



# *Components for the automobile industry*



*Sealing systems, vibration control,  
EMI shielding, thermal management materials*

# Parker: Global partner for



## Global presence

The Parker Hannifin Corporation Seal Group is a worldwide leader in the development, manufacture and sales of seals and their associated products. The Group manufactures in more than 40 production facilities, eight of which are in Europe.

With branches and sales offices as well as regional distributors guarantee technical assistance and sales in all industrial countries.

In addition to the automobile industry, Parker Seal Group products are used as original equipment and spares in nearly all industries, e.g. fluidpower, aerospace industry, chemical and process engineering, medical engineering, information technology, telecommunications and the semiconductor industry.

## Our specialities

- ⇒ **Sealing**
- ⇒ **Attenuating vibration and noise**
- ⇒ **Shielding against interference signals**

## European works certification

Works	QS 9000	VDA 6.1	ISO 9002	EMAS 1836/93
Bietigheim (D)	✓	✓		
Pleidelsheim (D)	✓	✓		
Weilheim (D)		✓		✓
Adro (I)	✓			
Espergaerde (DK)			✓	

## Wide range of products

Each of the four Parker Divisions offer a comprehensive range of products:

### O-Ring Division

O-rings, back-up rings and precision moulded parts in more than 300 compounds. O-rings are produced in accordance with national and international Standards such as DIN 3771, ISO 3601 and AS 568A.

### Packing Division

Sealing systems consisting of rod and piston seals, wipers and guiding elements. Special profiles and precision moulded parts.

### Gummi-Metall Division

Resilient rubber-metal buffers for the damping of vibrations. Bonded rubber metal, rubber plastic and rubber-ceramic components in accordance with customers drawings.

### Chomerics Division

Electromagnetic interference (EMI) shielding and thermal management materials for electronic equipment.

## Assurance of quality prior to serial use

Parker has been using SPC (Statistical Process Control) in the production process since the middle of the 1980's. The FMEA system (error possibility and influence analysis) was introduced at the time of the alignment of the quality management system according to QS 9000 and VDA 6.1. It helps to avoid mistakes in production. The objective is the achievement of "6-Sigma" quality.

# sealing and vibration control

## Production



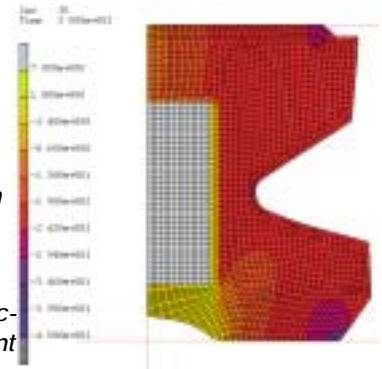
Computer-controlled plant for the production of rubber mixtures

Parker produces rubber mixtures in-house and also polymerizes thermoplastic elastomers. This ensures maximisation of quality and flexibility in the achievement of and adherence to requirements.

The high technical proficiency is a decisive factor in the continuous improvement and renewal of the processes. Computer-controlled plant for the production of rubber mixtures.

## Computer simulation

Gas spring seal under load



For more than ten years Parker has been using finite element analysis (FEA) for the reduction of development times and costs.

New simulation models enable prediction of the service life of sealing systems.

## Development

Parker aims at the continuous improvement of existing and development of new products with new technologies.



Measuring equipment with a CCD line sensor camera

## Technical consultation

Parker cultivates close cooperation between the development, production and purchasing departments in the automobile industry. Application technicians and external sales engineers are always available for consultation with designers. They are specialists in sealing technology and cultivate the regular exchange of experience with their colleagues in Europe and other countries. The "inPHorm" PC software enables the user to quickly arrive at the best possible seal for his specific application. The O-Ring, Packing and Chomerics Divisions programs incorporate easy to understand steps in the selection of types of seals and compounds.



In the automobile industry, fuels that preserve the environment as well as more exacting demands on safety, comfort and service life have stretched components to ever higher limits. Seal materials developed for this industry fulfil the exacting requirements and can be used from -40 to +200 °C. Parker has its own test rigs in Europe for the development of sealing systems, one of which is for the testing of automobile shock absorbers.

The chemical laboratories are equipped for chemical analytical and mechanical technological tests.



# Installed everywhere, but never seen...

Parker Seal Group products are to be found in nearly all dynamic and many static modules in motor vehicles. They are mostly invisible small rubber or plastic components that, although unnoticed, decisively contribute to safe and comfortable travel:



## ABS

- O-rings and moulded part produced in EPDM and used for sealing in hydraulics associated with antilocking systems (ABS) since their introduction during the 1980's. Zero defect quality is required for the surface property and dimensional accuracy.

- CliPHvent low pressure valves stop penetration of water into modern hydraulic units.



## Electronics and electrics

- CHO Seals®: electrically conductive silicone elastomers for connection between bodywork and aerial system (Diversity Receipt Systems).
- Laminated T-board: technically conductive materials for electrical plants (motor management).
- Silicone sealing discs prevent penetration of moisture into headlight bulbs.
- Glow plugs for Diesel engines with HNBR and FKM O-rings.
- Silicone seals for pin and socket connectors.

## Brakes

- O-rings in EPDM material for control and regulating valves as well as sensors.
- EPDM lip seals on wheel brake cylinders.
- Rubber-metal integral seals in the housings of heavy vehicle compressed air brakes.
- O-rings for brake piping and quick-release couplings.



## Injection

- FKM O-rings in petrol injection valves.
- HNBR and MFO precision moulded parts and liquid silicone for Diesel/RME (rape seed oil methylester).
- Low and high pressure seals in distributors and injection units.
- O-rings in quick-release couplings for fuel lines.



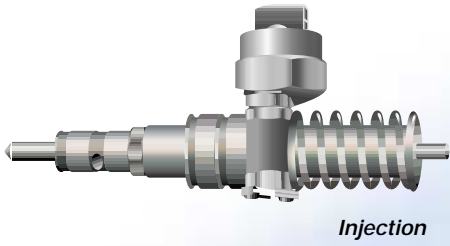
## Shock absorbers

- For many years O-rings have been used on the pistons of pneumatic shock absorbers for reciprocal sealing against oil and gas.
- Rod seals and wipers in shock absorbers and gas springs keep dirt outside and oil inside the system.

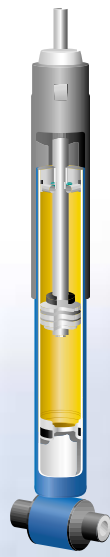


## Material definitions

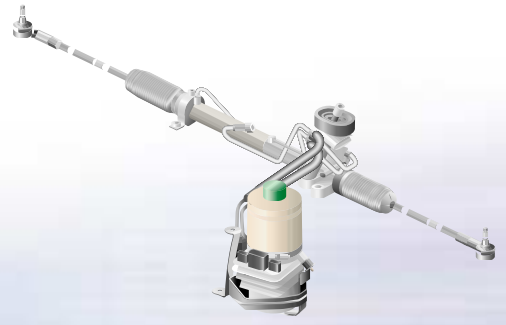
Material definitions	
Rubber	
ACM	Polyacrylate
EPDM	Ethylene propylene
FFKM	Perfluor
FKM	Fluorinated carbon
HNBR	Hydrated nitrile
MFO	Fluorinated silicone
NBR	Nitrile
Plastomers:	
PTFE	Polytetrafluorethylene



*Injection*



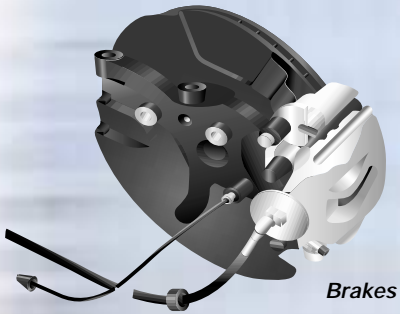
*Shock absorbers*



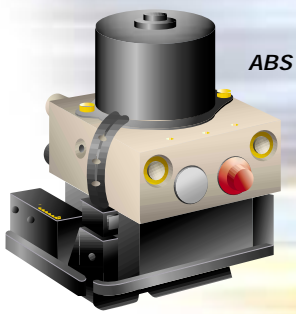
*Gearbox and steering*



*Electronics and electrics*

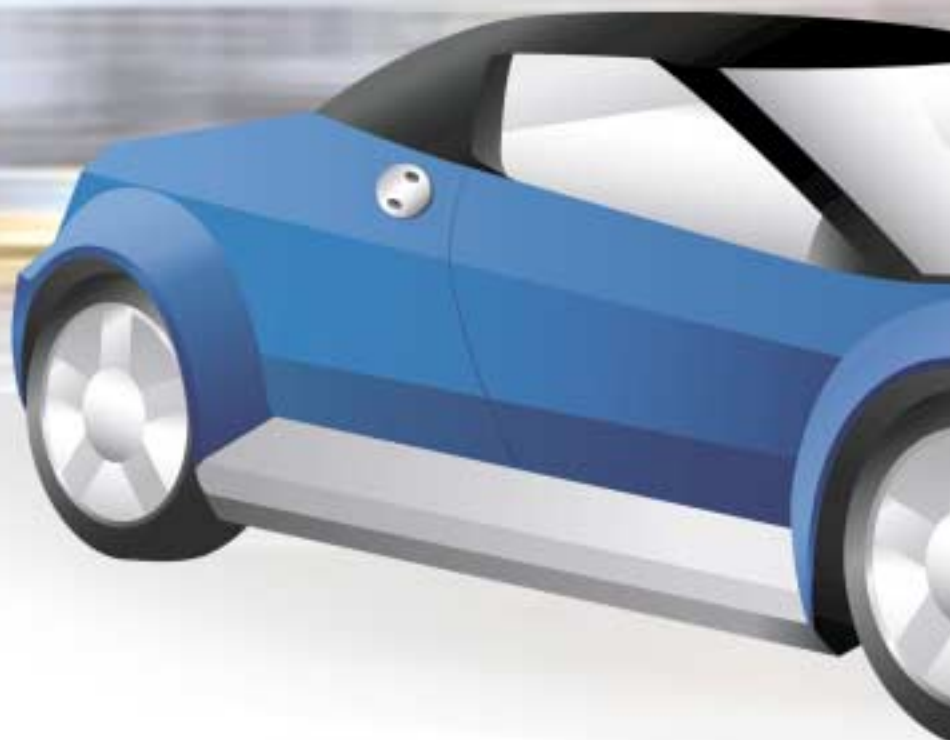


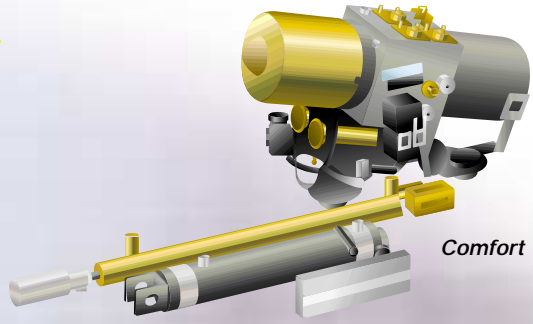
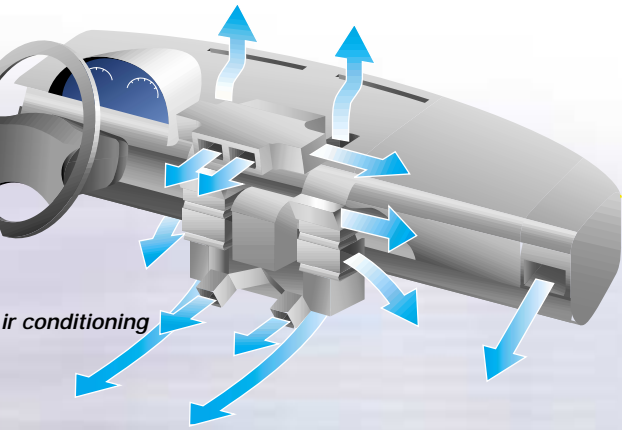
*Brakes*



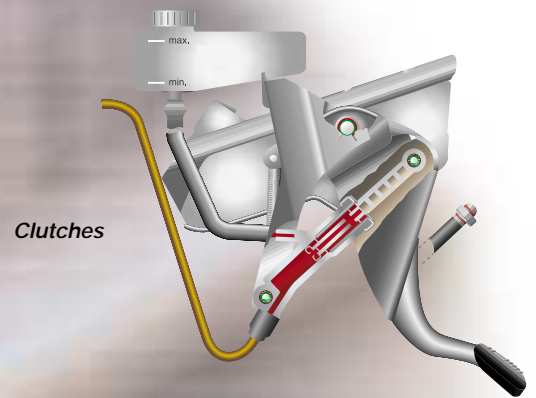
*ABS*

*Safety*

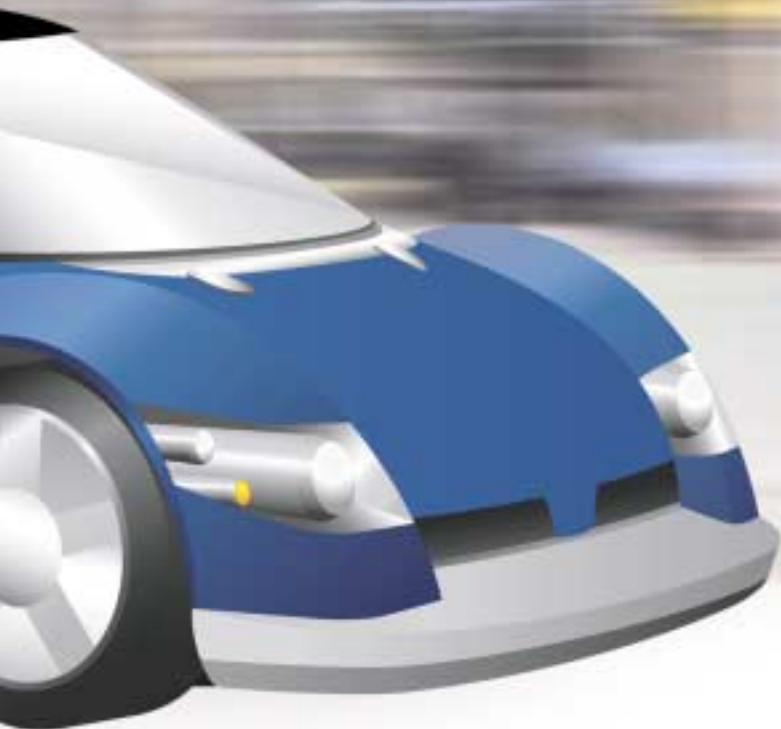
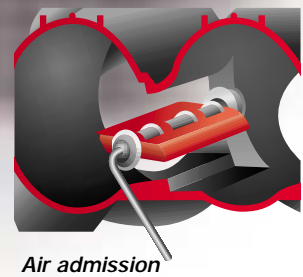
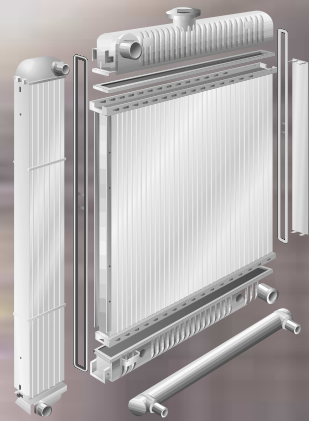




*in detail*



*Cooling*





## Gearbox and steering

- O-rings and moulded parts in NBR, HNBR, FKM and ACM.
- Axial face seals in bronze-filled PTFE in heavy vehicle steering systems. They seal on shafts rotating at 0.2 m/s.
- Damping elements in steering rods.



## Clutches

- A newly developed sealing system in EPDM prevents generation of a vacuum in the clutch hydraulic system if the driver makes a "foot hard down start".
- Butterfly valve systems in air admission modules effectively control the air for clean combustion with low pollutant emissions.



## Air admission

- Butterfly systems in air admission modules provide through effective air regulation for a clean combustion with little pollutant emission, low noise level and higher performance.
- Precision moulded parts in FKM for air intake systems on engines.



## Comfort

- Polyurethane rod seals in hydraulic cylinders ensure smooth and noiseless operation of the hood in convertible automobiles (Cabriolets)
- Rod seals in NBR and PTFE for roll bars that protect convertible occupants in case of accidents.
- Damping buffers in the seats moderate impacts and reduce vibrations.
- Polyurethane-metal seals for pneumatic springs.



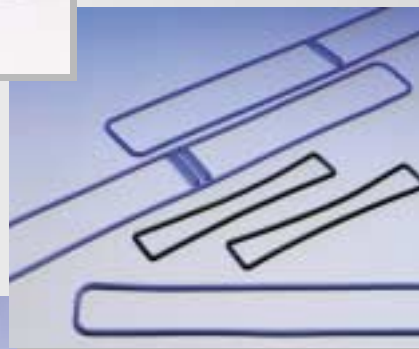
## Air conditioning

- O-rings in EPDM and HNBR for R 134a environmentally compatible refrigerant in valves, evaporators, compressors and flanges in the refrigerant circuit.
- Precision moulded parts in EPDM with low compression set for sealing between pipes and connecting pieces.



## Cooling

- Gaskets in a 2-component silicone for use in radiators for sealing between the metallic cooling block and the attached plastic parts. The material is resistant to water and glycol coolants up to + 120°C.



# Divisions of the Parker Seal Group Europe

---

**Parker Hannifin GmbH**  
O-Ring Division  
P.O. Box 40  
D-74383 Pleidelsheim  
Tel.: (0049) 71 44-206-0  
Fax: (0049) 71 44-2 37 49  
E-mail: oring-europe@parker.com

*O-rings, back-up rings,  
precision moulded parts*

**Parker Hannifin GmbH**  
Gummi-Metall Division  
Zeppelinstrasse 16  
D-73235 Weilheim  
Tel: (0049) 7023-7006-0  
Fax (0049) 7023-7006-66

*Bonded rubber metal and  
rubber plastic components*

**Parker Hannifin GmbH**  
Prädifa - Packing Division  
P.O. Box 1641  
D-74306 Bietigheim-Bissingen  
Tel.: (0049) 71 42-351-0  
Fax: (0049) 71 42-351-293  
E-mail: packing-europe@parker.com

*Sealing systems for fluidpower  
applications, special profiles*

**Parker Hannifin plc**  
Chomerics Division  
Parkway, Globe Park  
UK, Marlow, Bucks SL7 1 YB  
Tel: (0044) 1628-404 000  
Fax: (0044) 1628-404 090  
E-mail: chomerics\_europe@parker.com

*Electromagnetic interference (EMI)  
shielding materials.  
Thermal management materials.*

[www.parker.com/euroseal](http://www.parker.com/euroseal)

## Contacts with Parker sales locations:

**Belgium** Tel: (0032) 67 28 09 00. Fax: (0032) 67 28 09 99+++**Czech Republic and Slovakia**  
Tel: (0042) 32 55 55 11. Fax: (0042) 3 25 55 51 20+++**Denmark** Tel: (0045) 49 17 03 90  
Fax: (0045) 49 17 03 95+++**Finland** Tel: (00358) 9 47 67 31. Fax: (00358) 9 47 67 32 00+++  
**France** Tel: (0033) 4 50 87 80 80. Fax: (0033) 4 50 87 80 76+++**Great-Britain and Ireland**  
(O-Ring und Packing Division) Tel: (0044) 16 28 40 40 88. Fax: (0044) 16 28 40 40 89+++  
**Hungary** Tel: (0036) 12 52 81 37. Fax: (0036) 12 52 81 29+++**Italy** Tel: (0039) 02 45 19 21. Fax: (0039)  
0 24 47 93 40+++**The Netherlands** Tel: (0031) 5 41 58 50 00. Fax: (0031) 5 41 58 54 59+++  
**Norway** Tel: (0047) 64 91 10 00. Fax (0047) 64 91 10 90+++**Poland** Tel: (0048) 2 28 63 49 42.  
Fax: (0048) 2 28 63 49 44+++**Portugal** Tel: (0351) 29 99 73 60. Fax (0351) 29 96 15 27+++**Russia**  
Tel: (007095) 2 42 09 07. Fax: (007095) 2042 09 07+++**Sweden** Tel: (0046) 8 59 79 50 00. Fax: (0046)  
8 59 79 51 10+++**Switzerland** Tel: (0041) 2 23 07 73 08. Fax (0041) 2 23 07 74 70+++**Spain**  
Tel: (0034) 9 36 91 50 62. Fax: (0034) 9 36 91 46 19



Distributed by:

