

Single Stage Regulator for General Applications

Low to intermediate flow

Series AK1000



- High inlet pressure type: Max. 3500 psig (24.1 MPa)
- Flow capacity Standard: to 30 slpm
HF (option): to 120 slpm
- Body material: Stainless steel and Brass available
- Hastelloy internals available for corrosion resistance

How to Order

AK10 01 S 4PL 4 4 0 0

Delivery pressure

Code	Delivery pressure	Code	Delivery pressure
01	0.5 to 10 psig (0.0034 to 0.07 MPa)	15	5 to 150 psig (0.034 to 1.0 MPa)
02	1 to 30 psig (0.007 to 0.2 MPa)	20	5 to 200 psig (0.034 to 1.4 MPa)
06	2 to 60 psig (0.014 to 0.4 MPa)	30	5 to 300 psig (0.034 to 2.1 MPa)
10	2 to 100 psig (0.014 to 0.7 MPa)	50	10 to 500 psig (0.07 to 3.4 MPa)

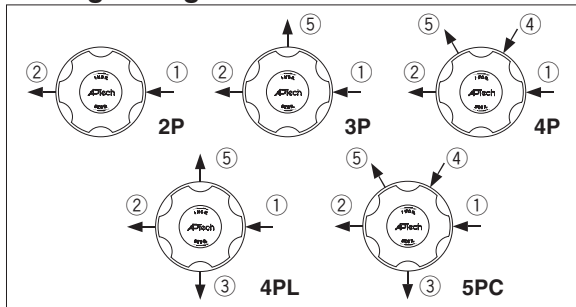
Material

Code	Body	Poppet	Diaphragm
B	Brass	316 SS	316 SS
S	316 SS	Hastelloy® C-22	Hastelloy® C-22
SH			

Ports

Code	Ports	Material		
		B	S, SH	
2P	Refer to the following porting configurations.		●	
3P			●	
4P			●	
4PL		●	●	
5PC		●	●	

Porting Configuration



Connections (Inlet ①, Outlet ②)

Code	Connections
4	NPT 1/4 inch
4T	1/4 inch compression
6T	3/8 inch compression

Gauge port (Extra bottom outlet ③, Inlet ④, Outlet ⑤)

Code	Pressure gauge *1	
	psig/bar unit	MPa unit
No code	No gauge port	
0	No pressure gauge (Connections: 1/4 inch NPT)	
V3	-30 in.Hg to 30 psig	-0.1 to 0.2 MPa
1	-30 in.Hg to 100 psig	-0.1 to 0.7 MPa
2	0 to 200 psig	0 to 1.4 MPa
10	0 to 1000 psig	0 to 7 MPa
40	0 to 4000 psig	0 to 28 MPa

*1) Other range available. Refer to gauge guide (P.94,95).

Sample Order Number

Port	①	②	③	④	⑤	
	AK1002S	2P	4	4		
	3P	4	4			V3 MPA
	4P	4	4	1		V3 MPA
	4PL	4	4	0		V3 MPA
	5PC	4	4	0	1	V3 MPA

Bonnet option

Code	Bonnet
No code	Standard
P	Panel installation *6)

*6) Panel mounting hole: dia. 1.42 inch (36.1 mm).

Option

Code	Specification
No code	Standard (Cv: 0.09)
HF	High flow (Cv: 0.15)

Seat material

Code	Material
No code	PCTFE (Standard)
VS	Vespe® *3)
PK	PEEK
TF	PTFE *4) *5)

*3) Not available with SH material.

*4) Source pressure rating is limited to 300 psig (2.1 MPa) or less.

*5) PTFE seats reduce seat abrasion for flow cycle application. Gas permeation is greater with PTFE than PCTFE.

Pressure gauge unit *2)

Code	Unit
No code	psig/bar
MPA	MPa

*2) Pressure gauge unit MPa or psig/bar selectable. However under Japanese regulation, only MPa is available in Japan.

Specifications

Operating Parameters	AK1001	AK1002	AK1006	AK1010	AK1015	AK1020	AK1030	AK1050
Delivery pressure	0.5 to 10 psig (0.0034 to 0.07 MPa)	1 to 30 psig (0.007 to 0.2 MPa)	2 to 60 psig (0.014 to 0.4 MPa)	2 to 100 psig (0.014 to 0.7 MPa)	5 to 150 psig (0.034 to 1.0 MPa)	5 to 200 psig (0.034 to 1.4 MPa)	5 to 300 psig (0.034 to 2.1 MPa)	10 to 500 psig (0.07 to 3.4 MPa)
Gas	Select compatible materials of construction for the gas							
Source pressure	Vacuum to 300 psig (2.1 MPa)	Vacuum to 3500 psig (24.1 MPa) *1)						
Proof pressure (Inlet)	4500 psig (30.7 MPa)							
Burst pressure	10000 psig (69 MPa)							
Ambient and operating temperature	-40 to 160°F (-40 to 71°C) (No freezing) *2)							
Cv	0.09							
Leak rate	1 x 10 ⁻¹⁰ Pa·m ³ /sec							
Connections	NPT female, Compression							
Supply pressure effect	0.38 psig (0.0026 MPa) rise in delivery pressure per 100 psig (0.7 MPa) source pressure drop							
Installation	Bottom mount (Option: panel mount)							
Internal volume	0.49 in ³ (8 cm ³)							
Mass	2.4 lbs (1.09 kg) *3)							

*1) Max 300 psig (2.1 MPa) for PTFE seat.

*2) 14 to 194°F (-10 to 90°C) for Vespe® and PEEK seat. Optional ambient and operating temperature range available. Please contact SMC.

*3) Mass, including individual boxed weight, may vary depending on connections or options.

Option

High flow

Higher flow capacity with internal changes only, no change in external dimensions. Changes from the standard type are:

Option	Other Parameters	AK1001	AK1002	AK1006	AK1010	AK1015	AK1020	AK1030	AK1050
HF	Cv	0.15							
	Supply pressure effect	0.75 psig (0.0052 MPa) rise in delivery pressure per 100 psig (0.7 MPa) source pressure drop							

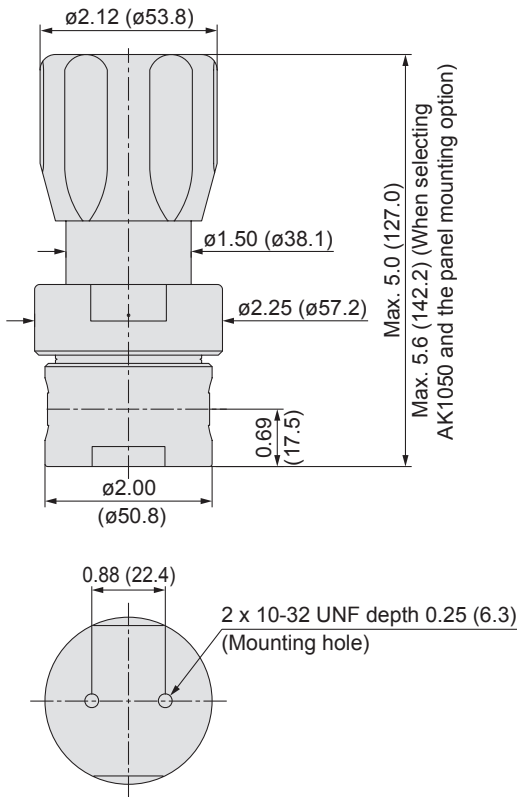
Wetted Parts Material

Wetted Parts	B	S	SH
Body	Brass	316 SS	
Poppet	316 SS		Hastelloy® C-22
Diaphragm	316 SS		Hastelloy® C-22
Seat	PTFE (Option: Vespel®, PEEK, PTFE)		PTFE (Option: PEEK, PTFE)

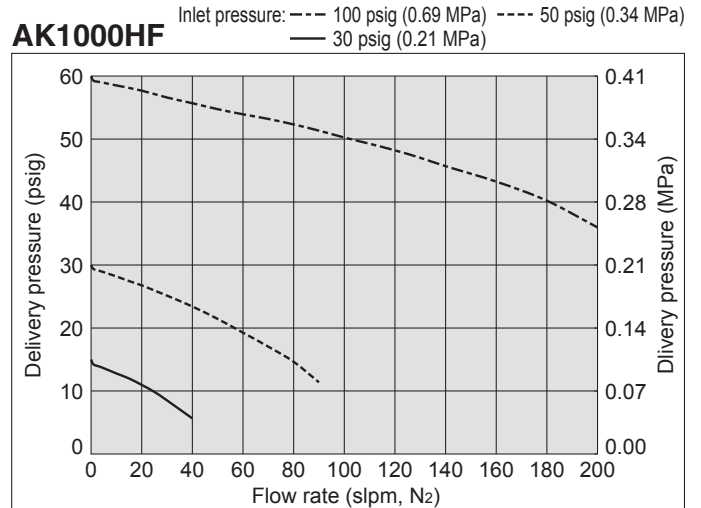
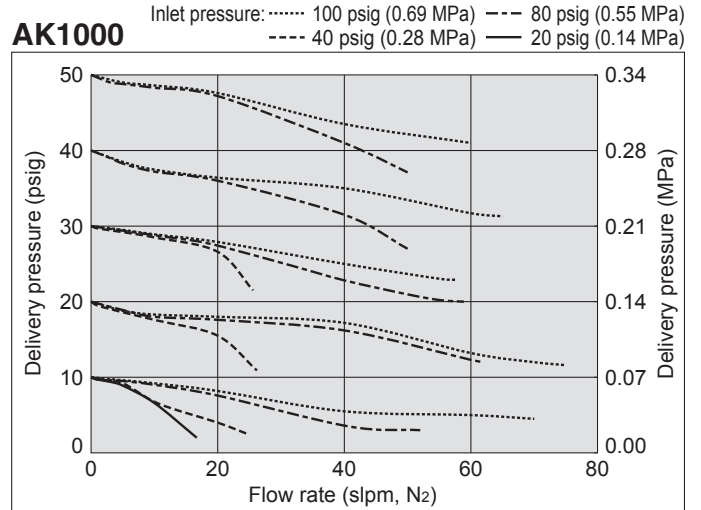
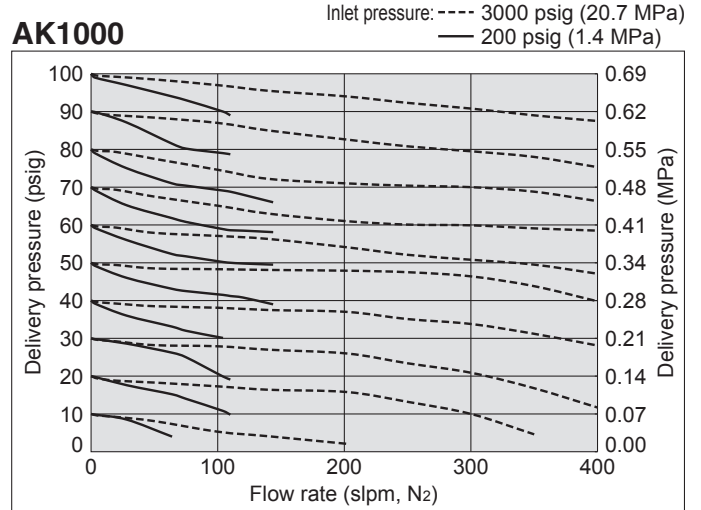
Dimensions

inch (mm)

AK1000



Flow Characteristics



Hastelloy® is a registered trademark of Haynes International.
Vespel® is a registered trademark of DuPont.

Single Stage Regulator for General Applications

High flow (Tied-diaphragm)

Series AK1200

- High inlet pressure type Standard: Max. 1700 psig (11.7 MPa)
HR (option): Max. 3000 psig (20.7 MPa)
- Flow capacity Standard: to 800 slpm
HF (option): to 1000 slpm
FC (Option): to 1500 slpm
- Body material: Stainless steel and Brass available
- Hastelloy internals available for corrosion resistance
- Tied-diaphragm design



How to Order

AK12 02 S 4PL 8 8 0 0

Port Number
① ② ③ ④ ⑤

Delivery pressure

Code	Delivery pressure
02	1 to 30 psig (0.007 to 0.2 MPa)
06	2 to 60 psig (0.014 to 0.4 MPa)
10	2 to 100 psig (0.014 to 0.7 MPa)
15	5 to 150 psig (0.034 to 1.0 MPa)
25	Preset to 250 psig (1.7 MPa)

Material

Code	Body	Poppet	Diaphragm
B	Brass	316 SS	Hastelloy® C-22
SH	316 SS		

Connections (Inlet ①, Outlet ②)

Code	Connections
4	NPT 1/4 inch
6	NPT 3/8 inch
8	NPT 1/2 inch
4T	1/4 inch compression
6T	3/8 inch compression
8T	1/2 inch compression

Bonnet option

Code	Bonnet
No code	Standard
P	Panel installation *6)
BP	Bonnet port (NPT 1/8 inch)

*6) Panel mounting hole: dia. 1.56 inch (39.6 mm).

Option

Code	Specification
No code	Standard (Cv: 0.9)
HF	High flow (Cv: 1.1)
FC	Force compensation (Cv: 0.65) *4) *5)
HR	High inlet pressure (Max. inlet pressure 3000 psig (20.7 MPa)) *4)

*4) FC option is not available with AK1202, AK1206 and AK1225.
*5) FC option is available with 1/2 inch NPT or 1/2 inch compression.

Gauge port (Extra bottom outlet ③, Inlet ④, Outlet ⑤)

Code	Pressure gauge *1)	
	psig/bar unit	MPa unit
No code	No pressure gauge	
0	No gauge port (Connections: 1/4 inch NPT)	
V3	-30 in.Hg to 30 psig -0.1 to 0.2 MPa	
1	-30 in.Hg to 100 psig -0.1 to 0.7 MPa	
2	0 to 200 psig	0 to 1.4 MPa
10	0 to 1000 psig	0 to 7 MPa
40	0 to 4000 psig	0 to 28 MPa

*1) Other range available. Refer to gauge guide (P.94,95).

Porting Configuration

① IN
② OUT
③ Extra bottom port (Outlet)
④ Gauge port (Inlet)
⑤ Gauge port (Outlet)

Seat material

Code	Material
No code	PCTFE (Standard)
VS	VespeI® *3)

*3) Not available with SH material.

Pressure gauge unit *2)

Code	Unit
No code	psig/bar
MPA	MPa

*2) Pressure gauge unit MPa or psig/bar selectable. However under Japanese regulation, only MPa is available in Japan.

Sample Order Number

AK1202S	Port ①	②	③	④	⑤
2P	8	8			
3P	8	8		V3	MPa
4PL	8	8	0	V3	MPa
5PC	8	8	0	40	V3 MPa

Specifications

Operating Parameters	AK1202	AK1206	AK1210	AK1215	AK1225
Delivery pressure	1 to 30 psig (0.007 to 0.2 MPa)	2 to 60 psig (0.014 to 0.4 MPa)	2 to 100 psig (0.014 to 0.7 MPa)	5 to 150 psig (0.034 to 1.0 MPa)	Preset to 250 psig (1.7 MPa) *2)
Gas	Select compatible materials of construction for the gas				
Source pressure	Vacuum to 1700 psig (11.7 MPa)				
Proof pressure (Inlet)	2550 psig (17.6 MPa)				
Burst pressure	9000 psig (62 MPa)				
Ambient and operating temperature	-40 to 160°F (-40 to 71°C) (No freezing) *3)				
Cv	0.65				
Leak rate	1 x 10 ⁻¹⁰ Pa·m ³ /sec				
Connections	NPT female, Compression				
Supply pressure effect	3.5 psig (0.024 MPa) rise in delivery pressure per 100 psig (0.7 MPa) source pressure drop				
Installation	Bottom mount (Option: panel mount)				
Internal volume	0.65 in ³ (10.6 cm ³)				
Mass	4.4 lbs (2.0 kg) *4)				

- *1) Source pressure above 1000 psig (6.9 MPa) decreases maximum delivery pressure to less than 150 psig (1 MPa) due to supply pressure effect. When the source pressure is 1700 psig (11.7 MPa), achievable delivery pressure is around 125 psig (0.86 MPa) (HF and FC option 120 psig (0.83 MPa)).
- *2) 250 psig outlet pressure preset at 800 psig (5.5 MPa) inlet pressure. Custom inlet/outlet pressure settings available. Please contact SMC.
- *3) 14 to 194°F (-10 to 90°C) for VespeI® seat. Optional ambient and operating temperature range available. Please contact SMC.
- *4) Mass, including individual boxed weight, may vary depending on connections or options.

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Single Stage Regulator for General Applications *Series AK1200*

High flow (Tied-diaphragm)

Options

1. High flow Higher flow capacity with internal changes only, no change in external dimensions. Changes from the standard type are:

Option	Other Parameters	AK1202	AK1206	AK1210	AK1215	AK1225
HF	Cv	1.1				
	Supply pressure effect	4.2 psig (0.029 MPa) rise in delivery pressure per 100 psig (0.7 MPa) source pressure drop				

2. Force compensation Force compensation feature added to HF option and has higher flow capacity than HF option. Changes from the standard type are:

Option	Other Parameters	AK1210	AK1215
FC	Source pressure	Vacuum to 300 psig (2.1 MPa)	
	Cv	0.65	
	Supply pressure effect	4.2 psig (0.029 MPa) rise in delivery pressure per 100 psig (0.7 MPa) source pressure drop	
	Connections	NPT 1/2 inch, 1/2 inch compression	

3. High inlet pressure Changes from the standard type are:

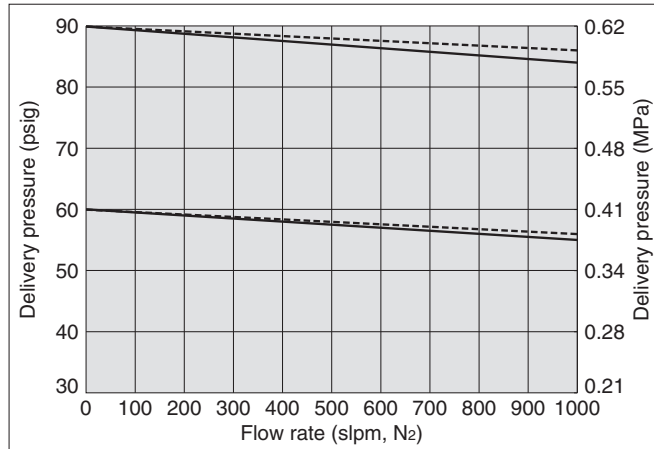
Option	Other Parameters	AK1210	AK1215
HR	Source pressure	Vacuum to 3000 psig (20.7 MPa)	
	Proof pressure (Inlet)	4500 psig (31 MPa)	
	Burst pressure	9000 psig (62 MPa)	

Wetted Parts Material

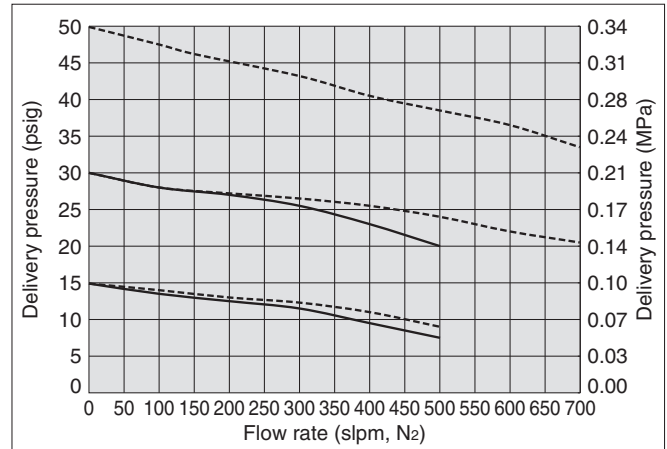
Wetted Parts	B	S	SH
Body	Brass	316 SS	
Poppet	316 SS		Hastelloy® C-22
Diaphragm	Hastelloy® C-22		
Seat	PTFE (Option: Vespel®)		PTFE

Flow Characteristics

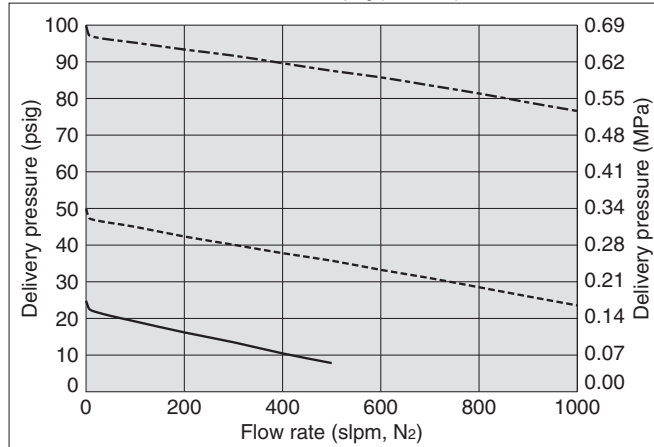
AK1200 Inlet pressure: - - - - 1700 psig (11.7 MPa) — 500 to 1000 psig (3.4 to 6.9 MPa)
1/2 inch connections *)



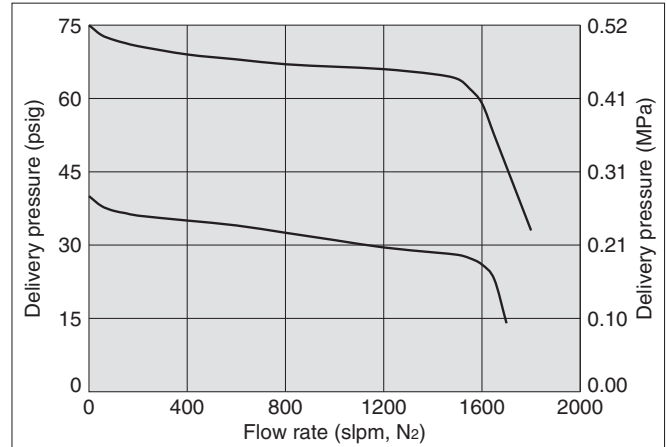
AK1200 Inlet pressure: - - - - 80 psig (0.55 MPa) — 60 psig (0.41 MPa)
1/2 inch connections *)



AK1200HF Inlet pressure: - - - 150 psig (1.0 MPa) - - - - 100 psig (0.69 MPa)
— 50 psig (0.34 MPa)



AK1200FC Inlet pressure: 150 psig (1.0 MPa)
3/4 inch connections *)

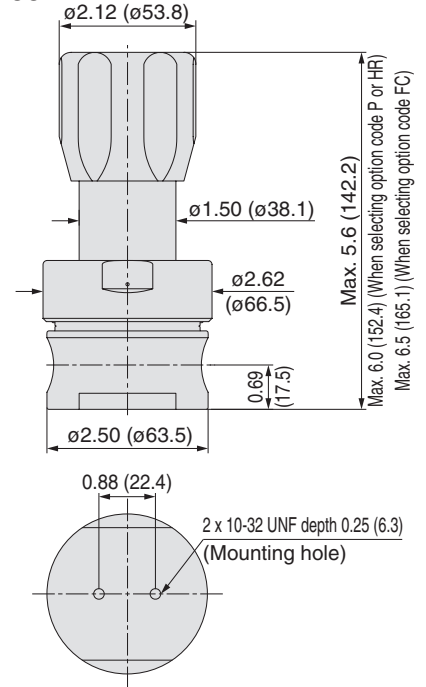


*) If connection size differs, flow characteristics also differ.

Dimensions

inch (mm)

AK1200



Recommendations

Regulators

AP

SL

AZ

AK

KT

BP

Diaphragm Valves

Check Valves

Vacuum Generators

Flow Switches

Technical Data/
Glossary of Terms

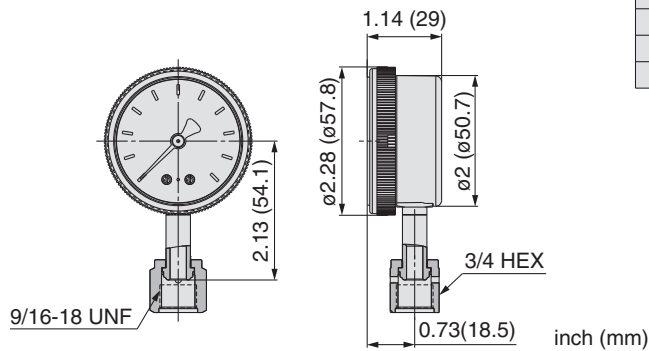
Precautions

Regulator Pressure Gauges Guide

For AP/SL/AZ series (Installed before shipment^{*1)} / Order separately)

Specifications

Installation	Lower mount	
Gas	Select compatible materials of construction for the gas	
Connections	1/4 inch face seal (Female)	
Temperature range	-40 to 140°F (-40 to 60°C) (No freezing)	
Accuracy	25% to 75% of the scale: ±1%F.S. Other than above: ±2%F.S. (ASME B40.1 Grade A)	
Cleanliness	ASME B40.1 level IV	
No oil	No oil	
Material	Case	Stainless steel
	Window	Polycarbonate
	Socket	316L SS
	Bourdon tube	316L SS



Model

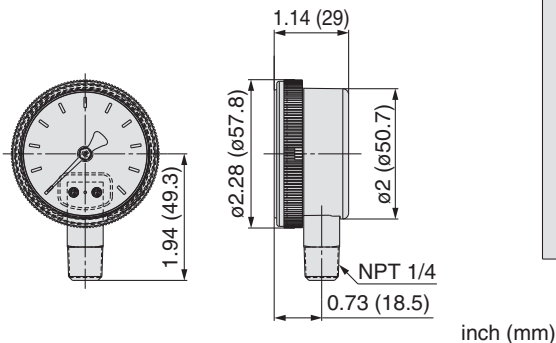
Regulator Code ^{*2)}		Pressure range	Unit	Part number ^{*3)}		
gauge port	unit					
V3	(No code)	-30 in.Hg to 30 psig	psig/bar ^{*4)}	00-83000023		
L		-30 in.Hg to 60 psig		00-83000026		
1		-30 in.Hg to 100 psig		00-83000021		
H		-30 in.Hg to 160 psig		00-83000116		
2		0 to 200 psig		00-83000020		
4		0 to 400 psig		00-83000007		
10		0 to 1000 psig		00-83000022		
40		0 to 4000 psig		00-83000024		
V3		MPa		-0.1 to 0.2 MPa	MPa	00-83000304
L				-0.1 to 0.4 MPa		00-83000305
1	-0.1 to 0.7 MPa		00-83000300			
H	-0.1 to 1.1 MPa		00-83000297			
2	0 to 1.4 MPa		00-83000299			
4	0 to 3 MPa		00-83000301			
10	0 to 7 MPa		00-83000302			
40	0 to 28 MPa		00-83000303			

For AK/BP series (Installed before shipment / Order separately)

Stainless steel / Lower mount

Specifications

Installation	Lower mount	
Gas	Select compatible materials of construction for the gas	
Connections	NPT 1/4 inch	
Temperature range	-40 to 140°F (-40 to 60°C) (No freezing)	
Accuracy	25% to 75% of the scale: ±2%F.S. Other than above: ±3%F.S. (ASME B40.1 Grade B or better)	
Cleanliness	ASME B40.1 level IV	
No oil	No oil	
Material	Case	Stainless steel
	Window	Polycarbonate
	Socket	316L SS
	Bourdon tube	316L SS



Model

Regulator Code ^{*2)}		Pressure range	Unit	Part number ^{*3)}	
material	gauge port				
S SH	V15	(No code)	psig/bar ^{*4)}	00-83000102	
	V3			-30 in.Hg to 30 psig	00-83000184
	L			-30 in.Hg to 60 psig	00-83000181
	1			-30 in.Hg to 100 psig	00-83000182
	H			-30 in.Hg to 160 psig	00-83000196
	V2			-30 in.Hg to 200 psig	00-83000033
	2			0 to 200 psig	00-83000193
	4			0 to 400 psig	00-83000194
	10			0 to 1000 psig	00-83000187
	30			0 to 3000 psig	00-83000234
	40	0 to 4000 psig	00-83000183		
	V15	MPa	MPa	00-83000287	
	V3			-0.1 to 0.2 MPa	00-83000288
	L			-0.1 to 0.4 MPa	00-83000289
	1			-0.1 to 0.7 MPa	00-83000290
	H			-0.1 to 1.1 MPa	00-83000291
	V2			-0.1 to 1.4 MPa	00-83000292
	2			0 to 1.5 MPa	00-83000286
	4			0 to 3 MPa	00-83000285
	10			0 to 7 MPa	00-83000284
30	0 to 21 MPa			00-83000283	
40	0 to 28 MPa	00-83000282			

*1) If one prefers shipment with the pressure gauges installed on the regulator, the material of gasket to be used on the connections will be Nickel (no plated). Please contact SMC for details if one prefers changing this material.

*2) When pressure gauge needs to be assembled with regulator when shipment, put this code as gauge port in How to Order.

Regulator / Pressure Gauges Guide

For **AK/BP** series (Installed before shipment / Order separately)

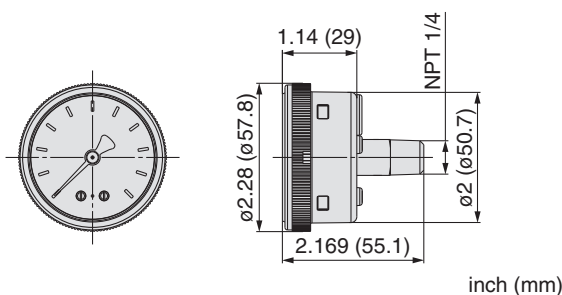
Stainless steel / Center back mount

Specifications

Installation	Center back mount	
Gas	Select compatible materials of construction for the gas	
Connections	NPT 1/4 inch	
Temperature range	-40 to 140°F (-40 to 60°C) (No freezing)	
Accuracy	25% to 75% of the scale: ±2%F.S. Other than above: ±3%F.S. (ASME B40.1 Grade B or better)	
Cleanliness	ASME B40.1 level IV	
No oil	No oil	
Material	Case	Stainless steel
	Window	Polycarbonate
	Socket	316L SS
	Bourdon tube	316L SS

Model

Regulator Code	Pressure range	Unit	Part number *3)
*5)	-30 in.Hg to 100 psig	psig/bar *4)	00-83000224
	-30 in.Hg to 160 psig		00-83000272
	-0.1 to 0.7 MPa	MPa	00-83000293
	-0.1 to 1.1 MPa		00-83000294



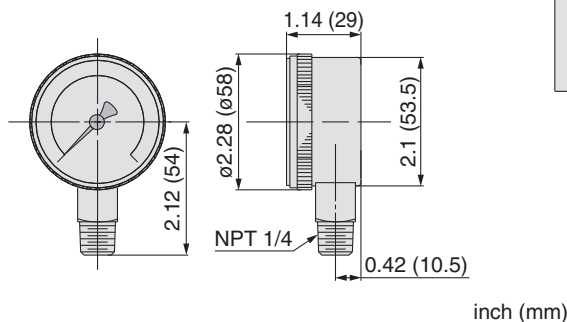
Brass / Lower mount

Specifications

Installation	Lower mount	
Gas	Select compatible materials of construction for the gas	
Connections	NPT 1/4 inch	
Temperature range	-40 to 140°F (-40 to 60°C) (No freezing)	
Accuracy	25% to 75% of the scale: ±2%F.S. Other than above: ±3%F.S. (ASME B40.1 Grade B or better)	
Cleanliness	ASME B40.1 level IV	
No oil	No oil	
Material	Case	Brass
	Window	Polycarbonate
	Socket	Brass
	Bourdon tube	Phosphor bronze

Model

Regulator Code *2)	material gauge port	unit	Pressure range	Unit	Part number *3)
	V3		-30 in.Hg to 30 psig		00-83000177
	L		-30 in.Hg to 60 psig		00-83000178
	1		-30 in.Hg to 100 psig		00-83000239
	H		-30 in.Hg to 160 psig		00-83000218
	2		0 to 200 psig		00-83000205
	4		0 to 400 psig		00-83000186
	10		0 to 1000 psig		00-83000179
	40		0 to 4000 psig		00-83000278
	V3		-0.1 to 0.2 MPa		00-83000279
	L		-0.1 to 0.4 MPa		00-83000280
	1		-0.1 to 0.7 MPa		00-83000281
	H		-0.1 to 1.1 MPa		00-83000277
	2		0 to 1.5 MPa		00-83000276
	4		0 to 3 MPa		00-83000275
	10		0 to 7 MPa		00-83000274
	40		0 to 28 MPa		



*3) Part number of pressure gauge itself. Gauge are shipped separately.
*4) Under Japanese regulation, psig/bar unit gauge is not sold in Japan.
*5) Available for special order. Please contact SMC.



Process Gas Equipment / Regulator Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions and P. 145 and 146 and the "Operation Manual" for common precautions. Operation manual is available from the SMC web site. <http://www.smcworld.com>

Selection

Warning

1. Confirm the specifications.

When selecting the product, confirm the operating conditions, such as type of gas, operating pressure (inlet and outlet), flow rate, operating temperature etc., and use within the operating range specified in the catalog. The product may not be suitable for use with specific gases and applications/ environments. Check the compatibility of the product materials with the process gas.

Design the equipment and select the product by understanding the characteristics of gas.

2. Confirm allowable pressure of any pressure gauges.

When installing a pressure gauge to the product, operating pressure should not exceed the maximum allowable pressure of the pressure gauge.

Mounting

Warning

1. Confirm the mounting direction of the product.

The high pressure (inlet) port is labeled with an "HP" mark and the low pressure (outlet) port is labeled with an "LP" mark. In the case of two stage regulator, the monitor port of first stage outlet pressure is labeled with "MP" mark.

Make sure to connect the port labeled with "HP" mark, to the high pressure. If any of the ports, other than "HP", are connected to the high pressure, it may cause damage or gas leakage.

2. After installation, check internal leakage (leakage across seat) of the product.

Check internal leakage (leakage across seat) with inert gases such as nitrogen, etc., and select the most appropriate test method depending on the application. The following procedures are an example of how a test may be performed. It is intended as an overview and not as an all inclusive description.

- 1) Rotate the adjustment wheel counterclockwise (DECR) completely to relieve spring force. Then gradually open the valve at inlet side to supply gas to the regulator.
- 2) Close the valves on the inlet and outlet side and hold for at least 10 minutes. Then confirm the outlet pressure.
- 3) Rotate the adjustment wheel clockwise (INCR) until the outlet pressure reaches the outlet pressure setting. Then hold for at least 10 minutes and confirm the outlet pressure.

If outlet pressure continues increasing in steps 2) and 3) above, the regulator may have internal leakage (leakage across seat) and you should stop using the regulator immediately and contact SMC or sales representative.

3. Purge hazardous gases from system before removing regulator from system.

Before removing regulators from system, fully open regulator by turning adjustment wheel clockwise (INCR), and follow proper procedures to flush system with inert gas such as nitrogen to remove any residual hazardous gases.

Maintenance

Warning

1. If a regulator requires repair, contact SMC.

Operation

Warning

1. Do not use the regulator as shutoff valve or safety valve.

2. Do not rotate the adjustment wheel counterclockwise (DECR) under no flow conditions.

If the adjustment wheel is rotated counterclockwise (DECR) under no flow conditions but there is residual pressure remaining in outlet side, it may cause damage to the regulator. Decreasing of the setting pressure should be done under flow conditions.

3. Do not pressurize the regulator from outlet side. If high pressure, which exceeds the setting pressure, is supplied from outlet side, it may cause damage to the regulator.

4. Supply gas to the regulator.

Rotate the adjustment wheel counterclockwise (DECR) completely to relieve spring force. Then, gradually open the valve at inlet side to supply gas to the regulator. When operating the valve, do not stand in front of the regulator and pressure gauge. If the valve at inlet side is opened rapidly, high pressure gas might be supplied into outlet side of the regulator and it may cause severe damage or burst the device.

5. Adjust pressure.

When rotating the adjustment wheel clockwise (INCR), outlet pressure will increase.

In order to adjust precisely, the wheel should be adjusted at the desired flow conditions.

6. Decreasing the setting pressure under flow conditions.

When decreasing the setting pressure, make sure to open the valve at outlet side to keep flow conditions. When rotating the adjustment wheel counterclockwise (DECR) under flow conditions, setting pressure will decrease.

7. Stop using the regulator immediately if resonance occurs.

Loud audible noise as well as vibration of device or fluctuation of outlet pressure (resonance) may occur depending on operating conditions etc. If this situation occurs, stop using the regulator immediately and contact SMC or sales representative.



Process Gas Equipment / Back Pressure Regulator Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions and P. 145 and 146 and the “Operation Manual” for common precautions. Operation manual is available from the SMC web site. <http://www.smcworld.com>

Selection

Warning

1. Confirm the specifications.

When selecting the product, confirm the operating conditions, such as type of gas, operating pressure (inlet and outlet), flow rate, operating temperature etc., and use within the operating range specified in the catalog. Verify flow capacity of regulator and vent or return line, are large enough to vent off gas source without creating excessive backpressure. The product may not be suitable for use with specific gases and applications/environments. Check the compatibility of the product materials with the process gas. Design the equipment and select the product by understanding the characteristics of gas.

2. Confirm allowable pressure of any pressure gauges.

When installing pressure gauges to the product, operating pressure should not exceed the maximum allowable pressure of the pressure gauge.

Mounting

Warning

1. Confirm the mounting direction of the product.

The high pressure (inlet) port is labeled with an “IN” mark and the low pressure (outlet) port is labeled with an “OUT” mark. Make sure to connect the port labeled with “IN” mark, to the high pressure. If any of the ports, other than “IN”, is connected to the high pressure, it may cause damage or gas leakage.

Maintenance

Warning

1. If a back pressure regulator requires repair, contact SMC.

Operation

Warning

1. Do not use the back pressure regulator as shutoff valve or safety valve.

2. Pressure control

- 1) Rotate the adjustment wheel counterclockwise completely to relieve spring force.
- 2) Partially open the valve at inlet side to supply gas to the back pressure regulator.
- 3) Increase the inlet pressure to the setting pressure by rotating the adjustment wheel clockwise.
- 4) Continue opening the valve at inlet side monitoring the inlet pressure. When the inlet pressure increases above the setting pressure, rotate the adjustment wheel counterclockwise to relieve the inlet pressure to the setting pressure.
- 5) Open the valve at inlet side completely and confirm that the inlet pressure reaches the setting pressure.

3. Decreasing the setting pressure.

When decreasing the setting pressure, make sure to gradually rotate the adjustment wheel counterclockwise until the inlet pressure reaches the setting pressure.

4. Stop using the regulator immediately if resonance occurs.

Loud audible noise as well as vibration of device or fluctuation of outlet pressure (resonance) may occur depending on operating conditions, etc. If this situation occurs, stop using the regulator immediately and contact SMC or sales representative.