INSTRUCTIONS FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF

FAIRCHILD MODEL 10BP BACK PRESSURE REGULATOR

GENERAL INFORMATION

The Model 10 BP is a high flow, high sensitivity regulator which provides a uniform controlled back pressure.

Specifications
Model 10BP

Flow Capacity..... 40 SCFM (68 m³/HR) max

Sensitivity ..... 1/0' (.32 cm) W.C.

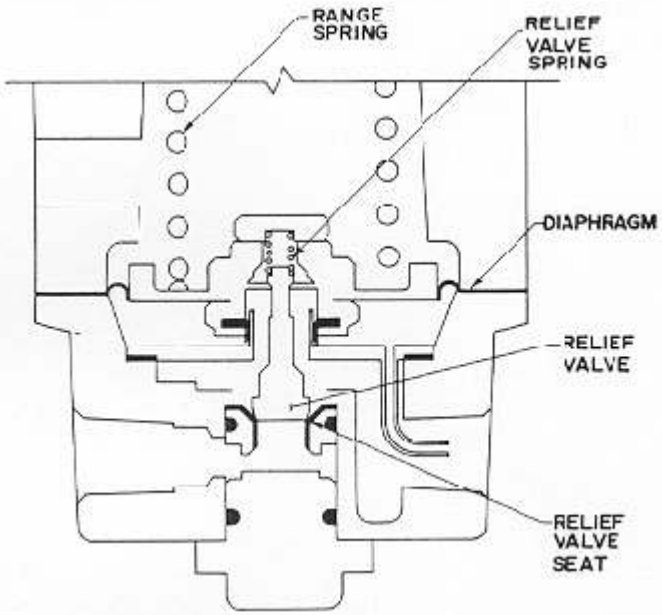
System Pressure...500 psig [35.0 BAR] (3500 kPa) max

Mounting ..... pipe or panel

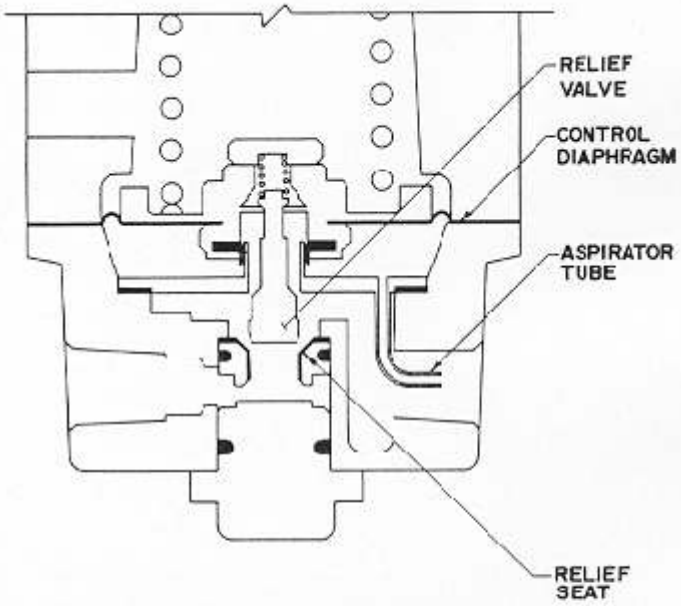
Ambient Temperature Limits .....–10° F to 200° F (–40° C to 93.3° C)

PRINCIPLES OF OPERATION

With the adjusting screw turned completely out, allowing the range spring to be relaxed, the relief valve is seated because of the downward force of the relief spring. This construction feature allows a large range spring force to act against the diaphragm (when the range spring is compressed and there is little or no system pressure) without applying excess pressure against the relief valve seat. The convoluted diaphragm furnishes a greater surface area, increasing sensitivity and assuring that the diaphragm does not stretch during upward or downward movement.



Downstream pressure is transmitted through the aspirator tube to the underside of the control diaphragm. As the adjusting screw is turned for a specific set point, the range spring is compressed, exerting a force on the top of the control diaphragm. The relief seat remains closed as long as the pressure acting on the underside of the control diaphragm produces a force less than the spring force acting on top of the diaphragm.



As system pressure Po increases, the force on the bottom of the diaphragm increases until it reaches set point. As Po increases beyond set point, the diaphragm moves upward lifting the relief valve from its seat and venting system air. As Po decreases below set point, the decrease in pressure is transmitted through the aspirator tube to the bottom to the diaphragm, which moves downward against the range spring force to seat the relief valve.

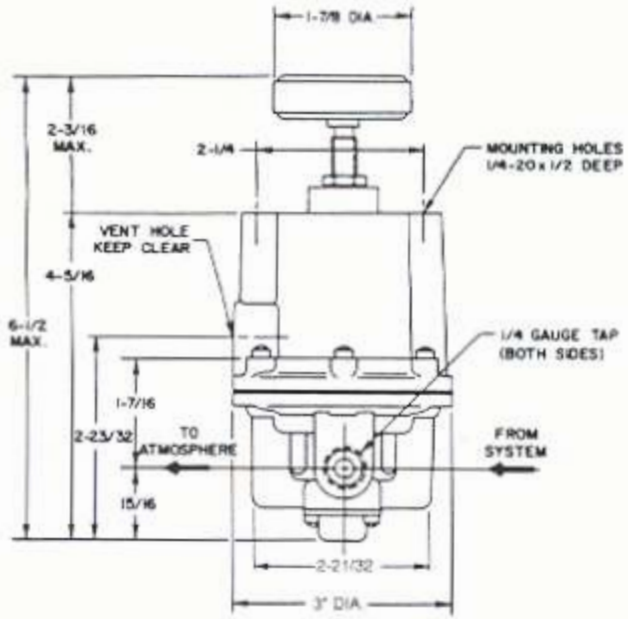
INSTALLATION

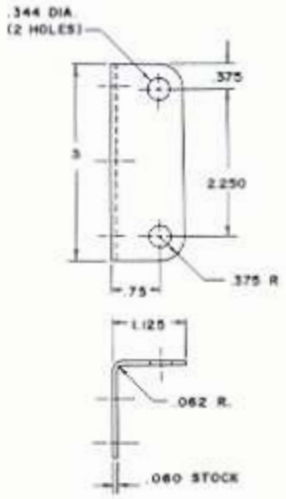
NOTICE

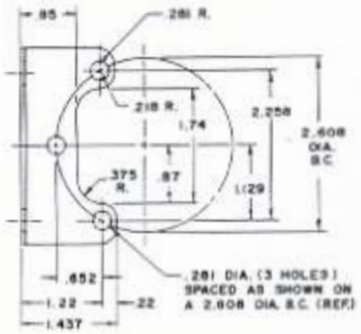
The presence of certain diester oils in the airlines may hasten deterioration of the elastomers and thus decrease the useful life of this unit.

Clean all pipe lines 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 fitted with a ¼" or ⅜" NPT for system (inlet) and exhaust (outlet) connections. Regulator can be mounted in any position without affecting its operation. System (inlet) and exhaust (outlet) connections are labelled and should be tightened securely. Avoid undersized fittings that will limit flow through the regulator. The use of a filter to remove dirt and entrained liquid in the air line ahead of the regulator is recommended for best performance.







ADJUSTMENTS

No field adjustments are necessary

OPERATION

The regulator as shipped is set at approximately mid-range. When installing the back pressure regulator it should be set at approximately the desired relief pressure. Full range requires approximately 13 to 16 turns depending on range of the unit. To operate, turn the adjusting screw slowly in a clockwise direction which will increase the setpoint or back pressure setting of the regulator. Counter clockwise rotation of the adjusting screw will decrease this setting.

MAINTENANCE

The regulator is easily disassembled for the occasional cleaning or removal or foreign matter. Before this is done, however, shut off valve upstream of the regulator to prevent escape of air when regulator is disassembled. Turn the adjusting screw counter clockwise to relieve the compression on the range spring. There is no need to remove the regulator from the pipe line; remove the six no. 10-32 screws on the bonney of the unit. Remove bonnet and spring, remove the diaphragm, assembly. Wash assembly with solvent exercising care to avoid damaging the diaphragms and valve facings. Replace assembly, spring and bonnet carefully. The vent hole in the bonnet should be kept clear. The adjusting screws should be lubricated with Molykote type "G" grease.

CAUTION

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

SERVICE KIT INSTALLATION

1. Check parts in the EA-12127-( ) kit against the parts marked with an asterisk in the exploded view and the associated table.
2. Mark Body Assembly (10) and Bonnet Assembly (2) so that these parts can be reassembled properly.
3. Turn Knob Assembly (1) counter clockwise to release compression on Spring (4).
4. Loosen six screws (5), remove Bonnet Assembly (2) and set aside.
5. Remove Spring Seat (3) and Spring (4) and set aside.
6. Pull out Diaphragm Assembly (6) and discard.
7. Loosen four screws (9) holding Seal plate Assembly (7) to Body (10) and lift out Seal Plate Assembly (7). The assembly will have to be twisted while removing in order to clear the aspirator tube from Body (10).
8. Lift out Seal Plate Gasket (8) and discard.
9. Remove two screws (15) holding retainer Plate (13) to Body (10) and set aside Retainer Plate (13).
10. Using wooden dowel rod, tap out the cylinder (16) from the seal plate side of Body (10). Check that filter (12) comes out with Cylinder (16). Discard items (16) and (12).
11. Using a dowel rod, tap out Seat Ring Assembly (11) and discard. Turn Body (10) over.
12. Secure Seat Ring Assembly (11) from the Service Kit and place it in the Bottom well of Body Assembly (10), brass end facing up, and tap until it is seated against the shoulder in the bottom of the well.
13. Secure O ring (14), Cylinder (16) and screen (12) from the service kit. Place ring (14) in the groove of Cylinder (16) Snap Filter Screen (12) over raised center portion of Cylinder (16). Insert this assembly, screen first into Body Assembly (10) well until Cylinder (16) is flush with the top of the well.
14. Place Retainer plate (13) over Cylinder (16) and secure Plate (13) to Body Assembly (10) using two screws (15). Turn Body Assembly (10) over.
15. Secure Seal Plate Gasket (8) from service kit and place in large top well of Body Assembly (10) so that cutouts in Gasket (8) are aligned with holes in Body Assembly (10).
16. Place Seal Plate Assembly (7) over gasket (8), making sure that the end of the aspirator tube on the seal plate Assembly (7) is in the IN port. Carefully twist the Seal Plate Assembly (7) to perform this step.
17. Align four holes in Seal Plate Assembly (7) with holes in the Body Assembly (10). Secure Seal Plate Assembly (7) to Body Assembly (10) with four screws (9).
18. Secure Diaphragm Assembly (6) from service Kit and place on Body (10), making sure that six holes in Diaphragm (6) are aligned with six holes in Body Assembly (10).
19. Place Spring (4) on piston of the Diaphragm Assembly (6). Place Spring Seat (3) on top of Spring (4), concave side facing up.
20. Align marks made in Step 2, and using six screws (5), CAREFULLY secure Bonnet Assembly (2) to Body Assembly (10).
21. Reinstall the regulator in accordance with installation instructions in the IOM and follow instructions in the operation section for placing the regulator back in service.

Note: See page 6 for J Option Table.

OPTION TABLE FOR MODEL 10BP

	STD	T	U	E	H
Knob Assembly	EB-4124-1	N/A			
Cap Nut	N/A	EB-7057-2	N/A	N/A	
Screw	N/A	EB-8159-16	N/A	N/A	
Nut	N/A	EB-1120	N/A	N/A	
Bonnet Assembly					
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-1823-1			EB-1895-1	
200 psig [14 BAR] (1400 kPa)	EB-1823-2			EB-16077-1	
300 psig [20 BAR] (2000 kPa)	EB-1823-2			EB-16077-1	
400 psig [27 BAR] (2700 kPa)	EB-1823-2			EB-16077-1	
Diaphragm Assembly					
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-8708				
300 psig [20 BAR] (2000 kPa)	EB-10686				
400 psig [27 BAR] (2700 kPa)	EB-10686				
Seat Ring Assembly	EB-6070				
Body Assembly					
¼ NPT	EB-12720-5				
⅜ NPT	EB-12720-6				
½ NPT	EB-12720-9				
¼ BSPT			EB-12720-7		
⅜ BSPT			EB-12720-8		
½ BSPT			EB-12720-10		
¼ BSPP					EB-12720-11
⅜ BSPP					EB-12720-12
½ BSPP					EB-12720-13

Spring			
2 psig	[.14 BAR]	(14 kPa)	EB-6060-2
10 psig	[.7 BAR]	(70 kPa)	EB-6060-10
30 psig	[2. BAR]	(200 kPa)	EB-6060-30
60 psig	[4 BAR]	(400 kPa)	EB-6060-60
150 psig	[10 BAR]	(1000 kPa)	EB-6060-150
200 psig	[14 BAR]	(1400 kPa)	EB-6060-200
300 psig	[20 BAR]	(2000 kPa)	EB-6060-150
400 psig	[27 BAR]	(2700 kPa)	EB-6060-200
20 psig	[1.4 BAR]	(140 kPa)	EB-6060-20

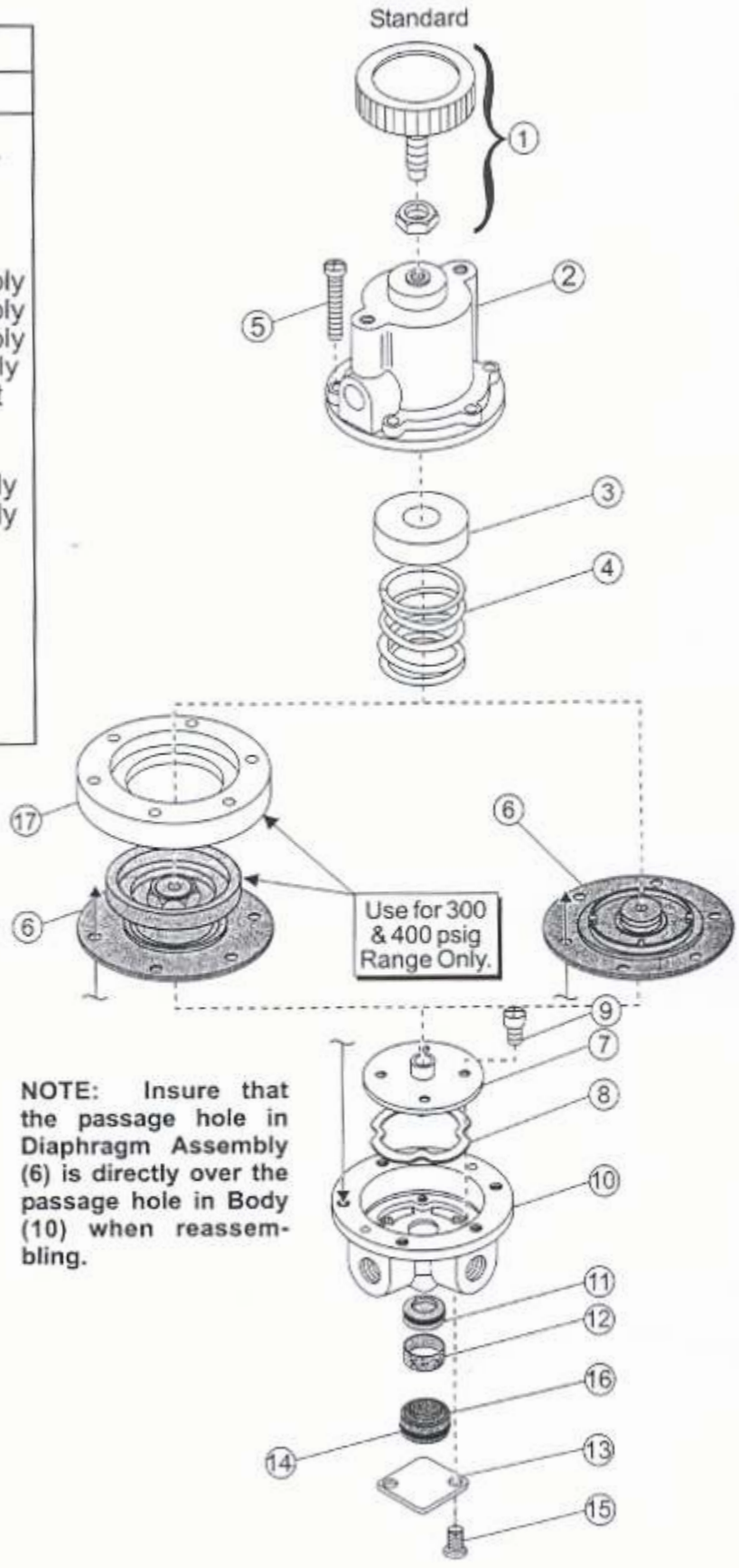
A OPTION TABLE FOR MODEL 10BP

	A	T	EU	U	E	H
Knob Assembly	EB-4124-1	N/A	EB-4124-1	EB-4124-1	EB-4124-1	
Cap Nut	N/A	EB-7057-2	N/A	N/A	N/A	
Screw	N/A	EB-8159-16	N/A	N/A	N/A	
Nut	N/A	EB-1120	N/A	N/A	N/A	
Bonnet Assembly						
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-1823-1		EB-1895-2		EB-1895-1	
200 psig [14 BAR] (1400 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
300 psig [20 BAR] (2000 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
400 psig [27 BAR] (2700 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
Diaphragm Assembly						
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-11954					
300 psig [20 BAR] (2000 kPa)	EB-10686					
400 psig [27 BAR] (2700 kPa)	EB-10686					
Seat Ring Assembly	EB-8161					
Body Assembly						
¼ NPT	EB-12722-5					
⅜ NPT	EB-12722-6					
½ NPT	EB-12722-9					
¼ BSPT				EB-12722-7		
⅜ BSPT				EB-12722-8		
½ BSPT				EB-12722-10		
¼ BSPP						EB-12722-11
⅜ BSPP						EB-12722-12
½ BSPP						EB-12722-13

Table 1. Model 10BP Components

Item	Part Number	Description
1	NS	Knob Assembly
2	NS	Bonnet Assembly
3	NS	Spring Seat
4	NS	Spring
5	NS	Screw
6[1]	EB-8708	Diaphragm Assembly
6[2]	EB-10686	Diaphragm Assembly
6[3]	EB-11954	Diaphragm Assembly
7	NS	Seal Plate Assembly
8[4]	EB-6053	Seal Plate Gasket
9	NS	Screw
10	NS	Body Assembly
11[5]	EB-6070	Seat Ring Assembly
11[3]	EB-8161	Seat Ring Assembly
12[4]	EB-6017	Filter Screen
13	NS	Retainer Plate
14[5]	EB-130-112-1-70	O-ring
14[3]	EB-130-112-4-60	O-ring
15	NS	Screw
16[4]	EB-9585	Cylinder
17	NS	Spacer Ring

[1] For EA-12127-1 Service Kit Only.
[2] For EA-12127-2 Service Kit Only.
[3] For EA-15743 Service Kit Only.
[4] For All Service Kits.
[5] For EA-12127-1 and EA-12127-2 Service Kits.



NOTE: Insure that the passage hole in Diaphragm Assembly (6) is directly over the passage hole in Body (10) when reassembling.

TROUBLE SHOOTING

PROBLEM	CHECK
Leakage	Body screw tightness Diaphragm
Difficult to Adjust	Adjusting screw and ball Seal ring lubrication

REPAIR PARTS LIST

A Service Kit is available for maintenance of the regulator.

2-150 psig [.14 -10 BAR] (14-1000 kPa)	EA-12127-1
300 psig [20 BAR] (2000 kPa)	EA-12127-2
400 psig [27 BAR] (2700 kPa)	EA-12127-2
Silicone	EA-15743

J OPTION TABLE FOR MODEL 10BP

	J	T	EU	U	E	H
Knob Assembly	EB-4124-1	N/A	EB-4124-1	EB-4124-1	EB-4124-1	
Cap Nut	N/A	EB-7057-2	N/A	N/A	N/A	
Screw	N/A	EB-8159-16	N/A	N/A	N/A	
Nut	N/A	EB-1120	N/A	N/A	N/A	
Bonnet Assembly						
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-1823-1		EB-1895-2		EB-1895-1	
200 psig [14 BAR] (1400 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
300 psig [20 BAR] (2000 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
400 psig [27 BAR] (2700 kPa)	EB-1823-2		EB-16077-2		EB-16077-1	
Diaphragm Assembly						
2-150 psig [.14 -10 BAR] (14-1000 kPa)	EB-11953					
300 psig [20 BAR] (2000 kPa)	EB-15613-1					
400 psig [27 BAR] (2700 kPa)	EB-15613-1					
Seat Ring Assembly	EB-6070					
Body Assembly						
¼ NPT	EB-12723-5					
⅜ NPT	EB-12723-6					
½ NPT	EB-12723-9					
¼ BSPT				EB-12723-7		
⅜ BSPT				EB-12723-8		
½ BSPT				EB-12723-10		
¼ BSPP						EB-12723-11
⅜ BSPP						EB-12723-12
½ BSPP						EB-12723-13

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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