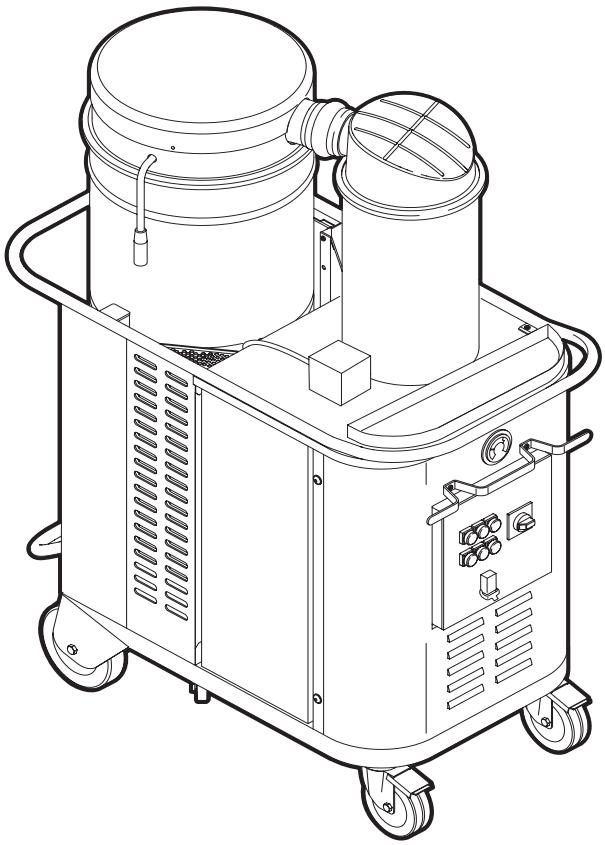
ATTIX 170
ATTIX 170 E



Nilfisk
ALTO

Istruzioni per l‘uso
Operating Instructions
Mode d’emploi
Betriebsanleitung
Instrucciones de funcionamiento
Gebruiksaanwijzing
Driftsinstruks
Bruksanvisning
Driftsvejledning

Table of contents

GB

Instructions for use

Read the operating instructions and comply with the important safety recommendations identified by the word **WARNING!**

Operator safety

⚠ WARNING! ⚠

Before starting the vacuum cleaner, it is absolutely essential to read these operating instructions and to keep them ready at hand for consultation.
The vacuum cleaner can only be used by people who are familiar with the way it works and who have been explicitly authorised and trained for the purpose.
Before using the vacuum cleaner, the operators must be informed, instructed and trained on how to work it and for which substances its usage is permitted including the safe method for removing and disposing of the vacuumed material.

⚠ WARNING! ⚠

The use of vacuum cleaner by people (including children) with limited physical and mental capacities or lacking in experience and knowledge is strictly forbidden, unless they are supervised by a person who is experienced in the use and safe handling of the machine.
Children must be supervised to make sure they will not play with the machine.

General information for using the vacuum cleaner

GB

Use of the vacuum cleaner is governed by the laws in force in the country where it is used.
Besides the operating instructions and the laws in force in the country where the vacuum cleaner is used, the technical regulations for ensuring safe and correct operation must also be observed (Legislation concerning environmental and labour safety, i.e. European Union Directive 89/391/EC and successive Directives).
Do not carry out any operation that could jeopardize the safety of people, property and the environment.
Comply with the safety indications and prescriptions in this instruction manual.

Proper uses

This vacuum cleaner is suitable for collective use, e.g. in hotels, schools, hospitals, factories, shops, offices and residences.
The vacuum cleaners described in this instruction manual are designed for industrial use. They are produced in different versions and for different applications.
The vacuum cleaner has been designed to be used by one operator at a time.

Versions and variations

Versions

⚠ WARNING! ⚠

Dust classification
This vacuum cleaner is produced in:

- ***A version for dust harmful to health: L - M - H classes. In this case, the vacuum cleaner is suitable for use with hazardous, non-combustible/ non-explosive dust in accordance with standard EN 60335-2-69, par. AA. 2. 202 b), c).***

  Check the tolerated dust hazardousness class on the data plate and on the label applied to the vacuum cleaner: L (low risk), M (medium risk), H (high risk).

Variants

ATEX
The manufacturer produces vacuum cleaners suitable to be used in potentially explosive atmospheres. These variants are manufactured according to directives and standards in force. The relevant additional instructions are supplied together with the vacuum cleaner.

[NOTE]

ATEX - ASBESTOS Variants
Refer to the manufacturer's sales network for these versions.

Classification in compliance with standard EN 60335-2-69 – Annexe AA

Vacuum cleaners for dust harmful to health are classified according to the following dust classification:

- **L** (low risk) suitable for separating dust with an exposure limit value of over 1 mg/m^3, depending on the volume occupied;
- **M** (medium risk) for separating dust with an exposure limit value of over 0.1 mg/m^3, depending on the volume occupied;
- **H** (high risk) for separating all dust with an exposure limit value lower than 0.1 mg/m^3 , depending on the volume occupied, including carcinogenic and pathogenic dusts.

Dust emissions into the environment

Indicative values of performance:

- version for dust harmful to health (Classes L, M, H):
  L: retains at least 99.1% of particles measuring ≥ 3 µm;
  M: retains at least 99,9% of particles measuring ≥ 3 µm;
  H: class H13 HEPA filter in accordance with EN1822.

General recommendations

⚠ WARNING! ⚠

Risk of fire outbreaks and explosions.

- ***The vacuum cleaner can only be used when it is certain that active sources of ignition are not going to be vacuumed.***
- ***It is forbidden to vacuum the following materials:***
  - ***burning materials (embers, hot ashes, lighted cigarettes, etc.);***
  - ***flammable liquids, aggressive fuels (e.g. gasoline, solvents, acids, alkaline solutions, etc.);***
  - ***explosive dust or ones liable to ignite in a spontaneous way (such as magnesium or aluminium dusts, etc.).***
- ***The vacuum cleaner is not suitable for vacuuming explosive or similar substances, as established by the laws governing explosive substances, particularly: liquid fuels and mixtures of flammable dust and liquids.***

⚠ WARNING! ⚠

Emergency
If an emergency situation occurs:

- ***filter breakage***
- ***fire outbreak***
- ***short-circuit***
- ***motor block***
- ***electric shock***
- ***etc.***

Turn off the vacuum cleaner, unplug it and ask for assistance from qualified personnel.

[NOTE]

Check the place of work and substances tolerated for the vacuum cleaner in ATEX variant.

⚠ WARNING! ⚠

The vacuum cleaners must not be used or stored outdoors, or in damp places.
The vacuum cleaner is not suitable for vacuuming liquids, it can only be used to vacuum dry materials.

GB

Vacuum cleaner description

Labels

Figure 1

1 Identification plate
Code of the model which includes the class (L, M, H), technical specifications, serial number, CE marking, year of manufacture.
2 Attention plate
Draws the operator's attention to the fact that the filter must only be shaken when the vacuum cleaner is off. Failing this, the shaking would have no effect while the filter itself could be damaged.
3 Warning label
(For L, M, H version)
4 Exhaust
5 Control and check panel
(For L, M, H versions)
6 HEPA filter container
(For L, M, H version)
7 Filtering chamber
8 Inlet
9 Inlet plug
10 Dust container
11 Panel power plate

Figure 2

1 Class L label
2 Class M label
3 Class H label

This vacuum cleaner creates a strong air flow which is drawn in through the inlet (**8**, Fig. 1) and blows out through the exhaust (**4**, Fig. 1). After the hose and tools have been fitted, make sure that the motor turns correctly.

Before turning on the vacuum cleaner, fit the vacuum hose into the inlet and then fit the required tool on to the end part. Refer to the manufacturer's accessory catalogue or Service Centre.

GB

The diameters of the authorised hoses are given in the technical specifications table.

This vacuum cleaner is equipped with an internal baffle plate which subjects the vacuumed substances to a circular centrifugal movement that makes them drop into the container.

The vacuum cleaner is equipped with a primary filter which enables it to be used for the majority of applications.

Several types of primary filters are available: L and M class for dust harmful to health.

Besides the main filter which retains the more common types of dust, the vacuum cleaner can be fitted with a HEPA filter at the intake and/or exhaust side, with a higher filtering capacity for fine dust and substances harmful for the health.

Optional kits

Various optional kits are available for converting the vacuum cleaner:
- Removable separator
- Clamp and bracket
- Downstream HEPA filter
- Grill and depressor
- Grid
- Cartridge filter
- Electric filter shaker

On request, the vacuum cleaner can be supplied with optional kits already installed. However, they can also be installed at a later date.

Please contact the manufacturer's sales network for further details.

Instructions to install parts on request are included in the conversion kit.

⚠ WARNING! ⚠

Use only supplied and authorized genuine spare parts.

Accessories

Various accessories are available; refer to the manufacturer's accessory catalogue.

WARNING!

ATEX variant: refer to the manufacturer's sales network.

WARNING!

Use only genuine accessories supplied and authorized by the manufacturer.

Packing and unpacking

Dispose of the packing materials in compliance with the laws in force.

Figure 3

Model	A (mm)	B (mm)	C (mm)	Kg
ATTIX 170	1,300	700	1,730	210
ATTIX 170E	1,300	700	1,730	225
ATTIX 170 - M / H	1,300	700	1,730	210

Setting to work - connection to the power supply

WARNING!

- ***Make sure that the vacuum cleaner is in perfect condition before commencing work.***
- ***Before plugging the vacuum cleaner into the electrical mains, make sure that the voltage rating indicated on the data plate corresponds to that of the electrical mains.***
- ***Plug the vacuum cleaner into a socket with a correctly installed ground contact/connection. Make sure that the vacuum cleaner is off.***
- ***The plugs and connectors of the connection cables must be protected against splashed water.***
- ***Make sure that connections to the electrical mains and plug are correct.***
- ***Use the vacuum cleaners only when the cables that connect to the electrical mains are in perfect condition (damaged cables could lead to electric shocks!).***
- ***Regularly check that the electric cable does not show signs of damage, excessive wear, cracks or ageing.***

WARNING!

When the vacuum cleaner is operating, do not:

- ***Crush, pull, damage or tread on the cable that connects to the electrical mains.***
- ***Only disconnect the cable from the electrical mains by removing the plug (do not pull the cable).***
- ***Only replace the electric power cable with one of the same type as the original (HO7 RN - F); the same rule applies if an extension is used.***
- ***The cable must be replaced by the manufacturer's Service Centre staff or by equivalent qualified personnel.***

GB

Extensions

If an extension cable is used, make sure it is fit for the power draw and protection degree of the vacuum cleaner.

WARNING!

ATEX variant: extensions, plugged in electrical devices and adapters cannot be used when the vacuum cleaner is used for flammable dust.

Minimum section of extension cables:
Maximum length = 20 m
Cable = HO7 RN - F

Max power (kW)	3	5	15	22
Minimum section (mm^2)	2.5	4	10	16

WARNING!

Sockets, plugs, connectors and installation of the extension cable must maintain the IP protection degree of the vacuum cleaner, as indicated on the data plate.

WARNING!

The vacuum cleaner's power socket must be protected by a differential circuit-breaker with surge current limitation, that shuts off the power supply when the current discharged to the ground exceeds 30 mA for 30 msec. or an equivalent protection circuit.

WARNING!

Never spray water on the vacuum cleaner: this could be dangerous for persons and could short circuit the power supply.

Consult the latest edition of the European Union Directives, the Laws in the country of use and the current standards in force (UNI - CEI - EN), particularly European standard EN60335-2-69.

GB

Dry applications

[NOTE]

- *The supplied filters and the safety container (if applicable) must be installed correctly.*

WARNING!

Comply with the safety regulations governing the materials for which the vacuum cleaner is used.

Use as a dust extractor only (M and H classes only)

WARNING!

The vacuum cleaner , only in M and H versions, can be used as a "dust extractor" in compliance with EN60335-2-69: 2003-08 – par AA.22.202. These versions are equipped with a horn that warns the user when the vacuum speed drops under 20 m/s.

The horn is set to work properly when the vacuum cleaner is connected to a 3-meter-long hose with a nominal diameter that comply with the indications in the technical data table (page 7). For different configurations, please contact the manufacturer's Service Centre.

WARNING!

When the vacuum cleaner is used as a dust extractor, it must be used in well-ventilated areas, to provide proper air change in the room where the exhaust air will be delivered. Always refer the Laws in the country of use.

Maintenance and repairs

WARNING!

Disconnect the vacuum cleaner from its power source before cleaning, servicing, replacing parts or converting it to obtain another version/variant, the plug must be removed from the socket.

- ***Carry out only the maintenance operations described in this manual.***
- ***Use only original spare parts.***
- ***Do not modify the vacuum cleaner in any way.***

Failure to comply with these instructions could jeopardize your safety. Moreover, such action would immediately void the EC declaration of conformity issued with the vacuum cleaner.

Technical specifications

Parameter	Units	ATTIX 170 ATTIX 170 E	ATTIX 170 - M ATTIX 170 - H
Voltage (50 Hz)	V	230/400	230/400
Power rating	kW	4	4.3
Power rating (EN 60335-2-69) (50 Hz)	kW	5.5	4
Noise level	dB(A)	73	72
Protection	IP	55	55
Insulation	Class	F	F
Capacity	L	100	100
Inlet (diameter)	mm	70	70
Max vacuum	mmH_2O	3,000	4,600
Max vacuum with valve	mmH_2O	2,000	3,600
Maximum air flow rate (without hose and reductions)	L/min’	8,600	5,100
Maximum air flow rate (with hose, length: 3 m, diameter: 50 mm)	L/min’	5,000	4,300
Hoses allowed for “L” class (diameter)	mm	70/50	/
Hoses allowed for “M” and “H” classes (diameter)	mm	/	50
Main filter surface for “L” and “M” classes	m^2	1.9	1.9
Upstream HEPA filter surface (code 817631)	m^2	5	5
Downstream ULPA filter surface (code 8 17653)	m^2	8	8
Hepa filter efficiency according to MPPS method (EN 1822) - “H” class		Hepa 13	Hepa 13

Dimensions

Figure 4

Model	ATTIX 170	ATTIX 170 E	ATTIX 170 - M ATTIX 170 - H
A (mm)	1,570	1,570	1,570
B (mm)	1,260	1,260	1,260
C (mm)	650	650	650
Kg (1)	192	207	192

(1) Net weight

- *Storage conditions:*
  T: -10°C ÷ +40°C
  Humidity: 85%
- *Operating conditions:*
  Maximum altitude: 800 m
  (Up to 2,000 m with reduced performances)
  T: -10°C ÷ +40°C
  Humidity: 85%

GB

Safety devices

Figure 5

1 Fan unit
2 Limiting valve

WARNING!

Do not tamper any setting.

Controls, indicators and connections

Figure 6

1 Container release lever
2 Castor lever
3 Manual filter shaker lever
4 Vacuum gauge
5 Main switch (ON “I”, OFF “0”)
6 “Clogged filter” indicator light (blue) (optional)
7 Reverse phase indicator light (yellow)
8 Stop-button (red)
9 Start-button (green)
10 Indicator light (electric panel voltage)
11 Electric filter shaker control button (yellow)
12 Connecting connector to mouth micro-switch
13 Horn for speeds below 20 m/s (M and H versions)

Inspection prior to starting

Figure 7

1 Inlet
2 Ø 70/50 Adaptor
3 Sleeve
4 Adaptor for Type 22 vacuum cleaners
5 Sleeve for Type 22 vacuum cleaners

Prior to starting, check that:

- The filters are installed
- All latches are tightly locked
- The vacuum hose and tools have been correctly fitted into the inlet (**1**)
- The bag or safety container is installed, if applicable
- for Type 22 vacuum cleaners, check that the adaptor (**4**) and the sleeve (**5**) of the suction hose are as shown.

WARNING!

Do not use the vacuum cleaner if the filter is faulty.

GB

Starting up

Figure 8

WARNING!

Lock the castor brakes (1) before starting the vacuum cleaner.

To wire up the mouth start/stop remote switch (if equipped), remove the connector (**6**) on the panel and use the connector (**7**) supplied with the vacuum cleaner.

Starting/stopping the vacuum cleaner

- Turn the main switch (**2**) to “I” position.
- Press the button (**3**) to start the vacuum cleaner.
- Activate the mouths (if equipped).
- Press the button (**5**) to stop the vacuum cleaner.
- Turn the main switch (**2**) to “0” position to turn the vacuum cleaner off.

Checking the rotation direction of the vacuum unit motor

- A check is automatically performed by the vacuum cleaner and, if a faulty electrical connection is found, the vacuum cleaner does not start and the yellow lamp (**4**) turns on.
  In these cases, unplug the vacuum cleaner and contact qualified personnel in order to perform the correct phase connection.

Vacuum cleaner operation

Figure 9

1 Red zone
2 Vacuum gauge
3 Green zone

Check the flow rate:

- When the vacuum cleaner is operating, the pointer of the vacuum gauge (**2**) must remain in the green zone (OK) (**3**) to ensure that the speed of the intake air does not drop below the safety value of 20 m/sec;
- If the pointer is in the red zone (STOP) (**1**) it means that the speed of the air in the vacuum hose is less than 20 m/s and that the vacuum cleaner is not operating in safety conditions.
  In such conditions, the horn (of M and H versions) emits a pulsing sound. The filters must be cleaned or replaced.
- After cleaning or replacing the filters, the vacuum gauge pointer must return to the green zone and the sound (M and H versions) must stop.
- When the vacuum hose is closed, the pointer of the vacuum gauge must switch from the green zone (OK) (**3**) to the red zone (STOP) (**1**) and the horn on M and H versions must emit a pulsing sound.

⚠ WARNING! ⚠

If the vacuum cleaner belongs to the M or H class, use only hoses with diameters that comply with the indications in the Technical data table, in order to prevent the air speed from dropping below 20 m/sec.

⚠ WARNING! ⚠

When the vacuum cleaner is operating, always check that the vacuum gauge pointer remains in the green zone (OK).
Consult the "Troubleshooting" chapter if faults occur.

Shaking the primary filter

Depending on the quantity of dust cleaned up, shake the main filter by means of the lever (**1**, Fig. 10) when the vacuum gauge pointer (**2**, Fig. 9) switches from the green zone (OK) to the red zone (STOP) and/or the horn (of M and H versions) emits a pulsing sound.

⚠ WARNING! ⚠

Stop the vacuum cleaner before shaking the filter.
Do not shake the filter while the vacuum cleaner is on, as this could damage the filter itself.

Wait before restarting the vacuum cleaner, to allow the dust to settle.
Replace the filter element if the pointer still remains in the red zone (STOP) even after the filter has been shaken (consult the "Primary filter replacement" paragraph).

Emergency stopping

Turn the main switch to "0" position.

Emptying the dust container

⚠ WARNING! ⚠

- ***Turn off the vacuum cleaner and remove the plug from the power socket before proceeding with this operation.***
- ***Check the class of the vacuum cleaner.***

Before emptying the container it is advisable to clean the filter (see "Shaking the main filter" paragraph).

GB

⚠ WARNING! ⚠

- ***These operations can only be carried out by trained and qualified personnel who must wear adequate clothing, in compliance with the laws in force.***
- ***Take care not to raise the dust during this operation. Wear a P3 protective mask.***
- ***In case of dangerous and/or toxic dust, use different kinds of safety bags or ABS containers.***
- ***The container and/or bag must only be disposed of by qualified personnel and in compliance with the laws in force.***

How to replace the ABS safety container:

- Place the vacuum hose in a safe, dust-free place.
- Release the container (**1**, Fig. 11).
- Close the safety container with the supplied cover and remove it from the dust container (**1**), fit an empty container in its place.
- Start the motor again to prevent dust from being blown about.
- Make sure that the gasket is in perfect condition and correctly positioned.
- Switch off the motor, fit an empty container in place and fasten it in position.

Replacement of the safety bag for class H vacuum cleaners (Fig. 12)

- Remove and put the vacuum hose in a safe and dust-free place.
- Close the inlet by using the relevant cap (**1**).
- Release the dust container. Remove the bag making sure that the union tubular element (**3**) is kept connected to the inlet.
- Close the plastic bag hermetically.
- Tighten the clamp (**2**) to close the inlet hermetically.
- Remove the union element from the dust container inlet.
- Insert a new safety bag making sure that the bag inlet is sealed.
- Wrap the plastic bag around the dust container external wall.
- Set the dust container into the vacuum cleaner again.

[NOTE]

Before inserting the bag, remove the tubular element so that it does not obstruct the input air.

GB

At the end of a cleaning session

- Turn off the vacuum cleaner and remove the plug from the socket.
- Wind the connection cable around the cable carrier (Fig. 13).
- Empty the container as described in the “Emptying the container” paragraph.
  Clean the vacuum cleaner as described in the “Maintenance, cleaning and decontamination” paragraph.
- Wash the container with clean water if aggressive substances have been vacuumed.
- Store the vacuum cleaner in a dry place, out of reach of unauthorized people.
- Shut the inlet with the appropriate plug when the vacuum cleaner is transported or not being used (particularly in the case of M, H versions) (**1**, Fig. 13).

Maintenance, cleaning and decontamination

⚠ WARNING! ⚠

Use only genuine spare parts supplied and authorized by the manufacturer.

⚠ WARNING! ⚠

The precautions described below must be taken during all the maintenance operations, including cleaning and replacing of the main and HEPA filters.

- To allow the user to carry out the maintenance operations, the vacuum cleaner must be disassembled, cleaned and overhauled as far as is reasonably possible, without causing hazards for the maintenance staff or other people. The suitable precautions include decontamination before disassembling the vacuum cleaner, adequate filtered ventilation of the exhaust air from the room in which it is disassembled, cleaning of the maintenance area and suitable personal protection.
- The external parts of class H and class M vacuum cleaners must be decontaminated by cleaning and vacuuming methods, dedusted or treated with sealant before being taken out of a hazardous zone.
  All parts of the vacuum cleaner must be considered as contaminated when they are removed from the hazardous zone and appropriate actions must be taken to prevent dust from dispersing.
  When maintenance or repair procedure are carried out, all the contaminated elements that cannot be properly cleaned, must be eliminated.
  These elements must be disposed of in sealed bags conforming to the applicable regulations and in accordance with the local laws governing the disposal of such material.
  This procedure must also be followed when the filters are eliminated (main, HEPA and downstream filters).
  Compartments that are not dust-tight must be opened with suitable tools (screwdrivers, wrenches, etc.) and thoroughly cleaned.
- Carry out a technical inspection at least once a year, for example: check the filters to find out whether the air-tightness of the vacuum cleaner has been impaired in any way and make sure that the electric control panel operates correctly. This inspection must be carried out by the manufacturer or by a competent person.

Primary and absolute filter disassembly and replacement

⚠ WARNING! ⚠

When the vacuum cleaner is used to vacuum hazardous substances, the filters become contaminated, thus:

- ***Work with care and avoid spilling the vacuumed dust and/or material;***
- ***Place the disassembled and/or replaced filter in a sealed plastic bag;***
- ***Close the bag hermetically;***
- ***Dispose of the filter in accordance with the laws in force.***

⚠ WARNING! ⚠

Filter replacement is a serious matter. The filter must be replaced with one of identical characteristics, filtering surface and category.
Otherwise the vacuum cleaner will not operate correctly.

Primary filter replacement

Figure 14

1 Vacuum hose
2 Release lever
3 Cover

⚠ WARNING! ⚠

Check the vacuum cleaner class (L, M, H).

Take care not to raise dust when this operation is carried out. Wear a P3 mask and other protective clothing plus protective gloves (DPI) suited to the hazardous nature of the dust collected, refer to the laws in force.
Before proceeding with these operations, turn off the vacuum cleaner and remove the plug from the power socket.

- Remove the vacuum hose (**1**).
- Use the lever (**2**) to remove the lid (**3**) together with the primary filter.
- Remove the old filter from the cage.
- Fit the new filter and secure it in the cage with special clamps.
- Install the cover and the main filter in the reverse order of removal.

GB

- Dispose of the old filter according to the laws in force.

⚠ WARNING! ⚠

While performing assembly operations, ensure to research phase condition between filter, cage and filter shaker (Fig. 15).

If necessary contact the manufacturer's Service Centre.

[NOTE]

These operations can be performed using devices for lifting the unit and keeping it in vertical position.

HEPA filter replacement

Version for dust harmful to health: H class

⚠ WARNING! ⚠

Take care not to raise dust when this operation is carried out. Wear a P3 mask and other protective clothing plus protective gloves (DPI) suited to the hazardous nature of the dust collected, refer to the laws in force.

Upstream HEPA filter replacement

Figure 16

1 Hose
2 Release lever
3 Cover
4 Filter
5 Safety bolt

- Remove the safety bolt (**5**).
- Disassemble the hose (**1**).
- Use the lever (**2**) to remove the cover (**3**) or the filter (**4**).
- Cover the filter (**4**) with a plastic bag.
- Seal the plastic bag hermetically and insert a new filter unit which complies with the laws in force.
- Assemble the components in the reverse order of disassembly.
- Seal the cover again hermetically.
- Dispose of the old filter according to the laws in force.

[NOTE]

If the vacuum cleaner is ATEX variant: perform galvanic continuity tests in accordance with the accident-prevention standards (e.g.: VBG4 and according to DIN VDE 0701 part 1 and part 3).
Standard EN 60335-2-69 prescribes inspections at regular intervals or after repairs or modifications.

Motor cooling fan inspection and cleaning

Periodically clean the motor cooling fan to prevent the motor from overheating, especially if the vacuum cleaner is used in a dusty place.

Tightness inspection

Hoses check

Make sure that connecting hoses (**1**, **2**, **3**, Fig. 17) are in a good condition and correctly fixed.
If the hoses are damaged, broken or badly connected to the unions, they must be replaced.
When sticky materials are treated, check for possible clogging along the hose (**4**, Fig. 17), in the inlet and on the baffle plate inside the filtering chamber.
Scrape the inlet from the outside and remove the deposited waste as indicated in figure 17.

Filtering chamber tightness check

If the gasket (**1**, Fig. 18) between the container and the filtering chamber (**3**) fails to guarantee tightness:

- Loosen the four screws (**2**) that lock the filtering chamber (**3**) against the vacuum cleaner structure.
- Allow the filtering chamber (**3**) to lower down and tighten the screws once it has reached the tightness position (**2**).

The gasket must be replaced if it is torn, cut, etc...
Replace the gasket (**1**, Fig. 18) if the degree of tightness is still not optimum.

Separator cleaning and replacement

[NOTE]

*If there is only a dust deposit on the separator (**4**, Fig. 19) allow the dust to drop through the central hole.*

The separator (**4**, Fig. 19) should first be disassembled in order to be perfectly cleaned:

- Use the lever (**1**) to remove the lid (**2**) together with the primary filter.
- Unscrew the two screws (**3**) and remove it from the container.

Replace the part if it is excessively worn.
Assemble the components in the reverse order of disassembly.

GB

Vacuum cleaner disposal

Figure 20

Dispose of the vacuum cleaner in compliance with the laws in force.

- **Proper disposal (electric and electronic waste) (applicable in the European Union and in countries providing a separate collection system)**

The symbol shown in the figure is present on the product or in its documentation and it indicates that the product cannot be disposed of together with other domestic waste at the end of its life cycle.
To prevent damages to the environment or the health caused by improper waste disposal, please separate this product from other waste and recycle it responsibly in order to support the sustainable reuse of material resources.
Domestic users should contact the retailer or the local office providing information on separate collection and recycling of this product.
Companies should contact the supplier and check the purchase contract terms and conditions.
This product can not be disposed of together with other commercial waste.

Wiring diagrams

Class L (preset for cartridge filter and automatic cleaning)

Figure 21

1 Power supply
2 Phase sequence relay
3 Vacuum cleaner

Figure 22

1 Transformer
2 Voltage signalling (white indicator)

Figure 23

1 Stop button
2 Start button
3 Vacuum cleaner contactor
4 Wrong phase sequence indicator (yellow indicator)
5 Vacuum cleaner switch-off delay timer
6 Mouth connection

Figure 24

1 Fuse box
2 Cartridge kit
3 Mouth connector

Figure 25

Item	Description	Q.ty
H1	White lamp	1
H3	Yellow lamp	1
KM1	Contactor kW4 24VAC 1NO	1
PA	Red button	1
PM	Green button	1
Q1	Circuit breaker 9-12,5 A	1
SF1	Phase sequence relay	1
TR1	Transformer 20 VA 400/24 V	1
KT1	24 VAC Timer	1
K1	24 VAC Relay	1
K2	24 VAC Relay	1
KC1	4P + T Connector	1

Class M and H (preset for cartridge filter and automatic cleaning)

Figure 21

1 Power supply
2 Phase sequence relay
3 Vacuum cleaner

Figure 22

1 Transformer
2 Voltage signalling (white indicator)

Figure 26

1 Stop button
2 Start button
3 Vacuum cleaner contactor
4 Wrong phase sequence indicator (yellow indicator)
5 Vacuum cleaner switch-off delay timer
6 Mouth connection
7 Air speed sensor
8 Horn

Figure 27

1 Fuse box
2 Cartridge kit
3 Mouth connector
4 Speed sensor
5 Horn

Figure 28

Item	Description	Q.ty
H1	White lamp	1
H3	Yellow lamp	1
KM1	Contactor kW4 24VAC 1NO	1
PA	Red button	1
PM	Green button	1
Q1	Circuit breaker 9-12,5 A	1
SF1	Phase sequence relay	1
TR1	Transformer 20 VA 400/24 V	1
KT1	24 VAC Timer	1
K1	24 VAC Relay	1
K2	24 VAC Relay	1
KC1	4P + T Connector	1

GB

Class L, M, H with cartridges cleaning

Figure 29

1 Timer
2 Filter cleaning solenoid valve 1
3 Filter cleaning solenoid valve 2
4 Filter cleaning solenoid valve 3
5 Filter cleaning solenoid valve 4

T1 = Filter cleaning time
T2 = Work hold time
T3 = Time between cleaning cycles

Class L with electric filter shaker and automatic cleaning

Figure 30

1 Power supply
2 Phase sequence relay
3 Vacuum cleaner
4 Electric filter shaker

Figure 31

1 Transformer
2 Voltage signalling (white indicator)
3 Phase sequence indicator (yellow indicator)

Figure 32

1 Stop button
2 Start button
3 Logo controller input
4Filter shaker buttons

Figure 33

1 Vacuum cleaner contactor
2 Filter shaker contactor
3 Logo controller output

Figure 34

1 Fuse box
2 Mouth connector

Figure 35

Item	Description	Q.ty
H1	White lamp	1
H3	Yellow lamp	1
KM1	KW 4 24 VAC 1NO Contactor	1
KM2	KW 3 24 VAC 1NC Contactor	1
PA	Red button	1
PM	Green button	1
PS1	Yellow button	1
Q1	Circuit breaker 9-12,5 A for 8 41593	1
Q2	Circuit breaker 0.7-1 A	1
SF1	Phase sequence relay	1
TR1	Transformer 20 VA 400/24 V	1
P1	24RC Logo controller	1
XC1	3P + T Connector	1

Recommended spare parts

The following is a list of spare parts that should be kept ready at hand in order to speed up maintenance operations:

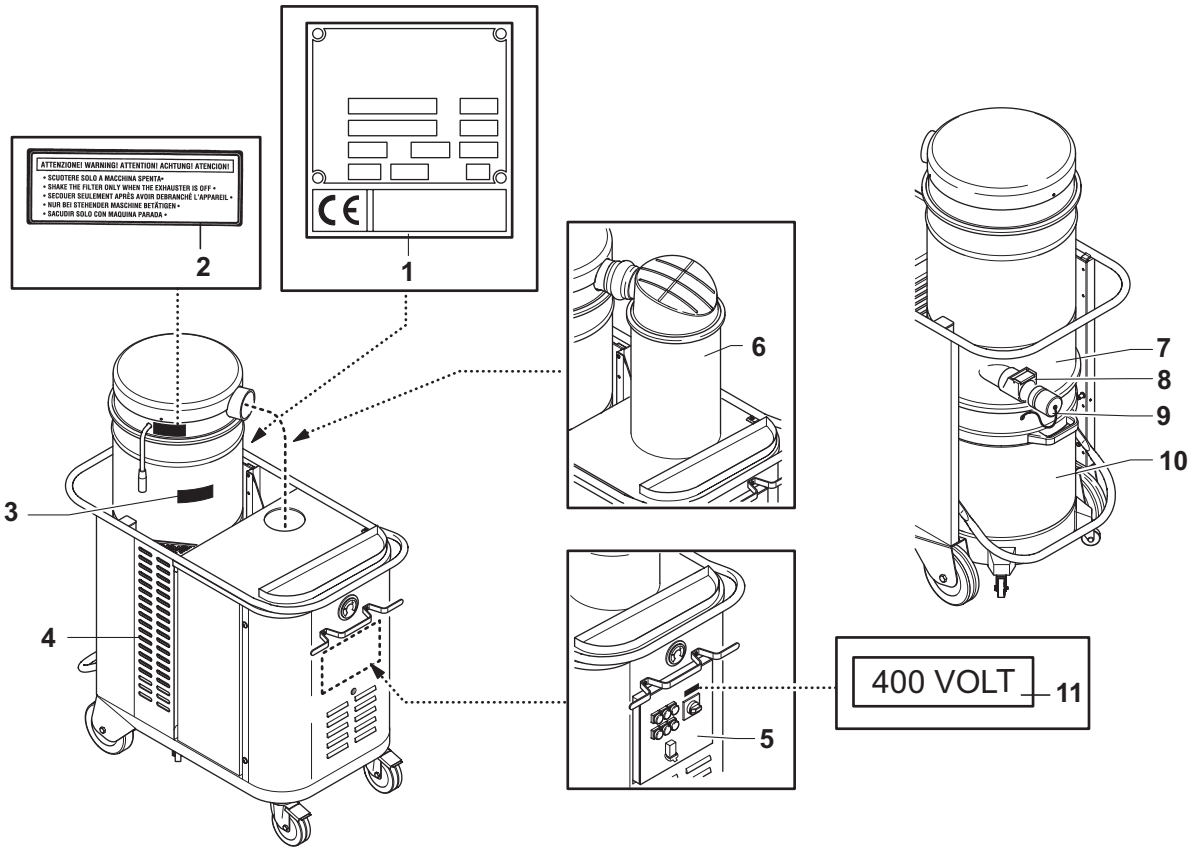
- Main filter
- HEPA filter
- Chamber gasket
- Filter gasket
- Main filter tightening clamps
- ABS safety container
- Dust bags

To order spare parts, please refer to the manufacturer's spare parts catalogue.

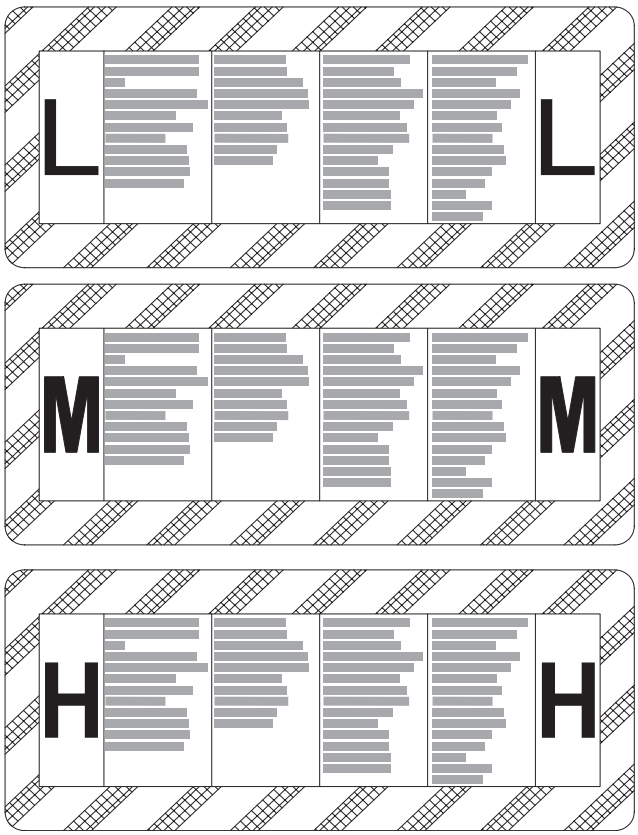
Troubleshooting

Problem	Cause	Remedy
The vacuum cleaner suddenly stops	Clogged primary filter	Shake the filter. Replace it if this is not sufficient.
	Clogged vacuum hose	Check the vacuum hose and clean it.
	Circuit breaker activation	Check the setting. Check the motor electrical input. Contact an authorized after-sales service centre if necessary.
Dust leaks from the vacuum cleaner	The filter is torn	Replace it with another of identical type.
	Inadequate filter	Replace it with another of a suitable category and check.
The vacuum cleaner blows instead of vacuuming	Incorrect connection to the electrical mains	Remove the plug and invert two of the phase wires.
Electrostatic current on the vacuum cleaner	Non existent or inefficient grounding	Check all ground connections. Especially check the inlet. Lastly, the hose must be strictly antistatic.

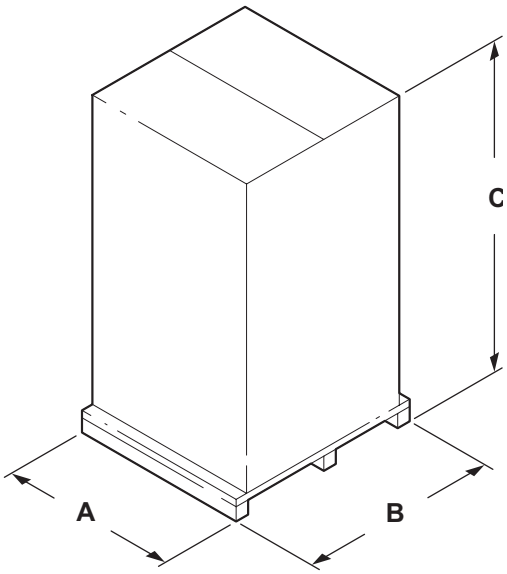
1


ATTENZIONE! WARNING! ATTENTION! ACHTUNG! ATENCION!
• SCUOTERE SOLO A MACCHINA SPENTA•
• SHAKE THE FILTER ONLY WHEN THE EXHAUSTER IS OFF •
• SECOUER SEULEMENT APRÈS AVOIR DEBRANCHÉ L'APPAREIL •
• NUR BEI STEHENDER MASCHINE BETÄTIGEN •
• SACUDIR SOLO CON MAQUINA PARADA •
2
1
6
7
8
9
10
3
4
5
400 VOLT
11

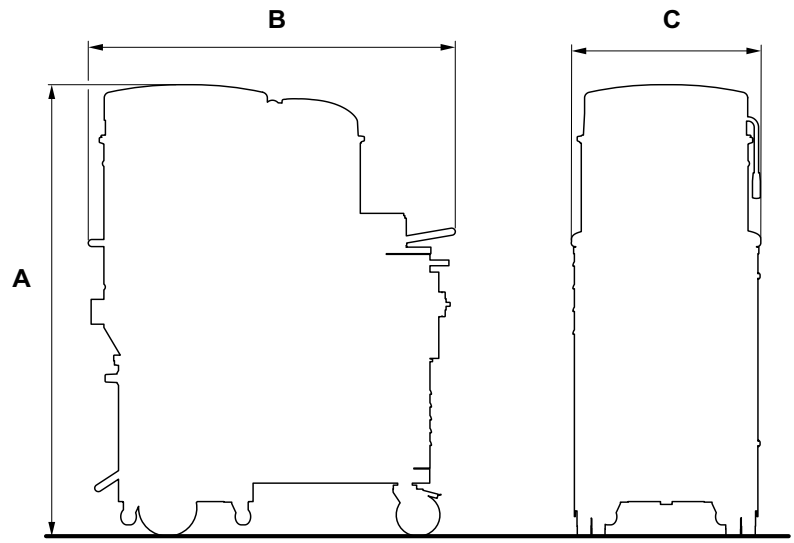
2


1
L
L
2
M
M
3
H
H

3


C
A
B

4



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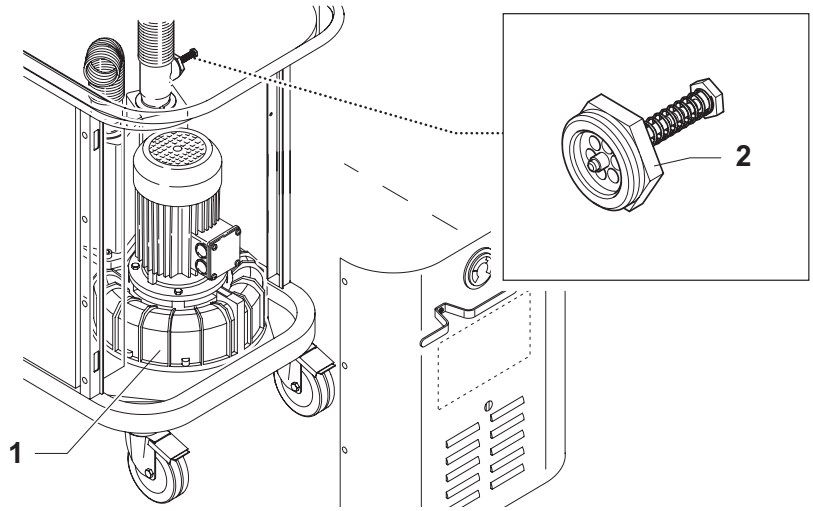

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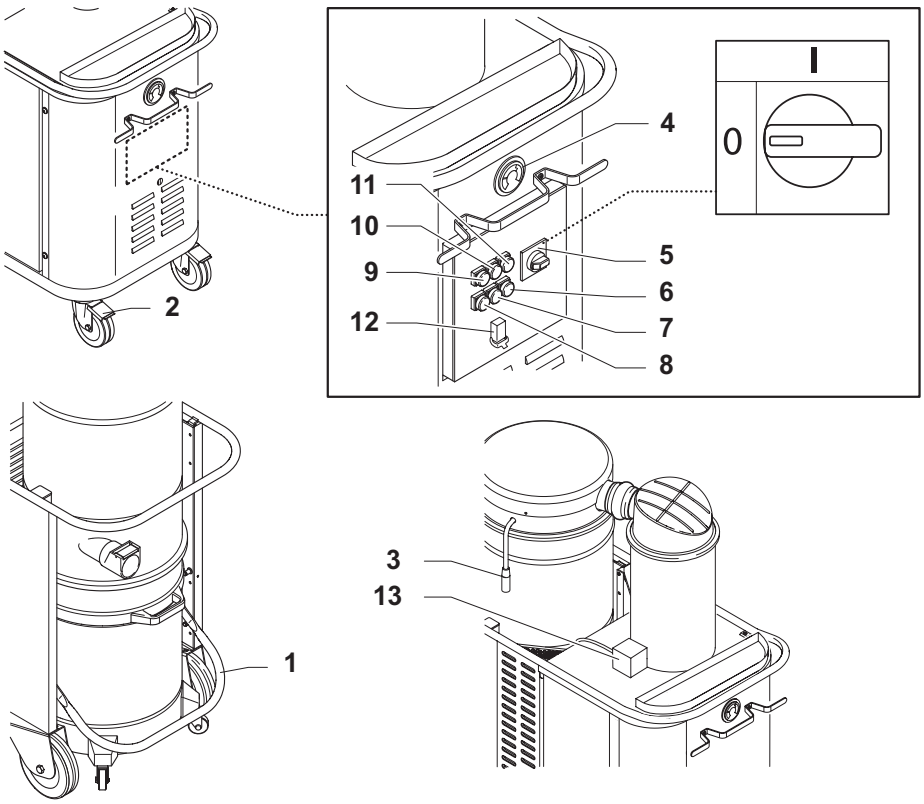

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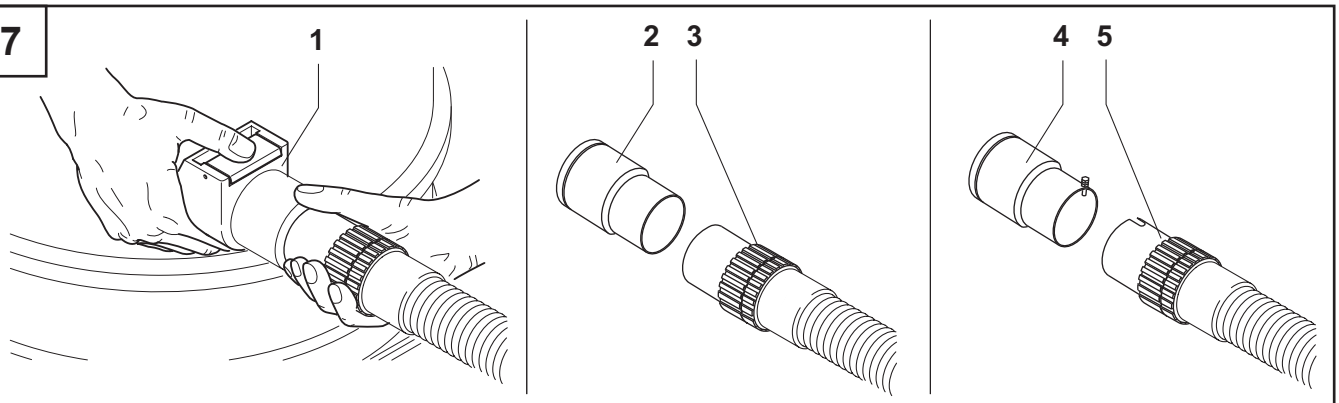

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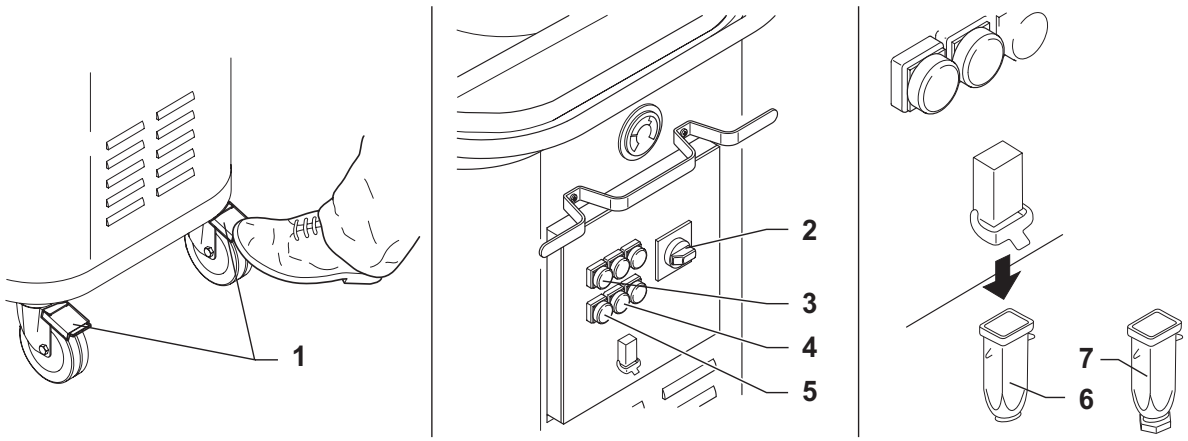

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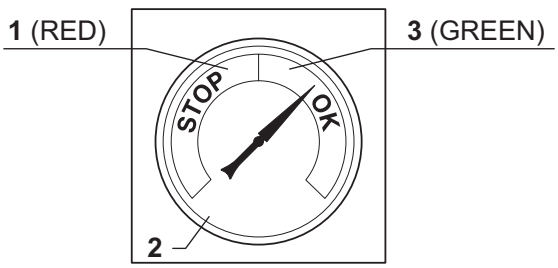

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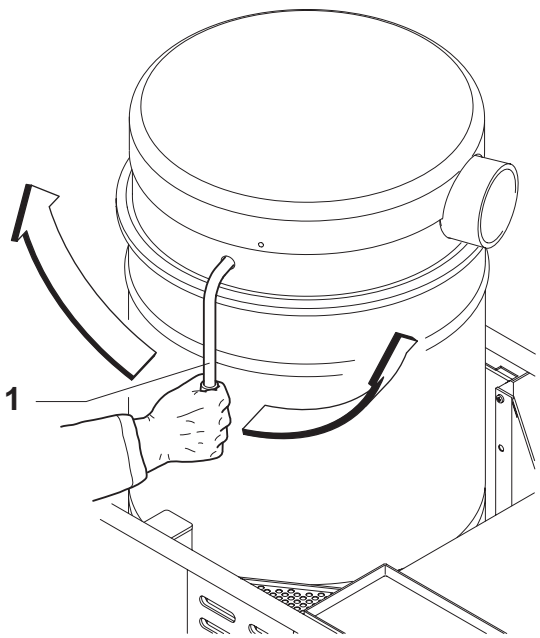

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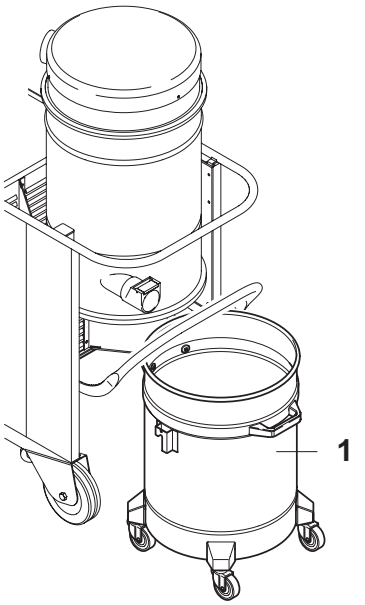

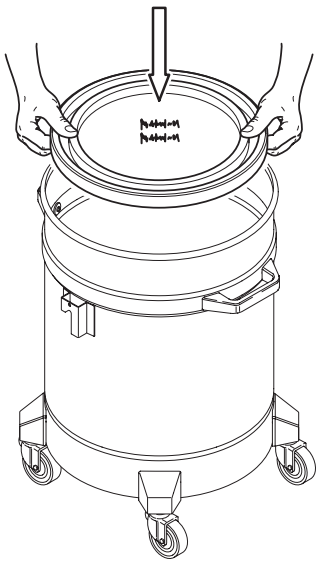

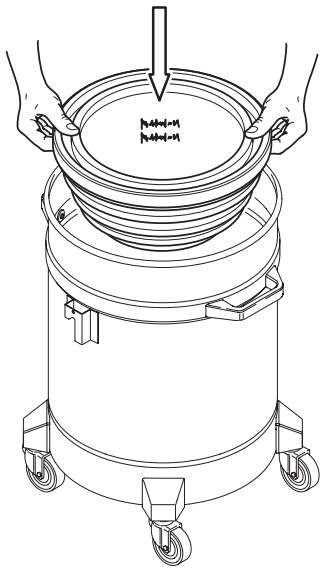

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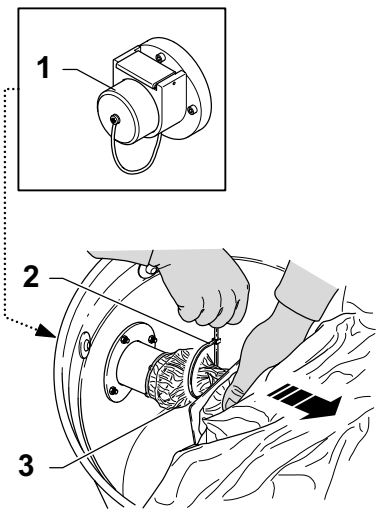

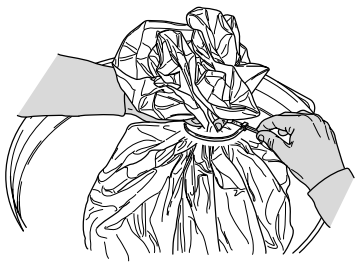

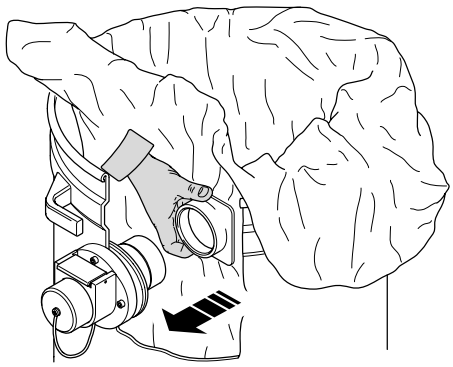

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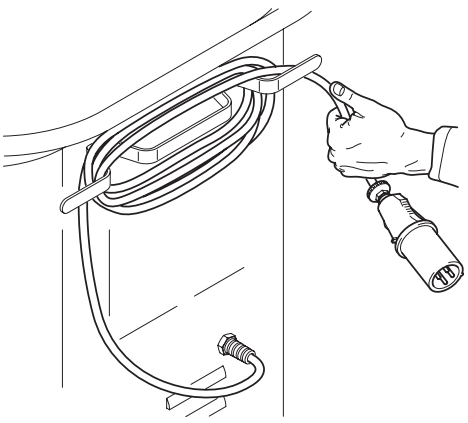

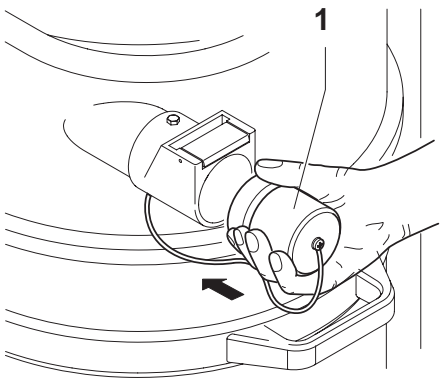

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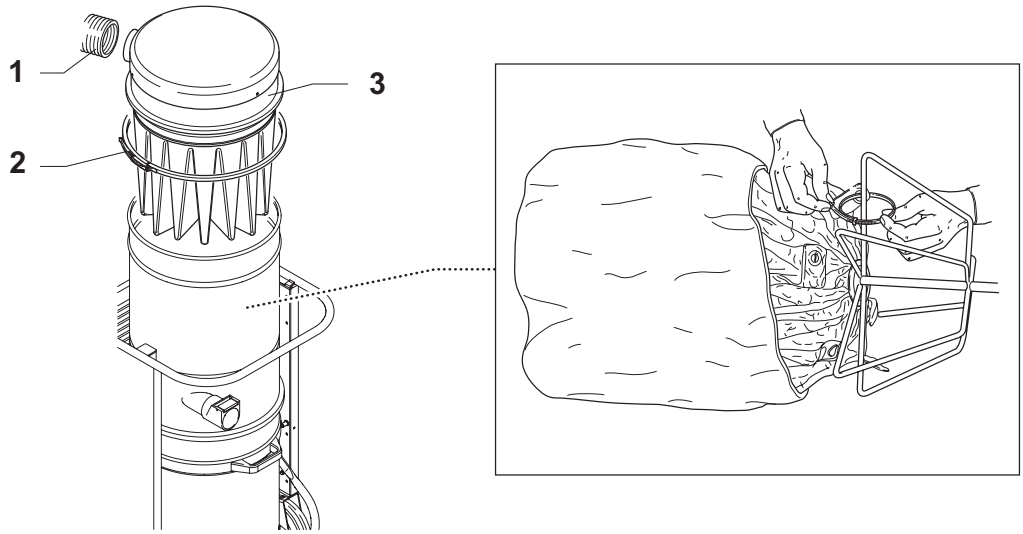

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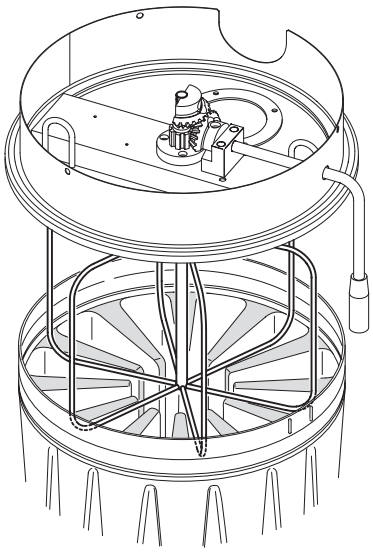

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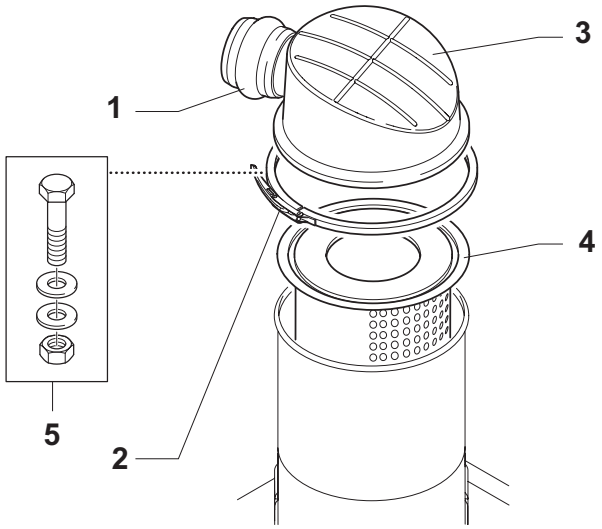

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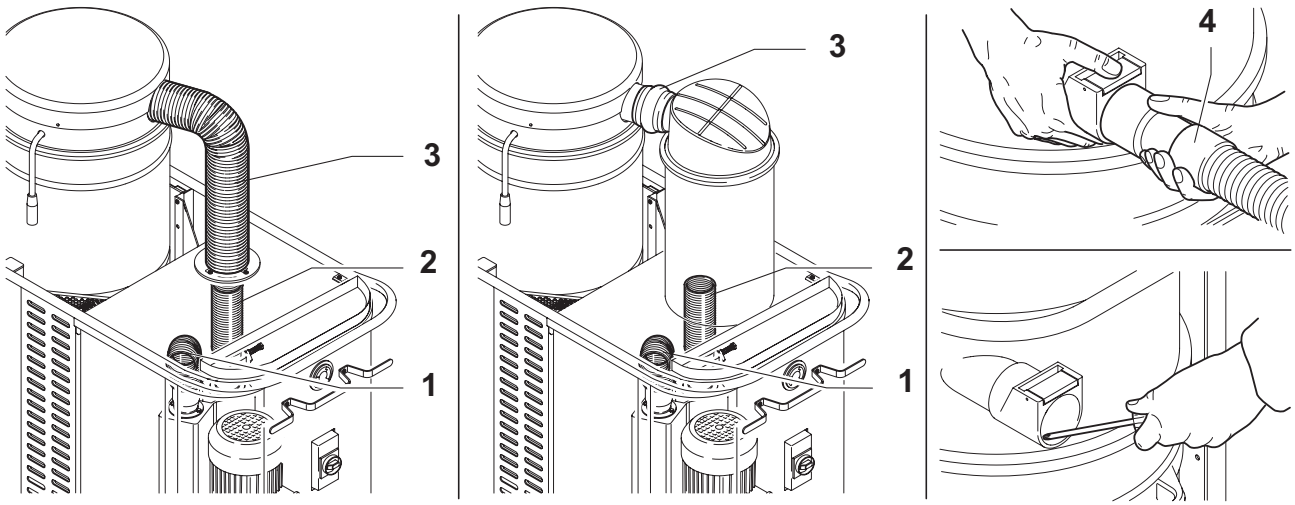

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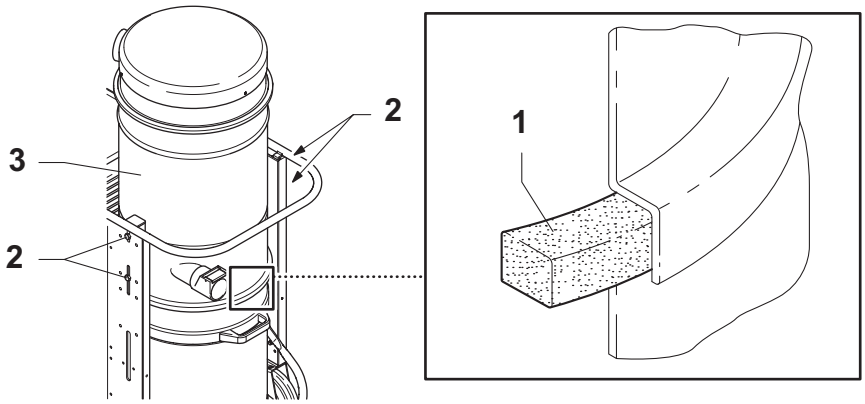
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2

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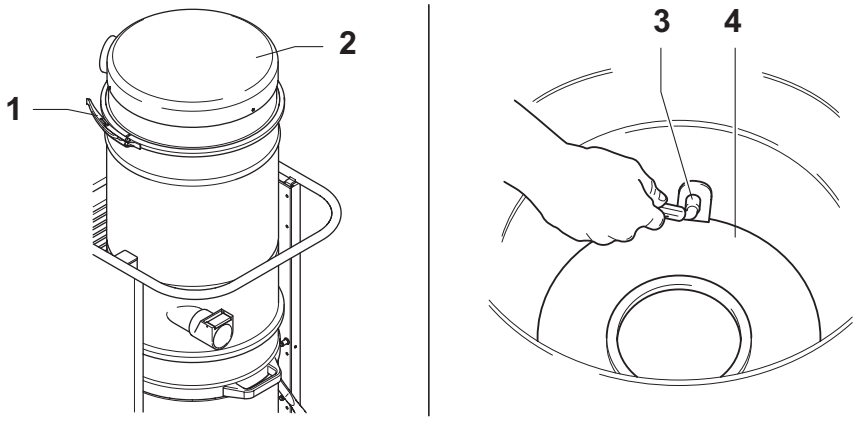
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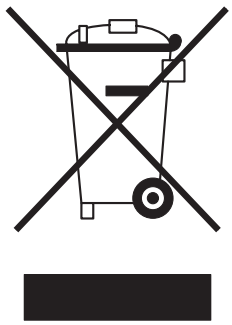

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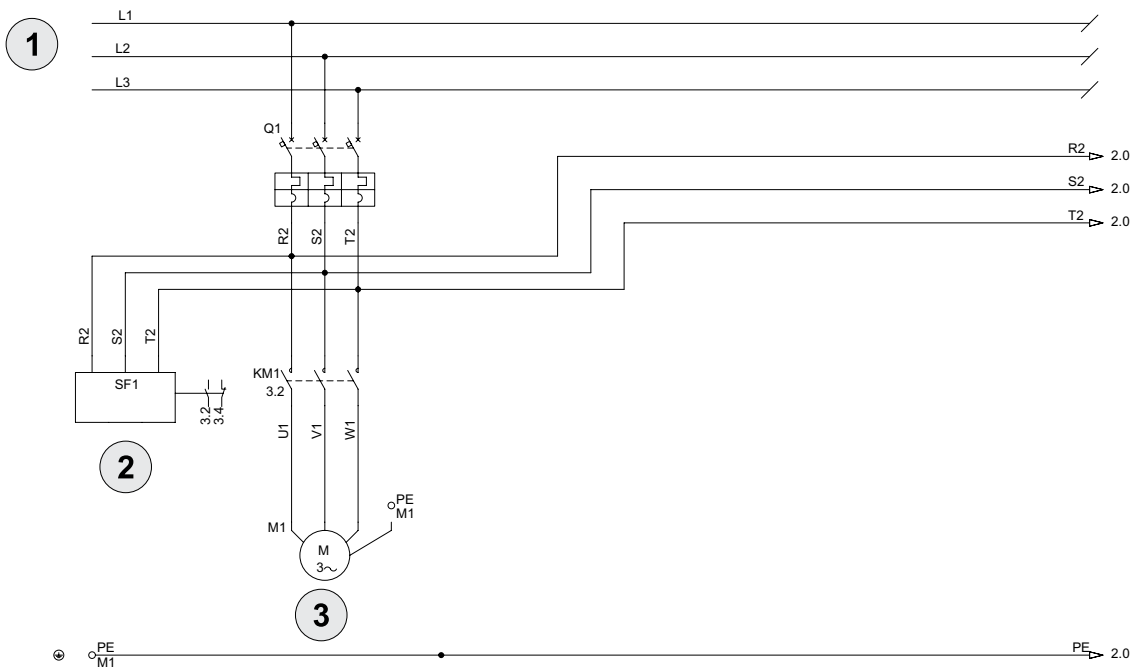
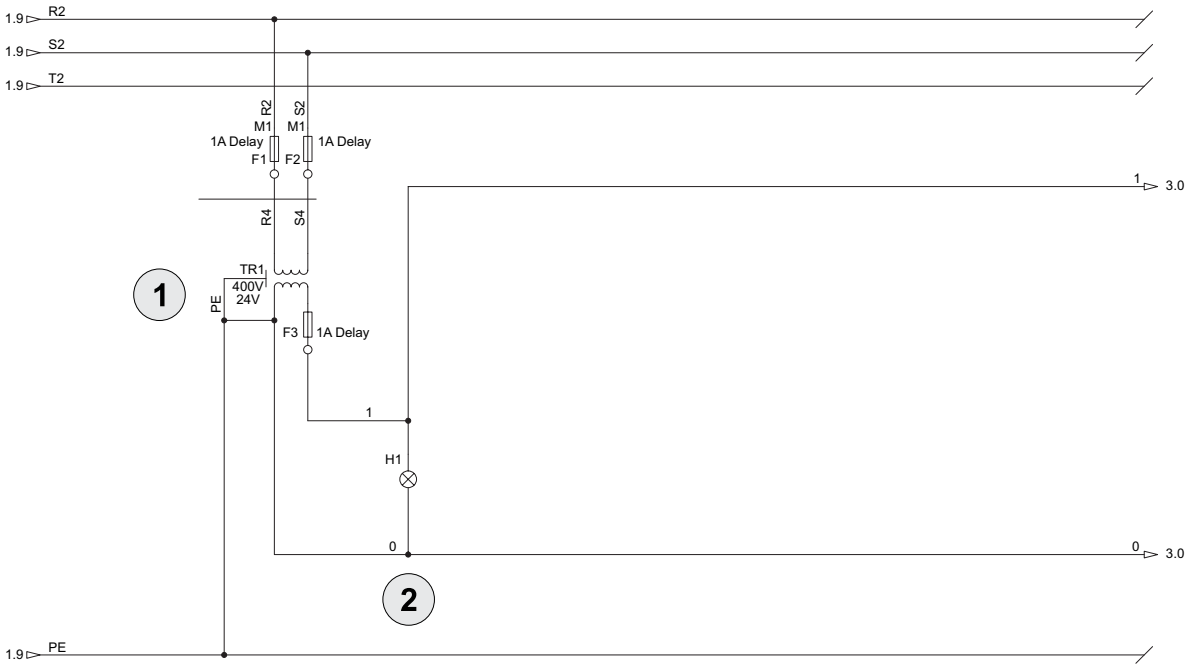
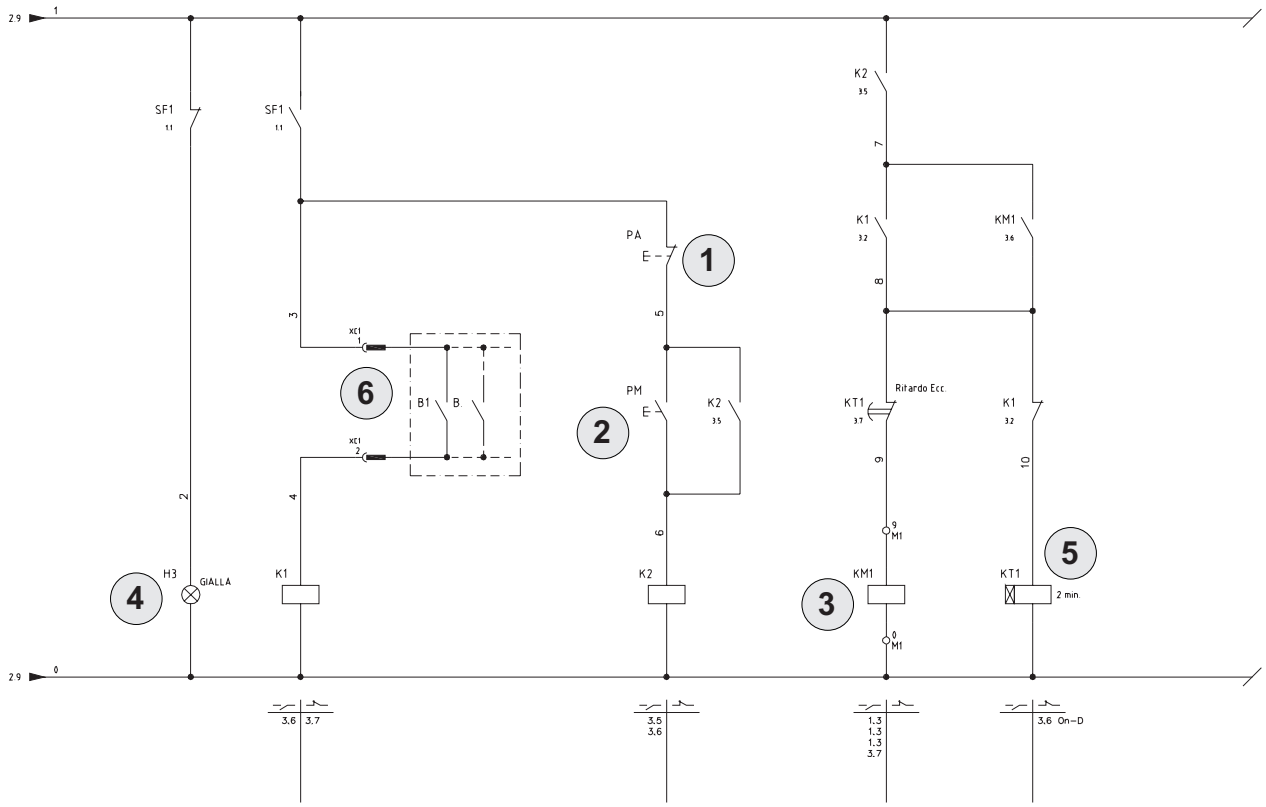

1
L1
L2
L3
Q1
R2
S2
T2
R2 2.0
S2 2.0
T2 2.0
R2
S2
T2
SF1
3.2
3.4
KM1
3.2
U1
V1
W1
2
M1
PE
M1
M
3~
3
PE
M1
PE 2.0

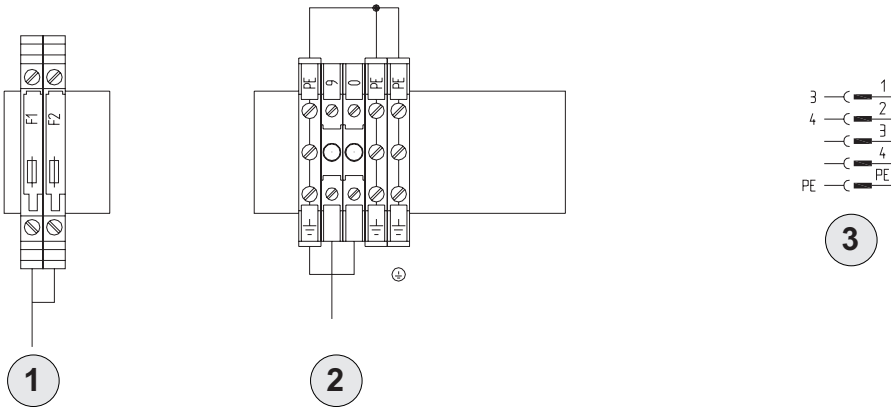
22


1.9 R2
1.9 S2
1.9 T2
R2
S2
M1
M1
1A Delay
1A Delay
F1
F2
1
3.0
R4
S4
TR1
400V
24V
PE
F3 1A Delay
1
H1
0
0
3.0
1
2
1.9 PE

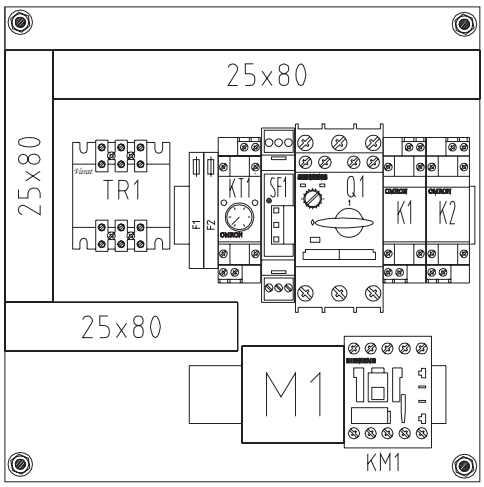
23

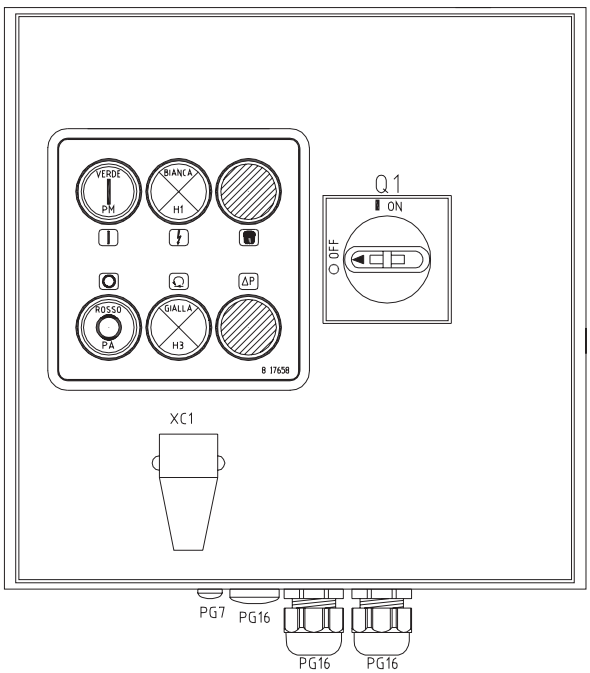

2.9 1
SF1
SF1
K2
PA
E
K1
KM1
Ritardo Ecc.
KT1
K1
PM
E
K2
B1
B
H3
GIALLA
K1
K2
KM1
KT1
2 min.
2.9 0
3.6 3.7
3.5 3.6
1.3 1.3 1.3 3.7
3.6 On-D
1
2
3
4
5
6

24

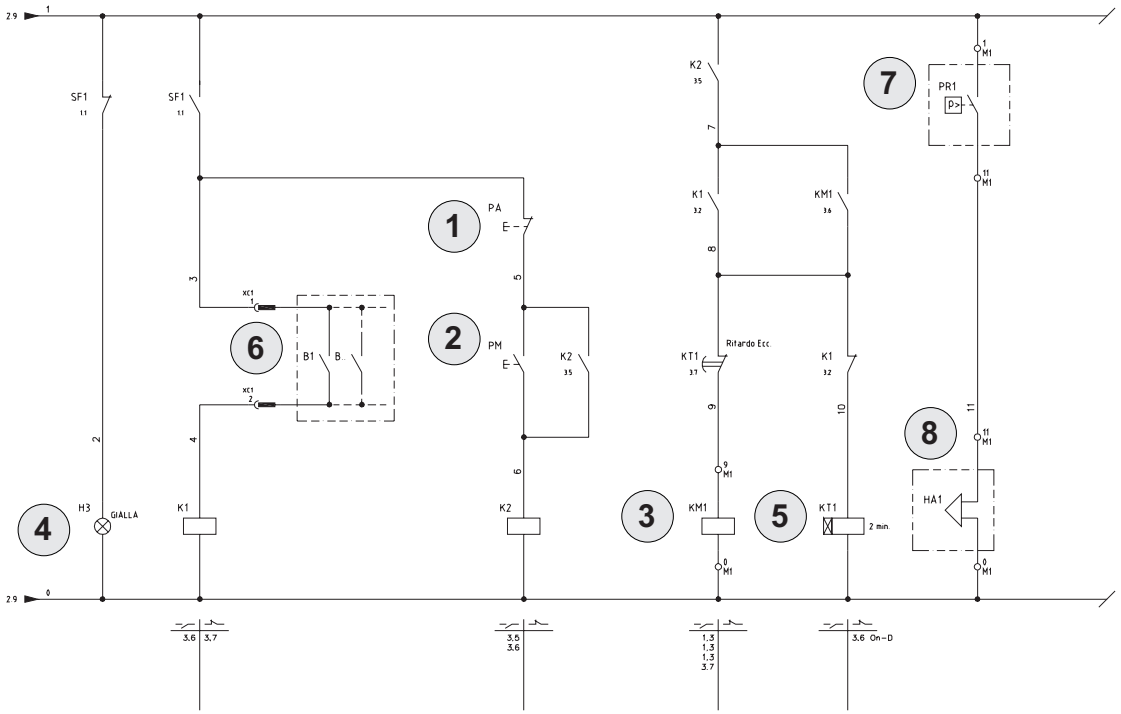

F1
F2
PE
PE
PE
3
4
PE
1
2
3
4
PE
1
2
3

25

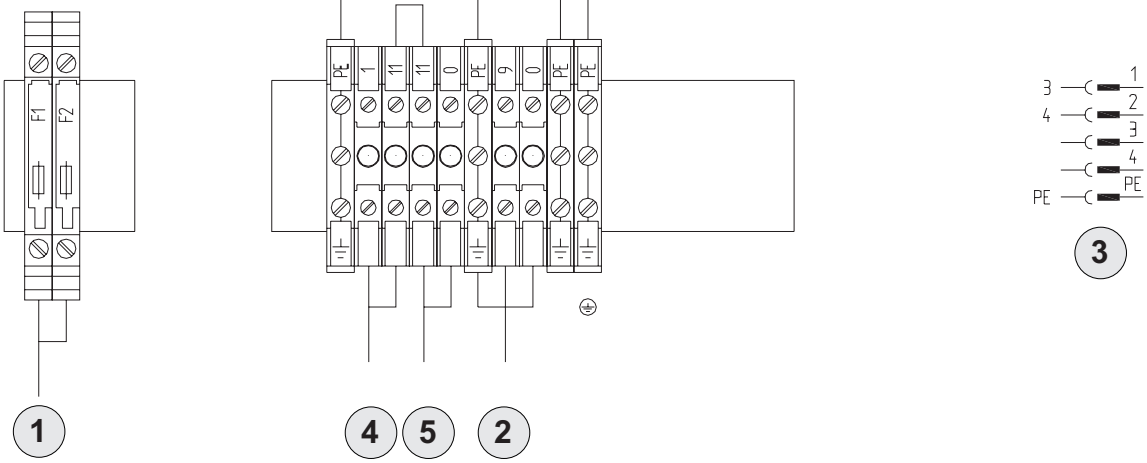

25x80
25x80
TR1
KT1
SF1
Q1
K1
K2
25x80
M1
KM1


VERDE
PM
BIANCA
H1
ROSSO
PA
GIALLA
H3
8 17658
Q1
ON
OFF
XC1
PG7
PG16
PG16
PG16

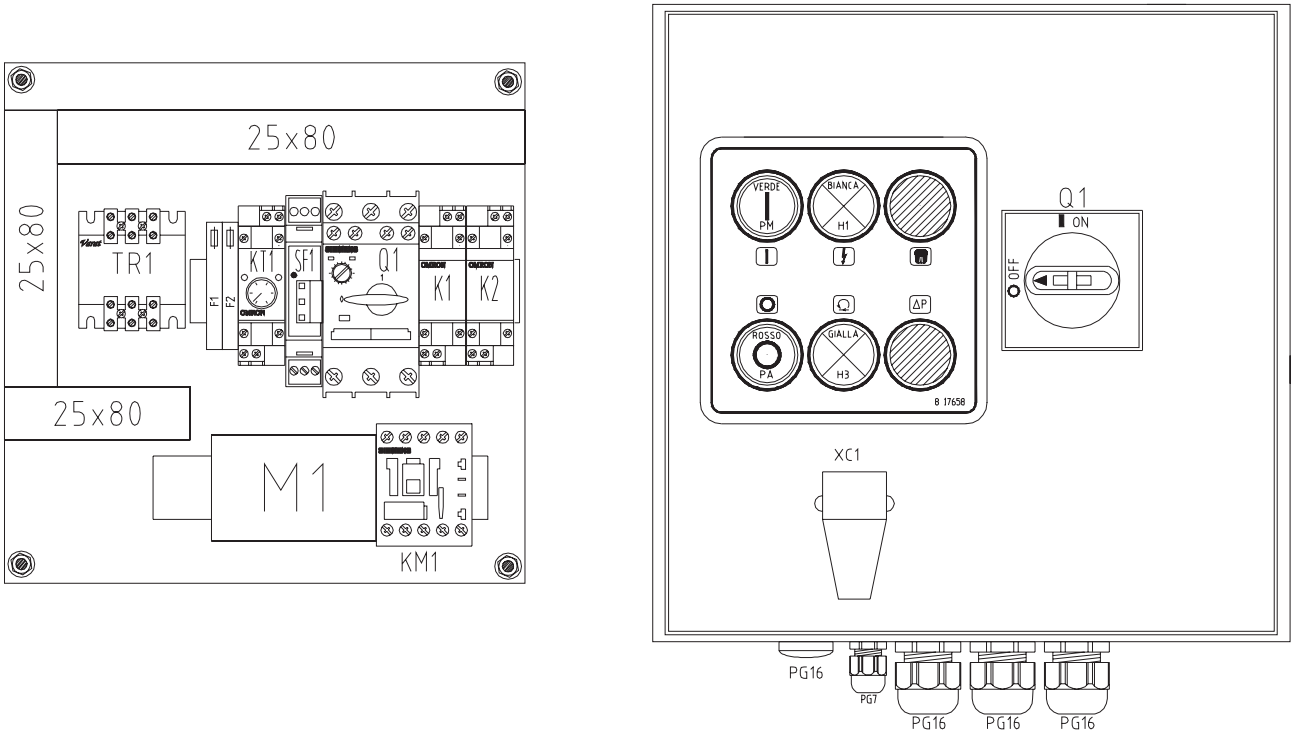
26


SF1
SF1
PA
PM
K2
K1
KM1
PR1
Ritardo Ecc
KT1
B1
B
H3
GIALLA
HA1
2 min.
On-D

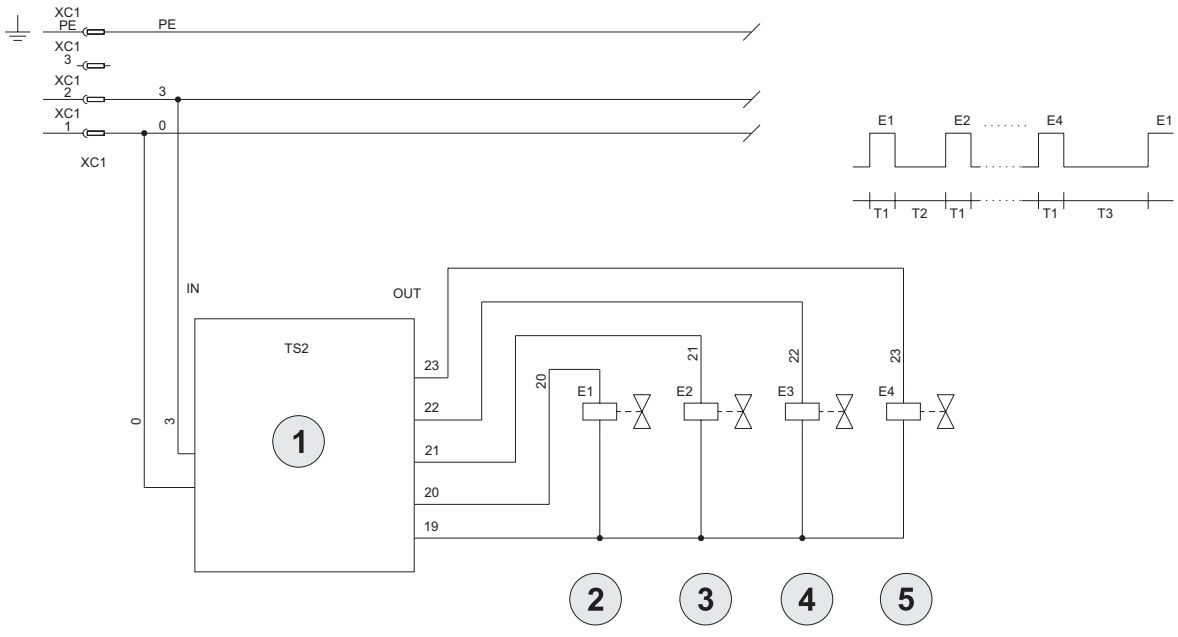
27


F1
F2
PE
3
4
PE

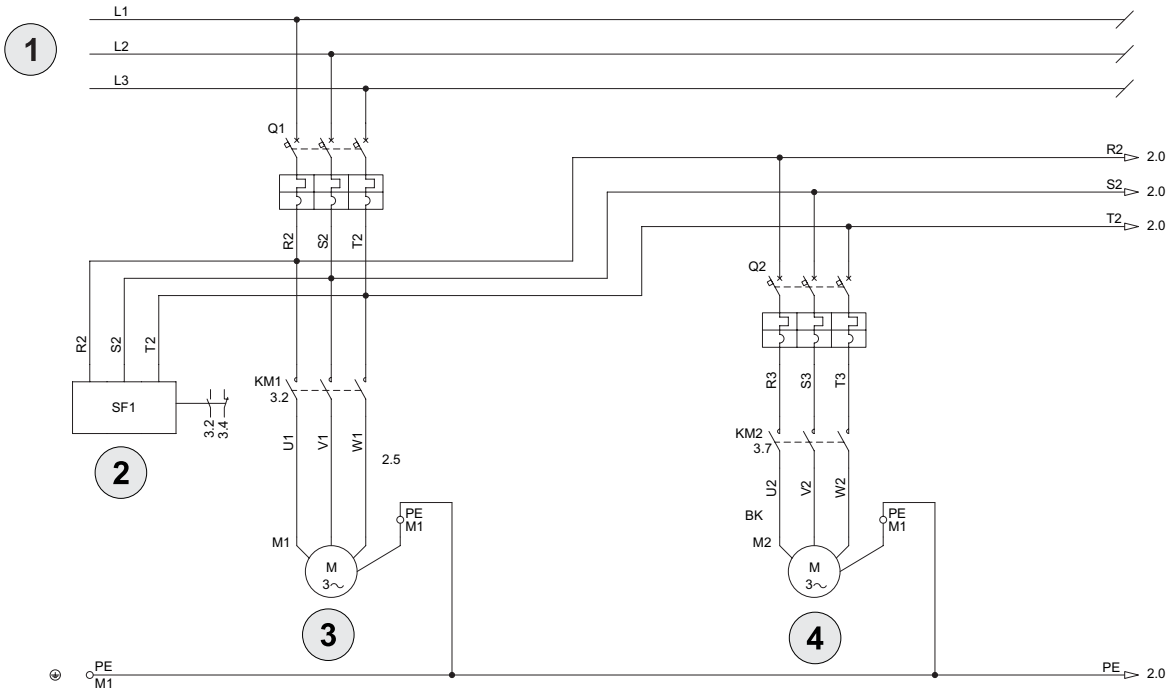
28


25x80
25x80
TR1
KT1
SF1
Q1
K1
K2
F1
F2
25x80
M1
KM1
VERDE
PM
BIANCA
H1
Q1
ON
OFF
ROSSO
PA
GIALLA
H3
ΔP
8 17658
XC1
PG16
PG7
PG16
PG16
PG16

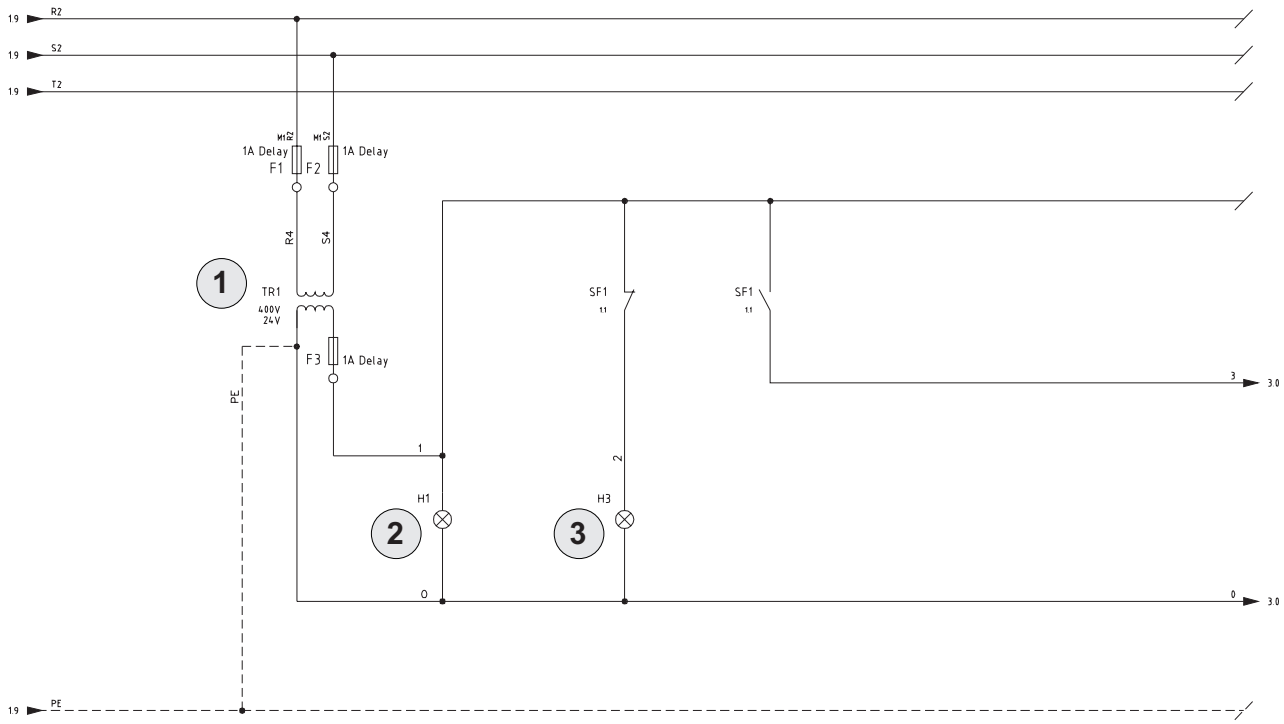
29


XC1
PE
PE
XC1
3
XC1
2
3
XC1
1
0
XC1
E1
E2
E4
E1
T1
T2
T1
T1
T3
IN
OUT
TS2
1
0
3
23
22
21
20
19
20
E1
21
E2
22
E3
23
E4
2
3
4
5

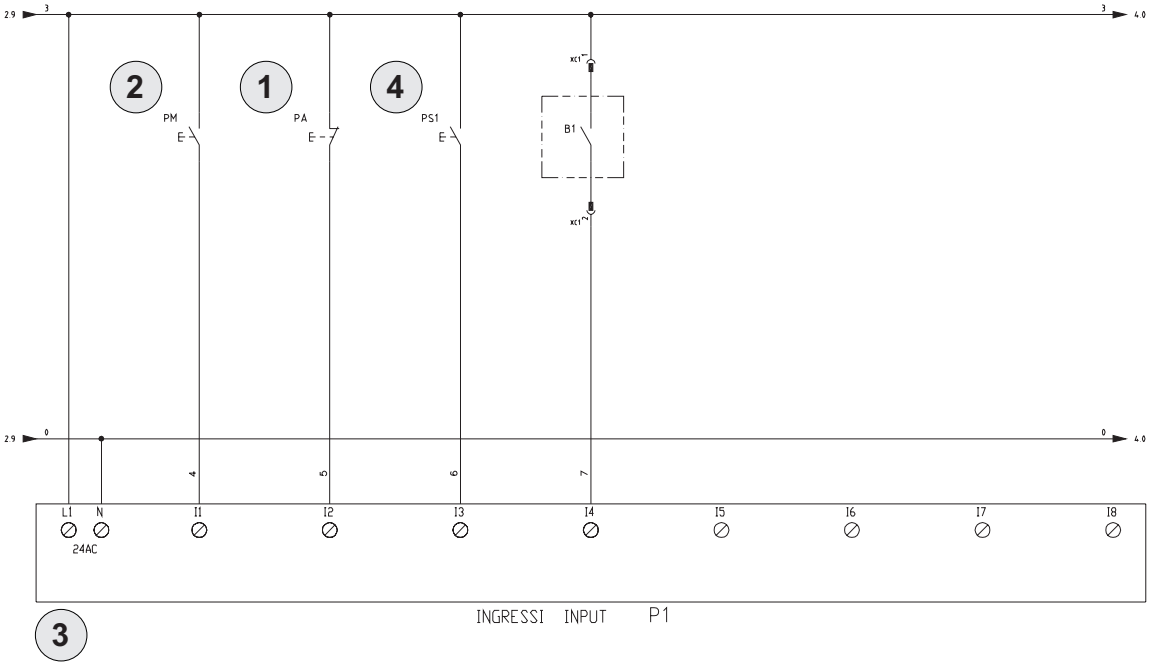
30


1
L1
L2
L3
Q1
R2
S2
T2
R2 2.0
S2 2.0
T2 2.0
Q2
R2
S2
T2
SF1
3.2
3.4
2
KM1
3.2
U1
V1
W1
2.5
M1
PE
M1
M
3~
3
R3
S3
T3
KM2
3.7
U2
V2
W2
BK
M2
4
PE
M1
PE
M1
PE 2.0

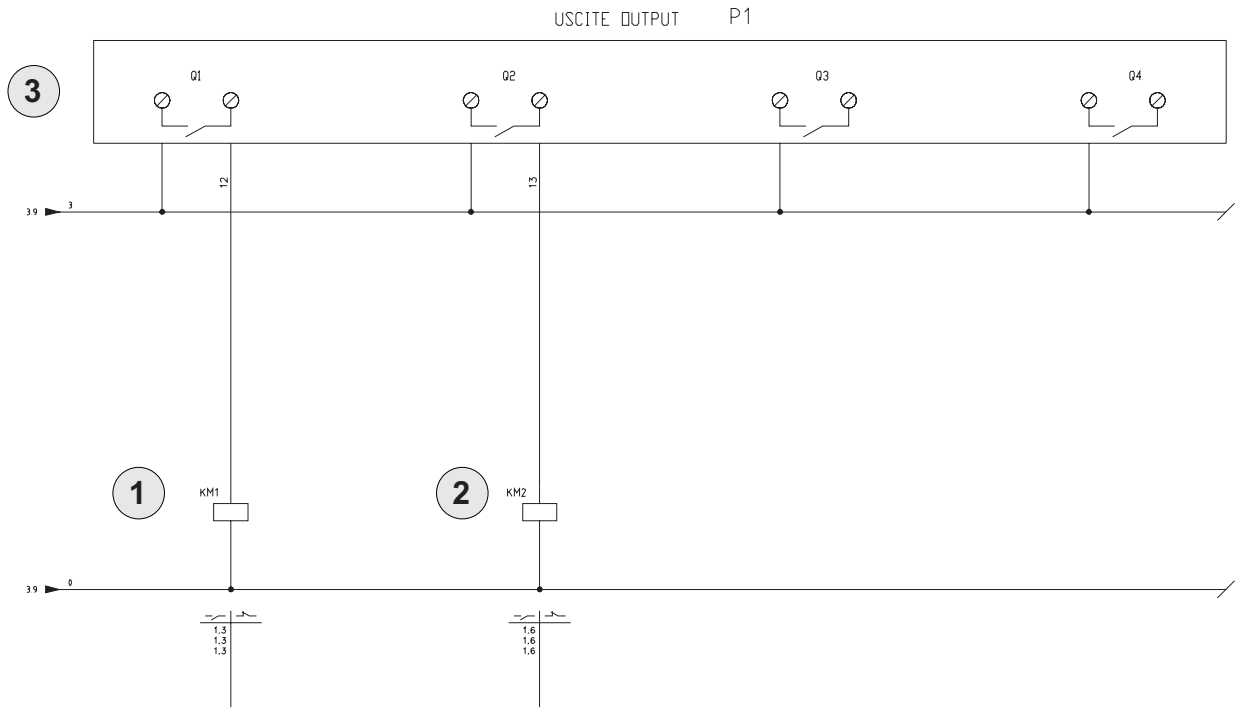
31


1.9 R2
1.9 S2
1.9 T2
1A Delay
F1
F2
1A Delay
R4
S4
1
TR1
400V
24V
F3
1A Delay
PE
SF1
11
SF1
11
3
3.0
1
2
H1
H3
2
3
0
0
3.0
1.9 PE

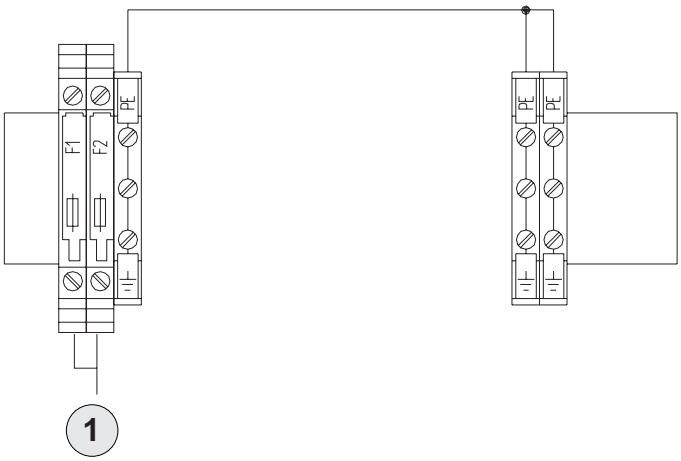
32


2.9
3
3
4.0
2
PM
1
PA
4
PS1
xc1
B1
xc1
2.9
0
0
4.0
4
5
6
7
L1
N
24AC
I1
I2
I3
I4
I5
I6
I7
I8
INGRESSI INPUT P1
3

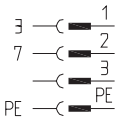
33


USCITE OUTPUT P1
3
Q1
Q2
Q3
Q4
12
13
3.9
3
1
KM1
2
KM2
3.9
0
1,3
1,3
1,3
1,6
1,6
1,6

34

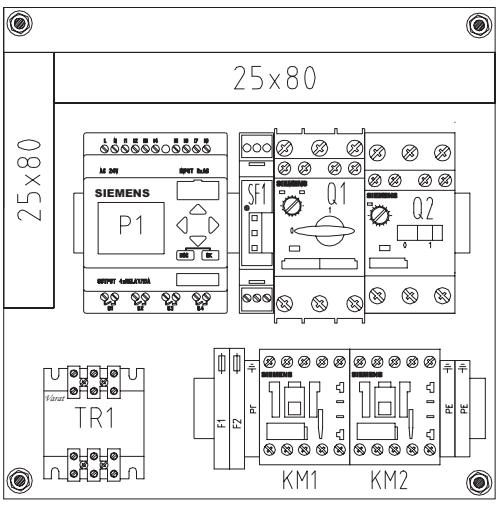

F1
F2
PE
PE
PE

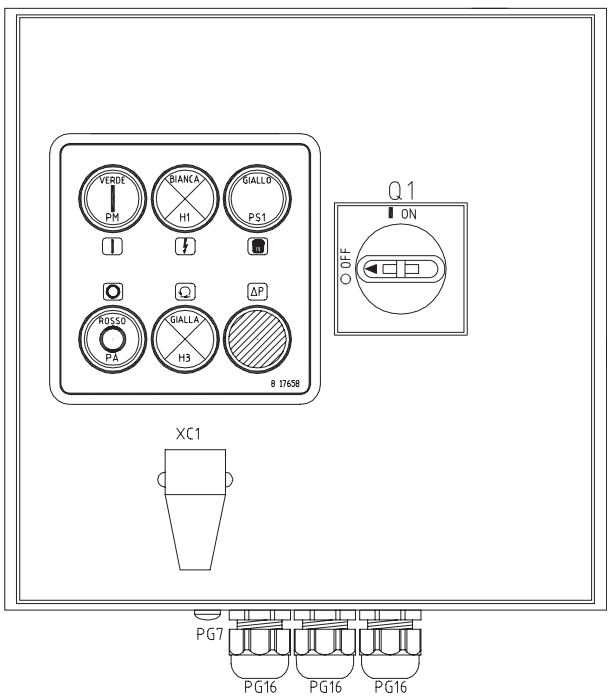
1


3
7
PE
1
2
3
PE

2

35


25x80
25x80
SIEMENS
P1
SF1
Q1
Q2
TR1
F1
F2
PE
KM1
KM2


VERDE
PM
BIANCA
H1
GIALLO
PS1
ROSSO
PA
GIALLA
H3
ΔP
8 17658
Q1
ON
OFF
XC1
PG7
PG16
PG16
PG16