



aerospace climate control electromechanical filtration fluid & gas handling hydraulics pneumatics process control sealing & shielding





Parker Solutions for Table Top Sterilizers

Solenoid Valves and Accessories



ENGINEERING YOUR SUCCESS.

Parker FCDE

Who we are?

The Fluid Control Division in Europe (FCDE) is a division of Parker Hannifin, the global leader in motion and control technologies.

FCDE core competences are the development and manufacturing of an extremely diverse range of fluid control products, including solenoid valves and pressure regulators.

Where we are?

Our European headquarters are located in Geneva, this is also where our R&D, Marketing, Application Support and Product Management functions are located.

FCDE Products are mainly manufactured at locations in Carouge (Geneva - Switzerland) and Gessate (Milan - Italy).

The Parker Sales Companies and comprehensive distribution network support you, wherever you are.

History

Parker FCDE has been a leading player in the manufacturing and development of solenoid valve technologies for over 60 years, with continuous research and development bringing innovative solutions to the marketplace, for example leading the way in the utilisation of synthetic ruby for critical water applications or the unsurpassed reliability and precision of our pressure regulators. The expertise accumulated and developed through the years is evident in the superior quality of FCDE solutions.

Markets

Our products and solutions are typically designed for markets including Industrial Equipment, Industrial Automation, Mobile, Transportation, Life Sciences, Beverage dispensing and for Fluid and Process Control.

Benefits

The modular concept of our products, having separate solenoid valves and electrical parts, provides the customer with increased flexibility by allowing numerous combinations. This additional flexibility can enable distributors to greater reduce valve inventory levels, whilst retaining the same number of capabilities. Parker also has unrivalled experience in developing customised product solutions complying with the highest technical, environmental, energy and service life requirements.



PARKER FCDE - GENEVA - SWITZERLAND



PARKER FCDE - MILAN - ITALY

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WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

• This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

• The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

• To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Introduction

Parker Hannifin, the global leader in motion and control technologies, is your ideal partner offering a wide range of solutions for Sterilization.

A wide product offering with high quality standards is available, including Solenoid Valves, Pipes, Fittings and Filters.

Each product has been developed by our engineers taking care of answering with exclusive benefits to the functional needs.



Sterilisation Market

- Table top Medical sterilizers
- Dental sterilizers
- Medium capacity autoclaves (vessel up to 60l)
- B class sterilizers



Applications and Benefits

Applications

Sterilisation in dental, medical and veterinary studies is a key process to ensure the cleanliness of the tools which will be used by the doctor with the patient.

This process is regulated by precise norms, including EN13060.

Sterilisation process is made by specific equipment controlling water, demineralized water, air, steam and vacuum in order to ensure the right cleaning conditions of the tools.

Parker, the global leader in motion and control technologies, can provide you with a wide range of components for sterilizers, each of them with exclusive benefit.





Benefits

Our engineers have developed a wide product offering for the sterilizer market taking into consideration of the most critical aspects of the application, like steam resistance, vacuum resistance, life targets, application temperature.

All the products listed in this catalogue have been developed to ensure:

- Strong and reliable design given by proper selection of the materials and oversizing of the areas under mechanical stress,
- Right materials to ensure long life in contact with selected media,
- Vacuum resistant solutions,
- Wide range of configurations.
- Products are IMQ,RoHS,CE approved and possibly UL,VDE,NSF depending on reference.

Solenoid Valves Program

2/2 Normally Closed Solenoid Valves

Parker product portfolio includes 1/4" port size valves with different flow rates. The smooth design ensures good performances, optimization of flow rate, and excellent vacuum resistance during life.

A wide range of high temperature resistant H class coils with several voltages are available. FKM is the selected sealing compound giving the best performances when additives and cleaners are present in the circuit.

Typical application:

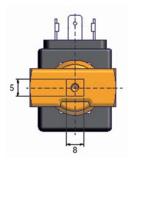
- **Filling:** Water loading of the steam generator and pump shut off line
- Emptying: Exhaust of the sterilization vessel

Fluids: Superheated water, Steam, cold water, air, vacuum Valve Body: Moulded brass, CW617N UNI EN 12165:98 Seals: FKM • Filling: Steam loading of the sterilization vessel and vacuum holding

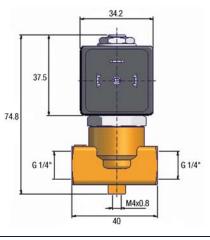
Nozzle: Stainless steel Sleeve and plungers: Stainless Steel

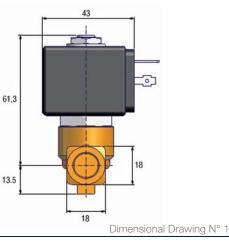
| | RAS | | | | | | | | | | | 2 | | | | |
|-----------------|--------------|----------------------------|-------------|-----|-----------|-----------|------|--------------|--------------------------|---------|--------------|-----------------|--------------------|-------------|---------|---|
| PIPE MOUNTING | | | | | | | | | | M ‡ Î Z | | | | | | |
| NORMALLY CLOSED | | | | | | | | | | 1 🖸 | | | | | | |
| Port Size | Orifice Ø | ð Factors Pressure Bar Tem | | | | | | Seat Seal | Valve Order Number | r Type | Coil Type | Power (cold) | | Dwg. No. | | |
| BSP | mm | KV m³/h | KV I/min | bar | AC bar | DC bar | mbar | °C | °C | | | | | AC W | DC W | |
| | 2.5 | 0.17 | 2.83 | 0 | 20 | - | 950 | -10 | 140 | FKM | 395448 | 126CV | ZH14 24/50-60 | 14 | - | 1 |
| | 2.5 | 0.17 | 2.83 | 0 | 20 | - | 950 | -10 | 140 | FKM | 395450 | 126CV | ZH14 220-230/50-60 | 14 | - | 1 |
| | 2.5 | 0.17 | 2.83 | 0 | 20 | - | 950 | -10 | 140 | FKM | 398264 | 126CV | ZH14 110-120/50-60 | 14 | - | 1 |
| | 2.5 | 0.17 | 2.83 | 0 | - | 15 | 950 | -10 | 140 | FKM | 398265 | 126CV | ZH16 24DC | - | 16 | 1 |
| | 3.5 | 0.33 | 5.50 | 0 | 15 | - | 950 | -10 | 140 | FKM | 395452 | 126LV | ZH14 24/50-60 | 14 | - | 1 |
| | 3.5 | 0.33 | 5.50 | 0 | 15 | - | 950 | -10 | 140 | FKM | 395454 | 126LV | ZH14 220-230/50-60 | 14 | - | 1 |
| | 3.5 | 0.33 | 5.50 | 0 | 15 | - | 950 | -10 | 140 | FKM | 398266 | 126LV | ZH14 110-120/50-60 | 14 | - | 1 |
| 1/4'' | 3.5 | 0.33 | 5.50 | 0 | - | 10 | 950 | -10 | 140 | FKM | 398267 | 126LV | ZH16 24DC | - | 16 | 1 |
| 1/4 | 4.0 | 0.40 | 6.66 | 0 | 10 | - | 950 | -10 | 140 | FKM | 398268 | 126JV.5 | ZH14 24/50-60 | 14 | - | 1 |
| | 4.0 | 0.40 | 6.66 | 0 | 10 | - | 950 | -10 | 140 | FKM | 397156 | 126JV.5 | ZH14 220-230/50-60 | 14 | - | 1 |
| | 4.0 | 0.40 | 6.66 | 0 | 10 | - | 950 | -10 | 140 | FKM | 398269 | 126JV.5 | ZH14 110-120/50-60 | 14 | - | 1 |
| | 4.0 | 0.40 | 6.66 | 0 | - | 6 | 950 | -10 | 140 | FKM | 397154 | 126JV.5 | ZH16 24DC | - | 16 | 1 |
| | 4.5 | 0.55 | 9.16 | 0 | 8 | - | 950 | -10 | 140 | FKM | 395456 | 126KV | ZH14 24/50-60 | 14 | - | 1 |
| | 4.5 | 0.55 | 9.16 | 0 | 8 | - | 950 | -10 | 140 | FKM | 395458 | 126KV | ZH14 220-230/50-60 | 14 | - | 1 |
| | 4.5 | 0.55 | 9.16 | 0 | 8 | - | 950 | -10 | 140 | FKM | 398270 | 126KV | ZH14 110-120/50-60 | 14 | - | 1 |
| | 4.5 | 0.55 | 9.16 | 0 | - | 3 | 950 | -10 | 140 | FKM | 398271 | 126KV | ZH16 24DC | - | 16 | 1 |

*Vacuum – working pressure given must be considered with vacuum applied at the outlet side of the valve (2) and no pressure applied simultaneously at the inlet side. We recommend to apply vacuum at the outlet side only.



All dimensions are in mm







Solenoid Valves Program

2/2 Normally Open Solenoid Valves

Parker product portfolio includes 1/4" port size normally open valves to balance internal vs external pressure and hold pressure during the sterilisation cycle.

The smooth design ensures good performances, optimization of flow rate, and excellent vacuum resistance during life, efficient speed when valve is working to release pressure during sterilization cycle, in order to keep the temperature constant inside sterilizer vessel.

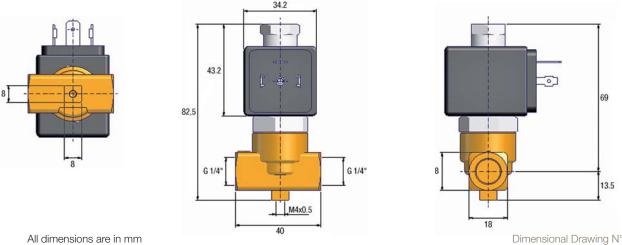
FKM is the selected compound giving the best performances when additives and cleaners are present in the circuit.

Fluids: Steam, air, vacuum Valve Body: Moulded brass, CW617N UNI EN 12165:98 Seals: FKM

Nozzle: Stainless steel Sleeve and plungers: Stainless Steel

| BRASS | | | | | | | | | | | | 2 | | | | | |
|---------------|--|------------|-------------|-----|-----------|-----------|------|-----|--------------|--------------------------|---------------|--------------|--------------------|------------|-------------|---|--|
| PI | PIPE MOUNTING | | | | | | | | | w t t | | | | | | | |
| NORMALLY OPEN | | | | | | | | | | | | | | | | | |
| Port Size | Port Orifice Flow Admissible Differential Fluid Size Ø Factors Pressure Bar Temp. | | | | | | | | Seat Seal | Valve Order Number | Valve Type | Coil Type | | ver Id) | Dwg. No. | | |
| BSP | mm | KV m³/h | KV I/min | bar | AC bar | DC bar | mbar | °C | °C | | | | | AC W | DC W | | |
| | 2.5 | 0.18 | 3 | 0 | 7 | - | 950 | -10 | 140 | FKM | 398257 | 136.2FV | ZH14 24/50-60 | 14 | - | 2 | |
| | 2.5 | 0.18 | 3 | 0 | 7 | - | 950 | -10 | 140 | FKM | 397177 | 136.2FV | ZH14 220-230/50-60 | 14 | - | 2 | |
| | 2.5 | 0.18 | 3 | 0 | 7 | - | 950 | -10 | 140 | FKM | 398258 | 136.2FV | ZH14 110-120/50-60 | 14 | - | 2 | |
| 1/4" | 2.5 | 0.18 | 3 | 0 | - | 7 | 950 | -10 | 140 | FKM | 398259 | 136.2FV | ZH16 24DC | - | 16 | 2 | |
| 1/4 | 3.0 | 0.24 | 4 | 0 | 5.5 | - | 950 | -10 | 140 | FKM | 398260 | 136.2YV | ZH14 24/50-60 | 14 | - | 2 | |
| | 3.0 | 0.24 | 4 | 0 | 5.5 | - | 950 | -10 | 140 | FKM | 398261 | 136.2YV | ZH14 220-230/50-60 | 14 | - | 2 | |
| | 3.0 | 0.24 | 4 | 0 | 5.5 | - | 950 | -10 | 140 | FKM | 398262 | 136.2YV | ZH14 110-120/50-60 | 14 | - | 2 | |
| | 3.0 | 0.24 | 4 | 0 | - | 5.5 | 950 | -10 | 140 | FKM | 398263 | 136.2YV | ZH16 24DC | - | 16 | 2 | |

*Vacuum – working pressure given must be considered with vacuum applied at the outlet side of the valve (2) and no pressure applied simultaneously at the inlet side. We recommend to apply vacuum at the outlet side only.



Dimensional Drawing N° 2

6

Parker coil ZH16 16W

24V DC 100% ED 10 65

Solenoid Valves Program

3/2 Universal Solenoid Valves

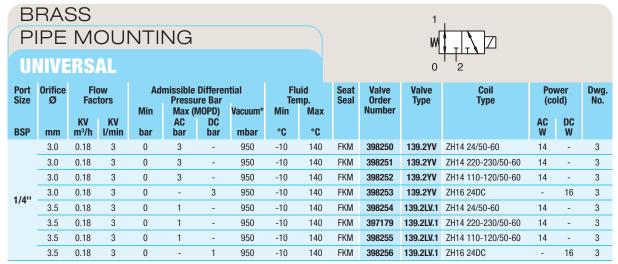
139.2YV and 139.2LV.1 are the right products to ensure the diverting/mixing function before the vacuum pump. The 3.0 bar hold pressure ensures the valve to stay closed when sterilization cycle is running. The smooth design ensures good performances, optimization of flow rate, and excellent vacuum resistance during life.

A wide range of electrical part includes several voltage and high temperature resistant H class coils.

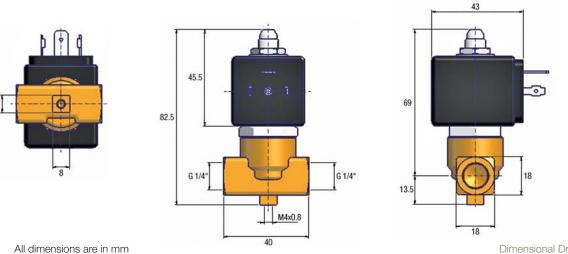
FKM is the selected sealing compound giving the best performances when additives and cleaners are present in the circuit.

Fluids: Superheated water, Steam, cold water, air, vacuum Valve Body: Moulded brass, CW617N UNI EN 12165:98

Seals: FKM Nozzle: Stainless steel



*Vacuum – working pressure given must be considered with vacuum applied at the outlet side of the valve (2) and no pressure applied simultaneously at the inlet side. We recommend to apply vacuum at the outlet side only



Dimensional Drawing N° 3

CE

A

Parker coil ZH16 16W

24V DC

100% ED 10 65

Coils and Accessories

ZH Series - Standard Coil Bi-Frequency H Class, IP65

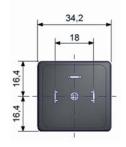
These coils can be mounted with every Parker solenoid valves corresponding to the specified Coil Group. Coil manufactured with H Class copper wire, moulded in thermoplastic material polyester with 30% glass fiber.

IP65 protection rate with EN 175301-803:2006-A. Three pin connector. This coil conforms to the IEC/ CENELEC safety standards and complies with European low-voltage directive. DIN plug connector to be ordered separately (see coil accessories section).

| Speci | ficatio | n | High Temperature + High Power | | | | | | | | |
|-----------------|------------------|---------------------------------|---|--|-------------------------------------|------------------|--|--|--|--|--|
| Ref. (| withou | t DIN plug) | ZH14/ZH16 | | | | | | | | |
| Coil G | iroup | | 20.2 | | | | | | | | |
| Degre | e of pr | otection | IP65 | according to IEC / EN 60529 s | tandards (with DIN plug and gasket) | | | | | | |
| Class | of ins | lation | | H 18 | 30°C | | | | | | |
| Electr | rical co | nnection | The coil is connected with a 2 P + E plug according to EN 175301-803 - A | | | | | | | | |
| Ambi | ent ten | nperature | ZH14/ZH16 -10°C to +80°C - The application is limited also by the temperature range of the valve. | | | | | | | | |
| | DC P (cold) 20°C | | 16 W | | | | | | | | |
| Elect. Power | AC | P (cold) 20°C | 14 W | | | | | | | | |
| | AU | Attraction cold | 33 VA | | | | | | | | |
| Weigh | nt | | 130 g (without plug) | | | | | | | | |
| Volta | ges "U | n" | VAC/Hz | Order Number | VDC | Order Number | | | | | |
| | | % of Un for AC) % for Un DC | ZH14 24/50-60 ZH14 115/50-60 ZH14 230/50-60 ZH14 100/50-60 ZH14 200/50-60 | 304100 304102 304104 304121 304121 304108 | ZH16 24DC ZH16 12DC | 304112 304110 | | | | | |

To Order a Coil: Use 6 digits ordering number - Code Example: ZH16 for 24VDC = 304112 More voltage possibilities can be found in the table of voltage codes at the end of the coil section.

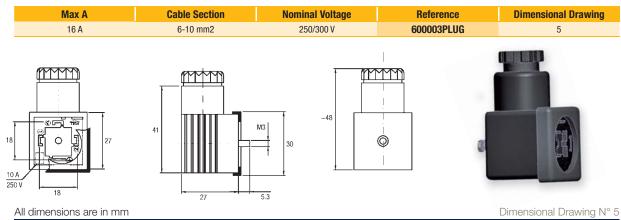






ACCESSORIES: ELECTRICAL CONNECTORS

• 2 P + E DIN 43650A Plug





How to Order a Complete Solenoid Valve

A complete solenoid valve is composed by 2 elements: the **valve** and the **coil**. All the parts listed in this catalogue are supplied with the standard housing assembled.

Therefore your selection process is easier: you have to choose the valve

with corresponding coil at a given voltage from page 6 to 8

and use the 6 digit number to order the complete solenoide valve.

Step 1

Select the pressure vessel reference needed on pages 6-8.

| | | uid np. | Seat Seal | Valve Order | Valve Type | Coll Type | |
|-------|-----|------------|--------------|----------------|---------------|--------------------|--|
| cuum* | Min | Max | | Number | | | |
| | °C | °C | | 0544 | 0 1 | | |
| | -10 | 140 | 3 | 9544 | S DV | ZH14 24/50-60 | |
| | -10 | 140 | TKM | 395450 | 126CV | ZH14 220-230/50-60 | |
| | -10 | 140 | FKM | 398264 | 126CV | ZH14 110-120/50-60 | |
| | -10 | 140 | FKM | 398265 | 126CV | ZH16 24DC | |
| | | 140 | FKM | 395452 | 126LV | ZH14 24/50-60 | |
| | | 140 | FKM | 395454 | 126LV | ZH14 220-230/50-60 | |
| | | | | | | | |





Step 2

Select accessories at page 9 (optional)



Ordering a product or a configuration not listed in the catalogue.

When an application demands a combination of features not listed in the catalogue, please feel free to contact the closest Parker office. Parker personnel will assist in determining the applicability, availability and price of the new product.

Other Parker Products for Sterilizers

Quick Connect Couplings

BT Series - Nominal Diameter: 7 mm

Technical Description:

The BT series coupling system has been developed for use in medical, biotechnology, pharmaceutical and laboratory applications and uses only medical grade materials. The main components are molded in a clean room from virgin transparent USP Class VI polysulfone (PSU). The seals are made from platinum cured silicone. The locking pins are stainless steel. Only available as straight-through version.



Advantages:

Single handed operation. Audible click to indicate a secure connection. Transparent components allow visual control of the flow path. Completely smooth flow path without any dead spaces prevents cross-contamination. Ergonomic sleeve for easy operation with gloves.

Working Pressure:

Working Temperature:

-20°C up to +148°C

- **PB** = 0 bar up to 4.5 bar
- Maximum Static Working Pressure with safety factor of 4 to 1

FCDE 6220/UK-02/2013

Other Parker Products for Sterilizers

Quick Connect Couplings

Series 20 - Nominal Diameter: 2.7 = 6 mm² Series 21 - Nominal Diameter: 5 = 20 mm²

Technical Description:

Mini industrial coupling, internationally used profile. Notable for a high flow and numerous application options with various media. Frequent use in minipneumatics, medical technology and chemistry/pharmacy.

Advantages:

Single handed operation. Small dimensions.

Working Pressure:

Working Temperature* :

- **PB** = 35 bar
- Maximum Static Working Pressure with safety factor of 4 to 1
- -15°C up to +200°C (FKM) depending on the medium.

 * At a temperature below -15°C and above +200°C special seals are available on request.

For more information on Quick Connect Couplings, please contact:

Parker Hannifin Manufacturing Germany GmbH & Co. KG

Quick Coupling Division Europe - Daimlerstraße 7 - 71735 EBERDINGEN - Germany Phone: +49 7042 100 0 - Fax: +49 7042 100 147 - info.rectus@parker.com - www.rectus.de

Instant Fitting

LIQUIfit[™]

Leak-free instant fittings in a 100% bio-based compact body. LIQUIfitTM offers optimum performance suitable for contact with water, beverages and food, as well as being the most compact profile on the market. The many advantages of this range include EPDM patented sealing technology, full flow, no pumping effect and minimized internal retention.

Technical Specifications Working Pressure: from -0.9 to 16 bar (depending on the product type) Working Temperature: -10°C to +95°C (depending on the product type) Material Specifications Body and threads: bio-based material Gripping ring: stainless steel Thread sealant: PTFE 'D' ring: EPDM



Image: Note that the second second

For more information see catalogue CAT/0598.



Instant Fittings

LF 3600 Nickel-Plated Brass

The LF 3600 fittings range, a range of extremely robust fittings. Resisting temperatures of up to 150°C, and functioning at 99% vacuum at as high as 30 bar, the LF 3600 is the one and only brass instant fitting on the market capable of such a performance.

Material Specifications

Technical Specifications Working Pressure: from 0.9 to 30 bar (limited to 20 bar for compact swivel elbows 3699, 3609) Working Temperature: -20°C to +150°C

Body/Collet/Washer/Sub-base: high phosphorus chemical nickelplated brass 'O' ring: FKM fluoroelastomer NSF H1 grease



1935/2004/EC DI 2002/95/EC For more information see catalogue BUL/0525.

LF 3900/LF 3800

LF 3900: a range of instant fittings in full 316L stainless steel, with FKM seals, for optimum resistance to aggressive environments. LF 3800: a range of instant fittings in 316L stainless steel with 303 (collet) and FKM seals, for elemental chemical resistance and competitive price positioning.

Technical Specifications

Working Pressure: from 0.9 to 30 bar (maxi 20 bar for 3979/3879 and 3989/3889) Working Temperature:

-20°C to +150°C



For more information see catalogue CAT/0598.





Universal Compression Fittings

Universal compression fittings are designed to solve all fluid distribution problems and provide a complete system of fittings suited to all types of tubing (copper and stainless steel) and valve assemblies thanks to the flexibility offered by the vast range of accessories: olives, sleeve nuts, reducers, tube adaptors.

Technical Specifications Working Pressure: up to 150 bar (depending on the product type) **Working Temperature:** up to 150°C (depending on the product type) Material Specifications Body/Olive*: brass or stainless steel

*Available in lead-free brass (<0.2%) upon request





For more information see catalogue CAT/0524.

Other Parker Products for Sterilizers

Tubing

Advanced PE

Made from high-grade polyethylene, "Advanced PE" tubing ensures the best balance between flexibility and pressure/temperature resistance. Resistant to a wide range of aggressive chemical agents.

Complies with international regulations and certifications for food and drinking water and standard W270 regarding micro-organism growth on materials. Available in nine colours and eight diameters.

Technical Specifications

Working Pressure:

from -0.9 to 16 bar (depending on temperature and product type)



For more information see catalogue CAT/0598.





-15°C to +95°C

Working Temperature:

NSF

Certified to NSE/ANSI 61

NSF 61



FEP

Parker Legris fluoropolymer tube (FEP) is food quality and provides excellent resistance to aggressive and corrosive agents and to high temperatures. It has a surface hardness of 55° shore D.

Technical Specifications

Working Pressure: from -0.9 to 22 bar (depending on temperature and product type) **Working Temperature:** -40°C to +150°C







For more information see catalogue CAT/0524.

PFA

A Comprehensive Range of PFA Tubing for Perfect Adaptability

High purity grade PFA for our clear tubing to cover all applications. Standard grade PFA for our coloured tubing for circuit identification and special requests.

Extreme Versatility for All Technical Applications

A flexible alternative to stainless steel tubing. Broad range of working temperatures. Non-stick properties, chemically inert and lowest permeability for the conveyance of numerous fluids and gases. Outstanding resistance to ageing. Non-flammable and UV-transparent. Repeated flexing possible with unmoved resistance to stress cracking.

Technical Specifications

Working Pressure:

from -0.9 to 35 bar (depending on temperature and product type)

Working Temperature:

-196°C to +260°C



For more information see catalogue LEAF/0598.



For more information on Instant Fittings and Tubing, please contact:

Fluid System Connectors Europe Parker Hannifin France SAS

Parker Hannifin Corporation

CS 46911 - 74 rue de Paris - 35069 RENNES Phone: +33 (0)2 99 25 55 00 Fax: +33 (0)2 99 25 55 99 www.parkerconnectic.com



many angles to find new

ways to create value. What-

ever 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 technol-

ogy than Parker. For further

info call 00800 27 27 5374

Parker's Motion & Control Technologies



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

Key Products

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



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



Commercial transports

Control systems &



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



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., 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



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



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 Electrohydrostatic actuation systems Electromechanical actuation systems Human machine interface Linear motors Stepper motors, servo motors, drives & controls Structural extrusions



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/wastewate

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



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 & drvers 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 & system



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 shape Medical device fabrication & assembly Metal & plastic retained composite seals Shielded optical windows Silicone tubing & extrusions Thermal management Vibration dampening

ENGINEERING YOUR SUCCESS.

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