

829S1 Series Flexflo® Pilot

The Model 829S1 Flexflo® Pilot Provides Versatile Pressure Regulation At An Economical Price.

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The Model 829S1 Flexflo Pilot is a reversible pressure control regulator (seat & nozzle) that is used in conjunction with Flexflo Regulators to provide pressure control. The Model 829S1 Flexflo Pilot is the most widely-used Flexflo pilot because it features wide setpoint range at an economical price with a simple design. The Model 829S1 may be utilized in both gas and liquid applications. The 829S1 is particularly well-suited for use in natural gas regulation. Applications include pressure reduction, monitor regulators, backpressure control, and relief valve.



Figure 1.0 - Model 829S1 Pilot

Model 829S1 Flexflo® Pilot Features:

- Available For Pressure Reducing or Backpressure/Relief Applications
- Easily Field-Reversible
- Rugged & Reliable Design
- Simple Design is Easy to Maintain
- High Accuracy Control at Economical Price
- All Stainless Steel Construction
- Redundant Parts Provide Extra Internal Seat
- Elimination of Sliding Stem O-Rings Optimizes Control Accuracy
- Pressure Equipment Directive compliant under "SEP" parameters of PED Directive of 1999

Specifications:

Control Range: 3-75 psig (21-517 kPa) Low Pressure
60-600 psig (414-4140 kPa) High Pressure

Available Action: Pressure Reducing
Backpressure/Relief

Available Models: Low Pressure
High Pressure

Operating Temperature: 10°F to 150°F (12°C to 66°C)

Weight: 4.25 Lbs. (1.9 kg)

Dimensions: 4.38 in. x 2.5 in. x 7.75 in.
(111mm x 64mm x 197mm)

Compatible Regulators: Flexflo® Regulator Models 900TE, 83, and 80
Also compatible with other manufacturer's products, contact REDQ Regulators for additional information.

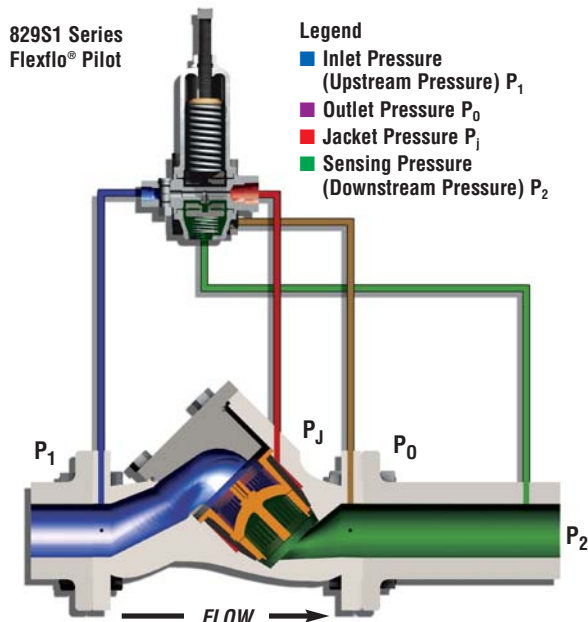


Figure 2.0 - Model 829S1 Flexflo® Pilot configured for downstream pressure control

The 829S1 may be used in conjunction with any flexible element regulator. The 829S1 is shown here with the Model 900TE Flexflo® Regulator. The 829S1 may be used on other Flexflo® models as well as other manufacturer's flexible element regulators for optimum performance.



Figure 3.0 - Model 829S1 Flexflo® Pilot Provides Optimum Control and Convenience When Combined with the REDQ Model 900TE Top-Entry Regulator

A Model 900TE "Top-Entry" Flexflo® Regulator is shown here with a Model 829S1 Flexflo® Pilot and a Model FT-35 Filter. The combination of product provides a versatile, reliable and convenient regulator to suit a wide variety of applications. The Model 829S1 Flexflo® Pilot features 316 SS construction for aggressive liquid or gas applications.

Figure 4.0 - REDQ Model 829S1 Flexflo® Pilot

The 829S1 is specifically designed for use in conjunction with REDQ Flexflo® Regulators.

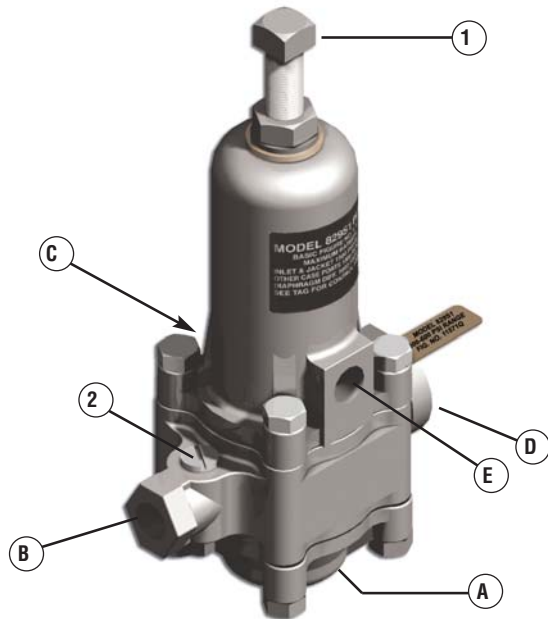


Figure 5.0 - REDQ Model 829S1 Flexflo® Pilot Cutaway

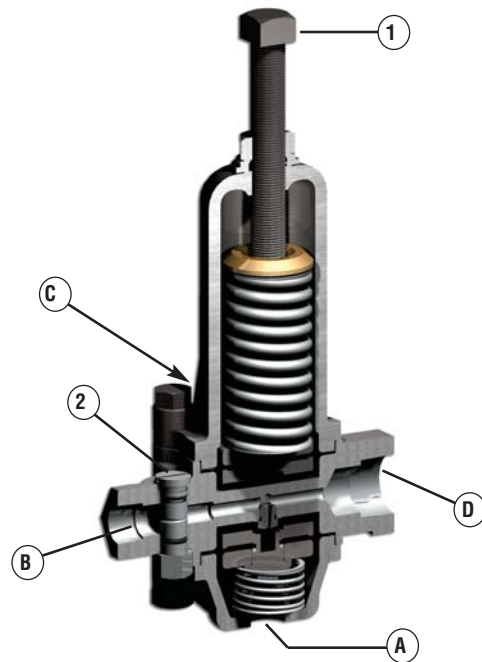


Table 1.0 - Model 829S1 Flexflo® Pilot Port Specifications

Port Definitions	Port Size	Maximum Operating Pressure		Port ID
		Low Pressure Model	High Pressure Model	
Sensing	1/4" FNPT	1000 psig (6895 kPa)	1000 psig (6895 kPa)	A
Inlet	1/4" FNPT	1500 psig (10342 kPa)	1500 psig (10342 kPa)	B
Outlet	1/4" FNPT	1000 psig (6895 kPa)	1000 psig (6895 kPa)	C ⁴
Jacket	1/2" FNPT	1500 psig (10342 kPa)	1500 psig (10342 kPa)	D
Vent	1/4" FNPT	1000 psig (6895 kPa)	1000 psig (6895 kPa)	E

Table 2.0 - Model 829S1 Flexflo® Pilot Main Components

Component	Item ID
Setpoint Adjustment Screw	1
Variable Orifice	2

The REDQ 829S pilot has been replaced with the 829S1.

Both pilots are identical from a functional and dimensional standpoint. Any REDQ 829S pilot may easily be converted to an 829S1 pilot by changing the key internal parts. REDQ offers a conversion kit, which contains all the necessary parts for this purpose.

Notes:

1. Low Pressure Model 829S1 Pilots are equipped with a the following control springs: Grey, White and Brown.
2. High Pressure Model 829S1 Pilots are equipped with the following control springs: Nickel, Yellow, Black and Orange.
3. Vent Port on 829S1 Spring Barrel may be pressure-loaded for "Pneumatic" remote setpoint adjustment. Consult REDQ Regulators for additional information.
4. Denotes Outlet Port (Item C) Not Visible from this View.
5. "Seat" is cast into body to identify the orientation of the body for pressure reducing or backpressure/relief service.

How It Works:

829S1 configuration shown is for Pressure Reduction (Downstream Pressure Control) in conjunction with a REDQ Model 900TE Flexflo® Regulator. Increasing downstream pressure will cause the 829S1 to close the Flexflo® Regulator and restrict flow. Initially, the downstream pressure is above the setpoint of the 829S1. With the Flexflo® jacket pressure equal to the upstream pressure, the Flexflo® Regulator remains fully closed (Fig. 6.1). As downstream pressure falls to a pressure equal to setpoint of the 829S1 pilot, the Flexflo® Regulator jacket pressure will begin to decrease. When the Flexflo® jacket loading pressure falls below the upstream pressure, the Flexflo® Regulator will begin to open and flow gas (Fig. 6.2). If the downstream pressure falls to a point nearly equal to the upstream pressure, the Flexflo® Regulator will fully unload the jacket pressure. With the jacket pressure equal to the downstream pressure, the Flexflo® Regulator is fully open (Fig. 6.3). The upstream pressure will be slightly high than the downstream pressure do the inherent "cracking pressure" associated with the rubber element (tube) of the Flexflo® Regulator.

Legend

- Inlet Pressure (Upstream Pressure) P_1
- Outlet Pressure P_0
- Jacket Pressure P_J
- Sensing Pressure (Downstream Pressure) P_2

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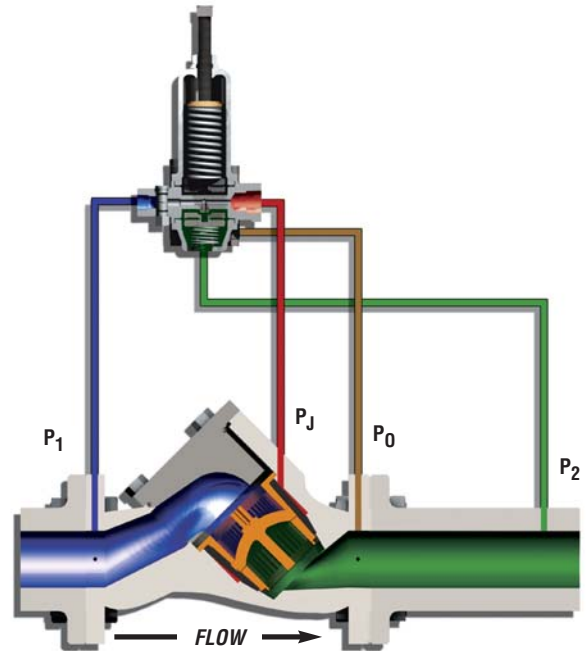


Figure 6.1 Flexflo® Regulator Fully Closed

When the downstream pressure is above the setpoint of the 829S1, the Flexflo® jacket pressure will be equal to the upstream pressure. The Flexflo® Regulator remains fully closed.

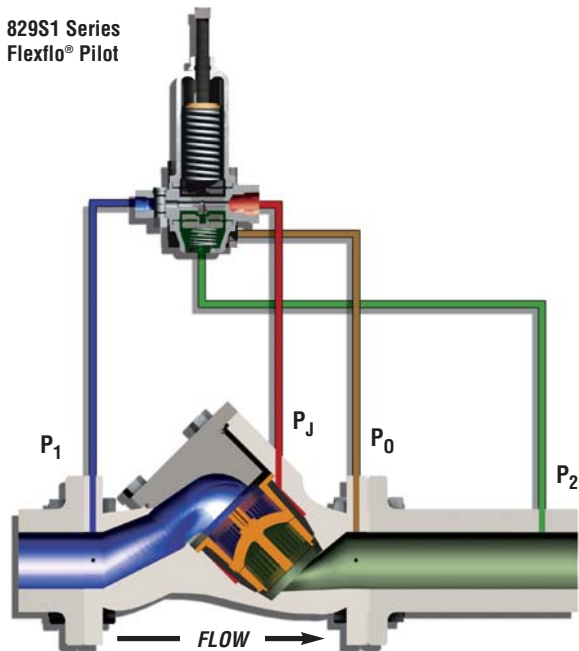


Figure 6.2 Flexflo® Regulator Throttling

When the Flexflo® jacket loading pressure falls below the upstream pressure, the Flexflo® Regulator will begin to open and flow gas. At setpoint equilibrium, the 829S1 will load the jacket of the Flexflo® Regulator to maintain a constant desired downstream pressure.

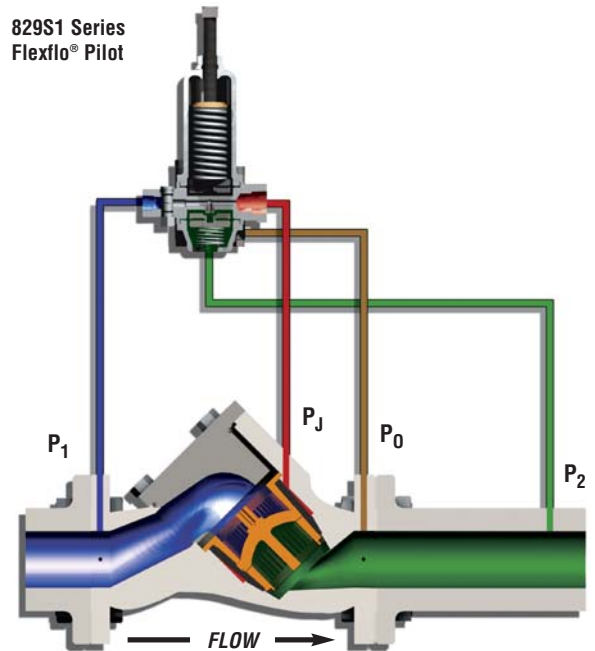


Figure 6.3 Flexflo® Regulator Fully Open

When the downstream pressure falls to a point nearly equal to the upstream pressure, the Flexflo® Regulator will fully unload the jacket pressure. With the jacket pressure equal to the downstream pressure, the Flexflo® Regulator is fully open. The upstream pressure will be slightly high than the downstream pressure do the inherent "cracking pressure" associated with the rubber element (tube) of the Flexflo® Regulator.

Table 4.0 - REDQ Model 829S1 Flexflo® Pilot Control Spring Ranges

Pilot Configuration	829-S1 Pilot Figure Number	Control Spring Range	Control Spring Color	Control Spring Part Number	Repair Kit Part Number
Pressure Reducing Models Low Pressure Reducing Models for Gas Service	11571-KRA	3-10 psig 21-69 kPa	Grey	101-90061	101-90086
	11571-LRA	8-25 psig 55-172 kPa	White	101-90062	101-90086
	11571-MRA	20-75 psig 138-517 kPa	Brown	101-90063	101-90086
Pressure Reducing Models High Pressure Reducing Models for Gas Service	11571-NRA	60-150 psig 413-1034 kPa	Nickel	101-90064	101-90087
	11571-QRA	125-350 psig 862-2413 kPa	Yellow	101-90065	101-90087
	11571-SRA	300-600 psig 2068-4137 kPa	Black & Orange	101-90066	101-90087
Backpressure Models Low Pressure Reducing Models for Gas Service	11571-KBA	3-10 psig 21-69 kPa	Grey	101-90061	101-90086
	11571-LBA	8-25 psig 55-172 kPa	White	101-90062	101-90086
	11571-MBA	20-75 psig 138-517 kPa	Brown	101-90063	101-90086
Backpressure Models High Pressure Reducing Models for Gas Service	11571-NBA	60-150 psig 413-1034 kPa	Nickel	101-90064	101-90086
	11571-QBA	125-350 psig 862-2413 kPa	Yellow	101-90065	101-90087
	11571-SBA	300-600 psig 2068-4137 kPa	Black & Orange	101-90066	101-90087

Notes:

1. For liquid service last digit of figure number would be D.

The 828S1 is a universal pilot, which can be used for pressure reducing or backpressure service. When used for backpressure service, the pilot is assembled slightly different. The table above identifies model, type of service and control range of each specific pilot. Please note that the 829S1 is available in six different spring ranges. The first three spring ranges utilize a low pressure diaphragm for better control accuracy while the second three utilize a high pressure diaphragm for increased strength needed at higher pressures.



Figure 7.1 - Model 829S1 Pilot Pressure Reducing



Figure 7.2 - Model 829S1 Pilot Backpressure/Relief

Maximum Performance and Versatility of the Model 829S1 Flexflo® Pilot may be Achieved when Combined with these Flexflo® Regulators and Accessories



Model 900TE Flexflo® Regulator
Top-Entry Design

The Model 900TE Flexflo® Regulator is a self-contained, rigid, heavy-duty, pilot-operated pressure regulator that may be used in both gas and liquid applications. The 900TE design features a simple, top-entry design for easy in-line maintenance. The 900TE features a cast steel body with integral flanged end connections. Multiple trim configurations are available from 1.5 in. (40 mm) bore to 6 in. (150 mm) bore.



Model 83 Flexflo® Regulator
Compact Design

The Model 83 Flexflo® Regulator is a self-contained, pilot-operated pressure regulator that may be used in both gas and liquid applications. The Model 83 design features a compact, flangeless body design that is constructed entirely of stainless steel. Unique construction of the Model 83 provides for a slim profile designed to mount between standard ANSI flanges. Multiple trim configurations are available from 1 in. (25 mm) bore to 6 in. (150 mm) bore.



Model 80 Flexflo® Regulator
High Capacity Design

The Model 80 Flexflo® Regulator is a self-contained, pilot-operated pressure regulator that may be used in both gas and liquid applications. The Model 80 design features larger bore sizes for high capacity applications. Additionally, note that the Model 80 design is perfectly suited for severe service applications that will destroy other regulators. Construction of the Model 80 provides for a rugged design to mount between standard ANSI flanges. Multiple trim configurations are available from 4 in. (100 mm) bore to 12 in. (300 mm) bore.

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REDQ™ Model FT-35 Filter

The REDQ™ Model FT-35 (T-Type Filter) filters supply gas for use upstream of Flexflo® Pilots and other Flexflo® instrumentation. The FT-35 body is manufactured from Zinc-Plated Steel for rugged durability. The FT-35 is a compact filter device ideal for use with Flexflo® instrumentation when dehydration is not necessary. The FT-35 cartridge filter element is made up of high density polyethylene providing a large surface area and filtration to 35 microns. The element can be readily replaced by depressurizing; removing the bottom closure; replacing the filter and reassembling (hand tight) while still in the line. REDQ™ Model FT-35 Filters are PED Compliant (Restrictions apply).

MAOP 1500 psig (10,340 kPa)
Max. Temp 200°F (93°C)
Filtration 35 μ nominal
Inlet/Outlet Port 1/4" FNPT
Drain 1/4" FNPT with plug

Dimensions 4.88" (124 mm) length x 1.75" (44 mm) diameter
Mounting Unit is supported by tubing/pipe fittings due to low weight and compact size
Weight 2.0 lbs. (0.91kg)



FD-1500 Filter-Dryer

The REDQ™ Model FD-1500 Filter Dryer filters and dehydrates supply gas for use upstream of Flexflo® Pilots and other Flexflo® instrumentation. Designed for use with all pneumatic instrumentation, the FD-1500 Filter Dryer provides superior filtration and dehydration with 110 square iEDes of 10 micron filtering media and 2.0 pounds of silica gel. The FD-1500 incorporates an easy-to-replace "spin on" cartridge made up of a high quality, high capacity nylon and fiberglass filter element reinforced with stainless steel mesh. All REDQ's FD-1500's are fully hydrotested to 2.5 times the working pressure to ensure the integrity of the pressure vessel. REDQ™ Model FD-1500 Filter-Dryers are PED Compliant (Restrictions apply).

MAOP 1500 psig (10,340 kPa)*
 all units hydrotested to 2250 psig (15,510 kPa)
Max. Temp 200°F (93°C)
Filtration 10 μ nominal (110 in² filtration media)
Dehydration 2 lbs. (0.9kg) silica gel water absorption

Inlet/Outlet Port 1/4" FNPT 1.75"
Drain 1/4" FNPT with plug
Dimensions 20" (508 mm) length x 4-1/2" (44 mm) diameter
Mounting Panel Mount or 2" Pipe Mount
Weight 29 lbs. (5.0 kg)

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