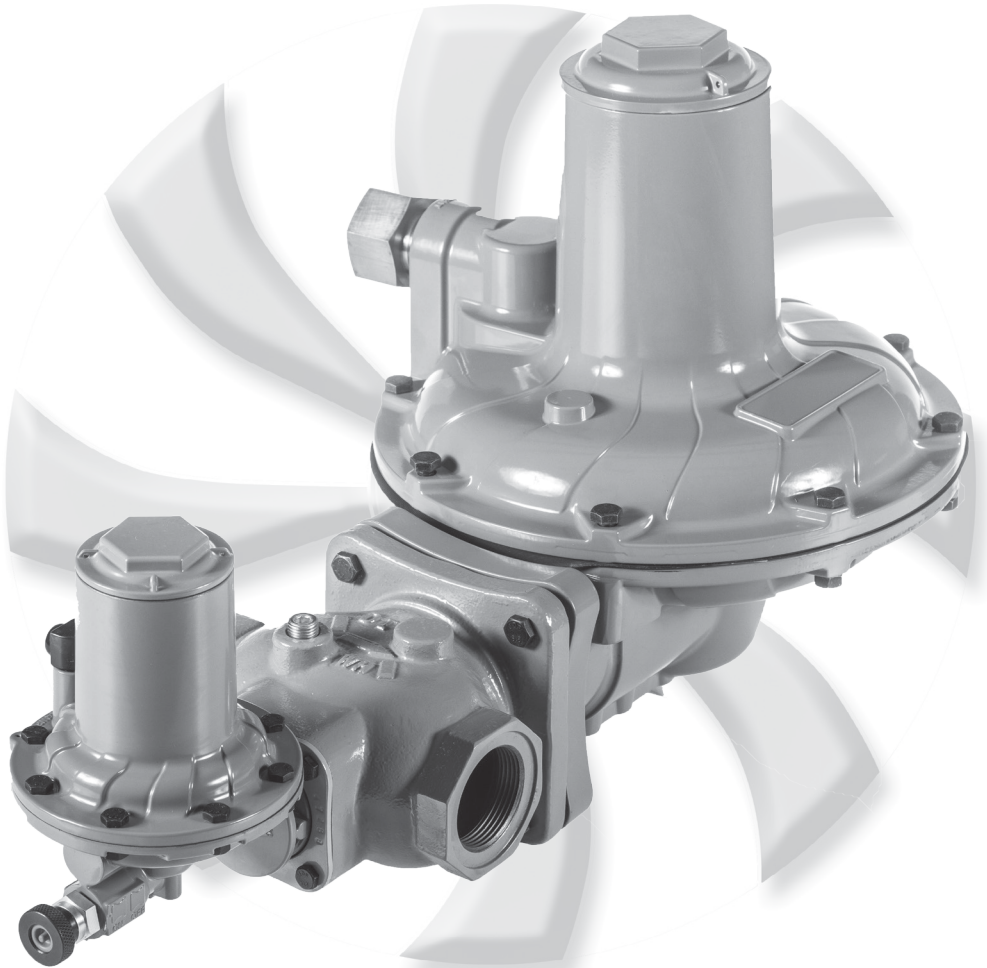


August 2017

CSB600 Series Commercial / Industrial Pressure Reducing Regulators



P2146

TYPE CSB604: CSB600 SERIES WITH TYPE VSX8 SLAM-SHUT

Figure 1. Typical CSB600 Series Pressure Reducing Regulator

Features and Benefits

- Ductile Iron and WCC Steel Bodies Available
- Wide Variety of Body Sizes and End Connections
- With Type VSX8 Slam-Shut Option
- No Special Tools for Pressure Adjustment and Orifice Removal

Introduction

The CSB600 Series direct-operated, spring-loaded regulators have been engineered to fit a multitude of pressure reducing applications including commercial and industrial installations. This flexibility is provided by the numerous body sizes, end connections and outlet pressure settings. In addition to application flexibility, the CSB600 Series offers multiple overpressure protection options to meet your application requirements.

CSB600 Series

Specifications

This section lists the specifications for the CSB600 Series regulators. The following information is stamped on the nameplate of CSB600 Series: Type and Class, Maximum Outlet Pressure and Spring Range.

Available Configurations

See Table 1

Body Sizes, Materials, End Connections and Pressure Ratings⁽¹⁾

See Table 2

Inlet Pressure Ratings⁽¹⁾

See Tables 3 and 4

Maximum Outlet Pressure⁽¹⁾

Emergency Casing:

Type CSB600/CSB620/CSB620F: 4.0 bar / 58.0 psig

Type CSB650: 5.0 bar / 72.5 psig

To Avoid Internal Metallic Parts Damage:

Type CSB600/CSB620/CSB620F:

0.34 bar / 5 psig over set pressure

Type CSB650: 1.5 bar / 21.8 psig over set pressure – not to exceed maximum emergency outlet

Operating Casing:

Types CSB600 and CSB620: 1.1 bar / 16 psig

Type CSB650: 5.0 bar / 72.5 psig

Outlet Pressure Ranges⁽¹⁾

9.0 mbar to 4.0 bar / 0.13 to 58.0 psig

See Table 5

Flow Capacities

See Tables 7 to 42

Orifice Size

25 mm / 1.0 in.

Flow and IEC Sizing Coefficients

See Table 4

Temperature Capabilities⁽¹⁾⁽²⁾⁽³⁾

According to PED Standards:

-20 to 66°C / -4 to 151°F

Non-PED:

-30 to 66°C / -22 to 151°F

Spring Case Vent Connection

1 NPT: Types CSB600 and CSB620

1/2 NPT: Type CSB650

Spring Case Vent and Body Orientation

See Figure 5

Type VSX8 Slam-Shut Device Maximum Inlet Pressure (P_{umax})⁽¹⁾:

Differential strength (DS): 16 bar / 232 psig

Integral strength (IS): 6.0 bar / 87 psig

Construction Materials

CSB600 Series Main Valve and Actuator

Body: Ductile iron or WCC steel

Body O-ring: Nitrile (NBR)

Closing Cap: Aluminum

Adjusting Screw: Aluminum

Adjusting Bolt: Steel

Spring Case, Lower Casing

and Valve Stem: Aluminum

Orifice: Aluminum

Pusher Post and Relief Valve Seat: Aluminum

Diaphragm and Disk: Nitrile (NBR)

Control Spring: Music wire or Stainless steel

Relief Valve Spring: Stainless steel

Relief Valve Diaphragm Retainer: Zinc-plated steel

Retaining Ring: Zinc-plated carbon steel

Lever Pin: Carbon steel

Lever: Steel

Spring Seat and Other Metal Parts: Zinc-plated steel

Type VSX8 Slam-shut Device

Diaphragm Case, Spring Case

and Valve Stem: Aluminum

Diaphragm Plate: Stainless steel or

Noryl™ GFN2 Plastic

Diaphragm and Disk: Nitrile (NBR)

Control Spring: Steel

Vent Screen: 18-8 Stainless steel

Vent Screen Retainer: Zinc-plated steel

Closing Cap: Aluminum

Adjusting Screw: Leaded-Brass

Approximate Weights

with Threaded body

Type CSB600/CSB620: 13 kg / 29 lbs

Type CSB650: 14 kg / 31 lbs

Type CSB604/CSB624: 14 kg / 31 lbs

Type CSB654: 15 kg / 33 lbs

with Flanged body

Add 5.2 kg / 11 lbs to weights listed

Designed, Tested and Evaluated Consistent With:

ANSI B16, ASME BPVC Section VIII Division I,

ASTM B117 (Corrosion Resistance), EN 334 and

EN 14382

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

2. Standard token relief set values listed in Tables 6a, 6b, 6c and 6d are based on -20 to 60°C / -4 to 140°F.

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

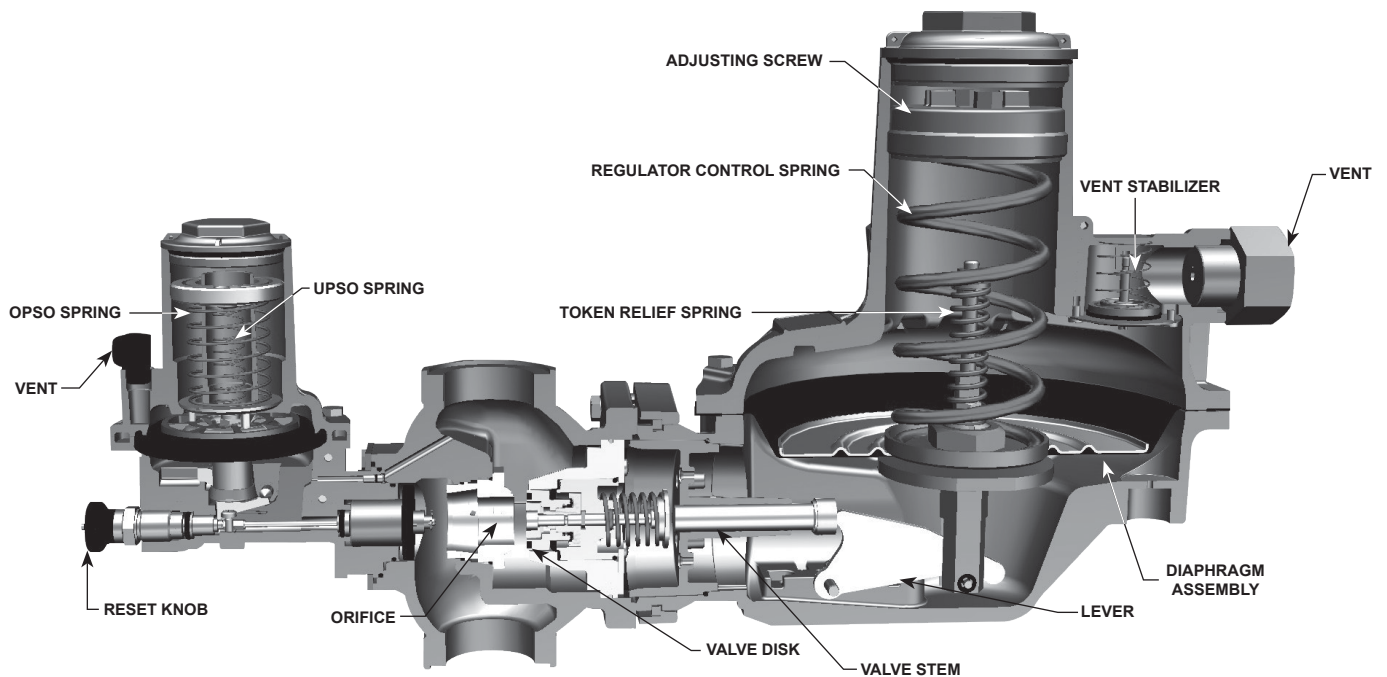


Figure 2. Type CSB604 Regulator with Type VSX8 Slam-Shut Internal View

Multiple Overpressure Protection Options Available

- **Token Internal 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, indicating that an overpressure situation is occurring.
- **Slam-Shut Protection** – discontinues gas service by shutting off the gas flow if there is an overpressure or underpressure condition.

Principle of 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 a spring). The action of the pusher post assembly, lever and valve stem moves the balanced port assembly closer to the orifice and reduces gas flow. If downstream demand increases, pressure under the diaphragm decreases. Spring force pushes the pusher post assembly downward and the balanced port assembly moves away from the orifice.

Installation

The CSB600 Series regulators may be installed in any position as long as the flow through the body is the same as indicated by the flow direction arrow on the body and the spring case vent is pointed downward (see Figure 5). If gas escaping through the CSB600 Series token 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, obstruction-free tubing or piping at least equal to the vent and the end of the vent pipe must be protected from anything that might clog it.

Downstream Control Line Connection

A CSB600 Series regulator with an “ET” or “EN” 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, Figure 4. A regulator with a downstream control line is typically used for monitoring installations or other applications where there is an 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. Refer to the CSB600 Series Instruction Manual for instruction regarding downstream control line installation.

CSB600 Series

Table 1. Available Configurations

TYPE NUMBER						OPTION	
C	S	B	6				
							PRESSURE CONSTRUCTION
0							Low Pressure Applications (Outlet Pressure: 9.0 to 110 mbar / 3.6 in.w.c. to 1.6 psig) ⁽²⁾
2							Medium Pressure Applications (Outlet Pressure: 61 to 780 mbar / 0.9 to 11.3 psig) ⁽²⁾
5							High Pressure Applications (Outlet Pressure: 0.70 to 4.0 bar / 10.2 to 58.0 psig) ⁽²⁾
							OVERPRESSURE PROTECTION
0							Without Overpressure Protection Module
0F							Without Overpressure Protection Module (Outlet Pressure: 9.0 to 110 mbar / 3.6 in.w.c. to 1.6 psig and 270 to 325 mbar / 3.9 to 4.7 psig only) ⁽²⁾
4							With Type VSX8 Slam-Shut Module ⁽¹⁾
4F							With Type VSX8 Slam-shut Module ⁽¹⁾ (Outlet Pressure: 9.0 to 110 mbar / 3.6 in.w.c. to 1.6 psig and 270 to 325 mbar / 3.9 to 4.7 psig only) ⁽²⁾
							PRESSURE REGISTRATION
						E	External
							RELIEF
						N	None
						T	Token Internal Relief ⁽³⁾
<p>Example: Type number CSB624ET: CSB600 Series regulator constructed for medium pressure applications, with Type VSX8 slam-shut module, with External pressure registration and with Token relief.</p> <p>1. Reference Instruction Manual D103127X012 for information regarding the Type VSX8 Slam-Shut Module.</p> <p>2. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.</p> <p>3. Token relief is not available for outlet pressure above 500 mbar / 8 psig.</p>							

Table 2. CSB600 Series Body Sizes, Material, End Connections and Cold Working Pressure Ratings

BODY MATERIAL	BODY SIZE		END CONNECTION	FACE-TO-FACE DIMENSION		BODY PRESSURE RATING	
	DN	NPS		mm	In.	bar	psig
Ductile Iron	32	1-1/4	NPT	155	6.10	17.2	250
	40	1-1/2					
	50	2					
	32	1-1/4	Rp				
	40	1-1/2					
	50	2					
	50	2	CL125 FF / CL150 FF	191	7.52		
	50	2		254	10.0		
	50	2		267	10.5		
	50	2	PN 10/16	254	10.0	16.0	232
	50	2		191	7.52		
	32	1-1/4	PN 16 Slip-On	200	7.87		
40	1-1/2	222		8.74			
WCC Steel	32	1-1/4	NPT	155	6.10	20.0	290
	40	1-1/2					
	50	2					
	32	1-1/4	Rp				
	40	1-1/2					
	50	2					
	50	2	CL150 RF	254	10.0	20.0	290
	50	2	PN 10/16			16.0	232

Table 3. Integral Strength (IS) Pressure Ratings⁽¹⁾

TYPE	MAXIMUM ALLOWABLE PRESSURE ⁽²⁾ / MAXIMUM EMERGENCY INLET PRESSURE		MAXIMUM OPERATING INLET PRESSURE ⁽²⁾	
	P _s		P _{umax}	
	bar	psig	bar	psig
CSB600, CSB604, CSB600F and CSB604F	4.0	58.0	4.0	58.0
CSB620F and CSB624F				
CSB620 and CSB624				
CSB650 and CSB654	5.0	72.5	5.0	72.5

1. Applicable only to applications where the inlet rating cannot exceed the outlet rating.
 2. For the Integral Strength (IS version), the maximum value of P_s and P_{umax} should be similar to the P_{SD} used for the Differential Strength (DS) version.

Table 4. Differential Strength (DS) Pressure Ratings and Flow and Sizing Coefficients

TYPE	SPECIFIC MAXIMUM ALLOWABLE PRESSURE / MAXIMUM EMERGENCY OUTLET PRESSURE ⁽¹⁾		MAXIMUM EMERGENCY INLET PRESSURE ⁽¹⁾		MAXIMUM OPERATING INLET PRESSURE ⁽¹⁾		ORIFICE SIZE		FLOW COEFFICIENTS WIDE OPEN			IEC SIZING COEFFICIENT		
	P _{SD}		P _s		P _{umax}		mm	In.	C _g	C _v	C ₁	X _T	F _D	F _L
	bar	psig	bar	psig	bar	psig								
CSB600 and CSB604	4.0	58.0	12.0	174	10.0	145	25	1.0	675	17.9	37.8	0.91	0.89	0.73
CSB600F and CSB604F					6.0	87								
CSB620F and CSB624F			20.0	290	16.0	232								
CSB620 and CSB624														
CSB650 and CSB654	5.0	72.5												

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

Table 5. CSB600 Series Primary Regulator Outlet Pressure Ranges

TYPE	OPERATING PRESSURE RANGE, W _d		PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
	mbar	psig			mm	In.	mm	In.
CSB600, CSB604, CSB600F and CSB604F	9 to 14	3.6 to 5.6 in. w.c.	GE30336X012	Silver	3.00	0.118	224	8.82
	13 to 24	5.2 to 9.6 in. w.c.	ERSA01138A0	Red	3.50	0.138	235	9.25
	22 to 39	8.8 to 15.7 in. w.c.	GE30338X012	Black Stripe	4.00	0.156	172	6.78
	32 to 50	12.8 to 20.1 in. w.c.	GE30339X012	Purple	4.30	0.171	187	7.35
	42 to 70	16.9 to 28.1 in. w.c.	GE30340X012	White Stripe	4.62	0.182	188	7.40
	61 to 110	0.9 to 1.6	ERSA03656A0	Dark Green	4.88	0.192	224	8.82
CSB620 and CSB624	61 to 110	0.9 to 1.6	ERSA03656A0	Dark Green	4.88	0.192	224	8.82
	105 to 220	1.5 to 3.2	ERSA03657A0	Blue	5.94	0.234	217	8.54
	210 to 380	3.1 to 5.5	GG06247X012	Black	8.00	0.315	206	8.11
	320 to 570	4.6 to 8.3	ERSA01582A0	Red with White Stripe	8.71	0.343	177	6.97
	510 to 780	7.4 to 11.3	ERSA05055A0	Blue with White Stripe	10.0	0.394	181	7.13
CSB620F and CSB624F	270 to 325	3.9 to 4.7	ERAA11747A0	Black with White Stripe	6.35	0.250	227	8.94
CSB650 and CSB654	0.7 to 1.19 bar	10.2 to 17.3	GE30345X012	Purple Stripe	9.00	0.354	225	8.86
	1.05 to 2.7 bar	15.2 to 39.2	GE30346X012	Brown	11.0	0.433	226	8.88
	2.3 to 3.25 bar	33.4 to 47.1	ERSA01125A0	Grey with Red Stripe	12.6	0.496	225	8.86
	3.1 to 4.0 bar	45 to 58.0	ERSA01126A0	Grey with Orange Stripe	13.7	0.539	226	8.88

CSB600 Series

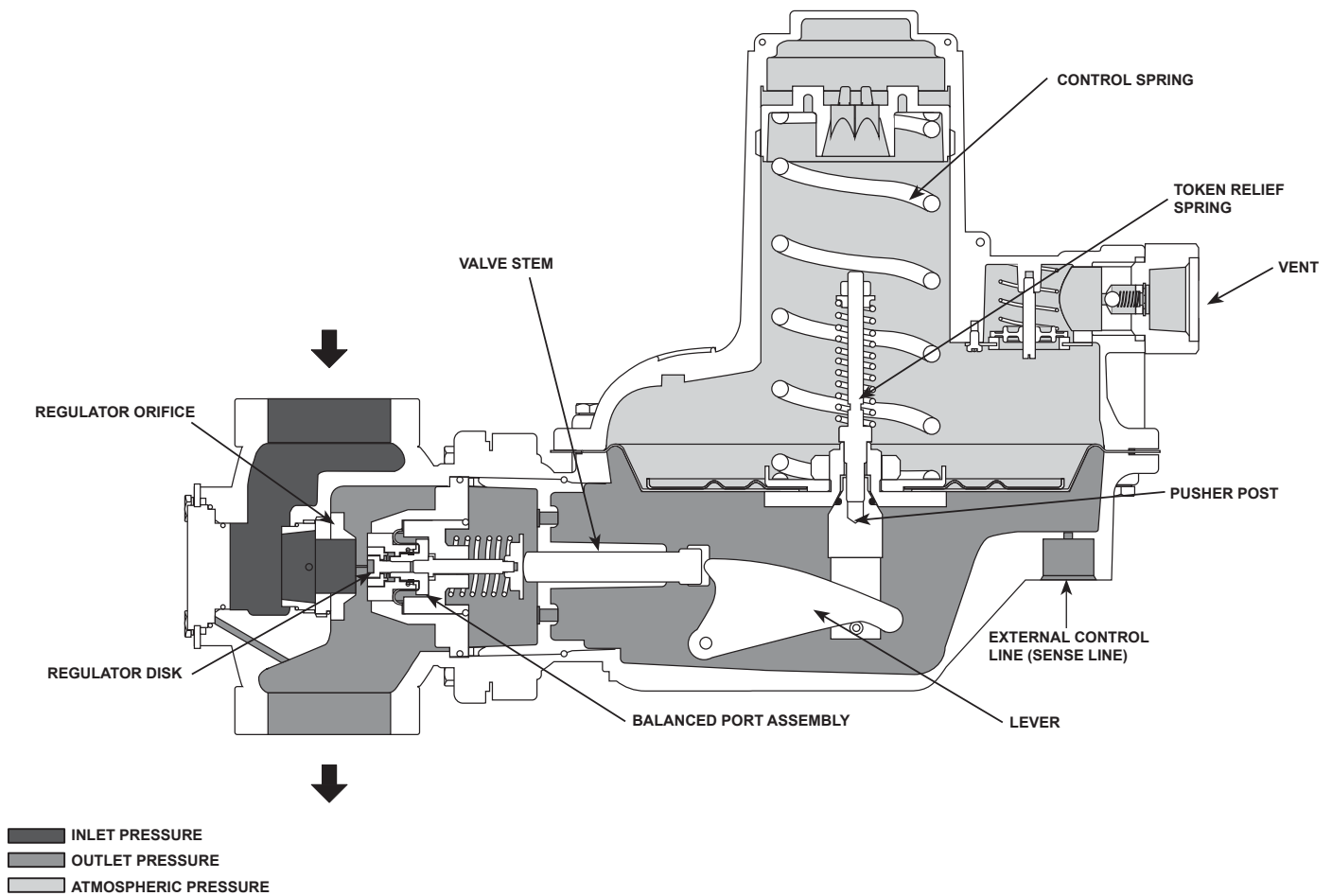


Figure 3. CSB600 Series External Registration Operational Schematic

Internal Token Relief

CSB600 Series regulators with a “T” in the type number, provide a low capacity or token internal relief to help minimize overpressure. The token relief also acts to avoid nuisance trips of the slam-shut mechanism due to pressure increase from thermal expansion or overpressure caused by orifice damage such as nicks and dents.

Overpressure Protection

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 to ensure that the critical limits in the Specifications section are not exceeded. Regulator operation within ratings does not preclude the possibility of damage from external sources or from debris in the pipeline.

The CSB600 Series regulators have outlet pressure ratings that are lower than their inlet pressure ratings. A pressure-relieving or pressure-limiting device is needed for the CSB600 Series that do not have a slam-shut device installed.

Types CSB604, CSB604F, CSB624F, CSB624 and CSB654 regulators rely on Type VSX8 slam-shut device for overpressure protection. In the event that outlet pressure rises above or falls below the pressure setting of the Type VSX8, the slam-shut device will activate or trip, thereby stopping flow through to the downstream system. To restart flow to the downstream system, the Type VSX8 must be reset.

Type CSB604 regulators with a “T” in their type number provide a low capacity (Token) internal relief which provides sufficient relief to preclude the Type VSX8 tripping due to pressure rise caused by thermal expansion or overpressure due to orifice damage such as nicks and dents.

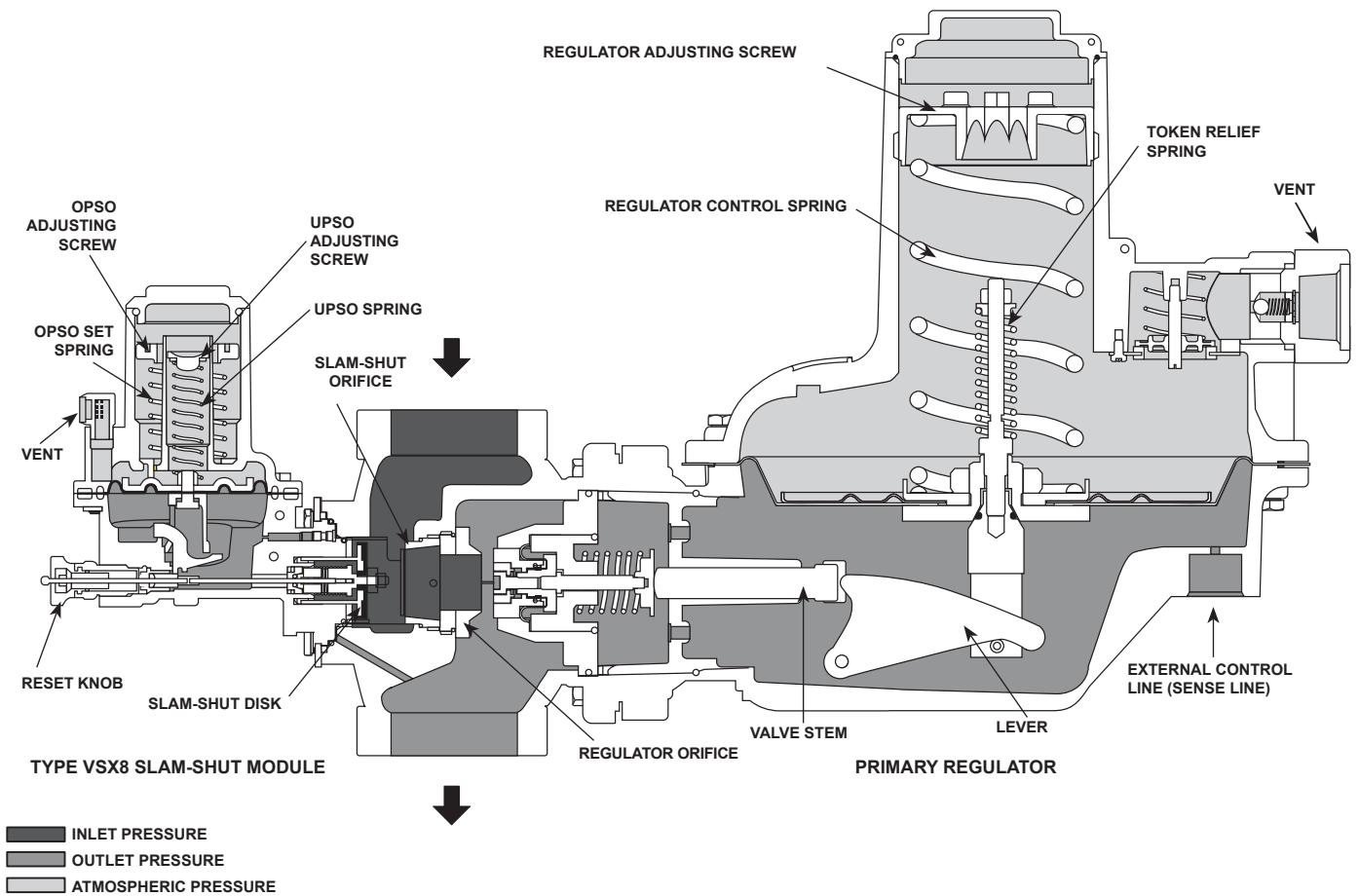


Figure 4. Type CSB604ET Externally Registered Regulator and Slam-Shut Operational Schematic

Type VSX8 Slam-Shut Device

The Type VSX8 slam-shut device on the Type CSB604 regulator is a fast-acting shutoff device that provides overpressure (OPZO) or over and underpressure (OPZO/USPO) protection by shutting off the flow of gas to the downstream system. The Type VSX8's actions are independent of the Type CSB604 regulator and of variations to the inlet pressure. The Type VSX8 uses external pressure registration and requires a downstream control line regardless if the regulator is internally or externally registered. Refer to the CSB600 Series Instruction Manual for instructions regarding downstream control line installation.

Refer to Figure 4, shutoff disk is normally located in the open (reset) position. If the pressure below the diaphragm increases (or decreases) reaching the Type VSX8 setpoint, the diaphragm will travel upwards (or downwards) to release the trip mechanism which allows the spring force on the stem to push the stem and disk against the seat, shutting off all gas flow. The manual reset has an internal bypass to equalize the reset pressure on either side on the shutoff disk.

Note

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

CSB600 Series

Table 6a. North American Overpressure Shut-off OPSO Only Ranges

REGULATOR			SLAM SHUT DEVICE						
Type Number	Typical Setpoint	Spring Range	Type Number	Token Relief Set	Relief Range Shown as a % of Regulator Setpoint		Required Difference Between Token Relief and OPSO	Over Pressure Shut-off (OPSO)	Factory Set
	psig	psig		psig	min	max	psig	Set Range	OPSO
						psig			
CSB604 CSB604F	7 in. w.c.	5.2 to 9.6 in. w.c.	VSX8L	12 in. w.c.	170	215	3.2 in. w.c.	12 to 24 in. w.c.	22 in. w.c.
	11 in. w.c.	8.8 to 15.7 in. w.c.		17 in. w.c.	150	160	4.0 in. w.c.	16 in. w.c. to 1.6 psig	25 in. w.c.
	14 in. w.c.	12.8 to 20.0 in. w.c.		21 in. w.c.	150	160	4.0 in. w.c.	24 in. w.c. to 2.8 psig	1.1
	1.0	24 in. w.c. to 1.6 psig		1.4	140	150	6.4 in. w.c.	1.4 to 4.1	2.0
CSB624 CSB624F	2.0	1.5 to 3.2		2.6	130	140	0.6	2.0 to 7.3	3.5
	3.0			3.8	125	140	0.6		5.0
	5.0	3.1 to 5.5		VSX8H	6.2	125	140	0.7	7.0
	10.0	7.4 to 11.3							12.0
CSB654	15.0	10.2 to 17.3							19.0
	20.0	15.2 to 39.2							25.0
	30.0		35.0						
40.0	33.4 to 47.1	45.0							

Grey areas indicate that token relief is not available above 8 psig setpoint.
 1. Maximum OPSO set point truncated to reflect maximum outlet pressure for spring range.

Table 6b. European Overpressure Shut-off OPSO Only Ranges

REGULATOR			SLAM SHUT DEVICE													
Type Number	Typical Setpoint	Spring Range	Type Number	Token Relief Set	Relief Range Shown as a % of Regulator Setpoint		Required Difference Between Token Relief and OPSO	Over Pressure Shut-off (OPSO)	Factory Set							
	mbar	mbar		mbar	min	max	mbar	Set Range	OPSO							
						mbar										
CSB604F	10	9 to 14	VSX8L	17	170	215	8	30 to 60	32							
	15	13 to 24		26	170	215	6	30 to 60	32							
	20	13 to 24		34	170	215	6	30 to 60	40							
	21	13 to 24		36	170	215	4	30 to 60	40							
	27	22 to 39		41	150	160	5	30 to 60	46							
	30			45	150	160	10	30 to 60	60							
	35			53	150	160	10	40 to 110	70							
	50	42 to 70		70	140	158	16	60 to 193	90							
	60			84	140	158	16		105							
	75			98	130	140	20		130							
CSB604	10	9 to 14		17	170	215	8	30 to 60	40							
	15	13 to 24		26	170	215	10	30 to 60	50							
	20	13 to 24		34	170	215	10	30 to 60	55							
	21	13 to 24		36	170	215	10	30 to 60	55							
	27	22 to 39		41	150	160	10	30 to 60	55							
	30			45	150	160	10	30 to 60	60							
	35			53	150	160	10	40 to 110	70							
	50	42 to 70		70	140	158	16	60 to 193	90							
	60			84	140	158	16		105							
	75			98	130	140	20		130							
CSB624	100	61 to 110	130	130	140	20	60 to 193	170								
	120		156	130	140	40		205								
	150		195	130	140	40		250								
	160	105 to 220	208	130	140	40	95 to 280	265								
	200	105 to 220	250	125	140	50	138 to 500	330								
	300	210 to 380	375	125	140	50	138 to 500	450								
	500	320 to 570		625	125	140	60	221 to 760	700							
	600	510 to 780						400 to 915 ⁽¹⁾	840							
	750							400 to 1100 ⁽¹⁾	1050							
	CSB624F	300						270 to 325					138 to 500	450		
CSB654	1 bar	0.7 to 1.19 bar						400 to 1450					1320			
	1.2 bar	1.05 to 2.7 bar											900 to 3000	1600		
	1.5 bar															
	2 bar															
	3 bar	2.3 to 3.25 bar													3400	
4 bar	3.1 to 4 bar					4400										

Grey areas indicate that token relief is not available above 500 mbar setpoint.
 1. Maximum OPSO set point truncated to reflect maximum outlet pressure for spring range.

Table 6c. North American Overpressure and Underpressure Shut-off UPSO/OPSO Ranges

REGULATOR			SLAM SHUT DEVICE									
Type Number	Typical Setpoint	Spring Range	Type Number	Token Relief Set	Relief range shown as a% of Regulator Setpoint		Required Difference Between Token Relief and OPSO	Under Pressure Shut-off (UPSO)	Over Pressure Shut-off (OPSO)	Factory Set		
					Set Range	Set Range Over UPSO Setpoint		UPSO	Adjusted OPSO Range	OPSO		
	psig	psig		psig	min	max	psig	psig	psig	psig	psig	
CSB604 CSB604F	7 in. w.c.	5.2 to 9.6 in. w.c.	VSX8L	12 in. w.c.	170	215	3.2 in. w.c.	3.0 to 12 in. w.c.	16 to 29 in. w.c.	3 in. w.c.	19 in. w.c. to 1.2 psig	22 in. w.c.
	11 in. w.c.	8.8 to 15.7 in. w.c.		17 in. w.c.	150	160	4.0 in. w.c.			6 in. w.c.	22 in. w.c. to 1.3 psig	25 in. w.c.
	14 in. w.c.	12.8 to 20.0 in. w.c.		21 in. w.c.	150	160	4.0 in. w.c.			9 in. w.c.	29 in. w.c. to 1.3 psig	1.1
1.0	24 in. w.c. to 1.6 psig	1.4		140	150	6.4 in. w.c.	10 in. w.c. to 2.3 psig	1.2 to 3.2	14 in. w.c.	1.7 to 3.7	2.0	
2.0	1.5 to 3.2	2.6		130	140	0.6			1.0	2.2 to 4.2	3.5	
3.0		3.8		125	140	0.6			2.0	4.6 to 7.6	5.0	
5.0		3.1 to 5.5		6.2	125	140			0.7	3.0	5.6 to 8.6	7.0
10.0	7.4 to 11.3						1.5 to 10.9	6.7 to 13.5	5.0	8.5 to 13.2	12.0	
15.0	10.2 to 17.3								7.0	13.7 to 20.5	19.0	
20.0	15.2 to 39.2								7.3 to 29.0	15.2 to 22.8	10.0	25.2 to 32.8
30.0		15.0	33.1 to 48.4	35.0								
40.0	33.4 to 47.1	VSX8H						18.1 to 33.4	20.0	38.1 to 53.4	45.0	

Grey areas indicate that token relief is not available above 8 psig setpoint.

Table 6d. European Overpressure and Underpressure Shut-off UPSO/OPSO Ranges

REGULATOR			SLAM SHUT DEVICE									
Type Number	Typical Setpoint	Spring Range	Type Number	Token Relief Set	Relief range shown as a% of Regulator Setpoint		Required Difference Between Token Relief and OPSO	Under Pressure Shut-off (UPSO)	Over Pressure Shut-off (OPSO)	Factory Set		
					Set Range	Set Range Over UPSO Setpoint		UPSO	Adjusted OPSO Range	OPSO		
	mbar	mbar		mbar	mbar	min	max	mbar	mbar	mbar	mbar	mbar
CSB604F	15	13 to 24	VSX8L	26	170	215	8	7 to 11	30 to 44	8	38 to 52	40
	20	13 to 24		34	170	215	6	7 to 11	30 to 44	10	40 to 54	40
	21	13 to 24		36	170	215	4	7 to 11	30 to 44	10	40 to 54	40
	27	22 to 39		41	150	160	5	7 to 15	32 to 44	14	46 to 58	46
	30	22 to 39		45	150	160	10	7 to 30	40 to 76	15	55 to 91	60
	35	22 to 39		53	150	160	10	7 to 30	40 to 76	18	58 to 94	70
	50	42 to 70		70	140	158	16	10 to 75	50 to 80	25	75 to 105	90
	60			84	140	158	16		50 to 80	30	80 to 110	105
	75	61 to 110		98	130	140	20	25 to 160	83 to 221	38	121 to 259	130
	15	13 to 24		26	170	215	8	7 to 30	40 to 55	8	48 to 63	50
20	13 to 24	34		170	215	10	7 to 30	40 to 55	10	50 to 65	55	
21	13 to 24	36		170	215	10	7 to 30	40 to 55	10	50 to 65	55	
27	22 to 39	41		150	160	10	7 to 30	40 to 55	14	54 to 69	55	
30		45		150	160	10	7 to 30	40 to 55	15	55 to 70	60	
35	42 to 70	53		150	160	10	7 to 30	45 to 76	18	63 to 94	70	
50		70		140	158	16	10 to 75	50 to 80	25	75 to 105	90	
60		84		140	158	16		50 to 80	30	80 to 110	105	
75		98		130	140	20	25 to 160	83 to 221	38	121 to 259	130	
100	61 to 110	130		130	140	20		83 to 221	50	133 to 271	170	
120	105 to 220	156		130	140	40	100 to 500		114 to 261	100	214 to 361	330
150		195	130	140	40	179 to 386		150	329 to 536	450		
160		208	130	140	40	25 to 160	83 to 221	80	163 to 301	265		
200		250	125	140	50		100 to 500	114 to 261	100	214 to 361	330	
300		210 to 380	375	125	140	50		179 to 386	150	329 to 536	450	
500		320 to 570	625	125	140	60	241 to 565	250	491 to 815	700		
600	510 to 780						100 to 500	241 to 565	300	541 to 865	840	
750							100 to 500	460 to 932	375	835 to 1120 ⁽¹⁾	1050	
CSB624F	300	270 to 325						100 to 750	179 to 386	200	379 to 586	400
CSB654 GrDF	1 bar	0.7 to 1.19 bar										
CSB654	1 bar	0.7 to 1.19 bar										
	1.2 bar	1.05 to 2.7 bar						500 to 2000	1050 to 1570	600	1650 to 2170	1650
	1.5 bar								750	1800 to 2320	1900	
	2 bar							1000	2250 to 3300	2400		
	3 bar	2.3 to 3.25 bar						500 to 2800	1250 to 2300	1500	2750 to 3800	3400
4 bar	3.1 to 4 bar	2100 to 3750	2000	4100 to 5000 ⁽¹⁾	4400							

Grey areas indicate that token relief is not available above 500 mbar setpoint.

1. Maximum OPSO set point truncated to reflect maximum outlet pressure for spring range.

Example: If a non-standard setpoint is needed, see the following example for the proper use of Tables 6a, 6b, 6c and 6d. In this example, the non-standard regulator setpoint is 140 mbar / 2.0 psig. The minimum factory token relief set pressure is 130% of the non-standard setpoint. The resulting token relief set pressure is 183 mbar / 2.6 psig. The minimum factory OPSO and UPSO set pressures are 165% and 50% of the non-standard setpoint, respectively. The resulting minimum settings are: OPSO = 231 mbar / 3.4 psig and UPSO = 70 mbar / 1.0 psig.

CSB600 Series

Capacity Information

Tables 7 to 42 provide natural gas regulating capacities at selected inlet pressures and outlet pressure settings for the CSB600 Series, which includes configurations that include the slam shut. Flows are in Sm³/h (16°C and 1.01325 bar) and SCFH (60°F and 14.7 psia) of 0.6 specific gravity natural gas.

To determine equivalent capacities for air, propane, butane or nitrogen, multiply the capacity value 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.

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

Table 7. CSB600 Series External Sense Flow Capacities for 20 mbar / 8 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
20 mbar	13 to 24 mbar	ERSA01138A0 / Red
8 in. w.c.	5.2 to 9.6 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	92	3249	96	3390	98	3461
0.3	4.4	116	4096	124	4379	124	4379
0.5	7.3	183	6462	184	6498	180	6357
0.8	11.6	190	6710	191	6745	191	6745
1	14.5	280	9888	322	11,371	280	9888
1.5	21.8	300	10,594	345	12,183	428	15,114
2	29.0	307	10,841	400	14,126	500	17,657
2.5	36.3	450	15,891	512	18,081	530	18,716
3	43.5	470	16,598	700	24,720	977	34,502
4	58.0	470	16,598	700	24,720	700	24,720
5	72.5	470	16,598	700	24,720	700	24,720
6	87.0	470	16,598	700	24,720	700	24,720
8	116	483	17,057	700	24,720	670	23,660
10	145	500	17,657	500	17,657	550	19,423
12	174						
14	203						
16	232						

- Grey areas indicate limited capacities due to boost effects.
 1. Industry performances are obtained at single curve at single inlet condition.

Table 8. CSB600 Series External Sense Flow Capacities for 20 mbar / 8 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
20 mbar	13 to 24 mbar	ERSA01138A0 / Red
8 in. w.c.	5.2 to 9.6 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	181	6392	185	6533	204	7204
0.3	4.4	230	8122	240	8475	258	9111
0.5	7.3	280	9888	334	11,795	334	11,795
0.8	11.6	350	12,360	446	15,750	448	15,821
1	14.5	421	14,867	530	18,716	532	18,787
1.5	21.8	722	25,497	555	19,599	705	24,896
2	29.0	802	28,322	900	31,783	940	33,195
2.5	36.3	802	28,322	1000	35,314	1100	38,845
3	43.5	802	28,322	1200	42,377	1307	46,155
4	58.0	802	28,322	1500	52,971	1550	54,737
5	72.5	802	28,322	1600	56,502	1989	70,240
6	87.0	867	30,617	1600	56,502	1100	38,845
8	116	900	31,783	1600	56,502	1110	39,199
10	145	900	31,783	1600	56,502	1000	35,314
12	174						
14	203						
16	232						

- Grey areas indicate limited capacities due to boost effects.
 1. Industry performances are obtained at single curve at single inlet condition.

Table 9. CSB600 Series External Sense Flow Capacities for 30 mbar / 12 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
30 mbar	22 to 39 mbar	GE30338X012 / Black Stripe
12 in. w.c.	8.8 to 15.7 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	89	3143	92	3249	100	3531
0.3	4.4	112	3955	136	4803	138	4873
0.5	7.3	140	4944	147	5191	140	4944
0.8	11.6	160	5650	181	6392	177	6251
1	14.5	240	8475	239	8440	203	7169
1.5	21.8	280	9888	346	12,219	280	9888
2	29.0	307	10,841	450	15,891	365	12,890
2.5	36.3	430	15,185	650	22,954	620	21,895
3	43.5	480	16,951	800	28,251	830	29,311
4	58.0	700	24,720	800	28,251	900	31,783
5	72.5	800	28,251	800	28,251	1050	37,080
6	87.0	800	28,251	800	28,251	1100	38,845
8	116	640	22,601	800	28,251	1100	38,845
10	145	640	22,601	800	28,251	900	31,783
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 10. CSB600 Series External Sense Flow Capacities for 30 mbar / 12 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
30 mbar	22 to 39 mbar	GE30338X012 / Black Stripe
12 in. w.c.	8.8 to 15.7 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	160	5650	165	5827	194	6851
0.3	4.4	198	6992	220	7769	237	8369
0.5	7.3	255	9005	280	9888	280	9888
0.8	11.6	320	11,300	317	11,195	363	12,819
1	14.5	404	14,267	434	15,326	439	15,503
1.5	21.8	520	18,363	550	19,423	570	20,129
2	29.0	751	22,954	800	28,251	820	28,957
2.5	36.3	800	28,251	900	31,783	920	32,489
3	43.5	850	28,251	1000	35,314	1277	45,096
4	58.0	920	32,489	1370	48,380	1558	55,019
5	72.5	940	33,195	1500	52,971	1600	56,502
6	87.0	960	33,901	1600	56,502	1650	58,268
8	116	1000	35,314	1600	56,502	1650	58,268
10	145	1200	42,377	1600	56,502	1650	58,268
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 11. CSB600 Series External Sense Flow Capacities for 40 mbar / 16 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
40 mbar	32 to 50 mbar	GE30339X012 / Purple
16 in. w.c.	12.8 to 20.1 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	99	3496	103	3637	103	3637
0.3	4.4	125	4414	181	6392	181	6392
0.5	7.3	175	6180	200	7063	172	6074
0.8	11.6	245	8652	253	8934	229	8087
1	14.5	280	9888	325	11,477	332	11,724
1.5	21.8	410	14,479	477	16,845	410	14,479
2	29.0	525	18,540	660	23,307	570	20,129
2.5	36.3	580	20,482	700	24,720	771	27,227
3	43.5	800	21,188	750	26,486	950	33,548
4	58.0	880	21,188	800	28,251	1000	35,314
5	72.5	880	21,188	800	28,251	1100	38,845
6	87.0	880	21,188	800	28,251	1100	38,845
8	116	880	21,188	800	28,251	1100	38,845
10	145	880	21,188	800	28,251	1000	35,314
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 12. CSB600 Series External Sense Flow Capacities for 40 mbar / 16 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
40 mbar	32 to 50 mbar	GE30339X012 / Purple
16 in. w.c.	12.8 to 20.1 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	150	5297	170	6003	170	6003
0.3	4.4	190	6710	220	7769	220	7769
0.5	7.3	290	10,241	314	11,089	340	12,007
0.8	11.6	422	14,903	336	11,866	400	14,126
1	14.5	470	16,598	525	18,540	530	18,716
1.5	21.8	570	20,129	660	23,307	710	25,073
2	29.0	800	28,251	900	31,783	790	27,898
2.5	36.3	850	30,017	1012	35,738	1109	39,163
3	43.5	950	33,548	1200	42,377	1350	47,674
4	58.0	1400	49,440	1500	52,971	1700	60,034
5	72.5	1600	56,502	1600	56,502	1800	63,565
6	87.0	1800	63,565	1600	56,502	2270	80,163
8	116	2000	70,628	1600	56,502	2950	104,176
10	145	1400	49,440	1600	56,502	3605	127,307
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

CSB600 Series

Table 13. CSB600 Series External Sense Flow Capacities for 50 mbar / 20 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
50 mbar	42 to 70 mbar	GE30340X012 / White Stripe
20 in. w.c.	16.9 to 28.1 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	103	3637	105	3708	110	3885
0.3	4.4	135	4767	137	4838	151	5332
0.5	7.3	170	6003	188	6639	170	6003
0.8	11.6	252	8899	264	9323	239	8440
1	14.5	333	11,760	332	11,724	332	11,724
1.5	21.8	400	14,126	473	16,704	473	16,704
2	29.0	569	20,094	700	24,720	700	24,720
2.5	36.3	630	22,248	750	26,486	750	26,486
3	43.5	700	24,720	800	28,251	800	28,251
4	58.0	750	26,486	900	31,783	1100	38,845
5	72.5	820	28,957	900	31,783	1200	42,377
6	87.0	850	30,017	900	31,783	1200	42,377
8	116	882	31,147	1000	35,314	1200	42,377
10	145	882	31,147	1010	35,667	1200	42,377
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 14. CSB600 Series External Sense Flow Capacities for 50 mbar / 20 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
50 mbar	42 to 70 mbar	GE30340X012 / White Stripe
20 in. w.c.	16.9 to 28.1 in.w.c.	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	110	3885	170	6003	201	7098
0.3	4.4	184	6498	230	8122	248	8758
0.5	7.3	365	12,890	330	11,654	361	12,748
0.8	11.6	420	14,832	453	15,997	409	14,443
1	14.5	499	17,622	523	18,469	480	16,951
1.5	21.8	685	24,190	693	24,473	698	24,649
2	29.0	823	29,063	880	31,076	880	31,076
2.5	36.3	1046	36,938	1000	35,314	1000	35,314
3	43.5	1223	43,189	1120	39,552	1218	43,012
4	58.0	1495	52,794	1400	49,440	1628	57,491
5	72.5	1783	62,965	1650	58,268	1950	68,862
6	87.0	2165	76,455	1800	63,565	2290	80,869
8	116	2619	92,487	2100	74,159	3067	108,308
10	145	2650	93,582	2300	81,222	3682	130,026
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 15. CSB600 Series External Sense Flow Capacities for 75 mbar / 30 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
75 mbar	61 to 110 mbar	ERSA03656A0 / Dark Green
30 in. w.c.	0.9 to 1.6 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	93	3284	85	3002	105	3708
0.3	4.4	127	4485	109	3849	120	4238
0.5	7.3	170	6003	181	6392	198	6992
0.8	11.6	225	7946	235	8299	230	8122
1	14.5	291	10,276	316	11,159	321	11,336
1.5	21.8	390	13,772	413	14,585	390	13,772
2	29.0	570	20,129	570	20,129	570	20,129
2.5	36.3	623	22,001	720	25,426	720	25,426
3	43.5	660	23,307	750	26,486	785	27,721
4	58.0	740	26,132	860	30,370	1100	38,845
5	72.5	800	28,251	900	31,783	1250	44,142
6	87.0	800	28,251	900	31,783	1250	44,142
8	116	800	28,251	1050	37,080	1250	44,142
10	145	800	28,251	1050	37,080	1250	44,142
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 16. CSB600 Series External Sense Flow Capacities for 75 mbar / 30 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
75 mbar	61 to 110 mbar	ERSA03656A0 / Dark Green
30 in. w.c.	0.9 to 1.6 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	131	4626	173	6109	199	7027
0.3	4.4	189	6674	223	7875	250	8828
0.5	7.3	332	11,724	260	9182	348	12,289
0.8	11.6	420	14,832	403	14,232	411	14,514
1	14.5	505	17,834	514	18,151	536	18,928
1.5	21.8	671	23,696	664	23,448	700	24,720
2	29.0	829	29,275	877	30,970	895	31,606
2.5	36.3	1000	35,314	937	33,089	940	33,195
3	43.5	1214	42,871	1150	40,611	1231	43,472
4	58.0	1363	48,133	1430	50,499	1555	54,913
5	72.5	1753	61,905	1700	60,034	1975	69,745
6	87.0	2125	75,042	2100	74,159	2326	82,140
8	116	2726	96,266	2700	95,348	3075	108,591
10	145	2800	98,879	3000	105,942	3661	129,285
12	174						
14	203						
16	232						
16	232						

Grey areas indicate limited capacities due to boost effects.
1. Industry performances are obtained at single curve at single inlet condition.

Table 17. CSB600 Series External Sense Flow Capacities for 100 mbar / 40 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
100 mbar	61 to 110 mbar	ERSA03656A0 / Dark Green
40 in. w.c.	0.9 to 1.6 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	90	3178	105	3708	100	3531
0.3	4.4	139	4909	130	4591	120	4238
0.5	7.3	200	7063	225	7946	190	6710
0.8	11.6	223	7875	280	9888	260	9182
1	14.5	297	10,488	374	13,207	320	11,300
1.5	21.8	396	13,984	450	15,891	450	15,891
2	29.0	474	16,739	581	20,517	610	21,542
2.5	36.3	520	18,363	600	21,188	650	22,954
3	43.5	560	19,776	700	24,720	770	27,192
4	58.0	820	28,957	750	26,486	900	31,783
5	72.5	1000	35,314	900	31,783	1000	35,314
6	87.0	1350	47,674	900	31,783	1100	38,845
8	116	1700	60,034	1300	45,908	1350	47,674
10	145	2260	79,810	1500	52,971	1800	63,565
12	174	2260	79,810	2000	70,628	2100	74,159
14	203	2800	98,879	2350	82,988	2400	84,754
16	232	2800	98,879	2700	95,348	2700	95,348

1. Industry performances are obtained at single curve at single inlet condition.

Table 18. CSB600 Series External Sense Flow Capacities for 100 mbar / 40 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
100 mbar	61 to 110 mbar	ERSA03656A0 / Dark Green
40 in. w.c.	0.9 to 1.6 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	159	5615	150	5297	180	6357
0.3	4.4	201	7098	250	8829	240	8475
0.5	7.3	263	9288	350	12,360	350	12,360
0.8	11.6	400	14,126	450	15,891	490	17,304
1	14.5	470	16,598	543	19,176	580	20,482
1.5	21.8	665	23,484	714	25,214	760	26,839
2	29.0	849	29,982	870	30,723	940	33,195
2.5	36.3	934	32,983	991	34,996	1000	35,314
3	43.5	1133	40,011	1100	38,845	1120	39,552
4	58.0	1458	51,488	1300	45,908	1600	56,502
5	72.5	1700	60,034	1550	54,737	1960	69,215
6	87.0	1841	65,013	1700	60,034	2260	79,810
8	116	2200	77,691	2100	74,159	2900	102,411
10	145	2600	91,816	2300	81,222	3600	127,130
12	174	2832	100,009	2550	90,051	4200	148,319
14	203	2832	100,009	3500	123,599	4700	165,976
16	232	2832	100,009	4000	141,256	5000	176,570

1. Industry performances are obtained at single curve at single inlet condition.

Table 19. CSB600 Series External Sense Flow Capacities for 150 mbar / 60 in. w.c. Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
150 mbar	105 to 220 mbar	ERSA03657A0 / Blue
60 in. w.c.	1.5 to 3.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	80	2825	88	3108	88	3108
0.3	4.4	120	4238	130	4591	130	4591
0.5	7.3	159	5615	206	7275	206	7275
0.8	11.6	200	7063	309	10,912	309	10,912
1	14.5	253	8934	363	12,819	363	12,819
1.5	21.8	312	11,018	480	16,951	480	16,951
2	29.0	482	17,021	621	21,930	621	21,930
2.5	36.3	652	23,025	722	25,497	722	25,497
3	43.5	668	23,590	839	29,628	839	29,628
4	58.0	992	35,031	1000	35,314	1090	38,492
5	72.5	1190	42,024	1160	40,964	1200	42,377
6	87.0	1500	52,971	1380	48,733	1550	54,737
8	116	1900	67,097	1770	62,506	2200	77,691
10	145	2420	85,460	2280	80,516	2800	98,879
12	174	2530	89,344	2640	93,229	3000	105,942
14	203	2640	93,229	3230	114,064	3700	130,662
16	232	2950	104,176	3390	119,714	3800	134,193

1. Industry performances are obtained at single curve at single inlet condition.

Table 20. CSB600 Series External Sense Flow Capacities for 150 mbar / 60 in. w.c. Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
150 mbar	105 to 220 mbar	ERSA03657A0 / Blue
60 in. w.c.	1.5 to 3.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.2	2.9	80	2825	137	4838	140	4944
0.3	4.4	159	5615	207	7310	180	6357
0.5	7.3	272	9605	283	9994	320	11,300
0.8	11.6	386	13,631	357	12,607	460	16,244
1	14.5	481	16,986	471	16,633	530	18,716
1.5	21.8	665	23,484	609	21,506	730	25,779
2	29.0	810	28,604	779	27,510	920	32,489
2.5	36.3	935	33,019	934	32,983	1110	39,199
3	43.5	1000	35,314	1104	38,987	1270	44,849
4	58.0	1133	40,011	1218	43,012	1580	55,796
5	72.5	1730	61,093	1700	60,034	1940	68,509
6	87.0	2040	72,041	1950	68,862	2280	80,516
8	116	2580	91,110	2390	84,400	2940	103,823
10	145	2550	90,051	3220	113,711	3600	127,130
12	174	2710	95,701	3880	137,018	4200	148,319
14	203	2890	102,057	4300	151,850	4300	151,850
16	232	3120	110,180	4530	159,972	5400	190,696

1. Industry performances are obtained at single curve at single inlet condition.

CSB600 Series

Table 21. CSB600 Series External Sense Flow Capacities for 300 mbar / 4.35 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
300 mbar	210 to 380 mbar	GG06247X012 / Black
4.35 psig	3.1 to 5.5 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.5	7.3	160	5650	178	6286	158	5580
0.8	11.6	210	7416	255	9005	249	8793
1	14.5	310	10,947	336	11,866	310	10,947
1.5	21.8	420	14,832	472	16,668	447	15,785
2	29.0	540	19,070	595	21,012	532	18,787
2.5	36.3	620	21,895	707	24,967	650	22,954
3	43.5	790	27,898	825	29,134	778	27,474
4	58.0	1000	35,314	1000	35,314	1061	37,468
5	72.5	1250	44,143	1250	44,143	1345	47,497
6	87.0	1470	51,912	1470	51,912	2000	70,628
8	116	1980	69,922	1700	60,034	2200	77,691
10	145	2400	84,754	2100	74,159	2800	98,879
12	174	2400	84,754	2200	77,691	3200	113,005
14	203	3000	105,942	2400	84,754	3400	120,068
16	232	3400	120,068	2560	90,404	3600	127,130

1. Industry performances are obtained at single curve at single inlet condition.

Table 22. CSB600 Series External Sense Flow Capacities for 300 mbar / 4.35 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
300 mbar	210 to 380 mbar	GG06247X012 / Black
4.35 psig	3.1 to 5.5 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.5	7.3	200	7063	273	9641	291	10,276
0.8	11.6	340	12,007	408	14,408	453	15,997
1	14.5	410	14,479	490	17,304	530	18,716
1.5	21.8	650	22,954	515	18,187	740	26,132
2	29.0	820	28,957	820	28,957	930	32,842
2.5	36.3	849	29,982	950	33,548	1100	38,845
3	43.5	850	30,017	1100	38,845	1270	44,849
4	58.0	1076	37,998	1400	49,440	1600	56,502
5	72.5	1400	49,440	1588	56,079	1900	67,097
6	87.0	1700	60,034	1901	67,132	2265	79,986
8	116	2039	72,005	2000	70,628	2900	102,411
10	145	2548	89,980	2450	86,519	3600	127,130
12	174	2800	98,879	2840	100,292	4200	148,319
14	203	3100	109,473	3200	113,005	4700	165,976
16	232	3400	120,068	3600	127,130	5500	194,227

1. Industry performances are obtained at single curve at single inlet condition.

Table 23. CSB600 Series External Sense Flow Capacities for 500 mbar / 7.25 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
500 mbar	320 to 570 mbar	ERSA01582A0 / Red with White Stripe
7.25 psig	4.6 to 8.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.8	11.6	170	6003	180	6357	180	6357
1	14.5	255	9005	351	12,395	275	9711
1.5	21.8	380	13,419	454	16,033	360	12,713
2	29.0	500	17,657	500	17,657	450	15,891
2.5	36.3	550	19,423	613	21,647	560	19,776
3	43.5	700	24,720	700	24,720	640	22,601
4	58.0	920	32,489	850	30,017	850	30,017
5	72.5	1130	39,905	1000	35,314	1090	38,492
6	87.0	1300	45,908	1200	42,377	1290	45,555
8	116	1750	61,800	1640	57,915	1800	63,565
10	145	2100	74,159	2040	72,041	2200	77,691
12	174	2100	74,159	2050	72,394	2500	88,285
14	203	2500	88,285	2200	77,691	3000	105,942
16	232	2800	98,879	2200	77,691	3200	113,005

1. Industry performances are obtained at single curve at single inlet condition.

Table 24. CSB600 Series External Sense Flow Capacities for 500 mbar / 7.25 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
500 mbar	320 to 570 mbar	ERSA01582A0 / Red with White Stripe
7.25 psig	4.6 to 8.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.8	11.6	270	9535	338	11,936	350	12,360
1	14.5	311	10,983	398	14,055	460	16,244
1.5	21.8	453	15,997	525	18,540	670	23,660
2	29.0	552	19,493	800	28,251	922	32,560
2.5	36.3	560	19,776	989	34,926	1020	36,020
3	43.5	765	27,015	1100	38,845	1180	41,671
4	58.0	1100	38,845	1440	50,852	1510	53,324
5	72.5	1350	47,674	1730	61,093	1850	65,331
6	87.0	1416	50,005	2000	70,628	2200	77,691
8	116	1784	63,000	2600	91,816	2800	98,879
10	145	2265	79,986	3200	113,005	3500	123,599
12	174	2265	79,986	3200	113,005	4100	144,787
14	203	2600	91,816	3200	113,005	4800	169,507
16	232	3000	105,942	3200	113,005	5500	194,227

1. Industry performances are obtained at single curve at single inlet condition.

Table 25. CSB600 Series External Sense Flow Capacities for 750 mbar / 10.9 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
750 mbar	510 to 780 mbar	ERSA05055A0 / Blue with White Stripe
10.9 psig	7.4 to 11.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.8	11.6	130	4591	161	5686	140	4944
1	14.5	280	9888	200	7063	176	6215
1.5	21.8	280	9888	340	12,007	340	12,007
2	29.0	510	18,010	450	15,891	419	14,797
2.5	36.3	510	18,010	550	19,423	550	19,423
3	43.5	560	19,776	700	24,720	650	22,954
4	58.0	900	31,783	900	31,783	900	31,783
5	72.5	1200	42,377	1100	38,845	1100	38,845
6	87.0	1400	49,440	1350	47,674	1350	47,674
8	116	2000	70,628	2000	70,628	2000	70,628
10	145	2540	89,698	2400	84,754	2400	84,754
12	174	2970	104,883	2800	98,879	2800	98,879
14	203	3400	120,068	3100	109,473	3050	107,708
16	232	3900	137,725	3100	109,473	3150	111,239

1. Industry performances are obtained at single curve at single inlet condition.

Table 26. CSB600 Series External Sense Flow Capacities for 750 mbar / 10.9 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
750 mbar	510 to 780 mbar	ERSA05055A0 / Blue with White Stripe
10.9 psig	7.4 to 11.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
0.8	11.6	250	8829	320	11,300	280	9888
1	14.5	283	9994	390	13,772	390	13,772
1.5	21.8	623	22,001	620	21,895	620	21,895
2	29.0	878	31,006	790	27,898	790	27,898
2.5	36.3	1000	35,314	943	33,301	943	33,301
3	43.5	1232	43,507	1100	38,845	1130	39,905
4	58.0	1557	54,984	1400	49,440	1450	51,205
5	72.5	1950	68,862	1780	62,859	1780	62,859
6	87.0	2265	79,986	2100	74,159	2100	74,159
8	116	2973	104,989	2700	95,348	2800	98,879
10	145	3681	129,991	3400	120,068	3400	120,068
12	174	4389	154,993	3900	137,725	4000	141,256
14	203	5020	177,276	4500	158,913	4700	165,976
16	232	5100	180,101	5100	180,101	5300	187,164

1. Industry performances are obtained at single curve at single inlet condition.

Table 27. CSB600 Series External Sense Flow Capacities for 1 bar / 14.5 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
1 bar	0.7 to 1.19 bar	GE30345X012 / Purple Stripe
14.5 psig	10.2 to 17.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
1.5	21.8	350	12,360	370	13,066	350	12,360
2	29.0	570	20,129	520	18,363	535	18,893
2.5	36.3	570	20,129	800	28,251	720	25,426
3	43.5	790	27,898	900	31,783	850	30,017
4	58.0	1090	38,492	1100	38,845	1205	42,553
5	72.5	1420	50,146	1500	52,971	1500	52,971
6	87.0	1670	58,974	1750	61,800	1825	64,448
8	116	2350	82,988	2260	79,810	2385	84,224
10	145	2970	104,883	2800	98,879	2975	105,059
12	174	3400	120,068	3250	114,771	3250	114,770
14	203	3960	139,843	3900	137,725	4000	141,256
16	232	4300	151,850	4300	151,850	4400	155,382

1. Industry performances are obtained at single curve at single inlet condition.

Table 28. CSB600 Series External Sense Flow Capacities for 1 bar / 14.5 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
1 bar	0.7 to 1.19 bar	GE30345X012 / Purple Stripe
14.5 psig	10.2 to 17.3 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
1.5	21.8	538	18,999	500	17,657	590	20,835
2	29.0	765	27,015	760	26,839	815	28,781
2.5	36.3	800	28,251	900	31,783	920	32,489
3	43.5	1133	40,011	1100	38,845	1195	42,200
4	58.0	1500	52,971	1470	51,912	1535	54,207
5	72.5	1812	63,989	1800	63,565	1895	66,920
6	87.0	2100	74,159	2100	74,159	2115	74,689
8	116	2803	98,985	2700	95,348	2835	100,115
10	145	3455	122,010	3400	120,068	3525	124,482
12	174	4106	144,999	4000	141,256	4215	148,849
14	203	4786	169,013	4700	165,976	4865	171,803
16	232	5300	187,164	5300	187,164	5540	195,640

1. Industry performances are obtained at single curve at single inlet condition.

CSB600 Series

Table 29. CSB600 Series External Sense Flow Capacities for 1.5 bar / 21.8 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
1.5 bar	1.05 to 2.7 bar	GE30346X012 / Brown
21.8 psig	15.2 to 39.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
2	29.0	380	13,419	420	14,832	450	15,891
2.5	36.3	451	15,927	617	21,789	620	21,895
3	43.5	660	23,307	730	25,779	730	25,779
4	58.0	700	24,720	990	34,961	1050	37,080
5	72.5	970	34,255	1270	44,849	1280	45,202
6	87.0	1470	51,912	1600	56,502	1600	56,502
8	116	1950	68,862	2200	77,691	2200	77,691
10	145	2120	74,866	2700	95,348	2760	97,467
12	174	2630	92,876	3100	109,473	3230	114,064
14	203	3460	122,186	3680	129,956	3910	138,078
16	232	3960	139,843	4200	148,319	4370	154,322

1. Industry performances are obtained at single curve at single inlet condition.

Table 30. CSB600 Series External Sense Flow Capacities for 1.5 bar / 21.8 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
1.5 bar	1.05 to 2.7 bar	GE30346X012 / Brown
21.8 psig	15.2 to 39.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
2	29.0	708	25,002	650	22,954	690	24,367
2.5	36.3	750	26,486	825	29,134	825	29,134
3	43.5	1076	37,998	1000	35,314	1130	39,905
4	58.0	1501	53,006	1400	49,440	1480	52,265
5	72.5	1841	65,013	1700	60,034	1820	64,271
6	87.0	2067	72,994	2000	70,628	2160	76,278
8	116	2800	98,879	2700	95,348	2800	98,879
10	145	3400	120,068	3400	120,068	3500	123,599
12	174	4106	144,999	4000	141,256	4190	147,966
14	203	4757	167,989	4600	162,444	4780	168,801
16	232	5400	190,696	5380	189,989	5530	195,286

1. Industry performances are obtained at single curve at single inlet condition.

Table 31. CSB600 Series External Sense Flow Capacities for 2 bar / 29 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
2 bar	1.05 to 2.7 bar	GE30346X012 / Brown
29 psig	15.2 to 39.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
2.5	36.3	350	12,360	470	16,598	470	16,598
3	43.5	710	25,073	850	30,017	820	28,957
4	58.0	950	33,548	1100	38,845	1100	38,845
5	72.5	1250	44,143	1550	54,737	1450	51,205
6	87.0	1420	50,146	2000	70,628	2010	70,981
8	116	2320	81,928	2500	88,285	2520	88,991
10	145	2970	104,883	3100	109,473	3100	109,473
12	174	3340	117,949	3600	127,130	3800	134,193
14	203	3910	138,078	4400	155,382	4550	160,679
16	232	4390	155,028	4800	169,507	5300	187,164

1. Industry performances are obtained at single curve at single inlet condition.

Table 32. CSB600 Series External Sense Flow Capacities for 2 bar / 29 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
2 bar	1.05 to 2.7 bar	GE30346X012 / Brown
29 psig	15.2 to 39.2 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
2.5	36.3	800	28,251	800	28,251	800	28,251
3	43.5	1019	35,985	980	34,608	1030	36,373
4	58.0	1501	53,006	1350	47,674	1430	50,499
5	72.5	1897	66,991	1700	60,034	1800	63,565
6	87.0	2150	75,925	2000	70,628	2140	75,572
8	116	2880	101,704	2700	95,348	2800	98,879
10	145	3600	127,130	3300	116,536	3500	123,599
12	174	4247	149,979	4100	144,787	4180	147,613
14	203	5000	176,570	4700	165,976	4850	171,273
16	232	5250	185,399	5200	183,633	5460	192,814

1. Industry performances are obtained at single curve at single inlet condition.

Table 33. CSB600 Series External Sense Flow Capacities for 3 bar / 43.5 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
3 bar	2.3 to 3.25 bar	ERSA01125A0 / Grey with Red Stripe
43.5 psig	33.4 to 47.1 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
4	58.0	850	30,017	790	27,898	890	31,429
5	72.5	1180	41,671	1070	37,786	1230	43,436
6	87.0	1500	52,971	1400	49,440	1610	56,856
8	116	2210	78,044	2000	70,628	2190	77,338
10	145	2770	97,820	2500	88,285	2780	98,173
12	174	3210	113,358	3100	109,473	3540	125,012
14	203	3630	128,190	3400	120,068	3960	139,843
16	232	4330	152,910	4000	141,256	4530	159,972

1. Industry performances are obtained at single curve at single inlet condition.

Table 34. CSB600 Series External Sense Flow Capacities for 3 bar / 43.5 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
3 bar	2.3 to 3.25 bar	ERSA01125A0 / Grey with Red Stripe
43.5 psig	33.4 to 47.1 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
4	58.0	1161	41,000	1190	42,024	1280	45,202
5	72.5	1586	56,008	1600	56,502	1680	59,328
6	87.0	1950	68,862	2000	70,628	2060	72,747
8	116	2680	94,642	2600	91,816	2780	98,173
10	145	3330	117,596	3300	116,536	3420	120,774
12	174	3964	139,985	3960	139,843	4100	144,787
14	203	4650	164,210	4670	164,916	4780	168,801
16	232	5200	183,633	5200	183,633	5410	191,049

1. Industry performances are obtained at single curve at single inlet condition.

Table 35. CSB600 Series External Sense Flow Capacities for 4 bar / 58 psig Setpoint AC 5 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
4 bar	3.1 to 4.0 bar	ERSA01126A0 / Grey with Orange Stripe
58 psig	45 to 58 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
5	72.5	1020	36,020	880	31,076	980	34,608
6	87.0	1330	46,968	1300	45,908	1450	51,205
8	116	1930	68,156	1800	63,565	2090	73,806
10	145	2410	85,107	2400	84,754	2690	94,995
12	174	3000	105,942	2970	104,883	3300	116,536
14	203	3540	125,012	3400	120,068	3890	137,371
16	232	4110	145,141	3900	137,725	4460	157,500

1. Industry performances are obtained at single curve at single inlet condition.

Table 36. CSB600 Series External Sense Flow Capacities for 4 bar / 58 psig Setpoint AC 10 - Industry Performance⁽¹⁾

SETPOINT	SET RANGE	PART NUMBER / COLOR
4 bar	3.1 to 4.0 bar	ERSA01126A0 / Grey with Orange Stripe
58 psig	45 to 58 psig	

INLET PRESSURE		BODY OUTLET SIZE					
		DN 32 / NPS 1-1/4		DN 40 / NPS 1-1/2		DN 50 / NPS 2	
bar	psig	Sm ³ /h	SCFH	Sm ³ /h	SCFH	Sm ³ /h	SCFH
5	72.5	1359	47,992	1400	49,440	1420	50,146
6	87.0	1760	62,153	1750	61,800	1890	66,743
8	116	2500	88,285	2500	88,285	2630	92,876
10	145	3256	114,982	3200	113,005	3380	119,361
12	174	3960	139,843	3920	138,431	4030	142,315
14	203	4531	160,008	4500	158,913	4720	166,682
16	232	5200	183,633	5100	180,101	5430	191,755

1. Industry performances are obtained at single curve at single inlet condition.

CSB600 Series

EN334 Utility Performance Data

Table 37. CSB600 Series External Pressure Registration Flow Capacities for DN 32 / NPS 1-1/4 Body, AC 5 Accuracy - Utility Performance⁽¹⁾

CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																						
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig																		
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0				
0.2 to 0.3	2.9 to 4.4	0.2	2.9	92	89	93	102	93	90	80												
		0.3	4.4	116	112	121	135	127	139	120												
0.5 to 3	7.3 to 43.5	0.5	7.3	183	140	175	170	170	200	159	160											
		0.8	11.6	190	160	215	252	225	223	200	210								170	130		
		1	14.5	280	240	280	333	289	297	253	310								255	280		
		1.5	21.8	300	261	389	380	390	396	312	420								380	280	350	
		2	29.0	300	307	505	569	542	474	482	540								500	510	570	380
		2.5	36.3	450	430	580	630	623	520	652	620								550	510	570	451
3	43.5	470	480	600	700	660	560	668	790	700	560	790	660	710								
4 to 6	58.0 to 87.0	4	58.0	470	700	800	750	740	820	992	1000	920	900	1090				700	950	850		
		5	72.5	470	800	820	820	800	1000	1162	1250	1130	1200	1420				970	1250	1180	1020	
		6	87.0	470	800	820	850	800	1250	1400	1470	1300	1400	1670				1470	1420	1500	1330	
8 to 16	116 to 232	8	116	483	640	780	882	800	1550	1700	1700	1750	2000	2350				1950	2320	2210	1930	
		10	145	450	600	820	882	800	1800	2200	2100	2100	2540	2970				2120	2970	2770	2410	
		12	174							2260	2400	2200	2100	2970	3400	2630	3340	3110	2890			
		14	203							2500	2634	2350	2400	3400	3960	3460	3910	3630	3540			
16	232	2700	2800	2548	2500	3900	4300	3960	4390	4330	4110											

Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).

Table 38. CSB600 Series External Pressure Registration Flow Capacities for DN 32 / NPS 1-1/4 Body, AC 10 Accuracy - Utility Performance⁽¹⁾

CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																						
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig																		
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0				
0.2 to 0.3	2.9 to 4.4	0.2	2.9	181	160	150	110	125	156	80												
		0.3	4.4	227	198	190	184	187	201	159												
0.5 to 3	7.3 to 43.5	0.5	7.3	218	255	290	365	332	263	255	200											
		0.8	11.6	350	320	422	381	420	340	386	340								270	250		
		1	14.5	421	404	470	492	505	400	481	410								311	283		
		1.5	21.8	722	520	570	664	671	665	665	650								453	623	538	
		2	29.0	802	742	800	823	829	849	810	820								552	878	765	708
		2.5	36.3	802	800	850	950	829	934	935	849								560	878	800	750
3	43.5	802	850	900	1100	1100	1133	1000	850	765	1232	1133	1076	1019								
4 to 6	58.0 to 87.0	4	58.0	802	920	1200	1380	1393	1133	1133	1076	1100	1557	1500				1501	1501	1161		
		5	72.5	742	940	1400	1600	1600	1416	1500	1400	1350	1950	1812				1841	1897	1586	1359	
		6	87.0	773	960	1600	1750	2050	1841	1900	1700	1416	2265	2100				2067	2150	1950	1760	
8 to 16	116 to 232	8	116	787	847	1800	2000	2600	2200	2200	2039	1784	2973	2803				2800	2880	2680	2500	
		10	145	686	828	1400	2200	2700	2600	2450	2548	2265	3681	3455				3400	3600	3330	3256	
		12	174							2832	2605	2800	2265	4389	4106	4106	4247	3964	3908			
		14	203							2832	2760	3100	2500	5020	4786	4757	5000	4650	4531			
16	232	2832	3050	3300	2800	5100	5060	5100	5100	5100	5100	5100	5100	5100	5100	4531						

Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).

Table 39. CSB600 Series External Pressure Registration Flow Capacities for DN 40 / NPS 1-1/2 Body, AC 5 Accuracy - Utility Performance⁽¹⁾

CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																			
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig															
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0	
0.2 to 0.3	2.9 to 4.4	0.2	2.9	96	89	103	101	81	105	88									
		0.3	4.4	124	111	133	135	108	130	130									
0.5 to 3	7.3 to 43.5	0.5	7.3	125	140	200	188	174	223	206	178								
		0.8	11.6	172	147	253	264	227	280	309	255	180	161						
		1	14.5	302	239	323	321	287	368	363	336	351	200						
		1.5	21.8	321	332	477	464	366	450	480	472	454	340	370					
		2	29.0	371	450	660	700	570	581	621	595	500	450	520	420				
		2.5	36.3	512	650	700	734	720	600	722	707	613	550	800	617				
3	43.5	700	800	700	750	718	700	839	825	700	700	900	730	850					
4 to 6	58.0 to 87.0	4	58.0	700	800	800	900	860	750	950	960	850	900	1100	990	1100	790		
		5	72.5	700	800	800	900	900	900	1150	1100	1000	1100	1500	1270	1550	1070	880	
		6	87.0	700	800	800	900	900	900	1300	1360	1200	1350	1750	1600	2000	1400	1300	
8 to 16	116 to 232	8	116	700	800	800	1000	1050	1300	1750	1400	1640	2000	2260	2200	2500	2000	1800	
		10	145	500	800	800	1010	1050	1500	2250	1600	2040	2400	2800	2700	3100	2500	2400	
		12	174							2000	2450	1840	2040	2800	3250	3100	3600	3100	2970
		14	203							2350	3000	2400	2200	3100	3900	3680	4400	3400	3400
		16	232							2700	3100	2560	2200	3100	4300	4200	4800	4000	3900

- Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).

Table 40. CSB600 Series External Pressure Registration Flow Capacities for DN 40 / NPS 1-1/2 Body, AC 10 Accuracy - Utility Performance⁽¹⁾

CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																			
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig															
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0	
0.2 to 0.3	2.9 to 4.4	0.2	2.9	180	155	160	165	170	150	137									
		0.3	4.4	240	210	210	230	220	250	207									
0.5 to 3	7.3 to 43.5	0.5	7.3	334	280	277	330	260	350	283	273								
		0.8	11.6	440	315	330	450	403	450	357	408	338	320						
		1	14.5	530	431	525	523	514	543	471	490	398	390						
		1.5	21.8	550	550	660	693	664	714	609	515	525	620	500					
		2	29.0	600	650	900	880	877	870	765	820	800	790	760	650				
		2.5	36.3	950	800	1000	980	930	990	934	950	989	943	900	825				
3	43.5	1000	1000	1200	1120	1150	1100	1104	1100	1100	1100	1100	1100	1000	980				
4 to 6	58.0 to 87.0	4	58.0	1500	1200	1300	1400	1430	1300	1218	1400	1440	1400	1470	1400	1350	1190		
		5	72.5	1600	1500	1300	1650	1700	1550	1671	1588	1730	1780	1800	1700	1700	1600	1400	
		6	87.0	1600	1600	1300	1800	2100	1700	1926	1901	2000	2100	2100	2000	2000	2000	2000	1750
8 to 16	116 to 232	8	116	1100	1600	1300	2100	2700	2100	2300	2000	2600	2700	2700	2700	2700	2600	2500	
		10	145	1025	1600	1300	2300	3000	2300	3020	2400	3200	3400	3400	3400	3300	3300	3200	
		12	174							2550	3600	2800	3200	3900	4000	4000	4100	3960	3960
		14	203							3500	4200	3200	3200	4500	4700	4600	4700	4670	4500
		16	232							4000	4400	3600	3200	5100	5300	5380	5200	5200	5100

- Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).

CSB600 Series

Table 41. CSB600 Series External Pressure Registration Flow Capacities for DN 50 / NPS 2 Body, AC 5 Accuracy - Utility Performance⁽¹⁾

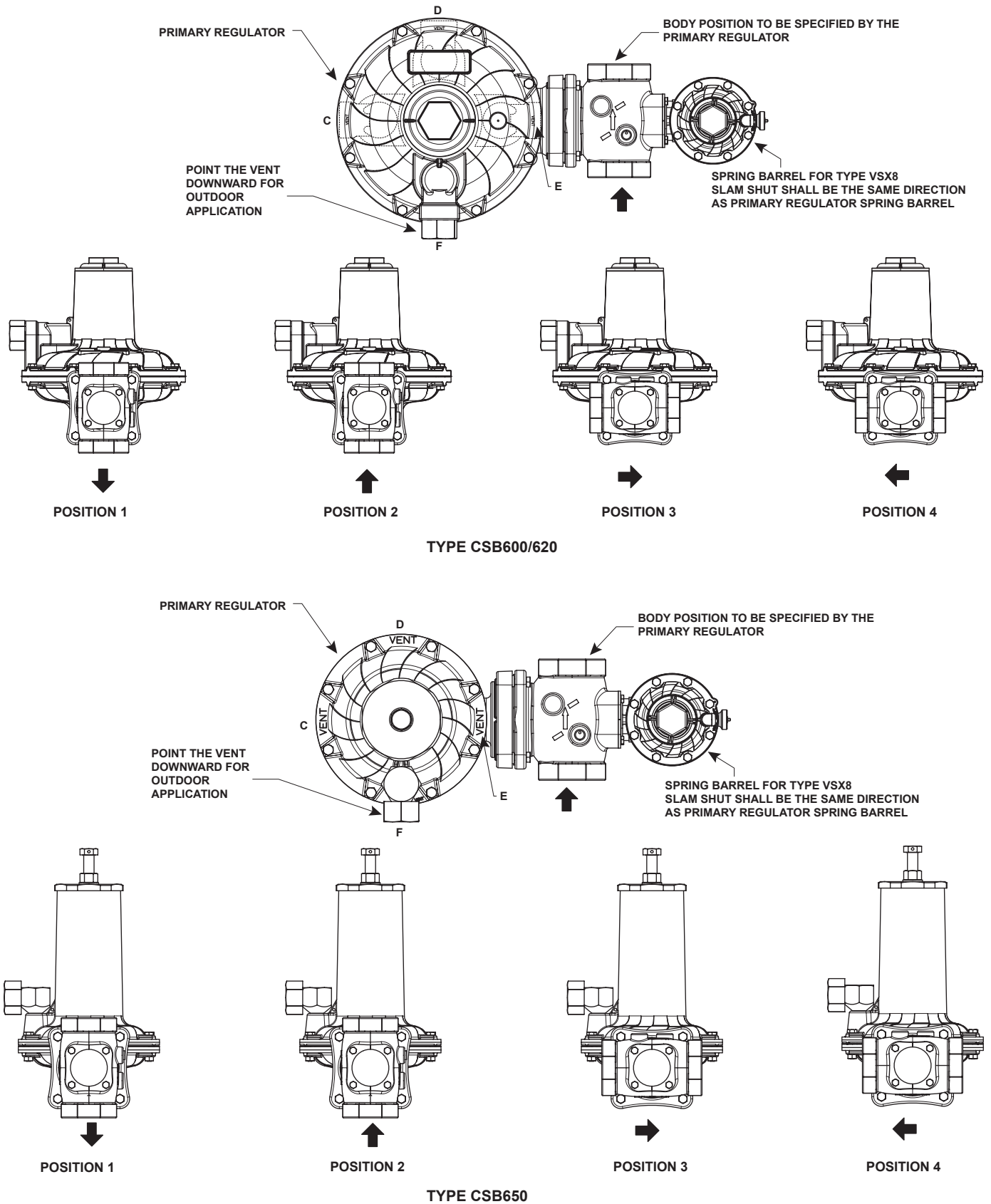
CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																				
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig																
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0		
0.2 to 0.3	2.9 to 4.4	0.2	2.9	98	100	103	110	105	100	88										
		0.3	4.4	124	138	181	151	120	120	130										
0.5 to 3	7.3 to 43.5	0.5	7.3	170	140	172	168	190	190	206	144									
		0.8	11.6	181	177	229	239	220	260	309	249								180	130
		1	14.5	270	203	332	332	321	320	363	297	230	175							
		1.5	21.8	428	262	400	473	383	450	480	447	340	300						350	
		2	29.0	600	365	570	700	570	610	621	532	450	415	535	450					
		2.5	36.3	530	620	771	750	720	650	722	650	560	550	720	620				470	
3	43.5	950	830	950	800	785	770	839	778	640	630	850	730	820						
4 to 6	58.0 to 87.0	4	58.0	700	900	1000	1100	1100	900	1040	1021	850	860	1205				1050	1100	890
		5	72.5	700	1050	1100	1200	1250	1000	1190	1070	1090	1100	1500	1280	1450	1230	980		
		6	87.0	700	1100	1100	1200	1250	1100	1470	1890	1290	1350	1825	1600	2010	1610	1450		
8 to 16	116 to 232	8	116	670	1100	1100	1200	1250	1350	2050	2200	1800	2000	2385	2200	2520	2190	2090		
		10	145	550	900	1000	1200	1250	1800	2770	2600	2200	2400	2975	2760	3100	2780	2690		
		12	174							2100	2850	3140	2500	2800	3250	3230	3800	3540	3300	
		14	203							2400	3570	3400	3000	3050	4000	3910	4550	3960	3890	
		16	232							2700	3710	3600	3200	3150	4400	4370	5300	4530	4460	

Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).

Table 42. CSB600 Series External Pressure Registration Flow Capacities for DN 50 / NPS 2 Body, AC 10 Accuracy - Utility Performance⁽¹⁾

CAPACITIES IN Sm ³ /h OF 0.60 SPECIFIC GRAVITY NATURAL GAS																				
Inlet Pressure Group		Inlet		Outlet Pressure in bar/psig																
bar	psig	bar	psig	0.02 / 0.29	0.03 / 0.44	0.04 / 0.58	0.05 / 0.73	0.075 / 1.1	0.1 / 1.5	0.15 / 2.2	0.3 / 4.4	0.5 / 7.3	0.75 / 10.9	1.0 / 14.5	1.5 / 21.8	2.0 / 29.0	3.0 / 43.5	4.0 / 58.0		
0.2 to 0.3	2.9 to 4.4	0.2	2.9	204	194	170	201	199	180	140										
		0.3	4.4	258	237	220	248	250	240	180										
0.5 to 3	7.3 to 43.5	0.5	7.3	328	277	340	361	348	350	320	291									
		0.8	11.6	448	363	400	409	411	490	460	453								350	280
		1	14.5	532	439	530	480	536	580	530	530	530	460	390						
		1.5	21.8	705	570	710	698	700	760	730	740	670	620	590						
		2	29.0	940	820	790	880	895	940	906	930	922	790	815	690					
		2.5	36.3	1100	920	1109	1000	940	1000	1110	1100	1020	943	920	825				800	
3	43.5	1307	1277	1350	1218	1231	1120	1270	1270	1180	1130	1195	1130	1030						
4 to 6	58.0 to 87.0	4	58.0	1550	1558	1700	1628	1555	1600	1580	1600	1510	1450	1535				1480	1430	1280
		5	72.5	1989	1600	1800	1950	1975	1960	1911	1900	1850	1780	1895	1820	1800	1680	1420		
		6	87.0	1100	1650	2270	2290	2326	2260	2256	2265	2200	2100	2115	2160	2140	2060	1890		
8 to 16	116 to 232	8	116	967	1650	2950	3067	3075	2900	2850	2900	2800	2800	2835	2800	2800	2780	2630		
		10	145	997	1650	3605	3682	3661	3600	3400	3550	3500	3400	3525	3500	3500	3420	3380		
		12	174							4200	3920	4160	4100	4000	4215	4190	4180	4100	4030	
		14	203							4700	4200	4700	4800	4700	4865	4780	4850	4780	4720	
		16	232							5000	5270	5500	5500	5300	5540	5530	5460	5410	5430	

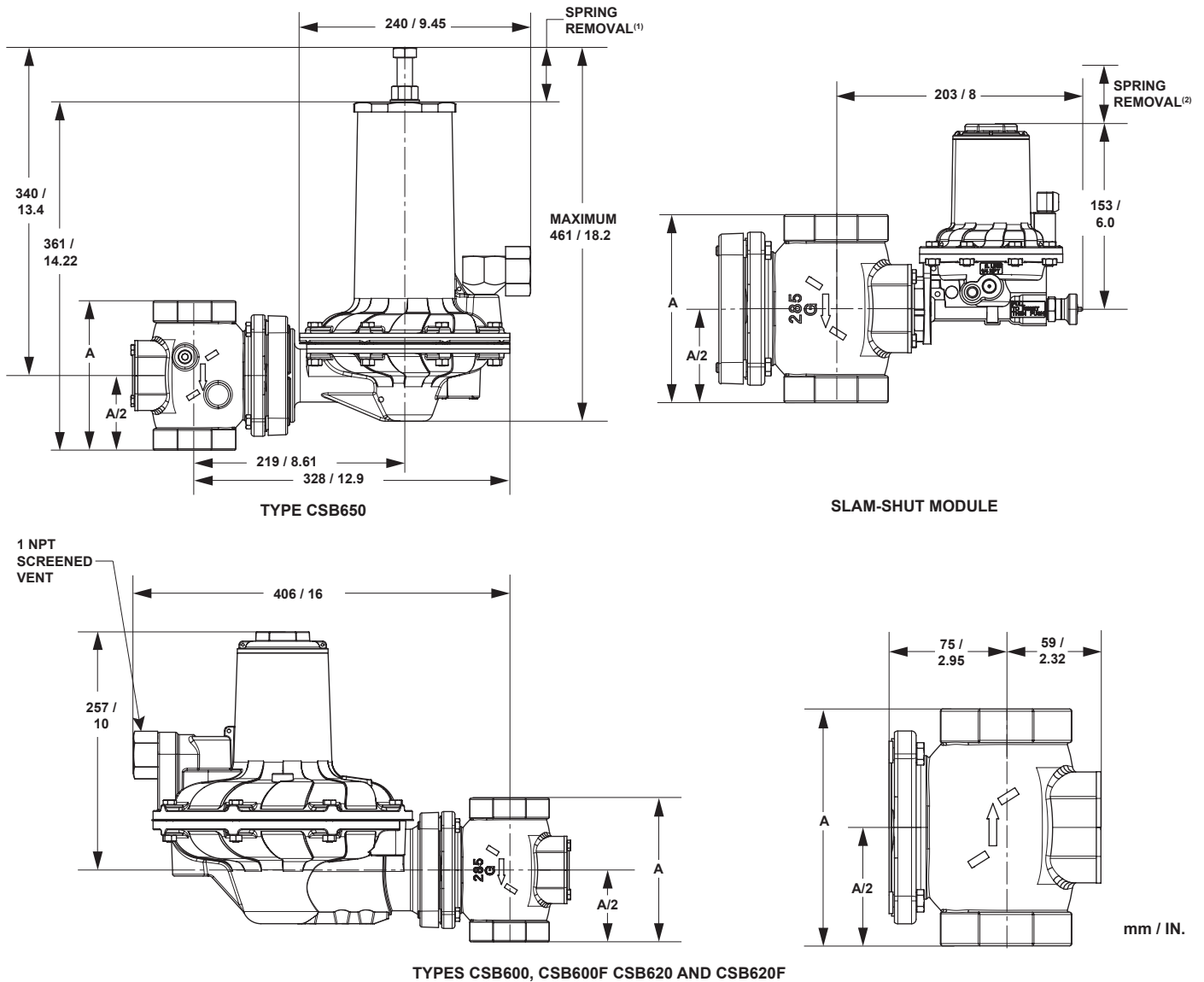
Grey areas indicate limited capacities due to boost effects.
 1. Utility performances are obtained by determination of the accuracy class related to a specified inlet pressure range and set range (per EN334 Rev November 2014).



GE32407_AF

Figure 5. CSB600 Series Vent and Body Positions

CSB600 Series



ERSA01657_AB

1. Maximum spring removal clearance for the primary regulator is 158 mm / 6.2 in.
2. Maximum spring removal clearance for the slam shut is 80 mm / 3.1 in.

Figure 6. CSB600 Series Dimensions

Table 43. CSB600 Series Dimensions

BODY SIZE		BODY END CONNECTION STYLE	FACE-TO-FACE DIAMETER (A)	
DN	NPS		mm	In.
32	1-1/4	NPT or Rp	155	6.10
40	1-1/2			
50	2			
50	2	CL125 FF / CL150 FF or PN 10/16	191	7.52
		CL125 FF / CL150 FF	254	10.0
			267	10.5
32	1-1/4	PN 16 Slip-On	200	7.87
40	1-1/2			
50	2			

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 details)
(Select One)

Stand-Alone Regulator

- | | |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> CSB600EN | <input type="checkbox"/> CSB620FEN |
| <input type="checkbox"/> CSB600ET | <input type="checkbox"/> CSB620EN |
| <input type="checkbox"/> CSB600FEN | <input type="checkbox"/> CSB620ET |
| <input type="checkbox"/> CSB600FET | <input type="checkbox"/> CSB650EN |

With Type VSX8 Slam-shut Module

- | | |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> CSB604ET | <input type="checkbox"/> CSB624FEN |
| <input type="checkbox"/> CSB604EN | <input type="checkbox"/> CSB624EN |
| <input type="checkbox"/> CSB604FEN | <input type="checkbox"/> CSB624ET |
| <input type="checkbox"/> CSB604FET | <input type="checkbox"/> CSB654EN |

Body Size and End Connection Style (Select One)

Ductile Iron

- 1-1/2 NPT
- 1-1/4 NPT
- 2 NPT***
- Rp 1-1/4***
- Rp 1-1/2***
- Rp 2***
- DN 50 / NPS 2, CL150 FF***
- DN 50 / NPS 2, CL125 FF***
- DN 50 / NPS 2, PN 10/16***
- DN 40 / NPS 1-1/2, PN 16 slip-on flanged body
- DN 32 / NPS 1-1/4, PN 16 slip-on flanged body

WCC Steel

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

Outlet Pressure Range (Select One)

Type CSB600/CSB604/CSB600F/CSB604F

- 9 to 14 mbar / 3.6 to 5.6 in.w.c., Silver***
- 13 to 24 mbar / 5.2 to 9.6 in.w.c., Red***
- 22 to 39 mbar / 8.8 to 15.7 in.w.c., Black Stripe***
- 32 to 50 mbar / 12.8 to 20.1 in.w.c., Purple***
- 42 to 70 mbar / 16.9 to 28.1 in.w.c., White Stripe***
- 61 to 110 mbar / 0.9 to 1.6 psig, Dark Green***

Type CSB620/CSB624

- 61 to 110 mbar / 0.9 to 1.6 psig, Dark Green***
- 105 to 220 mbar / 1.5 to 3.2 psig, Blue***
- 210 to 380 mbar / 3.1 to 5.5 psig, Black***
- 320 to 570 mbar / 4.6 to 8.3 psig, Red with White Stripe***
- 510 to 780 mbar / 7.4 to 11.3 psig, Blue with White Stripe***

Type CSB620F/CSB624F

- 270 to 325 mbar / 3.9 to 4.7 psig, Black and White Stripe***

Type CSB650/CSB654

- 0.7 to 1.19 bar / 10.2 to 17.3 psig, Purple Stripe***
- 1.05 to 2.7 bar / 15.2 to 39.2 psig, Brown***
- 2.3 to 3.25 bar / 33.4 to 47.1 psig, Grey with Red Stripe***
- 3.1 to 4.0 bar / 45 to 58 psig, Grey with Orange Stripe***

Body Orientation⁽¹⁾ (See Figure 5, Select One)

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

Vent Orientation⁽²⁾ (See Figure 5, Select One)

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

- continued -

1. For the Type CSB604, choose the body orientation of the primary regulator only. The Slam-Shut spring barrel will be oriented in the same direction as the primary regulator spring barrel.
2. For the Type CSB604, choose the vent orientation of the primary regulator only. The Slam-Shut vent will be oriented to point in the same direction as the primary regulator.

CSB600 Series

Ordering Guide (continued)

Slam-Shut Trip Pressure Setting

(Select One if applicable)

- Overpressure (OPSO) trip only
Indicate Overpressure Trip Point

- Over and Underpressure (OPSO/UPSO) trip
Indicate Overpressure Trip Point

- Indicate Underpressure Trip Point

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?	
<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, which is preferred:	
<input type="checkbox"/> Relief Valve <input type="checkbox"/> Monitor Regulator <input type="checkbox"/> 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:	

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