Changeover Systems

FDR-1,FDR-2, FDR-1L and FDR-1T Series

FITOK
Valves and Fittings

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Changeover Systems

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

Features

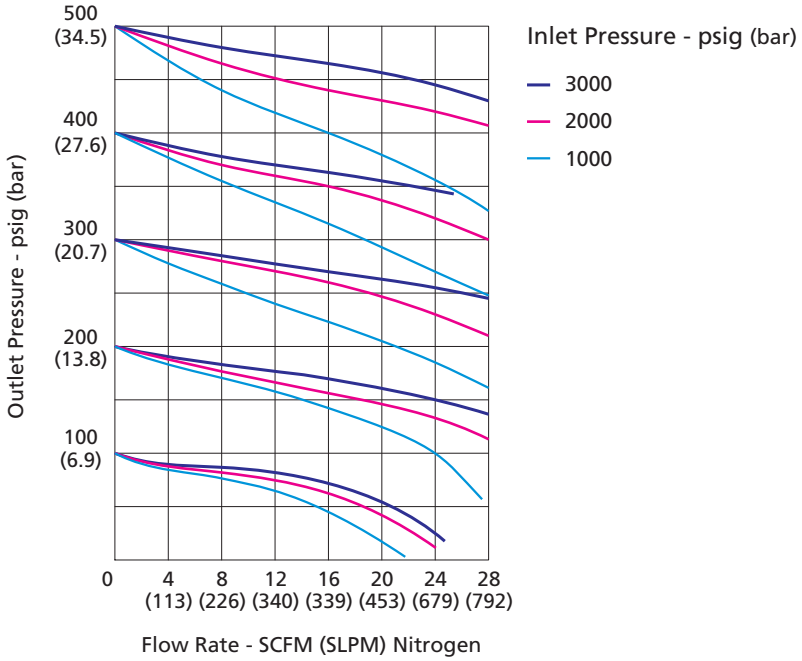
- ◎ A small manual changeover system with a regulator similar to FCR-1 Series Regulators
- ◎ Connecting with two independent gas sources at a time, gas source selected through diaphragm valves
- ◎ Applicable to corrosive or toxic gases
- ◎ With vent valves to relieve residual pressure quickly, easy and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

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

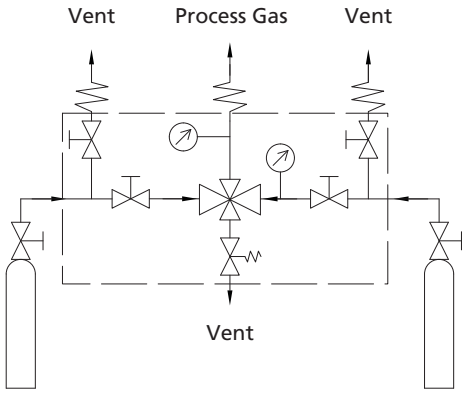
Technical Data

- ◎ 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: $\leqslant 1x10^{-7}$ mbar·l/s helium
  External: $\leqslant 1x10^{-9}$ mbar·l/s helium
- ◎ Flow coefficient (regulator Cv): 0.06

Typical Flow Chart

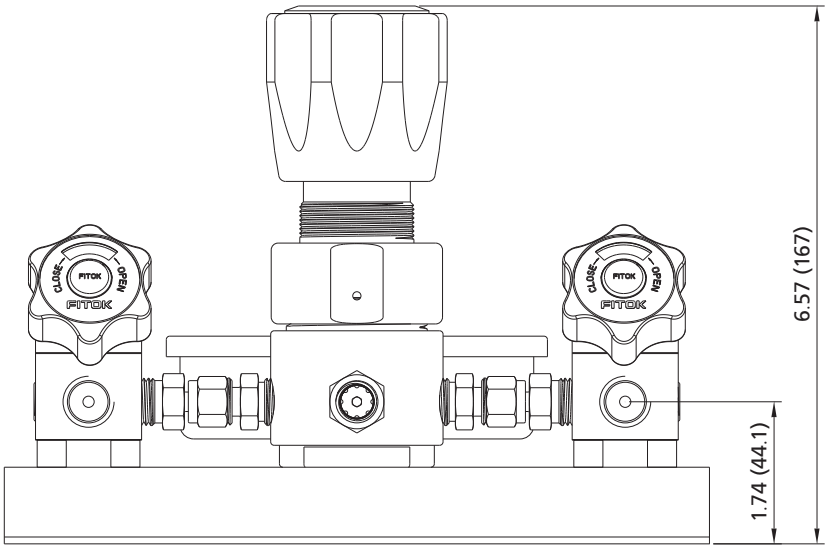


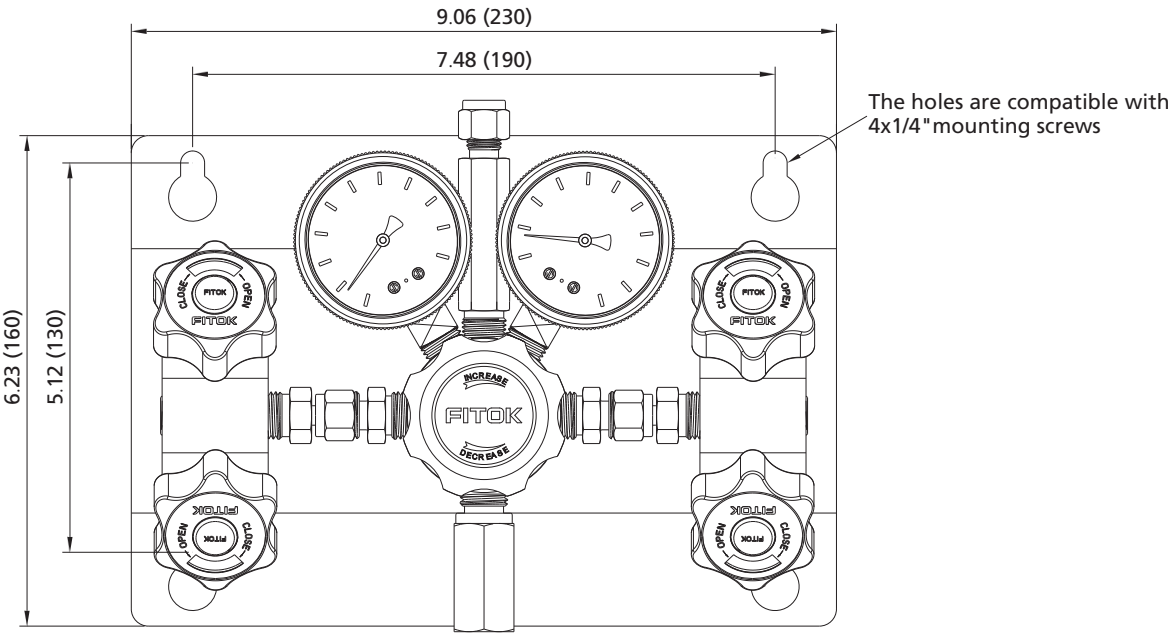
Flow Schematic



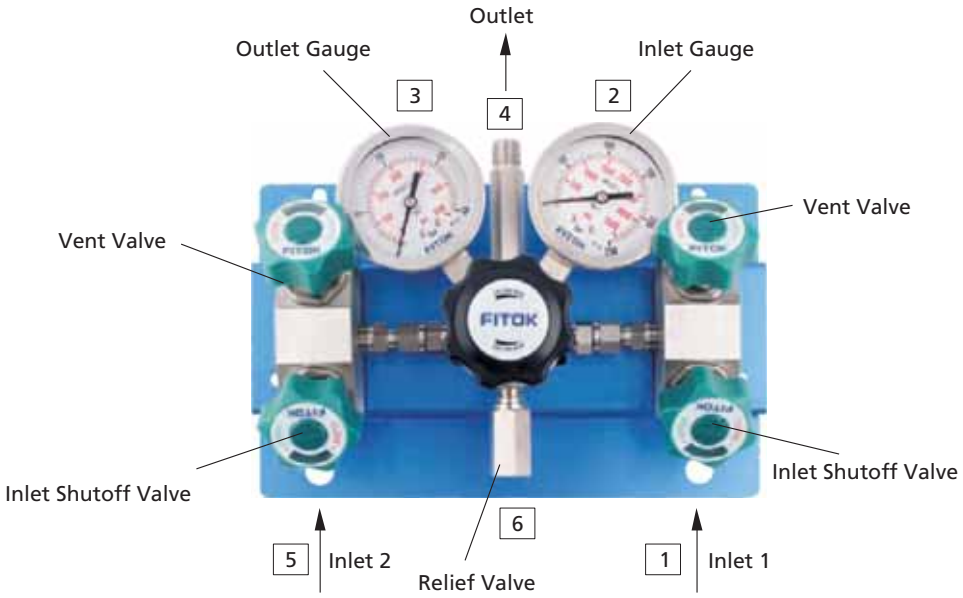
Dimensions

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 (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 5
Same as Connection 1

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

Changeover Systems

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

Features

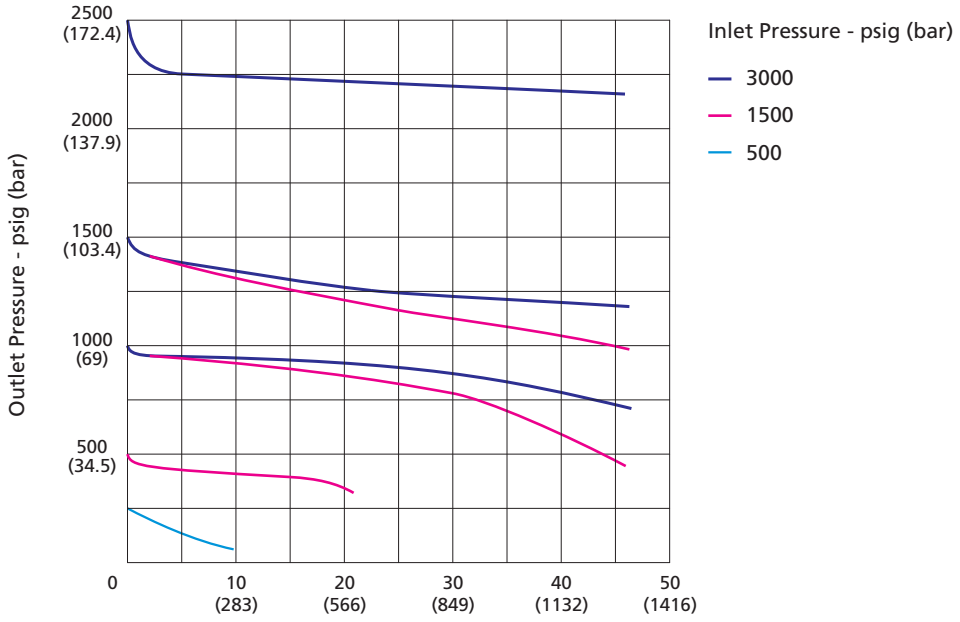
- A small manual changeover system with a regulator similar to FCR-2 Series Regulators
- Connecting with two independent gas sources at a time, gas sources switched through diaphragm valves
- Applicable to non-corrosive gases
- Venting model available
- Anodized Aluminium panel

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

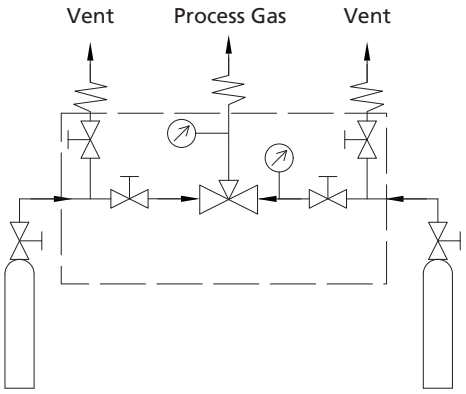
Technical Data

- 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

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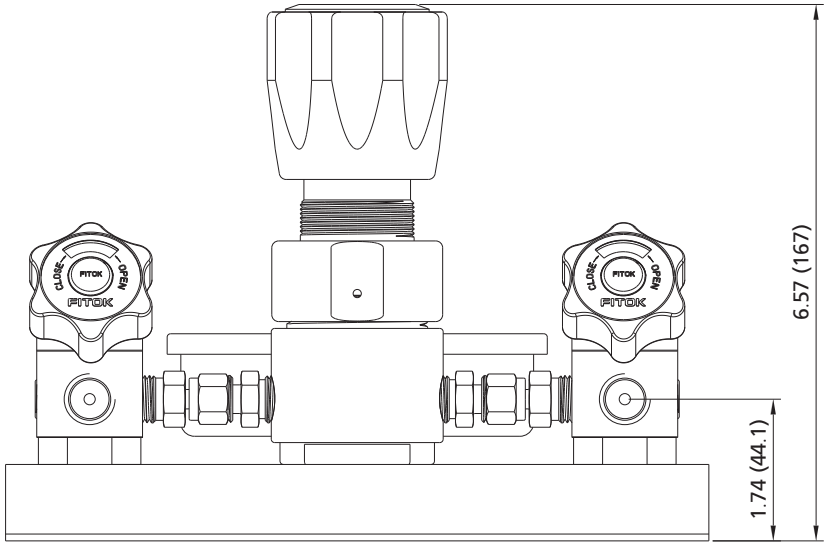
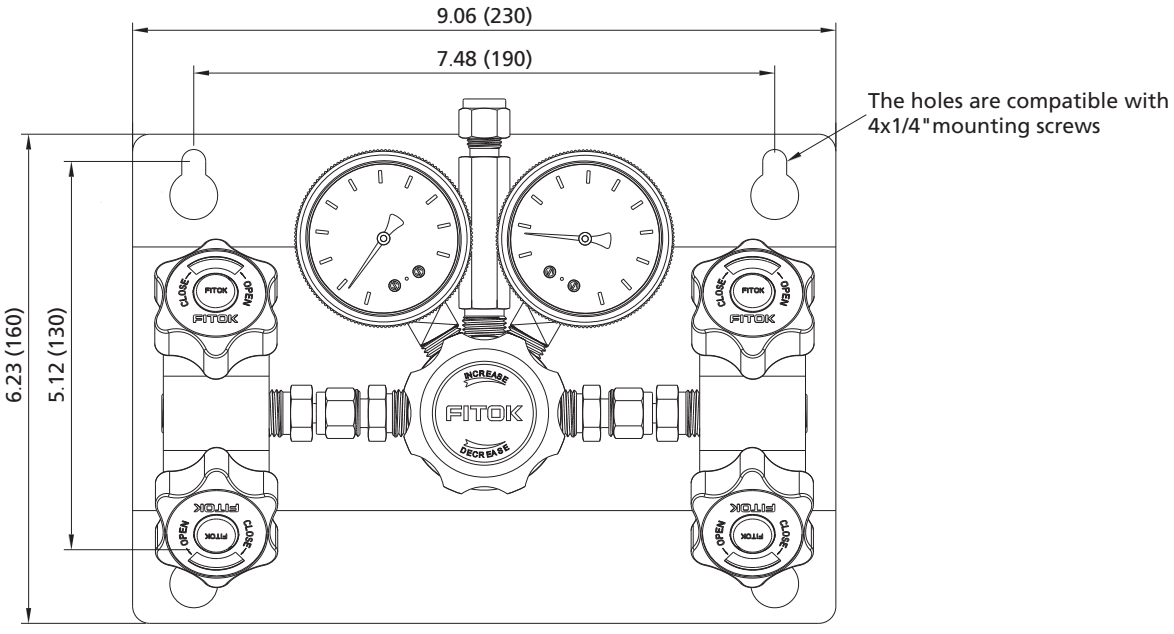
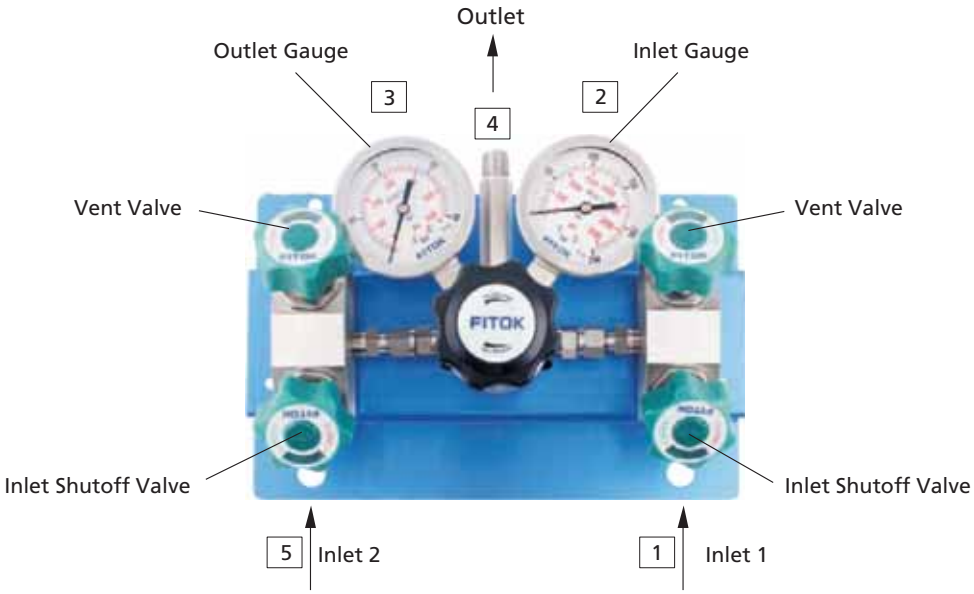




Flow Rate - SCFM (SLPM) Nitrogen

Components Introduction



Part Number Description

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

Vent Option

	Without
V	With

O-ring Material

	Viton
Z	Kalrez

Body Material (Regulator)

6L	316L SS
SS	316 SS
B	Brass (Nickel-plated)

Inlet Pressure P1

30	3000 psig
45	4500 psig

Outlet Pressure Range P2

750	0~750 psig
1500	0~1500 psig
2500	0~2500 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 (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 5

Same as Connection 1

Changeover Systems

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

Features

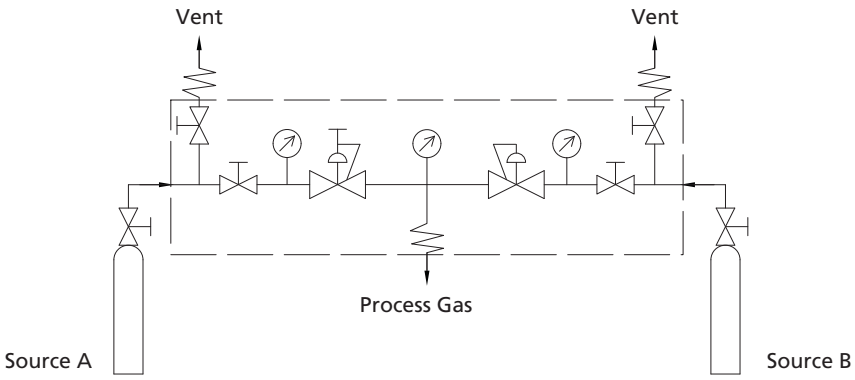
- With 2 regulators similar to FCR-1 Series Regulators
- Anodized Aluminium box with clearly marked panel
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- Automatic switching of gas source to ensure continuous gas supply
- Four fixed outlet pressure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

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

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: $\leqslant 1x10^{-7}$ mbar·l/s helium
  External: $\leqslant 1x10^{-9}$ 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.

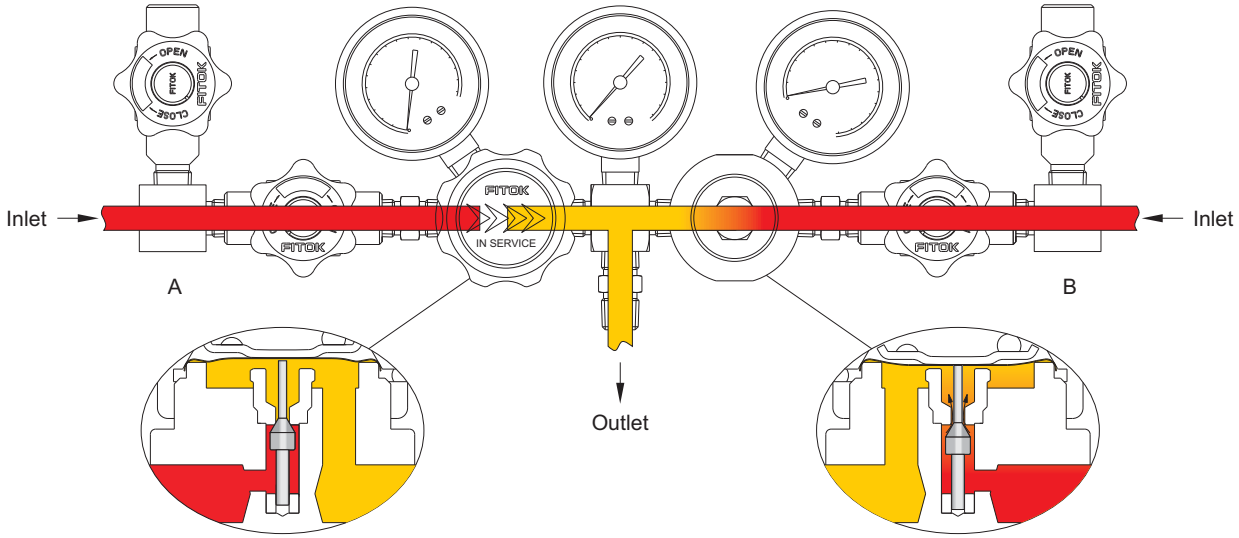


Fig. 1

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.

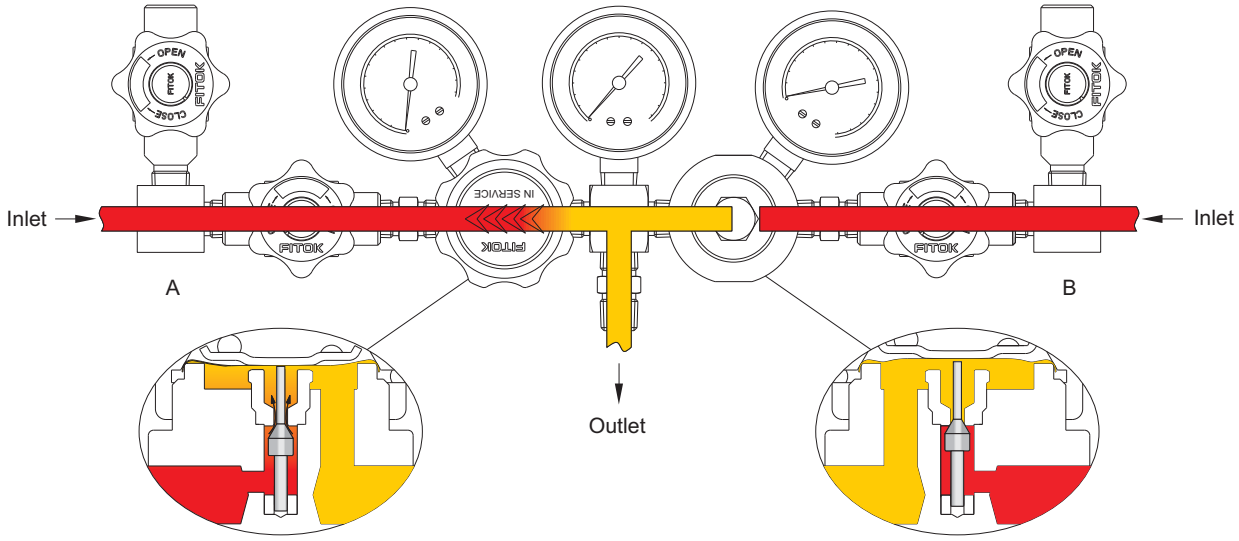


Fig. 2

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.

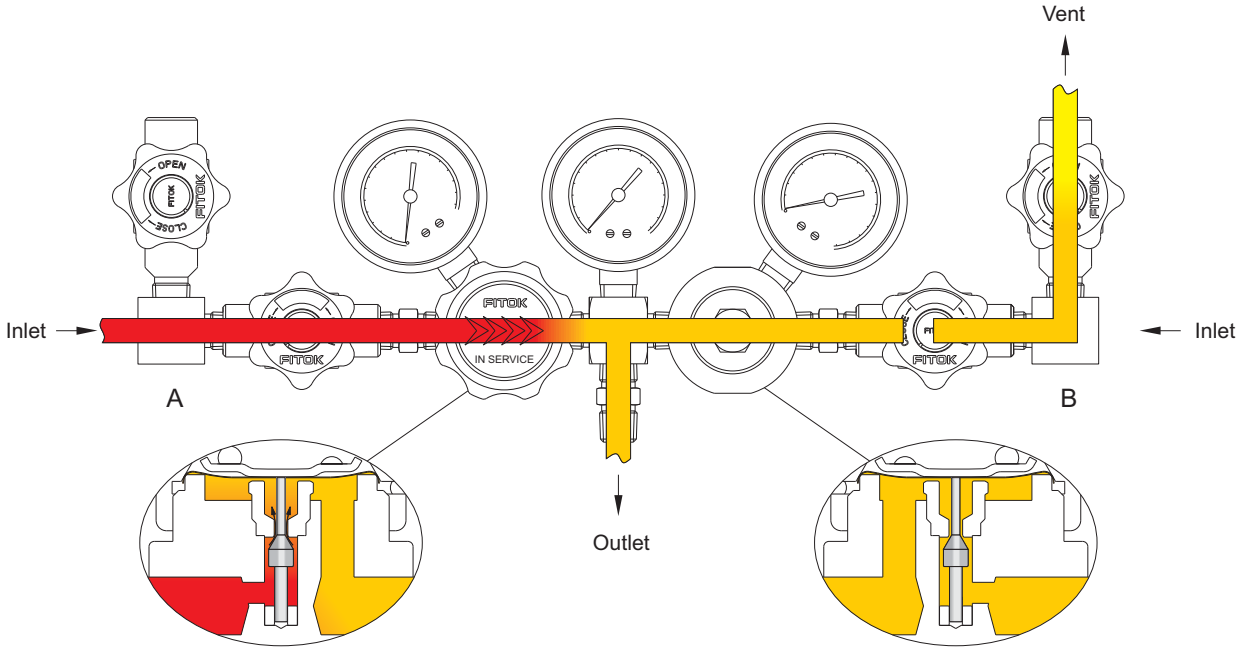
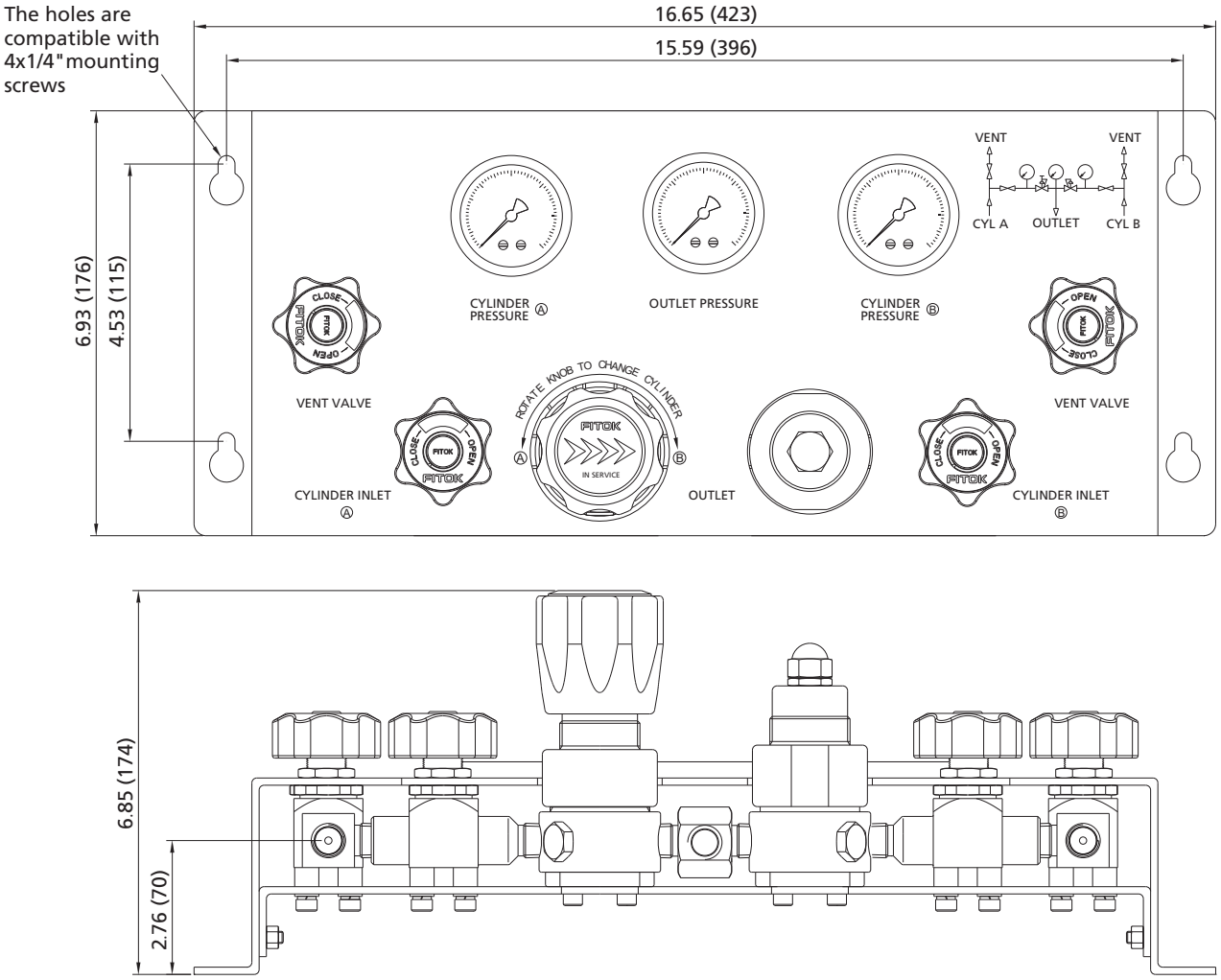


Fig. 3

Dimensions

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



Part Number Description

FDR – 1L6L – 30 – 20 – 10 – 00 – 00

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	
10	85~115 psig
15	135~165 psig
20	185~215 psig
25	235~265 psig

Inlet A	
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	

Inlet B
Same as Inlet A

Outlet
Same as Inlet A

Changeover Systems

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

Features

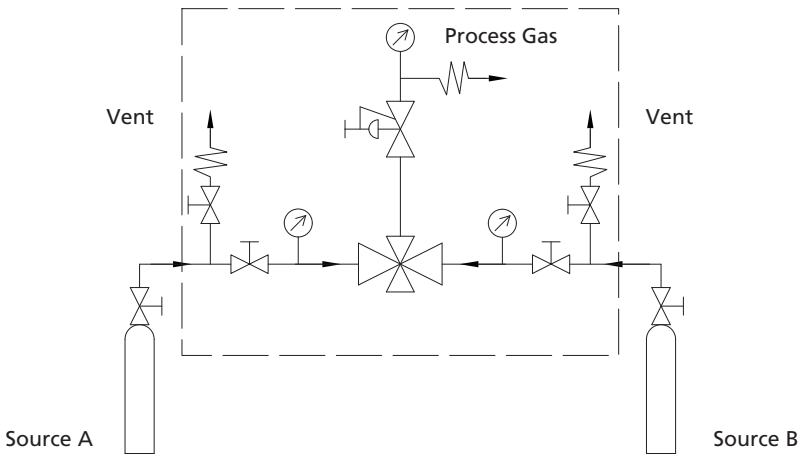
- With a FCR-1 Series Regulator and a FLR-1 Series Regulator to enable outlet pressure adjustment
- Anodized Aluminium box with clearly marked panel
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- Automatic switching of gas source to ensure continuous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

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

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: $\leqslant 1x10^{-7}$ mbar·l/s helium
  External: $\leqslant 1x10^{-9}$ mbar·l/s helium
- Flow coefficient (regulator Cv): 0.05
- Weight: ≈19.6 lbs (8.9 kg)

Flow Schematic



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.

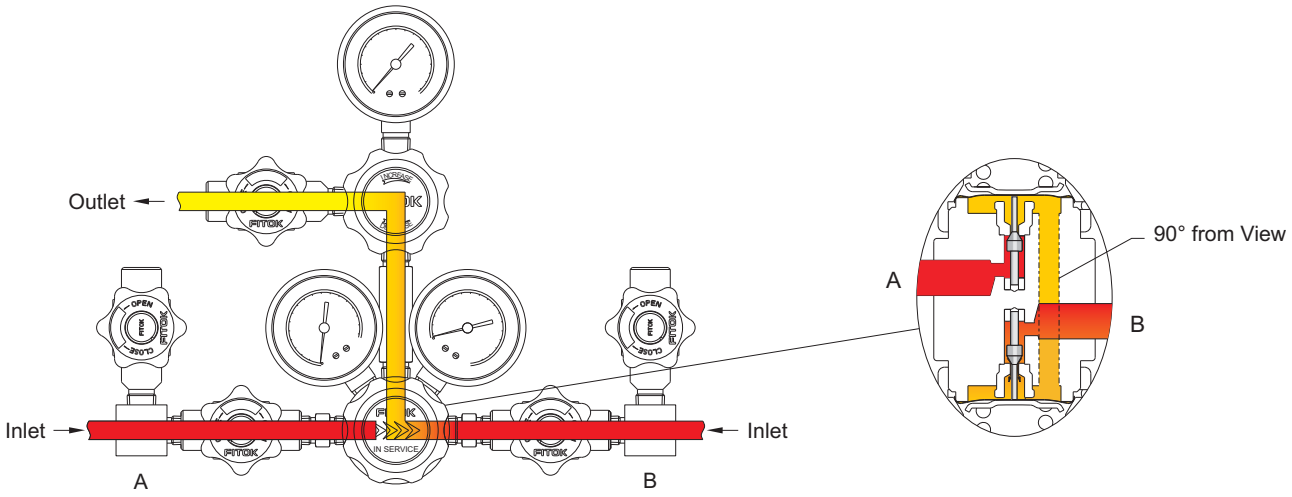


Fig. 1

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.

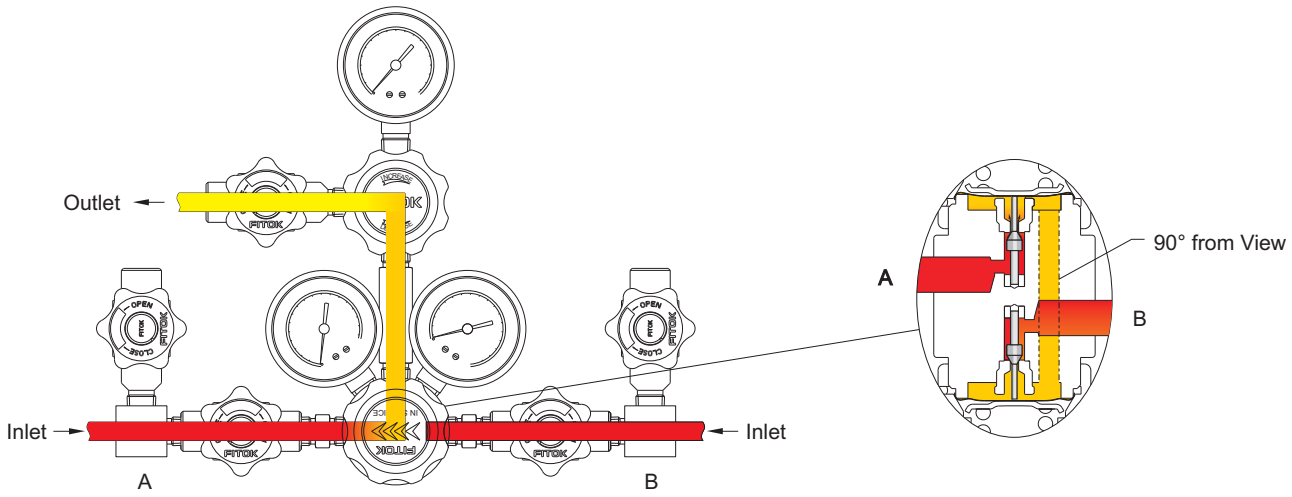


Fig. 2

13 Changeover System

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.

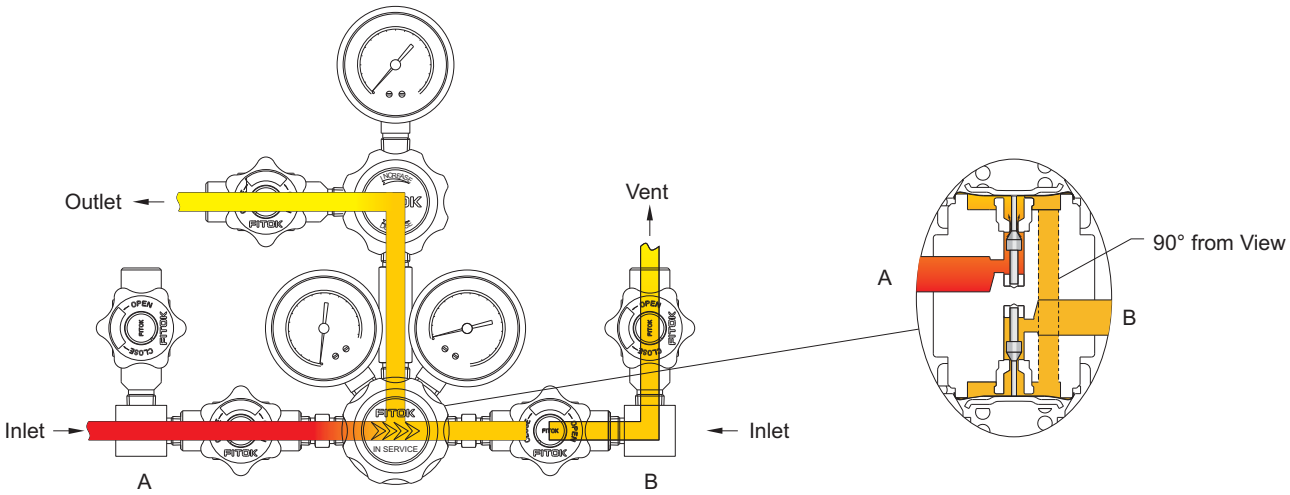
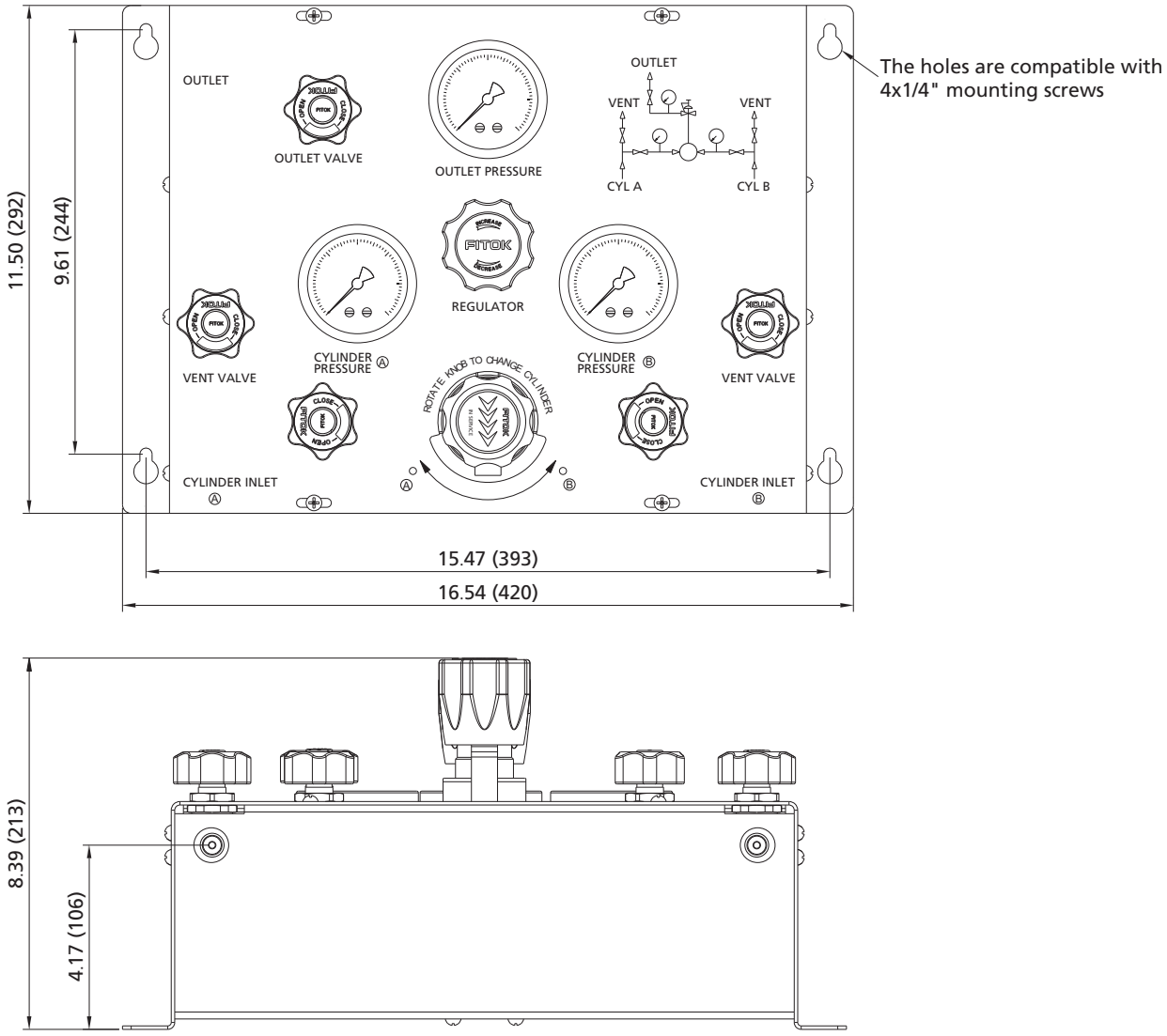


Fig. 3

Dimensions

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



Part Number Description

FDR – 1T6L – 30 – 25 – 10 – 00 – 00

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
150	0~150 psig

Inlet A	
00	1/4" Female NPT
01	1/4" Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
Other connections are available upon request	

Inlet B
Same as Inlet A

Outlet
Same as Inlet A

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