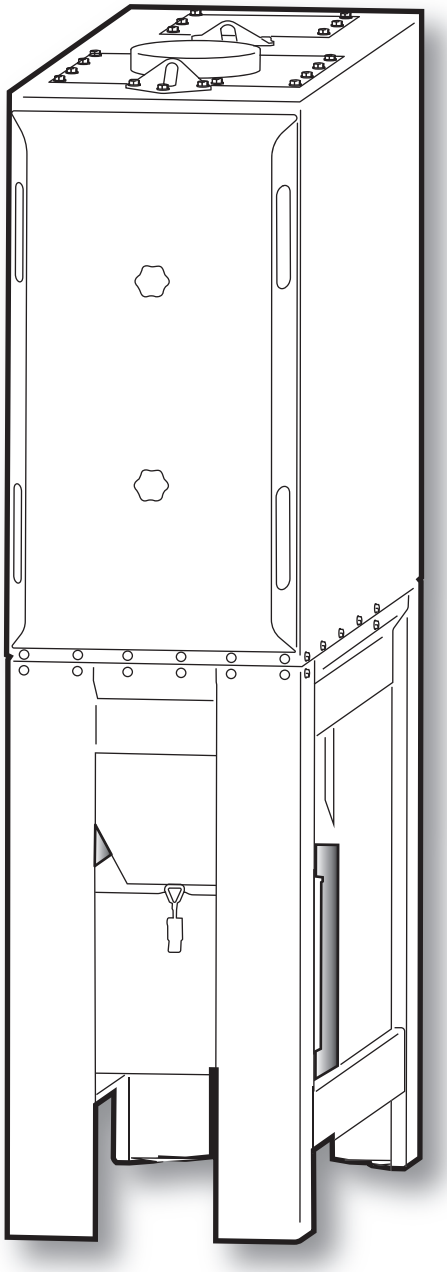
ASSEMBLY INSTRUCTIONS

FUMEX CFE



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C21W51_MCFE_F_EN

Contents

Hereafter, the following symbols will refer to:

Safety instructions (applicable to people or machinery) that must always be adhered to. Risk of fatality or risk of personal injury or damage to property are present.

Instructions which convey important information for an optimally functioning filter.

Information for equipment according to EN ISO 21904, safety in welding.

1 Identification

1.1 Manufacturer

Fumex AB
Verkstadsvägen 2
931 61 Skellefteå
Tfn: 0910-36180, Fax: 0910-13022

1.2 Project number

1.3 Product name

Cartridge filter CFE

1.4 Manufacture year

2024

1.5 Areas of Use

The cartridge filter is solely intended for the automatic purification of dust-filled or contaminated exhaust air. This filter is designed for the filtration of particulates during welding, laser cutting and plasma cutting.

NOTE!
Explosive gases must not be filtered!

Air containing sparks must not be filtered before the requisite adaptations have been carried out. Contact Fumex for information about the necessary measures.
To preserve the validity of the machine warranty, it is forbidden to modify or re-engineer the machine during the warranty period without first obtaining prior approval from Fumex. This is also applicable to any spare parts used which do not comply with the manufacturer's specifications. Damage that is not due to normal use of the product will result in:
- the warranty being voided
- the EC(CE) declaration of conformity being voided

1.6 Declaration of Conformity

CE Fumex hereby declares that the cartridge filter conforms to all applicable provisions in directives and standards as follows:

Machinery Directive 2006/42/EG
EMC Directive 2004/108/EG
Pressure Equipment Directive PED 97/23/EG
Safety of Machinery EN ISO 12100:2010
Electrical Equipment of Machines EN 60204-1

For signed declarations, please contact Fumex.

2 Technical specifications

2.1 Design

Cartridge filter CFE 4, see Fig. 1

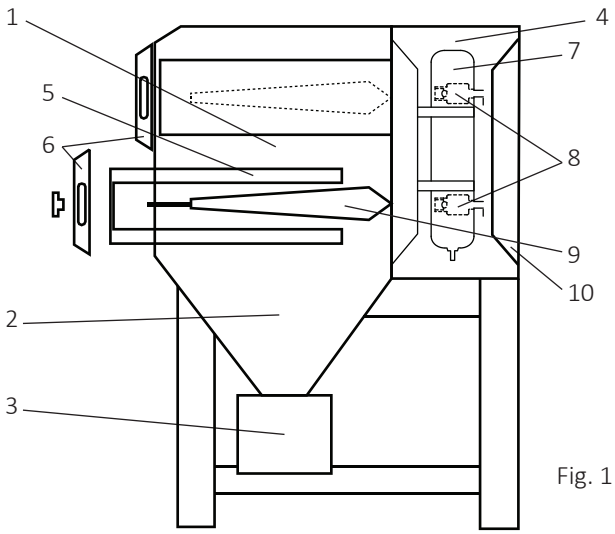


Fig. 1

The cartridge filter consists of a dirty section (1), straining compartment (2), dust collector (3) and a clean section (4) which are all manufactured from welded sheet metal and are joined with bolted joints in order to ensure a fully-sealed design. The filter cartridges (5) must be screwed into the dirty section horizontally so that a tight seal is formed to isolate the clean section. The filter cartridges can be accessed for servicing and inspection through the filter hatches (6) which are easy to remove. The clean section contains the pressure tank (7) and blow-off valves (8) which are directed towards the distribution cone (9) at the centre of each filter cartridge. Access to the compressed air purifier for servicing and repair is guaranteed by the large inspection door (10).

2.2 Function

W3 The cartridge filter is certified by the IFA (German Institute for Work Safety) in accordance with EN ISO 21904 for welding smoke class W3 and is able to filter more than 99% of smoke and dust pollutants produced by the welding of high alloyed steel, such as steel with a nickel and chromium content of 30% or higher.

The cartridge filter CFE is designed for use as an individual filter or in groups. Each filter module is made up of two, four, six or eight cartridges. These modules can be placed next to one another if a larger volume of air needs to be filtered.

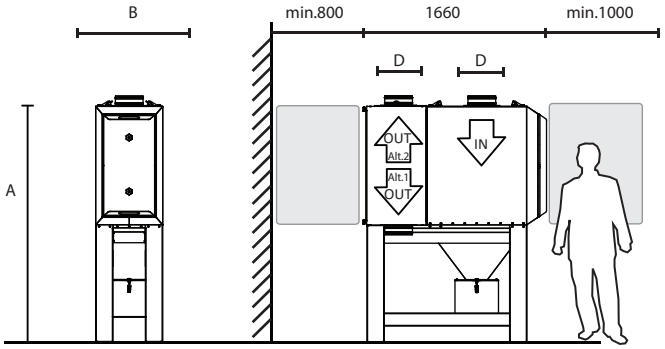
The horizontal placement of the filter cartridges makes it easy to access them during filter replacement. Owing to the bayonet ring and plastic bag included with the filter replacement, contact with hazardous dust is negligible.

Contaminated air is drawn into the filter from above by means of a separate exhaust fan. The dust then moves naturally through the filter. After which, the filter cartridges separate the dust with a high degree of efficiency. Sequentially operating blow-off valves, which are controlled by solenoid valves, then provide defined pressure shocks which release the dust that has collected in the filter cartridges. Dust that is released from the cartridges is collected in the straining compartment and falls down into the dust collector's plastic bag. The filtered air then passes out through the outlet.

The automatic purging of the filter cartridges increases the filter media lifespan and the need for servicing and maintenance is reduced.

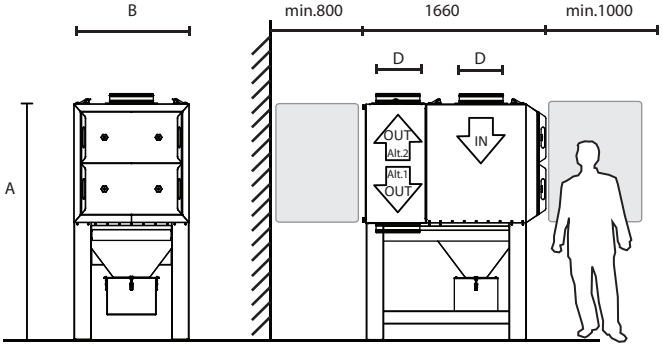
2.3 Technical data

Prior to installation, it is important to ensure that there is adequate room around the filter for servicing and repair, see Fig. 2.
In addition, the surface must be smooth and level and suitable for emptying the dust collector.



CFE 2 Fig. 2

Height (A):	2140 mm
Width (B):	550 mm
Depth: (C)	1660 mm
Connection (D):	250 mm
Weight:	270 kg
Material:	Powder coated steel
Filter colour (Dark blue):	NCS S7020-R90B
Leg frame colour (Dark grey):	NCS S8502-B
Number of filter cartridges:	2
Load/m2 during welding:	55 ±5 m3/h
Load/m2 during laser cutting:	45 ±5 m3/h
Load/m2 during plasma cutting:	37.5 ±2.5 m3/h
Filter area/module (CF 195P):	(2x19,5) 39 m^2
Filter area/module (CF 168PH):	(2x16,8) 33,6 m^2
Filter area/module (CF 211PH):	(2x19,5) 42,2 m^2
Filterarea/modul (CF 195/W3):	(2x19,5) 39 m^2
Filterarea/modul (CF 211/W3):	(2x21,1) 42,2 m^2
Maximum load:	2500 Pa
Temperature limits	
Operating temperature:	+5 to +60 °C
Ambient temperature:	+5 to +50 °C
Transport and storage temperature:	-25 to +50 °C
Placement outdoors:	OK if weather protection is used.



CFE 4 Fig. 2

Height (A):	2180 mm
Width (B):	1070 mm
Depth: (C)	1660 mm
Connection (D):	400 mm
Weight:	350 kg
Material:	Powder coated steel
Filter colour (Dark blue):	NCS S7020-R90B
Leg frame colour (Dark grey):	NCS S8502-B
Number of filter cartridges:	4
Load/m2 during welding:	55 ±5 m3/h
Load/m2 during laser cutting:	45 ±5 m3/h
Load/m2 during plasma cutting:	37.5 ±2.5 m3/h
Filter area/module (CF 195P):	(4x19,5) 78 m^2
Filter area/module (CF 168PH):	(4x16,8) 67,2 m^2
Filter area/module (CF 211PH):	(4x19,5) 78 m^2
Filterarea/modul (CF 195/W3):	(4x19,5) 78 m^2
Filterarea/modul (CF 211/W3):	(4x21,1) 84,4 m^2
Maximum load:	2500 Pa
Temperature limits	+5 to +60 °C
Operating temperature:	+5 to +50 °C
Ambient temperature:	-25 to +50 °C
Transport and storage temperature:	OK if weather
Placement outdoors:	protection is used.

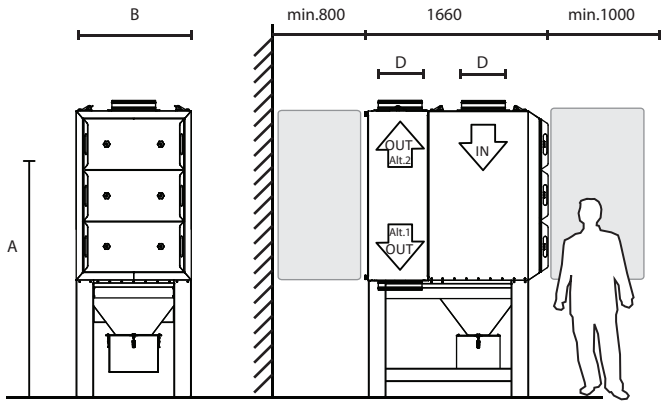


Fig. 2

CFE 6

Height (A):	2650 mm
Width (B):	1070 mm
Depth: (C)	1660 mm
Connection (D):	400 mm
Weight:	520 kg
Material:	Powder coated steel
Filter colour (Dark blue):	NCS S7020-R90B
Leg frame colour (Dark grey):	NCS S8502-B
Number of filter cartridges:	6
Load/m2 during welding:	55 ±5 m3/h
Load/m2 during laser cutting:	45 ±5 m3/h
Load/m2 during plasma cutting:	37.5 ±2.5 m3/h
Filter area/module (CF 195P):	(6x19,5) 117 m^2
Filter area/module (CF 168PH):	(6x16,8) 100,8 m^2
Filter area/module (CF 211PH):	(6x19,5) 117 m^2
Filterarea/modul (CF 195/W3):	(6x19,5) 117 m^2
Filterarea/modul (CF 211/W3):	(6x21,1) 126,6 m^2
Maximum load:	2500 Pa
Temperature limits	+5 to +60 °C
Operating temperature:	+5 to +50 °C
Ambient temperature:	-25 to +50 °C
Transport and storage temperature:	OK if weather
Placement outdoors:	protection is used.

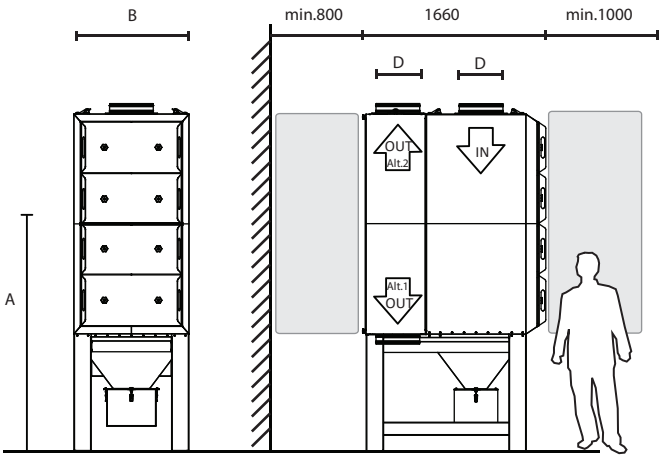


Fig. 2

CFE 8

Height (A):	3270 mm
Width (B):	1070 mm
Depth: (C)	1660 mm
Connection (D):	400 mm
Weight:	720 kg
Material:	Powder coated steel
Filter colour (Dark blue):	NCS S7020-R90B
Leg frame colour (Dark grey):	NCS S8502-B
Number of filter cartridges:	8
Load/m2 during welding:	55 ±5 m3/h
Load/m2 during laser cutting:	45 ±5 m3/h
Load/m2 during plasma cutting:	37.5 ±2.5 m3/h
Filter area/module (CF 195P):	(8x19,5) 156 m^2
Filter area/module (CF 168PH):	(8x16,8) 134,4 m^2
Filter area/module (CF 211PH):	(8x19,5) 156 m^2
Filterarea/modul (CF 195/W3):	(8x19,5) 156 m^2
Filterarea/modul (CF 211/W3):	(8x21,1) 168,8 m^2
Maximum load:	2500 Pa
Temperature limits	
Operating temperature:	+5 to +60 °C
Ambient temperature:	+5 to +50 °C
Transport and storage temperature:	-25 to +50 °C
Placement outdoors:	OK if weather protection is used.

2.4 Compressed air

A lockable safety switch (1), see Fig. 3, with quick exhaust valve and filter regulator is used so that safe servicing can be carried out. The blow-off valve's compressed air consumption is approx. 40 litres/purification. These 40 litres will be refilled within 10 seconds so that subsequent purging can be performed (provides a minimum of 0.24 m 3/min. in system flow).

Check the water level in the water separator filter (2) regularly. When the water level reaches the marker (3) placed on the collection cup, pull the lockable safety switch upwards and check that the water separating filter is emptied when the pressure tank is drained.

During service or any other type of maintenance, the safety switch should be locked and the main system shut off.

The solenoid valve that controls the blow-off valve is supplied with 24 V ~1N. Power consumption = 6.3 Watts. Compressed air must be installed according to the circuit diagram (see chapter 4.5.6).

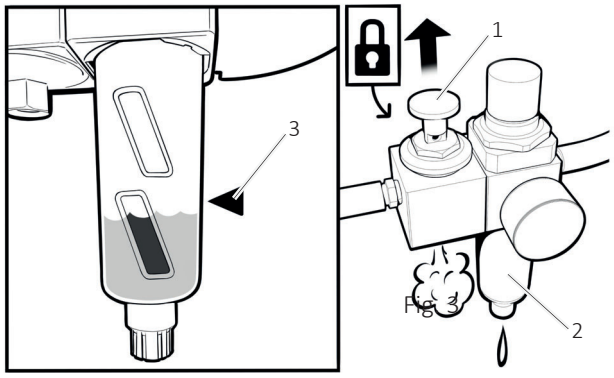


Fig. 3

2.5 Electrical installation

A lockable safety switch (2), see Fig. 4, is used for infeeding so that safe servicing can be carried out. The electronic automatic control is fed with 230 V 1N~ , 6A and must be installed according to the circuit diagram (see chapter 4.5.5).

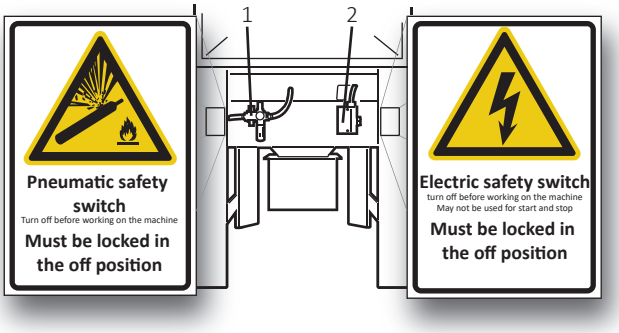


Fig. 4

W3

Filter units delivered according to EN ISO 21904, safety in welding, shall be equipped with:

- An orange flashing warning light
- A green operation indicator light

Both lights shall be visible to the user. For more information, see EN 842. Included relay box shall be fed with 230 V 1N~, 6 A and shall be installed according to the wiring diagram (see chapter 4.5.5).

2.6 Safety

2.6.1 Activation

The machine is designed using the latest technology and is safe to use. It is designed in such a way that hazardous parts only occupy restricted areas in the machine which are secured by a safety switch and safety devices and are indicated by warning labels.

Despite this, use of the machine can pose a risk to life and limb for the user or result in damage to the machine during incorrect or non-intended operation. Therefore, individuals who work with this machine must be conversant in and trained to operate the machine's safety equipment.
To reduce work-related accidents and injuries, the risks involved during the entire lifespan of the machine have been taken into account from the design stage. Risk reduction measures have been implemented as follows:
- through **built-in safety** in the design.
- through **technical protection** such as barriers, etc.
- through **information for use** such as user instructions and labels, etc.

The machine/system may only be used in perfect technical condition and in accordance with the user instructions. Faults that may reduce safety must be eliminated immediately! If any safety-related changes to the system or its operational functions arise, the system must be shut down immediately and this must be reported to the person in charge.

In addition to the user instructions, national and local safety and accident prevention regulations must be followed when operating the machine.

2.6.2 Dangers

When guards, barriers or hoods need to be removed for maintenance, repair or adjustment work, the machine/system must be locked to ensure that the risk involved is reduced. This is described in more detail in chapter 2.4 and 2.5.

Operating the machine without its safety devices is strictly forbidden as this can lead to serious accidents. Hatches and doors may only be opened or removed when the machine/system is pneumatically or electrically disabled.

Note that moving parts in the system always pose a risk (e.g. cutting, clamping or gripping points).

2.6.3 General Safety Instructions

In the event of fire, the doors on the filter or service hatches in the system may not be opened!

Under no circumstances may water be used as an extinguisher in the event of fire or heat propagation in the electrical system!
If water is used to extinguish an electrical installation, this can lead to life threatening injuries! A powder extinguisher or other suitable extinguishers should be used instead of water.

Prescribed hearing protection must always be used during machine operation as sudden noise can occur during purging. There is a label on the side of the machine explaining this.

3 Preparation before use

3.1 Qualifications

Work on the machine must always be carried out by authorised personnel.

Repair or alteration of the machine's electrical equipment may only be performed by certified electricians or persons being directly supervised by certified electricians, in accordance with national electrical regulations.

Work on the pneumatic equipment may only be carried out by experienced persons who are conversant in pneumatics.

National rules and regulations must always be adhered to during assembly work.

3.2 Electronic equipment

Electrical equipment in the system must be inspected regularly. Any defects such as loose connections or crushed cables must be rectified immediately!

Prior to the electrical equipment being started for the first time, all screw terminals in the electrical enclosure must be checked and tightened.

3.3 Pneumatic equipment

The supply of compressed air must be filtered, water-separated and oil-free and have a pressure of 6 to 8 Bar. The filter operating pressure must be set with the pressure regulator to 5 Bar. For other purification pressures, contact Fumex.

Visually inspect all wires, hoses and connections for leaks and external damage. Repair any damage immediately!

3.4 Transport and storage

Protect the machine's parts from rain, snow, aggressive atmospheres and other harmful effects.

When lifting and/or replacing parts, it is important that the lifting device is stable and secured. Only use suitable and technically sound lifting gear and load-bearing equipment with sufficient capacity. Never work or stand underneath suspended loads!
Load securing and instructions to crane operators must be carried out by experienced persons.
The signaller must stand within sight of the operator or stay in voice contact.

3.5 Installation and assembly

3.5.1 Assembly

All hatches, doors and connections must be tightly secured before lifting.

Remove all the packaging from the product and lift it into place, see Fig. 5. Fine adjustment can be performed with a pallet lift, see Fig. 6.

Fig. 5

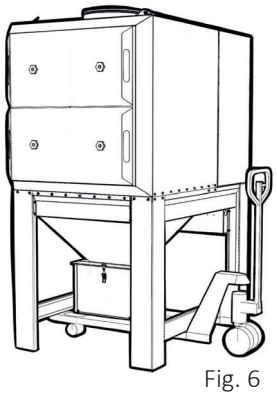


Fig. 6

Secure the filter with at least one anchor bolt in each leg. Anchor bolts must be suitable for the actual surface material, and must be strong enough to manage the load, see Fig. 7.

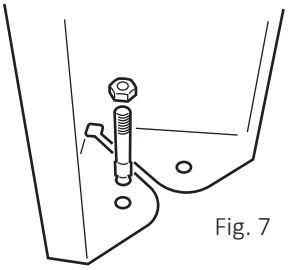


Fig. 7

3.5.2 Duct connection

Standard, one filter module.
This is performed on delivery for inlets and outlets on the filter, see Fig. 8. Duct connection underneath the exhaust air provides a natural flow and a low pressure drop.
Note that a straight part measuring 5 x the diameter of the exhaust air duct is preferable before the fan.

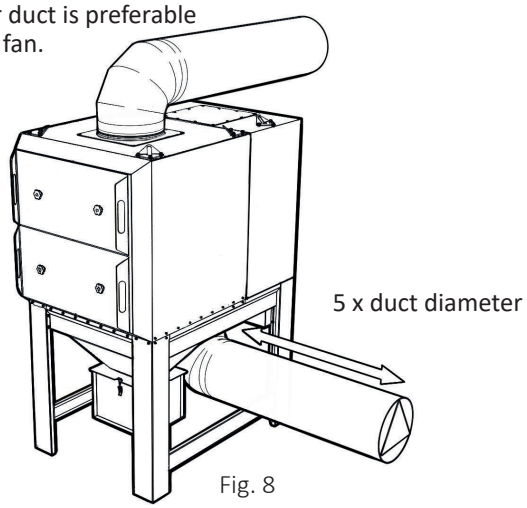


Fig. 8

Alternative, one filter module.
This ducting is a good alternative if there is a lack of room or if, for some other reason, the exhaust air must be connected from above, see Fig. 9.

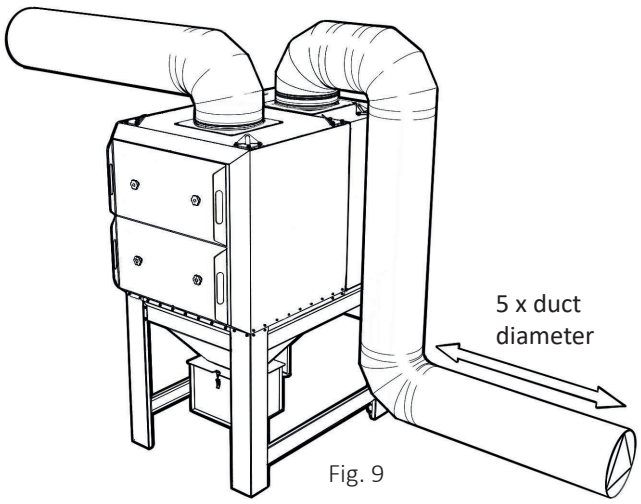


Fig. 9

Adaptation of the outlet plate.
If required, change the outlet plate, see Fig. 10.

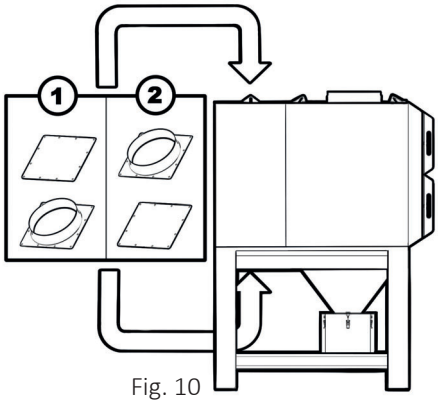


Fig. 10

Standard, two or more filter modules.
This ducting is preferable when several filter modules are placed next to one another, see Fig. 11.

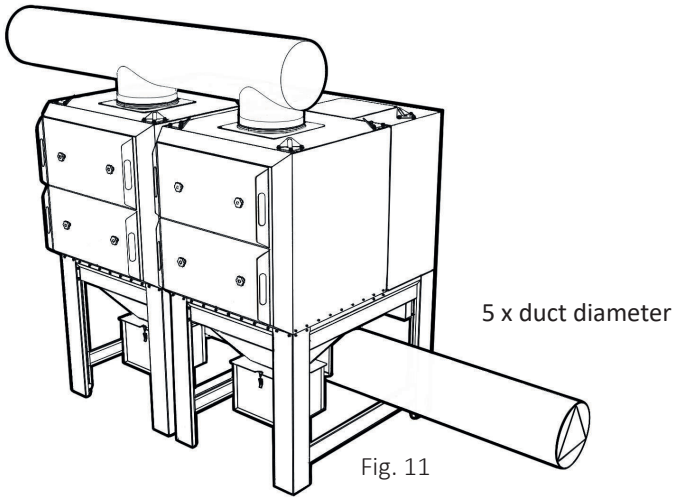


Fig. 11

Alternative, two or more filter modules.
This ducting is a good alternative if there is a lack of room or if, for some other reason, the exhaust air must be connected from above, see Fig. 12.

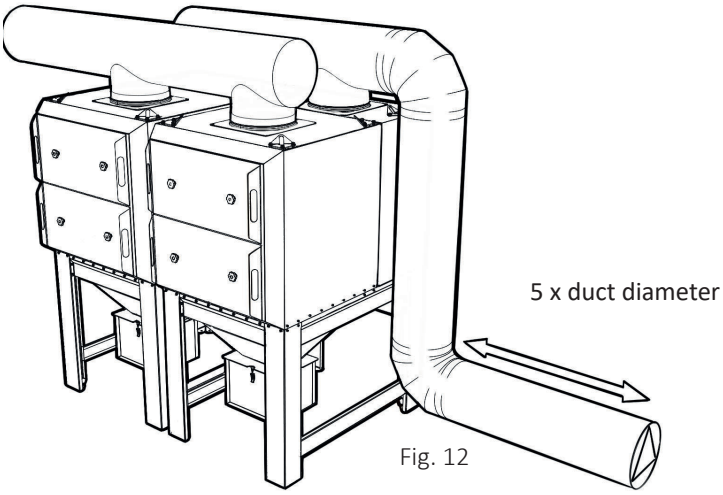


Fig. 12

4.1 Before start-up

Prior to system start-up, read the instructions provided in chapter 2.6 Safety.

Start-up of the system may only be performed by well-trained personnel!

4.2 Start up

Points 1 to 3 may only be performed when the machine is locked. Locking of the machine is done by securing the safety switches in the off-position with a lock, see 2.4 and 2.5. Place warning labels on the switches.

1. Inspect the filter and ventilation ducts thoroughly for any foreign objects. Remove any such objects immediately.

2. Make sure the gaskets and connections on the filter and ventilation ducts are tight.

3. Make sure that all electrical connections are correct.

Any faults must be rectified before operational start-up.

4. Turn on the power supply.

5. Start the compressor and open the compressed air supply.

6. Check the pressure in the compressed air system.

Operating pressure must be 5 bar in the compressed air system.

7. Start the fan and check the rotational direction.

8. Check the fan's power consumption.

If the current is too high, the system must be shut down immediately. Please contact our customer service department!

9. Turn off the fan.

10. Set all parameters according to the recommendations in section 4.5.3.

11. Make sure that each purge valve can open and close. See section 4.5.4 Sequence controls for manual activation.

4.3 Operational Flow

To maintain a proper operational flow the system can be equipped with adjusting dampers or pressure control.

If the flow is too high, this can result in the service life of the filter cartridges being drastically reduced.

If the operational flow is controlled by pressure control, adjustment of the system must be carried out according to the selected pressure control system.

When using adjusting dampers the following adjustments must be made prior to operational start-up.

1. Adjust the damper so that it is approx. 50% open.

2. Start the fan.

3. Adjust the airflow with the flow meter to a flow appropriate for the system.

4. Read the pressure drop off the pressure gauge (see 8 Accessories).

5. Gradually open the damper during the break-in period (2 to 4 weeks) until the pressure gauge shows an operating pressure of 700-1000 Pa. The time it takes to reach normal operating pressure may vary depending on the concentration of dust and the type of application.

6. During the break-in period, pressure reading from the pressure gauge should be performed continuously. A log of the recorded values should be kept as these form the basis for inspecting the status of the filter cartridges.

4.3.1 Operational flow at W3

To achieve correct airflow in a filter system with CFE W3 certified according to EN ISO 21904, the following equipment shall always be used:

- Fumex fan FB or FBE
- Fumex frequency converter SFC
- Fumex pressure sensor ST 300

For extraction arms the following airflows are recommended:

- Extraction arms Ø200 mm - 1800 m³/h
- Extraction arms Ø160 mm - 1100 m³/h
- Extraction arms Ø125 mm - 700 m³/h

Frequency converter SFC
Is programmed to continuously adjust the frequency of the fan, so that the pre-set value for the under pressure is maintained constant.

- Programming of the frequency converter is done at the Fumex factory.

Pressure sensor ST 300
The pressure sensor ST 300 is programmed so that it, from the given conditions in the facility, always gives a signal to the frequency converter SFC to keep a constant under pressure in the system, regardless of how many extractor arms that are in use at a given point.

- Programming of the pressure sensor is made via the manual for ST 300.

Orange flashing warning light CFE BW3
If the pre-set value in the system drops with 200 Pa, at the same time as the frequency converter sends a signal to the fan to run at 50Hz, which means that the fan is running on maximum speed, the orange flashing warning light will be lit and the green operation indicator lamp will be turned off.

Green operation indicator light CFE DW3
Under normal operation, the green operation indicator lamp will be lit and will show that the facility is running okay. The green operation indicator lamp is installed on a clearly visible in the premises together with the orange flashing warning light.

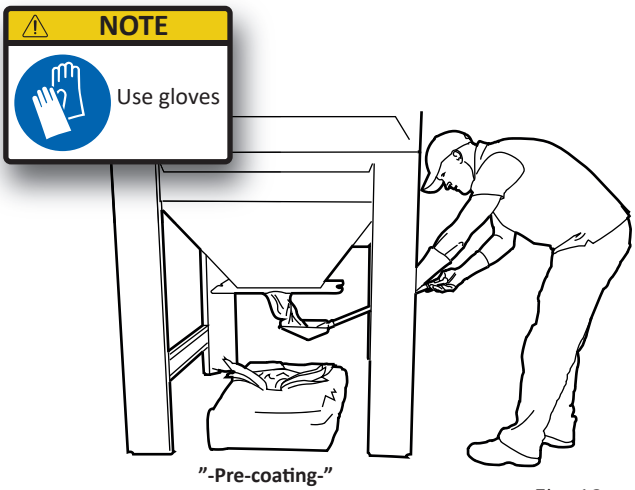
Operation indication lamp at each extraction point
To fully meet the requirements in EN ISO 21904, an operation indication light should also be installed on or near the extraction device. This responsibility lies with the end user to install an operation indication light.

4.4 Pre-coating

Filter cartridges must in most cases be pretreated to ensure maximum service life. Pretreatment or 'pre-coating' consists of introducing particles into the filter cartridge as follows:

1. Detach the dust collector and divide up the dust equally between the number of modules (1kg/cartridge for filter cartridge CF 195x or 170g/cartridge for CF 168x or 210g/cartridge for CF 211x).

2. Start the fan at full speed and suck up all the dust. Dispense the powder in an even flow so that the suction rate is approx. 20 sec/1kg, see Fig. 13.



"-Pre-coating-"

Fig. 13

3. The cartridge filter is now ready for operation!

4.5 Automatic Control

4.5.1 General

The sequence control is an electric automatic control for compressed air purification filter systems and is equipped with an internal differential pressure switch.

4.5.2 Description of Functions

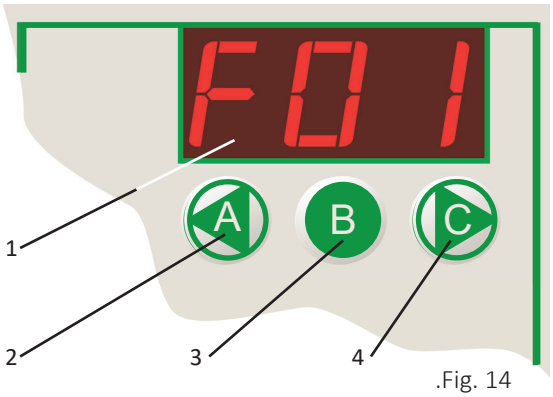
The sequence control is used to control the solenoid valves for the compressed air purifier's blow-off valves. The programmed values for pulse time (F02) and pause time (F03) determine the strength of the blow-off valves' pressure shock. The intervals for pressure shock are determined by the differential pressure (F11) between the filter cartridges' clean and dirty sections and occurs as soon as the programmed value is reached.The cleaning continues until the stop value is obtained (F10). To optimise the purification process after a purge, a so-called off-line purging (F13) is done when the fan is turned off. This means that the particles do not swirl around too much and drift down into the dust collector undisturbed. In order to optimally purge the filter cartridges, the purging process must be repeated 3 times (F05).

W3

When the filter cartridges have reached at the maximum pressure drop (F12), the relay K1 in the control box chuts and triggers the orange warning light CFE BW3 (see chapter 8). The warning light indicates that the filter cartridges have reached the maximum load and need to be changed.

4.5.3 Programming

The triple-digit display (1) shows which part of the function menu you are currently viewing or the current value in the set-up menu. When the filter is in use, the display shows pressure or function. Read more about this in the manual supplied by the manufacturer. All programming is done via the buttons on the front display, see Fig. 14. Button C (4) selects the function, scrolls forward in the function menu and increases the value in the set-up menu. Button A (2) provides access to the selected function and decreases the value in the set-up menu. Button B (3) navigates out of the set-up menu and returns to the function menu.



.Fig. 14

Function Menu	Setup-meny	Recommended Value	Selected Value
F01= Digital input use	*0 or 1*	1 (not active)	
F02= Pulse time	*0.05 to 5.00 s*	0.08 (s)	
F03= Pause time during purging	*1 to 999 s*	15 (s)	
F04= Number of outputs (valves)	*0 to 16*	2	
F05= Number of subsequent purges during stoppage	*0 to 99*	3	
F06= Manual activation of outputs	*1 to 32*	(See 4.3.4)	
F07= Purging via pressure sensor	*0 or 1*	1 (active)	
F08= Voltage to outputs (valves)	*24, 115 or 230*	24 (V 1N~)	
F09= Differential pressure reset.	*0.00*	0.00*	
F10= Threshold value purging stops	*0.01 to 9.99kPa*	0.8 (kPa)	
F11= Threshold value purging starts	*0.01 to 9.99kPa*	1.0 (kPa)	
F12= Threshold value max. dP, Relay K1	*0.01 to 9.99kPa*	1.5 (kPa)	
F13= Subsequent purging when the fan has stopped	*0 or 1*	1 (active)	

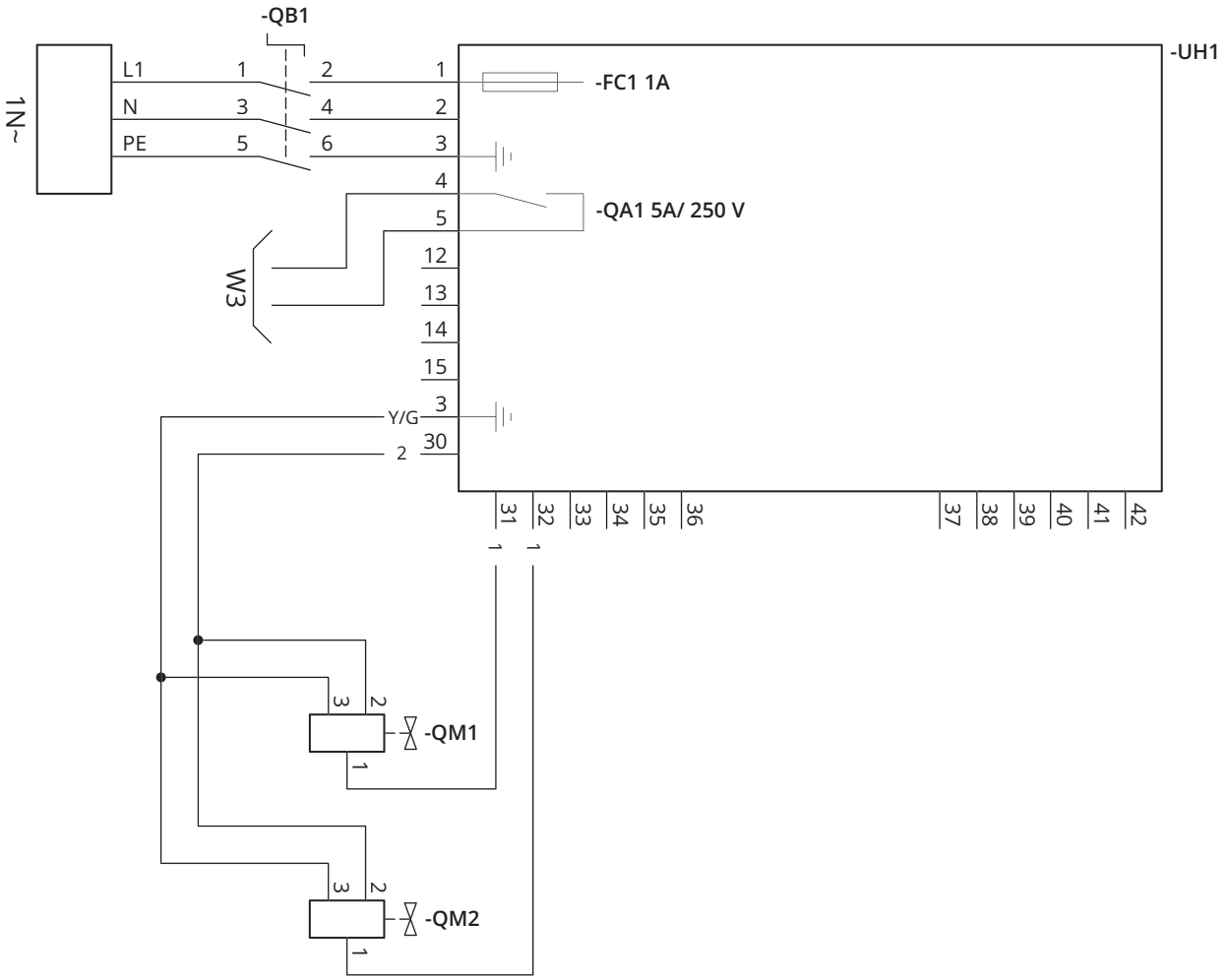
4.5.4 Manual Control

Manual control of purging may be required during maintenance and servicing. Scroll through the function menu and select F06 with button C. Access the set-up menu with button A and activate the current solenoid valve with button A again. Once activation is complete, use button C to select the next valve and so on.

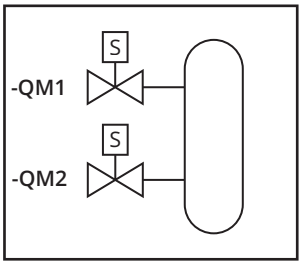
*Adjust the differential pressure to 0.00. Decrease the value with button A and increase with button C.

NOTE! If no button is pressed for 5 minutes, the unit automatically switches from Set-up menu to operating mode.

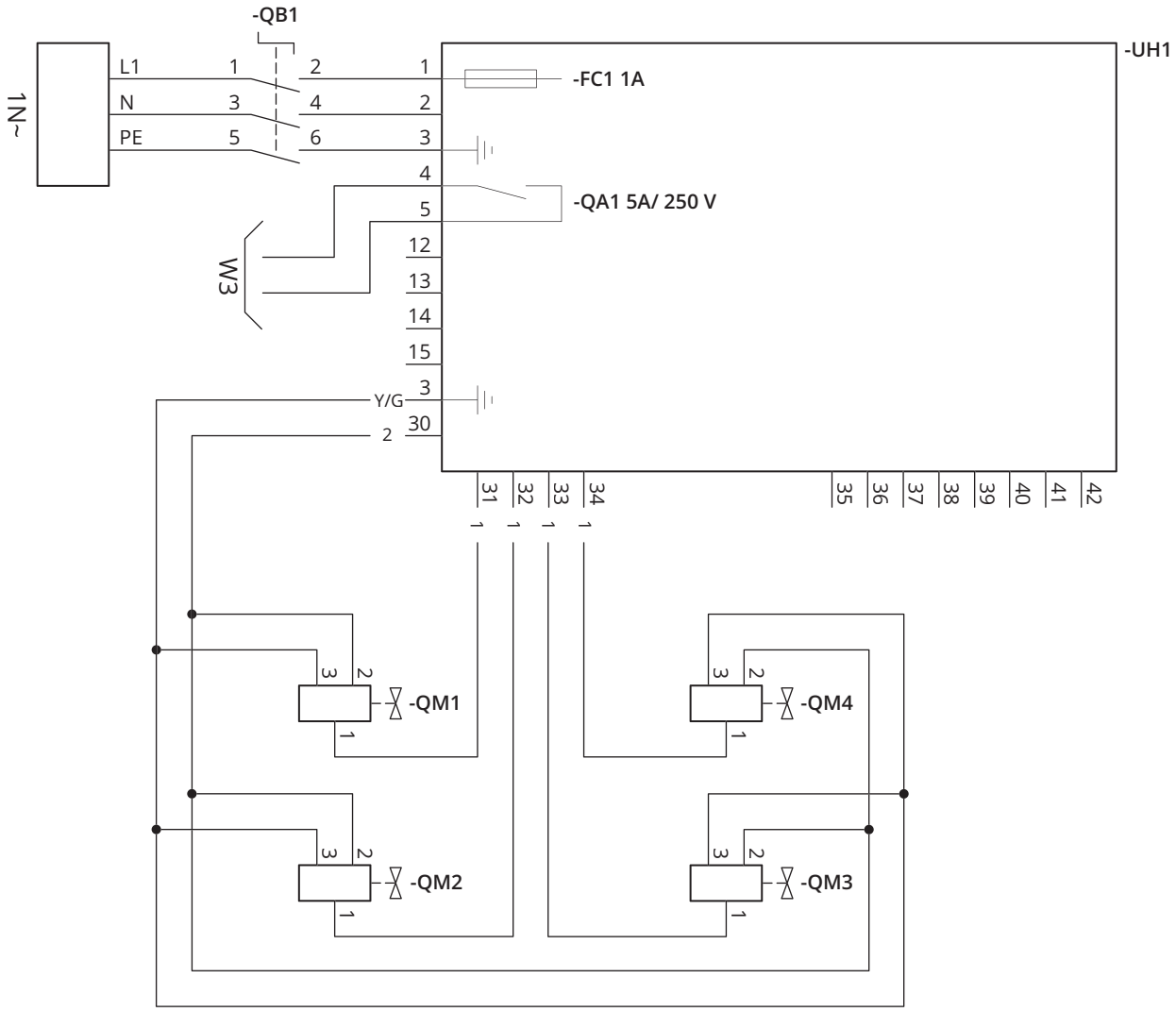
4.5.5 Circuit diagram Electronics
4.5.5.1 CFE 2



Layout



4.5.5.2 CFE 4



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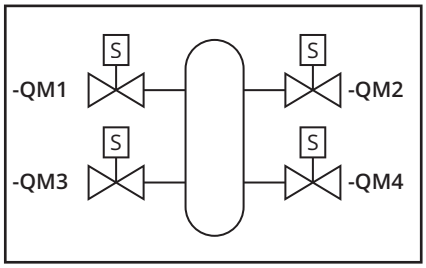
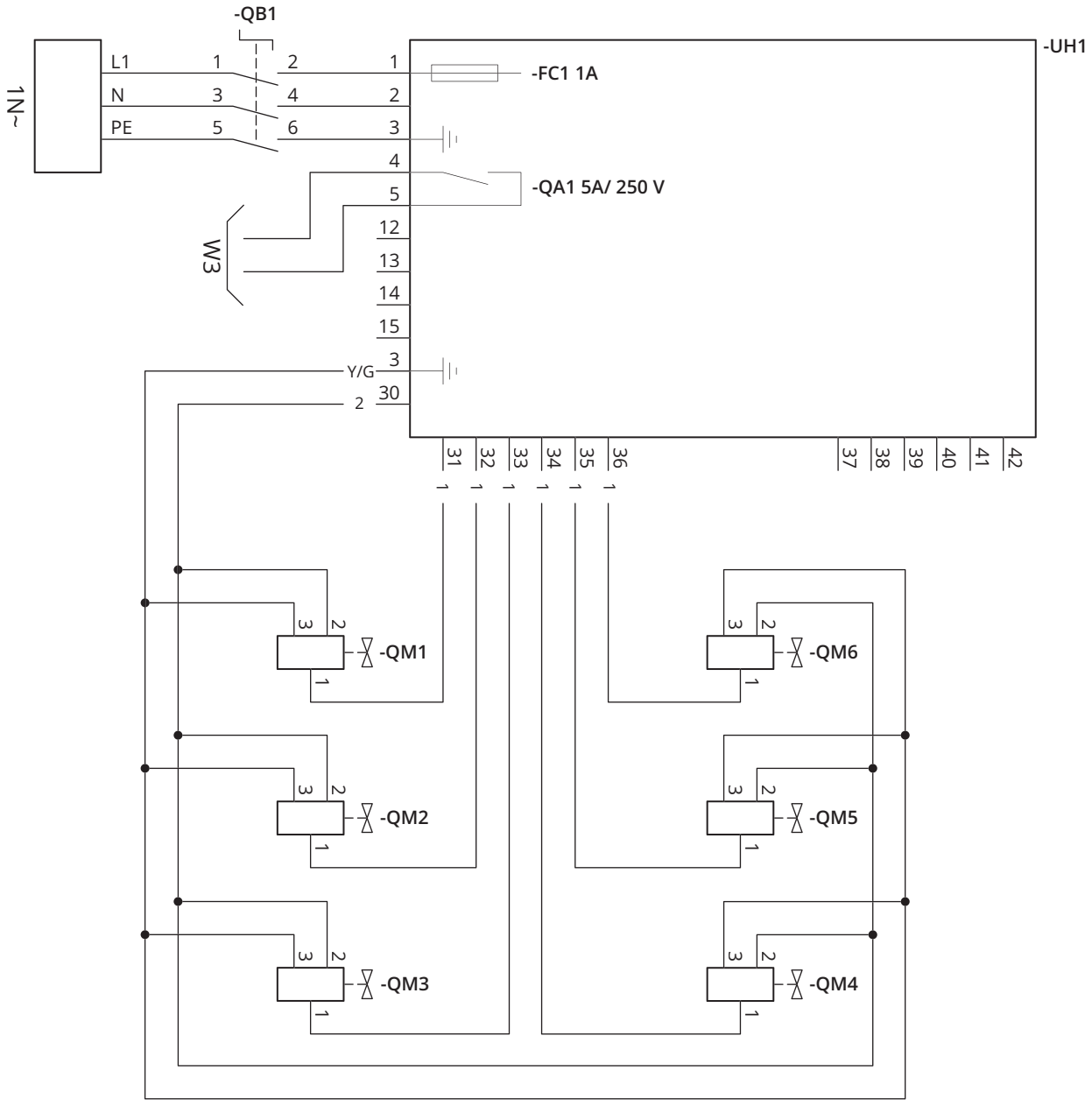


4.5.5.3 CFE 6



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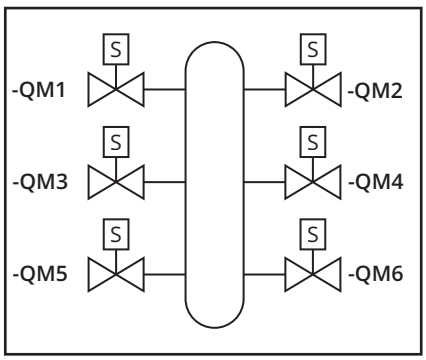
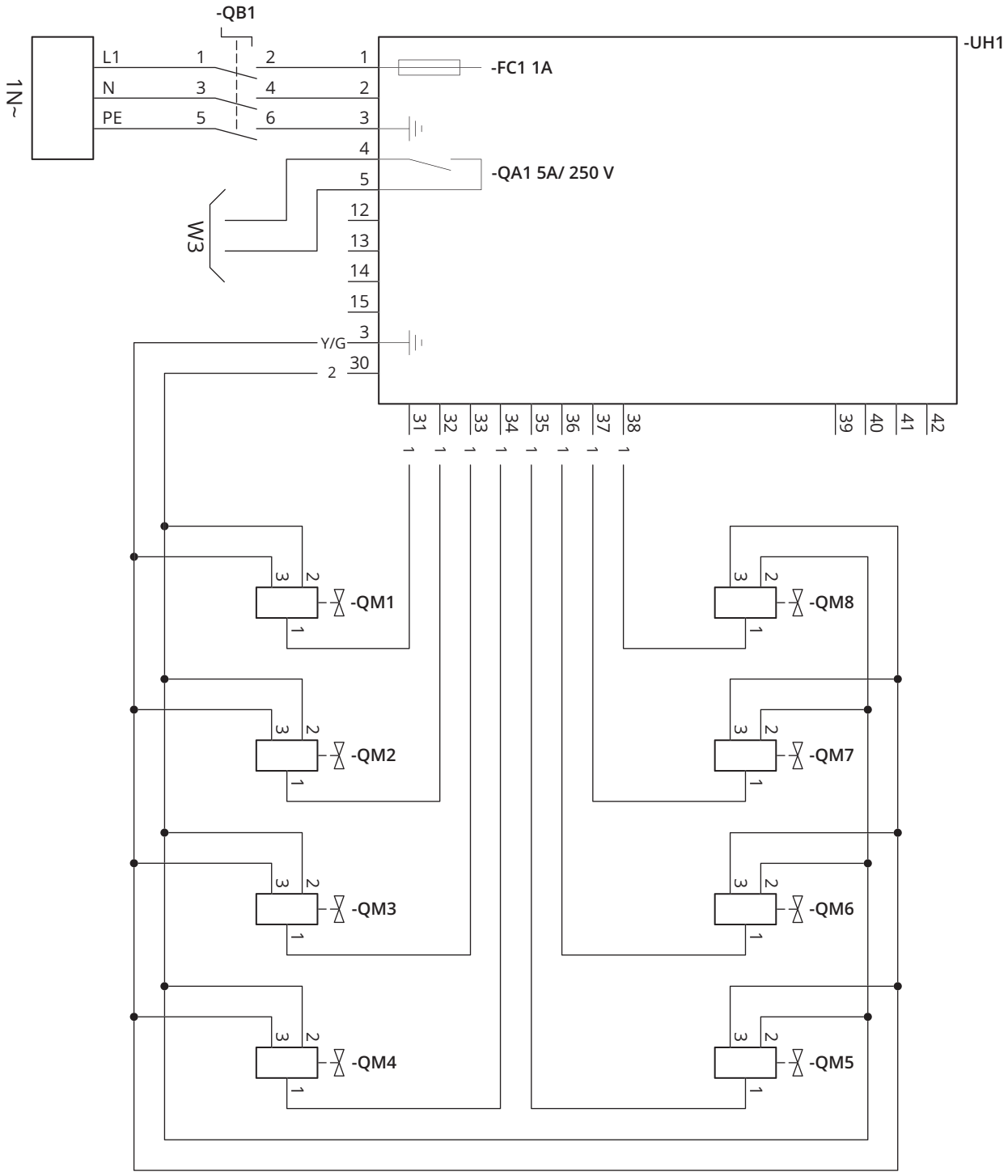


4.5.5.4 CFE 8



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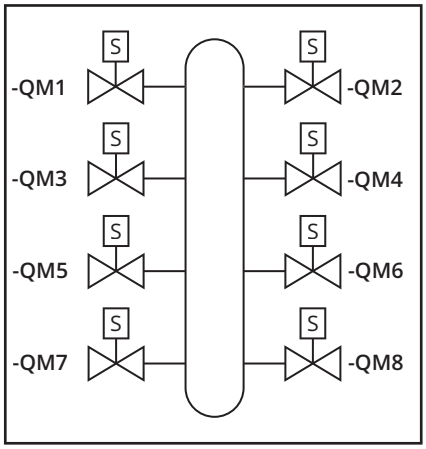
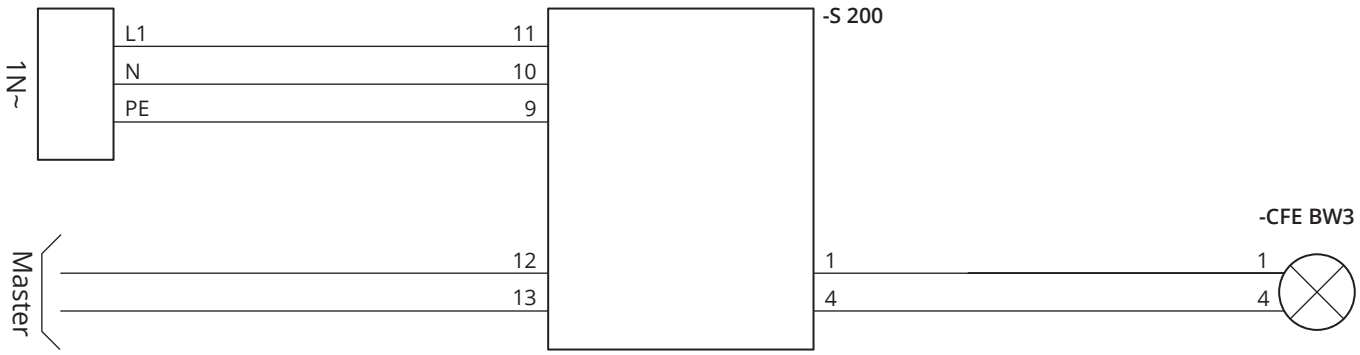
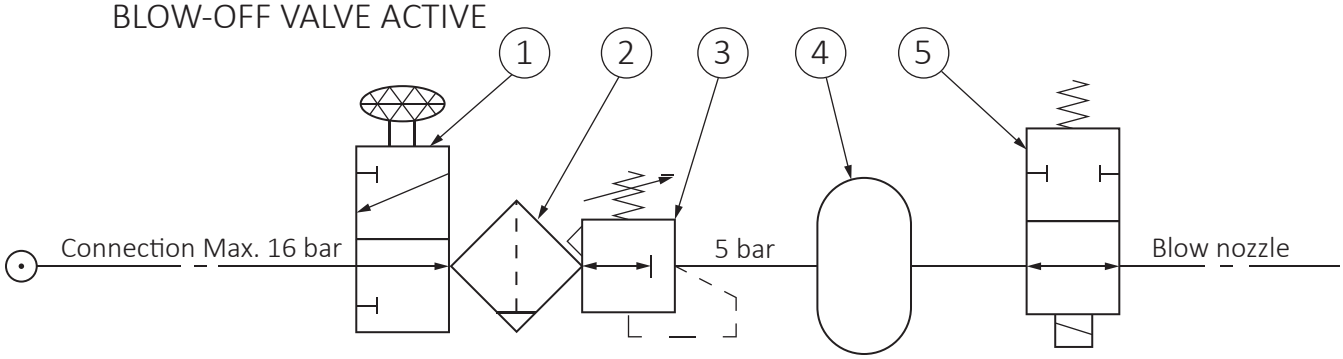


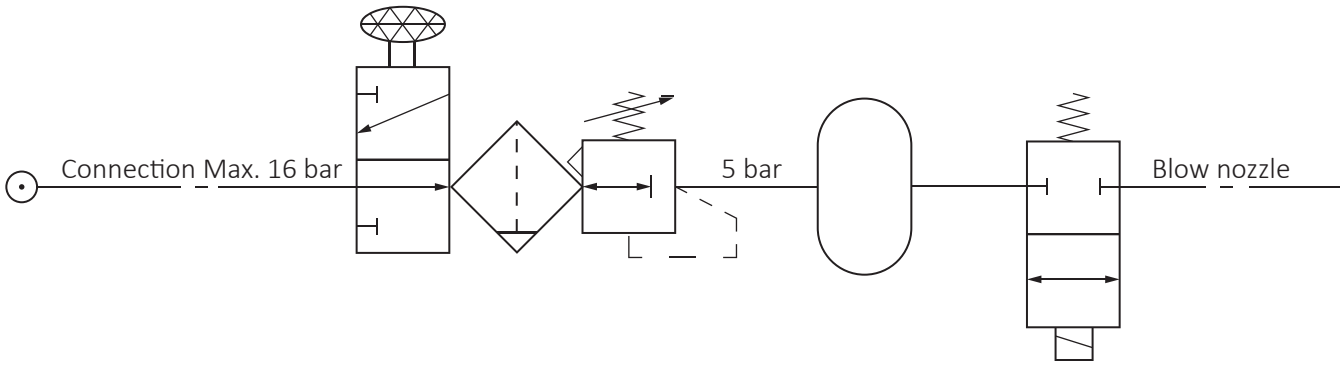

1N~
L1
N
PE
11
10
9
-S 200
-CFE BW3
Master
12
13
1
4
1
4

4.5.6 Circuit diagram Pneumatics

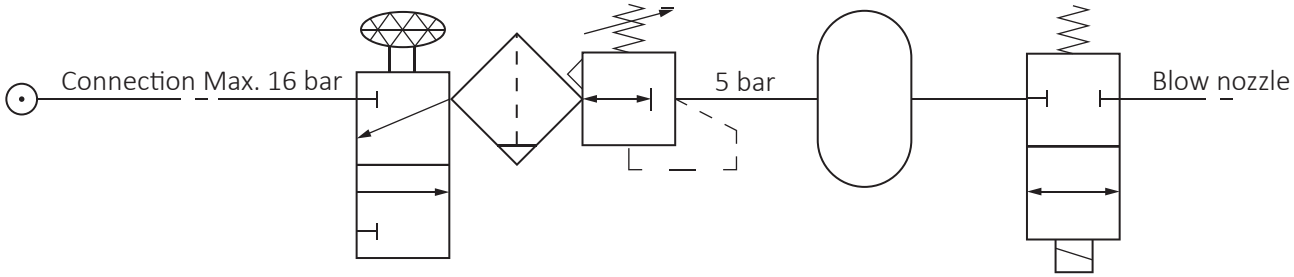
BLOW-OFF VALVE ACTIVE



BLOW-OFF VALVE INACTIVE



SAFETY VALVE ACTIVE



Pos	Name
5	Blow-off valve
4	Pressure tank
3	Regulator
2	Venting
1	Safety switch

5 Troubleshooting

5.1 Troubleshooting Guide

Chapter 2.6 must be taken into account when troubleshooting is required!

Problem	Possible cause	Actions
1. Blocked filter, poor airflow.	Cleaning is not being done often enough.	Check the value in the set-up menu and change if required (see chapter 4.5.3). Run all valves manually (see chapter 4.5.4) and hear if the valves are working.
	Pneumatic pulse too weak.	Check the compressed air supply. Check that the operating pressure in the compressed air system is at 5 bar. Check the voltage to the machine. Check the voltage to the solenoid valves. Replace the blow-off valve if necessary. Replace the solenoid valve if necessary. Replace the automatic control if necessary.
	Off-line purging not functioning.	Check the programming to make sure the off-line purging is set to start during a stop in operation.
	The collector becomes filled with too much material in a very short time.	The system's capacity should be increased.
	The filter element is saturated.	The filter must be replaced.
2. Material is accumulating in the straining compartment.	Wet dust is building up on the walls.	Dry dust is being expelled.
	The dust collector is full.	Check the level in the dust collector, and empty it if necessary.
3. Leaking service door.	Door not closed properly.	Close door properly.
4. Dust on the clean side.	Defective filter cartridge.	Replace the defective filter cartridge.
	The filter cartridge has been incorrectly installed.	Install the filter cartridge correctly.
	Incorrect filter material is being used.	Contact the customer service/servicing department.

Problem	Possible cause	Actions
5. Dust comes out of the suction mouth during and /or after cleaning.	Rear damper missing.	The rear damper must be installed before the filter unit.
	Leaking rear damper.	Check the rear damper for leaks.
6. Too little airflow.	Coating in the duct system.	Clean the ventilation duct.
7. The display does not illuminate.	No mains power.	Check the voltage supply.
	Control fuse defective.	Check the fuse.
	Internal equipment fault.	Contact the customer service department.
8. Solenoid valve not functioning.	Defective electrical connection to the valve.	Check the cables and connections.
	Incorrect setting regarding number of valves.	Check the value in the set-up menu and change if necessary (see chapter 4.5.3).
	Defective magnetic coil.	Replace the magnetic coil.
	Valve inactive.	Check function menu F=04 (see chapter 4.5.3).
	Cleaning defect.	Run the current valve in manual mode (see chapter 4.5.4).
		Change the set value.
		Check the hose connections, etc.
9. Off-line purging absent.	Incorrect setting.	Check function menu F=13 (see chapter 4.5.3).
10. Ineffective cleaning.	The cleaning intervals are incorrect.	Change the time between intervals in the function menu F=03 (see chapter 4.5.3).
	Cleaning pressure is too low.	Adjust the cleaning pressure to 5 bar. For other pressures, contact the customer service/servicing department.
	Defective valve.	Check the valve and replace if necessary.
	Impulse time too short.	Can be changed after consulting with our support service.
	Cleaning cycle interrupted.	Check the differential pressure and hose connections.
	Differential pressure too high.	Shut down the system and perform an off-line purge.
	Purging via pressure sensor not active.	Activate the pressure sensor in the function menu F=07 (see chapter 4.5.3).

6.1 Activation

Disruptions caused by inadequate or improper maintenance can result in high costs and extended downtime in the machine/system..

The check-list for maintenance is designed for normal use of the machine/system. The recommended intervals are approximate and refer to the time after first start-up. Depending on the changing operating conditions between the different systems, the intervals for recommended maintenance may differ. The user should therefore determine their own maintenance intervals.

Please remember that only original spare parts may be used.

When replacing damaged fasteners, only those of identical quality (strength, material) and type may be used.

6.2 Safety Instructions

Make sure that the entire machine/system is shut down during maintenance. The electronic and pneumatic safety switches must be in position 0 and must be locked. This is described in more detail in chapters 2.4 and 2.5.

Make sure that all moving parts are secured to prevent unintentional movement.

During maintenance of the machine where toxic gases may be present, the air inside the machine must be expelled. This can be done, for example, by opening all the doors and service doors on the assembly. Check all connections for the compressed air after maintenance is completed. Machine and system parts must be shut down during inspection, maintenance, and repair. All live parts must first be checked to ensure that they have been turned off. Troubleshooting with an active power supply is extremely dangerous and should therefore only be carried out when absolutely necessary. In these cases, one should seek the services of trained and qualified personnel.

6.3 Maintenance

6.3.1 Check-list for maintenance

Device	Interval	Point	Inspection module	Maintenance instructions	Date
Filter unit	Daily	1.1	Compressed air system	Check operating pressure. Should be 5 bar, for other pressures contact the customer service/servicing department.	
		1.2	Cartridge filter	Check the dust at the outlet in the clean section.	
		1.3	Dust barrel	Check the level and empty if necessary.	
		1.4	Filter hatches	Make sure there are no leaks	
	Every three months	1.5	Hose connections	Check for any wear at the hose connections as well as the tightness between the filter housing and cabling.	
	Every six months	1.6	Electrical connections	Check for moisture damage and corrosion.	
		1.7	Filter housing	Inspect for leaks, damage and wear.	
		1.8	Duct connections	Make sure there are no leaks.	
		1.9	Dust barrel	Make sure there are no leaks.	
	Once a year	2.0	Duct system	Check the dust build-up and clean if necessary.	
		2.1	Filter housing	Clean the filter's external housing with a damp cloth.	
Automatic control	Once a month	2.2	Purging	Check functionality by running manually (see chapter 4.5.4).	
		2.3	Purging	Check that off-line purging is functioning.	
		2.4	Housing	Clean the external housing with a damp cloth.	

6.3.2 Filter Replacement

Make sure to read the safety instructions in chapter 6.2 prior to servicing.

Personal protective equipment such as safety glass_ es, breathing protection, and safety gloves must be worn when replacing filter modules.

Disassembly:
- Turn off the system
- Unscrew and remove the service hatch.
- Unscrew the fasteners securing the filter.
- Twist the plastic frame with bayonet ring and attach the plastic bag to the frame by using an elastic band, see Fig. 15.

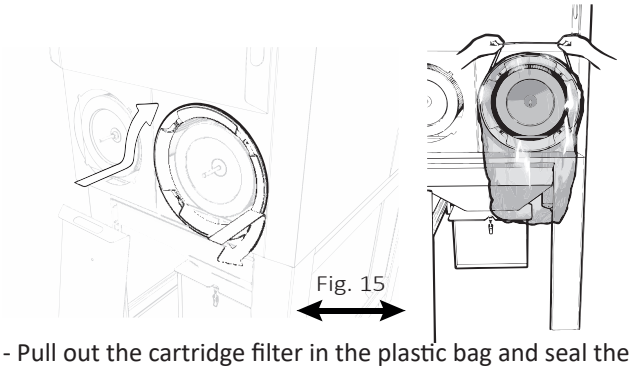


Fig. 15

- Pull out the cartridge filter in the plastic bag and seal the bag, see Fig. 16.

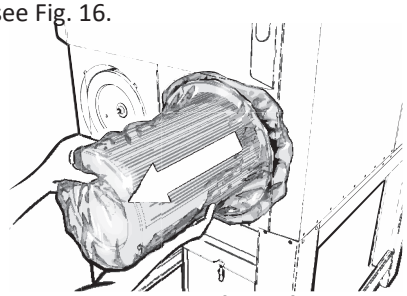


Fig. 16

- Repeat the process for all filters.

It is important to ensure that no dust enters the surrounding environment. If dust has escaped and reaches the ground during replacement of the filter modules, it must be cleaned up immediately.

Packaged in the plastic bags, the filter modules are then moved to the disposal site without pollutants and/or dust being able to spread.

Disposal of contaminated filter modules must be carried out in accordance with the relevant national regulations.

Assembly:

- Insert a new filter cartridge and then push it in perpendicular to the rear wall as far as it can go.
- Reattach the filter cartridge with the appropriate fastener.
- Check that the filter hatch seal has not become damaged. Replace the seal if necessary.
- Reattach the service hatch and verify that the seal between the hatch and the cabinet is satisfactory.
- Follow the instructions for pretreatment of the cartridge filters in chapter 4.4.

6.3.3 Dust Collector

Make sure to read the safety instructions in chapter 6.2 prior to servicing.

Personal protective equipment such as safety glasses, breathing protection, and safety gloves must be worn when emptying the dust collector.

The dust collector must be emptied regularly. The residual dust must not be allowed to remain in the collector for an extended period of time.
To avoid that the dust bag is too heavy for normal manual handling (10-15kg), it is neccesary to check the bag's weight regularly.

Procedure:

- Turn off the system.

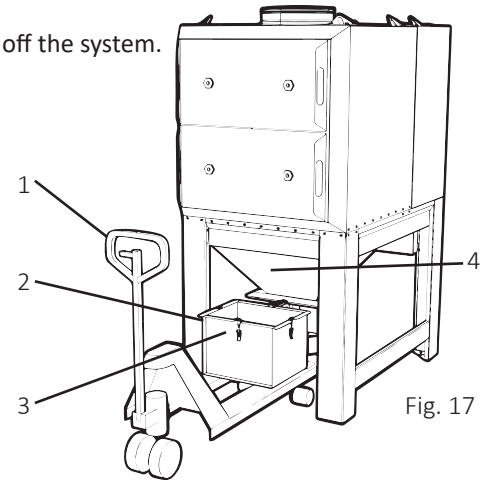


Fig. 17

- Position a suitable pallet lift (1) under the dust collector (2), see Fig. 17.
- Undo the toggle fasteners (3), raise the pallet lift toward the collector and pull out.
- Seal the plastic bag with tape or similar and raise it carefully out of the dust collector.

It is important to ensure that no dust enters the surrounding environment. If dust has escaped from the plastic bag and reaches the ground, it must be cleaned up immediately.

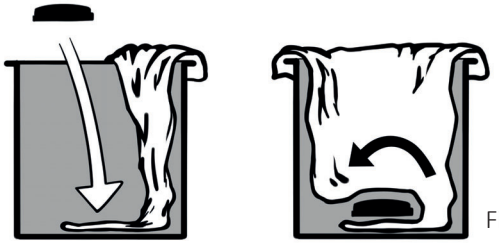


Fig. 18

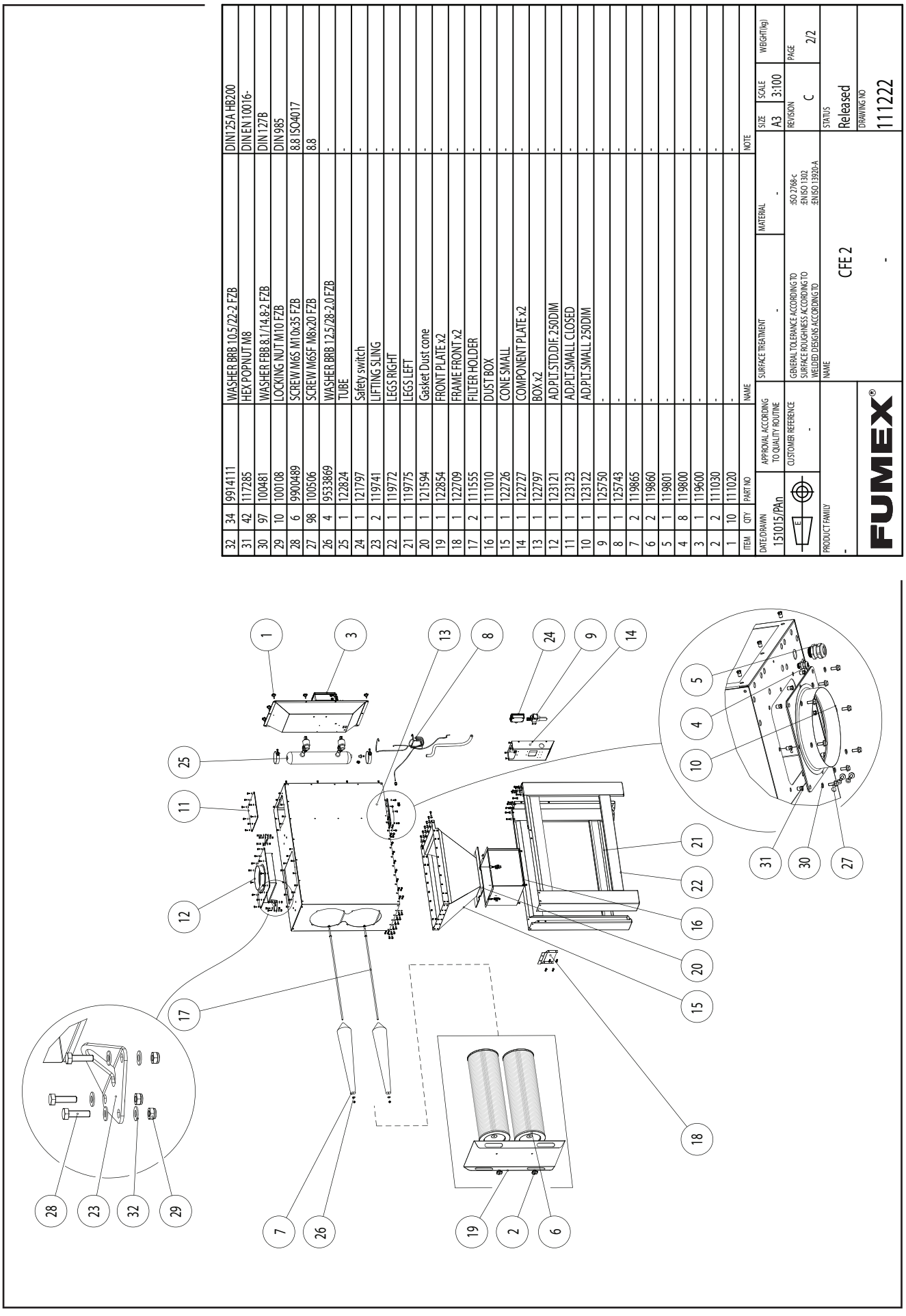
The magnet shall be positioned on the outside of the bag. The bag shall then be folded according to the sketch to get the right function. Fig. 18.
- Correctly place a new plastic bag in the dust collector.
- Reposition the dust collector under the straining compartment (4), see Fig. 17.
- Re-hook the toggle fasteners in their respective hooks and tension.

It is important to ensure that the dust collector is correctly reinstalled under the straining compartment.

- Restart the system.

Waste disposal must be carried out in accordance with the relevant national regulations.

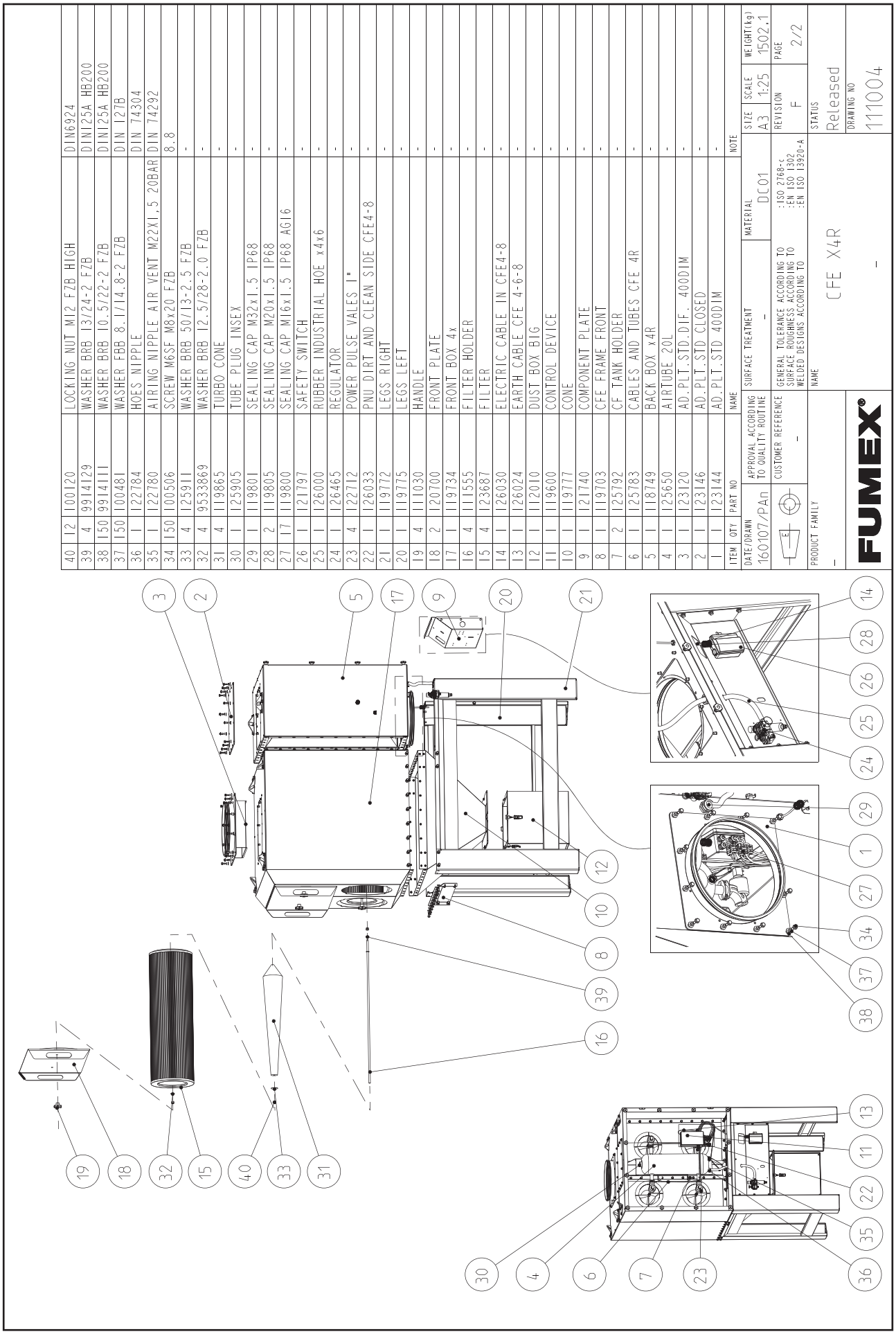
7 Details diagram CFE 2



ITEM	QTY	PART NO	NAME	NOTE
32	34	9914111	WASHER BRB 10.5/22-2 FZB	DIN125A HB200
31	42	117285	HEX POPNUT M8	DIN EN 10016-
30	97	100481	WASHER FBB 8.1/14.8-2 FZB	DIN 127B
29	10	100108	LOCKING NUT M10 FZB	DIN 985
28	6	9900489	SCREW M6S M10x35 FZB	8.8 ISO4017
27	98	100506	SCREW M6SF M8x20 FZB	8.8
26	4	9533869	WASHER BRB 12.5/28-2.0 FZB	-
25	1	122824	TUBE	-
24	1	121797	Safety switch	-
23	2	119741	LIFTING SLING	-
22	1	119772	LEGS RIGHT	-
21	1	119775	LEGS LEFT	-
20	1	121594	Gasket Dust cone	-
19	1	122854	FRONT PLATE x2	-
18	1	122709	FRAME FRONT x2	-
17	2	111555	FILTER HOLDER	-
16	1	111010	DUST BOX	-
15	1	122726	CONE SMALL	-
14	1	122727	COMPONENT PLATE x2	-
13	1	122797	BOX x2	-
12	1	123121	AD.PIT.STD.DIF. 250DIM	-
11	1	123123	AD.PIT.SMALL CLOSED	-
10	1	123122	AD.PIT.SMALL 250DIM	-
9	1	125750	-	-
8	1	125743	-	-
7	2	119865	-	-
6	2	119860	-	-
5	1	119801	-	-
4	8	119800	-	-
3	1	119600	-	-
2	2	111030	-	-
1	10	111020	-	-

DATE/DRAWN: 151015/PAn
APPROVAL ACCORDING TO QUALITY ROUTINE
SURFACE TREATMENT: -
MATERIAL: -
SIZE: A3
SCALE: 3:100
WEIGHT(kg)
CUSTOMER REFERENCE: -
GENERAL TOLERANCE ACCORDING TO ISO 2768-c
SURFACE ROUGHNESS ACCORDING TO EN ISO 1302
WELDED DESIGNS ACCORDING TO EN ISO 13920-A
REVISION: C
PAGE: 2/2
PRODUCT FAMILY: -
NAME: CFE 2
STATUS: Released
DRAWING NO: 111222
FUMEX®
-

7 Details diagram CFE 4



ITEM	QTY	PART NO	NAME	NOTE
40	12	100120	LOCKING NUT M12 FZB HIGH	DIN6924
39	4	9914129	WASHER BRB 13/24-2 FZB	DIN125A HB200
38	150	9914111	WASHER BRB 10.5/22-2 FZB	DIN125A HB200
37	150	100481	WASHER FBB 8.1/14.8-2 FZB	DIN 127B
36	1	122784	HOES NIPPLE	DIN 74304
35	1	122780	AIRING NIPPLE AIR VENT M22XI.5 20BAR	DIN 74292
34	150	100506	SCREW M6SF M8x20 FZB	8.8
33	4	125911	WASHER BRB 50/13-2.5 FZB	-
32	4	9533869	WASHER BRB 12.5/28-2.0 FZB	-
31	4	119865	TURBO CONE	-
30	1	125905	TUBE PLUG INSEX	-
29	1	119801	SEALING CAP M32xI.5 IP68	-
28	2	119805	SEALING CAP M20xI.5 IP68	-
27	17	119800	SEALING CAP M16xI.5 IP68 AG16	-
26	1	121797	SAFETY SWITCH	-
25	1	126000	RUBBER INDUSTRIAL HOE x4x6	-
24	1	126465	REGULATOR	-
23	4	122712	POWER PULSE VALES 1"	-
22	1	126033	PNU DIRT AND CLEAN SIDE CFE4-8	-
21	1	119772	LEGS RIGHT	-
20	1	119775	LEGS LEFT	-
19	4	111030	HANDLE	-
18	2	120700	FRONT PLATE	-
17	1	119734	FRONT BOX 4x	-
16	4	111555	FILTER HOLDER	-
15	4	123687	FILTER	-
14	1	126030	ELECTRIC CABLE IN CFE4-8	-
13	1	126024	EARTH CABLE CFE 4-6-8	-
12	1	112010	DUST BOX BIG	-
11	1	119600	CONTROL DEVICE	-
10	1	119777	CONE	-
9	1	121740	COMPONENT PLATE	-
8	1	119703	CFE FRAME FRONT	-
7	2	125792	CF TANK HOLDER	-
6	1	125783	CABLES AND TUBES CFE 4R	-
5	1	118749	BACK BOX x4R	-
4	1	125650	AIRTUBE 20L	-
3	1	123120	AD.PLT.STD.DIF. 400DIM	-
2	1	123146	AD.PLT.STD CLOSED	-
1	1	123144	AD.PLT.STD 400DIM	-

DATE/DRAWN 160107/PAn

APPROVAL ACCORDING TO QUALITY ROUTINE

SURFACE TREATMENT -

MATERIAL DC01

SIZE A3 | SCALE 1:25 | WEIGHT(kg) 1502.1

CUSTOMER REFERENCE -

GENERAL TOLERANCE ACCORDING TO :ISO 2768-c
SURFACE ROUGHNESS ACCORDING TO :EN ISO 1302
WELDED DESIGNS ACCORDING TO :EN ISO 13920-A

REVISION F | PAGE 2/2

PRODUCT FAMILY -

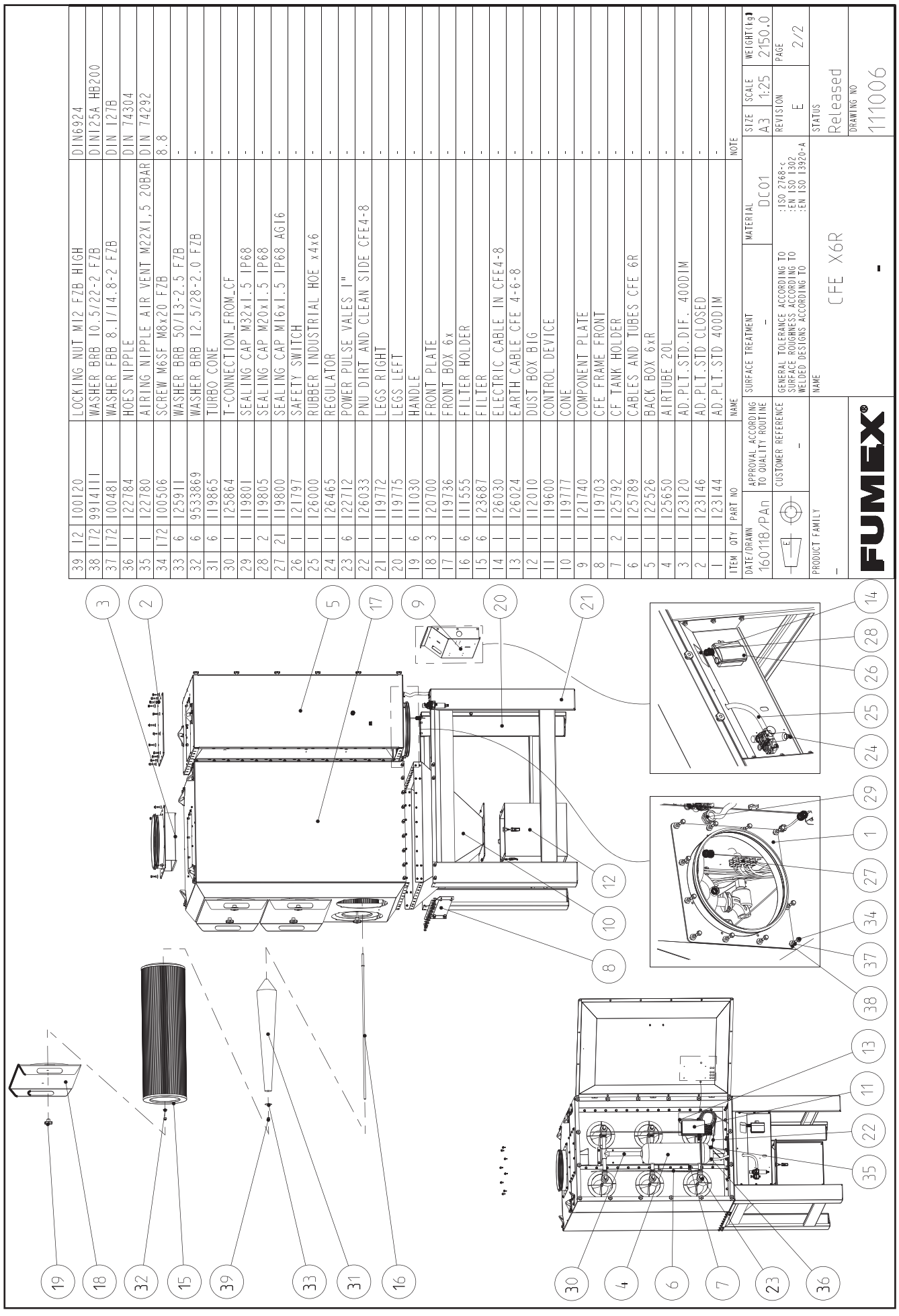
NAME CFE X4R

STATUS Released

DRAWING NO 111004

FUMEX

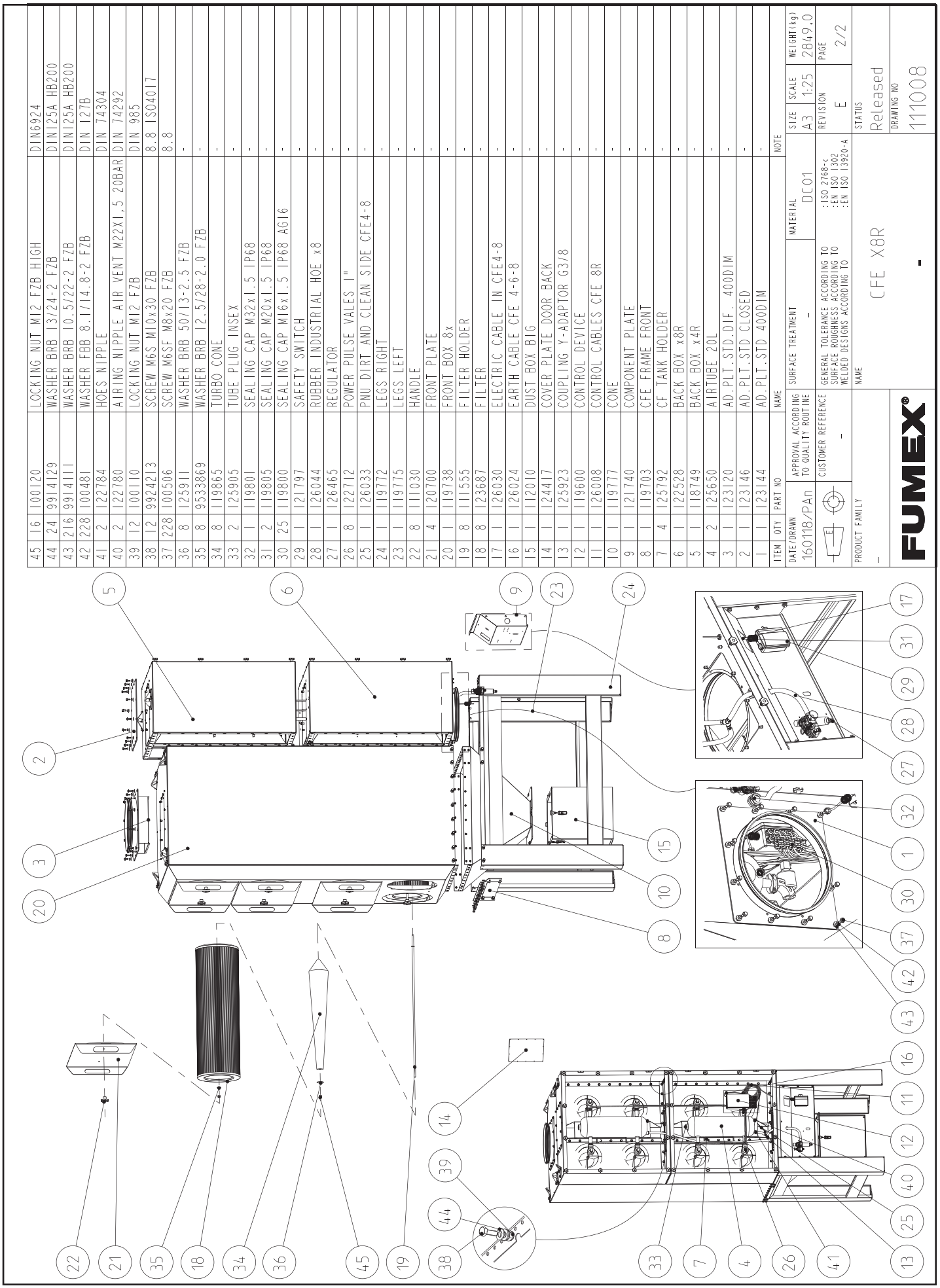
7 Details diagram CFE 6



ITEM	QTY	PART NO	NAME	NOTE
39	12	I00120	LOCKING NUT M12 FZB HIGH	DIN6924
38	172	9914111	WASHER BRB 10.5/22-2 FZB	DIN125A HB200
37	172	I00481	WASHER FBB 8.1/14.8-2 FZB	DIN 127B
36	1	I22784	HOES NIPPLE	DIN 74304
35	1	I22780	AIRING NIPPLE AIR VENT M22X1,5 20BAR	DIN 74292
34	172	I00506	SCREW M6SF M8x20 FZB	8.8
33	6	I25911	WASHER BRB 50/13-2.5 FZB	-
32	6	9533869	WASHER BRB 12.5/28-2.0 FZB	-
31	6	I19865	TURBO CONE	-
30	1	I25864	T-CONNECTION_FROM_CF	-
29	1	I19801	SEALING CAP M32x1.5 IP68	-
28	2	I19805	SEALING CAP M20x1.5 IP68	-
27	21	I19800	SEALING CAP M16x1.5 IP68 AGI6	-
26	1	I21797	SAFETY SWITCH	-
25	1	I26000	RUBBER INDUSTRIAL HOE x4x6	-
24	1	I26465	REGULATOR	-
23	6	I22712	POWER PULSE VALES 1"	-
22	1	I26033	PNU DIRT AND CLEAN SIDE CFE4-8	-
21	1	I19772	LEGS RIGHT	-
20	1	I19775	LEGS LEFT	-
19	6	I11030	HANDLE	-
18	3	I20700	FRONT PLATE	-
17	1	I19736	FRONT BOX 6x	-
16	6	I11555	FILTER HOLDER	-
15	6	I23687	FILTER	-
14	1	I26030	ELECTRIC CABLE IN.CFE4-8	-
13	1	I26024	EARTH CABLE CFE 4-6-8	-
12	1	I12010	DUST BOX BIG	-
11	1	I19600	CONTROL DEVICE	-
10	1	I19777	CONE	-
9	1	I21740	COMPONENT PLATE	-
8	1	I19703	CFE FRAME FRONT	-
7	2	I25792	CF TANK HOLDER	-
6	1	I25789	CABLES AND TUBES CFE 6R	-
5	1	I22526	BACK BOX 6xR	-
4	1	I25650	AIRTUBE 20L	-
3	1	I23120	AD.PLT.STD.DIF. 400DIM	-
2	1	I23146	AD.PLT.STD CLOSED	-
1	1	I23144	AD.PLT.STD 400DIM	-

DATE/DRAWN: 160118/PAn
APPROVAL ACCORDING TO QUALITY ROUTINE
CUSTOMER REFERENCE: -
SURFACE TREATMENT: -
MATERIAL: DC01
GENERAL TOLERANCE ACCORDING TO :ISO 2768-cc
SURFACE ROUGHNESS ACCORDING TO :EN ISO 1302
WELDED DESIGNS ACCORDING TO :EN ISO 13920-A
PRODUCT FAMILY: -
NAME: CFE X6R
-
FUMEX
SIZE: A3
SCALE: 1:25
WEIGHT(kg): 2150.0
REVISION: E
PAGE: 2/2
STATUS: Released
DRAWING NO: 111006

7 Details diagram CFE 8



ITEM	QTY	PART NO	NAME	NOTE
45	16	100120	LOCKING NUT M12 FZB HIGH	DIN6924
44	24	99141129	WASHER BRB 13/24-2 FZB	DIN125A HB200
43	216	99141111	WASHER BRB 10.5/22-2 FZB	DIN125A HB200
42	228	100481	WASHER FBB 8.1/14.8-2 FZB	DIN 127B
41	2	122784	HOES NIPPLE	DIN 74304
40	2	122780	AIRING NIPPLE AIR VENT M22X1,5 20BAR	DIN 74292
39	12	100110	LOCKING NUT M12 FZB	DIN 985
38	12	9924213	SCREW M6S M10x30 FZB	8.8 ISO4017
37	228	100506	SCREW M6SF M8x20 FZB	8.8
36	8	125911	WASHER BRB 50/13-2.5 FZB	-
35	8	953386 9	WASHER BRB 12.5/28-2.0 FZB	-
34	8	119865	TURBO CONE	-
33	2	125905	TUBE PLUG INSEX	-
32	1	119801	SEALING CAP M32x1.5 IP68	-
31	2	119805	SEALING CAP M20x1.5 IP68	-
30	25	119800	SEALING CAP M16x1.5 IP68 AG16	-
29	1	121797	SAFETY SWITCH	-
28	1	126044	RUBBER INDUSTRIAL HOE x8	-
27	1	126465	REGULATOR	-
26	8	122712	POWER PULSE VALES 1"	-
25	1	126033	PNU DIRT AND CLEAN SIDE CFE4-8	-
24	1	119772	LEGS RIGHT	-
23	1	119775	LEGS LEFT	-
22	8	111030	HANDLE	-
21	4	120700	FRONT PLATE	-
20	1	119738	FRONT BOX 8x	-
19	8	111555	FILTER HOLDER	-
18	8	123687	FILTER	-
17	1	126030	ELECTRIC CABLE IN CFE4-8	-
16	1	126024	EARTH CABLE CFE 4-6-8	-
15	1	112010	DUST BOX BIG	-
14	1	124417	COVER PLATE DOOR BACK	-
13	1	125923	COUPLING Y-ADAPTOR G3/8	-
12	1	119600	CONTROL DEVICE	-
11	1	126008	CONTROL CABLES CFE 8R	-
10	1	119777	CONE	-
9	1	121740	COMPONENT PLATE	-
8	1	119703	CFE FRAME FRONT	-
7	4	125792	CF TANK HOLDER	-
6	1	122528	BACK BOX x8R	-
5	1	118749	BACK BOX x4R	-
4	2	125650	AIRTUBE 20L	-
3	1	123120	AD.PLT.STD.DIF. 400DIM	-
2	1	123146	AD.PLT.STD CLOSED	-
1	1	123144	AD.PLT.STD 400DIM	-

DATE/DRAWN 160118/PAn

APPROVAL ACCORDING TO QUALITY ROUTINE

SURFACE TREATMENT –

MATERIAL DC01

CUSTOMER REFERENCE –

GENERAL TOLERANCE ACCORDING TO :ISO 2768-c
SURFACE ROUGHNESS ACCORDING TO :EN ISO 1302
WELDED DESIGNS ACCORDING TO :EN ISO 13920-A

PRODUCT FAMILY –

NAME CFE X8R

FUMEX®

SIZE A3 | SCALE 1:25 | WEIGHT(kg) 2849.0

REVISION E | PAGE 2/2

STATUS Released

DRAWING NO 111008

8 Accessories

8.1 Filter cartridge

CF 195P
Filter cartridge recommended for normal dust load, e.g. welding smoke and stone dust. The filter is made from polyester and is supported on the in- and outside by expanded metal.

CF 168PH
Filter cartridge recommended for heavy dust load, e.g. welding smoke, laser- and plasma cutting. The filter is made from corrugated polyester and is supported on the inside by a metal cage.

CF 195T
Filter cartridge recommended for slightly sticky or humid pollutant, e.g. tobacco production. The filter is made from polyester treated with teflon and is supported on the inside by expanded metal.

W3

CF 195W3
Filter cartridge tested and certified for use in application with requirement according to EN ISO 21904. The filter is made from corrugated polyester and teflon membrane and is supported on the inside by expanded metal.

W3

CF 211W3
Filter cartridge tested and certified for use in application with requirement according to EN ISO 21904. The filter is made from corrugated polyester and nano layer and is supported on the inside by a metal cage.

8.1 Other accessories

CFE RW3*
Ring with bayonet fitting and rubber band, used for a contact free exchange of filter cartridges.

CFE PCW3**
Plastic bag, for bagging of the used filter cartridge.

CFE PSW3***
Plastic bag in the bin, for contact free desposal of the filtered media.

CFE BW3****
Flashing warning light to indicate that the filters have reached there maximum capacity and need to be changed. The kit contains one orange flashing light and a relay box.

CFE DW3*****
Green operating indicator light to indicate that the filter unit is in operation. Delivered in a kit containing operating light and relay box.

CFE GP
Sliding plate for a simple exchange of the bin. Fits CFE 2.

CFE HS
Set of wheels for a simple exchange of the bin.
Fits CFE 4, 6 and 8.

CFE M
Manometer for an easy overview of the filter load.

W3

* Must be purchased separately together with exchange filter cartridges before filter change. Only one bayonet ring is required per filter unit.

** Must be purchased separately together with exchange filter cartridges before filter change.

*** Replacement bag must be purchased separately before emptying the dust bin.

**** Included in the W3 version

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