



COMPRESSED AIR FILTER



HEF 005÷240

MAINTENANCE AND OPERATING MANUAL

COMPRESSED
AIR ADVISORS
Inc.

Compressed Air Advisors, Inc.

Phone: 877.247.2381

info@compressedairadvisors.com

www.compressedairadvisors.com

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AIR ADVISORS
— www.compressedairadvisors.com —

INDEX

INDEX	1
INTRODUCTION	2
SAFETY.....	2
INTENDED USE	2
FILTRATION GRADES AND APPLICATIONS	3
INSTALLATION.....	4
1.1 Models HEF 005 - 070	4
1.2 Models HEF 094 - 240	4
1.3 Starting up.....	5
1.4 Operation	5
1.4.1 Condensate discharge	6
MAINTENANCE.....	8
1.5 Cartridge replacement.....	8
TECHNICAL DATA.....	9

INTRODUCTION

Dear Customer,

thank you for choosing our product. In order to get the best performances in the use of this product, please read carefully this manual.

To avoid incorrect operations of the equipment and possible physical risks to the operator, please read and strictly follow the instructions contained in this manual. Note, these instructions are in addition to the safety rules that apply in the country where the filter is installed.

This manual must be maintained available in any moment for future references and it has to be intended as inherent part of the relevant filter.

Due to the continuous technical evolution, we reserve the right to introduce any necessary change without giving previous notice.

Should you experience any trouble, or for further information, please do not hesitate to contact us.

SAFETY

ATTENTION

- Absolutely avoid to place the filter in zones influenced by warm air flows or near flammable materials. .
- Avoid vibrations during filter operation, they could cause damages.
- Do not use the filter for operations different than the prescribed one.
- In the event of losses, immediately depressurise the filter by closing the interdiction valve upstream from the filter.
- Respect the laws about the operation of under pressure systems in force in the installation place.

INTENDED USE

Filters are designed for industrial compressed air filtration. This appliance must be used only for the purpose for which it was specifically designed. All other uses are to be considered incorrect and therefore unreasonable.

Specifically:

- The filter is not intended for human breathing without proper additional device.
- The filter can only be used for "**GROUPE 2**" fluids (**PED 97/23**)".
- The filter can not be used for explosive, toxic, flammable, corrosive and "**GROUPE 1**" fluids (**PED 97/23**)".
- The filter can not be used for oxygen filtration.


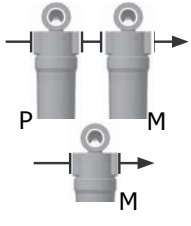
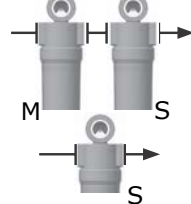

ATTENTION

Internal corrosion can seriously compromise the safety of installation: check it when changing cartidge.

The Manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

FILTRATION GRADES AND APPLICATIONS

The filters of this serie are used for filtering small solid particles and removing water and oil condensate from compressed air and gases.

Filter grade	Characteristics	Installation	Application example
Serie "P" Yellow	Filter capable to separate emulsion and particles down to 3 micron.		Ideal as a protection filter of the downstream line, in case of compressed aire with a high oil, condensate and/or dusts contamination: as a prefilter for line filters with a superior filtering degree, vacuum pumps, pneumatic pumps for inflation, etc.
Serie "M" Green	Filter capable to separate particles down to 0,1 micron, liquid and oil included. Maximum contents of residual oil 0,1 mg/m ³ .		Normally used as a prefilter at the entrance of the dryer with frigorific cycle, to prevent deterioration of pipes in a plant of compressed air, superficial treatments, drain of vacuum pumps, compressed air motors, post filter for adsorption dryers, etc.
Serie "S" Red	Oil removing filter capable to separate residual oil and extremely small particles down to 0,01 mg/m ³ . Maximum contents of residual oil 0,01 mg/m ³ . It produces air technical free from oil.		Normally used as a prefilter at the entrance of the dryer by absorption and active carbon filters; post filter at the delivery of the frigorific cycle dryers. Also ideal for the protection of the control systems, pneumatic transport, varnishing systems, etc.
Serie "A" Silver	Activated carbon filter for the elimination of oil vapours and odour. It lowers the maximum contents of residual oil to 0,005 mg/m ³ .		Used in the pharmaceutical industry, dental applications, photograph labs, packaging and galvanic treatments, etc.

INSTALLATION

ATTENTION

Operations to be performed by qualified personnel. Never operate with plants under pressure. The user is responsible to ensure that the filter will never be operated with pressure exceeding the nominal values. Eventual over-pressure could be dangerous both for the operator and the equipment.

1.1 Models HEF 005 - 070

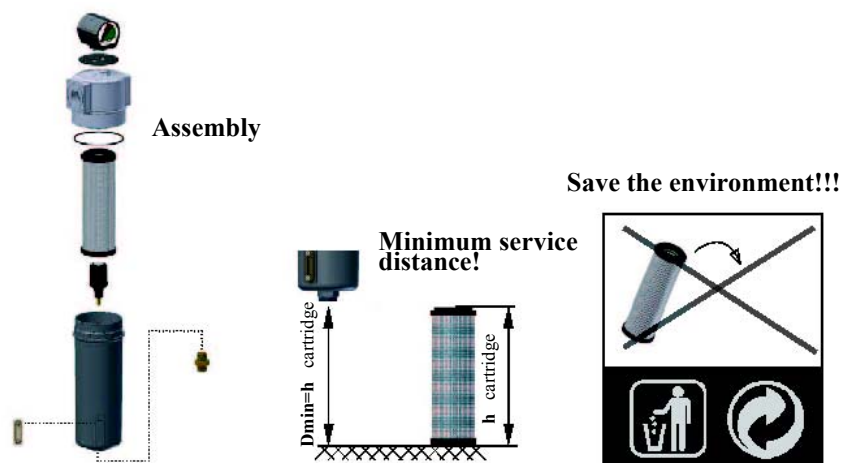
The filter assembly and installation procedures are as follows:

- If provided, install the clogging indicator or the Differential Pressure Gauge (optional) into the filter head.
- Connect the filter head to the compressed air piping and check that the airflow respects the direction of the arrow positioned on the filter head cap.
- Clean accurately the extremities of the piping and the filter head, after the installation, to remove any shaving, slaver or scrap from tooling.
- Lubricate the O-ring and the sealing surfaces of the filter head and cartridge, use multipurpose grease (SILICON FREE).
- Fit the filter cartridge on the filter head simply by pressing, tightness is ensured by one o-ring.
- Fit the filter bowl and tight it accurately.
- Remove from the bottom of the filter body the plastic plug (which does not withstand pressure) inserted in the connection for the condensate discharge.
- If foreseen, install a condensate discharger (not supplied with the filter).
If not foreseen, close the condensate discharge connection with a 1/2" metal plug with appropriate threading type.
- The filters must always be installed in a vertical position with sufficient space around and below them (see minimum distance D in the technical data table) so as to be able to disassemble the bowl and the cartridge as shown .
- Stick the adhesive label showing the month and year for the next filtering element change (max. one year) on the filter bowl.
- Pressurize the plant like shown at paragraph "Starting up" and check for air leakage.

1.2 Models HEF 094 - 240

The filter assembly and installation procedures are as follows:

- If provided, install the clogging indicator or the Differential Pressure Gauge (optional) into the filter head.
- Connect the filter head to the compressed air piping and check that the airflow respects the direction of the arrow positioned on the filter head cap.
- Clean accurately the extremities of the piping and the filter head, after the installation, to remove any shaving, slaver or scrap from tooling.
- Lubricate the O-ring and the sealing surfaces of the filter head and cartridge. Use multi-purpose grease (SILICON FREE).
- Fit the filter cartridge on the filter head centering the filter bottom hole with the screwed rod . Tight the hexagonal nut fixing the element.
- Fit the filter bowl and tight it accurately.
- Remove from the bottom of the filter body the plastic plug (which does not withstand pressure) inserted in the connection for the condensate discharge.
- If foreseen, install a condensate discharger (not supplied with the filter).
If not foreseen, close the condensate discharge connection with a 1/2" metal plug with appropriate threading type.
- The filters must always be installed in a vertical position with sufficient space around and below them (see minimum distance C in the technical data table) so as to be able to disassemble the bowl and the cartridge as shown.
- Stick the adhesive label showing the month and year for the next filtering element change (max. one year) on the filter bowl.
- Pressurize the plant like shown at paragraph "Starting up" and check for air leakage.

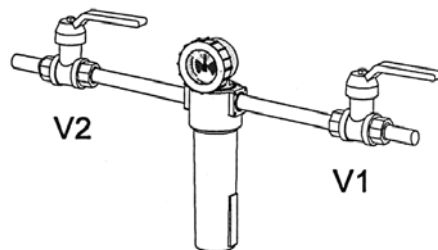


1.3 Starting up

ATTENTION

In start-up phase, it is necessary to gradually increase the pressure inside the filter, in order to avoid damages to the element.

- Check that the operating data (pressure, temperature and flow-rate) do not exceed those on the specification plate.
- Close the on-off valve (V1) down-line from the filter, slowly open the on-off valve (V2) up-line from the filter, and let the air flow from the manual or automatic drain valve for a few minutes; close the drain valve and open the on-off valve (V1) down-line from the filter.



1.4 Operation

- At least once a week (grade P, M, S) check if condensate drain takes place regularly.
- If installed, at least once a week (grade P, M, S), check if clogging indicator or Differential Pressure Gauge is in the green area.

If a filter grade A is installed, check the good efficiency of the pre-filters, otherwise the presence of any oil and water aerosols make the absorption power of the filter void.

1.4.1 Condensate discharge

The following models are available:

1. Manual discharger (See Fig. 1)

Discharge may be activated manually by opening the valve in anticlockwise direction.

2. SCF automatic internal discharger

The discharger is the float-type and operates in automatic mode. If the separator pressure drops below 0.6 bar / 8.7psi, the discharger opens and stays normally open until pressurized again.

It is possible to discharge the liquid manually by turning the brass pawl anticlockwise. In this case, automatic operation is overridden until the closed position is restored.

For the installation, insert the automatic condensate discharger SCF into the casing and screw it onto the condensate discharge connection. Take care not to tighten it with force so as not to break the discharger itself (see Fig. 2).

For maintenance, the gasket of the automatic discharger is made of Neoprene and its dimensions in inches are: De 1.26 - Di 0.92 - S 0.197.

3. CDF automatic external discharger (See Fig. 3)

See the instructions enclosed with the discharger for operation and installation.

4. SCE electronically-controlled timed discharger (See Fig. 4)

See the instructions enclosed with the discharger for operation and installation.

5. CE/CDE capacitive condensate discharger (See Fig. 5 and Fig. 6)

See the instructions enclosed with the discharger for operation and installation.



Fig. 1



Fig. 2

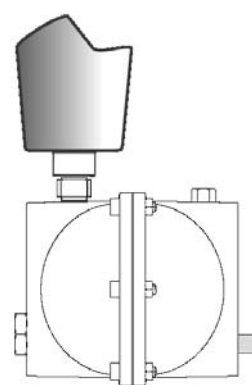


Fig. 3

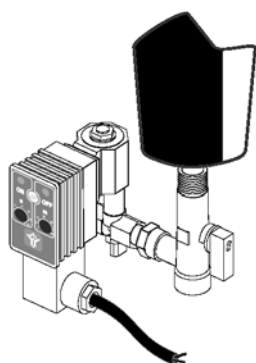


Fig. 4



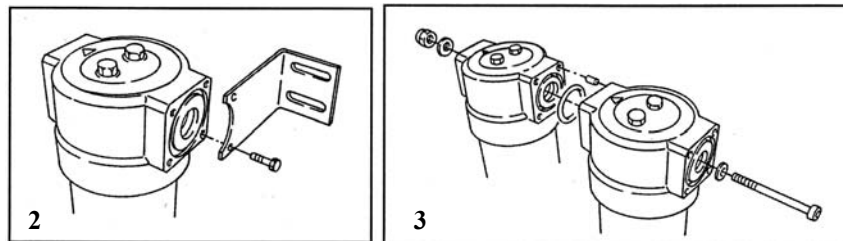
Fig. 5



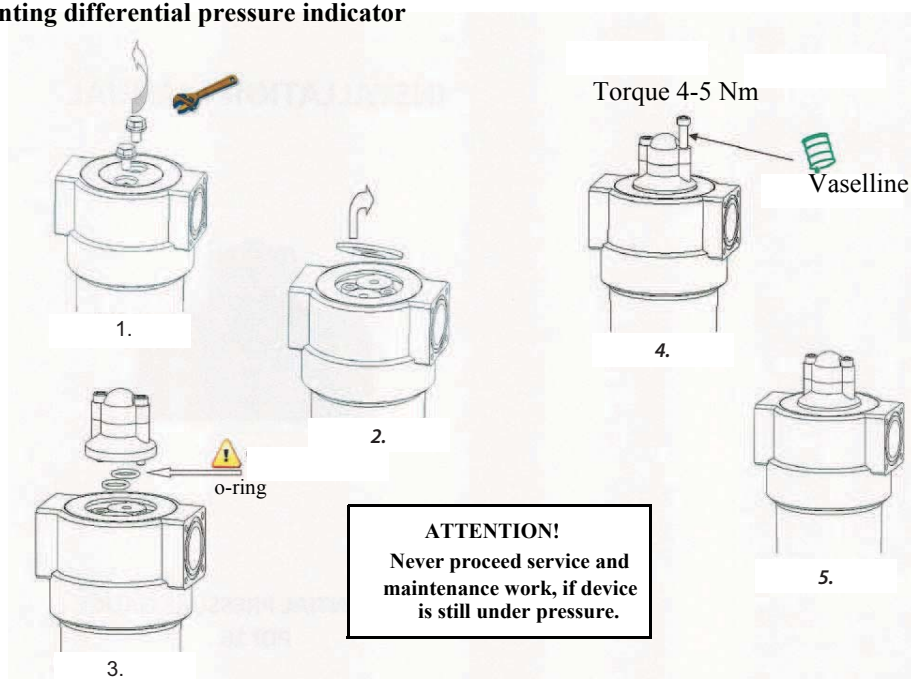
Fig. 6

On Request:

1. Condensate separator
2. Wall mounting kit
3. Serie connection kit
4. Differential pressure gauge



4. Mounting differential pressure indicator



MAINTENANCE

ATTENTION

Operations to be performed by qualified personnel. It's necessary to gradually decrease the pressure inside the filter slowly, in order to avoid damages to the element. A calibrated hole present in the filter head, warns the operator with a whistle of air, in case he works with filter under pressure.

1.5 Cartridge replacement

Filters with grade P, M, S:

change the filter cartridge at least once a year or when the clogging device recommends it (if installed) - Δp max. 0,6 bar.

Filters with grade A (activated carbon): the average life of the filtering element depends on the type of use and varies from case to case. It is recommended that the cartridge is replaced at least once a year, but depending on the application this can be required every 6 months.

1. Remove the bowl.
2. HEF 094 ÷ 240 - Remove the hexagonal nut.
3. Unthread the filter element.
4. Clean accurately the bowl and the drain device installed.
5. Clean accurately the head, in particular the seat for cartridge insertion.
6. Lubricate the O-rings and the sealing surfaces of the filter head and cartridge, use multipurpose grease (SILICON FREE).
7. Fit the filter cartridge on the filter head simply by pressing, tightness is ensured by o-ring.
8. HEF 094 ÷ 240 - Tight the hexagonal nut fixing the element.
9. Fit the filter bowl and tight it accurately.
10. Stick the adhesive label showing the month and year for the next filtering element change (max. one year) on the filter bowl.

ATTENTION

Pressurize the plant like shown at paragraph "Starting up" and check for air leakage.

ATTENTION

Always respect the regulations in force for disposing of polluting materials such as filtering elements etc.

TECHNICAL DATA

Working pressure	0 - 16 bar(g)	0 - 232 psi
Working temperature with cartridges of grade P, M, S	1,5 - 65 °C	35 - 149°F
Working temperature with cartridges of grade A	1,5 - 45°C	35 - 113°F

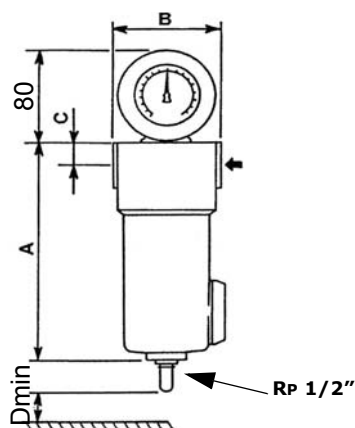
Filter housing model	Pipe size	Flow rate (*)	Dimension [mm]				Volume	Mass
	[Rp]	[m ³ /h]	A	B	C	D min	[l]	[Kg]
HEF 005	3/8"	60	187	88	20	60	0,47	0,7
HEF 007	1/2"	78	187	88	20	60	0,47	0,7
HEF 010	3/4"	120	257	88	20	80	0,60	0,8
HEF 018	1"	198	263	125	32	100	1,57	1,8
HEF 030	1"	335	363	125	32	120	2,20	2,5
HEF 047	1 1/2"	510	461	125	32	140	2,80	2,5
HEF 070	1 1/2"	780	640	125	32	160	3,90	3,2
HEF 094	2"	1000	684	163	43	520	6,00	5,1
HEF 150	2"	1500	935	163	43	770	8,20	7,1
HEF 175	2 1/2"	1680	935	163	43	770	14,0	6,9
HEF 200	3	2160	795	240	59	630	20,0	12,9
HEF 240	3	2760	1000	240	59	780	24,40	14,0

(*) Flow rate condition: FAD 20 °C, 1 bar(A), operating pressure 7 barg, air operating temperature 35 °C.

Filter housing model	Pipe size	Flow rate (*)	Dimension [in]				Volume	Mass
	[NPT]	[SCFM]	A	B	C	D min	[gal]	[lb]
HEF 005	3/8"	35	7 3/8	3 1/2	13/16	2 3/8	0,13	1,54
HEF 007	1/2"	46	7 3/8	3 1/2	13/16	2 3/8	0,13	1,54
HEF 010	3/4"	71	10 2/16	3 1/2	13/16	3 1/8	0,16	1,76
HEF 018	1"	117	10 6/16	4 15/16	1 4/16	3 7/8	0,42	3,97
HEF 030	1"	197	14 1/4	4 15/16	1 4/16	4 12/16	0,58	5,51
HEF 047	1 1/2"	300	18 1/4	4 15/16	1 4/16	5 1/2	0,74	5,51
HEF 070	1 1/2"	459	25 3/16	4 15/16	1 4/16	6 1/4	1,03	7,05
HEF 094	2"	589	26 7/8	6 3/8	1 6/8	20 1/2	1,59	11,24
HEF 150	2"	883	36 3/4	6 3/8	1 6/8	30 5/16	2,17	15,65
HEF 175	2 1/2"	989	36 3/4	6 3/8	1 6/8	30 5/16	3,70	15,21
HEF 200	3	1271	31 1/4	9 1/2	2 3/8	24 3/4	5,28	28,44
HEF 240	3	1624	39 1/4	9 1/2	2 3/8	30 11/16	6,45	30,87

(*) Flow rate condition: 68 °F, 14,6 psi(A), operating pressure 101,5 psig, air operating temperature 95 °F.

CORRECTION FACTORS															
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	160	174	189	203	218	232
Correction factor	0,38	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13



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