

FRS 7../6 Threaded and FRS 5... Flanged
Installation Instructions



SPECIFICATIONS

FRS The FRS series pressure regulator, is a spring-loaded pressure regulator with adjustable setpoint spring. Internal sensor for regulating output pressure.

Body sizes	Size	
705/6	1/2"	NPT
707/6	3/4"	NPT
FRS 710/6	1"	NPT
FRS 712/6	1 1/4"	NPT
FRS 715/6	1 1/2"	NPT
FRS 720/6	2"	NPT
FRS 725/6	2 1/2"	NPT
FRS 730/6	3"	NPT
FRS 5040	1 1/2" DN	Flanged
FRS 5050	2" DN	Flanged
FRS 5065	2 1/2" DN	Flanged
FRS 5080	3" DN	Flanged
FRS 5100	4" DN	Flanged
FRS 5125	5" DN	Flanged
FRS 5150	6" DN	Flanged

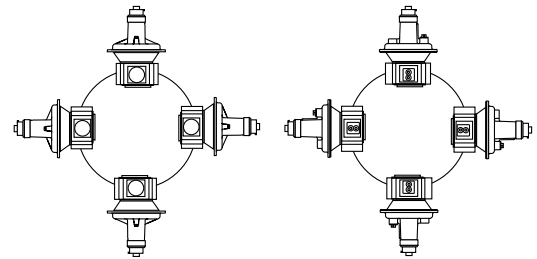
Gases
Natural gas, Propane, Butane, Air and Other Inert Gases.

Maximum Operating Pressure
10 PSI (140 mbar) FRS 7../6
7 PSI (500 mbar) FRS 5... Flanged (5PSI CSA)

Output pressure range (adjustable with different springs)
FRS 7../6 and 5... Flanged, 1 to 60 in. W.C. (2.5 to 150 mbar)

Ambient / Fluid Temperature
FRS 7../6 -40 to +160 °F (-40 to +70 °C)
FRS 5... +5 to +160 °F (-15 to +70 °C)

Mounting Position
Regulator dome vertically upright or lying horizontally.



Test Port
Depends on model, see details.

Vent Line Connection
See optional connections.

Approvals
CSA ANSI Z21.18 / CSA 6.3 # 1205610

ATTENTION

- Read these instructions carefully.
- Failure to follow them and/or improper installation may cause explosion, property damage and injuries.
- Installation must be done with the supervision of a licensed burner technician.
- The system must meet all applicable national and local code requirements.
- Check the ratings in the specifications to make sure that it is suitable for your application.
- Never perform work if gas pressure or power is applied, or in the presence of an open flame.
- Once installed, perform a complete checkout including leak testing.
- Verify proper operation after servicing.

MOUNTING PREPARATION

Recommended Preparation FRS 7../6 & FRS 5... Flanged

- The main gas supply must be shut off before starting the installation.
- Read these installation instructions carefully.
- Carefully examine the unit for shipping damage.
- Remove all dirt and debris before installing. Failure to remove dirt/debris could result in damage or improper performance.

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MOUNTING

Procedure to Mount the FRS 7.../6

- Install the FRS.../6 with the gas flow matching the direction indicated by the arrows on the casting.
- Mount the FRS.../6 with the regulator vertical or horizontal.
- Use new, properly reamed and NPT threaded pipe free of chips.
- Apply good quality pipe sealant, putting a moderate amount on the male threads only. If using LP gas, use pipe sealant rated for use with LP gas.
- Do not thread pipe too far. FRS.../6 distortion and/or malfunction may result from excess pipe in the valve body.
- Apply counterpressure with a parallel jaw wrench only to the flats of the FRS.../6 when installing pipe.
- Do not overtighten the pipe. Follow the maximum torque values listed.
- After installation is complete, perform a leak test using a soapy water solution.

Procedure to Mount the FRS 5... Flanged

- Install the FRS 5... with the gas flow matching the direction indicated by the arrows on the casting.
- Mount the FRS 5... with the regulator vertical or horizontal.
- Insert seal.
- Insert bolts, tighten in a star pattern to ensure uniform tightness.
- Do not overtighten bolts. Follow the maximum torque values listed.
- After installation is complete, perform a leak test using a soapy water solution

FRS 5... Flanged Accessories

DN	*Weld neck part #	# of Holes	Bolt size	**Bolt part #	***Seal part #
40	D227 137	4	M16x55	D135 940	D100 164
50	D227 138	4	M16x55	D135 940	D030 221
65	D227 139	4	M16x65	D135 930	D099 408
80	D227 140	8	M16x65	D135 930	D030 254
100	D227 141	8	M16x65	D135 930	D030 304
125	D227 142	8	M16x75	D148 830	D030 312

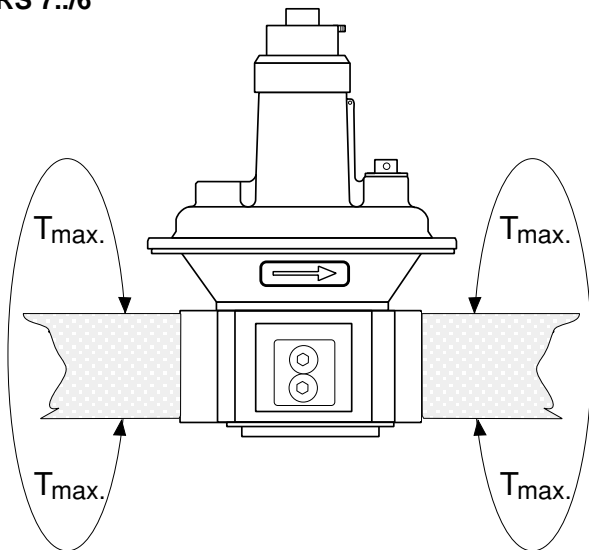
*When a control is used alone, one weld neck flange is needed for each end, for a total of two flanges.

When one control is bolted to another, such as an FRS to a DMV, one weld neck flange is needed for each end, for a total of two flanges

** includes one bolt, one lock washer, and one nut

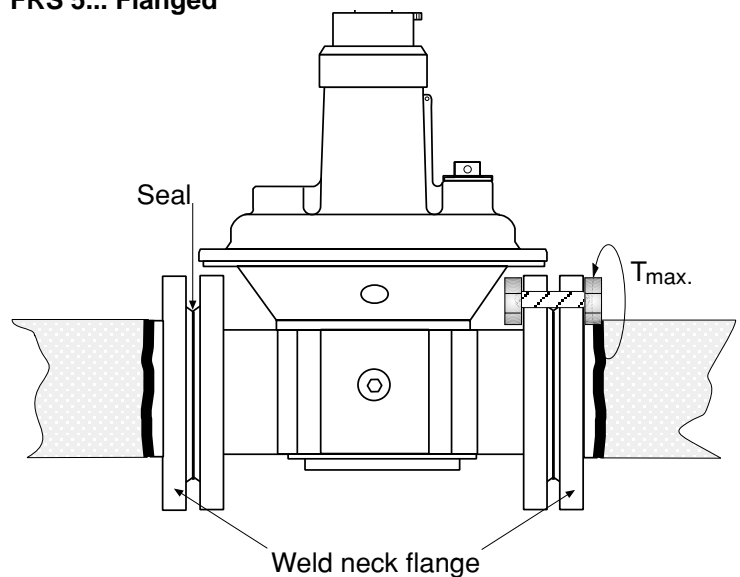
*** one seal needed for each flange

FRS 7.../6



NPT	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2 1/2"	3"
Tmax [lb-in]	443	560	750	875	940	1190	1310	1310

FRS 5... Flanged



Bolt	M16X65 (DIN 939)
Tmax [lb-in]	443

! CAUTION: Do not overtorque threaded connection or bolts permanent damage will occur.

! CAUTION: If the flow is not in the same direction as the arrows, the FRS will not operate properly.

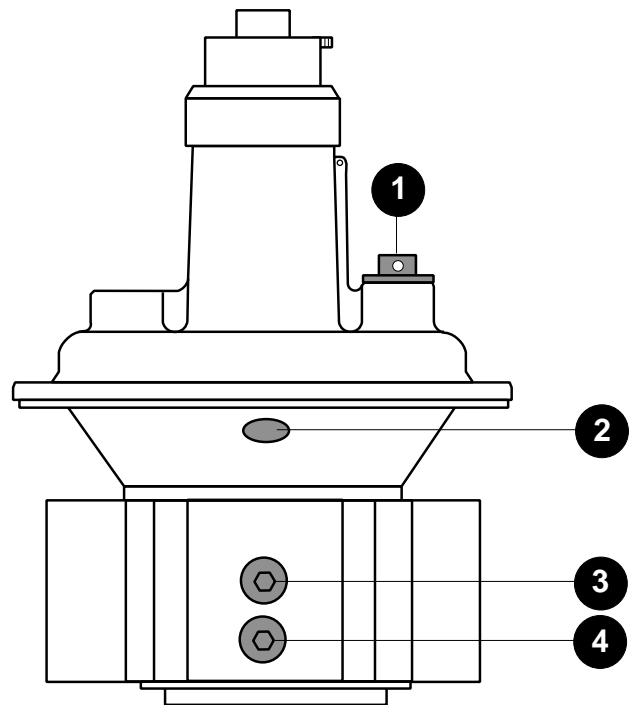
CONNECTIONS

Pressure taps

FRS 7../6


- 1 Vent connection (optional*)
FRS 705/6 - FRS 710/6, G 1/4 in.
FRS 712/6 - FRS 730/6, G 1/2 in.
- 2 Feedback pressure connection.
FRS 705/6 - FRS 710/6, G 1/4 in. - one side.
FRS 712/6 - FRS 730/6, G 1/4 in. - both sides.
- 3 Upstream pressure connection.
FRS 705/6 - FRS 710/6, 1/4 in. NPT - one side.
FRS 705/6 - FRS 710/6, G 1/4 in. - one side.


FRS 712/6 - FRS 730/6, 1/4 in. NPT - both sides.
- 4 Downstream pressure connection.
FRS 705/6 - FRS 710/6, 1/4 in. NPT - one side.
FRS 712/6 - FRS 730/6, 1/4 in. NPT - both sides.



FRS 5... Flanged

- 1 Vent connection (optional*)
FRS 5040 - FRS 5150, G 1/2 in.
- 2 External feedback pressure connection (optional)
FRS 5040 - FRS 5150, G 1/4 in. - both sides
- 3 Upstream pressure connection (optional)
FRS 5040 - FRS 5150, G 1/4 in. - both sides

 *All FRS regulators are approved as ventless. The pressure regulators incorporate a vent limiter as per ANSI Z21.18/CSA 6.3, standard for Gas Appliance Regulators.

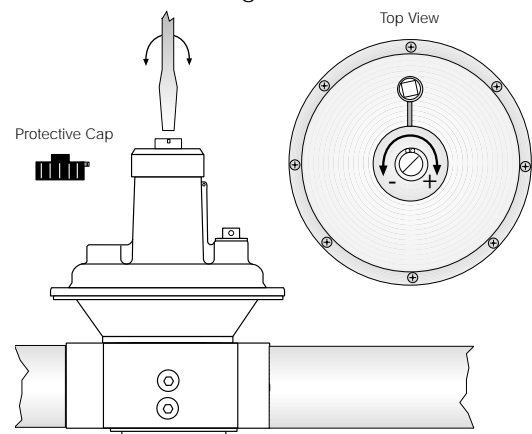
 CAUTION: When using optional external feedback connection, seal the internal impulse connection with a silicone or RTV sealant.

OUTLET PRESSURE ADJUSTMENT

Adjusting the FRS outlet pressure

1. Make sure the intended output pressure is within the spring range that is installed in the regulator.
2. Remove the black protective cap.
3. To increase outlet pressure, turn the adjustment spindle clockwise. To decrease the outlet pressure turn the adjustment spindle counterclockwise.
4. Always use an accurate pressure gauge connected downstream of the regulator to measure the actual outlet pressure when the FRS is in the intended operating position.
5. Reinstall the black protective cap.
6. After adjusting the setpoint for normal operation, check to see that the gas pressure regulator operates as intended.

7. To prevent unauthorized adjustment, use holes in the black cap and the side of the regulator to secure a lead seal.



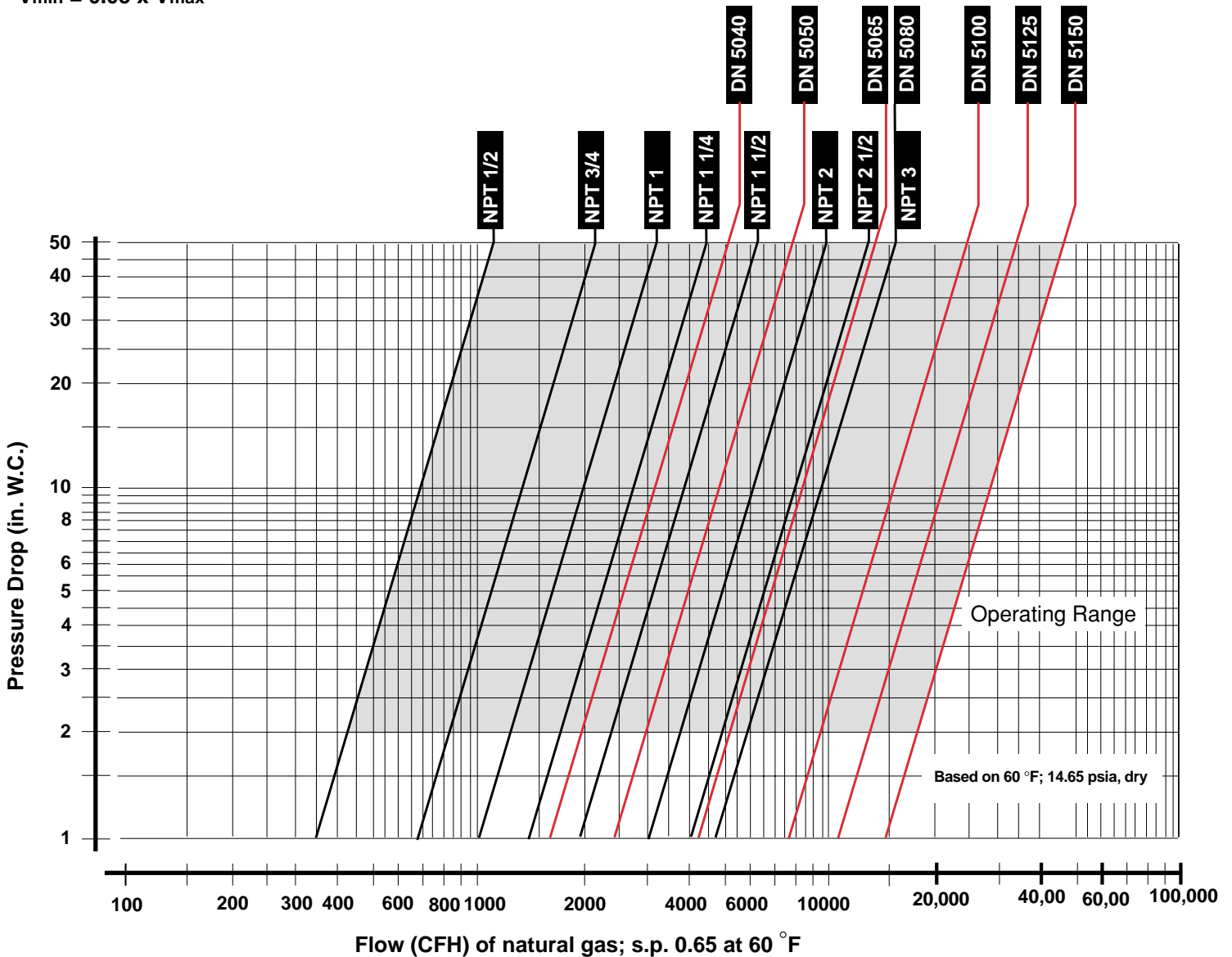
Spring selection

Setpoint spring range in. W.C.	1 to 3.6	2 to 5	2.8 to 8	4 to 12	10 to 22	12 to 28	24 to 40	40 to 60
Spring color	Spring 1 brown	Spring 2 white	Spring 3 orange	Spring 4 blue	Spring 5 red	Spring 6 yellow	Spring 7 black	Spring 8 pink
Nominal width	Standard							
FRS 705/6	D229 817	D229 818	D229 820	D229 821	D229 822	D229 823	D229 824	D229 825
FRS 707/6	D229 833	D229 834	D229 835	D229 836	D229 837	D229 838	D229 839	D229 840
FRS 710/6	D229 842	D229 843	D229 844	D229 845	D229 846	D229 847	D229 848	D229 849
FRS 712/6, 715/6 & 5040	D229 851	D229 852	D229 853	D229 854	D229 869	D229 870	D229 871	D229 872
FRS 720/6 & 5050	D229 874	D229 875	D229 876	D229 877	D229 878	D229 879	D229 880	D229 881
FRS 725/6, 730/6 & 5065, 5080	D229 883	D229 884	D229 885	D229 886	D229 887	D229 888	D229 889	D229 890
FRS 5100	D229 892	D229 893	D229 894	D229 895	D229 896	D229 897	D229 898	D229 899
FRS 5125	D229 901	D229 902	D229 903	D229 904	D229 905	D229 906	D229 907	D229 908
FRS 5150	D229 909	D229 910	D229 911	D229 912	D229 913	D229 914	D229 915	D229 916

FLOW DIAGRAM

Flow diagram in regulated state, where outlet pressure = 8 in. W.C.

$V_{min} = 0.05 \times V_{max}$



A minimum of 2 in. W.C. Δp is required when sizing at maximum flow capacity for optimal control.