INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

FOR

FAIRCHILD MODEL 1000 PRESSURE REGULATOR

GENERAL INFORMATION

The Model 1000 is a high capacity regulator that provides a uniform output pressure independent of supply pressure variations.

Specifications
Model 1000

Flow capacity ..... 100 psig [7.0 BAR] (700 kPa) supply; 20 psig [1.5 BAR] (150 kPa) psig set	50 SCFM (85 m³/HR)
Exhaust capacity ..... downstream pressure 5 psig [.35 BAR] (35 kPa) above set pressure	8 SCFM (13.6 m³/HR)
Sensitivity	½" (1.25 cm) W.C.
Effect of supply pressure variation	Less than 0.1 psig [.007 BAR] (0.7 kPa) for 100 psig [7.0 BAR] (700 kPa) change
Maximum supply pressure	250 psig [17.0 BAR] (1700 kPa)
Mounting	pipe or panel
Ambient temperature limits	-40°F to +200°F (-40°C to 93.3°C)

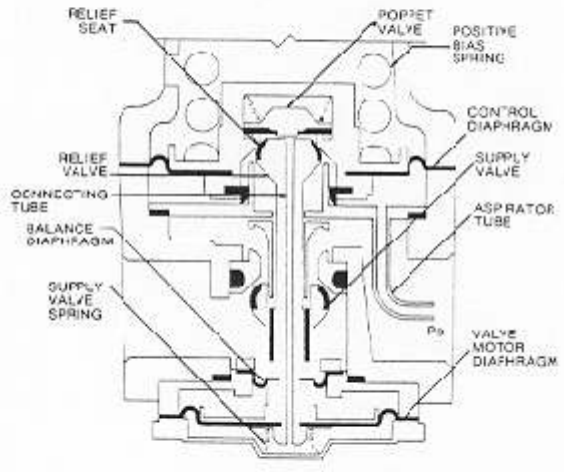
PRINCIPLES OF OPERATION

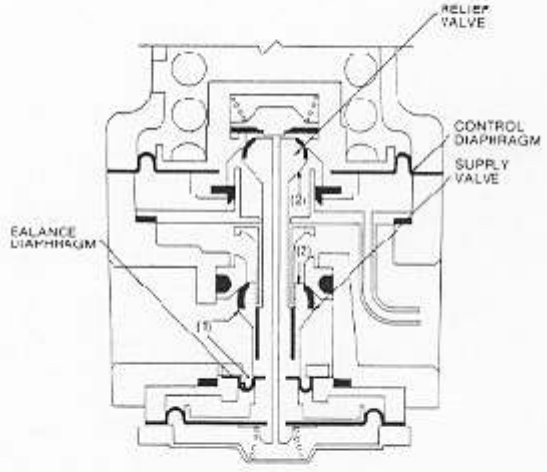
The Model 1000 is a regulator in which the main valving mechanism is assisted by a separate valve motor. The valve motor under steady state conditions is at or near atmospheric pressure. The valve motor is actuated by the pressure of air on the underside of the valve motor diaphragm but this action does not occur until corrective action is provided by the sensitive poppet valve. This action elimirates the need for constant air bleed to achieve the required sensitivity. With supply pressure turned off, and the control knob turned to allow the positive bias spring to be expanded, the supply valve is seated because of the upward force of the supply valve spring.

When supply air is introduced to the inlet port, it exerts pressure against the supply valve and at the same time it exerts pressure against the top of the inner valve assembly balance diaphragm. The two opposite acting forces tend to keep the supply valve assembly balanced and virtually unaffected by changes in supply pressure.

relief valve. This condition is not achieved until the output pressure reaches the desired set point. Until then, the downward force opens the supply valve allowing supply air to be routed to the outlet port. Downstream (outlet) pressure is transmitted through the aspirator tube to the control chamber and sensed by the underside of the control diaphragm. The increase in pressure on the bottom of the control diaphragm causes the diaphragm assembly to move upward against the force of the positive bias spring acting on the top of the control diaphragm. This force acting through the connecting tube allows the supply valve to throttle, maintaining the output pressure.

Downstream pressure acts against the top of the supply valve and the bottom of the relief valve. Air at atmospheric pressure is communicated through the vent and is transmitted through the bleed hole in the relief valve to the top of the relief valve. It is also transmitted down the connecting tube to the underside of the valve motor diaphragm.

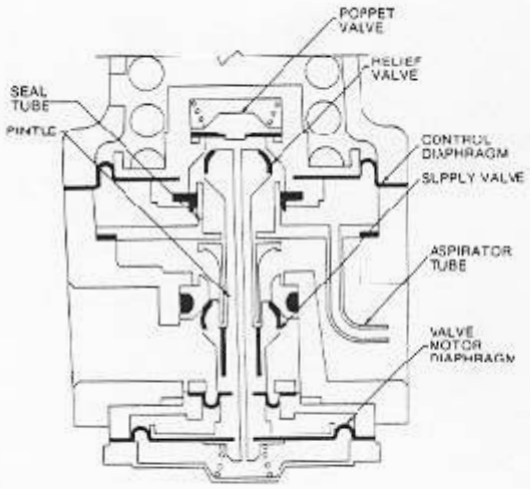




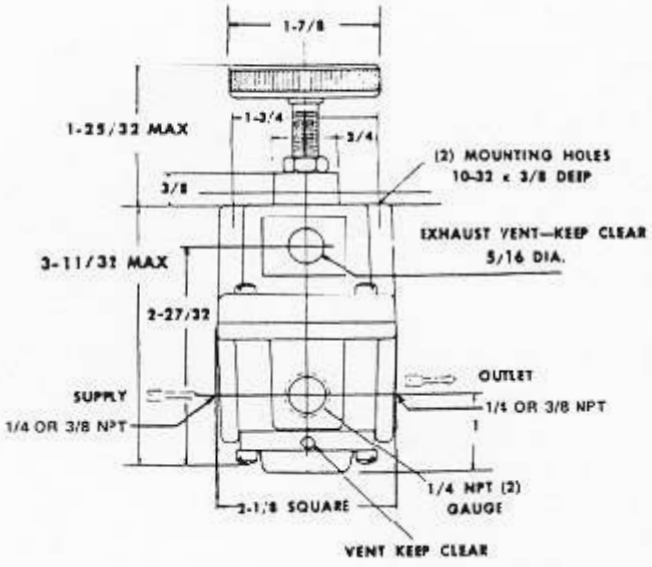
When the knob of the regulator is adjusted to a specific set point the positive bias spring exerts a force against the top of the control diaphragm. The combined force is the result of the force exercised by the positive bias spring to produce an output pressure Po = K where K is the spring constant. This force will keep the relief seat against the

When set point is reached, the force acting on the bottom of the control diaphragm is in balance with the force acting on the top of the control diaphragm. At this point the force (1) due to supply pressure acting on the supply valve and the force (1) due to supply pressure acting on top of the balance diaphragm are in balance. The force (2) due to

downstream pressure acting on the top of the supply valve and the force (2) due to downstream pressure acting on the bottom of the relief valve are in balance. If the downstream pressure increases above set point, the increased pressure will be transmitted through the aspirator tube to the bottom of the control diaphragm, causing the diaphragm assembly to move upward, allowing the supply valve to close. The diaphragm assembly continues its upward movement, sliding on the seal tube and allows the relief valve to open, and because the poppet valve is still closed, pressure will be communicated down the valve pintle, to the underside of the motor diaphragm causing the supply valve to seal off even tighter. With the continued increase in downstream pressure the poppet valve will open and vent the excess pressure to atmosphere. If downstream pressure decreases, the decreased pressure will be transmitted through the aspirator tube to the bottom of the control diaphragm, causing the diaphragm assembly to move downward, closing the poppet valve. As the diaphragm continues to move downward the end of the pintle will be sealed off and through the pintle the supply valve will open, allowing supply air to be routed to the inlet port, increasing the downstream pressure until set point is again reached.



INSTALLATION



Clean all pipe lines to the regulator to remove dirt and scale before installation is made. Apply minimum amount of pipe compound to male threads of air line only. Start with third thread back and work away from end of line to avoid possibility of getting compound into regulator. Install regulator in air line; body is threaded ¼" or ⅜" NPT for inlet and outlet connections. Regulator can be mounted in any position without affecting its operation. Inlet and outlet connections are labeled on underside of boss and should be tightened securely. Avoid undersized fittings that will limit flow through the regulator and cause pressure drop downstream. The use of a filter to remove dirt and entrained liquid in the air line ahead of the regulator is recommended for best performance. If an air line lubricator is used, it should be located downstream beyond the regulator in order to avoid interference with the regulator performance.

NOTICE

The presence of certain diester oils in airlines may hasten deterioration of the elastomers and thus decrease the useful life of this unit.

ADJUSTMENTS

Field adjustments are not required.

OPERATION

Relieve pressure on range spring before putting regulator into service for the first time. To operate, turn the adjusting screw slowly in a clockwise direction until required downstream pressure is obtained. Turned in this direction, the screw compresses the range spring causing increased output pressure. For decreased output pressure, turn the screw counterclockwise.

SERVICE KIT INSTALLATION

For Standard Unit

1. Check parts in the EA-12152 service kit against parts marked with an asterisk in the exploded view and the associated table.
2. Loosen Lock Nut (2).
3. Turn out Knob Assembly (1) to relieve tension on Spring (5).

For Tamper Proof Unit

1. Check parts in the EA-12152 service kit against parts marked with an asterisk in the exploded view and the associated table.
2. Remove Cap Nut (1A). Loosen Nut (1C).
3. Turn out Range Screw (1B) to relieve tension on Spring (5).

For All Units

4. Remove four Screws (30) and Bonnet Assembly (3).
5. Set aside Spring (5) and Spring Seat (4). Remove any pipe fitting in Body (15) ports.
6. Remove Diaphragm Assembly (28).
7. Remove four Screws (12) from Seal Plate Assembly (13).
8. Remove Seal Plate Assembly (13) by lifting and rotating to carefully free aspirator tube. Caution: do not damage end of tube.
9. Remove Seal Plate Gasket (14).
10. Remove four Screws and Washers (27) under the IN and OUT ports of Body (15). Gently tap out Inner Valve Assembly (29) and discard.
11. Remove Gasket (18) from Body (15). Clean the Body (15) with a suitable solvent and blow dry with compressed air.
12. Secure Gasket (18) and Inner Valve Assembly (29) from kit. Insert Gasket (18) into recess in bottom of Body (15).
13. Insert Inner Valve Assembly (29) into Body (15) making sure that holes in the Inner Valve Assembly are aligned with holes in the Body (15).
14. Insert four Screws (27) into Inner Valve Assembly (29) and tighten Inner Valve Assembly (29) to Body (15).
15. Secure Seal Plate Gasket (14) from kit and insert into Body (15) with notch facing port marked OUT.
16. Insert Seal Plate Assembly (13) into Body (15) by rotating carefully, assuring that aspirator projects into port marked OUT.
17. Insert four Screws (12) into Seal Plate Assembly (13) and tighten to Body (15).
18. Secure Diaphragm Assembly (28) from kit and position on Body (15), making sure that the hexagonal opening is on top and the diaphragm holes are aligned with holes in the Body (15).
19. Place Spring (5) on Piston (9). Place Spring Cap (4) on top of Spring (5), making sure that the recess is on top. Lubricate the recess with Molykote.
20. Place Bonnet Assembly (3) on top of Diaphragm Assembly (28) so that vent hole in the Bonnet is directly over a gauge port when the IN port is to the left when nameplate is being viewed.
21. Insert four Screws (30) into Bonnet Assembly (3) and tighten to Body (15).
22. Lubricate Knob Assembly Screw (1) or Range Screw (1B) with Molykote.
23. Reinstall the regulator in accord with instructions in the IOM and follow instructions in the operators section for placing the regulator back in the service.

	1022	1023	1032	1033	1042	1043	1062	1063
Spring	EB-1123-10	EB-1123-10	EB-1123-30	EB1123-30	EB1123-60	EB-1123-60	EB-1123-150	EB-1123-150
Body Assy.	EB-1186-3(6)[7]	EB-1186-1(5)[8]	EB-1186-3(6)[7]	EB-1186-1(5)[8]	EB-1186-3(5)[7]	EB-1186-1(5)[8]	EB-1186-3(6)[7]	EB-1186-1(5)[8]
Plugged Body	EB-15762-1(4)	EB-15762-2(5)	EB-15762-1(4)	EB-15762-2(5)	EB-15762-1(4)	EB-15762-2(5)	EB-15762-1(4)	EB-15762-2(5)
Body	EB-1101-2(12)	EB-1101-4(10)	EB-1101-2(12)	EB-1101-4(10)	EB-1101-2(12)	EB-1101-4(10)	EB-1101-2(12)	EB-1101-4(10)

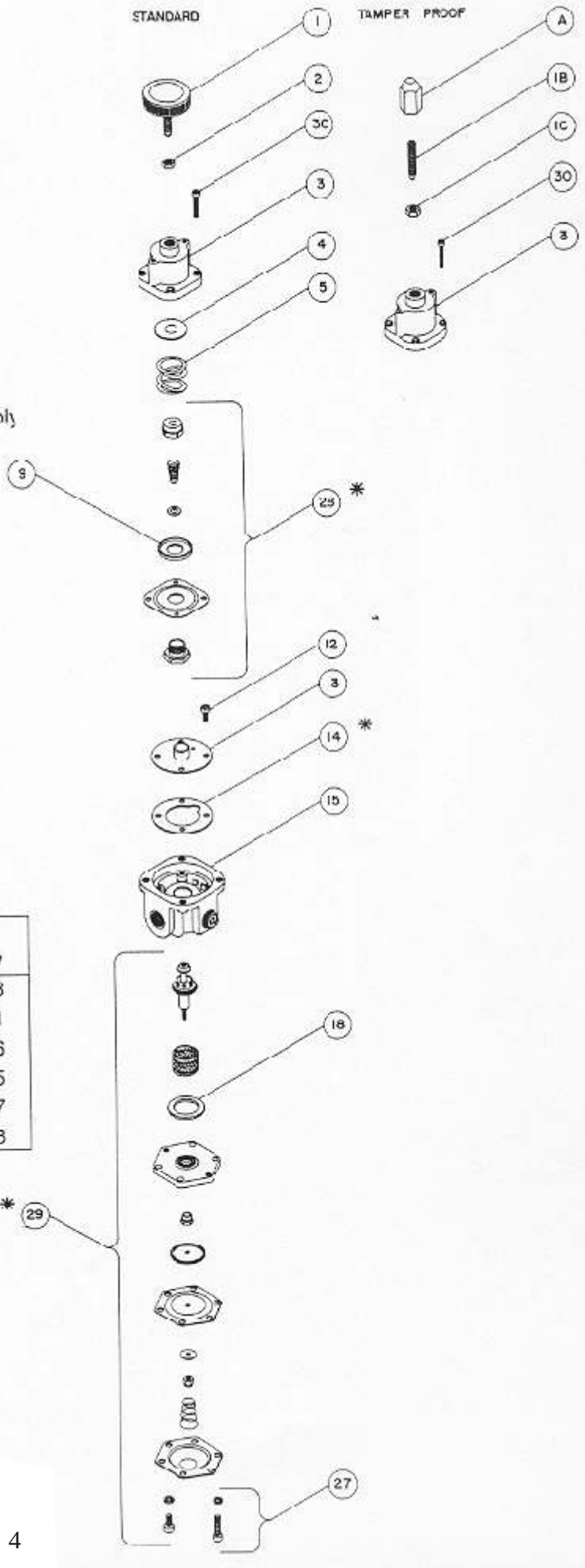
Numbers in parentheses indicate part number for U Option
Numbers in brackets indicate part number for H Option

	OPTION		
	STD	T	M
*Knob Assembly	EB-16104-1		
Range Screw		EB-8159-14	
Nut		EA-1120	
Cap nut		EB-7057-2	
Bonnet	EB-1141	EB-1141	EB-8520

*For 150 psig, Range Assembly is 16104-4

Index.	Part No.	Description
1	See Table	Knob Assembly
1 A	EB-7057-2	Cap Nut
1 B	EB-8159-14	Range Screw
1 C	EB-1120	Nut
2	EB-16100	Lock Nut
3	EB-1141	Bonnet
4	EB-1122	Spring Seat
5	EB-1123-( )	Range Spring
12	EB-832-6	8-32 Screw
13	EB-1146-1	Seal Plate Assembly
*14	EB-1106	Seal Plate Gasket
15	See Table	Body
18	EB-1135	Gasket
27	EB-1032-12	10-32 Screw
*28	EB-1145	Control Diaphragm Assembly
*29	EB-8086-1	Inner Valve Assembly
30	EB-1032-12	Screw

*EA-12152 Kit Components



Port Size	Part Number Item 15	Plugged Body	Body Assembly
¼ NPT	EB-1101-2	EB-15762-1	EB-1186-3
⅜ NPT	EB-1101-4	EB-15762-2	EB-1186-1
¼ BSPT	EB-1101-10	EB-15762-4	EB-1186-6
⅜ BSPT	EB-1101-12	EB-15762-5	EB-1186-5
¼ BSPP	EB-1101-14	EB-15762-6	EB-1186-7
⅜ BSPP	EB-1101-16	EB-15762-7	EB-1186-8

Plugged Body includes two plugs
Body Assembly includes Item 29, 13, 12, 14, 27

MAINTENANCE

The regulator is easily disassembled for the occasional cleaning or removal of foreign matter. Before this is done, close shut-off valve upstream of the regulator to prevent escape of air when regulator is disassembled. There is no need to remove the regulator from the pipe line; remove the four screws at the bottom of the unit that fasten into the body and pull our the inrer valve assembly. Wash inner valve assembly with solvent exercising care to avoid damaging diaphragms and valve facings. Replace assembly carefully. The small vent hole in the exterior part of the inner valve assembly must be open. The vent hole in the bonnet must also be open at all times.

Lubricate threads and end of adjusting screw period cally.

CAUTION

(Avoid such solvents as acetone, carbon tetrachloride, trichlorethylene)

TROUBLE SHOOTING

Problem	Check
Leakage	Body screw tightness Diaphragm
High Bleed	Relief pintle and relief seat for damage or contamination
Difficult to Adjust	Adjusting screw and ball Seal ring lubrication

REPAIR PARTS LIST

Service Kit EA-12152 is available for regulator repair.

LEGAL NOTICE:

The information set forth in the foregoing Installation, Operation and Maintenance Instructions shall not be modified or amended in any respect without prior written consent of Fairchild Industrial Products Company. In addition, the information set forth herein shall be furnished with each product sold incorporating Fairchild's unit as a component thereof.

ISO 9001:2000 Certified

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ISO 9001:2000
FM NO. 25571

IS-10001000
Litho in USA
Rev. K 11/03