Filtration

Compressed Air Vacuum Process

Pneutech

ECO-FRIENDLY

Table of Contents

Compressed Air Quality

Classes According To ISO 8573-1

CLASS	SOLID PARTICLES			HUMIDITY AND LIQUID WATER		OIL	
	Maximum number of particles per cubic meter as a function of particle size, d[2]			Pressure dew point		Concentration of total oil[2] (liquid, aerosol and vapour)	
	0,1 µm < d ≤ 0,5 µm	0,5 µm < d ≤ 1,0 µm	1,0 µm < d ≤ 5,0 µm	°C	°F	mg/m3	ppm/w/w
0	As specified by the equipment user or supplier and more stringent than class 1						
1	≤ 20.000	≤ 400	≤ 10	≤ -70	-94	≤ 0,01	≤ 0,008
2	≤ 400.000	≤ 6.000	≤ 100	≤ -40	-40	≤ 0,1	≤ 0,08
3	Not specified	≤ 90.000	≤ 1.000	≤ -20	-4	≤ 1	≤ 0,8
4	Not specified	Not specified	≤ 10.000	≤ +3	38	≤ 5	≤ 4
5	Not specified	Not specified	≤ 100.000	≤ +7	45	Not specified	Not specified
6				≤ ±10	50		
	Mass concentration[2]-C_p			LIQUID WATER CONTENT[2] - C_w			
	mg/m³			g/m³			
6	$0 < C_p \leq 5$					Not specified	Not specified
7	$5 < C_p \leq 10$			$C_w \leq 0,5$		Not specified	Not specified
8	Not specified			$0,5 \leq C_w \leq 5$		Not specified	Not specified
9	Not specified					Not specified	Not specified
X	$C_p > 10$					> 5	> 4

(1) To qualify for a class designation, each size range and particle number within a class shall be met.
(2) At reference conditions: air temperature of 20° C, absolute air pressure of 100 kPa (1 bar), 0 relative water vapour pressure.

www.pneutech.com

Typical Application Requirements

Table shows typical compressed air applications and the classification classes needed to suit the duty. Care should be taken when using this information, as it is for guidance only since individual uses can vary.

APPLICATION	TYPICAL QUALITY CLASSES ISO 8573-1			Cyclone separator	Prefilter	Microfilter	Activated carbon filter	Refrigerated dryer	Adsorption dryer	Sterile filter
	Solids	Water	Oil							
FOOD AND BEVERAGE INDUSTRY										
Control air / drive air	2	4	2	✓	✓	✓		✓		
Sterile air overlay	1	4	1	✓	✓	✓	✓	✓		✓
Conveying air / process air	1	3-4	1	✓	✓	✓	✓		✓	✓
Packaging production and processes, moulding	1	4	2-4	✓	✓	✓		✓		✓
PAPER/TEXTILE/CHEMICAL INDUSTRY										
Control air / drive air	2	4	2	✓	✓	✓		✓		
Conveying air / process air	2	4	1	✓	✓	✓	✓	✓		
Breathing air	1	1	1-3	✓	✓	✓	✓		✓	✓
METAL WORKING/FOUNDRY/GLASS/PLASTICS INDUSTRY										
Control air / drive air	2	4	2	✓	✓	✓		✓		
Blowing air / process air	2	4	1-2	✓	✓	✓	✓	✓		
SURFACE TREATMENT										
Control air	2	4	2	✓	✓	✓		✓		
Powder coating	2	3-4	1	✓	✓	✓	✓	✓	✓	
Blasting	-	4	2	✓	✓	✓		✓	✓	
Coating	2	3-4	1	✓	✓	✓	✓	✓	✓	
Breathing air	1	1	1-3	✓	✓	✓	✓		✓	✓
MECHANICAL / PLANT ENGINEERING										
Control air	2	4	2	✓	✓	✓		✓		
Blowing air	2-3	4	2	✓	✓	✓		✓		
Drive air	2-3	4	3-4	✓	✓	✓		✓		
Process air	2	4	1	✓	✓	✓	✓	✓		
MEASUREMENT AND MONITORING SYSTEMS										
3D measurement systems	1-2	3-4	1	✓	✓	✓	✓	✓	✓	
Measurement and monitoring systems	1-2	3-4	1	✓	✓	✓	✓	✓	✓	
GENERAL PURPOSE AIR										
General workshop air / Cleaning	4	5	4	✓	✓			✓		
Machine tools	3	5	4	✓	✓			✓		
Pneumatic tools	4	4	4	✓	✓			✓		
ELECTRONICS										
Micro electronics manufacture	1	1	1	✓	✓	✓	✓		✓	
MEDICAL AIR										
Medical equipment	1	1	1	✓	✓	✓			✓	✓
Breathing air	1	1	1-3	✓	✓	✓	✓		✓	✓
Dental laboratories	1	1	1	✓	✓	✓			✓	✓

Table in accordance with VDMA recommendation, Guideline 15390-1 (Draft 11/2013).

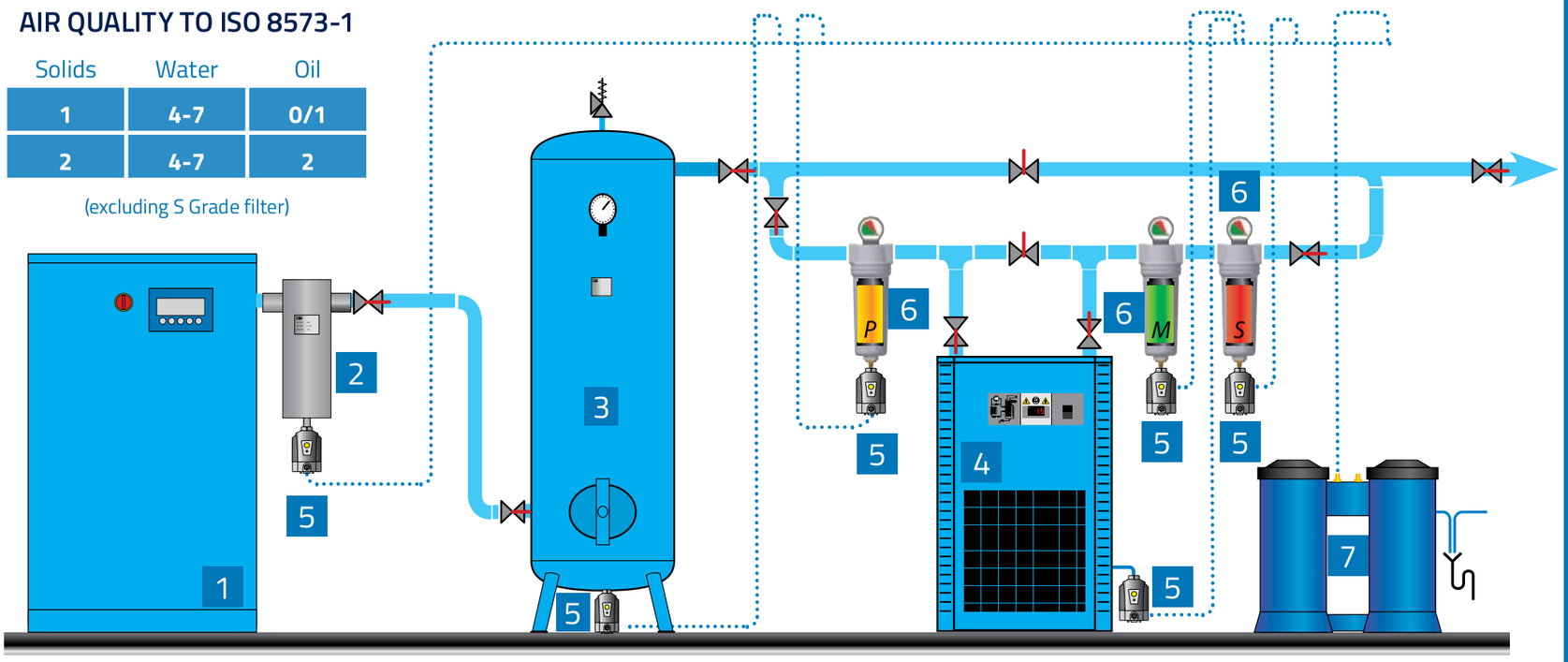
www.pneutech.com

General Compressed Air Layout

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
1	4-7	0/1
2	4-7	2

(excluding S Grade filter)



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

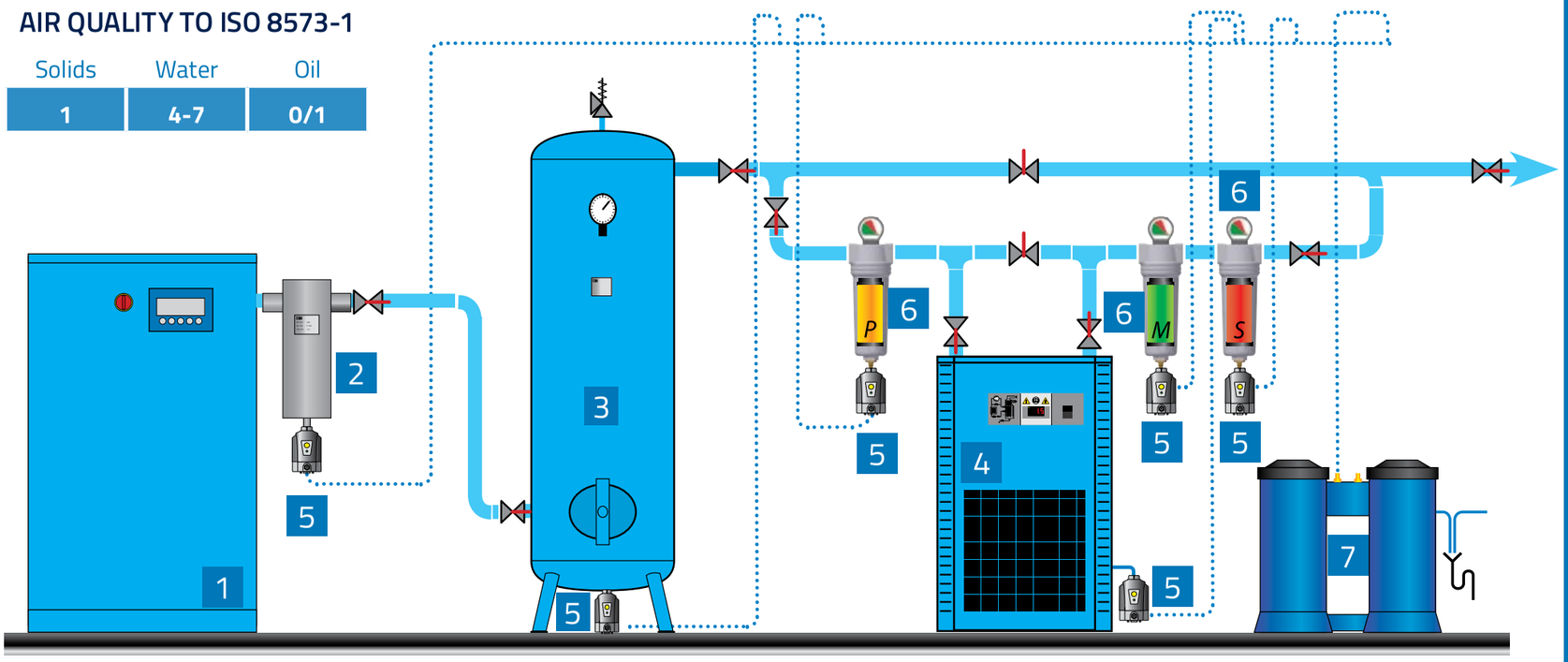
Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

Pneutech
www.pneutech.com

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
1	4-7	0/1



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

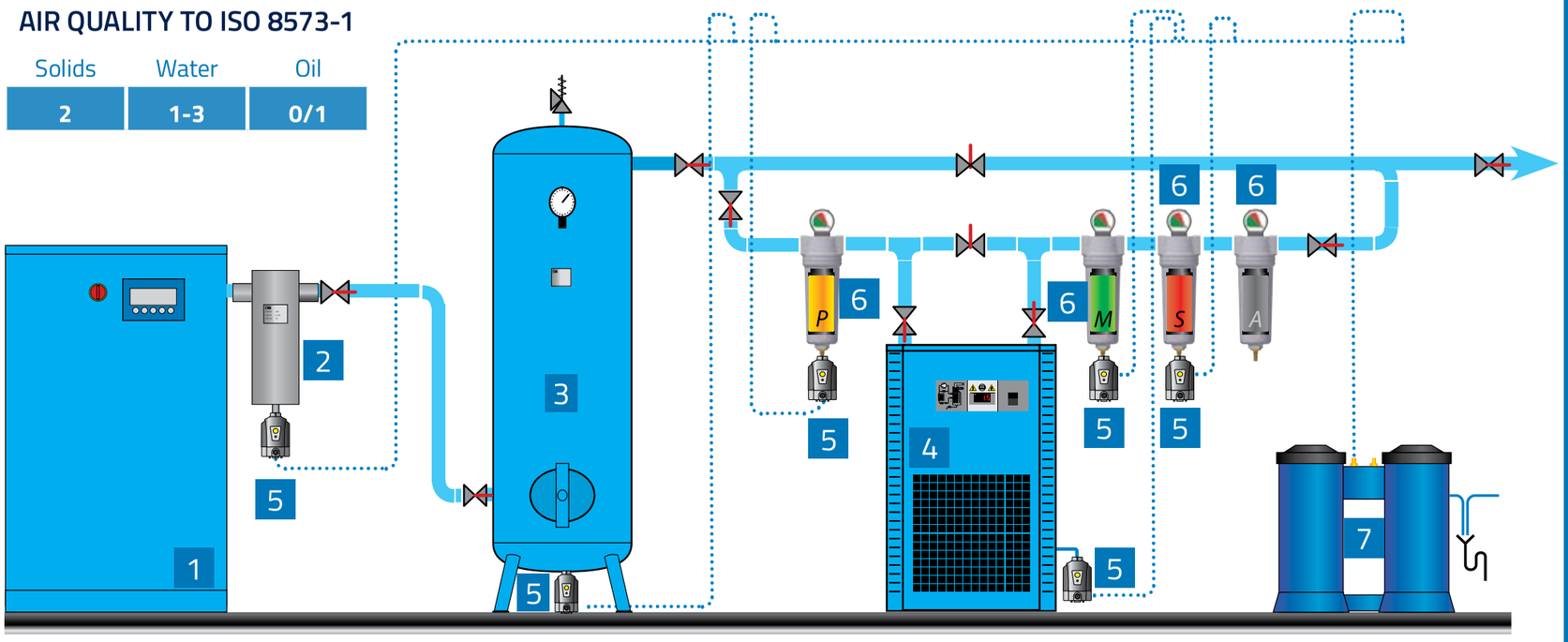
Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

Pneutech
www.pneutech.com

Breathing Air Layout

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
2	1-3	0/1



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

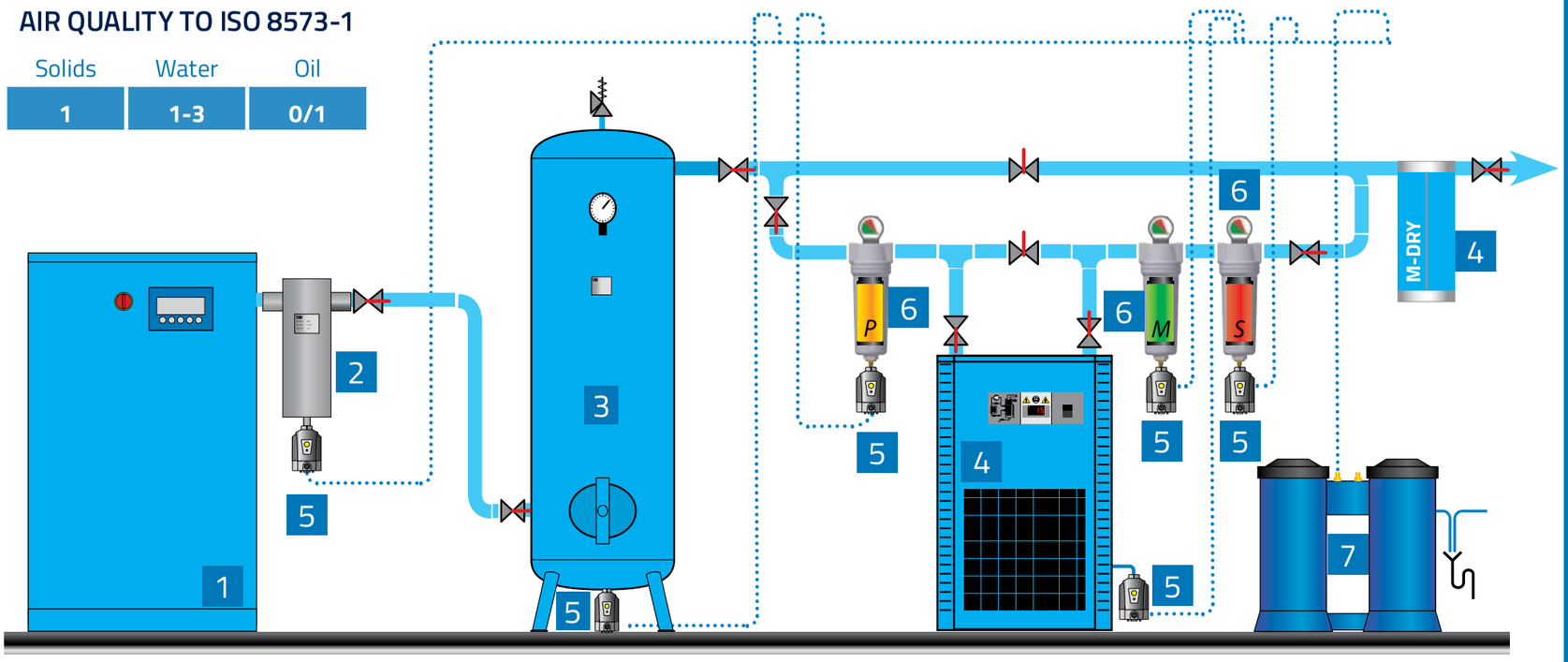
Pneutech
www.pneutech.com

Breathing Air Layout

Instrument Air Layout

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
1	1-3	0/1



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

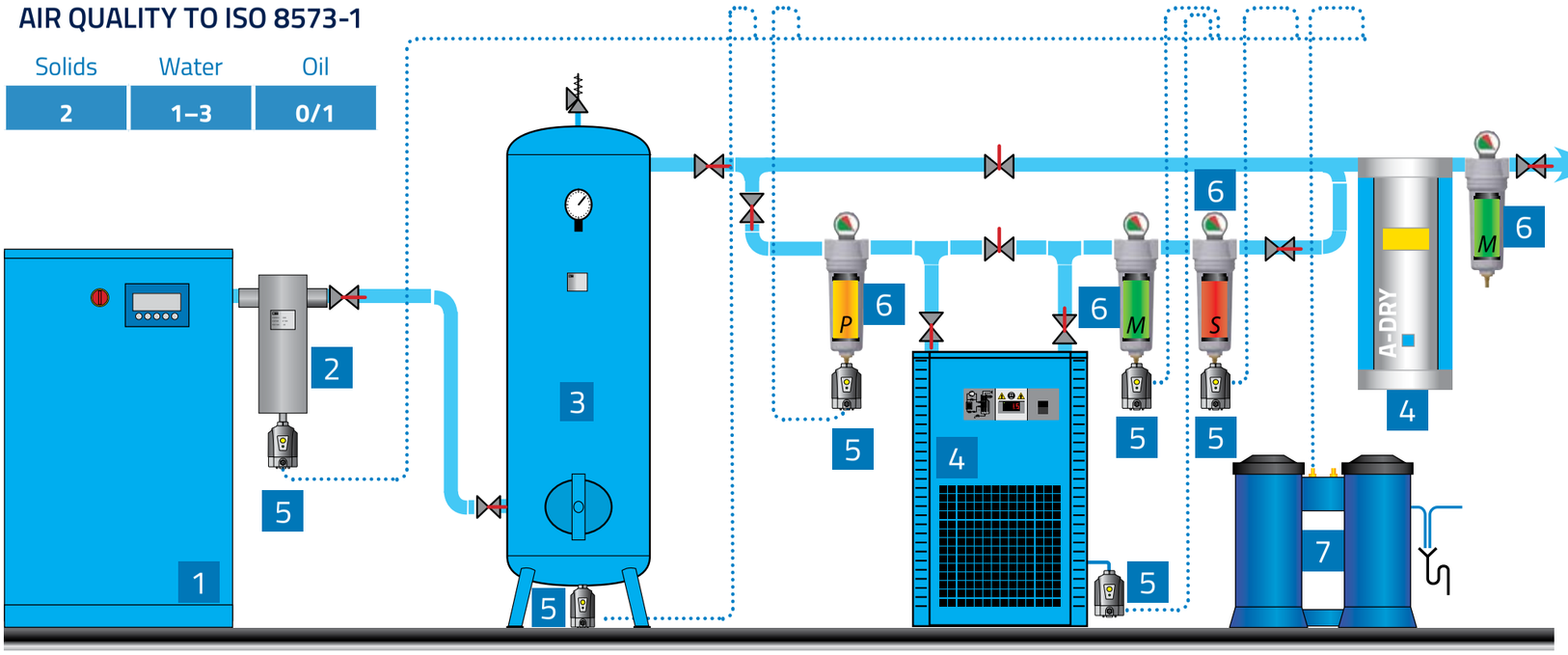
Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

Pneutech
www.pneutech.com

Laser Air Layout

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
2	1–3	0/1



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

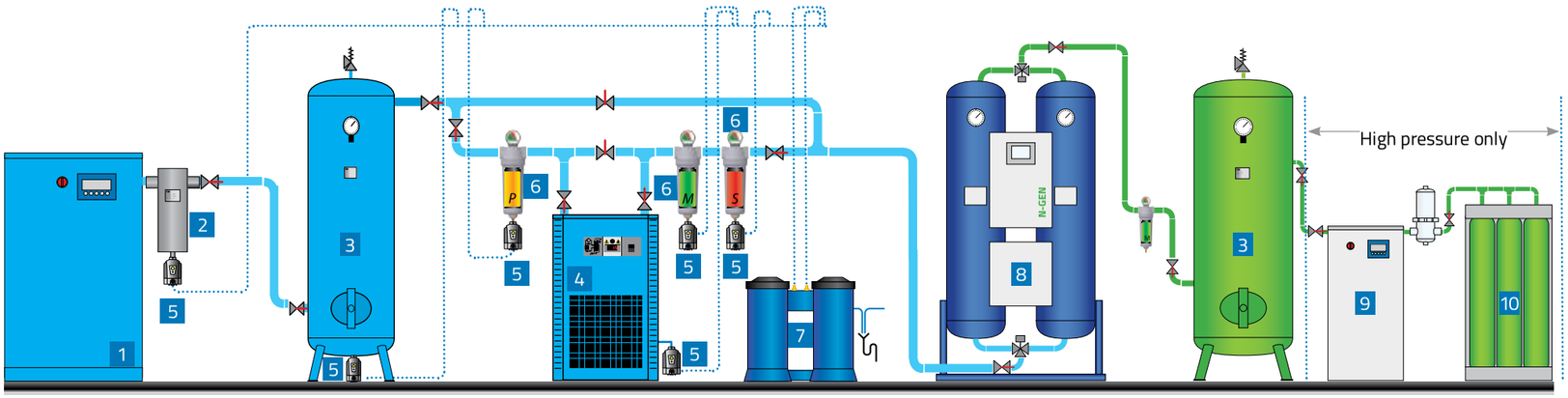
To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

Nitrogen Layout



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

8 NITROGEN GENERATORS

The nitrogen generators extract the available nitrogen in the ambient air from the other gases by applying the Pressure Swing Adsorption (PSA) technology. During the PSA process compressed, cleaned ambient air is led to a molecular sieve bed, which allows the nitrogen to pass through as a product gas, but adsorbs other gases.

The sieve releases the adsorbed gases to the atmosphere, when the outlet valve is closed and the bed pressure returns to ambient pressure. Subsequently the bed will be purged with nitrogen before fresh compressed air will enter for a new production cycle.

In order to guarantee a constant product flow, the nitrogen generators use modules of two molecular sieve beds, which alternatively switch between the adsorption and the regeneration phase.

Under normal operating conditions and with correct maintenance the molecular sieve beds will have an almost indefinite lifetime.

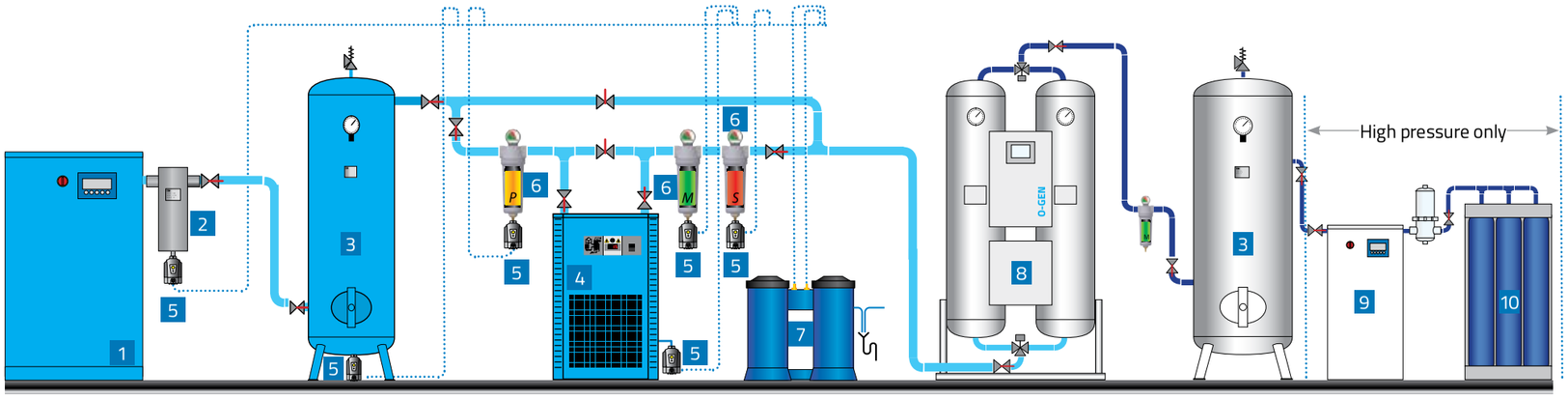
9 BOOSTER COMPRESSOR

If you require compressed air or gas at any pressure between 13 or 350 bar, a high pressure booster compressor is used. It is a piston-style compressor using standard feed pressure from a compressed air system, and increases it to the desired pressure for storage in high-pressure receivers.

10 MANPACK STORAGE

A manpack is simply a collection of smaller gas cylinders for storage of high pressure gasses or liquids. They are a G size bottle and can be supplied in packs of 12 or 15 bottles.

Oxygen Layout



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

8 OXYGEN GENERATORS

The oxygen generators extract the available oxygen in the ambient air from the other gases by applying the Pressure Swing Adsorption (PSA) technology. During the PSA process compressed, cleaned ambient air is led to a molecular sieve bed, which allows the oxygen to pass through as a product gas, but adsorbs other gases.

The sieve releases the adsorbed gases to the atmosphere, when the outlet valve is closed and the bed pressure returns to ambient pressure. Subsequently the bed will be purged with oxygen before fresh compressed air will enter for a new production cycle.

In order to guarantee a constant product flow, oxygen generators use modules of two molecular sieve beds, which alternatively switch between the adsorption and the regeneration phase.

Under normal operating conditions and with correct maintenance the molecular sieve beds will have an almost indefinite lifetime.

9 BOOSTER COMPRESSOR

If you require compressed air or gas at any pressure between 13 or 350 bar, a high pressure booster compressor is used. It is a piston-style compressor using standard feed pressure from a compressed air system, and increases it to the desired pressure for storage in high-pressure receivers.

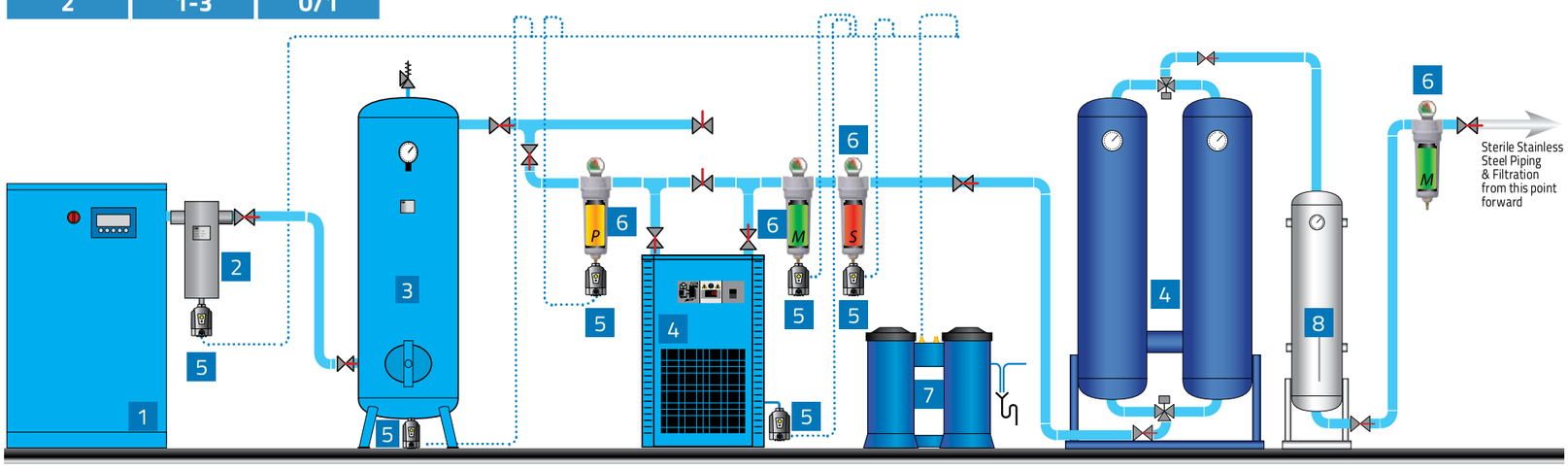
10 MANPACK STORAGE

A manpack is simply a collection of smaller gas cylinders for storage of high pressure gasses or liquids. They are a G size bottle and can be supplied in packs of 12 or 15 bottles.

Sterile & Process Air Layout

AIR QUALITY TO ISO 8573-1

Solids	Water	Oil
2	1-3	0/1



1 COMPRESSOR

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

2 CYCLONE CONDENSATE SEPARATOR

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

3 PRESSURE VESSEL

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

4 COMPRESSED AIR DRYER

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

5 CONDENSATE DRAIN

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

6 FILTER

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

7 OIL/WATER SEPARATOR

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

8 ACTIVATED CARBON TOWER

Activated carbon tower eliminates hydrocarbon vapours and odours from compressed air. Towers are filled with activated carbon adsorbent that adsorbs contaminants onto the surface of its internal pores. Activated carbon towers are used at applications where content of oil vapours needs to be reduced to minimum. Activated carbon towers can be incorporated in existing compressed air systems, significantly minimising the risks of contamination.

Inline Filtration

Aluminium Compressed Air Filters – 16 Bar

AF Series

AF filters are designed for protection of the downstream compressed air system and equipment against defects and other failures.
Required compressed air quality according to standard ISO 8571-1 can be achieved with 5 different grades of filter elements (P, M, S, A, and MS2).
Optional internal and external condensate drains should be used for efficient condensate draining from filter housing.

TECHNICAL DATA										FILTER ELEMENTS				
Filter housing size	Pipe size	Max.oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	**P** prefilter 3 µm	**M** microfilter 0,1 µm	**S** microfilter 0,01 µm	**A** activated carbon	**MS²** molecular sieve
	inch	[bar/psi]	Nm³/h	scfm	A	B	C	D	kg					
AF 0056	3/8"	16/232	60	35	192	88	25	60	0,6	06050 P	06050 M	06050 S	06050 A	-
AF 0076	1/2"	16/232	78	46	192	88	25	60	0,6	07050 P	07050 M	07050 S	07050 A	07050 MS²
AF 0106	3/4"	16/232	120	70	262	88	25	80	0,7	14050 P	14050 M	14050 S	14050 A	14050 MS²
AF 0186	1"	16/232	198	116	264	125	39	100	1,2	12075 P	12075 M	12075 S	12075 A	12075 MS²
AF 0306	1"	16/232	335	197	364	125	39	120	1,6	22075 P	22075 M	22075 S	22075 A	22075 MS²
AF 0476	1 1/2"	16/232	510	300	464	125	39	140	1,9	32075 P	32075 M	32075 S	32075 A	32075 MS²
AF 0706	1 1/2"	16/232	780	459	644	125	39	160	2,6	50075 P	50075 M	50075 S	50075 A	50075 MS²
AF 0946	2"	16/232	1000	588	696	164	50	520	5,7	51090 P	51090 M	51090 S	51090 A	-
AF 1506	2"	16/232	1500	882	943	164	50	770	7,6	76090 P	76090 M	76090 S	76090 A	-
AF 1756	2 1/2"	16/232	1680	990	943	164	50	770	7,3	76090 P	76090 M	76090 S	76090 A	-
AF 2006	3"	16/232	2160	1270	801	242	60	630	14,1	51140 P	51140 M	51140 S	51140 A	-
AF 2406	3"	16/232	2760	1620	998	242	60	780	16,7	75140 P	75140 M	75140 S	75140 A	-
									quality class - solids (ISO 8573-1)	6	2	1	1[3]	1
									residual oil content [mg/m³]	-	<0,1	<0,01	<0,005	-
									quality class - oils (ISO 8573-1)	-	2	1	1	-
									pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,160	60 / 0,870	< 50 / 0,725
									change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [2]	
									filter material	acrylic fibres, cellulose			borosilicate micro fibres	
													activ. carbon	molecular sieve
									pleated version	✓	✓	✓	-	✓
									wrapped version	-	-	-	✓	-
									sintered version	-	-	-	-	-
									min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
									max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113	45 / 113

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	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

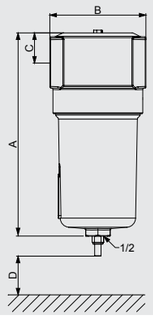
[1] "B" filter element can be cleaned with ultrasonic bath or with back flushing. Intervals of cleaning depends of application. If necessary replace filter element with new one.
[2] Filter elements "A, A², H²", must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
[3] Valid if "S" filter cartridge is installed upstream.
[4] For elements A², H² and MS² it is necessary to reduce the flow according to technical data sheet specification.

Aluminium High Temperature Compressed Air Filters – 10 Bar

AF HT Series

AF HT filter housings have been specifically developed for very high efficient removal of solid particles, water and oil aerosols, from compressed air systems in high temperature applications. To meet the required compressed air quality appropriate filter element must be installed into filter housing. For any other technical gas please contact us or your local dealer.
AF HT filter housing can be used in variety of applications. For applications not listed please contact us or your local dealer.

TECHNICAL DATA										FILTER ELEMENTS			
Filter housing size	Pipe size	Max. oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	N5HT prefilter 5 µm	RHT prefilter 1 µm	MHT microfilter 0,1 µm	SHT microfilter 0,01 µm
	inch	[bar/psi]	Nm³/h	scfm	A	B	C	D	kg				
AF 0056 HT	3/8"	10/145	60	35	192	88	25	60	0,6	06050 N5HT	06050 RHT	06050 MHT	06050 SHT
AF 0076 HT	1/2"	10/145	78	46	192	88	25	60	0,6	07050 N5HT	07050 RHT	07050 MHT	07050 SHT
AF 0106 HT	3/4"	10/145	120	70	262	88	25	80	0,7	14050 N5HT	14050 RHT	14050 MHT	14050 SHT
AF 0186 HT	1"	10/145	198	116	264	125	39	100	1,2	12075 N5HT	12075 RHT	12075 MHT	12075 SHT
AF 0306 HT	1"	10/145	335	197	364	125	39	120	1,6	22075 N5HT	22075 RHT	22075 MHT	22075 SHT
AF 0476 HT	1 1/2"	10/145	510	300	464	125	39	140	1,9	32075 N5HT	32075 RHT	32075 MHT	32075 SHT
AF 0706 HT	1 1/2"	10/145	780	459	644	125	39	160	2,6	50075 N5HT	50075 RHT	50075 MHT	50075 SHT
AF 0946 HT	2"	10/145	1000	588	695	164	50	520	5,7	51090 N5HT	51090 RHT	51090 MHT	51090 SHT
AF 1506 HT	2"	10/145	1500	882	942	164	50	770	7,6	76090 N5HT	76090 RHT	76090 MHT	76090 SHT
AF 1756 HT	2 1/2"	10/145	1680	990	942	164	50	770	7,3	76090 N5HT	76090 RHT	76090 MHT	76090 SHT
AF 2006 HT	3"	10/145	2160	1270	801	242	60	630	14,1	51140 N5HT	51140 RHT	51140 MHT	51140 SHT
AF 2406 HT	3"	10/145	2760	1620	1000	242	60	780	16,7	75140 N5HT	75140 RHT	75140 MHT	75140 SHT



quality class - solids (ISO 8573-1)	-	3	2	1
residual oil content [mg/m³]	-	-	<0,1	<0,01
quality class - oils (ISO 8573-1)	-	-	2	1
pressure drop - new element [mbar / psi]	10 / 0,145	20 / 0,290	80 / 1,160	80 / 1,160
change filter cartridge at pressure drop [mbar / psi]	-	350 / 5,07	350 / 5,07	350 / 5,07
filter material	stainless steel mesh 1.4301	borosilicate micro fibres		
pleated version	-	✓	✓	✓
wrapped version	✓	-	-	-
sintered version	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	120-248	120-248	120-248	120-248

CORRECTION FACTORS									
Operating pressure [bar]	2	3	4	5	6	7	8	9	10
Operating pressure [psi]	29	44	58	72	87	100	115	130	145
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38

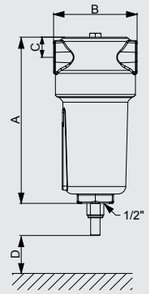
Replace filter element at least every 12 months or follow the instructions for specific filter element. Change the sealing when you disassemble filter housing. Once per year make a visual check of filter housing and make sure there is no visual damage.

Aluminium Compressed Air Filters – 16 Bar

AAF Series

AAF filters are designed for protection of the downstream compressed air system and equipment with lower air flows against defects and other failures.
Required compressed air quality according to standard ISO 8571-1 can be achieved with 4 different grades of filter elements (P, M, S and A).
Optional internal and external condensate drains should be used for efficient condensate draining from filter housing.

TECHNICAL DATA										FILTER ELEMENTS			
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	P prefilter 3 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon
	inch	[bar/psi]	Nm³/h	scfm	A	B	C	D	kg				
AAF 0006	1/8"	16/232	10	6	105	55	14	50	0,23	03528 P	03528 M	03528 S	03528 A
AAF 0016	1/4"	16/232	18	11	125	55	14	70	0,24	05528 P	05528 M	05528 S	05528 A
AAF 0026	1/4"	16/232	25	15	145	73	18	50	0,42	03844 P	03844 M	03844 S	03844 A
AAF 0036	3/8"	16/232	30	18	145	73	18	50	0,42	03844 P	03844 M	03844 S	03844 A
AAF 0046	1/4"	16/232	35	22	189	88	32	60	0,72	06050 P	06050 M	06050 S	06050 A
AAF 0056	3/8"	16/232	60	35	189	88	32	60	0,71	06050 P	06050 M	06050 S	06050 A



quality class - solids (ISO 8573-1)	6	2	1	1 [2]
residual oil content [mg/m³]	-	<0,1	<0,01	<0,005
quality class - oils (ISO 8573-1)	-	2	1	1
pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,160	60 / 0,870
change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [1]
filter material	acrylic fibres, cellulose	borosilicate micro fibres		activated carbon
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113

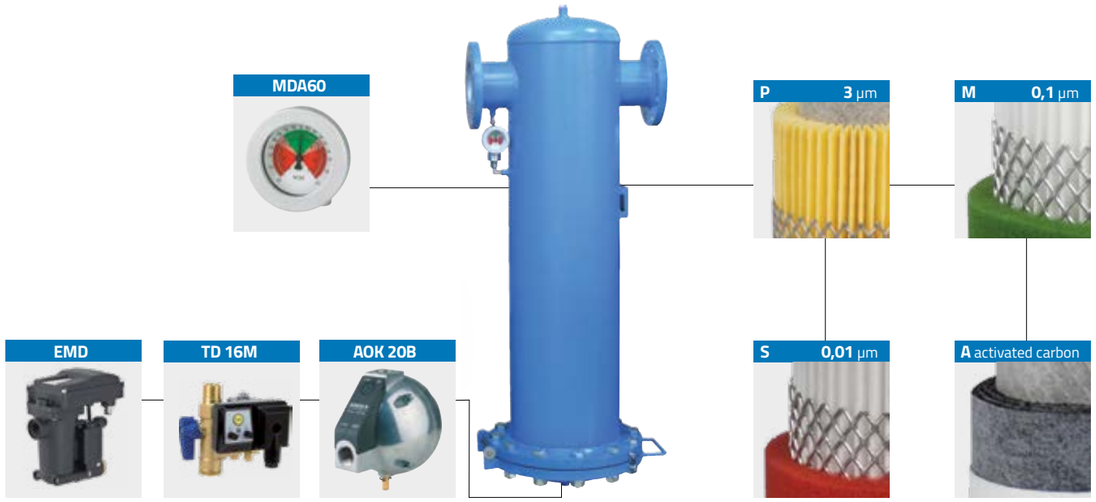
CORRECTION FACTORS															
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	160	174	189	203	218	232
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

[1] Filter elements "A" must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
[2] Valid if "S" filter cartridge is installed upstream.
[3] For size AAF 0006 and 0016 no differential pressure indicator and no internal condensate drain is available, IED not available.

Welded Carbon Steel Compressed Air Filters – 16 Bar

BF Series

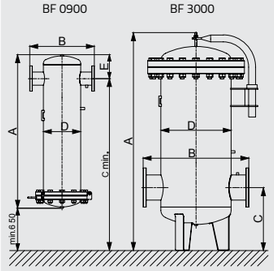
BF filters are designed for protection of the downstream compressed air system and equipment against defects and other failures. Due to their robust welded carbon steel construction, are used for installation in heavy industrial applications with high air flows.



TECHNICAL DATA											FILTER ELEMENTS			
Filter housing size	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]					Mass	P prefilter 3 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon
	DN	bar/psi	Nm³/h	scfm	A	B	C	D	E	kg				
BF 0240	80	16/232	1.680	989	1145	450	1640	219	157	71	1×76090 P	1×76090 M	1×76090 S	1×76090 A
BF 0300	100	16/232	3.150	1.853	1330	560	1780	324	208	110	2×76090 P	2×76090 M	2×76090 S	2×76090 A
BF 0450	125	16/232	4.700	2.765	1330	560	1780	324	206	115	3×76090 P	3×76090 M	3×76090 S	3×76090 A
BF 0600	150	16/232	6.300	3.706	1360	620	1780	368	241	154	4×76090 P	4×76090 M	4×76090 S	4×76090 A
BF 0900	150	16/232	9.400	5.530	1420	680	1810	405	261	195	6×76090 P	6×76090 M	6×76090 S	6×76090 A
BF 1200	200	16/232	12.550	7.382	1850	792	525	508	-	340	8×76090 P	8×76090 M	8×76090 S	8×76090 A
BF 1500	200	16/232	15.700	9.235	1890	918	545	610	-	497	10×76090 P	10×76090 M	10×76090 S	10×76090 A
BF 1800	250	16/232	18.850	11.088	1920	955	555	610	-	367	12×76090 P	12×76090 M	12×76090 S	12×76090 A
BF 2500	250	16/232	25.100	14.765	2030	1042	685	711	-	643	16×76090 P	16×76090 M	16×76090 S	16×76090 A
BF 3000	300	16/232	31.400	18.481	2130	1085	680	711	-	656	20×76090 P	20×76090 M	20×76090 S	20×76090 A

BF 0240
BF 0300
BF 0450
BF 0600
BF 0900

BF 1200
BF 1500
BF 1800
BF 2500
BF 3000



	P prefilter 3 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon
quality class - solids (ISO 8573-1)	6	2	1	1 [3]
residual oil content [mg/m³]	-	<0,1	<0,01	<0,005
quality class - oils (ISO 8573-1)	-	2	1	1
pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,160	60 / 0,870
change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [2]
filter media	acrylic fibres, cellulose	borosilicate micro fibres		activated carbon
pleated version	✓	✓	✓	-
wrapped version	-	-	-	✓
sintered version	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113

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	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

1) "B" filter element can be cleared with ultrasonic bath or with back flushing. Intervals of cleaning depends of application. If necessary replace filter element with new one.
2) Filter elements "A" must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
3) Valid if "S" filter cartridge is installed upstream.
Models BF 0240 to BF 0900 can be produced with optional integrated support legs, which should be noticed at order.

High Pressure Welded Carbon Steel Compressed Air Filters – 25 Bar

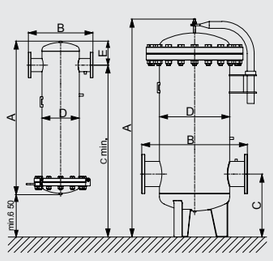
BF HP Series

BF HP filters are designed for protection of the downstream compressed air system and equipment against defects and other failures in high pressure applications. Due to their robust welded carbon steel construction, are used for installation in heavy industrial applications with high air flows.

TECHNICAL DATA										FILTER ELEMENTS			
Filter housing size	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]					P prefilter 3 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon
	DN	bar/psi	Nm³/h	scfm	A	B	C	D	E				
BF HP 0240	80	25/362	1.680	989	1170	450	1660	219	166	1×76090 P	1×76090 M	1×76090 S	1×76090 A
BF HP 0300	100	25/362	3.150	1.853	1330	560	1780	324	208	2×76090 P	2×76090 M	2×76090 S	2×76090 A
BF HP 0450	125	25/362	4.700	2.765	1330	560	1780	324	206	3×76090 P	3×76090 M	3×76090 S	3×76090 A
BF HP 0600	150	25/362	6.300	3.706	1360	620	1780	368	241	4×76090 P	4×76090 M	4×76090 S	4×76090 A
BF HP 0900	150	25/362	9.400	5.530	1420	680	1810	405	261	6×76090 P	6×76090 M	6×76090 S	6×76090 A
BF HP 1200	200	25/362	12.550	7.382	1850	792	525	508	-	8×76090 P	8×76090 M	8×76090 S	8×76090 A
BF HP 1500	200	25/362	15.700	9.235	1890	918	545	610	-	10×76090 P	10×76090 M	10×76090 S	10×76090 A
BF HP 1800	250	25/362	18.850	11.088	1920	655	555	610	-	12×76090 P	12×76090 M	12×76090 S	12×76090 A
BF HP 2500	250	25/362	25.100	14.765	2030	1042	685	711	-	16×76090 P	16×76090 M	16×76090 S	16×76090 A
BF HP 3000	300	25/362	31.400	18.481	2130	1085	680	711	-	20×76090 P	20×76090 M	20×76090 S	20×76090 A

BF HP 0240
BF HP 0300
BF HP 0450
BF HP 0600
BF HP 0900

BF HP 1200
BF HP 1500
BF HP 1800
BF HP 2500
BF HP 3000



	P prefilter 3 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon
quality class - solids (ISO 8573-1)	6	2	1	1 [3]
residual oil content [mg/m³]	-	<0,1	<0,01	<0,005
quality class - oils (ISO 8573-1)	-	2	1	1
pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,160	60 / 0,870
change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [2]
filter media	acrylic fibres, cellulose	borosilicate micro fibres		activated carbon
pleated version	✓	✓	✓	-
wrapped version	-	-	-	✓
sintered version	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113

CORRECTION FACTORS																	
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	12	14	15	18	20	22	25
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	174	203	218	261	290	319	363
Correction factor	0,38	0,5	0,63	0,75	0,88	1	1,13	1,25	1,38	1,63	1,88	2,00	2,37	2,63	2,89	3,25

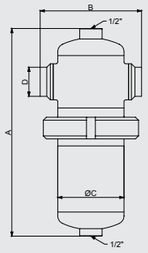
1) "B" filter element can be cleared with ultrasonic bath or with back flushing. Intervals of cleaning depends of application. If necessary replace filter element with new one.
2) Filter elements "A" must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
3) Valid if "S" filter cartridge is installed upstream.
Models BF HP 0240 to BF HP 0900 can be produced with optional integrated support legs, which should be noticed at order.

Welded Stainless Steel Compressed Air Filters – Threaded Connect – 14 Bar

WFIT Series

WFIT welded stainless steel filter housings with threaded connections have been developed for filtration of compressed air as well as many other gasses where the risk for corrosion is very high or where stainless steel housing is required. To meet the required gas quality appropriate filter element must be installed into filter housing.

TECHNICAL DATA									FILTER ELEMENTS				
Filter housing size	Pipe size D	Operat. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]			Mass	PP prefilter 3 µm	PM microfilter 0,1 µm	PS microfilter 0,01 µm	PA activated carbon	CKL-P
	inch	bar/psi	Nm³/h	scfm	A	B	C	kg					
WFIT 005	1/4"	14/203	75	44	204	120	76,1	1,9	0310 PP	0310 PM	0310 PS	0310 PA	0310 CKL-P
WFIT 007	3/8"	14/203	105	62	235	120	76,1	2,1	0410 PP	0410 PM	0410 PS	0410 PA	0410 CKL-P
WFIT 010	1/2"	14/203	150	88	239	121	76,1	2,2	0420 PP	0420 PM	0420 PS	0420 PA	0420 CKL-P
WFIT 018	3/4"	14/203	225	132	263	121	76,1	2,3	0520 PP	0520 PM	0520 PS	0520 PA	0520 CKL-P
WFIT 030	1"	14/203	315	185	278	136	88,9	3,1	0525 PP	0525 PM	0525 PS	0525 PA	0525 CKL-P
WFIT 047	1 1/4"	14/203	420	247	343	155	88,9	3,4	0725 PP	0725 PM	0725 PS	0725 PA	0725 CKL-P
WFIT 070	1 1/2"	14/203	600	353	376	180	114,3	4,6	0730 PP	0730 PM	0730 PS	0730 PA	0730 CKL-P
WFIT 094	2"	14/203	900	530	458	180	114,3	5,4	1030 PP	1030 PM	1030 PS	1030 PA	1030 CKL-P
WFIT 150	2"	14/203	1.260	742	571	180	114,3	6,1	1530 PP	1530 PM	1530 PS	1530 PA	1530 CKL-P
WFIT 175	2 1/2"	14/203	1.680	989	722	226	139,7	11,4	2030 PP	2030 PM	2030 PS	2030 PA	2030 CKL-P
WFIT 200	3"	14/203	2.400	1.413	1004	224	139,7	12	3030 PP	3030 PM	3030 PS	3030 PA	3030 CKL-P
WFIT 240	3"	14/203	3.600	2.119	1029	252	168,3	16	3050 PP	3050 PM	3050 PS	3050 PA	3050 CKL-P
quality class - solids (ISO 8573-1)									6	2	1	1 [1]	-
quality class - oils (ISO 8573-1)									-	2	1	1	-
pressure drop - new element-dry [mbar]									10	50	80	60	-
filter media									acrylic fibres, cellulose	borosilicate micro fibres		borosilicate micro fibres, activ. carbon	-
pleated version									✓	✓	✓	-	-
wrapped version									-	-	-	✓	-
sintered version									-	-	-	-	-
min. operating temperature (°C / °F)									1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)									65 / 149	120 / 248	120 / 248	45 / 113	120 / 248



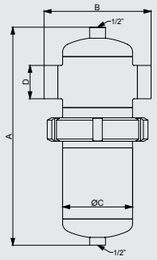
CORRECTION FACTORS													
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	11	12	13	14
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	160	174	189	203
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38	1,50	1,63	1,75	1,88

High Pressure Stainless Steel Compressed Air Filters – 50 Bar

WHFIT Series

WHFIT welded stainless steel filter housings with threaded connections have been developed for filtration of compressed air as well as many other gasses where the risk for corrosion is very high or where stainless steel housing is required. To meet the required gas quality appropriate filter element must be installed into filter housing.

TECHNICAL DATA									FILTER ELEMENTS				
Filter housing size	Pipe size D	Oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]			Mass	PP prefilter 3 µm	PM microfilter 0,1 µm	PS microfilter 0,01 µm	PA activated carbon	CKL-P
	inch	bar/psi	Nm³/h	scfm	A	B	C	kg					
WHFIT 010	1/2"	50/725	150	88	244	121	76,1	2,6	0420 PP	0420 PM	0420 PS	0420 PA	0420 CKL-P
WHFIT 018	3/4"	50/725	225	132	268	121	76,1	2,8	0520 PP	0520 PM	0520 PS	0520 PA	0520 CKL-P
WHFIT 030	1"	50/725	315	185	302	143	88,9	3,4	0525 PP	0525 PM	0525 PS	0525 PA	0525 CKL-P
WHFIT 047	1 1/4"	50/725	420	247	335	160	88,9	3,9	0725 PP	0725 PM	0725 PS	0725 PA	0725 CKL-P
WHFIT 070	1 1/2"	50/725	600	353	402	182	114,3	5,6	0730 PP	0730 PM	0730 PS	0730 PA	0730 CKL-P
WHFIT 094	2"	50/725	900	530	469	180	114,3	6,2	1030 PP	1030 PM	1030 PS	1030 PA	1030 CKL-P
WHFIT 150	2"	50/725	1260	742	606	180	114,3	6,9	1530 PP	1530 PM	1530 PS	1530 PA	1530 CKL-P
WHFIT 200	3"	50/725	2400	1413	1028	228	139,7	11,5	3030 PP	3030 PM	3030 PS	3030 PA	3030 CKL-P
quality class - solids (ISO 8573-1)									6	2	1	1 [1]	-
quality class - oils (ISO 8573-1)									-	2	1	1	-
pressure drop - new elem.-dry [mbar / psi]									10	50	80	60	-
filter media									acrylic fibres, cellulose	borosilicate micro fibres		borosilicate micro fibres, activ. carbon	-
pleated version									✓	✓	✓	-	-
wrapped version									-	-	-	✓	-
sintered version									-	-	-	-	-
min. operating temperature (°C / °F)									1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)									65 / 149	120 / 248	120 / 248	45 / 113	120 / 248



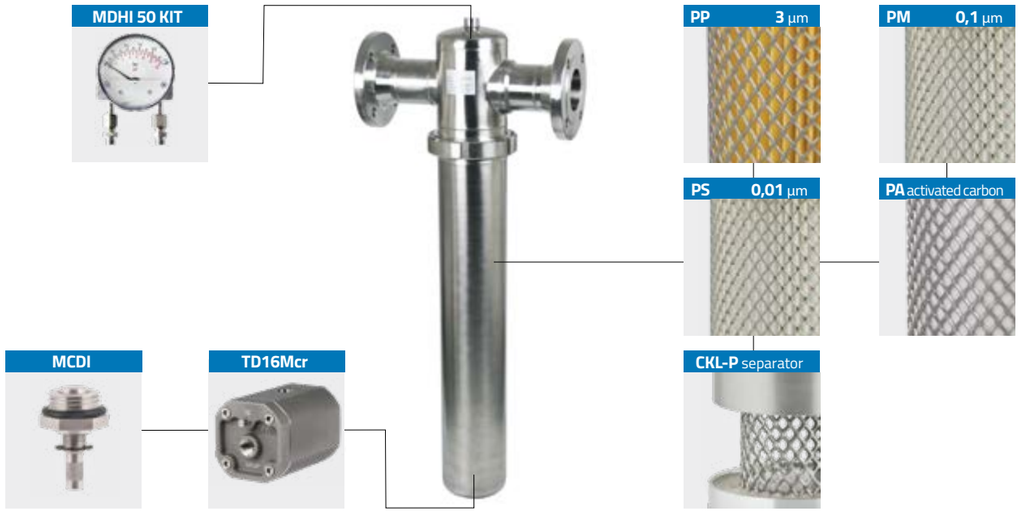
CORRECTION FACTORS										
Operating pressure [bar]	3	5	7	10	13	16	20	30	40	50
Operating pressure [psi]	44	72	100	145	189	232	290	435	580	725
Correction factor	0,50	0,75	1	1,38	1,75	2,13	2,63	3,88	5,13	6,38

[1] Valid if "S" filter cartridge is installed upstream.

Welded Stainless Steel Filters – Flanged Connections – 14 Bar

WFIF Series

WFIF welded stainless steel filter housings with flange connections have been specifically developed for filtration of compressed air as well as many other gasses where the risk for corrosion is very high or where stainless steel housing is required. To meet the required gas quality appropriate filter element must be installed into filter housing.



TECHNICAL DATA											FILTER ELEMENTS				
Filter housing size	Pipe size	Oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]					Mass	PP prefilter 3 µm	PM microfilter 0,1 µm	PS microfilter 0,01 µm	PA activated carbon	CKL-P
		bar/psi	Nm³/h	scfm	A	B	B*	C	E	kg					
WFIF 010	DN15	14/203	150	88	230	195	217	76,1	1/2"	3,5	0420 PP	0420 PM	0420 PS	0420 PA	0420 CKL-P
WFIF 018	DN20	14/203	225	132	263	201	219	76,1	1/2"	4,3	0520 PP	0520 PM	0520 PS	0520 PA	0520 CKL-P
WFIF 030	DN25	14/203	315	185	279	216	244	88,9	1/2"	5,7	0525 PP	0525 PM	0525 PS	0525 PA	0525 CKL-P
WFIF 047	DN32	14/203	420	247	343	235	267	88,9	1/2"	6,6	0725 PP	0725 PM	0725 PS	0725 PA	0725 CKL-P
WFIF 070	DN40	14/203	600	353	391	260	290	114,3	1/2"	8,0	0730 PP	0730 PM	0730 PS	0730 PA	0730 CKL-P
WFIF 094	DN50	14/203	900	530	444	270	304	114,3	1/2"	9,8	1030 PP	1030 PM	1030 PS	1030 PA	1030 CKL-P
WFIF 150	DN50	14/203	1.260	742	571	270	304	114,3	1/2"	11,0	1530 PP	1530 PM	1530 PS	1530 PA	1530 CKL-P
WFIF 175	DN65	14/203	1.680	989	752	295	340	139,7	1/2"	14,2	2030 PP	2030 PM	2030 PS	2030 PA	2030 CKL-P
WFIF 200	DN80	14/203	2.400	1.413	978	306	340	139,7	1/2"	21,2	3030 PP	3030 PM	3030 PS	3030 PA	3030 CKL-P
WFIF 240	DN80	14/203	3.600	2.119	1041	332	368	168,3	1/2"	22,9	3050 PP	3050 PM	3050 PS	3050 PA	3050 CKL-P
WFIF 450	DN100	10/145	5.040	2.966	981	410	-	219,1	1"	55	3x2030 PP	3x2030 PM	3x2030 PS	3x2030 PA	-
WFIF 600	DN100	10/145	6.720	3.955	1288	410	456	219,1	1"	64	3x3030 PP	3x3030 PM	3x3030 PS	3x3030 PA	-
WFIF 900	DN150	10/145	9.600	5.650	1310	480	-	273,0	1"	87	4x3030 PP	4x3030 PM	4x3030 PS	4x3030 PA	-
WFIF 1200	DN150	10/145	13.440	7.910	1351	540	598	323,9	1"	110	6x3030 PP	6x3030 PM	6x3030 PS	6x3030 PA	-
WFIF 1800	DN200	10/145	17.280	10.171	1496	660	-	406,4	1"	200	8x3030 PP	8x3030 PM	8x3030 PS	8x3030 PA	-
WFIF 2000	DN200	10/145	21.120	12.431	1496	660	-	406,4	1"	200	10x3030 PP	10x3030 PM	10x3030 PS	10x3030 PA	-
					quality class - solids (ISO 8573-1)						6	2	1	1 [1]	-
					quality class - oils (ISO 8573-1)						-	2	1	1	-
					pressure drop - new element-dry [mbar]						10	50	80	60	-
					filter media						acrylic fibres, cellulose	borosilicate micro fibres		borosilicate micro fibres, activ. carbon	-
					pleated version						✓	✓	✓	-	-
					wrapped version						-	-	-	✓	-
					sintered version						-	-	-	-	-
					min. operating temperature (°C / °F)						1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
					max. operating temperature (°C / °F)						65 / 149	120 / 248	120 / 248	45 / 113	120 / 248

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

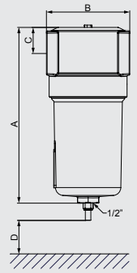
1) Valid if "S" filter cartridge is installed upstream.
B = flange connection E1092-1/11 PN16
B* = flange connection ANSI B16.5 WN Cl 150

Vacuum Pump Protection Filters – 2000 mBar

P-VAC Series

P-VAC filters are designed for protection of vacuum pumps. These filters are optimized for high-efficient removal of solid particles and other contamination from the suction side of vacuum pumps preventing damage to the pump.
Two filtration stages are available for P-VAC filters. Rough prefilter "VACP" removes bulk liquid and large solid particles, while high efficiency microfilter VACM removes very fine impurities which may damage the pump.

TECHNICAL DATA									FILTER ELEMENTS	
Filter model	Pipe size	Free air capacity at atmospheric pressure		Dimensions [mm]				Mass	VACP Prefilter	VACM Microfilter
	inch	Nm³/h	scfm	A	B	C	D	kg		
P-VAC 0056	3/8"	7,5	4,5	192	88	25	60	0,6	06050 VACP	06050 VACM
P-VAC 0076	1/2"	9,8	5,8	192	88	25	60	0,6	07050 VACP	07050 VACM
P-VAC 0106	3/4"	15,0	8,8	262	88	25	80	0,7	14050 VACP	14050 VACM
P-VAC 0186	1"	24,8	14,6	264	125	39	100	1,2	12075 VACP	12075 VACM
P-VAC 0306	1"	41,9	24,7	364	125	39	120	1,6	22075 VACP	22075 VACM
P-VAC 0476	1 1/2"	63,8	37,6	464	125	39	140	1,9	32075 VACP	32075 VACM
P-VAC 0706	1 1/2"	97,5	57,4	644	125	39	160	2,6	50075 VACP	50075 VACM
P-VAC 0946	2"	125	73,6	696	164	50	520	5,7	51090 VACP	51090 VACM
P-VAC 1506	2"	187	110,4	943	164	50	770	7,6	76090 VACP	76090 VACM
P-VAC 1756	2 1/2"	210	123,6	943	164	50	770	7,3	76090 VACP	76090 VACM
P-VAC 2006	3"	270	158,9	801	242	60	630	14,1	51140 VACP	51140 VACM
P-VAC 2406	3"	345	203	998	242	60	780	16,7	75140 VACP	75140 VACM
									pressure drop - new element-dry [mbar / psi]	10 / 0,15	30 / 0,45
									filter media	acrilyc fibres, cellulose	borosilicate micro fibres
									min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35
									max. operating temperature (°C / °F)	65 / 149	65 / 149



CORRECTION FACTORS												
Absolute pressure [bar]	1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0,05	0,02
Absolute pressure [psi]	14,7	13	11,6	10,2	8,7	7,3	5,8	3,3	2,9	1,45	0,73	0,29
Correction factor	1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0,05	0,02

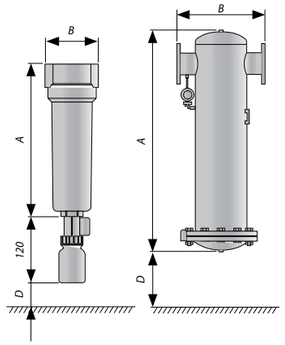
▪ To calculate the correct capacity of a given filter based on actual operating conditions, multiply the nominal flow capacity by the appropriate correction factor.

Medical Vacuum Filters – 2000 mBar

M-VAC Series

M-VAC filters are designed for medical vacuum applications. They are optimized for high-efficient removal of bacterial and other contamination (solids and liquids) from the suction side of vacuum pumps preventing damage to the pump and the potential biological infection of the surrounding environment. Removed liquids are collected in a transparent flask which can be removed for sterilisation.
The efficiency of the installed filter elements exceeds the 0,005 % penetration specified in HTM 2022 for infectious disease units, when tested in accordance with BS 3928.

TECHNICAL DATA								FILTER ELEMENTS
Filter model	Pipe size	Free air capacity at atmospheric pressure		Dimensions [mm]			Mass	
	inch	Nm³/h	scfm	A	B	D	kg	VAC
M-VAC 0056	3/8"	7,5	4	187	88	60	0,7	06050
M-VAC 0076	1/2"	9,8	6	187	88	60	0,7	07050
M-VAC 0106	3/4"	15,0	9	257	88	80	0,8	14050
M-VAC 0186	1"	24,8	15	263	125	100	1,8	12075
M-VAC 0306	1"	41,9	25	363	125	120	2,5	22075
M-VAC 0476	1 1/2"	63,8	38	461	125	140	2,5	32075
M-VAC 0706	1 1/2"	97,5	57	640	125	160	3,2	50075
M-VAC 0946	2"	125	74	684	163	520	5,1	51090
M-VAC 1506	2"	187,5	110	935	163	770	7,1	76090
M-VAC 1756	2 1/2"	210	124	935	163	770	6,9	76090
M-VAC 2006	3"	270	159	795	240	630	12,9	51140
M-VAC 2406	3"	345	203	1000	240	780	14	75140
M-VAC B240	DN80	275	162	1170	450	650	61	1x 76090
M-VAC B300	DN100	394	232	1340	560	650	115	2x 76090
M-VAC B450	DN125	587	345	1340	560	650	123	3x 76090
M-VAC B600	DN150	787	463	1425	620	650	178	4x 76090
				pressure drop - new element-dry [mbar / psi]				30 / 0,45
				filter media				borosilicate micro fibes
				min. operating temperature (°C / °F)				1,5 / 35
				max. operating temperature (°C / °F)				65 / 149



CORRECTION FACTORS												
Absolute pressure [bar]	1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0,05	0,02
Absolute pressure [psi]	14,7	13	11,6	10,2	8,7	7,3	5,8	3,3	2,9	1,45	0,73	0,29
Correction factor	1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0,05	0,02

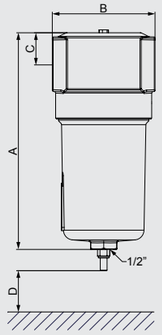
▪ To calculate the correct capacity of a given filter based on actual operating conditions, multiply the nominal flow capacity by the appropriate correction factor.

Silicone-Free Filters – 16 Bar

AFs Series

AFs filters are designed for applications in paint industry. Quantity of substances that could cause impairments in paint wetting applications or cause defects in paint work have been reduced to a minimum.
To meet the required compressed air quality appropriate "paint compatible" filter element must be installed into filter housing.

TECHNICAL DATA									FILTER ELEMENTS	
Filter model	Pipe size	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	Ms Microfilter 0,1 µm	Ss Microfilter 0,01 µm
	inch	Nm³/h	scfm	A	B	C	D	kg		
AFs 0056	3/8"	60	35	192	88	25	60	0,6	06050 Ms	06050 Ss
AFs 0076	1/2"	78	46	192	88	25	60	0,6	07050 Ms	07050 Ss
AFs 0106	3/4"	120	70	262	88	25	80	0,7	14050 Ms	14050 Ss
AFs 0186	1"	198	116	264	125	39	100	1,2	12075 Ms	12075 Ss
AFs 0306	1"	335	197	364	125	39	120	1,6	22075 Ms	22075 Ss
AFs 0476	1 1/2"	510	300	464	125	39	140	1,9	32075 Ms	32075 Ss
AFs 0706	1 1/2"	780	459	644	125	39	160	2,6	50075 Ms	50075 Ss
AFs 0946	2"	1000	588	695	164	50	520	5,7	51090 Ms	51090 Ss
AFs 1506	2"	1500	882	942	164	50	770	7,6	76090 Ms	76090 Ss
AFs 1756	2 1/2"	1680	990	942	164	50	770	7,3	76090 Ms	76090 Ss
AFs 2006	3"	2160	1270	801	242	60	630	14,1	51140 Ms	51140 Ss
AFs 2406	3"	2760	1620	1000	242	60	780	16,7	75140 Ms	75140 Ss
								quality class - solids (ISO 8573-1)	2	1
								quality class - oils (ISO 8573-1)	2	1
								residual oil content	<0,1 mg/m³	<0,01 mg/m³
								pressure drop - new element-dry [mbar / psi]	50/0,725	80 / 1,160
								pressure drop - new element-wet [mbar / psi]	120/1,74	190 / 2,756
								change filter element at pressure drop [mbar / psi]	350 mbar	350 mbar
								filter media	borosilicate micro fibes	borosilicate micro fibes
								pleated version	✓	✓
								wrapped version	-	-
								sintered version	-	-
								min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35
								max. operating temperature (°C / °F)	65 / 149	65 / 149



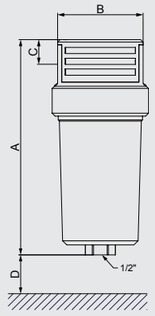
CORRECTION FACTORS																
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	160	174	189	203	218	232
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

Cast Aluminium High Pressure Filters – 50 Bar

HF Series

HF filters are designed for high efficient removal of solid particles, water, oil aerosols, hydrocarbons and other vapours from compressed air systems. To meet the required compressed air quality appropriate filter element (B, P, R, M, S, A) must be installed into filter housing.

TECHNICAL DATA										FILTER ELEMENTS			
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	**P** prefilter 3 µm	**M** microfilter 0,1 µm	**S** microfilter 0,01 µm	**A** activated carbon
	inch	bar/psi	Nm³/h	scfm	A	B	C	D	kg				
HF 007	1/2"	50/725	71	42	250	110	30	80	2,1	HF 6060 P	HF 6060 M	HF 6060 S	HF 6060 A
HF 010	3/4"	50/725	112	66	250	110	30	90	2,1	HF 7060 P	HF 7060 M	HF 7060 S	HF 7060 A
HF 018	1"	50/725	204	120	250	110	30	140	2,1	HF 12060 P	HF 12060 M	HF 12060 S	HF 12060 A
HF 047	1 1/2"	50/725	282	166	535	160	45	260	9,5	HF 22090 P	HF 22090 M	HF 22090 S	HF 22090 A
HF 070	1 1/2"	50/725	400	235	535	160	45	360	9,5	HF 32090 P	HF 32090 M	HF 32090 S	HF 32090 A
HF 094	2"	50/725	494	291	715	160	45	540	12,2	HF 50090 P	HF 50090 M	HF 50090 S	HF 50090 A
HF 150	2"	50/725	799	470	715	160	45	550	12,2	HF 51090 P	HF 51090 M	HF 51090 S	HF 51090 A
HF 200	3"	50/725	2160	1270	862	198	70	620	30,4	HF 51140 P	HF 51140 M	HF 51140 S	HF 51140 A
HF 240	3"	50/725	2760	1620	1010	198	70	780	34,9	HF 75140 P	HF 75140 M	HF 75140 S	HF 75140 A



quality class - solids (ISO 8573-1)	6	2	1	1 [3]
residual oil content [mg/m³]	-	<0,1	<0,01	<0,005
quality class - oils (ISO 8573-1)	-	2	1	1
pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,16	60 / 0,87
change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [2]
filter media	acrylic fibres, cellulose	borosilicate micro fibres		activated carbon
pleated version	✓	✓	✓	-
wrapped version	-	-	-	✓
sintered version	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113

CORRECTION FACTORS										
Operating pressure [bar]	3	5	7	10	13	16	20	30	40	50
Operating pressure [psi]	44	72	100	145	189	232	290	435	580	725
Correction factor	0,50	0,75	1	1,38	1,75	2,13	2,63	3,88	5,13	6,38

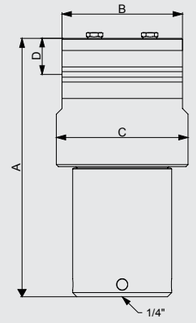
1) B filter element can be cleaned with ultrasonic bath or with back flushing. Intervals of cleaning depends of application. If necessary replace filter element with new one.
2) Filter elements "A", must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
3) Valid if "S" filter cartridge is installed upstream.

Carbon Steel High Pressure Filters – 100, 250, 420 Bar

CHP Series

CHP carbon steel high pressure filters have been specifically developed for high efficient removal of solid particles, water, oil aerosols, hydrocarbons and other vapours from compressed air systems. To meet the required compressed air quality appropriate filter element must be installed into filter housing.

TECHNICAL DATA										FILTER ELEMENTS			
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	**P** prefilter 3 µm	**M** microfilter 0,1 µm	**S** microfilter 0,01 µm	**A** activated carbon
	inch	bar	Nm³/h	scfm	A	B	C	D	kg				
CHP 003	1/4''	100/250/420	40	23,5	182	98	104	30	7,6	CHP 0305 P	CHP 0305 M	CHP 0305 S	CHP 0305 A
CHP 005	3/8''	100/250/420	70	41,2	182	98	104	30	7,6	CHP 0310 P	CHP 0310 M	CHP 0310 S	CHP 0310 A
CHP 007	1/2''	100/250/420	130	76,5	230	118	129	36	15,3	CHP 0420 P	CHP 0420 M	CHP 0420 S	CHP 0420 A
CHP 010	3/4''	100/250/420	195	115	254	118	129	36	16,1	CHP 0520 P	CHP 0520 M	CHP 0520 S	CHP 0520 A
CHP 018	1''	100/250/420	275	162	276	145	158	46	26,5	CHP 0525 P	CHP 0525 M	CHP 0525 S	CHP 0525 A
CHP 030	1 1/4''	100/250/420	380	223	328	145	158	46	28,6	CHP 0725 P	CHP 0725 M	CHP 0725 S	CHP 0725 A
CHP 047	1 1/2''	100/250/420	495	291	385	195	216	65	65,9	CHP 0730 P	CHP 0730 M	CHP 0730 S	CHP 0730 A
CHP 094	2''	100/250/420	715	421	460	195	216	65	71,4	CHP 1030 P	CHP 1030 M	CHP 1030 S	CHP 1030 A



quality class - solids (ISO 8573-1)	6	2	1	1 [3]
residual oil content [mg/m³]	-	<0,1	<0,01	<0,005
quality class - oils (ISO 8573-1)	-	2	1	1
pressure drop - new element [mbar / psi]	10 / 0,145	50 / 0,725	80 / 1,16	60 / 0,87
change filter cartridge at pressure drop [mbar / psi]	350 / 5,07	350 / 5,07	350 / 5,07	6 months [2]
filter media	acrylic fibres, cellulose			activated carbon
pleated version	✓	✓	✓	-
wrapped version	-	-	-	✓
sintered version	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)	65 / 149	65 / 149	65 / 149	45 / 113

CORRECTION FACTORS							
Operating pressure [bar]	7	25	40	64	100	250	420
Operating pressure [psi]	100	362	580	928	1450	3625	6091
Correction factor	1	3	5	8	12	12	12

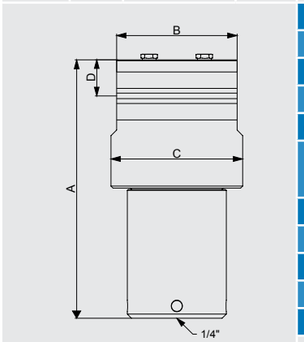
1) B filter element can be cleaned with ultrasonic bath or with back flushing. Intervals of cleaning depends of application. If necessary replace filter element with new one.
2) Filter elements "A", must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
3) Valid if "S" filter cartridge is installed upstream.

Stainless Steel High Pressure Filters – 100, 250, 420 Bar

IHP Series – **Stainless steel 1.4301**-standard

IHP stainless steel high pressure filters are designed for high efficient removal of solid particles, water, oil aerosols, hydrocarbons and other vapours from compressed air systems up to 420 bar.
Required compressed air quality according to standard ISO 8571-1 can be achieved with 5 different grades of filter elements (N5, N25, M, S and A).

TECHNICAL DATA										FILTER ELEMENTS						
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	N5 5 µm	N25 25 µm	R prefilter 1 µm	M microfilter 0,1 µm	S microfilter 0,01 µm	A activated carbon	CKL-IHP
	inch	bar	Nm^3/h	scfm	A	B	C	D	kg							
IHP 003	1/4"	100/250/420	40	23,5	182	98	104	30	7,9	IHP 0305 N5	IHP 0305 N25	IHP 0305 R	IHP 0305 M	IHP 0305 S	IHP 0305 A	CKL-IHP 0305
IHP 005	3/8"	100/250/420	70	41,2	182	98	104	30	7,9	IHP 0310 N5	IHP 0310 N25	IHP 0310 R	IHP 0310 M	IHP 0310 S	IHP 0310 A	CKL-IHP 0310
IHP 007	1/2"	100/250/420	130	76,5	230	118	129	36	15,7	IHP 0420 N5	IHP 0420 N25	IHP 0420 R	IHP 0420 M	IHP 0420 S	IHP 0420 A	CKL-IHP 0420
IHP 010	3/4"	100/250/420	195	115	254	118	129	36	16,6	IHP 0520 N5	IHP 0520 N25	IHP 0520 R	IHP 0520 M	IHP 0520 S	IHP 0520 A	CKL-IHP 0520
IHP 018	1"	100/250/420	275	162	276	145	158	46	27,3	IHP 0525 N5	IHP 0525 N25	IHP 0525 R	IHP 0525 M	IHP 0525 S	IHP 0525 A	CKL-IHP 0525
IHP 030	1 1/4"	100/250/420	380	223	328	145	158	46	29,6	IHP 0725 N5	IHP 0725 N25	IHP 0725 R	IHP 0725 M	IHP 0725 S	IHP 0725 A	CKL-IHP 0725
IHP 047	1 1/2"	100/250/420	495	291	385	195	216	65	67,8	IHP 0730 N5	IHP 0730 N25	IHP 0730 R	IHP 0730 M	IHP 0730 S	IHP 0730 A	CKL-IHP 0730
IHP 094	2"	100/250/420	715	421	460	195	216	65	73,5	IHP 1030 N5	IHP 1030 N25	IHP 1030 R	IHP 1030 M	IHP 1030 S	IHP 1030 A	CKL-IHP 1030
quality class - solids (ISO 8573-1)										-	-	3	2	1	1 [2]	-
residual oil content [mg/m^3]										-	-	-	<0,1	<0,01	<0,005	-
quality class - oils (ISO 8573-1)										-	-	-	2	1	1	-
pressure drop - new element [mbar / psi]										10 / 0,15	10 / 0,15	20 / 0,29	50 / 0,725	80 / 1,16	60 / 0,87	-
change filter cartridge at pressure drop [mbar / psi]										-	-	350 / 5,07	350 / 5,07	350 / 5,07	6 months [1]	-
filter media										stainless steel mesh 1.4301	stainless steel mesh 1.4301	borosilicate micro fibres			activated carbon	-
pleated version										-	-	✓	✓	✓	-	-
wrapped version										✓	✓	-	-	-	✓	-
sintered version										-	-	-	-	-	-	-
min. operating temperature (°C / °F)										1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)										65 / 149	65 / 149	65 / 149	65 / 149	65 / 149	45 / 113	65 / 149



CORRECTION FACTORS							
Operating pressure [bar]	7	25	40	64	100	250	420
Operating pressure [psi]	100	362	580	928	1450	3625	6091
Correction factor	1	3	5	8	12	12	12

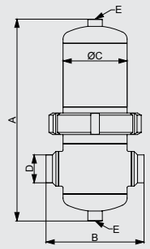
1) Filter elements "A", must be changed periodically to suit application, but at least every 6 months. Activated carbon filters must not operate in oil saturated conditions.
2) Valid if "S" filter cartridge is installed upstream.

Stainless Steel Process Filters – 14 Bar

PF Series

PF process filters are designed for applications in process industry, where the risk for corrosion of compressed air system components is very high.
Required compressed air quality according to standard ISO 8571-1 can be achieved with 7 different grades of filter elements.
PF process filter housing can be used in variety of applications. For applications not listed please contact producer or your local distributor.
For other technical gas please contact producer or your local distributor.
For oil removal, coalescing filter element must be installed and flow direction inside-out must be provided. General arrangement is bowl on the top and filter head on the bottom. Fluid group 1 on request.

TECHNICAL DATA										FILTER ELEMENTS					
Filter housing size	Pipe size D	Oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass	PP prefilter 3 µm	PR prefilter 1 µm	PM microfilter 0,1 µm	PS microfilter 0,01 µm	PA activated carbon	CKL-P
	inch	bar/psi	Nm^3/h	scfm	A	B	C	E	kg						
PF 005	1/4"	14/203	75	44	206	120	76,1	1/4"	1,8	0310 PP	0310 PR	0310 PM	0310 PS	0310 PA	0310 PA
PF 007	3/8"	14/203	105	62	236	120	76,1	1/4"	2,0	0410 PP	0410 PR	0410 PM	0410 PS	0410 PA	0410 PA
PF 010	1/2"	14/203	150	88	239	121	76,1	1/4"	2,1	0420 PP	0420 PR	0420 PM	0420 PS	0420 PA	0420 PA
PF 018	3/4"	14/203	225	132	263	121	76,1	1/4"	2,2	0520 PP	0520 PR	0520 PM	0520 PS	0520 PA	0520 PA
PF 030	1"	14/203	315	185	280	136	88,9	1/4"	3,0	0525 PP	0525 PR	0525 PM	0525 PS	0525 PA	0525 PA
PF 047	1 1/4"	14/203	420	247	343	155	88,9	1/4"	3,4	0725 PP	0725 PR	0725 PM	0725 PS	0725 PA	0725 PA
PF 070	1 1/2"	14/203	600	353	376	180	114,3	1/4"	4,6	0730 PP	0730 PR	0730 PM	0730 PS	0730 PA	0730 PA
PF 094	2"	14/203	900	530	445	180	114,3	1/4"	5,2	1030 PP	1030 PR	1030 PM	1030 PS	1030 PA	1030 PA
PF 150	2"	14/203	1.260	742	572	180	114,3	1/4"	6,0	1530 PP	1530 PR	1530 PM	1530 PS	1530 PA	1530 PA
PF 175	2 1/2"	14/203	1.680	989	736	226	139,7	1/4"	9,6	2030 PP	2030 PR	2030 PM	2030 PS	2030 PA	2030 PA
PF 200	3"	14/203	2.400	1.413	979	226	139,7	1/4"	13,7	3030 PP	3030 PR	3030 PM	3030 PS	3030 PA	3030 PA
PF 240	3"	14/203	3.600	2.119	1041	256	168,3	1/4"	18,5	3050 PP	3050 PR	3050 PM	3050 PS	3050 PA	3050 PA
PF 450	DN100	10/145	5.040	2.966	981	410	219,1	1"	56	3x2030 PP	3x2030 PR	3x2030 PM	3x2030 PS	3x2030 PA	-
PF 600	DN100	10/145	6.720	3.955	1240	410	219,1	1"	60	3x3030 PP	3x3030 PR	3x3030 PM	3x3030 PS	3x3030 PA	-
PF 900	DN150	10/145	9.600	5.650	1311	480	273,0	1"	90	4x3030 PP	4x3030 PR	4x3030 PM	4x3030 PS	4x3030 PA	-
PF 1200	DN150	10/145	13.440	7.910	1330	540	323,9	1"	112	6x3030 PP	6x3030 PR	6x3030 PM	6x3030 PS	6x3030 PA	-
PF 1800	DN200	10/145	17.280	10.171	1496	660	406,4	1"	201	8x3030 PP	8x3030 PR	8x3030 PM	8x3030 PS	8x3030 PA	-
PF 2000	DN200	10/145	21.120	12.431	1496	660	406,4	1"	202	10x3030 PP	10x3030 PR	10x3030 PM	10x3030 PS	10x3030 PA	-
quality class - solids (ISO 8573-1)										6	3	2	1	1 [1]	-
quality class - oils (ISO 8573-1)										-	-	2	1	1	-
pressure drop - new element-dry [mbar]										10	20	50	80	60	-
filter media										acrylic fibres, cellulose		borosilicate micro fibres		borosilicate micro fibres, activ. carbon	-
pleated version										✓	✓	✓	✓	-	-
wrapped version										-	-	-	-	✓	-
sintered version										-	-	-	-	-	-
min. operating temperature (°C / °F)										1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
max. operating temperature (°C / °F)										65 / 149	120 / 248	120 / 248	120 / 248	45 / 113	120 / 248



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

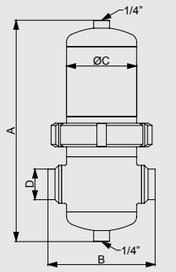
1) Valid if "S" filter cartridge is installed upstream.

High Pressure Stainless Steel Process Filters – 50 Bar

HPF Series – Stainless steel 1.4404-standard

HPF process filters are designed for high pressure applications in process industry, where the risk for corrosion of compressed air system components is very high.
Required compressed air quality according to standard ISO 8571-1 can be achieved with 9 different grades of filter elements.
HPF process filter housing can be used in variety of applications. For applications not listed please contact producer or your local distributor.
For other technical gas please contact producer or your local distributor.
For oil removal, coalescing filter element must be installed and flow direction inside-out must be provided. General arrangement is bowl on the top and filter head on the bottom.
Fluid group 1 on request.

TECHNICAL DATA									FILTER ELEMENTS					
Filter housing size	Pipe size D	Oper. press.	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]			Mass	PP prefilter 3 µm	PR prefilter 1 µm	PM microfilter 0,1 µm	PS microfilter 0,01 µm	PA activated carbon	CKL-P
	inch	bar/psi	Nm³/h	scfm	A	B	C	kg						
HPF 010	1/2"	50/725	150	88	243	121	76,1	2,5	0420 PP	0420 PR	0420 PM	0420 PS	0420 PA	0420 CKL-P
HPF 018	3/4"	50/725	225	132	267	129	76,1	2,7	0520 PP	0520 PR	0520 PM	0520 PS	0520 PA	0520 CKL-P
HPF 030	1"	50/725	315	185	286	143	88,9	3,4	0525 PP	0525 PR	0525 PM	0525 PS	0525 PA	0525 CKL-P
HPF 047	1 1/4"	50/725	420	247	336	160	88,9	3,9	0725 PP	0725 PR	0725 PM	0725 PS	0725 PA	0725 CKL-P
HPF 070	1 1/2"	50/725	600	353	400	180	114,3	5,6	0730 PP	0730 PR	0730 PM	0730 PS	0730 PA	0730 CKL-P
HPF 094	2"	50/725	900	530	481	180	114,3	9,2	1030 PP	1030 PR	1030 PM	1030 PS	1030 PA	1030 CKL-P
HPF 150	2"	50/725	1260	742	607	180	114,3	10,9	1530 PP	1530 PR	1530 PM	1530 PS	1530 PA	1530 CKL-P
HPF 200	3"	50/725	2400	1413	1018	228	139,7	11,5	3030 PP	3030 PR	3030 PM	3030 PS	3030 PA	3030 CKL-P
									quality class - solids (ISO 8573-1)		6	3	2	1	1 [1]	-
									quality class - oils (ISO 8573-1)		-	-	2	1	1	-
									pressure drop - new element-dry [mbar]		10	20	50	80	60	-
									filter media		acrylic fibres, cellulose		borosilicate micro fibres		borosilicate micro fibres, activ. carbon	-
									pleated version		✓	✓	✓	✓	-	-
									wrapped version		-	-	-	-	✓	-
									sintered version		-	-	-	-	-	-
									min. operating temperature (°C / °F)		1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35
									max. operating temperature (°C / °F)		65 / 149	120 / 248	120 / 248	120 / 248	45 / 113	120 / 248



CORRECTION FACTORS										
Operating pressure [bar]	3	5	7	10	13	16	20	30	40	50
Operating pressure [psi]	44	72	100	145	189	232	290	435	580	725
Correction factor	0,50	0,75	1	1,38	1,75	2,13	2,63	3,88	5,13	6,38

1) Valid if "S" filter cartridge is installed upstream.

Stainless Steel Process Filters For Liquids – 10 Bar

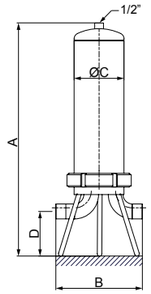
PFL Series

PFL process filter housings have been specifically developed for liquid filtration applications.
To meet the required liquid quality, appropriate filter element must be installed into filter housing.
For any other technical gas/ liquid, please contact us or your local dealer.
PFL process filter housing can be used in variety of applications. For applications not listed please contact producer or your local dealer.

TECHNICAL DATA									
Filter housing size	Pipe size	Operating pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass
	inch	bar/psi	l/min	gpm	A	B	C	D	kg
PFL 003	3/8"	10/145	3	0,8	270	110	76,1	90	1,2
PFL 008	3/8"	10/145	8	2,1	330	110	76,1	90	1,4
PFL 012	1"	10/145	12	3,2	402	220	114,3	105	4,4
PFL 025	1"	10/145	25	6,6	540	220	114,3	105	5,1
PFL 050	1"	10/145	50	13,2	785	220	114,3	105	6,4
PFL 075	1"	10/145	75	19,8	1.029	220	114,3	105	7,8
PFL 080	1 1/2"	10/145	80	21,1	680	320	168,3	192	16
PFL 150	1 1/2"	10/145	150	39,6	930	320	168,3	192	18
PFL 225	1 1/2"	10/145	225	59,4	1.200	320	168,3	192	20
PFL 250	2"	10/145	250	66	960	400	219,1	165	24
PFL 375	2"	10/145	375	99	1.210	400	219,1	165	27
PFL 400*	2 1/2"	10/145	400	106	980	500	323,9	175	36
PFL 600*	3"	10/145	600	159	1.230	500	323,9	175	41

CORRECTION FACTORS										
Operating pressure [bar]	2	3	4	5	6	7	8	9	10
Operating pressure [psi]	29	44	58	72	87	100	115	130	145
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38

Flow capacity based on water.
Standard is BSP pipe connection, other pipe connection on request.
* Max. operating pressure for liquids is 7 bar; 3 bar for saturated steam.



Stainless Steel Process Filters For Liquids

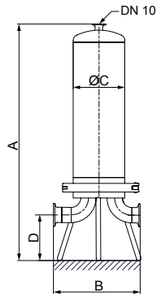
SFL Series

SFL stainless steel sterile filter housings have been specifically developed for liquid filtration applications.
To meet the required liquid purity, appropriate filter element must be installed into filter housing.
For any other technical gas/liquid, please contact us or your local dealer.
SFL sterile filter housing can be used in variety of applications. For applications not listed please contact us or your local dealer.

TECHNICAL DATA									
Filter housing size	Pipe size	Operating pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass
	inch	bar/psi	l/min	gpm	A	B	C	D	kg
SFL 003	DN10	10/145	3	0,8	260	110	76,1	90	1,2
SFL 008	DN10	10/145	8	2,1	323	110	76,1	90	1,4
SFL 012	DN25	10/145	12	3,2	396	220	114,3	105	4,4
SFL 025	DN25	10/145	25	6,6	530	220	114,3	105	5,1
SFL 050	DN25	10/145	50	13,2	775	220	114,3	105	6,4
SFL 075	DN25	10/145	75	19,8	1.019	220	114,3	105	7,8
SFL 080	DN40	10/145	80	21,1	680	320	168,3	192	16
SFL 150	DN40	10/145	150	39,6	930	320	168,3	192	18
SFL 225	DN40	10/145	225	59,4	1.200	320	168,3	192	20
SFL 250	DN50	10/145	250	66	960	400	219,1	165	24
SFL 375	DN50	10/145	375	99	1.210	400	219,1	165	27
SFL 400*	DN65	10/145	400	106	980	500	323,9	175	36
SFL 600*	DN65	10/145	600	159	1.230	500	323,9	175	41

CORRECTION FACTORS									
Operating pressure [bar]	2	3	4	5	6	7	8	9	10
Operating pressure [psi]	29	44	58	72	87	100	115	130	145
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38

Flow capacity based on water.
Standard is BSP pipe connection, other pipe connection on request.
* Max. operating pressure for liquids is 7 bar; 3 bar for saturated steam.

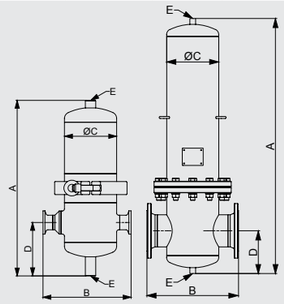


Stainless Steel Sterile Filters – 10 Bar

SF Series

SF stainless steel sterile filters are designed for high-efficient sterile filtration of compressed air, process air and technical gasses. SF sterile filters provide high-efficient removal of sub-micron particles down to 0,01µm including microorganisms (bacteria). Filter housing surface is polished down to grade Ra0,8.
Required compressed air quality according to standard ISO 8571-1 can be achieved with appropriate filter element.
For any other technical gas please contact producer or your local distributor.
Fluid group 1 on request.

TECHNICAL DATA											FILTER ELEMENTS
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]					Mass	**VSF** sterile 0,01 µm
	inch	bar/psi	Nm³/h	scfm	A	B	C	D	E	kg	
SF 0006	DN10	10/145	75	44	220	130	76,1	74	1/8"	1,6	1 x 0310 VSF
SF 0009	DN10	10/145	105	62	248	130	76,1	74	1/8"	1,6	1 x 0410 VSF
SF 0012	DN15	10/145	150	88	256	128	76,1	78	1/8"	1,8	1 x 0420 VSF
SF 0018	DN15	10/145	225	132	288	128	76,1	78	1/8"	1,8	1 x 0520 VSF
SF 0032	DN25	10/145	315	185	315	180	114,3	99	1/4"	3,1	1 x 0530 VSF
SF 0048	DN32	10/145	600	353	368	181	114,3	90	1/4"	3,4	1 x 0730 VSF
SF 0072	DN40	10/145	900	530	449	174	114,3	65	1/4"	3,6	1 x 1030 VSF
SF 0108	DN50	10/145	1.260	742	591	188	114,3	110	1/4"	4,9	1 x 1530 VSF
SF 0144	DN65	10/145	1.680	989	741	205	139,7	136	1/4"	8,4	1 x 2030 VSF
SF 0192	DN80	10/145	2.400	1.413	1014	203	139,7	136	1/4"	10,2	1 x 3030 VSF
SF 0432	DN100	10/145	5.040	2.966	1005	410	219,1	183	1/2"	44	3 x 2030 VSF
SF 0576	DN100	10/145	6.720	3.955	1266	410	219,1	183	1/2"	45	3 x 3030 VSF
SF 0768	DN150	10/145	9.600	5.650	1337	480	273	267	1/2"	70	4 x 3030 VSF
SF 1152	DN150	10/145	13.440	7.910	1331	540	323,9	267	1"	80	6 x 3030 VSF
SF 1536	DN200	10/145	17.200	10.124	1496	660	406,4	306	1"	200	8 x 3030 VSF
SF 1920	DN200	10/145	21.120	12.431	1496	660	406,4	306	1"	201	10 x 3030 VSF



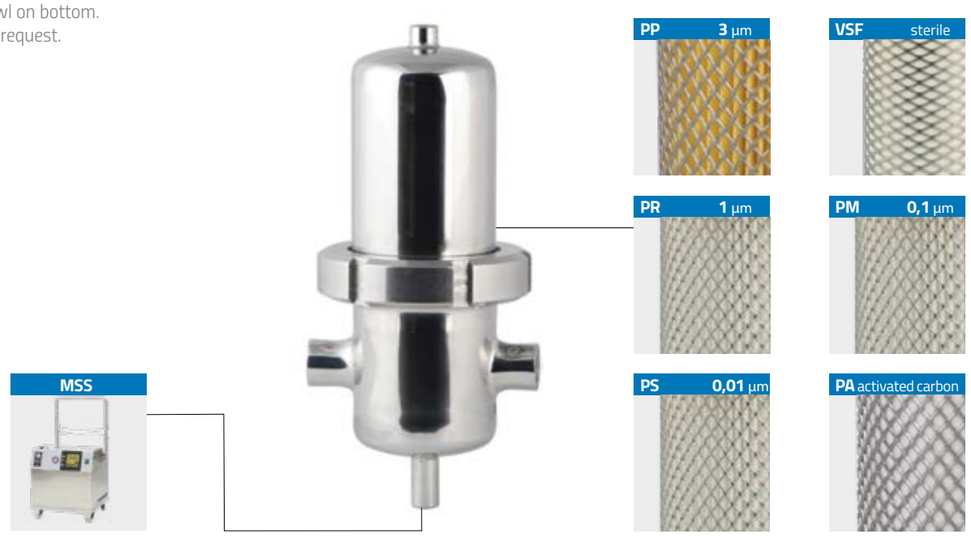
quality class - solids (ISO 8573-1)	1
quality class - oils (ISO 8573-1)	-
pressure drop - new element (dry) [mbar / psi]	80/1,160
pressure drop - new element (wet) [mbar / psi]	190/2,756
filter media	Borosilicate micro fibres
pleated version	-
wrapped version	✓
sintered version	-
min. operating temperature (°C / °F)	-20 / -4
max. operating temperature (°C / °F)	150 / 302

CORRECTION FACTORS									
Operating pressure [bar]	2	3	4	5	6	7	8	9	10
Operating pressure [psi]	29	44	58	72	87	100	115	130	145
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38

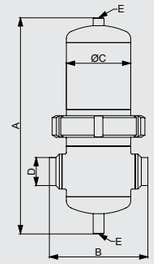
Stainless Steel Sterile Filters – 14 Bar

SPF Series

SPF stainless steel sterile filter housings have been specifically developed for applications in process industry, where the risk for corrosion of compressed air system components is very high. To meet the required compressed air quality appropriate filter element (Sterile filter cartridge) must be installed into filter housing.
For any other technical gas please contact us or your local dealer.
SPF process filter housing can be used in variety of applications. For applications not listed please contact us or your local dealer.
For oil removal, coalescing filter element must be installed and flow direction inside-out must be provided. General arrangement is filter head on top and filter bowl on bottom.
Fluid group 1 on request.



TECHNICAL DATA										FILTER ELEMENTS					
Filter housing size	Pipe size D	Oper. press.	Flow rate at 7 bar(g), 20 °C		DImensions [mm]				Mass	**PP** prefilter 3 µm	**PR** prefilter 1 µm	**PM** microfilter 0,1 µm	**PS** microfilter 0,01 µm	**PA** activated carbon	**VSF** sterile 0,01 µm
	inch	bar/psi	Nm³/h	scfm	A	B	C	E	kg						
SPF 005	1/4"	14/203	75	44	225	120	76,1	1/8"	1,9	0310 PP	0310 PR	0310 PM	0310 PS	0310 PA	0310 VSF
SPF 007	3/8"	14/203	105	62	251	120	76,1	1/8"	2,0	0410 PP	0410 PR	0410 PM	0410 PS	0410 PA	0410 VSF
SPF 010	1/2"	14/203	150	88	258	121	76,1	1/8"	2,1	0420 PP	0420 PR	0420 PM	0420 PS	0420 PA	0420 VSF
SPF 018	3/4"	14/203	225	132	282	121	76,1	1/8"	2,3	0520 PP	0520 PR	0520 PM	0520 PS	0520 PA	0520 VSF
SPF 030	1"	14/203	315	185	299	136	88,9	1/8"	3,1	0525 PP	0525 PR	0525 PM	0525 PS	0525 PA	0525 VSF
SPF 047	1 1/4"	14/203	420	247	359	155	88,9	1/8"	3,4	0725 PP	0725 PR	0725 PM	0725 PS	0725 PA	0725 VSF
SPF 070	1 1/2"	14/203	600	353	395	180	114,3	1/4"	4,7	0730 PP	0730 PR	0730 PM	0730-PS	0730 PA	0730 VSF
SPF 094	2"	14/203	900	530	464	180	114,3	1/4"	5,3	1030 PP	1030 PR	1030 PM	1030 PS	1030 PA	1030 VSF
SPF 150	2"	14/203	1260	742	592	180	114,3	1/4"	6,0	1530 PP	1530 PR	1530 PM	1530 PS	1530 PA	1530 VSF
SPF 175	2 1/2"	14/203	1680	989	743	226	139,7	1/4"	11,4	2030 PP	2030 PR	2030 PM	2030 PS	2030 PA	2030 VSF
SPF 200	3"	14/203	2400	1413	995	226	139,7	1/4"	12	3030 PP	3030 PR	3030 PM	3030 PS	3030 PA	3030 VSF
SPF 240	3"	14/203	3600	2119	1029	256	168,3	1/4"	18	3050 PP	3050 PR	3050 PM	3050 PS	3050 PA	3050 VSF



quality class - solids (ISO 8573-1)	6	3	2	1	1 [1]	1
quality class - oils (ISO 8573-1)	-	-	2	1	1	-
pressure drop - new element-dry [mbar]	10	20	50	80	60	80
filter media	acrylic fibres, cellulose	borosilicate micro fibres			borosilicate micro fibres, activ. carbon	borosilicate micro fibres
pleated version	✓	✓	✓	✓	-	-
wrapped version	-	-	-	-	✓	✓
sintered version	-	-	-	-	-	-
min. operating temperature (°C / °F)	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	1,5 / 35	-20 / -4
max. operating temperature (°C / °F)	65 / 149	120 / 248	120 / 248	120 / 248	45 / 113	150 / 302

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

1) Valid if "S" filter cartridge is installed upstream.

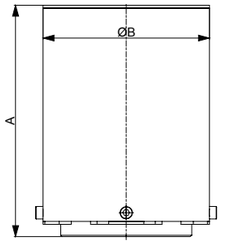
Stainless Steel Air Venting Filters

AV Series

AV stainless steel filter housings are designed to remove impurities from air which is being feed or exhausted from tank during changing of liquid level.
To meet the required air quality appropriate filter element (typically AVF filtration grade) must be installed into filter housing.
AV filter housing is also designed for sterilisation. Before use, if needed for the application, sterilize the filters.

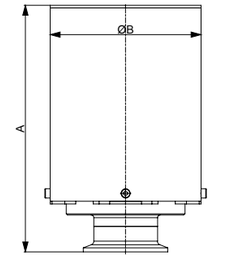
Sizes

Filter housing model	Connection DIN 11851	Flow rate	Dimensions [mm]		Mass	Filter element type
	DN	Nm³/h	A	ø B	kg	
AV 006	32	9	110	88,9	1,2	0310 AVF
AV 027	40	25	160	114,3	2,1	0525 AVF
AV 032	50	40	165	114,3	1,9	0530 AVF
AV 072	50	110	290	114,3	2,6	1030 AVF
AV 144	80	210	550	168,3	7,3	2030 AVF
AV 192	80	310	820	168,3	9,5	3030 AVF



Sizes – Tri-clamp Connections

Filter housing model	Connection ISO 1127	Flow rate	Dimensions [mm]		Mass	Filter element type
		Nm³/h	A	ø B	kg	
AV 006	DN40 (1 1/2")	9	126	88,9	1,2	0310 AVF
AV 027	DN40 (1 1/2")	25	179	114,3	2,4	0525 AVF
AV 032	DN50 (2")	40	181	114,3	2,0	0530 AVF
AV 072	DN50 (2")	110	308	114,3	2,7	1030 AVF
AV 144	DN80 (3")	210	568	168,3	7,7	2030 AVF
AV 192	DN80 (3")	310	812	168,3	12,5	3030 AVF



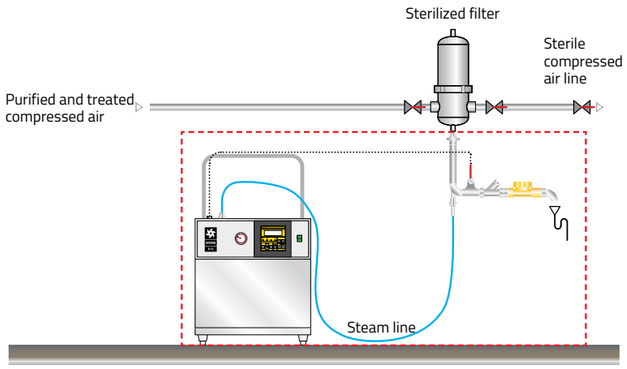
Mobile Steam Sterilizer – 3.6 Bar

MSS

Compressed air piping with high temperature and humidity is a suitable environment for microbial growth. In order to stop microbial activity, filters have to be sterilized. Sterilization can be done in place or in the autoclave.
To perform autoclave, sterilization filters need to be removed from the system and due to septic conditions in the atmosphere it is difficult to prevent contamination during re-assembly of the installation.
Sterilization in place (SIP) ensures much better results and is more common in the process industry. Steam sterilization is an effective method to stop microbial activity. "Mobile Steam Sterilizer" is designed for easier, cheaper and faster SIP. MSS can be easily connected to any part of installation where sterilization is required. After filter sterilization is completed MSS can simply be disconnected and transported to another location.

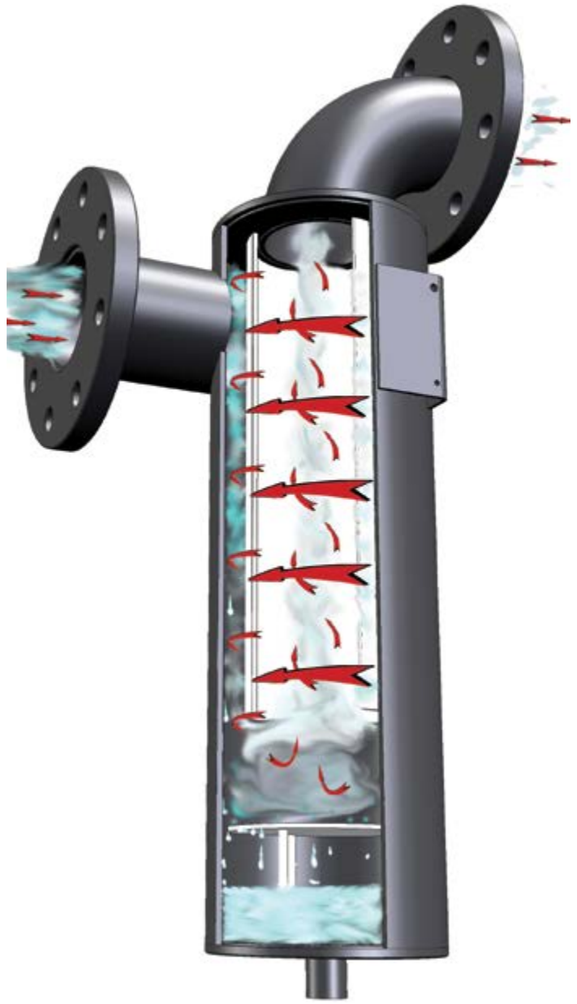
Installation Of MSS On Sterile Filter

Scheme of a new Mobile Steam Sterilizer connected to a filter. After sterilization cycle is completed flexible hose for steam distribution is disconnected from the filter and complete sterilizer (equipment outlined by a red frame) can be moved to another location.



TECHNICAL DATA	MSS
Power supply	110-230V / 50/60 Hz
Power consumption	1,7 kW
Sterilization temperature	Adjustable from 100 - 135 °C
Sterilization time	Adjustable up to 90 min
Material drying time	Adjustable up to 90 min
Sound level	60 dB(A)
Dimensions W x H x -L	450 x 855 x 445 mm

Condensate Separators



Aluminium Condensate Separators – 16 Bar

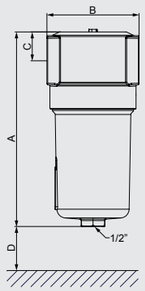
CKL-B Series

CKL-B condensate separators have been developed for high efficient removal of bulk liquids from compressed air and vacuum systems. Inside the housing there is an insert with vanes that creates controlled rotation of the air.
As a result of centrifugal action liquids (water, oil) and large particles are forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate. The turbulent free zone in the lower part of the filter housing prevents condensate from being picked up and "carried over" into the airstream.
Because of the nature of application, it is essential to install appropriately sized condensate drain on the separator.

TECHNICAL DATA

Model	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]				Mass
	inch	bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	kg
CKL 005 B	3/8"	16/232	60	35	1,5 - 65	35 - 149	192	88	25	60	0,6
CKL 007 B	1/2"	16/232	78	46	1,5 - 65	35 - 149	192	88	25	60	0,6
CKL 010 B	3/4"	16/232	120	70	1,5 - 65	35 - 149	264	88	25	80	0,7
CKL 018 B	1"	16/232	198	116	1,5 - 65	35 - 149	264	125	39	100	1,9
CKL 047 B	1 1/2"	16/232	510	300	1,5 - 65	35 - 149	464	125	39	140	1,9
CKL 094 B	2"	16/232	1000	588	1,5 - 65	35 - 149	694	163	50	520	5,7
CKL 150 B	2 1/2"	16/232	1500	882	1,5 - 65	35 - 149	694	163	50	520	7,6
CKL 200 SS*	3"	16/232	2160	1270	1,5 - 65	35 - 149	801	242	60	630	14,1

*Stainless steel cyclone element



quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%

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	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

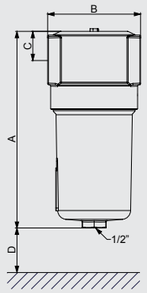
High Temperature Aluminium Condensate Separators – 10 Bar

CKL-B HT Series

CKL-B HT condensate separa-tors have been developed for high efficient removal of bulk liquids from compressed air(1) and vacuum systems.
Inside the housing there is an insert with vanes that creates controlled rotation of the air.
As a result of centrifugal action liquids (water, oil) and large particles are forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate. The turbulent free zone in the lower part of the filter housing prevents condensate from being picked up and "carried over" into the airstream.
Because of the nature of application, it is essential to install appropriately sized condensate drain on the separator.

TECHNICAL DATA

Model	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]				Mass
	inch	bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	kg
CKL 005 B HT	3/8"	10/145	60	35	1,5 - 120	35 - 248	192	88	25	60	0,6
CKL 007 B HT	1/2"	10/145	78	46	1,5 - 120	35 - 248	192	88	25	60	0,6
CKL 010 B HT	3/4"	10/145	120	70	1,5 - 120	35 - 248	264	88	25	80	0,7
CKL 018 B HT	1"	10/145	198	116	1,5 - 120	35 - 248	264	125	39	100	1,9
CKL 047 B HT	1 1/2"	10/145	510	300	1,5 - 120	35 - 248	464	125	39	140	1,9
CKL 094 B HT	2"	10/145	1.000	588	1,5 - 120	35 - 248	694	163	50	520	5,7
CKL 150 B HT	2 1/2"	10/145	1.500	882	1,5 - 120	35 - 248	694	163	50	520	7,6
CKL 200 B HT	3"	10/145	2.160	1.270	1,5 - 120	35 - 248	801	242	60	630	14,1



quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%

CORRECTION FACTORS

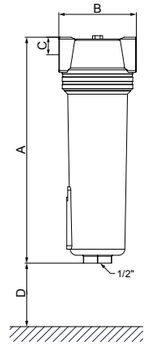
Operating pressure [bar]	2	3	4	5	6	7	8	9	10
Operating pressure [psi]	29	44	58	72	87	100	115	130	145
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38

Aluminium Condensate Separators

CKL-C Series

CKL-C condensate separators are designed for high efficient removal of bulk liquids from compressed air and vacuum systems up to 20 bar. Inside the housing there is an insert with vanes that creates controlled rotation of the air.
As a result of centrifugal action liquids (water, oil) and large particles are forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate. The turbulent free zone in the lower part of the filter housing prevents condensate from being picked up and "carried over" into the airstream.
To discharge condensate from the CKL-C cyclone separator it is essential to install automatic or electronic condensate drain.
Fluid group 1 on request.

TECHNICAL DATA									
Filter housing size	Pipe size	Max. oper. pressure	Flow rate at 7 bar(g), 20 °C		Dimensions [mm]				Mass
	inch	bar/psi	Nm³/h	scfm	A	B	C	D	kg
CKL-C 20	3/8"	20/290	72	42	187	88	20	80	0,7
CKL-C 21	1/2"	20/290	96	56	256	88	20	80	0,8
CKL-C 30	1/2"	20/290	150	88	278	106	25	100	1,3
CKL-C 31	3/4"	20/290	216	127	278	106	25	100	1,3
CKL-C 40	1"	20/290	282	166	252	125	32	120	2,1
CKL-C 43	1 1/2"	20/290	510	300	450	125	32	160	3,2
CKL-C 50	2"	20/290	888	522	605	160	43	180	5,1
CKL-C 52	2 1/2"	20/290	1440	847	685	160	43	200	6,3
CKL-C 61*	3"	20/290	2760	1624	800	240	60	300	12,9
*Stainless steel cyclone element					quality class - solids (ISO 8573-1)				-
					quality class - water (ISO 8573-1)				8
					quality class - oils (ISO 8573-1)				-
					efficiency				>98%



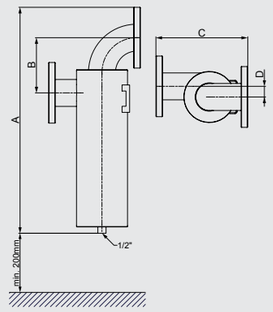
CORRECTION FACTORS																			
Operating pressure [bar]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Operating pressure [psi]	29	44	58	72	87	100	115	130	145	160	174	189	203	218	232	247	261	276	290
Correction factor	0,38	0,50	0,63	0,75	0,88	1	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13	2,25	2,38	2,50	2,63

Welded Condensate Separators – 16 Bar

CS/CS SS Series

CS condensate separators are designed for high efficient removal of bulk liquids and large impurities from compressed air systems. The insert inside the housing creates controlled rotation of the air flow. Centrifugal flow of liquids (water, oil) and large particles is forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate.
The turbulent free zone in the lower part of the cyclone housing prevents condensate from being picked up and "carried over" into the airstream.
To discharge condensate from the CS cyclone separator it is essential to install automatic or electronic condensate drain. CS cyclone separators are also available in stainless steel version CS-SS.

TECHNICAL DATA													
Model		Pipe size	Max.oper. pressure		Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]				Mass
Carbon steel	Stainless steel	DN	CS bar/psi	CS SS bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	kg
CS 14	**CS SS 14**	65	16/232	13/188	840	495	1,5 - 120	35 - 248	613	153	302	45	21
CS 28	**CS SS 28**	80	16/232	13/188	1.710	1.005	1,5 - 120	35 - 248	745	182	302	35	26
CS 62	**CS SS 62**	125	16/232	13/188	3.720	2.190	1,5 - 120	35 - 248	1041	280	390	43	58
CS 88	**CS SS 88**	150	16/232	13/188	5.280	3.110	1,5 - 120	35 - 248	1298	330	489	50	87
CS 124	**CS SS 124**	200	16/232	13/188	7.440	4.380	1,5 - 120	35 - 248	1506	436	619	52	147
CS 238	**CS SS 238**	300	16/232	13/188	14.280	8.404	1,5 - 120	35 - 248	1680	509	805	89	314
									quality class - solids (ISO 8573-1)				-
									quality class - water (ISO 8573-1)				8
									quality class - oils (ISO 8573-1)				-
									efficiency				>98%



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	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

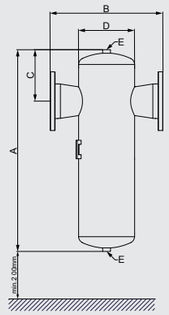
Welded Condensate Separators – 16 Bar

SFH/SFH SS Series

SFH condensate separators are designed for high efficient removal of bulk liquids and large impurities from compressed air systems. The insert inside the housing creates controlled rotation of the air flow. Centrifugal flow of liquids (water, oil) and large particles is forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate.
The turbulent free zone in the lower part of the cyclone housing prevents condensate from being picked up and "carried over" into the airstream.
To discharge condensate from the SFH cyclone separator it is essential to install automatic or electronic condensate drain. SFH cyclone separators are also available in stainless steel version SFH SS.

TECHNICAL DATA

Model		Pipe size	Max.oper. pressure		Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]					Mass
Carbon steel	Stainless steel	DN	SFH bar/psi	SFH SS bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	E	kg
SFH 029	**SFH SS 029**	80	16/232	13/188	1.760	1.024	1,5 - 120	35 - 248	720	400	165	219	1/2"	33
SFH 037	**SFH SS 037**	100	16/232	13/188	2.200	1.307	1,5 - 120	35 - 248	890	460	236	244	1/2"	45
SFH 066	**SFH SS 066**	125	16/232	13/188	3.940	2.331	1,5 - 120	35 - 248	980	550	250	273	1"	58
SFH 088	**SFH SS 088**	150	16/232	13/188	5.300	3.108	1,5 - 120	35 - 248	1040	570	250	300	1"	81
SFH 097	**SFH SS 097**	200	16/232	13/188	5.820	3.426	1,5 - 120	35 - 248	1110	690	265	350	1"	117
SFH 142	**SFH SS 142**	250	16/232	13/188	8.520	5.015	1,5 - 120	35 - 248	1330	800	360	480	1"	227
SFH 180	**SFH SS 180**	300	16/232	13/188	10.770	6.357	1,5 - 120	35 - 248	1470	820	408	550	1"	280
SFH 209	**SFH SS 209**	350	16/232	13/188	12.550	7.381	1,5 - 120	35 - 248	1670	920	471	622	1"	379



quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%

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	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

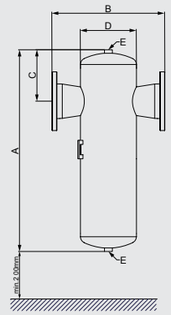
Welded High Pressure Condensate Separators

SFH HP Series

SFH HP condensate separators have been developed for high efficient removal of bulk liquids and large impurities from compressed air systems. Inside the housing there is an insert that creates controlled rotation of the air. As a result of centrifugal action liquids (water, oil) and large particles are forced to the housing wall, slowed down and accumulated at the bottom of separator housing as condensate. The turbulent free zone in the lower part of the cyclone housing prevents condensate from being picked up and "carried over" into the airstream.
Because of the nature of application, it is essential to install appropriately sized condensate drain on the separator.

TECHNICAL DATA

Model	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]					Mass
	DN	bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	E	kg
SFH HP 029	80	50/725	1.760	1.024	1,5 - 65	35 - 149	720	400	165	219	1/2"	41
SFH HP 037	100	50/725	2.200	1.307	1,5 - 65	35 - 149	890	460	236	244	1/2"	52
SFH HP 066	125	50/725	3.940	2.331	1,5 - 65	35 - 149	980	550	250	273	1"	66
SFH HP 088	150	50/725	5.300	3.108	1,5 - 65	35 - 149	1.040	570	250	300	1"	92
SFH HP 097	200	50/725	5.820	3.426	1,5 - 65	35 - 149	1.110	690	265	350	1"	113
SFH HP 142	250	50/725	8.520	5.015	1,5 - 65	35 - 149	1.330	800	360	480	1"	234
SFH HP 180	300	50/725	10.770	6.357	1,5 - 65	35 - 149	1.470	820	408	550	1"	300
SFH HP 209	350	50/725	12.550	7.381	1,5 - 65	35 - 149	1.670	920	471	622	1"	440



quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%

CORRECTION FACTORS

Operating pressure [bar]	3	5	7	10	13	16	20	30	40	50
Operating pressure [psi]	44	72	100	145	189	232	290	435	580	725
Correction factor	0,50	0,75	1	1,38	1,75	2,13	2,63	3,88	5,13	6,38

Aluminium Condensate Separators – 50 Bar

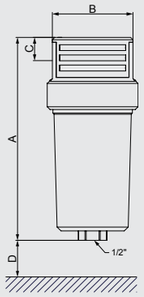
CKL-HF Series

CKL-HF condensate separators are designed for high efficient removal of bulk liquids from compressed air systems. Inside the housing there is a condensate separator element.
This element separates already liquefied water from mainstream and prevents the liquids and large particles from being airborne again.
To discharge condensate from the CKL-HF condensate separator it is essential to install automatic or electronic condensate drain.

TECHNICAL DATA

Model	Pipe size	Max.oper. pressure	Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]				Mass
	inch	bar/psi	Nm³/h	SCFM	°C	°F	A	B	C	D	kg
CKL-HF 007	1/2''	50/725	71	42	1,5 - 65	35 - 149	250	110	30	80	2,1
CKL-HF 010	3/4''	50/725	112	66	1,5 - 65	35 - 149	250	110	30	90	2,1
CKL-HF 018	1''	50/725	204	120	1,5 - 65	35 - 149	250	110	30	140	2,1
CKL-HF 047	1 1/2''	50/725	282	166	1,5 - 65	35 - 149	535	160	45	260	9,5
CKL-HF 070	1 1/2''	50/725	400	235	1,5 - 65	35 - 149	535	160	45	360	9,5
CKL-HF 094	2''	50/725	494	291	1,5 - 65	35 - 149	715	160	45	540	12,2
CKL-HF 150	2''	50/725	799	470	1,5 - 65	35 - 149	715	160	45	550	12,2
CKL-HF 200	3''	50/725	2160	1270	1,5 - 65	35 - 149	772	198	70	620	30,4
CKL-HF 240	3''	50/725	2760	1620	1,5 - 65	35 - 149	1.010	198	70	780	34,9

quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%



CORRECTION FACTORS

Operating pressure [bar]	3	5	7	10	13	16	20	30	40	50
Operating pressure [psi]	44	72	100	145	189	232	290	435	580	725
Correction factor	0,50	0,75	1	1,38	1,75	2,13	2,63	3,88	5,13	6,38

Carbon Steel High Pressure Condensate Separators – 100, 250, 420 Bar

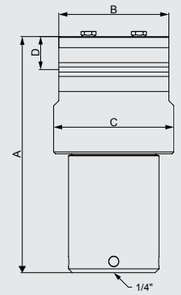
CKL-CHP Series

CKL-CHP condensate separators are designed for high efficient removal of bulk liquids from high pressure compressed air systems.
Condensate separator element inside the housing separates already liquefied water from mainstream and prevents the liquids and large particles from being airborne again.
To discharge condensate from the CKL-CHP condensate separator it is essential to install condensate drain. Please take appropriate pressure level into account.

TECHNICAL DATA

Filter housing size	Pipe size	Max. oper. pressure		Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]			Mass
	inch	bar	psi	Nm³/h	scfm	°C	°F	A	B	C	kg
CKL-CHP 003	1/4''	100/250/420	1450/3626/6091	40	23,5	1,5 - 65	35 - 149	182	98	104	7,6
CKL-CHP 005	3/8''	100/250/420	1450/3626/6091	70	41,2	1,5 - 65	35 - 149	182	98	104	7,6
CKL-CHP 007	1/2''	100/250/420	1450/3626/6091	130	76,5	1,5 - 65	35 - 149	230	118	129	15,3
CKL-CHP 010	3/4''	100/250/420	1450/3626/6091	195	115	1,5 - 65	35 - 149	254	118	129	16,1
CKL-CHP 018	1''	100/250/420	1450/3626/6091	275	162	1,5 - 65	35 - 149	276	145	158	26,5
CKL-CHP 030	1 1/4''	100/250/420	1450/3626/6091	380	223	1,5 - 65	35 - 149	328	145	158	28,6
CKL-CHP 047	1 1/2''	100/250/420	1450/3626/6091	495	291	1,5 - 65	35 - 149	385	195	216	65,9
CKL-CHP 094	2''	100/250/420	1450/3626/6091	715	421	1,5 - 65	35 - 149	460	195	216	71,4

quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%



CORRECTION FACTORS

Operating pressure [bar]	7	25	40	64	100	250	420
Operating pressure [psi]	100	362	580	928	1450	3625	6091
Correction factor	1	3	5	8	12	12	12

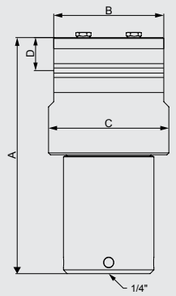
Stainless Steel High Pressure Condensate Separators

CKL-IHP Series

CKL-IHP condensate separators are designed for high efficient removal of bulk liquids from high pressure compressed air systems.
Condensate separator element inside the housing separates already liquefied water from mainstream and prevents the liquids and large particles from being airborne again.
To discharge condensate from the CKL-IHP condensate separator it is essential to install condensate drain. Please take appropriate pressure level into account.

TECHNICAL DATA											
Filter housing size	Pipe size	Max. oper. pressure		Flow rate at 7 bar(g), 20 °C		Temperature oper. range		Dimensions [mm]			Mass
	inch	bar	psi	Nm^3/h	scfm	°C	°F	A	B	C	kg
CKL-IHP 003	1/4"	100/250/420	1450/3626/6091	40	23,5	1,5 - 65	35 - 149	182	98	104	7,9
CKL-IHP 005	3/8"	100/250/420	1450/3626/6091	70	41,2	1,5 - 65	35 - 149	182	98	104	7,9
CKL-IHP 007	1/2"	100/250/420	1450/3626/6091	130	76,5	1,5 - 65	35 - 149	230	118	129	15,7
CKL-IHP 010	3/4"	100/250/420	1450/3626/6091	195	115	1,5 - 65	35 - 149	254	118	129	16,6
CKL-IHP 018	1"	100/250/420	1450/3626/6091	275	162	1,5 - 65	35 - 149	276	145	158	27,3
CKL-IHP 030	1 1/4"	100/250/420	1450/3626/6091	380	223	1,5 - 65	35 - 149	328	145	158	29,6
CKL-IHP 047	1 1/2"	100/250/420	1450/3626/6091	495	291	1,5 - 65	35 - 149	385	195	216	67,8
CKL-IHP 094	2"	100/250/420	1450/3626/6091	715	421	1,5 - 65	35 - 149	460	195	216	73,5

quality class - solids (ISO 8573-1)	-
quality class - water (ISO 8573-1)	8
quality class - oils (ISO 8573-1)	-
efficiency	>98%



CORRECTION FACTORS							
Operating pressure [bar]	7	25	40	64	100	250	420
Operating pressure [psi]	100	362	580	928	1450	3625	6091
Correction factor	1	3	5	8	12	12	12

Differential Pressure Indicators

Pressure drop is a huge problem in compressed air system. Every additional obstruction of compressed air flow requires additional power to drive the compressor.
Compressed air system pipeline has fixed pressure drop, which has already been taken into account in the phase of compressor dimensioning. This pressure drop generally can't be changed.
Filter element pressure drop is variable factor of compressed air system. Despite the fact that the filter element play a useful role in the removal of compressed air pollutants, it's saturation could be a problem since it will increase in time. The result is an increase of pressure drop, additional compressor power, which means the significantly rising of operating costs.
For this reason the pressure drop in filter element must be monitored and controlled.

Differential Pressure Indicator – 16 Bar

MDM 60 Series

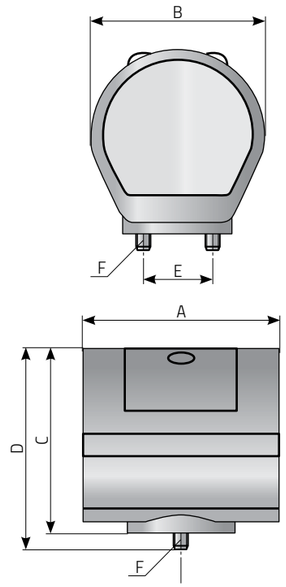
Magnetic differential manometer MDM 60 has been developed to indicate pressure drop across the filter element in compressed air system. For any other technical gas please contact producer or your local distributor.
It detects when the filter cartridge is clogged and should be replaced. MDM 60 is typically installed on the head of the filter housing.
MDM 60 can be used in variety of applications. For applications not listed please contact producer or your local distributor.

MDM 60
Basic version

MDM 60 E
Electronic version
with LED alarm

MDM 60 C
Voltage free contact version
for remote alarm

TECHNICAL DATA	
operating pressure	16 bar (232 psi)
operating temperature range	1,5 - 65 °C (35 - 149 °F)
mass	0,15 kg
measuring range	0,9 bar (13 psi)
DIMENSIONS	
A	72 mm
B	64 mm
C	68 mm
D	74 mm
E	24 mm
F	M5
TYPES	
MDM 60	basic version
MDM 60E	electronic version (battery) with LED alarm light
MDM 60C	voltage-free contact version for remote alarm

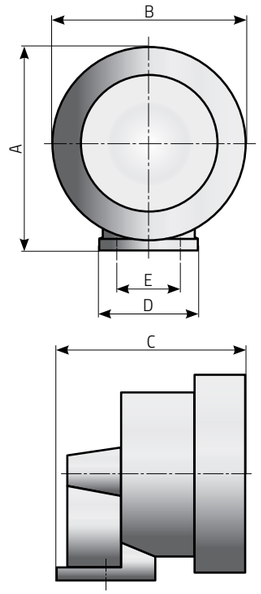


Differential Pressure Indicator – 20 Bar

MDA 60 Series

Pressure drop indicator MDA 60 is designed for accurate indication of pressure drop across the filter element in compressed air system. For any other technical gas please contact producer or your local distributor.
MDA 60 is optimized for installation on the head of the filter housing.
MDA 60 can be used in variety of applications. For applications not listed please contact producer or your local distributor.

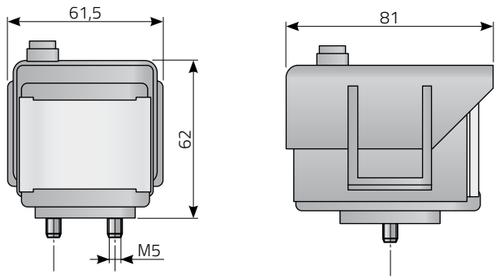
TECHNICAL DATA	
operating pressure range	20 bar (290 psi)
operating temperature range	1,5 - 65 °C (35 - 149 °F)
mass	0,36 kg
measuring range	2 bar (29 psi)
DIMENSIONS	
A	84 mm
B	80 mm
C	78 mm
D	ø40 mm
E	24 mm



Electronic Pressure Gauge – 16 Bar

EPG 60 Series

The EPG 60 is electronic pressure gauge designed for monitoring of filter cartridge condition.
Filter cartridge condition is estimated from pressure drop, working hours, total hours or their combination. A change filter cartridge warning is issued when these parameters approach their limiting values.
An optional Alarm/ Warning output and Service Network Protocol for remote surveillance available.
EPG 60 is battery operated. Low power consumption allows long intervals between battery replacements.



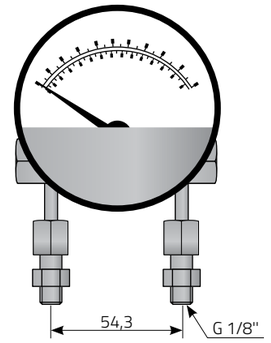
TECHNICAL DATA				
TYPE		EPG-SN	EPG	EPG 4-20mA
Service network connection possible		Yes	No	No
System pressure range		16 bar (232 psi)		
Differential pressure range		0,07 bar - 1,00 bar (1.0 psi – 14.5 psi)		
Max. differential pressure		1 bar, 14,7 psi		
Operating temperature	Ambient	1,5 °C - 40 °C (34,7 °F - 104 °F)		
	Compressed air	1,5 °C - 65 °C (34,7 °F - 149 °F)		
Mass		130 g (without batteries)		
Materials		PA6, glass fibres, NBR (sealing)		
Battery life time		>1 year (alkaline AA)		-
Output signal		No	No	4-20 mA

Differential High Pressure Stainless Steel Indicator – 50 Bar

MDHI 50 Series

Differential pressure drop indicator MDHI 50 has been developed for accurate indication of pressure drop across the filter element in compressed air system.
MDHI 50 is optimized for installation on the head of the filter housing.

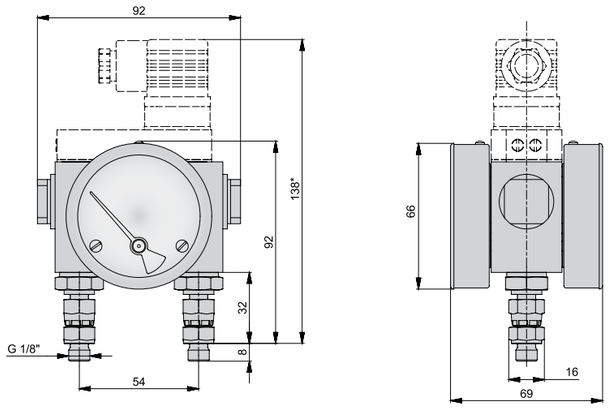
TECHNICAL DATA		
Ambient temperature range	1,5 - 60 °C	35 - 140°F
Measuring range	0 – 1 bar	0 - 14,5 psi
Static pressure	50 bar	725 psi
Protection class	IP 54	
Accuracy	±3 % of full scale	
Connection	2 x G 1/8" male	



Differential High Pressure Indicator – 200 Bar

MDH 200 Series

Magnetic differential manometer MDH 200 is designed to indicate pressure drop across the filter element in compressed air system. It detects when the filter cartridge is clogged and should be replaced. MDH 200 is usually installed on the head of the filter housing. Double dials on manometer allows readout values from both sides of the differential manometer.



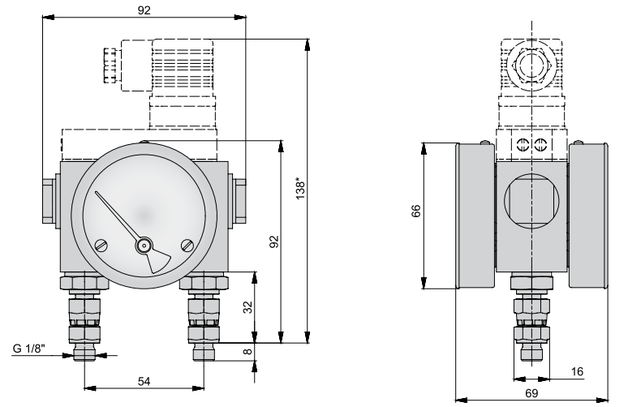
TECHNICAL DATA		
Ambient temperature range	1,5 - 80 °C	35 - 175°F
Measuring range	0 – 1 bar	0 - 14,5 psi
Static pressure	200 bar	2900 psi
Protection class	IP 64	
Accuracy	±5 % of full scale	
Connection	2 x G 1/8" male	

Model	Description
MDH 200	Basic version
MDH 200C	Voltage-free contact version for remote alarm

Differential High Pressure Indicator – 420 Bar

MDH 420 Series

Magnetic differential manometer MDH 420 is designed to indicate pressure drop across the filter element in compressed air system. It detects when the filter cartridge is clogged and should be replaced. MDH 420 is usually installed on the head of the filter housing. Double dials on manometer allows readout values from both sides of the differential manometer. Thanks to resistance stainless steel housing is also suitable for demanding applications.



TECHNICAL DATA		
Ambient temperature range	1,5 - 80 °C	35 - 175°F
Measuring range	0 – 1 bar	0 - 14,7 psi
Static pressure	420 bar	6091 psi
Protection class	IP 65	
Accuracy	±5 % of full scale	
Connection	On body G1/4"female – reducing fittings G1/8" male	

Model	Description
MDH 420	Basic version
MDH 420C	Voltage-free contact version for remote alarm

Oil Content Indicator – 16 Bar

OCI Series

OCI oil content indicator has been designed to monitor oil content in pressure vessels and receivers where air quality is critical. It is calibrated to detect aerosol-mist level of oil with sensitivity down to 0,01 PPMm (0,012 mg/m3).
Replacement cartridge is available when original is worn out.

TECHNICAL DATA	
TYPE	OCI A-4000-120
Connection	G1/8"
Dimensions	166 x 16,2 mm
Mass	0,134 kg
Pressure range	0,68 - 16 barg
Operating temperature range	1,5 °C to 49 °C
Measuring range	0 - 25 PPM(m) at 20 °C 0 - 30 mg/m³

Differential Pressure Indicator – 2000 mBar

VPG 60 Series

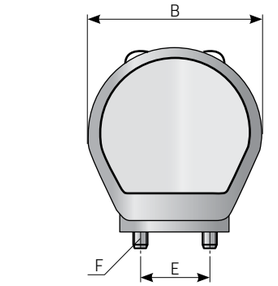
Magnetic differential manometer VPG 60 has been developed to indicate pressure drop across the filter element in vacuum system. It detects when the filter cartridge is clogged and should be replaced. VPG 60 is typically installed on the head of the filter housing.
For any other technical gas please contact us or your local distributor.
VPG 60 can be used in variety of applications. For applications not listed please contact us or your local dealer.

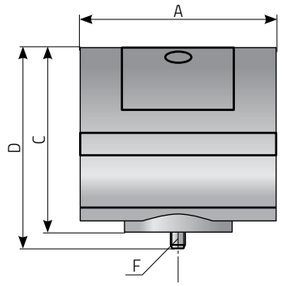
VPG 60
Basic version

VPG 60 E
Electronic version
with LED alarm

VPG 60 C
Voltage free contact version
for remote alarm

TECHNICAL DATA	
operating pressure range	20 - 2000 mbar(a) (0,29 - 29 psi(a))
operating temperature range	1,5 - 65 °C (35 - 149 °F)
mass	0,15 kg
measuring range	0,09 bar (0,0013 psi)
DIMENSIONS	
A	72 mm
B	64 mm
C	68 mm
D	74 mm
E	24 mm
F	M5
TYPES	
VPG 60	Basic version
VPG 60E	Electronic version (battery) with led alarm light
VPG 60C	Voltage-free contact version for remote alarm





Assembly Kits For Filters

AK Series

Assembly kits have been developed to connect two or more air filters together. Construction of assembly kit is universal and it can be used for any type of filter, including filters of some other world producers. It is easy to connect two filters together and it includes supporting elements for easy mounting on the wall or other surface.

AK - UNIVERSAL ASSEMBLY KITS					
Type	Connection	Operating temp.	Operating pressure	Max. load/ console [kg]	Mass [kg]
AK 3/8"	3/8"	1,5 - 65 °C	0 - 20 bar	0,47	0,3
AK 1/2"	1/2"	1,5 - 65 °C	0 - 20 bar	0,47	0,3
AK 3/4"	3/4"	1,5 - 65 °C	0 - 20 bar	0,6	0,3
AK 1"	1"	1,5 - 65 °C	0 - 20 bar	1,57	0,5
AK 1 1/2"	1 1/2"	1,5 - 65 °C	0 - 20 bar	2,2	0,5
AK 2"	2"	1,5 - 65 °C	0 - 20 bar	2,32	1,57
AK 2 1/2"	2 1/2"	1,5 - 65 °C	0 - 20 bar	2,28	1,53
AK 3"	3"	1,5 - 65 °C	0 - 20 bar	2,22	1,47

Wall Mounting Brackets For Filters

WB Series

WB AF

WB CHP/IHP

WB - WALL MOUNTING BRACKETS			
For filters	Wall mounting bracket type	Suitable for filter size	Maximum load [N]
AF	**WB AF S**	**AF 0056-0106**	60 N
	WB AF M	**AF 0186-0706**	150 N
CHP/IHP	**WB CHP/IHP S**	**CHP 003-005**	100 N
		IHP 003-005	
	WB CHP/IHP M	**CHP 007-010**	150 N
		IHP 007-010	
	WB CHP/IHP L	**CHP 018-030**	250 N
		IHP 018-030	
	WB CHP/IHP XL	**CHP 047**	350 N
		IHP 047	
	WB CHP/IHP XXL	**CHP 094**	700 N
		IHP 094	

Wall Mounting Kits For Filters

WK Series

WK AAF

WK - WALL MOUNTING KITS					
For filters	Wall mounting kit type	Suitable for filter size	Number of filters	Operating pressure	Maximum load [N]
AAF	**WK AAF 1S**	**AAF 0006-0016**	1	0-16 bar	40 N
	WK AAF 2S		2		
	WK AAF 3S		3		
	WK AAF 1M	**AAF 0026-0036**	1	0-16 bar	60 N
	WK AAF 2M		2		
	WK AAF 3M		3		
	WK AAF 1L	**AAF 0046-0106**	1	0-16 bar	100 N
	WK AAF 2L		2		
	WK AAF 3L		3		
	WK AAF 1XL	**AAF 0186-0706**	1	0-16 bar	150 N
	WK AAF 2XL		2		
	WK AAF 3XL		3		

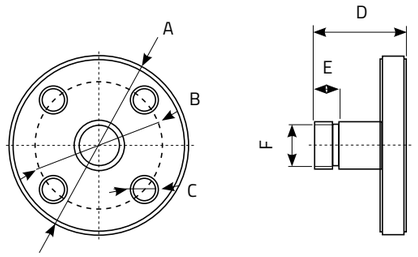
Flange Adapter

FA Series

Flange adapter FA is designed for all products and devices which cannot be connected to the pipeline without flanges such as: filter housings, condensate drains, dryers, valves, ... The product is made of male pipe thread which can be screwed to the female connection and the flange which can be coupled to another flange. The Flange adapter FA is completely protected from corrosion with zinc coating.

TECHNICAL DATA										
Type	Flange size[1]	Pressure rating	Dimensions [mm]						Mass [kg]
			A	B	C	D	E	F	
FA 15-16	DN15	PN16	95	65	4 × ø14	65	15	G 1/2	0,7
FA 15-63		PN63	105	75	4 × ø14	65	15		1,1
FA 20-16	DN20	PN16	105	75	4 × ø14	65	15	G 3/4	1,0
FA 20-16		PN63	130	90	4 × ø18	65	15		1,4
FA 25-16	DN25	PN16	115	85	4 × ø14	65	17	G 1	1,2
FA 25-63		PN63	140	100	4 × ø18	65	17		1,8
FA 32-16	DN32	PN16	140	100	4 × ø18	85	17	G 1 1/4	2,1
FA 32-63		PN63	155	110	4 × ø22	85	17		2,7
FA 40-16	DN40	PN16	150	110	4 × ø18	95	19	G 1 1/2	2,4
FA 40-63		PN63	170	125	4 × ø22	95	19		3,2
FA 50-16	DN50	PN16	165	125	4 × ø18	105	21	G 2	3,2
FA 50-63		PN63	180	135	4 × ø22	105	21		4,5
FA 65-16	DN65	PN16	185	145	4 × ø18	105	21	G 2 1/2	3,7
FA 65-63		PN63	205	160	8 × ø22	105	21		5,2
FA 80-16	DN80	PN16	200	160	8 × ø18	105	21	G 3	4,7
FA 80-63		PN63	215	170	8 × ø22	105	21		7,4

[1] Standard flange EN 1092-1, other pipe connection on request.



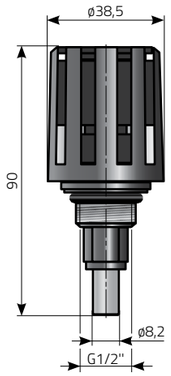
Condensate Drains

Automatic Mechanical Condensate Drain – 16 Bar

AOK 16B Series

AOK 16B is designed for fully automatic discharging of condensate or any other non aggressive fluid from compressed air system. For any other technical gas please contact producer or your local distributor. AOK 16B is easy to install inside to the filter housing.
AOK 16B can be used in a variety of applications. For applications not listed please contact producer or your local distributor.

TECHNICAL DATA	AOK 16B
Operating temp. range	1,5 - 65 °C (35-149 °F)
Operating pressure	16 bar (232 psi)
Mass	0,04 kg
Connection	G 1/2''
Outlet connection	ø8
Dimensions H × D	90 × ø38,5 mm
Medium	Condensate (air, water, oil)



Automatic Mechanical Condensate Drain – 20 Bar

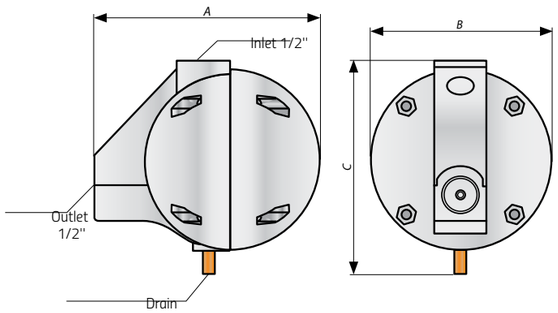
AOK 20B Series

AOK 20B has been developed for fully automatic discharging of condensate or any other non-aggressive fluid from compressed air system. For any other technical gas please contact producer or your local distributor.
The unit can be installed as external drain on any application specified. Condensate accumulates in the aluminium reservoir and when the level is high enough condensate is discharged from the system without any air losses. Direct acting valve is operated by precise level controlled floater which assures reliable and efficient operation. Thanks to robust aluminium housing AOK 20B is suitable for heavy duty applications. AOK 20B is also equipped with separate manual drain for venting.
AOK 20B can be used in variety of applications. For applications not listed please contact producer or your local distributor

TECHNICAL DATA	AOK 20B
Operating temperature range	1,5 - 65 °C (35-149 °F)
Operating pressure	20 bar (290 psi)
Mass	0,6 kg
Discharge capacity (at 7 bar/101 psi)	167 l/h
Inlet connection	G 1/2'' (NPT option)
Outlet connection	G 1/2'' (NPT option)
Dimensions A × B × C	135 × 110 × 130 mm
Medium	Condensate (air, water, oil)

RECOMMENDATIONS

Install ball valve between pressure vessel and inlet connection.
Install strainer element between pressure vessel and inlet connection.
Install nipple with venting tube to avoid generating of air bubbles.
Screw nipple in inlet connection.



Automatic Stainless Steel High Pressure Condensate Drain – 50 Bar

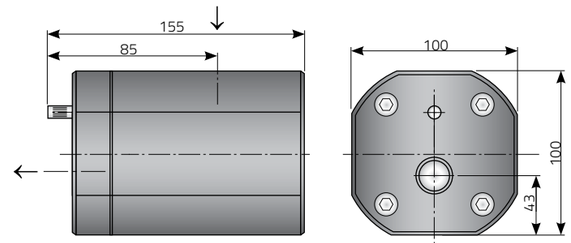
AOK 50SS Series

AOK 50SS has been developed for fully automatic discharging of condensate or any other non-aggressive fluid from compressed air system. The unit can be installed as external drain on any application specified below.
Condensate accumulates in the stainless steel reservoir and is discharged from the system when the level is high enough.
A direct acting valve is operated by a precise level controlled floater which assures reliable and efficient operation.
Thanks to its robust stainless steel housing AOK 50SS is suitable for heavy duty applications. On the front, the AOK 50SS, is also equipped with a separate manual drain for venting.

TECHNICAL DATA	AOK 50 SS
Operating temperature range	1,5 - 65 °C (35-149 °F)
Operating pressure	8-50 bar (116-725 psi)
Min. recommended operating pressure	10 bar(g) (145 psi)
Mass	7,2 kg
Discharge capacity	145 l/h (at 50 barg)
Inlet connection	G 1/2'' (NPT on request)
Outlet connection	G 1/2'' (NPT on request)
Medium	Condensate (air, water, oil); non aggressive

RECOMMENDATIONS

Install ball valve between pressure vessel and inlet connection.
Install strainer element between pressure vessel and inlet connection.
Install nipple with venting tube to avoid generating of air bubbles.
Screw nipple in inlet connection.

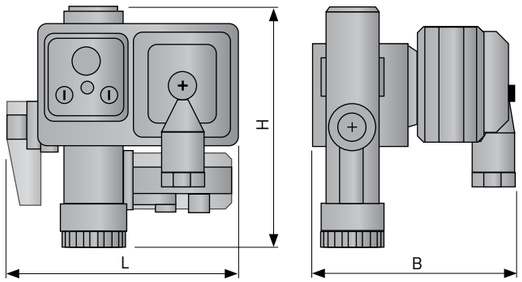


Timer Controlled Condensate Drain – 16 & 50 Bar

TD M Series

TD M timer controlled condensate drain is designed for reliable removal of condensate or other liquid from compressed air system. For any other technical gas please contact producer or your local distributor.
Discharge intervals can be set with two adjustment knobs.
TD M drain is available in several types based on operating pressure and operating medium.

TECHNICAL DATA	TD16M		TD50M	
Supply voltage	115 V	230 V	115 V	230 V
Operating temp. range	1,5 - 65 °C (35-149 °F)		1,5 - 65 °C (35-149 °F)	
Operating pressure	16 bar (232 psi)		50 bar (735 psi)	
Protection class	IP65		IP65	
Coil power	18VA (holding), 36 VA (inrush)		18VA (holding), 36 VA (inrush)	
Cable dimensions	3 × 0,75 mm²		3 × 0,75 mm²	
Mass (cable+valve)	0,35 kg		0,35 kg	
Mass (strainer)	0,23 kg		0,23 kg	
Time ON	0,5 s - 10 s		0,5 s - 10 s	
Time OFF	0,5 min - 45 min		0,5 min - 45 min	
Drain capacity (at 7 bar)	144 l/h		74 l/h	
Flow rate Kvs	2,4 l/min		0,7 l/min	
Inlet connection	R 1/2"		R 1/2"	
Outlet connection	R 1/4"		R 1/4"	
Dimensions L×B×H [mm]	77×79×93	87,5×90,5×123	77×79×93	87,5×90,5×123
Medium	Air, water, oil		Air, water, oil	
Option strainer	yes		yes	

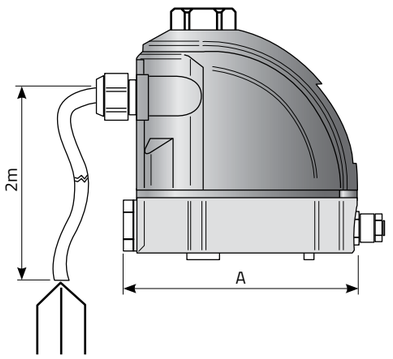


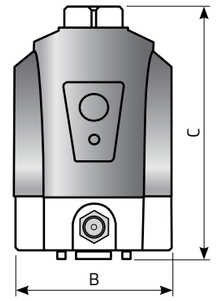
Electronic Condensate Drain – 16 Bar

ECD-B Series

ECD-B series is designed for fully automatic discharging of condensate or any other non-aggressive fluid from compressed air system. For any other technical gas please contact producer or your local distributor.
The units can be installed as external drain on any application specified.
Condensate accumulates in the collecting reservoir and when the level is high enough condensate is being discharged from the system without any air losses. Fluid level is detected by precise capacitive level sensor.
Special self-cleaning direct acting valve assures reliable operating. ECD-B series is also equipped with operation alarm, led indicator, test button and internal strainer.

TECHNICAL DATA		ECD 15B	ECD 40B	ECD 90B	ECD 150B
Voltage	115 VAC	115 V ± 10 %	115 V ± 10 %	115 V ± 10 %	115 V ± 10 %
	230 VAC	230 V ± 10 %	230 V ± 10 %	230 V ± 10 %	230 V ± 10 %
Power	115 VAC	24 VA	24 VA	24 VA	24 VA
	230 VAC	24 VA	24 VA	24 VA	24 VA
Frequency		50-60 Hz			
Operating pressure		16 bar (232 psi)			
Drain capacity (at 7 bar/101 psi)		15 l/h (0,0088 cfm)	40 l/h (0,023 cfm)	90 l/h (0,053 cfm)	150 l/h (0,088 cfm)
Operating temperature range		1,5 - 65 °C (35-149 °F)			
Inlet connection		R 1/2"	R 1/2"	R 1/2"	R 1/2"
Outlet connection		R 1/8"	R 1/8"	R 1/8"	R 1/8"
Power interface		3 × 0,75 mm²	3 × 0,75 mm²	3 × 0,75 mm²	3 × 0,75 mm²
Protection class		IP54	IP54	IP54	IP54
Mass [kg]		0,9	0,9	1,05	1,15
Dimensions A × B × C [mm]		120 × 82 × 125	120 × 82 × 125	120 × 82 × 135	120 × 82 × 150
Peak compressor performance [m³/min]	a	11,6	29,4	60,6	111,6
	b	9,3	23,5	48,5	89,3
	c	5,8	14,7	30,3	55,8
Peak dryer performance [m³/min]	a	23,2	58,8	121,2	223,2
	b	18,6	47,0	97,0	178,6
	c	11,6	29,4	60,6	111,6
Peak filter performance [m³/min]	a	116	294	606	1116
	b	93	235	485	893
	c	58	147	303	558
Compressor motor power [kW]		up to 30	up to 75	up to 160	up to 315





Please take the relevant climate zone into account when dimensioning yours specific ECD-B drain series application:

a	Northern Europe, Canada, Northern USA, Central Asia
b	Central and Southern Europe, Central America
c	South East Asian coastal regions, Oceania, Amazon and Congo regions

Water-Oil Separators

Water-Oil Separators

WOSM Series

WOSm water oil separators have been developed to separate lubricant oil from condensate generated in compressed air systems. Due to patented technology regular service can be done in 30 seconds without any cleaning.
Separation begins in “cyclonic depressurization chamber” and continues in “filter cartridge”. When the “filter cartridge” is fully saturated you just simply unscrew complete cartridge and replace it with new one.
All the condensate stays in old cartridge which can also be sealed with plastic cover and disposed according to local directives and laws.

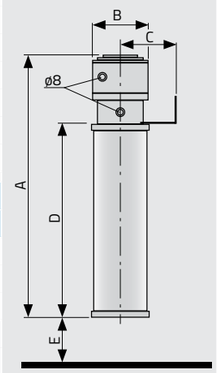
ADVANTAGES

- ✓ Quick and clean separator cartridge replacement.
- ✓ Easy installation due to compact design and small dimensions.

TECHNICAL DATA

Operating temperature	1,5 - 45 °C (max 65 °C)[1]; 35 - 113 °F (max. 149 °F)[1]
Operating media	Condensate (air, water, oil); Non aggressive; Not suitable for emulsion
Residual oil content	< 20ppm
Service interval	When first of following parameters appears:
	- 4000 operating hours of compressor [2]
	- 12 months regardless of compressor operating hours
	- when all white polypropylene media becomes yellow

		Cold climate zone 15 °C 60 %RH	Mild climate zone 25 °C 60 %RH	Hot climate zone 40 °C 100 %RH	Dimensions [mm] A	B	C	D	E
WOSm1	Max oil adsorption [g]	740	650	370	483	106	80	335	50
	Max FAD [Nm³/min]/[scfm]	1,23/43,05	1,08/37,8	0,62/21,9					
	Max condensate flow [l/h]	0,57	0,90	1,91					
WOSm2	Max oil adsorption [g]	1520	1340	770	816	106	80	670	50
	Max FAD [Nm³/min]/[scfm]	2,54/88,9	2,23/78,05	1,28/45,2					
	Max condensate flow [l/h]	1,19	1,87	3,96					



[1] Max. operating temperature is 65 °C, but when temperature is over 45 °C, performance may decrease.
[2] At compressor oil carryover 2,5 mg/m³. Lower/higher oil carry over means proportionally longer/shorter lifetime (e.g. if oil carryover is 5 mg/m³ lifetime reduces to 2000 operating hours).

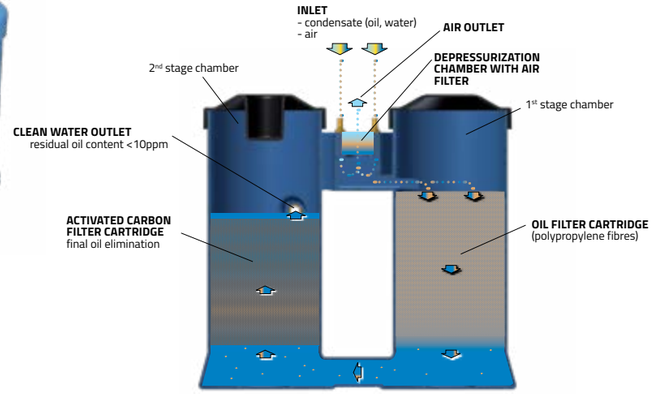
Water-Oil Separators

WOS Series

WOS water oil separators have been developed to separate lubricant oil from condensate from compressed air systems.
WOS water-oil separator can be used in variety of applications. For applications not listed please contact producer or your local distributor.

ADVANTAGES

- No complex sizing required.
- Simple to install.
- Works with any type of condensate drain.
- Can handle and separate any type of oil.
- Oil residue value is less than 10 ppm.
- Easy to maintain.
- No condensate settling tank is required (therefore there is no bacteria build-up).
- Small compact design.
- Test valve and test set included for sampling purposes.



TECHNICAL DATA

Operating temperature	1,5 - 45 °C (max 65 °C)(1); 35 - 113 °F (max. 149 °F)(2)
Operating media	Condensate (air, water, oil); Non aggressive; Not suitable for emulsion
Residual oil content	< 10ppm
Service interval	When first of following parameters appears:
	- 4000 operating hours of compressor (4)
	- 12 months regardless of compressor operating hours
	- outlet oil concentration reaches concentration determined with local directives

		Cold climate zone 15 °C 60 %RH	Mild climate zone 25 °C 60 %RH	Hot climate zone 40 °C 100 %RH	Dimensions [mm] A	B	C
WOS-4	Max oil adsorption [kg]	2,89	2,43	1,23	416	243	411
	Max FAD [Nm³/min]/[scfm]	4,82/170	4,04/142	2,05/72,3			
	Max condensate flow [l/h]	2,3	3,4	6,3			
WOS-8	Max oil adsorption [kg]	6,01	5,04	2,55	730	343	680
	Max FAD [Nm³/min]/[scfm]	10,0/353	8,4/296	4,25/150			
	Max condensate flow [l/h]	4,7	7,1	13,1			
WOS-20	Max oil adsorption [kg]	14,64	12,28	6,22	820	366	940
	Max FAD [Nm³/min]/[scfm]	24,4/861	20,5/723	10,37/366			
	Max condensate flow [l/h]	11,4	17,2	32,0			
WOS-35	Max oil adsorption [kg]	25,4	21,31	10,79	960	386	1137
	Max FAD [Nm³/min]/[scfm]	42,3/1495	35,5/1254	17,99/635			
	Max condensate flow [l/h]	19,8	29,8	55,6			

(1) Max. operating temperature is 65 °C, but when temperature is over 45 °C, performance may decrease.
(2) At compressor oil carryover 2,5 mg/m3. Lower/higher oil carry over means proportionally longer/shorter lifetime (e.g. if oil carryover is 5mg/m3 lifetime reduces to 2000 operating hours).

Mission Statement:

Using our combined industry experience, we provide knowledge, support, and superior products to compressed air distributors across the globe. We are committed to producing positive results through being trustworthy, ethical, and accessible. We are founded in the beliefs that through working together we can continue to transform the industry, while rising to turn challenges into opportunities.

DISTRIBUTED BY:

INDUSTRIAL AIR SYSTEMS NZ

115 Hilton Hwy
Washdyke
Timaru 7910
New Zealand

P. 0800 555 018

E. info@industrialair.co.nz
www.industrialair.co.nz

PneuTech

United States | Australia | New Zealand | United Kingdom