

Quincy

Compressed air filters



QAF, QCF, QMF, QPF, QWS 6-1500

Instruction book



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Original instructions

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This instruction book is valid for CE as well as non-CE labelled machines. It meets the requirements for instructions specified by the applicable European directives as identified in the Declaration of Conformity.

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Quincy
COMPRESSOR

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1 Safety precautions


1.1 Safety icons

Explanation

	Danger to life
	Warning
	Important note

1.2 Safety precautions during installation

1. Install the equipment where the ambient air is cool and as clean as possible. Consult section Reference conditions and limitations.
2. During installation or any other intervention on the equipment or one of the connected machines, the machines must be stopped, de-energized and the isolating switch opened and locked before any maintenance or repair. As a further safeguard, persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.
3. Install the equipment in an area free of flammable fumes, vapours and particles, e.g. paint solvents, that can lead to internal fire or explosion.
4. The electrical connections must correspond to the applicable codes. The equipment must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the equipment.
5. For machines controlled by a central control system, a sign stating "This machine may start without warning" must be affixed near the instrument panel.
6. In multiple compressor systems, manual valves must be installed to isolate each compressor. Non-return valves (check valves) must not be relied upon for isolating pressure systems.
7. Never remove or tamper with the safety devices.
8. If the maximum pressure of the compressor is higher than the design pressure of the connected equipment (e.g. a nitrogen generator or an oxygen generator), a full flow safety valve must be installed between the compressor and the connected equipment, in order to be able to blow off the excessive pressure.

	<p>Also consult following safety precautions: Safety precautions during operation and Safety precautions during maintenance or repair.</p> <p>These precautions apply to electrical devices.</p> <p>For precautions applying to the connected equipment consult the relevant instruction book.</p> <p>Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.</p>
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1.3 Safety precautions during operation



All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

1. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
2. Never operate the device in the presence of flammable or toxic fumes, vapours or particles.
3. Never operate the device below or in excess of its limit ratings.
4. Do not operate the device when there are flammable or toxic fumes, vapors or particles.
5. Keep all bodywork doors and panels closed during operation. The doors may be opened for short periods only, e.g. to carry out routine checks.
6. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.
7. Periodically check that:
 - All guards and fasteners are in place and tight
 - All hoses and/or pipes are in good condition, secure and not rubbing
 - There are no leaks
 - All electrical leads are secure and in good order
8. Never remove or tamper with the safety devices.



Also consult following safety precautions: [Safety precautions during installation](#) and [Safety precautions during maintenance](#) or repair.
 These precautions apply to electrical devices.
 For precautions applying to the connected equipment consult the relevant instruction book.
 Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.4 Safety precautions during maintenance or repair



All responsibility for any damage or injury resulting from neglecting these precautions, or non observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

1. Use only the correct tools for maintenance and repair work.
2. Use only genuine spare parts.
3. A warning sign bearing a legend such as "Work in progress - do not start" shall be attached to the starting equipment, including all remote start equipment.
4. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
5. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors of cleaning liquids.
6. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.

7. Never use a light source with open flame for inspecting the interior of the device.
8. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
9. Before clearing the device for use after maintenance or repair, check that operating pressures, temperatures and time settings are correct. Check that all control and shutdown devices are fitted and that they function correctly.
10. Make sure that no tools, loose parts or rags are left in or on the device.
11. Never use caustic solvents which can damage materials of the device.



Also consult following safety precautions: [Safety precautions during installation](#) and [Safety precautions during operation](#).
 These precautions apply to electrical devices.
 For precautions applying to the connected equipment consult the relevant instruction book.
 Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.



Units and/or used parts must be disposed of in an environmentally friendly and safe manner and in line with the local recommendations and legislation.

1.5 Disposal of used material

Used filters or any other used material (e.g. desiccant, lubricants, cleaning rags, machine parts, etc.) must be disposed of in an environmentally friendly and safe manner, and in line with the local recommendations and environmental legislation.

Electronic components are subject to the EU Directive 2012/19/EC for Waste Electrical and Electronic Equipment (WEEE). As such, these parts must not be disposed of at a municipal waste collection point. Refer to local regulations for directions on how to dispose of this product in an environmental friendly manner.

2 Description

2.1 General description



Quincy filters are available in a number of grades and sizes. (P, M, C, A, sizes 1–18) (WS, sizes 1–13)

Naming of the filters: **QPF (flow)(connection)(-/indicator/gauge)**

Example: **QPF 280 (G1 1/4) G** is a Quincy **P** grade Filter with a nominal flow of **280 scfm**, a **N1 1/4** connection with a **pressure gauge**.

Dependent on the filter size, they are standard equipped with either a differential pressure indicator or a differential pressure gauge.

Grade	Description	Maximum air inlet pressure	Air flow	Differential pressure		Drain
				Indicator	Gauge	
P	<ul style="list-style-type: none"> Coalescing and particulate general purpose prefilter Removes solid particles, dust, liquid and oil aerosol 	16 bar	From inside to outside	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Standard Size 6–18: Not available 	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Optional Size 6–18: Standard 	Automatic drain

Grade	Description	Maximum air inlet pressure	Air flow	Differential pressure		Drain
				Indicator	Gauge	
G	<ul style="list-style-type: none"> Coalescing filters for general purpose protection, removing solid particles, liquid water and oil aerosol Total mass efficiency: >99.25 % 	16 bar	From inside to outside	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Standard Size 6–18: Not available 	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Optional Size 6–18: Standard 	Automatic drain
C	<ul style="list-style-type: none"> High efficiency coalescing filters, removing solid particles, liquid water and oil aerosol Total mass efficiency: >99.9 % 	16 bar	From inside to outside	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Standard Size 6–18: Not available 	<ul style="list-style-type: none"> Size 1–2: Not available Size 3–5: Optional Size 6–18: Standard 	Automatic drain

Grade	Description	Maximum air inlet pressure	Air flow	Differential pressure		Drain
				Indicator	Gauge	
S	<ul style="list-style-type: none"> • Particulate filters for dust protection • Count efficiency: 99.92 % at most penetrating particle size 	20.7 bar	From outside to inside	<ul style="list-style-type: none"> • Size 1–2: Not available • Size 3–5: Standard • Size 6–18: Not available 	<ul style="list-style-type: none"> • Size 1–2: Not available • Size 3–5: Optional • Size 6–18: Standard 	Manual drain
D	<ul style="list-style-type: none"> • High efficiency particulate filters for dust protection • Count efficiency: 99.98 % at most penetrating particle size 	20.7 bar	From outside to inside	<ul style="list-style-type: none"> • Size 1–2: Not available • Size 3–5: Standard • Size 6–18: Not available 	<ul style="list-style-type: none"> • Size 1–2: Not available • Size 3–5: Optional • Size 6–18: Standard 	Manual drain

Grade	Description	Maximum air inlet pressure	Air flow	Differential pressure		Drain
				Indicator	Gauge	
V	<ul style="list-style-type: none"> Oil vapour and odour removal filter Air flows through the activated carbon, which absorbs oil vapours and odours 	20.7 bar	From inside to outside	/	/	Manual drain
WS	<ul style="list-style-type: none"> Condensed liquid water removal filter 	16 bar	From outside to inside	/	/	Automatic drain or level-controlled drain



The V filter does not remove methane, carbon monoxide, carbon dioxide or other toxic gases and fumes!

(1) The differential pressure gauge indicates the pressure drop over the filter.



(2) The differential pressure indicator turns red as the pressure drop over the filter increases.



Drains

The automatic mechanical float drain valve will discharge liquid from the filter bowl when it reaches a fixed level in the bowl.



1	Automatic float drain
---	-----------------------

The manual drain can be used to manually discharge dust or liquid from the filter bowl.



1	Manual drain valve
---	--------------------

2.2 Options

Filter connection kit

This kit allows to interconnect the filter heads if two or more filters are installed in series.



Always observe the correct air flow direction. Install a G filter upstream of a C grade filter. An arrow indicating the air flow direction is shown on the filter head or differential pressure indicator.



Wall mounting kit

For wall mounting, a special set is available as option. Fit the mounting brackets with bolts, washers and nuts to a solid frame within easy reach, leaving sufficient space for maintenance and service.



Voltage-free contact

A voltage-free switch, mounted in the differential pressure gauge, closes at a pressure drop of 0.35 bar (5 psi) and can be used for remote control or alarm purposes.



Electronic drain



The electronic drain is a zero loss, electronically operated drain valve, specially designed to drain oil condensate. A sensor senses the condensate level. If this level exceeds a preset value, the drain waits for a fixed programmed time, then a solenoid valve is activated and the condensate is discharged. When all the condensate is discharged, the solenoid valve closes and condensate is collected again. This way, the loss of air is reduced to a minimum.

If the microcontroller registers a malfunction, the automatic drain valve will automatically change to alarm mode. This alarm signal can be relayed via a potential-free contact.

The electronic drain is available for 2 operating voltages: 220 V and 115 V. An extra electric wiring can be foreseen to connect the potential free contacts and an external test button.



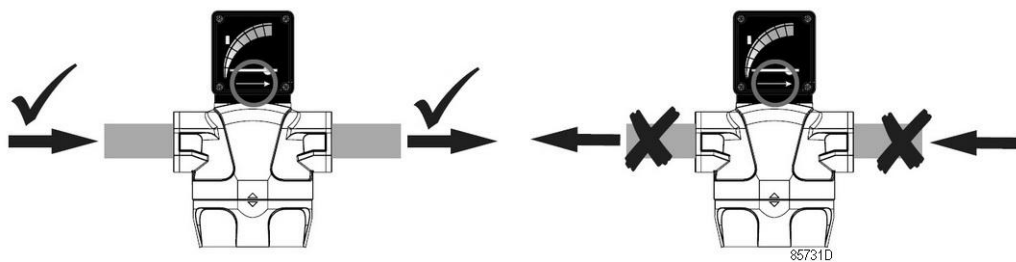
Always remove the manual drain or the automatic drain of the filter before installing the electronic drain.

3 Installation

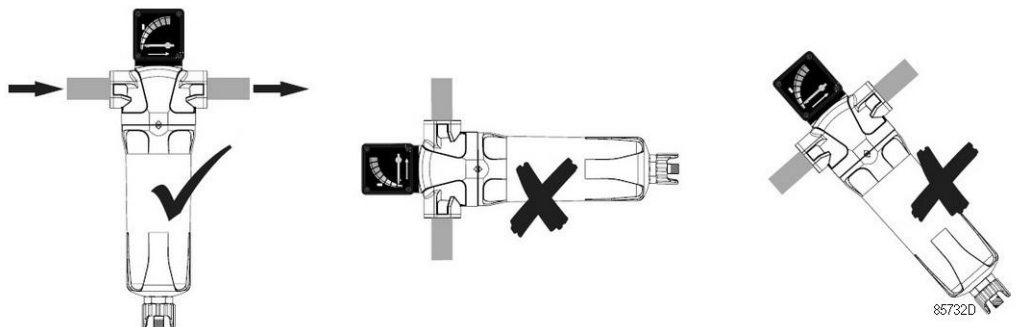
3.1 General remarks

When installing the filter, keep in mind the following:

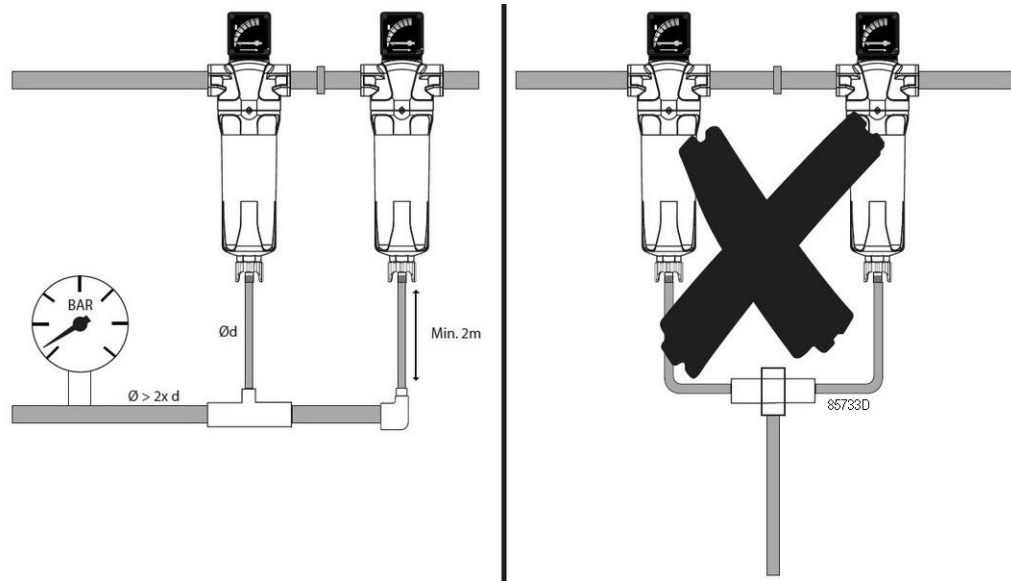
- Be sure that the piping is internally clean, especially downstream of the filter.
- Select the filter grade in line with the application requirements.
When selecting the filter size, take care that the maximum flow capacity is not exceeded to make sure that filtration performance and filter lifetime are guaranteed.
- Take into account the flow direction:



- The filters must be mounted vertically:



- If the unit is integrated in a multiple line system, provide isolating valves and (if required) a bypass.
- The automatic drain has a special connection allowing easy installation of a hose or a quick coupling to pipe away the drained liquid. This drained liquid should be fed into a non-pressurized vessel or drain pipe. In case two filters are installed next to each other, the drain pipe length per filter should be at least 2 meters before connecting them together. The pipe diameter of the collector should be at least twice the diameter of the pipes connected to the filter drain.



- Open and close isolating valves slowly, as a sudden pressure rise or pressure drop can cause irreversible damage to the filter element.

3.2 Specific remarks

P filter

The P grade filter can be used in installations where high oil or dust loads are expected.

In critical applications it is recommended to install a grade G (for oil) or a grade S (for dust) or a grade C (for oil) or a grade D (for dust) filter downstream the P filter to improve the air quality.

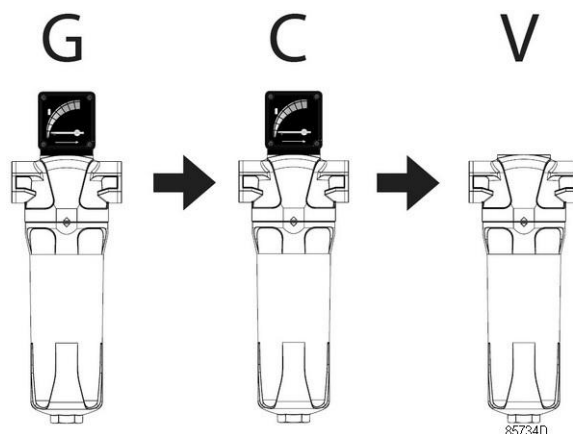
G filter

No specific remarks.

C filter

The filter must be mounted as close as possible to the point of use of the air

It is recommended to install a grade G filter upstream the C filter. If not, the load on the C filter element may become too high and will reduce its lifetime.



S filter and D filter

When the S and D filters are used with an adsorption type air dryer, install the filter downstream of the dryer.

V filter

To protect the activated carbon element, a V filter must always be preceded by a G and C filter. The filter should be mounted as close as possible to the point of use of the air.

3.3 ISO 8573-1

General

For new installations as well as for installations that have to be made up-to-date, the ISO 8573-1:2010 standard can be used. Some proposals are given fulfilling this standard.

This part specifies purity classes of compressed air with respect to particles, water and oil, independent of the location in the compressed air system at which the air is specified or measured, for ISO 8573-1:2010 standard.



The ISO 8573-1:2010 standard only concerns compressed air for general use and does not deal with, or is not applicable to, e.g. breathing air.

ISO class	Dust			Water		Oil Total oil concentration (aerosol, liquid and vapour) mg/m ³
	Maximum number of particles per m ³ as function of particle size <i>d</i>			Pressure dew point		
	0.1 < <i>d</i> ≤ 0.5 μm	0.5 < <i>d</i> ≤ 1.0 μm	1.0 < <i>d</i> ≤ 5.0 μm	°C	°F	
0	As specified by the equipment user or supplier and more stringent than class 1					
1	≤ 20000	≤ 400	≤ 10	≤ -70	≤ -94	≤ 0.01
2	≤ 400000	≤ 6000	≤ 100	≤ -40	≤ -40	≤ 0.1
3	not specified	≤ 90000	≤ 1000	≤ -20	≤ -4	≤ 1
4	not specified	not specified	≤ 10000	≤ +3	≤ +37.4	≤ 5
5	not specified	not specified	≤ 100000	≤ +7	≤ +44.6	-
6	mass concentration: 1 - 5 mg/m ³			≤ +10	≤ +50	-

Terms and definitions

Particle: small discrete mass of solid or liquid matter

Particle size *d* : length of the greatest distance between two external boundaries

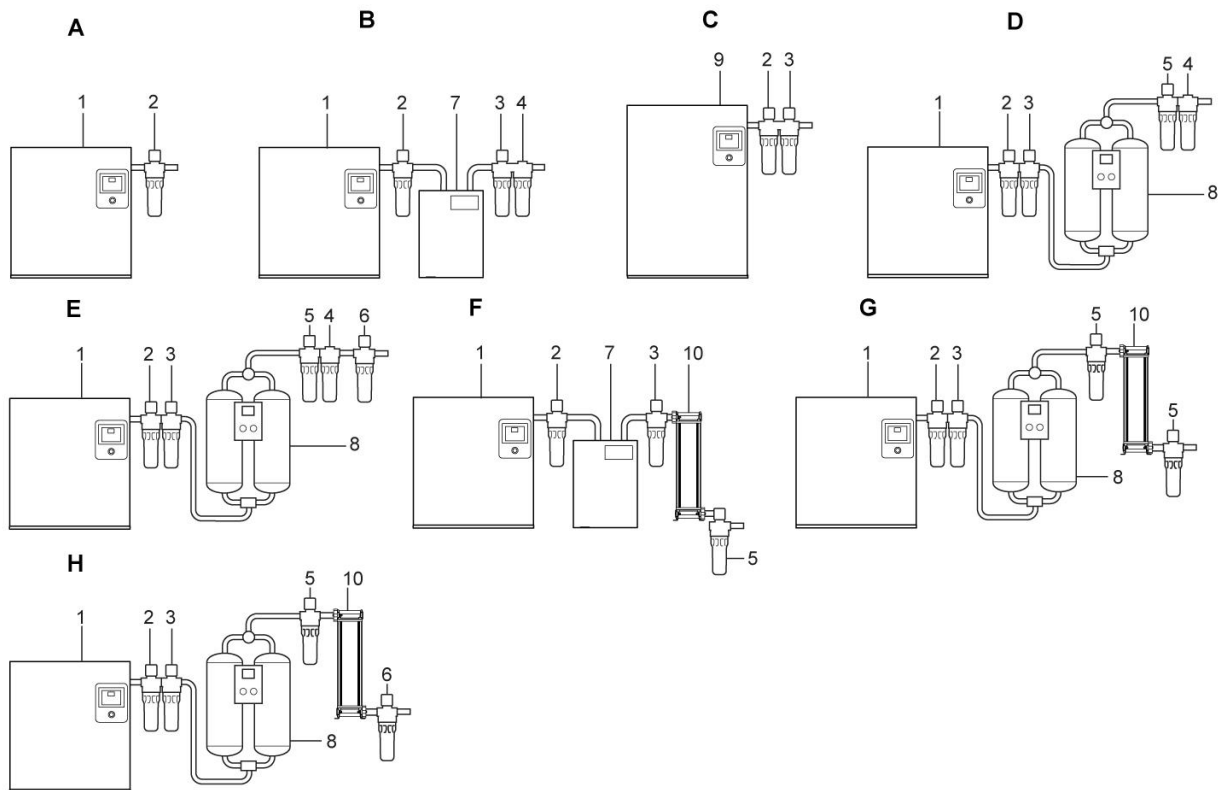
Dew point: temperature at which water vapour begins to condense

Pressure dew point: dew point of the air at the specified pressure

A desiccant dryer will be needed to reduce the dew point down to -40 °C (-40°F).

The air purity according to ISO 8573-1:2010 is expressed as follows: class [X.Y.Z], where X, Y and Z are respectively the purity classes with regard to dust, water and oil.

A few examples are given in the image below.



A	General purpose protection With grade P filter: air quality to ISO 8573-1: class 4:-:3 With grade G filter: air quality to ISO 8573-1: class 3:-:3
B	High quality air with reduced dew point (air quality to ISO 8573-1: class 1:4:1)
C	General purpose protection and reduced oil concentration (air quality to ISO 8573-1: class 1:-:2)
D	High quality air with extremely low dew point (air quality to ISO 8573-1: class 2:2:1)
E	High quality air with extremely low dew point (air quality to ISO 8573-1: class 1:2:1)
F	Upper class quality air with reduced dew point (air quality to ISO 8573-1: class 2:4:2)
G	Upper class quality air with extremely low dew point (air quality to ISO 8573-1: class 2:2:1)
H	Upper class quality air with extremely low dew point (air quality to ISO 8573-1: class 1:2:1)

Components shown in above image

Item	Description	Item	Description
1	Compressor with after cooler	6	D filter
2	G filter (or P filter in configuration A)	7	Refrigerant dryer
3	C filter	8	Desiccant dryer
4	V filter (for critical applications)	9	Compressor with integrated dryer
5	S filter	10	VT filter

Compressed air may come into direct or indirect contact with food. When this happens, for example during production or processing, this requires a much higher level of contaminant control. Particular attention needs to be given to contaminants added during the compression and the distribution process, such as bread packaging, fluidized bed in the transfer of flour from a tanker etc.

Recommendations:

- No contact: Air purity class ISO 8573-1:2010 [1:4:1]
- Contact: Air purity class ISO 8573-1:2010 [1:2:1]

The filters comply with the bacteriological filtration grade and the British Compressed Air Society (BCAS) Food Grade Compressed Air Code of Practice.

3.4 ISO 12500

ISO 12500

ISO 12500 has been introduced specifically to test purification equipment for compressed air and complements ISO 8573.

ISO 12500 currently consists of:

- Part 1: Oil aerosol filters
- Part 2: Oil vapor filters
- Part 3: Particulate filters
- Part 4: Water removal

ISO 12500-1:2007 - Testing of Coalescing filters

ISO 12500-1:2007 provides a set of standardized conditions with which coalescing filters should be tested in order to show their filtration performance in accordance with ISO 8573-1:2010. The testing will provide the user with an oil aerosol carry-over figure in mg/m³ and saturated (or wet) pressure drop in mbar. This is the filter performance at the reference conditions and can be used for benchmarking purposes.

ISO 12500-3:2009 - Testing of Dust removal filters

ISO 12500-3:2009 provides a guide for choosing an appropriate method of determining the solid particulate removal efficiency rating by particle size. Measurement methods are recommended based on the size range of the particulates that the filter being tested has been designed to remove. The test is performed as a type-test on filters as being representative of a range.

4 Maintenance

4.1 Maintenance

When maintaining the filter, keep in mind the following:

- On filters with manual drain valve, open the latter at regular intervals to evacuate collected dust or liquid.
- In case an automatic drain valve or a solenoid timer drain is installed, manual draining can be carried out by opening the valve counterclockwise to release collected condensate.



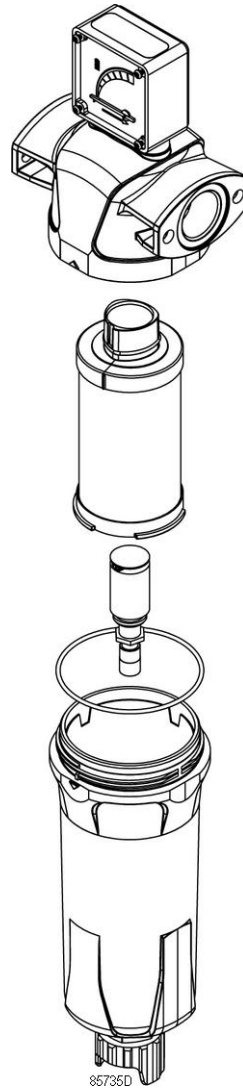
When the filter has to process air with a temperature higher than the specified maximum temperature, the filter's lifetime will be reduced considerably!

4.2 Filter element change



The hand-tool icon on the figure indicates the items provided in a dedicated filter kit.

1. Before filter element change, check for any leakages at the bottom of the filter bowl (connection of manual and automatic drain) during normal filter operation. If no leakage is observed, point 6 up to 9 can be discarded.
2. Isolate the filter from the air net.
3. Depressurize the filter by turning the connection nipple of the automatic drain valve counterclockwise or by opening the manual drain valve.
4. Unscrew the bowl.
5. Discard the filter element.



6. Remove the drain valve by unscrewing the retaining nut underneath the bowl.
7. Remove the O-ring from the filter head and clean the o-ring groove. Position a new O-ring in the filter head.
8. Reinstall the drain valve in the bowl using the retaining nut (tightening torque 3 Nm).
9. Reposition the new filter element within the filter head.
10. Screw the bowl completely on the head.



A small amount of acid-free vaseline may be applied to screw threads and O-rings to facilitate the assembly.

4.3 Service intervals

P, G, C, S, D filters

The filter elements of oil mist filters (P, G, C) should be replaced after 8000 hours. The gauge or pop-up is not a measure, as a typical oil mist filter operates in the steady state mode during its life and this mode is e.g. 125 mbar.

Note that the indicator or gauge will not move into the red area but will stay yellow or orange during operation.

The filter elements of dust filters (S, D) should be replaced after 8000 running hours or after 12 months (whichever comes first).

V filters

For V filters, the change interval of the adsorption element is approximately 1000 operating hours or every 6 months, whichever comes first. Its pressure drop will not increase during its useful life. Nevertheless, the adsorption element must be changed earlier at the first signs of oil vapor and odor.

5 Technical data

5.1 Reference conditions

Air inlet pressure	7 bar(e)	102 psig
Air inlet temperature	20°C	68 °F
Ambient temperature	20°C	68 °F

5.2 Principal data

Maximum compressed air inlet pressure	Coalescing filters (P-G-C) + WS: 16 bar(e)	Coalescing filters (P-G-C) + WS: 232 psig
Minimum compressed air inlet pressure	1 bar(e)	15 psig
Minimum compressed air inlet temperature	1°C	34°F
Maximum compressed air inlet temperature for V filters	50°C	122°F
Maximum compressed air inlet temperature coalescing filters and WS	80°C	176°F
Maximum compressed air inlet temperature particulate filters	120°C	248°F
Minimum ambient temperature	-20°C	-4 °F
Maximum ambient temperature for V filters	50°C	122°F
Maximum ambient temperature for other types	50°C	122°F

5.3 Specific data

Performance data at nominal volume flow and at reference conditions, unless otherwise stated.

P filter

		P
Challenge/inlet oil concentration	mg/m ³	10
Initial pressure drop over filter when dry	mbar	50
Initial pressure drop over filter when saturated	mbar	80
Oil carry-over (aerosol)	mg/m ³	<1
Total mass efficiency	%	90
Count efficiency	MPPS	92.03 %
	1 µm	95.29 %
	0.01 µm	95.65 %
ISO 8573-1 2010 Class		3:-:3

G filter and C filter

		G	C
Challenge/inlet oil concentration	mg/m ³	40	10
Initial pressure drop over filter when dry	mbar	55	85
Initial pressure drop over filter when saturated	mbar	125	125
Oil carry-over (aerosol)	mg/m ³	0.3	0.01
Total mass efficiency	%	>99.25	>99.9
Remark		Typical installation (1)	Typical installation (1)
ISO 8573-1 2010 Class		2.-.3	1.-.2

(1) Typical installation: compressor + refrigerant dryer/water separator + G + C

S filter and D filter

		S	D
Initial pressure drop over filter	mbar	55	85
Count efficiency	MPPS	(MPPS = 0.1 µm) 99.92 %	(MPPS = 0.06 µm) 99.98 %
	1 µm	99.998 %	> 99.999 %
	0.01 µm	99.93 %	99.995 %
Remark		ISO-12500-3	ISO-12500-3
ISO 8573-1 2010 Class		3:-:-	1.-.- (1)

(1): If preceded by an S filter

V filter

		V
Challenge/inlet oil concentration	mg/m ³	0.01
Initial pressure drop over filter when dry	mbar	115
Initial pressure drop over filter when saturated	mbar	-
Oil carry-over (aerosol)	mg/m ³	0.003
Total mass efficiency	%	-
Efficiency (total count)	%	-
Remark		After G-C
ISO 8573-1 2010 Class		-.-.1

WS filter

		WS
Total bulk water removal efficiency	%	99
Typical pressure loss at rated flow	mbar	55

5.4 Rated flow at reference conditions

For P, G, C, S, D and V filters


Size	l/s	m ³ /h	scfm	l/min
1	2.8	10	6	168
2	6.9	25	15	414
3	11.7	42	25	702
4	15	54	32	900
5	23.6	85	50	1416
6	33.1	119	70	1986
7	40	144	85	2400
8	49.4	178	105	2964
9	58.9	212	125	3534
10	82.5	297	175	4950
11	132.2	476	280	7932
12	151.4	545	321	9084
13	212.5	765	450	12750
14	330.3	1189	700	19818
15	401.1	1444	850	24066
16	424.7	1529	900	25482
17	590.3	2125	1250	35418
18	708.3	2550	1500	42498

For WS filters

Size	l/s	m ³ /h	scfm	l/min
1	2.8	10	6	168
2	6.9	25	15	414
3	11.7	42	25	702
4	16.4	59	35	984
5	23.6	85	50	1416
6	33.1	119	70	1986
7	58.9	212	125	3534
8	82.5	297	175	4950
9	132.2	476	280	7932

Size	l/s	m³/h	scfm	l/min
10	151.4	545	321	9084
11	330.3	1189	700	19818
12	401.1	1444	850	24066
13	708.3	2550	1500	42498

5.5 Correction factors

 When the actual working pressure differs from the reference pressure, multiply the nominal capacity of the filter with the corresponding correction factor to obtain the correct capacity.

Operating pressure bar(e)	4	5	6	7	8	10	12	14	16	20
Operating pressure psig	58	72	87	100	115	145	174	203	232	290
correction factor	0.76	0.84	0.92	1	1.07	1.19	1.31	1.41	1.51	1.6

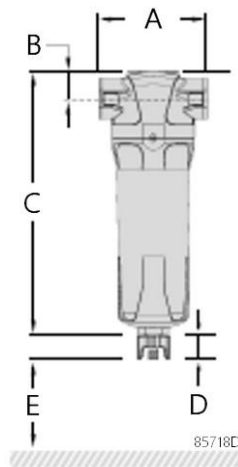
5.6 Dimensions and weight

For P, G, C, S, D and V filters

Size	Filter dimension A (mm)	Filter dimension B (mm)	Filter dimension C (mm)	Manual Drain length D (mm)	Automatic Drain length D (mm)	Service distance E (mm)
1	50	17	157	32	28	60
2	50	17	157	32	28	60
3	70	24	231	32	28	70
4	70	24	231	32	28	70
5	70	24	231	32	28	70
6	127	32	285	42	30	80
7	127	32	285	42	30	80
8	127	32	285	42	30	80
9	127	32	371	42	30	80
10	127	32	371	42	30	80
11	140	40	475	42	30	80
12	140	40	475	42	30	80
13	170	53	508	42	30	100
14	170	53	708	42	30	100
15	220	70	736	42	30	100

Size	Filter dimension A (mm)	Filter dimension B (mm)	Filter dimension C (mm)	Manual Drain length D (mm)	Automatic Drain length D (mm)	Service distance E (mm)
16	220	70	736	42	30	100
17	220	70	857	42	30	100
18	220	70	1005	42	30	100

Size	Filter dimension A (in)	Filter dimension B (in)	Filter dimension C (in)	Manual Drain length D (in)	Automatic Drain length D (in)	Service distance E (in)
1	1.97	0.67	6.18	1.26	1.10	2.36
2	1.97	0.67	6.18	1.26	1.10	2.36
3	2.76	0.94	9.09	1.26	1.10	2.76
4	2.76	0.94	9.09	1.26	1.10	2.76
5	2.76	0.94	9.09	1.26	1.10	2.76
6	5.00	1.26	11.22	1.65	1.18	3.15
7	5.00	1.26	11.22	1.65	1.18	3.15
8	5.00	1.26	11.22	1.65	1.18	3.15
9	5.00	1.26	14.60	1.65	1.18	3.15
10	5.00	1.26	14.60	1.65	1.18	3.15
11	5.51	1.57	18.70	1.65	1.18	3.15
12	5.51	1.57	18.70	1.65	1.18	3.15
13	6.69	2.09	20.00	1.65	1.18	3.94
14	6.69	2.09	27.87	1.65	1.18	3.94
15	8.66	2.76	28.98	1.65	1.18	3.94
16	8.66	2.76	28.98	1.65	1.18	3.94
17	8.66	2.76	33.74	1.65	1.18	3.94
18	8.66	2.76	39.57	1.65	1.18	3.94



Size	Filter volume, head+bowl (l)	Weight (kg)	Shipping length (mm)	Shipping width (mm)	Shipping height (mm)
1	0.1	0.25	260	65	65

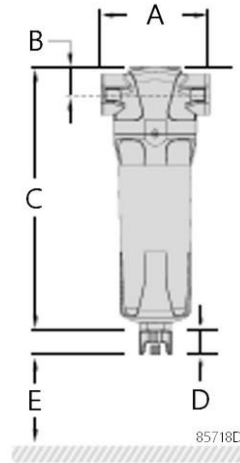
Size	Filter volume, head+bowl (l)	Weight (kg)	Shipping length (mm)	Shipping width (mm)	Shipping height (mm)
2	0.1	0.25	260	65	65
3	0.3	0.6	390	85	85
4	0.3	0.6	390	85	85
5	0.3	0.6	390	85	85
6	1.1	1.7	460	130	125
7	1.1	1.7	460	130	125
8	1.1	1.7	460	130	125
9	1.5	2	575	130	125
10	1.5	2	575	130	125
11	2.6	3	705	170	150
12	2.6	3	705	170	150
13	3.5	4.9	720	185	185
14	5.3	5.5	1020	185	185
15	9.4	10.5	1175	240	220
16	9.4	10.5	1175	240	220
17	12	11.5	1175	240	220
18	14	12.5	1300	240	220

Size	Filter volume, head+bowl (gal)	Weight (lb)	Shipping length (in)	Shipping width (in)	Shipping height (in)
1	0.03	0.55	10.24	2.56	2.56
2	0.03	0.55	10.24	2.56	2.56
3	0.08	1.32	15.35	3.35	3.35
4	0.08	1.32	15.35	3.35	3.35
5	0.08	1.32	15.35	3.35	3.35
6	0.29	3.75	18.11	5.12	4.92
7	0.29	3.75	18.11	5.12	4.92
8	0.29	3.75	18.11	5.12	4.92
9	0.40	4.41	22.64	5.12	4.92
10	0.40	4.41	22.64	5.12	4.92
11	0.69	6.61	27.76	6.69	5.91
12	0.69	6.61	27.76	6.69	5.91
13	0.92	10.80	28.34	7.28	7.28
14	1.40	12.13	40.16	7.28	7.28
15	2.48	23.15	46.26	9.45	8.66
16	2.48	23.15	46.26	9.45	8.66
17	3.17	25.35	46.26	9.45	8.66
18	3.70	27.56	51.18	9.45	8.66

For WS filters

Size	Filter dimension A (mm)	Filter dimension B (mm)	Filter dimension C (mm)	Automatic Drain length D (mm)	Service distance E (mm)
1	50	17	157	28	60
2	50	17	157	28	60
3	70	24	231	28	70
4	70	24	231	28	70
5	70	24	231	28	70
6	127	32	285	30	80
7	127	32	285	30	80
8	127	32	285	30	80
9	140	40	475	30	80
10	140	40	475	30	80
11	170	53	508	30	100
12	220	70	413	30	100
13	220	70	413	30	100

Size	Filter dimension A (in)	Filter dimension B (in)	Filter dimension C (in)	Automatic Drain length D (in)	Service distance E (in)
1	1.97	0.67	6.18	1.10	2.36
2	1.97	0.67	6.18	1.10	2.36
3	2.76	0.94	9.09	1.10	2.76
4	2.76	0.94	9.09	1.10	2.76
5	2.76	0.94	9.09	1.10	2.76
6	5.00	1.26	11.22	1.18	3.15
7	5.00	1.26	11.22	1.18	3.15
8	5.00	1.26	11.22	1.18	3.15
9	5.51	1.57	18.70	1.18	3.15
10	5.51	1.57	18.70	1.18	3.15
11	6.70	2.09	20.00	1.18	3.94
12	8.66	2.76	16.26	1.18	3.94
13	8.66	2.76	16.26	1.18	3.94



Size	Filter volume, head+ bowl (l)	Weight (kg)	Shipping length (mm)	Shipping width (mm)	Shipping height (mm)
1	0.1	0.25	260	65	65
2	0.1	0.25	260	65	65
3	0.3	0.6	390	85	85
4	0.3	0.6	390	85	85
5	0.3	0.6	390	85	85
6	1.1	1.7	460	130	125
7	1.1	1.7	460	130	125
8	1.1	1.7	460	130	125
9	2.6	3	705	170	150
10	2.6	3	705	170	150
11	3.5	4.9	720	185	185
12	4.5	8	730	235	220
13	4.5	8	730	235	220

Size	Filter volume, head+ bowl (gal)	Weight (lb)	Shipping length (in)	Shipping width (in)	Shipping height (in)
1	0.03	0.55	10.24	2.56	2.56
2	0.03	0.55	10.24	2.56	2.56
3	0.08	1.32	15.35	3.35	3.35
4	0.08	1.32	15.35	3.35	3.35
5	0.08	1.32	15.35	3.35	3.35
6	0.29	3.75	18.11	5.12	4.92
7	0.29	3.75	18.11	5.12	4.92
8	0.29	3.75	18.11	5.12	4.92
9	0.69	6.61	27.76	6.69	5.91
10	0.69	6.61	27.76	6.69	5.91
11	0.92	10.80	28.35	7.28	7.28
12	1.19	17.64	28.74	9.25	8.66

Size	Filter volume, head+bowl (gal)	Weight (lb)	Shipping length (in)	Shipping width (in)	Shipping height (in)
13	1.19	17.64	28.74	9.25	8.66

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