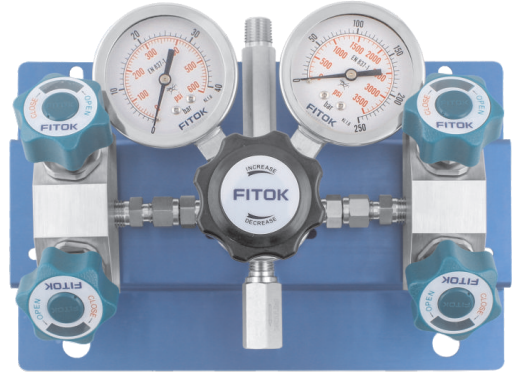


Changeover Systems

FDR-1 Series Manual Changeover System

Features

- ⦿ Two gas sources are connected to the system, when the pressure of one gas source is lower than the switching pressure, manually switch to the other gas source to ensure continuous gas supply
- ⦿ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- ⦿ With special cleaning and packaging, applicable to oxygen-enriched atmospheres

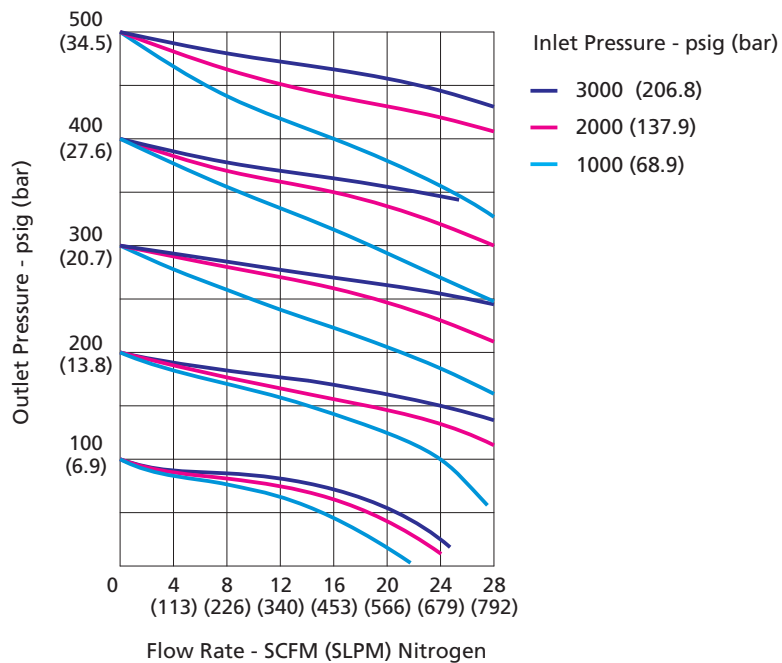


Model: FDR-16L-30-500-00-B-B-01-00-R

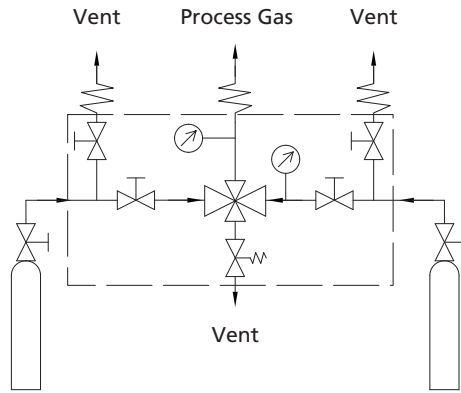
Technical Data

- ⦿ 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), cobalt alloy (diaphragm valve)
 - Diaphragm valve body: 316L
 - O-ring: FKM
- ⦿ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- ⦿ Valve leak rates (helium):
 - Internal: $\leq 1 \times 10^{-7}$ std cm³/s
 - External: $\leq 1 \times 10^{-9}$ std cm³/s
- ⦿ Flow coefficient (regulator Cv): 0.06

Typical Flow Chart

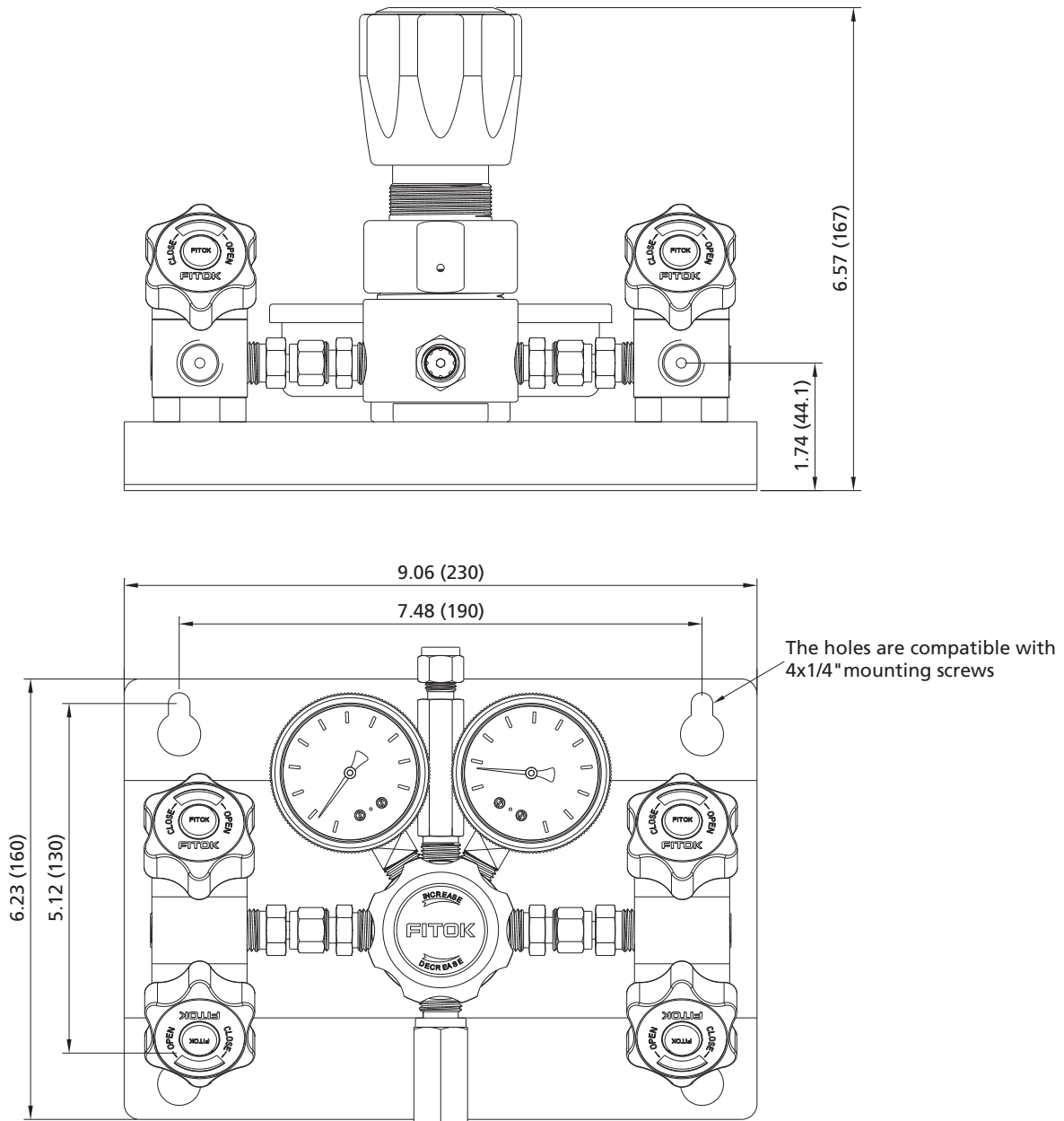


Flow Schematic

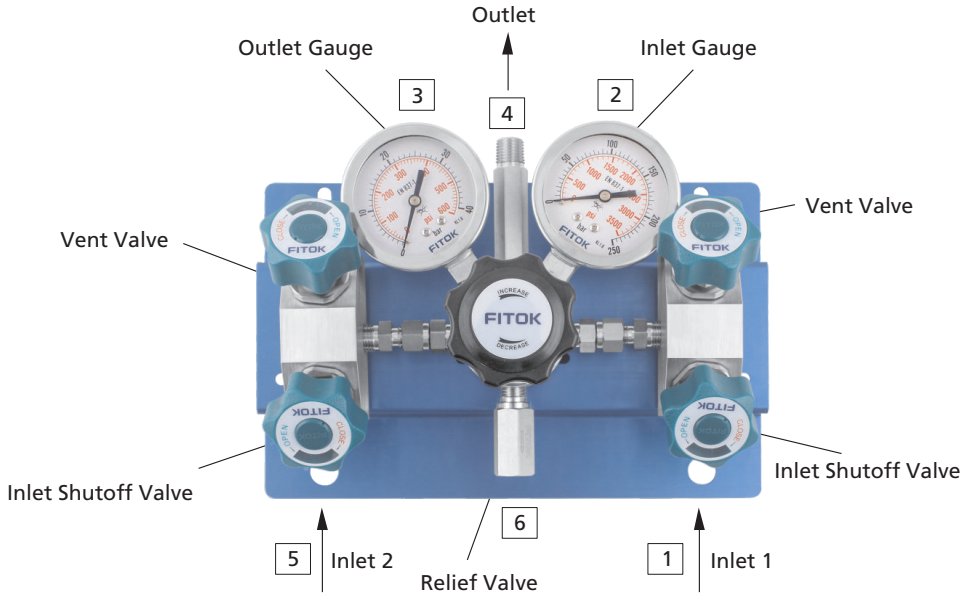


Dimensions

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



Components Introduction



Ordering 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

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-11.

Changeover Systems

FDR-2 Series Manual Changeover System

Features

- Two gas sources are connected to the system, when the pressure of one gas source is lower than the switching pressure, manually switch to the other gas source to ensure continuous gas supply
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres

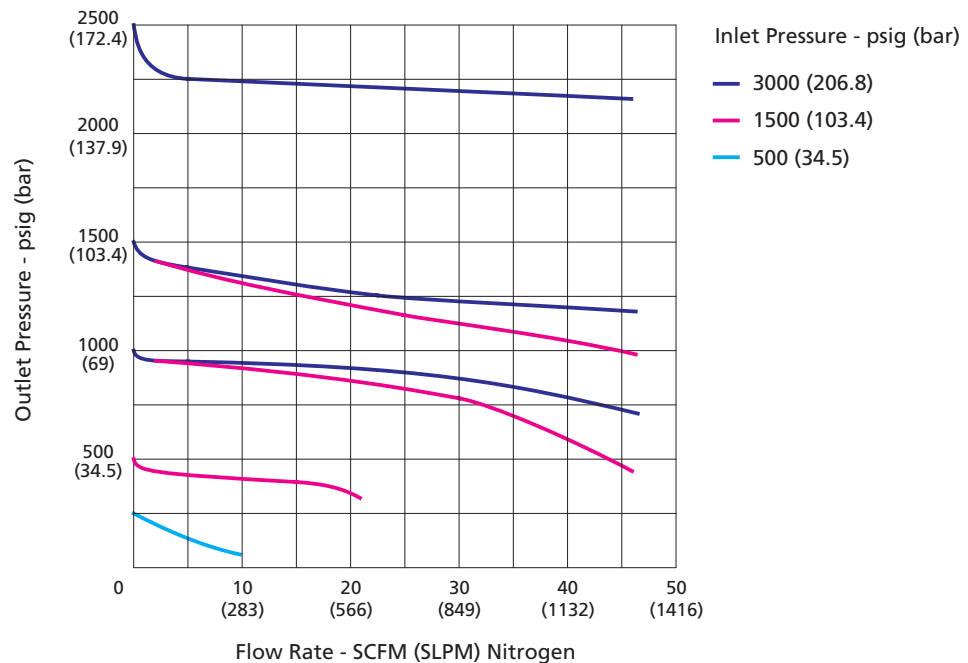


Model: FDR-2VSS-45-2500-00-B-B-01-00

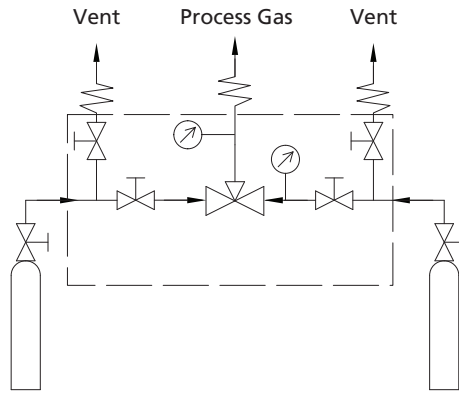
Technical Data

- 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: cobalt alloy (diaphragm valve)
 - Diaphragm valve body: 316L
 - O-ring: FKM or FFKM
 - 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

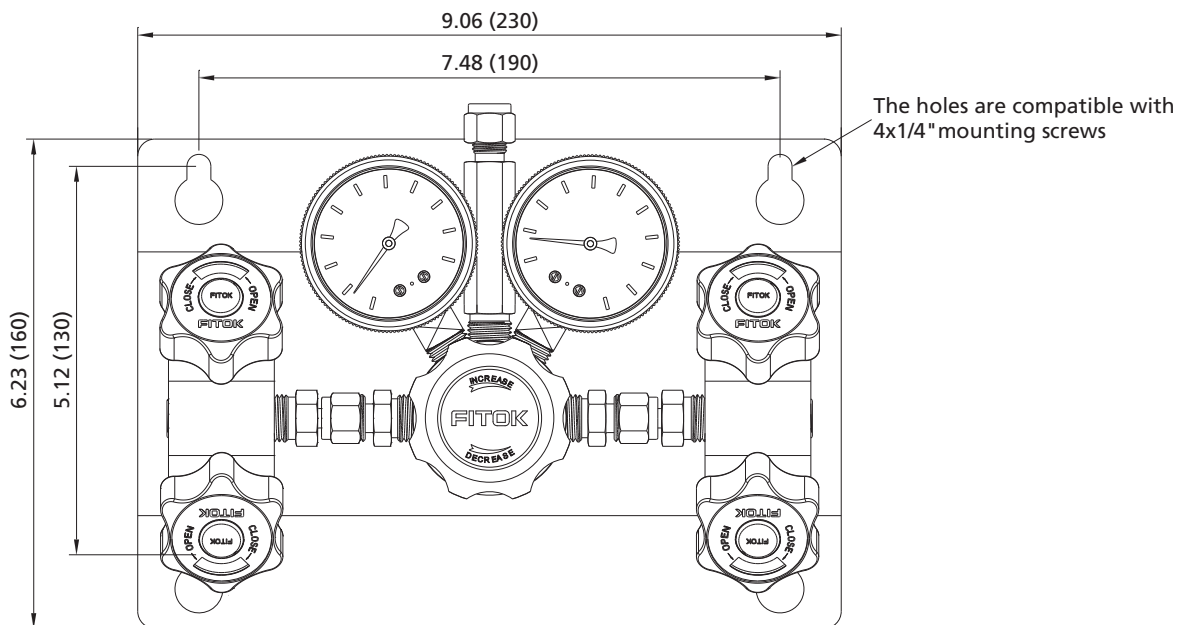
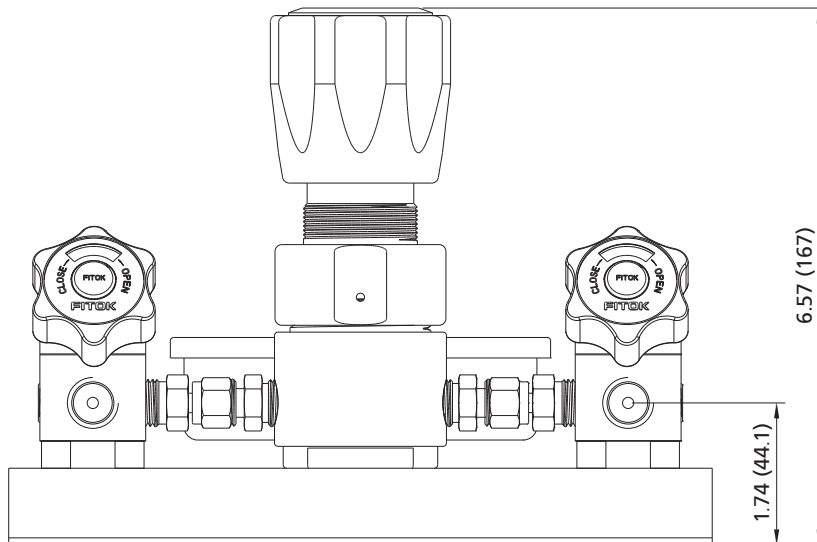


Flow Schematic

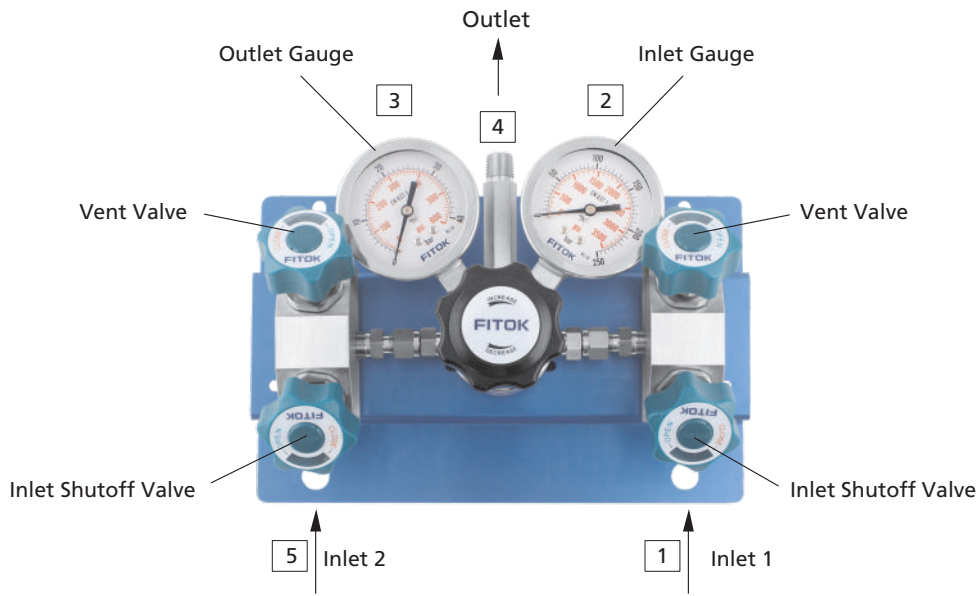


Dimensions

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



Components Introduction



Ordering 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	Other connections are available upon request
FKM	750 0~750 psig	11 3/8" Tube Fitting	00 1/4" Female NPT	11 3/8" Tube Fitting	
Z FFKM	1500 0~1500 psig	20 6 mm Tube Fitting	Connection 3	20 6 mm Tube Fitting	
	2500 0~2500 psig	21 8 mm Tube Fitting	Same as Connection 2	21 8 mm Tube Fitting	
Body Material (Regulator)		Other connections are available upon request			
6L 316L SS					
SS 316 SS					
B Brass (Nickel-plated)					

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-11.

Changeover System

CEPR Series Automatic Changeover System

The CEPR series automatic changeover system, suitable for uninterrupted gas supply, uses dual gas sources of main supply cylinder and backup cylinder. When the pressure of one gas source drops below the set pressure, the changeover system will automatically switch from the depleted source to the backup source, thus achieving a continuous gas supply.

Features

- ⦿ Two gas sources are connected to regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas, thus ensuring continuous gas supply
- ⦿ Excellent sensitivity and set point pressure stability

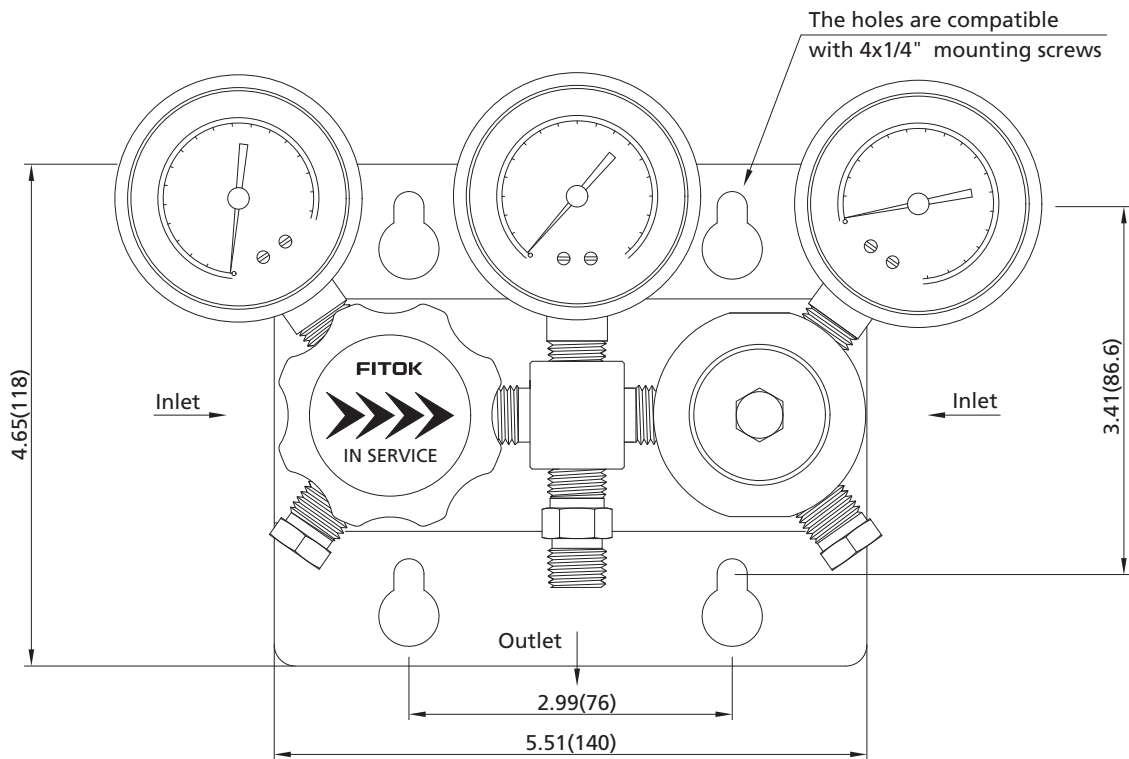
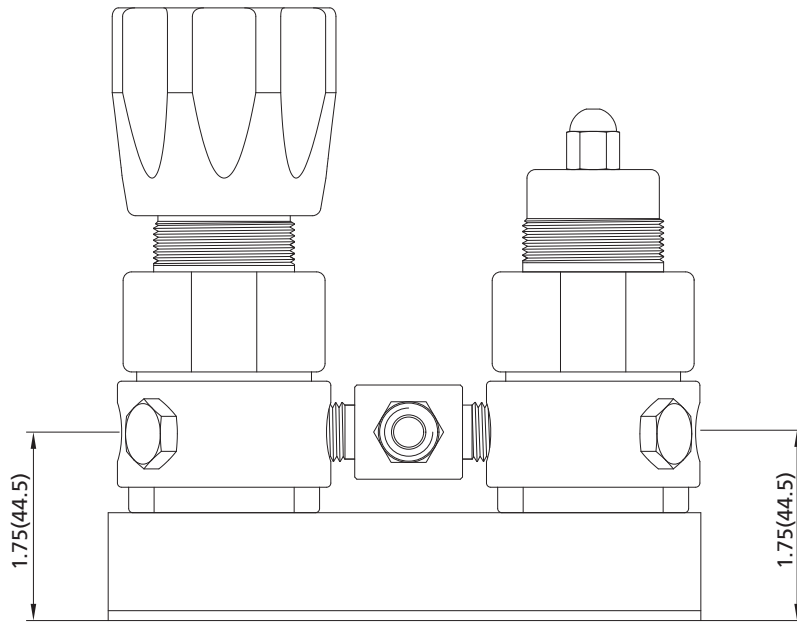


Technical Data

- ⦿ Maximum inlet pressure: 3000 psig
- ⦿ Nominal changeover pressure: 100, 150, 200 and 250 psig
- ⦿ Outlet pressure ranges: 85 ~ 115, 135 ~ 165, 185 ~ 215, 235 ~ 265 psig
- ⦿ Material of the internal components:
 - Seat: PCTFE
 - Diaphragm: Hastelloy
 - Filter: 316L
- ⦿ Working Temperature: -40 °F ~ 165 °F (-40 °C ~ 74 °C)
- ⦿ Valve leak rates (helium):
 - Internal: Bubble-tight
 - External: $\leq 2 \times 10^{-8}$ std cm³/s
- ⦿ Flow coefficient (Cv): 0.06
- ⦿ Weight: ≈ 5.07 lbs (2.3 kg)

Dimensions

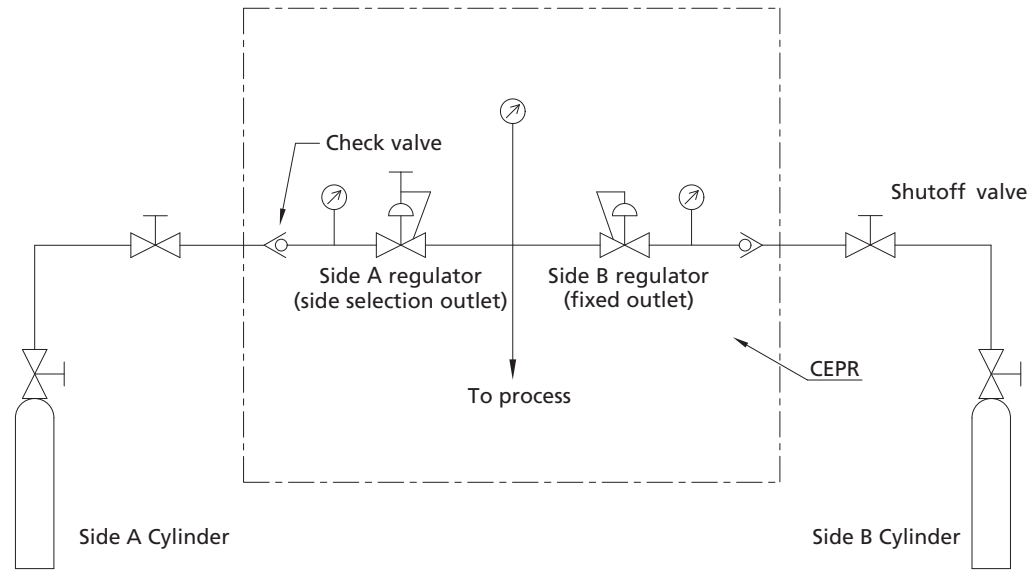
Dimensions, in inches (millimeters), are for reference only.



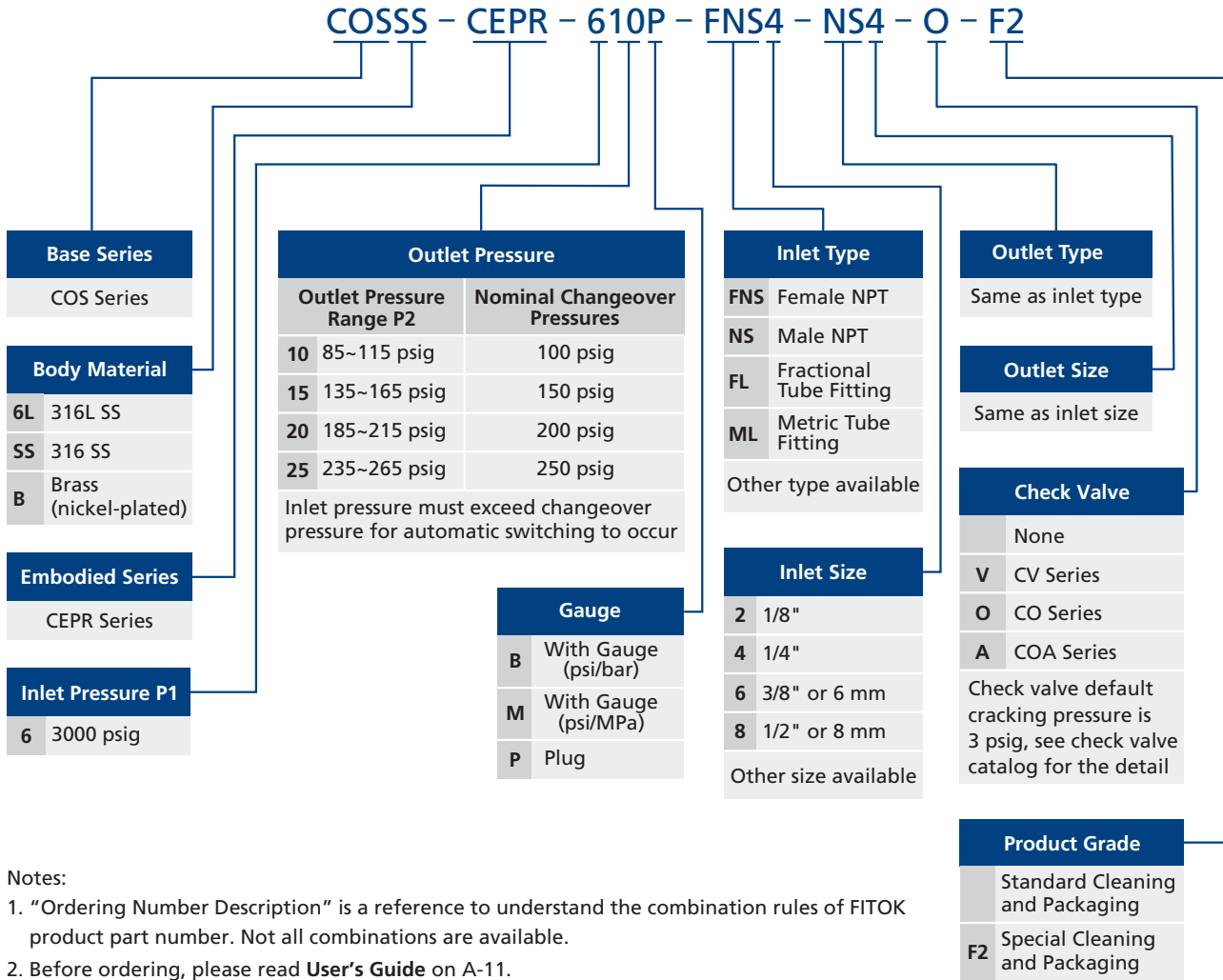
Operation Overview

The CEPR series changeover system consists of two separate regulators. The two regulators are respectively attached to separate source cylinders. One of the regulators has an adjusting handle which can swivel to enable source side selection.

The other regulator is preset to an appropriate setting for the system outlet range. The source selection handle adjusts the outlet pressure to be either above or below the preset side within 15 ~ 30 psig. When the handle is turned to point to the standby side, the standby side continues to supply gas due to the change in differential pressure to achieve continuous and uninterrupted gas supply. When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply.



Ordering Number Description



Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-11.

Changeover Systems

FDR-1L Series Automatic Changeover System

Features

- With CEPR series automatic changeover device
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres

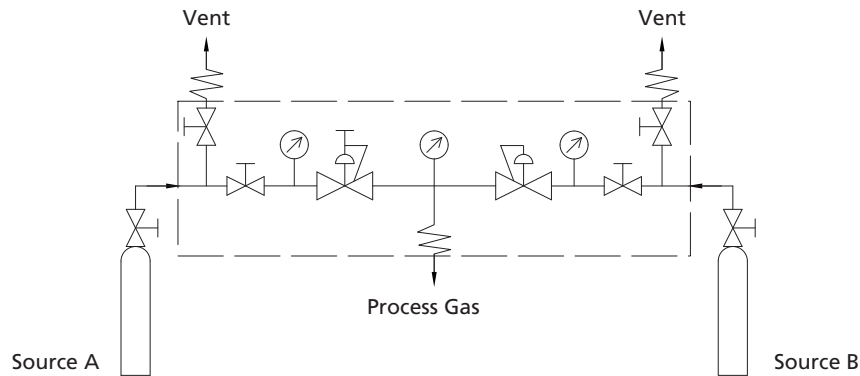


Model: FDR-1L6L-30-10-B-00-00-00

Technical Data

- Maximum inlet pressure: 3000 or 4500 psig
- Nominal changeover pressure: 100, 150, 200 and 250 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), cobalt alloy (diaphragm valve)
 - Diaphragm valve body: 316L
- Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- Valve leak rates (helium):
 - Internal: $\leq 1 \times 10^{-7}$ std cm³/s
 - External: $\leq 1 \times 10^{-9}$ std cm³/s
- 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.

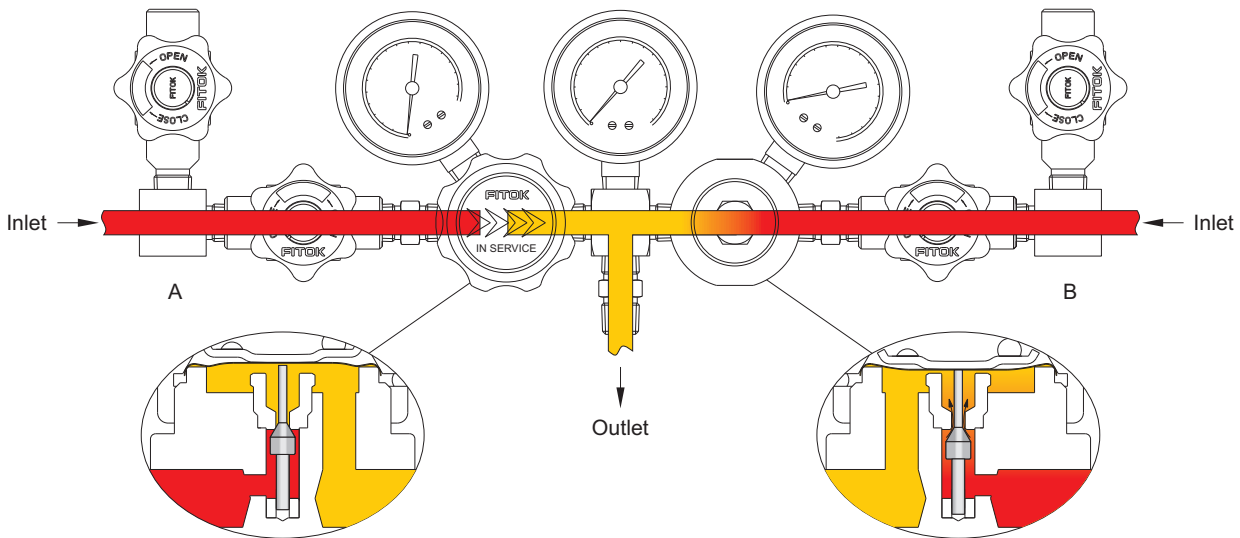


Fig. 1

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.

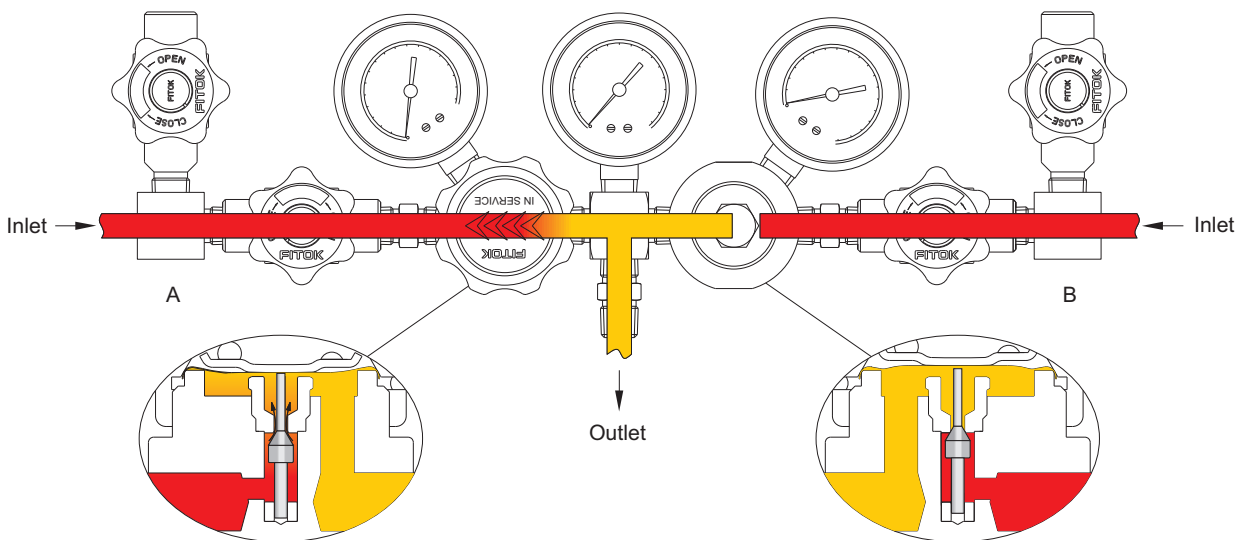


Fig. 2

A-70 Gas Control Equipment

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

Fig. 1 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 as shown in Fig. 3

Gas from side A will flow back into side B. At this time, replace to a new gas source of side B, close the shutoff valve and open the vent valve to exhaust the remaining pressure, then replace to a new gas source. After the replacement, if not rotating the handle, the gas supply will return to the status as of Fig. 1. And if rotating the handle to the status as shown in Fig. 2, the gas supply will be changed to the status as of Fig. 2.

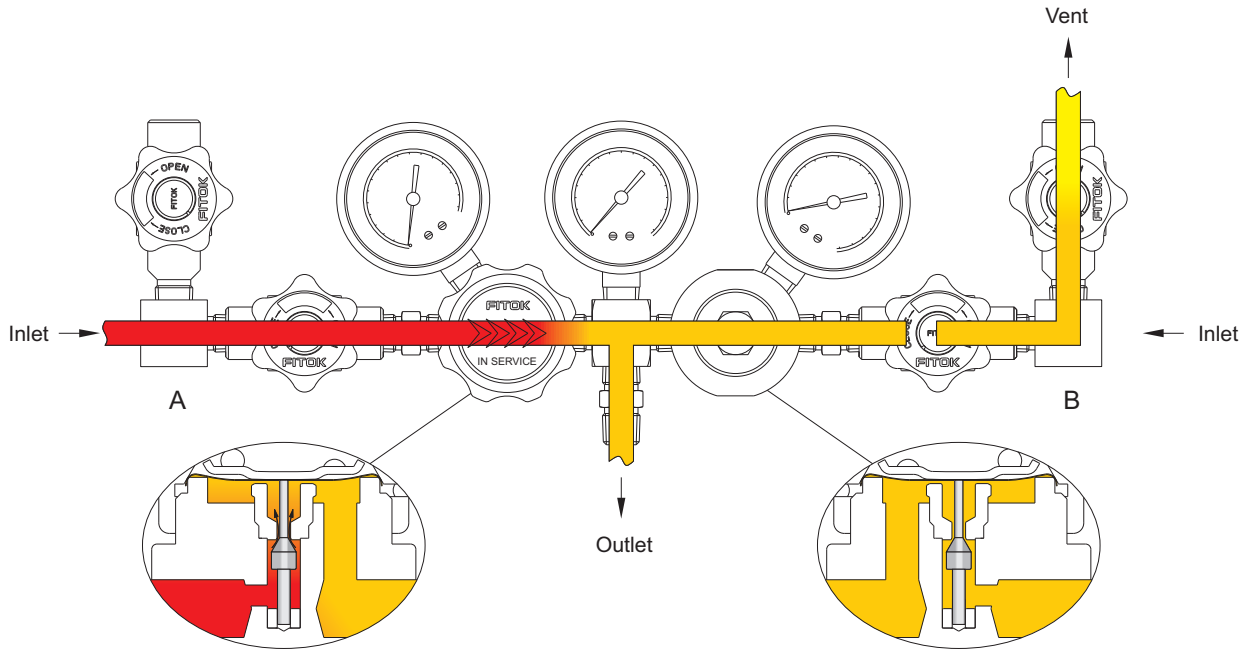
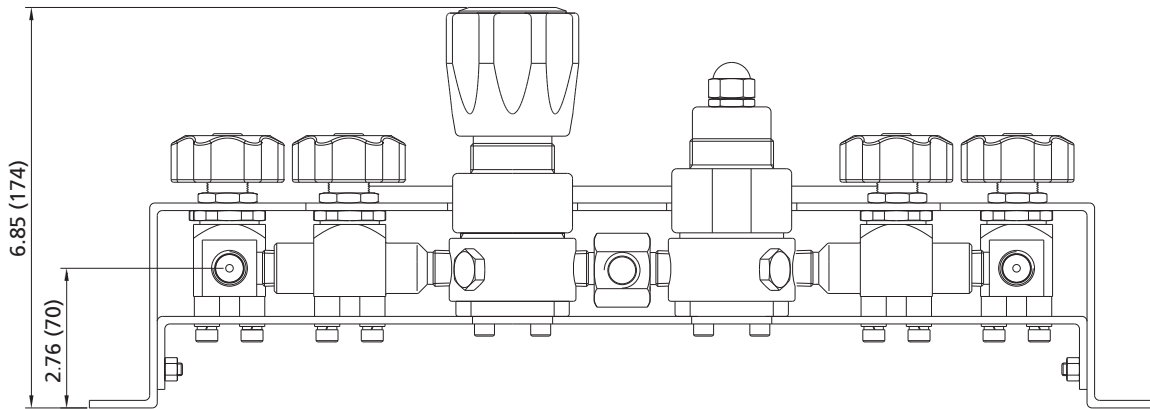
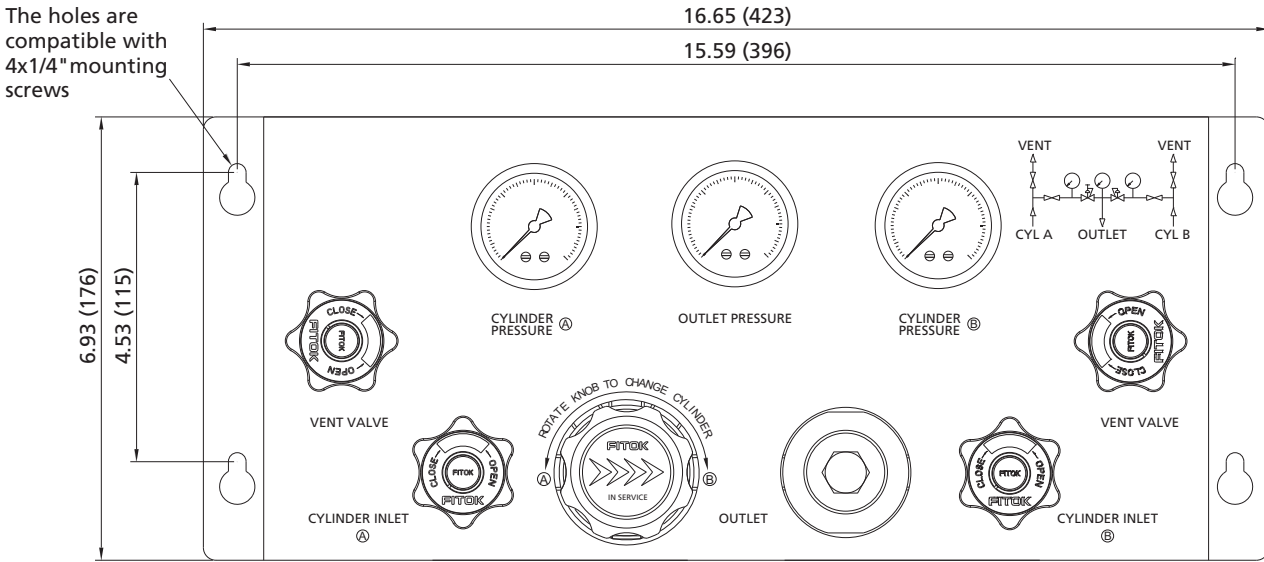


Fig. 3

Dimensions

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



Ordering Number Description

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

Body Material (Regulator)		Outlet Pressure		Gauge Scale	Inlet A	Inlet B
6L	316L SS	Outlet Pressure Range P2	Nominal Changeover Pressures	B With Gauge (psi/bar)	00 1/4" Female NPT	Same as Inlet A
SS	316 SS	10 85~115 psig	100 psig	M With Gauge (psi/MPa)	01 1/4" Male NPT	
HC	Hastelloy C-276	15 135~165 psig	150 psig		10 1/4" Tube Fitting	Outlet Same as Inlet A
B	Brass (Nickel-plated)	20 185~215 psig	200 psig		11 3/8" Tube Fitting	
Inlet Pressure P1		Inlet pressure must exceed changeover pressure for automatic switching to occur			20 6 mm Tube Fitting	
30	3000 psig				21 8 mm Tube Fitting	
45	4500 psig					

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-11.

Other connections are available upon request

Changeover Systems

DPPR Series Automatic Changeover System

The DPPR series automatic changeover system, suitable for uninterrupted gas supply, uses dual gas sources of main supply cylinder and backup cylinder. When the pressure of one gas source drops below the set pressure, the changeover system will automatically switch from the depleted source to the backup source, thus achieving a continuous gas supply.

Features

- ⦿ Two gas sources are connected to regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas, thus ensuring continuous gas supply.
- ⦿ Excellent sensitivity and set point pressure stability

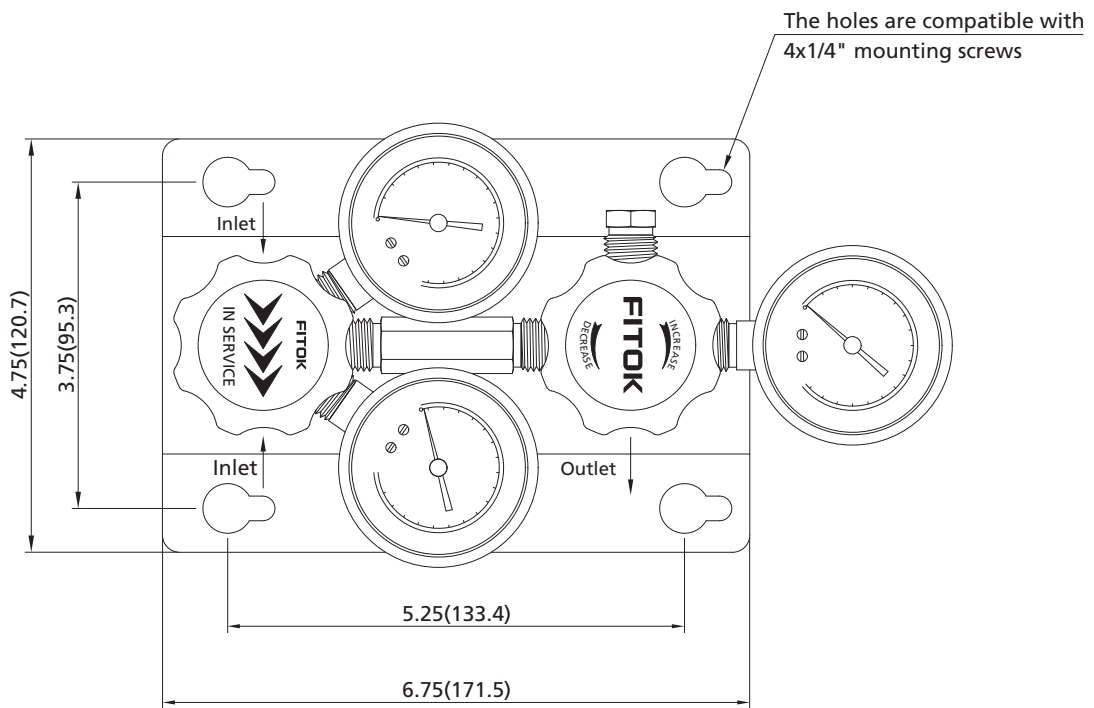
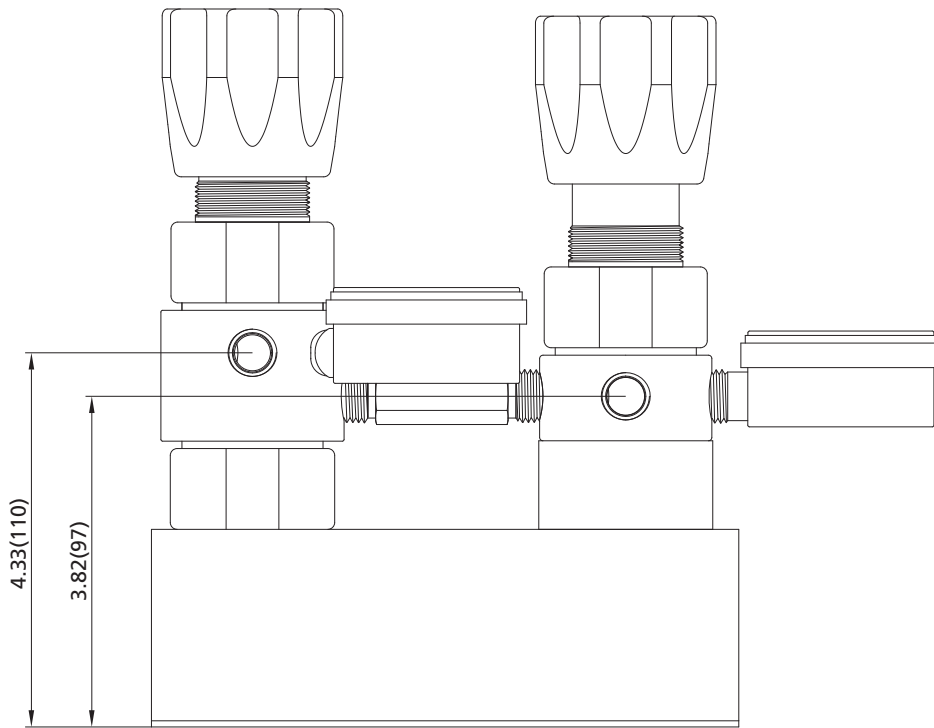


Technical Data

- ⦿ Maximum inlet pressure: 3000 psig
- ⦿ Nominal changeover pressures: 250 psig
- ⦿ Outlet pressure ranges: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 150 psig
- ⦿ Material of the internal components:
 - Seat: PCTFE
 - Diaphragm: Hastelloy
 - Filter: 316L
- ⦿ Temperature: -40 °F ~ 165 °F (-40 °C ~ 74 °C)
- ⦿ Valve leak rates (helium):
 - Internal: Bubble-tight
 - External: $\leq 2 \times 10^{-8}$ std cm³/s
- ⦿ Flow coefficient (Cv): 0.06
- ⦿ Weight: \approx 5 lbs (2.3 kg)

Dimensions

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

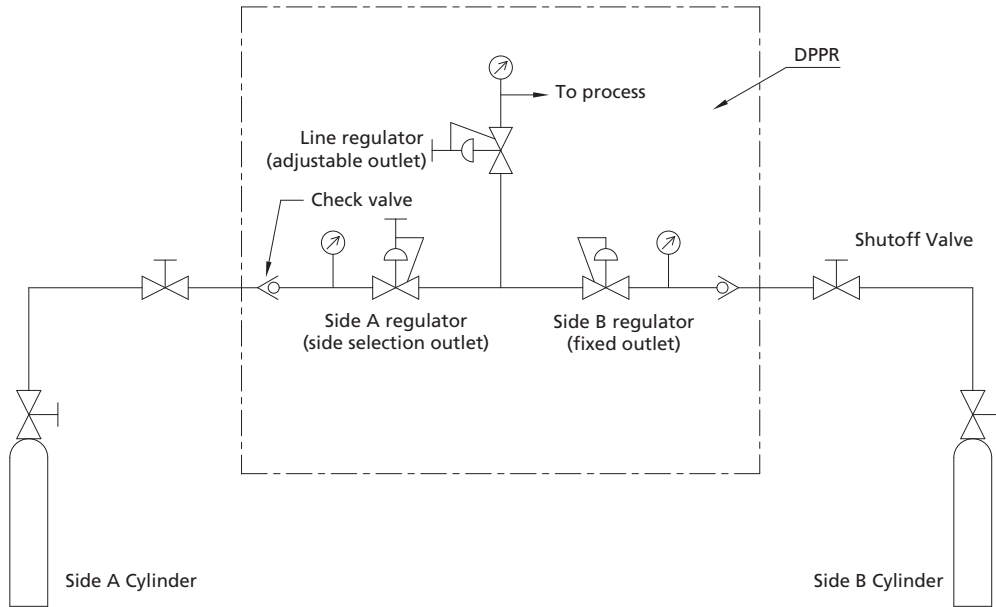


Operation Overview

The DPPR series changeover system consists of three pressure regulators, housing two single-stage regulators in a single body and a line regulator. The two single-stage regulators are each attached to separate source cylinders. The adjusting handle can swivel to enable source side selection. The other regulator is preset to an appropriate setting for the system outlet range.

The source selection handle adjusts the outlet pressure to be either above or below the preset side within 15 ~ 30 psig. When the handle is turned to point to the standby side, the standby side continues to supply gas due to the change in differential pressure to achieve continuous and uninterrupted gas supply.

When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply. At this time, the main gas cylinder can be changed for continuous uninterrupted gas supply.

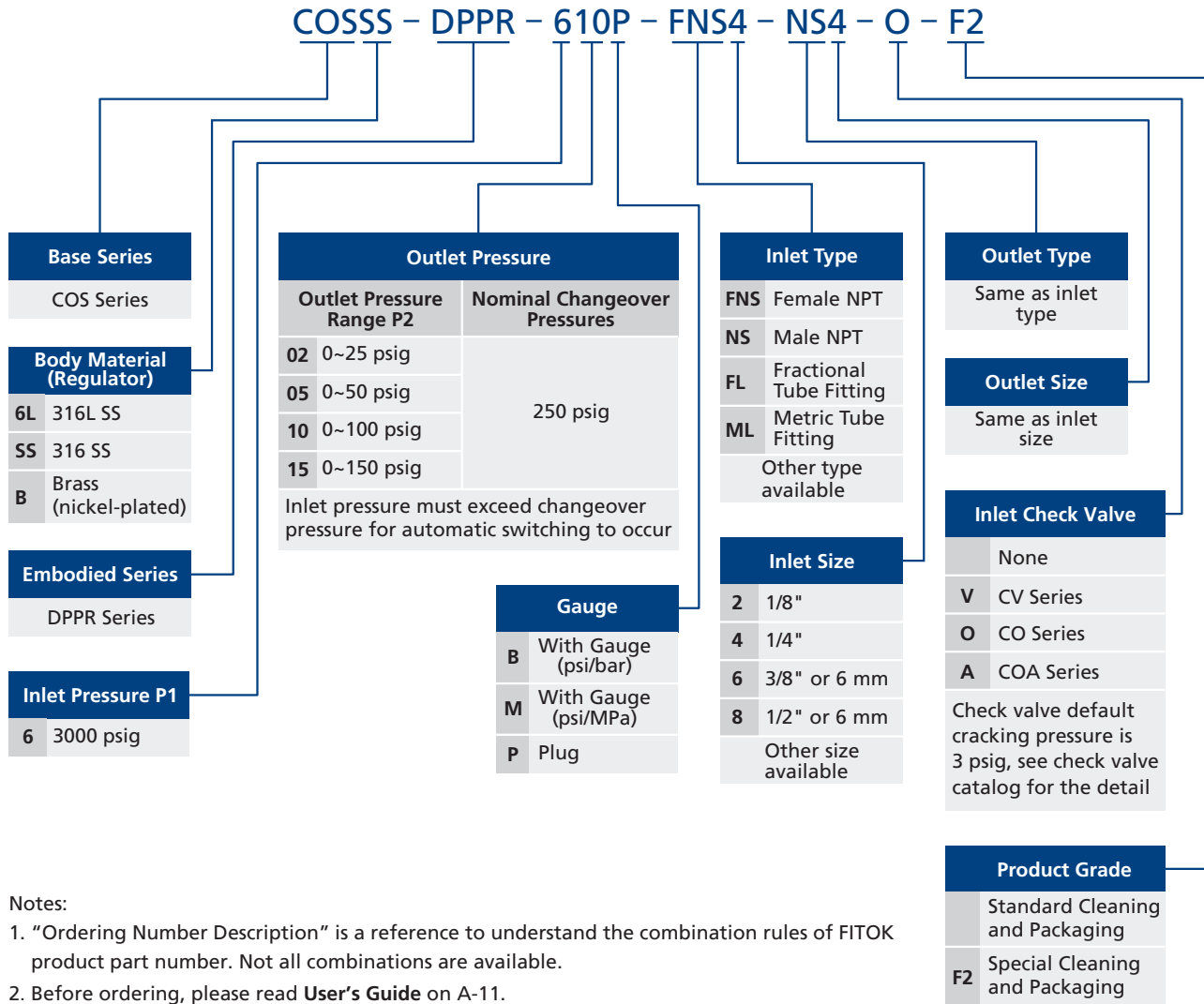


Gas Control Equipment

Related Products

Technical References

Ordering Number Description



Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-11.

Changeover Systems

FDR-1T Series Automatic Changeover System

Features

- Two gas sources are connected to pressure regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas to ensure continuous gas supply
- Excellent sensitivity and set point pressure stability
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres

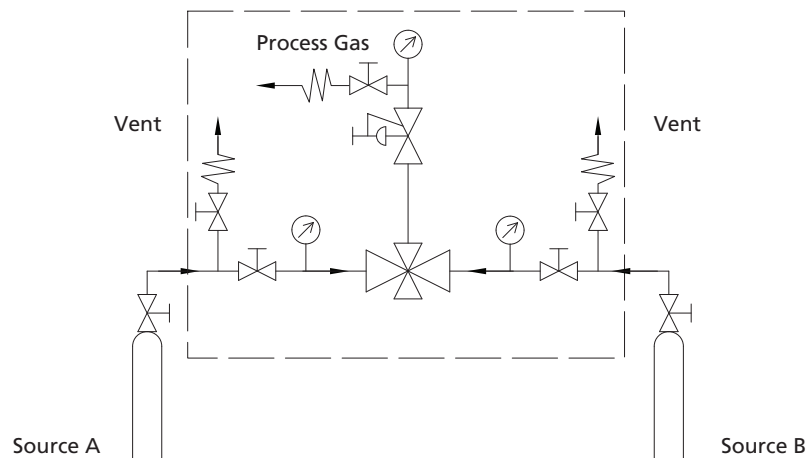


Model: FDR-1T6L-45-150-B-00-00-00

Technical Data

- Maximum inlet pressure: 3000 or 4500 psig
- Nominal changeover pressures: 250 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), cobalt alloy (diaphragm valve)
 - Diaphragm valve body: 316L
- Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- Valve leak rates (helium):
 - Internal: $\leq 1 \times 10^{-7}$ std cm³/s
 - External: $\leq 1 \times 10^{-9}$ std cm³/s
- Flow coefficient (regulator Cv): 0.06
- 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.

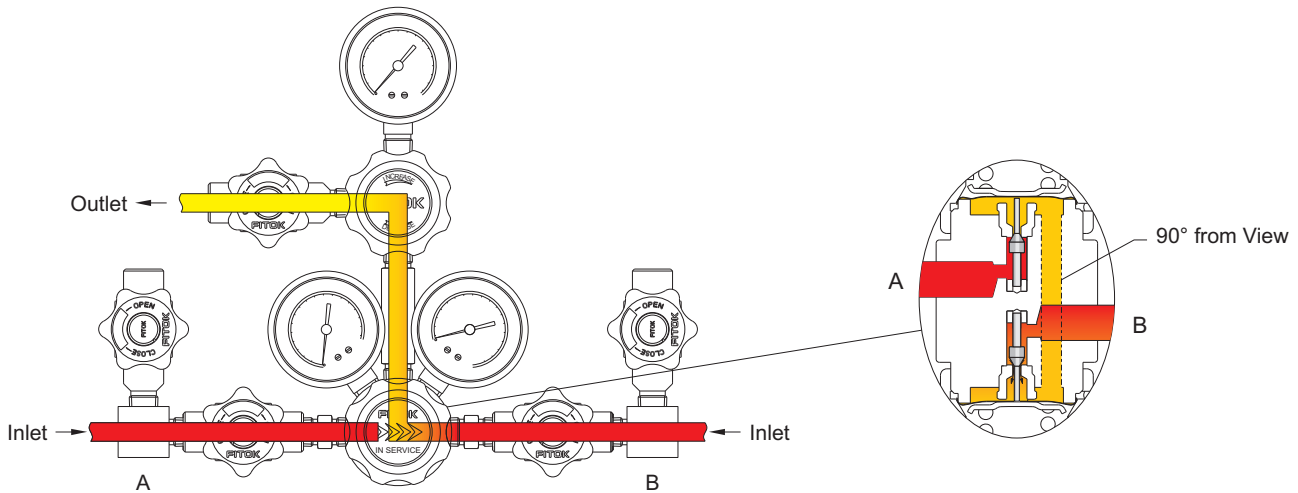


Fig. 1

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.

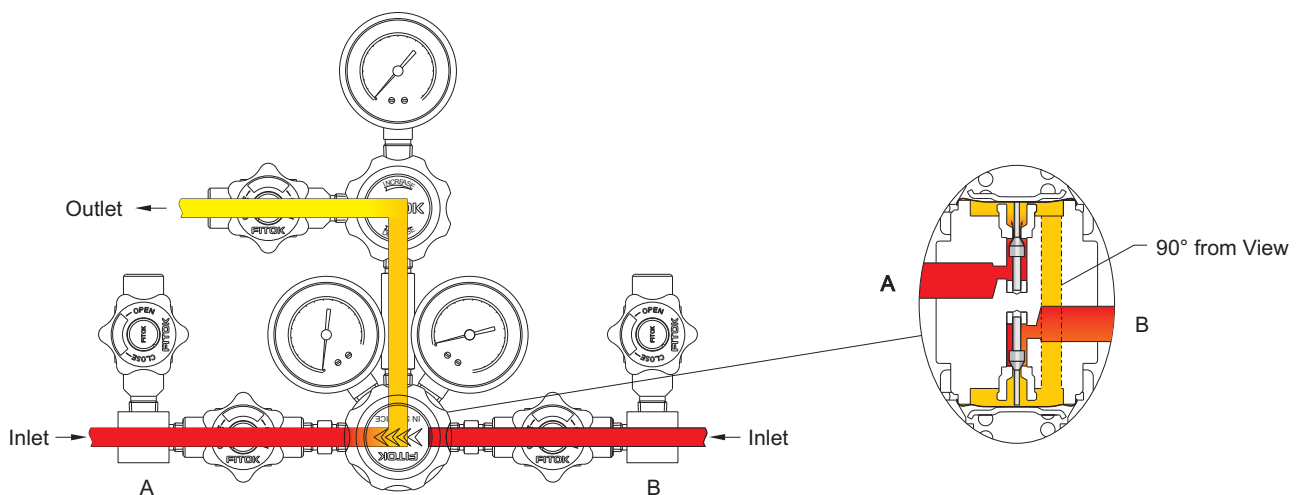


Fig. 2

A-78 Gas Control Equipment

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.

Gas from side A will flow back into side B. At this time, replace to a new gas source of side B, close the shutoff valve and open the vent valve to exhaust the remaining pressure, then replace to a new gas source. After the replacement, if not rotating the handle, the gas supply will return to the status as of Fig. 1. And if rotating the handle to the status as shown in Fig. 2, the gas supply will be changed to the status as of Fig. 2.

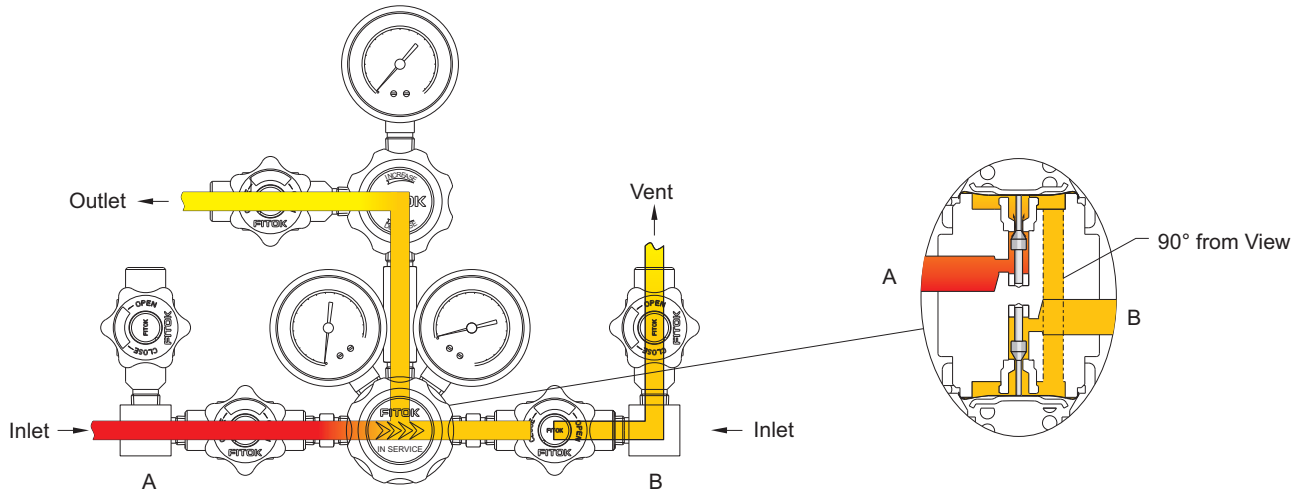
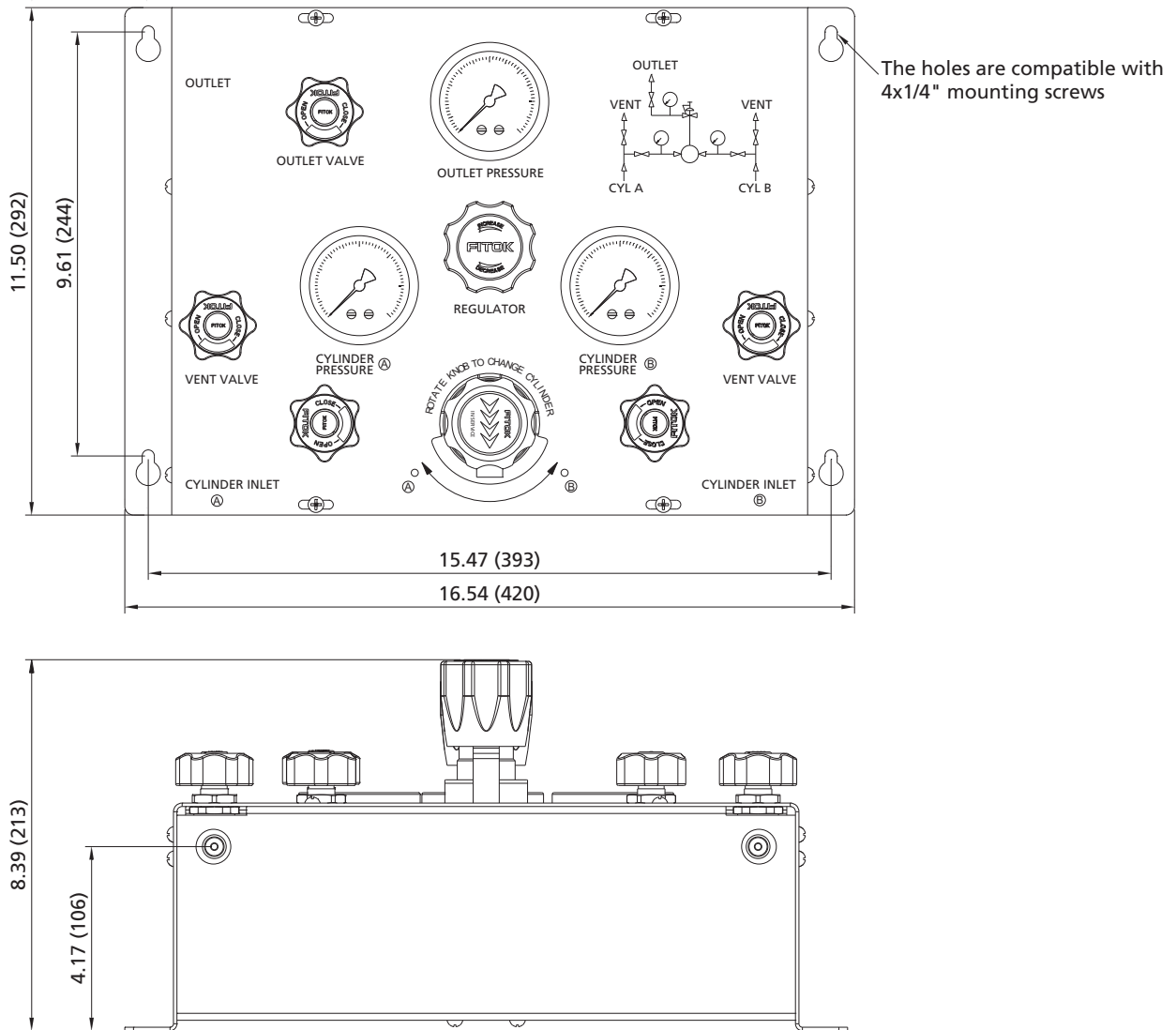


Fig. 3

Dimensions

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



Gas Control Equipment

Related Products

Technical References

Ordering Number Description

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

Body Material (Regulator)	Outlet Pressure		Gauge Scale	Inlet A		Inlet B
6L 316L SS	Outlet Pressure Range P2	Nominal Changeover Pressures	B With Gauge (psi/bar)	00 1/4" Female NPT	Other connections are available upon request	Same as Inlet A
SS 316 SS	25 0~25 psig	250 psig	M With Gauge (psi/MPa)	01 1/4" Male NPT		
HC Hastelloy C-276	50 0~50 psig			10 1/4" Tube Fitting		
B Brass (Nickel-plated)	100 0~100 psig		11 3/8" Tube Fitting			
	150 0~150 psig					
Inlet Pressure P1	Inlet pressure must exceed changeover pressure for automatic switching to occur				Outlet	Same as Inlet A
30 3000 psig						
45 4500 psig						

Notes: 1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

2. Before ordering, please read **User's Guide** on A-11.