

CS400 Series Commercial / Industrial Pressure Reducing Regulators



Figure 1. Typical CS400 Pressure Reducing Regulators

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Introduction

Scope of the Manual

This Instruction Manual provides installation, maintenance and parts ordering information for the CS400 Series regulators. Instructions and parts lists for other equipment mentioned in this Instruction Manual are found in separate manuals.

CS400 Series

Specifications

The Specifications section on the following page lists the specifications for the CS400 Series regulators. The following information is stamped on the regulator at the factory: type number, date of manufacture, spring range, orifice size, maximum inlet pressure, maximum operating outlet pressure and outlet pressure which may damage regulator parts.

Available Configurations

See Table 2

Body Sizes, End Connection Styles and Pressure Rating⁽¹⁾

See Table 4

Maximum Inlet Pressures⁽¹⁾

Emergency: 175 psig / 12.1 bar

Operating: See Table 3

Operating Pressure Ranges⁽¹⁾

Regulator: See Table 5

Integral Monitor Module: See Table 6

Slam-shut Module: See Tables 7 and 8

Maximum Outlet Pressures⁽¹⁾

Emergency (Casing): 25 psig / 1.7 bar

To Avoid Internal Parts Damage:

5 psig / 0.34 bar over set pressure

Operating: 5.5 psig / 0.38 bar

Flow Coefficients and Orifice Sizes

See Table 3

IEC Sizing Coefficients

See Table 3

Spring Case Vent Connection

1 NPT

Hydrogen

- Up to 25% Hydrogen Blend (By Volume)
- 100% Hydrogen Construction Available (Contact Factory)

Operating Temperature (TS)⁽¹⁾⁽²⁾

According to PED Standards:

All Types: -4 to 150°F / -20 to 66°C

Non-PED:

All Types: -20 to 150°F / -29 to 66°C

Pressure Registration

Internal or External

Approximate Weights

With Threaded Body

Type CS400: 9 lbs / 4 kg

Type CS403: 18.5 lbs / 8 kg

Type CS404: 11.2 lbs / 5 kg

With Flanged Body

Add 8.6 lbs / 4 kg to weights listed

PED Conformity Statement and Information

The CS400 Product Series is in conformity with the Pressure Equipment Directive PED 2014/68/EU.

The exception to this previous statement is the Type CS403 which is not yet certified to conform with the PED Directive.

Pressure regulator does not require any supplementary upstream safety accessory for protection against overpressure compared with its design pressure PS, when upstream reducing station is sized for a max downstream incidental MIPd ≤ 1.1 PS.

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

2. Product has passed Emerson testing for lockup, relief start-to-discharge and reseal down to -40°F / -40°C.

Table 1. PED Information

TYPE	DESCRIPTION	PED CATEGORY	FLUID GROUP
CS400	Base regulator	I	Groups 1 and 2 according to PED 2014/68/EU, 1st and 2nd family gas according to EN 437 or other gases (compressed air, nitrogen). The gas must be non-corrosive, clean (filtration on inlet side necessary) and dry.
CS404	Regulator with Slam-Shut Module	IV	
European EN Reference Standards		EN 334, EN 14382	

Table 2. Available Configurations

TYPE NUMBER				OPTIONS	
C	S	4	0		
					OVERPRESSURE PROTECTION MODULE
		0			Without Overpressure Protection Module
		3			With Integral Monitor Module ⁽¹⁾⁽³⁾
		4			With Slam-shut Module ⁽²⁾⁽³⁾
					PRESSURE REGISTRATION
		E			External Registration ⁽³⁾
		I			Internal Registration
					RELIEF
		N			Non-Relief
		T			Token Internal Relief
		R			Internal Relief
	Example: Type number CS404IT: CS400 regulator constructed with Type VSX4 slam-shut module, with internal pressure registration and with token relief.				
1. Reference Instruction Manual D103126X012 for information regarding the Integral Monitor module.					
2. Reference Instruction Manual D103127X012 for information regarding the Type VSX4 safety shut-off module.					
3. Available only with Non-Relieving or Token Relief options, not Internal Relief.					

Table 3. Inlet Pressure Ratings and Flow and Sizing Coefficients

TYPE	ORIFICE SIZE		MAXIMUM OPERATING INLET PRESSURE		FLOW COEFFICIENTS (WIDE OPEN)		C ₁	IEC SIZING COEFFICIENTS		
	In.	mm	psig	bar	C _g	C _v		X _T	F _D	F _L
CS400, CS403 and CS404	3/16	4.8	125	8.6	27	0.97	27.7	0.50	0.91	0.89
	1/4	6.4	125	8.6	50	1.77	28.2	0.50	0.92	
	5/16	7.9	100	6.9	82	2.90	28.3	0.50	0.94	
	3/8	9.5	60	4.1	113	3.72	30.4	0.58	0.89	
	1/2	12	40	2.8	182	5.61	32.4	0.66	0.82	
	5/8	16	30	2.1	284	7.26	39.1	0.97	0.74	
	3/4	19	20	1.4	356	9.83	36.2	0.83	0.72	



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.

Fisher™ regulators must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management, Inc. (Emerson) instructions.

If the regulator vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Call a gas service person to service the unit. Only a qualified person must install or service the regulator.

CALIFORNIA PROPOSITION 65

This product can expose you to chemicals including lead, nickel and cobalt, which is known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

Description

CS400 Series regulators are typically installed on industrial and commercial applications. See Table 2 for available configurations. Constructions with External Registration, e.g., Type CS400EN, require an external control line.

CS400 Series

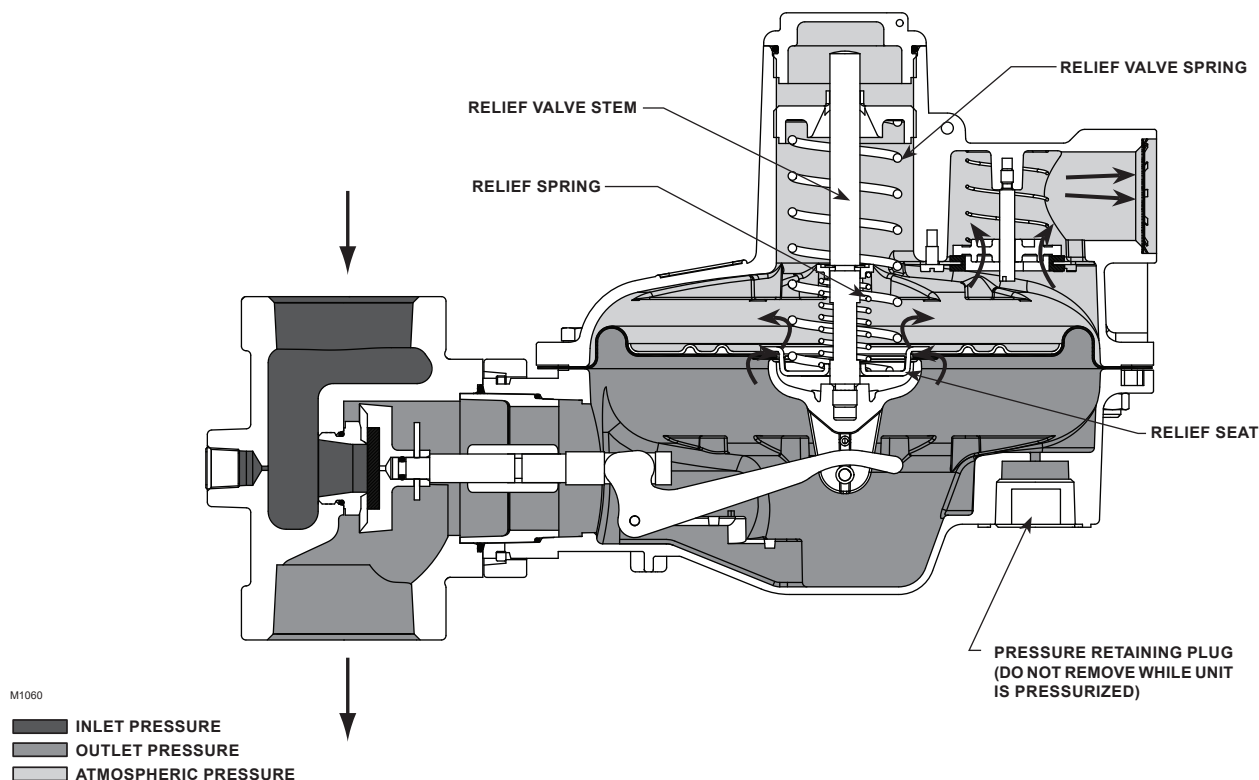


Figure 2. Type CS400IR Internally Registered Regulator with Internal Relief Operational Schematic

Table 4. Body Sizes, Material, End Connections and Pressure Ratings

BODY MATERIAL	INLET SIZE	OUTLET SIZE	END CONNECTION	FACE-TO-FACE DIMENSION		BODY PRESSURE RATING	
				In.	mm	psig	bar
Gray Cast Iron	1-1/4	1-1/4	NPT	4.5	114	175	12.1
	1-1/4	1-1/2					
	1-1/2	1-1/2					
	2	2	CL125 FF	5	127		
	NPS 2 / DN 50	NPS 2 / DN 50		10	254		
Ductile Iron	1-1/4	1-1/4	NPT	4.5	114	290	20.0
	1-1/2	1-1/2		4.5	114		
	2	2		5	127		
	1-1/4	1-1/4	Rp	4.5	114		
	1-1/2	1-1/2		4.5	114		
	2	2		5	127		
	NPS 2 / DN 50	NPS 2 / DN 50	CL125 FF / CL150 FF	10	254		
Steel	1-1/4	1-1/4	NPT	10	254	232	16.0
	1-1/2	1-1/2		10	254		
	1-1/4	1-1/4	Rp	4.5	114	290	20.0
	1-1/2	1-1/2		4.5	114		

Table 5. Outlet Pressure Ranges

TYPE	OUTLET PRESSURE RANGE		PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
	In. w.c.	mbar			In.	mm	In.	mm
CS400, CS403 and CS404	3.5 to 5	9 to 12	GE30198X012	Red	0.098	2.49	4.18	106
	4.5 to 6.5	11 to 16	GE30195X012	Purple	0.080	2.03	4.32	110
	6 to 8	15 to 20	GE30188X012	Gold	0.108	2.74	4.18	106
	7.5 to 11	19 to 27	GE30189X012	Blue	0.110	2.79	4.40	112
	10 to 14	25 to 35	GE30224X012	Unpainted	0.110	2.79	4.40	112
	12 to 19	30 to 47	GE30196X012	Green	0.112	2.85	4.70	119
	18 in. w.c. to 1 psig	45 to 69	GE30225X012	Orange	0.120	3.05	4.94	125
	1 to 2 psig	69 to 138	GE30190X012	Black	0.140	3.56	4.66	118
	2 to 5.5 psig	138 to 380	GE30197X012	Yellow	0.172	4.37	4.42	112

Table 6. Type CS403 Regulator and Integral Monitor Outlet Pressure Ranges

TYPE	PRIMARY REGULATOR				INTEGRAL MONITOR					
	Setpoint		Spring Part Number	Spring Color	Setpoint ⁽¹⁾		Spring Part Number	Spring Range		Spring Color
	In. w.c.	mbar			In. w.c.	mbar		In. w.c.	mbar	
CS403	4	10	GE30198X012	Red	14	35	GE30189X012	12 to 21	30 to 52	Blue
	5	12	GE30195X012	Purple						
	7	17	GE30188X012	Gold						
	11	27	GE30189X012	Blue	21	52	GE30196X012	18 to 30	45 to 75	Green
	14	35	GE30224X012	Unpainted						
	18	45	GE30196X012	Green	1 psig	69	GE30225X012	26 to 40	65 to 99	Orange
	1 psig	69	GE30225X012	Orange	1.5 psig	103	GE30190X012	1.4 to 2.9 psig	97 to 200	Black
	2 psig	138	GE30190X012	Black	2.5 psig	172	GE30190X012	1.4 to 2.9 psig	97 to 200	Black
	3 psig	207	GE30197X012	Yellow	3.5 psig	241	GE35081X012	2.6 to 3.7 psig	179 to 255	Purple
	4 psig	276	GE30197X012		5 psig	345	GE30192X012	3.6 to 6 psig	248 to 414	Dark Blue
	5 psig	345	GE30197X012		6 psig	414	GE33121X012	5.1 to 7.5 psig	352 to 517	Red
1. Integral Monitor setpoints shown represent the minimum setpoint difference between the Integral Monitor and the Primary regulator. Higher monitor setpoints can be chosen, e.g., for Primary regulator setpoint of 7 in. w.c. / 17 mbar, the Integral Monitor can also be set at 14, 21 in. w.c., 1 psig / 35, 52, 69 mbar or higher.										

Table 7. Type CS404 Regulator and Slam-shut OPSO Pressure Ranges

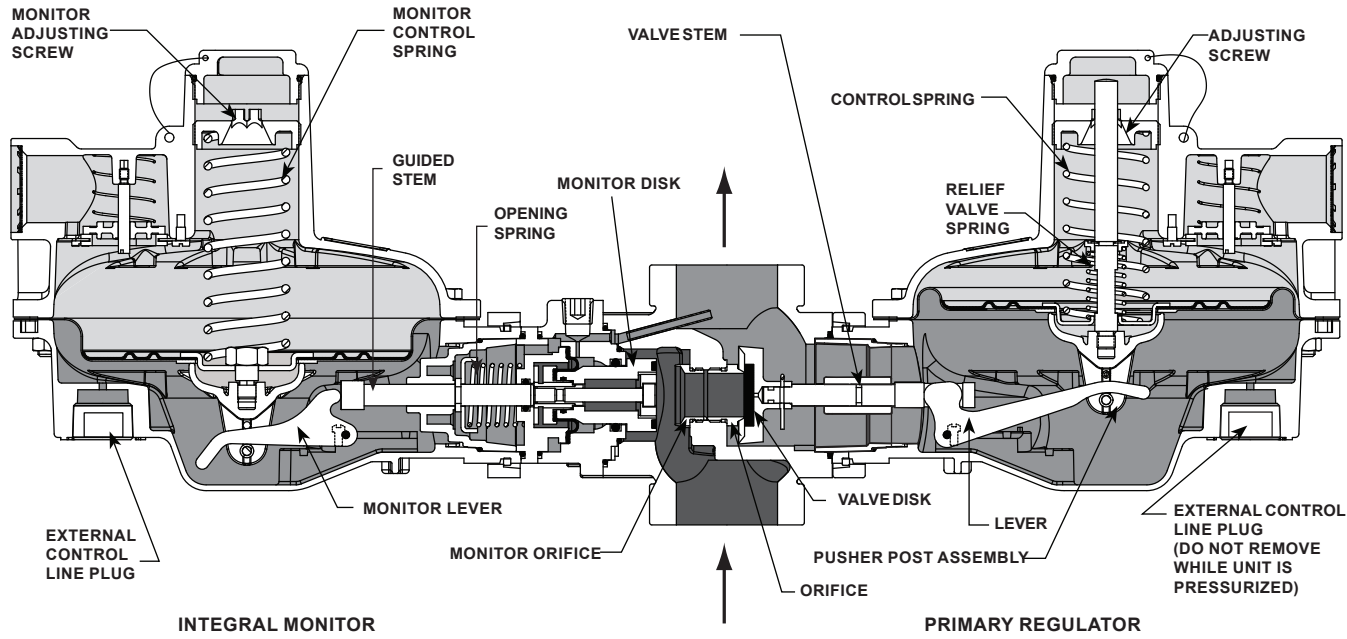
TYPE	REGULATOR				SLAM-SHUT DEVICE				
	Setpoint		Spring Range		Overpressure Shutoff (OPSO)				
	In. w.c.	mbar	In. w.c.	mbar	Factory Setpoint ⁽¹⁾		Spring Range		Spring Part Number
CS404	4	10	3.5 to 5	9 to 12	18	45	12 to 25	30 to 60	GF02168X012
	5	12	4.5 to 6.5	11 to 16	19	47			
	7	17	6 to 8	15 to 20	21	52			
	11	27	7.5 to 11	19 to 27	0.9	62	0.58 to 1.6 psig	40 to 110	GF02169X012
	14	35	10 to 14	25 to 35	1.1	75			
	0.65 psig	45	0.45 to 0.7 psig	30 to 47	1.4 psig	96	30 to 44	75 to 110	GF02170X012
	0.72 psig	50	0.65 to 1 psig	45 to 69	1.6 psig	112			
	1 psig	69			2.5 psig	172	1.4 to 4.1 psig	95 to 280	GF02171X012
	1.5 psig	103	1 to 2 psig	69 to 138	3.0 psig	207			
	2 psig	138			3.5 psig	241			
	3 psig	207	2 to 5.5 psig	138 to 380	6.3 psig	434	3.2 to 11 psig	220 to 760	GF02173X012
	4 psig	276			7.3 psig	503			
	5 psig	345			8.3 psig	572			
	5.5 psig	380			8.8 psig	606			

1. For Types CS404IT and CS404ET equipped with Token Relief, if Non-Factory slam-shut OPSO setpoints are specified, they must not encroach on the Token Relief Start-to-Discharge values provided in Table 4 of the CS400 Bulletin.

Table 8. Type CS404 Regulator and Slam-shut OPSO and UPSO Pressure Ranges

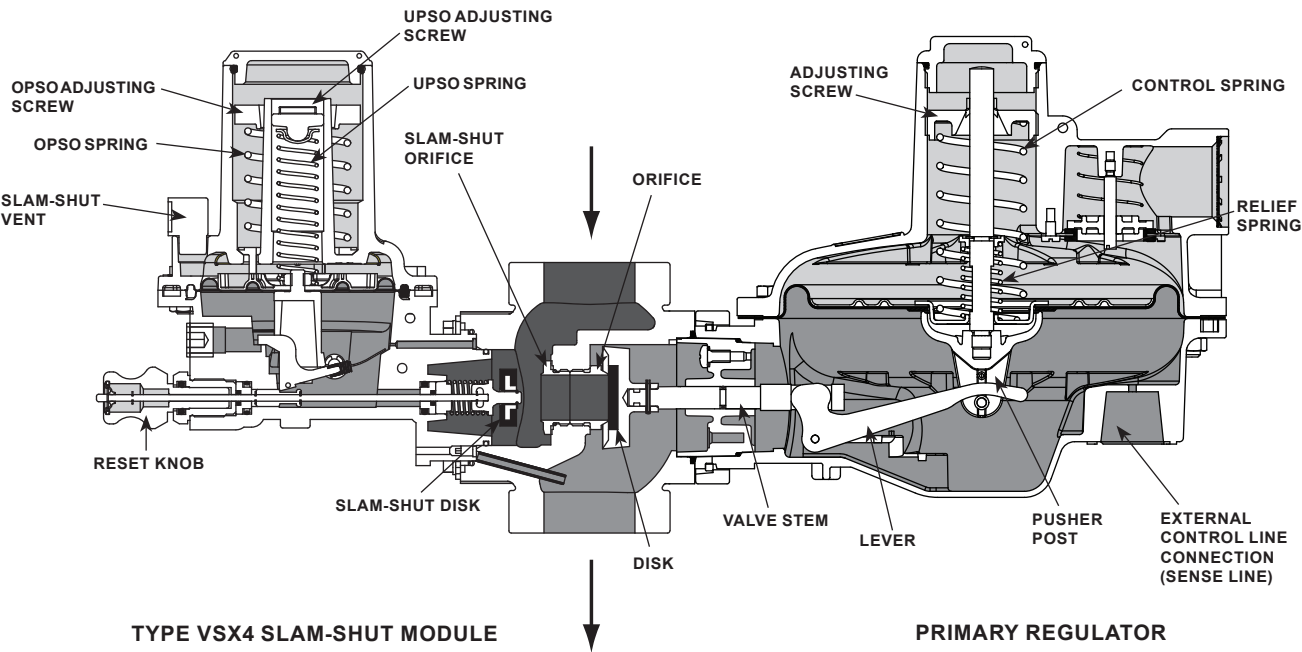
REGULATOR					SLAM-SHUT DEVICE										
TYPE	Setpoint		Spring Range		Overpressure Shutoff (OPSO)						Underpressure Shutoff (UPSO)				
					Factory Setpoint ⁽¹⁾		Range		Spring Part Number	Factory Setpoint		Range		Spring Part Number	
	psig	mbar	psig	mbar	psig	mbar	psig	mbar		psig	mbar	psig	mbar		
CS404	0.51	35	0.36 to 0.51	25 to 35	1.1	75	0.73 to 1.9	50 to 130	GF02168X012	0.32	22	0.14 to 1.1	10 to 75	T14169T0012	
	0.65	45	0.45 to 0.70	30 to 48	1.4	96				0.4	30				
	0.72	50	0.65 to 1	45 to 69	1.6	112	1.4 to 3.9	97 to 270	GF02169X012	0.4	30	0.36 to 2.3	25 to 159	T14170T0012	
	1	69			2.5	172				0.58	40				
	1.5	103	1 to 2	69 to 138	3.0	207	2.2 to 5.5	150 to 380	GF02170X012	0.73	50				
	2	138			3.5	241				1	69				
	3	207	2 to 5.5	138 to 380	6.3	434	3.8 to 8.7	262 to 600	GF02171X012	1.75	121	1.5 to 7.3	100 to 500	FA142869X12	
	4	276			7.3	503				2	140				
	5	345			8.3	572	5.8 to 16	400 to 1100	GF02172X012	2.9	200				
	5.5	380			8.8	606				3.6	250				
1. For Types CS404IT and CS404ET equipped with Token Relief, if Non-Factory slam-shut OPSO setpoints are specified, they must not encroach on the Token Relief Start-to-Discharge values provided in Table 4 of the CS400 Bulletin.															

CS400 Series



M1061

Figure 3. Type CS403 Internally Registered Primary Regulator with Internally Registered Integral Monitor Operational Schematic



M1063

- INLET PRESSURE
- OUTLET PRESSURE
- ATMOSPHERIC PRESSURE

Figure 4. Type CS404ET Externally Registered Regulator with Slam-shut Operational Schematic

Optional internal relief is available as well as low capacity token relief. Additional overpressure protection options include the Type CS403 that offers True-Monitor™ Protection, which is provided by an Integral Monitor installed on the inlet side of the valve body that assumes control of the pressure to the downstream system should the primary regulator cease to regulate downstream flow. The Type CS404 offers a slam-shut module that shuts off the flow of gas to the downstream system in the event of outlet pressure rising above or falling below the predefined levels.

Principle of Operation

Type CS400 Base Regulator Operation

Refer to Figure 2. When downstream demand decreases, the pressure under the diaphragm increases. This pressure overcomes the regulator setting (which is set by the regulator control spring). Through the action of the pusher post assembly, lever and valve stem, the valve disk moves closer to the orifice and reduces gas flow. If demand downstream increases, pressure under the diaphragm decreases. Spring force pushes the pusher post assembly downward, the valve disk moves away from the orifice and the gas flow increases downstream as the regulator opens in response to the decreased pressure underneath the diaphragm.

The Type CS400IR regulator includes an internal relief valve for overpressure protection. If the downstream pressure exceeds the regulator setting by 7 to 28 in. w.c. / 17 to 69 mbar (depending on the main spring used), the relief valve opens and excess gas is vented through the stabilizer vent in the upper spring case.

The Types CS400IT and CS400ET provide a low capacity/token relief. Token relief provides relief from minor overpressure caused by nicks or dents on the orifice or by thermal expansion of gas in the downstream line. Token relief also provides a token or signal, in the form of odor, that an overpressure situation is occurring.

Type CS403 Integral Monitor Operation

Type CS403 combines the operation of a conventional two-regulator wide-open monitor set into one body, see Figure 3. The Integral True-Monitor™ is installed on the inlet side of the body and serves to throttle flow and maintain an acceptable downstream pressure in the case where the Primary regulator fails to regulate downstream

pressure. During normal operation the Integral Monitor is in a wide-open state as its setpoint is set higher than the primary regulator. See Table 6 for guidance regarding the setpoints of the regulator and associated integral monitor sets. If the downstream pressure should rise to the setpoint of the internal monitor due to loss of pressure

control by the primary regulator, the integral monitor will assume control and regulate the flow to the downstream system. See the Type TM600 Instruction Manual for additional details of operation.

If token relief is present, it will relieve a small amount of gas to the atmosphere as an indication that the Integral monitor is controlling the downstream pressure.

Type CS404 Slam-shut Operation

The Type VSX4 slam-shut module on the Type CS404 regulator is a fast acting shut-off device that provides overpressure (OPSO) or over and underpressure (OPSO / UPSO) protection by completely shutting off the flow of gas to the downstream system. See Tables 7 and 8 for guidance regarding the typical setpoints of the regulator and associated OPSO and UPSO setpoints. The Type VSX4's actions are independent of the Type CS404 regulator and of variations to the inlet pressure. The Type VSX4 provides the option of internal or external downstream pressure registration. External registration requires a downstream sensing line. See Figure 7 for guidance regarding installation of the downstream control line.

The Type VSX4 shut-off disk is normally in the open (reset) position, see Figure 4. If the downstream pressure below the slam-shut diaphragm increases (or decreases) until it reaches the slam-shut setpoint, this diaphragm moves upward (or downward) to release the trip mechanism which allows the spring force on the stem to push the disk against the seat, shutting off all gas flow. To reset the slam shut after gas has been shutoff, refer to Type VSX4 Instruction Manual for additional details.

In order for the Underpressure Shutoff (UPSO) of any slam-shut to be triggered, the downstream pipe pressure must drop below the UPSO setpoint. In the case of a downstream line break, numerous factors can prevent the downstream pipe pressure from decreasing below the slam-shut UPSO setpoint. These factors include the distance of pipe to the break, the diameter of the pipe, size of the break and the number of restrictions, such as valves, elbows and bends, downstream of the regulator and/or slam-shut device. Due to these factors additional protections should be installed to stop flow in the event of a line break.

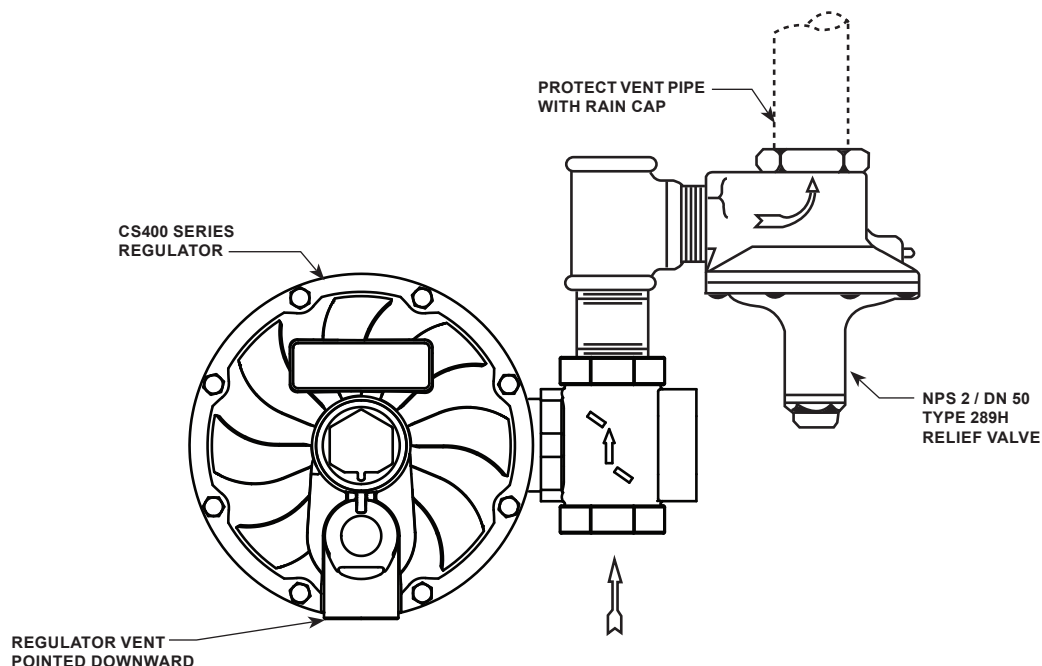


Figure 5. CS400 Series Regulator Installed with the Vent Pointed Downward and with a Type 289H Relief Valve for High Capacity Relief

Installation and Overpressure Protection



WARNING

Personal injury or system damage may result if this regulator is installed, without appropriate overpressure protection, where service conditions could exceed the limits given in the Specifications section and/or regulator nameplate.

Regulator installations should be adequately protected from physical damage.

All vents should be kept open to permit free flow of gas to the atmosphere. Protect openings against entrance of rain, snow, insects or any other foreign material that may plug the vent or vent line. On outdoor installations, point the spring case vent downward to allow condensate to drain (see Figures 5 through 7).

This minimizes the possibility of freezing and of water or other foreign materials entering the vent and interfering with proper operation.

For the Type CS403 with the Integral Monitor or the Type CS404 with slam shut, point the vents of both the Primary Regulator and Integral Monitor or slam shut downward to allow condensate to drain. From the factory, the Integral Monitor or slam shut will always point in the same direction as that of the Primary Regulator.

Under enclosed conditions or indoors, escaping gas may accumulate and be an explosion hazard. In these cases, the vent should be piped away from the regulator to the outdoors.



CAUTION

The CS400 Series regulators have an outlet pressure rating lower than their inlet pressure rating. If actual inlet pressure can exceed the outlet pressure rating, outlet overpressure protection is necessary. However, overpressuring any portion of the regulators beyond the limits in Specifications section may cause leakage, damage to regulator parts or personal injury due to bursting of pressure-containing parts.

Some type of external overpressure protection should be provided to the CS400 Series if inlet pressure will be high enough to damage downstream equipment. Common methods of external overpressure protection include relief valves, monitoring regulators, shut off devices and series regulation.

If the regulator is exposed to an overpressure condition, it should be inspected for any damage that may have occurred. Regulator operation below these limits does not preclude the possibility of damage from external sources or from debris in the pipeline.

General Installation Instructions

Before installing the regulator,

- Check for damage, which might have occurred during shipment.
- Check for and remove any dirt or foreign material, which may have accumulated in the regulator body.
- Blow out any debris, dirt or copper sulfate in the copper tubing and the pipeline.
- Apply pipe compound to the male threads of the pipe before installing the regulator.
- Make sure gas flow through the regulator is in the same direction as the arrow on the body. "Inlet" and "Outlet" connections are clearly marked.
- When designing a pressure reducing station using a CS400 Series regulator, make an analysis if it is necessary to take into account the effects of wind, snow and temperature to avoid unnecessary load and movement to the flanges of the equipment.

- If needed, a support may be used under the piping and regulator/slam-shut body to avoid excessive pressure force on the regulator/slam shut.

Installation Location

- The installed regulator should be adequately protected from vehicular traffic and damage from other external sources.
- **Install the regulator with the vent pointed vertically down, see Figures 5 through 7.** If the vent cannot be installed in a vertically down position, the regulator must be installed under a separate protective cover. Installing the regulator with the vent down allows condensation to drain, minimizes the entry of water or other debris from entering the vent and minimizes vent blockage from freezing precipitation.
- **Do not install the Types CS400, CS403 or CS404 in a location where there can be excessive water accumulation or ice formation,** such as directly beneath a downspout, gutter or roof line of building. Even a protective hood may not provide adequate protection in these instances.
- Install the Regulator so that any gas discharge through the vent or vent assembly is over 3 ft / 0.91 meters away from any building opening.

Regulators Subjected to Heavy Snow Conditions

Some installations, such as in areas with heavy snowfall, may require a hood or enclosure to protect the regulator from snow load and vent freeze over.

Downstream Control Line Installation

A CS400 Series regulator with an EN or ET in the type number has a blocked throat, an O-ring stem seal and a 3/4 NPT control line tapping in the lower diaphragm casing. A regulator with a downstream control line is used for monitoring installations or other applications where there is other equipment installed between the regulator and the pressure control point.

For Types CS400ET and CS400EN regulators, connect downstream control line tubing to the lower casing and run the tubing approximately 20 in. / 508 mm downstream. For best results, the outer diameter of the control line tubing should be 3/8 in. / 9.5 mm or larger.

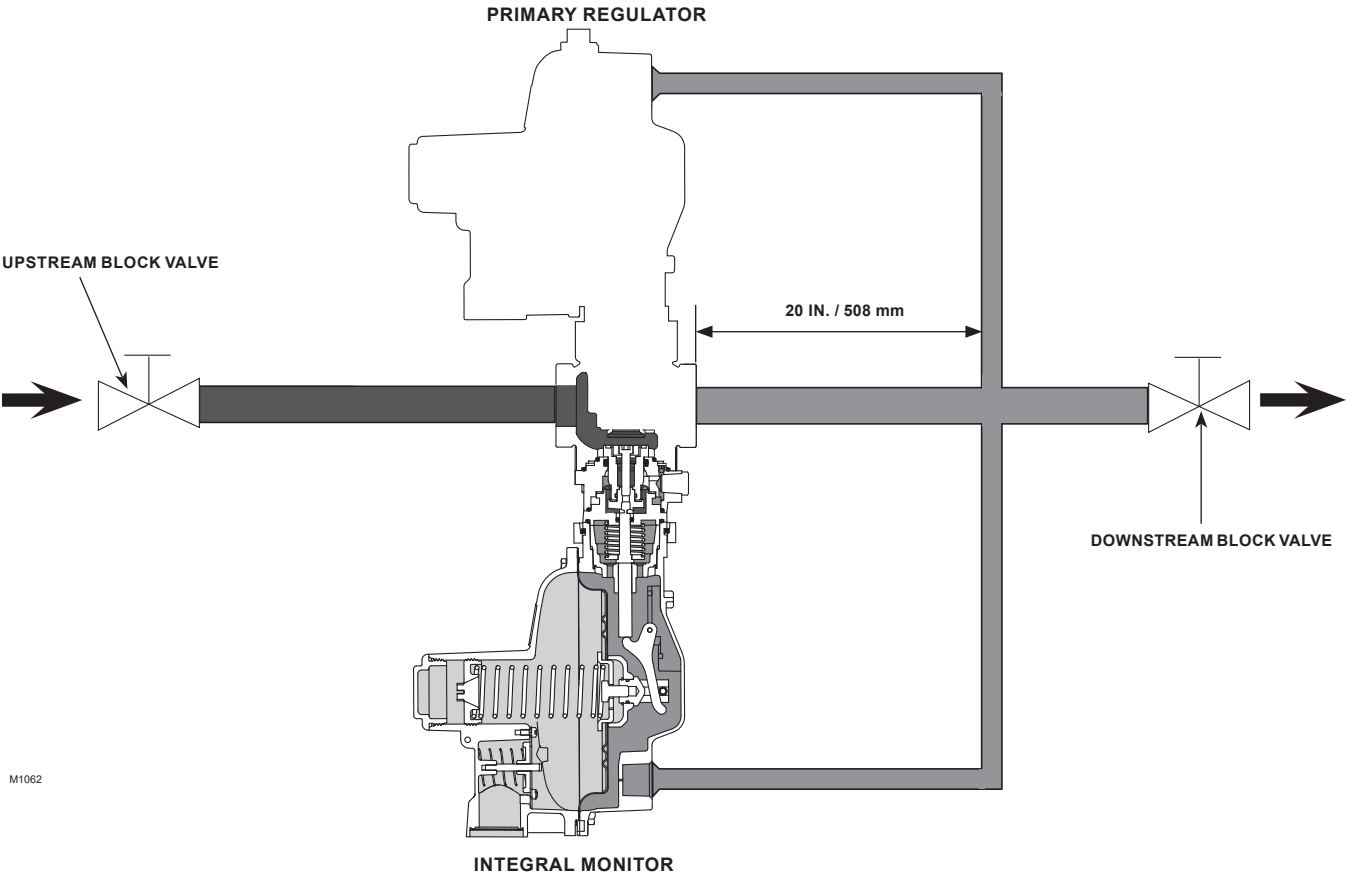


Figure 6. Type CS403 Downstream Control Line Connection

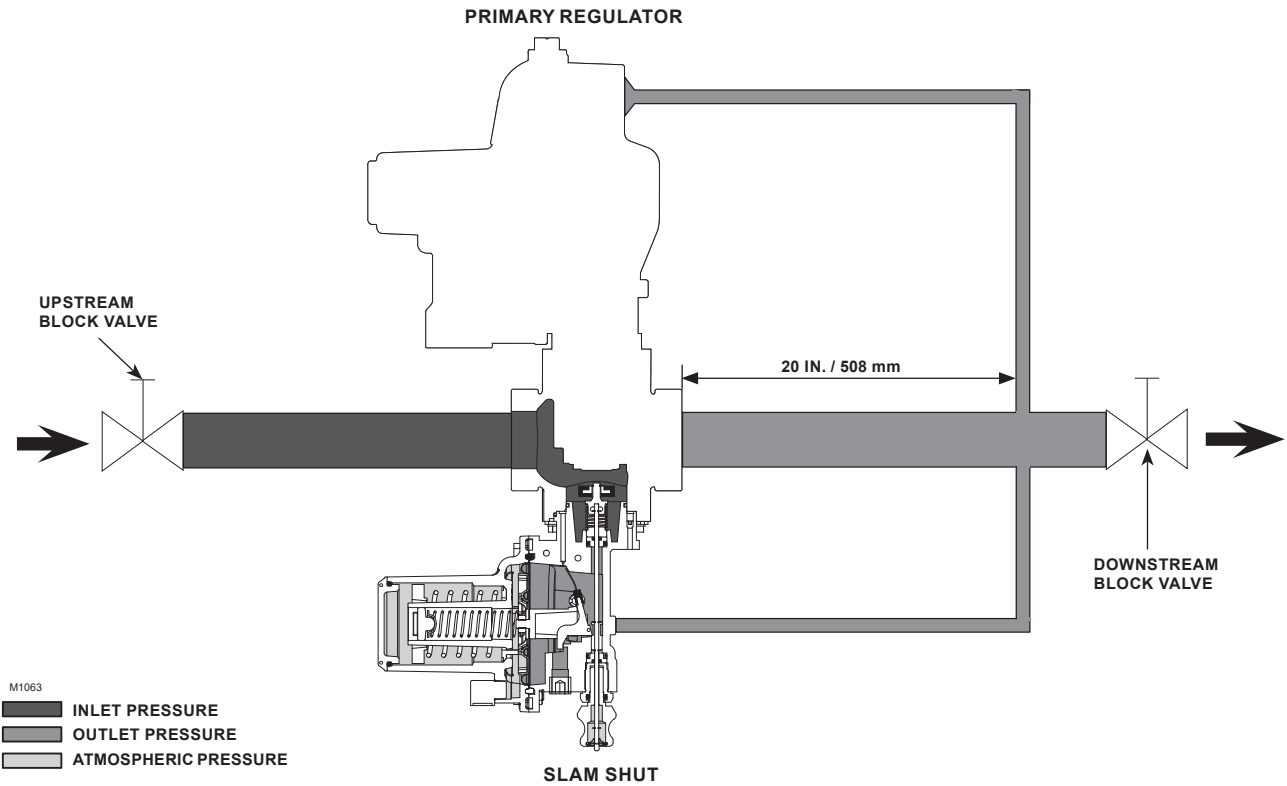


Figure 7. Type CS404 Downstream Control Line Connection

Downstream Control Line Installation with Integral Monitor

Refer to Figure 6. When installing the Types CS403ET and CS403EN regulators, connect downstream control line tubing to the lower casing of the Primary Regulator and run the tubing approximately 20 in. / 508 mm downstream. Connect a second, separate downstream control line tubing to the lower casing of the Integral Monitor and run the tubing approximately 20 in. / 508 mm downstream. For best results, the outer diameter of the control line tubing for both the Primary Regulator and the Integral Monitor should be 3/8 in. / 9.5 mm or larger.

Downstream Control Line Installation with Slam shut

Refer to Figure 7. When installing the Types CS404ET and CS404EN regulators, connect downstream control line tubing to the lower casing of the Regulator and run the tubing approximately 20 in. / 508 mm downstream. Connect a second, separate downstream control line tubing to the lower casing of the slam shut and run the tubing approximately 20 in. / 508 mm downstream. For best results, the outer diameter of the control line tubing for the regulator should be 3/8 in. / 9.5 mm or larger. The outer diameter of the control line tubing for the slam shut should be 1/4 in. / 6.4 mm or larger.

Installation with External Overpressure Protection

If the regulator is used in conjunction with a Type 289H relief valve, it should be installed as shown in Figure 5. The outside end of the vent line should be protected with a rainproof assembly. The Type 289H should be set 10 in. w.c. / 25 mbar higher than the outlet pressure setting of the regulator, up to 30 in. w.c. / 75 mbar outlet pressure. For pressure greater than this, set the Type 289H 0.75 psi / 0.05 bar higher than the outlet pressure setting of the regulator.

Vent Line Installation

The CS400 Series regulators have a 1 NPT screened vent opening in the spring case. If necessary to vent escaping gas away from the regulator, install a remote vent line in the spring case tapping. Vent piping should be as short and direct as possible with a minimum number of bends and elbows. The remote vent line should have the largest practical diameter. Vent piping on regulators with internal relief must be large enough to vent

all relief valve discharge to atmosphere without excessive backpressure and resulting excessive pressure in the regulator.

The Type CS403 offers an optional token relief. This optional low capacity relief is located in the spring case of the Primary Regulator. If necessary to vent escaping gas away; install a remote vent line in the spring case tapping of the Primary Regulator as described above.

Periodically check all vent openings to be sure that they are not plugged.

The CS400 Series Outlet pressure ranges are shown in Table 5. Outlet pressure greater than 5 psi / 0.34 bar above setpoint may damage internal parts such as the diaphragm head and valve disk. **The maximum emergency (casing) outlet pressure is 25 psig / 1.7 bar.**

Startup



CAUTION

Pressure gauges should always be used to monitor downstream pressure during Startup.

With the downstream system depressurized, use the following procedure to startup the regulator:

1. Check to see that all appliances are turned off.
2. Slowly open the upstream shut-off valve.
3. Check inlet and outlet pressure for correct values.
4. Check all connections for leaks.
5. Turn on utilization equipment and recheck the pressures.

Adjustment

Note

For Types that include the Integral Monitor module, refer to the instruction manual for Type TM600 Integral Monitor for Adjustment and Maintenance of the Integral Monitor. For Types that include the slam-shut module, refer to the instruction manual for Type VSX4 slam shut for Adjustment and Maintenance of the slam shut.

The range of allowable pressure settings is stamped on the nameplate. If the required setting is not within this range, substitute the correct spring (as shown in Table 5). If the spring is changed, change the nameplate to indicate the new pressure range.

A pressure gauge should always be used to monitor downstream pressure while adjustments are being made.

1. Remove the closing cap (key 60, Figure 8).
2. To increase the outlet setting, turn the adjusting screw (key 65, Figure 8) clockwise. To decrease the outlet setting, turn the adjusting screw counterclockwise.
3. Replace the closing cap.

CS400 Series with Integral Monitor Module

When adjusting the Primary Regulator and Integral Monitor for operation, ensure that the pressure differences between the Primary Regulator and the integral monitor shown in Table 6 are observed. For example, if the Primary Regulator setpoint is set at 7 in. w.c. / 17 mbar, then the Integral Monitor should be set at a minimum of 14 in. w.c. / 35 mbar or higher.

To test the Integral Monitor operation, the Primary regulator setpoint must be adjusted above the Integral Monitor's setpoint to simulate a failure of the primary regulator. If the spring range of the Primary Regulator is sufficiently high, it can simply be adjusted above the Integral Monitor's setpoint by following step 2 above. Otherwise, a different spring with a setpoint higher than the Integral Monitor's setpoint must be installed to check the operation of the Integral Monitor.

CS400 Series with Slam-shut Module

When adjusting the primary regulator and slam shut for operation, reference Tables 7 and 8 for the OPSO and UPSO setpoints of the slam shut for the given regulator spring ranges.



WARNING

In the case of a downstream line break, numerous factors affect the capability to evacuate gas from the pipeline. These factors include the distance of pipe to the break, the diameter of the pipe, size of the break and the number of restrictions, such as valves, elbows and bends, downstream

of the regulator and/or slam-shut device. Due to these factors additional protections should be installed to stop flow in the event of a line break.



CAUTION

Equipment installed downstream the Type VSX slam shut device can be damaged if the following procedure for resetting the Type VSX slam shut device is not followed. This equipment includes the integral Type VSX regulator configurations.

Step 1:

To properly reset the Type VSX slam shut after it has been tripped to the closed position, a flat-head screwdriver must be inserted into the position shown in Figure 8 on the backside of the reset button (key 30, Figure 8).

Step 2:

The screwdriver should be slowly rotated to gradually pull the reset button (key 30) away from the Type VSX device. This slow movement allows for a slow bleed of the pressure across the Type VSX slam shut's disk and seat area. The operator should be able to hear the pressure bleeding through the system.

Step 3:

When the pressure has equalized and the air bleeding sound has dissipated, the reset button (key 30) should be pulled completely away from the Type VSX slam shut device by hand until the internal shut-off mechanism has been re-latched.

Step 4:

Once the operator feels the click of the re-latch occurring, the reset button (key 30) should be pushed completely back into its original position.

Shutdown

Installation arrangements may vary, but in any installation it is important that the valves be opened or closed slowly and that the outlet pressure be vented before venting inlet pressure to prevent damage caused by reverse pressurization of the regulator. The steps in the following page apply to the typical installation as indicated.

1. Open valves downstream of the regulator.
2. Slowly close the upstream shut-off valve.
3. Inlet pressure will automatically be released downstream as the regulator opens in response to the lowered pressure on the diaphragm.

Maintenance and Inspection



WARNING

To avoid personal injury or equipment damage, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure as described in “Shutdown”.

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Emerson should be used for repairing Fisher™ regulators. Relight pilot lights according to normal startup procedures.

Due to normal wear or damage that may occur from external sources, this regulator should be inspected and maintained periodically. The frequency of inspection and replacement of parts depends upon the severity of service conditions or the requirement of local, state and federal rules and regulations.

Periodic inspection must be performed on the Types CS403 and CS404 to ensure that the integral monitor or slam-shut overpressure protection modules, respectively, protect the downstream system in the event of a failure to the primary regulator. This inspection must test that the integral monitor or slam-shut functions as intended. The frequency of this inspection must be at intervals not exceeding 15 months, but at least once each calendar year.

Disassembly to Replace Diaphragm

1. Remove the closing cap (key 60, Figure 8). Turn the adjusting screw (key 65) counterclockwise to ease spring compression.
2. Remove the adjusting screw (key 65) and control spring (key 38).

3. Remove hex nuts (key 16) and cap screws (key 15). Separate the upper spring case (key 1) from the lower casing assembly (key 9).

Note

If disassembling a CS400 Series regulator, lift the upper spring case straight up in order to avoid hitting the stem (key 44).

4. Slide the diaphragm head assembly (key 55) away from the body (key 70) to unhook the pusher post (key 51) from the lever (key 10). Lift off the diaphragm head assembly (key 55).
5. **For none relieving units such as the Types CS400IN and CS400EN**, unscrew the screw retainer (key 45, Figure 9) using a 5/8 in. / 16 mm wrench. The screw retainer fastens the lower spring seat (key 43) to the pusher post (key 51). Unscrewing the screw retainer will separate the lower spring seat (key 43), diaphragm head assembly (key 55) and pusher post (key 51). **For units with internal relief such as Type CS400IR**, press down on the upper spring retainer (key 42, Figure 10) using a 9/16 in. / 14 mm box-end wrench and remove the E-ring (key 58). Slide the upper spring retainer (key 42), the relief spring (key 41), the lower spring seat (key 43) and the diaphragm assembly (key 55) off of the relief valve stem (key 44).
6. Reassemble in reverse order of the above steps.

Disassembly to Replace Valve Disk and Orifice

1. Remove the cap screws (key 71, Figure 8) which hold the lower spring casing (key 9) to the body (key 70). Separate the lower casing (key 9) from the body.
2. Check the body O-ring (key 21) for wear and replace as necessary.
3. Examine the valve disk (key 36) for nicks, cuts and other damage. Remove the disk clip (key 37) that holds the disk to the stem (key 11) and replace the disk if necessary.
4. Examine the seating edge of the orifice (key 25). If it is nicked or rough, remove the orifice (key 25) from the body (key 70) using a 1-1/16 in. / 27 mm socket wrench. Coat the threads of the replacement orifice with a good quality lubricant and install.

CS400 Series

5. Change to a new part when reassembling the regulator. Coat the threads of the replacement orifice with a good quality lubricant. (If the orifice is being replaced with a different size, update the nameplate to state the new size and maximum inlet pressure).
6. Reassemble the regulator in reverse order of the above steps.

Regulator Reassembly

As indicated by the square callouts in Figures 8 through 12, it is recommended that a good quality pipe thread sealant be applied to pressure connections and fittings and a good quality lubricant be applied to O-rings. Also apply an anti-seize compound to the adjusting screw threads and other areas as needed.

Parts Ordering

The type number, orifice size, spring range and date of manufacture are stamped on the nameplate. Always provide this information in any correspondence with your local Sales Office regarding replacement parts or technical assistance.

When ordering replacement parts, reference the key number of each needed part as found in the following parts list. Separate kit containing all recommended spare parts is available.

Parts List

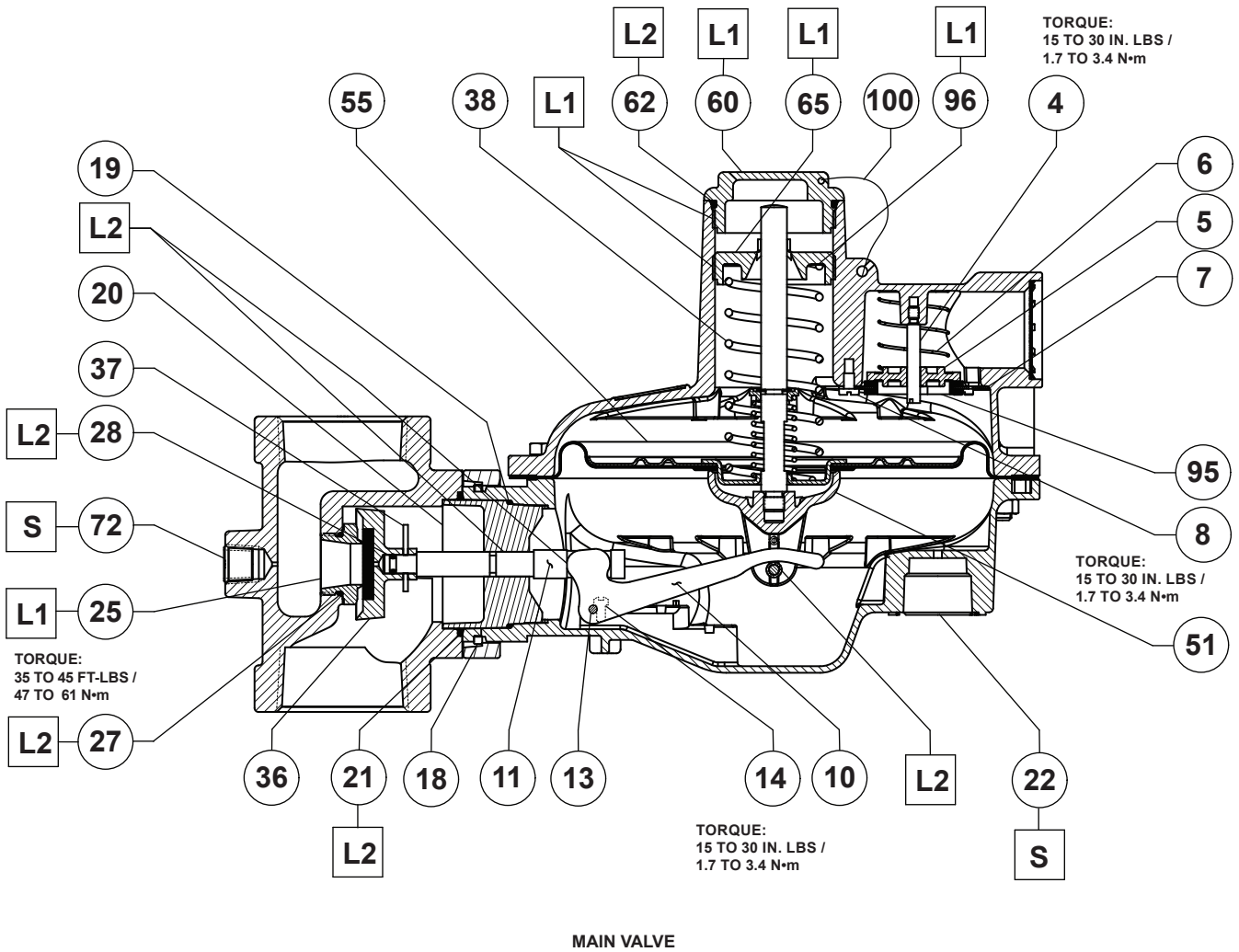
Key	Description	Part Number
	Regulator Repair Kit (Repair Parts Kit include keys 19, 21, 27, 36, 55 and 62)	
	Type CS400	RCS400X0012
	Type CS403	RCS403X0012
	Type CS404	RCS404X0012
	Orifice Repair Kit (Orifice Repair Parts kit includes keys 25 (Orifice) and 27 (O-ring, Quantity 1))	
	3/16 in. / 4.8 mm orifice size	GE31360X012
	1/4 in. / 6.4 mm orifice size	GE31361X012
	5/16 in. / 7.9 mm orifice size	GE31362X012
	3/8 in. / 9.5 mm orifice size	GE31363X012
	1/2 in. / 13 mm orifice size	GE31364X012
	5/8 in. / 16 mm orifice size	GE31365X012
	3/4 in. / 19 mm orifice size	GE31366X012
Key	Description	Part Number
1	Spring Case, Aluminum	GE24555X012
2	Vent Screen, Stainless steel	T1121338982
3	Retaining Ring, Zinc-plated steel	T1120925072
4	Stabilizer Guide, Stainless steel	GE27061X012
5	Stabilizer	GE27063X012
6	Stabilizer Spring, Stainless steel	GE35010X012
7	Stabilizer Retaining Ring, Zinc-plated steel	GE27024X012
8	Stabilizer Screw (3 required), Zinc-plated	GE29724X012
9	Lower Casing, Aluminum	GE24289X012
10	Lever, Steel	GE27194X012
11	Stem, Aluminum	GE27402X012
12*	O-ring, External Registration, Nitrile (NBR)	1E472706992
13	Lever Pin, Stainless steel	T14397T0012
14	Lever Screw (2 required), Zinc-plated steel	GE34243X012
15	Cap Screw (8 required), Steel	GE32059X012
16	Nut (8 required), Steel	GE32060X012
17	Union Ring, Aluminum	GE26590X012
18	Snap Ring, Stainless steel	T1120637022
19*	O-ring, Nitrile (NBR)	1K594906562
20	Stem Guide, Aluminum	
	Internal Registration (Open Throat)	GE25384X012
	External Registration (Closed Throat)	GE25385X012
21*	O-ring, Nitrile (NBR)	GE45216X012
22	Pipe Plug, 3/4 NPT, Steel	
	Internal Registration	GE34199X012
23	Screw, External Registration, Zinc-plated steel	1E175828982
24*	O-ring, External Registration, Nitrile (NBR)	17A0960X012
25*	Orifice, Aluminum	
	3/16 in. / 4.8 mm	T1122409012
	1/4 in. / 6.4 mm	T12522T0012
	5/16 in. / 7.9 mm	GE31233X012
	3/8 in. / 9.5 mm	T1122309012
	1/2 in. / 13 mm	T1122009012
	5/8 in. / 16 mm	GE31234X012
	3/4 in. / 19 mm	T1121909012
	7/32 x 1/4 in. / 5.5 x 6.4 mm	T1150309012
26*	OPP Orifice, 3/4 in. / 4.8 mm	
	True-Monitor™, Aluminum	GE30003X012
	Type VSX4, Brass	GE28684X012
27*	O-ring, Nitrile (NBR)	
	Type CS400 (1 required)	10A3802X022
	Type CS403 (2 required)	10A3802X022
	Type CS404 (2 required)	10A3802X022
28*	O-ring, Nitrile (NBR)	GE01439X012
36*	Valve Disk, Aluminum/Nitrile (NBR)	GE26497X012
37	Disk Clip, Stainless steel	GE33771X012
38	Control Spring, Music Wire or Stainless steel	
	3.5 to 5 in. w.c. / 9 to 12 mbar, Red	GE30198X012
	4.5 to 6.5 in. w.c. / 11 to 16 mbar, Purple	GE30195X012
	6 to 8 in. w.c. / 15 to 20 mbar, Gold	GE30188X012
	7.5 to 11 in. w.c. / 19 to 27 mbar, Blue	GE30189X012
	10 to 14 in. w.c. / 25 to 35 mbar, Unpainted	GE30224X012
	12 to 19 in. w.c. / 30 to 47 mbar, Green	GE30196X012
	18 to 28 in. w.c. / 45 to 69 mbar, Orange	GE30225X012
	1 to 2 psig / 69 to 138 mbar, Black	GE30190X012
	2 to 5.5 psig / 138 to 380 mbar, Yellow	GE30197X012

* Recommended spare part.

Key	Description	Part Number	Key	Description	Part Number
41	R.V. Spring, Stainless steel	GE30194X012	70	Globe Valve Body (continued)	
42	Spring Retainer, Aluminum	GE27296X012		Ductile Iron	
43	Spring Seat, Zinc-plated steel			1-1/4 NPT	GE26465X012
	Non-Relief	GE27327X012		1-1/2 NPT	GE26466X012
	Standard and Token Relief	GE28947X012		2 NPT	GE26467X012
44	Valve Stem, Aluminum			Rp 1-1/4	GE26469X012
	Standard Relief	GE27297X012		Rp 1-1/2	GE26470X012
	Token Relief	GE30895X012		Rp 2	GE26471X012
45	Diaphragm Screw Retainer for			NPS 2 / DN 50, CL125 / CL150 FF	GE26480X012
	Non-Relief, Zinc-plated steel	GE30887X012		NPS 2 / DN 50, PN 10/16	GE26481X012
47*	Adjustable Upper Seat			Steel	
	Token Relief, Aluminum	GE33332X012		1-1/4 NPT	GE26465X022
48	Token Restrictor Plate, Zinc-plated steel	GE28948X012		1-1/2 NPT	GE26466X022
51	Pusher Post, Aluminum			Rp 1-1/4	GE26469X022
	Non-Relief	ERAA00875A0		Rp 1-1/2	GE26470X022
	Standard and Token Relief	ERAA00876A0			
53	Pusher Post Pin, Stainless steel	GE29761X012	71	Cap Screw, Steel (2 required)	GE32061X012
54	Roller Pin, Brass	GE27060X012	72	Pipe Plug, 1/4 NPT	
55*	Diaphragm Head Assembly, Steel/Nitrile (NBR)	GE31248X012		Steel	1C333528992
55a	Diaphragm	-----		Stainless steel	1C3335X0012
55b	Diaphragm Head	-----	74	Blanking Plug, Aluminum	GE31255X012
56	Retaining Ring, Pusher Post Pin, Steel	GE33772X012	75*	Metric O-ring, Nitrile (NBR)	GF03442X012
57	Slotted Spring Pin, Zinc-plated steel	GE33668X012	76	Half Flange, Plated steel (2 required)	GF01942X012
58	E-Ring (Standard Relief)	GE32969X012	77*	Metric O-ring, Nitrile (NBR)	GF03443X012
60	Closing Cap, Aluminum	GE29244X012	80	Cap Screw, Steel (4 required)	GE38176X012
62*	O-ring, Nitrile (NBR)	T10275X0012	90	Nameplate	-----
65	Adjusting Screw, Aluminum	GE27828X012	91	Warning Label	-----
70	Globe Valve Body		93	Information Label	-----
	Gray Cast iron		94	Overlay Label	-----
	1-1/4 NPT	GE26446X012	95	Grommet, Nitrile (NBR)	GE35358X012
	1-1/4 x 1-1/2 NPT	GE44458X012	96	Slip Disk, Stainless steel	GG05787X012
	1-1/2 NPT	GE26448X012	100	Lockwire, Stainless steel	T14088T0012
	2 NPT	GE26459X012	101	Slotted Spring Pin, Plated steel	GE32724X012
	Flange				
	NPS 2 / DN 50, CL125 FF	GE26460X012			

* Recommended spare part.

CS400 Series

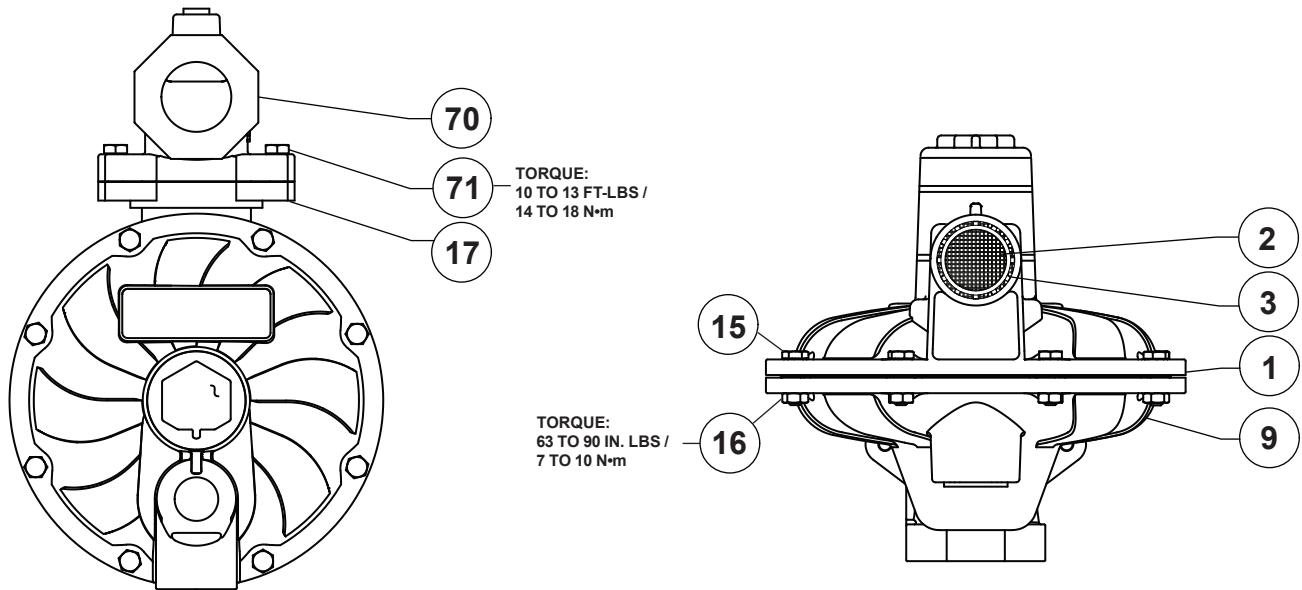


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- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
 L1 = ANTI-SEIZE LUBRICANT
 L2 = SILICONE GREASE
 S = THREAD SEALANT

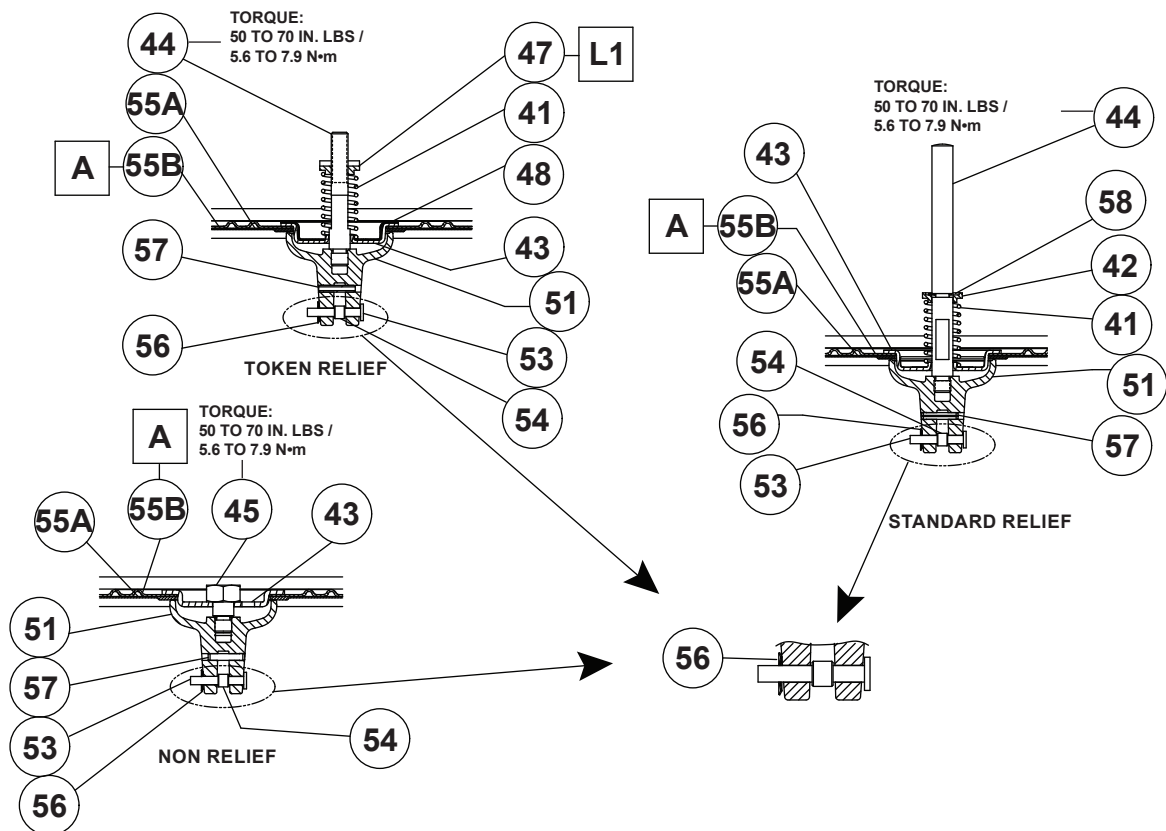
1. Lubricants and sealant must be selected such that they meet the temperature requirements.

Figure 8. CS400 Series Regulator Assemblies



ERAA03738

Figure 8. CS400 Series Regulator Assemblies (continued)



ERAA03738

□ APPLY LUBRICANT (L) / ADHESIVE (A)⁽¹⁾:
L1 = ANTI-SEIZE LUBRICANT
A = ADHESIVE

1. Lubricants and adhesive must be selected such that they meet the temperature requirements.

Figure 9. CS400 Series Diaphragm and Stem Assemblies

CS400 Series

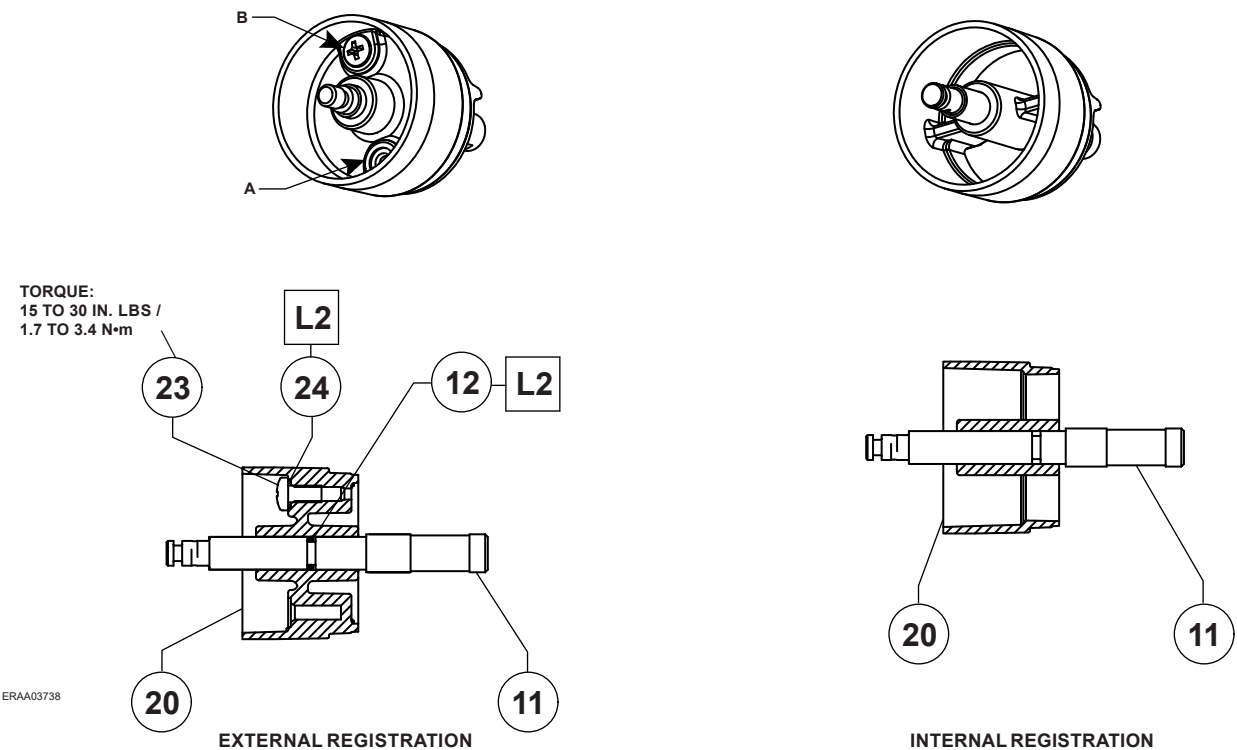


Figure 10. CS400 Series Registration Options

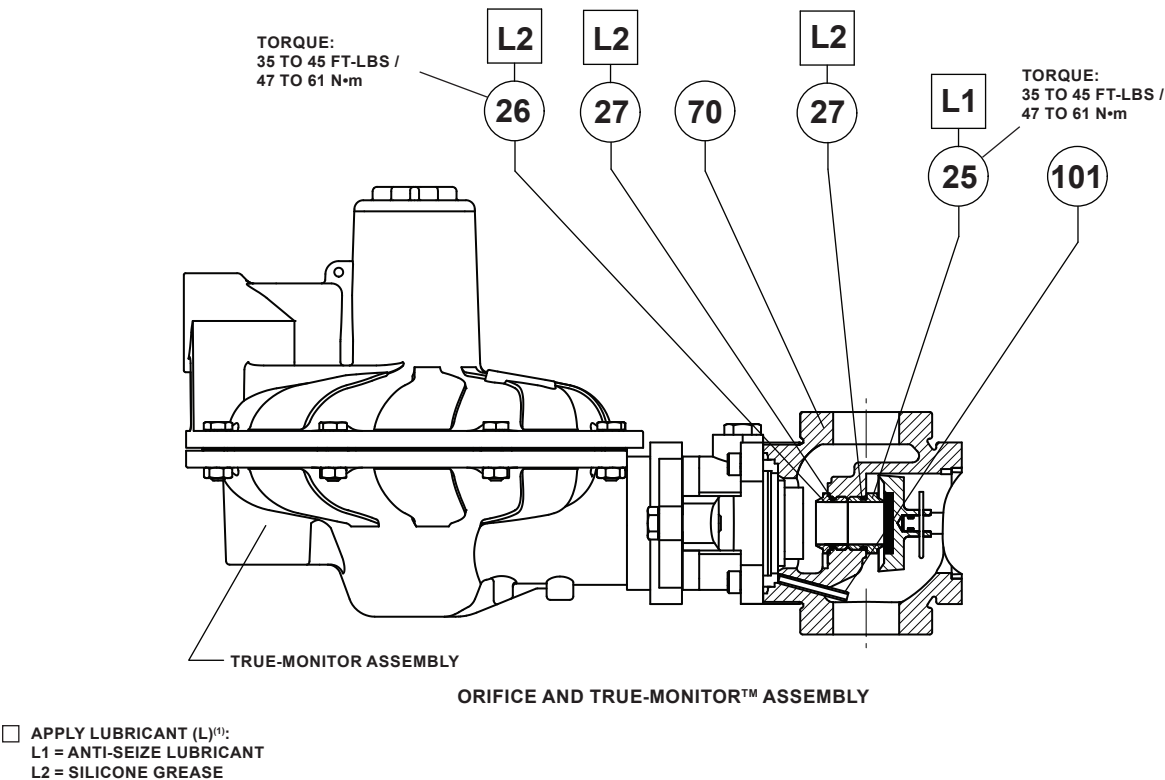


Figure 11. CS400 Series Slam shut and Integral Monitor Modules

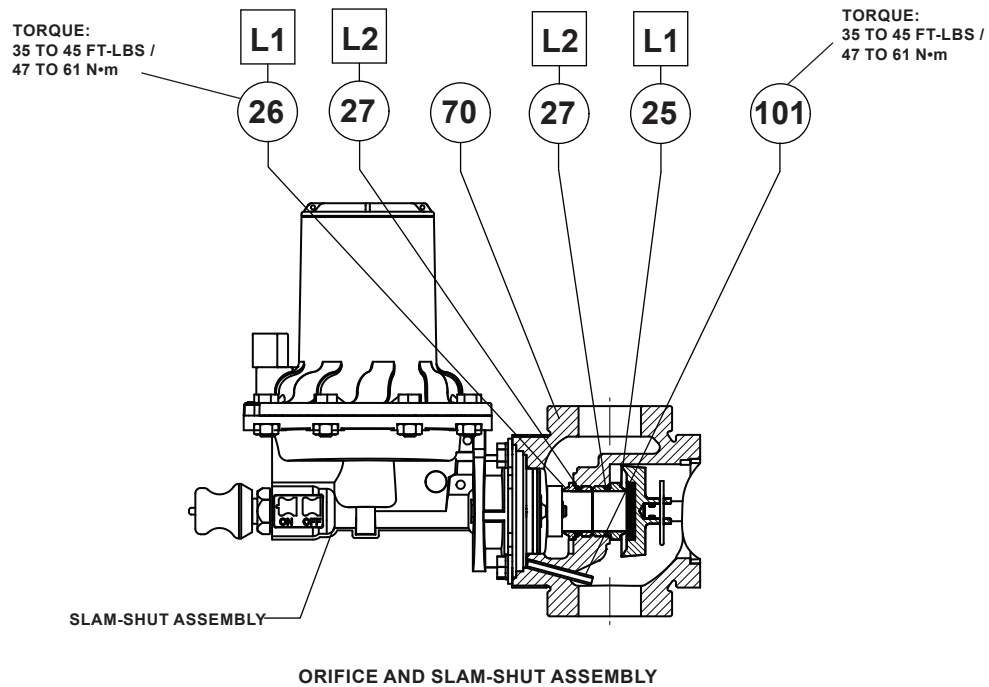
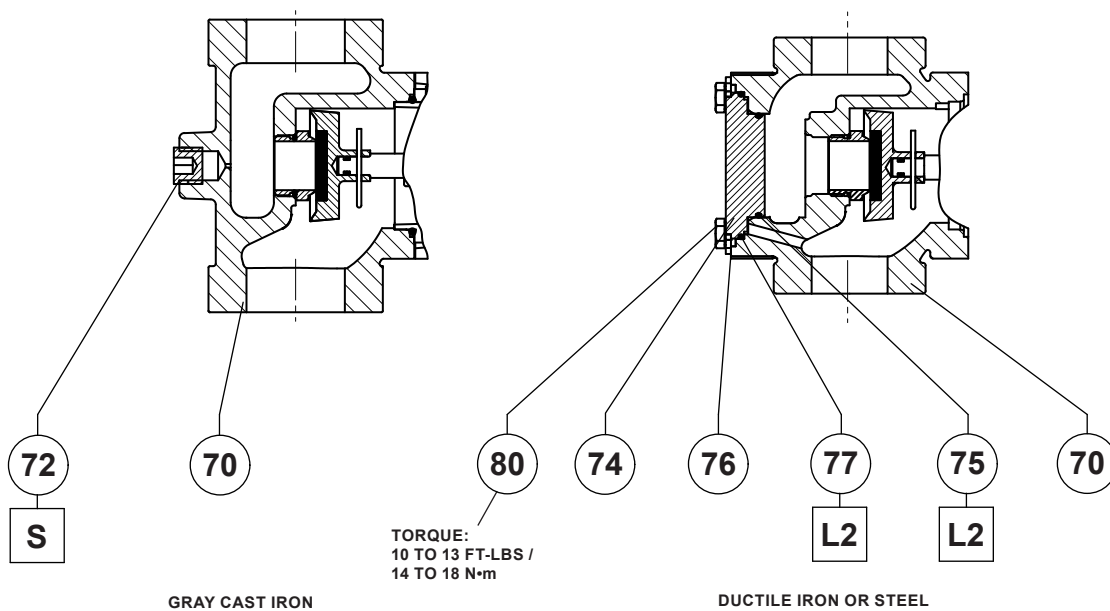


Figure 11. CS400 Series Slam shut and Integral Monitor Modules (continued)



□ APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
L1 = ANTI-SEIZE LUBRICANT
L2 = SILICONE GREASE
S = THREAD SEALANT

1. Lubricants and sealant must be selected such that they meet the temperature requirements.

Figure 12. Gray Cast Iron, Ductile Iron and Steel Body Configurations

CS400 Series

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The distinctive swirl pattern cast into every actuator casing uniquely identifies the regulator as part of the Fisher™ brand Commercial Service Regulator family and assures you of the highest-quality engineering, performance, and support traditionally associated with Fisher™ and Tartarini™ regulators. Visit www.fishercommercialservice.com to access interactive applications.



June 2023

CS800 Series Commercial/Industrial Pressure Reducing Regulators

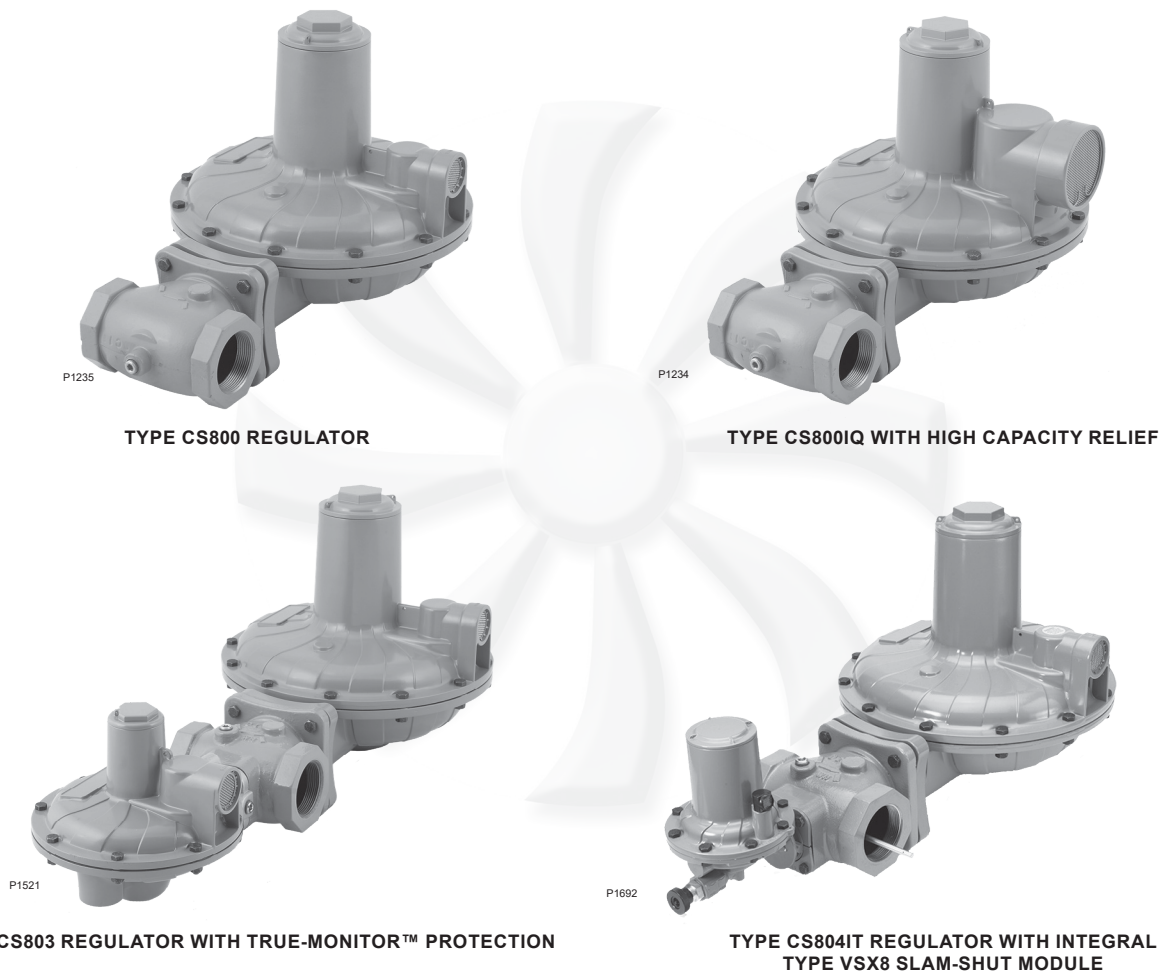


Figure 1. Typical CS800 Series Pressure Reducing Regulator

Features and Benefits

- Flow-optimized disks provide the maximum flow for your application
- Largest number of overpressure protection offerings in the industry
- Wide variety of body sizes and end connections
- Body materials available in gray cast iron, ductile iron and steel
- Fixed Factor/Pressure Factor Measurement (PFM) accuracy capabilities
- Only standard tools required for pressure adjustment and orifice removal
- Simplified maintenance
- Optional stabilizer cartridge
- Up to 25% Hydrogen Blend (By Volume)
- 100% Hydrogen Construction Available (Contact Factory)

CS800 Series

Specifications

The Specifications section lists the specifications for the CS800 Series Regulators. The following information is stamped on the nameplate of CS800 Series: Type Number, Maximum Outlet Pressure and Spring Range.

Available Configurations

See Table 1

Body Sizes, Material, End Connection and Pressure Rating⁽¹⁾

See Table 2

Maximum Inlet Pressures⁽¹⁾

Emergency: 175 psig / 12.1 bar

Operating: See Table 3

Maximum Outlet Pressure⁽¹⁾

Emergency (Casing): 15 psig / 1.0 bar

To avoid internal parts damage: 3 psig / 0.21 bar differential above outlet pressure setting

Outlet Pressure Ranges⁽¹⁾

Regulator: 3.5 in. w.c. to 10 psig / 9 mbar to 0.69 bar

See Table 4

Internal Relief Performance

Approximate Internal Relief Start-to-Discharge Point: See Table 5

Relief Performance:

For Standard Internal Relief:

See Figures 9, 11, 13, 15, 17 and 19

For High Capacity Internal Relief:

See Figures 10, 12, 14, 16, 18 and 20

Token Relief Performance

Approximate Token Relief Start-to-Discharge: See Table 5

Maximum Token Relief Discharge Capacities: See Figure 8

Flow Capacities

With Standard Construction: See Tables 14 through 18 and 20 through 62

With True-Monitor™ or Slam Shut: See Tables 14 through 62

With Secondary Seat™ Construction: See Tables 63 through 77

With Low Inlet Option⁽³⁾: See Tables 19 and 64

Orifice Sizes, Flow Coefficients and IEC Sizing Coefficients

See Table 3

Temperature Capabilities⁽¹⁾⁽²⁾

-20 to 150°F / -29 to 66°C

Hydrogen

- Up to 25% Hydrogen Blend (By Volume)
- 100% Hydrogen Construction Available (Contact Factory)

Spring Case Vent Connection

Internal Relief: 1 NPT

High Capacity Relief: 2-1/2 NPT

External Registration Connection

3/4 NPT

Spring Case Vent and Body Orientation

See Figure 21

Secondary Seat Approximate Lockup Values and Associated Internal Relief Start-to-Discharge:

See Table 6

TM600 Series True-Monitor Performance⁽¹⁾

Inlet Pressure Ratings

Maximum Operating: Up to 125 psig / 8.6 bar

Maximum Emergency: 175 psig / 12.1 bar

Outlet Pressure Range: 12 in. w.c. to 7.5 psig / 30 mbar to 0.52 bar

Type VSX8 Slam-Shut Device⁽¹⁾

Maximum Inlet Pressure: 175 psig / 12.1 bar

Maximum Operating Inlet Pressure: 175 psig / 12.1 bar

Construction Materials

CS800 Series Main Valve and Actuator

Body: Gray Cast Iron, Ductile Iron or Steel

Body O-ring: Nitrile (NBR)

Closing Cap: Aluminum

Adjusting Screw: Aluminum, Brass or Zinc-plated steel

Upper and Lower Case: Aluminum

Valve Stem: Aluminum or Zinc-plated steel

Diaphragm Head: Zinc-plated steel

Orifice:

Standard: Aluminum

Secondary Seat: Brass

Pusher Post or Internal Relief Valve Seat: Aluminum or Zinc-plated steel

Diaphragm and Disk: Nitrile (NBR)

Control Spring: Stainless steel or Steel

Relief Valve Spring: Stainless steel

Relief Valve Spring Retainer: Aluminum or Zinc-plated steel

Vent Screen: Stainless steel

1. The pressure/temperature limits in this Bulletin or any applicable standard or code limitation should not be exceeded.

2. Product has passed Emerson Process Management Regulator Technologies, Inc. testing for lockup, relief start-to-discharge and reseal down to -40°F / -40°C.

3. Applies to Capacities with Low Inlet Option, which offers Enhanced Flow Performance at Low Inlet pressures for the 2 in. / DN 50 body with 5.5 to 8.5 in. w.c. / 13 to 21 mbar spring range.

Specifications (continued)

CS800 Series Main Valve and Actuator (continued)

Retaining Ring: Stainless steel or Zinc-plated steel
Lever Pin: Stainless steel or hardened steel
Spring Seat: Aluminum
Lever: Steel

Type TM600 True-Monitor™ Actuator

Diaphragm Case, Spring Case and Balanced Port Assembly Housing: Aluminum
Diaphragm Retainer and Diaphragm Head: Zinc-plated steel
Valve Stem: Aluminum
Diaphragm: Nitrile (NBR)
Disk Holder and Disk Retainer: Brass
Disk/Seat Contact: Nitrile (NBR)
Monitor Stem: Stainless steel
Middle Diaphragm Retainer: Zinc-plated steel
Control Spring: Stainless steel
Vent Screen: Stainless steel
Vent Retaining Ring: Zinc-plated steel
Closing Cap: Aluminum
Adjusting Screw: Aluminum
O-rings: Nitrile (NBR)

Type VSX8 Slam-Shut Device

Diaphragm Case, Spring Case, Diaphragm Plate and Valve Stem: Aluminum
Diaphragm and Disk: Nitrile (NBR)

Type VSX8 Slam-shut Device (continued)

Control Spring: Music Wire or Stainless steel
Vent Screen: Stainless steel
Vent Screen Retainer: Zinc-plated steel
Closing Cap: Aluminum
Adjusting Screw: Aluminum

Designed, Tested and Evaluated Consistent with:

ASME B16, ASME Section VIII DIV I and
 ASTM B117 (Corrosion Resistance)

Approximate Weights

With Threaded Body

Type CS800/CS820: 25 lbs / 11 kg
Type CS803/CS823: 34 lbs / 15 kg
Type CS804/CS824: 31 lbs / 14 kg
Type CS805/CS825: 26 lbs / 12 kg
Type CS806/CS826: 26 lbs / 12 kg

High-Pressure Types: For Type CS85x add
 2 lbs / 0.9 kg to types listed above

With Flanged Body

Add 11 lbs / 5.0 kg to weights listed above

Table 1. Available Configurations

TYPE NUMBER								OPTIONS	
C	S	8							
								OUTLET PRESSURE CONSTRUCTION	
			0					Low Pressure Applications (<i>Outlet Pressure: 3.5 to 30 in. w.c. / 9 to 75 mbar</i>)	
			2					Medium Pressure Applications (<i>Outlet Pressure: 1 to 5.5 psig / 69 mbar to 0.38 bar</i>)	
			5					High Pressure Applications (<i>Outlet Pressure: 5 to 10 psig / 0.34 to 0.69 bar</i>) ⁽¹⁾	
								OVERPRESSURE PROTECTION MODULE	
			0					Without Overpressure Protection Module	
			3					With Integral True-Monitor Module ⁽⁴⁾	
			4					With Slam-shut Module ⁽⁴⁾	
			5					With Secondary Seat™ Protection	
			6					With Secondary Seat Protection with controlled bleed to indicate Secondary Seat is functioning ⁽²⁾	
								PRESSURE REGISTRATION	
				I				Internal Registration	
				E				External Registration ⁽³⁾	
								RELIEF	
					N			Non-Relieving	
					R			Internal Relief	
					Q			High-Capacity Relief	
					T			Token Relief	
					L			Low Flow Token Relief	
						SC		Stabilizer Cartridge	
Example: Type Number CS800IR: Type CS800 regulator without Overpressure Protection Module with Internal Pressure Registration and with Internal Relief. 1. High-pressure Construction is not available with True-Monitor Protection, Secondary Seat Protection or Relief. 2. Available only with Internal Relief or High-Capacity Relief Constructions. 3. Available only with Non-Relieving or Token Relief Constructions. 4. Reference Instruction Manual D103126X012 for information regarding the Type TM600 Integral True-Monitor or Instruction Manual D103127X012 for Type VSX8 safety Slam-shut module.									

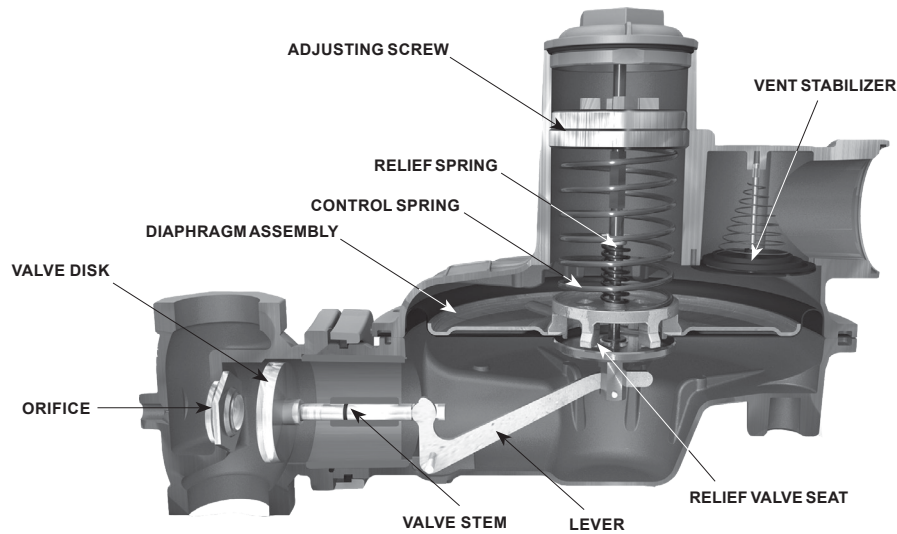


Figure 2. Internal View of CS800 Series with High Capacity Relief

Introduction

The CS800 Series direct-operated, spring-loaded regulators have been engineered to fit a multitude of commercial and industrial pressure-reducing applications. This flexibility is provided by the numerous body sizes and end connections, outlet pressure settings, orifice sizes, as well as the option for internal or external pressure registration.

Features

Stabilizer Cartridge Option

The stabilizer cartridge is designed to eliminate harmonic instability in such applications where there can be humming/buzzing, meter feedback or high efficiency boiler feedback.

Hydrogen Applications

The CS800 Series family has been evaluated for material compatibility, potential leakage and permeation and susceptibility to embrittlement for blending applications. Based on an extensive evaluation and testing program, the CS800 Series and all configurations are available for use in Hydrogen applications. Contact the factory for 100% Hydrogen applications.

Overpressure Protection Options Available

- **Internal Relief**—Provides overpressure protection to the downstream system by relieving gas through the diaphragm assembly to atmosphere in the event of an overpressure situation.

- **High-Capacity Internal Relief**—Provides an increase in relief performance over internal relief thereby offering a significant improvement in the level of overpressure protection to the downstream system in the event of an overpressure occurrence.
- **True-Monitor™ Protection**—Combines the operation of a conventional two-regulator wideopen monitor set into one body. Provides a second monitoring regulator to control downstream pressure. In event of loss of downstream pressure control by the primary regulator due to damage to the lever, downstream sense line, orifice, disk, diaphragm, etc., the monitoring regulator will assume control of the downstream pressure and regulator flow.
- **Secondary Seat™ Protection**—Provides a solution to the most common cause of regulators failing to shut off by employing a secondary seating surface to provide shutoff in the event the primary orifice seating surface becomes damaged or blocked. See page 15 for additional information.
- **Slam-Shut Protection**—Discontinues gas service by shutting the gas off if there is an overpressure or underpressure condition.

Overpressure Relief

- **Token Relief** – Provides overpressure relief via a small capacity or token relief that relieves minor overpressure caused by thermal expansion or minor nicks in the orifice or disk.

Table 2. Body Sizes, Materials, End Connections and Maximum Cold Working Pressure Ratings⁽⁵⁾

TYPE	BODY MATERIAL	END CONNECTION	BODY SIZE		FACE-TO-FACE DIMENSION		BODY INLET PRESSURE RATING	
			In.	DN	In.	mm	psig	bar
CS800, CS805, CS806, CS820, CS825, CS826 and CS850	Gray Cast Iron	NPT	1-1/4	----	6.12	155	175	12.1
			1-1/2	----	6.12	155		
			2 ⁽¹⁾	----	6.12	155		
			2	----	6.12	155		
		CL125 FF	2	50	7.5	191	175	12.1
			2	50	10	254		
CS800 ⁽³⁾ , CS820 ⁽³⁾ , CS850 ⁽³⁾ , CS803, CS823, CS804, CS824 and CS854	Gray Cast Iron	NPT	2 ⁽²⁾	----	6.12	155	175	12.1
	Ductile Iron	NPT	1-1/4 ⁽⁴⁾	----	6.12	155	250	17.2
			1-1/2	----	6.12	155		
			2	----	6.12	155		
		Rp	2	----	6.12	155	250	17.2
		CL125 FF / CL150 FF	2	50	7.5 ⁽⁴⁾	191 ⁽⁴⁾	250	17.2
			2	50	10	254		
			2	50	10.5	267		
		PN 10/16	2	50	7.5 ⁽⁴⁾	191 ⁽⁴⁾	232	16
			2	50	10	254		
	WCC Steel	NPT	1-1/4 ⁽⁴⁾	----	6.12	155	290	20
			1-1/2	----	6.12	155		
			2	----	6.12	155		
		Rp	2	----	6.12	155	290	20
		CL150 RF	2	50	10	254	290	20
		PN 10/16	2	50	10	254	232	16

1. Standard on Types CS800, CS820 and CS850.
 2. Standard on Types CS803, CS804, CS823, CS824 and CS854.
 3. If a ductile iron or steel body material is selected without an Integral True-Monitor™ or Slam-shut Overpressure Protection (OPP) device, the port located at the bottom of the body will receive an aluminum plug.
 4. Not available on Types CS804, CS824 and CS854.
 5. The pressure/temperature limits in this Bulletin or any applicable standard or code limitation should not be exceeded.

Table 3. Inlet Pressure Ratings and Flow and Sizing Coefficients

ORIFICE SIZE		MAXIMUM OPERATING INLET PRESSURE TO OBTAIN OPTIMUM PERFORMANCE				MAXIMUM EMERGENCY INLET PRESSURE		WIDE-OPEN FLOW COEFFICIENTS			IEC SIZING COEFFICIENTS		
		psig Setpoints		In. w.c. Setpoints									
In.	mm	psig	bar	psig	bar	psig	bar	C _g	C _v	C ₁	X _T	F _L	F _D
1/4 ⁽¹⁾	6.4 ⁽¹⁾	125	8.6	125	8.6	175	12.1	50	2.1	24.6	0.38	0.89	0.99
3/8	9.5	125	8.6	125	8.6	175	12.1	110	3.8	29.5	0.55	0.89	0.90
1/2	13	100	6.9	100	6.9	175	12.1	210	7.2	29.5	0.55	0.89	0.93
5/8	16	80	6.5	60	4.1	175	12.1	320	10.1	31.8	0.64	0.89	0.88
3/4	19	80	6.5	60	4.1	175	12.1	450	13.3	34	0.73	0.89	0.84
7/8	22	60	4.1	50	3.4	175	12.1	600	16.7	36	0.82	0.89	0.81
1 ⁽¹⁾	25 ⁽¹⁾	30	2.1	25	1.7	175	12.1	765	20.1	38.1	0.92	0.89	0.77
1-3/8 ⁽¹⁾⁽²⁾	35 ⁽¹⁾⁽²⁾	15	1.0	15	1.0	175	12.1	1125	29.8	37.7	0.90	0.89	0.76
1. Not available on the Types CS805, CS806, CS825 and CS826. 2. Not available on the Types CS803 and CS823.													

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Table 4. Outlet Pressure Ranges

TYPE	OUTLET PRESSURE RANGE		COLOR CODE	PART NUMBER	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
	In. w.c.	mbar			In.	mm	In.	mm
CS800, CS803, CS804, CS805 and CS806	3.5 to 6 ⁽¹⁾	9 to 15 ⁽¹⁾	Red	GE30337X012	0.15	3.8	6.8	173
	5.5 to 8.5	13 to 21	Black	GE30338X012	0.17	4.3	6.8	173
	5.5 to 8.5	13 to 21	Brown [Use with Low Inlet (LIN) Option]	GE49043X012	0.16	4.1	8.3	211
	8 to 12	20 to 30	Purple	GE30339X012	0.17	4.3	7.4	188
	10 to 16	25 to 40	White	GE30340X012	0.18	4.6	7.4	188
	14 to 30	35 to 75	Dark Green	GE30341X012	0.20	5.2	7.5	191
CS820, CS823, CS824, CS825 and CS826	1 to 2.5 psig	69 to 170	Dark Blue	GE30342X012	0.25	6.4	7.5	191
	1.5 to 3.5 psig	100 to 241	Orange	GE46922X012	0.26	6.6	7.1	180
	2.5 to 5.5 psig	170 to 380	Yellow	GE30343X012	0.29	7.5	6.7	170
CS850 and CS854	5 to 10 psig	345 to 690	Green with White Stripe	GE30344X012	0.39	9.9	7.6	192

1. In order to achieve the complete spring range listed, in some applications it may be required to re-orient the actuator/spring case to point downward to utilize the weight of the internal components.

Table 5. Approximate Internal Relief Valve Start-to-Discharge Pressure Above Setpoint

CONTROL SPRING	SETPOINT		SET RANGE		INTERNAL RELIEF AND HIGH CAPACITY RELIEF				TOKEN RELIEF	
					Start-to-Discharge Pressure Range above Setpoint	Low Start-to-Discharge Option ⁽¹⁾		Start-to-Discharge Pressure Range above Setpoint		
						Start-to-Discharge Pressure Range above Setpoint				
	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar
GE30337X012	4	10	3.5 to 6	9 to 15	11 to 18	27 to 42	7 to 14	17 to 35	6 to 14	15 to 35
GE30338X012	7	17	5.5 to 8.5	13 to 21	11 to 18	27 to 42	7 to 14	17 to 35	6 to 14	15 to 35
GE49043X012 (LIN)	7	17	5.5 to 8.5	13 to 21	11 to 18	27 to 42	7 to 14	17 to 35	6 to 14	15 to 35
GE30339X012	11	27	8 to 12	20 to 30	11 to 18	27 to 42	7 to 14	17 to 35	6 to 14	15 to 35
GE30340X012	14	35	10 to 16	25 to 40	11 to 18	27 to 42	7 to 14	17 to 35	6 to 14	15 to 35
GE30341X012	1 psig	69	14 to 30	35 to 75	7 in. w.c. to 1 psig	17 to 69	----	----	8 to 16	20 to 40
GE30342X012	2 psig	138	1 to 2.5 psig	70 to 170	7 in. w.c. to 2 psig	17 to 138	----	----	7 in. w.c. to 1 psig	17 to 69
GE46922X012	3 psig	207	1.5 to 3.5 psig	100 to 240	7 in. w.c. to 2 psig	17 to 138	----	----	0.5 to 1.5 psig	35 to 100
GE30343X012	5 psig	345	2.5 to 5.5 psig	170 to 380	7 in. w.c. to 2.5 psig	17 to 170	----	----	1 to 2 psig	69 to 138
1. Low start-to-discharge option is only available on the main control spring ranges up to 10 to 16 in. w.c. / 25 to 40 mbar.										

Table 6. Secondary Seat™ Outlet Pressures

CONTROL SPRING	SPRING RANGE		SETPOINT		SECONDARY SEAT SHUTOFF PRESSURE ⁽²⁾ (TYPES CS805 AND CS825)				DOWNSTREAM BUILD-UP PRESSURE ⁽¹⁾⁽²⁾⁽³⁾ (TYPES CS806 AND CS826)			
					Up to 1/2 in. / 13 mm Orifice Size		Up to 7/8 in. / 22 mm Orifice Size		Up to 1/2 in. / 13 mm Orifice Size		Up to 7/8 in. / 22 mm Orifice Size	
Color	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar
Black	5.5 to 8.5	13 to 21	7	17	11	27	12	30	25	62	23	57
Brown (LIN)	5.5 to 8.5	13 to 21	7	17	11	27	12	30	25	62	23	57
White Stripe	10 to 16	25 to 40	14	35	19	47	20	50	36	89	33	81
Dark Green	14 to 30	35 to 75	1 psig	69	1.2 psig	83	1.3 psig	90	2.1 psig	145	2 psig	138
Dark Blue	1 to 2.5 psig	69 to 170	2 psig	140	2.6 psig	179	2.6 psig	179	3.8 psig	262	3.7 psig	255
Yellow	2.5 to 5.5 psig	170 to 380	5 psig	345	6.3 psig	434	6.3 psig	434	7.4 psig	510	8.2 psig	565

1. Downstream pressure buildup with Secondary Seat fixed bleed in operation and regulator relief valve relieving to atmosphere.

2. Outlet pressure values listed are at maximum operating inlet pressure rating per orifice.

3. If the outlet pressure rises above setpoint exceeding the pressure rating of the regulator, the internal parts must be inspected and replaced if damaged.

Table 7. Types CS803 and CS823 Regulator and Integral True-Monitor™ Outlet Pressure Ranges without Token Relief

Type	PRIMARY REGULATOR					INTEGRAL TRUE-MONITOR				
	Setpoint		Spring Range		Spring Color	Setpoint		Spring Range		Spring Color
	In. w.c.	mbar	In. w.c.	mbar		In. w.c.	mbar	In. w.c.	mbar	
CS803IN and CS803EN	4	10	3.5 to 6	9 to 15	Red	14	35	12 to 21	30 to 52	Blue
						21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	7	17	5.5 to 8.5	13 to 21	Black	14	35	12 to 21	30 to 52	Blue
						21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	7	17	5.5 to 8.5	13 to 21	Brown (LIN)	14	35	12 to 21	30 to 52	Blue
						21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	11	27	8 to 12	20 to 30	Purple	21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
						1.5 psig	103	1.4 to 2.9 psig	97 to 200	Black
	14	35	10 to 16	25 to 40	White	21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
						1.5 psig	103	1.4 to 2.9 psig	97 to 200	Black
	1 psig	69	14 to 30	35 to 75	Dark Green	1.5 psig	103	1.4 to 2.9 psig	97 to 200	Black
						2 psig	138	1.4 to 2.9 psig	97 to 200	Black
						3.5 psig	241	2.6 to 3.7 psig	179 to 255	Purple
						2.5 psig	172	1.4 to 2.9 psig	97 to 200	Black
CS823IN and CS823EN	2 psig	138	1 to 2.5 psig	69 to 170	Dark Blue	3 psig	207	2.6 to 3.7 psig	179 to 255	Purple
						5 psig	345	3.6 to 6 psig	248 to 414	Dark Blue
						3.5 psig	241	2.6 to 3.7 psig	179 to 255	Purple
	3 psig	207	1.5 to 3.5 psig	100 to 241	Orange	4 psig	276	3.6 to 6 psig	248 to 414	Dark Blue
						6 psig	414	5.1 to 7.5 psig	352 to 517	Red
						6 psig	414	5.1 to 7.5 psig	352 to 517	Red
	5 psig	345	2.5 to 5.5 psig	170 to 380	Yellow	7 psig	483	5.1 to 7.5 psig	352 to 517	Red
						7.5 psig	517	5.1 to 7.5 psig	352 to 517	Red

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Table 8. Primary Regulator and Integral True-Monitor™ Outlet Pressure Ranges with Token Relief

PRIMARY REGULATOR						INTEGRAL TRUE-MONITOR				
Type	Setpoint		Spring Pressure Range		Spring Color	Setpoint		Spring Pressure Range		Spring Color
	In. w.c.	mbar	In. w.c.	mbar		In. w.c.	mbar	In. w.c.	mbar	
CS803IT, CS803IL, CS803ET and CS803EL	4	10	3.5 to 6	9 to 15	Red	21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	7	17	5.5 to 8.5	13 to 21	Black	21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	7	17	5.5 to 8.5	13 to 21	Brown (LIN)	21	52	18 to 30	45 to 75	Green
						1 psig	69	26 to 40	65 to 99	Orange
	11	27	8 to 12	20 to 30	Purple	1 psig	69	26 to 40	65 to 99	Orange
						1.5 psig	103	1.4 to 2.9 psig	97 to 200	Black
	14	35	10 to 16	25 to 40	White	1 psig	69	26 to 40	65 to 99	Orange
						1.5 psig	103	1.4 to 2.9 psig	97 to 200	Black
	1 psig	69	14 to 30	35 to 75	Dark Green	2 psig	138	1.4 to 2.9 psig	97 to 200	Black
						3 psig	207	2.6 to 3.7 psig	179 to 255	Purple
CS823IT, CS823IL, CS823ET and CS823EL	2 psig	138	1 to 2.5 psig	69 to 170	Dark Blue	3 psig	207	2.6 to 3.7 psig	179 to 255	Purple
						4 psig	276	3.6 to 6 psig	248 to 414	Dark Blue
						5 psig	345	3.6 to 6 psig	248 to 414	Dark Blue
	3 psig	207	1.5 to 3.5 psig	100 to 241	Orange	6 psig	414	5.1 to 7.5 psig	352 to 517	Red
						7 psig	483	5.1 to 7.5 psig	352 to 517	Red
						7.5 psig	517	5.1 to 7.5 psig	352 to 517	Red

Table 9. CS800 Series Disk Color Selection

PRESSURE REGISTRATION	TYPE	BODY SIZE		SPRING RANGE ⁽¹⁾		BODY MATERIAL	END CONNECTION	DISK COLOR	DISK ASSEMBLY PART NUMBER	REPAIR KIT ⁽²⁾
		In.	DN	In. w.c.	mbar					
Internal	CS800	1-1/4 and 1-1/2	32 and 40	3.5 to 30	9 to 75	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2
		2	50	3.5 to 6	9 to 15	All Materials	All Connections	Green	GE29773X042	RCS800XGRN2
				5.5 to 8.5 and 8 to 12	13 to 21 and 20 to 30	Gray Cast Iron	All Connections	Blue	GE29773X032	RCS800XBLU2
						Ductile Iron or WCC Steel	Flanged	Blue	GE29773X032	RCS800XBLU2
							Threaded	Dark Gray	GE29773X082	RCS800XGRY2
	10 to 16 and 14 to 30	25 to 40 and 35 to 75	All Materials	All Connections	Green	GE29773X042	RCS800XGRN2			
	CS820 and CS850	All Sizes	1 to 10 psig	69 to 690	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2	
External	All	All Sizes	All	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2		

1. The 3.5 to 30 in. w.c. / 9 to 75 mbar spring range indicates that all of the springs within this range are applicable.

2. Repair kit includes O-ring (key 19), disk assembly (key 36) and O-ring (key 62).

1. The 3.5 to 30 in. w.c. / 9 to 75 mbar spring range indicates that all of the springs within this range are applicable.

2. Repair kit includes O-ring (key 19), disk assembly (key 36) and O-ring (key 62).

Table 10. CS803 and CS804 Series Disk Color Selection

PRESSURE REGISTRATION	TYPE	BODY SIZE		SPRING RANGE ⁽¹⁾		BODY MATERIAL	END CONNECTION	DISK COLOR	DISK ASSEMBLY PART NUMBER	REPAIR KIT ⁽²⁾
		In.	DN	In. w.c.	mbar					
Internal	CS803 and CS804	1-1/2	40	3.5 to 30	9 to 75	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2
		2	50	3.5 to 6	9 to 15	All Materials	All Connections	Green	GE29773X042	RCS800XGRN2
				5.5 to 8.5 and 8 to 12	13 to 21 and 20 to 30	Ductile Iron or WCC Steel	Flanged	Blue	GE29773X032	RCS800XBLU2
							Threaded	Dark Gray	GE29773X082	RCS800XGRY2
				Gray Cast Iron	All Connections	Blue	GE29773X032	RCS800XBLU2		
	10 to 16 and 14 to 30	25 to 40 and 35 to 75	All Materials	All Connections	Green	GE29773X042	RCS800XGRN2			
	CS823, CS824 and CS854	All Sizes	1 to 10 psig	69 to 690	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2	
External	All	All Sizes	All	All Materials	All Connections	Black	GE29773X022	RCS800XBLK2		

1. The 3.5 to 30 in. w.c. / 9 to 75 mbar spring range indicates that all of the springs within this range are applicable.

2. Repair kit includes O-ring (key 19), disk assembly (key 36) and O-ring (key 62).

Table 11. CS805 and CS806 Series Disk Color Selection

PRESSURE REGISTRATION	TYPE	BODY SIZE		SPRING RANGE ⁽¹⁾		BODY MATERIAL	END CONNECTION	DISK COLOR	DISK ASSEMBLY PART NUMBER	REPAIR KIT ⁽³⁾
		In.	DN	In. w.c.	mbar					
Internal	CS805 and CS806	1-1/4	32	3.5 to 30	9 to 75	Gray Cast Iron	All Connections	Yellow/ White Dot	GE29773X062	RCS800XYEL2
		1-1/2	40					Green/ White Dot	GE29773X092	RCS800XGR22
		2	50					White/ White Dot ⁽²⁾	GE29773X052	RCS800XWHT2
	CS825 and CS826	All Sizes		1 to 5.5 psig	69 to 380	Gray Cast Iron	All Connections	Yellow/ White Dot	GE29773X062	RCS800XYEL2
External	All	All Sizes		All		All Materials	All Connections	Black	GE29773X022	RCS800XBLK2

1. The 3.5 to 30 in. w.c. / 9 to 75 mbar spring range indicates that all of the springs within this range are applicable.
2. White/White Dot disk requires the open end to be directed downstream with the direction of flow.
3. Repair kit includes O-ring (key 19), disk assembly (key 36) and O-ring (key 62).

Table 12. Regulator and Slam-Shut Overpressure Shutoff (OPSO) Pressure Ranges

REGULATOR					SLAM-SHUT DEVICE				
					Over Pressure Shut-off (OPSO)				
Type	Factory Setpoint		Spring Range		Factory Setpoint ⁽¹⁾		Spring Range ⁽²⁾		Spring Part Number and Color
	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	
CS804	4	10	3.5 to 6	9 to 15	19	47	12 to 25	30 to 60	GF02168X012 / Brown
	7	17	5.5 to 8.5	14 to 21	22	55			
	7 (optional)	17 (optional)	5.5 to 8.5	14 to 21	25	62	16 to 44	40 to 110	GF02169X012 / Red
	11	27	8 to 12	20 to 30					
	14	35	10 to 16	25 to 40	30	75	24 to 78	60 to 190	GF02170X012 / Orange
	14 (optional)	35 (optional)	10 to 16	25 to 40	2 psig	138	1.4 to 4.1 psig	97 to 283	GF02171X012 / Pink
	1 psig	69	14 to 30	35 to 75	2 psig	138			
CS824	2 psig	138	1 to 2.5 psig	69 to 170	3.5 psig	241	2 to 7.3 psig	138 to 503	GF02172X012 / Green
	3 psig	207	1.5 to 3.5 psig	100 to 241	5 psig	345			
	5 psig	345	2.5 to 5.5 psig	170 to 380	7 psig	483	3.2 to 8.5 psig	221 to 586	GF02173X012 / Silver
CS854	7 psig	483	5 to 10 psig	345 to 690	9 psig	621	5.8 to 13 psig	400 to 896	GF04353X012 / Yellow

1. For units equipped with Token Relief, if Non-Factory Slam-shut OPSO setpoints are specified, they must be higher than the Token Relief Start-to-Discharge values provided in Table 5.
2. If Non-Factory OPSO setpoints are specified, the allowable OPSO setpoint cannot exceed the maximum of 3 psig / 207 mbar above the regulator setpoint in order to ensure no internal parts damage from overpressure.

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Table 13. Regulator and Slam-Shut Underpressure Shutoff (UPSO) Pressure and Overpressure Shutoff (OPSO) Ranges

REGULATOR					SLAM-SHUT DEVICE									
					Under Pressure Shut-off (UPSO)					Over Pressure Shut-off (OPSO)				
Type	Factory Setpoint		Spring Range		Factory Setpoint ⁽¹⁾		Spring Range		Spring Part Number and Color	Factory Setpoint ⁽²⁾		Spring Range Over UPSO Setpoint ⁽³⁾		Spring Part Number and Color
	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar	In. w.c.	mbar		In. w.c.	mbar	In. w.c.	mbar	
CS804	7	17	5.5 to 8.5	14 to 21	3	7	2 to 12	5 to 30	T14168T0012 / White	22	55	17 to 28	42 to 69	GF02168X012 / Brown
	11	27	8 to 12	20 to 30	6	15				25	62			
	14	35	10 to 16	25 to 40	9	22				30	75			
		1 psig	69	14 to 30	35 to 75	0.5 psig	35	0.36 to 2.3 psig	25 to 160	T14170T0012 / Silver	2 psig	138	1.3 to 3.1 psig	90 to 214
CS824	2 psig	138	1 to 2.5 psig	69 to 170	1 psig	69	0.36 to 2.3 psig	25 to 160	T14170T0012 / Silver	3.5 psig	241	1.3 to 3.1 psig	90 to 214	GF02170X012 / Orange
	3 psig	207	1.5 to 3.5 psig	100 to 241	1.75 psig	121	1.5 to 7.3 psig	100 to 500	FA142869X12 / Orange Stripe	5 psig	345	2.7 to 5.5 psig	186 to 379	GF02171X012 / Pink
	5 psig	345	2.5 to 5.5 psig	170 to 380	3 psig	207				7 psig	483			
CS854	7 psig	483	5 to 10 psig	345 to 690	3.5 psig	241	1.5 to 7.3 psig	100 to 500	FA142869X12 / Orange Stripe	9 psig	621	2.7 to 5.5 psig	186 to 379	GF02171X012 / Pink
1. If Non-Factory UPSO setpoints are specified, a minimum differential of 4 in. w.c. / 10 mbar between UPSO setpoint and regulator setpoint must be maintained in order to ensure a secure latch of the Slam-Shut. 2. For units equipped with Token Relief, if Non-Factory Slam-shut OPSO setpoints are specified, they must be higher than the Token Relief Start-to-Discharge values provided in Table 5. 3. If Non-Factory OPSO setpoints are specified, the allowable OPSO setpoint cannot exceed the maximum of 3 psig / 207 mbar above the regulator setpoint in order to ensure no internal parts damage from overpressure.														

Principle of Operation and Overpressure Protection

Types CS800, CS820 and CS850 Base Regulator Operation

Refer to Figures 3 and 4. When downstream demand decreases, the pressure under the diaphragm increases. This pressure overcomes the regulator setting (which is set by the regulator control spring). Through the action of the pusher post assembly, lever and valve stem, the valve disk moves closer to the orifice and reduces gas flow. If demand downstream increases, pressure under the diaphragm decreases. Spring force pushes the pusher post assembly downward, the valve disk moves away from the orifice and the gas flow increases downstream as the regulator opens in response to the decreased pressure underneath the diaphragm.

Stability Cartridge

In certain commercial and industrial applications, regulators may exhibit excessive noise, even in situations with small pressure reductions. This noise is often caused by a harmonic instability condition in the system which manifests itself in the regulator.

The stabilizer cartridge can be installed to eliminate harmonic instability in such applications. This device is a compact assembly that is installed in the throat of a Type CS800 regulator. See Installation Sheet D104125X012.

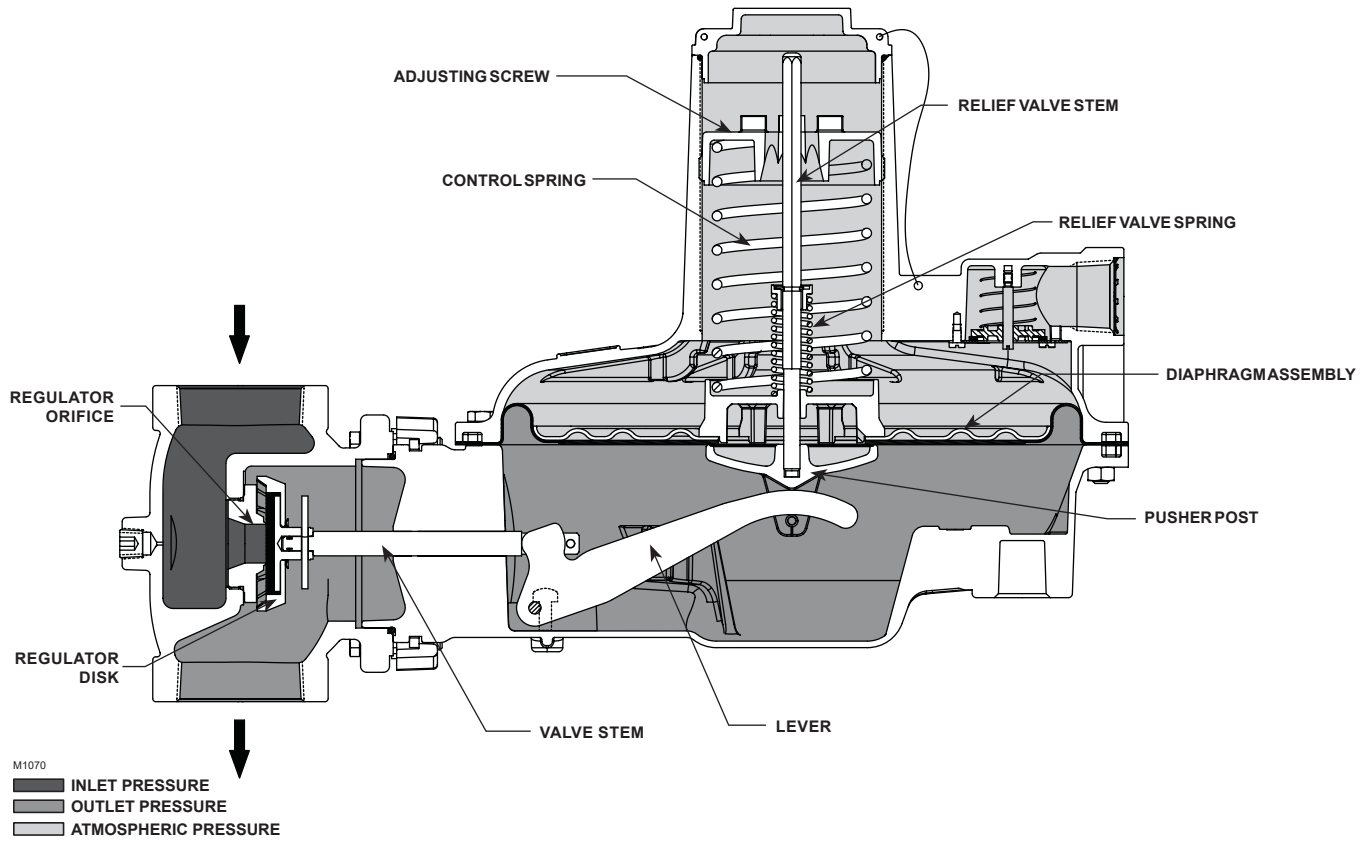


Figure 3. Type CS800IR Internally Registered Regulator with Internal Relief Operational Schematic

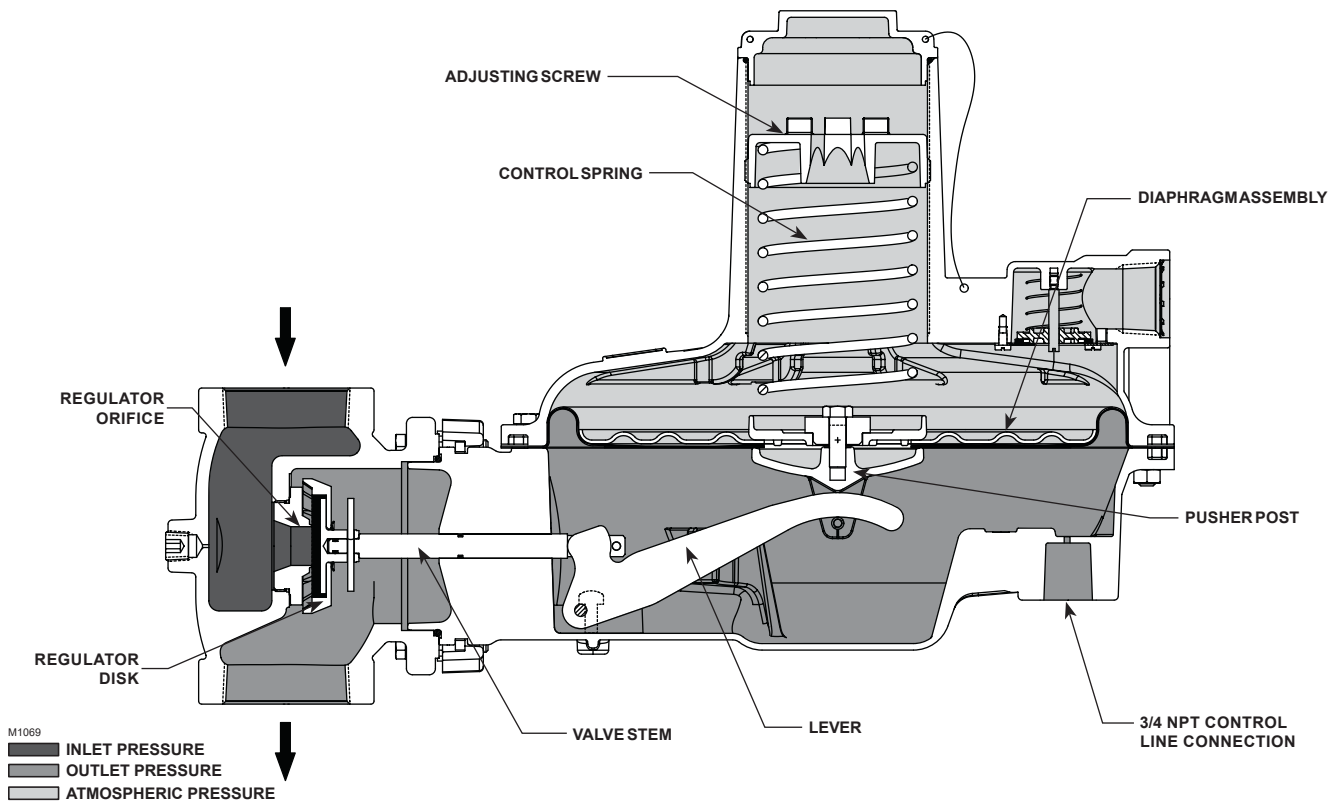


Figure 4. Type CS800EN Externally Registered Regulator Operational Schematic

CS800 Series

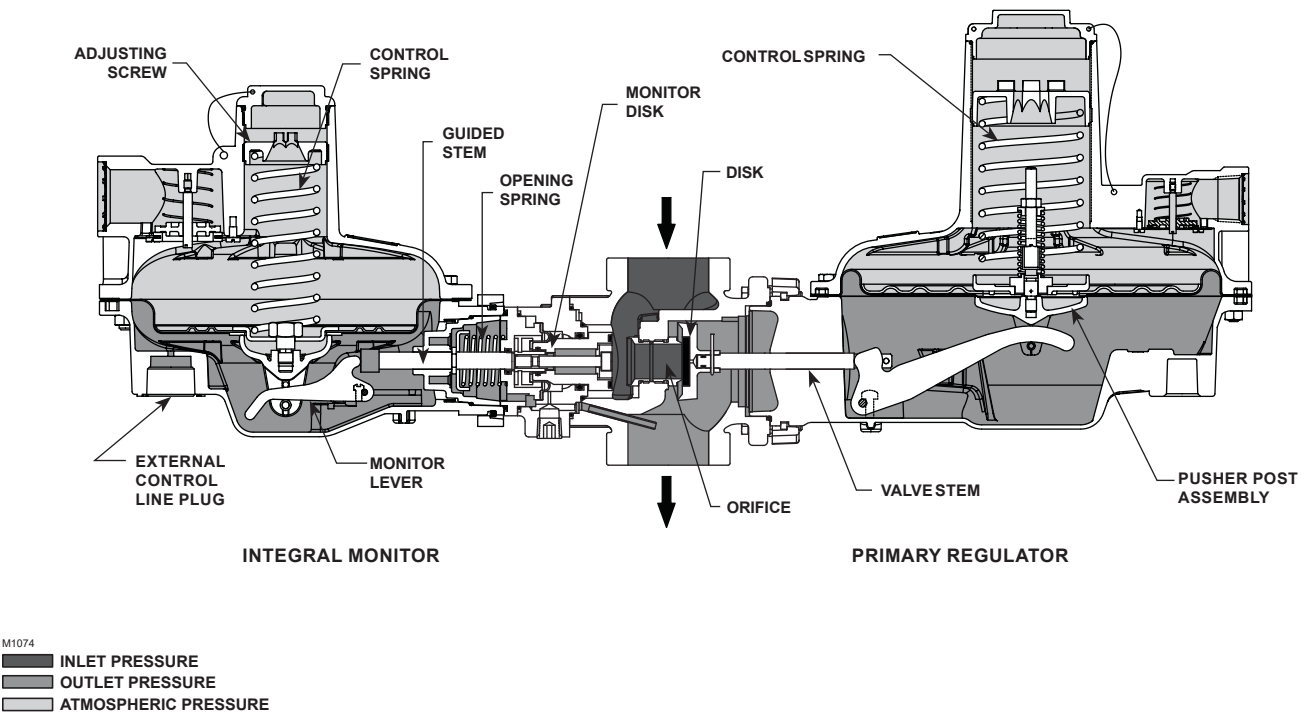


Figure 5. Type CS803IT Internally Registered Primary Regulator with Internally Registered Integral Monitor Operational Schematic

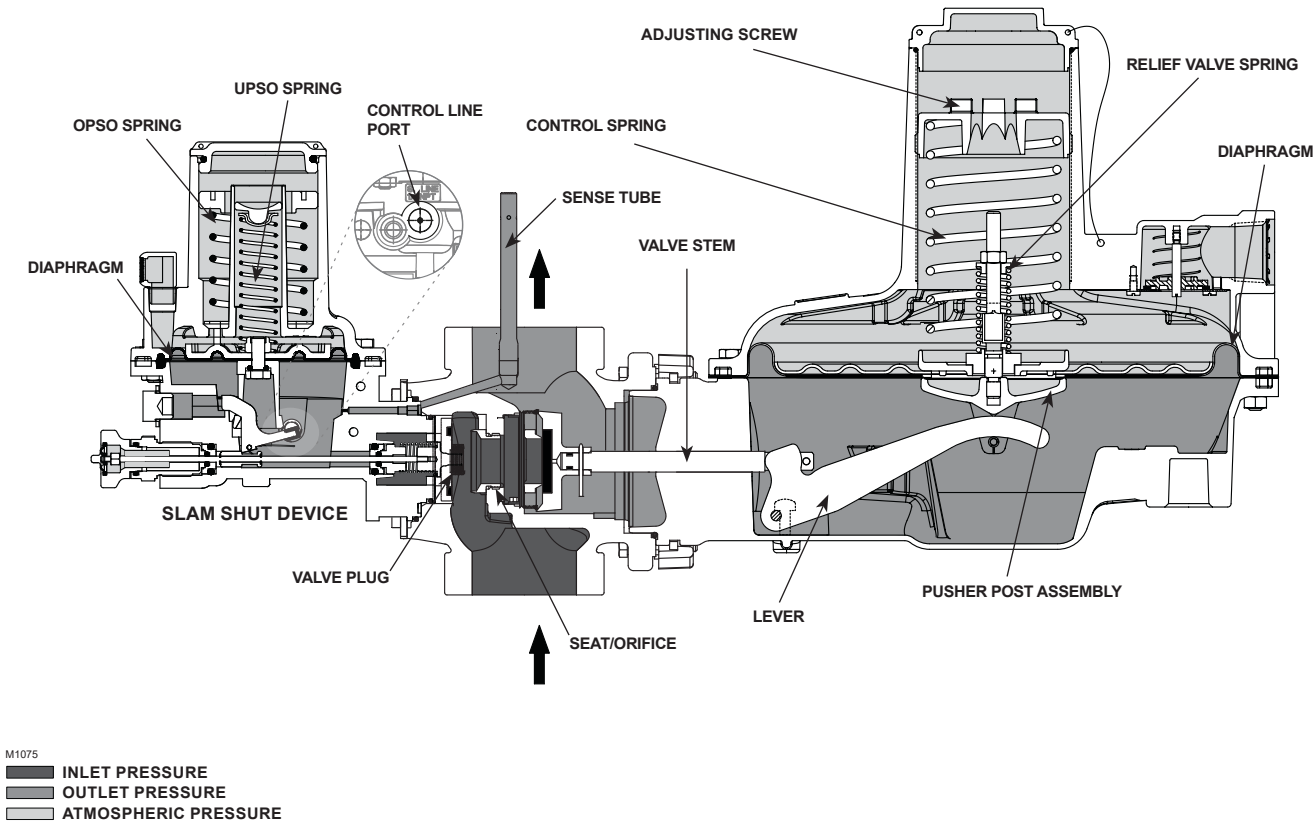
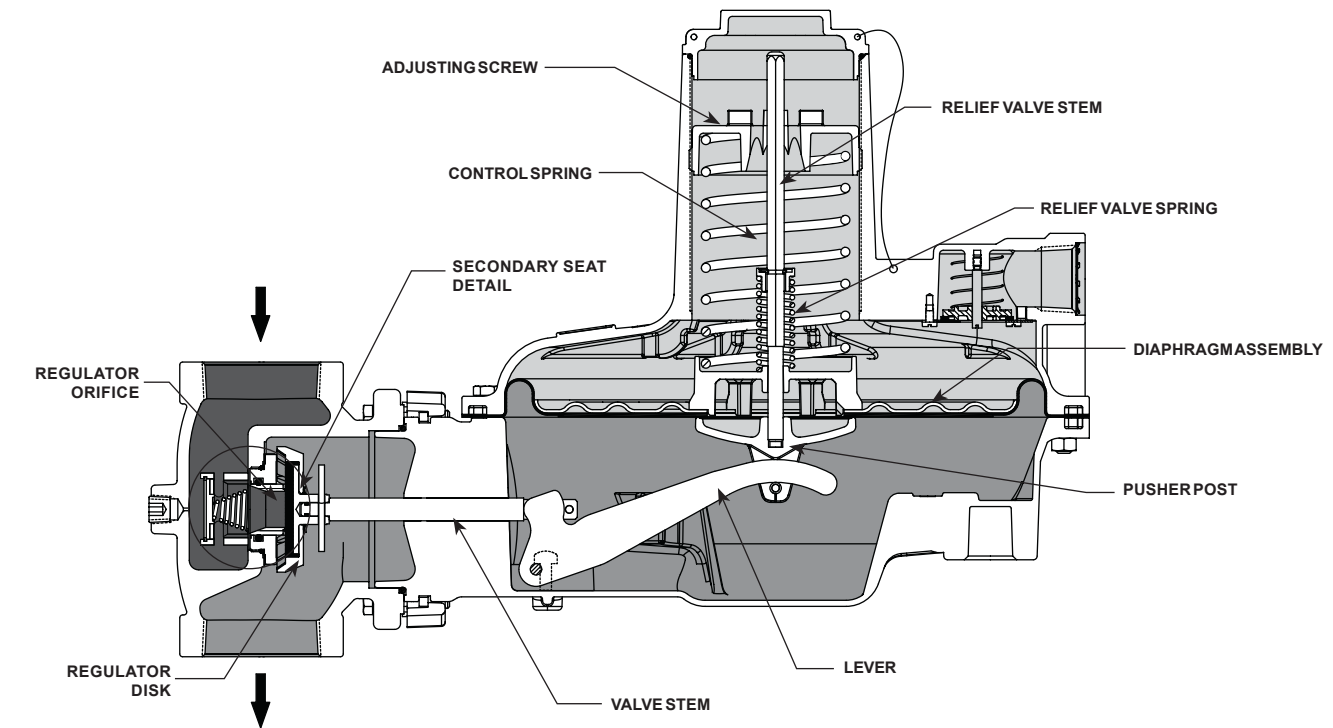
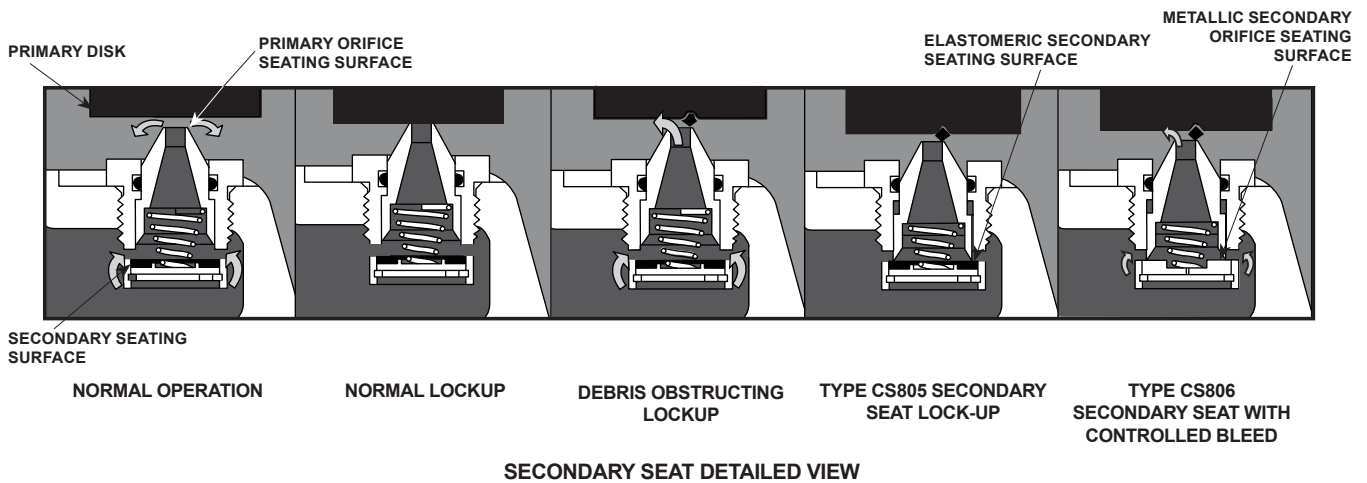


Figure 6. Type CS804IT Internally Registered Regulator with Slam-Shut Module Operational Schematic



M1072

- INLET PRESSURE
- OUTLET PRESSURE
- ATMOSPHERIC PRESSURE



M1072

- INLET PRESSURE
- OUTLET PRESSURE
- ATMOSPHERIC PRESSURE

Figure 7. CS805 Series with Secondary Seat™ Protection

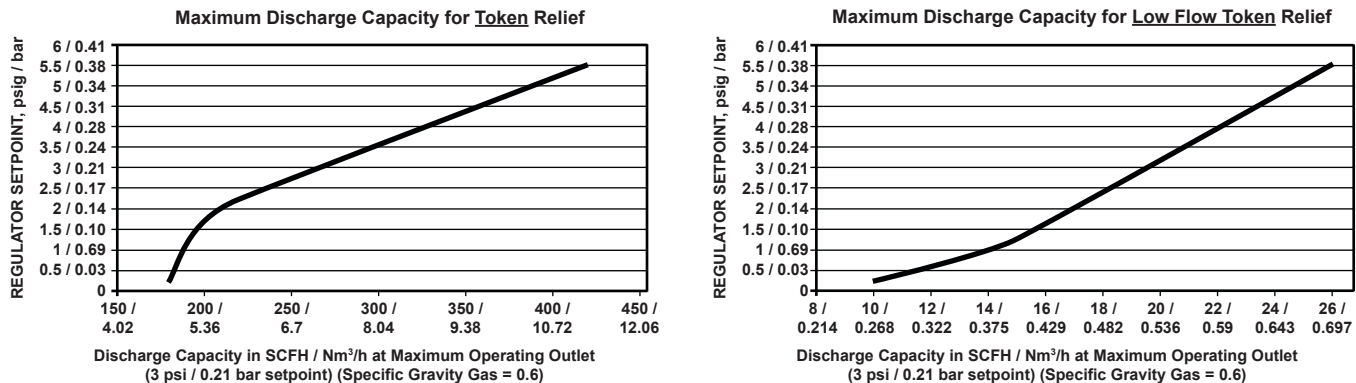


Figure 8. Maximum Discharge Capacity for Token and Low Flow Token Relief

Relief Operation

Internal Relief “R”

Type numbers with the “R” suffix, e.g., Type CS800IR, provide internal relief discharge through the diaphragm assembly (see Figure 3) to minimize overpressure. Any outlet pressure above the start-to-discharge point of the non-adjustable relief spring (see Table 5) moves the diaphragm off the relief seat, allowing excess pressure to discharge through the vent. If conditions should exist that prevent normal operation of the regulator or internal relief valve, the relief valve stem acts as a secondary travel stop contacting the underside of the closing cap and stopping the upward travel of the relief seat. Since the diaphragm continues to rise as downstream pressure builds, the diaphragm lifts off of the relief seat to provide relief operation. This secondary travel stop for internal relief is not available on token relieving units. Units with internal relief valve have 1 NPT vent size. See Figures 9, 11, 13, 15, 17 and 19 for relief capacity.

High-Capacity Internal Relief “Q”

Type numbers with the “Q” suffix, e.g., Type CS800IQ, provide high capacity relief discharge across the diaphragm assembly to minimize overpressure. Any outlet pressure above the start-to-discharge point of the non-adjustable relief spring (see Table 5) moves the diaphragm off the relief seat, allowing excess pressure to discharge through the vent. If emergency conditions should exist that prevent normal operation of the regulator or internal relief valve, the relief valve stem acts as a secondary travel stop contacting the underside of the closing cap and stopping the upward

travel of the relief seat. Since the diaphragm continues to rise as downstream pressure builds, the diaphragm lifts off of the relief seat to provide relief operation. The secondary travel stop for internal relief is not available on token relieving units. Units with high capacity internal relief valve have 2-1/2 NPT vent size. See Figures 10, 12, 14, 16, 18 and 20 for relief capacity. Contact Factory if using stabilizer cartridge for data.

Token Relief “T” and Low Flow Token Relief “L”

Type numbers with the “T” or “L” suffix, e.g., Types CS800IT and CS800IL provide a low capacity/ token relief. Token relief provides relief from minor overpressure caused by nicks or dents on the orifice or by thermal expansion of gas in the downstream line. Token relief also provides a token or signal, in the form of odor, that an overpressure situation is occurring. Start-to-discharge values for Token reliefs are found in Table 5. Maximum discharge capacities for Token reliefs are found in Figure 8.

Types CS803 and CS823 Integral True-Monitor™ Operation

Types CS803 and CS823 combine the operation of a conventional two-regulator wide-open monitor set into one body, see Figure 5. The Integral True-Monitor is installed on the inlet side of the body and serves to control downstream pressure in the situation where the Primary regulator can no longer regulate downstream pressure. During normal operation the True-Monitor is in a wide-open state as its setpoint is set higher than the primary regulator. See Tables 7 and 8 for guidance regarding the setpoints of the regulator and associated Integral Monitor sets. If the downstream pressure

should rise to the setpoint of the True-Monitor due to loss of pressure control by the primary regulator, the monitor will assume control and regulate flow to the downstream system. Internal and external downstream pressure registration are available. External pressure registration requires a downstream sensing line. See the Type TM600 Instruction Manual for additional details of operation.

If a Token relief is present, the token relief will relieve a small amount of gas to the atmosphere as an indication that the Integral Monitor is controlling the downstream pressure.

Types CS804, CS824 and CS854 Slam-Shut Operation

The Type VSX8 Slam-shut module on the CS804 Series regulators is a fast acting shutoff device that provides overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection by completely shutting off the flow of gas to the downstream system. See Tables 12 and 13 for guidance regarding the typical setpoint of the regulator and associated OPSO and UPSO sets. The Type VSX8's actions are independent of the CS804 Series regulator and of variations to the inlet pressure. The Type VSX8 provides the option of internal or external downstream pressure registration. External registration requires a downstream sensing line.

The Type VSX8 shutoff disk is normally in the open (reset) position, see Figure 6. If the downstream pressure below the slam-shut diaphragm increases (or decreases) until it reaches the slam-shut setpoint, this diaphragm moves upward (or downward) to release the trip mechanism which allows the spring force on the stem to push the disk against the seat, shutting off all gas flow. To reset the slam-shut after gas has been shutoff, refer to Type VSX8 Instruction Manual (D103127X012) for additional details.

Note

In order for the Underpressure Shutoff (UPSO) of any slam-shut to be triggered, the downstream pipe pressure must drop below the UPSO setpoint. In the case of a downstream line break, numerous factors can prevent the downstream pipe pressure from decreasing below the slam-shut UPSO setpoint. These factors include

the distance of pipe to the break, the diameter of the pipe, size of the break and the number of restrictions, such as valves, elbows and bends, downstream of the regulator and/or slam-shut device. Due to these factors additional protections should be installed to stop flow in the event of a line break.

Types CS805 and CS825 with Secondary Seat™ Protection

Note

Types CS805 and CS825 regulators do not have any means to alert when the Secondary Seat operates at lockup. Therefore, it is recommended that Internal relief or high-capacity relief are also selected or the addition of some other method of overpressure protection be added in the downstream system as discussed in the Overpressure Protection section.

Refer to Figure 7. The Type CS805 provides Secondary Seat Protection. As downstream demand decreases and downstream pressure rises to the regulator pressure lockup value, the regulator will lockup. If, however, damage has occurred to the primary disk, to the primary orifice seating surface or debris has become lodged between the primary disk and primary orifice, the outlet pressure will continue to rise. This additional pressure causes the primary disk to apply additional force to the orifice seating surface, which causes the Secondary seating surface to move toward the Secondary disk or sealing surface. If downstream demand decreases to zero, then the secondary seating surface will contact the sealing surface to provide lockup. See Table 6 for Secondary Seat shutoff above setpoint.

Types CS806 and CS826 Secondary Seat Protection with Bleed

The Types CS806 and CS826 provides small bleed to the downstream system as an indication that the Secondary Seat is providing lock-up. In the event that the primary orifice and disk cannot provide lockup, the secondary seating surface will move into contact with a metal disk. This metal to metal interface, combined with a small drilled bleed hole, will allow a small amount of gas to bleed downstream thereby

increasing outlet pressure until the internal relief valve begins to discharge gas to the atmosphere. The odor of this discharged gas provides an indication that the regulator is relying on the Secondary Seat for overpressure protection. See Table 6 for Secondary Seat maximum downstream buildup.

Secondary Seat Protection Limitations

Note

Overpressure conditions can occur in the downstream piping when the Secondary Seat Protection is installed. The Secondary Seat Protection serves only as a backup to the primary seat for lockup. Refer to the sections on Overpressure Protection and Maintenance.

Secondary Seat Protection does not provide additional overpressure protection in the event the secondary seat or disk is damaged by debris or contamination in the pipeline or from conditions that would cause the regulator to go wide-open.

Installation

The CS800 Series regulators may be installed in any position. However, the spring case vent should be pointed downward. If gas escaping through the CS800 Series internal relief valve could constitute a hazard, the spring case vent must be piped to a location where escaping gas will not be hazardous. If the vented gas will be piped to another location, use obstruction-free tubing or piping at least equal in size to the vent; protect the end of the vent pipe from anything that might clog it. Regulators with External Registration require the use of an external control line.

Non-Relieving “N”

Type numbers with the “N” suffix, e.g., Type CS800IN, do not provide internal relief discharge through the diaphragm assembly.

The CS800 Series regulators have outlet pressure ratings that are lower than their inlet pressure ratings. A pressure relieving or pressure limiting device is needed if the application inlet pressure can exceed the outlet pressure rating and the regulator is not equipped with internal relief, high capacity relief, Integral True-Monitor™ Protection or Secondary Seat™ Protection.

Note

Overpressuring any portion of a regulator or associated equipment may cause personal injury, leakage or property damage due to bursting of pressure-containing parts or explosion of accumulated gas. Provide appropriate pressure relieving or pressure limiting devices to ensure that the limits in the specifications section are not exceeded. Regulator operation within ratings does not prevent the possibility of damage from external sources or from debris in the pipeline.

Downstream Control Line Connection

A CS800 Series regulator with an EN, ET or ER in the type number has a blocked throat, an O-ring stem seal and a 3/4 NPT control line tapping in the lower diaphragm casing, see Figure 4. A regulator with a downstream control line is used for monitoring installations or other applications where there is other equipment installed between the regulator and the pressure control point. The O-ring stem seal helps separate body pressure from diaphragm case pressure on monitor installations where leakage cannot be tolerated.

Capacity Information

Tables 14 through 66 provide natural gas regulating capacities at selected inlet pressures, outlet pressure settings and body outlet sizes. Flows are in SCFH (60°F and 14.7 psia) and Nm³/h (0°C and 1.01,325 bar) of 0.6 specific gravity natural gas. To determine equivalent capacities for air, propane, butane or nitrogen, multiply the capacity number in the tables by the following appropriate conversion factor: 0.775 for air, 0.628 for propane, 0.548 for butane or 0.789 for nitrogen. For gases of other specific gravities, multiply the given capacity by 0.775 and divide by the square root of the appropriate specific gravity.

Table 14. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 4 in. w.c. / 10 mbar Setpoint for 1-1/4 in. / DN 32 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
4 in. w.c.	-1 in. w.c.	2 in. w.c.	3.5 to 6 in. w.c.	GE30337X012 / Red
10 mbar	-2.5 mbar	5 mbar	9 to 15 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
0.4	0.03			535	14.4	881	23.7	1194	32.1	1060	28.5	1053	28.3	1750	47.0	1780	47.8
0.51	0.04			718	19.3	963	25.9	1304	35.0	1192	32.0	1500	40.3	1871	50.2	2110	56.6
1	0.07	600	16.1	1051	28.2	1394	37.4	1447	38.8	1881	50.5	1980	53.2	1999	53.7	2137	57.4
2	0.14	810	21.7	1266	34.0	2109	56.6	2256	60.6	1951	52.4	2423	65.0	2329	62.5	2474	66.4
3	0.21	990	26.6	1617	43.4	2587	69.4	2077	55.8	2613	70.1	2512	67.4	2743	73.6	2888	77.5
5	0.34	1230	33.0	2063	55.4	2643	71.0	2769	74.3	3083	82.8	3155	84.7	3208	86	3195	86
10	0.69	1500	40.3	2775	74.5	3223	86.5	3476	93	3861	104	3812	102	3943	106	3411	92
15	1.0	1910	51.3	3272	87.8	3809	102	3895	105	3869	104	3827	103	3836	103	3784	102
20	1.4	2300	61.7	3650	98	4196	113	4168	112	4473	120	4243	114	4192	113		
25	1.7	2580	69.3	4021	108	4231	114	4334	116	4258	114	4214	113	3975	107		
30	2.1	2980	80.0	4241	114	4406	118	4414	118	4336	116	4238	114				
40	2.8	3620	97.2	4440	119	4762	128	4426	119	4087	110	4247	114				
50	3.4	4300	115	4416	119	4705	126	4456	120	4306	116	4424	119				
60	4.1	4400	118	4493	121	4604	124	4494	121	4451	119						
80	5.5	4490	121	4311	116	4640	125										
100	6.9	4070	109	4399	118	4653	125										
125	8.6	3850	103	4121	111												

Black areas show where indicated droop/boost would be exceeded regardless of capacity.

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

Table 15. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 4 in. w.c. / 10 mbar Setpoint for 1-1/2 in. / DN 40 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
4 in. w.c.	-1 in. w.c.	2 in. w.c.	3.5 to 6 in. w.c.	GE30337X012 / Red
10 mbar	-2.5 mbar	5 mbar	9 to 15 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, in. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
0.4	0.03			300	8.1	300	8.1	300	8.1	1000	26.8	1400	37.6	1400	37.6	1600	43.0
0.51	0.04			300	8.1	500	13.4	850	22.8	1400	37.6	1590	42.7	1600	43.0	1710	45.9
1	0.07	400	10.7	800	21.5	1200	32.2	1540	41.3	2100	56.4	2300	61.7	2500	67.1	2700	72.5
2	0.14	600	16.1	1300	34.9	2000	53.7	2400	64.4	2800	75.2	3100	83.2	3470	93.2	3470	93.2
3	0.21	780	20.9	1600	43.0	2470	66.3	2860	76.8	3360	90.2	3620	97.2	4100	110	4190	113
5	0.34	1150	30.9	2170	58.3	2940	78.9	3800	102	4500	121	4580	123	5190	139	5190	139
10	0.69	1370	36.8	2900	77.9	4750	128	5200	140	5650	152	5650	152	5650	152	5930	159
15	1.0	1600	43.0	3600	96.6	6200	166	6500	175	6500	175	6500	175	6000	161	6710	180
20	1.4	2070	55.6	4300	115	6620	178	7250	195	7250	195	7400	199	7500	201		
25	1.7	2550	68.5	5000	134	7050	189	7250	195	7250	195	7500	201	9000	242		
30	2.1	2860	76.8	5010	135	7050	189	7250	195	7250	195	7500	201				
40	2.8	3170	85.1	5020	135	7050	189	7250	195	7250	195	7500	201				
50	3.4	4120	111	5070	136	7050	189	7250	195	7250	195	7500	201				
60	4.1	4750	128	5100	137	7050	189	7250	195	7250	195						
80	5.5	5700	153	6200	166	7170	193										
100	6.9	6650	179	7300	196	7300	196										
125	8.6	6950	187	8300	223												
Black areas show where indicated droop/boost would be exceeded regardless of capacity. Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	

CS800 Series

Table 16. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 4 in. w.c. / 10 mbar Setpoint for 2 in. / DN 50 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
4 in. w.c.	-1 in. w.c.	2 in. w.c.	3.5 to 6 in. w.c.	GE30337X012 / Red
10 mbar	-2.5 mbar	5 mbar	9 to 15 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
0.4	0.03			300	8.1	300	8.1	300	8.1	1170	31.4	1400	37.6	1600	43.0	1800	48.3
0.51	0.04			300	8.1	500	13.4	1000	26.8	1550	41.6	1900	51.0	2070	55.6	2400	64.4
1	0.07	400	10.7	900	24.2	1300	34.9	1760	47.2	1950	52.3	3000	80.5	2710	72.8	3800	102
2	0.14	600	16.1	1240	33.3	2070	55.6	2620	70.3	3930	106	5000	134	3450	92.6	5620	151
3	0.21	730	19.6	1530	41.1	2580	69.3	3540	95.0	4980	134	6200	166	6830	183	8010	215
5	0.34	1000	26.8	2090	56.1	3700	99.3	5500	148	7800	209	8600	231	9500	255	10,620	285
10	0.69	1320	35.4	3000	80.5	5100	137	7450	200	10,400	279	10,900	293	11,750	315	12,580	338
15	1.0	1650	44.3	3700	99.3	6500	175	9400	252	13,000	349	13,200	354	14,000	376	13,150	353
20	1.4	2020	54.2	4450	120	7850	211	10,150	273	13,000	349	13,200	354	16,000	430		
25	1.7	2400	64.4	5200	140	9200	247	10,900	293	13,000	349	13,200	354	18,000	483		
30	2.1	2720	73.0	5560	149	9460	254	10,980	295	13,400	360	13,560	364				
40	2.8	3040	81.6	5920	159	9720	261	11,060	297	13,800	371	13,920	374				
50	3.4	4000	107	7000	188	10,500	282	11,300	303	15,000	403	12,510	336				
60	4.1	4450	120	9000	242	12,800	344	13,800	371	11,140	299						
80	5.5	4970	133	9250	248	12,850	345										
100	6.9	5500	148	9500	255	11,770	316										
125	8.6	7250	195	9500	255												
		Black areas show where indicated droop/boost would be exceeded regardless of capacity.															
		Gray areas indicate limited capacities due to boost effects.															
		Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.															
1. Not available on the Type CS803.																	

Table 17. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 1-1/4 in. / DN 32 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
0.4	0.03			314	8.43	506	13.6	564	15.1	640	17.2	678	18.2	936	25.1	1073	28.8
0.51	0.04			396	10.6	501	13.4	789	21.2	815	21.9	871	23.4	1031	27.7	1214	32.6
1	0.07	429	11.5	586	15.7	850	22.8	977	26.2	1219	32.7	1341	36.0	1486	39.9	1532	41.1
2	0.14	631	16.9	818	22.0	1192	32.0	1423	38.2	1596	42.8	1696	45.5	1777	47.7	1947	52.3
3	0.21	746	20.0	1024	27.5	1449	38.9	1673	44.9	1828	49.1	2025	54.4	2105	56.5	2245	60.3
5	0.34	952	25.6	1163	31.2	1755	47.1	2110	56.6	2200	59.1	2390	64.2	2514	67.5	2518	67.6
10	0.69	1133	30.4	1918	51.5	2381	63.9	2778	74.6	2731	73.3	2993	80.3	3030	81.3	2942	79.0
15	1.0	1400	37.6	2428	65.2	2900	77.8	3159	84.8	2938	78.9	3246	87.1	3255	87.4	3116	83.6
20	1.4	1709	45.9	2792	74.9	3107	83.4	3406	91.4	3081	82.7	3232	86.8	3364	90.3		
25	1.7	2041	54.8	2982	80.0	3260	87.5	3488	93.6	3289	88.3	3413	91.6	3332	89.4		
30	2.1	2281	61.2	3312	88.9	3326	89.3	3573	95.9	3137	84.2	3408	91.5				
40	2.8	2800	75.2	3569	95.8	3531	94.8	3632	97.5	3413	91.6	3414	91.6				
50	3.4	3330	89.4	3574	95.9	3799	102.0	3559	95.5	3341	89.7	3410	91.5				
60	4.1	3470	93.1	3405	91.4	3495	93.8	3515	94.4	3466	93.0						
80	5.5	3498	93.9	3355	90.1	3469	93.1										
100	6.9	3459	92.9	3199	85.9	3489	93.7										
125	8.6	2149	57.7	2186	58.7												
■ Black areas show where indicated droop/boost would be exceeded regardless of capacity.																	
□ Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	
2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.																	

Table 18. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 1-1/2 in. / DN 40 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
0.4	0.03			430	11.5	740	19.9	550	14.8	800	21.5	800	21.5	1060	28.5	1420	38.1
0.51	0.04			520	14.0	800	21.5	890	23.9	1100	29.5	1150	30.9	1300	34.9	1630	43.8
1	0.07	570	15.3	770	20.7	1140	30.6	1360	36.5	1510	40.5	1830	49.1	1960	52.6	2640	70.9
2	0.14	780	20.9	980	26.3	1570	42.1	1790	48.1	2220	59.6	2510	67.4	2790	74.9	3550	95.3
3	0.21	990	26.6	1230	33.0	1960	52.6	2380	63.9	2810	75.4	3310	88.9	3680	98.8	4380	118
5	0.34	1220	32.8	1920	51.5	2940	78.9	3390	91.0	4130	111	4130	111	4850	130	5510	148
10	0.69	1600	43.0	3160	84.8	4900	132	5130	138	5950	160	6270	168	6650	179	7200	193
15	1.0	1980	53.2	4150	111	6310	169	6040	162	7110	191	7240	194	7520	202	7650	205
20	1.4	2330	62.6	4910	132	7300	196	7130	191	7770	209	7770	209	8010	215		
25	1.7	2620	70.3	5680	153	7550	203	7550	203	8220	221	8330	224	8330	224		
30	2.1	2990	80.3	6370	171	8310	223	8140	219	8560	230	8560 ⁽²⁾	230 ⁽²⁾				
40	2.8	3650	98.0	7830	210	8990	241	8690	233	8770	235	8770 ⁽²⁾	235 ⁽²⁾				
50	3.4	4320	116	9010	242	9010	242	8880	238	9000	242	9210 ⁽²⁾	247 ⁽²⁾				
60	4.1	5010	135	9040	243	9040	243	9040 ⁽²⁾	243 ⁽²⁾	9070 ⁽²⁾	244 ⁽²⁾						
80	5.5	6290	169	9620	258	9620 ⁽²⁾	258 ⁽²⁾										
100	6.9	7550	202	9510	255	9510 ⁽²⁾	255 ⁽²⁾										
125	8.6	7820	210	9600	258												
■ Black areas show where indicated droop/boost would be exceeded regardless of capacity.																	
□ Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	
2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.																	

Table 19. Types CS800⁽¹⁾⁽³⁾, CS803⁽²⁾⁽³⁾ and CS804⁽³⁾⁽⁵⁾ Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 2 in. / DN 50 Body Size, Enhanced Low Inlet (LIN) Option

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE49043X012 / Brown
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19 ⁽¹⁾		7/8 / 22		1 / 25 ⁽²⁾		1-3/8 / 35 ⁽⁴⁾⁽⁵⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
0.4	0.03			460	12.3	750	20.1	910	24.4	1210	32.5	1470	39.5	1590	42.7	2390	64.2
0.51	0.04			600	16.1	820	22.0	1120	30.1	1580	42.4	1690	45.4	1720	46.2	2910	78.1
1	0.07	570	15.3	820	22.0	1330	35.7	1670	44.8	2190	58.8	2690	72.2	3330	89.4	4300	115
2	0.14	810	21.7	1080	29.0	2040	54.8	2750	73.8	3950	106	4610	124	4990	134	6250	168
3	0.21	1040	27.9	1450	38.9	2830	76.0	3730	100	5140	138	5920	159	6590	177	6970	187
5	0.34	1260	33.8	2050	55.0	3870	104	4990	134	7730	208	9080	244	11,020	296	10,380	279
10	0.69	1610	43.2	3070	82.4	6130	165	9360	251	12,330	331	14,570	391	16,360	439	13,210	355
15	1.0	1980	53.2	4050	109	7810	210	11,780	316	16,180	434	19,680	528	21,270	571	16,160	434
20	1.4	2160	58.0	4920	132	9210	247	13,860	372	18,920	508	22,030	591	22,030	591		
25	1.7	2490	66.8	5720	154	10,520	282	16,160	434	22,030 ⁽³⁾	591 ⁽³⁾	22,030	591	22,030	591		
Black areas show where indicated droop/boost would be exceeded regardless of capacity. Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Type CS800 with Ductile Iron or Steel body exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	
2. Type CS800 with Ductile Iron or Steel Bodies and Type CS803 exhibit a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	
3. Due to boost, the Type CS800 with Ductile Iron or Steel bodies, the Types CS803 and CS804 exhibit a 40% reduction in capacity for indicated condition. Multiply listed values by a factor of 0.6.																	
4. Not available on the Type CS803.																	
5. Type CS804 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8 .																	

CS800 Series

Table 20. Types CS800⁽¹⁾, CS803⁽²⁾ and CS804 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 2 in. / DN 50 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm ³ /h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25 ⁽¹⁾⁽²⁾		1-3/8 / 35 ⁽³⁾	
		SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h
psig	bar	Body Size: 2 in. / DN 50															
5	0.34	1120	30.1	1120	30.1	2600	69.8	3670	98.5	4630	124	8130	218	9590	257	5510	148
10	0.69	1480	39.7	2520	67.7	4840	130	9100	244	12,450	334	13,250	356	16,280	437	7200	193
15	1.0	1870	50.2	3130	84.0	7760	208	12,000	322	16,170	434	16,630	446	20,380	547	7650	205
20	1.4	2130	57.2	4230	114	9200	247	14,550	391	19,090	513	17,370	466	22,860	614		
25	1.7	2500	67.1	5530	149	10,510	282	15,920	427	20,180	542	17,370	466	22,860	614		
30	2.1	2850	76.5	6290	169	11,850	318	18,720	503	23,010	618	17,380 ⁽⁴⁾	467 ⁽⁴⁾				
40	2.8	3590	96.4	7850	211	14,100	379	22,910	615	25,910	696	16,180 ⁽⁴⁾	434 ⁽⁴⁾				
50	3.4	4200	113	9280	249	16,740	449	24,340	653	27,340	734	12,050 ⁽⁴⁾	324 ⁽⁴⁾				
60	4.1	4910	132	10,810	290	19,390	521	24,360 ⁽⁴⁾	654 ⁽⁴⁾	19,730 ⁽⁴⁾	530 ⁽⁴⁾						
80	5.5	6220	167	13,740	369	25,530 ⁽⁴⁾	685 ⁽⁴⁾										
100	6.9	7440	200	16,630	446	25,530 ⁽⁴⁾	685 ⁽⁴⁾										
125	8.6	8730	234	20,320	546												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
 Gray areas indicate limited capacities due to boost effects.

1. Type CS800 with Ductile Iron or Steel Bodies exhibit a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.
 2. Types CS803 and CS804 exhibit a 30% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.7.
 3. Not available on the Type CS803.
 4. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.

Relief Sizing

For critical flow:

To determine wide-open flow capacities for relief sizing of 0.6 specific gravity natural gas at 60°F at critical pressure drops (absolute outlet pressure equal to approximately one-half or less than one-half of the absolute inlet pressure), use the following formula:

$$Q = P_{1abs} (C_g) (1.29)$$

For subcritical flow:

If pressure drops are lower than critical (absolute outlet pressure greater than approximately one-half the absolute inlet pressure), use the following formula and convert according to the factors in the preceding paragraph if necessary:

$$Q = \sqrt{\frac{520}{GT}} C_g P_1 \sin \left(\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_1}} \right) \text{ DEG}$$

where:

- $C_1 = C_g / C_v$ (see Table 3)
- C_g = Gas sizing coefficient (see Table 3)
- G = Gas specific gravity (air = 1.0)
- P_1 = Regulator inlet pressure, psia
- ΔP = Pressure drop across regulator, psig
- Q = Gas flow rate, SCFH
- T = Absolute temperature of gas at inlet, °Rankine

Note

Due to boost, the above formulas cannot be used to obtain correct regulating capacities for regulators with internal registration.

The published capacities were obtained using inlet and outlet piping the same size as the regulator body size.

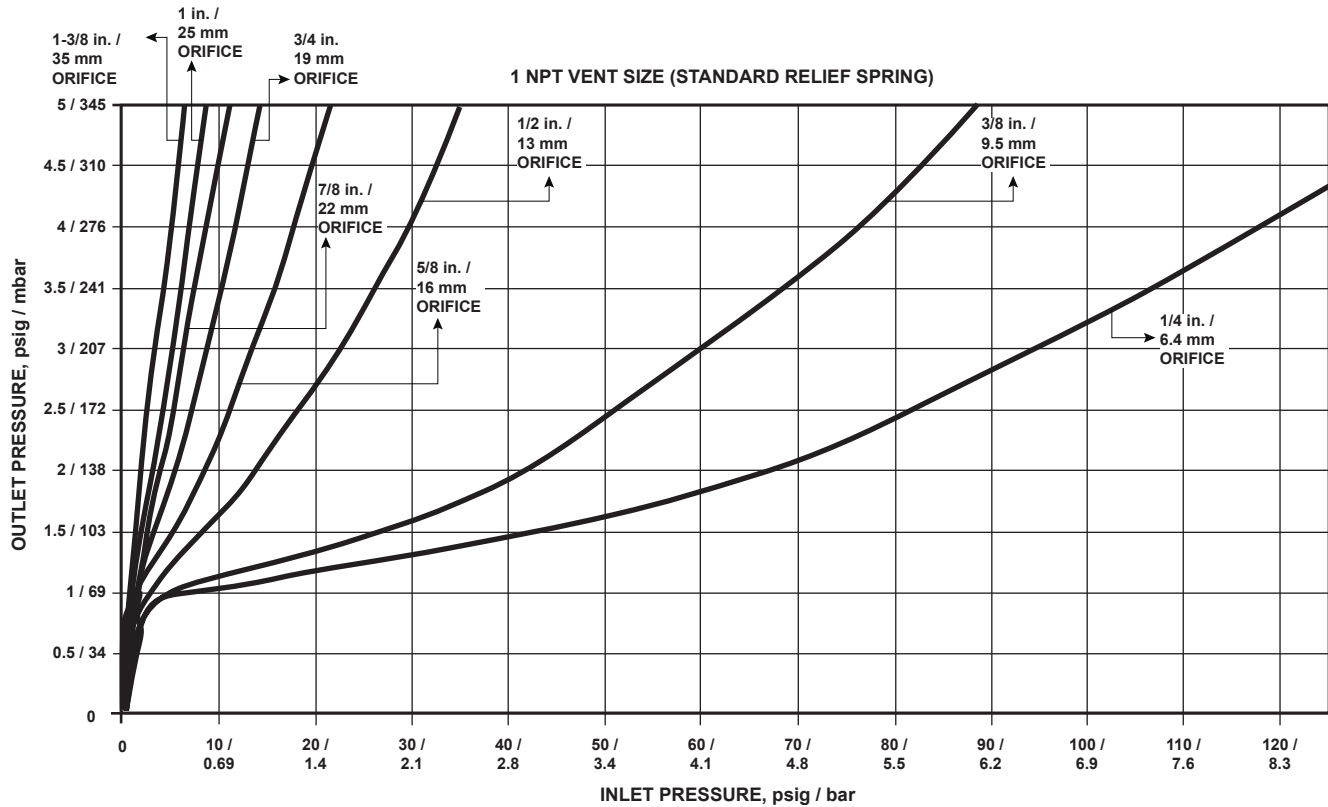


Figure 9. Type CS800IR Relief Curves (Blocked Open per Orifice Size) at 7 in. w.c. / 17 mbar Set Pressure

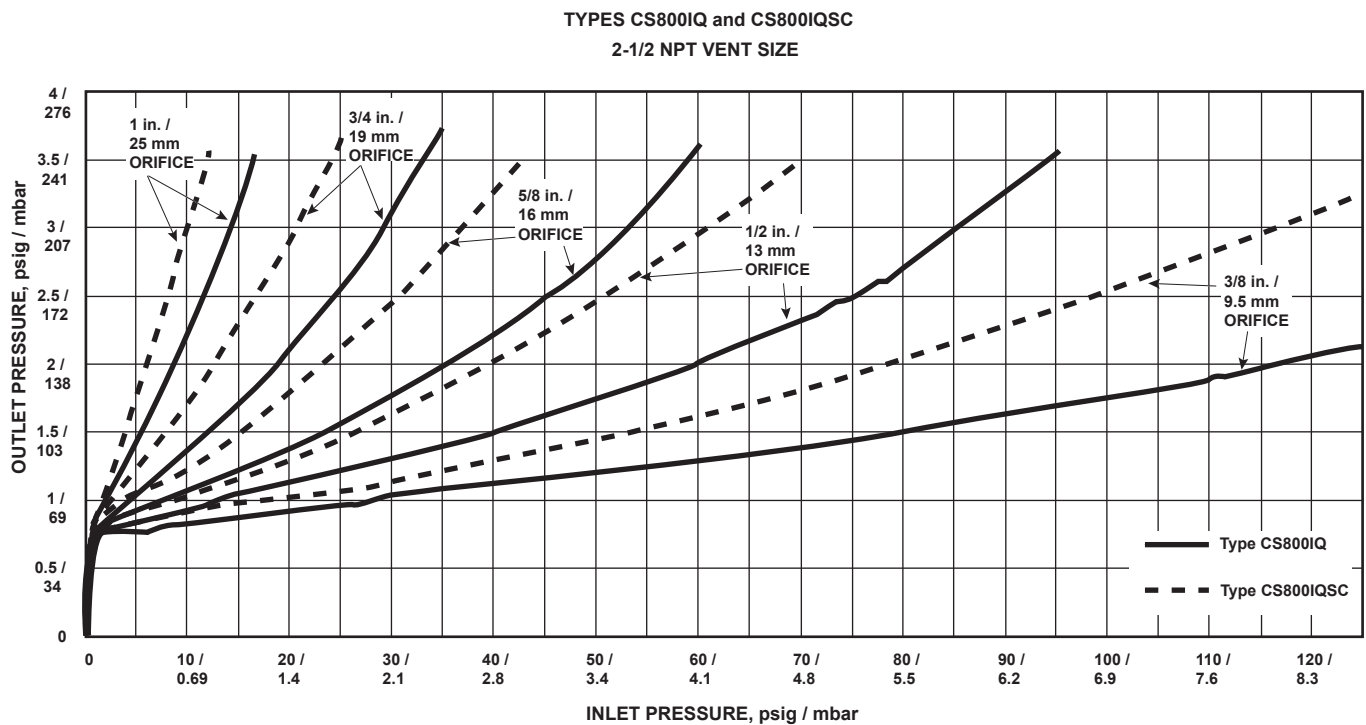


Figure 10. Type CS800IQ High Capacity Relief Curves With and Without Stabilizer Cartridge (Blocked Open per Orifice Size) at 7 in. w.c. / 17 mbar Set Pressure

CS800 Series

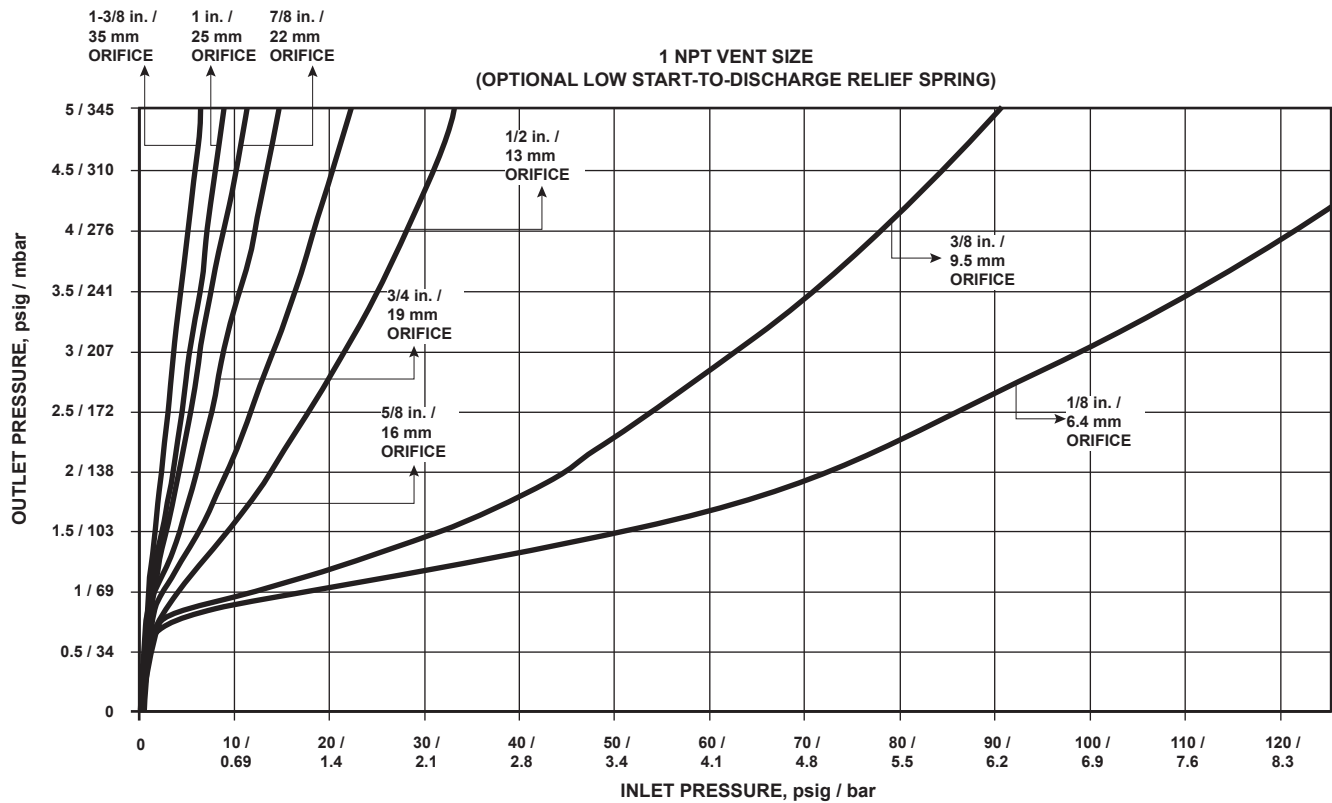


Figure 11. Type CS800IR Relief Curves (Blocked Open per Orifice Size) at 7 in. w.c. / 17 mbar Set Pressure

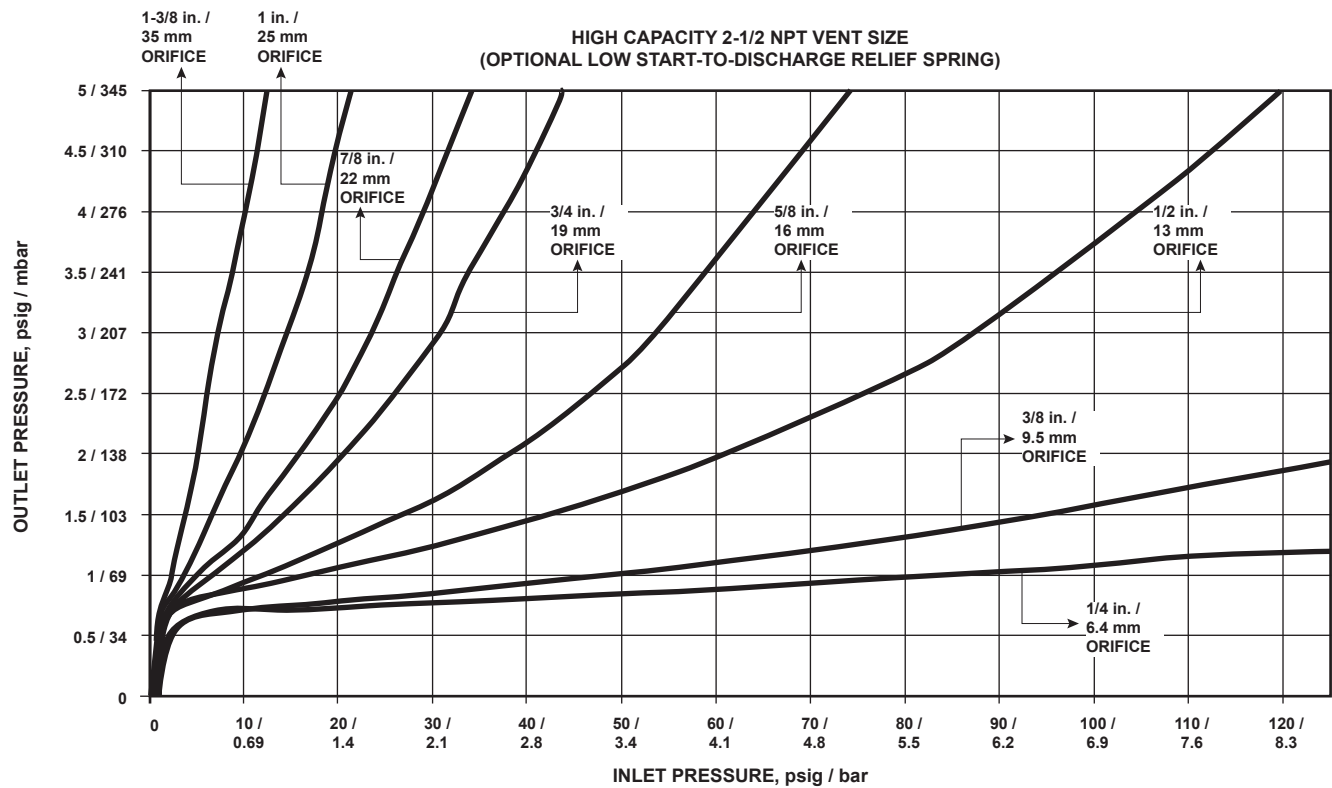


Figure 12. Type CS800IQ High Capacity Relief Curves (Blocked Open per Orifice Size) at 7 in. w.c. / 17 mbar Set Pressure

Table 21. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint for 1-1/4 in. / DN 32 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm ³ /h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH
psig	bar	Body Size: 1-1/4 in. / DN 32														
1	0.07	420	11.3	609	16.3	968	26.0	1309	35.1	1472	39.5	1890	50.7	2250	60.4	2556
2	0.14	684	18.4	1095	29.4	1579	42.4	2013	54.0	2317	62.2	2587	69.4	2915	78.2	3004
3	0.21	879	23.6	1381	37.1	1998	53.6	2511	67.4	2790	74.9	3022	81.1	3272	87.8	3551
5	0.34	1036	27.8	1734	46.6	2703	72.6	3224	86.5	3341	89.7	3591	96.4	3997	107	4125
10	0.69	1436	38.5	2401	64.5	3619	97.1	4031	108	4201	113	4707	126	4784	128	4804
15	1.0	1683	45.2	3309	88.8	4140	111	4428	119	4802	129	4979	134	5113	137	5143
20	1.4	1984	53.3	4043	109	4642	125	4935	132	5168	139	5375	144	5461	147	
25	1.7	2292	61.5	4477	120	4987	134	5013	135	5222	140	5366	144	5508	148	
30	2.1	2712	72.8	4742	127	5232	140	5406	145	5452	146	5726	154			
40	2.8	3274	87.9	5397	145	5468	147	5551	149	5577	150	5940	159			
50	3.4	3827	103	5682	153	5725	154	5701	153	5706	153	6056	163			
60	4.1	4605	124	5886	158	5599	150	5813	156	5825	156					
80	5.5	5554	149	5759	155	5595	150									
100	6.9	5614	151	5682	153	5343	143									
125	8.6	5273	142	5602	150											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.

Table 22. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint for 1-1/2 in. / DN 40 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm ³ /h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH
psig	bar	Body Size: 1-1/2 in. / DN 40														
1	0.07	450	12.1	670	18.0	1000	26.8	1100	29.5	1250	33.6	1400	37.6	1500	40.3	1950
2	0.14	550	14.8	1070	28.7	1400	37.6	1600	43.0	1750	47.0	2000	53.7	2300	61.7	2500
3	0.21	700	18.8	1160	31.1	1610	43.2	1900	51.0	2160	58.0	2500	67.1	2960	79.5	3250
5	0.34	1000	26.8	1200	32.2	2050	55.0	2500	67.1	3000	80.5	3600	96.6	4300	115	4750
10	0.69	1370	36.8	2120	56.9	3150	84.6	3800	102	4550	122	5100	137	5800	156	6300
15	1.0	1750	47.0	3050	81.9	4250	114	5100	137	6100	164	6700	180	7300	196	7850
20	1.4	2120	56.9	3900	105	4950	133	6000	161	7250	195	7600	204	8000	215	
25	1.7	2500	67.1	4750	128	5650	152	7000	188	8700	234	8700	234	8600	231	
30	2.1	2820	75.7	5420	146	6260	168	7500	201	8960	241	8960	241			
40	2.8	3140	84.3	6090	164	6870	184	7900	212	9220	248	9220	248			
50	3.4	4100	110	8100	217	8720	234	9300	250	9870	265	9870 ⁽²⁾	265 ⁽²⁾			
60	4.1	4750	128	9450	254	9730	261	9730 ⁽²⁾	261 ⁽²⁾	10,240 ⁽²⁾	275 ⁽²⁾					
80	5.5	6100	164	9920	266	10,270	276									
100	6.9	7450	200	10,400	279	10,430	280									
125	8.6	9050	243	10,400	279											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.

CS800 Series

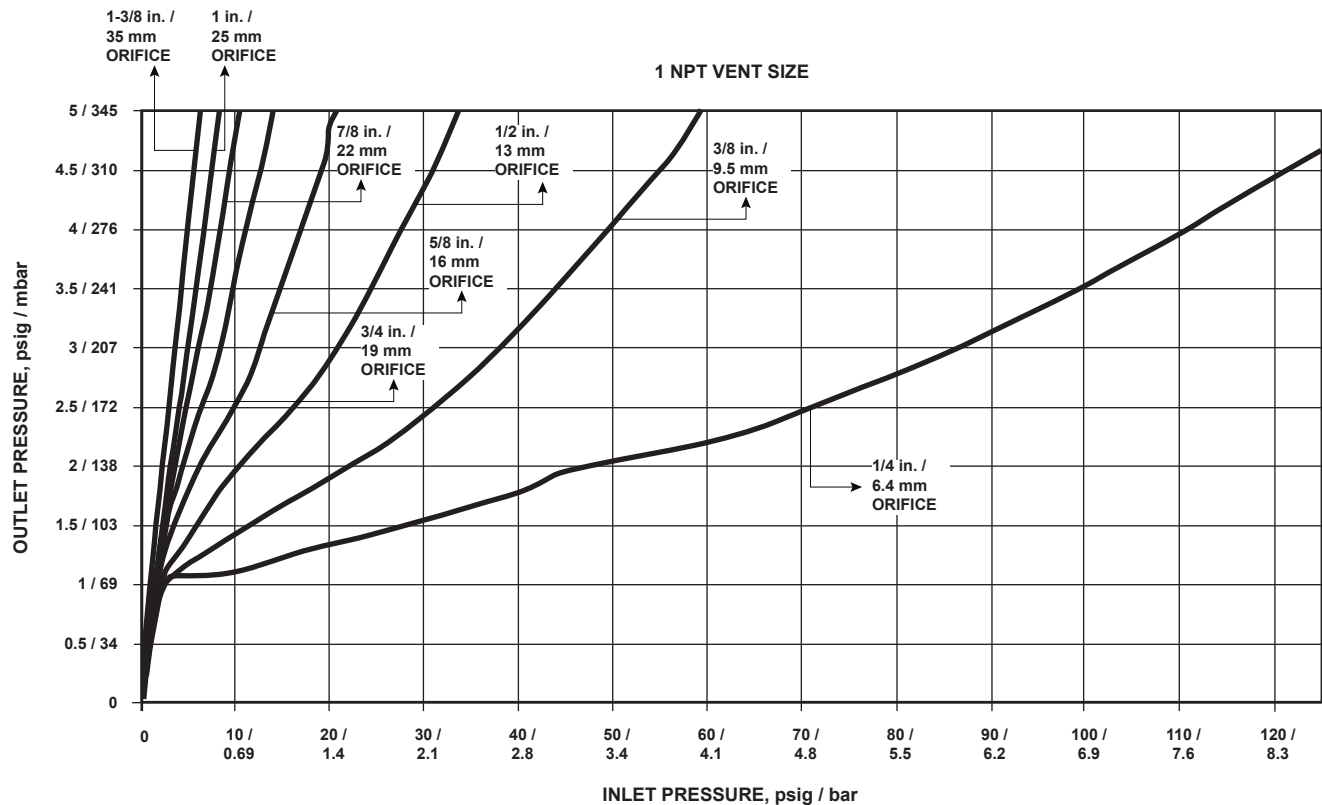


Figure 13. Type CS800IR Relief Curves (Blocked Open per Orifice Size) at 14 in. w.c. / 35 mbar Set Pressure

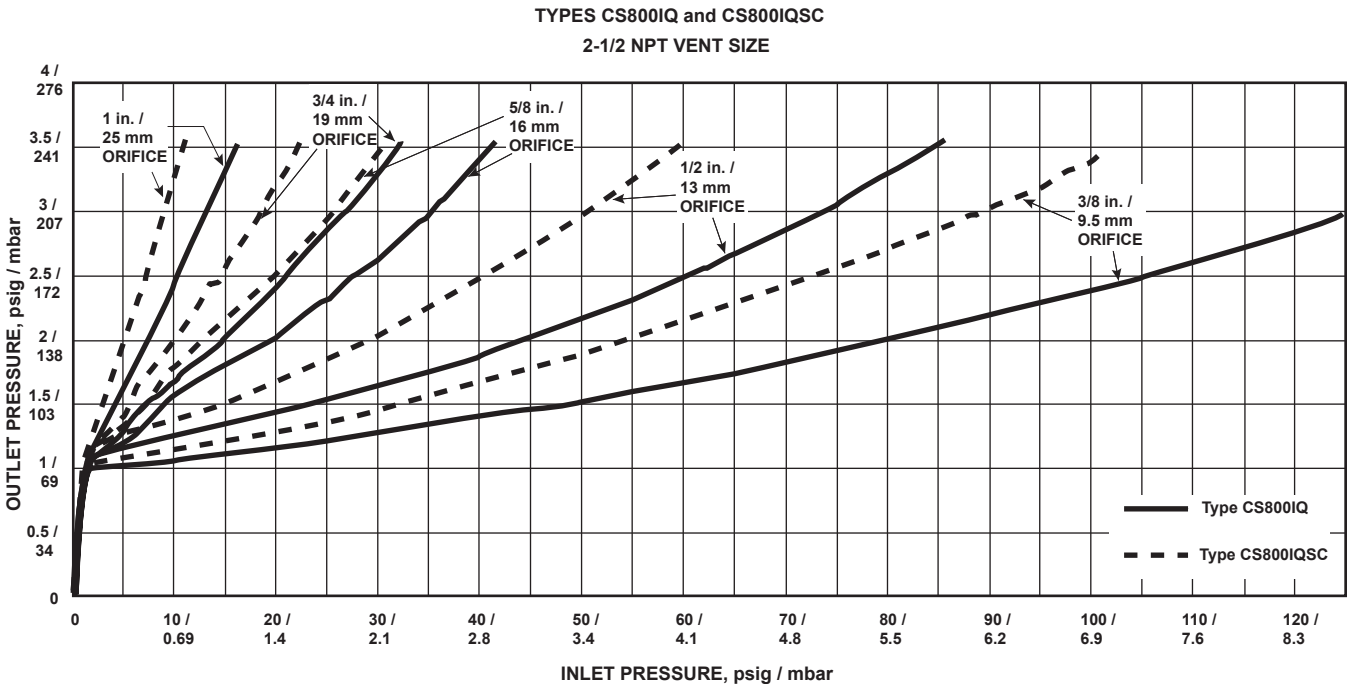


Figure 14. Type CS800IQ High Capacity Relief Curves With and Without Stabilizer Cartridge (Blocked Open per Orifice Size) at 14 in. w.c. / 35 mbar Set Pressure

Table 23. Types CS800, CS803 and CS804 Series Internal Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint for 2 in. / DN 50 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
1	0.07	450	12.1	630	16.9	770	20.7	1300	34.9	1500	40.3	1600	43.0	1700	45.6	2700	72.5
2	0.14	600	16.1	1000	26.8	1800	48.3	2240	60.1	2800	75.2	3260	87.5	3800	102	3800	102
3	0.21	750	20.1	1210	32.5	2200	59.1	2700	72.5	3200	85.9	3700	99.3	4300	115	6060	163
5	0.34	1050	28.2	1750	47.0	2800	75.2	3300	88.6	4000	107	4600	124	5300	142	10,200	274
10	0.69	1400	37.6	2720	73.0	4250	114	6500	175	9200	247	10,300	277	11,650	313	14,550	391
15	1.0	1750	47.0	3700	99.3	5700	153	9600	258	14,400	387	16,100	432	17,910	481	17,110	459
20	1.4	2170	58.3	4700	126	7950	213	11,700	314	16,200	435	18,800	505	20,290	545		
25	1.7	2560	68.7	5700	153	10,200	274	12,400	333	18,000	483	21,400	575	22,000	591		
30	2.1	2910	78.1	6440	173	10,310	277	12,400	333	18,220	489	21,400	575				
40	2.8	3540	95.0	7770	209	10,540	283	13,020	350	18,680	502	21,400	575				
50	3.4	4170	112	9190	247	10,770	289	14,500	389	19,140	514	21,400 ⁽²⁾	575 ⁽²⁾				
60	4.1	4800	129	10,900	293	11,000	295	14,900 ⁽²⁾	400 ⁽²⁾	19,600 ⁽²⁾	526 ⁽²⁾						
80	5.5	6100	164	12,550	337	12,550	337										
100	6.9	7400	199	14,100	379	14,100	379										
125	8.6	9100	244	16,120	433												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	
2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 20% reduction in capacity for conditions marked.																	

Table 24. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-4.3 in. w.c.	4.3 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-11 mbar	11 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
2	0.14	732	19.7	1144	30.7	1709	45.9	2572	69.0	2799	75.1	3023	81.2	3151	84.6	3683	98.9
3	0.21	959	25.8	1458	39.1	2420	65.0	3091	83.0	3284	88.2	3713	99.7	3965	106	4418	119
5	0.34	1264	33.9	2229	59.8	3268	87.7	3877	104	4321	116	4663	125	4875	131	5348	144
10	0.69	1612	43.3	3197	85.8	4459	120	5282	142	5401	145	5706	153	5968	160	6210	167
15	1.0	1953	52.4	4030	108	5276	142	5851	157	6160	165	6283	169	6456	173	6679	179
20	1.4	2280	61.2	4698	126	5757	155	6400	172	6520	175	6324	170	6810	183		
25	1.7	2608	70.0	5251	141	6078	163	6637	178	6834	183	6847	184	7019	188		
30	2.1	2944	79.0	5625	151	6418	172	6672	179	6969	187	7000	188	7098	191		
40	2.8	3615	97.1	6443	173	6929	186	7196	193	7196	193	7145	192				
50	3.4	4262	114	6859	184	7168	192	7247	195	7330	197	7534	202				
60	4.1	4949	133	10,218	274	7382	198	7338	197	7475	201	7593	204				
80	5.5	6246	168	7306	196	7468	200	7254	195	5614	151						
100	6.9	7039	189	7501	201	7382	198										
125	8.6	5473	147	5638	151												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

CS800 Series

Table 25. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-4.3 in. w.c.	4.3 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-11 mbar	11 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
2	0.14	650	17.4	1050	28.2	1350	36.2	1800	48.3	2450	65.8	2600	69.8	2700	72.5	3000	80.5
3	0.21	780	20.9	1400	37.6	1800	48.3	2260	60.7	2900	77.9	3130	84.0	3360	90.2	3730	100
5	0.34	1050	28.2	2100	56.4	2700	72.5	3200	85.9	3800	102	4200	113	4700	126	5200	140
10	0.69	1500	40.3	2800	75.2	3700	99.3	4600	124	5600	150	6300	169	7000	188	7300	196
15	1.0	1950	52.3	3750	101	4900	132	5800	156	6900	185	7600	204	8500	228	8750	235
20	1.4	2200	59.1	4600	124	5800	156	6900	185	8150	219	9200	247	10,350	278		
25	1.7	2500	67.1	5000	134	7250	195	8100	217	9050	243	9500	255	10,850	291		
30	2.1	2800	75.2	6000	161	8200	220	8700	234	9400	252	9500	255	11,000	295		
40	2.8	3550	95.3	7350	197	9100	244	9300	250	9500	255	9500	255				
50	3.4	4050	109	8450	227	10,300	276	10,300	277	10,300	277	10,300	277				
60	4.1	4800	129	9050	243	10,450	281	10,500	282	10,550	283	10,550	283				
80	5.5	5900	158	11,000	295	11,000	295	11,000	295	11,000	295						
100	6.9	7400	199	11,150	299	11,150	299										
125	8.6	9000	242	11,750	315												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS803. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

Table 26. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-4.3 in. w.c.	4.3 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-11 mbar	11 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																					
Inlet Pressure		Orifice Size, In. / mm																			
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾					
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h				
psig	bar	Body Size: 2 in. / DN 50																			
2	0.14	570	15.3	970	26.0	1910	51.2	1910	51.2	2750	73.7	2900	77.7	3100	831	3300	88.4				
3	0.21	730	19.6	1460	39.1	2250	60.3	2660	71.3	3200	85.8	3630	97.3	4150	111	5200	139				
5	0.34	1050	28.1	2200	59.0	2750	73.7	3400	91.1	4100	110	5100	137	6250	168	9000	241				
10	0.69	1500	40.2	2500	67.0	4050	109	6100	163	8500	228	10,700	287	13,250	355	13,700	367				
15	1.0	1900	50.9	3450	92.5	5800	155	9000	241	13,000	348	14,400	386	16,000	429	16,300	437				
20	1.4	2240	60.0	4800	129	7700	206	10,200	273	13,300	356	15,700	421	18,500	496						
25	1.7	2500	67.0	5600	150	10,400	279	13,100	351	16,500	442	17,700	474	19,000	509						
30	2.1	2900	77.7	6350	170	11,950	320	15,000	402	18,800	504	19,000	509	19,300	517						
40	2.8	3650	97.8	7850	210	14,550	390	16,700	448	19,300	517	19,500	523								
50	3.4	4250	114	9300	249	16,700	448	18,400	493	20,500	549	20,700	555								
60	4.1	4900	131	10,950	293	19,400	520	20,000	536	20,800	557	21,000	563								
80	5.5	6200	166	13,790	370	20,400	547	20,600	552	20,800	557										
100	6.9	7400	198	16,510	443	21,100	565														
125	8.6	9350	251	20,200	541																
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																					
1. Not available on the Type CS803.																					

Table 27. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-8.7 in. w.c.	8.7 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-22 mbar	22 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
2	0.14	776	20.8	1364	36.6	2418	64.9	3270	87.8	4147	111	4552	122	4927	132	5820	156
3	0.21	990	26.6	1719	46.1	3225	86.6	4153	111	4823	129	5484	147	5853	157	6545	176
5	0.34	1271	34.1	2403	64.5	4265	115	5509	148	6082	163	6670	179	6842	184	7409	199
10	0.69	1615	43.3	3552	95.4	6087	163	7290	196	7536	202	7988	214	8030	216	8457	227
15	1.0	1955	52.5	4339	116	7293	196	8204	220	8251	222	8559	230	8685	233	8825	237
20	1.4	2284	61.3	5040	135	7966	214	8767	235	8735	234	8759	235	8966	241		
25	1.7	2609	70.0	5811	156	8450	227	9093	244	9083	244	9137	245	9143	245		
30	2.1	2955	79.3	6543	176	8847	237	9347	251	9338	251	9252	248	9307	250		
40	2.8	3616	97.1	8034	216	9349	251	9725	261	9506	255	9388	252				
50	3.4	4286	115	9295	250	9633	259	9852	264	9633	259	9695	260				
60	4.1	4966	133	13,055	350	9781	263	9903	266	9714	261	9706	261				
80	5.5	6294	169	10,010	269	9904	266	9977	268	7679	206						
100	6.9	7620	205	10,044	270	9915	266										
125	8.6	8666	233	8053	216												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	
2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

Table 28. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-8.7 in. w.c.	8.7 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-22 mbar	22 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
2	0.14	740	19.9	1450	38.9	2100	56.4	2800	75.2	3700	99.3	4100	110	4650	125	5350	144
3	0.21	910	24.4	1800	48.3	2580	69.3	3400	91.3	4480	120	5100	137	5730	154	6200	166
5	0.34	1180	31.7	2320	62.3	3550	95.3	4700	126	6050	162	6900	185	7900	212	7900	212
10	0.69	1630	43.8	3380	90.7	5100	137	6700	180	8550	230	9000	242	9550	256	10,100	271
15	1.0	1960	52.6	4170	112	6700	180	7900	212	9400	252	10,300	277	11,250	302	11,400	306
20	1.4	2250	60.4	4740	127	8100	217	9200	247	10,500	282	11,300	303	12,200	328		
25	1.7	2660	71.4	5710	153	10,100	271	10,800	290	11,550	310	12,000	322	12,600	338		
30	2.1	2960	79.5	6440	173	10,550	283	11,400	306	12,350	332	12,700	341	13,100	352		
40	2.8	3650	98.0	7850	211	10,550	283	11,400	306	12,350	332	12,350	332				
50	3.4	4350	117	9250	248	12,000	322	12,500	336	13,000	349	13,000	349				
60	4.1	5000	134	10,900	293	12,600	338	12,800	344	13,000	349	13,000	349				
80	5.5	6340	170	12,550	337	13,000	349	13,000	349	13,000	349						
100	6.9	7740	208	12,900	346	13,450	361										
125	8.6	9380	252	13,450	361												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

CS800 Series

Table 29. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-8.7 in. w.c.	8.7 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-22 mbar	22 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Size: 2 in. / DN 50														
2	0.14	700	18.8	1110	29.8	2340	62.8	3100	83.2	4100	110	4800	129	5470	147	7900
3	0.21	850	22.8	1710	45.9	2960	79.5	4060	109	5180	139	6430	173	7630	205	10,030
5	0.34	1150	30.9	2250	60.4	4000	107	5800	156	7920	213	9700	260	11,620	312	14,300
10	0.69	1610	43.2	3510	94.2	6200	166	8900	239	12,250	329	14,750	396	18,280	491	19,480
15	1.0	1910	51.3	4250	114	7850	211	11,500	309	15,010	403	18,700	502	21,390	574	22,760
20	1.4	2240	60.1	4980	134	9100	244	13,600	365	18,990	510	22,300	599	24,110	647	
25	1.7	2610	70.1	5770	155	10,300	277	15,500	416	21,800	585	26,200	703	26,620	715	
30	2.1	2910	78.1	6540	176	11,800	317	18,300	491	24,710	663	27,670	743	27,670	743	
40	2.8	3630	97.4	8000	215	14,300	384	21,600	580	29,870	802	30,500	819			
50	3.4	4330	116	9300	250	16,700	448	24,400	655	31,950	858	31,950	858			
60	4.1	4950	133	10,850	291	19,500	524	26,100	701	32,010	859	32,410	870			
80	5.5	6310	169	13,600	365	24,600	660	28,900	776	32,010	859					
100	6.9	7640	205	16,810	451	30,200	811									
125	8.6	9370	252	20,480	550											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS803.

Table 30. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-2.8 in. w.c.	2.8 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-7 mbar	7 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Size: 1-1/4 in. / DN 32														
2	0.14	696	18.7	913	24.5	1379	37.0	1724	46.3	2187	58.7	2309	62.0	2335	62.7	2799
3	0.21	933	25.0	1169	31.4	2010	54.0	2431	65.2	2421	65.0	2698	72.4	2995	80.4	3442
5	0.34	1225	32.9	1739	46.7	2474	66.4	2863	76.9	3080	82.7	3498	93.9	3712	100	4305
10	0.69	1592	42.7	2370	63.6	3305	88.7	4051	109	4119	111	4502	121	4697	126	5024
15	1.0	1931	51.8	3183	85.4	4024	108	4614	124	4946	133	5068	136	5242	141	5377
20	1.4	2266	60.8	3697	99.2	4603	124	5163	139	5130	138	5058	136	5497	148	
25	1.7	2567	68.9	4119	111	4763	128	5312	143	5462	147	5635	151	5699	153	
30	2.1	2913	78.2	4458	120	4917	132	5457	146	5567	149	5736	154	5738	154	
40	2.8	3605	96.8	5303	142	5422	146	5514	148	5795	156	5844	157			
50	3.4	4198	113	5415	145	5699	153	5773	155	5954	160	6149	165			
60	4.1	4886	131	9196	247	5773	155	5799	156	5918	159	6212	167			
80	5.5	5756	155	5954	160	5858	157	5918	159	4687	126					
100	6.9	5658	152	5918	159	5933	159									
125	8.6	3339	89.6	4221	113											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS803.
2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

Table 31. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-2.8 in. w.c.	2.8 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-7 mbar	7 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																			
Inlet Pressure		Orifice Size, In. / mm																	
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾			
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h		
psig	bar	Body Size: 1-1/2 in. / DN 40																	
2	0.14	530	14.2	710	19.1	940	25.2	1220	32.8	1430	38.4	1430	38.4	1330	35.7	1930	51.8		
3	0.21	620	16.6	1070	28.7	1150	30.9	1490	40.0	1770	47.5	1700	45.6	1700	45.6	2530	67.9		
5	0.34	810	21.7	1560	41.9	1650	44.3	2050	55.0	2530	67.9	2450	65.8	2450	65.8	3750	101		
10	0.69	1360	36.5	2080	55.8	3100	83.2	3840	103	4680	126	4840	130	4950	133	5330	143		
15	1.0	1650	44.3	2920	78.4	3860	104	4670	125	5570	150	6290	169	7000	188	7500	201		
20	1.4	1960	52.6	3650	98.0	4560	122	5040	135	5570	150	6680	179	8120	218				
25	1.7	2400	64.4	4400	118	5550	149	6700	180	7900	212	7900	212	8650	232				
30	2.1	2570	69.0	5270	142	5650	152	7080	190	8220	221	9300	250	9990	268				
40	2.8	3360	90.2	3960	106	7300	196	7790	209	8470	227	8510	229						
50	3.4	3960	106	7920	213	7970	214	8590	231	8920	240	8920	240						
60	4.1	4660	125	7820	210	8020	215	8520	229	9020	242	9020	242						
80	5.5	5860	157	8740	235	9020	242	9020	242	9020	242								
100	6.9	7350	197	8960	241	10,150	273												
125	8.6	9050	243	10,020	269														
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS803. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																			

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
 1. Not available on the Type CS803.
 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

Table 32. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-2.8 in. w.c.	2.8 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-7 mbar	7 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
2	0.14	500	13.4	860	23.1	1420	38.1	1450	38.9	1450	38.9	1450	38.9	1450	38.9	1450	38.9
3	0.21	610	16.4	1030	27.7	1420	38.1	1660	44.6	2000	53.7	2300	61.7	2700	72.5	3260	87.5
5	0.34	850	22.8	1640	44.0	1800	48.3	2130	57.2	2570	69.0	3320	89.1	4190	113	5140	138
10	0.69	1350	36.2	1750	47.0	2380	63.9	4000	107	5920	159	6540	176	7110	191	8470	227
15	1.0	1610	43.2	2690	72.2	3540	95.0	5290	142	7470	201	7680	206	8050	216	9580	257
20	1.4	2000	53.7	3760	101	5350	144	7430	200	9760	262	9760	262	9800	263		
25	1.7	2400	64.4	4340	117	7000	188	9770	262	13,100	352	13,410	360	13,890	373		
30	2.1	2470	66.3	5120	137	7500	201	11,420	307	16,250	436	17,320	465	18,520	497		
40	2.8	3490	93.7	7300	196	13,100	352	15,510	416	18,410	494	20,910	561				
50	3.4	3900	105	8020	215	16,110	433	17,090	459	18,410	494	22,290	598				
60	4.1	4600	124	10,700	287	18,800	505	19,700	529	20,700	556	22,410	602				
80	5.5	5700	153	13,000	349	18,800	505	19,700	529	20,700	556						
100	6.9	7190	193	15,720	422	19,070	512										
125	8.6	9190	247	19,600	526												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
 1. Not available on the Type CS803.

CS800 Series

Table 33. Types CS800, CS803⁽¹⁾ and CS804⁽²⁾ Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
2	0.14	747	20.0	1218	32.7	1993	53.5	2780	74.6	3219	86.4	3502	94.0	3770	101	4297	115
3	0.21	970	26.0	1566	42.0	2836	76.1	3545	95.2	3881	104	4265	115	4435	119	4999	134
5	0.34	1271	34.1	2296	61.6	3643	97.8	4474	120	4808	129	5319	143	5539	149	6040	162
10	0.69	1612	43.3	3434	92.2	5147	138	5985	161	6115	164	6448	173	6604	177	7016	188
15	1.0	1955	52.5	4231	114	6036	162	6685	179	6869	184	7030	189	7212	194	7417	199
20	1.4	2284	61.3	4999	134	6562	176	7268	195	7251	195	7153	192	7509	202		
25	1.7	2609	70.0	5714	153	6814	183	7281	195	7555	203	7590	204	7749	208		
30	2.1	2949	79.2	6308	169	7212	194	7311	196	7434	200	7775	209	7833	210		
40	2.8	3596	96.5	7217	194	7772	209	7804	209	8040	216	7949	213				
50	3.4	4281	115	7645	205	8104	218	8307	223	8219	221	8185	220				
60	4.1	4963	133	11,423	307	8204	220	8406	226	8253	222	8362	224				
80	5.5	6289	169	8198	220	8174	219	8315	223	6285	169						
100	6.9	7599	204	8264	222	8285	222										
125	8.6	6641	178	6397	172												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS803. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

Table 34. Types CS800, CS803⁽¹⁾ and CS804⁽²⁾ Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, in. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
2	0.14	500	13.4	750	20.1	1750	47.0	2000	53.7	2250	60.4	2300	61.7	2400	64.4	2850	76.5
3	0.21	700	18.8	1100	29.5	1930	51.8	2200	59.1	2630	70.6	2900	77.9	3210	86.2	3680	98.8
5	0.34	1100	29.5	1800	48.3	2300	61.7	2800	75.2	3400	91.3	4100	110	4850	130	5350	144
10	0.69	1600	43.0	3200	85.9	4600	124	5800	156	7250	195	8000	215	8800	236	8800	236
15	1.0	1900	51.0	3970	107	5400	145	6600	177	8030	216	8700	234	9410	253	10,020	269
20	1.4	2200	59.1	4750	128	6200	166	7400	199	8820	237	9400	252	10,020	269		
25	1.7	2500	67.1	5520	148	7000	188	8200	220	9610	258	10,100	271	10,630	285		
30	2.1	2800	75.2	6300	169	7800	209	9000	242	10,400	279	10,800	290	11,250	302		
40	2.8	3500	94.0	7400	199	8410	226	9400	252	10,600	285	10,600	285				
50	3.4	4200	113	8500	228	9030	242	9800	263	10,800	290	10,800	290				
60	4.1	4900	132	9600	258	9650	259	10,300	277	11,000	295	11,000	295				
80	5.5	6100	164	10,070	270	10,800	290	10,900	293	11,000	295						
100	6.9	7300	196	10,550	283	11,950	321										
125	8.6	9100	244	10,550	283												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS803. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

Table 35. Types CS800, CS803 and CS804 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 20% Accuracy

SETPOINT	ACCURACY: +/- 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, in. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
2	0.14	650	17.4	1040	27.9	2200	59.1	2570	69.0	3200	85.9	3400	91.3	3600	96.6	4500	121
3	0.21	800	21.5	1560	41.9	2530	67.9	3100	83.2	3730	100	4300	115	4960	133	6330	170
5	0.34	1100	29.5	2300	61.7	3200	85.9	3900	105	4800	129	6100	164	7700	207	10,000	269
10	0.69	1600	43.0	3000	80.5	4300	115	7500	201	11,400	306	13,200	354	15,200	408	16,300	438
15	1.0	1900	51.0	4000	107	6900	185	10,800	290	14,560	391	18,000	483	19,930	535	20,170	542
20	1.4	2300	61.7	4900	132	9100	244	13,600	365	18,520	497	21,300	572	22,680	609		
25	1.7	2600	69.8	5600	150	10,500	282	15,500	416	21,700	583	24,300	652	24,410	655		
30	2.1	2900	77.9	6500	175	11,800	317	17,900	481	24,020	645	25,320	680	25,580	687		
40	2.8	3700	99.3	8000	215	14,500	389	20,100	540	27,000	725	27,810	747				
50	3.4	4300	115	9300	250	16,600	446	21,700	583	27,810	747	27,810	747				
60	4.1	4900	132	10,940	294	19,500	524	24,900	669	29,050	780	29,050	780				
80	5.5	6300	169	13,830	371	24,000	644	27,400	736	29,070	780						
100	6.9	7700	207	16,680	448	29,500	792										
125	8.6	9600	258	20,200	542												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS803.

Table 36. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: +/- 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.17 psig	0.17 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-12 mbar	12 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, in. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
3	0.21	614	16.5	665	17.9	824	22.1	1674	44.9	1715	46.0	1781	47.8	2056	55.2	2487	66.8
5	0.34	863	23.2	1072	28.8	1634	43.9	1933	51.9	2305	61.9	2522	67.7	3077	82.6	3807	102
10	0.69	1328	35.7	1581	42.4	2489	66.8	3093	83.0	3845	103	4124	111	4466	120	5259	141
15	1.0	1594	42.8	2366	63.5	3196	85.8	3931	106	4780	128	5025	135	5497	148	5696	153
20	1.4	1950	52.3	2882	77.4	3989	107	4770	128	5608	151	5683	153	5855	157		
25	1.7	2210	59.3	3473	93.2	4376	117	5256	141	5893	158	6108	164	6358	171		
30	2.1	2631	70.6	3862	104	4854	130	5350	144	6251	168	6450	173	6453	173		
40	2.8	3340	89.7	4809	129	5429	146	6039	162	6524	175	6770	182				
50	3.4	4097	110	5265	141	6393	172	6664	179	6949	187	7017	188				
60	4.1	4712	126	5445	146	6091	163	6930	186	7554	203	7517	202				
80	5.5	5909	159	6154	165	6871	184	7498	201	7596	204						
100	6.9	6750	181	6331	170	6994	188										
125	8.6	7030	189	6319	170												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

CS800 Series

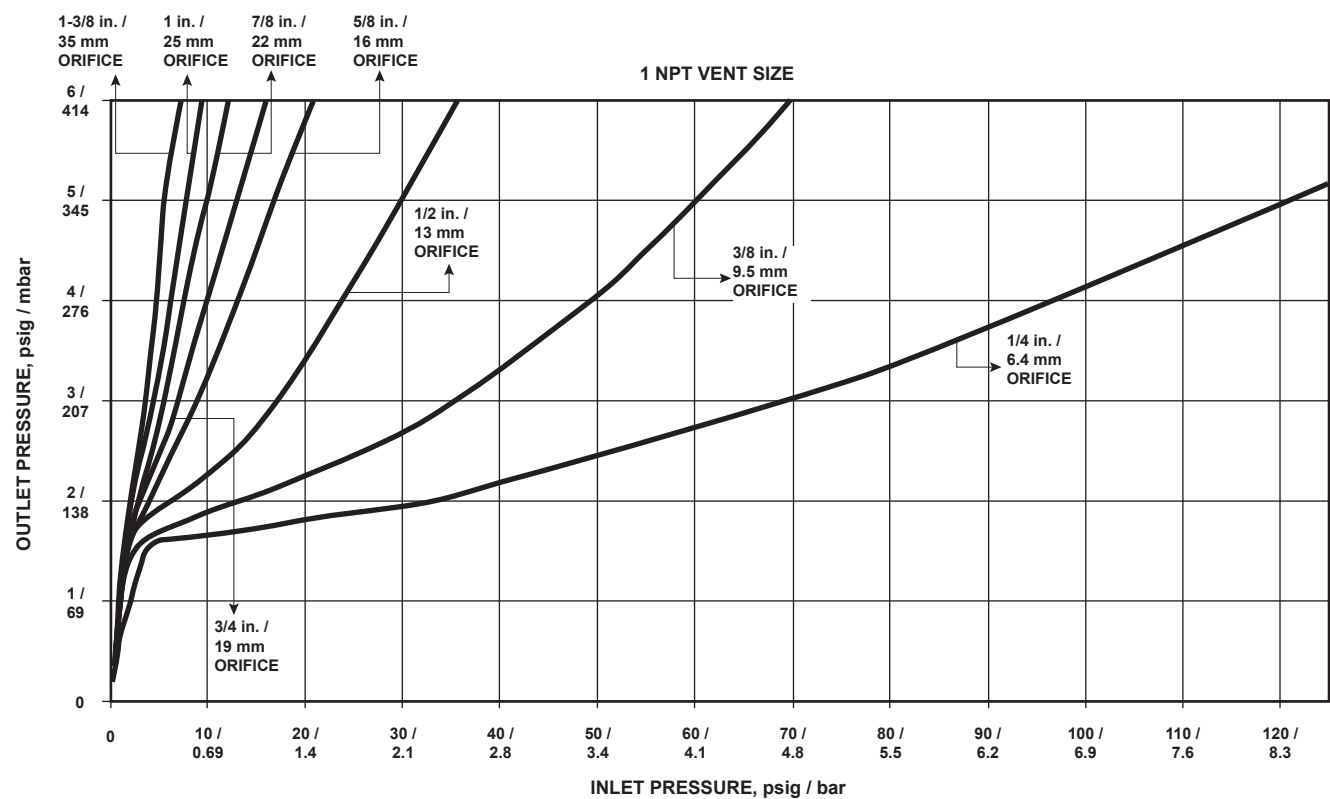


Figure 15. Type CS800IR Relief Curves (Blocked Open per Orifice Size) at 1 psig / 0.07 bar Set Pressure

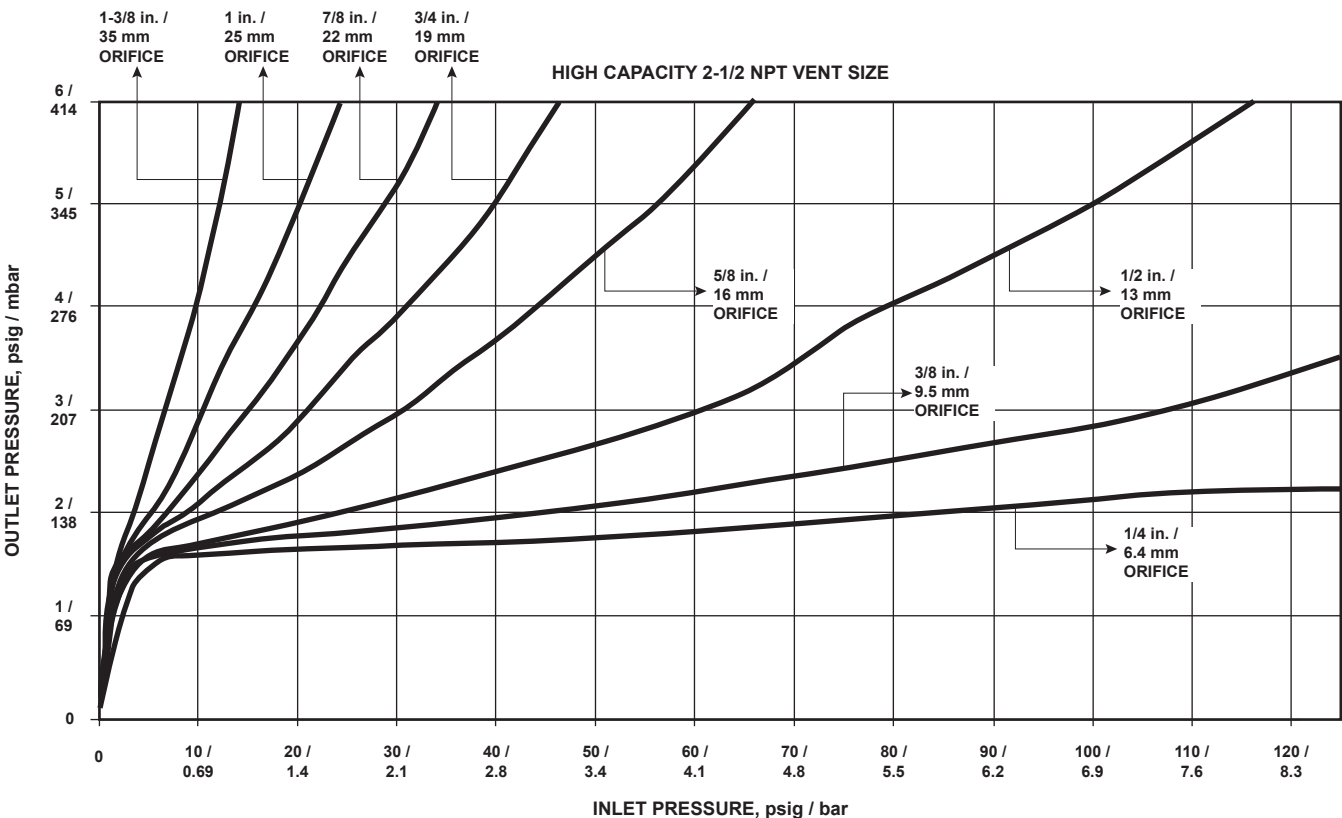


Figure 16. Type CS800IQ High Capacity Relief Curves (Blocked Open per Orifice Size) at 1 psig / 0.07 bar Set Pressure

Table 37. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.17 psig	0.17 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-12 mbar	12 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
3	0.21	710	19.1	1000	26.8	1000	26.8	1380	37.0	1600	43.0	1780	47.8	1800	48.3	2510	67.4
5	0.34	900	24.2	1160	31.1	1740	46.7	2080	55.8	2440	65.5	2920	78.4	3300	88.6	4150	111
10	0.69	1410	37.9	1980	53.2	2930	78.7	3780	102	4280	115	4760	128	5250	141	6430	173
15	1.0	1920	51.5	2690	72.2	4040	109	5060	136	5580	150	5760	155	6920	186	7720	207
20	1.4	2310	62.0	3370	90.5	5180	139	6350	171	6870	184	7500	201	7870	211		
25	1.7	2570	69.0	4050	109	6050	162	7280	195	7580	204	7890	212	8440	227		
30	2.1	2930	78.7	4720	127	6960	187	7800	209	8570	230	8230	221	9050	243		
40	2.8	3510	94.2	6280	169	8370	225	9400	252	9450	254	9290	250				
50	3.4	4330	116	7550	203	9320	250	9440	253	10,220	274	10,040	270				
60	4.1	4940	133	8960	241	10,010	269	10,420	280	10,420	280	10,140	272				
80	5.5	6360	171	10,320	277	10,890	292	11,180	300	11,180	300						
100	6.9	7560	203	11,090	298	11,290	303										
125	8.6	9300	250	11,290	303												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS823.																	

Table 38. Types CS820, CS823⁽¹⁾⁽²⁾ and CS824⁽³⁾ Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 2 in. / DN 50 Body Size at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.17 psig	0.17 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-12 mbar	12 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5 ⁽¹⁾		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25 ⁽¹⁾		1-3/8 / 35 ⁽²⁾⁽³⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
3	0.21	650	17.4	810	21.7	1080	29.0	1610	43.2	1690	45.4	1860	49.9	2690	72.2	3060	82.1
5	0.34	1040	27.9	1290	34.6	1850	49.7	2540	68.2	2900	77.9	3960	106	4270	115	5340	143
10	0.69	1480	39.7	2240	60.1	3410	91.5	4850	130	5780	155	7560	203	9230	248	10,800	290
15	1.0	1870	50.2	3260	87.5	5410	145	7700	207	8490	228	11,750	315	12,530	336	14,550	391
20	1.4	2280	61.2	4070	109	7360	198	10,180	273	11,900	320	13,250	356	14,760	396		
25	1.7	2600	69.8	4980	134	9100	244	12,640	339	15,050	404	16,190	435	17,120	460		
30	2.1	2920	78.4	5780	155	10,640	286	14,500	389	16,950	455	17,370	466	18,170	488		
40	2.8	3510	94.2	7640	205	14,010	376	17,930	481	20,100	537	20,230	542				
50	3.4	4240	113	8790	236	16,930	455	21,160	568	22,560	606	20,230	542				
60	4.1	4980	134	10,650	286	19,640	527	23,460	630	23,600	634	20,230	542				
80	5.5	6300	169	13,600	365	24,830	667	24,830	667	24,830	667						
100	6.9	7620	205	16,280	437	28,790	773										
125	8.6	9370	252	19,900	534												
1. Type CS823 exhibits a 15% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.85. 2. Not available on the Type CS823. 3. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8 .																	

CS800 Series

Table 39. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.33 psig	0.33 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-23 mbar	23 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
3	0.21	686	18.4	1134	30.5	1387	37.2	2667	71.6	3154	84.7	3316	89.0	3696	99.2	4363	117
5	0.34	966	25.9	1597	42.9	3008	80.7	3347	89.9	4290	115	4630	124	5239	141	6061	163
10	0.69	1461	39.2	2866	76.9	4052	109	5274	142	5923	159	6358	171	7022	188	7644	205
15	1.0	1802	48.4	3876	104	5478	147	6450	173	7013	188	7487	201	8026	215	8146	219
20	1.4	2157	57.9	4608	124	6412	172	7275	195	7924	213	8082	217	8512	229		
25	1.7	2377	63.8	5378	144	6953	187	7741	208	8369	225	8573	230	8861	238		
30	2.1	2765	74.2	6015	161	7377	198	8059	216	8731	234	8987	241	9233	248		
40	2.8	3520	94.5	7125	191	8131	218	8674	233	9678	260	9391	252				
50	3.4	4225	113	7890	212	9105	244	9072	244	9276	249	9540	256				
60	4.1	4928	132	8387	225	9396	252	9710	261	9853	265	9763	262				
80	5.5	6217	167	8970	241	9731	261	9926	266	10,135	272						
100	6.9	7661	206	9374	252	9963	267										
125	8.6	8984	241	9926	266												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

Table 40. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.33 psig	0.33 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-23 mbar	23 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
3	0.21	800	21.5	1350	36.2	1810	48.6	2370	63.6	2680	71.9	3460	92.9	3490	93.7	4140	111
5	0.34	1010	27.1	1790	48.1	2810	75.4	3740	100	4210	113	5000	134	5640	151	7310	196
10	0.69	1550	41.6	2930	78.7	4800	129	6160	165	6880	185	7440	200	8520	229	9690	260
15	1.0	1980	53.2	3870	104	6450	173	8040	216	8610	231	9020	242	10,210	274	10,800	290
20	1.4	2310	62.0	4740	127	7810	210	9480	255	10,030	269	10,510	282	11,350	305		
25	1.7	2670	71.7	5560	149	8890	239	10,270	276	11,080	297	11,160	300	12,220	328		
30	2.1	2980	80.0	6300	169	9830	264	11,500	309	11,900	320	11,560	310	12,590	338		
40	2.8	3630	97.4	7850	211	11,290	303	12,590	338	12,870	346	12,630	339				
50	3.4	4360	117	9160	246	12,610	339	13,100	352	13,340	358	13,340	358				
60	4.1	4990	134	10,860	292	13,500	362	13,530	363	13,530	363	13,530	363				
80	5.5	6380	171	13,420	360	14,230	382	14,230	382	14,230	382						
100	6.9	7660	206	14,690	394	15,150	407										
125	8.6	9390	252	14,690	394												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

Table 41. Types CS820, CS823⁽¹⁾⁽²⁾ and CS824⁽⁴⁾ Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 2 in. / DN 50 Body Size at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.33 psig	0.33 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-23 mbar	23 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25 ⁽¹⁾		1-3/8 / 35 ⁽³⁾⁽⁴⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
3	0.21	720	19.3	1150	30.9	1980	53.2	2470	66.3	3230 ⁽²⁾	86.7 ⁽²⁾	3540	95.0	4200	113	5640	151
5	0.34	1140	30.6	1850	49.7	3140	84.3	4120	111	5150 ⁽²⁾	138 ⁽²⁾	6120	164	7050	189	9210	247
10	0.69	1600	43.0	3100	83.2	5380	144	7250	195	8730	234	11,300	303	12,550	337	16,570	445
15	1.0	1980	53.2	4150	111	7440	200	10,230	275	12,410	333	15,290	411	16,900	454	19,470	523
20	1.4	2330	62.6	4930	132	9100	244	12,570	337	15,870	426	18,530	497	19,190	515		
25	1.7	2650	71.1	5670	152	10,450	281	14,690	394	18,720	503	21,120	567	22,120	594		
30	2.1	2940	78.9	6170	166	11,770	316	16,960	455	20,850	560	23,130	621	23,740	637		
40	2.8	3580	96.1	7920	213	14,780	397	20,790	558	24,670	662	26,630	715				
50	3.4	4280	115	9090	244	17,550	471	24,300	652	26,400	709	28,150	756				
60	4.1	4980	134	10,860	292	20,470	550	28,340	761	28,340	761	29,780	800				
80	5.5	6310	169	13,700	368	25,840	694	30,680	824	30,680	824						
100	6.9	7650	205	16,580	445	30,980	832										
125	8.6	9360	251	20,190	542												

1. Type CS823 exhibits a 10% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.9.
2. Due to droop, the Type CS823 exhibits a 15% reduction in capacity for indicated conditions. Multiply listed values by a factor of 0.85.
3. Not available on the Type CS823.
4. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8 .

Table 42. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.20 psig	0.20 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-14 mbar	14 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
3	0.21	634	17.0	762	20.5	968	26.0	1835	49.3	2153	57.8	2228	59.8	2351	63.1	2899	77.8
5	0.34	896	24.1	1191	32.0	2065	55.4	2243	60.2	2723	73.1	2941	79.0	3462	92.9	4163	112
10	0.69	1382	37.1	1980	53.1	2837	76.1	3569	95.8	4236	114	4626	124.2	4976	133.6	5724	154
15	1.0	1702	45.7	2880	77.3	3574	95.9	4507	121	5173	139	5814	156.1	6015	161.5	6373	171
20	1.4	2045	54.9	3382	90.8	4417	119	5382	144	6188	166	6372	171.1	6455	173.3		
25	1.7	2255	60.5	4032	108	5096	137	6009	161	6408	172	6661	178.8	6870	184.4		
30	2.1	2669	71.7	4463	120	5334	143	6208	167	6773	182	6991	187.7	7237	194.3		
40	2.8	3398	91.2	5416	145	6209	167	6828	183	7344	197	7586	203.6				
50	3.4	4141	111	5866	157	7027	189	7121	191	7627	205	7725	207				
60	4.1	4806	129	6301	169	7061	190	8053	216	8085	217	8080	217				
80	5.5	5998	161	6996	188	7434	200	7991	215	8219	221						
100	6.9	7362	198	7109	191	7781	209										
125	8.6	7629	205	7343	197												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

CS800 Series

Table 43. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.20 psig	0.20 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-14 mbar	14 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
3	0.21	740	19.9	1170	31.4	1170	31.4	1560	41.9	1730	46.4	2240	60.1	2240	60.1	3080	82.7
5	0.34	960	25.8	1410	37.9	1980	53.2	2510	67.4	2850	76.5	3640	97.7	3980	107	4830	130
10	0.69	1450	38.9	2260	60.7	3360	90.2	4320	116	5040	135	5510	148	6030	162	7410	199
15	1.0	1940	52.1	3080	82.7	4640	125	5830	157	6480	174	6980	187	7740	208	8440	227
20	1.4	2310	62.0	3880	104	5920	159	7090	190	7720	207	8020	215	8860	238		
25	1.7	2610	70.1	4660	125	6830	183	8210	220	8470	227	8600	231	9180	246		
30	2.1	2960	79.5	5430	146	7750	208	8810	237	9450	254	9120	245	9860	265		
40	2.8	3570	95.8	6830	183	9110	245	10,220	274	10,230	275	10,230	275				
50	3.4	4340	117	8310	223	10,060	270	10,520	282	10,800	290	10,800	290				
60	4.1	4970	133	9680	260	10,850	291	11,100	298	11,100	298	11,100	298				
80	5.5	6370	171	11,390	306	11,810	317	11,810	317	11,810	317						
100	6.9	7590	204	12,070	324	12,090	325										
125	8.6	9340	251	12,080	324												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

Table 44. Types CS820, CS823⁽¹⁾ and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 2 in. / DN 50 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.20 psig	0.20 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-14 mbar	14 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																		
Inlet Pressure		Orifice Size, In. / mm																
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽²⁾⁽³⁾		
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	
psig	bar	Body Size: 2 in. / DN 50																
3	0.21	670	18.0	910	24.4	1280	34.4	1760	47.2	1920 ⁽¹⁾	51.5 ⁽¹⁾	2310	62.0	2770	74.4	3490	93.7	
5	0.34	1080	29.0	1430	38.4	2230	59.9	3110	83.5	3440 ⁽¹⁾	92.3 ⁽¹⁾	4830	130	4970	133	6390	172	
10	0.69	1510	40.5	2580 ⁽¹⁾	69.3 ⁽¹⁾	4040	109	5470	147	6680	179	8670	233	10,060	270	12,100	325	
15	1.0	1900	51.0	3610	96.9	6220	167	8610	231	9800	263	12,320	331	13,570	364	17,260	463	
20	1.4	2310	62.0	4520	121	7980	214	10,990	295	13,000	349	14,630	393	16,230	436			
25	1.7	2620	70.3	5380	144	9690	260	13,480	362	16,010	430	17,180	461	18,510	497			
30	2.1	2940	78.9	5910	159	11,080	297	15,240	409	18,190	488	19,450	522	19,930	535			
40	2.8	3530	94.8	7770	209	14,390	386	18,740	503	21,510	577	22,830	613					
50	3.4	4250	114	8860	238	17,160	461	22,320	599	23,060	619	23,060	619					
60	4.1	4980	134	10,710	288	20,160	541	23,740	637	23,740	637	23,740	637					
80	5.5	6310	169	13,640	366	25,290	679	26,330	707	26,330	707							
100	6.9	7640	205	16,380	440	29,370	789											
125	8.6	9370	252	19,980	536													

1. Due to droop, the Type CS823 exhibits a 10% reduction in capacity for indicated conditions. Multiply listed values by a factor of 0.9.
2. Not available on the Type CS823.
3. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

Table 45. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/4 in. / DN 32 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.40 psig	0.40 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-28 mbar	28 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
3	0.21	707	19.0	1255	33.7	1486	39.9	2877	77.2	3555	95.4	3852	103	4326	116	5163	139
5	0.34	986	26.5	1803	48.4	3291	88.3	3771	101	4796	129	5305	142	5688	153	6540	176
10	0.69	1480	39.7	3123	83.8	4696	126	5816	156	6674	179	7021	188	7627	205	7983	214
15	1.0	1826	49.0	4122	111	5934	159	7215	194	7761	208	8143	219	8744	235	9128	245
20	1.4	2169	58.2	4850	130	7043	189	7925	213	8614	231	8879	238	9452	254		
25	1.7	2410	64.7	5656	152	7771	209	8608	231	9050	243	9406	252	9738	261		
30	2.1	2796	75.1	6287	169	8330	224	9005	242	9455	254	9729	261	9737	261		
40	2.8	3535	94.9	7692	206	8971	241	9679	260	9895	266	10,087	271				
50	3.4	4240	114	8567	230	9844	264	10,021	269	10,328	277	10,234	275				
60	4.1	4940	133	9243	248	10,124	271.8	10,479	281	10,590	284	10,481	281				
80	5.5	6249	168	9728	261	10,582	284.1	10,523	282	10,773	289						
100	6.9	7658	206	10,282	276	10,994	295.1										
125	8.6	9145	245	10,630	285												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

Table 46. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.40 psig	0.40 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-28 mbar	28 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
3	0.21	820	22.0	1420	38.1	1960	52.6	2830	76.0	3200	85.9	3950	106	4160	112	4620	124
5	0.34	1060	28.5	1860	49.9	3220	86.4	4200	113	5020	135	5920	159	6570	176	8000	215
10	0.69	1590	42.7	3120	83.8	5230	140	6870	184	7600	204	8410	226	9580	257	11,220	301
15	1.0	1990	53.4	4090	110	6970	187	8880	238	9820	264	10,200	274	11,520	309	11,790	317
20	1.4	2310	62.0	4880	131	8440	227	10,380	279	11,160	300	11,490	309	12,630	339		
25	1.7	2680	71.9	5640	151	9630	259	11,480	308	12,480	335	12,130	326	13,570	364		
30	2.1	2980	80.0	6340	170	10,670	286	12,360	332	12,960	348	12,990	349	13,920	374		
40	2.8	3660	98.3	7850	211	12,140	326	14,150	380	14,240	382	13,470	362				
50	3.4	4360	117	9260	249	13,460	361	14,190	381	14,920	401	14,280	383				
60	4.1	5000	134	10,860	292	14,740	396	14,910	400	15,260	410	14,620	393				
80	5.5	6400	172	13,710	368	15,440	415	15,440	415	15,440	415						
100	6.9	7670	206	15,900	427	16,200	435										
125	8.6	9410	253	16,080	432												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

CS800 Series

Table 47. Types CS820, CS823⁽¹⁾⁽²⁾ and CS824 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint for 2 in. / DN 50 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.40 psig	0.40 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-28 mbar	28 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25 ⁽¹⁾		1-3/8 / 35 ⁽³⁾⁽⁴⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
3	0.21	730	19.6	1280	34.4	2140	57.4	2890	77.6	3400 ⁽²⁾	91.3 ⁽²⁾	4190	113	4800	129	6490	174
5	0.34	1150	30.9	1960	52.6	3440	92.3	4380	118	5700 ⁽²⁾	153 ⁽²⁾	6770	182	7960	214	11,840	318
10	0.69	1610	43.2	3260	87.5	5790	155	7870	211	9930	267	11,840	318	13,680	367	18,160	488
15	1.0	1980	53.2	4200	113	7760	208	10,520	282	13,510	363	16,080	432	18,220	489	20,810	559
20	1.4	2330	62.6	4950	133	9250	248	12,990	349	16,570	445	19,760	531	20,610	553		
25	1.7	2660	71.4	5710	153	10,560	284	15,060	404	19,630	527	22,340	600	23,530	632		
30	2.1	2940	78.9	6300	169	11,890	319	17,290	464	21,870	587	24,500	658	25,180	676		
40	2.8	3600	96.6	7950	213	14,880	400	21,370	574	24,710	663	28,610	768				
50	3.4	4280	115	9200	247	17,600	473	24,860	667	27,290	733	29,870	802				
60	4.1	4980	134	10,890	292	20,430	549	29,670	797	29,670	797	30,930	830				
80	5.5	6310	169	13,710	368	25,880	695	32,240	866	32,240	866						
100	6.9	7650	205	16,620	446	31,200	838										
125	8.6	9360	251	20,220	543												

1. Type CS823 exhibits a 10% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.9.
 2. Due to droop, the Type CS823 exhibits a 15% reduction in capacity for indicated conditions. Multiply listed values by a factor of 0.85.
 3. Not available on the Type CS823.
 4. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

Table 48. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.20 psig	0.20 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-14 mbar	14 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/4 in. / DN 32															
10	0.69	797	21.4	615	16.5	1222	33	1538	41	1932	52	2003	54	2543	68	2767	74
15	1.0	769	20.6	1329	36	1670	45	2195	59	2425	65	2922	78	3407	91	3289	88
20	1.4	1098	29.5	1765	47	2200	59	2641	71	3072	82	3583	96	4000	107		
25	1.7	1289	34.6	2139	57	2569	69	2909	78	3726	100	4191	113	4605	124		
30	2.1	1417	38.0	2407	65	3024	81	3234	87	4232	114	4345	117	4764	128		
40	2.8	1778	47.7	2961	79	3512	94	4316	116	5142	138	5124	138				
50	3.4	2214	59	3491	94	4188	112	4383	118	5385	145	5571	150				
60	4.1	2810	75	4312	116	4875	131	5286	142	5780	155	6108	164				
80	5.5	3096	83	4906	132	5513	148	5097	137	6264	168						
100	6.9	3585	96	5530	148	5887	158										
125	8.6	3966	106	5988	161												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
 1. Not available on the Type CS823.

- continued -

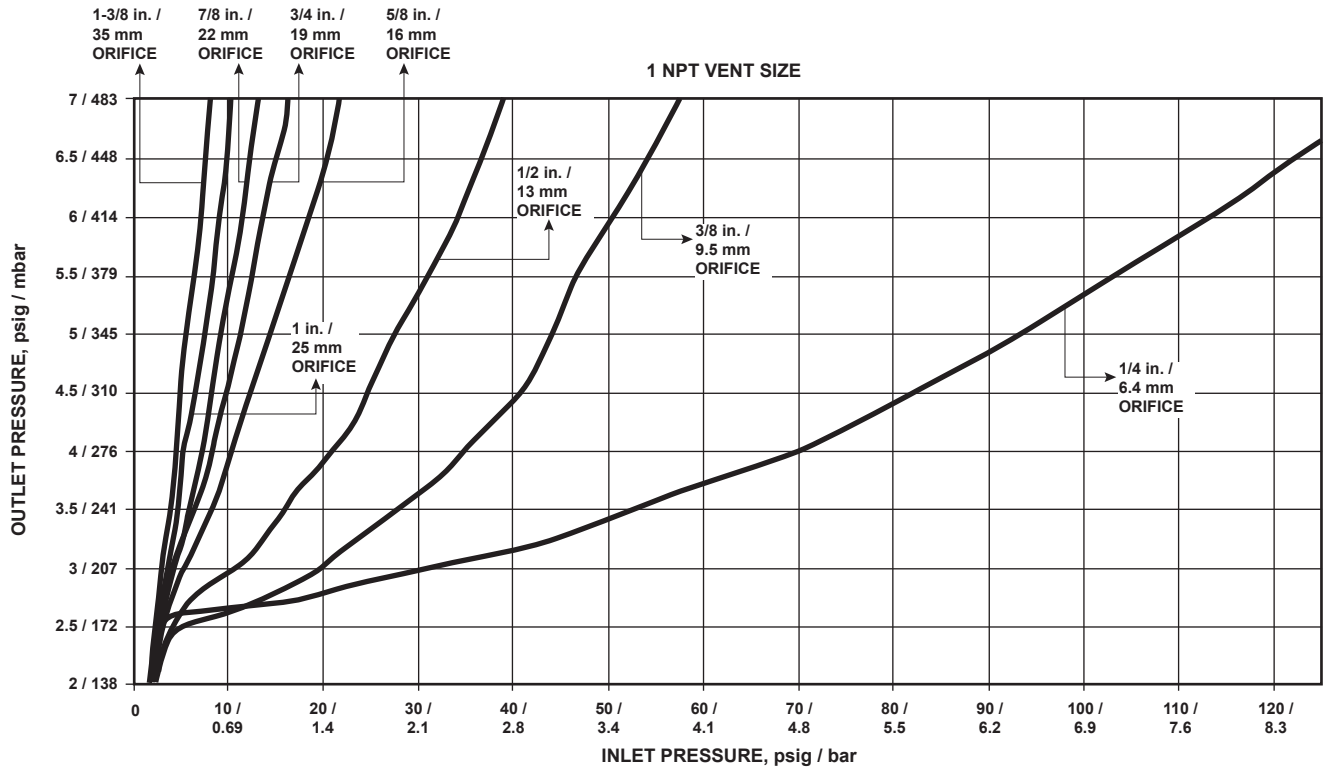


Figure 17. Type CS820IR Relief Curves (Blocked Open per Orifice Size) at 2 psig / 0.14 bar Set Pressure

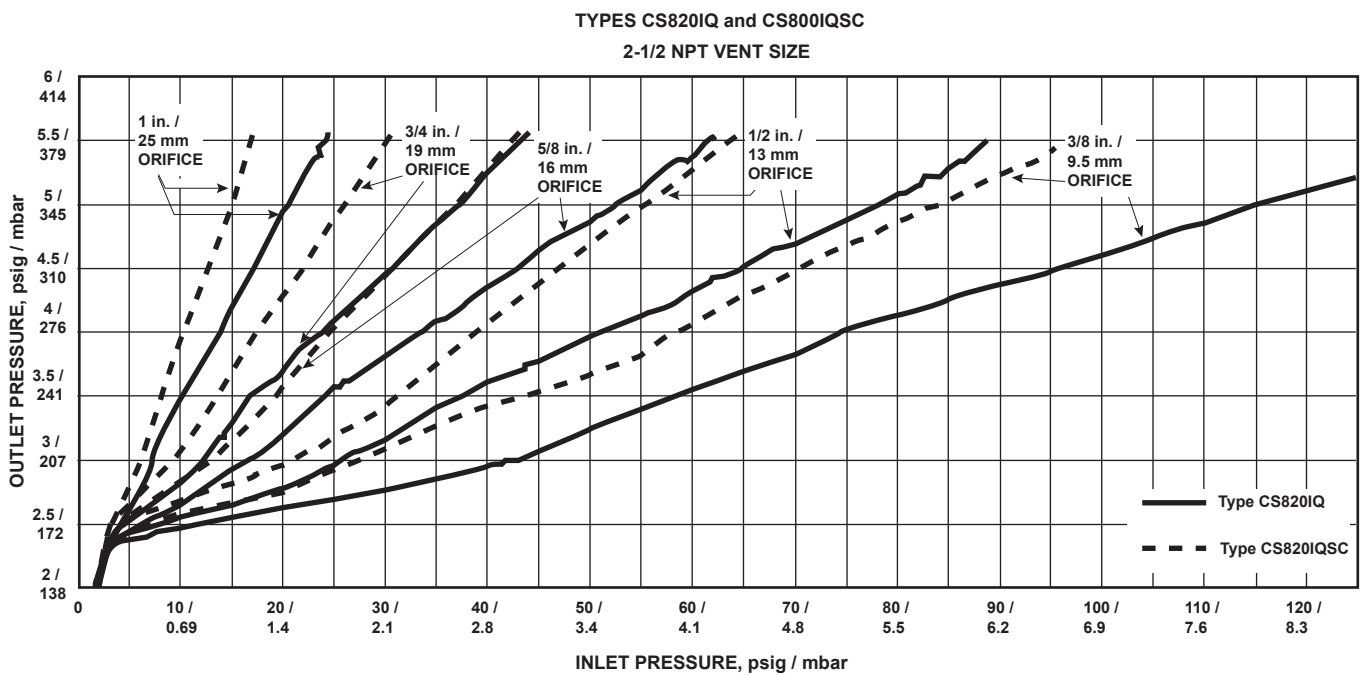


Figure 18. Type CS820IQ High Capacity Relief Curves With and Without Stabilizer Cartridge (Blocked Open per Orifice Size) at 2 psig / 14 bar Set Pressure

CS800 Series

Table 48. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 1% ABS Accuracy (continued)

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.20 psig	0.20 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-14 mbar	14 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
10	0.69	930	25.0	940	25.2	1290	34.6	1760	47.2	1910	51.3	2320	62.3	2390	64.2	3300	88.6
15	1.0	1220	32.8	1220	32.8	1810	48.6	2370	63.6	2660	71.4	2860	76.8	3570	95.8	4320	116
20	1.4	1590	42.7	1590	42.7	2250	60.4	2950	79.2	3110	83.5	3880	104	4580	123		
25	1.7	1900	51	1900	51.0	2730	73.3	3570	95.8	3890	104	4370	117	5790	155		
30	2.1	2160	58	2200	59.1	3150	84.6	4140	111	4290	115	5380	144	6200	166		
40	2.8	2690	72	2760	74.1	3750	101	4980	134	5110	137	6560	176				
50	3.4	3250	87	3310	88.9	4650	125	6190	166	6500	175	8020	215				
60	4.1	3850	103	4160	112	5690	153	7090	190	7410	199	8780	236				
80	5.5	5130	138	5290	142	7500	201	8570	230	9230	248						
100	6.9	6100	164	6100	164	9000	242										
125	8.6	7320	197	7430	200												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.20 psig	0.20 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-14 mbar	14 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
10	0.69	850	22.8	850	22.8	1270	34.1	1530	41.1	1900	51.0	2000	53.7	2390	64.2	3240	87.0
15	1.0	1150	30.9	1150	30.9	1920	51.5	2150	57.7	2790	74.9	2790	74.9	3750	101	5170	139
20	1.4	1490	40.0	1520	40.8	2390	64.2	2870	77.0	3360	90.2	3870	104	5030	135		
25	1.7	1770	47.5	1770	47.5	2850	76.5	3350	89.9	4480	120	4480	120	6560	176		
30	2.1	2020	54.2	2150	57.7	3470	93.2	4300	115	5060	136	5720	154	8010	215		
40	2.8	2590	69.5	2900	77.9	4730	127	5780	155	7740	208	9120	245				
50	3.4	3130	84.0	3630	97.4	6250	168	7200	193	9720	261	14,940	401				
60	4.1	3460	92.9	4150	111	7950	213	8520	229	12,940	347	20,040	538				
80	5.5	5070	136	5940	160	13,910	373	15,510	416	15,510	416						
100	6.9	6800	183	8430	226	18,840	506										
125	8.6	9090	244	15,390	413												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.

Table 49. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 2% ABS Accuracy

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.39 psig	0.39 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-27 mbar	27 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Size: 1-1/4 in. / DN 32														
10	0.69	1393	37.4	1152	30.9	2249	60	2760	74	3417	92	3773	101	4508	121	5165
15	1.0	1309	35.1	2384	64	3109	83	3918	105	4548	122	5347	144	5632	151	6436
20	1.4	1764	47.3	2987	80	3957	106	4702	126	5413	145	6245	168	6509	175	
25	1.7	2188	58.7	3624	97	4513	121	5404	145	6461	173	6741	181	7226	194	
30	2.1	2472	66.4	4093	110	5202	140	6077	163	7395	199	7230	194	7847	211	
40	2.8	3221	86.5	5068	136	5964	160	7154	192	7927	213	8448	227			
50	3.4	3843	103	5926	159	6652	179	7823	210	8668	233	8804	236			
60	4.1	4533	122	5936	159	8041	216	8444	227	9011	242	9535	256			
80	5.5	5197	140	8223	221	8902	239	9109	245	10,019	269					
100	6.9	6137	165	8918	239	9384	252									
125	8.6	7042	189	9572	257											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.39 psig	0.39 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-27 mbar	27 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Size: 1-1/2 in. / DN 40														
10	0.69	1360	36.5	1600	43.0	2170	58.3	2940	78.9	3480	93.4	3780	102	4560	122	5730
15	1.0	1890	50.7	2120	56.9	3140	84.3	4170	112	5030	135	5710	153	6760	182	7550
20	1.4	2210	59.3	2820	75.7	3960	106	5240	141	6010	161	7140	192	8240	221	
25	1.7	2520	67.7	3250	87.2	4880	131	6150	165	7290	196	7670	206	9890	266	
30	2.1	2660	71.4	3830	103	5290	142	7400	199	8040	216	8930	240	10,850	291	
40	2.8	3370	90.5	5000	134	7010	188	8740	235	9440	253	11,050	297			
50	3.4	3990	107	5870	158	8470	227	10,000	269	11,420	307	12,550	337			
60	4.1	4910	132	7150	192	9430	253	11,230	302	12,620	339	13,220	355			
80	5.5	6180	166	9260	249	11,910	320	13,760	369	14,570	391					
100	6.9	7610	204	10,620	285	13,920	374									
125	8.6	9160	246	11,740	315											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

- continued -

CS800 Series

Table 49. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 2% ABS Accuracy (continued)

SETPOINT	ACCURACY: + / - 2% ABS		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.39 psig	0.39 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-27 mbar	27 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																						
Inlet Pressure		Orifice Size, In. / mm																				
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾						
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h					
psig	bar	Body Size: 2 in. / DN 50																				
10	0.69	1120	30.1	1540	41.3	2330	62.6	2870	77.0	3840	103	3880	104	5060	136	6180	166					
15	1.0	1820	48.9	1950	52.3	3410	91.5	4020	108	5440	146	5830	157	7730	208	10,160	273					
20	1.4	2250	60.4	2730	73.3	4380	118	5510	148	7550	203	8580	230	10,870	292							
25	1.7	2540	68.2	3330	89.4	5560	149	6650	179	8550	230	10,580	284	13,260	356							
30	2.1	2930	78.7	4050	109	6360	171	8380	225	10,580	284	13,250	356	16,600	446							
40	2.8	3600	96.6	5280	142	8830	237	11,870	319	14,770	397	16,120	433									
50	3.4	4270	115	6430	173	12,330	331	15,450	415	17,460	469	21,810	586									
60	4.1	4890	131	8470	227	15,400	413	19,500	524	20,660	555	25,170	676									
80	5.5	6240	168	12,210	328	21,390 ⁽³⁾	574 ⁽³⁾	23,340 ⁽³⁾	627 ⁽³⁾	23,340 ⁽³⁾	661 ⁽³⁾											
100	6.9	7590	204	15,980	429	25,630 ⁽³⁾	688 ⁽³⁾															
125	8.6	9350	251	19,730	530																	
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS823. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8. 3. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 10% reduction in capacity for conditions marked.																						

Table 50. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.50 psig	0.50 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-34 mbar	34 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																								
Inlet Pressure		Orifice Size, In. / mm																						
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾								
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h							
psig	bar	Body Size: 1-1/4 in. / DN 32																						
10	0.69	1479	39.7	1607	43.2	2766	74	3366	90	4291	115	4752	128	5346	144	6246	168							
15	1.0	1494	40.1	2831	76	3795	102	4743	127	5667	152	6327	170	6668	179	7625	205							
20	1.4	2027	54.4	3574	96	4784	128	5802	156	6604	177	7422	199	7783	209									
25	1.7	2434	65.3	4292	115	5473	147	6553	176	7720	207	8144	219	8385	225									
30	2.1	2660	71.4	4818	129	6272	168	7361	198	8536	229	8607	231	8960	241									
40	2.8	3428	92.0	5863	157	7454	200	8419	226	9160	246	9476	254											
50	3.4	4109	110	6948	187	8167	219	9133	245	9979	268	9855	265											
60	4.1	4714	127	7155	192	9132	245	9586	257	10,317	277	10,710	288											
80	5.5	5845	157	9318	250	9960	267	10,326	277	11,097	298													
100	6.9	7130	191	10,056	270	10,799	290																	
125	8.6	8168	219	9691	260																			
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																								
1. Not available on the Type CS823.																								
2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 10% reduction in capacity for conditions marked.																								

- continued -

Table 50. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 10% Accuracy (continued)

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.50 psig	0.50 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-34 mbar	34 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
10	0.69	1450	38.9	1870	50.2	2650	71.1	3640	97.7	4170	112	5190	139	5760	155	7240	194
15	1.0	1910	51.3	2640	70.9	3920	105	5070	136	6050	162	6970	187	7960	214	9410	253
20	1.4	2260	60.7	3440	92.3	4910	132	6530	175	7520	202	8800	236	9670	260		
25	1.7	2640	70.9	4060	109	5920	159	7510	202	8570	230	9620	258	11,320	304		
30	2.1	2710	72.8	4700	126	6690	180	8750	235	9900	266	10,670	286	12,160	326		
40	2.8	3410	91.5	6000	161	8000	215	10,100	271	11,330	304	13,220	355				
50	3.4	4100	110	7260	195	10,070	270	11,540	310	13,030	350	14,920	401				
60	4.1	4950	133	8610	231	11,250	302	12,880	346	14,220	382	15,630	420				
80	5.5	6260	168	10,690	287	13,890 ⁽²⁾	373 ⁽²⁾	15,400 ⁽²⁾	413 ⁽²⁾	16,290 ⁽²⁾	437 ⁽²⁾						
100	6.9	7660	206	12,590	338	15,980 ⁽²⁾	429 ⁽²⁾										
125	8.6	9300	250	14,860	399												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS823. 2. When stabilizer cartridge used with Types CS800, CS803 or CS804 could exhibit a 10% reduction in capacity for conditions marked.																	

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.50 psig	0.50 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-34 mbar	34 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
10	0.69	1280	34.4	1880	50.5	2940	78.9	3530	94.8	4830	130	4970	133	6060	163	7680	206
15	1.0	1880	50.5	2410	64.7	4310	116	5160	139	7240	194	7610	204	9790	263	12,150	326
20	1.4	2300	61.7	3310	88.9	5610	151	6900	185	9230	248	10,390	279	12,770	343		
25	1.7	2660	71.4	4200	113	7040	189	8220	221	10,950	294	12,690	341	15,480	416		
30	2.1	2950	79.2	4990	134	8220	221	10,580	284	13,060	351	14,810	398	19,260	517		
40	2.8	3640	97.7	6360	171	11,080	297	14,630	393	17,710	475	20,120	540				
50	3.4	4280	115	8000	215	14,370	386	18,760	504	21,200	569	23,760	638				
60	4.1	4940	133	9900	266	17,590	472	21,760	584	23,760	638	27,480	738				
80	5.5	6290	169	13,260	356	22,900	615	27,200	730	27,200	730						
100	6.9	7650	205	16,380	440	28,030	753										
125	8.6	9390	252	20,030	538												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS823. 2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

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Table 51. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Drop	Boost	Set Range	Part Number / Color
5 psig	-1.0 psig	1.0 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-69 mbar	69 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm ³ /h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h
psig	bar	Body Size: 1-1/4 in. / DN 32															
10	0.69	1589	42.6	2944	79.0	4608	124	5969	160	7119	191	8091	217	8752	235	10,425	280
15	1.0	1924	51.7	4008	108	6266	168	7801	209	9123	245	10,155	273	10,445	280	12,236	328
20	1.4	2296	61.6	4918	132	7829	210	9290	249	10,466	281	11,400	306	11,726	315		
25	1.7	2640	70.9	5700	153	8758	235	10,533	283	11,720	315	12,244	329	12,792	343		
30	2.1	2943	79.0	6401	172	9899	266	11,550	310	12,645	339	12,897	346	13,151	353		
40	2.8	3634	97.5	7705	207	11,373	305	12,383	332	13,484	362	14,071	378				
50	3.4	4319	116	9211	247	12,418	333	13,496	362	14,131	379	14,612	392				
60	4.1	4924	132	10,598	285	13,265	356	14,149	380	14,474	389	15,608	419				
80	5.5	6250	168	13,171	354	14,144	380	15,100	405	15,172	407						
100	6.9	7670	206	14,231	382	14,720	395										
125	8.6	9233	248	15,079	405												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Drop	Boost	Set Range	Part Number / Color
5 psig	-1.0 psig	1.0 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-69 mbar	69 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm ³ /h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h	SCFH	Nm ³ /h
psig	bar	Body Size: 1-1/2 in. / DN 40															
10	0.69	1530	41.1	2710	72.8	4370	117	5880	158	6680	179	8470	227	9740	262	12,040	323
15	1.0	1960	52.6	3750	101	6250	168	7870	211	9620	258	11,330	304	12,580	338	15,210	408
20	1.4	2310	62.0	4720	127	7850	211	10,140	272	11,480	308	13,870	372	14,580	391		
25	1.7	2640	70.9	5520	148	9360	251	10,840	291	13,070	351	15,030	404	16,530	444		
30	2.1	2880	77.3	6390	172	10,570	284	12,760	343	14,620	393	16,620	446	16,990	456		
40	2.8	3560	95.6	7870	211	12,500	336	15,170	407	16,890	453	19,270	517				
50	3.4	4240	114	9360	251	14,840	398	16,650	447	18,310	492	21,270	571				
60	4.1	4950	133	11,000	295	16,380	440	17,530	471	19,970	536	22,640	608				
80	5.5	6310	169	13,840	372	19,090	513	20,400	548	22,710	610						
100	6.9	7690	206	16,280	437	21,380	574										
125	8.6	9390	252	19,280	518												

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS823.

- continued -

Table 51. Types CS820, CS823 and CS824 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 20% Accuracy (continued)

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-1.0 psig	1.0 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-69 mbar	69 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾⁽²⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50															
10	0.69	1500	40.3	2840	76.2	4780	128	5970	160	8000	215	9400	252	10,550	283	13,590	365
15	1.0	1970	52.9	3870	104	6960	187	8540	229	11,770	316	12,740	342	15,830	425	19,260	517
20	1.4	2330	62.6	4700	126	8600	231	10,760	289	14,810	398	16,600	446	19,810	532		
25	1.7	2660	71.4	5700	153	10,060	270	13,260	356	17,350	466	19,690	529	21,840	586		
30	2.1	2970	79.7	6500	175	11,660	313	15,530	417	20,540	551	20,950	562	24,770	665		
40	2.8	3670	98.5	7910	212	14,470	389	20,460	549	24,480	657	25,870	695				
50	3.4	4320	116	9340	251	17,690	475	23,180	622	29,880	802	30,750	826				
60	4.1	5010	135	11,120	299	20,100	540	27,820	747	31,780	853	33,840	909				
80	5.5	6340	170	13,740	369	25,800	693	34,910	937	36,270	974						
100	6.9	7710	207	16,900	454	31,450	844										
125	8.6	9410	253	20,580	553												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS823.																	
2. Type CS824 exhibits a 20% reduction in capacity for indicated orifice size. Multiply listed values by a factor of 0.8.																	

Table 52. Types CS850 and CS854 Internal Registration Flow Capacities for 7 psig / 0.48 bar Setpoint at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 psig	-0.7 psig	0.7 psig	5 to 10 psig	GE30344X012 / Green with White Stripe
0.48 bar	-48 mbar	48 mbar	345 to 690 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40															
10	0.69	1140	30.6	1250	33.6	1710	45.9	2030	54.5	2550	68.5	3140	84.3	3370	90.5	4290	115
15	1.0	1590	42.7	1810	48.6	2660	71.4	3150	84.6	3840	103	4490	121	5480	147	6860	184
20	1.4	2010	54.0	2460	66.0	3400	91.3	4170	112	4590	123	5710	153	6740	181		
25	1.7	2400	64.4	2980	80.0	4190	113	5030	135	5970	160	6790	182	7800	209		
30	2.1	2750	73.8	3450	92.6	4800	129	5840	157	7050	189	7890	212	9070	244		
40	2.8	3420	91.8	4380	118	6180	166	7350	197	8310	223	9760	262				
50	3.4	3990	107	5270	142	7450	200	8900	239	11,530	310	11,530	310				
60	4.1	4730	127	6220	167	8470	227	10,410	280	11,550	310	13,300	357				
80	5.5	5950	160	7700	207	11,070	297	13,150	353	15,300	411						
100	6.9	7300	196	9480	255	12,400	333										
125	8.6	8660	233	11,250	302												
psig	bar	Body Size: 2 in. / DN 50															
10	0.69	750	20.1	1290	34.6	1750	47.0	2140	57.4	2640	70.9	3170	85.1	3550	95.3	4540	122
15	1.0	1710	45.9	1950	52.3	2740	73.6	3530	94.8	4050	109	4750	128	5860	157	7640	205
20	1.4	2150	57.7	2500	67.1	3440	92.3	4470	120	5500	148	6600	177	7850	211		
25	1.7	2380	63.9	3070	82.4	4190	113	5390	145	6150	165	8150	219	9360	251		
30	2.1	2870	77.0	3570	95.8	4900	132	6300	169	7430	200	9980	268	11,640	313		
40	2.8	3540	95.0	4630	124	6570	176	8610	231	10,430	280	12,830	344				
50	3.4	4210	113	5530	149	7570	203	10,550	283	12,380	332	16,070	431				
60	4.1	4790	129	6690	180	9970	268	12,780	343	14,680	394	19,320	519				
80	5.5	6070	163	8740	235	14,170	380	16,720	449	17,930	481						
100	6.9	7690	206	11,310	304	18,060	485										
125	8.6	9220	248	14,520	390												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	

CS800 Series

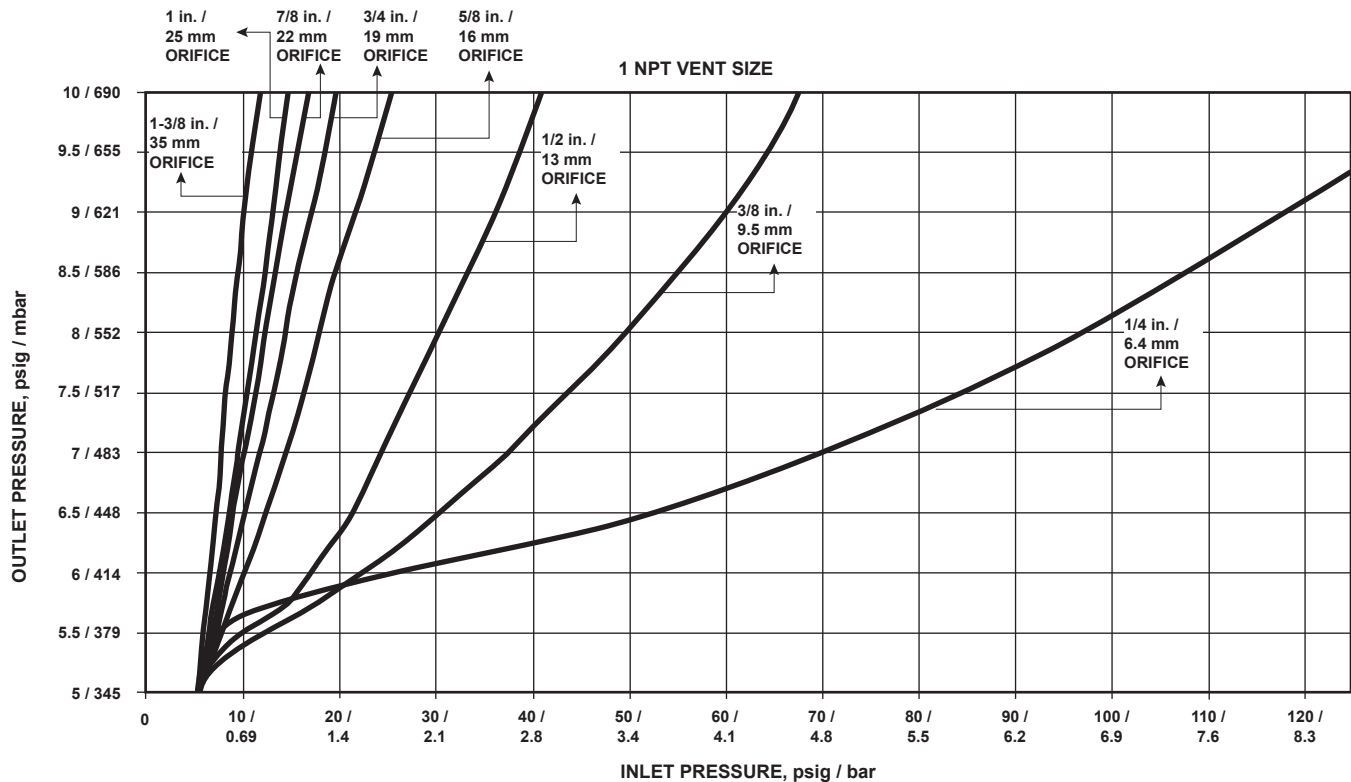


Figure 19. Type CS820IR Relief Curves (Blocked Open per Orifice Size) at 5 psig / 0.34 bar Set Pressure

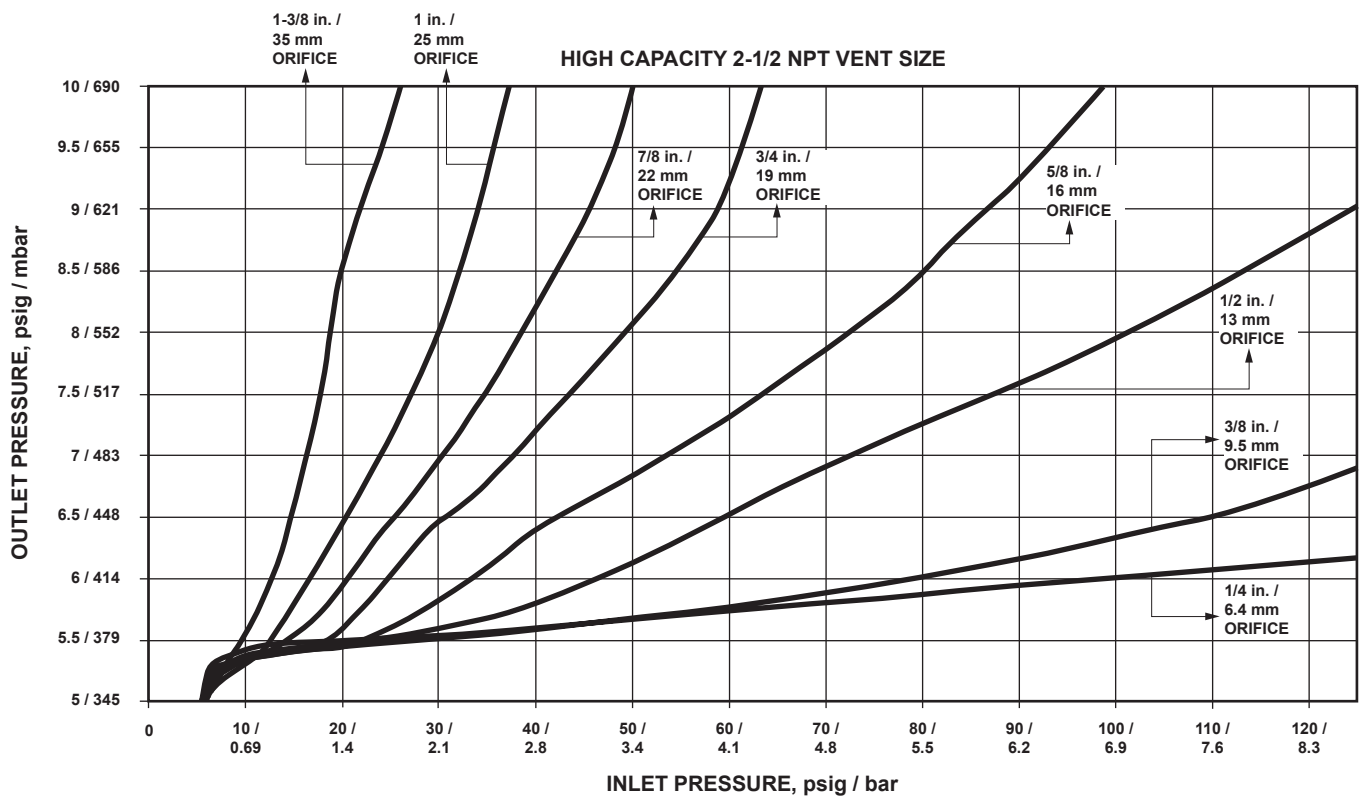


Figure 20. Type CS820IQ High Capacity Relief Curves (Blocked Open per Orifice Size) at 5 psig / 0.34 bar Set Pressure

Table 53. Types CS850 and CS854 Internal Registration Flow Capacities for 7 psig / 0.48 bar Setpoint at 20% Accuracy

SETPOINT		ACCURACY: +/- 20% GAUGE			SPRING				
		Droop	Boost	Set Range		Part Number / Color			
7 psig		-1.4 psig	1.4 psig	5 to 10 psig		GE30344X012 / Green with White Stripe			
0.48 bar		-0.10 bar	0.10 bar	345 to 690 mbar					

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																			
Inlet Pressure		Orifice Size, In. / mm																	
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35			
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h		
psig	bar	Body Size: 1-1/2 in. / DN 40																	
10	0.69	1350	36.2	2090	56.1	3100	83.2	3850	103	4760	128	5780	155	6270	168	8620	231		
15	1.0	1870	50.2	3060	82.1	4780	128	5830	157	6990	188	8540	229	9610	258	12,270	329		
20	1.4	2190	58.8	3930	106	5970	160	7450	200	8850	238	10,690	287	12,280	330				
25	1.7	2550	68.5	4810	129	7400	199	8970	241	10,630	285	12,880	346	13,610	365				
30	2.1	2900	77.9	5520	148	8440	227	10,320	277	12,400	333	14,340	385	15,400	413				
40	2.8	3610	96.9	7030	189	10,610	285	12,970	348	15,010	403	17,140	460						
50	3.4	4260	114	8370	225	12,500	336	15,010	403	18,020	484	19,120	513						
60	4.1	4880	131	9850	264	14,320	384	16,940	455	19,130	514	20,780	558						
80	5.5	6250	168	12,680	340	17,670	474	19,700	529	21,670	582								
100	6.9	7610	204	15,170	407	19,700	529												
125	8.6	9290	249	17,740	476														
psig	bar	Body Size: 2 in. / DN 50																	
10	0.69	1070	28.7	2230	59.9	3160	84.8	4040	109	4980	134	5880	158	6910	186	8860	238		
15	1.0	1820	48.9	3180	85.4	4610	124	6210	167	7360	198	9080	244	10,790	290	14,360	386		
20	1.4	2300	61.7	4110	110	6040	162	8060	216	9940	267	11,680	314	13,270	356				
25	1.7	2640	70.9	4970	133	7490	201	10,160	273	11,780	316	13,930	374	16,610	446				
30	2.1	2990	80.3	5710	153	8680	233	11,550	310	14,060	377	16,300	438	19,820	532				
40	2.8	3670	98.5	7360	198	11,440	307	14,910	400	18,130	487	21,300	572						
50	3.4	4350	117	8840	237	13,780	370	18,390	494	21,560	579	25,210	677						
60	4.1	5010	135	10,560	284	17,310	465	21,630	581	25,080	673	28,560	767						
80	5.5	6320	170	13,510	363	22,290	598	25,840	694	27,620	742								
100	6.9	7750	208	16,590	445	26,950	724												
125	8.6	9400	252	19,680	528														

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

CS800 Series

Table 54. Types CS850 and CS854 Internal Registration Flow Capacities for 10 psig / 0.69 bar Setpoint at 10% Accuracy

SETPOINT		ACCURACY: +/- 10% GAUGE			SPRING			
		Droop	Boost	Set Range		Part Number / Color		
10 psig		-1 psig	1 psig	5 to 10 psig		GE30344X012 / Green with White Stripe		
0.69 bar		-0.07 bar	0.07 mbar	345 to 690 mbar				

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
15	1.0	1300	34.9	1780	47.9	2460	66.1	2780	74.7	3140	84.2	4040	108	4040	108	6010	161
20	1.4	1960	52.6	2240	60.1	2980	80.0	3640	97.5	4370	117	5230	140	6060	163		
25	1.7	2430	65.2	2860	76.9	4020	108	4780	128	5180	139	6530	175	7210	193		
30	2.1	2910	78.1	3210	86.2	4470	120	5720	153	6540	175	7400	198	8420	226		
40	2.8	3560	95.4	4080	109	6090	163	7150	192	8680	233	9860	264				
50	3.4	4230	113	5020	135	7760	208	9730	261	10,750	288	11,210	300				
60	4.1	4790	129	6360	170	8900	238	10,530	282	12,960	347	13,720	368				
80	5.5	6110	164	7950	213	10,840	290	13,920	373	15,610	418						
100	6.9	7610	204	9730	261	12,780	343										
125	8.6	8960	240	11,890	319												

Table 55. Types CS850 and CS854 Internal Registration Flow Capacities for 10 psig / 0.69 bar Setpoint at 20% Accuracy

SETPOINT		ACCURACY: +/- 20% GAUGE				SPRING					
		Droop		Boost		Set Range		Part Number / Color			
10 psig		-2 psig		2 psig		5 to 10 psig		GE30344X012 / Green with White Stripe			
0.69 bar		-1.4 bar		1.4 bar		345 to 690 mbar					

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
15	1.0	1820	48.8	3160	84.8	4670	125	6050	162	6650	178	8250	221	9420	252	11,730	314
20	1.4	2190	58.8	3850	103	6450	173	7820	210	9380	251	11,000	295	12,560	336		
25	1.7	2570	69.0	4920	132	8110	217	9780	262	11,240	301	14,080	377	14,750	395		
30	2.1	2950	79.2	5780	155	9090	244	11,710	314	14,110	378	15,450	414	17,370	465		
40	2.8	3620	97.0	7330	197	11,740	315	14,830	398	16,820	451	19,590	525				
50	3.4	4310	116	8910	239	14,510	389	17,600	472	19,840	532	22,180	594				
60	4.1	4940	133	10,410	279	16,430	440	19,720	528	23,450	628	23,920	641				
80	5.5	6260	168	13,140	352	20,040	537	23,940	641	28,110	753						
100	6.9	7660	205	16,210	434	23,050	618										
125	8.6	9290	249	19,320	517.8												

Table 56. Types CS800, CS803 and CS804 External Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-2 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
0.4	0.03			550	14.8	780	20.9	1090	29.3	1000	26.8	1390	37.3	1640	44.0	1780	47.8
0.51	0.04	360	9.7	630	16.9	930	25.0	1100	29.5	1530	41.1	1530	41.1	1940	52.1	2400	64.4
1	0.07	500	13.4	830	22.3	1290	34.6	1730	46.4	1980	53.2	2320	62.3	2860	76.8	3780	102
2	0.14	720	19.3	1330	35.7	2010	54.0	2550	68.5	3260	87.5	3740	100	4360	117	5930	159
3	0.21	870	23.4	1650	44.3	2500	67.1	3180	85.4	4130	111	4760	128	5250	141	7110	191
5	0.34	1120	30.1	2070	55.6	3410	91.5	4380	118	5620	151	6400	172	7500	201	9370	252
10	0.69	1480	39.7	2990	80.3	5010	135	6480	174	8420	226	9820	264	11,600	311	14,600	392
15	1.0	1810	48.6	3710	99.6	6410	172	8320	223	10,800	290	12,770	343	15,130	406	19,610	526
20	1.4	2170	58.3	4560	122	7720	207	10,750	289	13,660	367	15,080	405	18,520	497		
25	1.7	2520	67.7	5320	143	9030	242	12,220	328	16,340	439	18,630	500	21,950	589		
30	2.1	2770	74.4	5990	161	10,440	280	13,770	370	17,790	478	20,350	546				
40	2.8	3400	91.3	7360	198	12,490	335	16,720	449	20,320	546	25,650	689				
50	3.4	4010	108	8700	234	14,510	390	18,750	503	24,220	650	26,390	709				
60	4.1	4630	124	10,110	271	16,810	451	22,130	594	26,490	711						
80	5.5	5960	160	12,550	337	19,580	526										
100	6.9	7280	195	15,030	404	22,540	605										
125	8.6	8150	219	16,990	456												

Black areas show where indicated droop/boost would be exceeded regardless of capacity.

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS803.

Table 57. Types CS800, CS803 and CS804 External Registration Flow Capacities for 10 in. w.c. / 25 mbar Setpoint

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
10 in. w.c.	-2 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30339X012 / Purple
25 mbar	-5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, in. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
0.51	0.04	310	8.3	560	15.0	640	17.2	990	26.6	1290	34.6	1250	33.6	1250	33.6	1970	52.9
1	0.07	470	12.6	750	20.1	1130	30.3	1430	38.4	1850	49.7	2210	59.3	2520	67.7	3530	94.8
2	0.14	690	18.5	1250	33.6	1530	41.1	1910	51.3	2880	77.3	3560	95.6	3750	101	5110	137
3	0.21	850	22.8	1540	41.3	2260	60.7	2860	76.8	3690	99.1	4350	117	4690	126	6320	170
5	0.34	1080	29.0	2050	55.0	3090	83.0	3850	103	4810	129	5850	157	6860	184	8180	220
10	0.69	1420	38.1	2590	69.5	4470	120	5460	147	7370	198	8340	224	10,130	272	13,030	350
15	1.0	1750	47.0	3500	94.0	5880	158	7500	201	9380	252	11,120	299	13,700	368	18,810	505
20	1.4	2090	56.1	4200	113	7260	195	9470	254	11,860	318	14,270	383	16,060	431		
25	1.7	2450	65.8	4950	133	8690	233	11,450	307	14,720	395	17,400	467	18,860	506		
30	2.1	2790	74.9	5600	150	10,170	273	12,560	337	16,420	441	19,700	529				
40	2.8	3390	91.0	6850	184	12,420	333	15,470	415	20,510	551	24,130	648				
50	3.4	4010	108	8200	220	14,090	378	17,960	482	23,020	618	29,010	779				
60	4.1	4620	124	9500	255	16,410	441	19,770	531	26,280	706						
80	5.5	5920	159	11,900	320	19,050	511										
100	6.9	7200	193	14,270	383	21,960	590										
125	8.6	8080	217	15,680	421												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	
1. Not available on the Type CS803.																	

CS800 Series

Table 58. Types CS800, CS803 and CS804 External Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50														
1	0.07	430	11.5	520	14.0	1210	32.5	1210	32.5	1290	34.6	1540	41.3	1790	48.1	2510
2	0.14	630	16.9	990	26.6	1690	45.4	2010	54.0	2440	65.5	2900	77.9	3350	89.9	4500
3	0.21	770	20.7	1350	36.2	1870	50.2	2540	68.2	2890	77.6	3730	100	4230	114	5660
5	0.34	1030	27.7	1800	48.3	2760	74.1	3280	88.1	4020	108	5320	143	5730	154	7160
10	0.69	1380	37.0	2560	68.7	4000	107	5110	137	6320	170	7700	207	8530	229	13,160
15	1.0	1700	45.6	3220	86.4	4980	134	6400	172	8180	220	10,270	276	11,690	314	19,100
20	1.4	1970	52.9	4040	109	6270	168	8110	218	10,620	285	15,320	411	17,550	471	
25	1.7	2340	62.8	4890	131	7810	210	9570	257	12,530	336	18,870	507	20,710	556	
30	2.1	2710	72.8	5320	143	8280	222	10,890	292	13,070	351	19,710	529			
40	2.8	3300	88.6	6900	185	10,980	295	13,280	357	16,560	444	26,440	710			
50	3.4	3890	104	8290	223	12,990	349	16,060	431	18,020	484	30,650	823			
60	4.1	4490	121	9710	261	15,400	413	18,340	492	21,170	568					
80	5.5	5770	155	12,450	334	18,900	507									
100	6.9	7000	188	15,030	404	21,320	572									
125	8.6	7900	212	16,680	448											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS803.

Table 59. Types CS800, CS803 and CS804 External Registration Flow Capacities for 1 psig / 0.07 bar Setpoint

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																
Inlet Pressure		Orifice Size, In. / mm														
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50														
2	0.14	680	18.3	1090	29.3	1830	49.1	2540	68.2	2950	79.2	3390	91.0	4140	111	6030
3	0.21	870	23.4	1500	40.3	2530	67.9	3360	90.2	4300	115	4870	131	5700	153	7310
5	0.34	1170	31.4	2050	55.0	3430	92.1	4690	126	6110	164	7000	188	8210	220	9760
10	0.69	1490	40.0	2960	79.5	4840	130	6550	176	8320	223	9480	255	11,380	306	14,700
15	1.0	1810	48.6	3790	102	6610	177	8740	235	10,590	284	11,840	318	13,980	375	20,000
20	1.4	2130	57.2	4920	132	7750	208	10,220	274	12,360	332	14,930	401	16,240	436	
25	1.7	2580	69.3	5590	150	9070	244	11,790	317	14,230	382	17,970	482	18,370	493	
30	2.1	2900	77.9	6570	176	10,070	270	13,200	354	16,450	442	19,880	534	22,620	607	
40	2.8	3640	97.7	7830	210	12,890	346	15,860	426	19,200	515	20,760	557			
50	3.4	4420	119	9360	251	15,480	416	18,380	493	22,670	609	24,280	652			
60	4.1	5100	137	10,910	293	18,120	486	21,070	566	24,680	663	26,750	718			
80	5.5	6460	173	13,140	353	20,770	558	23,970	644	27,780	746					
100	6.9	7930	213	16,420	441	23,090	620									
125	8.6	8730	234	19,710	529											

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.
1. Not available on the Type CS803.

Table 60. Types CS820, CS823 and CS824 External Registration Flow Capacities for 2 psig / 138 mbar Setpoint at 20% Accuracy

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.40 psig	0.40 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
138 mbar	-28 mbar	28 mbar	69 to 170 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
3	0.21	760	20.4	1220	32.8	1820	48.9	2780	74.6	2780	74.6	4180	112	5360	144	5540	149
5	0.34	1080	29.0	1770	47.5	2880	77.3	3710	99.6	4840	130	5570	150	6950	187	8570	230
10	0.69	1460	39.2	2560	68.7	4400	118	6330	170	7400	197	8750	235	9180	246	12,710	341
15	1.0	1760	47.2	3560	95.6	5540	149	7870	211	9590	257	11,280	303	11,890	319	15,220	409
20	1.4	2090	56.1	4310	116	6680	179	9610	258	11,940	321	13,420	360	14,300	384		
25	1.7	2350	63.1	5100	137	7600	204	10,780	289	13,440	361	14,020	376	15,510	416		
30	2.1	2710	72.8	5760	155	8980	241	12,410	333	15,040	404	15,770	423	17,220	462		
40	2.8	3390	91.0	7290	196	10,560	284	14,810	398	16,840	452	18,260	490				
50	3.4	3970	107	8530	229	12,490	335	16,790	451	18,370	493	19,490	523				
60	4.1	4570	123	9930	267	14,050	377	18,570	499	19,310	518	21,120	567				
80	5.5	5880	158	12,420	333	16,150	434	20,330	546	21,450	576						
100	6.9	7250	195	14,670	394	18,850	506										
125	8.6	8960	241	16,450	442												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded. 1. Not available on the Type CS823.																	

Table 61. Types CS820, CS823 and CS824 External Registration Flow Capacities for 5 psig / 345 mbar Setpoint at 20% Accuracy

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-1 psig	1 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
345 mbar	-0.07 mbar	69 mbar	170 to 380 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																					
Inlet Pressure		Orifice Size, In. / mm																			
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35 ⁽¹⁾					
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h				
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50																			
10	0.69	1430	38.4	2320	62.3	4370	117	4780	128	5920	159	7360	198	8670	233	10,820	291				
15	1.0	1800	48.3	3370	90.5	5370	144	7030	189	8520	229	11,130	299	11,870	319	15,610	419				
20	1.4	2120	56.9	4510	121	6640	178	8920	240	11,730	315	13,420	360	15,360	412						
25	1.7	2430	65.2	5340	143	7770	209	11,420	307	14,150	380	15,880	426	18,530	497						
30	2.1	2730	73.3	5960	160	9120	245	13,180	354	15,890	427	17,100	459	20,070	539						
40	2.8	3410	91.5	7210	194	11,410	306	16,620	446	18,800	505	19,890	534								
50	3.4	4040	109	8640	232	13,540	364	17,940	482	21,260	571	24,110	647								
60	4.1	4560	122	10,140	272	15,530	417	21,730	583	24,520	658	26,500	711								
80	5.5	5880	158	12,840	345	20,480	550	25,360	681	29,700	797										
100	6.9	7230	194	15,560	418	23,710	637														
125	8.6	8910	239	20,320	546																

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

1. Not available on the Type CS823.

CS800 Series

Table 62. Types CS850 and CS854 External Registration Flow Capacities for 7 psig / 483 mbar Setpoint at 20% Accuracy

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 psig	-1.4 psig	1.4 psig	5 to 10 psig	GE30344X012 / Green with White Stripe
483 mbar	-96 mbar	96 mbar	345 to 690 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS																	
Inlet Pressure		Orifice Size, In. / mm															
		1/4 / 6.4		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22		1 / 25		1-3/8 / 35	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Sizes: 1-1/2 and 2 in. / DN 40 and 50															
10	0.69	1410	37.9	1750	47.0	2030	54.5	3630	97.4	4130	111	4770	128	5390	145	7360	198
15	1.0	1880	50.5	2840	76.2	4040	109	5350	144	6970	187	7280	195	9050	243	12,240	329
20	1.4	2230	59.9	3710	99.6	5200	140	6840	184	8520	229	9550	256	11,390	306		
25	1.7	2590	69.5	3710	99.6	6250	168	8580	230	10,630	285	11,740	315	13,260	356		
30	2.1	2860	76.8	5140	138	7120	191	9970	268	12,780	343	14,020	376	14,890	400		
40	2.8	3540	95.0	6440	173	9050	243	12,630	339	14,690	394	16,690	448				
50	3.4	4290	115	7710	207	11,610	312	14,930	401	18,140	487	21,190	569				
60	4.1	4980	134	8920	240	13,370	359	16,650	447	20,110	540	23,550	632				
80	5.5	6010	161	11,490	309	17,230	463	19,220	516	24,430	656						
100	6.9	7360	198	15,110	406	20,130	540										
125	8.6	9090	244	17,490	470												
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.																	

Table 63. Types CS805 and CS806 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 1-1/2 in. / DN 40 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS													
Inlet Pressure		Orifice Size, In. / mm											
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22			
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h		
psig	bar	Body Size: 1-1/2 in. / DN 40											
0.51	0.04					730	19.6	850	22.8	910	24.4		
1	0.07	580	15.6	800	21.5	880	23.6	1050	28.2	1060	28.5		
2	0.14	900	24.2	1140	30.6	1520	40.8	1610	43.2	1610	43.2		
3	0.21	1080	29.0	1480	39.7	1920	51.5	2250	60.4	2260	60.7		
5	0.34	1620	43.5	2120	56.9	2560	68.7	3370	90.5	3470	93.2		
10	0.69	2520	67.7	3100	83.2	5200	140	5620	151	5680	153		
15	1.0	3150	84.6	5350	144	6400	172	7500	201	7140	192		
20	1.4	3910	105	6500	175	7200	193	7500	201	8610	231		
25	1.7	4680	126	7600	204	7600	204	7600	204	8610	231		
30	2.1	5160	139	7700	207	7700	207	7700	207	9550	256		
40	2.8	6140	165	7800	209	7900	212	7900	212	9550	256		
50	3.4	7120	191	7900	212	8000	215	8000	215	9550	256		
60	4.1	7500	201	8000	215	8000	215	8000	215				
80	5.5	8500	228	8500	228								
100	6.9	8500	228	8500	228								
125	8.6	8500	228										

Black areas show where indicated droop/boost would be exceeded regardless of capacity.

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 64. Types CS805 and CS806 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 2 in. / DN 50 Body Size, Enhanced Low Inlet (LIN) Option

SETPOINT	ACCURACY		SPRING	
	Drop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE49043X012 / Brown
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50									
0.51	0.04					970	26.2	1140	30.8	1320	35.7
1	0.07	710	19.1	1120	30.1	1270	34.2	1490	40.1	1990	53.5
2	0.14	1140	30.6	1710	45.9	2190	59.0	2570	69.1	2970	79.9
3	0.21	1460	39.3	2090	56.1	2580	69.3	3180	85.4	3750	101
5	0.34	2040	54.8	2670	71.9	4000	108	4370	118	5590	150
10	0.69	3120	84	4590	123	7120	191	7680	206	8300	223
15	1.0	4030	108	6160	166	8950	241	9650	259	10,610	285
20	1.4	4770	128	7550	203	10,990	295	11,860	318	12,660	340
25	1.7	5640	152	9170	246	12,680	341	12,930	347	13,610	365

Black areas show where indicated drop/boost would be exceeded regardless of capacity.

Table 65. Types CS805 and CS806 Internal Registration Flow Capacities for 7 in. w.c. / 17 mbar Setpoint for 2 in. / DN 50 Body Size

SETPOINT	ACCURACY		SPRING	
	Drop	Boost	Set Range	Part Number / Color
7 in. w.c.	-1 in. w.c.	2 in. w.c.	5.5 to 8.5 in. w.c.	GE30338X012 / Black
17 mbar	-2.5 mbar	5 mbar	13 to 21 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50									
0.51	0.04					870	23.4	1020	27.4	1270	34.1
1	0.07	540	14.5	1010	27.1	1190	31.9	1530	41.1	1510	40.5
2	0.14	900	24.2	1480	39.7	1710	45.9	2040	54.8	2290	61.5
3	0.21	1200	32.2	1830	49.1	2410	64.7	2750	73.8	3110	83.5
5	0.34	1670	44.8	2520	67.7	3280	88.1	4410	118	4600	124
10	0.69	2750	73.8	4190	113	6010	161	7210	194	7730	208
15	1.0	3670	98.5	6350	171	8140	219	9430	253	9750	262
20	1.4	4630	124	7910	212	9730	261	11,180	300	11,480	308
25	1.7	5560	149	9260	249	11,140	299	12,500	336	12,690	341
30	2.1	6330	170	10,350	278	12,500	336	12,500	336	13,830	371
40	2.8	7930	213	12,000	322	12,500	336	12,500	336	16,130	433
50	3.4	9490	255	12,140	326	12,500	336	12,500	336	17,060	458
60	4.1	10,800	290	12,500	336	12,500	336	12,500	336		
80	5.5	11,870	319	12,500	336						
100	6.9	12,500	336	12,500	336						
125	8.6	12,500	336								

Black areas show where indicated drop/boost would be exceeded regardless of capacity.
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

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Table 66. Types CS805 and CS806 Internal Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint for 1-1/2 in. / DN 40 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
1	0.07	540	14.5	830	22.3	870	23.4	1450	38.9	1490	40.0
2	0.14	880	23.6	1340	36.0	1440	38.7	2080	55.8	2230	59.9
3	0.21	1210	32.5	1770	47.5	2250	60.4	2390	64.2	3000	80.5
5	0.34	1650	44.3	2570	69.0	3340	89.7	3970	107	4150	111
10	0.69	2750	73.8	4270	115	5510	148	6270	168	6560	176
15	1.0	3680	98.8	5820	156	7370	198	7640	205	8060	216
20	1.4	4830	130	7080	190	8540	229	9200	247	9200	247
25	1.7	5620	151	8380	225	9600	258	9600	258	10,000	269
30	2.1	6360	171	9110	245	10,530	283	10,530	283	10,810	290
40	2.8	7940	213	10,740	288	11,870	319	11,870	319	11,870	319
50	3.4	9490	255	11,730	315	12,350	332	12,350	332	12,350	332
60	4.1	10,510	282	12,370	332	12,870	346	13,160	353		
80	5.5	12,660	340	13,170	354						
100	6.9	13,170	354	13,170	354						
125	8.6	13,630	366								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 67. Types CS805 and CS806 Internal Registration Flow Capacities for 14 in. w.c. / 35 mbar Setpoint for 2 in. / DN 50 Body Size

SETPOINT	ACCURACY		SPRING	
	Droop	Boost	Set Range	Part Number / Color
14 in. w.c.	-2 in. w.c.	2 in. w.c.	10 to 16 in. w.c.	GE30340X012 / White
35 mbar	-5 mbar	5 mbar	25 to 40 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50									
1	0.07	670	18.0	890	23.9	1150	30.9	1190	31.9	1550	41.6
2	0.14	1070	28.7	1320	35.4	1570	42.1	1910	51.3	2370	63.6
3	0.21	1200	32.2	1770	47.5	2120	56.9	2570	69.0	3020	81.1
5	0.34	1710	45.9	2400	64.4	2950	79.2	3520	94.5	4180	112
10	0.69	2630	70.6	3890	104	4930	132	5750	154	6630	178
15	1.0	3520	94.5	5230	140	6340	170	7760	208	8740	235
20	1.4	4150	111	6680	179	7800	209	9990	268	10,500	282
25	1.7	5030	135	8190	220	9070	244	11,480	308	12,040	323
30	2.1	5960	160	9530	256	10,120	272	12,650	340	13,030	350
40	2.8	7650	205	11,870	319	13,370	359	15,120	406	15,340	412
50	3.4	9530	256	13,960	375	15,240	409	16,830	452	17,960	482
60	4.1	10,750	289	15,310	411	17,930	481	18,320	492		
80	5.5	13,860	372	19,100	513						
100	6.9	16,370	440	21,650	581						
125	8.6	19,090	513								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 68. Types CS805 and CS806 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-2.8 in. w.c.	2.8 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-7 mbar	7 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
2	0.14	840	22.6	1200	32.2	1310	35.2	1820	48.9	1610	43.2
3	0.21	1100	29.5	1520	40.8	1760	47.2	2430	65.2	2700	72.5
5	0.34	1680	45.1	2280	61.2	2820	75.7	3490	93.7	3710	99.6
10	0.69	2410	64.7	3430	92.1	4480	120	5630	151	6480	174
15	1.0	3080	82.7	4770	128	6910	186	7850	211	8520	229
20	1.4	4080	110	5970	160	8540	229	9100	244	9670	260
25	1.7	4690	126	7400	199	9030	242	9700	260	10,190	274
30	2.1	5790	155	8680	233	10,380	279	10,240	275	10,790	290
40	2.8	7310	196	10,290	276	11,660	313	11,470	308	11,930	320
50	3.4	9270	249	11,010	296	12,140	326	11,740	315	12,550	337
60	4.1	10,320	277	11,200	301	12,490	335	12,220	328		
80	5.5	11,810	317	11,610	312						
100	6.9	12,180	327	12,030	323						
125	8.6	11,730	315								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 69. Types CS805 and CS806 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-2.8 in. w.c.	2.8 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-7 mbar	7 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50									
2	0.14	760	20.4	1330	35.7	1600	43.0	1600	43.0	1880	50.5
3	0.21	1030	27.7	1460	39.2	1810	48.6	2360	63.4	2820	75.7
5	0.34	1640	44.0	2160	58.0	2690	72.2	3340	89.7	3930	106
10	0.69	2570	69.0	3530	94.8	4320	116	5710	153	6550	176
15	1.0	3170	85.1	4740	127	6340	170	7390	198	8950	240
20	1.4	4140	111	5630	151	7800	209	8790	236	10,970	295
25	1.7	4940	133	7110	191	9920	266	10,830	291	12,140	326
30	2.1	5390	145	8180	220	11,560	310	12,680	340	13,260	356
40	2.8	7030	189	11,300	303	13,640	366	15,280	410	16,180	434
50	3.4	9170	246	13,520	363	16,130	433	18,330	492	18,760	504
60	4.1	10,570	284	15,690	421	18,780	504	20,150	541		
80	5.5	13,500	362	19,670	528						
100	6.9	16,670	448	22,360	600						
125	8.6	19,890	534								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

CS800 Series

Table 70. Types CS805 and CS806 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 1-1/2 in. / DN 40 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
2	0.14	1120	30.1	1710	45.9	2130	57.2	2600	69.8	2910	78.1
3	0.21	1620	43.5	2320	62.3	2510	67.4	3590	96.4	3750	101
5	0.34	2250	60.4	3090	83.0	3650	98.0	5190	139	5230	140
10	0.69	3150	84.6	4610	124	6320	170	7720	207	8330	224
15	1.0	3990	107	6310	169	8480	228	9390	252	10,000	269
20	1.4	4970	133	7600	204	9950	267	10,710	288	11,480	308
25	1.7	5490	147	8860	238	11,100	298	11,880	319	12,340	331
30	2.1	6590	177	9910	266	12,110	325	12,120	325	13,160	353
40	2.8	7890	212	11,640	313	13,000	349	13,590	365	13,920	374
50	3.4	9350	251	12,680	340	14,120	379	13,940	374	14,440	388
60	4.1	10,860	292	13,000	349	14,540	390	14,080	378		
80	5.5	13,310	357	13,780	370						
100	6.9	13,750	369	14,360	386						
125	8.6	13,750	369								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 71. Types CS805 and CS806 Internal Registration Flow Capacities for 1 psig / 0.07 bar Setpoint for 2 in. / DN 50 Body Size at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
1 psig	-5.5 in. w.c.	5.5 in. w.c.	14 to 30 in. w.c.	GE30341X012 / Dark Green
0.07 bar	-14 mbar	14 mbar	35 to 75 mbar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 2 in. / DN 50									
2	0.14	1100	29.5	1590	42.7	2290	61.5	2670	71.7	2630	70.6
3	0.21	1390	37.3	2160	58.0	2970	79.7	3470	93.2	3730	100
5	0.34	2020	54.2	2970	79.7	4270	115	4770	128	5350	144
10	0.69	3230	86.7	4880	131	6870	184	7550	203	8520	229
15	1.0	3990	107	6190	166	8530	229	9470	254	10,990	295
20	1.4	4930	132	7380	198	10,690	287	11,190	300	13,620	366
25	1.7	5650	152	9190	247	12,240	329	12,630	339	14,680	394
30	2.1	6380	171	10,090	271	13,990	376	15,010	403	16,100	432
40	2.8	7830	210	12,900	346	16,080	432	18,220	489	19,340	519
50	3.4	9430	253	15,050	404	18,110	486	21,310	572	22,030	591
60	4.1	10,870	292	17,330	465	21,540	578	22,540	605		
80	5.5	13,820	371	21,480	577						
100	6.9	16,960	455	24,650	662						
125	8.6	20,290	545								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 72. Types CS825 and CS826 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING	
	Drop	Boost	Set Range	Part Number / Color
2 psig	-0.17 psig	0.17 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-12 mbar	12 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS													
Inlet Pressure		Orifice Size, In. / mm											
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22			
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h		
psig	bar	Body Size: 1-1/2 in. / DN 40											
3	0.21	690	19.8	1490	42.3	1070	30.5	1440	40.9	1660	47.2		
5	0.34	860	24.4	1490	42.3	1840	52.4	2190	62.2	2490	70.5		
10	0.69	1880	53.4	2560	72.7	3140	89.1	3980	113	4770	135		
15	1.0	2510	71.2	3650	103	4280	121	5810	165	6300	179		
20	1.4	3140	89.2	4710	134	5960	169	7950	225	8030	228		
25	1.7	3920	111	5730	162	7210	204	8490	241	8880	252		
30	2.1	4450	126	6890	195	7970	226	9260	262	10,420	295		
40	2.8	6250	177	9020	256	10,170	288	11,090	314	11,770	333		
50	3.4	7710	218	10,800	306	12,150	344	12,880	365	13,750	390		
60	4.1	9580	271	11,390	323	13,100	371	13,210	374				
80	5.5	11,570	328	13,200	374								
100	6.9	12,990	368	14,020	397								
125	8.6	13,320	377										
psig	bar	Body Size: 2 in. / DN 50											
3	0.21	720	20.5	930	26.4	1120	31.8	1410	40.1	1670	47.3		
5	0.34	1100	31.1	1530	43.5	1860	52.8	2350	66.8	2720	77.1		
10	0.69	1840	52.1	2260	64.1	3590	102	4430	126	5670	161		
15	1.0	2560	72.6	3760	107	5520	157	7120	202	8710	247		
20	1.4	3290	93.2	4930	140	7500	212	9730	276	11,600	329		
25	1.7	4060	115	6520	185	10,010	284	12,580	356	14,370	407		
30	2.1	4680	133	8120	230	11,840	335	14,820	420	17,200	487		
40	2.8	6730	191	11,580	328	16,140	457	19,140	542	21,940	621		
50	3.4	8800	249	14,080	399	19,900	564	23,390	663	26,300	745		
60	4.1	10,580	300	16,950	480	24,370	690	26,970	764				
80	5.5	13,590	385	22,090	626								
100	6.9	16,680	472	27,290	773								
125	8.6	20,280	574										
Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.													

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

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Table 73. Types CS825 and CS826 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
2 psig	-0.20 psig	0.20 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-14 mbar	14 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
3	0.21	740	19.9	1580	42.4	1230	33.0	1620	43.5	1860	49.9
5	0.34	990	26.6	1720	46.2	2020	54.2	2730	73.3	2870	77.0
10	0.69	2040	54.8	2970	79.7	3490	93.7	4820	129	5290	142
15	1.0	2890	77.6	4170	112	5000	134	6510	175	7010	188
20	1.4	3600	96.6	5350	144	6580	177	8620	231	8690	233
25	1.7	4370	117	6430	173	7950	213	9240	248	9530	256
30	2.1	4960	133	7690	206	9030	242	10,240	275	11,060	297
40	2.8	6800	183	9790	263	11,040	296	11,890	319	12,590	338
50	3.4	8140	219	11,460	308	12,760	343	13,290	357	14,450	388
60	4.1	9850	264	12,100	325	13,760	369	14,020	376		
80	5.5	12,110	325	13,830	371						
100	6.9	13,720	368	14,800	397						
125	8.6	13,880	373								
psig	bar	Body Size: 2 in. / DN 50									
3	0.21	810	21.7	1080	29.0	1340	36.0	1560	41.9	1780	47.8
5	0.34	1240	33.3	1760	47.2	2170	58.3	2750	73.8	3170	85.1
10	0.69	2100	56.4	2670	71.7	4130	111	4910	132	6300	169
15	1.0	2900	77.9	4220	113	6230	167	7920	213	9310	250
20	1.4	3640	97.7	5770	155	8400	226	10,470	281	12,460	335
25	1.7	4530	122	7180	193	10,660	286	13,300	357	14,970	402
30	2.1	5190	139	8840	237	12,270	330	15,280	410	17,900	481
40	2.8	7140	192	12,040	323	16,610	446	19,630	527	22,700	609
50	3.4	9020	242	14,530	390	20,410	548	23,830	640	26,840	721
60	4.1	10,720	288	17,070	458	24,980	671	27,450	737		
80	5.5	13,660	367	22,220	597						
100	6.9	16,760	450	27,350	734						
125	8.6	20,350	546								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 74. Types CS825 and CS826 Internal Registration Flow Capacities for 2 psig / 0.14 bar Setpoint at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Drop	Boost	Set Range	Part Number / Color
2 psig	-0.40 psig	0.40 psig	1 to 2.5 psig	GE30342X012 / Dark Blue
0.14 bar	-28 mbar	28 mbar	0.07 to 0.17 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
3	0.21	1170	31.4	2020	54.2	2150	57.7	2570	69.0	3110	83.5
5	0.34	1770	47.5	2540	68.2	3130	84.0	4100	110	4520	121
10	0.69	3080	82.7	4420	119	5370	144	6800	183	7330	197
15	1.0	3880	104	5600	150	7180	193	8730	234	9850	264
20	1.4	4830	130	6970	187	9130	245	10,390	279	11,410	306
25	1.7	5740	154	8500	228	10,630	285	12,150	326	12,640	339
30	2.1	6180	166	9670	260	11,650	313	13,330	358	14,210	382
40	2.8	7810	210	12,190	327	13,870	372	15,330	412	15,860	426
50	3.4	9250	248	13,800	371	15,660	420	16,330	438	17,440	468
60	4.1	10,570	284	14,780	397	16,310	438	17,480	469		
80	5.5	13,170	354	16,800	451						
100	6.9	15,740	423	18,200	489						
125	8.6	17,430	468								
psig	bar	Body Size: 2 in. / DN 50									
3	0.21	1070	28.7	1470	39.5	2080	55.8	2540	68.2	2710	72.8
5	0.34	1760	47.2	2660	71.4	3420	91.8	4130	111	4660	125
10	0.69	2860	76.8	4260	114	5930	159	7190	193	8360	224
15	1.0	3880	104	5950	160	8200	220	9920	266	11,340	304
20	1.4	4740	127	7360	198	10,200	274	12,310	331	14,410	387
25	1.7	5590	150	8830	237	12,560	337	15,100	405	16,980	456
30	2.1	6310	169	10,150	273	14,290	384	17,140	460	19,320	519
40	2.8	7820	210	12,990	349	18,360	493	21,510	577	23,500	631
50	3.4	9370	252	15,320	411	22,350	600	25,450	683	28,260	759
60	4.1	10,860	292	17,710	475	26,420	709	29,670	797		
80	5.5	13,750	369	22,830	613						
100	6.9	16,800	451	27,610	741						
125	8.6	20,510	551								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

CS800 Series

Table 75. Types CS825 and CS826 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 1% ABS Accuracy

SETPOINT	ACCURACY: + / - 1% ABS		SPRING			
	Droop	Boost	Set Range		Part Number / Color	
5 psig	-0.20 psig	0.20 psig	2.5 to 5.5 psig		GE30343X012 / Yellow	
0.34 bar	-14 mbar	14 mbar	0.17 to 0.38 bar			

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS													
Inlet Pressure		Orifice Size, In. / mm											
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22			
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h		
psig	bar	Body Size: 1-1/2 in. / DN 40											
10	0.69	770	21.9	1030	29.2	1370	39.0	1790	50.8	2010	57.0		
15	1.0	1190	33.9	1720	48.9	2140	60.8	2560	72.5	2560	72.5		
20	1.4	1500	42.6	1940	55.1	2710	77.0	3100	88.0	3500	99.3		
25	1.7	1680	47.6	2350	66.6	3340	94.8	3920	111	4400	125		
30	2.1	2160	61.4	2740	77.8	3840	109	4910	139	5040	143		
40	2.8	2680	76.0	3860	109	4830	137	6520	185	6560	186		
50	3.4	3420	96.9	4650	132	6040	171	7580	215	7980	226		
60	4.1	4050	115	5780	164	7400	210	8950	254				
80	5.5	5210	148	7660	217								
100	6.9	6810	193	8940	253								
125	8.6	7410	210										
psig	bar	Body Size: 2 in. / DN 50											
10	0.69	920	26.1	1220	34.7	1370	38.9	1730	49.0	1960	55.6		
15	1.0	1300	37.1	1750	49.6	2020	57.5	2510	71.1	2930	83.0		
20	1.4	1660	47.1	2180	61.7	2700	76.5	3220	91.3	3890	110		
25	1.7	1930	54.8	2540	71.9	3140	89.1	4110	117	5490	155		
30	2.1	2290	65.1	3060	86.8	3860	110	5270	149	6930	196		
40	2.8	2870	81.5	4000	113	5370	152	8050	228	10,840	307		
50	3.4	3510	99.6	5460	155	7860	223	10,990	311	14,620	414		
60	4.1	4160	118	7250	205	11,130	315	15,400	436				
80	5.5	6360	180	11,380	322								
100	6.9	9640	273	16,370	464								
125	8.6	13,250	375										

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 76. Types CS825 and CS826 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 10% Accuracy

SETPOINT	ACCURACY: + / - 10% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-0.50 psig	0.50 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-34 mbar	34 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
10	0.69	1750	47.0	2360	63.4	2860	76.8	3630	97.4	4290	115
15	1.0	2400	64.4	3530	94.8	4370	117	5400	145	5960	160
20	1.4	3110	83.5	4270	115	5660	152	6630	178	7540	202
25	1.7	3640	97.7	5320	143	6910	186	7870	211	8920	240
30	2.1	4350	117	6240	168	7950	213	9530	256	10,490	282
40	2.8	5490	147	7730	208	9760	262	11,740	315	12,770	343
50	3.4	6850	184	9270	249	11,900	320	13,230	355	14,360	386
60	4.1	7970	214	11,280	303	13,470	362	15,070	405		
80	5.5	10,650	286	13,750	369						
100	6.9	12,440	334	15,460	415						
125	8.6	14,500	389								
psig	bar	Body Size: 2 in. / DN 50									
10	0.69	1730	46.4	2400	64.4	2840	76.2	3620	97.2	4060	109
15	1.0	2500	67.1	3410	91.5	4300	115	5360	144	6490	174
20	1.4	3230	86.7	4360	117	5610	151	6950	187	8760	235
25	1.7	3810	102	5280	142	6860	184	8960	241	11,030	296
30	2.1	4410	118	6340	170	8430	226	10,780	289	13,080	351
40	2.8	5550	149	8640	232	11,810	317	15,280	410	17,290	464
50	3.4	6980	187	11,120	299	15,070	405	19,630	527	21,680	582
60	4.1	8750	235	13,630	366	18,300	491	23,260	624		
80	5.5	11,970	321	18,590	499						
100	6.9	15,030	404	23,560	633						
125	8.6	19,350	520								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

Table 77. Types CS825 and CS826 Internal Registration Flow Capacities for 5 psig / 0.34 bar Setpoint at 20% Accuracy

SETPOINT	ACCURACY: + / - 20% GAUGE		SPRING	
	Droop	Boost	Set Range	Part Number / Color
5 psig	-1.0 psig	1.0 psig	2.5 to 5.5 psig	GE30343X012 / Yellow
0.34 bar	-69 mbar	69 mbar	0.17 to 0.38 bar	

CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
Inlet Pressure		Orifice Size, In. / mm									
		3/8 / 9.5		1/2 / 13		5/8 / 16		3/4 / 19		7/8 / 22	
		SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
psig	bar	Body Size: 1-1/2 in. / DN 40									
10	0.69	2460	66.0	3650	98.0	4680	126	5880	158	6610	177
15	1.0	3460	92.9	5200	140	6520	175	8240	221	9120	245
20	1.4	4370	117	6650	179	8300	223	10,120	272	11,110	298
25	1.7	5220	140	7700	207	10,020	269	12,050	324	13,400	360
30	2.1	6060	163	8980	241	11,440	307	13,520	363	15,180	408
40	2.8	7580	204	11,060	297	14,160	380	16,400	440	17,610	473
50	3.4	9150	246	12,850	345	16,250	436	17,880	480	19,590	526
60	4.1	10,490	282	15,370	413	18,130	487	20,170	542		
80	5.5	13,270	356	18,410	494						
100	6.9	15,310	411	20,820	559						
125	8.6	18,730	503								
psig	bar	Body Size: 2 in. / DN 50									
10	0.69	2440	65.5	3650	98.0	4660	125	5740	154	6660	179
15	1.0	3540	95.0	5220	140	6790	182	8260	222	9740	262
20	1.4	4480	120	6650	179	8720	234	10,670	286	12,370	332
25	1.7	5260	141	7950	213	10,580	284	13,090	351	15,060	404
30	2.1	6100	164	9370	252	12,540	337	15,440	415	17,410	467
40	2.8	7650	205	11,860	318	16,150	434	19,860	533	22,580	606
50	3.4	9230	248	14,510	390	19,730	530	24,260	651	27,210	731
60	4.1	10,710	288	16,820	452	23,710	637	28,650	769		
80	5.5	13,670	367	21,930	589						
100	6.9	16,630	446	27,000	725						
125	8.6	20,310	545								

Blank areas indicate where maximum operating inlet pressure for a given orifice size is exceeded.

CS800 Series

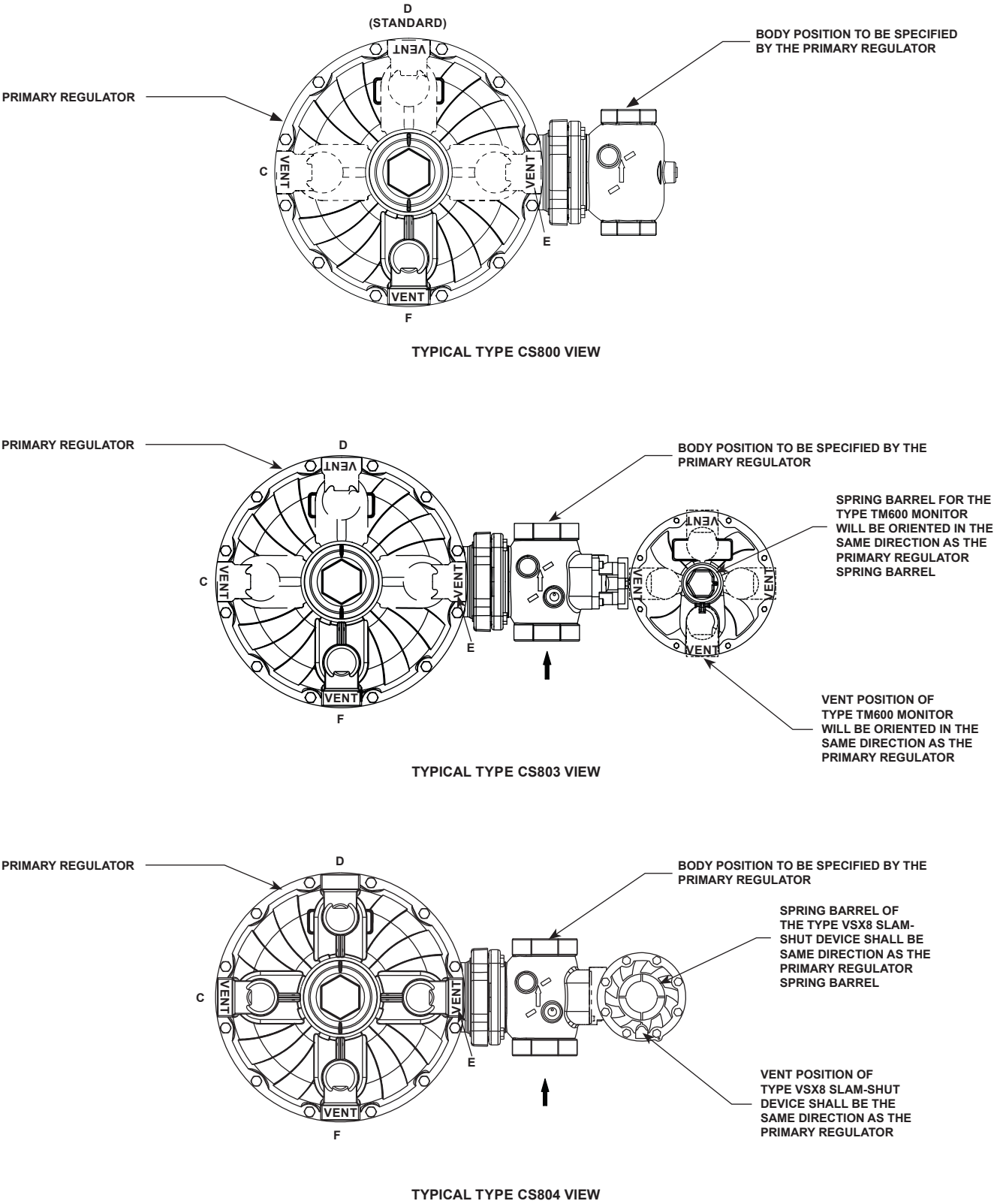


Figure 21. Spring Case Vent and Body Orientation

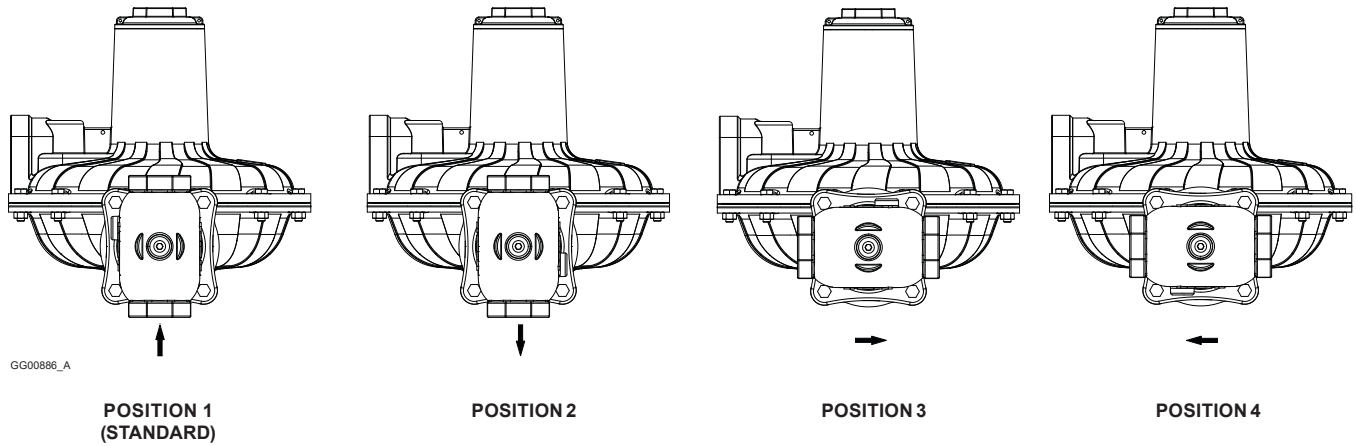
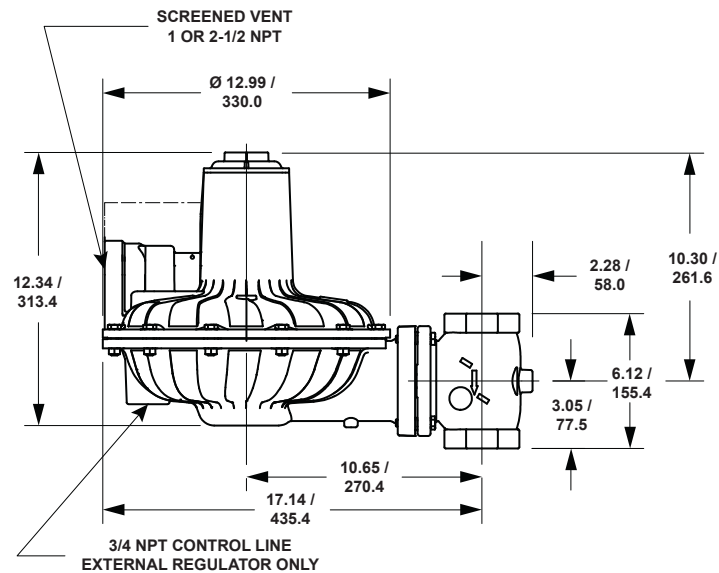


Figure 21. Spring Case Vent and Body Orientation (continued)



TYPE CS800 REGULATOR MAIN VALVE

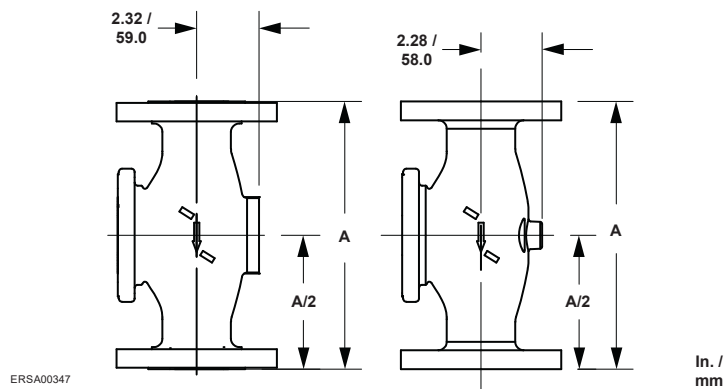
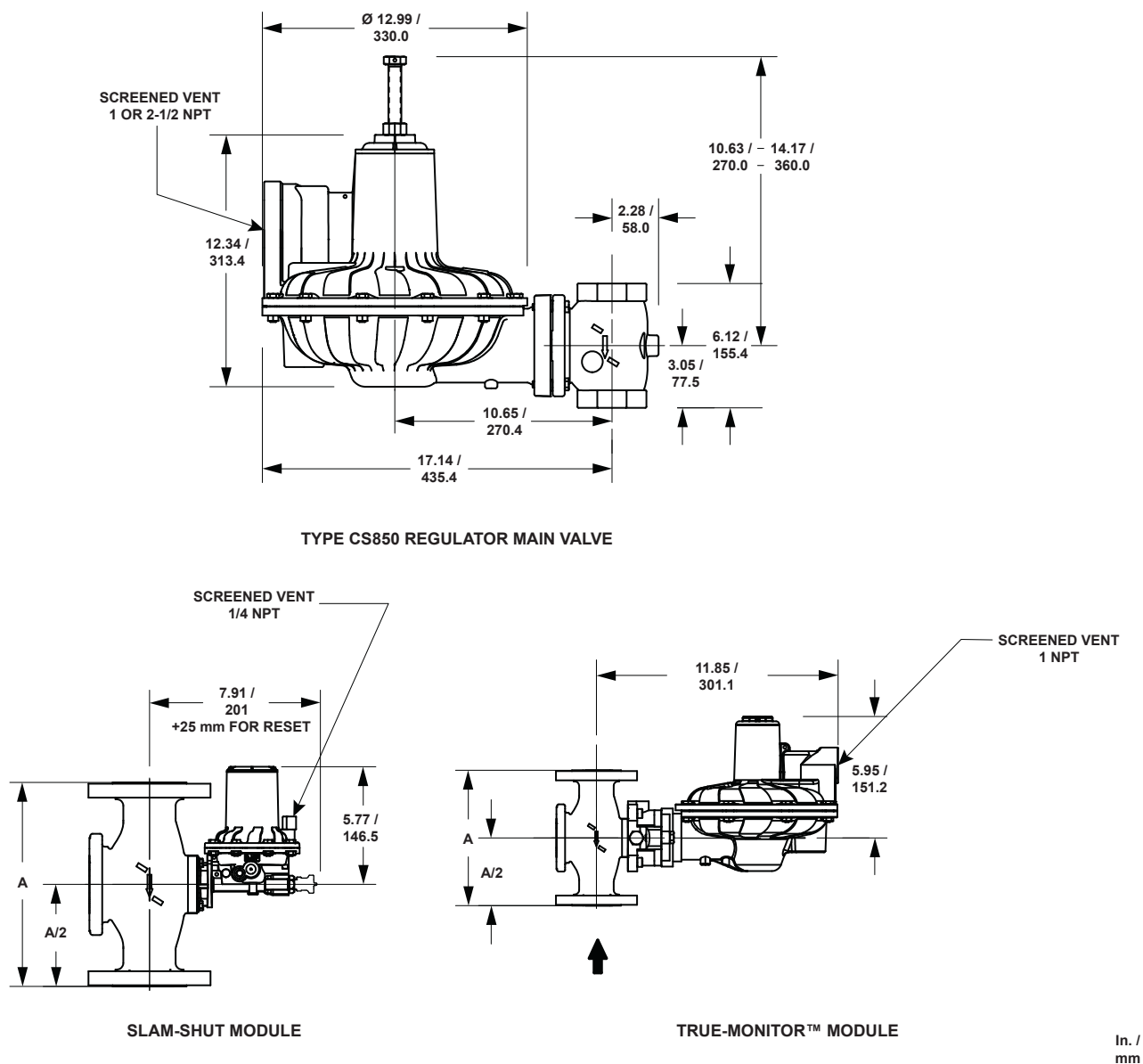


Figure 22. Dimensions

CS800 Series



ERSA00347

Figure 22. Dimensions (continued)

Table 78. Dimensions

BODY SIZE		END CONNECTION STYLE	DIMENSION A			
In.	DN		In.		mm	
1-1/4 to 2	----	NPT or Rp	6.12		155	
2 ⁽¹⁾	50 ⁽¹⁾	CL125 FF Flange	7.5	10	191	254
2 ⁽²⁾	50 ⁽²⁾	CL125 FF, CL150 FF or PN 10/16 Flange				
2 ⁽²⁾	50 ⁽²⁾	CL125 FF or CL150 FF Flange	10.5		267	
2 ⁽³⁾	50 ⁽³⁾	CL150 RF or PN 16 Flange	10		254	
1. For Cast Iron. 2. For Ductile Iron. 3. For Steel.						

Ordering Information

When ordering, complete the ordering guide on this page. Refer to the Specifications section on page 2. Review the description to the right of each

specification and the information in each referenced table or figure. Specify your choice whenever a selection is offered.

Ordering Guide

Type (See Table 1 for Construction Features)
(Select One)

Stand-Alone Regulator

- ☐ CS800IN
- ☐ CS800IR
- ☐ CS800IT
- ☐ CS800IQ
- ☐ CS800IL
- ☐ CS800EN
- ☐ CS800ET
- ☐ CS800EL
- ☐ CS820IN
- ☐ CS820IR
- ☐ CS820IT
- ☐ CS820IQ
- ☐ CS820IL
- ☐ CS820EN
- ☐ CS820ET
- ☐ CS820EL
- ☐ CS850IN
- ☐ CS850EN

With Integral True-Monitor™ Module

- ☐ CS803IN
- ☐ CS803IT
- ☐ CS803IL
- ☐ CS803EN
- ☐ CS803ET
- ☐ CS803EL
- ☐ CS823IN
- ☐ CS823IT
- ☐ CS823IL
- ☐ CS823EN
- ☐ CS823ET
- ☐ CS823EL

With Type Secondary Seat™ Protection Without Vent

- ☐ CS805IN
- ☐ CS805IR
- ☐ CS805IT
- ☐ CS805IQ
- ☐ CS825IN
- ☐ CS825IR
- ☐ CS825IT
- ☐ CS825IQ

With Type Secondary Seat Protection with Vent

- ☐ CS806IR
- ☐ CS806IQ
- ☐ CS826IR
- ☐ CS826IQ

With Slam Shut

- ☐ CS804IN
- ☐ CS804IT
- ☐ CS804IL
- ☐ CS804EN
- ☐ CS804ET
- ☐ CS804EL
- ☐ CS824IN
- ☐ CS824IT
- ☐ CS824IL
- ☐ CS824EN
- ☐ CS824ET
- ☐ CS824EL
- ☐ CS854IN
- ☐ CS854EN

Body Material, Body Size and End Connection (Select One)

Gray Cast Iron (Types CS800, CS805, CS806, CS820, CS825, CS826 and CS850)

- ☐ 1-1/4 NPT***
- ☐ 1-1/2 NPT***
- ☐ 2 NPT***
- ☐ NPS 2 / DN 50, CL125 FF***

Face-to-face dimension:

- ☐ 7.5 in. / 191 mm
- ☐ 10 in. / 254 mm

Gray Cast Iron (Types CS803, CS823, CS804, CS824 and CS854)

- ☐ 2 NPT***

- continued -

CS800 Series

Ordering Guide (continued)

Ductile Iron (Types CS800, CS803, CS820, CS823 and CS850)

- ☐ 1-1/4 NPT***
- ☐ 1-1/2 NPT***
- ☐ 2 NPT***
- ☐ Rp 1-1/4***
- ☐ Rp 1-1/2***
- ☐ Rp 2***
- ☐ NPS 2 / DN 50, CL125 FF / CL150 FF***
 - Face-to-face dimension:*
 - ☐ 7.5 in. / 191 mm
 - ☐ 10 in. / 254 mm
 - ☐ 10.5 in. / 267 mm
- ☐ NPS 2 / DN 50, PN 10/16***
 - Face-to-face dimension:*
 - ☐ 7.5 in. / 191 mm
 - ☐ 10 in. / 254 mm

Ductile Iron (Types CS804, CS824 and CS854)

- ☐ 1-1/2 NPT***
- ☐ 2 NPT***
- ☐ Rp 2***
- ☐ NPS 2 / DN 50, CL125 FF / CL150 FF***
 - Face-to-face dimension:*
 - ☐ 10 in. / 254 mm
 - ☐ 10.5 in. / 267 mm
- ☐ NPS 2 / DN 50, PN 10/16***⁽¹⁾

WCC Steel (Types CS800, CS803, CS820, CS823 and CS850)

- ☐ 1-1/4 NPT***
- ☐ 1-1/2 NPT***
- ☐ 2 NPT***
- ☐ Rp 1-1/4***
- ☐ Rp 1-1/2***
- ☐ Rp 2***
- ☐ NPS 2 / DN 50, CL150 RF***⁽¹⁾
- ☐ NPS 2 / DN 50, PN 10/16***⁽¹⁾

WCC Steel (Types CS804, CS824 and CS854)

- ☐ 1-1/2 NPT***
- ☐ 2 NPT***
- ☐ Rp 2***
- ☐ NPS 2 / DN 50, CL150 RF***⁽¹⁾
- ☐ NPS 2 / DN 50, PN 10/16***⁽¹⁾

Outlet Pressure Range

(See Table 4) (Select One)

- ☐ 3.5 to 6 in. w.c. / 9 to 15 mbar, Red
- ☐ 5.5 to 8.5 in. w.c. / 13 to 21 mbar, Black
- ☐ 5.5 to 8.5 in. w.c. / 13 to 21 mbar, Brown
- ☐ 8 to 12 in. w.c. / 20 to 30 mbar, Purple
- ☐ 10 to 16 in. w.c. / 25 to 40 mbar, White
- ☐ 14 to 30 in. w.c. / 35 to 75 mbar, Dark Green
- ☐ 1 to 2.5 psig / 69 to 170 mbar, Dark Blue
- ☐ 1.5 to 3.5 psig / 100 to 241 mbar, Orange
- ☐ 2.5 to 5.5 psig / 170 to 380 mbar, Yellow
- ☐ 5 to 10 psig / 345 to 690 mbar, Green with White Stripe

Orifice Size (Select One)

Types CS800, CS804, CS820, CS824, CS850 and CS854

- ☐ 1/4 in. / 6.4 mm
- ☐ 3/8 in. / 9.5 mm
- ☐ 1/2 in. / 13 mm
- ☐ 5/8 in. / 16 mm
- ☐ 3/4 in. / 19 mm
- ☐ 7/8 in. / 22 mm
- ☐ 1 in. / 25 mm
- ☐ 1-3/8 in. / 34.9 mm

Types CS803 and CS823

- ☐ 1/4 in. / 6.4 mm
- ☐ 3/8 in. / 9.5 mm
- ☐ 1/2 in. / 13 mm
- ☐ 5/8 in. / 16 mm
- ☐ 3/4 in. / 19 mm
- ☐ 7/8 in. / 22 mm
- ☐ 1 in. / 25 mm

Types CS805, CS825, CS855, CS806, CS826 and CS856

- ☐ 3/8 in. / 9.5 mm
- ☐ 1/2 in. / 13 mm
- ☐ 5/8 in. / 16 mm
- ☐ 3/4 in. / 19 mm
- ☐ 7/8 in. / 22 mm

Body Orientation (Select one, see Figure 21)

- ☐ Position 1 (standard)***
- ☐ Position 2***
- ☐ Position 3***
- ☐ Position 4***

- continued -

1. 10 in. / 254 mm face-to-face dimension

Ordering Guide (continued)

Vent Orientation (Select one, see Figure 21)

- ☐ Position C***
- ☐ Position D (standard)***
- ☐ Position E***
- ☐ Position F***

True-Monitor™ Control Pressure Range (For CS803 and CS823 Series)

(See Tables 7 and 8, select one if applicable)

- ☐ 12 to 21 in. w.c. / 30 to 52 mbar, Blue
- ☐ 18 to 30 in. w.c. / 45 to 75 mbar, Green
- ☐ 26 to 40 in. w.c. / 65 to 99 mbar, Orange
- ☐ 1.4 to 2.9 psig / 97 to 200 mbar, Black
- ☐ 2.6 to 3.7 psig / 179 to 255 mbar, Purple
- ☐ 3.6 to 6 psig / 248 to 414 mbar, Dark Blue
- ☐ 5.1 to 7.5 psig / 352 to 517 mbar, Red

Slam-Shut Trip Pressure Setting (For CS804, CS824 and CS854 Series)

(Select one if applicable and specify setpoint/s, see Tables 12 and 13)

- ☐ **Overpressure Protection Only (OPSO)**

Supply setpoint required _____

- ☐ **Overpressure and Underpressure Protection (OPSO/UPSO)**

Supply overpressure setpoint required _____

Supply underpressure setpoint required _____

Options (Select all that apply)

- ☐ **Enhanced Low Inlet Pressure Flow Performance**
Choose this option for enhanced flow performance for low inlet pressure systems, up to 25 psig / 1.7 bar. This option applies to the 5.5 to 8.5 in. w.c. / 13 to 21 mbar spring range when combined with 2 in. threaded or flanged bodies only.
- ☐ **Low Relief Start-to-Discharge (STD) Spring**
This option provides a relief start-to-discharge range of 7 to 14 in. w.c. / 17 to 35 mbar above setpoint for the Type CS800IR or CS800IQ with a spring range of up to 10 to 16 in. w.c. / 25 to 40 mbar.
- ☐ **Closing Cap and Setpoint Seal Wire**
- ☐ **Stabilizer Cartridge**

Regulators Quick Order Guide	
***	Readily Available for Shipment
**	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Specification Worksheet

Application:

Specific Use _____

Line Size _____

Gas Type and Specific Gravity _____

Gas Temperature _____

Does the Application Require Overpressure Protection?

☐ Yes ☐ No If yes, which is preferred:

☐ Relief Valve ☐ Monitor Regulator ☐ Shutoff Device

Is overpressure protection equipment selection assistance desired? _____

Pressure:

Maximum Inlet Pressure (P_{1max}) _____

Minimum Inlet Pressure (P_{1min}) _____

Downstream Pressure Setting(s) (P_2) _____

Maximum Flow (Q_{max}) _____

Performance Required:

Accuracy Requirements? _____

Need for Extremely Fast Response? _____

Other Requirements: _____

CS800 Series

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