



FM80 Fuel Regulation Module

Innovating CNG fuel filtration, regulation, and control
for a safer, cleaner environment



ENGINEERING YOUR SUCCESS.

Parker's FM80:

Setting the new standard

Parker is an expert in natural gas and a leader in the design and manufacture of products and systems that filter, regulate, control, and convey compressed natural gas (CNG).

A Breakthrough Solution:

Parker's FM80 is a breakthrough in CNG fuel regulation and addresses a host of challenges faced by OEMs and integrators, as well as end users. Parker's new system is designed for delivering reliable extreme weather performance, extending oil change intervals, reducing leak points, and delivering enhanced drivability under the toughest road conditions.

The FM80 Fuel Regulation Module is made of anodized aluminum. It incorporates high grade stainless steel internal parts and elastomers that are specially designed for use with natural gas in the widest possible temperature ranges. When durability and performance are at the top of your wish list, ask for the FM80.



FM80 Advantages for OEMs:

- ✓ Less risk
 - ✓ Lower cost
-
- ✓ Higher margins
 - ✓ Increased sales
 - ✓ Greater customer satisfaction

FM80 Advantages for Fleets:

- ✓ Less maintenance
 - ✓ Reduced downtime
-
- ✓ Greater vehicle range
 - ✓ Increased uptime
 - ✓ Higher productivity



Integrated heat exchanger for extreme weather performance

in CNG fuel systems

REDUCED RISK, INSTALLATION AND OWNERSHIP COSTS

- Our proven, multi-technology systems reduce risk and cost for CNG vehicle integrators, resulting in higher margins, sales, and customer satisfaction.
- The all-inclusive design reduces installation time and costs of the FM80.
- Fewer connections mean less frequent tightening and fewer leak checks during maintenance.

GREATER FLEET PRODUCTIVITY

Predictable performance and full gas flow down to cutoff improve total range, uphill driving, and hauling capability. This eliminates range anxiety and allows the deployment of an environmentally friendly and cost-effective fuel in the toughest applications. Large filter sump increases oil drainage intervals and optimizes engine protection.

GLOBAL CONNECTIVITY • LOCAL AVAILABILITY

Our global footprint assures local availability, no matter where you develop, assemble, manufacture, or operate. Parker's commitment to acquiring global certifications and quality standards – including CSA/NGV3.1, UN ECE-R110, and ISO/TS 16949 – speak to Parker FM80's universal quality.



SAFE. ROBUST. RELIABLE.

Our advanced Fuel Regulation Module withstands variations in temperature, flow, vibration, supply pressure, and gas composition.

Parker Veriflo's fuel regulation module – available with multiple options – is an integrated system that provides advanced fuel handling performance.

Optimized for 5 to 12 liter engines, Veriflo's piston regulator design offers better control, fewer connections, longer range, and higher performance, increasing fleet productivity as it decreases cost and risk. Parker is setting the new standard in on-board, CNG fuel management.

Stable. Well-dampened piston reduces flow-induced vibration.

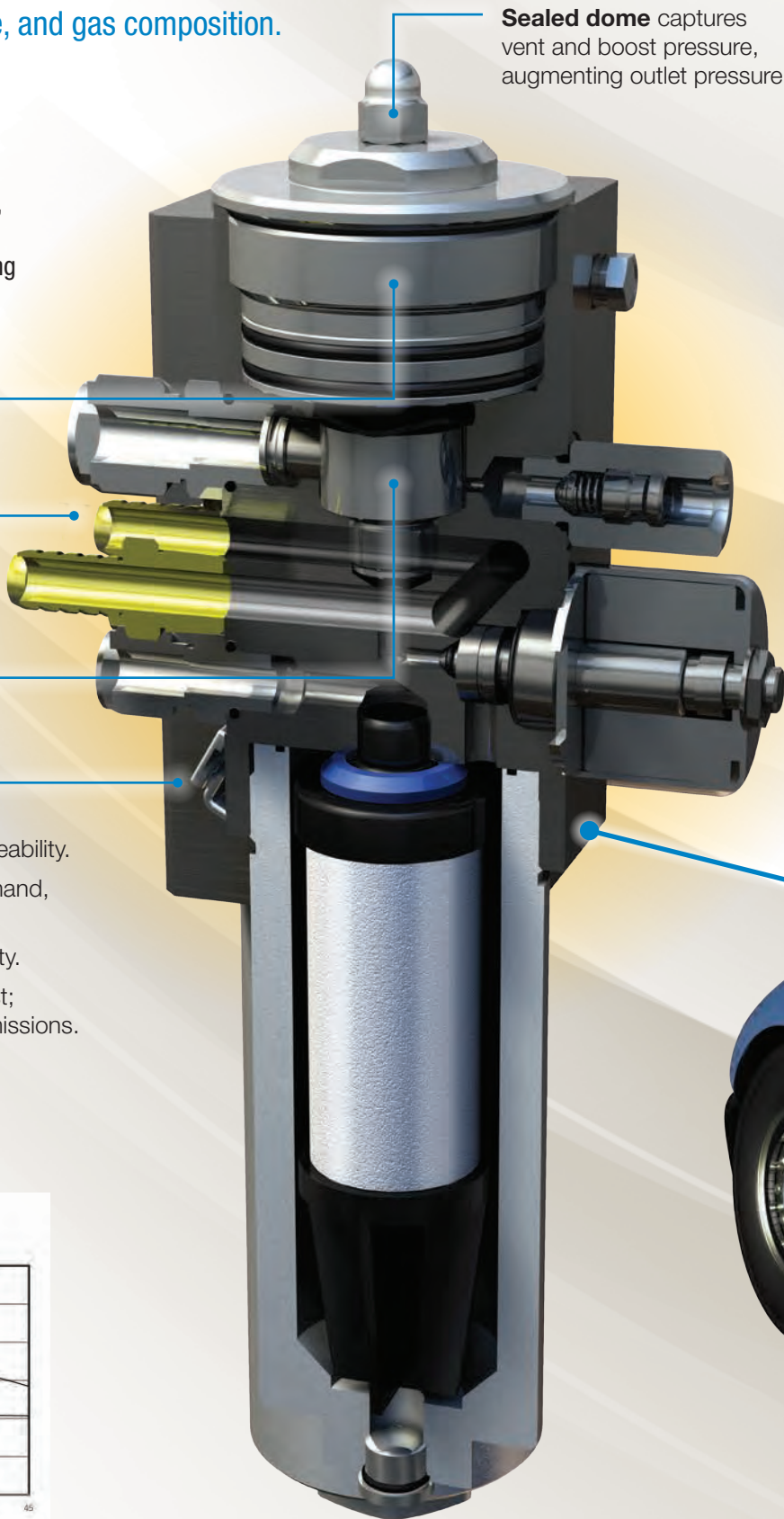
Minimized freezing potential in cold weather. Integrated heater uses radiator fluid to warm gas before it enters the engine, providing improved reliability at low temperatures.

Superior cycle life. Constrained motion poppet design eliminates lateral loads and seat wear.

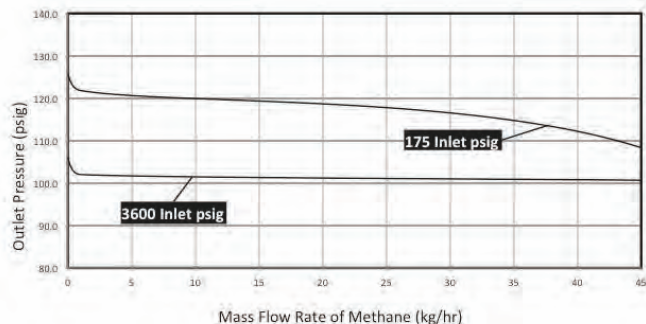
Durable machined body.

- **Good response to power demand** for better driveability.
- **Robust design** with higher flow rates for peak demand, facilitating enhanced performance.
- **Lower risk of failure and rupture** for greater safety.
- **Integrated system** for less assembly time and cost; fewer leak paths; greater reliability; lower fugitive emissions.
- **Large flow capacity** increases vehicle range.
- **Meets and exceeds industry specs.**
- **Compact.** Maximum efficiency in a small space.

Sealed dome captures vent and boost pressure, augmenting outlet pressure.



Pressure vs. Flow - Light Duty



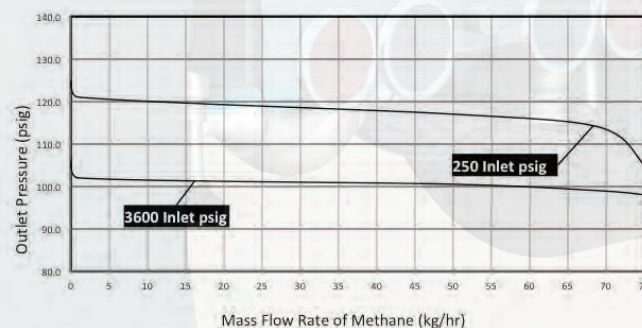
PRECISE.

FM80 Advantages

The Parker FM80 eliminates common problems faced by existing CNG fuel systems, redefining the customer experience with natural gas vehicles.

DRIVING / VEHICLE CONDITION	SYSTEM PROBLEM	PARKER SOLUTION
Excessive moisture; Sub-zero temperatures	Freezing, stalling of vehicle; Regulator failure	Piston regulator, special seals, integrated filter, integrated temperature homogenization, and heat exchanger for reliable, extreme weather performance
Uphill driving; Poor BTU-content gas	Poor drivability, low tank pressure inaccuracy causing range anxiety	Superior poppet and seat design for good repeatable performance; Integrated, large orifice shutoff for high flows down to 250 psig (17 bar)
Excessive oil in fuel, frequent daily draining of oil	Failure of regulator, sensors, and calibration, excessive emissions, eventual vehicle stalling	Integrated large filter option to eliminate oil vapors and increase time interval between oil draining
Gas leakage into coolant	Failure of soft seals due to extreme weather and ambient changes, causing gas to leak into coolant	No soft seals between heat exchanger and gas circuit
Start and stop driving; Heavy-duty towing	Regulator makes whining noise due to mechanical vibration at harmonic frequency after some time of operation	Signature poppet design for long life; Anodized aluminum piston and body for durability; Constrained motion poppet for long life and the elimination of uneven seat wear

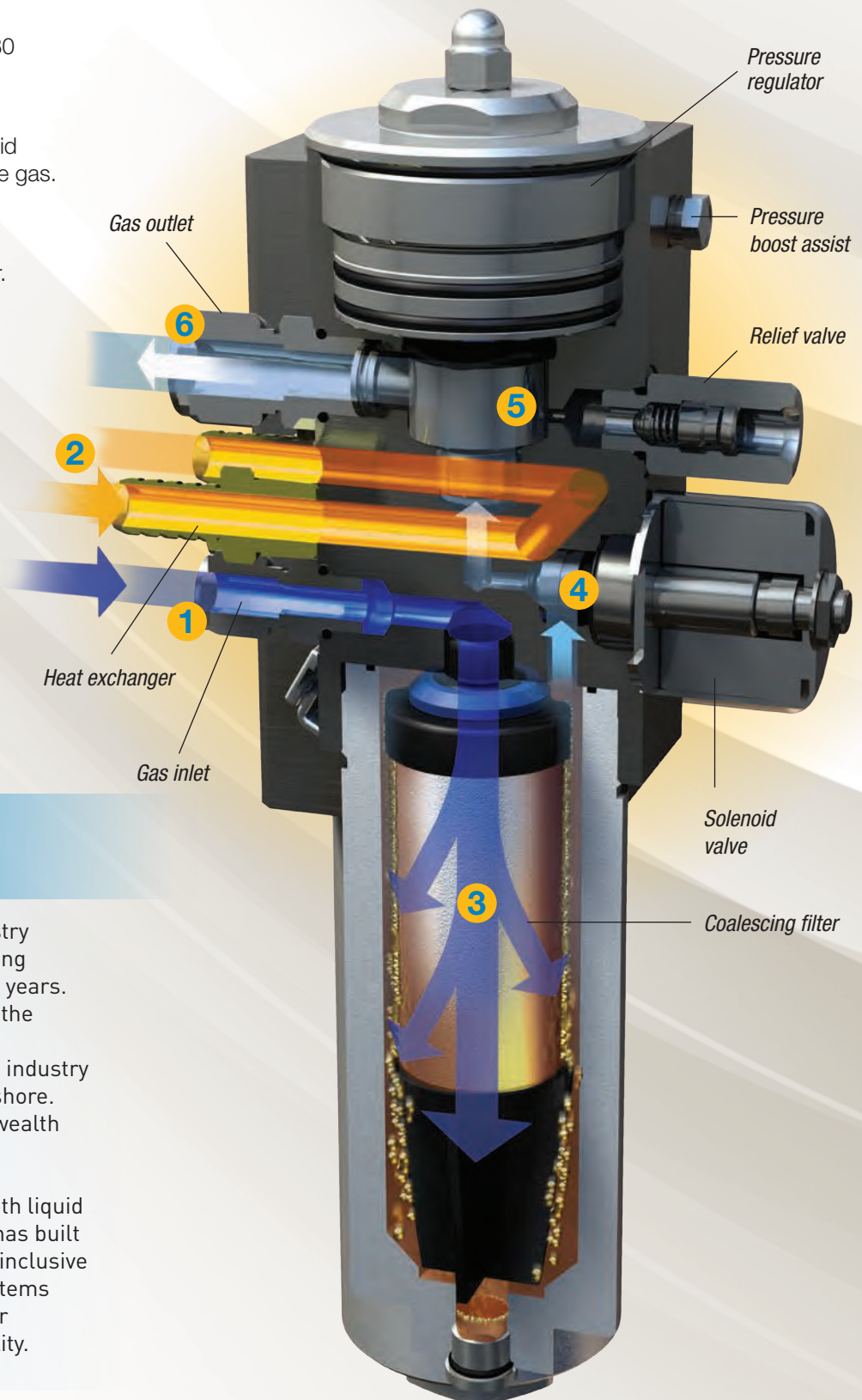
Pressure vs. Flow - Heavy Duty



FM80 Gas Flow Diagram

Incorporating lessons learned for impressive performance and durability, our Fuel Regulation Module integrates an advanced piston style regulator, shutoff valve, and large capacity filter to warm the gas, remove particulates, and reduce the gas pressure, protecting the engine.

- 1 High pressure CNG enters the FM80 Regulation Module.
- 2 At the same time, warm radiator fluid circulates, heating the high pressure gas.
- 3 The high pressure, heated gas passes through the coalescing filter.
- 4 The high pressure, heated gas travels past the solenoid valve to the pressure regulator.
- 5 At the pressure regulator, gas pressure is reduced to outlet pressure setpoint (i.e., 120 psig).
- 6 The heated, low pressure gas leaves the FM80 Module on its way to the engine.



A History of Proven Regulator Precision

Veriflo has been responding to industry change through innovative engineering and manufacturing for more than 85 years. Renowned for quality and reliability, the Veriflo range of regulators has been designed to meet the most stringent industry requirements, from analytical to offshore. Veriflo regulators are available in a wealth of materials and designs – including single-stage, two-stage, heated and changeover – and are suitable for both liquid and gas applications. The company has built upon this regulator expertise an all-inclusive Fuel Regulation Module for CNG systems that incorporates lessons learned for impressive performance and durability.



THIS IS THE FM80. THIS IS BREAKTHROUGH.

Good drivability and response



*Better fleet performance
and productivity*



*Durable with longer intervals
between oil service*



More fleet uptime

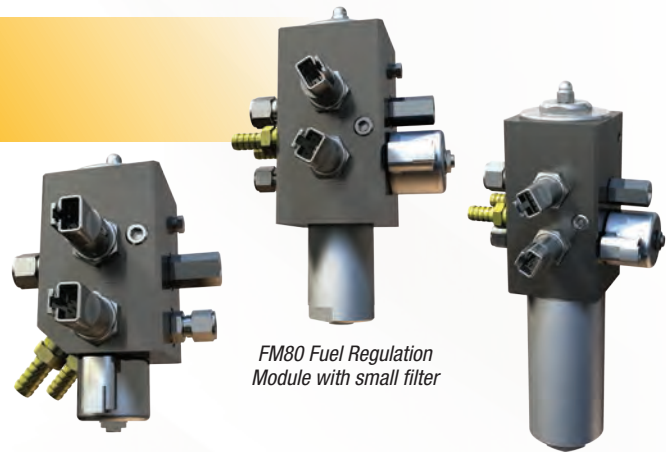


*Greater safety and lower
fugitive emissions*

Parker offers multiple regulator options for systems integrators and OEMs

No other company can provide you with as many options to customize your fuel system. Choose a regulation module with any or all of the following:

- High pressure filters
- Pressure sensors (low and high)
- Lock-off solenoid valve
- Customized fittings
- Pressure relief valve



FM80 Fuel Regulation Module

FM80 Fuel Regulation
Module with small filter

FM80 Fuel Regulation
Module with large filter

FM80 Specifications

Technical specifications only. See user guide for complete instructions.

OPERATING CONDITIONS	
Service Pressure	3,600 psig (P36)
Operating Temperature	-40 °F to 248 °F / -40 °C to 120 °C
Media	Natural Gas, Compressed
PERFORMANCE	
Flow Capacity	176 lb/hr / 80 kg/hr
Leakage	Bubble Tight
PRESSURE REGULATOR	
Outlet Pressure Setpoint Option	25 to 140 psig / 1.73 to 9.65 bar
Outlet Pressure Envelope	+0 / -20 psi (-1.38 bar) from Idle to Full Flow
FEATURES	
HP Coalescing Filter Capacity Options	High Sump Capacity: 5 oz / 148 mL, Mid Sump Capacity: 3 oz / 89 mL, Low Sump Capacity: 0.5 oz / 15 mL, or None
HP Coalescing Filter Grade Options	Grade 6 or 10 Available
HP Solenoid Valve Options	12 V Coil, 24 V Coil, or None
Relief Valve	250 psig (± 50 psi) / 17.2 bar (± 3.4 bar)
Heat Exchanger	Radiator Fluid Circuit Standard
Pressure Sensor High	0 to 5,000 psig: 0.5 to 4.5 V, 4 - 20 mA, or None
Pressure Sensor Low	0 to 500 psig: 0.5 to 4.5 V, 4 - 20 mA, or None
INTERFACE / CONNECTIONS	
Inlet Connection	#6 SAE Female, 3/8" / 8 mm, 1/2" / 12mm Fittings Available
Outlet Connection	#8 SAE Female, 1/2" / 12 mm Fittings Available
Radiator Fluid Connection	3/8" NPT Female or Connections for 1/4", 1/2", 3/8" / 8 mm, 6 mm, and 12 mm Hoses Available
Relief Valve Connection	#4 SAE Female
Boost Assist Connection	1/8" Hose Barb, 3 mm Hose Barb or None
Filter Drain Connection	#6 SAE Female (plugged)
DIMENSIONS (with Large Capacity Filter, Solenoid, Fittings and No Sensors)	
Height	12.7" / 323 mm (with large filter)
Width	2.63" / 66.80 mm
Depth	5.92" / 150.37 mm
Weight	8.0 lbs / 3.63 kg
ELECTRICAL REQUIREMENTS	
Input Voltage (Solenoid Valve)	12 V or 24 V
Nominal Current Requirements	1.7 A
Connection Type (Solenoid Valve)	Deutsch Connector, DTO4 - 2P
Connection Type (Pressure Sensors)	Deutsch Connector, DTMO4 - 3P

Choose from a full line of leak-free, high efficiency components to complete your fuel system.



FFC-110 / 110L Filters

Positioned on the low-pressure side of the vehicle system between the pressure regulator and the fuel injectors. Protect fouling of fuel injectors.



Series 60 Defuel Coupler

Provides an additional connection to on-board CNG tanks to allow for safe defueling of a vehicle. Unique 3-piece valve design secures the valve seal in place in a high-flow condition.



FMS-362 Receptacles

NGV1 / ANSI compliant receptacles are keyed and pressure-activated to prevent backflow and over-pressurization.



High-Pressure Fuel Line Fittings

The widest range available. A-LOK® / CPI™ compression fittings with Supercase® hardened ferrules for advanced corrosion resistance or stainless steel Seal-Lok® O-ring face seal fittings.



HB4 Series Ball Valves

Provide reliable shutoff or switching functions. Upper and lower trunnion bearings enhance the resistance of the trunnions against seizure, and increase the valve life in extreme applications.



B Series Ball Valves

Manually, pneumatically, and electrically actuated two-way B Series ball valves provide quick, 1/4 turn, on-off control of natural gas.



Check Valves

Located on the fuel line between the fill receptacle and the fuel tank, Parker's CVS-363 check valve allows depressurization of the nozzle and receptacle, preventing return flow.



5CNG High-Pressure CNG Hose

Flexible, lightweight hose serves as primary conveyance of CNG in all areas of the vehicle system up to the firewall. Rated to 180°F (82°C) at 5,000 psi (345 bar).



SS23CG Low-Pressure CNG Hose

CNG compatible low-pressure, rubber-covered hose with nylon inner tube. High temperature rated to 250°F (121°C) at 425 psi (29 bar). Flexible with a small bend radius for easy routing.

LEARN MORE ABOUT OUR FM80 FUEL REGULATION MODULE.
Contact Parker Veriflo at 1-510-412-1100 or email us at ngv@parker.com

Sales Offices Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates, Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener
Neustadt
Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BG – Bulgaria, Sofia
Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy
Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs
Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7273 561 000
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker
Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul
phone +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev
phone +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick
phone +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

US – USA, Cleveland
Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

CN – China, Shanghai
Tel: +86 21 2899 5000

HK – Hong Kong
Tel: +852 2428 8008

IN – India, Mumbai
Tel: +91 22 6513 7081-85

JP – Japan, Tokyo
Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul
Tel: +82 2 559 0400

MY – Malaysia, Shah Alam
Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

SG – Singapore
Tel: +65 6887 6300

TH – Thailand, Bangkok
Tel: +662 186 7000-99

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires
phone +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos
phone +55 800 727 5374

CL – Chile, Santiago
phone +56 2 623 1216

MX – Mexico, Toluca
phone: +52 72 2275 4200

DISCLAIMER

The products described herein, including without limitation, product features, specifications, designs. Availability & pricing are subject to change by Parker Hannifin Corp & its subsidiaries at any time without notice.

