

## Single-Piece Steel Rotors

A popular and quick brake upgrade is the Remmen Single-Piece steel rotors upgrades. These rotors directly replace the Original Equipment Manufacturer (OEM) rotors. In as little as an hour, you can be out and enjoying the drive with added control and performance of your braking system. Look for them in either slotted, cross-drilled, or slotted and cross-drilled.

### Technical Aspects of the Remmen Brakes Steel Rotor

- Geomet Coating: prevents corrosion and maintains rotor aesthetics
- Directional air-vanes: improves airflow to control brake heat and brake fade
- Rounded slots/beveled holes: improves contact surface, helps maintain pad life. Machines surface: improves pad contact surface and tolerances for optimal performance
- Stress relief design features: reduces thermal stresses and mitigates warping
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Use these rotors for street driving or track days. Not suitable for race applications.



Designed for the performance-oriented street goer, the Remmen Series 100 brake rotors deliver performance and longevity meeting the high demands of S-turns wherever they may be.

All of Remmen's Series 100 rotors are single-piece rotors cast using a highly controlled metallurgical formula that is heat treated for a homogeneous crystal structure ensuring minimal warping and consistent performance through countless heat cycles. All our one-piece rotors either meet or exceed OEM standards.

The characteristics to expect are:

- High in frictional properties from cold to high temperatures
- High resistance to fade with the help of vanes, slots/cross-drilled holes, etc.
- Geomet® coating for corrosion resistance
- Reduced disc wear rate
- Great "feel"

**Geomet® Coating for Added Protection Against Corrosion**

**Rounded Slots and Bevelled Holes for Improved Contact Surface and Reduced Harshness on Brake Pads**

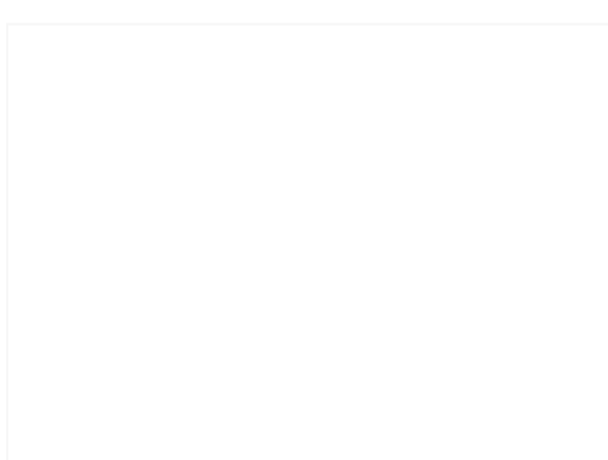
**Air Vanes for Increased Airflow and Cooling Efficiency**

**Stress-relief Design Features to Help Eliminate Warping and Increase Lifetime**

**Machined for Improved Tolerances, Reduced Vibrations, and Superior Performance**

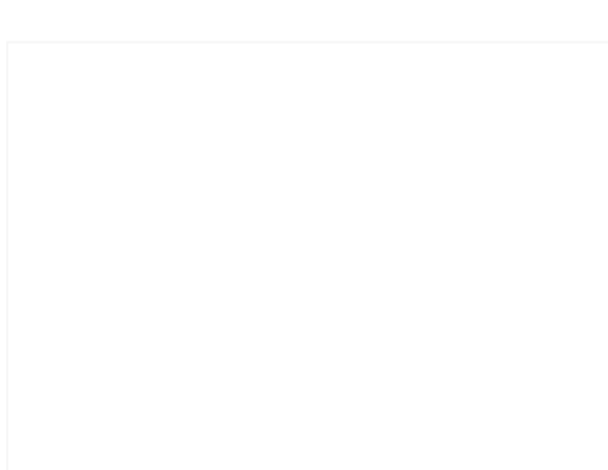
**Heat Treated Metallurgy for Improved Strength, Durability, and Resistance to Warping**

## Brake Rotor Options



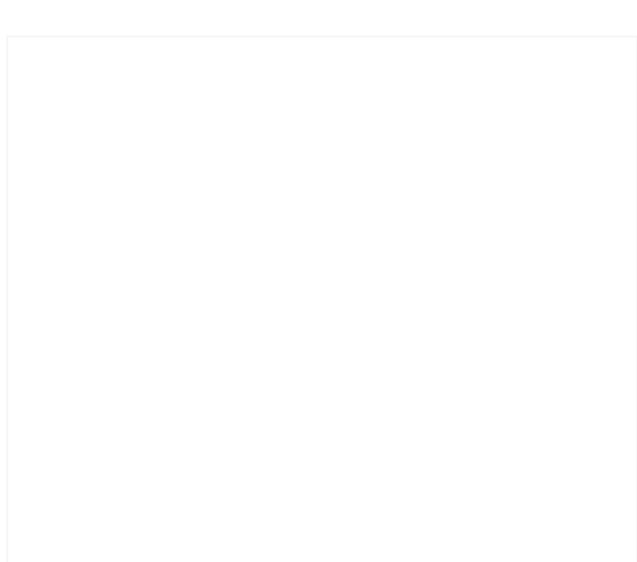
### Series 110 – Cross-drilled Rotors

Utilizing cross-drilled holes at strategic rotor locations, this series of rotors provides increased airflow and pad gas management. Expect cooler rotor temperatures over the standard, plain OEM rotors leading to increased fade resistance, better brake bike and a much smoother pedal feel.



### Series 120 – Slotted Rotors

Utilizing angles slots for increased pad to rotor surface contact, expect the Series 120 Slotted rotors to provide improved bite over the typical plain OEM rotors.



### Series 130 – Cross-drilled & Slotted Rotors

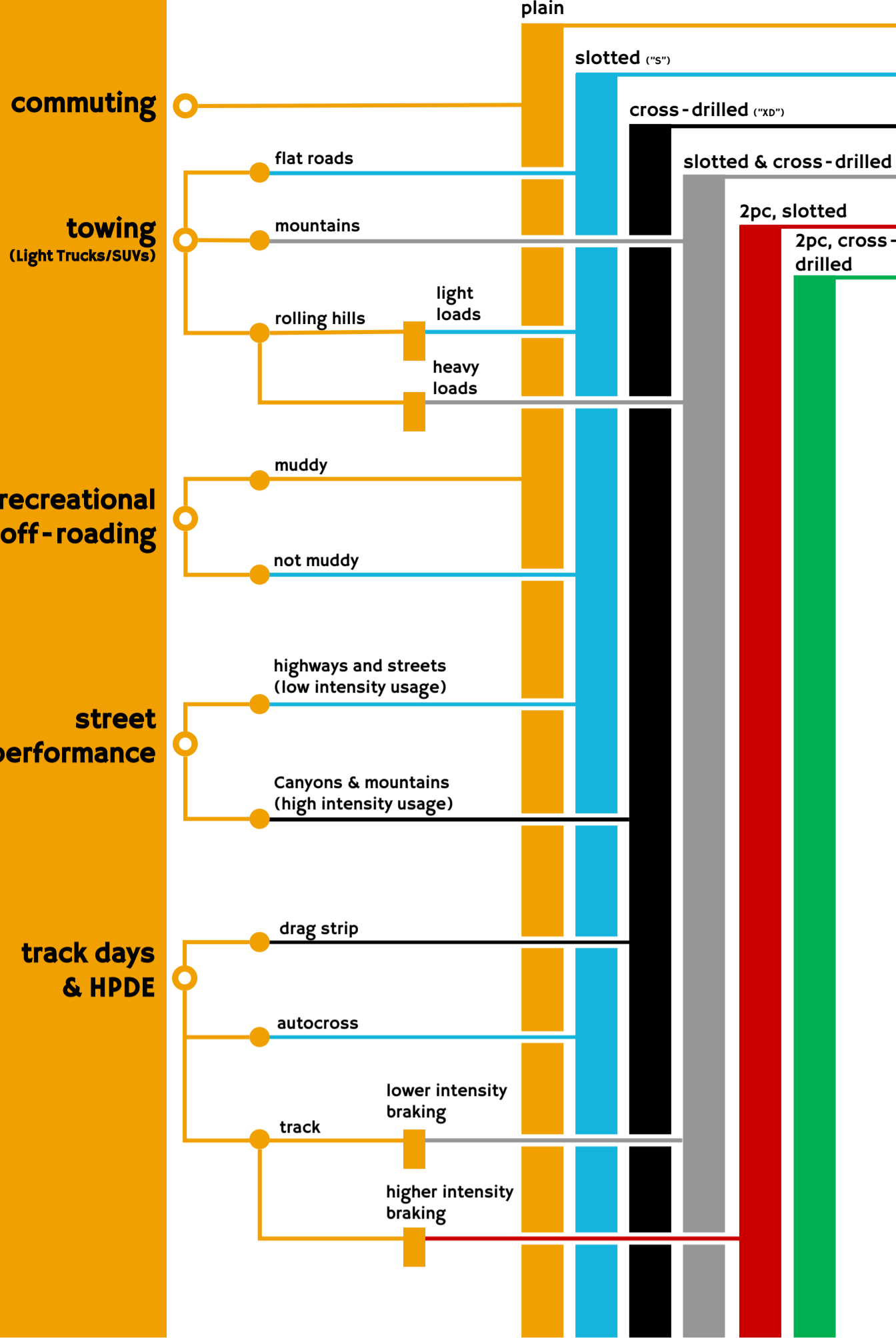
Combining features of both Cross-drilled and Slotted designs, the Series 130 Crossdrilled & Slotted rotors takes advantage of the high cooling level of the cross-drilled design and the cooler sweeping properties of the slotted design. Expect higher pad to rotor contact surface and cooler temperatures.



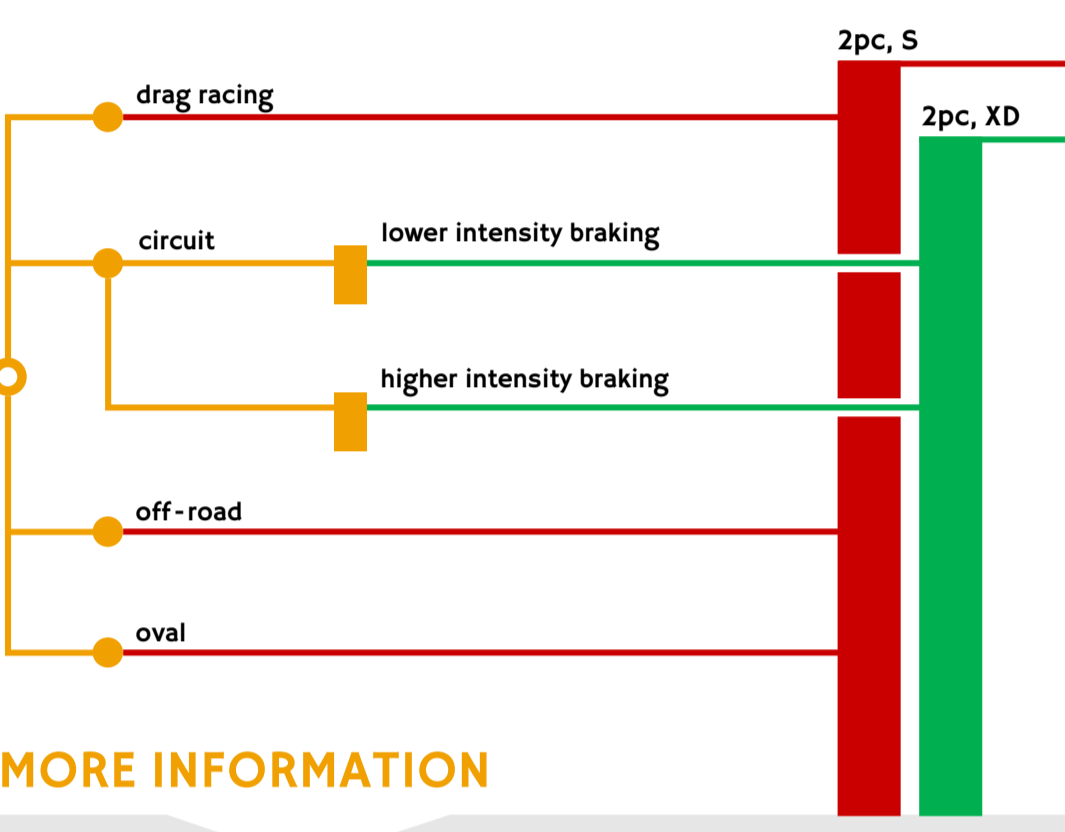
# how to choose the right brake rotors

TROUBLE DECIDING WHAT BRAKE ROTORS SUITE YOU BEST? FOLLOW THE CHART BELOW FOR A [QUICK FIX!](#)

*Brake rotors should be chosen based on the type of driving you'll be doing. We've picked out the best rotor solutions that will work for you based on what you'll be using them for.*



## racing only



### MORE INFORMATION

Drive Type	Rotor	Reason
Commuting	1-piece, Plain	As a commuter, brakes aren't used as intensely as in other applications and temperature levels of the system remain relatively low. This being the case, plain rotors provide ample brake performance for the daily commute and save the user money since plain rotors are the most economical of the choices.
Towing	1-piece, Slotted 1-piece, Slotted & Crossdrilled	Flat surfaces require less brake application to control speed. Slots will ensure that the brake pads remain in full contact with the rotors and will clear away debris and gasses as needed. On steeper terrain, with more intense brake periods, the slotted and cross-drilled rotors will reduce brake fade thanks to the increased airflow from the cross-drilled holes and the slots will ensure the surface is kept clean and in contact with the pads.
Recreational off-roading	1-piece, Plain 1-piece, Slotted	Over muddy terrain, holes and slots will trap dirt and debris and will impair the performance of the brakes. For this reason, plain rotors are suggested. Over non-muddy terrain, slotted rotors will work well enough by ensuring the surface of the rotor is wiped clean of debris and is in full contact with the pad.
Street performance	1-piece, Slotted 1-piece, Crossdrilled 1-piece, Slotted & Crossdrilled	For lower brake intensity applications, the Street Performance vehicle can use slotted or cross drilled rotors. These rotors will provide enough improvement in braking performance to suite highway and street driving. For higher brake intensity applications, the brake rotors will need to ensure temperatures don't build up and gasses are allowed to flow away from the surface of the rotor freely. For this reason, a cross-drilled setup or a slotted and crossdrilled setup would suit the application.
Track days & HPDE	1-piece, Slotted 1-piece, Crossdrilled 1-piece, Slotted & Crossdrilled 2-piece, Slotted	Drag: lighter is better. Crossdrilled provides a slight advantage over slotted if one piece is required. Autocross: speeds are typically low so heat is not an issue. The rotor will need to therefore focus on contact surface area. Slotted provides the best option Track: depending on the turns and the intensity of braking, options can range from slotted and crossdrilled to 2-piece slotted. The higher the intensity of braking the more heat dissipation is needed and the lighter the rotor the easier it is to control through fade. 2-piece rotors therefore provide the advantage needed during heavy track use.
Racing	2-piece, Slotted 2-piece, Crossdrilled	Weight, performance, fade resistance trump cost. Every little advantage helps. 2-piece rotors are significantly lighter and provide much better heat dissipation properties than 1-piece rotors. Furthermore crossdrilled rotors provides more airflow for higher brake intensity applications over slotted.

Ever find yourself lost in a sea of information when looking for brake rotors? Fret no more! We've put together a handy [infographic](#) that matches the driving style to the most suitable rotor choice.

#### A word about the infographic

In the world of brake rotors, the choices are endless and the costs can quickly skyrocket. For the purpose of the infographic, we have selected the most suitable rotor for the application based on cost. Also, consider the following rules of thumb for a given rotor, assuming the rotor metallurgy (formula, heat treatment, etc.) is the same:

- Plain rotors last longer than slotted rotors which last longer than cross-drilled rotors
- Cross-drilled rotors are lighter than slotted rotors which are lighter than plain rotors
- Cross-drilled rotors provide more airflow so they are more likely to reduce brake fade
- Slotted and cross-drilled rotors offer more airflow than slotted rotors but less airflow than cross-drilled rotors. They also provide an added level of "swiping" away dirt thanks to the slots but fall short of the Slotted rotors' ability to do so. In short, it falls in between slotted rotors and cross-drilled rotors.

#### Commuting

Use of brakes is minimal when commuting. Even through stop-and-go traffic, the brakes don't heat up to very high levels as they do on circuits. This being the case, a simple plain rotor would do the job.

#### Towing

Driving with heavy loads in tow generates a lot of kinetic energy. However, when driving on flat surfaces, you will typically require less brake application to control speed than when driving on declines. To manage the increase in kinetic energy, slots are suggested when driving mostly on flat surfaces. Since the higher energy levels will cause gasses and the debris will interfere with braking, slots will ensure that the brake pads remain in full contact with the rotors and will clear away debris and gasses as needed. On steeper terrain, with more intense brake periods, the slotted and cross-drilled rotors will reduce brake fade thanks to the increased airflow from the cross-drilled holes and the slots will ensure the surface is kept clean and in contact with the pads.

#### Recreational off-roading

When off-roading for fun, odds are that you won't be applying the brakes too heavily since any intense brake application would most likely result in skidding over gravel or dirt. This being the case, the likelihood of heat build up is low and the improvement can be gained from either reducing weight or keeping the pad surface clean of debris. One thing to keep in mind though is that when "playing" in muddy terrain, the last thing you'd want is for mud to get caught in between the rotor and the pads. This will significantly reduce the performance of your brakes. For this reason, plain rotors are recommended in wet and muddy terrain. When driving on dry terrain, slotted rotors are acceptable since they wipe away debris and ensure full pad contact.

#### Street Performance

When upgrading your car for street performance, it's essential to think about brakes. However, brake upgrades don't have to be expensive and you can further reduce the cost by considering the type of driving you would like to do. For low intensity applications (highway driving, street driving, etc.) where not much brake use occurs, slotted rotors will mostly suffice. When brake intensity increases (canyon driving, mountain driving, etc.) you'll need rotors that can help reduce brake fade so cross-drilled rotors are suggested. Of course, the price difference between cross-drilled, slotted, and slotted & crossdrilled is minimal so people mostly decide on the rotor based on aesthetics.

#### Track days & High-Performance Driving Events (HPDE)

Drag strip: getting off the line the fastest is a great advantage in drag racing. For this reason, the lighter the rotor is, the better. Choices here can be argued based on preferences and recommendations can vary from plain to slotted to crossdrilled. We will recommend crossdrilled here since weight is the most important factor after economy (otherwise, a two piece rotor would cross better). Crossdrilled provides a slight advantage over slotted if one piece is required.

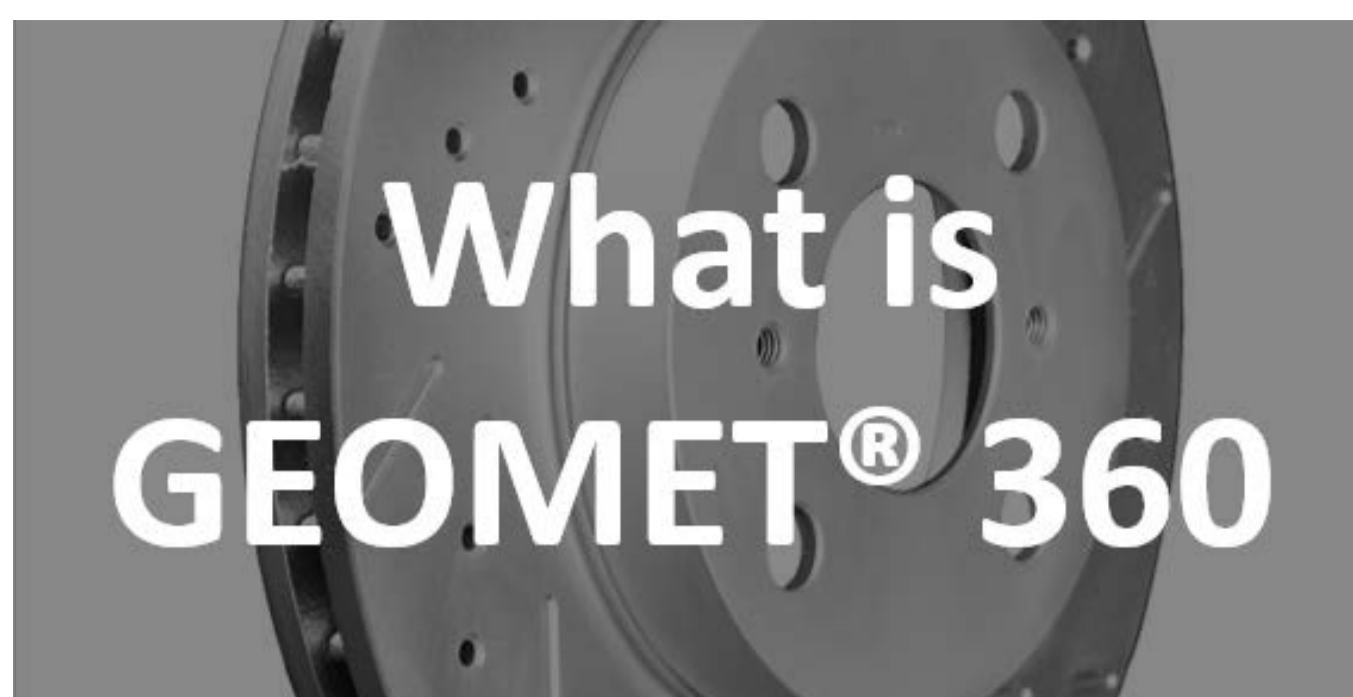
Autocross: speeds are typically low so heat buildup is not an issue. The rotor will need to therefore focus on contact surface area. Slotted provides the best option by ensuring the surfaces of the rotor and pads remain in full contact, improving the brake force of the system.

Track: depending on the turns and the intensity of braking, options can range from slotted and crossdrilled to 2-piece slotted. The higher the intensity of braking the more heat dissipation is needed and the lighter the rotor, the easier it is to control through fade. two-piece rotors therefore provide the advantage needed during heavy track use.

#### Racing applications

When using the vehicle for racing, weight, performance, fade resistance trump cost. Every little advantage helps and two-piece rotors are significantly lighter and provide much better heat dissipation properties than one-piece rotors. Furthermore, crossdrilled rotors provides more airflow for higher brake intensity applications over slotted and since rotor life isn't much of an issue during racing, crossdrilled are usually the preferred finish for high brake-use circuits.

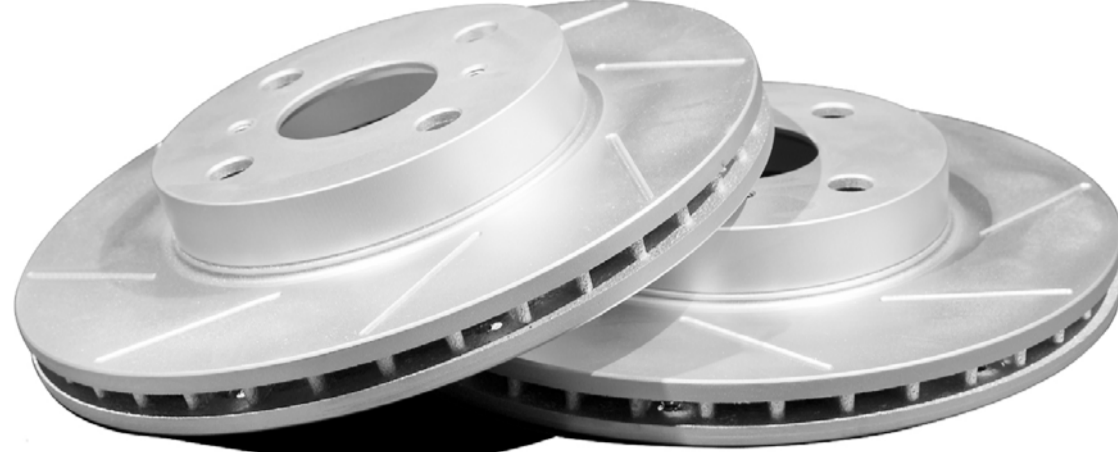
## What is GEOMET® on Brake Rotors?



You may have seen many brake manufacturers state that their brake rotors are GEOMET® coated but none have actually explained what that really means.

As brake rotors are made of iron, they naturally rust and when exposed to minerals such as salt, the rusting (oxidization) tends to speed up. This leaves you with a very ugly looking rotor.

Naturally, companies started looking at ways to mitigate rusting of the rotors. One way was to apply a coating to prevent rust. Enter **GEOMET®**.



## What is GEOMET® Coating?

GEOMET® (or more specifically GEOMET® 360) is a water based chemical coating that is applied to brake rotors to help prevent corrosion.

The coating was developed by NOF Metal Coatings Group in response to stricter environmental regulations and concerns. The resulting product is one that is used worldwide on more than 40 million brake discs per year.

It complies with REACH and The End of Life Vehicles Directive of the European Union.

REACH is a regulation "adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals".

The End of Life Vehicles Directive (2000/53/EC) is a Directive addressing the end of life for automotive products.

## What are the benefits?



**It looks better:** Most cars these days ride on alloy wheels with lots of space to see through to the brakes. The last thing you'd like to see under those wheels are rusted rotors. GEOMET minimizes rusting and keeps your rotors looking good.



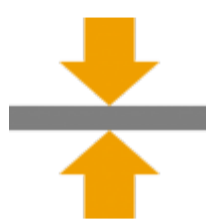
**Good initial braking performance:** GEOMET® 360 is not greasy and it forms a pretty thin film of coating once dried. This means that the coating is thin enough that it doesn't damage the quality of braking during the brake's first use.



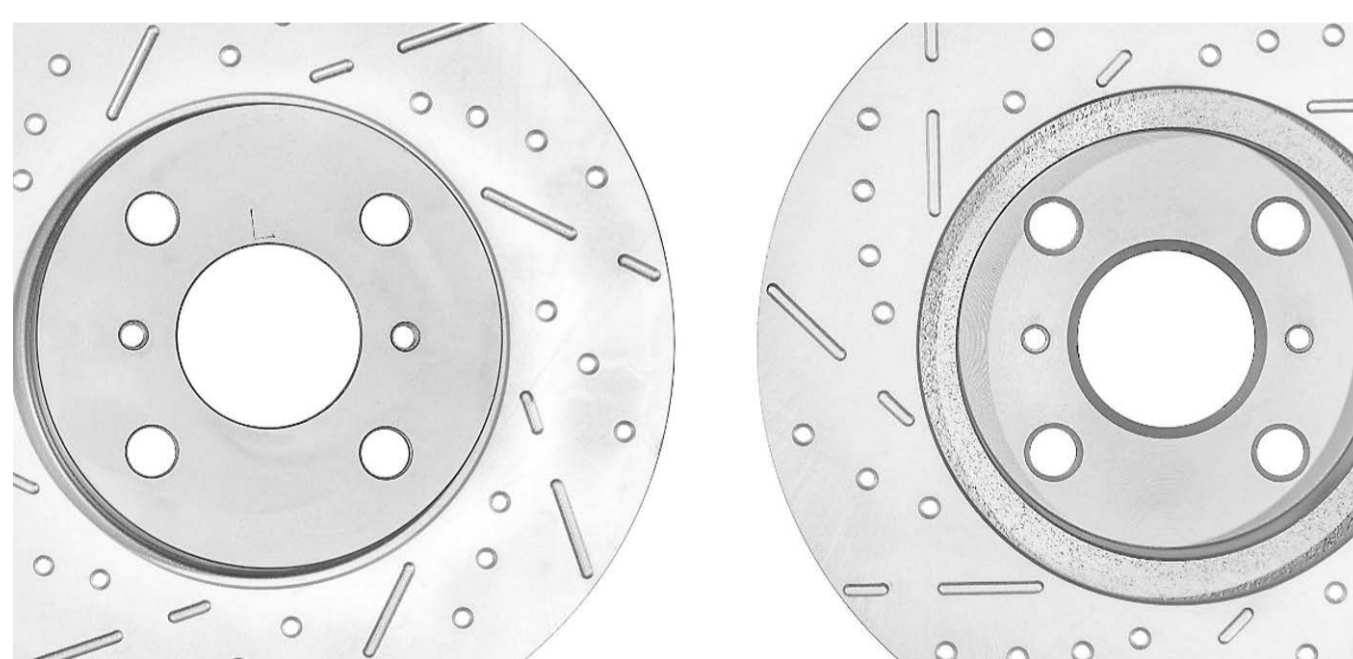
**High temperature resistance:** The coating can withstand up to 400°C (750°F) and still provide excellent corrosion resistance without crystallization during heat cycles or formation of organic resins. This means that the coating won't chip and will wear evenly.



**Environmentally conscious coating:** There is no chromium in the solution and since it is applied in a closed system, the leftover liquid is recycled. During curing, the only thing that evaporates is water, not chemicals.



**Thin and non-greasy:** Once cured, GEOMET is thin and non-greasy which makes it a great option for aftermarket products where the rotors are handled, shipped, and stored before being delivered to the customer. The coating keeps things clean and relatively light and will make sure you get your brakes in great shape.



## How is it applied and what happens when it's used?

The brake rotors are sprayed with GEOMET® 360 at the finishing line in order to protect it until it is installed on the vehicle. After the coating cures, it ends up as a thin, dry film (approximately 8 micrometers thick) and gives the rotor a metallic/silver look.

When the rotor is used on the vehicle for the first time, the layer of GEOMET® over the braking surface is easily rubbed away by friction. This exposes a ring of steel where the brake pad and the brake rotor meet. The daily use of the vehicle does a good job of keeping the brake pad/rotor free of rust. However, the part of the rotor that sits on the car's hub, will still be coated and protected from corrosion by GEOMET®.

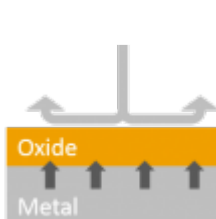
## How does it work?



**Physical Barrier:** The first method of protection is by forming a barrier to prevent exposing the steel underneath to the elements. With GEOMET®, zinc and aluminium flakes are layered up and they provide this barrier



**Galvanic Action:** The second method of protection is the electro-chemical process called "galvanic action". When driving in damp/wet conditions, water and salt from the road can corrode the steel of the rotor over time. However, if zinc (in the GEOMET® coating) is placed in contact with the steel, the water and salt act as an electrolyte and initiate the process of electrolysis which allows the zinc to corrode first before the steel does.



**Passivation:** The third method of protection is through passivation. Passivation in this case is when metal compounds in the coating actually oxidize and form a 'passive' layer over the steel rotor. This layer doesn't oxidize any further and in turn acts as another barrier that slows down the corrosion of steel.