

# LSHT Torqmotors™ and Nichols™ Motors

Catalog No. HY13-1590-011/US,EU



ENGINEERING YOUR SUCCESS.



## **WARNING**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.



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Wherever in the world machinery is designed, manufactured, or used, Parker is there to meet your hydraulic application requirements—with complete hydraulic component selection, worldwide availability, and technical assistance.

This catalog contains the information you need to order hydraulic motor products. It contains complete specifications, dimensions, and ordering information on the complete line of Parker hydraulic motor products, including technical data and

reference material for designers, builders, and users of motion control machinery. No more shuffling through dozens of separate catalogs from dozens of separate suppliers.

And when you're ready to order, call your local Parker hydraulic distributor for fast delivery and service. Or call your Parker Hydraulic Sales Office (see listing at the back of this catalog).

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In line with our policy of continuing product improvement, specifications and information contained in this catalog are subject to change.

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## Introduction

### Excellence of Design

The producers of Parker Hannifin's Low Speed High Torque motors have a history of manufacturing reliable, precision parts that stretches back over a century. Milestones include the first patent on roller vane rotor sets for low speed, high torque hydraulic motors. That was forty years ago. Today the technological advances continue.

In the Development Laboratory, engineers continuously measure and analyze motor data to move existing products to even higher levels of performance and to develop new products to serve the ever changing needs of our customers. Design integrity is assured by exhaustive testing on endurance stands. To be sure that this translates into superior performance, advanced manufacturing techniques are employed as well.

### Excellence of Manufacturing

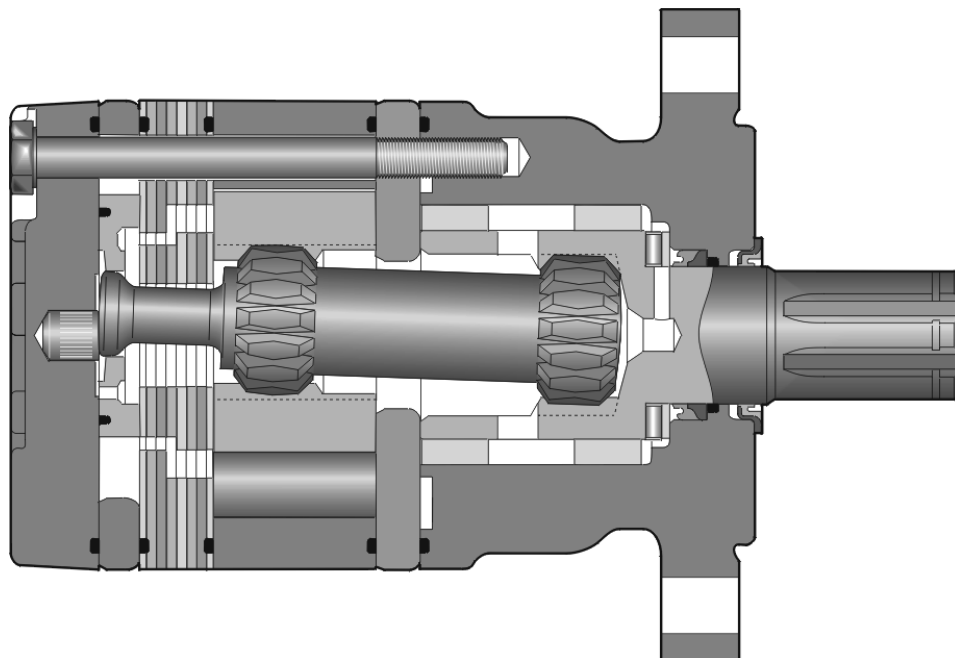
Central to manufacturing excellence is the understanding that quality parts make quality motors. The instrumentation in our Quality Assurance laboratory includes devices such as coordinate measuring machines, to accurately measure the parts that we manufacture as well as those that we purchase. Quality cannot be inspected in, however. It must be manufactured. Each machine operator is responsible for the quality of the part that comes off that machine. Efficiency is enhanced by our cellular manufacturing techniques. Accuracy is assured by statistical process control methods. Micrometers and specialized gages are at the disposal of the operator. As a final check, every motor is tested before shipment to our customer. Parker understands that our customers cannot produce quality products unless we do.



|                          |   |  |
|--------------------------|---|--|
| <b>15 Displacements</b>  | (2.2 - 24.0 in <sup>3</sup> /rev)<br><b>36 . . . 390 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>  | <b>Cont</b><br>(1250 psid)<br><b>. . .86 bar</b>                            | <b>Int</b><br>(1750 psid)<br><b>. . .121 bar</b> |
| <b>Maximum Oil Flow</b>  | (15 gpm)<br><b>. . . 57 lpm</b>   |  |
| <b>Maximum Speed</b>     | (902 rpm)<br><b>902 rpm</b>   |  |
| <b>Maximum Torque</b>    | <b>Cont</b><br>(1905 lb in)<br><b>215.2 Nm</b>                              | <b>Int</b><br>(2709 lb in)<br><b>306.1 Nm</b>    |
| <b>Maximum Side Load</b> | (788 lb)<br><b>. . . 3505 N</b>   |  |

**Big Performance In A Small Package**

High Performance and long life in a reduced space envelope describe Parker's TC Series motors. High volume fluid flow continually washes across splines and seals to extend their life. Roller vanes and sealed commutation assure high volumetric efficiency and smooth low speed operation.





| Code | cm <sup>3</sup> /rev<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|--|----------------------|
| 0036 | 36 /   | 2.2                  |
| 0045 | 41 /   | 2.5                  |
| 0050 | 49 /   | 3.0                  |
| 0065 | 65 /   | 4.0                  |
| 0080 | 82 /   | 5.0                  |
| 0100 | 98 /   | 6.0                  |
| 0130 | 130 /  | 8.0                  |
| 0165 | 163 /  | 10.0                 |
| 0195 | 195 /  | 11.9                 |
| 0230 | 228 /  | 13.9                 |
| 0260 | 260 /  | 15.9                 |
| 0295 | 293 /  | 17.9                 |
| 0330 | 328 /  | 20.0                 |
| 0365 | 370 /  | 22.6                 |
| 0390 | 392 /  | 24.0                 |

| Code | Mounting/Ports                       |
|------|--------------------------------------|
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE<br>       |
| FS   | 4 Bolt w/3/8-16 Thd, 7/8-14 SAE<br>  |
| 3F   | SAE "A" w/.225 Pilot, 3/4 O-ring<br> |
| AP   | SAE "A" 2 Bolt, 1/2-14 NPTF<br>      |

| Code | Shaft                            |
|------|----------------------------------|
| 10   | 1" Keyed<br>                     |
| 11   | 1" 6B Spline<br>                 |
| 72   | Spl. Short Wood Key, 1/4 Tap<br> |

| Code | Rotation                   |
|------|----------------------------|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

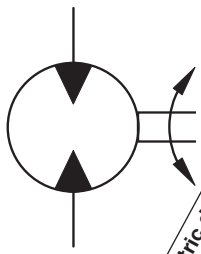
| Code                | Options   |
|---------------------|---|
| AAAA <sup>4</sup>   | "Standard", Black Paint   |
| AAAB                | "Standard", No Paint  |
| AAAC <sup>4</sup>   | "Standard", Double Paint  |
| AABJ <sup>1,4</sup> | Free Running Rotor Set, Black Paint   |
| AAFA                | Fluorocarbon shaft seal, High Temp Commutator Seal, High Temp Section Seals, Black Paint  |
| AAFW <sup>4</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint   |
| AAJH <sup>4</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint  |
| AAUP                | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, No hardware, No Paint   |
| AAVE <sup>1,4</sup> | Free Running Rotor Set, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint   |
| ABCW <sup>4</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Bidirectional shuttle (.062 Orifice) (11:00*), Black Paint            |
| ABCZ <sup>4</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Double Paint  |
| BBGS <sup>4</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temp Section Seals, High Temperature Commutator Seal, High Temp Section Seals 921 PSI Int Bidirectional Relief, Black Paint |
| BBGT <sup>2,4</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 1200 PSI Int Bidirectional Relief, Black Paint                        |
| BBGW <sup>3,4</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 1450 PSI Int Bidirectional Relief, Black Paint                        |

**TC Series are not available rear ported.**

<sup>1</sup> Not applicable to 0365 & 0390 displacements  
<sup>2</sup> Not applicable to 0330, 0365 or 0390 displacements  
<sup>3</sup> Not applicable to 0260, 0295, 0330, 0365 or 0390 displacements  
<sup>4</sup> Paint area all over except front and rear pilot and mounting flanges and shaft



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*Geometric displacement*  
*Max. speed @ Max. intermittent flow*  
*Max. oil flow*  
*Max. Differential Pressure*  
*Max. supply pressure*  
*Max. torque*  
*Max. performance*  
*Min. starting torque*

| Motor Series TC | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int*<br>l/min<br>g/min |          | cont / int*<br>bar<br>psid |             | max<br>bar<br>psig | cont / int*<br>Nm<br>lb-in |             | max<br>KW<br>HP | cont / int*<br>Nm<br>lb-in |             |
|-----------------|--|---------|-------------------------------|----------|----------------------------|-------------|--------------------|----------------------------|-------------|-----------------|----------------------------|-------------|
| TC 0036         | 36<br>2.2                                    | 902     | 34<br>9                       | 34<br>9  | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 31<br>272                  | 44<br>393   | 4.2<br>5.6      | 16<br>138                  | 27<br>236   |
| TC 0045         | 41<br>2.5                                    | 794     | 34<br>9                       | 34<br>9  | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 40<br>351                  | 56<br>496   | 4.5<br>6.1      | 20<br>174                  | 33<br>295   |
| TC 0050         | 49<br>3.0                                    | 688     | 34<br>9                       | 34<br>9  | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 48<br>423                  | 67<br>589   | 4.7<br>6.3      | 27<br>235                  | 39<br>349   |
| TC 0065         | 65<br>4.0                                    | 517     | 34<br>9                       | 34<br>9  | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 66<br>582                  | 92<br>810   | 4.8<br>6.5      | 41<br>361                  | 67<br>590   |
| TC 0080         | 82<br>5.0                                    | 413     | 34<br>9                       | 34<br>9  | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 96<br>753                  | 119<br>1050 | 4.9<br>6.6      | 61<br>539                  | 86<br>758   |
| TC 0100         | 98<br>6.0                                    | 460     | 45<br>12                      | 45<br>12 | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 100<br>888                 | 140<br>1240 | 6.1<br>8.2      | 78<br>691                  | 106<br>934  |
| TC 0130         | 130<br>8.0                                   | 429     | 45<br>12                      | 57<br>15 | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 138<br>1218                | 192<br>1697 | 7.5<br>10.1     | 111<br>986                 | 169<br>1492 |
| TC 0165         | 163<br>10.0                                  | 346     | 45<br>12                      | 57<br>15 | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 173<br>1529                | 238<br>2110 | 7.5<br>10.0     | 139<br>1232                | 209<br>1846 |
| TC 0195         | 195<br>11.9                                  | 287     | 45<br>12                      | 57<br>15 | 86<br>1250                 | 121<br>1750 | 134<br>1950        | 205<br>1815                | 286<br>2532 | 7.3<br>9.8      | 195<br>1724                | 264<br>2332 |
| TC 0230         | 228<br>13.9                                  | 246     | 45<br>12                      | 57<br>15 | 76<br>1100                 | 107<br>1550 | 134<br>1950        | 215<br>1905                | 298<br>2637 | 6.3<br>8.4      | 195<br>1722                | 261<br>2310 |
| TC 0260         | 260<br>15.9                                  | 217     | 45<br>12                      | 57<br>15 | 66<br>950                  | 97<br>1400  | 134<br>1950        | 211<br>1870                | 306<br>2709 | 5.4<br>7.3      | 183<br>1618                | 265<br>2344 |
| TC 0295         | 293<br>17.9                                  | 193     | 45<br>12                      | 57<br>15 | 59<br>850                  | 86<br>1250  | 134<br>1950        | 208<br>1843                | 300<br>2657 | 4.7<br>6.3      | 189<br>1675                | 269<br>2379 |
| TC 0330         | 328<br>20.0                                  | 173     | 45<br>12                      | 57<br>15 | 52<br>750                  | 76<br>1100  | 134<br>1950        | 206<br>1819                | 296<br>2621 | 4.0<br>5.3      | 187<br>1655                | 262<br>2318 |
| TC 0365         | 370<br>22.6                                  | 152     | 45<br>12                      | 57<br>15 | 45<br>650                  | 66<br>950   | 134<br>1950        | 206<br>1825                | 296<br>2622 | 3.4<br>4.6      | 186<br>1648                | 276<br>2443 |
| TC 0390         | 392<br>24.0                                  | 144     | 45<br>12                      | 57<br>15 | 45<br>650                  | 66<br>950   | 134<br>1950        | 207<br>1832                | 296<br>2622 | 3.2<br>4.3      | 192<br>1698                | 286<br>2527 |

Performance data based on testing using 10W40 oil with a viscosity of 43,1 cSt. (200 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.



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TC 0036

2.2 cu in / rev PRESSURE (PSID)

|           | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|-----|-----|------|------|------|------|
| <b>.5</b> | 104 | 160 | 214  |      |      |      |
|           | 27  | 18  | 8    |      |      |      |
| <b>1</b>  | 108 | 167 | 222  | 277  | 328  | 380  |
|           | 78  | 67  | 57   | 45   | 28   | 12   |
| <b>2</b>  | 109 | 169 | 229  | 287  | 344  | 396  |
|           | 179 | 170 | 160  | 147  | 130  | 111  |
| <b>3</b>  | 107 | 172 | 235  | 293  | 351  | 405  |
|           | 283 | 272 | 262  | 248  | 229  | 208  |
| <b>4</b>  | 105 | 168 | 236  | 295  | 353  | 410  |
|           | 387 | 375 | 365  | 350  | 332  | 311  |
| <b>5</b>  | 103 | 166 | 233  | 295  | 354  | 412  |
|           | 490 | 478 | 468  | 451  | 434  | 410  |
| <b>7</b>  | 90  | 156 | 220  | 286  | 348  | 410  |
|           | 695 | 685 | 673  | 656  | 635  | 610  |
| <b>9</b>  | 76  | 142 | 208  | 272  | 332  | 393  |
|           | 903 | 889 | 876  | 860  | 839  | 812  |

Flow (GPM)

TORQUE (LB IN) 272  
SPEED (RPM) 860

TC 0045

2.5 cu in / rev PRESSURE (PSID)

|           | 500 | 750 | 1000 | 1250 | 1500 | 1750 |
|-----------|-----|-----|------|------|------|------|
| <b>.5</b> | 124 | 200 | 254  |      |      |      |
|           | 22  | 13  | 7    |      |      |      |
| <b>1</b>  | 131 | 202 | 270  | 332  | 403  |      |
|           | 73  | 67  | 61   | 51   | 42   |      |
| <b>2</b>  | 131 | 201 | 279  | 350  | 412  | 481  |
|           | 163 | 157 | 149  | 141  | 130  | 114  |
| <b>3</b>  | 127 | 201 | 279  | 352  | 424  | 496  |
|           | 255 | 248 | 241  | 231  | 221  | 208  |
| <b>4</b>  | 122 | 192 | 279  | 350  | 421  | 498  |
|           | 346 | 339 | 330  | 321  | 310  | 292  |
| <b>5</b>  | 113 | 183 | 270  | 341  | 412  | 489  |
|           | 436 | 429 | 420  | 410  | 399  | 381  |
| <b>7</b>  | 105 | 174 | 262  | 332  | 403  | 481  |
|           | 615 | 606 | 594  | 583  | 569  | 547  |
| <b>9</b>  | 93  | 168 | 249  | 324  | 397  | 473  |
|           | 793 | 784 | 770  | 757  | 739  | 717  |

Flow (GPM)

TORQUE (LB IN) 324  
SPEED (RPM) 757

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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TC 0050

3.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000       | 1250       | 1500       | 1750       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 136        | 210        |            |            |            |            |
|           | <b>28</b>  | <b>17</b>  |            |            |            |            |
| <b>1</b>  | 148        | 226        | 305        | 377        |            |            |
|           | <b>59</b>  | <b>51</b>  | <b>42</b>  | <b>33</b>  |            |            |
| <b>2</b>  | 155        | 238        | 331        | 413        | 476        | 543        |
|           | <b>136</b> | <b>129</b> | <b>117</b> | <b>107</b> | <b>95</b>  | <b>79</b>  |
| <b>3</b>  | 154        | 245        | 334        | 417        | 496        | 573        |
|           | <b>215</b> | <b>207</b> | <b>197</b> | <b>186</b> | <b>173</b> | <b>157</b> |
| <b>4</b>  | 148        | 238        | 331        | 422        | 503        | 578        |
|           | <b>292</b> | <b>284</b> | <b>273</b> | <b>263</b> | <b>251</b> | <b>228</b> |
| <b>5</b>  | 139        | 233        | 330        | 420        | 506        | 587        |
|           | <b>369</b> | <b>361</b> | <b>350</b> | <b>340</b> | <b>327</b> | <b>305</b> |
| <b>7</b>  | 131        | 224        | 325        | 418        | 506        | 591        |
|           | <b>519</b> | <b>511</b> | <b>498</b> | <b>486</b> | <b>470</b> | <b>445</b> |
| <b>9</b>  | 123        | 216        | 314        | 405        | 492        | 579        |
|           | <b>672</b> | <b>661</b> | <b>646</b> | <b>632</b> | <b>615</b> | <b>592</b> |

Flow (GPM)

TORQUE (LB IN) 405  
SPEED (RPM) 632

TC 0065

4.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000       | 1250       | 1500       | 1750       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 207        | 333        | 425        |            |            |            |
|           | <b>14</b>  | <b>9</b>   | <b>3</b>   |            |            |            |
| <b>1</b>  | 218        | 334        | 449        | 561        | 668        |            |
|           | <b>47</b>  | <b>43</b>  | <b>36</b>  | <b>30</b>  | <b>23</b>  |            |
| <b>2</b>  | 231        | 352        | 471        | 583        | 700        | 797        |
|           | <b>104</b> | <b>100</b> | <b>93</b>  | <b>87</b>  | <b>79</b>  | <b>68</b>  |
| <b>3</b>  | 218        | 341        | 463        | 582        | 697        | 811        |
|           | <b>163</b> | <b>158</b> | <b>151</b> | <b>145</b> | <b>138</b> | <b>126</b> |
| <b>4</b>  | 209        | 330        | 462        | 574        | 695        | 808        |
|           | <b>220</b> | <b>216</b> | <b>209</b> | <b>202</b> | <b>195</b> | <b>182</b> |
| <b>5</b>  | 201        | 320        | 449        | 571        | 688        | 801        |
|           | <b>278</b> | <b>273</b> | <b>266</b> | <b>260</b> | <b>251</b> | <b>238</b> |
| <b>7</b>  | 186        | 311        | 439        | 563        | 682        | 799        |
|           | <b>391</b> | <b>386</b> | <b>376</b> | <b>370</b> | <b>359</b> | <b>344</b> |
| <b>9</b>  | 176        | 297        | 427        | 547        | 675        | 796        |
|           | <b>506</b> | <b>498</b> | <b>490</b> | <b>480</b> | <b>467</b> | <b>450</b> |

Flow (GPM)

TORQUE (LB IN) 547  
SPEED (RPM) 480

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





TC 0080

5.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000       | 1250       | 1500       | 1750       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 270        | 431        | 558        | 700        |            |            |
|           | <b>14</b>  | <b>10</b>  | <b>8</b>   | <b>3</b>   |            |            |
| <b>1</b>  | 289        | 438        | 585        | 730        | 871        |            |
|           | <b>39</b>  | <b>37</b>  | <b>33</b>  | <b>30</b>  | <b>25</b>  |            |
| <b>2</b>  | 291        | 445        | 599        | 753        | 918        | 1037       |
|           | <b>86</b>  | <b>83</b>  | <b>78</b>  | <b>75</b>  | <b>70</b>  | <b>61</b>  |
| <b>3</b>  | 284        | 442        | 600        | 753        | 903        | 1049       |
|           | <b>132</b> | <b>129</b> | <b>125</b> | <b>121</b> | <b>116</b> | <b>108</b> |
| <b>4</b>  | 272        | 431        | 563        | 745        | 897        | 1046       |
|           | <b>179</b> | <b>176</b> | <b>171</b> | <b>167</b> | <b>162</b> | <b>153</b> |
| <b>5</b>  | 255        | 414        | 574        | 730        | 882        | 1033       |
|           | <b>225</b> | <b>221</b> | <b>217</b> | <b>212</b> | <b>207</b> | <b>198</b> |
| <b>7</b>  | 239        | 396        | 559        | 714        | 867        | 1021       |
|           | <b>315</b> | <b>312</b> | <b>306</b> | <b>300</b> | <b>294</b> | <b>284</b> |
| <b>9</b>  | 226        | 382        | 547        | 703        | 855        | 1011       |
|           | <b>407</b> | <b>402</b> | <b>394</b> | <b>389</b> | <b>382</b> | <b>369</b> |

Flow (GPM)

TORQUE (LB IN) 703  
SPEED (RPM) 389

TC 0100

6.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000       | 1250       | 1500       | 1750       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 319        | 485        |            |            |            |            |
|           | <b>8</b>   | <b>4</b>   |            |            |            |            |
| <b>1</b>  | 337        | 514        | 684        | 855        | 1022       |            |
|           | <b>30</b>  | <b>26</b>  | <b>22</b>  | <b>18</b>  | <b>14</b>  |            |
| <b>2</b>  | 345        | 546        | 728        | 909        | 1087       | 1222       |
|           | <b>67</b>  | <b>64</b>  | <b>61</b>  | <b>56</b>  | <b>51</b>  | <b>44</b>  |
| <b>3</b>  | 335        | 522        | 707        | 888        | 1065       | 1243       |
|           | <b>108</b> | <b>104</b> | <b>100</b> | <b>96</b>  | <b>92</b>  | <b>84</b>  |
| <b>4</b>  | 323        | 508        | 697        | 879        | 1059       | 1241       |
|           | <b>146</b> | <b>142</b> | <b>139</b> | <b>135</b> | <b>130</b> | <b>123</b> |
| <b>5</b>  | 305        | 490        | 681        | 864        | 1044       | 1227       |
|           | <b>185</b> | <b>181</b> | <b>177</b> | <b>173</b> | <b>168</b> | <b>161</b> |
| <b>7</b>  | 282        | 465        | 658        | 842        | 1024       | 1209       |
|           | <b>261</b> | <b>256</b> | <b>251</b> | <b>247</b> | <b>241</b> | <b>232</b> |
| <b>9</b>  | 262        | 444        | 638        | 822        | 1005       | 1193       |
|           | <b>337</b> | <b>332</b> | <b>326</b> | <b>322</b> | <b>315</b> | <b>304</b> |
| <b>12</b> | 203        | 384        | 582        | 763        | 943        | 1121       |
|           | <b>448</b> | <b>443</b> | <b>438</b> | <b>433</b> | <b>427</b> | <b>412</b> |

Flow (GPM)

TORQUE (LB IN) 763  
SPEED (RPM) 433

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TC 0130

8.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000       | 1250        | 1500        | 1750        |
|-----------|------------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 447<br>9   | 718<br>7   | 921<br>5   | 1188<br>2   |             |             |
| <b>1</b>  | 472<br>25  | 717<br>23  | 960<br>21  | 1201<br>19  | 1442<br>17  |             |
| <b>2</b>  | 476<br>54  | 726<br>52  | 970<br>50  | 1213<br>48  | 1455<br>45  | 1698<br>40  |
| <b>3</b>  | 461<br>83  | 710<br>82  | 961<br>79  | 1204<br>76  | 1448<br>74  | 1693<br>70  |
| <b>4</b>  | 440<br>112 | 689<br>111 | 942<br>108 | 1188<br>106 | 1432<br>103 | 1677<br>100 |
| <b>5</b>  | 417<br>141 | 663<br>139 | 918<br>137 | 1164<br>135 | 1408<br>132 | 1654<br>129 |
| <b>7</b>  | 384<br>198 | 629<br>195 | 857<br>193 | 1102<br>191 | 1346<br>188 | 1597<br>184 |
| <b>9</b>  | 308<br>256 | 533<br>256 | 792<br>252 | 1034<br>250 | 1279<br>246 | 1533<br>241 |
| <b>12</b> | 270<br>342 | 499<br>340 | 758<br>337 | 998<br>334  | 1239<br>330 | 1492<br>324 |
| <b>15</b> | 188<br>428 | 418<br>426 | 677<br>422 | 911<br>420  | 1144<br>416 | 1391<br>412 |

Flow (GPM)

TORQUE (LB IN) 1533  
SPEED (RPM) 241

TC 0165

10.0 cu in / rev PRESSURE (PSID)

|           | 500        | 750        | 1000        | 1250        | 1500        | 1750        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 554<br>8   | 881<br>6   | 1130<br>4   | 1457<br>2   |             |             |
| <b>1</b>  | 594<br>20  | 898<br>19  | 1197<br>17  | 1492<br>16  | 1785<br>14  |             |
| <b>2</b>  | 605<br>43  | 914<br>42  | 1220<br>41  | 1526<br>39  | 1819<br>38  | 2114<br>35  |
| <b>3</b>  | 584<br>67  | 899<br>66  | 1211<br>64  | 1518<br>63  | 1833<br>61  | 2109<br>58  |
| <b>4</b>  | 554<br>91  | 866<br>89  | 1183<br>89  | 1491<br>87  | 1791<br>86  | 2092<br>85  |
| <b>5</b>  | 519<br>114 | 827<br>113 | 1146<br>111 | 1455<br>110 | 1755<br>109 | 2057<br>108 |
| <b>7</b>  | 477<br>159 | 782<br>158 | 1102<br>156 | 1408<br>155 | 1707<br>153 | 2011<br>150 |
| <b>9</b>  | 376<br>207 | 671<br>205 | 991<br>204  | 1290<br>202 | 1587<br>201 | 1894<br>198 |
| <b>12</b> | 323<br>248 | 613<br>247 | 933<br>245  | 1229<br>244 | 1519<br>243 | 1833<br>241 |
| <b>15</b> | 194<br>347 | 467<br>345 | 786<br>344  | 1073<br>342 | 1363<br>341 | 1673<br>340 |

Flow (GPM)

TORQUE (LB IN) 1894  
SPEED (RPM) 198

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.



**TC 0195**

**11.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 750        | 1000        | 1250        | 1500        | 1750        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 678<br>6   | 1089<br>5  | 1402<br>3   |             |             |             |
| <b>1</b>  | 704<br>17  | 1070<br>15 | 1439<br>14  | 1805<br>13  | 2166<br>11  |             |
| <b>2</b>  | 717<br>36  | 1089<br>35 | 1459<br>33  | 1824<br>32  | 2176<br>30  | 2523<br>27  |
| <b>3</b>  | 687<br>56  | 1061<br>55 | 1427<br>54  | 1789<br>52  | 2148<br>51  | 2508<br>48  |
| <b>4</b>  | 650<br>75  | 1019<br>74 | 1389<br>73  | 1749<br>72  | 2105<br>70  | 2463<br>67  |
| <b>5</b>  | 614<br>95  | 978<br>94  | 1350<br>92  | 1708<br>91  | 2061<br>89  | 2418<br>86  |
| <b>7</b>  | 567<br>132 | 925<br>132 | 1301<br>131 | 1656<br>129 | 2007<br>127 | 2365<br>124 |
| <b>9</b>  | 452<br>201 | 799<br>200 | 1177<br>199 | 1526<br>198 | 1873<br>195 | 2232<br>192 |
| <b>12</b> | 392<br>227 | 732<br>226 | 1107<br>225 | 1454<br>224 | 1803<br>221 | 2163<br>218 |
| <b>15</b> | 249<br>290 | 569<br>289 | 944<br>288  | 1288<br>287 | 1627<br>285 | 1985<br>282 |

Flow (GPM)

TORQUE (LB IN) 2232  
SPEED (RPM) 192

**TC 0260**

**15.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 750         | 950         | 1200        | 1400        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 950<br>5   | 1446<br>4   | 1828<br>3   | 2307<br>2   |             |
| <b>1</b>  | 978<br>13  | 1473<br>12  | 1860<br>11  | 2335<br>11  | 2713<br>10  |
| <b>2</b>  | 989<br>27  | 1489<br>26  | 1880<br>26  | 2353<br>25  | 2728<br>24  |
| <b>3</b>  | 946<br>42  | 1449<br>42  | 1837<br>41  | 2307<br>40  | 2689<br>39  |
| <b>4</b>  | 889<br>57  | 1382<br>56  | 1775<br>55  | 2233<br>55  | 2608<br>54  |
| <b>5</b>  | 837<br>71  | 1316<br>71  | 1704<br>70  | 2169<br>70  | 2536<br>69  |
| <b>7</b>  | 765<br>100 | 1235<br>100 | 1623<br>100 | 2078<br>99  | 2437<br>98  |
| <b>9</b>  | 588<br>130 | 1016<br>129 | 1391<br>129 | 1876<br>129 | 2230<br>128 |
| <b>12</b> | 523<br>155 | 952<br>155  | 1329<br>155 | 1767<br>154 | 2131<br>154 |
| <b>15</b> | 357<br>217 | 796<br>216  | 1177<br>216 | 1611<br>216 | 1969<br>215 |

Flow (GPM)

TORQUE (LB IN) 2230  
SPEED (RPM) 128

**TC 0230**

**13.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 750         | 1100        | 1300        | 1550        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 837<br>4   | 1313<br>3   |             |             |             |
| <b>1</b>  | 856<br>14  | 1293<br>12  | 1892<br>11  | 2226<br>9   | 2637<br>8   |
| <b>2</b>  | 846<br>30  | 1291<br>29  | 1888<br>28  | 2221<br>25  | 2621<br>23  |
| <b>3</b>  | 820<br>47  | 1258<br>46  | 1853<br>44  | 2179<br>42  | 2581<br>41  |
| <b>4</b>  | 784<br>64  | 1217<br>63  | 1809<br>61  | 2134<br>60  | 2531<br>58  |
| <b>5</b>  | 741<br>80  | 1168<br>79  | 1760<br>78  | 2086<br>76  | 2475<br>74  |
| <b>7</b>  | 683<br>113 | 1101<br>112 | 1692<br>111 | 2019<br>110 | 2405<br>106 |
| <b>9</b>  | 518<br>146 | 908<br>146  | 1497<br>144 | 1833<br>143 | 2231<br>140 |
| <b>12</b> | 462<br>176 | 851<br>175  | 1432<br>174 | 1763<br>173 | 2153<br>169 |
| <b>15</b> | 337<br>246 | 720<br>244  | 1291<br>243 | 1604<br>242 | 1969<br>237 |

Flow (GPM)

TORQUE (LB IN) 2231  
SPEED (RPM) 140

**TC 0295**

**17.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 850         | 1000        | 1250        |
|-----------|------------|-------------|-------------|-------------|
| <b>.5</b> | 1037<br>4  | 1769<br>2   |             |             |
| <b>1</b>  | 1075<br>11 | 1834<br>10  | 2145<br>9   | 2656<br>8   |
| <b>2</b>  | 1090<br>23 | 1850<br>23  | 2153<br>22  | 2656<br>21  |
| <b>3</b>  | 1046<br>36 | 1807<br>36  | 2110<br>36  | 2611<br>35  |
| <b>4</b>  | 976<br>50  | 1729<br>49  | 2040<br>48  | 2540<br>48  |
| <b>5</b>  | 915<br>63  | 1668<br>62  | 1970<br>61  | 2468<br>61  |
| <b>7</b>  | 837<br>89  | 1582<br>88  | 1883<br>87  | 2378<br>87  |
| <b>9</b>  | 645<br>115 | 1349<br>114 | 1648<br>114 | 2163<br>113 |
| <b>12</b> | 575<br>138 | 1271<br>137 | 1569<br>137 | 2046<br>136 |
| <b>15</b> | 392<br>192 | 1098<br>191 | 1377<br>191 | 1831<br>191 |

Flow (GPM)

TORQUE (LB IN) 2163  
SPEED (RPM) 113

■ Cont. □ Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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**TC 0330**

**20.0 cu in / rev** PRESSURE (PSID)

|           | 250        | 500        | 750         | 1100        |
|-----------|------------|------------|-------------|-------------|
| <b>.5</b> | 580<br>4   | 1177<br>3  |             |             |
| <b>1</b>  | 603<br>10  | 1207<br>10 | 1803<br>9   | 2298<br>7   |
| <b>2</b>  | 598<br>22  | 1232<br>22 | 1803<br>21  | 2298<br>19  |
| <b>3</b>  | 558<br>34  | 1158<br>33 | 1757<br>32  | 2251<br>32  |
| <b>4</b>  | 507<br>46  | 1098<br>45 | 1693<br>44  | 2195<br>44  |
| <b>5</b>  | 458<br>57  | 1033<br>56 | 1620<br>56  | 2124<br>55  |
| <b>7</b>  | 381<br>80  | 968<br>79  | 1510<br>79  | 2030<br>79  |
| <b>9</b>  | 226<br>103 | 733<br>102 | 1272<br>103 | 1808<br>103 |
| <b>12</b> |            | 636<br>123 | 1163<br>123 | 1706<br>123 |
| <b>15</b> |            | 426<br>173 | 934<br>172  | 1485<br>172 |

Flow (GPM)

TORQUE (LB IN) 1808  
SPEED (RPM) 103

**TC 0390**

**24.0 cu in / rev** PRESSURE (PSID)

|           | 250       | 500        | 650        | 950         |
|-----------|-----------|------------|------------|-------------|
| <b>.5</b> | 671<br>3  | 1356<br>2  |            |             |
| <b>1</b>  | 694<br>8  | 1404<br>8  | 1825<br>7  | 2622<br>6   |
| <b>2</b>  | 694<br>18 | 1421<br>17 | 1842<br>17 | 2604<br>16  |
| <b>3</b>  | 648<br>27 | 1343<br>26 | 1754<br>26 | 2533<br>26  |
| <b>4</b>  | 587<br>38 | 1264<br>37 | 1675<br>37 | 2453<br>36  |
| <b>5</b>  | 534<br>47 | 1194<br>47 | 1595<br>46 | 2363<br>46  |
| <b>7</b>  | 458<br>66 | 1107<br>66 | 1498<br>66 | 2265<br>66  |
| <b>9</b>  | 282<br>86 | 880<br>85  | 1260<br>85 | 2016<br>86  |
| <b>12</b> |           | 819<br>98  | 1195<br>98 | 1942<br>98  |
| <b>15</b> |           | 540<br>144 | 908<br>143 | 1623<br>144 |

Flow (GPM)

TORQUE (LB IN) 2016  
SPEED (RPM) 86

**TC 0365**

**22.6 cu in / rev** PRESSURE (PSID)

|           | 250       | 500        | 650         | 950         |
|-----------|-----------|------------|-------------|-------------|
| <b>.5</b> | 603<br>4  | 1260<br>3  | 1689<br>2   | 2529<br>1   |
| <b>1</b>  | 636<br>9  | 1316<br>8  | 1745<br>8   | 2542<br>7   |
| <b>2</b>  | 637<br>19 | 1351<br>18 | 1772<br>18  | 2551<br>17  |
| <b>3</b>  | 587<br>30 | 1264<br>29 | 1684<br>28  | 2479<br>28  |
| <b>4</b>  | 542<br>40 | 1212<br>39 | 1622<br>39  | 2408<br>39  |
| <b>5</b>  | 484<br>50 | 1138<br>50 | 1550<br>50  | 2331<br>49  |
| <b>7</b>  | 419<br>71 | 1055<br>70 | 1463<br>70  | 2239<br>70  |
| <b>9</b>  | 259<br>91 | 793<br>91  | 1199<br>91  | 2025<br>91  |
| <b>12</b> |           | 741<br>108 | 1155<br>108 | 1962<br>108 |
| <b>15</b> |           | 619<br>152 | 1058<br>152 | 1828<br>152 |

Flow (GPM)

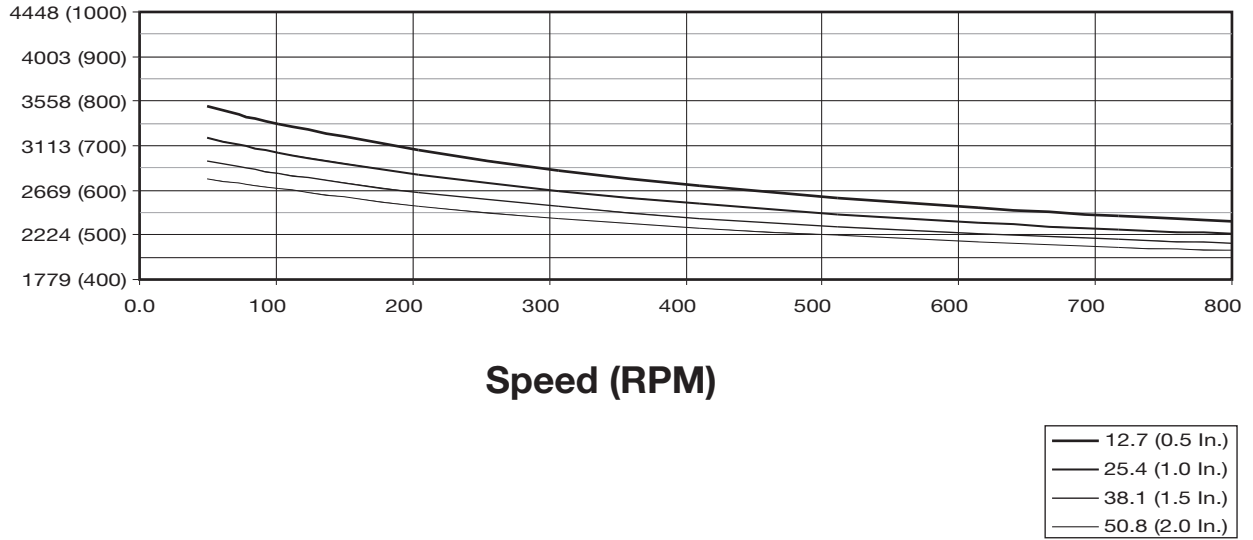
TORQUE (LB IN) 2025  
SPEED (RPM) 91

Cont.  Int.

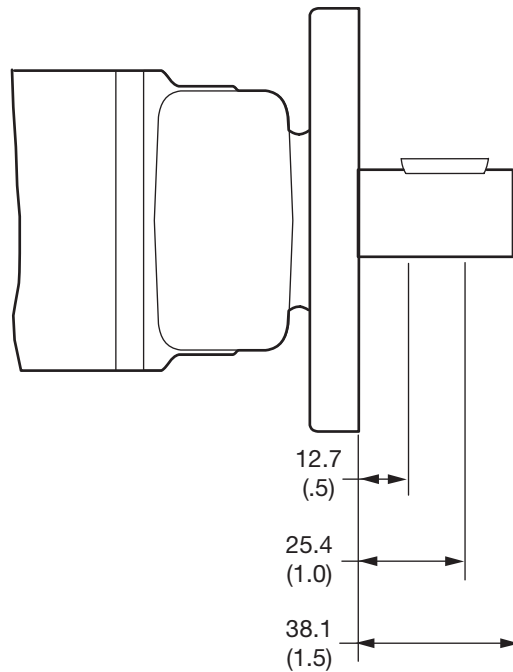
Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Shaft Side Load Capacity N (lb)



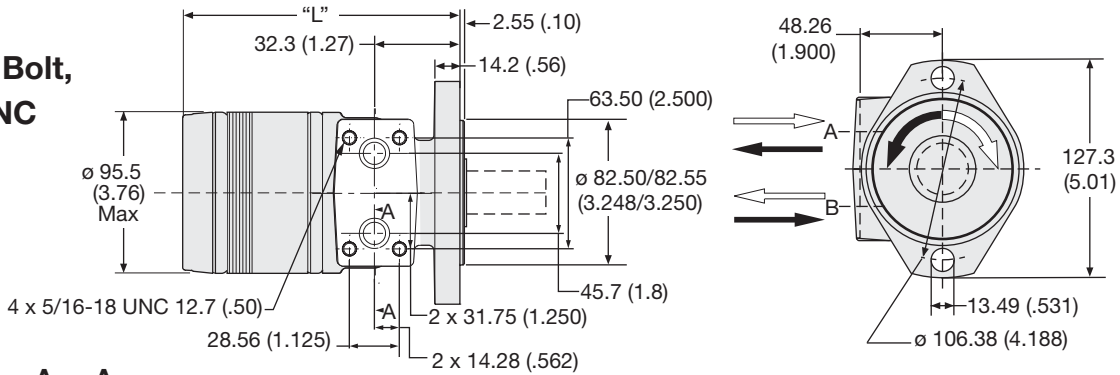
The allowable side load curve is based on bushing life of  $2.5 \times 10^6$  revolutions.



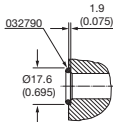
English equivalents for metric specifications are shown in ( ).

Code: AM

SAE "A" 2 Bolt,  
5/16-18 UNC  
Manifold



A - - A

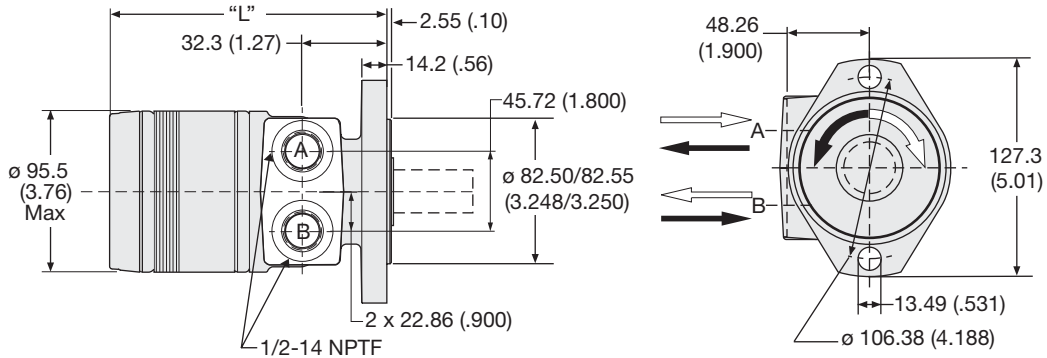


Motor with manifold mount is supplied with 2 O-rings.

| Code AM        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 5.38   | 5.46   | 5.54   | 5.67   | 5.81   | 5.88   | 6.19   | 6.45   | 6.74   | 6.93   | 7.23   | 7.39   | 7.71   | 8.09   | 8.21   |
| Poids/Peso     | (lb)     | (11.8) | (12.0) | (12.2) | (12.5) | (12.8) | (13.0) | (13.6) | (14.2) | (14.9) | (15.3) | (15.9) | (16.3) | (17.0) | (17.8) | (18.1) |
| Length         | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|                | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

Code: AP

SAE "A" 2 Bolt,  
1/2-14 NPTF



| Code AP        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 5.38   | 5.46   | 5.54   | 5.67   | 5.81   | 5.88   | 6.19   | 6.45   | 6.74   | 6.93   | 7.23   | 7.39   | 7.71   | 8.09   | 8.21   |
| Poids/Peso     | (lb)     | (11.8) | (12.0) | (12.2) | (12.5) | (12.8) | (13.0) | (13.6) | (14.2) | (14.9) | (15.3) | (15.9) | (16.3) | (17.0) | (17.8) | (18.1) |
| Length         | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|                | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

English equivalents for metric specifications are shown in ( ).

001 TC.indd, b



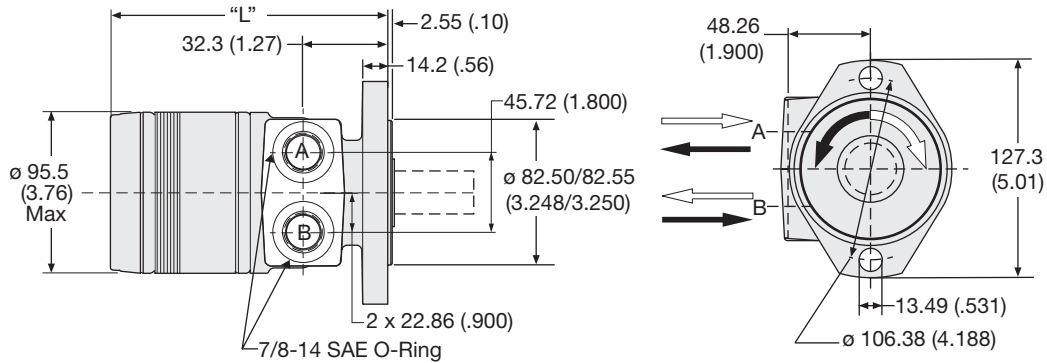
**WARNING**

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Code: AS

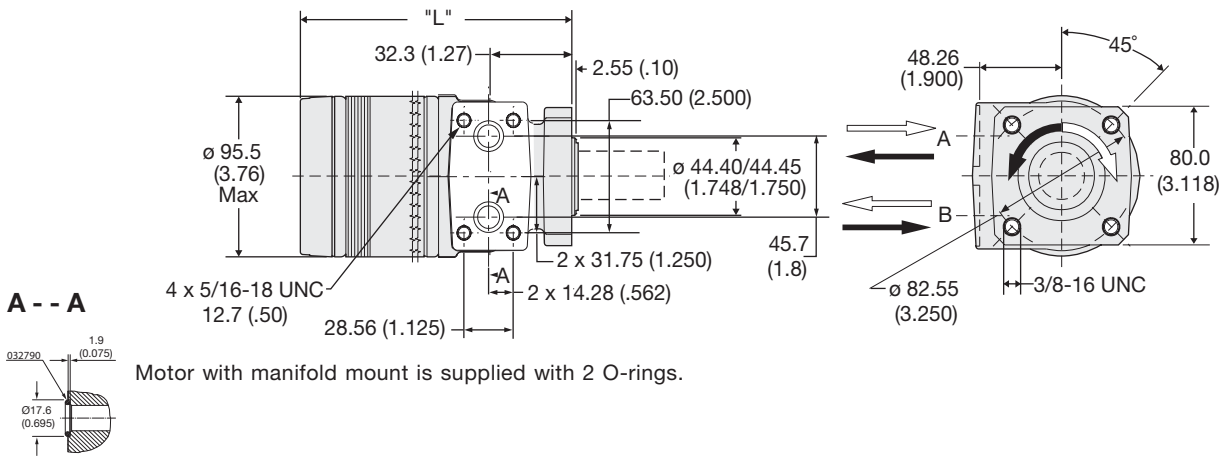
SAE "A" 2 Bolt,  
7/8-14 SAE



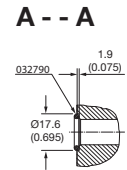
| Code AS | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 5.38   | 5.46   | 5.54   | 5.67   | 5.81   | 5.88   | 6.19   | 6.45   | 6.74   | 6.93   | 7.23   | 7.39   | 7.71   | 8.09   | 8.21   |
|         | (lb)     | (11.8) | (12.0) | (12.2) | (12.5) | (12.8) | (13.0) | (13.6) | (14.2) | (14.9) | (15.3) | (15.9) | (16.3) | (17.0) | (17.8) | (18.1) |
| Length  | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|         | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

Code: FM

4 Bolt w/3/8-16 Thd,  
5/16-18 UNC Manifold



Motor with manifold mount is supplied with 2 O-rings.



| Code FM | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 5.91   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
|         | (lb)     | (13.1) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length  | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|         | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

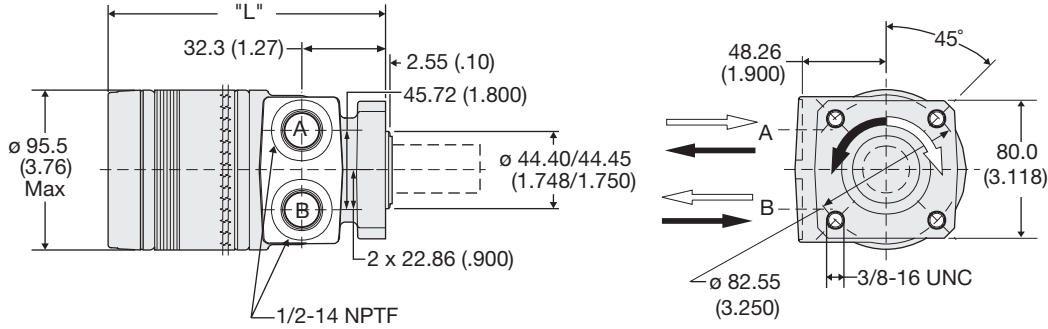
English equivalents for metric specifications are shown in ( ).



WARNING  
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Code: FP

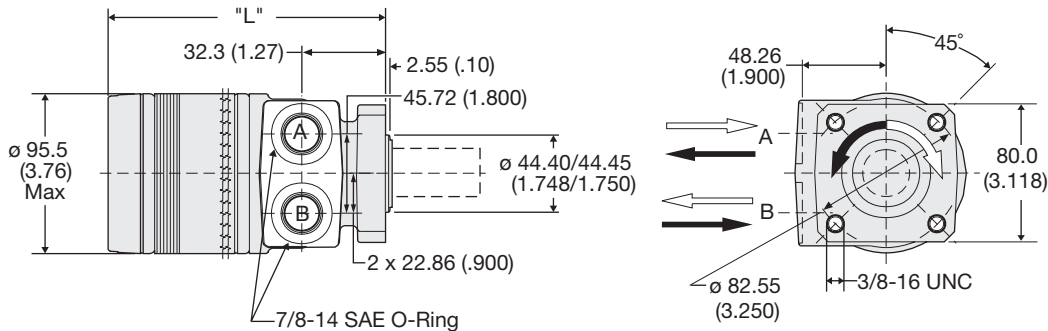
4 Bolt w/3/8-16 Thd,  
1/2-14 NPTF



| Code FP          | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewichtkg |          | 5.91   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso       | (lb)     | (13.1) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length           | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|                  | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

Code: FS

4 Bolt w/3/8-16 Thd,  
7/8-14 SAE



| Code FS          | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewichtkg |          | 5.91   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso       | (lb)     | (13.1) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length           | "L" mm   | 119.1  | 120.1  | 121.6  | 124.8  | 127.9  | 131.1  | 137.5  | 143.8  | 150.2  | 156.5  | 162.9  | 169.2  | 175.6  | 184.2  | 188.3  |
|                  | "L" (in) | (4.69) | (4.73) | (4.79) | (4.91) | (5.04) | (5.16) | (5.41) | (5.66) | (5.91) | (6.16) | (6.41) | (6.66) | (6.91) | (7.25) | (7.41) |

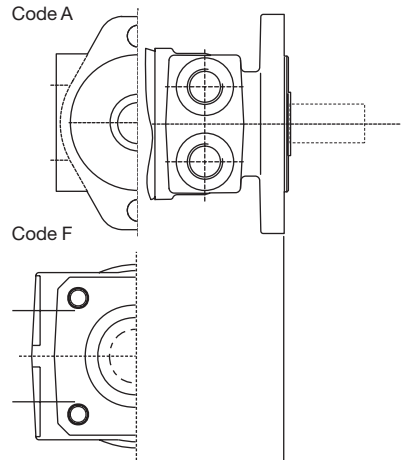
English equivalents for metric specifications are shown in ( ).

001 TC.indd, b



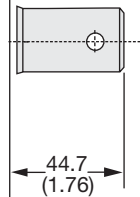
**WARNING**

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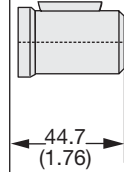
**Code: 09**

**1" Straight with  
0.38" Crosshole**



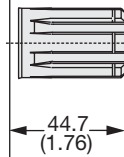
**Code: 10**

**1" Keyed**



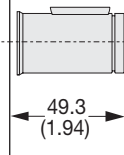
**Code: 11**

**1" 6B Spline**

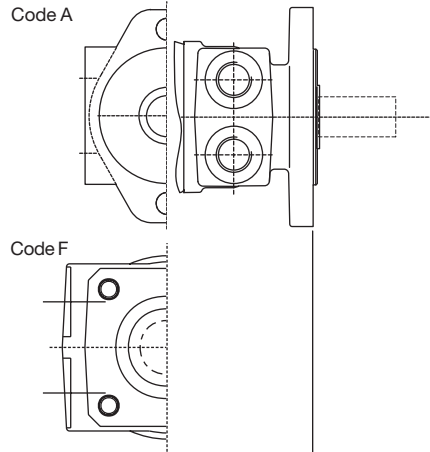


**Code: 13**

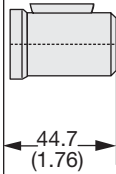
**Long 1" Keyed**



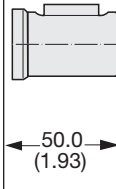
English equivalents for metric specifications are shown in ( ).



**Code: 21**  
**1" Keyed**  
**Corrosion Resistant**



**Code: 26**  
**25mm Keyed**  
**with 8mm Key**



English equivalents for metric specifications are shown in ( ).

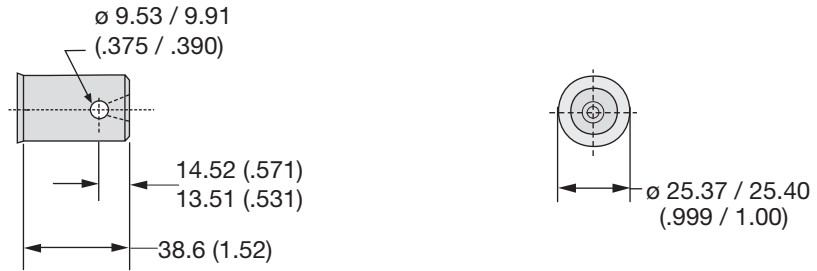
001 TC.indd, b



**WARNING**  
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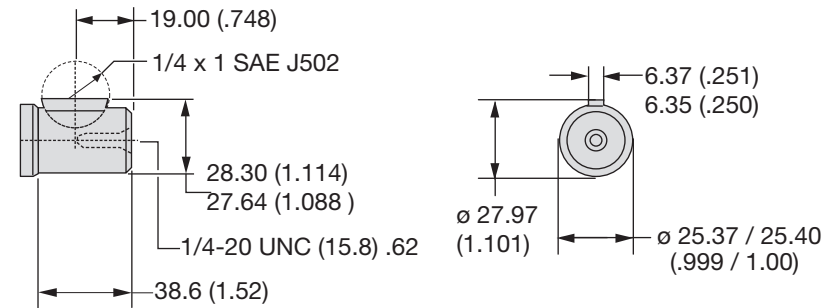
**Code: 09**

**1" Straight with  
 0.38" Crosshole**



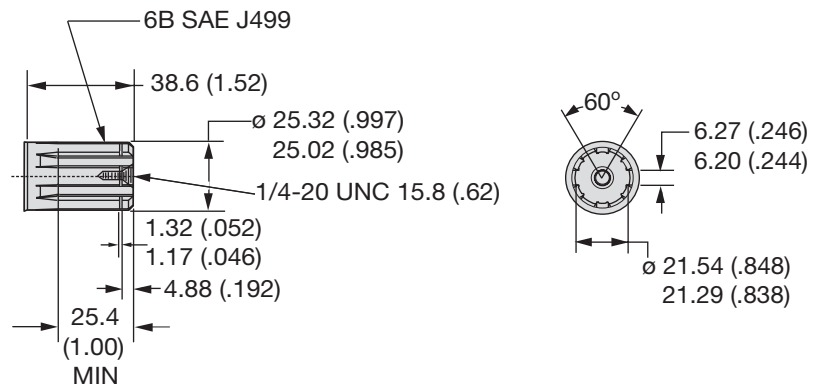
**Code: 10**

**1" Keyed**



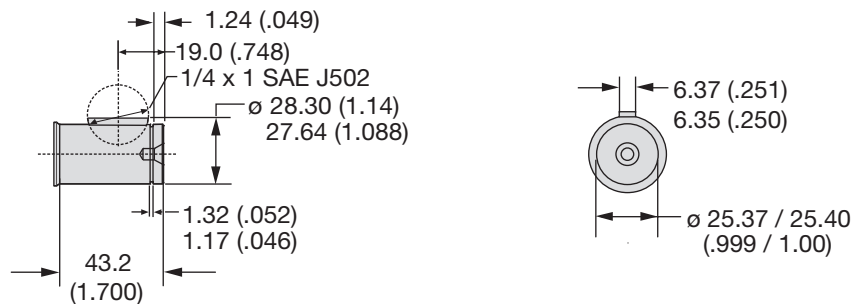
**Code: 11**

**1" 6B Spline**



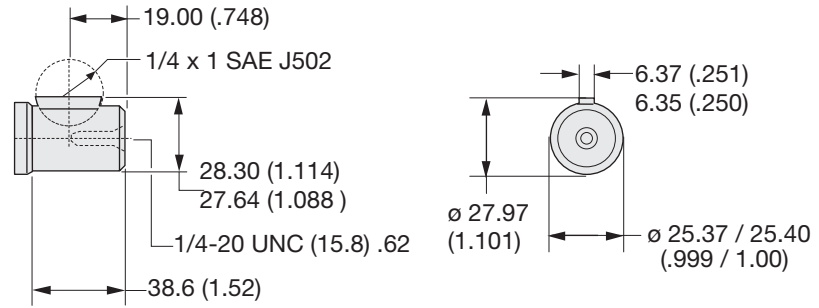
**Code: 13**

**Long 1" Keyed**

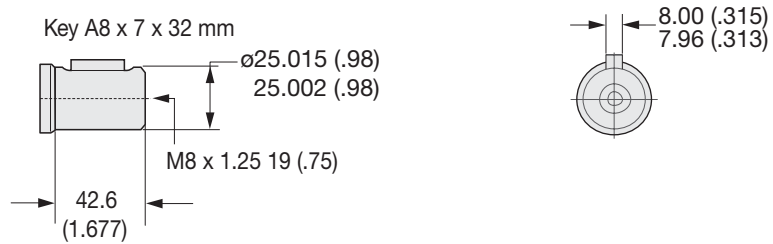


English equivalents for metric specifications are shown in ( ).

**Code: 21**  
**1" Keyed**  
**Corrosion Resistant**



**Code: 26**  
**25mm Keyed**  
**with 8mm Key**



English equivalents for metric specifications are shown in ( ).

001 TC.indd, b



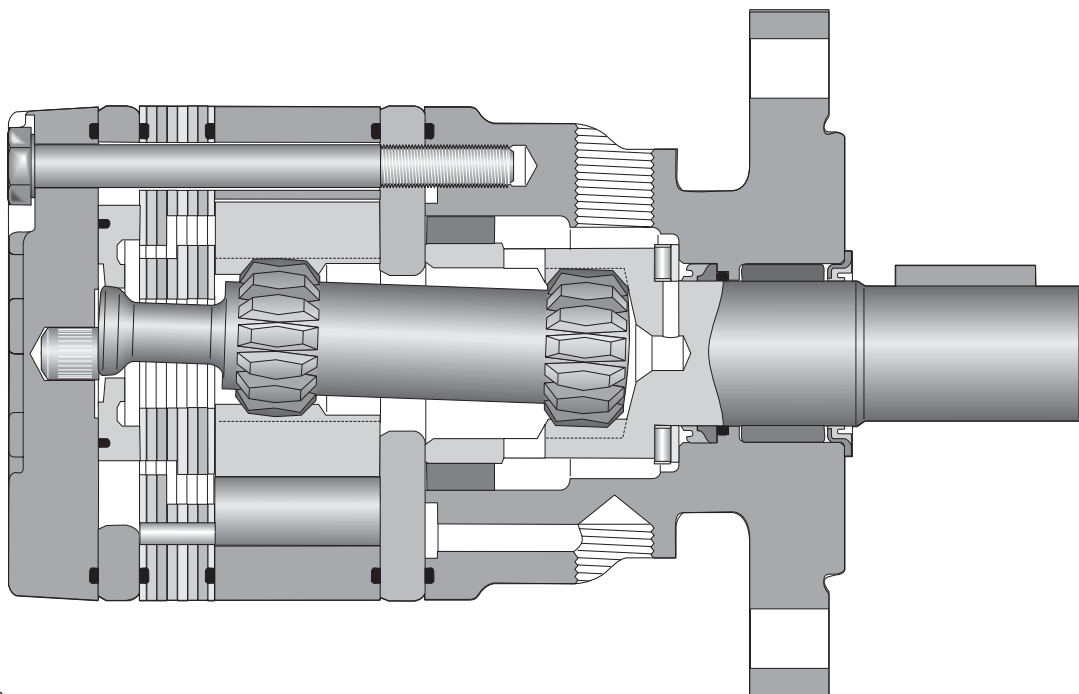
**WARNING**  
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|                                 |   |  |
|---------------------------------|---|--|
| <b>15 Displacements</b>         | (2.2 – 24.0 in <sup>3</sup> /rev)<br><b>36 . . . 390 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont</b><br>(1800 psid)<br><b>. . .125 bar</b>                           | <b>Int</b><br>(2400 psid)<br><b>. . .165 bar</b> |
| <b>Maximum Oil Flow</b>         | (15 gpm)<br><b>. . . 57 lpm</b>   |  |
| <b>Maximum Speed</b>            | (932 rpm)<br><b>932 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont</b><br>(3897 lb in)<br><b>440 Nm</b>                                | <b>Int</b><br>(4783 lb in)<br><b>540 Nm</b>      |
| <b>Maximum Side Load at Key</b> | (1100 lb)<br><b>. . . 4900 N</b>  |  |

**A Light Duty Low Speed, High Torque Motor**

This light duty motor incorporates all the features of heavy duty motors. Design features include a high pressure shaft seal so external drains are never required, roller vane technology for automatic wear compensation, and full flow internal cooling and flushing. This is a very economical motor for most light to medium duty applications.



**TB**

Series

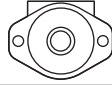

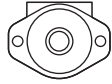



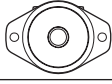





**XXXX**











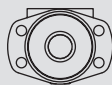

Displacement

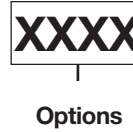
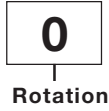
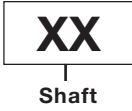
**XX**

Mounting/Ports

| Code | cm <sup>3</sup> /U  |                      |
|------|---------------------|----------------------|
|      | cm <sup>3</sup> /tr | in <sup>3</sup> /rev |
| 0036 | 36                  | / 2.2                |
| 0045 | 41                  | / 2.5                |
| 0050 | 49                  | / 3.0                |
| 0065 | 65                  | / 4.0                |
| 0080 | 82                  | / 5.0                |
| 0100 | 98                  | / 6.0                |
| 0130 | 130                 | / 8.0                |
| 0165 | 163                 | / 10.0               |
| 0195 | 195                 | / 11.9               |
| 0230 | 228                 | / 13.9               |
| 0260 | 260                 | / 15.9               |
| 0295 | 293                 | / 17.9               |
| 0330 | 328                 | / 20.0               |
| 0365 | 370                 | / 22.6               |
| 0390 | 392                 | / 24.0               |

| Code | Mounting/Ports   |
|------|--|
| AM   | SAE "A" 2 Bolt, 5/16-18 UNC Manifold   |
| AP   | SAE "A" 2 Bolt, 1/2-14 NPTF            |
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE             |
| BM   | SAE "B" 2 Bolt, 5/16-18 UNC Manifold   |
| FP   | 4 Bolt w/3/8-16 UNC, 1/2-14 NPTF       |
| FS   | 4 Bolt w/3/8-16 UNC, 7/8-14 SAE      |

| Custom Order | Code   | Mounting/Ports   |
|--------------|--|--|
|              | AR   | SAE "A" 2 Bolt, 3/4-16 SAE O-ring Axial Rear Port        |
|              | FJ   | 4 Bolt Mt., 9/16 O-ring (SAE # 6)                        |
|              | FM   | 4 Bolt w/3/8-16 UNC, 5/16-18 UNC Manifold                |
|              | FR   | 4 Bolt w/3/8-16 UNC, 3/4-16 SAE O-ring Axial Rear Port   |
|              | GM   | 4 Bolt Mt., Manifold w/Machined SS Boss                  |
| MM           | Standard Mt., Manifold   |  |



| Code | Shaft                                 |
|------|---------------------------------------|
| 10   | 1" Keyed<br>                          |
| 11   | 1" 6B Spline<br>                      |
| 13   | Long 1" Keyed<br>                     |
| 25   | 1" Tapered<br>                        |
| 33   | 1" Tapered, 3/16 Key, 3/4-16 Thd.<br> |
| 59*  | 7/8" 13 Tooth Spline SAE<br>          |

| Code | Rotation                   |
|------|----------------------------|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

| Code | Rear Port Rotation         |
|------|----------------------------|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

Rotation viewed from shaft end.

| Code                    | Options  |
|-------------------------|--|
| AAAA <sup>8</sup>       | "Standard", Black Paint  |
| AAAB                    | "Standard", No Paint   |
| AAAC <sup>8</sup>       | "Standard", Double Paint   |
| AABJ <sup>1,8</sup>     | Free Running Rotor Set, Black Paint  |
| AABT <sup>4,8</sup>     | No Nut, Black Paint  |
| AAFA                    | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section seals, No Paint   |
| AAFW <sup>8</sup>       | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint  |
| AAJH <sup>4,8</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Spl paint area Black Paint  |
| AAJL <sup>4</sup>       | No Nut, No Paint   |
| AAUP <sup>4</sup>       | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, No Shaft Hardware, No Paint  |
| AAVE <sup>1,8</sup>     | Free Running Rotor Set, Fluorocarbon Seals, High Temp High Temp Section Seals, Commutator Seal, Black Paint  |
| ABCW <sup>4,5,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint |
| ABCZ <sup>8</sup>       | Fluorocarbon Seals, Double paint, High Temp Commutator Seal, High Temp Section Seals   |
| BBGS <sup>4,5,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 921 PSI Int Bidirectional Relief, Black Paint              |
| BBGT <sup>2,4,5,8</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 1200 PSI Int Bidirectional Relief, Black Paint             |
| BBGU <sup>3,4,5,8</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 2030 PSI Int Bidirectional Relief, Black Paint             |
| BBGW <sup>3,8</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint                                      |
| BBHB <sup>4,5,7,8</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 2393 PSI Int Bidirectional Relief, Black Paint                                      |
| FSEK <sup>4,6,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Parker ECD Speed Sensor, Black Paint                       |
| FSEN <sup>4,6</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Parker ECD Speed Sensor, No Paint                          |

| Custom Order | Code                             | Shaft                             |
|--------------|----------------------------------|-----------------------------------|
|              | 09                               | 1" Straight w/0.38" Crosshole<br> |
|              | 21                               | 1" Keyed; Corrosion Resistant<br> |
|              | 28                               | 7/8" 13 Tooth Spline<br>          |
| 34           | Special 13 Tooth (Dbl. Seal)<br> |                                   |

\* Conforms to SAE B recommended length

<sup>1</sup> Not applicable to 0365 & 0390 displacements  
<sup>2</sup> Not applicable to 0330, 0365 or 0390 displacements  
<sup>3</sup> Not applicable to 0230, 0295, 0330, 0365 or 0390 displacements  
<sup>4</sup> No Nut with shaft code 25 or 33  
<sup>5</sup> Not applicable with FR or AR Mounting / Porting options  
<sup>6</sup> Not applicable with shaft code 33 or 65  
<sup>7</sup> Not applicable to 0165, 0195, 0230, 0260, 0295, 0330, 0365 or 0390  
<sup>8</sup> Paint area all over except front and rear pilot and mounting flanges and shaft





| Motor Series<br>TB | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int* |          | cont / int* |             | max         |             |             | cont / int*  |             |             |
|--------------------|--|---------|-------------|----------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|
|                    |  |         | l/min       | bar      | bar         | psig        | Nm          | KW          | Nm          | HP           | lb-in       |             |
|                    |  |         | g/min       | psid     | bar         | psig        | lb-in       |             |             |              | lb-in       |             |
| TB 0036            | 36<br>2.2                                    | 932     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 48<br>427   | 67<br>596   | 6.6<br>8.8   | 44<br>385   | 50<br>440   |
| TB 0045            | 41<br>2.5                                    | 805     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 64<br>526   | 88<br>731   | 7.2<br>9.7   | 46<br>403   | 52<br>461   |
| TB 0050            | 49<br>3.0                                    | 678     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 78<br>693   | 107<br>946  | 7.5<br>10.1  | 62<br>542   | 70<br>619   |
| TB 0065            | 65<br>4.0                                    | 511     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 107<br>946  | 145<br>1284 | 7.8<br>10.4  | 66<br>582   | 99<br>977   |
| TB 0080            | 82<br>5.0                                    | 409     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 135<br>1193 | 184<br>1624 | 7.8<br>10.5  | 92<br>816   | 139<br>1226 |
| TB 0100            | 98<br>6.0                                    | 454     | 45<br>12    | 45<br>12 | 125<br>1800 | 165<br>2400 | 190<br>2750 | 159<br>1411 | 217<br>1917 | 10.2<br>13.8 | 119<br>1050 | 158<br>1400 |
| TB 0130            | 130<br>8.0                                   | 430     | 45<br>12    | 57<br>15 | 125<br>1800 | 165<br>2400 | 190<br>2750 | 220<br>1951 | 297<br>2632 | 13.4<br>18.0 | 167<br>1482 | 229<br>2024 |
| TB 0165            | 163<br>10.0                                  | 343     | 45<br>12    | 57<br>15 | 125<br>1800 | 155<br>2250 | 190<br>2750 | 273<br>2418 | 346<br>3062 | 12.4<br>16.7 | 199<br>1760 | 263<br>2331 |
| TB 0195            | 195<br>11.9                                  | 287     | 45<br>12    | 57<br>15 | 125<br>1800 | 145<br>2100 | 190<br>2750 | 340<br>3011 | 400<br>3537 | 12.0<br>16.1 | 270<br>2388 | 325<br>2872 |
| TB 0230            | 228<br>13.9                                  | 246     | 45<br>12    | 57<br>15 | 103<br>1500 | 138<br>2000 | 190<br>2750 | 316<br>2797 | 427<br>3782 | 11.0<br>14.8 | 261<br>2354 | 353<br>3121 |
| TB 0260            | 260<br>15.9                                  | 216     | 45<br>12    | 57<br>15 | 100<br>1450 | 131<br>1900 | 190<br>2750 | 350<br>3096 | 465<br>4117 | 10.5<br>14.1 | 291<br>2573 | 395<br>3498 |
| TB 0295            | 293<br>17.9                                  | 191     | 45<br>12    | 57<br>15 | 97<br>1400  | 125<br>1800 | 190<br>2750 | 383<br>3391 | 499<br>4415 | 10.0<br>13.4 | 308<br>2724 | 400<br>3544 |
| TB 0330            | 328<br>20.0                                  | 171     | 45<br>12    | 57<br>15 | 93<br>1350  | 114<br>1650 | 190<br>2750 | 413<br>3657 | 509<br>4505 | 9.1<br>12.2  | 332<br>2942 | 406<br>3590 |
| TB 0365            | 370<br>22.6                                  | 151     | 45<br>12    | 57<br>15 | 86<br>1250  | 105<br>1525 | 190<br>2750 | 440<br>3897 | 540<br>4783 | 8.7<br>11.6  | 372<br>3296 | 454<br>4021 |
| TB 0390            | 392<br>24.0                                  | 143     | 45<br>12    | 57<br>15 | 83<br>1200  | 100<br>1450 | 190<br>2750 | 428<br>3792 | 525<br>4642 | 7.8<br>10.5  | 339<br>3003 | 434<br>3845 |

Performance data based on testing using 10W40 oil with a viscosity of 43,1 cSt. (200 SUS) at 54° C (130° F.). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TB 0036**

**2.2 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000       | 2400       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 108        | 223        | 343        | 418        | 468        | 570        |
|           | <b>45</b>  | <b>37</b>  | <b>26</b>  | <b>19</b>  | <b>15</b>  | <b>8</b>   |
| <b>1</b>  | 114        | 234        | 357        | 431        | 481        | 581        |
|           | <b>97</b>  | <b>88</b>  | <b>77</b>  | <b>70</b>  | <b>66</b>  | <b>57</b>  |
| <b>2</b>  | 112        | 235        | 361        | 440        | 492        | 598        |
|           | <b>202</b> | <b>191</b> | <b>179</b> | <b>172</b> | <b>168</b> | <b>158</b> |
| <b>3</b>  | 113        | 241        | 370        | 450        | 503        | 610        |
|           | <b>307</b> | <b>295</b> | <b>282</b> | <b>274</b> | <b>269</b> | <b>258</b> |
| <b>4</b>  | 109        | 241        | 373        | 455        | 509        | 620        |
|           | <b>411</b> | <b>398</b> | <b>384</b> | <b>376</b> | <b>370</b> | <b>358</b> |
| <b>5</b>  | 104        | 237        | 371        | 453        | 509        | 621        |
|           | <b>515</b> | <b>501</b> | <b>486</b> | <b>477</b> | <b>471</b> | <b>459</b> |
| <b>7</b>  | 87         | 225        | 360        | 443        | 498        | 613        |
|           | <b>724</b> | <b>708</b> | <b>691</b> | <b>681</b> | <b>674</b> | <b>660</b> |
| <b>9</b>  | 71         | 208        | 344        | 427        | 483        | 598        |
|           | <b>932</b> | <b>915</b> | <b>896</b> | <b>884</b> | <b>876</b> | <b>860</b> |

Flow (GPM)

TORQUE (LB IN) 427  
SPEED (RPM) 884

**TB 0050**

**3.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000       | 2400       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 144        | 319        |            |            |            |            |
|           | <b>26</b>  | <b>13</b>  |            |            |            |            |
| <b>1</b>  | 154        | 338        | 518        | 625        | 697        | 840        |
|           | <b>65</b>  | <b>50</b>  | <b>35</b>  | <b>28</b>  | <b>21</b>  | <b>9</b>   |
| <b>2</b>  | 163        | 360        | 555        | 671        | 746        | 875        |
|           | <b>141</b> | <b>127</b> | <b>110</b> | <b>102</b> | <b>94</b>  | <b>80</b>  |
| <b>3</b>  | 161        | 358        | 557        | 675        | 753        | 907        |
|           | <b>218</b> | <b>203</b> | <b>186</b> | <b>177</b> | <b>169</b> | <b>153</b> |
| <b>4</b>  | 160        | 361        | 567        | 691        | 774        | 931        |
|           | <b>295</b> | <b>279</b> | <b>261</b> | <b>251</b> | <b>243</b> | <b>227</b> |
| <b>5</b>  | 155        | 358        | 566        | 693        | 777        | 946        |
|           | <b>371</b> | <b>355</b> | <b>337</b> | <b>326</b> | <b>317</b> | <b>301</b> |
| <b>7</b>  | 143        | 346        | 558        | 686        | 772        | 946        |
|           | <b>525</b> | <b>507</b> | <b>487</b> | <b>474</b> | <b>466</b> | <b>448</b> |
| <b>9</b>  | 133        | 336        | 546        | 675        | 761        | 936        |
|           | <b>678</b> | <b>658</b> | <b>638</b> | <b>623</b> | <b>614</b> | <b>595</b> |

Flow (GPM)

TORQUE (LB IN) 675  
SPEED (RPM) 623

**TB 0045**

**2.5 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000       | 2400       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 116        | 263        |            |            |            |            |
|           | <b>31</b>  | <b>17</b>  |            |            |            |            |
| <b>1</b>  | 124        | 276        | 427        | 518        | 579        | 706        |
|           | <b>76</b>  | <b>61</b>  | <b>43</b>  | <b>36</b>  | <b>29</b>  | <b>18</b>  |
| <b>2</b>  | 134        | 294        | 453        | 547        | 609        | 723        |
|           | <b>167</b> | <b>149</b> | <b>131</b> | <b>121</b> | <b>113</b> | <b>97</b>  |
| <b>3</b>  | 132        | 293        | 455        | 553        | 617        | 746        |
|           | <b>256</b> | <b>239</b> | <b>220</b> | <b>210</b> | <b>200</b> | <b>183</b> |
| <b>4</b>  | 132        | 296        | 465        | 567        | 635        | 769        |
|           | <b>344</b> | <b>326</b> | <b>307</b> | <b>295</b> | <b>285</b> | <b>268</b> |
| <b>5</b>  | 128        | 294        | 465        | 569        | 639        | 779        |
|           | <b>433</b> | <b>414</b> | <b>393</b> | <b>380</b> | <b>370</b> | <b>352</b> |
| <b>7</b>  | 117        | 284        | 458        | 564        | 635        | 779        |
|           | <b>609</b> | <b>589</b> | <b>566</b> | <b>551</b> | <b>540</b> | <b>520</b> |
| <b>9</b>  | 107        | 275        | 449        | 555        | 627        | 770        |
|           | <b>785</b> | <b>764</b> | <b>739</b> | <b>722</b> | <b>710</b> | <b>689</b> |

Flow (GPM)

TORQUE (LB IN) 555  
SPEED (RPM) 722

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TB 0065**

**4.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000        | 2400        |
|-----------|------------|------------|------------|------------|-------------|-------------|
| <b>.5</b> | 213<br>22  | 459<br>14  | 709<br>6   |            |             |             |
| <b>1</b>  | 224<br>51  | 479<br>42  | 734<br>34  | 887<br>29  | 989<br>25   | 1193<br>17  |
| <b>2</b>  | 233<br>108 | 500<br>99  | 767<br>90  | 926<br>85  | 1033<br>81  | 1228<br>71  |
| <b>3</b>  | 231<br>166 | 498<br>156 | 769<br>147 | 932<br>141 | 1039<br>136 | 1252<br>126 |
| <b>4</b>  | 229<br>224 | 501<br>214 | 778<br>203 | 945<br>197 | 1056<br>192 | 1272<br>181 |
| <b>5</b>  | 223<br>281 | 497<br>271 | 777<br>260 | 946<br>252 | 1058<br>247 | 1284<br>237 |
| <b>7</b>  | 206<br>396 | 481<br>385 | 764<br>372 | 936<br>364 | 1050<br>359 | 1280<br>347 |
| <b>9</b>  | 192<br>511 | 467<br>499 | 749<br>485 | 920<br>476 | 1035<br>470 | 1267<br>457 |

Flow (GPM)

TORQUE (LB IN) 920  
SPEED (RPM) 476

**TB 0100**

**6.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 1800        | 2000        | 2400        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 310<br>16  | 669<br>13  | 1035<br>9   | 1258<br>7   | 1408<br>5   |             |
| <b>1</b>  | 330<br>35  | 697<br>32  | 1073<br>27  | 1298<br>25  | 1448<br>23  | 1737<br>18  |
| <b>2</b>  | 346<br>73  | 732<br>69  | 1121<br>64  | 1353<br>61  | 1509<br>59  | 1800<br>53  |
| <b>3</b>  | 345<br>111 | 735<br>107 | 1134<br>102 | 1371<br>98  | 1530<br>95  | 1844<br>89  |
| <b>4</b>  | 347<br>149 | 747<br>144 | 1158<br>139 | 1403<br>135 | 1569<br>132 | 1885<br>126 |
| <b>5</b>  | 343<br>187 | 750<br>182 | 1164<br>176 | 1411<br>172 | 1578<br>169 | 1909<br>162 |
| <b>7</b>  | 327<br>264 | 738<br>257 | 1159<br>250 | 1411<br>246 | 1580<br>242 | 1917<br>235 |
| <b>9</b>  | 301<br>340 | 715<br>333 | 1139<br>325 | 1395<br>319 | 1566<br>316 | 1909<br>307 |
| <b>12</b> | 257<br>454 | 669<br>446 | 1091<br>437 | 1347<br>430 | 1518<br>426 | 1863<br>417 |

Flow (GPM)

TORQUE (LB IN) 1347  
SPEED (RPM) 430

**TB 0080**

**5.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800        | 2000        | 2400        |
|-----------|------------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 256<br>17  | 562<br>10  | 877<br>4   |             |             |             |
| <b>1</b>  | 269<br>40  | 585<br>33  | 905<br>26  | 1097<br>21  | 1226<br>18  | 1487<br>10  |
| <b>2</b>  | 285<br>86  | 616<br>78  | 950<br>70  | 1150<br>66  | 1283<br>62  | 1527<br>53  |
| <b>3</b>  | 285<br>132 | 619<br>124 | 959<br>116 | 1163<br>110 | 1298<br>106 | 1566<br>97  |
| <b>4</b>  | 286<br>178 | 628<br>170 | 976<br>161 | 1187<br>155 | 1327<br>151 | 1600<br>141 |
| <b>5</b>  | 282<br>225 | 627<br>216 | 979<br>206 | 1193<br>200 | 1335<br>196 | 1621<br>185 |
| <b>7</b>  | 267<br>317 | 615<br>307 | 972<br>296 | 1189<br>290 | 1333<br>285 | 1624<br>274 |
| <b>9</b>  | 252<br>409 | 600<br>398 | 956<br>387 | 1173<br>379 | 1318<br>374 | 1609<br>362 |

Flow (GPM)

TORQUE (LB IN) 1173  
SPEED (RPM) 379

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**TB 0130**

**8.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1800        | 2000        | 2400        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 446<br>12  | 955<br>10   | 1479<br>7   | 1797<br>5   | 2011<br>3   |             |
| <b>1</b>  | 465<br>27  | 989<br>24   | 1515<br>21  | 1831<br>19  | 2043<br>17  | 2469<br>13  |
| <b>2</b>  | 481<br>55  | 1023<br>52  | 1571<br>49  | 1901<br>46  | 2120<br>44  | 2520<br>40  |
| <b>3</b>  | 482<br>84  | 1029<br>81  | 1581<br>77  | 1912<br>74  | 2133<br>72  | 2570<br>67  |
| <b>4</b>  | 483<br>113 | 1042<br>109 | 1605<br>105 | 1940<br>102 | 2164<br>100 | 2608<br>95  |
| <b>5</b>  | 478<br>142 | 1041<br>138 | 1610<br>133 | 1951<br>130 | 2179<br>128 | 2628<br>122 |
| <b>7</b>  | 450<br>199 | 1019<br>195 | 1597<br>190 | 1943<br>186 | 2174<br>184 | 2632<br>177 |
| <b>9</b>  | 414<br>257 | 984<br>252  | 1563<br>246 | 1911<br>242 | 2145<br>239 | 2612<br>233 |
| <b>12</b> | 335<br>343 | 907<br>338  | 1489<br>331 | 1842<br>327 | 2076<br>323 | 2550<br>316 |
| <b>15</b> | 253<br>430 | 818<br>424  | 1393<br>416 | 1740<br>411 | 1974<br>407 | 2443<br>399 |

Flow (GPM)

TORQUE (LB IN) 2612  
SPEED (RPM) 233

**TB 0165**

**10.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1800        | 2250        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 529<br>9   | 1137<br>7   | 1769<br>4   | 2149<br>3   |             |
| <b>1</b>  | 556<br>21  | 1181<br>18  | 1819<br>15  | 2201<br>13  | 2776<br>9   |
| <b>2</b>  | 580<br>44  | 1238<br>40  | 1909<br>37  | 2314<br>34  | 2876<br>29  |
| <b>3</b>  | 584<br>67  | 1248<br>63  | 1926<br>59  | 2332<br>56  | 2934<br>51  |
| <b>4</b>  | 592<br>90  | 1276<br>86  | 1968<br>82  | 2382<br>78  | 3000<br>73  |
| <b>5</b>  | 588<br>113 | 1283<br>109 | 1988<br>104 | 2412<br>101 | 3046<br>95  |
| <b>7</b>  | 560<br>159 | 1268<br>154 | 1987<br>149 | 2418<br>145 | 3062<br>139 |
| <b>9</b>  | 517<br>205 | 1230<br>200 | 1957<br>194 | 2393<br>190 | 3047<br>183 |
| <b>12</b> | 425<br>274 | 1141<br>268 | 1874<br>262 | 2317<br>257 | 2980<br>250 |
| <b>15</b> | 321<br>343 | 1033<br>337 | 1759<br>330 | 2197<br>325 | 2859<br>317 |

Flow (GPM)

TORQUE (LB IN) 3047  
SPEED (RPM) 183

**TB 0195**

**11.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1800        | 2100        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 688<br>9   | 1490<br>8   | 2329<br>7   | 2841<br>6   | 3353<br>5   |
| <b>1</b>  | 718<br>18  | 1537<br>17  | 2380<br>16  | 2890<br>15  | 3373<br>14  |
| <b>2</b>  | 746<br>38  | 1580<br>36  | 2443<br>35  | 2962<br>33  | 3442<br>32  |
| <b>3</b>  | 745<br>57  | 1592<br>55  | 2452<br>53  | 2973<br>52  | 3494<br>50  |
| <b>4</b>  | 746<br>76  | 1607<br>74  | 2482<br>72  | 3008<br>71  | 3528<br>69  |
| <b>5</b>  | 737<br>95  | 1601<br>93  | 2480<br>91  | 3011<br>89  | 3537<br>87  |
| <b>7</b>  | 697<br>134 | 1572<br>131 | 2455<br>129 | 2986<br>127 | 3514<br>125 |
| <b>9</b>  | 641<br>172 | 1510<br>169 | 2398<br>167 | 2934<br>164 | 3472<br>162 |
| <b>12</b> | 530<br>230 | 1391<br>227 | 2283<br>223 | 2821<br>221 | 3360<br>217 |
| <b>15</b> | 399<br>287 | 1252<br>284 | 2130<br>280 | 2662<br>277 | 3200<br>273 |

Flow (GPM)

TORQUE (LB IN) 3472  
SPEED (RPM) 162

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Cont.  Int.



**TB 0230**

**13.9** cu in / rev PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        |
|-----------|------------|-------------|-------------|-------------|
| <b>.5</b> | 796<br>8   | 1704<br>7   | 2640<br>6   | 3597<br>5   |
| <b>1</b>  | 818<br>16  | 1733<br>15  | 2681<br>14  | 3623<br>13  |
| <b>2</b>  | 840<br>32  | 1775<br>31  | 2732<br>30  | 3700<br>28  |
| <b>3</b>  | 845<br>49  | 1789<br>47  | 2750<br>46  | 3725<br>43  |
| <b>4</b>  | 848<br>65  | 1815<br>64  | 2789<br>62  | 3762<br>59  |
| <b>5</b>  | 840<br>82  | 1813<br>80  | 2797<br>78  | 3782<br>74  |
| <b>7</b>  | 799<br>114 | 1790<br>112 | 2785<br>110 | 3776<br>106 |
| <b>9</b>  | 741<br>147 | 1738<br>145 | 2738<br>142 | 3741<br>138 |
| <b>12</b> | 613<br>197 | 1615<br>194 | 2626<br>190 | 3645<br>185 |
| <b>15</b> | 473<br>246 | 1531<br>243 | 2457<br>239 | 3467<br>233 |

TORQUE (LB IN) 3776  
SPEED (RPM) 106

Flow (GPM)

**TB 0295**

**17.9** cu in / rev PRESSURE (PSID)

|           | 500        | 1000        | 1400        | 1800        |
|-----------|------------|-------------|-------------|-------------|
| <b>.5</b> | 1039<br>6  | 2229<br>5   | 3208<br>4   | 4200<br>3   |
| <b>1</b>  | 1069<br>12 | 2281<br>11  | 3265<br>10  | 4248<br>9   |
| <b>2</b>  | 1098<br>25 | 2332<br>24  | 3337<br>22  | 4290<br>20  |
| <b>3</b>  | 1100<br>38 | 2344<br>36  | 3353<br>35  | 4356<br>32  |
| <b>4</b>  | 1098<br>50 | 2366<br>49  | 3386<br>47  | 4398<br>44  |
| <b>5</b>  | 1086<br>63 | 2361<br>61  | 3391<br>60  | 4415<br>57  |
| <b>7</b>  | 1034<br>89 | 2325<br>87  | 3361<br>85  | 4394<br>81  |
| <b>9</b>  | 955<br>114 | 2250<br>112 | 3295<br>109 | 4337<br>106 |
| <b>12</b> | 792<br>153 | 2085<br>150 | 3141<br>147 | 4194<br>142 |
| <b>15</b> | 606<br>191 | 1879<br>188 | 2908<br>185 | 3955<br>180 |

TORQUE (LB IN) 4337  
SPEED (RPM) 106

Flow (GPM)

**TB 0260**

**15.9** cu in / rev PRESSURE (PSID)

|           | 500        | 1000        | 1450        | 1900        |
|-----------|------------|-------------|-------------|-------------|
| <b>.5</b> | 906<br>7   | 1947<br>6   | 2910<br>5   | 3896<br>4   |
| <b>1</b>  | 932<br>14  | 1984<br>13  | 2964<br>12  | 3919<br>11  |
| <b>2</b>  | 958<br>28  | 2032<br>27  | 3025<br>26  | 4000<br>24  |
| <b>3</b>  | 961<br>43  | 2047<br>41  | 3045<br>40  | 4052<br>38  |
| <b>4</b>  | 963<br>57  | 2074<br>56  | 3086<br>54  | 4098<br>52  |
| <b>5</b>  | 954<br>71  | 2074<br>70  | 3096<br>68  | 4117<br>65  |
| <b>7</b>  | 909<br>100 | 2049<br>99  | 3084<br>96  | 4112<br>93  |
| <b>9</b>  | 844<br>129 | 1991<br>127 | 3032<br>125 | 4070<br>121 |
| <b>12</b> | 696<br>172 | 1851<br>170 | 2903<br>167 | 3953<br>162 |
| <b>15</b> | 540<br>216 | 1683<br>213 | 2711<br>209 | 3753<br>204 |

TORQUE (LB IN) 4112  
SPEED (RPM) 93

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**TB 0330**

**20.0** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1350        | 1650        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1192<br>5   | 2498<br>4   | 3425<br>4   | 4227<br>3   |
| <b>1</b>  | 1224<br>11  | 2555<br>10  | 3495<br>9   | 4250<br>8   |
| <b>2</b>  | 1255<br>22  | 2620<br>21  | 3581<br>20  | 4350<br>18  |
| <b>3</b>  | 1259<br>34  | 2633<br>32  | 3597<br>31  | 4424<br>29  |
| <b>4</b>  | 1258<br>45  | 2666<br>43  | 3645<br>42  | 4480<br>40  |
| <b>5</b>  | 1243<br>56  | 2665<br>55  | 3657<br>53  | 4505<br>51  |
| <b>7</b>  | 1186<br>79  | 2627<br>77  | 3634<br>75  | 4492<br>73  |
| <b>9</b>  | 1092<br>102 | 2544<br>100 | 3563<br>97  | 4431<br>94  |
| <b>12</b> | 905<br>137  | 2363<br>134 | 3391<br>131 | 4269<br>127 |
| <b>15</b> | 692<br>171  | 2129<br>168 | 3136<br>165 | 4001<br>161 |

Flow (GPM)

TORQUE (LB IN) 4431  
SPEED (RPM) 94

**TB 0390**

**24.0** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1200        | 1450        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1309<br>4   | 2885<br>3   | 3534<br>2   | 4359<br>2   |
| <b>1</b>  | 1368<br>9   | 2948<br>8   | 3589<br>7   | 4394<br>6   |
| <b>2</b>  | 1417<br>18  | 3028<br>17  | 3683<br>16  | 4460<br>15  |
| <b>3</b>  | 1427<br>28  | 3058<br>26  | 3714<br>26  | 4540<br>24  |
| <b>4</b>  | 1443<br>37  | 3102<br>36  | 3764<br>35  | 4595<br>34  |
| <b>5</b>  | 1439<br>47  | 3120<br>45  | 3790<br>45  | 4630<br>43  |
| <b>7</b>  | 1392<br>66  | 3110<br>65  | 3792<br>64  | 4642<br>62  |
| <b>9</b>  | 1297<br>85  | 3040<br>84  | 3732<br>83  | 4597<br>81  |
| <b>12</b> | 1087<br>114 | 2835<br>112 | 3541<br>111 | 4418<br>110 |
| <b>15</b> | 831<br>143  | 2571<br>141 | 3272<br>140 | 4145<br>138 |

Flow (GPM)

TORQUE (LB IN) 4597  
SPEED (RPM) 81

**TB 0365**

**22.6** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1250        | 1525        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1393<br>5   | 2942<br>4   | 3734<br>4   | 4617<br>3   |
| <b>1</b>  | 1444<br>10  | 3005<br>9   | 3796<br>9   | 4672<br>8   |
| <b>2</b>  | 1494<br>20  | 3090<br>19  | 3890<br>18  | 4710<br>17  |
| <b>3</b>  | 1485<br>30  | 3082<br>29  | 3883<br>28  | 4765<br>27  |
| <b>4</b>  | 1477<br>40  | 3089<br>39  | 3897<br>38  | 4783<br>36  |
| <b>5</b>  | 1452<br>50  | 3075<br>49  | 3887<br>48  | 4775<br>46  |
| <b>7</b>  | 1371<br>70  | 3009<br>69  | 3826<br>67  | 4719<br>65  |
| <b>9</b>  | 1260<br>90  | 2899<br>89  | 3721<br>87  | 4621<br>85  |
| <b>12</b> | 1002<br>121 | 2658<br>119 | 3488<br>117 | 4393<br>115 |
| <b>15</b> | 700<br>151  | 2355<br>149 | 3190<br>147 | 4095<br>144 |

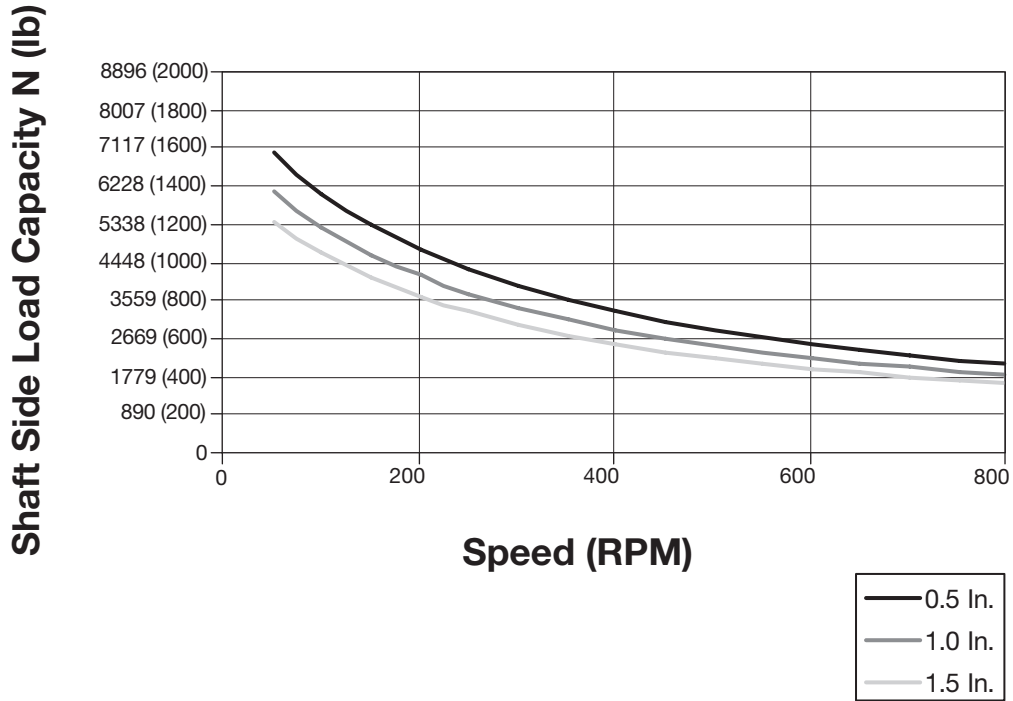
Flow (GPM)

TORQUE (LB IN) 4621  
SPEED (RPM) 85

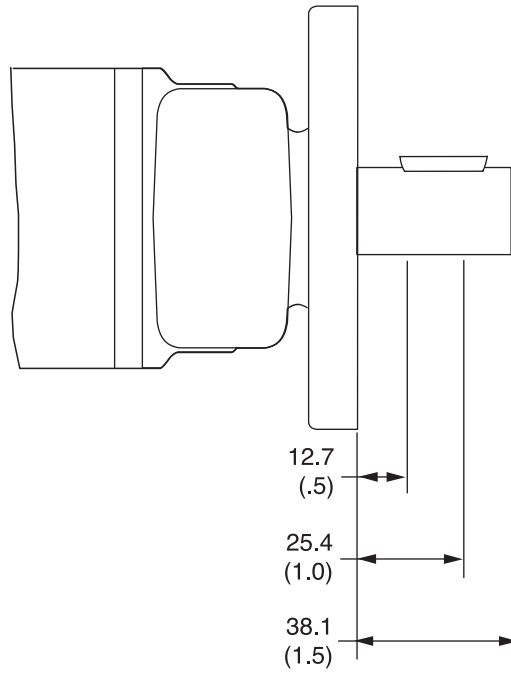
Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



The allowable side load curve is based on bushing life of  $2.5 \times 10^6$  revolutions.



English equivalents for metric specifications are shown in ( ).

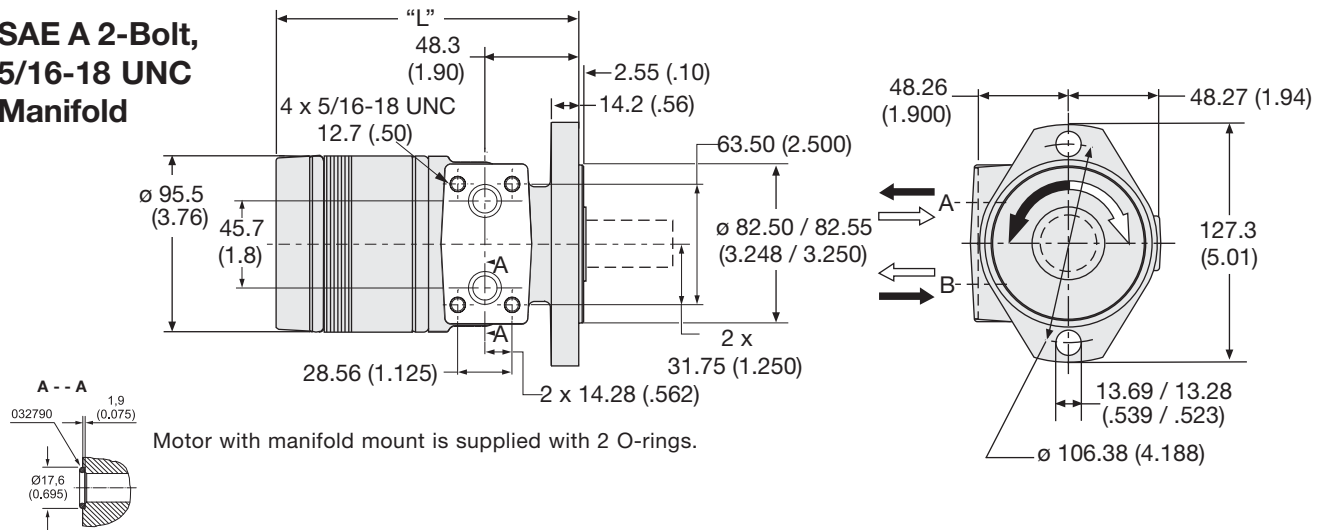
002 TB.indd, b



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: AM

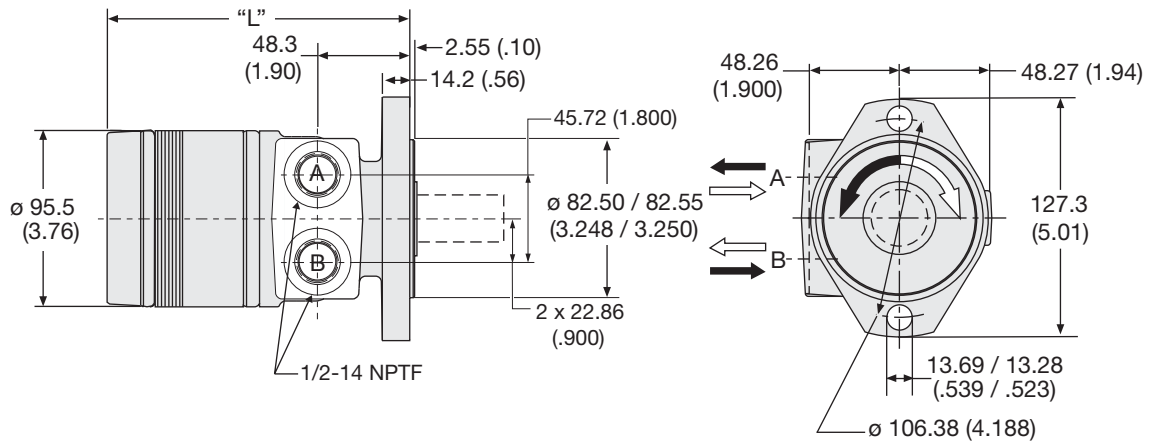
SAE A 2-Bolt,  
5/16-18 UNC  
Manifold



| Code AM disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso (lb)   | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

Code: AP

SAE A 2-Bolt,  
1/2-14 NPTF



| Code AP disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso (lb)   | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

English equivalents for metric specifications are shown in ( ).

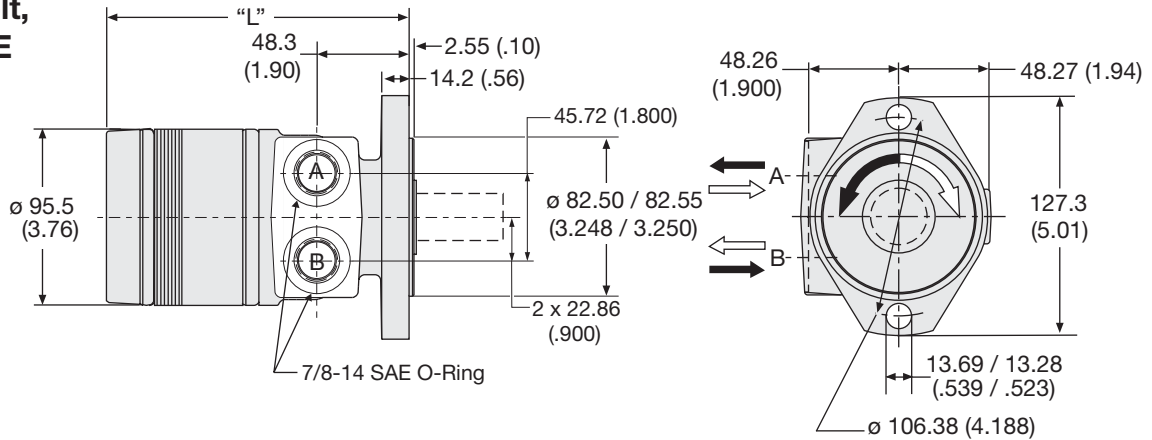
002 TB.indd, b



This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: AS

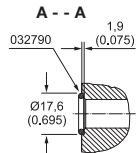
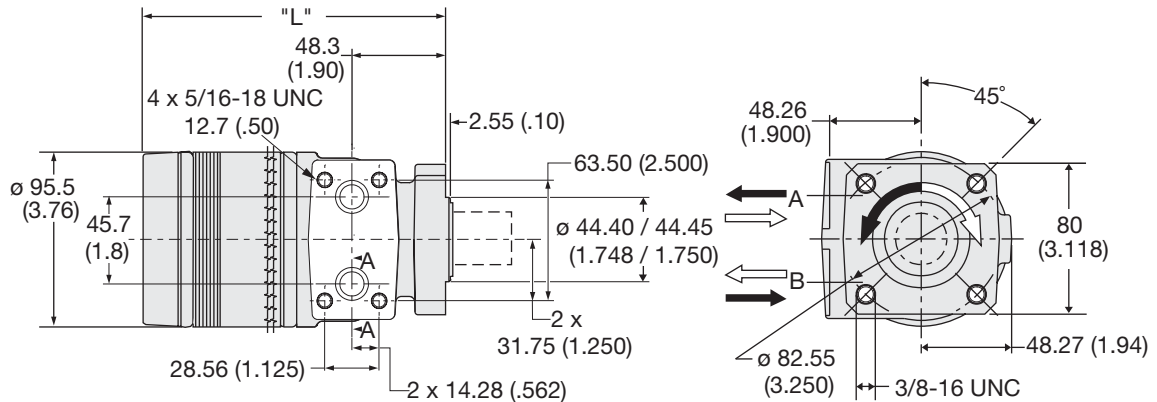
SAE A 2-Bolt,  
7/8"-14 SAE  
O-Ring



| Code AS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso (lb)   | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

Code: FM

4-Bolt,  
5/16-18 UNC  
Manifold



Motor with manifold mount is supplied with 2 O-rings.

| Code FM disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.58   | 5.62   | 5.67   | 5.80   | 5.94   | 6.08   | 6.31   | 6.62   | 7.03   | 7.17   | 7.39   | 7.62   | 7.94   | 8.26   | 8.39   |
| Poids/Peso (lb)   | (12.3) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

English equivalents for metric specifications are shown in ( ).

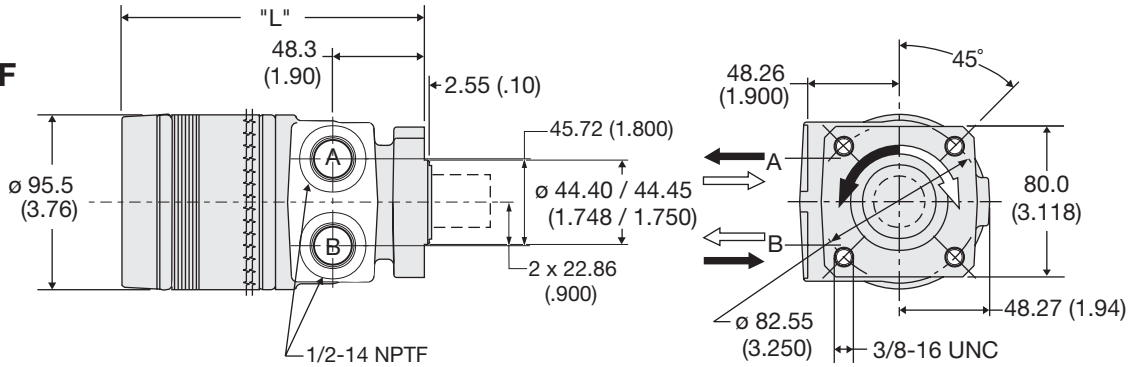
002 TB.indd, b



This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: FP

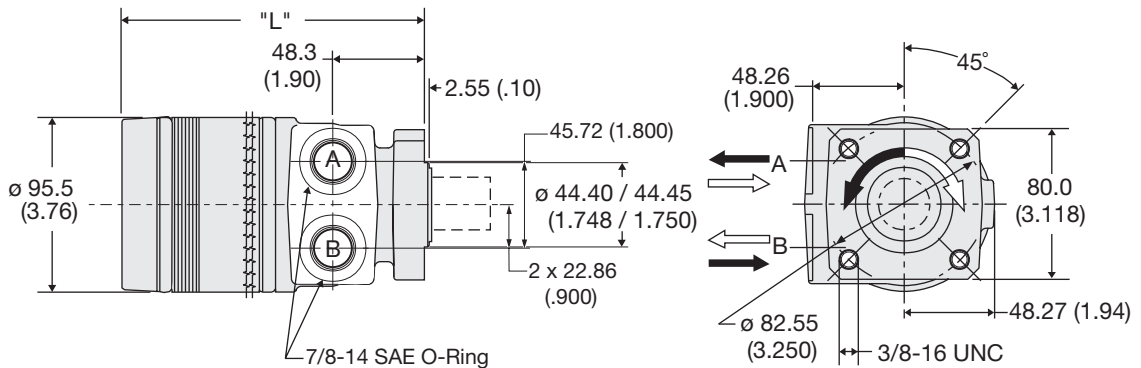
4 Bolt,  
1/2-14 NPTF



| Code FP disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.58   | 5.62   | 5.67   | 5.80   | 5.94   | 6.08   | 6.31   | 6.62   | 7.03   | 7.17   | 7.39   | 7.62   | 7.94   | 8.26   | 8.39   |
| Poids/Peso (lb)   | (12.3) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

Code: FS

4 Bolt,  
7/8"-14 SAE  
O-Ring



| Code FS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.58   | 5.62   | 5.67   | 5.80   | 5.94   | 6.08   | 6.31   | 6.62   | 7.03   | 7.17   | 7.39   | 7.62   | 7.94   | 8.26   | 8.39   |
| Poids/Peso (lb)   | (12.3) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

English equivalents for metric specifications are shown in ( ).

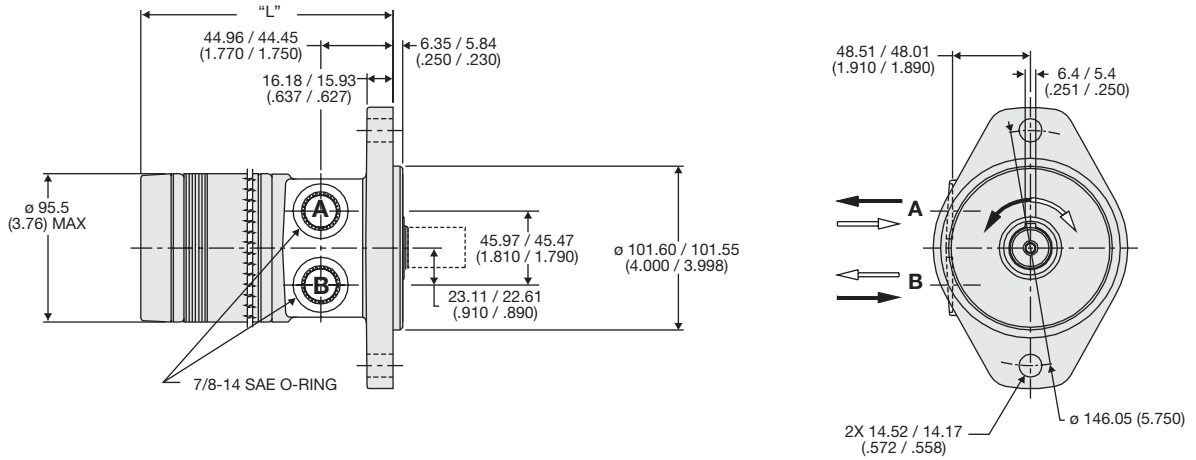
002 TB.indd, b



**WARNING**

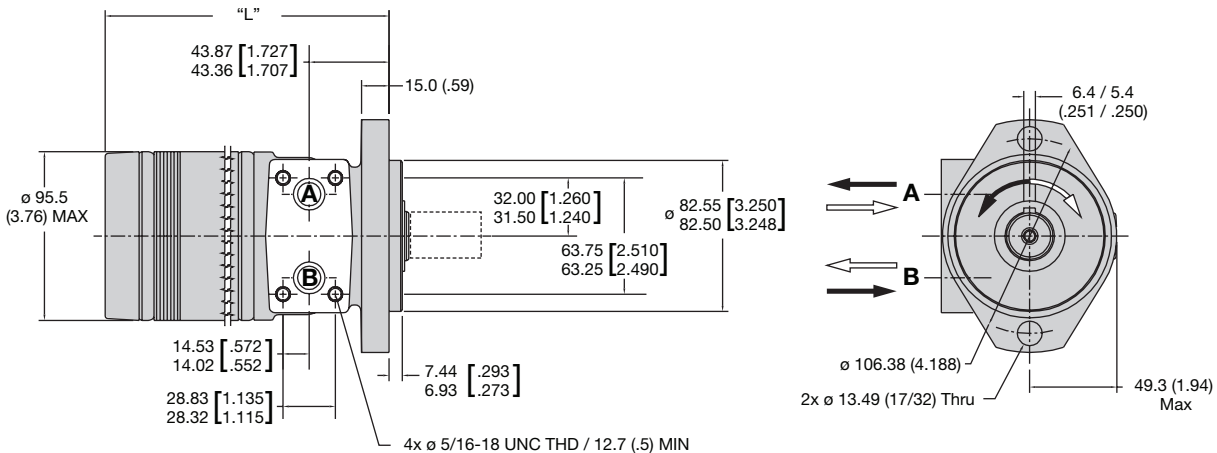
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: BS**  
**SAE B 2-Bolt**  
**7/8-14 SAE**



| Code BS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 7.27   | 7.34   | 7.48   | 7.62   | 7.71   | 7.84   | 8.11   | 8.39   | 8.70   | 8.93   | 9.16   | 9.43   | 9.70   | 9.97   | 10.1   |
| Poids/Peso (lb)   | (15.9) | (16.3) | (16.5) | (16.8) | (17.0) | (17.3) | (17.9) | (18.5) | (19.2) | (19.7) | (20.2) | (20.8) | (21.4) | (22.0) | (22.4) |
| Length "L" mm     | 131.5  | 132.5  | 134.1  | 137.1  | 140.4  | 143.5  | 149.8  | 156.2  | 162.5  | 168.9  | 175.2  | 181.6  | 187.9  | 196.5  | 200.9  |
| "L" (in)          | (5.18) | (5.22) | (5.28) | (5.40) | (5.53) | (5.65) | (5.90) | (6.15) | (6.40) | (6.65) | (6.90) | (7.15) | (7.40) | (7.74) | (7.91) |

**Code: CM**  
**SAE A 2 Bolt, Long Pilot**  
**5/16-18 UNC Manifold**



| Code CM disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 6.17   | 6.35   | 6.44   | 6.58   | 6.67   | 6.80   | 7.07   | 7.35   | 7.66   | 7.84   | 8.11   | 8.39   | 8.66   | 8.94   | 9.11   |
| Poids/Peso (lb)   | (13.6) | (14.0) | (14.2) | (14.5) | (14.7) | (15.0) | (15.6) | (16.2) | (16.9) | (17.4) | (17.9) | (18.5) | (19.1) | (19.7) | (20.1) |
| Length "L" mm     | 130.4  | 131.5  | 132.9  | 136.1  | 139.3  | 142.5  | 148.8  | 155.2  | 161.5  | 167.9  | 174.2  | 180.6  | 186.9  | 195.6  | 199.7  |
| "L" (in)          | (5.13) | (5.18) | (5.23) | (5.36) | (5.48) | (5.61) | (5.86) | (6.11) | (6.36) | (6.61) | (6.86) | (7.11) | (7.36) | (7.70) | (7.86) |

English equivalents for metric specifications are shown in ( ).

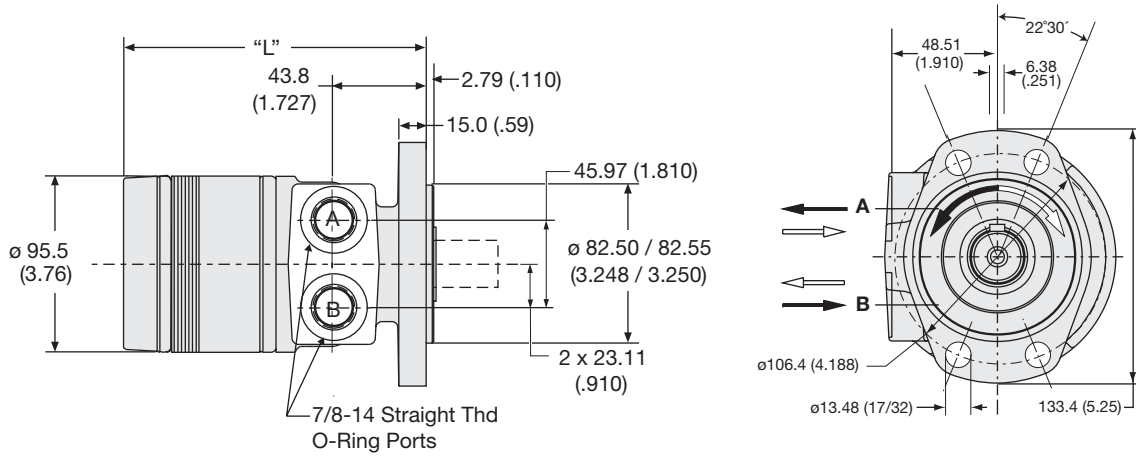
002 TB.indd, b



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

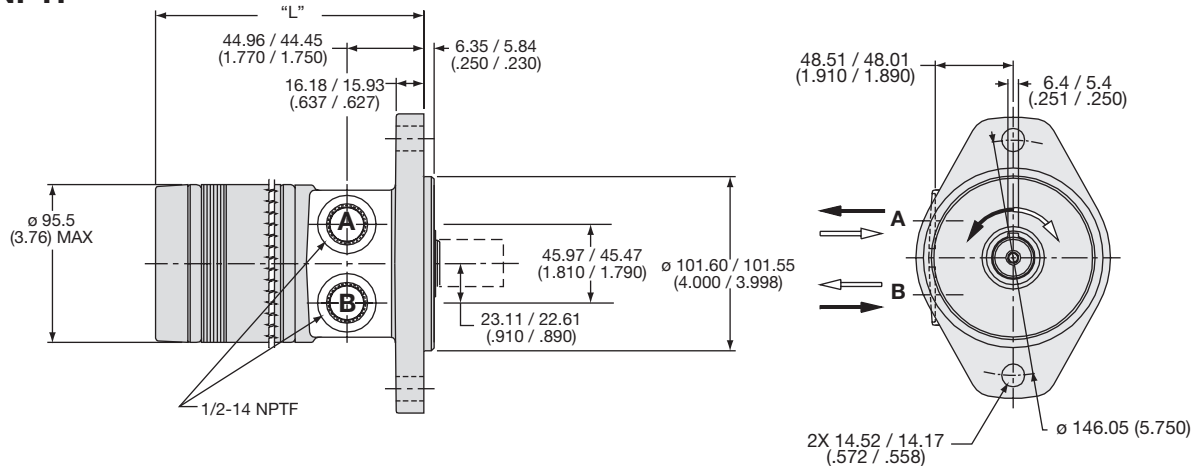


**Code: MS**  
**Magneto**  
**7/8-14 SAE**



| Code MS        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 6.16   | 6.30   | 6.40   | 6.53   | 6.62   | 6.76   | 7.03   | 7.30   | 7.62   | 7.85   | 8.12   | 8.35   | 8.62   | 8.94   | 9.07   |
| Poids/Peso     | (lb)     | (13.6) | (13.9) | (14.1) | (14.4) | (14.6) | (14.9) | (15.5) | (16.1) | (16.8) | (17.3) | (17.9) | (18.4) | (19.0) | (19.7) | (20.0) |
| Length         | "L" mm   | 135.1  | 136.1  | 137.6  | 140.8  | 144.0  | 147.1  | 153.5  | 159.8  | 166.2  | 172.5  | 178.9  | 185.2  | 191.6  | 200.2  | 204.3  |
|                | "L" (in) | (5.32) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

**Code: BP**  
**SAE B 2-Bolt**  
**1/2-14 NPTF**



| Code BP        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 7.27   | 7.34   | 7.48   | 7.62   | 7.71   | 7.84   | 8.11   | 8.39   | 8.70   | 8.93   | 9.16   | 9.43   | 9.70   | 9.97   | 10.1   |
| Poids/Peso     | (lb)     | (15.9) | (16.3) | (16.5) | (16.8) | (17.0) | (17.3) | (17.9) | (18.5) | (19.2) | (19.7) | (20.2) | (20.8) | (21.4) | (22.0) | (22.4) |
| Length         | "L" mm   | 131.4  | 132.5  | 134.0  | 137.2  | 140.4  | 143.6  | 149.9  | 156.3  | 162.6  | 169.0  | 175.3  | 181.7  | 188.0  | 196.7  | 200.8  |
|                | "L" (in) | (5.18) | (5.22) | (5.28) | (5.40) | (5.53) | (5.65) | (5.90) | (6.15) | (6.40) | (6.65) | (6.90) | (7.15) | (7.40) | (7.74) | (7.90) |

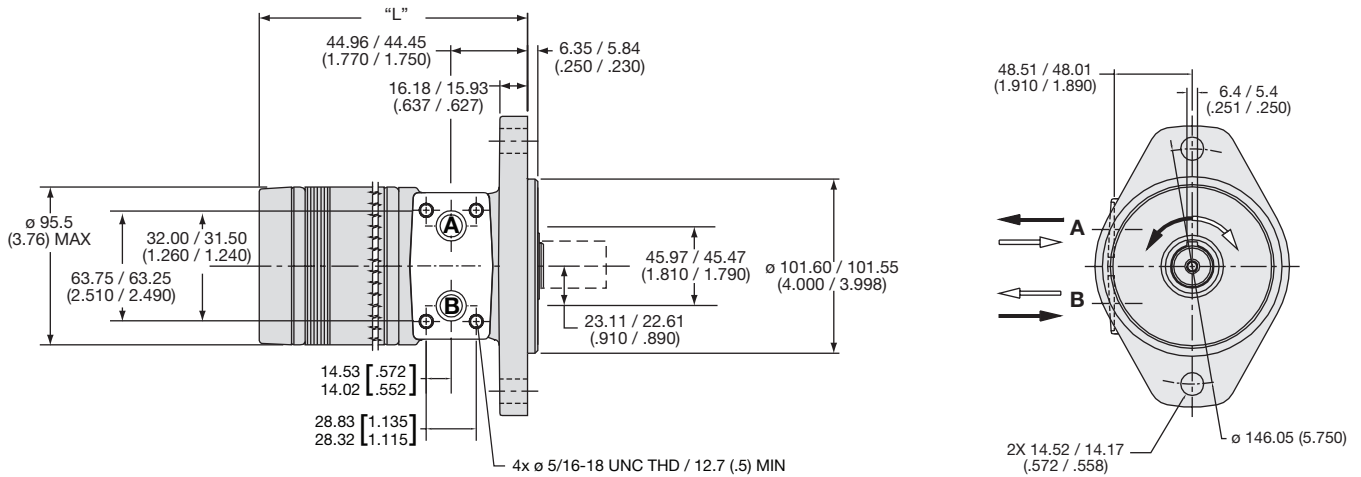
English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



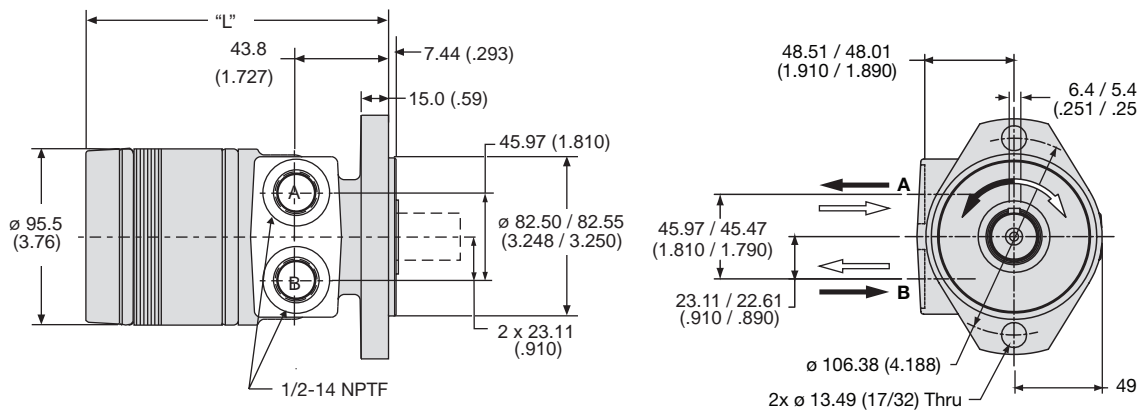
**WARNING**  
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**Code: BM**  
**SAE B 2-Bolt**  
**5/16-18 UNC Manifold**



| Code BM | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 7.27   | 7.34   | 7.48   | 7.62   | 7.71   | 7.84   | 8.11   | 8.39   | 8.70   | 8.93   | 9.16   | 9.43   | 9.70   | 9.97   | 10.1   |
|         | (lb)     | (15.9) | (16.3) | (16.5) | (16.8) | (17.0) | (17.3) | (17.9) | (18.5) | (19.2) | (19.7) | (20.2) | (20.8) | (21.4) | (22.0) | (22.4) |
| Length  | "L" mm   | 131.4  | 132.5  | 134.0  | 137.2  | 140.4  | 143.6  | 149.9  | 156.3  | 162.6  | 169.0  | 175.3  | 181.7  | 188.0  | 196.7  | 200.8  |
|         | "L" (in) | (5.18) | (5.22) | (5.28) | (5.40) | (5.53) | (5.65) | (5.90) | (6.15) | (6.40) | (6.65) | (6.90) | (7.15) | (7.40) | (7.74) | (7.90) |

**Code: CP**  
**SAE A 2 Bolt, Long Pilot**  
**1/2-14 NPTF**



| Code CP | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 6.17   | 6.35   | 6.44   | 6.58   | 6.67   | 6.80   | 7.07   | 7.35   | 7.66   | 7.84   | 8.11   | 8.39   | 8.66   | 8.94   | 9.11   |
|         | (lb)     | (13.6) | (14.0) | (14.2) | (14.5) | (14.7) | (15.0) | (15.6) | (16.2) | (16.9) | (17.4) | (17.9) | (18.5) | (19.1) | (19.7) | (20.1) |
| Length  | "L" mm   | 130.4  | 131.5  | 132.9  | 136.1  | 139.3  | 142.5  | 148.8  | 155.2  | 161.5  | 167.9  | 174.2  | 180.6  | 186.9  | 195.6  | 199.7  |
|         | "L" (in) | (5.13) | (5.18) | (5.23) | (5.36) | (5.48) | (5.61) | (5.86) | (6.11) | (6.36) | (6.61) | (6.86) | (7.11) | (7.36) | (7.70) | (7.86) |

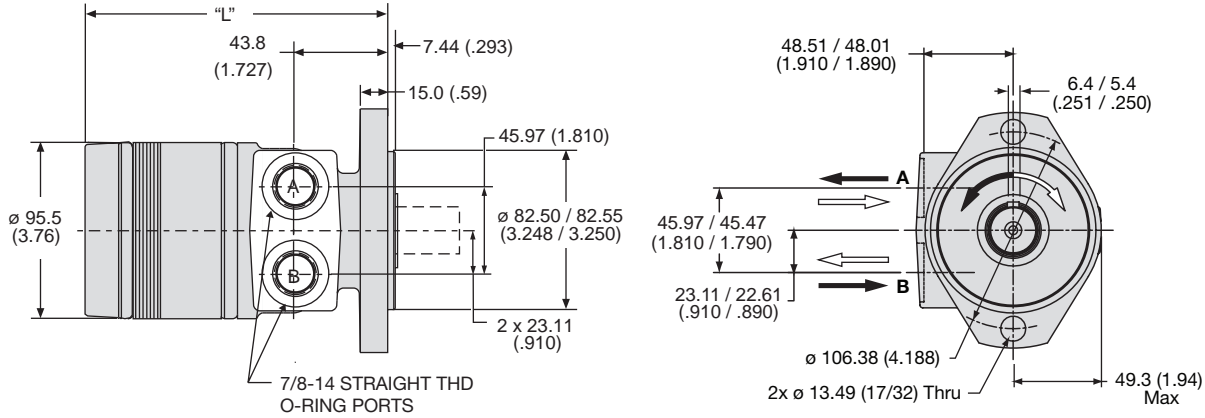
English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



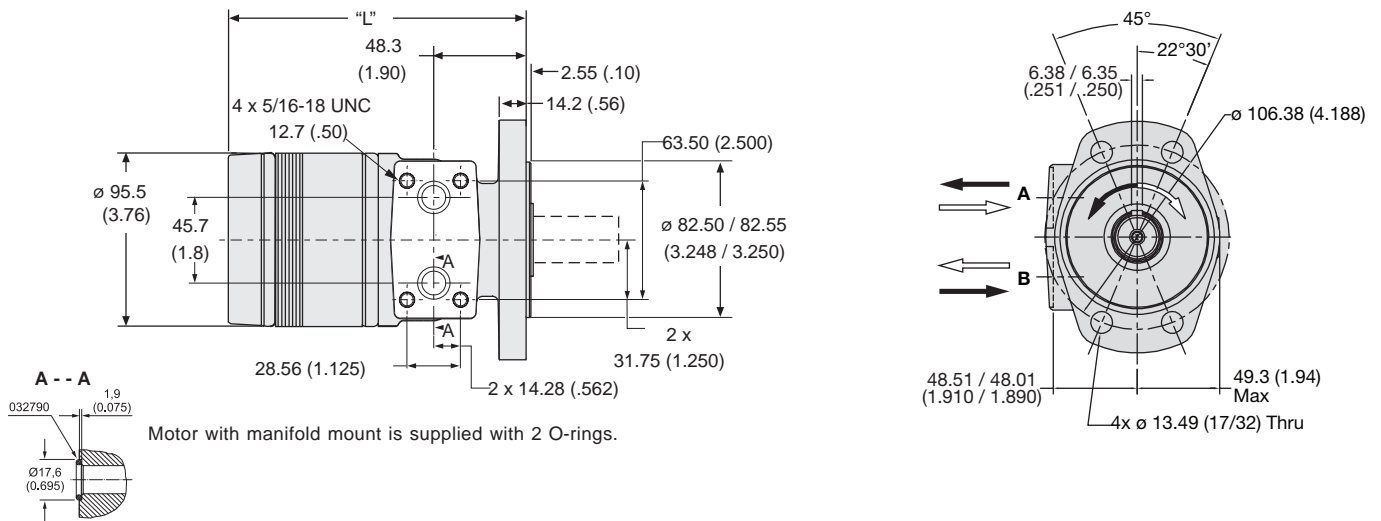
**WARNING**  
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**Code: CS**  
**SAE A 2 Bolt, Long Pilot**  
**7/8-14 SAE**



| Code CS                 | disp.         | 0036         | 0045         | 0050         | 0065         | 0080         | 0100         | 0130         | 0165         | 0195         | 0230         | 0260         | 0295         | 0330         | 0365         | 0390         |
|-------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewichtkg</b> | <b>5.87</b>   | <b>6.03</b>  | <b>6.12</b>  | <b>6.26</b>  | <b>6.35</b>  | <b>6.49</b>  | <b>6.76</b>  | <b>7.03</b>  | <b>7.35</b>  | <b>7.58</b>  | <b>7.80</b>  | <b>8.07</b>  | <b>8.35</b>  | <b>8.66</b>  | <b>8.80</b>  |              |
| Poids/Peso (lb)         | (12.9)        | (13.3)       | (13.5)       | (13.8)       | (14.0)       | (14.3)       | (14.9)       | (15.5)       | (16.2)       | (16.7)       | (17.2)       | (17.8)       | (18.4)       | (19.1)       | (19.4)       |              |
| <b>Length</b>           | <b>"L" mm</b> | <b>130.4</b> | <b>131.5</b> | <b>132.9</b> | <b>136.1</b> | <b>139.3</b> | <b>142.5</b> | <b>148.8</b> | <b>155.2</b> | <b>161.5</b> | <b>167.9</b> | <b>174.2</b> | <b>180.6</b> | <b>186.9</b> | <b>195.6</b> | <b>199.7</b> |
| "L" (in)                | (5.13)        | (5.18)       | (5.23)       | (5.36)       | (5.48)       | (5.61)       | (5.86)       | (6.11)       | (6.36)       | (6.61)       | (6.86)       | (7.11)       | (7.36)       | (7.70)       | (7.86)       |              |

**Code: MM**  
**Magneto**  
**5/16-18 UNC Manifold**



| Code MM       | disp.         | 0036         | 0045         | 0050         | 0065         | 0080         | 0100         | 0130         | 0165         | 0195         | 0230         | 0260         | 0295         | 0330         | 0365         | 0390         |
|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight</b> | <b>kg</b>     | <b>6.16</b>  | <b>6.30</b>  | <b>6.40</b>  | <b>6.53</b>  | <b>6.62</b>  | <b>6.76</b>  | <b>7.03</b>  | <b>7.30</b>  | <b>7.62</b>  | <b>7.85</b>  | <b>8.12</b>  | <b>8.35</b>  | <b>8.62</b>  | <b>8.94</b>  | <b>9.07</b>  |
| (lb)          | (13.6)        | (13.9)       | (14.1)       | (14.4)       | (14.6)       | (14.9)       | (15.5)       | (16.1)       | (16.8)       | (17.3)       | (17.9)       | (18.4)       | (19.0)       | (19.7)       | (20.0)       |              |
| <b>Length</b> | <b>"L" mm</b> | <b>135.0</b> | <b>136.1</b> | <b>137.6</b> | <b>140.8</b> | <b>144.0</b> | <b>147.1</b> | <b>153.5</b> | <b>159.8</b> | <b>166.2</b> | <b>172.5</b> | <b>178.9</b> | <b>185.2</b> | <b>191.6</b> | <b>200.2</b> | <b>204.3</b> |
| "L" (in)      | (5.32)        | (5.36)       | (5.42)       | (5.54)       | (5.67)       | (5.79)       | (6.04)       | (6.29)       | (6.54)       | (6.79)       | (7.04)       | (7.29)       | (7.54)       | (7.88)       | (8.04)       |              |

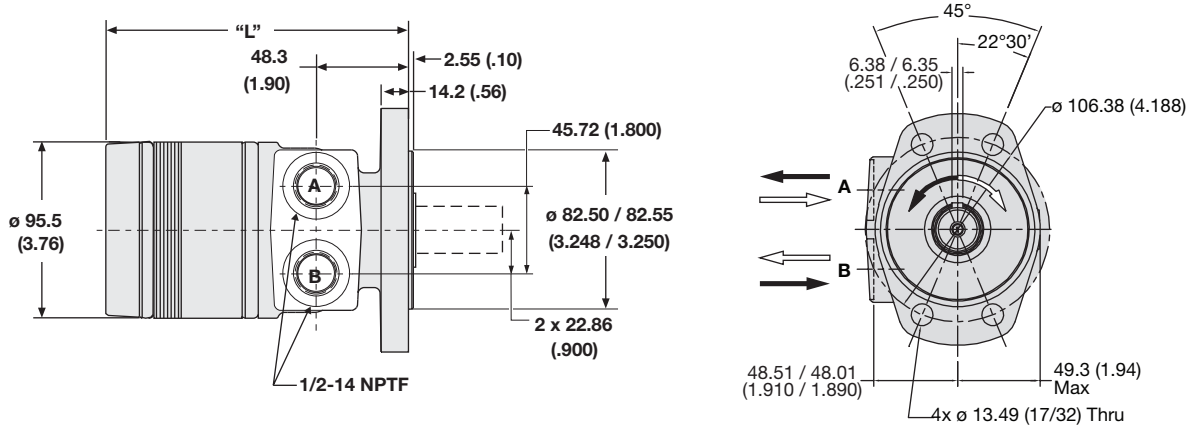
English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



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Code: MP  
Magneto  
1/2-14 NPTF



| Code MP        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 6.16   | 6.30   | 6.40   | 6.53   | 6.62   | 6.76   | 7.03   | 7.30   | 7.62   | 7.85   | 8.12   | 8.35   | 8.62   | 8.94   | 9.07   |
| Poids/Peso     | (lb)     | (13.6) | (13.9) | (14.1) | (14.4) | (14.6) | (14.9) | (15.5) | (16.1) | (16.8) | (17.3) | (17.9) | (18.4) | (19.0) | (19.7) | (20.0) |
| Length         | "L" mm   | 135.1  | 136.1  | 137.6  | 140.8  | 144.0  | 147.1  | 153.5  | 159.8  | 166.2  | 172.5  | 178.9  | 185.2  | 191.6  | 200.2  | 204.3  |
|                | "L" (in) | (5.32) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

English equivalents for metric specifications are shown in ( ).

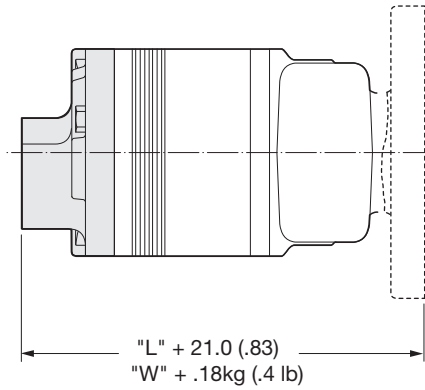
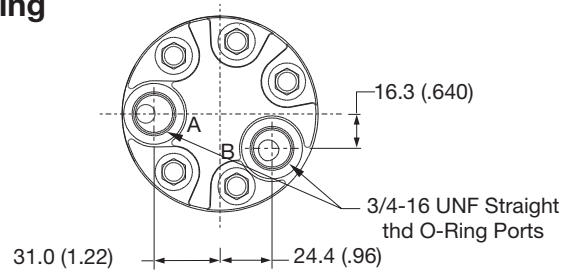
002 TB.indd, b



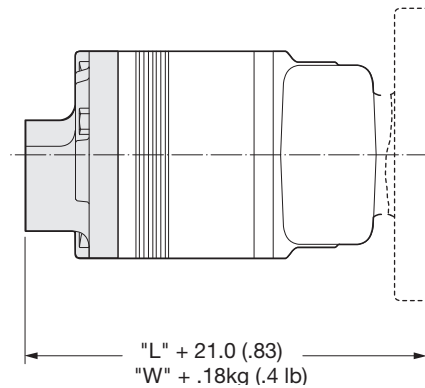
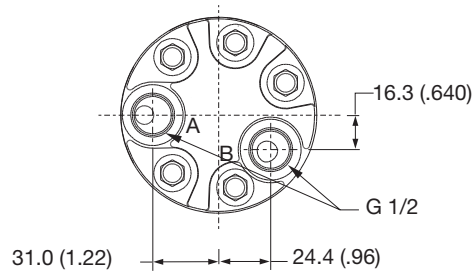
**WARNING**

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**Code: R**  
**Rear Port**  
**3/4"-16 SAE O-Ring**



**Code: Y**  
**Rear Port**  
**G 1/2 BSPP**



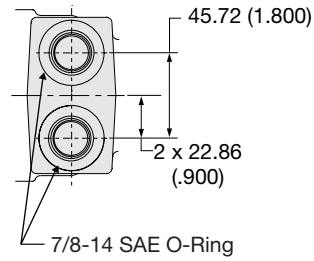
English equivalents for metric specifications are shown in ( ).

002 TB.indd, b

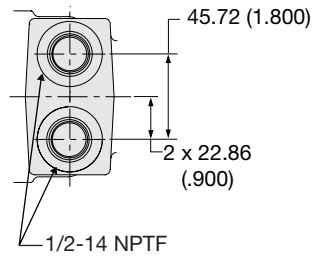


This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: S**  
**7/8"-14 SAE O-Ring**



**Code: P**  
**1/2"-14 NPTF**



English equivalents for metric specifications are shown in ( ).

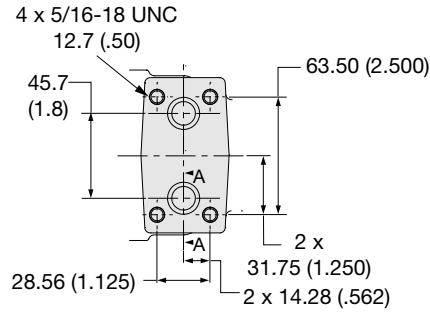
002 TB.indd, b



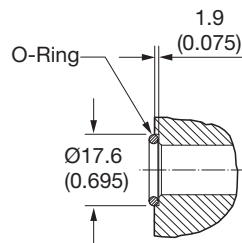
**WARNING**

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**Code: M**  
**Manifold**

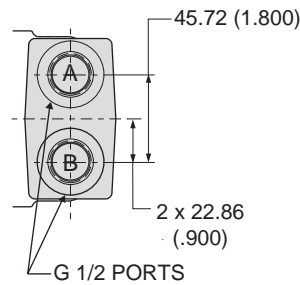


**A - - A**



Motor with manifold mount is supplied with 2 o-rings (P/N 032790).

**Code: W**  
**G 1/2 BSPP**  
**Milled Front**

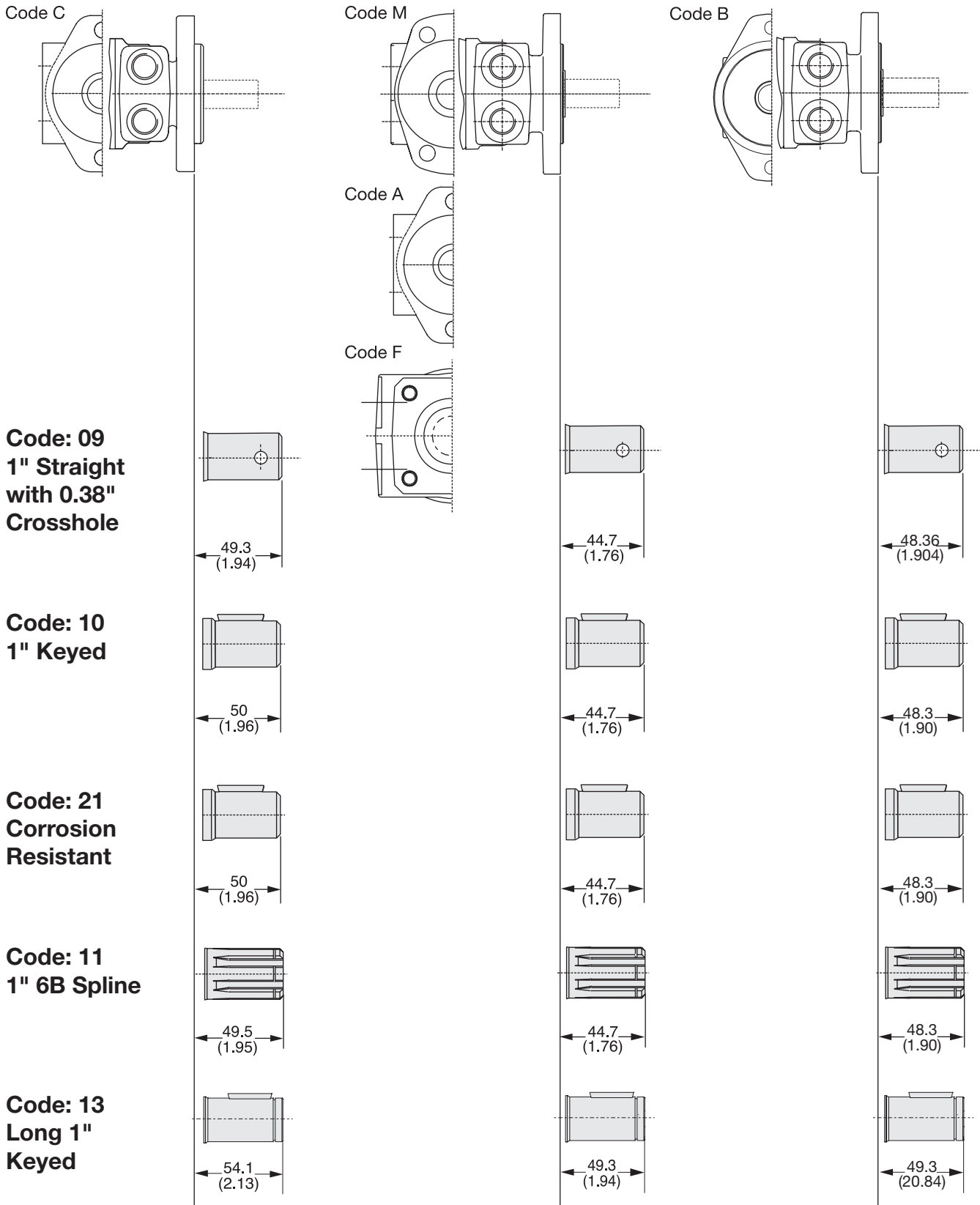


English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



**WARNING**  
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English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



**WARNING**

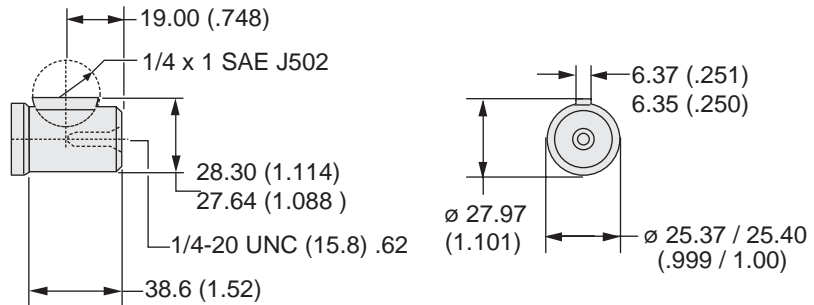
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



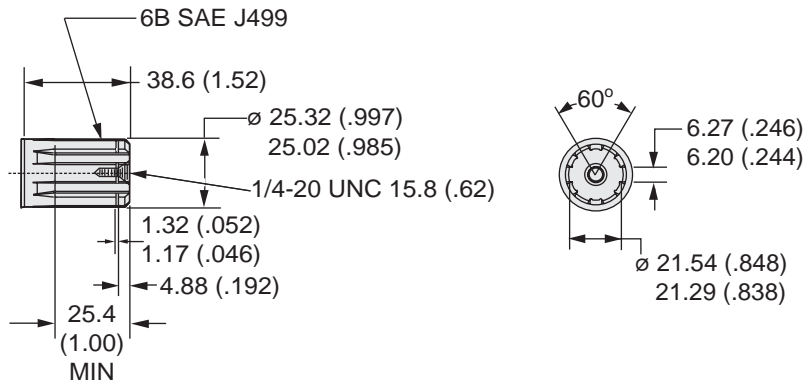
**Code: 09**  
**1" Straight**  
**with 0.38"**  
**Crosshole**



**Code: 10**  
**1" Keyed**

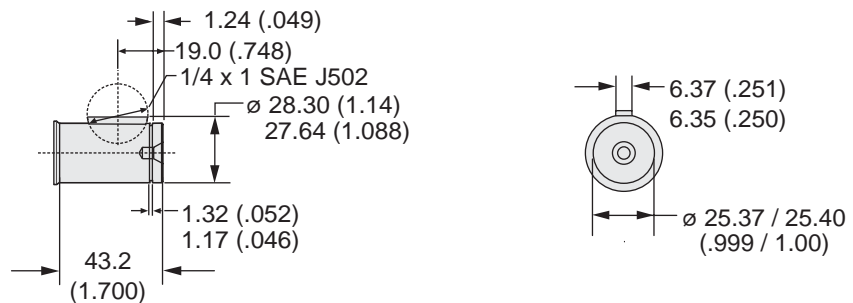


**Code: 21**  
**1" Keyed**  
**Corrosion**  
**Resistant**



**Code: 11**  
**1" 6B Spline**

**Code: 13**  
**Long 1"**  
**Keyed**



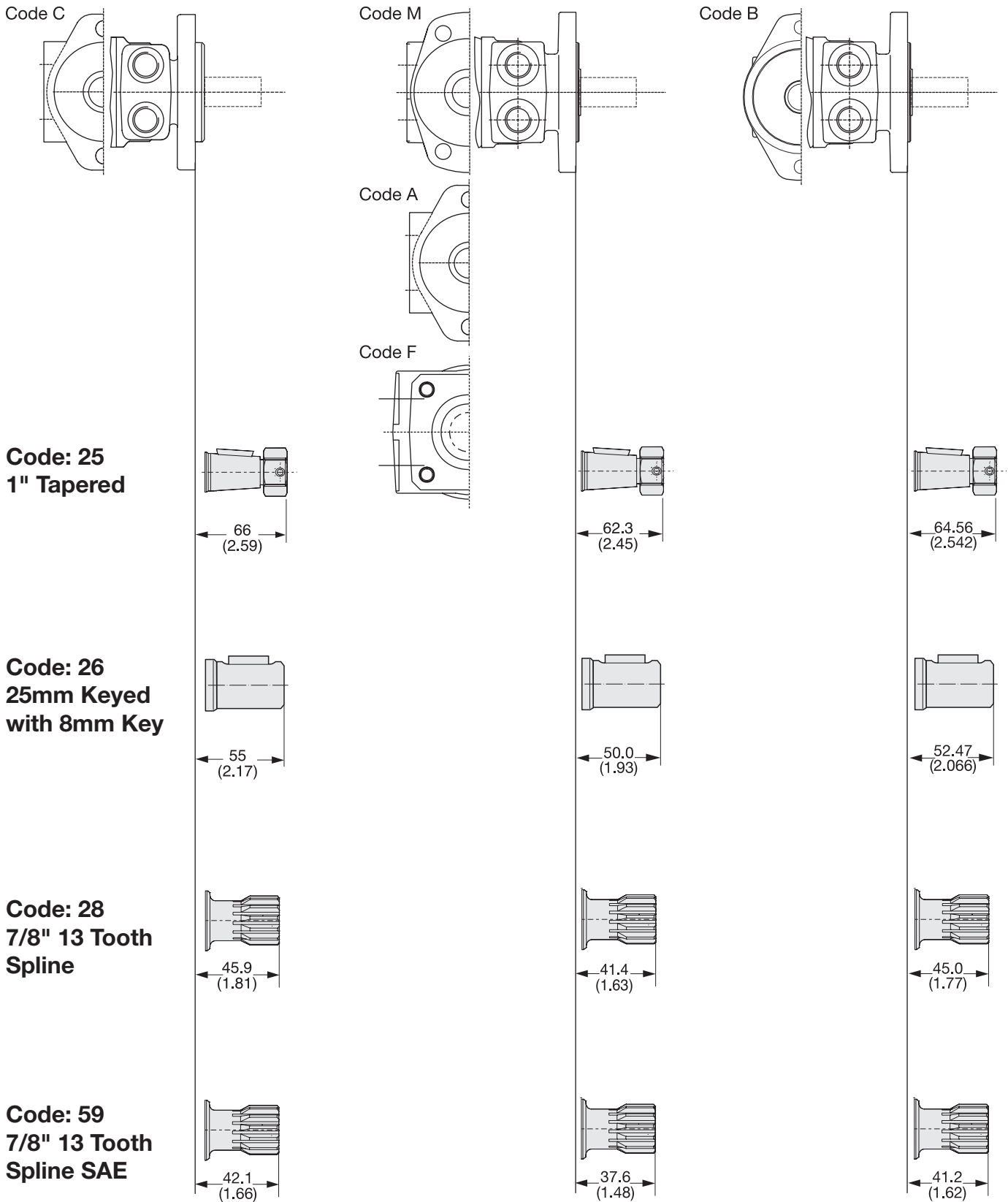
English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



**WARNING**

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English equivalents for metric specifications are shown in ( ).

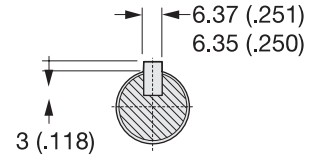
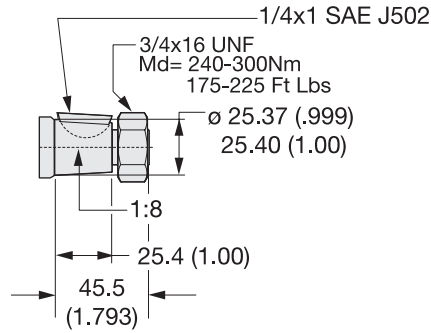
002 TB.indd, b



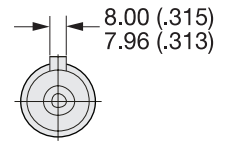
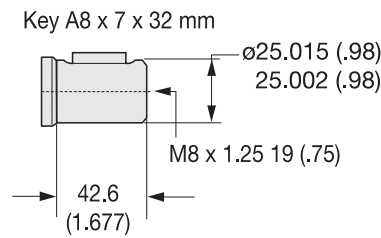
**WARNING**

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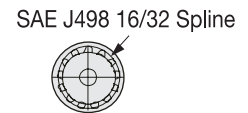
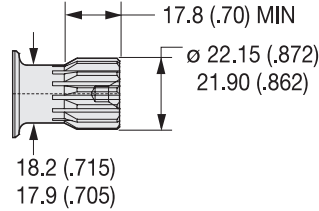
**Code: 25**  
**1" Tapered**



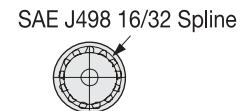
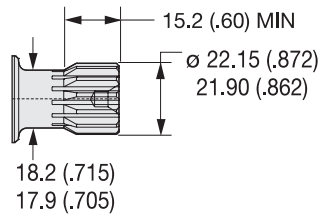
**Code: 26**  
**25mm Keyed**  
**with 8mm Key**



**Code: 28**  
**7/8" 13 Tooth**  
**Spline**



**Code: 59**  
**7/8" 13 Tooth**  
**Spline SAE**



English equivalents for metric specifications are shown in ( ).

002 TB.indd, b



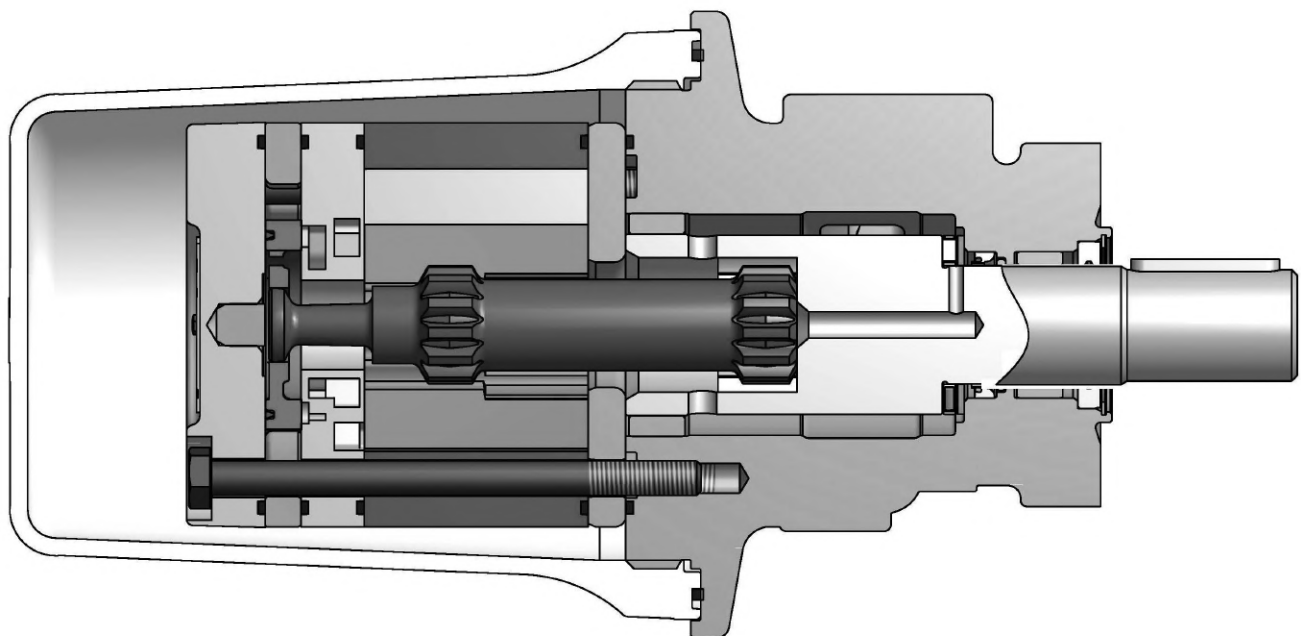
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|                                 |  |  |
|---------------------------------|--|--|
| <b>15 Displacements</b>         | (2.2 – 24.0 in <sup>3</sup> /rev)<br>36 . . . 390 cm <sup>3</sup> /rev |  |
| <b>Maximum Pressure</b>         | <b>Cont</b><br>(1800 psid)<br>. . . 125 bar                            | <b>Int</b><br>(2400 psid)<br>. . . 165 bar |
| <b>Maximum Oil Flow</b>         | (15 gpm)<br>. . . 57 lpm   |  |
| <b>Maximum Speed</b>            | (932 rpm)<br>932 rpm   |  |
| <b>Maximum Torque</b>           | <b>Cont</b><br>(2000 lb in)<br>226 Nm                                  | <b>Int</b><br>(2000 lb in)<br>226 Nm       |
| <b>Maximum Side Load at Key</b> | (300 lb)<br>. . . 1340 N   |  |

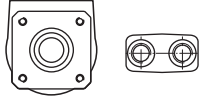
### A Stainless Steel Low Speed, High Torque Motor


This motor utilizes a stainless steel front housing and output shaft, with a glass filled polypropylene rear cover for the ultimate in corrosion protection. It is designed for use under water or in harsh environments where it will be exposed to water or corrosive chemicals. Features such as roller vanes, high pressure shaft seal and full flow spline lubrication are standard.

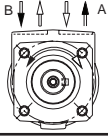
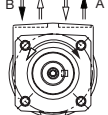




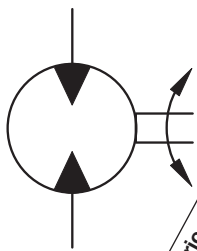
| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro in <sup>3</sup> /rev |
|------|---|
| 0036 | 36 / 2.2  |
| 0045 | 41 / 2.5  |
| 0050 | 49 / 3.0  |
| 0065 | 65 / 4.0  |
| 0080 | 82 / 5.0  |
| 0100 | 98 / 6.0  |
| 0130 | 130 / 8.0   |
| 0165 | 163 / 10.0  |
| 0195 | 195 / 11.9  |
| 0230 | 228 / 13.9  |
| 0260 | 260 / 15.9  |
| 0295 | 293 / 17.9  |
| 0330 | 328 / 20.0  |
| 0365 | 370 / 22.6  |
| 0390 | 392 / 24.0  |

| Code | Mounting/Ports  |
|------|---|
| FS   | 4 Bolt w/3/8-16 UNC,<br>7/8-14 SAE<br> |

| Code | Shaft   |
|------|---|
| 77   | 1" Square Keyed<br>Stainless Steel<br> |

| Code | Rotation  |
|------|---|
| 0    | Standard<br>                     |
| 1    | Reverse<br>Timed<br>Manifold<br> |

| Code | Options  |
|------|--|
| AAXH | Fluorocarbon Body, Shaft, Dirt & Water<br>Seals. High Temperature Commutator Seals |



Geometric displacement  
Max. speed @ Max. intermittent flow  
Max. oil flow  
Max. Differential Pressure  
Max. supply pressure  
Max. torque  
Max. performance  
Min. starting torque

| Motor Series TS | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int* |          | cont / int* |             | max         | cont / int* |             | max          | cont / int* |             |             |
|-----------------|--|---------|-------------|----------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
|                 |  |         | l/min       | g/min    | bar         | psid        | bar         | Nm          | lb-in       | KW           | HP          | Nm          | lb-in       |
| TS 0036         | 36<br>2.2                                    | 932     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 48<br>427   | 67<br>596   | 6.6<br>8.8   |             | 44<br>385   | 50<br>440   |
| TS 0045         | 41<br>2.5                                    | 805     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 64<br>526   | 88<br>731   | 7.2<br>9.7   |             | 39<br>341   | 52<br>461   |
| TS 0050         | 49<br>3.0                                    | 678     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 78<br>693   | 107<br>946  | 7.5<br>10.1  |             | 36<br>319   | 70<br>619   |
| TS 0065         | 65<br>4.0                                    | 511     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 107<br>946  | 145<br>1284 | 7.8<br>10.4  |             | 66<br>582   | 99<br>977   |
| TS 0080         | 82<br>5.0                                    | 409     | 34<br>9     | 34<br>9  | 125<br>1800 | 165<br>2400 | 190<br>2750 | 135<br>1193 | 184<br>1624 | 7.8<br>10.5  |             | 92<br>816   | 139<br>1226 |
| TS 0100         | 98<br>6.0                                    | 454     | 45<br>12    | 45<br>12 | 125<br>1800 | 165<br>2400 | 190<br>2750 | 160<br>1411 | 217<br>1917 | 10.2<br>13.8 |             | 119<br>1050 | 158<br>1400 |
| TS 0130         | 130<br>8.0                                   | 430     | 45<br>12    | 57<br>15 | 131<br>1900 | 131<br>1900 | 190<br>2750 | 226<br>2000 | 226<br>2000 | 10.1<br>13.6 |             | 172<br>1520 | 172<br>1520 |
| TS 0165         | 163<br>10.0                                  | 343     | 45<br>12    | 57<br>15 | 103<br>1500 | 103<br>1500 | 190<br>2750 | 226<br>2000 | 226<br>2000 | 8.1<br>10.9  |             | 165<br>1460 | 165<br>1460 |
| TS 0195         | 195<br>11.9                                  | 287     | 45<br>12    | 57<br>15 | 83<br>1200  | 83<br>1200  | 190<br>2750 | 226<br>2000 | 226<br>2000 | 6.8<br>9.1   |             | 179<br>1586 | 179<br>1586 |
| TS 0230         | 228<br>13.9                                  | 246     | 45<br>12    | 57<br>15 | 76<br>1100  | 76<br>1100  | 190<br>2750 | 226<br>2000 | 226<br>2000 | 5.8<br>7.8   |             | 190<br>1680 | 190<br>1680 |
| TS 0260         | 260<br>15.9                                  | 216     | 45<br>12    | 57<br>15 | 69<br>1000  | 69<br>1000  | 190<br>2750 | 226<br>2000 | 226<br>2000 | 5.1<br>6.9   |             | 188<br>1660 | 188<br>1660 |
| TS 0295         | 293<br>17.9                                  | 191     | 45<br>12    | 57<br>15 | 62<br>900   | 62<br>900   | 190<br>2750 | 226<br>2000 | 226<br>2000 | 4.6<br>6.1   |             | 181<br>1600 | 181<br>1600 |
| TS 0330         | 328<br>20.0                                  | 171     | 45<br>12    | 57<br>15 | 41<br>600   | 41<br>600   | 190<br>2750 | 226<br>2000 | 226<br>2000 | 4.0<br>5.4   |             | 181<br>1600 | 181<br>1600 |
| TS 0365         | 370<br>22.6                                  | 151     | 45<br>12    | 57<br>15 | 41<br>600   | 41<br>600   | 190<br>2750 | 226<br>2000 | 226<br>2000 | 3.6<br>4.8   |             | 191<br>1690 | 191<br>1690 |
| TS 0390         | 392<br>24.0                                  | 143     | 45<br>12    | 57<br>15 | 41<br>600   | 41<br>600   | 190<br>2750 | 226<br>2000 | 226<br>2000 | 3.4<br>4.5   |             | 179<br>1580 | 179<br>1580 |

Performance data based on testing using 10W40 oil with a viscosity of 43,1 cSt. (200 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute. I

**TS 0036**

**2.2 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1800        | 2000        | 2400        |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 109         | 225         | 344         | 419         | 470         | 567         |
|           | <b>46</b>   | <b>37</b>   | <b>26</b>   | <b>20</b>   | <b>15</b>   | <b>7</b>    |
| <b>1</b>  | 111         | 230         | 351         | 429         | 478         | 579         |
|           | <b>99</b>   | <b>89</b>   | <b>78</b>   | <b>71</b>   | <b>68</b>   | <b>58</b>   |
| <b>2</b>  | 112         | 236         | 363         | 442         | 493         | 598         |
|           | <b>203</b>  | <b>192</b>  | <b>179</b>  | <b>172</b>  | <b>170</b>  | <b>159</b>  |
| <b>3</b>  | 112         | 241         | 369         | 449         | 503         | 609         |
|           | <b>307</b>  | <b>296</b>  | <b>283</b>  | <b>276</b>  | <b>270</b>  | <b>259</b>  |
| <b>4</b>  | 108         | 241         | 372         | 452         | 508         | 619         |
|           | <b>413</b>  | <b>398</b>  | <b>383</b>  | <b>376</b>  | <b>371</b>  | <b>360</b>  |
| <b>5</b>  | 104         | 238         | 370         | 454         | 507         | 621         |
|           | <b>517</b>  | <b>502</b>  | <b>487</b>  | <b>478</b>  | <b>473</b>  | <b>460</b>  |
| <b>7</b>  | 88          | 225         | 360         | 444         | 500         | 615         |
|           | <b>725</b>  | <b>710</b>  | <b>694</b>  | <b>681</b>  | <b>674</b>  | <b>661</b>  |
| <b>9</b>  | 71          | 207         | 344         | 425         | 483         | 599         |
|           | <b>933</b>  | <b>916</b>  | <b>896</b>  | <b>885</b>  | <b>876</b>  | <b>862</b>  |
| <b>12</b> | 48          | 184         | 321         | 405         | 459         | 572         |
|           | <b>1245</b> | <b>1225</b> | <b>1203</b> | <b>1192</b> | <b>1181</b> | <b>1163</b> |

TORQUE (LB IN) 599  
 SPEED (RPM) 862

**Flow (GPM)**

**TS 0045**

**2.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000       | 2400       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 119        | 263        | 413        |            |            |            |
|           | <b>32</b>  | <b>18</b>  | <b>3</b>   |            |            |            |
| <b>1</b>  | 123        | 277        | 425        | 518        | 581        | 705        |
|           | <b>77</b>  | <b>61</b>  | <b>44</b>  | <b>37</b>  | <b>28</b>  | <b>18</b>  |
| <b>2</b>  | 132        | 290        | 450        | 542        | 606        | 719        |
|           | <b>168</b> | <b>150</b> | <b>131</b> | <b>122</b> | <b>113</b> | <b>97</b>  |
| <b>3</b>  | 136        | 296        | 462        | 557        | 623        | 748        |
|           | <b>256</b> | <b>239</b> | <b>220</b> | <b>211</b> | <b>199</b> | <b>184</b> |
| <b>4</b>  | 132        | 296        | 464        | 567        | 635        | 768        |
|           | <b>344</b> | <b>326</b> | <b>307</b> | <b>296</b> | <b>286</b> | <b>269</b> |
| <b>5</b>  | 129        | 290        | 464        | 567        | 639        | 779        |
|           | <b>433</b> | <b>416</b> | <b>394</b> | <b>381</b> | <b>371</b> | <b>352</b> |
| <b>7</b>  | 119        | 284        | 460        | 565        | 635        | 779        |
|           | <b>610</b> | <b>590</b> | <b>567</b> | <b>551</b> | <b>541</b> | <b>521</b> |
| <b>9</b>  | 109        | 277        | 450        | 555        | 625        | 768        |
|           | <b>785</b> | <b>765</b> | <b>740</b> | <b>723</b> | <b>710</b> | <b>690</b> |

TORQUE (LB IN) 779  
 SPEED (RPM) 521

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**TS 0050**

**3.0 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000       | 2400       |
|-----------|------------|------------|------------|------------|------------|------------|
| <b>.5</b> | 146<br>25  | 324<br>13  | 506<br>0   |            |            |            |
| <b>1</b>  | 156<br>66  | 338<br>50  | 521<br>35  | 631<br>28  | 701<br>20  | 842<br>9   |
| <b>2</b>  | 166<br>141 | 359<br>127 | 555<br>110 | 666<br>102 | 742<br>94  | 877<br>80  |
| <b>3</b>  | 162<br>218 | 365<br>203 | 566<br>186 | 688<br>176 | 764<br>168 | 912<br>153 |
| <b>4</b>  | 164<br>295 | 361<br>279 | 570<br>261 | 693<br>251 | 775<br>242 | 936<br>227 |
| <b>5</b>  | 156<br>372 | 359<br>355 | 568<br>337 | 691<br>327 | 779<br>317 | 947<br>302 |
| <b>7</b>  | 146<br>525 | 350<br>506 | 561<br>486 | 691<br>474 | 775<br>466 | 949<br>448 |
| <b>9</b>  | 135<br>678 | 338<br>659 | 551<br>638 | 680<br>623 | 766<br>615 | 939<br>596 |

**Flow (GPM)**

TORQUE (LB IN) 939  
 SPEED (RPM) 596

**TS 0065**

**4.0 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800       | 2000        | 2400        |
|-----------|------------|------------|------------|------------|-------------|-------------|
| <b>.5</b> | 217<br>22  | 459<br>14  | 707<br>6   | 862<br>1   |             |             |
| <b>1</b>  | 225<br>51  | 479<br>42  | 735<br>34  | 887<br>29  | 992<br>24   | 1194<br>17  |
| <b>2</b>  | 237<br>108 | 496<br>98  | 761<br>90  | 921<br>85  | 1028<br>81  | 1225<br>70  |
| <b>3</b>  | 237<br>166 | 504<br>156 | 777<br>147 | 941<br>140 | 1045<br>136 | 1251<br>126 |
| <b>4</b>  | 228<br>224 | 501<br>214 | 777<br>203 | 946<br>197 | 1054<br>192 | 1273<br>181 |
| <b>5</b>  | 225<br>281 | 496<br>271 | 775<br>260 | 946<br>252 | 1059<br>247 | 1282<br>237 |
| <b>7</b>  | 208<br>396 | 485<br>385 | 763<br>373 | 938<br>364 | 1051<br>359 | 1282<br>347 |
| <b>9</b>  | 194<br>511 | 468<br>499 | 749<br>485 | 924<br>476 | 1037<br>470 | 1265<br>457 |

**Flow (GPM)**

TORQUE (LB IN) 1282  
 SPEED (RPM) 347

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



**TS 0080**

**5.0 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1800        | 2000        | 2400        |
|-----------|------------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 259<br>18  | 563<br>10  | 881<br>5   | 1078<br>1   |             |             |
| <b>1</b>  | 274<br>40  | 589<br>33  | 911<br>26  | 1100<br>22  | 1230<br>19  | 1489<br>11  |
| <b>2</b>  | 285<br>86  | 615<br>78  | 952<br>70  | 1144<br>67  | 1281<br>63  | 1530<br>53  |
| <b>3</b>  | 293<br>132 | 630<br>124 | 970<br>116 | 1174<br>110 | 1311<br>106 | 1570<br>98  |
| <b>4</b>  | 285<br>179 | 630<br>171 | 978<br>161 | 1185<br>155 | 1330<br>152 | 1604<br>142 |
| <b>5</b>  | 285<br>226 | 626<br>216 | 978<br>206 | 1196<br>200 | 1341<br>196 | 1626<br>185 |
| <b>7</b>  | 267<br>317 | 622<br>307 | 974<br>296 | 1189<br>290 | 1337<br>285 | 1626<br>275 |
| <b>9</b>  | 256<br>410 | 604<br>398 | 959<br>387 | 1178<br>379 | 1322<br>375 | 1611<br>362 |

**Flow (GPM)**

TORQUE (LB IN) 1611  
SPEED (RPM) 362

**TS 0100**

**6.0 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 1800        | 2000        | 2400        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 316<br>16  | 674<br>13  | 1045<br>9   | 1267<br>7   | 1411<br>4   | 1708<br>0   |
| <b>1</b>  | 327<br>34  | 698<br>32  | 1072<br>27  | 1298<br>25  | 1454<br>23  | 1743<br>18  |
| <b>2</b>  | 339<br>74  | 725<br>69  | 1111<br>64  | 1353<br>61  | 1509<br>58  | 1805<br>53  |
| <b>3</b>  | 351<br>111 | 741<br>107 | 1146<br>102 | 1388<br>98  | 1544<br>95  | 1852<br>89  |
| <b>4</b>  | 351<br>148 | 752<br>143 | 1162<br>139 | 1404<br>135 | 1571<br>132 | 1887<br>126 |
| <b>5</b>  | 347<br>187 | 749<br>183 | 1170<br>176 | 1415<br>172 | 1583<br>169 | 1910<br>162 |
| <b>7</b>  | 320<br>264 | 737<br>257 | 1162<br>250 | 1415<br>246 | 1587<br>242 | 1926<br>235 |
| <b>9</b>  | 308<br>339 | 721<br>333 | 1142<br>325 | 1400<br>319 | 1571<br>316 | 1910<br>307 |
| <b>12</b> | 257<br>454 | 674<br>446 | 1096<br>437 | 1474<br>430 | 1524<br>426 | 1864<br>418 |

**Flow (GPM)**

TORQUE (LB IN) 1910  
SPEED (RPM) 307

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TS 0130**

**8.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1800        | 1900        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 455<br>11  | 966<br>10   | 1485<br>7   | 1802<br>5   | 1897<br>4   |
| <b>1</b>  | 463<br>27  | 983<br>24   | 1511<br>21  | 1836<br>19  | 1931<br>18  |
| <b>2</b>  | 476<br>55  | 1018<br>52  | 1563<br>49  | 1893<br>46  | 1988<br>45  |
| <b>3</b>  | 485<br>84  | 1039<br>81  | 1594<br>77  | 1927<br>73  | 2027<br>73  |
| <b>4</b>  | 489<br>113 | 1048<br>109 | 1611<br>105 | 1944<br>103 | 2044<br>101 |
| <b>5</b>  | 481<br>142 | 1044<br>138 | 1615<br>133 | 1953<br>130 | 2057<br>129 |
| <b>7</b>  | 459<br>199 | 1026<br>195 | 1598<br>190 | 1944<br>186 | 2044<br>185 |
| <b>9</b>  | 411<br>257 | 983<br>252  | 1568<br>246 | 1914<br>242 | 2022<br>241 |
| <b>12</b> | 342<br>343 | 914<br>338  | 1494<br>331 | 1874<br>327 | 1953<br>325 |
| <b>15</b> | 260<br>430 | 823<br>424  | 1394<br>416 | 1745<br>411 | 1849<br>410 |

TORQUE (LB IN) 1953  
 SPEED (RPM) 325

**Flow (GPM)**

**TS 0165**

**10.0 cu in / rev**

PRESSURE (PSID)

|           | 250        | 500        | 1000        | 1250        | 1500        |
|-----------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 227<br>12  | 537<br>9   | 1148<br>7   | 1461<br>6   | 1772<br>4   |
| <b>1</b>  | 237<br>23  | 554<br>21  | 1177<br>18  | 1496<br>16  | 1813<br>15  |
| <b>2</b>  | 247<br>46  | 578<br>44  | 1226<br>40  | 1560<br>38  | 1891<br>37  |
| <b>3</b>  | 254<br>69  | 591<br>67  | 1263<br>63  | 1600<br>61  | 1936<br>59  |
| <b>4</b>  | 251<br>91  | 595<br>89  | 1276<br>86  | 1621<br>84  | 1965<br>82  |
| <b>5</b>  | 239<br>115 | 587<br>113 | 1288<br>109 | 1634<br>107 | 1981<br>104 |
| <b>7</b>  | 204<br>162 | 562<br>159 | 1267<br>154 | 1627<br>151 | 1985<br>149 |
| <b>9</b>  | 155<br>208 | 517<br>205 | 1230<br>200 | 1594<br>197 | 1956<br>194 |
| <b>12</b> | 61<br>277  | 427<br>274 | 1140<br>268 | 1509<br>265 | 1874<br>261 |
| <b>15</b> |            | 324<br>343 | 1029<br>337 | 1394<br>334 | 1755<br>331 |

TORQUE (LB IN) 1956  
 SPEED (RPM) 194

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TS 0195**

**11.9 cu in / rev**

PRESSURE (PSID)

|           | 250               | 500               | 750                | 1000               | 1200               |
|-----------|-------------------|-------------------|--------------------|--------------------|--------------------|
| <b>.5</b> | 318<br><b>9.4</b> | 701<br><b>8.9</b> | 1095<br><b>8.5</b> | 1504<br><b>7.7</b> | 1780<br><b>6.8</b> |
| <b>1</b>  | 336<br><b>19</b>  | 720<br><b>18</b>  | 1119<br><b>17</b>  | 1535<br><b>17</b>  | 1807<br><b>17</b>  |
| <b>2</b>  | 351<br><b>38</b>  | 744<br><b>38</b>  | 1152<br><b>37</b>  | 1579<br><b>36</b>  | 1854<br><b>36</b>  |
| <b>3</b>  | 363<br><b>58</b>  | 760<br><b>57</b>  | 1172<br><b>56</b>  | 1602<br><b>55</b>  | 1882<br><b>54</b>  |
| <b>4</b>  | 355<br><b>76</b>  | 756<br><b>76</b>  | 1173<br><b>75</b>  | 1610<br><b>74</b>  | 1890<br><b>73</b>  |
| <b>5</b>  | 341<br><b>95</b>  | 744<br><b>95</b>  | 1166<br><b>94</b>  | 1610<br><b>93</b>  | 1886<br><b>92</b>  |
| <b>7</b>  | 300<br><b>135</b> | 705<br><b>134</b> | 1128<br><b>132</b> | 1575<br><b>131</b> | 1850<br><b>130</b> |
| <b>9</b>  | 241<br><b>173</b> | 646<br><b>172</b> | 1069<br><b>170</b> | 1516<br><b>169</b> | 1791<br><b>168</b> |
| <b>12</b> | 142<br><b>232</b> | 543<br><b>230</b> | 961<br><b>229</b>  | 1398<br><b>227</b> | 1677<br><b>226</b> |
| <b>15</b> | 9<br><b>288</b>   | 409<br><b>287</b> | 824<br><b>286</b>  | 1256<br><b>284</b> | 1539<br><b>283</b> |

TORQUE (LB IN) 1677  
 SPEED (RPM) 226

**Flow (GPM)**

**TS 0230**

**13.9 cu in / rev**

PRESSURE (PSID)

|           | 250                | 500                | 750                 | 1000                | 1100                |
|-----------|--------------------|--------------------|---------------------|---------------------|---------------------|
| <b>.5</b> | 373<br><b>8.3</b>  | 806<br><b>8.2</b>  | 1248<br><b>7.8</b>  | 1714<br><b>7.2</b>  | 1836<br><b>6.9</b>  |
| <b>1</b>  | 382<br><b>16.6</b> | 820<br><b>16.4</b> | 1267<br><b>15.8</b> | 1733<br><b>15.1</b> | 1865<br><b>14.8</b> |
| <b>2</b>  | 409<br><b>33</b>   | 850<br><b>32</b>   | 1298<br><b>32</b>   | 1768<br><b>31</b>   | 1899<br><b>31</b>   |
| <b>3</b>  | 414<br><b>49</b>   | 859<br><b>49</b>   | 1316<br><b>48</b>   | 1802<br><b>47</b>   | 1919<br><b>47</b>   |
| <b>4</b>  | 408<br><b>66</b>   | 854<br><b>65</b>   | 1323<br><b>65</b>   | 1816<br><b>64</b>   | 1938<br><b>64</b>   |
| <b>5</b>  | 383<br><b>83</b>   | 845<br><b>82</b>   | 1318<br><b>81</b>   | 1821<br><b>80</b>   | 1943<br><b>79</b>   |
| <b>7</b>  | 338<br><b>113</b>  | 811<br><b>114</b>  | 1292<br><b>113</b>  | 1797<br><b>112</b>  | 1938<br><b>111</b>  |
| <b>9</b>  | 261<br><b>147</b>  | 747<br><b>147</b>  | 1237<br><b>146</b>  | 1738<br><b>145</b>  | 1899<br><b>144</b>  |
| <b>12</b> | 111<br><b>199</b>  | 615<br><b>199</b>  | 1120<br><b>197</b>  | 1626<br><b>194</b>  | 1800<br><b>193</b>  |
| <b>15</b> |                    | 479<br><b>246</b>  | 987<br><b>244</b>   | 1473<br><b>241</b>  | 1650<br><b>240</b>  |

TORQUE (LB IN) 1899  
 SPEED (RPM) 144

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TS 0260**

**15.9 cu in / rev**

PRESSURE (PSID)

|           | 250         | 500         | 750          | 1000         |
|-----------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 399<br>7.2  | 915<br>6.9  | 1431<br>6.4  | 1948<br>6.0  |
| <b>1</b>  | 412<br>14.5 | 936<br>14.0 | 1460<br>13.6 | 1984<br>13.1 |
| <b>2</b>  | 419<br>29.0 | 956<br>28.3 | 1493<br>27.6 | 2030<br>26.8 |
| <b>3</b>  | 427<br>43   | 971<br>43   | 1516<br>42   | 2060<br>41   |
| <b>4</b>  | 412<br>58   | 966<br>57   | 1521<br>57   | 2076<br>56   |
| <b>5</b>  | 401<br>71   | 961<br>71   | 1521<br>71   | 2081<br>70   |
| <b>7</b>  | 348<br>101  | 915<br>100  | 1483<br>100  | 2050<br>99   |
| <b>9</b>  | 271<br>130  | 844<br>129  | 1416<br>128  | 1989<br>128  |
| <b>12</b> | 133<br>174  | 706<br>173  | 1278<br>172  | 1851<br>171  |
| <b>15</b> |             | 547<br>216  | 1117<br>215  | 1687<br>214  |

TORQUE (LB IN) 1851  
 SPEED (RPM) 171

**Flow (GPM)**

**TS 0295**

**17.9 cu in / rev**

PRESSURE (PSID)

|           | 250         | 500          | 750          | 900          |
|-----------|-------------|--------------|--------------|--------------|
| <b>.5</b> | 384<br>6.4  | 1048<br>6.0  | 1713<br>5.3  | 2111<br>4.9  |
| <b>1</b>  | 394<br>12.6 | 1068<br>12.2 | 1742<br>11.7 | 2146<br>11.4 |
| <b>2</b>  | 397<br>25.6 | 1093<br>25.1 | 1788<br>24.6 | 2205<br>24.3 |
| <b>3</b>  | 406<br>39   | 1107<br>38   | 1809<br>37   | 2229<br>36   |
| <b>4</b>  | 397<br>50   | 1107<br>50   | 1818<br>49   | 2244<br>49   |
| <b>5</b>  | 365<br>64   | 1088<br>63   | 1810<br>62   | 2244<br>61   |
| <b>7</b>  | 316<br>90   | 1038<br>89   | 1761<br>88   | 2195<br>87   |
| <b>9</b>  | 223<br>115  | 955<br>114   | 1687<br>113  | 2126<br>112  |
| <b>12</b> | 60<br>154   | 792<br>153   | 1524<br>151  | 1964<br>150  |
| <b>15</b> |             | 605<br>191   | 1325<br>189  | 1757<br>188  |

TORQUE (LB IN) 2126  
 SPEED (RPM) 112

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TS 0330**

**20.0 cu in / rev**

PRESSURE (PSID)

|           | 250                | 500                 | 600                 |
|-----------|--------------------|---------------------|---------------------|
| <b>.5</b> | 481<br><b>5.7</b>  | 1201<br><b>5.1</b>  | 1489<br><b>4.6</b>  |
| <b>1</b>  | 469<br><b>11.4</b> | 1229<br><b>11.1</b> | 1533<br><b>10.6</b> |
| <b>2</b>  | 416<br><b>22.8</b> | 1258<br><b>22.5</b> | 1594<br><b>21.7</b> |
| <b>3</b>  | 377<br><b>35</b>   | 1270<br><b>34</b>   | 1627<br><b>33</b>   |
| <b>4</b>  | 323<br><b>46</b>   | 1266<br><b>45</b>   | 1643<br><b>44</b>   |
| <b>5</b>  | 252<br><b>57</b>   | 1245<br><b>56</b>   | 1643<br><b>56</b>   |
| <b>7</b>  | 154<br><b>80</b>   | 1189<br><b>79</b>   | 1602<br><b>78</b>   |
| <b>9</b>  | 55<br><b>103</b>   | 1099<br><b>102</b>  | 1517<br><b>102</b>  |
| <b>12</b> |                    | 913<br><b>137</b>   | 1331<br><b>136</b>  |
| <b>15</b> |                    | 706<br><b>171</b>   | 1087<br><b>170</b>  |

TORQUE (LB IN) 1517  
 SPEED (RPM) 102

**Flow (GPM)**

**TS 0365**

**22.6 cu in / rev**

PRESSURE (PSID)

|           | 250                 | 500                  | 600                  |
|-----------|---------------------|----------------------|----------------------|
| <b>.5</b> | 680<br><b>5.1</b>   | 1405<br><b>4.9</b>   | 1650<br><b>4.6</b>   |
| <b>1</b>  | 688<br><b>10.2</b>  | 1438<br><b>9.8</b>   | 1703<br><b>9.7</b>   |
| <b>2</b>  | 686<br><b>20.4</b>  | 1479<br><b>19.8</b>  | 1756<br><b>19.6</b>  |
| <b>3</b>  | 692<br><b>30.3</b>  | 1495<br><b>30.2</b>  | 1784<br><b>30.0</b>  |
| <b>4</b>  | 720<br><b>40.2</b>  | 1487<br><b>39.9</b>  | 1796<br><b>39.8</b>  |
| <b>5</b>  | 703<br><b>50.6</b>  | 1466<br><b>50.0</b>  | 1772<br><b>49.8</b>  |
| <b>7</b>  | 572<br><b>70.6</b>  | 1373<br><b>70.1</b>  | 1695<br><b>69.9</b>  |
| <b>9</b>  | 440<br><b>91.4</b>  | 1251<br><b>90.3</b>  | 1572<br><b>89.9</b>  |
| <b>12</b> | 189<br><b>121.5</b> | 1014<br><b>120.9</b> | 1344<br><b>120.7</b> |
| <b>15</b> |                     | 701<br><b>151.1</b>  | 1022<br><b>150.9</b> |

TORQUE (LB IN) 1695  
 SPEED (RPM) 69.9

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

TS 0390

**24.0** cu in / rev

PRESSURE (PSID)

|           | 250          | 500          | 600          |
|-----------|--------------|--------------|--------------|
| <b>.5</b> | 604          | 1324         | 1492         |
|           | <b>4.5</b>   | <b>4.0</b>   | <b>3.8</b>   |
| <b>1</b>  | 640          | 1356         | 1540         |
|           | <b>9.3</b>   | <b>9.2</b>   | <b>9.0</b>   |
| <b>2</b>  | 690          | 1408         | 1608         |
|           | <b>18.6</b>  | <b>18.1</b>  | <b>17.9</b>  |
| <b>3</b>  | 700          | 1440         | 1664         |
|           | <b>28.4</b>  | <b>28.1</b>  | <b>27.7</b>  |
| <b>4</b>  | 705          | 1452         | 1692         |
|           | <b>37.5</b>  | <b>37.0</b>  | <b>36.8</b>  |
| <b>5</b>  | 715          | 1444         | 1712         |
|           | <b>48.1</b>  | <b>47.1</b>  | <b>46.8</b>  |
| <b>7</b>  | 642          | 1392         | 1692         |
|           | <b>67.2</b>  | <b>66.2</b>  | <b>65.8</b>  |
| <b>9</b>  | 496          | 1296         | 1616         |
|           | <b>85.6</b>  | <b>85.1</b>  | <b>84.9</b>  |
| <b>12</b> | 292          | 1092         | 1412         |
|           | <b>115.9</b> | <b>114.5</b> | <b>113.9</b> |
| <b>15</b> | 62           | 832          | 1140         |
|           | <b>144.1</b> | <b>143.1</b> | <b>142.7</b> |

TORQUE (LB IN) 1616  
 SPEED (RPM) 84.9

**Flow (GPM)**

Cont.  Int.

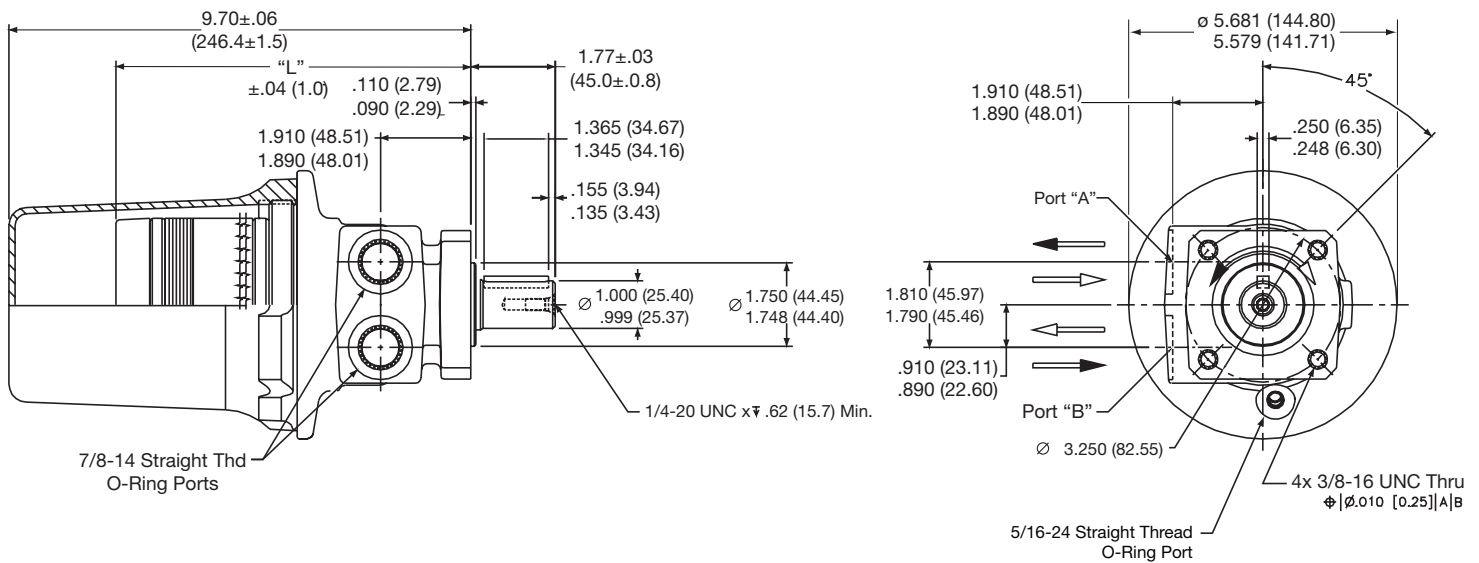
Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

A 5/16-24 straight thread o-ring drain port is provided in the flange of the front housing. This port is to be connected to the reservoir. The purpose of this port is to relieve pressure in the polypropylene rear cover in the rare event of a motor section seal leak.

**Code: FS**

**4 Bolt,  
 7/8"-14 SAE  
 O-Ring**



\* Do not plug 5/16-24 drain port

| Code FS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 8.3    | 8.3    | 8.4    | 8.5    | 8.7    | 8.8    | 9.0    | 9.3    | 9.8    | 9.9    | 10.1   | 10.3   | 10.7   | 11.0   | 11.1   |
| Poids/Peso (lb)   | (18.3) | (18.4) | (18.5) | (18.8) | (19.1) | (19.4) | (19.9) | (20.6) | (21.5) | (21.8) | (22.3) | (22.8) | (23.5) | (24.2) | (24.5) |
| Length "L" mm     | 164.4  | 165.5  | 167.0  | 170.2  | 173.3  | 176.5  | 182.9  | 189.2  | 195.6  | 201.9  | 208.3  | 214.6  | 221.0  | 229.6  | 233.7  |
| "L" (in)          | (6.47) | (6.52) | (6.57) | (6.70) | (6.82) | (6.95) | (7.20) | (7.45) | (7.70) | (7.95) | (8.20) | (8.45) | (8.70) | (9.04) | (9.20) |

English equivalents for metric specifications are shown in ( ).

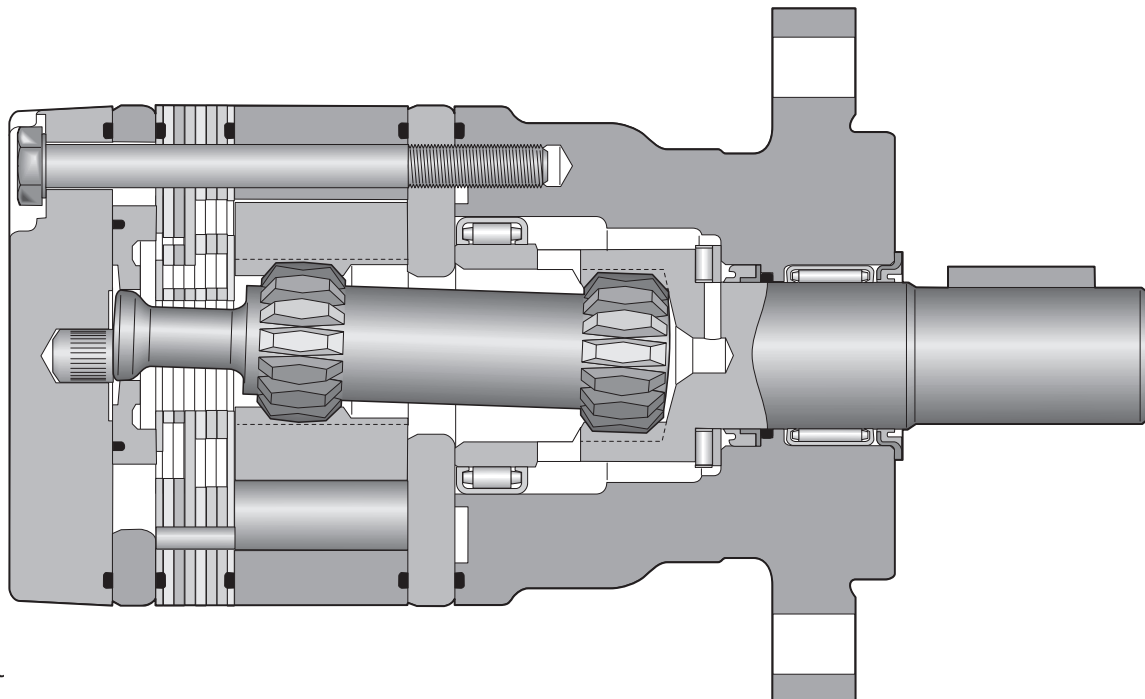
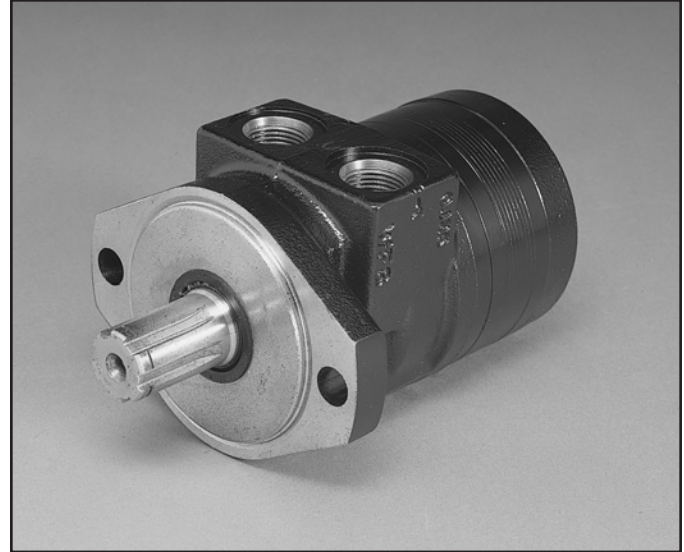


**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|                                 |   |  |
|---------------------------------|---|--|
| <b>15 Displacements</b>         | (2.2 – 24.0 in <sup>3</sup> /rev)<br><b>36 . . . 390 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont</b><br>(2030 psid)<br><b>. . .140 bar</b>                           | <b>Int</b><br>(2750 psid)<br><b>. . .190 bar</b> |
| <b>Maximum Oil Flow</b>         | (20 gpm)<br><b>. . . 75 lpm</b>   |  |
| <b>Maximum Speed</b>            | (1142 rpm)<br><b>1142 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont</b><br>(4139 lb in)<br><b>467 Nm</b>                                | <b>Int</b><br>(5728 lb in)<br><b>648 Nm</b>      |
| <b>Maximum Side Load at Key</b> | (1500 lb)<br><b>. . . 6650 N</b>  |  |

### An Improved Light Duty Low Speed, High Torque Motor

This light duty motor has higher pressure ratings than the TB motor, for applications requiring higher torque. Robust roller bearings withstand higher side loads and are suitable for chain and sprocket shaft connections. It uses high pressure shaft seals, robust roller bearings and high flow shaft seal cooling.



Note: Calcu



**TE**

Series

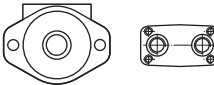




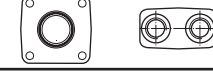
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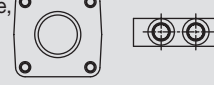
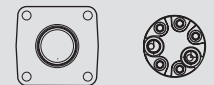
Displacement

**XX**

Mounting/Ports

| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|--|----------------------|
| 0036 | 36 /   | 2.2                  |
| 0045 | 41 /   | 2.5                  |
| 0050 | 49 /   | 3.0                  |
| 0065 | 65 /   | 4.0                  |
| 0080 | 82 /   | 5.0                  |
| 0100 | 98 /   | 6.0                  |
| 0130 | 130 /  | 8.0                  |
| 0165 | 163 /  | 10.0                 |
| 0195 | 195 /  | 11.9                 |
| 0230 | 228 /  | 13.9                 |
| 0260 | 260 /  | 15.9                 |
| 0295 | 293 /  | 17.9                 |
| 0330 | 328 /  | 20.0                 |
| 0365 | 370 /  | 22.6                 |
| 0390 | 392 /  | 24.0                 |

| Code | Mounting/Ports   |
|------|--|
| AM   | SAE "A" 2 Bolt,<br>5/16-18 UNC<br>Manifold  |
| AP   | SAE "A" 2 Bolt,<br>1/2-14 NPTF              |
| AS   | SAE "A" 2 Bolt,<br>7/8-14 SAE               |
| FP   | 4 Bolt w/3/8-16 UNC,<br>1/2-14 NPTF         |
| FS   | 4 Bolt w/3/8-16 UNC,<br>7/8-14 SAE          |
| US   | Wheel Mount,<br>7/8-14 SAE                 |

| Code | Mounting/Ports   |
|------|--|
| AR   | SAE "A" 2 Bolt,<br>Rear Port 3/4-16<br>SAE O-ring Axial                           |
| CW   | SAE "A" 2 Bolt,<br>Long Pilot,<br>G 1/2 BSPP                                      |
| FF   | 4 Bolt w/3/8-16 UNC,<br>3/4-14 SAE    |
| FJ   | 4 Bolt Mt.,<br>9/16 O-ring<br>(SAE # 6)   |
| JS   | "US" w/Mach. Plt. Nose,<br>1/2 -13UNC<br>C'bored mtg. Holes,<br>7/8 O-ring ports  |
| UR   | Wheel Mount,<br>Rear Port 3/4-16<br>SAE O-ring Axial                              |

**XX**







Shaft


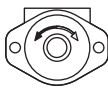
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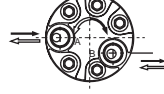
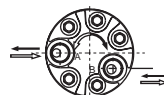
Rotation

**XXXX**

Options  
Opciones







| Code | Shaft   |
|------|---|
| 10   | 1" Keyed<br>                           |
| 11   | 1" 6B Spline<br>                       |
| 13   | Long 1" Keyed<br>                      |
| 25   | 1" Tapered<br>                         |
| 26   | 25mm Keyed w/ 8mm Key<br>              |
| 33   | 1" Tapered, 3/16 Key, 3/4-16 Thd.<br> |

| Code | Rotation  |
|------|---|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

| Code | Rear Port Rotation  |
|------|---|
| 0    | Standard<br>                |
| 1    | Reverse Timed Manifold<br> |

Rotation viewed from shaft end.

| Code                    | Options  |
|-------------------------|--|
| AAAA <sup>8</sup>       | "Standard", Black Paint  |
| AAAB                    | "Standard", No Paint   |
| AAAC <sup>8</sup>       | "Standard", Double Paint   |
| AABJ <sup>1,8</sup>     | Free Running Rotor Set, Black Paint  |
| AABT <sup>4,8</sup>     | No Nut, Black Paint  |
| AAFA                    | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section seals, No Paint   |
| AAFW <sup>8</sup>       | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint  |
| AAJH <sup>4,8</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Spl paint, Black Paint  |
| AAJL <sup>4</sup>       | No Nut, No Paint   |
| AAUP <sup>4</sup>       | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, No Shaft Hardware, No Paint  |
| AAVE <sup>1,8</sup>     | Free Running Rotor Set, Fluorocarbon Seals, High Temp High Temp Section Seals, Commutator Seal, Black Paint  |
| ABCW <sup>4,5,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint |
| ABCZ <sup>8</sup>       | Fluorocarbon Seals, Double paint, High Temp Commutator Seal, High Temp Section Seals   |
| BBGS <sup>4,5,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 921 PSI Int Bidirectional Relief, Black Paint              |
| BBGT <sup>4,5,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 1200 PSI Int Bidirectional Relief, Black Paint             |
| BBGU <sup>3,4,5,8</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 2030 PSI Int Bidirectional Relief, Black Paint             |
| BBGW <sup>8</sup>       | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint                                      |
| BBHB <sup>4,5,7,8</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 2393 PSI Int Bidirectional Relief, Black Paint                                      |
| FSEK <sup>4,6,8</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Parker ECD Speed Sensor, Black Paint                       |
| FSEN <sup>4,6</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Parker ECD Speed Sensor, No Paint                          |

| Code | Custom Order   |
|------|--|
| 01   | Long 6B Spline, Groove<br>              |
| 09   | 1" dia., 0.38" Hole, 0.55" From End<br> |
| 12   | Short 1" Tapered<br>                    |
| 21   | 1" Keyed Corrosion Resistant<br>        |
| 22   | 25mm Str. w/7mm Key, 6mm Tap<br>        |
| 41   | Long 6B, 8mm Tap<br>                    |

\* Conforms to SAE B recommended length

<sup>1</sup> Not applicable to 0365 & 0390 displacements

<sup>3</sup> Not applicable to 0330, 0365 or 0390 displacements

<sup>4</sup> No Nut with shaft code 12, 25 or 33

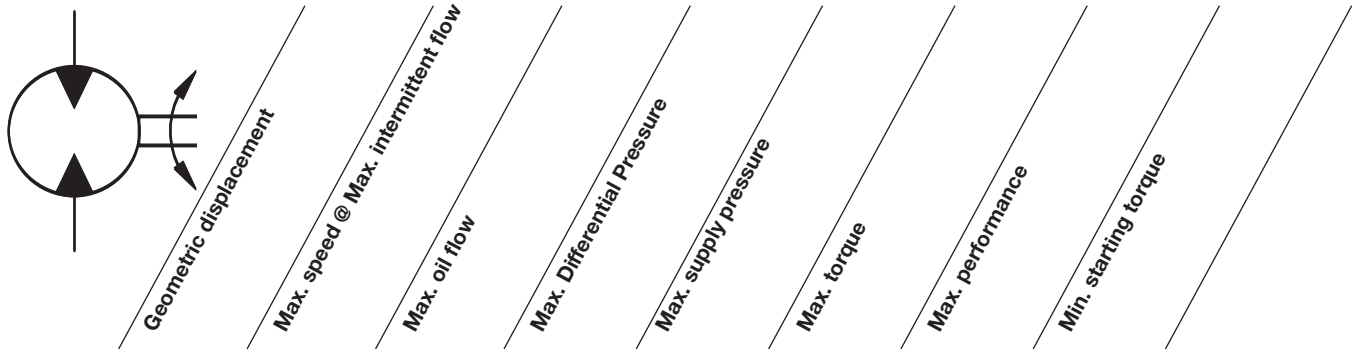
<sup>5</sup> Not applicable with FR or AR Mounting / Porting options

<sup>6</sup> Not applicable with shaft code 33

<sup>7</sup> Not applicable to 0260, 0295, 0330, 0365 or 0390 displacements

<sup>8</sup> Paint area all over except front and rear pilot and mounting flanges and shaft

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.



| Motor Series<br>TE | Geometric displacement<br>cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | Max. speed @ Max. intermittent flow<br><i>Int</i><br>rev/min | Max. oil flow<br><i>cont / int*</i><br>l/min<br>g/min | Max. Differential Pressure<br><i>cont / int*</i><br>bar<br>psid | Max. supply pressure<br><i>max</i><br>bar<br>psig | Max. torque<br><i>cont / int*</i><br>Nm<br>lb-in | Max. performance<br><i>max</i><br>KW<br>HP | Min. starting torque<br><i>cont / int*</i><br>Nm<br>lb-in |
|--------------------|--|--|---|---|---|--|--|---|
| TE 0036            | 36<br>2.2  | 1141   | 34 42<br>9 11   | 140 190<br>2030 2750  | 200<br>2900                                       | 54.6 71.1<br>483 630                             | 8.5<br>11.4                                | 44 52<br>389 460  |
| TE 0045            | 41<br>2.5  | 1024   | 34 42<br>9 11   | 140 190<br>2030 2750  | 200<br>2900                                       | 71 99<br>624 876                                 | 10.4<br>13.9                               | 44 64<br>411 565  |
| TE 0050            | 49<br>3.0  | 1020   | 34 50<br>9 13   | 140 190<br>2030 2750  | 200<br>2900                                       | 90 127<br>796 1120                               | 12.8<br>17.2                               | 72 98<br>637 871  |
| TE 0065            | 65<br>4.0  | 877  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 125 176<br>1106 1558                             | 14.7<br>19.8                               | 100 137<br>885 1211                                       |
| TE 0080            | 82<br>5.0  | 695  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 160 220<br>1416 1947                             | 17.3<br>23.2                               | 128 171<br>1133 1515                                      |
| TE 0100            | 98<br>6.0  | 582  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 190 264<br>1682 2337                             | 17.4<br>23.4                               | 152 205<br>1345 1819                                      |
| TE 0130            | 130<br>8.0   | 438  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 255 352<br>2257 3116                             | 17.3<br>23.2                               | 204 274<br>1806 2423                                      |
| TE 0165            | 163<br>10.0  | 348  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 310 436<br>2744 3846                             | 17.0<br>22.8                               | 248 338<br>2195 2992                                      |
| TE 0195            | 195<br>11.9  | 292  | 45 57<br>12 15  | 140 190<br>2030 2750  | 200<br>2900                                       | 390 528<br>3452 4673                             | 17.4<br>23.4                               | 312 411<br>2762 3637                                      |
| TE 0230            | 228<br>13.9  | 328  | 57 75<br>15 20  | 120 165<br>1740 2400  | 200<br>2900                                       | 380 514<br>3363 4554                             | 17.7<br>23.8                               | 304 411<br>2691 3637                                      |
| TE 0260            | 260<br>15.9  | 287  | 57 75<br>15 20  | 110 155<br>1595 2250  | 200<br>2900                                       | 400 550<br>3540 4870                             | 16.7<br>22.4                               | 320 449<br>2832 3977                                      |
| TE 0295            | 293<br>17.9  | 256  | 57 75<br>15 20  | 100 145<br>1450 2100  | 200<br>2900                                       | 428 582<br>3784 5180                             | 15.7<br>21.0                               | 328 445<br>2903 3939                                      |
| TE 0330            | 328<br>20.0  | 228  | 57 75<br>15 20  | 100 135<br>1450 1950  | 200<br>2900                                       | 443 600<br>3926 5312                             | 14.8<br>19.8                               | 344 453<br>3045 4014                                      |
| TE 0365            | 370<br>22.6  | 203  | 57 75<br>15 20  | 95 125<br>1378 1825   | 200<br>2900                                       | 467 648<br>4133 5728                             | 13.6<br>18.2                               | 373 477<br>3301 4223                                      |
| TE 0390            | 392<br>24.0  | 191  | 57 75<br>15 20  | 85 120<br>1233 1740   | 200<br>2900                                       | 445 628<br>3935 5562                             | 12.5<br>16.8                               | 348 462<br>3080 4090                                      |

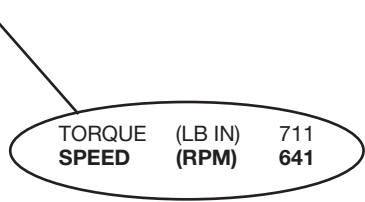
Performance data based on testing using 10W40 oil with a viscosity of 43,1 cSt. (200 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another. \* Intermittent operation rating applies to 10% of every minute.

TE 0036

**2.2 cu in / rev** PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2750        |
|-----------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 111         | 225         | 346         | 470         |             |
|           | <b>44</b>   | <b>37</b>   | <b>25</b>   | <b>15</b>   |             |
| <b>1</b>  | 113         | 231         | 353         | 480         | 670         |
|           | <b>96</b>   | <b>86</b>   | <b>77</b>   | <b>67</b>   | <b>40</b>   |
| <b>2</b>  | 115         | 239         | 365         | 495         | 691         |
|           | <b>202</b>  | <b>190</b>  | <b>179</b>  | <b>169</b>  | <b>140</b>  |
| <b>3</b>  | 113         | 241         | 371         | 505         | 709         |
|           | <b>307</b>  | <b>296</b>  | <b>282</b>  | <b>269</b>  | <b>240</b>  |
| <b>4</b>  | 109         | 241         | 373         | 509         | 722         |
|           | <b>411</b>  | <b>397</b>  | <b>384</b>  | <b>371</b>  | <b>340</b>  |
| <b>5</b>  | 103         | 237         | 371         | 509         | 726         |
|           | <b>516</b>  | <b>501</b>  | <b>486</b>  | <b>470</b>  | <b>440</b>  |
| <b>7</b>  | 87          | 225         | 361         | 501         | 711         |
|           | <b>724</b>  | <b>709</b>  | <b>691</b>  | <b>674</b>  | <b>641</b>  |
| <b>9</b>  | 72          | 208         | 344         | 482         | 672         |
|           | <b>933</b>  | <b>916</b>  | <b>897</b>  | <b>877</b>  | <b>841</b>  |
| <b>11</b> | 54          | 190         | 326         | 462         | 629         |
|           | <b>1142</b> | <b>1117</b> | <b>1096</b> | <b>1075</b> | <b>1045</b> |

Flow (GPM)

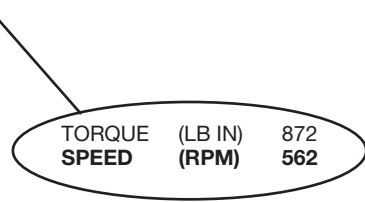


TE 0045

**2.5 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2750       |
|-----------|------------|------------|------------|------------|------------|
| <b>.5</b> | 121        | 272        | 425        | 579        | 808        |
|           | <b>41</b>  | <b>35</b>  | <b>28</b>  | <b>22</b>  | <b>10</b>  |
| <b>1</b>  | 126        | 282        | 440        | 599        | 832        |
|           | <b>86</b>  | <b>79</b>  | <b>72</b>  | <b>65</b>  | <b>50</b>  |
| <b>2</b>  | 128        | 288        | 452        | 619        | 867        |
|           | <b>176</b> | <b>168</b> | <b>161</b> | <b>152</b> | <b>134</b> |
| <b>3</b>  | 126        | 287        | 453        | 620        | 868        |
|           | <b>266</b> | <b>257</b> | <b>249</b> | <b>239</b> | <b>221</b> |
| <b>4</b>  | 123        | 285        | 454        | 624        | 876        |
|           | <b>356</b> | <b>346</b> | <b>337</b> | <b>326</b> | <b>306</b> |
| <b>5</b>  | 119        | 281        | 451        | 624        | 877        |
|           | <b>446</b> | <b>435</b> | <b>425</b> | <b>413</b> | <b>391</b> |
| <b>7</b>  | 105        | 270        | 440        | 615        | 872        |
|           | <b>625</b> | <b>613</b> | <b>601</b> | <b>587</b> | <b>562</b> |
| <b>9</b>  | 94         | 259        | 430        | 605        | 862        |
|           | <b>805</b> | <b>791</b> | <b>777</b> | <b>761</b> | <b>733</b> |
| <b>11</b> | 81         | 246        | 415        | 590        | 849        |
|           | <b>983</b> | <b>967</b> | <b>950</b> | <b>930</b> | <b>896</b> |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TE 0050 **3.0** cu in / rev PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2750       |
|-----------|------------|------------|------------|------------|------------|
| <b>.5</b> | 146        | 327        | 513        | 705        |            |
|           | <b>32</b>  | <b>23</b>  | <b>13</b>  | <b>6</b>   |            |
| <b>1</b>  | 159        | 345        | 537        | 727        | 1005       |
|           | <b>69</b>  | <b>60</b>  | <b>50</b>  | <b>41</b>  | <b>17</b>  |
| <b>2</b>  | 170        | 364        | 563        | 764        | 1057       |
|           | <b>145</b> | <b>136</b> | <b>124</b> | <b>113</b> | <b>85</b>  |
| <b>3</b>  | 167        | 363        | 565        | 768        | 1066       |
|           | <b>225</b> | <b>214</b> | <b>203</b> | <b>191</b> | <b>163</b> |
| <b>4</b>  | 169        | 367        | 574        | 784        | 1092       |
|           | <b>294</b> | <b>282</b> | <b>271</b> | <b>260</b> | <b>231</b> |
| <b>5</b>  | 165        | 365        | 574        | 785        | 1097       |
|           | <b>363</b> | <b>349</b> | <b>339</b> | <b>327</b> | <b>297</b> |
| <b>7</b>  | 156        | 357        | 568        | 782        | 1096       |
|           | <b>501</b> | <b>485</b> | <b>474</b> | <b>460</b> | <b>430</b> |
| <b>9</b>  | 141        | 342        | 555        | 771        | 1087       |
|           | <b>640</b> | <b>621</b> | <b>609</b> | <b>594</b> | <b>561</b> |
| <b>13</b> | 88         | 295        | 503        | 722        | 1036       |
|           | <b>904</b> | <b>881</b> | <b>869</b> | <b>851</b> | <b>819</b> |

TORQUE (LB IN) 1096  
SPEED (RPM) 430

Flow (GPM)

TE 0065 **4.0** cu in / rev PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2750       |
|-----------|------------|------------|------------|------------|------------|
| <b>.5</b> | 220        | 481        | 743        | 1004       |            |
|           | <b>24</b>  | <b>17</b>  | <b>11</b>  | <b>3</b>   |            |
| <b>1</b>  | 232        | 498        | 763        | 1025       | 1411       |
|           | <b>52</b>  | <b>45</b>  | <b>38</b>  | <b>31</b>  | <b>19</b>  |
| <b>2</b>  | 239        | 512        | 789        | 1066       | 1469       |
|           | <b>109</b> | <b>102</b> | <b>94</b>  | <b>85</b>  | <b>65</b>  |
| <b>3</b>  | 238        | 512        | 790        | 1068       | 1474       |
|           | <b>167</b> | <b>159</b> | <b>151</b> | <b>141</b> | <b>120</b> |
| <b>4</b>  | 237        | 514        | 795        | 1078       | 1492       |
|           | <b>224</b> | <b>215</b> | <b>207</b> | <b>197</b> | <b>179</b> |
| <b>5</b>  | 233        | 511        | 794        | 1080       | 1502       |
|           | <b>279</b> | <b>271</b> | <b>262</b> | <b>252</b> | <b>234</b> |
| <b>7</b>  | 216        | 497        | 783        | 1072       | 1497       |
|           | <b>386</b> | <b>376</b> | <b>366</b> | <b>356</b> | <b>336</b> |
| <b>9</b>  | 195        | 477        | 764        | 1054       | 1481       |
|           | <b>494</b> | <b>483</b> | <b>472</b> | <b>460</b> | <b>439</b> |
| <b>12</b> | 152        | 435        | 724        | 1017       | 1445       |
|           | <b>654</b> | <b>641</b> | <b>629</b> | <b>617</b> | <b>596</b> |
| <b>15</b> | 102        | 388        | 676        | 969        | 1391       |
|           | <b>802</b> | <b>789</b> | <b>776</b> | <b>763</b> | <b>740</b> |

TORQUE (LB IN) 1497  
SPEED (RPM) 336

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TE 0080 5.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000        | 2750        |
|-----------|------------|------------|------------|-------------|-------------|
| <b>.5</b> | 261<br>17  | 575<br>8   |            |             |             |
| <b>1</b>  | 276<br>39  | 596<br>30  | 918<br>23  | 1245<br>13  |             |
| <b>2</b>  | 290<br>85  | 631<br>76  | 974<br>68  | 1310<br>56  | 1784<br>35  |
| <b>3</b>  | 291<br>131 | 633<br>122 | 978<br>113 | 1319<br>101 | 1819<br>79  |
| <b>4</b>  | 293<br>177 | 642<br>167 | 995<br>158 | 1347<br>146 | 1854<br>121 |
| <b>5</b>  | 290<br>223 | 641<br>213 | 999<br>203 | 1359<br>191 | 1884<br>165 |
| <b>7</b>  | 273<br>316 | 628<br>304 | 989<br>293 | 1353<br>280 | 1890<br>253 |
| <b>9</b>  | 249<br>408 | 603<br>396 | 966<br>384 | 1334<br>370 | 1873<br>340 |
| <b>12</b> | 197<br>546 | 551<br>533 | 916<br>519 | 1287<br>504 | 1827<br>472 |
| <b>15</b> | 136<br>686 | 494<br>670 | 857<br>655 | 1226<br>638 | 1762<br>603 |

TORQUE (LB IN) 1890  
SPEED (RPM) 253

**Flow (GPM)**

**TE 0100 6.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2750        |
|-----------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 315<br>14  | 687<br>7   |             |             |             |
| <b>1</b>  | 332<br>33  | 710<br>26  | 1083<br>18  | 1460<br>9   |             |
| <b>2</b>  | 348<br>71  | 751<br>64  | 1152<br>55  | 1541<br>45  | 2089<br>27  |
| <b>3</b>  | 350<br>109 | 756<br>102 | 1160<br>92  | 1556<br>83  | 2138<br>62  |
| <b>4</b>  | 353<br>147 | 768<br>140 | 1185<br>130 | 1596<br>120 | 2189<br>99  |
| <b>5</b>  | 349<br>186 | 771<br>178 | 1197<br>168 | 1622<br>158 | 2235<br>137 |
| <b>7</b>  | 330<br>263 | 759<br>254 | 1191<br>244 | 1624<br>232 | 2258<br>209 |
| <b>9</b>  | 302<br>340 | 731<br>330 | 1167<br>319 | 1606<br>307 | 2246<br>284 |
| <b>12</b> | 243<br>456 | 671<br>444 | 1111<br>433 | 1555<br>420 | 2198<br>394 |
| <b>15</b> | 176<br>572 | 606<br>558 | 1042<br>546 | 1484<br>533 | 2121<br>505 |

TORQUE (LB IN) 2258  
SPEED (RPM) 209

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

**TE 0130 8.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2750        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 445<br>12  | 962<br>10   | 1488<br>7   | 2018<br>3   |             |
| <b>1</b>  | 464<br>27  | 996<br>24   | 1525<br>21  | 2051<br>17  | 2835<br>5   |
| <b>2</b>  | 482<br>55  | 1032<br>53  | 1584<br>49  | 2136<br>44  | 2940<br>31  |
| <b>3</b>  | 483<br>84  | 1037<br>81  | 1594<br>77  | 2150<br>72  | 2961<br>60  |
| <b>4</b>  | 483<br>113 | 1051<br>110 | 1619<br>105 | 2184<br>100 | 3015<br>87  |
| <b>5</b>  | 478<br>142 | 1050<br>138 | 1625<br>133 | 2201<br>128 | 3050<br>114 |
| <b>7</b>  | 450<br>200 | 1029<br>195 | 1613<br>190 | 2195<br>183 | 3054<br>169 |
| <b>9</b>  | 414<br>257 | 993<br>252  | 1579<br>247 | 2166<br>239 | 3030<br>224 |
| <b>12</b> | 338<br>344 | 915<br>338  | 1503<br>331 | 2096<br>323 | 2961<br>306 |
| <b>15</b> | 252<br>431 | 827<br>424  | 1408<br>416 | 1996<br>407 | 2851<br>389 |

TORQUE (LB IN) 3054  
SPEED (RPM) 169

**Flow (GPM)**

**TE 0165 10.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2750        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 552<br>9   | 1175<br>7   | 1813<br>4   | 2457<br>3   |             |
| <b>1</b>  | 574<br>21  | 1213<br>18  | 1856<br>16  | 2499<br>12  | 3465<br>7   |
| <b>2</b>  | 597<br>44  | 1263<br>41  | 1938<br>38  | 2614<br>33  | 3604<br>25  |
| <b>3</b>  | 600<br>67  | 1273<br>64  | 1955<br>60  | 2634<br>55  | 3628<br>46  |
| <b>4</b>  | 603<br>90  | 1299<br>87  | 1997<br>83  | 2691<br>78  | 3705<br>67  |
| <b>5</b>  | 597<br>113 | 1302<br>109 | 2015<br>105 | 2727<br>100 | 3767<br>89  |
| <b>7</b>  | 569<br>159 | 1286<br>155 | 2009<br>150 | 2732<br>144 | 3791<br>133 |
| <b>9</b>  | 523<br>205 | 1244<br>201 | 1976<br>195 | 2707<br>189 | 3773<br>177 |
| <b>12</b> | 429<br>274 | 1152<br>269 | 1890<br>263 | 2630<br>256 | 3701<br>242 |
| <b>15</b> | 316<br>344 | 1039<br>338 | 1769<br>331 | 2500<br>323 | 3568<br>308 |

TORQUE (LB IN) 3791  
SPEED (RPM) 133

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TE 0195 11.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2750        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 710<br>8   | 1519<br>7   | 2344<br>5   | 3182<br>3   |             |
| <b>1</b>  | 736<br>18  | 1558<br>16  | 2387<br>14  | 3221<br>12  | 4457<br>6   |
| <b>2</b>  | 758<br>37  | 1596<br>35  | 2445<br>33  | 3302<br>30  | 4558<br>22  |
| <b>3</b>  | 758<br>56  | 1604<br>54  | 2459<br>51  | 3315<br>48  | 4576<br>39  |
| <b>4</b>  | 757<br>75  | 1618<br>73  | 2482<br>70  | 3346<br>67  | 4619<br>56  |
| <b>5</b>  | 747<br>95  | 1615<br>92  | 2488<br>89  | 3360<br>85  | 4643<br>74  |
| <b>7</b>  | 705<br>133 | 1586<br>130 | 2467<br>127 | 3343<br>122 | 4631<br>111 |
| <b>9</b>  | 646<br>172 | 1528<br>169 | 2415<br>165 | 3300<br>160 | 4590<br>147 |
| <b>12</b> | 530<br>230 | 1408<br>226 | 2303<br>221 | 3197<br>215 | 4494<br>201 |
| <b>15</b> | 394<br>288 | 1273<br>283 | 2147<br>278 | 3027<br>272 | 4308<br>256 |

TORQUE (LB IN) 4631  
SPEED (RPM) 111

**Flow (GPM)**

**TE 0230 13.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1750        | 2000        | 2400        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 761<br>7   | 1673<br>6   | 2614<br>5   | 3094<br>4   | 3584<br>3   | 4331<br>3   |
| <b>1</b>  | 791<br>15  | 1712<br>14  | 2650<br>13  | 3128<br>12  | 3615<br>11  | 4366<br>9   |
| <b>2</b>  | 819<br>32  | 1764<br>30  | 2726<br>29  | 3208<br>28  | 3692<br>26  | 4448<br>24  |
| <b>3</b>  | 819<br>48  | 1771<br>47  | 2737<br>45  | 3226<br>44  | 3718<br>42  | 4482<br>41  |
| <b>4</b>  | 821<br>65  | 1787<br>63  | 2765<br>61  | 3256<br>60  | 3750<br>58  | 4520<br>56  |
| <b>5</b>  | 808<br>81  | 1786<br>79  | 2777<br>77  | 3277<br>76  | 3778<br>74  | 4554<br>73  |
| <b>7</b>  | 770<br>114 | 1756<br>112 | 2755<br>109 | 3255<br>108 | 3760<br>106 | 4535<br>104 |
| <b>9</b>  | 705<br>147 | 1699<br>145 | 2710<br>142 | 3216<br>140 | 3724<br>138 | 4496<br>137 |
| <b>12</b> | 581<br>197 | 1582<br>194 | 2595<br>191 | 3103<br>189 | 3617<br>186 | 4382<br>183 |
| <b>15</b> | 400<br>247 | 1409<br>243 | 2437<br>239 | 2949<br>237 | 3466<br>235 | 4216<br>230 |
| <b>20</b> | 64<br>329  | 1052<br>325 | 2067<br>321 | 2580<br>319 | 3100<br>316 | 3814<br>311 |

TORQUE (LB IN) 1894  
SPEED (RPM) 198

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



**TE 0260** **15.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1650        | 2250        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 908<br>7   | 1961<br>6   | 3048<br>6   | 3380<br>6   | 4631<br>5   |
| <b>1</b>  | 938<br>14  | 2006<br>13  | 3099<br>13  | 3433<br>12  | 4692<br>11  |
| <b>2</b>  | 971<br>28  | 2059<br>27  | 3165<br>26  | 3501<br>26  | 4779<br>23  |
| <b>3</b>  | 968<br>43  | 2065<br>42  | 3177<br>40  | 3514<br>39  | 4797<br>38  |
| <b>4</b>  | 970<br>57  | 2081<br>56  | 3203<br>54  | 3541<br>53  | 4837<br>50  |
| <b>5</b>  | 957<br>71  | 2084<br>70  | 3219<br>68  | 3561<br>67  | 4870<br>64  |
| <b>7</b>  | 907<br>100 | 2049<br>98  | 3198<br>96  | 3542<br>95  | 4856<br>91  |
| <b>9</b>  | 837<br>129 | 1985<br>127 | 3143<br>124 | 3489<br>123 | 4799<br>117 |
| <b>12</b> | 692<br>172 | 1844<br>169 | 3016<br>166 | 3367<br>164 | 4671<br>157 |
| <b>15</b> | 489<br>215 | 1647<br>212 | 2830<br>208 | 3188<br>206 | 4494<br>200 |
| <b>20</b> | 129<br>287 | 1255<br>283 | 2418<br>279 | 2773<br>277 | 4031<br>270 |

TORQUE (LB IN) 4856  
SPEED (RPM) 91

**TE 0295** **17.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1550        | 2100        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1014<br>6  | 2216<br>5   | 3453<br>4   | 3576<br>4   | 4900<br>3   |
| <b>1</b>  | 1051<br>12 | 2270<br>11  | 3509<br>10  | 3633<br>10  | 4963<br>8   |
| <b>2</b>  | 1088<br>25 | 2334<br>24  | 3600<br>22  | 3727<br>22  | 5092<br>21  |
| <b>3</b>  | 1085<br>38 | 2338<br>36  | 3611<br>35  | 3739<br>34  | 5110<br>33  |
| <b>4</b>  | 1085<br>50 | 2353<br>49  | 3639<br>47  | 3769<br>47  | 5152<br>44  |
| <b>5</b>  | 1072<br>63 | 2352<br>62  | 3654<br>60  | 3784<br>59  | 5180<br>57  |
| <b>7</b>  | 1019<br>89 | 2311<br>87  | 3624<br>85  | 3755<br>84  | 5159<br>80  |
| <b>9</b>  | 939<br>115 | 2237<br>113 | 3561<br>110 | 3693<br>110 | 5098<br>104 |
| <b>12</b> | 776<br>153 | 2074<br>151 | 3403<br>148 | 3537<br>147 | 4931<br>142 |
| <b>15</b> | 545<br>192 | 1853<br>189 | 3184<br>186 | 3319<br>185 | 4689<br>180 |
| <b>20</b> | 126<br>256 | 1408<br>253 | 2697<br>249 | 2826<br>249 | 4099<br>243 |

TORQUE (LB IN) 5159  
SPEED (RPM) 80

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TE 0330 **20.0** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1950        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1184<br>5   | 2507<br>5   | 3722<br>4   | 5040<br>3   |
| <b>1</b>  | 1218<br>11  | 2558<br>10  | 3772<br>9   | 5093<br>8   |
| <b>2</b>  | 1258<br>22  | 2632<br>21  | 3867<br>20  | 5224<br>19  |
| <b>3</b>  | 1251<br>34  | 2633<br>32  | 3879<br>31  | 5242<br>30  |
| <b>4</b>  | 1249<br>45  | 2649<br>44  | 3909<br>42  | 5287<br>40  |
| <b>5</b>  | 1229<br>57  | 2648<br>55  | 3926<br>53  | 5312<br>50  |
| <b>7</b>  | 1162<br>80  | 2600<br>78  | 3898<br>75  | 5296<br>71  |
| <b>9</b>  | 1064<br>103 | 2518<br>100 | 3829<br>98  | 5219<br>93  |
| <b>12</b> | 875<br>137  | 2333<br>135 | 3657<br>131 | 5026<br>127 |
| <b>15</b> | 621<br>171  | 2081<br>169 | 3420<br>165 | 4770<br>160 |
| <b>20</b> | 163<br>229  | 1576<br>226 | 2875<br>222 | 4129<br>214 |

TORQUE (LB IN) 5219  
SPEED (RPM) 93

TE 0365 **22.6** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1325        | 1825        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1393<br>5   | 2942<br>4   | 3974<br>4   | 5539<br>3   |
| <b>1</b>  | 1444<br>10  | 3005<br>9   | 4036<br>8   | 5599<br>7   |
| <b>2</b>  | 1494<br>20  | 3090<br>19  | 4131<br>18  | 5714<br>17  |
| <b>3</b>  | 1485<br>30  | 3082<br>29  | 4125<br>28  | 5709<br>27  |
| <b>4</b>  | 1477<br>40  | 3089<br>39  | 4139<br>37  | 5728<br>36  |
| <b>5</b>  | 1452<br>50  | 3075<br>49  | 4130<br>47  | 5719<br>45  |
| <b>7</b>  | 1371<br>70  | 3009<br>69  | 4071<br>67  | 5654<br>63  |
| <b>9</b>  | 1260<br>90  | 2899<br>89  | 3669<br>87  | 5543<br>84  |
| <b>12</b> | 1002<br>121 | 2658<br>119 | 3737<br>117 | 5283<br>113 |
| <b>15</b> | 700<br>151  | 2355<br>149 | 3432<br>146 | 4937<br>142 |
| <b>20</b> | 152<br>201  | 1776<br>199 | 2838<br>196 | 4228<br>191 |

TORQUE (LB IN) 5543  
SPEED (RPM) 84

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

TE 0390 **24.0** cu in / rev PRESSURE (PSID)

|           | 500         | 1000        | 1250        | 1750        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1326<br>4   | 2889<br>3   | 3682<br>2   | 5244<br>2   |
| <b>1</b>  | 1380<br>9   | 2934<br>7   | 3724<br>7   | 5283<br>6   |
| <b>2</b>  | 1443<br>18  | 3034<br>17  | 3840<br>15  | 5427<br>13  |
| <b>3</b>  | 1442<br>28  | 3049<br>26  | 3861<br>25  | 5458<br>22  |
| <b>4</b>  | 1454<br>37  | 3084<br>36  | 3905<br>34  | 5518<br>32  |
| <b>5</b>  | 1447<br>47  | 3104<br>45  | 3935<br>44  | 5562<br>40  |
| <b>7</b>  | 1393<br>66  | 3080<br>64  | 3923<br>62  | 5559<br>60  |
| <b>9</b>  | 1297<br>85  | 3013<br>83  | 3868<br>81  | 5507<br>79  |
| <b>12</b> | 1088<br>114 | 2818<br>112 | 3686<br>110 | 5308<br>106 |
| <b>15</b> | 797<br>143  | 2539<br>140 | 3414<br>138 | 5002<br>135 |
| <b>20</b> | 264<br>191  | 2006<br>188 | 2880<br>186 | 4374<br>182 |

TORQUE (LB IN) 5559  
SPEED (RPM) 60

Flow (GPM)

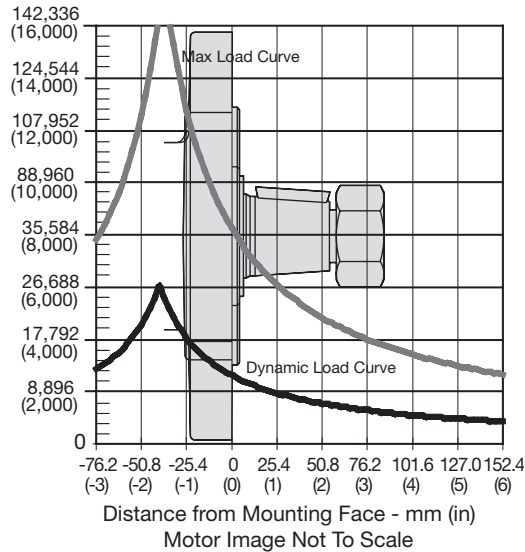
Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Flange Mount

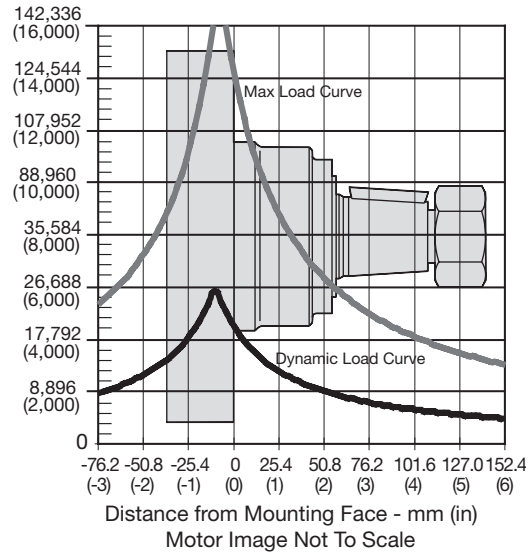
Side Load - N (lbs)



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and S in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3.0 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

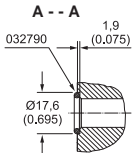
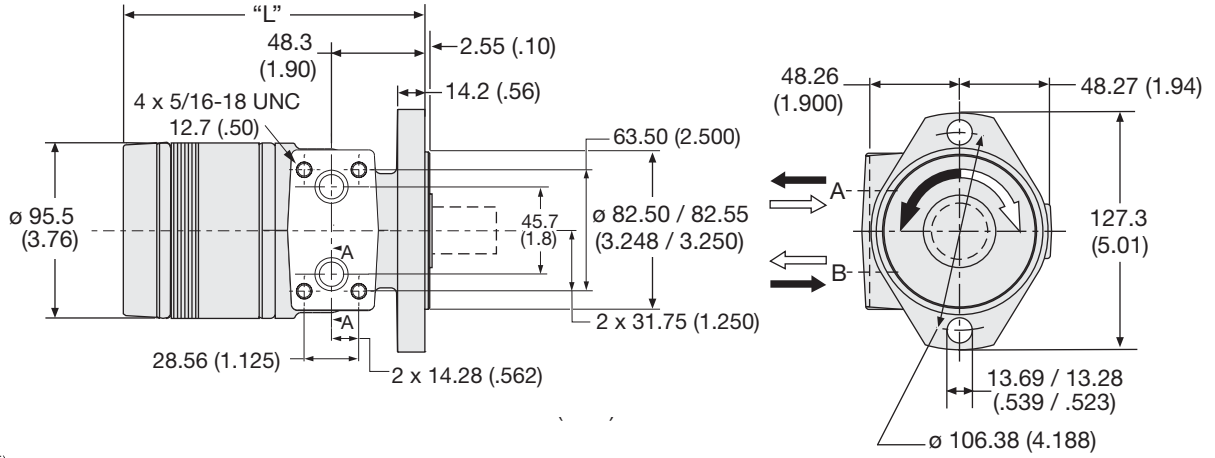
L = Life In Hours

$F_a$  = Allowable side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

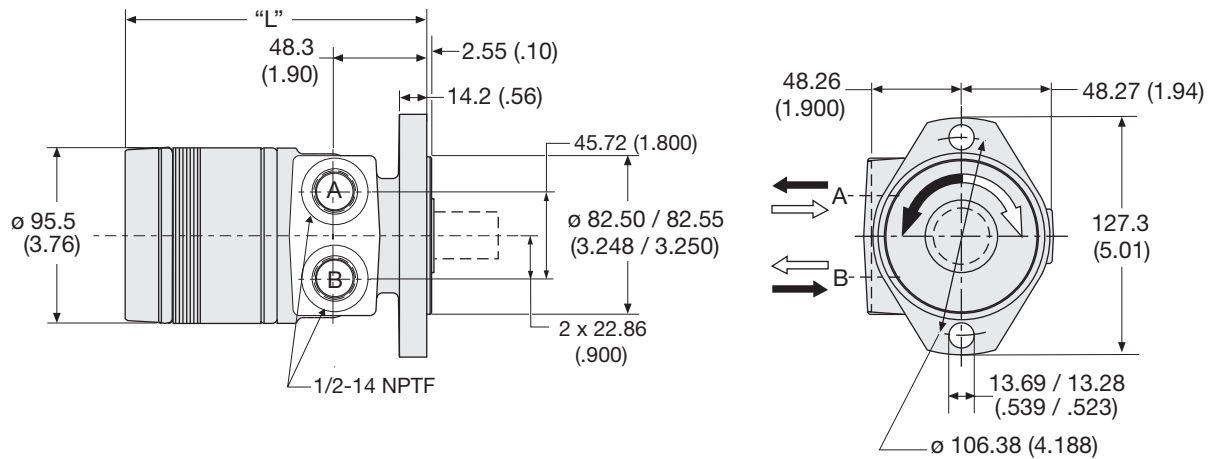
**Code: AM**  
**SAE A 2-Bolt, Manifold**



Motor with manifold mount is supplied with 2 O-rings.

| Code AM disp. | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight kg     | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| (lb)          | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)      | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

**Code: AP**  
**SAE A 2-Bolt, 1/2-14 NPTF Pipe**



| Code AP disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| (lb)              | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

English equivalents for metric specifications are shown in ( ).

004 TE.indd, b

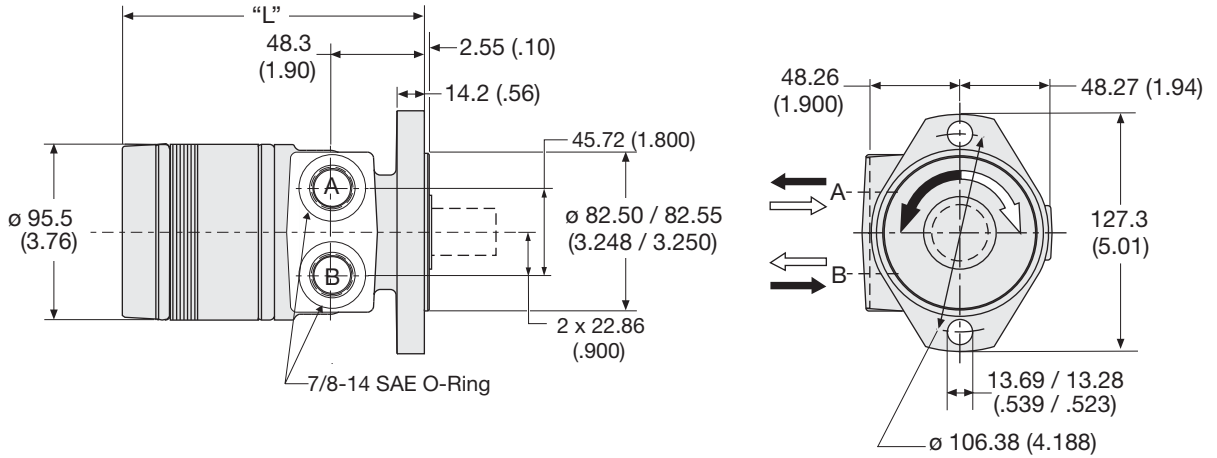


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: AS**

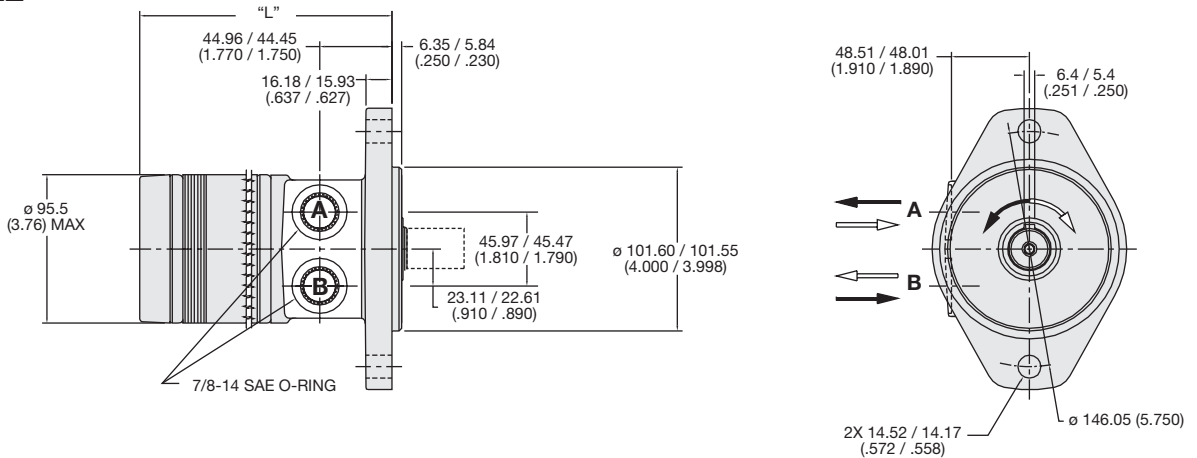
**SAE A 2-Bolt, 7/8-14 SAE O-Ring**



| Code AS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso (lb)   | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

**Code: BS**

**SAE B 2-Bolt  
7/8-14 SAE**



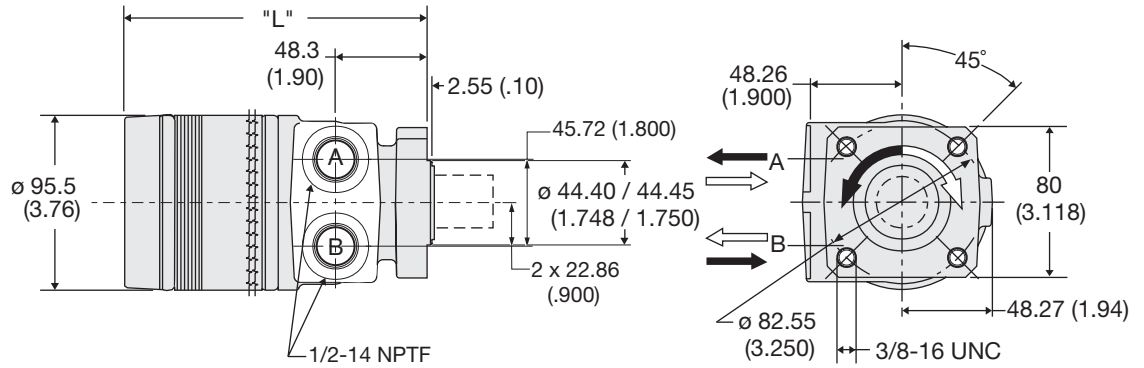
| Code BS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 7.27   | 7.34   | 7.48   | 7.62   | 7.71   | 7.84   | 8.11   | 8.39   | 8.70   | 8.93   | 9.16   | 9.43   | 9.70   | 9.97   | 10.1   |
| (lb)              | (15.9) | (16.3) | (16.5) | (16.8) | (17.0) | (17.3) | (17.9) | (18.5) | (19.2) | (19.7) | (20.2) | (20.8) | (21.4) | (22.0) | (22.4) |
| Length "L" mm     | 131.5  | 132.5  | 134.1  | 137.1  | 140.4  | 143.5  | 149.8  | 156.2  | 162.5  | 168.9  | 175.2  | 181.6  | 187.9  | 196.5  | 200.9  |
| "L" (in)          | (5.18) | (5.22) | (5.28) | (5.40) | (5.53) | (5.65) | (5.90) | (6.15) | (6.40) | (6.65) | (6.90) | (7.15) | (7.40) | (7.74) | (7.91) |

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).

Code: FP

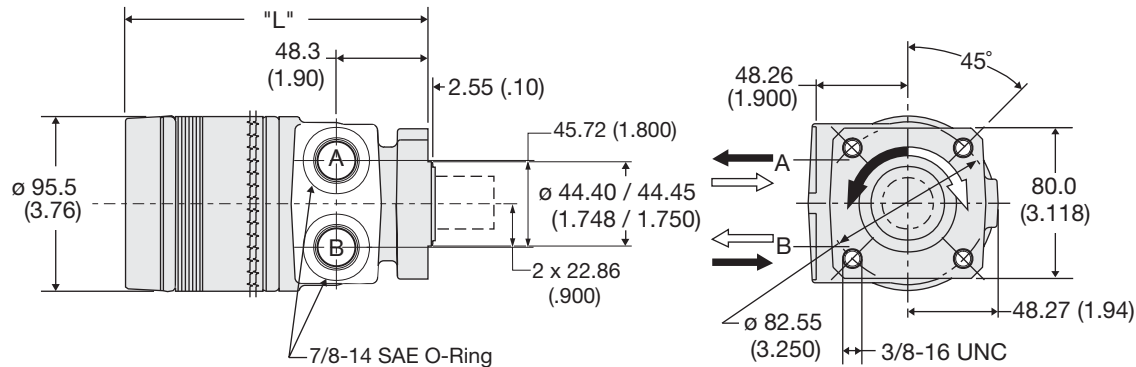
Four Bolt, 1/2-14 NPTF Pipe



| Code AM disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.87   | 6.03   | 6.12   | 6.26   | 6.35   | 6.49   | 6.76   | 7.03   | 7.35   | 7.58   | 7.80   | 8.07   | 8.35   | 8.66   | 8.80   |
| Poids/Peso (lb)   | (12.9) | (13.3) | (13.5) | (13.8) | (14.0) | (14.3) | (14.9) | (15.5) | (16.2) | (16.7) | (17.2) | (17.8) | (18.4) | (19.1) | (19.4) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 72.5   | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.6)  | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

Code: FS

Four Bolt, 7/8-14 SAE O-Ring



| Code FS disp.     | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht kg | 5.58   | 5.62   | 5.67   | 5.80   | 5.94   | 6.08   | 6.31   | 6.62   | 7.03   | 7.17   | 7.39   | 7.62   | 7.94   | 8.26   | 8.39   |
| Poids/Peso (lb)   | (12.3) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Length "L" mm     | 132.6  | 136.1  | 137.7  | 140.7  | 144.0  | 147.1  | 153.4  | 159.8  | 166.1  | 172.5  | 178.8  | 185.1  | 191.5  | 200.2  | 202.2  |
| "L" (in)          | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

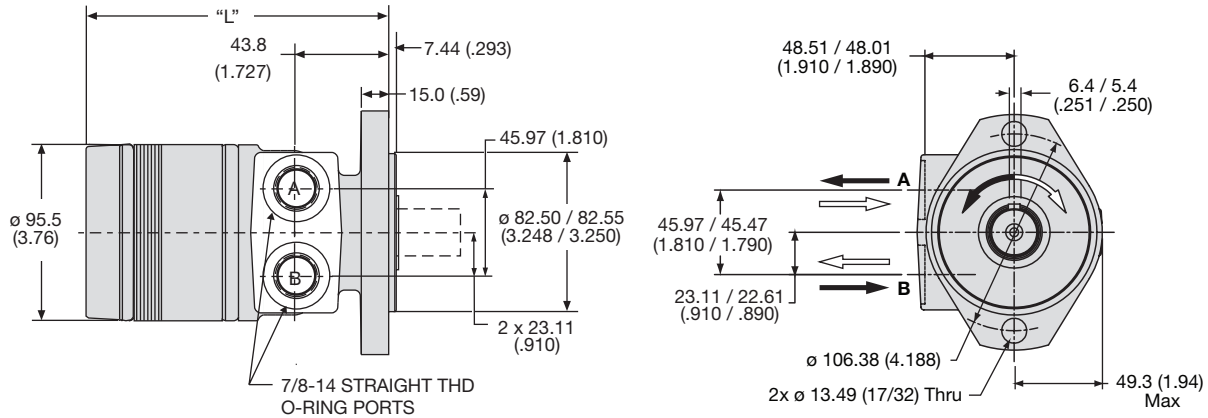
English equivalents for metric specifications are shown in ( ).

004 TE.indd, b



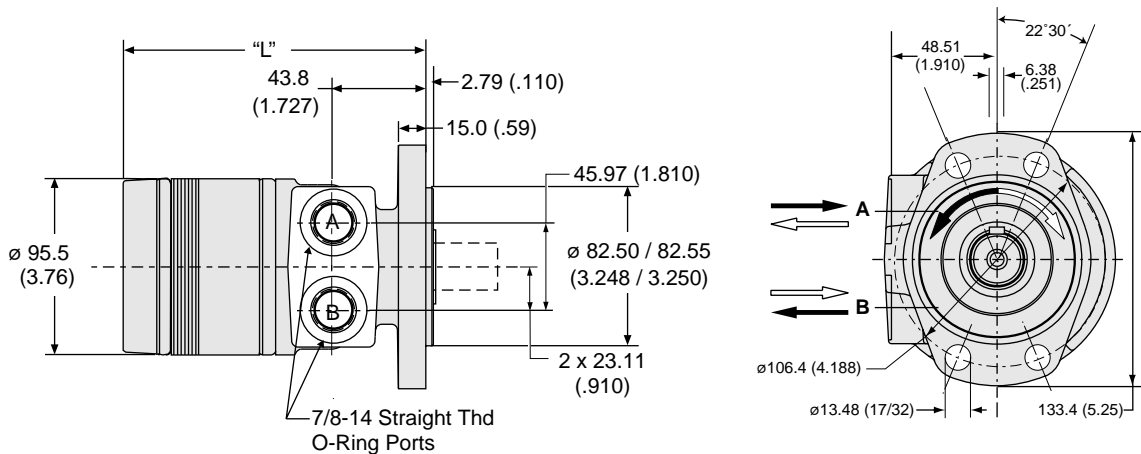
**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: CS**  
**SAE "A" 2-Bolt Long Pilot, 7/8-14 SAE O-Ring**



| Code CS       | disp.    | 0036         | 0045         | 0050         | 0065         | 0080         | 0100         | 0130         | 0165         | 0195         | 0230         | 0260         | 0295         | 0330         | 0365         | 0390         |
|---------------|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight</b> | (lb)     | <b>5.87</b>  | <b>6.03</b>  | <b>6.12</b>  | <b>6.26</b>  | <b>6.35</b>  | <b>6.49</b>  | <b>6.76</b>  | <b>7.03</b>  | <b>7.35</b>  | <b>7.58</b>  | <b>7.80</b>  | <b>8.07</b>  | <b>8.35</b>  | <b>8.66</b>  | <b>8.80</b>  |
|               |          | (12.9)       | (13.3)       | (13.5)       | (13.8)       | (14.0)       | (14.3)       | (14.9)       | (15.5)       | (16.2)       | (16.7)       | (17.2)       | (17.8)       | (18.4)       | (19.1)       | (19.4)       |
| <b>Length</b> | "L" mm   | <b>130.4</b> | <b>131.5</b> | <b>132.9</b> | <b>136.1</b> | <b>139.3</b> | <b>142.5</b> | <b>148.8</b> | <b>155.2</b> | <b>161.5</b> | <b>167.9</b> | <b>174.2</b> | <b>180.6</b> | <b>186.9</b> | <b>195.6</b> | <b>199.7</b> |
|               | "L" (in) | (5.13)       | (5.18)       | (5.23)       | (5.36)       | (5.48)       | (5.61)       | (5.86)       | (6.11)       | (6.36)       | (6.61)       | (6.86)       | (7.11)       | (7.36)       | (7.70)       | (7.86)       |

**Code: MS**  
**Magneto, 7/8-14 SAE O-Ring**



| Code MS               | disp.    | 0036         | 0045         | 0050         | 0065         | 0080         | 0100         | 0130         | 0165         | 0195         | 0230         | 0260         | 0295         | 0330         | 0365         | 0390         |
|-----------------------|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | kg       | <b>6.16</b>  | <b>6.30</b>  | <b>6.40</b>  | <b>6.53</b>  | <b>6.62</b>  | <b>6.76</b>  | <b>7.03</b>  | <b>7.30</b>  | <b>7.62</b>  | <b>7.85</b>  | <b>8.12</b>  | <b>8.35</b>  | <b>8.62</b>  | <b>8.94</b>  | <b>9.07</b>  |
| <b>Poids/Peso</b>     | (lb)     | (13.6)       | (13.9)       | (14.1)       | (14.4)       | (14.6)       | (14.9)       | (15.5)       | (16.1)       | (16.8)       | (17.3)       | (17.9)       | (18.4)       | (19.0)       | (19.7)       | (20.0)       |
| <b>Length</b>         | "L" mm   | <b>135.1</b> | <b>136.1</b> | <b>137.6</b> | <b>140.8</b> | <b>144.0</b> | <b>147.1</b> | <b>153.5</b> | <b>159.8</b> | <b>166.2</b> | <b>172.5</b> | <b>178.9</b> | <b>185.2</b> | <b>191.6</b> | <b>200.2</b> | <b>204.3</b> |
|                       | "L" (in) | (5.32)       | (5.36)       | (5.42)       | (5.54)       | (5.67)       | (5.79)       | (6.04)       | (6.29)       | (6.54)       | (6.79)       | (7.04)       | (7.29)       | (7.54)       | (7.88)       | (8.04)       |

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

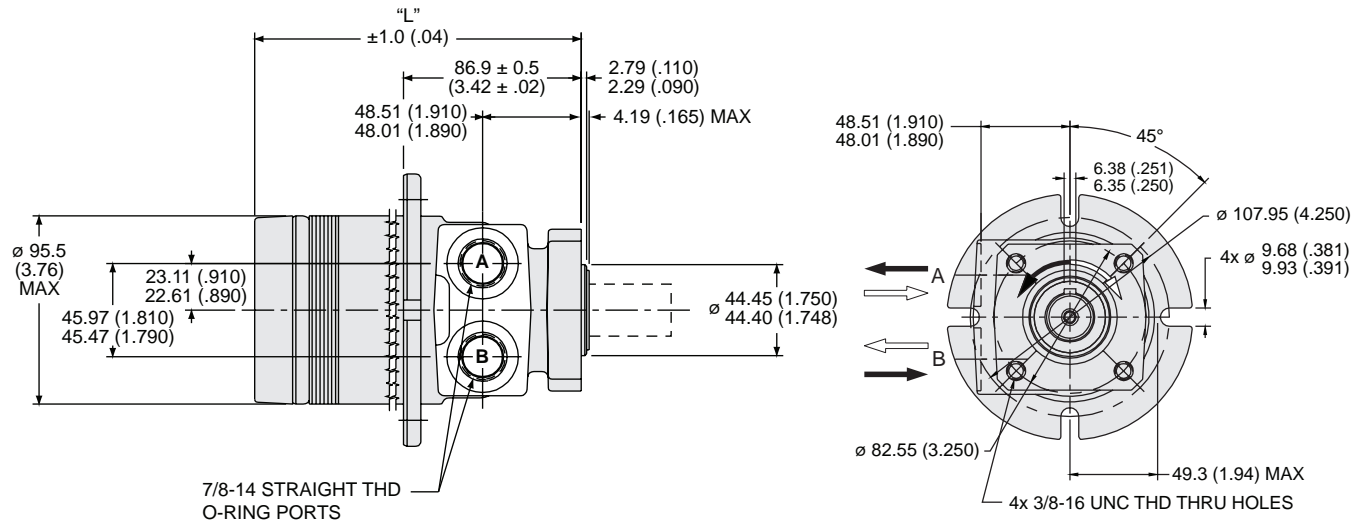
English equivalents for metric specifications are shown in ( ).



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

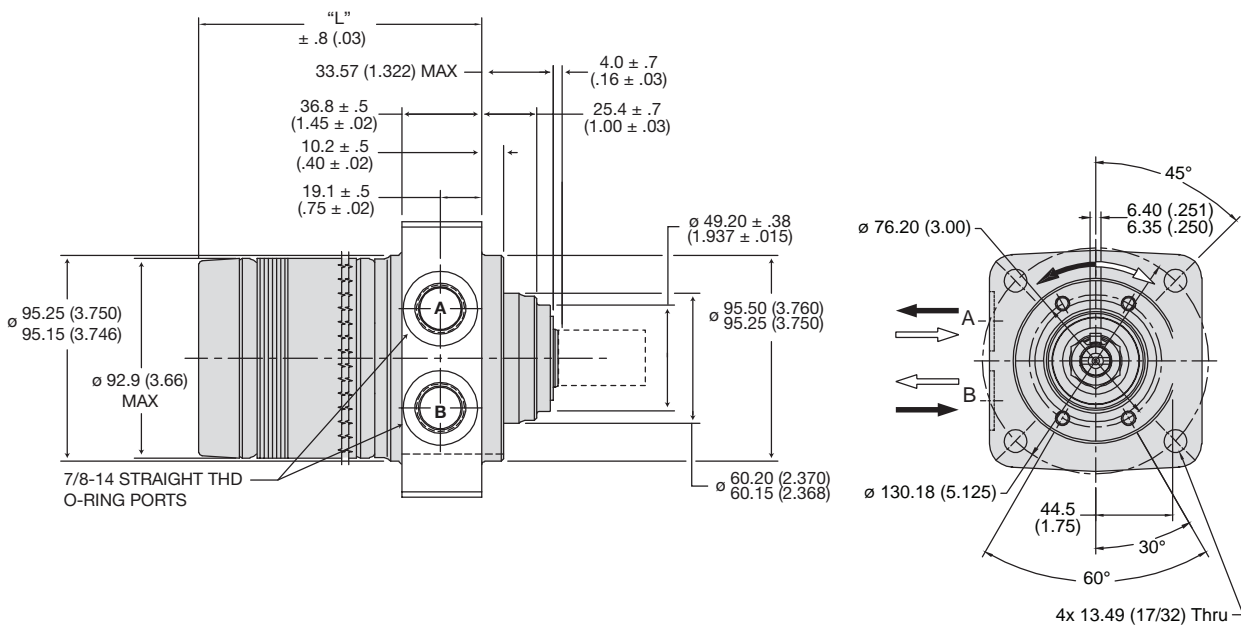


**Code: NS**  
**Midmount, 7/8-14 SAE O-Ring**



| Code NS        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 5.58   | 5.62   | 5.67   | 5.80   | 5.94   | 6.08   | 6.31   | 6.62   | 7.03   | 7.17   | 7.39   | 7.62   | 7.94   | 8.26   | 8.39   |
| Poids/Peso     | (lb)     | (12.3) | (12.4) | (12.5) | (12.8) | (13.1) | (13.4) | (13.9) | (14.6) | (15.5) | (15.8) | (16.3) | (16.8) | (17.5) | (18.2) | (18.5) |
| Length         | "L" mm   | 132.6  | 136.1  | 137.6  | 140.8  | 144.0  | 147.1  | 153.5  | 159.8  | 166.2  | 172.5  | 178.9  | 185.2  | 191.6  | 200.2  | 204.3  |
|                | "L" (in) | (5.22) | (5.36) | (5.42) | (5.54) | (5.67) | (5.79) | (6.04) | (6.29) | (6.54) | (6.79) | (7.04) | (7.29) | (7.54) | (7.88) | (8.04) |

**Code: LS**  
**Wheel Mount, 7/8-14 SAE O-Ring**



| Code LS        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 6.67   | 6.80   | 6.90   | 7.00   | 7.10   | 7.20   | 7.60   | 7.80   | 8.10   | 8.30   | 8.60   | 8.80   | 9.10   | 9.40   | 9.60   |
| Poids/Peso     | (lb)     | (14.7) | (15.0) | (15.2) | (15.4) | (15.6) | (15.8) | (16.7) | (17.2) | (17.9) | (18.3) | (19.0) | (19.4) | (20.0) | (20.7) | (21.2) |
| Length         | "L" mm   | 105.8  | 106.9  | 108.5  | 111.5  | 114.7  | 117.9  | 124.3  | 130.6  | 137.0  | 143.3  | 149.7  | 156.0  | 162.4  | 171.0  | 175.1  |
|                | "L" (in) | (4.17) | (4.21) | (4.27) | (4.39) | (4.52) | (4.64) | (4.89) | (5.14) | (5.39) | (5.64) | (5.89) | (6.14) | (6.39) | (6.73) | (6.89) |

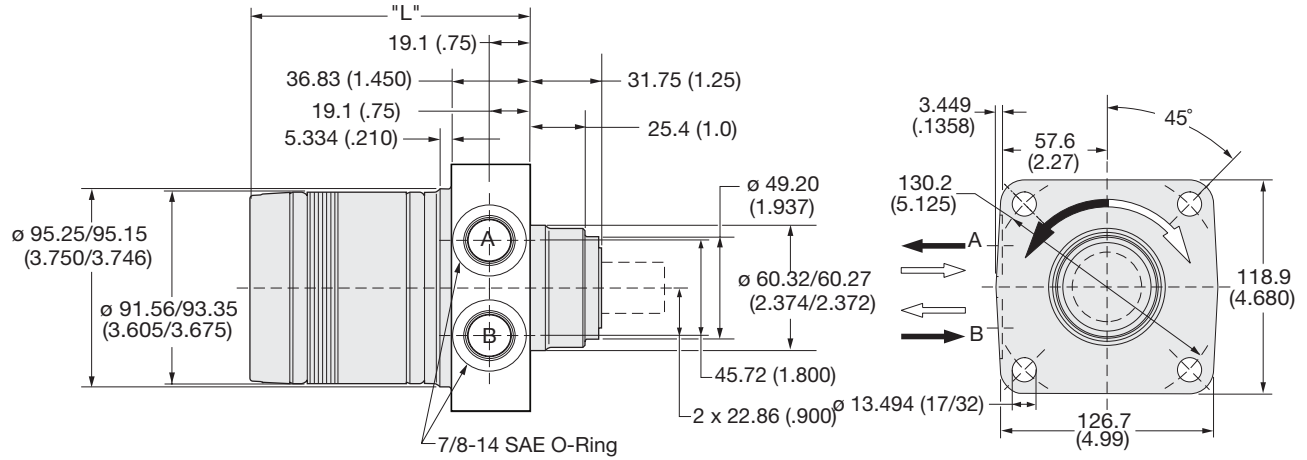
English equivalents for metric specifications are shown in ( ).

004 TE.indd, b



**WARNING**  
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**Code: US**  
**Wheel Mount, 7/8-14 SAE O-Ring**

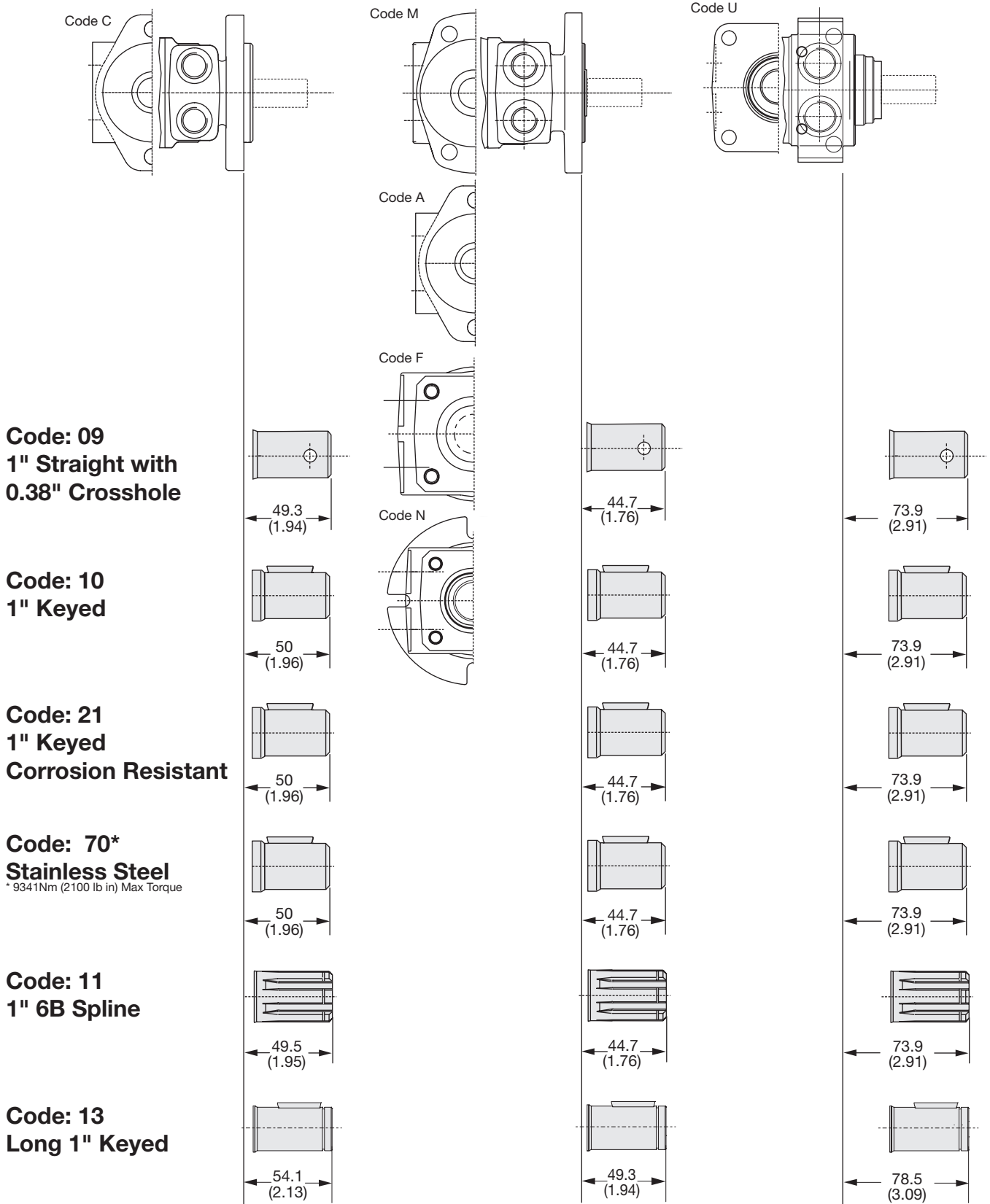


| Code US               | disp.         | 0036         | 0045         | 0050         | 0065         | 0080         | 0100         | 0130         | 0165         | 0195         | 0230         | 0260         | 0295         | 0330         | 0365         | 0390         |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>     | <b>6.67</b>  | <b>6.80</b>  | <b>6.90</b>  | <b>7.00</b>  | <b>7.10</b>  | <b>7.20</b>  | <b>7.60</b>  | <b>7.80</b>  | <b>8.10</b>  | <b>8.30</b>  | <b>8.60</b>  | <b>8.80</b>  | <b>9.10</b>  | <b>9.40</b>  | <b>9.60</b>  |
| Poids/Peso            | (lb)          | (14.7)       | (15.0)       | (15.2)       | (15.4)       | (15.6)       | (15.8)       | (16.7)       | (17.2)       | (17.9)       | (18.3)       | (19.0)       | (19.4)       | (20.0)       | (20.7)       | (21.2)       |
| <b>Length</b>         | <b>"L" mm</b> | <b>105.8</b> | <b>106.9</b> | <b>108.5</b> | <b>111.5</b> | <b>114.7</b> | <b>117.9</b> | <b>124.3</b> | <b>130.6</b> | <b>137.0</b> | <b>143.3</b> | <b>149.7</b> | <b>156.0</b> | <b>162.4</b> | <b>171.0</b> | <b>175.1</b> |
|                       | "L" (in)      | (4.17)       | (4.21)       | (4.27)       | (4.39)       | (4.52)       | (4.64)       | (4.89)       | (5.14)       | (5.39)       | (5.64)       | (5.89)       | (6.14)       | (6.39)       | (6.73)       | (6.89)       |

English equivalents for metric specifications are shown in ( ).

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).



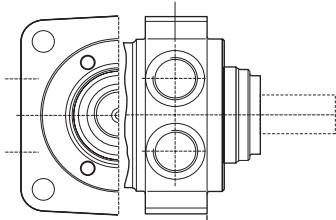
English equivalents for metric specifications are shown in ( ).

004 TE.indd, b

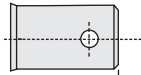


**WARNING**  
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Code L

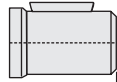


**Code: 09**  
1" Straight with  
0.38" Crosshole



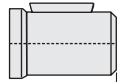
74.8  
(2.94)

**Code: 10**  
1" Keyed



75.5  
(2.97)

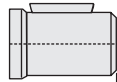
**Code: 21**  
1" Keyed  
Corrosion Resistant



75.5  
(2.97)

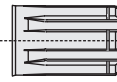
**Code: 70\***  
1" Keyed, 1/4" Tap,  
Stainless Steel

\* 9341Nm (2100 lb in) Max Torque



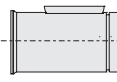
75.5  
(2.97)

**Code: 11**  
1" 6B Spline



75.0  
(2.95)

**Code: 13**  
Long 1" Keyed



79.6  
(3.13)

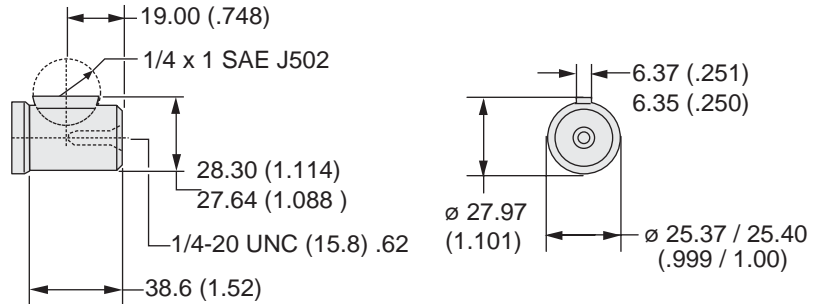
Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).

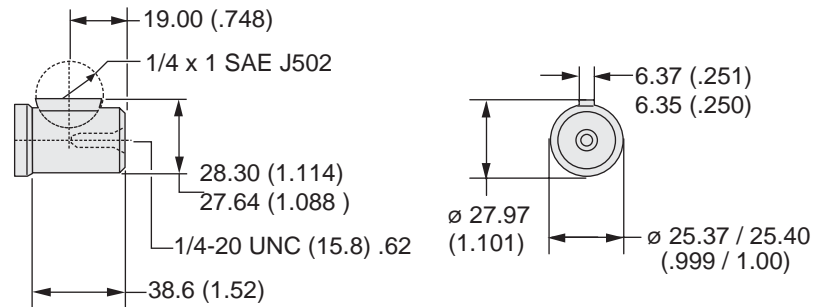
**Code: 09**  
**1" Straight with**  
**0.38" Crosshole**



**Code: 10**  
**1" Keyed**

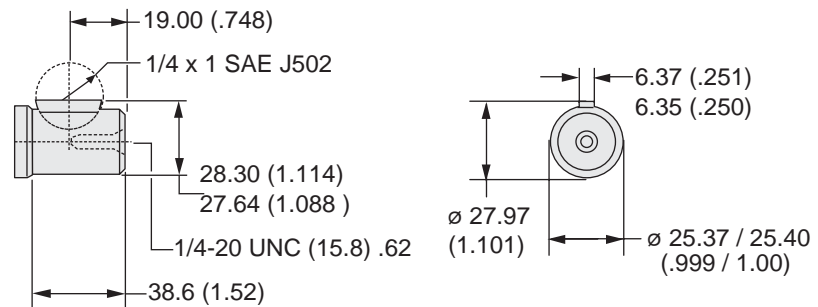


**Code: 21**  
**1" Keyed**  
**Corrosion Resistant**



**Code: 70\***  
**1" Keyed, 1/4" Tap,**  
**Stainless Steel**

\* 9341Nm (2100 lb in) Max Torque



English equivalents for metric specifications are shown in ( ).

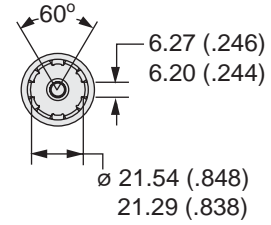
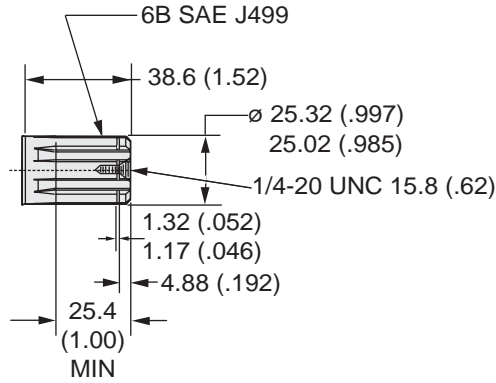
004 TE.indd, b



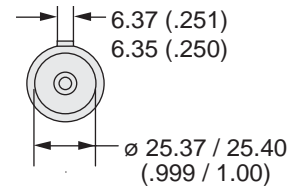
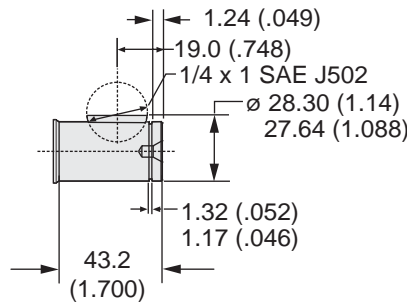
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: 11**  
**1" 6B Spline**

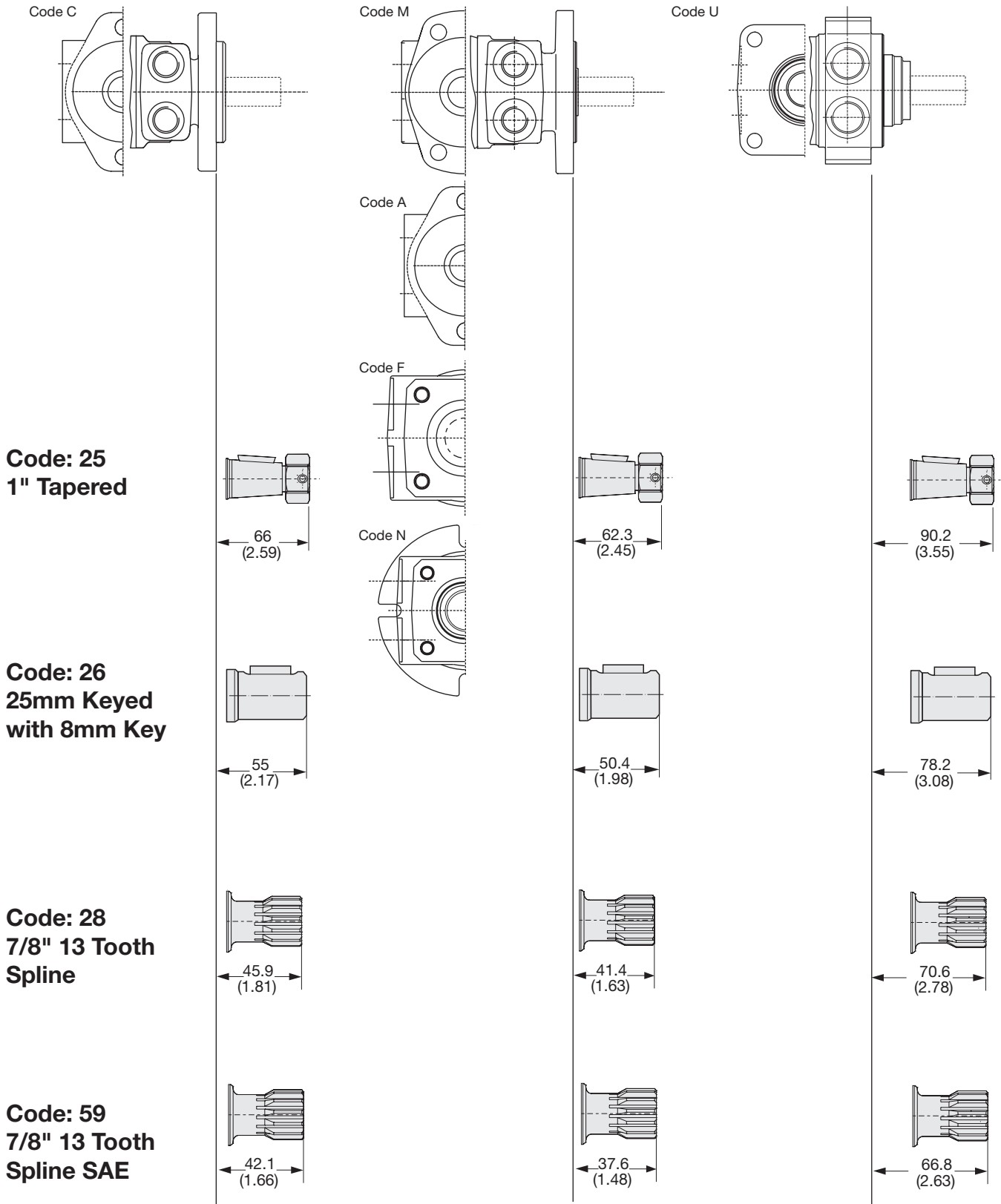


**Code: 13**  
**Long 1" Keyed**



Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).



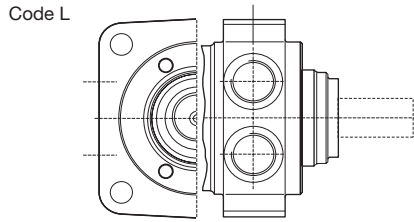
English equivalents for metric specifications are shown in ( ).

004 TE.indd, b

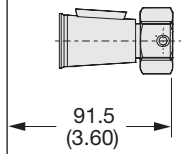


**WARNING**

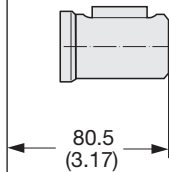
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



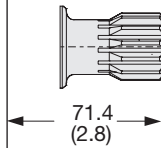
**Code: 25**  
**1" Tapered**



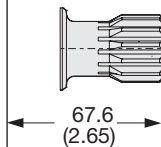
**Code: 26**  
**25mm Keyed**  
**with 8mm Key**



**Code: 28**  
**7/8" 13 Tooth**  
**Spline**



**Code: 59**  
**7/8" 13 Tooth**  
**Spline SAE**

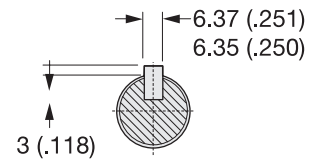
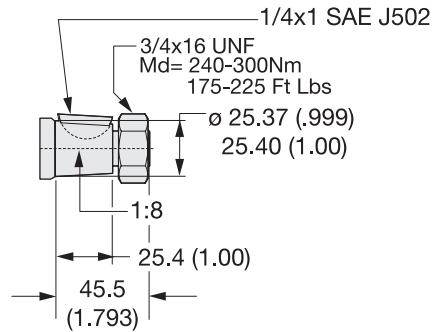


Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

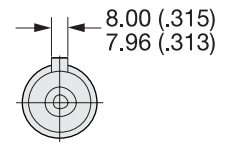
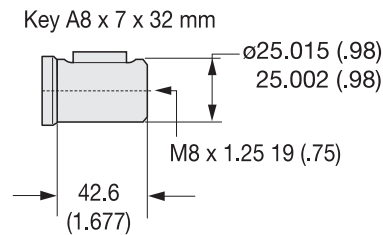
English equivalents for metric specifications are shown in ( ).



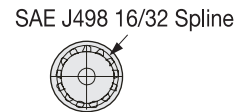
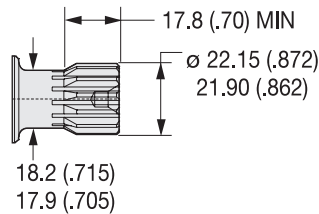
**Code: 25**  
**1" Tapered**



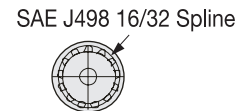
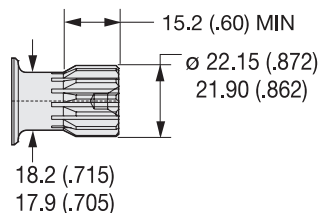
**Code: 26**  
**25mm Keyed**  
**with 8mm Key**



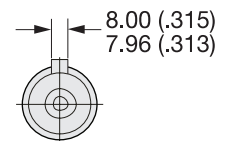
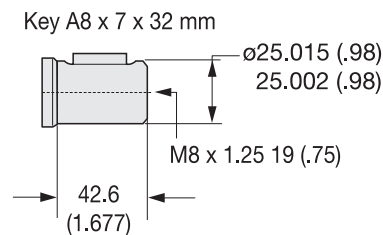
**Code: 28**  
**7/8" 13 Tooth**  
**Spline**



**Code: 59**  
**7/8" 13 Tooth**  
**Spline SAE**



**Code: 66**  
**25mm Keyed with**  
**8mm Key, Corrosion**  
**Resistant**



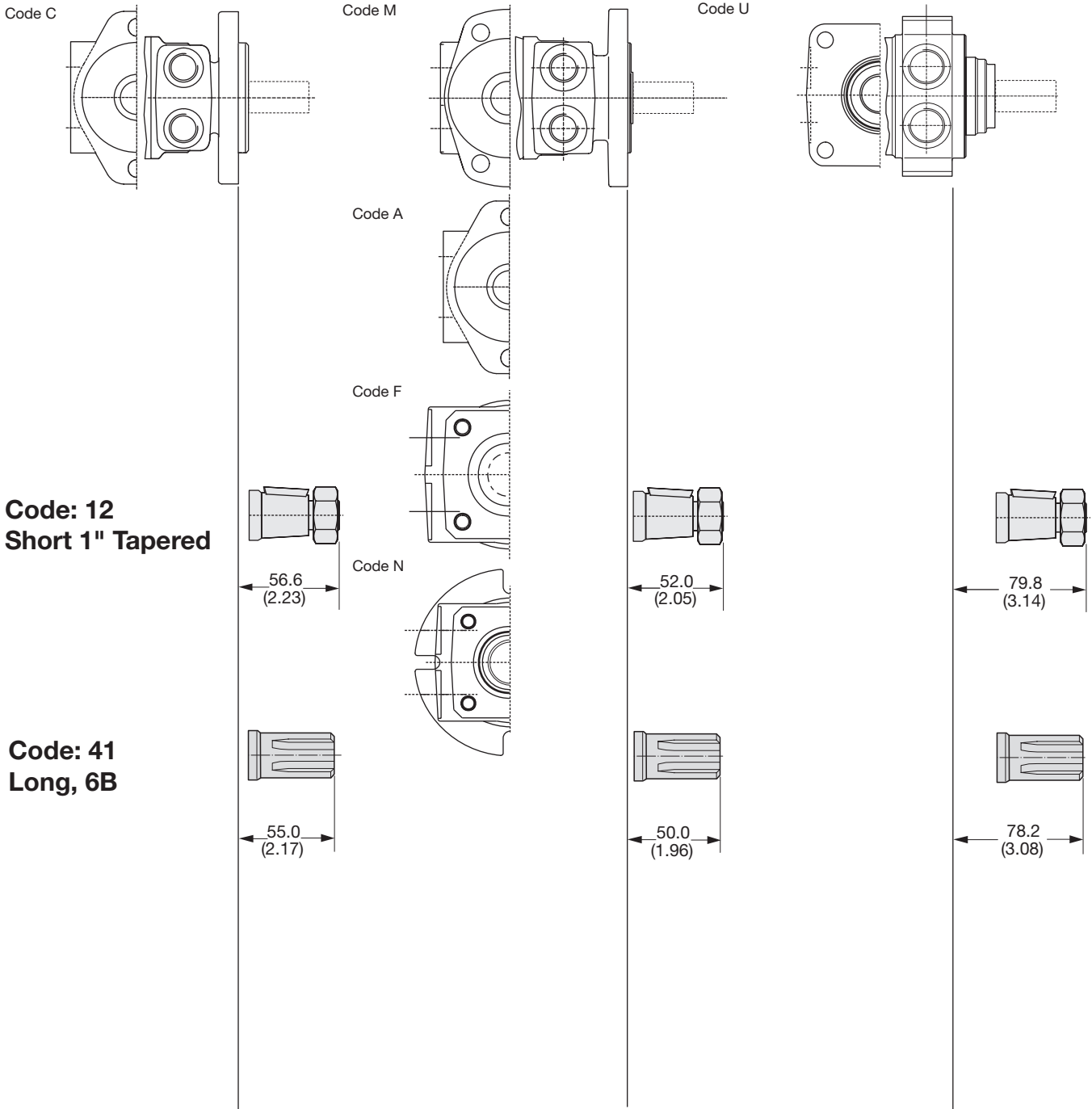
English equivalents for metric specifications are shown in ( ).

004 TE.indd, b



**WARNING**

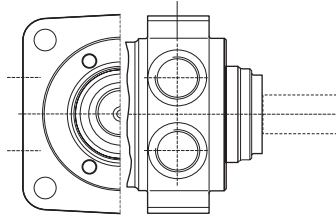
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



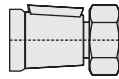
Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).

Code L

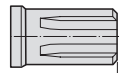


**Code: 12**  
**Short 1" Tapered**



82.1  
(3.23)

**Code: 41**  
**Long, 6B**



80.5  
(3.17)

English equivalents for metric specifications are shown in ( ).

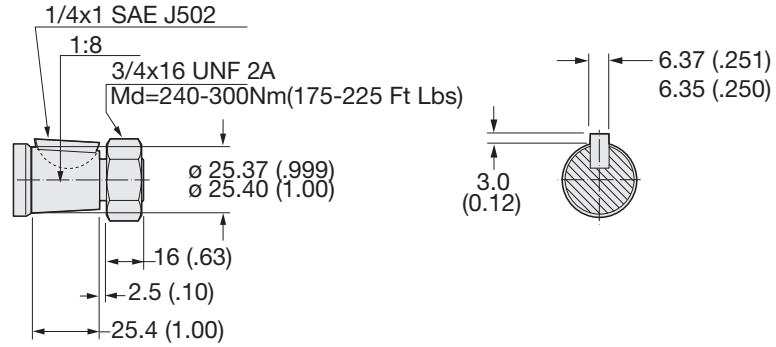
004 TE.indd, b



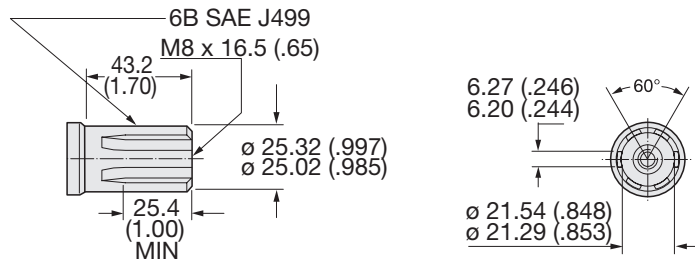
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: 12**  
**Short 1" Tapered**



**Code: 41**  
**Long, 6B**



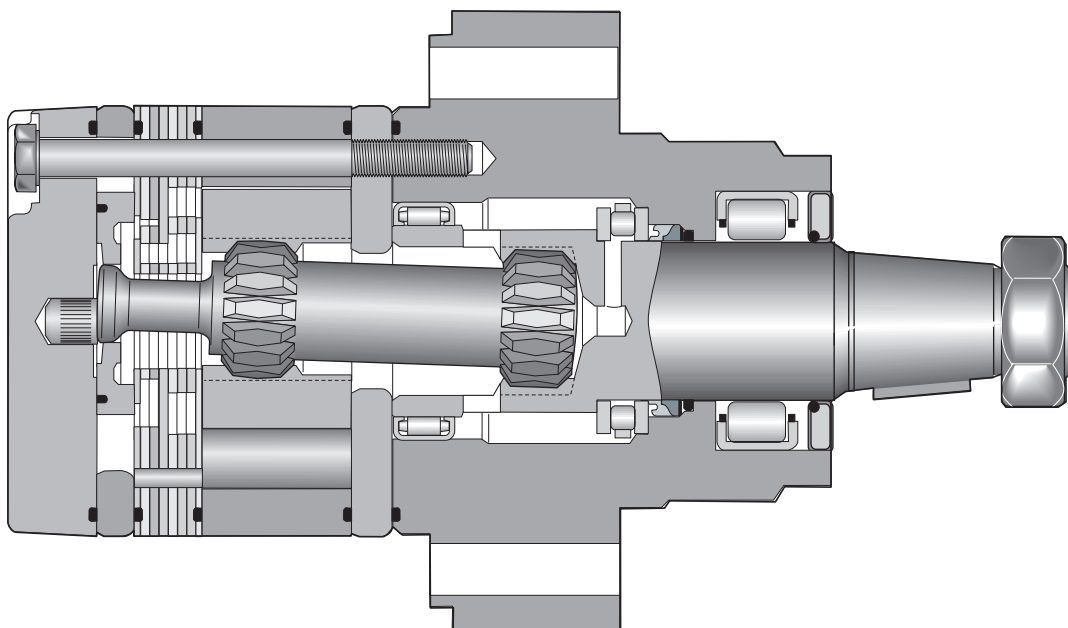
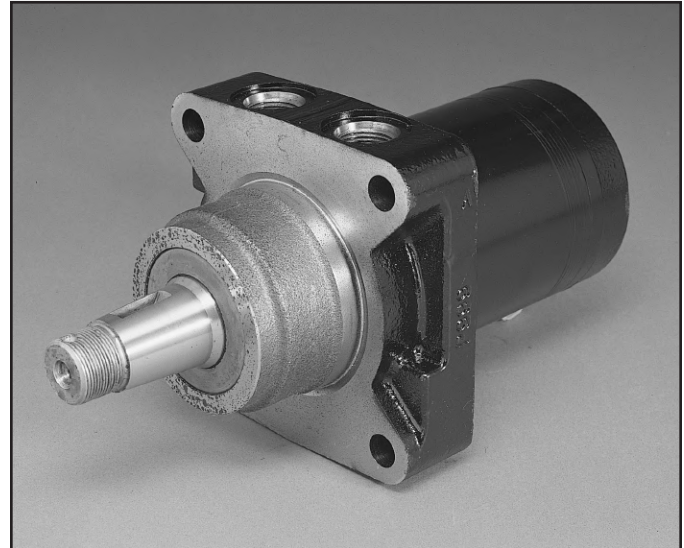
Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

English equivalents for metric specifications are shown in ( ).

|                                 |  |  |
|---------------------------------|--|--|
| <b>14 Displacements</b>         | (2.5 – 24.0 in <sup>3</sup> /rev)<br>41 . . . 390 cm <sup>3</sup> /rev |  |
| <b>Maximum Pressure</b>         | <b>Cont</b><br>(2030 psid)<br>. . . <b>.140 bar</b>                    | <b>Int</b><br>(2750 psid)<br>. . . <b>.190 bar</b> |
| <b>Maximum Oil Flow</b>         | (20 gpm)<br>. . . <b>75 lpm</b>  |  |
| <b>Maximum Speed</b>            | (1024 rpm)<br><b>1024 rpm</b>  |  |
| <b>Maximum Torque</b>           | <b>Cont</b><br>(4139 lb in)<br><b>467 Nm</b>                           | <b>Int</b><br>(5728 lb in)<br><b>648 Nm</b>        |
| <b>Maximum Side Load at Key</b> | (3150 lb)<br>. . . <b>14000 N</b>                                      |  |

### The Ultimate in Performance from a Light Duty Wheel Motor

The TJ Series marries the TE Series drive train with a larger and heavier roller bearing and shaft. It provides all that could be expected of a light duty wheel motor and more. Unique 60:40 spline geometry provides drivetrain strength for severe applications. Roller vanes and sealed orbit commutation assure high volumetric efficiency and smooth slow speed operation. Cooling fluid flow across splines and seals mean long, trouble-free life.



**TJ**  
Series

**XXXX**  
Displacement

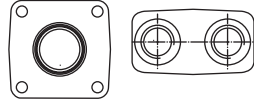
**US**  
Mounting/Ports


**08**  
Shaft

**0**  
Rotation



**XXXX**  
Options

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|--|----------------------|
| 0036 | 36 / 2.2                                     |                      |
| 0045 | 41 / 2.5                                     |                      |
| 0050 | 49 / 3.0                                     |                      |
| 0065 | 65 / 4.0                                     |                      |
| 0080 | 82 / 5.0                                     |                      |
| 0100 | 98 / 6.0                                     |                      |
| 0130 | 130 / 8.0                                    |                      |
| 0165 | 163 / 10.0                                   |                      |
| 0195 | 195 / 11.9                                   |                      |
| 0230 | 228 / 13.9                                   |                      |
| 0260 | 260 / 15.9                                   |                      |
| 0295 | 293 / 17.9                                   |                      |
| 0330 | 328 / 20.0                                   |                      |
| 0365 | 370 / 22.6                                   |                      |
| 0390 | 392 / 24.0                                   |                      |

| Code | Mounting/Ports   |
|------|--|
| US   | Wheel Mount, 7/8-14 SAE<br> |

| Code | Shaft  |
|------|--|
| 08   | 1 1/4" Tapered*<br> |

\*See installation instructions.

| Code | Rotation  |
|------|---|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

| Code                  | Options   |
|-----------------------|---|
| AAAA <sup>6</sup>     | "Standard", Black Paint   |
| AAAB                  | "Standard", No Paint  |
| AAAC <sup>6</sup>     | "Standard", Double Paint  |
| AABJ <sup>1,6</sup>   | Free Running Rotor Set, Black Paint   |
| AABT <sup>4,6</sup>   | No Nut, Black Paint   |
| AAFA                  | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section seals, No Paint  |
| AAFV <sup>6</sup>     | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint   |
| AAJH <sup>4,6</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Spl paint area (AO except front and rear pilot and mounting flanges and shaft) Black Paint |
| AAJL <sup>4</sup>     | No Nut, No Paint  |
| AAUP <sup>4,6</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, No Nut, Black Paint   |
| AAVE <sup>1,6</sup>   | Free Running Rotor Set, Fluorocarbon Seals, High Temp High Temp Section Seals, Commutator Seal, Black Paint   |
| ABCW <sup>4,6</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Bidirectional shuttle (.062 Orifice) (1:100*), Black Paint                          |
| ABCZ <sup>6</sup>     | Fluorocarbon Seals, Double paint, High Temp Commutator Seal, High Temp Section Seals  |
| BBGS <sup>4</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 921 PSI Int Bidirectional Relief, Black Paint                                       |
| BBGT <sup>4</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 1200 PSI Int Bidirectional Relief, Black Paint                                      |
| BBGU <sup>3,4</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, 2030 PSI Int Bidirectional Relief, Black Paint                                      |
| BBGW <sup>6</sup>     | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint   |
| BBHB <sup>4,5,6</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 2393 PSI Int Bidirectional Relief, Black Paint   |

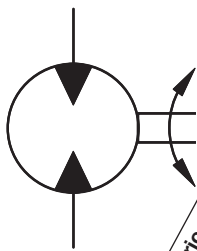
<sup>1</sup> Not applicable to 0365 & 0390 displacements

<sup>3</sup> Not applicable to 0230, 0295, 0330, 0365 or 0390 displacements

<sup>4</sup> No Nut with shaft code 8

<sup>5</sup> Not applicable to 0260, 0295, 0330, 0365 or 0390 displacements

<sup>6</sup> Paint area all over except front and rear pilot and mounting flanges and shaft



Geometric displacement  
Max. speed @ Max. intermittent flow  
Max. oil flow  
Max. Differential Pressure  
Max. supply pressure  
Max. torque  
Max. performance  
Min. starting torque

| Motor Series TJ | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | Int<br>rev/min | cont / int*<br>l/min<br>g/min | cont / int*<br>bar<br>psid | max<br>bar<br>psig | cont / int*<br>Nm<br>lb-in | max<br>KW<br>HP | cont / int*<br>Nm<br>lb-in |
|-----------------|--|----------------|-------------------------------|----------------------------|--------------------|----------------------------|-----------------|----------------------------|
| TJ 0036         | 36<br>2.2                                    | 1141           | 34 42<br>9 11                 | 140 190<br>2030 2750       | 200<br>2900        | 54.6 71.1<br>483 630       | 8.5<br>11.4     | 44 52<br>389 460           |
| TJ 0045         | 41<br>2.5                                    | 1024           | 34 42<br>9 11                 | 140 190<br>2030 2750       | 200<br>2900        | 71 99<br>624 876           | 10.4<br>13.9    | 44 64<br>411 565           |
| TJ 0050         | 49<br>3.0                                    | 1020           | 34 50<br>9 13                 | 140 190<br>2030 2750       | 200<br>2900        | 90 127<br>796 1120         | 12.8<br>17.2    | 72 98<br>637 871           |
| TJ 0065         | 65<br>4.0                                    | 877            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 125 176<br>1106 1558       | 14.7<br>19.8    | 100 137<br>885 1211        |
| TJ 0080         | 82<br>5.0                                    | 695            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 160 220<br>1416 1947       | 17.3<br>23.2    | 128 171<br>1133 1515       |
| TJ 0100         | 98<br>6.0                                    | 582            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 190 264<br>1682 2337       | 17.4<br>23.4    | 152 205<br>1345 1819       |
| TJ 0130         | 130<br>8.0                                   | 438            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 255 352<br>2257 3116       | 17.3<br>23.2    | 204 274<br>1806 2423       |
| TJ 0165         | 163<br>10.0                                  | 348            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 310 436<br>2744 3846       | 17.0<br>22.8    | 248 338<br>2195 2992       |
| TJ 0195         | 195<br>11.9                                  | 292            | 45 57<br>12 15                | 140 190<br>2030 2750       | 200<br>2900        | 390 528<br>3452 4673       | 17.4<br>23.4    | 312 411<br>2762 3637       |
| TJ 0230         | 228<br>13.9                                  | 328            | 57 75<br>15 20                | 120 165<br>1740 2400       | 200<br>2900        | 380 514<br>3363 4554       | 17.7<br>23.8    | 304 411<br>2691 3637       |
| TJ 0260         | 260<br>15.9                                  | 287            | 57 75<br>15 20                | 110 155<br>1595 2250       | 200<br>2900        | 400 550<br>3540 4870       | 16.7<br>22.4    | 320 449<br>2832 3977       |
| TJ 0295         | 293<br>17.9                                  | 256            | 57 75<br>15 20                | 100 145<br>1450 2100       | 200<br>2900        | 428 582<br>3784 5180       | 15.7<br>21.0    | 328 445<br>2903 3939       |
| TJ 0330         | 328<br>20.0                                  | 228            | 57 75<br>15 20                | 100 135<br>1450 1950       | 200<br>2900        | 443 600<br>3926 5312       | 14.8<br>19.8    | 344 453<br>3045 4014       |
| TJ 0365         | 370<br>22.6                                  | 203            | 57 75<br>15 20                | 95 125<br>1378 1825        | 200<br>2900        | 467 648<br>4133 5728       | 13.6<br>18.2    | 373 477<br>3301 4223       |
| TJ 0390         | 392<br>24.0                                  | 191            | 57 75<br>15 20                | 85 120<br>1233 1740        | 200<br>2900        | 445 628<br>3935 5562       | 12.5<br>16.8    | 348 462<br>3080 4090       |

Performance data based on testing using 10W40 oil with a viscosity of 43,1 cSt. (200 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

TJ 0036

**2.2 cu in / rev** PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2750        |
|-----------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 111         | 225         | 346         | 470         |             |
|           | <b>44</b>   | <b>37</b>   | <b>25</b>   | <b>15</b>   |             |
| <b>1</b>  | 113         | 231         | 353         | 480         | 670         |
|           | <b>96</b>   | <b>86</b>   | <b>77</b>   | <b>67</b>   | <b>40</b>   |
| <b>2</b>  | 115         | 239         | 365         | 495         | 691         |
|           | <b>202</b>  | <b>190</b>  | <b>179</b>  | <b>169</b>  | <b>140</b>  |
| <b>3</b>  | 113         | 241         | 371         | 505         | 709         |
|           | <b>307</b>  | <b>296</b>  | <b>282</b>  | <b>269</b>  | <b>240</b>  |
| <b>4</b>  | 109         | 241         | 373         | 509         | 722         |
|           | <b>411</b>  | <b>397</b>  | <b>384</b>  | <b>371</b>  | <b>340</b>  |
| <b>5</b>  | 103         | 237         | 371         | 509         | 726         |
|           | <b>516</b>  | <b>501</b>  | <b>486</b>  | <b>470</b>  | <b>440</b>  |
| <b>7</b>  | 87          | 225         | 361         | 501         | 711         |
|           | <b>724</b>  | <b>709</b>  | <b>691</b>  | <b>674</b>  | <b>641</b>  |
| <b>9</b>  | 72          | 208         | 344         | 482         | 672         |
|           | <b>933</b>  | <b>916</b>  | <b>897</b>  | <b>877</b>  | <b>841</b>  |
| <b>11</b> | 54          | 190         | 326         | 462         | 629         |
|           | <b>1142</b> | <b>1117</b> | <b>1096</b> | <b>1075</b> | <b>1045</b> |

Flow (GPM)

TORQUE (LB IN) 711  
SPEED (RPM) 641

TJ 0045

**2.5 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2750       |
|-----------|------------|------------|------------|------------|------------|
| <b>.5</b> | 121        | 272        | 425        | 579        | 809        |
|           | <b>41</b>  | <b>35</b>  | <b>28</b>  | <b>22</b>  | <b>10</b>  |
| <b>1</b>  | 126        | 282        | 440        | 599        | 832        |
|           | <b>86</b>  | <b>79</b>  | <b>72</b>  | <b>65</b>  | <b>50</b>  |
| <b>2</b>  | 128        | 288        | 452        | 619        | 860        |
|           | <b>176</b> | <b>168</b> | <b>161</b> | <b>152</b> | <b>136</b> |
| <b>3</b>  | 126        | 287        | 453        | 620        | 874        |
|           | <b>266</b> | <b>257</b> | <b>249</b> | <b>239</b> | <b>221</b> |
| <b>4</b>  | 123        | 285        | 454        | 624        | 876        |
|           | <b>356</b> | <b>346</b> | <b>337</b> | <b>326</b> | <b>306</b> |
| <b>5</b>  | 119        | 281        | 451        | 624        | 874        |
|           | <b>446</b> | <b>435</b> | <b>425</b> | <b>413</b> | <b>392</b> |
| <b>7</b>  | 105        | 270        | 440        | 615        | 862        |
|           | <b>625</b> | <b>613</b> | <b>601</b> | <b>587</b> | <b>562</b> |
| <b>9</b>  | 94         | 259        | 430        | 605        | 865        |
|           | <b>805</b> | <b>791</b> | <b>777</b> | <b>761</b> | <b>733</b> |
| <b>11</b> | 79         | 245        | 415        | 590        | 848        |
|           | <b>984</b> | <b>968</b> | <b>951</b> | <b>930</b> | <b>897</b> |

Flow (GPM)

TORQUE (LB IN) 862  
SPEED (RPM) 562

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





**TJ 0050 3.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2750        |
|-----------|------------|------------|------------|------------|-------------|
| <b>.5</b> | 146<br>32  | 327<br>23  | 516<br>13  | 705<br>6   |             |
| <b>1</b>  | 159<br>69  | 345<br>60  | 537<br>50  | 727<br>41  | 1005<br>18  |
| <b>2</b>  | 170<br>146 | 364<br>136 | 563<br>124 | 764<br>113 | 1051<br>85  |
| <b>3</b>  | 167<br>225 | 363<br>214 | 565<br>203 | 768<br>191 | 1079<br>161 |
| <b>4</b>  | 169<br>294 | 367<br>282 | 574<br>271 | 784<br>260 | 1089<br>232 |
| <b>5</b>  | 165<br>363 | 365<br>349 | 574<br>339 | 785<br>327 | 1099<br>294 |
| <b>7</b>  | 156<br>501 | 357<br>485 | 568<br>474 | 782<br>460 | 1094<br>429 |
| <b>9</b>  | 141<br>640 | 342<br>621 | 555<br>609 | 771<br>594 | 1084<br>561 |
| <b>13</b> | 86<br>903  | 299<br>879 | 506<br>868 | 724<br>852 | 1038<br>809 |

**Flow (GPM)**

TORQUE (LB IN) 1094  
SPEED (RPM) 429

**TJ 0065 4.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000        | 2750        |
|-----------|------------|------------|------------|-------------|-------------|
| <b>.5</b> | 220<br>24  | 481<br>17  | 743<br>11  | 1004<br>3   |             |
| <b>1</b>  | 232<br>52  | 498<br>45  | 763<br>38  | 1025<br>31  | 1418<br>20  |
| <b>2</b>  | 239<br>109 | 512<br>102 | 789<br>94  | 1066<br>85  | 1457<br>67  |
| <b>3</b>  | 238<br>167 | 512<br>159 | 790<br>151 | 1068<br>141 | 1489<br>122 |
| <b>4</b>  | 237<br>224 | 514<br>215 | 795<br>207 | 1078<br>197 | 1496<br>180 |
| <b>5</b>  | 233<br>279 | 511<br>271 | 794<br>262 | 1080<br>252 | 1500<br>235 |
| <b>7</b>  | 216<br>386 | 497<br>376 | 783<br>366 | 1072<br>356 | 1496<br>337 |
| <b>9</b>  | 195<br>494 | 477<br>483 | 764<br>472 | 1054<br>460 | 1492<br>440 |
| <b>12</b> | 152<br>654 | 435<br>641 | 724<br>629 | 1017<br>617 | 1450<br>596 |
| <b>15</b> | 102<br>802 | 388<br>789 | 680<br>775 | 969<br>763  | 1394<br>740 |

**Flow (GPM)**

TORQUE (LB IN) 1496  
SPEED (RPM) 337

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TJ 0080

**5.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000        | 2750        |
|-----------|------------|------------|------------|-------------|-------------|
| <b>.5</b> | 261<br>17  | 575<br>8   |            |             |             |
| <b>1</b>  | 276<br>39  | 596<br>30  | 918<br>23  | 1245<br>13  |             |
| <b>2</b>  | 290<br>85  | 631<br>76  | 974<br>68  | 1310<br>56  | 1774<br>37  |
| <b>3</b>  | 291<br>131 | 633<br>122 | 978<br>113 | 1319<br>101 | 1819<br>79  |
| <b>4</b>  | 293<br>177 | 642<br>167 | 995<br>158 | 1347<br>146 | 1846<br>122 |
| <b>5</b>  | 290<br>223 | 641<br>213 | 999<br>203 | 1359<br>191 | 1869<br>166 |
| <b>7</b>  | 273<br>316 | 628<br>304 | 989<br>293 | 1353<br>280 | 1887<br>255 |
| <b>9</b>  | 249<br>408 | 603<br>396 | 966<br>384 | 1334<br>370 | 1869<br>340 |
| <b>12</b> | 197<br>546 | 551<br>533 | 916<br>519 | 1287<br>504 | 1815<br>472 |
| <b>15</b> | 136<br>686 | 494<br>670 | 857<br>655 | 1226<br>638 | 1756<br>605 |

TORQUE (LB IN) 1887  
SPEED (RPM) 255

Flow (GPM)

TJ 0100

**6.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2750        |
|-----------|------------|------------|-------------|-------------|-------------|
| <b>.5</b> | 315<br>14  | 687<br>7   |             |             |             |
| <b>1</b>  | 332<br>33  | 710<br>26  | 1083<br>18  | 1460<br>9   |             |
| <b>2</b>  | 348<br>71  | 751<br>64  | 1152<br>55  | 1541<br>45  | 2081<br>27  |
| <b>3</b>  | 350<br>109 | 756<br>102 | 1160<br>92  | 1556<br>83  | 2145<br>62  |
| <b>4</b>  | 353<br>147 | 768<br>140 | 1185<br>130 | 1596<br>120 | 2193<br>99  |
| <b>5</b>  | 349<br>186 | 771<br>178 | 1197<br>168 | 1622<br>158 | 2220<br>138 |
| <b>7</b>  | 330<br>263 | 759<br>254 | 1191<br>244 | 1624<br>232 | 2251<br>209 |
| <b>9</b>  | 302<br>340 | 731<br>330 | 1167<br>319 | 1606<br>307 | 2251<br>284 |
| <b>12</b> | 243<br>456 | 671<br>444 | 1111<br>433 | 1555<br>420 | 2193<br>394 |
| <b>15</b> | 176<br>572 | 606<br>558 | 1042<br>546 | 1484<br>533 | 2113<br>506 |

TORQUE (LB IN) 2251  
SPEED (RPM) 209

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TJ 0130 8.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2750        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 445<br>12  | 962<br>10   | 1488<br>7   | 2018<br>3   |             |
| <b>1</b>  | 464<br>27  | 996<br>24   | 1525<br>21  | 2051<br>17  | 2839<br>4   |
| <b>2</b>  | 482<br>55  | 1032<br>53  | 1584<br>49  | 2136<br>44  | 2917<br>31  |
| <b>3</b>  | 483<br>84  | 1037<br>81  | 1594<br>77  | 2150<br>72  | 2979<br>60  |
| <b>4</b>  | 483<br>113 | 1051<br>110 | 1619<br>105 | 2184<br>100 | 3018<br>87  |
| <b>5</b>  | 478<br>142 | 1050<br>138 | 1625<br>133 | 2201<br>128 | 3041<br>115 |
| <b>7</b>  | 450<br>200 | 1029<br>195 | 1613<br>190 | 2195<br>183 | 3049<br>170 |
| <b>9</b>  | 414<br>257 | 993<br>252  | 1579<br>247 | 2166<br>239 | 3033<br>223 |
| <b>12</b> | 338<br>344 | 915<br>338  | 1503<br>331 | 2096<br>323 | 2963<br>306 |
| <b>15</b> | 252<br>431 | 827<br>424  | 1408<br>416 | 1996<br>407 | 2854<br>389 |

TORQUE (LB IN) 3049  
SPEED (RPM) 170

**Flow (GPM)**

**TJ 0165 10.0 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2750        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 552<br>9   | 1175<br>7   | 1813<br>4   | 2457<br>3   |             |
| <b>1</b>  | 574<br>21  | 1213<br>18  | 1856<br>16  | 2499<br>12  | 3472<br>6   |
| <b>2</b>  | 597<br>44  | 1263<br>41  | 1938<br>38  | 2614<br>33  | 3576<br>25  |
| <b>3</b>  | 600<br>67  | 1273<br>64  | 1955<br>60  | 2634<br>55  | 3654<br>46  |
| <b>4</b>  | 603<br>90  | 1299<br>87  | 1997<br>83  | 2691<br>78  | 3706<br>67  |
| <b>5</b>  | 597<br>113 | 1302<br>109 | 2015<br>105 | 2727<br>100 | 3758<br>89  |
| <b>7</b>  | 569<br>159 | 1286<br>155 | 2009<br>150 | 2732<br>144 | 3784<br>133 |
| <b>9</b>  | 523<br>205 | 1244<br>201 | 1976<br>195 | 2707<br>189 | 3766<br>177 |
| <b>12</b> | 429<br>274 | 1152<br>269 | 1890<br>263 | 2630<br>256 | 3697<br>242 |
| <b>15</b> | 316<br>344 | 1039<br>338 | 1769<br>331 | 2500<br>323 | 3576<br>308 |

TORQUE (LB IN) 3784  
SPEED (RPM) 133

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TJ 0195

**11.9** cu in / rev PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 710<br>8   | 1519<br>7   | 2344<br>5   | 3182<br>3   |             |
| <b>1</b>  | 736<br>18  | 1558<br>16  | 2387<br>14  | 3221<br>12  | 4466<br>6   |
| <b>2</b>  | 758<br>37  | 1596<br>35  | 2445<br>33  | 3302<br>30  | 4528<br>22  |
| <b>3</b>  | 758<br>56  | 1604<br>54  | 2459<br>51  | 3315<br>48  | 4600<br>39  |
| <b>4</b>  | 757<br>75  | 1618<br>73  | 2482<br>70  | 3346<br>67  | 4620<br>56  |
| <b>5</b>  | 747<br>95  | 1615<br>92  | 2488<br>89  | 3360<br>85  | 4630<br>74  |
| <b>7</b>  | 705<br>133 | 1586<br>130 | 2467<br>127 | 3343<br>122 | 4620<br>111 |
| <b>9</b>  | 646<br>172 | 1528<br>169 | 2415<br>165 | 3300<br>160 | 4579<br>147 |
| <b>12</b> | 530<br>230 | 1408<br>226 | 2303<br>221 | 3197<br>215 | 4497<br>201 |
| <b>15</b> | 394<br>288 | 1273<br>283 | 2147<br>278 | 3027<br>272 | 4292<br>256 |

TORQUE (LB IN) 4620  
SPEED (RPM) 111

Flow (GPM)

TJ 0230

**13.9** cu in / rev PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1750        | 2000        | 2400        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 761<br>7   | 1673<br>6   | 2614<br>5   | 3094<br>4   | 3584<br>3   | 4347<br>3   |
| <b>1</b>  | 791<br>15  | 1712<br>14  | 2650<br>13  | 3128<br>12  | 3615<br>11  | 4367<br>9   |
| <b>2</b>  | 819<br>32  | 1764<br>30  | 2726<br>29  | 3208<br>28  | 3692<br>26  | 4450<br>24  |
| <b>3</b>  | 819<br>48  | 1771<br>47  | 2737<br>45  | 3226<br>44  | 3718<br>42  | 4502<br>41  |
| <b>4</b>  | 821<br>65  | 1787<br>63  | 2765<br>61  | 3256<br>60  | 3750<br>58  | 4533<br>56  |
| <b>5</b>  | 808<br>81  | 1786<br>79  | 2777<br>77  | 3277<br>76  | 3778<br>74  | 4554<br>73  |
| <b>7</b>  | 770<br>114 | 1756<br>112 | 2755<br>109 | 3255<br>108 | 3760<br>106 | 4554<br>104 |
| <b>9</b>  | 705<br>147 | 1699<br>145 | 2710<br>142 | 3216<br>140 | 3724<br>138 | 4512<br>137 |
| <b>12</b> | 581<br>197 | 1582<br>194 | 2595<br>191 | 3103<br>189 | 3617<br>186 | 4378<br>183 |
| <b>15</b> | 400<br>247 | 1409<br>243 | 2437<br>239 | 2949<br>237 | 3466<br>235 | 4232<br>230 |
| <b>20</b> | 64<br>329  | 1052<br>325 | 2067<br>321 | 2580<br>319 | 3100<br>316 | 3828<br>311 |

TORQUE (LB IN) 4554  
SPEED (RPM) 104

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TJ 0260** **15.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1650        | 2250        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 908<br>7   | 1961<br>6   | 3048<br>6   | 3380<br>6   | 4643<br>5   |
| <b>1</b>  | 938<br>14  | 2006<br>13  | 3099<br>13  | 3433<br>12  | 4674<br>11  |
| <b>2</b>  | 971<br>28  | 2059<br>27  | 3165<br>26  | 3501<br>26  | 4758<br>23  |
| <b>3</b>  | 968<br>43  | 2065<br>42  | 3177<br>40  | 3514<br>39  | 4800<br>38  |
| <b>4</b>  | 970<br>57  | 2081<br>56  | 3203<br>54  | 3541<br>53  | 4742<br>50  |
| <b>5</b>  | 957<br>71  | 2084<br>70  | 3219<br>68  | 3561<br>67  | 4874<br>64  |
| <b>7</b>  | 907<br>100 | 2049<br>98  | 3198<br>96  | 3542<br>95  | 4842<br>91  |
| <b>9</b>  | 837<br>129 | 1985<br>127 | 3143<br>124 | 3489<br>123 | 4790<br>117 |
| <b>12</b> | 692<br>172 | 1844<br>169 | 3016<br>166 | 3367<br>164 | 4685<br>157 |
| <b>15</b> | 489<br>215 | 1647<br>212 | 2830<br>208 | 3188<br>206 | 4485<br>200 |
| <b>20</b> | 129<br>287 | 1255<br>283 | 2418<br>279 | 2773<br>277 | 4034<br>270 |

TORQUE (LB IN) 4842  
SPEED (RPM) 91

**Flow (GPM)**

**TJ 0295** **17.9 cu in / rev** PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1550        | 2100        |
|-----------|------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1014<br>6  | 2216<br>5   | 3453<br>4   | 3576<br>4   | 4907<br>3   |
| <b>1</b>  | 1051<br>12 | 2270<br>11  | 3509<br>10  | 3633<br>10  | 4943<br>8   |
| <b>2</b>  | 1088<br>25 | 2334<br>24  | 3600<br>22  | 3727<br>22  | 5073<br>21  |
| <b>3</b>  | 1085<br>38 | 2338<br>36  | 3611<br>35  | 3739<br>34  | 5133<br>33  |
| <b>4</b>  | 1085<br>50 | 2353<br>49  | 3639<br>47  | 3769<br>47  | 5156<br>44  |
| <b>5</b>  | 1072<br>63 | 2352<br>62  | 3654<br>60  | 3784<br>59  | 5180<br>57  |
| <b>7</b>  | 1019<br>89 | 2311<br>87  | 3624<br>85  | 3755<br>84  | 5157<br>80  |
| <b>9</b>  | 939<br>115 | 2237<br>113 | 3561<br>110 | 3693<br>110 | 5085<br>104 |
| <b>12</b> | 776<br>153 | 2074<br>151 | 3403<br>148 | 3537<br>147 | 4931<br>142 |
| <b>15</b> | 545<br>192 | 1853<br>189 | 3184<br>186 | 3319<br>185 | 4694<br>180 |
| <b>20</b> | 126<br>256 | 1408<br>253 | 2697<br>249 | 2826<br>249 | 4089<br>243 |

TORQUE (LB IN) 5157  
SPEED (RPM) 80

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TJ 0330** **20.0 cu in / rev** PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1950         |
|-----------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1184<br>5   | 2507<br>5   | 3722<br>4   | 5051<br>2.8  |
| <b>1</b>  | 1218<br>11  | 2558<br>10  | 3772<br>9   | 5110<br>7.9  |
| <b>2</b>  | 1258<br>22  | 2632<br>21  | 3867<br>20  | 5204<br>18.6 |
| <b>3</b>  | 1251<br>34  | 2633<br>32  | 3879<br>31  | 5275<br>29.9 |
| <b>4</b>  | 1249<br>45  | 2649<br>44  | 3909<br>42  | 5311<br>39.9 |
| <b>5</b>  | 1229<br>57  | 2648<br>55  | 3926<br>53  | 5323<br>50   |
| <b>7</b>  | 1162<br>80  | 2600<br>78  | 3898<br>75  | 5311<br>71   |
| <b>9</b>  | 1064<br>103 | 2518<br>100 | 3829<br>98  | 5228<br>93   |
| <b>12</b> | 875<br>137  | 2333<br>135 | 3657<br>131 | 5027<br>127  |
| <b>15</b> | 621<br>171  | 2081<br>169 | 3420<br>165 | 4779<br>160  |
| <b>20</b> | 163<br>229  | 1576<br>226 | 2875<br>222 | 4140<br>214  |

TORQUE (LB IN) 5311  
SPEED (RPM) 71

**TJ 0365** **22.6 cu in / rev** PRESSURE (PSID)

|           | 500         | 1000        | 1325        | 1825        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1393<br>5   | 2942<br>4   | 3974<br>4   | 5557<br>3   |
| <b>1</b>  | 1444<br>10  | 3005<br>9   | 4036<br>8   | 5595<br>7   |
| <b>2</b>  | 1494<br>20  | 3090<br>19  | 4131<br>18  | 5671<br>17  |
| <b>3</b>  | 1485<br>30  | 3082<br>29  | 4125<br>28  | 5722<br>27  |
| <b>4</b>  | 1477<br>40  | 3089<br>39  | 4139<br>37  | 5734<br>36  |
| <b>5</b>  | 1452<br>50  | 3075<br>49  | 4130<br>47  | 5734<br>45  |
| <b>7</b>  | 1371<br>70  | 3009<br>69  | 4071<br>67  | 5671<br>63  |
| <b>9</b>  | 1260<br>90  | 2899<br>89  | 3669<br>87  | 5532<br>84  |
| <b>12</b> | 1002<br>121 | 2658<br>119 | 3737<br>117 | 5266<br>113 |
| <b>15</b> | 700<br>151  | 2355<br>149 | 3432<br>146 | 4937<br>142 |
| <b>20</b> | 152<br>201  | 1776<br>199 | 2838<br>196 | 4228<br>191 |

TORQUE (LB IN) 5671  
SPEED (RPM) 63

**Flow (GPM)**

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TJ 0390 24.0 cu in / rev** PRESSURE (PSID)

|           | 500         | 1000        | 1250        | 1750        |
|-----------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1326<br>4   | 2889<br>3   | 3682<br>2   | 5235<br>2   |
| <b>1</b>  | 1380<br>9   | 2934<br>7   | 3724<br>7   | 5296<br>6   |
| <b>2</b>  | 1443<br>18  | 3034<br>17  | 3840<br>15  | 5383<br>13  |
| <b>3</b>  | 1442<br>28  | 3049<br>26  | 3861<br>25  | 5457<br>22  |
| <b>4</b>  | 1454<br>37  | 3084<br>36  | 3905<br>34  | 5531<br>32  |
| <b>5</b>  | 1447<br>47  | 3104<br>45  | 3935<br>44  | 5543<br>40  |
| <b>7</b>  | 1393<br>66  | 3080<br>64  | 3923<br>62  | 5568<br>60  |
| <b>9</b>  | 1297<br>85  | 3013<br>83  | 3868<br>81  | 5494<br>79  |
| <b>12</b> | 1088<br>114 | 2818<br>112 | 3686<br>110 | 5296<br>106 |
| <b>15</b> | 797<br>143  | 2539<br>140 | 3414<br>138 | 5000<br>135 |
| <b>20</b> | 264<br>191  | 2006<br>188 | 2880<br>186 | 4358<br>182 |

TORQUE (LB IN) 5568  
 SPEED (RPM) 60

**Flow (GPM)**

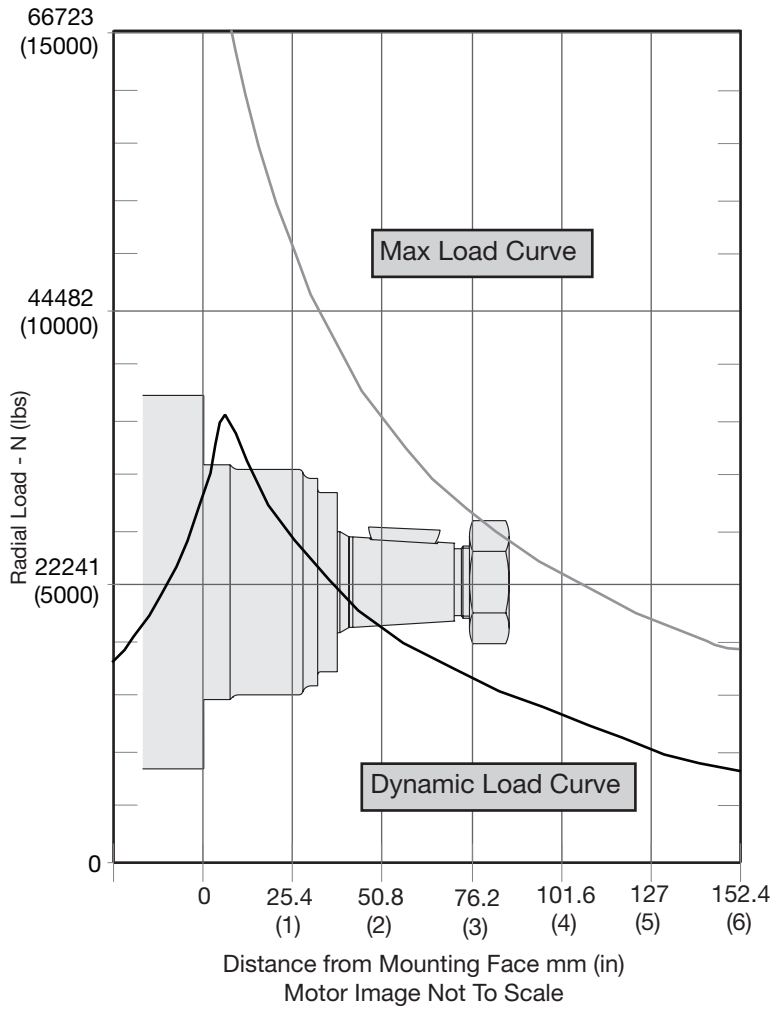
Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



Wheel Mount



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and S in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange. / Erlaubte radiale

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Auslegung basiert auf einer  $L_{10}$  Lebensdauer nach ISO 281

005 TJ.indd, b

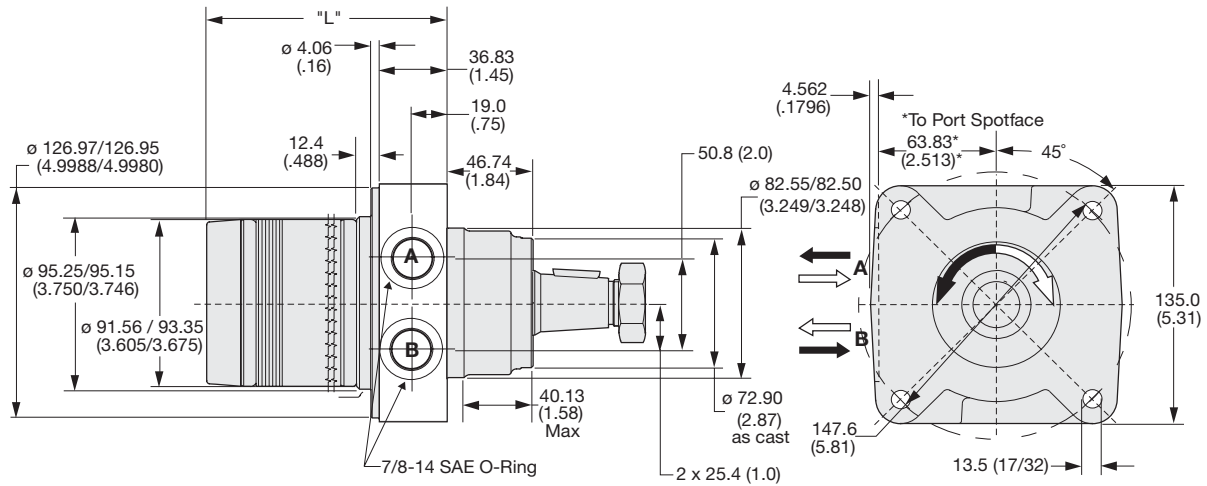


WARNING  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



Code: US

Wheel Mount, 7/8-14 SAE O-Ring



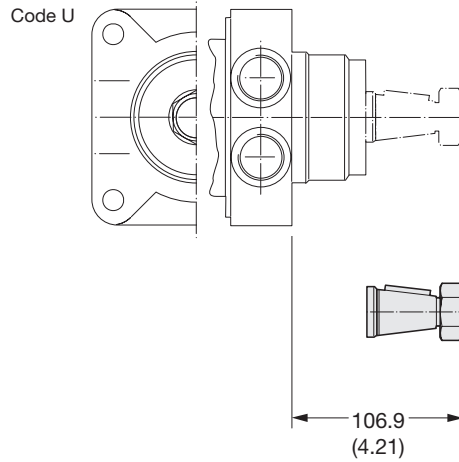
| Code US        | disp.    | 0036   | 0045   | 0050   | 0065   | 0080   | 0100   | 0130   | 0165   | 0195   | 0230   | 0260   | 0295   | 0330   | 0365   | 0390   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 6.67   | 6.80   | 6.90   | 7.00   | 7.10   | 7.20   | 7.60   | 7.80   | 8.10   | 8.30   | 8.60   | 8.80   | 9.10   | 9.40   | 9.60   |
| Poids/Peso     | (lb)     | (14.7) | (15.0) | (15.2) | (15.4) | (15.6) | (15.8) | (16.7) | (17.2) | (17.9) | (18.3) | (19.0) | (19.4) | (20.0) | (20.7) | (21.2) |
| Length         | "L" mm   | 105.8  | 106.9  | 108.4  | 111.5  | 114.7  | 117.8  | 124.3  | 130.6  | 137.0  | 143.3  | 149.7  | 156.0  | 162.4  | 171.0  | 175.1  |
|                | "L" (in) | (4.17) | (4.21) | (4.27) | (4.39) | (4.52) | (4.64) | (4.89) | (5.14) | (5.39) | (5.64) | (5.89) | (6.14) | (6.39) | (6.73) | (6.89) |

English equivalents for metric specifications are shown in ( ).

005 TJ.indd, b

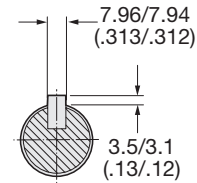
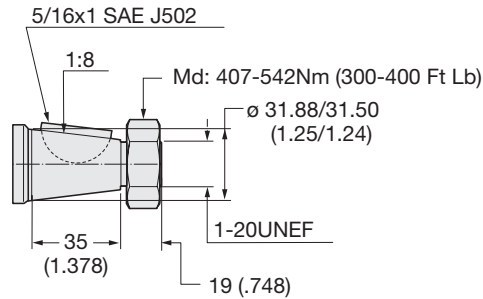


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



Code: 08

1 1/4" Tapered



English equivalents for metric specifications are shown in ( ).

005 TJ.indd, b



**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|  |                  |                |                | Code     |            |   |
|--|------------------|----------------|----------------|----------|------------|---|
| Availability   |                  |                |                | Painted  | Unpainted  | Description   |
| TC   | TB               | TE             | TJ             | Lackiert | UnLackiert | Description   |
| x  | x                | x              | x              | AAAA     | AAAB       | Standard seals  |
| x  | x <sup>7</sup>   | x <sup>7</sup> |                | AAJV     | AANC       | Bidirectional shuttle 3:30  |
|  |                  |                |                | AABT     | -          | No nut  |
| x  | x <sup>7</sup>   | x <sup>7</sup> | x              | BBDF     | BBDM       | 53 Bar (761 PSI) Internal Bidirectional Relief                                    |
| x  | x <sup>7</sup>   | x <sup>7</sup> | x              | BBCV     | -          | 64 Bar (921 PSI) Internal Bidirectional Relief                                    |
| x  |                  |                |                | -        | BBCE       | 83 Bar (1200 PSI) Internal Bidirectional Relief, Fluorocarbon (Viton) shaft seals |
| x <sup>3</sup>   | x <sup>7</sup>   |                | x              | BBCR     | BBCP       | 100 Bar (1450 PSI) Internal Bidirectional Relief                                  |
| x <sup>3</sup>   | x <sup>7</sup>   | x <sup>7</sup> | x              | -        | BBCT       | 108 Bar (1560 PSI) Internal Bidirectional Relief                                  |
| x  |                  | x              |                | AAAC     | -          | Double Paint / Zweischichten – Lackierung   |
|  | x <sup>6</sup>   | x <sup>6</sup> | x              | AAAF     | AABP       | Castle Nut / Kronenmutter   |
| x  | x                | x              | x              | AAAG     | AAAH       | Fluorocarbon Seals / Fluorocarbon Dichtungen                                      |
| x  | x                | x              | x              | AAAJ     | AAFG       | High Temperature Commutator Seal / Kommutatordichtung fuer hohe Temperaturen      |
| x <sup>1</sup>   | x <sup>1</sup>   | x <sup>1</sup> | x <sup>1</sup> | AABJ     | AABK       | Free Running Rotorset / Leichtläufer-Rotorsatz                                    |
|  | x <sup>1</sup>   | x <sup>1</sup> |                | AABL     | AABM       | Free Running Rotorset, No Commutator Seal   |
|  | x                | x              | x              | AAFW     | AAFA       | High Temperature Commutator Seals, Fluorocarbon Seals                             |
|  |                  |                | x              | AAFB     | AANG       | High Temperature Commutator Seal, Castle Nut                                      |
|  |                  |                |                | AAPL     | -          | Fluorocarbon Seals, Castle Nut, Black Paint                                       |
| x  |                  |                |                | AAUA     | -          | Double Paint, Free Running Rotorset   |
|  |                  |                |                | -        | AAXD       | Fluorocarbon Seals, No Commutator Seal, No Paint                                  |
|  | x                | x              |                | FSAA     | FSAB       | Speed Sensor / Drehzahl-Sensor  |
|  | x <sup>5,7</sup> | x <sup>2</sup> | x <sup>2</sup> | BBFZ     | BBCN       | 140 Bar (2030 PSI) Internal Bidirectional Relief / Internes Schockventil          |
| x <sup>4</sup>   | x <sup>2,7</sup> | x <sup>7</sup> | x              | BBDY     | BBCK       | 120 Bar (1740 PSI) Internal Bidirectional Relief Internes Schockventil            |
| x <sup>2</sup>   | x <sup>7</sup>   | x <sup>7</sup> | x              | BBGA     | BBCM       | 83 Bar (1200 PSI) Internal Bidirectional Relief / Internes Schockventil           |
|  | x <sup>8</sup>   | x <sup>8</sup> |                | HAAA     | HAAB       | Adjustable external Relief Valve / Schockventil (einstellbar)                     |
|  | x                | x              |                | -        | AAUY       | Nickel Plated Except Shaft  |
| <b>Consult factory for other positions and combinations.</b> |                  |                |                |          |            |   |

<sup>1</sup> Not applicable to 0365 or 0390 displacements

<sup>2</sup> Not available in 0330, 0365 or 0390 displacements

<sup>3</sup> Not available in 0260, 0295, 0330, 0365 or 0390 displacements

<sup>4</sup> Not available in 0230, 0260, 0295, 0330, 0365 or 0390 displacements

<sup>5</sup> Not available with 0230, 0295, 0330, 0365 or 0390 displacements

<sup>6</sup> Only available with 25 shaft

<sup>7</sup> Not available with R or Y ports

<sup>8</sup> Only available with M ports

**Code: AAAA**

Black Paint

**Code: AAAB**

No Paint

**Code: AAAC**

Double Paint — Base coat of red oxine primer and finish coat of black paint for increased corrosion resistance.

**Code AAAF\* or AABP****Castle Nut** — All motors ordered with Tapered shafts are equipped with patch locking nuts. If desired, a castle nut may be specified.**Code: AAAJ\* or AAFG**

High Temperature Commutator Seal — Under conditions of high temperature, it is suggested that a high temperature commutator seal be used.

**Code: AAAG\* or AAAH****Fluorocarbon** — is available under various registered trademarks, including **VITON™** (a registered trademark of DuPont), **FLUOREL™** (a registered trademark of 3M) or **FPM™** (a registered trademark of DuPont).**Code: AABJ\* or AABK****Free Running Rotorset** — The “free running rotorset” is a specially dimensioned rotorset that allows for smooth operation at low flows and low pressure. Volumetric efficiency can be affected.

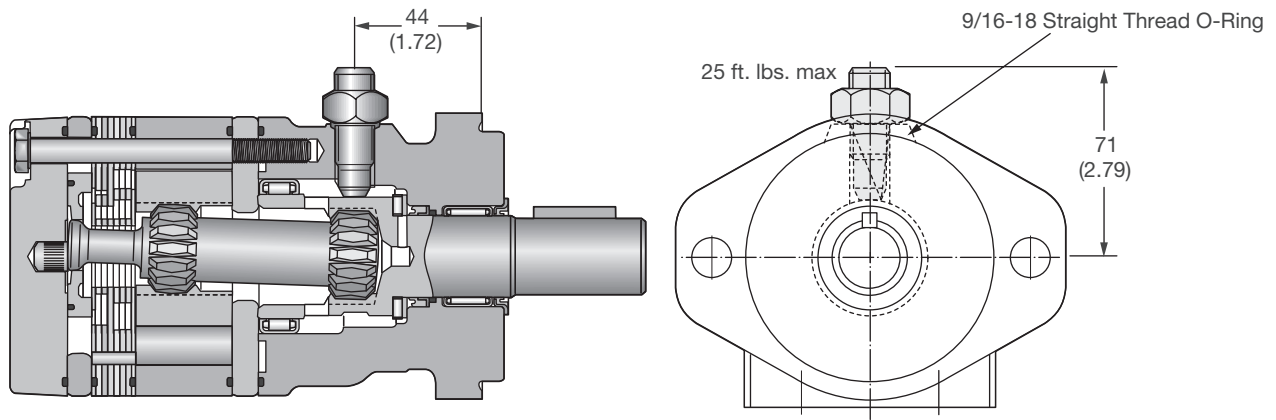
\* Option code shown is with a single black coat of paint.

\* Code: Motor schwarz grundiert

Code: FSAA\* or FSAB

### An Economical Sensor for Speed Readout

This rugged, weather resistant design is ideal for industrial and mobile applications. Applications include salt/sand/fertilizer spreader drives, conveyer drives and injection molder compression drives. The sensor is a hall-effect type, which when externally powered outputs 30 square wave digital pulses per coupling shaft revolution. The connector is a user friendly universally available 4 pin polarized M12 connector allowing for simplified field service. The integrated design does not effect the side load capacity or performance of the torque motor.



\* Option code FSAA is with a single black coat of paint.  
\* Code FSAA: Motor schwarz grundiert

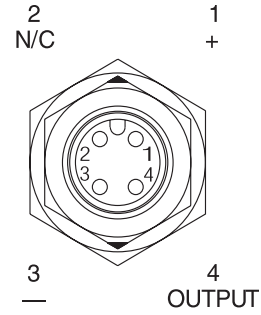
US equivalents for metric specifications are shown in ( ).

006 Light Duty Options.indd, a



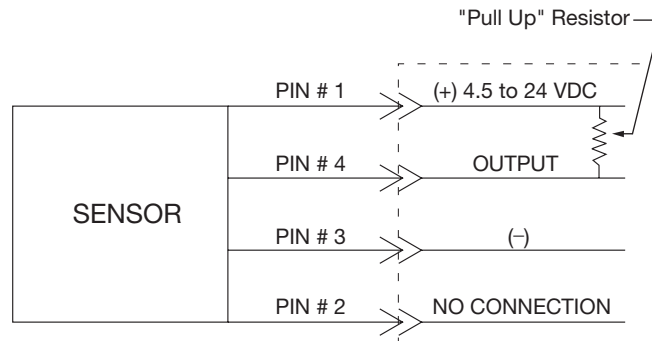
**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|                           |  |
|---------------------------|--|
| Operating voltage range   | 4.5...24 VDC   |
| Operating temperature     | -20° to 220° F<br>-29° ...104° C                             |
| Operating frequency range | 0...10 KHZ   |
| Max sink current          | 0 ... 20 mA (max.)   |
| Connection                | 4 Pin Polarized (12mm)                                       |
| Sensor output             | 30 Pulses per revolution which can be doubled electronically |
| Output is NPN             | Open Collector   |



4 Pin Polarized  
M12 Connector (Male)

Cable and "Pull Up" Resistor are not supplied by factory.



Pull-up Resistor Value Formula

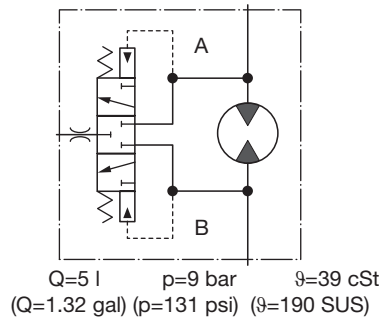
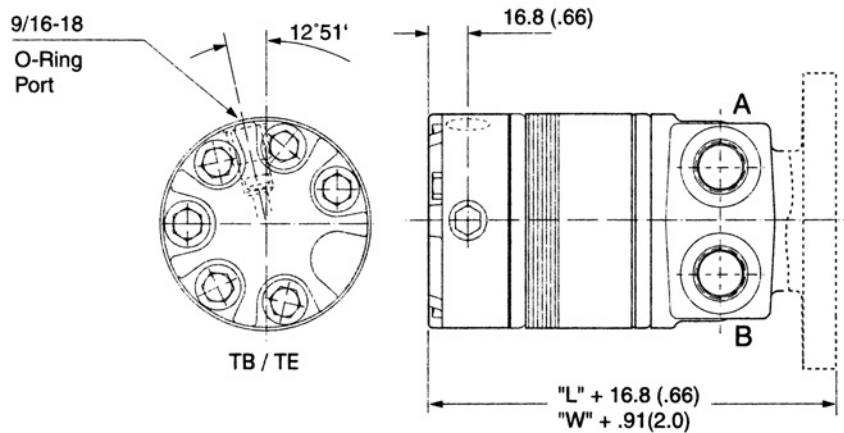
$$\begin{matrix}
 \text{(0.25 Watt, 5\% de tol.)} & \text{Voltage} & & \text{Resistor} \\
 & \frac{4.5...24 \text{ VDC}}{\text{Sink Current} / 0...20 \text{ mA}} & = & \text{(k Ohm)}
 \end{matrix}$$

Status: Offstate / aus



Code: AANC or AAJV\*

A Hot Oil Shuttle is used to continuously remove a portion of the fluid in a closed loop transmission or other closed loop system. At 125 PSI pressure differential between the motor return port and the shuttle outlet, 1.5 GPM will exit the circuit to cool, filter and return to the reservoir. The constant loop replenishment helps to keep heat and contamination from building up in the circuit.



\* Option code AAJV is with a single black coat of paint

English equivalents for metric specifications are shown in ( ).

006 Light Duty Options.indd, a



This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

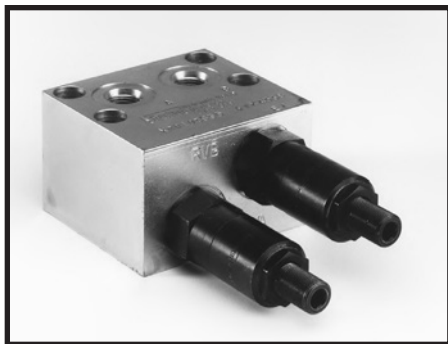
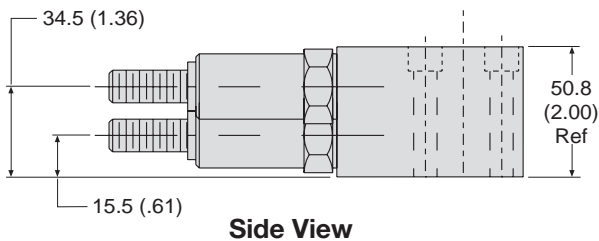
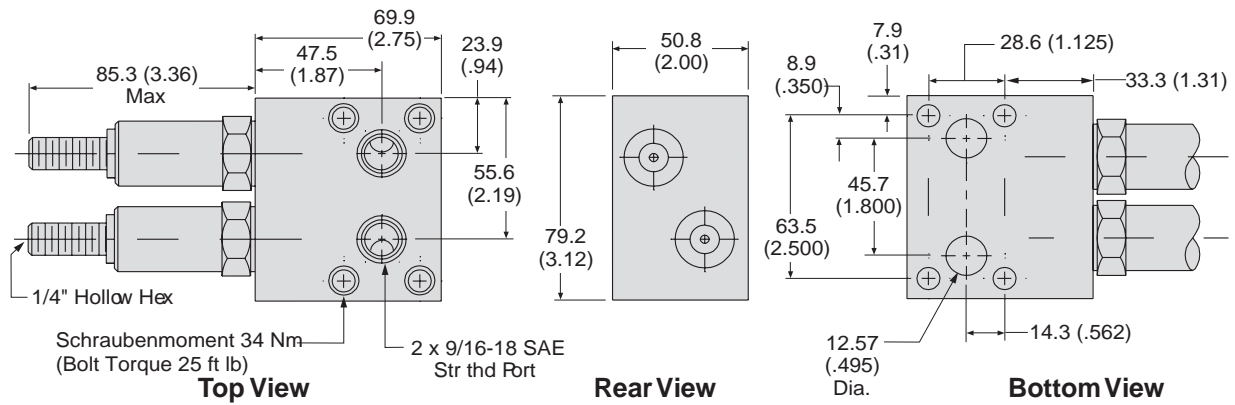
Code: HAAA\* or HAAB

Specifications

- **Rated flow** — 20 gpm
- **Max. Operating Pressure** — adjustable up to 3500 psi, factory preset at 1750 psi.
- **Reseat Pressure** — 90% of set pressure
- **Operating Temperature Range:** -40°F to 250°F
- **Cartridge Material** — All parts steel. All operating parts hardened steel.
- **Body Material** — Steel

Einsatzdaten

- Max. Fluß 76l/min.
- Max. Druck 240 bar (Voreinstellung 120 bar)
- Hysteresis 90% des Öffnungsdrucks
- Betriebstemperatur - 40°C bis 115°C
- Ventil in Stahlausführung
- Code für Ausführung schwarz grundiert

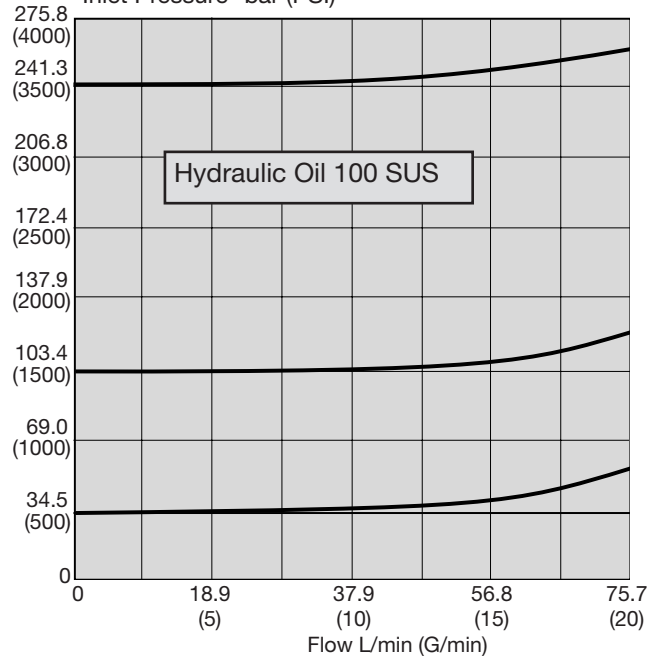


\* Option code shown is with a single black coat of paint.

Performance Curve

Flow vs. Pressure

Inlet Pressure- bar (PSI)



English equivalents for metric dimensions are shown in ( ).

006 Light Duty Options.indd, a

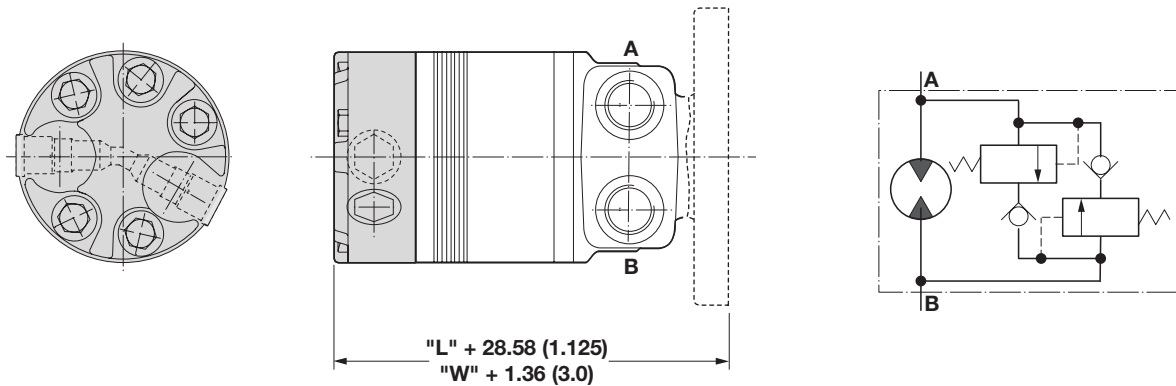


**WARNING**  
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**Code: Bidirectional Relief Valves**

This integrated internal relief valve is used for fixed pressure settings.



| Code | Description   | TC             | TB               | TE             | TJ             |
|------|---|----------------|------------------|----------------|----------------|
| BBCM | 83 Bar / 1200 PSI Int Bidirectional Relief, No paint                              | x <sup>2</sup> | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBCN | 140 Bar / 2030 PSI Int Bidirectional Relief, No paint                             |                | x <sup>7</sup>   | x <sup>2</sup> | x <sup>2</sup> |
| BBCP | 100 Bar / 1450 PSI Int Bidirectional Relief, No paint                             | x <sup>3</sup> | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBCR | 100 Bar / 1450 PSI Int Bidirectional Relief, Black paint                          | x <sup>3</sup> | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBCT | 108 Bar / 1560 PSI Int Bidirectional Relief, No paint                             | x <sup>3</sup> | x <sup>1,7</sup> | x <sup>7</sup> | x              |
| BBCV | 64 Bar / 921 PSI Int Bidirectional Relief, Black paint                            | x              | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBCK | 120 Bar / 1740 PSI Int Bidirectional Relief, No paint                             | x <sup>4</sup> | x <sup>2,7</sup> | x <sup>7</sup> | x              |
| BBCE | 83 Bar / 1200 PSI Int Bidirectional Relief, Flourocarbon (Viton) Seals, No Paint  |                |                  |                |                |
| BBDE | 150 Bar / 2175 PSI Int Bidirectional Relief, Flourocarbon (Viton) Seals, No paint |                |                  |                |                |
| BBDF | 53 Bar / 761 PSI Int Bidirectional Relief, Black paint                            | x              | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBDM | 53 Bar / 761 PSI Int Bidirectional Relief, No paint                               | x              | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBDT | 150 Bar / 2175 PSI Int Bidirectional Relief, No paint                             |                |                  |                |                |
| BBDY | 120 Bar / 1740 PSI Int Bidirectional Relief, Black paint                          | x <sup>4</sup> | x <sup>5,7</sup> | x <sup>7</sup> | x              |
| BBGA | 83 Bar / 1200 PSI Bar Int Bidirectional Relief, Black Paint                       | x <sup>2</sup> | x <sup>7</sup>   | x <sup>7</sup> | x              |
| BBFZ | 140 Bar / 2030 PSI Bar Int Bidirectional Relief, Black Paint                      |                | x <sup>5,7</sup> | x <sup>2</sup> | x <sup>2</sup> |

<sup>1</sup> Not applicable to 0365 or 0390 displacements - Nicht verfugbar fur 0365 und 0390

<sup>2</sup> Not available in 0330, 0365 or 0390 displacements

<sup>3</sup> Not available in 0260, 0295, 0330, 0365 or 0390 displacements

<sup>4</sup> Not available in 0230, 0260, 0295, 0330, 0365 or 0390 displacements

<sup>5</sup> Not available with 0230, 0295, 0330, 0365 or 0390 displacements

<sup>6</sup> Only available with 25 shaft

<sup>7</sup> Not available with R or Y ports

<sup>8</sup> Only available with M ports

Standard Length & Weights for TB Series on Pages 36-43 and TE Series on Pages 76-81.

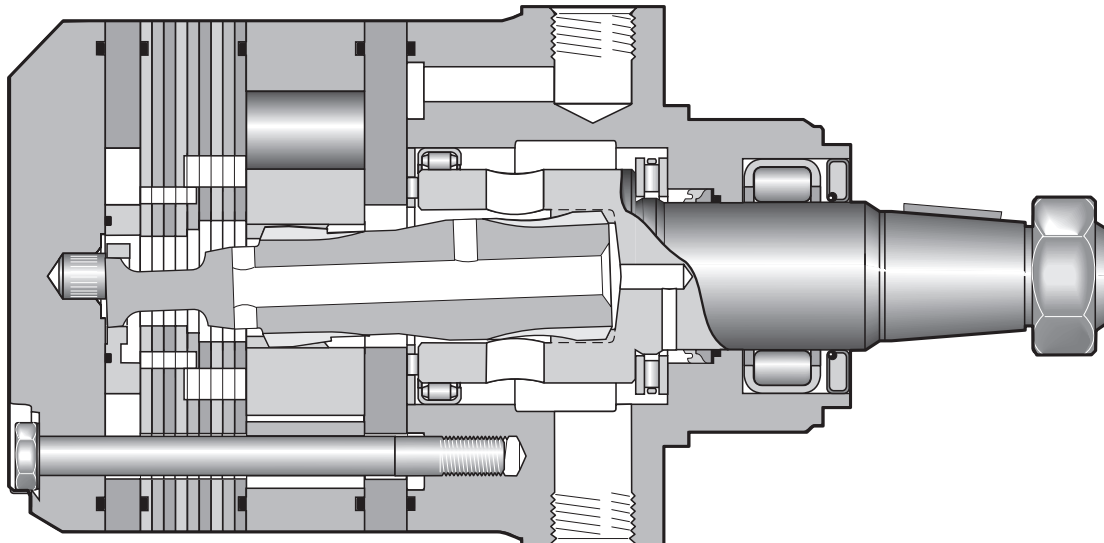
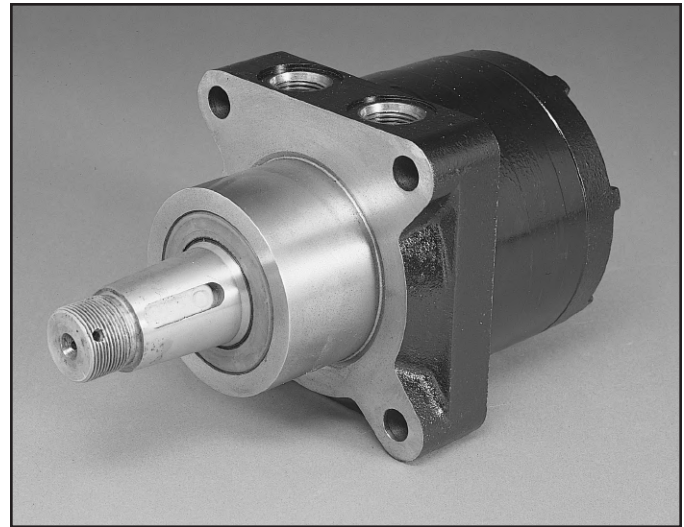
English equivalents for metric specifications are shown in ( ).

006 Light Duty Options.indd, a

|                                 |   |  |
|---------------------------------|---|--|
| <b>11 Displacements</b>         | (4.9 - 29.1 in <sup>3</sup> /rev)<br><b>81 . . . 477 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . <b>207 bar</b>                         | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b>         | (25 gpm)<br>. . . <b>95 lpm</b>   |  |
| <b>Maximum Speed</b>            | (749 rpm)<br><b>749 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(6027 lb in)<br><b>681 Nm</b>                               | <b>Int.</b><br>(8106 lb in)<br><b>916 Nm</b>       |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>. . . <b>16000 N</b>   |  |

### A Tough Motor for Tough Applications

Sturdy construction throughout makes Parker's TF Series motors suitable for the most severe applications. The powertrain uses unique 60:40 spline geometry for strength. All splines are constantly flushed with cool fluid for durability. Roller vanes and sealed commutation assure high volumetric efficiency, smooth low speed operation and extended life. Shaft seals can withstand full system pressure and are washed in cool fluid for long life.



**TF**  
Series

**XXXX**  
Displacement

**XX**  
Mounting/Ports

**XX**  
Shaft

**X**  
Rotation

| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro in <sup>3</sup> /rev |
|------|---|
| 0080 | 81 / 4.9  |
| 0100 | 100 / 6.1   |
| 0130 | 128 / 7.8   |
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 197 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0360 | 364 / 22.2  |
| 0405 | 405 / 24.7  |
| 0475 | 477 / 29.1  |

| Code | Mounting/Ports                                 |
|------|--|
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE                     |
| LS   | Wheel, Front Brake Nose, 7/8-14 SAE            |
| MS   | Magneto, 7/8-14 SAE                            |
| UB   | Wheel, Standard 7/8-14 SAE O-Ring; Rear Radial |
| US   | Wheel, Standard, 7/8-14 SAE                    |
| ZS   | Magneto, O Ring Pilot, 7/8-14 SAE              |

| Code | Shaft                  |
|------|------------------------|
| 01*  | 1" 6B Spline           |
| 02*  | 1" Keyed               |
| 03   | 1 1/4" Keyed           |
| 05   | 1 1/4" 14 Tooth Spline |
| 06   | 19 Tooth Spline        |
| 08   | 1 1/4" Tapered         |

| Code | Rotation               |
|------|------------------------|
| 0    | Standard               |
| 1    | Reverse Timed Manifold |

| Code | Rear Rotation          |
|------|------------------------|
| 0    | Standard               |
| 1    | Reverse Timed Manifold |

Rotation viewed from shaft end.

| Code | Mounting/Ports   |
|------|--|
| AB   | SAE "A" 2 Bolt 7/8-14 SAE O-Ring; Rear Radial                            |
| AE   | SAE "A" 2 Bolt, Manifold; Rear Radial                                    |
| AM   | SAE "A" 2 Bolt, 5/16-18 UNC Manifold                                     |
| BS   | SAE "B" 2 Bolt, 7/8-14 SAE   |
| ES   | Modified SAE A 6 Bolt, 7/8-14 SAE  |
| KS   | Wheel Front Brake Nose, 1/2-13 UNC Mounting Holes, 7/8-14 SAE            |
| MA   | Magneto 7/8-14 SAE O-Ring; Rear Axial                                    |
| MB   | Standard Mount "A", 4-Bolt, Rear Port, 7/8 O-ring (SAE # 10) Rear Radial |
| MM   | Magneto, 5/16-18 UNC Manifold  |
| UJ   | Large Wheel Mt., 9/16 O-ring   |
| WB   | Wheel, Optional 7/8-14 SAE O-Ring; Rear Radial                           |
| WE   | Wheel, Optional, Manifold; Rear Radial                                   |

| Code | Shaft                         |
|------|-------------------------------|
| 07   | 15 Tooth Spline               |
| 26   | 25mm Str. w/8mm Key, 8mm Tap  |
| 28   | 13 Tooth Spline (16/32 Pitch) |
| 58   | 1 1/4" Keyed plus Nitrotec C  |

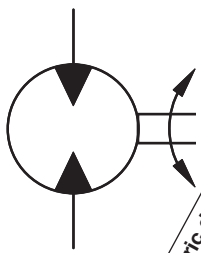
\* Conforms to SAE recommended length

\*Coupling shaft Ø 1 inch Max. torque cont./int. } 450/550 Nm

**XXXX**

**Options  
 Opciones**

| Code | Options   |
|------|---|
| AAAA | “Standard”, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | “Standard”, No Paint  |
| AAAC | “Standard”, Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00’), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| FSEK | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| FSEN | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), No Paint, No Shaft Hardware   |



Geometric displacement

Max. speed @ Max. intermittent flow

Max. oil flow

Max. Differential Pressure

Max. supply pressure

Max. torque

Max. performance

Min. starting torque

| Motor Series<br>TF | cm <sup>3</sup> /rev | rev/min | cont / int*    |                      | cont / int* |      | max                  | cont / int*  |                      | max | cont / int* |  |
|--------------------|----------------------|---------|----------------|----------------------|-------------|------|----------------------|--------------|----------------------|-----|-------------|--|
|                    | in <sup>3</sup> /rev |         | l/min          | bar                  | max         | Nm   | KW                   | Nm           |                      |     |             |  |
|                    |                      |         | g/min          | psid                 | bar         | psig | lb-in                | HP           | lb-in                |     |             |  |
| TF 0080            | 81<br>4.9            | 693     | 46 57<br>12 15 | 207 276<br>3000 4000 | 300         | 4350 | 220 296<br>1948 2621 | 21.5<br>28.8 | 158 205<br>1401 1811 |     |             |  |
| TF 0100            | 100<br>6.1           | 749     | 57 76<br>15 20 | 155 241<br>2250 3500 | 300         | 4350 | 197 318<br>1746 2813 | 24.9<br>33.4 | 148 243<br>1309 2155 |     |             |  |
| TF 0130            | 128<br>7.8           | 583     | 57 76<br>15 20 | 138 207<br>2000 3000 | 300         | 4350 | 229 356<br>2031 3148 | 21.7<br>29.1 | 180 278<br>1596 2460 |     |             |  |
| TF 0140            | 141<br>8.6           | 530     | 57 76<br>15 20 | 138 207<br>2000 3000 | 300         | 4350 | 254 393<br>2248 3477 | 21.8<br>29.2 | 196 308<br>1739 2728 |     |             |  |
| TF 0170            | 169<br>10.3          | 444     | 57 76<br>15 20 | 138 207<br>2000 3000 | 300         | 4350 | 317 489<br>2808 4324 | 22.7<br>30.5 | 243 385<br>2152 3404 |     |             |  |
| TF 0195            | 197<br>12.0          | 381     | 57 76<br>15 20 | 138 207<br>2000 3000 | 300         | 4350 | 364 562<br>3222 4971 | 22.4<br>30.1 | 302 468<br>2671 4142 |     |             |  |
| TF 0240            | 238<br>14.5          | 394     | 76 95<br>20 25 | 138 207<br>2000 3000 | 300         | 4350 | 427 670<br>3782 5928 | 27.7<br>37.1 | 366 572<br>3242 5058 |     |             |  |
| TF 0280            | 280<br>17.1          | 334     | 76 95<br>20 25 | 138 207<br>2000 3000 | 300         | 4350 | 509 794<br>4502 7029 | 27.8<br>37.3 | 438 672<br>3876 5946 |     |             |  |
| TF 0360            | 364<br>22.2          | 258     | 76 95<br>20 25 | 130 190<br>1880 2750 | 300         | 4350 | 594 880<br>5257 7788 | 20.0<br>26.8 | 517 779<br>4575 6898 |     |             |  |
| TF 0365<br>Clutch  | 364<br>22.2          | 258     | 76 95<br>20 25 | 97 152<br>1400 2200  | 300         | 4350 | 437 740<br>3871 6456 | 20.0<br>26.8 | 398 650<br>3521 5749 |     |             |  |
| TF 0405            | 405<br>24.7          | 231     | 76 95<br>20 25 | 128 172<br>1850 2750 | 300         | 4350 | 655 916<br>5800 8106 | 22.1<br>29.7 | 575 789<br>5091 6978 |     |             |  |
| TF 0475            | 477<br>29.1          | 195     | 76 95<br>20 25 | 113 138<br>1645 2000 | 300         | 4350 | 681 851<br>6027 7528 | 17.4<br>23.3 | 603 740<br>5334 6548 |     |             |  |

Performance data based on testing using 10W40 oil with a viscosity of 43.1 cSt (200 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

TF 0080

4.9 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 256<br>19  | 546<br>14  | 835<br>8   | 1118<br>1   |             |             |             |             |
| <b>1</b>  | 270<br>42  | 575<br>37  | 867<br>31  | 1151<br>24  | 1434<br>17  | 1713<br>13  | 2002<br>12  | 2289<br>13  |
| <b>2</b>  | 281<br>89  | 598<br>83  | 917<br>76  | 1233<br>68  | 1537<br>60  | 1821<br>53  | 2090<br>46  | 2352<br>40  |
| <b>3</b>  | 282<br>135 | 601<br>128 | 922<br>121 | 1238<br>113 | 1547<br>104 | 1845<br>96  | 2138<br>86  | 2428<br>78  |
| <b>4</b>  | 284<br>182 | 610<br>174 | 938<br>166 | 1264<br>158 | 1586<br>149 | 1899<br>139 | 2202<br>129 | 2491<br>120 |
| <b>5</b>  | 282<br>228 | 612<br>219 | 944<br>211 | 1278<br>202 | 1607<br>193 | 1932<br>183 | 2250<br>172 | 2560<br>163 |
| <b>7</b>  | 274<br>321 | 607<br>311 | 945<br>301 | 1285<br>291 | 1622<br>281 | 1957<br>270 | 2288<br>258 | 2612<br>247 |
| <b>9</b>  | 262<br>414 | 597<br>402 | 937<br>391 | 1279<br>380 | 1622<br>369 | 1960<br>357 | 2295<br>344 | 2628<br>331 |
| <b>12</b> | 239<br>553 | 574<br>540 | 916<br>526 | 1260<br>514 | 1605<br>501 | 1948<br>488 | 2287<br>472 | 2621<br>456 |
| <b>15</b> | 215<br>693 | 546<br>677 | 886<br>661 | 1231<br>646 | 1579<br>633 | 1927<br>619 | 2269<br>601 | 2605<br>582 |

Flow (GPM)

TORQUE (LB IN) 2605  
SPEED (RPM) 582

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TF 0100**

**6.1 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2250        | 2500        | 3000        | 3500        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 318<br>14  | 679<br>9   | 1041<br>4   |             |             |             |             |             |
| <b>1</b>  | 335<br>33  | 703<br>28  | 1066<br>22  | 1430<br>17  | 1611<br>14  | 1791<br>12  | 2162<br>9   | 2543<br>6   |
| <b>2</b>  | 351<br>71  | 743<br>65  | 1132<br>58  | 1514<br>52  | 1700<br>48  | 1882<br>45  | 2241<br>39  | 2602<br>34  |
| <b>3</b>  | 350<br>109 | 746<br>102 | 1138<br>95  | 1525<br>88  | 1717<br>84  | 1907<br>80  | 2288<br>72  | 2671<br>64  |
| <b>4</b>  | 353<br>147 | 754<br>139 | 1156<br>132 | 1554<br>124 | 1752<br>120 | 1948<br>116 | 2334<br>107 | 2716<br>98  |
| <b>5</b>  | 352<br>184 | 759<br>177 | 1167<br>169 | 1572<br>161 | 1774<br>156 | 1974<br>152 | 2370<br>143 | 2762<br>133 |
| <b>7</b>  | 343<br>260 | 753<br>252 | 1166<br>243 | 1581<br>233 | 1788<br>229 | 1994<br>224 | 2401<br>213 | 2810<br>202 |
| <b>9</b>  | 329<br>336 | 741<br>327 | 1159<br>316 | 1579<br>306 | 1788<br>301 | 1997<br>296 | 2411<br>284 | 2824<br>272 |
| <b>12</b> | 299<br>449 | 715<br>438 | 1137<br>426 | 1561<br>415 | 1773<br>409 | 1985<br>403 | 2406<br>391 | 2825<br>377 |
| <b>15</b> | 259<br>562 | 679<br>549 | 1106<br>536 | 1532<br>523 | 1746<br>517 | 1959<br>510 | 2387<br>496 | 2813<br>480 |
| <b>20</b> | 186<br>749 | 607<br>734 | 1034<br>718 | 1463<br>703 | 1679<br>696 | 1896<br>689 | 2331<br>671 | 2763<br>653 |

Flow (GPM)

TORQUE (LB IN) 2763  
 SPEED (RPM) 653

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TF 0130**

**7.8 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 441<br>10  | 927<br>7    | 1413<br>3   |             |             |             |
| <b>1</b>  | 456<br>24  | 948<br>21   | 1440<br>17  | 1935<br>13  | 2422<br>9   | 2909<br>5   |
| <b>2</b>  | 478<br>52  | 991<br>47   | 1495<br>42  | 2004<br>36  | 2508<br>32  | 3009<br>29  |
| <b>3</b>  | 475<br>82  | 993<br>76   | 1510<br>70  | 2023<br>63  | 2533<br>57  | 3042<br>52  |
| <b>4</b>  | 479<br>112 | 1006<br>105 | 1529<br>98  | 2048<br>91  | 2568<br>85  | 3084<br>79  |
| <b>5</b>  | 478<br>141 | 1014<br>134 | 1548<br>127 | 2076<br>119 | 2600<br>113 | 3115<br>106 |
| <b>7</b>  | 467<br>200 | 1010<br>192 | 1553<br>184 | 2094<br>176 | 2632<br>169 | 3166<br>161 |
| <b>9</b>  | 447<br>259 | 996<br>251  | 1546<br>242 | 2094<br>233 | 2640<br>225 | 3184<br>216 |
| <b>12</b> | 410<br>348 | 961<br>338  | 1518<br>328 | 2073<br>318 | 2626<br>309 | 3177<br>299 |
| <b>15</b> | 365<br>436 | 914<br>426  | 1474<br>415 | 2031<br>404 | 2589<br>394 | 3148<br>382 |
| <b>20</b> | 263<br>583 | 812<br>572  | 1371<br>559 | 1933<br>547 | 2498<br>535 | 3059<br>522 |

Flow (GPM)

TORQUE (LB IN) 3059  
 SPEED (RPM) 522

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**TF 0140**

**8.6 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 485<br>11  | 1025<br>8   | 1560<br>4   |             |             |             |
| <b>1</b>  | 507<br>24  | 1056<br>20  | 1594<br>16  | 2137<br>12  | 2682<br>8   | 3224<br>5   |
| <b>2</b>  | 526<br>50  | 1101<br>46  | 1670<br>42  | 2237<br>37  | 2796<br>33  | 3336<br>28  |
| <b>3</b>  | 525<br>77  | 1103<br>72  | 1676<br>68  | 2246<br>63  | 2814<br>57  | 3370<br>52  |
| <b>4</b>  | 528<br>103 | 1114<br>98  | 1696<br>93  | 2277<br>88  | 2857<br>82  | 3423<br>77  |
| <b>5</b>  | 528<br>130 | 1120<br>125 | 1712<br>119 | 2301<br>113 | 2885<br>107 | 3456<br>101 |
| <b>7</b>  | 516<br>184 | 1115<br>177 | 1716<br>170 | 2314<br>164 | 2908<br>158 | 3497<br>151 |
| <b>9</b>  | 496<br>237 | 1100<br>230 | 1707<br>222 | 2311<br>215 | 2912<br>208 | 3510<br>200 |
| <b>12</b> | 454<br>317 | 1063<br>309 | 1677<br>300 | 2290<br>292 | 2901<br>284 | 3506<br>275 |
| <b>15</b> | 403<br>397 | 1011<br>388 | 1629<br>378 | 2248<br>368 | 2866<br>359 | 3477<br>349 |
| <b>20</b> | 298<br>530 | 908<br>520  | 1525<br>508 | 2149<br>497 | 2775<br>485 | 3401<br>473 |

Flow (GPM)

TORQUE (LB IN) 3401  
 SPEED (RPM) 473

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TF 0170**

**10.3 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 627<br>8   | 1304<br>6   | 1980<br>2   |             |             |             |
| <b>1</b>  | 657<br>19  | 1341<br>16  | 2021<br>12  | 2714<br>9   | 3404<br>4   | 4101<br>1   |
| <b>2</b>  | 687<br>42  | 1409<br>38  | 2123<br>34  | 2829<br>29  | 3520<br>25  | 4197<br>21  |
| <b>3</b>  | 681<br>64  | 1407<br>60  | 2127<br>56  | 2841<br>51  | 3552<br>45  | 4263<br>40  |
| <b>4</b>  | 681<br>86  | 1419<br>82  | 2153<br>77  | 2879<br>72  | 3604<br>67  | 4321<br>61  |
| <b>5</b>  | 675<br>109 | 1423<br>104 | 2165<br>99  | 2897<br>94  | 3628<br>88  | 4355<br>82  |
| <b>7</b>  | 654<br>153 | 1406<br>148 | 2161<br>143 | 2911<br>137 | 3652<br>130 | 4385<br>123 |
| <b>9</b>  | 624<br>198 | 1380<br>193 | 2143<br>186 | 2900<br>180 | 3645<br>173 | 4384<br>165 |
| <b>12</b> | 572<br>265 | 1331<br>259 | 2101<br>252 | 2863<br>244 | 3618<br>236 | 4364<br>228 |
| <b>15</b> | 514<br>332 | 1267<br>325 | 2040<br>317 | 2808<br>309 | 3570<br>300 | 4324<br>291 |
| <b>20</b> | 387<br>444 | 1138<br>436 | 1903<br>427 | 2667<br>417 | 3435<br>407 | 4201<br>396 |

Flow (GPM)

TORQUE (LB IN) 4201  
 SPEED (RPM) 396

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TF 0195

**12.0** cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        |
| <b>.5</b> | 710<br>8        | 1494<br>7   | 2286<br>5   | 3085<br>3   |             |             |
| <b>1</b>  | 737<br>18       | 1537<br>16  | 2334<br>14  | 3133<br>12  | 3946<br>9   | 4767<br>7   |
| <b>2</b>  | 757<br>37       | 1587<br>35  | 2417<br>32  | 3242<br>29  | 4067<br>26  | 4887<br>23  |
| <b>3</b>  | 758<br>56       | 1591<br>53  | 2424<br>51  | 3254<br>47  | 4086<br>44  | 4914<br>40  |
| <b>4</b>  | 759<br>75       | 1604<br>72  | 2450<br>69  | 3292<br>66  | 4131<br>62  | 4965<br>58  |
| <b>5</b>  | 755<br>94       | 1610<br>91  | 2469<br>88  | 3321<br>84  | 4163<br>80  | 5000<br>75  |
| <b>7</b>  | 737<br>132      | 1599<br>129 | 2467<br>125 | 3329<br>120 | 4185<br>116 | 5034<br>110 |
| <b>9</b>  | 709<br>170      | 1577<br>166 | 2451<br>162 | 3319<br>157 | 4181<br>152 | 5034<br>146 |
| <b>12</b> | 652<br>228      | 1523<br>223 | 2405<br>218 | 3283<br>212 | 4154<br>206 | 5018<br>199 |
| <b>15</b> | 586<br>285      | 1451<br>280 | 2338<br>273 | 3222<br>267 | 4100<br>260 | 4971<br>252 |
| <b>20</b> | 445<br>381      | 1303<br>375 | 2174<br>367 | 3056<br>359 | 3939<br>350 | 4822<br>341 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TF 0240**

**14.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 856<br>7   | 1796<br>5   | 2758<br>3   | 3739<br>1   |             |             |
| <b>1</b>  | 883<br>15  | 1838<br>13  | 2801<br>11  | 3780<br>8   | 4756<br>5   | 5741<br>3   |
| <b>2</b>  | 920<br>30  | 1912<br>28  | 2910<br>26  | 3895<br>23  | 4880<br>20  | 5864<br>17  |
| <b>3</b>  | 919<br>46  | 1920<br>44  | 2927<br>41  | 3931<br>38  | 4924<br>35  | 5919<br>31  |
| <b>4</b>  | 924<br>62  | 1941<br>60  | 2958<br>57  | 3967<br>54  | 4978<br>50  | 5985<br>45  |
| <b>5</b>  | 919<br>78  | 1948<br>75  | 2975<br>72  | 3998<br>69  | 5017<br>64  | 6025<br>60  |
| <b>7</b>  | 904<br>109 | 1947<br>106 | 2995<br>103 | 4036<br>99  | 5066<br>94  | 6090<br>89  |
| <b>9</b>  | 868<br>141 | 1922<br>137 | 2982<br>134 | 4033<br>130 | 5072<br>124 | 6101<br>119 |
| <b>12</b> | 815<br>188 | 1866<br>184 | 2930<br>180 | 3998<br>175 | 5053<br>169 | 6090<br>162 |
| <b>15</b> | 726<br>235 | 1791<br>231 | 2865<br>227 | 3934<br>221 | 5002<br>214 | 6054<br>206 |
| <b>20</b> | 539<br>315 | 1616<br>310 | 2699<br>304 | 3782<br>297 | 4863<br>289 | 5928<br>280 |
| <b>25</b> | 335<br>394 | 1404<br>389 | 2464<br>382 | 3542<br>374 | 4634<br>365 | 5718<br>354 |

Flow (GPM)

TORQUE (LB IN) 5718  
 SPEED (RPM) 354

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TF 0280**

**17.1 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        |
| <b>.5</b> | 1048<br>6       | 2180<br>5   | 3333<br>4   | 4508<br>3   | 5704<br>2   |             |
| <b>1</b>  | 1080<br>13      | 2237<br>12  | 3399<br>11  | 4577<br>9   | 5762<br>7   | 6925<br>5   |
| <b>2</b>  | 1120<br>26      | 2316<br>25  | 3516<br>23  | 4726<br>22  | 5915<br>19  | 7092<br>17  |
| <b>3</b>  | 1117<br>39      | 2320<br>38  | 3528<br>36  | 4742<br>34  | 5949<br>32  | 7134<br>29  |
| <b>4</b>  | 1120<br>53      | 2337<br>51  | 3559<br>49  | 4778<br>47  | 5988<br>44  | 7187<br>41  |
| <b>5</b>  | 1109<br>66      | 2342<br>64  | 3575<br>62  | 4802<br>60  | 6020<br>56  | 7218<br>53  |
| <b>7</b>  | 1086<br>93      | 2331<br>91  | 3582<br>88  | 4827<br>85  | 6058<br>81  | 7266<br>77  |
| <b>9</b>  | 1040<br>120     | 2299<br>117 | 3562<br>114 | 4811<br>111 | 6048<br>106 | 7264<br>102 |
| <b>12</b> | 978<br>160      | 2226<br>157 | 3494<br>154 | 4758<br>149 | 6001<br>144 | 7217<br>138 |
| <b>15</b> | 888<br>200      | 2146<br>197 | 3419<br>193 | 4688<br>188 | 5945<br>182 | 7176<br>175 |
| <b>20</b> | 678<br>267      | 1945<br>263 | 3223<br>258 | 4502<br>252 | 5777<br>245 | 7029<br>236 |
| <b>25</b> | 442<br>334      | 1686<br>330 | 2938<br>324 | 4206<br>316 | 5487<br>308 | 6754<br>297 |

**Flow (GPM)**

TORQUE (LB IN) 6754  
 SPEED (RPM) 297

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TF 0360

**22.2 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 1850        | 2000        | 2500        | 2750        |
| <b>.5</b> | 1436<br>5       | 2955<br>4   | 4497<br>4   | 5582<br>4   | 6047<br>3   | 7608<br>3   | 8393<br>3   |
| <b>1</b>  | 1492<br>10      | 3042<br>9   | 4591<br>9   | 5672<br>8   | 6136<br>8   | 7673<br>8   | 8445<br>7   |
| <b>2</b>  | 1532<br>20      | 3114<br>19  | 4691<br>19  | 5784<br>18  | 6249<br>18  | 7799<br>17  | 8575<br>16  |
| <b>3</b>  | 1527<br>30      | 3114<br>29  | 4699<br>29  | 5796<br>28  | 6263<br>27  | 7814<br>26  | 8590<br>25  |
| <b>4</b>  | 1526<br>40      | 3125<br>40  | 4718<br>38  | 5821<br>37  | 6290<br>37  | 7847<br>35  | 8624<br>34  |
| <b>5</b>  | 1504<br>51      | 3114<br>50  | 4719<br>48  | 5831<br>47  | 6304<br>46  | 7866<br>44  | 8641<br>43  |
| <b>7</b>  | 1469<br>71      | 3090<br>70  | 4697<br>68  | 5809<br>66  | 6282<br>66  | 7850<br>63  | 8630<br>61  |
| <b>9</b>  | 1392<br>92      | 3017<br>90  | 4640<br>88  | 5766<br>86  | 6243<br>85  | 7817<br>81  | 8595<br>79  |
| <b>12</b> | 1279<br>122     | 2902<br>120 | 4526<br>117 | 5653<br>115 | 6133<br>113 | 7712<br>109 | 8493<br>106 |
| <b>15</b> | 1106<br>153     | 2739<br>151 | 4385<br>147 | 5518<br>144 | 5999<br>142 | 7578<br>139 | 8355<br>134 |
| <b>20</b> | 840<br>204      | 2465<br>202 | 4115<br>197 | 5256<br>193 | 5735<br>191 | 7329<br>184 | 8121<br>180 |
| <b>25</b> | 516<br>255      | 2138<br>253 | 3756<br>248 | 4876<br>243 | 5356<br>240 | 6976<br>232 | 7785<br>226 |

Flow (GPM)

TORQUE (LB IN) 7785  
SPEED (RPM) 226

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TF 0405

**24.7** cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1850        | 2000        | 2500        |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1567<br>4   | 3212<br>4   | 4883<br>3   | 6075<br>2   | 6587<br>2   | 8325<br>2   |
| <b>1</b>  | 1623<br>9   | 3298<br>8   | 4972<br>7   | 6151<br>6   | 6660<br>6   | 8371<br>5   |
| <b>2</b>  | 1662<br>18  | 3377<br>17  | 5103<br>16  | 6306<br>14  | 6815<br>14  | 8507<br>12  |
| <b>3</b>  | 1665<br>27  | 3392<br>26  | 5118<br>24  | 6325<br>23  | 6839<br>22  | 8554<br>20  |
| <b>4</b>  | 1667<br>37  | 3414<br>35  | 5155<br>33  | 6367<br>32  | 6880<br>31  | 8591<br>28  |
| <b>5</b>  | 1652<br>46  | 3417<br>44  | 5171<br>42  | 6393<br>40  | 6909<br>39  | 8625<br>36  |
| <b>7</b>  | 1623<br>64  | 3399<br>62  | 5163<br>60  | 6392<br>58  | 6912<br>56  | 8638<br>53  |
| <b>9</b>  | 1549<br>83  | 3337<br>81  | 5125<br>78  | 6361<br>75  | 6883<br>73  | 8605<br>69  |
| <b>12</b> | 1432<br>111 | 3216<br>108 | 5006<br>104 | 6252<br>101 | 6779<br>99  | 8523<br>94  |
| <b>15</b> | 1259<br>138 | 3059<br>136 | 4866<br>131 | 6113<br>128 | 6644<br>126 | 8394<br>120 |
| <b>20</b> | 936<br>185  | 2735<br>182 | 4542<br>177 | 5800<br>172 | 6335<br>170 | 8106<br>162 |
| <b>25</b> | 657<br>231  | 2435<br>229 | 4187<br>222 | 5418<br>217 | 5945<br>214 | 7709<br>205 |

Flow (GPM)

TORQUE (LB IN) 7709  
SPEED (RPM) 205

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TF 0475

29.1 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 1645        | 1850        | 2000        |
| <b>.5</b> | 1870<br>4       | 3857<br>3   | 5875<br>3   | 6460<br>3   | 7292<br>2   | 7902<br>2   |
| <b>1</b>  | 1941<br>8       | 3967<br>7   | 5992<br>7   | 6582<br>6   | 7410<br>6   | 8016<br>6   |
| <b>2</b>  | 2003<br>15      | 4071<br>15  | 6124<br>14  | 6717<br>14  | 7554<br>13  | 8166<br>13  |
| <b>3</b>  | 1994<br>23      | 4072<br>23  | 6145<br>22  | 6738<br>21  | 7578<br>20  | 8192<br>20  |
| <b>4</b>  | 1993<br>31      | 4091<br>30  | 6177<br>29  | 6776<br>28  | 7620<br>27  | 8235<br>27  |
| <b>5</b>  | 1964<br>39      | 4081<br>38  | 6186<br>37  | 6790<br>36  | 7639<br>35  | 8258<br>34  |
| <b>7</b>  | 1918<br>55      | 4048<br>54  | 6159<br>52  | 6765<br>51  | 7620<br>50  | 8242<br>48  |
| <b>9</b>  | 1829<br>70      | 3965<br>59  | 6098<br>67  | 6709<br>66  | 7565<br>64  | 8189<br>63  |
| <b>12</b> | 1694<br>94      | 3822<br>92  | 5954<br>89  | 6575<br>89  | 7440<br>87  | 8063<br>85  |
| <b>15</b> | 1462<br>117     | 3617<br>116 | 5766<br>112 | 6385<br>111 | 7254<br>109 | 7875<br>107 |
| <b>20</b> | 1070<br>156     | 3231<br>154 | 5394<br>151 | 6027<br>149 | 6900<br>147 | 7530<br>145 |
| <b>25</b> | 711<br>195      | 2820<br>194 | 4927<br>190 | 5531<br>188 | 6391<br>185 | 7028<br>183 |

Flow (GPM)

TORQUE (LB IN) 7028  
SPEED (RPM) 183

TF 0365 Clutch Motor

22.2 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1400        | 1500        | 2000        | 2200        |
| <b>.5</b> | 1392<br>5       | 2902<br>4   | 4131<br>3   | 4441<br>3   | 6013<br>2   | 6653<br>2   |
| <b>1</b>  | 1439<br>10      | 2972<br>9   | 4208<br>8   | 4518<br>8   | 6090<br>7   | 6725<br>7   |
| <b>2</b>  | 1478<br>20      | 3061<br>19  | 4332<br>18  | 4651<br>18  | 6248<br>17  | 6884<br>16  |
| <b>3</b>  | 1478<br>30      | 3071<br>29  | 4349<br>29  | 4670<br>28  | 6268<br>27  | 6906<br>26  |
| <b>4</b>  | 1480<br>41      | 3089<br>40  | 4379<br>39  | 4703<br>38  | 6311<br>37  | 6950<br>36  |
| <b>5</b>  | 1467<br>51      | 3096<br>50  | 4396<br>49  | 4720<br>49  | 6332<br>47  | 6971<br>46  |
| <b>7</b>  | 1434<br>72      | 3072<br>70  | 4384<br>69  | 4712<br>69  | 6344<br>66  | 6990<br>65  |
| <b>9</b>  | 1378<br>92      | 3031<br>91  | 4355<br>89  | 4686<br>89  | 6322<br>86  | 6970<br>85  |
| <b>12</b> | 1278<br>123     | 2922<br>122 | 4252<br>120 | 4585<br>119 | 6242<br>116 | 6897<br>115 |
| <b>15</b> | 1158<br>154     | 2810<br>152 | 4139<br>150 | 4470<br>150 | 6127<br>146 | 6787<br>144 |
| <b>20</b> | 873<br>206      | 2531<br>204 | 3871<br>202 | 4206<br>201 | 5878<br>197 | 6546<br>194 |
| <b>25</b> | 557<br>258      | 2197<br>255 | 3509<br>253 | 3839<br>252 | 5498<br>247 | 6175<br>244 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

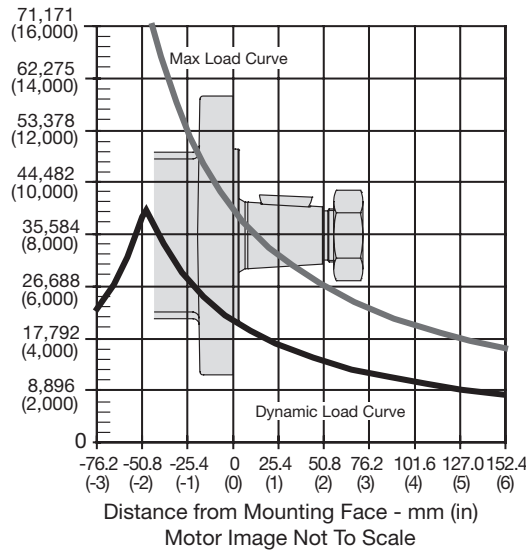


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



Flange Mount

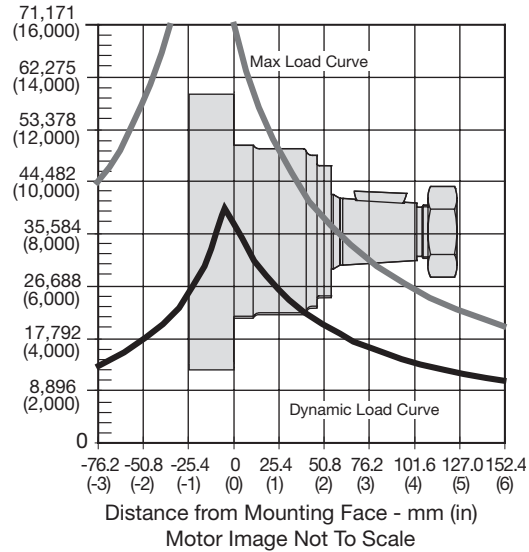
Side Load - N (lbs)



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where :

S = Shaft Speed RPM

L = Life In Hours

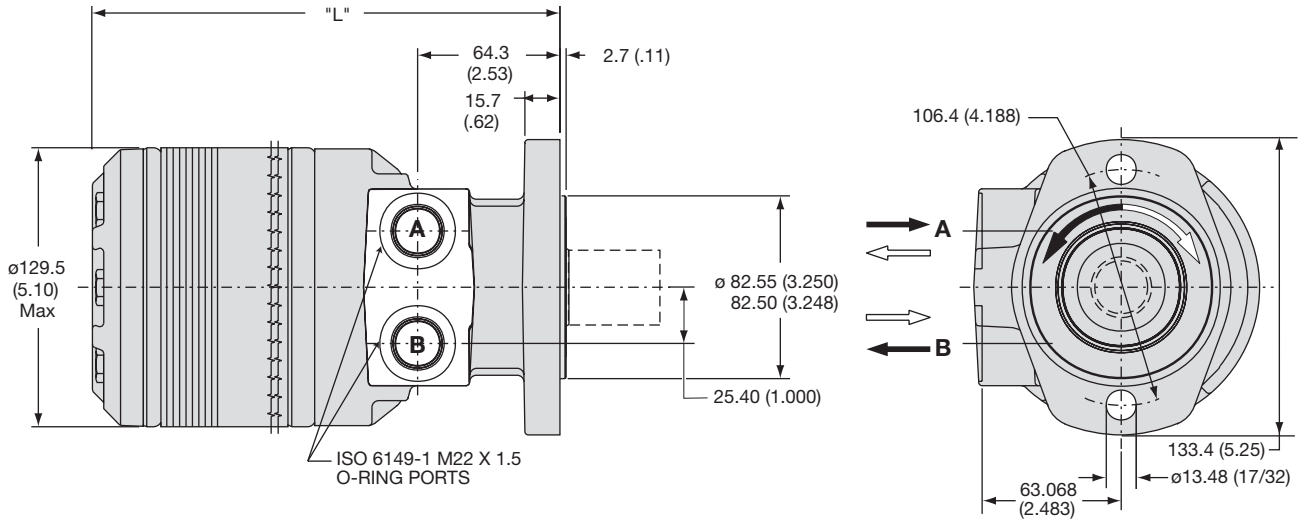
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: AH

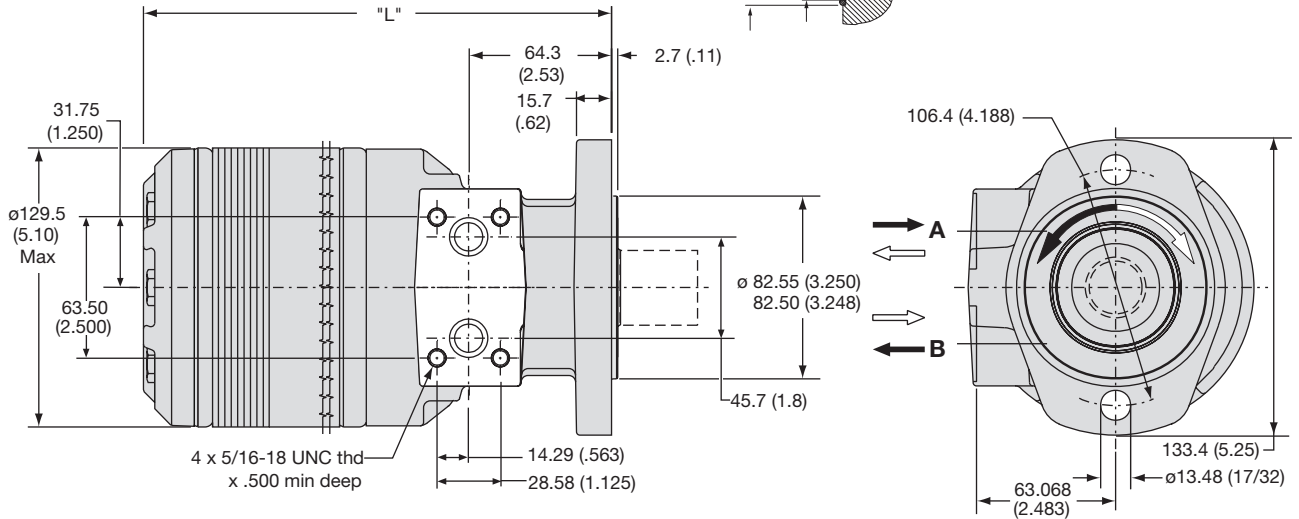
SAE A 2-Bolt, ISO 6149-1 M22 x 1.5



| Code AH        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.6   | 13.6   | 13.8   | 13.9   | 14.2   | 14.5   | 14.9   | 15.2   | 16.0   | 16.5   | 17.2   |
| Poids/Peso     | (lb)     | (29.9) | (30.0) | (30.5) | (30.7) | (31.3) | (31.9) | (32.9) | (33.5) | (35.2) | (36.4) | (37.9) |
| Length         | "L" mm   | 190.8  | 190.8  | 193.8  | 195.6  | 198.6  | 201.9  | 207    | 211.3  | 221.0  | 225.3  | 233.7  |
|                | "L" (in) | (7.51) | (7.51) | (7.63) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.70) | (8.87) | (9.20) |

Code: AM

SAE A 2-Bolt, Manifold



Motor with manifold mount is supplied with 2 o-rings.

| Code AM        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.6   | 13.6   | 13.8   | 13.9   | 14.2   | 14.5   | 14.9   | 15.2   | 16.0   | 16.5   | 17.2   |
| Poids/Peso     | (lb)     | (29.9) | (30.0) | (30.5) | (30.7) | (31.3) | (31.9) | (32.9) | (33.5) | (35.2) | (36.4) | (37.9) |
| Length         | "L" mm   | 190.8  | 190.8  | 193.8  | 195.6  | 198.6  | 201.9  | 207    | 211.3  | 221.0  | 225.3  | 233.7  |
|                | "L" (in) | (7.51) | (7.51) | (7.63) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.70) | (8.87) | (9.20) |

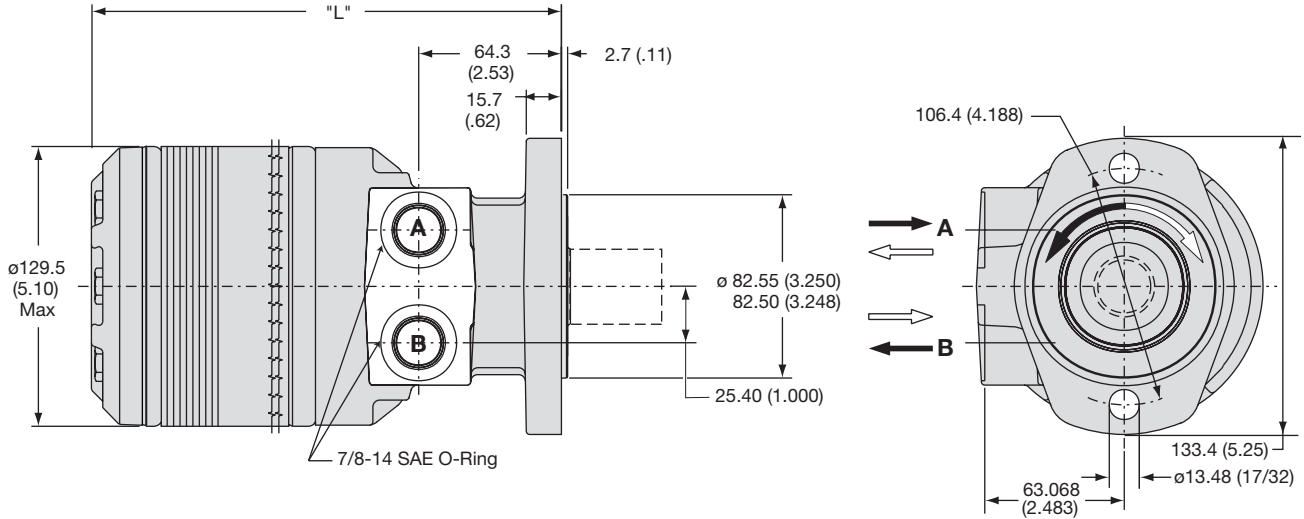
English equivalents for metric specifications are shown in ( ).



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: AS

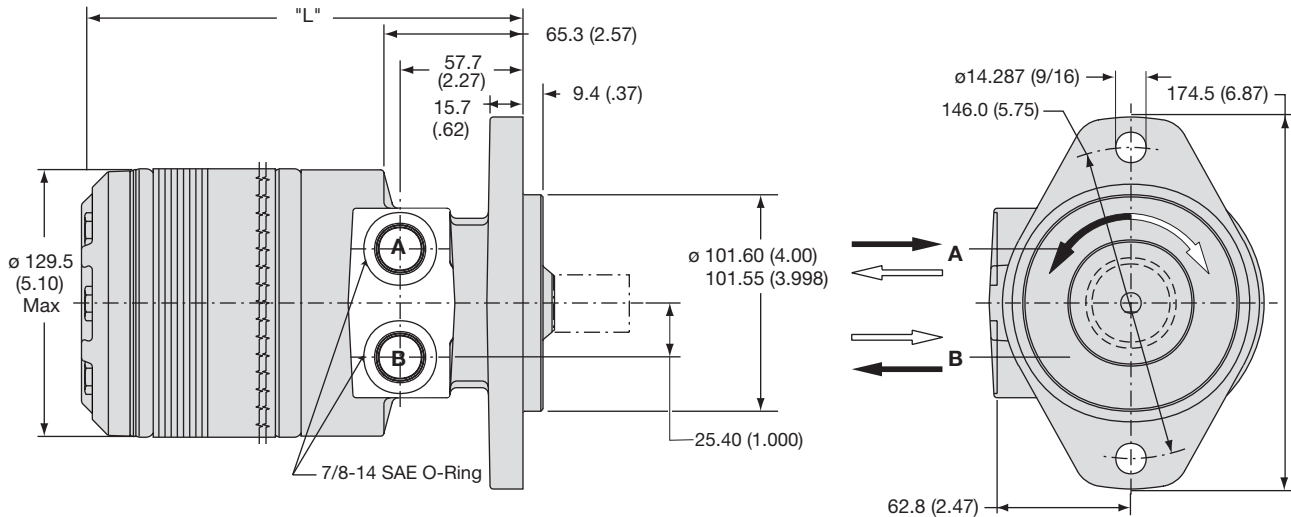
SAE A 2-Bolt, 7/8-14 SAE O-Ring



| Code AS        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.6   | 13.6   | 13.8   | 13.9   | 14.2   | 14.5   | 14.9   | 15.2   | 16.0   | 16.5   | 17.2   |
| Poids/Peso     | (lb)     | (29.9) | (30.0) | (30.5) | (30.7) | (31.3) | (31.9) | (32.9) | (33.5) | (35.2) | (36.4) | (37.9) |
| Length         | "L" mm   | 190.8  | 190.8  | 193.8  | 195.6  | 198.6  | 201.9  | 206.5  | 211.3  | 221.0  | 225.3  | 233.7  |
|                | "L" (in) | (7.51) | (7.51) | (7.63) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.70) | (8.87) | (9.20) |

Code: BS

SAE B 2-Bolt, 7/8-14 SAE O-Ring



| Code BS        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.2   | 14.2   | 14.5   | 14.6   | 14.8   | 15.1   | 15.5   | 15.8   | 16.6   | 17.1   | 17.8   |
| Poids/Peso     | (lb)     | (31.3) | (31.4) | (31.9) | (32.1) | (32.7) | (33.3) | (34.3) | (34.9) | (36.6) | (37.8) | (39.3) |
| Length         | "L" mm   | 184.2  | 184.2  | 187.2  | 189.0  | 198.6  | 195.3  | 200.0  | 204.8  | 214.3  | 218.4  | 227.1  |
|                | "L" (in) | (7.25) | (7.25) | (7.37) | (7.44) | (7.56) | (7.69) | (7.87) | (8.06) | (8.44) | (8.60) | (8.94) |

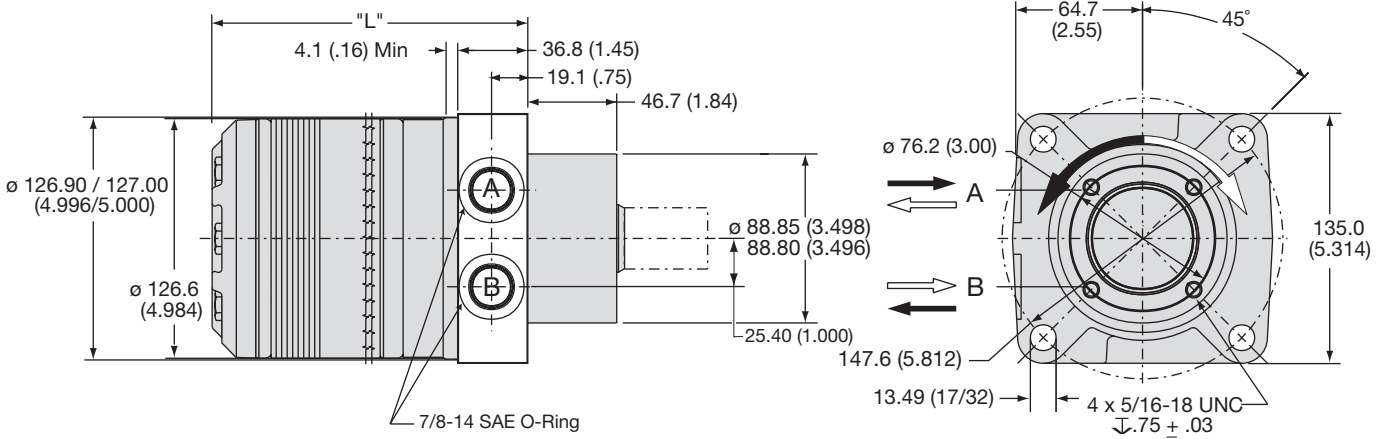
English equivalents for metric specifications are shown in ( ).



**WARNING**  
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Code: LS

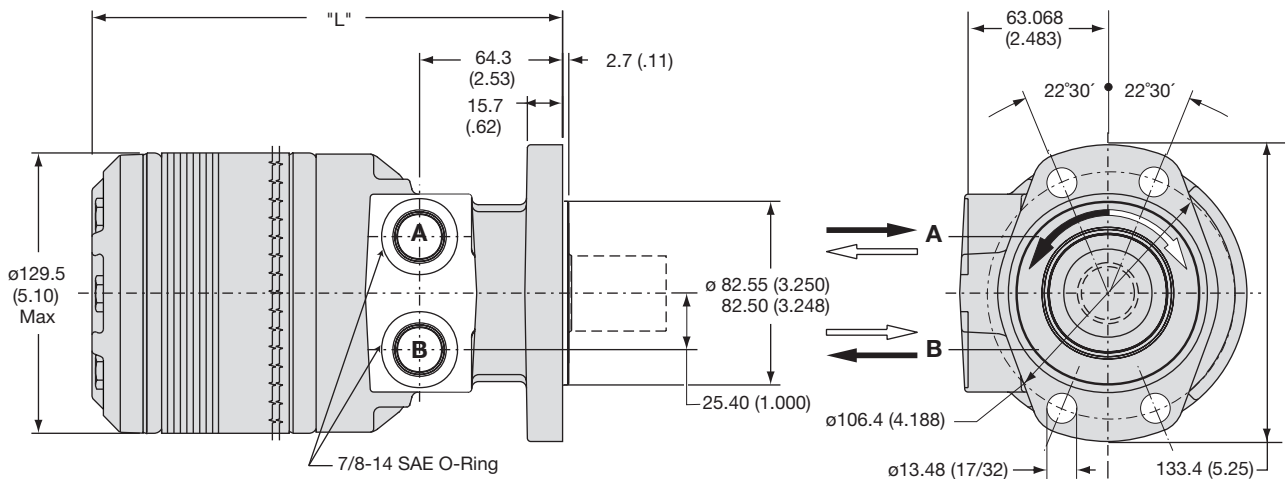
Wheel, Front Brake Nose



| Code LS        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.0   | 14.0   | 14.2   | 14.3   | 14.6   | 14.9   | 15.3   | 15.6   | 16.3   | 17.0   | 17.5   |
| Poids/Peso     | (lb)     | (30.9) | (30.9) | (31.2) | (31.5) | (32.1) | (32.9) | (33.7) | (34.4) | (35.9) | (37.5) | (38.6) |
| Length         | "L" mm   | 145.5  | 145.5  | 148.6  | 150.4  | 153.4  | 156.7  | 161.3  | 166.1  | 175.8  | 180.0  | 188.5  |
|                | "L" (in) | (5.73) | (5.73) | (5.85) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.92) | (7.08) | (7.42) |

Code: MS

Magneto, 7/8-14 SAE O-Ring

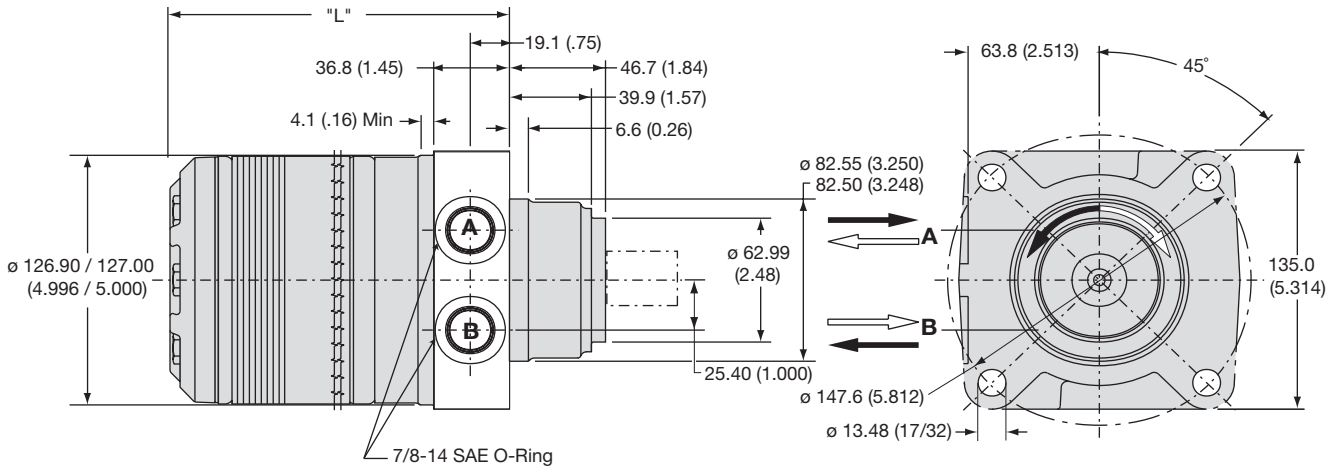


| Code MS        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.6   | 13.6   | 13.8   | 13.9   | 14.2   | 14.5   | 14.9   | 15.2   | 16.0   | 16.5   | 17.2   |
| Poids/Peso     | (lb)     | (29.9) | (30.0) | (30.5) | (30.7) | (31.3) | (31.9) | (32.9) | (33.5) | (35.2) | (36.4) | (37.9) |
| Length         | "L" mm   | 190.8  | 190.8  | 193.8  | 195.6  | 198.6  | 201.9  | 206.5  | 211.3  | 221.0  | 225.3  | 233.7  |
|                | "L" (in) | (7.51) | (7.51) | (7.63) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.70) | (8.87) | (9.20) |

English equivalents for metric specifications are shown in ( ).

Code: US

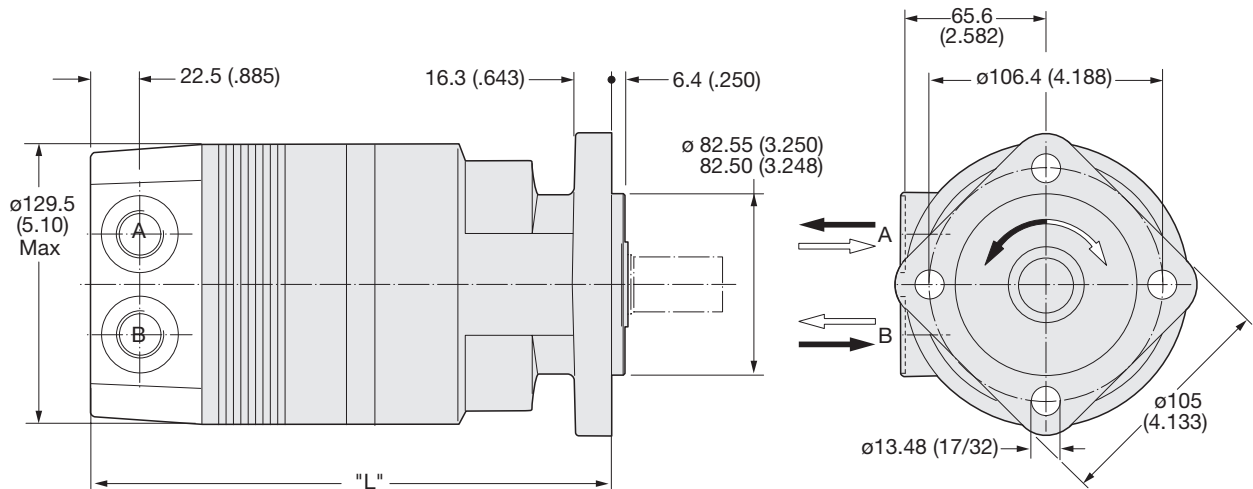
Wheel, Standard, 7/8-14 SAE O-Ring



| Code US        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.9   | 13.9   | 14.2   | 14.3   | 14.5   | 14.8   | 15.2   | 15.5   | 16.3   | 16.9   | 17.5   |
| Poids/Peso     | (lb)     | (30.6) | (30.7) | (31.2) | (31.5) | (32.0) | (32.7) | (33.6) | (34.2) | (35.9) | (37.2) | (38.6) |
| Length         | "L" mm   | 145.5  | 145.5  | 148.6  | 150.4  | 153.4  | 156.7  | 161.3  | 166.1  | 175.8  | 179.8  | 188.5  |
|                | "L" (in) | (5.73) | (5.73) | (5.85) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.92) | (7.08) | (7.42) |

Code: VB

SAE A 4-Bolt, 7/8-14 SAE Rear Port



| Code VB        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg       | 14.0   | 14.0   | 14.2   | 14.3   | 14.6   | 14.9   | 15.3   | 15.6   | 16.3   | 17.0   | 17.5    |
| Poids/Peso     | (lb)     | (30.9) | (30.9) | (31.2) | (31.5) | (32.1) | (32.9) | (33.7) | (34.4) | (35.9) | (37.5) | (38.6)  |
| Length         | "L" mm   | 213.1  | 213.1  | 215.6  | 218.4  | 221.0  | 224.0  | 229.1  | 232.9  | 242.1  | 246.9  | 256.0   |
|                | "L" (in) | (8.39) | (8.39) | (8.49) | (8.60) | (8.70) | (8.82) | (9.02) | (9.17) | (9.53) | (9.72) | (10.08) |

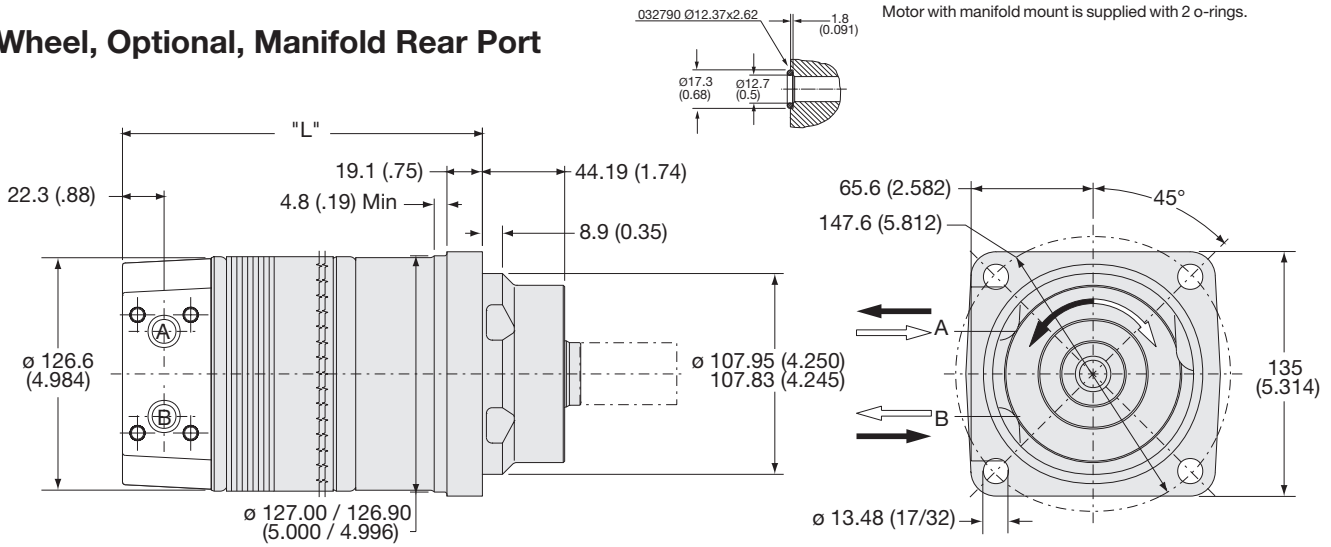
English equivalents for metric specifications are shown in ( ).



**WARNING**  
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Code: WE

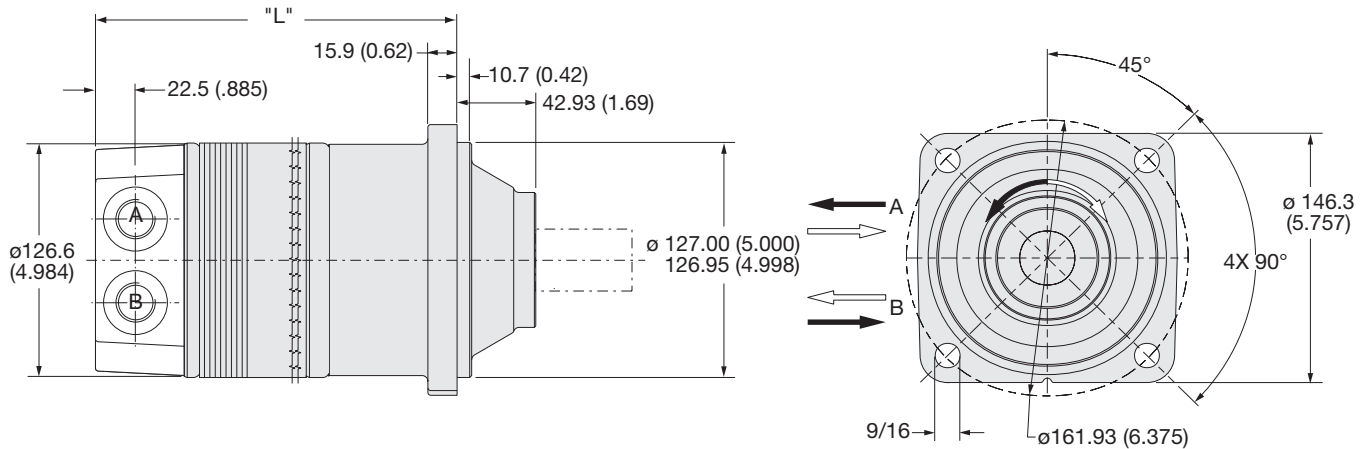
Wheel, Optional, Manifold Rear Port



| Code WE        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 16.9   | 16.9   | 17.2   | 17.3   | 17.5   | 17.8   | 18.2   | 18.5   | 19.3   | 19.8   | 20.5   |
| Poids/Peso     | (lb)     | (37.2) | (37.3) | (37.8) | (38.0) | (38.6) | (39.2) | (40.2) | (40.8) | (42.5) | (43.7) | (45.2) |
| Length         | "L" mm   | 172.7  | 172.7  | 176.0  | 177.5  | 180.6  | 183.9  | 188.7  | 193.3  | 202.9  | 207.0  | 215.6  |
|                | "L" (in) | (6.80) | (6.80) | (6.93) | (6.99) | (7.11) | (7.24) | (7.43) | (7.61) | (7.99) | (8.15) | (8.49) |

Code: DB

Large Wheel Mount, 7/8-14 SAE Rear Port



| Code DB        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 16.9   | 16.9   | 17.2   | 17.3   | 17.5   | 17.8   | 18.2   | 18.5   | 19.3   | 19.8   | 20.5   |
| Poids/Peso     | (lb)     | (37.2) | (37.3) | (37.8) | (38.0) | (38.6) | (39.2) | (40.2) | (40.8) | (42.5) | (43.7) | (45.2) |
| Length         | "L" mm   | 173.0  | 173.0  | 175.5  | 178.8  | 182.1  | 185.2  | 190.0  | 194.8  | 200.9  | 208.5  | 216.9  |
|                | "L" (in) | (6.81) | (6.81) | (6.91) | (7.04) | (7.17) | (7.29) | (7.48) | (7.67) | (7.91) | (8.21) | (8.54) |

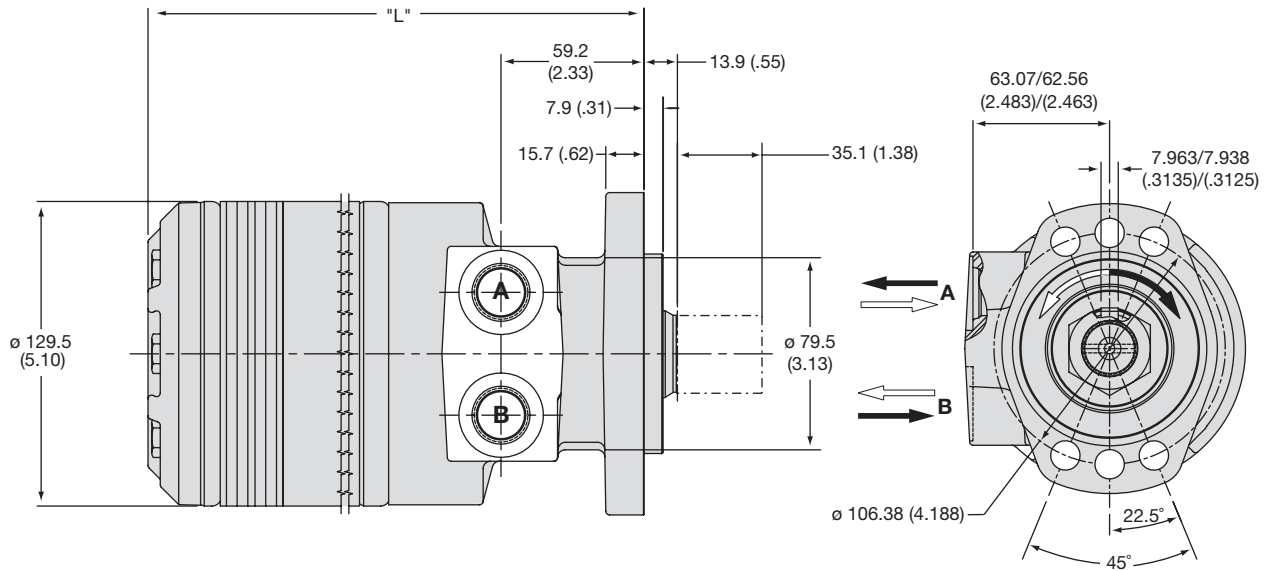
English equivalents for metric specifications are shown in ( ).



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

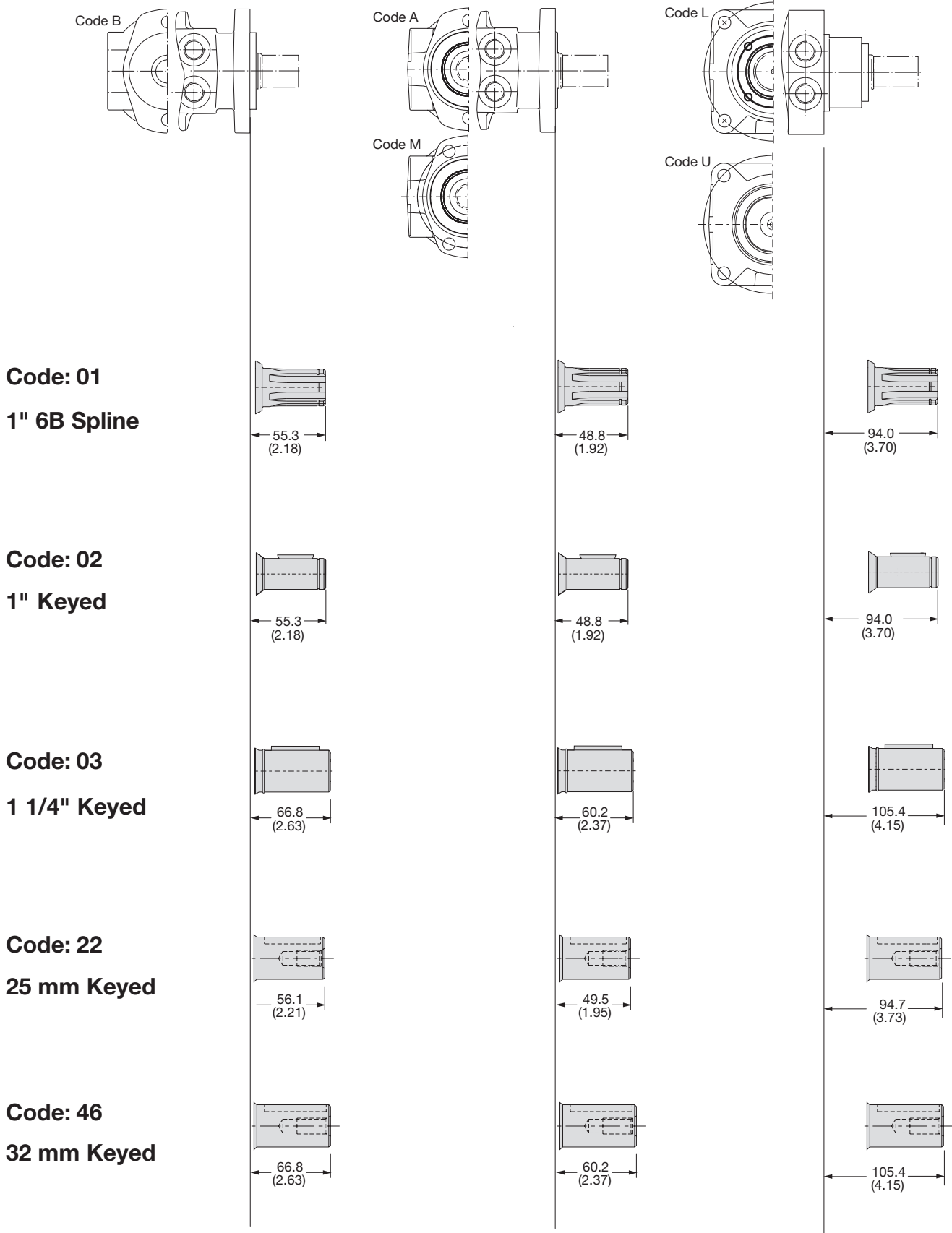
Code: ES

Modified SAE A 6-Bolt, 7/8-14 SAE O-Ring



| Code ES        | disp.    | 0080   | 0100   | 0130   | 0140   | 0170   | 0195   | 0240   | 0280   | 0360   | 0405   | 0475   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 13.6   | 13.6   | 13.8   | 13.9   | 14.2   | 14.5   | 14.9   | 15.2   | 16.0   | 16.5   | 17.2   |
| Poids/Peso     | (lb)     | (29.9) | (30.0) | (30.5) | (30.7) | (31.3) | (31.9) | (32.9) | (33.5) | (35.2) | (36.4) | (37.9) |
| Length         | "L" mm   | 184.7  | 184.7  | 187.7  | 189.5  | 192.5  | 195.8  | 200.4  | 205.2  | 214.9  | 218.9  | 227.6  |
|                | "L" (in) | (7.27) | (7.27) | (7.39) | (7.46) | (7.58) | (7.71) | (7.89) | (8.08) | (8.46) | (8.62) | (8.96) |

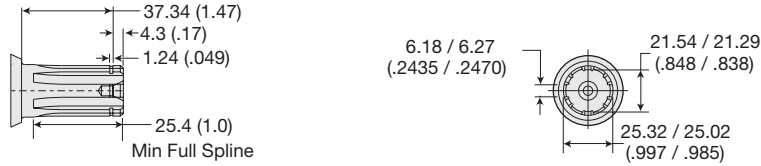
English equivalents for metric specifications are shown in ( ).



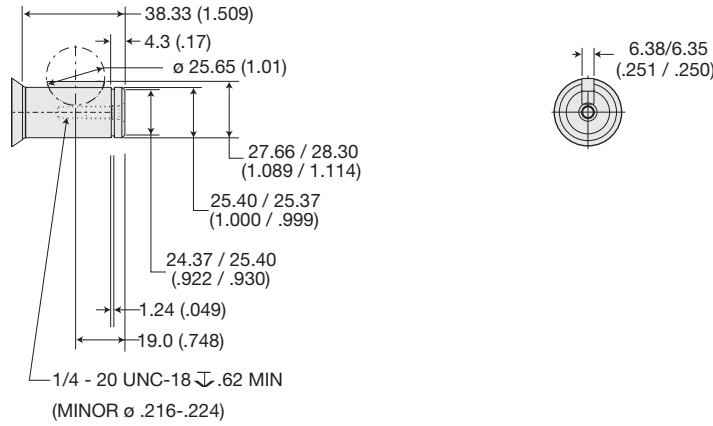
English equivalents for metric specifications are shown in ( ).



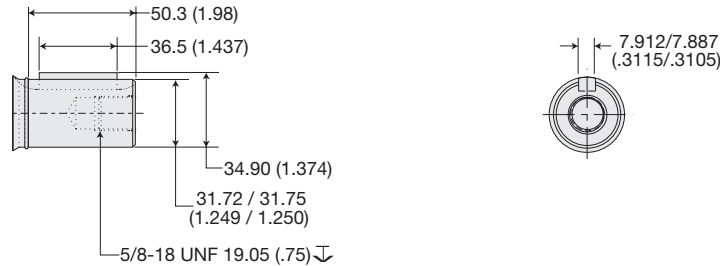
**Code: 01**  
**1" 6B Spline**



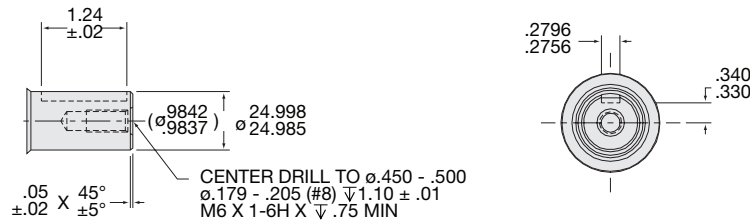
**Code: 02**  
**1" Keyed**



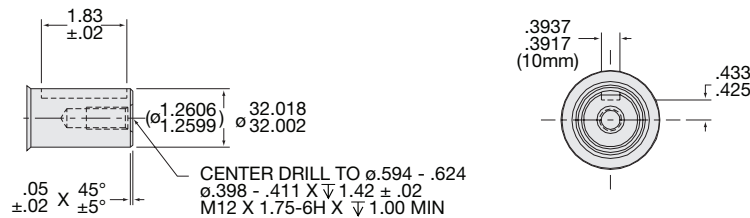
**Code: 03**  
**1 1/4" Keyed**



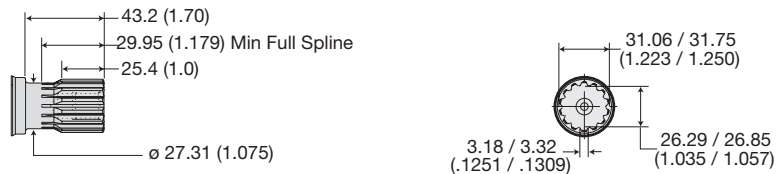
**Code: 22**  
**25 mm Keyed**



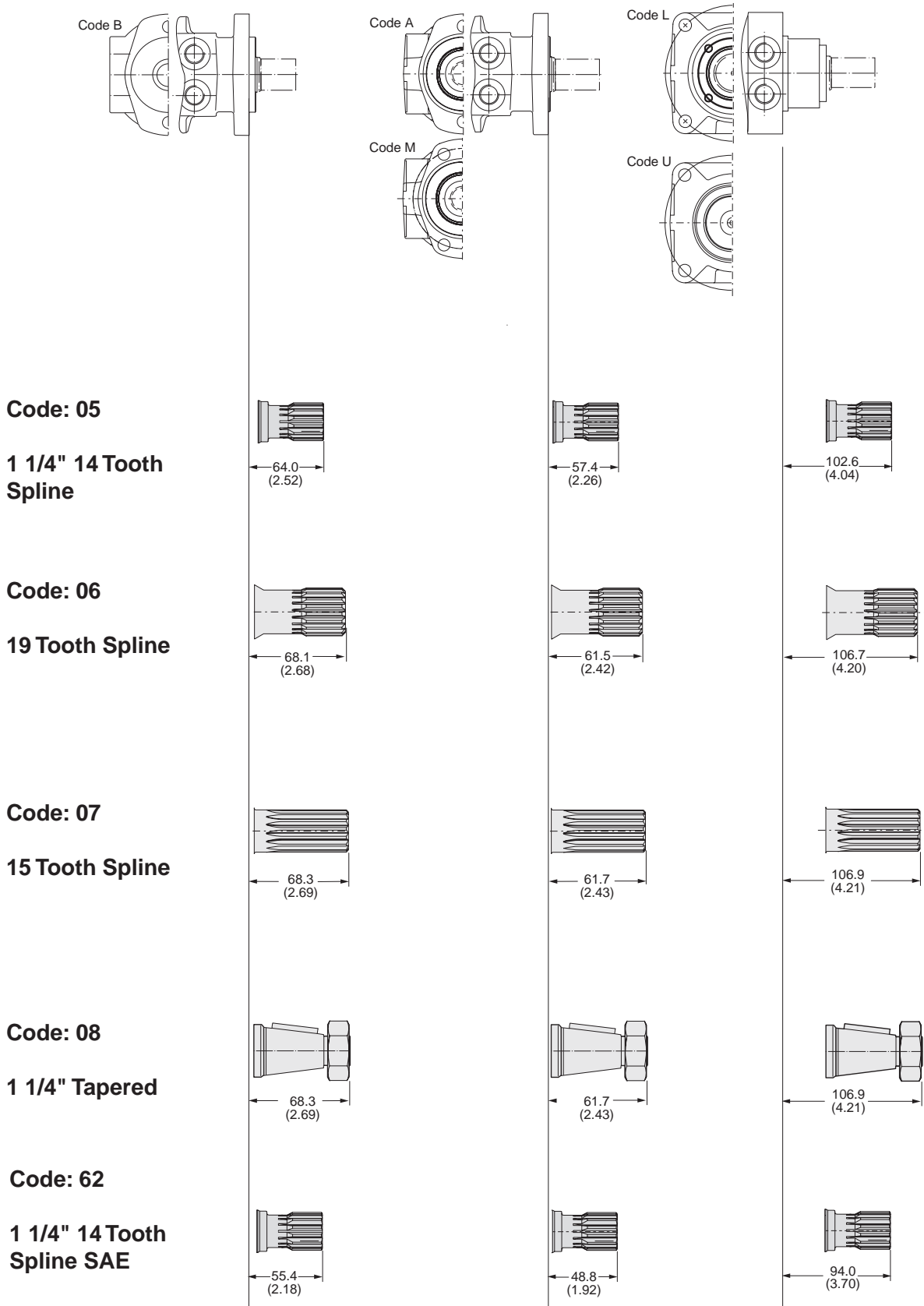
**Code: 46**  
**32 mm Keyed**



**Code: 62**  
**1 1/4" 14 Tooth Spline SAE**

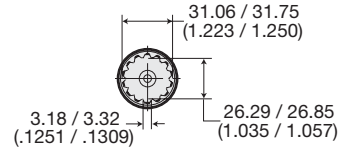
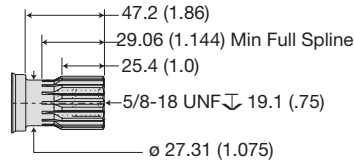


English equivalents for metric specifications are shown in ( ).

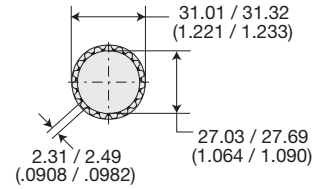
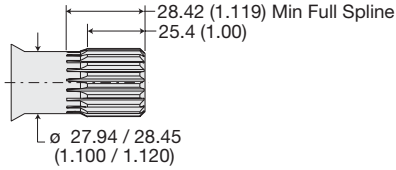


English equivalents for metric specifications are shown in ( ).

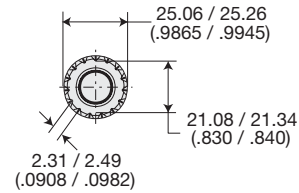
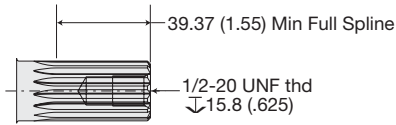
**Code: 05**  
**1 1/4" 14 Tooth Spline**



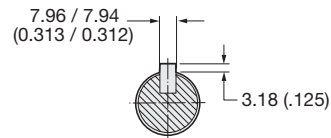
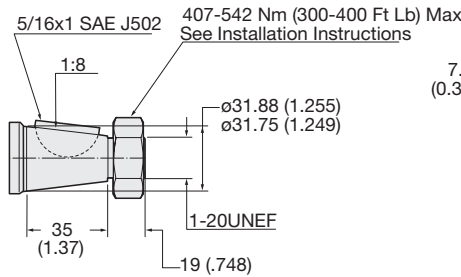
**Code: 06**  
**19 Tooth Spline**



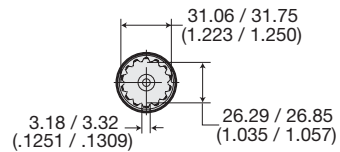
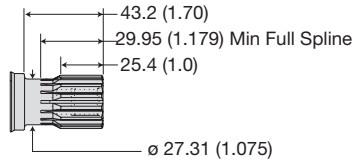
**Code: 07**  
**15 Tooth Spline**



**Code: 08**  
**1 1/4" Tapered**



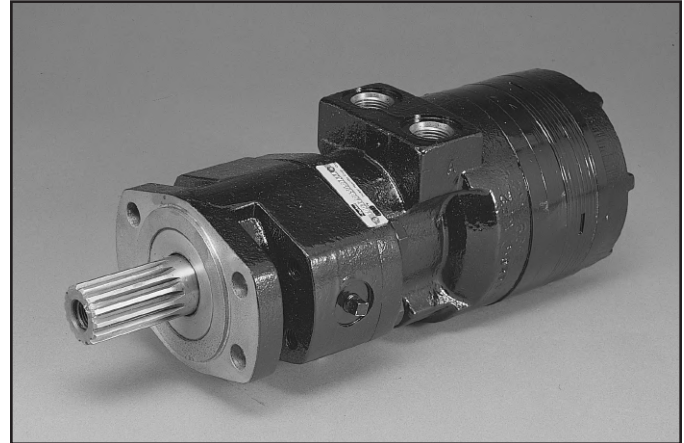
**Code: 62**  
**1 1/4" 14 Tooth Spline SAE**



English equivalents for metric specifications are shown in ( ).

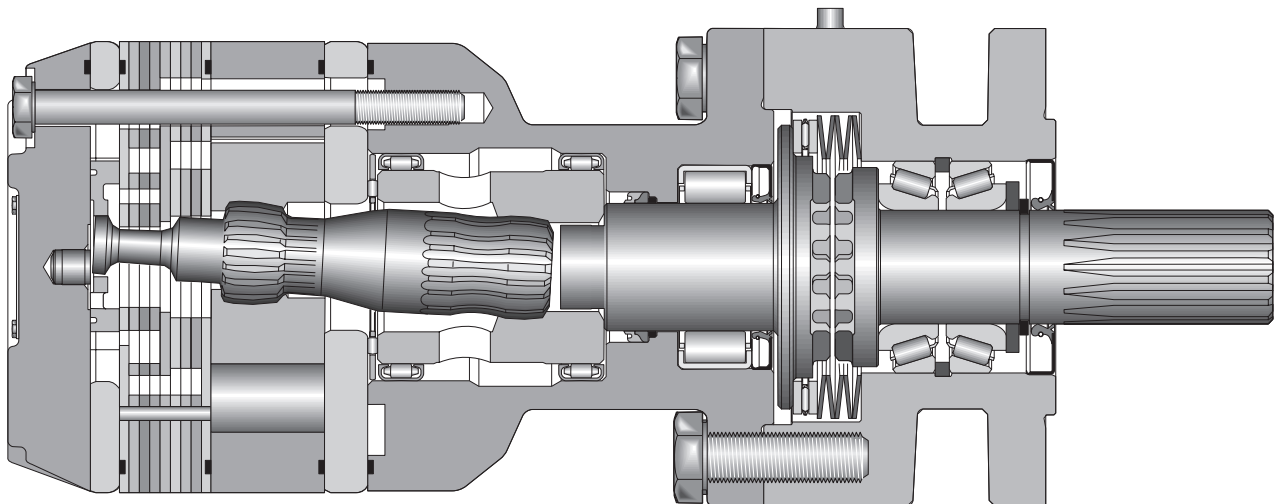
|                         |   |  |
|-------------------------|---|--|
| <b>9 Displacements</b>  | (4.9 - 22.2 in <sup>3</sup> /rev)<br><b>81 . . . 364 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b> | <b>Cont.</b><br>(3000 psid)<br>. . . <b>207 bar</b>                         | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b> | (25 gpm)<br><b>. . .95 lpm</b>  |  |
| <b>Maximum Speed</b>    | (749 rpm)<br><b>749 rpm</b>   |  |
| <b>Maximum Torque</b>   | <b>Cont.</b><br>(4502 lb in)<br><b>509 Nm</b>                               | <b>Int.</b><br>(7029 lb in)<br><b>794 Nm</b>       |

The Clutch Motor consists of a TF Series motor separated from the output shaft by a face spline coupling. The coupling is held apart by springs, disconnecting the motor from the output shaft, allowing the output shaft to freewheel. When hydraulic pressure is applied to either motor port, the springs separating the coupling are overcome and the motor is coupled to the output shaft.



Notes:

- 1) It is not recommended to engage the clutch while the output shaft is rotating.
- 2) Clutch may not disengage if there is residual torque on output shaft when pressure is lost at motor ports.
- 3) Minimum pressure to engage clutch - 200 PSI.
- 4) To assure clutch disengagement, pressure at motor ports must be below 60 PSI.
- 5) Shaft will freewheel when pressure is lost at motor ports whether by design or inadvertently. The possibility of unplanned freewheeling should be considered in the design of the system.
- 6) If applicable, contact factory for radial load capacity.



**TF**

Series

**XXXX**

Displacement

**GS**

Mounting/Ports

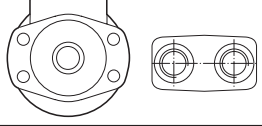
**XX**



Shaft


**0**



Rotation

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0080 | 81 / 4.9  |
| 0100 | 100 / 6.1   |
| 0130 | 128 / 7.8   |
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 197 / 12.0  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0365 | 364 / 22.2  |

| Code | Mounting/Ports   |
|------|--|
| GS   | Magneto, 7/8-14 SAE<br> |

| Code | Shaft  |
|------|--|
| 03   | 1 1/4" Keyed<br>            |
| 05   | 1 1/4" 14 Tooth Spline<br> |

| Custom Order |   |
|--------------|---|
| 08           | 1.25" Tapered, 1-20 Thread<br> |

| Code | Rotation  |
|------|---|
| 0    | Standard<br>                     |
| 1    | Reverse<br>Timed<br>Manifold<br> |

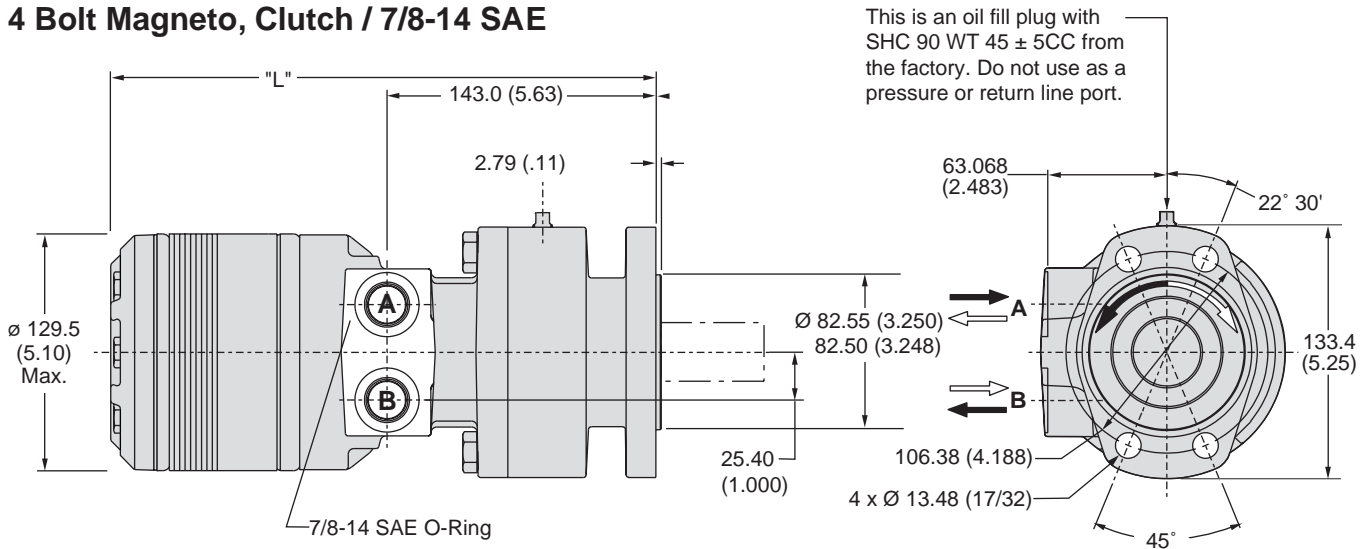
**XXXX**

**Options  
 Opciones**

| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |

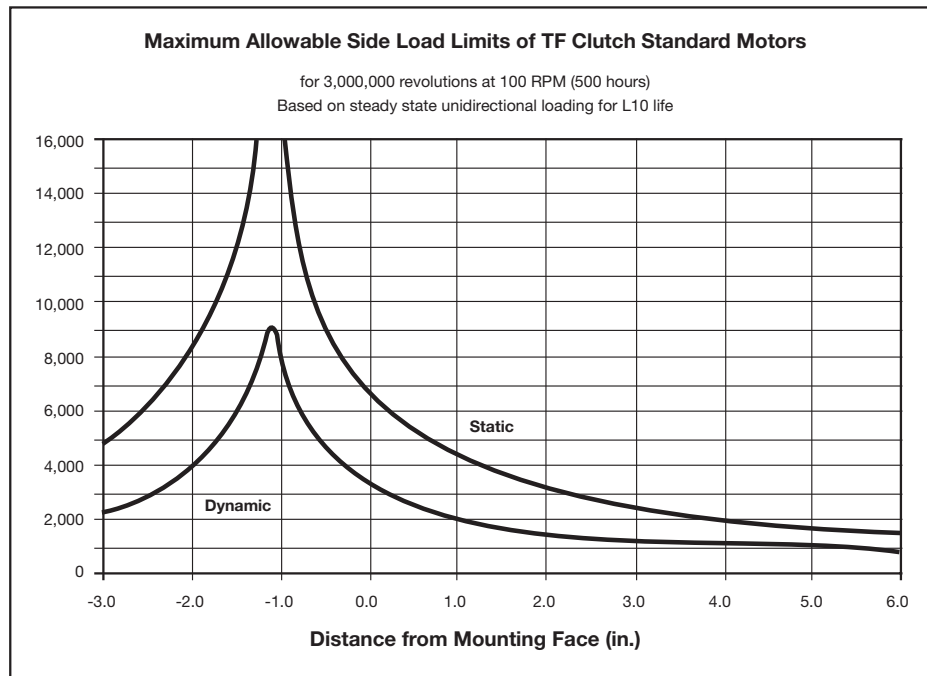
Code: GS

4 Bolt Magneto, Clutch / 7/8-14 SAE



| Code GS        | disp.    | 0080    | 0100    | 0130    | 0140    | 0170    | 0195    | 0240    | 0280    | 0365    |
|----------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg       | 17.9    | 17.9    | 18.1    | 18.2    | 18.5    | 18.8    | 19.2    | 19.5    | 20.3    |
| Poids/Peso     | (lb)     | (39.3)  | (39.4)  | (39.9)  | (40.1)  | (40.7)  | (41.3)  | (42.3)  | (42.9)  | (44.6)  |
| Length         | "L" mm   | 270     | 270     | 273     | 275     | 278     | 281     | 286     | 290     | 300     |
|                | "L" (in) | (10.61) | (10.61) | (10.73) | (10.80) | (10.92) | (11.05) | (11.23) | (11.42) | (11.80) |

For performance data curves, see TF section.

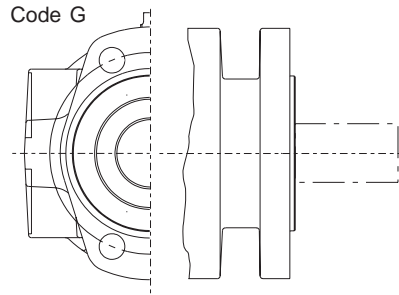


English equivalents for metric specifications are shown in ( ).

008 TF Clutch.indd, b

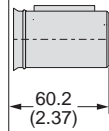


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



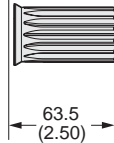
**Code: 03**

**1 1/4" Keyed**



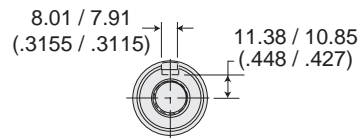
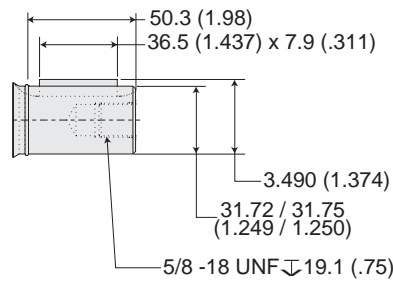
**Code: 05**

**1 1/4" 14 Tooth Spline**



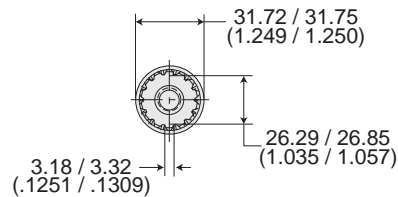
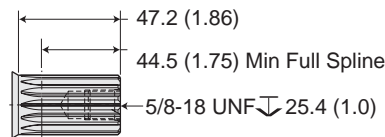
**Code: 03**

**1 1/4" Keyed**



**Code: 05**

**1 1/4" 14 Tooth Spline**



English equivalents for metric specifications are shown in ( ).

008 TF Clutch.indd, b



**WARNING**

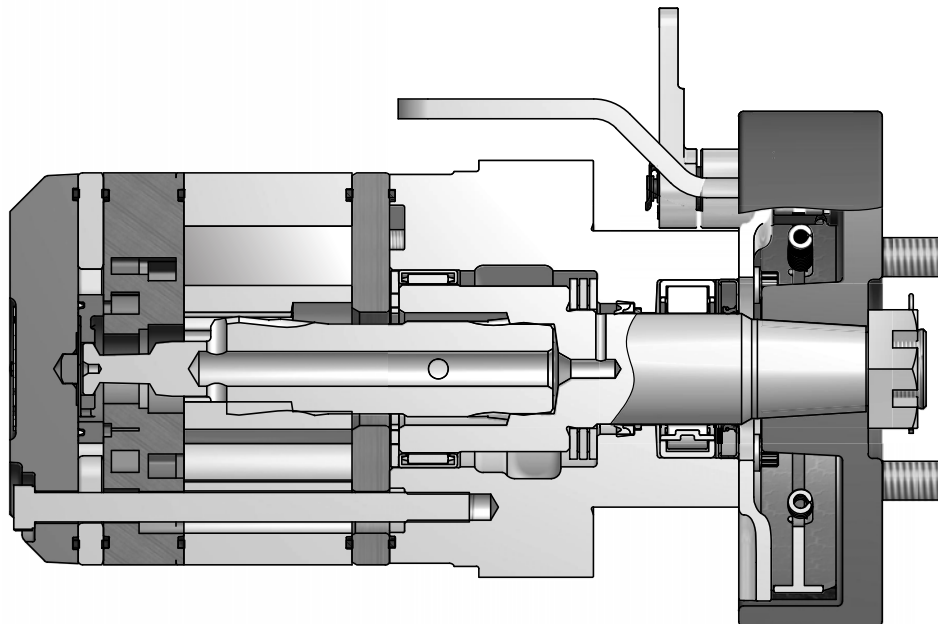
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



|                                 |  |   |
|---------------------------------|--|---|
| <b>11 Displacements</b>         | (4.9 - 29.1 in <sup>3</sup> /rev)<br>81 ... 477 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>... 207 bar                           | <b>Int.</b><br>(4000 psid)<br>... 276 bar |
| <b>Maximum Oil Flow</b>         | (25 gpm)<br>... 95 lpm   |   |
| <b>Maximum Speed</b>            | (749 rpm)<br>749 rpm   |   |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(6027 lb in)<br>681 Nm                               | <b>Int.</b><br>(8106 lb in)<br>916 Nm     |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>... 16000 N   |   |

## A Mechanical Brake Motor for Tough Applications

Parker's DF Series brake motors consists of a mechanical drum brake mounted integrally to our rugged TF Series LSHT hydraulic motor. The compact size, reliable holding capacity and ease of installation make this motor with parking brake the ideal choice for the propulsion systems on many turf, agricultural and other vehicles.



**DF**

Series

**XXXX**

Displacement

**XS**

Mounting/Ports




**X**

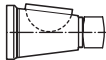
Drum Type



**X**

Shaft

| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro in <sup>3</sup> /rev |
|------|---|
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 195 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0310 | 310 / 18.9  |
| 0335 | 337 / 20.6  |
| 0405 | 405 / 24.7  |
| 0475 | 477 / 29.1  |

| Code | Mounting/Ports - Horizontal Lever  |
|------|--|
| US   | Wheel Mt. w/Brake<br>Lever @ 270° / 7/8-14 SAE   |
| VS   | Wheel Mt. w/Brake<br>Lever @ 90° / 7/8-14 SAE   |
| WS   | Wheel Mt. w/Brake<br>Lever @ 180° / 7/8-14 SAE  |

| Code | Shaft  |
|------|--|
| 8    | 1 1/4" Tapered  |



| Code | Drum Type  |
|------|--|
| A    |  4 Bolt |
| B    |  5 Bolt |

**0**

Rotation

**XXXX**

Options  
Opciones

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

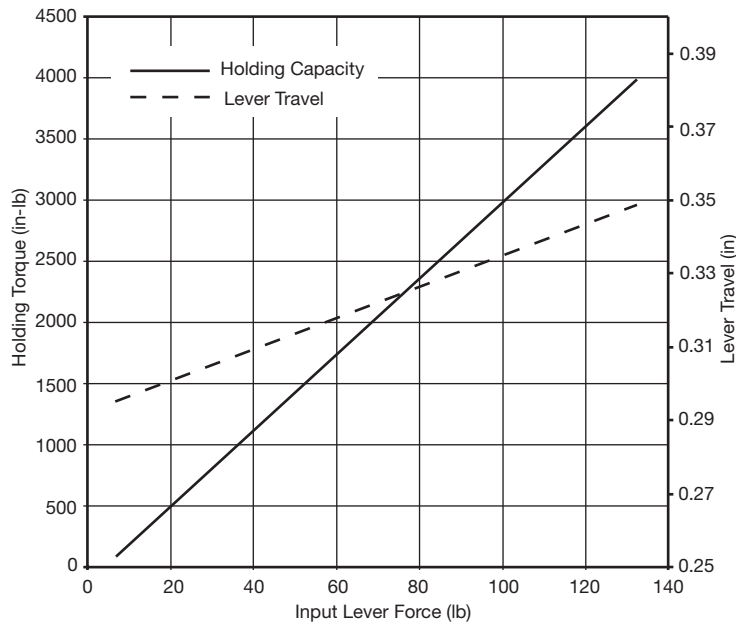
| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft                         |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |

## Vertical Lever

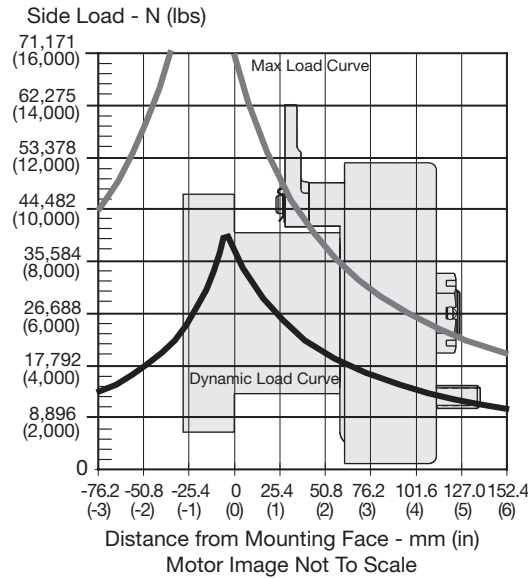
Holding capacity is 497 Nm (4,400 in lbs) with 68 Nm (600 in lbs) of input torque at lever pivot. Brake capacities are typical for non-burnished brake shoe. OEM testing required to verify actual field conditions.

## Horizontal Lever

**Brake Torque and Travel of 3.72 inch Horizontal Lever**



Wheel Mount



The dynamic side load curve is based on uni-directional steady state loads for L<sub>10</sub> bearing life at 3 x 10<sup>6</sup> revolutions.

The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use F<sub>a</sub>, F<sub>b</sub> and S in equation to determine hours of L<sub>10</sub> bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

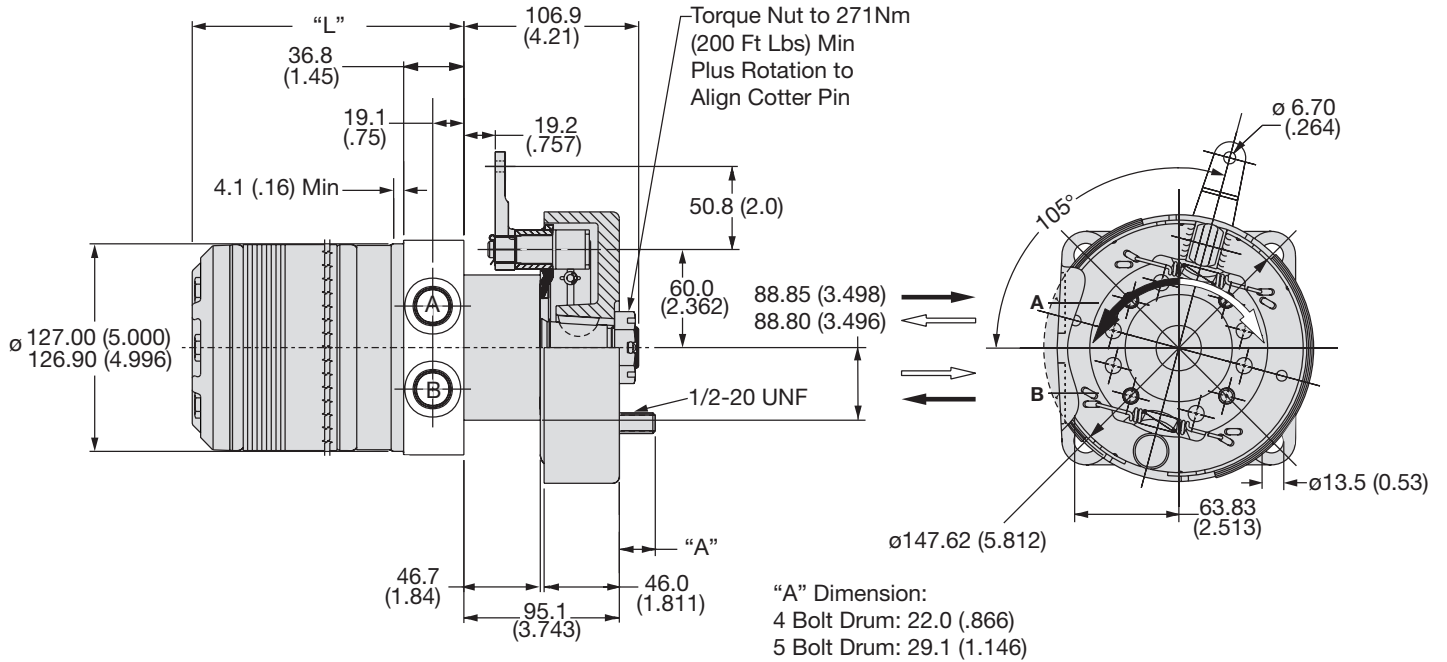
F<sub>a</sub> = Dynamic side load defined by above curve at a distance from mounting flange.

F<sub>b</sub> = Application side load.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

Code: AS - Vertical Lever

Wheel Mount w/Brake Lever / 7/8-14 SAE O-Ring



Note:

1. Brake Acuation Lever can be positioned in 12.00° increments from that shown.
2. Brake Acuation Lever is shipped unattached, secured with wire or tiewrap to assembly.

| Code AS | disp.    | 0080    | 0100    | 0130    | 0140    | 0170    | 0195    | 0240    | 0280    | 0360    | 0405    | 0475    |
|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Weight  | kg       | 18.0    | 18.1    | 18.3    | 18.4    | 18.7    | 19.0    | 19.4    | 19.7    | 20.4    | 21.0    | 21.7    |
|         | (lb)     | (39.74) | (39.84) | (40.34) | (40.64) | (41.14) | (41.84) | (42.74) | (43.34) | (45.04) | (46.34) | (47.74) |
| Length  | "L" mm   | 145.5   | 145.5   | 145.6   | 150.4   | 153.4   | 156.7   | 161.3   | 166.1   | 175.8   | 179.8   | 188.5   |
|         | "L" (in) | (5.73)  | (5.73)  | (5.85)  | (5.92)  | (6.04)  | (6.17)  | (6.35)  | (6.54)  | (6.92)  | (7.08)  | (7.42)  |

For performance data curves, see TF section.

English equivalents for metric specifications are shown in ( ).

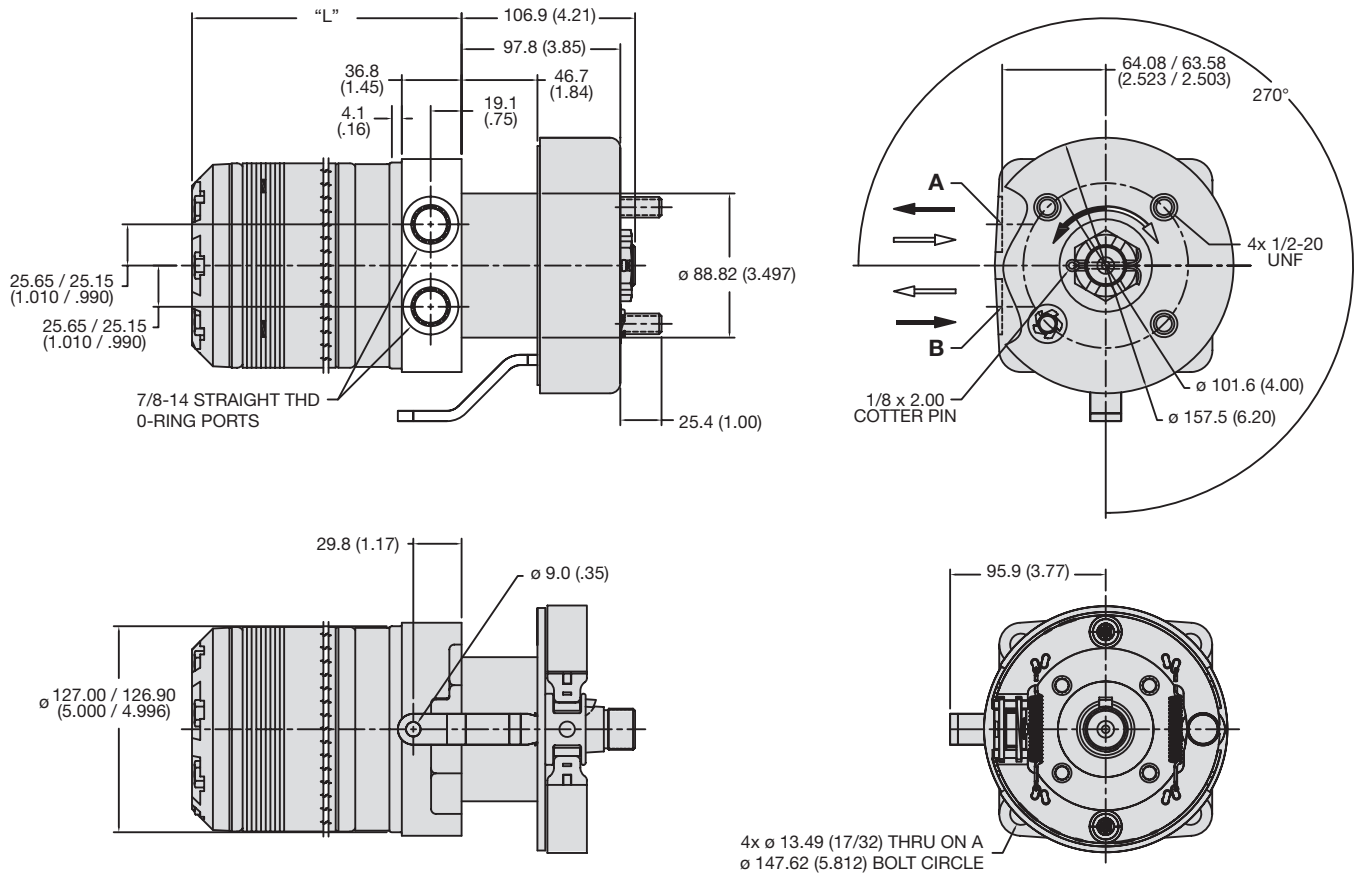
009 DF.indd, b



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: US - Horizontal Lever

Wheel Mount w/Brake Lever / 7/8-14 SAE O-Ring



Note:  
Brake Acuation Lever can be positioned in 90° increments from that shown.

| Code US | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 14.6   | 14.8   | 15.1   | 15.5   | 15.9   | 16.1   | 16.3   | 16.9   | 17.5   | 18.3   | 19.0   | 20.5   | 22.2   |
|         | (lb)     | (41.3) | (41.8) | (42.4) | (43.2) | (44.1) | (44.6) | (44.9) | (46.3) | (47.7) | (49.4) | (50.9) | (54.4) | (58.1) |
| Length  | "L" mm   | 150.3  | 153.4  | 156.7  | 161.3  | 166.1  | 169.7  | 172.5  | 179.8  | 188.5  | 194.8  | 204.2  | 223.3  | 242.3  |
|         | "L" (in) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.68) | (6.79) | (7.08) | (7.42) | (7.67) | (8.04) | (8.79) | (9.54) |

For performance data curves, see TF section.

English equivalents for metric specifications are shown in ( ).

009 DF.indd, b

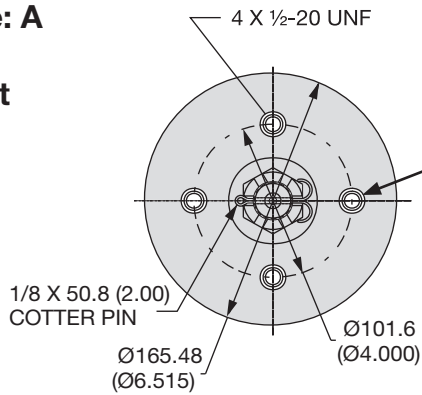


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Drum Type

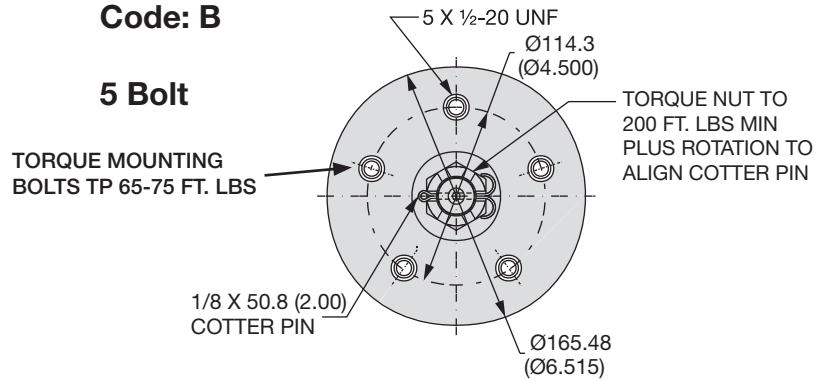
Code: A

4 Bolt



Code: B

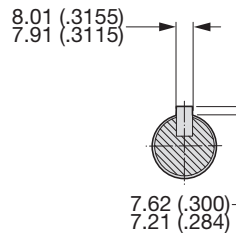
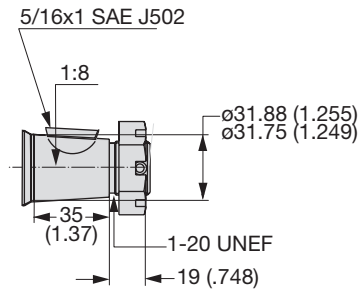
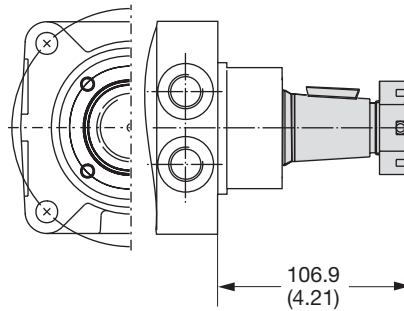
5 Bolt



Shafts

Code: 8

1 1/4" Taper



English equivalents for metric specifications are shown in ( ).

009 DF.indd, b



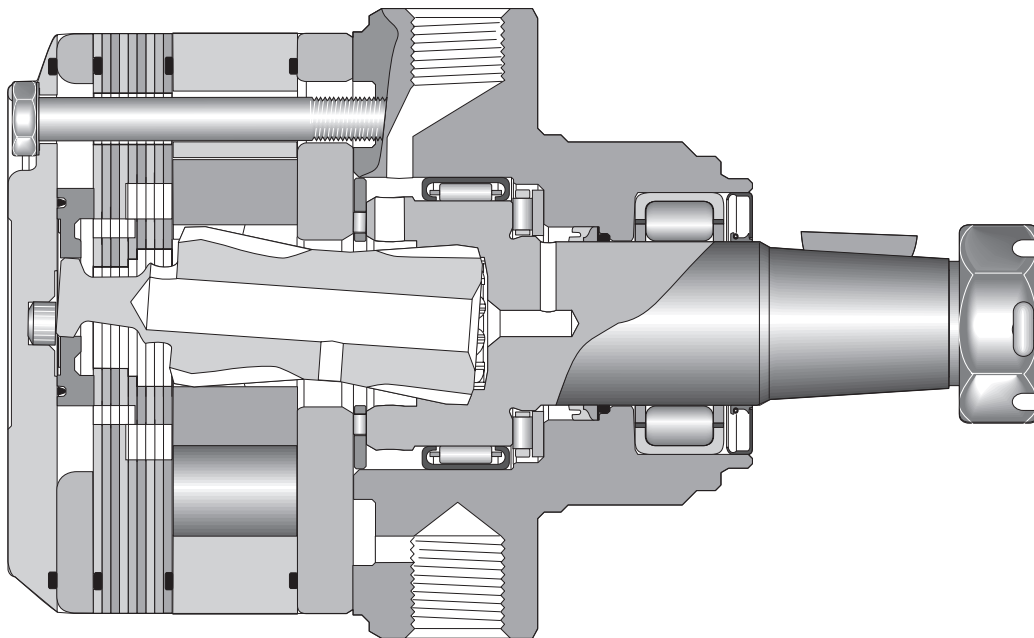
**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



|                         |   |  |
|-------------------------|---|--|
| <b>7 Displacements</b>  | (8.6 to 22.2 in <sup>3</sup> /rev)<br><b>140 . . . 364 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b> | <b>Cont.</b><br>(2750 psid)<br><b>. . . 190 bar</b>                           | <b>Int.</b><br>(3500 psid)<br><b>. . . 241 bar</b> |
| <b>Maximum Oil Flow</b> | (25 gpm)<br><b>. . . 95 lpm</b>   |  |
| <b>Maximum Speed</b>    | (613 rpm)<br><b>613 rpm</b>   |  |
| <b>Maximum</b>          | <b>Cont.</b><br>(8,650 lb in)<br><b>977 Nm</b>                                | <b>Int.</b><br>(10,300 lb in)<br><b>1164 Nm</b>    |

**Exceptional Power Density and Durability**

The heart of the new compact Torqmotor™ is the strongest drive train in its class. Coupled with this extra heavy-duty drive train are the high efficiencies and low speed performance for which the Parker Torqmotor™ is known. As with all Torqmotors™, high speed valving and full flow drive train lubrication are standard. Case drains are not required. Roller vanes and a sealed commutator maintain high efficiencies and provide smooth low speed performance.



**TL**

Series

**XXXX**

Displacement

**XX**

Mounting/Ports

**XX**

Shaft

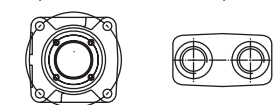
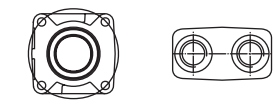
**X**

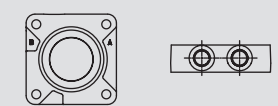
Rotation

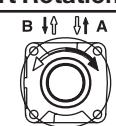

**XXXX**


Options

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 195 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0310 | 310 / 18.9  |
| 0360 | 364 / 22.2  |

| Code | Mounting/Ports   |
|------|--|
| LS   | Wheel, Front Brake Nose, 7/8-14 SAE<br> |
| US   | Wheel, Standard, 7/8-14 SAE<br>         |

| Code | Mounting/Ports   |
|------|--|
| TS   | Wheel, 7/8-14 SAE<br> |

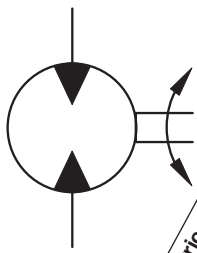
| Code | Front Port Rotation   |
|------|---|
| 0    | Standard<br>               |
| 1    | Reverse Timed Manifold<br> |

| Code | Shaft   |
|------|---|
| 08   | 1 1/4" Tapered<br> |

| Code                | Options  |
|---------------------|--|
| AAAA <sup>2</sup>   | "Standard", Black Paint  |
| AAAB                | "Standard", No Paint   |
| AAAC <sup>2</sup>   | "Standard", Double Paint   |
| AABJ <sup>2</sup>   | Free Running Rotor Set, Black Paint  |
| AABT <sup>1,2</sup> | No Nut, Black Paint  |
| AAFA                | Fluorocarbon Seals, High Temp Commutator Seal, No Paint  |
| AAFW <sup>2</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, Black Paint   |
| AAJH <sup>1,2</sup> | Fluorocarbon Seals, High Temp Commutator Seal, Black Paint   |
| AAJL <sup>1</sup>   | No Nut, No paint   |
| AAUP <sup>1</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, No Nut, No Paint  |
| AAVE <sup>2</sup>   | Free Running Rotor Set, Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Black Paint  |
| ABCW <sup>1</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, High Temp Section Seals, Bidirectional shuttle (.062 Orifice) (11:00'), Black Paint |
| ABCZ <sup>2</sup>   | Fluorocarbon Seals, High Temp Commutator Seal, High Temp Section Seals, Double paint   |
| BBGV <sup>1,2</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint                                      |
| BBGW <sup>1,2</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint                                      |
| BBGX <sup>1,2</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint                                      |
| BBGY <sup>1,2</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint                                      |
| BBHC <sup>2</sup>   | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint                                       |
| BBHD <sup>2,3</sup> | No Shaft Hardware, Fluorocarbon Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint                                      |

<sup>1</sup> No Nut with shaft code 08

<sup>2</sup> Paint area all over except front and rear pilot and mounting flanges and shaft



*Geometric displacement*

*Max. speed @ Max. intermittent flow*

*Max. oil flow*

*Max. differential pressure*

*Max. supply pressure*

*Max. torque*

*Max. performance*

*Min. starting torque*

| Motor Series<br>TL | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int<br>l/min<br>g/min | cont / int<br>bar<br>psid | max<br>bar<br>psig | cont / int<br>Nm<br>lb-in | max<br>KW<br>HP | cont / int<br>Nm<br>lb-in |
|--------------------|--|---------|------------------------------|---------------------------|--------------------|---------------------------|-----------------|---------------------------|
| TL0140             | 140<br>8.6                                   | 613     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 364 463<br>3226 4095      | 30<br>40        | 294 365<br>2606 3234      |
| TL0170             | 169<br>10.3                                  | 512     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 449 570<br>3970 5042      | 31<br>41        | 354 445<br>3137 3943      |
| TL 0195            | 195<br>11.9                                  | 484     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 511 648<br>4520 5739      | 34<br>46        | 414 526<br>3666 4654      |
| TL 0240            | 238<br>14.5                                  | 399     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 620 790<br>5485 6990      | 34<br>46        | 536 679<br>4740 6011      |
| TL 0280            | 280<br>17.1                                  | 335     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 730 929<br>6460 8218      | 34<br>45        | 619 787<br>5479 6967      |
| TL 0310            | 310<br>18.9                                  | 310     | 68 95<br>18 25               | 190 241<br>2750 3500      | 300<br>4350        | 847 1079<br>7499 9548     | 36<br>48        | 713 907<br>6309 8029      |
| TL 0360            | 364<br>22.2                                  | 255     | 68 95<br>18 25               | 172 224<br>2500 3250      | 300<br>4350        | 890 1163<br>7874 10293    | 31<br>42        | 778 1002<br>6882 8867     |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

Intermittent operation rating applies to 10% of every minute.

Peak operation rating applies to 1% max of every minute.

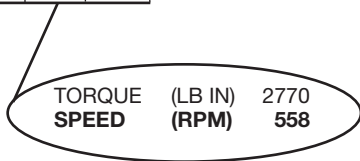
**TL 0140**

**8.6 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 364<br>12  | 955<br>11   | 1531<br>10  | 2115<br>9   | 2719<br>7   | 3016<br>6   | 3288<br>5   | 3803<br>2   |
| <b>1</b>  | 395<br>25  | 1014<br>24  | 1599<br>23  | 2174<br>21  | 2761<br>19  | 3056<br>17  | 3352<br>16  | 3871<br>13  |
| <b>2</b>  | 408<br>51  | 1011<br>49  | 1634<br>47  | 2229<br>45  | 2828<br>42  | 3127<br>40  | 3421<br>38  | 3943<br>35  |
| <b>3</b>  | 411<br>77  | 1029<br>74  | 1659<br>72  | 2257<br>69  | 2856<br>65  | 3191<br>63  | 3459<br>62  | 4006<br>57  |
| <b>4</b>  | 414<br>103 | 1040<br>99  | 1675<br>96  | 2286<br>93  | 2900<br>89  | 3226<br>86  | 3509<br>83  | 4054<br>78  |
| <b>5</b>  | 407<br>129 | 1039<br>126 | 1685<br>123 | 2285<br>119 | 2899<br>113 | 3210<br>110 | 3532<br>108 | 4075<br>102 |
| <b>7</b>  | 381<br>182 | 1004<br>177 | 1646<br>172 | 2250<br>168 | 2862<br>162 | 3180<br>158 | 3499<br>155 | 4095<br>147 |
| <b>9</b>  | 338<br>235 | 951<br>231  | 1599<br>226 | 2208<br>220 | 2802<br>213 | 3117<br>208 | 3422<br>203 | 4041<br>193 |
| <b>12</b> | 263<br>308 | 856<br>303  | 1485<br>297 | 2093<br>290 | 2693<br>283 | 2983<br>278 | 3314<br>272 | 3957<br>260 |
| <b>15</b> | 170<br>380 | 771<br>376  | 1381<br>371 | 1983<br>364 | 2587<br>356 | 2898<br>350 | 3219<br>343 | 3838<br>328 |
| <b>20</b> | 65<br>454  | 659<br>446  | 1242<br>437 | 1864<br>430 | 2443<br>422 | 2748<br>418 | 3100<br>413 | 3744<br>399 |
| <b>25</b> |            | 361<br>613  | 896<br>601  | 1464<br>588 | 2046<br>575 | 2363<br>567 | 2770<br>558 | 3455<br>539 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TL 0170**

**10.3 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3500        |
| <b>.5</b> | 499<br>10       | 1226<br>10  | 1937<br>9   | 2656<br>7   | 3395<br>6   | 3760<br>5   | 4100<br>4   | 4750<br>2   |
| <b>1</b>  | 530<br>21       | 1285<br>20  | 2005<br>19  | 2715<br>17  | 3437<br>16  | 3800<br>15  | 4164<br>13  | 4818<br>11  |
| <b>2</b>  | 543<br>43       | 1282<br>41  | 2040<br>39  | 2770<br>38  | 3504<br>35  | 3871<br>34  | 4233<br>32  | 4890<br>29  |
| <b>3</b>  | 546<br>64       | 1300<br>62  | 2065<br>60  | 2798<br>58  | 3532<br>55  | 3935<br>53  | 4271<br>52  | 4953<br>48  |
| <b>4</b>  | 549<br>86       | 1311<br>83  | 2081<br>80  | 2827<br>78  | 3576<br>74  | 3970<br>72  | 4321<br>70  | 5001<br>66  |
| <b>5</b>  | 542<br>108      | 1310<br>105 | 2091<br>102 | 2826<br>99  | 3575<br>95  | 3954<br>92  | 4344<br>90  | 5022<br>85  |
| <b>7</b>  | 516<br>152      | 1275<br>148 | 2052<br>144 | 2791<br>140 | 3538<br>135 | 3924<br>132 | 4311<br>129 | 5042<br>123 |
| <b>9</b>  | 473<br>196      | 1222<br>193 | 2005<br>189 | 2749<br>184 | 3478<br>178 | 3861<br>174 | 4234<br>169 | 4988<br>162 |
| <b>12</b> | 398<br>257      | 1127<br>253 | 1891<br>248 | 2634<br>242 | 3369<br>236 | 3727<br>232 | 4126<br>227 | 4904<br>217 |
| <b>15</b> | 305<br>317      | 1042<br>314 | 1787<br>310 | 2524<br>304 | 3263<br>297 | 3642<br>293 | 4031<br>286 | 4785<br>274 |
| <b>20</b> | 200<br>379      | 930<br>372  | 1648<br>365 | 2405<br>359 | 3119<br>352 | 3492<br>349 | 3912<br>345 | 4691<br>333 |
| <b>25</b> |                 | 632<br>512  | 1302<br>502 | 2005<br>491 | 2722<br>480 | 3107<br>474 | 3582<br>466 | 4402<br>450 |

Flow (GPM)

TORQUE (LB IN) 3582  
 SPEED (RPM) 466

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
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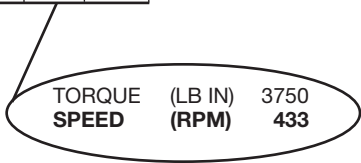
**TL 0195**

**11.9 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 2750          | 3000        | 3500         |
|-----------|------------|-------------|-------------|-------------|-------------|---------------|-------------|--------------|
| <b>.5</b> | 571<br>9   | 1353<br>7   | 2148<br>5   | 2938<br>3   |             |               |             |              |
| <b>1</b>  | 609<br>18  | 1417<br>16  | 2234<br>14  | 3032<br>12  | 3873<br>10  | 4250<br>8.5   | 4641<br>7   | 5400<br>4    |
| <b>2</b>  | 621<br>37  | 1443<br>35  | 2267<br>33  | 3086<br>30  | 3923<br>27  | 4300<br>25.5  | 4712<br>24  | 5450<br>19   |
| <b>3</b>  | 619<br>56  | 1448<br>54  | 2279<br>52  | 3104<br>49  | 3952<br>46  | 4331<br>44    | 4727<br>42  | 5490<br>37   |
| <b>4</b>  | 615<br>75  | 1456<br>73  | 2303<br>71  | 3142<br>68  | 3963<br>64  | 4371<br>61.5  | 4761<br>59  | 5535<br>53.5 |
| <b>5</b>  | 604<br>94  | 1448<br>92  | 2301<br>90  | 3148<br>87  | 3980<br>82  | 4400<br>79.5  | 4792<br>77  | 5587<br>72   |
| <b>7</b>  | 571<br>132 | 1419<br>130 | 2272<br>127 | 3125<br>123 | 3965<br>119 | 4370<br>116   | 4784<br>113 | 5590<br>107  |
| <b>9</b>  | 518<br>170 | 1364<br>168 | 2223<br>165 | 3072<br>161 | 3911<br>155 | 4310<br>152   | 4738<br>149 | 5549<br>142  |
| <b>12</b> | 437<br>226 | 1264<br>224 | 2113<br>221 | 2956<br>216 | 3792<br>210 | 4191<br>206.8 | 4620<br>203 | 5433<br>195  |
| <b>15</b> | 344<br>283 | 1164<br>281 | 2003<br>277 | 2835<br>272 | 3668<br>265 | 4062<br>261   | 4498<br>257 | 5314<br>248  |
| <b>20</b> | 189<br>343 | 1013<br>340 | 1833<br>333 | 2633<br>325 | 3461<br>319 | 3876<br>315   | 4295<br>310 | 5116<br>300  |
| <b>25</b> |            | 613<br>468  | 1397<br>460 | 2100<br>452 | 2903<br>443 | 3302<br>438   | 3750<br>433 | 4542<br>422  |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**

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**TL 0240**

**14.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 705<br>8   | 1662<br>8   | 2641<br>7   | 3635<br>6   | 4620<br>5   | 5095<br>5   | 5585<br>4   | 6536<br>3   |
| <b>1</b>  | 752<br>16  | 1740<br>15  | 2740<br>14  | 3746<br>14  | 4739<br>13  | 5200<br>12  | 5712<br>11  | 6661<br>10  |
| <b>2</b>  | 772<br>31  | 1783<br>30  | 2799<br>30  | 3818<br>29  | 4830<br>27  | 5300<br>26  | 5823<br>25  | 6793<br>23  |
| <b>3</b>  | 769<br>47  | 1784<br>46  | 2812<br>45  | 3844<br>44  | 4863<br>42  | 5362<br>41  | 5857<br>40  | 6828<br>37  |
| <b>4</b>  | 766<br>62  | 1797<br>62  | 2840<br>61  | 3887<br>59  | 4923<br>57  | 5384<br>56  | 5932<br>55  | 6910<br>51  |
| <b>5</b>  | 751<br>78  | 1790<br>77  | 2842<br>76  | 3895<br>75  | 4933<br>72  | 5438<br>71  | 5951<br>69  | 6946<br>66  |
| <b>7</b>  | 710<br>109 | 1758<br>108 | 2816<br>107 | 3875<br>105 | 4920<br>102 | 5425<br>101 | 5947<br>99  | 6958<br>95  |
| <b>9</b>  | 649<br>141 | 1697<br>139 | 2762<br>138 | 3826<br>136 | 4875<br>132 | 5387<br>130 | 5908<br>128 | 6922<br>124 |
| <b>12</b> | 553<br>188 | 1583<br>186 | 2633<br>184 | 3675<br>182 | 4706<br>178 | 5219<br>175 | 5725<br>172 | 6734<br>167 |
| <b>15</b> | 438<br>235 | 1471<br>233 | 2499<br>230 | 3513<br>227 | 4520<br>223 | 4998<br>220 | 5526<br>217 | 6534<br>211 |
| <b>20</b> | 312<br>282 | 1350<br>279 | 2300<br>276 | 3305<br>273 | 4310<br>267 | 4732<br>264 | 5250<br>261 | 6200<br>254 |
| <b>25</b> |            | 1021<br>388 | 1837<br>384 | 2710<br>380 | 3735<br>373 | 4060<br>370 | 4500<br>365 | 5423<br>354 |

Flow (GPM)

TORQUE (LB IN) 4500  
 SPEED (RPM) 365

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
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**TL 0280**

**17.1 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3500        |
| <b>.5</b> | 887<br>7        | 2008<br>6   | 3147<br>5   | 4299<br>4   | 5458<br>3   | 6022<br>2   | 6599<br>2   | 7724<br>0   |
| <b>1</b>  | 947<br>13       | 2093<br>13  | 3262<br>12  | 4424<br>11  | 5582<br>10  | 6144<br>9   | 6715<br>8   | 7812<br>6   |
| <b>2</b>  | 982<br>27       | 2164<br>26  | 3361<br>25  | 4561<br>24  | 5745<br>22  | 6315<br>21  | 6902<br>19  | 8033<br>15  |
| <b>3</b>  | 982<br>40       | 2167<br>39  | 3366<br>39  | 4570<br>37  | 5757<br>36  | 6356<br>34  | 6943<br>32  | 8070<br>28  |
| <b>4</b>  | 984<br>53       | 2184<br>52  | 3397<br>51  | 4612<br>50  | 5820<br>48  | 6435<br>46  | 6985<br>45  | 8147<br>40  |
| <b>5</b>  | 975<br>66       | 2185<br>65  | 3409<br>64  | 4634<br>62  | 5841<br>60  | 6417<br>58  | 7031<br>56  | 8201<br>52  |
| <b>7</b>  | 931<br>93       | 2149<br>92  | 3381<br>90  | 4614<br>88  | 5829<br>85  | 6420<br>83  | 7029<br>81  | 8200<br>76  |
| <b>9</b>  | 865<br>119      | 2083<br>118 | 3319<br>117 | 4556<br>114 | 5780<br>110 | 6396<br>108 | 6992<br>106 | 8193<br>101 |
| <b>12</b> | 746<br>159      | 1956<br>158 | 3190<br>156 | 4428<br>153 | 5661<br>149 | 6270<br>147 | 6885<br>143 | 8089<br>137 |
| <b>15</b> | 581<br>199      | 1800<br>198 | 3025<br>196 | 4255<br>192 | 5494<br>187 | 6128<br>184 | 6721<br>181 | 7912<br>174 |
| <b>20</b> | 415<br>239      | 1650<br>238 | 2850<br>235 | 4120<br>230 | 5350<br>224 | 5995<br>221 | 6570<br>217 | 7750<br>209 |
| <b>25</b> | 50<br>332       | 1240<br>330 | 2450<br>327 | 3700<br>320 | 5000<br>312 | 5650<br>307 | 6170<br>302 | 7340<br>290 |

Flow (GPM)

TORQUE (LB IN) 6170  
 SPEED (RPM) 302

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**

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**TL 0310**

**18.9 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3500        |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 1031<br>6   | 2296<br>5   | 3579<br>5   | 4875<br>4   | 6178<br>3   | 6814<br>2   | 7463<br>2   | 8732<br>0   |
| <b>1</b>  | 1091<br>12  | 2381<br>11  | 3694<br>11  | 5000<br>10  | 6302<br>9   | 6936<br>8   | 7579<br>7   | 8820<br>5   |
| <b>2</b>  | 1126<br>24  | 2452<br>24  | 3793<br>23  | 5137<br>22  | 6465<br>20  | 7107<br>19  | 7766<br>17  | 9041<br>14  |
| <b>3</b>  | 1126<br>36  | 2455<br>36  | 3798<br>35  | 5146<br>34  | 6477<br>32  | 7148<br>31  | 7807<br>29  | 9078<br>25  |
| <b>4</b>  | 1128<br>48  | 2472<br>47  | 3829<br>46  | 5188<br>45  | 6540<br>43  | 7227<br>42  | 7849<br>40  | 9155<br>36  |
| <b>5</b>  | 1119<br>60  | 2473<br>59  | 3841<br>58  | 5210<br>56  | 6561<br>54  | 7209<br>52  | 7895<br>51  | 9209<br>47  |
| <b>7</b>  | 1075<br>84  | 2437<br>83  | 3813<br>81  | 5190<br>80  | 6549<br>77  | 7212<br>75  | 7893<br>73  | 9208<br>69  |
| <b>9</b>  | 1009<br>108 | 2371<br>107 | 3751<br>106 | 5132<br>103 | 6500<br>99  | 7188<br>98  | 7856<br>96  | 9201<br>91  |
| <b>12</b> | 890<br>144  | 2244<br>143 | 3622<br>141 | 5004<br>138 | 6381<br>135 | 7062<br>132 | 7749<br>129 | 9097<br>124 |
| <b>15</b> | 725<br>180  | 2088<br>179 | 3457<br>177 | 4831<br>174 | 6214<br>169 | 6920<br>166 | 7585<br>164 | 8920<br>157 |
| <b>20</b> | 559<br>216  | 1938<br>215 | 3282<br>213 | 4696<br>208 | 6070<br>203 | 6787<br>200 | 7434<br>196 | 8758<br>189 |
| <b>25</b> | 194<br>300  | 1528<br>298 | 2882<br>295 | 4276<br>289 | 5720<br>282 | 6442<br>277 | 7034<br>273 | 8348<br>262 |

Flow (GPM)

TORQUE (LB IN) 7034  
 SPEED (RPM) 273

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



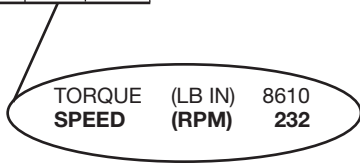
**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**TL 0360**

**22.2 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 2750        | 3000        | 3250         |
| <b>.5</b> | 1294<br>5       | 2821<br>5   | 4367<br>4   | 5926<br>3   | 7491<br>2   | 8259<br>2   | 9039<br>1   | 9810<br>1    |
| <b>1</b>  | 1354<br>10      | 2906<br>10  | 4482<br>9   | 6051<br>8   | 7615<br>8   | 8381<br>7   | 9155<br>6   | 9947<br>6    |
| <b>2</b>  | 1389<br>20      | 2977<br>20  | 4581<br>19  | 6188<br>18  | 7778<br>17  | 8552<br>16  | 9342<br>15  | 10152<br>14  |
| <b>3</b>  | 1389<br>31      | 2980<br>30  | 4586<br>30  | 6197<br>29  | 7790<br>27  | 8593<br>26  | 9383<br>25  | 10190<br>24  |
| <b>4</b>  | 1391<br>41      | 2997<br>40  | 4617<br>39  | 6239<br>38  | 7853<br>37  | 8672<br>36  | 9425<br>34  | 10262<br>33  |
| <b>5</b>  | 1382<br>51      | 2998<br>50  | 4629<br>49  | 6261<br>48  | 7874<br>46  | 8654<br>45  | 9471<br>43  | 10288<br>42  |
| <b>7</b>  | 1338<br>72      | 2962<br>71  | 4601<br>69  | 6241<br>68  | 7862<br>65  | 8657<br>64  | 9469<br>62  | 10293<br>61  |
| <b>9</b>  | 1272<br>92      | 2896<br>91  | 4539<br>90  | 6183<br>88  | 7813<br>85  | 8633<br>83  | 9432<br>82  | 10261<br>79  |
| <b>12</b> | 1153<br>122     | 2769<br>122 | 4410<br>120 | 6055<br>118 | 7694<br>115 | 8507<br>113 | 9325<br>110 | 10144<br>108 |
| <b>15</b> | 988<br>153      | 2613<br>152 | 4245<br>151 | 5882<br>148 | 7527<br>144 | 8365<br>142 | 9161<br>139 | 9985<br>136  |
| <b>20</b> | 822<br>184      | 2463<br>183 | 4070<br>181 | 5747<br>177 | 7383<br>173 | 8232<br>170 | 9010<br>167 | 9847<br>164  |
| <b>25</b> | 457<br>255      | 2053<br>254 | 3670<br>251 | 5327<br>246 | 7033<br>240 | 7887<br>236 | 8610<br>232 | 9472<br>227  |

Flow (GPM)

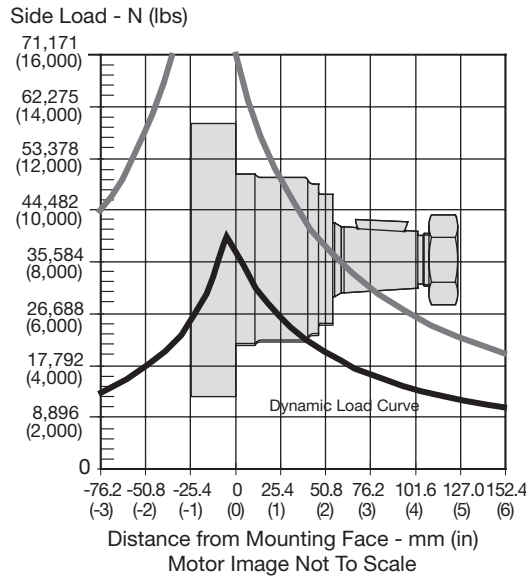


Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**Wheel Mount**



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

**Equation to Calculate the Expected Radial Bearing Life**

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

$S$  = Shaft Speed RPM

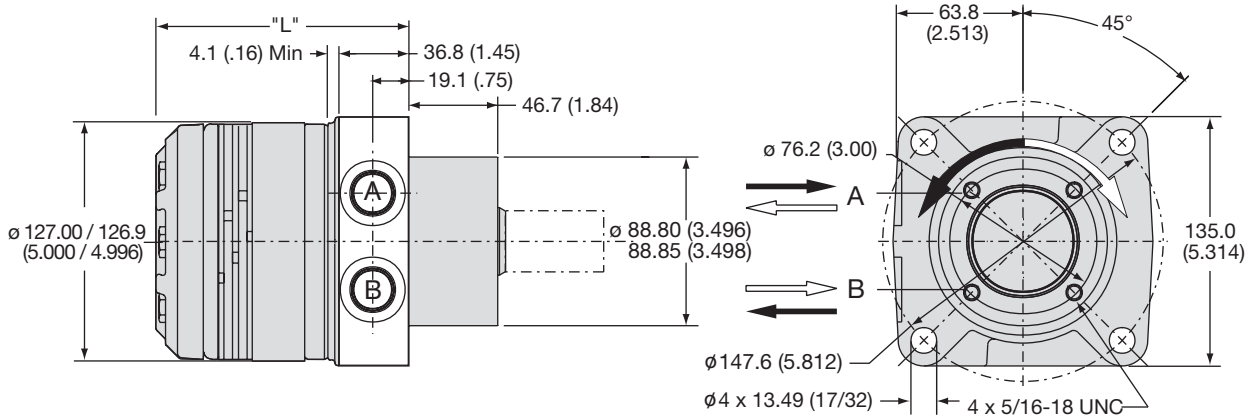
$L$  = Life In Hours

$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

**Code: L** 

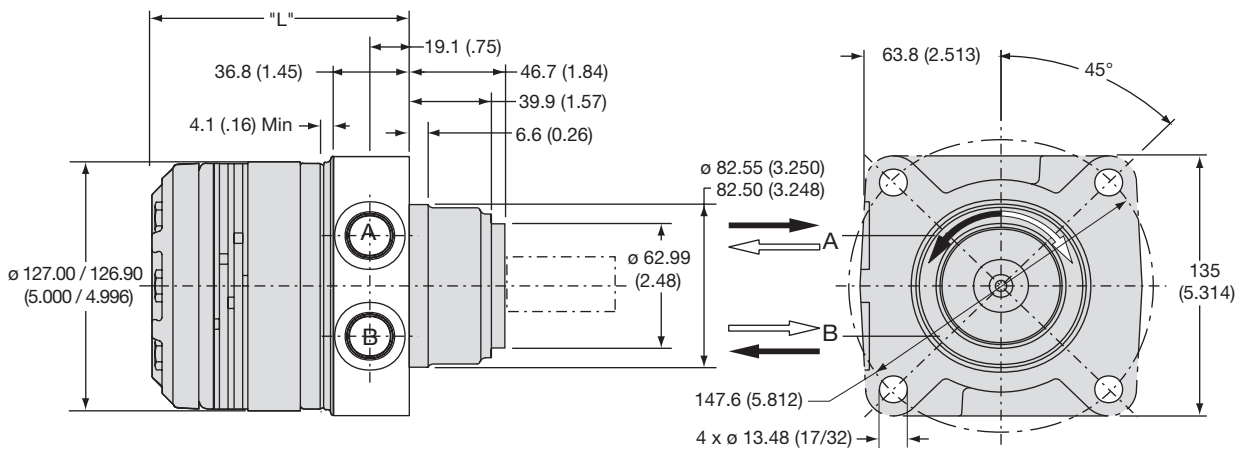
**Wheel, Front Brake Nose**



| Code L                | disp.         | 0140         | 0170         | 0195         | 0240         | 0280         | 0310         | 0360         |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>     | <b>10.9</b>  | <b>11.1</b>  | <b>11.4</b>  | <b>11.8</b>  | <b>12.2</b>  | <b>12.4</b>  | <b>12.9</b>  |
| Poids/Peso            | (lb)          | (24.1)       | (24.6)       | (25.2)       | (26.0)       | (26.9)       | (27.4)       | (28.4)       |
| <b>Length</b>         | <b>"L" mm</b> | <b>122.7</b> | <b>122.7</b> | <b>122.7</b> | <b>126.7</b> | <b>131.1</b> | <b>134.6</b> | <b>141.7</b> |
|                       | "L" (in)      | (4.83)       | (4.83)       | (4.83)       | (4.99)       | (5.16)       | (5.30)       | (5.58)       |

**Code: U** 

**Wheel, Standard**

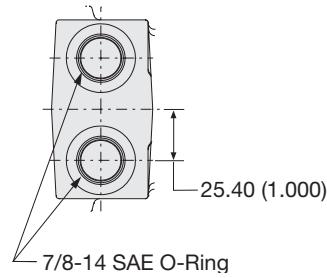


| Code U                | disp.         | 0140         | 0170         | 0195         | 0240         | 0280         | 0310         | 0360         |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>     | <b>10.9</b>  | <b>11.1</b>  | <b>11.4</b>  | <b>11.8</b>  | <b>12.2</b>  | <b>12.4</b>  | <b>12.9</b>  |
| Poids/Peso            | (lb)          | (24.1)       | (24.6)       | (25.2)       | (26.0)       | (26.9)       | (27.4)       | (28.4)       |
| <b>Length</b>         | <b>"L" mm</b> | <b>122.7</b> | <b>122.7</b> | <b>122.7</b> | <b>126.7</b> | <b>131.1</b> | <b>134.6</b> | <b>141.7</b> |
|                       | "L" (in)      | (4.83)       | (4.83)       | (4.83)       | (4.99)       | (5.16)       | (5.30)       | (5.58)       |

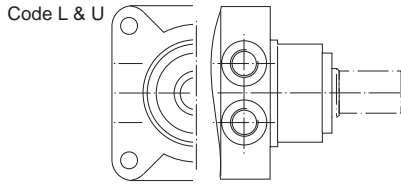
English equivalents for metric specifications are shown in ( ).

Code: S 

7/8-14 SAE O-Ring

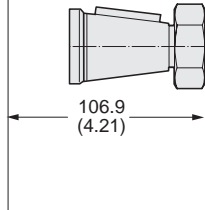


English equivalents for metric specifications are shown in ( ).



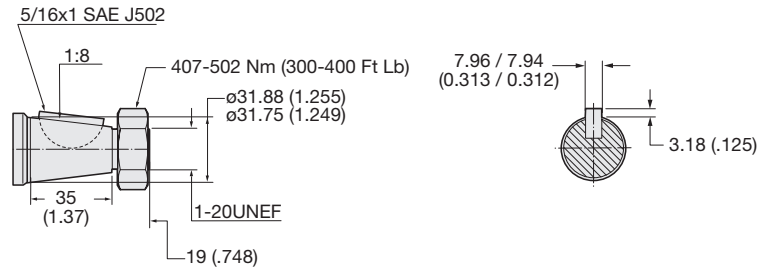
**Code: 08** EU US

**1 1/4" Tapered**



**Code: 08** EU US

**1 1/4" Tapered**

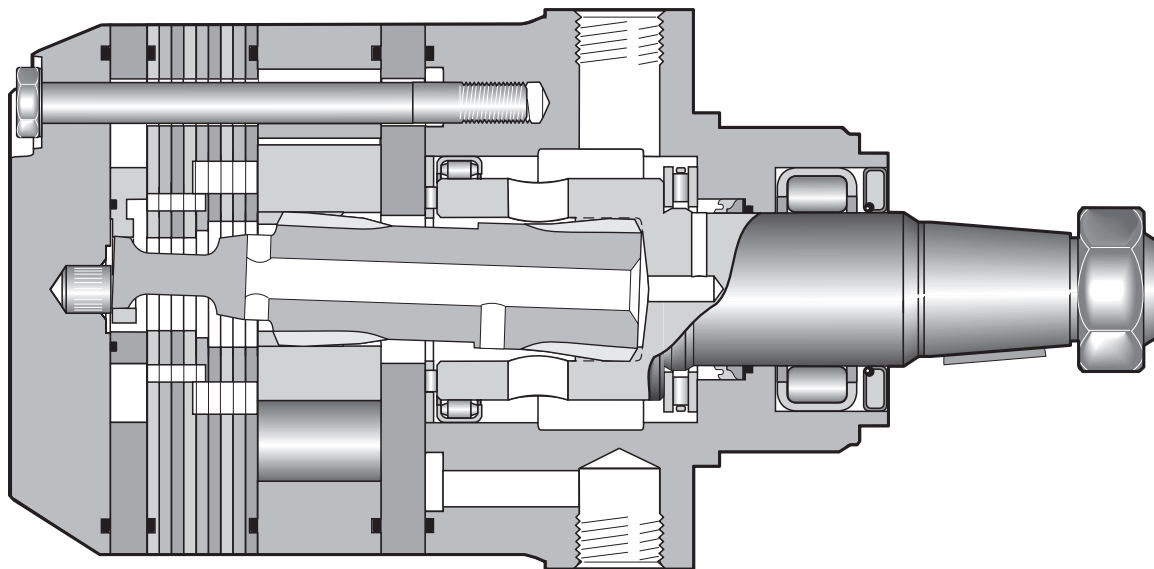
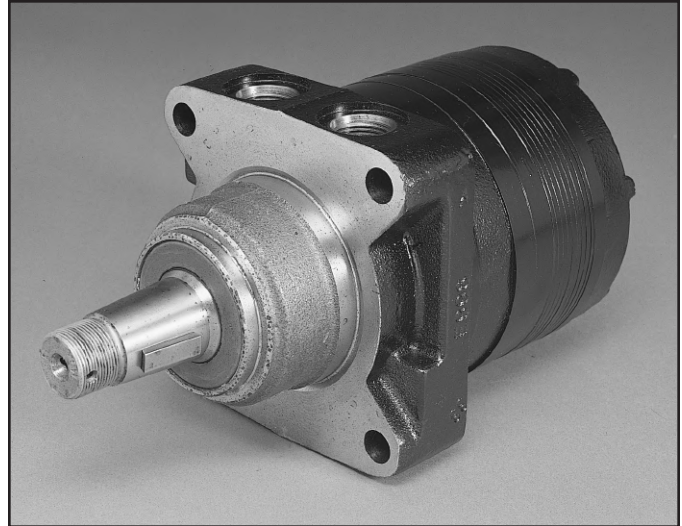


English equivalents for metric specifications are shown in ( ).

|                                 |  |   |
|---------------------------------|--|---|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br>141 . . . 959 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . 207 bar                             | <b>Int.</b><br>(4000 psid)<br>. . . 276 bar     |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . 114 lpm  |   |
| <b>Maximum Speed</b>            | (660 rpm)<br><b>660 rpm</b>  |   |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(9,239 lb in)<br><b>1044 Nm</b>                          | <b>Int.</b><br>(12,636 lb in)<br><b>1428 Nm</b> |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>. . . 16000 N   |   |

**Exceptional Strength and Durability in a High Performance Motor**

The heart of Parker's TG Series powertrain, the drive link, is an extra heavy duty part that includes unique 60:40 spline geometry. Rugged construction throughout allows the transmission of up to 13,000 lb-in of torque. The entire powertrain is continually washed in cool, high flow fluid to assure long life. Roller vanes and sealed commutator maintain high efficiency and provide smooth low speed performance.



**TG**

Series

**XXXX**

Displacement







**XX**






Mounting/Ports




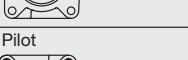






**XX**











Shaft  
Welle  
Arbre  
Eje

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U | in <sup>3</sup> /rev |
|------|--|----------------------|
| 0140 | 141  | 8.6                  |
| 0170 | 169  | 10.3                 |
| 0195 | 195  | 11.9                 |
| 0240 | 238  | 14.5                 |
| 0280 | 280  | 17.1                 |
| 0310 | 310  | 18.9                 |
| 0335 | 337  | 20.6                 |
| 0360 | 360  | 22.2                 |
| 0405 | 405  | 24.7                 |
| 0475 | 477  | 29.1                 |
| 0530 | 528  | 32.3                 |
| 0625 | 623  | 38.0                 |
| 0785 | 786  | 48.0                 |
| 0960 | 959  | 58.5                 |

| Code | Mounting   |
|------|--|
| AS   | SAE "A"<br>2 Bolt,<br>7/8-14 SAE   |
| LS   | Wheel,<br>Front Brake,<br>7/8-14 SAE   |
| MS   | Magneto,<br>7/8-14 SAE   |
| UB   | Wheel, Standard<br>7/8-14 SAE<br>O-Ring;<br>Rear Radial                      |
| US   | Wheel,<br>Standard,<br>7/8-14 SAE    |
| ZS   | Four Bolt Flange,<br>7/8-14 O-Ring;<br>Extended Pilot<br>With O-Ring Groove  |

| Code | Shaft  |
|------|--|
| 01*  | 1" 6B Spline            |
| 03   | 1 1/4" Keyed            |
| 05   | 1 1/4" 14 Tooth Spline  |
| 08   | 1 1/4" Tapered          |
| 19   | 1 3/8" J501 Taper       |

| Code | Mounting  |
|------|---|
| EB   | 6 Hole Mount<br>Deep Pilot,<br>7/8-14 SAE<br>Rear Radial                             |
| HK   | Wheel,<br>Machined Pilot<br>Nose,<br>M6 Manifold                                    |
| HW   | Wheel, Machined<br>Pilot Nose,<br>G1/2 (1/2 BSPP)<br>Milled Port Face               |
| JS   | Wheel, Machined Pilot<br>Nose, 1/2 -13<br>UNC Tapped<br>Holes, 7/8<br>O-ring ports  |
| MB   | Magneto<br>7/8-14 SAE<br>O-Ring;<br>Rear Radial                                     |
| MM   | Magneto,<br>5/16-18<br>UNC Manifold   |
| RS   | Wheel Mount<br>For Ø1-1/2"<br>shaft, 7/8-14<br>front ports                          |
| UE   | Wheel, Standard<br>Manifold;<br>Rear Radial   |
| WC   | Wheel Mount.<br>7/8 O-ring<br>Rear Radial<br>w/ 2.43"<br>Dimension To C/L           |
| WE   | Wheel, Optional<br>Manifold;<br>Rear Radial   |

| Code | Shaft   |
|------|---|
| 02   | Long Wood. Key,<br>1/4 Tap, Groove   |
| 06   | 19 Tooth Spline   |
| 17   | 19 T. Spline (16/32 Pitch)   |
| 20   | 1 3/8" Keyed   |
| 38   | 1.378" Special<br>Long Straight    |
| 39   | 14 Tooth, Groove,<br>5/8 Tap   |
| 44   | 14 T. Spline (12/24 P.),<br>12mm Tap   |
| 46   | 32 mm Keyed    |
| 85   | 1 1/4", Captured Straight<br>Keyway, No Taped Hole<br>& No Ring Groove         |
| 86   | 1 1/4" With Captured<br>Straight Keyway, No<br>Taped Hole &<br>No Ring Groove  |

Custom Order

\* Conforms to SAE recommended length







**0**

Rotation

**XXXX**

Options  
Opciones

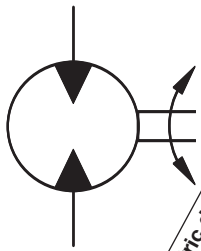
| Code | Rotation   |
|------|--|
| 0    | Standard<br>B ↓ ↓ A<br>                     |
| 1    | Reverse<br>Timed<br>Manifold<br>B ↑ ↑ A<br> |

| Code | Rear<br>Rotation  |
|------|---|
| 0    | Standard<br>                       |
| 1    | Reverse<br>Timed<br>Manifold<br> |

Rotation viewed  
from shaft end.

| Code | Options   |
|------|---|
| AAAA | “Standard”, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | “Standard”, No Paint  |
| AAAC | “Standard”, Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (1:1:00*), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware       |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGZ | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 4061 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| FSEK | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| FSEN | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), No Paint, No Shaft Hardware   |

Coupling shaft Ø 1 inch Max. torque cont./int. } 450/550 Nm



Geometric displacement

Max. speed @ Max. intermittent flow

Max. oil flow

Max. Differential Pressure

Max. supply pressure

Max. torque

Max. performance

Min. starting torque

| Motor Series TG | cm <sup>3</sup> /rev | rev/min | cont / int*     |                      | cont / int* |                         | max      | cont / int*            |       | max | cont / int* |       |
|-----------------|----------------------|---------|-----------------|----------------------|-------------|-------------------------|----------|------------------------|-------|-----|-------------|-------|
|                 | in <sup>3</sup> /rev |         | l/min           | bar                  | bar         | bar                     | Nm       | KW                     | Nm    | HP  | Nm          | lb-in |
|                 |                      |         | g/min           | psid                 | psig        | psig                    | lb-in    | HP                     | lb-in | HP  | lb-in       | lb-in |
| TG 0140         | 141<br>8.6           | 660     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 390 530<br>3455 4692    | 33<br>45 | 315 418<br>2791 3706   |       |     |             |       |
| TG 0170         | 169<br>10.3          | 554     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 476 646<br>4216 5714    | 33<br>45 | 376 505<br>3331 4469   |       |     |             |       |
| TG 0195         | 195<br>11.9          | 477     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 556 753<br>4919 6663    | 33<br>45 | 451 611<br>3989 5408   |       |     |             |       |
| TG 0240         | 238<br>14.5          | 393     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 677 913<br>5991 8081    | 32<br>44 | 582 776<br>5152 6865   |       |     |             |       |
| TG 0280         | 280<br>17.1          | 334     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 796 1073<br>7044 9499   | 31<br>42 | 675 870<br>5972 7699   |       |     |             |       |
| TG 0310         | 310<br>18.9          | 303     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 924 1229<br>8184 10817  | 31<br>41 | 778 1005<br>6882 8893  |       |     |             |       |
| TG 0335         | 337<br>20.6          | 277     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 964 1297<br>8533 11479  | 30<br>41 | 843 1117<br>7458 9889  |       |     |             |       |
| TG 0360         | 360<br>22.2          | 259     | 76 95<br>20 25  | 172 241<br>2500 3500 | 300<br>4350 | 894 1254<br>7913 11093  | 29<br>39 | 703 1017<br>6224 9007  |       |     |             |       |
| TG 0405         | 405<br>24.7          | 232     | 76 95<br>20 25  | 172 241<br>2500 3500 | 300<br>4350 | 942 1342<br>8336 11877  | 27<br>37 | 791 1145<br>7002 10133 |       |     |             |       |
| TG 0475         | 477<br>29.1          | 237     | 76 114<br>20 30 | 138 207<br>2000 3000 | 300<br>4350 | 887 1372<br>7853 12145  | 28<br>38 | 740 1120<br>6549 9909  |       |     |             |       |
| TG 0530         | 528<br>32.3          | 213     | 76 114<br>20 30 | 138 172<br>2000 2500 | 300<br>4350 | 983 1253<br>8701 11086  | 23<br>31 | 874 1091<br>7737 9657  |       |     |             |       |
| TG 0625         | 623<br>38.0          | 182     | 76 114<br>20 30 | 121 155<br>1750 2250 | 300<br>4350 | 986 1291<br>8727 11424  | 20<br>27 | 895 1165<br>7924 10312 |       |     |             |       |
| TG 0785         | 786<br>48.0          | 143     | 76 114<br>20 30 | 103 138<br>1500 2000 | 300<br>4350 | 1044 1428<br>9239 12636 | 17<br>23 | 991 1341<br>8772 11876 |       |     |             |       |
| TG 0960         | 959<br>58.5          | 118     | 76 114<br>20 30 | 69 103<br>1000 1500  | 300<br>4350 | 773 1268<br>6843 11227  | 12<br>16 | 763 1177<br>6752 10419 |       |     |             |       |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

TG 0140

8.6 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 519<br>9   | 1060<br>4   |             |             |             |             |             |             |
| <b>1</b>  | 540<br>22  | 1090<br>17  | 1635<br>11  | 2180<br>6   |             |             |             |             |
| <b>2</b>  | 569<br>49  | 1156<br>43  | 1730<br>36  | 2286<br>30  | 2827<br>23  | 3368<br>19  | 3899<br>12  | 4447<br>12  |
| <b>3</b>  | 565<br>75  | 1159<br>69  | 1744<br>62  | 2321<br>55  | 2899<br>47  | 3477<br>40  | 4048<br>33  | 4608<br>29  |
| <b>4</b>  | 564<br>102 | 1170<br>94  | 1768<br>87  | 2358<br>80  | 2943<br>72  | 3517<br>64  | 4082<br>57  | 4644<br>52  |
| <b>5</b>  | 556<br>128 | 1170<br>120 | 1776<br>112 | 2375<br>105 | 2968<br>97  | 3556<br>89  | 4135<br>81  | 4701<br>76  |
| <b>7</b>  | 540<br>182 | 1160<br>172 | 1779<br>164 | 2390<br>155 | 2994<br>146 | 3592<br>138 | 4181<br>130 | 4763<br>123 |
| <b>9</b>  | 515<br>235 | 1143<br>225 | 1768<br>215 | 2385<br>206 | 2996<br>196 | 3601<br>187 | 4199<br>179 | 4794<br>171 |
| <b>12</b> | 471<br>315 | 1096<br>303 | 1729<br>292 | 2356<br>281 | 2974<br>271 | 3587<br>261 | 4193<br>252 | 4794<br>243 |
| <b>15</b> | 418<br>395 | 1042<br>381 | 1673<br>368 | 2307<br>357 | 2933<br>346 | 3549<br>336 | 4163<br>325 | 4771<br>314 |
| <b>20</b> | 299<br>528 | 931<br>512  | 1565<br>497 | 2198<br>484 | 2825<br>472 | 3455<br>459 | 4078<br>447 | 4692<br>435 |
| <b>25</b> | 173<br>660 | 794<br>643  | 1426<br>626 | 2059<br>612 | 2695<br>598 | 3332<br>583 | 3961<br>569 | 4579<br>555 |

Flow (GPM)

TORQUE (LB IN) 3961  
SPEED (RPM) 569

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TG 0170

10.3 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 620<br>9        | 1284<br>7   | 1945<br>5   | 2613<br>4   | 3293<br>3   | 3983<br>2   |             |             |
| <b>1</b>  | 652<br>20       | 1337<br>18  | 2006<br>16  | 2683<br>14  | 3375<br>12  | 4063<br>11  | 4744<br>8   | 5402<br>8   |
| <b>2</b>  | 678<br>42       | 1390<br>40  | 2105<br>37  | 2822<br>35  | 3535<br>32  | 4226<br>30  | 4909<br>27  | 5587<br>25  |
| <b>3</b>  | 678<br>64       | 1397<br>61  | 2117<br>58  | 2836<br>56  | 3554<br>53  | 4263<br>50  | 4963<br>46  | 5652<br>44  |
| <b>4</b>  | 679<br>86       | 1409<br>83  | 2142<br>80  | 2872<br>77  | 3596<br>74  | 4310<br>71  | 5021<br>67  | 5716<br>64  |
| <b>5</b>  | 675<br>108      | 1413<br>104 | 2150<br>101 | 2885<br>98  | 3616<br>94  | 4339<br>91  | 5057<br>87  | 5761<br>83  |
| <b>7</b>  | 661<br>153      | 1405<br>148 | 2152<br>143 | 2900<br>140 | 3642<br>136 | 4374<br>132 | 5101<br>127 | 5818<br>123 |
| <b>9</b>  | 632<br>197      | 1385<br>191 | 2140<br>186 | 2891<br>181 | 3638<br>177 | 4380<br>173 | 5114<br>168 | 5838<br>163 |
| <b>12</b> | 583<br>263      | 1334<br>256 | 2096<br>250 | 2860<br>244 | 3617<br>239 | 4362<br>234 | 5101<br>228 | 5823<br>223 |
| <b>15</b> | 524<br>330      | 1275<br>322 | 2035<br>314 | 2804<br>308 | 3572<br>302 | 4327<br>296 | 5070<br>289 | 5801<br>283 |
| <b>20</b> | 382<br>442      | 1143<br>432 | 1908<br>422 | 2683<br>413 | 3455<br>406 | 4216<br>399 | 4972<br>391 | 5714<br>383 |
| <b>25</b> | 239<br>554      | 983<br>543  | 1747<br>531 | 2523<br>520 | 3299<br>511 | 4071<br>501 | 4839<br>492 | 5591<br>483 |

Flow (GPM)

TORQUE (LB IN) 4839  
SPEED (RPM) 492

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**TG 0195**

**11.9 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 733<br>7   | 1503<br>3   |             |             |             |             |             |             |
| <b>1</b>  | 761<br>16  | 1546<br>13  | 2326<br>8   | 3104<br>3   |             |             |             |             |
| <b>2</b>  | 799<br>35  | 1638<br>32  | 2465<br>27  | 3270<br>21  | 4046<br>16  | 4813<br>11  | 5589<br>7   | 6375<br>6   |
| <b>3</b>  | 794<br>55  | 1639<br>50  | 2476<br>45  | 3303<br>39  | 4132<br>34  | 4970<br>28  | 5792<br>23  | 6595<br>19  |
| <b>4</b>  | 794<br>74  | 1654<br>69  | 2509<br>64  | 3356<br>58  | 4196<br>52  | 5023<br>46  | 5830<br>40  | 6635<br>35  |
| <b>5</b>  | 783<br>93  | 1653<br>88  | 2517<br>83  | 3375<br>76  | 4224<br>70  | 5065<br>64  | 5895<br>58  | 6710<br>52  |
| <b>7</b>  | 762<br>131 | 1637<br>126 | 2514<br>120 | 3384<br>113 | 4245<br>106 | 5098<br>99  | 5940<br>92  | 6772<br>86  |
| <b>9</b>  | 731<br>170 | 1616<br>164 | 2499<br>157 | 3373<br>150 | 4239<br>142 | 5093<br>135 | 5936<br>127 | 6774<br>120 |
| <b>12</b> | 677<br>228 | 1562<br>221 | 2455<br>213 | 3343<br>205 | 4217<br>196 | 5081<br>188 | 5934<br>179 | 6776<br>172 |
| <b>15</b> | 613<br>285 | 1498<br>278 | 2389<br>269 | 3283<br>260 | 4169<br>251 | 5040<br>242 | 5907<br>232 | 6765<br>233 |
| <b>20</b> | 448<br>381 | 1350<br>373 | 2245<br>363 | 3141<br>353 | 4031<br>342 | 4919<br>331 | 5798<br>321 | 6663<br>310 |
| <b>25</b> | 334<br>477 | 1158<br>468 | 2044<br>457 | 2941<br>445 | 3837<br>433 | 4729<br>421 | 5612<br>409 | 6500<br>397 |

Flow (GPM)

TORQUE (LB IN) 5612  
 SPEED (RPM) 409

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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**TG 0240**

**14.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 932<br>6   | 1907<br>4   | 2894<br>2   |             |             |             |             |             |
| <b>1</b>  | 960<br>14  | 1954<br>12  | 2950<br>9   | 3943<br>6   | 4939<br>3   | 5930<br>2   |             |             |
| <b>2</b>  | 988<br>30  | 2031<br>27  | 3065<br>24  | 4090<br>20  | 5107<br>17  | 6100<br>14  | 7068<br>11  | 8037<br>9   |
| <b>3</b>  | 983<br>45  | 2029<br>42  | 3071<br>39  | 4101<br>35  | 5128<br>31  | 6161<br>27  | 7182<br>23  | 8184<br>20  |
| <b>4</b>  | 978<br>61  | 2037<br>58  | 3090<br>54  | 4136<br>49  | 5176<br>45  | 6207<br>42  | 7230<br>37  | 8234<br>33  |
| <b>5</b>  | 962<br>77  | 2030<br>73  | 3092<br>69  | 4144<br>64  | 5190<br>60  | 6231<br>56  | 7259<br>51  | 8271<br>47  |
| <b>7</b>  | 933<br>108 | 2005<br>104 | 3078<br>99  | 4141<br>94  | 5194<br>89  | 6239<br>84  | 7275<br>78  | 8298<br>73  |
| <b>9</b>  | 890<br>140 | 1972<br>135 | 3048<br>129 | 4112<br>123 | 5169<br>117 | 6213<br>112 | 7245<br>106 | 8271<br>100 |
| <b>12</b> | 832<br>187 | 1912<br>181 | 2996<br>175 | 4071<br>167 | 5125<br>161 | 6163<br>154 | 7195<br>147 | 8224<br>140 |
| <b>15</b> | 753<br>235 | 1832<br>228 | 2921<br>220 | 4009<br>212 | 5081<br>204 | 6137<br>196 | 7182<br>188 | 8212<br>180 |
| <b>20</b> | 559<br>314 | 1654<br>306 | 2744<br>297 | 3834<br>287 | 4917<br>278 | 5991<br>268 | 7045<br>258 | 8081<br>248 |
| <b>25</b> | 524<br>393 | 1427<br>384 | 2507<br>373 | 3595<br>363 | 4690<br>352 | 5780<br>340 | 6853<br>328 | 7913<br>317 |

**Flow (GPM)**

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



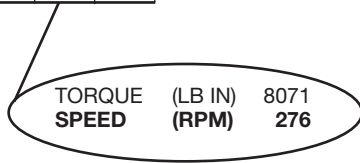
**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TG 0280

17.1 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 1056<br>5       | 2177<br>4   | 3323<br>2   | 4512<br>1   |             |             |             |             |
| <b>1</b>  | 1087<br>12      | 2223<br>10  | 3378<br>8   | 4552<br>6   | 5734<br>5   | 6930<br>3   | 8135<br>3   | 9350<br>2   |
| <b>2</b>  | 1124<br>25      | 2313<br>23  | 3513<br>21  | 4700<br>18  | 5880<br>16  | 7060<br>14  | 8239<br>12  | 9400<br>11  |
| <b>3</b>  | 1124<br>39      | 2323<br>36  | 3532<br>34  | 4740<br>31  | 5940<br>28  | 7143<br>25  | 8346<br>22  | 9536<br>19  |
| <b>4</b>  | 1126<br>52      | 2346<br>49  | 3568<br>47  | 4786<br>43  | 6004<br>40  | 7214<br>37  | 8415<br>33  | 9596<br>30  |
| <b>5</b>  | 1115<br>65      | 2350<br>62  | 3582<br>59  | 4816<br>56  | 6044<br>52  | 7256<br>49  | 8457<br>45  | 9641<br>41  |
| <b>7</b>  | 1091<br>92      | 2338<br>88  | 3586<br>85  | 4832<br>80  | 6072<br>76  | 7301<br>72  | 8515<br>67  | 9706<br>63  |
| <b>9</b>  | 1046<br>118     | 2309<br>114 | 3564<br>110 | 4811<br>105 | 6051<br>101 | 7280<br>96  | 8499<br>90  | 9707<br>85  |
| <b>12</b> | 981<br>159      | 2242<br>154 | 3506<br>148 | 4757<br>143 | 5992<br>137 | 7221<br>132 | 8444<br>125 | 9652<br>118 |
| <b>15</b> | 898<br>199      | 2164<br>193 | 3437<br>186 | 4702<br>180 | 5951<br>174 | 7187<br>168 | 8416<br>160 | 9625<br>152 |
| <b>20</b> | 691<br>266      | 1976<br>258 | 3255<br>250 | 4529<br>243 | 5795<br>235 | 7044<br>227 | 8275<br>218 | 9499<br>209 |
| <b>25</b> | 703<br>334      | 1726<br>324 | 2987<br>314 | 4260<br>305 | 5540<br>296 | 6815<br>286 | 8071<br>276 | 9311<br>267 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**

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**TG 0310**

**18.9 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1188<br>4   | 2464<br>3   | 3766<br>2   | 5102<br>1   |             |             |             |              |
| <b>1</b>  | 1220<br>11  | 2508<br>9   | 3812<br>7   | 5145<br>5   | 6477<br>4   | 7822<br>2   | 9181<br>2   | 10530<br>1   |
| <b>2</b>  | 1259<br>23  | 2598<br>21  | 3950<br>19  | 5298<br>17  | 6642<br>14  | 7972<br>13  | 9282<br>10  | 10574<br>9   |
| <b>3</b>  | 1257<br>35  | 2606<br>33  | 3889<br>30  | 5332<br>28  | 6688<br>25  | 8044<br>22  | 9392<br>19  | 10693<br>16  |
| <b>4</b>  | 1259<br>47  | 2628<br>44  | 4003<br>42  | 5377<br>39  | 6749<br>36  | 8114<br>33  | 9461<br>29  | 10780<br>26  |
| <b>5</b>  | 1247<br>59  | 2629<br>56  | 4252<br>52  | 5401<br>50  | 6782<br>47  | 8149<br>42  | 9499<br>39  | 10823<br>35  |
| <b>7</b>  | 1218<br>84  | 2614<br>80  | 4013<br>76  | 5413<br>72  | 6806<br>68  | 8184<br>64  | 9543<br>60  | 10874<br>56  |
| <b>9</b>  | 1167<br>107 | 2574<br>103 | 3983<br>99  | 5386<br>94  | 6780<br>90  | 8162<br>85  | 9529<br>80  | 10877<br>75  |
| <b>12</b> | 1089<br>143 | 2493<br>139 | 3904<br>133 | 5308<br>128 | 6696<br>122 | 8075<br>117 | 9443<br>110 | 10793<br>102 |
| <b>15</b> | 995<br>180  | 2400<br>173 | 3817<br>167 | 5225<br>160 | 6621<br>154 | 8003<br>148 | 9371<br>140 | 10718<br>131 |
| <b>20</b> | 769<br>241  | 2194<br>234 | 3618<br>225 | 5043<br>218 | 6462<br>210 | 7863<br>203 | 9238<br>194 | 10588<br>183 |
| <b>25</b> | 626<br>303  | 1955<br>294 | 3359<br>284 | 4771<br>274 | 6251<br>265 | 7608<br>256 | 8998<br>246 | 10360<br>236 |

Flow (GPM)

TORQUE (LB IN) 7608  
 SPEED (RPM) 256

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TG 0335

20.6 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1297<br>4   | 2699<br>3   | 4128<br>1   | 5584<br>1   |             |             |              |              |
| <b>1</b>  | 1329<br>10  | 2741<br>8   | 4176<br>7   | 5630<br>5   | 7084<br>4   | 8551<br>2   | 10036<br>2   | 11496<br>1   |
| <b>2</b>  | 1369<br>21  | 2832<br>19  | 4308<br>17  | 5787<br>15  | 7265<br>13  | 8718<br>11  | 10136<br>9   | 11534<br>8   |
| <b>3</b>  | 1366<br>32  | 2838<br>30  | 4326<br>27  | 5817<br>25  | 7301<br>22  | 8781<br>20  | 10248<br>17  | 11685<br>14  |
| <b>4</b>  | 1368<br>43  | 2858<br>40  | 4358<br>38  | 5861<br>35  | 7358<br>32  | 8850<br>29  | 10317<br>25  | 11748<br>22  |
| <b>5</b>  | 1355<br>54  | 2858<br>51  | 4368<br>48  | 5880<br>45  | 7386<br>42  | 8880<br>38  | 10352<br>34  | 11791<br>30  |
| <b>7</b>  | 1323<br>76  | 2840<br>73  | 4363<br>69  | 5888<br>65  | 7407<br>61  | 8908<br>57  | 10384<br>53  | 11829<br>47  |
| <b>9</b>  | 1266<br>98  | 2791<br>94  | 4326<br>90  | 5856<br>85  | 7376<br>81  | 8884<br>76  | 10372<br>71  | 11834<br>64  |
| <b>12</b> | 1177<br>131 | 2698<br>127 | 4230<br>121 | 5759<br>116 | 7273<br>110 | 8773<br>105 | 10261<br>98  | 11726<br>90  |
| <b>15</b> | 1075<br>165 | 2594<br>159 | 4127<br>153 | 5654<br>146 | 7170<br>140 | 8670<br>134 | 10153<br>126 | 11613<br>116 |
| <b>20</b> | 833<br>221  | 2372<br>214 | 3915<br>205 | 5463<br>197 | 7008<br>189 | 8533<br>182 | 10026<br>173 | 11479<br>161 |
| <b>25</b> | 678<br>277  | 2142<br>269 | 3663<br>259 | 5189<br>248 | 6726<br>239 | 8257<br>230 | 9757<br>219  | 11219<br>209 |

Flow (GPM)

TORQUE (LB IN) 8257  
SPEED (RPM) 230

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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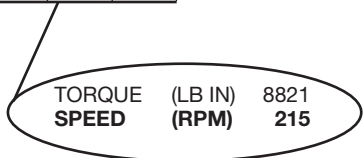
**TG 0360**

**360 cm<sup>3</sup> / rev (22.2 in<sup>3</sup> / rev)**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1386<br>4   | 2883<br>3   | 4410<br>1   | 5965<br>1   |             |             |              |
| <b>1</b>  | 1420<br>9   | 2928<br>7   | 4461<br>7   | 6014<br>5   | 7567<br>4   | 9135<br>2   | 10721<br>2   |
| <b>2</b>  | 1462<br>20  | 3025<br>18  | 4602<br>16  | 6182<br>14  | 7761<br>12  | 9313<br>10  | 10828<br>8   |
| <b>3</b>  | 1459<br>30  | 3031<br>28  | 4621<br>25  | 6214<br>23  | 7799<br>21  | 9380<br>19  | 10947<br>16  |
| <b>4</b>  | 1461<br>40  | 3053<br>37  | 4655<br>36  | 6261<br>33  | 7884<br>30  | 9454<br>27  | 11021<br>23  |
| <b>5</b>  | 1447<br>51  | 3053<br>48  | 4666<br>45  | 6281<br>42  | 7890<br>39  | 9486<br>36  | 11059<br>32  |
| <b>7</b>  | 1413<br>71  | 3034<br>68  | 4661<br>65  | 6290<br>61  | 7913<br>57  | 9516<br>53  | 11093<br>50  |
| <b>9</b>  | 1352<br>92  | 2981<br>88  | 4621<br>84  | 6256<br>80  | 7879<br>76  | 9490<br>71  | 11080<br>66  |
| <b>12</b> | 1257<br>123 | 2882<br>119 | 4519<br>113 | 6152<br>109 | 7769<br>103 | 9372<br>98  | 10961<br>92  |
| <b>15</b> | 1148<br>154 | 2771<br>149 | 4409<br>143 | 6040<br>137 | 7659<br>131 | 9262<br>125 | 10846<br>118 |
| <b>20</b> | 890<br>207  | 2534<br>200 | 4182<br>192 | 5836<br>184 | 7486<br>177 | 9115<br>170 | 10710<br>162 |
| <b>25</b> | 724<br>259  | 2288<br>252 | 3913<br>242 | 5543<br>232 | 7185<br>224 | 8821<br>215 | 10423<br>205 |

Flow (GPM)



Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

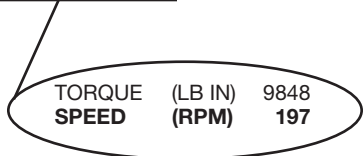
TG 0405

**24.7** cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000         | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1544<br>4   | 3178<br>3   | 4840<br>2   | 6515<br>1   | 8185<br>1   |              |              |
| <b>1</b>  | 1593<br>8   | 3256<br>7   | 4928<br>6   | 6607<br>6   | 8303<br>5   | 9987<br>4    | 11652<br>3   |
| <b>2</b>  | 1636<br>17  | 3351<br>16  | 5084<br>15  | 6817<br>14  | 8550<br>13  | 10272<br>12  | 11978<br>11  |
| <b>3</b>  | 1637<br>27  | 3365<br>25  | 5106<br>23  | 6847<br>22  | 8588<br>21  | 10314<br>19  | 12031<br>18  |
| <b>4</b>  | 1645<br>36  | 3394<br>34  | 5159<br>32  | 6920<br>30  | 8668<br>29  | 10402<br>27  | 12130<br>26  |
| <b>5</b>  | 1640<br>45  | 3408<br>43  | 5201<br>41  | 6983<br>39  | 8733<br>37  | 10466<br>35  | 12194<br>33  |
| <b>7</b>  | 1606<br>64  | 3396<br>61  | 5211<br>59  | 7003<br>56  | 8772<br>54  | 10527<br>51  | 12271<br>49  |
| <b>9</b>  | 1551<br>82  | 3350<br>80  | 5176<br>77  | 6981<br>73  | 8763<br>70  | 10519<br>67  | 12269<br>64  |
| <b>12</b> | 1428<br>110 | 3238<br>107 | 5075<br>103 | 6888<br>99  | 8670<br>95  | 10424<br>91  | 12172<br>88  |
| <b>15</b> | 1310<br>138 | 3112<br>135 | 4948<br>130 | 6759<br>125 | 8545<br>120 | 10306<br>115 | 12060<br>111 |
| <b>20</b> | 1136<br>185 | 2862<br>181 | 4692<br>175 | 6518<br>168 | 8336<br>162 | 10122<br>156 | 11877<br>151 |
| <b>25</b> |             |             | 4492<br>219 | 6303<br>212 | 8084<br>204 | 9848<br>197  | 11585<br>190 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TG 0475**

**29.1 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         |
| <b>.5</b> | 1768<br>3       | 3732<br>3   | 5733<br>2   | 7744<br>1   | 9762<br>1    |              |
| <b>1</b>  | 1868<br>7       | 3878<br>7   | 5879<br>6   | 7851<br>5   | 9838<br>4    | 11830<br>3   |
| <b>2</b>  | 1964<br>15      | 4055<br>14  | 6180<br>14  | 8237<br>12  | 10241<br>10  | 12136<br>8   |
| <b>3</b>  | 1972<br>23      | 4074<br>22  | 6208<br>21  | 8321<br>19  | 10379<br>17  | 12355<br>13  |
| <b>4</b>  | 2005<br>31      | 4135<br>30  | 6287<br>29  | 8382<br>27  | 10463<br>24  | 12496<br>20  |
| <b>5</b>  | 2004<br>39      | 4129<br>38  | 6304<br>37  | 8428<br>34  | 10514<br>31  | 12544<br>26  |
| <b>7</b>  | 1990<br>55      | 4133<br>54  | 6308<br>52  | 8445<br>50  | 10555<br>45  | 12602<br>40  |
| <b>9</b>  | 1924<br>70      | 4104<br>69  | 6285<br>68  | 8430<br>65  | 10528<br>60  | 12608<br>54  |
| <b>12</b> | 1775<br>94      | 3974<br>93  | 6157<br>91  | 8328<br>87  | 10446<br>82  | 12528<br>75  |
| <b>15</b> | 1619<br>118     | 3784<br>116 | 5990<br>114 | 8188<br>110 | 10311<br>104 | 12372<br>96  |
| <b>20</b> | 1314<br>157     | 3373<br>156 | 5629<br>153 | 7853<br>149 | 10038<br>141 | 12145<br>132 |
| <b>25</b> | 1141<br>197     | 3029<br>196 | 5220<br>193 | 7427<br>189 | 9629<br>182  | 11757<br>174 |
| <b>30</b> | 606<br>237      | 2505<br>236 | 4649<br>233 | 6766<br>230 | 8878<br>224  | 10989<br>219 |

**Flow (GPM)**

**TORQUE (LB IN) 6766**  
**SPEED (RPM) 230**

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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**TG 0530**

**32.2 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         |
| <b>.5</b> | 2080<br>3       | 4256<br>3   | 6479<br>2   | 8726<br>2   | 11012<br>1   |
| <b>1</b>  | 2158<br>7       | 4372<br>6   | 6592<br>6   | 8779<br>5   | 10994<br>4   |
| <b>2</b>  | 2246<br>14      | 4567<br>13  | 6869<br>12  | 9126<br>11  | 11376<br>9   |
| <b>3</b>  | 2242<br>21      | 4578<br>20  | 6916<br>19  | 9237<br>17  | 11500<br>14  |
| <b>4</b>  | 2253<br>28      | 4625<br>27  | 6977<br>25  | 9296<br>23  | 11586<br>20  |
| <b>5</b>  | 2235<br>35      | 4629<br>34  | 7002<br>32  | 9333<br>29  | 11626<br>26  |
| <b>7</b>  | 2182<br>49      | 4599<br>48  | 7006<br>46  | 9362<br>42  | 11659<br>38  |
| <b>9</b>  | 2095<br>63      | 4535<br>62  | 6960<br>59  | 9330<br>55  | 11650<br>50  |
| <b>12</b> | 1943<br>85      | 4390<br>83  | 6825<br>80  | 9217<br>75  | 11549<br>69  |
| <b>15</b> | 1753<br>106     | 4199<br>104 | 6638<br>100 | 9052<br>95  | 11408<br>87  |
| <b>20</b> | 1327<br>141     | 3783<br>139 | 6262<br>135 | 8701<br>129 | 11086<br>120 |
| <b>25</b> | 1011<br>177     | 3300<br>175 | 5751<br>171 | 8210<br>165 | 10639<br>158 |
| <b>30</b> | 269<br>213      | 2698<br>211 | 5083<br>208 | 7415<br>203 | 9814<br>197  |

**Flow (GPM)**

TORQUE (LB IN) 9814  
 SPEED (RPM) 197

Cont.    Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TG 0625**

**38.0 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1750        | 2250         |
|-----------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1939<br>2   | 4593<br>1   |             |             |              |
| <b>1</b>  | 2087<br>5   | 4665<br>3   | 7283<br>2   | 8680<br>2   | 11579<br>1   |
| <b>2</b>  | 2338<br>11  | 4991<br>9   | 7590<br>8   | 8853<br>7   | 11458<br>5   |
| <b>3</b>  | 2386<br>17  | 5101<br>15  | 7753<br>13  | 9055<br>12  | 11689<br>9   |
| <b>4</b>  | 2457<br>23  | 5202<br>21  | 7872<br>19  | 9174<br>17  | 11769<br>14  |
| <b>5</b>  | 2479<br>29  | 5246<br>27  | 7943<br>25  | 9242<br>23  | 11821<br>18  |
| <b>7</b>  | 2464<br>41  | 5273<br>39  | 7995<br>36  | 9306<br>34  | 11859<br>28  |
| <b>9</b>  | 2401<br>53  | 5223<br>51  | 7993<br>48  | 9337<br>45  | 11935<br>39  |
| <b>12</b> | 2254<br>71  | 5092<br>69  | 7886<br>65  | 9239<br>62  | 11900<br>54  |
| <b>15</b> | 2052<br>89  | 4901<br>87  | 7721<br>83  | 9086<br>80  | 11763<br>70  |
| <b>20</b> | 1600<br>120 | 4490<br>117 | 7334<br>112 | 8725<br>109 | 11424<br>98  |
| <b>25</b> | 1063<br>151 | 3933<br>148 | 6818<br>144 | 8235<br>140 | 11021<br>131 |
| <b>30</b> | 359<br>182  | 3250<br>180 | 6074<br>176 | 7443<br>172 | 10179<br>165 |

Flow (GPM)

TORQUE (LB IN) 7443  
 SPEED (RPM) 172

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TG 0785

48.0 cu in / rev

|           | PRESSURE (PSID) |             |             |              |
|-----------|-----------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000         |
| <b>.5</b> | 2910<br>2       | 6153<br>2   | 9607<br>1   | 12950<br>1   |
| <b>1</b>  | 3011<br>4       | 6296<br>4   | 9670<br>3   | 12919<br>3   |
| <b>2</b>  | 3217<br>9       | 6536<br>8   | 9935<br>7   | 13060<br>6   |
| <b>3</b>  | 3220<br>14      | 6613<br>13  | 9977<br>11  | 13079<br>9   |
| <b>4</b>  | 3265<br>19      | 6679<br>17  | 10021<br>15 | 13078<br>13  |
| <b>5</b>  | 3263<br>23      | 6703<br>22  | 10047<br>19 | 13103<br>16  |
| <b>7</b>  | 3218<br>33      | 6722<br>31  | 10068<br>28 | 13062<br>24  |
| <b>9</b>  | 3107<br>43      | 6664<br>41  | 10108<br>36 | 13185<br>31  |
| <b>12</b> | 2892<br>57      | 6489<br>55  | 9959<br>49  | 13082<br>42  |
| <b>15</b> | 2643<br>71      | 6238<br>69  | 9733<br>62  | 12938<br>54  |
| <b>20</b> | 2044<br>95      | 5673<br>92  | 9239<br>85  | 12636<br>75  |
| <b>25</b> | 2313<br>119     | 4976<br>117 | 8571<br>110 | 12073<br>101 |
| <b>30</b> | 496<br>143      | 4104<br>141 | 7582<br>137 | 11024<br>130 |

Flow (GPM)

TORQUE (LB IN) 11024  
SPEED (RPM) 130

TG 0960

58.5 cu in / rev

|           | PRESSURE (PSID) |             |             |
|-----------|-----------------|-------------|-------------|
|           | 500             | 1000        | 1500        |
| <b>.5</b> | 3692<br>2       | 7712<br>1   | 11750<br>1  |
| <b>1</b>  | 3788<br>3       | 7858<br>3   | 11895<br>3  |
| <b>2</b>  | 3900<br>7       | 8045<br>7   | 12058<br>6  |
| <b>3</b>  | 3905<br>11      | 8078<br>11  | 12135<br>10 |
| <b>4</b>  | 3939<br>15      | 8155<br>14  | 12210<br>13 |
| <b>5</b>  | 3923<br>19      | 8173<br>18  | 12238<br>17 |
| <b>7</b>  | 3860<br>27      | 8160<br>26  | 12262<br>24 |
| <b>9</b>  | 3733<br>35      | 8074<br>34  | 12224<br>31 |
| <b>12</b> | 3475<br>47      | 7848<br>45  | 12062<br>42 |
| <b>15</b> | 3149<br>58      | 7545<br>57  | 11823<br>53 |
| <b>20</b> | 2437<br>78      | 6843<br>76  | 11227<br>72 |
| <b>25</b> | 2969<br>98      | 5990<br>96  | 10360<br>92 |
| <b>30</b> | 603<br>118      | 4919<br>117 | 9170<br>113 |

Flow (GPM)

TORQUE (LB IN) 9170  
SPEED (RPM) 113

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

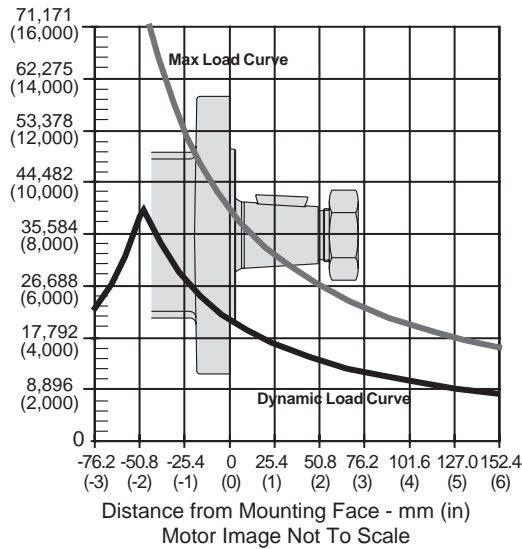
Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Flange Mount

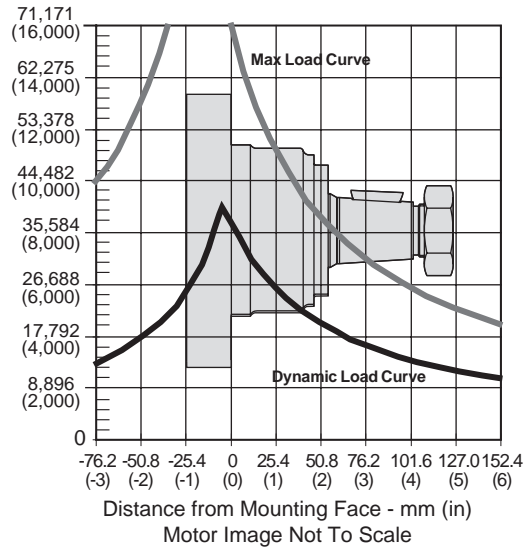
Side Load - N (lbs)



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

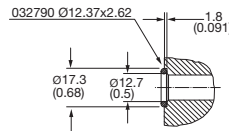
$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

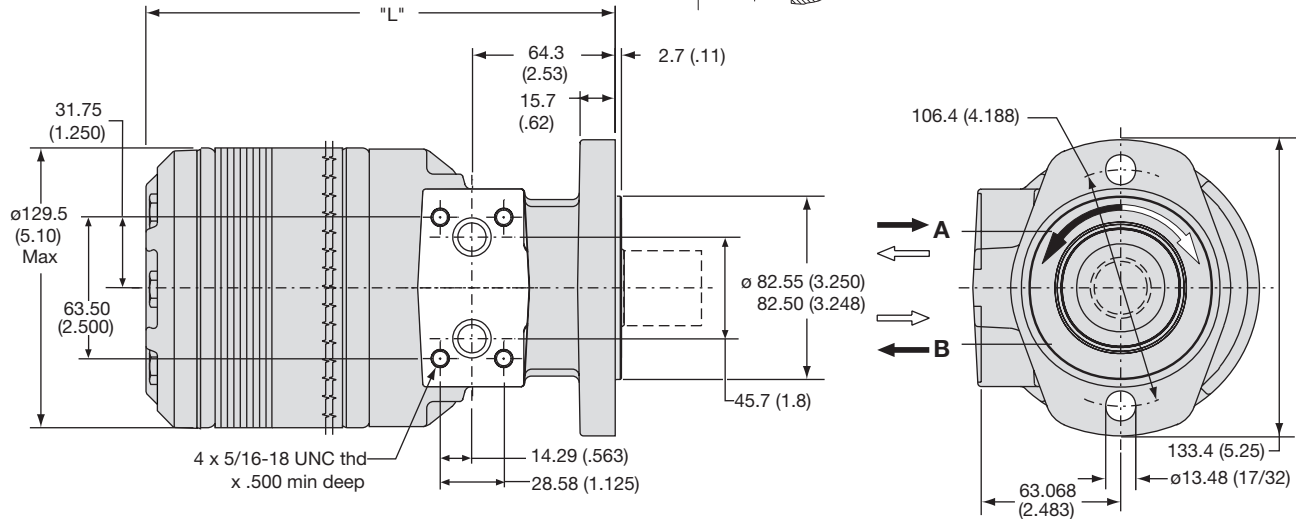


Code: AM

SAE A 2-Bolt, 5/16-18 UNC Manifold



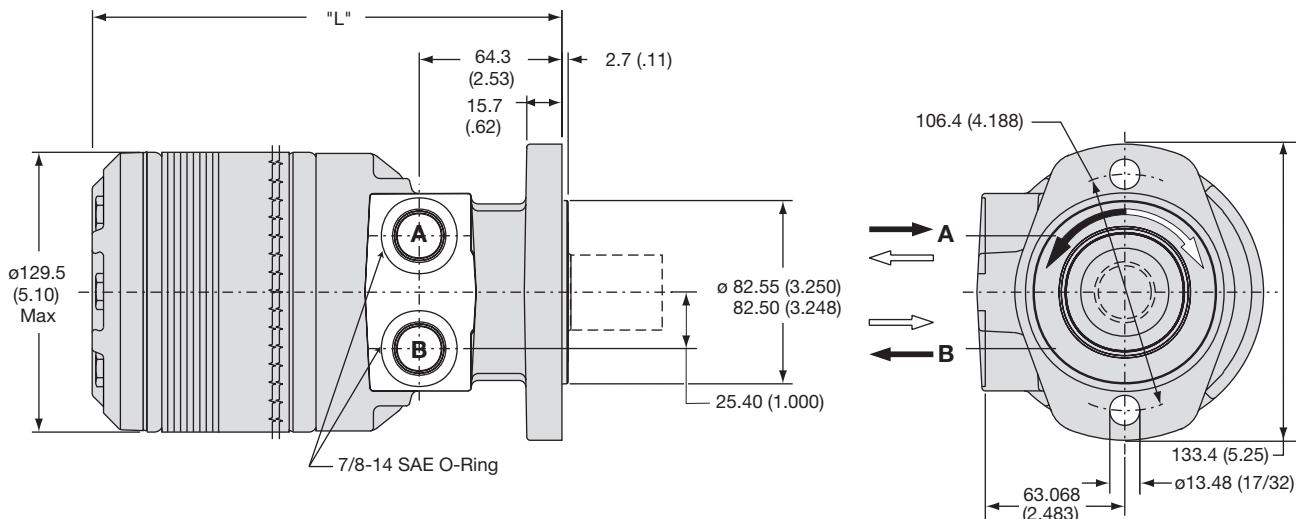
Motor with manifold mount is supplied with 2 o-rings.



| Code AM        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 14.2   | 14.5   | 14.7   | 15.1   | 15.5   | 15.7   | 15.9   | 16.5   | 17.2   | 17.9   | 18.6   | 20.2    | 21.9    |
| Poids/Peso     | (lb)     | (31.4) | (32.0) | (32.5) | (33.3) | (34.2) | (34.7) | (35.1) | (36.4) | (37.9) | (39.5) | (41.1) | (44.5)  | (48.3)  |
| Length         | "L" mm   | 195.6  | 198.6  | 201.4  | 206.5  | 211.3  | 214.8  | 217.7  | 225.0  | 233.7  | 240.0  | 249.4  | 268.4   | 287.5   |
|                | "L" (in) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.46) | (8.57) | (8.86) | (9.20) | (9.45) | (9.82) | (10.57) | (11.32) |

Code: AS

SAE A 2-Bolt, 7/8-14 SAE



| Code AS        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 14.2   | 14.5   | 14.7   | 15.1   | 15.5   | 15.7   | 15.9   | 16.5   | 17.2   | 17.9   | 18.6   | 20.2    | 21.9    |
| Poids/Peso     | (lb)     | (31.4) | (32.0) | (32.5) | (33.3) | (34.2) | (34.7) | (35.1) | (36.4) | (37.9) | (39.5) | (41.1) | (44.5)  | (48.3)  |
| Length         | "L" mm   | 195.6  | 198.6  | 201.4  | 206.5  | 211.3  | 214.8  | 217.7  | 225.0  | 233.7  | 240.0  | 249.4  | 268.4   | 287.5   |
|                | "L" (in) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.46) | (8.57) | (8.86) | (9.20) | (9.45) | (9.82) | (10.57) | (11.32) |

English equivalents for metric specifications are shown in ( ).

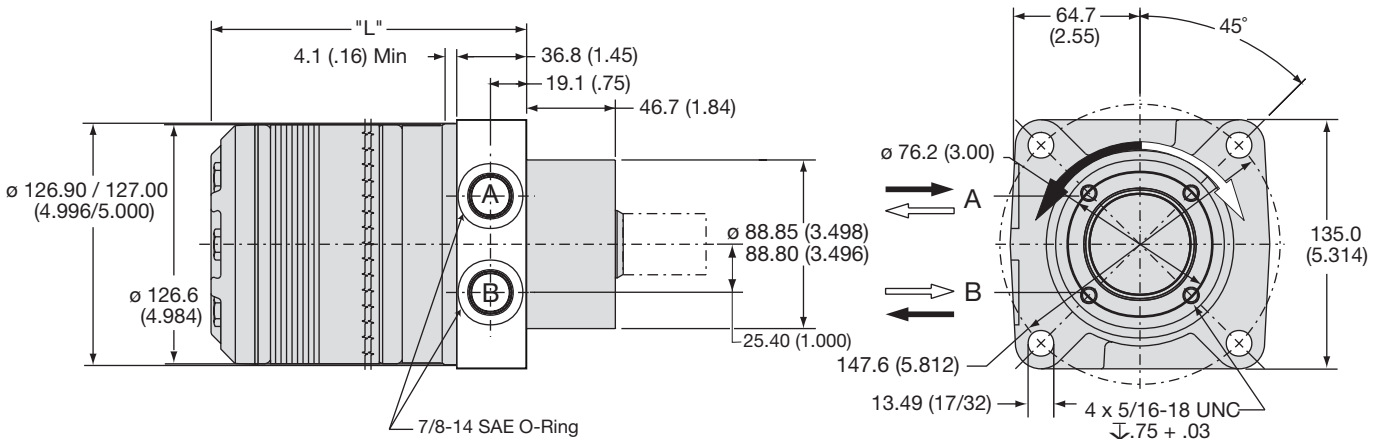


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: LS

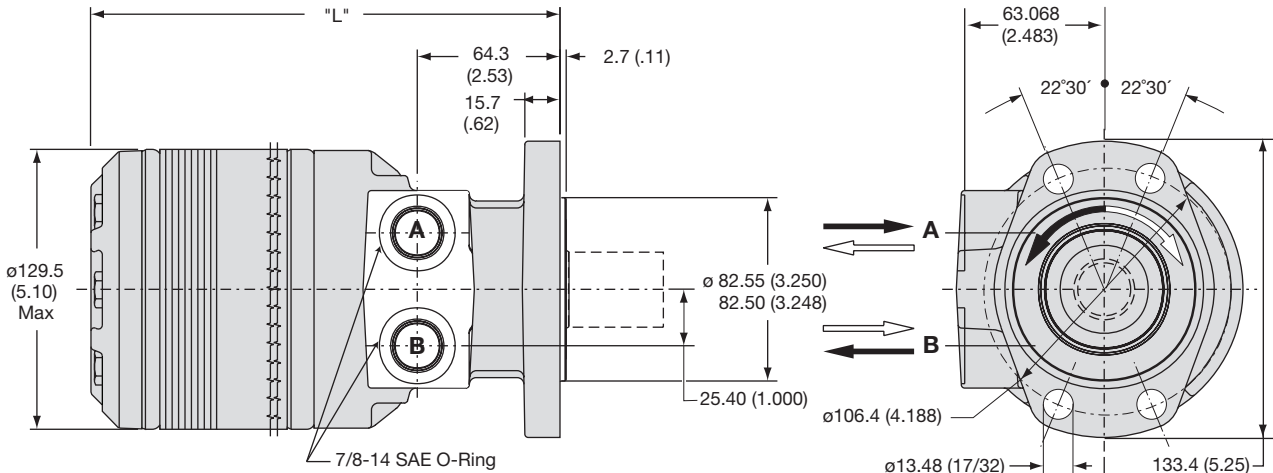
Wheel, Front Brake Nose, 7/8-14 SAE



| Code LS        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.6   | 14.8   | 15.1   | 15.5   | 15.9   | 16.1   | 16.3   | 16.9   | 17.5   | 18.3   | 19.0   | 20.5   | 22.2   |
| Poids/Peso     | (lb)     | (32.2) | (37.7) | (33.3) | (34.1) | (35.0) | (35.5) | (35.8) | (37.2) | (38.6) | (40.3) | (41.8) | (45.3) | (49.0) |
| Length         | "L" mm   | 150.3  | 153.4  | 156.7  | 161.3  | 168.1  | 169.7  | 172.5  | 179.8  | 188.5  | 194.8  | 204.2  | 233.3  | 242.3  |
|                | "L" (in) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.68) | (6.79) | (7.08) | (7.42) | (7.67) | (8.04) | (8.79) | (9.54) |

Code: MS

Magneto, 7/8-14 SAE

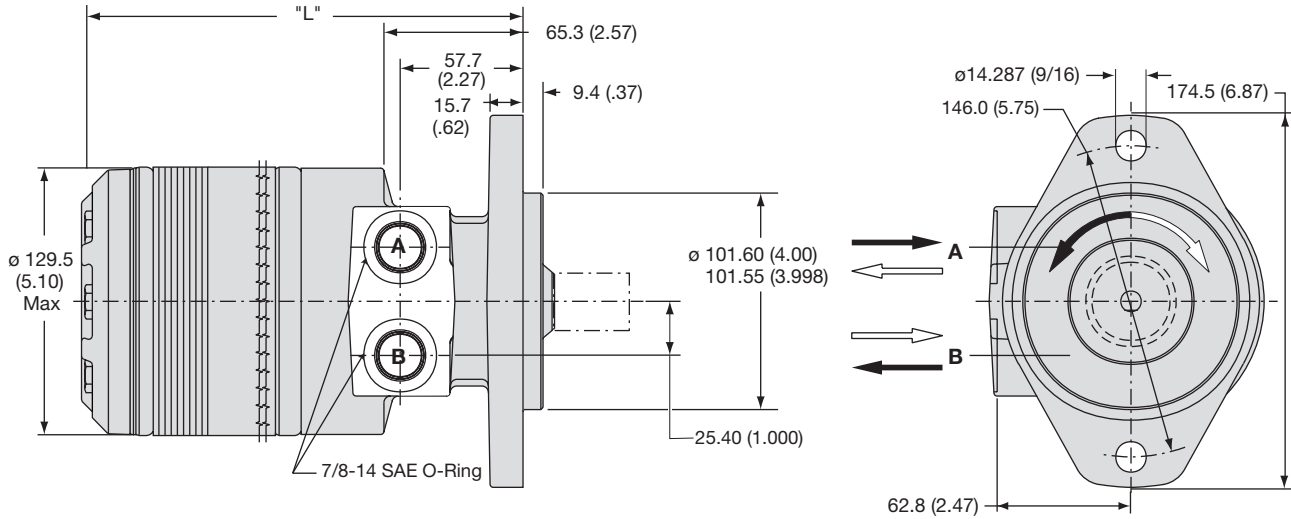


| Code MS        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 14.2   | 14.5   | 14.7   | 15.1   | 15.5   | 16.1   | 15.9   | 16.5   | 17.2   | 17.9   | 18.6   | 20.2    | 21.9    |
| Poids/Peso     | (lb)     | (31.4) | (32.0) | (32.5) | (33.3) | (34.2) | (35.5) | (35.1) | (36.4) | (37.9) | (39.5) | (41.1) | (44.5)  | (48.3)  |
| Length         | "L" mm   | 195.6  | 198.6  | 201.4  | 206.5  | 211.3  | 214.8  | 217.7  | 225.0  | 233.7  | 240.0  | 249.4  | 268.4   | 287.5   |
|                | "L" (in) | (7.70) | (7.82) | (7.95) | (8.13) | (8.32) | (8.46) | (8.57) | (8.86) | (9.20) | (9.45) | (9.82) | (10.57) | (11.32) |

English equivalents for metric specifications are shown in ( ).

Code: BS

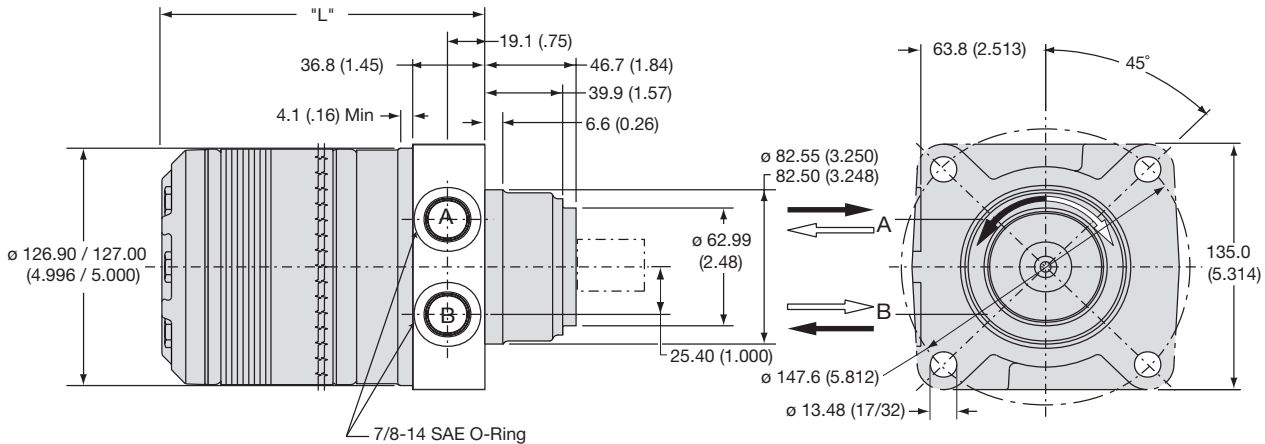
SAE B 2-Bolt, 7/8-14 SAE O-Ring



| Code BS       | disp.           | 0140         | 0170         | 0195         | 0240         | 0280         | 0310         | 0335         | 0405         | 0475         | 0530         | 0625         | 0785         | 0960         |
|---------------|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight</b> | <b>kg</b>       | <b>14.9</b>  | <b>15.2</b>  | <b>15.3</b>  | <b>15.7</b>  | <b>16.1</b>  | <b>16.4</b>  | <b>16.6</b>  | <b>17.1</b>  | <b>17.8</b>  | <b>18.6</b>  | <b>19.3</b>  | <b>20.8</b>  | <b>22.5</b>  |
|               | (lb)            | (32.8)       | (33.4)       | (33.9)       | (34.7)       | (35.6)       | (36.1)       | (36.5)       | (37.8)       | (39.3)       | (40.9)       | (42.5)       | (45.9)       | (49.7)       |
| <b>Length</b> | <b>"L" mm</b>   | <b>195.6</b> | <b>198.6</b> | <b>201.4</b> | <b>206.5</b> | <b>211.3</b> | <b>214.8</b> | <b>217.7</b> | <b>225.0</b> | <b>233.7</b> | <b>240.0</b> | <b>249.4</b> | <b>268.4</b> | <b>287.5</b> |
|               | <b>"L" (in)</b> | (7.70)       | (7.82)       | (7.95)       | (8.13)       | (8.32)       | (8.46)       | (8.57)       | (8.86)       | (9.20)       | (9.45)       | (9.82)       | (10.57)      | (11.32)      |

Code: US

Wheel, Standard, 7/8-14 SAE



| Code US               | disp.           | 0140         | 0170         | 0195         | 0240         | 0280         | 0310         | 0335         | 0405         | 0475         | 0530         | 0625         | 0785         | 0960         |
|-----------------------|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>       | <b>14.6</b>  | <b>14.8</b>  | <b>15.1</b>  | <b>15.5</b>  | <b>15.9</b>  | <b>16.1</b>  | <b>16.3</b>  | <b>16.9</b>  | <b>17.51</b> | <b>18.3</b>  | <b>19.0</b>  | <b>20.5</b>  | <b>22.2</b>  |
| <b>Poids/Peso</b>     | (lb)            | (32.2)       | (32.7)       | (33.3)       | (34.1)       | (35.0)       | (35.5)       | (35.8)       | (37.2)       | (38.6)       | (40.3)       | (41.8)       | (45.3)       | (49.0)       |
| <b>Length</b>         | <b>"L" mm</b>   | <b>150.3</b> | <b>153.4</b> | <b>156.7</b> | <b>161.3</b> | <b>168.1</b> | <b>169.7</b> | <b>172.5</b> | <b>179.8</b> | <b>188.5</b> | <b>194.8</b> | <b>204.2</b> | <b>233.3</b> | <b>242.3</b> |
|                       | <b>"L" (in)</b> | (5.92)       | (6.04)       | (6.17)       | (6.35)       | (6.54)       | (6.68)       | (6.79)       | (7.08)       | (7.42)       | (7.67)       | (8.04)       | (8.79)       | (9.54)       |

English equivalents for metric specifications are shown in ( ).

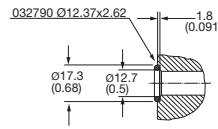


**WARNING**

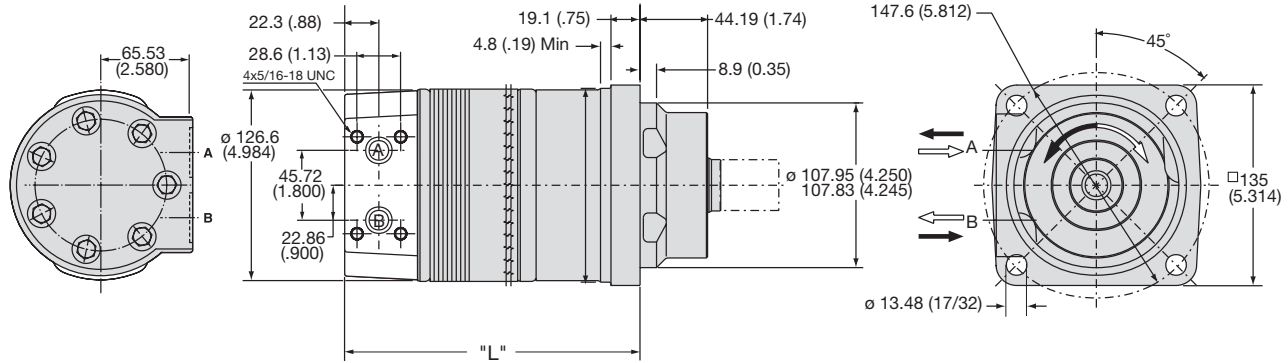
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: WE

Wheel, Optional, Manifold Rear Port



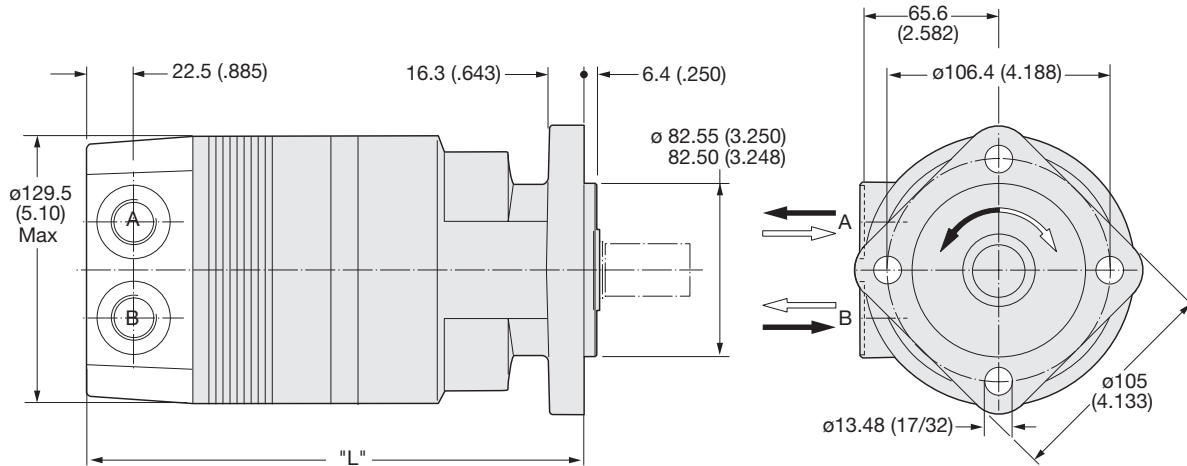
Motor with manifold mount is supplied with 2 o-rings.



| Code WE | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight  | kg       | 17.6   | 17.8   | 18.1   | 18.4   | 18.8   | 19.1   | 19.3   | 19.8   | 20.5   | 21.3   | 22.0   | 23.5   | 25.2    |
|         | (lb)     | (38.7) | (39.3) | (39.8) | (40.6) | (41.5) | (42.0) | (42.4) | (43.7) | (45.2) | (46.8) | (48.4) | (51.8) | (55.6)  |
| Length  | "L" mm   | 177.5  | 180.6  | 183.9  | 188.7  | 193.3  | 196.9  | 199.6  | 207.0  | 215.6  | 222.0  | 231.6  | 250.7  | 269.7   |
|         | "L" (in) | (6.99) | (7.11) | (7.24) | (7.43) | (7.61) | (7.75) | (7.86) | (8.15) | (8.49) | (8.74) | (9.12) | (9.87) | (10.62) |

Code: VB

SAE A 4-Bolt, 7/8-14 SAE Rear Port



| Code VB | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Weight  | kg       | 16.1   | 16.3   | 16.6   | 17.0   | 17.4   | 17.6   | 17.8   | 18.4   | 19.0    | 19.8    | 20.5    | 22.0    | 23.7    |
|         | (lb)     | (35.5) | (35.9) | (36.6) | (37.5) | (38.4) | (38.8) | (39.2) | (41.0) | (41.9)  | (43.7)  | (45.2)  | (48.5)  | (52.2)  |
| Length  | "L" mm   | 216.7  | 219.7  | 223.0  | 227.8  | 232.4  | 236.0  | 238.8  | 246.1  | 254.8   | 261.1   | 270.8   | 289.8   | 308.9   |
|         | "L" (in) | (8.53) | (8.65) | (8.78) | (8.97) | (9.15) | (9.29) | (9.40) | (9.69) | (10.03) | (10.28) | (10.66) | (11.41) | (12.16) |

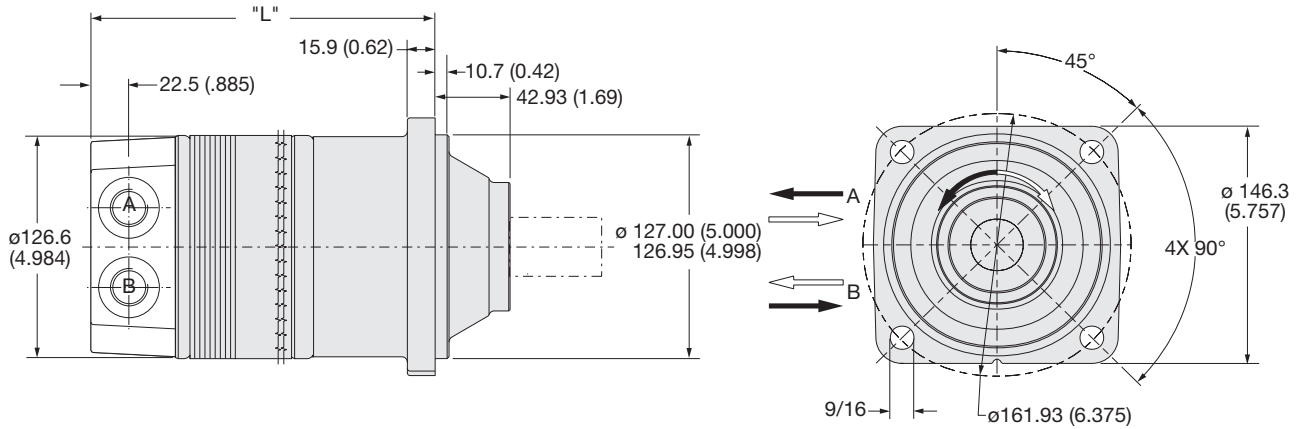
English equivalents for metric specifications are shown in ( ).



**WARNING**  
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Code: DB

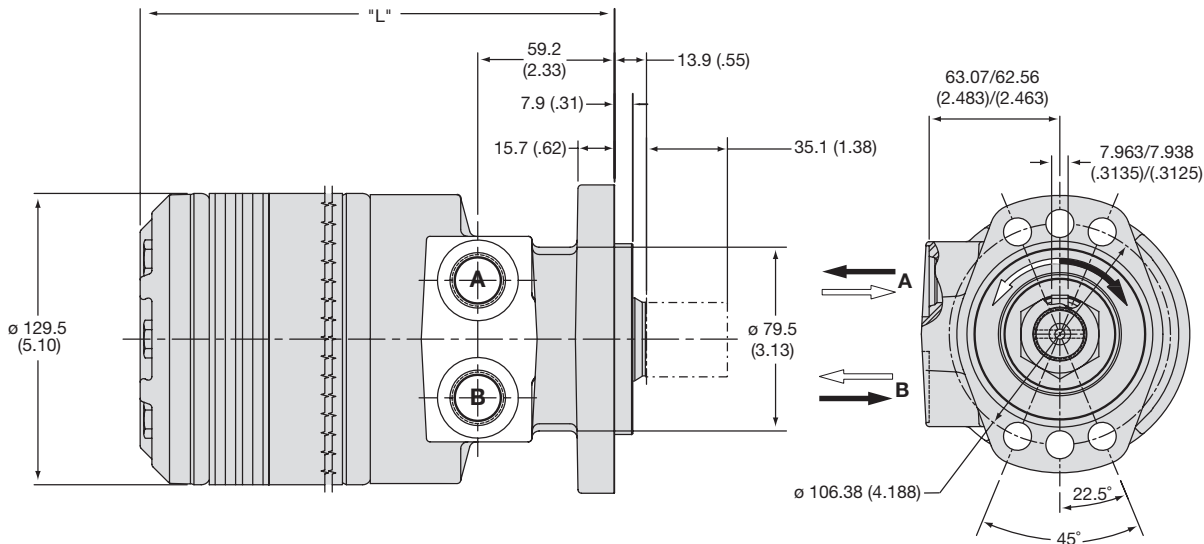
Large Wheel Mount, 7/8-14 SAE Rear Port



| Code DB | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight  | kg       | 17.6   | 17.8   | 18.1   | 18.4   | 18.8   | 19.1   | 19.3   | 19.8   | 20.5   | 21.3   | 22.0   | 23.5   | 25.2    |
|         | (lb)     | (38.7) | (39.3) | (39.8) | (40.6) | (41.5) | (42.0) | (42.4) | (43.7) | (45.2) | (46.8) | (48.4) | (51.8) | (55.6)  |
| Length  | "L" mm   | 178.8  | 182.1  | 185.2  | 190.0  | 194.8  | 198.4  | 201.2  | 208.5  | 216.9  | 223.3  | 232.9  | 252.0  | 271.0   |
|         | "L" (in) | (7.04) | (7.17) | (7.29) | (7.48) | (7.67) | (7.81) | (7.92) | (8.21) | (8.54) | (8.79) | (9.17) | (9.92) | (10.67) |

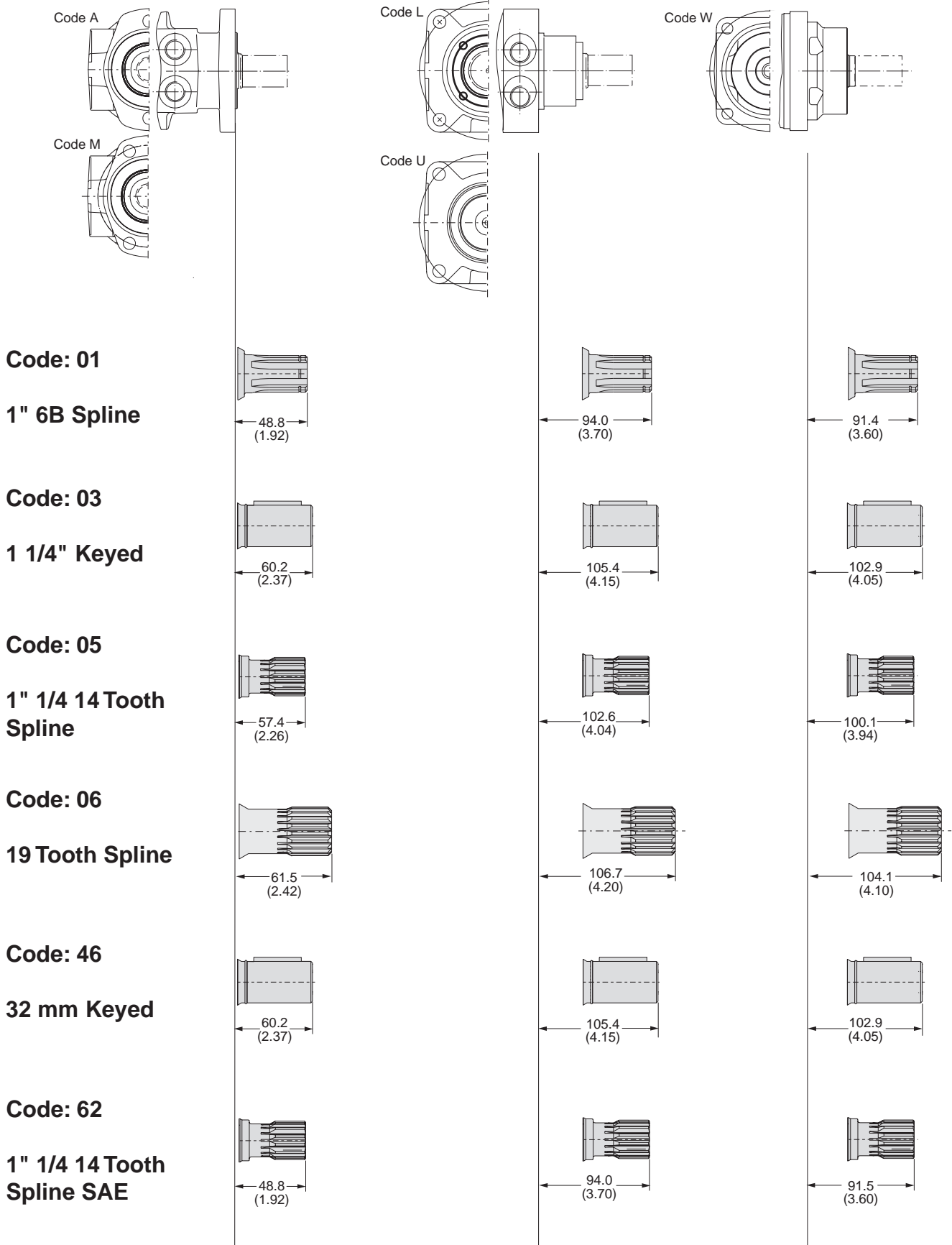
Code: ES

Modified SAE A 6-Bolt, 7/8-14 SAE O-Ring



| Code ES        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 14.2   | 14.5   | 14.7   | 15.1   | 15.5   | 16.1   | 16.3   | 16.4   | 16.5   | 17.2   | 17.9   | 18.6   | 20.2    | 21.9    |
|                | (lb)     | (31.4) | (32.0) | (33.3) | (33.3) | (34.2) | (35.5) | (35.9) | (36.2) | (36.4) | (37.9) | (39.5) | (41.1) | (44.5)  | (48.3)  |
| Length         | "L" mm   | 189.5  | 192.5  | 195.8  | 200.4  | 205.2  | 208.5  | 211.6  | 214.9  | 218.9  | 227.6  | 233.9  | 243.3  | 262.4   | 281.4   |
|                | "L" (in) | (7.46) | (7.58) | (7.71) | (7.89) | (8.08) | (8.21) | (8.33) | (8.46) | (8.62) | (8.96) | (9.21) | (9.58) | (10.33) | (11.08) |

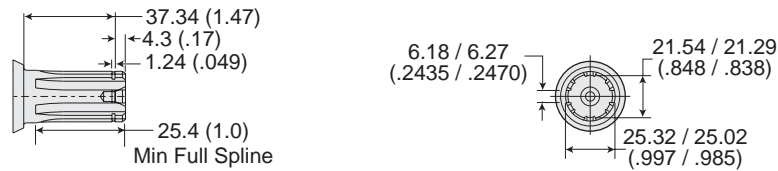
English equivalents for metric specifications are shown in ( ).



English equivalents for metric specifications are shown in ( ).

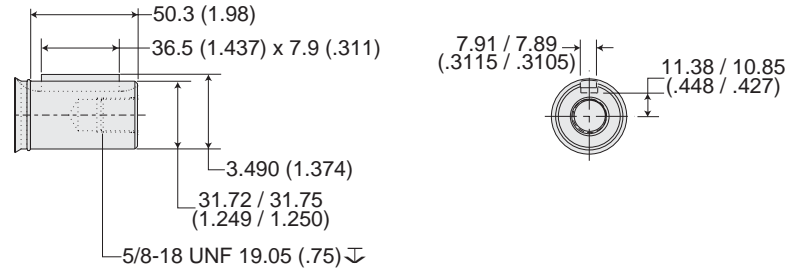
**Code: 01**

**1" 6B Spline**



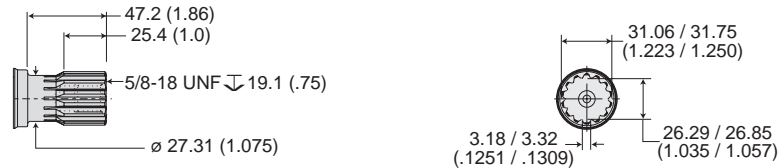
**Code: 03**

**1 1/4" Keyed**



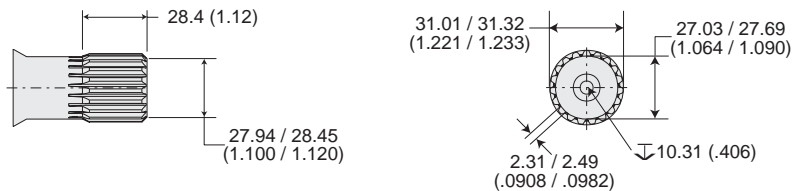
**Code: 05**

**1" 1/4 14 Tooth Spline**



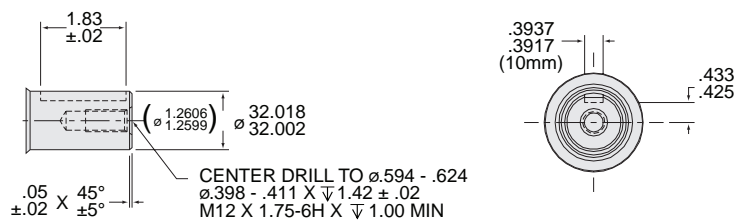
**Code: 06**

**19 Tooth Spline**



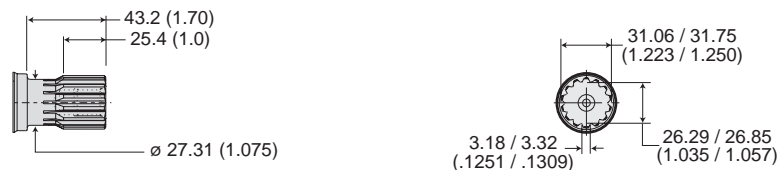
**Code: 46**

**32 mm Keyed**

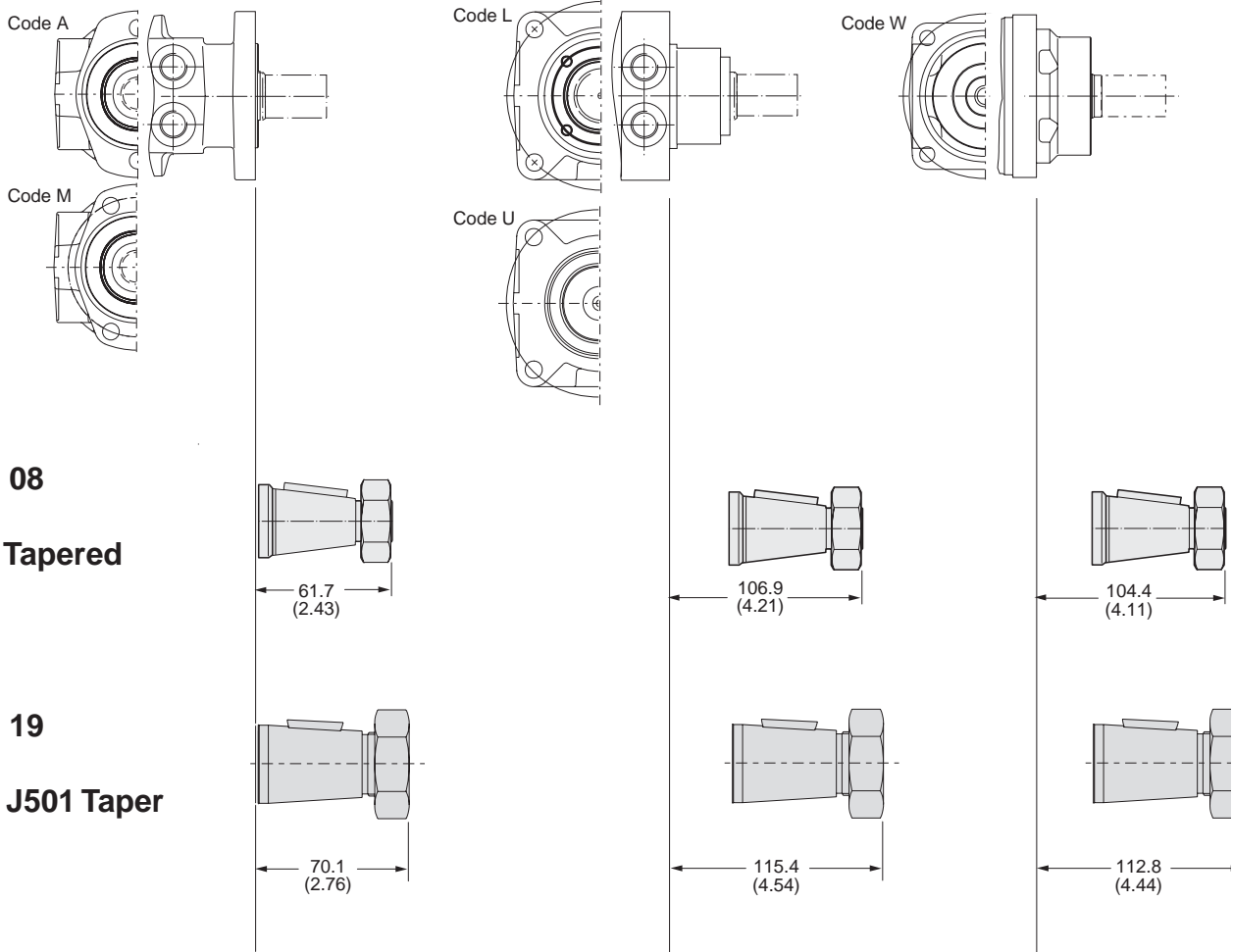


**Code: 62**

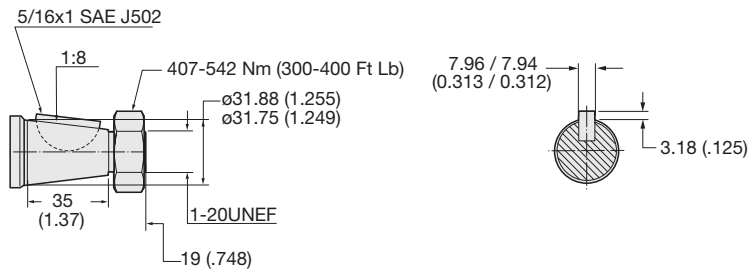
**1" 1/4 14 Tooth Spline SAE**



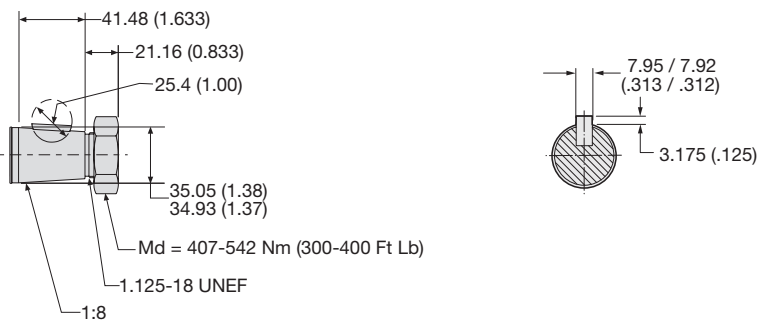
English equivalents for metric specifications are shown in ( ).



**Code: 08**  
**1 1/4" Tapered**



**Code: 19**  
**1 3/8" J501 Taper**



English equivalents for metric specifications are shown in ( ).



|                                 |  |  |
|---------------------------------|--|--|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br>140 . . . 959 cm <sup>3</sup> /rev |  |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . <b>207 bar</b>                      | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . <b>114 lpm</b>   |  |
| <b>Maximum Speed</b>            | (660 rpm)<br><b>660 rpm</b>  |  |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(9,239 lb in)<br><b>1044 Nm</b>                          | <b>Int.</b><br>(12,636 lb in)<br><b>1428 Nm</b>    |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>. . . <b>16000 N</b>  |  |

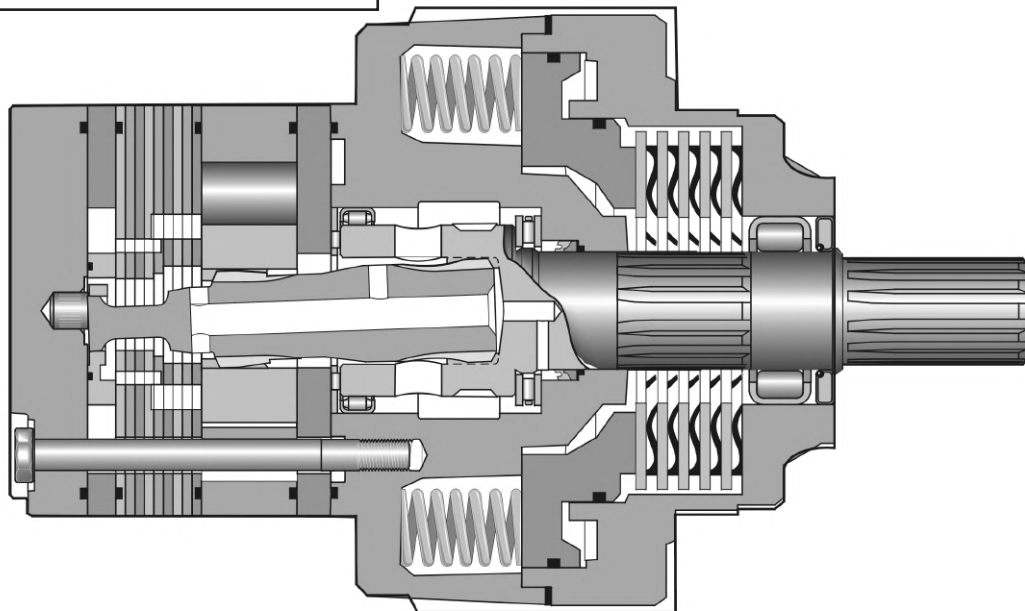
### Exceptional Strength and Durability in a High Performance Motor/Brake Package

This brake motor consists of a BG Series motor integrated into a wet disc, spring applied, hydraulically released brake. Standard holding capacity is 12,000 lb in of holding torque. The brake is front mounted for reliable operation even in the event of a system failure. The brake release port is capable of pressures to 3000 PSI.



| Rated Brake Holding Capacity<br>@ Zero Release Pressure<br>Nm (in-lbs)                     | Minimum Full<br>Release Pressure<br>bar (PSI) |
|--|---|
| 1350 (12,000)  | 22 (315)                                      |
| 12,000 in-lbs is standard holding capacity.<br>For other holding capacities, see page 287. |   |

**CAUTION!**  
 See installation/operating instructions for product cautions and proper use.



**BG**

Series

**XXXX**

Displacement

**XX**

Mounting/Ports

**XX**

Shaft

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 195 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0310 | 310 / 18.9  |
| 0335 | 337 / 20.6  |
| 0360 | 360 / 22.2  |
| 0405 | 405 / 24.7  |
| 0475 | 477 / 29.1  |
| 0530 | 528 / 32.3  |
| 0625 | 623 / 38.0  |
| 0785 | 786 / 48.0  |
| 0960 | 959 / 58.5  |

| Code | Mounting/Ports  |
|------|---|
| AS   | Front Mtg/Front Bolting, 1/2-13 UNC Thd<br>7/8-14 SAE<br> |
| CS   | Rear Mtg/Thru Bolting, 7/8-14 SAE<br>                     |

| Code | Mounting/Ports                           |
|------|--|
| BM   | SAE "B" 2 Bolt, 5/16-18 UNC Manifold<br> |
| BS   | SAE "B" 2 Bolt, 7/8-14 SAE<br>           |

| Code | Shaft                      |
|------|----------------------------|
| 03   | 1 1/4" Keyed<br>           |
| 05   | 1 1/4" 14 Tooth Spline<br> |
| 08   | 1 1/4" Tapered*<br>        |

| Code | Shaft                    |
|------|--------------------------|
| 19   | 1 3/8" J501 Tapered*<br> |



**For performance data curves, see TG section.**

**0**

Rotation

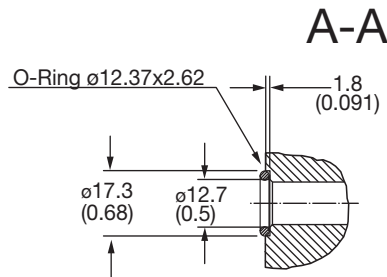
**XXXX**

Options

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

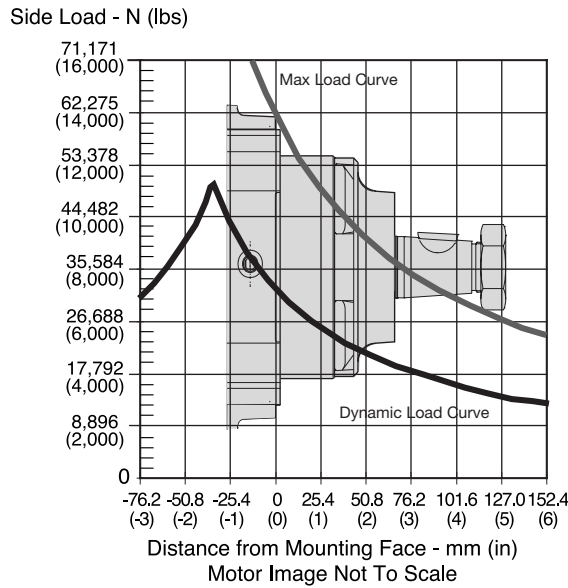
| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGZ | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 4061 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |

**\*Note:**



Motor with manifold mount is supplied with 2 o-rings.

**Wheel Mount**



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

**Equation to Calculate the Expected Radial Bearing Life**

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and S in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

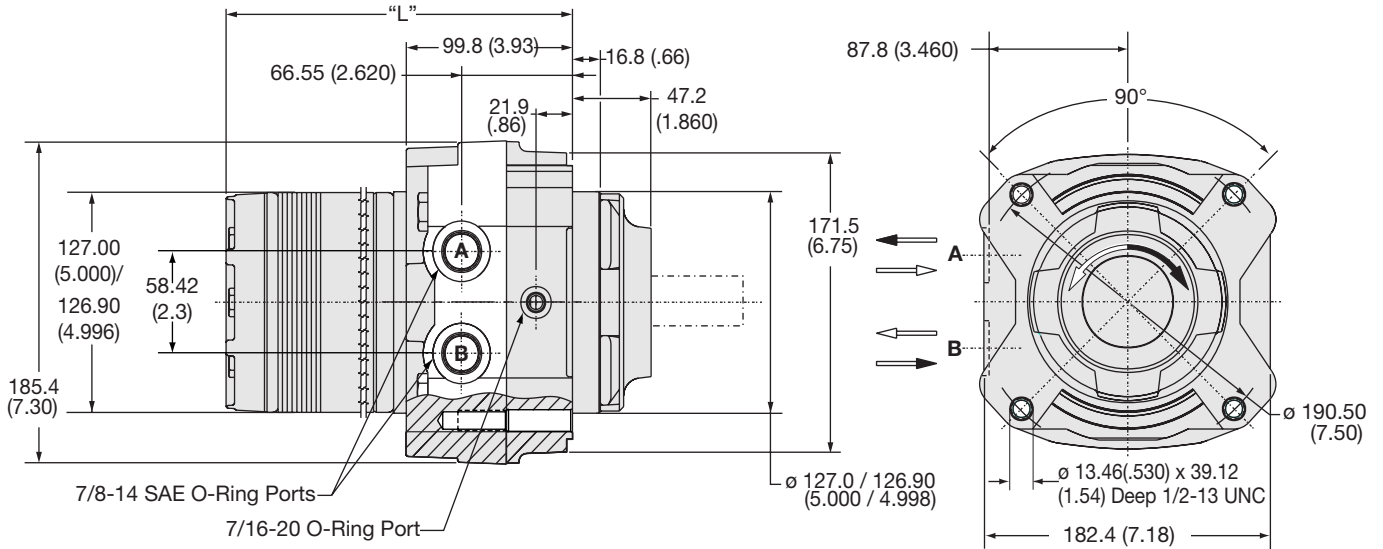
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: AS

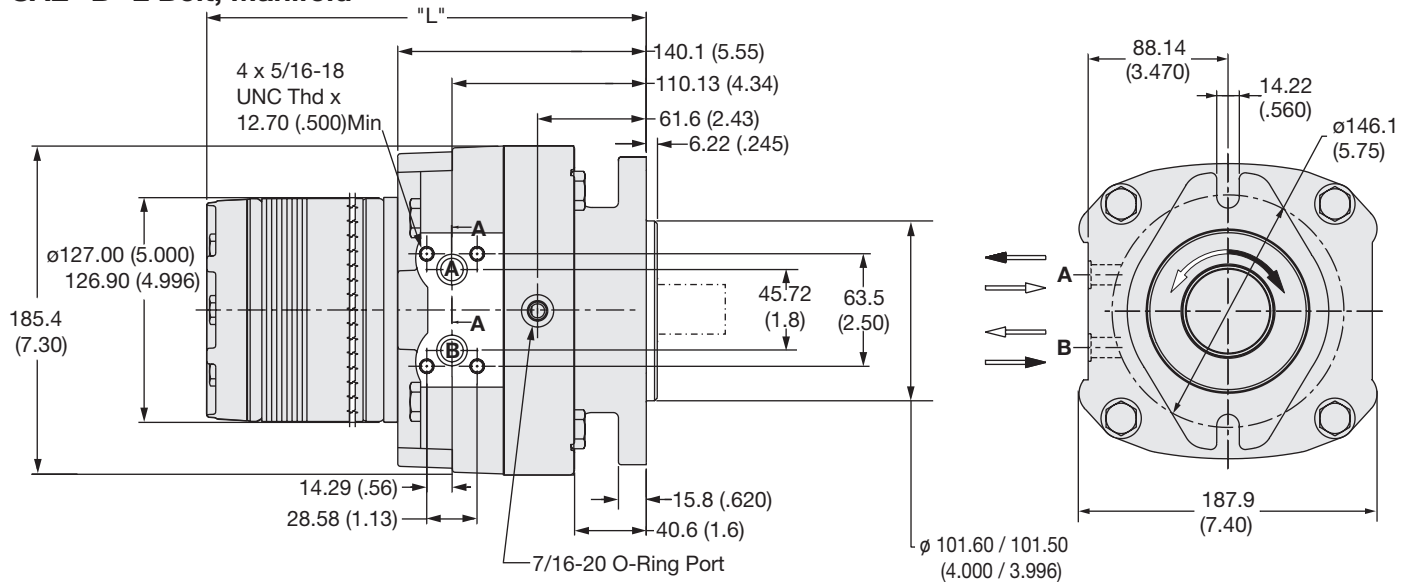
Front Mounting / Front Bolting, 7/8-14 SAE O-Ring



| Code AS |          | 0140   | 0170   | 0195   | 0240   | 0280   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight  | kg       | 27.3   | 27.5   | 27.8   | 28.1   | 28.5   | 28.9   | 29.5   | 30.2   | 30.9   | 31.7   | 33.2    | 34.9    |
|         | (lb)     | (60.2) | (60.8) | (61.3) | (62.1) | (63.0) | (63.9) | (65.2) | (66.7) | (68.3) | (69.9) | (73.3)  | (77.1)  |
| Length  | "L" mm   | 192.3  | 195.3  | 198.6  | 203.2  | 208.0  | 214.4  | 221.7  | 230.4  | 236.7  | 246.1  | 265.2   | 284.2   |
|         | "L" (in) | (7.57) | (7.69) | (7.82) | (8.00) | (8.19) | (8.44) | (8.73) | (9.07) | (9.32) | (9.69) | (10.44) | (11.19) |

Code: BM\*

SAE "B" 2 Bolt, Manifold



| Code BM |          | 0140   | 0170   | 0195   | 0240   | 0280   | 0335    | 0405    | 0475    | 0530    | 0625    | 0785    | 0960    |
|---------|----------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| Weight  | kg       | 28.4   | 28.7   | 28.9   | 29.3   | 29.7   | 30.1    | 30.1    | 30.7    | 31.3    | 32.8    | 34.3    | 36.1    |
|         | (lb)     | (62.6) | (63.2) | (63.7) | (64.5) | (65.4) | (66.3)  | (67.6)  | (69.1)  | (70.7)  | (72.3)  | (75.7)  | (79.5)  |
| Length  | "L" mm   | 233.2  | 236.4  | 239.6  | 244.3  | 249.1  | 255.4   | 262.8   | 271.3   | 277.7   | 287.2   | 306.3   | 325.3   |
|         | "L" (in) | (9.18) | (9.31) | (9.43) | (9.62) | (9.81) | (10.06) | (10.35) | (10.68) | (10.93) | (11.31) | (12.06) | (12.81) |

English equivalents for metric specifications are shown in ( ).

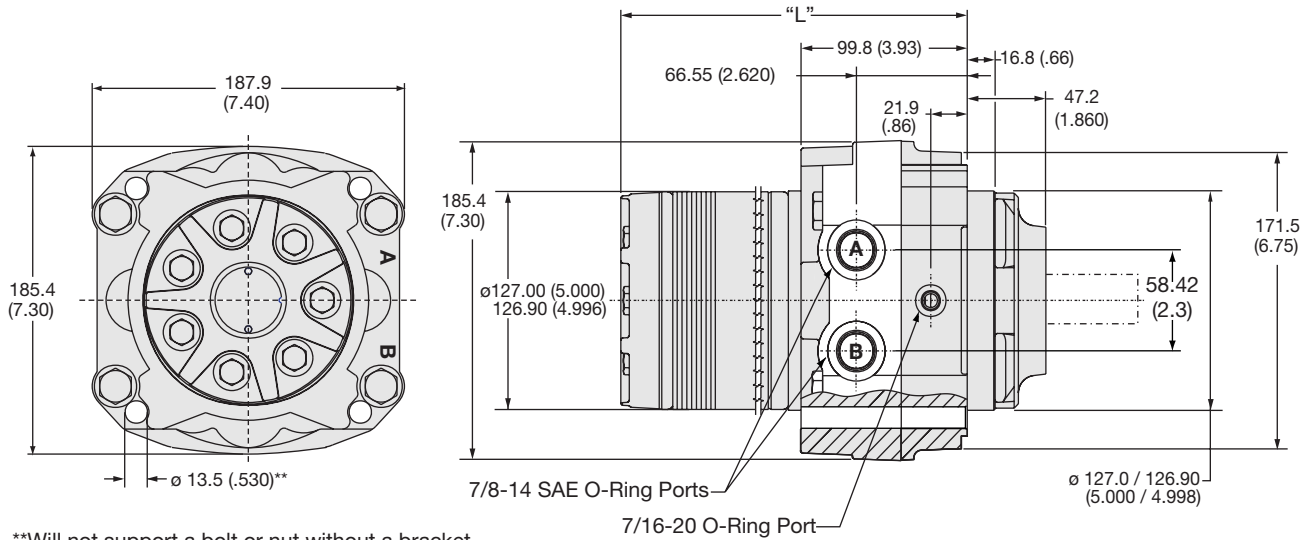
012 BG Brake.indd, b



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: CS

Rear Mounting/Thru Bolting, 7/8-14 SAE O-Ring

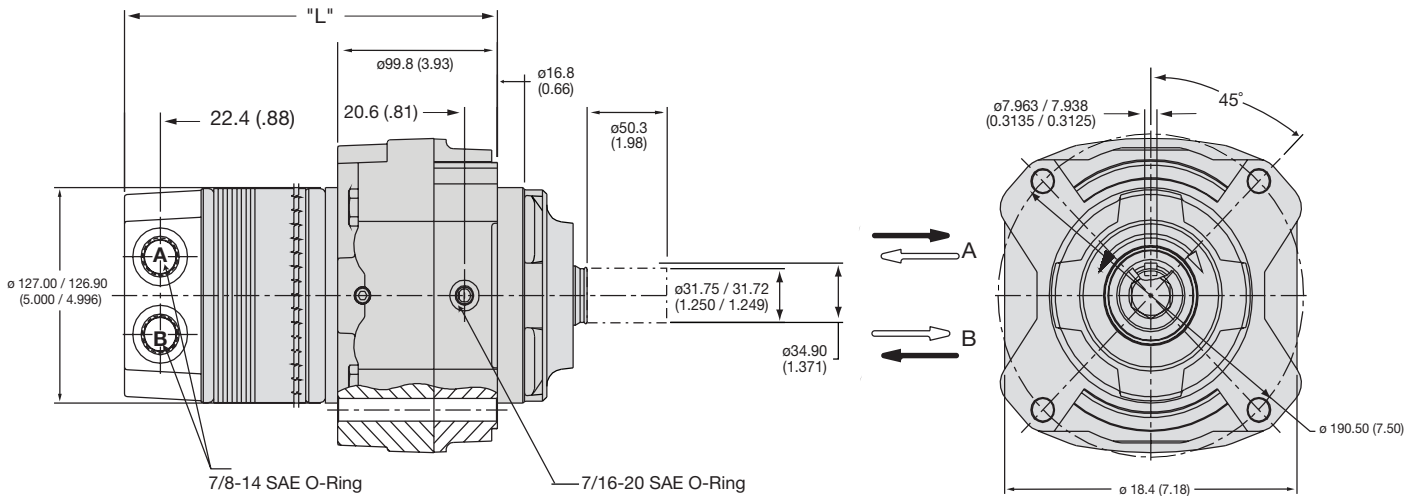


\*\*Will not support a bolt or nut without a bracket.

| Code CS |          | 0140   | 0170   | 0195   | 0240   | 0280   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight  | kg       | 27.3   | 27.5   | 27.8   | 28.1   | 28.5   | 28.9   | 29.5   | 30.2   | 30.9   | 31.7   | 33.2    | 34.9    |
|         | (lb)     | (60.2) | (60.8) | (61.3) | (62.1) | (63.0) | (63.9) | (65.2) | (66.7) | (68.3) | (69.9) | (73.3)  | (77.1)  |
| Length  | "L" mm   | 192.3  | 195.3  | 198.6  | 203.2  | 208.0  | 214.4  | 221.7  | 230.4  | 236.7  | 246.1  | 265.2   | 284.2   |
|         | "L" (in) | (7.57) | (7.69) | (7.82) | (8.00) | (8.19) | (8.44) | (8.73) | (9.07) | (9.32) | (9.69) | (10.44) | (11.19) |

Code: CB

Rear Mounting/Thru-Bolting, 7/8-14 SAE Rear Port



| Code CB    | disp | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Weight/    | kg   | 29.6   | 29.8   | 30.1   | 30.4   | 30.8   | 31.1   | 31.3   | 31.8   | 32.5    | 33.2    | 34.0    | 35.5    | 37.2    |
|            | (lb) | (65.2) | (65.8) | (66.3) | (67.1) | (68.0) | (68.5) | (68.9) | (70.2) | (71.7)  | (73.3)  | (74.9)  | (78.3)  | (82.1)  |
| Length "L" | mm   | 216.9  | 220.0  | 223.3  | 228.1  | 232.7  | 235.0  | 239.0  | 246.4  | 255.0   | 261.4   | 271.0   | 290.1   | 309.1   |
|            | (in) | (8.54) | (8.66) | (8.79) | (8.98) | (9.16) | (9.25) | (9.41) | (9.70) | (10.04) | (10.29) | (10.67) | (11.42) | (12.17) |

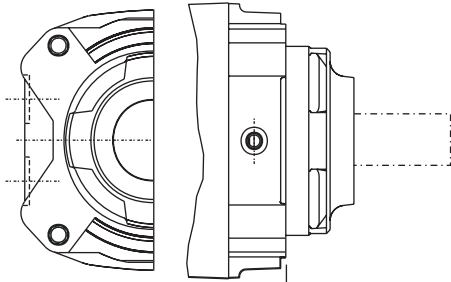
English equivalents for metric specifications are shown in ( ).

012 BG Brake.indd, b

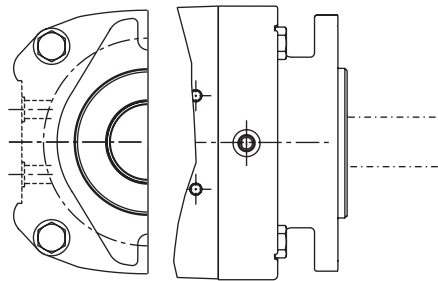


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code A & C

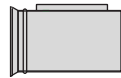


Code B

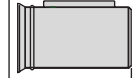


**Code: 03**

**1 1/4" Keyed**



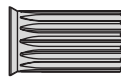
106.7/104.7  
(4.20/4.12)



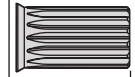
65.5/63.5  
(2.58/2.50)

**Code: 05**

**1 1/4" 14 Tooth Spline**



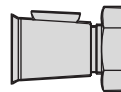
106.7/104.7  
(4.20/4.12)



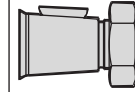
65.5/63.5  
(2.58/2.50)

**Code: 08**

**1 1/4" Taper**



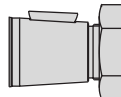
107.9/105.9  
(4.25/4.17)



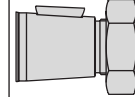
66.7/64.7  
(2.63/2.55)

**Code: 19**

**1 3/8" J501 Taper**



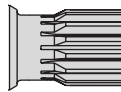
110.5/108.5  
(4.35/4.27)



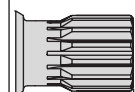
69.3/67.3  
(2.73/2.65)

**Code: 62**

**SAE 14 Tooth Spline**



97.6/95.6  
(3.84/3.76)



56.4/54.4  
(2.22/2.14)

English equivalents for metric specifications are shown in ( ).

012 BG Brake.indd, b

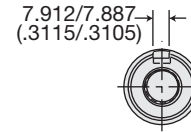
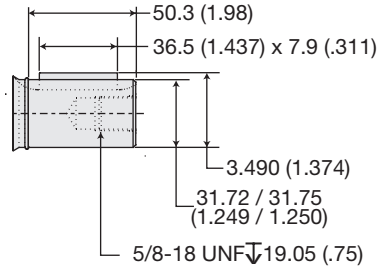


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

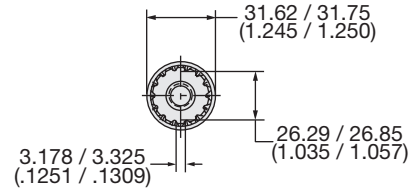
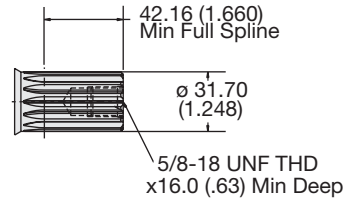
Code: 03

1 1/4" Keyed



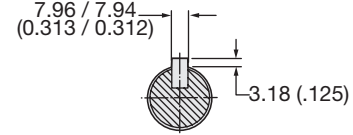
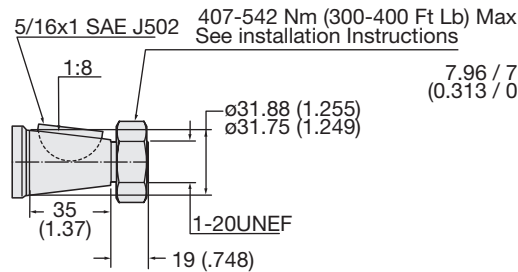
Code: 05

1 1/4" 14 Tooth Spline



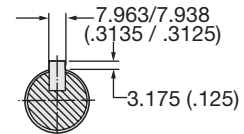
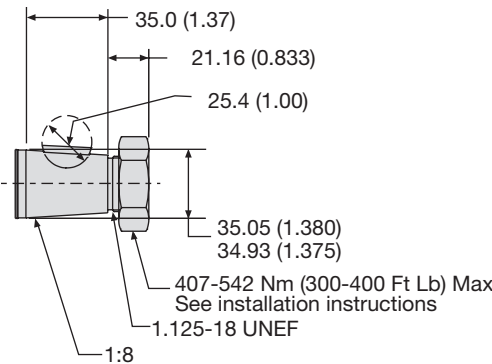
Code: 08

1 1/4" Taper



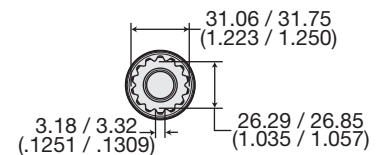
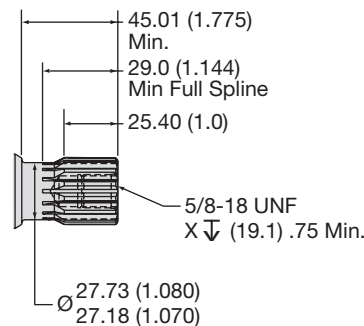
Code: 19

1 3/8" J501 Taper



Code: 62

SAE 14 Tooth Spline



English equivalents for metric specifications are shown in ( ).

012 BG Brake.indd, b



**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

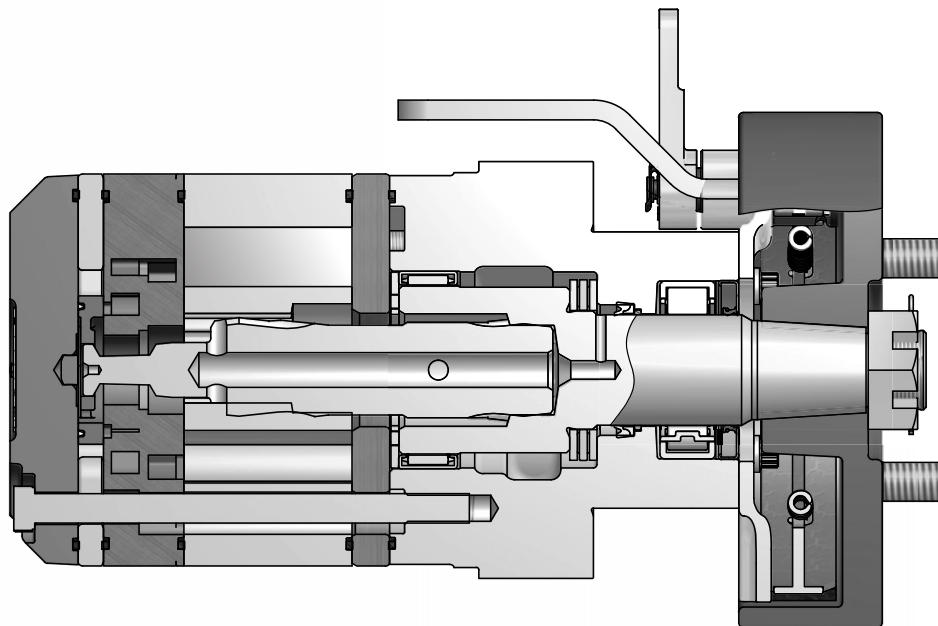


|                                 |  |   |
|---------------------------------|--|---|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br>140 . . . 958 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . 207 bar                             | <b>Int.</b><br>(4000 psid)<br>. . . 276 bar |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . 114 lpm  |   |
| <b>Maximum Speed</b>            | (660 rpm)<br>660 rpm   |   |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(9,239 lb in)<br>1044 Nm                                 | <b>Int.</b><br>(12,636 lb in)<br>1428 Nm    |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>. . . 16000 N   |   |

## A Mechanical Brake Motor for Tough Applications



Parker's DG Series brake motors consists of a mechanical drum brake mounted integrally to our rugged TG Series LSHT hydraulic motor. The compact size, reliable holding capacity and ease of installation make this motor with parking brake the ideal choice for the propulsion systems on many turf, agricultural and other vehicles.


The brake is available with either vertical or horizontally applied levers. The vertical style has fixed brake pads, while the horizontal version has floating brake pads that can be adjusted as required over the life of the brake. Both versions are for static applications only.








| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 195 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0310 | 310 / 18.9  |
| 0335 | 337 / 20.6  |
| 0360 | 360 / 22.2  |
| 0405 | 405 / 24.7  |
| 0475 | 477 / 29.1  |
| 0530 | 528 / 32.3  |
| 0625 | 623 / 38.0  |
| 0785 | 786 / 48.0  |
| 0960 | 959 / 58.5  |

| Code | Drum Type  |
|------|--|
| A    |  4 Bolt |
| B    |  5 Bolt |

| Code | Shaft  |
|------|--|
| A8   | 1 1/4" Tapered<br> |



| Code | Mounting/Ports - Horizontal Lever   |
|------|---|
| US   | Wheel Mt. w/Brake<br>Lever @ 270° / 7/8-14 SAE                                     |
| VS   | Wheel Mt. w/Brake<br>Lever @ 90° / 7/8-14 SAE                                      |
| YA   | Wheel Mount w/ 2-Hole<br>Horizontal Brake Lever @<br>270° / 7/8 O-Ring Rear Axial  |

**0**

Rotation

**XXXX**

Options  
Opciones

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

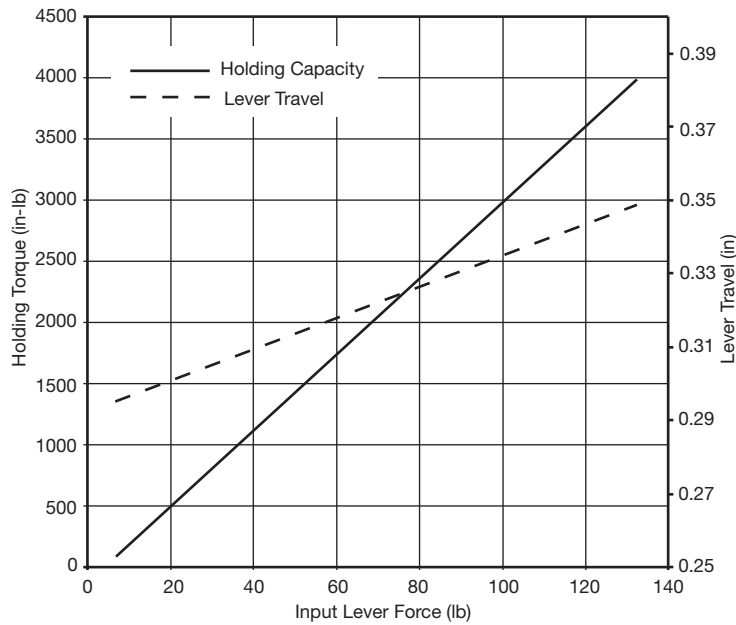
| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft                         |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft |

## Vertical Lever

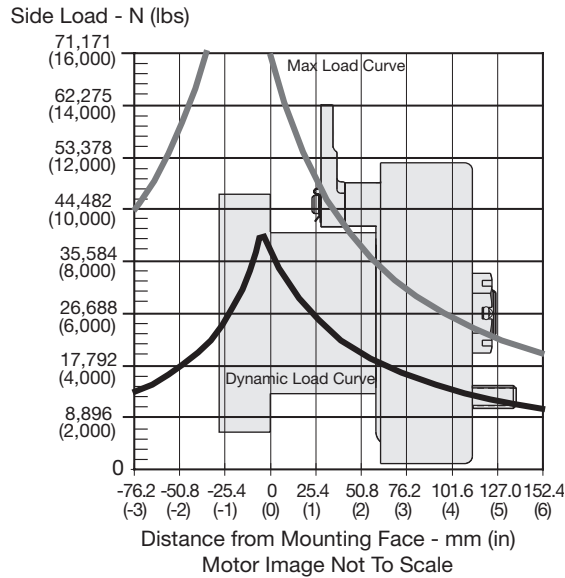
Holding capacity is 497 Nm (4,400 in lbs) with 68 Nm (600 in lbs) of input torque at lever pivot. Brake capacities are typical for non-burnished brake shoe. OEM testing required to verify actual field conditions.

## Horizontal Lever

**Brake Torque and Travel of 3.72 inch Horizontal Lever**



**Wheel Mount**



The dynamic side load curve is based on uni-directional steady state loads for L<sub>10</sub> bearing life at 3 x 10<sup>6</sup> revolutions.

The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

**Equation to Calculate the Expected Radial Bearing Life**

Equation to calculate the dynamic bearing life for a given load:

Use F<sub>a</sub>, F<sub>b</sub> and S in equation to determine hours of L<sub>10</sub> bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

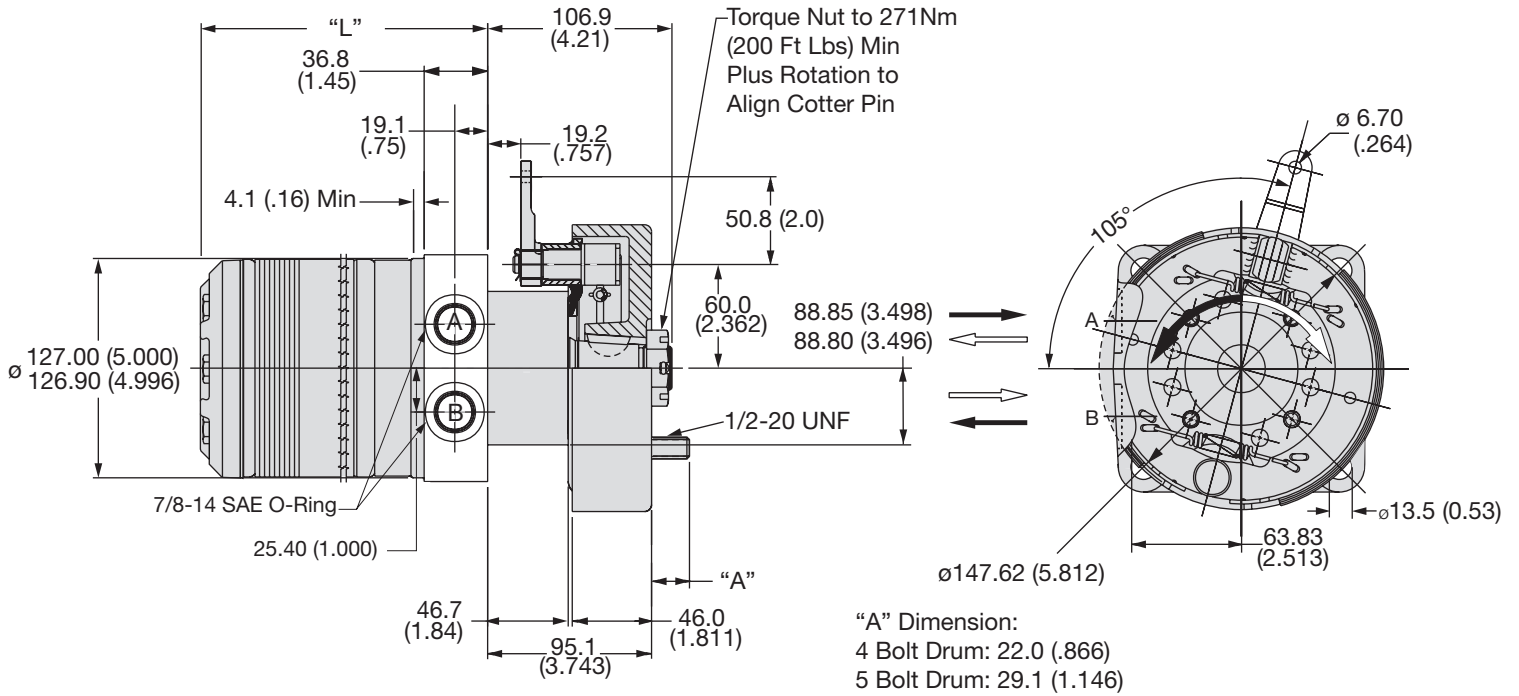
F<sub>a</sub> = Dynamic side load defined by above curve at a distance from mounting flange.

F<sub>b</sub> = Application side load.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

Code: AS - Vertical Lever

Wheel Mount w/Brake Lever / 7/8-14 SAE O-Ring



Note:

1. Brake Acuation Lever can be positioned in 12.00° increments from that shown.
2. Brake Acuation Lever is shipped unattached, secured with wire or tiewrap to assembly.

| Code AS | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 14.6   | 14.8   | 15.1   | 15.5   | 15.9   | 16.1   | 16.3   | 16.9   | 17.5   | 18.3   | 19.0   | 20.5   | 22.2   |
|         | (lb)     | (41.3) | (41.8) | (42.4) | (43.2) | (44.1) | (44.6) | (44.9) | (46.3) | (47.7) | (49.4) | (50.9) | (54.4) | (58.1) |
| Length  | "L" mm   | 150.4  | 153.4  | 156.7  | 161.3  | 166.1  | 169.7  | 172.5  | 179.8  | 188.5  | 194.8  | 204.2  | 223.3  | 242.3  |
|         | "L" (in) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.68) | (6.79) | (7.08) | (7.42) | (7.67) | (8.04) | (8.79) | (9.54) |

For performance data curves, see TG section.

English equivalents for metric specifications are shown in ( ).

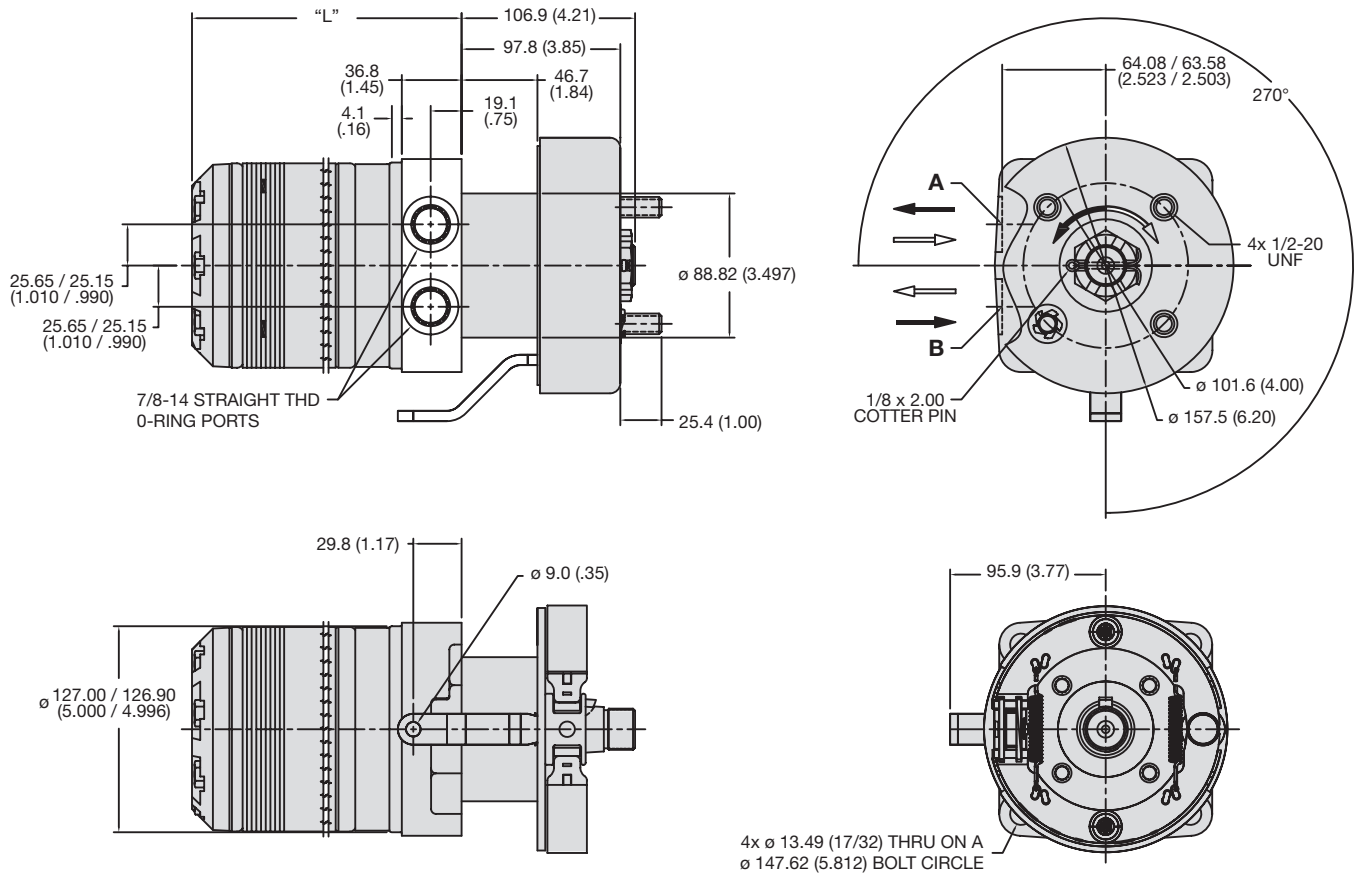
013 DG Brake.indd, b



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: US - Horizontal Lever

Wheel Mount w/Brake Lever / 7/8-14 SAE O-Ring



Note:  
Brake Acuation Lever can be positioned in 90° increments from that shown.

| Code US | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight  | kg       | 14.6   | 14.8   | 15.1   | 15.5   | 15.9   | 16.1   | 16.3   | 16.9   | 17.5   | 18.3   | 19.0   | 20.5   | 22.2   |
|         | (lb)     | (41.3) | (41.8) | (42.4) | (43.2) | (44.1) | (44.6) | (44.9) | (46.3) | (47.7) | (49.4) | (50.9) | (54.4) | (58.1) |
| Length  | "L" mm   | 150.4  | 153.4  | 156.7  | 161.3  | 166.1  | 169.7  | 172.5  | 179.8  | 188.5  | 195.6  | 204.2  | 223.3  | 242.3  |
|         | "L" (in) | (5.92) | (6.04) | (6.17) | (6.35) | (6.54) | (6.68) | (6.79) | (7.08) | (7.42) | (7.67) | (8.04) | (8.79) | (9.54) |

For performance data curves, see TG section.

English equivalents for metric specifications are shown in ( ).

013 DG Brake.indd, b

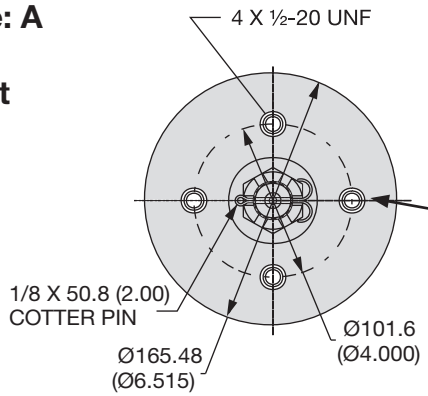


**WARNING**  
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Drum Type

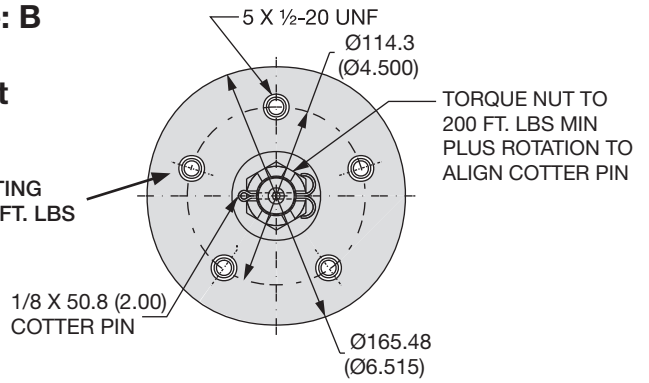
Code: A

4 Bolt



Code: B

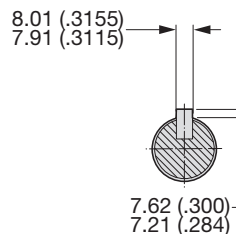
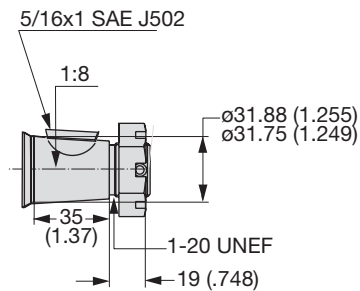
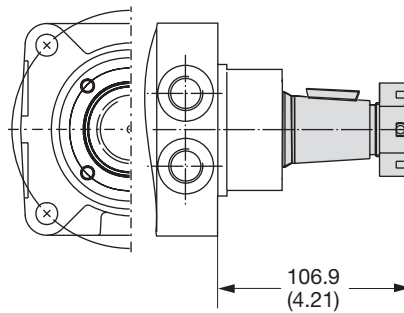
5 Bolt



Shafts

Code: 8

1 1/4" Taper



English equivalents for metric specifications are shown in ( ).

013 DG Brake.indd, b



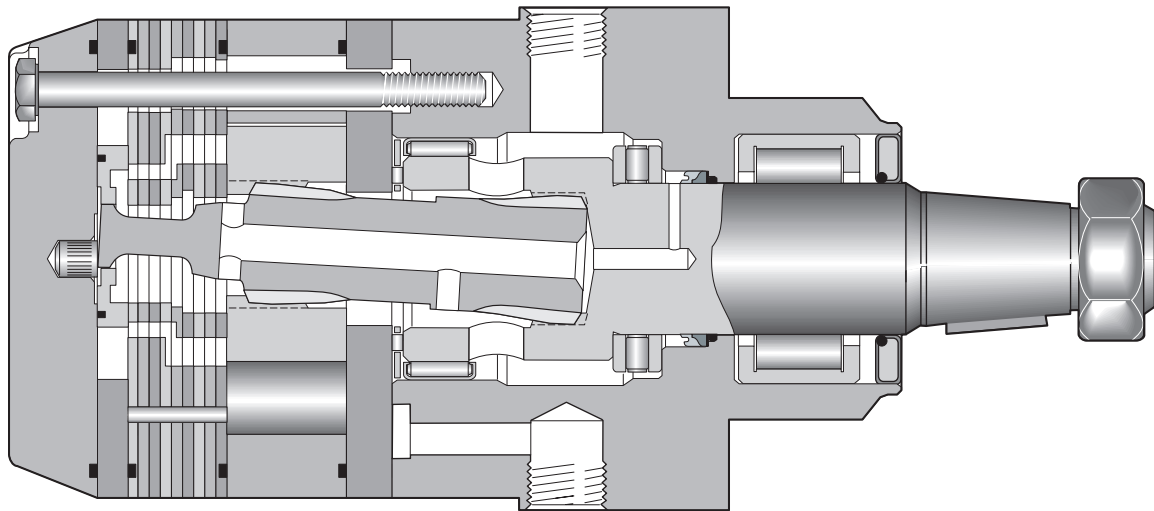
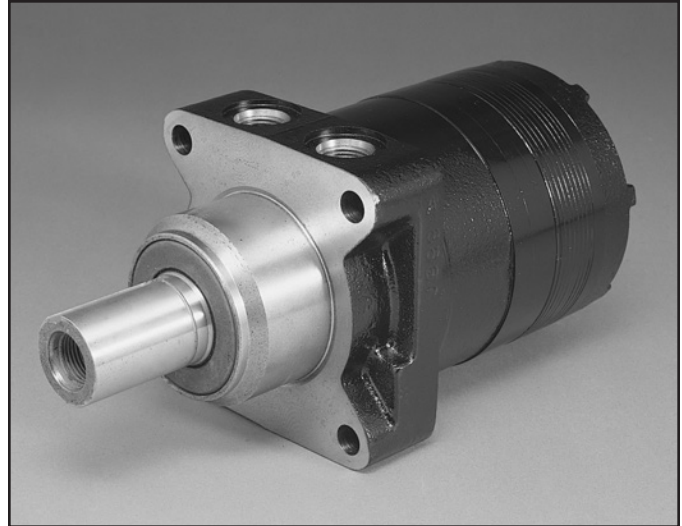
**WARNING**  
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|                                 |   |  |
|---------------------------------|---|--|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br><b>141 . . . 959 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . <b>207 bar</b>                           | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . <b>114 lpm</b>  |  |
| <b>Maximum Speed</b>            | (660 rpm)<br><b>660 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(8,772 lb in)<br><b>991 Nm</b>                                | <b>Int.</b><br>(11,876 lb in)<br><b>1342 Nm</b>    |
| <b>Maximum Side Load at Key</b> | (4800 lb)<br>. . . <b>21360 N</b>   |  |

**A Rugged Motor for Heavy Duty, High Side Load Applications**

This motor was designed for tough applications. A stout drive link with unique 60:40 spline geometry will transmit over 13,000 lb-in of torque. The 1-1/2" output shaft can support 7000 pounds of radial load. Efficiency is assured by the use of roller vanes and sealed commutator. Durability is maintained by continually washing the powertrain splines and shaft seal in cooling fluid.



**TH**

Series

**XXXX**

Displacement

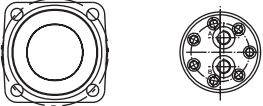
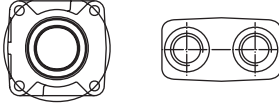

**XX**

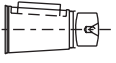

Mounting/Ports

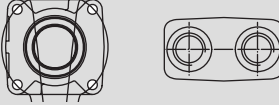
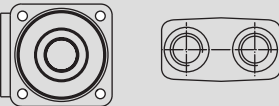
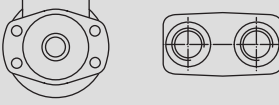
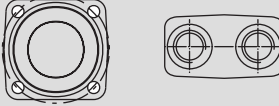
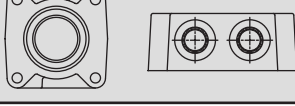
**XX**





Shaft

| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0140 | 141 / 8.6   |
| 0170 | 169 / 10.3  |
| 0195 | 195 / 11.9  |
| 0240 | 238 / 14.5  |
| 0280 | 280 / 17.1  |
| 0310 | 310 / 18.9  |
| 0335 | 337 / 20.6  |
| 0360 | 360 / 22.2  |
| 0405 | 405 / 24.7  |
| 0475 | 477 / 29.1  |
| 0530 | 528 / 32.3  |
| 0625 | 623 / 38.0  |
| 0785 | 786 / 48.0  |
| 0960 | 959 / 58.5  |

| Code | Mounting/Ports  |
|------|---|
| PA   | SAE "B" 4 Bolt<br>7/8-14 SAE O-Ring; Rear Axial<br>   |
| UB   | Wheel, Standard<br>7/8-14 SAE O-Ring; Rear Radial<br> |
| US   | Wheel, Standard, 7/8-14 SAE<br>                       |



| Code | Shaft  |
|------|--|
| 31   | 1 1/2" J501 Taper<br>               |
| 36   | 1 1/2" 17 Tooth<br>12/24 Spline<br> |

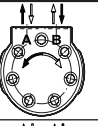
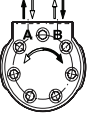
| Code | Mounting/Ports   |
|------|--|
| FS   | Large Wheel Mt., rearport<br>                        |
| KB   | SAE CC 4 Bolt<br>7/8-14 SAE O-Ring; Rear Radial<br>  |
| MS   | Magneto, 7/8-14 SAE<br>                              |
| PB   | SAE "B" 4 Bolt<br>7/8-14 SAE O-Ring; Rear Radial<br> |
| UX   | G1/2 (1/2 BSPP) Rear Radial<br>                      |

| Code | Shaft   |
|------|---|
| 03   | 1 1/4" Keyed<br>   |
| 32   | 1 1/2" Keyed<br>   |
| 62   | 14 Tooth Spline<br>(12/24 P.), (SAE)<br>                              |
| 73   | 17 Tooth Spline<br>(12/24 P.)<br>(full length spline)<br>M12 Tap<br> |

**0**  
 Rotation

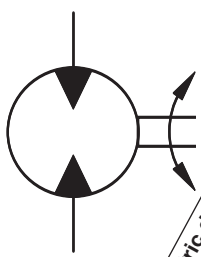
**XXXX**  
 Options

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

| Code | Rear Rotation   |
|------|---|
| 0    | Standard                 |
| 1    | Reverse Timed Manifold  |

Rotation viewed from shaft end.

| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft                  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft                 |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft      |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware           |
| AAJL | No paint, No shaft hardware   |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft |



Geometric displacement  
Max. speed @ Max. intermittent flow  
Max. oil flow  
Max. Differential Pressure  
Max. supply pressure  
Max. torque  
Max. performance  
Min. starting torque

| Motor Series TH | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int* |           | cont / int* |             | max         |      |              | cont / int*   |          | max         |               | cont / int* |       |
|-----------------|--|---------|-------------|-----------|-------------|-------------|-------------|------|--------------|---------------|----------|-------------|---------------|-------------|-------|
|                 |  |         | l/min       | g/min     | bar         | psid        | bar         | psig |              | Nm            | lb-in    | KW          | HP            | Nm          | lb-in |
| TH 0140         | 141<br>8.6                                   | 660     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 390<br>3455  | 530<br>4692   | 33<br>45 | 315<br>2791 | 418<br>3706   |             |       |
| TH 0170         | 169<br>10.3                                  | 554     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 476<br>4216  | 646<br>5714   | 33<br>45 | 376<br>3331 | 505<br>4469   |             |       |
| TH 0195         | 195<br>11.9                                  | 477     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 556<br>4919  | 753<br>6663   | 33<br>45 | 451<br>3989 | 611<br>5408   |             |       |
| TH 0240         | 238<br>14.5                                  | 393     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 677<br>5991  | 913<br>8081   | 32<br>44 | 582<br>5152 | 776<br>6865   |             |       |
| TH 0280         | 280<br>17.1                                  | 334     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 796<br>7044  | 1073<br>9499  | 31<br>42 | 675<br>5972 | 870<br>7699   |             |       |
| TH 0310         | 310<br>18.9                                  | 303     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 964<br>8533  | 1297<br>11479 | 30<br>41 | 843<br>7458 | 1117<br>9889  |             |       |
| TH 0335         | 337<br>20.6                                  | 277     | 76<br>20    | 95<br>25  | 207<br>3000 | 276<br>4000 | 300<br>4350 |      | 924<br>8184  | 1229<br>10817 | 31<br>41 | 778<br>6882 | 1005<br>8893  |             |       |
| TH 0360         | 360<br>22.2                                  | 259     | 76<br>20    | 95<br>25  | 172<br>2500 | 241<br>3500 | 300<br>4350 |      | 894<br>7913  | 1253<br>11093 | 29<br>39 | 703<br>6224 | 1017<br>9007  |             |       |
| TH 0405         | 405<br>24.7                                  | 232     | 76<br>20    | 95<br>25  | 172<br>2500 | 241<br>3500 | 300<br>4350 |      | 942<br>8336  | 1342<br>11877 | 27<br>37 | 791<br>7002 | 1145<br>10133 |             |       |
| TH 0475         | 477<br>29.1                                  | 237     | 76<br>20    | 114<br>30 | 138<br>2000 | 207<br>3000 | 300<br>4350 |      | 887<br>7853  | 1372<br>12145 | 28<br>38 | 740<br>6549 | 1120<br>9909  |             |       |
| TH 0530         | 528<br>32.3                                  | 213     | 76<br>20    | 114<br>30 | 138<br>2000 | 172<br>2500 | 300<br>4350 |      | 983<br>8701  | 1253<br>11086 | 23<br>31 | 874<br>7737 | 1091<br>9657  |             |       |
| TH 0625         | 623<br>38.0                                  | 182     | 76<br>20    | 114<br>30 | 121<br>1750 | 155<br>2250 | 300<br>4350 |      | 986<br>8727  | 1291<br>11424 | 20<br>27 | 895<br>7924 | 1165<br>10312 |             |       |
| TH 0785         | 786<br>48.0                                  | 143     | 76<br>20    | 114<br>30 | 103<br>1500 | 138<br>2000 | 300<br>4350 |      | 1044<br>9239 | 1428<br>12636 | 17<br>23 | 991<br>8772 | 1341<br>11876 |             |       |
| TH 0960         | 959<br>58.5                                  | 118     | 76<br>20    | 114<br>30 | 69<br>1000  | 103<br>1500 | 300<br>4350 |      | 773<br>6843  | 1268<br>11227 | 12<br>16 | 763<br>6752 | 1177<br>10419 |             |       |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

TH 0140

8.6 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 519<br>9   | 1060<br>4   |             |             |             |             |             |             |
| <b>1</b>  | 540<br>22  | 1090<br>17  | 1635<br>11  | 2180<br>6   |             |             |             |             |
| <b>2</b>  | 569<br>49  | 1156<br>43  | 1730<br>36  | 2286<br>30  | 2827<br>23  | 3368<br>19  | 3899<br>12  | 4447<br>12  |
| <b>3</b>  | 565<br>75  | 1159<br>69  | 1744<br>62  | 2321<br>55  | 2899<br>47  | 3477<br>40  | 4048<br>33  | 4608<br>29  |
| <b>4</b>  | 564<br>102 | 1170<br>94  | 1768<br>87  | 2358<br>80  | 2943<br>72  | 3517<br>64  | 4082<br>57  | 4644<br>52  |
| <b>5</b>  | 556<br>128 | 1170<br>120 | 1776<br>112 | 2375<br>105 | 2968<br>97  | 3556<br>89  | 4135<br>81  | 4701<br>76  |
| <b>7</b>  | 540<br>182 | 1160<br>172 | 1779<br>164 | 2390<br>155 | 2994<br>146 | 3592<br>138 | 4181<br>130 | 4763<br>123 |
| <b>9</b>  | 515<br>235 | 1143<br>225 | 1768<br>215 | 2385<br>206 | 2996<br>196 | 3601<br>187 | 4199<br>179 | 4794<br>171 |
| <b>12</b> | 471<br>315 | 1096<br>303 | 1729<br>292 | 2356<br>281 | 2974<br>271 | 3587<br>261 | 4193<br>252 | 4794<br>243 |
| <b>15</b> | 418<br>395 | 1042<br>381 | 1673<br>368 | 2307<br>357 | 2933<br>346 | 3549<br>336 | 4163<br>325 | 4771<br>314 |
| <b>20</b> | 299<br>528 | 931<br>512  | 1565<br>497 | 2198<br>484 | 2825<br>472 | 3455<br>459 | 4078<br>447 | 4692<br>435 |
| <b>25</b> | 173<br>660 | 794<br>643  | 1426<br>626 | 2059<br>612 | 2695<br>598 | 3332<br>583 | 3961<br>569 | 4579<br>555 |

Flow (GPM)

TORQUE (LB IN) 3332  
SPEED (RPM) 583

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TH 0170**

**10.3 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 620<br>9        | 1284<br>7   | 1945<br>5   | 2613<br>4   | 3293<br>3   | 3983<br>2   |             |             |
| <b>1</b>  | 652<br>20       | 1337<br>18  | 2006<br>16  | 2683<br>14  | 3375<br>12  | 4063<br>11  | 4744<br>8   | 5402<br>8   |
| <b>2</b>  | 678<br>42       | 1390<br>40  | 2105<br>37  | 2822<br>35  | 3535<br>32  | 4226<br>30  | 4909<br>27  | 5587<br>25  |
| <b>3</b>  | 678<br>64       | 1397<br>61  | 2117<br>58  | 2836<br>56  | 3554<br>53  | 4263<br>50  | 4963<br>46  | 5652<br>44  |
| <b>4</b>  | 679<br>86       | 1409<br>83  | 2142<br>80  | 2872<br>77  | 3596<br>74  | 4310<br>71  | 5021<br>67  | 5716<br>64  |
| <b>5</b>  | 675<br>108      | 1413<br>104 | 2150<br>101 | 2885<br>98  | 3616<br>94  | 4339<br>91  | 5057<br>87  | 5761<br>83  |
| <b>7</b>  | 661<br>153      | 1405<br>148 | 2152<br>143 | 2900<br>140 | 3642<br>136 | 4374<br>132 | 5101<br>127 | 5818<br>123 |
| <b>9</b>  | 632<br>197      | 1385<br>191 | 2140<br>186 | 2891<br>181 | 3638<br>177 | 4380<br>173 | 5114<br>168 | 5838<br>163 |
| <b>12</b> | 583<br>263      | 1334<br>256 | 2096<br>250 | 2860<br>244 | 3617<br>239 | 4362<br>234 | 5101<br>228 | 5823<br>223 |
| <b>15</b> | 524<br>330      | 1275<br>322 | 2035<br>314 | 2804<br>308 | 3572<br>302 | 4327<br>296 | 5070<br>289 | 5801<br>283 |
| <b>20</b> | 382<br>442      | 1143<br>432 | 1908<br>422 | 2683<br>413 | 3455<br>406 | 4216<br>399 | 4972<br>391 | 5714<br>383 |
| <b>25</b> | 239<br>554      | 983<br>543  | 1747<br>531 | 2523<br>520 | 3299<br>511 | 4071<br>501 | 4839<br>492 | 5591<br>483 |

Flow (GPM)

|        |         |      |
|--------|---------|------|
| TORQUE | (LB IN) | 4839 |
| SPEED  | (RPM)   | 492  |

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0195

11.9 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 733<br>7   | 1503<br>3   |             |             |             |             |             |             |
| <b>1</b>  | 761<br>16  | 1546<br>13  | 2326<br>8   | 3104<br>3   |             |             |             |             |
| <b>2</b>  | 799<br>35  | 1638<br>32  | 2465<br>27  | 3270<br>21  | 4046<br>16  | 4813<br>11  | 5589<br>7   | 6375<br>6   |
| <b>3</b>  | 794<br>55  | 1639<br>50  | 2476<br>45  | 3303<br>39  | 4132<br>34  | 4970<br>28  | 5792<br>23  | 6595<br>19  |
| <b>4</b>  | 794<br>74  | 1654<br>69  | 2509<br>64  | 3356<br>58  | 4196<br>52  | 5023<br>46  | 5830<br>40  | 6635<br>35  |
| <b>5</b>  | 783<br>93  | 1653<br>88  | 2517<br>83  | 3375<br>76  | 4224<br>70  | 5065<br>64  | 5895<br>58  | 6710<br>52  |
| <b>7</b>  | 762<br>131 | 1637<br>126 | 2514<br>120 | 3384<br>113 | 4245<br>106 | 5098<br>99  | 5940<br>92  | 6772<br>86  |
| <b>9</b>  | 731<br>170 | 1616<br>164 | 2499<br>157 | 3373<br>150 | 4239<br>142 | 5093<br>135 | 5936<br>127 | 6774<br>120 |
| <b>12</b> | 677<br>228 | 1562<br>221 | 2455<br>213 | 3343<br>205 | 4217<br>196 | 5081<br>188 | 5934<br>179 | 6776<br>172 |
| <b>15</b> | 613<br>285 | 1498<br>278 | 2389<br>269 | 3283<br>260 | 4169<br>251 | 5040<br>242 | 5907<br>232 | 6765<br>233 |
| <b>20</b> | 448<br>381 | 1350<br>373 | 2245<br>363 | 3141<br>353 | 4031<br>342 | 4919<br>331 | 5798<br>321 | 6663<br>310 |
| <b>25</b> | 334<br>477 | 1158<br>468 | 2044<br>457 | 2941<br>445 | 3837<br>433 | 4729<br>421 | 5612<br>409 | 6500<br>397 |

Flow (GPM)

TORQUE (LB IN) 5612  
SPEED (RPM) 409

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**

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**TH 0240**

**14.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 932<br>6   | 1907<br>4   | 2894<br>2   |             |             |             |             |             |
| <b>1</b>  | 960<br>14  | 1954<br>12  | 2950<br>9   | 3943<br>6   | 4939<br>3   | 5930<br>2   |             |             |
| <b>2</b>  | 988<br>30  | 2031<br>27  | 3065<br>24  | 4090<br>20  | 5107<br>17  | 6100<br>14  | 7068<br>11  | 8037<br>9   |
| <b>3</b>  | 983<br>45  | 2029<br>42  | 3071<br>39  | 4101<br>35  | 5128<br>31  | 6161<br>27  | 7182<br>23  | 8184<br>20  |
| <b>4</b>  | 978<br>61  | 2037<br>58  | 3090<br>54  | 4136<br>49  | 5176<br>45  | 6207<br>42  | 7230<br>37  | 8234<br>33  |
| <b>5</b>  | 962<br>77  | 2030<br>73  | 3092<br>69  | 4144<br>64  | 5190<br>60  | 6231<br>56  | 7259<br>51  | 8271<br>47  |
| <b>7</b>  | 933<br>108 | 2005<br>104 | 3078<br>99  | 4141<br>94  | 5194<br>89  | 6239<br>84  | 7275<br>78  | 8298<br>73  |
| <b>9</b>  | 890<br>140 | 1972<br>135 | 3048<br>129 | 4112<br>123 | 5169<br>117 | 6213<br>112 | 7245<br>106 | 8271<br>100 |
| <b>12</b> | 832<br>187 | 1912<br>181 | 2996<br>175 | 4071<br>167 | 5125<br>161 | 6163<br>154 | 7195<br>147 | 8224<br>140 |
| <b>15</b> | 753<br>235 | 1832<br>228 | 2921<br>220 | 4009<br>212 | 5081<br>204 | 6137<br>196 | 7182<br>188 | 8212<br>180 |
| <b>20</b> | 559<br>314 | 1654<br>306 | 2744<br>297 | 3834<br>287 | 4917<br>278 | 5991<br>268 | 7045<br>258 | 8081<br>248 |
| <b>25</b> | 524<br>393 | 1427<br>384 | 2507<br>373 | 3595<br>363 | 4690<br>352 | 5780<br>340 | 6853<br>328 | 7913<br>317 |

Flow (GPM)

TORQUE (LB IN) 5780  
 SPEED (RPM) 340

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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TH 0280

17.1 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 1056<br>5       | 2177<br>4   | 3323<br>2   | 4512<br>1   |             |             |             |             |
| <b>1</b>  | 1087<br>12      | 2223<br>10  | 3378<br>8   | 4552<br>6   | 5734<br>5   | 6930<br>3   | 8135<br>3   | 9350<br>2   |
| <b>2</b>  | 1124<br>25      | 2313<br>23  | 3513<br>21  | 4700<br>18  | 5880<br>16  | 7060<br>14  | 8239<br>12  | 9400<br>11  |
| <b>3</b>  | 1124<br>39      | 2323<br>36  | 3532<br>34  | 4740<br>31  | 5940<br>28  | 7143<br>25  | 8346<br>22  | 9536<br>19  |
| <b>4</b>  | 1126<br>52      | 2346<br>49  | 3568<br>47  | 4786<br>43  | 6004<br>40  | 7214<br>37  | 8415<br>33  | 9596<br>30  |
| <b>5</b>  | 1115<br>65      | 2350<br>62  | 3582<br>59  | 4816<br>56  | 6044<br>52  | 7256<br>49  | 8457<br>45  | 9641<br>41  |
| <b>7</b>  | 1091<br>92      | 2338<br>88  | 3586<br>85  | 4832<br>80  | 6072<br>76  | 7301<br>72  | 8515<br>67  | 9706<br>63  |
| <b>9</b>  | 1046<br>118     | 2309<br>114 | 3564<br>110 | 4811<br>105 | 6051<br>101 | 7280<br>96  | 8499<br>90  | 9707<br>85  |
| <b>12</b> | 981<br>159      | 2242<br>154 | 3506<br>148 | 4757<br>143 | 5992<br>137 | 7221<br>132 | 8444<br>125 | 9652<br>118 |
| <b>15</b> | 898<br>199      | 2164<br>193 | 3437<br>186 | 4702<br>180 | 5951<br>174 | 7187<br>168 | 8416<br>160 | 9625<br>152 |
| <b>20</b> | 691<br>266      | 1976<br>258 | 3255<br>250 | 4529<br>243 | 5795<br>235 | 7044<br>227 | 8275<br>218 | 9499<br>209 |
| <b>25</b> | 703<br>334      | 1726<br>324 | 2987<br>314 | 4260<br>305 | 5540<br>296 | 6815<br>286 | 8071<br>276 | 9311<br>267 |

Flow (GPM)

TORQUE (LB IN) 8071  
SPEED (RPM) 276

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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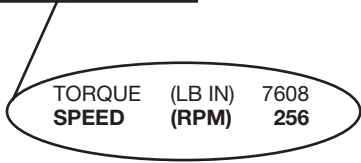
TH 0310

**18.9** cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1188<br>4   | 2464<br>3   | 3766<br>2   | 5102<br>1   |             |             |             |              |
| <b>1</b>  | 1220<br>11  | 2508<br>9   | 3812<br>7   | 5145<br>5   | 6477<br>4   | 7822<br>2   | 9181<br>2   | 10530<br>1   |
| <b>2</b>  | 1259<br>23  | 2598<br>21  | 3950<br>19  | 5298<br>17  | 6642<br>14  | 7972<br>13  | 9282<br>10  | 10574<br>9   |
| <b>3</b>  | 1257<br>35  | 2606<br>33  | 3889<br>30  | 5332<br>28  | 6688<br>25  | 8044<br>22  | 9392<br>19  | 10693<br>16  |
| <b>4</b>  | 1259<br>47  | 2628<br>44  | 4003<br>42  | 5377<br>39  | 6749<br>36  | 8114<br>33  | 9461<br>29  | 10780<br>26  |
| <b>5</b>  | 1247<br>59  | 2629<br>56  | 4252<br>52  | 5401<br>50  | 6782<br>47  | 8149<br>42  | 9499<br>39  | 10823<br>35  |
| <b>7</b>  | 1218<br>84  | 2614<br>80  | 4013<br>76  | 5413<br>72  | 6806<br>68  | 8184<br>64  | 9543<br>60  | 10874<br>56  |
| <b>9</b>  | 1167<br>107 | 2574<br>103 | 3983<br>99  | 5386<br>94  | 6780<br>90  | 8162<br>85  | 9529<br>80  | 10877<br>75  |
| <b>12</b> | 1089<br>143 | 2493<br>139 | 3904<br>133 | 5308<br>128 | 6696<br>122 | 8075<br>117 | 9443<br>110 | 10793<br>102 |
| <b>15</b> | 995<br>180  | 2400<br>173 | 3817<br>167 | 5225<br>160 | 6621<br>154 | 8003<br>148 | 9371<br>140 | 10718<br>131 |
| <b>20</b> | 769<br>241  | 2194<br>234 | 3618<br>225 | 5043<br>218 | 6462<br>210 | 7863<br>203 | 9238<br>194 | 10588<br>183 |
| <b>25</b> | 626<br>303  | 1955<br>294 | 3359<br>284 | 4771<br>274 | 6251<br>265 | 7608<br>256 | 8998<br>246 | 10360<br>236 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0335

20.6 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1297<br>4   | 2699<br>3   | 4128<br>1   | 5584<br>1   |             |             |              |              |
| <b>1</b>  | 1329<br>10  | 2741<br>8   | 4176<br>7   | 5630<br>5   | 7084<br>4   | 8551<br>2   | 10036<br>2   | 11496<br>1   |
| <b>2</b>  | 1369<br>21  | 2832<br>19  | 4308<br>17  | 5787<br>15  | 7265<br>13  | 8718<br>11  | 10136<br>9   | 11534<br>8   |
| <b>3</b>  | 1366<br>32  | 2838<br>30  | 4326<br>27  | 5817<br>25  | 7301<br>22  | 8781<br>20  | 10248<br>17  | 11685<br>14  |
| <b>4</b>  | 1368<br>43  | 2858<br>40  | 4358<br>38  | 5861<br>35  | 7358<br>32  | 8850<br>29  | 10317<br>25  | 11748<br>22  |
| <b>5</b>  | 1355<br>54  | 2858<br>51  | 4368<br>48  | 5880<br>45  | 7386<br>42  | 8880<br>38  | 10352<br>34  | 11791<br>30  |
| <b>7</b>  | 1323<br>76  | 2840<br>73  | 4363<br>69  | 5888<br>65  | 7407<br>61  | 8908<br>57  | 10384<br>53  | 11829<br>47  |
| <b>9</b>  | 1266<br>98  | 2791<br>94  | 4326<br>90  | 5856<br>85  | 7376<br>81  | 8884<br>76  | 10372<br>71  | 11834<br>64  |
| <b>12</b> | 1177<br>131 | 2698<br>127 | 4230<br>121 | 5759<br>116 | 7273<br>110 | 8773<br>105 | 10261<br>98  | 11726<br>90  |
| <b>15</b> | 1075<br>165 | 2594<br>159 | 4127<br>153 | 5654<br>146 | 7170<br>140 | 8670<br>134 | 10153<br>126 | 11613<br>116 |
| <b>20</b> | 833<br>221  | 2372<br>214 | 3915<br>205 | 5463<br>197 | 7008<br>189 | 8533<br>182 | 10026<br>173 | 11479<br>161 |
| <b>25</b> | 678<br>277  | 2142<br>269 | 3663<br>259 | 5189<br>248 | 6726<br>239 | 8257<br>230 | 9757<br>219  | 11219<br>209 |

Flow (GPM)

TORQUE (LB IN) 9757  
SPEED (RPM) 219

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0360

**360 cm<sup>3</sup> / rev (22.2 in<sup>3</sup> / rev)**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1386<br>4   | 2883<br>3   | 4410<br>1   | 5965<br>1   |             |             |              |
| <b>1</b>  | 1420<br>9   | 2928<br>7   | 4461<br>7   | 6014<br>5   | 7567<br>4   | 9135<br>2   | 10721<br>2   |
| <b>2</b>  | 1462<br>20  | 3025<br>18  | 4602<br>16  | 6182<br>14  | 7761<br>12  | 9313<br>10  | 10828<br>8   |
| <b>3</b>  | 1459<br>30  | 3031<br>28  | 4621<br>25  | 6214<br>23  | 7799<br>21  | 9380<br>19  | 10947<br>16  |
| <b>4</b>  | 1461<br>40  | 3053<br>37  | 4655<br>36  | 6261<br>33  | 7884<br>30  | 9454<br>27  | 11021<br>23  |
| <b>5</b>  | 1447<br>51  | 3053<br>48  | 4666<br>45  | 6281<br>42  | 7890<br>39  | 9486<br>36  | 11059<br>32  |
| <b>7</b>  | 1413<br>71  | 3034<br>68  | 4661<br>65  | 6290<br>61  | 7913<br>57  | 9516<br>53  | 11093<br>50  |
| <b>9</b>  | 1352<br>92  | 2981<br>88  | 4621<br>84  | 6256<br>80  | 7879<br>76  | 9490<br>71  | 11080<br>66  |
| <b>12</b> | 1257<br>123 | 2882<br>119 | 4519<br>113 | 6152<br>109 | 7769<br>103 | 9372<br>98  | 10961<br>92  |
| <b>15</b> | 1148<br>154 | 2771<br>149 | 4409<br>143 | 6040<br>137 | 7659<br>131 | 9262<br>125 | 10846<br>118 |
| <b>20</b> | 890<br>207  | 2534<br>200 | 4182<br>192 | 5836<br>184 | 7486<br>177 | 9115<br>170 | 10710<br>162 |
| <b>25</b> | 724<br>259  | 2288<br>252 | 3913<br>242 | 5543<br>232 | 7185<br>224 | 8821<br>215 | 10423<br>205 |

Flow (GPM)

TORQUE (LB IN) 8821  
SPEED (RPM) 215

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

TH 0405

**24.7** cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000         | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1544<br>4   | 3178<br>3   | 4840<br>2   | 6515<br>1   | 8185<br>1   |              |              |
| <b>1</b>  | 1593<br>8   | 3256<br>7   | 4928<br>6   | 6607<br>6   | 8303<br>5   | 9987<br>4    | 11652<br>3   |
| <b>2</b>  | 1636<br>17  | 3351<br>16  | 5084<br>15  | 6817<br>14  | 8550<br>13  | 10272<br>12  | 11978<br>11  |
| <b>3</b>  | 1637<br>27  | 3365<br>25  | 5106<br>23  | 6847<br>22  | 8588<br>21  | 10314<br>19  | 12031<br>18  |
| <b>4</b>  | 1645<br>36  | 3394<br>34  | 5159<br>32  | 6920<br>30  | 8668<br>29  | 10402<br>27  | 12130<br>26  |
| <b>5</b>  | 1640<br>45  | 3408<br>43  | 5201<br>41  | 6983<br>39  | 8733<br>37  | 10466<br>35  | 12194<br>33  |
| <b>7</b>  | 1606<br>64  | 3396<br>61  | 5211<br>59  | 7003<br>56  | 8772<br>54  | 10527<br>51  | 12271<br>49  |
| <b>9</b>  | 1551<br>82  | 3350<br>80  | 5176<br>77  | 6981<br>73  | 8763<br>70  | 10519<br>67  | 12269<br>64  |
| <b>12</b> | 1428<br>110 | 3238<br>107 | 5075<br>103 | 6888<br>99  | 8670<br>95  | 10424<br>91  | 12172<br>88  |
| <b>15</b> | 1310<br>138 | 3112<br>135 | 4948<br>130 | 6759<br>125 | 8545<br>120 | 10306<br>115 | 12060<br>111 |
| <b>20</b> | 1136<br>185 | 2862<br>181 | 4692<br>175 | 6518<br>168 | 8336<br>162 | 10122<br>156 | 11877<br>151 |
| <b>25</b> |             |             | 4492<br>219 | 6303<br>212 | 8084<br>204 | 9848<br>197  | 11585<br>190 |

Flow (GPM)

TORQUE (LB IN) 9848  
SPEED (RPM) 197

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

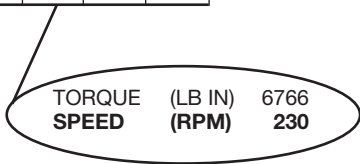
Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0475

29.1 cu in / rev

|           | PRESSURE (PSID) |             |             |             |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         |
| <b>.5</b> | 1768<br>3       | 3732<br>3   | 5733<br>2   | 7744<br>1   | 9762<br>1    |              |
| <b>1</b>  | 1868<br>7       | 3878<br>7   | 5879<br>6   | 7851<br>5   | 9838<br>4    | 11830<br>3   |
| <b>2</b>  | 1964<br>15      | 4055<br>14  | 6180<br>14  | 8237<br>12  | 10241<br>10  | 12136<br>8   |
| <b>3</b>  | 1972<br>23      | 4074<br>22  | 6208<br>21  | 8321<br>19  | 10379<br>17  | 12355<br>13  |
| <b>4</b>  | 2005<br>31      | 4135<br>30  | 6287<br>29  | 8382<br>27  | 10463<br>24  | 12496<br>20  |
| <b>5</b>  | 2004<br>39      | 4129<br>38  | 6304<br>37  | 8428<br>34  | 10514<br>31  | 12544<br>26  |
| <b>7</b>  | 1990<br>55      | 4133<br>54  | 6308<br>52  | 8445<br>50  | 10555<br>45  | 12602<br>40  |
| <b>9</b>  | 1924<br>70      | 4104<br>69  | 6285<br>68  | 8430<br>65  | 10528<br>60  | 12608<br>54  |
| <b>12</b> | 1775<br>94      | 3974<br>93  | 6157<br>91  | 8328<br>87  | 10446<br>82  | 12528<br>75  |
| <b>15</b> | 1619<br>118     | 3784<br>116 | 5990<br>114 | 8188<br>110 | 10311<br>104 | 12372<br>96  |
| <b>20</b> | 1314<br>157     | 3373<br>156 | 5629<br>153 | 7853<br>149 | 10038<br>141 | 12145<br>132 |
| <b>25</b> | 1141<br>197     | 3029<br>196 | 5220<br>193 | 7427<br>189 | 9629<br>182  | 11757<br>174 |
| <b>30</b> | 606<br>237      | 2505<br>236 | 4649<br>233 | 6766<br>230 | 8878<br>224  | 10989<br>219 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0530

**32.2 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         |
| <b>.5</b> | 2080<br>3       | 4256<br>3   | 6479<br>2   | 8726<br>2   | 11012<br>1   |
| <b>1</b>  | 2158<br>7       | 4372<br>6   | 6592<br>6   | 8779<br>5   | 10994<br>4   |
| <b>2</b>  | 2246<br>14      | 4567<br>13  | 6869<br>12  | 9126<br>11  | 11376<br>9   |
| <b>3</b>  | 2242<br>21      | 4578<br>20  | 6916<br>19  | 9237<br>17  | 11500<br>14  |
| <b>4</b>  | 2253<br>28      | 4625<br>27  | 6977<br>25  | 9296<br>23  | 11586<br>20  |
| <b>5</b>  | 2235<br>35      | 4629<br>34  | 7002<br>32  | 9333<br>29  | 11626<br>26  |
| <b>7</b>  | 2182<br>49      | 4599<br>48  | 7006<br>46  | 9362<br>42  | 11659<br>38  |
| <b>9</b>  | 2095<br>63      | 4535<br>62  | 6960<br>59  | 9330<br>55  | 11650<br>50  |
| <b>12</b> | 1943<br>85      | 4390<br>83  | 6825<br>80  | 9217<br>75  | 11549<br>69  |
| <b>15</b> | 1753<br>106     | 4199<br>104 | 6638<br>100 | 9052<br>95  | 11408<br>87  |
| <b>20</b> | 1327<br>141     | 3783<br>139 | 6262<br>135 | 8701<br>129 | 11086<br>120 |
| <b>25</b> | 1011<br>177     | 3300<br>175 | 5751<br>171 | 8210<br>165 | 10639<br>158 |
| <b>30</b> | 269<br>213      | 2698<br>211 | 5083<br>208 | 7415<br>203 | 9814<br>197  |

Flow (GPM)

TORQUE (LB IN) 9814  
 SPEED (RPM) 197

Cont.     Int.

Intermittent operation rating applies to 10% of every minute.

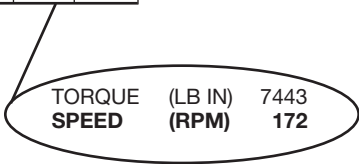
Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

TH 0625

**38.0** cu in / rev

|           | PRESSURE (PSID) |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 1750        | 2250         |
| <b>.5</b> | 1939<br>2       | 4593<br>1   |             |             |              |
| <b>1</b>  | 2087<br>5       | 4665<br>3   | 7283<br>2   | 8680<br>2   | 11579<br>1   |
| <b>2</b>  | 2338<br>11      | 4991<br>9   | 7590<br>8   | 8853<br>7   | 11458<br>5   |
| <b>3</b>  | 2386<br>17      | 5101<br>15  | 7753<br>13  | 9055<br>12  | 11689<br>9   |
| <b>4</b>  | 2457<br>23      | 5202<br>21  | 7872<br>19  | 9174<br>17  | 11769<br>14  |
| <b>5</b>  | 2479<br>29      | 5246<br>27  | 7943<br>25  | 9242<br>23  | 11821<br>18  |
| <b>7</b>  | 2464<br>41      | 5273<br>39  | 7995<br>36  | 9306<br>34  | 11859<br>28  |
| <b>9</b>  | 2401<br>53      | 5223<br>51  | 7993<br>48  | 9337<br>45  | 11935<br>39  |
| <b>12</b> | 2254<br>71      | 5092<br>69  | 7886<br>65  | 9239<br>62  | 11900<br>54  |
| <b>15</b> | 2052<br>89      | 4901<br>87  | 7721<br>83  | 9086<br>80  | 11763<br>70  |
| <b>20</b> | 1600<br>120     | 4490<br>117 | 7334<br>112 | 8725<br>109 | 11424<br>98  |
| <b>25</b> | 1063<br>151     | 3933<br>148 | 6818<br>144 | 8235<br>140 | 11021<br>131 |
| <b>30</b> | 359<br>182      | 3250<br>180 | 6074<br>176 | 7443<br>172 | 10179<br>165 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TH 0785

48.0 cu in / rev

|           | PRESSURE (PSID) |             |             |              |
|-----------|-----------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000         |
| <b>.5</b> | 2910<br>2       | 6153<br>2   | 9607<br>1   | 12950<br>1   |
| <b>1</b>  | 3011<br>4       | 6296<br>4   | 9670<br>3   | 12919<br>3   |
| <b>2</b>  | 3217<br>9       | 6536<br>8   | 9935<br>7   | 13060<br>6   |
| <b>3</b>  | 3220<br>14      | 6613<br>13  | 9977<br>11  | 13079<br>9   |
| <b>4</b>  | 3265<br>19      | 6679<br>17  | 10021<br>15 | 13078<br>13  |
| <b>5</b>  | 3263<br>23      | 6703<br>22  | 10047<br>19 | 13103<br>16  |
| <b>7</b>  | 3218<br>33      | 6722<br>31  | 10068<br>28 | 13062<br>24  |
| <b>9</b>  | 3107<br>43      | 6664<br>41  | 10108<br>36 | 13185<br>31  |
| <b>12</b> | 2892<br>57      | 6489<br>55  | 9959<br>49  | 13082<br>42  |
| <b>15</b> | 2643<br>71      | 6238<br>69  | 9733<br>62  | 12938<br>54  |
| <b>20</b> | 2044<br>95      | 5673<br>92  | 9239<br>85  | 12636<br>75  |
| <b>25</b> | 2313<br>119     | 4976<br>117 | 8571<br>110 | 12073<br>101 |
| <b>30</b> | 496<br>143      | 4104<br>141 | 7582<br>137 | 11024<br>130 |

Flow (GPM)

TORQUE (LB IN) 11024  
SPEED (RPM) 130

TH 0960

58.5 cu in / rev

|           | PRESSURE (PSID) |             |             |
|-----------|-----------------|-------------|-------------|
|           | 500             | 1000        | 1500        |
| <b>.5</b> | 3692<br>2       | 7712<br>1   | 11750<br>1  |
| <b>1</b>  | 3788<br>3       | 7858<br>3   | 11895<br>3  |
| <b>2</b>  | 3900<br>7       | 8045<br>7   | 12058<br>6  |
| <b>3</b>  | 3905<br>11      | 8078<br>11  | 12135<br>10 |
| <b>4</b>  | 3939<br>15      | 8155<br>14  | 12210<br>13 |
| <b>5</b>  | 3923<br>19      | 8173<br>18  | 12238<br>17 |
| <b>7</b>  | 3860<br>27      | 8160<br>26  | 12262<br>24 |
| <b>9</b>  | 3733<br>35      | 8074<br>34  | 12224<br>31 |
| <b>12</b> | 3475<br>47      | 7848<br>45  | 12062<br>42 |
| <b>15</b> | 3149<br>58      | 7545<br>57  | 11823<br>53 |
| <b>20</b> | 2437<br>78      | 6843<br>76  | 11227<br>72 |
| <b>25</b> | 2969<br>98      | 5990<br>96  | 10360<br>92 |
| <b>30</b> | 603<br>118      | 4919<br>117 | 9170<br>113 |

Flow (GPM)

TORQUE (LB IN) 9170  
SPEED (RPM) 113

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

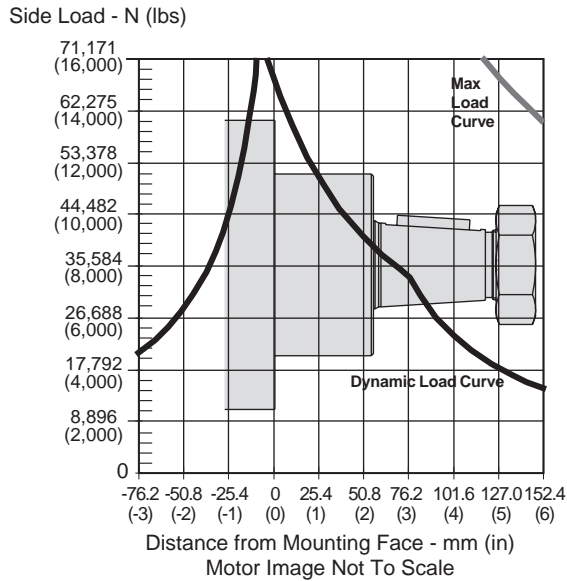
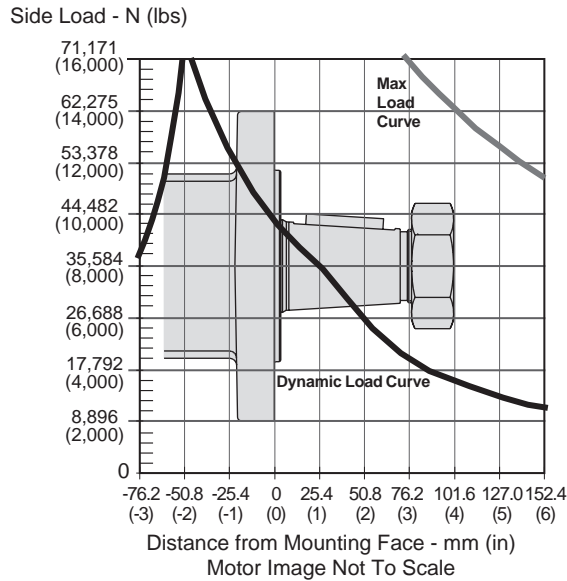
Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



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Flange Mount

Wheel Mount



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $6 \times 10^6$  revolutions.

The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{6 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

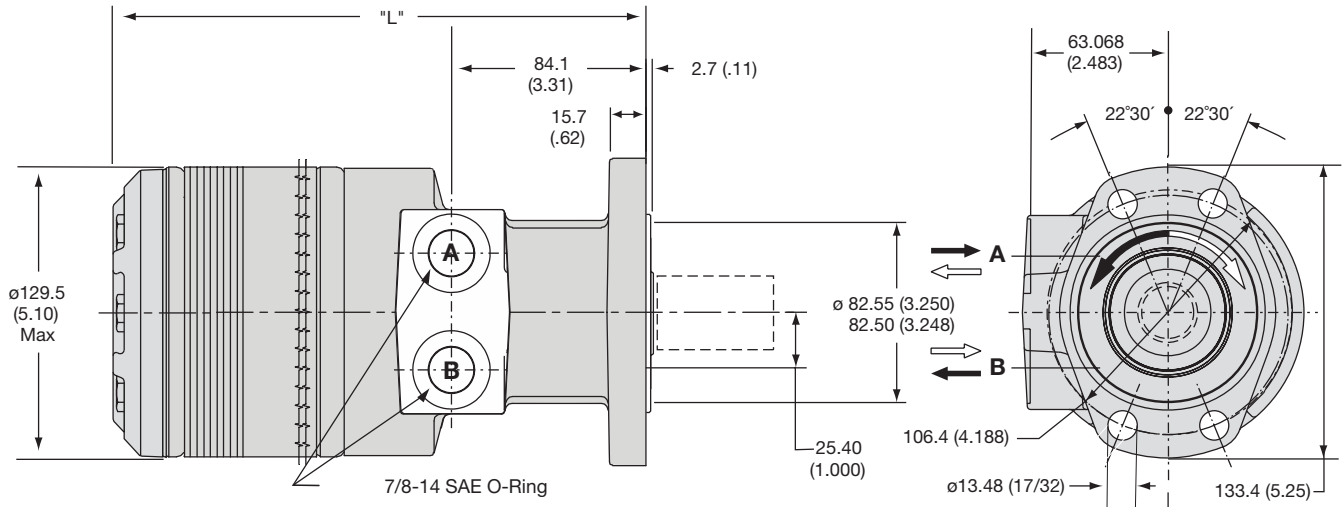
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: MS

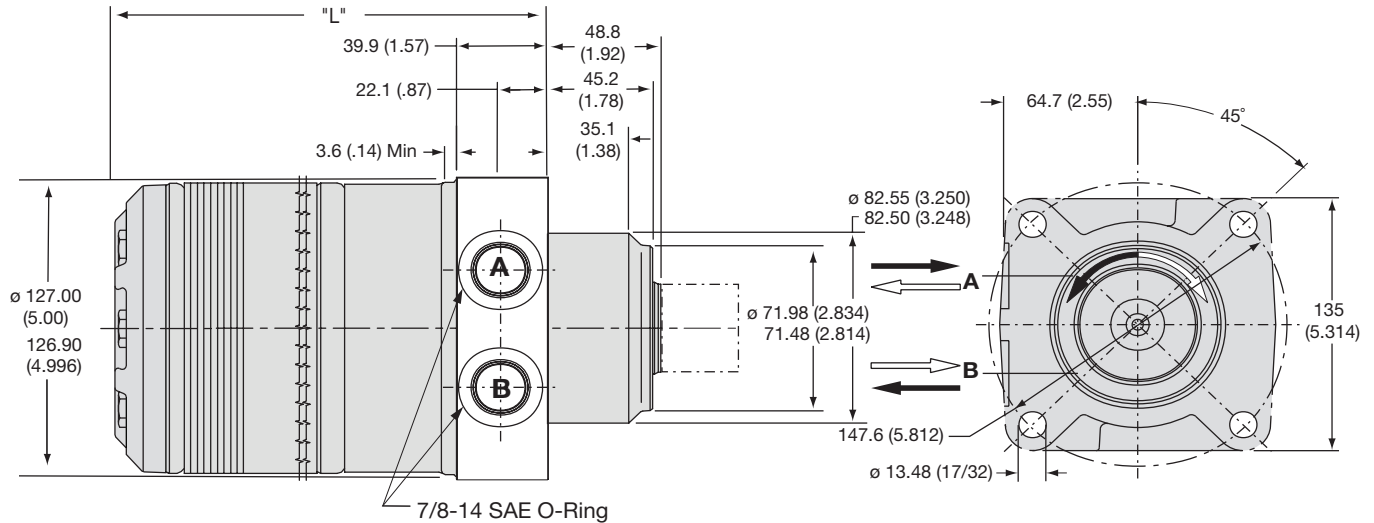
Magneto, 7/8-14 SAE O-Ring



| Code MS | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Weight  | kg       | 14.7   | 14.9   | 15.2   | 15.5   | 15.9   | 16.3   | 16.1   | 16.9   | 17.6    | 18.3    | 19.0    | 20.6    | 22.3    |
|         | (lb)     | (32.3) | (32.8) | (33.4) | (34.2) | (35.1) | (35.9) | (35.4) | (37.3) | (38.7)  | (40.4)  | (41.9)  | (45.4)  | (49.1)  |
| Length  | "L" mm   | 215.9  | 218.9  | 222.3  | 227.1  | 231.6  | 238.0  | 235.0  | 245.4  | 254.0   | 260.4   | 269.7   | 288.8   | 307.8   |
|         | "L" (in) | (8.50) | (8.62) | (8.75) | (8.94) | (9.12) | (9.37) | (9.25) | (9.66) | (10.00) | (10.25) | (10.62) | (11.37) | (12.12) |

Code: US

Wheel, Standard, 7/8-14 SAE O-Ring



| Code US | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|---------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight  | kg       | 16.9   | 17.2   | 17.4   | 17.8   | 18.2   | 18.4   | 18.6   | 19.2   | 19.8   | 20.6   | 21.3   | 22.9   | 24.5    |
|         | (lb)     | (37.3) | (37.8) | (38.4) | (39.2) | (40.1) | (40.5) | (40.9) | (42.3) | (43.7) | (45.4) | (46.9) | (50.4) | (54.1)  |
| Length  | "L" mm   | 173.2  | 176.5  | 179.6  | 184.4  | 189.2  | 191.8  | 195.6  | 202.9  | 211.3  | 217.7  | 227.3  | 246.4  | 265.4   |
|         | "L" (in) | (6.82) | (6.95) | (7.07) | (7.26) | (7.45) | (7.55) | (7.70) | (7.99) | (8.32) | (8.57) | (8.95) | (9.70) | (10.45) |

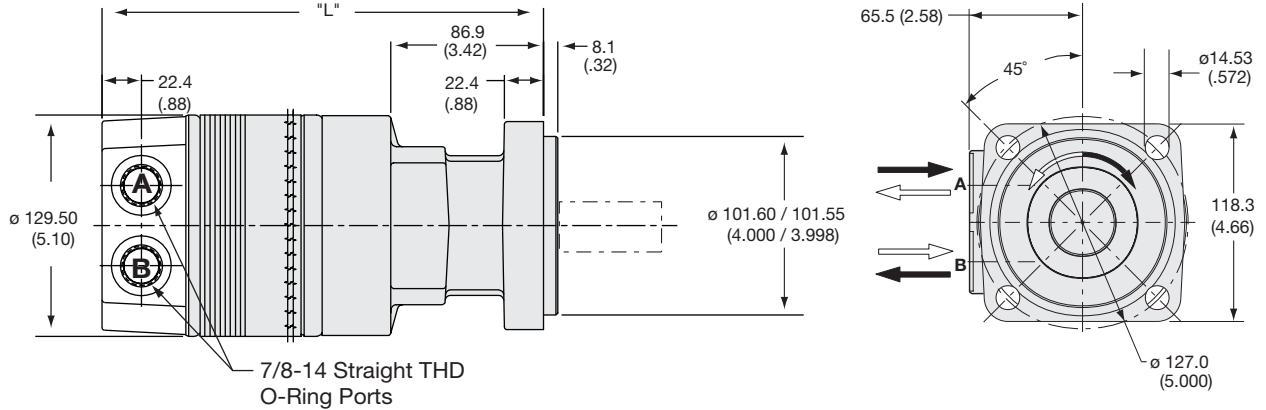
English equivalents for metric specifications are shown in ( ).



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: PB

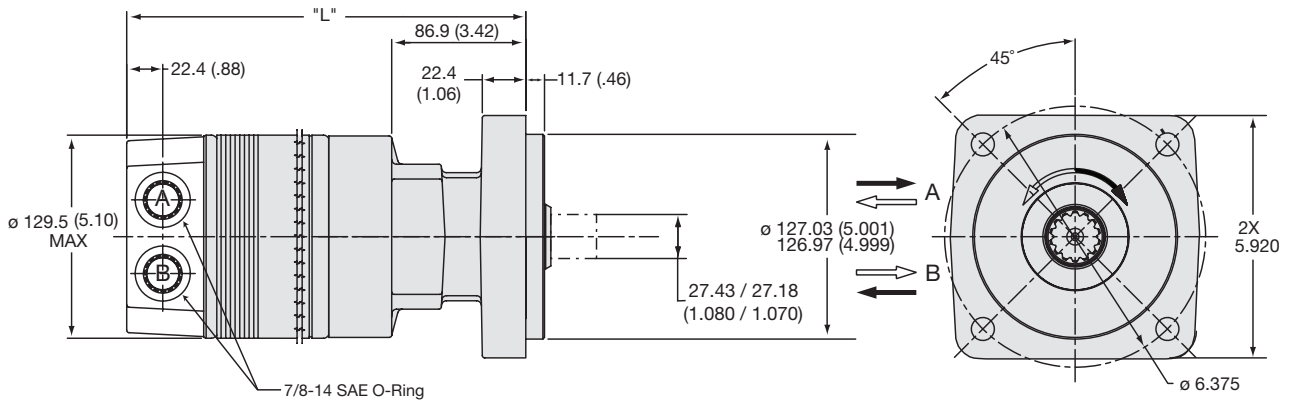
SAE "B" 4 Bolt, Rear 7/8-14 SAE O-Ring Radial



| Code PB        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335    | 0405    | 0475    | 0530    | 0625    | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg       | 16.9   | 17.2   | 17.4   | 17.8   | 18.2   | 18.4   | 18.6    | 19.2    | 19.8    | 20.6    | 21.3    | 22.9    | 24.5    |
| Poids/Peso     | (lb)     | (37.3) | (37.8) | (38.4) | (39.2) | (40.1) | (40.5) | (40.9)  | (42.3)  | (43.7)  | (45.4)  | (46.9)  | (50.4)  | (54.1)  |
| Length         | "L" mm   | 235.2  | 238.3  | 241.6  | 246.4  | 251.0  | 254.0  | 257.3   | 264.9   | 273.3   | 279.7   | 289.3   | 308.4   | 327.4   |
|                | "L" (in) | (9.26) | (9.38) | (9.51) | (9.70) | (9.88) | (10.0) | (10.13) | (10.43) | (10.76) | (11.01) | (11.39) | (12.14) | (12.89) |

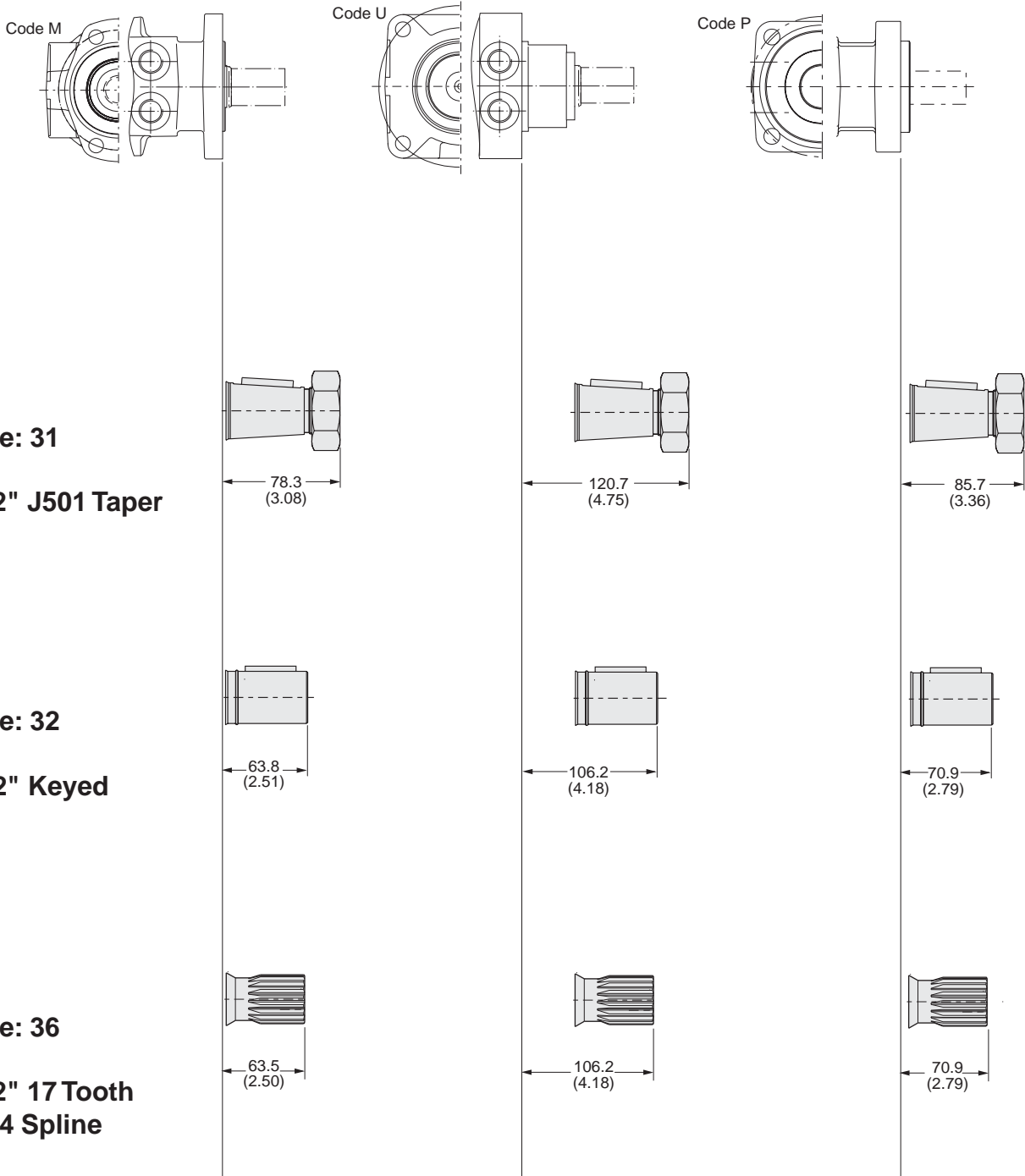
Code: KB

SAE CC 4 Bolt, Rear 7/8-14 SAE O-Ring Radial



| Code KB        | disp | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335    | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|----------------|------|--------|--------|--------|--------|--------|--------|---------|--------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg   | 19.4   | 19.4   | 19.9   | 20.3   | 20.7   | 20.9   | 21.0    | 21.7   | 22.3    | 23.1    | 23.8    | 25.4    | 27.0    |
| Poids/Peso     | (lb) | (42.8) | (43.3) | (43.9) | (44.7) | (45.6) | (46.0) | (46.4)  | (47.8) | (49.2)  | (50.9)  | (52.4)  | (55.9)  | (59.6)  |
| Length "L"     | mm   | 231.9  | 235.2  | 238.3  | 243.1  | 247.9  | 251.0  | 254.3   | 261.6  | 270.0   | 276.4   | 286.0   | 305.1   | 324.1   |
|                | (in) | (9.13) | (9.26) | (9.38) | (9.57) | (9.76) | (9.88) | (10.01) | (10.3) | (10.63) | (10.88) | (11.26) | (12.01) | (12.76) |

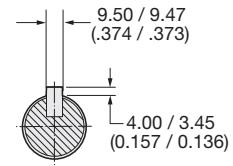
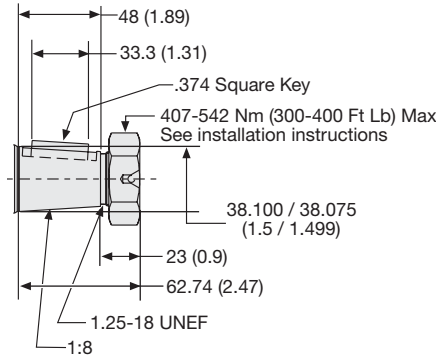
English equivalents for metric specifications are shown in ( ).



English equivalents for metric specifications are shown in ( ).

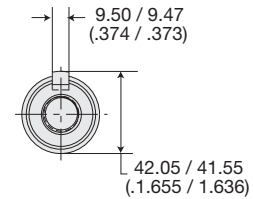
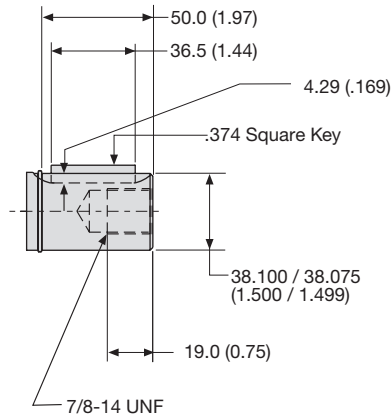
**Code: 31**

**1 1/2" J501 Taper**



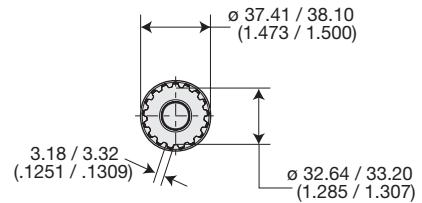
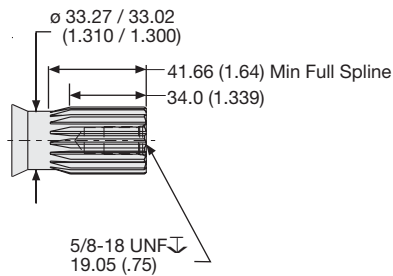
**Code: 32**

**1 1/2" Keyed**



**Code: 36**

**1 1/2" 17 Tooth  
12/24 Spline**



English equivalents for metric specifications are shown in ( ).

|                                 |  |   |
|---------------------------------|--|---|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br>141 . . . 959 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . 207 bar                             | <b>Int.</b><br>(4000 psid)<br>. . . 276 bar |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . 114 lpm  |   |
| <b>Maximum Speed</b>            | (660 rpm)<br>660 rpm   |   |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(9,239 lb in)<br>1044 Nm                                 | <b>Int.</b><br>(12,636 lb in)<br>1428 Nm    |
| <b>Maximum Side Load at Key</b> | (4790 lb)<br>. . . 21306 N   |   |

### Exceptional Strength and Durability in a High Performance Motor/Brake Package

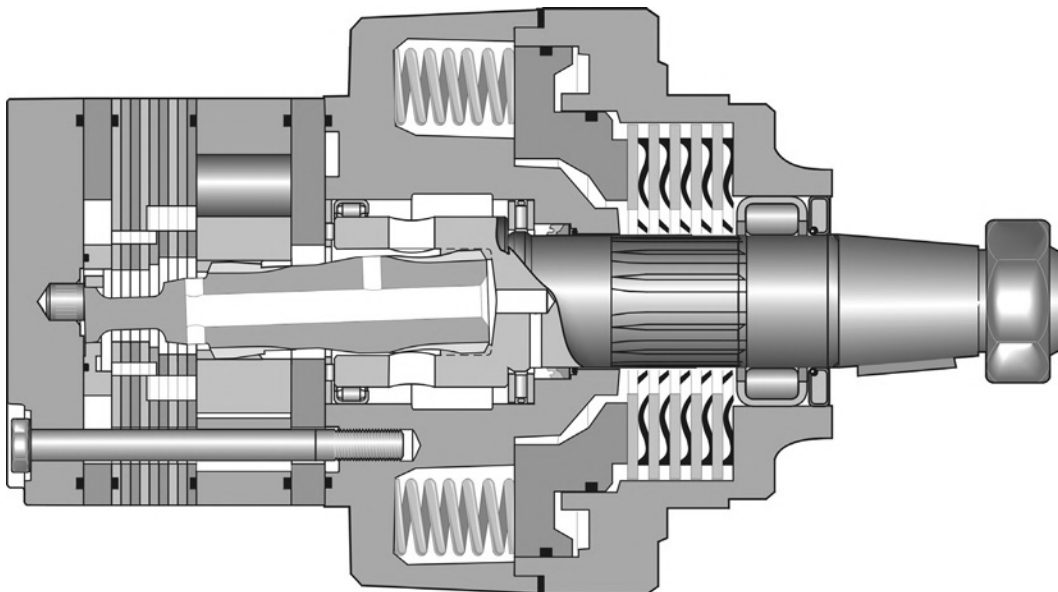
This brake motor consists of a BH Series motor integrated into a wet disc, spring applied, hydraulically released brake. Standard holding capacity is 16,000 lb in of holding torque. The brake is front mounted for reliable operation even in the event of a system failure. The brake release port is capable of pressures to 3000 PSI.



| Rated Brake Holding Capacity @ Zero Release Pressure<br>Nm (in-lbs)                     | Minimum Full Release Pressure<br>bar (PSI) |
|---|--|
| 1800 (16,000)   | 22 (315)                                   |
| 16,000 in-lbs is standard holding capacity. For other holding capacities, see page 287. |  |

**! CAUTION!**

See installation/operating instructions for product cautions and proper use.



**BH**

Series

**XXXX**

Displacement

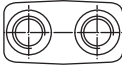

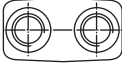

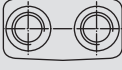
**XX**

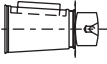
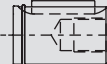
Mounting/Ports

**XX**

Shaft

| Code | cm <sup>3</sup> /tr |                      | cm <sup>3</sup> /giro |                      |
|------|---------------------|----------------------|-----------------------|----------------------|
|      | cm <sup>3</sup> /U  | in <sup>3</sup> /rev | cm <sup>3</sup> /U    | in <sup>3</sup> /rev |
| 0140 | 141                 | / 8.6                |                       |                      |
| 0170 | 169                 | / 10.3               |                       |                      |
| 0195 | 195                 | / 11.9               |                       |                      |
| 0240 | 238                 | / 14.5               |                       |                      |
| 0280 | 280                 | / 17.1               |                       |                      |
| 0310 | 310                 | / 18.9               |                       |                      |
| 0335 | 337                 | / 20.6               |                       |                      |
| 0360 | 360                 | / 22.2               |                       |                      |
| 0405 | 405                 | / 24.7               |                       |                      |
| 0475 | 477                 | / 29.1               |                       |                      |
| 0530 | 528                 | / 32.3               |                       |                      |
| 0625 | 623                 | / 38.0               |                       |                      |
| 0785 | 786                 | / 48.0               |                       |                      |
| 0960 | 959                 | / 58.5               |                       |                      |

| Code | Mounting/Ports  |
|------|---|
| AS   | Front Mtg/Front Bolting 1/2-13 UNC Thd<br>7/8-14 SAE<br>  |
| CS   | Rear Mtg/Thru Bolting, 7/8-14 SAE<br>                |
| DS   | Front Mtg/Thru Bolding,<br>7/8 - 14 O Ring Port<br>  |



| Code | Shaft  |
|------|--|
| 31   | 1 1/2" J501 Taper<br> |
| 32   | 1 1/2" Keyed<br>      |

For performance data curves, see TH section.



**0**  
 Rotation

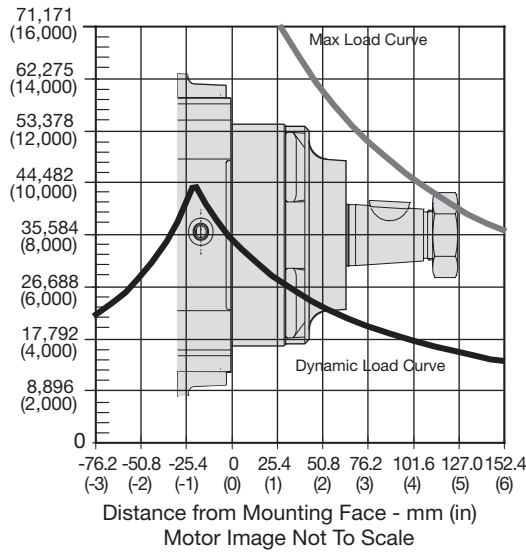
**XXXX**  
 Options

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

| Code | Options   |
|------|---|
| AAAA | “Standard”, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | “Standard”, No Paint  |
| AAAC | “Standard”, Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00°), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGZ | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 4061 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |

Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $6 \times 10^6$  revolutions.

D

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and S in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{6 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

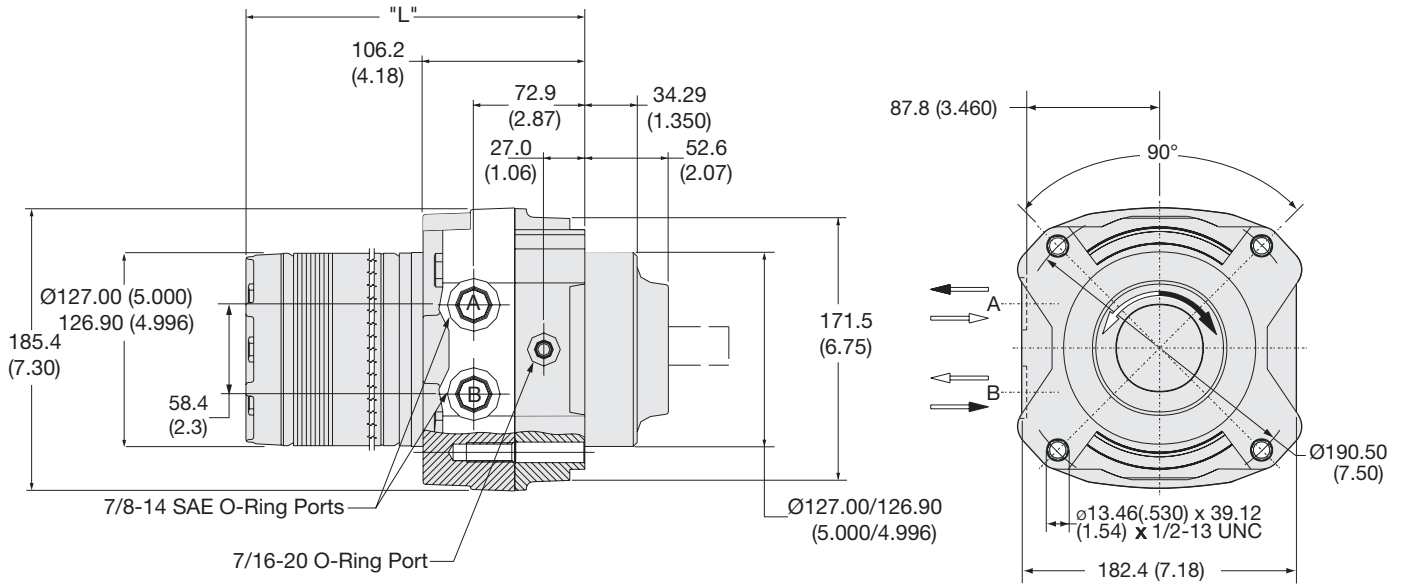
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: AS

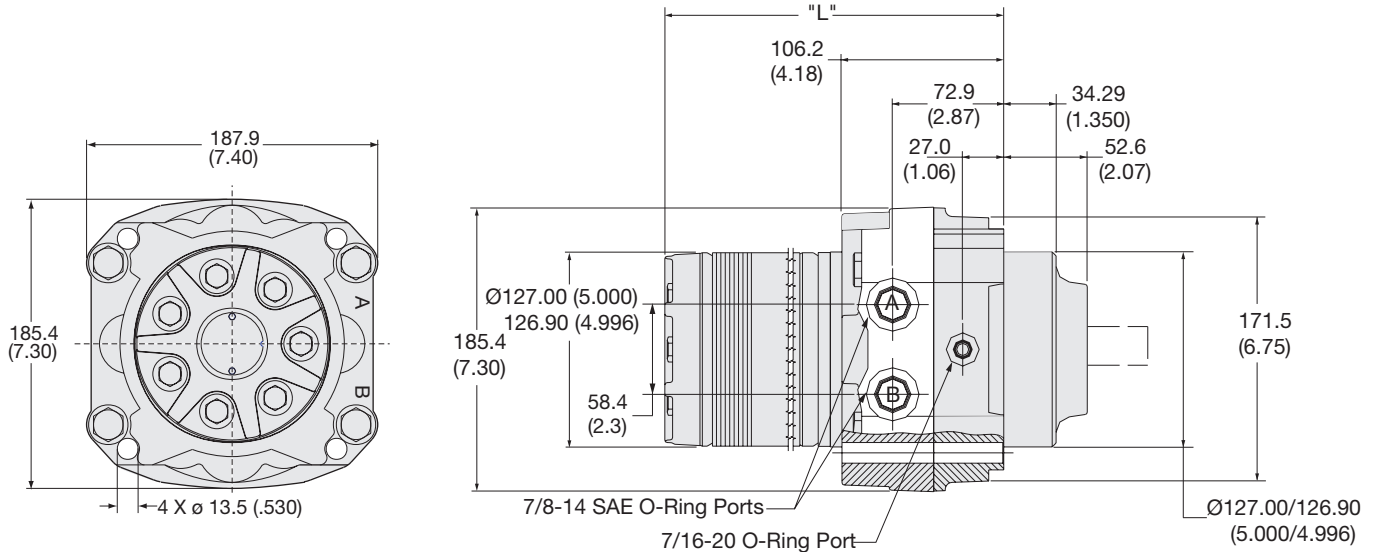
Front Mounting / Front Bolting, 7/8-14 SAE O-Ring



| Code AS        |          | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 27.3   | 27.5   | 27.8   | 28.1   | 28.5   | 28.7   | 28.9   | 29.5   | 30.2   | 30.9   | 31.7   | 33.2    | 34.9    |
| Poids/Peso     | (lb)     | (60.2) | (60.8) | (61.3) | (62.1) | (63.0) | (63.5) | (63.9) | (65.2) | (66.7) | (68.3) | (69.9) | (73.3)  | (77.1)  |
| Length         | "L" mm   | 198.6  | 201.7  | 205.0  | 209.6  | 214.4  | 217.9  | 220.7  | 228.1  | 236.7  | 243.1  | 252.5  | 271.5   | 290.6   |
|                | "L" (in) | (7.82) | (7.94) | (8.07) | (8.25) | (8.44) | (8.58) | (8.69) | (8.98) | (9.32) | (9.57) | (9.94) | (10.69) | (11.44) |

Code: CS

Rear Mounting/Thru Bolting, 7/8-14 SAE O-Ring



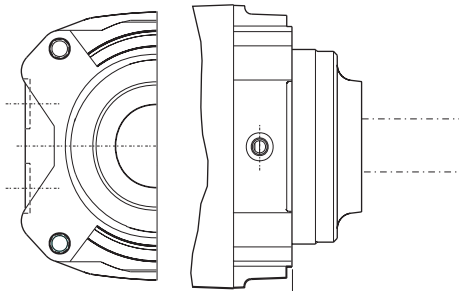
| Code CS        |          | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 27.3   | 27.5   | 27.8   | 28.1   | 28.5   | 28.7   | 28.9   | 29.5   | 30.2   | 30.9   | 31.7   | 33.2    | 34.9    |
| Poids/Peso     | (lb)     | (60.2) | (60.8) | (61.3) | (62.1) | (63.0) | (63.5) | (63.9) | (65.2) | (66.7) | (68.3) | (69.9) | (73.3)  | (77.1)  |
| Length         | "L" mm   | 198.6  | 201.7  | 205.0  | 209.6  | 214.4  | 217.9  | 220.7  | 228.1  | 236.7  | 243.1  | 252.5  | 271.5   | 290.6   |
|                | "L" (in) | (7.82) | (7.94) | (8.07) | (8.25) | (8.44) | (8.58) | (8.69) | (8.98) | (9.32) | (9.57) | (9.94) | (10.69) | (11.44) |

English equivalents for metric specifications are shown in ( ).



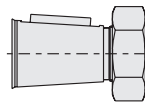
WARNING

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



Code: 31

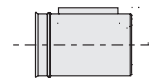
1 1/2" J501 Taper



130.0  
(5.12)

Code: 32

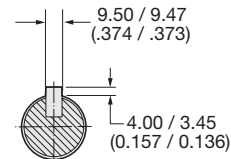
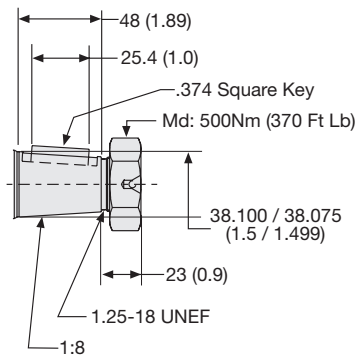
1 1/2" Keyed



116.4  
(4.58)

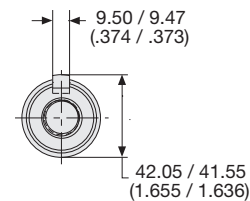
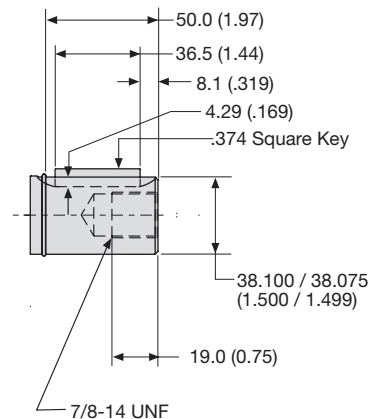
Code: 31

1 1/2" J501 Taper



Code: 32

1 1/2" Keyed



English equivalents for metric specifications are shown in ( ).

015 BH Brake.indd, b



**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

# Standard Options

# LSHT Torqmotors™ and Nichols™ Motors Medium Duty Motors

HY13-1590-011/US,EU

| TF/DF              | Availability    |                    |                    |                    |    | Code    |           | Description  |
|--------------------|-----------------|--------------------|--------------------|--------------------|----|---------|-----------|--|
|                    | Clutch          | TG/DG              | TH                 | BG/BH              | TL | Painted | Unpainted |  |
| x                  | x               | x                  | x                  | x                  | x  | AAAA    | AAAB      | Black Paint  |
| x                  | x               | x                  | x                  | x                  | x  | AAAC    | -         | Double Paint   |
| x <sup>9</sup>     | x               | x <sup>15</sup>    | x <sup>15</sup>    | x <sup>15</sup>    | x  | AAAF    | AABP      | Castle Nut   |
| x                  | x               | x                  | x                  | x                  | x  | AAAG    | AAAH      | Fluorocarbon Seals   |
| x                  | x               | x                  | x                  | x                  | x  | AAAJ    | AAFG      | High Temperature Commutator Seal   |
| x                  | x               | x                  | x                  | x                  |    | AABJ    | AABK      | Free Running Rotorset  |
| x <sup>10</sup>    |                 | x <sup>10</sup>    | x <sup>10</sup>    | x                  |    | AAAT    | AAFX      | Hot Oil Shuttle (11:00)  |
| x                  |                 | x                  |                    |                    |    | AANM    | -         | Seal saver for 1.25 taper shaft only   |
| x                  |                 |                    |                    | x                  |    | AANB    | -         | 678 Nm (6000 in-lb) Holding Capacity   |
|                    |                 |                    |                    | x                  |    | AAMN    | AANH      | 1808 Nm (16000 in-lb) Holding Capacity   |
| x <sup>9,10</sup>  |                 | x <sup>10,15</sup> | x <sup>10,15</sup> | x                  | x  | AAAU    | AAGF      | Bi-directional Shuttle (11:00*), Castle Nut  |
| x                  |                 | x                  | x                  | x                  | x  | AAAW    | -         | Bi-directional Shuttle (11:00*), High Temperature Commutator Seal                    |
| x                  | x               | x                  | x                  | x                  |    | AABL    | AABM      | Free Running Rotor Set & No Commutator Seal  |
| x                  | x               | x                  | x                  | x                  |    | AABT    | -         | No Nut   |
| x                  |                 | x                  | x                  | x                  | x  | AACP    | -         | Free Running Rotor Set, Castle Nut   |
| x                  | x               | x                  | x                  | x                  | x  | -       | AADJ      | High Temperature Commutator Seal, Castle Nut   |
| x                  | x               | x                  |                    | x                  | x  | AAFW    | AAFA      | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal                         |
| x                  | x               | x                  | x                  | x                  | x  | -       | AAFX      | Bidirectional shuttle (11:00*)   |
| x                  |                 | x                  | x                  | x                  | x  | AAHU    | -         | High Temperature Commutator Seal, No Nut   |
| x                  |                 | x                  | x                  | x                  | x  | -       | AAJL      | No Nut   |
| x                  |                 | x                  | x                  | x                  | x  | AALD    | -         | Bidirectional shuttle (1:00*), Castle Nut  |
| x                  |                 | x                  | x                  | x                  | x  | AALE    | -         | Bidirectional shuttle (1:00*)  |
| x                  |                 | x                  | x                  | x                  |    | AALF    | -         | No Commutator Seal   |
| x                  |                 | x                  | x                  | x                  |    | -       | AALP      | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal |
|                    |                 |                    |                    | x                  |    | AAML    | -         | (IBM) Bidirectional shuttle (11:00*), Castle Nut, 6 Brake Springs Installed          |
|                    |                 |                    |                    | x                  |    | AAMM    | -         | (IBM) Castle Nut, 6 brake springs installed, (9000 in-lbs hold cap)                  |
|                    |                 |                    |                    | x                  |    | AAMN    | -         | (IBM) 'Yellow' brake springs (8), (16,000 in-lbs hold cap)                           |
|                    |                 |                    |                    | x                  |    | AAMP    | -         | (IBM) 'Yellow' brake springs (8), (16,000 in-lbs hold cap), Castle Nut               |
| x <sup>10</sup>    | x               | x <sup>10</sup>    | x <sup>10</sup>    | x <sup>10</sup>    | x  | BBBA    | BBBM      | 69 Bar (1000 PSI) Internal Bidirectional Relief                                      |
| x <sup>10</sup>    | x               | x <sup>10</sup>    | x <sup>10</sup>    | x <sup>10</sup>    | x  | BBBG    | BBBJ      | 103 Bar (1500 PSI) Internal Bidirectional Relief                                     |
| x <sup>10</sup>    | x               | x <sup>10,16</sup> | x <sup>10,16</sup> | x <sup>10,16</sup> | x  | BBBB    | BBBN      | 138 Bar (2000 PSI) Internal Bidirectional Relief                                     |
| x <sup>10,12</sup> | x <sup>14</sup> | x <sup>10,18</sup> | x <sup>10,18</sup> | x <sup>10,18</sup> | x  | BBBC    | BBBF      | 207 Bar (3000 PSI) Internal Bidirectional Relief                                     |
| x <sup>10,13</sup> | x <sup>13</sup> | x <sup>10,19</sup> | x <sup>10,19</sup> | x <sup>10,19</sup> |    | BBBD    | BBBW      | 276 Bar (4000 PSI) Internal Bidirectional Relief                                     |
| x <sup>10,11</sup> | x <sup>14</sup> | x <sup>10,17</sup> | x <sup>10,17</sup> | x <sup>10,17</sup> | x  | BBDL    | BBCG      | 2500 PSI Int Bidirectional Relief  |
| x                  |                 | x                  | x                  | x                  | x  | -       | BBCW      | 3000 PSI Int Bidirectional Relief, No Nut  |
| x                  |                 | x                  | x                  | x                  | x  | BBCX    | -         | 2500 PSI Int Bidirectional Relief, No Nut  |
| x                  |                 | x                  | x                  | x                  | x  | -       | BBDA      | 3000 PSI Int Bidirectional Relief, Castle Nut  |
| x                  |                 | x                  | x                  | x                  | x  | -       | BBDH      | 2500 PSI Int Bidirectional Relief, Castle Nut  |
| x <sup>10</sup>    | x               | x                  | x                  | x                  | x  | BBDN    | -         | 1750 PSI Int Bidirectional Relief  |
| x                  | x               | x                  | x                  | x                  | x  | -       | BBDP      | 725 PSI Int Bidirectional Relief   |
| x                  |                 | x                  | x                  | x                  |    | BBDW    | -         | 725 PSI CCW Int Bidirectional Relief (045134)  |
| x                  |                 | x                  |                    |                    |    | FSAA    | FSAB      | Speed Sensor   |
| x                  |                 | x                  |                    |                    |    | FSAJ    | FSAH      | Int Short Speed Sensor, Castle Nut   |
| x                  |                 | x                  | x                  |                    |    | -       | AAUY      | Complete Motor Nickel Plated, 40 um, Except Shaft                                    |

Consult factory for other positions and combinations.

<sup>9</sup> Available only with shaft code 08

<sup>10</sup> Not available with ports code A, B or E

<sup>11</sup> Not available with displacement 0475

<sup>12</sup> Not available with displacements 0360, 0405 or 0475

<sup>13</sup> Only available with displacement 0080

<sup>14</sup> Not available with displacements 0365

<sup>15</sup> Available only with shaft codes 08 and 19

<sup>16</sup> Not available with displacement 0960

<sup>17</sup> Not available with displacements 0625, 0785 or 0960

<sup>18</sup> Not available with displacements 0530, 0625, 0785 or 0960

<sup>19</sup> Not available with displacements 0360, 0405, 0530, 0625, 0785 or 0960



**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: AAAC**

**Double Paint** — Base coat of red oxide primer and finish coat of black paint for increased corrosion resistance.

**Code: AAAF\* or AABP**

**Castle Nut** — All motors ordered with Tapered shafts are equipped with patch locking nuts. If desired, a castle nut may be specified.

**Code: AAAJ\* or AAFG**

**High Temperature Commutator Seal** — Under conditions of high temperature, it is suggested that a high temperature commutator seal be used.

**Code: AAAG\* or AAAH**

**Fluorocarbon** — is available under various registered trademarks, including VITON™ (a registered trademark of DuPont), FLUOREL™ (a registered trademark of 3M) or FPM™ (a registered trademark of DuPont).

**Code: AABJ\* or AABK**

**Free Running Rotorset** — The “free running rotorset” is a specially dimensioned rotorset that allows for smoother operation at low flows and low pressure. Volumetric efficiency can be affected.

**Code: AANM\***

**Seal Saver** — Seal saver is a metal disc that presses onto the motor shaft, covering the dirt and water (D&W) seal. It's purpose is to aid in preventing external contamination from damaging the D&W seal.

\* Option code shown is with a single black coat of paint.

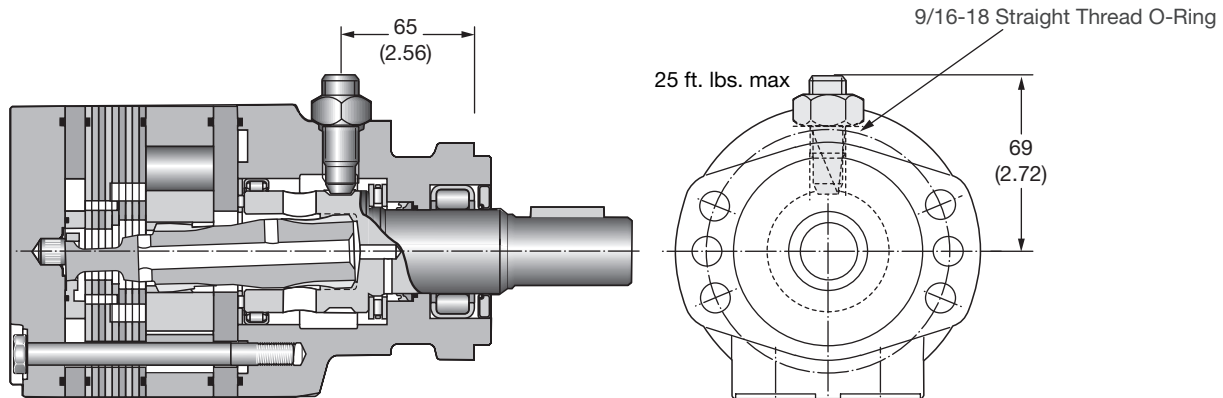
**WARNING**

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Code: FSAA\* or FSAB

### An Economical Sensor for Speed Readout

This rugged, weather resistant design is ideal for industrial and mobile applications. Applications include salt/sand/fertilizer spreader drives, conveyer drives and injection molder compression drives. The sensor is a hall-effect type, which when externally powered outputs 30 square wave digital pulses per coupling shaft revolution. The connector is a user friendly universally available 4 pin polarized M12 connector allowing for simplified field service. The integrated design does not effect the side load capacity or performance of the torque motor.



English equivalents for metric specifications are shown in ( ).

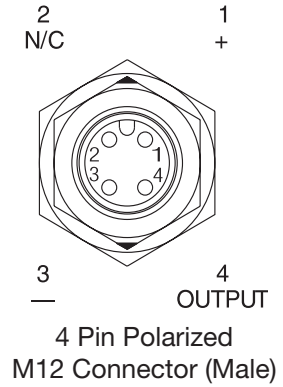
016 Medium Duty Options.indd, a



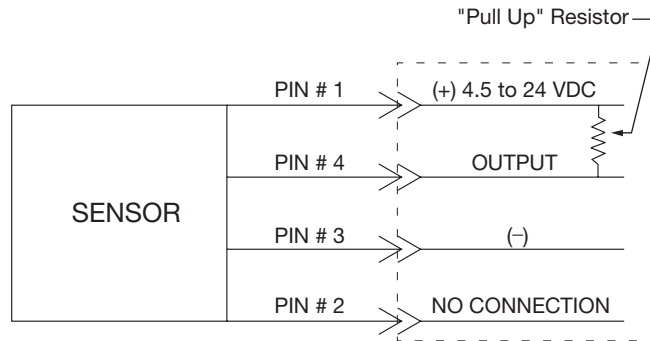
**WARNING**

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|                                  |  |
|----------------------------------|--|
| <b>Operating voltage range</b>   | 4.5...24 VDC   |
| <b>Operating temperature</b>     | -20° to 220° F<br>-29°...104° C                              |
| <b>Operating frequency range</b> | 0...10 KHZ   |
| <b>Max sink current</b>          | 0 ... 20 mA (max.)   |
| <b>Connection</b>                | 4 Pin Polarized (12mm)                                       |
| <b>Sensor output</b>             | 30 Pulses per revolution which can be doubled electronically |
| <b>Output is NPN</b>             | Open Collector   |



Cable and "Pull Up" Resistor are *not* supplied by factory.

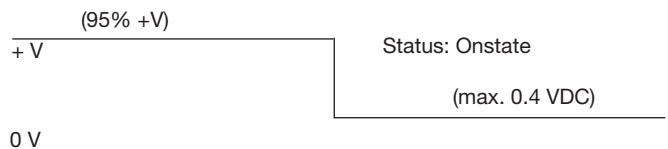


**Pull-up Resistor Value Formula**

$$\text{Resistor (k Ohm)} = \frac{\text{Voltage (4.5...24 VDC)}}{\text{Sink Current (0...20 mA)}}$$

(0.25 Watt, Tol. 5%)  
"Pull-up"

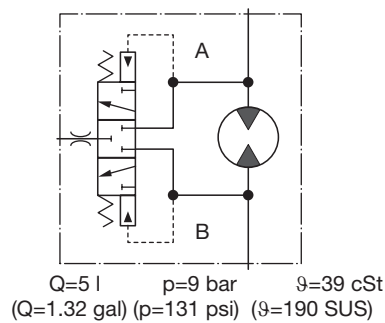
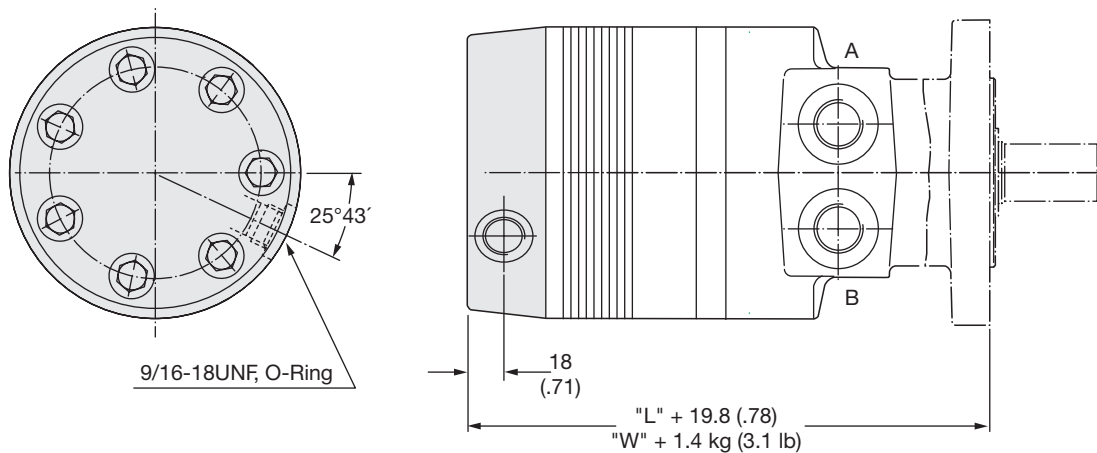
Status: Offstate





**Code: AAFX or AAAT\***

A Hot Oil Shuttle is used to continuously remove a portion of the fluid in a closed loop transmission or other closed loop system. At 125 PSI pressure differential between the motor return port and the shuttle outlet, 1.5 GPM\* will exit the circuit to cool, filter and return to the reservoir. The constant loop replenishment helps to keep heat and contamination from building up in the circuit. This option is not available with rear ports or integral cross over relief.



Standard Length & Weights for TF Series on Pages 131-136, TG Series on Pages 185-189 and TH Series on Pages 227-228.

English equivalents for metric specifications are shown in ( ).

016 Medium Duty Options.indd, a

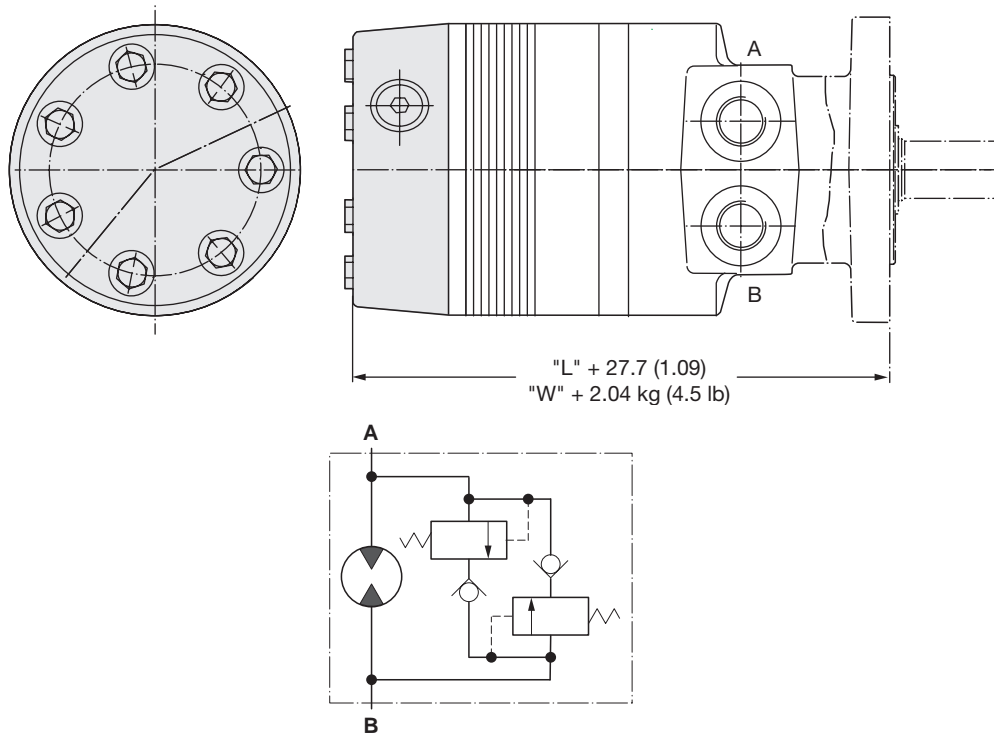


This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

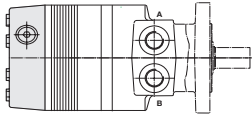
**Code: BBBA\*, BBBB\*, BBBC\*, BBBD\* or BBBG\***

This integrated internal relief valve is used for fixed pressure settings.

Internes Schockventil



Ordering system

| Option |  | Pressure<br>bar (psi) |
|--------|--|-----------------------|
| BBBA   | <br><b>Opening pressure</b> | 69 (1000)             |
| BBBB   |  | 138 (2000)            |
| BBBC   |  | 207 (3000)            |
| BBBD   |  | 276 (4000)            |
| BBBG   |  | 103 (1500)            |

Standard Length & Weights for TF Series on Pages 131-136, TG Series on Pages 185-189 and TH Series on Pages 227-228.

English equivalents for metric specifications are shown in ( ).

016 Medium Duty Options.indd, a



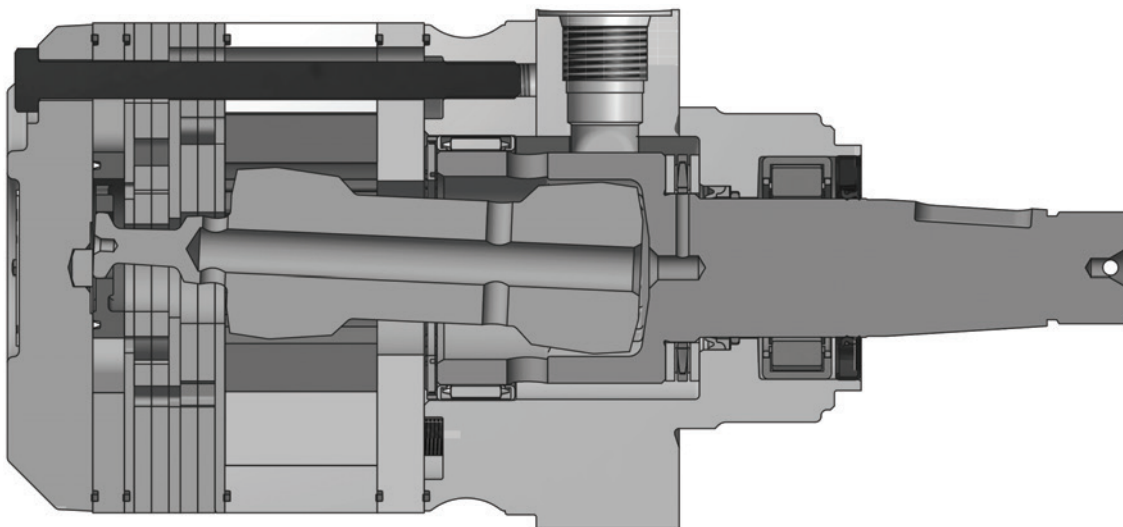
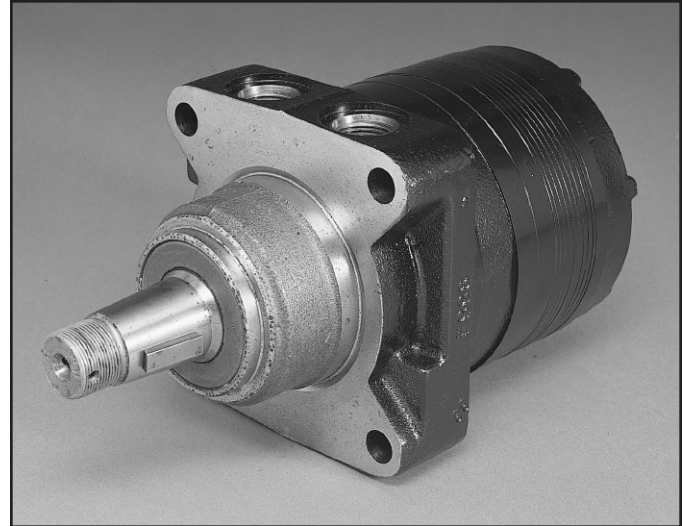
**WARNING**

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|                                 |   |  |
|---------------------------------|---|--|
| <b>15 Displacements</b>         | (6.9 to 58.5 in <sup>3</sup> /rev)<br><b>110 . . . 959 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3500 psid)<br>. . . <b>241 bar</b>                           | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . <b>114 lpm</b>  |  |
| <b>Maximum Speed</b>            | (660 rpm)<br><b>660 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(14,624 lb in)<br><b>1652 Nm</b>                              | <b>Int.</b><br>(17,948 lb in)<br><b>2028 Nm</b>    |
| <b>Maximum Side Load at Key</b> | (3597 lb)<br>. . . <b>16000 N</b>   |  |

### High Power Density in a Compact Design

The TGK motor is a compact motor with the performance of much larger motors. Up to 45 HP in less than 6 inches of length. This high power density allows for higher HP applications in a small space, reducing machine weight as well. Its unique drive train design is based on proven Torqmotor™ technology, assuring unmatched durability.



**TGK**

Series

**XXXX**

Displacement

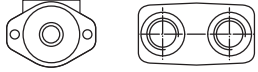
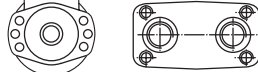
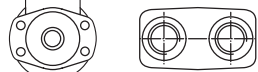


**XX**








Mounting/Ports

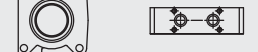

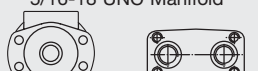
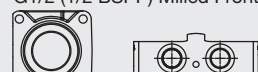
**XX**



Shaft

| Code | cm <sup>3</sup> /tr | cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|---------------------|-----------------------|----------------------|
|      | cm <sup>3</sup> /U  |                       |                      |
| 0110 | 110                 | 6.9                   |                      |
| 0140 | 141                 | 8.6                   |                      |
| 0170 | 169                 | 10.3                  |                      |
| 0195 | 195                 | 11.9                  |                      |
| 0240 | 238                 | 14.5                  |                      |
| 0280 | 280                 | 17.1                  |                      |
| 0310 | 310                 | 18.9                  |                      |
| 0335 | 337                 | 20.6                  |                      |
| 0360 | 360                 | 22.2                  |                      |
| 0405 | 405                 | 24.7                  |                      |
| 0475 | 477                 | 29.1                  |                      |
| 0530 | 528                 | 32.3                  |                      |
| 0625 | 623                 | 38.0                  |                      |
| 0785 | 786                 | 48.0                  |                      |
| 0960 | 959                 | 58.5                  |                      |

| Code | Mounting/Ports  |
|------|---|
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE<br>   |
| EM   | Modified SAE "A"<br>(6 Hole) with Long Pilot<br>5/16-18 UNC Manifold<br>                       |
| MS   | Magneto, 7/8-14 SAE<br>  |
| TS   | Wheel Mount W/ Brake<br>Mount Nose, No Tapped Holes In<br>Nose, 7/8 O-ring (SAE #10) Front<br> |
| US   | Wheel, Standard, 7/8-14 SAE<br>  |

| Code | Shaft   |
|------|---|
| 05   | 1 1/4" 14 Tooth Spline<br>               |
| 08   | 1 1/4" Tapered<br>                       |
| 20   | 1.38" Straight<br>Keyed, 5/8 Tap<br>     |
| 39   | 4 Tooth, Groove, 5/8 Tap<br>             |
| 44   | 14 T. Spline (12/24 P.),<br>12mm Tap<br> |
| 62*  | 1 1/4" 14 Tooth<br>Spline SAE<br>        |
| 1L   | 1.50" Straight Keyed,<br>No Tap<br>    |

| Code | Mounting/Ports  |
|------|---|
| HK   | Wheel Mount w/Machined<br>Pilot Nose, Manifold M6, Front<br>                                     |
| MB   | Standard Mount "A", 4-Bolt,<br>Rear Port, 7/8 O-ring<br>(SAE #10) Rear Radial<br>                |
| MM   | Magneto<br>5/16-18 UNC Manifold<br>  |
| TW   | Wheel Mount W/ Brake Mount<br>Nose, No Tapped Holes In Nose,<br>G1/2 (1/2 BSPP) Milled Front<br> |

| Code | Shaft  |
|------|--|
| 03   | 1 1/4" Keyed<br>      |
| 19   | 1 3/8" J501 Taper<br> |



\* Conforms to SAE recommended length



0

Rotation

XXXX

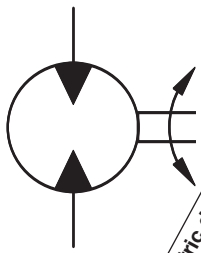
Options

| Code | Rotation   |
|------|--|
| 0    | Standard<br>B ↓ ↑ A<br>                     |
| 1    | Reverse<br>Timed<br>Manifold<br>B ↑ ↓ A<br> |

| Code | Rear Rotation   |
|------|---|
| 0    | Standard<br>                      |
| 1    | Reverse<br>Timed<br>Manifold<br> |

Rotation viewed from shaft end.

| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGZ | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 4061 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| FSEK | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| FSEN | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), No Paint, No Shaft Hardware   |



Geometric displacement

Max. speed @ Max. intermittent flow

Max. oil flow

Max. Differential Pressure

Max. supply pressure

Max. torque

Max. performance

Min. starting torque

| Motor Series<br>TGK | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont           |             | int         |             | max<br>bar<br>psid | cont        |             | int         |       | max<br>KW<br>HP | cont |      | int |  |
|---------------------|--|---------|----------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------------|-------|-----------------|------|------|-----|--|
|                     |  |         | l/min<br>g/min | bar<br>psid | bar<br>psid | Nm<br>lb-in |                    | Nm<br>lb-in | Nm<br>lb-in | Nm<br>lb-in |       |                 |      |      |     |  |
| 0110                | 110<br>6.9                                   | 672     | 76             | 95          | 241         | 276         | 300                | 373         | 426         | 24          | 279   | 318             | 279  | 318  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 3299        | 3767        | 32          | 2464  | 2814            |      |      |     |  |
| 0140                | 141<br>8.6                                   | 660     | 76             | 95          | 241         | 276         | 300                | 474         | 530         | 30          | 354   | 418             | 354  | 418  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 4199        | 4794        | 40          | 3137  | 3706            |      |      |     |  |
| 0170                | 169<br>10.3                                  | 554     | 76             | 95          | 241         | 276         | 300                | 578         | 646         | 32          | 432   | 505             | 432  | 505  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 5114        | 5838        | 43          | 3820  | 4392            |      |      |     |  |
| 0195                | 195<br>11.9                                  | 477     | 76             | 95          | 241         | 276         | 300                | 671         | 753         | 31          | 501   | 562             | 501  | 562  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 5936        | 6776        | 41          | 4434  | 5062            |      |      |     |  |
| 0240                | 238<br>14.5                                  | 393     | 76             | 95          | 241         | 276         | 300                | 794         | 913         | 30          | 593   | 678             | 593  | 678  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 7027        | 8031        | 40          | 5250  | 6000            |      |      |     |  |
| 0280                | 280<br>17.1                                  | 334     | 76             | 95          | 241         | 276         | 300                | 936         | 1073        | 29          | 699   | 799             | 699  | 799  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 8286        | 9470        | 39          | 6191  | 7075            |      |      |     |  |
| 0310                | 310<br>18.9                                  | 303     | 76             | 95          | 241         | 276         | 300                | 1037        | 1229        | 29          | 773   | 883             | 773  | 883  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 9175        | 10465       | 39          | 6841  | 7819            |      |      |     |  |
| 0335                | 337<br>20.6                                  | 277     | 76             | 95          | 241         | 276         | 300                | 1128        | 1297        | 28          | 843   | 963             | 843  | 963  |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 9981        | 11834       | 37          | 7457  | 8522            |      |      |     |  |
| 0360                | 360<br>22.2                                  | 263     | 76             | 95          | 241         | 276         | 300                | 1205        | 1377        | 28          | 900   | 1029            | 900  | 1029 |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 10665       | 12189       | 37          | 7968  | 9107            |      |      |     |  |
| 0405                | 405<br>24.7                                  | 232     | 76             | 95          | 241         | 276         | 300                | 1353        | 1546        | 29          | 1011  | 1155            | 1011 | 1155 |     |  |
|                     |  |         | 20             | 25          | 3500        | 4000        | 4350               | 11971       | 13681       | 39          | 8944  | 10222           |      |      |     |  |
| 0475                | 477<br>29.1                                  | 237     | 76             | 114         | 241         | 276         | 300                | 1593        | 1821        | 37          | 1190  | 1360            | 1190 | 1360 |     |  |
|                     |  |         | 20             | 30          | 3500        | 4000        | 4350               | 14101       | 16115       | 49          | 10535 | 12040           |      |      |     |  |
| 0530                | 528<br>32.3                                  | 231     | 76             | 114         | 224         | 259         | 300                | 1643        | 1895        | 32          | 1227  | 1416            | 1227 | 1416 |     |  |
|                     |  |         | 20             | 30          | 3250        | 3750        | 4350               | 14537       | 16774       | 43          | 10861 | 12532           |      |      |     |  |
| 0625                | 623<br>38.0                                  | 182     | 76             | 114         | 190         | 224         | 300                | 1635        | 1932        | 28          | 1221  | 1443            | 1221 | 1443 |     |  |
|                     |  |         | 20             | 30          | 2750        | 3250        | 4350               | 14469       | 17100       | 38          | 10810 | 12776           |      |      |     |  |
| 0785                | 786<br>48.0                                  | 143     | 76             | 114         | 152         | 186         | 300                | 1652        | 2028        | 22          | 1234  | 1515            | 1234 | 1515 |     |  |
|                     |  |         | 20             | 30          | 2200        | 2700        | 4350               | 14624       | 17948       | 30          | 10926 | 13409           |      |      |     |  |
| 0960                | 959<br>58.5                                  | 118     | 76             | 114         | 124         | 159         | 300                | 1647        | 2105        | 19          | 1231  | 1504            | 1231 | 1504 |     |  |
|                     |  |         | 20             | 30          | 1800        | 2300        | 4350               | 14580       | 18630       | 26          | 10893 | 13314           |      |      |     |  |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.



TGK 0110

110 cm³ / rev (6.9 in³ / rev)

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 408<br>11  | 834<br>5   |             |             |             |             |             |             |
| <b>1</b>  | 424<br>28  | 856<br>22  | 1285<br>14  | 1713<br>8   |             |             |             |             |
| <b>2</b>  | 447<br>62  | 908<br>55  | 1359<br>46  | 1796<br>38  | 2221<br>29  | 2646<br>24  | 3063<br>15  | 3494<br>15  |
| <b>3</b>  | 444<br>95  | 911<br>88  | 1370<br>79  | 1824<br>70  | 2278<br>60  | 2732<br>51  | 3181<br>42  | 3621<br>37  |
| <b>4</b>  | 443<br>130 | 919<br>120 | 1389<br>111 | 1853<br>102 | 2312<br>92  | 2763<br>81  | 3207<br>73  | 3649<br>66  |
| <b>5</b>  | 437<br>163 | 919<br>153 | 1395<br>143 | 1866<br>134 | 2332<br>123 | 2794<br>113 | 3249<br>103 | 3694<br>97  |
| <b>7</b>  | 424<br>232 | 911<br>219 | 1398<br>209 | 1878<br>197 | 2352<br>186 | 2822<br>176 | 3285<br>165 | 3742<br>157 |
| <b>9</b>  | 405<br>299 | 898<br>286 | 1389<br>274 | 1874<br>262 | 2354<br>249 | 2829<br>238 | 3299<br>228 | 3767<br>218 |
| <b>12</b> | 370<br>401 | 861<br>386 | 1358<br>372 | 1851<br>358 | 2337<br>345 | 2818<br>332 | 3294<br>321 | 3767<br>309 |
| <b>15</b> | 328<br>503 | 819<br>485 | 1314<br>468 | 1813<br>454 | 2304<br>440 | 2788<br>428 | 3270<br>414 | 3749<br>400 |
| <b>20</b> | 380<br>672 | 731<br>636 | 1230<br>633 | 1727<br>616 | 2220<br>601 | 2715<br>584 | 3204<br>569 | 3687<br>554 |

Flow (GPM)

TORQUE (LB IN) 2715  
SPEED (RPM) 584

TGK 0140

141 cm³ / rev (8.6 in³ / rev)

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 519<br>9   | 1060<br>4   |             |             |             |             |             |             |
| <b>1</b>  | 540<br>22  | 1090<br>17  | 1635<br>11  | 2180<br>6   |             |             |             |             |
| <b>2</b>  | 569<br>49  | 1156<br>43  | 1730<br>36  | 2286<br>30  | 2827<br>23  | 3368<br>19  | 3899<br>12  | 4447<br>12  |
| <b>3</b>  | 565<br>75  | 1159<br>69  | 1744<br>62  | 2321<br>55  | 2899<br>47  | 3477<br>40  | 4048<br>33  | 4608<br>29  |
| <b>4</b>  | 564<br>102 | 1170<br>94  | 1768<br>87  | 2358<br>80  | 2943<br>72  | 3517<br>64  | 4082<br>57  | 4644<br>52  |
| <b>5</b>  | 556<br>128 | 1170<br>120 | 1776<br>112 | 2375<br>105 | 2968<br>97  | 3556<br>89  | 4135<br>81  | 4701<br>76  |
| <b>7</b>  | 540<br>182 | 1160<br>172 | 1779<br>164 | 2390<br>155 | 2994<br>146 | 3592<br>138 | 4181<br>130 | 4763<br>123 |
| <b>9</b>  | 515<br>235 | 1143<br>225 | 1768<br>215 | 2385<br>206 | 2996<br>196 | 3601<br>187 | 4199<br>179 | 4794<br>171 |
| <b>12</b> | 471<br>315 | 1096<br>303 | 1729<br>292 | 2356<br>281 | 2974<br>271 | 3587<br>261 | 4193<br>252 | 4794<br>243 |
| <b>15</b> | 418<br>395 | 1042<br>381 | 1673<br>368 | 2307<br>357 | 2933<br>346 | 3549<br>336 | 4163<br>325 | 4771<br>314 |
| <b>20</b> | 299<br>528 | 931<br>512  | 1565<br>497 | 2198<br>484 | 2825<br>472 | 3455<br>459 | 4078<br>447 | 4692<br>435 |
| <b>25</b> | 173<br>660 | 794<br>643  | 1426<br>626 | 2059<br>612 | 2695<br>598 | 3332<br>583 | 3961<br>569 | 4579<br>555 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



WARNING  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov

**TGK 0170**

**169 cm³ / rev (10.3 in³ / rev)**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 620<br>9        | 1284<br>7   | 1945<br>5   | 2613<br>4   | 3293<br>3   | 3983<br>2   |             |             |
| <b>1</b>  | 652<br>20       | 1337<br>18  | 2006<br>16  | 2683<br>14  | 3375<br>12  | 4063<br>11  | 4744<br>8   | 5402<br>8   |
| <b>2</b>  | 678<br>42       | 1390<br>40  | 2105<br>37  | 2822<br>35  | 3535<br>32  | 4226<br>30  | 4909<br>27  | 5587<br>25  |
| <b>3</b>  | 678<br>64       | 1397<br>61  | 2117<br>58  | 2836<br>56  | 3554<br>53  | 4263<br>50  | 4963<br>46  | 5652<br>44  |
| <b>4</b>  | 679<br>86       | 1409<br>83  | 2142<br>80  | 2872<br>77  | 3596<br>74  | 4310<br>71  | 5021<br>67  | 5716<br>64  |
| <b>5</b>  | 675<br>108      | 1413<br>104 | 2150<br>101 | 2885<br>98  | 3616<br>94  | 4339<br>91  | 5057<br>87  | 5761<br>83  |
| <b>7</b>  | 661<br>153      | 1405<br>148 | 2152<br>143 | 2900<br>140 | 3642<br>136 | 4374<br>132 | 5101<br>127 | 5818<br>123 |
| <b>9</b>  | 632<br>197      | 1385<br>191 | 2140<br>186 | 2891<br>181 | 3638<br>177 | 4380<br>173 | 5114<br>168 | 5838<br>163 |
| <b>12</b> | 583<br>263      | 1334<br>256 | 2096<br>250 | 2860<br>244 | 3617<br>239 | 4362<br>234 | 5101<br>228 | 5823<br>223 |
| <b>15</b> | 524<br>330      | 1275<br>322 | 2035<br>314 | 2804<br>308 | 3572<br>302 | 4327<br>296 | 5070<br>289 | 5801<br>283 |
| <b>20</b> | 382<br>442      | 1143<br>432 | 1908<br>422 | 2683<br>413 | 3455<br>406 | 4216<br>399 | 4972<br>391 | 5714<br>383 |
| <b>25</b> | 239<br>554      | 983<br>543  | 1747<br>531 | 2523<br>520 | 3299<br>511 | 4071<br>501 | 4839<br>492 | 5591<br>483 |

Flow (GPM)

TORQUE (LB IN) 4839  
 SPEED (RPM) 492

**TGK 0195**

**195 cm³ / rev (11.9 in³ / rev)**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 733<br>7        | 1503<br>3   |             |             |             |             |             |             |
| <b>1</b>  | 761<br>16       | 1546<br>13  | 2326<br>8   | 3104<br>3   |             |             |             |             |
| <b>2</b>  | 799<br>35       | 1638<br>32  | 2465<br>27  | 3270<br>21  | 4046<br>16  | 4813<br>11  | 5589<br>7   | 6375<br>6   |
| <b>3</b>  | 794<br>55       | 1639<br>50  | 2476<br>45  | 3303<br>39  | 4132<br>34  | 4970<br>28  | 5792<br>23  | 6595<br>19  |
| <b>4</b>  | 794<br>74       | 1654<br>69  | 2509<br>64  | 3356<br>58  | 4196<br>52  | 5023<br>46  | 5830<br>40  | 6635<br>35  |
| <b>5</b>  | 783<br>93       | 1653<br>88  | 2517<br>83  | 3375<br>76  | 4224<br>70  | 5065<br>64  | 5895<br>58  | 6710<br>52  |
| <b>7</b>  | 762<br>131      | 1637<br>126 | 2514<br>120 | 3384<br>113 | 4245<br>106 | 5098<br>99  | 5940<br>92  | 6772<br>86  |
| <b>9</b>  | 731<br>170      | 1616<br>164 | 2499<br>157 | 3373<br>150 | 4239<br>142 | 5093<br>135 | 5936<br>127 | 6774<br>120 |
| <b>12</b> | 677<br>228      | 1562<br>221 | 2455<br>213 | 3343<br>205 | 4217<br>196 | 5081<br>188 | 5934<br>179 | 6776<br>172 |
| <b>15</b> | 613<br>285      | 1498<br>278 | 2389<br>269 | 3283<br>260 | 4169<br>251 | 5040<br>242 | 5907<br>232 | 6765<br>233 |
| <b>20</b> | 448<br>381      | 1350<br>373 | 2245<br>363 | 3141<br>353 | 4031<br>342 | 4919<br>331 | 5798<br>321 | 6663<br>310 |
| <b>25</b> | 334<br>477      | 1158<br>468 | 2044<br>457 | 2941<br>445 | 3837<br>433 | 4729<br>421 | 5612<br>409 | 6500<br>397 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





TGK 0240

238 cm³ / rev (14.5 in³ / rev)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 932<br>6   | 1907<br>4   | 2894<br>2   |             |             |             |             |             |
| <b>.5</b> |            |             |             |             |             |             |             |             |
| <b>1</b>  | 960<br>14  | 1954<br>12  | 2950<br>9   | 3943<br>6   | 4939<br>3   | 5930<br>2   |             |             |
| <b>2</b>  | 988<br>30  | 2031<br>27  | 3065<br>24  | 4090<br>20  | 5107<br>17  | 6100<br>14  | 7068<br>11  | 8037<br>9   |
| <b>3</b>  | 983<br>45  | 2029<br>42  | 3071<br>39  | 4101<br>35  | 5128<br>31  | 6161<br>27  | 7182<br>23  | 8184<br>20  |
| <b>4</b>  | 978<br>61  | 2037<br>58  | 3090<br>54  | 4136<br>49  | 5176<br>45  | 6207<br>42  | 7230<br>37  | 8234<br>33  |
| <b>5</b>  | 962<br>77  | 2030<br>73  | 3092<br>69  | 4144<br>64  | 5190<br>60  | 6231<br>56  | 7259<br>51  | 8271<br>47  |
| <b>7</b>  | 933<br>108 | 2005<br>104 | 3078<br>99  | 4141<br>94  | 5194<br>89  | 6239<br>84  | 7275<br>78  | 8298<br>73  |
| <b>9</b>  | 890<br>140 | 1972<br>135 | 3048<br>129 | 4112<br>123 | 5169<br>117 | 6213<br>112 | 7245<br>106 | 8271<br>100 |
| <b>12</b> | 832<br>187 | 1912<br>181 | 2996<br>175 | 4071<br>167 | 5125<br>161 | 6163<br>154 | 7195<br>147 | 8224<br>140 |
| <b>15</b> | 753<br>235 | 1832<br>228 | 2921<br>220 | 4009<br>212 | 5081<br>204 | 6137<br>196 | 7182<br>188 | 8212<br>180 |
| <b>20</b> | 559<br>314 | 1654<br>306 | 2744<br>297 | 3834<br>287 | 4917<br>278 | 5991<br>268 | 7045<br>258 | 8081<br>248 |
| <b>25</b> | 524<br>393 | 1427<br>384 | 2507<br>373 | 3595<br>363 | 4690<br>352 | 5780<br>340 | 6853<br>328 | 7913<br>317 |

Flow (GPM)

TORQUE (LB IN) 5780  
SPEED (RPM) 340

TGK 0280

280 cm³ / rev (17.1 in³ / rev)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 1056<br>5   | 2177<br>4   | 3323<br>2   | 4512<br>1   |             |             |             |             |
| <b>.5</b> |             |             |             |             |             |             |             |             |
| <b>1</b>  | 1087<br>12  | 2223<br>10  | 3378<br>8   | 4552<br>6   | 5734<br>5   | 6930<br>3   | 8135<br>3   | 9350<br>2   |
| <b>2</b>  | 1124<br>25  | 2313<br>23  | 3513<br>21  | 4700<br>18  | 5880<br>16  | 7060<br>14  | 8239<br>12  | 9400<br>11  |
| <b>3</b>  | 1124<br>39  | 2323<br>36  | 3532<br>34  | 4740<br>31  | 5940<br>28  | 7143<br>25  | 8346<br>22  | 9536<br>19  |
| <b>4</b>  | 1126<br>52  | 2346<br>49  | 3568<br>47  | 4786<br>43  | 6004<br>40  | 7214<br>37  | 8415<br>33  | 9596<br>30  |
| <b>5</b>  | 1115<br>65  | 2350<br>62  | 3582<br>59  | 4816<br>56  | 6044<br>52  | 7256<br>49  | 8457<br>45  | 9641<br>41  |
| <b>7</b>  | 1091<br>92  | 2338<br>88  | 3586<br>85  | 4832<br>80  | 6072<br>76  | 7301<br>72  | 8515<br>67  | 9706<br>63  |
| <b>9</b>  | 1046<br>118 | 2309<br>114 | 3564<br>110 | 4811<br>105 | 6051<br>101 | 7280<br>96  | 8499<br>90  | 9707<br>85  |
| <b>12</b> | 981<br>159  | 2242<br>154 | 3506<br>148 | 4757<br>143 | 5992<br>137 | 7221<br>132 | 8444<br>125 | 9652<br>118 |
| <b>15</b> | 898<br>199  | 2164<br>193 | 3437<br>186 | 4702<br>180 | 5951<br>174 | 7187<br>168 | 8416<br>160 | 9625<br>152 |
| <b>20</b> | 691<br>266  | 1976<br>258 | 3255<br>250 | 4529<br>243 | 5795<br>235 | 7044<br>227 | 8275<br>218 | 9499<br>209 |
| <b>25</b> | 703<br>334  | 1726<br>324 | 2987<br>314 | 4260<br>305 | 5540<br>296 | 6815<br>286 | 8071<br>276 | 9311<br>267 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



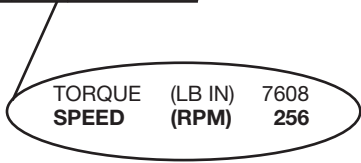
WARNING  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov

**TGK 0310**

**310 cm<sup>3</sup> / rev (18.9 in<sup>3</sup> / rev)**

|           | PRESSURE (PSID) |             |             |             |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000         |
| <b>.5</b> | 1188<br>4       | 2464<br>3   | 3766<br>2   | 5102<br>1   |             |             |             |              |
| <b>1</b>  | 1220<br>11      | 2508<br>9   | 3812<br>7   | 5145<br>5   | 6477<br>4   | 7822<br>2   | 9181<br>2   | 10530<br>1   |
| <b>2</b>  | 1259<br>23      | 2598<br>21  | 3950<br>19  | 5298<br>17  | 6642<br>14  | 7972<br>13  | 9282<br>10  | 10574<br>9   |
| <b>3</b>  | 1257<br>35      | 2606<br>33  | 3889<br>30  | 5332<br>28  | 6688<br>25  | 8044<br>22  | 9392<br>19  | 10693<br>16  |
| <b>4</b>  | 1259<br>47      | 2628<br>44  | 4003<br>42  | 5377<br>39  | 6749<br>36  | 8114<br>33  | 9461<br>29  | 10780<br>26  |
| <b>5</b>  | 1247<br>59      | 2629<br>56  | 4252<br>52  | 5401<br>50  | 6782<br>47  | 8149<br>42  | 9499<br>39  | 10823<br>35  |
| <b>7</b>  | 1218<br>84      | 2614<br>80  | 4013<br>76  | 5413<br>72  | 6806<br>68  | 8184<br>64  | 9543<br>60  | 10874<br>56  |
| <b>9</b>  | 1167<br>107     | 2574<br>103 | 3983<br>99  | 5386<br>94  | 6780<br>90  | 8162<br>85  | 9529<br>80  | 10877<br>75  |
| <b>12</b> | 1089<br>143     | 2493<br>139 | 3904<br>133 | 5308<br>128 | 6696<br>122 | 8075<br>117 | 9443<br>110 | 10793<br>102 |
| <b>15</b> | 995<br>180      | 2400<br>173 | 3817<br>167 | 5225<br>160 | 6621<br>154 | 8003<br>148 | 9371<br>140 | 10718<br>131 |
| <b>20</b> | 769<br>241      | 2194<br>234 | 3618<br>225 | 5043<br>218 | 6462<br>210 | 7863<br>203 | 9238<br>194 | 10588<br>183 |
| <b>25</b> | 626<br>303      | 1955<br>294 | 3359<br>284 | 4771<br>274 | 6251<br>265 | 7608<br>256 | 8998<br>246 | 10360<br>236 |

Flow (GPM)



**TGK 0335**

**337 cm<sup>3</sup> / rev (20.6 in<sup>3</sup> / rev)**

|           | PRESSURE (PSID) |             |             |             |             |             |              |              |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         | 4000         |
| <b>.5</b> | 1297<br>4       | 2699<br>3   | 4128<br>1   | 5584<br>1   |             |             |              |              |
| <b>1</b>  | 1329<br>10      | 2741<br>8   | 4176<br>7   | 5630<br>5   | 7084<br>4   | 8551<br>2   | 10036<br>2   | 11496<br>1   |
| <b>2</b>  | 1369<br>21      | 2832<br>19  | 4308<br>17  | 5787<br>15  | 7265<br>13  | 8718<br>11  | 10136<br>9   | 11534<br>8   |
| <b>3</b>  | 1366<br>32      | 2838<br>30  | 4326<br>27  | 5817<br>25  | 7301<br>22  | 8781<br>20  | 10248<br>17  | 11685<br>14  |
| <b>4</b>  | 1368<br>43      | 2858<br>40  | 4358<br>38  | 5861<br>35  | 7358<br>32  | 8850<br>29  | 10317<br>25  | 11748<br>22  |
| <b>5</b>  | 1355<br>54      | 2858<br>51  | 4368<br>48  | 5880<br>45  | 7386<br>42  | 8880<br>38  | 10352<br>34  | 11791<br>30  |
| <b>7</b>  | 1323<br>76      | 2840<br>73  | 4363<br>69  | 5888<br>65  | 7407<br>61  | 8908<br>57  | 10384<br>53  | 11829<br>47  |
| <b>9</b>  | 1266<br>98      | 2791<br>94  | 4326<br>90  | 5856<br>85  | 7376<br>81  | 8884<br>76  | 10372<br>71  | 11834<br>64  |
| <b>12</b> | 1177<br>131     | 2698<br>127 | 4230<br>121 | 5759<br>116 | 7273<br>110 | 8773<br>105 | 10261<br>98  | 11726<br>90  |
| <b>15</b> | 1075<br>165     | 2594<br>159 | 4127<br>153 | 5654<br>146 | 7170<br>140 | 8670<br>134 | 10153<br>126 | 11613<br>116 |
| <b>20</b> | 833<br>221      | 2372<br>214 | 3915<br>205 | 5463<br>197 | 7008<br>189 | 8533<br>182 | 10026<br>173 | 11479<br>161 |
| <b>25</b> | 678<br>277      | 2142<br>269 | 3663<br>259 | 5189<br>248 | 6726<br>239 | 8257<br>230 | 9757<br>219  | 11219<br>209 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TGK 0360

360 cm³ / rev (22.2 in³ / rev)

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1386<br>4   | 2883<br>3   | 4410<br>1   | 5965<br>1   |             |             |              |              |
| <b>1</b>  | 1420<br>9   | 2928<br>7   | 4461<br>7   | 6014<br>5   | 7567<br>4   | 9135<br>2   | 10721<br>2   | 12281<br>1   |
| <b>2</b>  | 1462<br>20  | 3025<br>18  | 4602<br>16  | 6182<br>14  | 7761<br>12  | 9313<br>10  | 10828<br>8   | 12321<br>7   |
| <b>3</b>  | 1459<br>30  | 3031<br>28  | 4621<br>25  | 6214<br>23  | 7799<br>21  | 9380<br>19  | 10947<br>16  | 12482<br>13  |
| <b>4</b>  | 1461<br>40  | 3053<br>37  | 4655<br>36  | 6261<br>33  | 7884<br>30  | 9454<br>27  | 11021<br>23  | 12550<br>21  |
| <b>5</b>  | 1447<br>51  | 3053<br>48  | 4666<br>45  | 6281<br>42  | 7890<br>39  | 9486<br>36  | 11059<br>32  | 12596<br>28  |
| <b>7</b>  | 1413<br>71  | 3034<br>68  | 4661<br>65  | 6290<br>61  | 7913<br>57  | 9516<br>53  | 11093<br>50  | 12636<br>44  |
| <b>9</b>  | 1352<br>92  | 2981<br>88  | 4621<br>84  | 6256<br>80  | 7879<br>76  | 9490<br>71  | 11080<br>66  | 12642<br>60  |
| <b>12</b> | 1257<br>123 | 2882<br>119 | 4519<br>113 | 6152<br>109 | 7769<br>103 | 9372<br>98  | 10961<br>92  | 12526<br>84  |
| <b>15</b> | 1148<br>154 | 2771<br>149 | 4409<br>143 | 6040<br>137 | 7659<br>131 | 9262<br>125 | 10846<br>118 | 12406<br>109 |
| <b>20</b> | 890<br>207  | 2534<br>200 | 4182<br>192 | 5836<br>184 | 7486<br>177 | 9115<br>170 | 10710<br>162 | 12262<br>151 |
| <b>25</b> | 724<br>259  | 2288<br>252 | 3913<br>242 | 5543<br>232 | 7185<br>224 | 8821<br>215 | 10423<br>205 | 11985<br>196 |

Flow (GPM)

TORQUE (LB IN) 8821  
SPEED (RPM) 215

TGK 0405

405 cm³ / rev (24.7 in³ / rev)

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000         | 3500         | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
| <b>.5</b> | 1544<br>4   | 3178<br>3   | 4840<br>2   | 6515<br>1   | 8185<br>1   |              |              |              |
| <b>1</b>  | 1593<br>8   | 3256<br>7   | 4928<br>6   | 6607<br>6   | 8303<br>5   | 9987<br>4    | 11652<br>3   |              |
| <b>2</b>  | 1636<br>17  | 3351<br>16  | 5084<br>15  | 6817<br>14  | 8550<br>13  | 10272<br>12  | 11978<br>11  | 13575<br>10  |
| <b>3</b>  | 1637<br>27  | 3365<br>25  | 5106<br>23  | 6847<br>22  | 8588<br>21  | 10314<br>19  | 12031<br>18  | 13674<br>16  |
| <b>4</b>  | 1645<br>36  | 3394<br>34  | 5159<br>32  | 6920<br>30  | 8668<br>29  | 10402<br>27  | 12130<br>26  | 13858<br>24  |
| <b>5</b>  | 1640<br>45  | 3408<br>43  | 5201<br>41  | 6983<br>39  | 8733<br>37  | 10466<br>35  | 12194<br>33  | 13989<br>31  |
| <b>7</b>  | 1606<br>64  | 3396<br>61  | 5211<br>59  | 7003<br>56  | 8772<br>54  | 10527<br>51  | 12271<br>49  | 14306<br>46  |
| <b>9</b>  | 1551<br>82  | 3350<br>80  | 5176<br>77  | 6981<br>73  | 8763<br>70  | 10519<br>67  | 12269<br>64  | 14077<br>61  |
| <b>12</b> | 1428<br>110 | 3238<br>107 | 5075<br>103 | 6888<br>99  | 8670<br>95  | 10424<br>91  | 12172<br>88  | 14015<br>84  |
| <b>15</b> | 1310<br>138 | 3112<br>135 | 4948<br>130 | 6759<br>125 | 8545<br>120 | 10306<br>115 | 12060<br>111 | 13910<br>106 |
| <b>20</b> | 1136<br>185 | 2862<br>181 | 4692<br>175 | 6518<br>168 | 8336<br>162 | 10122<br>156 | 11877<br>151 | 13717<br>145 |
| <b>25</b> |             |             | 4492<br>219 | 6303<br>212 | 8084<br>204 | 9848<br>197  | 11585<br>190 | 13408<br>184 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**TGK 0475**

**477 cm³ / rev (29.1 in³ / rev)**

|           | PRESSURE (PSID) |             |             |             |              |              |              |              |  |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         | 3500         | 4000         |  |
| <b>.5</b> | 1768<br>3       | 3732<br>3   | 5733<br>2   | 7744<br>1   | 9762<br>1    |              |              |              |  |
| <b>1</b>  | 1868<br>7       | 3878<br>7   | 5879<br>6   | 7851<br>5   | 9838<br>4    | 11830<br>3   |              |              |  |
| <b>2</b>  | 1964<br>15      | 4055<br>14  | 6180<br>14  | 8237<br>12  | 10241<br>10  | 12136<br>8   | 14283<br>5   | 16325<br>2   |  |
| <b>3</b>  | 1972<br>23      | 4074<br>22  | 6208<br>21  | 8321<br>19  | 10379<br>17  | 12355<br>13  | 14513<br>9   | 16597<br>4   |  |
| <b>4</b>  | 2005<br>31      | 4135<br>30  | 6287<br>29  | 8382<br>27  | 10463<br>24  | 12496<br>20  | 14648<br>15  | 16749<br>9   |  |
| <b>5</b>  | 2004<br>39      | 4129<br>38  | 6304<br>37  | 8428<br>34  | 10514<br>31  | 12544<br>26  | 14719<br>20  | 16832<br>13  |  |
| <b>7</b>  | 1990<br>55      | 4133<br>54  | 6308<br>52  | 8445<br>50  | 10555<br>45  | 12602<br>40  | 14795<br>32  | 16913<br>23  |  |
| <b>9</b>  | 1924<br>70      | 4104<br>69  | 6285<br>68  | 8430<br>65  | 10528<br>60  | 12608<br>54  | 14797<br>45  | 16935<br>35  |  |
| <b>12</b> | 1775<br>94      | 3974<br>93  | 6157<br>91  | 8328<br>87  | 10446<br>82  | 12528<br>75  | 14736<br>65  | 16890<br>54  |  |
| <b>15</b> | 1619<br>118     | 3784<br>116 | 5990<br>114 | 8188<br>110 | 10311<br>104 | 12372<br>96  | 14598<br>85  | 16757<br>72  |  |
| <b>20</b> | 1314<br>157     | 3373<br>156 | 5629<br>153 | 7853<br>149 | 10038<br>141 | 12145<br>132 | 14363<br>119 | 16545<br>102 |  |
| <b>25</b> | 1141<br>197     | 3029<br>196 | 5220<br>193 | 7427<br>189 | 9629<br>182  | 11757<br>174 | 13876<br>163 | 16021<br>151 |  |
| <b>30</b> | 606<br>237      | 2505<br>236 | 4649<br>233 | 6766<br>230 | 8878<br>224  | 10989<br>219 | 13047<br>212 | 15138<br>204 |  |

Flow (GPM)

TORQUE (LB IN) 6766  
 SPEED (RPM) 230

**TGK 0530**

**528 cm³ / rev (32.2 in³ / rev)**

|           | PRESSURE (PSID) |             |             |             |              |              |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         | 3250         | 3750         |
| <b>.5</b> | 2080<br>3       | 4256<br>3   | 6479<br>2   | 8726<br>2   | 11012<br>1   |              |              |              |
| <b>1</b>  | 2158<br>7       | 4372<br>6   | 6592<br>6   | 8779<br>5   | 10994<br>4   |              |              |              |
| <b>2</b>  | 2246<br>14      | 4567<br>13  | 6869<br>12  | 9126<br>11  | 11376<br>9   |              |              |              |
| <b>3</b>  | 2242<br>21      | 4578<br>20  | 6916<br>19  | 9237<br>17  | 11500<br>14  | 13847<br>12  | 15006<br>10  | 17323<br>7   |
| <b>4</b>  | 2253<br>28      | 4625<br>27  | 6977<br>25  | 9296<br>23  | 11586<br>20  | 13949<br>17  | 15115<br>15  | 17449<br>11  |
| <b>5</b>  | 2235<br>35      | 4629<br>34  | 7002<br>32  | 9333<br>29  | 11626<br>26  | 14011<br>22  | 15185<br>20  | 17534<br>15  |
| <b>7</b>  | 2182<br>49      | 4599<br>48  | 7006<br>46  | 9362<br>42  | 11659<br>38  | 14077<br>33  | 15263<br>30  | 17634<br>23  |
| <b>9</b>  | 2095<br>63      | 4535<br>62  | 6960<br>59  | 9330<br>55  | 11650<br>50  | 14086<br>43  | 15281<br>39  | 17671<br>30  |
| <b>12</b> | 1943<br>85      | 4390<br>83  | 6825<br>80  | 9217<br>75  | 11549<br>69  | 13997<br>62  | 15198<br>57  | 17602<br>46  |
| <b>15</b> | 1753<br>106     | 4199<br>104 | 6638<br>100 | 9052<br>95  | 11408<br>87  | 13859<br>79  | 15067<br>74  | 17483<br>63  |
| <b>20</b> | 1327<br>141     | 3783<br>139 | 6262<br>135 | 8701<br>129 | 11086<br>120 | 13563<br>110 | 14784<br>104 | 17228<br>90  |
| <b>25</b> | 1011<br>177     | 3300<br>175 | 5751<br>171 | 8210<br>165 | 10639<br>158 | 13032<br>149 | 14240<br>144 | 16656<br>132 |
| <b>30</b> | 269<br>213      | 2698<br>211 | 5083<br>208 | 7415<br>203 | 9814<br>197  | 12198<br>188 | 13388<br>183 | 15769<br>173 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

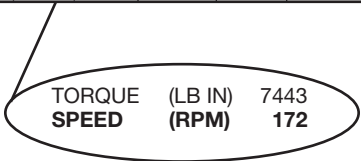


TGK 0625

623 cm³ / rev (38.0 in³ / rev)

|           | PRESSURE (PSID) |             |             |             |              |              |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 1750        | 2000         | 2500         | 2750         | 3250         |
| <b>.5</b> | 1939<br>2       | 4593<br>1   |             |             |              |              |              |              |
| <b>1</b>  | 2087<br>5       | 4665<br>3   | 7283<br>2   | 8680<br>2   |              |              |              |              |
| <b>2</b>  | 2338<br>11      | 4991<br>9   | 7590<br>8   | 8853<br>7   |              |              |              |              |
| <b>3</b>  | 2386<br>17      | 5101<br>15  | 7753<br>13  | 9055<br>12  | 10383<br>11  | 13039<br>7   | 14367<br>5   | 17022<br>1   |
| <b>4</b>  | 2457<br>23      | 5202<br>21  | 7872<br>19  | 9174<br>17  | 10487<br>15  | 13147<br>11  | 14477<br>9   | 17137<br>4   |
| <b>5</b>  | 2479<br>29      | 5246<br>27  | 7943<br>25  | 9242<br>23  | 10551<br>21  | 13221<br>15  | 14557<br>12  | 17227<br>5   |
| <b>7</b>  | 2464<br>41      | 5273<br>39  | 7995<br>36  | 9306<br>34  | 10605<br>31  | 13292<br>24  | 14636<br>20  | 17324<br>11  |
| <b>9</b>  | 2401<br>53      | 5223<br>51  | 7993<br>48  | 9337<br>45  | 10653<br>42  | 13382<br>36  | 14747<br>33  | 17476<br>26  |
| <b>12</b> | 2254<br>71      | 5092<br>69  | 7886<br>65  | 9239<br>62  | 10585<br>58  | 13345<br>49  | 14725<br>44  | 17484<br>33  |
| <b>15</b> | 2052<br>89      | 4901<br>87  | 7721<br>83  | 9086<br>80  | 10439<br>75  | 13219<br>64  | 14608<br>57  | 17387<br>42  |
| <b>20</b> | 1600<br>120     | 4490<br>117 | 7334<br>112 | 8725<br>109 | 10088<br>104 | 12900<br>92  | 14305<br>86  | 17117<br>72  |
| <b>25</b> | 1063<br>151     | 3933<br>148 | 6818<br>144 | 8235<br>140 | 9634<br>136  | 12484<br>125 | 13909<br>118 | 16758<br>103 |
| <b>30</b> | 359<br>182      | 3250<br>180 | 6074<br>176 | 7443<br>172 | 8830<br>168  | 11636<br>162 | 13039<br>158 | 15845<br>151 |

Flow (GPM)



TGK 0785

786 cm³ / rev (48.0 in³ / rev)

|           | PRESSURE (PSID) |             |             |              |              |              |
|-----------|-----------------|-------------|-------------|--------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000         | 2200         | 2700         |
| <b>.5</b> | 2910<br>2       | 6153<br>2   | 9607<br>1   | 12950<br>1   |              |              |
| <b>1</b>  | 3011<br>4       | 6296<br>4   | 9670<br>3   | 12919<br>3   |              |              |
| <b>2</b>  | 3217<br>9       | 6536<br>8   | 9935<br>7   | 13060<br>6   |              |              |
| <b>3</b>  | 3220<br>14      | 6613<br>13  | 9977<br>11  | 13079<br>9   | 14481<br>8   | 17775<br>5   |
| <b>4</b>  | 3265<br>19      | 6679<br>17  | 10021<br>15 | 13078<br>13  | 14489<br>12  | 17767<br>9   |
| <b>5</b>  | 3263<br>23      | 6703<br>22  | 10047<br>19 | 13103<br>16  | 14523<br>15  | 17810<br>12  |
| <b>7</b>  | 3218<br>33      | 6722<br>31  | 10068<br>28 | 13062<br>24  | 14514<br>22  | 17802<br>17  |
| <b>9</b>  | 3107<br>43      | 6664<br>41  | 10108<br>36 | 13185<br>31  | 14665<br>28  | 18033<br>21  |
| <b>12</b> | 2892<br>57      | 6489<br>55  | 9959<br>49  | 13082<br>42  | 14573<br>38  | 17977<br>29  |
| <b>15</b> | 2643<br>71      | 6238<br>69  | 9733<br>62  | 12938<br>54  | 14420<br>50  | 17858<br>41  |
| <b>20</b> | 2044<br>95      | 5673<br>92  | 9239<br>85  | 12636<br>75  | 14113<br>70  | 17647<br>58  |
| <b>25</b> | 2313<br>119     | 4976<br>117 | 8571<br>110 | 12073<br>101 | 13490<br>97  | 17021<br>86  |
| <b>30</b> | 496<br>143      | 4104<br>141 | 7582<br>137 | 11024<br>130 | 12463<br>127 | 15969<br>120 |

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**TGK 0960**

**959 cm³ / rev** (58.5 in³ / rev)

|           | PRESSURE (PSID) |             |             |              |              |
|-----------|-----------------|-------------|-------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 1800         | 2300         |
| <b>.5</b> | 3692<br>2       | 7712<br>1   | 11750<br>1  |              |              |
| <b>1</b>  | 3788<br>3       | 7858<br>3   | 11895<br>3  |              |              |
| <b>2</b>  | 3900<br>7       | 8045<br>7   | 12058<br>6  |              |              |
| <b>3</b>  | 3905<br>11      | 8078<br>11  | 12135<br>10 | 14623<br>9   | 18738<br>7   |
| <b>4</b>  | 3939<br>15      | 8155<br>14  | 12210<br>13 | 14718<br>12  | 18854<br>10  |
| <b>5</b>  | 3923<br>19      | 8173<br>18  | 12238<br>17 | 14763<br>16  | 18921<br>14  |
| <b>7</b>  | 3860<br>27      | 8160<br>26  | 12262<br>24 | 14816<br>22  | 19017<br>19  |
| <b>9</b>  | 3733<br>35      | 8074<br>34  | 12224<br>31 | 14803<br>28  | 19049<br>23  |
| <b>12</b> | 3475<br>47      | 7848<br>45  | 12062<br>42 | 14665<br>39  | 18958<br>33  |
| <b>15</b> | 3149<br>58      | 7545<br>57  | 11823<br>53 | 14445<br>50  | 18782<br>45  |
| <b>20</b> | 2437<br>78      | 6843<br>76  | 11227<br>72 | 13854<br>68  | 18234<br>62  |
| <b>25</b> | 2969<br>98      | 5990<br>96  | 10360<br>92 | 12921<br>88  | 17226<br>80  |
| <b>30</b> | 603<br>118      | 4919<br>117 | 9170<br>113 | 11751<br>109 | 16034<br>102 |

**Flow (GPM)**

TORQUE (LB IN) 9170  
 SPEED (RPM) 113

Cont.  Int.

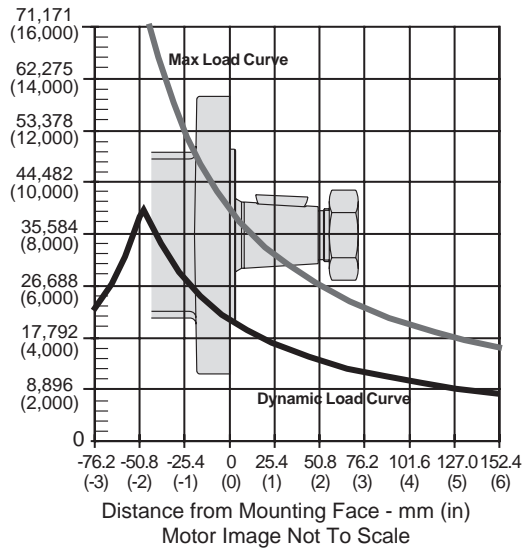
Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



### Flange Mount

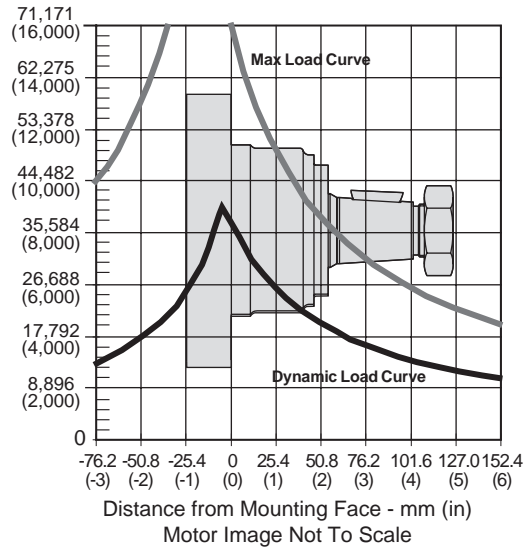
Side Load - N (lbs)



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $3 \times 10^6$  revolutions.

### Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

### Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{3 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

$S$  = Shaft Speed RPM

$L$  = Life In Hours

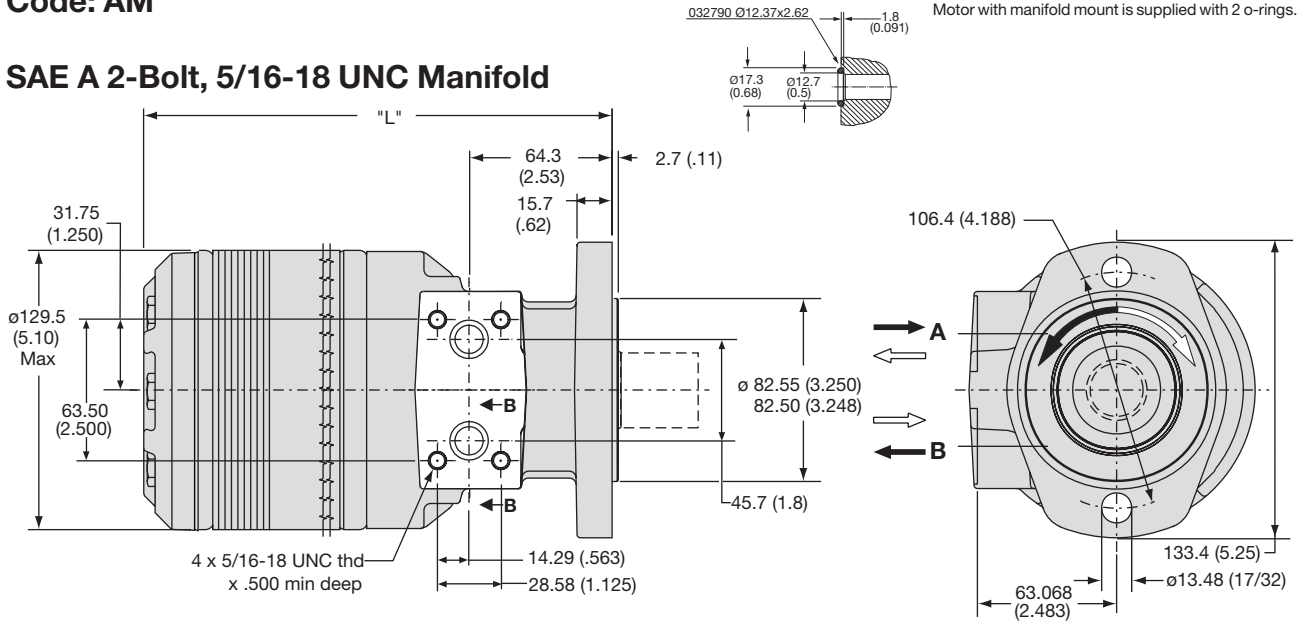
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

**Code: AM**

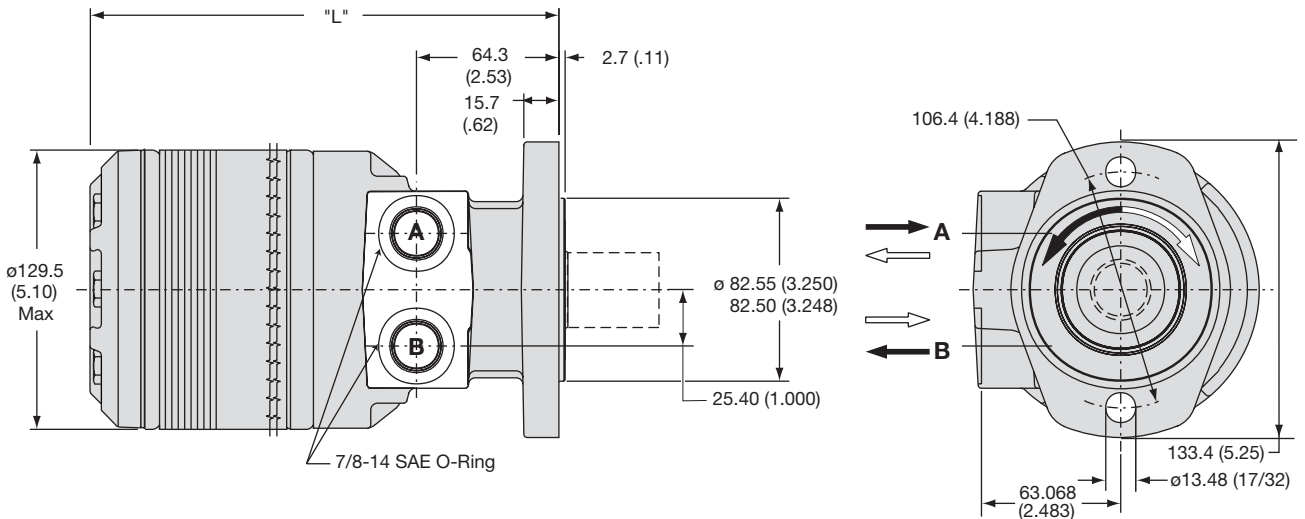
**SAE A 2-Bolt, 5/16-18 UNC Manifold**



| Code AM        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 13.7   | 14.1   | 14.3   | 14.5   | 14.8   | 15.2   | 15.4   | 15.5   | 15.8   | 16.1   | 16.6   | 17.3   | 18.0   | 19.8    | 20.8    |
| Poids/Peso     | (lb)     | (30.1) | (31.0) | (31.5) | (32.0) | (32.7) | (33.5) | (33.9) | (34.2) | (34.8) | (35.4) | (36.7) | (38.1) | (39.6) | (43.6)  | (45.9)  |
| Length         | "L" mm   | 190.2  | 193.3  | 196.1  | 198.6  | 202.4  | 206.8  | 209.8  | 212.3  | 215.6  | 218.7  | 225.8  | 230.9  | 239.8  | 256.0   | 272.5   |
|                | "L" (in) | (7.49) | (7.61) | (7.72) | (7.82) | (7.97) | (8.14) | (8.26) | (8.36) | (8.49) | (8.61) | (8.89) | (9.09) | (9.44) | (10.08) | (10.73) |

**Code: AS**

**SAE A 2-Bolt, 7/8-14 SAE**



| Code AS        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 13.7   | 14.1   | 14.3   | 14.5   | 14.8   | 15.2   | 15.4   | 15.5   | 15.8   | 16.1   | 16.6   | 17.3   | 18.0   | 19.8    | 20.8    |
| Poids/Peso     | (lb)     | (30.1) | (31.0) | (31.5) | (32.0) | (32.7) | (33.5) | (33.9) | (34.2) | (34.8) | (35.4) | (36.7) | (38.1) | (39.6) | (43.6)  | (45.9)  |
| Length         | "L" mm   | 190.2  | 193.3  | 196.1  | 198.6  | 202.4  | 206.8  | 209.8  | 212.3  | 215.6  | 218.7  | 225.8  | 230.9  | 239.8  | 256.0   | 272.5   |
|                | "L" (in) | (7.49) | (7.61) | (7.72) | (7.82) | (7.97) | (8.14) | (8.26) | (8.36) | (8.49) | (8.61) | (8.89) | (9.09) | (9.44) | (10.08) | (10.73) |

English equivalents for metric specifications are shown in ( ).

017 TGK Series.indd, b

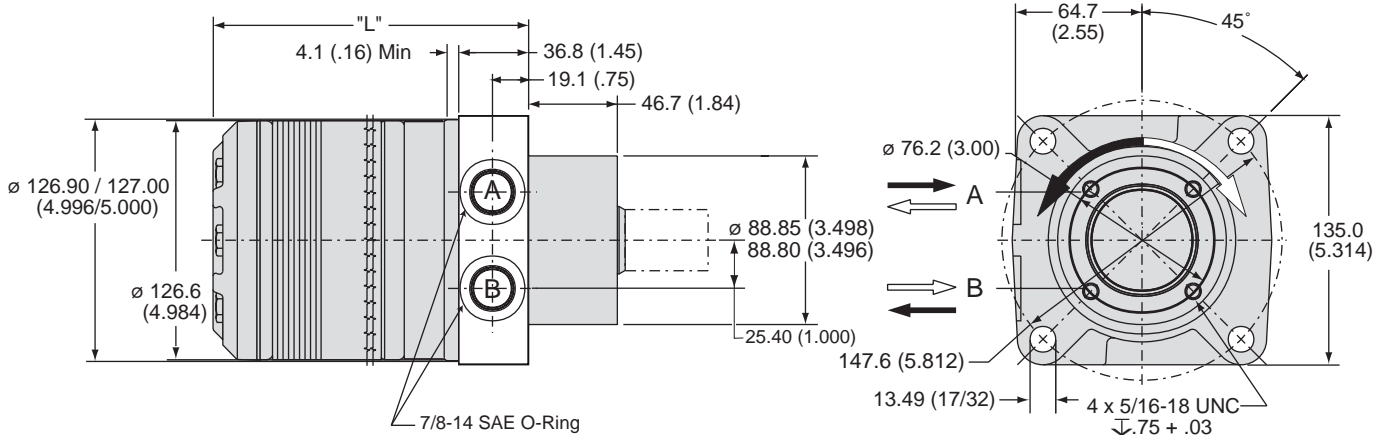


**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



Code: LS

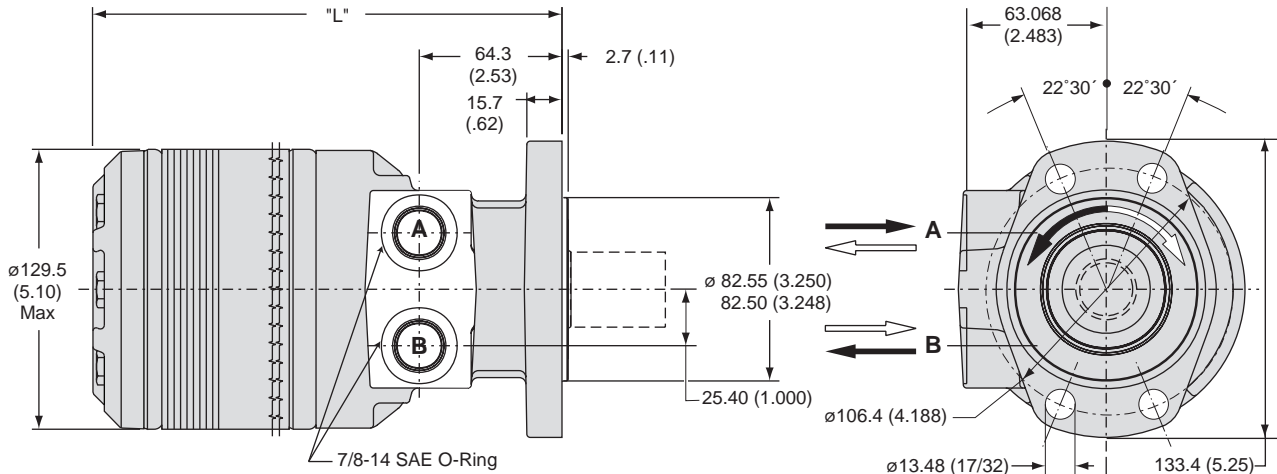
Wheel, Front Brake Nose, 7/8-14 SAE



| Code LS        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.0   | 14.4   | 14.6   | 14.9   | 15.2   | 15.6   | 15.7   | 15.8   | 16.1   | 16.4   | 16.5   | 17.6   | 18.3   | 19.7   | 21.1   |
| Poids/Peso     | (lb)     | (30.9) | (31.8) | (32.2) | (32.8) | (33.5) | (34.3) | (34.7) | (34.9) | (35.4) | (36.2) | (36.4) | (38.9) | (40.3) | (43.4) | (46.6) |
| Length         | "L" mm   | 145.0  | 148.1  | 150.6  | 153.4  | 157.2  | 161.5  | 164.6  | 167.1  | 170.4  | 173.5  | 180.6  | 185.7  | 194.6  | 210.8  | 227.3  |
|                | "L" (in) | (5.71) | (5.83) | (5.93) | (6.04) | (6.19) | (6.36) | (6.48) | (6.58) | (6.71) | (6.83) | (7.11) | (7.31) | (7.66) | (8.30) | (8.95) |

Code: MS

Magneto, 7/8-14 SAE

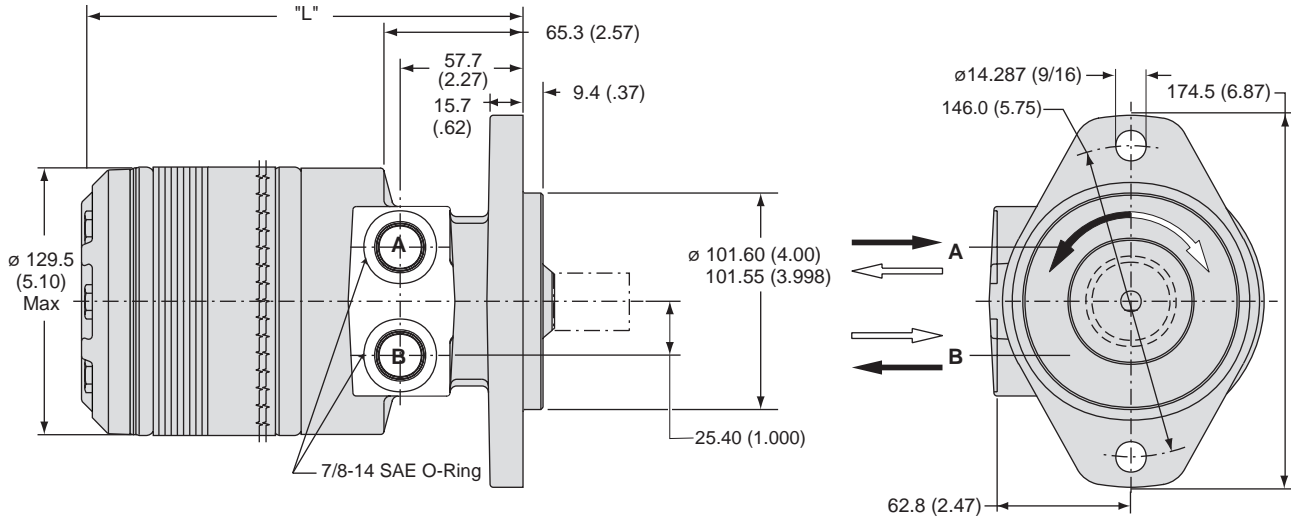


| Code MS        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 13.7   | 14.1   | 14.3   | 14.5   | 14.8   | 15.2   | 15.4   | 15.5   | 15.8   | 16.1   | 16.6   | 17.3   | 18.0   | 19.8    | 20.8    |
| Poids/Peso     | (lb)     | (30.1) | (31.0) | (31.5) | (32.0) | (32.7) | (33.5) | (33.9) | (34.2) | (34.8) | (35.4) | (36.7) | (38.1) | (39.6) | (43.6)  | (45.9)  |
| Length         | "L" mm   | 190.2  | 193.3  | 196.1  | 198.6  | 202.4  | 206.8  | 209.8  | 212.3  | 215.6  | 218.7  | 225.8  | 230.9  | 239.8  | 256.0   | 272.5   |
|                | "L" (in) | (7.49) | (7.61) | (7.72) | (7.82) | (7.97) | (8.14) | (8.26) | (8.36) | (8.49) | (8.61) | (8.89) | (9.09) | (9.44) | (10.08) | (10.73) |

English equivalents for metric specifications are shown in ( ).

**Code: BS**

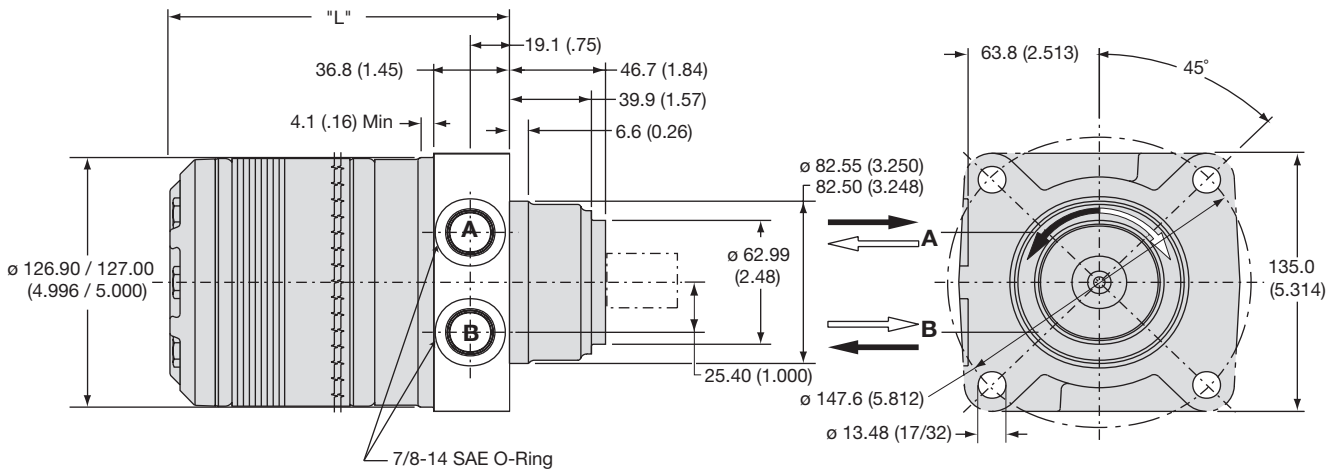
**SAE B 2-Bolt, 7/8-14 SAE O-Ring**



| Code BS        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 14.3   | 14.7   | 14.9   | 15.1   | 15.5   | 15.8   | 16.0   | 16.1   | 16.4   | 16.7   | 17.3   | 17.9   | 18.6   | 20.0    | 21.5    |
| Poids/Peso     | (lb)     | (31.5) | (32.4) | (32.9) | (33.4) | (34.1) | (34.9) | (35.3) | (35.6) | (36.2) | (36.8) | (38.1) | (39.5) | (41.0) | (44.0)  | (47.3)  |
| Length         | "L" mm   | 190.2  | 193.3  | 196.1  | 198.6  | 202.4  | 206.8  | 209.8  | 212.3  | 215.6  | 218.7  | 225.8  | 230.9  | 239.8  | 256.0   | 272.5   |
|                | "L" (in) | (7.49) | (7.61) | (7.72) | (7.82) | (7.97) | (8.14) | (8.26) | (8.36) | (8.49) | (8.61) | (8.89) | (9.09) | (9.44) | (10.08) | (10.73) |

**Code: US**

**Wheel, Standard, 7/8-14 SAE**



| Code US        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.0   | 14.4   | 14.6   | 14.9   | 15.2   | 15.6   | 15.7   | 15.8   | 16.1   | 16.4   | 16.5   | 17.6   | 18.3   | 19.7   | 21.1   |
| Poids/Peso     | (lb)     | (30.9) | (31.8) | (32.2) | (32.8) | (33.5) | (34.3) | (34.7) | (34.9) | (35.4) | (36.2) | (36.4) | (38.9) | (40.3) | (43.4) | (46.6) |
| Length         | "L" mm   | 145.0  | 148.1  | 150.6  | 153.4  | 157.2  | 161.5  | 164.6  | 167.1  | 170.4  | 173.5  | 180.6  | 185.7  | 194.6  | 210.8  | 227.3  |
|                | "L" (in) | (5.71) | (5.83) | (5.93) | (6.04) | (6.19) | (6.36) | (6.48) | (6.58) | (6.71) | (6.83) | (7.11) | (7.31) | (7.66) | (8.30) | (8.95) |

English equivalents for metric specifications are shown in ( ).

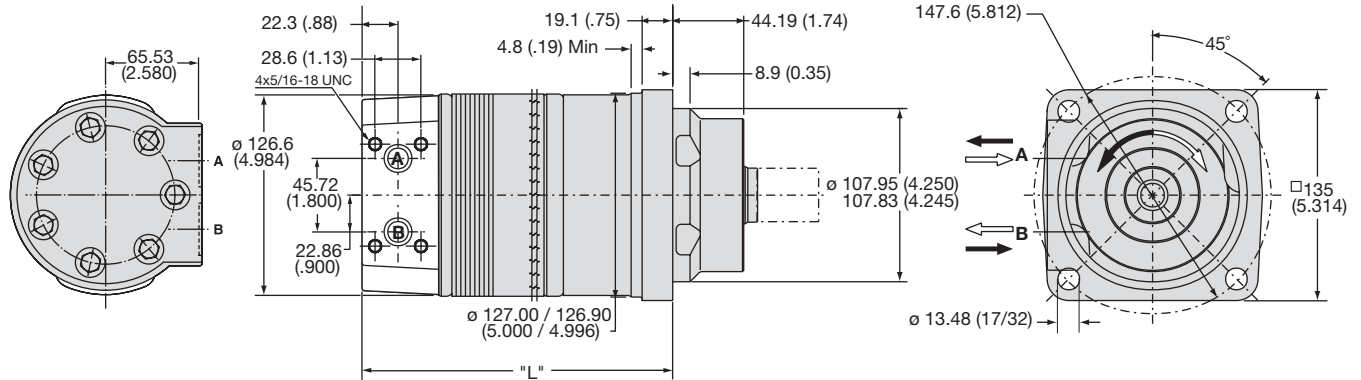
017 TGK Series.indd, b



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: WE

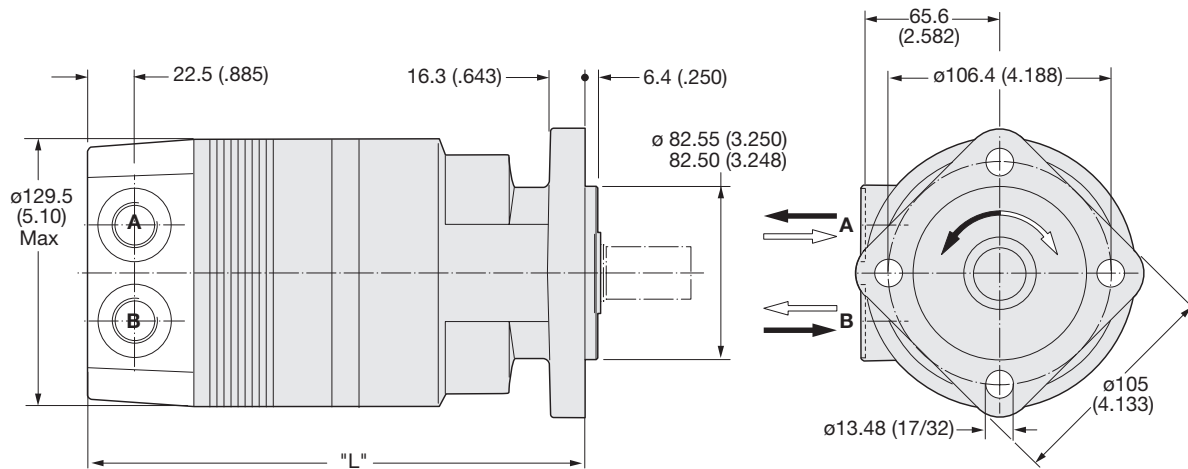
Wheel, Optional, Manifold Rear Port



| Code WE        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg       | 17.0   | 17.4   | 17.6   | 17.8   | 18.1   | 18.5   | 18.7   | 18.8   | 19.1   | 19.4   | 19.6   | 20.6   | 21.3   | 22.6   | 24.1    |
| Poids/Peso     | (lb)     | (37.4) | (38.3) | (38.8) | (39.3) | (40.0) | (40.8) | (41.2) | (41.5) | (42.1) | (42.7) | (44.0) | (45.4) | (46.9) | (49.9) | (53.2)  |
| Length         | "L" mm   | 172.2  | 175.3  | 177.8  | 181.9  | 185.9  | 190.2  | 193.3  | 195.8  | 199.1  | 202.2  | 209.0  | 214.1  | 223.3  | 239.5  | 256.0   |
|                | "L" (in) | (6.78) | (6.90) | (7.00) | (7.16) | (7.32) | (7.49) | (7.61) | (7.71) | (7.84) | (7.96) | (8.23) | (8.43) | (8.79) | (9.43) | (10.08) |

Code: VB

SAE A 4-Bolt, 7/8-14 SAE Rear Port



| Code VB        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625    | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Weight/Gewicht | kg       | 15.5   | 15.9   | 16.1   | 16.4   | 16.7   | 17.1   | 17.2   | 17.4   | 17.8   | 18.1   | 18.5   | 19.2   | 19.4    | 21.1    | 22.6    |
| Poids/Peso     | (lb)     | (34.2) | (35.1) | (35.4) | (36.1) | (36.8) | (37.7) | (38.0) | (38.3) | (39.2) | (40.0) | (40.7) | (42.3) | (43.7)  | (46.6)  | (49.8)  |
| Length         | "L" mm   | 211.3  | 214.4  | 213.9  | 219.7  | 223.8  | 227.8  | 230.9  | 233.4  | 236.7  | 239.8  | 246.9  | 252.0  | 261.1   | 277.4   | 293.9   |
|                | "L" (in) | (8.32) | (8.44) | (8.42) | (8.65) | (8.81) | (8.97) | (9.09) | (9.19) | (9.32) | (9.44) | (9.72) | (9.92) | (10.28) | (10.92) | (11.57) |

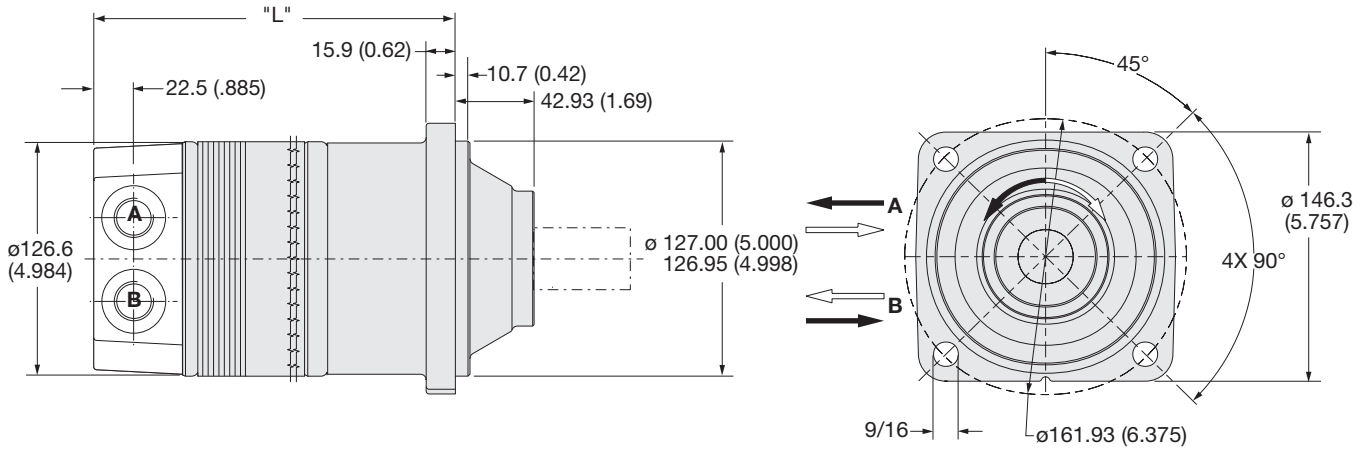
English equivalents for metric specifications are shown in ( ).



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: DB

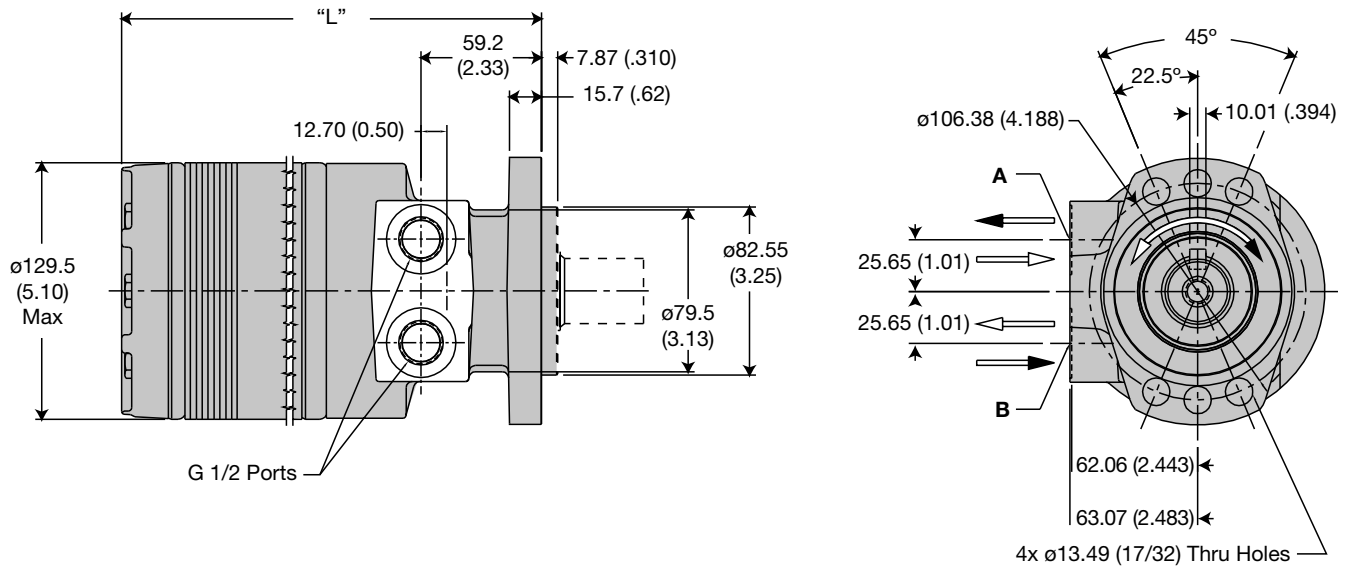
Large Wheel Mount, 7/8-14 SAE Rear Port



| Code DB        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg       | 17.0   | 17.4   | 17.6   | 17.8   | 18.1   | 18.5   | 18.7   | 18.8   | 19.1   | 19.4   | 19.6   | 20.6   | 21.3   | 22.6   | 24.1    |
| Poids/Peso     | (lb)     | (37.4) | (38.3) | (38.8) | (39.3) | (40.0) | (40.8) | (41.2) | (41.5) | (42.1) | (42.7) | (44.0) | (45.4) | (46.9) | (49.9) | (53.2)  |
| Length         | "L" mm   | 172.2  | 175.3  | 177.8  | 181.9  | 185.9  | 190.2  | 193.3  | 195.8  | 199.1  | 202.2  | 209.0  | 214.1  | 223.3  | 239.5  | 256.0   |
|                | "L" (in) | (6.78) | (6.90) | (7.00) | (7.16) | (7.32) | (7.49) | (7.61) | (7.71) | (7.84) | (7.96) | (8.23) | (8.43) | (8.79) | (9.43) | (10.08) |

Code: EW

Modified SAE A 6-Bolt, G1/2 BSPP



| Code EW        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight/Gewicht | kg       | 13.7   | 14.1   | 14.3   | 14.5   | 14.8   | 15.2   | 15.4   | 15.5   | 15.8   | 16.1   | 16.6   | 17.3   | 18.0   | 19.8    | 20.8    |
| Poids/Peso     | (lb)     | (30.1) | (31.0) | (31.5) | (32.0) | (32.7) | (33.5) | (33.9) | (34.2) | (34.8) | (35.4) | (36.7) | (38.1) | (39.6) | (43.6)  | (45.9)  |
| Length         | "L" mm   | 190.2  | 193.3  | 196.1  | 198.6  | 202.4  | 206.8  | 209.8  | 212.3  | 215.6  | 218.7  | 225.8  | 230.9  | 239.8  | 256.0   | 272.5   |
|                | "L" (in) | (7.49) | (7.61) | (7.72) | (7.82) | (7.97) | (8.14) | (8.26) | (8.36) | (8.49) | (8.61) | (8.89) | (9.09) | (9.44) | (10.08) | (10.73) |

English equivalents for metric specifications are shown in ( ).

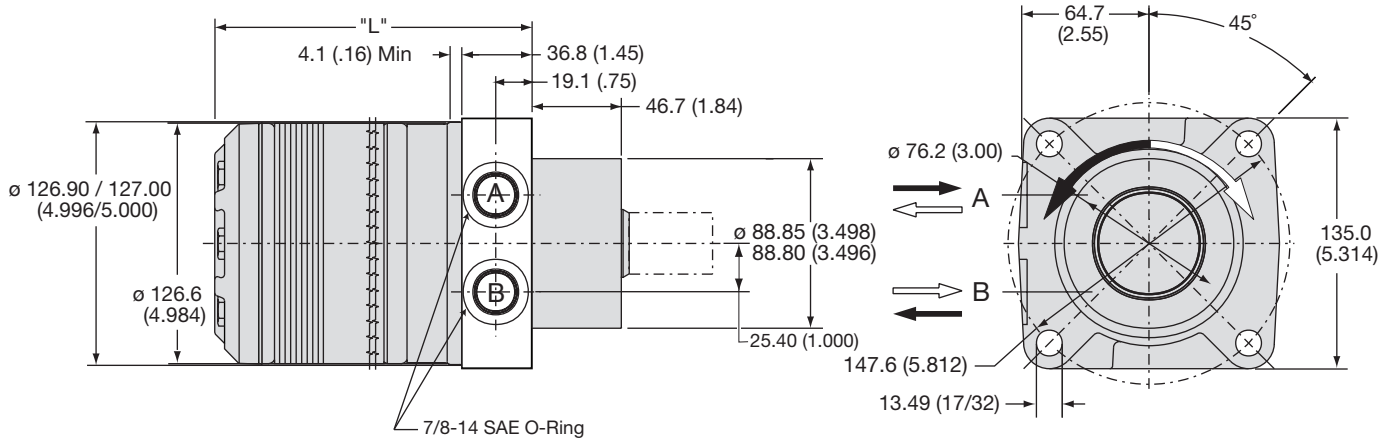
017 TGK Series.indd, b



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

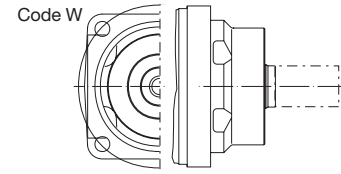
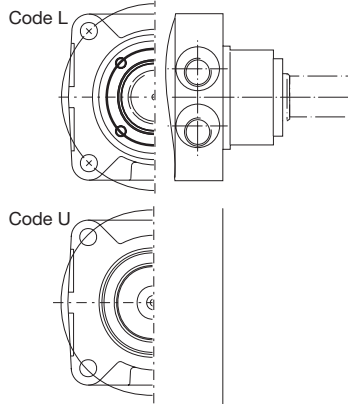
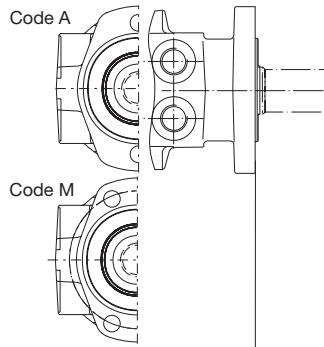
Code: TS

Wheel, Front Brake, No Tapped Holes in Nose, 7/8-14 SAE



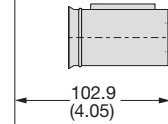
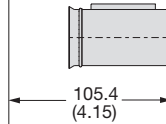
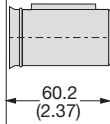
| Code TS        | disp     | 0110   | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0360   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 14.0   | 14.4   | 14.6   | 14.9   | 15.2   | 15.6   | 15.7   | 15.8   | 16.1   | 16.4   | 16.5   | 17.6   | 18.3   | 19.7   | 21.1   |
| Poids/Peso     | (lb)     | (30.9) | (31.8) | (32.2) | (32.8) | (33.5) | (34.3) | (34.7) | (34.9) | (35.4) | (36.2) | (36.4) | (38.9) | (40.3) | (43.4) | (46.6) |
| Length         | "L" mm   | 145.0  | 148.1  | 150.6  | 153.4  | 157.2  | 161.5  | 164.6  | 167.1  | 170.4  | 173.5  | 180.6  | 185.7  | 194.6  | 210.8  | 227.3  |
|                | "L" (in) | (5.71) | (5.83) | (5.93) | (6.04) | (6.19) | (6.36) | (6.48) | (6.58) | (6.71) | (6.83) | (7.11) | (7.31) | (7.66) | (8.30) | (8.95) |

English equivalents for metric specifications are shown in ( ).



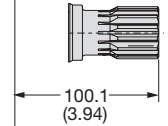
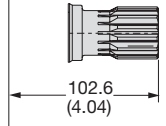
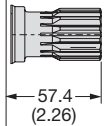
**Code: 03**

**1 1/4" Keyed**



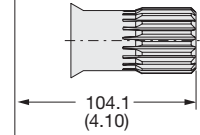
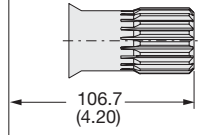
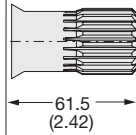
**Code: 05**

**1" 1/4 14 Tooth Spline**



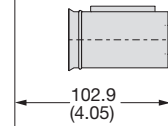
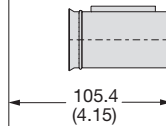
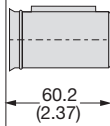
**Code: 06**

**19 Tooth Spline**



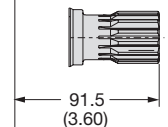
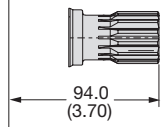
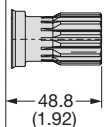
**Code: 46**

**32 mm Keyed**



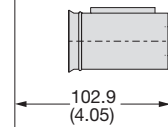
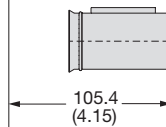
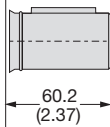
**Code: 62**

**1" 1/4 14 Tooth Spline SAE**



**Code: 64**

**40 mm Keyed**



English equivalents for metric specifications are shown in ( ).

017 TGK Series.indd, b

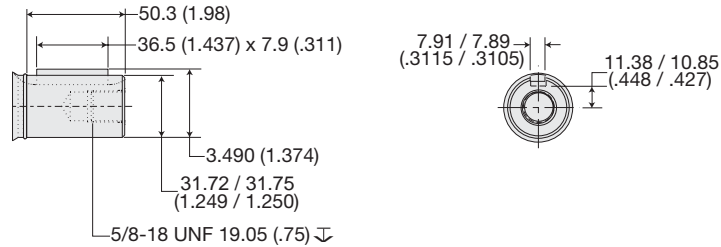


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

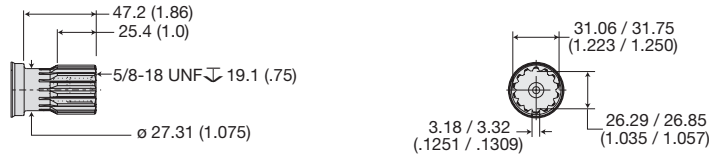
**Code: 03**

**1 1/4" Keyed**



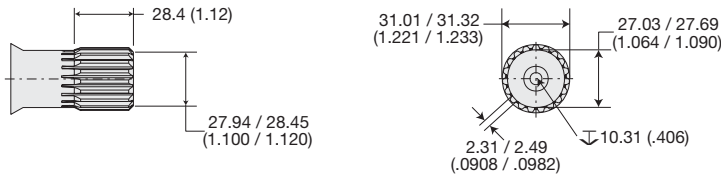
**Code: 05**

**1" 1/4 14 Tooth Spline**



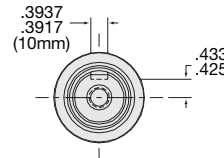
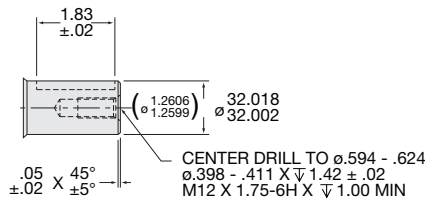
**Code: 06**

**19 Tooth Spline**



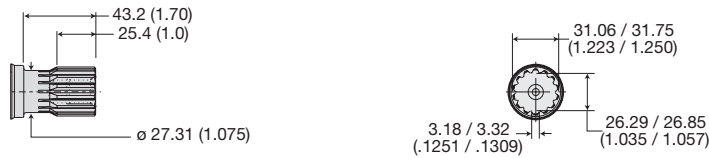
**Code: 46**

**32 mm Keyed**



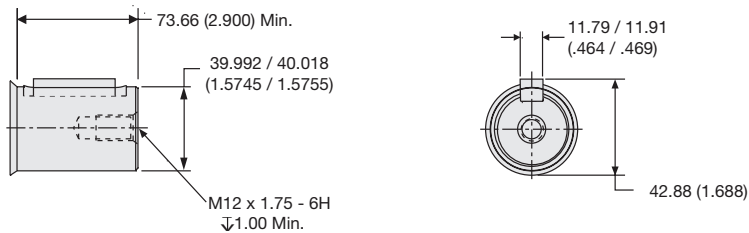
**Code: 62**

**1" 1/4 14 Tooth Spline SAE**

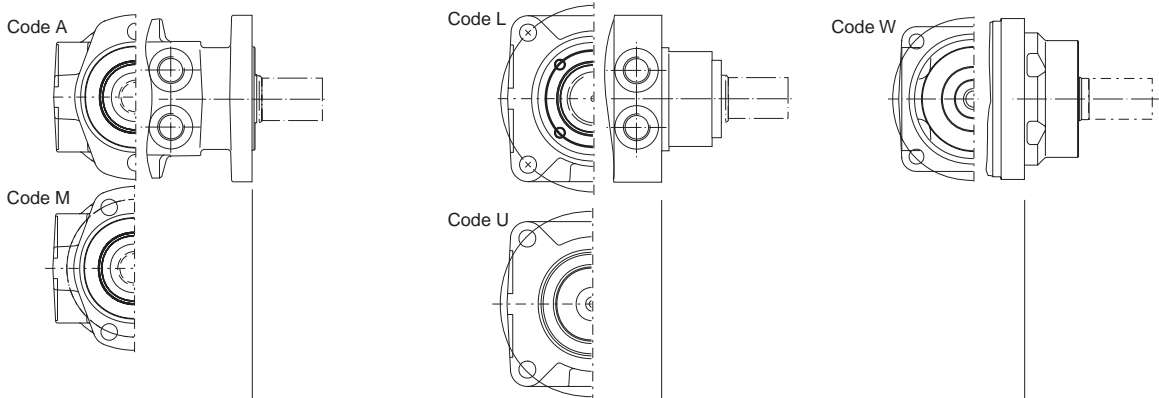


**Code: 64**

**40 mm Keyed**

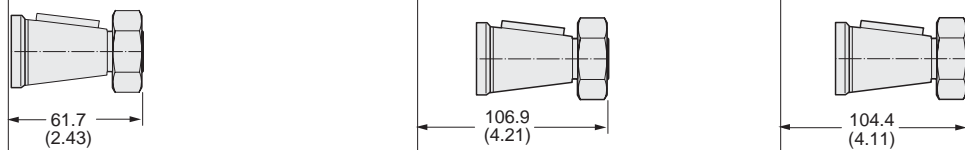


English equivalents for metric specifications are shown in ( ).



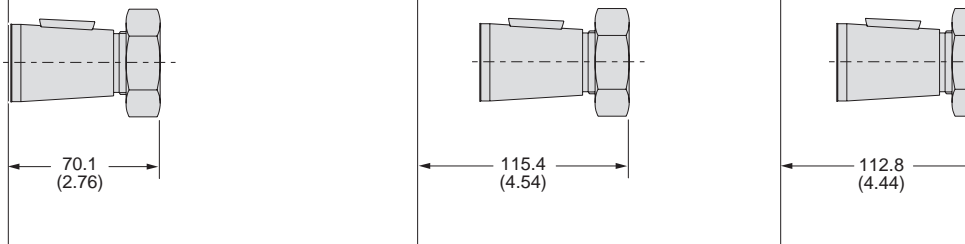
**Code: 08**

**1 1/4" Tapered**



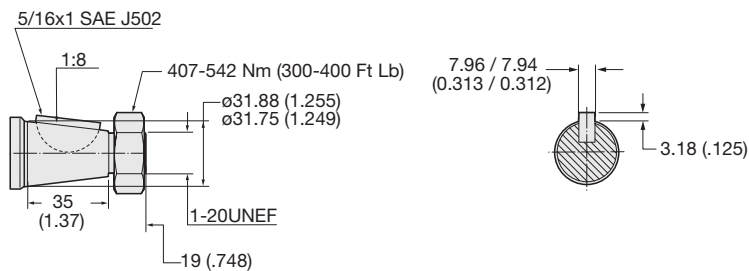
**Code: 19**

**1 3/8" J501 Taper**



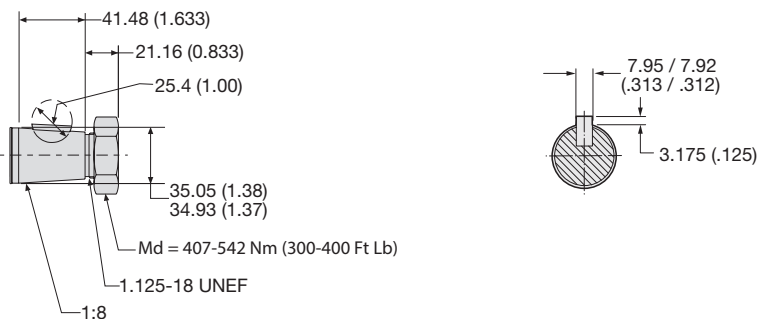
**Code: 08**

**1 1/4" Tapered**



**Code: 19**

**1 3/8" J501 Taper**



English equivalents for metric specifications are shown in ( ).

017 TGK Series.indd, b



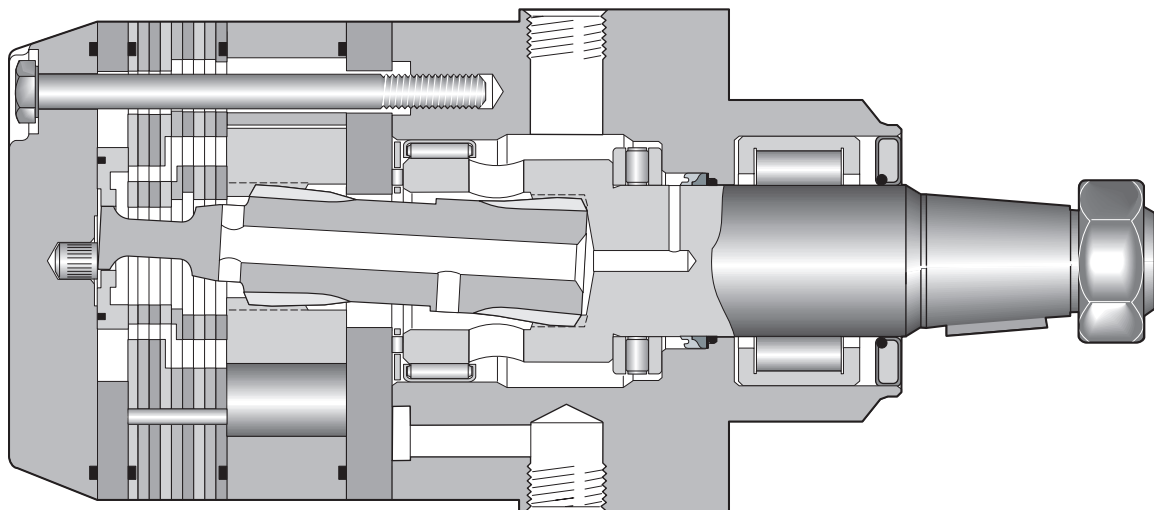
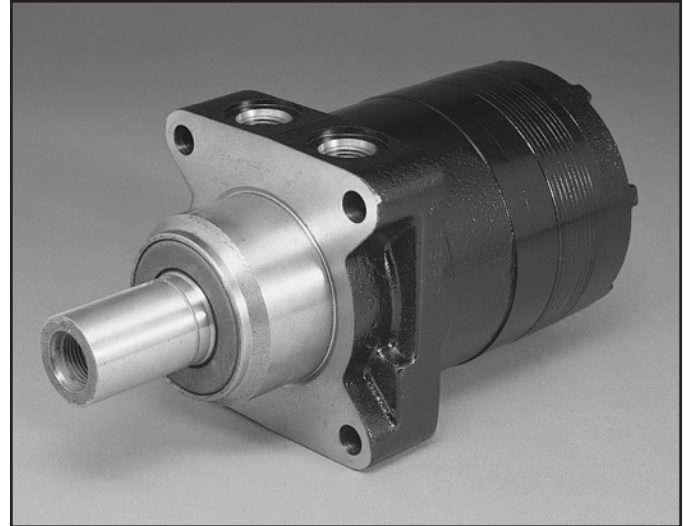
**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



|                                 |   |  |
|---------------------------------|---|--|
| <b>13 Displacements</b>         | (8.6 to 58.5 in <sup>3</sup> /rev)<br><b>141 . . . 959 cm<sup>3</sup>/rev</b> |  |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3000 psid)<br>. . . <b>207 bar</b>                           | <b>Int.</b><br>(4000 psid)<br>. . . <b>276 bar</b> |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>. . . <b>114 lpm</b>  |  |
| <b>Maximum Speed</b>            | (660 rpm)<br><b>660 rpm</b>   |  |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(8,772 lb in)<br><b>991 Nm</b>                                | <b>Int.</b><br>(11,876 lb in)<br><b>1342 Nm</b>    |
| <b>Maximum Side Load at Key</b> | (4800 lb)<br>. . . <b>21360 N</b>   |  |

### A Rugged Motor for Heavy Duty, High Side Load Applications

This motor was designed for tough applications. A stout drive link with unique 60:40 spline geometry will transmit over 13,000 lb-in of torque. The 1-1/2" output shaft can support 7000 pounds of radial load. Efficiency is assured by the use of roller vanes and sealed commutator. Durability is maintained by continually washing the powertrain splines and shaft seal in cooling fluid.



**THK**

Series

**XXXX**

Displacement


**XX**

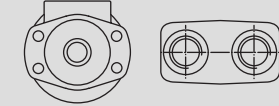
Mounting/Ports

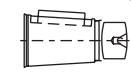
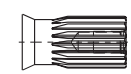
**XX**

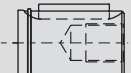
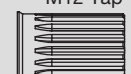
Shaft

| Code | cm <sup>3</sup> /tr   |   |
|------|-----------------------|---|
|      | cm <sup>3</sup> /giro | cm <sup>3</sup> /U in <sup>3</sup> /rev |
| 0140 | 141                   | / 8.6                                   |
| 0170 | 169                   | / 10.3                                  |
| 0195 | 195                   | / 11.9                                  |
| 0240 | 238                   | / 14.5                                  |
| 0280 | 280                   | / 17.1                                  |
| 0310 | 310                   | / 18.9                                  |
| 0335 | 337                   | / 20.6                                  |
| 0360 | 360                   | / 22.2                                  |
| 0405 | 405                   | / 24.7                                  |
| 0475 | 477                   | / 29.1                                  |
| 0530 | 528                   | / 32.3                                  |
| 0625 | 623                   | / 38.0                                  |
| 0785 | 786                   | / 48.0                                  |
| 0960 | 959                   | / 58.5                                  |

| Code | Mounting/Ports  |
|------|---|
| US   | Wheel, Standard, 7/8-14 SAE<br> |



| Code | Mounting/Ports  |
|------|---|
| MS   | Magneto, 7/8-14 SAE<br> |

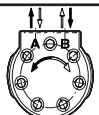
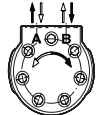
| Code | Shaft   |
|------|---|
| 31   | 1 1/2" J501 Taper<br>            |
| 36   | 1 1/2" 17 Tooth 12/24 Spline<br> |

| Code | Shaft   |
|------|---|
| 32   | 1 1/2" Keyed<br>   |
| 73   | 17 Tooth Spline (12/24 P.) (full length spline) M12 Tap<br> |

**0**  
 Rotation

**XXXX**  
 Options

| Code | Front Port Rotation  |
|------|--|
| 0    | Standard                |
| 1    | Reverse Timed Manifold  |

| Code | Rear Rotation   |
|------|---|
| 0    | Standard                 |
| 1    | Reverse Timed Manifold  |

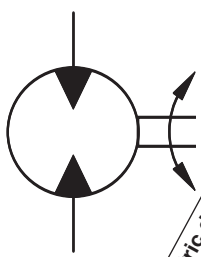
Rotation viewed from shaft end.

| Code | Options   |
|------|---|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAAB | "Standard", No Paint  |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint   |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAJL | No paint, No shaft hardware   |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware  |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00"), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware        |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| BBGV | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1015 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 1450 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGX | No Shaft Hardware, Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2031 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| BBGY | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 3046 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBGZ | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 4061 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| BBHC | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 725 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| BBHD | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, 2538 PSI Int Bidirectional Relief, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                    |
| FSEK | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware                     |
| FSEN | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), No Paint, No Shaft Hardware   |



**WARNING**

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Geometric displacement  
 Max. speed @ Max. intermittent flow  
 Max. oil flow  
 Max. Differential Pressure  
 Max. supply pressure  
 Max. torque  
 Max. performance  
 Min. starting torque

| Motor Series THK | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int*     |                      | cont / int* |                         | max         |                        |             | cont / int* |  |
|------------------|--|---------|-----------------|----------------------|-------------|-------------------------|-------------|------------------------|-------------|-------------|--|
|                  |  |         | l/min<br>g/min  | bar<br>psid          | bar<br>psig | bar<br>psig             | Nm<br>lb-in | KW<br>HP               | Nm<br>lb-in |             |  |
| THK 0140         | 141<br>8.6                                   | 660     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 390 530<br>3455 4692    | 33<br>45    | 315 418<br>2791 3706   |             |             |  |
| THK 0170         | 169<br>10.3                                  | 554     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 476 646<br>4216 5714    | 33<br>45    | 376 505<br>3331 4469   |             |             |  |
| THK 0195         | 195<br>11.9                                  | 477     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 556 753<br>4919 6663    | 33<br>45    | 451 611<br>3989 5408   |             |             |  |
| THK 0240         | 238<br>14.5                                  | 393     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 677 913<br>5991 8081    | 32<br>44    | 582 776<br>5152 6865   |             |             |  |
| THK 0280         | 280<br>17.1                                  | 334     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 796 1073<br>7044 9499   | 31<br>42    | 675 870<br>5972 7699   |             |             |  |
| THK 0310         | 310<br>18.9                                  | 303     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 964 1297<br>8533 11479  | 30<br>41    | 843 1117<br>7458 9889  |             |             |  |
| THK 0335         | 337<br>20.6                                  | 277     | 76 95<br>20 25  | 207 276<br>3000 4000 | 300<br>4350 | 924 1229<br>8184 10817  | 31<br>41    | 778 1005<br>6882 8893  |             |             |  |
| THK 0360         | 360<br>22.2                                  | 259     | 76 95<br>20 25  | 172 241<br>2500 3500 | 300<br>4350 | 894 1253<br>7913 11093  | 29<br>39    | 703 1017<br>6224 9007  |             |             |  |
| THK 0405         | 405<br>24.7                                  | 232     | 76 95<br>20 25  | 172 241<br>2500 3500 | 300<br>4350 | 942 1342<br>8336 11877  | 27<br>37    | 791 1145<br>7002 10133 |             |             |  |
| THK 0475         | 477<br>29.1                                  | 237     | 76 114<br>20 30 | 138 207<br>2000 3000 | 300<br>4350 | 887 1372<br>7853 12145  | 28<br>38    | 740 1120<br>6549 9909  |             |             |  |
| THK 0530         | 528<br>32.3                                  | 213     | 76 114<br>20 30 | 138 172<br>2000 2500 | 300<br>4350 | 983 1253<br>8701 11086  | 23<br>31    | 874 1091<br>7737 9657  |             |             |  |
| THK 0625         | 623<br>38.0                                  | 182     | 76 114<br>20 30 | 121 155<br>1750 2250 | 300<br>4350 | 986 1291<br>8727 11424  | 20<br>27    | 895 1165<br>7924 10312 |             |             |  |
| THK 0785         | 786<br>48.0                                  | 143     | 76 114<br>20 30 | 103 138<br>1500 2000 | 300<br>4350 | 1044 1428<br>9239 12636 | 17<br>23    | 991 1341<br>8772 11876 |             |             |  |
| THK 0960         | 959<br>58.5                                  | 118     | 76 114<br>20 30 | 69 103<br>1000 1500  | 300<br>4350 | 773 1268<br>6843 11227  | 12<br>16    | 763 1177<br>6752 10419 |             |             |  |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.



**THK 0140**

**8.6 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 519<br>9   | 1060<br>4   |             |             |             |             |             |             |
| <b>1</b>  | 540<br>22  | 1090<br>17  | 1635<br>11  | 2180<br>6   |             |             |             |             |
| <b>2</b>  | 569<br>49  | 1156<br>43  | 1730<br>36  | 2286<br>30  | 2827<br>23  | 3368<br>19  | 3899<br>12  | 4447<br>12  |
| <b>3</b>  | 565<br>75  | 1159<br>69  | 1744<br>62  | 2321<br>55  | 2899<br>47  | 3477<br>40  | 4048<br>33  | 4608<br>29  |
| <b>4</b>  | 564<br>102 | 1170<br>94  | 1768<br>87  | 2358<br>80  | 2943<br>72  | 3517<br>64  | 4082<br>57  | 4644<br>52  |
| <b>5</b>  | 556<br>128 | 1170<br>120 | 1776<br>112 | 2375<br>105 | 2968<br>97  | 3556<br>89  | 4135<br>81  | 4701<br>76  |
| <b>7</b>  | 540<br>182 | 1160<br>172 | 1779<br>164 | 2390<br>155 | 2994<br>146 | 3592<br>138 | 4181<br>130 | 4763<br>123 |
| <b>9</b>  | 515<br>235 | 1143<br>225 | 1768<br>215 | 2385<br>206 | 2996<br>196 | 3601<br>187 | 4199<br>179 | 4794<br>171 |
| <b>12</b> | 471<br>315 | 1096<br>303 | 1729<br>292 | 2356<br>281 | 2974<br>271 | 3587<br>261 | 4193<br>252 | 4794<br>243 |
| <b>15</b> | 418<br>395 | 1042<br>381 | 1673<br>368 | 2307<br>357 | 2933<br>346 | 3549<br>336 | 4163<br>325 | 4771<br>314 |
| <b>20</b> | 299<br>528 | 931<br>512  | 1565<br>497 | 2198<br>484 | 2825<br>472 | 3455<br>459 | 4078<br>447 | 4692<br>435 |
| <b>25</b> | 173<br>660 | 794<br>643  | 1426<br>626 | 2059<br>612 | 2695<br>598 | 3332<br>583 | 3961<br>569 | 4579<br>555 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0170**

**10.3 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 620<br>9        | 1284<br>7   | 1945<br>5   | 2613<br>4   | 3293<br>3   | 3983<br>2   |             |             |
| <b>1</b>  | 652<br>20       | 1337<br>18  | 2006<br>16  | 2683<br>14  | 3375<br>12  | 4063<br>11  | 4744<br>8   | 5402<br>8   |
| <b>2</b>  | 678<br>42       | 1390<br>40  | 2105<br>37  | 2822<br>35  | 3535<br>32  | 4226<br>30  | 4909<br>27  | 5587<br>25  |
| <b>3</b>  | 678<br>64       | 1397<br>61  | 2117<br>58  | 2836<br>56  | 3554<br>53  | 4263<br>50  | 4963<br>46  | 5652<br>44  |
| <b>4</b>  | 679<br>86       | 1409<br>83  | 2142<br>80  | 2872<br>77  | 3596<br>74  | 4310<br>71  | 5021<br>67  | 5716<br>64  |
| <b>5</b>  | 675<br>108      | 1413<br>104 | 2150<br>101 | 2885<br>98  | 3616<br>94  | 4339<br>91  | 5057<br>87  | 5761<br>83  |
| <b>7</b>  | 661<br>153      | 1405<br>148 | 2152<br>143 | 2900<br>140 | 3642<br>136 | 4374<br>132 | 5101<br>127 | 5818<br>123 |
| <b>9</b>  | 632<br>197      | 1385<br>191 | 2140<br>186 | 2891<br>181 | 3638<br>177 | 4380<br>173 | 5114<br>168 | 5838<br>163 |
| <b>12</b> | 583<br>263      | 1334<br>256 | 2096<br>250 | 2860<br>244 | 3617<br>239 | 4362<br>234 | 5101<br>228 | 5823<br>223 |
| <b>15</b> | 524<br>330      | 1275<br>322 | 2035<br>314 | 2804<br>308 | 3572<br>302 | 4327<br>296 | 5070<br>289 | 5801<br>283 |
| <b>20</b> | 382<br>442      | 1143<br>432 | 1908<br>422 | 2683<br>413 | 3455<br>406 | 4216<br>399 | 4972<br>391 | 5714<br>383 |
| <b>25</b> | 239<br>554      | 983<br>543  | 1747<br>531 | 2523<br>520 | 3299<br>511 | 4071<br>501 | 4839<br>492 | 5591<br>483 |

Flow (GPM)

TORQUE (LB IN) 4839  
 SPEED (RPM) 492

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0195**

**11.9 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 733<br>7   | 1503<br>3   |             |             |             |             |             |             |
| <b>1</b>  | 761<br>16  | 1546<br>13  | 2326<br>8   | 3104<br>3   |             |             |             |             |
| <b>2</b>  | 799<br>35  | 1638<br>32  | 2465<br>27  | 3270<br>21  | 4046<br>16  | 4813<br>11  | 5589<br>7   | 6375<br>6   |
| <b>3</b>  | 794<br>55  | 1639<br>50  | 2476<br>45  | 3303<br>39  | 4132<br>34  | 4970<br>28  | 5792<br>23  | 6595<br>19  |
| <b>4</b>  | 794<br>74  | 1654<br>69  | 2509<br>64  | 3356<br>58  | 4196<br>52  | 5023<br>46  | 5830<br>40  | 6635<br>35  |
| <b>5</b>  | 783<br>93  | 1653<br>88  | 2517<br>83  | 3375<br>76  | 4224<br>70  | 5065<br>64  | 5895<br>58  | 6710<br>52  |
| <b>7</b>  | 762<br>131 | 1637<br>126 | 2514<br>120 | 3384<br>113 | 4245<br>106 | 5098<br>99  | 5940<br>92  | 6772<br>86  |
| <b>9</b>  | 731<br>170 | 1616<br>164 | 2499<br>157 | 3373<br>150 | 4239<br>142 | 5093<br>135 | 5936<br>127 | 6774<br>120 |
| <b>12</b> | 677<br>228 | 1562<br>221 | 2455<br>213 | 3343<br>205 | 4217<br>196 | 5081<br>188 | 5934<br>179 | 6776<br>172 |
| <b>15</b> | 613<br>285 | 1498<br>278 | 2389<br>269 | 3283<br>260 | 4169<br>251 | 5040<br>242 | 5907<br>232 | 6765<br>233 |
| <b>20</b> | 448<br>381 | 1350<br>373 | 2245<br>363 | 3141<br>353 | 4031<br>342 | 4919<br>331 | 5798<br>321 | 6663<br>310 |
| <b>25</b> | 334<br>477 | 1158<br>468 | 2044<br>457 | 2941<br>445 | 3837<br>433 | 4729<br>421 | 5612<br>409 | 6500<br>397 |

Flow (GPM)

TORQUE (LB IN) 5612  
 SPEED (RPM) 409

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0240**

**14.5 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 932<br>6   | 1907<br>4   | 2894<br>2   |             |             |             |             |             |
| <b>1</b>  | 960<br>14  | 1954<br>12  | 2950<br>9   | 3943<br>6   | 4939<br>3   | 5930<br>2   |             |             |
| <b>2</b>  | 988<br>30  | 2031<br>27  | 3065<br>24  | 4090<br>20  | 5107<br>17  | 6100<br>14  | 7068<br>11  | 8037<br>9   |
| <b>3</b>  | 983<br>45  | 2029<br>42  | 3071<br>39  | 4101<br>35  | 5128<br>31  | 6161<br>27  | 7182<br>23  | 8184<br>20  |
| <b>4</b>  | 978<br>61  | 2037<br>58  | 3090<br>54  | 4136<br>49  | 5176<br>45  | 6207<br>42  | 7230<br>37  | 8234<br>33  |
| <b>5</b>  | 962<br>77  | 2030<br>73  | 3092<br>69  | 4144<br>64  | 5190<br>60  | 6231<br>56  | 7259<br>51  | 8271<br>47  |
| <b>7</b>  | 933<br>108 | 2005<br>104 | 3078<br>99  | 4141<br>94  | 5194<br>89  | 6239<br>84  | 7275<br>78  | 8298<br>73  |
| <b>9</b>  | 890<br>140 | 1972<br>135 | 3048<br>129 | 4112<br>123 | 5169<br>117 | 6213<br>112 | 7245<br>106 | 8271<br>100 |
| <b>12</b> | 832<br>187 | 1912<br>181 | 2996<br>175 | 4071<br>167 | 5125<br>161 | 6163<br>154 | 7195<br>147 | 8224<br>140 |
| <b>15</b> | 753<br>235 | 1832<br>228 | 2921<br>220 | 4009<br>212 | 5081<br>204 | 6137<br>196 | 7182<br>188 | 8212<br>180 |
| <b>20</b> | 559<br>314 | 1654<br>306 | 2744<br>297 | 3834<br>287 | 4917<br>278 | 5991<br>268 | 7045<br>258 | 8081<br>248 |
| <b>25</b> | 524<br>393 | 1427<br>384 | 2507<br>373 | 3595<br>363 | 4690<br>352 | 5780<br>340 | 6853<br>328 | 7913<br>317 |

Flow (GPM)

TORQUE (LB IN) 5780  
 SPEED (RPM) 340

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





**THK 0280**

**17.1 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |             |             |             |             |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        |
| <b>.5</b> | 1056<br>5       | 2177<br>4   | 3323<br>2   | 4512<br>1   |             |             |             |             |
| <b>1</b>  | 1087<br>12      | 2223<br>10  | 3378<br>8   | 4552<br>6   | 5734<br>5   | 6930<br>3   | 8135<br>3   | 9350<br>2   |
| <b>2</b>  | 1124<br>25      | 2313<br>23  | 3513<br>21  | 4700<br>18  | 5880<br>16  | 7060<br>14  | 8239<br>12  | 9400<br>11  |
| <b>3</b>  | 1124<br>39      | 2323<br>36  | 3532<br>34  | 4740<br>31  | 5940<br>28  | 7143<br>25  | 8346<br>22  | 9536<br>19  |
| <b>4</b>  | 1126<br>52      | 2346<br>49  | 3568<br>47  | 4786<br>43  | 6004<br>40  | 7214<br>37  | 8415<br>33  | 9596<br>30  |
| <b>5</b>  | 1115<br>65      | 2350<br>62  | 3582<br>59  | 4816<br>56  | 6044<br>52  | 7256<br>49  | 8457<br>45  | 9641<br>41  |
| <b>7</b>  | 1091<br>92      | 2338<br>88  | 3586<br>85  | 4832<br>80  | 6072<br>76  | 7301<br>72  | 8515<br>67  | 9706<br>63  |
| <b>9</b>  | 1046<br>118     | 2309<br>114 | 3564<br>110 | 4811<br>105 | 6051<br>101 | 7280<br>96  | 8499<br>90  | 9707<br>85  |
| <b>12</b> | 981<br>159      | 2242<br>154 | 3506<br>148 | 4757<br>143 | 5992<br>137 | 7221<br>132 | 8444<br>125 | 9652<br>118 |
| <b>15</b> | 898<br>199      | 2164<br>193 | 3437<br>186 | 4702<br>180 | 5951<br>174 | 7187<br>168 | 8416<br>160 | 9625<br>152 |
| <b>20</b> | 691<br>266      | 1976<br>258 | 3255<br>250 | 4529<br>243 | 5795<br>235 | 7044<br>227 | 8275<br>218 | 9499<br>209 |
| <b>25</b> | 703<br>334      | 1726<br>324 | 2987<br>314 | 4260<br>305 | 5540<br>296 | 6815<br>286 | 8071<br>276 | 9311<br>267 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



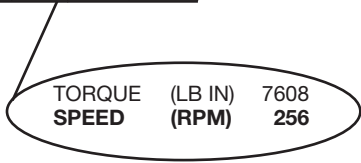
**THK 0310**

**18.9 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1188<br>4   | 2464<br>3   | 3766<br>2   | 5102<br>1   |             |             |             |              |
| <b>1</b>  | 1220<br>11  | 2508<br>9   | 3812<br>7   | 5145<br>5   | 6477<br>4   | 7822<br>2   | 9181<br>2   | 10530<br>1   |
| <b>2</b>  | 1259<br>23  | 2598<br>21  | 3950<br>19  | 5298<br>17  | 6642<br>14  | 7972<br>13  | 9282<br>10  | 10574<br>9   |
| <b>3</b>  | 1257<br>35  | 2606<br>33  | 3889<br>30  | 5332<br>28  | 6688<br>25  | 8044<br>22  | 9392<br>19  | 10693<br>16  |
| <b>4</b>  | 1259<br>47  | 2628<br>44  | 4003<br>42  | 5377<br>39  | 6749<br>36  | 8114<br>33  | 9461<br>29  | 10780<br>26  |
| <b>5</b>  | 1247<br>59  | 2629<br>56  | 4252<br>52  | 5401<br>50  | 6782<br>47  | 8149<br>42  | 9499<br>39  | 10823<br>35  |
| <b>7</b>  | 1218<br>84  | 2614<br>80  | 4013<br>76  | 5413<br>72  | 6806<br>68  | 8184<br>64  | 9543<br>60  | 10874<br>56  |
| <b>9</b>  | 1167<br>107 | 2574<br>103 | 3983<br>99  | 5386<br>94  | 6780<br>90  | 8162<br>85  | 9529<br>80  | 10877<br>75  |
| <b>12</b> | 1089<br>143 | 2493<br>139 | 3904<br>133 | 5308<br>128 | 6696<br>122 | 8075<br>117 | 9443<br>110 | 10793<br>102 |
| <b>15</b> | 995<br>180  | 2400<br>173 | 3817<br>167 | 5225<br>160 | 6621<br>154 | 8003<br>148 | 9371<br>140 | 10718<br>131 |
| <b>20</b> | 769<br>241  | 2194<br>234 | 3618<br>225 | 5043<br>218 | 6462<br>210 | 7863<br>203 | 9238<br>194 | 10588<br>183 |
| <b>25</b> | 626<br>303  | 1955<br>294 | 3359<br>284 | 4771<br>274 | 6251<br>265 | 7608<br>256 | 8998<br>246 | 10360<br>236 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0335**

**20.6 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         | 4000         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1297<br>4   | 2699<br>3   | 4128<br>1   | 5584<br>1   |             |             |              |              |
| <b>1</b>  | 1329<br>10  | 2741<br>8   | 4176<br>7   | 5630<br>5   | 7084<br>4   | 8551<br>2   | 10036<br>2   | 11496<br>1   |
| <b>2</b>  | 1369<br>21  | 2832<br>19  | 4308<br>17  | 5787<br>15  | 7265<br>13  | 8718<br>11  | 10136<br>9   | 11534<br>8   |
| <b>3</b>  | 1366<br>32  | 2838<br>30  | 4326<br>27  | 5817<br>25  | 7301<br>22  | 8781<br>20  | 10248<br>17  | 11685<br>14  |
| <b>4</b>  | 1368<br>43  | 2858<br>40  | 4358<br>38  | 5861<br>35  | 7358<br>32  | 8850<br>29  | 10317<br>25  | 11748<br>22  |
| <b>5</b>  | 1355<br>54  | 2858<br>51  | 4368<br>48  | 5880<br>45  | 7386<br>42  | 8880<br>38  | 10352<br>34  | 11791<br>30  |
| <b>7</b>  | 1323<br>76  | 2840<br>73  | 4363<br>69  | 5888<br>65  | 7407<br>61  | 8908<br>57  | 10384<br>53  | 11829<br>47  |
| <b>9</b>  | 1266<br>98  | 2791<br>94  | 4326<br>90  | 5856<br>85  | 7376<br>81  | 8884<br>76  | 10372<br>71  | 11834<br>64  |
| <b>12</b> | 1177<br>131 | 2698<br>127 | 4230<br>121 | 5759<br>116 | 7273<br>110 | 8773<br>105 | 10261<br>98  | 11726<br>90  |
| <b>15</b> | 1075<br>165 | 2594<br>159 | 4127<br>153 | 5654<br>146 | 7170<br>140 | 8670<br>134 | 10153<br>126 | 11613<br>116 |
| <b>20</b> | 833<br>221  | 2372<br>214 | 3915<br>205 | 5463<br>197 | 7008<br>189 | 8533<br>182 | 10026<br>173 | 11479<br>161 |
| <b>25</b> | 678<br>277  | 2142<br>269 | 3663<br>259 | 5189<br>248 | 6726<br>239 | 8257<br>230 | 9757<br>219  | 11219<br>209 |

Flow (GPM)

TORQUE (LB IN) 9757  
 SPEED (RPM) 219

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0360**

**360 cm<sup>3</sup> / rev (22.2 in<sup>3</sup> / rev)**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <b>.5</b> | 1386<br>4   | 2883<br>3   | 4410<br>1   | 5965<br>1   |             |             |              |
| <b>1</b>  | 1420<br>9   | 2928<br>7   | 4461<br>7   | 6014<br>5   | 7567<br>4   | 9135<br>2   | 10721<br>2   |
| <b>2</b>  | 1462<br>20  | 3025<br>18  | 4602<br>16  | 6182<br>14  | 7761<br>12  | 9313<br>10  | 10828<br>8   |
| <b>3</b>  | 1459<br>30  | 3031<br>28  | 4621<br>25  | 6214<br>23  | 7799<br>21  | 9380<br>19  | 10947<br>16  |
| <b>4</b>  | 1461<br>40  | 3053<br>37  | 4655<br>36  | 6261<br>33  | 7884<br>30  | 9454<br>27  | 11021<br>23  |
| <b>5</b>  | 1447<br>51  | 3053<br>48  | 4666<br>45  | 6281<br>42  | 7890<br>39  | 9486<br>36  | 11059<br>32  |
| <b>7</b>  | 1413<br>71  | 3034<br>68  | 4661<br>65  | 6290<br>61  | 7913<br>57  | 9516<br>53  | 11093<br>50  |
| <b>9</b>  | 1352<br>92  | 2981<br>88  | 4621<br>84  | 6256<br>80  | 7879<br>76  | 9490<br>71  | 11080<br>66  |
| <b>12</b> | 1257<br>123 | 2882<br>119 | 4519<br>113 | 6152<br>109 | 7769<br>103 | 9372<br>98  | 10961<br>92  |
| <b>15</b> | 1148<br>154 | 2771<br>149 | 4409<br>143 | 6040<br>137 | 7659<br>131 | 9262<br>125 | 10846<br>118 |
| <b>20</b> | 890<br>207  | 2534<br>200 | 4182<br>192 | 5836<br>184 | 7486<br>177 | 9115<br>170 | 10710<br>162 |
| <b>25</b> | 724<br>259  | 2288<br>252 | 3913<br>242 | 5543<br>232 | 7185<br>224 | 8821<br>215 | 10423<br>205 |

Flow (GPM)

TORQUE (LB IN) 8821  
 SPEED (RPM) 215

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0405**

**24.7 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000         | 3500         |
|-----------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1544<br>4   | 3178<br>3   | 4840<br>2   | 6515<br>1   | 8185<br>1   |              |              |
| <b>1</b>  | 1593<br>8   | 3256<br>7   | 4928<br>6   | 6607<br>6   | 8303<br>5   | 9987<br>4    | 11652<br>3   |
| <b>2</b>  | 1636<br>17  | 3351<br>16  | 5084<br>15  | 6817<br>14  | 8550<br>13  | 10272<br>12  | 11978<br>11  |
| <b>3</b>  | 1637<br>27  | 3365<br>25  | 5106<br>23  | 6847<br>22  | 8588<br>21  | 10314<br>19  | 12031<br>18  |
| <b>4</b>  | 1645<br>36  | 3394<br>34  | 5159<br>32  | 6920<br>30  | 8668<br>29  | 10402<br>27  | 12130<br>26  |
| <b>5</b>  | 1640<br>45  | 3408<br>43  | 5201<br>41  | 6983<br>39  | 8733<br>37  | 10466<br>35  | 12194<br>33  |
| <b>7</b>  | 1606<br>64  | 3396<br>61  | 5211<br>59  | 7003<br>56  | 8772<br>54  | 10527<br>51  | 12271<br>49  |
| <b>9</b>  | 1551<br>82  | 3350<br>80  | 5176<br>77  | 6981<br>73  | 8763<br>70  | 10519<br>67  | 12269<br>64  |
| <b>12</b> | 1428<br>110 | 3238<br>107 | 5075<br>103 | 6888<br>99  | 8670<br>95  | 10424<br>91  | 12172<br>88  |
| <b>15</b> | 1310<br>138 | 3112<br>135 | 4948<br>130 | 6759<br>125 | 8545<br>120 | 10306<br>115 | 12060<br>111 |
| <b>20</b> | 1136<br>185 | 2862<br>181 | 4692<br>175 | 6518<br>168 | 8336<br>162 | 10122<br>156 | 11877<br>151 |
| <b>25</b> |             |             | 4492<br>219 | 6303<br>212 | 8084<br>204 | 9848<br>197  | 11585<br>190 |

Flow (GPM)

TORQUE (LB IN) 9848  
 SPEED (RPM) 197

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

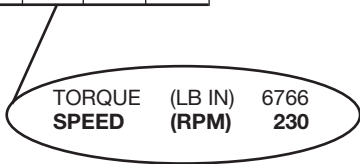


**THK 0475**

**29.1 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         |
| <b>.5</b> | 1768<br>3       | 3732<br>3   | 5733<br>2   | 7744<br>1   | 9762<br>1    |              |
| <b>1</b>  | 1868<br>7       | 3878<br>7   | 5879<br>6   | 7851<br>5   | 9838<br>4    | 11830<br>3   |
| <b>2</b>  | 1964<br>15      | 4055<br>14  | 6180<br>14  | 8237<br>12  | 10241<br>10  | 12136<br>8   |
| <b>3</b>  | 1972<br>23      | 4074<br>22  | 6208<br>21  | 8321<br>19  | 10379<br>17  | 12355<br>13  |
| <b>4</b>  | 2005<br>31      | 4135<br>30  | 6287<br>29  | 8382<br>27  | 10463<br>24  | 12496<br>20  |
| <b>5</b>  | 2004<br>39      | 4129<br>38  | 6304<br>37  | 8428<br>34  | 10514<br>31  | 12544<br>26  |
| <b>7</b>  | 1990<br>55      | 4133<br>54  | 6308<br>52  | 8445<br>50  | 10555<br>45  | 12602<br>40  |
| <b>9</b>  | 1924<br>70      | 4104<br>69  | 6285<br>68  | 8430<br>65  | 10528<br>60  | 12608<br>54  |
| <b>12</b> | 1775<br>94      | 3974<br>93  | 6157<br>91  | 8328<br>87  | 10446<br>82  | 12528<br>75  |
| <b>15</b> | 1619<br>118     | 3784<br>116 | 5990<br>114 | 8188<br>110 | 10311<br>104 | 12372<br>96  |
| <b>20</b> | 1314<br>157     | 3373<br>156 | 5629<br>153 | 7853<br>149 | 10038<br>141 | 12145<br>132 |
| <b>25</b> | 1141<br>197     | 3029<br>196 | 5220<br>193 | 7427<br>189 | 9629<br>182  | 11757<br>174 |
| <b>30</b> | 606<br>237      | 2505<br>236 | 4649<br>233 | 6766<br>230 | 8878<br>224  | 10989<br>219 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**THK 0530**

**32.2 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         |
| <b>.5</b> | 2080<br>3       | 4256<br>3   | 6479<br>2   | 8726<br>2   | 11012<br>1   |
| <b>1</b>  | 2158<br>7       | 4372<br>6   | 6592<br>6   | 8779<br>5   | 10994<br>4   |
| <b>2</b>  | 2246<br>14      | 4567<br>13  | 6869<br>12  | 9126<br>11  | 11376<br>9   |
| <b>3</b>  | 2242<br>21      | 4578<br>20  | 6916<br>19  | 9237<br>17  | 11500<br>14  |
| <b>4</b>  | 2253<br>28      | 4625<br>27  | 6977<br>25  | 9296<br>23  | 11586<br>20  |
| <b>5</b>  | 2235<br>35      | 4629<br>34  | 7002<br>32  | 9333<br>29  | 11626<br>26  |
| <b>7</b>  | 2182<br>49      | 4599<br>48  | 7006<br>46  | 9362<br>42  | 11659<br>38  |
| <b>9</b>  | 2095<br>63      | 4535<br>62  | 6960<br>59  | 9330<br>55  | 11650<br>50  |
| <b>12</b> | 1943<br>85      | 4390<br>83  | 6825<br>80  | 9217<br>75  | 11549<br>69  |
| <b>15</b> | 1753<br>106     | 4199<br>104 | 6638<br>100 | 9052<br>95  | 11408<br>87  |
| <b>20</b> | 1327<br>141     | 3783<br>139 | 6262<br>135 | 8701<br>129 | 11086<br>120 |
| <b>25</b> | 1011<br>177     | 3300<br>175 | 5751<br>171 | 8210<br>165 | 10639<br>158 |
| <b>30</b> | 269<br>213      | 2698<br>211 | 5083<br>208 | 7415<br>203 | 9814<br>197  |

**Flow (GPM)**

TORQUE (LB IN) 9814  
 SPEED (RPM) 197

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

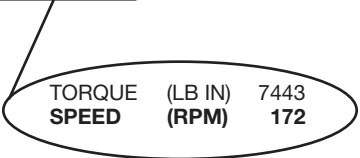


**THK 0625**

**38.0 cu in / rev**

|           | PRESSURE (PSID) |             |             |             |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 1750        | 2250         |
| <b>.5</b> | 1939<br>2       | 4593<br>1   |             |             |              |
| <b>1</b>  | 2087<br>5       | 4665<br>3   | 7283<br>2   | 8680<br>2   | 11579<br>1   |
| <b>2</b>  | 2338<br>11      | 4991<br>9   | 7590<br>8   | 8853<br>7   | 11458<br>5   |
| <b>3</b>  | 2386<br>17      | 5101<br>15  | 7753<br>13  | 9055<br>12  | 11689<br>9   |
| <b>4</b>  | 2457<br>23      | 5202<br>21  | 7872<br>19  | 9174<br>17  | 11769<br>14  |
| <b>5</b>  | 2479<br>29      | 5246<br>27  | 7943<br>25  | 9242<br>23  | 11821<br>18  |
| <b>7</b>  | 2464<br>41      | 5273<br>39  | 7995<br>36  | 9306<br>34  | 11859<br>28  |
| <b>9</b>  | 2401<br>53      | 5223<br>51  | 7993<br>48  | 9337<br>45  | 11935<br>39  |
| <b>12</b> | 2254<br>71      | 5092<br>69  | 7886<br>65  | 9239<br>62  | 11900<br>54  |
| <b>15</b> | 2052<br>89      | 4901<br>87  | 7721<br>83  | 9086<br>80  | 11763<br>70  |
| <b>20</b> | 1600<br>120     | 4490<br>117 | 7334<br>112 | 8725<br>109 | 11424<br>98  |
| <b>25</b> | 1063<br>151     | 3933<br>148 | 6818<br>144 | 8235<br>140 | 11021<br>131 |
| <b>30</b> | 359<br>182      | 3250<br>180 | 6074<br>176 | 7443<br>172 | 10179<br>165 |

**Flow (GPM)**



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





**THK 0785**

**48.0 cu in / rev**

|           | PRESSURE (PSID) |             |             |              |
|-----------|-----------------|-------------|-------------|--------------|
|           | 500             | 1000        | 1500        | 2000         |
| <b>.5</b> | 2910<br>2       | 6153<br>2   | 9607<br>1   | 12950<br>1   |
| <b>1</b>  | 3011<br>4       | 6296<br>4   | 9670<br>3   | 12919<br>3   |
| <b>2</b>  | 3217<br>9       | 6536<br>8   | 9935<br>7   | 13060<br>6   |
| <b>3</b>  | 3220<br>14      | 6613<br>13  | 9977<br>11  | 13079<br>9   |
| <b>4</b>  | 3265<br>19      | 6679<br>17  | 10021<br>15 | 13078<br>13  |
| <b>5</b>  | 3263<br>23      | 6703<br>22  | 10047<br>19 | 13103<br>16  |
| <b>7</b>  | 3218<br>33      | 6722<br>31  | 10068<br>28 | 13062<br>24  |
| <b>9</b>  | 3107<br>43      | 6664<br>41  | 10108<br>36 | 13185<br>31  |
| <b>12</b> | 2892<br>57      | 6489<br>55  | 9959<br>49  | 13082<br>42  |
| <b>15</b> | 2643<br>71      | 6238<br>69  | 9733<br>62  | 12938<br>54  |
| <b>20</b> | 2044<br>95      | 5673<br>92  | 9239<br>85  | 12636<br>75  |
| <b>25</b> | 2313<br>119     | 4976<br>117 | 8571<br>110 | 12073<br>101 |
| <b>30</b> | 496<br>143      | 4104<br>141 | 7582<br>137 | 11024<br>130 |

Flow (GPM)

TORQUE (LB IN) 11024  
SPEED (RPM) 130

**THK 0960**

**58.5 cu in / rev**

|           | PRESSURE (PSID) |             |             |
|-----------|-----------------|-------------|-------------|
|           | 500             | 1000        | 1500        |
| <b>.5</b> | 3692<br>2       | 7712<br>1   | 11750<br>1  |
| <b>1</b>  | 3788<br>3       | 7858<br>3   | 11895<br>3  |
| <b>2</b>  | 3900<br>7       | 8045<br>7   | 12058<br>6  |
| <b>3</b>  | 3905<br>11      | 8078<br>11  | 12135<br>10 |
| <b>4</b>  | 3939<br>15      | 8155<br>14  | 12210<br>13 |
| <b>5</b>  | 3923<br>19      | 8173<br>18  | 12238<br>17 |
| <b>7</b>  | 3860<br>27      | 8160<br>26  | 12262<br>24 |
| <b>9</b>  | 3733<br>35      | 8074<br>34  | 12224<br>31 |
| <b>12</b> | 3475<br>47      | 7848<br>45  | 12062<br>42 |
| <b>15</b> | 3149<br>58      | 7545<br>57  | 11823<br>53 |
| <b>20</b> | 2437<br>78      | 6843<br>76  | 11227<br>72 |
| <b>25</b> | 2969<br>98      | 5990<br>96  | 10360<br>92 |
| <b>30</b> | 603<br>118      | 4919<br>117 | 9170<br>113 |

Flow (GPM)

TORQUE (LB IN) 9170  
SPEED (RPM) 113

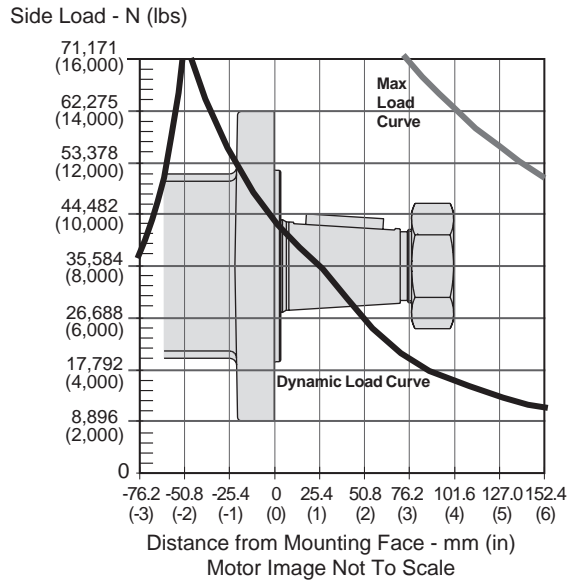
Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

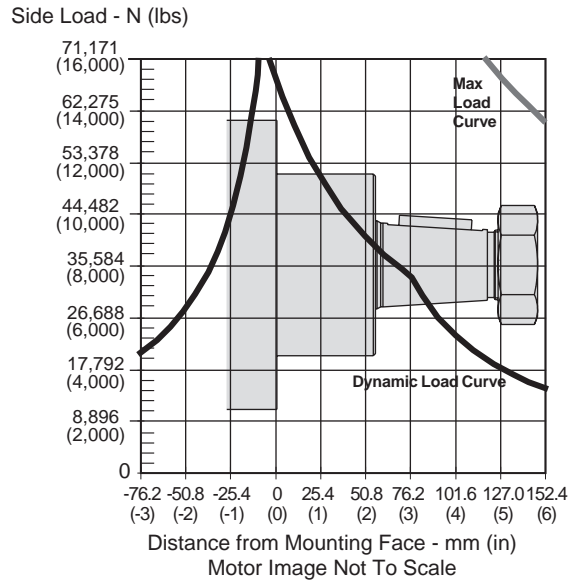


### Flange Mount



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $6 \times 10^6$  revolutions.

### Wheel Mount



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

### Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{6 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where:

$S$  = Shaft Speed RPM

$L$  = Life In Hours

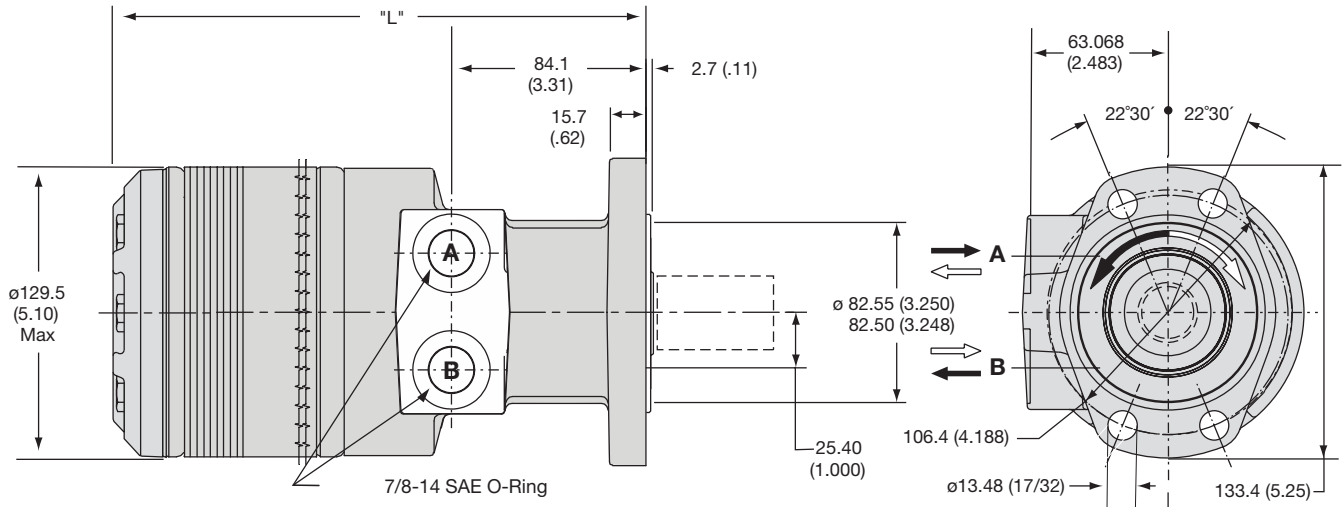
$F_a$  = Dynamic side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: MS

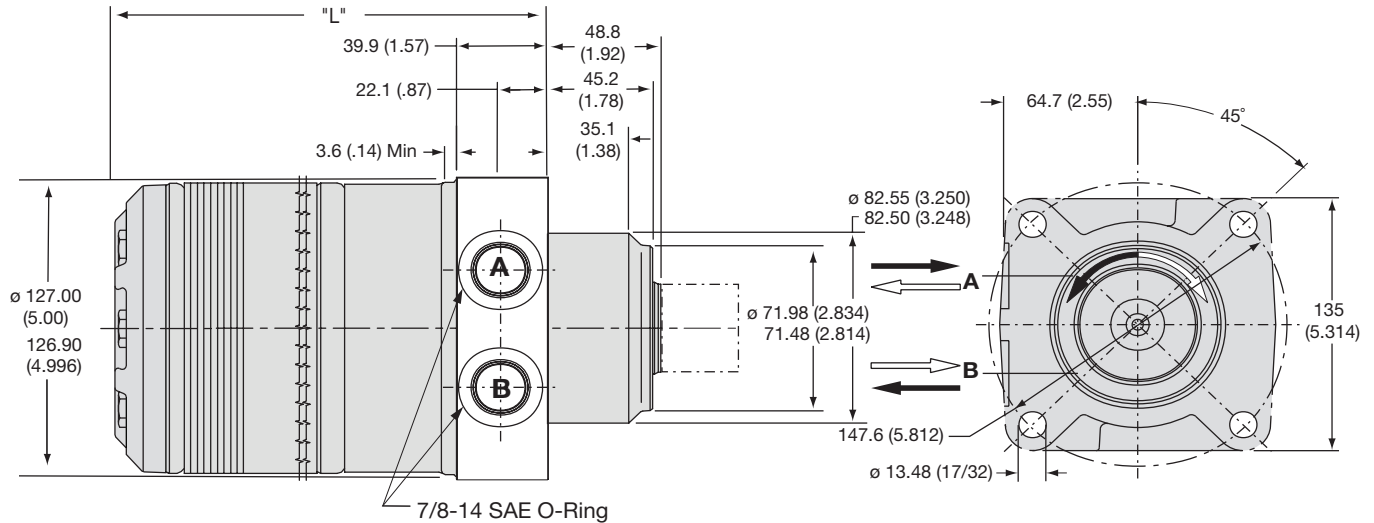
Magneto, 7/8-14 SAE O-Ring



| Code MS        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg       | 14.7   | 14.9   | 15.2   | 15.5   | 15.9   | 16.3   | 16.1   | 16.9   | 17.6    | 18.3    | 19.0    | 20.6    | 22.3    |
| Poids/Peso     | (lb)     | (32.3) | (32.8) | (33.4) | (34.2) | (35.1) | (35.9) | (35.4) | (37.3) | (38.7)  | (40.4)  | (41.9)  | (45.4)  | (49.1)  |
| Length         | "L" mm   | 215.9  | 218.9  | 222.3  | 227.1  | 231.6  | 238.0  | 235.0  | 245.4  | 254.0   | 260.4   | 269.7   | 288.8   | 307.8   |
|                | "L" (in) | (8.50) | (8.62) | (8.75) | (8.94) | (9.12) | (9.37) | (9.25) | (9.66) | (10.00) | (10.25) | (10.62) | (11.37) | (12.12) |

Code: US

Wheel, Standard, 7/8-14 SAE O-Ring



| Code US        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335   | 0405   | 0475   | 0530   | 0625   | 0785   | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg       | 16.9   | 17.2   | 17.4   | 17.8   | 18.2   | 18.4   | 18.6   | 19.2   | 19.8   | 20.6   | 21.3   | 22.9   | 24.5    |
| Poids/Peso     | (lb)     | (37.3) | (37.8) | (38.4) | (39.2) | (40.1) | (40.5) | (40.9) | (42.3) | (43.7) | (45.4) | (46.9) | (50.4) | (54.1)  |
| Length         | "L" mm   | 173.2  | 176.5  | 179.6  | 184.4  | 189.2  | 191.8  | 195.6  | 202.9  | 211.3  | 217.7  | 227.3  | 246.4  | 265.4   |
|                | "L" (in) | (6.82) | (6.95) | (7.07) | (7.26) | (7.45) | (7.55) | (7.70) | (7.99) | (8.32) | (8.57) | (8.95) | (9.70) | (10.45) |

English equivalents for metric specifications are shown in ( ).

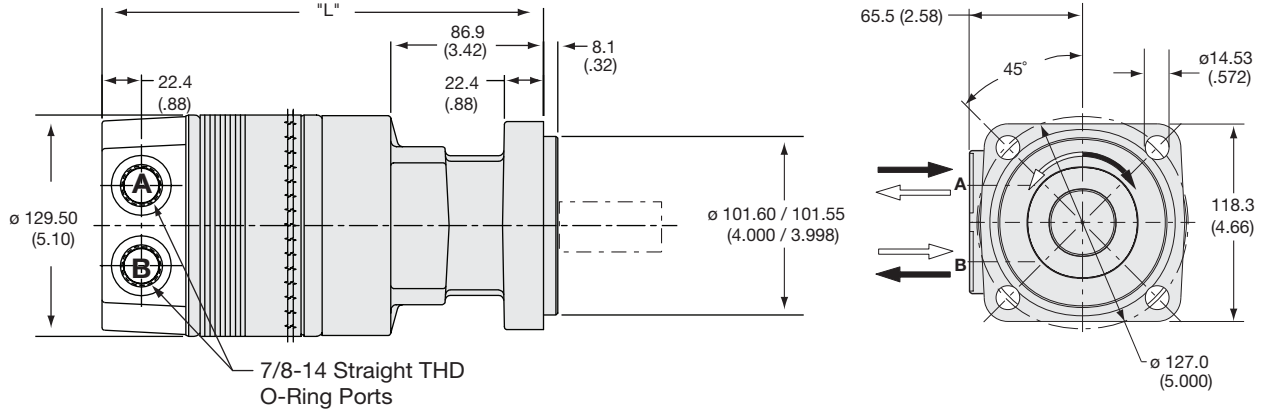
017.5 THK.indd, b



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: PB**

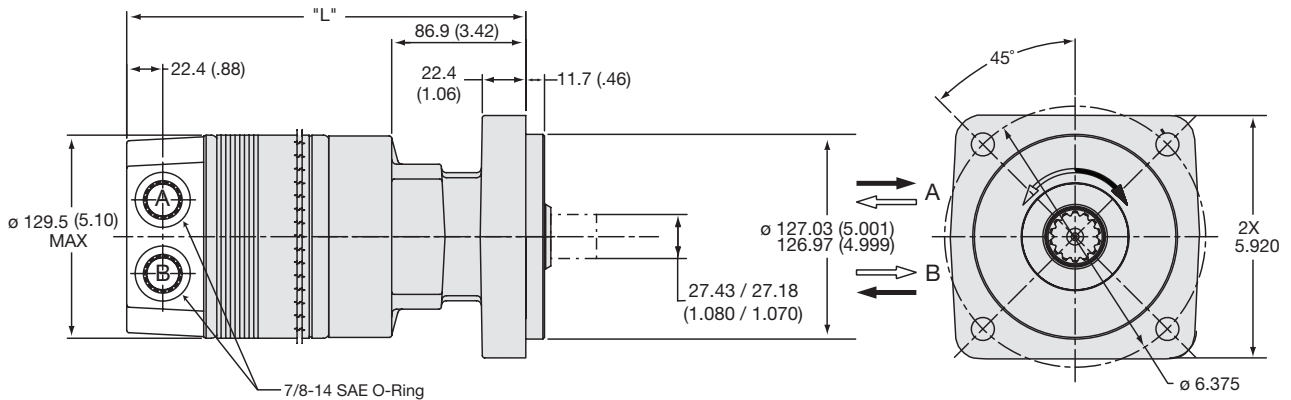
**SAE "B" 4 Bolt, Rear 7/8-14 SAE O-Ring Radial**



| Code PB        | disp.    | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335    | 0405    | 0475    | 0530    | 0625    | 0785    | 0960    |
|----------------|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg       | 16.9   | 17.2   | 17.4   | 17.8   | 18.2   | 18.4   | 18.6    | 19.2    | 19.8    | 20.6    | 21.3    | 22.9    | 24.5    |
| Poids/Peso     | (lb)     | (37.3) | (37.8) | (38.4) | (39.2) | (40.1) | (40.5) | (40.9)  | (42.3)  | (43.7)  | (45.4)  | (46.9)  | (50.4)  | (54.1)  |
| Length         | "L" mm   | 235.2  | 238.3  | 241.6  | 246.4  | 251.0  | 254.0  | 257.3   | 264.9   | 273.3   | 279.7   | 289.3   | 308.4   | 327.4   |
|                | "L" (in) | (9.26) | (9.38) | (9.51) | (9.70) | (9.88) | (10.0) | (10.13) | (10.43) | (10.76) | (11.01) | (11.39) | (12.14) | (12.89) |

**Code: KB**

**SAE CC 4 Bolt, Rear 7/8-14 SAE O-Ring Radial**



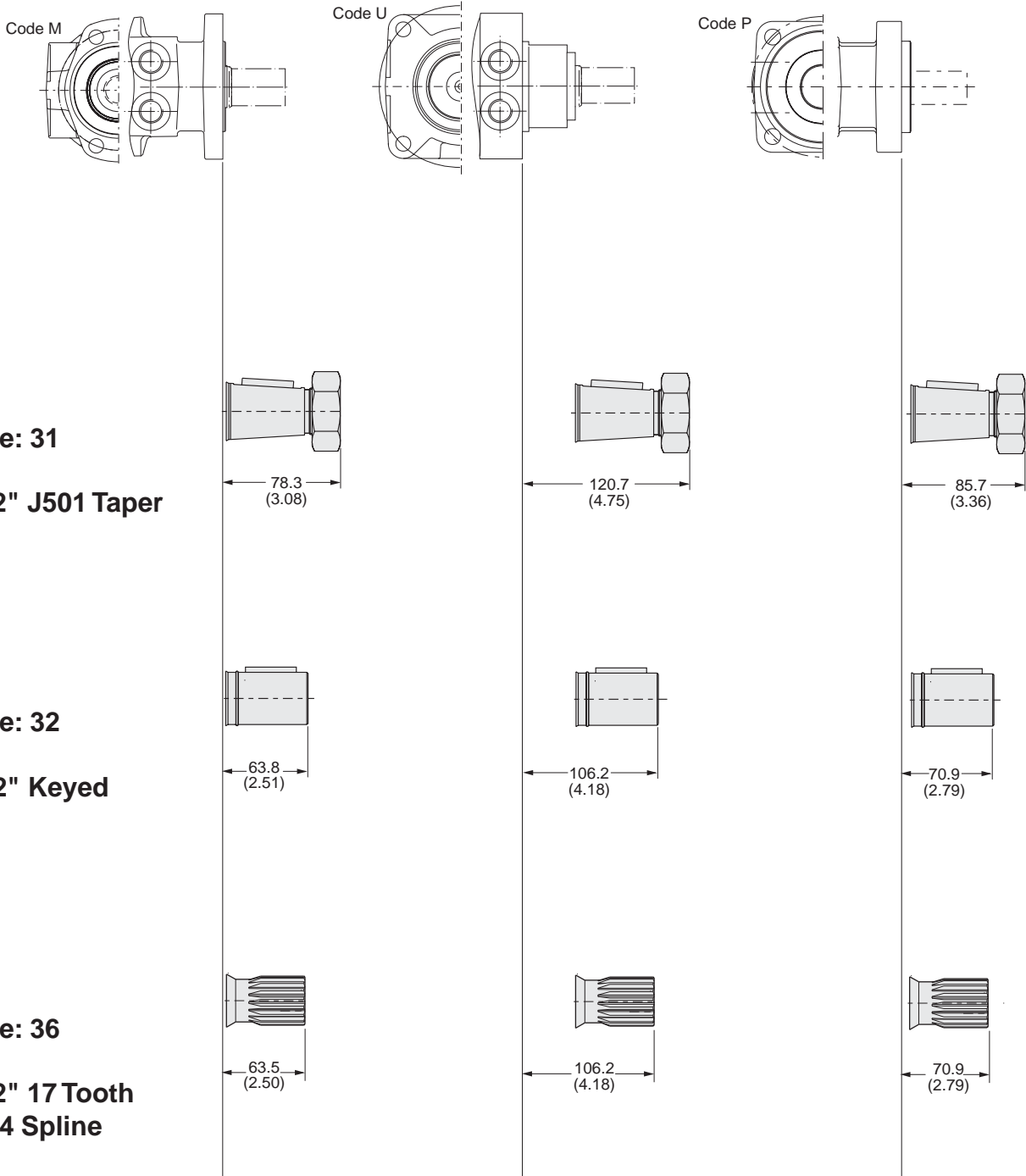
| Code KB        | disp | 0140   | 0170   | 0195   | 0240   | 0280   | 0310   | 0335    | 0405   | 0475    | 0530    | 0625    | 0785    | 0960    |
|----------------|------|--------|--------|--------|--------|--------|--------|---------|--------|---------|---------|---------|---------|---------|
| Weight/Gewicht | kg   | 19.4   | 19.4   | 19.9   | 20.3   | 20.7   | 20.9   | 21.0    | 21.7   | 22.3    | 23.1    | 23.8    | 25.4    | 27.0    |
| Poids/Peso     | (lb) | (42.8) | (43.3) | (43.9) | (44.7) | (45.6) | (46.0) | (46.4)  | (47.8) | (49.2)  | (50.9)  | (52.4)  | (55.9)  | (59.6)  |
| Length "L"     | mm   | 231.9  | 235.2  | 238.3  | 243.1  | 247.9  | 251.0  | 254.3   | 261.6  | 270.0   | 276.4   | 286.0   | 305.1   | 324.1   |
|                | (in) | (9.13) | (9.26) | (9.38) | (9.57) | (9.76) | (9.88) | (10.01) | (10.3) | (10.63) | (10.88) | (11.26) | (12.01) | (12.76) |

English equivalents for metric specifications are shown in ( ).

017.5 THK.indd, b



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



English equivalents for metric specifications are shown in ( ).

017.5 THK.indd, b

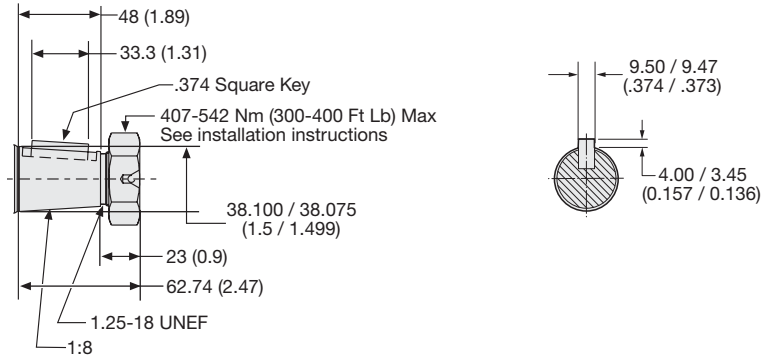


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

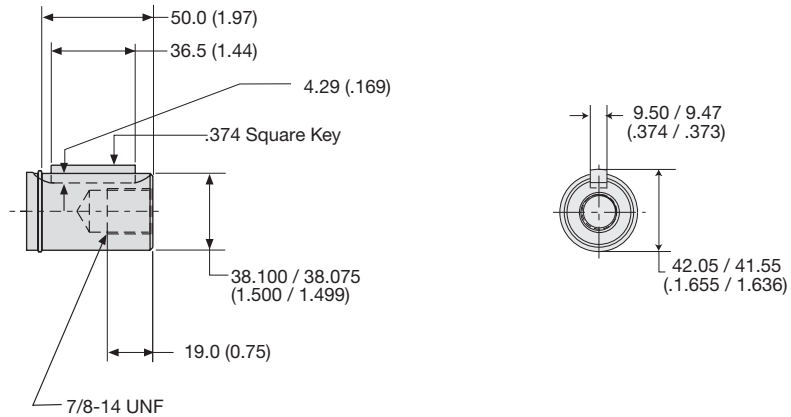
**Code: 31**

**1 1/2" J501 Taper**



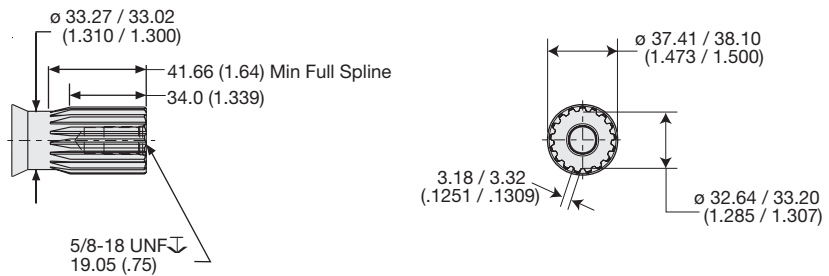
**Code: 32**

**1 1/2" Keyed**



**Code: 36**

**1 1/2" 17 Tooth  
 12/24 Spline**



English equivalents for metric specifications are shown in ( ).

017.5 THK.indd, b



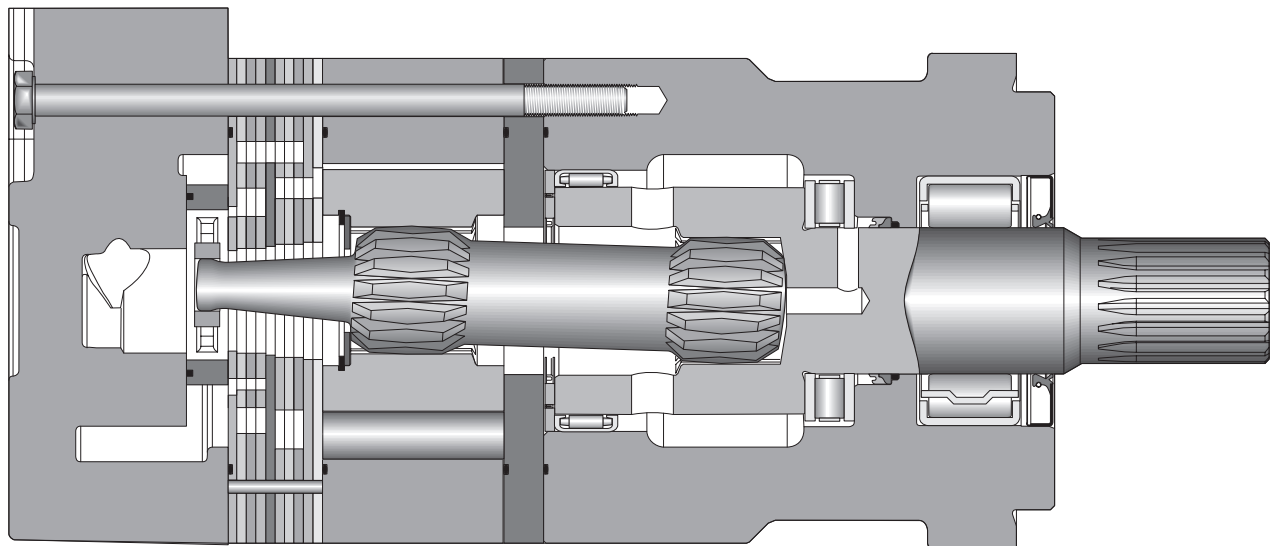
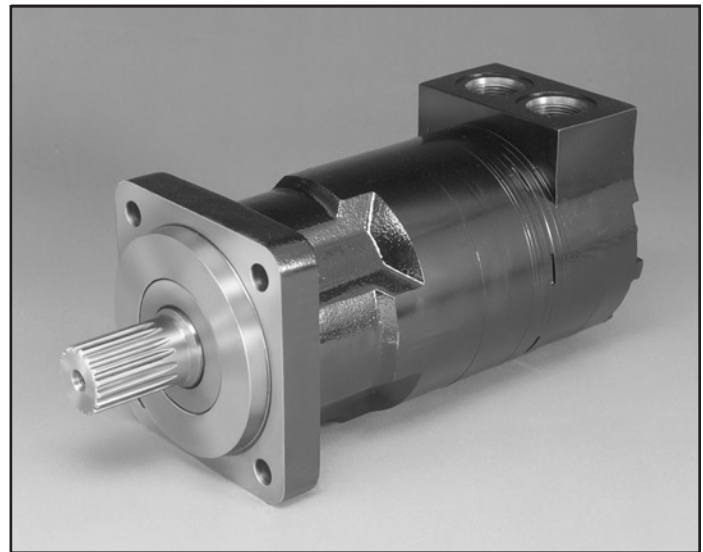
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|                                 |  |   |
|---------------------------------|--|---|
| <b>7 Displacements</b>          | (15.3 to 61.0 in <sup>3</sup> /rev)<br>250 . . . 1000 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont.</b><br>(3500 psid)<br>. . . 241 bar                               | <b>Int.</b><br>(4500 psid)<br>. . . 310 bar |
| <b>Maximum Oil Flow</b>         | (60 gpm)<br>. . . 227 lpm  |   |
| <b>Maximum Speed</b>            | (523 rpm)<br>523 rpm   |   |
| <b>Maximum Torque</b>           | <b>Cont.</b><br>(21360 lb in)<br>2413 Nm                                   | <b>Int.</b><br>(23540 lb in)<br>2660 Nm     |
| <b>Maximum Side Load at Key</b> | (5900 lb)<br>. . . 26245 N   |   |

### Exceptional Strength and Durability in a High Performance Motor

The heart of Parker's TK Series powertrain, the Torqmotor™, is an extra heavy duty part that includes unique 60:40 spline geometry. Rugged construction throughout allows the transmission of over 23,000 lb-in of torque. The entire powertrain is continually washed in cool, high flow fluid to assure long life. Roller vanes and sealed commutator maintain high efficiency and provide smooth low speed performance.





| Code | cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro<br>cm <sup>3</sup> /U in <sup>3</sup> /rev |
|------|---|
| 0250 | 250 / 15.3  |
| 0315 | 315 / 19.2  |
| 0400 | 400 / 24.4  |
| 0500 | 500 / 30.5  |
| 0630 | 630 / 38.4  |
| 0800 | 800 / 48.8  |
| 1000 | 1000 / 61.0   |

| Code | Shaft                               |
|------|-------------------------------------|
| 32   | 1 1/2" Keyed<br>                    |
| 36   | 1 1/2" 17 Tooth<br>12/24 Spline<br> |
| 63   | 1 3/4" Tapered<br>                  |
| 64   | 40mm Keyed<br>                      |

| Code | Rear Port Rotation               |
|------|----------------------------------|
| 0    | Standard<br>                     |
| 1    | Reverse<br>Timed<br>Manifold<br> |

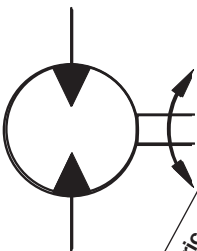
| Code | Mounting   |
|------|--|
| K4   | Standard SAE CC 4 Bolt<br>3/4 Split Flange Rear Radial<br> |
| K5   | Standard SAE CC 4 Bolt<br>1 5/16-12 SAE Rear Radial<br>    |
| R4   | SAE CC 4 Bolt Metric<br>3/4 Split Flange Rear Radial<br>   |
| T5   | Wheel Mount<br>1 5/16-12 SAE Rear Radial<br>               |

|              |    |  |
|--------------|----|--|
| Custom Order | 62 | 14 Tooth Spline<br>(12/24 P.), (SAE)<br> |
|--------------|----|--|

|              |    |  |
|--------------|----|--|
| Custom Order | T6 | Wheel Mount W/ Brake<br>Mount Nose, No Tapped<br>Holes In Nose, G3/4<br>(3/4 BSPP) Rear Radial<br> |
|--------------|----|--|

| Code | Options  |
|------|--|
| AAAA | "Standard", Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AAAB | "Standard", No Paint   |
| AAAC | "Standard", Double Paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AABJ | Free Running Rotor Set, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft   |
| AABT | Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware  |
| AAFA | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No paint  |
| AAFW | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| AAJH | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No shaft hardware   |
| AAJL | No paint, No shaft hardware  |
| AAUP | Fluorocarbon (Viton) Seals, High Temp Commutator Seal, No Paint, No shaft Hardware   |
| AAVE | Free Running Rotor Set, Fluorocarbon (Viton) Seals, High Temp Commutator Seal, Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| ABCW | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Bidirectional shuttle (.062 Orifice) (11:00°), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware |
| ABCZ | Fluorocarbon (Viton) Seals, Double paint (045247), Paint area all over except front and rear pilot and mounting flanges and shaft  |
| FSEK | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), Black Paint (045134), Paint area all over except front and rear pilot and mounting flanges and shaft, No Shaft Hardware              |
| FSEN | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal, Parker ECD Speed Sensor (455073), No Paint, No Shaft Hardware  |





| Motor Series TK | Geometric displacement<br>cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | Max. speed @ Max. intermittent flow<br>rev/min | Max. oil flow<br>cont / int*<br>l/min<br>g/min | Max. Differential Pressure<br>cont / int*<br>bar<br>psid | Max. supply pressure<br>max<br>bar<br>psig | Max. torque<br>cont / int*<br>Nm<br>lb-in | Max. performance<br>max<br>KW<br>HP | Min. starting torque<br>cont / int*<br>Nm<br>lb-in |
|-----------------|--|--|--|--|--|---|-------------------------------------|--|
| TK 0250         | 250<br>15.3  | 523  | 114 133<br>30 35                               | 241 310<br>3500 4500                                     | 328<br>4750                                | 814 1043<br>7204 9234                     | 48.5<br>65.0                        | 689 879<br>6100 7780                               |
| TK 0315         | 315<br>19.2  | 413  | 114 133<br>30 35                               | 241 310<br>3500 4500                                     | 328<br>4750                                | 1029 1314<br>9105 11625                   | 47.4<br>63.5                        | 949 1217<br>8400 10770                             |
| TK 0400         | 400<br>24.4  | 373  | 114 151<br>30 40                               | 207 276<br>3000 4000                                     | 328<br>4750                                | 1153 1524<br>10201 13484                  | 48.7<br>65.3                        | 1049 1410<br>9280 12480                            |
| TK 0500         | 500<br>30.5  | 298  | 114 151<br>30 40                               | 207 276<br>3000 4000                                     | 328<br>4750                                | 1439 1914<br>12736 16940                  | 48.1<br>64.5                        | 1322 1783<br>11700 15780                           |
| TK 0630         | 630<br>38.4  | 237  | 114 151<br>30 40                               | 207 224<br>3000 3250                                     | 328<br>4750                                | 1617 1716<br>14313 15187                  | 33.7<br>45.2                        | 1497 1621<br>13250 14350                           |
| TK 0800         | 800<br>48.8  | 276  | 151 227<br>40 60                               | 190 207<br>2750 3000                                     | 328<br>4750                                | 1916 2300<br>16960 20360                  | 44.4<br>59.5                        | 1745 1902<br>15440 16834                           |
| TK 1000         | 1000<br>61.0   | 218  | 151 227<br>40 60                               | 172 190<br>2500 2750                                     | 328<br>4750                                | 2413 2660<br>21360 23540                  | 35.4<br>47.5                        | 1981 2180<br>17535 19290                           |

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F.) Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

TK 0250

15.3 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000        | 4500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>.5</b> | 892<br>5   | 1838<br>3   |             |             |             |             |             |             |             |
| <b>1</b>  | 895<br>12  | 1834<br>10  | 2777<br>7   | 3729<br>5   | 4687<br>4   | 5366<br>3   |             |             |             |
| <b>2</b>  | 941<br>27  | 1922<br>25  | 2911<br>21  | 3900<br>19  | 4895<br>18  | 5614<br>17  | 6576<br>16  | 7551<br>15  | 8526<br>14  |
| <b>4</b>  | 951<br>57  | 1959<br>55  | 2972<br>51  | 3988<br>48  | 5012<br>46  | 5932<br>43  | 6874<br>40  | 7824<br>38  | 8792<br>37  |
| <b>8</b>  | 927<br>118 | 1960<br>114 | 2997<br>110 | 4035<br>107 | 5069<br>103 | 6121<br>98  | 7124<br>95  | 8114<br>92  | 9139<br>89  |
| <b>12</b> | 870<br>178 | 1913<br>174 | 2958<br>170 | 4008<br>166 | 5060<br>161 | 6167<br>155 | 7204<br>149 | 8221<br>144 | 9230<br>139 |
| <b>16</b> | 786<br>239 | 1841<br>234 | 2895<br>229 | 3943<br>224 | 4994<br>219 | 6147<br>214 | 7183<br>209 | 8203<br>205 | 9234<br>199 |
| <b>20</b> | 671<br>299 | 1731<br>294 | 2799<br>289 | 3855<br>283 | 4896<br>278 | 6088<br>272 | 7126<br>267 | 8159<br>261 | 9185<br>255 |
| <b>24</b> | 555<br>359 | 1600<br>354 | 2666<br>349 | 3739<br>342 | 4796<br>336 | 6001<br>330 | 7044<br>324 | 8075<br>319 | 9120<br>314 |
| <b>28</b> | 410<br>419 | 1457<br>416 | 2516<br>409 | 3585<br>402 | 4657<br>395 | 5887<br>388 | 6939<br>380 | 7967<br>373 | 8993<br>366 |
| <b>32</b> | 237<br>479 | 1294<br>476 | 2362<br>469 | 3424<br>462 | 4490<br>455 | 5747<br>448 | 6802<br>441 | 7806<br>434 | 8809<br>426 |
| <b>35</b> | 119<br>523 | 1157<br>522 | 2216<br>514 | 3296<br>507 | 4381<br>499 | 5647<br>492 | 6676<br>484 | 7661<br>477 | 8685<br>470 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 0315

19.2 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        | 4000         | 4500         |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>.5</b> | 1105<br>5   | 2300<br>4   | 3519<br>3   |             |             |             |             |              |              |
| <b>1</b>  | 1161<br>11  | 2342<br>9   | 3567<br>9   | 4786<br>8   | 6035<br>8   | 7319<br>7   |             |              |              |
| <b>2</b>  | 1210<br>22  | 2468<br>21  | 3728<br>20  | 4992<br>19  | 6222<br>18  | 7454<br>17  | 8675<br>16  | 9899<br>15   | 11104<br>14  |
| <b>4</b>  | 1224<br>46  | 2512<br>43  | 3803<br>41  | 5094<br>39  | 6363<br>37  | 7623<br>35  | 8875<br>33  | 10108<br>31  | 11337<br>30  |
| <b>8</b>  | 1201<br>94  | 2524<br>91  | 3853<br>89  | 5183<br>86  | 6498<br>83  | 7799<br>80  | 9084<br>78  | 10343<br>77  | 11587<br>76  |
| <b>12</b> | 1128<br>142 | 2458<br>137 | 3791<br>133 | 5134<br>130 | 6469<br>127 | 7793<br>124 | 9105<br>121 | 10383<br>118 | 11625<br>117 |
| <b>16</b> | 1021<br>189 | 2358<br>184 | 3702<br>179 | 5045<br>176 | 6390<br>172 | 7724<br>168 | 9043<br>164 | 10340<br>161 | 11601<br>159 |
| <b>20</b> | 890<br>237  | 2227<br>232 | 3580<br>226 | 4931<br>222 | 6278<br>218 | 7620<br>214 | 8942<br>210 | 10245<br>205 | 11520<br>201 |
| <b>24</b> | 739<br>284  | 2067<br>280 | 3419<br>273 | 4771<br>268 | 6123<br>263 | 7470<br>259 | 8798<br>254 | 10099<br>249 | 11374<br>244 |
| <b>28</b> | 586<br>331  | 1904<br>327 | 3249<br>320 | 4605<br>314 | 5953<br>309 | 7296<br>304 | 8636<br>300 | 9937<br>293  | 11222<br>289 |
| <b>32</b> | 397<br>377  | 1721<br>374 | 3087<br>367 | 4420<br>361 | 5757<br>355 | 7100<br>350 | 8447<br>346 | 9766<br>339  | 11057<br>332 |
| <b>35</b> | 240<br>413  | 1558<br>410 | 2897<br>403 | 4257<br>395 | 5606<br>389 | 6943<br>383 | 8284<br>378 | 9593<br>371  | 10888<br>367 |

Flow (GPM)



Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 0400

24.4 cu in / rev

|           | PRESSURE (PSID) |             |             |             |             |              |              |              |
|-----------|-----------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500        | 3000         | 3500         | 4000         |
| <b>.5</b> | 1429<br>4       | 2974<br>3   | 4559<br>3   | 6201<br>2   | 7860<br>2   | 9483<br>2    | 11110<br>2   | 12511<br>1   |
| <b>1</b>  | 1498<br>8       | 3029<br>8   | 4566<br>7   | 6173<br>6   | 7829<br>6   | 9479<br>5    | 11101<br>5   | 12648<br>4   |
| <b>2</b>  | 1586<br>17      | 3211<br>15  | 4835<br>14  | 6466<br>13  | 8043<br>12  | 9590<br>11   | 11206<br>10  | 12865<br>9   |
| <b>4</b>  | 1620<br>36      | 3295<br>34  | 4974<br>32  | 6652<br>29  | 8321<br>28  | 9962<br>26   | 11582<br>25  | 13052<br>23  |
| <b>8</b>  | 1615<br>73      | 3334<br>70  | 5062<br>68  | 6790<br>65  | 8488<br>63  | 10160<br>60  | 11825<br>58  | 13301<br>56  |
| <b>12</b> | 1536<br>110     | 3282<br>107 | 5025<br>105 | 6764<br>101 | 8493<br>98  | 10201<br>95  | 11893<br>92  | 13462<br>89  |
| <b>16</b> | 1418<br>148     | 3171<br>144 | 4924<br>141 | 6676<br>138 | 8421<br>134 | 10150<br>130 | 11846<br>127 | 13484<br>123 |
| <b>20</b> | 1270<br>185     | 3022<br>181 | 4776<br>178 | 6537<br>174 | 8296<br>170 | 10037<br>166 | 11744<br>161 | 13432<br>157 |
| <b>24</b> | 1095<br>222     | 2846<br>219 | 4601<br>215 | 6371<br>210 | 8135<br>206 | 9876<br>201  | 11610<br>197 | 13405<br>192 |
| <b>28</b> | 907<br>259      | 2645<br>256 | 4397<br>251 | 6171<br>247 | 7937<br>242 | 9681<br>237  | 11430<br>232 | 13250<br>228 |
| <b>32</b> | 683<br>297      | 2420<br>293 | 4179<br>288 | 5951<br>283 | 7714<br>278 | 9467<br>273  | 11211<br>268 | 12923<br>262 |
| <b>35</b> | 501<br>325      | 2216<br>322 | 4007<br>316 | 5779<br>311 | 7529<br>306 | 9280<br>300  | 11020<br>294 | 12745<br>289 |
| <b>40</b> | 195<br>373      | 1908<br>368 | 3649<br>362 | 5417<br>357 | 7193<br>351 | 8961<br>345  | 10703<br>339 | 12390<br>332 |

Flow (GPM)

TORQUE (LB IN) 8961  
SPEED (RPM) 345

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 0500

30.5 cu in / rev

|           | PRESSURE (PSID) |             |             |             |              |              |              |              |
|-----------|-----------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
|           | 500             | 1000        | 1500        | 2000        | 2500         | 3000         | 3500         | 4000         |
| <b>1</b>  | 1880<br>5       | 3810<br>4   | 5826<br>3   | 7926<br>2   | 9000<br>2    | 11979<br>2   | 14077<br>1   | 16261<br>1   |
| <b>2</b>  | 1982<br>13      | 4013<br>11  | 6067<br>9   | 8109<br>8   | 10154<br>6   | 12243<br>5   | 14323<br>5   | 16394<br>5   |
| <b>4</b>  | 2000<br>28      | 4103<br>26  | 6223<br>24  | 8346<br>22  | 10464<br>20  | 12559<br>18  | 14642<br>16  | 16615<br>14  |
| <b>8</b>  | 1971<br>58      | 4118<br>56  | 6276<br>53  | 8437<br>50  | 10584<br>48  | 12724<br>45  | 14852<br>44  | 16825<br>40  |
| <b>12</b> | 1876<br>91      | 4041<br>87  | 6219<br>85  | 8400<br>80  | 10575<br>77  | 12736<br>73  | 14873<br>70  | 16901<br>66  |
| <b>16</b> | 1724<br>120     | 3904<br>115 | 6088<br>112 | 8277<br>109 | 10461<br>103 | 12633<br>101 | 14801<br>97  | 16940<br>93  |
| <b>20</b> | 1537<br>148     | 3725<br>145 | 5911<br>142 | 8105<br>138 | 10301<br>134 | 12494<br>130 | 14660<br>125 | 16783<br>121 |
| <b>24</b> | 1318<br>178     | 3504<br>175 | 5694<br>171 | 7898<br>167 | 10108<br>163 | 12310<br>159 | 14481<br>154 | 16607<br>149 |
| <b>28</b> | 1066<br>208     | 3242<br>205 | 5430<br>200 | 7634<br>196 | 9856<br>192  | 12063<br>188 | 14232<br>182 | 16405<br>177 |
| <b>32</b> | 781<br>238      | 2959<br>235 | 5146<br>230 | 7357<br>225 | 9580<br>221  | 11781<br>217 | 13939<br>211 | 16110<br>206 |
| <b>35</b> | 551<br>260      | 2702<br>258 | 4940<br>252 | 7153<br>248 | 9335<br>243  | 11517<br>239 | 13703<br>233 | 15892<br>228 |
| <b>40</b> | 178<br>298      | 2341<br>296 | 4519<br>290 | 6746<br>285 | 8957<br>280  | 11041<br>275 | 13296<br>269 | 15400<br>264 |

Flow (GPM)

TORQUE (LB IN) 11041  
SPEED (RPM) 275

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 0630

**38.4 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000         | 2500         | 3000         | 3250         |
|-----------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| <b>1</b>  | 2319<br>4   | 4638<br>2   | 6993<br>2   | 9395<br>1    |              |              |              |
| <b>2</b>  | 2431<br>10  | 4839<br>8   | 7230<br>7   | 9636<br>6    | 11969<br>5   | 13330<br>4   | 13946<br>3   |
| <b>4</b>  | 2492<br>22  | 4992<br>19  | 7446<br>17  | 9896<br>15   | 12235<br>14  | 13800<br>13  | 14516<br>11  |
| <b>8</b>  | 2475<br>45  | 5116<br>42  | 7670<br>39  | 10180<br>36  | 12504<br>33  | 14216<br>31  | 15003<br>29  |
| <b>12</b> | 2323<br>69  | 5027<br>66  | 7694<br>62  | 10275<br>57  | 12614<br>53  | 14253<br>50  | 15147<br>46  |
| <b>16</b> | 2106<br>94  | 4850<br>90  | 7572<br>85  | 10229<br>79  | 12659<br>74  | 14290<br>70  | 15187<br>65  |
| <b>20</b> | 1885<br>118 | 4638<br>114 | 7390<br>109 | 10092<br>102 | 12609<br>97  | 14313<br>91  | 15095<br>85  |
| <b>25</b> | 1455<br>147 | 4261<br>143 | 7110<br>136 | 9946<br>129  | 12528<br>119 | 14268<br>111 | 15068<br>104 |
| <b>30</b> | 969<br>177  | 3737<br>175 | 6596<br>168 | 9451<br>161  | 12111<br>152 | 14113<br>142 | 15044<br>133 |
| <b>32</b> | 751<br>189  | 3508<br>187 | 6330<br>181 | 9201<br>174  | 11909<br>165 | 14028<br>154 | 15018<br>144 |
| <b>40</b> | 121<br>237  | 2592<br>235 | 5266<br>233 | 8201<br>226  | 11101<br>217 | 13504<br>205 | 14912<br>191 |

Flow (GPM)

TORQUE (LB IN) 13504  
SPEED (RPM) 205

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 0800

48.8 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 2000         | 2500         | 2750         | 3000         |
|-----------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| <b>1</b>  | 3144<br>4   | 6368<br>4   | 9714<br>3   | 13131<br>3   | 16586<br>3   | 18303<br>3   | 20020<br>3   |
| <b>2</b>  | 3254<br>9   | 6589<br>8   | 9957<br>8   | 13355<br>7   | 16783<br>7   | 18511<br>7   | 20239<br>7   |
| <b>4</b>  | 3313<br>18  | 6721<br>17  | 10131<br>17 | 13531<br>16  | 16926<br>15  | 18632<br>15  | 20338<br>15  |
| <b>8</b>  | 3267<br>37  | 6707<br>36  | 10146<br>35 | 13561<br>33  | 16961<br>32  | 18661<br>32  | 20360<br>31  |
| <b>12</b> | 3105<br>55  | 6564<br>54  | 10011<br>53 | 13436<br>51  | 16832<br>49  | 18512<br>48  | 20191<br>47  |
| <b>16</b> | 2817<br>74  | 6316<br>73  | 9812<br>71  | 13263<br>68  | 16678<br>66  | 18380<br>65  | 20082<br>64  |
| <b>20</b> | 2530<br>93  | 6046<br>91  | 9530<br>89  | 12963<br>86  | 16392<br>84  | 18099<br>83  | 19806<br>81  |
| <b>24</b> | 2153<br>112 | 5637<br>109 | 9156<br>107 | 12636<br>104 | 16060<br>101 | 17758<br>100 | 19456<br>99  |
| <b>28</b> | 1741<br>130 | 5226<br>128 | 8766<br>125 | 12213<br>122 | 15621<br>119 | 17339<br>118 | 19057<br>116 |
| <b>32</b> | 1302<br>149 | 4774<br>147 | 8267<br>144 | 11748<br>140 | 15196<br>137 | 16885<br>136 | 18574<br>134 |
| <b>35</b> | 941<br>162  | 4411<br>161 | 7913<br>158 | 11363<br>154 | 14816<br>151 | 16511<br>149 | 18206<br>147 |
| <b>40</b> | 349<br>186  | 3765<br>184 | 7231<br>181 | 10684<br>177 | 14141<br>174 | 15842<br>172 | 17543<br>170 |
| <b>45</b> | 244<br>209  | 3134<br>208 | 6585<br>205 | 10019<br>201 | 13462<br>197 | 15149<br>195 | 16835<br>193 |
| <b>50</b> | 0<br>234    | 2287<br>232 | 5748<br>228 | 9207<br>224  | 12688<br>219 | 14407<br>218 | 16125<br>216 |
| <b>55</b> |             | 1441<br>256 | 4326<br>252 | 8356<br>247  | 12212<br>242 | 13713<br>241 | 15213<br>239 |
| <b>60</b> |             |             | 2904<br>276 | 7505<br>270  | 10677<br>265 | 12489<br>264 | 14301<br>262 |

TORQUE (LB IN) 17543  
SPEED (RPM) 170

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



TK 1000

61.0 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1500         | 2000         | 2500         | 2750         |
|-----------|-------------|-------------|--------------|--------------|--------------|--------------|
| <b>1</b>  | 3839<br>3   | 7926<br>2   | 12129<br>1   | 16431<br>1   | 20758<br>1   | 23100<br>1   |
| <b>2</b>  | 4049<br>7   | 8269<br>6   | 12522<br>5   | 16814<br>4   | 21124<br>4   | 23195<br>4   |
| <b>4</b>  | 4122<br>14  | 8406<br>13  | 12692<br>12  | 16997<br>11  | 21317<br>11  | 23477<br>11  |
| <b>8</b>  | 4040<br>29  | 8378<br>28  | 12711<br>26  | 17031<br>25  | 21366<br>23  | 23546<br>23  |
| <b>12</b> | 3846<br>44  | 8215<br>42  | 12581<br>41  | 16899<br>39  | 21173<br>37  | 23312<br>36  |
| <b>16</b> | 3519<br>59  | 7958<br>57  | 12362<br>55  | 16690<br>53  | 20955<br>50  | 23083<br>50  |
| <b>20</b> | 3168<br>74  | 7615<br>72  | 12006<br>70  | 16369<br>67  | 20683<br>64  | 22750<br>63  |
| <b>24</b> | 2705<br>89  | 7132<br>87  | 11594<br>85  | 15965<br>82  | 20245<br>78  | 22358<br>77  |
| <b>28</b> | 2173<br>104 | 6629<br>102 | 11088<br>100 | 15457<br>96  | 19776<br>93  | 21883<br>92  |
| <b>32</b> | 1627<br>119 | 6008<br>117 | 10463<br>114 | 14911<br>111 | 19230<br>107 | 21354<br>105 |
| <b>35</b> | 1170<br>130 | 5568<br>129 | 9988<br>126  | 14376<br>123 | 18768<br>119 | 20921<br>117 |
| <b>40</b> | 399<br>149  | 4732<br>148 | 9133<br>145  | 13544<br>142 | 17944<br>138 | 20093<br>136 |
| <b>45</b> | 0<br>169    | 3802<br>167 | 8071<br>164  | 12397<br>161 | 16791<br>157 | 18963<br>155 |
| <b>50</b> | 0<br>187    | 2733<br>186 | 6958<br>183  | 11168<br>179 | 15338<br>175 | 17376<br>174 |
| <b>55</b> |             | 1502<br>205 | 5845<br>202  | 9939<br>198  | 13985<br>194 | 15973<br>191 |
| <b>60</b> |             |             | 4732<br>218  | 8710<br>215  | 12632<br>213 | 14202<br>211 |

TORQUE (LB IN) 20093  
SPEED (RPM) 136

Flow (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

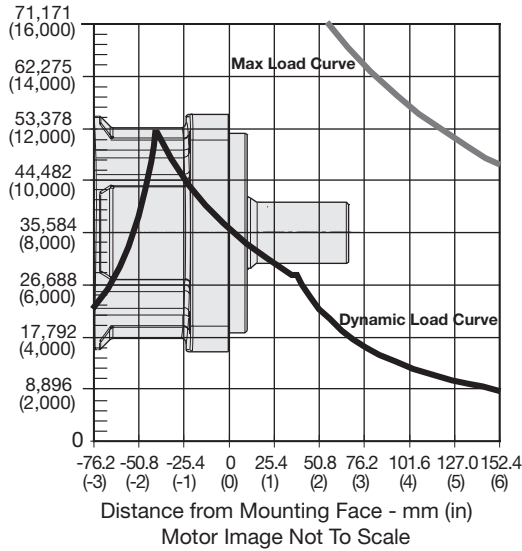
Performance data based on testing using 10W40 oil with a viscosity of 200 SUS at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





Flange Mount

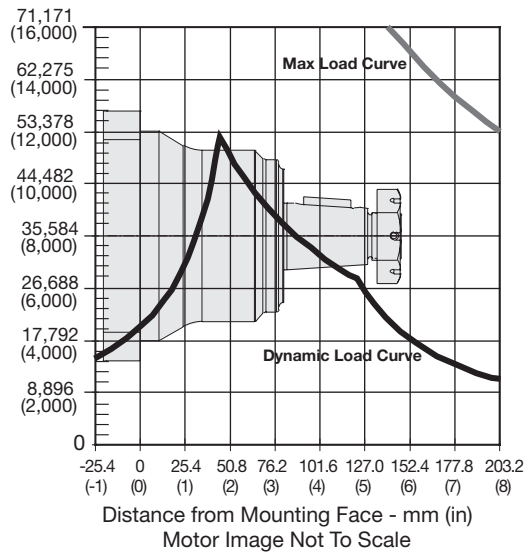
Side Load - N (lbs)



The dynamic side load curve is based on uni-directional steady state loads for  $L_{10}$  bearing life at  $12 \times 10^6$  @ 100 RPM revolutions.

Wheel Mount

Side Load - N (lbs)



The maximum load curve is defined by bearing static load capacity. This curve should not be exceeded at any time including shock loads.

Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use  $F_a$ ,  $F_b$  and  $S$  in equation to determine hours of  $L_{10}$  bearing life.

$$L = \frac{12 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

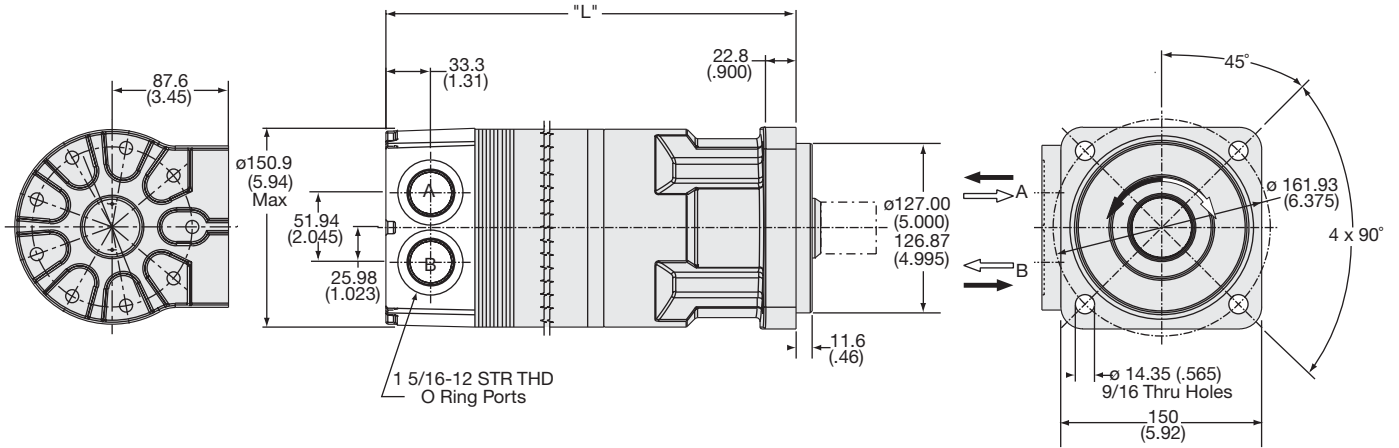
$F_a$  = Allowable side load defined by above curve at a distance from mounting flange.

$F_b$  = Application side load.

Note: Calculations are based on  $L_{10}$  bearing life per ISO 281.

Code: K5

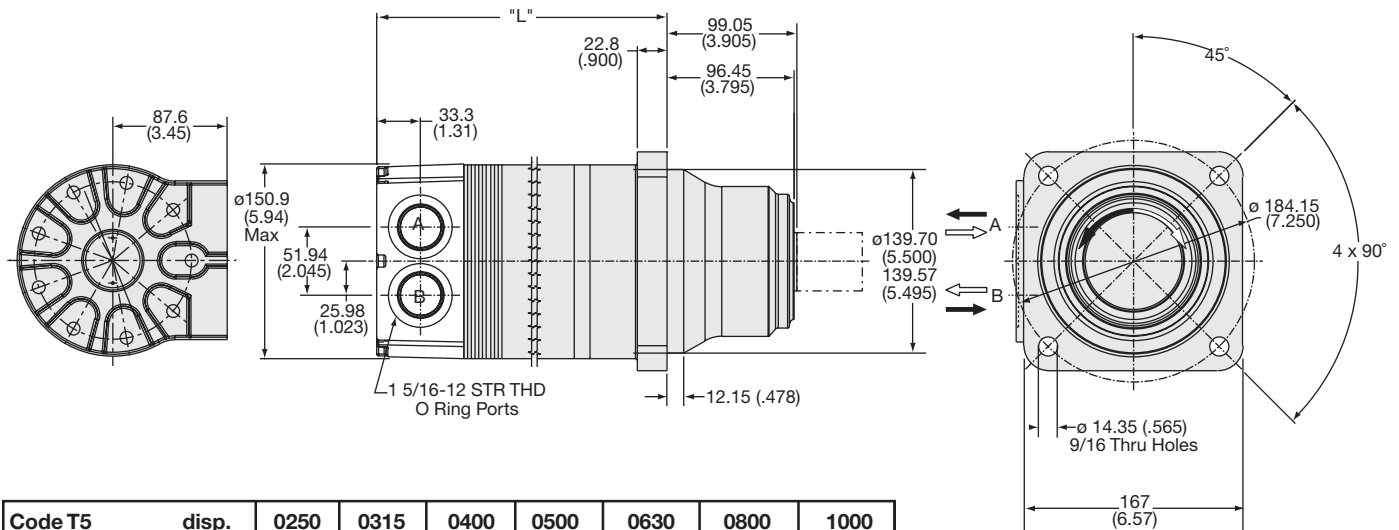
Standard SAE CC, 1 5/16-12 SAE Rear Radial



| Code K5          | disp.    | 0250   | 0315   | 0400   | 0500   | 0630   | 0800   | 1000   |
|------------------|----------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewichtkg | kg       | 32.0   | 32.7   | 33.5   | 34.5   | 35.7   | 37.2   | 39.1   |
| Poids/Peso       | (lb)     | (70.6) | (72.0) | (73.8) | (76.0) | (78.8) | (82.1) | (86.3) |
| Length           | "L" mm   | 276.9  | 281.9  | 289.6  | 297.2  | 309.9  | 322.6  | 340.4  |
|                  | "L" (in) | (10.9) | (11.1) | (11.4) | (11.7) | (12.2) | (12.7) | (13.4) |

Code: T5

Wheel Mount, 1 5/16-12 SAE Rear Radial



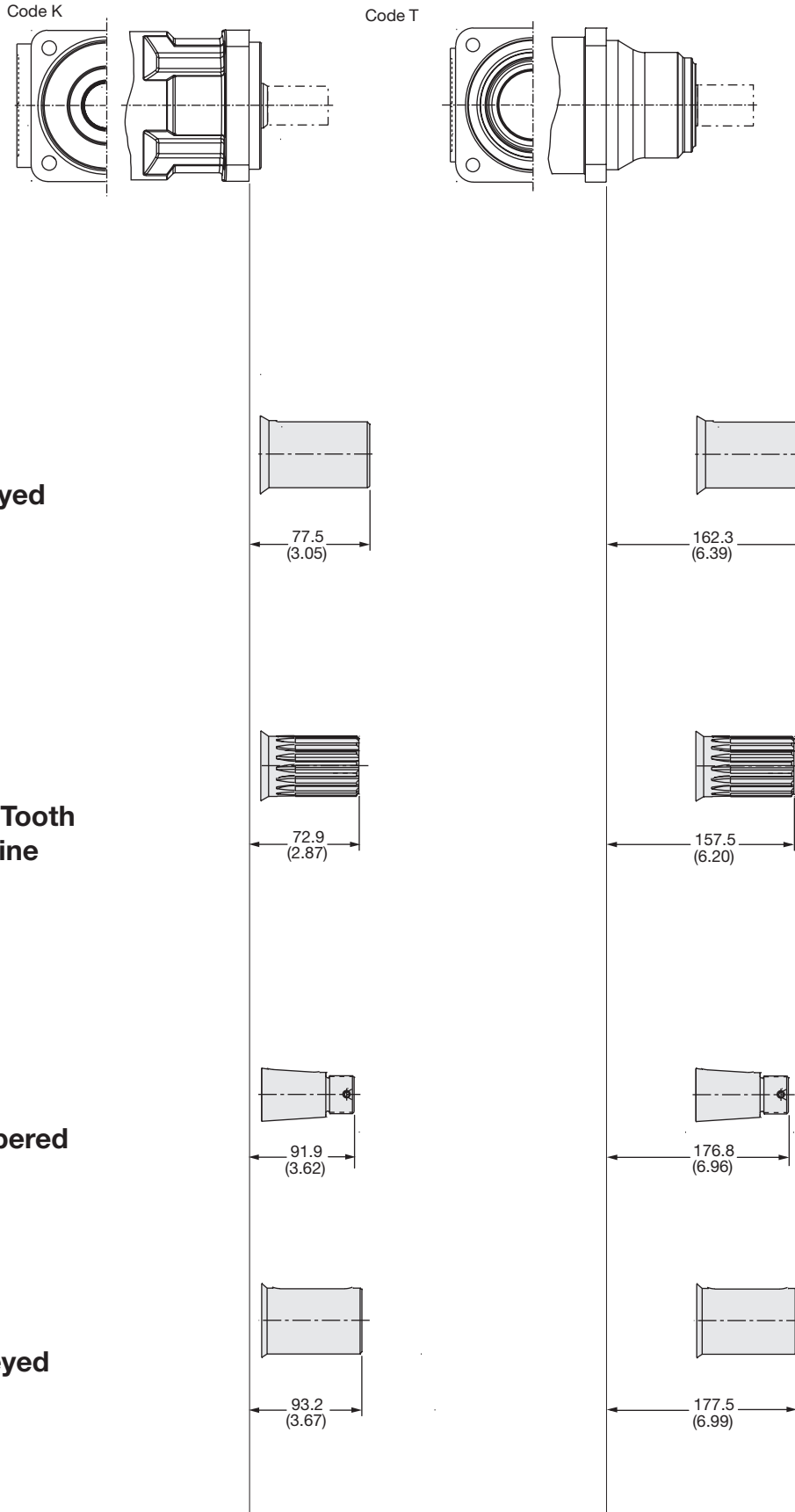
| Code T5        | disp.    | 0250   | 0315   | 0400   | 0500   | 0630   | 0800   | 1000   |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 30.8   | 31.4   | 32.3   | 33.2   | 34.5   | 36.0   | 37.9   |
| Poids/Peso     | (lb)     | (67.9) | (69.3) | (71.1) | (73.3) | (76.1) | (79.4) | (83.5) |
| Length         | "L" mm   | 190.5  | 195.6  | 203.2  | 213.4  | 223.5  | 238.8  | 256.5  |
|                | "L" (in) | (7.5)  | (7.7)  | (8.0)  | (8.4)  | (8.8)  | (9.4)  | (10.1) |

English equivalents for metric specifications are shown in ( ).

018 TK.indd, b



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



English equivalents for metric specifications are shown in ( ).

018 TK.indd, b

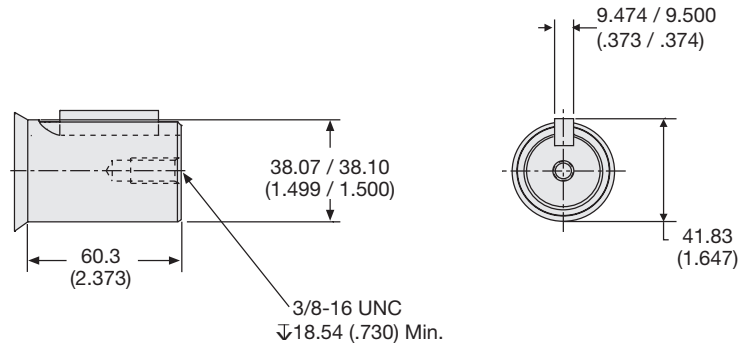


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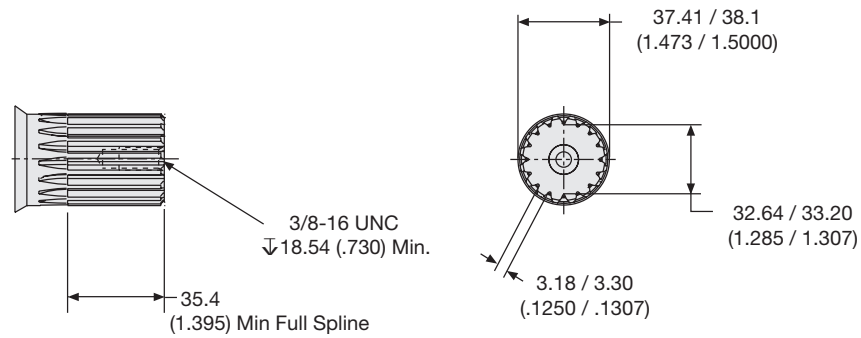
**Code: 32**

**1 1/2" Keyed**



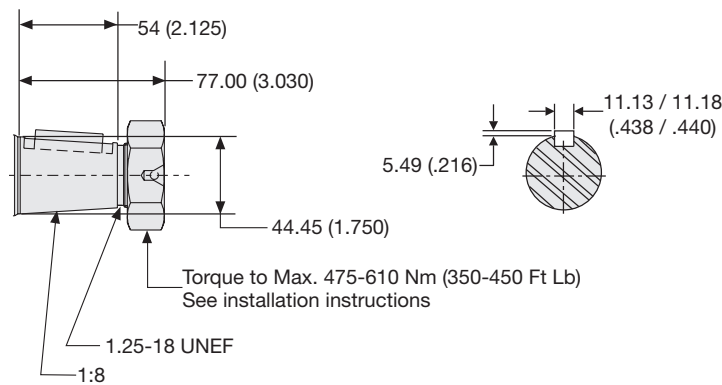
**Code: 36**

**1 1/2" 17 Tooth  
12/24 Spline**



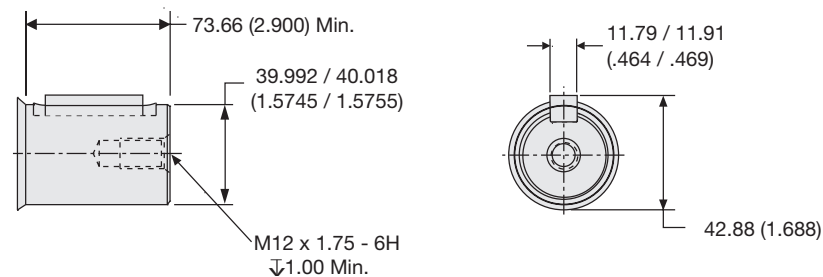
**Code: 63**

**1 3/4" Tapered**



**Code: 64**

**40mm Keyed**



English equivalents for metric specifications are shown in ( ).

018 TK.indd, b



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| Availability    |                    | Code    |           | Description   |
|-----------------|--------------------|---------|-----------|---|
| TK              | TGK                | Painted | Unpainted |   |
| x               | x                  | AAAA    | AAAB      | Black Paint   |
| x               | x                  | AAAC    | -         | Double Paint  |
| x <sup>22</sup> | x <sup>15</sup>    | AAAF    | AABP      | Castle Nut  |
| x               | x                  | AAAG    | AAAH      | Fluorocarbon Seals  |
| x               | x                  | AAAJ    | AAFG      | High Temperature Commutator Seal                                  |
|                 | x                  | AABJ    | AABK      | Free Running Rotorset   |
|                 | x <sup>10</sup>    | AAAT    | AAFX      | Hot Oil Shuttle (11:00)   |
|                 | x <sup>10,15</sup> | AAAU    | AAGF      | Bi-directional Shuttle (11:00*), Castle Nut                       |
|                 | x                  | AABL    | AABM      | Free Running Rotor Set & No Commutator Seal                       |
| x               | x                  | AABT    | -         | No Nut  |
| x               | x                  | AACP    | -         | Free Running Rotor Set, Castle Nut                                |
| x               | x                  | -       | AADJ      | High Temperature Commutator Seal, Castle Nut                      |
| x               | x                  | AAFW    | AAFA      | Fluorocarbon (Viton) Seals, High Temperature Commutator Seal      |
| x <sup>22</sup> | x <sup>20</sup>    | AANG    | AADD      | Fluorocarbon seals, High Temperature Commutator Seals, Castle Nut |
|                 | x <sup>10</sup>    | -       | AAFX      | Bidirectional shuttle (11:00*)                                    |
| x               | x                  | AAHU    | -         | High Temperature Commutator Seal, No Nut                          |
| x               | x                  | -       | AAJL      | No Nut  |
| x               | x                  | AALF    | -         | No Commutator Seal  |
|                 | x <sup>10</sup>    | BBBA    | BBBM      | 69 Bar (1000 PSI) Internal Bidirectional Relief                   |
|                 | x <sup>10</sup>    | BBBG    | BBBJ      | 103 Bar (1500 PSI) Internal Bidirectional Relief                  |
|                 | x <sup>10</sup>    | BBBB    | -         | 138 Bar (2000 PSI) Internal Bidirectional Relief                  |
|                 | x <sup>10,21</sup> | BBBC    | BBBF      | 207 Bar (3000 PSI) Internal Bidirectional Relief                  |
|                 | x <sup>10,18</sup> | BBBD    | BBBW      | 276 Bar (4000 PSI) Internal Bidirectional Relief                  |
|                 | x <sup>10,21</sup> | -       | BBCG      | 2500 PSI Int Bidirectional Relief                                 |
|                 | x                  | FSAA    | FSAB      | Speed Sensor  |
|                 | x                  | -       | AAUY      | Complete Motor Nickel Plated, 40 um, Except Shaft                 |

**Consult factory for other positions and combinations.**

<sup>10</sup> Not available with ports code A, B or E (If specifying internal bidirectional reliefs, relief settings cannot exceed intermittent pressure rating of motor.)

<sup>15</sup> Available only with shaft codes 08 and 19

<sup>18</sup> Not available with displacements 0530, 0625, 0785 or 0960

<sup>20</sup> Only available with shaft codes 08, 19 and 31

<sup>21</sup> Not available with displacements 0785 or 0960

<sup>22</sup> Only available with TK shaft code 63

## Standard Options

---

### Code: AAAC

**Double Paint** — Base coat of red oxide primer and finish coat of black paint for increased corrosion resistance.

### Code: AAAF\* or AABP

**Castle Nut** — All motors ordered with Tapered shafts are equipped with patch locking nuts. If desired, a castle nut may be specified.

### Code: AAAJ\* or AAFG

**High Temperature Commutator Seal** — Under conditions of high temperature, it is suggested that a high temperature commutator seal be used.

### Code: AAAG\* or AAAH

**Fluorocarbon** — is available under various registered trademarks, including VITON™ (a registered trademark of DuPont), FLUOREL™ (a registered trademark of 3M) or FPM™ (a registered trademark of DuPont).

### Code: AABJ\* or AABK

**Free Running Rotorset** — The “free running rotorset” is a specially dimensioned rotorset that allows for smoother operation at low flows and low pressure. Volumetric efficiency can be affected.

### Code: AANM\*

**Seal Saver** — Seal saver is a metal disc that presses onto the motor shaft, covering the dirt and water (D&W) seal. It's purpose is to aid in preventing external contamination from damaging the D&W seal.

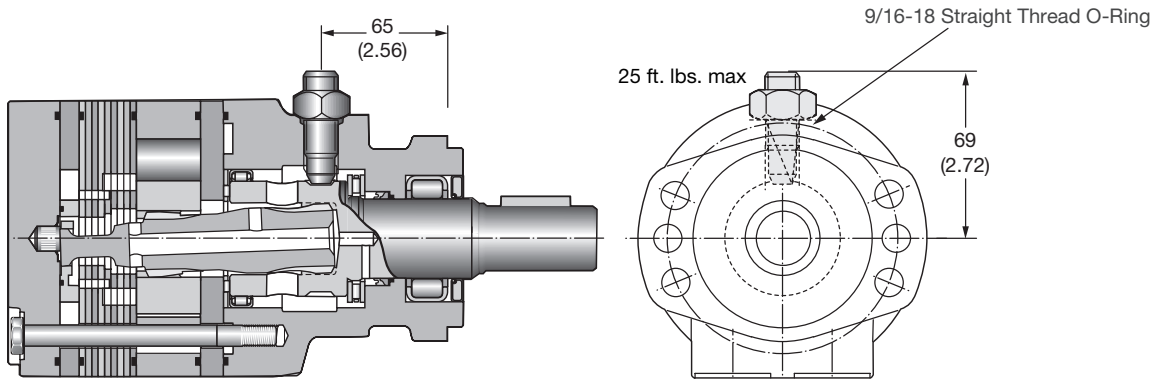
\* Option code shown is with a single black coat of paint.

\* Motor schwarz grundiert

Code: FSAA\* or FSAB  

### An Economical Sensor for Speed Readout

This rugged, weather resistant design is ideal for industrial and mobile applications. Applications include salt/sand/fertilizer spreader drives, conveyer drives and injection molder compression drives. The sensor is a hall-effect type, which when externally powered outputs 30 square wave digital pulses per coupling shaft revolution. The connector is a user friendly universally available 4 pin polarized M12 connector allowing for simplified field service. The integrated design does not effect the side load capacity or performance of the torque motor.



English equivalents for metric specifications are shown in ( ).

019 Heavy Duty Options.indd, a

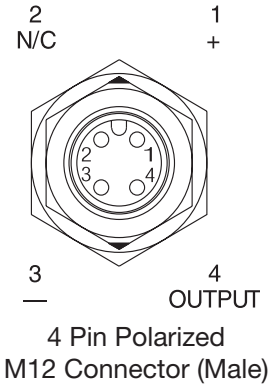


**WARNING**

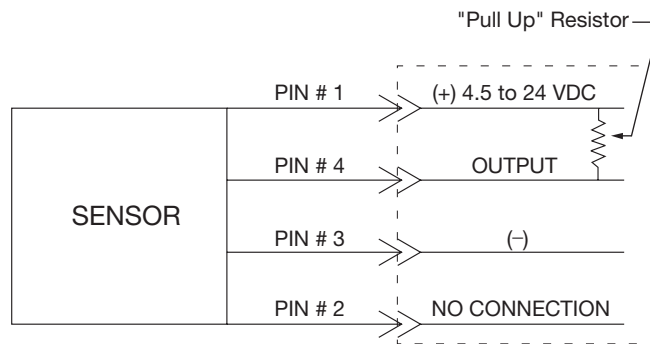
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

# Speed Sensor

|                                  |  |
|----------------------------------|--|
| <b>Operating voltage range</b>   | 4.5...24 VDC   |
| <b>Operating temperature</b>     | -20° to 220° F<br>-29°...104° C                              |
| <b>Operating frequency range</b> | 0...10 KHZ   |
| <b>Max sink current</b>          | 0 ... 20 mA (max.)   |
| <b>Connection</b>                | 4 Pin Polarized (12mm)                                       |
| <b>Sensor output</b>             | 30 Pulses per revolution which can be doubled electronically |
| <b>Output is NPN</b>             | Open Collector   |



Cable and "Pull Up" Resistor are *not* supplied by factory.

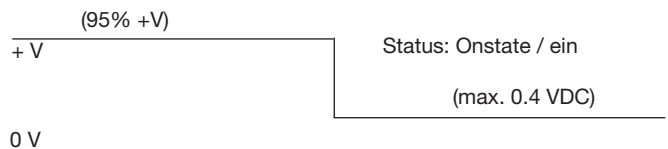


### Pull-up Resistor Value Formula

(0.25 Watt, 5% tol.)

$$\frac{\text{Voltage}}{\text{Sink Current /}} = \frac{4.5...24 \text{ VDC}}{0...20 \text{ mA}} = \text{Resistor (k Ohm)}$$

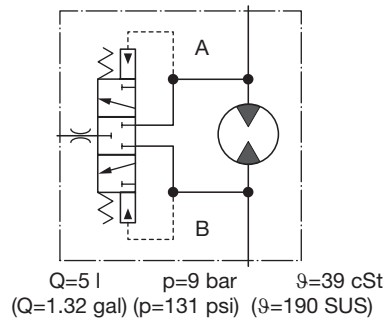
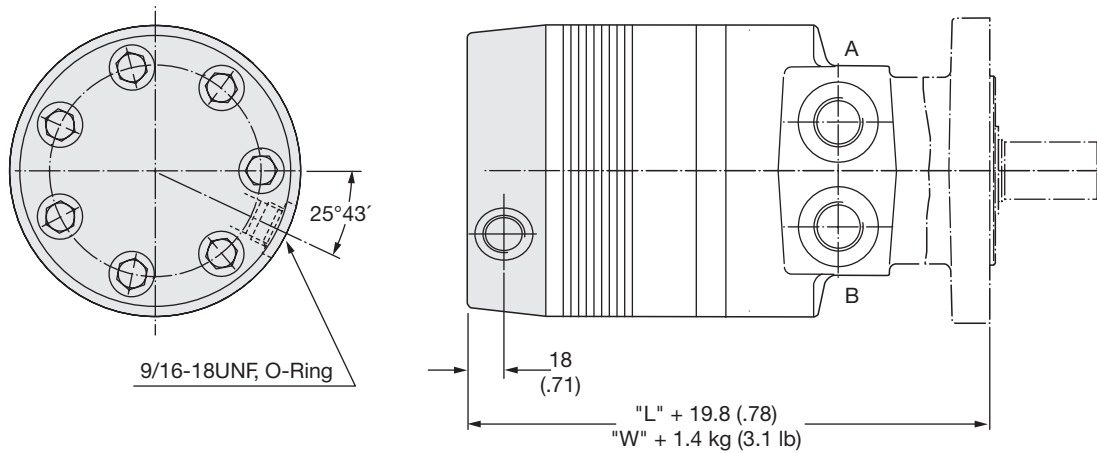
Status: Offstate / aus





Code: AAFX or AAAT\* **EU** **US**

A Hot Oil Shuttle is used to continuously remove a portion of the fluid in a closed loop transmission or other closed loop system. At 125 PSI pressure differential between the motor return port and the shuttle outlet, 1.5 GPM\* will exit the circuit to cool, filter and return to the reservoir. The constant loop replenishment helps to keep heat and contamination from building up in the circuit. This option is not available with rear ports or integral cross over relief.



Standard Length & Weights for TF Series on Pages 131-136, TG Series on Pages 185-189 and TH Series on Pages 227-228.

English equivalents for metric specifications are shown in ( ).

019 Heavy Duty Options.indd, a



**WARNING**

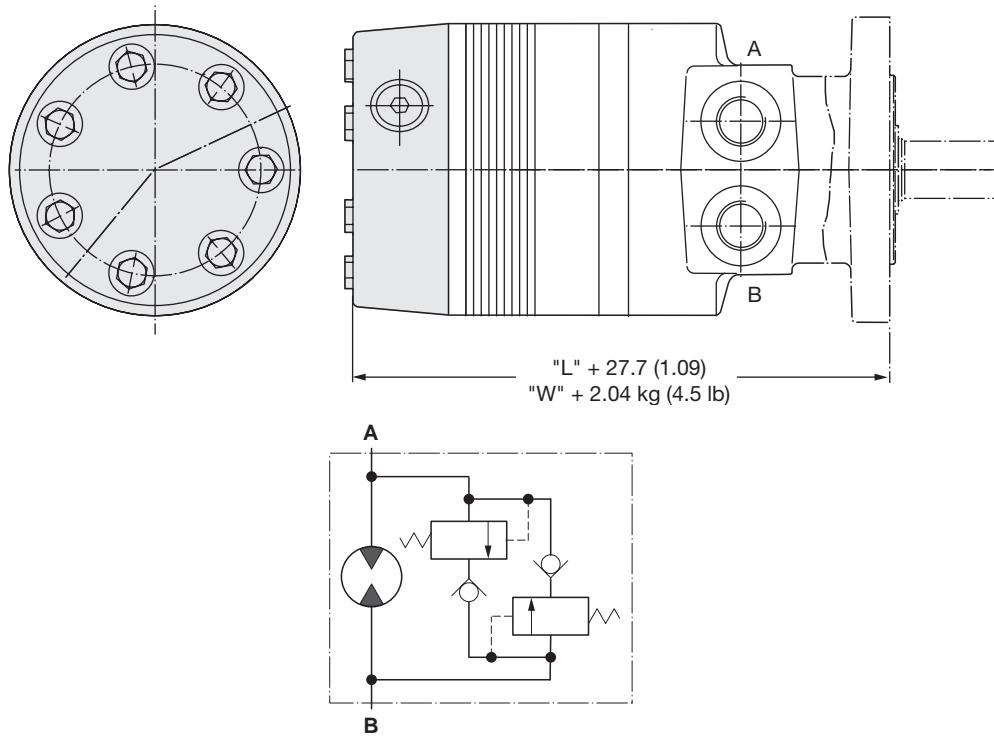
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# Internal relief valve

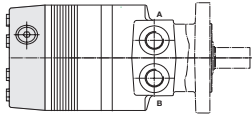
**Code: BBBA\*, BBBB\*, BBBC\*, BBBD\* or BBBG\* EU US**

This integrated internal relief valve is used for fixed pressure settings.

Internes Schockventil



## Ordering system

| Option |   | Pressure<br>bar (psi) |
|--------|---|-----------------------|
| BBBA   |  | 69 (1000)             |
| BBBB   |   | 138 (2000)            |
| BBBC   |   | 207 (3000)            |
| BBBD   |   | 276 (4000)            |
| BBBG   |   | 103 (1500)            |

Standard Length & Weights for TF Series on Pages 131-136, TG Series on Pages 185-189 and TH Series on Pages 227-228.

English equivalents for metric specifications are shown in ( ).

019 Heavy Duty Options.indd, a



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## Fluid

To insure maximum motor performance and life, use a premium grade hydraulic or engine oil. Fluids with a minimum of .125% zinc (or equivalent) anti-wear package should be used. A mineral or synthetic based 10W40 engine oil or hydraulic (200 SUS) is recommended. Torqmotor™ seals come standard in nitrile rubber. If a fluid that is not compatible with nitrile is to be used, a fluoroelastomer seal material can be specified.

- Minimum fluid viscosity is 50 SUS
- Recommended fluid operating temperature is -28° C to 93° C (-20°F to 200° F)
- Filtration level is 20-50 micron nominal

## Pressure

Operating the motor in its intermittent pressure range will shorten the life of the motor and should generally be restricted to 10% or less per minute. The reduced life resulting from continuous operation in the intermittent range may be acceptable in some applications. Consult the factory for details.

## Shaft Loading

The use of 1 inch and 25mm diameter shafts are not recommended when torque loads exceed 3500 lb-in. 316 stainless shafts should be limited to 2000 lb-in. For 7/8 inch diameter shafts, torque should be limited to 1250 lb-in. Corrosion resistant Nitrotec shafts have reduced torque-carrying capability. Consult factory for values for specific shafts. The maximum thrust load on all shafts should not exceed 1000 lbs inward or outward.

## Performance Data

Performance data shown in this catalog is the result of testing performed using 10W40 oil at 54°C (130°F), 200 SUS. Actual performance will vary with fluid conditions. Lower viscosity will produce lower performance.

## Inlet Conditions

Positive pressure *must* be available at the motor inlet while it is rotating. If an overrunning load causes the motor to rotate faster than the pump can fill it, cavitation will occur. Consult the factory for inlet pressure requirements and speed limitations.

## Other Operating Conditions

Consult factory before operating at conditions exceeding any ratings or recommendations in this catalog.

## Installation Recommendations

- To avoid contamination do not remove plastic port plugs until fittings are to be installed.
- Motor mounting flange must make full contact with equipment mount; do not use the mounting bolts to force the motor pilot into the pilot hole to align the motor.
- Pulleys, sprockets, wheels, or couplings should be properly aligned on the shaft to avoid excessive radial or thrust loads.
- To avoid damaging the thrust system, do not hammer on the motor or shaft to install or remove couplings, pulleys, sprockets, etc.

## Tapered Shaft

The tightening torque listed for a taper shaft nut is based on strength of the shaft and nut. Hub design and hub material determine the application tightening torque. Refer to hub manufacturers specifications to determine actual assembly torque. Factory suggested assembly torques are: 200-400 lb-ft (1.25, 1.5 & 1.75 Dia. Shafts), 175-225 lb-ft (1.0 dia. shafts).

To insure a sound hub to shaft coupling, the hub must conform to the full length of the shaft taper. This will prevent bending stresses at the keyway that could cause a fatigue failure.

## Castle Nut

All motors ordered with Tapered shafts are equipped with patch locking nuts. If desired, a castle nut may be specified.

## Paint

Unless specified otherwise, motors are shipped unpainted and coated with a rust inhibitor. Paint options are:

- \* Single coat of black paint.
- \* Single coat of black paint plus a coat of red oxide primer. (Double paint).

**Reverse Timed Manifold**

All motors in this catalog are bi-rotational. The efficiency of the motors is essentially unaffected by direction of rotation.

The direction of output shaft rotation depicted below is that which will result from pressurizing the “A” port of the motor. Pressurizing the “B” port will cause shaft rotation in the opposite direction. Direction of rotation is as seen by looking directly at the shaft.

“Front ported” motors have the ports at the shaft end of the motor. “Rear ported” motors have the ports in the end cap of the motor. Standard motors are Rotation Code “0”. Reverse timed motors are Rotation Code “1”.

| Series                     | Standard Code “0” |             | Reverse Timed Code “1” |             |
|----------------------------|-------------------|-------------|------------------------|-------------|
|                            | Front Ported      | Rear Ported | Front Ported           | Rear Ported |
| TC, TB, TE, TJ             | CW                | CCW         | CCW                    | CW          |
| TF, DF, TG, BG, DG, TH, BH | CCW               | CW          | CW                     | CCW         |
| TK                         | N/A               | CW          | N/A                    | CCW         |
| 110A                       | CW                | N/A         | N/A                    | N/A         |
| 700, 716                   | CCW               | N/A         | N/A                    | N/A         |



**CAUTION!**

**Static Brake Only:**

The brakes on these motors are designed for static use only, i.e., the brake should not be used to stop the motor and the motor should not be started while the brake is applied. These brakes are "parking" brakes only. Using the brake in a dynamic condition (while the motor is turning) will damage and reduce the holding capacity of the brake. If the brake does not hold because it has been damaged, personal injury or property damage could result.

**Brake holding capacity and periodic test:**

The brake holding capacity rating is based on actual holding capacity when new. If properly used as a static brake only, the holding capacity will slowly decrease with time. Since holding capacity will slowly decrease over time, a proper maintenance procedure should include periodically testing the holding capacity of the brake. This can be achieved by running a vehicle ramp test per OEM instructions.

**Brake orientation:**

This wet sump, multi-disk brake is designed to be mounted with the shaft in a horizontal position. If your application will have the motor in any other orientation, the motor should be thoroughly tested for longevity of brake holding capacity. This can be achieved by running a vehicle ramp test per OEM instructions after a predetermined number of brake actuations. Under no circumstances, however, should the motor be mounted with the shaft pointing vertically upward because the disks will not be operating within the oil sump and damage to the brake disks will occur.

**Holding torque/brake release pressure:**

The brake release port is designed for 3000 psi maximum. Limiting the pressure in that port to below 1500 psi is recommended to enhance seal life. The minimum pressure required to fully release the brake depends upon the holding torque of the brake.

| BG Series | Holding Torque | Release Pressure |
|-----------|----------------|------------------|
| Standard  | 12,000 lb in   | 315 psi          |
| Optional  | 6,000 lb in    | 160 psi          |
| Optional  | 9,000 lb in    | 240 psi          |
| Optional  | 16,000 lb in   | 405 psi          |

| BH Series | Holding Torque | Release Pressure |
|-----------|----------------|------------------|
| Standard  | 16,000 lb in   | 315 psi          |

**Initial use, bleeding not required:**

Bleeding the brake is not required. It is recommended that the brake release port be filled with approximately 1.2 oz. (36cc) system oil prior to installation or first use.

**Torque for mounting bolts:**

Customer installed mounting bolts should be grade 8 and torqued to a minimum of 90 ft-lbs.

**Brake service intervals:**

The seals, springs and brake disc package should be periodically (how often depends on your application) inspected and replaced if damaged or worn. All should be replaced at least every 250,000 brake cycles or 3 years, whichever occurs first.



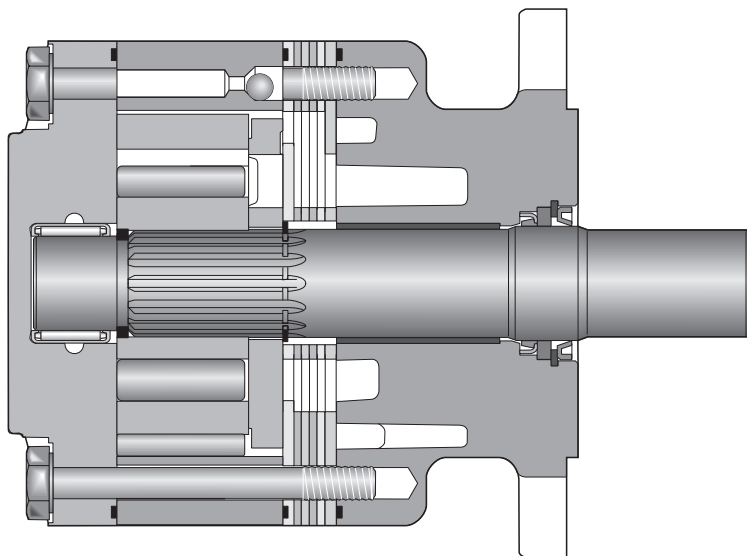
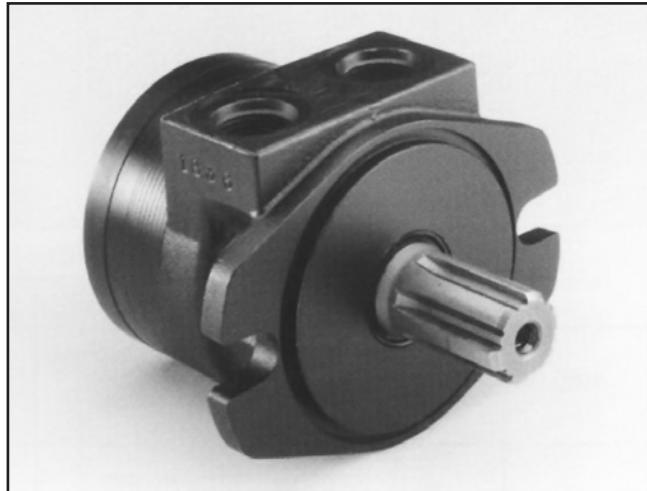
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|                                 |  |   |
|---------------------------------|--|---|
| <b>9 Displacements</b>          | (3.6 – 24.1 in <sup>3</sup> /rev)<br>59...395 cm <sup>3</sup> /rev |   |
| <b>Maximum Pressure</b>         | <b>Cont</b><br>(2500 psid)<br>...172.4 bar                         | <b>Int</b><br>(3000 psid)<br>...206.8 bar |
| <b>Maximum Oil Flow</b>         | (30 gpm)<br>...113.6 lpm   |   |
| <b>Maximum Speed</b>            | 858 rpm  |   |
| <b>Maximum Torque</b>           | <b>Cont</b><br>(5548 lb in)<br>...627 Nm                           | <b>Int</b><br>(7247 lb in)<br>...819 Nm   |
| <b>Maximum Side Load at Key</b> | (1450 lb)<br>... 6450 N  |   |

**When the Ultimate in Efficiency and Reliability is a Must**

This high performance motor contains a power element that is pressure loaded against internal leakage for high volumetric efficiency. It is wear compensated, so that its volumetric efficiency will not degrade with use. It can provide up to 7247 lb-in of torque through a one-piece solid fixed axis shaft. This shaft design allows for full stationary spline contact between shaft and rotor, minimizing spline contact stresses. It also allows the shaft to be extended through the rear cover for mounting parking brakes, auxiliary drive functions or encoders for speed readout or closed loop control. Low internal pressure drop means high mechanical efficiency and higher flow capability. This rugged motor is the most compact on the market.



**11**

Series

**X**

Shaft

**A**

Engineering Design

**XXX**

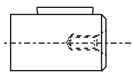
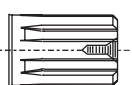
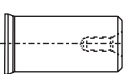
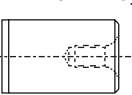
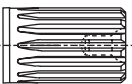
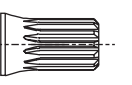
Displacement to

**X**

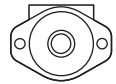
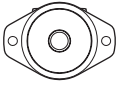
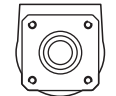
Mounting





**X**

Ports

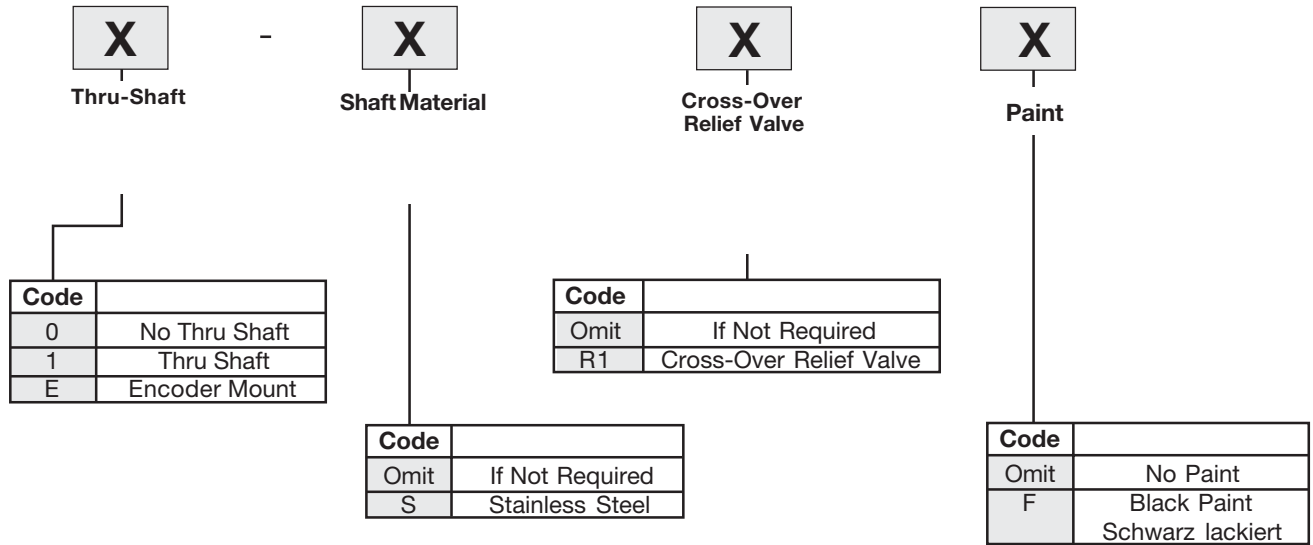
| Code |   |
|------|---|
| 0    | 1" Keyed<br>                 |
| 1    | 1" 6B Spline<br>             |
| 2    | 25mm Keyed<br>               |
| 3    | 1-1/4" Keyed<br>            |
| 5    | 1-1/4"-14 Tooth Spline<br> |
| 6    | 7/8"-13 Tooth Spline<br>   |

| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro in <sup>3</sup> /rev |
|------|---|
| 036  | 59 / 3.6  |
| 054  | 89 / 5.4  |
| 071  | 116 / 7.1   |
| 088  | 144 / 8.8   |
| 106  | 174 / 10.6  |
| 129  | 211 / 12.9  |
| 164  | 269 / 16.4  |
| 189  | 310 / 18.9  |
| 241  | 395 / 24.1  |

| Code |  |
|------|--|
| A    | SAE A 2-Bolt<br>        |
| B    | SAE B 2-Bolt<br>        |
| F    | 4 Bolt w/3/8-16 UNC<br> |

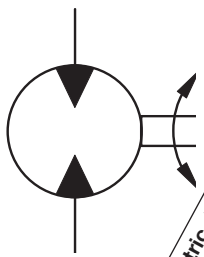
| Code |   |
|------|---|
| M    | 5/16-18 UNC Manifold<br> |
| S    | 7/8-14 SAE<br>           |
| P    | 1/2-14 NPTF<br>          |
| T    | 1/2-14 BSPP<br>          |

Consult factory for other available options, configurations ordering codes and lead times.



Consult factory for other available options, configurations ordering codes and lead times.





Geometric displacement

Max. speed @ Max. intermittent flow

Max. oil flow

Max. differential pressure

Max. supply pressure

Max. torque

Max. performance

| Motor Series<br>110A | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | rev/min | cont / int*    |             | cont / int* |             | max<br>bar<br>psig | cont / int* |             | max<br>KW<br>HP |
|----------------------|--|---------|----------------|-------------|-------------|-------------|--------------------|-------------|-------------|-----------------|
|                      |  |         | l/min<br>g/min | bar<br>psid | bar<br>psig | Nm<br>lb-in |                    |             |             |                 |
| 110A 036             | 59<br>3.6                                    | 898     | 45.4<br>12     | 53.0<br>14  | 172<br>2500 | 207<br>3000 | 276<br>4000        | 126<br>1117 | 152<br>1349 | 10.4<br>13.9    |
| 110A 054             | 89<br>5.4                                    | 942     | 60.6<br>16     | 83.3<br>22  | 172<br>2500 | 207<br>3000 | 276<br>4000        | 199<br>1765 | 241<br>2129 | 15.3<br>20.5    |
| 110A 071             | 116<br>7.1                                   | 716     | 75.7<br>20     | 83.3<br>22  | 172<br>2500 | 207<br>3000 | 276<br>4000        | 278<br>2458 | 329<br>2915 | 20.0<br>26.8    |
| 110A 088             | 144<br>8.8                                   | 787     | 75.7<br>20     | 113.6<br>30 | 172<br>2500 | 207<br>3000 | 276<br>4000        | 348<br>3080 | 406<br>3593 | 16.7<br>22.4    |
| 110A 106             | 174<br>10.6                                  | 654     | 75.7<br>20     | 113.6<br>30 | 155<br>2250 | 190<br>2750 | 276<br>4000        | 380<br>3359 | 451<br>3990 | 16.7<br>22.4    |
| 110A 129             | 211<br>12.9                                  | 537     | 75.7<br>20     | 113.6<br>30 | 155<br>2250 | 172<br>2500 | 276<br>4000        | 458<br>4055 | 509<br>4503 | 14.6<br>19.6    |
| 110A 164             | 269<br>16.4                                  | 423     | 75.7<br>20     | 113.6<br>30 | 138<br>2000 | 172<br>2500 | 276<br>4000        | 517<br>4573 | 617<br>5462 | 13.3<br>17.8    |
| 110A 189             | 310<br>18.9                                  | 420     | 75.7<br>20     | 113.6<br>30 | 121<br>1750 | 172<br>2500 | 276<br>4000        | 627<br>5548 | 651<br>5765 | 8.6<br>11.5     |
| 110A 241             | 395<br>24.1                                  | 288     | 75.7<br>20     | 113.6<br>30 | 121<br>1750 | 155<br>2250 | 276<br>4000        | 622<br>5504 | 800<br>7077 | 8.7<br>11.7     |

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

**110A 036**

**3.6** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 244        | 473        | 688        | 882        | 1031       |            |            |
|           | <b>128</b> | <b>124</b> | <b>119</b> | <b>105</b> | <b>82</b>  |            |            |
| <b>4</b>  | 238        | 471        | 700        | 905        | 1067       | 1203       | 1293       |
|           | <b>257</b> | <b>251</b> | <b>245</b> | <b>226</b> | <b>193</b> | <b>139</b> | <b>87</b>  |
| <b>6</b>  | 232        | 470        | 713        | 928        | 1103       | 1255       | 1344       |
|           | <b>385</b> | <b>381</b> | <b>377</b> | <b>362</b> | <b>331</b> | <b>289</b> | <b>250</b> |
| <b>8</b>  | 226        | 461        | 700        | 922        | 1117       | 1289       | 1404       |
|           | <b>513</b> | <b>508</b> | <b>503</b> | <b>490</b> | <b>454</b> | <b>403</b> | <b>359</b> |
| <b>10</b> | 221        | 453        | 688        | 917        | 1132       | 1324       | 1464       |
|           | <b>642</b> | <b>635</b> | <b>629</b> | <b>622</b> | <b>584</b> | <b>526</b> | <b>481</b> |
| <b>12</b> | 216        | 443        | 675        | 897        | 1117       | 1349       | 1564       |
|           | <b>770</b> | <b>762</b> | <b>755</b> | <b>747</b> | <b>708</b> | <b>651</b> | <b>601</b> |
| <b>14</b> | 212        | 433        | 662        | 877        | 1103       | 1375       | 1664       |
|           | <b>898</b> | <b>889</b> | <b>880</b> | <b>871</b> | <b>835</b> | <b>782</b> | <b>728</b> |

FLOW (GPM)

TORQUE (LB IN) 1664  
 SPEED (RPM) 728

**110A 054**

**5.4** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 365        | 716        | 1051       | 1368       | 1635       |            |            |
|           | <b>86</b>  | <b>83</b>  | <b>80</b>  | <b>72</b>  | <b>58</b>  |            |            |
| <b>4</b>  | 365        | 713        | 1076       | 1407       | 1700       | 1957       | 2134       |
|           | <b>171</b> | <b>167</b> | <b>164</b> | <b>153</b> | <b>134</b> | <b>101</b> | <b>60</b>  |
| <b>6</b>  | 361        | 722        | 1100       | 1445       | 1765       | 2055       | 2278       |
|           | <b>257</b> | <b>253</b> | <b>250</b> | <b>244</b> | <b>226</b> | <b>198</b> | <b>171</b> |
| <b>8</b>  | 352        | 713        | 1057       | 1419       | 1731       | 2020       | 2237       |
|           | <b>342</b> | <b>338</b> | <b>334</b> | <b>329</b> | <b>309</b> | <b>278</b> | <b>247</b> |
| <b>10</b> | 340        | 713        | 1057       | 1392       | 1697       | 1985       | 2196       |
|           | <b>428</b> | <b>424</b> | <b>419</b> | <b>415</b> | <b>396</b> | <b>366</b> | <b>332</b> |
| <b>12</b> | 331        | 679        | 1038       | 1382       | 1697       | 2011       | 2316       |
|           | <b>513</b> | <b>508</b> | <b>503</b> | <b>498</b> | <b>480</b> | <b>450</b> | <b>408</b> |
| <b>14</b> | 318        | 653        | 1019       | 1372       | 1732       | 2129       | 2543       |
|           | <b>599</b> | <b>593</b> | <b>587</b> | <b>581</b> | <b>566</b> | <b>536</b> | <b>488</b> |
| <b>16</b> | 309        | 636        | 987        | 1335       | 1700       | 2091       | 2491       |
|           | <b>684</b> | <b>678</b> | <b>671</b> | <b>664</b> | <b>645</b> | <b>618</b> | <b>566</b> |
| <b>18</b> | 281        | 600        | 955        | 1298       | 1668       | 2052       | 2438       |
|           | <b>770</b> | <b>762</b> | <b>755</b> | <b>747</b> | <b>724</b> | <b>701</b> | <b>647</b> |
| <b>20</b> | 264        | 567        | 880        | 1220       | 1581       | 1947       | 2235       |
|           | <b>856</b> | <b>849</b> | <b>843</b> | <b>830</b> | <b>804</b> | <b>785</b> | <b>729</b> |
| <b>22</b> | 247        | 541        | 824        | 1390       | 1593       | 2026       | 2423       |
|           | <b>942</b> | <b>936</b> | <b>931</b> | <b>913</b> | <b>885</b> | <b>871</b> | <b>813</b> |

FLOW (GPM)

- Cont.
- Cont. with no side load
- Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



110A 071

**7.1 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 480        | 949        | 1407       | 1853       | 2260       |            |            |
|           | <b>65</b>  | <b>63</b>  | <b>62</b>  | <b>56</b>  | <b>47</b>  |            |            |
| <b>4</b>  | 480        | 994        | 1492       | 1989       | 2430       | 2848       | 3243       |
|           | <b>130</b> | <b>128</b> | <b>125</b> | <b>118</b> | <b>105</b> | <b>83</b>  | <b>47</b>  |
| <b>6</b>  | 458        | 972        | 1483       | 1966       | 2458       | 2915       | 3322       |
|           | <b>195</b> | <b>192</b> | <b>189</b> | <b>187</b> | <b>176</b> | <b>154</b> | <b>133</b> |
| <b>8</b>  | 446        | 961        | 1475       | 1966       | 2458       | 2915       | 3362       |
|           | <b>260</b> | <b>258</b> | <b>255</b> | <b>251</b> | <b>239</b> | <b>219</b> | <b>193</b> |
| <b>10</b> | 424        | 927        | 1449       | 1944       | 2444       | 2915       | 3382       |
|           | <b>325</b> | <b>322</b> | <b>319</b> | <b>316</b> | <b>306</b> | <b>290</b> | <b>260</b> |
| <b>12</b> | 412        | 904        | 1407       | 1921       | 2444       | 2898       | 3391       |
|           | <b>390</b> | <b>387</b> | <b>383</b> | <b>379</b> | <b>371</b> | <b>353</b> | <b>316</b> |
| <b>14</b> | 396        | 859        | 1373       | 1876       | 2373       | 2882       | 3401       |
|           | <b>455</b> | <b>451</b> | <b>447</b> | <b>442</b> | <b>437</b> | <b>419</b> | <b>374</b> |
| <b>16</b> | 379        | 825        | 1339       | 1853       | 2345       | 2848       | 3342       |
|           | <b>521</b> | <b>515</b> | <b>510</b> | <b>505</b> | <b>497</b> | <b>482</b> | <b>429</b> |
| <b>18</b> | 362        | 791        | 1288       | 1785       | 2317       | 2814       | 3283       |
|           | <b>586</b> | <b>580</b> | <b>574</b> | <b>568</b> | <b>556</b> | <b>545</b> | <b>486</b> |
| <b>20</b> | 339        | 757        | 1237       | 1763       | 2288       | 2780       | 3243       |
|           | <b>651</b> | <b>644</b> | <b>638</b> | <b>631</b> | <b>618</b> | <b>608</b> | <b>543</b> |
| <b>22</b> | 305        | 701        | 1187       | 1740       | 2232       | 2746       | 3243       |
|           | <b>716</b> | <b>709</b> | <b>701</b> | <b>694</b> | <b>680</b> | <b>673</b> | <b>601</b> |

FLOW (GPM)

TORQUE (LB IN) 701  
 SPEED (RPM) 709

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**110A 088**

**8.8 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 605        | 1210       | 1774       | 2324       | 2869       |            |            |
|           | <b>52</b>  | <b>51</b>  | <b>50</b>  | <b>48</b>  | <b>41</b>  |            |            |
| <b>4</b>  | 590        | 1207       | 1804       | 2387       | 2975       | 3475       | 3929       |
|           | <b>105</b> | <b>103</b> | <b>102</b> | <b>99</b>  | <b>88</b>  | <b>73</b>  | <b>63</b>  |
| <b>6</b>  | 574        | 1204       | 1833       | 2451       | 3080       | 3593       | 4141       |
|           | <b>158</b> | <b>156</b> | <b>154</b> | <b>152</b> | <b>142</b> | <b>126</b> | <b>107</b> |
| <b>8</b>  | 553        | 1183       | 1817       | 2437       | 3067       | 3634       | 4154       |
|           | <b>210</b> | <b>208</b> | <b>206</b> | <b>203</b> | <b>192</b> | <b>178</b> | <b>159</b> |
| <b>10</b> | 532        | 1162       | 1801       | 2423       | 3054       | 3675       | 4167       |
|           | <b>263</b> | <b>261</b> | <b>259</b> | <b>253</b> | <b>243</b> | <b>235</b> | <b>219</b> |
| <b>12</b> | 509        | 1127       | 1762       | 2381       | 3006       | 3623       | 4179       |
|           | <b>315</b> | <b>312</b> | <b>309</b> | <b>303</b> | <b>295</b> | <b>284</b> | <b>264</b> |
| <b>14</b> | 487        | 1092       | 1722       | 2339       | 2958       | 3571       | 4192       |
|           | <b>367</b> | <b>363</b> | <b>358</b> | <b>353</b> | <b>347</b> | <b>335</b> | <b>310</b> |
| <b>16</b> | 468        | 1044       | 1659       | 2269       | 2914       | 3529       | 4143       |
|           | <b>420</b> | <b>415</b> | <b>411</b> | <b>403</b> | <b>396</b> | <b>384</b> | <b>362</b> |
| <b>18</b> | 448        | 997        | 1595       | 2199       | 2870       | 3487       | 4094       |
|           | <b>472</b> | <b>468</b> | <b>463</b> | <b>454</b> | <b>444</b> | <b>435</b> | <b>416</b> |
| <b>20</b> | 428        | 973        | 1551       | 2178       | 2832       | 3446       | 4051       |
|           | <b>525</b> | <b>520</b> | <b>516</b> | <b>507</b> | <b>499</b> | <b>486</b> | <b>458</b> |
| <b>22</b> | 408        | 949        | 1506       | 2158       | 2794       | 3405       | 4008       |
|           | <b>578</b> | <b>573</b> | <b>569</b> | <b>562</b> | <b>555</b> | <b>537</b> | <b>499</b> |
| <b>25</b> | 348        | 846        | 1423       | 2008       | 2610       | 3191       | 3809       |
|           | <b>656</b> | <b>651</b> | <b>647</b> | <b>636</b> | <b>625</b> | <b>608</b> | <b>575</b> |
| <b>30</b> | 279        | 740        | 1313       | 1821       | 2381       | 2921       | 3555       |
|           | <b>787</b> | <b>782</b> | <b>776</b> | <b>760</b> | <b>744</b> | <b>725</b> | <b>697</b> |

TORQUE (LB IN) 4051  
 SPEED (RPM) 458

FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



110A 106

**10.6** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1750       | 2000       | 2250       | 2500       | 2750       | 3000       | 3250       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 742        | 1501       | 2227       | 2569       | 2919       | 3264       | 3585       | 3897       | 4201       | 4537       | 4871       |
|           | <b>44</b>  | <b>43</b>  | <b>42</b>  | <b>41</b>  | <b>40</b>  | <b>39</b>  | <b>37</b>  | <b>34</b>  | <b>31</b>  | <b>27</b>  | <b>23</b>  |
| <b>4</b>  | 721        | 1485       | 2214       | 2576       | 2935       | 3302       | 3669       | 3990       | 4251       | 4599       | 4945       |
|           | <b>87</b>  | <b>86</b>  | <b>85</b>  | <b>83</b>  | <b>82</b>  | <b>79</b>  | <b>76</b>  | <b>71</b>  | <b>66</b>  | <b>61</b>  | <b>57</b>  |
| <b>6</b>  | 700        | 1468       | 2202       | 2583       | 2969       | 3359       | 3754       | 4036       | 4302       | 4660       | 5019       |
|           | <b>131</b> | <b>129</b> | <b>128</b> | <b>127</b> | <b>126</b> | <b>122</b> | <b>118</b> | <b>112</b> | <b>106</b> | <b>104</b> | <b>102</b> |
| <b>8</b>  | 675        | 1442       | 2189       | 2569       | 2952       | 3340       | 3733       | 4071       | 4403       | 4715       | 5019       |
|           | <b>174</b> | <b>173</b> | <b>171</b> | <b>169</b> | <b>166</b> | <b>162</b> | <b>158</b> | <b>153</b> | <b>149</b> | <b>146</b> | <b>144</b> |
| <b>10</b> | 650        | 1417       | 2176       | 2554       | 2935       | 3321       | 3711       | 4106       | 4504       | 4770       | 5019       |
|           | <b>218</b> | <b>216</b> | <b>214</b> | <b>210</b> | <b>207</b> | <b>203</b> | <b>198</b> | <b>197</b> | <b>196</b> | <b>193</b> | <b>190</b> |
| <b>12</b> | 616        | 1383       | 2138       | 2509       | 2885       | 3264       | 3648       | 4025       | 4403       | 4715       | 5019       |
|           | <b>262</b> | <b>258</b> | <b>255</b> | <b>252</b> | <b>248</b> | <b>245</b> | <b>241</b> | <b>238</b> | <b>235</b> | <b>232</b> | <b>229</b> |
| <b>14</b> | 582        | 1350       | 2100       | 2465       | 2834       | 3207       | 3585       | 3943       | 4302       | 4660       | 5019       |
|           | <b>305</b> | <b>301</b> | <b>296</b> | <b>293</b> | <b>290</b> | <b>287</b> | <b>284</b> | <b>279</b> | <b>275</b> | <b>272</b> | <b>268</b> |
| <b>16</b> | 567        | 1278       | 2050       | 2410       | 2775       | 3155       | 3543       | 3903       | 4264       | 4626       | 4989       |
|           | <b>349</b> | <b>344</b> | <b>340</b> | <b>336</b> | <b>331</b> | <b>328</b> | <b>324</b> | <b>320</b> | <b>316</b> | <b>311</b> | <b>307</b> |
| <b>18</b> | 553        | 1206       | 1999       | 2354       | 2716       | 3103       | 3501       | 3862       | 4226       | 4592       | 4960       |
|           | <b>392</b> | <b>388</b> | <b>384</b> | <b>379</b> | <b>373</b> | <b>369</b> | <b>365</b> | <b>361</b> | <b>357</b> | <b>351</b> | <b>345</b> |
| <b>20</b> | 529        | 1168       | 1885       | 2270       | 2674       | 3060       | 3458       | 3822       | 4188       |            |            |
|           | <b>436</b> | <b>431</b> | <b>427</b> | <b>422</b> | <b>416</b> | <b>412</b> | <b>408</b> | <b>403</b> | <b>399</b> |            |            |
| <b>22</b> | 506        | 1130       | 1771       | 2185       | 2632       | 3018       | 3416       | 3781       | 4150       |            |            |
|           | <b>479</b> | <b>475</b> | <b>470</b> | <b>465</b> | <b>460</b> | <b>455</b> | <b>451</b> | <b>446</b> | <b>441</b> |            |            |
| <b>25</b> | 492        | 1110       | 1747       | 2145       | 2573       | 2951       | 3342       | 3700       | 4061       |            |            |
|           | <b>545</b> | <b>541</b> | <b>537</b> | <b>531</b> | <b>526</b> | <b>520</b> | <b>515</b> | <b>511</b> | <b>507</b> |            |            |
| <b>30</b> | 470        | 1076       | 1708       | 2078       | 2474       | 2840       | 3219       | 3564       | 3913       |            |            |
|           | <b>654</b> | <b>651</b> | <b>647</b> | <b>641</b> | <b>634</b> | <b>628</b> | <b>621</b> | <b>615</b> | <b>608</b> |            |            |

TORQUE (LB IN) 5019  
 SPEED (RPM) 229

FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



110A 129

**12.9** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1750        | 2000        | 2250        | 2500        | 2750        | 3000        | 3250        | 3500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 905<br>36  | 1827<br>35  | 2698<br>34  | 3112<br>33  | 3527<br>32  | 3943<br>31  | 4336<br>29  | 4729<br>27  | 5115<br>25  | 5522<br>23  | 5925<br>20  |
| <b>4</b>  | 880<br>72  | 1807<br>70  | 2691<br>69  | 3128<br>68  | 3567<br>66  | 3999<br>64  | 4420<br>62  | 4805<br>58  | 5180<br>55  | 5599<br>51  | 6017<br>48  |
| <b>6</b>  | 854<br>107 | 1786<br>106 | 2684<br>105 | 3144<br>104 | 3607<br>103 | 4055<br>100 | 4503<br>97  | 4881<br>93  | 5245<br>89  | 5677<br>87  | 6108<br>85  |
| <b>8</b>  | 822<br>143 | 1755<br>142 | 2666<br>140 | 3122<br>139 | 3582<br>137 | 4035<br>134 | 4490<br>130 | 4912<br>127 | 5330<br>123 | 5723<br>121 | 6108<br>118 |
| <b>10</b> | 790<br>179 | 1725<br>177 | 2648<br>175 | 3101<br>173 | 3556<br>171 | 4015<br>168 | 4476<br>164 | 4944<br>162 | 5416<br>160 | 5769<br>157 | 6108<br>154 |
| <b>12</b> | 750<br>215 | 1683<br>212 | 2605<br>210 | 3060<br>208 | 3511<br>205 | 3965<br>202 | 4419<br>199 | 4867<br>196 | 5324<br>193 | 5718<br>189 | 6104<br>186 |
| <b>14</b> | 710<br>251 | 1642<br>247 | 2562<br>244 | 3020<br>242 | 3465<br>240 | 3914<br>237 | 4363<br>234 | 4790<br>230 | 5233<br>226 |             |             |
| <b>16</b> | 685<br>287 | 1557<br>283 | 2501<br>280 | 2948<br>277 | 3394<br>274 | 3850<br>271 | 4309<br>268 | 4742<br>263 | 5183<br>259 |             |             |
| <b>18</b> | 661<br>322 | 1472<br>319 | 2439<br>316 | 2876<br>312 | 3322<br>307 | 3785<br>304 | 4256<br>301 | 4695<br>297 | 5133<br>293 |             |             |
| <b>20</b> | 628<br>358 | 1418<br>355 | 2294<br>351 | 2741<br>347 | 3205<br>343 | 3651<br>339 | 4105<br>336 | 4522<br>331 |             |             |             |
| <b>22</b> | 596<br>394 | 1363<br>390 | 2150<br>386 | 2605<br>382 | 3089<br>378 | 3517<br>374 | 3954<br>370 |             |             |             |             |
| <b>25</b> | 571<br>448 | 1322<br>444 | 2093<br>440 | 2532<br>436 | 2997<br>431 | 3427<br>427 | 3869<br>422 |             |             |             |             |
| <b>30</b> | 531<br>537 | 1254<br>533 | 1999<br>530 | 2410<br>524 | 2843<br>519 | 3276<br>514 |             |             |             |             |             |

TORQUE (LB IN) 6108  
 SPEED (RPM) 154

FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**110A 164**

**16.4 cu in / rev**

PRESSURE (PSID)

|           | 500         | 1000        | 1500        | 1750        | 2000        | 2250        | 2500        | 2750        | 3000        | 3250       |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| <b>2</b>  | 1155<br>28  | 2323<br>27  | 3406<br>26  | 3928<br>25  | 4437<br>24  | 4954<br>23  | 5462<br>22  | 5986<br>21  | 6507<br>20  | 7020<br>19 |
| <b>4</b>  | 1122<br>56  | 2297<br>55  | 3414<br>54  | 3963<br>53  | 4505<br>51  | 5023<br>49  | 5530<br>48  | 6065<br>46  | 6597<br>44  | 7124<br>43 |
| <b>6</b>  | 1088<br>85  | 2271<br>84  | 3422<br>83  | 3997<br>82  | 4573<br>80  | 5092<br>79  | 5599<br>77  | 6144<br>74  | 6687<br>72  | 7227<br>70 |
| <b>8</b>  | 1047<br>113 | 2232<br>112 | 3394<br>110 | 3963<br>109 | 4531<br>108 | 5071<br>106 | 5605<br>104 | 6164<br>101 | 6722<br>98  | 7247<br>95 |
| <b>10</b> | 1005<br>141 | 2193<br>139 | 3367<br>138 | 3928<br>137 | 4489<br>135 | 5051<br>133 | 5612<br>131 | 6184<br>128 | 6758<br>125 |            |
| <b>12</b> | 955<br>169  | 2061<br>167 | 3318<br>166 | 3888<br>164 | 4463<br>163 | 5021<br>161 | 5579<br>158 | 6141<br>155 |             |            |
| <b>14</b> | 904<br>197  | 2086<br>195 | 3269<br>193 | 3878<br>192 | 4437<br>191 | 4998<br>188 | 5547<br>185 | 6072<br>181 |             |            |
| <b>16</b> | 861<br>225  | 1925<br>223 | 3191<br>221 | 3763<br>219 | 4346<br>217 | 4908<br>215 | 5475<br>212 |             |             |            |
| <b>18</b> | 818<br>254  | 1879<br>251 | 3113<br>248 | 3677<br>246 | 4255<br>243 | 4827<br>241 |             |             |             |            |
| <b>20</b> | 783<br>282  | 1853<br>279 | 3015<br>276 | 3577<br>273 | 4155<br>270 | 4733<br>268 |             |             |             |            |
| <b>22</b> | 718<br>310  | 1710<br>307 | 2721<br>304 | 3209<br>301 | 3706<br>297 | 4170<br>294 |             |             |             |            |
| <b>25</b> | 672<br>352  | 1626<br>349 | 2596<br>345 | 3068<br>342 | 3550<br>338 | 4038<br>335 |             |             |             |            |
| <b>30</b> | 596<br>423  | 1488<br>418 | 2388<br>414 | 2832<br>410 | 3289<br>406 | 3817<br>401 |             |             |             |            |

TORQUE (LB IN) 6758  
 SPEED (RPM) 125

FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



110A 189

**18.9** cu in / rev

PRESSURE (PSID)

|           | 500                | 1000               | 1250               | 1500               | 1750               | 2250               | 2500               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1285<br><b>23</b>  | 2619<br><b>22</b>  | 3224<br><b>21</b>  | 3838<br><b>20</b>  | 4442<br><b>18</b>  | 5548<br><b>16</b>  | 6131<br><b>13</b>  |
| <b>4</b>  | 1264<br><b>47</b>  | 2589<br><b>46</b>  | 3250<br><b>45</b>  | 3859<br><b>44</b>  | 4486<br><b>42</b>  | 5668<br><b>40</b>  | 6282<br><b>38</b>  |
| <b>6</b>  | 1228<br><b>73</b>  | 2559<br><b>72</b>  | 3240<br><b>71</b>  | 3865<br><b>70</b>  | 4513<br><b>69</b>  | 5765<br><b>67</b>  | 6409<br><b>66</b>  |
| <b>8</b>  | 1171<br><b>97</b>  | 2509<br><b>96</b>  | 3176<br><b>95</b>  | 3829<br><b>94</b>  | 4503<br><b>93</b>  | 5771<br><b>90</b>  | 6439<br><b>89</b>  |
| <b>10</b> | 1114<br><b>121</b> | 2449<br><b>120</b> | 3111<br><b>119</b> | 3793<br><b>118</b> | 4476<br><b>117</b> | 5777<br><b>114</b> | 6468<br><b>112</b> |
| <b>12</b> | 1065<br><b>145</b> | 2391<br><b>144</b> | 3061<br><b>143</b> | 3750<br><b>142</b> | 4439<br><b>141</b> | 5747<br><b>137</b> |                    |
| <b>14</b> | 1016<br><b>169</b> | 2333<br><b>168</b> | 3011<br><b>167</b> | 3707<br><b>166</b> | 4402<br><b>165</b> | 5717<br><b>161</b> |                    |
| <b>16</b> | 975<br><b>200</b>  | 2257<br><b>199</b> | 2938<br><b>198</b> | 3636<br><b>197</b> | 4326<br><b>195</b> | 5645<br><b>185</b> |                    |
| <b>18</b> | 966<br><b>232</b>  | 1988<br><b>230</b> | 2506<br><b>228</b> | 3037<br><b>227</b> | 3563<br><b>226</b> |                    |                    |
| <b>20</b> | 941<br><b>263</b>  | 1815<br><b>261</b> | 2253<br><b>259</b> | 2702<br><b>258</b> | 3143<br><b>256</b> |                    |                    |
| <b>22</b> | 916<br><b>295</b>  | 1643<br><b>293</b> | 2001<br><b>290</b> | 2367<br><b>288</b> | 2724<br><b>286</b> |                    |                    |
| <b>25</b> | 879<br><b>342</b>  | 1384<br><b>339</b> | 1622<br><b>335</b> | 1865<br><b>334</b> | 2094<br><b>331</b> |                    |                    |
| <b>30</b> | 816<br><b>420</b>  | 952<br><b>417</b>  | 990<br><b>412</b>  | 1027<br><b>410</b> | 1045<br><b>407</b> |                    |                    |

TORQUE (LB IN) 2724  
 SPEED (RPM) 286

FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





110A 241

**24.1** cu in / rev

PRESSURE (PSID)

|           | 500                | 1000               | 1250               | 1500               | 1750               | 2250              |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| <b>2</b>  | 1515<br><b>15</b>  | 3184<br><b>14</b>  | 3884<br><b>12</b>  | 4660<br><b>11</b>  | 5427<br><b>10</b>  | 6645<br><b>9</b>  |
| <b>4</b>  | 1534<br><b>35</b>  | 3145<br><b>34</b>  | 4027<br><b>32</b>  | 4718<br><b>30</b>  | 5504<br><b>29</b>  | 6904<br><b>28</b> |
| <b>6</b>  | 1496<br><b>56</b>  | 3107<br><b>55</b>  | 4027<br><b>54</b>  | 4718<br><b>53</b>  | 5504<br><b>52</b>  | 7077<br><b>51</b> |
| <b>8</b>  | 1400<br><b>74</b>  | 3030<br><b>73</b>  | 3884<br><b>72</b>  | 4660<br><b>70</b>  | 5571<br><b>68</b>  | 7163<br><b>66</b> |
| <b>10</b> | 1304<br><b>93</b>  | 2915<br><b>92</b>  | 3740<br><b>91</b>  | 4603<br><b>90</b>  | 5571<br><b>89</b>  |                   |
| <b>12</b> | 1266<br><b>112</b> | 2851<br><b>112</b> | 3708<br><b>110</b> | 4584<br><b>109</b> | 5549<br><b>107</b> |                   |
| <b>14</b> | 1227<br><b>130</b> | 2787<br><b>129</b> | 3676<br><b>128</b> | 4564<br><b>127</b> | 5527<br><b>126</b> |                   |
| <b>16</b> | 1189<br><b>149</b> | 2723<br><b>148</b> | 3644<br><b>147</b> | 4545<br><b>146</b> | 5504<br><b>144</b> |                   |
| <b>18</b> | 1170<br><b>167</b> | 2685<br><b>166</b> | 3596<br><b>165</b> | 4488<br><b>164</b> | 5437<br><b>162</b> |                   |
| <b>20</b> | 1151<br><b>184</b> | 2685<br><b>183</b> | 3596<br><b>182</b> | 4430<br><b>180</b> | 5370<br><b>178</b> |                   |
| <b>22</b> | 1112<br><b>205</b> | 2608<br><b>204</b> | 3452<br><b>203</b> | 4258<br><b>202</b> | 5169<br><b>200</b> |                   |
| <b>25</b> | 1055<br><b>235</b> | 2455<br><b>232</b> | 3260<br><b>231</b> | 4085<br><b>230</b> | 4900<br><b>228</b> |                   |
| <b>30</b> | 959<br><b>288</b>  | 2225<br><b>285</b> | 2925<br><b>282</b> | 3682<br><b>279</b> | 4363<br><b>273</b> |                   |

TORQUE (LB IN) 5169  
 SPEED (RPM) 200

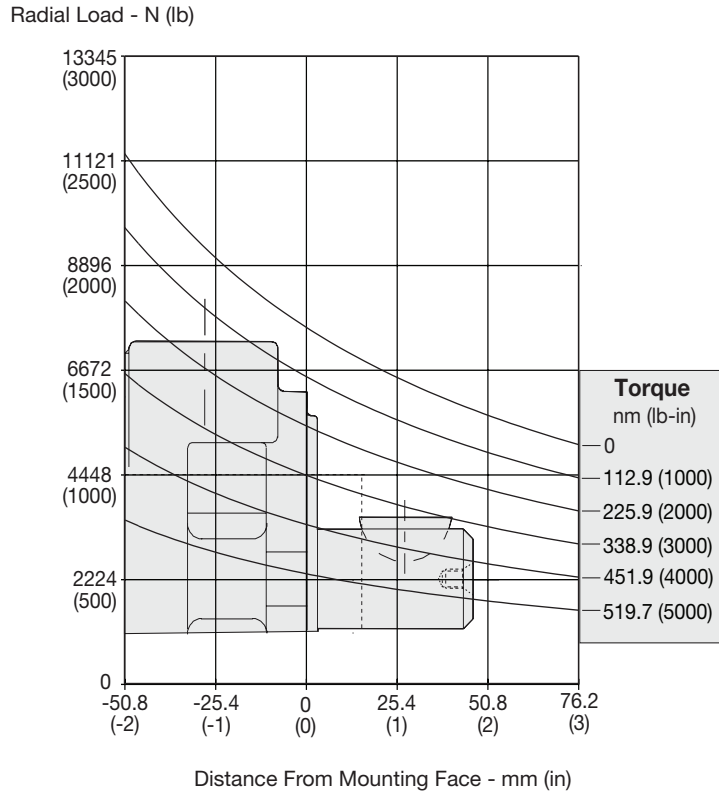
FLOW (GPM)

- Cont.
- Cont. with no side load  
Int. with rated side load
- Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





The allowable side load curve is based on L<sub>10</sub> bushing life of 3 x 10<sup>6</sup> revolutions @ 100 RPM.

### Equation to Calculate the Expected Radial Bearing Life

Equation to calculate the dynamic bearing life for a given load:

Use F<sub>a</sub>, F<sub>b</sub> and S in equation to determine hours of L<sub>10</sub> bearing life.

$$L = \frac{3.0 \times 10^6}{60 \times S} \left\{ \frac{F_a}{F_b} \right\}^{3.33}$$

Where / Mit:

S = Shaft Speed RPM

L = Life In Hours

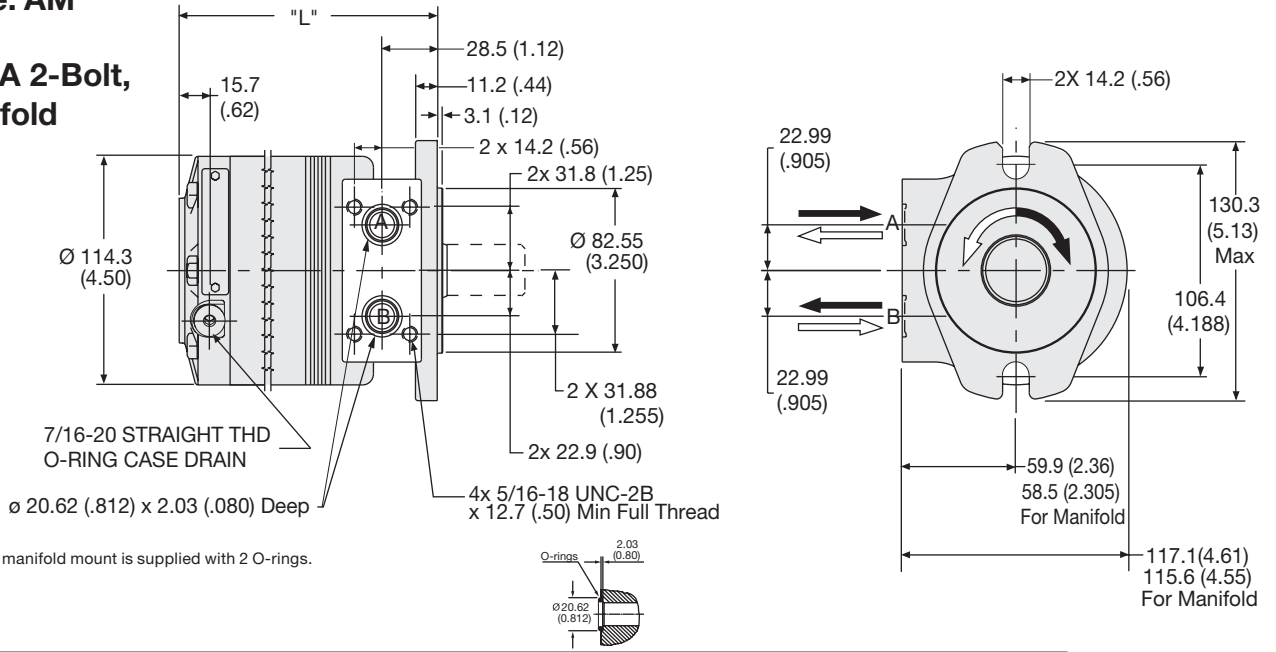
F<sub>a</sub> = Allowable side load defined by above curve at a distance from mounting flange.

F<sub>b</sub> = Application side load.

Note: Calculations are based on L<sub>10</sub> bearing life per ISO 281.

**Code: AM**

**SAE A 2-Bolt,  
Manifold**

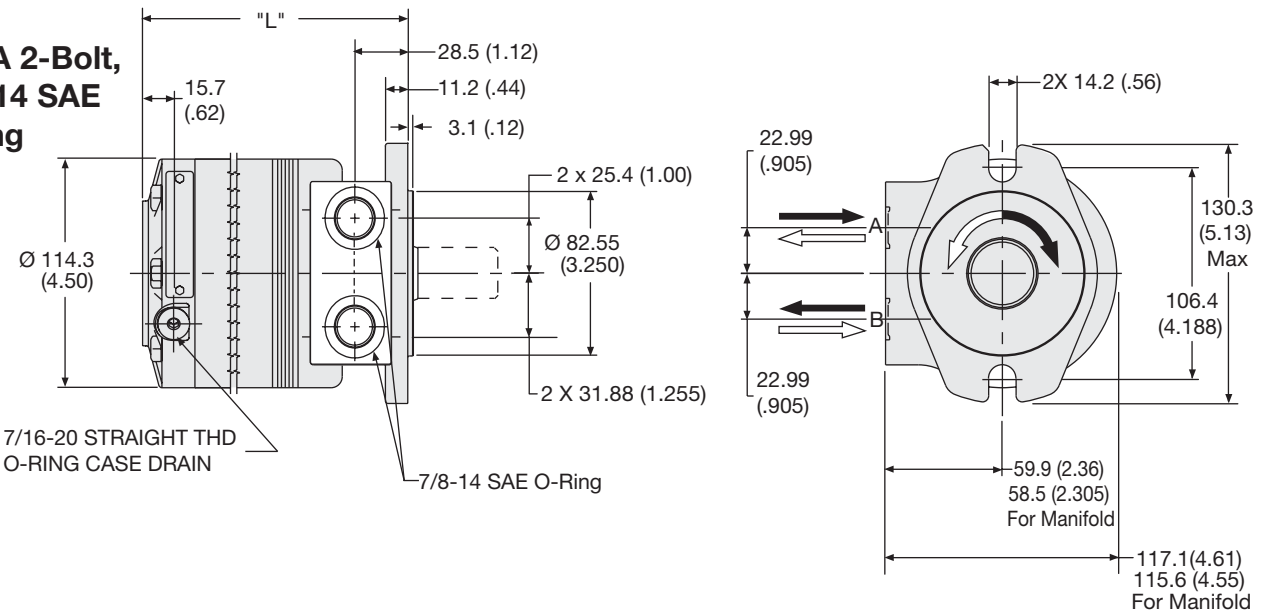


Motor with manifold mount is supplied with 2 O-rings.

| Code AM        |          | 036    | 054    | 071    | 088    | 106    | 129    | 164    | 189    | 241    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 7.0    | 7.4    | 7.7    | 8.0    | 8.4    | 8.7    | 9.4    | 9.8    | 10.8   |
| Poids/Peso     | (lb)     | (15.4) | (16.2) | (16.9) | (17.5) | (18.4) | (19.1) | (20.6) | (21.6) | (23.7) |
| Length         | "L" mm   | 112.0  | 116.8  | 121.4  | 126.5  | 131.3  | 137.7  | 147.3  | 154.2  | 168.7  |
|                | "L" (in) | (4.41) | (4.60) | (4.78) | (4.98) | (5.17) | (5.42) | (5.80) | (6.07) | (6.64) |

**Code: AS**

**SAE A 2-Bolt,  
7/8"-14 SAE  
O-Ring**



| Code AS        |          | 036    | 054    | 071    | 088    | 106    | 129    | 164    | 189    | 241    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 7.0    | 7.4    | 7.7    | 8.0    | 8.4    | 8.7    | 9.4    | 9.8    | 10.8   |
| Poids/Peso     | (lb)     | (15.4) | (16.2) | (16.9) | (17.5) | (18.4) | (19.1) | (20.6) | (21.6) | (23.7) |
| Length         | "L" mm   | 112.0  | 116.8  | 121.4  | 126.5  | 131.3  | 137.7  | 147.3  | 154.2  | 168.7  |
|                | "L" (in) | (4.41) | (4.60) | (4.78) | (4.98) | (5.17) | (5.42) | (5.80) | (6.07) | (6.64) |

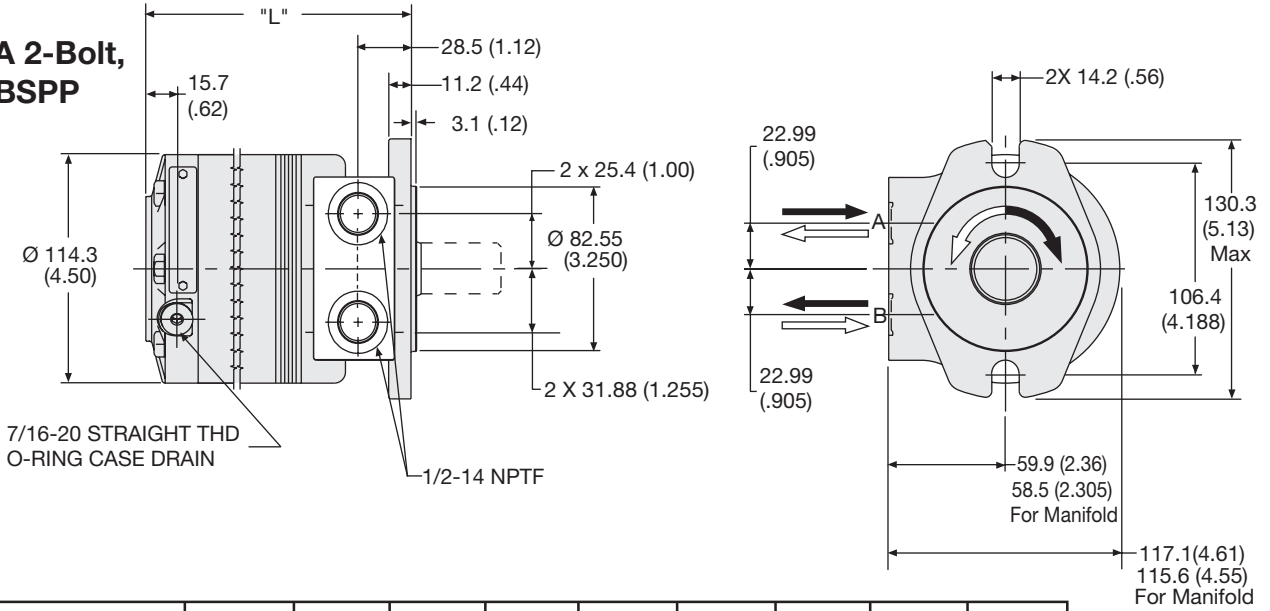
English equivalents for metric specifications are shown in ( ).  
 021 110A.indd, a



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: AP**

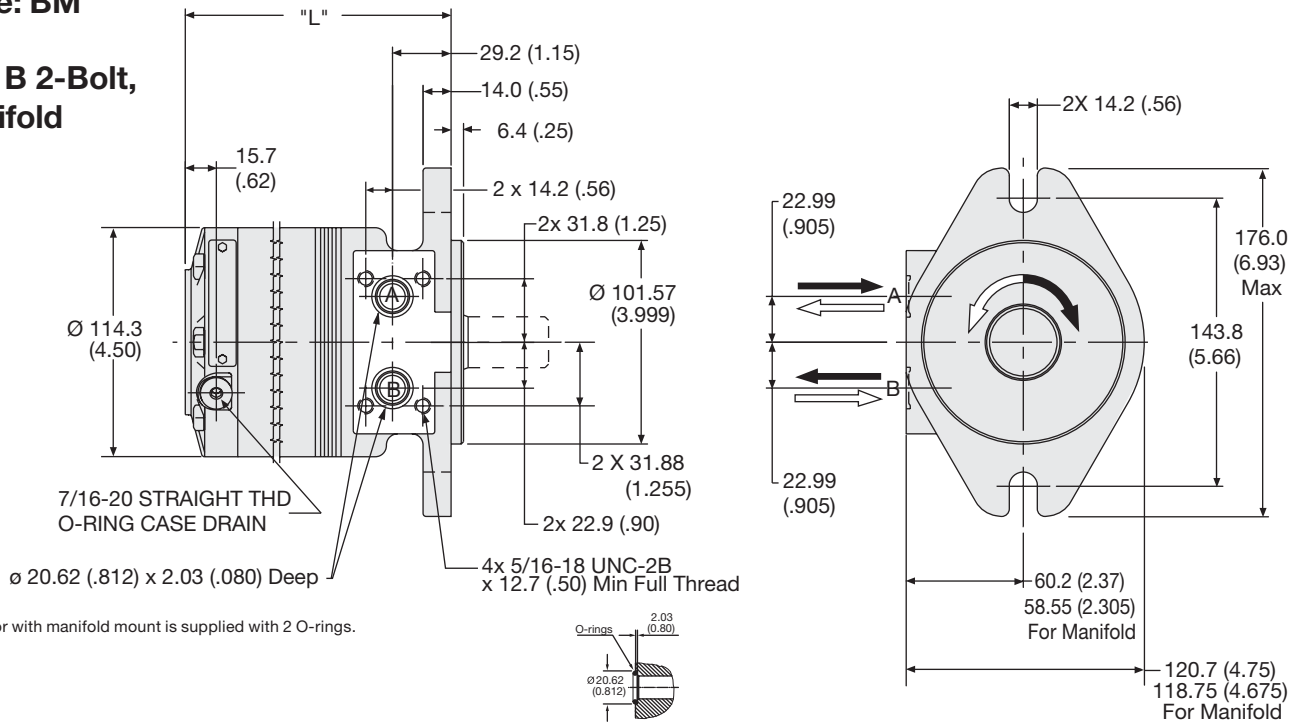
**SAE A 2-Bolt,  
 1/2" BSPP**



| Code AP        |          | 036    | 054    | 071    | 088    | 106    | 129    | 164    | 189    | 241    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 7.0    | 7.4    | 7.7    | 8.0    | 8.4    | 8.7    | 9.4    | 9.8    | 10.8   |
| Poids/Peso     | (lb)     | (15.4) | (16.2) | (16.9) | (17.5) | (18.4) | (19.1) | (20.6) | (21.6) | (23.7) |
| Length         | "L" mm   | 112.0  | 116.8  | 121.4  | 126.5  | 131.3  | 137.7  | 147.3  | 154.2  | 168.7  |
|                | "L" (in) | (4.41) | (4.60) | (4.78) | (4.98) | (5.17) | (5.42) | (5.80) | (6.07) | (6.64) |

**Code: BM**

**SAE B 2-Bolt,  
 Manifold**



| Code BM        |          | 036    | 054    | 071    | 088    | 106    | 129    | 164    | 189    | 241    |
|----------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg       | 7.0    | 7.4    | 7.7    | 8.0    | 8.4    | 8.7    | 9.4    | 9.8    | 10.8   |
| Poids/Peso     | (lb)     | (15.4) | (16.2) | (16.9) | (17.5) | (18.4) | (19.1) | (20.6) | (21.6) | (23.7) |
| Length         | "L" mm   | 112.0  | 116.8  | 121.4  | 126.5  | 131.3  | 137.7  | 147.3  | 154.2  | 168.7  |
|                | "L" (in) | (4.41) | (4.60) | (4.78) | (4.98) | (5.17) | (5.42) | (5.80) | (6.07) | (6.64) |

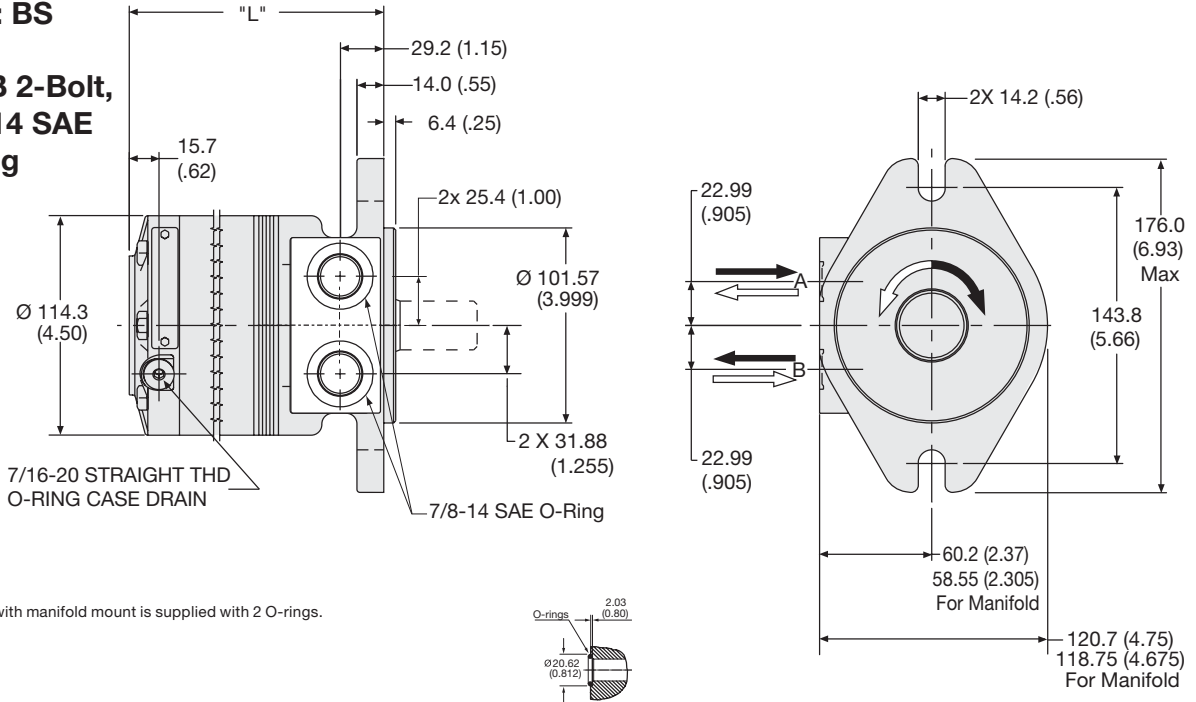
English equivalents for metric specifications are shown in ( ).  
 021 110A.indd, a



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: BS**

**SAE B 2-Bolt,  
 7/8"-14 SAE  
 O-Ring**

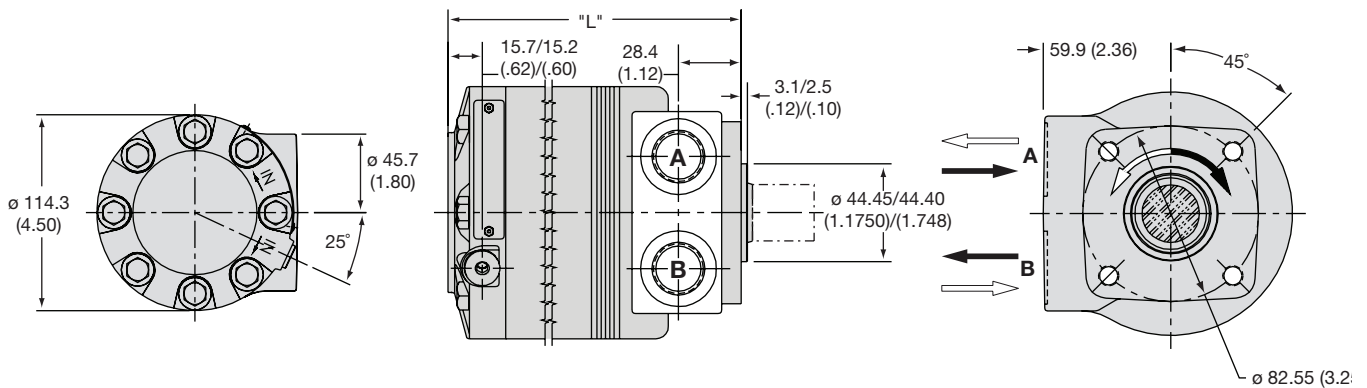


Motor with manifold mount is supplied with 2 O-rings.

| Code BS               |               | 036          | 054          | 071          | 088          | 106          | 129          | 164          | 189          | 241          |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>     | <b>7.0</b>   | <b>7.4</b>   | <b>7.7</b>   | <b>8.0</b>   | <b>8.4</b>   | <b>8.7</b>   | <b>9.4</b>   | <b>9.8</b>   | <b>10.8</b>  |
| Poids/Peso            | (lb)          | (15.4)       | (16.2)       | (16.9)       | (17.5)       | (18.4)       | (19.1)       | (20.6)       | (21.6)       | (23.7)       |
| <b>Length</b>         | <b>"L" mm</b> | <b>112.0</b> | <b>116.8</b> | <b>121.4</b> | <b>126.5</b> | <b>131.3</b> | <b>137.7</b> | <b>147.3</b> | <b>154.2</b> | <b>168.7</b> |
|                       | "L" (in)      | (4.41)       | (4.60)       | (4.78)       | (4.98)       | (5.17)       | (5.42)       | (5.80)       | (6.07)       | (6.64)       |

**Code: FS**

**4 Bolt, 7/8-14 SAE O-Ring**



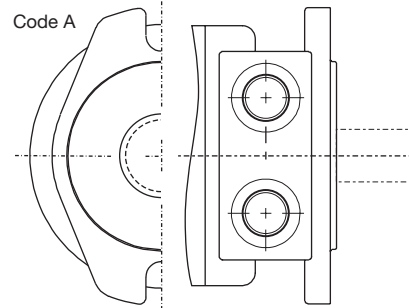
| Code FS               |               | 036          | 054          | 071          | 088          | 106          | 129          | 164          | 189          | 241          |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Weight/Gewicht</b> | <b>kg</b>     | <b>6.7</b>   | <b>7.0</b>   | <b>7.3</b>   | <b>7.6</b>   | <b>8.0</b>   | <b>8.3</b>   | <b>9.0</b>   | <b>9.5</b>   | <b>10.4</b>  |
| Poids/Peso            | (lb)          | (14.7)       | (15.5)       | (16.2)       | (16.8)       | (17.7)       | (18.4)       | (19.9)       | (20.9)       | (23.0)       |
| <b>Length</b>         | <b>"L" mm</b> | <b>112.0</b> | <b>116.8</b> | <b>121.4</b> | <b>126.5</b> | <b>131.3</b> | <b>137.7</b> | <b>147.3</b> | <b>154.2</b> | <b>168.7</b> |
|                       | "L" (in)      | (4.41)       | (4.60)       | (4.78)       | (4.98)       | (5.17)       | (5.42)       | (5.80)       | (6.07)       | (6.64)       |

English equivalents for metric specifications are shown in ( ).

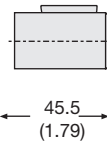
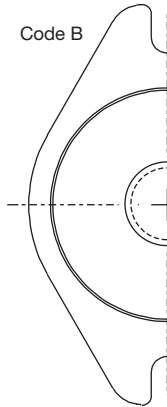
021 110A.indd, a



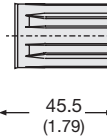
**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



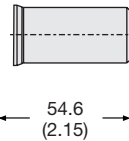
**Code: 0**  
**1" Keyed**



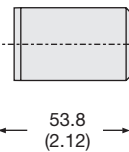
**Code: 1**  
**1" 6B Spline**



**Code: 2**  
**25mm Keyed**



**Code: 3**  
**1-1/4" Keyed**



English equivalents for metric specifications are shown in ( ).

021 110A.indd, a

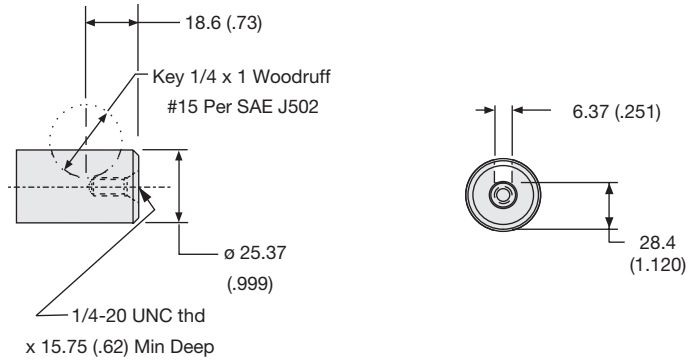


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

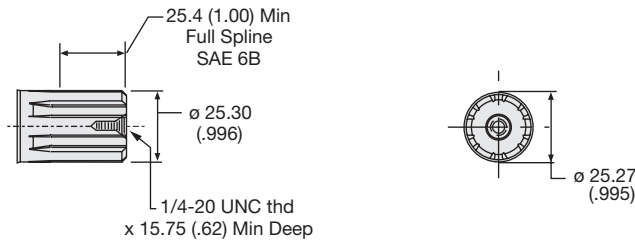
**Code: 0**

**1" Keyed**



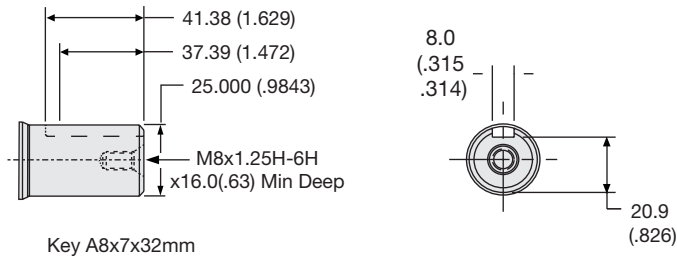
**Code: 1**

**1" 6B Spline**



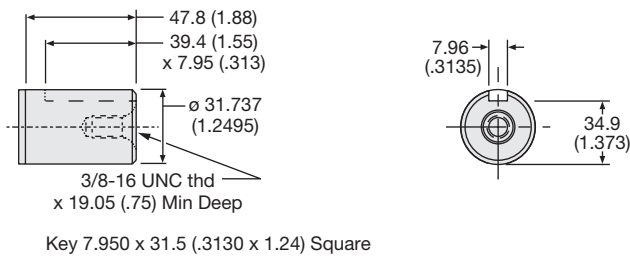
**Code: 2**

**25mm Keyed**

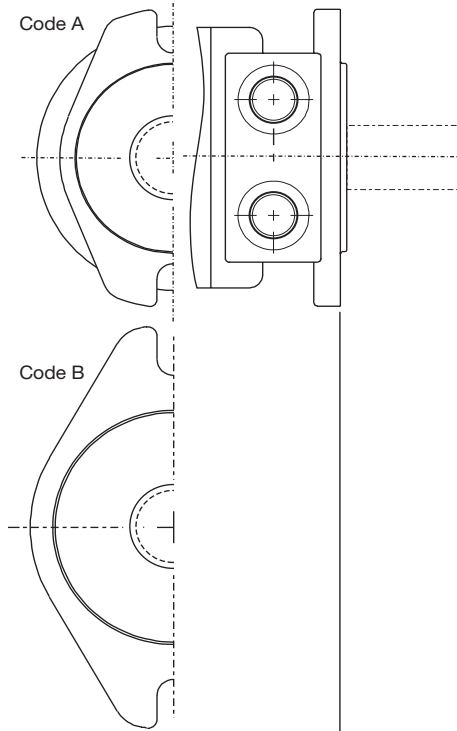


**Code: 3**

**1-1/4" Keyed**

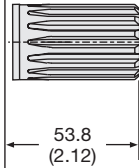


English equivalents for metric specifications are shown in ( ).  
 021 110A.indd, a



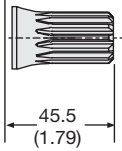
**Code: 5**

**1-1/4"-14 Tooth Spline**



**Code: 6**

**7/8"-13 Tooth Spline**



English equivalents for metric specifications are shown in ( ).

021 110A.indd, a



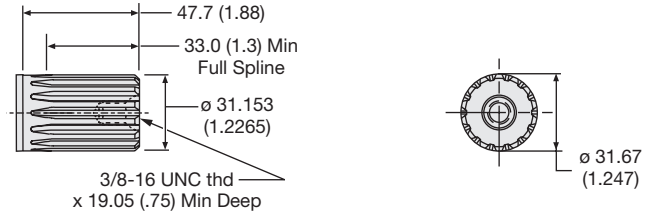
**WARNING**

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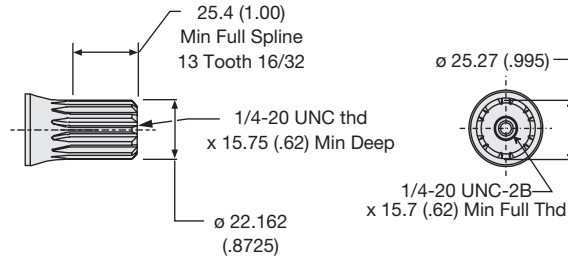
**Code: 5**

**1-1/4"-14 Tooth Spline**



**Code: 6**

**7/8"-13 Tooth Spline**



English equivalents for metric specifications are shown in ( ).  
 021 110A.indd, a

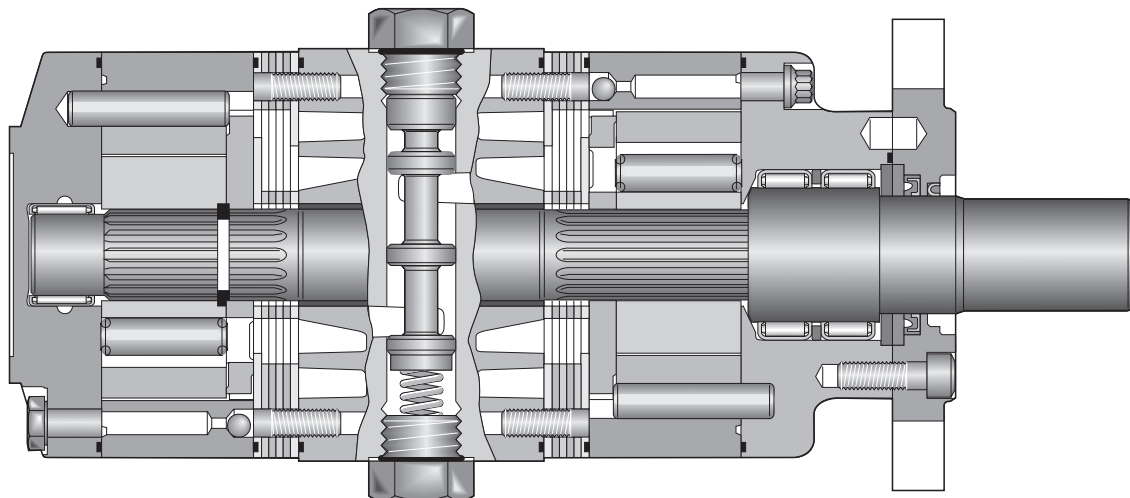
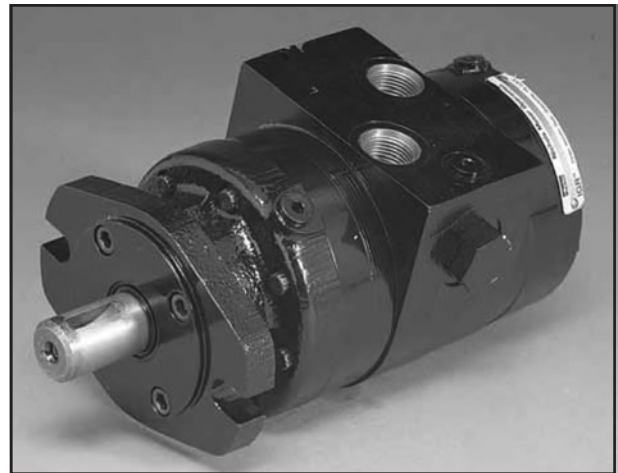


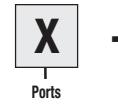
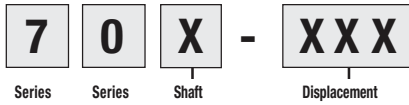
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

|                                 |                 |  |                                  |
|---------------------------------|-----------------|--|----------------------------------|
| <b>6 Displacements</b>          | <b>Series</b>   | (3.6 – 12.9 in <sup>3</sup> /rev)<br><b>59...211 cm<sup>3</sup>/rev</b>  |                                  |
|                                 | <b>Parallel</b> | (7.2 – 25.8 in <sup>3</sup> /rev)<br><b>118...423 cm<sup>3</sup>/rev</b> |                                  |
| <b>Maximum Pressure</b>         |                 | <b>Cont</b>  | <b>Int</b>                       |
|                                 | <b>Series</b>   | (2500 psid)<br><b>...170 bar</b>   | (3000 psid)<br><b>...210 bar</b> |
|                                 | <b>Parallel</b> | (2500 psid)<br><b>...170 bar</b>   | (3000 psid)<br><b>...210 bar</b> |
|                                 |                 |  |                                  |
| <b>Maximum Oil Flow</b>         | <b>Series</b>   | (20 gpm)<br><b>...76 lpm</b>   |                                  |
|                                 | <b>Parallel</b> | (30 gpm)<br><b>...114 lpm</b>  |                                  |
| <b>Maximum Speed</b>            | <b>Series</b>   | <b>890 rpm</b>   |                                  |
|                                 | <b>Parallel</b> | <b>782 rpm</b>   |                                  |
| <b>Maximum Torque</b>           |                 | <b>Cont</b>  | <b>Int</b>                       |
|                                 | <b>Series</b>   | (3816 lb in)<br><b>...431 Nm</b>   | (4694 lb in)<br><b>...530 Nm</b> |
|                                 | <b>Parallel</b> | (6648 lb in)<br><b>...751 Nm</b>   | (7463 lb in)<br><b>...843 Nm</b> |
|                                 |                 |  |                                  |
| <b>Maximum Side Load at Key</b> | <b>Series</b>   | (2000 lb)<br><b>... 226 N</b>  |                                  |

**High Efficiency, High Flow Two-Speed Motor**

Parker's unique two-speed motor utilizes two separate IGR™ power elements on a common shaft. An integral selector valve shifts between high torque, low speed (parallel) operation and high speed, low torque (series) mode in a ration of 2:1. The use of two power elements eliminates the deficiencies of traditional, single power element designs. In the high torque mode, the motor delivers twice the torque and half the speed that it does in the high speed mode. The selector valve can be open or closed center and may be actuated by an external pilot or optional solenoid valve. The open center selector valve can be shifted "on the fly" while the motor shaft is rotating under load. The selector valve is spring loaded to return to its pilot-pressure-off position. Normal mode of operation is field changeable and can be selected as series or parallel. Pilot pressure must be 300 psi higher than motor case or outlet pressure and may be as high as typical hydraulic system operating pressure.





| Code |                            |
|------|----------------------------|
| 0    | 1" Keyed<br>               |
| 1    | 1" 6B Spline<br>           |
| 2    | 25mm Keyed<br>             |
| 3    | 1-1/4" Keyed<br>           |
| 5    | 1-1/4"-14 Tooth Spline<br> |
| 6    | 7/8"-13 Tooth Spline<br>   |

| Code |                  |
|------|------------------|
| A    | SAE A 2-Bolt<br> |
| B    | SAE B 2-Bolt<br> |

| Code |                 |
|------|-----------------|
| M    | Manifold<br>    |
| S    | 7/8"-14 SAE<br> |

| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|--|----------------------|
| 072  | 60 /   | 3.6 Series           |
|      | 119 /  | 7.2 Parallel         |
| 108  | 88 /   | 5.4 Series           |
|      | 176 /  | 10.8 Parallel        |
| 142  | 116 /  | 7.1 Series           |
|      | 232 /  | 14.2 Parallel        |
| 176  | 144 /  | 8.8 Series           |
|      | 289 /  | 17.6 Parallel        |
| 212  | 174 /  | 10.6 Series          |
|      | 348 /  | 21.2 Parallel        |
| 258  | 211 /  | 12.9 Series          |
|      | 423 /  | 25.8 Parallel        |

Consult factory for other available options, configurations ordering codes and lead times.



Thru-Shaft

-



Spool Actuation



Normal Center Position



Normal Mode of Operation

-



Paint

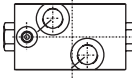
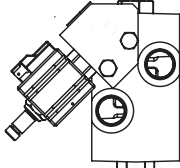
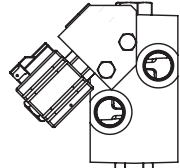


Voltage

| Code |               |
|------|---------------|
| 0    | No Thru Shaft |
| 1    | Thru Shaft    |
| E    | Encoder Mount |

| Code |        |
|------|--------|
| O    | Open   |
| C    | Closed |

| Code |                                 |
|------|---------------------------------|
| Omit | No Paint                        |
| F    | Black Paint<br>Schwarz lackiert |

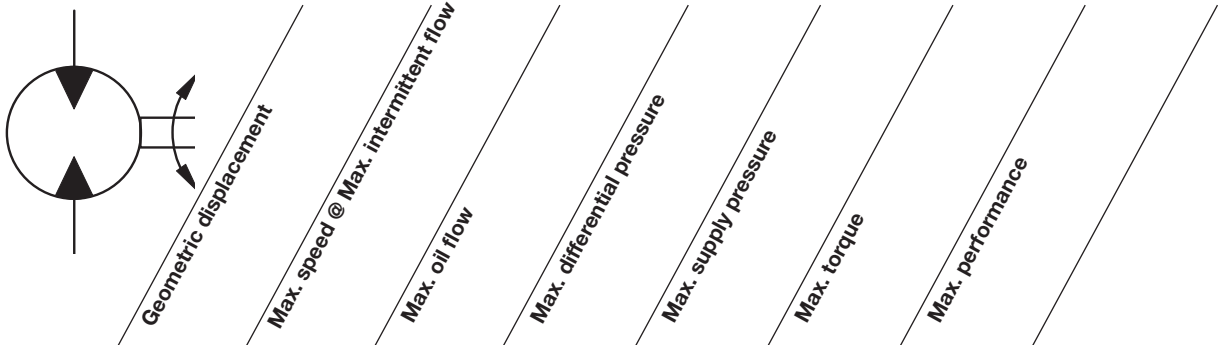
| Code           |  |
|----------------|--|
| P              | Remotely Piloted<br>                            |
| E <sup>1</sup> | Solenoid Actuated with Manual Override<br>     |
| W <sup>1</sup> | Solenoid Actuated without Manual Override<br> |

| Code |          |
|------|----------|
| L    | Parallel |
| R    | Series   |

| Code |         |
|------|---------|
| Omit | 12V DC  |
| 31   | 120V AC |

<sup>1</sup> Standard Solenoid is 12V DC with 1/4" Spade Connections.

Consult factory for other available options, configurations ordering codes and lead times.



| Motor Series 700 | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | int<br>rev/min | cont / int*      |                      | cont / int* |                      | max<br>bar<br>psig | cont / int* |  | max<br>KW<br>HP |
|------------------|--|----------------|------------------|----------------------|-------------|----------------------|--------------------|-------------|--|-----------------|
|                  |  |                | l/min<br>g/min   | bar<br>psid          | bar<br>psig | bar<br>psig          | Nm<br>lb-in        |             |  |                 |
| 072 Series       | 59<br>3.6                                    | 898            | 42 53<br>11 14   | 241 241<br>3500 3500 | 276<br>4000 | 181 181<br>1606 1606 | 13.6<br>18.3       |             |  |                 |
| 072 Parallel     | 118<br>7.2                                   | 962            | 95 114<br>25 30  | 207 241<br>3000 3500 | 276<br>4000 | 296 335<br>2620 2968 | 17.2<br>23.1       |             |  |                 |
| 108 Series       | 88<br>5.4                                    | 940            | 61 83<br>16 22   | 241 241<br>3500 3500 | 276<br>4000 | 278 278<br>2463 2463 | 15.7<br>21.1       |             |  |                 |
| 108 Parallel     | 177<br>10.8                                  | 641            | 114 114<br>30 30 | 207 241<br>3000 3500 | 276<br>4000 | 454 521<br>4022 4614 | 16.9<br>22.6       |             |  |                 |
| 142 Series       | 116<br>7.1                                   | 716            | 76 83<br>20 22   | 241 241<br>3500 3500 | 276<br>4000 | 373 373<br>3298 3298 | 19.0<br>25.5       |             |  |                 |
| 142 Parallel     | 233<br>14.2                                  | 488            | 114 114<br>30 30 | 207 224<br>3000 3250 | 276<br>4000 | 594 624<br>5261 5523 | 13.4<br>18.0       |             |  |                 |
| 176 Series       | 144<br>8.8                                   | 786            | 76 114<br>20 30  | 241 241<br>3500 3500 | 276<br>4000 | 470 470<br>4162 4162 | 14.4<br>19.3       |             |  |                 |
| 176 Parallel     | 288<br>17.6                                  | 393            | 114 114<br>30 30 | 172 190<br>2500 2750 | 276<br>4000 | 684 738<br>6050 6532 | 11.8<br>15.8       |             |  |                 |
| 212 Series       | 174<br>10.6                                  | 653            | 76 114<br>20 30  | 224 224<br>3250 3250 | 276<br>4000 | 531 531<br>4702 4702 | 11.8<br>15.8       |             |  |                 |
| 212 Parallel     | 347<br>21.2                                  | 327            | 114 114<br>30 30 | 155 172<br>2250 2500 | 276<br>4000 | 737 812<br>6520 7187 | 8.9<br>11.9        |             |  |                 |
| 258 Series       | 211<br>12.9                                  | 537            | 68 114<br>18 30  | 172 207<br>2500 3000 | 276<br>4000 | 502 601<br>4440 5318 | 9.5<br>12.8        |             |  |                 |
| 258 Parallel     | 423<br>25.8                                  | 268            | 114 114<br>30 30 | 138 155<br>2000 2250 | 276<br>4000 | 798 887<br>7063 7853 | 8.2<br>11.0        |             |  |                 |

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F.) Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

072 Series

3.6 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 242        | 481        | 718        | 941        | 1143       | 1313       |            |
|           | <b>128</b> | <b>127</b> | <b>119</b> | <b>107</b> | <b>88</b>  | <b>70</b>  |            |
| <b>4</b>  | 240        | 476        | 695        | 961        | 1193       | 1399       | 1574       |
|           | <b>257</b> | <b>256</b> | <b>255</b> | <b>239</b> | <b>219</b> | <b>194</b> | <b>157</b> |
| <b>6</b>  | 217        | 449        | 697        | 947        | 1189       | 1420       | 1606       |
|           | <b>385</b> | <b>384</b> | <b>382</b> | <b>378</b> | <b>357</b> | <b>329</b> | <b>289</b> |
| <b>8</b>  | 187        | 421        | 670        | 910        | 1155       | 1384       | 1610       |
|           | <b>513</b> | <b>512</b> | <b>513</b> | <b>511</b> | <b>492</b> | <b>467</b> | <b>418</b> |
| <b>10</b> | 139        | 372        | 618        | 867        | 1116       | 1361       | 1534       |
|           | <b>642</b> | <b>640</b> | <b>641</b> | <b>638</b> | <b>628</b> | <b>599</b> | <b>553</b> |
| <b>12</b> | 74         | 307        | 553        | 818        | 1056       | 1275       | 1496       |
|           | <b>770</b> | <b>770</b> | <b>768</b> | <b>768</b> | <b>756</b> | <b>708</b> | <b>671</b> |
| <b>14</b> |            | 240        | 486        | 754        | 994        | 1191       | 1448       |
|           |            | <b>898</b> | <b>898</b> | <b>897</b> | <b>882</b> | <b>847</b> | <b>798</b> |

FLOW (GPM)

TORQUE (LB IN) 994  
SPEED (RPM) 882

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



072 Parallel  
7.2 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 441<br>63  | 889<br>59  | 1272<br>48  | 1650<br>29  |             |             |             |
| <b>4</b>  | 481<br>128 | 966<br>125 | 1403<br>121 | 1824<br>104 | 2163<br>81  |             |             |
| <b>6</b>  | 477<br>192 | 957<br>187 | 1401<br>181 | 1813<br>159 | 2186<br>121 | 2485<br>67  |             |
| <b>8</b>  | 464<br>257 | 964<br>251 | 1428<br>244 | 1850<br>212 | 2249<br>161 | 2578<br>90  |             |
| <b>10</b> | 437<br>321 | 941<br>320 | 1427<br>316 | 1836<br>283 | 2243<br>240 | 2620<br>178 | 2968<br>115 |
| <b>12</b> | 419<br>385 | 913<br>382 | 1401<br>377 | 1833<br>353 | 2229<br>309 | 2589<br>249 | 2960<br>174 |
| <b>14</b> | 405<br>449 | 881<br>448 | 1384<br>444 | 1824<br>420 | 2220<br>372 | 2582<br>300 | 2952<br>235 |
| <b>16</b> | 395<br>513 | 858<br>510 | 1363<br>503 | 1801<br>485 | 2192<br>438 | 2571<br>356 | 2940<br>280 |
| <b>18</b> | 381<br>577 | 821<br>576 | 1327<br>573 | 1769<br>553 | 2183<br>495 | 2520<br>414 | 2931<br>334 |
| <b>20</b> | 369<br>642 | 799<br>642 | 1308<br>641 | 1772<br>616 | 2146<br>578 | 2513<br>507 | 2904<br>405 |
| <b>22</b> | 350<br>706 | 779<br>706 | 1272<br>705 | 1742<br>678 | 2114<br>608 | 2503<br>534 | 2884<br>452 |
| <b>25</b> |            | 710<br>802 | 1169<br>801 | 1604<br>770 | 1997<br>691 | 2314<br>606 | 2647<br>513 |
| <b>30</b> |            | 653<br>962 | 1066<br>962 | 1444<br>924 | 1776<br>830 | 2097<br>728 | 2366<br>616 |

FLOW (GPM)

TORQUE (LB IN) 2647  
SPEED (RPM) 513

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



108 Series

5.4 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 366<br>86  | 727<br>84  | 1084<br>80  | 1431<br>74  | 1740<br>62  | 2036<br>52  |             |
| <b>4</b>  | 361<br>171 | 725<br>171 | 1071<br>170 | 1462<br>163 | 1816<br>150 | 2122<br>135 | 2424<br>110 |
| <b>6</b>  | 329<br>257 | 690<br>256 | 1066<br>255 | 1443<br>252 | 1812<br>242 | 2159<br>224 | 2455<br>200 |
| <b>8</b>  | 289<br>342 | 654<br>341 | 1029<br>342 | 1395<br>340 | 1764<br>330 | 2118<br>317 | 2463<br>288 |
| <b>10</b> | 229<br>428 | 593<br>427 | 968<br>427  | 1337<br>425 | 1712<br>419 | 2078<br>406 | 2375<br>379 |
| <b>12</b> | 151<br>513 | 509<br>513 | 882<br>512  | 1271<br>511 | 1636<br>505 | 1979<br>481 | 2324<br>459 |
| <b>14</b> | 77<br>599  | 426<br>599 | 800<br>598  | 1194<br>596 | 1552<br>588 | 1874<br>571 | 2253<br>547 |
| <b>16</b> | 40<br>684  | 342<br>684 | 720<br>683  | 1133<br>680 | 1469<br>671 | 1790<br>649 | 2146<br>656 |
| <b>18</b> |            | 259<br>769 | 627<br>769  | 1031<br>765 | 1339<br>755 | 1642<br>738 | 1961<br>731 |
| <b>20</b> |            |            | 536<br>855  | 858<br>850  | 1139<br>845 | 1407<br>817 | 1678<br>788 |
| <b>22</b> |            |            | 452<br>940  | 775<br>935  | 1031<br>930 | 1277<br>899 | 1532<br>867 |

FLOW (GPM)

TORQUE (LB IN) 1678  
SPEED (RPM) 788

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





108 Parallel  
**10.8** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 683<br>42  | 1366<br>40  | 1970<br>33  |             |             |             |             |
| <b>4</b>  | 729<br>85  | 1455<br>83  | 2140<br>78  | 2809<br>65  | 3383<br>47  |             |             |
| <b>6</b>  | 728<br>128 | 1465<br>124 | 2150<br>120 | 2801<br>105 | 3399<br>76  |             |             |
| <b>8</b>  | 711<br>171 | 1469<br>168 | 2185<br>163 | 2856<br>142 | 3491<br>110 |             |             |
| <b>10</b> | 678<br>214 | 1442<br>213 | 2182<br>211 | 2838<br>189 | 3482<br>159 | 4104<br>77  |             |
| <b>12</b> | 651<br>257 | 1401<br>254 | 2150<br>252 | 2833<br>235 | 3456<br>205 | 4022<br>109 |             |
| <b>14</b> | 630<br>299 | 1362<br>298 | 2104<br>295 | 2814<br>280 | 3445<br>246 | 4012<br>131 | 4614<br>75  |
| <b>16</b> | 611<br>342 | 1329<br>340 | 2095<br>335 | 2778<br>323 | 3408<br>290 | 3981<br>226 | 4598<br>151 |
| <b>18</b> | 587<br>385 | 1295<br>383 | 2051<br>379 | 2756<br>368 | 3364<br>333 | 3898<br>267 | 4519<br>184 |
| <b>20</b> | 565<br>428 | 1250<br>426 | 2013<br>425 | 2723<br>411 | 3335<br>382 | 3878<br>317 | 4482<br>236 |
| <b>22</b> | 539<br>469 | 1215<br>469 | 1962<br>467 | 2678<br>452 | 3295<br>409 | 3847<br>338 | 4451<br>257 |
| <b>25</b> |            | 1123<br>534 | 1834<br>532 | 2515<br>513 | 3108<br>464 | 3594<br>385 | 4309<br>290 |
| <b>30</b> |            | 1037<br>641 | 1693<br>639 | 2313<br>615 | 2828<br>557 | 3311<br>462 | 4151<br>379 |

FLOW (GPM)

TORQUE (LB IN) 4309  
SPEED (RPM) 290

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



142 Series

7.1 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500        | 3000       | 3500       |
|-----------|------------|------------|------------|------------|-------------|------------|------------|
| <b>2</b>  | 484        | 964        | 1434       | 1907       | 2319        | 2759       |            |
|           | <b>65</b>  | <b>64</b>  | <b>62</b>  | <b>58</b>  | <b>50</b>   | <b>43</b>  |            |
| <b>4</b>  | 474        | 968        | 1444       | 1948       | 2410        | 2819       | 3264       |
|           | <b>130</b> | <b>130</b> | <b>130</b> | <b>126</b> | <b>118</b>  | <b>107</b> | <b>87</b>  |
| <b>6</b>  | 438        | 930        | 1428       | 1926       | 2417        | 2875       | 3285       |
|           | <b>195</b> | <b>195</b> | <b>194</b> | <b>192</b> | <b>1987</b> | <b>174</b> | <b>158</b> |
| <b>8</b>  | 391        | 889        | 1381       | 1870       | 2359        | 2838       | 3298       |
|           | <b>260</b> | <b>260</b> | <b>260</b> | <b>259</b> | <b>253</b>  | <b>245</b> | <b>226</b> |
| <b>10</b> | 327        | 821        | 1324       | 1804       | 2298        | 2776       | 3215       |
|           | <b>325</b> | <b>324</b> | <b>324</b> | <b>323</b> | <b>320</b>  | <b>313</b> | <b>295</b> |
| <b>12</b> | 249        | 728        | 1226       | 1725       | 2217        | 2664       | 3092       |
|           | <b>390</b> | <b>390</b> | <b>390</b> | <b>388</b> | <b>385</b>  | <b>372</b> | <b>358</b> |
| <b>14</b> | 184        | 643        | 1141       | 1648       | 2116        | 2573       | 3063       |
|           | <b>455</b> | <b>455</b> | <b>454</b> | <b>452</b> | <b>447</b>  | <b>439</b> | <b>427</b> |
| <b>16</b> | 101        | 532        | 1040       | 1558       | 2011        | 2474       | 2949       |
|           | <b>520</b> | <b>520</b> | <b>519</b> | <b>516</b> | <b>511</b>  | <b>501</b> | <b>497</b> |
| <b>18</b> |            | 439        | 930        | 1441       | 1876        | 2325       | 2790       |
|           |            | <b>585</b> | <b>584</b> | <b>581</b> | <b>575</b>  | <b>564</b> | <b>559</b> |
| <b>20</b> |            | 300        | 810        | 1275       | 1712        | 2125       | 2535       |
|           |            | <b>651</b> | <b>650</b> | <b>647</b> | <b>643</b>  | <b>629</b> | <b>612</b> |
| <b>22</b> |            | 249        | 707        | 1169       | 1594        | 1983       | 2386       |
|           |            | <b>716</b> | <b>715</b> | <b>711</b> | <b>707</b>  | <b>692</b> | <b>673</b> |

FLOW (GPM)

TORQUE (LB IN) 2535  
SPEED (RPM) 612

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



142 Parallel

14.2 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3250       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 925        | 1836       | 2668       | 3467       |            |            |            |
|           | <b>32</b>  | <b>31</b>  | <b>26</b>  | <b>16</b>  |            |            |            |
| <b>4</b>  | 969        | 1920       | 2860       | 3784       | 4619       |            |            |
|           | <b>65</b>  | <b>63</b>  | <b>57</b>  | <b>46</b>  | <b>31</b>  |            |            |
| <b>6</b>  | 971        | 1963       | 2886       | 3785       | 4619       |            |            |
|           | <b>97</b>  | <b>94</b>  | <b>90</b>  | <b>79</b>  | <b>55</b>  |            |            |
| <b>8</b>  | 954        | 1962       | 2927       | 3858       | 4736       |            |            |
|           | <b>130</b> | <b>128</b> | <b>125</b> | <b>108</b> | <b>85</b>  |            |            |
| <b>10</b> | 918        | 1933       | 2921       | 3837       | 4724       |            |            |
|           | <b>163</b> | <b>162</b> | <b>160</b> | <b>145</b> | <b>121</b> |            |            |
| <b>12</b> | 884        | 1882       | 2886       | 3829       | 4685       |            |            |
|           | <b>195</b> | <b>193</b> | <b>191</b> | <b>179</b> | <b>164</b> |            |            |
| <b>14</b> | 857        | 1841       | 2831       | 3796       | 4672       |            |            |
|           | <b>228</b> | <b>226</b> | <b>224</b> | <b>212</b> | <b>191</b> |            |            |
| <b>16</b> | 826        | 1799       | 2816       | 3747       | 4630       | 5261       |            |
|           | <b>260</b> | <b>259</b> | <b>255</b> | <b>246</b> | <b>219</b> | <b>164</b> |            |
| <b>18</b> | 790        | 1754       | 2755       | 3703       | 4557       | 5207       | 5523       |
|           | <b>293</b> | <b>290</b> | <b>286</b> | <b>280</b> | <b>246</b> | <b>197</b> | <b>164</b> |
| <b>20</b> | 757        | 1709       | 2710       | 3661       | 4528       | 5166       | 5472       |
|           | <b>325</b> | <b>323</b> | <b>322</b> | <b>313</b> | <b>273</b> | <b>226</b> | <b>198</b> |
| <b>22</b> | 726        | 1655       | 2648       | 3603       | 4485       | 5099       | 5259       |
|           | <b>356</b> | <b>356</b> | <b>353</b> | <b>344</b> | <b>301</b> | <b>245</b> | <b>211</b> |
| <b>25</b> | 452        | 1547       | 2513       | 3441       | 4227       | 4861       | 5068       |
|           | <b>406</b> | <b>405</b> | <b>403</b> | <b>390</b> | <b>342</b> | <b>278</b> | <b>239</b> |
| <b>30</b> | 374        | 1436       | 2344       | 3225       | 3921       | 4577       | 4921       |
|           | <b>488</b> | <b>486</b> | <b>484</b> | <b>468</b> | <b>410</b> | <b>334</b> | <b>294</b> |

FLOW (GPM)

TORQUE (LB IN) 5068  
SPEED (RPM) 239

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



176 Series

8.8 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 604        | 1204       | 1788       | 2395       | 2913       | 3521       |            |
|           | <b>52</b>  | <b>52</b>  | <b>50</b>  | <b>49</b>  | <b>43</b>  | <b>38</b>  |            |
| <b>4</b>  | 588        | 1217       | 1834       | 2445       | 3022       | 3529       | 4142       |
|           | <b>105</b> | <b>105</b> | <b>105</b> | <b>104</b> | <b>98</b>  | <b>90</b>  | <b>73</b>  |
| <b>6</b>  | 548        | 1179       | 1803       | 2423       | 3039       | 3609       | 4142       |
|           | <b>158</b> | <b>157</b> | <b>157</b> | <b>155</b> | <b>153</b> | <b>143</b> | <b>131</b> |
| <b>8</b>  | 497        | 1137       | 1748       | 2364       | 2973       | 3584       | 4162       |
|           | <b>210</b> | <b>209</b> | <b>210</b> | <b>208</b> | <b>206</b> | <b>201</b> | <b>188</b> |
| <b>10</b> | 436        | 1070       | 1704       | 2291       | 2906       | 3496       | 4098       |
|           | <b>263</b> | <b>262</b> | <b>261</b> | <b>260</b> | <b>259</b> | <b>256</b> | <b>244</b> |
| <b>12</b> | 371        | 976        | 1601       | 2204       | 2829       | 3441       | 4034       |
|           | <b>315</b> | <b>315</b> | <b>315</b> | <b>313</b> | <b>311</b> | <b>305</b> | <b>295</b> |
| <b>14</b> | 332        | 899        | 1525       | 2140       | 2717       | 3324       | 3922       |
|           | <b>367</b> | <b>367</b> | <b>366</b> | <b>363</b> | <b>361</b> | <b>358</b> | <b>353</b> |
| <b>16</b> | 186        | 762        | 1405       | 2017       | 2591       | 3214       | 3814       |
|           | <b>420</b> | <b>419</b> | <b>418</b> | <b>416</b> | <b>413</b> | <b>410</b> | <b>400</b> |
| <b>18</b> |            | 665        | 1284       | 1891       | 2468       | 3088       | 3721       |
|           |            | <b>472</b> | <b>471</b> | <b>468</b> | <b>465</b> | <b>462</b> | <b>450</b> |
| <b>20</b> |            | 553        | 1134       | 1762       | 2388       | 2975       | 3549       |
|           |            | <b>524</b> | <b>524</b> | <b>522</b> | <b>519</b> | <b>514</b> | <b>503</b> |
| <b>22</b> |            | 459        | 1017       | 1636       | 2272       | 2836       | 3417       |
|           |            | <b>576</b> | <b>576</b> | <b>574</b> | <b>571</b> | <b>565</b> | <b>554</b> |
| <b>25</b> |            | 81         | 721        | 1375       | 1968       | 2534       | 3113       |
|           |            | <b>655</b> | <b>655</b> | <b>652</b> | <b>648</b> | <b>637</b> | <b>624</b> |
| <b>30</b> |            |            | 284        | 958        | 1562       | 2097       | 2691       |
|           |            |            | <b>786</b> | <b>782</b> | <b>778</b> | <b>765</b> | <b>749</b> |

TORQUE (LB IN) 3549  
SPEED (RPM) 503

FLOW (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



176 Parallel  
**17.6** cu in / rev

PRESSURE (PSID)

|           | 500                | 1000               | 1500               | 2000               | 2250               | 2500               | 2750               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1179<br><b>26</b>  | 2325<br><b>26</b>  | 3403<br><b>22</b>  |                    |                    |                    |                    |
| <b>4</b>  | 1214<br><b>52</b>  | 2412<br><b>51</b>  | 3601<br><b>44</b>  | 4801<br><b>34</b>  |                    |                    |                    |
| <b>6</b>  | 1221<br><b>79</b>  | 2479<br><b>75</b>  | 3651<br><b>72</b>  | 4818<br><b>64</b>  | 5338<br><b>55</b>  |                    |                    |
| <b>8</b>  | 1206<br><b>105</b> | 2468<br><b>104</b> | 3693<br><b>101</b> | 4908<br><b>88</b>  | 5483<br><b>83</b>  | 6050<br><b>70</b>  |                    |
| <b>10</b> | 1172<br><b>131</b> | 2443<br><b>130</b> | 3685<br><b>129</b> | 4885<br><b>117</b> | 5464<br><b>108</b> | 6036<br><b>97</b>  | 6532<br><b>93</b>  |
| <b>12</b> | 1130<br><b>157</b> | 2381<br><b>156</b> | 3651<br><b>155</b> | 4874<br><b>144</b> | 5420<br><b>137</b> | 5980<br><b>125</b> | 6394<br><b>112</b> |
| <b>14</b> | 1097<br><b>184</b> | 2345<br><b>182</b> | 3613<br><b>180</b> | 4824<br><b>171</b> | 5408<br><b>164</b> | 5966<br><b>149</b> | 6363<br><b>130</b> |
| <b>16</b> | 1052<br><b>210</b> | 2294<br><b>209</b> | 3567<br><b>206</b> | 4762<br><b>198</b> | 5345<br><b>189</b> | 5924<br><b>175</b> | 6317<br><b>149</b> |
| <b>18</b> | 1003<br><b>236</b> | 2238<br><b>233</b> | 3487<br><b>229</b> | 4689<br><b>226</b> | 5275<br><b>216</b> | 5812<br><b>208</b> | 6255<br><b>184</b> |
| <b>20</b> | 955<br><b>262</b>  | 2199<br><b>260</b> | 3437<br><b>258</b> | 4639<br><b>253</b> | 5231<br><b>240</b> | 5791<br><b>231</b> | 6209<br><b>205</b> |
| <b>22</b> | 922<br><b>286</b>  | 2123<br><b>286</b> | 3366<br><b>283</b> | 4566<br><b>277</b> | 5200<br><b>264</b> | 5749<br><b>254</b> | 6147<br><b>225</b> |
| <b>25</b> | 832<br><b>328</b>  | 2006<br><b>326</b> | 3240<br><b>324</b> | 4431<br><b>314</b> | 4954<br><b>302</b> | 5413<br><b>289</b> | 5816<br><b>256</b> |
| <b>30</b> | 689<br><b>393</b>  | 1868<br><b>392</b> | 3050<br><b>389</b> | 4224<br><b>377</b> | 4651<br><b>362</b> | 5112<br><b>347</b> | 5546<br><b>307</b> |

FLOW (GPM)

TORQUE (LB IN) 5816  
SPEED (RPM) 256

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



212 Series

10.6 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 1750        | 2000        | 2250        | 2500        | 2750        | 3000        | 3250        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 731<br>44  | 1458<br>43  | 2162<br>42  | 2509<br>42  | 2901<br>40  | 3175<br>39  | 3532<br>36  |             |             |             |
| <b>4</b>  | 712<br>87  | 1468<br>87  | 2210<br>87  | 2562<br>87  | 2946<br>86  | 3274<br>84  | 3641<br>81  | 3955<br>80  | 4269<br>75  | 4623<br>71  |
| <b>6</b>  | 665<br>131 | 1426<br>130 | 2175<br>130 | 2553<br>129 | 2920<br>128 | 3290<br>127 | 3658<br>127 | 4009<br>123 | 4351<br>119 | 4702<br>115 |
| <b>8</b>  | 603<br>174 | 1371<br>174 | 2110<br>174 | 2473<br>173 | 2854<br>173 | 3229<br>171 | 3587<br>170 | 3961<br>170 | 4323<br>166 | 4674<br>161 |
| <b>10</b> | 527<br>218 | 1287<br>217 | 2053<br>217 | 2406<br>216 | 2767<br>215 | 3136<br>215 | 3508<br>214 | 3872<br>213 | 4223<br>212 |             |
| <b>12</b> | 450<br>262 | 1182<br>261 | 1935<br>261 | 2315<br>260 | 2665<br>259 | 3040<br>258 | 3414<br>257 | 3775<br>256 | 4150<br>251 |             |
| <b>14</b> | 390<br>305 | 1089<br>304 | 1844<br>303 | 2210<br>302 | 2588<br>301 | 2940<br>300 | 3291<br>299 | 3667<br>298 | 3948<br>293 |             |
| <b>16</b> | 225<br>349 | 929<br>348  | 1703<br>347 | 2076<br>346 | 2443<br>346 | 2789<br>345 | 3149<br>343 | 3526<br>338 | 3846<br>335 |             |
| <b>18</b> |            | 806<br>391  | 1559<br>391 | 1921<br>389 | 2300<br>389 | 2672<br>388 | 2995<br>384 | 3340<br>380 | 3644<br>377 |             |
| <b>20</b> |            | 669<br>435  | 1377<br>435 | 1769<br>434 | 2128<br>433 | 2498<br>432 | 2741<br>427 | 2992<br>423 | 3239<br>418 |             |
| <b>22</b> |            | 567<br>478  | 1244<br>478 | 1612<br>477 | 1994<br>476 | 2337<br>475 | 2657<br>470 | 2876<br>465 | 3113<br>460 |             |
| <b>25</b> |            | 153<br>544  | 900<br>544  | 1244<br>543 | 1676<br>541 | 2037<br>540 | 2404<br>534 | 2830<br>528 | 3037<br>523 |             |
| <b>30</b> |            |             | 398<br>653  | 732<br>651  | 1183<br>650 | 1534<br>648 | 1898<br>641 | 2366<br>641 | 2531<br>628 |             |

TORQUE (LB IN) 3113  
SPEED (RPM) 460

FLOW (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**212 Parallel**  
**21.2 cu in / rev**

PRESSURE (PSID)

|           | 500                | 1000               | 1250               | 1500               | 1750               | 2000               | 2250               | 2500               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1413<br><b>22</b>  | 2789<br><b>21</b>  | 3434<br><b>19</b>  | 4057<br><b>18</b>  | 4676<br><b>15</b>  | 5276<br><b>11</b>  |                    |                    |
| <b>4</b>  | 1455<br><b>44</b>  | 2874<br><b>42</b>  | 3580<br><b>39</b>  | 4299<br><b>36</b>  | 5036<br><b>34</b>  | 5719<br><b>29</b>  |                    |                    |
| <b>6</b>  | 1471<br><b>65</b>  | 2970<br><b>63</b>  | 3686<br><b>61</b>  | 4380<br><b>60</b>  | 5047<br><b>56</b>  | 5777<br><b>52</b>  | 6388<br><b>46</b>  |                    |
| <b>8</b>  | 1455<br><b>87</b>  | 2964<br><b>86</b>  | 3698<br><b>85</b>  | 4429<br><b>84</b>  | 5163<br><b>80</b>  | 5877<br><b>73</b>  | 6498<br><b>69</b>  | 7170<br><b>47</b>  |
| <b>10</b> | 1413<br><b>109</b> | 2938<br><b>108</b> | 3678<br><b>108</b> | 4429<br><b>107</b> | 5135<br><b>103</b> | 5869<br><b>98</b>  | 6520<br><b>90</b>  | 7187<br><b>65</b>  |
| <b>12</b> | 1366<br><b>131</b> | 2871<br><b>129</b> | 3627<br><b>129</b> | 4390<br><b>128</b> | 5112<br><b>127</b> | 5845<br><b>120</b> | 6492<br><b>115</b> | 7069<br><b>105</b> |
| <b>14</b> | 1326<br><b>153</b> | 2827<br><b>151</b> | 3542<br><b>150</b> | 4256<br><b>149</b> | 5052<br><b>148</b> | 5785<br><b>143</b> | 6476<br><b>137</b> | 6984<br><b>122</b> |
| <b>16</b> | 1269<br><b>174</b> | 2767<br><b>173</b> | 3522<br><b>172</b> | 4241<br><b>171</b> | 5005<br><b>169</b> | 5718<br><b>165</b> | 6400<br><b>158</b> | 6900<br><b>139</b> |
| <b>18</b> | 1215<br><b>196</b> | 2699<br><b>194</b> | 3445<br><b>193</b> | 4207<br><b>191</b> | 4948<br><b>190</b> | 5643<br><b>188</b> | 6326<br><b>180</b> | 6833<br><b>157</b> |
| <b>20</b> | 1158<br><b>218</b> | 2656<br><b>216</b> | 3393<br><b>215</b> | 4153<br><b>213</b> | 4898<br><b>209</b> | 5587<br><b>210</b> | 6210<br><b>200</b> | 6790<br><b>174</b> |
| <b>22</b> | 1114<br><b>240</b> | 2572<br><b>238</b> | 3297<br><b>237</b> | 4068<br><b>236</b> | 4806<br><b>234</b> | 5493<br><b>230</b> | 6226<br><b>220</b> | 6740<br><b>192</b> |
| <b>25</b> | 1004<br><b>272</b> | 2439<br><b>271</b> | 3165<br><b>270</b> | 3897<br><b>269</b> | 4659<br><b>266</b> | 5347<br><b>261</b> | 5982<br><b>252</b> | 6647<br><b>218</b> |
| <b>30</b> | 831<br><b>327</b>  | 2299<br><b>325</b> | 2973<br><b>324</b> | 3690<br><b>323</b> | 4393<br><b>319</b> | 5093<br><b>313</b> | 5709<br><b>302</b> | 6267<br><b>262</b> |

FLOW (GPM)

TORQUE (LB IN) 6647  
SPEED (RPM) 218

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

258 Series

12.9 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1750       | 2000       | 2250       | 2500       | 2750       | 3000       |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 905        | 1811       | 2673       | 3155       | 3613       | 3950       | 4414       | 4822       | 5226       |
|           | <b>36</b>  | <b>36</b>  | <b>35</b>  | <b>35</b>  | <b>33</b>  | <b>33</b>  | <b>31</b>  | <b>30</b>  | <b>26</b>  |
| <b>4</b>  | 882        | 1799       | 2692       | 3147       | 3585       | 4014       | 4440       | 4850       | 5287       |
|           | <b>72</b>  | <b>72</b>  | <b>71</b>  | <b>71</b>  | <b>70</b>  | <b>69</b>  | <b>66</b>  | <b>65</b>  | <b>62</b>  |
| <b>6</b>  | 834        | 1762       | 2645       | 3119       | 3560       | 4000       | 4440       | 4856       | 5318       |
|           | <b>107</b> | <b>107</b> | <b>106</b> | <b>106</b> | <b>104</b> | <b>104</b> | <b>103</b> | <b>101</b> | <b>98</b>  |
| <b>8</b>  | 757        | 1675       | 2593       | 3036       | 3507       | 3940       | 4399       | 4839       | 5292       |
|           | <b>143</b> | <b>143</b> | <b>142</b> | <b>141</b> | <b>140</b> | <b>139</b> | <b>138</b> | <b>137</b> | <b>135</b> |
| <b>10</b> | 652        | 1556       | 2504       | 2957       | 3400       | 3857       | 4306       | 4771       | 5201       |
|           | <b>179</b> | <b>178</b> | <b>177</b> | <b>176</b> | <b>175</b> | <b>174</b> | <b>173</b> | <b>172</b> | <b>171</b> |
| <b>12</b> | 565        | 1472       | 2390       | 2867       | 3289       | 3737       | 4188       | 4635       | 5072       |
|           | <b>215</b> | <b>213</b> | <b>212</b> | <b>210</b> | <b>208</b> | <b>208</b> | <b>207</b> | <b>207</b> | <b>205</b> |
| <b>14</b> | 423        | 1357       | 2279       | 2731       | 3199       | 3668       | 4096       | 4517       | 4957       |
|           | <b>251</b> | <b>249</b> | <b>249</b> | <b>248</b> | <b>245</b> | <b>243</b> | <b>243</b> | <b>241</b> | <b>239</b> |
| <b>16</b> | 278        | 1187       | 2125       | 2587       | 3043       | 3525       | 3973       |            |            |
|           | <b>287</b> | <b>286</b> | <b>286</b> | <b>285</b> | <b>284</b> | <b>283</b> | <b>283</b> |            |            |
| <b>18</b> |            | 1006       | 1962       | 2440       | 2911       | 3349       |            |            |            |
|           |            | <b>321</b> | <b>321</b> | <b>319</b> | <b>319</b> | <b>318</b> |            |            |            |
| <b>20</b> |            | 827        | 1728       | 2264       | 2620       | 3003       |            |            |            |
|           |            | <b>357</b> | <b>357</b> | <b>356</b> | <b>355</b> | <b>354</b> |            |            |            |
| <b>22</b> |            | 758        | 1614       | 2037       | 2546       | 2975       |            |            |            |
|           |            | <b>393</b> | <b>393</b> | <b>392</b> | <b>390</b> | <b>390</b> |            |            |            |
| <b>25</b> |            | 466        | 1260       | 1681       | 2135       | 2624       |            |            |            |
|           |            | <b>446</b> | <b>446</b> | <b>446</b> | <b>445</b> | <b>443</b> |            |            |            |
| <b>30</b> |            |            | 773        | 1099       | 1585       | 2079       |            |            |            |
|           |            |            | <b>537</b> | <b>536</b> | <b>535</b> | <b>534</b> |            |            |            |

FLOW (GPM)

TORQUE (LB IN) 1099  
SPEED (RPM) 536

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**258 Parallel**  
**25.8 cu in / rev**

PRESSURE (PSID)

|           | 500                | 1000               | 1250               | 1500               | 1750               | 2000               | 2250               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1679<br><b>18</b>  | 3334<br><b>15</b>  | 4055<br><b>14</b>  | 4724<br><b>12</b>  |                    |                    |                    |
| <b>4</b>  | 1731<br><b>36</b>  | 3474<br><b>34</b>  | 4224<br><b>32</b>  | 5038<br><b>30</b>  | 5979<br><b>27</b>  | 6636<br><b>25</b>  |                    |
| <b>6</b>  | 1790<br><b>54</b>  | 3531<br><b>53</b>  | 4419<br><b>51</b>  | 5235<br><b>48</b>  | 6072<br><b>45</b>  | 6898<br><b>42</b>  | 7557<br><b>38</b>  |
| <b>8</b>  | 1782<br><b>71</b>  | 3564<br><b>71</b>  | 4435<br><b>71</b>  | 5291<br><b>68</b>  | 6115<br><b>66</b>  | 6981<br><b>60</b>  | 7715<br><b>56</b>  |
| <b>10</b> | 1727<br><b>89</b>  | 3552<br><b>89</b>  | 4424<br><b>88</b>  | 5340<br><b>87</b>  | 6209<br><b>84</b>  | 7063<br><b>81</b>  | 7853<br><b>76</b>  |
| <b>12</b> | 1684<br><b>107</b> | 3511<br><b>107</b> | 4424<br><b>106</b> | 5303<br><b>104</b> | 6187<br><b>103</b> | 6981<br><b>100</b> | 7715<br><b>97</b>  |
| <b>14</b> | 1636<br><b>125</b> | 3457<br><b>124</b> | 4373<br><b>124</b> | 5279<br><b>123</b> | 6108<br><b>123</b> | 6915<br><b>120</b> | 7650<br><b>118</b> |
| <b>16</b> | 1556<br><b>143</b> | 3388<br><b>143</b> | 4312<br><b>143</b> | 5223<br><b>142</b> | 6050<br><b>140</b> | 6866<br><b>138</b> | 7594<br><b>135</b> |
| <b>18</b> | 1515<br><b>161</b> | 3301<br><b>161</b> | 4240<br><b>160</b> | 5149<br><b>160</b> | 6022<br><b>159</b> | 6841<br><b>155</b> | 7557<br><b>151</b> |
| <b>20</b> | 1445<br><b>179</b> | 3273<br><b>179</b> | 4193<br><b>178</b> | 5118<br><b>178</b> | 5979<br><b>178</b> | 6800<br><b>172</b> | 7502<br><b>168</b> |
| <b>22</b> | 1378<br><b>197</b> | 3203<br><b>197</b> | 4060<br><b>196</b> | 5020<br><b>196</b> | 5878<br><b>195</b> | 6652<br><b>189</b> | 7391<br><b>185</b> |
| <b>25</b> | 1234<br><b>224</b> | 3084<br><b>224</b> | 3998<br><b>223</b> | 4866<br><b>222</b> | 5763<br><b>222</b> | 6553<br><b>215</b> | 7354<br><b>210</b> |
| <b>30</b> | 1018<br><b>268</b> | 3043<br><b>268</b> | 3798<br><b>267</b> | 4570<br><b>266</b> | 5468<br><b>266</b> | 6225<br><b>258</b> | 6975<br><b>252</b> |

FLOW (GPM)

TORQUE (LB IN) 7354  
SPEED (RPM) 210

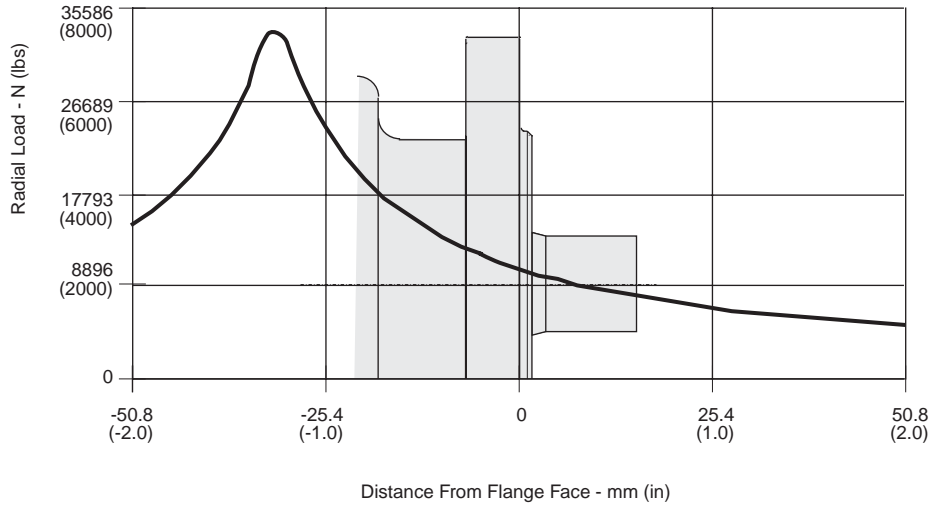
Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

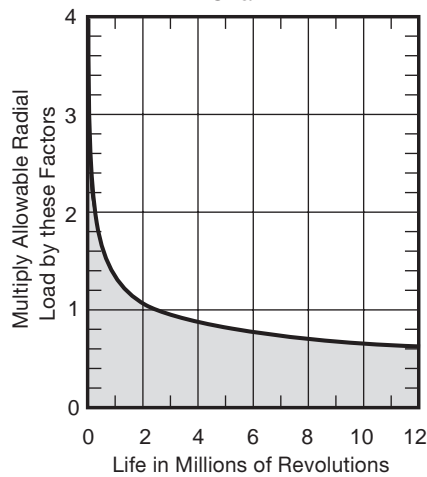


700 Series Roller Bearing Allowable Radial Load Curve  
Chart A



The allowable side load curve is based on  $L_{10}$  bearing life of  $2.5 \times 10^6$  revolutions.

Bearing Life Factor Curve  
Chart B



Note:  
Side load should be considered a vector sum of all imposed loads.

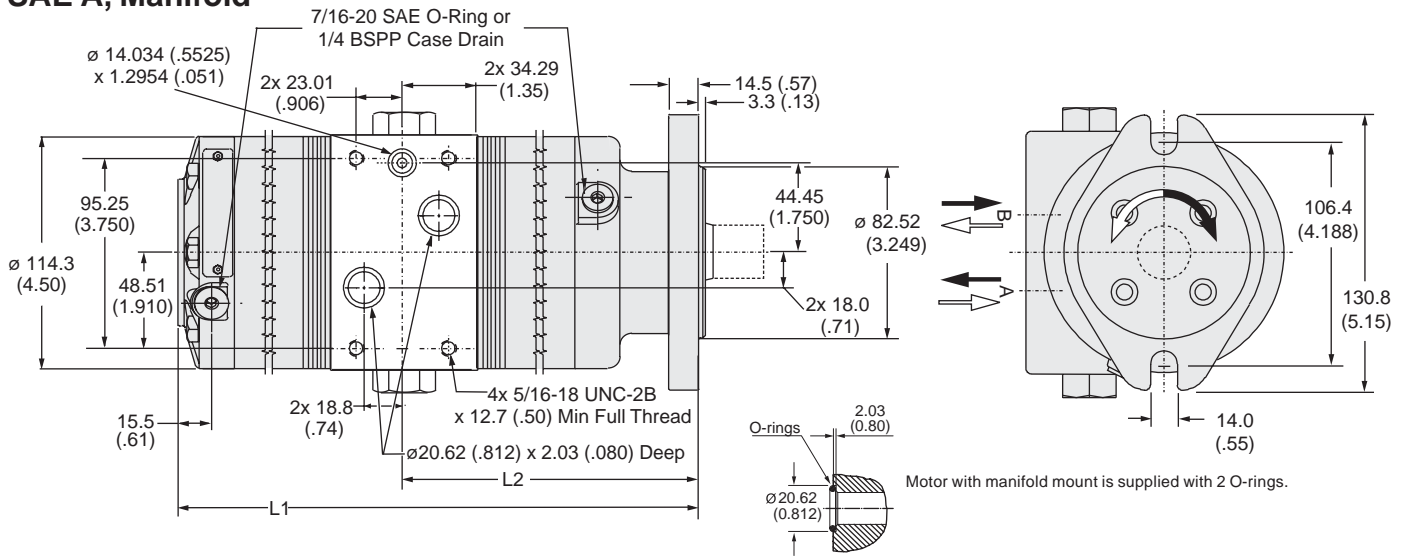
English equivalents for metric specifications are shown in ( ).

022 700.indd, a



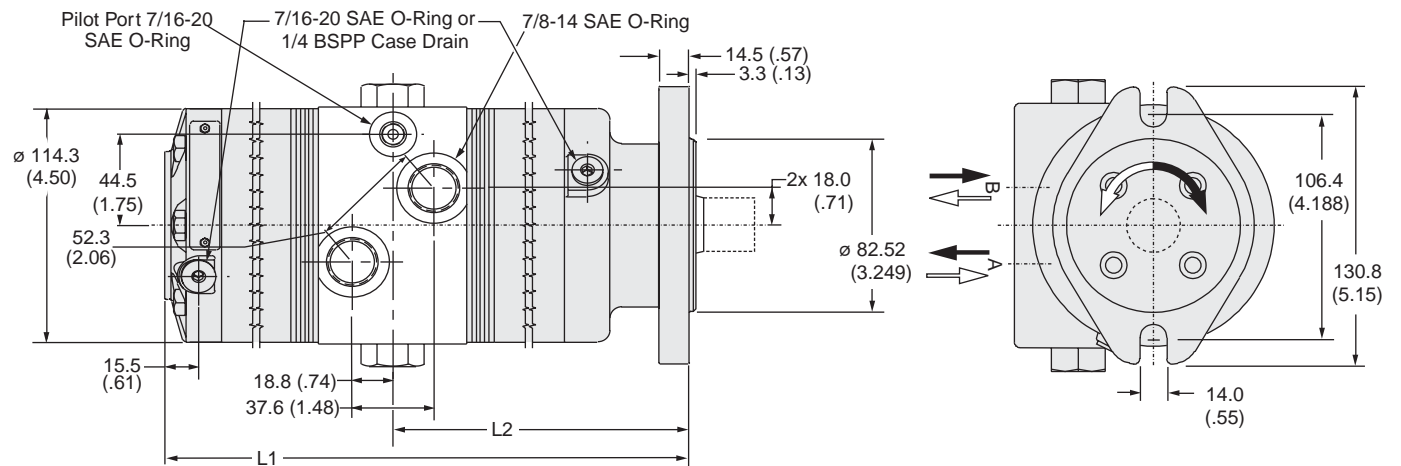
**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: AM**  
**SAE A, Manifold**



| Code AM           | 072       | 108    | 142    | 176    | 212    | 258     |
|-------------------|-----------|--------|--------|--------|--------|---------|
| Weight/Gewicht kg | 15.9      | 16.1   | 16.2   | 16.4   | 16.6   | 16.8    |
| Poids/Peso (lb)   | (35.0)    | (35.4) | (35.7) | (36.1) | (36.5) | (37.0)  |
| Length "L1" mm    | 214.6     | 224.3  | 233.7  | 243.3  | 253.2  | 266.0   |
|                   | "L1" (in) | (8.45) | (8.83) | (9.20) | (9.58) | (10.47) |
| "L2" mm           | 123.2     | 128.0  | 132.9  | 137.7  | 142.5  | 148.8   |
|                   | "L2" (in) | (4.85) | (5.04) | (5.23) | (5.42) | (5.86)  |

**Code: AS**  
**SAE A, 7/8"-14 SAE**



| Code AS           | 072       | 108    | 142    | 176    | 212    | 258     |
|-------------------|-----------|--------|--------|--------|--------|---------|
| Weight/Gewicht kg | 15.9      | 16.1   | 16.2   | 16.4   | 16.6   | 16.8    |
| Poids/Peso (lb)   | (35.0)    | (35.4) | (35.7) | (36.1) | (36.5) | (37.0)  |
| Length "L1" mm    | 214.6     | 224.3  | 233.7  | 243.3  | 253.2  | 266.0   |
|                   | "L1" (in) | (8.45) | (8.83) | (9.20) | (9.58) | (10.47) |
| "L2" mm           | 123.2     | 128.0  | 132.9  | 137.7  | 142.5  | 148.8   |
|                   | "L2" (in) | (4.85) | (5.04) | (5.23) | (5.42) | (5.86)  |

English equivalents for metric specifications are shown in ( ).

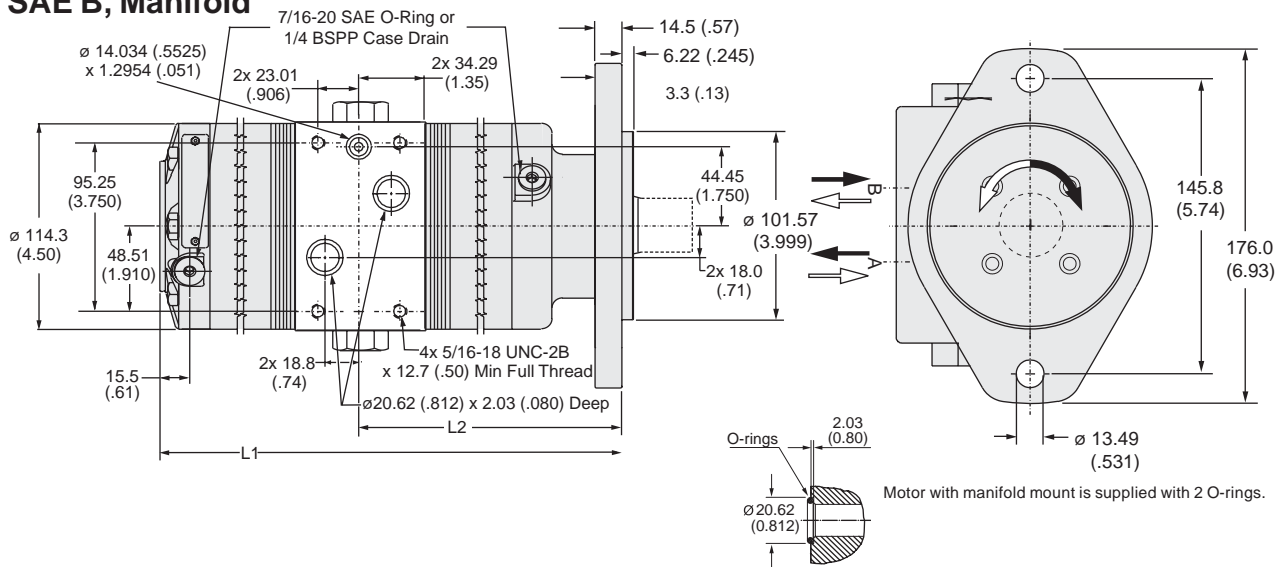
022 700.indd, a



**WARNING**

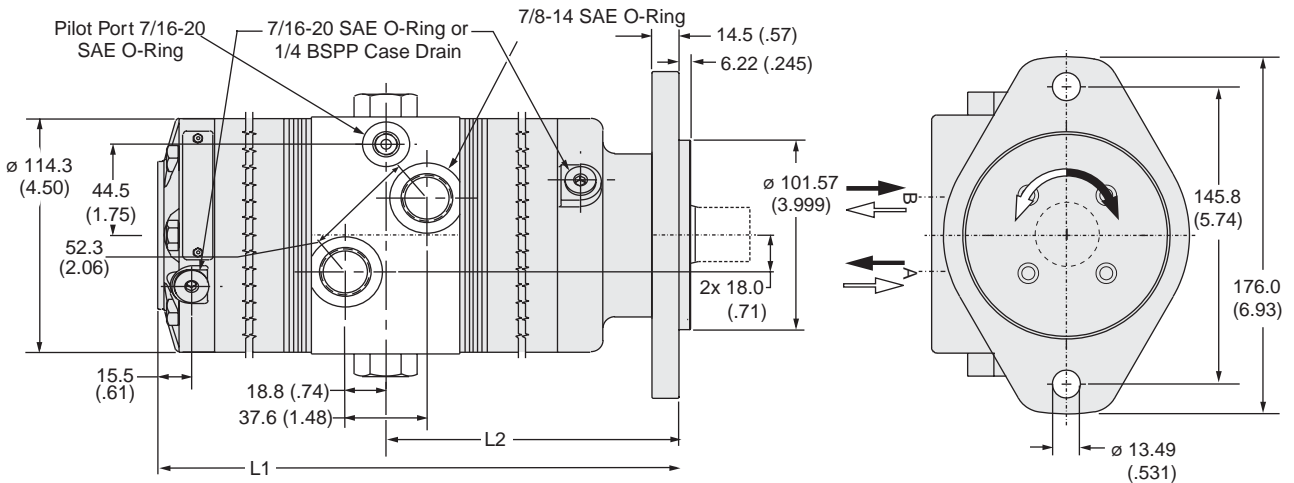
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

**Code: BM**  
**SAE B, Manifold**



| Code BM        |           | 072    | 108    | 142    | 176    | 212    | 258     |
|----------------|-----------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg        | 15.9   | 16.1   | 16.2   | 16.4   | 16.6   | 16.8    |
| Poids/Peso     | (lb)      | (35.0) | (35.4) | (35.7) | (36.1) | (36.5) | (37.0)  |
| Length         | "L1" mm   | 214.6  | 224.3  | 233.7  | 243.3  | 253.2  | 266.0   |
|                | "L1" (in) | (8.45) | (8.83) | (9.20) | (9.58) | (9.97) | (10.47) |
|                | "L2" mm   | 123.2  | 128.0  | 132.9  | 137.7  | 142.5  | 148.8   |
|                | "L2" (in) | (4.85) | (5.04) | (5.23) | (5.42) | (5.61) | (5.86)  |

**Code: BS**  
**SAE B, 7/8"-14 SAE**



| Code BS        |           | 072    | 108    | 142    | 176    | 212    | 258     |
|----------------|-----------|--------|--------|--------|--------|--------|---------|
| Weight/Gewicht | kg        | 15.9   | 16.1   | 16.2   | 16.4   | 16.6   | 16.8    |
| Poids/Peso     | (lb)      | (35.0) | (35.4) | (35.7) | (36.1) | (36.5) | (37.0)  |
| Length         | "L1" mm   | 214.6  | 224.3  | 233.7  | 243.3  | 253.2  | 266.0   |
|                | "L1" (in) | (8.45) | (8.83) | (9.20) | (9.58) | (9.97) | (10.47) |
|                | "L2" mm   | 123.2  | 128.0  | 132.9  | 137.7  | 142.5  | 148.8   |
|                | "L2" (in) | (4.85) | (5.04) | (5.23) | (5.42) | (5.61) | (5.86)  |

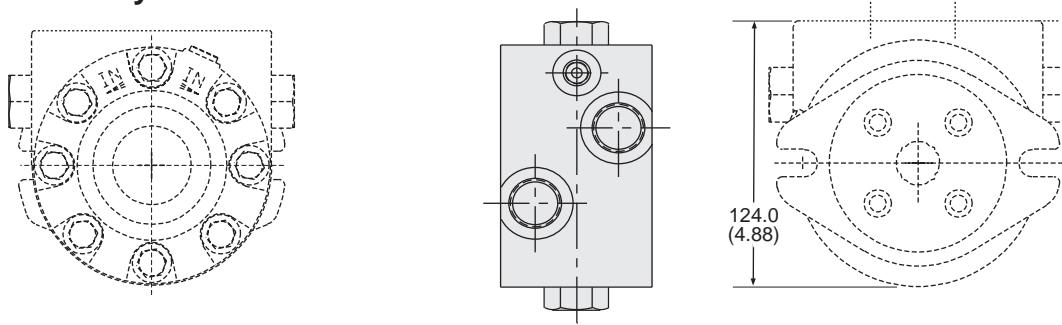
English equivalents for metric specifications are shown in ( ).

022 700.indd, a

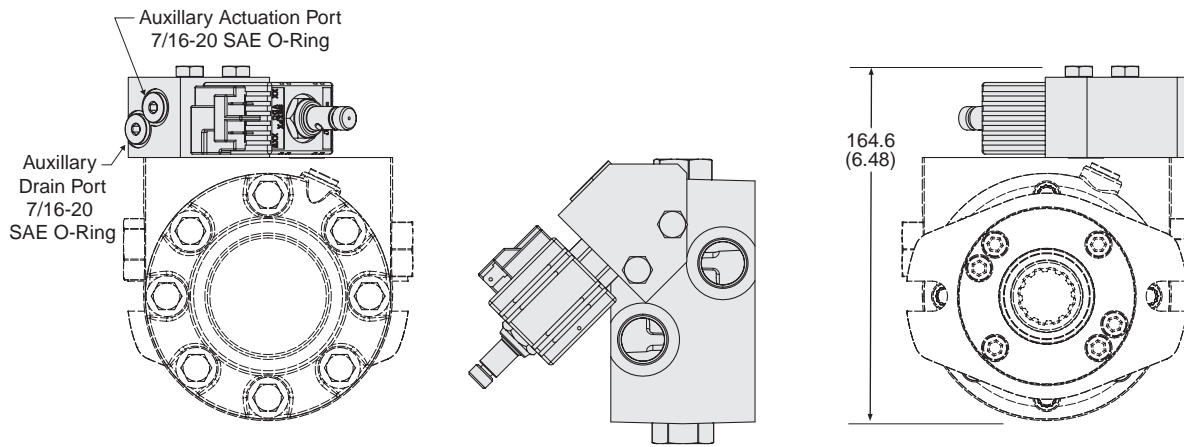


**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

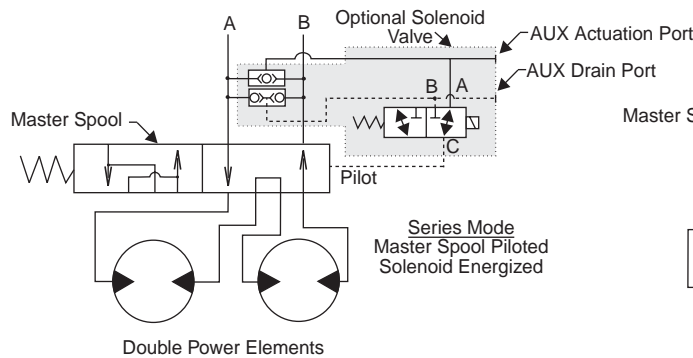
**Code: P**  
**Remotely Piloted**



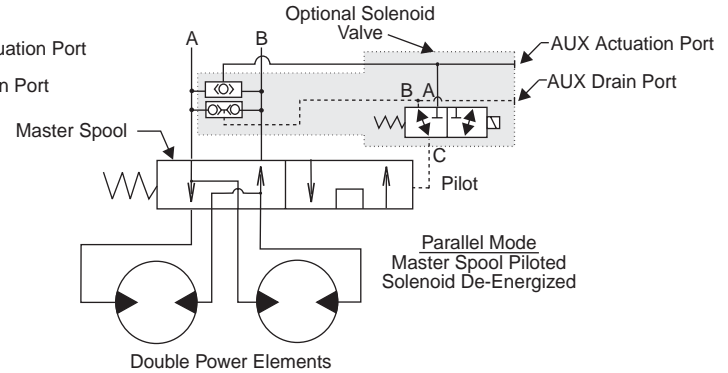
**Code: E, W**  
**Solenoid Actuated**



**High Speed Series Mode**



**High Torque Parallel Mode**



Add .5 kg (1.1 lb) for this option.

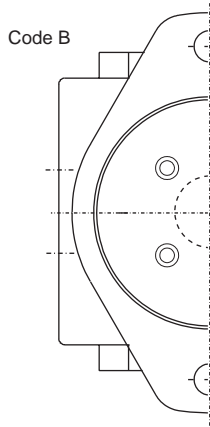
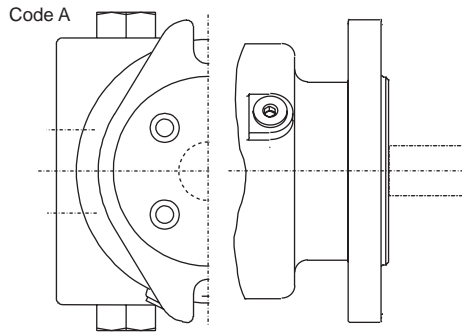
English equivalents for metric specifications are shown in ( ).

022 700.indd, a

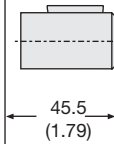


**WARNING**

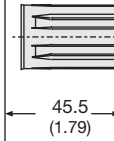
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



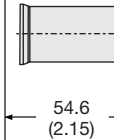
**Code: 0**  
**1" Keyed**



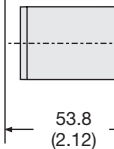
**Code: 1**  
**1" 6B Spline**



**Code: 2**  
**25mm Keyed**



**Code: 3**  
**1-1/4" Keyed**



English equivalents for metric specifications are shown in ( ).

022 700.indd, a

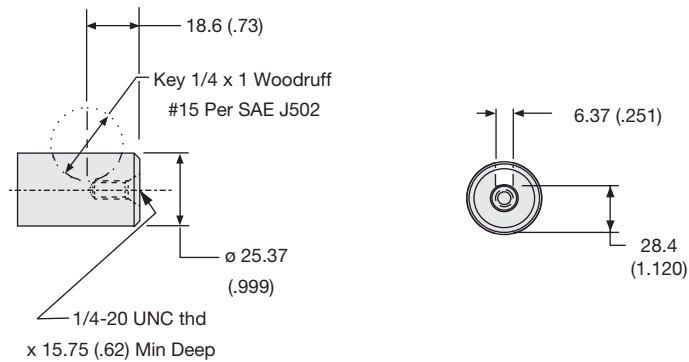


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

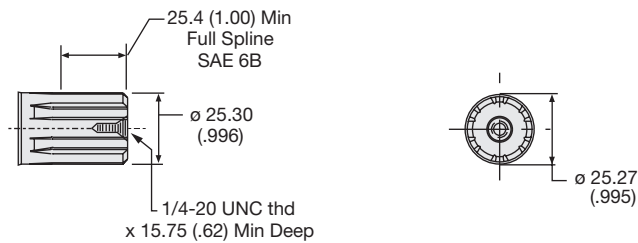
**Code: 0**

**1" Keyed**



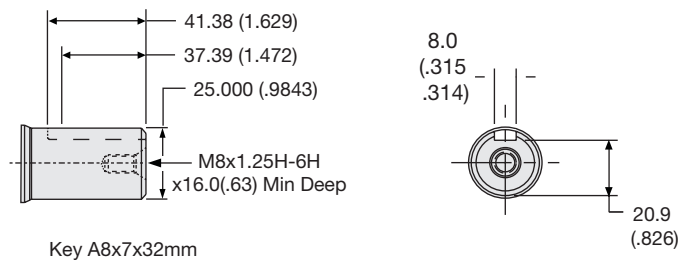
**Code: 1**

**1" 6B Spline**



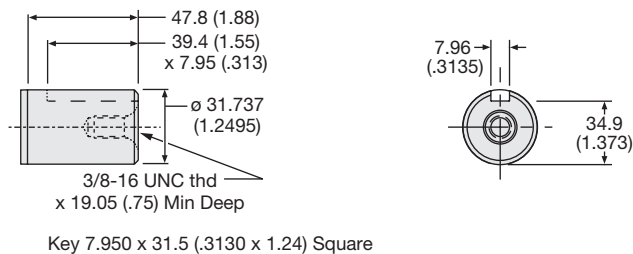
**Code: 2**

**25mm Keyed**



**Code: 3**

**1-1/4" Keyed**



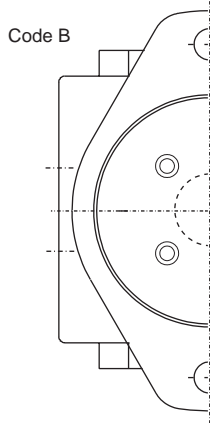
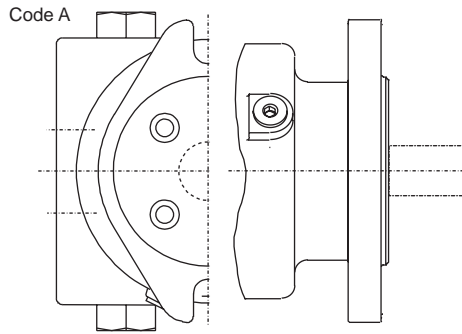
English equivalents for metric specifications are shown in ( ).

022 700.indd, a



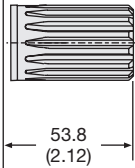
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



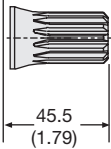
**Code: 5**

**1-1/4"-14 Tooth Spline**



**Code: 6**

**7/8"-13 Tooth Spline**



English equivalents for metric specifications are shown in ( ).

022 700.indd, a



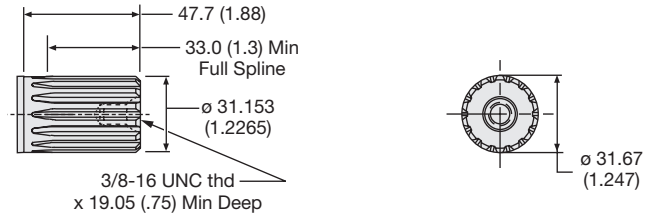
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



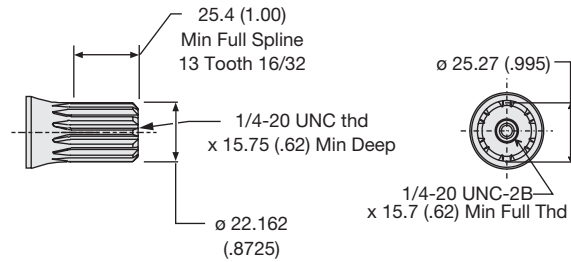
Code: 5

1-1/4"-14 Tooth Spline



Code: 6

7/8"-13 Tooth Spline



English equivalents for metric specifications are shown in ( ).

022 700.indd, a



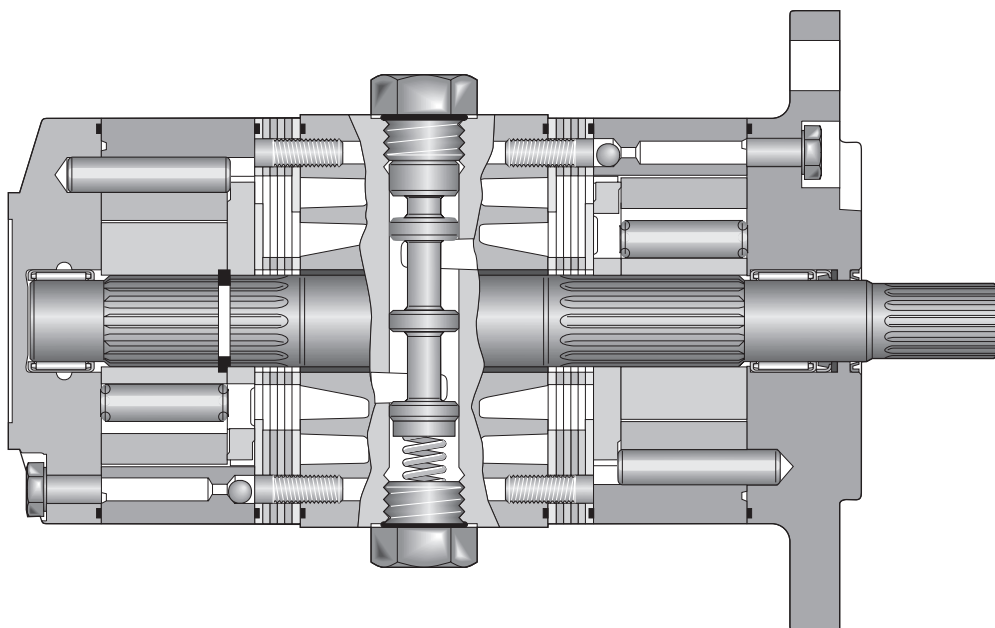
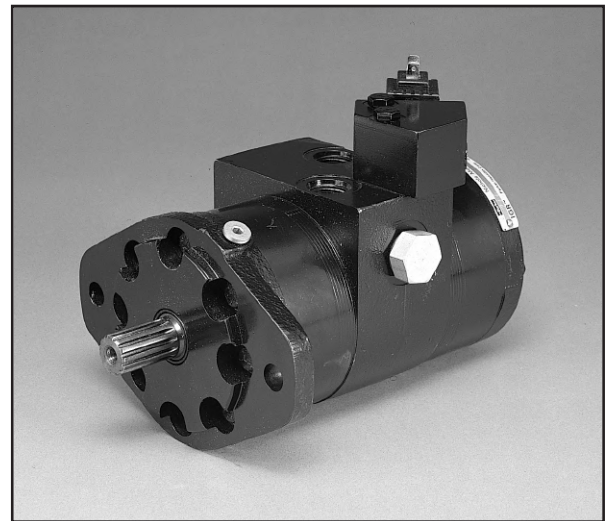
**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

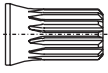
|                                 |                 |  |                                  |
|---------------------------------|-----------------|--|----------------------------------|
| <b>6 Displacements</b>          | <b>Series</b>   | (3.6 – 12.9 in <sup>3</sup> /rev)<br><b>59...211 cm<sup>3</sup>/rev</b>  |                                  |
|                                 | <b>Parallel</b> | (7.2 – 25.8 in <sup>3</sup> /rev)<br><b>118...423 cm<sup>3</sup>/rev</b> |                                  |
| <b>Maximum Pressure</b>         |                 | <b>Cont</b>  | <b>Int</b>                       |
|                                 | <b>Series</b>   | (2500 psid)<br><b>...170 bar</b>   | (3000 psid)<br><b>...210 bar</b> |
|                                 | <b>Parallel</b> | (2000 psid)<br><b>...140 bar</b>   | (2500 psid)<br><b>...170 bar</b> |
|                                 |                 |  |                                  |
| <b>Maximum Oil Flow</b>         | <b>Series</b>   | (20 gpm)<br><b>...76 lpm</b>   |                                  |
|                                 | <b>Parallel</b> | (30 gpm)<br><b>...114 lpm</b>  |                                  |
| <b>Maximum Speed</b>            | <b>Series</b>   | <b>890 rpm</b>   |                                  |
|                                 | <b>Parallel</b> | <b>782 rpm</b>   |                                  |
| <b>Maximum Torque</b>           |                 | <b>Cont</b>  | <b>Int</b>                       |
|                                 | <b>Series</b>   | (3125 lb in)<br><b>...353 Nm</b>   | (3844 lb in)<br><b>...434 Nm</b> |
|                                 | <b>Parallel</b> | (3735 lb in)<br><b>...422 Nm</b>   | (4666 lb in)<br><b>...527 Nm</b> |
|                                 |                 |  |                                  |
| <b>Maximum Side Load at Key</b> | <b>Series</b>   | (1000 lb)<br><b>... 113 N</b>  |                                  |

**High Efficiency, High Flow Two-Speed Motor**



Parker's unique two-speed motor utilizes two separate IGR™ power elements on a common shaft. An integral selector valve shifts between high torque, low speed (parallel) operation and high speed, low torque (series) mode in a ratio of 2:1. The use of two power elements eliminates the deficiencies of traditional, single power element designs. In the high torque mode, the motor delivers twice the torque and half the speed that it does in the high speed mode. The selector valve can be open or closed center and may be actuated by an external pilot or optional solenoid valve. The open center selector valve can be shifted "on the fly" while the motor shaft is rotating under load. The selector valve is spring loaded to return to its pilot-pressure-off position. Normal mode of operation is field changeable and can be selected as series or parallel. Pilot pressure must be 300 psi higher than motor case or outlet pressure and may be as high as typical hydraulic system operating pressure.

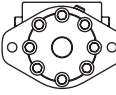




| Code |   |
|------|---|
| 6    | 7/8"-13 Tooth Spline<br> |

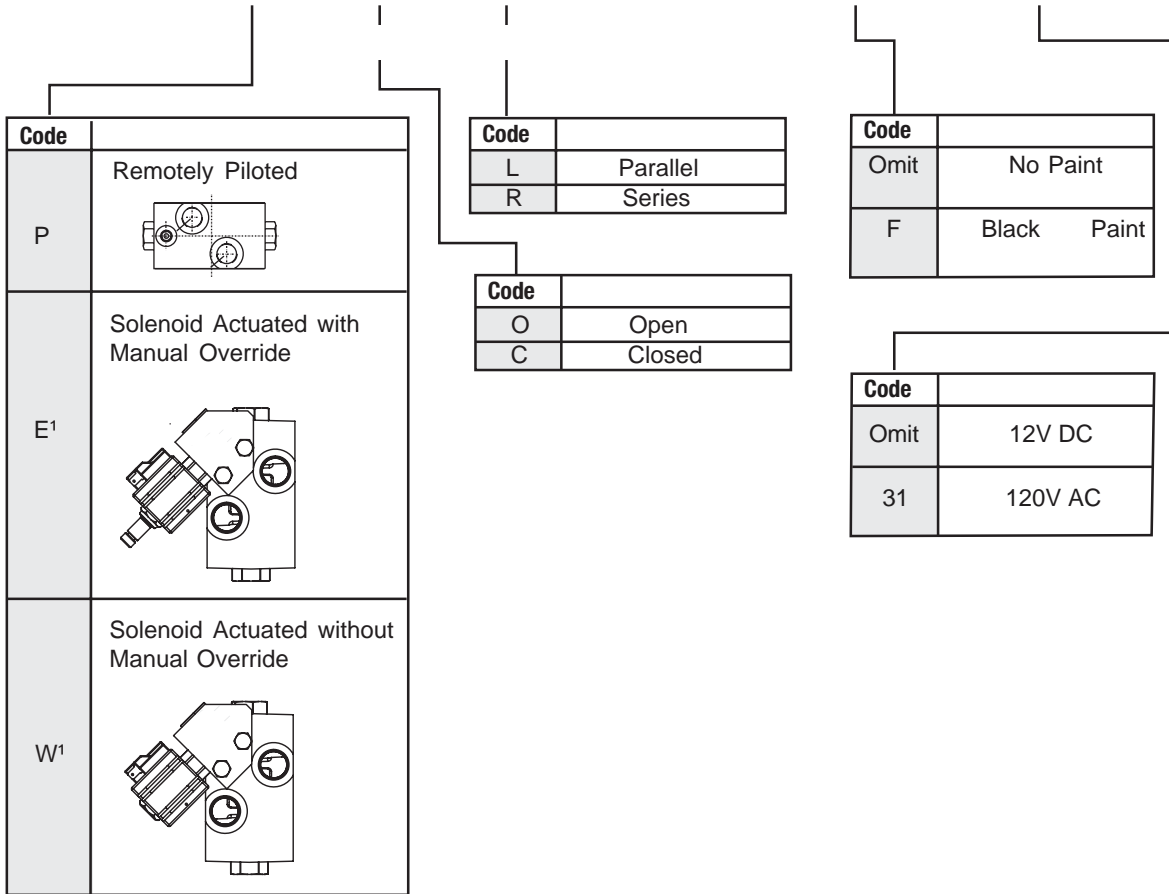
| Code | cm <sup>3</sup> /U<br>cm <sup>3</sup> /tr<br>cm <sup>3</sup> /giro | in <sup>3</sup> /rev |
|------|--|----------------------|
| 072  | 60 / 3.6 Series<br>119 / 7.2 Parallel                              |                      |
| 108  | 88 / 5.4 Series<br>176 / 10.8 Parallel                             |                      |
| 142  | 116 / 71.1 Series<br>232 / 14.2 Parallel                           |                      |
| 176  | 144 / 8.8 Series<br>289 / 17.6 Parallel                            |                      |
| 212  | 174 / 10.6 Series<br>348 / 21.2 Parallel                           |                      |
| 258  | 211 / 12.9 Series<br>423 / 25.8 Parallel                           |                      |

| Code |  |
|------|--|
| S    | 7/8"-14 SAE<br> |
| M    | Manifold<br>                              |

| Code |   |
|------|---|
| B    | SAE B 2-Bolt<br> |

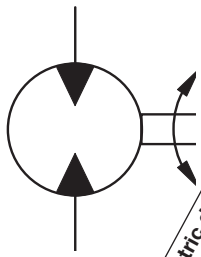
| Code |               |
|------|---------------|
| 0    | No Thru Shaft |
| 1    | Thru Shaft    |
| E    | Encoder Mount |

Consult factory for other available options, configurations ordering codes and lead times.



Standard Solenoid is 12V DC with 1/4" Spade Connections.

Consult factory for other available options, configurations ordering codes and lead times.



Geometric displacement  
Max. speed @ Max. intermittent flow  
Max. oil flow  
Max. differential pressure  
Max. supply pressure  
Max. torque  
Max. performance

| Motor Series 700 | cm <sup>3</sup> /rev<br>in <sup>3</sup> /rev | int<br>rev/min | cont / int<br>l/min<br>g/min |           | cont / int<br>bar<br>psid |             | max<br>bar<br>psig | cont / int<br>Nm<br>lb-in |             | max<br>KW<br>HP |
|------------------|--|----------------|------------------------------|-----------|---------------------------|-------------|--------------------|---------------------------|-------------|-----------------|
| 072 Series       | 59<br>3.6                                    | 898            | 42<br>11                     | 53<br>14  | 241<br>3500               | 241<br>3500 | 276<br>4000        | 181<br>1606               | 181<br>1606 | 13.6<br>18.3    |
| 072 Parallel     | 118<br>7.2                                   | 962            | 95<br>25                     | 114<br>30 | 207<br>3000               | 241<br>3500 | 276<br>4000        | 296<br>2620               | 335<br>2968 | 17.2<br>23.1    |
| 108 Series       | 88<br>5.4                                    | 940            | 61<br>16                     | 83<br>22  | 241<br>3500               | 241<br>3500 | 276<br>4000        | 278<br>2463               | 278<br>2463 | 15.7<br>21.1    |
| 108 Parallel     | 177<br>10.8                                  | 641            | 114<br>30                    | 114<br>30 | 207<br>3000               | 241<br>3500 | 276<br>4000        | 454<br>4022               | 521<br>4614 | 16.9<br>22.6    |
| 142 Series       | 116<br>7.1                                   | 716            | 76<br>20                     | 83<br>22  | 241<br>3500               | 241<br>3500 | 276<br>4000        | 373<br>3298               | 373<br>3298 | 19.0<br>25.5    |
| 142 Parallel     | 233<br>14.2                                  | 488            | 114<br>30                    | 114<br>30 | 207<br>3000               | 224<br>3250 | 276<br>4000        | 594<br>5261               | 624<br>5523 | 13.4<br>18.0    |
| 176 Series       | 144<br>8.8                                   | 786            | 76<br>20                     | 114<br>30 | 241<br>3500               | 241<br>3500 | 276<br>4000        | 470<br>4162               | 470<br>4162 | 14.4<br>19.3    |
| 176 Parallel     | 288<br>17.6                                  | 393            | 114<br>30                    | 114<br>30 | 172<br>2500               | 190<br>2750 | 276<br>4000        | 684<br>6050               | 738<br>6532 | 11.8<br>15.8    |
| 212 Series       | 174<br>10.6                                  | 653            | 76<br>20                     | 114<br>30 | 224<br>3250               | 224<br>3250 | 276<br>4000        | 531<br>4702               | 531<br>4702 | 11.8<br>15.8    |
| 212 Parallel     | 347<br>21.2                                  | 327            | 114<br>30                    | 114<br>30 | 155<br>2250               | 172<br>2500 | 276<br>4000        | 737<br>6520               | 812<br>7187 | 8.9<br>11.9     |
| 258 Series       | 211<br>12.9                                  | 537            | 68<br>18                     | 114<br>30 | 172<br>2500               | 207<br>3000 | 276<br>4000        | 502<br>4440               | 601<br>5318 | 9.5<br>12.8     |
| 258 Parallel     | 423<br>25.8                                  | 268            | 114<br>30                    | 114<br>30 | 138<br>2000               | 155<br>2250 | 276<br>4000        | 798<br>7063               | 887<br>7853 | 8.2<br>11.0     |

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

\* Intermittent operation rating applies to 10% of every minute.

**072 Series**

**3.6 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 242        | 481        | 718        | 941        | 1143       | 1313       |            |
|           | <b>128</b> | <b>127</b> | <b>119</b> | <b>107</b> | <b>88</b>  | <b>70</b>  |            |
| <b>4</b>  | 240        | 476        | 695        | 961        | 1193       | 1399       | 1574       |
|           | <b>257</b> | <b>256</b> | <b>255</b> | <b>239</b> | <b>219</b> | <b>194</b> | <b>157</b> |
| <b>6</b>  | 217        | 449        | 697        | 947        | 1189       | 1420       | 1606       |
|           | <b>385</b> | <b>384</b> | <b>382</b> | <b>378</b> | <b>357</b> | <b>329</b> | <b>289</b> |
| <b>8</b>  | 187        | 421        | 670        | 910        | 1155       | 1384       | 1610       |
|           | <b>513</b> | <b>512</b> | <b>513</b> | <b>511</b> | <b>492</b> | <b>467</b> | <b>418</b> |
| <b>10</b> | 139        | 372        | 618        | 867        | 1116       | 1361       | 1534       |
|           | <b>642</b> | <b>640</b> | <b>641</b> | <b>638</b> | <b>628</b> | <b>599</b> | <b>553</b> |
| <b>12</b> | 74         | 307        | 553        | 818        | 1056       | 1275       | 1496       |
|           | <b>770</b> | <b>770</b> | <b>768</b> | <b>768</b> | <b>756</b> | <b>708</b> | <b>671</b> |
| <b>14</b> |            | 240        | 486        | 754        | 994        | 1191       | 1448       |
|           |            | <b>898</b> | <b>898</b> | <b>897</b> | <b>882</b> | <b>847</b> | <b>798</b> |

FLOW (GPM)

TORQUE (LB IN) 994  
 SPEED (RPM) 882

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



072 Parallel  
7.2 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 441<br>63  | 889<br>59  | 1272<br>48  | 1650<br>29  |             |             |             |
| <b>4</b>  | 481<br>128 | 966<br>125 | 1403<br>121 | 1824<br>104 | 2163<br>81  |             |             |
| <b>6</b>  | 477<br>192 | 957<br>187 | 1401<br>181 | 1813<br>159 | 2186<br>121 | 2485<br>67  |             |
| <b>8</b>  | 464<br>257 | 964<br>251 | 1428<br>244 | 1850<br>212 | 2249<br>161 | 2578<br>90  |             |
| <b>10</b> | 437<br>321 | 941<br>320 | 1427<br>316 | 1836<br>283 | 2243<br>240 | 2620<br>178 | 2968<br>115 |
| <b>12</b> | 419<br>385 | 913<br>382 | 1401<br>377 | 1833<br>353 | 2229<br>309 | 2589<br>249 | 2960<br>174 |
| <b>14</b> | 405<br>449 | 881<br>448 | 1384<br>444 | 1824<br>420 | 2220<br>372 | 2582<br>300 | 2952<br>235 |
| <b>16</b> | 395<br>513 | 858<br>510 | 1363<br>503 | 1801<br>485 | 2192<br>438 | 2571<br>356 | 2940<br>280 |
| <b>18</b> | 381<br>577 | 821<br>576 | 1327<br>573 | 1769<br>553 | 2183<br>495 | 2520<br>414 | 2931<br>334 |
| <b>20</b> | 369<br>642 | 799<br>642 | 1308<br>641 | 1772<br>616 | 2146<br>578 | 2513<br>507 | 2904<br>405 |
| <b>22</b> | 350<br>706 | 779<br>706 | 1272<br>705 | 1742<br>678 | 2114<br>608 | 2503<br>534 | 2884<br>452 |
| <b>25</b> |            | 710<br>802 | 1169<br>801 | 1604<br>770 | 1997<br>691 | 2314<br>606 | 2647<br>513 |
| <b>30</b> |            | 653<br>962 | 1066<br>962 | 1444<br>924 | 1776<br>830 | 2097<br>728 | 2366<br>616 |

FLOW (GPM)

TORQUE (LB IN) 2647  
SPEED (RPM) 513

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**108 Series**

**5.4 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 366<br>86  | 727<br>84  | 1084<br>80  | 1431<br>74  | 1740<br>62  | 2036<br>52  |             |
| <b>4</b>  | 361<br>171 | 725<br>171 | 1071<br>170 | 1462<br>163 | 1816<br>150 | 2122<br>135 | 2424<br>110 |
| <b>6</b>  | 329<br>257 | 690<br>256 | 1066<br>255 | 1443<br>252 | 1812<br>242 | 2159<br>224 | 2455<br>200 |
| <b>8</b>  | 289<br>342 | 654<br>341 | 1029<br>342 | 1395<br>340 | 1764<br>330 | 2118<br>317 | 2463<br>288 |
| <b>10</b> | 229<br>428 | 593<br>427 | 968<br>427  | 1337<br>425 | 1712<br>419 | 2078<br>406 | 2375<br>379 |
| <b>12</b> | 151<br>513 | 509<br>513 | 882<br>512  | 1271<br>511 | 1636<br>505 | 1979<br>481 | 2324<br>459 |
| <b>14</b> | 77<br>599  | 426<br>599 | 800<br>598  | 1194<br>596 | 1552<br>588 | 1874<br>571 | 2253<br>547 |
| <b>16</b> | 40<br>684  | 342<br>684 | 720<br>683  | 1133<br>680 | 1469<br>671 | 1790<br>649 | 2146<br>656 |
| <b>18</b> |            | 259<br>769 | 627<br>769  | 1031<br>765 | 1339<br>755 | 1642<br>738 | 1961<br>731 |
| <b>20</b> |            |            | 536<br>855  | 858<br>850  | 1139<br>845 | 1407<br>817 | 1678<br>788 |
| <b>22</b> |            |            | 452<br>940  | 775<br>935  | 1031<br>930 | 1277<br>899 | 1532<br>867 |

FLOW (GPM)

TORQUE (LB IN) 1678  
 SPEED (RPM) 788

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





108 Parallel  
**10.8** cu in / rev

PRESSURE (PSID)

|           | 500        | 1000        | 1500        | 2000        | 2500        | 3000        | 3500        |
|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 683<br>42  | 1366<br>40  | 1970<br>33  |             |             |             |             |
| <b>4</b>  | 729<br>85  | 1455<br>83  | 2140<br>78  | 2809<br>65  | 3383<br>47  |             |             |
| <b>6</b>  | 728<br>128 | 1465<br>124 | 2150<br>120 | 2801<br>105 | 3399<br>76  |             |             |
| <b>8</b>  | 711<br>171 | 1469<br>168 | 2185<br>163 | 2856<br>142 | 3491<br>110 |             |             |
| <b>10</b> | 678<br>214 | 1442<br>213 | 2182<br>211 | 2838<br>189 | 3482<br>159 | 4104<br>77  |             |
| <b>12</b> | 651<br>257 | 1401<br>254 | 2150<br>252 | 2833<br>235 | 3456<br>205 | 4022<br>109 |             |
| <b>14</b> | 630<br>299 | 1362<br>298 | 2104<br>295 | 2814<br>280 | 3445<br>246 | 4012<br>131 | 4614<br>75  |
| <b>16</b> | 611<br>342 | 1329<br>340 | 2095<br>335 | 2778<br>323 | 3408<br>290 | 3981<br>226 | 4598<br>151 |
| <b>18</b> | 587<br>385 | 1295<br>383 | 2051<br>379 | 2756<br>368 | 3364<br>333 | 3898<br>267 | 4519<br>184 |
| <b>20</b> | 565<br>428 | 1250<br>426 | 2013<br>425 | 2723<br>411 | 3335<br>382 | 3878<br>317 | 4482<br>236 |
| <b>22</b> | 539<br>469 | 1215<br>469 | 1962<br>467 | 2678<br>452 | 3295<br>409 | 3847<br>338 | 4451<br>257 |
| <b>25</b> |            | 1123<br>534 | 1834<br>532 | 2515<br>513 | 3108<br>464 | 3594<br>385 | 4309<br>290 |
| <b>30</b> |            | 1037<br>641 | 1693<br>639 | 2313<br>615 | 2828<br>557 | 3311<br>462 | 4151<br>379 |

FLOW (GPM)

TORQUE (LB IN) 4309  
SPEED (RPM) 290

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**142 Series**

**7.1 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500        | 3000       | 3500       |
|-----------|------------|------------|------------|------------|-------------|------------|------------|
| <b>2</b>  | 484        | 964        | 1434       | 1907       | 2319        | 2759       |            |
|           | <b>65</b>  | <b>64</b>  | <b>62</b>  | <b>58</b>  | <b>50</b>   | <b>43</b>  |            |
| <b>4</b>  | 474        | 968        | 1444       | 1948       | 2410        | 2819       | 3264       |
|           | <b>130</b> | <b>130</b> | <b>130</b> | <b>126</b> | <b>118</b>  | <b>107</b> | <b>87</b>  |
| <b>6</b>  | 438        | 930        | 1428       | 1926       | 2417        | 2875       | 3285       |
|           | <b>195</b> | <b>195</b> | <b>194</b> | <b>192</b> | <b>1987</b> | <b>174</b> | <b>158</b> |
| <b>8</b>  | 391        | 889        | 1381       | 1870       | 2359        | 2838       | 3298       |
|           | <b>260</b> | <b>260</b> | <b>260</b> | <b>259</b> | <b>253</b>  | <b>245</b> | <b>226</b> |
| <b>10</b> | 327        | 821        | 1324       | 1804       | 2298        | 2776       | 3215       |
|           | <b>325</b> | <b>324</b> | <b>324</b> | <b>323</b> | <b>320</b>  | <b>313</b> | <b>295</b> |
| <b>12</b> | 249        | 728        | 1226       | 1725       | 2217        | 2664       | 3092       |
|           | <b>390</b> | <b>390</b> | <b>390</b> | <b>388</b> | <b>385</b>  | <b>372</b> | <b>358</b> |
| <b>14</b> | 184        | 643        | 1141       | 1648       | 2116        | 2573       | 3063       |
|           | <b>455</b> | <b>455</b> | <b>454</b> | <b>452</b> | <b>447</b>  | <b>439</b> | <b>427</b> |
| <b>16</b> | 101        | 532        | 1040       | 1558       | 2011        | 2474       | 2949       |
|           | <b>520</b> | <b>520</b> | <b>519</b> | <b>516</b> | <b>511</b>  | <b>501</b> | <b>497</b> |
| <b>18</b> |            | 439        | 930        | 1441       | 1876        | 2325       | 2790       |
|           |            | <b>585</b> | <b>584</b> | <b>581</b> | <b>575</b>  | <b>564</b> | <b>559</b> |
| <b>20</b> |            | 300        | 810        | 1275       | 1712        | 2125       | 2535       |
|           |            | <b>651</b> | <b>650</b> | <b>647</b> | <b>643</b>  | <b>629</b> | <b>612</b> |
| <b>22</b> |            | 249        | 707        | 1169       | 1594        | 1983       | 2386       |
|           |            | <b>716</b> | <b>715</b> | <b>711</b> | <b>707</b>  | <b>692</b> | <b>673</b> |

FLOW (GPM)

TORQUE (LB IN) 2535  
 SPEED (RPM) 612

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



142 Parallel

14.2 cu in / rev

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3250       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 925        | 1836       | 2668       | 3467       |            |            |            |
|           | <b>32</b>  | <b>31</b>  | <b>26</b>  | <b>16</b>  |            |            |            |
| <b>4</b>  | 969        | 1920       | 2860       | 3784       | 4619       |            |            |
|           | <b>65</b>  | <b>63</b>  | <b>57</b>  | <b>46</b>  | <b>31</b>  |            |            |
| <b>6</b>  | 971        | 1963       | 2886       | 3785       | 4619       |            |            |
|           | <b>97</b>  | <b>94</b>  | <b>90</b>  | <b>79</b>  | <b>55</b>  |            |            |
| <b>8</b>  | 954        | 1962       | 2927       | 3858       | 4736       |            |            |
|           | <b>130</b> | <b>128</b> | <b>125</b> | <b>108</b> | <b>85</b>  |            |            |
| <b>10</b> | 918        | 1933       | 2921       | 3837       | 4724       |            |            |
|           | <b>163</b> | <b>162</b> | <b>160</b> | <b>145</b> | <b>121</b> |            |            |
| <b>12</b> | 884        | 1882       | 2886       | 3829       | 4685       |            |            |
|           | <b>195</b> | <b>193</b> | <b>191</b> | <b>179</b> | <b>164</b> |            |            |
| <b>14</b> | 857        | 1841       | 2831       | 3796       | 4672       |            |            |
|           | <b>228</b> | <b>226</b> | <b>224</b> | <b>212</b> | <b>191</b> |            |            |
| <b>16</b> | 826        | 1799       | 2816       | 3747       | 4630       | 5261       |            |
|           | <b>260</b> | <b>259</b> | <b>255</b> | <b>246</b> | <b>219</b> | <b>164</b> |            |
| <b>18</b> | 790        | 1754       | 2755       | 3703       | 4557       | 5207       | 5523       |
|           | <b>293</b> | <b>290</b> | <b>286</b> | <b>280</b> | <b>246</b> | <b>197</b> | <b>164</b> |
| <b>20</b> | 757        | 1709       | 2710       | 3661       | 4528       | 5166       | 5472       |
|           | <b>325</b> | <b>323</b> | <b>322</b> | <b>313</b> | <b>273</b> | <b>226</b> | <b>198</b> |
| <b>22</b> | 726        | 1655       | 2648       | 3603       | 4485       | 5099       | 5259       |
|           | <b>356</b> | <b>356</b> | <b>353</b> | <b>344</b> | <b>301</b> | <b>245</b> | <b>211</b> |
| <b>25</b> | 452        | 1547       | 2513       | 3441       | 4227       | 4861       | 5068       |
|           | <b>406</b> | <b>405</b> | <b>403</b> | <b>390</b> | <b>342</b> | <b>278</b> | <b>239</b> |
| <b>30</b> | 374        | 1436       | 2344       | 3225       | 3921       | 4577       | 4921       |
|           | <b>488</b> | <b>486</b> | <b>484</b> | <b>468</b> | <b>410</b> | <b>334</b> | <b>294</b> |

FLOW (GPM)

TORQUE (LB IN) 5068  
SPEED (RPM) 239

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**176 Series**

**8.8 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 2000       | 2500       | 3000       | 3500       |
|-----------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 604        | 1204       | 1788       | 2395       | 2913       | 3521       |            |
|           | <b>52</b>  | <b>52</b>  | <b>50</b>  | <b>49</b>  | <b>43</b>  | <b>38</b>  |            |
| <b>4</b>  | 588        | 1217       | 1834       | 2445       | 3022       | 3529       | 4142       |
|           | <b>105</b> | <b>105</b> | <b>105</b> | <b>104</b> | <b>98</b>  | <b>90</b>  | <b>73</b>  |
| <b>6</b>  | 548        | 1179       | 1803       | 2423       | 3039       | 3609       | 4142       |
|           | <b>158</b> | <b>157</b> | <b>157</b> | <b>155</b> | <b>153</b> | <b>143</b> | <b>131</b> |
| <b>8</b>  | 497        | 1137       | 1748       | 2364       | 2973       | 3584       | 4162       |
|           | <b>210</b> | <b>209</b> | <b>210</b> | <b>208</b> | <b>206</b> | <b>201</b> | <b>188</b> |
| <b>10</b> | 436        | 1070       | 1704       | 2291       | 2906       | 3496       | 4098       |
|           | <b>263</b> | <b>262</b> | <b>261</b> | <b>260</b> | <b>259</b> | <b>256</b> | <b>244</b> |
| <b>12</b> | 371        | 976        | 1601       | 2204       | 2829       | 3441       | 4034       |
|           | <b>315</b> | <b>315</b> | <b>315</b> | <b>313</b> | <b>311</b> | <b>305</b> | <b>295</b> |
| <b>14</b> | 332        | 899        | 1525       | 2140       | 2717       | 3324       | 3922       |
|           | <b>367</b> | <b>367</b> | <b>366</b> | <b>363</b> | <b>361</b> | <b>358</b> | <b>353</b> |
| <b>16</b> | 186        | 762        | 1405       | 2017       | 2591       | 3214       | 3814       |
|           | <b>420</b> | <b>419</b> | <b>418</b> | <b>416</b> | <b>413</b> | <b>410</b> | <b>400</b> |
| <b>18</b> |            | 665        | 1284       | 1891       | 2468       | 3088       | 3721       |
|           |            | <b>472</b> | <b>471</b> | <b>468</b> | <b>465</b> | <b>462</b> | <b>450</b> |
| <b>20</b> |            | 553        | 1134       | 1762       | 2388       | 2975       | 3549       |
|           |            | <b>524</b> | <b>524</b> | <b>522</b> | <b>519</b> | <b>514</b> | <b>503</b> |
| <b>22</b> |            | 459        | 1017       | 1636       | 2272       | 2836       | 3417       |
|           |            | <b>576</b> | <b>576</b> | <b>574</b> | <b>571</b> | <b>565</b> | <b>554</b> |
| <b>25</b> |            | 81         | 721        | 1375       | 1968       | 2534       | 3113       |
|           |            | <b>655</b> | <b>655</b> | <b>652</b> | <b>648</b> | <b>637</b> | <b>624</b> |
| <b>30</b> |            |            | 284        | 958        | 1562       | 2097       | 2691       |
|           |            |            | <b>786</b> | <b>782</b> | <b>778</b> | <b>765</b> | <b>749</b> |

TORQUE (LB IN) 3549  
 SPEED (RPM) 503

FLOW (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**176 Parallel**  
**17.6 cu in / rev**

PRESSURE (PSID)

|           | 500                | 1000               | 1500               | 2000               | 2250               | 2500               | 2750               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1179<br><b>26</b>  | 2325<br><b>26</b>  | 3403<br><b>22</b>  |                    |                    |                    |                    |
| <b>4</b>  | 1214<br><b>52</b>  | 2412<br><b>51</b>  | 3601<br><b>44</b>  | 4801<br><b>34</b>  |                    |                    |                    |
| <b>6</b>  | 1221<br><b>79</b>  | 2479<br><b>75</b>  | 3651<br><b>72</b>  | 4818<br><b>64</b>  | 5338<br><b>55</b>  |                    |                    |
| <b>8</b>  | 1206<br><b>105</b> | 2468<br><b>104</b> | 3693<br><b>101</b> | 4908<br><b>88</b>  | 5483<br><b>83</b>  | 6050<br><b>70</b>  |                    |
| <b>10</b> | 1172<br><b>131</b> | 2443<br><b>130</b> | 3685<br><b>129</b> | 4885<br><b>117</b> | 5464<br><b>108</b> | 6036<br><b>97</b>  | 6532<br><b>93</b>  |
| <b>12</b> | 1130<br><b>157</b> | 2381<br><b>156</b> | 3651<br><b>155</b> | 4874<br><b>144</b> | 5420<br><b>137</b> | 5980<br><b>125</b> | 6394<br><b>112</b> |
| <b>14</b> | 1097<br><b>184</b> | 2345<br><b>182</b> | 3613<br><b>180</b> | 4824<br><b>171</b> | 5408<br><b>164</b> | 5966<br><b>149</b> | 6363<br><b>130</b> |
| <b>16</b> | 1052<br><b>210</b> | 2294<br><b>209</b> | 3567<br><b>206</b> | 4762<br><b>198</b> | 5345<br><b>189</b> | 5924<br><b>175</b> | 6317<br><b>149</b> |
| <b>18</b> | 1003<br><b>236</b> | 2238<br><b>233</b> | 3487<br><b>229</b> | 4689<br><b>226</b> | 5275<br><b>216</b> | 5812<br><b>208</b> | 6255<br><b>184</b> |
| <b>20</b> | 955<br><b>262</b>  | 2199<br><b>260</b> | 3437<br><b>258</b> | 4639<br><b>253</b> | 5231<br><b>240</b> | 5791<br><b>231</b> | 6209<br><b>205</b> |
| <b>22</b> | 922<br><b>286</b>  | 2123<br><b>286</b> | 3366<br><b>283</b> | 4566<br><b>277</b> | 5200<br><b>264</b> | 5749<br><b>254</b> | 6147<br><b>225</b> |
| <b>25</b> | 832<br><b>328</b>  | 2006<br><b>326</b> | 3240<br><b>324</b> | 4431<br><b>314</b> | 4954<br><b>302</b> | 5413<br><b>289</b> | 5816<br><b>256</b> |
| <b>30</b> | 689<br><b>393</b>  | 1868<br><b>392</b> | 3050<br><b>389</b> | 4224<br><b>377</b> | 4651<br><b>362</b> | 5112<br><b>347</b> | 5546<br><b>307</b> |

FLOW (GPM)

TORQUE (LB IN) 5816  
SPEED (RPM) 256

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**212 Series**

**10.6 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1750       | 2000       | 2250       | 2500       | 2750       | 3000       | 3250       |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 731        | 1458       | 2162       | 2509       | 2901       | 3175       | 3532       |            |            |            |
|           | <b>44</b>  | <b>43</b>  | <b>42</b>  | <b>42</b>  | <b>40</b>  | <b>39</b>  | <b>36</b>  |            |            |            |
| <b>4</b>  | 712        | 1468       | 2210       | 2562       | 2946       | 3274       | 3641       | 3955       | 4269       | 4623       |
|           | <b>87</b>  | <b>87</b>  | <b>87</b>  | <b>87</b>  | <b>86</b>  | <b>84</b>  | <b>81</b>  | <b>80</b>  | <b>75</b>  | <b>71</b>  |
| <b>6</b>  | 665        | 1426       | 2175       | 2553       | 2920       | 3290       | 3658       | 4009       | 4351       | 4702       |
|           | <b>131</b> | <b>130</b> | <b>130</b> | <b>129</b> | <b>128</b> | <b>127</b> | <b>127</b> | <b>123</b> | <b>119</b> | <b>115</b> |
| <b>8</b>  | 603        | 1371       | 2110       | 2473       | 2854       | 3229       | 3587       | 3961       | 4323       | 4674       |
|           | <b>174</b> | <b>174</b> | <b>174</b> | <b>173</b> | <b>173</b> | <b>171</b> | <b>170</b> | <b>170</b> | <b>166</b> | <b>161</b> |
| <b>10</b> | 527        | 1287       | 2053       | 2406       | 2767       | 3136       | 3508       | 3872       | 4223       |            |
|           | <b>218</b> | <b>217</b> | <b>217</b> | <b>216</b> | <b>215</b> | <b>215</b> | <b>214</b> | <b>213</b> | <b>212</b> |            |
| <b>12</b> | 450        | 1182       | 1935       | 2315       | 2665       | 3040       | 3414       | 3775       | 4150       |            |
|           | <b>262</b> | <b>261</b> | <b>261</b> | <b>260</b> | <b>259</b> | <b>258</b> | <b>257</b> | <b>256</b> | <b>251</b> |            |
| <b>14</b> | 390        | 1089       | 1844       | 2210       | 2588       | 2940       | 3291       | 3667       | 3948       |            |
|           | <b>305</b> | <b>304</b> | <b>303</b> | <b>302</b> | <b>301</b> | <b>300</b> | <b>299</b> | <b>298</b> | <b>293</b> |            |
| <b>16</b> | 225        | 929        | 1703       | 2076       | 2443       | 2789       | 3149       | 3526       | 3846       |            |
|           | <b>349</b> | <b>348</b> | <b>347</b> | <b>346</b> | <b>346</b> | <b>345</b> | <b>343</b> | <b>338</b> | <b>335</b> |            |
| <b>18</b> |            | 806        | 1559       | 1921       | 2300       | 2672       | 2995       | 3340       | 3644       |            |
|           |            | <b>391</b> | <b>391</b> | <b>389</b> | <b>389</b> | <b>388</b> | <b>384</b> | <b>380</b> | <b>377</b> |            |
| <b>20</b> |            | 669        | 1377       | 1769       | 2128       | 2498       | 2741       | 2992       | 3239       |            |
|           |            | <b>435</b> | <b>435</b> | <b>434</b> | <b>433</b> | <b>432</b> | <b>427</b> | <b>423</b> | <b>418</b> |            |
| <b>22</b> |            | 567        | 1244       | 1612       | 1994       | 2337       | 2657       | 2876       | 3113       |            |
|           |            | <b>478</b> | <b>478</b> | <b>477</b> | <b>476</b> | <b>475</b> | <b>470</b> | <b>465</b> | <b>460</b> |            |
| <b>25</b> |            | 153        | 900        | 1244       | 1676       | 2037       | 2404       | 2830       | 3037       |            |
|           |            | <b>544</b> | <b>544</b> | <b>543</b> | <b>541</b> | <b>540</b> | <b>534</b> | <b>528</b> | <b>523</b> |            |
| <b>30</b> |            |            | 398        | 732        | 1183       | 1534       | 1898       | 2366       | 2531       |            |
|           |            |            | <b>653</b> | <b>651</b> | <b>650</b> | <b>648</b> | <b>641</b> | <b>641</b> | <b>628</b> |            |

TORQUE (LB IN) 3113  
 SPEED (RPM) 460

FLOW (GPM)

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.



**212 Parallel**  
**21.2 cu in / rev**

PRESSURE (PSID)

|           | 500                | 1000               | 1250               | 1500               | 1750               | 2000               | 2250               | 2500               |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>2</b>  | 1413<br><b>22</b>  | 2789<br><b>21</b>  | 3434<br><b>19</b>  | 4057<br><b>18</b>  | 4676<br><b>15</b>  | 5276<br><b>11</b>  |                    |                    |
| <b>4</b>  | 1455<br><b>44</b>  | 2874<br><b>42</b>  | 3580<br><b>39</b>  | 4299<br><b>36</b>  | 5036<br><b>34</b>  | 5719<br><b>29</b>  |                    |                    |
| <b>6</b>  | 1471<br><b>65</b>  | 2970<br><b>63</b>  | 3686<br><b>61</b>  | 4380<br><b>60</b>  | 5047<br><b>56</b>  | 5777<br><b>52</b>  | 6388<br><b>46</b>  |                    |
| <b>8</b>  | 1455<br><b>87</b>  | 2964<br><b>86</b>  | 3698<br><b>85</b>  | 4429<br><b>84</b>  | 5163<br><b>80</b>  | 5877<br><b>73</b>  | 6498<br><b>69</b>  | 7170<br><b>47</b>  |
| <b>10</b> | 1413<br><b>109</b> | 2938<br><b>108</b> | 3678<br><b>108</b> | 4429<br><b>107</b> | 5135<br><b>103</b> | 5869<br><b>98</b>  | 6520<br><b>90</b>  | 7187<br><b>65</b>  |
| <b>12</b> | 1366<br><b>131</b> | 2871<br><b>129</b> | 3627<br><b>129</b> | 4390<br><b>128</b> | 5112<br><b>127</b> | 5845<br><b>120</b> | 6492<br><b>115</b> | 7069<br><b>105</b> |
| <b>14</b> | 1326<br><b>153</b> | 2827<br><b>151</b> | 3542<br><b>150</b> | 4256<br><b>149</b> | 5052<br><b>148</b> | 5785<br><b>143</b> | 6476<br><b>137</b> | 6984<br><b>122</b> |
| <b>16</b> | 1269<br><b>174</b> | 2767<br><b>173</b> | 3522<br><b>172</b> | 4241<br><b>171</b> | 5005<br><b>169</b> | 5718<br><b>165</b> | 6400<br><b>158</b> | 6900<br><b>139</b> |
| <b>18</b> | 1215<br><b>196</b> | 2699<br><b>194</b> | 3445<br><b>193</b> | 4207<br><b>191</b> | 4948<br><b>190</b> | 5643<br><b>188</b> | 6326<br><b>180</b> | 6833<br><b>157</b> |
| <b>20</b> | 1158<br><b>218</b> | 2656<br><b>216</b> | 3393<br><b>215</b> | 4153<br><b>213</b> | 4898<br><b>209</b> | 5587<br><b>210</b> | 6210<br><b>200</b> | 6790<br><b>174</b> |
| <b>22</b> | 1114<br><b>240</b> | 2572<br><b>238</b> | 3297<br><b>237</b> | 4068<br><b>236</b> | 4806<br><b>234</b> | 5493<br><b>230</b> | 6226<br><b>220</b> | 6740<br><b>192</b> |
| <b>25</b> | 1004<br><b>272</b> | 2439<br><b>271</b> | 3165<br><b>270</b> | 3897<br><b>269</b> | 4659<br><b>266</b> | 5347<br><b>261</b> | 5982<br><b>252</b> | 6647<br><b>218</b> |
| <b>30</b> | 831<br><b>327</b>  | 2299<br><b>325</b> | 2973<br><b>324</b> | 3690<br><b>323</b> | 4393<br><b>319</b> | 5093<br><b>313</b> | 5709<br><b>302</b> | 6267<br><b>262</b> |

FLOW (GPM)

TORQUE (LB IN) 6647  
SPEED (RPM) 218

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.

**258 Series**

**12.9 cu in / rev**

PRESSURE (PSID)

|           | 500        | 1000       | 1500       | 1750       | 2000       | 2250       | 2500       | 2750       | 3000       |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>2</b>  | 905        | 1811       | 2673       | 3155       | 3613       | 3950       | 4414       | 4822       | 5226       |
|           | <b>36</b>  | <b>36</b>  | <b>35</b>  | <b>35</b>  | <b>33</b>  | <b>33</b>  | <b>31</b>  | <b>30</b>  | <b>26</b>  |
| <b>4</b>  | 882        | 1799       | 2692       | 3147       | 3585       | 4014       | 4440       | 4850       | 5287       |
|           | <b>72</b>  | <b>72</b>  | <b>71</b>  | <b>71</b>  | <b>70</b>  | <b>69</b>  | <b>66</b>  | <b>65</b>  | <b>62</b>  |
| <b>6</b>  | 834        | 1762       | 2645       | 3119       | 3560       | 4000       | 4440       | 4856       | 5318       |
|           | <b>107</b> | <b>107</b> | <b>106</b> | <b>106</b> | <b>104</b> | <b>104</b> | <b>103</b> | <b>101</b> | <b>98</b>  |
| <b>8</b>  | 757        | 1675       | 2593       | 3036       | 3507       | 3940       | 4399       | 4839       | 5292       |
|           | <b>143</b> | <b>143</b> | <b>142</b> | <b>141</b> | <b>140</b> | <b>139</b> | <b>138</b> | <b>137</b> | <b>135</b> |
| <b>10</b> | 652        | 1556       | 2504       | 2957       | 3400       | 3857       | 4306       | 4771       | 5201       |
|           | <b>179</b> | <b>178</b> | <b>177</b> | <b>176</b> | <b>175</b> | <b>174</b> | <b>173</b> | <b>172</b> | <b>171</b> |
| <b>12</b> | 565        | 1472       | 2390       | 2867       | 3289       | 3737       | 4188       | 4635       | 5072       |
|           | <b>215</b> | <b>213</b> | <b>212</b> | <b>210</b> | <b>208</b> | <b>208</b> | <b>207</b> | <b>207</b> | <b>205</b> |
| <b>14</b> | 423        | 1357       | 2279       | 2731       | 3199       | 3668       | 4096       | 4517       | 4957       |
|           | <b>251</b> | <b>249</b> | <b>249</b> | <b>248</b> | <b>245</b> | <b>243</b> | <b>243</b> | <b>241</b> | <b>239</b> |
| <b>16</b> | 278        | 1187       | 2125       | 2587       | 3043       | 3525       | 3973       |            |            |
|           | <b>287</b> | <b>286</b> | <b>286</b> | <b>285</b> | <b>284</b> | <b>283</b> | <b>283</b> |            |            |
| <b>18</b> |            | 1006       | 1962       | 2440       | 2911       | 3349       |            |            |            |
|           |            | <b>321</b> | <b>321</b> | <b>319</b> | <b>319</b> | <b>318</b> |            |            |            |
| <b>20</b> |            | 827        | 1728       | 2264       | 2620       | 3003       |            |            |            |
|           |            | <b>357</b> | <b>357</b> | <b>356</b> | <b>355</b> | <b>354</b> |            |            |            |
| <b>22</b> |            | 758        | 1614       | 2037       | 2546       | 2975       |            |            |            |
|           |            | <b>393</b> | <b>393</b> | <b>392</b> | <b>390</b> | <b>390</b> |            |            |            |
| <b>25</b> |            | 466        | 1260       | 1681       | 2135       | 2624       |            |            |            |
|           |            | <b>446</b> | <b>446</b> | <b>446</b> | <b>445</b> | <b>443</b> |            |            |            |
| <b>30</b> |            |            | 773        | 1099       | 1585       | 2079       |            |            |            |
|           |            |            | <b>537</b> | <b>536</b> | <b>535</b> | <b>534</b> |            |            |            |

FLOW (GPM)

TORQUE (LB IN) 1099  
 SPEED (RPM) 536

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





258 Parallel

25.8 cu in / rev

PRESSURE (PSID)

|           | 500         | 1000        | 1250        | 1500        | 1750        | 2000        | 2250        |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>2</b>  | 1679<br>18  | 3334<br>15  | 4055<br>14  | 4724<br>12  |             |             |             |
| <b>4</b>  | 1731<br>36  | 3474<br>34  | 4224<br>32  | 5038<br>30  | 5979<br>27  | 6636<br>25  |             |
| <b>6</b>  | 1790<br>54  | 3531<br>53  | 4419<br>51  | 5235<br>48  | 6072<br>45  | 6898<br>42  | 7557<br>38  |
| <b>8</b>  | 1782<br>71  | 3564<br>71  | 4435<br>71  | 5291<br>68  | 6115<br>66  | 6981<br>60  | 7715<br>56  |
| <b>10</b> | 1727<br>89  | 3552<br>89  | 4424<br>88  | 5340<br>87  | 6209<br>84  | 7063<br>81  | 7853<br>76  |
| <b>12</b> | 1684<br>107 | 3511<br>107 | 4424<br>106 | 5303<br>104 | 6187<br>103 | 6981<br>100 | 7715<br>97  |
| <b>14</b> | 1636<br>125 | 3457<br>124 | 4373<br>124 | 5279<br>123 | 6108<br>123 | 6915<br>120 | 7650<br>118 |
| <b>16</b> | 1556<br>143 | 3388<br>143 | 4312<br>143 | 5223<br>142 | 6050<br>140 | 6866<br>138 | 7594<br>135 |
| <b>18</b> | 1515<br>161 | 3301<br>161 | 4240<br>160 | 5149<br>160 | 6022<br>159 | 6841<br>155 | 7557<br>151 |
| <b>20</b> | 1445<br>179 | 3273<br>179 | 4193<br>178 | 5118<br>178 | 5979<br>178 | 6800<br>172 | 7502<br>168 |
| <b>22</b> | 1378<br>197 | 3203<br>197 | 4060<br>196 | 5020<br>196 | 5878<br>195 | 6652<br>189 | 7391<br>185 |
| <b>25</b> | 1234<br>224 | 3084<br>224 | 3998<br>223 | 4866<br>222 | 5763<br>222 | 6553<br>215 | 7354<br>210 |
| <b>30</b> | 1018<br>268 | 3043<br>268 | 3798<br>267 | 4570<br>266 | 5468<br>266 | 6225<br>258 | 6975<br>252 |

FLOW (GPM)

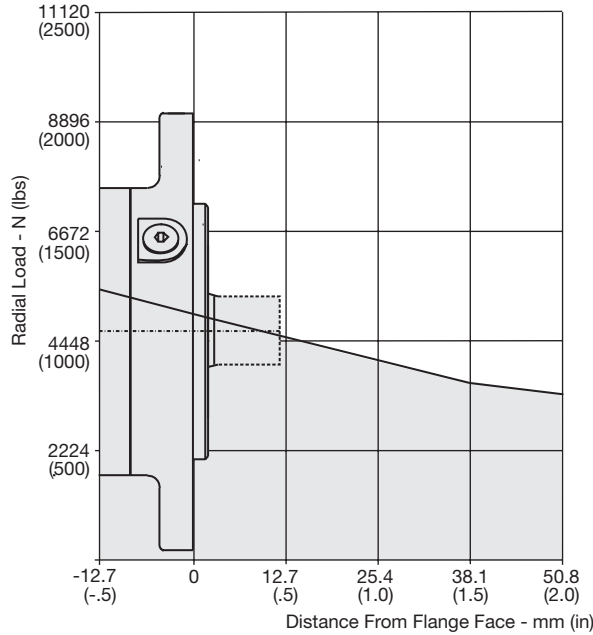
TORQUE (LB IN) 7354  
SPEED (RPM) 210

Cont.  Int.

Intermittent operation rating applies to 10% of every minute.

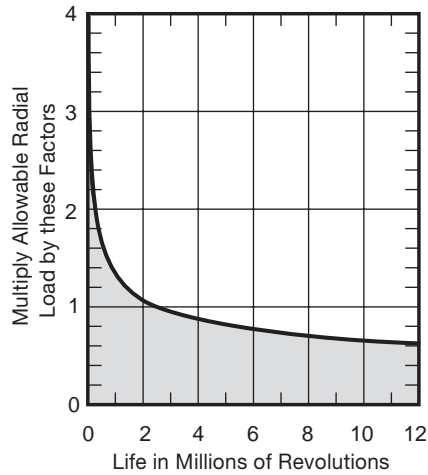
Performance data based on tests using 15W40 oil with a viscosity of 55 cSt (215 SUS) at 54° C (130° F). Performance data is typical. Actual data may vary slightly from one production motor to another.





The allowable side load curve is based on a  $L_{10}$  bearing life of  $2.5 \times 10^6$  revolutions.

Bearing Life Factor Curve  
 Chart B



Note:  
 Side load should be considered a vector sum of all imposed loads.

English equivalents for metric specifications are shown in ( ).

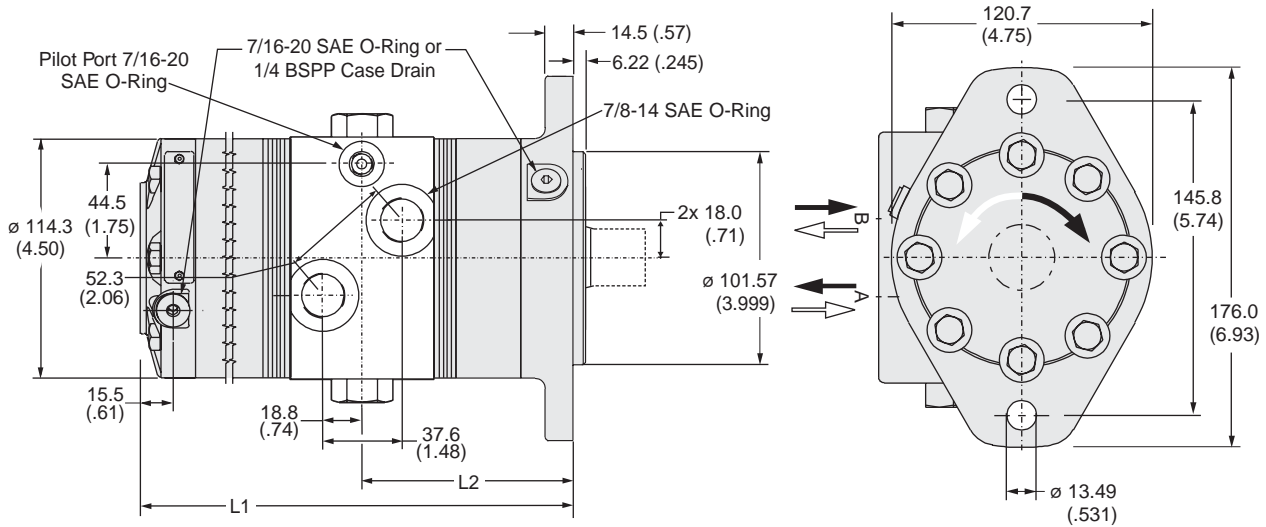
023 716.indd, a



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

Code: BS

SAE B, 7/8"-14 SAE



| Code BS        |           | 072    | 108    | 142    | 176    | 212    | 258    |
|----------------|-----------|--------|--------|--------|--------|--------|--------|
| Weight/Gewicht | kg        | 14.8   | 15.2   | 15.4   | 15.6   | 15.7   | 15.9   |
| Poids/Peso     | (lb)      | (32.7) | (33.6) | (33.9) | (34.3) | (34.7) | (35.2) |
| Length         | "L1" mm   | 182.6  | 192.3  | 201.7  | 211.3  | 221.2  | 234.0  |
|                | "L1" (in) | (7.18) | (7.57) | (7.94) | (8.32) | (8.71) | (9.21) |
|                | "L2" mm   | 91.4   | 96.3   | 101.8  | 105.7  | 110.7  | 117.1  |
|                | "L2" (in) | (3.60) | (3.79) | (3.97) | (4.16) | (4.36) | (4.61) |

English equivalents for metric specifications are shown in ( ).

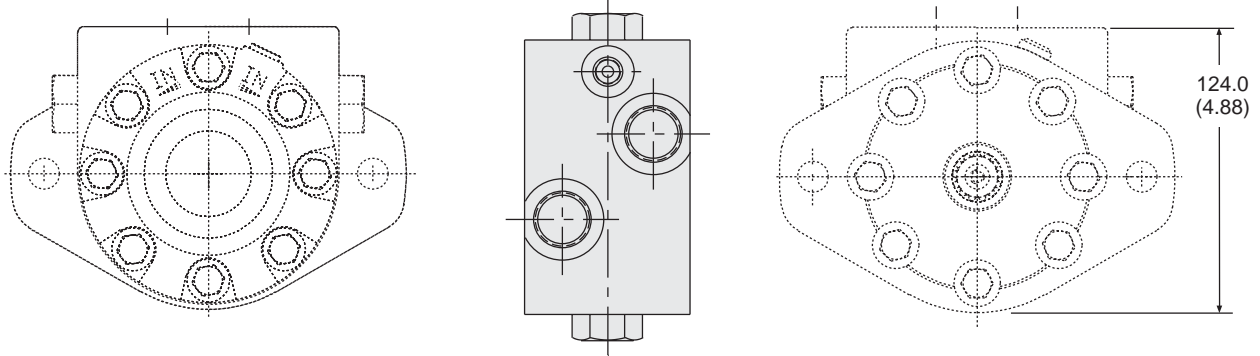
023 716.indd, a



**WARNING**  
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

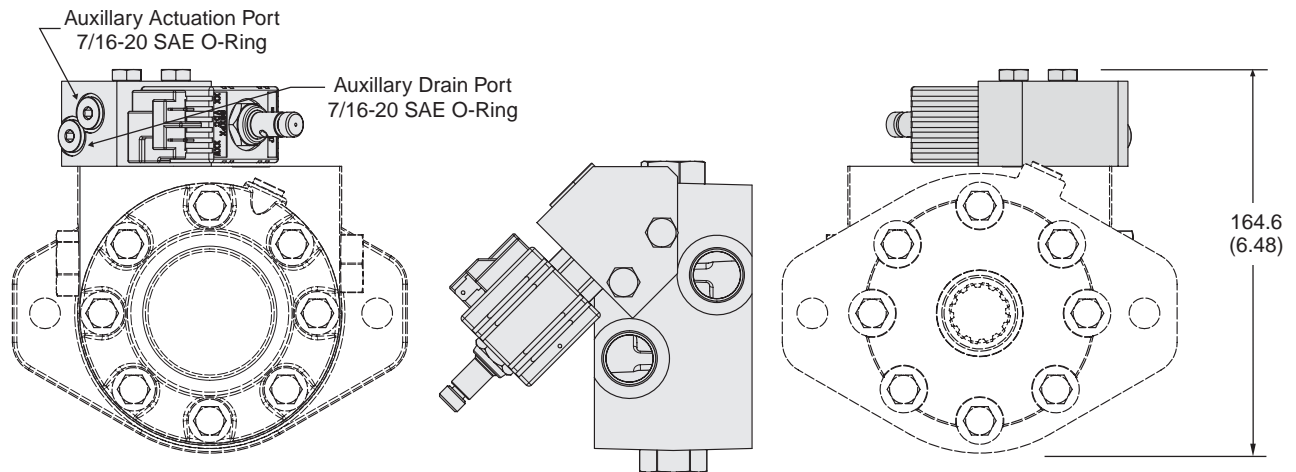
**Code: P**

**Remotely Piloted**

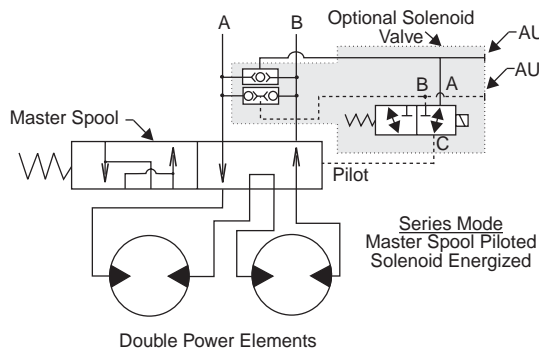


**Code: E, W**

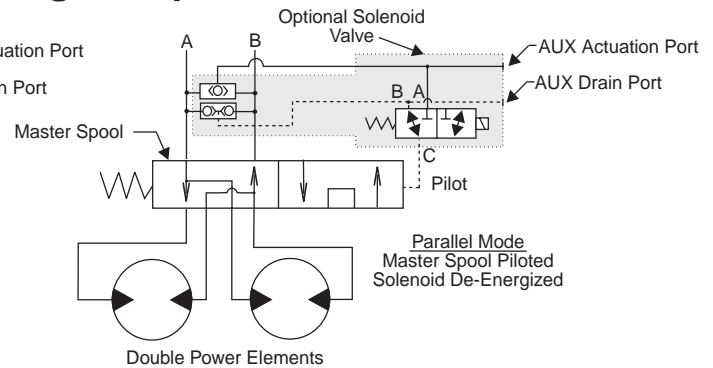
**Solenoid Actuated**



**High Speed Series Mode**



**High Torque Parallel Mode**



Add .5 kg (1.1 lb) for this option.

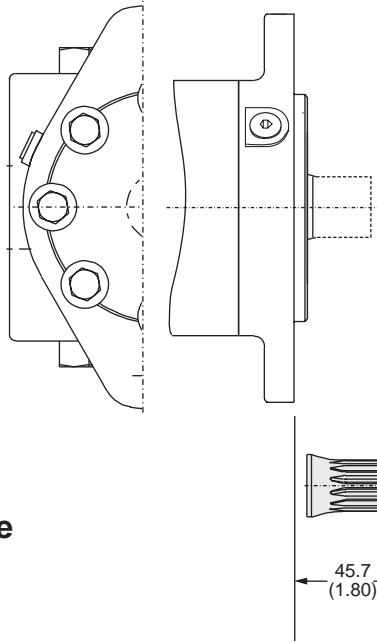
English equivalents for metric specifications are shown in ( ).

023 716.indd, a



**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

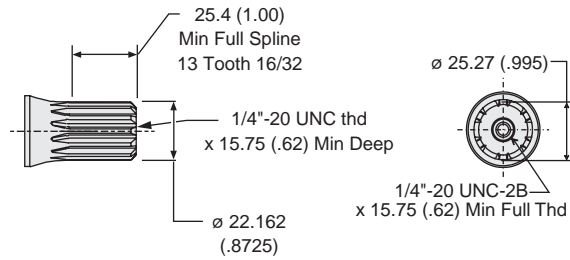


Code: 6

7/8"-13 Tooth Spline

Code: 6

7/8"-13 Tooth Spline



English equivalents for metric specifications are shown in ( ).

023 716.indd, a

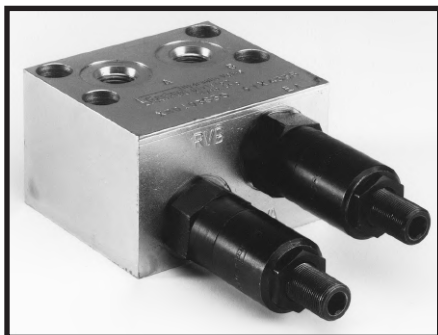
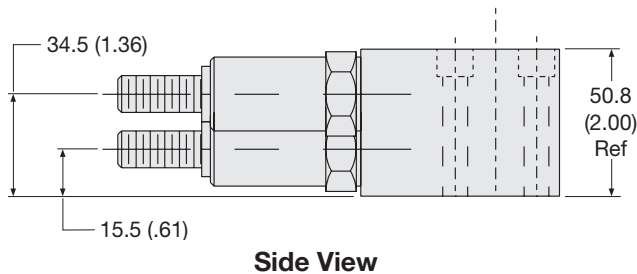
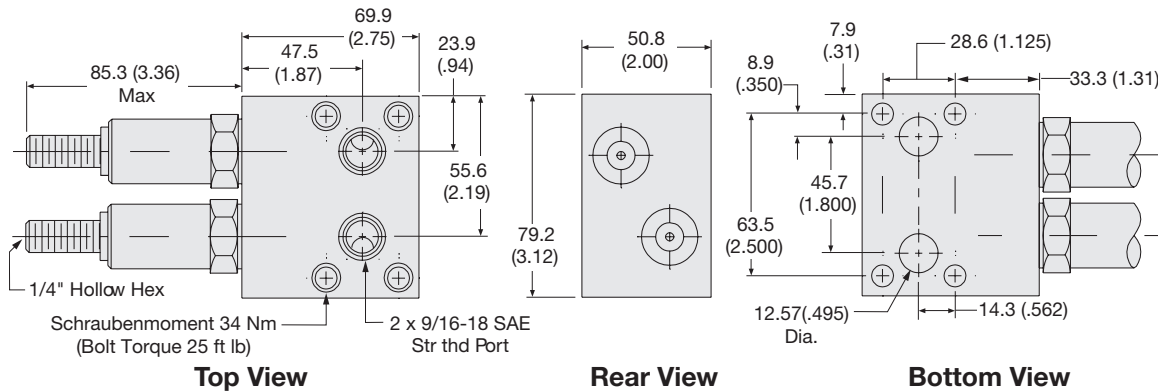


**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

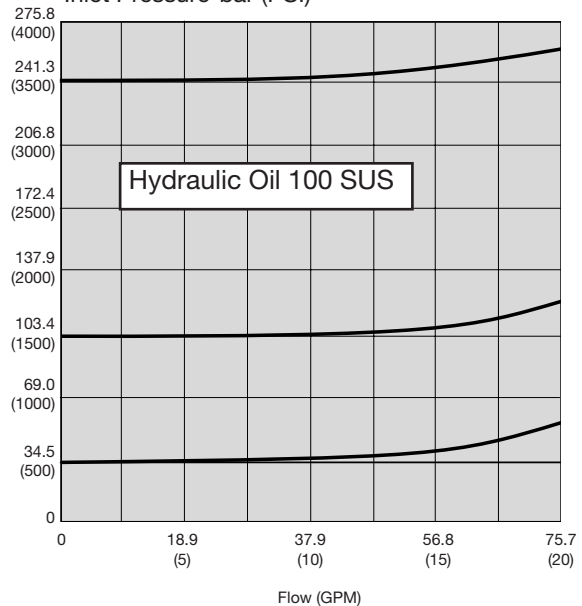
**Specifications**

- **Rated flow** — 20 gpm
- **Max. Operating Pressure** — adjustable up to 3500 psi, factory preset at 1750 psi.
- **Reseat Pressure** — 90% of set pressure
- **Operating Temperature Range:** -40°F to 250°F
- **Cartridge Material** — All parts steel. All operating parts hardened steel.
- **Body Material** — Steel



**Performance Curve**

Flow vs. Pressure  
Inlet Pressure-bar (PSI)



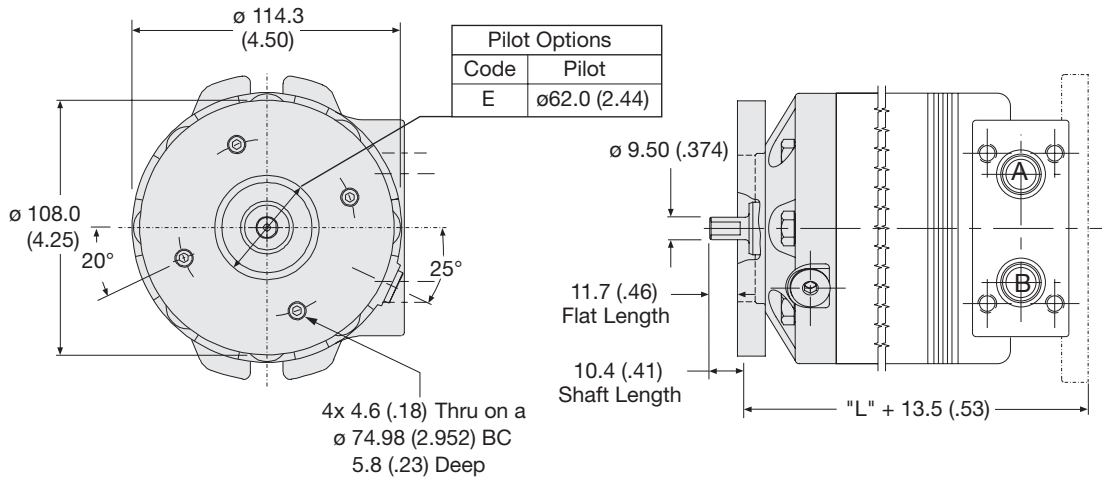
Consult factory for other available options, configurations ordering codes and lead times.

English equivalents for metric specifications are shown in ( ).

024 Nichols Options.indd, a



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



**Note:**

To mount encoder, remove (4) socket head cap screws attaching rear encoder mounting plate to motor. Attach encoder and encoder mounting plate to motor using (4) longer socket head cap screws, furnished. Torque to 10 lb in.

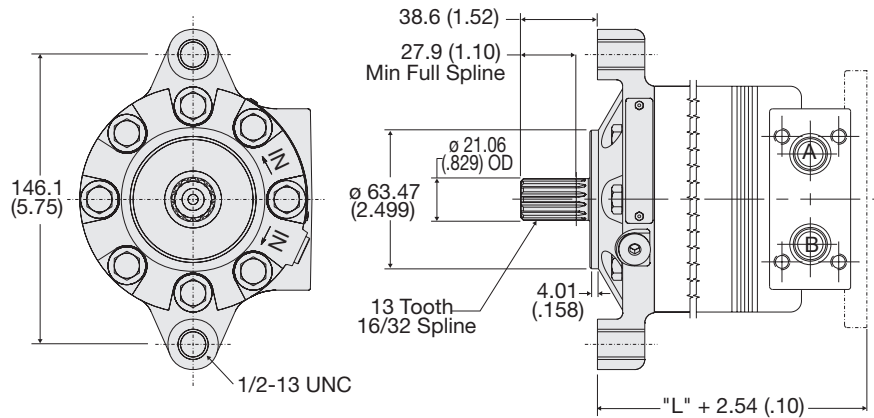
**Consult factory for other available options, configurations ordering codes and lead times.**

English equivalents for metric specifications are shown in ( ).

024 Nichols Options.indd, a



**WARNING**  
 This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



**Note:**

Torque Rating: Maximum torque should not exceed 339 Nm (3000 lb in) in dynamic on the thru-shaft. Consult factory if the radial load on the thru-shaft exceed 1780 N (400 lb).

**Hinweis:**

Drehmoment-Grenzwert: Das statische Drehmoment auf die durchgehende Welle darf höchstens 339 Nm (3000 lb in) betragen. Wenn die radiale Querbelastung auf die durchgehende Welle größer als 1780 N (400 lb) ist, vom Herstellerwerk beraten lassen.

**⚠ WARNING**

If torque on the thru-shaft exceeds 339 Nm (3000 lb in) when attempting to dynamically brake a load, the thru-shaft splines and/or shaft could fail and all braking action could be lost.

Standard Length & Weights for 110A Series on Pages 302-304.

**Consult factory for other available options, configurations ordering codes and lead times.**

English equivalents for metric specifications are shown in ( ).

024 Nichols Options.indd, a



**⚠ WARNING**

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Stainless Steel Shaft

Encoder Mount Standard, 2.44 Pilot

External Relief Valve - adjustable up to 3500 psi, factory preset at 1750 psi.

Thru Shaft with Brake Mount

Consult Factory for Other Positions

\* To order crossover relief valve mounted on a specific motor see the ordering information for that motor.

To order crossover relief valve as a field conversion or a spare part consult factory for part number.

Mounting bolts are available as 5/16-18 socket head cap screw (4 required) as well as 2 o-rings.

Consult factory for part number.

**Consult factory for other available options, configurations ordering codes and lead times.**

## Fluid

To insure maximum motor performance and life, use a premium grade hydraulic or engine oil. Fluids with a minimum .125% zinc (or equivalent) anti-wear package should be used. A mineral or synthetic based 10W40 engine oil or hydraulic oil (200 SUS) is recommended. Nichols motor seals come standard in nitrile rubber. If a fluid that is not compatible with nitrile is to be used, fluoroelastomer seal material can be specified.

- Minimum fluid viscosity - 50 SUS
- Recommended fluid operating temperature is -28°C to 82°C (-20°F to 180°F)
- Minimum recommended fluid filtration 25 micron with a beta ratio of 2.

## Pressure

Operating the motor in its intermittent pressure range will shorten the life of the motor and should generally be restricted to 10% or less per minute. The reduced life resulting from continuous operation in the intermittent range may be acceptable in some applications. Consult the factory for details.

## Case Drain

A check ball system drains the shaft seal to the outlet port regardless of direction of rotation of the shaft. This maintains low pressure on the shaft seal, reducing heat and friction for long seal life. If high pressure exists in the outlet port due to series operation, meter-out circuitry or other causes, the shaft seal can be externally drained to tank for low seal pressure. For continuous operation with outlet pressure above 1000 psi use of the external case drain is recommended for extended seal life.

## Shaft Loading

The use of 1 inch and 25mm diameter shafts are not recommended when torque loads exceed 3500 lb-in. For 7/8 inch diameter shafts, torque should be limited to 1250 lb-in. Maximum thrust load on the shaft should not exceed 1000 lbs inward or outward.

## Stainless Steel Shafts

Torque, speed, axial, and radial load ratings are reduced by 20% when operating with the stainless steel shaft that is optional on some series of motors. Maximum speed to be limited to 600 RPM.

## Thru-Shafts

Shaft torque should not exceed 3000 lb-in.

## Performance Data

Performance data shown in this catalog is the result of testing performed using petroleum based fluid at 120°F, 180 SUS. Actual performance will vary with fluid conditions. Lower viscosity will produce lower performance.

## Run-In

For optimum performance and life, a 15 minute run-in period at no load and mid-flow conditions is recommended. Do not subject the system to full load until air has been bled from the hydraulic system and all contaminate particles have been filtered out.

## Inlet Conditions

Positive pressure *must* be available at the motor inlet while it is operating. If an overrunning load causes the motor to rotate faster than the pump can fill it, cavitation will occur. Consult the factory for inlet pressure requirements and speed limitations.

## Other Operating Conditions

Consult factory before operating at conditions exceeding any ratings or recommendations in this catalog.

## Installation Recommendations

- To avoid contamination do not remove plastic port plugs until fittings are to be installed.
- Motor mounting flange must make full contact with equipment mount; do not use the mounting bolts to force the motor pilot into the pilot hole to align the motor.
- Pulleys, sprockets, wheels, or couplings should be properly aligned on the shaft to avoid excessive radial or thrust loads.
- To avoid damaging the thrust system, do not hammer on the motor or shaft to install or remove couplings, pulleys, sprockets, etc.

**Engineering Data**

**Hydraulic Formulas**

$$HP_{in} = \frac{Q \Delta P}{1714}$$

$$HP_{out} = \frac{NT}{63025}$$

$$T = \frac{D \Delta P e_m}{2 \pi}$$

$$Q = \frac{DN}{231 e_v}$$

Where

- HP = Horsepower
- Q = Flow, GPM
- P = Pressure, PSI
- P = Pressure differential across the motor
- $\Delta \pi = 3.1416$
- T = Torque, lb in
- D = Motor displacement, cubic inches per revolution
- N = Shaft Speed, RPM
- $e_m$  = Mechanical efficiency
- $e_v$  = Volumetric efficiency

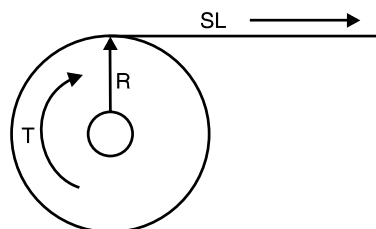
| To Convert    | Into          | Multiply By                 |
|---------------|---------------|-----------------------------|
| Into          | To Convert    | Divide By                   |
| bars          | pounds/sq.in. | 14.5                        |
| BTU/min       | horsepower    | .02356                      |
| BTU/min       | kilowatts     | .01757                      |
| centigrade    | fahrenheit    | $(C^\circ \times 9/5) + 32$ |
| centimeters   | inches        | .3937                       |
| cu. cms.      | cu. inches    | .06102                      |
| cu. cms.      | liters        | .001                        |
| cu. inches    | cu.cms.       | 16.39                       |
| cu. inches    | liters        | .01639                      |
| feet          | meters        | .3048                       |
| gallons       | cu. inches    | 231                         |
| gallons       | liters        | 3.785                       |
| horsepower    | kilowatts     | .7457                       |
| inches        | millimeters   | 25.4                        |
| kilograms     | pounds        | 2.205                       |
| pounds        | newtons       | 4.448                       |
| pound-inches  | newton-meters | .113                        |
| pound-inches  | daNM          | .0113                       |
| radians       | degrees       | 57.3                        |
| square inches | sq. cms.      | 6.452                       |

**Side Load**

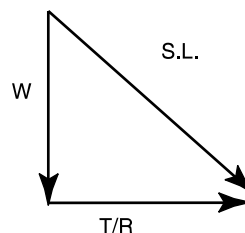
Side loads are imposed upon the shaft of a motor by:

- Driving the load through a pulley or gear
- Supporting the weight of a vehicle or other load on the shaft

Or both



If the load above requires torque T pound-inches and is driven with a pulley on the motor shaft a with a radius of R inches, the side load imposed on the motor shaft is T/R pounds. If the motor shaft is connected to a sprocket for a chain drive, R is one half the pitch diameter of the sprocket. If an external load with a weight of W pounds is also being supported by the motor shaft above, the total side load on the shaft is:



$$(SL)^2 = W^2 + (T/R)^2$$

$$\text{Side Load(lb)} = \sqrt{W^2 + (T/R)^2}$$

**Warning**

This Catalog is not a Controlled Document. All Dimensions listed herein are for reference only. Consult a Sales engineer for detailed information.

**Vehicle Propulsion Systems**

Hydraulic motors are often used to drive off-highway vehicles, either directly or through gear reducers. The power required to propel the vehicle, called "Tractive Effort," is supplied by the hydraulic motor(s). It is normally expressed in pounds and is the sum of the forces below:

$$TE = (RR+GR+F+DP) \times 1.1$$

Where:

- RR = Rolling Resistance**
- GR = Grade Resistance**
- F = Acceleration Force**
- DP = Drawbar Pull**

**Definitions**

• **Tractive Effort (TE)**

Tractive effort is the total linear force that a vehicle can exert on the ground. Sometimes called "rim pull," it is the axle torque divided by the distance from the axle to the surface it is traversing.

• **Rolling Resistance (RR)**

Rolling resistance is the force in pounds required to propel a vehicle at constant speed over level terrain. It varies with the weight of the vehicle and the type of surface it is traversing. Soft sand, for example, offers more resistance to movement than concrete.

RR = GVW x R      where:

- RR = Rolling Resistance (lbs.)
- GVW = Gross Vehicle Weight (lbs.)
- R = Rolling Resistance Factor dependent upon type and condition of surface. Typical "R" values are shown in the accompanying table.

| Surface Type | Surface Condition | R Value            |
|--------------|-------------------|--------------------|
| Concrete     | Excellent         | 0.010 lb.          |
| Concrete     | Good              | 0.015 lb.          |
| Concrete     | Poor              | 0.020 lb.          |
| Asphalt      | Good              | 0.012 lb.          |
| Asphalt      | Fair              | 0.017 lb.          |
| Asphalt      | Poor              | 0.022 lb.          |
| Macadam      | Good              | 0.015 lb.          |
| Macadam      | Fair              | 0.022 lb.          |
| Macadam      | Poor              | 0.037 lb.          |
| Cobbles      | Ordinary          | 0.055 lb.          |
| Cobbles      | Poor              | 0.085 lb.          |
| Grass        |                   | 0.025 lb.          |
| Snow         | 2 In.             | 0.025 lb.          |
| Snow         | 4 In.             | 0.037 lb.          |
| Dirt         | Smooth            | 0.025 lb.          |
| Dirt         | Sandy             | 0.037 lb.          |
| Mud          |                   | 0.037 to 0.150 lb. |
| Sand         | Level/Soft        | 0.060 to 0.150 lb. |
| Sand         | Dune              | 0.150 to 0.300 lb. |



**Engineering Data**

• **Grade Resistance (GR)**

Grade resistance is the additional force required to move a vehicle up an incline. The grade of a slope is normally expressed as a percentage, and represents the number of feet of rise in 100 feet of length. A slope that rises 10 feet in 100 feet has a grade of 10%. The gradeability of a vehicle is defined as the maximum grade the vehicle can climb.

$GR = 0.01 \times GVW \times G$  where:

- GR = Grade Resistance (lbs.)
- GVW = Gross Vehicle Weight (lbs.)
- G = Grade (%)

The following table gives the approximate relationship between grade in percent and slope in degrees.

| Grade (Percent) | Slope (Degrees) |
|-----------------|-----------------|
| 1%              | 0° 35'          |
| 2%              | 1° 9'           |
| 5%              | 2° 51'          |
| 6%              | 3° 26'          |
| 8%              | 4° 35'          |
| 10%             | 5° 43'          |
| 12%             | 6° 54'          |
| 15%             | 8° 31'          |
| 20%             | 11° 19'         |
| 25%             | 14° 3'          |
| 32%             | 18°             |
| 60%             | 31°             |

• **Acceleration Force (F)**

The force required to accelerate a vehicle from an initial speed  $V_1$  (in feet/second) to speed  $V_2$  in T seconds is the accelerating force in pounds. If the acceleration is from rest,  $V_1$  is zero.

$F = \frac{V \times GVW}{T \times 32.16}$  where

V = Change in Velocity (ft. per Second)  
(Final Velocity - Initial Velocity)

GVW = Gross Vehicle Weight (lbs.)

T = Time for Velocity Change (Seconds)

Note - To obtain velocity in feet per second when MPH is known, Multiply MPH by 1.467.

• **Drawbar Pull (DP)**

Drawbar Pull is the force a vehicle can exert on a load in addition to the force required to propel itself.

Actual force to tow or push a load can be calculated based upon Rolling Resistance, Accelerating Force and Grade Resistance of towed or pushed load.

• **Motor Torque**

The total Tractive effort required to propel a vehicle is the sum of the forces due to Rolling Resistance, Grade Resistance, Acceleration and Drawbar Pull plus 10% for friction and other variables:

$TE = (RR + GR + F + DP) \times 1.1$

When Tractive Effort has been calculated, hydraulic motor torque can be estimated by:

$T = \frac{TE \times r}{G \times N}$  where:

- T = Hydraulic Motor Torque (lbs. in.)
- TE = Tractive Effort
- r = Rolling Radius of Driven Tires (inches)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheels (if none, use a value of 1)
- N = Number of Driving Motors



• Slip Torque

Slip torque is the torque at the motor shaft that will cause the wheels or tracks to break traction and skid. It is affected by the weight of the vehicle and the coefficient of friction between the wheels or tracks and the surface.

$$ST = \frac{VW \times u \times r}{G \times N} \text{ where:}$$

- ST = Hydraulic Motor Slip Torque (lb in)
- VW = Maximum Weight on Driven Wheel (lb) Including: Allowable Vehicle Overload Dynamic Weight Shift.
- u = Coefficient of Friction Between Tire and Ground. (A value of 0.6 is used for "normal" tires and an average road surface)
- r = Rolling Radius of Driven Tires (inches)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheel.
- N = Number of Driving Motors

• Rolling Radius

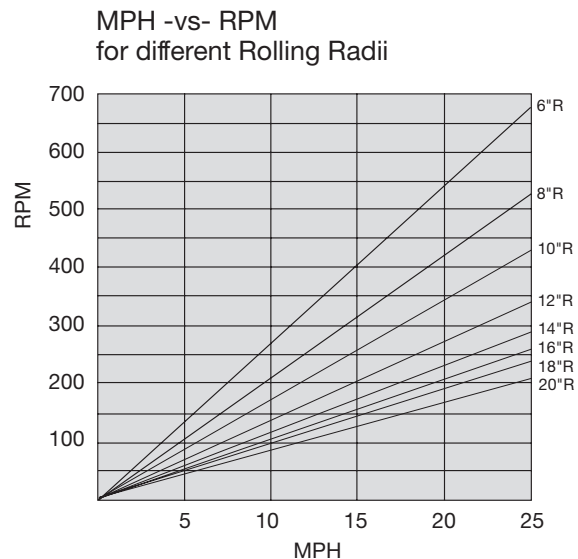
The rolling radius should be based on actual application factors such as Plyrating, Rated Load and inflation pressure can result in different values.

• Hydraulic Motor Speed

$$S = \frac{168 \times V \times G}{r} \text{ where:}$$

- S = Required Hydraulic Motor Speed (RPM)
- V = Desired Vehicle Velocity (MPH)
- G = Gear Reduction Ratio Between Hydraulic Motors and Driven Wheels (if none, use a value of 1)
- r = Rolling Radius of driven Tires (inches)

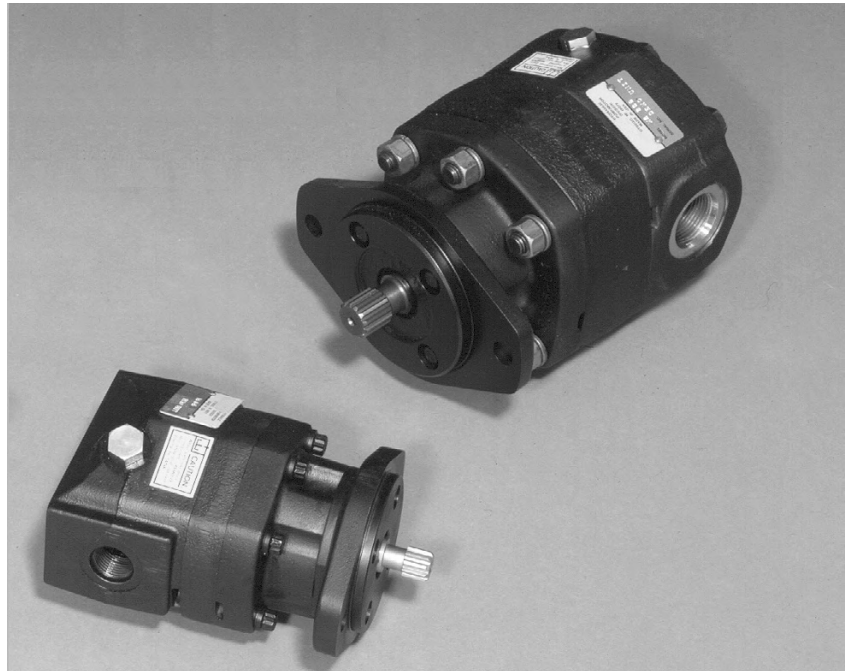
The chart below will estimate the wheel RPM -vs- vehicle velocity for various rolling radii.





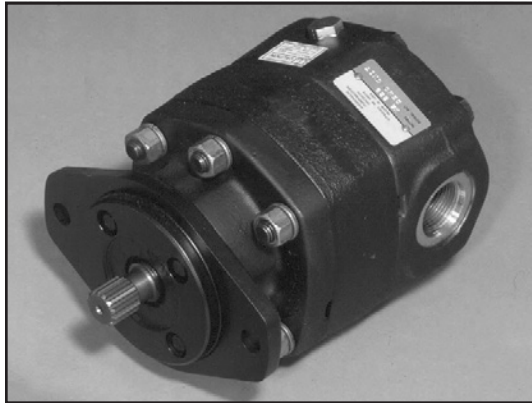
# High Speed Hydraulic Motors

Catalog HY13-2600-800-001/NA



 **WARNING**

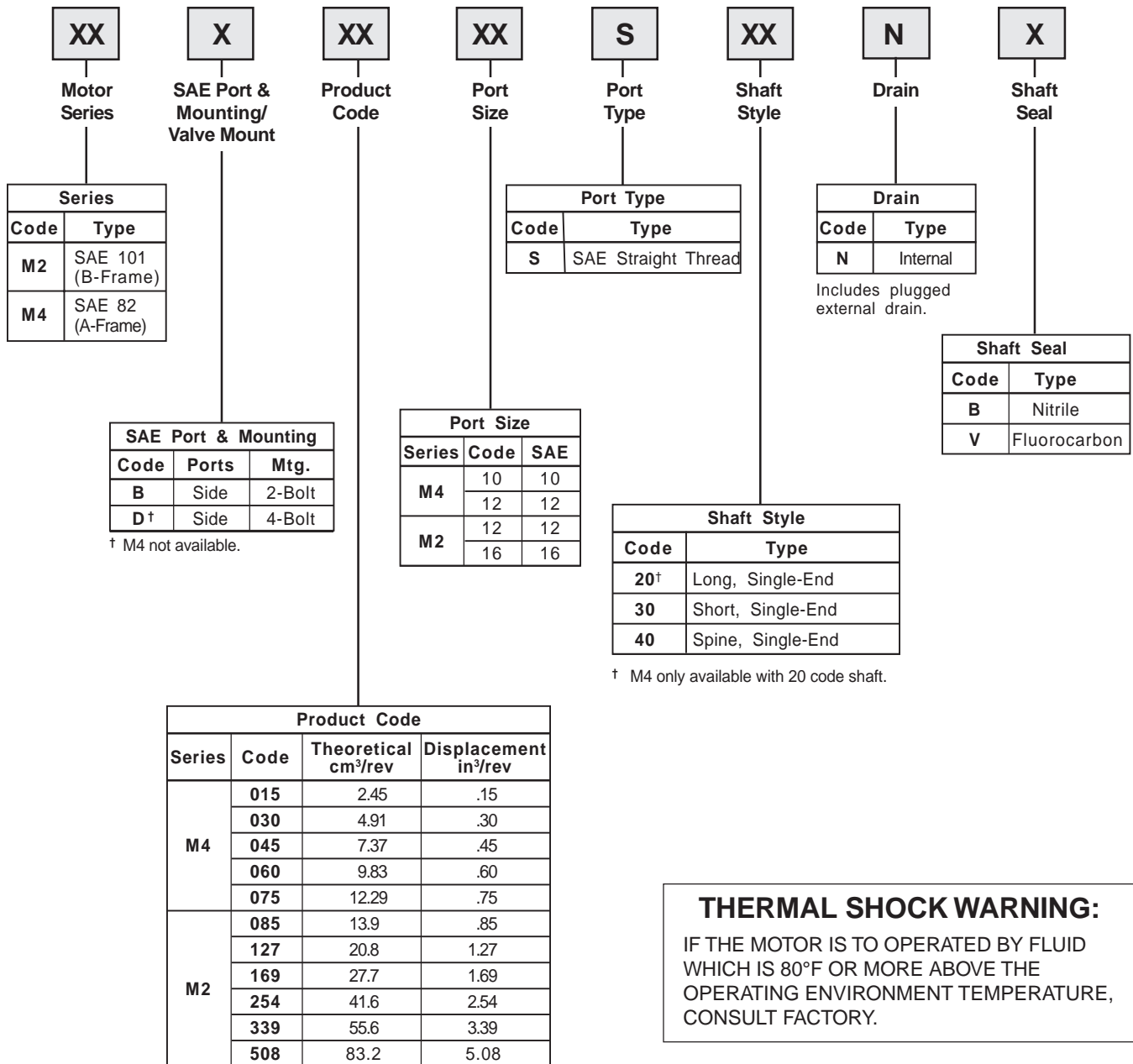
This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



## Features

- **High Starting Torque** typically 90% of running torque.
- **Smooth Output Torque** throughout the entire speed range of the motor.
- **High Speed Capabilities** up to 7500 rpm on some models.
- **Bi-Directional Operation** built in checks internally relieve high pressure from the shaft seal.
- **High Pressure Shaft Seal** allows back pressure to 400 PSI without the requirement of Case Drain.
- **Standard SAE Mounting** 2 or 4 bolt mounting flanges, shaft and port dimensions conform to SAE standards.
- **Long Life & Quiet Operation** Precision Gerotor Design results in a motor with extended operating life and noise levels below most other hydraulic motors.
- **Heavy Duty Bearings** capable of withstanding radial and thrust loads.





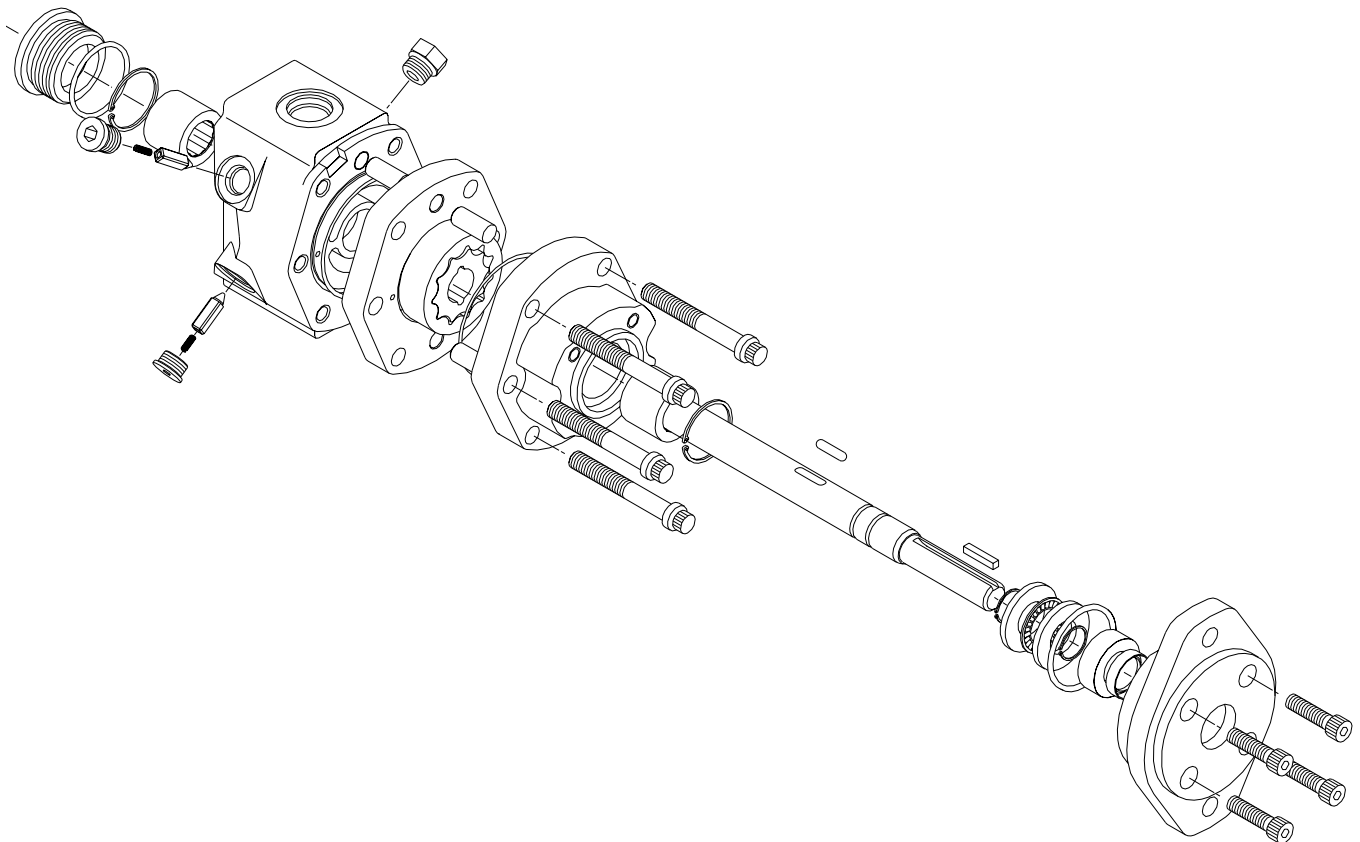
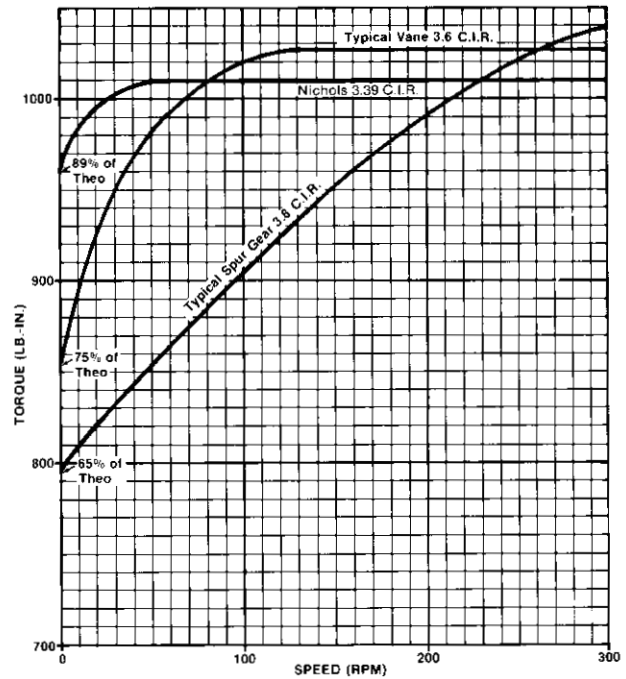
**THERMAL SHOCK WARNING:**  
IF THE MOTOR IS TO OPERATED BY FLUID WHICH IS 80°F OR MORE ABOVE THE OPERATING ENVIRONMENT TEMPERATURE, CONSULT FACTORY.

## Applications

Parker motors serve our customers worldwide in many industries and in many applications. Typical applications include:

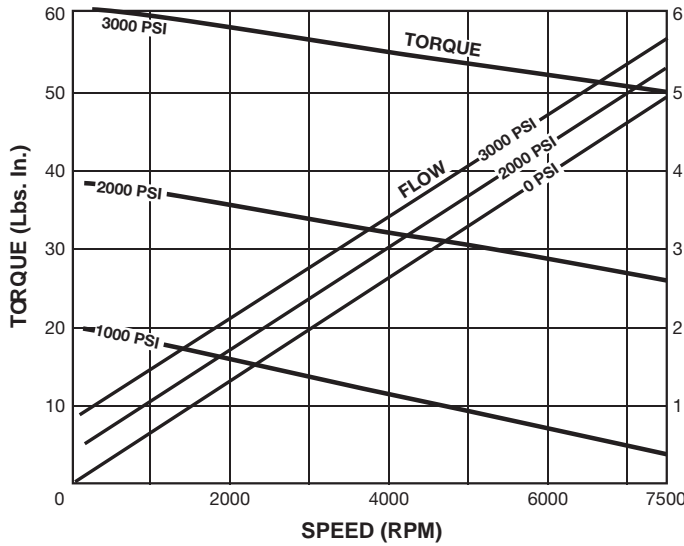
- Fan Drives** High speed capabilities means increased cooling capacity. Rugged bearing design allows the fan to be mounted directly on the motor shaft.
- Swing Drives** High starting torque and smooth output torque throughout the motor's speed range means optimum control.
- Vibratory Drives** Rugged design, high speed capabilities, and optional cross port relief valve means maximum life for vibratory drives.
- Wheel Drives** High speed capabilities and high starting torque means faster road speeds and increased productivity.
- Winch Drives** Smooth output torque throughout the speed range, high speed capabilities, and high starting torque means increased control, greater productivity.

### Starting and running torque comparison between Parker Gerotor and typical Spur Gear and Vane Motors.

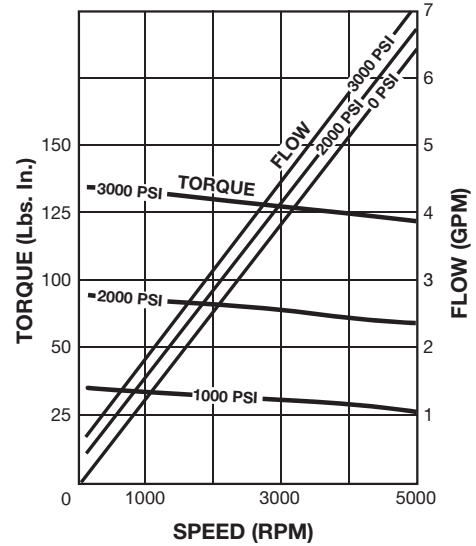


Performance Data & Mounting Data

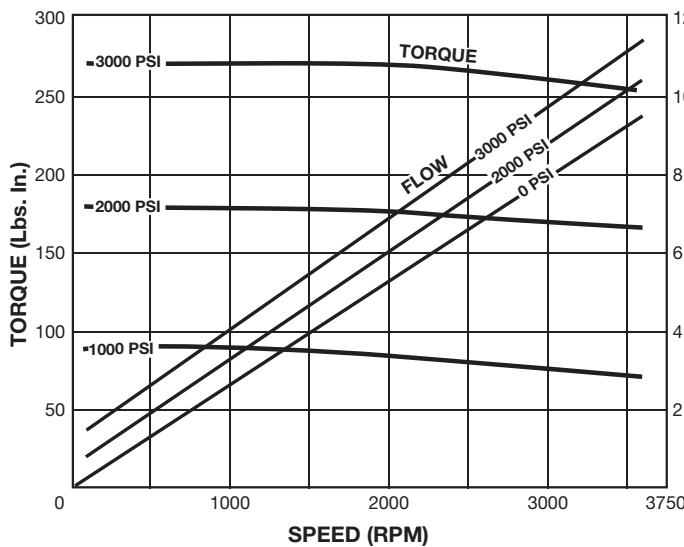
M4-015



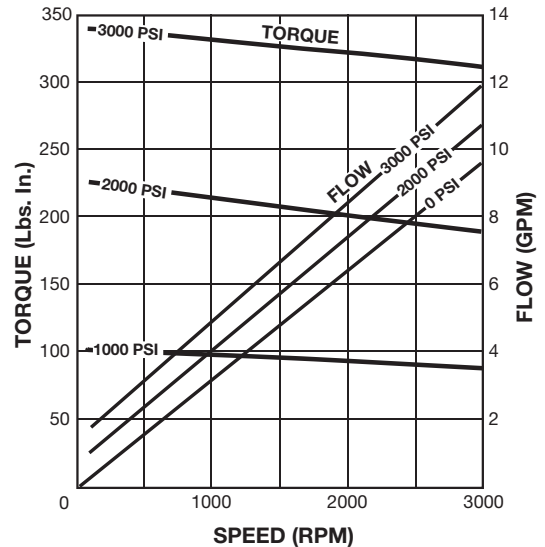
M4-030



M4-060



M4-075



Displacement

|          | cm <sup>3</sup> /rev | (in <sup>3</sup> /rev) |
|----------|----------------------|------------------------|
| 015 Unit | 2.45                 | (.15)                  |
| 030 Unit | 4.91                 | (.30)                  |
| 045 Unit | 7.37                 | (.45)                  |
| 060 Unit | 9.83                 | (.60)                  |
| 075 Unit | 12.29                | (.75)                  |

Speed

|          | Recommended Range |
|----------|-------------------|
| 015 Unit | 75 to 7500 rpm    |
| 030 Unit | 50 to 5000 rpm    |
| 045 Unit | 50 to 5000 rpm    |
| 060 Unit | 36 to 3600 rpm    |
| 075 Unit | 30 to 3000 rpm    |

Performance Curves:

Data based on:  
Oil: 65 cst (300 SSU)  
Mobil DTE-26  
Temp: 38°C (100°F)

Weight

|          | Kg  | (lb) |
|----------|-----|------|
| 015 Unit | 7.3 | (16) |
| 030 Unit | 7.7 | (17) |
| 045 Unit | 8.2 | (18) |
| 060 Unit | 8.6 | (19) |
| 075 Unit | 9.1 | (20) |

Minimum speeds indicated are based on constant load. For speeds outside of the recommended range, consult the factory.

Pressure

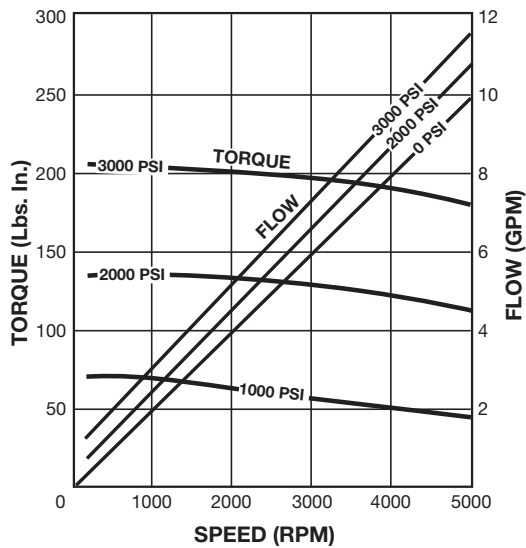
Continuous: 2000 PSI  
† Intermittent, Max: 2400 PSI  
‡ Transient, Max: 3000 PSI

† Intermittent conditions are to be less than 10% of each minute.  
‡ Transient conditions are to be less than 1% of every minute.



Performance Data & Mounting Data

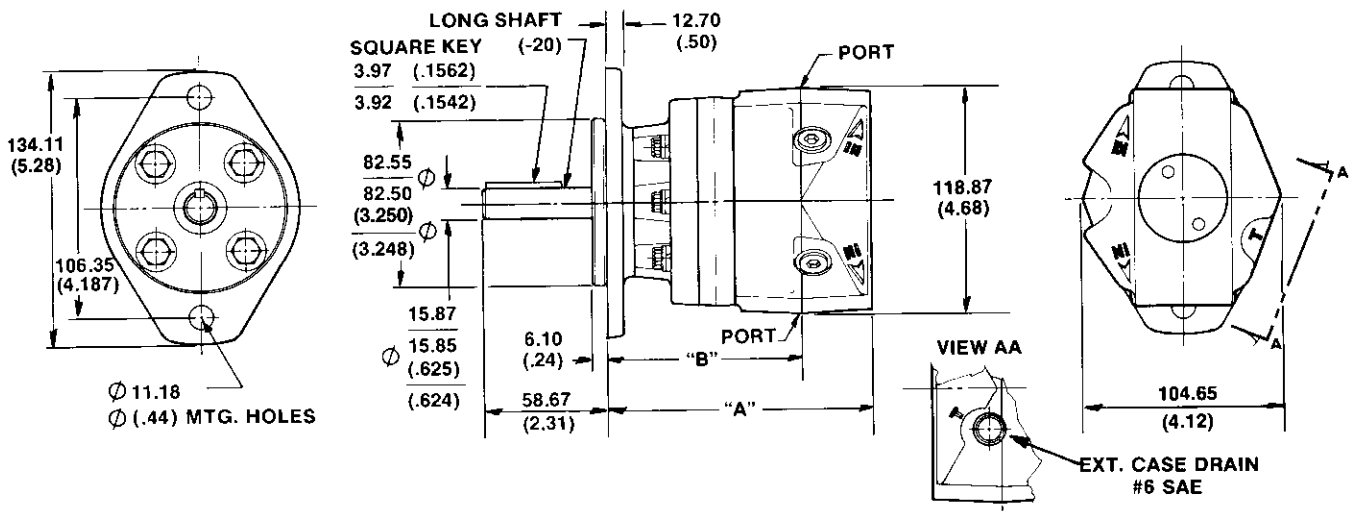
M4-045



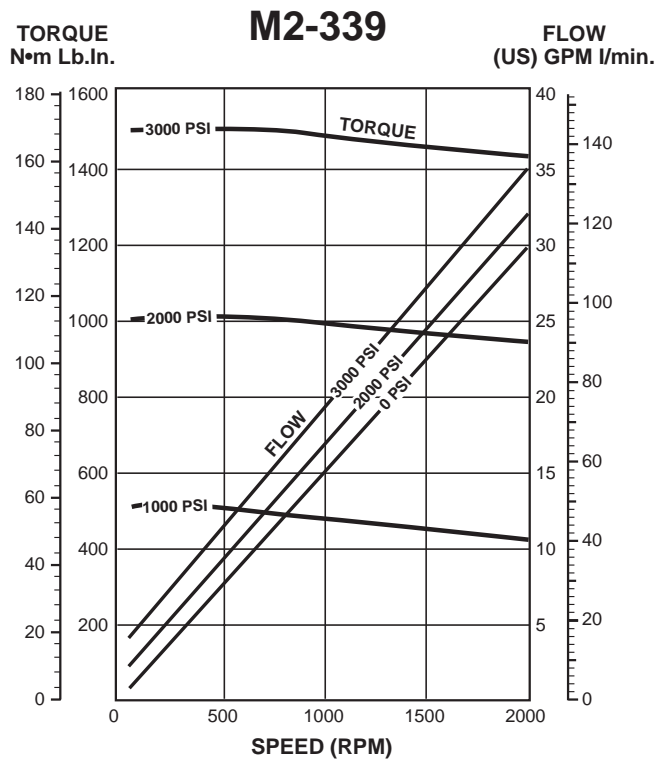
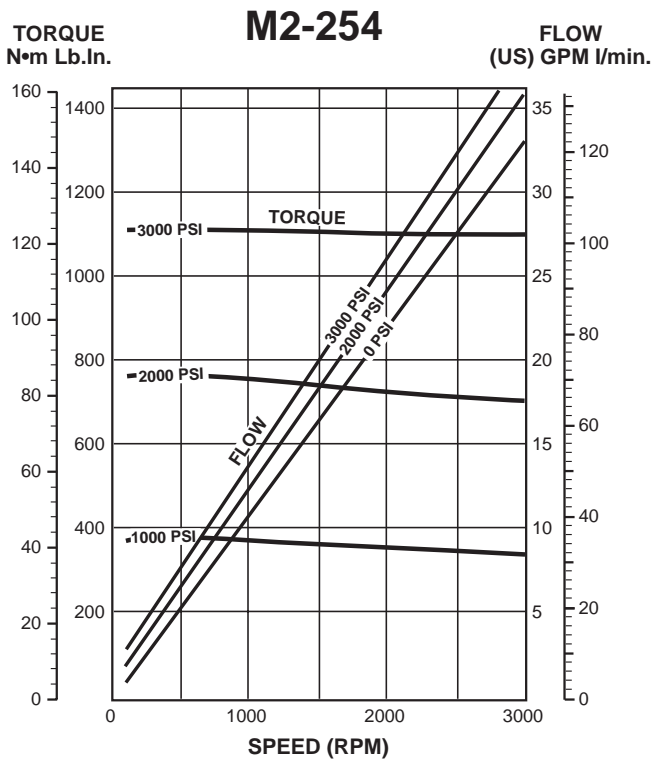
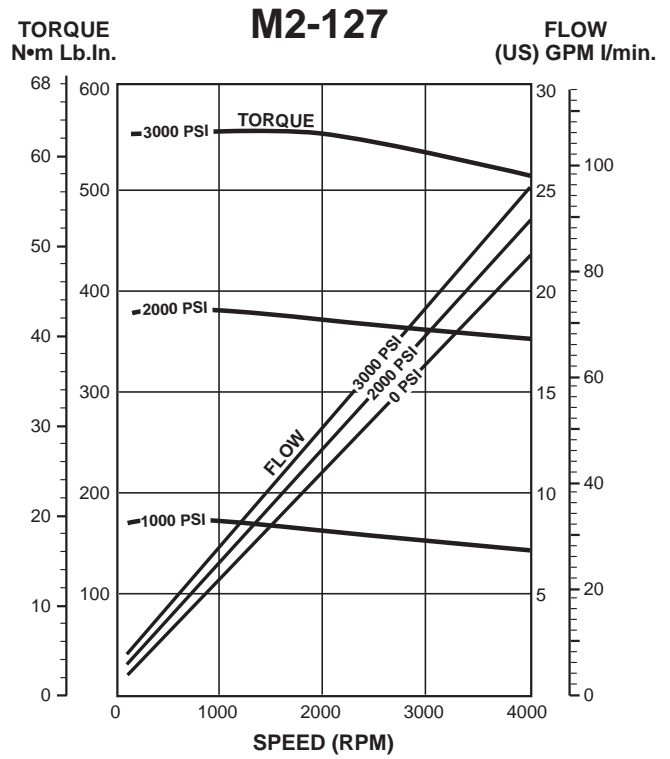
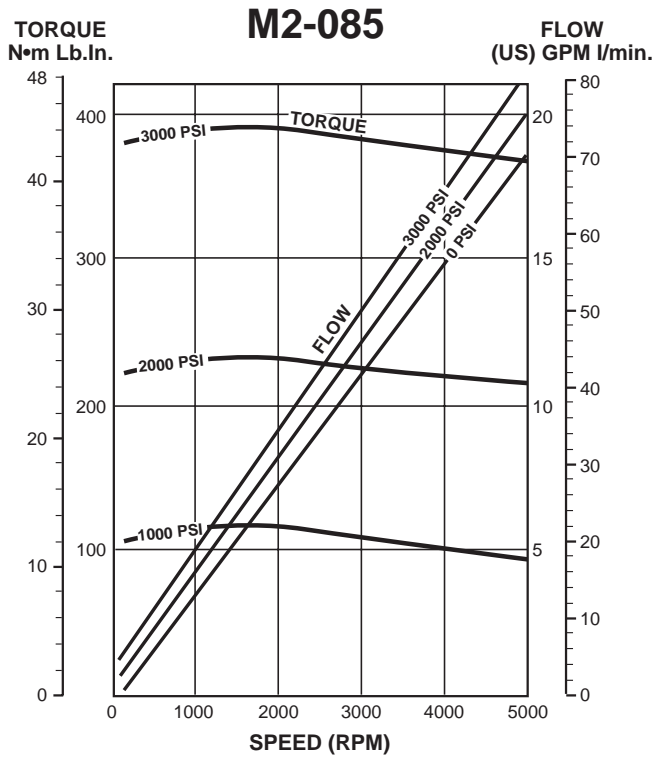
Dimensions are shown in millimeters.  
Dimensions within ( ) are in inches.

| Code | A             | B             |
|------|---------------|---------------|
| 015  | 143.26 (5.64) | 107.44 (4.23) |
| 030  | 149.61 (5.89) | 113.79 (4.48) |
| 045  | 156.21 (6.15) | 120.14 (4.73) |
| 060  | 162.31 (6.39) | 126.49 (4.98) |
| 075  | 168.66 (6.64) | 132.84 (5.23) |

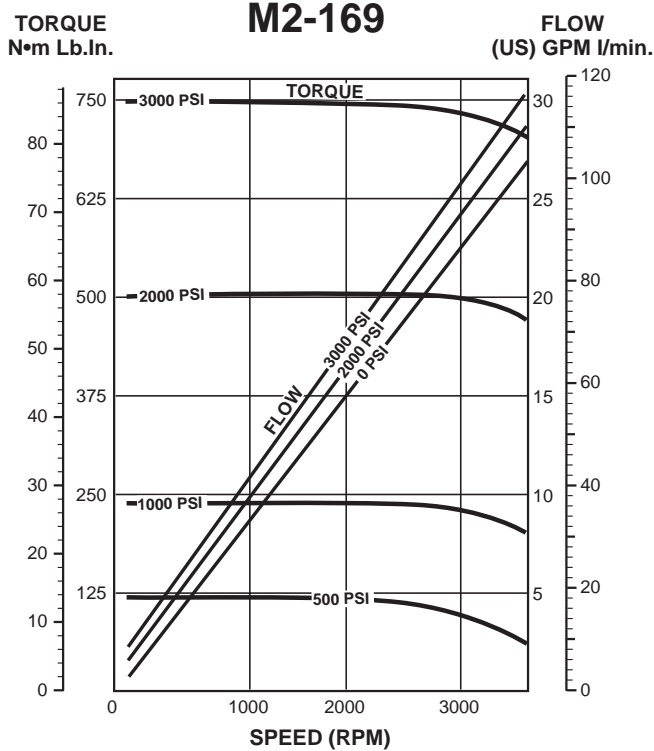
MOUNTING DATA



Performance Data



Performance Data



Displacement

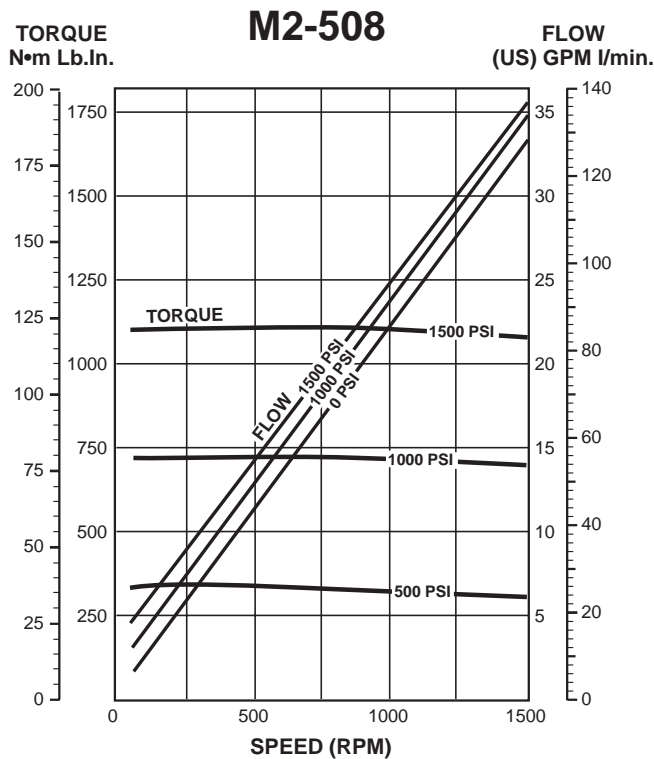
|          | cm <sup>3</sup> /rev | (in <sup>3</sup> /rev) |
|----------|----------------------|------------------------|
| 085 Unit | 13.9                 | (0.85)                 |
| 127 Unit | 20.8                 | (1.27)                 |
| 169 Unit | 27.7                 | (1.69)                 |
| 254 Unit | 41.6                 | (2.54)                 |
| 339 Unit | 55.6                 | (3.39)                 |
| 508 Unit | 83.2                 | (5.08)                 |

Pressure

- Continuous:
  - M2-508 1000 PSI
  - All other Units 2000 PSI
- † Intermittent, Max:
  - M2-508 1400 PSI
  - All other Units 2400 PSI
- ‡ Transient, Max:
  - M2-508 1700 PSI
  - All other Units 3000 PSI

† Intermittent conditions are to be less than 10% of each minute.

‡ Transient conditions are to be less than 1% of every minute.



Speed

Recommended Range

|          |                |
|----------|----------------|
| 085 Unit | 50 to 5000 rpm |
| 127 Unit | 40 to 4000 rpm |
| 169 Unit | 36 to 3600 rpm |
| 254 Unit | 30 to 3000 rpm |
| 339 Unit | 20 to 2000 rpm |
| 508 Unit | 15 to 1500 rpm |

Minimum speeds indicated are based on constant load. For speeds outside of the recommended range, consult the factory.

Weight

|          |         |         |
|----------|---------|---------|
| 085 Unit | 15.4 Kg | (34 lb) |
| 127 Unit | 16.3 Kg | (36 lb) |
| 169 Unit | 17.2 Kg | (38 lb) |
| 254 Unit | 18.6 Kg | (41 lb) |
| 339 Unit | 20.4 Kg | (45 lb) |
| 508 Unit | 24.0 Kg | (52 lb) |

Performance Curves:

Data based on:

- Oil: 65 cst (300 SSU) Mobil DTE-26
- Temp: 38°C (100°F)

\* Stall torque band is application dependent, consult factory.

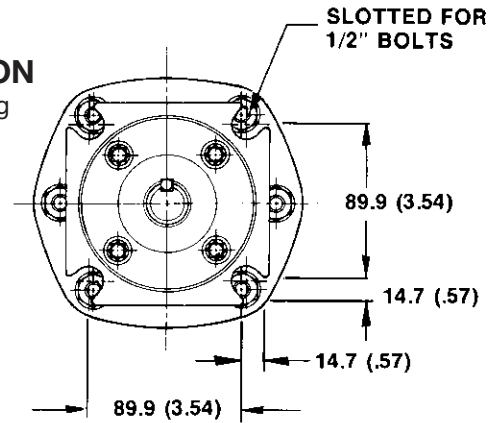


### Mounting Data

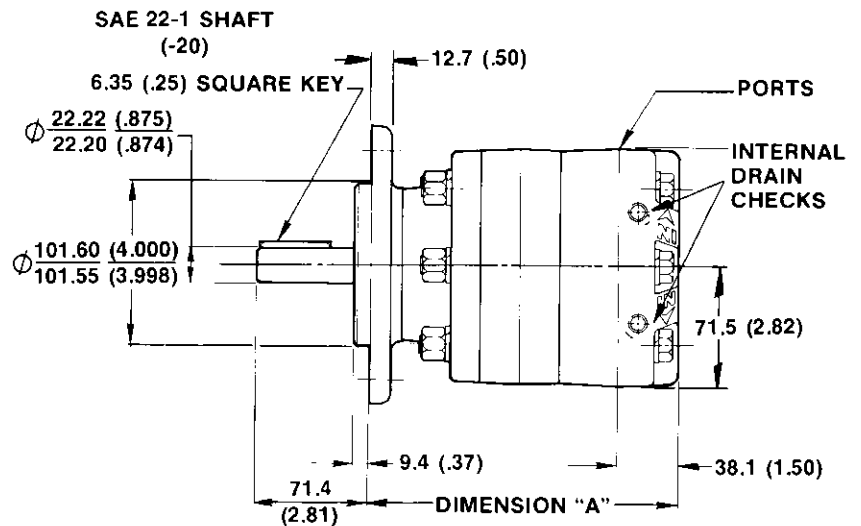
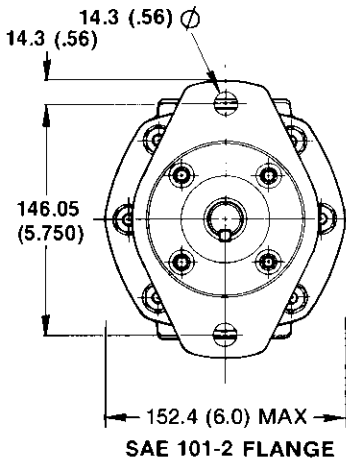
Dimensions are shown in millimeters.  
Dimensions within ( ) are in inches.

| Code | Dimension "A" |
|------|---------------|
| 085  | 158.8 (6.25)  |
| 127  | 165.1 (6.50)  |
| 169  | 171.5 (6.75)  |
| 254  | 184.2 (7.25)  |
| 339  | 196.9 (7.75)  |
| 508  | 222.3 (8.75)  |

### FLANGE OPTION SAE 101-4 Mounting

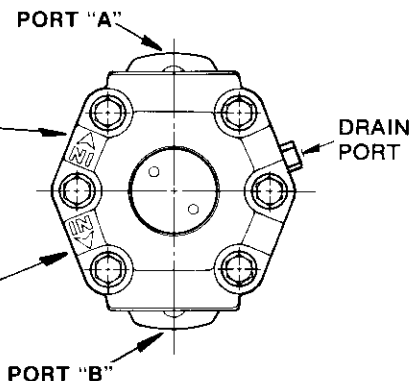


### DIMENSIONS

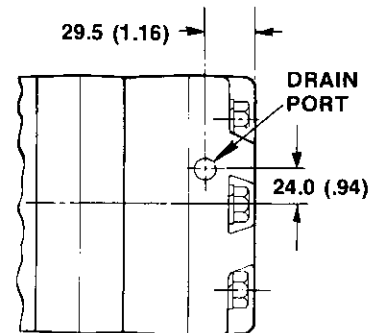


### PORT LOCATION

1. The shaft will rotate in the direction of this "ARROWHEAD" when Port "A" is the inlet "IN" or pressure port.
2. With Port "B" as the inlet "IN" or pressure port, the shaft will rotate in the direction of this "ARROWHEAD".



### DRAIN PORT

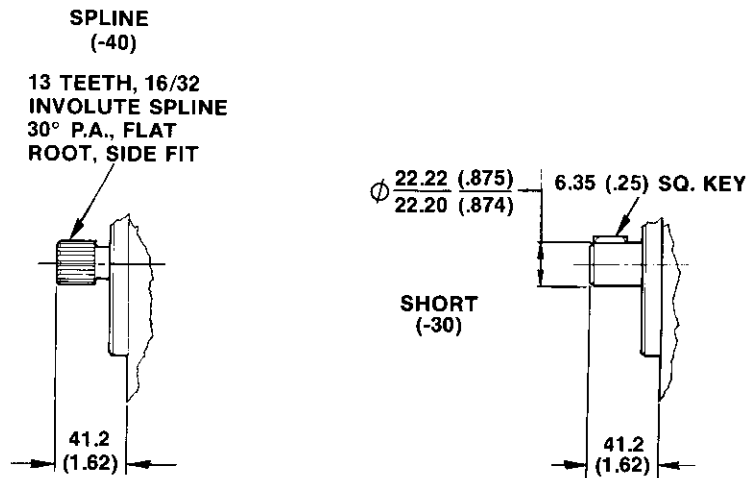


Drain Port Will Be:

1. No. 6-SAE for the SAE ported motors.

## Mounting Data

### Shaft Options





## Operating Pressures

Continuous:

M2-508 1000 PSI

All other Units 2000 PSI

Intermittent, Max:

M2-508 1400 PSI

All other Units 2400 PSI

Transient, Max:

M2-508 1700 PSI

All other Units 3000 PSI

## Filtration

25 micron or less

## Fluids

To insure ultimate component life, use premium quality hydraulic oils. Fluids with effective quantities of anti-wear agents or additives, (such as Mobil Oil DTE-26), are highly recommended.

## Viscosity

Maximum 1000 centistokes  
5000 SSU

Minimum 13.5 centistokes  
70 SSU

## Recommended Temperature Range

-40°C (-40°F) to 82°C (180°F)

## Case Drain Precaution

If outlet port exceeds 400 PSI, the external case drain should be used with no more than 400 PSI back pressure.

## Dimensions

Published dimensions are nominal. Allowances should be made for dimensional variations of cast parts.

## Installation Requirements

Pulleys, sprockets, and belts should be properly aligned on the shaft; and fan blades should be properly sized to prevent excessive thrust loads.

## Shaft Seal

The standard Nitrile shaft seal is adequate for most applications. For applications which involve shaft speeds above 2500 rpm or synthetic fluids, the operational Viton shaft seal should be specified.

## Static Seals

All the o-rings included within the motor and the shaft dust seal are Nitrile. They may be used with all types of hydraulic fluids. However, since these seals swell after exposure to ester base synthetic fluids, they should be replaced if the motor is repaired.

## Motor Precaution

A hydraulic motor is not designed to hold a suspended load. Therefore, if the application requires a locked position, a mechanical holding device (such as a brake) must be employed. Consult factory for availability.

**For different operating conditions, consult the factory.**



### About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving nearly 400,000 customers worldwide.

### Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

The Aerospace Group is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



The Climate & Industrial Controls Group designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.



The Fluid Connectors Group designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.



The Seal Group designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.



The Hydraulics Group designs, produces and markets a full spectrum of hydraulic components and systems to builders and users of industrial and mobile machinery and equipment.



The Filtration Group designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.



The Automation Group is a leading supplier of pneumatic and electromechanical components and systems to automation customers worldwide.



The Instrumentation Group is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.

