



Pressure Regulators for Oil & Natural Gas

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ControlAir pressure regulators are durable, high performing instruments that are designed to provide reliable control of pressure in various stages of a flow system. From first cut, high pressure regulation, to low pressure regulation and air filtration applications, ControlAir provides high quality instruments to control the process. All of the regulators in this catalog offer multiple spring ranges to enhance the control of their output pressure. NACE compliant options are also available for ControlAir pressure regulators.



TYPE 3500/3600
HIGH PRESSURE
REGULATOR



TYPE 330/335 AIR
FILTER REGULATOR



TYPE 1230
PRESSURE
REGULATOR



TYPE 1227
PRESSURE
REGULATOR

Pressure Regulators

Model Selection

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Type 1230 Pressure Regulator	14	Type 380/390 Stainless Steel Filter Regulator & Regulator	
Type 330/335 Filter Regulator	22	Type 950XP Explosion-Proof I/P Transducer	
		Type 6000 High Flow Capacity Volume Booster	
		Type 6100 High Flow Capacity Volume Booster	
		Type 6500/6600 Large Flow Capacity Volume Booster	
		Type 2000 Pneumatic and Electro-Pneumatic Valve Positioner	



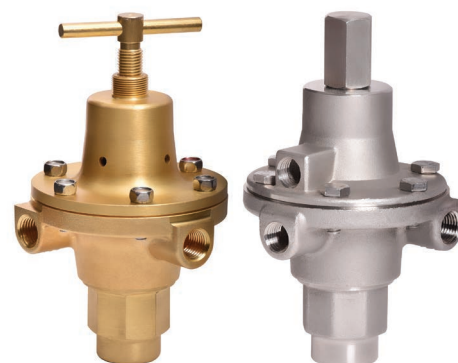
Model	Type 3500/3600 High Pressure Regulator	Type 1227 Pressure Regulator	Type 1230 Pressure Regulator	Type 330/335 Filter Regulator
Operating Media	Air Inert Gas Natural Gas			
Body Sizes	1/4" NPT	1" and 2" NPT	1" and 2" NPT	1/4" and 1/2" NPT
Max Supply Pressure*	6000 psi	2000 psi*	1500 psi*	250 psi
	413 bar	138 bar*	103 bar*	17 bar
Output Ranges	0-30 psi 0-60 psi 0-125 psi 0-150 psi 0-225 psi	5-20 psi 15-40 psi 35-80 psi 70-150 psi	27-50 psi 46-95 psi 90-150 psi 150-200 psi 200-275 psi 275-500 psi	0-30 psi 0-60 psi 0-120 psi
	0-2 bar 0-4 bar 0-8 bar 0-10 bar 0-15 bar	0.4-1.4 bar 1.0-2.8 bar 2.4-5.5 bar 4.8-10.3 bar	1.9-3.5 bar 3.2-6.6 bar 6.2-10.3 bar 10.3-13.8 bar 13.8-19 bar 19-34.5 bar	0-2 bar 0-4 bar 0-8 bar
Description	Designed to be used in applications requiring high-pressure reducing regulators for various gases. Type 3600 is constructed of 316 Stainless Steel and meets NACE MR-0175 requirements for sour gases	Designed to provide pressure control for a wide range of processes - Includes additional options such as selecting elastomer materials and orifice size. Available in NACE MR-0175 version.	Designed to provide pressure control across a vast array of industries and applications - Similar to the Type 1227, includes additional product options not available for custom. Available in NACE MR-0175 version.	Designed to provide clean, accurate air pressure to instruments, valves, and other automatic control equipment. Combines pressure regulation with filtration in an integral compact package. Available in NACE MR-0175 version.
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* Max Supply Pressure will vary depending on selected options. The ratings listed in the table are the highest possible; consult the specification sheet for details.

Pressure Regulators

Type 3500/3600 High Pressure Regulator

The Type 3500/3600 High Pressure Regulator is designed to provide pressure control in numerous processes that involve a high-pressure drop. It is an extremely durable regulator capable of handling a max inlet pressure of 6000 (314 bar). The spring configuration of the Type 3500/3600 can be configured to provide five different outlet pressures ranging from 0-30 psi (0-2.1 bar) to 0-255 psi (0-15.5 bar).



Features

- 3 outlet ports allow for regulated pressure to go to 3 separate pneumatic devices
- Adjustment screw with tamper resistant cap standard, or optional T-handle adjustment
- Seat block contains four seats - if sealing poorly, simply rotate the block for a new elastomer seat
- Warranty - 18 months

Product Specifications

Inlet Size			1/4" NPT			Temperature Limits				
Outlet Number and Size			3 outlets, 1/4" NPT			Type 3500		-70°F to 225°F (-57°C to 107°C)		
Spring Case Vent			Brass	4 holes, (5/32" each)			Type 3600		-40°F to 225°F (-40°C to 107°C)	
			SS	1/4" NPTF			Weight		3.25 lbs. (1.47 kg)	
Output Ranges			0 to 30 psi (0 to 2 bar)			Operating Media		Air, Inert Gas and Natural Gas		
			0 to 60 psi (0 to 4 bar)							
			0 to 125 psi (0 to 8 bar)			Materials of Construction		Type 3500		Type 3600
			0 to 150 psi (0 to 10 bar)			Body, Bonnet, Bottom Plug		Brass		316SS
			0 to 225 psi (0 to 15 bar)			Tamper Resistant Cover		Brass		316SS
Max Supply Pressure			6000 psi (314 bar)			Diaphragm		302SS		Monel 400
Orifice and Flow						Seals		Nitrile		CTFE
Coefficient Value			5/64", Cv = 0.13*			Valve Spring		17-7PH SS		MP35N
						Range Spring		Steel		Stainless Steel
						Seats		Nylon		PTFE

Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.

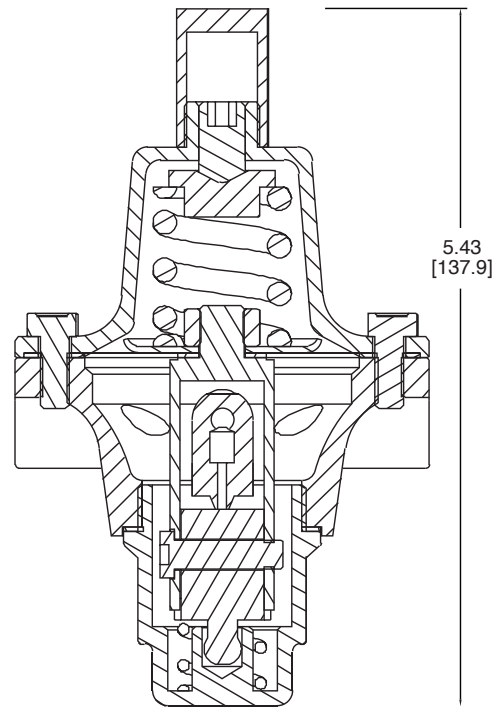
* Cv value is a theoretical value obtained from calculations using ISA-75 01.01-2007 standard. Please contact the factory for more information.

Pressure Regulators

Type 3500/3600 High Pressure Regulator

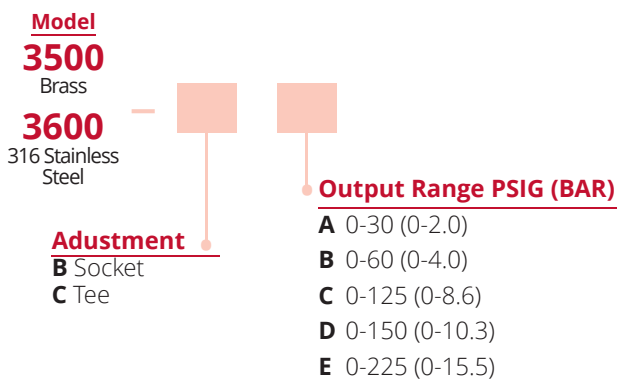
Principles of Operation

Directly operated, the Type 3500/3600 registers downstream pressure through the body to the underside of the diaphragm. The disk is forced towards the orifice when downstream pressure is at or above the set pressure of the regulator, and less media flows through the regulator. When the downstream pressure decreases (as demand for the media increases), the regulator spring is able to extend, moving the disk assembly away from the orifice. Media is then allowed to flow through the regulator at a higher rate, until the downstream pressure once again reaches the set point. After the set point is reached, the downstream pressure pushes the disk assembly back towards the orifice, thus reducing flow through the regulator once more.



How to Order

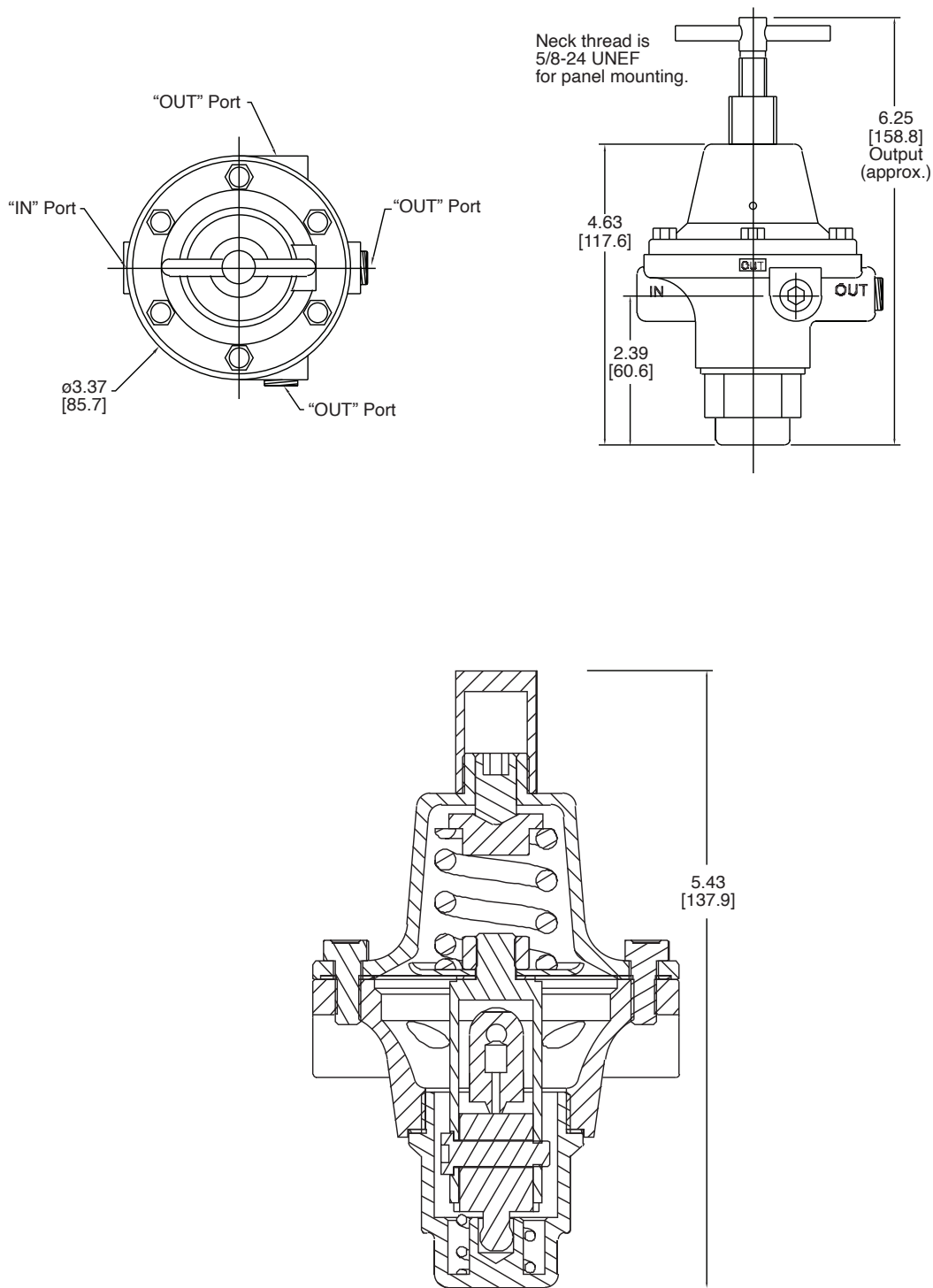
Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



Pressure Regulators

Type 3500/3600 High Pressure Regulator

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



Pressure Regulators

Type 1227 Pressure Regulator

The **Type 1227 Pressure Regulator** is a pressure-reducing, direct-operated regulator suitable for use with compressed air, natural gas, or an assortment of other inert gases. The Type 1227 is available with output ranges that span from 5 psi up to 150 psi and can be ordered with a variety of orifice sizes and materials providing application flexibility.

Features

- Wide range of orifice sizes for different flow capacities.
- 1" or 2" body size
- Guarded against unwanted set point adjustment with tamper-proof cap
- Monitoring Option (M) provides downstream feedback control line
- Trim can be replaced without disconnecting regulator from the system
- Can be re-arranged into multiple orientations for difficult installations with limited maneuverability
- NACE MR0175 configurations available
- Warranty – 18 months
- Assembled and tested in the USA



Product Specifications

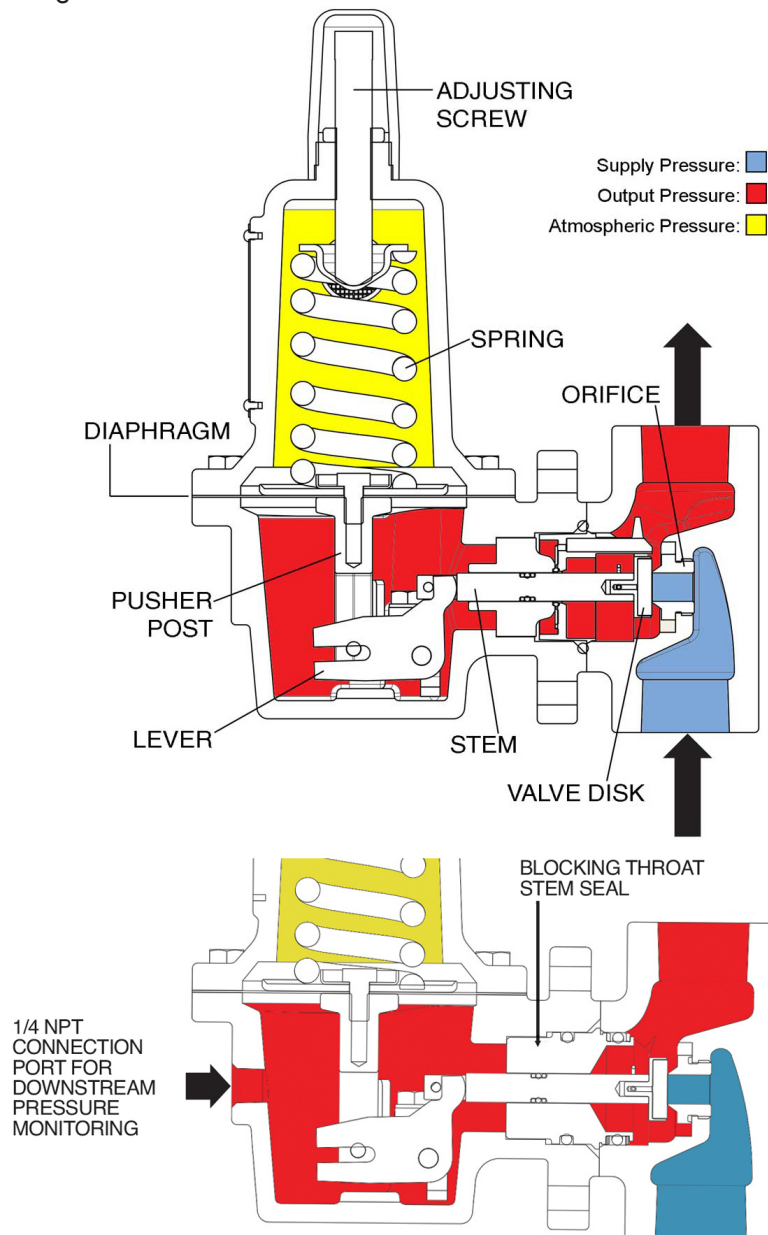
Body Sizes	1" or 2" NPT	Temperature Limits:	
Output Ranges	5 to 20 psi (0.4 to 1.4 bar) 15 to 40 psi (1.0 to 2.8 bar) 10 to 95 psi (0.7 to 6.4 bar) 35 to 80 psi (2.4 to 5.5 bar) 70 to 150 psi (4.8 to 10.3 bar)	Elastomer Material	
Orifice Sizes	3/32", 1/8", 3/16", 1/4", 3/8", 1/2"	Fluorocarbon (FKM)	0°F to 180°F (-18°C to 82°C)
Maximum Inlet Pressure	See Table 1	Nitrile (NBR) & Nylon (PA)	-40°F to 180°F (-40°C to 82°C)
Body Inlet Pressure Rating	LCC Steel: 2000 psi (138 bar)	Body Material	
Regulator Inlet Pressure Rating	Fluorocarbon (FKM): 300 psi (21 bar) Nitrile (NBR): 1000 psi (69 bar) Nylon (PA): 2000 psi (138 bar)	LCC Steel	-40°F to 180°F (-40°C to 82°C)
Diaphragm Casing Pressure Ratings	See Table 2	Weights	1" NPT / DN 25 Body: 6.5 lbs. (3 kg) 2" NPT / DN 50 Body: 10 lbs. (4.5 kg)
Maximum Flow Coefficients (Cv)	See Table 3	Operating Media	Compressed Air, Natural Gas, Other Inert Gases
Flow Capacities	See Table 4	Materials of Construction:	<u>Standard (S)</u> <u>NACE (N)</u>
		Body	LLC Steel LLC Steel
		Bonnet,	
		Diaphragm Case	Ductile Iron LCC Steel
		Diaphragm	Nitrile Fluorocarbon
		Valve Disk	Nitrile Fluorocarbon (Nylon option)
		Trim	Aluminum Stainless (Stainless option) Steel

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Principles of Operation

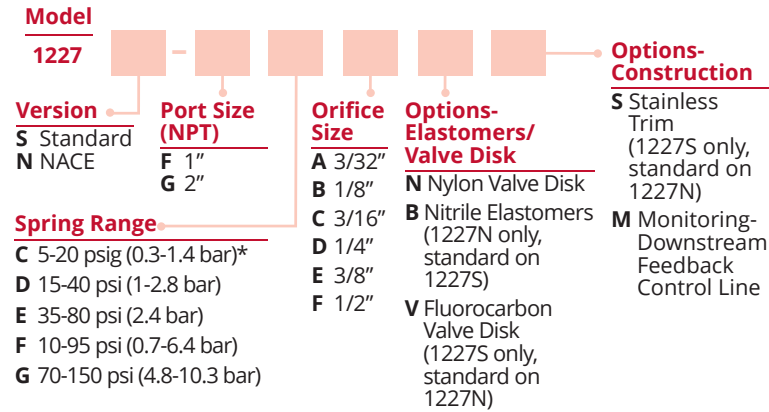
The Type 1227 utilizes a force counter-balance design consisting of a spring, diaphragm, and lever mechanism. The spring compression dictates the set point of the regulator while the diaphragm senses the downstream pressure. As downstream demand decreases, the downstream pressure increases until it reaches or exceeds the set point of the compressed spring; this causes the valve stem, lever, and pusher post assembly to move together, positioning the valve disk closer to the orifice and thereby reducing the flow of gas. On the other hand, when the downstream demand increases, the downstream pressure will decrease. The reduced downstream pressure allows the spring to push down against the pusher post and lever assembly, pulling the valve disk farther away from the orifice and increasing the flow of gas through the regulator.

Note: The ControlAir Type 1227 Pressure Regulator does not include internal relief. Therefore, if the inlet pressure is able to exceed the diaphragm casing pressure rating, the user must provide a pressure-relieving device.



How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



Materials of Construction

	Standard (S)	NACE (N)
Body	LCC Steel	LCC Steel
Bonnet, Diaphragm Case	Ductile Iron	LCC Steel
Diaphragm	Nitrile	Fluorocarbon
Valve Disk	Nitrile (Nylon option)	Fluorocarbon
Trim	Aluminum (Stainless option)	Stainless Steel

Table 1: Maximum Inlet Pressure by Output Range, Orifice Size, and Disk Material

Output Range**	Orifice Size		Maximum Inlet Pressure*					
			Fluorocarbon (FKM) Disk		Nitrile (NBR) Disk		Nylon (PA) Disk	
	in.	mm	psi	bar	psi	bar	psi	bar
5-20 psi (0.4-1.4 bar)	3/32	2.4	300	20.7	1000	69	2000	138
	1/8	3.2	300	20.7	1000	69	1000	69
	3/16	4.8	300	20.7	750	51.7	750	15.7
	1/4	6.4	300	20.7	500	34.5	500	34.5
	3/8	9.5	300	20.7	300	20.7	300	20.7
	1/2	13	300	20.7	250	17.2	250	17.2
15-40 psi (1.0-2.8 bar)	3/32	2.4	300	20.7	1000	69	2000	138
	1/8	3.2	300	20.7	1000	69	1500	103
	3/16	4.8	300	20.7	1000	69	1000	69
	1/4	6.4	300	20.7	750	51.7	750	51.7
	3/8	9.5	300	20.7	500	34.5	500	34.5
	1/2	13	300	20.7	300	20.7	300	20.7
35-80 psi (2.4-5.5 bar)	3/32	2.4	300	20.7	1000	69	2000	138
	1/8	3.2	300	20.7	1000	69	2000	138
	3/16	4.8	300	20.7	1000	69	1750	121
	1/4	6.4	300	20.7	1000	69	1500	103
	3/8	9.5	300	20.7	1000	69	1000	69
	1/2	13	300	20.7	750	51.7	750	51.7
70-150 psi (4.8-10.3 bar)	3/32	2.4	300	20.7	1000	69	2000	138
	1/8	3.2	300	20.7	1000	69	2000	138
	3/16	4.8	300	20.7	1000	69	2000	138
	1/4	6.4	300	20.7	1000	69	1750	121
	3/8	9.5	300	20.7	1000	69	1250	86.2
	1/2	13	300	20.7	750	51.7	750	51.7

* If inlet pressure is greater than 1000 psi, always compare against the Body Inlet Pressure Rating and Valve Disk Inlet Pressure Rating in the Product Specifications Table (Page 7).

** If the set point is 10 psi (0.69 bar) or less, the inlet pressure should remain below 100 psi (6.9 bar) to still allow for set point adjustment.

Table 2: Diaphragm and Spring Casing Pressure Ratings

Pressure Limit	Body Material	Maximum Pressure	
		psi	bar
Overpressure Limit Maximum pressure above set point that may be applied without causing internal damage.	Ductile Iron	60	4.1
	LCC Steel		
Leakage Pressure Limit Maximum pressure that may be applied to the diaphragm and spring casings without causing leak to atmosphere (internal damage may still occur).	Ductile Iron	250	17.2
	LCC Steel		
Burst Pressure Limit Maximum pressure that may be applied to the diaphragm and spring casings without causing the casings to burst (leak to atmosphere and internal damage may still occur).	Ductile Iron	465	32.1
	LCC Steel	1500	103

Table 3: Cv Values

Orifice Size		Cv Value	
in.	mm	1" NPT	2" NPT
3/32	2.4	0.24	0.23
1/8	3.2	0.43	0.42
3/16	4.8	0.93	1.02
1/4	6.4	1.71	1.66
3/8	9.5	3.42	3.39
1/2	13	5.29	5.01

Flow Capacity Information

Calculated flow capacities for the ControlAir Type 1227 Pressure Regulator are listed in Table 4 (SCFH) and Table 5 (Nm³/h). The calculations were obtained with the assumption that the upstream and downstream piping are both the same size as the body of the regulator. Additionally, these flow capacities were calculated using natural gas as the process media (0.6 SG relative to air).

To determine the equivalent flow capacities for gases other than natural gas.

Step 1: Multiply the SCFH flow capacity from Table 4 by 0.775.

Step 2: Divide by the square root of the alternative gas' specific gravity.

Step 3: The resulting value is the equivalent flow capacity for the alternative gas.

Step 4: To convert SCFH flow capacities to units of Nm³/h, multiply the SCFH flow capacity by 0.02832.

Table 4: Flow Capacities in SCFH

Output Range	Set Point (psi)	Inlet Pressure (psi)	Orifice Size (in.)											
			1" NPT Body Size						2" NPT Body Size					
			3/32	1/8	3/16	1/4	3/8	1/2	3/32	1/8	3/16	1/4	3/8	1/2
5-20 psi (0.4-1.4 bar)	5	10	170	330	710	1100	1900	2500	170	330	710	1080	1700	2400
		20	290	500	1160	2060	3400	4450	290	500	1160	1900	2650	3900
		60	640	1170	2600	4710	8140	13700	640	1170	2600	4750	7250	17800
		100	990	1800	4070	7310	12500	16000	990	1790	4070	7310	16200	28700
	10	15	210	375	880	1590	2480	3300	210	375	880	1220	1860	2670
		30	380	670	1560	2800	4720	6840	380	670	1560	2760	3640	6460
		75	770	1410	3150	5710	9790	14500	770	1410	3150	5700	8060	22400
		150	1420	2580	5850	10500	17000	18000	1420	2580	5850	10500	23300	25900
		300	2700	4910	11200	19800	20000		2700	4910	11200	10300	12800	
		750	5400	12000	18000				6600	12000	27200			
		1250	6300						11000					
		1750	6800						15000					
		2000	7600						6300					
	20	30	350	620	1450	2580	4360	6290	350	620	1450	2350	4300	6110
		60	640	1170	2640	4750	9690	14500	640	1170	2640	4750	8400	15700
		150	1420	2580	5850	10500	17700	34200	1420	2580	5850	10500	23300	29000
		300	2700	4910	11200	20100	37000		2700	4910	11200	20100	19600	
		750	6600	12000	23600				6600	12000	27200			
		1250	10000						11000					
		1750	12000						15000					
		2000	14000						6300					
15-40 psi (1.0-2.8 bar)	40	60	610	1090	2530	4510	9290	9420	610	1090	2530	4370	8680	13300
		100	990	1790	4070	7310	14700	21900	990	1800	4070	7310	16200	25400
		200	1850	3370	7630	13700	27100	46400	1850	3370	7630	13700	30400	53900
		500	4400	8090	18300	32900	63900		4400	8090	18300	32900	22000	
		1000	8700	16000	36100				8700	16000	36100			
		1500	13000	22000					13000	22000				
		2000	17000						17000					

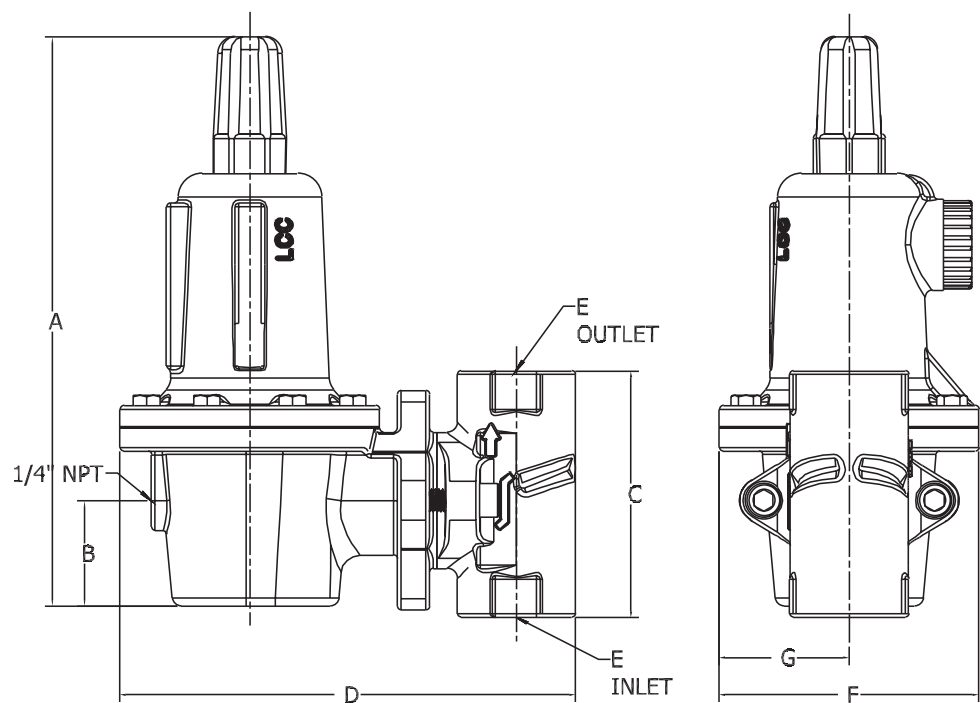
Table 4: Flow Capacities in SCFH (cont.)

Output Range	Set Point (psi)	Inlet Pressure (psi)	Orifice Size (in.)											
			1" NPT Body Size						2" NPT Body Size					
			3/32	1/8	3/16	1/4	3/8	1/2	3/32	1/8	3/16	1/4	3/8	1/2
35-80 psi (2.4-5.5 bar)	60	100	970	1740	4010	7000	13000	19300	970	1740	4010	7000	15000	20400
		200	1850	3370	7630	13700	24000	42200	1850	3370	7630	13700	30400	53900
		500	4400	8090	18300	32900	64000	94300	4400	8090	18300	32900	73000	38800
		1000	8700	16000	36100	50300	67700		8700	16000	36100	43000	52000	
		1500	13000	22000	54000	63000			13000	22000	54000	43000		
		2000	17000	28000					17000	28000				
	80	150	1410	2580	5850	10500	21100	33600	1410	2580	5850	10500	23300	41300
		300	2700	4910	11200	20100	43300	75400	2700	4910	11200	20100	44600	79000
		750	6600	12000	27200	48900	105500	135000	6600	12000	27200	48900	87000	44000
		1250	11000	19000	45000	80000			11000	19000	45000	63000		
		1750	15000	25000	63000				15000	25000	63000			
		2000	28000	71000										
70-150 psi (4.8-10.3 bar)	100	150	1170	2510	5540	8710	16000	24000	1170	2510	5540	8600	16000	22000
		300	2700	4910	11200	19400	30100	53200	2700	4910	11200	20100	35000	65300
		500	4400	8090	18300	31800	66500	83900	4400	8090	18300	32900	73000	129000
		1000	8700	16000	36100	59700	100000		8700	16000	36100	64800	82000	
		1500	13000	22000	54000	86000			13000	22000	54000	96000		
		2000	17000	28000	71000				17000	28000	71000			
	125	200	1830	3320	7550	13400	28100	32800	1830	3320	7550	13700	24000	36000
		500	4400	8090	18300	32900	70800	109000	4400	8090	18300	32900	73000	129000
		1000	8700	16000	36100	64800	138000	160000	8700	16000	36100	64800	58000	
		1500	13000	22000	54000	96000			13000	22000	54000	96000		
		2000	17000	28000	71000				17000	28000	71000			
	150	300	2700	4910	11200	17200	40100	55900	2700	4910	11200	20100	44600	64200
		750	6600	12000	27200	48900	104000	160000	6600	12000	27200	48900	108000	62000
		1250	11000	19000	45000	80000	150000		11000	19000	45000	80000	81000	
		1750	15000	25000	63000	112000			15000	25000	63000	112000		
		2000	17000	28000	71000									

Note: To convert SCFH to Nm³/h, multiply the SCFH flow capacity by 0.02832

Dimensions

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



PORT SIZE (NPT)	A	B	C	D	E	F	G
1"	9.41 [239.0]	1.75 [44.4]	4.07 [103.4]	7.52 [191.1]	1" NPT	4.29 [109.0]	2.15 [54.5]
2"	9.41 [239.0]	1.75 [44.4]	5.00 [127.0]	8.57 [217.8]	2" NPT	4.29 [109.0]	2.15 [54.5]

in [mm]

Pressure Regulators

Type 1230 Pressure Regulator

The **Type 1230 Pressure Regulator** utilizes a similar design to the Type 1227 but provides a much broader offering of output pressure ranges and valve disk materials. Just like the Type 1227, the Type 1230 can be used with compressed air, natural gas, or an assortment of other inert gases.

The Type 1230 is available with output pressures that span from 50 psi up to 500 psi making it suitable for use across a vast range of industries and applications, especially those utilizing regulators in series for controlled pressure reduction across multiple stages.

Features

- 1" or 2" body size
- Trim can be replaced without disconnecting regulator from the system
- Wide selection of output ranges allows for multiple-stage pressure cuts
- NACE MR0175 configurations available
- Can be re-arranged into multiple orientations for difficult installations with limited maneuverability
- Assembled and tested in the USA



Product Specifications

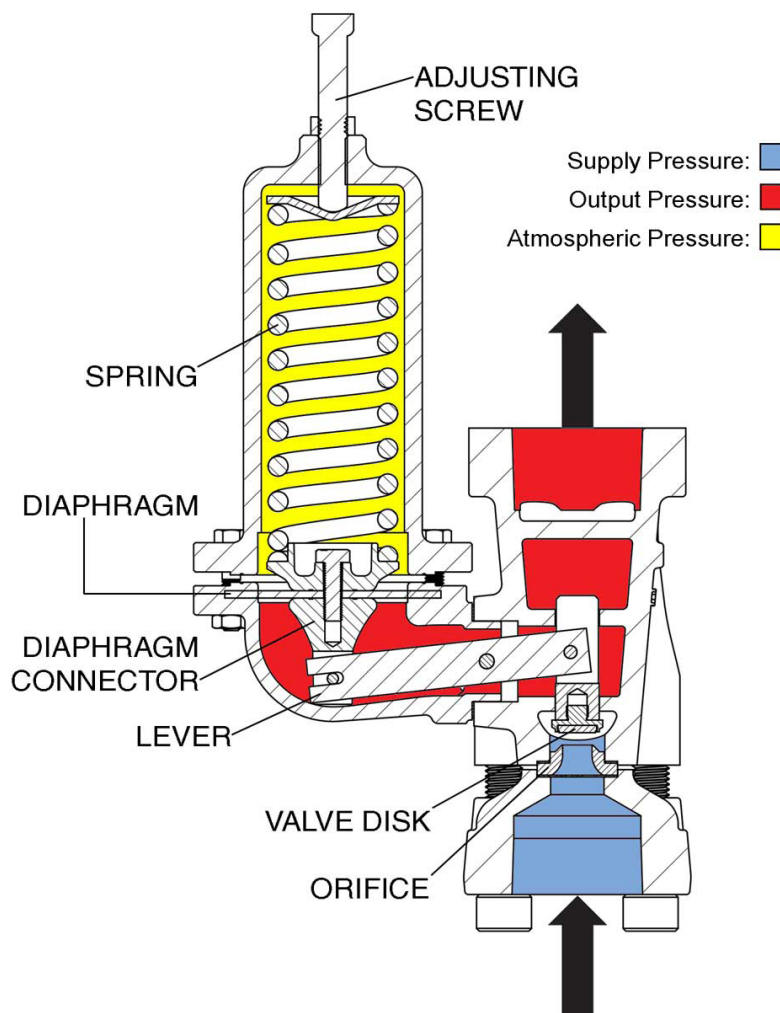
Inlet/Outlet Sizes	1" or 2" NPT (DN 25 or 50)	Temperature Limits:	
Vent Size	1/4" NPT	Elastomer Material	
Output Ranges	27-50 psi (1.9 to 3.5 bar) 46-95 psi (3.2 to 6.6 bar) 90-150 psi (6.2 to 10.3 bar) 150-200 psi (10.3 to 13.8 bar) 200-275 psi (13.8 to 19 bar) 275-500 psi (19 to 34.5 bar)	Neoprene (CR), Nitrile (NBR), & Nylon (PA) -40°F to 180°F (-40°C to 82°C)	
Note: Nylon seat disks standard for ranges over 150 psig (10 bar).		Fluorocarbon (FKM) and PTFE 0°F to 180°F (-18°C to 82°C)	
Orifice Sizes	1/8", 3/16", 1/4", 3/8", & 1/2"	Weights	1" NPT / DN 25 Body: 25 lbs. (11.3 kg) 2" NPT / DN 50 Body: 30 lbs. (13.6 kg)
Maximum Inlet Pressure and Pressure Drop	See Tables 1 & 2	Operating Media	Compressed Air, Natural Gas, Other Inert Gases
Body Inlet Pressure Rating	1500 psi (103 bar)	Materials of Construction:	Standard (S) NACE (N)
Maximum Outlet Pressure	500 psi (39.7 bar)	Body, Bonnet, Diaphragm Case	LCC Steel LCC Steel
Maximum Outlet Pressure Above Set Point	200 psi (13.8 bar)	Diaphragm	Neoprene Fluorocarbon
Cv Values	See Table 2	Valve Seat Disk	Nitrile or Nylon Fluorocarbon or Nylon
Flow Capacities	See Table 3	Trim	Brass and Aluminum (Stainless option) Stainless Steel

Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.

Principles of Operation

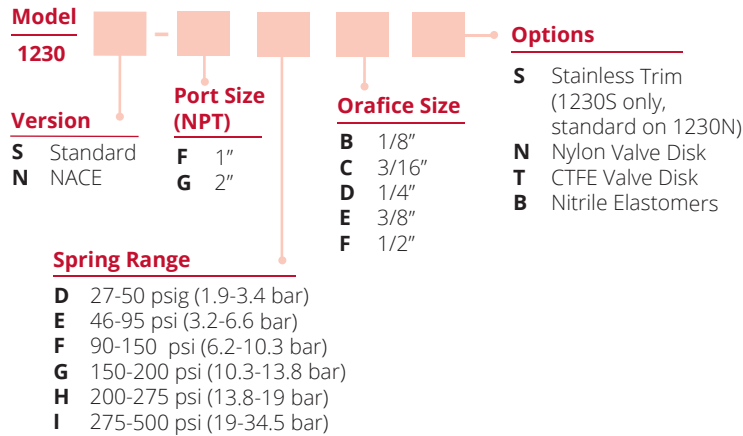
The operation of the Type 1230 pressure-reducing regulator is very similar to that of the Type 1227; the primary difference between them is the lever-mechanism design and the orientation of the orifice. If the downstream pressure (sensed by underside of diaphragm) is below the set point of the spring, the spring force will overcome the downstream pressure force causing it to push down on the diaphragm connector; this in turn pulls upward on the valve disk through movement of the lever, pulling it further away from the orifice allowing more gas to flow through the regulator. Conversely, if the downstream pressure is at or above the set point of the spring, the spring compression force is unable to overcome the downstream pressure force acting on the underside of the diaphragm; this causes the diaphragm connector to move upward, positioning the valve disk closer to the orifice and reducing the flow of gas.

Note: The ControlAir Type 1230 Pressure Regulator does not include internal relief. Therefore, if the inlet pressure is able to exceed the outlet pressure rating, the user must provide a pressure-relieving device.



How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



Note: Nylon seat disks standard for ranges over 150 psig (10 bar).

Materials of Construction

	Standard (S)	NACE (N)
Body, Bonnet, Diaphragm Case	LCC Steel	LCC Steel
Diaphragm	Neoprene	Fluorocarbon
Valve Seat Disk	Nitrile or Nylon	Fluorocarbon or Nylon
Trim	Brass and Aluminum (Stainless option)	Stainless Steel

Table 1: Maximum Inlet Pressure by Orifice Size

Orifice Size		Maximum Inlet Pressure	
in.	mm	psi	bar
1/8	3.2	1500	103
3/16	4.8	1500	103
1/4	6.4	1500	103
3/8	9.5	1000	69
1/2	13	750	51.7

Table 2: Maximum Pressure Drop by Orifice Size and Disk Material

Orifice Size		Maximum Pressure Drop*							
		Nitrile (NBR) Disk		Fluorocarbon (FKM) Disk		CTFE Disk		Nylon (PA) Disk	
in.	mm	psi	bar	psi	bar	psi	bar	psi	bar
1/8	3.2	600	41.4	200	13.8	1500	103	1500	103
3/16	4.8	600	41.4	200	13.8	1500	103	1500	103
1/4	6.4	600	41.1	200	13.8	1000	69	1000	69
3/8	9.5	500	34.5	200	13.8	500	34.5	500	34.5
1/2	13	250	17.2	200	13.8	250	17.2	250	17.2

* The inlet pressure cannot exceed the sum of the set point and maximum pressure drop.

Note: Nitrile valve disks are furnished for pressure ranges up to 150 psig (10 bar) for better wear resistance. Nylon valve disks are furnished for higher pressure ranges over 150 psig (10 bar).

Example: For a regulator with 1/2" orifice size, NBR disk material, and set point of 100 psi, the maximum inlet pressure would be 350 psi = 250 psi (maximum pressure drop for 1/2" & NBR) + 100 psi (set point)

Table 3: Flow Coefficient for Relief Valve Sizing

Orifice Size		Cg	Cv	C1
in.	mm			
1/8	3.2	13.9	0.49	26.4
3/16	4.8	31.3	1.11	28.2
1/4	6.4	55.1	2.03	27.2
3/8	9.5	122.5	4.61	26.6
1/2	13	216.0	8.18	26.4

Flow Capacity Information

Calculated flow capacities for the ControlAir Type 1230 pressure regulator are listed in Table 4 (SCFH) and Table 5 (Nm³/h). The calculations were obtained with the assumption that the upstream and downstream piping are both the same size as the body of the regulator. Additionally, these flow capacities were calculated using natural gas as the process media (0.6 SG relative to air).

To determine the equivalent flow capacities for gases other than natural gas.

Step 1: Multiply the SCFH flow capacity from Table 4 by 0.775.

Step 2: Divide by the square root of the alternative gas' specific gravity.

Step 3: The resulting value is the equivalent flow capacity for the alternative gas.

Step 4: To convert SCFH flow capacities to units of Nm³/h, multiply the SCFH flow capacity by 0.02832.

Table 4: Flow Capacities in SCFH at 20% droop of Natural Gas (0.6 Specific Gravity)

Output Range	Set Point (psi)	Inlet Pressure (psi)	Orifice Size (in.)									
			1" NPT Body Size					2" NPT Body Size				
			1/8	3/16	1/4	3/8	1/2	1/8	3/16	1/4	3/8	1/2
27-50 psi (1.9-3.5 bar)	50	60	900	2000	3100	5200	8100	1000	2100	3200	5300	12000
		100	1700	3500	5700	10500	13000	1800	3600	5800	10000	21000
		200	3500	7800	11000	16000	19000	3600	7900	12000	21000	55000
		300	5300	10500	14000	20000	23000	5500	11000	19000	48000	83000
		400	6900	13000	17000	23000		7000	15000	27000	63000	
		500	8700	15000	19000	25000		8800	19000	34300	79700	
		600	9800	17000	21000			10000	23000	42000		
		1000	16200	22300	26300			18000	39900	70400		
46-95 psi (3.2-6.6 bar)	50	1500	19000	25000				27000	60000			
		60	800	1500	2400	4300	6400	900	1600	2500	4400	7300
		100	1500	3100	4200	7500	10000	1600	3400	4300	7600	12000
		200	3400	6800	9400	14000	17000	3500	6700	9600	16000	27000
		300	5200	8900	11000	16000	20000	5300	10000	14000	27000	51000
		400	6800	11000	15000	20000		6900	13000	21000	46000	
		500	8600	12300	16300	22000		8700	16300	26300	73300	
		600	9800	14000	19000			10000	20000	35000		
	75	1000	13500	18400	21700			17100	38700	68800		
		1500	18000	24000				26000	59000			
		100	1700	3200	5000	8000	13000	1800	3300	5200	9000	14000
		200	3500	7300	10000	16000	22000	3600	7400	11000	19000	30000
		400	7100	14000	19000	27000		7200	15000	24000		
		500	8600	16300	21300	28700		8700	19000	31400		
		600	9900	19000	25000			10000	23000	39000		
		1000	16700	25800	31000			17600	39000	69300		
90-150 psi (6.2-10.3 bar)	100	1500	23000	32000				24000	60000			
		125	2000	3600	5500	9200	13000	2100	3700	5600	9800	15000
		150	2500	4600	6800	11000	16000	2600	4900	7400	12000	18000
		200	3600	6600	9400	13000	22000	3700	6900	10000	17000	27000
		300	5300	9800	14000	21000	30000	5400	10000	16000	27000	44000
		400	7000	13000	18000	27000		7200	14000	21000	39000	
		500	8300	15500	20500	31000		8600	17500	27500	54000	
		1000	17500	26000	32600			17200	38600	66000		
		1500	25000	35000				27000	59000			

(cont.)

Pressure Regulators

Type 1230 Pressure Regulator

Table 4: Flow Capacities in SCFH (cont.)

Output Range	Set Point (psi)	Inlet Pressure (psi)	Orifice Size (in.)									
			1" NPT Body Size					2" NPT Body Size				
			1/8	3/16	1/4	3/8	1/2	1/8	3/16	1/4	3/8	1/2
90-150 psi (6.2-10.3 bar)	125	150	2400	4600	6700	11000	17000	2500	5000	8100	12000	20000
		200	3500	6800	10000	15000	23000	3600	7400	11000	19000	30000
		300	5200	10000	15000	25000	34000	5300	11000	17000	31000	48000
		400	7300	14500	19000	29000		7000	15000	24000	43000	65000
		500	7900	15000	25000	36000		8800	19000	30000	59000	
		1000	16000	30300	38800			17000	39000	69300		
		1500	26000	43000				27000	60000			
	150	200	3400	6800	10000	16000	26000	3500	7300	11000	18000	30000
		300	5300	10000	15000	24000	35000	5400	11000	19000	32000	52000
		400	7100	14000	22000	34000	42000	7200	15000	26000	46000	77000
		500	8000	18800	26300	39300		8600	19800	32800	62500	
		800	13000	29000	38000			14000	30000	54000		
		1000	17000	34000	44300			18000	39100	67700		
		1500	26000	47000				27000	60000			
150-200 psi (10.3-13.8 bar)	150	200	3400	6200	9300	16000	26000	3500	6900	10000	17000	28000
		300	5300	10000	15000	24000	30000	5400	11000	17000	28000	47000
		400	7100	14000	21000	32000	38000	7200	15000	24000	40000	66000
		500	8000	16500	26300	39000		8500	18300	30250	53000	
		800	13000	27000	37000			14000	30000	51000		
		1000	16700	31000	43900			17400	38600	66400		
		1500	26000	44000				27000	60000			
	200	250	4200	8300	12000	20000	30000	4300	9100	13000	23000	42000
		300	5200	10000	16000	25000	35000	5300	11000	18000	33000	52000
		600	9500	22000	34000	55000		10000	23000	40000	75000	
		700	11000	25000	40000	61500		12000	27000	47000	90000	
		800	13000	30000	43000			14000	31000	54000		
		1000	16000	37000	50000			17000	39000	69000		
		1200	20000	41000	59000			21000	48000	83000		
		1500	26000	53000				27000	60000			
200-275 psi (13.8-19 bar)	200	250	4200	8200	11000	20000	29000	4300	8900	12000	23000	35000
		300	5200	10000	14500	25000	35000	5300	11000	18000	31000	46000
		600	9500	22000	31000	51000		10000	23000	38000	70000	
		700	11000	25000	35000	55000		12000	27000	45000	83000	
		800	13000	29000	42000			14000	31000	52000		
		1000	16000	36000	50000			17000	39000	68000		
		1200	19000	41000	55000			20000	46000	83000		
		1500	26000	51000				27000	60000			
	250	300	4900	9000	15000	28000	42000	5000	10000	17000	30000	52000
		400	7000	14000	23000	40000	56000	7100	15000	25000	47000	76000
		500	8500	18000	29000	51000	65000	8600	19000	34000	62000	103000
		600	9500	22000	34000	59000		10000	23000	41000	78000	
		1000	16000	39000	58000			17000	40000	68000		
		1500	26000	59000				27000	60000			
	275	300	4700	9000	15000	28000	39000	4800	10000	17000	29000	43000
		400	6900	14000	25000	40000	54000	7000	15000	26000	47000	73000
		600	9300	21000	39800	76100		10000	23000	40800	81900	
		1000	16000	39000	67000			17000	40000	68000		
		1500	26000	60000				26000	61000			

(cont.)

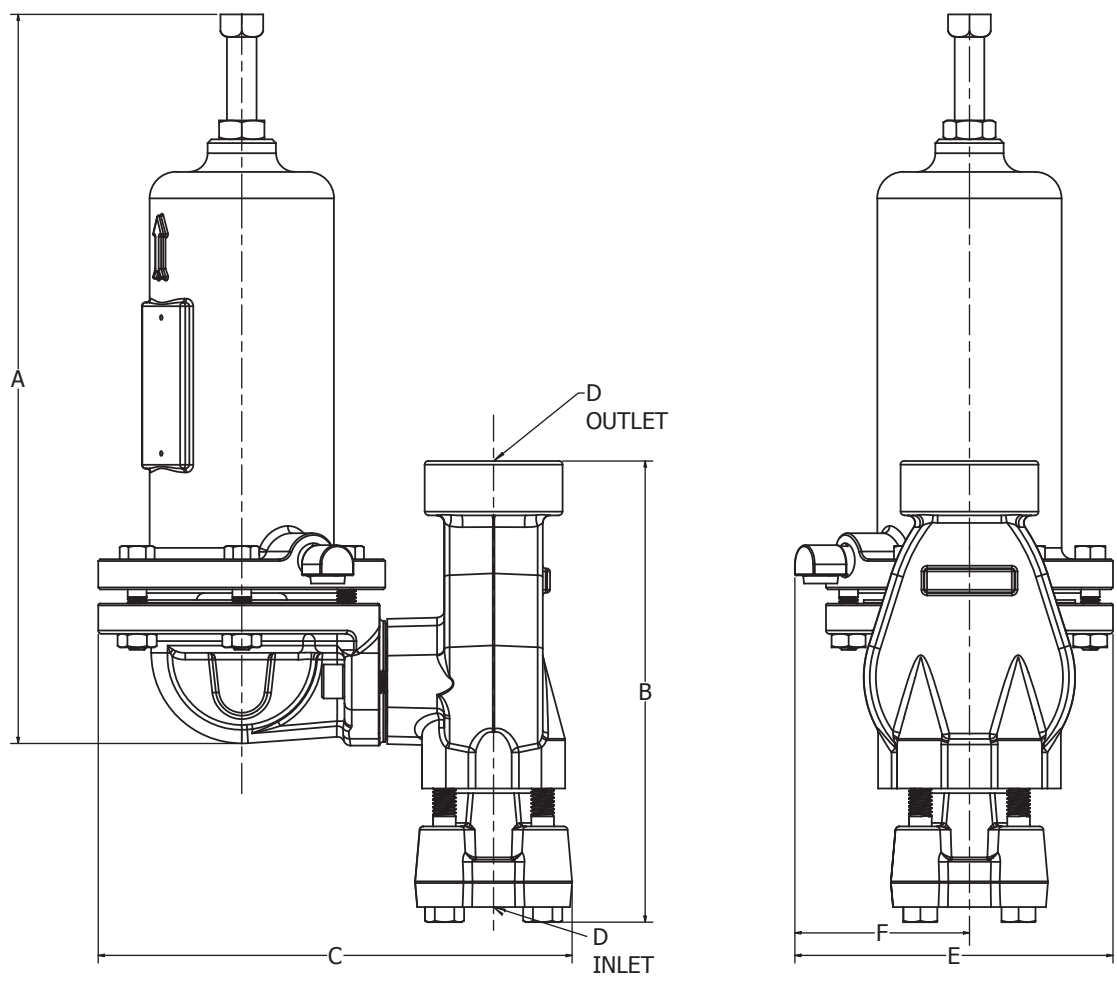
Table 4: Flow Capacities in SCFH (cont.)

Output Range	Set Point (psi)	Inlet Pressure (psi)	Orifice Size (in.)									
			1" NPT Body Size					2" NPT Body Size				
			1/8	3/16	1/4	3/8	1/2	1/8	3/16	1/4	3/8	1/2
275-500 psi (19-34.5 bar)	275	300	4500	7500	10000	20000	31000	4600	8400	13000	23000	37000
		400	6600	12000	16000	31000	43000	7000	13000	20000	32000	53000
		600	9300	18400	24300	43800		10000	23000	40800	81900	
		1000	17000	32000	43000			18000	37000	57000		
		1500	26000	46000				27000	57000			
	300	400	6600	11000	16000	31000	42000	7000	13000	21000	35000	54000
		600	9900	19000	26000	48000		10000	21000	34000	59000	
		700	11000	23000	30000	54000		12000	26000	40000	72000	
		800	13000	26000	35000	61000		14000	29000	47000	81000	
		1000	16800	32500	43800			15800	33200	53600		
		1300	22000	43000	58000			23000	50000	80000		
		1500	26000	49000				27000	58000			
	400	500	8300	16000	24000	44000	62000	8800	17000	28000	49000	77000
		600	9400	21300	30000	55300		10300	22300	36000	66300	100300
		800	13000	30000	41000	76000		14000	31000	51000	95000	
		900	15000	34000	49000	85000		16000	36000	58000	110000	
		1000	17000	38000	54000			18000	40000	66000		
		1200	20000	46000	63000			21000	48000	80000		
		1400	24000	55000	76000			25000	57000	96000		
		1500	26000	60000				27000	61000			
	500	550	8700	16000	26000	50000	77000	9000	18000	30000	53000	89000
		600	9500	19000	36800	57000		10000	20800	34500	62300	102000
		900	15000	34000	52000	92000		16000	35000	60000	113000	
		1000	17000	39000	60000	100000		18000	40000	67000	130000	
		1500	26000	59000	72000			27000	60000	82000		

Note: To convert SCFH to Nm³/h, multiply the SCFH flow capacity by 0.02832

Dimensions

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



	A	B	C	D	E	F
1" Body	12.07 [306.5]	7.63 [193.9]	7.84 [199.2]	1" NPT	5.26 [133.7]	2.89 [73.4]
2" Body	12.07 [306.5]	8.58 [218.0]	8.48 [215.4]	2" NPT	5.26 [133.7]	2.89 [73.4]

Pressure Regulators

Type 330/335 Air Filter Regulator

Type 330/335 Air Filter Regulator

The Type 330/335 Air Filter Regulator is designed to provide clean, accurate air pressure to instruments, valves, and other automatic control equipment in a lightweight, compact housing. This quality instrument is constructed of durable materials that will provide long lasting performance in industrial environments. The Type 330 Filter Regulator is available in 1/4" NPT porting for normal operation and 1/2" NPT porting for high flow capacity requirements. The materials in the Type 335 Filter Regulator meet NACE MR-0175 requirements (available in 1/4" only).



1/4" NPT

Features

- Compact and light weight construction
- Mounts where competitive units won't
- 1/4" NPT or 1/2" NPT version for high flow capacity
- Low air consumption lower operating costs
- Tapped exhaust option
- Rugged, corrosion resistant design functional for harsh conditions
- Warranty - 18 months
- NACE option available for 1/4" NPT version



HIGH FLOW
CAPACITY
1/2" NPT

Product Specifications

In/Out Port Size	1/4" NPT	Effect of Supply Pressure Variation	Less than 0.25 psi (0.017 bar) for 25 psi (1.7 bar) change
	1/2" NPT (High flow capacity) (Gauge Ports 1/4 NPT)		Less than 0.5 psi (0.035 bar) for 25 psi (1.7 bar) change
Output Ranges	0-30 psi (0 to 2 bar) 0-60 psi (0 to 4 bar) 0-120 psi (0 to 8 bar)	Temperature Limits	0°F to 160°F (-18°C to 71°C)
Maximum Supply Pressure	250 psi (17 bar)	Weight	1.2 lbs (.45 kg)
Mounting	Pipe or through body direct	Operating Media	Air, Inert Gas, Sweet Natural Gas, Sour Natural Gas (Type 335)
Filter	40 micron (5 optional)	Materials of Construction	<u>Standard</u> <u>NACE</u>
Cv Values	0.5 at 150 psi supply and 80 psi setpoint for 1/4" 2.5 at 150 psi supply and 80 psi setpoint for 1/2"	Body	Diecast Aluminum Alloy, Irridite & Baked Epoxy Finish
Exhaust Capacity	0.1 scfm (2.83 NI/min) with downstream pressure 5 psi (0.3 bar) above set point	Filter Diaphragm	Polyethylene Polyethylene Nitrile Elastomer & Nylon Fabric Viton
Sensitivity	1" of water	Valve Seat	Nitrile Elastomer Viton
Air Consumption	Less than 5 scfh (2.5 NI/min)	Additional Materials	Brass, Zinc Plated Steel, Acetal 316SS Aluminum, Heat Treated Plated Steel

Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.

Pressure Regulators

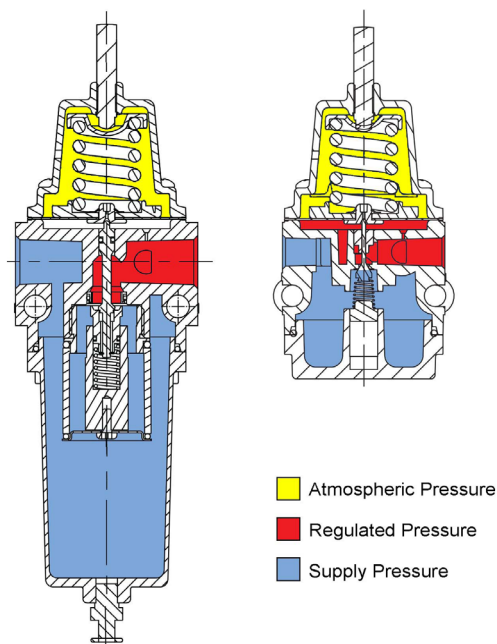
Type 330/335 Air Filter Regulator

Principles of Operation

Turning the adjusting screw changes the force exerted by the range spring on the diaphragm assembly. In equilibrium of set pressure, the force exerted by the range spring is balanced by the force from the output pressure acting underneath the diaphragm assembly. An unbalanced state between the output pressure and the set pressure causes a corresponding reaction in the diaphragm and supply valve assemblies.

If the output pressure rises above the set pressure, an upward force is exerted on the diaphragm assembly causing the relief seat to lift and open. Excess pressure is vented to atmosphere until equilibrium is reached. If the output pressure drops below the set pressure the unbalanced force of the range spring causes a downward force on the diaphragm assembly. The supply valve then opens until the pressure builds up once more to the equilibrium condition.

Under forward flow conditions, the range spring force is balanced by the diaphragm pressure force, with the supply valve open just enough to maintain the required equilibrium pressure. When high flow occurs, a specially designed aspirator helps maintain downstream pressure and compensates for droop.



How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component

Filter Regulator
330 - [] [] [B] [] Options (see descriptions)

NPT
B 1/4"
D 1/2"

Gauge Ports (2)

Range
A 0-30 psig (0-2 bar)
B 0-60 psig (0-4 bar)
C 0-120 psig (0-8 bar)

Options (see descriptions)
A Autodrain
E Tapped Exhaust
F 5 Micron Filter
K Knob
L Low Temp
N Non-Relieving
P Panel Mount
R EAC TR-CU
X ATEX

NACE Filter Regulator
335 - [B] [] [B] [] Options (see descriptions)

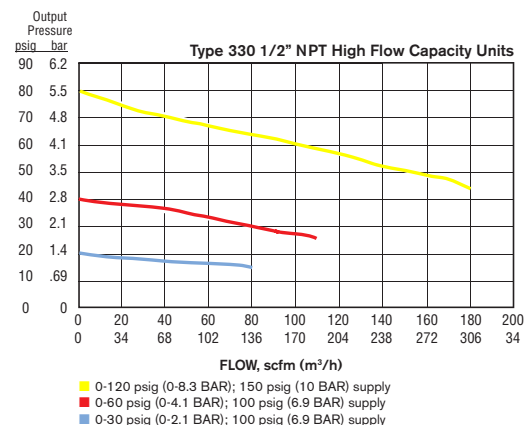
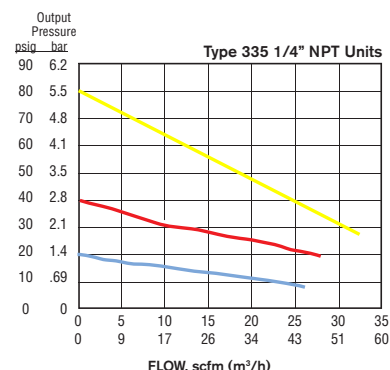
NPT
B 1/4"

Gauge Ports (2)

Range
A 0-30 psig (0-2 bar)
B 0-60 psig (0-4 bar)
C 0-120 psig (0-7 bar)

Options (see descriptions)
F 5 Micron Filter
N Non-Relieving

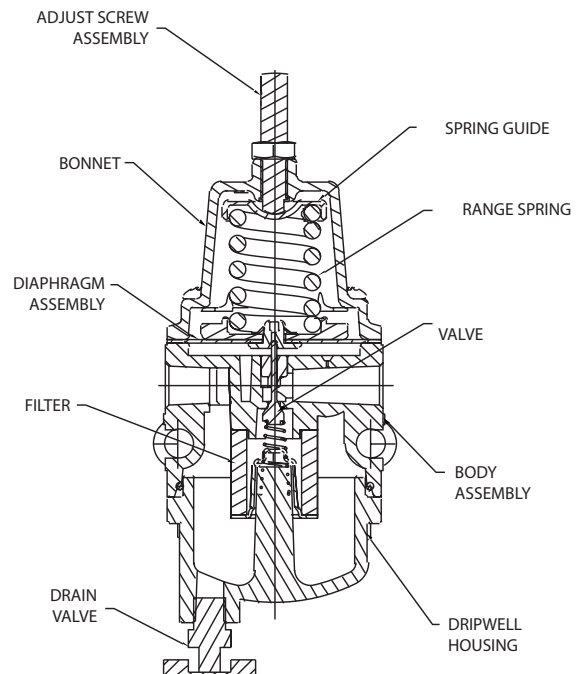
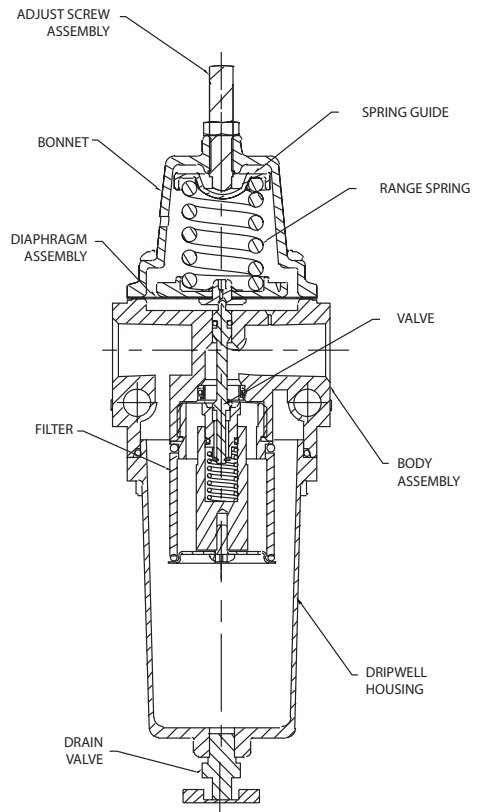
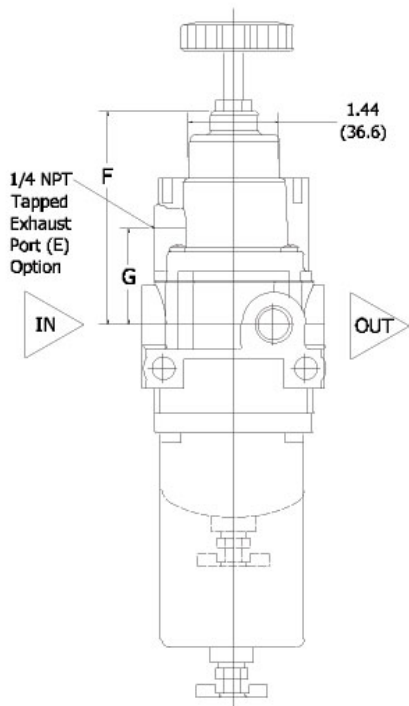
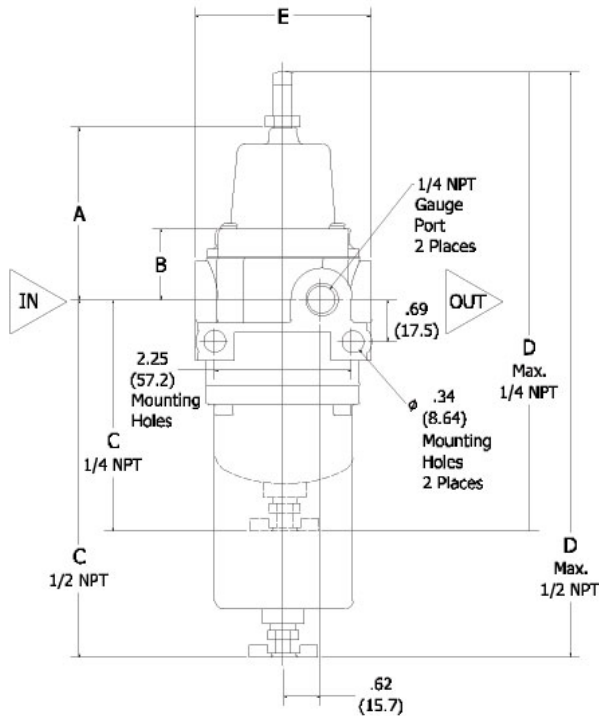
Flow Charts



Pressure Regulators

Type 330/335 Air Filter Regulator

Dimensions shown are for reference only. Linear = mm/in.



Port Size (NPT)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)
1/4"	2.66 (67.6)	1.0 (25.4)	3.42 (86.8)	7.15 (181.6)	2.25 (57.2)	3.19 (81.0)	1.22 (31.0)
1/2"	2.83 (71.9)	1.17 (29.7)	6.06 (153.7)	9.78 (248.4)	2.25 (57.2)	3.36 (85.3)	1.39 (35.3)

Pressure Regulators

Type 350/360/370 Stainless Steel Regulators & Filter

350SS Stainless Steel Filter Regulator | 360SS Stainless Steel Regulator | 370SS Stainless Steel Filter



- Provides clean, accurate air pressure
- Epoxy paint finish standard
- Stable output and repeatability
- High capacity, long lasting depth filter
- Low droop
- Meets NACE MR-0175 requirements
- Low temperature option
- Filter only unit available

Maximum Flow Capacity SCFM (NI/min)		
1/4" NPT	20	(600)
1/2" NPT	160	(4,800)
Exhaust Capacity SCFM (NI/min)		
1.0	30	
Sensitivity Inch wc (mm)		
1.0	(25.0)	
Supply Pressure max. psig (BAR)		
290	(20)	

Type 370SS Stainless Steel Filter

Model	Part Number	Port Size (NPT)
370-SS	370-BX	1/4"
370-SS	370-DX	1/2"

Type 350SS Stainless Steel Filter Regulator

Model	Part Number	Port Size (NPT)	Output Range psi	bar
350-SS	350-BA	1/4"	0-30	0-2.1
350-SS	350-BB	1/4"	0-60	0-4.1
350-SS	350-BC	1/4"	0-100	0-6.9
350-SS	350-BD	1/4"	0-150	0-10.3
350-SS	350-DA	1/2"	0-30	0-2.1
350-SS	350-DB	1/2"	0-60	0-4.1
350-SS	350-DC	1/2"	0-100	0-6.9
350-SS	350-DD	1/2"	0-150	0-10.3

Type 360SS Stainless Steel Regulator

Model	Part Number	Port Size (NPT)	Output Range psi	bar
360-SS	360-BA	1/4"	0-30	0-2.1
360-SS	360-BB	1/4"	0-60	0-4.1
360-SS	360-BC	1/4"	0-100	0-6.9
360-SS	360-BD	1/4"	0-150	0-10.3
360-SS	360-DA	1/2"	0-30	0-2.1
360-SS	360-DB	1/2"	0-60	0-4.1
360-SS	360-DC	1/2"	0-100	0-6.9
360-SS	360-DD	1/2"	0-150	0-10.3

Type 380/390 Stainless Steel Filter Regulator & Regulator

380 Large Flow Capacity Stainless Steel Filter Regulator | 390 Large Flow Capacity Stainless Steel Regulator



- All 316 stainless steel construction
- 3/4" & 1" NPT/BSP ported version
- High flow capacity
- NACE approved
- Autodrain option
- Tapped exhaust

Maximum Flow	3/4" NPT	6.0
Coefficients (Cv)	1" NPT	7.0
Maximum Flow	3/4" NPT	350 (9,905)
Capacity SCFM (NI/min)	1" NPT	400 (11,320)
Supply Pressure max. 290 psig (20 BAR)		
Operating Temperature -40° to 200°F (-40° to 93°C)		
Filter 25 micron or 5 micron		
Weight	Type 380	15 lbs (6.80 kg)
	Type 390	13 lbs (5.90 kg)

Type 380 Stainless Steel Filter Regulator

Range psig (BAR)	Port Size NPT	Model#
0-30 (0-2)	3/4, 1	380-EA, 380-FA
0-60 (0-4)	3/4, 1	380-EB, 380-FB
0-100 (0-7)	3/4, 1	380-EC, 380-FC
0-150 (0-10)	3/4, 1	380-ED, 380-FD
0-200 (0-14)	3/4, 1	380-EE, 380-FE

Type 390 Stainless Steel Regulator

Range psig (BAR)	Port Size NPT	Model#
0-30 (0-2)	3/4, 1	390-EA, 390-FA
0-60 (0-4)	3/4, 1	390-EB, 390-FB
0-100 (0-7)	3/4, 1	390-EC, 390-FC
0-150 (0-10)	3/4, 1	390-ED, 390-FD
0-200 (0-14)	3/4, 1	390-EE, 390-FE

Type 950XP Explosion-Proof I/P Transducer

Process reliable and field rugged electronic pressure regulator



- Compact design
- Explosion-proof NEMA-4X (IP65) enclosure
- RFI, EMI protected
- Shock, vibration and position insensitive.
- Field-selectable outputs (optional)
- Highly tolerant of impure air
- Optional tapped exhaust and conduit seal required for FM/CSA approval when using natural gas (sweet) or methane

Flow Capacity SCFM (NI/min)	12.0 (360)
Terminal Based Linearity (% of span)	±0.10
Repeatability (% of span)	<0.10
Supply Pressure max. psig (BAR)	100 (7)
Port Size Pneumatic (Electric)	1/4 NPT (1/2 NPT)
Approximate Size inches (mm)	DIA 3.50 (88.9) H 4.60 (116.6)
Weight lbs (kg)	T380: 15 (6.80) T390: 13 (5.90)

Input Signal	Output Range PSI (BAR)	Model# NPT/BSP
4-20 mA	3-15 (0.2-1)	950-AC
4-20 mA	3-27 (0.2-1.8)	950-AD
4-20 mA	6-30 (0.4-2)	950-AE
4-20 mA	Field Selectable	950-ACA
4-20 mA	Explosion-proof	950-ACA

Volume Boosters

Type 6000 High Flow Capacity Volume Booster

High Flow Capacity in a Rugged Casing



- 1:1 signal to output relay
- High air volume for rapid actuator stroking
- Adjustable bypass valve eliminates actuator overshoot or overdamping
- Soft seat sealing for tight shutoff
- Available in aluminum or 316 stainless steel construction
- EPDM or silicone elastomer options



In/Out Port	Construction	Model #
1/2" NPT	Aluminum	6000-DA
3/4" NPT	Aluminum	6000-EA
1/2" NPT	Stainless Steel	6000-DS
3/4" NPT	Stainless Steel	6000-ES

Supply & Signal Pressure	150 psig (10 BAR) max.
Max Flow Coefficients (Cv)	Supply 3.0 / Exhaust 3.0
Flow Capacity	115 SCFM (3,450 NL/min)
Deadband	Under 0.25 psig (0.017 BAR)
Signal to Output Ratio	1:1 ± 5%
Temperature Limits	-40° to 160°F (-40° to 71°C)
EPDM Option "R"	-40° to 230°F (-40° to 110°C)
Silicone	-60° to 230°F (-51° to 110°C)
Signal Port	1/4" NPT
Supply/Output Port	1/2" or 3/4" NPT

Type 6100 High Flow Capacity Volume Booster

Rapid Stroke Capability in a Rugged Aluminum Casing



- 1/4", 1/2", 3/4" NPT porting
- Two 1/4" NPT gauge ports
- Integral adjustable bypass valve
- High flow capacity
- Soft valve seat design
- High temperature operation
- Two high output exhaust vents
- Two 1/4" NPT gauge ports

In/Out Port	Construction	Model #
1/2" NPT	Aluminum	6100-DA
3/4" NPT	Aluminum	6100-EA
1/2" NPT	Stainless Steel	6100-DS
3/4" NPT	Stainless Steel	6100-ES

Signal/Output Ratio	1:1
Supply Pressure	250 psig (17.0 BAR) max.
Signal Pressure	150 psig (10.0 BAR) max.
Maximum Flow Coefficients	3/4"-Forward: 5.0; Exhaust 3.5, 1/2"-Forward: 4.5; Exhaust 3.5, 1/4"-Forward: 2.0; Exhaust 2.5
Exhaust Capacity SCFM (NL/min)	3/4"-80 (2,264 NL/min), 1/2"-75 (2,123 NL/min), 1/4"-35 (991 NL/min)
Output Accuracy	1.0% of 100 psi output span
Sensitivity Inch wc (cm) 1" (2.54)	
Supply Pressure Effect	0.1 psig (0.007 BAR) for a 25 psig (1.7 BAR) change
Signal Port	1/4" NPT
Supply/Output Port	1/4", 1/2", or 3/4" NPT
Exhaust Port	ø7/16" or 1/4" NPT option
Gauge Port (2)	1/4" NPT

Type 6500/6600 Large Flow Capacity Volume Booster

Rapid Stroke Capability in a Rugged Aluminum or Stainless Steel Casing



- 11:1 signal to output relays utilized in high flow applications
- Aluminum or 316 stainless steel
- 3/4" or 1" NPT porting
- SIL3 certifications
- Integral adjustable bypass valve
- High temperature option
- Soft valve seat design
- Tapped high output exhaust port
- no gauge ports - optional output feedback port
- Low temperature option

In/Out Port	Construction	Model #
3/4" NPT	Aluminum	6500-EA
1" NPT	Aluminum	6500-FA
3/4" NPT	Stainless Steel	6600-ES
1" NPT	Stainless Steel	6600-FS

Signal/Output Ratio	1:1
Supply Pressure	250 psig (17.0 BAR) Maximum
Signal Pressure	150 psig (10.0 BAR) Maximum
Maximum Flow Coefficients	3/4"-Forward: 6.0; Exhaust 5.0 1"-Forward: 7.0; Exhaust 5.0
Flow Capacity:	3/4"-350 SCFM (9,905 NL/min); 1"-400 SCFM (11,320 NL/min)
	100 psig (7 BAR) supply, 20 psig (1.4 BAR) output
Signal to Output	2.0% (% of 100 psi output span)
Ratio Accuracy:	1.5% (% of 15 psi output span)
Temperature Limits	-40 to 200°F (-40 to 93°C)
Low Temperature Limits	-62 to 194°F (-52 to 90°C)
Deadband	Under 0.2 psig (.01 BAR)
Supply Pressure Effect	0.3 psig (.02 BAR)
Exhaust Port	ø7/16" or 1/4" NPT option
Gauge Port (2)	1/4" NPT

Valve Positioner

Type 2000 Pneumatic and Electro-Pneumatic Valve Positioner

Stable and accurate positioning of rotary and linear valves



- Modular construction - base pneumatic unit can be quickly field converted to a fully optioned electro-pneumatic unit
- Rotary and linear, single and double acting
- External and zero adjustment for easy calibration
- Compact design - small size and low weight
- Vibration, position and shock insensitive
- Namur rotary mounting kits
- Linear mounting kits for most valves
- Stainless steel spool valve - long operating life
- High gain pilot valve - Provides quick and accurate valve/actuator response
- Standard pointed indicator (rotary), standard blank cover (linear) and optional raised beacon
- High maximum supply pressure - 145 psig (10 Bar)
- FM, CSA & ATEX approvals - for Intrinsically Safe (CA2010/CA2011) and Explosion-proof (CA2020/CA2021) operation
- Optional mechanical switches and 4-20mA position feedback

	Pneumatic (CA2000)	Electro-Pneumatic (CA2005/CA2010/CA2011) (CA2022/CA2023)	
Input Signal	3-15 PSI (0.2-1.0 Bar)	4-20 mA (Ri<250 ohms)	
Supply Pressure	<145 PSI (<10 Bar)	21.8-145 PSI (1.5-10 Bar)	
Linearity Error	<0.7 % f.s	<1.0% f.s	
Hysteresis	<0.4% f.s	<0.6% f.s	
Repeatability	<0.3% f.s	<0.5% f.s	
Pressure Gain	750 P out/P in	750 P out/P in	
Flow Capacity	SCFM NI/min	SCFM	NI/min
@29 PSI (2.0 Bar)	9.5 268.9	9.5	268.9
@87 PSI (6.0 Bar)	28.3 800.1	28.3	800.1
@145 PSI (10 Bar)	47.1 1333	47.1	1333
Air Consumption	SCFM NI/min	SCFM	NI/min
@29 PSI (2.0 Bar)	0.18 5.09	0.2	5.7
@87 PSI (6.0 Bar)	0.53 424.5	0.6	17.0
@145 PSI (10 Bar)	0.88 707.5	1.0	28.3
Impedance		260 Ohms @ 70°F	500 Ohms @ 70°F
Loop Load		5.2 Volts @ 20 mA	9.5 Vdc @ 20 mA
Temperature Range	-40° to 185° F (-40° to 85° C)		-40° to 158° F (-40° to 70° C)
Port Sizes	Pneumatic: 1/4" NPT; Gauge Ports - 1/8" NPT Electric: 1/2" NPT; M20-1.5 (ATEX)		
Media	Clean, dry, oil-free instrument air, filtered to 40 micron or methane Sweet natural gas		
Enclosure	Nema 4X / IP66 aluminum with polyester epoxy finish		
Weight	3.5 lbs (1.6 kg)	3.8 lbs (1.7 kg)	CA2005/CA2010/CA2011
	5.1 lbs (2.3 kg)	5.4 lbs (2.5 kg)	CA2005 with feedback
		4.8 lbs (2.2 kg)	CA2020/CA2011
		6.0 lbs (2.7 kg)	CA2022/CA2023

Mechanical Switches

(S & FS Option)	
Input Signal	Honeywell V15S05-CZ100 A05-01
Switch Type	SPDT
Loop Load	5A 125/ 250 VAC/ 0.1A 48 Vdc
Operating Force	100gf
Position Feedback	<0.3% f.s.

(F & FS Option)

Voltage	Supply 12-30 Vdc
Output	2 Wire; 4-20 mA DC
Loop Impedance	Max. 700Ω @ 24 Vdc
Linearity Error	<1.5% F.S.
Hysteresis Error	<0.5% F.S.

Model	Type of Motion	Cam	Feedback/ Switches
CA20	R Rotary L Linear	C1 90°/180° (Standard Rotary) C2 45°/90° C3 30°/60° (Standard Linear)	(factory installed) CA20-05-R or CA20-00-R only
Type of Positioner	Spindle	Indicator	
00 P/P Pneumatic	0 Namur (Rotary)	N None (Standard Linear)	F 4-20 mA Feedback
05 E/P Electro-pneumatic; no approvals; general purpose only	1 Standard (Linear)	A Arrow (Standard Rotary)	S Mechanical Switch (2 spdt)
10 E/P Electro-pneumatic; FM/CSA Intrinsically Safe	2 3/8" Square	D Dome (Option)	FS 4-20 mA Feedback & mechanical switches
11 E/P Electro-pneumatic; ATEX Intrinsically Safe	3 1/2" Square		
20 E/P Electro-pneumatic; FM/CSA Explosion-proof			
21 E/P Electro-pneumatic; ATEX Flame-proof			
22 E/P Electro-pneumatic; FM/CSA XP, Natural Gas			
23 E/P Electro-pneumatic; ATEX Flame-proof, Natural Gas			

Accessories

Gauges

0-30 psi (0-2 bar), 1/8" NPT Back Mount	P/N: 446-725-006
0-160 psi (0-11 bar), 1/8" NPT Back Mount	P/N: 446-725-008
0-30 psi (0-2 bar), 1/8" NPT Bottom Mount	P/N: 446-725-033

Mounting Kits

Rotary Namur Bracket Kits (Namur spindle required)	
ISO-1 Bracket	P/N: 449-542-032
ISO-2 Bracket	P/N: 449-542-033
ISO-3 Bracket	P/N: 449-542-034
ISO-4 Bracket	P/N: 449-542-035

Linear Bracket Kits

Universal	P/N: 449-542-036
Namur IEC534	P/N: 449-542-037

I/P plate assemblies to make quick field conversions are available.



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