

A-4000 Series Oil Removal and Pressure Reducing Stations & Air Compressor Accessories

Oil Removal and Pressure Reducing Stations

The A-4000 Series Oil Removal and Pressure Reducing Stations (see Figs. 1 through 4) are available in single or dual PRV models in 10 or 20 SCFM (4.7 or 9.4 L/s) maximum flow capacities. In addition, each unit features a four-way bypass valve, coalescing and activated charcoal oil removing filters, and is completely piped with copper tubing which reduces friction, allows higher flow rates, and meets fire codes in mechanical equipment rooms. The filter combination removes both oil aerosols and vapors to provide clean, oil free air for pneumatic control systems. All models provide maximum performance for a period of one year at which time the coalescing and activated charcoal filter elements will need to be replaced. Gages are provided to monitor system operations and performance. All models can provide filtered, high pressure air to remote PRV stations. All models have a maximum input pressure rating of 150 PSIG (1050 kPa) and an upper temperature limit of 120°F (52°C). **Note: The air supply to these stations must be from a properly broken in air compressor producing less than 6 ppm aerosol oil (as measured by a Johnson Controls A-4000-120 Oil Indicator on the compressor tank outlet) and must also pass through a properly operating air dryer.**

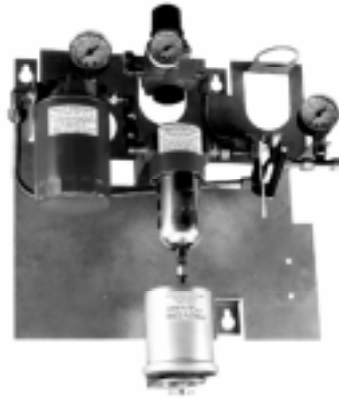


Fig. 1: A-4000-139
10 SCFM, Single PRV Station
(Shown with Optional Oil
Reservoir)

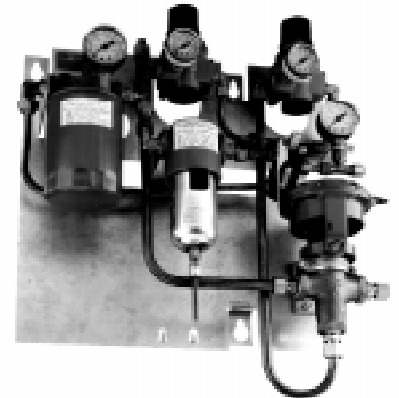


Fig. 2: A-4000-140
10 SCFM, Dual PRV Station

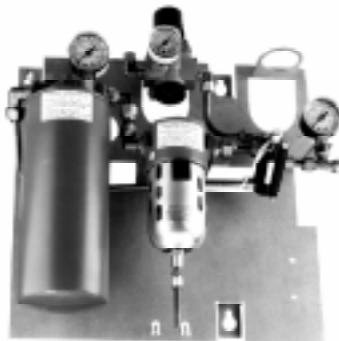


Fig. 3: A-4000-141
20 SCFM, Single PRV Station



Fig. 4: A-4000-142
20 SCFM, Dual PRV Station
(Shown with Optional Oil
Reservoir)

Single PRV models are factory set for approximately 20 PSIG (140 kPa) and dual PRV models are factory set for approximately 15 and 20 PSIG (105 and 140 kPa). Dual 10 SCFM units have a maximum of 1 PSI (7 kPa) pressure drop with a 10 SCFM flow from the PRVs through the three-way air valve; dual 20 SCFM units have a maximum of 2 PSI (14 kPa) pressure drop. The three-way air valve is equipped with a 1/2 in. O.D. compression fitting to furnish the dual supply air to the system. A 1/2 in. connection is furnished to provide a constant 20 PSIG (140 kPa) supply to local control panels and a 3/8 in. connection is furnished to provide filtered high pressure air to remote PRV stations.

Note: All A-4000 Series Oil Removal and Pressure Reducing Stations are shipped from the factory with the activated charcoal filter packaged separately in the carton. The filter must be reinstalled by screwing it onto the threaded pipe of the filter head. Tighten the filter to the point where the white label faces the front of the unit.

Table 1: Models

Flow Consumption*	Compressor Horsepower (50% Running Time)	PRVs	Code Number
Up to a Maximum of 10 SCFM (4.7 L/s)	Johnson Controls 7-1/2 hp and Under	Single	A-4000-139
		Dual	A-4000-140
10 to 20 SCFM Maximum (4.7 to 9.4 L/s)	Other Manufacturers 7-1/2 hp and Over	Single	A-4000-141
		Dual	A-4000-142

* **Warning: If system air flow consumption increases beyond the maximum flow listed, oil will be forced through the coalescing filter and saturate the activated charcoal filter before its required replacement time.**

Table 2: Repair Parts

Description	Code No.
Charcoal Filter Elements:	
10 SCFM (4.7 L/s)	A-4000-632
20 SCFM (9.4 L/s)	A-4000-633
Coalescing Filter Elements:	
10 SCFM (4.7 L/s)	A-4110-604
20 SCFM (9.4 L/s)	A-4000-604
3/8 in. Pressure Regulator with Bracket, Gage, and Safety Relief Valve	A-4000-138
Four-Way Bypass Valve with 3/8 in. Compression Fittings	A-4110-601

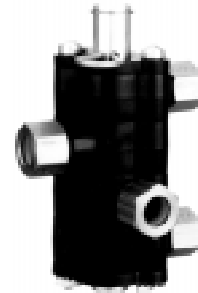


Fig. 5: A-4110-601 Four-Way Bypass Valve

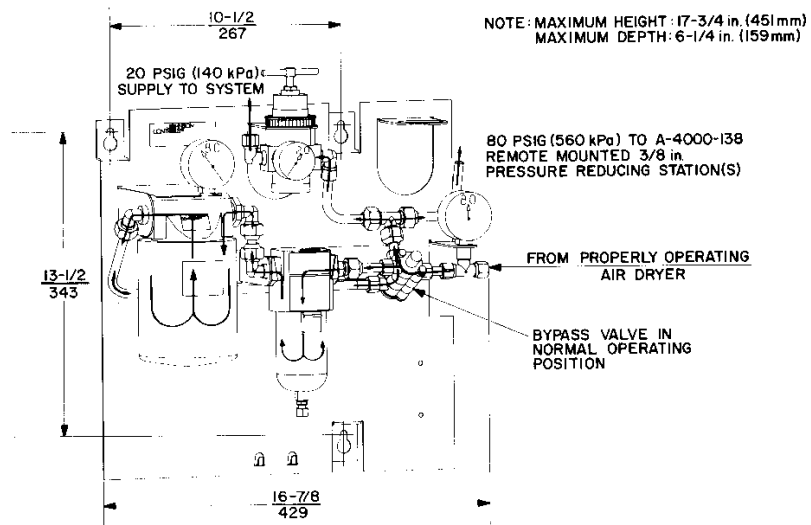


Fig. 6: Flow Path with Bypass Valve in Normal Operating Position (Applies to All Models)

Dimensions $\frac{\text{in.}}{\text{mm}}$

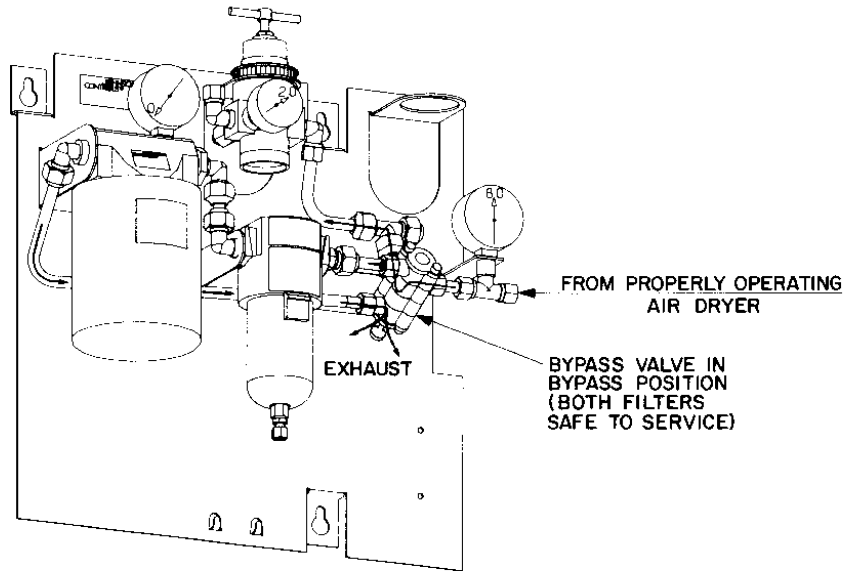


Fig. 7: Flow Path with Bypass Valve in Bypass Position (Applies to All Models)

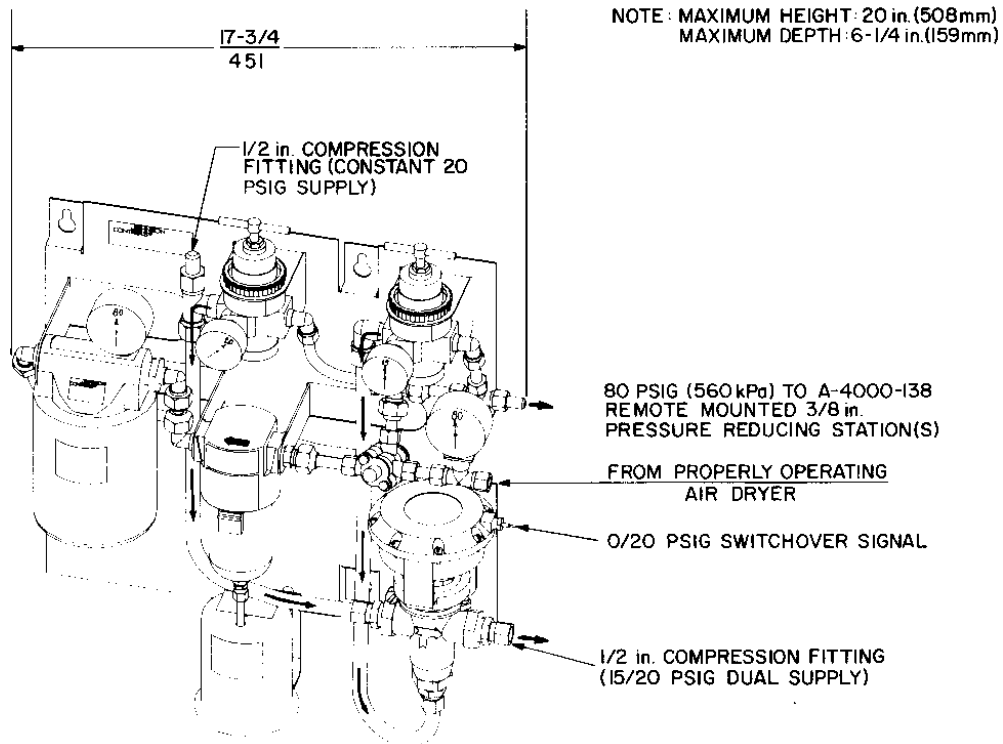


Fig. 8: Flow Path Through Three-Way Air Valve on Dual Oil Removal and Pressure Reducing Stations (Shown with Optional Oil Reservoir)

Dimensions $\frac{\text{in.}}{\text{mm}}$

Remote Mounted 3/8 in. Pressure Reducing Station



Fig. 9: A-4000-138 Remote Mounted 3/8 in. Pressure Reducing Station

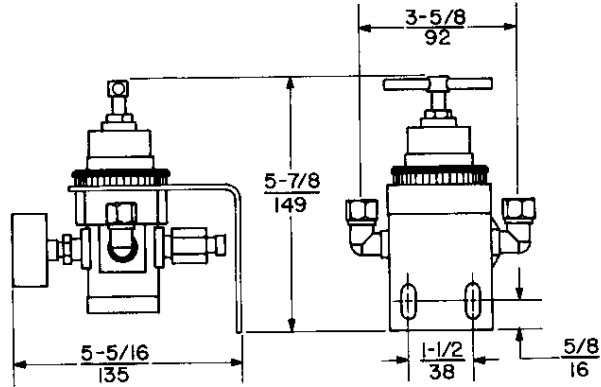


Fig. 10: A-4000-138 Dimensions $\frac{\text{in.}}{\text{mm}}$

The A-4000-138 Remote Mounted 3/8 in. Pressure Reducing Station (see Fig. 9) comes completely assembled with a wall mounting bracket, 0 to 30 PSIG gage, safety relief valve, and 3/8 in. O.D. compression elbow fittings on the high and low pressure sides. The desired output pressure can be easily adjusted between 0 and 30 PSIG using the black knob. The factory set safety relief valve relieves overpressures exceeding 25 PSIG (175 kPa). Pressure adjustments up to 50 PSIG (350 kPa) can be made; however, the 0 to 30 PSIG gage must be replaced with one having a higher scale and the safety relief valve must be readjusted to the required higher value. Designed to handle input pressures up to 300 PSIG (2100 kPa) at air flows in excess of 20 SCFM (9.4 L/s), this pressure reducing station regulated an output pressure within a 0.2 PSI (1.4 kPa) variation with a 20 PSI (140 kPa) variation in input pressure.

Table 3: Repair Parts

Description	Code No.
1/4 in. NPT, 25 PSIG Safety Relief Valve (Not ASME Coded)	A-4000-144
Replacement Bracket	A-4000-143

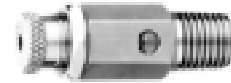


Fig. 11: A-4000-144 Safety Relief Valve

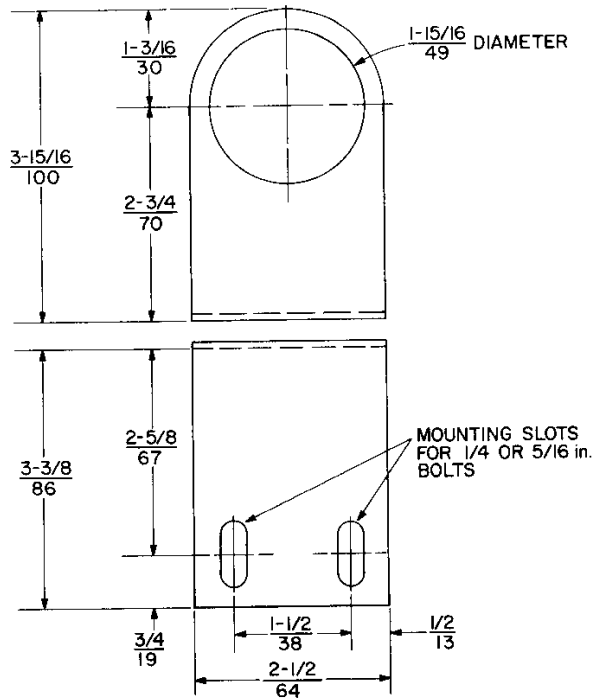


Fig. 12: A-4000-143 Mounting Bracket Dimensions $\frac{\text{in.}}{\text{mm}}$

Oil Reservoir



Fig. 13: A-4000-145 Oil Reservoir and Bracket Assembly

The A-4000-145 Oil Reservoir (see Fig. 13) provides a means of identifying excess oil pumping (compressor maintenance) as well as water entrainment (air dryer maintenance). If either occurs, replacement of the oil removal elements is required. The oil reservoir also provides a means of collecting the coalesced oil for proper disposal.

Note: Refer to the Drain Cock section for drain cock replacement ordering data.

Oil Removal Filters



Coalescing Filter

Charcoal Filter

Fig. 14: Oil Removal Filters

The combination of coalescing and activated charcoal filters (see Fig. 14) in series removes both oil aerosols and vapors to provide clean, oil free air for pneumatic control systems. These filters have a maximum input pressure rating of 150 PSIG (1050 kPa) and an upper temperature limit of 125°F (52°C).

Note: The air supply to this filter combination must be from a properly broken in air compressor producing less than 6 ppm aerosol oil (as measured by a Johnson Controls A-4000-120 Oil Indicator on the compressor tank outlet) and must also pass through a properly operating air dryer.

Table 4: Models

Description	Efficiency Rating	Code No.
<i>Coalescing</i>		
10 SCFM (4.7 L/s)	99.999+ % efficient for particles .025 microns in size and larger.	A-4000-148
20 SCFM (9.4 L/s)		A-4000-149
40 SCFM (18.9 L/s)		A-4000-601
<i>Carbon</i>		
10 SCFM (4.7 L/s)	100% efficient for particles as small as .025 microns in size.	A-4000-147
20 SCFM (9.4 L/s)		A-4000-146

**Table 5:
Repair Parts**

Description	Code No.
Coalescing Filter Elements:	
10 SCFM (4.7 L/s)	A-4110-604
20 SCFM (9.4 L/s)	A-4000-604
40 SCFM (18.9 L/s)	A-4000-605
Charcoal Filter Elements:	
10 SCFM (4.7 L/s)	A-4000-632
20 SCFM (9.4 L/s)	A-4000-633
Filter Auto-Drain Kit (All Coalescing Filters)	A-4000-610

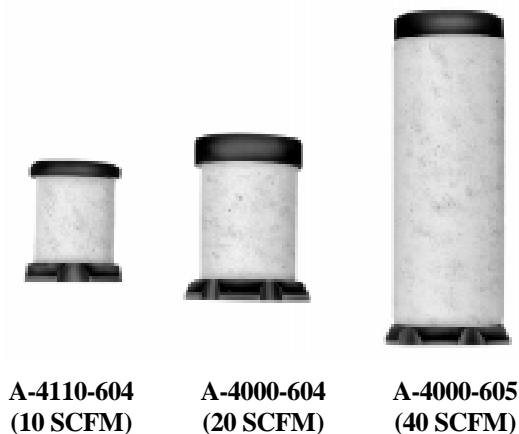


Fig. 15: Coalescing Filter Elements

Servicing Procedure for Coalescing Filters

All coalescing filters are equipped with an automatic drain from which accumulations of entrapped liquids are automatically blown out. The filter element should be replaced when the leaving air pressure gage (mounted on the PRV station charcoal filter head) indicates less than 50 PSIG (350 kPa) the differential pressure between the leaving and input gages is 15 PSI (105 kPa) or more, or after one year of service - whichever occurs first.

To replace the filter element, refer to Fig. 17 and proceed as follows:

1. Turn the air supply OFF.
2. Depress the lever on the filter bowl clamp and turn 1/8 of a revolution. Drop the clamp, bowl guard, and bowl to expose the filter element which needs to be replaced.
3. Remove the old filter element by turning it counterclockwise.
4. Clean the small screen around the drain seat of the automatic drain valve by turning the filter bowl upside down and tapping it lightly on a table top.
5. Clean the bowl and drain valve assembly using household detergent or any solvent that is not harmful to polycarbonate.
6. Install the new filter element and bowl O-ring, then reinstall the bowl and guard.



Fig. 16: Charcoal Filter Elements

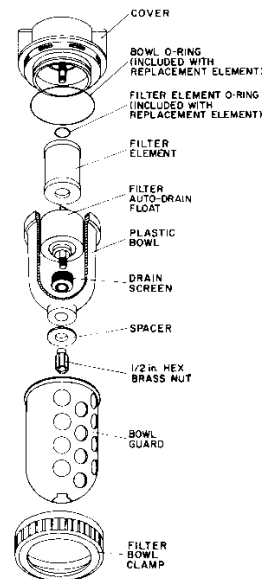


Fig. 17: Coalescing Filter Disassembly

Servicing Procedure for Activated Charcoal Filter

Refer to the white service label on the activated charcoal filter element for proper replacement procedure.

Note: After the activated charcoal filter element has been replaced, apply the white service label included and record the next replacement date (month and year).

A-4000-610 Filter Auto-Drain Replacement (see Fig. 18)



Fig. 18: A-4000-610 Filter Auto-Drain Assembly

Release the pressure in the system and remove the bowl guard and the plastic bowl. Insert a 7/64 in. Allen wrench up through the bottom of the external 1/2 in. hex brass nut to prevent the float assembly from turning when loosening the 1/2 in. hex brass nut to remove the old auto-drain assembly. Install the replacement auto-drain assembly. Turn the hex brass nut finger-tight while restraining the float assembly from turning by holding it with the 7/64 in. Allen wrench.

CAUTION: While tightening the 1/2 in. hex nut, it is important not to hold the float assembly. Holding the float assembly may cause the float arm to twist, resulting in a malfunctioning of the auto-drain.

Wall Bracket for Small, Horizontal, Single Compressors and Tanks

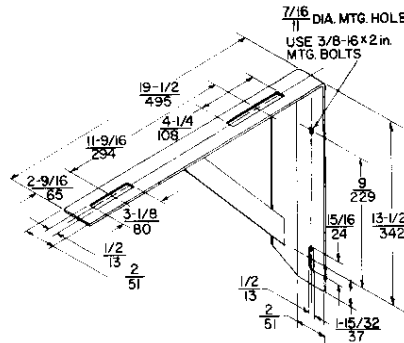


Fig. 19: A-4000-108 Wall Bracket (1/8 in. Plate Metal)

Dimensions in.
mm

Rugged 1/8 in. A-4000-108 Angle Iron Brackets (see Fig. 19) may be used to mount a compressor on a wall where floor space is limited. These brackets may be used for single compressors with up to 30 gallon tanks.

Floor Legs for Horizontal Tanks



Fig. 20: A-4000-109 Floor Leg

A-4000-109 Floor Legs (made from U-channel, see Fig. 20) for mounting horizontal tanks 12 in. off the floor are available to meet building requirements and facilitate cleaning under the compressor.

Pulsation Chamber

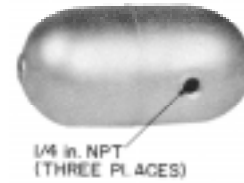


Fig. 21: A-4000-114 Pulsation Chamber

The A-4000-114 37 in.³ (606 cm³) Pulsation Chamber (see Fig. 21) has a 300 PSIG (2100 kPa) maximum working pressure and is used for installations where pulsations in the compressor output must be minimized and/or air surge noise through the check valve is objectionable. Installed between the compressor and the check valve, the chamber produces a smooth flow of air; pulsations are reduced and noise which is normally produced by air surges through the check valve is eliminated. The chamber should be installed in the line as close to the check valve as possible.

Intake Silencer



Fig. 22: A-4000-113 Intake Silencer

The A-4000-113 Intake Silencer (see Fig. 22) uses a perforated tube surrounded by a thick layer of special, highly efficient, sound absorbing material. Minimum restriction to flow is obtained with this type of construction. Designed to be installed directly before the intake of a compressor head, the silencer has a capacity rating of 9 to 15 SCFM (4 to 7 L/s).

Drain Cock



Fig. 23: Drain Cock

The 1/8 in. NPT A-4000-118 Drain Cock (see Fig. 23) is available as a repair part for installation in air tanks for draining condensation. Use the 1/8 in. model for 10 gallon tanks and the 1/4 in. model for 15 and 30 gallon tanks. The 1/8 in. model is also the replacement drain cock for the A-4000-145 Oil Reservoir.

Intake Air Filter

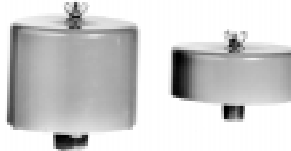


Fig. 24: Intake Air Filters

The dry-type intake air filters (see Fig. 24) are rated 99% efficient at a 10 micron rating, regardless of air demands or temperature variations. A steel housing with baked enamel finish makes these filters suitable for either outside or inside locations. Replaceable cartridges provide for simple

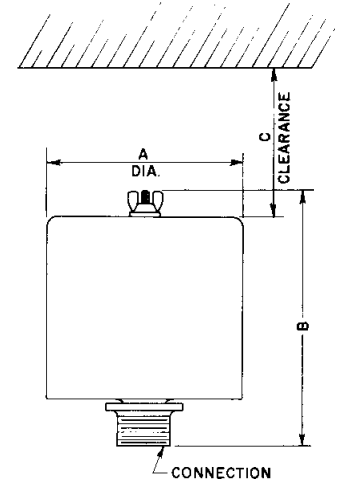


Fig. 25: Dimensions (in./mm) (See Table 6.)

The combination pointer and

Table 6: Dimensions $\frac{\text{in.}}{\text{mm}}$

Code Number	Capacity	Connection	Dimensions $\frac{\text{in.}}{\text{mm}}$		
			A	B	C
A-4000-115	5 SCFM	1/2 in. NPT	2-1/2	3	2-7/8
	2 L/s		64	76	73
A-4000-14	15 SCFM	3/4 in. NPT	6	4	4-1/4
	5 L/s		152	102	108
A-4000-15	30 SCFM	1-1/4 in. NPT	6	6-3/4	7
	14 L/s		152	172	178

Note: Standard pressure drop across the filters at full load is 2.25 in. WG (560 Pa).

maintenance.

Air Bypass Valve



Fig. 26: A-4000-130 Air Bypass Valve

The A-4000-130 Bypass Valve (see Fig. 26) is used to bypass air around a device for servicing without interrupting the air supply to the system.

stop indicates the action of the valve. With the pointer/stop turned to the BYPASS position, air is bypassed through the valve directly to the outlet. An automatic bleed relieves the pressure beyond the valve for safe removal of devices. The valve comes furnished with four compression fittings for 1/2 in. tubing.

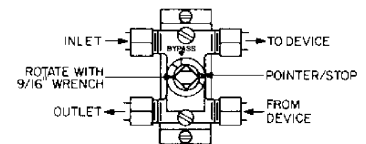


Fig. 27: A-4000-130 Air Bypass Valve