

Be safe. Be sure

# Gabriel®

SHOCKS, STRUTS & CARTRIDGES

# LEARNING & TRAINING



# OVERVIEW

## Training, e-Learning & Certification

### THIS DOCUMENT SERVES TWO PURPOSES.

1. It can be used as a training tool
2. As a reference guide.

We recommend that you read it from beginning to end.

In this document you will find information pertaining to the Gabriel Brand as well as the general shocks, struts and gas lifts category.

Some of the content is generic in nature and not necessarily specific to the Gabriel product/s.

The learning/training material is primarily aimed at those that interact with Gabriel Shock Absorbers, be it in Management, Field Sales, Counter Sales Workshop or Fitment environments to improve product knowledge and assist in enhancing your knowledge of this product category.

This is not meant to teach you how to be a mechanic. It is a discussion with the idea of giving some interesting facts about shocks, what signs to look for to help identify worn shocks and what to look out for during fitment to avoid common problems. It also outlines some general technical aspects about shock absorbers.

Having digested the contents of this Learning and Training material, please use the link provided to complete the Gabriel Online Quiz.

### INTRODUCTION: GABRIEL SHOCK ABSORBER E-LEARNING TEST AND CERTIFICATION

The Gabriel Shock Absorbers E-Learning Test and Certification process is designed to validate the technical understanding, installation competence, and product knowledge of technicians, fitment specialists, and sales professionals working with Gabriel products.

This structured assessment ensures that participants not only understand the function and importance of shock absorbers and struts but also know how to correctly diagnose faults, perform proper installation, and recommend the most suitable Gabriel solution based on customer needs.

Successful completion of this assessment demonstrates a professional level of competency and a commitment to delivering safe, reliable, and high-quality service using genuine Gabriel components.

### SCAN THE BELOW QR CODE TO TAKE THE QUIZ



# ABOUT GABRIEL

The Gabriel brand is a wholly owned and traded brand of **Autoworld South Africa (Pty) Ltd.**

Gabriel is a leading shock absorber brand in the South African automotive aftermarket and exporting to many other countries. Its sales, marketing and distribution operations, based in Johannesburg South Africa, serve a network of wholesale distributors across South Africa and into Africa.

Gabriel has a proud history of innovation and achievement stretching back to 1907 when Claude Foster – the automotive parts pioneer who founded Gabriel in Cleveland, Ohio, USA – developed and patented the first shock absorber called the “Snubber”.

The company continued to prosper in the suspension business, pioneering many more firsts, the first hydraulic shocks (1918), adjustable shocks (1956 and 1967), position and velocity

sensitive shocks (1979), gas-charged twin-tube shocks (1983) and velocity sensitive technology for shocks and struts (1996).

Gabriel first came to South Africa in 1935, importing all products from the US. Production in South Africa started in 1962 and sometime later, in 1984, Gabriel South Africa made its own contribution to Gabriel’s innovative history with the design and manufacturer of the “gas springs” which were promptly adopted by Gabriel plants worldwide. In 2024 Gabriel moved its manufacturing from South Africa to global world class facilities.

Our products are distributed nationally to spares shops and workshops through our wholesale network; we also export these products internationally. These nationwide retail outlets proudly display the Gabriel name which has become synonymous with the highest standard of quality.

## GABRIEL BRAND STRUCTURE



### **GASRYDER**

Engineered for everyday Passenger Vehicles with comfort and control in mind.

### **SAFARI**

Designed for tough environments, offering dependable performance for SUVs, Mini-Bus Taxis, and off-road capable vehicles.

### **FLEETRYDER**

Purpose-built for the demands of Heavy Commercial and Fleet Vehicles.

### **TECHNOMATIC**

Built for durability across varied road conditions, ideal for Passenger Cars, MPVs, and LCVs.

### **SAFARI HDP**

A heavy-duty performance shock absorber for 4x4s, SUVs, and Light Commercial Vehicles needing extra strength.

### **GASLIFT**

A versatile range of gas springs for automotive and industrial applications including boots, bonnets, canopies and industrial applications.

# INTRODUCTION

## WHAT IS RIDE CONTROL?

Several factors influence the performance of a vehicle in motion. These include weight, how that weight is distributed, vehicle speed, road surfaces, and even wind. Despite these constantly changing conditions, a vehicle's suspension system must consistently provide stable steering and reliable handling, while also ensuring a comfortable ride for passengers.

**This combination of stability and comfort is what we refer to as ride control.**

Effective ride control depends on the condition of the suspension system, which includes parts such as shock absorbers, struts, and springs. When any of these components are worn, they can negatively affect both vehicle stability and ride comfort. In addition, damaged or ageing suspension parts can put extra pressure on other components, including the tyres, resulting in premature wear.

One of the clearest signs of suspension problems can be seen in the tyres. Irregular wear patterns or patches of heavy wear that appear at consistent intervals, known as cupping, may be a sign that the shock absorbers are not working properly. Cupping happens when the tyre repeatedly bounces and loses contact with the road.

Worn shock absorbers can also cause the vehicle to lean excessively during cornering. This increases the rate of wear on the outer edges of the tyres and can change how the vehicle handles, especially in terms of turning response.

Another cause of uneven tyre wear is incorrect wheel alignment, which is often the result of worn or loose steering and suspension components.

Shock absorbers and struts are key parts of the suspension system. Replacing worn components with high quality products from Gabriel and performing a thorough inspection of the entire suspension system helps maintain proper ride control.

### **This leads to the following benefits:**

- Improved steering accuracy and a more comfortable ride for passengers
- Less wear on tyres and other suspension parts
- Better cornering, improved overall handling, and more consistent driving performance

## WHY ARE SHOCK ABSORBERS IMPORTANT?

Shock absorbers are essential components in vehicle safety, though their importance is often underestimated. They help maintain proper vehicle control by supporting steering response, improving handling, and ensuring effective braking.

As a vehicle travels over rough or uneven roads, the suspension springs absorb the energy from these impacts. Without properly functioning shock absorbers, this energy causes the springs to continue bouncing. These repeated movements can lead to the tyres losing contact with the road surface, creating a dangerous situation where the tyres are not firmly gripping the road after hitting a bump.

Research has shown that a vehicle with just one worn shock absorber may require an additional two metres to come to a complete stop. In many cases, this could be the difference between stopping safely and being involved in a collision.

During emergency braking, worn shock absorbers can cause the front of the vehicle to dip sharply, shifting weight away from the rear tyres. This reduces their grip and increases the chance of skidding. At the same time, the front tyres may also temporarily lose traction, which can cause the vehicle to pull to one side or become unstable. These effects significantly increase the risk of losing control, particularly in wet weather.

The main function of a shock absorber is to control the movement of the suspension springs. By doing so, it helps the tyres maintain consistent contact with the road, regardless of how smooth or rough the surface may be. Shock absorbers work by turning the energy from suspension movement into heat, which is then released into the surrounding air.

**Gabriel emphasises the importance of shock absorbers as a critical part of vehicle safety. Along with the braking system and tyres, shock absorbers form a key part of maintaining vehicle control, improving road handling, and ensuring a safer driving experience.**

# 8 SIGNS OF WORN SHOCK ABSORBERS



**STEERING WHEEL VIBRATION**



**CAR NOSES DOWN WHEN BRAKING**



**EXCESSIVE BOUNCING**



**OIL SEEPING FROM SHOCKS**



**DENTED OR DAMAGED HOUSING**



**BALD PATCHES ON TYRES**



**CAR DOES NOT HUG THE ROAD ON BENDS**



**CAR VEERS EXCESSIVELY IN SIDE WINDS**



# TYPES OF SHOCK ABSORBERS

## WHAT SETS ONE SHOCK ABSORBER APART FROM ANOTHER

Although shock absorbers may vary in design and appearance, whether they are strut cartridges, sealed struts, spring seat designs, or conventional telescopic models in both twin-tube or mono-tube designs, they all function according to the same basic principles. The differences in how they look from the outside should not distract from their shared purpose.

All shock absorbers are designed to control the movement of the suspension by resisting compression and extension. This process is known as damping, and it takes place during both the compression and rebound phases of suspension movement.

Damping control is achieved by forcing hydraulic fluid through a network of internal valves that create resistance. This fluid is a specially blended hydraulic oil. Both hydraulic shocks and gas pressurised shocks use this fluid to manage suspension movement, although some may use nitrogen gas to help maintain pressure and reduce foaming.

Since vehicle suspension systems vary widely, shock absorbers do not all look or function the same. However, they generally fall into three main categories, These are:

1. Conventional telescopic shock absorbers (Twin-Tube & Mono-Tube designs)
2. Strut type shock absorbers
3. Spring seat shock absorbers.

The strut category includes two formats, sealed struts and replaceable strut cartridges

There is a clear movement in the industry away from basic telescopic shocks toward more integrated systems like struts and spring seat designs.



MacPherson Strut



Telescopic Shock



Mono-Tube Shock



Cartridge Shock



Spring Seat Shock

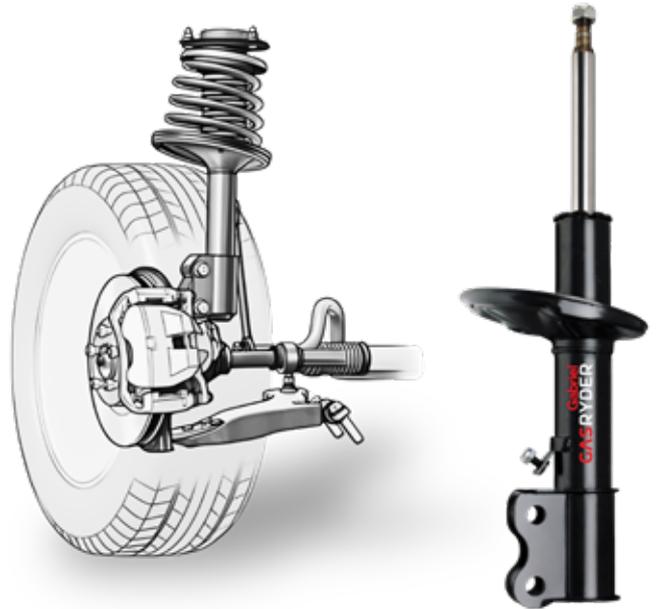


Heavy Duty Telescopic Shock

## MACPHERSON STRUTS

Although the primary function of a strut is the same as that of a conventional shock absorber, a strut is built to handle greater forces. It acts as both a damping unit and a key structural part of the suspension system. Struts are stronger and better suited for higher loads and side forces. Because of their design, they eliminate the need for additional suspension parts such as upper control arms, ball joints, and complex cross member structures. This helps to reduce vehicle weight and frees up space in the engine and luggage compartments.

Struts are most commonly found in the front and rear suspension systems of small to medium sized vehicles. However, more large vehicles are now being produced with strut based suspensions as well.

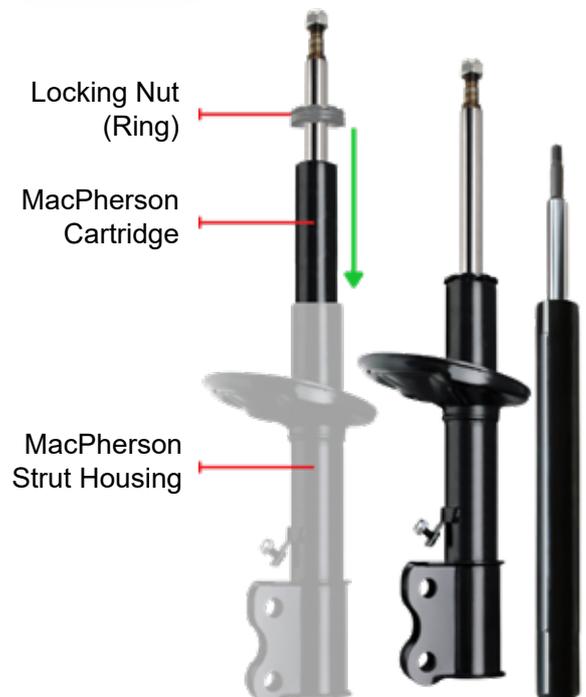


## MACPHERSON STRUT CARTRIDGES

Struts come in two types. One is a repairable version where the internal shock absorber is replaced with a sealed MacPherson strut cartridge. The cartridge is installed into the existing strut housing and secured with a locking ring at the top.

The other version is a sealed or non serviceable strut. As the name suggests, this type is permanently sealed during manufacturing and is replaced as a complete unit. In design, it is similar to the repairable version but cannot be taken apart for servicing.

More vehicle manufacturers are now choosing sealed struts over repairable types. This shift includes not only small and medium sized vehicles but also larger models that previously used more traditional designs. Spring seat shocks are also becoming increasingly common in modern vehicles.



## TELESCOPIC SHOCK ABSORBERS

This design is one of the most basic and is often used in both front and rear suspension systems. Telescopic shock absorbers have two design types:

1. Twin-Tube Design
2. Mono-Tube Design

## SPRING SEAT SHOCK ABSORBERS

These shocks combine the functions of a suspension support and a damping device into one complete unit, similar to struts. However, they are not exposed to the same level of lateral force. Spring seat shocks are fully sealed and are replaced as complete units when worn. They use similar components to those found in conventional telescopic shocks but with a more integrated design.

The units are straightforward and typically non serviceable. When it fails or wears out, it is removed and replaced entirely. These shock absorbers are generally affordable and widely used in various types of vehicles.



## TWIN-TUBE DESIGN

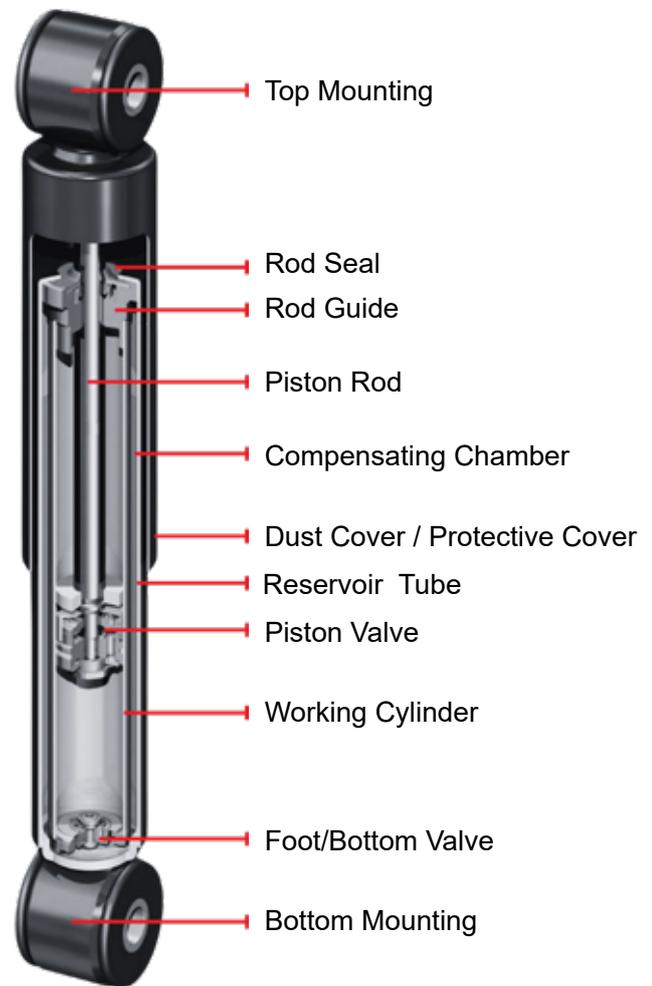
Gabriel twin tube shock absorbers feature a dual-chamber design with two oil-filled sections:

- The main working chamber, where the piston and rod operate.
- The compensating chamber. This second chamber is positioned between the working cylinder and the outer tube, filled approximately two-thirds with hydraulic oil and one-third with gas or air.

This design allows for a more compact shock absorber, offering a shorter overall length compared to a monotube version, which can be critical for certain vehicle applications.

Each Gabriel twin tube shock is precision-tuned to match the specific demands of the vehicle configuration, and suspension spring characteristics are carefully considered to ensure optimal damping performance, comfort, and control.

With Gabriel, you get more than just a shock absorber, you get a component engineered to meet the real-world needs of your vehicle.



## COMPRESSION PHASE

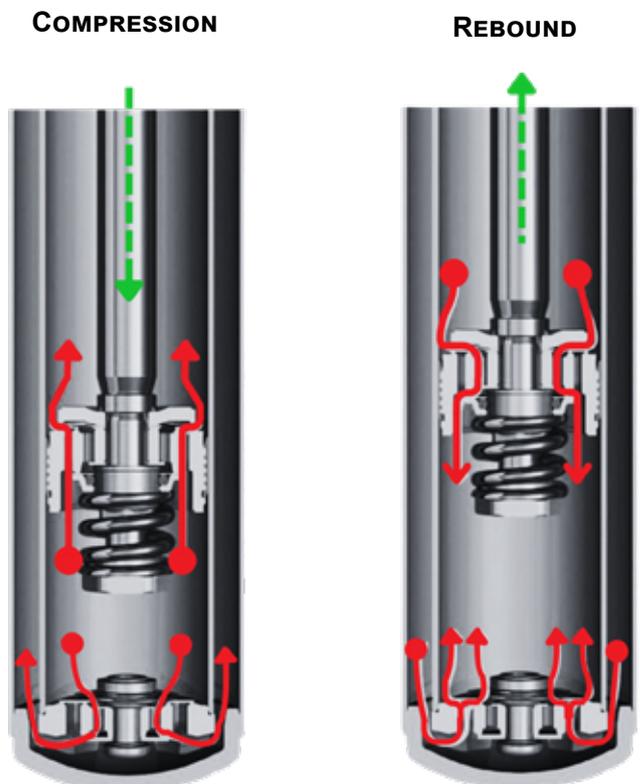
As the shock compresses, oil flows into the compensating chamber where the base valve regulates pressure to absorb impact. The piston valve stays open, allowing oil to pass freely for smooth, controlled movement.

Gabriel engineering ensures stable, comfortable handling on every road.

## REBOUND PHASE

As the suspension extends, the piston valve controls oil flow from the upper chamber, slowing rebound for stability and tire contact. The base valve allows oil to return freely, resetting the system quickly.

Gabriel shocks provide reliable rebound control for better traction and a smoother ride.



## MONO-TUBE DESIGN

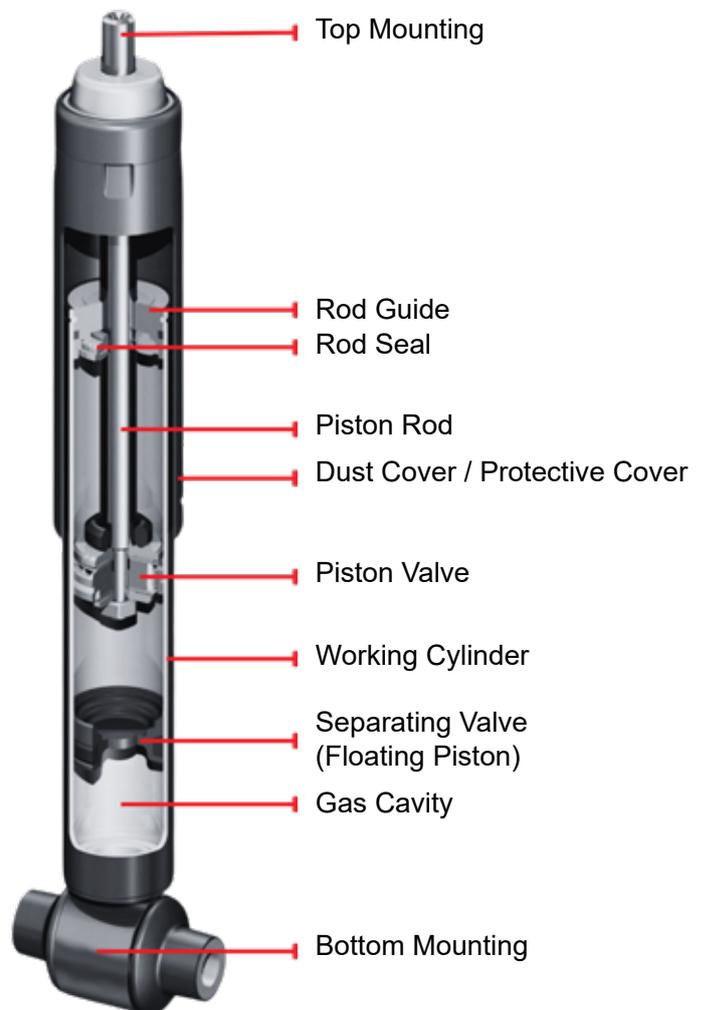
Gabriel gas-filled monotube shock absorbers are engineered for high-performance applications.

Inside a single working cylinder, hydraulic oil and gas are contained under high pressure, typically between 25 and 30 bar. A floating internal piston keeps the oil and gas completely separated, ensuring a leak-free and consistent response under all driving conditions.

Unlike twin-tube designs, Gabriel mono-tube shocks operate at significantly higher pressure. This high-pressure environment keeps the hydraulic oil stable by preventing foam and air bubble formation, even under intense use. It also enhances the responsiveness of the precision-engineered valve system within the piston, delivering sharper, more immediate damping control.

These shock absorbers can be installed in any orientation, offering flexibility in fitment and consistently strong performance across a wide range of vehicles and driving conditions.

Gabriel monotube shocks are the ideal solution where precision, durability, and control are non-negotiable.



## COMPRESSION PHASE

As road forces compress the shock, the piston valve resists oil flow from the lower chamber, controlling the movement for smooth, stable damping. The retracting piston rod compresses the gas chamber, which absorbs force and maintains consistent pressure.

Gabriel monotube shocks deliver precise control and improved comfort during every compression.

## REBOUND PHASE

As the suspension extends, the piston valve resists oil flow from the upper chamber, slowing the rebound to maintain control and tire contact. The gas chamber expands to balance pressure as the rod extends, ensuring smooth recovery.

Gabriel monotube shocks provide reliable rebound control for confident handling and stability.

## COMPRESSION



## REBOUND



## BENEFITS OF GAS PRESSURISATION

Even under typical driving conditions, a vehicle's suspension system puts constant and intense demands on its shock absorbers. In a split second, a shock absorber can switch from a compression stroke to a rebound stroke. This transition **repeats thousands of times for every kilometre driven.**

On uneven roads or during high speed driving, these demands increase significantly. In fact, a shock absorber is estimated to cycle over six million times during just twenty thousand kilometres of driving.

While hydraulic shock absorbers perform well under pressure, their function can be compromised when oil moves between high and low pressure zones. **This flow causes a sudden drop in pressure, which can lead to the formation of air bubbles in the oil. This condition is known as cavitation or aeration.**

Unlike oil, air bubbles can be compressed. When bubbles are present, the initial movement of the piston rod compresses the air instead of moving the oil

through the internal valving. **This causes a delay in damping force, reducing the effectiveness of the shock absorber and leading to performance fade.**

To counter this issue, Gabriel shock absorbers are filled with pressurised nitrogen gas. This gas prevents the formation of bubbles by eliminating the low pressure zones that cause cavitation. **The result is a significant improvement in damping response, consistency, and resistance to fade.**

**Gabriel engineers have spent considerable time refining the internal valving to make the most of gas pressurisation. This results in a smoother ride, reduced operational noise, and enhanced handling performance for a wide variety of driving conditions.**

## WHEN TO REPLACE

### WHEN TO REPLACE SHOCK ABSORBERS AND STRUTS

Shock absorbers wear out gradually over time, making it difficult for most drivers to notice the decline in ride comfort and handling. Often, the change is so slow that the driver only becomes aware of the issue when someone else points it out or when the vehicle is compared to one with new shocks.

This subtle decline in performance explains why many drivers do not consider that their shock absorbers may need replacing.

It is advisable to have shock absorbers inspected regularly—ideally every twenty thousand kilometres. Regular inspections help identify wear before it begins to affect vehicle safety and comfort.

However, shock absorber wear is not the only reason they might need replacement. In some cases, the shock absorbers fitted to the vehicle may not suit the specific driving preferences or usage needs of the current owner. Replacing them with units that better match the vehicle's use case can significantly improve comfort, control, and overall driving experience.

- 1. Bounce Test** - To check the condition of the shock absorbers, push down and quickly release the front and rear corners of the car to perform a bounce test. Pay attention to how easily the car bounces up and down. The car should stop bouncing after one to one and a half cycles. If the car continues to bounce excessively, it is an indication that the shock absorbers are worn and need replacing.
- 2. Check for Noise** - Knocking sounds from the shock absorbers can be detected by placing a finger on the end of the shock's shaft while bouncing the car. A knocking sound indicates that there are issues with the internal components of the shock absorber. However, always check for faulty installation before concluding that the shock absorber itself is the problem.
- 3. Tyre Wear** - Worn shock absorbers are a common cause of uneven or "cupped" tyre wear. Cupping occurs when the shock absorbers allow the tyre to bounce and skip over the road, resulting in a series of flat spots at regular intervals on the tyre. The easiest way to check for this is by running your hand over the tyre's tread to feel for any irregularities or flat spots.



4. **Check the Ride Height** - While worn shock absorbers do not directly affect the ride height of a vehicle, the overall condition of the suspension does. If the vehicle appears to sag at the rear or on one corner, this could be a sign that the shock absorbers are worn out.
5. **Check the Bump Stops** - Examine the bump stops for any signs of damage, such as oil-soaked or split bump rubbers, or shiny metal bump stops. These conditions indicate a lack of damping control and may suggest that the suspension is bottoming out. This could also indicate that the vehicle is being used under severe conditions and that the current shocks may not be suitable for the vehicle's application.
6. **Check the Odometer and Shock Age** - Check the odometer reading to determine when the shock absorbers were last inspected. It is recommended to inspect shock absorbers every twenty thousand kilometres, depending on driving habits and road conditions. For older vehicles, check the build date code stamped into the shock absorber body to determine its age.
7. **Leaking Shock Absorbers** - Oil leaks usually occur around the piston rod oil seal area. Shock absorbers are filled with a specific amount of oil during manufacturing, and once this oil begins to leak, the damping control is compromised. A knocking noise may also develop as performance deteriorates. Leaking shocks cannot operate effectively and must be replaced. In the early stages of a leak, the oil will appear fresh and wet. Over time, road dirt, dust, and grime combine with the escaping oil to form a greasy residue or oily paste on the body of the shock absorber or strut. If a leaking shock is not replaced in time, this residue will eventually dry out, indicating the shock absorber has been ineffective for a while. This dried residue, which may resemble dried mud, can sometimes cause a faulty unit to be overlooked. Any leaking shock absorber should always be replaced.
8. **Broken or Worn Mounts** - Shock absorber mounts are designed to last as long as the shock itself. If the mounting rubbers appear cracked, worn, or deteriorated, this often suggests that the shock absorber may also need replacing. If a mount is broken, it's important to investigate the cause. Failures are rarely due to manufacturing faults; instead, they are typically caused by incorrect installation or the use of parts not suited to the vehicle. Always check the part number against the correct application. In modified vehicles, such as lowered passenger cars or raised four-wheel drives, it is critical to ensure that the shock absorber maintains enough travel at both full compression and extension. The original shock length, even if correctly matched to the model, may no longer suit the altered suspension setup.
9. **Replace All Four Shock Absorbers** - When shock absorbers or struts are found to be worn or no longer suitable for the application, it is best practice to replace them with new Gabriel units. For optimum ride quality, balanced handling, and vehicle safety, it is strongly recommended that all four shock absorbers be replaced at the same time.
10. **Meet Customer Needs with the Right Product** There are cases where the existing shock absorbers may be functioning but do not meet the driver's specific needs or expectations. Some customers may seek a softer, more comfortable ride, while others may require performance shocks for demanding driving conditions. For example, four-wheel drive owners who frequently travel off-road will benefit from fitting a more robust shock absorber than what the vehicle was originally equipped with. In these cases, a heavy-duty Gabriel shock absorber would be an ideal upgrade. Likewise, performance-oriented drivers who wish to improve vehicle handling and road control will see a noticeable difference by upgrading to high-performance Gabriel shock absorbers designed for improved response and stability.

# SHOCKS - FITMENT GUIDE

## BEFORE INSTALLING GABRIEL SHOCKS

1. Always read the instructions provided with the Gabriel shock absorbers in conjunction with the vehicle manufacturer's workshop manual.
2. Check that all necessary mounting components are included with the new shock.
3. Hold the shock absorber vertically (shaft or dust tube at the top) and stroke it up and down several times to prime it before installation.

## REMOVING FRONT SHOCKS

1. Secure the upper stud of the shock to prevent it from turning, then remove the upper retaining nut, washer, and rubber bush. Note: On shocks without dust tubes, the stud end may be machined to accept a spanner for removal.
2. With the vehicle safely raised, remove the lower mounting bolt(s) from the suspension control arm.
3. Depending on the vehicle, the shock may be removed either upward or downward.

## INSTALLING FRONT SHOCKS

1. Fit the lower metal washer and rubber bush onto the upper stud. Insert the shock into the frame mount through the control arm. Then, fit the upper bush, washer, and retaining nut. Secure the lower mounting bolts in the control arm.
2. If installing a Gabriel shock that is larger than the unit being replaced, you may need to slightly enlarge the control arm's mounting hole with a round file.

## REMOVING REAR SHOCKS

1. Raise the vehicle and support the rear axle.
2. Disconnect the upper mountings first, followed by the lower mountings.

## INSTALLING REAR SHOCKS

1. Connect the upper mountings first, then secure the lower mountings.
2. Be sure to check the clearance around brake and fuel lines, and the exhaust system — both on and off the hoist.

## INSTALLATION DO'S & DON'TS

1. Do not tighten all mounting bolts firmly but avoid over-tightening. Over-compressed rubber bushes (bulging beyond retainer washers) indicate over-tightening.
2. Always use new replacement parts where applicable.
3. Never grip or clamp the piston rod with any tool. Any marks on the rod can damage the oil seal and will void warranty.

## POST-INSTALLATION CHECKS

1. Inspect all clearances with the vehicle on the ground.
2. Confirm tyre pressures are set according to the manufacturer's specifications.

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# STRUTS - FITMENT GUIDE

## BEFORE INSTALLING GABRIEL STRUTS

1. If possible, road test the vehicle before and after replacing struts or cartridges.
2. Ensure you've selected the correct Gabriel strut or cartridge for the specific vehicle. Always check the build date and application data.
3. In many cases, a wheel alignment will be required after removing and replacing struts — check the workshop manual for confirmation.
4. Mark the strut tower and upper bearing plate before disassembly to preserve alignment. If an adjustable camber bolt is present, mark its position as well.

## STRUT TOOLS REQUIRED

1. A spring compressor (manual, air-operated, bench or wall-mounted) to safely compress the coil spring.
2. A spanner wrench to remove or install the locking ring on cartridge-type struts.
3. A torque wrench to tighten all bolts to the correct manufacturer torque specification.

## STRUT CARTRIDGE DO'S & DON'TS

1. Discard the old locking ring. Before installing the cartridge, thread the new locking ring by hand to confirm compatibility and thread condition.
2. Inspect the inside of the strut housing and remove any old components before inserting the new cartridge.
3. Ensure the cartridge fits securely inside the housing. It should not move once the locking ring is fully tightened.

If the brake line was removed during replacement, bleed the brake system after reinstallation.

## SEALED STRUT UNITS DO'S & DON'TS

1. During strut installation, take care not to damage front axle rubber boots — even minor damage can cause CV joint failure.
2. Do not over-compress the coil spring. Apply only the minimum force needed to safely disassemble the strut.

During reassembly, ensure the bearing plate thrust washers and spring seats (top and bottom) are correctly aligned.

## HOW TO PROTECT YOUR STRUTS

1. Gabriel wants to emphasize the importance of renewing damaged or missing strut cushions (bump rubbers)
2. Damaged or missing strut cushions that are not replaced during strut and cartridge fitments can cause premature strut failure.
3. A strut cushion consists of a convoluted rubber boot or gaiter and a urethane compression bumper. These fit together and slide over the piston rod to rest on the strut's body.
4. The gaiter protects the strut's chrome piston rod from damage, keeps dirt out of the seal, pitting from stone chippings and corrosion from whatever the road may throw up.
5. The compression bumper, which fits into the boot, avoids internal damage being caused by preventing metal-to-metal contact under severe compression of the piston rod.

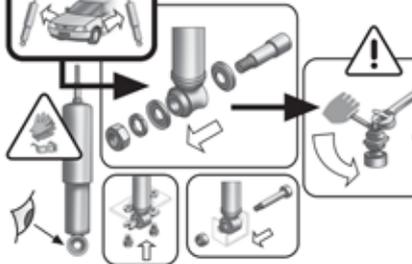


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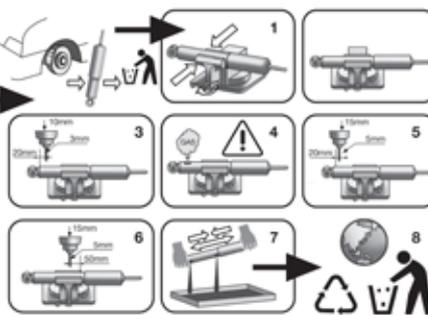
# FITMENT INSTRUCTIONS

## SHOCK REMOVAL

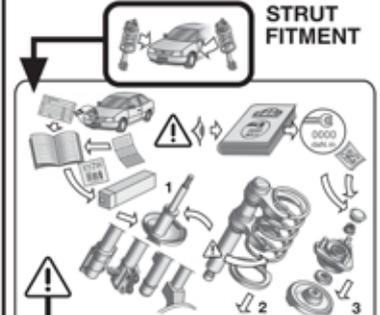


**DISCLAIMER:** Gabriel SA cannot be held liable in the event of injury or damage to property during the assembly / disassembly / disposal process, if the product is not assembled / disassembled / disposed of at a fitment centre, by a trained professional. These instructions are a generic representation, and not all vehicles will have this type of shock configuration.

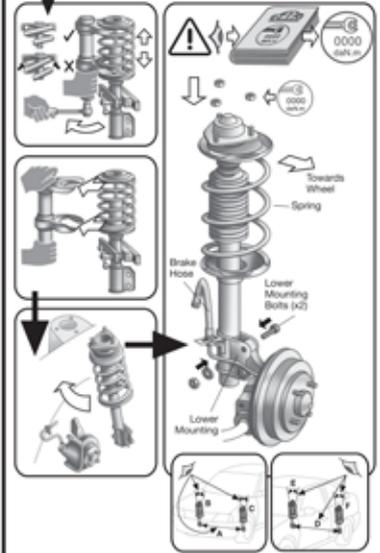
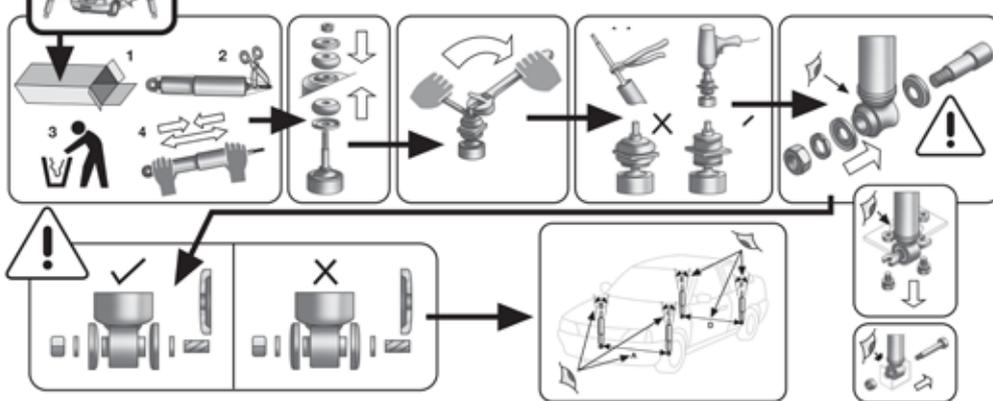
## SHOCK DISPOSAL



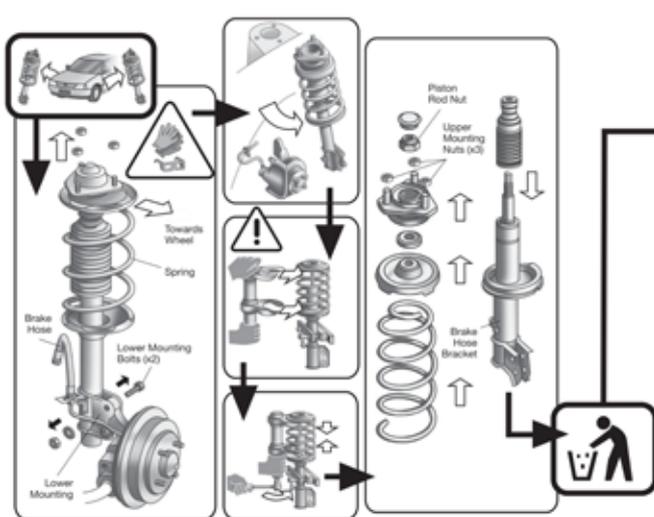
## STRUT FITMENT



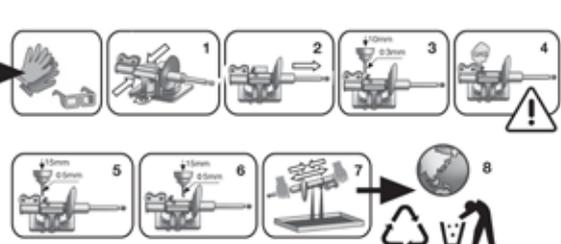
## SHOCK FITMENT



## STRUT REMOVAL



## STRUT DISPOSAL



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# COMMON FAULTS

## DIAGNOSING AND PREVENTING COMMON SHOCK ABSORBER AND STRUT FAILURES

### INCORRECT FINAL TORQUE WHILE VEHICLE IS SUSPENDED

One overlooked cause of premature failure is securing shock absorber mountings while the vehicle is elevated and its suspension fully extended. When mounts are tightened in this position, the bushings can become twisted once the vehicle returns to normal ride height, creating constant tension. This may cause misalignment, paint abrasion on one side of the shock, and ultimately damage to seals due to the side forces. You may also notice that the vehicle sags unevenly or sits unnaturally high in the rear.

**To avoid this, always carry out the final torque procedure with the vehicle supported on its wheels**, ideally with a passenger seated inside to simulate normal weight. If this isn't possible, use a jack to raise the axle until the dust cover edge lines up with a marked reference point on the shock body, then tighten bolts to the recommended torque.

Additionally, Gabriel offers shocks with an asymmetric bushing design, which must be aligned correctly to ensure optimal movement. Incorrect orientation or misalignment of these bushings can lead to internal seal damage, loss of oil, and a blocked suspension response. Wheel alignment should also be checked after installation to prevent long-term issues.

### USING OLD OR DAMAGED MOUNTING KITS

Top mounts, which include a bearing and a rubber isolator, are crucial for safe and smooth steering operation. Over time, the rubber becomes harder, and the bearing may wear out, leading to vibration through the steering wheel, resistance when returning from turns, and even steering lock-up. If old mounting kits are reused during shock or strut replacement, the new parts won't perform correctly, and serious safety concerns may arise.

For this reason, Gabriel recommends replacing the top mounting kits at the same time as struts. These components are designed to wear together and typically have a service life of around 80,000 kilometers under normal driving conditions.



### COMPRESSION BUMPER MISPOSITIONED DURING INSTALLATION

The compression/bump bumper is a key part of the protection system. During installation, some technicians pull the bumper downward to access the piston rod. If not repositioned properly, it can restrict travel and result in a suspension that feels overly stiff and unresponsive.

To ensure correct operation, always position the bumper near the top of the rod with a small gap between it and the bottom of the mount once installation is complete. This allows full suspension movement and prevents travel blockages.

### USE OF WORN PROTECTION KITS WITH NEW DAMPERS

Protection kits are designed to keep harmful contaminants like dust, water, and road salt away from the shock absorber's piston rod. If these kits are reused or in poor condition, the rod may become scratched, which compromises the oil seal and leads to gas and fluid leaks.

Additionally, the compression bumper, usually made of high-density foam, helps limit body roll, brake dive, and suspension bottoming. As it ages, it can become brittle or loose-fitting, allowing road particles to damage the rod surface. Once the seal is compromised, damping performance is reduced, and wear on other suspension components increases.

For reliable and long-lasting shock absorber performance, Gabriel recommends always fitting new protection kits with any shock or strut replacement.



*Correctly installed protection kit*

### **DAMAGE CAUSED BY INCORRECT TOOLS AND METHODS**

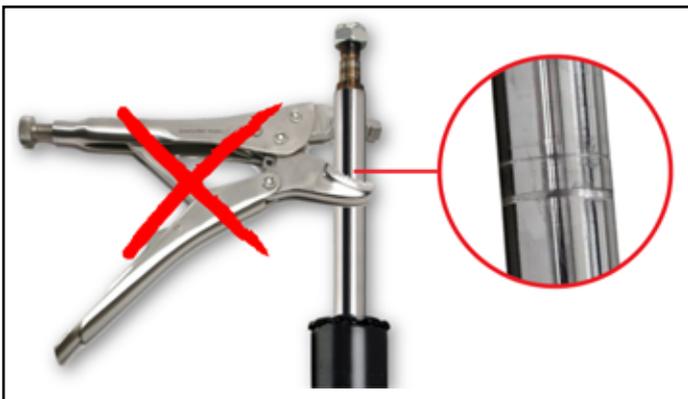
Improper tool use is a leading cause of installation related failures. One frequent issue occurs when pliers or grips are used to hold the piston rod while tightening the top nut. This leaves deep scratches on the rod's chrome surface. Every time the rod cycles through the damper's seal, it accelerates wear and causes leakage.

Another mistake is cross-threading or damaging the piston rod threads by misaligning the nut and forcing it on with an air tool. This not only causes noise but also shortens the service life of the unit. In such cases, the issue is not caused by the damper itself but by poor handling, and it may not be covered by warranty.

Always use the correct holding tools and avoid impact wrenches when working with threaded components.

### **UNEVEN REPLACEMENT OF SHOCK ABSORBERS**

Shock absorbers should always be replaced in pairs across the same axle. Each damper undergoes millions of compression and rebound cycles during its life. Replacing only one unit creates an imbalance between



*Damaged piston rod due to use of grips or pliers*

the new and the old shock, causing the fresh unit to overwork and wear out faster as it tries to compensate for the weakened performance of the other side.

This mismatch leads to poor vehicle handling, uneven tyre wear, and reduced suspension control. Gabriel recommends replacing both shocks or struts on the same axle and inspecting protection and mounting components at the same time to ensure the system functions harmoniously.

### **TOP NUT OVERTIGHTENED DURING ASSEMBLY**

Another cause of strut failure is overtightening the upper retaining nut. This nut secures the strut assembly, spring, and top mount. Applying too much torque, especially with a pneumatic tool, can deform the rod, damage the mount, or even cause the unit to dislodge from its seated position. In some cases, this might result in rod breakage or complete failure on the road.

The top nut should always be torqued using a hand tool and calibrated wrench to the vehicle manufacturer's specification, which typically falls well below the torque generated by an impact gun.

### **FINAL THOUGHTS**

**Most premature shock absorber and strut failures are not due to manufacturing faults, but rather:**

- incorrect installation
- poor supporting components
- inadequate tools.

**As a Gabriel professional, following best practices and educating customers on proper replacement procedures helps ensure optimal performance and safety.**

**For every fitment:**

- Ensure that the correct part number is used for specific vehicle as per Gabriel catalogue
- Use correct tools and torque specifications
- Replace parts in matched pairs
- Fit new protection and mounting kits
- Verify correct component alignment and position

# SERVING THE CUSTOMER

## SERVING YOUR CUSTOMER THE PROFESSIONAL WAY WITH GABRIEL

As a shock absorber specialist, your customers rely on you to help them make the right decision. Providing expert service means knowing the Gabriel product range, asking the right questions to understand each customer's ride control needs, and clearly communicating the benefits of choosing Gabriel.

### WHY CUSTOMERS BUY

The most common reason for buying new shock absorbers or struts is to restore ride control lost due to normal wear and tear. But there are other reasons too:

1. A firmer or softer ride preference
2. Heavy duty or off road driving needs
3. Improved handling and vehicle stability

Vehicle safety, a growing concern as more drivers understand the vital role shocks play in braking and control

### DIFFERENT CUSTOMERS, DIFFERENT NEEDS

Every customer has a different motivation for replacing shocks. Some are focused on comfort, others on safety, performance, or durability. Many choose brand name as their top reason. Gabriel is a trusted name in ride control, making your job easier when you recommend it.

### SELLING IS SERVING

A successful sale happens when both you and your customer are satisfied. Achieving that means following a professional sales approach:

1. Know your Gabriel products and their benefits
2. Ask the right questions to identify customer needs
3. Explain clearly how Gabriel shocks meet those needs
4. Make your recommendation confidently
5. Ask for the sale, do not forget this final step

### Product Knowledge Builds Confidence

You should be familiar with the entire Gabriel range, from conventional oil and gas shocks to sealed struts and heavy duty options. Keep a current Gabriel catalogue on hand and stay up to date with the latest

innovations. The more you know, the easier your sales conversations will be.

Confidence builds trust. When you know your products and care about finding the right solution, customers will trust your advice and appreciate your professionalism.

### UNDERSTANDING CUSTOMER NEEDS

To recommend the right Gabriel product, you need to gather some basic details:

1. Vehicle make, model, year, and any modifications
2. Kilometres travelled
3. Handling complaints such as nose dive, body roll, instability
4. Whether the customer tows or carries heavy loads
5. Desired ride feel such as soft, firm, or sportier
6. Listen carefully. The customer will tell you more than you think.

### INSPECT THE VEHICLE

Customers do not always know their shocks need replacing. But if the vehicle is in for another service, it is the perfect time to check:

1. Fluid leaks from shocks or struts
2. Condition of mounting parts and bushings
3. Tyre wear patterns such as cupping or uneven wear
4. Ride height concerns or sagging
5. Any noise or knocking when moving the suspension

**It is important to be honest about the vehicle's condition. You do not want a comeback on a good brake job because you did not mention the shocks needed replacing.**

### MAKE AND REINFORCE YOUR RECOMMENDATION

- You know the Gabriel product line
- You know the customer's ride control needs
- Now recommend the right shock solution

Start with the option that best suits the customer's needs and explain all available choices. Maximise your opportunity by recommending Gabriel premium products. Reinforce your recommendation by explaining the benefits such as improved handling, better comfort, reduced wear on other parts, and long lasting performance.

## ASK FOR THE BUSINESS

You have given the customer the information they need to make a decision. Now make it easy for them to act. Provide a clear and immediate path to complete the sale.

## SELLING IS EASIER WITH GABRIEL

From basic to advanced shock absorber technology, you can be confident in Gabriel quality. Know the product line, understand the customer's needs, recommend the right solution, and ask for the business.

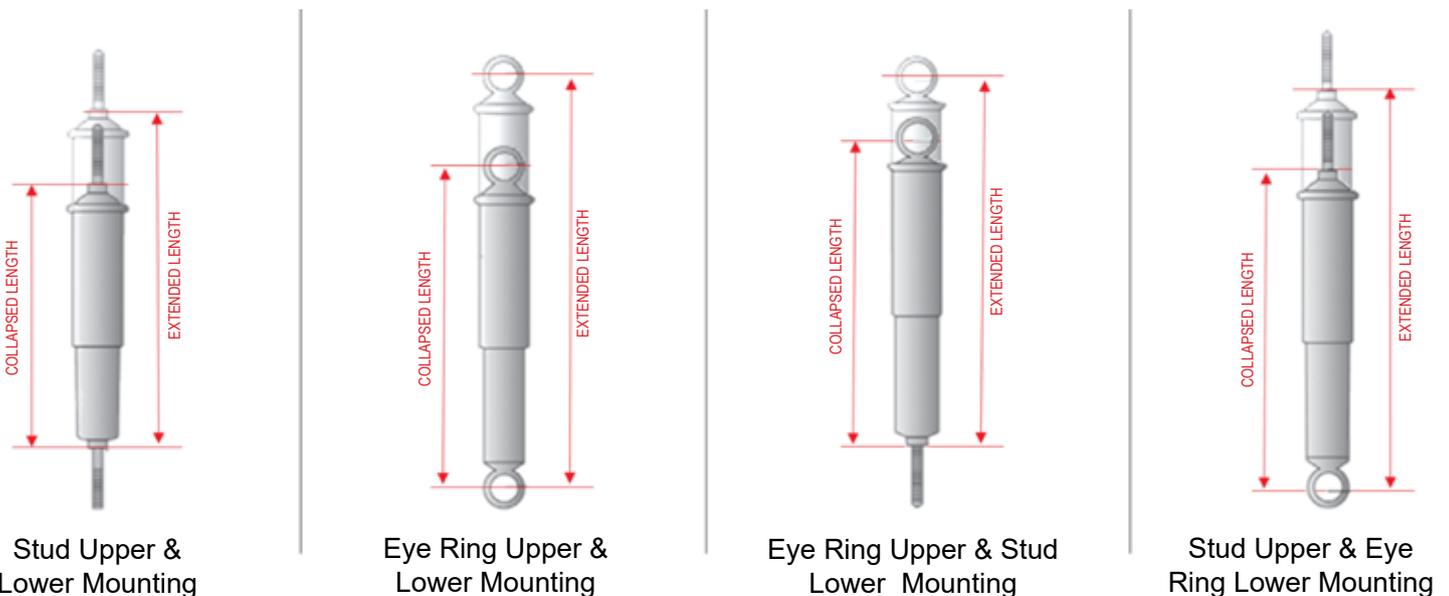
**The result is a successful sale and a satisfied customer!**



# HOW TO MEASURE SHOCKS

## HOW TO MEASURE THE EXTENDED AND COLLAPSED LENGTHS OF A SHOCK ABSORBER:

1. First fully extend the shock and measure from the centre of one mounting eye or bolt (or base of the stud) to the centre of the opposite eye or base of the stud, this gives you the extended length.
2. Then, compress the shock completely and take the same measurement again to determine the collapsed length. Always measure along the shock's centreline, and ensure any bump stops or washers are accounted for if they are part of the unit.



# GABRIEL PART NUMBERS

Gabriel manages its part numbering system using a structured prefix that indicates both the type of shock absorber and its sub-brand. This prefix helps quickly identify the product's application and positioning within the Gabriel range.

This system ensures clarity across product categories and helps both retailers and fitment technicians select the correct unit for the vehicle and intended use.

<b>Prefix</b>	<b>Unit Type</b>	<b>Sub-Brand</b>
18...	Telescopic Shock Oil	Technomatic
19...	Telescopic Shock Oil	Technomatic
35...	Strut Oil	Technomatic
36...	Telescopic Shock Oil	Technomatic
42...	Telescopic Shock Gas	Technomatic
44...	McPherson Cartridge Oil	Technomatic
46...	Mono-tube Shock Absorber Gas	
51...	Spring Seat Shock Oil	Technomatic
55...	Safari Shock Absorber Oil	Safari
558...	Struts Gas	GasRyder
612...	Telescopic Shock Absorber Gas	GasRyder
613...	McPherson Cartridge Gas	GasRyder
619...	McPherson Cartridge Gas	GasRyder
62...	Telescopic Shock Absorber Gas	GasRyder
69...	Spring Seat Shock Gas	GasRyder
70...	Strut Gas	GasRyder
76...	Telescopic Shock Absorber Oil	FleetRyder
77...	Telescopic Shock Absorber Oil	FleetRyder
83...	Telescopic Shock Absorber Gas	FleetRyder
G35...	Struts Gas	GasRyder
G44...	McPherson Cartridge Gas	GasRyder
G45...	Telescopic Shock Gas	Technomatic
G51...	Spring Seat Gas	GasRyder
G55...	Strut Gas	GasRyder
G56...	Telescopic Shock Absorber Gas	Safari
G63...	Telescopic Shock Absorber Gas	
GS...	Safari HDP Gas	Safari

# WARRANTY

When it comes to performance and durability, Gabriel products, are subject to the highest quality and safety standards. As a valued customer, you can always rely on Gabriel quality, backed by a limited warranty promise of reliability and dependability.

Gabriel (through Auto World South Africa (Pty) Ltd) warrants its products to be free from defects in material, function, quality, performance, and durability. Gabriel SA products are warranted to the original wholesale or retail purchaser only.

All consumer warranty claims must be directed to and via the place of purchase accompanied by the minimum required Warranty Claim Information.

## GABRIEL WARRANTY

- Gabriel shock absorbers used on passenger cars and light commercial vehicles (up to 1 000 kg load capacity)
- Warranted for a period of 36 (thirty-six) months from the date of purchase. This applies in South Africa, Botswana, Namibia, Swaziland and Lesotho.
- Zimbabwe, Zambia, Malawi and Mozambique have a warranty of 12 (twelve) months
- Gabriel® gas-springs (Gabriel Gaslift®), both industrial and automotive are warranted for a period of 12 (twelve) months from date of sale to user.
- Gabriel honours All of its product from any store that a warranty is claimed from irrespective of where the customer initially purchased the product from.
- If you are not the original seller, it is still your responsibility to validate if a customer has a valid claim and to process the claim in line with this procedure.
- We so advise that you make a copy of the claimed invoice for your records.

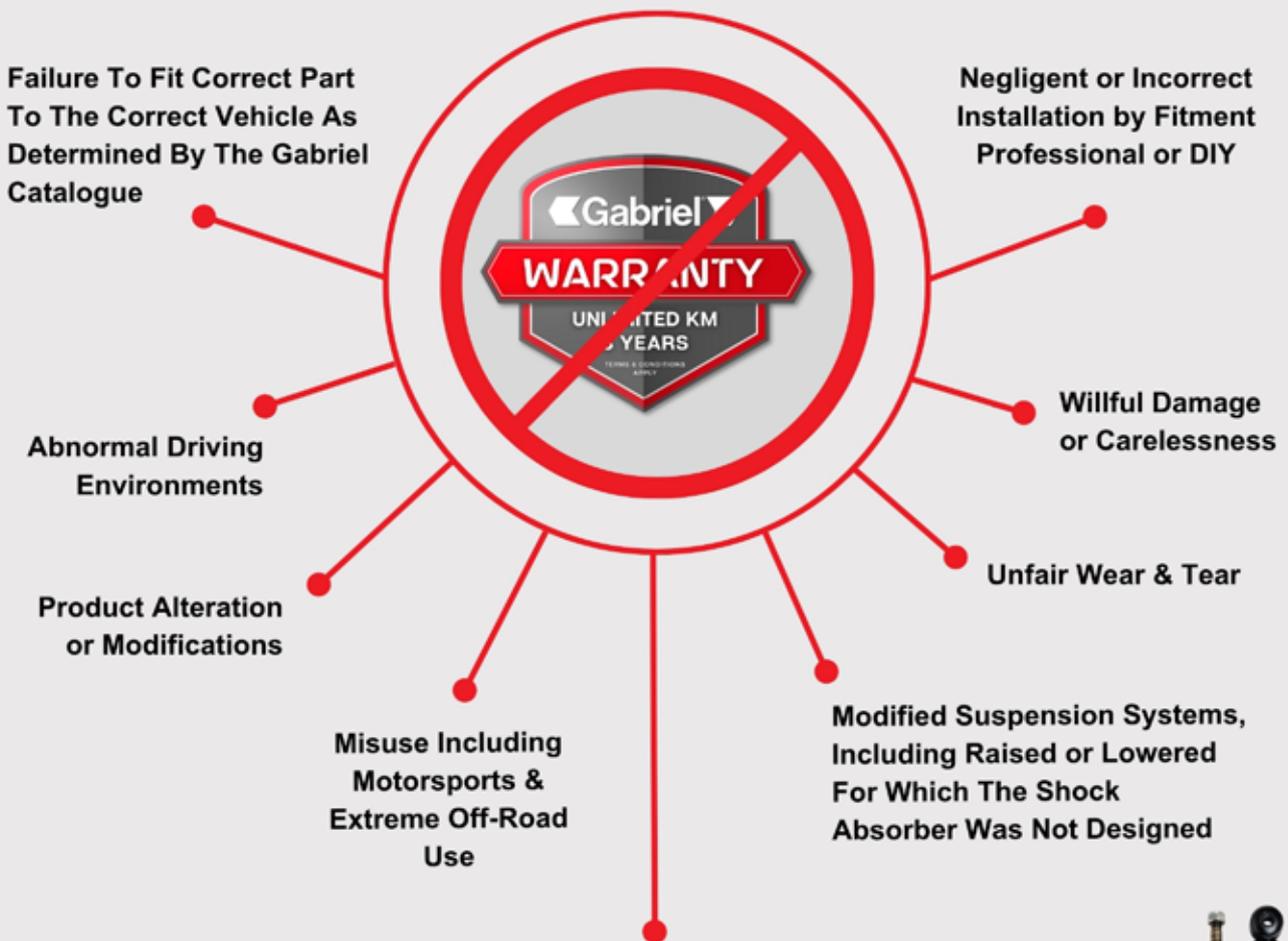


For more information on the Gabriel Warranty Statement, please scan or click on the Warranty QR Code



The Gabriel brand and all of its registered trademarks, is wholly owned and distributed by Auto World South Africa (Pty) Ltd. Gabriel products, are subject to the highest quality and safety standards. Gabriel, through Auto World South Africa (Pty) Ltd, warrants its products to be free from defects in material, function, quality, performance, and durability. Gabriel SA products are warranted to the original wholesale or retail purchaser only.

# EXCLUSIONS FROM WARRANTY



Failure Due To The Re-Use Of Bump Rubbers (Part No. 143057) Or The Re-Use Of The Original OE Bump Rubbers. (Also Void If Bump Rubbers Are Not Used)



# ANTI-COUNTERFEIT

## Gabriel Shock Absorbers with Market-Leading Security Features!

Gabriel Shock Absorbers, now featuring a **bold, modern design** and an industry-first innovation with **integrated anti-counterfeit devices** on both the packaging and the product.

These cutting-edge security measures ensure that every Gabriel product is authentic, **protecting the market, safeguarding consumers, and preserving the integrity of the Gabriel brand.**

This pioneering approach not only enhances the product's visual appeal and durability but also reinforces our commitment to quality and trust. With Gabriel, you're not just getting superior performance - you're getting peace of mind.



**IMPORTANT:** This packaging introduction will be introduced to the market with immediate effect and on a phase in, phase out system of current packaging and stock on hand. It is anticipated that this process could take some time to fully saturate the market with the new packaging.

### Simple, Modern, Bold Design

Strong and recognisable elements  
All round brand visibility.  
"Gabriel RED" is uniform

### Glueless Construction

The folding and seams of the box is totally glueless making flattening of empty boxes easier and recycling **more** beneficial.

### Stronger Materials

Material strength has been specified to ensure overall strength and burst resistance to endure shipment, multiple handling and layer stacking during warehousing and shipping.

### Resealable Closure

The "pizza box" design allows for easy opening and closing of the packaging without fear of damaging or ripping the packaging.

### On Product Protection

Cypheme Tag placed onto product for out of box protection

### Shelf Appeal

Enhanced bulk shelf appeal and brand presence is achieved giving rise to front of house merchandising opportunities.



## Anti-Counterfeit Measures

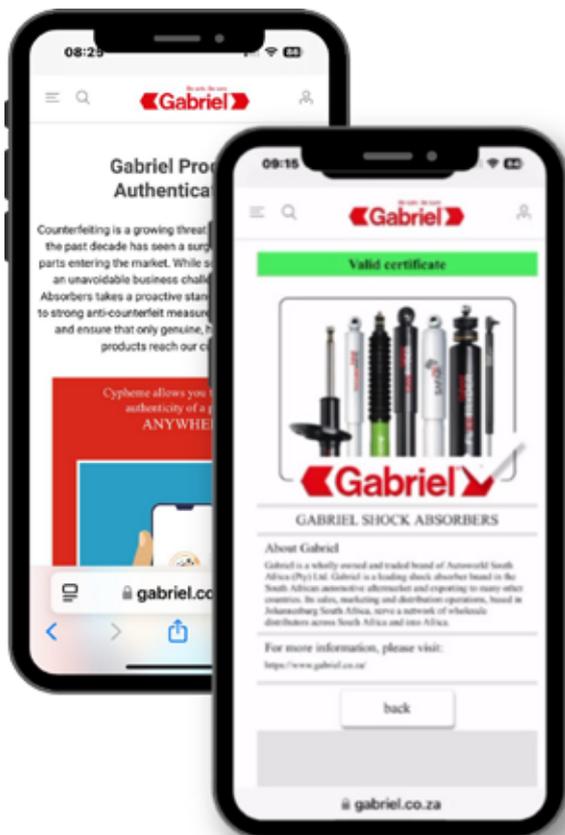
We have incorporated Cypheme technology with algorithm powered labels which are supported by robust Artificial Intelligence (AI) which verifies a product's authenticity; this is made possible because of our unique fingerprint labels that cannot be copied or reproduced. Our solution protect the brand, stops counterfeiters and protects the market, consumer and the reseller.

	Unique fingerprint	
	Sophisticated Tag	
	Colour Recognition	
	AI Tag Recognition	
	Proprietary Code	



QR Code to the Gabriel Authentication Web App

Placeholder & Gabriel Unique Cypheme Certificate



Gabriel Web App with clear instructions on how to verify the authenticity of your Gabriel product.



Be safe. Be sure

# ◀ Gabriel ▶

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