

Filter Regulator Combination

Series Miniature FRC13, Intermediate FRC14 & Standard FRC15

Congratulations on purchase of this World Class Filter Regulator Combination !

The Filter-Regulator Combination is one of the most popular air preparation units. The 2 are assembled together to form a single unit

Air Filter is used to separate dust, dirt, moisture & other contaminants from compressed air

Filter has a Die Cast Aluminum body, polycarbonate bowl with a steel bowl guard & a high performance Sintered Bronze Filtering element

Filter is designed with a Separator & Shield for efficient moisture separation. It is combined with a Regulator which maintains a steady outlet pressure, unaffected by variations/fluctuations in the inlet pressure

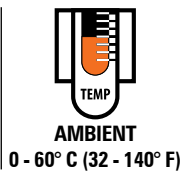
Regulators have a Non Raising “Press to Lock” adjusting knob for locking at any set pressure. Regulators work on a Diaphragm operated, relieving type mechanism with pressure compensated by balanced poppet

WETTED COMPONENTS:

Aluminum, Bronze, Brass, Steel, Acetal, Polycarbonate, Stainless Steel & Nitrile

! WARNING

Polycarbonate bowls may get damaged and possibly fail if exposed to synthetic oils, thinner, solvents, trichloroethylene, kerosene or other aromatic hydrocarbons



STANDARD CONFIGURATION

- Pressure adjustment range of 7 - 145 PSI (0.5 - 10 BAR)
- 40 micron filtering element
- Press Type Manual Drain with Night Time Drain feature which automatically drains off the bowl once the compressed air supply to the filter is switched off

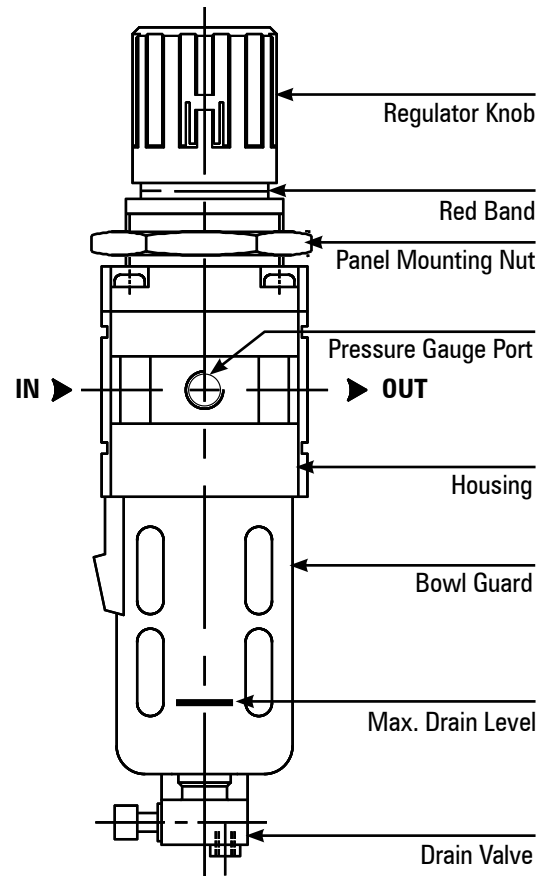


FIG. 1

OPTIONAL CONFIGURATION

Custom built include the following Pressure Adjustment ranges:

- 3 - 28 PSI (0.2 - 2 BAR)
- 3 - 58 PSI (0.2 - 4 BAR)
- 8 - 100 PSI (0.5 - 7 BAR)

Custom options for Filtering element:

- 1 Micron
- 5 Micron
- 25 micron
- 50 Micron
- 100 Micron

Drain Type options include an Internal & an External Auto drain as well as Manual drain

SPECIFICATIONS

Description	Port Size	Flow Rate (Max)**		Pressure Gauge	Bowl Size		Bowl Capacity (Max)		Height (h)		Width (w)	
		Cfm	Lpm	Port Size	Oz.	ml	Oz.	ml	in	mm	in	mm
Miniature	1/8"	14	400	1/8"	1.3	37	0.3	9	6.69	170	1.57	40
Miniature	1/4"	20	550	1/8"	1.3	37	0.3	9	6.69	170	1.57	40
Intermediate	1/4"	63	1800	1/8"	2.9	83	1.08	32	8.66	220	2.17	55
Intermediate	3/8"	77	2200	1/8"	2.9	83	1.08	32	8.66	220	2.17	55
Standard	1/2"	106	3000	1/8"	6.5	185	1.5	44	11.02	280	2.76	70

**Inlet Pressure 105 PSI (7 BAR),Set Pressure 90 PSI (6BAR). Pressure Drop 17 PSI (1 Bar)

FILTER & REGULATOR COMBINATION ACCESSORIES

Description	Port Size	Accessories Part #					
		Mounting Clamp	Mechanical Pressure Gauge		Digital Pressure Gauge		External Auto Drain
			BSPT	NPT	BSPT	NPT	
Miniature	1/8"	A2C01	A2G02	A2G05	DPG/L/1-8/B	DPG/L/1-8/N	A2D01
Miniature	1/4"	A2C01	A2G02	A2G05	DPG/L/1-8/B	DPG/L/1-8/N	A2D01
Intermediate	1/4"	A2C02	A2G02	A2G05	DPG/L/1-8/B	DPG/L/1-8/N	A2D02
Intermediate	3/8"	A2C02	A2G02	A2G05	DPG/L/1-8/B	DPG/L/1-8/N	A2D02
Standard	1/2"	A2C03	A2G02	A2G05	DPG/L/1-8/B	DPG/L/1-8/N	A2D03

WHY USE A FILTER REGULATOR COMBINATION?

The air being supplied to the equipment may contain moisture, dust, dirt or other foreign particles which can damage the equipment. To prevent this damage, an Air Filter is recommended.

Air Regulators ensures that the compressed air stays within a specified pressure range. Pneumatic equipment that is operated at a higher than recommended pressure level wastes the energy which generates that pressure. Creates a potential safety hazard,

and will probably wear out prematurely. Operating below specified pressure levels can cause the machine to fail to meet design performance specifications.

Precise air pressure control is essential for efficient operation of air-powered equipment.

The Filter-Regulator combo offers the above in a space saving design.

GENERAL SELECTION GUIDE FOR CHOOSING THE CORRECT FILTER & REGULATOR COMBINATION BASED ON COMPRESSOR SIZE

Compressor		Filter & Regulator Combination
HP	CFM	
1HP	Upto 4 CFM	Miniature 1/8" or 1/4"
2 HP	Upto 9 CFM	Miniature 1/8" or 1/4"
3 HP	Upto 13 CFM	Miniature 1/4"
5 HP	Upto 22 CFM	Miniature 1/4", Intermediate 1/4"
7.5 HP	Upto 33 CFM	Intermediate 1/4"
10 HP	Upto 45 CFM	Intermediate 1/4" or 3/8"
15 HP	Upto 67 CFM	Intermediate 3/8", Standard 1/2"
20 HP	Upto 90 CFM	Standard 1/2"
25 HP	Upto 112 CFM	Standard 1/2"

WHERE TO INSTALL A FILTER & REGULATOR COMBINATION?

- Install as far away from compressor as possible. This allows air to cool and moisture to condense. It is easier to remove condensed moisture than vapours.
- As close to tool/equipment as possible.
- It must be installed before Lubricator or else it will filter out the oil in the air coming from the Lubricator.
- With arrows pointing in the direction of air flow (towards tool/equipment).

WHERE TO INSTALL A PRESSURE GAUGE?

Pressure Gauge must be installed on the pressure gauge port on the Filter & Regulator Combination. Filter & Regulator Combination has 1/8" pressure gauge port. The Pressure gauge must also be of 1/8" port size. Steps to install the pressure gauge:

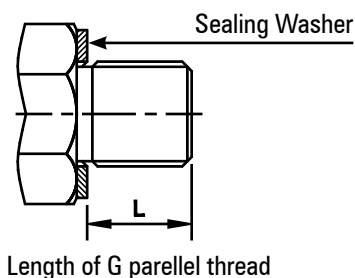
1. Unscrew the bolt on the pressure gauge port.
2. Replace the bolt with the corresponding size Pressure Gauge.
3. Pressure Gauge can be installed on any of the two Pressure Gauge ports on Filter & Regulator combination.

NOTE: Pressure Gauge may not be included as a standard accessory, but can be purchased separately.

INSTALLATION INSTRUCTIONS

1. Install in clean/ acid free atmosphere.
2. Flush the piping for dirt, dust and other foreign particles.
3. Connect the supply pressure to IN port and take the outlet from the OUT port. (If the unit is installed in reverse direction the air will continuously flow through the bonnet and the setting of the pressure will not be possible).
4. Use proper thread sealant for taper threads to have a leak proof connection.
5. Set the pressure in the regulator within the specified Limit. Otherwise the spring may break.
6. Open the inlet valve/ switch on the air supply.
7. When using (G) parallel thread nipples, check the length of the thread from the given table.

Thread Size	Tightening Torque, Lb - In (Nm)	Length (L) of Thread
G1/8	62 - 79 (7 - 9)	6 mm Max.
G1/4	106 - 125 (12 - 14)	8 mm Max.
G3/8	195 - 215 (22 - 24)	9 mm Max.
G1/2	250 - 270 (28 - 30)	12 mm Max.



OPERATING INSTRUCTIONS

1. To set the regulator, pull the regulating knob till "Red Band" (Indicator Ring) is visible (Fig.1).
2. To increase the pressure, turn the regulating knob in clockwise direction.
3. To reduce the pressure, turn the regulating knob in counter clockwise direction.
4. Set the pressure always in the ascending manner.
5. Set the pressure within the specified Limit.
6. For draining the condensate water collected in the Bowl (21.1.1). Press and hold the knob of the Drain valve (21.2) (see Fig.3).
7. It is advisable to drain the Bowl every day. The frequency of draining can be decided based on the condensate collection.
8. However, take care that the condensate level does not exceed the "Max Level" mark on the Bowl guard.

MAINTENANCE INSTRUCTIONS

Miniature		Intermediate	Standard
FRC 13		FRC 14	FRC 15
Dismantle the Filter:-			
1. Before dismantling the unit, exhaust the air in the line completely.			
2. To clean the Filter:-			
a. Unscrew the threaded bowl guard (21) in counter clockwise direction. Dismantle the components and clean the filter element and blow with compressed air.	b. Lift the Metal Bowl guard (21) upwards, Pull down the locking piece (21.4). Turn the bowl guard by 45° and pull down.		
3. Check for damages in the O-rings and other parts. Replace if needed or clean and reassemble.			
4. Apply general purpose grease on the O-rings and on the surface of the Housing where the O- ring enters the Housing (11). Reassemble all the components.			
5. Screw the threaded Bowl guard (21) on to the Housing (11).	5. Position the top flange lug portion of the Bowl guard (21) to the corresponding slots in the Housing (11). Push the Bowl guard fully into the Housing. Turn the bowl guard by 45° till the locking piece (21.4) enters into the Housing slot fully.		
Dismantle the Regulator:-			
1. Dismantle the components and clean them in kerosene and blow with compressed air.			
2. Check for damages in the O-rings (13.2), (22) and at sealing areas in the valve cone rubber, spherical relieving seating, seating area of the housing etc. Replace if needed or clean and reassemble.			
3. For assembly of the unit: Apply general purpose grease on the O-rings (13.2), (22) and on the cylindrical surface of the valve cone (13), on threads of the adjusting screw (7), and on bearing washer (6). Reassemble all the components.			

EXPLODED VIEW

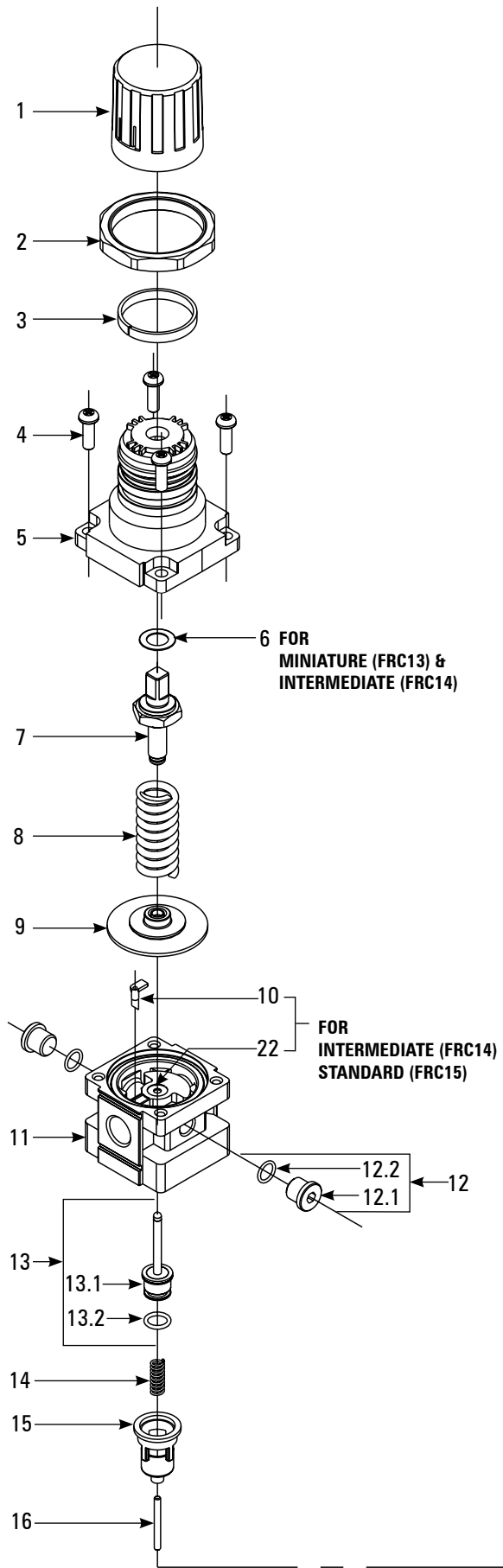


FIG. 2

SECTIONAL VIEW

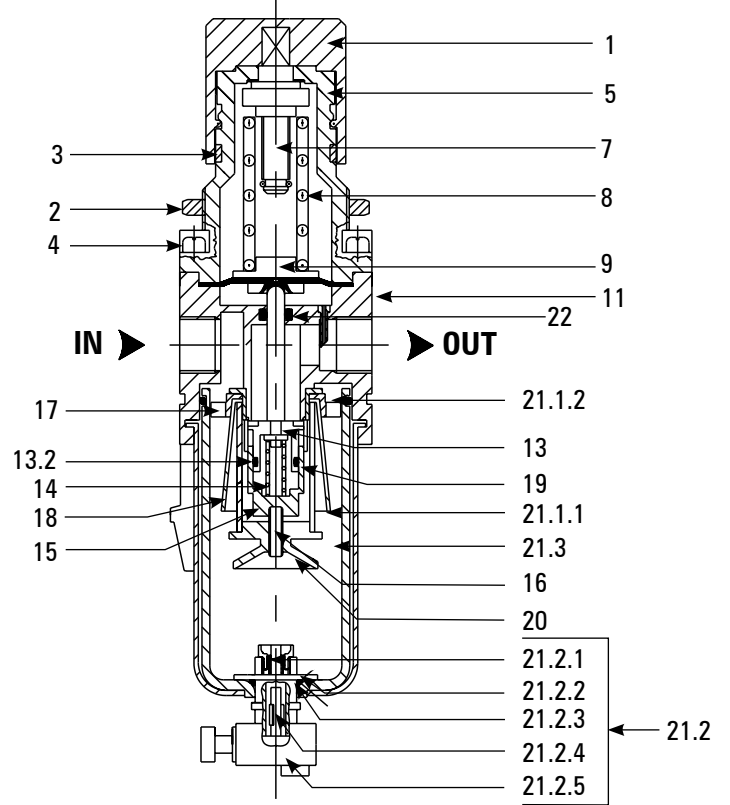
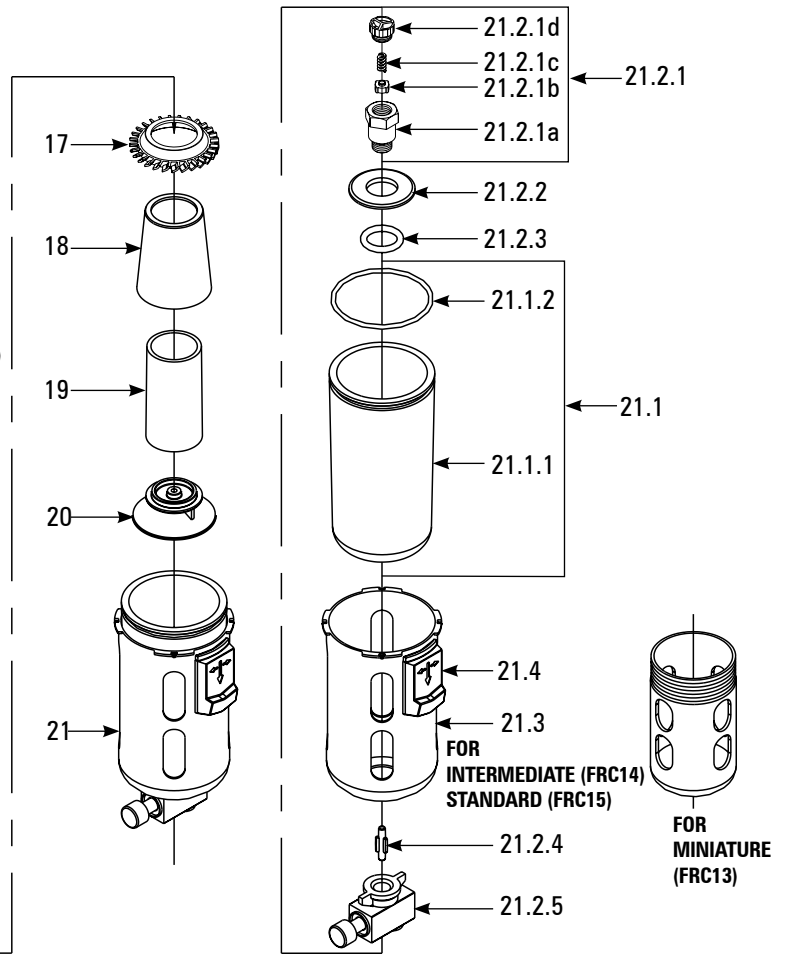


FIG. 3



PARTS LIST

Ref No.	Description	Qty.
1	Knob	1
2	Panel Mounting Nut	1
3	Indicator Ring	1
4	Philip Head Screw	4
5	Bonnet	1
6	Bearing Washer	1
7	Adjusting Screw Assembly	1
8	Main Spring	1
*	0.2 - 2 BAR (3- 28 PSI)	-
*	0.2 - 4 BAR (3 - 58 PSI)	-
*	0.5 - 7 BAR (8 - 100 PSI)	-
*	0.5 - 10 BAR (8 - 145 PSI)	-
9	Diaphragm Assembly	1
10	Venturi Tube	1
11	Housing	1
12	Port Plug Assembly	2
12.1	Port Plug	2
12.2	O-ring	2
13	Valve cone Assembly	1
13.1	Valve cone	1
13.2	O-ring	1
14	Bottom Spring	1
15	Spring Seat	1
16	Stud	1
17	Seprator	1
18	Shield	1
19	Filter Element	1
**	Filter Element - 1 Micron	-
**	Filter Element - 5 Micron	-
**	Filter Element - 25 Micron	-
**	Filter Element - 40 Micron	-
**	Filter Element - 50 Micron	-
**	Filter Element - 100 Micron	-
20	Filter Holder	1
21	Bowl & Bowl Guard Assembly	1
21.1	Bowl Assembly	1
21.1.1	Bowl	1
21.1.2	O-Ring	1

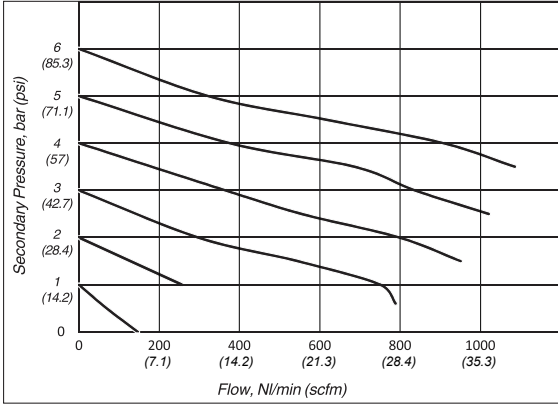
Ref No.	Description	Qty.
21.2	Drain Valve Assembly	1
21.2.1	Gland Assembly	1
21.2.1a	Gland	1
21.2.1b	Valve Seat	1
21.2.1c	Spring	1
21.2.1d	Spring Guide Nut	1
21.2.2	Sealing Washer	1
21.2.3	O-Ring	1
21.2.4	Actuator	1
21.2.5	Stem Housing Assembly	1
21.3	Bowl Guard	1
21.4	Locking Piece	1
22	O-Ring	1

REPAIR PARTS LIST

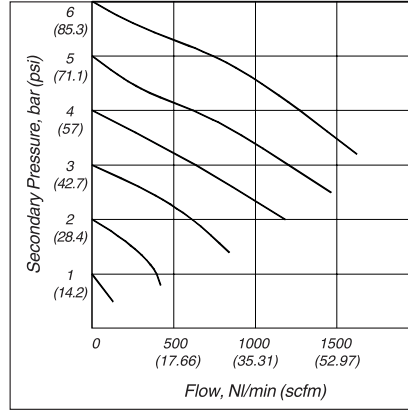
Sr. No.	Part Name	Part No.		
		Miniature	Intermediate	Standard
		FRC 13	FRC 14	FRC 15
1	Main Spring	-	-	-
	0.2 - 2 BAR (3 - 28 PSI)	062025	062031	062061
	0.2 - 4 BAR (3 - 58 PSI)	062026	062032	062062
	0.5 - 7 BAR (8 - 100 PSI)	062027	062033	062063
	0.5 - 10 BAR (8 - 145 PSI)	062028	062030	062060
2	Port Plug Assembly	LA2203	LA2203	LA2203
3	Valve cone Assembly	SA2602	SA2600	SA2601
4	Filter Element	-	-	-
	Filter Element - 1 Micron	F582006	F582030	F582047
	Filter Element - 5 Micron	F582000	F582026	F582040
	Filter Element - 25 Micron	F582001	F582027	F582041
	Filter Element - 40 Micron	F582002	F582025	F582042
	Filter Element - 50 Micron	F582003	F582028	F582043
	Filter Element - 100 Micron	F582004	F582029	F582044
5	Bowl Assembly	LA2000	LA2001	LA2002
6	Drain Valve Assembly	SC2004	SC2004	SC2004

PERFORMANCE CURVES

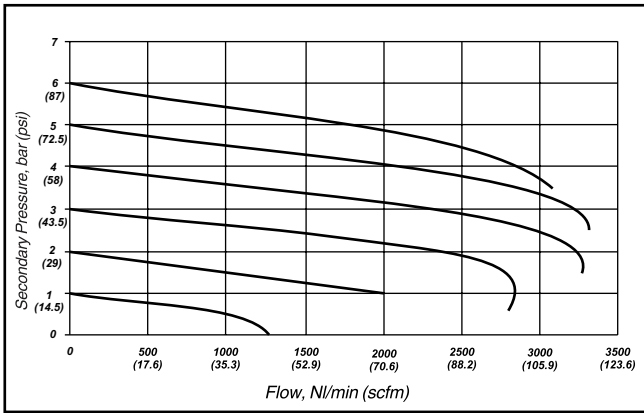
1/8" MINIATURE



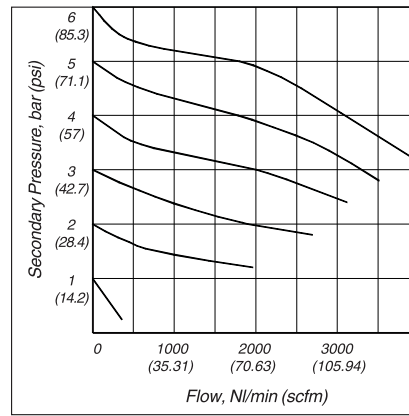
1/4" MINIATURE



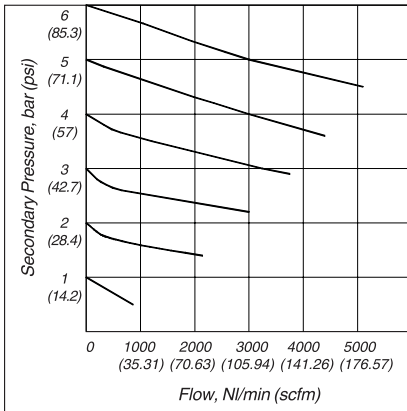
1/4" INTERMEDIATE



3/8" INTERMEDIATE



1/2" STANDARD



TROUBLESHOOTING

Problem	Cause	Solution
1. Continuous flow/ leak through the knob.	<ol style="list-style-type: none"> 1. Diaphragm (9) damaged 2. Relieving spherical seating of the valve cone damaged. 3. Dirt found in between the seating and the valve cone (13.1). 	<ol style="list-style-type: none"> 1. Replace diaphragm assembly (9). 2. Replace the valve cone assembly (13). 3. Clean and reassemble.
2. Setting pressure goes on increasing slowly.	<ol style="list-style-type: none"> 1. Relieving spherical seat of the Valve cone damaged. 2. Dirt found in between the seating and the valve cone. 	<ol style="list-style-type: none"> 1. Replace the Valve cone assembly (13). 2. Clean the seating area and Reassemble.
3. After frequent use of adjustment knob, the pressure setting becomes impossible.	Wearing out of the Adjusting Screw (7).	Replace after applying general purpose grease on threads and at Bearing washer (6).
4. Supply pressure directly connected to outlet port and making pressure setting impossible	Valve cone assembly (13) got stuck	Dismantle the Valve cone assembly (13). Clean using kerosene and air jet, reassemble after applying general purpose grease on O-ring (13.2) and on the valve cone cylindrical portion
5. Restricted air flow.	Filter element (19) clogged.	Clean the filter element or replace.
6. Water level not visible.	Dirt on the inner surface of the bowl.	Clean the bowl (21.1.1).
7. Air leaks from the bottom of the Bowl guard (21.3)	O-ring (21.2.3) damaged.	Replace the O-ring (21.2.3)
8. Air leaks continuously through the Drain valve (21.2).	Valve seat(21.2.1b) damaged. Dust on valve seat (21.2.1b)	Replace the valve seat (21.2.1b). Clean the valve seat and reassemble
9. The knob (1) of drain valve does not return	Valve components got stuck.	Pull the knob and operate. Replace the valve if problem persist.
<p>CAUTION: When the unit is erected in salty atmosphere, there are good chances of formation of aluminum oxide inside the housing. In due course the valve cone may get stuck. In this case dismantle the components and clean them using kerosene and air jet. And during reassembly apply general purpose grease on all the inside surfaces of the housing as protection against corrosion. Also apply grease on the O-rings and cylindrical portion of the valve cone.</p>		