Flexflo® Regulator Model 80

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 features a rugged design, which consists of fabricated construction. The rugged design of the Model 80 provides extremely long service life. Multiple trim configurations are available to match a variety of applications.The Model 80 Flexflo® is available from 4" (100 mm) to 12" (300 mm) bore. The Model 80 Flexflo® Regulator typically is used in tandem with a Flexflo® Pilot for pressure control applications. The environmentally friendly design of the Flexflo® Pilot and Regulator eliminates all atmospheric emissions by maintaining all gas/liquid within the piping system.

Specifications:

Item:	Model 80 Flexflo® Regulator
Type:	Pilot Operated Regulator
Body Materials:	Carbon Steel
Available Sizes:	4" (100mm), 6" (150mm), 8" (200mm), 10" (250mm) and 12" (300mm)
End Connections:	Raised Face Flange 150, 300, 600 ANSI ASME/ANSI B16.10 - 1986
Working Temperature:	-20°F to +212°F (-29°C to +100°C) Standard* and **
Maximum Differential:	1200 psid**
Maximum Inlet Pressure:	1480 psig**
Outlet Pressure Range:	1480 psig***
Flow Direction:	Inlet to Outlet

* Optional low temperature design allows -40°F (-40°C)
** Limited by Flexflo® Tube Selection, see page 18, for additional information
*** Limited by Flexflo® Pilot Selection, consult page 19 for additional information.

The Flexflo® Model 80 Features:

- Large capacity design available in larger sizes up to 12" nominal bore
- Rugged design provides years of trouble free service with minimal maintenance
- Rugged design ideally suited for natural gas and liquid regulation
- May be utilized to control liquids pipelines
- Only one moving part (Tube)
- No internal spring required
- No hydraulic oil required
- Large seating area and circumferential tube design provide superior flow shutoff
- Environmentally friendly design with no emissions
- Restricted trims allow growth for future
- Since 1942, the Flexflo® is the original flexible element regulator
- Lower cost regulation than control valves
- Self-contained regulator does not require power source
- Wide range of complementary instrumentation (Pilots) provides limitless application solutions
- Low Noise
- Pressure reducing, pressure relief, or flow control applications.

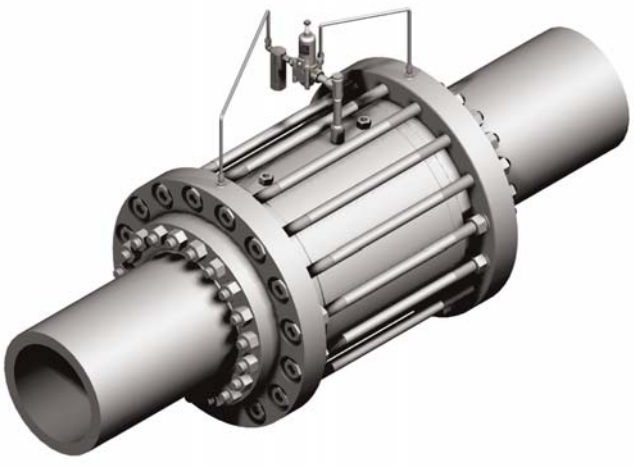
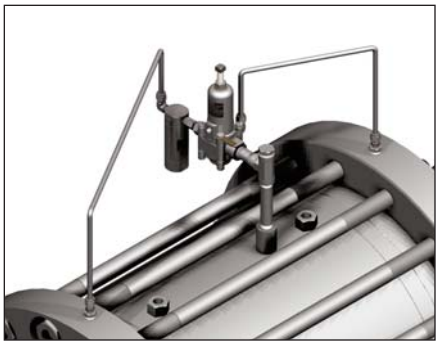
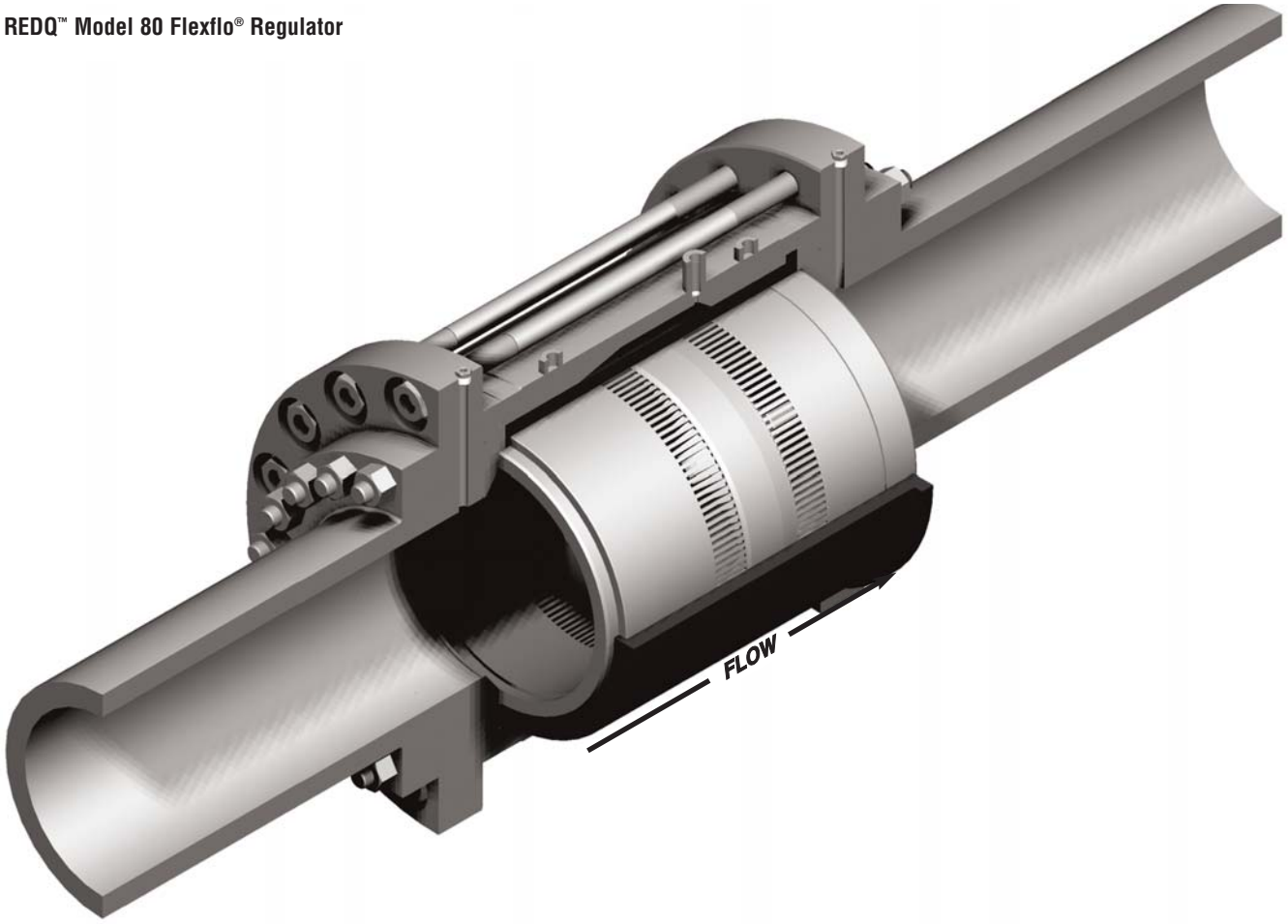


Figure 2.0 - REDQ™ Model 80 Flexflo® Regulator is the original flexible element regulator. The Model 80 Flexflo® Regulator is the ideal regulator for natural gas transmission/distribution systems and liquid pipelines. The combined package of the Model 80, Model FT-35 Filter, and Model 829S1 Pilot show here provides a reliable and economical regulation package for all your pipeline needs. The Model 80 Flexflo® is capable of regulating both gas and liquids.

The REDQ™ Model 80 Flexflo® Regulator is an Extremely Rugged Design

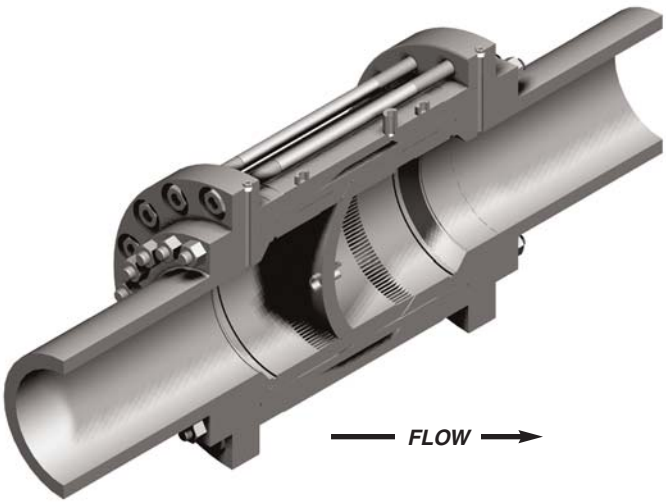


REDQ™ Model 80 Flexflo® Regulator



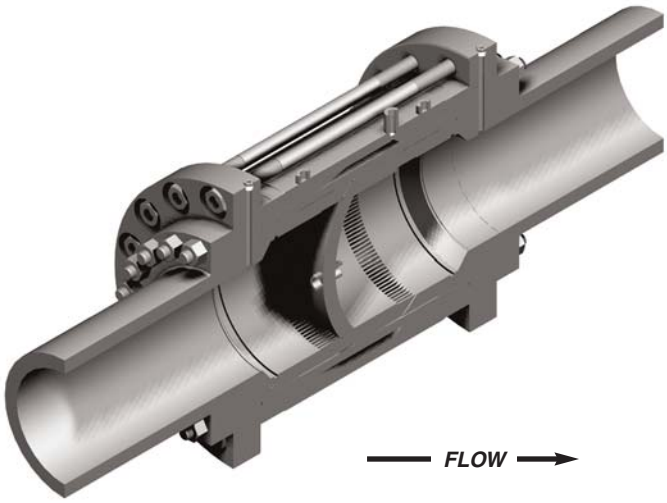
How it Works

Operation of the Model 80 Flexflo® Regulator consists of one moving part, the Tube. This single moving part is a flexible element that controls the flow of gas/liquid through the Core of the regulator. Application of Jacket Pressure to the Tube (tube shown in purple) will regulate the volume of gas/liquid that flows through the regulator. The Model 80 Flexflo® functions as a "slave" device and requires a "brain" to control the process application. Most commonly, Flexflo® Pilots are utilized to control the process. For complete information on REDQ™ Flexflo® Pilots and other related Flexflo® accessories, see pages 19 and 20 of this brochure.



Model 80 Flexflo® Regulator at Full Closed Position

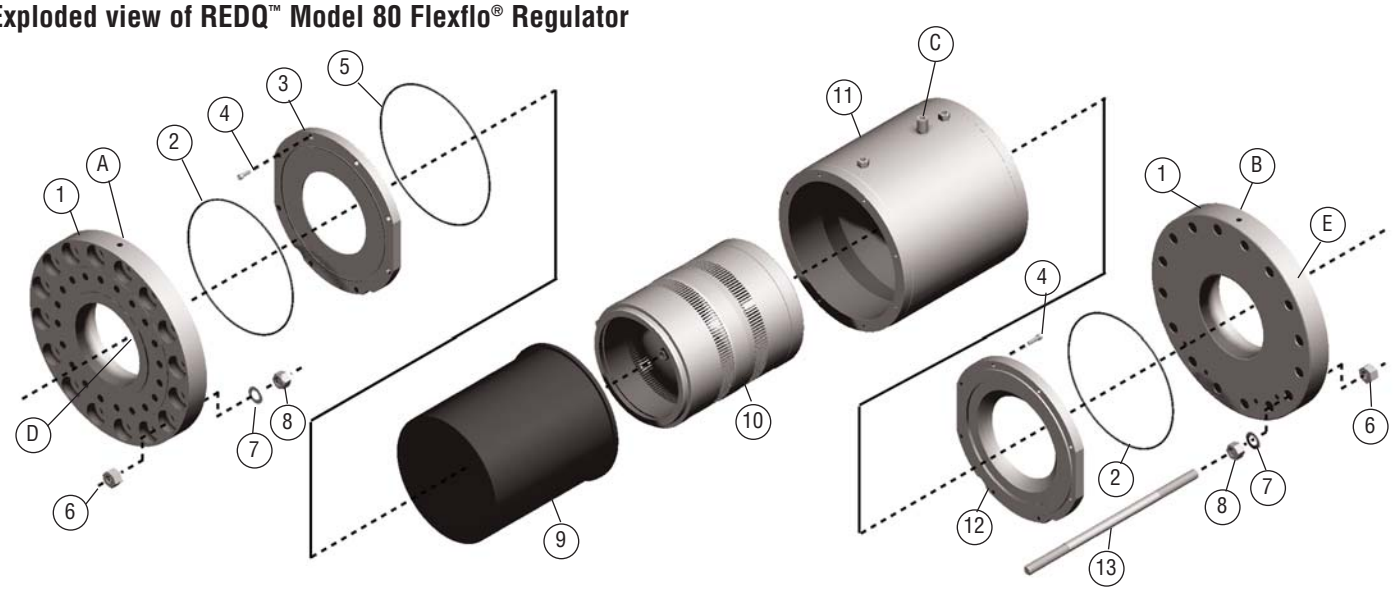
As Jacket Pressure is increased the Tube will constrict around the Core reducing the volume of gas that passes through the Core of the regulator. If Jacket Pressure is maximized, the Tube will seal around the center sealing surface of the Core and completely shut off flow. Jacket Pressure is maximized when it is equal to Upstream Pressure.



Model 80 Flexflo® Regulator at Full Open Position

As Jacket Pressure is decreased, the Tube will expand from the Core increasing the volume of gas/liquid that passes through the regulator. If Jacket Pressure is minimized, the Tube will expand away from the sealing surface of the Core allowing maximum flow. Jacket Pressure is minimized when it is equal to Downstream Pressure.

Exploded view of REDQ™ Model 80 Flexflo® Regulator



Parts Identification and Material of Construction for Model 80 Flexflo® Regulator

Item	Qty	Description	Material
1	2	Line Flange	Carbon Steel
2	2	Line Flange O-Ring	Nitrile Rubber
3	1	Inlet Cover Plate	Carbon Steel
4	Depends on Model	Capscrew	Carbon Steel
5	1	Inlet Cover Plate O-Ring	Nitrile Rubber
6	Depends on Model	Nut	Carbon Steel
7	Depends on Model	Washer	Carbon Steel
8	Depends on Model	Nut	Carbon Steel
9	1	Tube	Depends on Service
10	1	Core	Carbon Steel
11	1	Body	Carbon Steel
12	1	Outlet Cover Plate	Carbon Steel
13	Depends on Model	Stud	

Port Identification for Model 80 Flexflo® Regulator

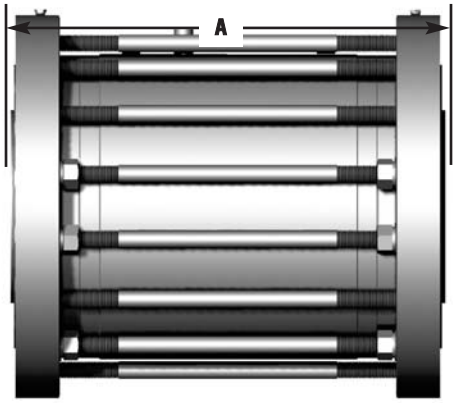
Item	Model 80 Port Definition	Port Size
A	Jacket Loading Port	1/2” FNPT
B	Upstream Supply Port	1/4” FNPT
C	Downstream Discharge Port	1/4” FNPT
D	Regulator Inlet Port	RFFE
E	Regulator Outlet Port	RFFE

Size	ANSI Class	Face to Face Dimensions A[3]	Flange Diameter B	Weight	Recommended Tube (Standard)	Standard Tube P/N[1,2]
4" (40mm)	150	12.50" 13 mm	13.75" 349 mm	150 lbs 70 kg	Nitrile 814	201-04420-814
	300	13.25" 337 mm	14.88" 378 mm	201 lbs 91 kg	Nitrile 814	201-04407-814
	600	15.50" 394 mm	16.13" 410 mm	340 lbs 159 kg	Nitrile 846	201-04005-846
6" (150mm)	150	16.75" 425 mm	17.63" 448 mm	292 lbs 132 kg	Nitrile 814	201-06413-814
	300	16.88" 429 mm	17.88" 454 mm	370 lbs 168 kg	Nitrile 814	201-06406-814
	600	20.00" 508 mm	19.63" 498 mm	680 lbs 308 kg	Nitrile 846	201-06005-846
8" (200mm)	150	21.38" 543 mm	20.75" 527 mm	620 lbs 281 kg	Nitrile 814	201-08407-814
	300	22.38" 568 mm	20.75" 527 mm	700 lbs 318 kg	Nitrile 814	201-08413-814
	600	24.00" 610 mm	23.00" 584 mm	1160 lbs 526 kg	Nitrile846	201-08413-846
10" (250mm)	150	26.63" 676 mm	22.88" 579 mm	1110 lbs 503 kg	Nitrile 814	201-10017-814
	300	22.78" 706 mm	24.13" 613 mm	1360 lbs 617 kg	Nitrile 814	201-10013-814
	600	29.63" 752 mm	27.00" 686 mm	2080 lbs 943 kg	Nitrile 846	201-10013-846
12" (300mm)	150	29.00" 737 mm	26.38" 670 mm	1370 lbs 621 kg	Nitrile 814	201-12008-814
	300	30.50" 775 mm	28.13" 714 mm	1800 lbs 816 kg	Nitrile 814	201-12014-814
	600	32.25" 819 mm	29.75" 756 mm	2860 lbs 1297 kg	Nitrile 846	201-12014-846

NOTES:
1. Tube materials listed are standard offering for natural gas applications.
   Tubes listed are limited by allowable Max. P across tube and flow media temperature.
2. For additional tube materials and more specific tube specifications, please see Tube Material Table on page 18.
3. Face-to-face dimensions are compatible with ASME/ANSI B16.10-1896 Specifications.

REDQ™ Model 80 C_v for 100% Capacity Core & 50% Capacity Core

Pressure Class	Size Inches	Max C_v (100% Core)		Max C_v (50% Core)	
		N Body	W Body	N Body	W Body
ANSI 150	4	230	283	153.3	188.7
	6	528	564	352	376
	8	910	1000	606.7	666.7
	10	1145	1385	763.3	923.3
	12	1610	2020	1073.3	1346.7
ANSI 300	4	245	283	163.3	188.7
	6	528	564	352	376
	8	910	1000	606.7	666.7
	10	1145	1385	763.3	923.3
	12	1610	2020	1073.3	1346.7
ANSI 600	4	95	121	63.3	80.7
	6	207	262	138	174.7
	8	642	742	428	494.7
	10	742	990	494.7	660
	12	1072	1437	614.7	958



Model 80 Flexflo® Regulator Figure Number Designation

REDQ™ Flexflo® Regulator Model Number Designation Explanation Every REDQ™ Regulator product can be completely identified by its figure number. Listed below is an example of how figure numbers are derived.

Example: 10 in. REDQ™ Model 80, Class 150 ANSI End Connections.

Basic Figure Number		
Size	**ANSI**	**Basic F/N**
	150	11564
4”	300	11565
	600	11356
	150	11564
6”	300	11565
	600	11356
	150	11354
8”	300	11351
	600	11356
	150	11354
10”	300	11351
	600	11356
	150	11354
12”	300	11351
	600	11356

Size Code	
040	4”
060	6”
080	8”
100	10”
120	12”

Trim Codes	
A	Standard Service (10/150°F)
B	Sour Service/Nace (0-150°F)
C	Sour Service/Nace (-20/150°F)
D	Standard Service (-20/150°F)
E	Water Service (0/175°F) *Not FDA approved for potable water*
F	Salt Water (-20/175°F)
H	MTBE (10/180°F)
J	Standard Service (-40/150°F)

Body Cavity	
w	Liquid Service
N	Natural Gas

Core	
H	Liquid Service
K	Gas Service
R	Reliever Service (80-888)

REDQ™ Tube material selection table for Flexflo® Regulators

In order to meet the exact demands of each particular Flexflo® Application, REDQ offers a wide variety of different tube compounds. When selecting a tube for a specific application, its important to take into consideration pressure differential, temperature, as well as the particular flow media. In the table below there are some of the standard tubes that REDQ offers.

Standard Flexflo® Tube Materials

REDQ Material (Code number)	814 (C)	846 (E)	878 (A)	893 (D)	880 (N)	888 (B)	725 (F)	745M 744I 740 (K)	644 (R)
Base Polymer	Nitrile	Nitrile	Hydrin	Hydrin	Polylsoprene	EPDM	Hydrin	HNBR	Nitrile
Nominal Durometer	65	75	65	55	65	70	40	65,75,85	75
Max. Differential (psid)	720	1440	720	275	720	720	60	745,744,740 275,720,1440	1440
Model 80	STD	STD	OPT	OPT	OPT	OPT	OPT	OPT	OPT
Temp. Range min/max °F	10/150	10/150	-20/150	-40/150	0/150	-20/175	-40/120	10/212	-40/150
Temp. Range min/max °C	-12/65	-12/65	-29/65	-40/65	-17/65	-29/79	-40/48	-12/100	-40/65
Hydrocarbon									
Gaseous	OK	OK	OK	OK	NR	NR	OK	OK	OK
Liquid	OK	OK	OK	OK	NR	NR	OK	OK	OK
%Aromatic content Max	20	15	30	15	NR	NR	20	40	NR
Max sulfur % wt	0.5	0.5	5	0.5	NR	NR	5	40	NR
Fluid Compatibility									
Water	OK	OK	NR	NR	OK	OK	NR	OK	OK
Nitrogen	OK	OK	OK	OK	OK	OK	OK	OK	OK
Air	OK	OK	OK	120°F max	OK	OK	OK	OK	OK
Synthetic Lubes (Phosphate Esters)	NR	NR	NR	OK	OK	NR	NR	NR	NR
Peroxides (Sour Gasoline)	NR	NR	NR	NR	NR	NR	NR	OK	OK
Ketones/Amines	NR	NR	NR	NR	NR	NR	NR	NR	NR
Max H2S in water %wt	0.5	0.5	NR	NR	NR	Unlimited	NR	1.5	NR
Methyl. Ethyl Alcohols	NR	NR	NR	NR	OK	OK	NR	OPT	NR
	Gen-Hydro-carbon Service, Water	Gen-Hydro-carbon Service, Water	Gen-Hydro-carbon Service, Water at Lower Temps.	Rec.for Potable Water, Mill Scale Apps. Salt Water	Gen-Hydro-carbon Service, Water	Rec. for Std. Water Ammonia, CO_2 Service	Low AP Apps Only	White Petrol Products, Unleaded gas w/Alcohols (MTBE)	Gen-Hydro-carbon Service, Water

NOTES:

STD Indicates a Standard Material for Specific Flexflo® Regulator Model.
OPT Indicates Optional Compatible Material for Specific Flexflo® Regulator Model.
OK Indicates Material is Compatible with Corresponding Fluid.
NR Indicates Material Not Recommended for Specific Flexflo® Regulator Model.

Hydrin is a registered trademark of Zeon Chemicals L.P.
Fluorel is a trademark of 3M Company.

Application Guidelines for Flexflo® Model 80 Regulator

Model 80

Applications
Pressure Control
Power Plant Control
Monitor Regulator (Overpressure)
Relief Service (Overpressure)
Flow Control
Line Break Protection
Backpressure Control
On-Off Service
Liquid Surge Relief [1]

Features
Optional Reduced Capacity Trims

Available Configurations
4" (100 mm) , 6" (120) Bore
12" (300 mm) Bore
150, 300, 600 ANSI

End Connections
Raised Face Flanged End (R F F E)

Accessories
CVD Control Valve Diffuser
CVS Control Valve Silencer

Compatible Instrumentation
FEP-30 Flexflo® Regulator
Model 829S1 Flexflo® Regulator
FEP 200/600 Flexflo® Regulator
FEP-175/600-CH Flexflo® Regulator
FEP-10001300-CH Flexflo® Regulator

NOTES:
[1] Model 80 Flexflo® Regulator may be utilized as economical option for Liquid Surge Relief. Model 887 Flexflo® Surge Relievers are primary choice for Liquid Surge Relief due to speed of response.

NOTE: This information is intended as a guideline for application of REDQ™ Flexflo® Products. We reserve the right to modify product design at any time without notice. We strongly recommend contacting REDQ Regulator Operations prior to application of any products.

Figure 10.0 - REDQ™ Model 80 regulators in parallel with REDQ™ Model 820 pilots (superceded by FEP-1000-CH and FEP-1300-CH) configured for downstream pressure control.

Figure 11.0 - REDQ™ Model 80 regulators in series with REDQ™ Model 820 pilots (superceded by FEP-1000-CH and FEP-1300-CH) configured for downstream pressure control.

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