

MANUAL

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5221 (Shown)

SPECIFICATIONS

Boom Position	1	2	3	4
Capacity 5221	1/4 Ton	1/2 Ton	3/4 Tons	1 Tons
Capacity 5222	1/2 Ton	1 Ton	1-1/2 Tons	2 Tons
Max. Boom Height 5221	92.5"	87.2"	81.9"	76.6"
Max. Boom Height 5222	96.5"	90.5"	84.5"	78.5"
Min. Boom Height 5221	0"	0"	4.7"	11"
Min. Boom Height 5222	0"	0"	5.5"	11.75"
Boom Ext. From End to Ram 5221	49.6"	42.5"	35.4"	28.5"
Boom Ext. From End to Ram 5222	48"	41.5"	34"	27"
Base Dimensions Unfolded				37.5" x 68"
Base Dimensions Folded				32" x 22.5"
Shipping Weight				(5221, 229 Lbs.) (5222, 269 Lbs.)

WARNING INFORMATION



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

WARNING

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



IMPORTANT: READ THESE INSTRUCTIONS BEFORE OPERATING

BEFORE USING THIS DEVICE, READ THIS MANUAL COMPLETELY AND THOROUGHLY, UNDERSTAND ITS OPERATING PROCEDURES, SAFETY WARNINGS AND MAINTENANCE REQUIREMENTS.

It is the responsibility of the owner to make sure all personnel read this manual prior to using the device. It is also the responsibility of the device owner to keep this manual intact and in a convenient location for all to see and read. If the manual or product labels are lost or not legible, contact Sunex for replacements. If the operator is not fluent in English, the product and safety instructions shall be read to and discussed with the operator in the operator's native language by the purchaser/owner or his designee, making sure that the operator comprehends its contents.

THE NATURE OF HAZARDOUS SITUATIONS

WARNING

The use of portable automotive lifting devices is subject to certain hazards that cannot be prevented by mechanical means, but only by the exercise of intelligence, care, and common sense. It is therefore essential to have owners and personnel involved in the use and operation of the equipment who are careful, competent, trained, and qualified in the safe operation of the equipment and its proper use. Examples of hazards are dropping, tipping or slipping of loads caused primarily by improperly securing loads, overloading, off-centered loads, use on other than hard level surfaces, and using equipment for a purpose for which it was not designed.

METHODS TO AVOID HAZARDOUS SITUATIONS

WARNING



- Read, study, understand & follow all instructions before using.
- User and bystanders must wear eye protection that meets ANSI Z87.1 and OSHA standards.
- Inspect crane before each use. Do not use if damaged, altered, modified, in poor condition, leaking hydraulic fluid, or unstable due to loose or missing hardware or parts. Take corrective action before using.
- Never get under the load being lifted or suspended.
- Use only on a hard level surface.
- Do not raise the boom if the crane is equipped with a foldable or storable leg feature and the legs are in the upright position.
- Use only slings or chains with a rated capacity greater than the weight of the load being lifted.
- Do not exceed rated capacity.
- Do not lift or move a load that has a center of gravity extending beyond the front wheels.
- Do not allow load to swing or drop violently while raising, lowering or moving.
- Do not use (or modify) this product for any other purpose than that for which it was designed without consulting the manufacturer's authorized representative.
- Before moving, lower load to the lowest possible point.
- Apply the load restraint to the engine before transporting. See operating instructions in manual.
- No alterations shall be made to this product and do not use any unapproved attachments.
- This product may contain one or more chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. *Wash hands thoroughly after handling.*
- Failure to heed these warnings may result in serious or fatal personal injury and/or property damage.

CONSEQUENCES OF NOT AVOIDING HAZARDOUS SITUATIONS

WARNING

Failure to read this manual completely and thoroughly, failure to understand its OPERATING INSTRUCTIONS, SAFETY WARNINGS, MAINTENANCE INSTRUCTIONS and comply with them, and failure to comply with the METHODS TO AVOID HAZARDOUS SITUATIONS could cause accidents resulting in serious or fatal personal injury and/or property damage.

ASSEMBLY INSTRUCTIONS

PLEASE REFER TO THE EXPLODED VIEW DRAWING IN THIS MANUAL IN ORDER TO IDENTIFY PARTS.

1. Secure the (#1) rear caster assemblies to the (#26) base frame with the bolts and washers provided and in accordance with the assembly drawing.
2. Loosely assemble the (#29) upright mast to the (#26) base frame in accordance with the assembly drawing and finger tighten the (#8) bolts and (#7) nuts.
3. Loosely assemble the (#30) mast braces to the (#29) upright mast by finger tightening the (#18) bolt, and (#6) nut. Loosely assemble the opposite ends of the (#30) mast braces to the (#26) base frame by finger tightening the (#5) bolts and (#6) nuts.
4. Tighten all the hardware mentioned in steps 2 and 3.
5. Slide the (#34) sliding strap loops on the (#27) and (#28) leg extensions as shown in the exploded view drawing on page 5.
6. Install the front wheels (#15) in the front ends of the right and left leg extensions (#27) and (#28) and secure them with the bolts (#14), spring washers (#16) and nuts (#17) provided.
7. Install the (#27) and (#28) leg extensions in the (#26) base frame where the holes in the legs line up with the holes in the base as shown in the assembly drawing. Secure the legs to the base using the (#10) detent pins and (#9) R-clips.
8. According to the assembly drawing, secure the (#25) hydraulic ram in between the mounting brackets on the (#29) upright mast using the (#5) bolt and (#6) nut. Lean the ram up against the mast.
9. Secure the (#31) boom in between the mounting flanges located on top of the (#29) upright mast using the (#19) bolt and (#20) nut.
10. Line up the hole in the (#25) hydraulic ram with the holes in the gussets of the (#31) boom and secure the ram to the boom with the (#5) bolt and (#6) nut. It may be necessary to extend the ram to line up all the holes.
11. Pump the jack so the (#31) boom is horizontal to the ground. According to the assembly drawing, slide the (#32) boom extension inside the (#31) boom so the hole in the boom aligns with any of the four holes in the (#31) boom. Secure the boom and boom extension together using the (#21) detent pin and (#9) R-clip.
12. Slide the u-bracket of the (#33) hook assembly over the end of the (#32) boom extension, align all the holes and secure them together with the (#22) bolt and (#23) nut.
13. Install the (#24) pump handle in the (#25) hydraulic ram pump linkage when using the crane or in the (#29) upright mast holder for storage.
14. Sometimes air gets trapped in the hydraulic system during shipment. An air bound hydraulic system feels spongy when pumped and may not allow the jack to pump full incremental strokes.

TO PURGE AIR FROM THE HYDRAULIC SYSTEM

- a. Open the release valve by turning the handle in a counterclockwise direction two full turns. From its closed position.
- b. Pump the handle ten full strokes.
- c. Close the release valve by turning the handle in a clockwise direction until tight.
- d. Pump the jack until the ram is extended to maximum height.
- e. Repeat steps "a" through "d" until all the air is purged from the system.

OPERATING INSTRUCTIONS



This is the safety alert symbol used for the OPERATING INSTRUCTIONS section of this manual to alert you to potential personal injury hazards. Obey all instructions to avoid possible injury or death.

OPERATION:

1. Before lifting, evaluate the work to be done by:
 - a. Determining the weight of the load to be lifted and secure the boom extension in the boom in the appropriate hole position.
 - b. Determine the crane's boom extension in order to ensure there is enough boom lift/travel to accomplish the work.

IMPORTANT: THE WORKING CAPACITY OF THE CRANE IS DETERMINED BY THE LOCATION OF THE EXTENSION BOOM. THE CAPACITY OF THE EXTENSION BOOM MUST EXCEED THE WEIGHT TO BE LIFTED.

Secure the boom extension in the boom with the appropriate hardware provided, making sure it can not come loose during use.
2. Make sure the crane's front wheels extend beyond the extension boom's hook in order to avoid load tipping. Do not lift or move a load with a center of gravity that extends beyond the sides of the crane and the crane's front wheels.
 3. Use balancers, levelers, slings, chains or any combination thereof (which are capable of sustaining the load) around the load before using the crane's hook to lift the load. Make sure the complete setup is secure before lifting.
 4. Attach the crane's hook to the balancer, leveler, sling, chain or any combination thereof. Turn the release valve on the crane's hydraulic ram in a clockwise direction until tight. Before pumping the crane's jack handle, make sure the engine or load is free from all other restraints and connections that would hinder the raising of the load. Once the engine or load has cleared its location, make sure there is no slope in the floor or any obstructions on the floor that could cause the crane to tip and lose the load.
 5. Immediately upon removal of the engine from the engine compartment or load from its position, the engine or load must be as close to the ground as possible when transporting. Lower the load to the proper transport height by slowly and carefully turning the hydraulic ram's release valve in a counter clockwise direction. When approaching the transport height, start turning the crane's release valve in a clockwise direction until tight. This same procedure of lowering the load is also used for moving a load to its final or temporary resting place or location. This crane is equipped with a load restraint system identified as (#34) sliding strap loop (2 each) and (#35) strap tie down (2 each). Before transporting the engine:
 - a. Determine an attachment position on both sides of the engine.

- b. Slide the sliding strap loops on the crane's legs so the loops are aligned with and adjacent to the attachment positions on both sides of the engine.
- c. Connect one hook at the end of the strap tie down to the sliding strap loop and the hook at the other end of the tie down to the attachment position on the side of the engine. Do this on both sides of the engine.
- d. Adjust the strap tie downs to take up the slack but not enough to force the engine towards one leg more than the other.
- e. Tighten tie downs equally so the engine will not swing side to side during transport of the engine.

PREVENTATIVE MAINTENANCE



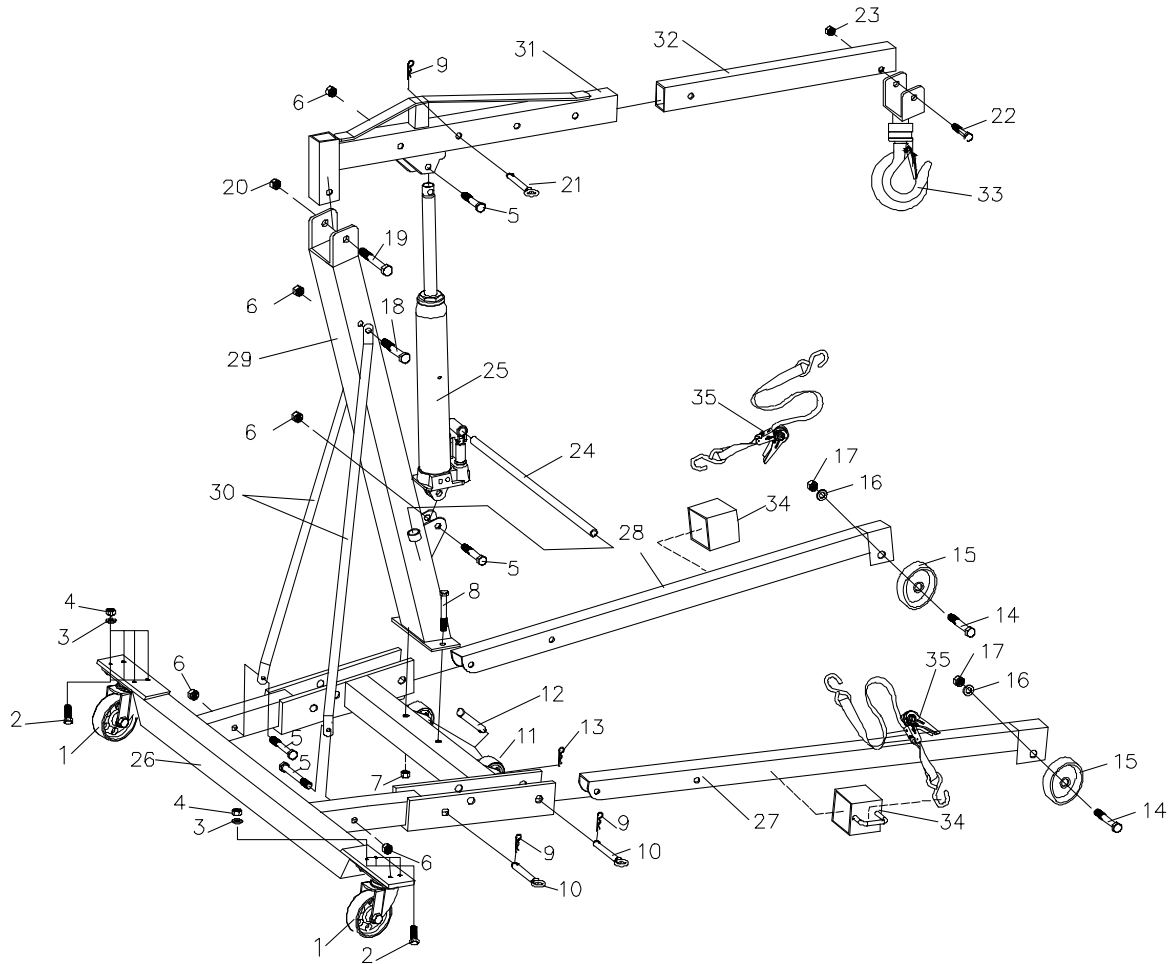
This is the safety alert symbol used for the PREVENTATIVE MAINTENANCE section of this manual to alert you to potential personal injury hazards. Obey all instructions to avoid possible injury or death.

1. Always store the crane in a well protected area where it will not be exposed to inclement weather, corrosive vapors, abrasive dust, or any other harmful elements. The jack must be cleaned of water, snow, sand, grit, oil, grease and other foreign matter before using.
2. Lubricate the wheels, casters, and all pivot points on the crane according to an acceptable shop maintenance schedule. Maintenance intervals are dependant on time and usage.
3. Every crane owner is responsible for keeping the crane labels clean and readable. Use a mild soap solution to wash external surfaces of the crane but not any moving hydraulic components. Contact Sunex for a replacement label if your crane's label is not readable.
4. Inspect the crane before each use. Do not use the crane if any component is cracked, broken or bent. Do not use the crane if it has loose or missing hardware or components, or is modified in any way. Take corrective action before using the crane again.
5. It should not be necessary to refill or top off the crane's jack reservoir with hydraulic fluid unless there is an external leak. An external leak requires immediate repair which must be performed in a dirt-free environment by qualified hydraulic repair personnel who are familiar with this equipment. Authorized service centers are recommended. **IMPORTANT:** In order to prevent seal damage and jack failure, never use alcohol, hydraulic brake fluid, or transmission oil in the crane's jack. Use jack oil, Chevron Hydraulic oil AW IS032, or Unocal Unax AW150.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	ACTION
Crane will not lift rated load.	Release valve not tightly closed Overload condition. Air trapped in hydraulic system. Hydraulic valves not operating properly.	Close release valve firmly. Use jack with proper capacity. Purge air from system by following steps "a" through "d" in the "ASSEMBLY INSTRUCTIONS" section of the manual. Contact your dealer.
Crane will lift but lowers rated load slowly.	Release valve not tightly closed Hydraulic valve not tightly closed	Close release valve firmly. Contact your dealer.
Crane will not lower after rated load has been removed.	Jack's reservoir has too much fluid.	Place jack in its upright position. Retract the ram. Remove the reservoir fill plug. Allow oil to drain out of fill plug hole until oil level is at bottom level of hole. Reinstall fill plug.
Poor lift performance or will not lift maximum height.	Hydraulic fluid low. Air trapped in hydraulic system.	Place jack in its upright position. Retract the ram. Remove the reservoir fill plug. Add only high quality jack oil up to the bottom level of the hole. Reinstall fill plug. Purge air from system according to steps "a" through "d" in the "ASSEMBLY INSTRUCTIONS" section of this manual. Purge air from the system. See steps "a" through "d" in the "ASSEMBLY INSTRUCTIONS" section of this manual.

PARTS LIST AND DRAWING

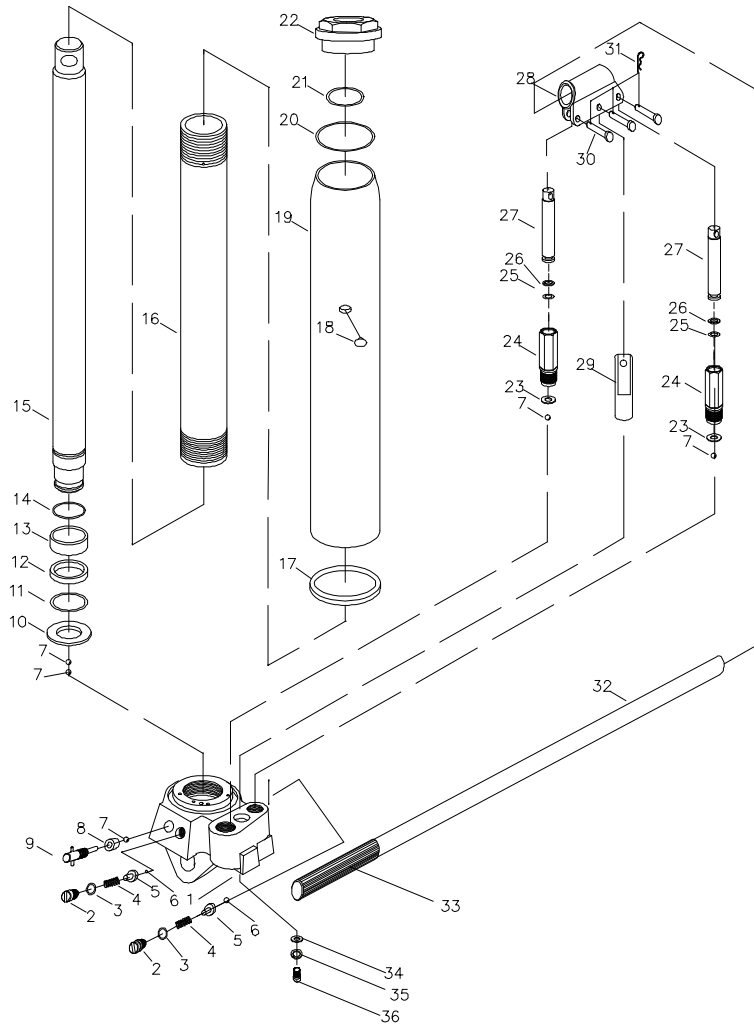


Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1	RS522201	Rear caster assembly (incl. 2,3 & 4)	2	21	*	Detent Pins 16x85	1
2	*	Bolt M8X25 (incl. w/#1)	8	22	*	Bolt M14x75	1
3	*	Spring washer 8 (incl. w/#1)	8	23	*	Nut M14	1
4	*	Nut M8 (incl. w/#1)	8	24	RS522224	Pump Handle 21.3x580	1
5	*	Bolt M16x85	4	25	RS522125	Hydraulic Ram (5221)	1
6	*	Nut M16	5		RS522225	Hydraulic Ram (5222)	1
7	*	Nut M14	2	26		Base frame	1
8	*	Bolt M14X110	2	27		Right leg extension	1
9	*	R-Clip	5	28		Left leg extension	1
10	*	Detent Pins 17X103	4	29		Upright Mast	1
11	RS522211	Middle wheel assembly (incl. 12 & 13)	2	30		Mast Brace	2
12	*	Pin 10X54 (incl. w/#11)	2	31		Boom	1
13	*	R-Clip (incl. w/#11)	2	32		Boom extension	1
14	*	Bolt M12x75 (incl. w/#15)	2	33	RS522233	Hook Assembly	1
15	RS522215	Front leg wheel assembly (incl. 14, 16 & 17)	2	34	RS602131	Sliding Strap Loop	2
16	*	Spring washer 12 (incl. w/#15)	2	35	RS602132	Strap	2
17	*	Nut M12 (incl. w/#15)	2	Not Shown	RS5221PLK	Label Kit for 5221	1
18	*	Bolt M16x100	1	Not Shown	RS5222PLK	Label Kit for 5222	1
19	*	Bolt M20x110	1				
20	*	Nut M20	1				

Parts identified by an asterisk, plus the caster hardware, are available in the Hardware Kit, RS5222BK

PARTS LIST AND DRAWING

Hydraulic Ram



Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1		Ram Base	1	18	* , **	Oil Refill Cap	1
2		Screw	2	19		Reservoir	1
3	* , **	O Ring 6X3	2	20	* , **	Top Sealing Ring 64x58x1	1
4		Spring	2	21	*	O Ring 31.5x3.55	1
5		Spring Base	2		**	O Ring 33.5x3.55	
6	* , **	Steel Ball 4	2	22		Top Nut	1
7	* , **	Steel Ball 6	5	23	* , **	Sealing Ring	2
8	* , **	Sealing Ring	1	24		Pump Piston Housing 12x55	2
9		Release Valve	1	25	* , **	O Ring 6.6x3	2
10		Bottom Plate	1	26	* , **	O Ring 12x7x1.5	2
11	*	O Ring 28x3.55	1	27		Pump Piston 12x68	2
	**	O Ring 33.5x3.55	1	28		Handle Yoke	1
12	*	Washer 36x4.4	1	29		Linkage Rod	1
	**	Washer 40x4.4	1	30		Pin 8x25	3
13		Piston Ring	1	31		R-Pin	3
14		Retaining Ring	1	32		Handle	1
15		Piston	1	33		Handle Cap	1
16		Oil Tank	1	34		Washer 10	1
17	*	Bottom Sealing Ring 76x71x4	1	35		Spring Washer 10	1
	**	Bottom Sealing Ring 81x76x4	1	36		Hex Bolt M 10x25	1

* Hydraulic Ram Repair Kit, RS5221HRRK for 5221 unit. ** Hydraulic Ram Repair Kit, RS5222HRRK for 5222 unit.

Only Index No.'s identified by Part No. are available individually.

5221 and 5222