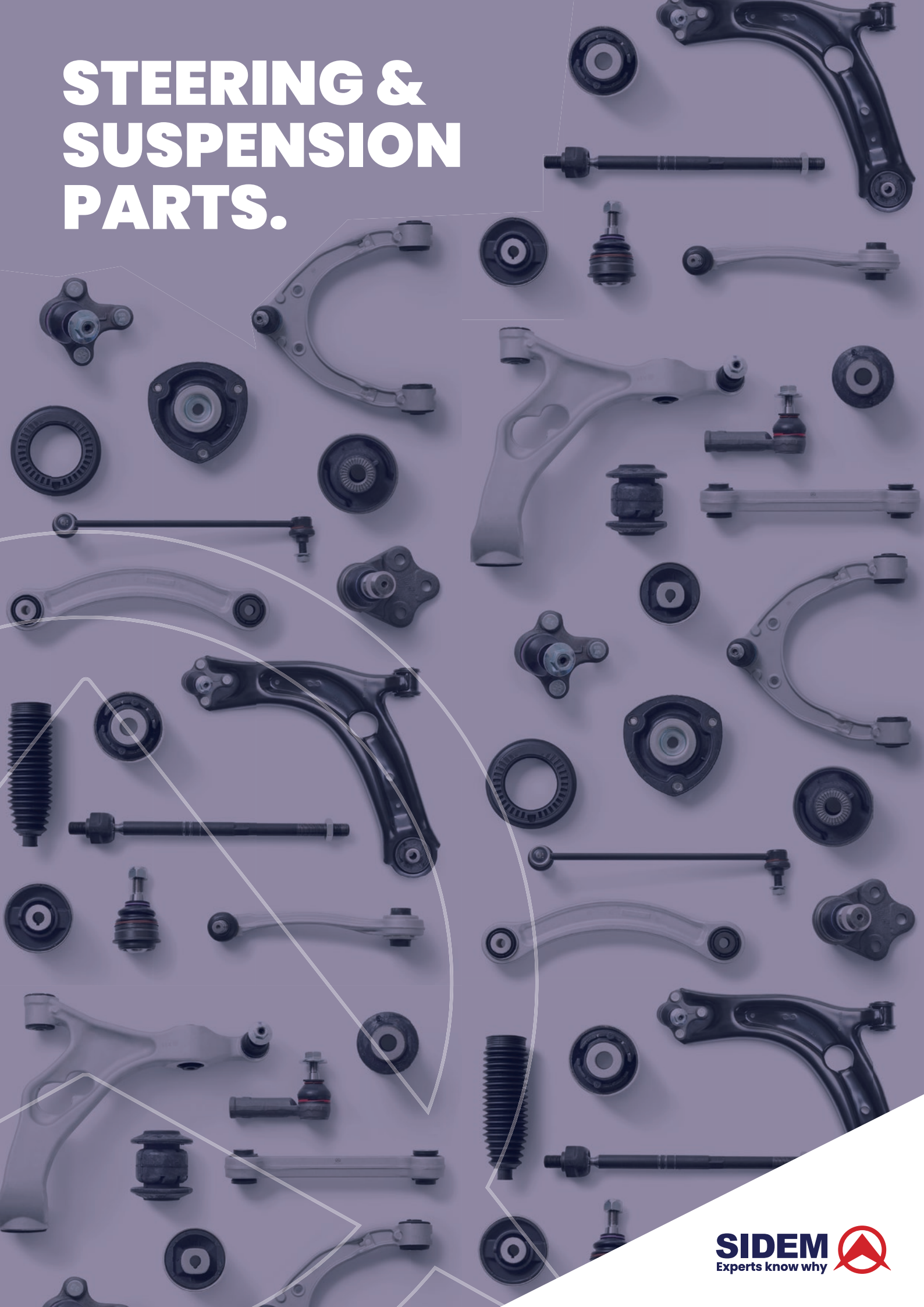
STEERING & SUSPENSION PARTS.



SIDEM
Experts know why

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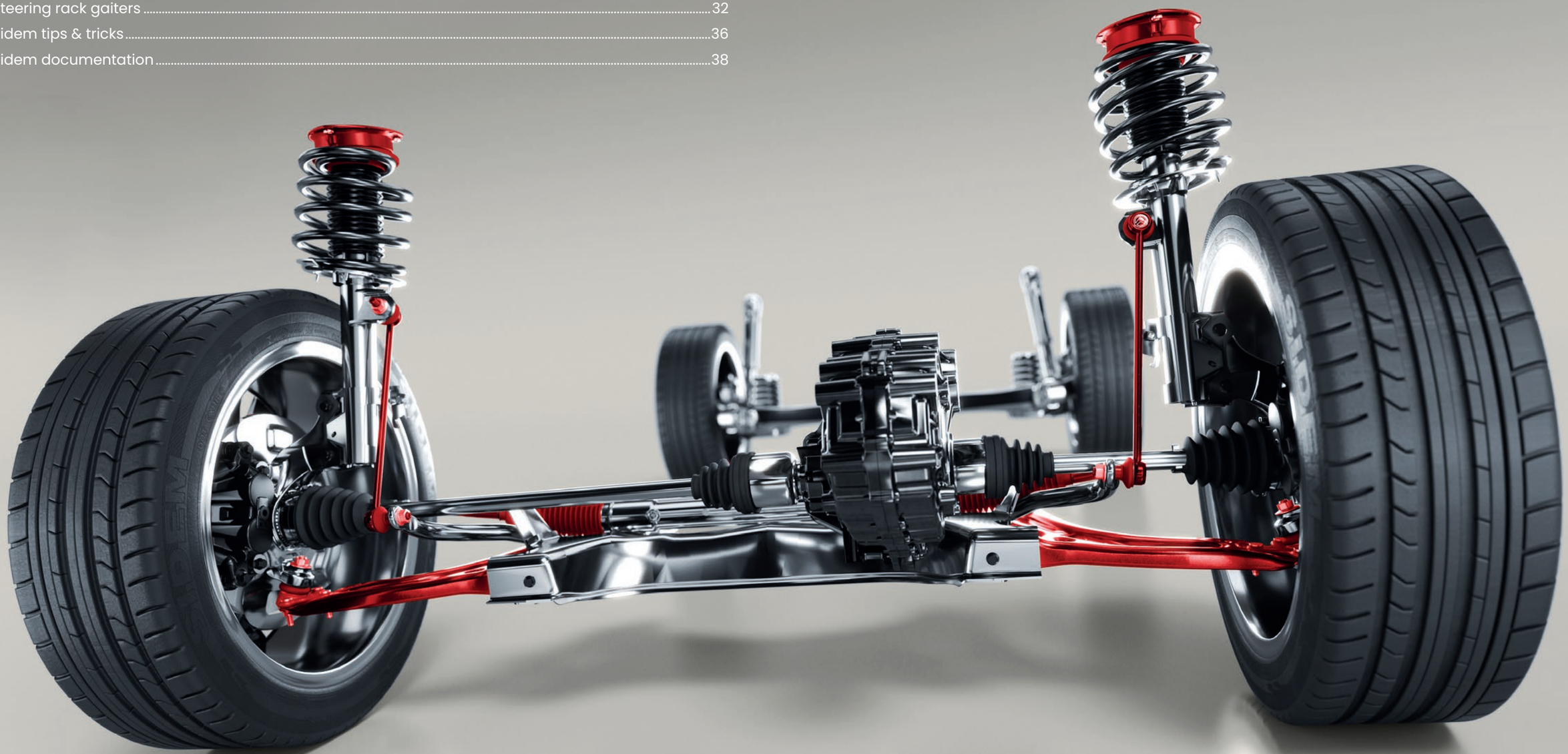
SCAN FOR OUR INTERACTIVE TOOL



SIDEM
BALL JOINTS.

Ball joints play an essential role in your vehicle's suspension system. They are spherical bearings that connect the wheel suspension control arms to the steering knuckles which directs the wheels. Also integrated in many other parts like tie rod ends, axial joints, stabilizer links etc. they are constantly working to guide your vehicle on the road safely.

BALL JOINTS:

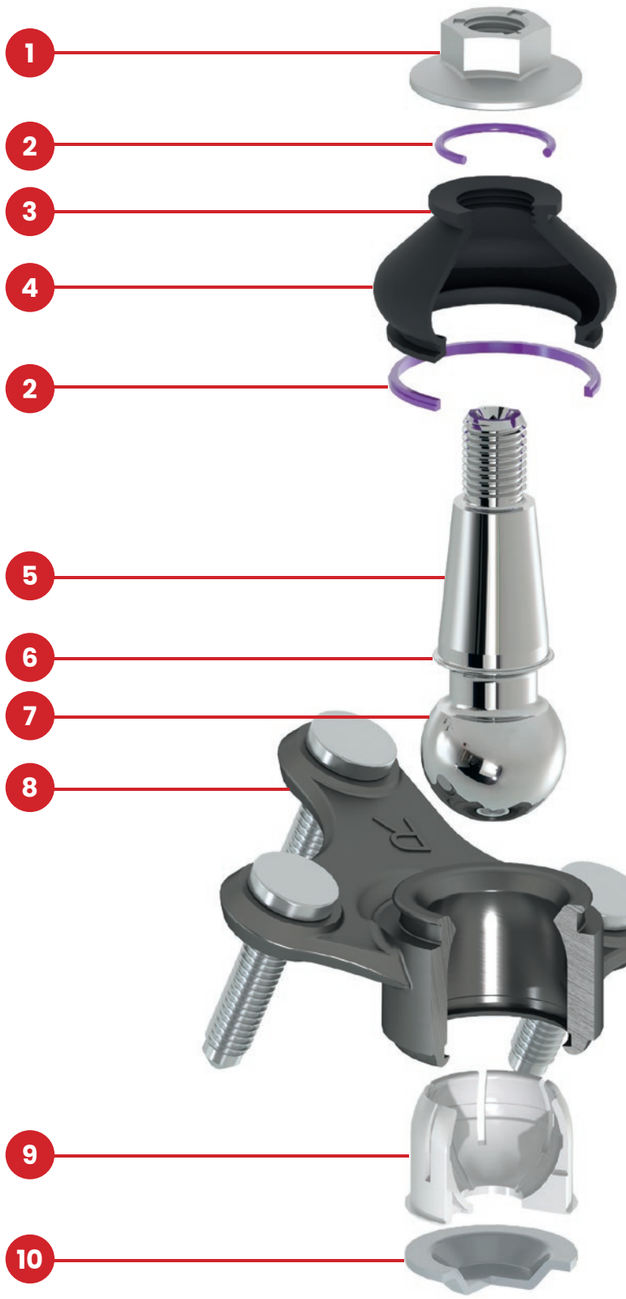
- Ball joints are **spherical bearings** which allow both smooth rotational and tilting movements. As they share the same working principles, you can consider them the hip joints in your vehicle.
- Because ball joints allow these movements, they are used as the **pivot** between the control arm and the steering knuckle, allowing both steering (rotation) and suspension (tilting) movements.
- Depending on the suspension design, the lower ball joint also has the important task of **carrying the vehicle's weight**. Needless to say, these load carrying ball joints are **vital for both comfort and safety**!

SIDEM BALL JOINTS:

Due to the constant motions and forces, a premium ball joint is what you need for a proper repair job. That is why experts rely on Sidem to keep the vehicle safe and comfortably on the road .

- Every moving mechanical part is subject to wear. We reduce this to an absolute minimum by rolling the pivoting ball for a **perfect finish**, even adding **extra surface strength**. Combined with a high-quality POM-insert and top-of-the-market lifetime grease (co-engineered with Klüber lubrification), durability is ensured.
- Another reason that will cause early ball failure is water. Once it makes its way inside a joint, corrosion will wear it down rapidly. Our **high quality dust covers**, made from chloroprene rubber with a special design for anti-torsion, prevent this with ease.
- The constant high forces and impacts on ball joints ask for parts constructed with strong materials and techniques. Using **Chromium steel, cold forged with rolled ball & thread**, our though ball joints will guarantee your safety.

SIDEM
BALL JOINTS.



1 Nut
- Lock nuts prevent loosening
- Class 10; white zinc coated
- Correct flange nut diameter according OE-standard

2 Top & bottom springs
- Flattened spring steel
- No deformation, diameter is maintained
- Excellent sealing pressure

3 Dustcover grooves
- Increases sealing pressure on the ball stud
- Allows grease between the grooves for lubrification
- Prevent water infiltration

4 Dustcover
- Chloroprene rubber
- Anti-torsion design
- Maximum resistance to chemical substances
- Best sealing from moist and dust
- Extreme resistance to wear and extreme temperatures
- Strong resistance to ozone and all-weather circumstances

5 Ball stud
- Cold forged chromium steel
- Extremely rust resistant
- Rolled ball for extra surface strength and smooth finish
- Low friction results in increased lifespan
- Maximum strength
- Rolled thread; stronger than cutting thread

6 Dustcover seat
- Prevents the dustcover from collapsing/ damage

7 Lifetime lubricant grease
- Co-engineered with Klüber
- Reduces friction
- Prevents drying and wearing out
- Better adhesion
- Water repellant
- Increased lifespan

8 Housing finishing
- All sharp edges are removed
- Round edges prevent damage to the dustcover

9 Insert
- Constrains the ball-pin movement
- In polyoxymethylene
- Resistant to high impact and temperatures
- Low wear

10 Backplate
- Closes the ball joint
- Locks the insert in position

SCAN TO READ MORE ABOUT BALL JOINTS ON OUR WEBSITE.

SIDEM
STABILISER LINKS.

You've surely experienced body roll. It's the way your vehicle leans to one side when turning into a corner, caused by the occurring centrifugal forces. Stabilizer links, along with the stabilizer bar, help to limit this. That's why they are vital components in the suspension!

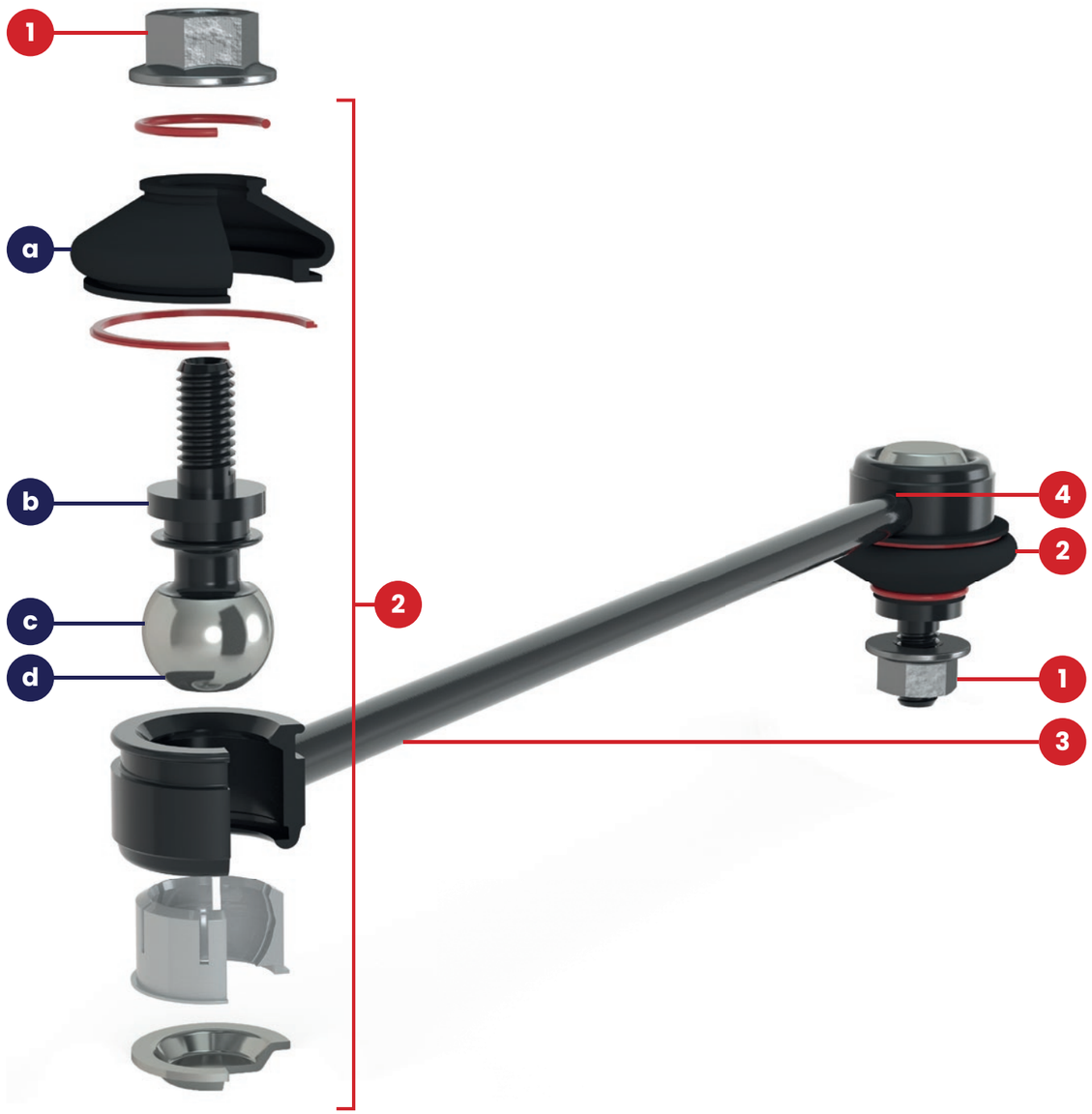
STABILISER LINKS:

- Stabilizer links are connected to the stabilizer bar at one end while the other end is mounted to a suspension component. Basically, they connect the vehicle's **left- and right-side wheel suspension** via the stabilizer bar.
- A vehicle will tend to lean outwards when steering into a corner. Due to this, the outer suspension will be pushed inwards while the inner suspension will be pulled outwards (rolling). The stabilizer-system limits the suspension differences through the rigid connection, **keeping your chassis as flat as possible**. This also occurs when driving on uneven surfaces.
- A stabilizer link consists of 2 ball joints, connected via a rod. As the suspension is constantly working, so are these ball joints. **This parts needs to be strong and trustworthy as it constantly distributes the occurring forces on both wheels evenly**.

SIDEM STABILISER LINKS:

- As the ball joints on stabilizer links are working hard for your comfort and safety, a strong part with high endurance is what you want. Using our **premium Sidem ball joints** with chromium steel ball stud; Klüber grease and chloroprene rubber anti-torsion dustcovers on stabilizer links, we've got this covered!
- To connect these ball joints, we always take it one step further. You won't find plastic or aluminum connections. For optimal strength and safety, every Sidem stabilizer link uses a **low carbon steel** connecting rod.
- The assembly is completed by automated flash welding, ensuring perfectly **strong welds without contamination**.
- Finishing with **white zinc or black paint**, our stabilizer links look neat and are protected from corrosion.

SIDEM
STABILISER LINKS.



1 Collar lock nuts

- Lock nuts preventing loosening
- Collar prevents damage to the mounting surface
- Class 10 grade coated white zinc

2 Sidem ball joints (full details at page 6)

- **a** Anti-torsion dustcover in chloroprene rubber prevents water infiltration
- **b** Cold forged ball stud in chromium steel for strength and rust resistance
- **c** Ball rolled for extra surface strength and smooth finish
- **d** Top-of-the-market lifetime grease, co-engineered with Klüber

3 Stabiliser bar

- Low carbon steel: maximum
- Cold work hardened and tempered: strength
- Straightened and cut from coil: increased density and strength
- Coating white zinc or paint black RAL9005: optimal corrosion protection
- Clean and neat finish

4 Automated flash welding

- Effective and complete welds
- Lowered chance of imperfections or contaminations in the welds
- An additional spot weld is added if needed

SCAN TO READ MORE ABOUT STABILISER LINKS ON OUR WEBSITE.

SIDEM
TIE ROD ENDS.

Tie rod ends, also known as outer tie rod end, are with their name implies: the end of the rods that tie the steering gear to the steering knuckle. No matter what steering system your vehicle is equipped with, a tie rod end will always be present to engage the steering wheels. Another important safety part, as they steer you on the road!

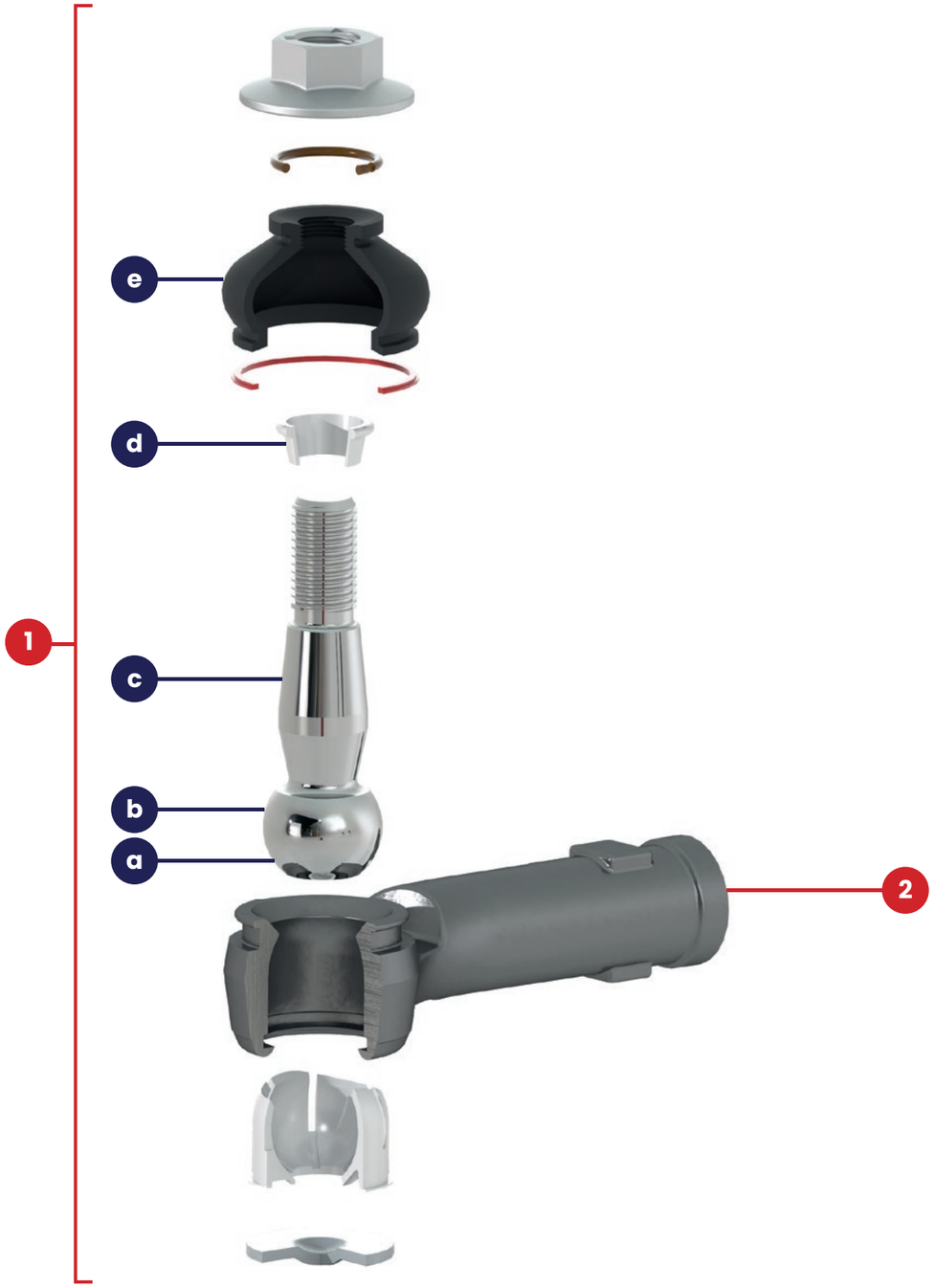
TIE ROD ENDS:

- Being the final part to **transfer the horizontal movement** of the steering rack to a rotational movement to steer the wheels, they are one of the most important pivoting points in your steering system.
- Tie rods ends are connected to the axial joint at one side via inner or outer thread. This is not just a simple connection, as this thread is used to **correctly set the steering alignments**.
- The other side is connected to the steering knuckle. As this is the pivoting point, you'll need a **ball joint to allow the rotational movements**. The quality of this ball joint is key, as this impacts both your safety and driving comfort.

SIDEM TIE ROD ENDS:

- As the ball joint rotates with every steering movement, it is subject to wear over time. Using our **premium Sidem ball joints** with chromium steel ball stud; Klüber grease and chloroprene rubber anti-torsion dustcovers on tie rod ends, we're sure they'll last for a long time!
- Knowing the responsibilities of a tie rod end, we make no compromises. **All our tie rod ends are forged** as this is by far the strongest choice for high-stress conditions.
- Either it's an aluminum or steel body, we sandblast it for **a neat finish**. The steel bodies receive an extra phosphating treatment for corrosion protection.

SIDEM
TIE ROD ENDS.



1 Sidem ball joints (full details at page 6)

- **a** Ball rolled for extra surface strength and smooth finish
- **b** Top-of-the-market lifetime grease, co-engineered with Klüber
- **c** Cold forged ball stud in chromium steel for strength and rust resistance
- **d** Dustcover seat which prevents the cover from collapsing/damage
- **e** Anti-torsion dustcover in chloroprene rubber prevents water infiltration

2 Forged body

- **Forged steel**
  - Steel
  - Forging causes less waste than casting
  - Forging is the best choice for high-stress conditions as it causes optimal grain flow compared to casting
  - Sandblasted and phosphated for corrosion protection
- **Forged aluminum body**
  - Less weight
  - Same forging benefits
  - Sandblasted for clean finish

SCAN TO READ MORE ABOUT TIE ROD ENDS ON OUR WEBSITE.

SIDEM
AXIAL JOINTS.

Axial joints, also known as inner tie rod ends, are key to steering. They are the link between the tie rod end and the steering gear, helping to translate the steering wheel movements to the wheels and controlling your vehicle.

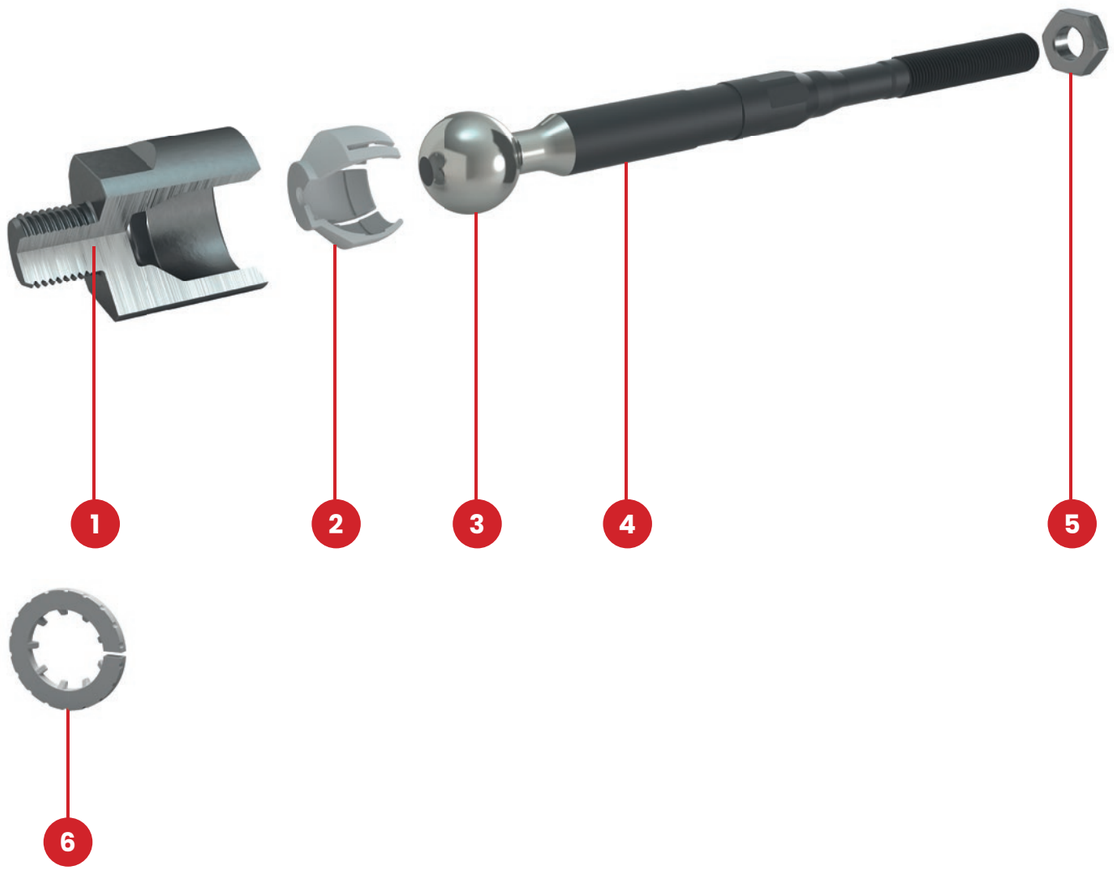
AXIAL JOINTS:

- The axial joint is connected to the steering gear at one side. This is a **threaded connection**, where the mounting surfaces are often separated with a **nylon spacer** to avoid metal-to-metal impacts.
- The **other end is mounted to the tie rod end**. This is not just a simple connection, as this thread is used to **correctly set the steering alignments**. A counter nut is required to lock the correct position.
- **A ball joint is located close to the steering gear side to allow wheel suspension movements**. This is the only moving part of the axial joint, so the ball joint quality will most likely determine its lifetime. It's an **open ball joint, protected from dirt and moisture by the steering rack gaiter** (find out more on page 32).

SIDEM AXIAL JOINTS:

- As the ball joint rotates with every steering movement, it is subject to wear over time. Using our **premium Sidem ball joints** with chromium steel ball stud; Klüber grease and chloroprene rubber anti-torsion dustcovers on tie rod ends, we're sure they'll last for a long time.
- Knowing the responsibilities of a tie rod end, we make no compromises. All our tie rod ends are **forged** as this is by far the strongest choice for high-stress conditions.
- Either it's an aluminum or steel body, we sandblast it for **a neat finish**. The steel bodies receive an extra phosphating treatment for **corrosion protection**.

SIDEM
AXIAL JOINTS.



1 Housing
- Forged from low carbon steel for high strength
- Machined for insert and ball-pin
- Threated for mounting in the steering gear
- Phosphated for corrosion protection

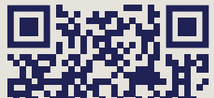
2 Insert
- Constrains the ball-pin movement
- In polyoxymethylene
- Resistant to high impact and temperatures
- Low wear

3 Lifetime lubricant grease co-engineered with Klüber
- Reduces friction
- Prevents drying and wearing out
- Better adhesion
- Water repellant
- Increased lifespan

4 Axle
- Cold forged chromium steel
- Extremely rust resistant
- Maximum strength
- Rolled ball for smooth movement & low friction
- Treated for torque reduction
- Phosphated for corrosion protection

5 Counter nut
- Securing tie rod end position
- Always provided with the Sidem axial joint
- White zinc coating

6 Spacer
- Axial joints are delivered with spacer to prevent metal-to-metal impact (when applicable OE-design)



SCAN TO READ MORE ABOUT AXIAL JOINTS ON OUR WEBSITE.

SIDEM
SILENT BLOCKS.

Silent blocks, also known as suspension bushings, play a crucial role in a vehicle's suspension. Their main purpose is to absorb vibrations, noises and impacts while driving, preventing them from being transferred to the body and interior.

Silent blocks are important to have a perfect driving comfort.

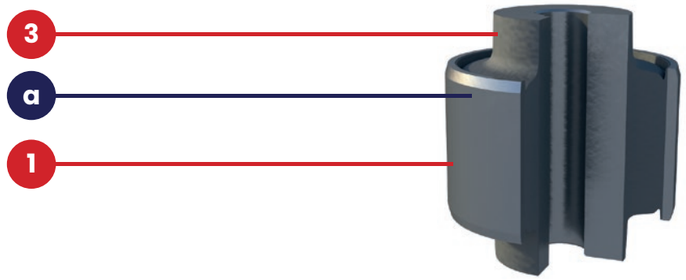
SILENT BLOCKS:

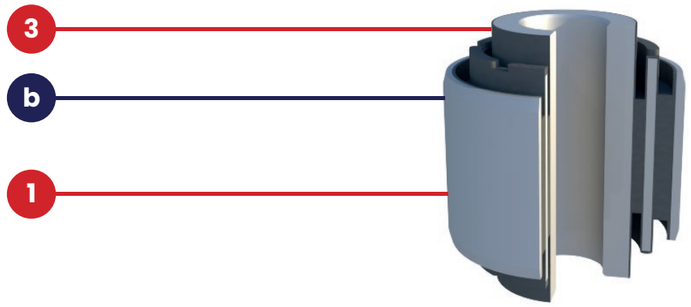
- Basically, you could divide silent blocks in **2 main categories**: static silent blocks and dynamic silent blocks.
  - **Static silent blocks** have the sole purpose of absorbing vibrations, noise and impacts, providing comfort to your drive. Otherwise, they are not designed to move or pivot. Typical static silent blocks are subframe bushings, which connect the subframe to the vehicle body.
  - **Dynamic silent blocks** have a second purpose: to act as a pivot, allowing movements of other parts. Typical examples are the silent blocks in the track control arms which are mounted to the subframe. They have the purposes of both cushioning the connection while allowing the track control arm to tilt.
- **A lot of forces act on silent blocks constantly**: the weight of the vehicle; acceleration and deceleration; braking; impacts; … Therefore, their **strength is crucial**! Still, the correct balance with flexibility for your comfort is needed.
- A silent block also can't be too flexible, as they have a **direct impact on your wheel alignment and driving stability**! Different designs exist to allow more flexibility/comfort in one direction while maintaining the required stiffness in the other.

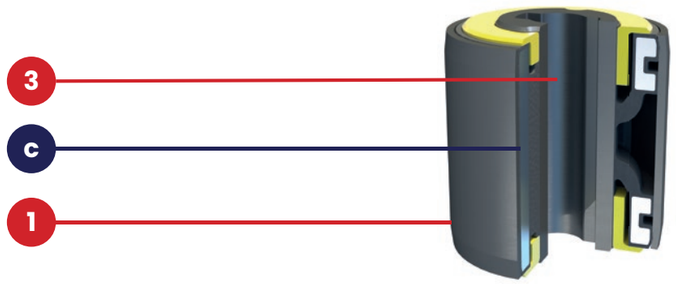
SIDEM SILENT BLOCKS:

- Due to the forces that are constantly acting on silent blocks, their strength is key. That's why we provide silent blocks with excellent **rubber quality** and impeccable **metal-to-rubber bonding** properties.
- To have our silent block's spot on, we test them in every possible way. Stiffness, flexibility and Shore hardness are vital properties for your **driving comfort and stability**. Leave that to us!
- As mounting a silent block correctly is very important for its lifespan, we'll help you out! **A QR-code on our package leads you towards our mounting instructions**, clarifying things for you.

SIDEM
SILENT BLOCKS.







1 Outer bush

- **Material:**
  - Steel
  - Aluminum

2 Rubber core

With excellent metal-to-rubber bonding. Core designed according to OE-standard:

a Full rubber:
- Standaard core type for stiffness-comfort balance
- Optional openings in the core for added flexibility

b Full rubber with intersecting metal bush:
- Increased strength
- Increased stiffness

c Hydraulic-rubber:
- Absorption of vibrations by hydraulic fluid being pushed through rubber chambers
- More rigid than full rubber-design with openings

3 Inner bush

- **Material:**
  - Steel
  - Aluminum

SCAN TO READ MORE ABOUT SILENT BLOCKS ON OUR WEBSITE.

SIDEM
TRACK CONTROL ARMS.

Track control arms link the chassis and the wheel suspension together. Connected to the subframe at one side and to the steering knuckle or the wheel hub at the other, they allow smooth and controlled wheel suspension movements while keeping the wheel aligned.

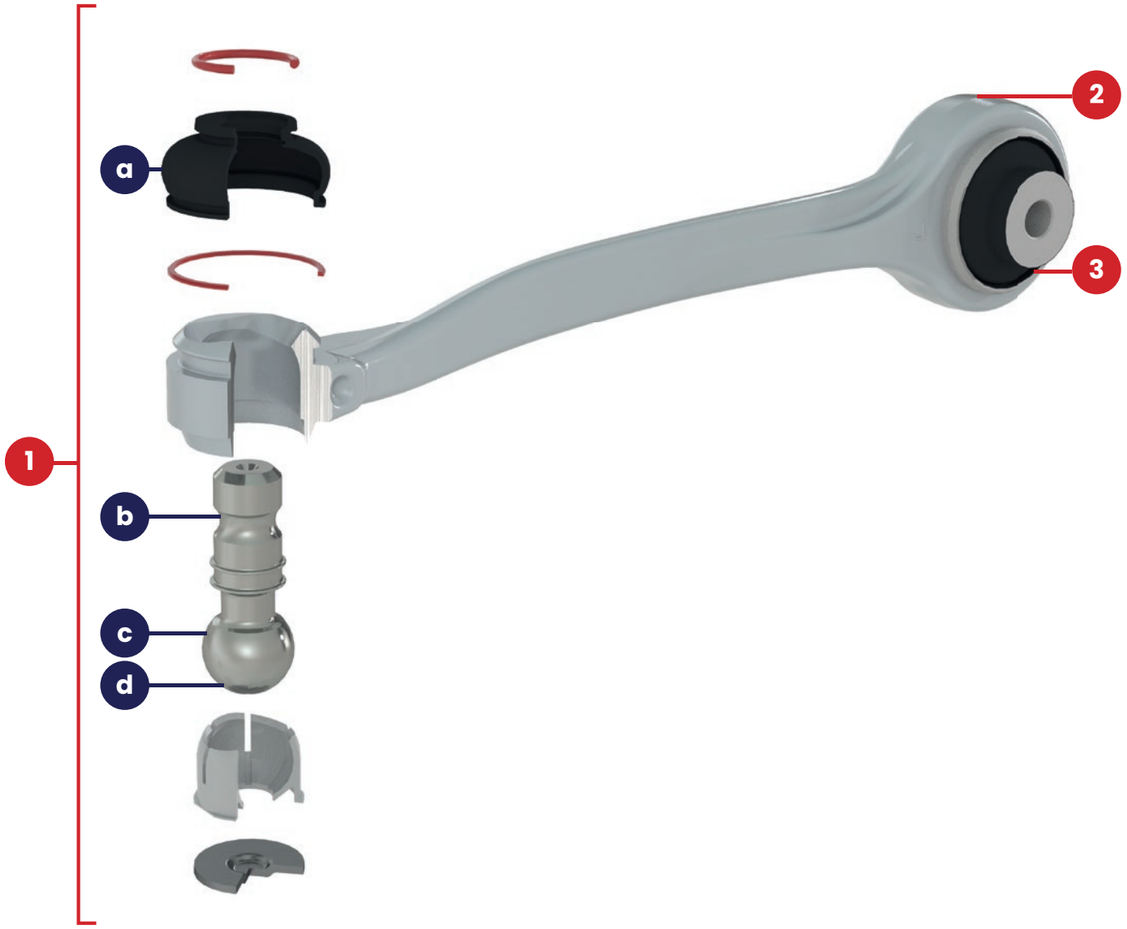
TRACK CONTROL ARMS:

- To allow these wheel suspension movements, track control arms act as a **pivot** allowing the wheels to move up and down while keeping them aligned with the subframe.
- The construction of front and rear control arms differs from one another:
  - As the front wheels are the steered wheels, the track control arm should allow the steering movements. That's why the front control arm is connected to the steering knuckle via a **ball joint**, which allows both steering and suspension movements. The other side of the front arm contains a **silent block**, which is bolted to the subframe.
  - In general, the rear wheels are not steered. So, there's no need for a pivoting ball joint: **silent blocks** at both ends of the rear track control arm are bolted to the subframe and the wheel hub to allow suspension movements.
- The **arm types can vary a lot**, depending on the suspension type of the vehicle such as MacPherson struts, double wishbones or multi-link suspension.

SIDEM TRACK CONTROL ARMS:

- As the ball joint rotates with every steering movement and tilts along with the suspension, it is subject to wear over time. Using our **premium Sidem ball joints** with chromium steel ball stud; Klüber grease and chloroprene rubber anti-torsion dustcovers on ball joints, we're sure they'll last for a long time!
- To ensure your driving comfort and stability, our strong Sidem silent blocks are mounted in the track control arms. They prevent impacts, vibrations and noise from being transferred to the subframe. With their **excellent metal-to-rubber bonding and rubber quality**, a comfortable and safe ride is guaranteed.
- The body of our track control arms is made with strength and durability in mind. Following the OE-design, they're made from **forged steel or aluminum, sheet metal or nodular cast iron**. The applied cataphoresis coating will protect them from corrosion.

SIDEM
TRACK CONTROL ARMS.



1 Sidem ball joints (full details at page 6)

- **a** Anti-torsion dustcover in chloroprene rubber prevents water infiltration
- **b** Cold forged ball stud in chromium steel for strength and rust resistance
- **c** Ball rolled for extra surface strength and smooth finish
- **d** Top-of-the-market lifetime grease, co-engineered with Klüber

2 Track control body

Following OE design, these can be made of:

- Forged steel
- Cast iron, nodular structure for maximum strength
- Forged aluminum
- Sheet metal, pressed into shape

All metal body types are cataphoresis painted for optimal corrosion protection. This treatment is also very eco-friendly.

3 Silent blocks

- **Following OE design, these can be:**
  - Full rubber silent block
  - Full rubber silent block with extra metal bush
  - Hydraulic silent block

SCAN TO READ MORE ABOUT TRACK CONTROL ARMS ON OUR WEBSITE.

SIDEM
STRUT MOUNTS.

Strut mounts make the vital connection between the suspension strut and the vehicle's subframe. They serve multiple important purposes such as isolating road noise and vibrations, following suspension movements and maintaining correct wheel alignment. In MacPherson suspensions, they're even a steering pivot.

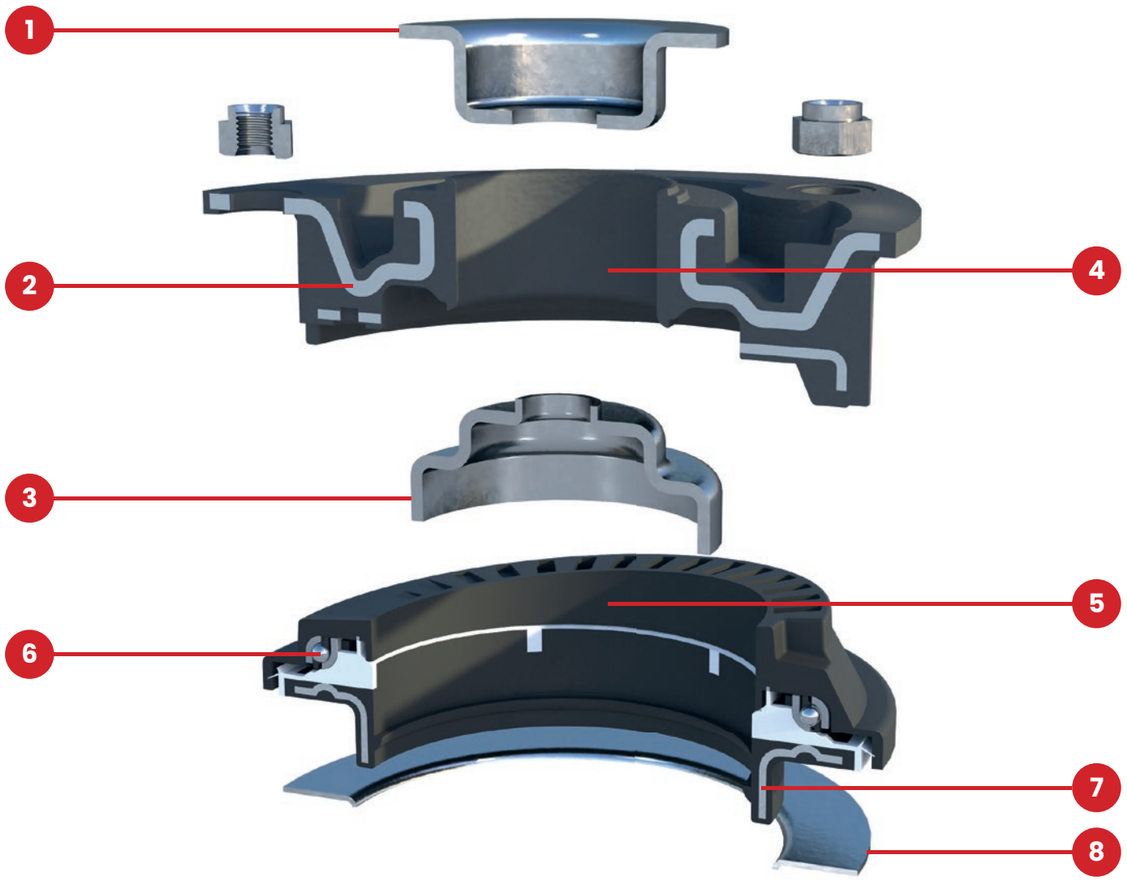
STRUT MOUNTS:

- Basically, a strut mount is like a silent block: they are a metal-to-rubber bonded bushing, mounted on the top of the damper at one side and to the subframe at the other. **They act as a rubber cushion, dampening road noise and vibrations**.
- They're not just any cushion though. With every in- and outward movement of the suspension, the camber and strut angle changes (following the lower ball joint movement). The strut mount allows this change in angle and therefore **plays a crucial role in the wheel alignment**!
- **The strut mounts in MacPherson suspensions** work even harder:
- They **act as a steering pivot**, as the complete strut rotates along with every steering movement. Therefore, **they contain a bearing** allowing steering rotations between the strut and the subframe.
- Along with this, they also **take on (horizontal) bending forces** which occur when the suspension is working. While the upper track control arms take over this task with multi-link and double wishbone suspensions, the MacPherson strut mounts have to do it all!

SIDEM STRUT MOUNTS:

- For your safety, we provide strong strut mounts with **superior rubber and excellent metal-to-rubber bonding**. A lot of forces constantly act on strut mounts, ours are up for the task!
- Stiffness, flexibility and Shore hardness are vital properties. Our strut mounts are tested in every possible way to ensure your **driving comfort, stability and correct wheel alignment**.
- We don't use just any bearing in our strut mounts. To allow **smooth steering movements**, we use thrust bearings which can handle load and impacts. This way, we ensure durable strut mounts!

SIDEM
STRUT MOUNTS.



1 Rebound limiter

- Limits the rebound forces & movement
- **Material (following OE design)**
  - Sheet metal, pressed into shape
  - Aluminum
- Metal is painted or cataphoresis coated for corrosion protection
- Aluminum is sandblasted for clean finish

2 Outer & inner case

3

- Outer case mounted to the vehicule chassis
- Inner case holds the inner thruts bearing
- Bonded to the rubber core
- **Material (following OE design)**
  - Sheet metal, pressed into shape, painted or cataphoresis coating for corrosion protection
  - Aluminum; sandblasted for clean finish

4 Rubber core

- Excellent metal-to-rubber bonding
- Shore & stiffness values according to OE design
  - Damping of noise & vibrations (axial flexibility)
  - Maintain correct wheel alignment (radial stiffness)

5 Spring seat housing

- Holding the spring seat and thrust bearing in place
- Mounted to the rubber core
- Mostly made out of durable Nylon:
  - High strength
  - Excellent temperature resistance
  - Strong resistance to chemical substances
- Only applicable when spring seat is integrated (following OE-design)

6 Thrust bearing (front struts)

Allowing steering movements. Type according to OE design:

- **Ball bearing:**
  - Polished chromium steel balls reducing friction
  - Hardened ball races for maximum bearing strength
  - Quality lifetime grease
- **Roller bearing:**
  - Polished chromium steel rollers reducing friction
  - Hardened roller races for maximum bearing strength
  - Quality lifetime grease
  - Applicable for heavier loads
- **Hydrodynamic bearing:**
  - Reduced metal-to-metal contact
  - Increased lifespan
  - Excellent damping functionalities
  - Limited load capacity due to low operating speed

7 Spring seat reinforcement

- Metal reinforcement ring for the spring seat
- “Cup”-design for extra strength
- Only applicable if seat is integrated in the housing

8 Spring seat

- Metal ring
- Connects the spring to the strut mount
- Can integrated in the strut mount; bearing or available as separate part according OE-design

SCAN TO READ MORE ABOUT STRUT MOUNTS ON OUR WEBSITE.

SIDEM
STEERING RACK GAITERS.

Steering rack gaiters protect the steering rack and axial joint from dirt and moisture. Locked at the steering rack at one side and to the axial joint on the other, they are vital for the lifespan of the steering components!

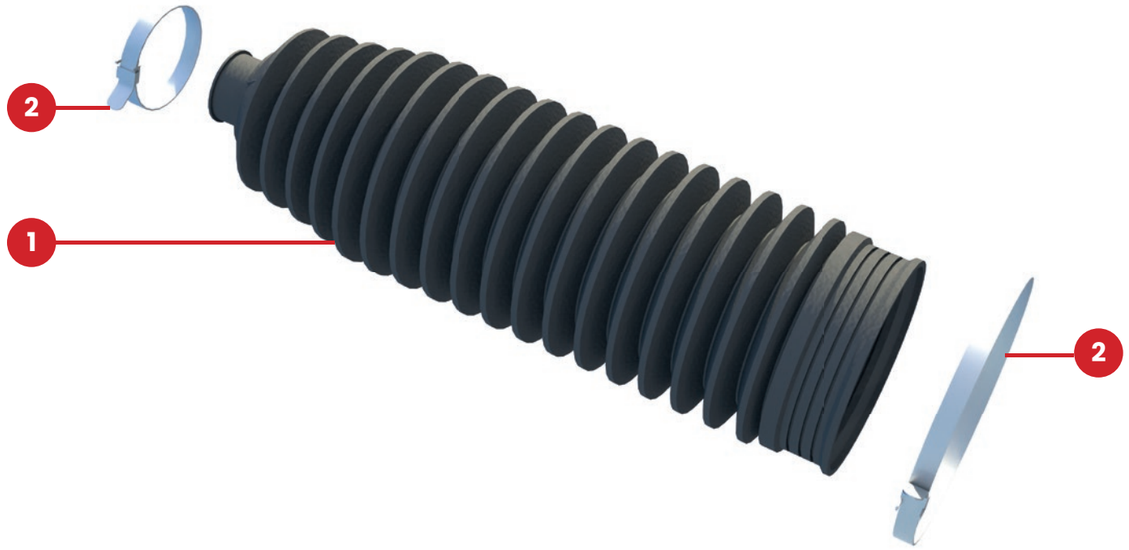
STEERING RACK GAITERS:

- The main function of steering rack gaiters is to **keep the grease inside** which lubricates the axial joint and steering rack, while securing it from dirt and moisture.
- To do this properly, they need to be flexible and **move along with the steering movements**, without loosening or tearing That's where their accordion-shape comes in handy!
- Steering rack gaiters are constantly **subject to dirt, moist and extreme overall circumstances**. Therefore, they need to be very durable in order to last!

SIDEM STEERING RACK GAITERS:

- Made from **durable TPE**, our steering rack gaiters ensure **maximum sealing** and a long lifespan. They're resistant to all weather circumstances, chemical substances and wear.
- To seal the gaiters on the steering rack and axial joints, we always provide **high quality clamps**. These are made out of **flattened spring steel** which won't deform, causing a lasting sealing pressure. A **strong locking system** allows you to firmly lock them at the correct place.

SIDEM
STEERING RACK GAITERS.



1 Steering rack gaiter

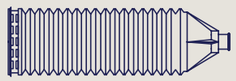
- Made from TPE (Thermoplastic Elastomer)*
- Maximum resistance to chemical substances
- Best sealing from moist and dust
- Extreme resistance to wear and fatigue
- Strong resistance to all-weather circumstances

3 Clamps

- Flattened spring steel
- No deformation, diameter is maintained
- Excellent sealing pressure
- Strong locking system

**Older vehicles may have rubber steering rack gaiters per OE-standard. In these cases, Sidem follows the OE-design to ensure correct functioning.*

SCAN TO READ MORE ABOUT STEERING RACK GAITERS ON OUR WEBSITE.



SIDEM INSPECTION & REPAIR TIPS FOR EXPERTS.

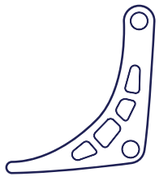
Sidem is a family-owned company founded in 1933, the leading specialist in engineering and manufacturing of steering and suspension parts for Original Equipment Manufacturers (OEM) and the Automotive Aftermarket.

The company offers the most comprehensive range in the industry with over 10,000 references for private and light commercial vehicles.

Sidem has its own in-house engineering team, an IATF certified manufacturing facility and a central warehouse, all based in Europe.

more than
10.000
references

more than
4 000 000
parts in stock



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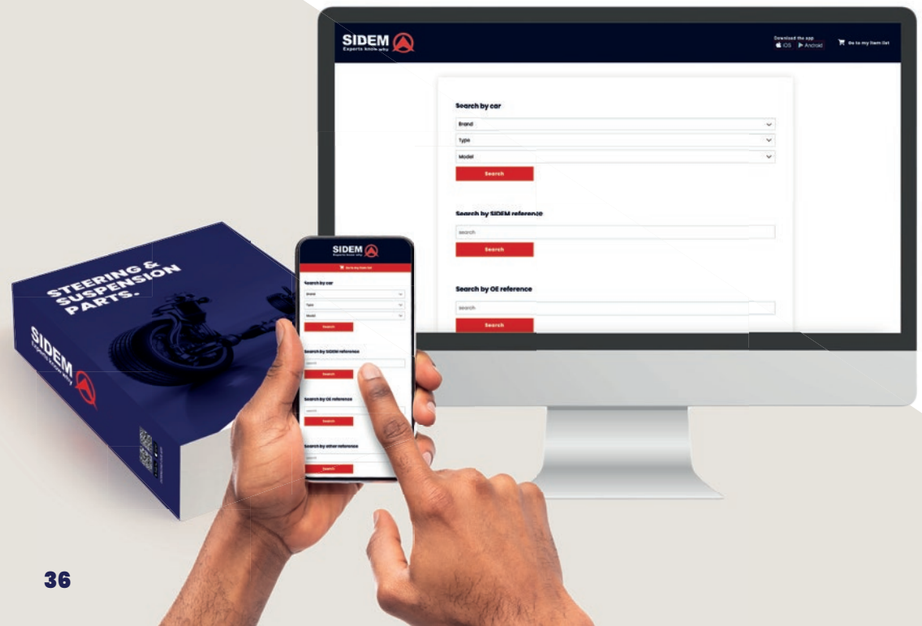
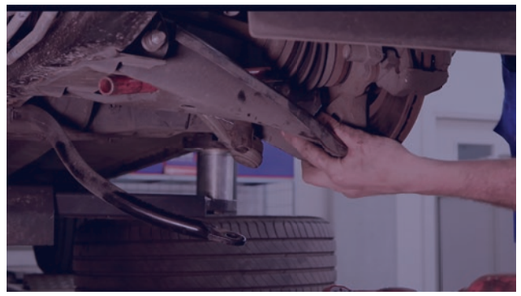


INSTALLATION VIDEOS



How to install a track control arm with re-engineered ball joint?

How to install a track control arm without preload?

Right tools to install steering & suspension parts

How to recognize bad stabilizer links?

How to recognize bad tie rod ends or axial joints?

How to recognize a bad track control arm?

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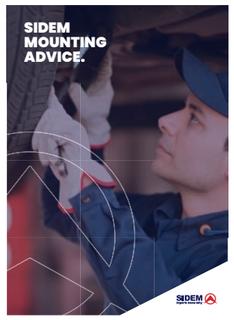

Sidem mounting advice.
It's a great idea to give your car's steering and suspension parts a once-over every year to see if they're wearing out. If you spot any issues, it's crucial to fix them up right! This article breaks down where to look at during your check-up and gives you some expert tips on how to install everything.

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For safe and easy assembly we have developed special assembly tools: a handy help to assemble parts faultlessly according to the state of the art.

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