

## **MARK GS+ / GC+ / G+**

0660600\_R28





# Read this document before installing the heater

## Warning

Incorrect installation, adjustment, alteration, repair or maintenance work may lead to material damage or injury. All work must be carried out by certified, qualified professionals. If the appliance is not positioned in accordance with the instructions, the warranty shall be rendered void. This appliance is not intended for use by children or persons with a physical, sensory or mental handicap, or who lack the required experience or expertise, unless they are supervised or have been instructed in the use of the appliance by somebody who is responsible for their safety. Children must be supervised to ensure that they do not play with the appliance.

If the manual refers to an image or table, a number will be shown between square brackets, for example [3]. The number refers to images and tables at the back of the manual with the stated number.

## 1.0 General

### 1.1 Application

Appliance type GS+ is solely suitable for the free and direct intake of the air to be heated and the free discharge of heated air into the room. Appliance type G+ with a centrifugal fan is suitable both for the free and direct intake of the air to be heated and the free discharge of heated air into the room, and for connection to a duct system.

If areas are to be heated in which corrosive vapours are present (chlorinated hydrocarbons in particular), which are either produced directly in the area, or which may be drawn in from the outside by the heater via a duct or an open connection, wall air heaters cannot be used because of the risk of corrosion to the heat exchanger.

#### Subject to change

The manufacturer is committed to constantly improving its products and reserves the right to make changes in the specifications without prior notice. The technical details are considered correct but do not form the basis for a contract or warranty. All orders are accepted according to the standard terms of our general sales and delivery conditions (available upon request).

### 1.2 Type indication

|                      |                          |
|----------------------|--------------------------|
| GS +                 | G+                       |
| G    Gas             | G    Gas                 |
| S    Axial fan       | External centrifugal fan |
| +    High efficiency | +    High efficiency     |

All the types of appliance are listed in table [3]. The various types are shown in the rows, and technical information relating to the appliances is shown in the columns. See the key below. Key to table [3]

- A Nominal load (upper value)
- B Nominal load (lower value)
- C Efficiency at 100% full load
- D Efficiency at 30% partial load
- E Gas consumption for a specified gas type (15°) max/min
- E1 CO<sub>2</sub>/O<sub>2</sub> for a specified gas type: max. load %
- E2 CO<sub>2</sub>/O<sub>2</sub> for a specified gas type: min. load %
- E3 Gas pre-pressure for a specified gas type
- F Burner turndown ratio
- G Flue gas temperature (min-max load)
- I Burner fan start-max.-min.
- J Admissible flue gas flow resistance
- K Diameter of the flue gas duct/air supply duct
- L Electrical supply
- M Electrical power
- N Appliance fuse rating
- O Protection class
- Q Air displacement (20°C)
- R Air temperature rise
- S Throw
- U Ambient temperature min. /max.
- V Fan diameter(s)
- W Fan speed
- X Noise level at 5m (unobstructed)
- Y Weight
- Z Condensate acidity
- ZI Flue gas mass
- AB Max. condensate quantity
- AC Gas connection
- \* NL, BE, DE 50 mbar

#### Information for Belgium

- AA Nominal load (lower value) H gas / L gas
- BB Power H gas / L gas

### 1.3 General warnings

Incorrect installation, adjustment, alteration, maintenance or repair may lead to material or environmental damage and/or injuries. The appliance should therefore be installed, adapted or converted by a skilled and qualified installer, taking into account national and international regulations. Faulty installation, adjustment, alteration, maintenance activity or repair shall render the warranty void.

#### Appliance

When installing wall air heaters, you must comply with the relevant national and, if applicable, regional and local regulations (e.g. gas company regulations, building regulations etc.). The wall air heater may be installed only in an area and position suitable for the purpose, see Chapter 2

Installation. In Belgium, the wall air heater must be installed in accordance with Belgian standard NBN D51-003.

#### *Gas supply and connection*

Before installation, check that the local distribution conditions, gas type and pressure and the current adjustment of the appliance all match. An approved gas stop cock must be fitted to the inner pipeline.

#### *Flue gas route*

Combustion air supply pipelines and combustion gas exhaust ducts should have as few bends as possible; in general, flow resistance should be kept to a minimum and in all cases, the diameter should be constant along the entire length. The exhaust duct may not rest on the heater, but should be suspended efficiently! If the flue gas exhaust duct passes along or through combustible walls or floors, the duct must be sufficiently far away from the combustible material to prevent fire.

### **1.4 Think of your safety**

If you smell gas, you must not under any circumstances:

- Ignite an appliance
- Touch electrical switches or telephone from the area in question

Take the following action:

- Switch off the gas and electricity
- Activate the operational emergency plan
- Evacuate the building if necessary

## **2.0 Installation**

### **2.1 Positioning the appliance**

After unpacking, check the appliance for damage. Check that the information relating to the type/model and the electrical voltage is correct. Place the appliance and any accessories to a sufficiently solid structure [2], taking into account the minimum free space required [1].

For GS+ you should use the four M10-sized suspension points [21]. GC+ devices provided with a support frame should, when hung up, always be mounted to the support frame, see the detail in picture [22]. Never mount to the M10-sized suspension points, as these are not intended for this purpose. Also, remove the transport feet of the frame when the device is to be hung, see picture [23]. Frames can be connected by means of the connection pieces as shown in picture [24].

### **2.2 Positioning the flue gas exhaust system and air supply**

The device only has the CE approval in combination with its flue gas system. The flue gas system includes: single flue set vertical or horizontal, extension pipes and elbows. Table [4] indicates which parts can be used per appliance type. The flue gas system must be installed according to the instructions attached.

If a flue gas set is to be installed sideways to or through a flammable floor or wall, then there must be a minimum air gap of 25 mm around the flue gas sets. This to prevent fire and / or scorch hazard. The mentioned flue gas products are made of stainless steel, or have a stainless steel inner pipe. This has been chosen because of the maximum flue gas temperature and because of the stainless steel heat exchanger.

The combustion air inlet pipes may consist of the same materials as specified for the flue gas discharge, but may also consist of materials mentioned in the table on pages 7-9. Other materials are not allowed.

When the maximum length of the flue systems is exceeded, as shown in table [4], the diameter of the single flue sets, including extension pipes and elbows, must be increased by one size.

**Caution:**

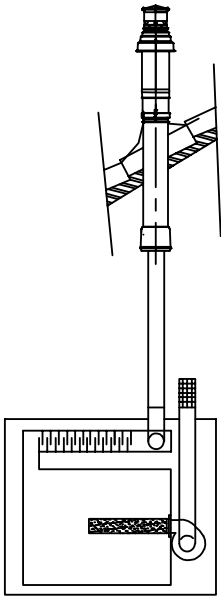
- The values shown in the resistance table [4] apply only to the delivered and advised flue systems supplied by the manufacturer.
- Discharge material with a different resistivity can influence the length of the total supply and discharge route.
- The Ph-value of condensate is 3.4!

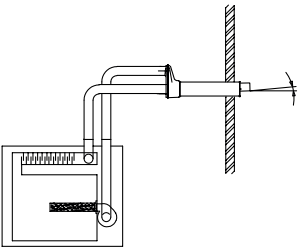
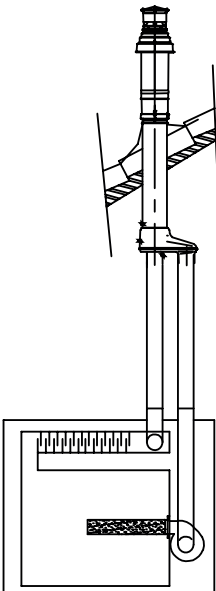
The roof and wall pass-throughs supplied by the manufacturer are identified by the following item numbers:

| <b>Appliance type</b> | <b>Roof pass-through C33</b> | <b>Wall pass-through C13</b> |
|-----------------------|------------------------------|------------------------------|
| G+ 15/25/35/40        | 59 90 557                    | 59 90 581                    |
| G+ 60/80/100          | 59 90 561                    | 59 90 585                    |
| G+ 135/150/200        | 59 90 564                    | 59 90 589                    |

The extension pipes and bends of the gas flue exhaust system must satisfy the following requirements:

| <b>Appliance type</b> | <b>Minimum diameter</b> |
|-----------------------|-------------------------|
| G+ 15/25/35/40        | 80 mm                   |
| G+ 60/80/100          | 100 mm                  |
| G+ 135/150/200        | 130 mm                  |

| Type                                                                                             | Flue gas exhaust         |   |              | Accessories                           |              | Installation remarks |
|--------------------------------------------------------------------------------------------------|--------------------------|---|--------------|---------------------------------------|--------------|----------------------|
|                                                                                                  | Appliance type           | Ø | Article code | Ø                                     | Article code |                      |
| <div>B23</div>  | Single flue set vertical |   |              | Extension pipe stainless steel L=500  |              |                      |
|                                                                                                  | 15/25/35/40              |   | 5990557      | 80                                    | 5990201      |                      |
|                                                                                                  | 60/80/100                |   | 5990561      | 100                                   | 5990211      |                      |
|                                                                                                  | 135/150/200              |   | 5990564      | 130                                   | 5990221      |                      |
|                                                                                                  |                          |   |              | Extension pipe stainless steel L=1000 |              |                      |
|                                                                                                  |                          |   |              | 80                                    | 5990202      |                      |
|                                                                                                  |                          |   |              | 100                                   | 5990212      |                      |
|                                                                                                  |                          |   |              | 130                                   | 5990222      |                      |
|                                                                                                  |                          |   |              | Elbow 45° stainless steel             |              |                      |
|                                                                                                  |                          |   |              | 80                                    | 5990204      |                      |
|                                                                                                  |                          |   |              | 100                                   | 5990214      |                      |
|                                                                                                  |                          |   |              | 130                                   | 5990224      |                      |
|                                                                                                  |                          |   |              | Elbow 90° stainless steel             |              |                      |
|                                                                                                  |                          |   |              | 80                                    | 5990203      |                      |
|                                                                                                  |                          |   |              | 100                                   | 5990213      |                      |
|                                                                                                  |                          |   |              | 130                                   | 5990223      |                      |
|                                                                                                  |                          |   |              | Air inlet mesh                        |              |                      |
|                                                                                                  |                          |   |              | 80                                    | 3002532      |                      |
|                                                                                                  |                          |   |              | 100                                   | 3002533      |                      |
|                                                                                                  |                          |   |              | 130                                   | 3002534      |                      |

|                                                                                                   |                                               |         |         |                                          |         |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------|---------|---------|------------------------------------------|---------|
| <div>C13</div>   | Single flue set horizontal<br>stainless steel |         |         | Flue gas exhaust                         |         |
|                                                                                                   |                                               |         |         | Extension pipe<br>stainless steel L=500  |         |
|                                                                                                   | 15/25/35/40                                   | 80/125  | 5990581 | 80                                       | 5990201 |
|                                                                                                   | 60/80/100                                     | 100/150 | 5990585 | 100                                      | 5990211 |
| 135/150/200                                                                                       | 130/200                                       | 5990589 | 130     | 5990221                                  |         |
| <div>C33</div>  | Single flue set vertical<br>stainless steel   |         |         | Extension pipe<br>stainless steel L=1000 |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990202 |
|                                                                                                   | 100                                           | 5990212 |         |                                          |         |
|                                                                                                   | 15/25/35/40                                   | 80/125  | 5990557 | 130                                      | 5990222 |
|                                                                                                   | 60/80/100                                     | 100/150 | 5990561 | Elbow 45°<br>stainless steel             |         |
|                                                                                                   | 135/150/200                                   | 130/200 | 5990564 |                                          |         |
|                                                                                                   |                                               |         |         |                                          |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990204 |
|                                                                                                   |                                               |         |         | 100                                      | 5990214 |
|                                                                                                   |                                               |         |         | 130                                      | 5990224 |
|                                                                                                   |                                               |         |         | Elbow 90°<br>stainless steel             |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990203 |
|                                                                                                   |                                               |         |         | 100                                      | 5990213 |
|                                                                                                   |                                               |         |         | 130                                      | 5990223 |
|                                                                                                   |                                               |         |         | Combustion air                           |         |
|                                                                                                   |                                               |         |         | Extension pipe<br>stainless steel L=500  |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990201 |
|                                                                                                   |                                               |         |         | 100                                      | 5990211 |
|                                                                                                   |                                               |         |         | 130                                      | 5990221 |
|                                                                                                   |                                               |         |         | Extension pipe<br>stainless steel L=1000 |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990202 |
|                                                                                                   |                                               |         |         | 100                                      | 5990212 |
|                                                                                                   |                                               |         |         | 130                                      | 5990222 |
|                                                                                                   |                                               |         |         | Extension pipe<br>aluminum               |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990532 |
|                                                                                                   |                                               |         |         | 100                                      | 5990536 |
|                                                                                                   |                                               |         |         | 130                                      | 5990540 |
|                                                                                                   |                                               |         |         | Duct bend 45°<br>aluminum                |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990534 |
|                                                                                                   |                                               |         |         | 100                                      | 5990538 |
|                                                                                                   |                                               |         |         | 130                                      | 5990544 |
|                                                                                                   |                                               |         |         | Elbow 90°<br>aluminum                    |         |
|                                                                                                   |                                               |         |         | 80                                       | 5990533 |
|                                                                                                   |                                               |         |         | 100                                      | 5990537 |
|                                                                                                   |                                               |         |         | 130                                      | 5990542 |

The flue gas exhaust pipes must be made of stainless steel. The combustion air inlet pipes can be made of stainless steel, aluminum or polyethylene.

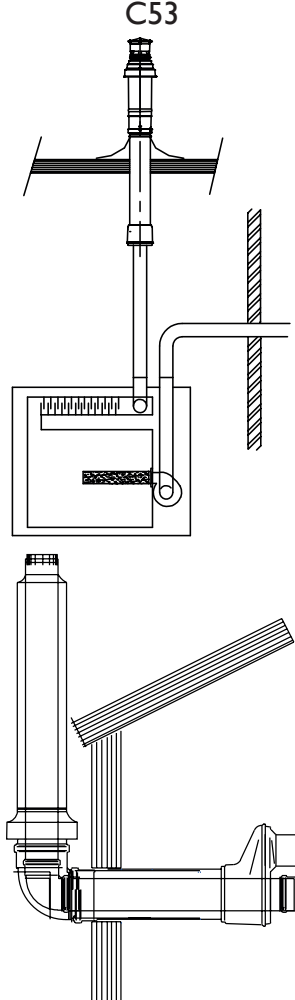
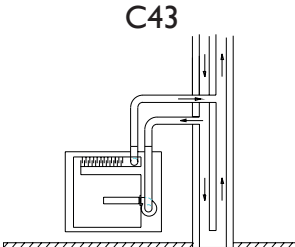
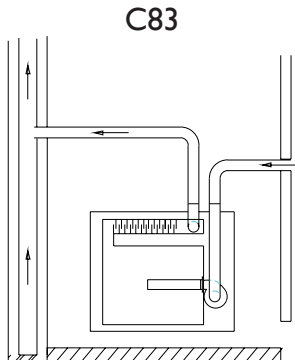
When the maximum length of the flue systems is exceeded, as shown in table [4], the diameter of the single flue sets, including extension pipes and elbows, must be increased by one size.

Reducer kits:  
Ø80- Ø100 5990230  
Ø100- Ø130 5990240

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Reducer kits:  
 Ø80- Ø100  
 5990230  
 Ø100- Ø130  
 5990240

|                                                                                     |                                                   |         |         |                                       |         |
|-------------------------------------------------------------------------------------|---------------------------------------------------|---------|---------|---------------------------------------|---------|
|   | RVS Single flue set horizontal                    |         |         | Extension pipe<br>Polyethylene L=500  |         |
|                                                                                     | 15/25/35/40                                       | 80/125  | 5990557 | 80                                    | 5989205 |
|                                                                                     | 60/80/100                                         | 100/150 | 5990561 | 100                                   | 5989206 |
|                                                                                     | 135/150/200                                       | 130/200 | 5990564 | 130                                   | 5989207 |
|                                                                                     | In combination with<br>single flue set horizontal |         |         | Extension pipe<br>Polyethylene L=1000 |         |
|                                                                                     | 15/25/35/40                                       |         | 5990511 | 80                                    | 5989210 |
|                                                                                     | 60/80/100                                         |         | 5990512 | 100                                   | 5989211 |
|                                                                                     | 135/150/200                                       |         | 5990513 | 130                                   | 5989212 |
|                                                                                     | OR                                                |         |         | Elbow 45°<br>Polyethylene             |         |
|                                                                                     | 15/25/35/40                                       |         | 0703100 | 80                                    | 5989224 |
|                                                                                     | 60/80/100                                         |         | 0703101 | 100                                   | 5989233 |
|                                                                                     |                                                   |         |         | 130                                   | 5989234 |
|                                                                                     |                                                   |         |         | Elbow 90°<br>Polyethylene             |         |
|                                                                                     |                                                   |         |         | 80                                    | 5989225 |
|                                                                                     |                                                   |         |         | 100                                   | 5989236 |
|                                                                                     |                                                   |         |         | 130                                   | 5989237 |
|  |                                                   |         |         |                                       |         |
|                                                                                     |                                                   |         |         |                                       |         |
|  | Single flue set horizontal                        |         |         |                                       |         |
|                                                                                     | 15/25/35/40                                       |         | 5990511 |                                       |         |
|                                                                                     | 60/80/100                                         |         | 5990512 |                                       |         |
|                                                                                     | 135/150/200                                       |         | 5990513 |                                       |         |
|                                                                                     |                                                   |         |         |                                       |         |

C43: Minimum internal area of a round common drain pipe **AV**, see table [5]

Applicable only if the combined flue gas system has sufficient natural draft: the unit does not have an internal non-return valve.

Condensate is not allowed to flow back from the flue system into the unit.

### 2.3 Gas connection

The installation of the gas pipeline and gas tap must comply with the relevant local and/or national regulations. The gas tap must be positioned within reach of the appliance [3]. If the connection line is subject to pressures above 60mbar, this gas tap must be closed. If there is any possibility of the presence of

dirt in the gas, use a gas filter. Always blow through the gas pipe in compliance with the regulations prior to operating the appliance. If the appliance needs to be converted to a different type of gas than that indicated on the type plate, the supplier of the appliance must be contacted. The supplier can advise you which parts must be replaced in order to ensure correct operation of the appliance with the desired type of gas. Conversion to a different type of gas is not permitted in Belgium.

## **2.4 Electrical connection**

Installation must comply with the relevant local and/or national regulations. Ensure that there is a correct connection group with a mains fuse. The electrical diagram is displayed on the appliance. A basic diagram for the GS+ appliance can be found in chapter 8 and 9 Electrical diagrams. In the case of the G+ with a centrifugal fan, please refer to the diagram on the appliance.

PLEASE NOTE:

- The appliance must be adequately earthed. The appliance must be fitted with an isolator switch which interrupts phase and zero (not earth).
- The isolator switch must be accessible at all times.
- Never, under any circumstances, allow the supply to the appliance to be interrupted by other switches. This could result in the appliance overheating.
- The unit is phase sensitive.

## **2.5 Siphon [1]**

The boiler siphon that is included in the scope of supply must be connected to the appliance. The boiler siphon must connect to the odour trap siphon in the drainage system to the sewer via an open connection. Make sure that the siphon is protected against frost (risk of freezing).

# **3.0 Controls**

## **3.1 Room thermostat and reset button**

The room thermostat must be located at a height of approx. 1.5m and not directly within the flow of warm air. Connect the room thermostat using a shielded cable in accordance with the wiring diagram supplied for the appliance. Refer also to the technical information handbook supplied with the room thermostat. Incorrect connection will render the manufacturer's warranty void.

PLEASE NOTE:

- The maximum lengths and diameters are specified in the table [26].
- Earth the cable shielding to the appliance.
- For connecting multiple appliances, see [25] + [26]

## **3.2 Choice of bus cable**

Selection of the correct type of bus cable is based on the specific model for the country concerned. When selecting the cable, the values noted in the technical details must be complied with. Bus cables of the appropriate specifications, which are offered in countries with an EIB market, are:

- |   |                   |                                                  |
|---|-------------------|--------------------------------------------------|
| – | YCYM              | Fixed system                                     |
|   | EIB specification | Dry, damp, wet rooms                             |
|   |                   | In the open air (no direct exposure to sunlight) |
|   |                   | Face-fit, flush-fit, in conduits                 |
| – | J-Y(st)Y          | Fixed system                                     |
|   | EIB specification | Only in interior spaces                          |
|   |                   | Face-fit, in conduits                            |
| – | JH(st)H           | Halogen-free conduits, remote system             |

- A-2Y(L)2Y or A-2YF(L)2Y Telephone ground cable, system in the outside area

## **4.0 Start-up/shutdown**

### **4.1 General**

Before being packed, each appliance is fully tested for safety and correct operation. Among other checks, the gas pressure and CO<sub>2</sub> are set. You must however always check the gas pre-pressure. Never turn the adjustment screws without good cause. Do not forget to instruct the user on the proper use and operation of the appliance and peripherals.

### **4.2 Checks**

- Switch off the electricity supply at the main switch.
- Set the room thermostat to the minimum temperature.
- Open the gas stop cock, then carefully purge the gas pipes of air and check for leaks. Under no circumstances use a naked flame!
- Close the gas stop cock.
- Check whether the siphon has been correctly mounted and is protected against frost. Fill it with water before starting up the appliance for the first time.
- In the case of the GS+, check whether the vanes in the air discharge port are set to the open position (open to a min. of 45°).
- In the case of appliances with a centrifugal fan, check the external static system pressure, direction of rotation of the fan, current draw and check the belt tension after 20 to 40 operating hours. Adjust the tension regularly during the first year of operation [19].
- Switch on the electrical supply at the main switch and set the room thermostat to maximum temperature. After the purge time has elapsed, the automatic ignition control will generate an electric spark and the safety valve on the gas control unit will open. Because the gas stop clock is closed, no flame will appear. The automatic ignition control will lock out after 4 attempts at ignition, each lasting about 5 seconds. After waiting for approximately 30 seconds, the automatic controller can be reset and the same cycle can be repeated.
- Open the gas stop cock, the appliance will now start up.
- Check the flame pattern at the main burner (clearly defined inner core, even combustion).
- In the case of appliances with an external fan, check that the maximum temperature increase of 30K is not exceeded.

### **4.3 Check that the room thermostat is functioning correctly**

If the setting is lower than the ambient temperature, the burner will extinguish. At a setting higher than the ambient temperature, the burner should ignite.

### **4.4 Check the pre-pressure**

The gas pre-pressure must be measured at the gas unit when the appliance is in operation. The pre-pressure is indicated on the appliance's type plate. To check, the volume of gas consumed [3] can be measured via the gas meter (temporarily switch off all other appliances that consume gas).

### **4.5 Check appliance operation.**

Finally, check that the operation of the appliance cannot be influenced by other appliances close to it, localised air flows or corrosive or explosive vapours, etc.

### **4.6 Set the gas control unit [6]**

Before being packed, each appliance is fully tested for safety and correct operation. The correct

combustion values are set during this procedure. If checks indicate that the CO<sub>2</sub> value is different from that in table [3], adjustments may be made (difference of more than 0.2%). Never adjust set screws without the correct measuring equipment.

#### Legend [6]

- 1 Measuring point for gas pre-pressure
- 2 Measuring point for offset
- 3 Offset adjustment screw
- 4 Throttle adjustment screw

#### Step 1

Set the appliance to run at full operational load by pressing and holding the reset button of the unit for at least 5 seconds. The fault lamp in the reset button flashes at a high frequency. If the appliance will not fire up, you can try sealing the air opening in the gas mixer during ignition using your thumb and index finger. This makes the mixture richer and easier to ignite. Check the CO<sub>2</sub> when the appliance is operating at high output. If the CO<sub>2</sub> is too high, turn the throttle adjuster to the right (less gas). If the CO<sub>2</sub> is too low, turn the screw to the left (more gas). The correct CO<sub>2</sub> value is shown in table [3] (E1).

#### Step 2

Set the appliance to minimum load by shortly pressing the reset button of the unit. The fault lamp in the reset button flashes at a low frequency. Check the CO<sub>2</sub> against the value in table [3] (E2). If different, correct by turning the offset adjuster under the cap. To the left for lower CO<sub>2</sub>, to the right for higher CO<sub>2</sub>.

After setting the gas control unit press the reset button again (the light goes out).

### 4.7 Shutting down the heater

For short periods of time:

- Set the room thermostat to the minimum temperature.
- Do not switch off the electricity supply at the main switch as this may damage the maximum temperature and safety thermostat.

For longer periods of time:

- Set the room thermostat to the minimum temperature.
- After ± 5 minutes, the electrical power may be switched off.

## 5.0 Maintenance

### 5.1 General

The appliance must be subjected to maintenance at least once a year, more often if necessary. If applicable, ask a qualified installer for maintenance advice. When carrying out maintenance, the appliance must have been shut down for an extended period. Make sure that you comply with all safety rules.

### 5.2 Cleaning

All gas-fired appliances require periodical maintenance. This maintenance work must be performed by qualified maintenance technicians.

- Before starting maintenance work, the gas and electrical supplies must be shut off. See also paragraph 4.7

- Check all gaskets and replace if required.
- The gas transport section is located on the side of the appliance in the electrical compartment. The gas transport section can be removed from the appliance as a single assembly. To do so, six M6 nuts must be removed and the electrical wiring disconnected.
- Removal of the gas transport section provides access to the burner and the ignition/ionisation electrode. It is recommended to replace the ignition/ionisation electrode yearly during regular maintenance.
- Check the burner surface for irregularities. Never use a steel brush!
- Clean the gas mixer using a soft brush. Make sure that no dust gets into the burner and the gas suction tube. Refit the gas transport section, reconnect the wiring and the gas and electrical supplies.
- The condensation drain nozzle is located in the base-plate of the flue gas collection chamber. This opening and the siphon should be checked regularly for dirt build-up.
- A GS+ 135/150 has a water level sensor fitted in the flue gas collection chamber. This switches the appliance off if a blockage forms in the condensation water pipe or the siphon in order to avoid an unacceptable build-up of water in the flue gas collection chamber.
- If a G+ with a centrifugal fan is fitted with filters, the flow resistance through the filters increases as dirt accumulates. This flow resistance may not exceed the value shown on the type plate. Only replacement filters of the same class may be used. Refer to the sticker on the filter housing for more information about the filter set(s).
- Check the fan pulley(s) and belt tension, clean the pulley(s) if required.
- When using a condensate pump (3100585) with condensation neutralization kit (3100586) the cartridge needs to be replaced annually.

## 6.0 Description of parts

The parts are:

- Fan [7]
- Combustion air fan [8]
- Ignition set [9]
- Water level sensor [10]
- Burner [11]
- Gas control unit [12]
- Ambient temperature sensor [13]
- Outlet temperature sensor / max [14]
- Gasket set [15]
- Microprocessor [16]
- Gas mixer [17]
- Siphon [18]

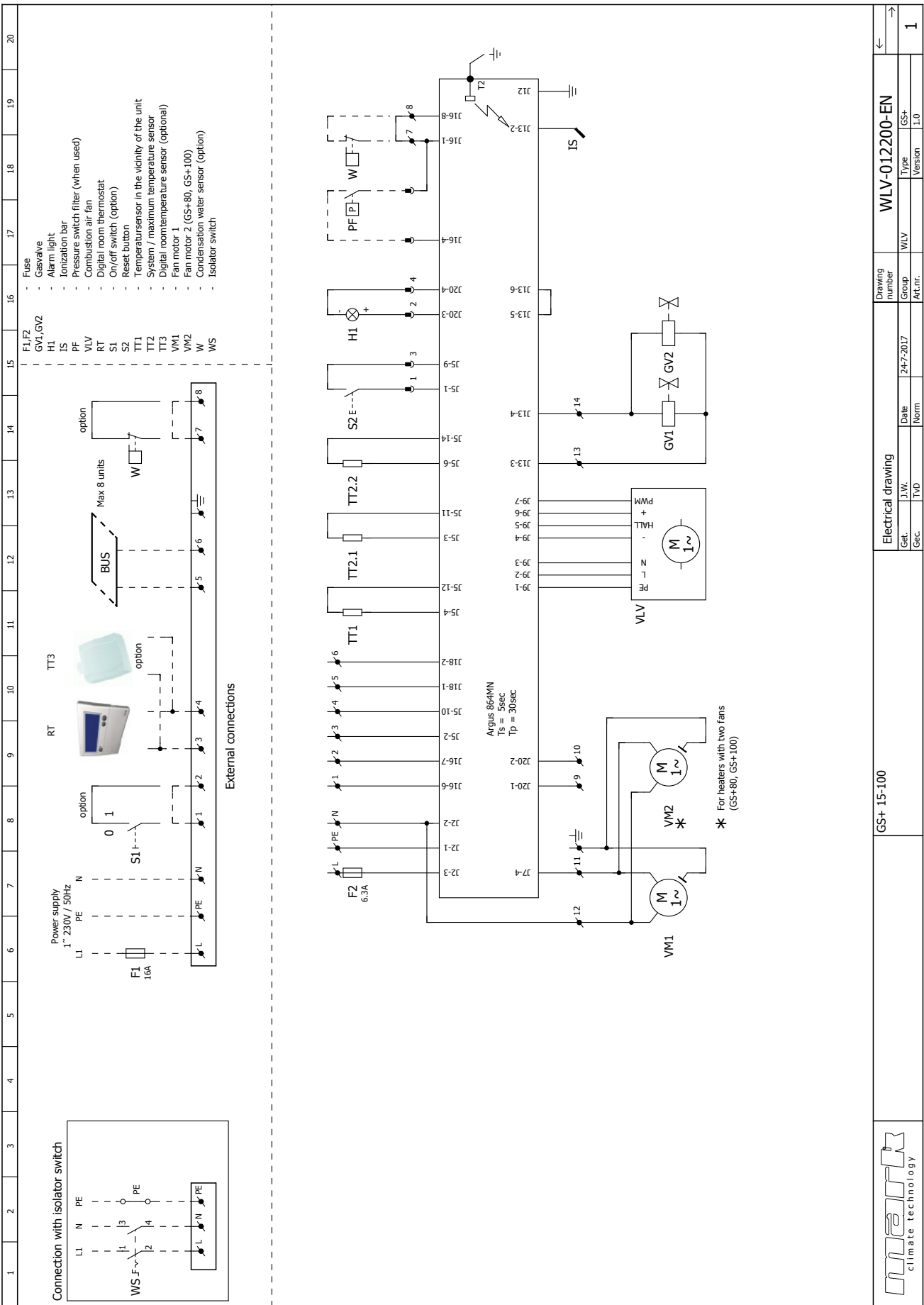
## 7.0 Fault codes

| Code                                                                                                                                                    | Error                        | Description                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                                                                                                                                                      | Ignition failure             | Ignition has failed (three attempts at ignition).                                                                             |
| 02                                                                                                                                                      | Gas valve relay/T max.       | Maximum thermostat is open                                                                                                    |
| 03                                                                                                                                                      | Gas valve                    | Gas valve faulty / Wire connecting the gas valve to the burner control box is open-circuit or has been incorrectly connected. |
| 10                                                                                                                                                      | Sensor diff too high         | Temperature difference between both outlet temperature sensors is too high.                                                   |
| 23                                                                                                                                                      | Filters/system fan           | Filter is dirty/system fan has suffered a thermal failure                                                                     |
| 25                                                                                                                                                      | T max.                       | Maximum thermostat is open                                                                                                    |
| 31                                                                                                                                                      | Too many attempts to restart | Flame goes out (3x) when the device is in operation.                                                                          |
| 42                                                                                                                                                      | Choke relay broken           | Relay of the choke valve is broken                                                                                            |
| 43                                                                                                                                                      | Combustion air fan failure   | The current speed of the combustion air fan deviates too much                                                                 |
| 62                                                                                                                                                      | Block drain                  | Condensate drain blocked. Condensate pump failure.                                                                            |
| 65                                                                                                                                                      | Phase and zero back to front | Phase and zero not connected correctly                                                                                        |
| 72                                                                                                                                                      | Air out sensor open          | Outlet temperature sensor interrupted                                                                                         |
| 73                                                                                                                                                      | Unit temp sensor open        | Ambient temperature sensor interrupted                                                                                        |
| 78                                                                                                                                                      | Air out safety open          | Outlet temperature sensor interrupted                                                                                         |
| 80                                                                                                                                                      | Air out shorted              | Outlet temperature sensor has short circuited                                                                                 |
| 81                                                                                                                                                      | Unit temp shorted            | Ambient temperature sensor has short circuited                                                                                |
| 86                                                                                                                                                      | Air out safety shorted       | Outlet temperature sensor has short circuited                                                                                 |
| When a different error code displayed on the thermostat appears, press the Reset button. If the fault returns, please contact the vendor of the device. |                              |                                                                                                                               |

# 8.0 Electrical diagram GS+ 15 - 100

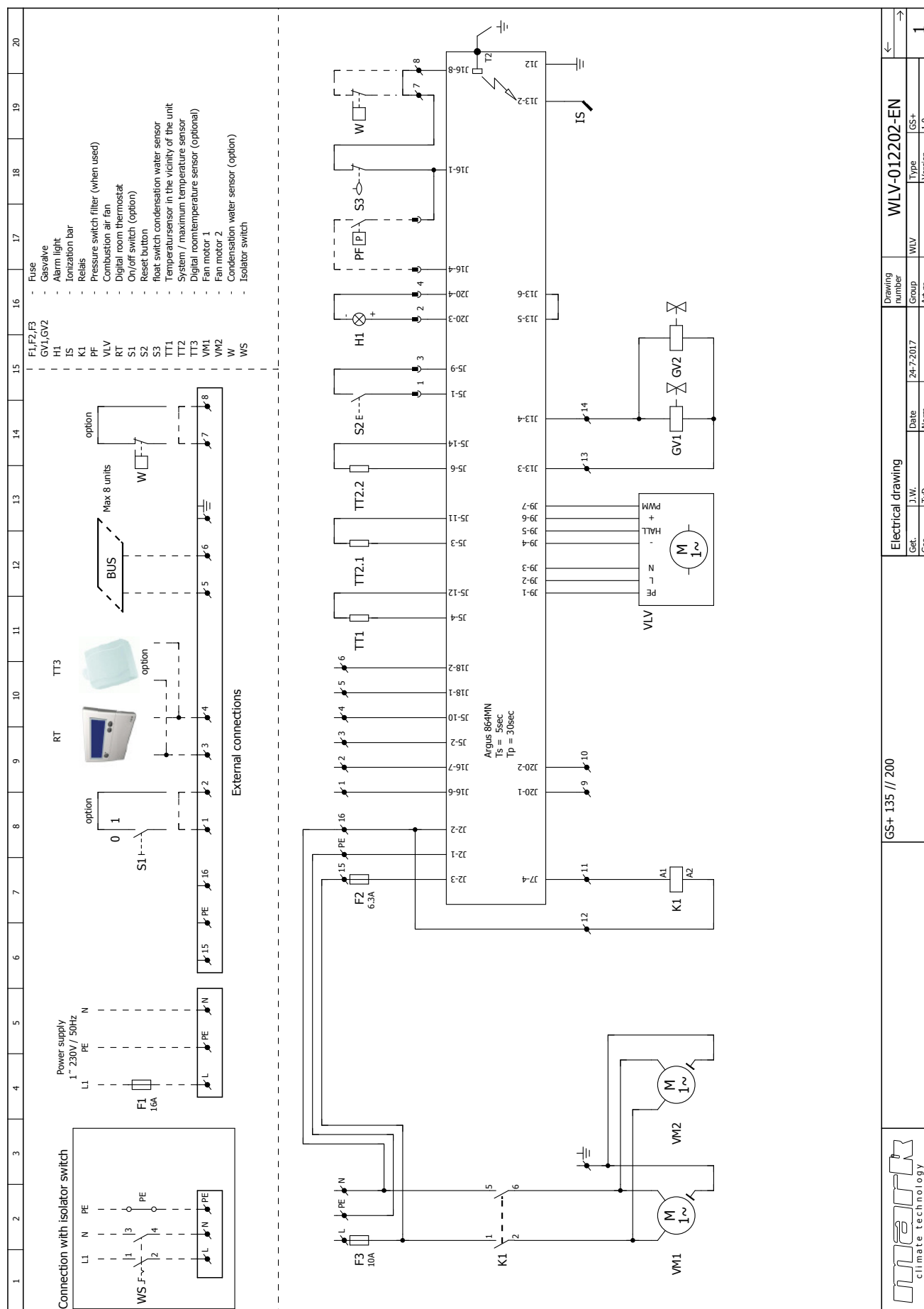
EN

For G+: see inside the appliance.



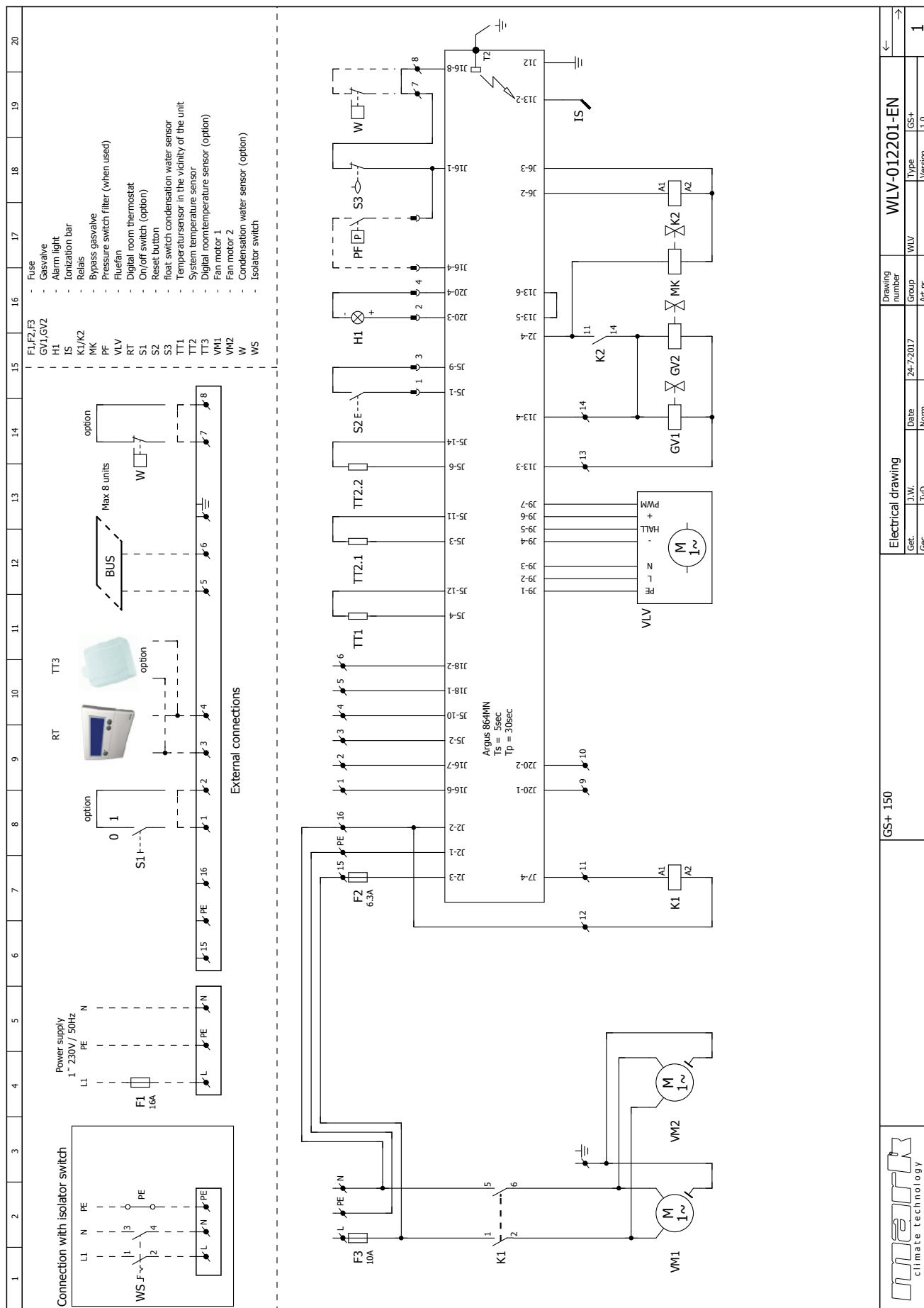
# 9.0 Electrical diagram GS+ I35

For G+: see inside the appliance.



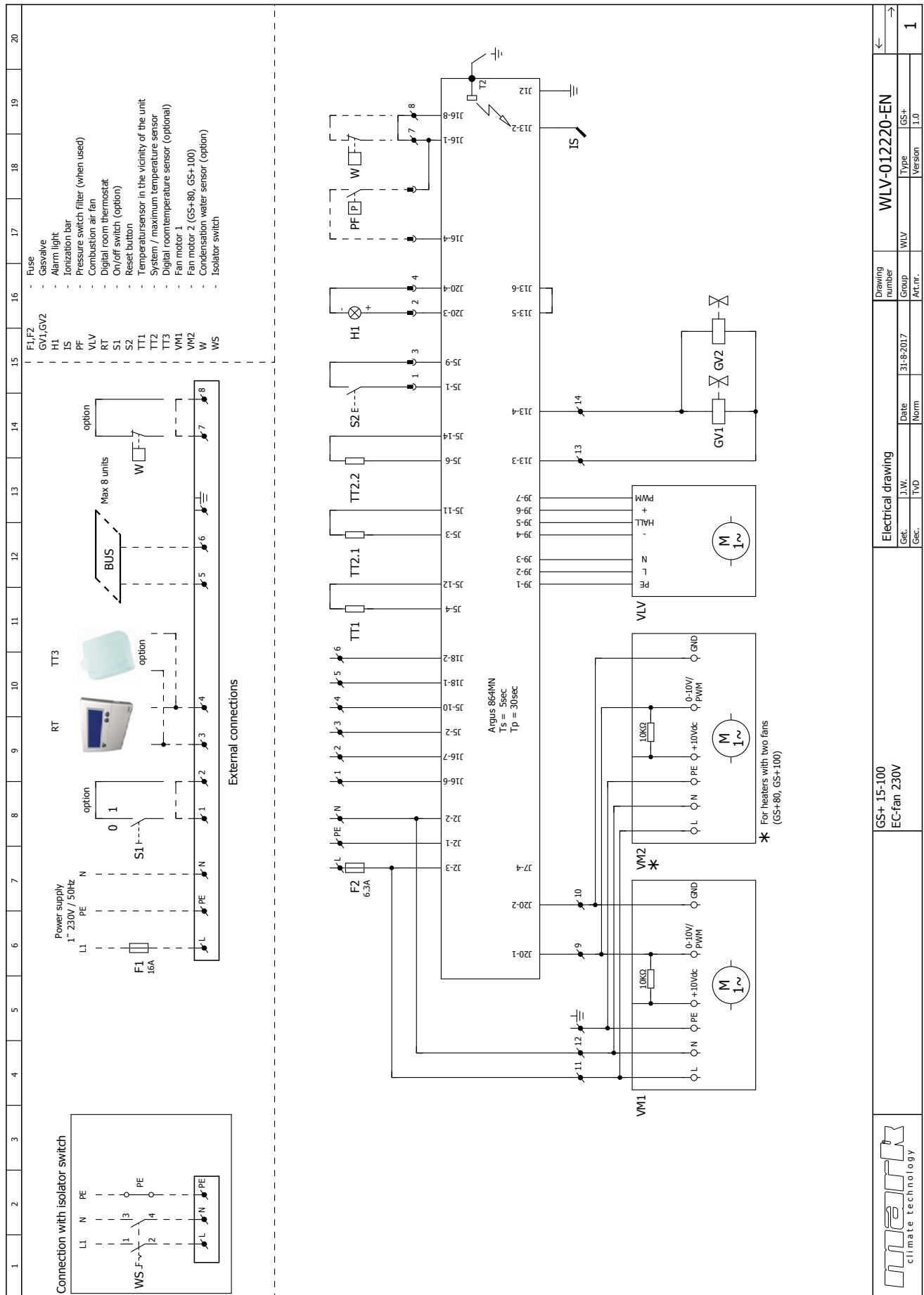
## EN

For G+: see inside the appliance.



## 11.0 Electrical diagram GS+ 15 - 100 EC

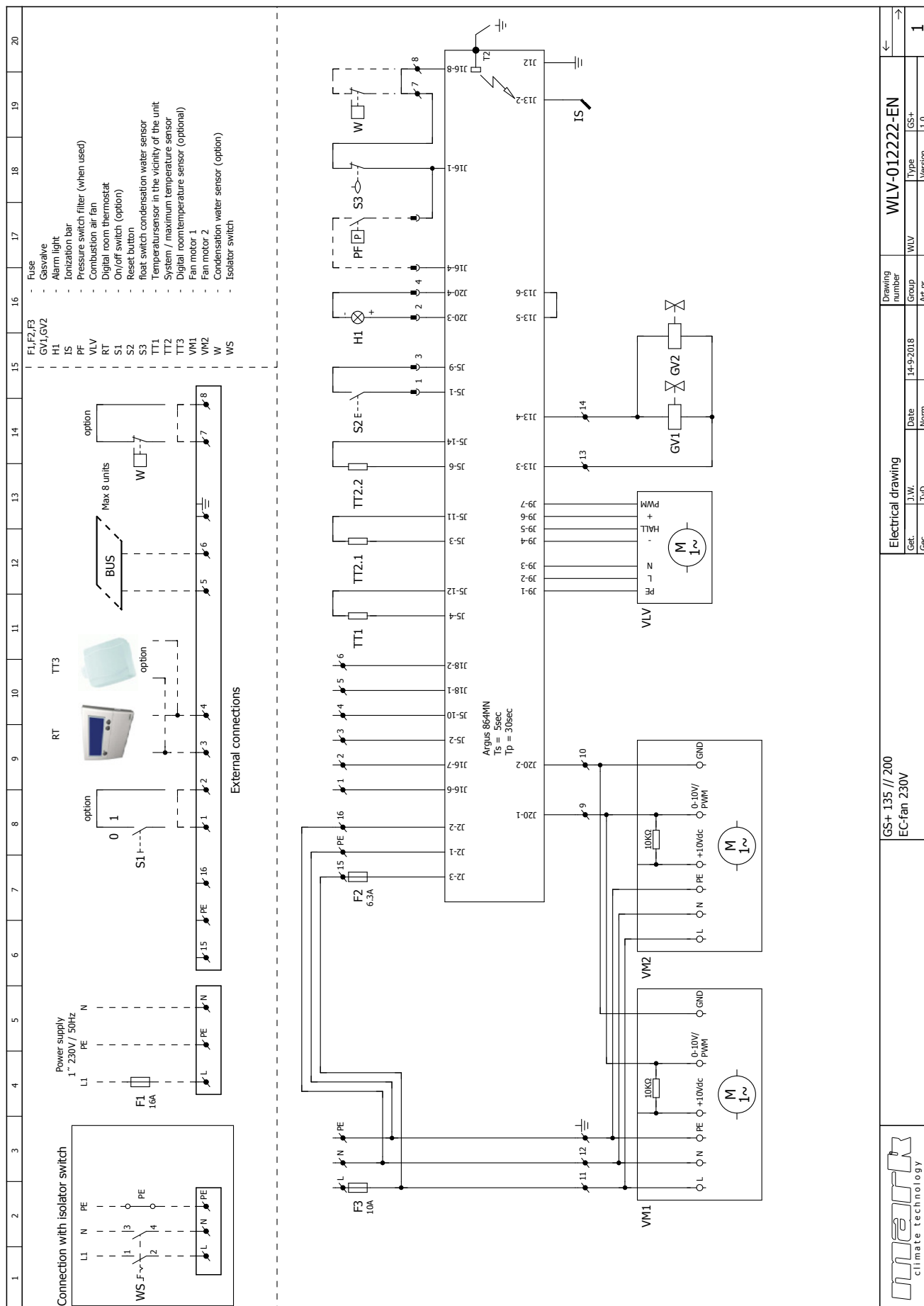
For G+: see inside the appliance.



# I2.0 Electrical diagram GS+ I35 EC

EN

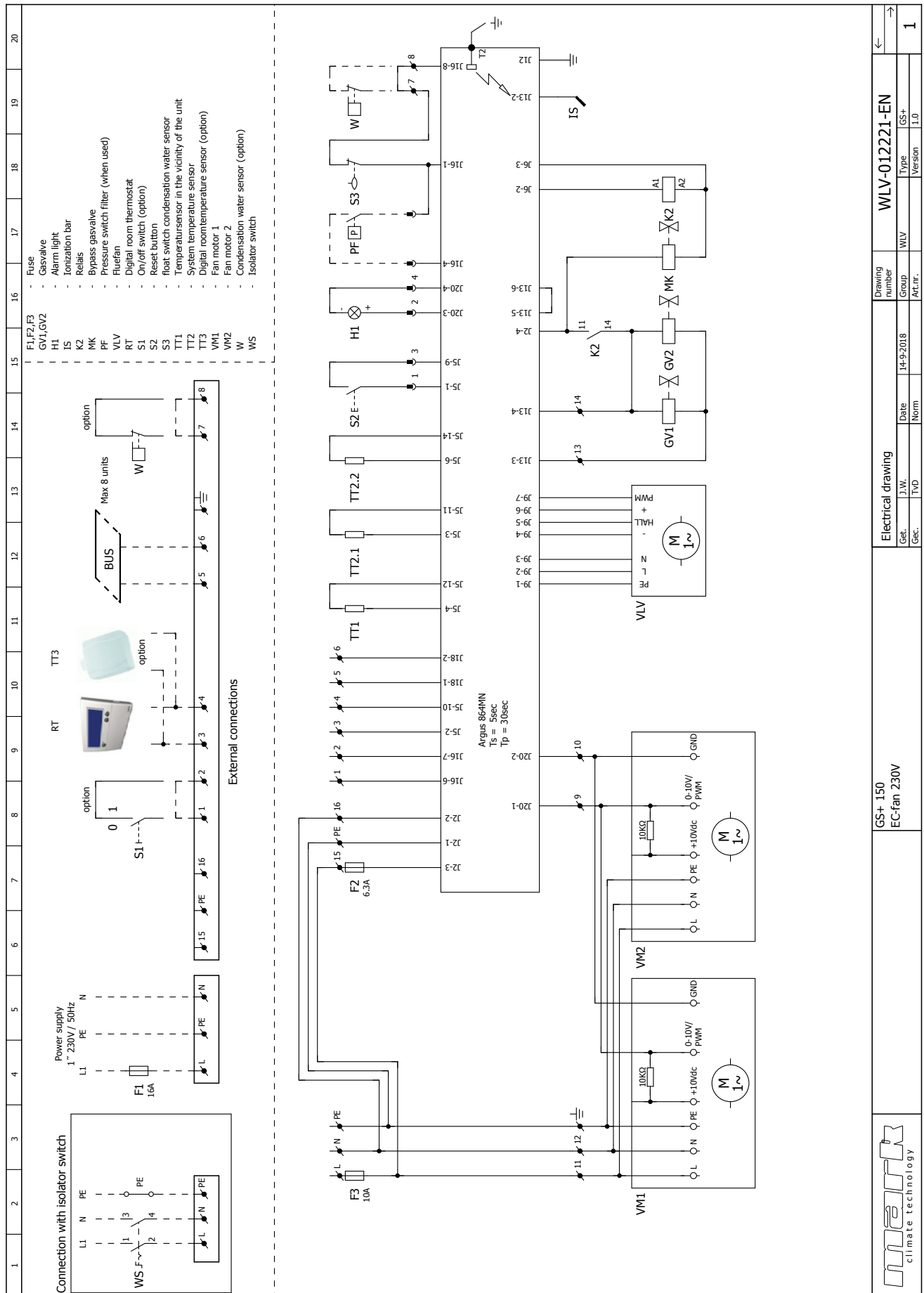
For G+: see inside the appliance.



|                    |      |                |           |               |         |
|--------------------|------|----------------|-----------|---------------|---------|
| Electrical drawing |      | Drawing number |           | WLV-012222-EN |         |
| Get.               | 1.W. | Date           | 14-9-2018 | Group         | GS+     |
| Doc.               | 1.W. | Norm           |           | Att.r.        | Version |
| GS+ I35 // 200     |      | EC-fan 230V    |           | 1             |         |

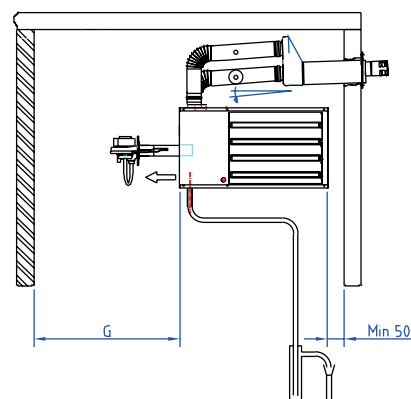
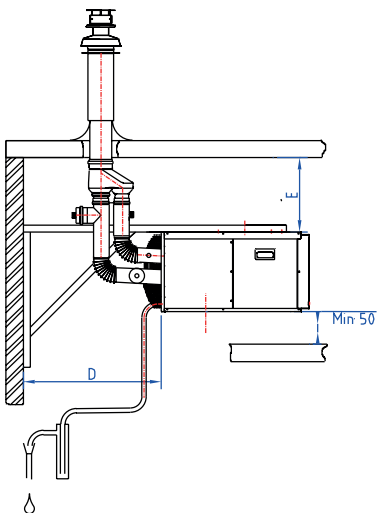
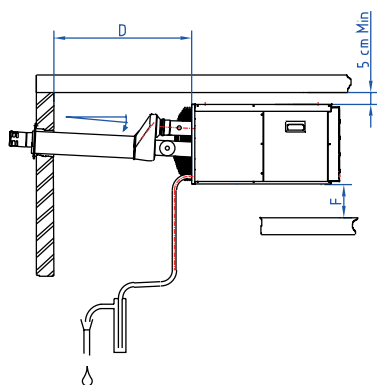
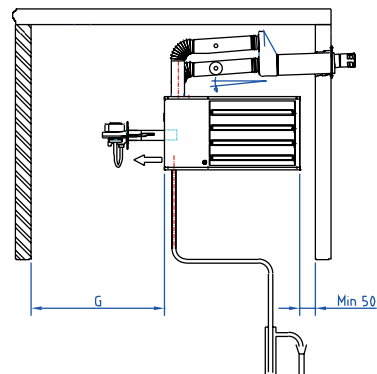
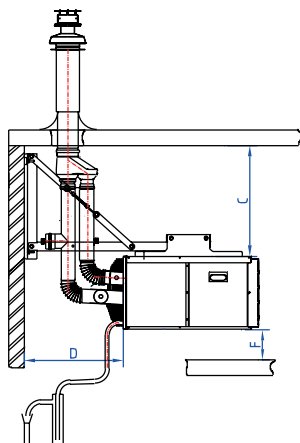
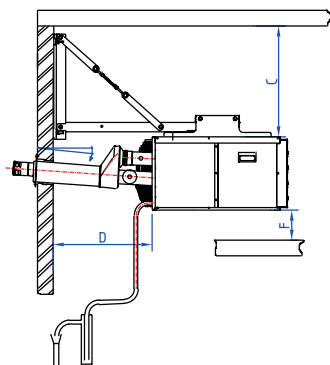
### I3.0 Electrical diagram GS+ I50 EC

For G+: see inside the appliance.

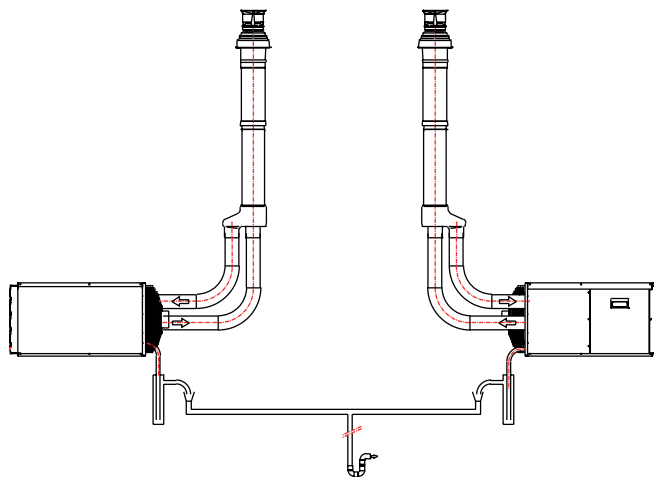


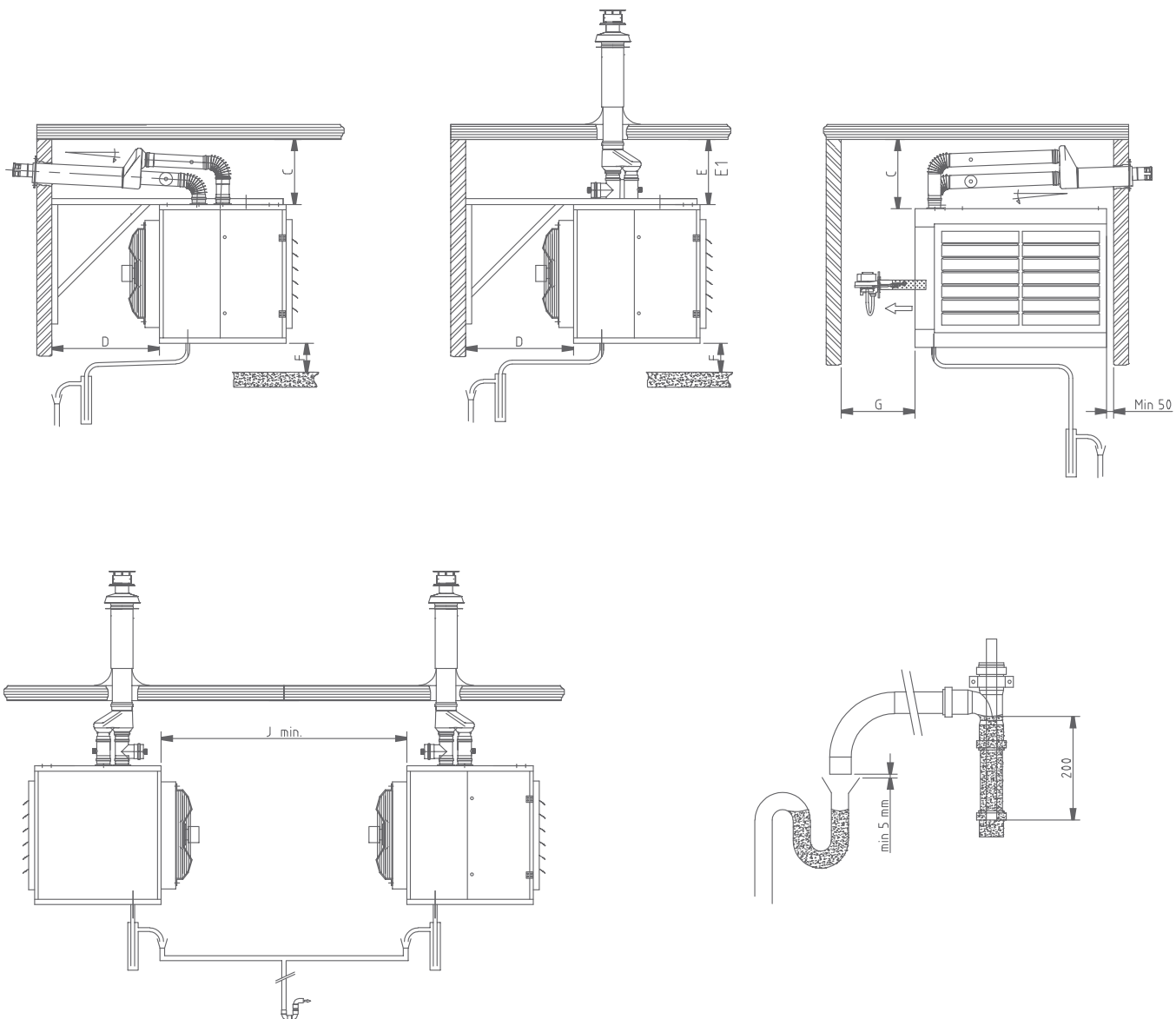
|                                |                                                                                                                               |                                                                                                                                                                                                                                                                                 |                                                                                                                        |                                                                                                    |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>[20]</b> Basic instructions | <b>Single-wall steel flue system</b>                                                                                          |                                                                                                                                                                                                                                                                                 | <b>Air supply system</b>                                                                                               |                                                                                                    |
|                                | These basic requirements are only applicable to connecting pipes with the following characteristics:                          |                                                                                                                                                                                                                                                                                 | These basic instructions are only applicable to air supply pipes with the following characteristics:                   |                                                                                                    |
|                                | <input type="checkbox"/>                                                                                                      | • Connection to a heater with built-in ventilator.                                                                                                                                                                                                                              | <input type="checkbox"/>                                                                                               | • Connection to a closed heater with built-in fan.                                                 |
|                                | <input type="checkbox"/>                                                                                                      | • Connection in the installation area of the appliance and in sight.                                                                                                                                                                                                            | <input type="checkbox"/>                                                                                               | • Connection in the installation area of the appliance and in sight.                               |
|                                | <input type="checkbox"/>                                                                                                      | • Single-walled, rigid aluminium or stainless steel pipes with CE certification (cf EN 1856-1/2, P1, V).                                                                                                                                                                        | <input type="checkbox"/>                                                                                               | • Aluminium, stainless steel or plastic air supply pipes.                                          |
|                                | <input type="checkbox"/>                                                                                                      | • Maximum flue gas temperature of 160°C.                                                                                                                                                                                                                                        | <input type="checkbox"/>                                                                                               | • Diameter air supply pipe of Ø80 to Ø130 mm.                                                      |
|                                | <input type="checkbox"/>                                                                                                      | • Diameters from Ø80 to Ø130 mm.                                                                                                                                                                                                                                                | <input type="checkbox"/>                                                                                               |                                                                                                    |
|                                | <input type="checkbox"/>                                                                                                      |                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                                                                                               |                                                                                                    |
|                                | <input type="checkbox"/>                                                                                                      |                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                                                                                               |                                                                                                    |
|                                | <input type="checkbox"/>                                                                                                      |                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                                                                                               |                                                                                                    |
|                                | <b>Caution! This checklist includes some basic instructions. For further instructions for this unit paragraph 2.2.</b>        |                                                                                                                                                                                                                                                                                 | <b>Caution! This checklist includes some basic instructions. For further instructions for this unit paragraph 2.2.</b> |                                                                                                    |
|                                | <input checked="" type="checkbox"/>                                                                                           | Checklist                                                                                                                                                                                                                                                                       | <input checked="" type="checkbox"/>                                                                                    | Checklist                                                                                          |
|                                | <b>General</b>                                                                                                                |                                                                                                                                                                                                                                                                                 | <b>General</b>                                                                                                         |                                                                                                    |
|                                | <input type="checkbox"/>                                                                                                      | We recommend using the brackets of manufacturer Cox Geelen.                                                                                                                                                                                                                     | <input type="checkbox"/>                                                                                               | Do not combine components of various materials or finished products for the connecting pipe.       |
|                                | <input type="checkbox"/>                                                                                                      | Do not combine components of various materials or finished products for the connecting pipe, except where the manufacturer of the system allows this. Exception to this rule: components tested according to Gastec Qa KE83-3 (thick-walled aluminium) and 5 (stainless steel). | <input type="checkbox"/>                                                                                               | The minimum insertion length of sleeves and spigot ends is 40mm.                                   |
|                                | <input type="checkbox"/>                                                                                                      | The minimum insertion length of sleeves and spigot ends is 40mm.                                                                                                                                                                                                                | <input type="checkbox"/>                                                                                               | When using plastic air supply pipes make sure that the distance to the flue pipe is at least 35mm. |
|                                | <input type="checkbox"/>                                                                                                      | Mount tension free.                                                                                                                                                                                                                                                             | <input type="checkbox"/>                                                                                               | Mount tension free.                                                                                |
|                                | <input type="checkbox"/>                                                                                                      | Create a slope 3 degrees (so 50mm per meter) to the unit for a proper drainage of the condensate.                                                                                                                                                                               | <input type="checkbox"/>                                                                                               | <b>Connecting and bracing</b>                                                                      |
|                                | <input type="checkbox"/>                                                                                                      | <b>Connecting and bracing</b>                                                                                                                                                                                                                                                   | <input type="checkbox"/>                                                                                               | Place the first bracket on a maximum of 0.5m pipe length from the unit.                            |
|                                | <input type="checkbox"/>                                                                                                      | Brace every corner to or close to the sleeve. Exception when connecting to the unit:                                                                                                                                                                                            | <input type="checkbox"/>                                                                                               | <b>Horizontal and non-vertical pipes</b>                                                           |
| <input type="checkbox"/>       | - If the connecting pipe is shorter than 0.25m before and after the first bend, the bracket at the first bend can be omitted. | <input type="checkbox"/>                                                                                                                                                                                                                                                        | - Maximum bracket distance of 1m.                                                                                      |                                                                                                    |
| <input type="checkbox"/>       | - Place the first bracket on a maximum of 0.5m pipe length from the unit.                                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                        | - Divide lengths between brackets evenly.                                                                              |                                                                                                    |
| <input type="checkbox"/>       | <b>Horizontal and non-vertical pipes</b>                                                                                      | <input type="checkbox"/>                                                                                                                                                                                                                                                        | <b>Vertical pipes</b>                                                                                                  |                                                                                                    |
| <input type="checkbox"/>       | - Maximum bracket distance of 1m.                                                                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                        | - Maxium bracket distance of 2m.                                                                                       |                                                                                                    |
| <input type="checkbox"/>       | - Divide lengths between brackets evenly.                                                                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                        | - Divide lengths between brackets evenly.                                                                              |                                                                                                    |
| <input type="checkbox"/>       | <b>Vertical pipes</b>                                                                                                         | <input type="checkbox"/>                                                                                                                                                                                                                                                        | <b>Gaskets and seals</b>                                                                                               |                                                                                                    |
| <input type="checkbox"/>       | - Maximum bracket distance of 2m.                                                                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                        | Avoid damaging of the sealing rings by cutting of in an angle and deburring.                                           |                                                                                                    |
| <input type="checkbox"/>       | - Divide lengths between brackets evenly.                                                                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                        | Seals of metal air supply pipes may be bolted or parked. This is not allowed for plastic air supply pipes.             |                                                                                                    |
| <input type="checkbox"/>       | <b>Gaskets and seals</b>                                                                                                      | <input type="checkbox"/>                                                                                                                                                                                                                                                        | Guarantee the gas-tightness by using components that are provided with a seal.                                         |                                                                                                    |
| <input type="checkbox"/>       | Avoid damaging of the sealing rings by cutting of in an angle and deburring.                                                  | <input type="checkbox"/>                                                                                                                                                                                                                                                        | If necessary lubricate sealing rings exclusively with max. 1% soap solution or water.                                  |                                                                                                    |
| <input type="checkbox"/>       | When using tension-proof connections follow the instructions of the manufacturer.                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                        | <b>Caution!</b> Do not use grease, Vaseline, petroleum jelly or oil.                                                   |                                                                                                    |
| <input type="checkbox"/>       | Do not screw or park connections.                                                                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                        |                                                                                                                        |                                                                                                    |
| <input type="checkbox"/>       | It is not allowed to seal foam or paste (for example PUR, silicone, etc.).                                                    | <input type="checkbox"/>                                                                                                                                                                                                                                                        |                                                                                                                        |                                                                                                    |
| <input type="checkbox"/>       | If necessary lubricate sealing rings exclusively with max. 1% soap solution or water.                                         | <input type="checkbox"/>                                                                                                                                                                                                                                                        |                                                                                                                        |                                                                                                    |
| <input type="checkbox"/>       | <b>Caution!</b> Do not use grease, Vaseline, petroleum jelly or oil.                                                          | <input type="checkbox"/>                                                                                                                                                                                                                                                        |                                                                                                                        |                                                                                                    |





| T  | C≥  | D≥  | E≥ | F>         | G≥  |
|----|-----|-----|----|------------|-----|
| 15 | 575 | 350 | 70 | 400 - 2500 | 430 |
| 25 | 575 | 350 | 70 | 400 - 2500 | 430 |

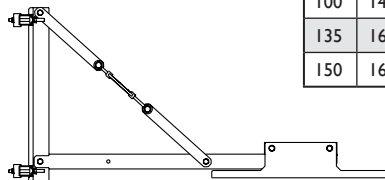
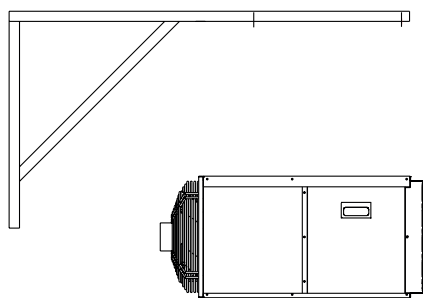




| T   | C≥  | D≥   | E≥  | E1*≥ | F ≥ - ≤    | G≥  | J≥   |
|-----|-----|------|-----|------|------------|-----|------|
| 35  | 430 | 780  | 305 | 350  | 400 - 4000 | 600 | 1400 |
| 40  | 430 | 780  | 305 | 350  | 400 - 4000 | 600 | 1400 |
| 60  | 450 | 780  | 395 | 450  | 400 - 4500 | 600 | 1600 |
| 80  | 450 | 780  | 395 | 460  | 400 - 5000 | 600 | 1800 |
| 100 | 450 | 780  | 395 | 450  | 400 - 5000 | 700 | 2200 |
| 135 | 600 | 1100 | 495 | 600  | 400 - 7000 | 750 | 2600 |
| 150 | 600 | 1100 | 495 | 600  | 400 - 7000 | 750 | 2600 |

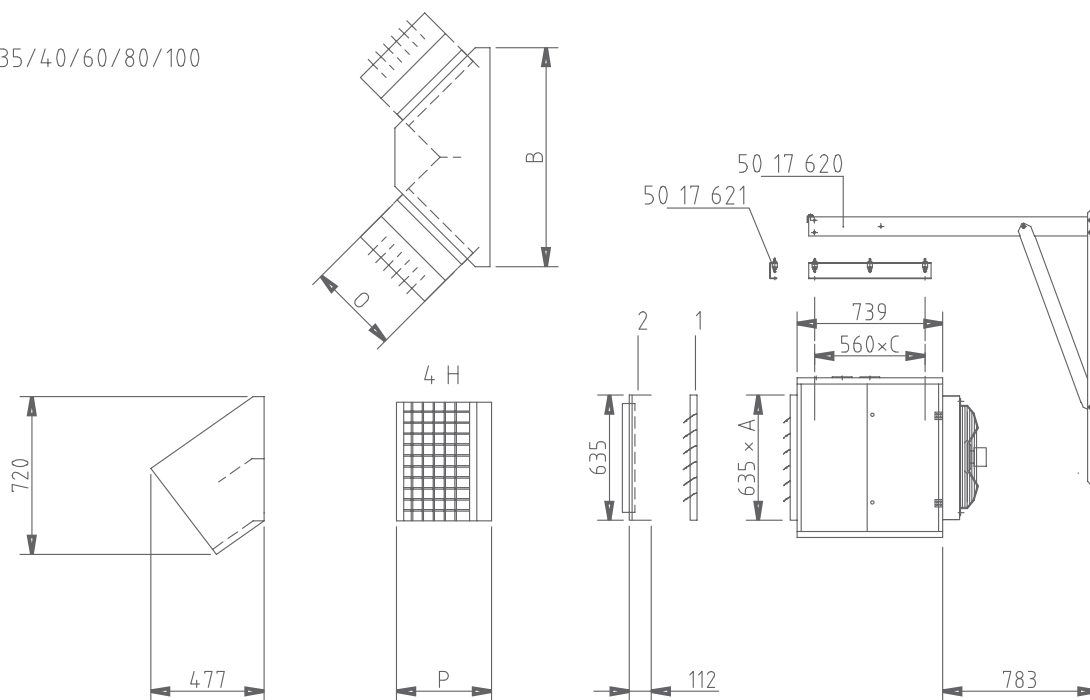
\* Germany / Deutschland.

GS+ 15/25

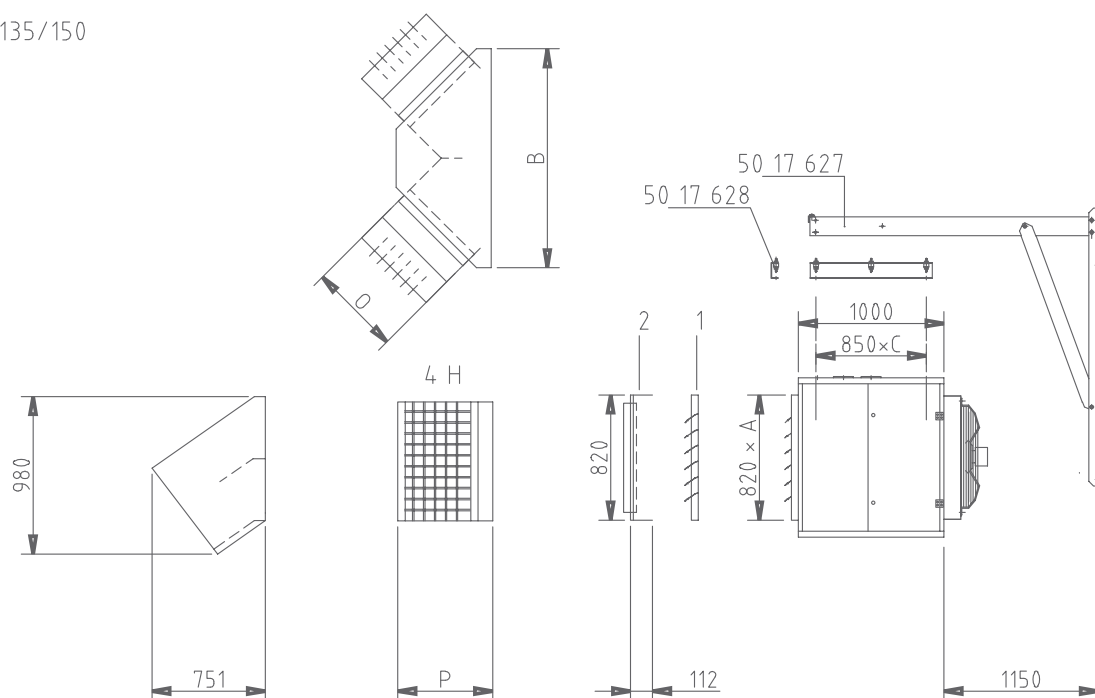


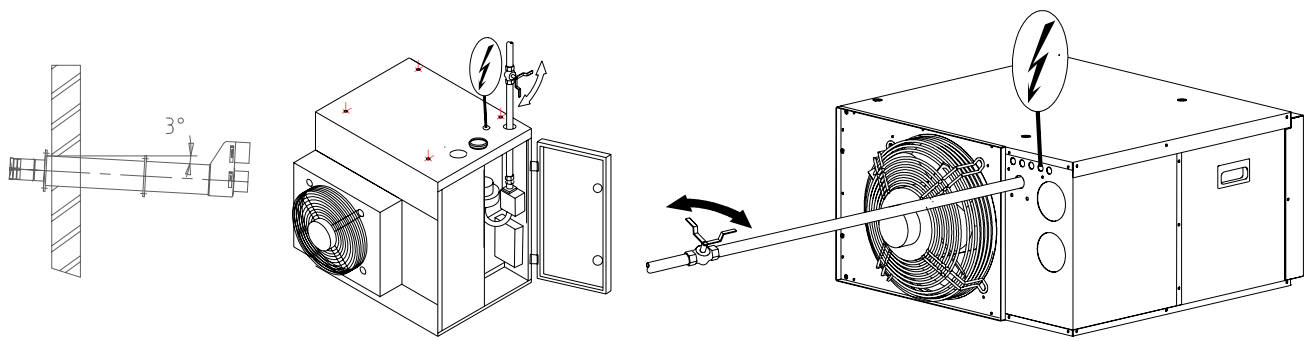
| T   | mm   |      |      |     |     | kg   |      |
|-----|------|------|------|-----|-----|------|------|
|     | A    | B    | C    | O   | P   | 2    | 4H   |
| 35  | 760  | 760  | 470  | 320 | 314 | 5    | 12   |
| 40  | 760  | 760  | 470  | 320 | 314 | 5    | 12   |
| 60  | 1005 | 1005 | 715  | 490 | 490 | 7    | 18.5 |
| 80  | 1190 | 1190 | 890  | 620 | 620 | 9    | 26   |
| 100 | 1480 | 1480 | 1180 | 825 | 825 | 11.5 | 35.5 |
| 135 | 1660 | 1890 | 1455 | 850 | 850 | 16.5 | 46   |
| 150 | 1660 | 1890 | 1455 | 850 | 850 | 16.5 | 46   |

GS+ 35/40/60/80/100



GS+ 135/150





| Type  |       |       | 15             | 25             | 35             | 40             | 60             |
|-------|-------|-------|----------------|----------------|----------------|----------------|----------------|
| A     |       | kW    | 16,1           | 27,2           | 38,8           | 44,4           | 66,7           |
| B     |       | kW    | 14,5           | 24,5           | 34,9           | 40             | 60             |
| C     | 100%  | %     | 94,1           | 93,9           | 95,7           | 94,8           | 94,2           |
| D     | 30%   | %     | 104,4          | 105,3          | 105,7          | 105,7          | 105,8          |
| E     | G25   | m³/h  | 1,75-0,49      | 2,95-0,74      | 4,10-1,02      | 4,73-1,02      | 7,03-1,47      |
| E1    | CO2   | %     | 8,9            | 9,0            | 9              | 9              | 9              |
| E2    | CO2   | %     | 8,1            | 8,1            | 8,4            | 8,4            | 8,3            |
| E3    |       | mBar  | 25             | 25             | 25             | 25             | 25             |
| E     | G25.3 | m³/h  | 1,76-0,53      | 2,99-0,73      | 4,10-0,95      | 4,70-0,95      | 7,05-1,38      |
| E1    | O2    | %     | 5,2            | 5,0            | 5,6            | 5,3            | 5,0            |
| E2    | O2    | %     | 6,4            | 6,0            | 6,5            | 6,7            | 6,4            |
| E3    |       | mBar  | 25             | 25             | 25             | 25             | 25             |
| E     | G20   | m³/h  | 1,56-0,45      | 2,61-0,66      | 3,65-0,88      | 4,18-0,88      | 6,22-1,34      |
| E1    | CO2   | %     | 8,9            | 8,8            | 8,8            | 8,8            | 8,8            |
| E2    | CO2   | %     | 7,9            | 8,0            | 8,0            | 8,0            | 8,2            |
| E3    |       | mBar  | 20             | 20             | 20             | 20             | 20             |
| E     | G30   | kg/h  | 1,19-0,33      | 2,02-0,51      | 2,92-0,72      | 3,46-0,72      | 5,05-1,11      |
| E1    | CO2   | %     | 10,7           | 10,7           | 11,1           | 11,1           | 10,8           |
| E2    | CO2   | %     | 10,4           | 10,2           | 10,6           | 10,6           | 10,6           |
| E3    |       | mBar  | 28-30 / 50*    | 28-30 / 50*    | 28-30 / 50*    | 28-30 / 50*    | 28-30 / 50*    |
| E     | G31   | kg/h  | 1,13-0,32      | 1,91-0,48      | 2,68-0,64      | 3,17-0,64      | 4,72-1,04      |
| E1    | CO2   | %     | 10,2           | 10,2           | 10,3           | 10,3           | 10,2           |
| E2    | CO2   | %     | 9,4            | 9,3            | 9,2            | 9,2            | 9,0            |
| E3    |       | mBar  | 37 / 50*       | 37 / 50*       | 37 / 50*       | 37 / 50*       | 37 / 50*       |
| E     | G27   | m³/h  |                |                | 4,45-1,14      | 5,10-1,14      | 7,65-1,60      |
| E1    | CO2   | %     |                |                | 9              | 9              | 9              |
| E2    | CO2   | %     |                |                | 8,5            | 8,5            | 8,6            |
| E3    |       | mBar  |                |                | 20             | 20             | 20             |
| E     | G350  | m³/h  |                |                | 5,13-1,28      | 5,88-1,28      | 8,82-1,84      |
| E1    | CO2   | %     |                |                | 8,7            | 8,7            | 8,7            |
| E2    | CO2   | %     |                |                | 8,3            | 8,3            | 8,3            |
| E3    |       | mBar  |                |                | 13             | 13             | 13             |
| F     |       | :-    | 3:1            | 4:1            | 4:1            | 5:1            | 5:1            |
| G     |       | °C    | 40-135         | 33-140         | 38-105         | 38-124         | 33-134         |
| I     |       | min-l | 3000/4500/1380 | 3000/5100/1260 | 3480/5100/1320 | 3480/5940/1320 | 2520/6180/1500 |
| J     |       | Pa    | 70,0           | 90,0           | 110            | 110            | 130            |
| K     |       | Ø-Ø   | 80-80          | 80-80          | 80-80          | 80-80          | 100-100        |
| L     |       | V/Hz  | 230/50         | 230/50         | 230/50         | 230/50         | 230/50         |
| M GS+ |       | kW    | 0,16           | 0,18           | 0,32           | 0,32           | 0,4            |
| M G+  |       | W     | 30             | 40             | 40             | 55             | 90             |
| N     |       | A     | 6,3            | 6,3            | 6,3            | 6,3            | 6,3            |
| O     |       | IP    | 00B            | 00B            | 00B            | 00B            | 00B            |
| Q GS+ | AC    | m³/h  | 1410           | 2190           | 5000           | 5000           | 5300           |
| Q GS+ | EC    | m³/h  | 850-1730       | 1090-2470      | 1350-3900      | 1350-3900      | 2700-5500      |
| Q G+  |       | m³/h  | 1250-4100      | 2000-4100      | 3760-7200      | 3760-7200      | 5640-8640      |
| R GS+ | AC    | ΔT    | 29,0 - 9,2     | 31,5 - 9,0     | 20,0 - 5,5     | 23,1 - 5,5     | 31,8 - 7,7     |
| R GS+ | EC    | ΔT    | 23,4 - 14,8    | 28,0 - 17,8    | 25,7 - 20,4    | 29,3 - 19,9    | 30,8 - 14,5    |
| S     |       | M     | 10-16          | 14-20          | 28-36          | 26-36          | 26-36          |
| U     |       | °C    | -15/+40        | -15/+40        | -15/+40        | -15/+40        | -15/+40        |
| V     |       | ø     | 350            | 350            | 500            | 500            | 560            |
| W     |       | min-l | 900            | 1290           | 925            | 925            | 815            |
| X     |       | dB(A) | 44             | 48             | 48             | 48             | 51             |
| Y GS+ |       | kg    | 50             | 56             | 95             | 95             | 111            |
| Y G+  |       | kg    | 46             | 52             | 75             | 75             | 86             |
| Z     |       | Ph    | 3,4            | 3,4            | 3,4            | 3,4            | 3,4            |
| Z1    |       | kg/h  | 27-8           | 45-12          | 62-16          | 72-16          | 107-24         |
| AB    |       | ltr/h | 0,37           | 0,73           | 1,23           | 1,23           | 1,9            |
| AC    |       |       | 1/2" (M)       | 1/2" (M)       | 3/4" (M)       | 3/4" (M)       | 3/4" (M)       |

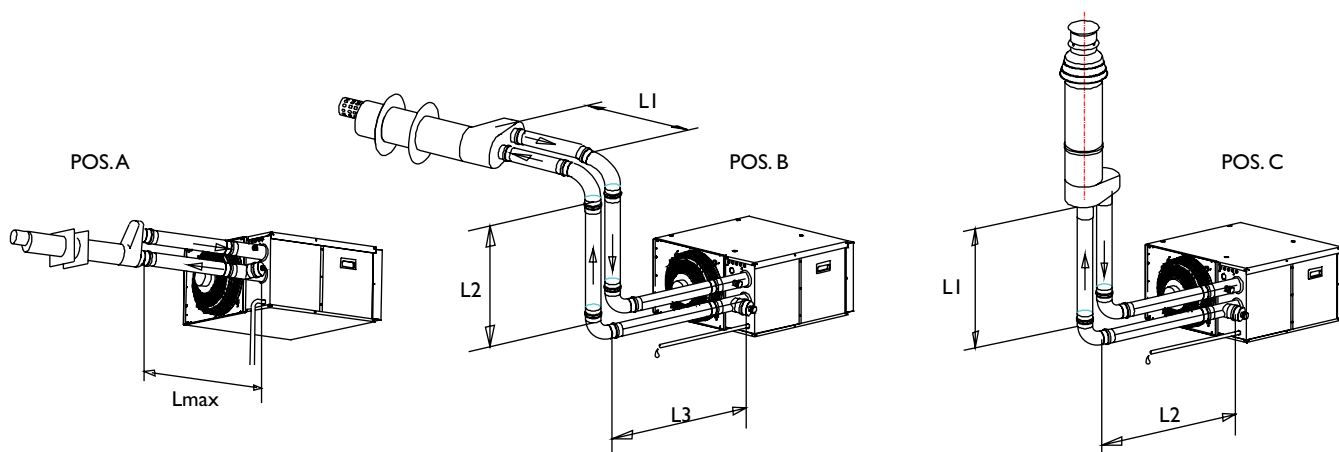
\* NL BE DE AT 50 mBar

|    |  |    |             |             |             |             |             |
|----|--|----|-------------|-------------|-------------|-------------|-------------|
| BE |  |    |             |             |             |             |             |
| A  |  | kW | 14,5 / 12,2 | 24,5 / 20,7 | 34,9 / 28,9 | 40 / 33,3   | 60 / 48,4   |
| B  |  | kW | 13,6 / 11,5 | 23,0 / 22,0 | 33,4 / 27,6 | 37,9 / 31,4 | 56,6 / 45,7 |

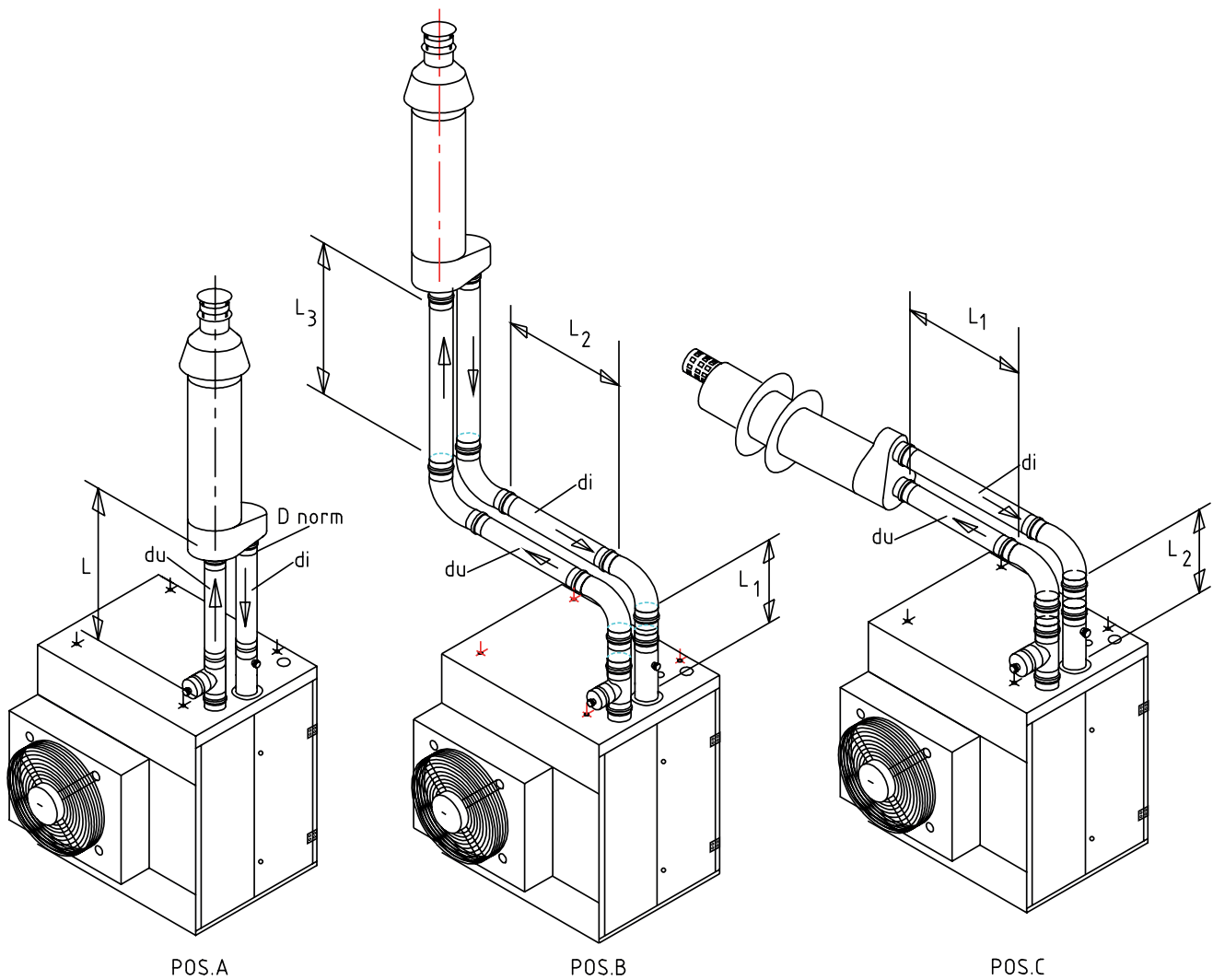
| Type  |       |       | 80             | 100            | 135            | 150            | 200            |
|-------|-------|-------|----------------|----------------|----------------|----------------|----------------|
| A     |       | kW    | 88,8           | 110,6          | 149,8          | 166,7          | 216,7          |
| B     |       | kW    | 80             | 99,5           | 134,9          | 150            | 195            |
| C     | 100%  | %     | 94,3           | 94,2           | 95,1           | 94,8           | 93,6           |
| D     | 30%   | %     | 105,8          | 105,6          | 106,8          | 104,9          | 105,7          |
| E     | G25   | m³/h  | 9,30-1,40      | 11,57-1,85     | 15,98-2,25     | 17,05-3,75     | 23,10-4,43     |
| E1    | CO2   | %     | 9              | 9              | 9              | 8,9            | 9              |
| E2    | CO2   | %     | 8,3            | 8,0            | 8,1            | 8,3            | 7,9            |
| E3    |       | mBar  | 25             | 25             | 25             | 25             | 25             |
| E     | G25.3 | m³/h  | 9,37-1,41      | 11,69-1,85     | 15,84-2,28     | 17,61-3,72     | 22,90-4,43     |
| E1    | O2    | %     | 5,0            | 5,0            | 5,0            | 5,0            | 5,0            |
| E2    | O2    | %     | 6,9            | 6,4            | 6,4            | 6,4            | 6,4            |
| E3    |       | mBar  | 25             | 25             | 25             | 25             | 25             |
| E     | G20   | m³/h  | 8,16-1,25      | 10,30-1,78     | 14,05-1,98     | 15,3-3,37      | 20,31-4,05     |
| E1    | CO2   | %     | 8,8            | 8,8            | 8,8            | 8,5            | 8,8            |
| E2    | CO2   | %     | 8,1            | 8,3            | 8,6            | 8,0            | 8,1            |
| E3    |       | mBar  | 20             | 20             | 20             | 20             | 20             |
| E     | G30   | kg/h  | 6,70-0,96      | 8,19-1,48      | 11,1-1,85      | 12,35-2,72     | 16,06-3,89     |
| E1    | CO2   | %     | 10,8           | 10,7           | 11,5           | 10,7           | 10,8           |
| E2    | CO2   | %     | 10,5           | 10,3           | 11,3           | 9,3            | 10,6           |
| E3    |       | mBar  | 28-30 / 50 *   | 28-30 / 50 *   | 28-30 / 50 *   | 28-30 / 50 *   | 28-30 / 50 *   |
| E     | G31   | kg/h  | 6,22-0,89      | 7,76-1,34      | 10,51-2,23     | 11,69-2,57     | 15,20-3,25     |
| E1    | CO2   | %     | 10,1           | 10,2           | 10,5           | 10,3           | 10,0           |
| E2    | CO2   | %     | 9,6            | 9,0            | 10,2           | 9,2            | 9,3            |
| E3    |       | mBar  | 37 / 50*       | 37 / 50*       | 37 / 50*       | 37 / 50*       | 37 / 50*       |
| E     | G27   | m³/h  | 10,2-2,82      | 12,69-3,54     | 17,21-2,42     | 19,14-4,45     | 24,88-4,85     |
| E1    | CO2   | %     | 9              | 9              | 9              | 8,9            | 9              |
| E2    | CO2   | %     | 8,5            | 8,5            | 8,5            | 8,5            | 8,5            |
| E3    |       | mBar  | 20             | 20             | 20             | 20             | 20             |
| E     | G350  | m³/h  | 11,75-3,25     | -              | -              | -              | -              |
| E1    | CO2   | %     | 8,7            | -              | -              | -              | -              |
| E2    | CO2   | %     | 8,3            | -              | -              | -              | -              |
| E3    |       | mBar  | 13             | -              | -              | -              | -              |
| F     |       | :-    | 7:1            | 6:1            | 7:1            | 4:1            | 5:1            |
| G     |       | °C    | 37-131         | 35-133         | 24-113         | 30-121         | 28-147         |
| I     |       | min-l | 3480/8220/1380 | 2520/6720/1260 | 2520/8520/1380 | 1740/5700/1680 | 1740/5700/1260 |
| J     |       | Pa    | 225            | 213            | 250            | 200            | 200            |
| K     |       | Ø-Ø   | 100-100        | 100-100        | 130-130        | 130-130        | 130-130        |
| L     |       | V/Hz  | 230/50         | 230/50         | 230/50         | 230/50         | 230/50         |
| M GS+ |       | kW    | 0,72           | 0,7            | 1,3            | 1,4            | -              |
| M G+  |       | W     | 160            | 160            | 250            | 250            | 300            |
| N     |       | A     | 6,3            | 6,3            | 6,3            | 6,3            | 6,3            |
| O     |       | IP    | 00B            | 00B            | 00B            | 00B            | 00B            |
| Q GS+ | AC    | m³/h  | 9000           | 9800           | 16300          | 16300          | 18500          |
| Q GS+ | EC    | m³/h  | 4500-880       | 5400-9400      | 7350-14500     | 7350-16300     | -              |
| Q G+  |       | m³/h  | 7520-13680     | 9400-16200     | 13500-20880    | 14200-20880    | 17500-24500    |
| R GS+ | AC    | ΔT    | 25,2 - 7,9     | 29,6 - 9,2     | 23,7 - 3,8     | 25,9 - 6,5     | 30,1 - 6,6     |
| R GS+ | EC    | ΔT    | 25,9 - 15,6    | 30,9 - 16,5    | 26,7 - 8,3     | 26,2 - 14,2    | -              |
| S     |       | M     | 32-46          | 36-50          | 48-68          | 48-68          | -              |
| U     |       | °C    | -15/+40        | -15/+40        | -15/+40        | -15/+40        | -15/+40        |
| V     |       | ø     | (2x) 500       | (2x) 560       | (2x) 650       | (2x) 650       | -              |
| W     |       | min-l | 925            | 815            | 925            | 925            | -              |
| X     |       | dB(A) | 52             | 52             | 58             | 58             | -              |
| Y GS+ |       | kg    | 136            | 155            | 228            | 230            | -              |
| Y G+  |       | kg    | 103            | 114            | 200            | 202            | 218            |
| Z     |       | Ph    | 3,4            | 3,4            | 3,4            | 3,4            | 3,4            |
| ZI    |       | kg/h  | 141-23         | 182-32         | 243-38         | 262-62         | 352-77         |
| AB    |       | ltr/h | 2,5            | 3,2            | 4,9            | 4,7            | 6,5            |
| AC    |       |       | 1" (M)         | 1" (M)         | 1" (F)         | 1" (F)         | 1" (F)         |

\* NL BE DE AT 50 mBar

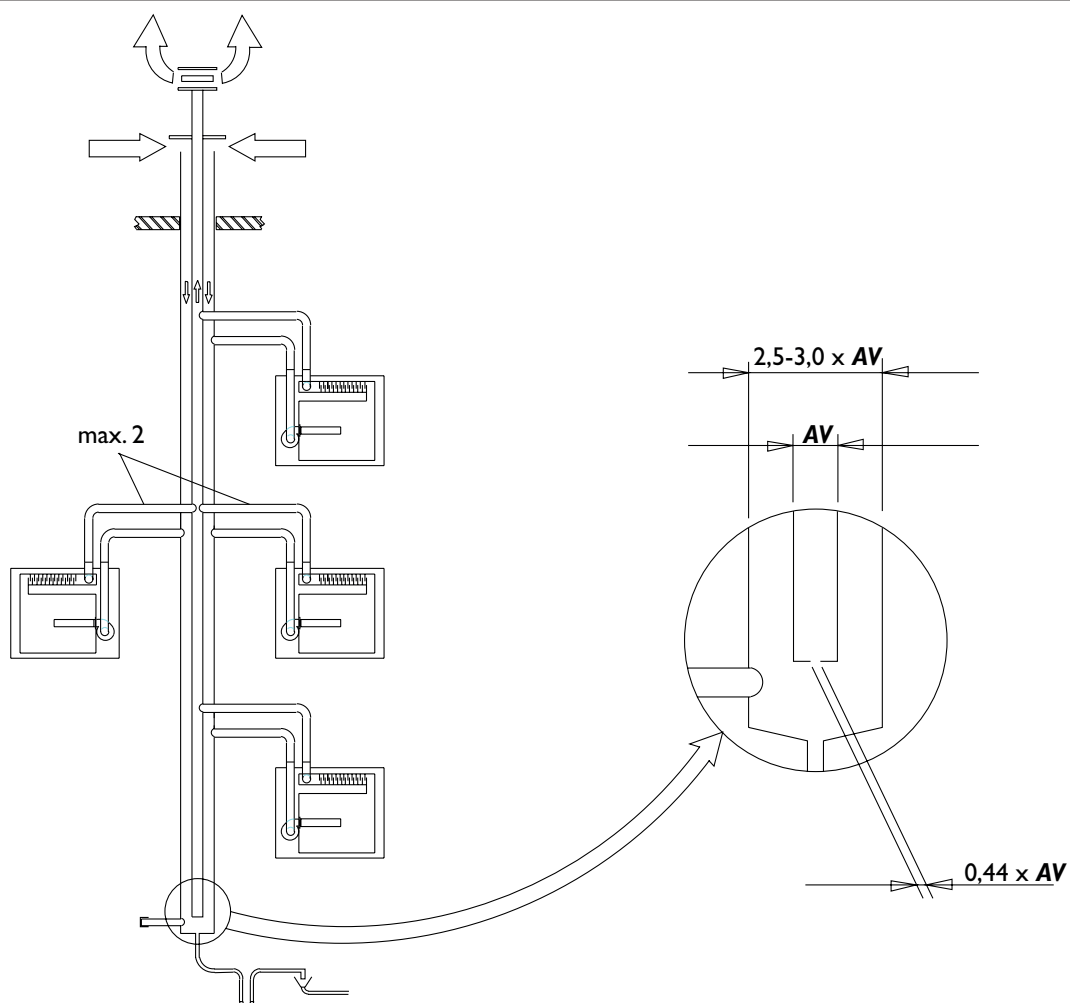
| BE |  |    |             |             |               |               |             |
|----|--|----|-------------|-------------|---------------|---------------|-------------|
| A  |  | kW | 80 / 66,7   | 99,5 / 85,1 | 134,9 / 109,7 | 150 / 127,7   | 195 / 159   |
| B  |  | kW | 75,8 / 63,1 | 93,8 / 80,2 | 128,3 / 103,7 | 141,8 / 121,3 | 182,5 / 148 |



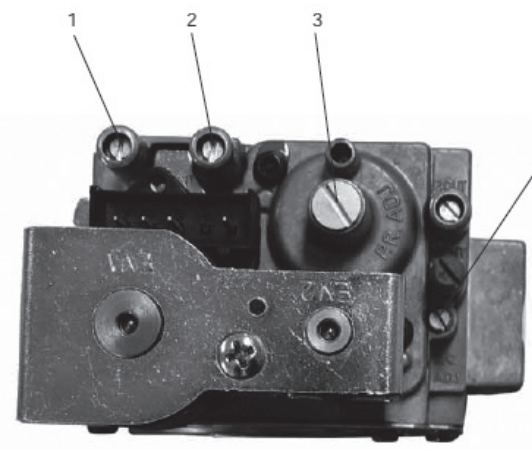
|    |          |       | Pos. A | Pos. B   | Pos. C |
|----|----------|-------|--------|----------|--------|
| T  | D norm * | du/di | L max  | L1+L2+L3 | L1+L2  |
|    | ø mm     | ø mm  | m      | m        | m      |
| 15 | 80       | 80/80 | 2x77   | 2x73,6   | 2x75,3 |
| 25 | 80       | 80/80 | 2x31   | 2x27,6   | 2x29,3 |



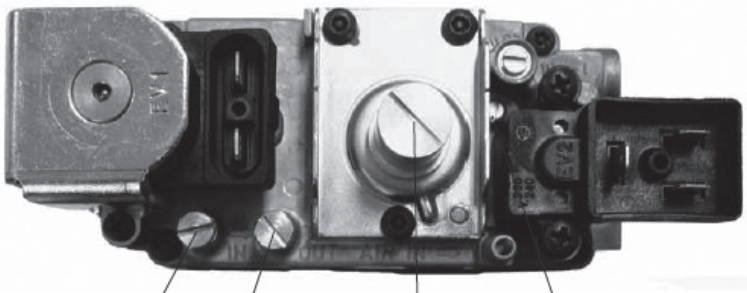
|     |          |         | Pos. A | Pos. B   | Pos. C |
|-----|----------|---------|--------|----------|--------|
| T   | D norm * | du/di   | L max  | L1+L2+L3 | L1+L2  |
|     | ø mm     | ø mm    | m      | m        | m      |
| 35  | 80       | 80/80   | 2x20   | 2x16,6   | 2x18,3 |
|     | 100      | 100/100 | 2x75   | 2x71,2   | 2x73,1 |
| 40  | 80       | 80/80   | 2x14   | 2x10,6   | 2x12,3 |
|     | 100      | 100/100 | 2x60   | 2x56,2   | 2x58,1 |
| 60  | 100      | 100/100 | 2x28   | 2x24,2   | 2x26,1 |
|     | 130      | 130/130 | 2x125  | 2x121    | 2x123  |
| 80  | 100      | 100/100 | 2x27   | 2x23,2   | 2x25,1 |
|     | 130      | 130/130 | 2x125  | 2x121    | 2x123  |
| 100 | 100      | 100/100 | 2x11   | 2x7,2    | 2x9,1  |
|     | 130      | 130/130 | 2x74   | 2x70     | 2x72   |
| 135 | 130      | 130/130 | 2x48   | 2x44     | 2x46   |
| 150 | 130      | 130/130 | 2x26   | 2x22     | 2x24   |
| 200 | 130      | 130/130 | 2x4    |          | 2x2    |



| No. of units | T | 15                       | 25                       | 35                       | 40                       | 60                       | 80                       | 100                      | 135                      | 150                      | 200                      |
|--------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|              |   | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] | AV<br>[cm <sup>2</sup> ] |
| 0            |   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 1            |   |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 2            |   | 99                       | 167                      | 238                      | 273                      | 410                      | 546                      | 703                      | 920                      | 1024                     | 1331                     |
| 3            |   | 117                      | 198                      | 283                      | 324                      | 486                      | 648                      | 834                      | 1092                     | 1216                     | 1580                     |
| 4            |   | 132                      | 223                      | 318                      | 364                      | 546                      | 727                      | 937                      | 1226                     | 1365                     | 1774                     |
| 5            |   | 148                      | 250                      | 356                      | 408                      | 612                      | 815                      | 1050                     | 1375                     | 1530                     | 1989                     |
| 6            |   | 164                      | 277                      | 395                      | 452                      | 679                      | 903                      | 1164                     | 1524                     | 1696                     | 2204                     |
| 7            |   | 181                      | 305                      | 436                      | 499                      | 749                      | 997                      | 1285                     | 1682                     | 1872                     | 2433                     |
| 8            |   | 198                      | 335                      | 478                      | 547                      | 822                      | 1095                     | 1410                     | 1846                     | 2055                     | 2671                     |
| 9            |   | 217                      | 367                      | 524                      | 599                      | 900                      | 1198                     | 1544                     | 2021                     | 2249                     | 2924                     |
| 10           |   | 237                      | 400                      | 571                      | 653                      | 981                      | 1306                     | 1683                     | 2204                     | 2452                     | 3188                     |
| 11           |   | 258                      | 436                      | 622                      | 712                      | 1069                     | 1424                     | 1834                     | 2401                     | 2672                     | 3474                     |
| 12           |   | 279                      | 471                      | 672                      | 769                      | 1155                     | 1538                     | 1981                     | 2594                     | 2887                     | 3753                     |
| 13           |   | 301                      | 509                      | 726                      | 831                      | 1248                     | 1662                     | 2141                     | 2803                     | 3119                     | 4055                     |
| 14           |   | 324                      | 548                      | 782                      | 894                      | 1344                     | 1789                     | 2305                     | 3018                     | 3358                     | 4365                     |
| 15           |   | 348                      | 588                      | 838                      | 959                      | 1441                     | 1919                     | 2472                     | 3237                     | 3602                     | 4682                     |
| 16           |   | 372                      | 629                      | 897                      | 1027                     | 1543                     | 2054                     | 2646                     | 3464                     | 3855                     | 5012                     |
| 17           |   | 398                      | 672                      | 958                      | 1097                     | 1647                     | 2193                     | 2825                     | 3700                     | 4117                     | 5352                     |
| 18           |   | 424                      | 716                      | 1022                     | 1169                     | 1757                     | 2339                     | 3013                     | 3945                     | 4390                     | 5707                     |
| 19           |   | 452                      | 764                      | 1090                     | 1247                     | 1874                     | 2494                     | 3214                     | 4208                     | 4683                     | 6087                     |
| 20           |   | 480                      | 811                      | 1157                     | 1324                     | 1989                     | 2648                     | 3412                     | 4467                     | 4971                     | 6462                     |



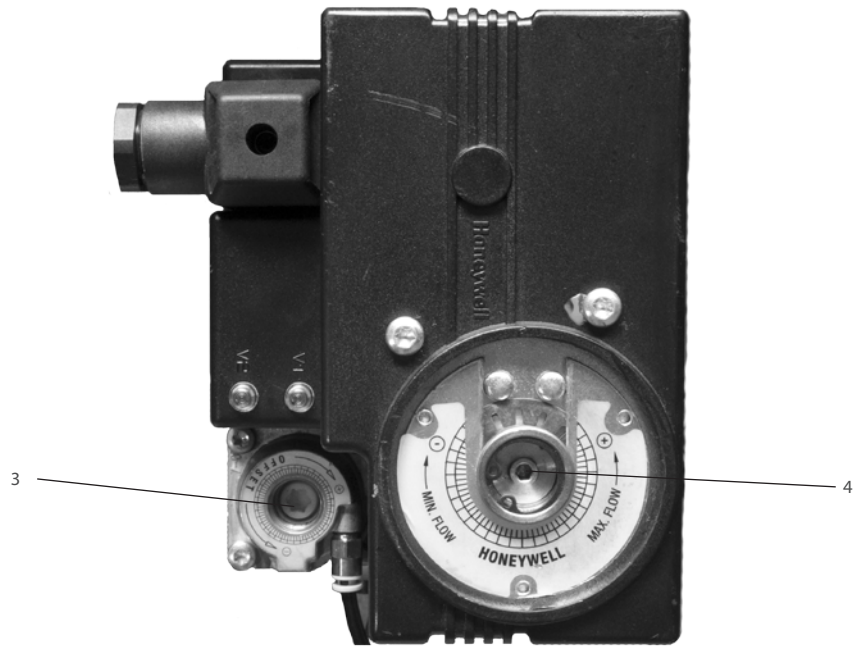
06 08 094 G(S)+ 15, 25, 35, 40



06 08 076 G(S)+ 60, 80, 100, 135



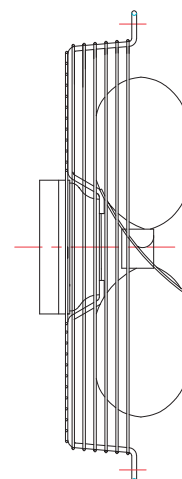
06 08 220 G(S)+ 150



06 08 225 G+ 200

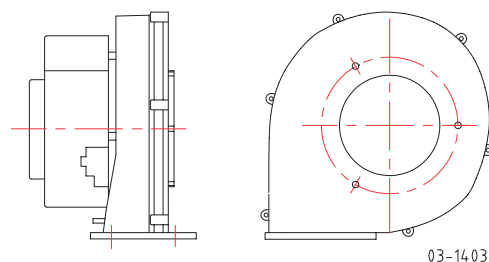
[7]

| T     | code AC        | code EC        |
|-------|----------------|----------------|
| 15    | 06 21 561      | 06 21 528      |
| 25    | 06 21 551      | 06 21 528      |
| 35/40 | 06 21 565      | 06 21 530      |
| 60    | 06 21 563      | 06 21 531      |
| 80    | (2x) 06 21 565 | (2x) 06 21 530 |
| 100   | (2x) 06 21 563 | (2x) 06 21 531 |
| 135   | (2x) 06 21 564 | (2x) 06 21 532 |
| 150   | (2x) 06 21 564 | (2x) 06 21 532 |



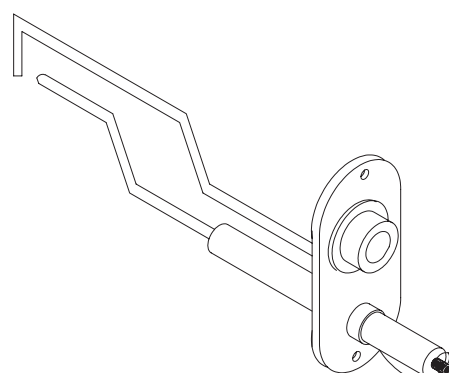
[8]

| T             | code      |
|---------------|-----------|
| 15/25/35/40   | 06 00 830 |
| 60/80/100/135 | 06 00 831 |
| 150           | 06 00 844 |
| 200           | 06 00 832 |



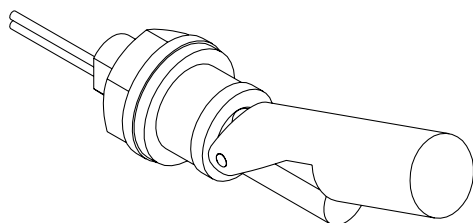
[9]

| T                     | code      |
|-----------------------|-----------|
| 15/25/35/40/60/80/100 | 06 25 360 |
| 150/200               | 12 90 847 |
| 135                   | 12 90 848 |



[10]

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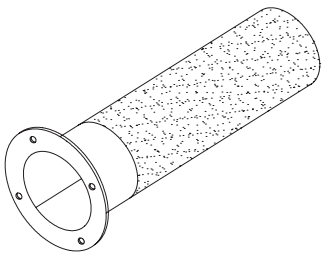


| T              | code      |
|----------------|-----------|
| GS+<br>135/200 | 06 29 059 |

[11]

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| T           | code      |
|-------------|-----------|
| 15/25/35/40 | 06 03 405 |
| 60/80       | 06 03 410 |
| 100/150     | 06 03 415 |
| 135/200     | 06 03 420 |



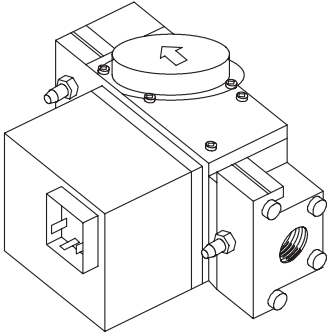
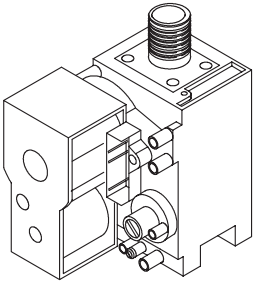
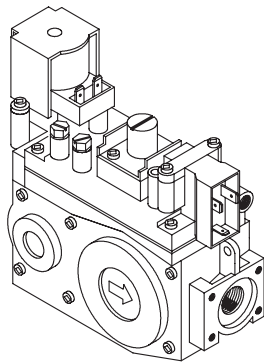
[12]

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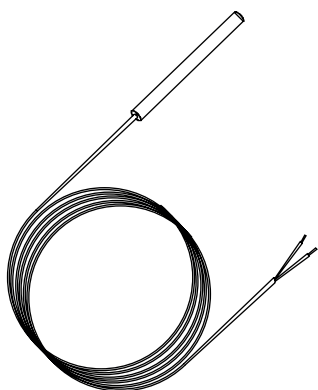
| T                 | code               |
|-------------------|--------------------|
| 60/80/<br>100/135 | 06 08 076          |
| 150               | 06 08 082 (bypass) |

| T           | code      |
|-------------|-----------|
| 15/25/35/40 | 06 08 094 |

| T   | code      |
|-----|-----------|
| 150 | 06 08 220 |
| 200 | 06 08 225 |

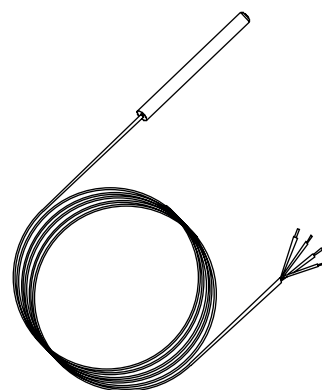


## [13]



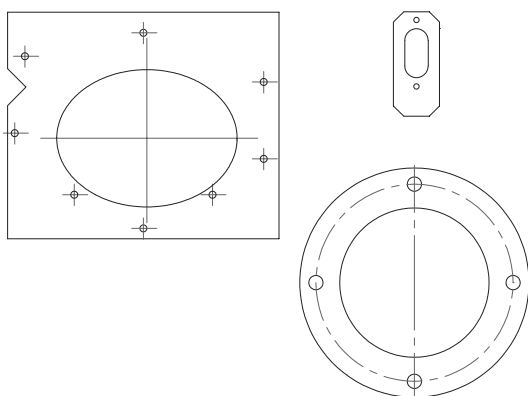
| T           | code      |
|-------------|-----------|
| 15 - 100    | 06 29 057 |
| 135/150/200 | 06 29 058 |

## [14]



| T        | code      |
|----------|-----------|
| 15 - 200 | 06 29 053 |

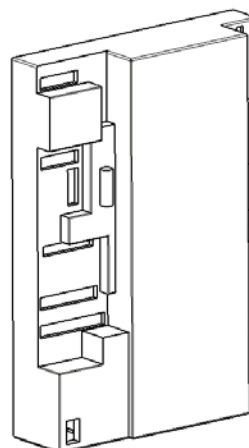
## [15]



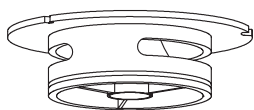
| T           | code      |
|-------------|-----------|
| 15/25       | 19 99 074 |
| 35 - 100    | 19 99 075 |
| 135/150/200 | 19 99 076 |

## [16]

| T   | code G20/G25 | code G30/G31 |
|-----|--------------|--------------|
| 15  | 30 03 840    | 30 03 850    |
| 25  | 30 03 841    | 30 03 851    |
| 35  | 30 03 842    | 30 03 852    |
| 40  | 30 03 843    | 30 03 853    |
| 60  | 30 03 844    | 30 03 854    |
| 80  | 30 03 845    | 30 03 855    |
| 100 | 30 03 846    | 30 03 856    |
| 135 | 30 03 847    | 30 03 857    |
| 150 | 30 03 848    | 30 03 858    |
| 200 | 30 03 849    | 30 03 859    |

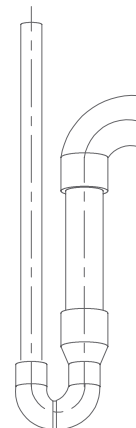
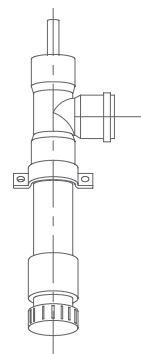
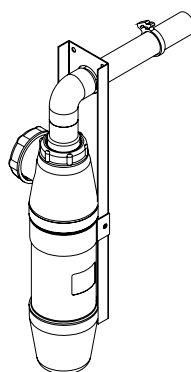


[17]



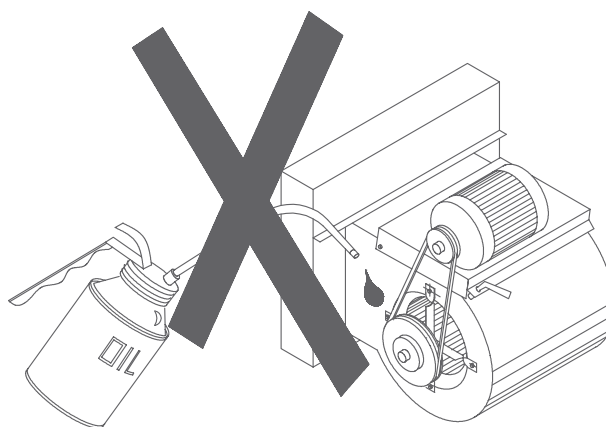
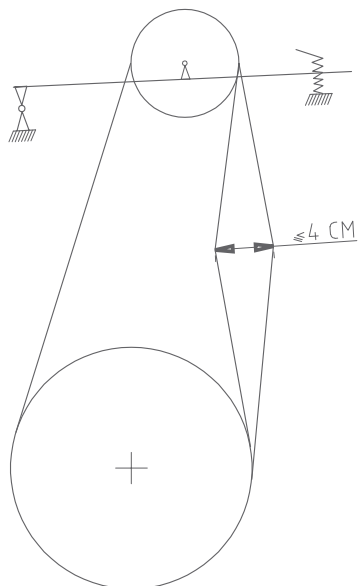
| T       | code      |
|---------|-----------|
| 15/25   | 04 01 602 |
| 35/40   | 04 01 604 |
| 60/80   | 04 01 614 |
| 100/135 | 04 01 615 |
| 150     | 04 01 612 |
| 200     | 04 01 620 |

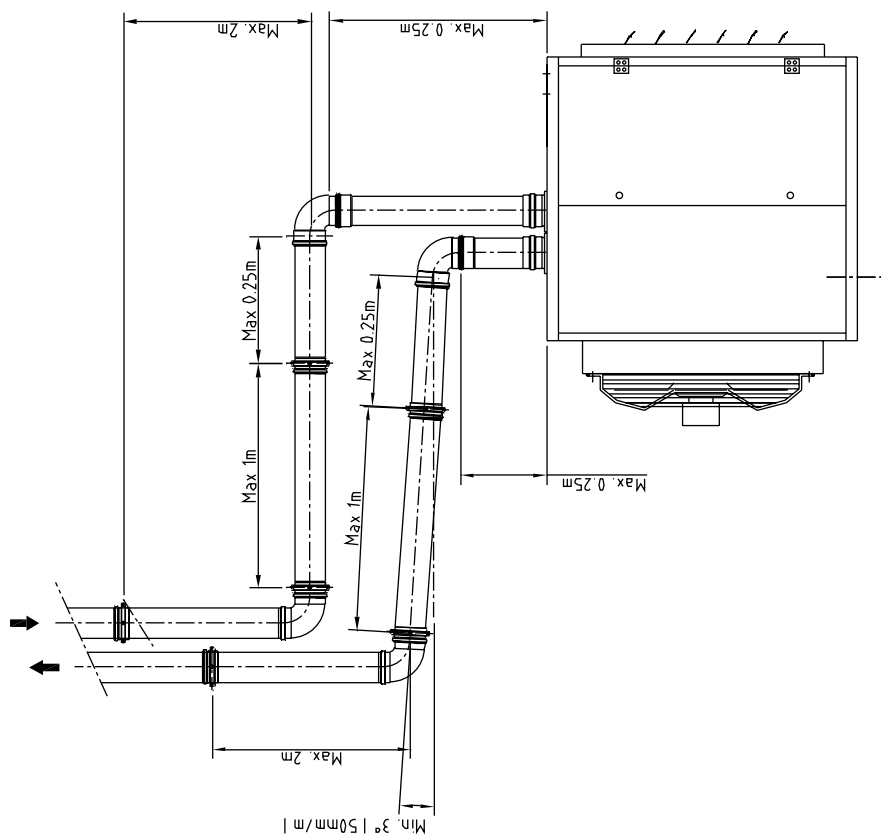
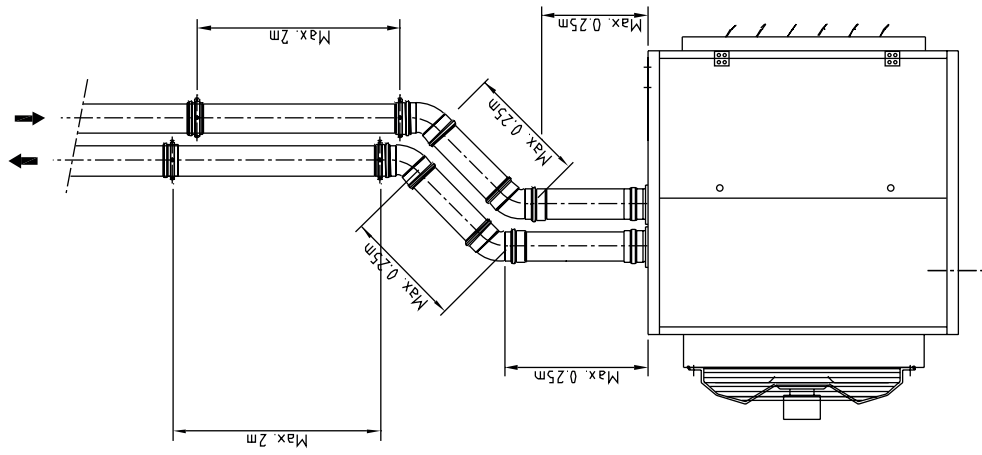
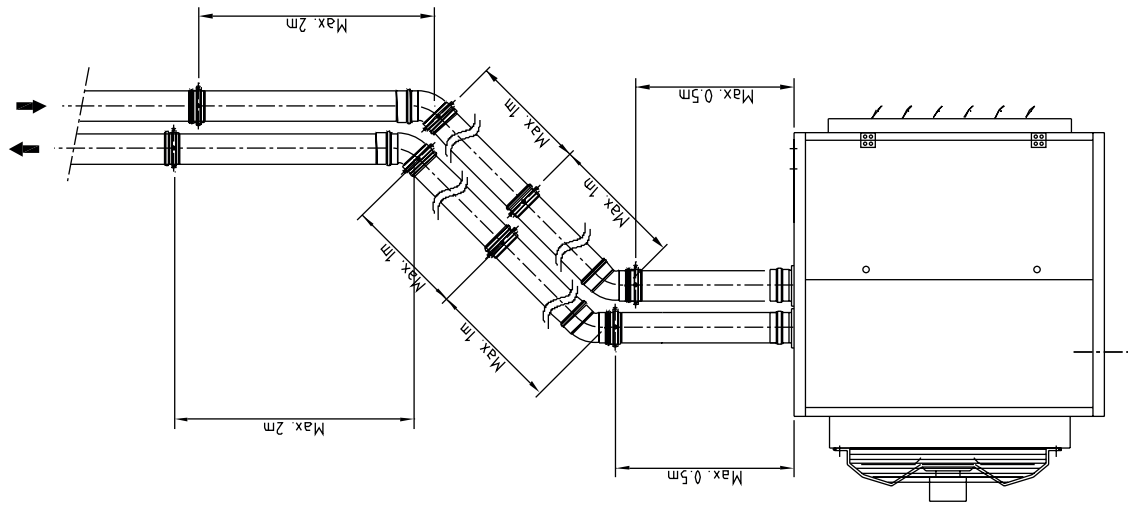
[18]



| T         | code      |
|-----------|-----------|
| 15 - 25   | 31 00 575 |
| 35 - 100  | 31 00 599 |
| 135 - 200 | 31 00 595 |

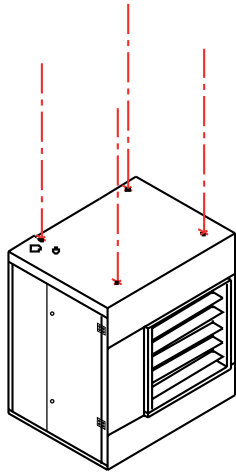
[19]





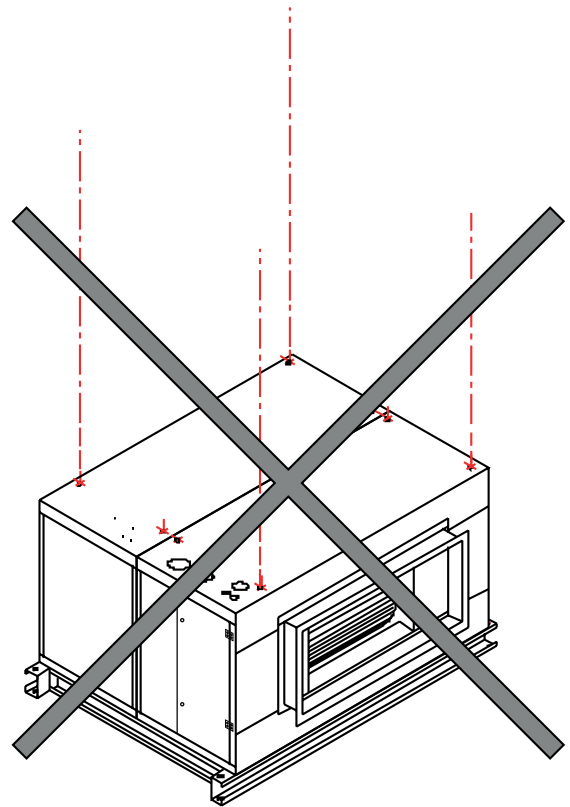
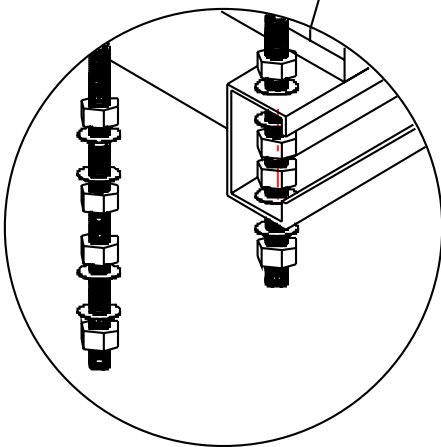
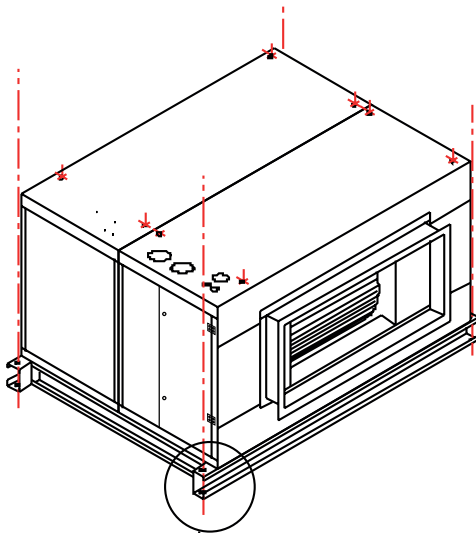
## [21] GS+

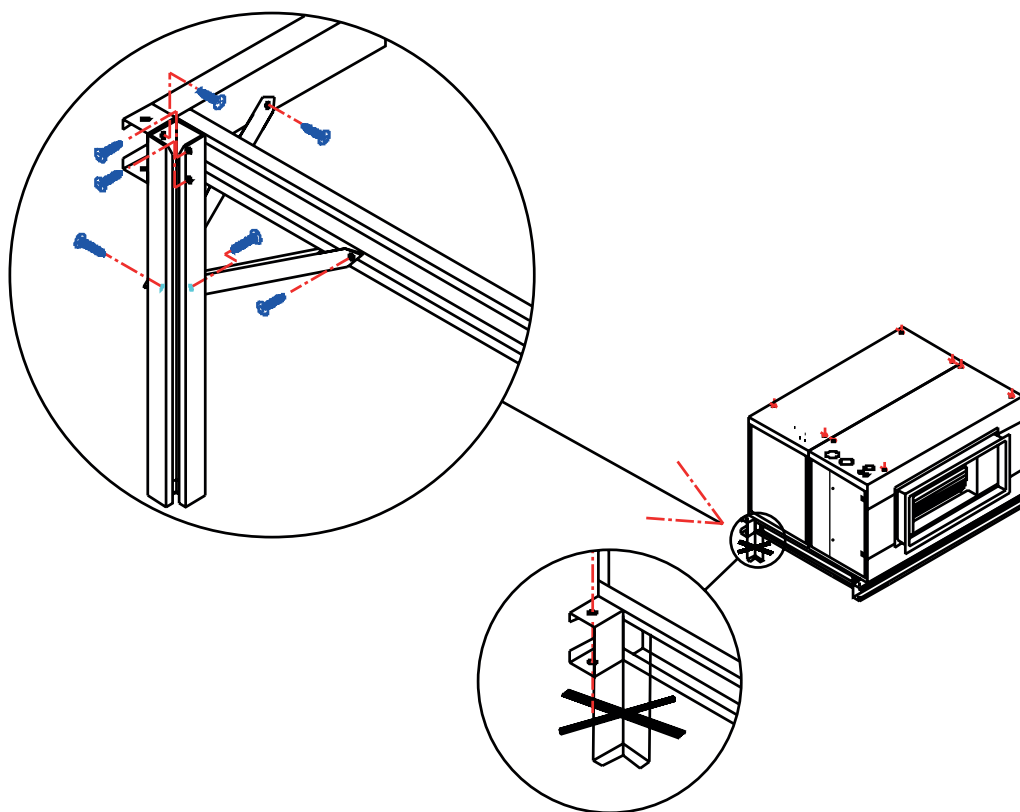
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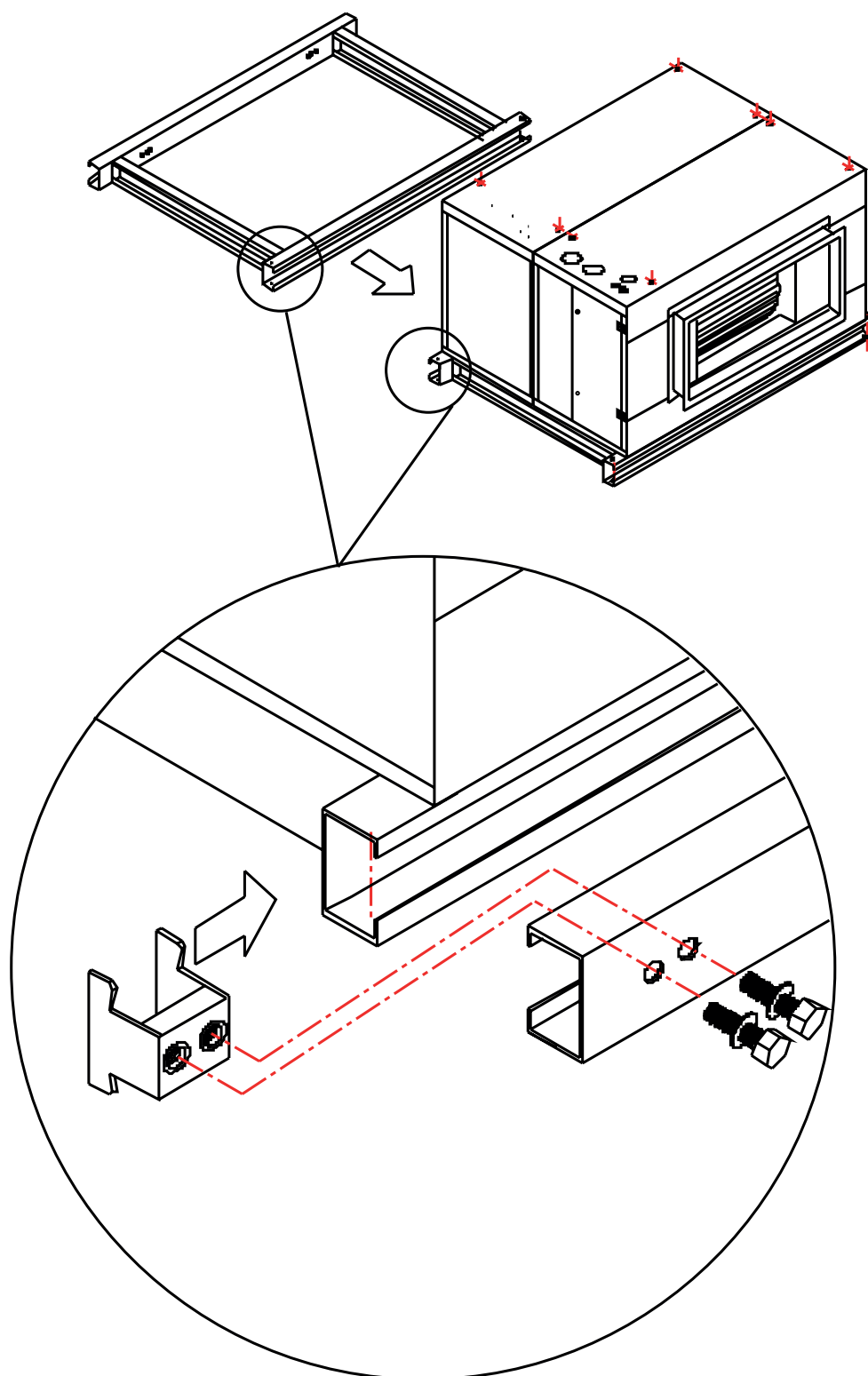


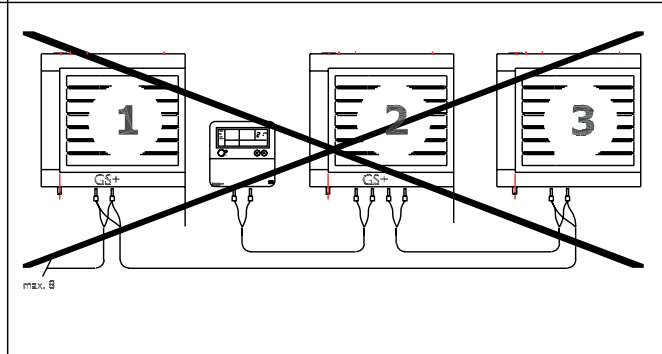
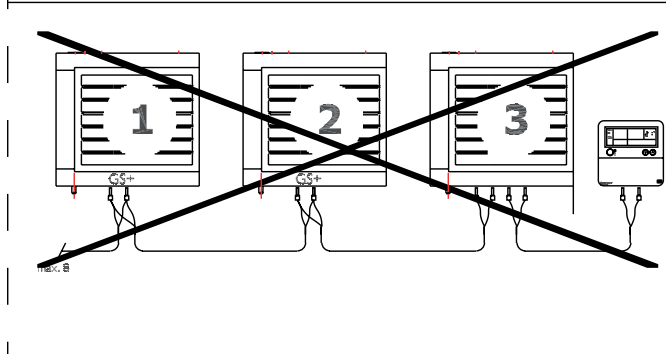
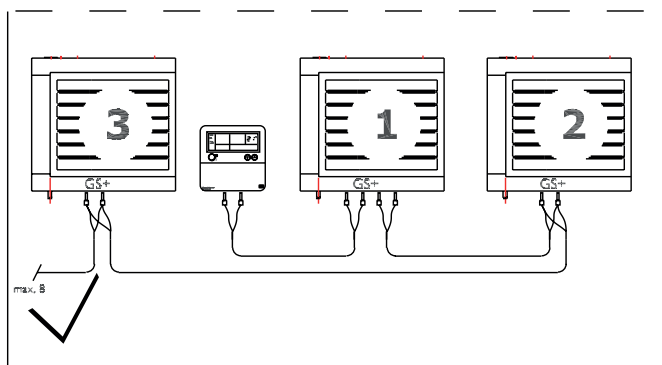
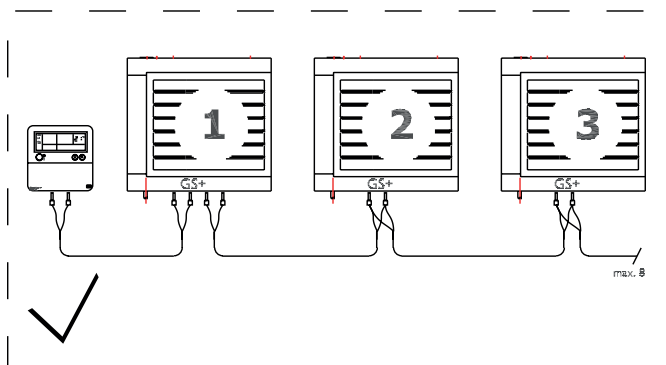
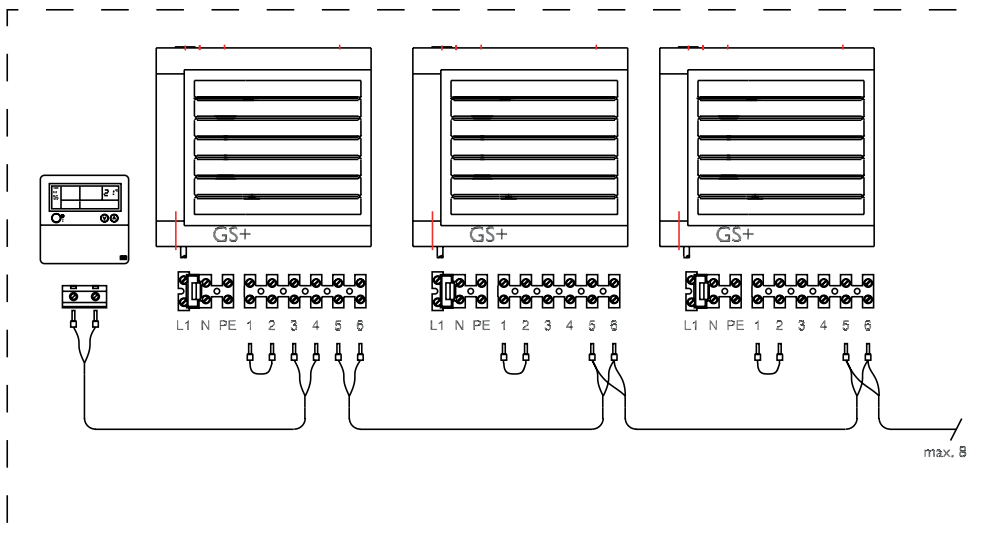
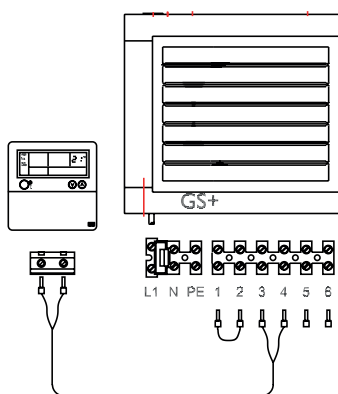
## [22] G(C)+

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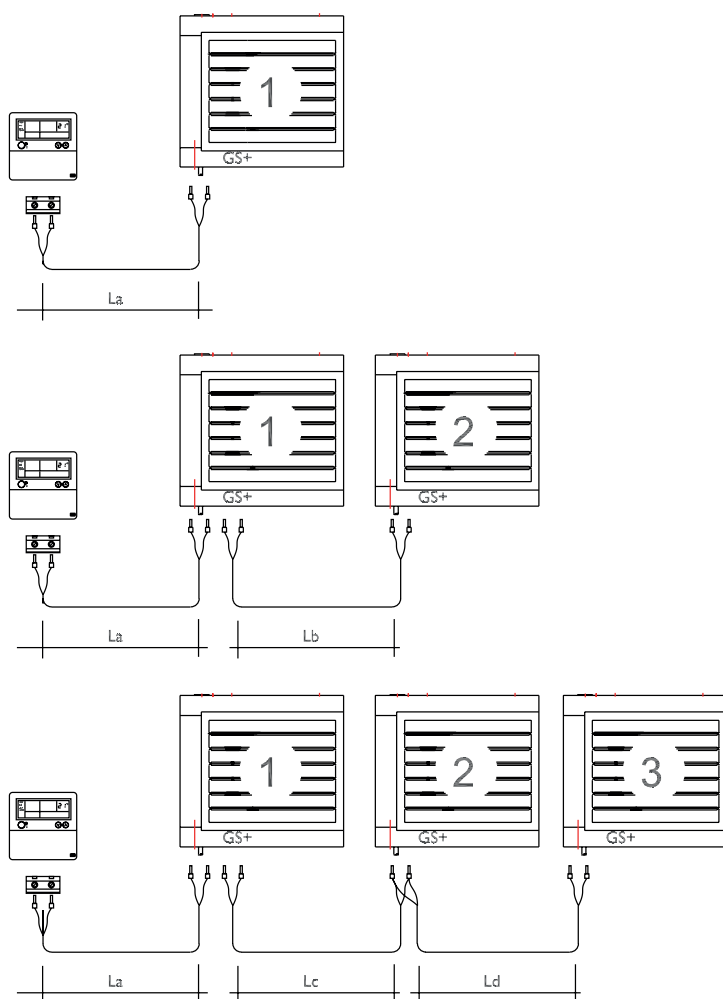




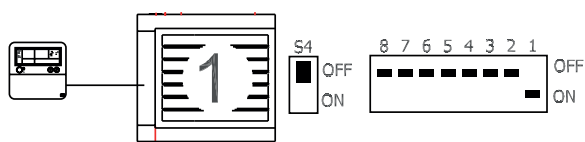




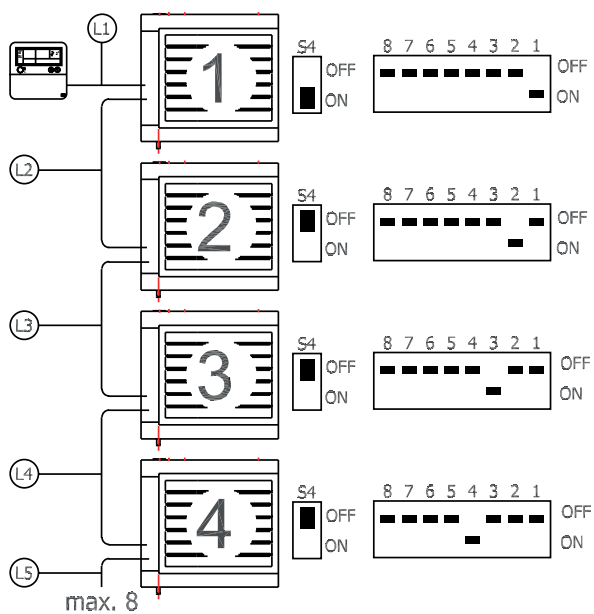
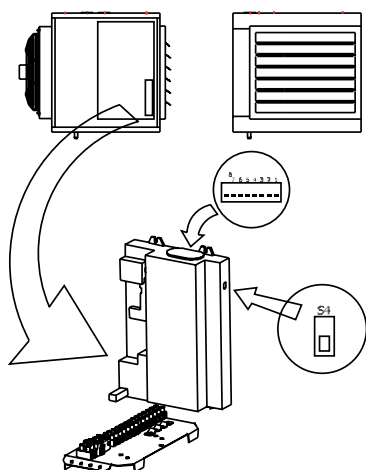
## [25]



## [26]



| Ø                  | L1   | L2+L3+L4+...L8 |
|--------------------|------|----------------|
| 0.8mm <sup>2</sup> | 160m | 800m           |
| 1.0mm <sup>2</sup> | 200m | 1000m          |
| 1.5mm <sup>2</sup> | 300m | 1500m          |







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