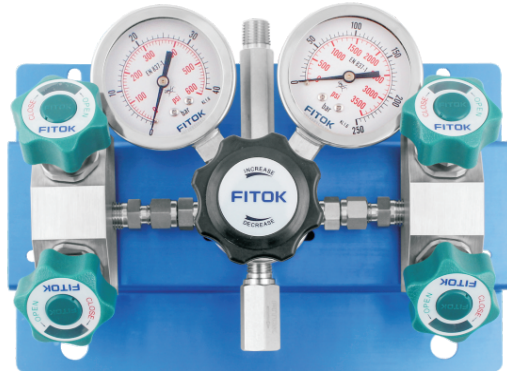


Changeover Systems

FDR-1 Series Manual Changeover System (up to 500 psig)

Features

- ⦿ A small manual changeover system with a regulator similar to FCR-1 Series Regulators
- ⦿ Connecting with two independent gas sources at a time, gas source selected through diaphragm valves
- ⦿ Applicable to corrosive or toxic gases
- ⦿ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- ⦿ Anodized Aluminium panel

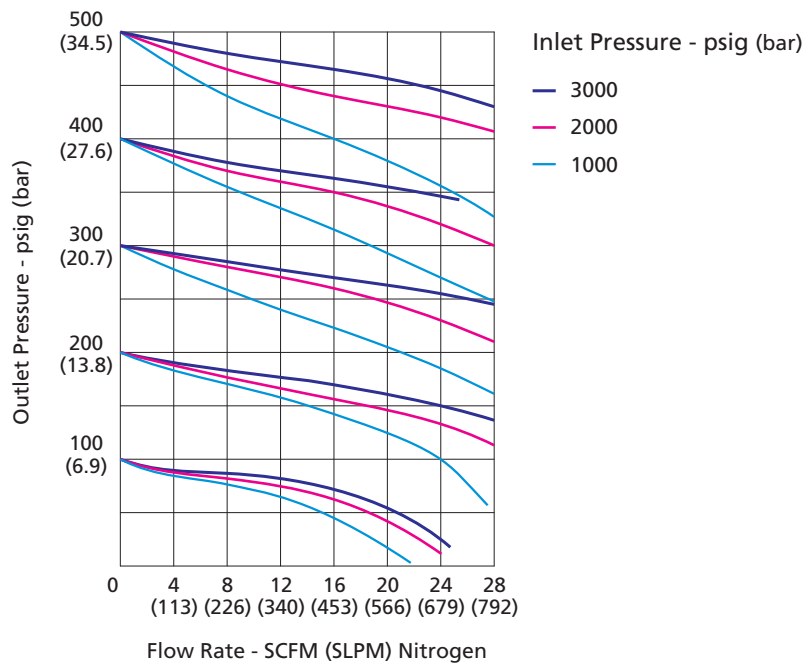


Model: FDR-16L-30-500-00-B-B-01-00-R

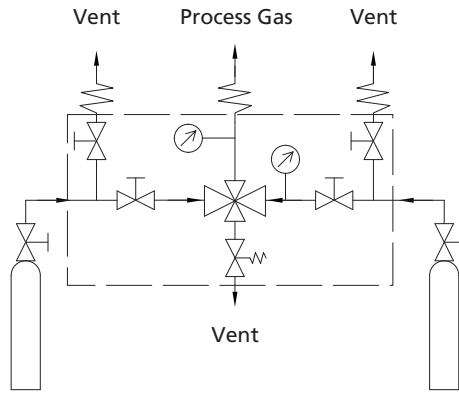
Technical Data

- ⦿ Maximum inlet pressure: 3000 or 4500 psig
- ⦿ Outlet pressure range: 0~25, 0~50, 0~100, 0~250 or 0~500 psig
- ⦿ Material of the main components:
 - Seat: PCTFE (regulator and diaphragm valve)
 - Diaphragm: Hastelloy (regulator), Elgiloy (diaphragm valve)
 - Diaphragm valve body: 316L
 - O-ring: Viton
- ⦿ Temperature: -10°F~+150°F (-23°C~+65°C)
- ⦿ Leak rates:
 - Internal: $\leq 1 \times 10^{-7}$ mbar·l/s helium
 - External: $\leq 1 \times 10^{-9}$ mbar·l/s helium
- ⦿ Flow coefficient (regulator Cv): 0.06

Typical Flow Chart

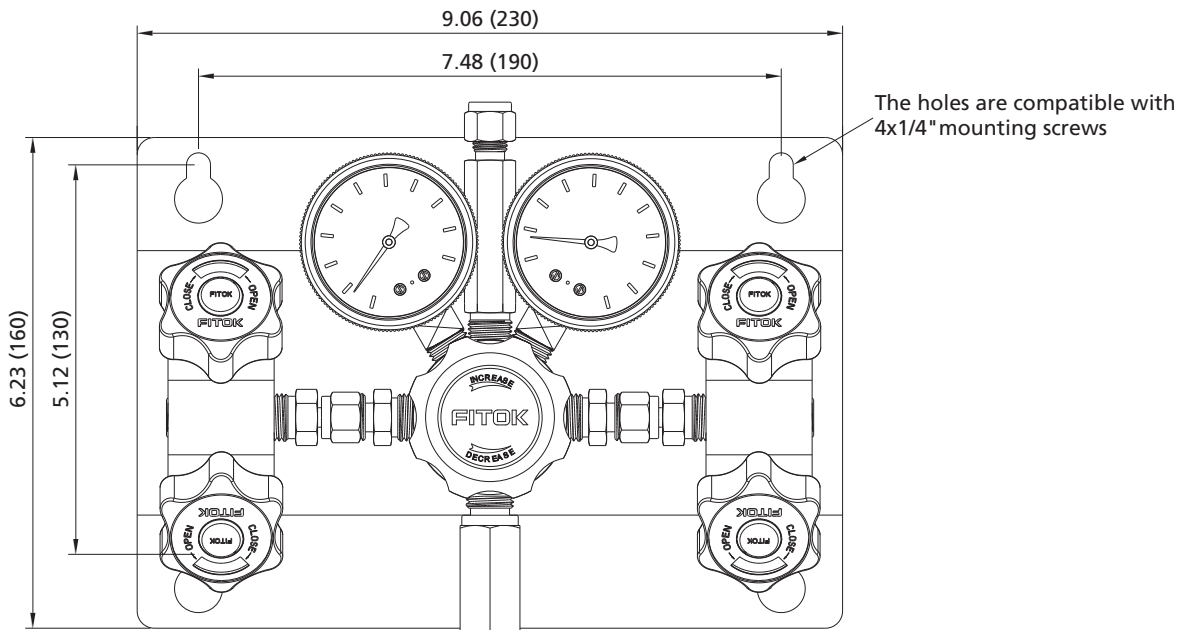
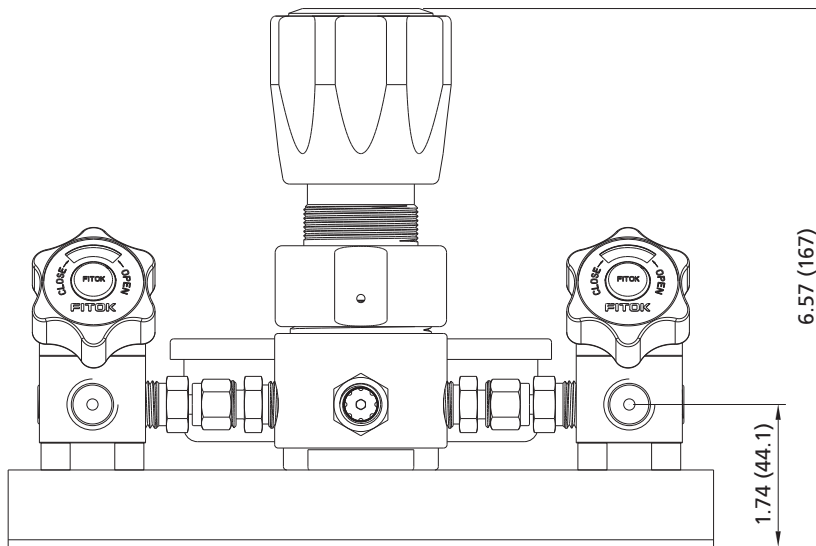


Flow Schematic

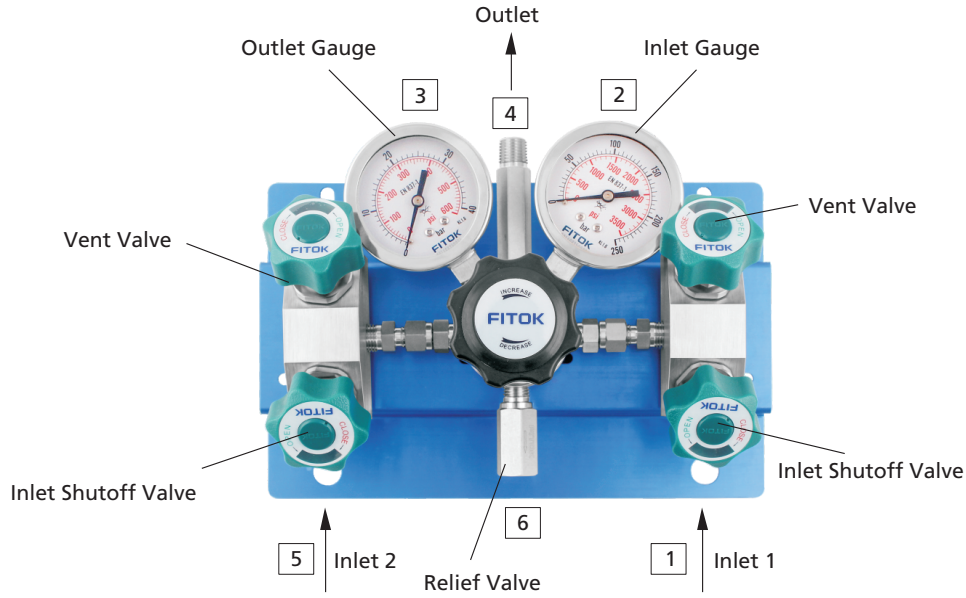


Dimensions

Dimensions, in inches (millimeters), are for reference only.



Components Introduction



Part Number Description

FDR - 16L - 30 - 250 - 00 - B - B - 01 - 00 - R

Body Material (Regulator)	
6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1	
30	3000 psig
45	4500 psig

Outlet Pressure Range P2	
25	0~25 psig
50	0~50 psig
100	0~100 psig
250	0~250 psig
500	0~500 psig

Connection 1	
00	1/4" Female NPT
01	1/4" Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting
Other connections are available upon request	

Connection 2	
B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4" Female NPT

Connection 3	
Same as Connection 2	

Connection 4	
00	1/4" Female NPT
01	1/4" Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting
Other connections are available upon request	

Connection 6	
R	Relief Valve
P	Plug
00	1/4" Female NPT

Connection 5	
Same as Connection 1	

Note: Before ordering, please read **Installation Instructions and Cautions** on A-77.

Changeover Systems

FDR-2 Series Manual Changeover System (up to 2500 psig)

Features

- ⦿ A small manual changeover system with a regulator similar to FCR-2 Series Regulators
- ⦿ Connecting with two independent gas sources at a time, gas sources switched through diaphragm valves
- ⦿ Applicable to non-corrosive gases
- ⦿ Venting model available
- ⦿ Anodized Aluminium panel

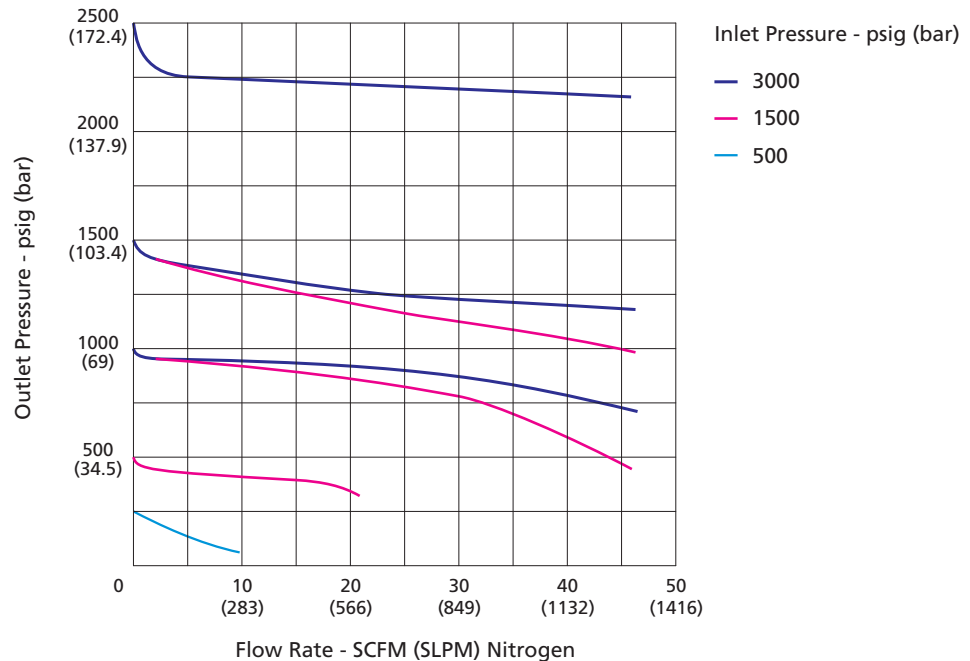


Model: FDR-2VSS-45-2500-00-B-B-01-00

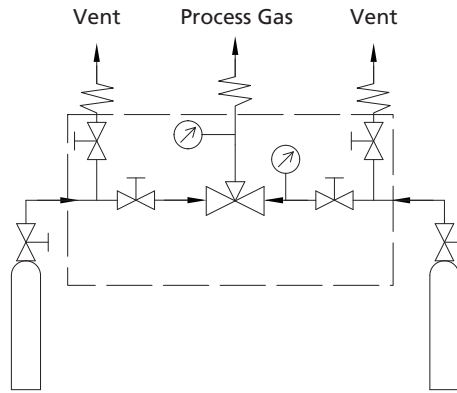
Technical Data

- ⦿ Maximum inlet pressure: 3000 or 4500 psig
- ⦿ Outlet pressure range: 0~750, 0~1500 or 0~2500 psig
- ⦿ Material of the main components:
 - Seat: PCTFE (regulator and diaphragm valve)
 - Piston: 316L
 - Diaphragm: Elgiloy (diaphragm valve)
 - Diaphragm valve body: 316L
 - O-ring: Viton or Kalrez
 - Filter: 316L
- ⦿ Temperature: -10°F~+150°F (-23°C~+65°C)
- ⦿ Leak rates:
 - Internal: Bubble-tight
 - External: Bubble-tight
- ⦿ Flow coefficient (regulator Cv):
 - Without vent: 0.06
 - Vent: 0.1

Typical Flow Chart

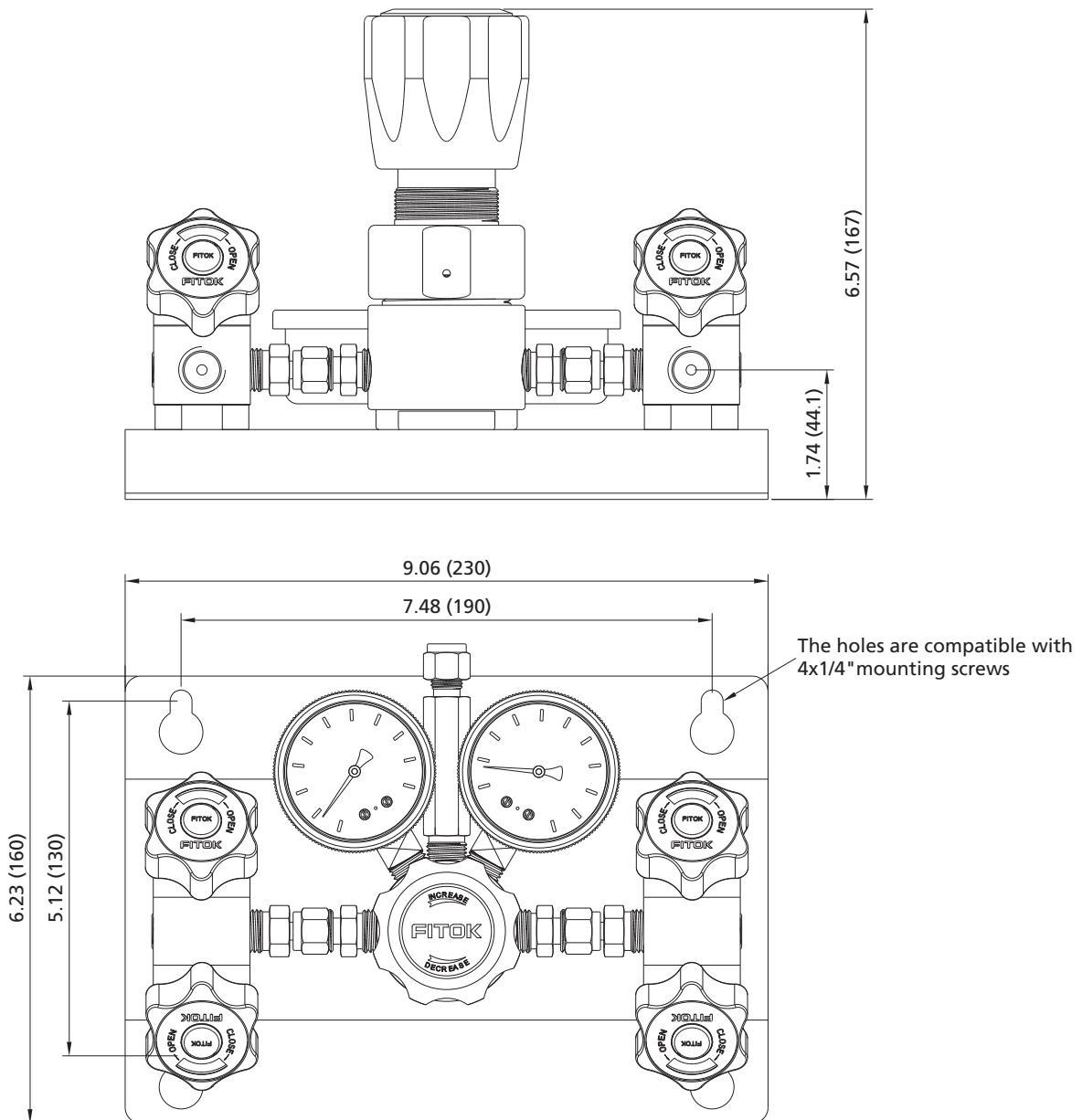


Flow Schematic

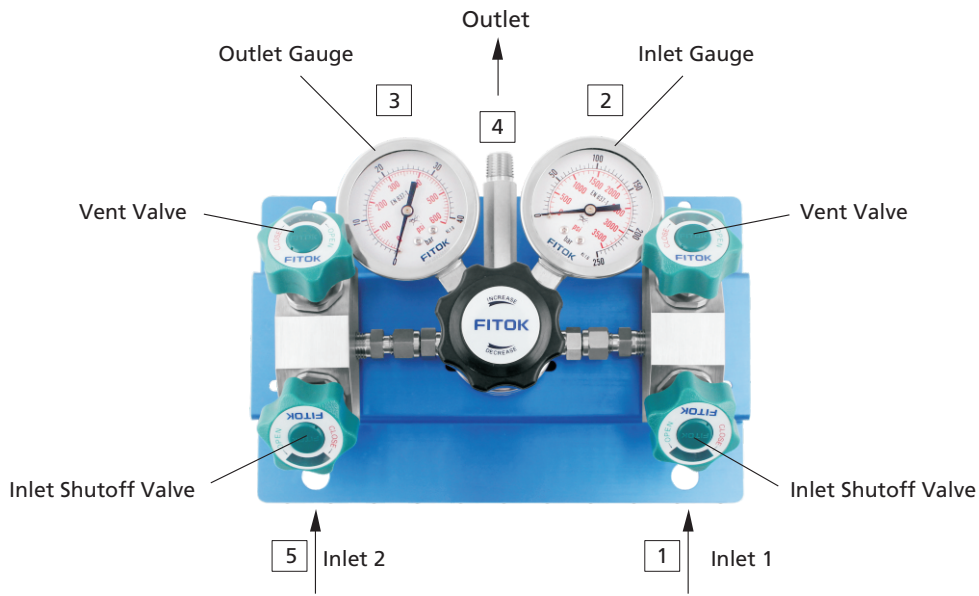


Dimensions

Dimensions, in inches (millimeters), are for reference only.



Components Introduction



Part Number Description

FDR - 2V Z 6L - 30 - 750 - 00 - B - B - 01 - 00

Vent Option	Inlet Pressure P1	Connection 1	Connection 2	Connection 4	Connection 5
Without	30 3000 psig	00 1/4" Female NPT	B With Gauge (psi/bar)	00 1/4" Female NPT	Same as Connection 1
V With	45 4500 psig	01 1/4" Male NPT	M With Gauge (psi/MPa)	01 1/4" Male NPT	
O-ring Material	Outlet Pressure Range P2	10 1/4" Tube Fitting	P Plug	10 1/4" Tube Fitting	
Viton	750 0~750 psig	11 3/8" Tube Fitting	00 1/4" Female NPT	11 3/8" Tube Fitting	
Z Kalrez	1500 0~1500 psig	20 6 mm Tube Fitting	Connection 3 Same as Connection 2	20 6 mm Tube Fitting	
Body Material (Regulator)	2500 0~2500 psig	21 8 mm Tube Fitting		Other connections are available upon request	21 8 mm Tube Fitting
6L 316L SS		Other connections are available upon request			
SS 316 SS					
B Brass (Nickel-plated)					

Note: Before ordering, please read **Installation Instructions and Cautions** on A-77.

Changeover Systems

FDR-1L Series Automatic Changeover System without Line Pressure Regulator

Features

- With 2 regulators similar to FCR-1 Series Regulators
- Anodized Aluminium box with clearly marked panel
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- Automatic switching of gas source to ensure continuous gas supply
- Four fixed outlet pressure ranges available
- With special cleaning and packaging, applicable to oxygen-enriched environments

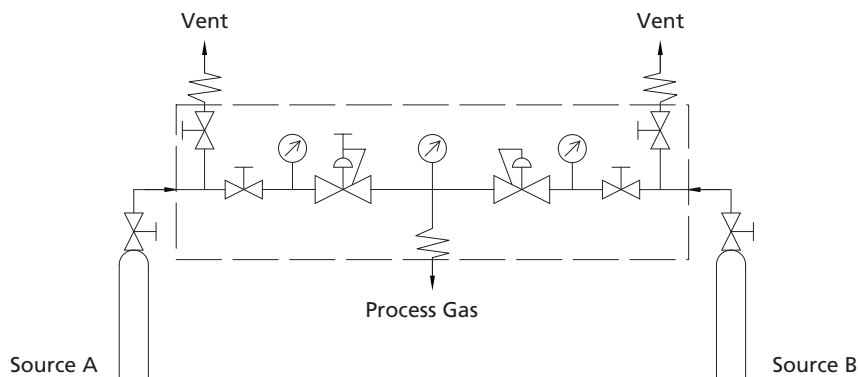


Model: FDR-1L6L-30-10B-00-00-00

Technical Data

- Maximum inlet pressure: 3000 or 4500 psig
- Outlet pressure range: 85~115, 135~165, 185~215 or 235~265 psig
- Material of the main components:
 - Seat: PCTFE (regulator and diaphragm valve)
 - Diaphragm: Hastelloy (regulator), Elgiloy (diaphragm valve)
 - Diaphragm valve body: 316L
- Temperature: -10°F~+150°F (-23°C~+65°C)
- Leak rates:
 - Internal: $\leq 1 \times 10^{-7}$ mbar·l/s helium
 - External: $\leq 1 \times 10^{-9}$ mbar·l/s helium
- Flow coefficient (regulator Cv): 0.06
- Weight: ≈ 12.1 lbs (5.5 kg)

Flow Schematic



Operation Overview

The FDR-1L Series Changeover System is mainly comprised of one adjustable outlet pressure regulator together with one fixed outlet pressure regulator.

When the 2 inlets are both open, the one side that the "IN SERVICE" arrow is pointing at by turning the handle would be the 1st source for gas supply.

Fig. 1 When the "In Service" arrow is pointing at side B, side B would be the gas source. At this time, the fixed outlet pressure of side B is higher than the set pressure of side A. Consequently, the diaphragm of side A regulator moves to enable the stem to close the regulator.

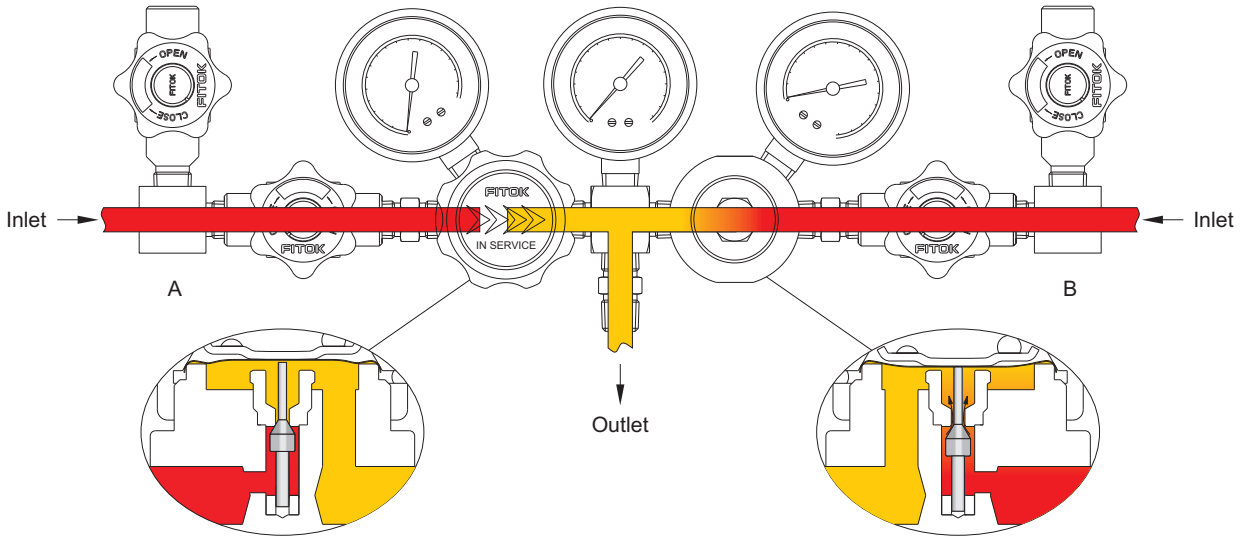


Fig. 1

Fig. 2 If side A is chosen as the gas source, the handle should be turned clockwise until the "IN SERVICE" arrow is pointing at side A. At this time, the set pressure of side A is higher than the fixed outlet pressure of side B. Consequently, the diaphragm of side B regulator moves to enable stem to close the regulator.

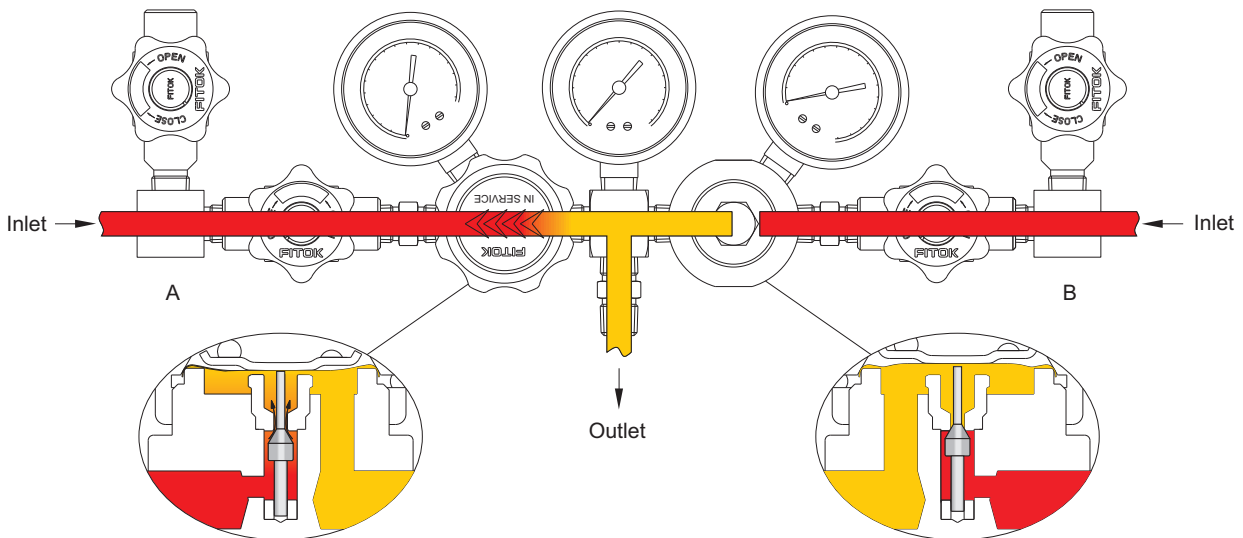


Fig. 2

When gas source of one side is depleted, gas source would automatically change to the other side.

Fig. 3 When "IN SERVICE" arrow is pointing at side B, but gas source of side B is depleted, its outlet pressure shall decrease to be lower than the set pressure of side A. By the force of spring, side A regulator will be opened to begin gas supply.

Before replacing new gas source of side B, the diaphragm valve should be turned off. Otherwise, gas from side A will flow back into side B. Then open the vent valve to exhaust the remaining pressure.

After the replacement, if the "IN SERVICE" arrow still points at side B, side B would be the gas source. If the arrow is turned towards side A, side A would thus be the gas source.

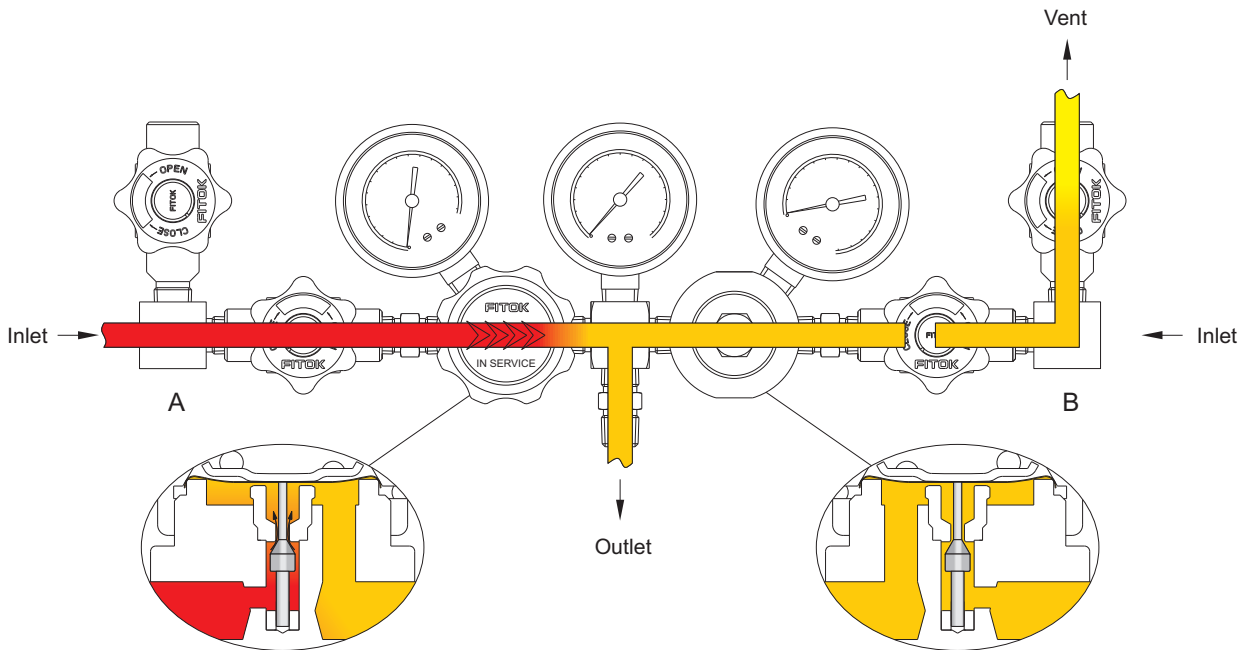
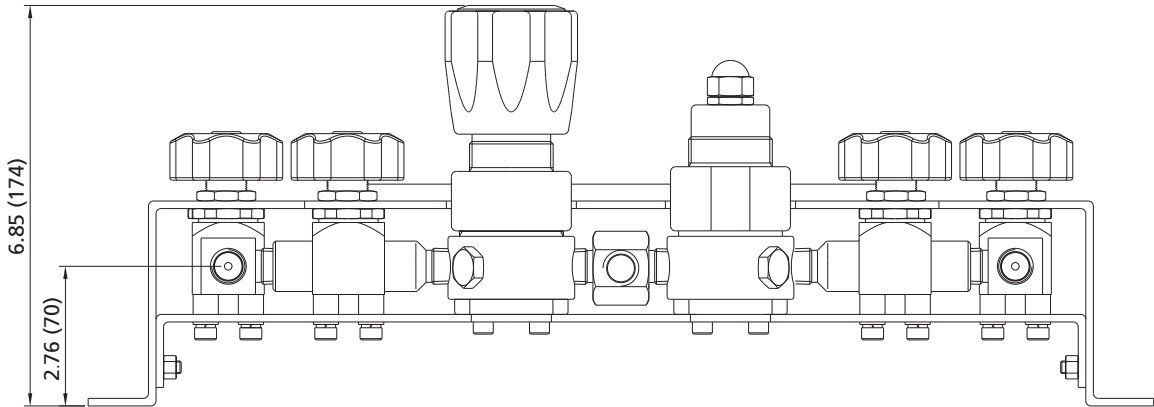
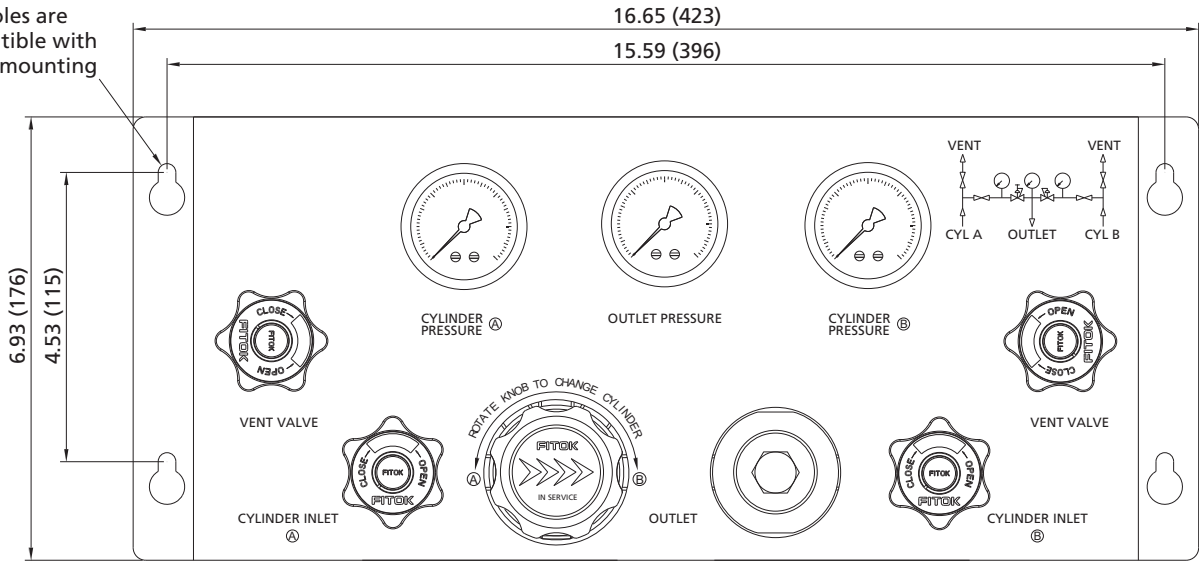


Fig. 3

Dimensions

Dimensions, in inches (millimeters), are for reference only.

The holes are compatible with 4x1/4" mounting screws



Part Number Description

FDR - 1L6L - 30 - 20 - B - 10 - 00 - 00

Body Material (Regulator)	Inlet Pressure P1	Outlet Pressure Range P2	Gauge Scale	Inlet A	Inlet B	Outlet
6L 316L SS	30 3000 psig	10 85~115 psig	B psi/bar	00 1/4" Female NPT	Same as Inlet A	Same as Inlet A
SS 316 SS	45 4500 psig	15 135~165 psig	M psi/MPa	01 1/4" Male NPT		
HC Hastelloy C-276		20 185~215 psig		10 1/4" Tube Fitting		
B Brass (Nickel-plated)		25 235~265 psig		11 3/8" Tube Fitting		
				20 6 mm Tube Fitting		
				21 8 mm Tube Fitting		

Note: Before ordering, please read **Installation Instructions and Cautions** on A-77.

Other connections are available upon request

Changeover Systems

FDR-1T Series Automatic Changeover System with Line Pressure Regulator

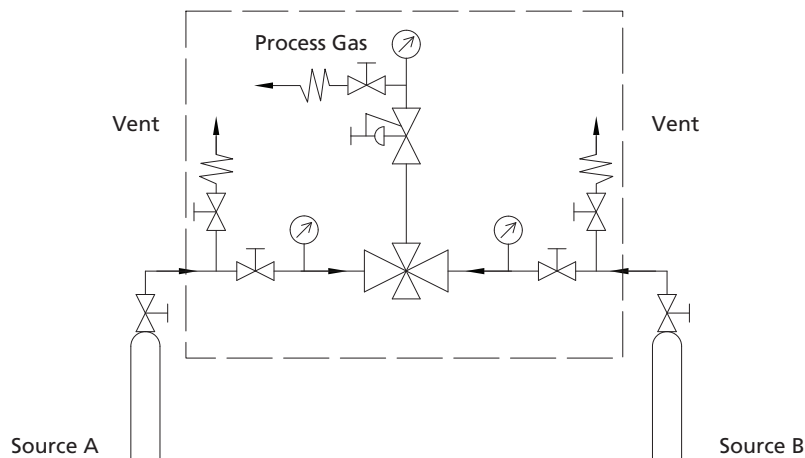
Features

- ⦿ With a FCR-1 Series Regulator and a FLR-1 Series Regulator to enable outlet pressure adjustment
- ⦿ Anodized Aluminium box with clearly marked panel
- ⦿ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- ⦿ Automatic switching of gas source to ensure continuous gas supply
- ⦿ With special cleaning and packaging, applicable to oxygen-enriched environments

Technical Data

- ⦿ Maximum inlet pressure: 3000 or 4500 psig
- ⦿ Outlet pressure range: 0~25, 0~50, 0~100 or 0~150 psig
- ⦿ Material of the main components:
 - Seat: PCTFE (regulator and diaphragm valve)
 - Diaphragm: Hastelloy (regulator), Elgiloy (diaphragm valve)
 - Diaphragm valve body: 316L
- ⦿ Temperature: -10°F~+150°F (-23°C~+65°C)
- ⦿ Leak rates:
 - Internal: $\leq 1 \times 10^{-7}$ mbar·l/s helium
 - External: $\leq 1 \times 10^{-9}$ mbar·l/s helium
- ⦿ Flow coefficient (regulator Cv): 0.05
- ⦿ Weight: ≈ 19.6 lbs (8.9 kg)

Flow Schematic



Model: FDR-1T6L-45-150B-00-00-00

Operation Overview

The FDR-1T Series Changeover System is mainly comprised of one adjustable outlet pressure regulator and one fixed outlet pressure regulator, together with a line pressure regulator on the outlet port.

When the 2 inlets are both open, the one side that the "IN SERVICE" arrow is pointing at by turning the handle would be the 1st source for gas supply.

Fig. 1 When the "In Service" arrow is pointing at side B, side B would be the gas source. At this time, the fixed outlet pressure of side B is higher than the set pressure of side A. Consequently, the diaphragm of side A regulator moves to enable the stem to close the regulator.

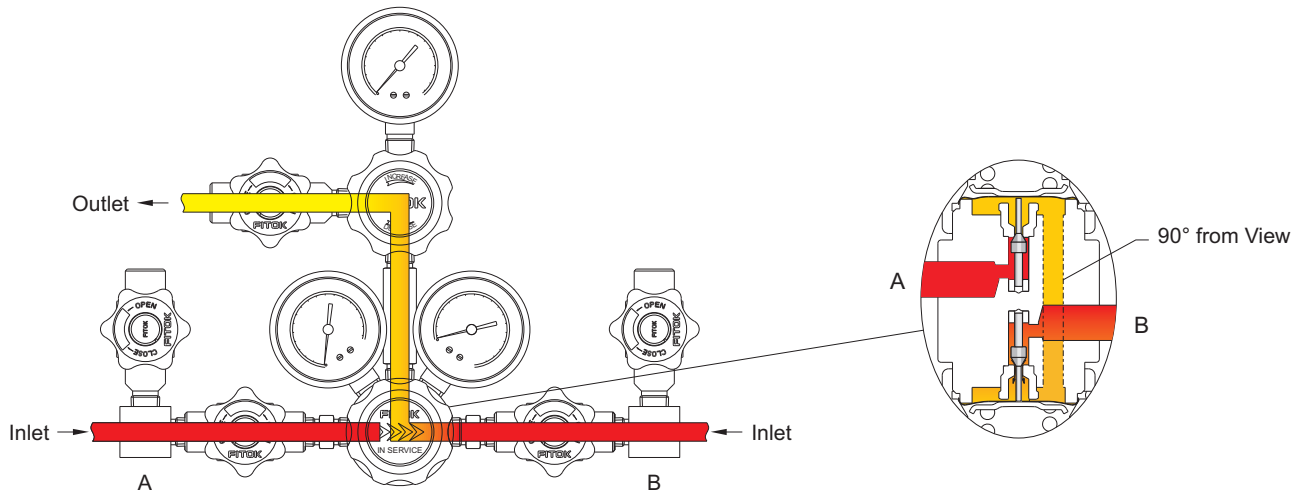


Fig. 1

Fig. 2 If side A is chosen as the gas source, the handle should be turned clockwise until the "IN SERVICE" arrow is pointing at side A. At this time, the set pressure of side A is higher than the fixed outlet pressure of side B. Consequently, the diaphragm of side B regulator moves to enable the stem to close the regulator.

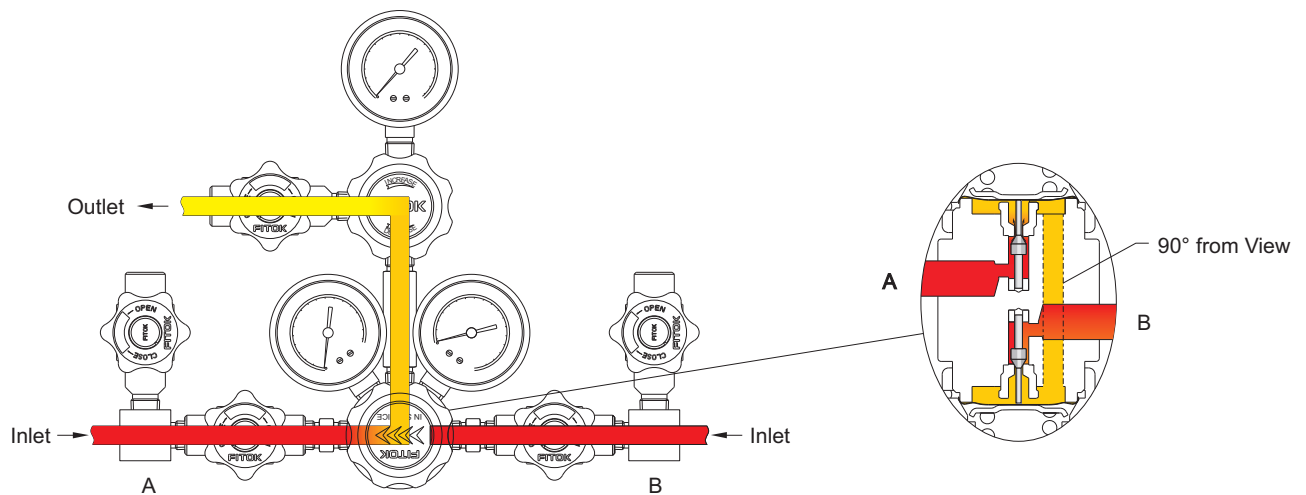


Fig. 2

When gas source of one side is depleted, gas source would automatically change to the other side.

Fig. 3 When "IN SERVICE" arrow is pointing at side B, but gas source of side B is depleted, its outlet pressure shall decrease to be lower than the set pressure of side A. By the force of spring, side A regulator will be opened to begin gas supply.

Before replacing new gas source of side B, the diaphragm valve should be turned off. Otherwise, gas from side A will flow back into side B. Then open the vent valve to exhaust the remaining pressure.

After the replacement, if the "IN SERVICE" arrow still points at side B, side B would be the gas source. If the arrow is turned towards side A, side A would thus be the gas source.

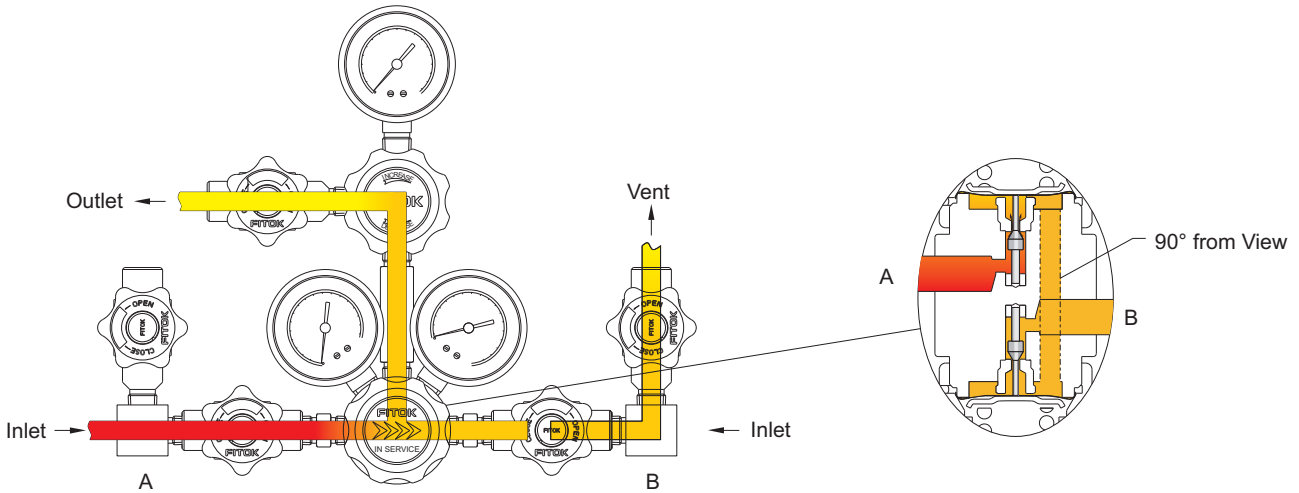
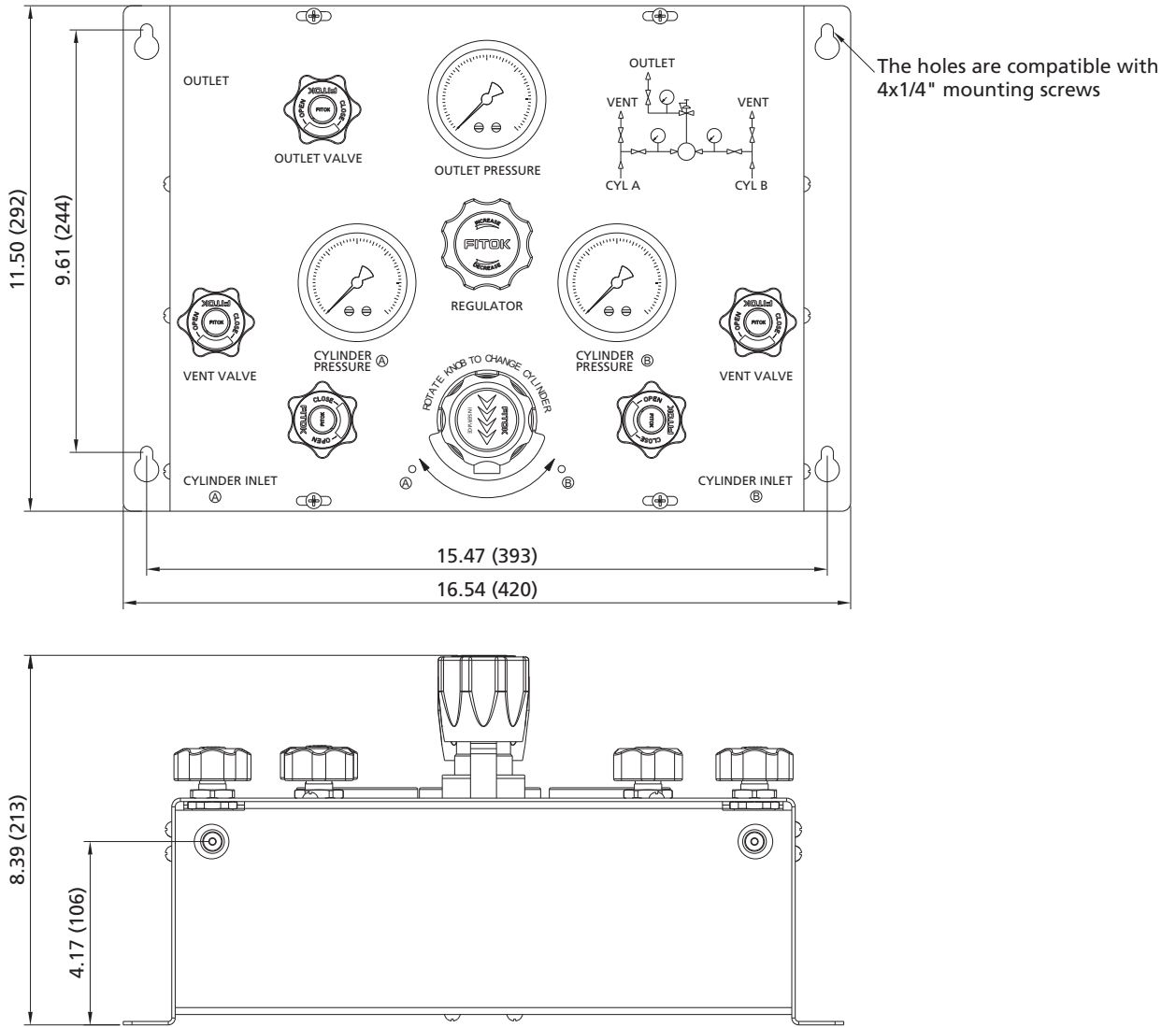


Fig. 3

Dimensions

Dimensions, in inches (millimeters), are for reference only.



Part Number Description

FDR - 1T6L - 30 - 25 - B - 10 - 00 - 00

Body Material (Regulator)	Inlet Pressure P1	Outlet Pressure Range P2	Gauge Scale	Inlet A	Inlet B	Outlet
6L 316L SS	30 3000 psig	25 0~25 psig	B psi/bar	00 1/4" Female NPT	Same as Inlet A	Same as Inlet A
SS 316 SS	45 4500 psig	50 0~50 psig	M psi/MPa	01 1/4" Male NPT		
HC Hastelloy C-276		100 0~100 psig		10 1/4" Tube Fitting		
B Brass (Nickel-plated)		150 0~150 psig		11 3/8" Tube Fitting		

Note: Before ordering, please read **Installation Instructions and Cautions** on A-77.

Other connections are available upon request