



# Power Generation Interactive Resource Guide

The most comprehensive line of aftermarket component and system solutions in the world.

February 2013

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



ENGINEERING YOUR SUCCESS.

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## A Legacy Since 1940

Parker is proven in the power industry like no other supplier. Our years of strategic acquisition have created a vast array of trusted, reliable legacy products that improve system life, increase safety, eliminate downtime, reduce operation and maintenance costs, boost efficiency, and accurately meet standards for emissions compliance.



A-Filter Arlon • Abex • Advanced Products • Airtek • AquaPro • Atlas Cylinder • Autoclave Engineer • Balston • Bayside Motion • Berea Rubber Products • Calzoni • Climax • Commercial Filter • Computer Technology • Daedal • Dayco Industrial • Denison International • domnick hunter • Ermeto • Fairey Arlon • Farr • Filtran Aftermarkets Products • Finite Filter • Finn Filter • Gold Ring • Greer • Gresen Hydraulics • Hanil Hydraulics • Hargraves Technology • Hiross • Hy-Temp • Invensys Watts Fluid Air • Kittiwake Group • Legris SA • Lucifer • Maidenstone • Manapak • Mantrol • Maxam Pneumatics • Meads Fluids Dynamics • Metal Bellows • Miller Fluid Power • Mitos Technologies • Olaer Group • Origa Group • Parflex • Page International • PGI International • Pioneer Quick Coupling • Pneutronics Ltd. • Polyflex • Porter Instrument • Pradifa Jager K.G. • Procal • Racor Industries • Rectus AG • Republic Valves • Resistoflex • RM Dynex • Rosaen Filter • Ross Controls • Schraeder Bellows • Schwarz Group • Sealcraft Division • Sempress • Sinclair Collins • Skinner Valve • Snap-tite • SSD Drives • Sterling Hydraulics • Stratoflex • Synthetic Rubber Products • Tell Tale Filters • Texas Thermowell • Texloc Holdings • Titan Industries • Trilogy Motors • Twin Filter • UCC International • UHP Components • United Air Products • Velcon Filters • Veriflo • Whatman's Industrial Filtration • Wilkerson • Zander

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# PARKER AND POWER

## Advanced Motion and Control Products and Systems that Improve your Reliability, Performance, and Profitability.

Parker is the world's leading diversified **original equipment manufacturer** of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of markets, including power generation. As a collaborative partner, we work one-on-one with you to help create cleaner, more efficient energy. Whether for **nuclear, coal-fired, gas turbine, and combined cycle plants**...or **biomass, hydroelectric, waste-to-energy, geothermal, wind, and solar**...our solutions reduce costs and optimize performance. Faster and more efficiently.

### What Parker Offers You

As the world's motion control expert, you can rely on our understanding of your business. Parker provides:

- Decades of power generation innovation
- Proven reliability worldwide
- OEM component and system solutions that meet stringent safety standards
- New, evolving technologies
- Customized system design
- Local distributor support
- Corporate procurement solutions

The bottom line? Our thousands of standardized and custom engineered solutions improve system life, increase safety, eliminate downtime, reduce operation and maintenance costs, boost efficiency, and meet emissions standards in new and old plants alike.

*Expertise in key power areas translates into faster development, improved life, reduced risk, and greater value for you.*

**PH LISTED NYSE**

We are a public company traded on the New York Stock Exchange with annual sales in the billions of dollars.



## Our Power Expertise

Parker has solutions for every power plant system, as well as balance of plant (BOP).

- Boiler Systems
- Circulating Water Systems
- Conveyor Systems
- Combustion
- Condensate and Feed water Systems
- Flue Gas Systems
- Fuel Handling
- Gas Turbine
- Generator Systems
- HRSG
- I&C
- Nuclear Reactor
- Plant Electrical
- Steam Turbine

### Globally Connected

No matter where you produce, Parker is there. By working with us, you have access to an integrated network of hundreds of global manufacturing plants, 13,000 distributors and maintenance/repair outlets, and over 1,500 ParkerStores.



With approximately 60,000 employees in almost 50 countries, Parker is everywhere you need us to be.

### Quality Focused

Our national and international certifications verify that our systems and solutions offer the highest possible quality for the most efficient performance.



### A Partnership Approach

Whether you're involved in **new construction, planned outages, or plant upgrades** for an aging fleet, involving us early on can frequently speed the process and reduce costs. As a collaborative partner, we work one-on-one with you to create and deliver:

- **Custom engineered** original equipment and aftermarket solutions utilizing our complete range of proven products
- **Technology advances** that are smaller, lighter, safer, sustainable, more energy efficient, and highly reliable

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# PARKER AND POWER

## A Dedicated Team of Power Experts to Provide the Best Turnkey, Technical Solutions.

As one of the leading **original equipment manufacturers** of engineered products, subsystems, and systems, Parker's capabilities in power are impressive – particularly when you realize they come to you as **one easy-to-work-with team**. Consisting of Parker experts who have worked in power for decades, including a North American network of **dedicated power distributors** with strong power engineering and fabrication capability, the Parker Power Team was formed to both **simplify and speed** working with us to your advantage.

### The Power of Parker

Parker means solutions. We offer you a systems capability that leverages the power of Parker across the broadest range of applications in power plants for the best technical solutions. Plus our dedicated power distributors, located all over the world, can provide the additional benefit of “one-stop shopping,” saving time and simplifying both your job and your day.



### How Our Distributors Help

- Vendor Managed Inventory
- Inventory Sharing
- Kitting and Pre-Assemblies
- Local ParkerStores
- Repair and Rebuild Services
- System Engineering
- Custom HPUs / Manifold Blocks
- In-House Fabrication (Pump, Compressor, Lube Oil / Flushing Skids)
- Field Service

### Complete Systems Engineering Support

Parker's ability to design, prototype, and manufacture can shorten the design cycle, improving production efficiency and simplifying processes. Our team of dedicated power experts can be brought in to provide valuable, early-on collaboration for streamlined development. Not only can their knowledge of our many engineered solutions help solve existing problems – it can also help you develop new systems for added efficiency and productivity.

### Fewer Suppliers

Working with Parker simplifies things. As a multiple technology provider, we can save you time and money by providing or negotiating national purchasing agreements, offering fleet standardization on key components, and helping to integrate a faster, more efficient supply chain. All of which can reduce the need for multiple suppliers and make single source supply for your company a reality.

### Aftermarket Service Programs

We know how important maintenance, repair, and service are. That's why we have focused service programs tailored to the needs of the aftermarket world. Working together, we can **control stock room inventories with integrated procurement options**. Improve maintenance cycles. Even help with **obsolete equipment**. Plus evolving development across all technology platforms guarantees you **new technology upgrades that deliver increased efficiency and longevity for your fleet**.

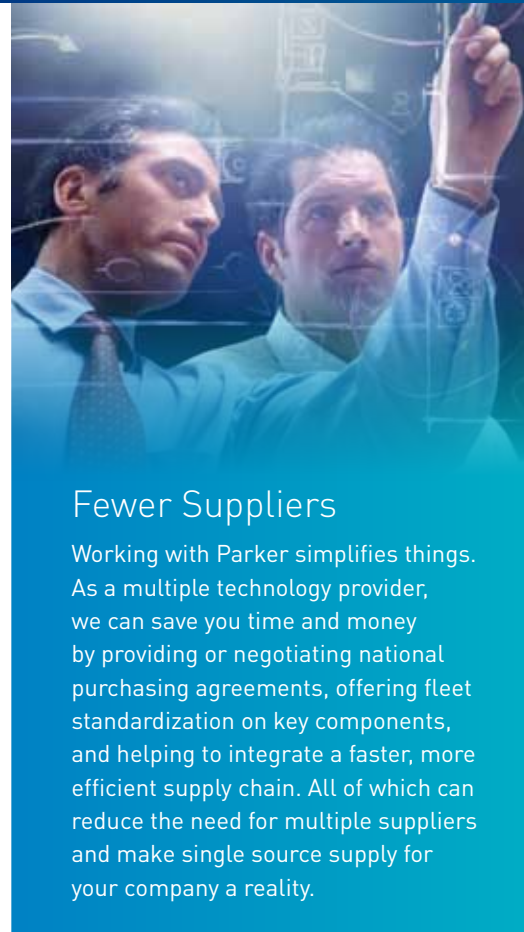
### Sustainability Initiatives

Parker can help you meet the need for low-emission, high-performance energy. Our advanced technologies can:

- Improve emissions performance
- Minimize waste
- Meet environmental regulations
- Monitor air and water quality
- Extend operating life
- Help create greater fuel efficiency

### Profitability

Our active customer partnerships result in cost-effective solutions that optimize value. We offer a full complement of services that reduce outages and operational costs.



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Spec the Best. Spec Parker.

COVER

This is an **INTERACTIVE** resource guide. Click on **specific products** in the listing – **or featured product headlines** – for links to additional Parker information.

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**Email us at [pgn.mro@parker.com](mailto:pgn.mro@parker.com) or [pgn.oem@parker.com](mailto:pgn.oem@parker.com)**

Notice: This resource guide does not feature every product that Parker offers. Visit [www.parker.com](http://www.parker.com) for more products and solutions in Power Generation.

A global leader in motion and control pneumatic, electromechanical, drive, and fluidic technologies, our innovative engineering, application analysis, system, sub-system, and component selectable levels of integration offer the kind of collaborative development that can result in improved life, reduced risk, and greater value.

## Air Preparation – FRLs (Filters, Regulators, Lubricators)

### FRL Heavy Duty Metal Air Preparation Units (Metal Bowl)

#### • Filters

- 06 & 07 Series – Particulate Filters
- 06 & 07 Series – Coalescing & Absorber Filters
- 12F Series – Inline Coalescing Filters

#### • Regulators

- 06 Series – Compact Regulators
- 07 Series – Standard Regulators

#### • Filter/Regulators

- 06 Series – Compact Filter/Regulators
- 07 Series – Standard Filter/Regulators

#### • Lubricators

- 06 Series – Compact Mist Lubricators
- 07 Series – Standard Mist Lubricators

#### • Combinations

- 06 Series – Compact Modular 2-Unit & 3-Unit Combinations
- 07 Series – Standard Modular 2-Unit & 3-Unit Combinations

## Parker Prep Air II Series 06 and 07 Air Filters, Regulators, Mist Lubricators, and Modular Combinations

Offered separately and in combination packages, Parker's line of 06 and 07 Series Air Preparation Filters, Regulators, and Mist Lubricators effectively remove dirt and contaminants while protecting air line integrity and ensuring proper flow. Standard and compact sizes available with numerous options to meet virtually any need.



### Features & Benefits

#### Air Filters

- Particulate, coalescing, and absorber styles
- Unique deflector plate and shroud create a swirling of the air stream, ensuring maximum water and dirt separation
- Large filter element surface guarantees low pressure drop and increased element life
- Easily serviced
- Optional automatic float drain

#### Air Regulators

- Secondary aspiration plus balanced poppet provide quick response and accurate pressure regulation
- Rolling diaphragm for extended life
- Two high-flow 1/4" gauge ports can be used as additional outlets
- Removable non-rising knob

#### Mist Lubricators

- Proportional oil delivery over a wide range of air flows
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate
- Bowl can be filled while air line is under pressure

#### Modular 2- and 3-Unit Combinations

- Streamlined package contains Filters, Regulators, or Mist Lubricators
- Compact modular setup allows for easy installation

### Applications

- Instrument and service air lines
- Main gas lines
- Valve actuation
- Burner front oil guns (boiler)
- Fly ash handling systems
- Automatic lubrication control feed



## FRL Stainless Steel Air Preparation Units (ISO 15156)

- **Filters**
  - PF10 – Air Line Particulate Filters
  - PF11 – Air Line Coalescing Filters
- **Regulators**
  - PR10 & PR11 – Air Line Regulators
- **Filter/Regulators**
  - PB11 & PB12 – Air Line Filter/Regulators
- **Lubricators**
  - PL10 – Air Line Lubricators

## FRL Accessories

- ECS Series – Muffler-Reclassifiers
- ED Series – Zero Loss Condensate Drains
- ES Series – Silencers
- PPS1 Series – Pressure Switches
- WDV3 Series – Automatic Electrical Drain Valves
- WDVE Series – Automatic Drip Leg Drains

## Electromechanical

### Linear Actuators

- Origa HMR Series

### Electric Cylinders

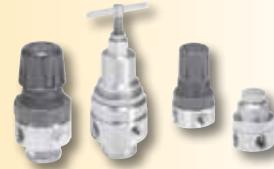
- ETH Series – High Force Electro-thrust (ET)

### Servo Drives

- Compax3 Series – 1 to 75 kW System
- MPP Series – High Power Brushless Rotary

## Stainless Steel Air Preparation Units (ISO 15156)

Parker offers a wide range of Stainless Steel Air Preparation Units including particulate filters, coalescing filters, regulators, and lubricators. These modular units can be combined to meet application needs and create full FRL systems. Stainless steel construction withstands most corrosive environments.



### Features & Benefits

- Standard fluorocarbon seals
- Meet NACE specifications MR-01-75/ISO 15156
- Regulators feature large diaphragm-to-valve-area ratio for precise regulation and high flow capacity
- Lubricators are fillable under pressure
- Threaded drains on coalescing and lubricator filters

### Applications

- CEMS shelters
- Emissions monitoring
- Scrubbers
- Line feed systems
- Fly ash handling systems

## HMI – Visualization

### HMI - Dedicated

- Interact Xpress – Software
- XPR2 – PowerStations

### HMI - Windows

- EPX InteractX – PowerStations
- InteractX – SCADA Supervisory Software



## InteractX HMI

The unique interaction between Parker's InteractX Software and InteractX PowerStations reduces the time, effort, and cost of SCADA application development. InteractX Software leverages your investment in machine-level HMIs, connecting you directly to Interact Xpress screens and data so you can re-use application elements at the supervisory level, saving up to 80% of development time. InteractX PowerStations include a range of options such as CompactFlash storage, USB ports, RS-232 and RS-232/422/485 ports, and a 100 Base-T Ethernet port. These systems are RoHS-compliant and offer big HMI capabilities in a compact, affordable package.

### Features & Benefits

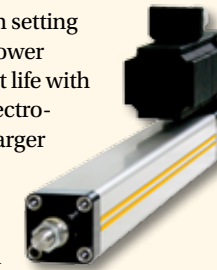
- Customized monitoring panels for plant control
- Xpress allows user to push information to SCADA/remote monitoring locations
- Xpress HMI can reside at the substation
- Xpress can communicate via Modbus TCP/IP
- PowerStations include InteractX Window HMI with unlimited tags and 60+ communication drivers

### Applications

- Transmission and distribution substations
- Fuel, gas, and compressed air control
- Steam pressure control
- Boiler/HRSG control parameters
- Compressor/turbine/generator parameters
- Guide vane actuation

## ETH Series High Force Electro-Thrust Cylinders

Parker succeeded in setting new standards in power density and product life with its ETH Series of Electro-Thrust Cylinders. Larger screw and bearing designs result in increased force output within small frame sizes. Widely used in the power plant environment, ETH cylinders close the gap between pneumatic and hydraulic drives while offering an economical solution.



### Features & Benefits

- High shock and vibration resistance
- Small temperature drift
- Traction/thrust forces up to 25 kN

### Applications

- Hydraulic and pneumatic control replacement
- Electric control actuation
- Fuel control systems

## Non-Regenerative DC598+ and Full-Regenerative DC599+ External Stack Controllers

Economically retrofit outdated or obsolete high-powered DC drives by adding digital control to existing SCR power stages and using existing motors. Integrates with your existing control equipment or SCADA package.

### Features & Benefits

- Add functionality and control
- Gain fieldbus connectivity with multiple communication options
- Suitable for power stacks up to 2,700 amps

### Applications

- Cranes and hoists with existing DC drives
- Conveyors with existing DC drives
- Coal handling systems



## AC30V AC Low Voltage VFDs

The AC30V Variable Frequency Drive (VFD) from Parker provides speed control for AC induction and permanent magnet (PMAC) servo motors through 25 HP, as well as exceptional levels of control for pumps, fans, and general purpose applications.

### Saving energy through speed control

Pumps and fans are widely used throughout the plant. Some estimates suggest that many of them can be oversized for their application by as much as 20%. When these are operated at a constant speed, a significant amount of the power consumed by the motor is wasted, costing considerable amounts of money and creating additional CO<sub>2</sub> emissions.

### Improved power factor and service life

Continuous operation at maximum speed inevitably shortens pump and fan life spans, subjecting them to unnecessary wear and tear. VFDs can help improve service life while reducing energy consumption and improving the power factor of your installations. In addition to lower energy costs, you'll see significant maintenance and repair cost savings as well as a noticeable reduction in noise pollution.

### Features & Benefits

- Up to 50% energy savings
- Improved power factor
- Reduced maintenance
- Quieter operation and increased service life
- Reduced carbon footprint
- Modular design; intuitive graphical keypad; easy to service
- 0.75 to 18.0 kW operation
- Safe Torque Off (STO to EN13849 PLe)
- CE marked to EN61800-5-1 and NRTL listed to UL508C and C22.2#14

- Conformally coated; suitable for harsh environment classes 3C1, 3C2 (all defined substances), plus 3C3 and 3C4 for hydrogen sulfide
- SCADA communication options

### Applications

- Air compressor control
- Feed pump, fan and blower speed control
- General-purpose motor speed control
- Hydraulic Power Unit (HPU) and hydraulic pump control



## Factory Display Visualization System

- PFD Series – 32", 42" & 46" Color TFT Video Screens

## Industrial Flat Panel Monitors

- PHM Series – Class I, Division 2

## Industrial Low Voltage Drives

### Custom Drives

- MTO (Made To Order) AC or DC Packaged Drives

### DC Drives

- DC590+ Series – 0.75 to 1,500 kW Digital Drives
- DC598+/DC599+ Series – 1 to 2,700 Amp Digital Stack Controllers
- 506/507/508/512 Series – 3 to 32 Amp Single-Phase (Analog)

### AC Variable Frequency Drives

- AC30V Series – 0.75 to 18.0 kW Low Voltage Drives
- AC650S Series – 0.25 to 7.5 kW Sensorless PMAC Control
- AC690+ Series – 0.75 to 315.0 kW Low Voltage Drives
- AC890PX Series – 110 to 1,500 kW Low Voltage Drives
- AFE (Active Front End) Units – 110 to 1,500 kW Regenerative In-feed (IEEE 519 Requirement)

### Servo Drives

- 638 Series – 1 to 15 Amp PMAC

## AC890PX AC Low Voltage VFDs

For accurate speed control of AC induction motors through 2,000 HP, our AC890PX Series of Variable Frequency Drives is the preferred choice. Modular design makes installation and maintenance quick and easy. Refrigerant cooling available.



### Features & Benefits

- 110 to 1,500 kW operation
- Operates AC induction or PMAC motors
- Compact size, small footprint
- Field replaceable power modules for minimal downtime
- Line regenerative units available

### Applications

- Synchronous generator excitation
- Gas turbine electric start systems
- Black start solutions
- Large hydraulic pump flow/pressure control (boiler feed/slurry feed/condensate/cooling water, and circulating pumps)
- Cooling tower and exhaust fan drives
- Induction and force draft fans (large air handlers)
- Coal handling system conveyors
- Centrifugal fans
- Chillers (chilled water supply pumps)
- Hydro power pump turbine sets

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## Servo Motors

- EX Series – 1.75 to 35 Nm (ATEX)
- MGV Series – 1 to 230 kW Brushless High Speed Direct Drive
- MPP Series – High Power Brushless Rotary
- NV Series – High Speed Brushless Spindle
- NX Series – 0.45 to 64 Nm Brushless Permanent Magnet (PMAC)
- TK Series – Frameless High Torque
- TMW Series – 1,200 to 22,100 Nm Brushless Direct Drive Torque (PMAC)

## Pneumatics

### Air Control Valves

- 130 & 134 Series – Diaphragm-type Relief Valves
- XM Series – Direct Operated 3-Way & 4-Way
- OR Series – Quick Exchange/Shuttle Valves

- P4Q Series – Quick Exhaust Valves
- T, G & SS Series – Single Solenoid Valves
- Valvair II Series – 3-Way & 4-Way Sub-base/Manifold Valves

### Inline Air Valves

- B Series – Enhanced Flow, Compact Industrial Valves
- N Series – Heavy Duty, High Flow Poppet Valves
- VE Series – Isolator/Main Shut-Off (Power) Valves
- Viking Xtreme Series – ATEX Intrinsically Safe, Single & Double Solenoid Operated Valves

### Manual/Mechanical Air Valves

- DirectAir 2 Series – 3 & 4-Way, 3 & 5 Port, 2-Position Inline Valves
- LV & EZ Series – Lockout/Soft-Start Valves

### Rotary Actuators

- HP Series – Large Rack & Pinion Rotary Actuators
- PV Series – Vane Rotary Actuators

## MGV Series High Speed Servo Motors

MGV Brushless Servo Motors provide an innovative solution for applications that require high speeds and low inertias, and where fast response time and cycling are needed. Pair with Parker AC890 Series Servo Drives for optimum performance.

### Features & Benefits

- Power ratings from 1 to 230 kW
- Up to 45,000 RPM capability
- Fast response time
- Low inertia
- Water cooled



### Applications

- Turbine starter
- Equipment test bench
- General high speed direct drive requirements

## N Series Poppet Valves

For decades, Parker's N Series Poppet Valves have been operating in power plants without fail. Users select this line specifically for its high flow speeds and long service life. Available as 2-way NC and 3-way NC/NO. Cast aluminum body, aluminum and stainless steel poppet assembly, nitrile seals.



### Features & Benefits

- Continuous duty rated option
- Non-lube service
- High-flow, short stroke poppet
- Indicator lights available
- Hazardous duty option IP 65 rating/NEMA 4

### Applications

- Igniter burner fuel line
- Lime feed systems
- Cooling water and boiler feed water systems
- Coolant flow
- Hydrogen cooling systems
- Main steam valve drains
- Compressor blowdown lines
- Condensate system (make-up water to the condenser)

## PV Series Vane Rotary Actuators

Parker PV Vane Rotary Actuators provide the maximum amount of output torque from a minimum envelope size, converting pneumatic pressure into rotary motion for a variety of power gen applications. Single vane models have a maximum rotation of 280°. Double vane models have a maximum rotation of 100°, but with double the torque.



### Features & Benefits

- 8 model sizes
- Output torque at 100 psig: 8 to 1,800 lb/in
- Stainless steel shaft
- Zero backlash allows precise positioning
- Uniform torque in both directions
- Washdown compatible
- Perform under the most adverse ambient conditions
- Zero external leakage

### Applications

- Circulating water and steam circuit systems
- ID fans
- Main steam line
- Ventilation systems
- Feed water and reactor isolation valves
- Ball, plug, and disc valve actuation
- Scrubbers
- Coal handling

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## Industrial Pneumatic Cylinders

### • ISO 15552 Cylinders

- P1A Series – ISO 6432 Stainless Steel Air (Round Body, Non-repairable)
- P1D Series – ISO 6431 Aluminum Air
- P1D-T (CETOP RP52P) – Double Action Wire Stainless Piston Rod (ATEX)
- P1E Series – Heavy Duty ISO 6431 Aluminum Air

### • Rodless Pneumatic Cylinders

- OSP-P Series – Aluminum Modular Linear Drives
- P1X Series – Stainless Steel Band-Type Air
- P1Z Series – Magnetically-Coupled Stainless Steel Barrel Air

### • Tie-Rod Cylinders

- 2A Series – Heavy Duty Pneumatic
- 4MA Series – Aluminum NFPA Interchangeable Air
- PA-2 Series – Heavy Duty Pneumatic (Schrader Bellows Repairable)
- SA Series – Stainless Steel NFPA Interchangeable Air

## Electronic Pressure Sensors

- MPS Series – Solid State LED Pressure Sensors
- PMPS-5 Series – Pressure Transducers
- SCP01 Series – High Pressure 316 Stainless Steel Sensors
- WMPS32 Series – Digital Pressure Gauge/Sensor

## ISO Aluminum and Stainless Steel Pneumatic Cylinders

Designed to meet ISO 6431, ISO/DIN 15552 and VDMA 24562 standards, Parker double-acting P1D Series Pneumatic Cylinders offer new air cushioning for smoother operation, as well as anodized aluminum heads, caps, and profiled cylinder bodies to accommodate 32 to 200 mm bores.



### Features & Benefits

#### Aluminum

- Standard, removable gland, and clean versions
- PUR seals for long service life
- Drop-in sensors
- Stainless steel piston rods, fasteners, and rod accessories
- Strokes available in any practical length
- Corrosion-resistant anodized aluminum construction

#### Stainless Steel

- Nominal pressure up to 250 psi
- Standard bore sizes from 1" to 14"
- 14 standard mounting styles

### Applications

- Pneumatic control
- Damper controls
- ID/FD fans
- Main gas line
- Gas vent valves

## Utility Grid-Tie Inverters

- Scalable Megawatt-Class PCS (Power Conversion System) for Energy Storage System
- PV Solar Central Inverter
- Wind Turbine Converter (Low Voltage)

## 2A Series Heavy Duty Pneumatic Tie-Rod Cylinders

Engineered for extremely high quality performance, Parker 2A Series Tie-Rod Cylinders feature 125,000 psi yield strength rod end studs (with rolled threads) and 100,000 psi yield strength tie-rods. Steel construction, repairable design.



### Features & Benefits

- Meet NFPA Heavy Duty Pneumatic and ANSI/(NFPA) T3.6.7R2-1996 standards
- Bore sizes from 1" through 14" (larger sizes available)
- Strokes available in any practical length
- Piston rod diameters from 1/2" to 5-1/2"

### Applications

- Boiler dampers
- Large process valve control – knife gate/slurry/globe/butterfly
- Pulverizer gates
- Ash hoppers
- Bottom lime feed systems

## Did you know? CUSTOM ENGINEERED SOLUTIONS

Parker KV Division offers **customized shut-off and drain assemblies for liquid fuel and water systems on gas turbines.** Contact your local Parker Power Gen Distributor Specialist.

## Power Conversion System for Energy Storage

Power Conversion Systems (PCS) are designed to integrate battery storage with the grid for multiple applications. The PCS regulates the charging and discharging of the batteries. Available in scalable, megawatt-class systems.



### Features & Benefits

- Modular design for system scalability
- Easily transported and deployed
- Refrigerant-cooled, climate-controlled enclosure
- Works with all battery chemistries

### Applications

- Black start
- Frequency regulation
- Integration of renewable power sources
- VAR control
- Peak shaving/time shifting

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### SALES OFFICES

Parker offers products and systems in refrigeration and air conditioning, mobile air conditioning and fluid control, ensuring comfort and convenience. Recognized trade names include Gold Ring, Sportan, HERL, Virginia, Skinner, Sinclair Collins, and Lucifer.

## Precision Cooling Solutions

**Evaporative Cooled Inverter Racks (1.5 MW)**

**Precision Cooled Battery Storage Containers**

**Two-Phase Evaporative Cooling Unit (2.5 - 200 kW)**

### Stand-Alone Evaporative Cooling Units

Using a non-corrosive, non-conductive fluid that vaporizes and cools hot surfaces on contact, our Stand-Alone Evaporative Cooling Unit is ideal for high power electronics systems where heat loads have moved beyond traditional air and water cooling system capabilities. Safer and more efficient, our evaporative cooling technology increases power densities for high power electronics by more than 2x while lowering total system cost by up to 15%. Improved thermal efficiency allows for lower coolant flow rates, resulting in the use of smaller, energy efficient pumps. Plus the improved thermal efficiency enables the use of smaller cold plate assemblies that lend themselves to highly modular, scalable architectures, giving customers more flexibility in their converter/inverter system design.



#### Features & Benefits

Significant benefits over air and water based cooling systems, including:

- Overall system cost reduction due to increased power density
- Safer operation due to non-conductive coolant
- Increased reliability in power modules
- Reduced energy consumption
- Lower maintenance cost
- Scalable design: available in 18, 50, 100 and 200 kW

#### Applications

- Substation power conversion – grid stabilization (STATCOM)
- HVDC power conditioning
- Wind turbine converters
- Solar grid-tie inverters
- Medium voltage motor drives (VSD)
- Electrostatic precipitators (ESP)
- Water cooling systems
- T&D upgrade deferral

## Solenoid Valves

### General Purpose Solenoid Valves

#### • 2-Way & On/Off Process Valves

- Skinner & Gold Ring 2-Way Direct Acting Solenoid Valves (NPT Port)
- Lucifer 2-Way Direct Acting Solenoid Valves (BSP Port)
- Skinner & Gold Ring 2-Way Direct Lift, Pilot & Remote Operated Solenoid Valves (NPT Port)

- Lucifer 2-Way Direct Lift, Pilot & Remote Operated Solenoid Valves (BSP Port)
- Skinner & Gold Ring 2-Way High Pressure Pilot & Remote Operated Solenoid Valves (NPT Port)
- Lucifer 2-Way High Pressure Pilot & Remote Operated Solenoid Valves (BSP Port)

### 2-Way On/Off Solenoid Valves – High Pressure Applications

Our Skinner and Gold Ring brands of 2-Way Solenoid Valves offer actuation via a pilot or remote signal. These high pressure valves provide flow control for a wide variety of liquids and gases.



#### Features & Benefits

- Wide variety of enclosures, coil types, and seal materials
- Up to 3,000 psi working pressure
- Broad range of port sizes and thread connections
- Stringent manufacturing processes for high quality, trouble-free operation

#### Applications

- Turbines (lubrication systems)
- Coolant lines
- Instrument air
- Coal handling systems (water lines and air lines)
- Compressors and pumps
- Boiler feed units (steam)
- Air pollution control (wash down valves for air filters)

#### Did you know?

Parker offers numerous **ATEX** and **IECEx** certified solenoid valves for use in hazardous environments. Contact your local Parker Power Gen Distributor Specialist.

## General Purpose Solenoid Valves

### • 2-Way & On/Off Process Valves

continued

- Skinner & Gold Ring Anti-Water Hammer & Slow Closing Solenoid Valves (NPT Port)
- Lucifer Anti-Water Hammer & Slow Closing Solenoid Valves (BSP Port)
- Lucifer 201LG Series – 316L Stainless Steel Direct Acting Solenoid Valves
- Lucifer Oil Burner Valves – Safety Shut-off Valves (DIN-EN 23553-1)

### • 3-Way Valves – Valve Actuation

- Skinner & Gold Ring 3-Way High Flow Direct Acting Solenoid Valves (NPT Port)
- Lucifer 3-Way High Flow Direct Acting Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way High Pressure Direct Acting Solenoid Valves (NPT Port)
- Lucifer 3-Way High Pressure Direct Acting Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way Pilot & Remote Operated Solenoid Valves (NPT Port)
- Lucifer 3-Way Pilot & Remote Operated Solenoid Valves (BSP Port)

## 2-Way On/Off Solenoid Valves – Anti-Water Hammer/Slow Closing

The Skinner and Lucifer brands of 2-Way Anti-Water Hammer Solenoid Valves permit flow control without the effect of propagating shock waves throughout piping systems when the valve closes. The reduction of these shock waves results in longer life of system components and decreases the likelihood of system leaks and failures.



### Features & Benefits

- Wide variety of enclosures, coil types, and seal materials
- AC and DC power supply
- Integral speed control for slow closing actuation
- Numerous agency approvals

### Applications

- Steam and liquid flows
- SO<sub>2</sub> scrubbing
- Water treatment

### • 3-Way Valves – Valve Actuation

continued

- Skinner & Gold Ring 3-Way Quick Exhaust Solenoid Valves (NPT Port)
- Lucifer 3-Way Quick Exhaust Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way Direct Mount NAMUR Solenoid Valves (NPT Port)
- Lucifer 3-Way Direct Mount NAMUR Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way Low Power Solenoid Valves (NPT Port)
- Lucifer 3-Way Low Power Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way Banjo Solenoid Valves (Normally Closed)

### • 4-Way Valves – Valve Actuation (5 Position)

- Skinner & Gold Ring 4-Way Direct Acting & Pilot Operated Solenoid Valves (NPT Port)
- Lucifer 4-Way Direct Acting & Pilot Operated Solenoid Valves (BSP Port)
- Skinner & Gold Ring 4-Way Direct Mount NAMUR Solenoid Valves (NPT Port)
- Lucifer 4-Way Direct Mount NAMUR Solenoid Valves (BSP Port)
- Skinner 4-Way Low Power (0.6 Watts) Solenoid Valves (NPT Port)
- Lucifer 4-Way Low Power (0.6 Watts) Solenoid Valves (BSP Port)

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## 3- & 4-Way Direct Acting and Pilot Operated Solenoid Valves – NAMUR Mounting



Parker 3- and 4-way versions of the NAMUR interface provide a mounting option seen throughout the world. Like our other solenoid valve offerings, stringent manufacturing process control ensures consistent operation and performance.

### Features & Benefits

- Wide variety of enclosures, coil types, and seal materials
- Unique industry ability to convert between 3- and 4-way operation with optional conversion plate
- Numerous agency approvals
- NAMUR mounting for space savings

### Applications

- Steam, air, and liquid flows
- Turbine lubrication
- Igniter burner – number 2 fuel lines
- Steam bleed valves
- Cooling systems



## Intrinsically Safe (ATEX) Solenoid Valves

- Skinner & Gold Ring 2-Way ATEX-IECEX Intrinsically Safe Direct Acting & Pilot Operated Solenoid Valves (NPT Port)
- Lucifer 2-Way ATEX-IECEX Intrinsically Safe Direct Acting & Pilot Operated Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way ATEX-IECEX Direct Acting, Pilot Operated & Manual Reset Solenoid Valves (NPT Port)
- Lucifer 3-Way ATEX-IECEX Direct Acting, Pilot Operated & Manual Reset Solenoid Valves (BSP Port)
- Skinner & Gold Ring 3-Way & 4-Way ATEX-IECEX Direct Mount NAMUR Solenoid Valves (NPT Port)
- Lucifer 3-Way & 4-Way ATEX-IECEX Direct Mount NAMUR Solenoid Valves (BSP Port)
- Skinner & Gold Ring 4-Way ATEX-IECEX Pipe Mount Solenoid Valves (NPT Port)
- Lucifer 4-Way ATEX-IECEX Pipe Mount Solenoid Valves (BSP Port)

## Process Control Solenoid Valves (Stainless Steel or Brass)

- Sinclair Collins HP Series – 2-Way & 3-Way High Pressure Valves
- Sinclair Collins K Series – 2-Way & 3-Way Stainless Steel On/Off Valves
- Sinclair Collins SC2000 Series – 316L Stainless Steel Check Valves

## 2-, 3- and 4-Way Intrinsically Safe Solenoid Valves – Low Power



This Parker line of Intrinsically Safe Solenoid Valves was designed for applications that require the highest level of protection against explosion or fire. Their low power consumption and low temperature rise reduce their ability to become ignitable. These safety related products are approved for hazardous classifications I, II, III - Divisions 1 and 2 (U.S./Canada) and Divisions 0, 1 and 2 (U.K.). In Europe, the valves are approved according to ATEX standards.

### Features & Benefits

- Rated at 24 VDC nominal; calibrated to operate at a minimum current draw as low as 29 milliamps (0.029 amps)
- Designed to maintain a maximum outside surface temperature of less than 185°F (85°C); meets UL T6 classification
- All intrinsically safe FCD coil enclosures
- Can be mounted in any position and still operate normally
- Wide variety of enclosures, coil types, and seal materials

### Applications

- Hazardous environments
- Applications requiring low power consumption
- Combustible dust, flammable liquids, vapors, etc.

## 810/880 Series Angle Body Piston Valves



High flow rates and robust, high cycling designs. That's what Parker's angle seat line of control valves brings to the demanding power gen environment. Offering on/off operation, these valves can be fitted with proportional controllers that enable widely-varied flow rates.

### Features & Benefits

- 2-way and 3-way control valves
- Water hammer-free actuation
- Optical valve position indicator
- Multiple millions of cycles in demanding industrial applications
- Optional end configurations

### Applications

- Chemical process lines
- Refrigeration systems
- Wastewater treatment systems and DI water systems
- Boiler feed water systems
- Steam boiler blowdown
- Combustion systems

### Did you know?

Parker offers **two-way and three-way motorized control valves (MCVs) with linear actuators** for your combustion needs. The self-calibrating valve line features precision control, zero leakage, ANSI Class VI shutoff, and excellent vibration resistance for critical applications like temperature and steam control or systems that require electrical supply voltage. Also suitable for aggressive and highly corrosive fluids, inert gases, hot water, and oils. Contact your local Parker Power Gen Distributor Specialist.

## • Angle Body On/Off Control Valves

- Sinclair Collins 830/835 Series – Motorized Control Valves (MCVs) (with integrated linear actuators)

## • Proportional Control Valves

- Sinclair Collins 810/880 Series – Angle Body Piston Proportional Control Valves

## SIL 3 Qualified Solenoid Valves

- FCD 7300 Series – 3-Way Direct Acting Solenoid Valves
- FCD 73317/73417 Series – 3-Way & 4-Way Piped and NAMUR Solenoid Valves
- Lucifer F Valve Range – 3-Way Sub-base or Flange Mounting, Direct Operated Solenoid Valves
- Lucifer V Valve Range – 2-Way & 3-Way Direct Mounting, Direct Operated Solenoid Valves
- Lucifer X Valve Range – 3-Way Direct Pipe Mounting, Direct Operated Solenoid Valves

## Flow Meters, Specialty Valves & Replacement Parts

### Vortex Flow Meters

- Vortex Shedding Flow Meters – Water & Glycol Coolant

### Specialty Valves & Manifolds

- FCD 800 Series – Angle Body Piston Valves for On/Off and Proportional Control
- 2-Way Dry Operator Valves – Corrosive Fluids
- 2-Way Hydraulic Oil Direct Acting Solenoid Valves
- CNG Natural Gas Valve – High Pressure, High Flow, Low Leakage, Natural Gas Valve
- Timer Drain Solenoid Valves (Automatic) for Compressed Air Systems
- Fuel Selector Valve Manifold – Six-Port Diesel Manifold

### Replacement Parts – Coils

- Integrated Modular Coils
- Replacement Coils

### Vortex Shedding Flow Meters

Parker Vortex Shedding Flow Meters are the ideal solution for measuring flow in low viscosity fluids like water and glycol coolant. With measuring rates up to 200 GPM and no moving parts to wear or clog, these flow meters are a superior choice for cooling water systems.



#### Features & Benefits

- Bronze or 316 stainless steel body
- LED digital display with a flow rate transmitter 4-20mA output signal (GPM or LPM outputs)
- CSA and CE certifications

#### Applications

- Turbine bearing cooling
- Boiler feed water monitoring
- Monitoring flow of cooling water (nuclear plants)
- Wastewater pump seal water
- Burner consumption
- DI water systems
- Generator and compressor (water cooling systems)
- Condensate measurement (DI water)



### 201LG Stainless Steel Solenoid Valves

Designed for a wide range of applications in aggressive environments or with aggressive media, our normally closed, direct acting 201LG Solenoid Valves can be used with many different electrical parts, including ATEX, low power, IP67, and UL/VDE approved. Areas with mechanical stress have been studied and oversized for robust and solid performance. Two direct acting versions are available: compact, with 22 mm electrical parts, and high performance, with 32 mm electrical parts.



#### Features & Benefits

- Stainless steel body, tub, plunger, and spring; FKM seals and copper or optional silver shading ring
- Mountable in any position; recommended that coil be vertical above the body
- Compatible with a wide range of aggressive media, including water/glycol solutions, demineralized water, hot water, and steam

#### Applications

- Process industry/process equipment
- Wastewater treatment equipment
- Acid/aggressive media

## Need an Expert?

Click here to locate a Parker Power Generation Specialist near you.

Our extensive range of filtration, purification, and separation products increases productivity and profitability. From highly engineered compressed air, water, and gas filtration systems to process, fuel, oil, and hydraulic filtration products and equipment, Parker meets the needs of OEMs, distributors, and end users alike.

## Compressed Air & Gas Treatment

### Regenerative Desiccant Dryers (Adsorption)

#### • Adsorption Dryers

- Parker Zander Ecodyry HDK Series (up to 50 bar)
- Parker Zander Ecodyry HDK-MT Series – High Pressure Heatless (up to 350 bar)
- Parker Zander Ecodyry KA-MT Series – Heatless Twin Tower with Activated Carbon Stage
- Parker Zander Ecodyry ZMX Series – Heatless (240 SCFM +)

#### • Blower Purge Regenerative Desiccant Air Dryers

- Airtek TWB Series (100 SCFM +)
- domnick hunter DBA Series (500 SCFM +)
- Parker Zander ZBA Series – Twin Tower (500 SCFM +)

#### • Externally Heated Regenerative Desiccant Air Dryers

- Airtek TWP Series (100 SCFM +)
- domnick hunter DHA Series (250 SCFM +)
- domnick hunter PNEUDRI MIDiplus Series
- Parker Zander ZHA Series (250 SCFM +)

### domnick hunter DBA Series Blower Purge Regenerative Dryers

Parker domnick hunter externally heated and blower purge regenerative desiccant air dryers use the adsorption method to remove moisture from compressed air. They also rely on activated alumina, a spherically-shaped, hygroscopic material having an extremely large surface-to-mass ratio within two pressure vessels. These vessels operate independently for continuous use, delivering dry, clean air to points throughout a plant.



#### Features & Benefits

- Meets noise reduction requirements
- Meet ISO 8573.1:2001 air quality standards
- Maximize energy savings
- Zero corrosion helps prevent product spoilage, recall, and litigation

#### Applications

- Gas turbines
- Main station compressors (water vapor removal)
- Air digester gas – landfill

#### • Heatless (PSA) Regenerative Desiccant Air Dryers

- Airtek BV Series (12-750 SCFM)
- Airtek OFC Series (7-360 SCFM)
- Airtek TW Series (10-600 SCFM)
- Airtek TX Series – High Operating Pressures

- domnick hunter PNEUDRI MAXI Series (3-10,000 SCFM +)
- Parker Zander KTA Series – (200 SCFM +)

#### • Heat-of-Compression (HOC) Regenerative Desiccant Air Dryers

- Airtek HOC Series

### domnick hunter PNEUDRI Heatless and Heat Regenerative Dryers

PNEUDRI ranges of heatless and heat regenerative desiccant dryers from Parker domnick hunter remove water vapor from a compressed air supply to create clean, oil-free, dry compressed air in compliance with international standards. Light-weight, compact modular construction makes installation easy. Providing uncompromising performance and reliability combined with the right balance of air quality and the lowest cost of operation, PNEUDRI dryers are proven with many thousands of compressed air users worldwide.

#### Features & Benefits

- Highest quality air – clean, oil-free and dry compressed air in accordance with all editions of ISO8573-1, the international standard for compressed air quality
- Energy efficient, giving maximum savings
- Dry air eliminates microbiological growth, preventing product spoilage, recall, and litigation
- Dry air means zero corrosion, preventing product spoilage and damage
- Smaller, more compact and light-weight – modular construction means less than half the size of conventional dryers' modular design; 100% standby at a fraction of the cost of twin tower designs
- Approvals to international standards – PED, CE, CSA (US and Canada), and CRN
- Super quiet operation; simple maintenance



#### Applications

- Instrumentation air control (transmitters, valve actuators, and regulators)
- Reverse air jet purging
- Plant compressed air systems (compressor room)
- CEMS shelters (moisture removal and analyzer lines)
- Condensers
- Fly ash conveying

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## Compressed Air & Gas Filters

### • Compressed Air Filters

- domnick hunter OIL-X EVOLUTION Series
- domnick hunter OIL-X IP50 - Intermediate Pressure
- Finite HX Series
- Parker Zander GL Series – High Efficiency
- Parker Zander HyperFilter Series – High Pressure

## domnick hunter OIL-X EVOLUTION Compressed Air and Gas Filters

Parker domnick hunter OIL-X EVOLUTION is a range of high efficiency, compressed air filters with coalescing filter grades for the removal of water and oil aerosols, solid particulates, and microorganisms, combined with dust filter grades for the removal of dry particulates and microorganisms.

In these times of increasing energy costs, an efficient and cost-effective manufacturing process is a major factor in maintaining the profitability and growth of your business. All Parker domnick hunter OIL-X EVOLUTION Compressed Air Filters are designed to not only minimize the use of compressed air and electrical energy, but also to significantly reduce the operational costs of the compressor by minimizing pressure losses.

Constantly innovated, OIL-X EVOLUTION has become the leading technology for compressed air filtration, providing the exact balance between air quality, energy efficiency, and low lifetime costs.

### Features & Benefits

- Industry-leading design
- Worldwide approvals for safety and reliability
- Meets or exceeds the requirements for delivered air quality shown in all editions of ISO 8573-1:2001, the international standard for compressed air quality
- Coalescing filter performance fully tested to the stringent requirement of ISO 12500-1
- Filtration performance independently validated by Lloyds Register
- Pressure losses start low and stay low to save energy, money, and the environment
- Filters are covered by a one-year compressed air quality guarantee
- Ten-year guarantee on filter housings



### Applications

- Contamination protection of multiple compressed air systems at a single point

## Parker Zander GL Series High-Efficiency Compressed Air Filters

Our Parker Zander GL Series Filters offers peak performance with enhanced features, including air stabilizers, unrestricted air flow guidance, and high quality filter media. These filters remove all contaminants, including solid particulates, oil vapors, oil, and aerosols for compressor applications.

### Features & Benefits

- Carbon steel fabricated filters
- Reliable removal of particulate, oil and water aerosols, as well as oil vapors
- Help meet compressed air quality standards in accordance with ISO 12500-1:2007 and ISO 8573-1:2010
- High energy efficiency helps eliminate operational costs
- Extremely low differential pressure enables long element life
- High dirt holding capability

### Applications

- Air compressor filtration
- Instrumentation and plant air lines





## Compressed Air & Gas Filters continued

### • Compressed Air & Gas Filters (Including Natural Gas)

- Airtek JL Series – Severe Duty ASME Code Welded
- Airtek JLA Series – Severe Duty Two-Stage ASME Code Welded
- Finite J Series – High Pressure
- Finite M Series – Medium Pressure
- Finite SJ Series – Stainless Steel High Pressure
- Finite SM Series – Stainless Steel Medium Pressure

### • Filter Housings/Vessels

- domnick hunter OIL-X EVOLUTION – Die-cast & Carbon Steel
- Finite High Capacity ASME Code Welded
- Finite ASME Series
- Hiross-Zander HFP Series – High Pressure

### • Vacuum Filters

- domnick hunter OIL-X EVOLUTION Vacuum Pump Exhaust
- domnick hunter OIL-X EVOLUTION Vacuum Pump Inlet
- Finite Vacuum Exhaust

## Airtek JLA Series Separator/ Coalescer

Designed to meet severe contaminant challenges, the Airtek JLA Series two-stage combination centrifugal separator/high efficiency coalescer effectively removes the bulk of all liquid contaminants, solids, oil aerosols, and mist. Its multi-stage design causes the pre-separation of gross contaminants prior to the air entering the high efficiency coalescing element. This unique filter allows for flexibility in installations and is ideal for power plant compressed air systems.



### Features & Benefits

- Flow range of 200 to 5,300 SCFM
- Lowest pressure drop
- Typical element life can exceed one year under normal conditions
- Simple installation and maintenance; convenient “top-loading” elements allow for changeout without disturbing inlet/outlet piping or drains

### Applications

- Gas injection systems
- Gas compressor discharger
- Plant air systems
- Compressed air systems

## Finite SJ Series High Pressure Stainless Steel Air and Gas Filters

The Parker Finite SJ Series features robust, stainless steel filters rated for working pressures up to 6,000 psig. A wide variety of filter media grades and styles make these filters a flexible solution across a multitude of applications.



### Features & Benefits

- Easy installation and a variety of port sizes and types reduce the need for extra piping or use of adapters
- Easy maintenance, including a 1/4" drain port, allows the user to drain all oil from the assembly prior to servicing, eliminating possible cross contamination and leaving a cleaner environment
- Compatible with all high pressure gases

### Applications

- Contaminant removal from gas in piping
- Boiler flue gas treatment
- Instrument air applications
- Water fogging

## Finite Large Capacity ASME Vessels

For large flows of compressed air and gas, Finite’s filter vessels eliminate oil, water, and particulate contamination. The welded vessels have been

specifically designed for Finite Filter coalescing elements and incorporate large sump capacities and generous exit cavities for maximum performance with low differential pressures. All



units are “U” stamped and conform to ASME Section VIII standard code/CRN for pressure vessels. With flow capacities to 37,000 SCFM and a wide range of construction materials, most compressor source filtration requirements can be realized.

### Features & Benefits

- High pressure stainless steel vessels (304 & 316 stainless steel options)
- Non-standard port orientation
- Liquid level control connections
- Maximum operating pressure of 185 psig

### Applications

- Oil vapor removal
- Particulate and hydrocarbon removal
- Coalescing liquid (oil removal)
- Desiccant dryer after filter
- Landfill gas

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## Oil Vapor Removal Filters (Activated Carbon Adsorbers)

- domnick hunter OIL-X EVOLUTION OVR Series – Oil Vapor (Activated Carbon) Removal Filters
- Finite Adsorber Filters – Vapor Removal
- Parker Zander AKA Series – Activated Carbon Adsorbers
- Parker Zander AKM Series – Oil Vapor Adsorbers
- Parker Zander G3KTA Series – Activated Carbon Filter Cartridges with KTA installed

## Silencers

- domnick hunter Mist-X Series – Pneumatic Exhaust Silencer
- Finite ECS Series – Exhaust Coalescing Silencer
- Parker Zander FS Series – Compressed Air Filter Silencer

## Instrumentation Filters

- Finite High Efficiency Disposable In-line Filters
- Finite S\*PS Series – Instrumentation & Gas Sampling Filters

## Condensate Management

### • Mist Eliminators

- Airtek Mist Eliminator Series
- domnick hunter Mist-XL Series
- Parker Zander EcoMist Series

## domnick hunter OIL-X EVOLUTION Oil Vapor Removal (OVR) Filters

Parker domnick hunter OIL-X EVOLUTION Oil Vapor Removal (OVR) Filters remove oil vapor from compressed air through the use of an adsorbent bed of activated carbon. Unlike welded steel pressure vessels that are large and bulky, these systems utilize a high tensile aluminum extrusion, making their external dimensions smaller in comparison without compromising performance. A “snowstorm filling” technique maximizes the packing density of activated carbon to extend adsorption bed life and provide an even flow through the bed, while removing the possibility of preferential flow and bypass that can lead to oil carry-over.



### Features & Benefits

- Delivered air quality in accordance with ISO 8573-1:2001
- Modular systems can be multi-banked to achieve higher capacities
- Corrosion-protected; light-weight
- Pressure losses start low and stay low to save energy, money, and the environment
- Easy-to-fit cartridge system for quick, clean, and simple servicing without the need to handle oil-contaminated carbon granules

### Applications

- Compressed air systems for the actuation of control valves
- Instrument air
- Wastewater treatment

## domnick hunter MIST-XL Series Mist Eliminators

Compressed air processing equipment must have very low pressure drop, long service life, and be strong enough to operate in the most arduous conditions. Specifically designed to meet these demands, Parker domnick hunter's line of MIST-XL Mist Eliminators gives the user optimum protection against catastrophic air/oil separator failure by containing large slugs of oil and condensate (up to 50% of compressor sump capacity), without re-entrainment.



### Features & Benefits

- Ultra-low 0.5 psid, which is typically 8 psi lower than conventional filters
- Eliminates migration of air flow to area of least resistance, also known as “channeling”
- Eliminates rust and corrosion which can contaminate the system
- Built per ASME Code (U or UM Stamp accordingly)
- 5-year performance plus element warranty that the differential pressure will not exceed 1 psid

### Applications

- Compressed air systems and gearboxes
- Oil-free exhaust air on gas and steam turbines
- Compressors and generators
- Ventilation for lubricant and bearings, oil tanks (steam turbines)
- Auxiliary support skids



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## Condensate Management continued

### • Oil/Water Separators

- Airtek OWS Series – Oil/Water Separators
- domnick hunter ES2000 Series – Oil/Water Separators
- Parker Zander EcoSep Series – Oil/Water Separators

### • Water Separators

- domnick hunter Oil-X Evolution – Water Separators
- Finite WN Series – Water Separators
- Parker Zander WS Series – Water Separators

### • Condensate Drains

- Parker Hiross HDF Series – Mechanical Float Drains
- domnick hunter TSD Series – Electric Timed Solenoid Condensate Drains
- Finite SJDK Series – Stainless Steel High Pressure Condensate Drains
- Finite TV Series – Electric Timed Solenoid Drains
- Finite ZLD-10 Series – Zero Air Loss Condensate Drains
- Parker Hiross CDV Series – Timed Condensate Drains
- Parker Zander EcoDrain Series – Electronic Zero Air Loss Condensate Drains

## domnick hunter ES2000 Series – Oil/Water Separators

Installed as part of a compressed air system, Parker domnick hunter ES2000 Series Oil/Water Separators reduce the oil concentration in the collected condensate to a level permitted for EPA discharge. This allows the larger volume of clean water (up to 99.9% of the total condensate) to be discharged safely. Meets EPA regulations and European Standard EN 858. A simple, economical, and environmental solution!



### Features & Benefits

- Efficiently separates oil and water on site
- Rapid payback over conventional disposal methods
- Simple to install, operate, and maintain
- Oil-absorbing pre-filter(s) protect carbon stage from bulk contamination
- Large carbon stage for increased contact time, improving water quality and extending carbon life

### Applications

- Treatment of compressed air system condensate, allowing discharge of treated water in a legal and responsible manner
- Removes oil from wastewater/storm run-off/recirculating cooling water/oily sludge

### Related Products

- Finite AD-12 Series – Automatic Drain Valve
- Finite ADS-50 Series – Float Actuated Stainless Steel Drain Trap
- Finite ADT-50 Series – Automatic Drain Trap (Float Actuated)
- Finite TD-50 Series – Timed Drain Valve

### Aftercoolers

- Parker Hiross Hypercool ADT Series – Standard Air Cooled Aftercoolers
- Parker Hiross Hypercool WFS Series – Stainless Steel Water Cooled Aftercoolers

### Accessories

- Finite DP Series – Differential Pressure Gauges

## Biogas Filtration

### Biogas Filters

- Parker Hiross Raw Biogas Filters (ATEX)
- Parker S4 – Biogas Filters

### Biogas Industrial Process Water Chillers

- Parker Hiross HyperChill – Bioenergy Chillers
- Parker Hiross HyperFilter – Bioenergy Low Pressure Filters

### Biogas Heat Exchangers/Aftercoolers

- Parker Hiross Hypercool Bioenergy

## Parker Hiross Hyperdrain Bioenergy Condensate Float Drain

The condensate drain is a vital component in any compressed air system. Its role is to guarantee an efficient removal of all the condensate and impurities present within the compressed air. To satisfy the most demanding requirements, Parker's Hiross Hyperdrain line comprises zero-loss electronic capacitive drains, zero-loss mechanical float drains, and timed drains... all designed to protect against the smallest amount of liquid condensate that may be carried through the compressed air network if not properly drained.



### Features & Benefits

- Large capacity drain
- No electrical wiring and no gas loss
- Designed to work with dirty condensate and low pressure operation
- HiroShield treatment for optimal operation in any ambient
- No risk of condensate carry-over

### Applications

- Compressed air systems with high drain requirements
- Exhaust and condenser steam (steam turbine)

## Biogas Heat Exchangers/ Aftercoolers *continued*

- Parker Hiross WFB Series – Shell & Tube Coolers

## Biogas Demister Separator (Centrifugal Separator)

- Parker Hiross HyperSep Bioenergy

## Biogas/Landfill/Digester Dryers

- Parker Zander W Series – Biomethane Dryers

## Biogas Condensate Float Drains

- Parker Hiross Hyperdrain Bioenergy

## Parker Hiross WFB Series Shell and Tube Coolers

Parker Hiross WFB Series Shell and Tube Coolers incorporate stainless steel ribbed tubes with a low pressure drop design to create a high efficiency system.



### Features & Benefits

- 12 different sizes for maximum application options
- Ability to handle gas or water
- Low gas outlet temperature

### Applications

- Heat exchangers
- Landfill gas recovery
- Continuous blowdown heat recovery
- Gas heaters and coolers

## Hydraulic Filtration

### Emissions Monitoring

#### • Analyzer Control Unit & Software

- Parker Procal 1000 – Software Control and Reporting Analyzer Control Unit & Software

#### • Gas Analyzers

- Parker Procal 2000 – Continuous IR Emissions Monitoring System (CEMS); Flue Gas Desulfurization (FGD)
- Parker Procal P2000 IR Emissions Analyzer – Selective Catalytic Reduction (SCR) Monitoring
- Parker Procal 5000 – UV Emissions Analyzer
- Parker Procal 6000 IR– Radioactive Gas Monitoring for Nuclear Power Generation

### Stationary Engine Filtration

#### • Engine Oil Separator & Compressor Filters

- Parker Farr Cylindrical Filter Assemblies – Oil Eliminator Filter

#### • Intake Inertial Filters

- Parker Farr Monoclon – Self-cleaning Intake Air Pre-Cleaner

#### • Rotor Air Inertial Filters

- Parker Farr Roto Air Filter Assembly

## Roto Air Inertial Filter and Assemblies

### High Pressure Air Filter for Gas Turbines



Modern gas turbines have steadily increased their efficiency and power density by increasing their firing pressures and temperatures. Many modern gas turbines have combustor outlet temperatures in excess of 2,600°F. At these temperatures, the metal parts of the turbine must be cooled to survive the centrifugal forces in the turbine. High pressure cooling air is directed through passages in the turbine and exhausted over the surfaces of the blades to provide an insulating film of air between the metal turbine blades and the hot gases coming from the combustor.

### Features & Benefits

- Removes particulates from the cooling air under high pressure and high temperature
- Self cleaning – minimum maintenance
- Vibration resistance – no moving parts
- Self contained – no external power or bleed blowers required
- Long service life
- Offers low pressure loss
- High pressure and high temperature pressure vessel is designed and built in accordance to ASME requirements
- Available in a wide range of materials
- Adaptable to wide range of gas turbine motors including: Siemens, GE, Rolls-Royce, Pratt & Whitney, Mitsubishi, and others

### Applications

- Gas turbine cooling air filter
- High pressure cooling air filter

## Parker Farr Monoclon Self-Cleaning Air Inertial Filter



The unique impeller shape of the Parker Farr Monoclon Pre-Cleaner forces air aspirated by an engine to spin, generating a centrifugal force that separates dust from intake airflow. Consequently, the air pre-cleaner easily handles high dust concentrations without any significant maintenance. Separated particles are rejected by means of a scavenge fan, creating a self-cleaning filter that requires no replacement elements.

### Features & Benefits

- Panels are customizable just like a modular product to better respond to the special shapes or performances of today's applications
- Housings available in painted carbon steel, aluminum, and stainless steel
- Cost-effective, light-weight, or corrosion-resistant solutions based on customer need

### Applications

- Inlet air filtration
  - Gas turbines
  - Compressors
  - Blowers
  - Diesel gen sets

## Parker Farr R30/30 WR Static Panel Air Filter

Specifically designed for water and mist removal, the Parker Farr R30/30 WR features a non-cellulose media that effectively repels water while capturing dust, lint, pollen, and other particulate contaminants. The media is enclosed in a waterproof frame made of proprietary board material that will not deform or degrade throughout the service life of the filter.



### Features & Benefits

- Rated as a G4/MERV 7 filter under ASHRAE test procedure 52.2-2007
- 2 to 3 times more efficient than conventional pad filters
- Pleated design containing over 7 times more media surface area for enhanced performance and longer life

### Applications

- Air inlet filtration
  - Gas turbine
  - Compressors
  - Diesel engines

## Parker PuriFarr Air and Liquid Fuel ASME Pressure Vessels

Clean engine fuel is critical to protecting today's diesel gen set engines from premature wear, not to mention prolonging onboard fuel filter life. Parker Farr PuriFarr Systems form a first line of defense in removing contaminants that build up during fuel storage and transfer, minimizing fuel-related problems and providing enhanced protection to electronic fuel injectors and other sensitive components. Parker also makes pressure vessels for oil lubrication and rotor air cooling applications.



### Features & Benefits

- Withstand water hammer and pressure surges, reducing the need for shock absorbers or difficult-to-maintain accumulators
- PuriFarr filter housings are engineered to meet ASME U Stamp and ASME Boiler and Pressure Vessel Code specifications (Section 8, Division 1)
- Vertical or horizontal designs available
- Simple or duplex configurations
- Carbon steel or stainless steel construction

### Applications

- Diesel engines
- Lube oil filter housings
- Rotor air housings (rotor air cooling on gas turbines and generators)

### • Inlet Air Filters

- Parker Farr R30/30 WR – Non-Cellulose Class G4, MERV 7 Air Filters
- Parker Farr RC-Dynacel – High Efficiency Pleated Air Filters
- Parker Farr RF-180 – Bag Type Hybrid (design integrates high efficiency paper-type filters into bag-type filter configuration)

### • Lube & Fuel Filters

- Parker Farr PuriFarr 200 Series – Single-Piece Dual-Stage Filter
- Parker Farr PuriFarr 400 Series – Dual-Stage Filters
- Parker Farr PuriFarr Systems – Pressure Vessel Housings (ASME)

## Oil Filtration & Conditioning

### • Filter Elements

- Parker Dry ION Charge Bonding Elements
- Parker PAR-GEL™ – Water Removal Filter Elements
- Parker Static Control Filter Elements – Electric Static Charge Control Cartridges

### • Low Pressure/Return Line Filters

- Parker Moduflow Plus Series – Suction/Inline/In-Tank Return Filters
- Parker Suction Return Series – Tank-Top Mounted Suction & Return Line Filters
- Parker TTF and BGT Series – Tank Top Mounted Filters

## Static Control Filter Elements

Parker's patent-pending, Static Control Filter Elements reduce triboelectric charging that occurs in a fluid system equipped with typical filtration materials. Triboelectric charging can result in a sudden static discharge (sparks in the oil) that eventually causes varnish and damages oil and system components. The discharge can also harm the filter element by burning and pitting the filter media.



### Features & Benefits

- No compromise in efficiency, dirt-holding capacity, or flow pressure drop
- No vessel modifications required – drop-in solution
- Available in a wide variety of element configurations
- Protects from varnish failures which include sticking servovalves, plugged filters, buildup on bearing surfaces, reservoir walls, and heat exchange surfaces

### Applications

- Steam and gas turbine lube oil filtration
- Electrohydraulic controls (EHC) speed control reliability
- Varnish prevention
- Dielectric fluid protection
- Hydraulic circuits
- Kidney loops

## Oil Filtration & Conditioning

continued

### • Medium Pressure Filters

- 12CS/50CS Series – Coreless Filters
- 30PD Series – Duplex Medium Pressure Filters
- CN Series – Inline Coreless Filters
- DF Series – Duplex Water Separator/Fuel Filters
- Global Lube Series – Inline Duplex Filter Housings
- HFS/HFD Series – High Flow Single & Duplex Filters
- MPD Series – Duplex Filters

Did you know?

### OUR CENTRI-MAX OIL FILTRATION SYSTEM CAN BE CUSTOMIZED TO YOUR APPLICATION.



For diesel gen sets, engine lube oil, gear oil, and soot control. The Parker **Centri-Max System** offers a unique combination of centrifuge for heavy sludge and bypass oil cleaners for final filtration. Including both oil pumps and heater, the compact, heavy-duty unit can be permanently mounted or rolled from area to area. Preset maintenance alarms and a simplified touchpad make operation easy.

## INNOVATION IN ACTION

### DF Series Duplex Filters for Fuel and Lube Filtration

#### DF2089: for fuel and lube oil

The DF2089 is a versatile, heavy-duty duplex filter with several media options for propulsion system lube oil filtration, heavy fuel oil safety filtration, and medium pressure hydraulic system filtration. It offers a maximum flow rate of 350 l/min and a maximum working pressure of 30 bar. The cast iron housing has a pressure rating of up to 40 bar and features in-to-out flow to keep particulates away even during filter changes.



#### DF65: for lube oil

Designed for gearbox lubrication, turbine lubrication, and propulsion system lubrication where space is limited, the DF65 duplex filter offers a maximum flow rate of 800 l/min and a maximum working pressure of 25 bar. Its unique design allows for installation in almost any position, including horizontal for applications with tight height limitations. New purpose-designed iproTECT® elements contain a broad filtration area that provides low pressure loss, long service life, and maximum protection even in cold conditions.



#### Applications:

- Turbine and compressor lube filtration
- Fuel oil filtration
- Solutions available for flow rates up to 11,000 l/min

### • High Pressure Filters

- 12S Series – Stainless Steel Sintered Inline Filters
- 15P/30P Series – Inline/Duplex Filters
- 50P Series – Inline/Reverse Flow Filters
- Global Series – Reverse Flow Filters (Up to 7,000 psi)
- Servo Saver Series – Manifold/Sub-Plate Mount Pressure Filter Assemblies

### 15P/30P Series High Pressure Duplex Filters

Parker 15P and 30P Series High Pressure Filters remove contaminants in hydraulic and lube systems, increasing component life while improving oil quality and operation controls.



#### Features & Benefits

- Wire-reinforced elements
- Manifold mount and duplex optional
- Bypass and indicator simplify maintenance
- Single and double length bowls

#### Applications

- Main turbine lube oil reservoir
- Hydraulic and lube systems
- Gas control systems
- Fuel oil feed control/boiler feed pump lube oil
- Generator lube oil and hydrogen seal oil
- Compressors

### Global Series High Pressure Filters

Our Global Series High Pressure Reverse Flow Filters remove particulates down to 2 micron at operating pressures up to 7,000 psi. They feature an integral indicator and bypass with coreless element assembly for ease of disposal. A proprietary SurgeGuard System protects from backflow risks, while patented deformable tangs allow automatic element locating for fast, safe, and clean removal.



#### Features & Benefits

- Best-in-class element removal clearance
- Low mass, low pressure differential reverse flow valve is ideal for closed-loop applications
- Can be mounted in any position for operation
- Environmentally-friendly, reusable core

#### Applications

- High pressure hydraulic and lube systems
- Fan drums
- Servo control protector
- Pulverizer lube oil

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## Par Fit™ Interchangeable Replacement Hydraulic Filter Elements for OEM/Aftermarket Filters

View the current list of all Par Fit™ Interchange Elements at [www.parker.com/parfit](http://www.parker.com/parfit).

### Par Fit™ Replacement Filter Elements

Looking for ONE SOURCE for competitively priced, quality replacement filter elements? Parker Par Fit™ offers an extensive range of interchangeable elements that conform to the same rigorous tests as our standard replacement products. So regardless of the original equipment manufacturer, you can be assured of a perfect fit... and reliable function.



#### Features & Benefits

- Full online database of original equipment with over 50,000 part numbers
- IS02941 Element Collapse/Burst Resistance
- IS02942 Fabrication Integrity
- IS02943 Material Compatibility
- IS03724 Flow Fatigue Resistance
- IS04572/ISO16889 Multipass Test

#### Applications

- Hydraulic, lube, fuel, and water filtration

Did you know?

### OIL CONDITIONING UNITS (OCUs)

A family of off-line filtration packages, Parker **OCUs** are designed to effectively remove water or particulates from hydraulic and lube system fluids found in steam and gas turbine power generation, as well as wind power turbine generators and gearboxes. These compact, user-friendly solutions efficiently remove very fine contaminants. They also reduce or eliminate the precursors to varnish. Parker OCUs are a cost-effective way to ensure the reliability of important hydraulic and lubrication systems. Contact your local Parker Power Gen Distributor Specialist.



## Oil Filtration & Conditioning

continued

### • Fluid Condition (Contamination) Monitoring

- Parker FMU – Filtration Condition/Differential Pressure Indicator
- Parker icountBS Plus – Bottle Sampler
- Parker icountIOS – Online/Off-line Oil Sampler
- Parker icountMS – Moisture Sensors
- Parker icountPD – Online Particle Detector
- Parker IQ 200 – Continuous Online Particle Counter

### • Offline Portable Filtration

- Parker Intelli-Cart – Hydraulic Filter Carts
- Parker OCU – Oil Conditioning Units
- Parker 10 MFP Trolley – Hydraulic Filter Cart

## icountPD Online Particle Detector

The Parker icountPD represents the most up-to-date technology in solid particle detection. The small device allows for real-time condition monitoring, and can operate remotely or relay information back to a central location. Placed within pressure systems up to 6,000 psi, icountPD can also transmit the cleanliness of the oil by ISO code through LED or digital display indication. Alarm settings can be programmed to help meet preventive maintenance schedules and standards.



#### Features & Benefits

- Independent monitoring of system contamination trends
- Early warning LED or digital display indicators for low, medium, and high contamination levels
- Moisture % content of relative humidity LED indicator (optional)
- Cost-effective solution for prolonging fluid life and reducing machine downtime
- Continuous performance for dependable analysis

#### Applications

- Hydraulic oil and lube oil systems
- Preventive maintenance
- Off-line systems
- Flushing systems

## Oil Filtration & Conditioning

continued

### • Offline Portable Filtration

- Parker PVS Unit – Hydraulic Fluid Purification System (Water Removal)
- Parker SMR Unit – Hydraulic Sub-Micronic Varnish Removal System

### • Gearbox Filtration

- SOS Unit – Stationary Offline System

### • Transducers/Transmitters

- Parker ASIC Performer Series – Stainless Steel

### • Transfer Valves

- Parker A, AR Series
- Parker MR Series – Three-Way Flanged Ball Valves

### • Premium Hydraulic Fluid

- Parker DuraClean™ Hydraulic Fluid

### • Hydraulic Reservoir Accessories

- Parker Metallic & Non-Metallic Breathers
- Parker Spin-on Breathers
- Parker Triceptor Series – Desiccant Breathers
- Parker Diffusers
- Parker Fluid Level/Temperature Gauges
- Parker Magnetic Suction Strainers
- Parker Single Station Gauge Isolator

### • Diagnostics

- Laboratory Testing – Fluid Analysis  
» PAR-TEST Service

## PVS Portable Purification System

Mobile and compact, Parker's PVS Portable Purification Unit delivers vacuum dehydration wherever you need it. The system purifies lube and hydraulic tanks by removing particulates, as well as free and dissolved water/gases. Removing these contaminants extends oil life, thereby reducing oil disposal and replacement costs.



### Features & Benefits

- Variable flow circuit
- Automatic operation for unattended use
- Stainless steel construction
- Moisture sensor for real-time water contact indication

### Applications

- Steam and gas main turbine lube systems
- EHC speed control systems
- Diesel generator fuel storage tanks
- Moisture-saturated oil tanks
- FD-PA-ID fan reservoirs
- Wet gas and hydrogen compressor lube systems
- Turbo expanders and bearing lube
- Hydraulic power units (HPU)
- Boiler feed pump lube (steam power boiler)
- Gearboxes
- Cooling tower and pulverizer

## SMR Purification System for Varnish Removal

Designed to prevent and remove the buildup of sludge and varnish, this Parker-smart purification system features patented Balanced Charge Agglomeration (BCATM) technology that maintains the optimum condition of hydraulic and lubricating fluids, extending their usable life. An ideal solution for fluid flow in the range of 120 to 600 GPH (454 to 2,268 LPH), SMR units are available in PLC or simplified control versions.



### Features & Benefits

- Contaminant removal to the sub-micron level
- Removal of oxide insoluble and biological contamination
- Removal of ferrous and non-ferrous contamination
- Phosphate Ester compatible
- UL, CE, and ATEX versions available
- Highest flow rates in the industry

### Applications

- Lube systems for compressors, boilers, and bearings
- Hydraulic systems
- Kidney loop systems
- EHC speed control systems
- Gas and steam main turbine lube

## Stationary Offline System Unit

The Stationary Offline System from Parker provides a complete filtration package designed to keep hydraulic and lube systems clean and dry. A compact, self-contained unit, SOS features an integral pump, filter, and enclosure making it ideal for power gen applications. Continuous off-line or on-line operation.



### Features & Benefits

- Self-monitoring
- Auto shut-off with high-visibility bypass alarm
- Easy serviceability
- Acid control and live condition monitoring versions available
- NEMA 4 IP65 enclosure

### Applications

- Hydraulic and lube filtration
- T&D transformer/load tap changes
- Cooling tower fans, gears, and gearboxes
- Acid removal/prevention
- Coal handling system gears/crushers
- Pulverizer gearboxes

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## Industrial Fuel Filtration – Diesel/BioDiesel

Stationary Diesel Generator Sets & Engine-Powered Equipment for Material Handling, Pumps & Compressors

### Air Filtration

- John Fowler Gas Turbine Air Filters
- Racor AFAP Series – Heavy Duty Air Pre-Cleaners
- Racor AFPP082 Series – Heavy Duty Combination Static Pre-Cleaner/Air Filter (Three-Stage Filtration)
- Racor AFSF Series – Heavy Duty Air Filters
- Racor Dynacell Series – Low Profile Single-Stage Air Cleaners
- Racor EAF Series – Heavy Duty Composite Air Cleaners
- Racor ECO III Series – Non-Gasketed Air Cleaners
- Racor Pamic Series – Two-Stage Air Filters
- Racor Spinaire Series – Engine Air Pre-Cleaners

### John Fowler Gas Turbine Self-Cleaning/Pulse Air Filters

Cylindrical in shape, Parker's John Fowler Gas Turbine Air Filters feature metallic end caps and strong inner metal cores that help support a pleated filter paper media. This paper media is further enhanced by NANO media to increase dirt holding capacity.



#### Features & Benefits

- Protect gas turbines and parts from damage
- Incorporation of NANO media yields high efficiencies
- Reverse pulse cleaning process meets or surpasses industrial standards

#### Applications

- Gas turbine air inlet systems
- Compressor systems

### ECO III Series Air Cleaners

A high efficiency solution for air inlet applications, Parker's Racor ECO III Series Air Cleaners are faster, safer, and more trouble-free than any other air cleaner today. ECO filters provide improvements in engine protection by collecting dust and debris inside the disposable housing, and feature water-resistant media for improved performance and optimum life.



#### Features & Benefits

- Tangential orientation of the 7" inlet directs air flow evenly around the filter, increasing filter life
- Unique mounting system offers flexibility to install in any direction to frame rail or firewall
- High efficiency of 99.9% per SAE J726C0
- Integral CCV port enables a Racor Closed Crankcase Ventilation System exhaust line to be easily connected for an environmentally sound air system
- Water-resistant media provides 3 to 5 times longer filter life over conventional designs
- Paper pleats are permanently locked in place for reliable performance
- Easy to service element

#### Applications

- Cylindrical air inlet on diesel gen set engines

### Pamic Series Two-Stage Air Filters

Racor Pamic Series Two-Stage Air Cleaners provide unmatched engine protection for a wide range of equipment including compressors and stationary engines. Unique construction ensures a longer filter life when compared to other filters of the same approximate size.



#### Features & Benefits

- Heavy duty, powder coated, metal construction removes 90% of water
- High dust-holding capacity
- Low intake air restriction
- Integral gasket for easy service
- Air flow rates from 80 to 1,600 CFM

#### Applications

- Diesel gen air inlets
- Diesel generators, air compressors, pumps
- Auxiliary power units
- Renewable energy equipment
- Photo voltaic (PV) inverters and wind turbines

## Fuel Filtration

- Racor DFBO-14 Series – Duplex Fuel Filters
  - Racor FBO Series – Fuel Filter/Water Separator Assemblies
  - Racor RVFS Series – High Flow Industrial Filter/Water Separator Vessels
  - Racor RVMF Series – High Flow Microfilter Vertical Vessels
  - Racor Turbine Series – Three-Stage Fuel Filter/Water Separators
- Related Products**
- **Replacement Filter Cartridges**
    - Racor FW Series – Hydrocarbon Water Absorbing Cartridges
    - Racor HACP Series – Coreless Coalescer Cartridges
    - Racor HCP Series – Industrial Coalescer Cartridges
    - Racor HFW Series – Water Absorbing Filters
    - Racor HIF/HIFO Series – Incinerable Coreless Micronic Hydrocarbon Filter Cartridges
    - Racor HSP Series – Silicon Treated Cartridges
    - Racor HSS Series – Separator Cartridges
    - Racor HST Series – PTFE (Teflon®) Coated Separator Cartridges

## FBO/DFBO Series – Primary Fuel Filter/Water Separator for Diesel Gen Sets

The Racor FBO Series consists of fuel filters, water separators, or fuel filter/water absorbers for large diesel engines. With flow rates from 25 to 75 GPM (95 to 284 LPM), FBO Series Filters offer filtration efficiency ratings down to 2 microns. Water separators allow for all coalesced liquids to be captured and drained during operation.

Racor DFBO Series Duplex Fuel Filters target applications using biodiesel fuel. The new duplex design ensures that fuel is efficiently filtered without interruption, while fluoroelastomer seals provide biodiesel compatibility. DFBO filters come with two, 25 micron elements that allow diesel flows up to 60 GPM (223 LPM) if open to full flow. A pre-filter, water separator/particle filter, or a water absorptive filter can be used. DFBO Filters need no special tools, so service is easy.



### Features & Benefits

- No tools needed for element change
- Die-cast aluminum head; steel filter bowl assembly
- Powder-coated components
- Optional water sight glass or electronic water probe indicator; various element options

### Applications

- Liquid fuel polishing
- High velocity fuel tank flushing
- On-line fuel filtration and water separator

## Alternative Fuel Filtration (CNG & LNG)

- Racor FCC Series – Filter/Coalescer Elements

## Coolant Filtration

- Parker Par Fit Series – Spin-on Coolant Filters

## Lubrication (Oil) Filtration

- Racor Absolute Series – Oil Bypass Filtration

## Tenkay Self-Cleaning Cartridges

- Racor STXL282 & STL222 – Tenkay Elements (Vertical Hung Self-Cleaning Air Filter Cartridges)

**Did you know?** **CUSTOM ENGINEERED SOLUTIONS**

Parker offers **Custom Liquid Fuel Filtration Systems**. Ask about our Racor RSKS Open Automated Diesel Filtration Skid. Contact your local Parker Power Gen Distributor Specialist.

## RVFS Series High Flow Filter/Water Separator Vessels

Engineered for high flow industrial applications up to 75 GPM (284 LPM), the Racor RVFS Series fuel filter vessel line delivers superior contaminant removal of particulates, as well as water separation capabilities. High performance elements combine with coalescing drains to remove liquids and solid contaminants from diesel fuel, aviation gas, jet fuel, and other lubricating or hydraulic oils during operation. Designed and manufactured to ASME and CE/PED qualifications.

### Features & Benefits

- 250 psi ASME Code-stamped and certified construction
- Yellow zinc-plated swing bolt closure
- Interior epoxy coated MIL-C4556 E
- Exterior prime coated

### Applications

- Liquid fuel polishing
- High velocity fuel tank flushing
- On-line fuel filtration and water separation
- Steam and hydroelectric turbines – lube oil conditioning
- Fuel conditioning skids

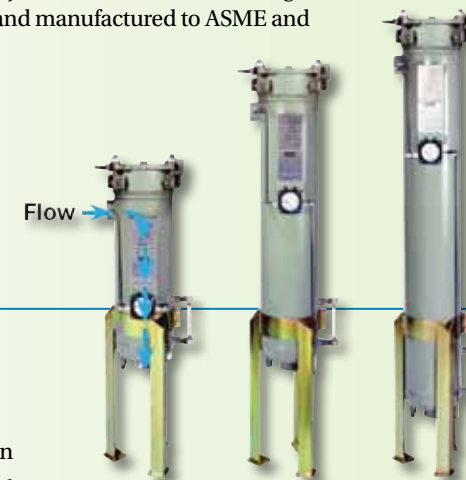


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## Crankcase Ventilation Filtration Systems

- Racor CCV Series – Closed Crankcase Ventilation System
- Racor CV Series – Open Crankcase Ventilation System

## Diesel Fuel Conditioning Additives

- Racor Diesel Conditioner Plus – Dissolves Gum & Varnish
- Racor P Series – Diesel Fuel Conditioning Module
- Racor Biocide – BioDiesel Additives

## Fuel Heaters (BioDiesel)

- Racor NOMAD Series – Coolant Heat Exchange Heaters, Electric Heaters, In-Fuel Line Heaters

## Fuel Monitoring Equipment

- Parker icount ACM20-Z2 – Fluid Conditioning Monitoring (ATEX Zone 2 Qualified)

## Industrial Gas Generators

### Nitrogen Generators

- Balston AGS Series – CEM Grade Nitrogen Generators for Dilution and Calibration Gases on CEM Equipment
- domnick hunter Maxigas Series – Nitrogen Generators

### Hydrogen Generators

- domnick hunter H High-Purity Hydrogen Gas Generator for GC Combustion Detector Applications

## CCV Series Closed Crankcase Ventilation Systems

### Are Your Stationary Diesel Engines Compliant?

According to the E.U. Stage III/IV emissions standards and the U.S. EPA's Tier 3/4 standards Reciprocating Internal Combustion Engines (RICE) NESHAP ruling, stationary engines over 300 HP must be equipped with a crankcase ventilation system by August of 2013. Parker's Closed Crankcase Ventilation Systems are employed to return cleaned blow-by gas to the engine air intake system.



### Features & Benefits

- Restriction indicator to monitor element condition
- Tool-less element change; multiple element options
- Continuous drain
- Four different sizes for various flows
- Compatible with our ECO III Air Cleaner for an environmentally sound air system

### Applications

- Oil vapor and particle (PM) capture for crankcase systems
- Particulate capture for crankcase systems

## Zero Air Generators

- Balston CEM Grade Zero Air Generators

## MaxiGas Series Nitrogen Generators

Need continuous nitrogen gas on demand? The Parker domnick hunter line of MaxiGas Nitrogen Gas Generators produces this vital gas from compressed air. A cost-effective, reliable, and safe alternative to traditional cylinder or liquid nitrogen supplies, MaxiGas can be used in a wide range of power plant applications and can be multi-banked if required.



### Features & Benefits

- Can operate from a standard factory compressed air supply
- Delivers 5% down to 10 ppm oxygen content, without the need for any additional purification
- Built-in oxygen analyzer for continuous purity monitoring
- Digital and analogue outputs for remote monitoring
- Alarm capabilities

### Applications

- Boiler (HRSG) layout
- CEMS line purging
- DI water (sparging and blanketing of tanks)
- Gas seals inerting
- Blanketing or purging storage tanks
- Nitrogen blanketing on transformers, tap changers on breakers

- Parker Zander K-MT-LAB CO<sub>2</sub> – CO<sub>2</sub> Free Air Generator for FT-IR and TOC Applications

## Biogas Treatment Systems

- Parker Siloxane Removal Systems (H<sub>2</sub>S, NH<sub>3</sub> or HHC)

## CUSTOM ENGINEERED SOLUTIONS Mobile Desalination System

Parker's Portable Water Desalination and Purification System converts sea water, brackish water, and contaminated water into temporary or emergency potable water as required. Delivered as a complete system with a generator, supply pump, and storage tanks ready for quick operation. Standard 20-foot ISO container can be transported by road, rail, or sea. Parker has supplied these critical systems to NASA (part of FEMA), the EPA, U.S. Navy, and other government departments.



What makes these units unique:

- Easy setup and use
- Self-contained power supply
- Simple operation
- Ruggedly built to withstand harsh environments
- Production capacities up to 250,000 gallons per day
- Collapsible storage tanks
- Titanium head high pressure pump

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## Industrial Process Water Filtration

### Aqua Pro Water Pumps

- Aqua Pro Titanium Pumps
- High Pressure Titanium Water Pumps

### Aqua Pro Membranes & Filters

- Aqua Pro Pleated & Melt Blown Filters
- Aqua Pro FRP – High Pressure Filter Housings
- Aqua Pro Reverse Osmosis (RO) Membranes

### Reverse Osmosis (RO) and Ultrafiltration (UF) Systems

- Racor Boiler Feed Series – Skid Mounted
- Racor BW Series – Brackish Water Units
- Racor K Series – Skid Mounted
- Racor RFH Series – Horizontal Frame
- Racor S Series – Sea Water Desalination Skid
- SS316 Series – Filter Housings and Specialty Vessels for Sea Water Use

#### Did you know?

#### Zero Liquid Discharge (ZLD) Management

Combining Parker's **K Series Reverse Osmosis and RHF Ultrafiltration Series** systems provides a complete water management solution for plants trying to attain their Zero Liquid Discharge requirements.

## Racor K Series Skid Mounted Reverse Osmosis (RO) System

Designed to produce water with low dissolved solids from tap or well water, Racor K Series Systems use high efficiency reverse osmosis membranes to filter 28,800 to 324,000 GPD (108,000 to 1,215,000 LPD). The skids are assembled with pressure vessels and multiple 8" diameter, 40" long elements. Available options include indication settings with gauges, pH monitoring, and turbidity meters to meet customer needs.



### Features & Benefits

- Heavy duty, powder coated, corrosion-resistant frame
- Stainless steel high pressure components; stainless steel pump
- Microprocessor controlled operation
- Conservatively engineered for reliable, long-term performance
- Factory-tested to ensure trouble-free operation

### Applications

- Single and dual pass reverse osmosis (RO) technology filtration
- High purity water treatment for NOx reduction and turbine injection
- Dual pass reverse osmosis (RO) with EDI polishing to eliminate high maintenance DI beds
- High purity turbine wastewater

## Racor RFH Ultrafiltration (UF) Series with Hollow Fiber Membranes

Racor's RHF Ultrafiltration Series is a large-scale, reverse osmosis pretreatment filtration system that provides robust, multibore technology for superior membrane integrity and durability. The membranes are able to withstand harsh conditions without tearing or compromising filtrate water quality. Optional equipment is also available including holding tanks, chemical tanks for chemical injection, remote monitoring, and additional instrumentation.



### Features & Benefits

- Improves water consistency and quality
- Heavy duty, powder coated, corrosion-resistant frame
- Stainless steel high pressure components, stainless steel pump
- Touchscreen PLC operation (typical for CEB UF systems)
- Packaged membrane treatment system tested per ISO 9001:2008 QMS

### Applications

- Consistent reliability over clarifiers
- Cooling tower, boiler make-up, and feed water filtration
- Reduce water usage and chemical use
- Pretreatment for wastewater and sea water desalination
- Clean in place (CIP) capability; mixed bed make-up

## Racor S Series Sea Water Desalination Systems

Using high quality reverse osmosis (RO) Sea Water desalination membranes, our Racor S Series systems convert sea water to drinking water, producing anywhere from 2,000 to 10,000 gallons per day. Proven components, including a stainless steel, high pressure RO pump with delayed start, permeate and concentrate flow meters, a recycle flow meter, and microprocessor-controlled operation provide reliable, long-term performance. Factory tested to ensure trouble-free operation.



### Features & Benefits

- Longer life for boilers
- Cleaner water options
- More reliable power generation
- Better NO<sub>x</sub> control
- Corrosion protection
- Reduced water consumption for a more efficient, more cost-effective plant operation

### Applications

- Process water
- Combustion turbine injection water
- NO<sub>x</sub> water
- Fogging
- Boiler feed water
- Zero liquid discharge (ZLD) management
- Steam generation

## Industrial Process Water Filtration continued

### Did you know?

Parker also makes **Custom Media Filters and Chemical Injection Skids** designed for:

- Condensate polishing
- Highly regenerated SAC for conductivity measuring
- Dealkalization
- Demineralization
- Mixed-bed polishing
- Removal of organic constituents
- Softening

Contact your local Parker Power Gen Specialist.



## Natural Gas Filtration

### Natural Gas & CNG Filters

- Parker Zander CNG (F&G) Series – CNG Filters
- Parker Zander Purgas TGA/TGS Series – Natural Gas Filters (Dry or Sweet Gas)
- Parker Zander Purgas TGE Series – Stainless Steel High Pressure Natural Gas Filters (Wet or Sour Gas)
- Parker Zander Purgas TGH Series – High Pressure Natural Gas Filters (Dry or Sweet Gas)

### CNG Gas Absorber

- Parker Zander HDAM(E) Series – High Pressure Static Gas Absorber (Stainless Steel)
- Parker Zander STV Series – Medium Pressure Static Gas Absorber

## Fulflo® ProBond™ Resin Bonded Two-Stage Filter Cartridges

A unique, proprietary two-stage filtration design is incorporated into Parker's Fulflo® ProBond™ Filter Cartridges to maximize particle retention and service life in viscous fluid filtration applications. An outer spiral pre-filter wrap, made from a fiber blend of polyester and acrylic, increases cartridge strength and eliminates residual debris associated with conventional or machined and grooved resin bonded cartridges.



### Features & Benefits

- Extra-long acrylic fibers provide added strength; resist breakage and migration common with competitive "short fiber" cartridges
- Available with optimal, single open-end seals
- Withstand pressure surges up to 150 psid across cartridge (depending on fluid temperature)
- One-piece construction eliminates bypass concerns with multi-length cartridges and eases changeout

### Applications

- Wastewater treatment

## Process Filtration

### Filter Cartridges

#### • Activated Carbon Filter Cartridges

- Fulflo® MC & RC – Activated Carbon Cartridges (Unique Three-Stage Water Filter Cartridge)

#### • Melt Blown & Resin Bonded Filter Cartridges

- Avasan – High-Purity Melt Blown Filter Cartridges
- DuraBond – Polyolefin Melt Blown Filter Cartridges
- EcoBond – High-Purity Melt Blown Filter Cartridges
- Fulflo® ProBond™ – Resin Bonded Two-Stage Filter Cartridges (With Outer Pre-filter Wrap)

#### • Membrane Filter Cartridges

- Fluoroflow® – Fluoropolymer Filter Cartridges
- ProFlow™ II-E Select – PTFE Membrane Filters

### Did you know?

**Avasan** high purity melt blown filter cartridges are an excellent choice for pre-filtration on reverse osmosis systems. Contact your local Parker Power Gen Distributor Specialist.



## Flo-Pac® and Flo-Pac+® Phenolic Impregnated Cellulose Filters

Designed for critical filter applications, Parker Flo-Pac® and Flo-Pac+® Filters contain premium grade, phenolic impregnated, pleated cellulosic filter media to ensure long service life, high flow rate, and low pressure drop. Variety of sizes and configurations available to fit most industrial vessels.



### Features & Benefits

- High strength spiral core withstands pressure surges up to 70 psid
- Suitable for operating temperatures up to 250°F (121°C)
- Outer sleeve protects the media from damage
- ETP (Electro Tin Plated) steel metal components for both aqueous and oil-based applications
- Buna-N gaskets standard; other materials available
- Epoxy adhesive (Flo-Pac+ models) especially suitable for liquid fuel systems

### Applications

- Dielectric oil filters
- Compressor fouling
- Turbine lube oil
- Transformer dielectric oil filtration
- Lubrication for steam and gas turbines

## Filters Cartridges *continued*

### • Metal Filter Cartridges

- Steelflow™ – 316L Woven Sintered Stainless Steel Filter Cartridges (for steam applications)
- Fulflo® Metallic – Stainless Steel Filter Cartridges (Cylindrical or Pleated in 304 or 316 Stainless Steel)

### • Pleated Filter Cartridges

- Fulflo® 1401 – High Pressure Water Injection Pleated Filter Cartridges
- Flo-Pac® FP & FPE – PTFE Membrane Filters
- Fulflo® PCC – Pleated Cellulosic, Phenolic Resin Impregnated Filter Cartridges
- Fulflo® Poly-Mate™ – Polypropylene Pleated Filter Cartridges

### Did you know?

#### We offer Steelflow™ Filter Cartridges for microfiltration.

With a proprietary 421® filter medium composed of 100% 316L random fiber stainless steel, these woven sintered metal cartridges tolerate extreme thermal ranges and differential pressures while providing an extended service life for a variety of turbine, fuel nozzle, and steam applications. Contact your local Parker Power Gen Distributor Specialist.



## Fulflo® Metallic Stainless Steel Filter Cartridges

Parker Fulflo® 304 and 316 grade Stainless Steel Cartridges provide the optimum filtration solution for fluids and gases requiring high temperature and high flow capabilities. Available in cylindrical and pleated designs, Stainless Cartridges are a logical choice for aggressive process conditions where natural and synthetic media cartridges just won't do.



### Features & Benefits

- Operating temperatures up to 500°F (260°C) with synthetic seals; up to 1,500 °F (815°C) with NPT connections
- Cleanable and reusable
- Available in 14 nominal ratings from 2 to 840 microns
- For use with a wide range of grommet and O-ring materials
- Variety of seal configurations allows retrofit in many filter vessel designs
- Pleated surface maximizes filtration area for longer service life

### Applications

- Gearbox and bearing lube oil filtration
- Fuel nozzle protection in oil burners
- Fluidized bed combustion
- Condensate water
- Water treatment

## Poly-Mate™ Pleated Melt-Blown Polypropylene Cartridges

With a unique combination of polypropylene melt-blown and spun-bonded media, Parker Poly-Mate™ cartridges offer a high surface area for high purity filtration, with maximum chemical resistance to acids. Plus Poly-Mate Xtra Duty™ (PXD) offers coreless cartridge filtration for the tight particle control required in power generation chemical and radioactive water filtration.

PXD glass-filled polypropylene stainless steel posts can be permanently welded into existing filter vessels to accommodate cordless cartridges. By eliminating the filter cartridge's core, the following is achieved:

- Cartridge mass is reduced by 25% to 40%, creating fewer waste disposal drums
- With fewer drums, disposal cost is reduced; the lower mass of coreless cartridges can be completely incinerated
- Exposure time for workers changing the filters is decreased five-fold

### Features & Benefits

- Incinerable
- 99% efficiency for critical process applications
- High pleated surface for extended service life, low pressure drop, and high flow capacity
- One-piece construction, continuous to 40" in length, integrally sealed
- Custom cordless options available
- Poly-Mate™ Xtra Duty™ (PXD)
  - Unique Parker design
  - Coreless posts retroactively installed into existing filter vessels
  - Reduced cartridge mass reduces disposal costs and minimizes worker exposure to harmful compounds

### Applications

- Wastewater pre-filter
- Cooling tower – side stream filtration
- Process water
- Washdown of nuclear radioactive equipment
- Condensate systems
- Boiling water reactor filtration (radioactive water)



## Filter Cartridges *continued*

- **Pleated Filter Cartridges** *continued*
  - Glass-Mate™ – Pleated Micro Fiberglass Filter Cartridges
  - Glass-Tech II® – Pleated Composite Filter Cartridges
- **Sorbent Filter Cartridges (Hydrocarbon Removal)**
  - Fulflo® TruBind™ Series – Polymeric Absorbent Cartridges (Incinerable)
- **Wound Depth Filter Cartridges**
  - Fulflo® Honeycomb HFT
  - Fulflo® SWC
  - Fulflo® XTL
- **Pleated Back-washable Media**
  - Fulflo® Abso-Mate – Pleated, All-Polypropylene
  - Fulflo® Poly-Mate™ Xtra Duty (PXD) – Coreless Pleated Polypropylene
  - Polyflow® – Polypropylene Thermally Bonded Depth Cartridges

## Fulflo® Honeycomb HFT Wound Depth Filter Cartridges

Wound cartridges provide true depth filtration by utilizing hundreds of tapered filtering passages of controlled size and shape. Their irregular outer layer reduces surface blinding, assuring both longer cartridge life and full utilization. Parker's Fulflo® Honeycomb Cartridges demonstrate effective removal ratings at nominal 90% efficiency from 0.5 µm to 150 µm.



### Features & Benefits

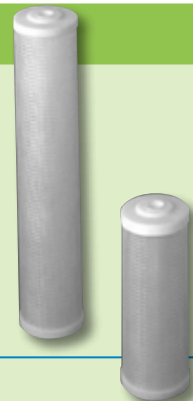
- Continuous strand winding geometry provides performance consistency
- A broad range of media for excellent application compatibility
- Variety of O-ring and end cap options
- Many cartridge lengths available to minimize changeout time, eliminate spacers, and fit competitive filter vessels

### Applications

- Pre-filtration for reverse osmosis
- Cooling tower zero discharge management
- Fan lube oil filtration
- Transformer dielectric oil filtration
- Turbine water injection

## Fulflo® TruBind™ Series Cartridges

Used alone or as an enhancement to other systems, Parker Fulflo® TruBind™ Absorbent Cartridges utilize a modified polymeric absorbent that economically and effectively reduces trace hydrocarbon contamination in aqueous fluids. The enhanced polymer, configured in a radial-flow-design cartridge, provides maximum utilization of available surface area.



### Features & Benefits

- Increases working life of valuable process fluids
- Absorbent polymer maximizes utilization of surface area
- Radial flow design of cartridge provides maximum flow with minimal pressure drop

### Applications

- Post oil/water separator
- Pre RO membrane polishing
- Pre carbon bed filtration



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## Large Diameter Cartridge Systems

- **Cartridges**
  - ParMax™ – Large Diameter High Flow Pleated Filter Cartridges
  - ParMax™ Select – Large Diameter High Flow Pleated Filter Cartridges
- **Vessels**
  - ParMax™ – High Capacity Filter Vessels

### ParMax™ Select Large Diameter Filter Cartridges

Used in combination with ParMax™ Large Diameter Vessels, ParMax Select Filter Cartridges outperform in high flow, critical process applications. Unique layered construction together with staged pleating provide an additional 25% surface area and up to 40% more life across a wide range of flux rates. Available in polypropylene and micro-fiberglass media.

#### Features & Benefits

- Large diameter yields much higher flow rates compared to traditional 2.5" filters
- Up to 500 GPM (1,892 LPM) per 60" length – 6" diameter cartridge
- High flow capacity permits use of fewer elements and lowers capital expenditure
- Inside/out flow pattern ensures positive capture of contaminants

#### Applications

- Boiler condensate filtration
- Pre-filtration for reverse osmosis
- Combustion turbine water – injection filters
- Cooling tower and zero discharge management
- Condensate polishing pre-filtration (crud removal)
- Removes radioactive particles



## Depth Media & Cartridges

- Claripor™ – Pleated Polypropylene Depth Media
- MegaBond Plus™ – Absolute-Rated Thermally Bonded Depth Cartridges

### MegaBond Plus™ Absolute-Rated Thermally Bonded Depth Cartridges

Designed with high dirt-holding capacity and absolute-rated filtration efficiency in mind, Parker's MegaBond Plus™ Series is comprised of thermally bonded, continuous microfibre polypropylene fiber depth cartridges. Their non-releasing fiber matrix prevents media migration and ensures consistent production yields as well as overall quality filtration performance.



#### Features & Benefits

- Double open-end cartridges feature polyolefin gaskets thermally bonded to both ends, eliminating fluid bypass between the cartridge and the vessel seal
- Polypropylene fiber provides broad chemical compatibility for a variety of applications
- Pore size differentiation is achieved using fibers of differing diameters while maintaining uniform density throughout the cartridge
- Pore sizes do not change as DP increases during service, providing consistent particle retention

#### Applications

- Lubrication for steam and gas turbines
- Hydrogen seal oil filters
- Turbine water injection
- HRSG boiler feed water
- Membrane pre-filtration
- DI water

## Need an Expert?

Click here to locate a Parker Power Generation Specialist near you.

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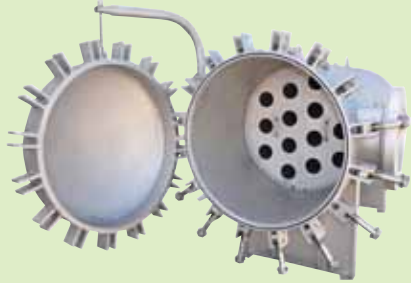
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## ParMax™ Large Diameter Multi-Cartridge Filter Vessels



The best of large diameter and pleated technologies are combined in Parker's ParMax™ Large Diameter Filter Vessels. Designed to work with ParMax Filter Cartridges that handle flows up to 500 GPM (1,892 LPM) per 60" length, these high-flow capacity vessels offer significant size and capital cost reduction compared with vessels containing conventional size filter cartridges. Plus, our standard horizontal vessel design and coreless cartridge configuration make changeout fast and easy.

### Features & Benefits

- Cartridges feature inside/out flow direction and are available in 20", 40", or 60" lengths
- Vessels hold up to 19 cartridges – 6,840 GPM (60" cartridge)
- 316L SS, 304L SS, carbon steel options
- ASME Code design
- Will accept other industry standard high flow pleated polypropylene cartridges

### Applications

- Condensate filtration
- Combustion turbine water injection
- Cooling tower make-up blowdown water
- Wastewater treatment
- Condensate polishing pre-filtration (crud removal)

## Filter Vessels

### • Multi-Cartridge Housing Filter Vessels

- Fulflo® HT-Series – High Temperature Multi-Cartridge Filter Vessels
- Fulflo® MP-Series – Membrane Protector ASME Code Multi-Cartridge Filter Vessels
- Fulflo® P-Series – High Flow Capacity Multi-Cartridge Filter Vessels for Flo-Pac Cartridges
- Fulflo® S-Series – Multi-Cartridge Filter Vessels
- ParMax™ Series – Large Diameter Multi-Cartridge Filter Vessels

### • Single-Cartridge Housing Filter Vessels

- Fulflo® B Series – Carbon Steel Filter Vessel
- Fulflo® BSSB Series – Stainless Steel Filter Vessel
- Fulflo® M-Series – High Pressure Single-Cartridge Filter Vessels
- Fulflo® (SS) TC-Series – Stainless Steel Single-Cartridge Filter Vessels



Our fluidic and pneumatic fittings, tubing, couplings, manifolds, valves, hose, and piping have been engineered to outperform, working together with a systems approach that offers reliable, leak-free connections, streamlines development, and speeds manufacturing.

## Fittings (Industrial)

### Brass Fittings

- Hose Barb Fittings
- High-Duty Series
- Poly-Tite Series
- Vibra-Lok Series

### Integrated Fittings (Inch & Metric)

- Blocking Valve Fittings
- Check Valve Fittings
- Compact Metal Flow Control Fittings

- Inline Flow Control Fittings
- Slow Start Valve Fittings
- Threshold Sensor Fittings

### Hose Fittings

- **Field-Attachable & Reusable Fittings**
  - Barbed
  - Push-Lok®

## LIQUIfit™ Fittings

LIQUIfit™ is a revolutionary fitting that solves a number of problems associated with push-to-connect fittings used in filtration applications like water treatment and reverse osmosis. Its full-flow profile delivers maximum capability and offers high chemical resistance to chlorine, cleaning agents, and UV. A compact, push-to-connect design facilitates the tightest tube bends in the industry, while the valve's full-flow, self-cleaning ball raises the bar for quality and durability.

### Features & Benefits

- Patented sealing technology with a D-shaped EPDM seal provides greater surface contact area for better sealing
- Chloramine-resistant EPDM seals offer significantly longer seal life in water filtration equipment
- Full, stainless steel gripping ring eliminates locking clips while helping to facilitate the tightest possible tube bends
- High performance, sustainable nylon polymer body manufactured from renewable castor seeds offers superior mechanical strength; no pumping effect to 158°F (70°C)



### Applications

- Wastewater treatment
- Reverse osmosis (RO) filtration
- DI water
- Pollution control
- Chlorine injection system

## Hose Fittings continued

### • Permanent & Crimp Fittings

- Fluoropolymer Crimp
- Metric (DIN, BSP, BSPP, GAZ & JIS)
- MonoBlok™

### • Steam Hose Couplings

### • Thermoplastic & Fluoropolymer Hose & Tube Fittings

- Parflex Field Attachable
- Parflex Crimp

### Push-to-Connect (PTC) Fittings (Inch & Metric)

- Prestolok® PLM Series – Steel Metal Fittings (Nickel Plated)
- Prestolok® PLP Series – Brass Fittings
- Prestolok® PLS Series – Stainless Steel Fittings

### Thermoplastic Fittings

- Fast & Tite® – Nylon or Polypropylene Fittings
- LIQUIfit™ – Bio-based Plastic Push-to-Connect Fittings
- Par-Barb™ – Four-Barb Fittings
- TrueSeal™ – All-Plastic Grey Acetal or Polypropylene Push-to-Connect Fittings

### Tube Fittings

#### • 24 Degree Flareless Fittings (Available in Stainless Steel)

- E0 Series – Metric
- E0-2 Series – High Pressure Chromium-6 Free
- Ferulok® Series

#### • 37 Degree Flare Fittings (Available in Stainless Steel)

- Triple-Lok® Series

## Triple-Lok® Series 37° Flare Fittings



Engineered to meet the strict requirements of SAE J514 and ISO 8434-2 industry standards, Parker Triple-Lok® 37° Flare Fittings feature a highly efficient compact design. The fitting consists of three pieces: the body, sleeve, and nut. The tube is flared at a 37° angle held between the fitting nose (seat) and sleeve (support) with the nut providing a very effective seal. Manufactured in over 65 configurations!

### Features & Benefits

- Available in stainless steel and brass
- Wide temperature, media, and tube compatibility due to metal-to-metal seal
- Universal body allows for adaptability to inch or metric tube as well as flexible hose
- Adjustable port stud protects upper threads, back-up washer, and O-ring
- Smallest seal area of all fitting types
- Superior plating protection against red rust; exceeds ASTM B117 spray test
- Pre-lubricated stainless steel tube nut prevents galling during assembly

### Applications

- Liquid fuel, water, and air lines for combustor cans or turbines
- Electrohydraulic controls (EHC)
- Lube auxiliary systems
- Hydraulic piping skids
- Diverter damper control systems
- Coal handling/conveying and coal crushing systems

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## Seal-Lok®/O-Lok® Series O-Ring Face Seal Fittings

Parker's O-ring face seal fittings have been designed for applications with higher impulse pressures and vibration, offering leak-free connections up to 9,000 psi in a wide range of temperatures. Their patented trapezoidal seal, available on both Seal-Lok and O-Lok fittings, allows for maximum O-ring retention in a precisely engineered Captive O-Ring Groove (CORG). This competitive advantage increases assembly productivity and offers maximum assurance of a leak-free connection, avoiding operational and maintenance costs.

### Features & Benefits

- Seal-Lok available in zinc plated carbon steel and 316 stainless steel with Superior Plating for unrivaled rust protection. O-Lok products have Chromium-6 free surface protection for a minimum of 120 hours to first white rust.
- Universal Push to Connect (UPTC) speeds assembly, simplifies hard to reach applications
- Robust Adjustable Port connections tested to prevent leaks caused by incorrect assembly
- Adaptable to inch and metric tube and hose assemblies
- SAE, NPT, ISO 6149, BSPP, and metric port ends available
- Meets SAE J1453 and ISO 8434-3
- Small tube entry ideal for tight tube line routing on turbine and other plant applications

### Applications

- Liquid fuel, water, and natural conveyance for combustion turbines
- Auxiliary systems such as turbine jacking/leveling, hydraulic controls, lube oil skids, and liquid fuel control systems

## Tube Fittings continued

### • O-Ring Face Seal Fittings

- O-Lok® Plus Series – Metric
- Seal-Lok® Series – Fractional & Metric

### Related Products

### Hydraulic Flanges & Components (SAE/ISO)

### • Components (Pipe Fittings & Adapters)

- Dual Seal Flange Adapter
- Metric/BSP Conversion Adapter
- Pipe Fitting & Port Adapter
- SAE Adjustable Port Stud
- Triple-Lok® Adapter
- Weld Adapter

### • Flanges

- Gear Pump Flanges
- ISO/DIN 4-Bolt High Pressure Hydraulic Square Flanges (CETOP)
- SAE 4-Bolt High Pressure Hydraulic Flanges
- SAE Parflange High Pressure Flanges (3,000 - 6,000 psi)
- Stainless Steel Flanges

## Hose (Industrial)

### Air & Multi-Purpose Hose

- 5409 Series – Suction & Return Line Hose (SAE 100R4)

- Hydroelectric plants – lube auxiliary systems
- Electrohydraulic controls (EHC)
- Combustion turbine zero clearance connections
- Generators and transformers

- 7161 Series – Jiffy® Push-On Non-Conductive Air Hose (MSHA)
- 7201 Series – Maximaire Heavy Duty Non-Conductive Air Hose
- 7268E Series GSTII – General Service Air & Water Hose
- Stinger II – High Pressure Wire Braided Mine & Multi Purpose Hose (MSHA)

## BioDiesel Hose

- Super-Flex FL 3970X Hose

## Flexible Metal Hose

- Parflex 9A – Standard Stainless Steel Braided Hose
- Parflex 9H – High Pressure Stainless Steel Braided Hose
- Parflex 9M – Ultra Flexible Stainless Steel Braided Hose

## Parflex 9A, 9H, 9M Flexible Metal Hose

Truly the superior choice, Parflex Metal Hose Assemblies are designed for applications where chemical and temperature extremes are present in either the media or the atmosphere. Factory-welded using proprietary methods, these hoses arrive ready to install with attached fittings to provide reliable, leak-free, full-vacuum solutions. A unique hydroforming process performed on 9A and 9M utilizes high pressure water to form the corrugated stainless steel core tube. This minimizes residual stress in the metal, maintaining a consistent tube wall thickness throughout the hose.

### Features & Benefits

- Zero permeation
- High temperature operation up to 500°F (260°C)
- 316 stainless steel core tube for improved corrosion resistance
- High percentage of braid coverage yields better cycle life and protection against tube damage

### 9A Standard Hose / 9M Ultra Flexible Hose

- Working pressures up to 2,700 psi
- Annular profile
- Brightly annealed tube material minimizes the risk of Corrosion Crevice Cracking (CCR) failure and increases chemical resistance

### Applications

- Fuel control valves
- Gas turbine fuel atomizer and delivery lines
- Air, gas, steam, and water lines
- Oil burner fronts – fuel atomizer lines
- Steam and combustion turbine exhaust
- High pressure oil and lube lines
- Diesel and gas generators

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## Fluoropolymer (PTFE) Hose

- Parflex 919/919B Series – PTFE Stainless Steel Braid Hose (SAE 100R14)
- Parflex 929BJ Series – Silicone Jacketed PTFE Hose (Static-Dissipative Tube)
- Parflex 939/939B Series – Convoluted PTFE Hose
- Parflex 955B Series – High Temperature PTFE Double Stainless Steel Braid Hose
- SCW/SCB Series – Convoluted PTFE 316 Stainless Steel Braid Hose
- STW/STB True-Bore Series – Smooth Bore Stainless Steel Braid Hose

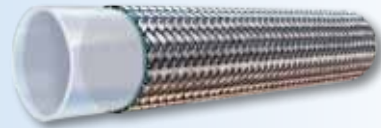
## Fluoropolymer Tubing (PTFE, FEP & PFA)

- Parflex 101/201 Series – PTFE Tubing
- Parflex 103/203 Series – FEP Tubing
- Parflex 104/204 Series – PFA Tubing

## Hydraulic Hose

- **Braided Hose**
  - 302 – SAE 100R2 Type AT Hose
  - 426 – SAE 100R1 Type AT High Pressure Hose
  - 471TC Tough Cover – SAE 100R16/ EN 857-2SC Hose (4,250 psi)
  - 472TC Tough Cover – SAE 100R2/ EN 857-2SC Hose (2,250 psi)
  - 482TC Tough Cover – SAE 100R1/ EN 853 Hose (3,250 psi)
  - 772TC Tough Cover – SAE 100R12/ EN 856 Spiral-Wire Hose (4,000 psi)

## 919 PTFE Stainless Steel Braided Hose



When high temperature performance and excellent chemical compatibility are demanded, Parker 919 PTFE Hose accepts the challenge. This medium pressure hose can withstand temperatures up to 450°F (232°C). A smooth bore natural PTFE core tube and stainless steel braided wire reinforcement tackle corrosive chemicals and abrasive environments.

### Features & Benefits

- Low friction minimizes pressure drops and deposits
- Environmentally safe
- Resists moisture
- Maximum working pressures up to 3,000 psi
- Meets or exceeds SAE 100R14A -919; SAE 100R14B -919B (Static Dissipative PTFE); FDA CFR 177.1550 (Natural Tube)

### Applications

- Oil burner fronts (boiler)
- Fuel, lube, and oil skids
- Water injection, inlet fogging skids, and water wash
- Fuel control valves
- Compressed air discharge and coolant lines
- Gas analyzer systems
- High pressure steam lines
- Instrument test equipment

### Did you know?

Parker offers a **custom, annular, corrugated metal hose in C276 alloy**. It's ideal for scrubbers (FGD/SCR), sea water reverse osmosis (RO) systems, brackish water, and other applications in aggressive environments. Available in 1/2" or 6" I.D. Contact your local Parker Power Gen Distributor Specialist.

## Thermoplastic and Fluoropolymer Tubing

Fluoropolymer tubing features a low coefficient of friction, anti-stick properties, high temperature capabilities, and the most corrosion and chemical resistance of all polymers. Parker manufactures nylon, PTFE, FEP, and PFA tubing to precision processes, with some materials operating at temperatures up to 500°F (260°C). Comprehensive offering of sizes, lengths, colors, grades, profiles, temperatures, pressures, and characteristics.



### Nylon Tubing

#### Features & Benefits

- Fractional inch and metric
- High-grade resins for strength and flexibility; routing in tight spaces
- Abrasion-resistant, heat and light-stabilized
- Exhibits low-level water absorption
- Chemically resistant

#### Applications

- Instrument air lines
- CEMS shelter
- Valve actuation

### PTFE Tubing

#### Features & Benefits

- AMS 3653E/FDA Compliant/USP Class VI Compliant
- Fractional inch and metric
- 90 to 95 Shore A durometer
- Excellent kink/abrasion resistance and hydrolytic stability
- Flexible and easy to assemble onto designated fittings

#### Applications

- Water purification and conditioning systems (caustics and acids)
- CEMS shelters
- Chlorinator

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## Hydraulic Hose *continued*

### • Constant Working Pressure – Wire Braid Hose

- 351TC Tough Cover – SAE 100R19 Hose (4,000 psi)
- 451TC Tough Cover – SAE 100R17/ISO 11237 Hose (3,000 psi)
- 782TC Tough Cover – SAE 100R13/EN 856 Hose (5,000 psi)
- 792TC Tough Cover – SAE 100R15 Hose (6,000 psi)

### • Constant Working Pressure – Spiral Hose

- 722TC Tough Cover Compact Spiral – 4-Wire SAE 100R12 Hose (4,000 psi)
- 787TC Tough Cover Compact Spiral – ISO 18752-DC Hose (5,000 psi)
- 797TC Tough Cover Compact Spiral – ISO 18752-DC Hose (6,000 psi)

## 451TC & 451ST Constant Working Pressure Hydraulic Hose

When abrasion resistance and ease of use are required, spec Parker 451 Hydraulic Hose. Then choose the cover that provides the right amount of protection for your application: Tough Cover (TC) or Super Tough (ST). Designed with flexibility in mind, 451 features a one-half SAE 100R1 minimum bend radius making installation in tight spaces fast and simple.



### Features & Benefits

- Meets ISO 18752 requirements
- Tough Cover 451TC – specially formulated MSHA-accepted rubber cover that offers exceptional protection from hose-to-hose or hose-to-object abrasion; hose lines last longer, minimizing maintenance and downtime
- Super Tough cover 451ST – polymeric cover for when only maximum abrasion resistance will do
- 3,000 psi constant working pressure in all sizes
- Construction – synthetic rubber tube compatible with most petroleum-base hydraulic fluids; high-tensile steel wire reinforcement

- Compatible with Parker 43 Series crimp fittings and the Parkrimp family of crimpers

### Applications

- Coal prep (pulverizers, conveyors, dumper cars)
- Diverter dampers
- Lube and oil control skids
- Hydraulic power units (HPU)
- ID/FD fans
- Turbine control valves
- Diesel generators
- Turbine lubrication systems

## 722TC Constant Working Pressure Spiral Hose

Resilient four-wire spiral



construction and Parker's leading Tough Cover protection combine to make 722TC Hose an ideal choice for a variety of uses. At one-half the bend radius of SAE 100R12 hose, 722TC is easy to install and requires less hose to make your connection.

### Features & Benefits

- Meets ISO 18752 requirements
- 4-spiral construction ensures longer lasting hose in high impulse, heavy duty cycle applications
- Synthetic rubber inner tube provides a wider range of fluid compatibility
- Synthetic rubber Tough Cover for abrasion resistance
- Working pressures up to 4,000 psi
- Compatible with Parker 43 and 71 Series fittings and the Parkrimp family of crimpers

### Applications

- Inlet guide vane actuators
- Bag house shakers
- Butterfly valve air actuator
- Fly ash knife gates
- Railcar-slaker/pumper

### Did you know?

Parker **Parkrimp**® hose crimper machines can use hydraulic rubber hose, thermoplastic hose, fluoropolymer hose or industrial hose, along with hydraulic fittings, to create leak-free hose assemblies on-site. Contact your local Parker Power Gen Distributor Specialist.



## Material Handling/Dry Bulk Transfer/Slurry Hose

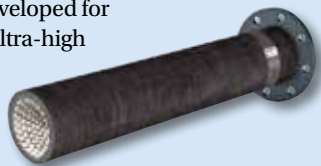
- CERGOM – Series 8800 Material Handling Hose
- MPW 1000 – 7204 Series Dry Bulk Transfer Hose
- Super-Flex – Series 7363 Corrugated Material Handling Hose
- Titan EWC777 – Highly Abrasive Slurry Suction Hose

## Multi-Purpose Rubber Hose

- BXX – SAE 100R2 Type AT 2 Hose
- Push-Lok® Plus 801, 804 – Low & Medium Pressure Hose (diesel fuel lines)
- Push-Lok® Plus 836 – High Temperature Hose (compatible with diesel fuels)

## CERGOM Special Heavy Duty Material Handling Hose

Specially developed for conveying ultra-high abrasive materials, Parker's CERGOM Material Handling Hose is constructed of **new ceramic hexagonal plate tubing** processed to match its SBR/NBR rubber cover. Advanced patented technology incorporates Alumina Oxide to achieve an unusually dense structure and very high hardness, lending to increased service life when compared to traditional rubber hose and steel tube assemblies.



### Features & Benefits

- Patented technology – ITR International Patent PCT-EP2007-057488
- Minimizes vibration and noise during operation
- Greatly reduces maintenance costs
- Temperature range from -22°F (-30°C) to 158°F (70°C)

### Applications

- Pneumatic suction and delivery of coal powders, fly ash, lime, and aggressive slurries
- Loading/unloading barges
- Ash hoppers/fly ash feeder
- Lime slaker/scrubbing lime spray

## Series 7204 MPW-1000 High Pressure Multi-Purpose Hose

An extremely versatile hose, Parker's MPW-1000 can handle air, saturated steam, water, mild chemicals, oil, and refined fuels such as biodiesel, diesel, ethanol, and gasoline. Hose construction includes a premium grade tube especially suited for high temperature materials. High tensile wire braid reinforcement provides durability, kink resistance, high pressure capability, and superior coupling retention.



### Features & Benefits

- Operating pressures up to 150 psi (10.3 bar)
- High temperature performance to 300°F (149°C) continuous; 350°F (177°C) intermittent; up to 368°F (187°C) for saturated steam
- Black nitrile inner tube
- Wire braid cover resistant to heat, oil, and weathering

### Applications

#### Air

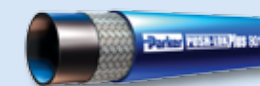
- Condensate pump inlet and outlet bypass valves
- Gland seal system drain valves
- Fuel oil pneumatic valves
- Clinker grinder
- Gland seal system control valves

#### Water

- Pressure gauges on circulating water pumps

## 801 & 804 Push-Lok® Plus Multi-Purpose Hose

With the widest fluid compatibility and size range in the industry, Parker's Push-Lok® Plus Multi-Purpose Hose line offers the versatility to meet virtually any application. Highest working pressures in all sizes – along with the most complete line of low pressure hose and fittings – further support the claim.



### Features & Benefits

- Unique Push-Lok seal ensures reliable, leak-free service
- Extruded, synthetic rubber inner tube (EPDM inner tube on Push-Lok 804)
- Easy assembly and organization with Parker's exclusive color-code system
- No clamps or special tools required for installation
- Approved for use with crimp-style or push-on fittings

### Applications

- Pneumatic dry air systems
- Low pressure drain and return lines
- Instrumentation air lines
- Temporary water and air lines for outages/compressing (flushing and purging)

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## 304 No-Skive Phosphate Ester (EPDM) Hydraulic Hose

For the utmost chemical compatibility



with aggressive Phosphate Ester and Fyrquel® fluids typical to the power industry, Parker's 304 No Skive Hose should be your first and only choice. Unique construction includes a high quality EPDM rubber tube, one or two braids of steel wire reinforcement, and a weather-resistant green EPDM cover.

### Features & Benefits

- No-Skive design eliminates the need to remove the cover before crimping
- Pressure ratings that conform to SAE 100R2AT
- Optimum leak-free assembly when used with Parker's EPDM O-ring face seals and 37° flare fittings and pipe adapters
- Compatible with Parker's 43 Series fittings and the Parkrimp family of crimpers

### Applications

- Steam turbine control/electrohydraulic control (EHC) valves
- Diesel generators
- Turbine lubrication systems
- Hydraulic servo for pulverizers

## Phosphate Ester/Fyrquel® Resistant Hose

- No Skive 304 – EPDM Hydraulic Fluids Hose (SAE 100R1 Type AT)
- No Skive 424 – EPDM Hydraulic Fluids Hose (SAE 100R2 Type AT)
- No Skive 774 – EPDM Hydraulic Fluids Hose
- No Skive F42 – EPDM Hydraulic Fluids Hose (6,000 psi)

### Specialty Hose

- Parflex CNG – Compressed Natural Gas Hose (electrically conductive)
- Parflex HLB – Lubrication Line Hose

### Steam Hose

- Dragon Breath – Steam Hose (Butyl or EPDM material)

### Suction & Return Hose

- 811 – SAE 100R4 Hose (MSHA)
- 811 HT – SAE 100R4 Hose (High Temperature)

### Thermoplastic Hose

- Parflex 518C – Non-Conductive Hose (SAE J517 & SAE 100R7)
- Parflex 528N – Non-Conductive Hose (SAE J517 & SAE 100R8)
- Parflex 540N – Hydraulic Hose (compatible with Phosphate Ester & Fyrquel® fluids)
- Parflex 588N – High Pressure Hose

## Parflex 540N General Hydraulic Hose

The Parflex 540N Hose is a medium



pressure hydraulic hose that offers excellent overall chemical compatibility and a wide service temperature range of -40°F to 212°F (-40°C to 100°C). All constructed layers are bonded for optimum kink resistance and flexibility. Especially suitable for cold temperature applications.

### Features & Benefits

- Matte finish urethane cover for low coefficient of friction
- Greater range of fluid compatibility than SAE 100R1 hose
- Twin or multi-line fiber reinforcement; polymeric inner tube
- Compatible with Parker's 55 and 57 Series fittings

### Applications

- Fuel control valves
- Oil igniters
- Diesel generators
- Coal yard – dozers/loaders
- Pneumatic air hose
- Steam atomization on oil burners

## 588N Non-Conductive High Pressure Hose

When encountering exposure to high voltage, guesswork is not an



option. Parker's 588N High Pressure Hose features thermoplastic construction and a non-perforated polyurethane cover making it an excellent, non-conductive choice.

### Features & Benefits

- Maximum operating pressures up to 5,000 psi
- Operating temperatures from -40°F to 212°F (-40°C to 100°C)
- Replacement for 100R2 hose when greater flexibility, fluid compatibility, electrical non-conductivity, and cover durability are required
- Fiber reinforced nylon tube; orange, abrasion-resistant cover
- Meets SAE J517 for less than 50 microamps leakage under 75,000 volts per foot
- Compatible with Parker 58 Series fittings

### Applications

- Inlet guide vane for gas turbines
- Steam piping systems
- Fuel handling (delivery lines)
- Coal handling

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## Thermoplastic Hose (High Pressure)

- Polyflex 2022N – High Pressure Electrically Non-Conductive Hose
- Polyflex 2240D/2440D Tough Cover – Ultra High Pressure Hose
- Polyflex 2380N – High Pressure Smooth Bore Hose (Phosphate Ester compatible)

## Thermoplastic Tubing

- Parker E Series – Polyethylene Tubing
- Parker N Series – Nylon Tubing

## Ultra High Pressure Hose

- JH Jack Hose – Ultra High Pressure Hose (10,000 psi)
- ParMax No Skive 761 – Ultra High Pressure Multi-Spiral Hose (8,000 psi)

## Water Hose

- BS&W – 7213 E Series Corrugated Suction Hose
- Day-Flo 7306H – Heavy Duty Water Discharge Hose
- PWD 7143 – High Pressure Wash Down Hose
- Super-Flex 7325 Heavy Duty Water Suction Hose
- Titan EW301 – Heavy Duty Water Suction Hose
- 540P – Specialty Water Hose

## Welding Hose

- Siamese Grade T – Twin Line Welding Hose

## Piping Systems

### Industrial Air & Water Piping Systems

- Transair® – Aluminum Compressed Air Piping System
- Transair® – Stainless Steel Industrial Water Piping System

### Non-Welded Piping System

- Parflange® F37 – Non-welded Tube & Piping System

### 2240D & 2440D Tough Cover Ultra High Pressure Hose

Developed to meet today's power plant requirements, Parker 2240D



and 2440D Ultra High Pressure Hose are especially well-matched for tube cleaning applications. Their abrasion-resistant Tough Cover helps decrease downtime and replacement cost, while increasing productivity.

#### Features & Benefits

- Up to 40% less abrasion with blue Tough Cover polyamide material
- Working pressures of 75 MPa and higher
- Polyoxymethylene inner tube with high tensile steel wire reinforcement
- Tested according to EN 1829-2
- Resistance against hydrolysis, ozone, and UV radiation

#### Applications

- Heat exchangers
- Boiler tubes

## Transair® ISO 8573-1 Air & Water Piping Systems

Transair® is a fast, flexible, and easy to modify piping system for compressed air and industrial water applications. Quick, instant connections eliminate the need to thread or solder pipe. The **light-weight, corrosion-resistant aluminum or stainless steel** pipe is easy to handle and safe to work with on elevated platforms. Modular, reusable and energy efficient, Transair significantly reduces labor time making it the most cost-effective piping system today.



#### Features & Benefits

- 1/2" (16.5 mm) to 6" (168 mm) pipe sizes
- No corrosion
- Full-bore design
- Optimum flow rates
- Immediate pressurization
- Leak-free guarantee; 10-year warranty

#### Applications

- Instrument and plant air lines
- Inert gas piping systems
- Vacuum piping systems
- Industrial water piping systems (glycol and water lines)
- Wastewater aeration and cooling water systems
- Pneumatic conveying and bag houses

## Parflange® F37 Non-Welded Tube & Piping System

Robust technology is the foundation of Parker's complete piping systems. Parflange® F37 utilizes standard SAE Code 61/62, ISO 6162, and ISO 6164 flange interfaces. The non-welded system is fully complemented with Parker's fabrication equipment and a broad range of interconnect components, valves, clamps, and seamless tubes. These integrated elements are capable of providing systems up to 273 mm, with wall thicknesses to 25 mm (10" x 1"). Users realize significant installation cost savings through reduced welding and fabrication times.

#### Features & Benefits

- Various technologies available to achieve specific pressure needs: Flare Flange, Retaining Ring, Light Duty
- Reduces system flushing time due to inherently clean piping with no weld-induced contaminants
- Heat code traceable components (HCT)
- Minimizes concerns of stress corrosion cracking of weld joints
- Chromium-6 free carbon steel and stainless steel piping and components for corrosion protection
- DNV and ABS type approved



#### Applications

- Power piping
- Lube oil, liquid fuel, water, hydraulic skids, and interconnect piping

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## Quick Couplings

### Compressed Air Pneumatic Couplings

- 10 Series – Tru-Flate design
- 20 Series – Industrial Interchange
- 70 Series – Lincoln Interchange
- TL Series – Schrader Interchange

### Hydraulic Couplings

#### • Straight-Through Quick Couplings (High Flow)

- ST Series (Brass, Steel, Stainless Steel)

#### • Non-Spill Quick Couplings

- FEM Series – Push-to-Connect (ISO 16028)
- FF Series – Push-to-Connect
- FH Series – High Pressure
- NS Series – Push-to-Connect
- TEMA TIF Series – Connect Under Residual Pressure

#### • Double Shut-Off General Purpose Poppet Design Quick Couplings

- 60 Series – ISO 7241, Series B
- 6600 Series – ISO 7241-1, Series A
- HP Series – High Pressure

### Instrumentation Couplings

- CPI™ Series – Stainless Steel Low-Spill Couplings
- FS & NSS Series – Stainless Steel Non-Spill Couplings

## FF Series Flush Face Non-Spill Couplings

FF Series Non-Spill Couplings eliminate spillage and air inclusion when connecting and disconnecting attachments. The 3/8" body size complies with Hydraulic Tool Manufacturers Association (HTMA) standards.

A connect-under-pressure nipple option is available for trapped pressures up to 3,000 psi on the nipple side. Ease of cleaning makes them ideal for use in hostile environments.



### Features & Benefits

- Push-to-connect design
- Flush face, non-spill valving
- Hardened steel sleeves and nipple bodies
- Standard locking sleeve
- Blow-out resistant seal
- Protective trivalent zinc plating with clear trivalent chromate finish

### Applications

- Hydraulic tools and test benches
- Hydraulic lines and connections
- Instrumentation calibration connections
- Lubrication systems (drums to oil and grease lines)

## 60 Series Double Shut-off Couplings

Designed for general purpose use, Parker 60 Series Couplings are available in brass, 303 stainless steel, and 316 stainless steel. Brass models feature double O-ring seals and stainless steel locking balls for optimum performance. All 60 Series couplings have poppet valves and manual sleeves. Ideal for use with hydraulic fluids, chemicals, water, steam, and some gases.



### Features & Benefits

- Brass models – Nitrile seals standard (other materials available)
- Stainless models – Fluorocarbon seals standard (other materials available)
- Body sizes 1/8" through 2-1/2"
- Operating pressures up to 5,000 psi (345 bar)
- ISO 7241 Series B Compliant

### Applications

- Fluid transfer lines
- Hydraulic and lubrication flushing lines
- Gauge lines
- Water systems

## FS Series Stainless Steel Non-Spill Couplings

Parker FS Series Stainless Steel Couplings are ideal for closed system transfer and dispensing of chemicals and other fluids. The flush valves eliminate spillage and air inclusion when connecting and disconnecting which results in minimal environmental contamination. Available in 1/4", 3/8", 1/2", 3/4", and 1" sizes.



### Features & Benefits

- Push-to-connect design
- Rated pressures up to 2,000 psi
- Flush face, non-spill valves
- Stainless steel material and fluorocarbon seals for chemical compatibility
- Seal material options
- End configurations include female pipe, male pipe, and female straight thread ORB

### Applications

- Cooling lines
- Electrohydraulic control (EHC) sampling ports
- Transmitter calibration ports
- Chemical feed
- Deionized (DI) water lines
- CEMS analyzer connections

## Steam Couplings – High Temperature Couplings

- 60 Series – STM Steam Couplings

## Thermoplastic Couplings

- PF Series – Non-Spill Quick Couplings
- PPL/PPM/PPA Series – General Purpose Push-Button Quick Couplings
- Spectrum Series – High Flow Quick Couplings

## Tubing (Metal)

(For Fluoropolymer & Thermoplastic Tubing, see page 70 and 78)

## Hydraulic/Pneumatic and Instrumentation Seamless Tubing (Metric - DIN 2391)

- EO Series – Seamless 316 Stainless Steel and Carbon Steel (Chromium-6 Free) Tubing

## Heat Traced Tubing Bundles – Instrumentation

### CEMS & Analyzer Umbilicals

- AB Series – Analyzer Heated Bundles
- CEMS Umbilicals
- PS Series – Analyzer Unheated Probe Support Bundles

## CS Series Continuous Steam Purge Bundles

Parflex CS Continuous Steam Purge Bundles are your best bet for applications that involve continuous high temperature steam purge up to 1,100°F (593°C). Freeze concerns? Not a problem. A fluoropolymer jacket covers the heating cable to provide protection from the harshest environments.



### Features & Benefits

- Thermally insulated with a composite layer of fiberglass that allows for continuous high temperature steam purge
- Internal bundle tubes can be steam purged for any duration without affecting performance to the heating element
- Standard internal tinned copper braid on the heating cable ensures proper grounding

### Applications

- High temperature steam purge exposure with freeze concerns
- Differential pressure transmitters
- Flow transmitters

## Multitube Pre-Insulated/Pre-Traced Tubing Bundles

### • Electric Heat Traced

- CH Series – Constant Watt High Temperature Electric Trace Bundles
- CL Series – Constant Watt Low Temperature Electric Trace Bundles
- SH Series – Self-Regulating High Temperature Bundles
- SL Series – Self-Regulating Low Temperature Bundles

### • Steam Heat Traced

- CS Series – Continuous Steam Purge Bundles
- HT Series – Heavy Steam Trace Bundles
- IS Series – Intermittent Steam Purge Bundles
- LT Series – Light Steam Trace Bundles
- TT Series – Temptube Bundles



## Valves

### Air Bleed Valves

- EO Series DV
- EO Series ELA
- EO Series LRV and VDHA Non-Return Valves

### Ball Valves

- Brass Ball Valves
- Carbon Steel Ball Valves
- EO SAE Ball Valves
- Stainless Steel Ball Valves

### Check Valves

- CV Series – Inline Unidirectional Valves (3,000 psi)
- DC Series – Inline Unidirectional Valves (5,000 psi)

### Pressure/Vacuum Relief Valves

- H1 Series
- PV Series

### Thermal Bypass Valves

- TH Series

### Thermoplastic Valves

- LIQUIfit™ – Bio-based Ball Valves
- TrueSeal™ – Polypropylene Ball Valves

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## Monitoring Solutions

### Diagnostic Equipment

- Service Master Easy – Four Input Diagnostic Meter
- Service Master Plus – Diagnostic Engineering Tool
- ServiceJunior™
- ServiceJunior™ – Wireless Diagnostic Meter
- Serviceman Plus™ – Diagnostic Meter

### Service Master Easy Diagnostic Meter

Offering the latest in sensor recognition technology, the Parker Service Master Easy is a hand-held diagnostic meter that measures and stores data relating to pressure, flow, temperature, and rotational speed simultaneously or independently. A 0.25 ms scanning rate catches even the most instantaneous spikes, surges, or changes. On-site data storage can be downloaded to a PC via our SensoWin® software.



#### Features & Benefits

- Four sensor inputs
- Customized field kits
- Easy intuitive operation
- More than one million data points in memory
- User-adjustable measuring units
- Auto sensor recognition
- Manual or automatic triggering

#### Applications

- Pressure, flow, RPM, and temperature on most hydraulic, pneumatic, and fluid systems
  - Troubleshooting
  - Preventive maintenance
  - System validation
  - System fault diagnosis

### ServiceJunior™ Wireless Diagnostic Meter

Measure, display, and store pressure readings quickly and accurately with Parker's ServiceJunior™ Wireless Diagnostic Meter. With its unique intelligent memory, ServiceJunior can record measurements of up to 1,000 bar maximum working pressure from up to 16 different machine or equipment measurement points. Ten-millisecond scanning rate accurately reflects actual conditions so potential problems can be better identified and diagnosed. Offers you time and cost savings in the monitoring of machines and equipment, conveniently and safely from your PC. Configured to work with Parker's PC software.



#### Features & Benefits

- Ideal for areas of the plant that require personal safety
- Stored data can be transmitted to a PC over a distance up to 492 feet (150 meters)
- Easy operation – four-key menu
- Up to 14,500 psi (1,000 bar) maximum working pressure possible
- Accurate readings within +/- 0.5% full scale
- Powered by two 1.5 volt AA batteries
- Convenient and safe monitoring option

#### Applications

- Chlorine injection systems – water treatment
- Ammonia injection systems – scrubbers (FGD/SCR)
- Gas turbine and power plant fluid system diagnostics

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## Sensors & Controllers

### SensoControl®

#### • Industrial Sensors

- SCFT Series – Flow Sensors
- SCP01 Series – Pressure Sensors
- SCP-EX Series – Explosion Resistant Pressure Sensors
- SCT Series – Temperature Sensors
- PPD Series – Transducers
- SCPSDi Series – Pressure Switches

#### • Industrial Controllers

- SCLSD Series – Level Controllers
- SCLTSD Series – Level/ Temperature Controllers
- SCPSD Series – Pressure Controllers
- SCTSD Series – Temperature Controllers

#### Related Products

- PD Series – Test Port Couplings
- SensoControl EO Test Points (Chromium-6 Free)

## Need an Expert?

- [Click here to locate a Parker Power Generation Specialist near you.](#)

### SensoControl® Flow Sensors

Parker SensoControl® Flow Sensors provide the ability to measure pressure, temperature, and flow from a single test point in a hydraulic system. Constructed of light-weight aluminum, they are designed to be used with a wide variety of hydraulic fluids.



#### Features & Benefits

- Four measurement ranges: 0.2 to 160 GPM
- Accuracy of 1% FS
- Supplied with diagnostic coupling and temperature measurement port
- Minimizes the effects of viscosity changes

#### Applications

- Pump and motor lubrication
- Water treatment
- Turbine and burner systems (leak measurement)
- Piping systems

### SensoControl® Level/ Temperature Controllers

Our SensoControl® Level/Temperature Controllers provide a single instrument solution for monitoring two vital system parameters: fluid level and temperature. A color-coded display allows the user to easily identify tank and temperature measurements. This simple yet robust instrument accurately regulates critical, programmable operating parameters for hydraulic and pneumatic systems.



#### Features & Benefits

- Rotatable digital display
- Vibration resistant
- Rugged housing (IP67 rated)
- Dual function, single point access

#### Applications

- Cooling circuits (hydrogen cooling)
- Water treatment
- Hydraulic power units (HPU)
- Turbine lube pump, oil and filter pressures
- Boiler drum level
- Transformers and generators
- Compressors

### SensoControl® Pressure Sensors

SensoControl® Pressure Sensors are ideal for permanent industrial installations and explosion risk applications where continuous system monitoring is needed. Precision engineered with rugged construction, these sensors offer electrical interference resistance, superb stability, and repeatable measurements.



#### Features & Benefits

- Stainless steel body
- Compact construction
- Shock and vibration proof
- Resistant to pressure spikes
- Wide range of standard versions; made-to-order configurations

#### Applications

- Seal oil systems
- Heat exchangers
- Hydraulic power units (HPU)
- Test stands
- Boiler auxiliary systems

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## ParkerStore™ On-Site Mobile Work Containers

ParkerStore™ On-Site Containers bring a fully customized workspace directly to the job site. These highly efficient, mobile units can contain all the technology, equipment, and inventory needed to significantly reduce the time it takes to obtain critical spares or fabricate hose assemblies.



### Features & Benefits

- Fully insulated, climate controlled, electrically wired
- Standard 20- or 40-foot containers can be dropped anywhere on the property
- Bin label program makes product identification and restocking easy
- Shelving, cabinets, work benches, material hoists, hose reels, and more
- Sprayed-in rubberized flooring available

### Applications

- New build construction sites
- Planned outages – preventive maintenance initiatives
- Major upgrade projects

## Equipment

ParkerStore™ On-Site Mobile Work Containers

Parker PTS System – Web-Based RFID Technology System

## Parker Tracking System™ (PTS)

The Parker Tracking System™ was designed to help customers reduce asset downtime through a combination of Web-based technology and durable printed barcode or RFID labels. A unique identification code is generated onto the label for each hose so users can record/recall data quickly and accurately. Components can be replaced using only the PTS number, eliminating the need to remove the hose prior to replacing it.



### Features & Benefits

- Improved critical machine uptime, more convenient scheduled repair
- Labels are specifically engineered to withstand harsh chemicals, temperatures, UV exposure, and other harsh conditions
- Speeds hose replacement, regardless of where the original assembly was made

### Applications

- New build construction sites
- Planned outages – preventive maintenance initiatives
- Emergencies

## Accessories

Drain Cocks

Flange Kits

Hose Clamps

Hose Ends & Protective Sleeves

Hose Whip Restraints

Metric Port Adapters – ISO

Tube & Pipe Clamps  
(Fractional & Metric)

### Did you know?

Parker makes over **500,000 components** to meet your power system needs. Ranging from fittings and valves to integrated subsystem assemblies, Parker products add reliability and efficiency to the following applications:

- Coal handling
- Boilers
- Gas turbines
- (HRSG) boilers
- Ammonia/catalytic reduction
- Steam turbines
- Water analysis and purification
- Chemical feed systems
- Scrubbers
- Continuous Emissions Monitoring (CEMS)
- Generators
- Transformers

Contact your local Parker Power Gen Distributor Specialist.



Unmatched reliability and consistent performance. That's what Parker brings to this unique power generation segment. From our industry-leading, well-respected ABEX Jet-Pipe® EHSV (ATEX and FM-certified) to our proprietary Macrospray® spray nozzles, we engineer solutions that keep gas turbines running longer and stronger.

## Fuel Control

### Electrohydraulic Servovalves (EHSV's)

- **Gas and Liquid Fuel Metering Valves**
  - ABEX Jet-Pipe® 410 Series EHSV's
  - ABEX Jet-Pipe® 415 Series EHSV's
- **Water or Steam Injection Valves**
  - ABEX Jet-Pipe® 425 Series EHSV's
  - ABEX Jet-Pipe® 450 Series EHSV's
- **Compressor Bleed Air Valves**
  - 410 Series
- **Gas Stop Ratio Valves**
  - 410 Series
  - 415 Series

## Power Augmentation

### Fuel & Fogging Spray Nozzles

- Macrospray® Single-Point Nozzles
- Macrospray® Spider Nozzles

## Fluid Conveyance

### Flexible Metal Convuluted Hose

- Stratoflex M1000 Series – CRES Hose (Stainless Steel, Aluminum Metal, Inconel or Titanium); Meets or exceeds SAE AS1424
- Water Injection Flow Proportioning Valve

### PTFE Hose Assemblies

- Stratoflex 124 Series – PTFE Flex Hose
- Stratoflex 124 H/J Series – Integral Fire Sleeve PTFE Hose

## Fuel Systems

### Fuel Nozzles

- Aero Derivative Nozzles
- Flow Distribution/Flow Divider Valves
- Fuel Control Valves
- Lances & Burners

### Fuel Nozzle Services

- Clean, Check, Test (CCT) & Overhaul Nozzles
- Nozzle Filters



## Hydraulic & Lubrication Systems

### Pumps

- Lubrication & Oil Scavenge Pumps

### Did you know?

Parker recently introduced a **Water Injection Flow Proportioning Check Valve** that can be found as an approved spec on GE 7A dual fuel combustion turbine frames. Specifically engineered to solve fuel transfer problems, this drop-in replacement features Parker's proven CB Series Check Valve seat technology which provides reliable and consistent ZERO seat leakage in demanding applications like liquid fuel and purge air systems. An ideal solution for high temperatures and aggressive media, the valve also helps minimize can-to-can temperature spreads and trips. Contact your local Parker Power Gen Distributor Specialist.

## Parker Jet-Pipe® Electrohydraulic Servovalves

Our advanced, Jet-Pipe® electrohydraulic servovalve (EHSV) technology is far less prone to contamination in dirty power generation environments, receiving and passing particles as large as 500 microns without malfunction. The result is an exceptionally stable, contamination-resistant, and erosion-tolerant EHSV that offers the longest expected life in the industry.

### Features & Benefits

- AS9100-certified, offering aerospace quality, reliability, and performance
- 30-plus FM-, CE-, and ATEX-certified valves available off-the-shelf
- Superior Jet-Pipe® design:
  - Fail-to-center design
  - Low sensitivity to vibration and shock
  - Reduced high gain at null for increased stability
  - Symmetrical torque motor design minimizes null shift
  - Low maintenance
  - Servo-controlled second stage
  - Wide dynamic range
  - Dry torque motor
  - Lower life cycle cost

### Applications

- Steam and gas turbine control valves
- Gas and liquid fuel control
- Gas turbine inlet guide vane (IGV)
- Wet NO<sub>x</sub> control
- Combustor or steam bypass



## Macropray® Nozzles

### Single-Point Nozzles

Designed to replace conventional pressure-swirl and impact-type nozzles, Parker's Macropray® Single-Point Nozzles offer smaller droplets, repeatable dispersion patterns, and more uniform spray patterns. For plant operations, this means increased power output, reduced fuel consumption, and lower NO<sub>x</sub> emissions on turbines or compressors.

### Features & Benefits

- Lower operating pressures for reduced nozzle erosion and longer nozzle life than conventional pressure-swirl or impact-type nozzles
- Larger flow passages than impact-type nozzles for reduced plugging; wide range of flow capacities and multiple configurations
- More robust and consistent performance
- Integral filter for reduced maintenance and longer life
- Easy replacement option



### Applications

- Turbine inlet air cooling (TIAC)
- Fire suppression
- Wet compression/inlet fogging
- Air pollution control (reduced NO<sub>x</sub>/SO<sub>x</sub> emissions)
- Dust suppression
- Gas cooling and conditioning

### Spider Nozzles

Because Parker Macropray® Spider Nozzles utilize multiple spray points per assembly, they are able to provide a much larger coverage area than conventional pressure-swirl or impact-type nozzles. This translates into fewer bosses and less piping, resulting in quicker installation, lighter weight, and lower installation and maintenance costs.

### Features & Benefits

- Two, four, six, eight, or twelve spray points
- Geometries chemically machined into layers, providing smooth, efficient flow passages, which allow for complex or multiple circuits
- Extremely fine spray with significantly smaller droplets than conventional pressure-swirl or impact-type nozzles



## Stratoflex M1000 Series CRES (Corrosion-Resistant) Stainless Steel Hose

Developed to meet critical demands of the energy, aerospace and military fields, the Parker Stratoflex CRES Hose extends its high performance to the demands of today's power plants. The convoluted metal hose meets or exceeds SAE AS1424 standards which ensures its suitability in turbine power plants requiring extreme temperatures up to 850°F.

### Features & Benefits

- Metallic convoluted CRES inner core, reinforced with layers of CRES braid reinforcement
- Sizes from -4 to -40
- Rated working pressures up to 2,000 psi for small diameters (850 psi for larger diameters)
- Complex hose/tubing assemblies available to meet specific applications
- Wall thickness from .020 to .120



### Applications

- Diesel engine exhaust
- Fuel and air delivery lines
- Steam and water delivery lines
- Bleed air control (gas turbine rotor air cooling and compressor bleed)
- Gas turbine bearing lift
- Fuel manifolds

## Need an Expert?

- [Click here to locate a Parker Power Generation Specialist near you.](#)



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The global leader in motion and control technologies, Parker's expertise in the core motion technology of hydraulics is unsurpassed. Market leading breadth of efficient, power-dense systems and products combine with unequalled global reach to enable and improve industrial and mobile machinery performance.

## Hydraulic Accumulators

### Accumulator Safety Blocks

- SBA Series – Accumulator Safety Blocks

### Bladder Accumulators

- BAE Series – CE/PED
- Greer ASME Series – UL/ASME

### Diaphragm Accumulators

- ADE Series – CE/PED
- Greer AD Series – UL/ASME

### Gas Bottles

- Bladder Style Gas Bottles
- Large Capacity Style Gas Bottles (Piston & Bladder)
- Metric Style Gas Bottles
- Piston Style Gas Bottles

### Piston Accumulators

- A Series – CE/PED
- Greer 3,000/4,000/5,000 Series – UL/ASME

#### Related Products

#### Accumulator Repair Kits

- Accumulator Charging Kits
- Accumulator Rebuild Kits

### SBA Series Accumulator Safety Blocks



SBA Safety Blocks permit safe, simple connection of an accumulator to a hydraulic system. Suitable for use with all types of accumulators – bladder, piston, and diaphragm – their compact, multi-function design saves space and reduces connections. Parker's SBA Safety Blocks are available in NG10, NG20, and NG32 sizes with all the features required to protect, isolate, and discharge a hydraulic accumulator. In emergency or for maintenance, the shut-off valve turns through 90° to isolate the accumulator instantly from the hydraulic system. Once isolated, the accumulator can be discharged to tank via a manual or electrically-controlled discharge valve.

#### Feature & Benefits

- CE certified pressure relief valve
- SAE and BSPP porting
- Lockout/tagout option available
- Electric discharge option available

#### PED COMPLIANT

Meets European Pressure Equipment Directive (PED) 97/23/EC which states that a safety device must be fitted to all accumulators to provide a shut-off facility, pressure limiting and pressure release functions, and measurement points.

## Greer UL/ASME Bladder Accumulators

Whether for nuclear, steam or gas turbine power generation, Parker offers the most complete selection of bladder accumulator solutions. Available in bottom repairable, top repairable, medium flow, high flow, transfer barrier and gas bottle styles, our Greer Bladder Accumulators are the industry's original, and still the best. Parker bladder products maintain the highest quality because of our in-house bladder molding operations. All Greer bladders are engineered and manufactured in our own facility to our own high quality standards.

### Features & Benefits

- Standard capacities from 10 cu. in. (.16 liters) to 15 gallons (56 liters)
- Maximum operating pressures up to 6,000 psi (414 bar)
- 24-hour emergency bladder kit program
- Eight different configurations
- ASME certification standard, one gallon and up
- Water/chemical service available, with stainless steel ports
- Five bladder compounds to suit a variety of fluids and temperatures
- Certifications available: CE, CRN, AS1210, SELO, ABS, DNV, GOST



### Applications

- Steam and gas turbines – inlet guide vanes
- Pulverizers
- Back-up energy storage
- Control of valves (gates) and actuators
- Hydro – wicket gates
- Emergency operation of cylinders and supply of fuel oil to burners
- Fuel supply and residue disposal
- Steam generators
- Steam, water and gas circuits
- Superchargers and compressors
- Grinding mills
- Biomass and waste incineration plants
- Water turbine systems
- Control devices and servo drives
- Gates, protective devices, weir systems
- Screens, screen cleaning machines



### CUSTOM ENGINEERED SOLUTIONS

Parker offers hydraulic pumps that are compatible with fire-resistant fluids like **Fyrquel®** or **Phosphate Ester** used in turbine electrohydraulic control (EHC) systems. Contact your local Parker Power Gen Distributor Specialist.

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## KleenVent KV Series Hydraulic Reservoir Isolators

Fluid contamination can lead to high maintenance costs, waste disposal costs, and downtime in hydraulic systems. Our KleenVent Reservoir Isolators protect your system against the ingestion of airborne contaminants – including dust, chemicals, and water vapor – through the reservoir’s breather vent. By using an elastomer bladder as a lung, the changes in gas volume in a hydraulic system’s reservoir can be trapped and prevented from mixing with the outside atmosphere. And unlike conventional breather vent filters, KleenVent Reservoir Isolators provide a positive separation without the possibility of clogging or need for maintenance, extending filter life.



### Features & Benefits

- Standard capacities from 2.5 to 80 gallons (9.5 to 302 liters)
- Four bladder polymers for compatibility with a wide range of fluids and temperatures
- Choice of steel or fiberglass shells
- Optional pressure/vacuum breaker

### Applications

- Hydraulic reservoir tanks
- Gas turbine lube oil systems
- Air compressor lube oil systems

## Pulsation Dampeners

- Inline Pulse-Tone Shock Suppressors
- Greer ASME SurgeKushion

## Reservoir Isolators

- KleenVent KV Series Hydraulic Reservoir Isolators

## Industrial Cylinders

### Electrohydraulic Cylinders

- 2HX/3HX Series – Electrohydraulic Cylinders

### Electromechanical Cylinders

- XFC Series – Extreme Force Electromechanical Cylinders

### Hydraulic Cylinders

- 2H/3H Series – Heavy Duty Hydraulic Tie-Rod Cylinders
- AHM Series – Metric Hydraulic Cylinders
- CHD Series – Compact Hydraulic Cylinders (Repairable)
- HMI Series – ISO 6020/2 Hydraulic Tie-Rod Cylinders
- SH/SHG Series – Stainless Steel Hydraulic Cylinders

## 2H/3H Heavy Duty Hydraulic Cylinders

Our Series 2H Tie-Rod Carbon Steel Cylinders set the standard for performance, durability, and trouble-free operation, resulting in long cylinder service life and reduced operating costs. Design features such as the removable “jewel” rod gland, hardened, chrome-plated piston rods, and stepped cushions provide increased machine productivity through reduced downtime, faster cycle times, and improved system efficiency.



Series 3H are Large Bore, High Pressure Tie-Rod Cylinders that provide unmatched reliability and performance, increasing productivity while reducing operating costs and downtime. The externally removable, bolt-on gland assembly makes preventive and routine maintenance quick and easy. Series 3H cylinders also include a multitude of innovative design features, including anti-extrusion body end seals, floating cushions, and a high load piston (standard).

### Feature & Benefits

- “Jewel” rod gland assembly – externally removable
- TS-2000 primary rod seal is a proven, leak-proof design, self-compensating and self-relieving
- Adjustable floating stepped cushions reduce shock
- Lip seal piston provides zero leakage under static conditions
- High strength tie-rods are constructed from 100,000 psi minimum yield steel with rolled threads

### Applications

- Steam, gas, and fuel oil control valves
- ID and FD fans
- Diverter dampers
- Stop valve actuators
- Coal handling systems
- Fuel supply and residue disposal
- Steam and gas turbine systems
- Steam generators
- Steam, water, and gas circuits
- Superchargers and compressors
- Grinding mills
- Biomass and waste incineration plants
- Water turbine systems
- Control devices and servo drives
- Gates, protective devices, weir systems
- Screens, screen cleaning machines

**Need a unique product or system to meet a specific application?**

Parker offers turnkey solutions from idea through finished part.

Email us at [pgn.oem@parker.com](mailto:pgn.oem@parker.com).



Parker offers **Cylinder and Accumulator Rebuild Kits** that make maintenance and repair a snap. Contact your local Parker Power Gen Distributor Specialist.

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## Legacy Miller Fluid Power Hydraulic Cylinders

- Miller AV Series – Pneumatic Tie-Rod Cylinders (250 psi)
- Miller JV Series – Hydraulic Tie-Rod Cylinders (1,000 psi)
- Miller HV2 Series – Hydraulic Tie-Rod Cylinders (3,000 psi)

## Valve Actuator Pneumatic Cylinders

- VE Series – Pneumatic Cylinders

### Related Products

#### Industrial Cylinder Rebuild Kits

- Cushion/Gland Seal/Piston & Body Seal/Piston & Rod Seal/Seal

## Hydraulic Direct Drive Servo Actuator

- Parker TAIYO PQCS2 Series – Electric Hydraulic Servo Actuator



## Miller HV2 Series Heavy Duty Industrial Hydraulic Cylinders

Looking for a heavy duty hydraulic cylinder with maximum performance? Specify the Parker Miller HV2 Series.



These cylinders have been designed to maximize machine uptime. The standard bronze rod bushing (nodular iron is a no-cost option), case-hardened piston rod, high strength piston rod stud, and tie-rod material make HV2 the cylinder for demanding applications up to 3,000 psi.

### Features & Benefits

- Tie-rod construction for heavy duty service
- Nominal pressure of 3,000 psi (207 bar)
- Standard bore sizes from 1.5" through 20"
- Piston rod diameters from 0.625" through 10"
- 17 standard mounting styles

### Applications

- Fly ash silo – slide gate
- Fuel supply and residue disposal
- Steam and gas turbine systems
- Steam generators
- Steam, water, and gas circuits
- Superchargers and compressors
- Grinding mills
- Biomass and waste incineration plants
- Water turbine systems
- Control devices and servo drives
- Gates, protective devices, weir systems
- Screens, screen cleaning machines

## VE Series Pneumatic Tie-Rod Cylinders

Providing the power generation industry with a durable, yet cost-effective solution for knife gate valve actuation, our VE Series Cylinders feature a removable rod bushing for easy rod seal service.



### Features & Benefits

- Externally removable “jewel” rod gland assembly incorporates a primary and secondary seal to assure leak-free service and longevity; secondary seal acts as a rod wiper to prevent cylinder contamination
- Case hardened, carbon steel piston rod assemblies are hard chrome plated and polished to a 10 RMS surface finish
- Wear compensating lip seals throughout the rod gland and piston assembly assure leak-free operation and optimal performance
- Tie-rods are high strength, 100,000 psi minimum yield material
- Align-A-Groove design provides a 3/16" wide, machined surface at each end of the cylinder body, assuring tube-to-head alignment and leak-free operation

### Applications

- Knife gate, slurry, globe, and butterfly valve control
- Pulverizer swing valve
- Soot blower, superchargers, and compressors
- Gas turbine bleed air
- Condensate make-up
- Fuel supply and residue disposal
- Steam and gas turbine systems and generators
- Steam, water, and gas circuits
- Control devices and servo drives
- Gates, protective devices, weir systems

## Parker TAIYO PQCS2 Series Electric Hydraulic Servo Actuator

Parker TAIYO has designed an innovative, intelligent “direct-drive” hydraulic servo unit that needs no control valve or piping. The unit includes a patented cylinder equipped with load and length-measuring sensors.



### Features & Benefits

- Compact, turnkey design – shipped with integrated hydraulic pump, actuator, controller, tank filled with operating oil, and other components all fine-tuned for servo control
- No control valve needed – employs a two-way discharge hydraulic pump, which can change discharging directions, virtually working as a directional control valve
- Eliminated piping – servo directly drives the actuator by changing the hydraulic pump’s discharge direction, amount and pressure, eliminating the piping connections to the pump and actuator
- Minimal power consumption – low hydraulic temperature helps reduce energy consumption

### Applications

- Actuator for steam control valve
- Actuator for governor (hydroelectric plants)
- Actuator for compressor or HPU

## Gear Pumps & Motors

### Gear Pumps

- PGG Series – Aluminum High Speed/Low Torque Gerotor Pumps
- PGP/PGM 500 Series – Heavy Duty Aluminum External Gear Pumps/Motors (275 bar/4,000 psi)
- PGP/PGM 600 Series – Heavy Duty Cast Iron, External Gear Pumps/Motors (275 bar/4,000 psi)

### Gear Motors

- MGG Series – Aluminum High Speed/Low Torque Gerotor Motors

## Hydraulic Pumps & Motors

### Low Speed, High Torque Hydraulic Motors

- LSHT Torqmotors Series

### Bent Axis Pumps

- **Fixed Displacement Pumps**
  - F11 Series – Heavy Duty Motor/Pumps (6,000 psi)
  - F12 Series – Heavy Duty Motor/Pumps (7,000 psi)
- **Variable Displacement Pumps**
  - V12 Series – Heavy Duty Motor/Pumps
  - V14 Series – Heavy Duty Motor/Pumps

### PGP/PGM 600 Series Gear Pumps/Motors – Cast Iron Housing

Parker's line of PGP/PGM 600 Series Fixed Displacement Heavy Duty Gear Pumps offers a durable cast iron housing for use in industrial environments. Proven over many years, the 600 Series pumps and motors offer a patented, interlocking body design with high power through-drive capability.



#### Features & Benefits

- Displacements available from 7 cc to 80 cc
- Exceptionally quiet operation with a "stealth" pump option
- Continuous operating pressures up to 4,000 psi (275 bar), depending on model
- Pressure balanced thrust plate design for high efficiency
- Common inlets available for multiple section pumps

#### Applications

- Heavy duty conveyor systems
- Lift oil, jacking oil systems
- Fuel or burner injection
- Chemical injection system for emission reduction
- Lubrication systems for forced draft, induced draft, cooling tower gearboxes

Did you know?

### CUSTOM ENGINEERED SOLUTIONS

Parker can tailor these products to your specific needs:

#### • Lift Oil Pump Assemblies

We provide fully assembled and pre-tested Lift Oil Assemblies custom designed to customer requirements. The assemblies include pump and motor units supplied with custom valve manifolds, integrated filtration, and pressure and flow control.



#### • Hydraulic Control Units for Diverter Dampers

Our custom designed Hydraulic Drive Systems for Diverter Damper applications can include a turnkey solution with project management, commissioning, and on-site service. The customized control unit includes an HPU, cylinders, valves, tubing, connectors and hoses, an inclusive control cabinet with PLC control (redundant), and a double security circuit with accumulator system.



Contact your local Parker Power Gen Distributor Specialist.

#### More Parker Power!

Not every product that Parker offers for the Power Gen industry is in this Resource Guide.

[Click here to contact a Parker Specialist for more solutions.](#)



## Hydraulic Piston Pumps

- Denison Gold Cup Series – P6, P7, P8 Axial Piston Pumps
- P1/PD Series – Medium Pressure Axial Piston Pumps
- Premier Series – High Pressure, High Speed, Variable Displacement Pumps
- PVplus Series – High Pressure Cast Iron Pumps

## Radial Piston Pumps

- Calzoni MR-MRE Series – Fixed Displacement Pumps
- Calzoni MRV-MRVE Series – Variable Displacement Pumps

## Denison Gold Cup P6-P7-P8 Series Axial Piston Pumps (Open & Closed Circuits)

Our Gold Cup Axial Variable Displacement Piston Pumps offer a proprietary “barrel-bearing” design that enables them to run in stable conditions at high speeds and pressures. Robust and reliable construction results in longer life cycle in severe duty applications. All Gold Cup pumps and motors have ATEX approval. Rated to 5,000 psi (350 bar) continuous pressure and duty, Gold Cup pumps can run in many open circuit applications and offer digital flow/pressure capability for the most difficult control requirements.



### Features & Benefits

- Modular controls can be configured to meet any system requirements
- One piece stroking vane/cam means no lost motion, zero backlash, better control, and no linkages to wear out
- Quick-change valve block – easy to service/replace
- Controls can be located on either side of pump or motor for design flexibility
- Dampened low inertia rocker cam – more stable, quieter, and faster than other designs
- Exclusive zero-backlash rotary servo design for lifetime accuracy
- Conforms to SAE mounting standards

### Applications

- Turbine starter/turbine electrohydraulic controls (EHC)
- Turbine governor jacking, lube and seal systems
- Coal bunker and feed systems
- Hydraulic test stands

## PVplus Series High Pressure Piston Pumps

Fast response, service-friendly, compact pumps for heavy duty applications with operating pressures up to 5,000 psi (350 bar). “Ripple Chamber” technology lowers pressure pulsations for low flow “ripple,” reducing system noise for quiet operation.



### Features & Benefits

- High strength cast iron housing
- Large control piston for fast response
- Through-shaft option with 100% through-torque capability
- Modular controls for field convertibility
- High self-priming speed and cold start capability
- Multiple pressure control
- Fractional and metric mounting features
- Reduced flow and pressure ripples

### Applications

- Lube oil skids
- Turbine electrohydraulic controls (EHC)
- Pulverizer
- HPU
- Conveyor belt tensioner

## Calzoni MR-MRE Small Displacement Radial Piston Motors

The outstanding performance of this low torque, high speed, robust motor is the result of our original, patented design. The Parker Calzoni Motor is produced in sizes from 32 cc up to 23,034 cc per revolution. The efficiency of our design allows for a smaller installed product for the same displacement versus that of our competitors. Since there are no internal connecting rods, we offer greatly reduced frictional drag as well as the greatest thrust loading.



### Features & Benefits

- 5-piston design
- Wide range of displacements
- Starting torque from 90-95% theoretical
- Total efficiency up to 96%
- Resistance to thermal shocks with  $\Delta T = 176^\circ F$
- Static balance on the shaft to extend life

### Applications

- High pressure steam valves
- Coal handling equipment – conveyors and pulverizers
- Barge unloaders
- ID and FD fans
- Dust collectors

## Specialty Pumps

- Republic Hydraulic Hand Pumps (single-acting or double-acting)

## Vane Pumps & Motors

- M5AS/M5ASF Vane Series – Fixed Displacement Heavy Duty Fan Motors
- PVS Series – Variable Displacement Vane Pumps
- Denison T7-T67-T6C Series – Single, Double, Triple Fixed Displacement Vane Pumps

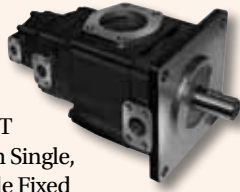
## Hydraulic Power Units (HPUs)

- D-Pak Series – Fixed Displacement (0.9 - 2.7 GPM)
- H-Pak Series – Fixed Displacement (0.9 - 6.3 GPM)
- V-Pak Series – Variable Displacement (2.0 - 36.0 GPM)



## Denison T Series Fixed Displacement Vane Pumps

The highest performance pump of its kind, Parker Denison's T Series is offered in Single, Double, and Triple Fixed Displacement Vane models. These high pressure, high speed pumps were designed to accommodate high flows within a small envelope. Their balanced design and double-lip vane technology are key features in providing contamination resistance and reliability.



### Features & Benefits

- Mobile cartridge designed for cold start-ups
- Wide range of displacements
- Low noise promotes machine operator safety
- Speed range from 400 to 2,800 RPM
- Double shaft seal option allows direct mounting to gearboxes

### Applications

- Damper systems
- Fan drive motors
- Lift oil pumps
- Hydraulic control system/turning gear
- Fuel pumps

## Hydraulic Power Units (HPUs)

### D-Pak / H-Pak / V-Pak / V-Pak Low Profile

These space-saving, vertical style HPUs are available with gear or piston pumps for quieter, leak-free operation, protecting pumps from contamination and extending pump life. Standard Parker filtration on each unit helps ensure a long service life.



### Features & Benefits

- Vertical design saves floor space
- Submerged pump for quiet operation and elimination of potential leak point
- Spare return ports
- Precision pump mounting adapters ensure proper alignment and operation
- Suction strainer on inlet protects pump from contamination
- Glycerine-filled pressure gauge with shut-off and oil level gauge with thermometer for improved diagnostics
- Standard safety relief valve to protect pump from system shock
- Breather/fill cap to control ingress of contaminants

### Applications

- Hydraulic oil supply for control systems
- Hydraulically-actuated valves
- Boiler dampers
- Cooling water discharge control
- Oil handling and transfer equipment
- Condensate, bled steam, and DA actuators
- Coal bunker and feed systems
- Soot blowers

## Hydraulic Cartridge Valves

### Screw-In Element Valves (DIN Style)

- Logic Elements – Poppet or Spool Type Valves

### Threaded Cartridge Valves

- Check Valves – Poppet, Ball, or Pilot Operated
- Counter Balance Valves
- Directional Control Valves – Pilot Operated Spool
- Flow Control Valves – Needle, Pressure Compensated, or Flow Divider
- Pressure Control (Relief) Valves – Direct-Acting or Pilot Operated
- Proportional Valves – Relief or Flow Control
- Shuttle Valves – Cartridge or Spool
- Solenoid Valves – Poppet or Spool

## Threaded Cartridge Valves continued

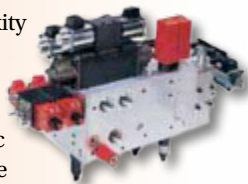
Related Products

### Replacement Coils

- Legacy – DC Coils
- Super Coil – IP69 Rated Coils

## Hydraulic Manifold Blocks

Reduce the complexity and size of your fluid control system with our Integrated Hydraulic Circuits (IHC). These standard and custom Manifold Blocks allow for the installation of cartridge valves, eliminating potential leak paths, as well as reducing the size and weight when compared to conventional control components. Our offering ranges from single cartridge valve manifolds to integrated hydraulic circuit manifolds.



### Features & Benefits

- Rotary manifolds – for 360° operating capability
- Seven standard off-the-shelf sizes – enabling broad range of flow/pressure control
- Code 61/62 flange mounting
- Accepts wide range of Parker slip-in cartridge valves for all hydraulic requirements

### Applications

- Hydroelectric steam and gas turbine control valves
- Pulverizers
- Hydraulic controls – HPU
- Miscellaneous hydraulic control circuits
- ID/FD fans

## Bodies & Cavities

- Counter Balance Bodies
- Standard Line Bodies

## Manifolds & Blocks

- HIC Manifolds (Hydraulic Manifold Blocks)
- Unicoil – Standard Coils

## Super Coil IP69 Rated Coils

Parker's coil evolution has resulted in a threaded hydraulic cartridge valve coil that exceeds IP69K requirements. This coil's ability to operate with either a 50 Hz or 60 Hz electrical supply, waterproof construction, and Class N magnetic wire construction all contribute to its rugged performance. Endurance tested to extreme temperatures and water dunk test qualified, the Super Coil is also water spray and chemical solvent compatible.



### Features & Benefits

- Class N magnetic wire that provides longer life
- Exceeds IP69K class specifications
- Thermal Shock Dunk Test qualified
- External ribs result in larger coil surface area for better heat dissipation
- Salt spray and high pressure water spray test per ASTM B117
- Optional Deutsch molded connector or LS sealed lead wire assemblies

### Applications

- Cartridge valve coil replacement

## Hydraulic Valves

### Electrohydraulic Valves

#### Proportional Directional Control Throttle Valves

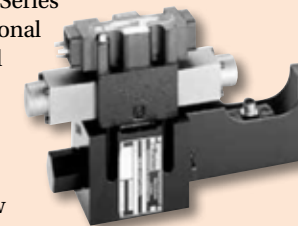
- D-1FP Series – Pilot Operated Servo (CETOP 5, 7, 8, 10)
- D-1FS Series – Pilot Operated Directional Control (CETOP 5, 7, 8, 10)
- D-1FW-ET Series – ATEX Direct-Operated Proportional Directional Control
- D-FH Series – Direct-Operated Servo (CETOP 3, 5)
- DF<sup>plus</sup>® Series – Servo Proportional DC Valve
- D-FX Series – Direct-Operated Proportional Directional (CETOP 3, 5)
- F5C Series – Proportional Throttle, Flange Mounted (ISO 6264)

#### Proportional Pressure Control Valves (Standard DIN/ISO Interface)

- 4VP01 Series – Proportional Pressure Relief (CETOP3)
- PRPM Series – Proportional Pilot Operated Relief (ISO 6264/CETOP 5)
- R4V & RV6 Series – Proportional Pilot Operated Relief (ISO 6264)
- R5A, R5P Series – SAE Flange Pressure Compensator for Flange Thrust Valves (ISO 6264)
- R5R-P2 Series – Proportional Pressure Reducing, Flange Mounted (ISO 6264)
- R5V-P2 Series – Proportional Pressure Relief, Flange Mounted (ISO 6264)

## D-1FS Proportional Directional Control Valves

The D-1FS Series of Proportional Directional Control Valves provides variable output flow in response to variable input commands. The high performance, two-stage valves are designed with a pilot operated solenoid and electronic spool position feedback. When used in conjunction with our AS20 driver, these valves offer control options such as electronic null adjustment, ramp control, velocity limiting, deadband elimination, and external, closed loop feedback.



### Features & Benefits

- Valves available in CETOP 5, 7, 8 and 10 sizes
- Characterized by high resolution flow control with accurate repeatability and dynamic performance
- Flow rates from 12 to 264 GPM

### Applications

- Precise, reproducible control of actuator speed
- Cylinder/actuator control for actuation of gas or steam control valves
- Fan dampers (hydraulic actuator)
- Inlet guide vane actuator control

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## Proportional Pressure Control Valves (Standard DIN/ISO Interface) continued

- SPC Series – Sandwich Pressure Compensators for Proportional Directional Valves (CETOP 3, 5, 7, 8)
- VMY Series – Proportional Pressure Reducing (NG 6, 10)

## Servovalves

- BD15 Series – Manifold Mounted, Two-Stage Torque Motor
- DY Series – Two-Stage Torque Motor
- PH76 Series – ATEX Two-Stage
- SE Series – Two-Stage, Four-Way Flapper Nozzle

### Related Products:

- Compax 3F – Servo Drive Modules
- P1D00A-400 – E-Modules
- Servovalves, Electronics & Controllers



## Parker PH76 Series ATEX Two-Stage Servovalve

Built to survive tank port pressure spikes, Parker's high performance line of Two-Stage Servovalves is designed with a symmetrical flapper-nozzle pilot stage, implementing a double air gap dry torque motor. The output stage is a four-way, sliding spool with mechanical feedback that uses an exclusive "no ball glitch" design.



### Features & Benefits

- No ball glitch for accurate position feedback
- Tool steel construction of body and spool
- ATEX certification
- Meets ISO 10372 specifications
- Optional 5th port for external pilot

### Applications

- Control valve actuation packages (steam and gas turbines)
- Gate control valve actuation packages
- Shut-off valve for EHS

## Inline Mounted Hydraulic Valves Hydraulic Ball Valves

### • Low Pressure Ball Valves

- 500-CS Series – Two-Way Low Pressure Steel (2,000 psi)
- 50-SS Series – Two-Way Low Pressure Stainless Steel (2,000 psi)

### • High Pressure Ball Valves

- BV3H & BV4H Series – Three-Way & Four-Way High Pressure Steel (6,000 psi)
- BVHH Series – Two-Way High Pressure (10,000 psi)
- BVHP, BVAH & BVHS Series – Two-Way High Pressure Steel (6,000 psi)

## Hydraulic Check Valves

- 440/450 Series – High Pressure Inline Check Valves
- 580/590 Series – Swing Check Valves
- C & 6C Series – Standard Check Valves (Poppet Design)
- Colorflow® CLS Series – Inline Check Valves (Poppet Design)
- CP Series – Inline Pilot Operated Check Valves (Poppet Design)
- CV5 Series – Direct Operated Check Valves
- ICP Series – Pilot Operated Check Valves
- LT & LT-F Series – Line Check & Line Throttle Valves
- SPV/SPZ Series – Check Valve Screw-In Cartridge

## Colorflow® CLS Series Inline Poppet Style Check Valves



Parker's line of Colorflow® Poppet Style Check Valves offers enhanced reliability when compared to common ball style check valves, eliminating the wobble and erratic travel that can commonly occur. With improved sealing in demanding applications that experience shock and high velocity flow, choose Colorflow Check Valves for your critical applications.

### Features & Benefits

- Stainless steel poppet construction
- Free flow in one direction; positive check in the opposite direction
- Soft seal poppet for reliable shut-off
- Wide variety of port types and sizes
- 1/4" to 1-1/2" sizes available

### Applications

- Hydraulic power units
- Line rupture protection
- Guide vane controls
- Oil lube skids
- Hydraulic actuator packages

## Did you know?

### HERE'S A GREAT ALTERNATIVE TO TRADITIONAL SERVOVALVES IN HYDRAULIC CONTROL SYSTEMS

Our DFplus® Series Servo Proportional Valves with patented voice coil drive (VCD) offer greater efficiency and less downtime. Thanks to a shorter cycle time, DFplus Valves deliver higher machine output achieved through the highest dynamics. Plus our short delivery times mean no warehousing. Contact your local Parker Power Gen Distributor Specialist.

## Hydraulic Flow Control Valves

- 133, 135 & 143 Series – Brass Needle (Metering) Valves
- 154 Series – High Pressure Needle Valves
- 6611 Series – Flow Divider Valves
- Colorflow® F & 6F Series – Flow Control Valves (ISO 6149)
- FS Series – Flow Control Valves
- GFG2 Series – Flow Control Two-Way Valves
- MV & 6MV Series – ISO 6149 Metering Valves
- MVI 600S-V Series – Cartridge-Type Needle Valve
- N & 6N Series – ISO 6149 Needle Valves

## Hydraulic Plug Valves

- 300 Series – PTFE Plug Valves (Two-, Three-, Four-Way)
- 700 Series – Metal Plug Valves (Two-, Three-, Four-Way)

## Hydraulic Pressure Control Valves

- 620-649 Series – Direct-Acting Relief Valves
- PRS Series – Pressure Reducing Valves
- R5V Series – Pilot Operated Pressure Relief
- R6701 Series – Pilot Operated Relief Valves
- RCP Series – Pressure Relief Valves

## Colorflow® F and 6F Series Flow Control Valves



Colorflow® Flow Control Valves provide precise control of flow and shut-off in one direction, while automatically allowing full flow in the opposite direction. Exclusive, convenient “Colorflow” color band reference scale on the valve stem makes setting and re-setting quick and easy.

### Features & Benefits

- Meet ISO 6149 standards
- SAE, NPT, BSPT, BSPP and metric porting available
- Flow adjustment knob color-coded for setting repeatability
- Tamper-proof option available

### Applications

- Flow control applications with integral check valve
- Cylinder speed control
- Hydraulic systems with back-pressure requirements
- Main turbine manual overspeed test

## DIN Slip-in Cartridge Valves

- C Series – Two-Way Cartridge Cover Function Valves
- CE Series – Two-Way Cartridge Valves
- C101 Series – Two-Position, Two-Way Valves
- C1DB Series – Check Valves
- R-E Series – Manual Pressure Relief Valves
- R-SE Series – Manual Pressure Control Relief Valves
- RK & RB Series – Threaded Check Valves

## Hand Pump Valves

- Republic 910N/910R Series – Hydraulic Single and Double Acting Hand Pumps

## Need an Expert?

- [Click here to locate a Parker Power Generation Specialist near you.](#)

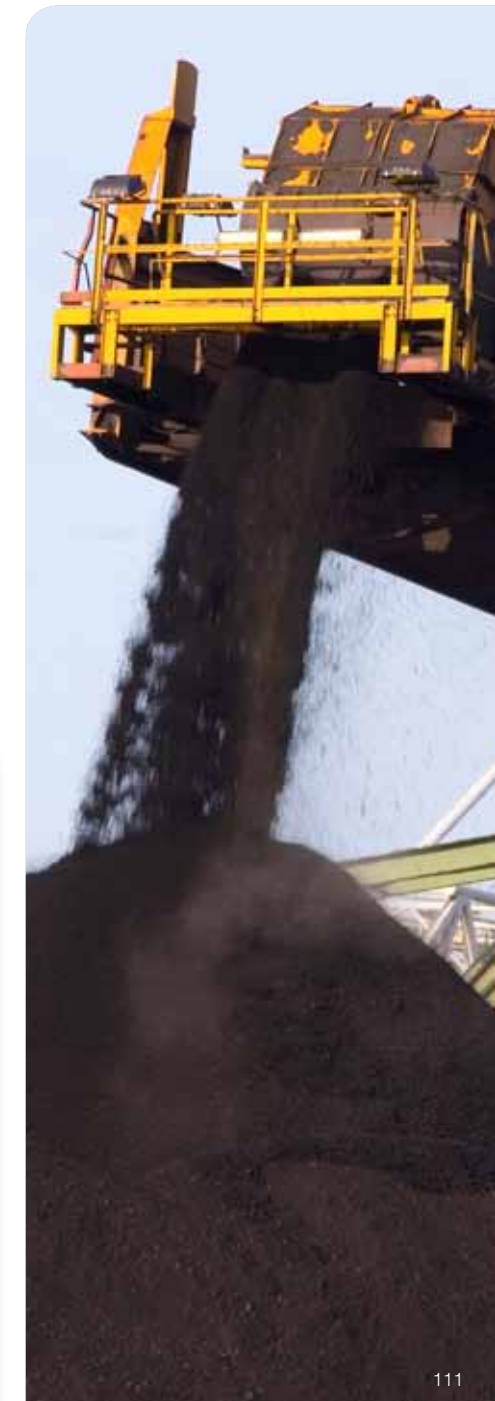


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## Manifold Mounted Hydraulic Valves

### • Directional Control Valves

- Exectrol Series – High Pressure Solenoid Operated (Two-Way & Four-Way)
- Lo-Torq Series – Manual Directional Control (Two-, Three- & Four-Way)
- D1V Series – NFPA D03/CETOP 3
- D3 Series – NFPA D05/CETOP 5
- D41 Series – NFPA D07/CETOP 7
- D61 Series – NFPA D08/CETOP 8
- D101 Series – NFPA D10/CETOP 10
- D5S Series – SAE Flange

### • Sandwich Valves

- CM Series – Check
- CPOM Series – Pilot Operated Check
- FM Series – Flow Control
- PRDM Series – Direct Operated, Pressure Reducing
- PRM Series – Pilot Operated Pressure Reducing
- RM Series – Relief
- ZDR Series – Pressure Reducing
- ZDV Series – Pressure Relief

## Republic Exectrol Series Directional Control Valves

Our line of high pressure, solenoid controlled, two-way and four-way control valves has been designed with a unique sliding metering plate/pressure balanced shear seal that provides very low leak rates and exceptional contamination resistance. Each movement of the slide wipes the sealing surfaces clean, resulting in long service life.



### Features & Benefits

- Leak rates of less than one drop per minute per pressure port (select valves)
- Low leakage performance over the life of the valve with shear-seal slide design
- Wide variety of operating pressures, flow paths, and fluid compatibility
- Highly resistant to silt locking and contamination

### Applications

- ID fans
- Fly ash
- Dam gate control systems
- Hydraulic actuators
- Boiler feed water (stop valves - nuclear)

## Custom Specialty Valves

- Gresen Air Purge Valves
- Gresen Fuel Distribution Valves
- Gresen Fuel Oil Splitter Valves
- Gresen Isolation Valves
- Gresen Liquid Fuel Flow Diverter Valves

## Subplates & Manifolds

- Subplate Mounted Manifold

## Accessories

- DS12/DS75 Series – Port Selector Valves
- GF Series – Pressure Snubber Valves
- GT Series – Gauge Isolator Valves
- MSGI Series – Multi-Station Gauge Isolator Valves
- WM Series – Pressure Gauge Selector Valves
- PSB Series – Electrohydraulic Pressure Switch



Did you know?

### CUSTOM ENGINEERED SOLUTIONS

- Parker has a complete line of **Hydraulic Turning Control Blocks** for gas turbine shaft turning.
- We offer **Custom Hydraulic Safety Blocks** as safety packages for stream valves.

Contact your local Parker Power Gen Distributor Specialist to learn more.

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From instrumentation valves, fittings, tubing, and manifolds to flow control systems, our instrumentation solutions solve problems in new ways for increased accuracy, improved productivity, and less risk. Plus many of our products comply with Pressure Equipment Directive (PED) quality standards, ASME B31.1 Power Piping Code, as well as enabling compliance with newly enacted fugitive emissions standards.

## Flow Control

### Mass Flow Meters

- Porter 100/200/3200 Series – Analog Controllers
- Porter 500 Series – Digital Controllers
- Porter 3600 MFM Series – Digital Controllers

### PTFE Flow Meters

- Veriflo FM-4 Series

### Variable Area Flow Meters

- **Metal Tube Rotameters**
  - Porter P710 Series
  - Porter P750 Series
  - Porter P800 Series
- **Purge Meters**
  - Porter P100 Series – Metal Tube Purge Meter
- **Instrumentation (IPA) Flow Controllers**
  - Veriflo LC223S Series – Gas or Liquid Flow Controllers
  - Veriflo SC423XL Series – Gas Flow Controllers

### Porter 3600 Series Digital Mass Flow Meters and Controllers

Parker's Porter brand of Mass Flow Meters/Controllers is specifically designed for severe duty industrial applications, handling a wide variety of gases. Both feature digital control electronics which enhance accuracy and repeatability.



#### Features & Benefits

- Certified for a wide variety of industry classifications, including hazardous environments
- Industry standard TURCK electrical connectors
- Multi-gas capability
- Modbus, Profibus, and DeviceNet communication

#### Applications

- Continuous on-stream analyzers
- Chemical (gas) flow measurement
- Corrosive/non-corrosive gas
- Cooling and circulating water
- Heat measurement of steam and saturated steam

### Mass Flow Controllers

- Porter 200/2200/3200 Series – Analog Intra-Flow Controllers
- Porter 600 Series – Digital Controllers
- Porter 3600 Series – Digital Severe Duty Controllers

### Porter 800 Series Metal Tube Flow Rotameters

Parker offers a broad range of metal tube type flow meters that are applicable for monitoring lube oil and coolant flows. With an industry standard installation height, as well as stainless steel construction of all wetted surfaces, these flow meters are compact and highly accurate.



#### Features & Benefits

- 250 mm face-to-face installation height, an industry standard
- Corrosion-resistant 316L stainless steel construction standard
- Ease of installation and interchange with other flow meters
- Options of 4-20mA output, HART communication, alarm contacts, intrinsically safe

#### Applications

- Liquid, gas, steam, or dry gas seal flow measurement in piping up to 6" in diameter
- Chemical injection feed systems
- Process water flow measurement
- Compressor air flow monitoring
- Slurries – lime, fly ash, and coal powder
- Flow measurements on fuel line
- DI water systems (boiler, feed water and steam generators)

### Instrumentation (IPA) Valves

- Veriflo FS190 Series – Excess Flow Shut-off Valves
- Veriflo NV17 Series – High Pressure Instrumentation Diaphragm Valves
- Veriflo NV70 Series – High Flow Instrumentation Diaphragm Valves
- Veriflo VR7 Series – Pressure Relief Valves

### Veriflo NV70 Series High Flow Instrumentation Valves

For high flow applications that demand positive shut-off, either via pneumatic or manual actuation, these high cycle valves are an economical choice. Corrosion-resistant bodies and high fatigue strength diaphragm material ensure contaminate-free flows.



#### Features & Benefits

- Internally threadless design prevents contamination of fluid stream
- Metal-to-metal seal to atmosphere
- Elgiloy® diaphragm for exceptional corrosion resistance

#### Applications

- Continuous emissions monitoring (CEMS)
- High-purity flow control
- Hydrogen delivery
- Analyzer sampling

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## Mass Flow Control Valves

- Porter 001/002/003 Series

## Metering Valves

- Porter HR Series – Valve Cartridges
- Porter HRCV Series – High Resolution Metering Valves

## PFA/PTFE Valves

- Partek Ball Valves
- Partek Check Valves
- Partek Diaphragm Valves (Manual)
- Partek Needle Valves
- Partek Relief Valves
- Partek Sampling Valves
- Partek StopCock Valves

## Thermoplastic Valves

- Partek PVC/CPVC True Union Ball Valves

## Ultra-High Purity (UHP) Valves

- Veriflo F9 Series – UHP Check Valves

## PFA Tube Fittings

- Partek Parflare Series
- Partek ParGrip Series
- Partek PFA Schedule 40 Tube Fittings

## Thermoplastic Fittings

- Partek PVC Schedule 40 Fittings
- Partek PVC/CPVC Schedule 80 Fittings

## Ultra-High Purity (UHP) Fittings

- Veriflo UltraSeal™ Series – UHP Fittings

## Partek PFA Fluoropolymer Tube Fittings

Our full line of Fluoropolymer Tube Fittings enables the simplified creation of a corrosion-/contamination-resistant plumbing system. Containment of corrosive liquids and gases, as well as complete transmission of emission byproducts, is possible with Parker's line of Parflare, ParGrip, Parbond, and Schedule 40 pipe connections.

### Features & Benefits

- Parflare flared tube connections minimize dead volume in unswept areas
- ParGrip tube connections can be assembled without any special tools
- Parbond weldable tube connections eliminate leaks
- Schedule 40 pipe connections simplify assembly
- Virgin fluoropolymer material for the ultimate in purity and corrosion resistance



### Applications

- Plumbing systems requiring the utmost in corrosion resistance
- Exhaust stream flow paths for continuous emission monitoring systems (CEMS)
- Chemical injection lines for emission reduction

## Partek PVC/CPVC Schedule 40 & 80 Fittings

An economical and long-lasting alternative to more exotic metal alloys, Parker Partek's PVC and CPVC thermoplastic pipe products are excellent in applications where corrosion resistance is required, but stainless steel piping will not work. PVC and CPVC piping products are available in a broad range of styles.



### Features & Benefits

- Schedule 80 PVC and CPVC products, and Schedule 40 PVC products
- Corrosion resistance
- Ease of installation
- Light-weight, maintenance-free, long-lasting

### Applications

- Liquid acid and alkali transport
- Chemical injection systems
- Emission reduction – FGD/SCR
- Wastewater treatment/process water filtration

## Changeover Systems

- Veriflo COSE Changeover System – Continuous Gas Delivery

## Instrumentation Cylinder Connections (Stainless Steel Compressed Gas Fittings)

- Veriflo CGA Connections
- Veriflo DISS Connections (Ultra High Integrity)

## ChangeOver System (COSE)

For dependable, efficient gas and fluid management, Parker's ChangeOver System (COSE) is the solution. The compact, turnkey module maintains continuous gas delivery from multiple sources, eliminating costly downtime. Specialty gas costs are also reduced by maximizing gas consumption.



### Features & Benefits

- Depleted gas cylinders can be changed out without disrupting gas flow
- Remote monitoring of cylinder banks using optional pressure switches reduces need for visual inspection by the operator
- Fully enclosed to protect internal components
- Removable side panels for field maintenance

### Applications

- Continuous on-stream analyzers
- Continuous feed of bottle gases for CEMS
- Back-up system for compressors, generators, and other plant air sources

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## Pressure Control Regulators

- **Back-Pressure Regulators**
  - Veriflo ABP1/ABP3 Series
  - Veriflo BPR50 Series – High Pressure
- **Dual Stage Regulators**
  - Veriflo 735 Series
  - Veriflo IR6000 Series
  - Veriflo IR6000W Series (High Pressure)
- **High Flow Regulators**
  - Veriflo HF 1200 Series
  - Veriflo HFR 9000 Series
  - Veriflo HFT 1200 Series
- **High Pressure Regulators**
  - Veriflo APR 66 Series (Pressure Reducing)
  - Veriflo HPR 800 Series
  - Veriflo XPR Series (Pressure Reducing)
- **Negative Pressure Regulators**
  - Veriflo NPR4100 Series
  - Veriflo NPR959 Series
- **Precision Instrument Regulators**
  - Porter 8310 Series
  - Porter 8311 Series
- **PTFE Pressure Regulators**
  - Veriflo BR-01 & BR-08 Series – PTFE Back-Pressure
  - Veriflo PR-01 & PR-08 Series – PTFE Pressure

## Dual Stage Pressure Regulators – IR6000 and 735 Series

The IR6000 line of dual stage gas pressure regulators is for general purpose industrial applications, while the 735 Series features tied diaphragms, ensuring positive shut-off. These dual stage regulators from Veriflo dramatically reduce downstream pressure changes as the supply pressure fluctuates.



### Features & Benefits

- 316L stainless steel
- 735 Series features tied diaphragms, ensuring positive shut-off of flow in case of a seat leak
- Elimination of threads in the wetted area for a cleaner flow path
- Metal-to-metal, body-to-diaphragm sealing for high leak integrity
- Up/down stops prevent diaphragm damage
- Welded option available for nuclear

### Applications

- Steam atomizing/steam pressure
- Chemical feed systems
- Water treatment and DI water systems
- Fugitive emissions
- Calibration (gas cylinders)



### • Single Stage Regulators

- Veriflo IR4000 Series
- Veriflo IR4000W Series (High Pressure)
- Veriflo IR4200 Series

### • Vaporizing Regulators

- Veriflo AVR3 Series – Steam Heated Vaporizing (Pressure Reducing)
- Veriflo AVR4 Series – Electrically Heated Vaporizing (Pressure Reducing)

## Single Stage Pressure Regulators – IR4000/IR4200 Series

Parker Veriflo's single stage pressure regulators meet a wide variety of industrial gas pressure regulations. With a broad range of flow rates, body constructions, porting options, and seal materials, we can build a regulator to meet your system requirements.



### Features & Benefits

- 316L stainless steel
- Hastelloy® C-22 diaphragms standard
- Close tolerances and tight alignment reduce hysteresis effect, enhancing pressure control
- Threadless design for clean, contamination-free flow path
- Metal-to-metal, diaphragm-to-body sealing for leak-free performance
- PEEK, Vespel®, and PCTFE seat materials
- Welded option available for nuclear

### Applications

- Continuous emission monitoring (CEMS)
- Compressed air/gas
- Seal gas
- Boiler layup/nitrogen systems
- Calibration – gas cylinders
- Analyzer sample systems
- Instrument calibration

## Process Control

### Compression Fittings

- A-LOK® Series – Double Ferrule Instrumentation Tube Fittings (up to 15,000 psi)
- CPI™ Series – Single Ferrule Instrumentation Tube Fittings

### A-LOK® Tube Fittings

A-LOK® Double Ferrule Fittings bring the Parker edge to the power generation industry. Positive, reliable connections with Parker A-LOK Fittings have been qualified by exhaustive tests and more than four decades of manufacturing experience, making A-LOK the industry standard for instrumentation grade tubing. Documented heat code traceability on readily available stainless steel A-LOK Fittings for nuclear and other critical applications.



#### Features & Benefits

- Industry standard for instrumentation grade double ferrule tube connections
- Silver-coated threads reduce galling
- Back ferrule with Suparcase® resists inter-granular corrosion for superior sealing, longer shelf life
- For use with a wide variety of tubing materials and tube wall thicknesses

#### Applications

- Plant instrumentation control racks
- Continuous emissions monitoring (CEMS)
- Steam blowdown lines
- Transmitter connections

[Click here](#) to get a grip on pressure, vibration, and corrosion.

- MPI™ Series – Medium Pressure Tube Fittings (up to 15,000 psi)
- Phastite® Series – Permanent Ferrule-less Fittings (non-welded; up to 20,000 psi)

### CPI™ Tube Fittings

Designed for leak-free tube connections in process, power, and instrumentation applications, Parker CPI™ Single Ferrule Fittings are manufactured to the highest quality standards and are available in a broad range of sizes, materials, and configurations. Documented heat code traceability on readily available stainless steel CPI Fittings for nuclear and other critical applications.



#### Features & Benefits

- Simple three-piece design; excellent for thermal cycling and heavy vibration applications
- Single ferrule system with Suparcase® reduces tube shear in high vibration environments
- Molybdenum disulfide coated nuts prevent galling and provide thread lubrication
- For use with a wide variety of tubing materials and tube wall thicknesses

#### Applications

- Instrumentation tubing connections
- Demanding applications where thermal cycling and/or vibration are present
- Steam blowdown lines
- Transmitter connections

### MPI™ Tube Fittings

Parker's MPI™ Fittings have been engineered to provide secure, tight, leak-resistant connections for power gen applications requiring operating pressures from 6,000 to 15,000 psi and temperatures up to 1,150°F (621°C). Proven double ferrule construction and consistent high levels of reliability result in less media loss and reduced maintenance.



#### Features & Benefits

- Reduce installation and rework time by 50% as compared to cone and thread connections
- Designed with thick-wall tubing for added strength
- Longer thread area for vibration resistance
- Molybdenum disulfide coated nuts prevent galling
- Supplied complete and ready to install with standard hand tools

#### Applications

- Supercritical coal plant boiler water control
- Heavy wall tubing connections
- Alternative to traditional cone and thread connections
- High pressure/high temperature water and steam applications
- Transmitter/gauge/relief valve connections

### Phastite® Tube Fittings (Non-Welded)

Revolutionary Phastite® tube connections from Parker provide an integrated alternative to welded connections and traditional high pressure fittings. Simply insert your cleaned and prepped tubing, then compress the integral collars to their stops. It's as simple as that. Assembly time required for heavy wall tubing is reduced, while costly welding and inspection are eliminated.



#### Features & Benefits

- Permanent, tamper-proof assemblies
- No loose parts – integral ferrules
- No threads, eliminating vibration-induced leaks
- Dramatic reduction in assembly time as compared to welded connections
- No heat-induced brittleness or corrosion reduction

#### Applications

- Heavy wall tubing connections
- Alternative to traditional cone and thread and welded connections
- High-pressure/high temperature steam applications
- Transmitter/gauge/relief valve connections
- Boiler water sampling lines

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## B Series Ball Valves

Manual, pneumatic, and electric actuated Parker B Series Ball Valves are designed to provide positive, leak-tight shut-off and control of fluids utilized in process and instrumentation applications. The two-way valves provide quick, 1/4-turn on/off control of media, while the three-way valves may be used as diverting or selecting valves. A broad selection of valve body, seat, and seal materials combine to deliver a wide range of temperatures and pressures.



**ANSI B31.1 COMPLIANT**

### Features & Benefits

- Two-way, three-way, or spring-loaded three-way selector designs
- Broadest temperature/pressure ranges: -65°F (18°C) to +450°F (232°C); up to 6,000 psi (414 bar)
- Lower inventory requirements by 60% through use of “one valve fits all”
- Widest variety of seats, seals, and port connections

### Applications

- Instrumentation lines subjected to ambient temperatures – permits the use of one valve in various applications, eliminating potential misapplication
- Sample transport lines
- High-pressure/temperature steam lines
- Hydraulic control circuits, lube oil skids, pneumatic systems, etc.
- Control valves (steam turbine)
- Water injection

## Pipe Fittings

- High Pressure 10k Pipe Fittings (10,000 psi)

## Instrumentation Valves

- **Ball & Plug Valves**
  - B Series – **ANSI B31.1 COMPLIANT** General Purpose Ball Valves
  - HB4 Series – High Pressure Ball Valves
  - Hi-Pro Series – **ANSI B31.1 COMPLIANT** High Pressure Ball Valves (20,000 psi)
  - MB Series – One-Piece Miniature Ball Valves
  - MBP Series – Medium Pressure Ball Valves
  - PR Series – 316 Stainless Steel Rotary Plug Valves
  - SB/SWB Series – Three-Piece Swing-out Ball Valves
  - SB/SWB8 Series – Three-Piece Swing-out Ball Valves (with PEEK seats & Grafoil seals)

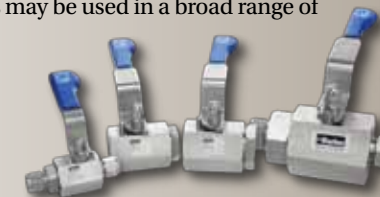


## Hi-Pro Ball Valves – ANSI B31.1 COMPLIANT

These high performance ball valves are of two-piece construction, reducing the number of potential leak paths, and offering up to 10,000 psig working pressure capability. Integral compression ends also help to eliminate leak-prone NPT threads. With various seat and seal materials available, these ball valves may be used in a broad range of difficult industrial applications.

### Features & Benefits

- PEEK and PTFE standard ball seat materials for bubble tight shut-off
- 316 stainless steel
- Two-piece construction results in leak path reduction
- Integral compression end connections available, eliminating leak-prone NPT threads
- Meet the requirements of ANSI B16.34
- 4:1 standard working pressure safety factor
- Bidirectional flow path



### Applications

- High pressure hydraulics
- Steam transport lines
- High pressure gas
- Hydraulic control circuits, lube oil circuits, pneumatic systems, etc.

## SB/SWB8 Series Three-piece Swing-out Ball Valves

With a center section that can swing out to replace seats, seals and the ball without major disruption to the piping system, our SB and SWB8 Ball Valves now offer PEEK seats and Grafoil® seals for higher temperature and pressure ratings for process and instrumentation applications. The free-floating ball design allows the valve to continue to seal even after the seats begin to wear. Plus an ISO-type actuator mounting design offers the option of electric and pneumatic actuation.

### Features & Benefits

- PEEK seats and packing improve the temperature range over that of the standard valve
- Grafoil® seals expand material compatibility options for the SWB8 valve
- Free-floating ball design for excellent seat wear and compensation
- Micro-finished ball provides reliable, positive seal
- Straight through flow design for minimum pressure drop



- ISO-type actuator mounting design offers electric and pneumatic actuation options

### Applications

- Electrohydraulic control (EHC)
- Generators
- Welded piping systems
- Process lines/high flow applications
- High pressure/temperature steam lines
- Hydraulic control circuits and lube oil circuits

## Instrumentation Valves continued

### • Check Valves

- C Series – General Purpose Check Valves
- CB/CBF Series – Dual Fuel Check Valves
- CF Series – Check/Filter Valves
- CO Series – High Performance O-ring Poppet Check Valves
- LC Series – Lift Check Valves
- MPC Series – Medium Pressure Check Valves

### Diaphragm Valves

- Nova Series – Economical general purpose valve
- NV55 Series – High flow valve

### Manifold Valves & Systems

- CCIMS – Close Coupled & Remote Mount Manifold System
- H Series – **ANSI B31.1 COMPLIANT** Three- and Five-Valve Manifolds
- H Series – Two-Valve Manifolds
- Hi-Check Series – Non-Return Valves

## CB/CBF Check Valves

Specifically designed to withstand the high temperatures and aggressive media of dual fuel turbines used in power generation, chemical processing, and oil and gas production, Parker CB Series Check Valves can significantly reduce or eliminate costly turbine shutdowns and maintenance caused by premature seat and seal failures. The unidirectional valve reduces the chance of coke deposit buildup when installed in fuel oil, purge air, or water lines connected to the combustion chamber.



### Features & Benefits

- High temperature sealing materials, including Teflon® coating
- Excellent, bubble-tight shut-off results in fewer stuck poppets and chattering valves
- No micro leakage to accelerate deposit formation and catastrophic failure
- Valve seats and seals withstand operating conditions in excess of 500°F (260°C)

### Applications

- Liquid fuel lines
- Combustion turbine water feed lines for purge or NO<sub>x</sub> reduction (water injection)
- Combustion turbine air purge lines
- Any fluid system exposed to high temperatures and process media coking

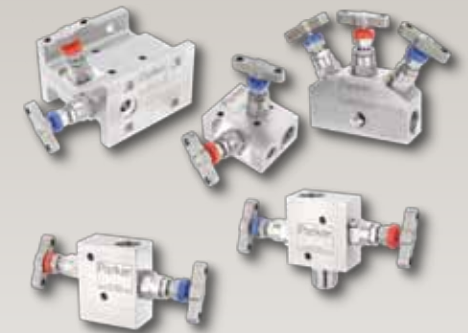


## H Series Manifolds – ANSI B31.1 COMPLIANT

Whether for pressure, flow or temperature measurements, Parker's line of stainless and carbon steel manifold products offer innovative threadless connections and proven valve designs for demanding industrial applications. From the most basic two-valve manifold block, to multiple valve distribution manifolds, Parker offers a model to fit your instrumentation needs.

### Features & Benefits

- 316 stainless steel
- 2, 3, 5, and multiple valve manifold designs in stainless steel and carbon steel
- Optional PT-Free™ threadless connection, for the elimination of NPT threads
- ASME Class 2500
- Graphite packed for high temperature service
- Patented Tru-Lok® safety bonnet locking device



### Applications

- Differential pressure transmitter mounting
- Pressure gauge mounting
- Steam blowdown lines
- Process instrumentation

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## Manifold Valves & Systems

continued

- Monoflange Series – **ANSI B31.1 COMPLIANT** Double Block & Bleed Manifolds – FEMF Series for Ultra-low Class A Emissions
- Pro-Bloc® Series – Double Block & Bleed Flanged Valves & Manifolds
- R-Max Series – Stream Switching System

## Metering Valves

- HR Series – Shut-off Capability
- N Series – General Purpose and High Flow Valve

## Needle Valves

- H Series – **ANSI B31.1 COMPLIANT** Needle Valves
- Hi-Pro Series – **ANSI B31.1 COMPLIANT** High Pressure Needle Valves
- NV/HNV Series – Globe Style Bar Stock Needle Valves
- U Series – **ANSI B31.1 COMPLIANT** Union Bonnet Needle Valves
- V Series – Integral Bonnet Valves (5,000 psi)

### Double Block and Bleed Monoflange Manifolds – ANSI B31.1 COMPLIANT

Parker now offers a full range of double block and bleed flanged products with fugitive emission options. These products meet Class 'A' or Class 'B' levels of the ISO 15848 standard for fugitive emissions. They also meet ANSI/ASME B16-34, B1.20.1, and B16.5 codes, as well as BS6755 PART 2/API 607 for fire safety.

The Monoflange manifold range is designed to replace conventional, multiple-valve installations that currently interface with pressure measuring systems. By combining primary and secondary valves into one compact manifold, the number of leak paths is significantly reduced and the system mass is lowered, offsetting the stresses from loading and vibration. This not only improves installation and operational safety factors, it lowers installation cost.



#### Features & Benefits

- Up to 60% reduction in leak paths through integral valve mounting for improved safety
- Less susceptibility to vibration
- Installation and component costs reduced by up to 80%
- Weight reduced by up to 85%
- One-piece, grain flow controlled, forged body for strength
- Incorporates standard "H" Series needle valve technology
- State-of-the-art outside screw and yoke (OS&Y) design
- Meets ISO 15848, Class A standard for fugitive emission requirements
- ANSI B16.5, 150 to 2,500 flange class

#### Applications

- Differential pressure transmitter mounting
- Pressure gauge mounting
- Steam blowdown lines
- Process instrumentation

### H Series Needle Valves – ANSI B31.1 COMPLIANT

Specifically designed and tested for ANSI B31.1 compliance, these H Series Valves can be used for a wide variety of flow controls. The non-rotating stem tip and metal-to-metal sealing provide confidence with bubble-tight shut-off.



#### Features & Benefits

- Tru-Lok® safety bonnet locking device prevents accidental stem removal
- Graphite packing for high temperature service
- Blowout-proof stem

#### Applications

- Instrument lines
- Steam lines
- Transmitter lines
- Flow control

### U-Series Union Bonnet Needle Valves



**ANSI B31.1 COMPLIANT**

Our Union Bonnet Valves have been specifically engineered to meet the severe service requirements of BEP power applications. With sizes through 1", these U-Series Needle Valves are pressure-rated at up to 6,000 psi (414 bar), and temperature-rated from -65°F to 1200°F (-54°C to 649°C) with Grafoil® packing and a high temperature option.

#### Features & Benefits

- Provide a high integrity seal under severe service
- Packing below power threads protects and isolates thread lubricants from the media
- Stem tip options prevent wire draw in high pressure steam applications
- 316 stainless steel

#### Applications

- Steam blowdown lines
- High pressure/high temperature applications
- Severe duty needle valve applications
- Flow control
- Boiler water sampling systems

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## Hand Valves

All Parker Hand Valves are **ANSI B31.1 COMPLIANT**

- FB Series – Bellows Valves (6,000 psi) – **ANSI B31.1 COMPLIANT**
- GV/HGV Series – Multi-Port Gauge Valves
- MPN – Medium Pressure Needle Valves – **ANSI B31.1 COMPLIANT**
- PV/HRPV Series – Rising Stem Plug Valves – **ANSI B31.1 COMPLIANT**
- SN6 Series – Integral Bonnet Valves (6,000 psi) – **ANSI B31.1 COMPLIANT**

- VG/HVG Series – Single Port Gauge Valves (with vent) – **ANSI B31.1 COMPLIANT**
- YV Series – Outside Screw & Yoke Globe Pattern Needle Valves – **ANSI B31.1 COMPLIANT**

## Purge Valves

- BV Series – Bleed/Purge Valves
- PG Series – Bleed, Purge or Drain Valves



## Snap-Trap® Tube Clamp Systems

Choosing the best possible components for a given application or environment can greatly control corrosion, not to mention the hazards and costs associated with it. Parker's Snap-Trap® is an innovative clamp designed to help customers defend against corrosion while radically simplifying the installation and maintenance of instrumentation tubing. Minimal contact points make Snap-Trap clamps a much better solution for avoiding crevice corrosion between the tubing and support system. When paired with Parker 6Mo Tubing and Fittings (both very resilient to uniform and pitting corrosion), you'll realize far greater confidence in your long-term corrosion control efforts.

Snap-Trap's unique one-piece design allows quick and easy fitting to cable trays, brackets, and angle iron alike. The clamp will fit slotted cable trays with various dimensions and can be mounted to any other design of trays with the aid of brackets.

## Features & Benefits

- Salt spray tested with Parker 6Mo Tubing per ASTM B-117/ISO 9227
- Erected without using traditional tools – no slippage of spanners on nut or bolt hexagons
- Available in 5 sizes covering both imperial and metric tubing
- Significant reduction in installation time (less than two minutes)
- No bolts to be fastened to the ladder, tray, etc.; no additional spare parts to be ordered

- Designed by an offshore contractor, with over one million installed worldwide
- Complies fully to NORSOK standard Z-CR-010
- Brackets, cable trays, keys, and accessories available

## Applications

- Water treatment systems
- Gauge clusters
- Hydrogen cooling (generators)
- Instrument air lines and panels

## Relief Valves

- HRPV Series – **PED-APPROVED** Relief Valves
- LPRA Series – Medium Pressure Relief Valves
- MPR Series – Relief Valves
- RH4 Series – High Pressure Relief Valves
- RL4 Series – Relief Valves

## Tubing (Fractional/Metric)

- 316/316L Stainless Steel Instrumentation Tubing

## Instrumentation Filters

- F Series – Inline Type Filters
- FT Series – Tee Type Filters
- MPF Series – Sintered Stainless Steel Filters

## Did you know?

Parker offers standard and custom tubing in several materials, including **316/316L, 304/304L, 6Mo, 321, SAF 2507, 625, 825, and Hastelloy C276**. Contact your local Parker Power Gen Distributor Specialist to learn more.

## 316/316L and 6Mo Stainless Steel Instrumentation Tubing

For stainless steel tubing in harsh process control environments, the safety, integrity, and reliability of the tubing are critical. By partnering with only the best tubing suppliers, Parker is able to offer quality-assured domestic (P1) and non-domestic (P2) 316/316L stainless steel tubing that meets Parker performance standards.



## Exotic materials

Our welded or seamless instrumentation tubing is available in 316/316L stainless steel, as well as a range of the most commonly used exotic alloys. These include 304/304L, 6Mo, 321, SAF 2507, 625, 825, and Hastelloy C276. This assures corrosion-free performance in specific applications, including media, pressure, temperature, and environment.

## Features & Benefits

- Controlled and consistent quality to provide easy welding
- Plugged ends provide protection during transit and from environmental contamination
- Strictly controlled ovality, concentricity, and close tolerances
- Meets ASME, ISO 9001, QS-9000, PED 97/23/EC, JIS, TUV, and LRQA requirements for tubing

## Applications

- Instrument lines for pressure, flow, and temperature monitoring
- Sample transport lines for chemical injection or process measurement
- Fuel, gas, or steam transport lines
- Hydraulic control circuits, lube oil circuits, pneumatic systems, etc.
- Feed water tubes/condenser tubes/baler tubes

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## Thermowells, Probes & Sensors

- 21 Series – Thermowells
- 22 Series – Protection Tube
- 23 Series – Sample Probes
- Thermocouples – Temperature Sensor Assemblies
- TR10-B Series – ATEX Resistance Thermometers

## Specialty Products

- Condensate Pots
- Diaphragm Seals
- Gauge Snubbers
- Pressure Gauges
- Sample Valves
- SC Series – Stainless Steel Sample Cylinders

## Adapters (Pipe & Tube)

- ANSI Flanges
- ANSI Flange Adapters
- FC Series – Flange-to-Compression Connectors
- ISO Conversion Fittings (Pipe)
- NPT Pipe Thread Fittings
- Pipe Adapters – BSPP, BSPT & NPT threads
- WeldLok™ Series – Tube Socket Weld (Welded) Fittings
- X44 – Port Adapters

## Equipment

- Deburring Tool (stainless steel)
- Tube Cutter (stainless steel)

## 21 Series Thermowells

Thermowells are recommended for temperature measurement instruments in process systems where pressure and velocity, or viscous, abrasive, and corrosive materials are present individually or in combination. A properly selected thermowell will protect the temperature instrument from damage by the process media. Parker's Texas Thermowell 21 Series is backed by ISO 9001:2008 certification and its products are among the most popular thermowells in the industry today.



### Features & Benefits

- Available in virtually any material
- Bodies machined from bar stock; mill standard +0.000" to -1/32"
- Flange mounts welded to the thermowell body
- Serial number and material etched on each thermowell; custom tagging available

### Applications

- Slurry/chemical injection – emission control
- Steam
- Cooling water monitoring
- Stack emissions monitoring
- Natural gas supply lines

## Thermocouples (Thermowell Sensor Assemblies)

Parker's Texas Thermowell division has long been the leader in the design and manufacture of thermowells used in power generation and nuclear applications. Building on that experience in the temperature field, we now offer a line of standard sensor assemblies coupled to our thermowells. These assemblies consist of a head, spring fitting or union nipple, thermocouple or RTD (resistance temperature detector), and the thermowell.



### Features & Benefits

- Thermowells available in threaded, flanged, VanStone, socket weld, weld-in, and sanitary styles in other hard-to-find materials beyond stainless steel; largest inventory of flange and bar in stock
- Thermocouples available in types J, K, T, and E; more durable than RTDs for high vibration and shock applications
- RTDs use either wire wound or thin film elements with a reference resistance of 100 ohms at 32°F (0°C); superior accuracy and repeatability over thermocouples
- Connection heads available in cast iron, aluminum, or 316 stainless steel; meet NEMA 4X requirements and provide a clean, protected area for a terminal block or transmitter
- Fittings can be spring-loaded or nipple union nipple in carbon or stainless steel

### Applications

- Boiler tube/HRSG temperature monitoring
- Heat trace monitoring
- Ash hopper heater control
- Feed water systems
- Turbine exhaust gas

## Need an Expert?

[Click here to locate a Parker Power Generation Specialist near you.](#)

Our technically advanced sealing devices and materials keep pace with the tight tolerances, higher temperatures and more aggressive chemistries found in the modern machine. With experience and innovation built right in, our products can fit virtually any sealing and shielding application you can imagine.

## Seals

### Fastener Seals

- Lock-O-Seal™ – Sealing for Tube Fittings
- Stat-O-Seal® – Fractional & Metric
- Thredseal® –

### Flange Gasket Seals

- Fas-N-Seal – AS27194 – AS27198 Plate Flange Seals
- Gask-O-Seal – Volume/Void Flange Seals
- Integral Seal – Edge Bonded Seals
- Pipe Flange Gask-O-Seal

### Fluid Power Seals

- CQ Profile – Bidirectional Piston Seal
- Park-O-Pak – Metric Rod & Piston Seals
- PolyPak® – Rod & Piston Seals
- Resilon® – High Temperature O-ring & Head Seals
- S-Seal Profile – High Temperature/High Pressure Rod & Piston Seals
- U-Ring Series – 8400/8500

### Gask-O-Seal – Pipe Flange Seals

The Parker Gask-O-Seal is a simple, uniquely designed elastomeric element molded directly into grooves to produce an integrated sealing solution for a virtually endless array of challenging static face type applications. The seal is designed so that the elastomer is deformed against the faying surfaces, affecting the seal by the inherent “memory” or resiliency of the elastomer as it tries to return to its original molded shape.



#### Features & Benefits

- ANSI B16.5 flange sealing solution
- Accommodates 150 to 250 lb flanges
- Provides the most optimum setting for the fully compressed seal element during assembly; no over-fill and no under-fill
- Extremely low permeability rate in vacuum and other gaseous applications

#### Applications

- Flange seals
- Diesel gen sets – fuel, lubrication, and air lines
- Access covers, manifolds, and manways
- Oil reserve lid seals
- Pressure vessel covering seals

### Metal Seals

- Metal E-Seal (Small <10”) Seals
- Metal E-Seal (Large >30”) Seals
- Metal C-ring Axial Seals
- Metal C-ring Seals
- Metal O-ring Seals

### Metal E-rings

Optimized one-piece construction makes Parker’s Metal E-rings the ideal choice for applications requiring high compliance and low cost. The seal has a fully elastic working envelope for consistent performance throughout many compression/extension cycles with a defined fatigue life.



#### Features & Benefits

- Many custom cross sections available
- Radius footprint area protects mating surfaces
- Available in a choice of high strength/high temperature nickel and cobalt alloys
- Available with HVOF (High Velocity Oxygen Flame) anti-wear coating
- Electro-deposited, anti-wear coatings

#### Applications

- Turbine engine bleed air ducting joints and turbine engine cases
- Multi-convolution E-rings available for very high deflection applications
- Resonant frequency of E-ring may be customized to avoid destructive resonance in high vibration applications
- Available in standard sizes to fit all AS1895 flanges

### Did you know?

### SEALING APPLICATION FOR HIGH TEMPERATURE, HIGH SHOCK LOAD ENVIRONMENTS?

Think **Resilon™** high performance polyurethane. The temperature resistance, compression set resistance, and rebound/resilience provide major advantages over other urethane formulations.

Now available in standard O-ring sizes, the high extrusion resistance of Resilon 4300 eliminates the need for a back-up in many hydraulic applications, simplifying installation and reducing groove width.

Resilon polyurethane’s unmatched temperature rating makes it suitable for applications where other urethanes fail. Plus Resilon O-rings are much less prone to spiral failure and installation damage compared to rubber O-rings.

Contact your local Parker Power Gen Distributor Specialist to learn more.

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## Spring Energized Metal C-ring

Although similar to Parker's Metal C-ring, the Spring Energized Metal C-ring is able to sustain higher loads for use with rougher mating surfaces. Numerous plating options, materials, and sizes to meet high pressures of up to 38,000 psi. Corrosion and fatigue resistant.



### Features & Benefits

- Lowest leak rate
- Internal spring provides high pressure capabilities
- All plating options available
- Uses jacket forces, spring forces, and hydrostatic forces additively to increase sealing forces at higher pressures when used with external pressurization
- Circular, racetrack, and other custom shapes available

### Applications

- Oil and hydraulic start systems
- Gas turbine fuel systems
- Heat exchangers
- Steam compressor and turbine casings seals
- Valve seats
- Piping and flanges
- Nuclear waste container casks

## Metal Seals continued

- Metal Spring Energized C-ring Seals
- Turbine Casing Seals
- Vane Seals (Cloth Seal Alternative)

## O-ring Seals

### • O-ring Elastomer Seals

- Butyl (IIR) Rubber Seals
- Ethylene Propylene (EPDM) Seals **M**
- HiFluor® – Fluorocarbon (FKM) Seals **M**
- Hydrogenated Nitrile (HNBR) Seals
- Nitrile (Buna-N, NBR) Seals
- Neoprene (NR) Seals
- Ultra – Perfluoroelastomer (FFKM) Seals **M**
- Silicone (VMQ, PVMQ) Rubber Seals
- Viton® – Fluoroelastomer (FKM) Seals

### Did you know?

**FlexiCase™** is a metal-cased rotary lip seal suitable for applications

where elastomeric lip seals fail and mechanical seals are too costly. With greater chemical compatibility, wider temperature ranges, higher pressure capabilities and longer life than elastomeric lip seals, they are an excellent solution for the following applications:

- Air compressors
- Hydraulic gear pumps and motors
- Gas turbines
- Blowers
- Gearboxes
- Scavenge pump lines and sump engines

Contact your local Parker Power Gen Distributor Specialist.

## Ethylene Propylene (EPDM) O-rings **M**

Ethylene Propylene (EPDM) O-rings and seals are designed for exposure in nuclear/steam/water applications. Parker O-ring compounds are formulated to meet the most stringent industry standards and perform in a wide range of power plant applications.

### Features & Benefits

- Chloramine-resistant formulation
- Broadest selection of elastomer formulations to solve application problems
- Application engineers available for material selection and problem solving
- Large authorized distribution network for immediate availability

### Applications

- Wastewater treatment
- Turbine steam generator connections
- Power transmission
- Coolant pumps/filter units
- Heat exchangers, circulating water pumps, and valves
- Boiler feed pumps, fans, motors, and gearboxes
- Nuclear – high radiation exposure
- CNG fuel storage
- Air pollution control units

## Ultra O-Rings **M**

### FFKM O-Rings and Seals Offer Superior Sealing in Critical Environments

As the leader in cutting edge elastomer technology, Parker's Perfluorinated (FFKM) Elastomer O-rings and Seals deserve your attention. Designed for high temperature steam and water applications, they offer exceptional sealing in the most extreme, critical environments of energy exploration and production, providing the broadest chemical resistance to aggressive fluids and a temperature range up to 608° (320°C).

Parker's FF580-75 compound withstands long-term exposure to heat, maintaining high sealing force retention, low compression set, and outstanding mechanical properties. It also provides excellent thermal stability, reduces maintenance costs, and improves cost efficiency, safety, and reliability.

### Features & Benefits

- Broadest selection of elastomer formulations to solve application problems
- Application engineers available for material selection and problem solving
- Large authorized distribution network for immediate availability



### Applications

- O-rings for engine exhaust valve – gases
- Turbine steam generator connections
- Compressors
- Coolant pump filter units
- Heat exchangers, circulating water pumps, valves, flue ducts
- Boiler feed pumps, fans, motors, gearboxes, steam connections
- Nuclear – high radiation
- CNG fuel storage
- Air pollution control units
- High temperature gas turbine fluid systems
- Sampling and metering equipment



## O-ring Seals continued

### Related Products

- O-ring Filter Seals
- O-ring ISO 6149 Metric Tube Fittings Seals
- O-ring Pusher Seals
- O-ring Repair Kits (Inch & Metric)
- Parbak® - Back-up Rings

## Polyurethane Seals M

- Ultrathan® Flange Seals
- Ultrathan® O-ring Seals
- Ultrathan® Piston Seals
- Ultrathan® Rod Seals
- Ultrathan® Sealing Set for Piston Accumulators

## PTFE Seals M

- FlexiCase™ - Metal Cased Rotary Lip Seals
- FlexiLip™ - Deflected Lip Rotary Shaft Seals
- FlexiSeal™ - Spring Energized PTFE Lip Seals (Single, Dual & Triple)
- Molded PTFE Ring Sets
- Molded PTFE Seals
- PTFE Bearings
- PTFE Bellows
- PTFE Flange Seals
- PTFE Guiding Elements
- PTFE Slipper Seals
- PTFE Wedge Seals

## Rotary Seals

- **High Pressure, Low Speed** M
- **Low Pressure, High Speed** M
- Clipper Oil Seals - Elastomer Lip, Aramid Fiber Split Seals

## O-ring Kits & Accessories M

From emergency outages to simple sealing solutions, Parker's got you covered with a wide variety of O-ring kits and accessories to keep your system up and running. Our Emergency O-ring Kits contain 37 of the most popular AS568 sizes in exactly the right materials. Extraction tools, lubricants, adhesives, and sealants are available for proper removal and installation.



### Features & Benefits

- Maintenance solutions and selections for various sealing applications
- Available O-ring materials include EPR, Nitrile (Buna), and Fluorocarbon (FKM)
- Metric and boss fitting kits available
- Wide range of adhesives and sealants that include thread lockers, retaining compounds, and thread sealants

### Fact Sheet

### Applications

- Turbine steam generator O-rings and seals
- Heat exchangers, circulating water pumps, valves, flue ducts
- Boiler feed pumps, fans, motors, and gearboxes
- CNG fuel storage
- Air pollution control units
- Diesel generators and compressors

## Clipper® Oil Seals

Clipper® Oil Seals are the anchor of Parker's rotary seal product line. The Clipper design features an integrally molded rubber fiber outer case and an elastomeric seal lip. The unique, non-metallic construction will not rust or corrode, and forms a gasket-type seal between the equipment housing and the seal outside diameter (O.D.). With a wide range of profiles and material options, Clipper seals are available for shaft diameters from 0.250" (6.35 mm) to over 65" (1,651 mm).

### Features & Benefits

- Split seal can be installed without having to uncouple equipment
- Labor and downtime to replace seals is reduced from 6 hours to less than 1 hour
- Off-the-shelf solution so lead time on seals is minimized
- O.D. press fit of composite material ensures seal does not spin in the housing

### Applications

- Turbines
- Pumps and motors
- Gearboxes
- Additional shaft seal protection



## Rotary Seals continued

- Millennium® ML Profile – Bearing Isolator Seals
- Parker Oil Seals – Single & Double Lip, Metal-Clad Oil Seals
- ProTech™ – Bearing Isolator Seals
- Cassette Seals

## Shaft Seals

- **High Pressure, Low Speed** M
- **Low Pressure, High Speed** M
- Radial Shaft Seal Rings (NBR, FKM, EPDM)
- V-Seals/V-Rings – Rotary Shaft Seals

## Gaskets

### Metal Corrugated & Jacketed Gaskets

- Metal Corrugated Gaskets
- Metal Jacketed Gaskets

## Expansion Joints

### Fabric Expansion Joints

- Non-Metallic Expansion Joints (EPDM, CR & PTFE)

## Need an Expert?

Click here to locate a Parker Power Generation Specialist near you.

## ProTech™ Bearing Isolators

Parker developed the unique ProTech™ design to provide unmatched two-way sealing for zero lubricant leakage and total exclusion of contaminants. This is accomplished by using non-contact labyrinth seal technology. ProTech features the most effective labyrinth design for both dirt exclusion and oil retention, and is far superior to isolators that rely on internal O-rings or other internal seals for sealability.



### Features & Benefits

- Non-contact design provides virtually no torque consumption and will not wear or groove shafts
- Two-piece unitized design allows complete exclusion of dust and water which provides zero oil leakage, fewer components, and ease of installation
- Higher shaft speed limits than standard radial lip seals for better operation
- Precision-machined seal allows retrofit of most bore and shaft combinations with no tooling charges

### Applications

- Blowers and fans
- Bearing protection
- Gearboxes
- Water treatment

## Metal-Jacketed Gaskets

This family of Parker gaskets offers good compressibility and excellent compensation for flange irregularities and misalignment when high pressures up to 2,500 psi (or higher, depending on joint design) must be contained. By selecting the proper style, almost any size or configuration can be produced.



### Features & Benefits

- Wide range of cross-sections
- Many metal materials available
- Designed for use in assemblies where the elasticity of bolts in flange design can compensate for joint relaxation
- Can handle extreme temperatures

### Applications

- Main feed systems/condensate systems (heaters/flanges)
- Heat exchangers
- Gas mains and vacuum lines
- Wastewater make-up and circulating pumps
- Diesel generators
- Steam systems and boiler openings
- Flue gas stacks
- Pumps and piping

## Non-Metallic Expansion Joints

Parker's Non-Metallic Expansion Joints manage air and gas handling systems in conventional power plants (coal, oil and gas-fired) as well as combined cycle and gas turbine power plants. Styles are well suited to meet the thermal, chemical, and environmental demands for a wide variety of power plant systems and applications.



### Features & Benefits

- Fabric expansion joints move in any direction; absorb twisting movements
- Fabric expansion joints accommodate errors in calculated movements and construction misalignments
- Multi-ply wall construction results in long life
- Corrosion resistant
- Available in EPDM, FKM, PTFE, and composite materials

### Applications

- Gas turbine inlet and exhaust gas path (duct seals)
- Flue gas desulfurization (FGD) systems
- SCR and ESP inlets/outlets
- Air heater and air ducts
- Bag house inlets/outlets
- ID-PA-FD fan intake/outtake
- HRSG (boiler) inlet/outlet
- Ash hopper
- Coal handling system – tripper, silo, and pulverizer
- Economized outlets

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## Custom Sealing Solutions

### Composite Sealing Solutions

- Braided Rope Seals
- Fabric Reinforced Seals
- Heat Exchanger/Boiler Seals
- Metal Bellows Expansion Joints

### Extruded Sealing Solutions

#### • Lathe-Cut Seals (Static O-ring Replacement)

- TetraSeal® – Rubber Washers
- Isolator Bushings

#### • Spliced Rings & Gaskets

- Extruded Profiles
- Hollow Spliced O-ring Gaskets
- Solid Spliced O-rings
- Spliced Hollow Picture Frame Gaskets
- Torque (Compression) Limited Gaskets

### Integrated Sealing Solutions

- Bonded Piston Seals – One-Piece Rubber-to-Metal Seals
- Carrier Gaskets – Over-molded Composite "Controlled Compression" Gaskets
- ChemCast® Seals – Zero Drift Piston Seals

### Molded Sealing Solutions

- Accumulator & Bladder Seals
- Bellows & Convulated Boot Seals
- D-ring Seals

- Diamond Seals - Press in Place Molded Seals
- Diaphragms & Directional Valve Seals
- Fluid Transfer Seals (Fuel Pump Isolator)
- Grommets, Plugs & Bushing Seals
- Metal Over-Molded Seals
- Turbine Shaft Seals
- X-Rings
- X-Seals

### Water Pump Sealing Solutions

- Cooling System Seals
- High Pressure Water Pump Seals

## Sealing Accessories

### Adhesives M

### Back-up Rings M

- Fluid Power Back-up Rings
- Parbak® O-ring Back-up Rings

### Molded PTFE Ring Sets

### O-ring Filter Seals

### O-ring Lubricants M

### Piston Rings

### Retaining Compounds

### Sealants

- DuxSeal® – Sealing & Caulking Compound

### Sealing Washers M

### Wipers M

## Fluid Transfer Seals – Proven Solutions for High Tolerance Seal Joints

Designed for error-proof assembly and leak-free operation regardless of component misalignment, our Fluid Transfer Seals can reduce rework and warranty costs for improved reliability and total customer satisfaction. What's more, their ability to self-retain by using an interference fit is of critical importance in power gen applications.

Less demanding applications can take advantage of the flangeless, or "wedding band", Parker Pipe Seal. Self-retained in an easily molded or machined counterbore, the flangeless seal isolates, centers, and seals pipe in bore. By isolating the tube and bore, Parker Pipe Seals may also improve noise, vibration, and harshness (NVH) characteristics.

Consisting of a range of seals – including Transfer Port, Long Lip, Cluster, Press-Fit, Easy Assembly, and Flangeless Pipe seals – Parker Fluid Transfer Seals are available in a wide range of rubber compounds and insert materials to assure compatibility with your application.

### Features & Benefits

- Self-retaining capability offers quick, simple, error-proof assembly for single or multiple ports
- Highly compliant – compensates for variation and misalignment in mating components
- "Clusters" combine multiple seals into one part, offering pressurized fluid containment, even across gaps, as well as reduced inventory and part number count
- Compact designs for reduced space requirements
- Reduced rework and warranty costs
- Reduced service tool access needs
- Improved reliability and life
- Enhanced system design flexibility



### Applications

- Pipe seals
- Fuel pump isolator seals

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Carbon. Mercury. SO<sub>x</sub>. NO<sub>x</sub>. CO<sub>2</sub>. Soot. Organic chemicals. Metals. Tightening regulations regarding these and other air pollutants are making gas and coal compliance more challenging than ever. As companies look for new ways to meet mandates Parker is there, offering game-changing innovations that provide accurate, reliable, and cost-effective solutions.

## Emissions Monitoring and Analysis Expertise

For more than 25 years, coal-, oil-, and gas-fired power plants have formed the largest installed user base for Parker CEM systems. Throughout this period, there has been increasing environmental scrutiny and resulting process upgrades, including the adoption of after-treatments such as sophisticated Flue Gas Desulfurization (FGD) and Selective Catalytic Reduction (SCR) systems. Parker technology has evolved with the industry, offering increasingly sophisticated monitoring and analysis solutions that help ensure a cleaner environment.

[Click here](#) for Key Global Regulations.



## Procal 1000 Analyzer Control Unit and Software

The brains of an advanced, continuous emissions monitoring software control and reporting system.



Configured to collect data from Procal's advanced range of emissions analyzers as well as complementary devices, enabling the system to display gas concentrations in a normalized basis or in mass units if required. Can be located up to 1,200 meters from the CEMS.

### Features & Benefits

- Reports that meet the requirements of most national environmental authorities
- Data from up to 16 channels per instrument can be presented on one individual panel
- Measurement values in digital and analog form
- Normalization system diagnostic alarm with access to specific detailed displays
- Analyzer connection status and analyzer-specific status panel screens for each instrument

### Applications

- Selective catalytic reduction monitoring
- Flue gas desulfurization monitoring
- Continuous emissions monitoring (CEMS)
- Combustion control

## Procal 2000 In-Situ Infrared (IR) CEMS/FGD Analyzer

This Infrared (IR) Duct or Stack-mounted Analyzer uses the reflective



beam principle to directly measure process gas as it enters a sample cell. It provides an online analysis solution of up to six gas-phase emissions components. Patented, sintered metal technology eliminates the need for gas filtering or sample conditioning as required by higher maintenance extractive systems. Plus Procal 2000 allows for rapid upgrades of measuring range, presentation, and reporting formats to help ensure compliance.

### Features & Benefits

- Integral auto verification unit initiates a zero-check on the system by filling the sample probe with clean, dry instrument air; similarly, it performs a span-check by filling the sample probe with certified span gas
- Wet or dry options; Oxygen or CO<sub>2</sub> measurement normalization options
- ATEX/IEC options for hazardous areas
- Legislative compliance: CEM - U.S. EPA 40 CFR parts 60 & 75 / AMS - Europe QAL 3 of EN 14181

### Applications

- Selective catalytic reduction monitoring (SCR)
- Flue gas desulfurization monitoring (FGD)
- Continuous emissions monitoring (CEMS)
- Combustion control (CFB)
- Biomass plant emissions monitoring



## KEY GLOBAL REGULATIONS

### In the U.S.:

#### *Mercury and Air Toxics Standards (MATS)*

- Finalized in 2011
- Sets the first emissions limits on mercury and other toxic air pollutants
- Applies to coal- and oil-fired power plants
- Requires 1,100 coal-fired power plants to prevent 90% of mercury in burned coal from being emitted by 2015
- Will also curtail lead, arsenic, hydrogen chloride, hydrogen fluoride, and dioxins/furans
- Currently, power plants are the dominant emitters of mercury (50%), acid gases (<75%), and many toxic metals (20-60%)
- Approximately 40% of current plants do not have advanced pollution control equipment

### In Europe:

#### *The Large Combustion Plant (LCP) Directive*

- Coal-fired plants that produce sulphur dioxide, nitrogen oxide, and carbon dioxide in large volumes had to fit pollution reduction technologies such as FGD by the start of 2008 or else operate for 20,000 more hours or until the end of 2015 and then close
- In 2016, the LCP Directive will be superseded by the Industrial Emissions Directive (IED), which gives coal, gas, and oil fired power stations until June 2020 to comply with the next phase of EU pollution regulations
- New plants, both gas and coal, are required to use the best available pollution control technologies at time of construction, updatable through a legislative review process

## Procal 5000 Ultraviolet (UV) Emissions Analyzer

Continuous emissions monitoring analyzer for in-situ analysis of gas-phase emission components. Uses absorption spectroscopy to store and analyze the full UV spectrum and calculate gas emission concentrations. Patented, sintered metal technology eliminates gas filtering or sample conditioning.



### Features & Benefits

- Multi-component gas analysis; typically measures up to 6 components
- No operator intervention during routine use
- Automatic signal verification and recalibration of oxygen or CO<sub>2</sub> measurement normalization
- Reduced maintenance and cost; simple installation
- Legislative compliance: CEM - US EPA 40 CFR parts 60 & 75 / AMS - Europe QAL 3 of EN 14181

### Applications

- Selective catalytic reduction monitoring
- Flue gas desulfurization monitoring
- Continuous emissions monitoring (CEMS)
- Combustion control
- Incineration emissions monitoring (waste to energy plants)

## Procal 6000 Infrared (IR) Radioactive Gas Monitoring for Nuclear Power Generation

Procal 6000 is an infrared (IR), duct-mounted multi-component gas analysis emissions analyzer designed to provide in-duct analysis of up to six gas-phase emission components. Consisting of a duct-mounted analyzer, an Auto Verification Unit, and a Control Unit, Procal 6000 is suitable for stack testing/analysis of corrosive, toxic, and in particular, potentially radioactive gas-phase samples. Under such conditions, its simplicity and reliability compare favorably to the high maintenance requirements and potential contamination issues of extractive systems.



### Features & Benefits

- Measures up to six components
- Provides direct, in-situ measurements, eliminating the need for high cost, high maintenance sample handling systems
- Eliminates the need for sample modification
- Automatic signal verification and recalibration removes operator intervention during routine use
- Flange-mounted analyzer reduces installation cost
- Low maintenance and zero consumables reduces cost of ownership

### Applications

- Stack testing
- Analysis of corrosive, toxic, and in particular, potentially radioactive gas-phase samples



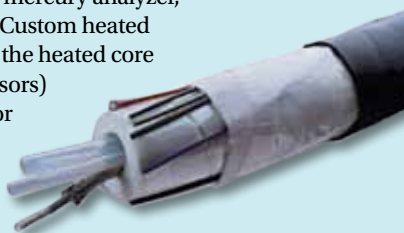
Power plant instrumentation equipment must operate reliably to monitor critical processes, determine emissions, and maintain control of the power plant. To do this, tubing requires heat trace and insulation capabilities. Parker pre-insulated tubing is the most reliable, consistent, and cost-effective way to accomplish the following:

- Process accuracy and emissions compliance
- Winterization/freeze protection
- Temperature maintenance
- Personnel protection from hot piping/tubes
- Keeping gas streams above their dew point

Our heated lines for your gas stack sampling systems offer a temperature maintenance range of up to 4,000°F (2,040°C). Each element within the umbilical is helically cabled, allowing for complete heat control through its length, providing precise feedback to the operator and ensuring system accuracy.

## Multitube® CEMS and Analyzer Umbilicals

Used to extract stack gas from a probe located at the top of a smoke stack. The umbilical transports the gas by vacuuming it down to a mercury analyzer, where the mercury content of the stack gas can be verified. Custom heated CEMS umbilicals typically consist of two separate sections: the heated core (sample transport tubes, heating element, temperature sensors) and the non-heated probe support bundle section (tubes for calibration/air purge, electric wires, temperature sensor and wires, thermocouple cables for the probe). To reduce installation time and cost, Parker offers Multitube® bundles made to customer design requirements with all components included.



### Features & Benefits

- Withstand temperatures up to 1,500°F (815°C)
- Accurately maintain stack gas temperatures while transporting flue gas samples
- Unique cabling design for ease of handling and routing
- Single or multiple tubes, cabled or parallel configurations, up to 30 elements

### Applications

- Environmental stack gas analyzer lines and probe control
- Continuous emissions monitoring (CEMS) sampling analyzers (SO<sub>x</sub>, NO<sub>x</sub>, and mercury)
- Analyzer lines that need to be heated to measure gas streams above their dew point

## CH/CL Series Constant Watt Electric Heat Trace Tubing Bundles

Temptrace™ electric heat trace tubing bundles utilize a constant wattage heating cable to protect against corrosion, freezing, and personnel injury. High Temperature (CH Series) and Low Temperature (CL Series) provide even heat distribution and precise temperature control. Parker tubing bundles save space within cabled trays and reduce overall installation costs.

### Features & Benefits

- CH Series High Temperature: Process temperature maintenance up to 400°F (204°C)
- CL Series Low Temperature: Process temperature maintenance up to 250°F (121.1°C)
- Non-hygroscopic fiberglass thermal insulation for minimum heat loss
- Flexible black UV and flame-resistant PVC jacket
- Process tubes 1/4" to 1/2" O.D.; single or dual tube designs



### Applications

- Process analyzer and analyzer lines
- Impulse and instrument lines
- Stack gas sampling lines
- Water lines (water shelter) – freeze protection
- Transmitters (flow, pressure, and level)

## SH/SL Series Self-Regulating Electric Heat Trace Tubing Bundles

Bundles feature insulated and heated tube construction with self-regulating cables for maximum performance in an extreme range of temperatures. Although both series offer freeze protection, SH is engineered for high temperature maintenance up to 250°F (121°C), while SL is ideally suited for low temperature maintenance up to 150°F (65°C).

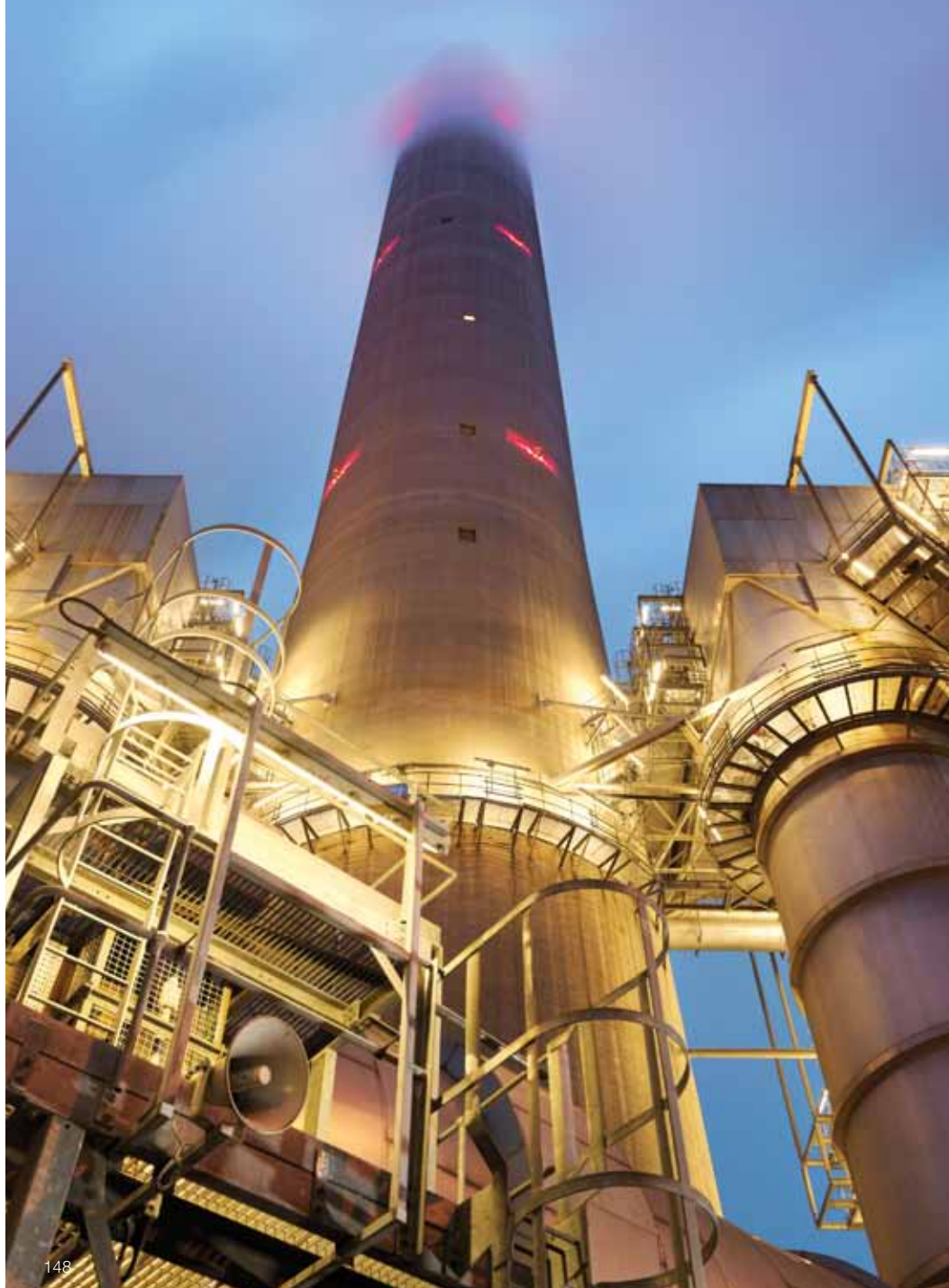
### Features & Benefits

- SH Series withstands steam blowdown
- Non-hygroscopic, inorganic fiberglass insulation for minimum heat loss
- Flexible black UV and flame-resistant PVC jacket
- Standard Parflex Temptrace™ meets NEC Personnel Protection Code 427.12

### Applications

- Water injection and cooling system protection
- Water freeze protection for pipes, valves, and tubes
- Temperature maintenance of gas samples, liquids, and other process materials
- HRSG (heat recovery steam generator)
- Steam blowdown





## Temptube Steam Bundles

Designed to provide an economical and highly efficient method of conveying steam or other hot materials through the power plant, Parker Temptube Bundles are pre-insulated to provide winterization and protect against freeze and personnel injury. Intended to replace hard piping and on-site installations.



### Features & Benefits

- Patented non-hygroscopic insulation for minimum heat loss
- Outer jacket surface temperature maintained at 140°F (60°C)
- Flexible black UV and flame-resistant PVC jacket

### Applications

- Steam supply, condensate return, cooling water, lubrication, and liquid nitrogen lines
- Transfer heat from tracer/steam line to process line
- Turbine inlets
- Impulse lines
- Water injection
- Flow measurement in cooling modules
- Instrument line freeze protection

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Between municipal solid waste (MSW), agricultural waste, and forestry waste, there is an abundance of biomass waste around the world. This makes biogas – which originates from biomass – a leading energy source for renewable power production. In fact, according to EIA, biomass was the world’s fourth largest source of energy in 2011.

The technologies used in harnessing this abundant power resource include gasification and direct firing. Parker’s portfolio of proven heat transfer technologies is ideal for these production processes, which involve feed preheating, steam generation, steam condensing, and gas cooling. Parker’s extensive expertise includes the following:

- Filters
- Cooling and chilling packages
- Condensate drains
- Gas drying and dehydration packages, utilizing TSA and PSA technology
- Removal systems for siloxanes, H<sub>2</sub>S, NH<sub>3</sub>, HHC from biogas/landfill gas
- Fuel, associated gas, and natural gas purification systems
- High pressure compressed gas filters



## Parker Siloxane Removal System

A dual-bed regenerative skid that is placed into a fuel gas stream prior to turbine usage of methane from landfill gas. The skid efficiently separates the siloxane from the gas in order to protect the turbine from harmful damage created when the gas is burned. Utilizing a blower, chiller, and pre- and post-filters, the system removes additional contaminants as well, reducing turbine maintenance costs and improving profitability.



### Features & Benefits

- The only regenerative system proven to consistently meet or exceed OEM specifications for fuel gas siloxane content
- Provides efficient particulate and aerosol filtration, VOC reduction, and dehydration
- Fully adjustable cycle to handle a wide range of gas qualities and adjust to changing gas conditions
- Operates on as little as 0.2 to 0.6 cents per kWh
- Individually designed for each application

### Applications

- Siloxane removal in gas applications
- Treatment of landfill gas

### Did you know?

Cooling biogas to a low dew point can increase cogeneration systems’ energy output by as much as 5% and significantly reduce operating costs. Using Parker components such as WFB Coolers, SFB Separators and ICE Water Chillers, Parker can custom engineer complete packaged dehumidification systems to meet the specific needs of our clients worldwide. Contact your local Parker Power Gen Distributor Specialist.

## Biogas Filters

- Parker Hiross Raw Biogas Filters (ATEX)
- Parker S4 – Biogas Filters

## Biogas Industrial Process Water Chillers

- Parker Hiross HyperChill – Bioenergy Chillers
- Parker Hiross HyperFilter – Bioenergy Low Pressure Filters

## Need an Expert?

Click here to locate a Parker Power Generation Specialist near you.

## Parker Hiross Raw Biogas Filters

Our low-pressure Raw Biogas Filters increase process safety and efficiency by protecting the tube bundle coolers from dirt and particle contamination. Used as a post-filter, they remove particles from the gas stream, protecting the downstream gas engine. Filters are available in sizes to handle gas flows up to 50,000 Nm<sup>3</sup>/h.



### Features & Benefits

- ATEX approved
- Comply with PED, GOST, ASME, and SQL pressure vessel codes
- Water separation filters available

### Applications

- Landfill gas conditioning
- Feed preheating
- Steam generation
- Steam condensing
- Gas cooling

## Parker Hiross Hyperchill Bioenergy Chillers

Designed to cool and dehumidify aggressive bio, landfill and sewage gases, Parker Bioenergy Chillers offer high efficiency, excellent reliability, and flawless performance under many different operating conditions. Their closed water temperature operation provides high working limits and low running costs. Many options make them highly adjustable.

### Features & Benefits

- Special protective treatment on condensers and copper piping for reliable operation, even in aggressive ambient environments
- Pump and tank reside inside the chiller for a compact footprint and easy installation
- Electronic controllers; remote monitoring available
- Large internal tank and pump, low head pressure 21.7 psi (1.5 bar)
- Scroll compressors and large condensers for high efficiency



### Applications

- Provides chilled water for heat exchangers in gas cooling



## Biogas Heat Exchangers/Aftercoolers

- Parker Hiross Hypercool Bioenergy

## Aftercoolers

- Parker Hiross WFB Series – Shell & Tube Coolers

## Biogas Demister Separator (Centrifugal Separator)

- Parker Hiross HyperSep Bioenergy

## Biogas/Landfill/Digester Dryers

- Parker Hiross W Series – Biomethane Dryers

## Biogas Condensate Float Drains

- Parker Hiross Hyperdrain Bioenergy

## Biomass Treatment Systems

- Parker Siloxane Removal Systems (H<sub>2</sub>S, NH<sub>3</sub> or HHC)

## Parker Hiross Hypercool Bioenergy Heat Exchangers/Aftercoolers

Hypercool Aftercoolers can be installed immediately downstream of compressors or blowers to remove up to 80% of the condensate, protecting the entire compressed air system or production process. Cost-effectively remove water vapor and cool compressed air to safe, usable levels. ADT coolers can be used when cooling water is not available, limiting plant complexity and preparing air for further filtration and drying.



### Features & Benefits

- High efficiency heat exchanger for a low gas outlet temperature
- Robust construction and compact design with stainless steel ribbed tubes
- Significant energy and capital investment savings
- Reduced maintenance and improved product quality

### Applications

- Cooling warm, saturated landfill air, or biogases
- Compressed air cooling and dehumidification
- Cooling air before an adsorption dryer
- Turbine bearing lube systems
- Boiler feed systems (boiler blowdown)
- FGD systems

## Parker Hiross W Series Biomethane Dryer

Grid injection of treated biogas (biomethane) requires compliance with various country-specific criteria, including dehumidification. Parker's adsorption dryers ensure reliable gas dehumidification, achieving pressure dew points of -94° to -130°F (-70° to -90°C). The twin tower design facilitates continuous operation, providing optimum energy balance and maximum safety.



### Features & Benefits

- ATEX-compliant components
- Low differential pressure
- Able to use external flash gas sources
- Adsorption drying agents used to capture moisture
- Twin tower process enables 24/7 operation; one tower used for drying, while the other is regenerating

### Applications

- Biomethane production plants (dehumidification before grid injection)
- Dehumidification of associated gas
- IGCC plants (integrated gasification combined cycle)
- Combined heat and power (CHP) systems

## Parker Hiross HyperSep Bioenergy Separators

HyperSep Bioenergy Separators from Parker Hiross remove rust, oil, and other impurities, significantly improving the performance of filters. Compact and easy to install, HyperSep units are available with a wide range of threaded and flanged air connections. They require no external power source and work automatically without any required maintenance. All threaded models feature a unique HiroShield surface protection treatment applied both inside and outside to further reduce downtime.



### Features & Benefits

- Removable demister for very easy maintenance
- Stainless steel separator with 99% efficiency across the entire flow range
- Surfaces in contact with the media are made of stainless steel

### Applications

- Removal of water content from gases entering gas turbines

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To maximize profit, power plants need to be operated with the greatest possible reliability, capacity, and efficiency, along with minimum operating and maintenance costs. To accomplish this, plant management is investing heavily in condition monitoring and predictive maintenance products and systems that can identify and eliminate potential problems, thereby ensuring continuous and efficient operation.

Parker offers in-depth expertise in condition monitoring, with a variety of both proven and leading-edge products for power applications. Detailed in multiple sections of this book, our on-site condition monitoring capabilities embrace the following machine components:

- Bearings, including radial and thrust bearings
- Seals and packing
- Rotors
- Auxiliaries, such as lube oil system, cooling system, etc.

No matter the type of power generation, monitoring these component areas will reliably determine the condition of the machinery.

## New Acquisition Enhances Parker's Condition Monitoring Capabilities

In 2012, Parker acquired UK-based Kittiwake Developments Limited, a leading manufacturer of condition monitoring technology, including wear debris sensors, oil testing and analysis instrumentation, and acoustic, vibration, and gas emissions monitoring sensors. The acquisition extends our capability to offer customers complete health monitoring solutions for a wide variety of power generation systems. Detailed in this section are just a few of the new products we can now offer you through Parker Kittiwake.



## Bearing Checker for Rotating Machinery

The MHC Bearing Checker monitors high frequency Acoustic Emissions (AE) signals naturally generated by deterioration in rotating machinery. The unique way of detecting and processing these signals gives you condition-related information in the easiest possible form. It is a state-of-the-art condition monitoring instrument with extreme sensitivity to developing faults.

### Features & Benefits

- Early indication of machine degradation
- Excellent complement to oil analysis
- Last measurement recall
- Simple one-handed operation
- Rechargeable through USB port
- Ease of operation

### Applications

- Bearings
- Gearboxes
- Motors
- Pumps



## MHC On-site Instruments

- MHC Classic Kit: Standard mode only non-data logging handheld instrument + standard accessories
- MHC Classic Plus Kit: Standard & Super-Slo mode non-data logging handheld instrument + standard accessories
- MHC MEMO Pro Kit: Full functionality data logging portable instrument + standard accessories
- MEMO View Pro: Setup, download & reporting PC software for MHC MEMO Pro
- MEMO View Lab: Frequency diagnostic PC software for use with MHC MEMO Pro

## MHC On-Site Instruments:

**Hand-held, rugged instruments that give you instant access to powerful CM diagnostics.**



MHC instruments monitor high frequency Acoustic Emissions (AE) signals naturally generated by deterioration in rotating machinery. Our unique way of detecting and processing these signals provides the user with condition related information in the easiest possible form. These are state-of-the-art condition monitoring instruments with extreme sensitivity to developing faults. With thousands of MHC on-site instruments in use worldwide and countless successes on ball, roller, white metal and journal bearings, this is a proven technology.

- With Standard and Super-Slo modes of measurement, it's easy to monitor down to rotational speeds as low as 0.25 RPM (that's 4 minutes per revolution!)
- What's more, you don't need to know design details like bearing type, size, or number

MHC Memo instruments give you crucial information for implementing proactive, rather than reactive, maintenance – even on machinery you have never monitored before. Unlike traditional vibration analysis, sensor placement is easy as it's unaffected by the plane of the bearing or at any specific orientation.

The outstanding speed and ease of use of the MHC Memo range are not gained by compromising performance or sensitivity to developing faults. In fact, our unique, patented, and well established MHC technology has gained an enviable reputation across all industrial sectors.

## MHC On-Site Case Studies

### 1. Finding lubrication problems

Distress<sup>®</sup> readings were taken every month. When bearings were found with a value greater than 10, it was time to re-grease. The reduction in Distress<sup>®</sup> confirms the improvement. No need to know the speed, bearing type, etc.

### 2. Instant “health” checking

Three of five motors were found to have a Distress<sup>®</sup> greater than 10. There was no need for calculations or previous machine knowledge – problem identification was instant. Since earlier re-greasing had given no improvement, it was clear there was permanent damage.

### 3. Confirming repair success

Motor bearings were replaced. The reduced Distress<sup>®</sup> value immediately confirmed a successful repair.

#### Features & Benefits

- On-site instruments for real-time condition monitoring
- Detect failure modes for shaft speeds > 0.25 RPM
- Record and replay readings from pre-planned routes

#### Applications

- Ball and roller bearings
- Gearing
- Slew bearings on cranes
- Color block bearings
- Tank stirrers
- Pillow block bearings

## ANALEX fdMplus

A highly accurate instrument, ANALEX fdMplus is designed to measure uncombined ferrous wear metal particles in oil or grease samples taken from a variety of types of machinery. It provides you with the ability to successfully monitor your equipment, preventing costly machinery downtime. ANALEX fdMplus is suitable for both field and laboratory use.

#### Features & Benefits

- Fast measurement of ferrous metal
- Suitable for oil and grease testing
- Many sample options
- Portable for field use
- No moving parts; very reliable
- Easy to operate

#### Applications

- Bearings
- Gearboxes
- Motors
- Pumps



## Heated Viscometer Provides On-Site Oil Viscosity Results in Minutes

Monitoring oil viscosity gives early warning for a range of common problems for critical plant equipment. The Parker Kittiwake Heated Viscometer gives you the ability to test fuel and lubricating oils on-site, at point of use. This allows you to quickly and easily detect out-of-spec levels, identifying potential problems before equipment damage can occur.

Why measure oil viscosity? It shows the oil’s resistance to flow and the strength of the oil film between surfaces. Viscosity can increase or decrease as a result of problems such as contamination, fuel dilution, and shear thinning. Measurement of viscosity is extremely important for hydraulic oils, diesel engine oils, gears, and fuel oils.

Our Heated Viscometer measures at the actual temperature and is designed to ‘tilt’ from side to side in both directions, allowing the ball to fall under gravity and calculate the viscosity of the oil automatically.



#### Features & Benefits

- Monitoring viscosity gives an early warning for a range of common problems
- Highly accurate results with three readings taken at 40°C, 50°C, or 100°C
- Test an even greater range of oils by changing the viscosity index or density
- Estimate the combustion performance (CCAI) of fuel oil
- Heavy duty, robust equipment – ideal for long-term use with rapid results

#### Applications

- Hydraulic oils
- Diesel engine oils
- Gear oils
- Fuel oils



### Condition Monitoring App Buy and download at iTunes App Store

Featuring ISO Code Generator and Frequency Analysis, Version 1.04 of the app includes the ability to select the number of systems running on the Frequency Analysis utility. The app is usable on iPhone, iPad, or iTouch devices.

[Go here to get it.](#)



## On-Site Used Oil Analysis

### DIGI Field Kit Measures Multiple Oil Parameters

Low cost kit allows multiple oil parameters to be measured in the field, including:

#### Total Acid Number (TAN)

Testing for TAN is essential to maintain and protect your equipment, preventing damage in advance. Measure both the weak organic and strong inorganic acids present within an oil with the Parker Kittiwake TAN Test. A rise in TAN is indicative of oil oxidation due to time or operating temperature.

- Test kit is supplied with up to 50 tests, enabling you to monitor TAN level trends
- Simple to use drop test - the result is shown by a color change, providing you with easy to interpret results, suitable for use by non-technical personnel

#### Water in Oil

Maintain and protect your equipment while eliminating damage caused by water in your oil. The DIGI Kit provides advanced, digital analysis and gives fast, accurate results for easy monitoring of trends.

- Prevent corrosion, cavitation, or failure of your machinery by detecting water in oil before damage occurs
- Minimize instability of additive packages and damaging microbe growth by monitoring your oil
- Fully portable for use on-board or in the field; test cells are extremely robust, durable, and easy to use

#### Insolubles

Monitor combustion-related debris and oxidation products.

High insolubles will cause lacquer formation on hot surfaces, sticking of piston rings, and wear of cylinder liner and bearing surfaces. The detergent property of the oil will also decrease, speeding further deterioration.



### Low Range DIGI Water Kit EasySHIP DIGI Field Kit

- Detect insolubles from diesel engine combustion products such as fuel ash, carbon, partially oxidized fuel, oil oxidation products, and spent lubricant additive
- Simple and quick to use, the Insolubles tests give you actionable results, helping prevent engine damage

#### Total Base Number (TBN)

DIGI Test Kit provides state-of-the-art, digital analysis and gives fast, accurate results for in-depth monitoring of trends. The ECON TBN Test Kit gives a rapid indication of TBN depletion in lubricants.

- Avoid fouling within the engine and corrosion of engine components by monitoring the Total Base Number (TBN) of your lubricating oils
- Simple, economical monitoring of lubricants

#### Viscosity

The ECON Viscostick gives a simple go / no-go result. Typically it will detect 5-10% distillate fuel dilution of an SAE 30 to 40 engine oil, as well as increases in viscosity due to oil contamination.



Parker offers a full range of solutions for utility scale battery energy storage, from bidirectional grid-tie inverters and outdoor duty Power Conversion Systems (PCS) to climate-controlled battery containers. Energy storage systems are often integrated with renewable energy sources such as solar and wind farms, but when combined with traditional generating sources, can provide benefits of lower emissions, better grid stability, and lower fuel consumption.

### Energy Storage Applications:

- Grid frequency stabilization
- Frequency regulation
- Integration of renewables
- Micro-grid solutions
- Power factor control/VAR support
- Ramp rate control
- Peak shaving
- Spinning reserve
- Black start
- Grid-tie battery storage

### Globally Available Energy Storage Solutions:

- Bidirectional grid-tie inverters
- Outdoor duty power conversion systems
- Climate-controlled battery enclosures
- Thermal management for battery containers and power electronics

[Click here](#) more information on our innovative solutions for energy storage.

## Power Conversion Systems

Power Conversion Systems (PCS) depend on proven, reliable inverter technology. Parker has spent more than 35 years designing and manufacturing inverters for a wide range of power management applications. Our bidirectional inverter designs efficiently channel energy into storage elements, and retrieve stored energy for fast delivery on demand to the power grid. Parker Power conversion technologies are scalable from 100 kW to multiple megawatts of power. For typical substation installations, multiple 1 MW modules are integrated into shipping containers, buildings, or custom outdoor enclosures for quick delivery and commissioning.

### Application Specific Control Logic

Through the use of an industry accepted Programmable Logic Controller (PLC) and the appropriate energy management interfaces, the Parker PCS can be customized to assume various application response profiles to meet specific utility duty cycles.

### Features & Benefits

- Scalable from 100 kW to multiple megawatts of power
- Can be customized to assume various application response profiles to meet specific utility duty cycles
- Suitable for grid frequency stabilization - integrated IGBT-based Active Bridge Bidirectional Inverter delivers full power in either direction within 10 ms
- Provides quality power - AC890PX Inverter incorporates advanced Pulse-Width-Modulated (PWM) switching technology, automatically synchronizing to the AC power grid
- Automated sequenced shutdown and disconnection under power loss events in compliance with IEEE 1547 guidelines
- Inverters and balance of PCS manufactured at ISO9001:2008 Parker facility; satisfy ARRA "Buy American" provision
- VAR support - can supply reactive power to the grid, regulating system voltage and enhancing the stability of a weak grid; millisecond response time minimizes momentary grid fluctuations; real or reactive power can be regulated



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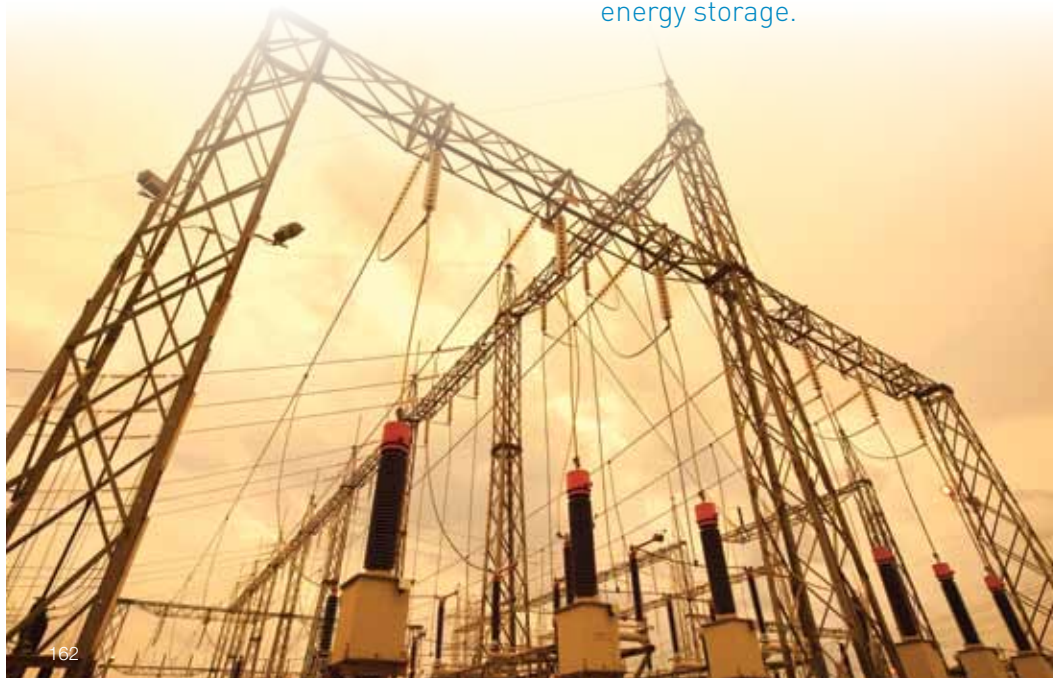
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## Climate-Controlled Battery Storage Containers

Parker's long established expertise in system integration is now being translated into turnkey battery containers for energy storage systems. Configured to customer and application requirements, the fully integrated containers are delivered and installed on site. These containers can be configured for convection, air, or two-phase evaporative cooling. They include racks ready for batteries, DC bus bar distribution, low voltage wiring, fire suppression, and precision-cooled thermal management.

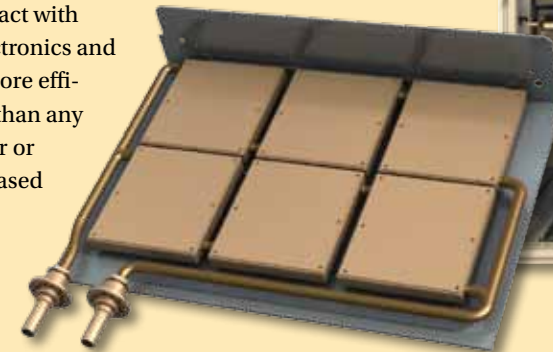
### Features & Benefits

- 20 and 40 foot standard containers
- Up to 4 MWh per container
- Configurable racks for batteries
- Fully integrated



## Advanced, Refrigerant-Based Cooling

Our advanced thermal management technologies are key to our ability to offer efficient, cost-effective energy storage and power conversion. Specifically, with **two-phase evaporative precision cooling**, Parker has been able to cool the full range of wind and solar power generation systems, delivering up to a 40% increase in throughput and more than twice the power density, significantly reducing the overall space requirements for power conversion and grid-tie systems. This closed loop, advanced cooling system uses a non-conductive, non-corrosive refrigerant that vaporizes on contact with hot electronics and cools more efficiently than any other air or water based system.



**Need a unique product or system to meet a specific application?** Parker offers turnkey solutions from idea through finished part. Email us at [pgn.oem@parker.com](mailto:pgn.oem@parker.com).

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## A Legacy of Innovative Solutions for Nuclear Power

Parker has been the source of innovative solutions for the nuclear power industry since the 1960s. In fact, Parker components and subsystems have been used in more than 50% of all nuclear power plants in the world over the past 40 years. Leading power generation companies have depended on us to deliver solutions of exceptional quality and durability – solutions designed to reduce costs and advance performance.



**Our globally available, safety-related certified products for nuclear power include the following:**

### Electrohydraulic Servovalves

### Hose Assemblies

### Hydraulic Accumulators

- Bladder Accumulators/Pulsation Dampeners/Suction Stabilizers
- Piston Accumulators

Also ASME U Stamp and CRN certified.

### Hydraulic Fittings

Also CRN certified.

### Hydraulic Pumps/Motors/PU

### Hydraulic Valves

- Flow Control Valves
- Colorflow® Valves
- Republic/Manatrol Valves
- Servo/Proportional Valves

### Industrial Cylinders/Actuators

Also ASME U Stamp and CRN certified.

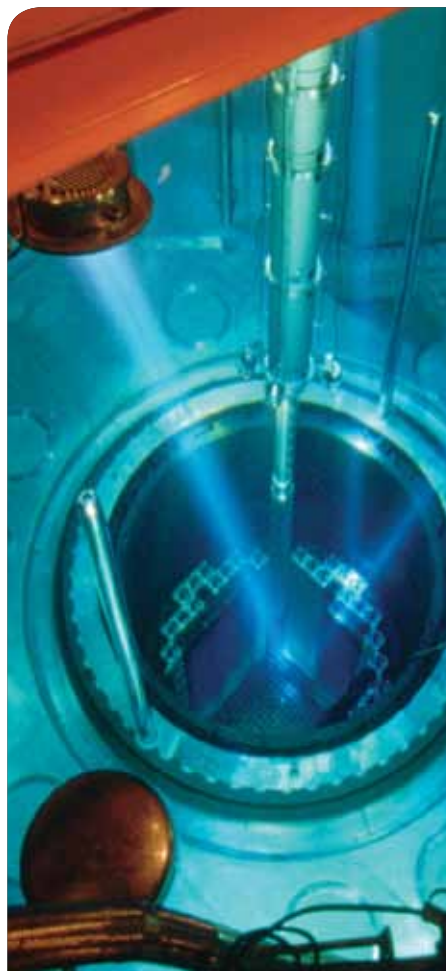
### Instrumentation Fittings and Tubing

Also ASME, RCC-M, and CRN certified.

### Instrumentation Valves and Manifolds

Also ASME N Stamp, RCC-M, and CRN certified.

### NPP Filters



## Our Installed Base

Where is Parker in nuclear today? Everywhere – as listed below:

Alabama Power	Farley Nuclear Plant	Progress Energy
American Electric Power	First Conax Nuclear Inc.	Progress Energy Crystal River
Areva Np Inc.	First Energy Corp.	Qingshan <sup>Russia</sup>
Arkansas Nuclear One	Florida Power Light	RE Ginna Nuclear Power Plant
Bruce Power LP	GE Global Nuclear Fuel	SCE Songs
Brunswick Nuclear Plant	GE Nuclear Energy	SCK Bruxelles <sup>EU</sup>
BW Nuclear	Georgia Power	Sequoyah Nuclear Plant
Con Edison	Helian Industrial Machiner	Slovenske Elektrane Mochovce
Constellation Nuclear	Qingdao, Prc (China)	Sogedec
Diablo Canyon Nuclear	Hydro Quebec <sup>Canada</sup>	Southern Cal Edison <sup>East Asia</sup>
Detroit Edison	Kernkraftwerk	Southern Nuclear Co.
Dominion Generation	Korea Hydro Nuclear Power	STP Nuclear Operating
Dominion Nuclear	Ling Ao	Taiwan Power
Duke Energy Corp.	Nebraska Public Power District	Texas Utilities
Duke Power Co.	Nine Mile Point Nuclear Station	TVA Browns Ferry
EDF	Ontario Hydro	TVA Sequoyah Nuclear Plant
EDF Cnpe De Cat	Ontario Power Gen	TVA Watts Bar Nuclear
Entergy Corp.	Palisades Nuclear Plant	UKAEA Government
Entergy Nuclear Operation	Par Nuclear Inc.	Union Electric Company
Entergy Operations Inc.	Pennsylvania Power Light	Westinghouse Electric
Exelon Corp.	Perry Nuclear Power Plant	Wolf Creek Nuclear
Exelon Generation	Point Beach Nuclear Plant	Xinhua Powerstation
Exelon Nuclear	PPL Susquehanna	Shanghai Prc.

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## O-rings/Seals

- E0740/E0962/E0803/V0747/V0884/VM835 O-rings

## Pneumatic Cylinders

Also ASME U Stamp and CRN certified.

## Quick Closing Valve Actuators

Also ASME U Stamp and CRN certified.

## E0740 EPDM High Radiation O-rings

Parker has been the premier supplier of O-rings for U.S. power plants for over 30 years. Key among our offerings is the E0740 EPDM O-ring, specially formulated for compression set resistance at intensities of 10<sup>6</sup> rads and above. Typically used for storage containers, high/low temperature cooling connections, and steam turbine and boiler applications in temperatures that range from -70°F to 250°F (-57°C to 121°C), the E0740 High Radiation O-ring provides the following benefits:



- Available in standard sizes for quick delivery
- Custom spliced O-rings for extremely large I.D.s
- Test data with popular gearbox lubricants
- Long-term CSR data
- Adhesives for holding large seals in place
- NUPIC certification for nuclear power plant use
- Several unique recipes specifically for power plant applications

### U.S. Nuclear Installed Base:

- Calvert Cliffs
- Ginna
- Nine Mile Point
- Monticello
- Point Beach
- Savannah River
- Tennessee Valley

## Quick Couplers

- CPI™/A-LOK® Series Instrumentation Couplings
- 60 Series General Purpose Couplings
- Snap-tite™ H Series General Purpose Poppet Couplings

Also CRN certified.

## Solenoid Valves

## Greer Bladder Accumulators

Available in bottom repairable, top repairable, medium flow, high flow, transfer barrier, and gas bottle styles, the Parker Bladder Style Accumulator is the industry's original, and still the best. For years this style of accumulator has served nuclear markets, providing a proven design for many hydraulic system applications. Parker bladder products maintain the highest quality because of our in-house bladder molding operations. All Greer bladders are engineered and manufactured in our own facility to our own high quality standards. For nuclear applications, Greer Bladder Accumulators offer the following:

- Operating pressures to 6,600 psi
- 10 different capacities from 10 cubic inches to 15 gallons
- Nine different configurations
- ASME/U-Stamp certification standard, one gallon and up
- Water/chemical service available, with stainless steel ports
- Five bladder compounds to suit a variety of fluids and temperatures
- CE marking available



### Nuclear Applications

- Valve actuation systems
- HYD lube oil systems
- Boric acid injection skids

## Parker Jet-Pipe® (ABEX) EHSV's

Parker Electrohydraulic Servovalves (EHSV's) produce fewer unscheduled trips due to their highly reliable Jet-Pipe® first-stage and second-stage spool design. This basic fail-to-center design has been continuously developed and refined over the last 40 years. The result is an exceptionally stable and erosion-tolerant EHSV that offers the longest expected life in the industry.



Another benefit? Parker Jet-Pipe® technology is far less prone to contamination, a key advantage in power generation "dirty" environments. The unique jet construction enables most designs to receive and pass particles as large as 500 microns without malfunction. Plus Parker EHSV's offer 75% pressure recovery and neutral fail-safe capability.

This total value servovalve also offers the following:

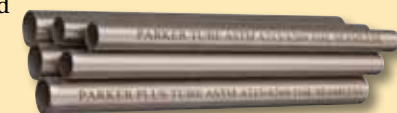
- Excellent low temperature performance
- Low sensitivity to first-stage erosion
- Enlarged product portfolio targeting the global power generation market
- Global dedicated power generation distributors, situated to provide local support
- Competitively priced for a highly reliable, value conscious solution

### Nuclear Applications

- Steam turbine control valves
- Boiler feed water control

## Quality-Assured Stainless Steel Instrument Tubing

Want to reduce the risk of leakage in your hydraulic and instrumentation systems? Consider Parker seamless, stainless steel, straight length tubing. Our domestic and non-domestic tubing is characterized by the ovality, concentricity, and hardness limits required for superior performance. Plus Parker tubing offers the high surface smoothness and close dimensional tolerances needed to ensure a leak-free environment when connected with couplings or to Parker fittings. This quality-assured tubing with its superior O.D. finish offers:



- Easy welding, due to controlled and consistent quality
- Plugged ends that provide protection during transit and from inside contamination
- Superior performance in a wide variety of system applications, temperatures, and pressures due to strictly controlled ovality, concentricity, and close tolerances
- Meets ASME, ISO 9001, QS-9000, PED 97/23/EC, JIS, TUV, and LRQA requirements for tubing
- Parker "branded" on tubing, assuring installers that it has been qualified by Parker Hannifin



### Products Certified to the Highest Standards

These products include safety-significant and safety-related nuclear grade subsystems and components, as well as high quality “off-the-shelf” commercial products for non-regulated areas of the plant. They meet the following standards:

10 CFR 50 Appendix B Program	EU PED*	KTA 3507
ASME N Stamp	HAF 604*	NNSA
ASME QME-1*	IAEA SC-QA	NQA-1
ASME QSC (NCA-3800)	IEC 60 780	RCC-E
ASME Section III	IEC 60 980	RCC-M
ASME U Stamp	IEC 61 298*	SKI
ASME UV Stamp	IEEE*	STUK
ASN	ISO 9001: 2008	TBM/KBM
CNSC	JNES	US NRC
CRN/CRN-N*	KINS	

\* Certifications in process

### New to Nuclear: FB Series Bellows Valves

Capable of meeting ASME BPVC requirements, these Section III, Class 1 and 2 valves provide high integrity atmospheric sealing for severe service nuclear instrumentation applications. Designed for increased valve and cycle life, 316 stainless steel FB Series Bellows Valves offer a welded or gasketed valve body to bellows sealing, a choice of Grafoil® or PTFE packing, and blunt, regulating, or soft stem tip configurations. Panel-mountable and 100% factory-tested, with a wide variety of US Customary and SI ports.

Features	Benefits
Bellows stem seal	High integrity atmospheric sealing
Secondary packing system	Back-up seal above primary bellows seal
Non-rotating stem tip	Increased valve life by removing rotation from the seat area
Power threads above primary seal	Thread lubricant isolated from media
Externally pressurized bellows	Increased cycle life



### Nuclear Applications

- Pressure-sensing system impulse line isolation valves
- Primary root valves

**FOR MORE INFORMATION AND TO ORDER SAFETY RELATED PRODUCTS,**  
 Call 256 885 3833 (sales), 256 885 3880 (technical support),  
 or e-mail [ipdusnuclear@parker.com](mailto:ipdusnuclear@parker.com)



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