

## Customized solutions for railway vehicles



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### **Permits, certification and requirements**

**Note: The customer must submit the required certifications, classifications, tests, and inspections if a quote / an order is submitted.**

### **For your safety:**

Tube connections may be exposed to extreme loads under certain circumstances, such as vibrations and uncontrolled pressure peaks.

You can only ensure the reliability and safety of the products and their compliance with the corresponding standards by using original parts produced by Parker and by complying with the appropriate standards.

Any failure to observe this rule can have a significant negative impact on the functional safety and reliability of the products, which may result in personal injury and invalidate your claims under warranty.

Subject to changes

# The benefits to you when using customized solutions

+ Reduced weight

+ Cost savings

+ System optimization

## We implement customer solutions promptly

The market for railway vehicles continues to develop at a very swift pace

Parker has a huge range of products and numerous combinations of materials on offer. All components from one source and perfectly aligned with each other – available globally. Ordering is easy since as a customer you only have one system supplier: Parker.

The constant pursuit for the highest quality, promotion of innovative ideas and a distinct focus on the customer are all closely interlinked at Parker.

In addition to the standard product range, Parker also supports you in developing individual concepts. Based on your ideas experienced Parker engineers develop the customized products and

system solutions that meet your requirements.

This brochure provides lots of examples of products that have been developed based on the close collaboration between customers from various industries and Parker. Be inspired! We will also be happy to successfully implement your ideas.

Please contact us!

## Parker gets you on the rails with added value

### **Parker is a system supplier**

- Extensive product range
- Individual customer solutions
- Industry-specific solutions
- A wide range of material combinations
- Global availability
- Supplementary product portfolio

### **Pre-sale and after-sale service**

- Training sessions
- Technical user support
- Parker Store
- Hose Doctor



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# Implementing your connection ideas

From the idea to the finished product.

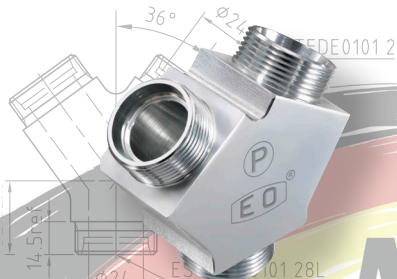
Idea



Consultation



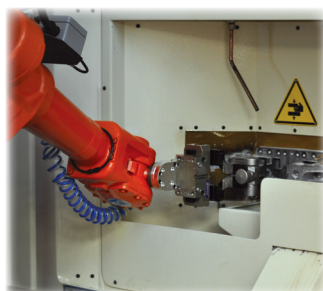
Product



*Made in  
GERMANY*



Quality



Production



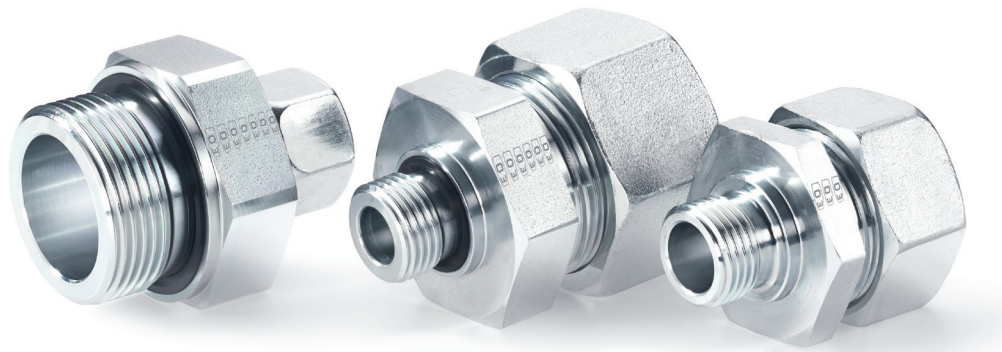
Design

**Parker can implement your individual connection ideas in addition to providing standard fittings.**

- Production in accordance with your designs and specifications
- Expert advice and extensive production experience
- Ultra-modern processing center
- Available globally
- You reduce your costs
- You increase your productivity
- You save weight



# Jump sizes



## **Areas of application**

- Include compressed air applications

## **Customer Benefits**

- Avoid multiple fittings combinations (reduced weight)
- Reduced assembly time
- Reduction in potential leakage paths and therefore in consequential costs

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# Extra long fittings (up to 500 mm)



## Areas of application

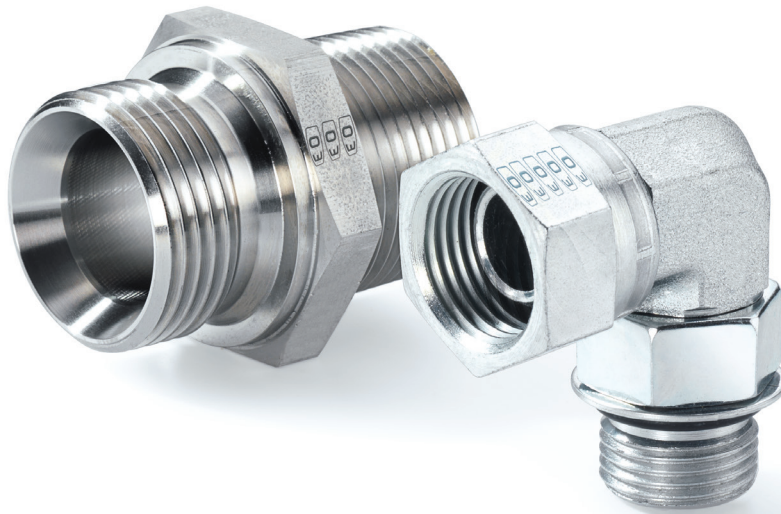
- Include compressed air applications in the under-floor area
- Feed-through from the inside to the outside of the coach in order to secure the pressure resistance

## Customer Benefits

- Avoid tube extensions or adapter combinations (reduced weight)
- Reduced assembly time
- Reduction in potential leakage paths and therefore in consequential costs



# System-independent connections



## Areas of application

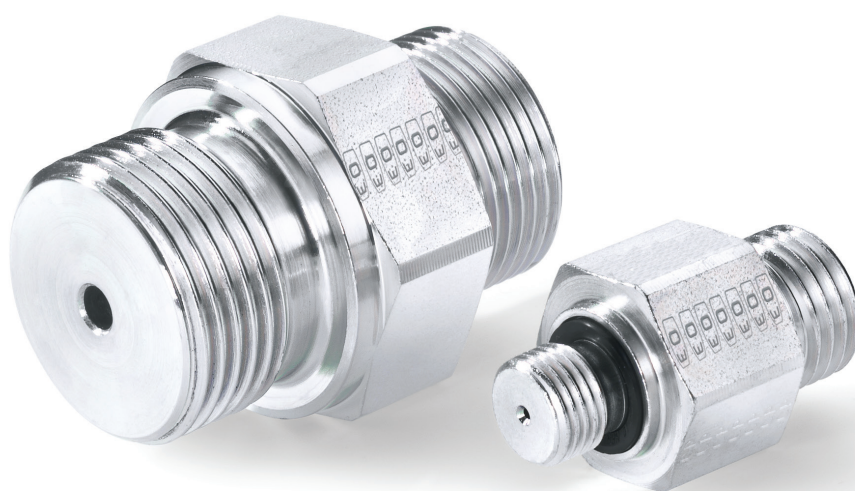
- Special solutions for combining different modules, systems and standards
- e.g. DIN to SAE

## Customer Benefits

- No need to use standardised modules
- High flexibility
- Avoidance of multiple fittings combinations (reduced weight)
- Reduction in potential leakage paths and therefore in consequential costs

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# Throttle fittings



## Areas of application

- Include compressed air applications (with throttle up to 0.3 mm)
- Adaptation of pressure conditions, including for the protection of sensitive components (e.g. auxiliary equipment systems) from pressure surges

## Customer Benefits

- Avoids the need to use a reduction aperture - no additional component
- Simple and safe assembly



# Filter fittings



## Areas of application

- Compressed air supply for the brake system
- External power supply (air) to prevent failure

## Customer Benefits

- Increased safety
- Can be combined with all standard fittings
- Protection for important components from damage caused by contamination

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# Special solutions (e.g. Y adapter)



## Areas of application

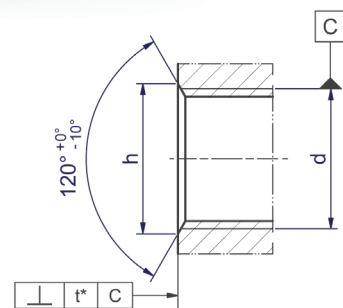
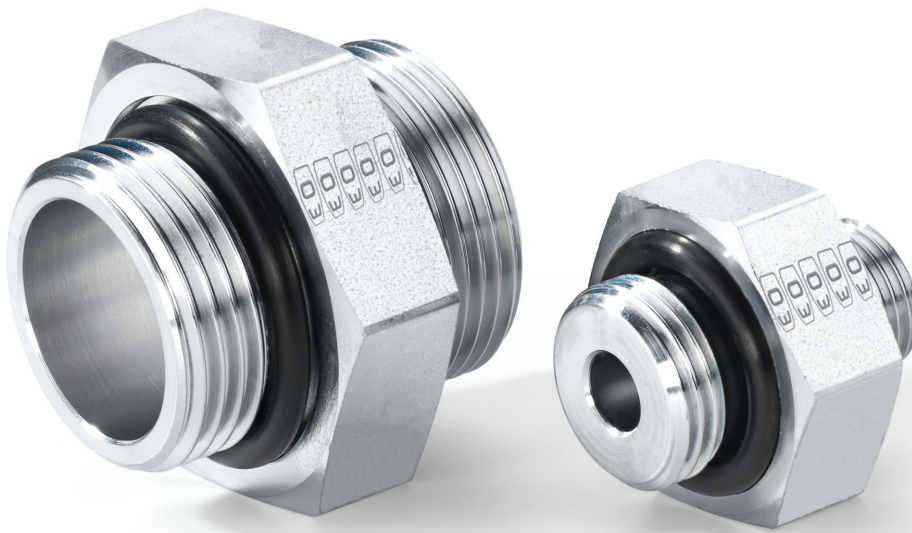
- Main air for the brake line - improved flow characteristics compared with W-fitting in order to guarantee fastest possible braking action in an emergency

## Customer Benefits

- Optimized flow characteristics
- Avoidance of multiple fitting combinations (reduced weight)
- Reduced assembly time
- Reduction in potential leakage paths and therefore in consequential costs



# Straight stud fitting with special seal (for brake systems)



## Areas of application

- Compressed air applications in brake systems
- Straight stud fitting for sealing  $120^{\circ}$  chamfers (including for connecting valves from different brake manufacturers)

## Customer Benefits

- No additional sealing required, e.g. Teflon tape or Loctite
- Elastomer sealing - no sealant required
- Avoidance of multiple fitting combinations (reduced weight)

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# O-Lok<sup>®</sup> H2 Hydrogen Fittings (e.g. Y adapter)



## Areas of application

- Hydrogen-powered trains

## Customer Benefits

- Reliable SAE J1453 O-Ring Face Seal (O-Lok) connection with H2 compatible P5009 soft seals
- Proved compound with temperature capabilities -55°C to +85°C
- Zero clearance for fast and easy plumbing
- Process-safe torque wrench assembly
- Robust design, no risk of tearing out
- Larger tubes sizes on request



# Certified products

ZERTIFIKAT

CERTIFICATE

CERTIFICADO

CERTIFICAT

証明書

CERTIFICATE

CERTIFICATE

  
Management Service

## CERTIFICATE

awarded to

**Parker Hannifin Manufacturing Germany GmbH & Co. KG**  
**Bahndamm 31-33**  
**33758, Schloß Holte-Stukenbrock**  
**Germany**

**TÜV SÜD Management Service GmbH**

confirms, as an IRIS Certification® approved certification body, that the Management System of the above organization has been assessed and found to be in accordance with the

**IRIS Certification® Conformity**  
**assessment:2020**  
**and based on**  
**ISO/TS 22163:2017**

for the activity of Manufacturing  
for the scopes of certification: 19 (Single railway components),  
20 (Components related to special process work)  
Production of high pressure hydraulic fittings, functional fittings and high pressure hydraulic fittings, functional fittings made of stainless steel for railway application

Certificate valid from: 17/09/2021      Certificate valid until: 27/11/2022\*



Current date: 06/01/2022  
Certificate-Register-No.: 12 113 59549

\* Providing that the subsequent surveillance audits are successful before the validity date of the previous audit.  
Certification body address: Ridlerstr. 57, 80339 München, Germany

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www.tuev-sued.de/certificate-validity-check



IRIS is a reliable global supplier evaluation system in the area of railway technology. IRIS intends to implement the internationally recognized quality management standards ISO9001.

For technical approval test purposes Parker offers customized tests such as low temperature, loading and shock tests. E.g.:

- EN 45545-2
- EN 61373

All certificates are available for download at [www.parker.com/hpce](http://www.parker.com/hpce) “Support”

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# Long-term low-temperature test for stainless steel fittings

Stainless steel connectors withstand temperatures of up to minus 60°C in a 1000 h test.

Anyone who travels on the world's longest rail route, the Transsib, covering 9000 km between Moscow and Beijing experiences intense changes in temperature.

The heaviest December frosts for 50 years were experienced in 2012, when temperatures fell down to minus 57°C. Ground frosts generally last into June and temperatures of more than 30°C are possible in the July/August period.

Russian railway standards have not permitted the use of elastomer sealing elements up to now under these climatic conditions.

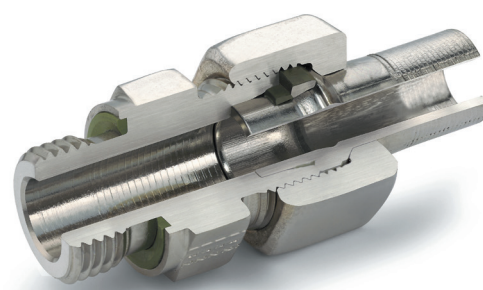
Parker engineers wanted to know the situation exactly and developed a series of tests for which there has been no previous example till now. They designed a 1000 h long-term low-temperature test for the soft sealing fittings Form E/Form F\*. Evidence was provided of the reliability of the NBR material used as standard in conjunction with the DIN fitting systems EO cutting ring, EO-2, EO2-FORM and 24° DKO sealing cone.

All the tube connector mentioned above proved successful in the low temperature test. Both the metallic cutting ring connection as well as the soft sealing systems EO-2/EO2-FORM withstood the worst-case conditions simulated. The O-rings and ED seals used



on the screw-in side proved their absolute reliability.

This project was pioneered by Parker and has set new guidelines for future standards. Parker is a reliable partner for further developments in the transportation sector with its high-performance product program.



\*Form E: ED seal metric: ISO 9974-2  
Form F: O-ring (retaining ring) metric:  
ISO 6149-2/3 UN/UNF: ISO 11926-2/3





At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374

# Parker's Motion & Control Technologies



## **Aerospace** **Key Markets**

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

## **Key Products**

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



## **Climate Control** **Key Markets**

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

## **Key Products**

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



## **Electromechanical** **Key Markets**

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

## **Key Products**

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



## **Filtration** **Key Markets**

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

## **Key Products**

Analytical gas generators  
Compressed air filters & dryers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



## **Fluid & Gas Handling** **Key Markets**

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

## **Key Products**

Check valves  
Connectors for low pressure  
fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



## **Hydraulics** **Key Markets**

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

## **Key Products**

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



## **Pneumatics** **Key Markets**

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

## **Key Products**

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



## **Process Control** **Key Markets**

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

## **Key Products**

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/ controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



## **Sealing & Shielding** **Key Markets**

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

## **Key Products**

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

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