

MULTIMAXX[®] HG

OPERATION MANUAL



Product range



Unit Type Code

MultiMAXX

H G 2 4 U E F T C B A M D

Model size
 2 = Model size 2
 4 = Model size 4

Capacity stage
 4 = Low capacity
 5 = High capacity

Unit model
 U = Recirculating-air mode
 M = Mixed air unit

Heating medium
 E = Natural gas (EG), Propane-butane (LPG)

Coil
 F = High-temperature resistant steel

Control of thermal output
 P = Control of supply-air temperature (only with mixed-air units)
 T = Control of room temperature

Unit model
 B = Non-room-sealed firing
 C = Room-sealed firing

Outlet
 A = Outlet nozzle, ceiling
 B = Basis - wall
 C = SAL, ceiling, manually adjustable
 D = Motorized SAL, ceiling, (230 V, Open/Close)
 K = Blank flange on discharge side
 L = Air deflection louvre
 P = Profile outlet
 T = Gate nozzle
 U = SAL, wall installation, manual adjustment
 V = Four sides, ceiling
 W = Motorized SAL, wall, (230 V, Open/Close)
 Z = Two-side basic ceiling outlet
 O = Without louvre

Motor/speeds
AC motors
 A = 3x400 V, 2-speed - low speed range, wide-blade fan, for capacity stage (4)
 B = 3x400 V, 2-speed - high speed range, wide-blade fan, for capacity stage (5)
 D = 1x230 V, 2-speed - low speed range, wide-blade fan, for lower capacity stage (4) (only for size 2)
 E = 1x230 V, 2-speed - high speed range, wide-blade fan, for capacity stage (5)
 R = 3x400 V, 2-speed - high speed range, sickle-blade fan, for capacity stage (5) (only for size 4)
EC motors
 Y = 1x230 V continuously variable EC - sickle-blade fan
 Z = 3x400 V, continuously variable - sickle blade fan, for capacity size (5) (only for size 4)

Electric equipment
 M = Multifunctional control

Unit casing
 D = Heat exchanger casing in industrial design RAL 7000

Controls

OSHG 0.ECOM

Control panel, control board
 0.000M = Sheet steel casing Multi (motors D, E)
 0.ECOM = Sheet steel casing Multi (drives A, B, R, Y, Z)
 0.RDDO = Remote control controller PCB RDDO

Accessories

Z H # # # #

Model size
 2 = Model size 2
 4 = Model size 4

Air-side accessories
 20 = Mixed-air module, type 1
 21 = Mixed-air module, type 2
 23 = Outdoor air blocking damper
 25 = Flexible connection
 26 = Rectangular duct 150
 27 = Rectangular duct 1000
 28 = Duct bend 90° symmetrical
 29 = Duct bend 90° asymmetrical
 31 = Wall air-intake hood
 32 = External louvre
 33 = Contact protection grille
 34 = Duct through slanted roof
 35 = Roof air-intake hood
 36 = Bag filter module
 37 = Mat filter module
 38 = Spare filter for air intake hood, roof
 39 = Spare filter for bag filter module
 40 = Spare filter for mat filter module
 49 = Duct through roof with flat roof plinth
 51 = Frame for wall connection
 52 = Flange (for recirculating-air units)

Suspensions
 53 = Compact C
 54 = Studio (for wall configuration)
 55 = Modular (for wall configuration)
 56 = Ceiling suspension

Model/material
 0 = Standard model
 8 = Ecodesign (only for 25, 26, 36, 38, 39)

Actuators for louvers and mixed-air modules
 0 = Actuator on site
 1 = Manual
 2 = Actuator 230 V, Open/Close
 3 = Actuator 230 V, Open/Close + poti
 4 = Actuator 230 V, Open/Close + final position switch
 5 = Actuator 230 V + spring return

Filter grade/electric equipment
 0 = Without filter, without differential pressure switch
 2 = G2/without differential pressure switch
 3 = G3/without differential pressure switch (only for ZH#.37)
 4 = G4/without differential pressure switch
 5 = G2/with differential pressure switch
 6 = G3/with differential pressure switch (only for ZH#.37)
 7 = G4/with differential pressure switch
 9 = F7/with differential pressure switch - for Ecodesign

Modular (ZH#.550#) with accessories

| | |
|-------------------------|---|
| 0 = without accessories | 8 = 25+36+23+51 |
| 1 = 25+20+51 | 9 = 25+37+23+51 |
| 2 = 25+36+20+51 | A = 26+36 |
| 3 = 25+37+20+51 | B = 26+37 |
| 4 = 25+21+29+51 | C = 25+28 (+49...) |
| 5 = 25+36+21+29+51 | E = Ecodesign 25(26)+36+20+51 |
| 6 = 25+37+21+29+51 | W = without unit accessories with vertical outlet |
| 7 = 25+23+51 | |

Suspension ceiling (ZH#.560#)
 0 = Without threaded rod
 1 = Threaded rod 1 m
 2 = Threaded rod 2 m
 3 = Threaded rod 3 m

| | | |
|----------|---|-----------|
| | Unit Type Code | 3 |
| 1 | Safety and User Information | 6 |
| | 1.1 Scope of application of the operation manual | 6 |
| | 1.2 Icons used | 6 |
| | 1.3 Safety-conscious work procedures | 7 |
| | 1.4 Proper use | 8 |
| | 1.5 Safety regulations and codes | 8 |
| | 1.6 Modifications and changes | 8 |
| | 1.7 Spare parts | 8 |
| | 1.8 Selection and qualification of personnel | 8 |
| 2 | Specifications | 9 |
| | 2.1 Unit configuration and packaged content | 9 |
| | 2.2 Specification of material | 10 |
| | 2.3 Functional description | 11 |
| | 2.4 Operating conditions | 11 |
| | 2.5 Unit dimensions and minimum installation space | 12 |
| | 2.6 Technical specifications | 13 |
| | 2.7 Commission Regulation (EU) 2016/2281 from November 30, 2016 | 14 |
| | 2.8 Air-side accessories | 15 |
| | 2.9 Accessories - flue gas pipework, gas distribution | 16 |
| 3 | Shipping and storage | 18 |
| | 3.1 Shipping | 18 |
| | 3.2 Shipping and handling of the unit | 18 |
| | 3.3 Storage | 19 |
| 4 | Mounting | 20 |
| | 4.1 Load-bearing capacity of the installation site | 20 |
| | 4.2 Ceiling installation | 20 |
| | 4.3 On-wall mounting | 21 |
| | 4.4 Safety clearance | 23 |
| | 4.5 Unit mounting | 23 |
| | 4.6 Mounting the flue gas pipework | 23 |
| | 4.7 Mounting examples | 24 |
| 5 | Electrical Connection | 26 |
| | 5.1 Electric switch cabinet | 27 |
| | 5.2 Connection diagrams | 27 |
| | 5.3 Multi Operation | 27 |
| 6 | Gas Connection | 34 |
| | 6.1 Gas distribution | 34 |
| 7 | Commissioning | 36 |
| | 7.1 Initial commissioning - information for service companies | 36 |

| | | |
|-----------|---|-----------|
| 8 | Operation of the Gas Unit Heater | 50 |
| 8.1 | General operation | 50 |
| 8.2 | Operation and adjustment of the units by means of the control panel OSHG 0.EC0M (OSHG 0.000M) | 50 |
| 8.3 | Adjustment of the mixed-air module | 59 |
| 8.4 | Adjustment of the secondary-air louvre | 59 |
| 8.5 | Differential pressure switch | 60 |
| 8.6 | Decommissioning | 60 |
| 9 | Maintenance | 61 |
| 9.1 | Maintenance | 61 |
| 9.2 | Quarterly maintenance | 62 |
| 9.3 | Semi-annual maintenance | 63 |
| 9.4 | Annual maintenance | 64 |
| 9.5 | Breakdowns | 65 |
| 10 | Disassembly and Disposal | 67 |
| 10.1 | Dismantling | 67 |
| 10.2 | Recycling | 67 |
| 11 | Warranty Conditions | 68 |
| 11.1 | Authorized service companies for warranty and repairs in Germany | 68 |
| 11.2 | Warranty certificate | 69 |

– Original operation manual –

Copyright note

Disclosing, copying, distributing or taking any action in reliance on the contents of this document is strictly prohibited without express prior consent. Violations entail liability for any damages or other liability arising. All rights in relation to patents, utility patents or design patents are reserved.

1 Safety and User Information

This is an original operation manual verified by the manufacturer.

MultiMAXX HG Air Heaters are developed and manufactured according to the current state of technology and the approved safety-specific standards and directives and correspond to the EC Directive on Machinery.

MultiMAXX HG Air Heaters are safe to operate and comply with high quality standards. Future-oriented technology and pronounced operator and maintenance friendliness were combined in this product series.

However, every unit heater can pose an unavoidable residual danger for the user or third parties, or can lead to impairments of the units or other objects. For this reason, it is important to observe the safety regulations without fail. The unit and its maintenance must be carried out according to all prevailing regulations and standards.

Failure to follow the safety precautions could result in death, serious injury, environmental damage and/or considerable property damage.

Observing the safety instructions in the current operation manual will help prevent risks, ensure economical operation of the unit and let you enjoy the full benefits of the product.

The safety aspects covered by this chapter are valid for the entire operation manual.

1.1 Scope of application of the operation manual

This operation manual provides critical information about the following:

- Shipping
- Mounting
- Installation
- Electrical connection
- Commissioning
- Operation
- Maintenance, cleaning and disposal

1.2 Icons used

The following icons are used to highlight specific text sections in this operation manual:

- Indicates text paragraphs
- Indicates process instructions
- ✓ Indicates work results



Notice!

Here you can find supplementary information on using the air heater MultiMAXX HG and its economic handling.



Recycling!

This icon is used to highlight instructions on proper reuse of packaging material and disused assembly groups (separated according to recyclable materials).

The following designations and icons are used in the operation manual for safety instructions:



Danger of electrical current!

This icon indicates a risk of electrical shock that can result in serious injury, death and material damage.



Risk of personal injury!

This icon indicates (different from the above-mentioned danger types) a hazardous location with a risk of personal injury including death and material damage.

**Danger due to overhead loads!**

This icon indicates a hazardous suspended load with a risk of personal injury including death and material damage.

**Danger of hot surfaces!**

This section specifies procedures and precautions for preventing personal injury resulting from contact with hot surfaces.

**Danger of sharp cutting edges!**

This section specifies procedures and precautions for preventing personal injury resulting from cuts caused by sheet metal.

**Risk of rotating components!**

This symbol indicates hazardous rotating parts with a risk of personal injury including death and material damage.

**Environmental damage!**

This icon warns about possible damage to the environment.

**Danger of damage due to static discharge!**

This icon precedes a warning of risks of damage to unit electronic components due to static discharge.

**Damage to the unit!**

This icon indicates a hazardous location with a risk of material damage that can also lead to personal injury.

**Danger of accident due to gas explosion!**

This section specifies particular information and prohibitions for avoiding personal injury through gas explosions.

1.3 Safety-conscious work procedures

Observe the following instructions during installation, configuration, repair and maintenance tasks:

**Danger of electrical current!**

Disconnect the unit from the power supply and ensure the power cannot be inadvertently switched on, earth, short-circuit, and block off all neighboring live parts. Non-compliance can lead to death or serious injury.

**Risk of rotating components!**

Danger of injury from rotating fan wheel! Before performing any work on the unit, ensure that the unit is disconnected and powered down. Ensure that the unit is isolated and secured against being energized at an appropriate point of the on-site electrical power supply.

**Danger of damage due to static discharge!**

When connecting and/or adjustment work on the MultiMAXX air-handling unit, make sure that you statically discharge yourself before touching PCBs and electrical components.

Fluctuations and imbalance in the mains supply voltage must not exceed tolerance limits specified on the name plate; otherwise, this could cause severe unit malfunction, overload states or failure.

1.4 Proper use

The MultiMAXX air-handling units are used in industrial, warehouse, sales and exhibition rooms, i.e., in areas which are protected against the influences of weather (including mounting, temporary storage, and maintenance work). They serve for heating, ventilation and filtration of the room/outdoor air.

In all areas which demand a room air-independent firing, the units are equipped with a fresh-air supply (coaxial flue gas pipework can be optionally employed).

In all areas where there is the danger of negative pressure, it is absolutely necessary to use units with a room-sealed model.

Filters, mixed-air modules, air intake plenums, mounting brackets, control units and control elements can be supplied as accessories.

Proper use also includes observance of the operation manual and the maintenance and care instructions prescribed by FläktGroup.

Improper use

Any use other than that described above is considered improper. The manufacturer/supplier is not liable for any damages arising from improper use. The user alone bears the risk.



Risk of personal injury!

It is not permitted to operate MultiMAXX air heaters:

- in areas subject to explosion risk
- in rooms with high dust or moisture content
- in rooms with strong electromagnetic fields
- in rooms with aggressive atmosphere

1.5 Safety regulations and codes

For mounting the electrical connection and gas connection, commissioning, repair and maintenance work with MultiMAXX air-handling units, observe the respective safety regulations and standards which are valid in the respective countries and generally recognized rules of technology.

1.6 Modifications and changes

Do not attempt to modify, add components, or convert the GEA MultiMAXX unit heater in any way.

Changes or modifications of the heating unit will invalidate the CE conformity and render all warranty claims as null and void.

1.7 Spare parts

You must only use original FläktGroup spare parts, as FläktGroup is not liable for damage caused by the use of third-party spare parts. You must only use original FläktGroup spare parts, as FläktGroup is not liable for damage caused by the use of third-party spare parts.

1.8 Selection and qualification of personnel



Notice!

Every person who works on the MultiMAXX unit heater must have completely read and understood this entire operation manual.

Mounting/maintenance/repair may only be carried out by skilled staff observing the valid regulations and standards.

Commissioning may only be carried out by specialists briefed in the prevailing standards and regulations and who have installed the complete unit.

Electrical installation may only be carried out by skilled electricians observing the valid regulations.

Gas installation may only be carried out by trained gas specialists observing the valid regulations.

All skilled staff must be able to assess the work assigned to them, and recognize and avoid all associated dangers.

2 Specifications

2.1 Unit configuration and packaged content

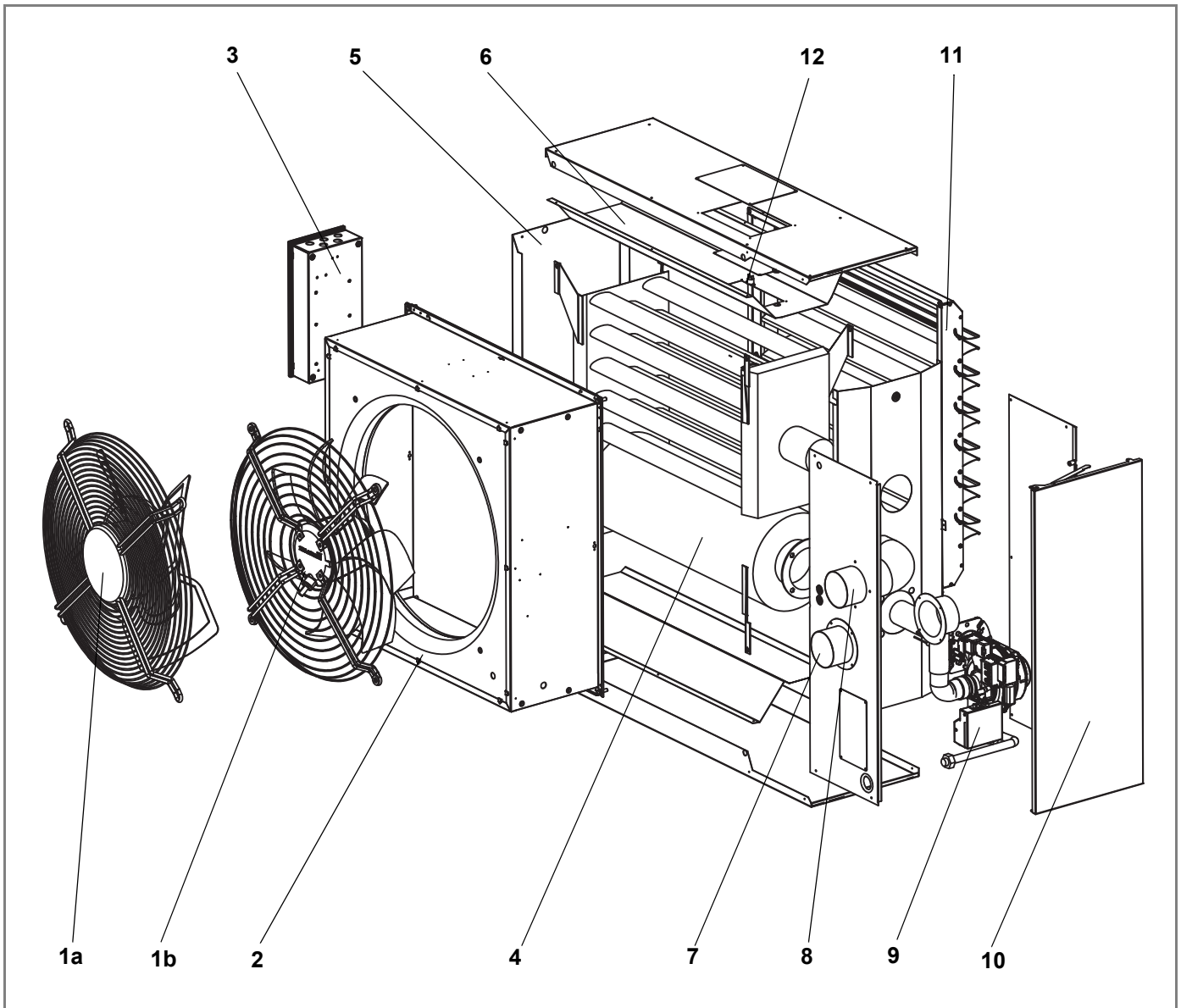


Fig. 2-1: Technical description MultiMAXX HG

Pos. 1a: Wide-blade fan (optional)
 Pos. 1b: Sickle-blade fan (optional)
 Pos. 2: Fan chamber with air inlet nozzle
 Pos. 3: Electrical switch cabinet for Multi Operation (sheet steel)
 Pos. 4: Coil
 Pos. 5: Heat exchanger casing
 Pos. 6: Reflection plates

Pos. 7: Flue pipe fitting on air-intake side
 Pos. 8: Flue pipe fitting for smoke extract
 Pos. 9: Gas burner
 Pos. 10: Gas burner casing
 Pos. 11: Outlet (optional)
 Pos. 12: Thermal fuse

Various unit parts indicated in Fig. 2-1 are specified in detail as follows.

Wide-blade fan (Pos. 1a)

Axial fan with external-rotor motor and integrated contact protection grille, aluminum wide blade, balanced by the manufacturer, maintenance-free with moisture proof motor wired ready for connection in the cable box.

Protection class IP 54, thermal class F, external thermal contact, in 2 models 400 V, 50 Hz and 2 models 230 V, 50 Hz.

Sickle-blade fan (Pos. 1b)

Axial fan with with AC or EC external rotor motor and integrated contact protection grille. Sickle blade, balanced by the manufacturer, maintenance-free with moisture-proof motor and wired to the cable box.

Protection class IP 54 thermal class F, external thermal contact, 400 V, 50 Hz and 230 V, 50 Hz.

Fan chamber with air inlet nozzle (Pos. 2)

The fan chamber is made of galvanized sheet steel and equipped with 8 x M8 nutserts for the suspension of the unit.

Electrical switch cabinet for control system (pos. 3)

Sheet steel cable box contains controller PCB with terminal strip.

Coil (Pos. 4)

The coil is simple and robust, furnished with a combustion chamber and integrated retractions, thereby ensuring optimal heat transfer between the combustion chamber and the air to be warmed. The coil is made of high-temperature resistant steel.

Heat exchanger casing (pos. 5)

The coil casing is assembled by the manufacturer and made of galvanized sheet steel, painted in RAL 7000.

Gas burner (Pos. 9)

The fully automatic gas-pressure burner provides for the temperature rise in the coil. The burner can be used for the following gas configurations: natural gas, gas propane-butane, only propane, and only butane.

Outlet (Pos. 11)

The diffusers direct the heated air in the desired direction.

2.2 Specification of material

| Unit part | Material |
|------------------------------------|---|
| Fan with contact protection grille | Aluminum-metal mix + diverse materials |
| Ventilator chamber | Galvanized sheet steel |
| Electrical box | made of galvanized sheet steel + different materials |
| Coil | High-temperature resistant steel |
| Unit casing | made of varnished sheet steel RAL 7000 |
| Outlet | The frame is made of galvanized painted sheet steel or galvanized sheet steel. The blades are made of galvanized sheet steel or aluminum profiles |
| Gas burner | Aluminum-metal mix + diverse materials |

Tab. 2-1: Specification of material

2.3 Functional description

The MultiMAXX HG Gas Air Heaters are produced in 2 model sizes with 2 capacity stages each for wall or ceiling version. The basis of the unit is formed by a coil with a robust combustion chamber and integrated retractions, assuring an optimal heat transfer between the combustion chamber and the air to be warmed.

The coil is installed in a thin-walled high-temperature resistant steel casing (RAL 7000).

The 4 M8 nut sets on each side of the fan module are provided for suspending the unit on the ceiling or wall.

The rear side of the unit is equipped with an AC or EC axial fan with integrated contact protection grille. The thermal contact is guided out and wired to the cable box. A flange can be mounted on the fan module of the unit, which permits the connection of air-side accessories.

A diffuser is mounted on the discharge side of the unit, ensuring the control of the direction of airflow and air throw of the warmed air compared to the position of the unit in the room. The outlet is made of several selectable types (see type code on page 3)

The temperature rise of the coil is ensured by a fully automatic Premix burner. The burner can process the following gases: natural gas, propane-butane gas, only propane and only butane.

2.4 Operating conditions



Notice!

All other important data on dimensions, weights, connections, sound power etc. are provided in the "Technical data MultiMAXX HG Air Heaters."

| | |
|---|--|
| Operating temperature | 0°C to +40°C |
| Operating voltage | 3 x 400 V, or 1 x 230 V~ 50 Hz |
| Protection class | IP 42 (according to EN 60 529) |
| Fan power consumption | see name plate |
| Gas burner class: | I _{2R} - Natural gas (NG) I _{3R} - Propane-butane (PB), propane (P), butane (B) |
| Class NO _x : | see Tab. 2-2 |
| Variant types of the exhaust installation: | B ₂₃ , C ₅₃ , C ₁₃ , C ₂₃ , C ₃₃ (as per EN 1020) |
| Gas burner Inlet pressure of the heating medium | |
| - Natural gas and propane/butane: | 3 +1 kPa |
| - Max. power consumption: | approx. 150 W (see name plate) |
| - Operating voltage: | 1 x 230 V~ 50 Hz |

** During unit operation (burner operation), there is usually a drop in gas pressure as a result of pressure losses in the pipeline. Even with such a waste, the fuel pressure must not be outside the limit.*

The MultiMAXX HG Air Heaters may only be operated under the conditions (except temperature) described in Storage (chapter 3.3).

When operating the MultiMAXX HG heating units, it is essential to ensure adequate ventilation of the area

| Unit type | Concentration NO _x | | | Class NO _x |
|--------------|-------------------------------|---------|-------------------|-----------------------|
| | ppm | mg/kWh | mg/m ³ | |
| HG 24 | 15 - 22 | 28 - 40 | 28 - 41 | 5 |
| HG 25 | 20 - 22 | 36 - 40 | 38 - 41 | 5 |
| HG 44 | 25 - 27 | 45 - 50 | 47 - 53 | 5 |
| HG 45 | 25 - 38 | 45 - 70 | 47 - 73 | 4 |

Tab. 2-2: Specification of the NO_x class

2.5 Unit dimensions and minimum installation space

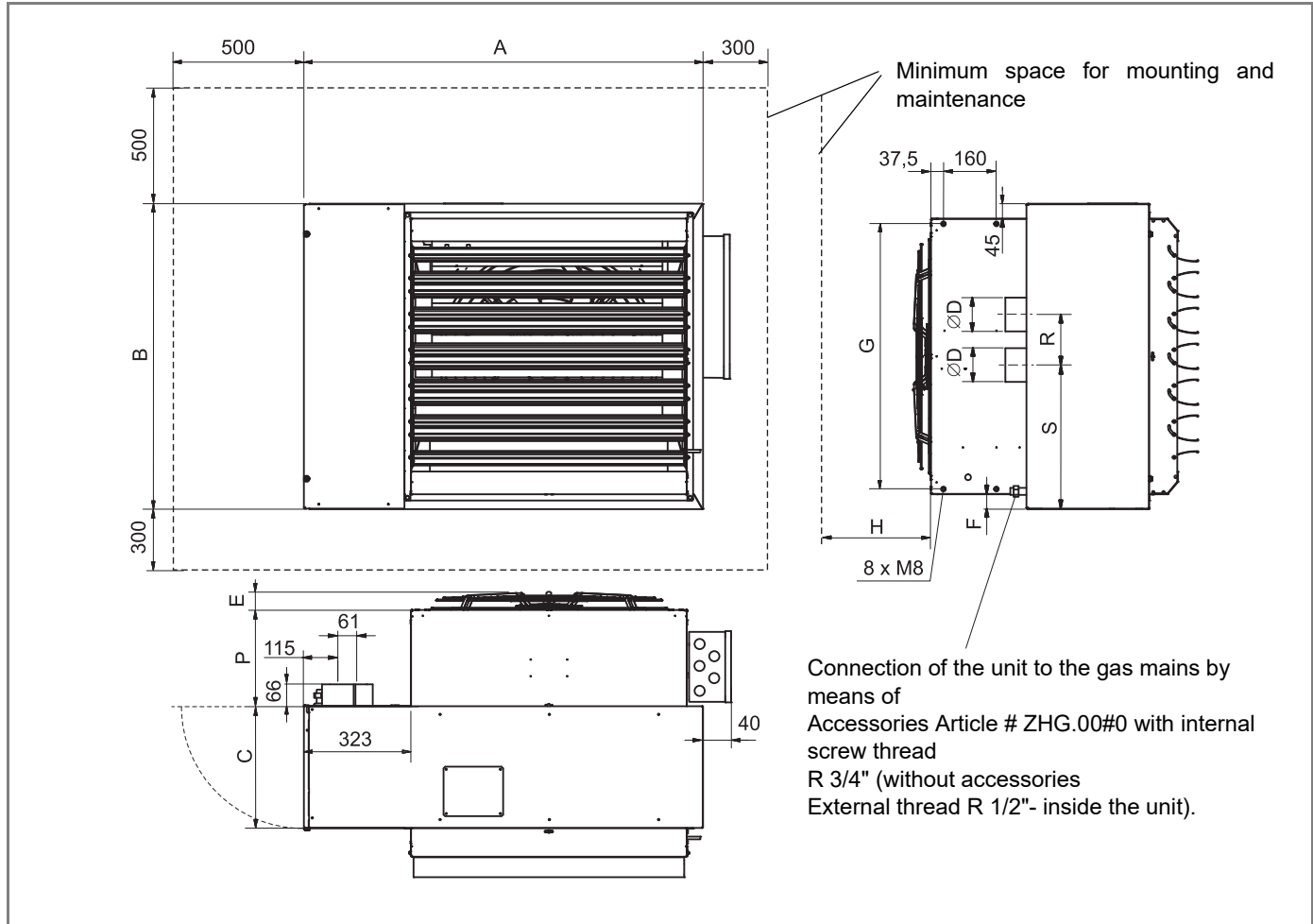


Fig. 2-2: Unit dimensions MultiMAXX HG

| Size/unit model size | 2 | 4 |
|------------------------------------|-------|------|
| A [mm] | 918 | 1206 |
| B [mm] | 701 | 954 |
| C [mm] | 340 | 370 |
| D [mm] | 80 | 100 |
| E (for AC motor (A, B, D, E)) [mm] | 81 | 112 |
| E (for AC motor (R)) [mm] | - | 66 |
| E (for EC motor (Y)) [mm] | 65 | 53 |
| E (for EC motor (Z)) [mm] | - | 53 |
| F [mm] | 110 | 75 |
| G [mm] | 514 | 802 |
| H [mm] | 300 | 400 |
| P [mm] | 222,5 | 288 |
| R [mm] | 126 | 195 |
| S [mm] | 352 | 424 |

Tab. 2-3: Unit dimensions MultiMAXX HG

2.6 Technical specifications

| Type | Thermal output range Q_T | Speed | Airflow rate V_L | Fan Voltage U | Max Current consumption I | Max Power consumption P | Burner voltage U | Sound power | Air throw (Blinds B) | Air throw (Louvre U, W) | Suspension height (louvre C, D) | Weight with burner without Louvre | |
|---|----------------------------|----------------------|---------------------|---------------|---------------------------|-------------------------|------------------|-------------|----------------------|-------------------------|---------------------------------|-----------------------------------|-----|
| | [kW] | [min ⁻¹] | [m ³ /h] | [V] | [A] | [kW] | [V] | [dB(A)] | [m] | [m] | [m] | [kg] | |
| A - 3x400 V, AC motor, 2-stage (lower speed range) | | | | | | | | | | | | | |
| HG24 | 15 ÷ 25 | 710 | 2395 | 3x400 | 0,40 | 0,13 | 1x230 | 63 | 6,4 | 8,3 | 11,4 | 65 | |
| | | 910 | 2825 | | 0,57 | 0,19 | | 66 | 7,1 | 9,2 | 13,5 | | |
| HG44 | 25 ÷ 45 | 500 | 5210 | | 0,78 | 0,24 | | 70 | 64 | 5,1 | 6,7 | 7,9 | 112 |
| | | 650 | 6725 | | 1,11 | 0,36 | | | 70 | 6,0 | 7,9 | 10,2 | |
| B - 3x400 V, AC motor, 2-stage (upper speed range) | | | | | | | | | | | | | |
| HG25 | 20 ÷ 30 | 890 | 3085 | 3x400 | 0,59 | 0,27 | 1x230 | 69 | 7,5 | 9,8 | 14,7 | 65 | |
| | | 1270 | 4035 | | 0,83 | 0,38 | | 74 | 9,0 | 11,7 | 19,3 | | |
| HG45 | 40 ÷ 60 | 740 | 8065 | | 2,02 | 0,63 | | 79 | 75 | 6,8 | 8,9 | 12,3 | 112 |
| | | 910 | 9475 | | 2,04 | 0,78 | | | 79 | 7,6 | 9,9 | 14,4 | |
| D - 1x230 V, AC motor, 2-stage (lower speed range) | | | | | | | | | | | | | |
| HG24 | 15 ÷ 25 | 460 | 1705 | 1x230 | 0,79 | 0,12 | 1x230 | 55 | 5,1 | 6,6 | 8,1 | 65 | |
| | | 890 | 2790 | | 0,89 | 0,21 | | 66 | 7,0 | 9,1 | 13,3 | | |
| E - 1x230 V, AC motor, 2-stage (upper speed range) | | | | | | | | | | | | | |
| HG25 | 20 ÷ 30 | 780 | 2820 | 1x230 | 1,88 | 0,26 | 1x230 | 66 | 7,1 | 9,2 | 13,5 | 65 | |
| | | 1210 | 4105 | | 2,04 | 0,43 | | 74 | 9,1 | 11,8 | 19,6 | | |
| HG45 | 40 ÷ 60 | 700 | 8455 | | 3,93 | 0,67 | | 82 | 77 | 7,0 | 9,2 | 12,9 | 112 |
| | | 910 | 9555 | | 3,71 | 0,83 | | | 82 | 7,6 | 10,0 | 14,5 | |
| R - 3x400 V, AC motor, 2-stage (upper speed range) | | | | | | | | | | | | | |
| HG45 | 40 ÷ 60 | 650 | 8020 | 3x400 | 1,87 | 0,72 | 1x230 | 72 | 6,8 | 8,9 | 12,2 | 112 | |
| | | 870 | 10425 | | 2,72 | 1,08 | | 79 | 8,1 | 10,6 | 15,8 | | |
| Y - 1x230 V, EC motor, 3-stage | | | | | | | | | | | | | |
| HG 24 | 15 ÷ 25 | 1185 | 3350 | 1x230 | 1,38 | 0,31 | 1x230 | 74 | 8,0 | 10,4 | 16,0 | 65 | |
| | | 1356 | 3900 | | 1,91 | 0,43 | | 79 | 9,0 | 11,6 | 18,6 | | |
| | | 1605 | 4590 | | 2,31 | 0,53 | | 82 | 10,1 | 13,1 | 22,0 | | |
| HG 44 | 25 ÷ 45 | 727 | 7600 | | 2,27 | 0,47 | | 72 | 72 | 6,7 | 8,2 | 11,4 | 112 |
| | | 772 | 8200 | | 2,52 | 0,55 | | | 73 | 7,1 | 8,6 | 12,3 | |
| | | 840 | 8900 | | 3,03 | 0,67 | | | 74 | 7,5 | 9,1 | 13,4 | |
| Z - 3x400 V, EC motor, 3-stage | | | | | | | | | | | | | |
| HG 44 | 25 ÷ 45 | 740 | 7600 | 3x400 | 1,30 | 0,50 | 1x230 | 70 | 6,7 | 8,2 | 11,4 | 112 | |
| | | 791 | 8200 | | 1,41 | 0,58 | | 72 | 7,1 | 8,6 | 12,3 | | |
| | | 854 | 8900 | | 1,56 | 0,69 | | 74 | 7,5 | 9,1 | 13,4 | | |

Tab. 2-4: Technical description

2.7 Commission Regulation (EU) 2016/2281 from November 30, 2016

Values of Tab. 2-5 are intended to implement Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products with regard to air heating products, cooling products, high temperature process chillers and fan coil units.

Unit information

B1 air heater: no

C2 air heater: no

C4 air heater: no

Fuel type: gaseous - natural gas

| Model size | Units | Capacity | | Usefulness | | Other product data | | | | | Power consumption | | |
|------------|----------------|--------------------------------------|----------------------------|---|--|-------------------------------|---|--|--|--|---------------------------------------|---------------------------------|--------------------------|
| | | Nominal heat output $P_{rated,h}$ | Minimum power P_{min} | Efficiency at Nominal heat output η_{nom} | Efficiency at Minimum power η_{pl} | Hull loss factor F_{env} | Power consumption of the pilot flame P_{ign} | Nitrogen oxide emissions NO_x | Efficiency of heat output $\eta_{s,flow}$ | Space heating- Annual efficiency $\eta_{s,h}$ | at nominal heat output P_{elmax} | at minimum power P_{elmin} | at standby P_{elSB} |
| | | [kW] | [kW] | [%] | [%] | [%] | [kW] | [mg/kWh energy input (calorific value)] | [%] | [%] | [kW] | [kW] | [kW] |
| 2 | HG24.#####.A## | 21,7 | 13,8 | 87,8 | 93,2 | 0,0 | 0,0 | 40 | 94,6 | 84,5 | 0,043 | 0,030 | 0,008 |
| | HG24.#####.D## | 21,7 | 13,8 | 87,8 | 93,2 | 0,0 | 0,0 | 40 | 91,9 | 82,0 | 0,043 | 0,030 | 0,008 |
| | HG24.#####.Y## | 21,3 | 13,5 | 87,8 | 93,2 | 0,0 | 0,0 | 40 | 96,0 | 85,8 | 0,043 | 0,030 | 0,008 |
| | HG25.#####.B## | 25,6 | 18,0 | 86,6 | 90,5 | 0,0 | 0,0 | 40 | 94,2 | 81,3 | 0,057 | 0,034 | 0,008 |
| | HG25.#####.E## | 25,6 | 18,0 | 86,6 | 90,5 | 0,0 | 0,0 | 40 | 93,7 | 80,9 | 0,057 | 0,034 | 0,008 |
| 4 | HG44.#####.A## | 39,7 | 20,7 | 94,6 | 96,0 | 0,0 | 0,0 | 50 | 95,9 | 90,0 | 0,098 | 0,055 | 0,008 |
| | HG44.#####.Y## | 37,5 | 20,4 | 94,6 | 96,0 | 0,0 | 0,0 | 50 | 97,2 | 90,9 | 0,098 | 0,055 | 0,008 |
| | HG44.#####.Z## | 39,7 | 20,4 | 94,6 | 96,0 | 0,0 | 0,0 | 50 | 97,2 | 90,9 | 0,098 | 0,055 | 0,008 |
| | HG45.#####.B## | 52,7 | 33,0 | 91,1 | 95,2 | 0,0 | 0,0 | 70 | 95,8 | 87,9 | 0,140 | 0,070 | 0,008 |
| | HG45.#####.E## | 52,7 | 33,0 | 91,1 | 95,2 | 0,0 | 0,0 | 70 | 96,0 | 88,0 | 0,140 | 0,070 | 0,008 |
| | HG45.#####.R## | 52,7 | 33,0 | 91,1 | 95,2 | 0,0 | 0,0 | 70 | 95,8 | 87,9 | 0,140 | 0,070 | 0,008 |

Tab. 2-5: Values according to Regulation (EU) 2016/2281

2.8 Air-side accessories

The following accessory items can be delivered for the MultiMAXX HG unit heater:

| Description | Type code | Model |
|---|--|--|
| Mixed-air module, type 1 | ZH#.200# | Outdoor air and recirculation air offset by 90°; galvanized sheet steel, aluminum profile blades |
| Mixed-air module, type 2* | ZH#.210# | Outdoor air and recirculation air offset by 90°; galvanized sheet steel, aluminum profile blades |
| Blocking damper outdoor air* | ZH#.230# | Outdoor air feed; galvanized sheet steel, Al profile fins |
| Flexible connection | ZH#.2500 | Elastic spacer, max. overall length 150 mm, sheet steel, plastic |
| Rectangular duct 150 | ZH#.2600 | Spacer, overall length 150 mm, sheet steel |
| Rectangular duct 1000 | ZH#.2700 | Spacer, overall length 1000 mm, sheet steel |
| Duct turn 90°, symmetrical | ZH#.2800 | Air duct with full-perimeter mounting frame, made of galvanized sheet steel |
| Duct turn 90°, asymmetrical | ZH#.2900 | Air duct with full-perimeter mounting frame, made of galvanized sheet steel |
| Wall air-intake hood | ZH#.3100 | Protection against rain with bird screen, made of galvanized sheet steel |
| External louvre | ZH#.3200 | Protection against rain with bird screen, made of galvanized sheet steel |
| Contact protection grille | ZH#.3300 | End grille for accessories |
| Duct through slanted roof | ZH#.3400 | Air duct for a connection to the roof air-intake hood, made of galvanized sheet steel |
| Roof air-intake hood | ZH#.35## | Duct termination with or without bag filter insert, made of lacquered galvanized sheet steel (RAL 9002) |
| Spare filter for air intake hood, roof | ZH#.3802 ZH#.3804 ZH#.3808 | Filter G2 Filter G4 Filter F7 |
| Bag-filter module | ZH#.36## | With filter G2, G4 and F7 made of galvanized sheet steel with or without differential pressure switch |
| Spare filter for bag filter module | ZH#.3902 ZH#.3904 ZH#.3908 | Filter G2 Filter G4 Filter F7 |
| Mat filter module* | ZH#.370# | With filter G2, G3 and G4 made of galvanized sheet steel with or without differential pressure switch |
| Replacement filter for mat filter module* | ZH#.4002 ZH#.4003 ZH#.4004 | Filter G2 Filter G3 Filter G4 |
| Roof duct with flat roof-duct base | ZH#.4900 | made of plastic and galvanized sheet steel |
| Frame for wall connection | ZH#.5100 | For connecting the air duct to the wall opening, made of galvanized sheet steel |
| Closing flange on discharge side | ZH#.5200 | For connecting the accessories on the suction side (recirculation unit only) Galvanized sheet steel |
| Suspension type compact C | ZH#.5300 | For the suspension of a recirculation unit in wall/ceiling design made of galvanized sheet steel |
| Suspension type Studio | ZH#.5400 | For the suspension of a recirculation unit, wall-mounted version only made of galvanized sheet steel |
| Modular type suspension | ZH#.550# | For the suspension of a recirculating/mixed-air unit in wall version or a recirculating-air unit in ceiling version; made of galvanized sheet steel |
| Ceiling suspension | ZH#.5600 ZH#.5601 ZH#.5602 ZH#.5603 | Attachment without threaded rod, made of galvanized sheet steel with threaded rod 1 m - M10; made of galvanized sheet steel with threaded rod 2 m - M10; made of galvanized sheet steel with threaded rod 3 m - M10; made of galvanized sheet steel |

Tab. 2-6: Air-side accessories

* This accessory is not intended for units HG24.#####.Y, HG44.#####.Y a HG44.#####.Z

Symbol "#" - see type code page 3.



Notice!

Detailed information on the air-side accessories can be found in the Technical data MultiMAXX HG

2.9 Accessories - flue gas pipework, gas distribution



Notice!

All exhaust gas conducting parts contain silicon gaskets (upon request, also seals without silicon can be delivered). Detailed information on the flue gas pipework accessories can be found in the Technical data MultiMAXX HG.

The following accessory items can be supplied for the MultiMAXX HG unit heater:

| Description | Type | Dimensions - model |
|--|----------|--|
| Pipe with sleeve | ZHG.3780 | Diameter 80 mm, length 0.22 m, Al |
| | ZHG.3710 | Diameter 100 mm, length 0.22 m, Al |
| | ZHG.3880 | Diameter 80 mm, length 0.17 m, Al |
| | ZHG.3810 | Diameter 100 mm, length 0.17 m, Al |
| | ZHG.3980 | Diameter 80 mm, length 0.31 m, Al |
| | ZHG.3910 | Diameter 100 mm, length 0.35 m, Al |
| | ZHG.4080 | Diameter 80 mm, length 0.5 m, Al |
| | ZHG.4010 | Diameter 100 mm, length 0.5 m, Al |
| | ZHG.4180 | Diameter 80 mm, length 1 m, Al |
| | ZHG.4110 | Diameter 100 mm, length 1 m, Al |
| | ZHG.4280 | Diameter 80 mm, length 2 m, Al |
| | ZHG.4210 | Diameter 100 mm, length 2 m, Al |
| Coaxial pipe with sleeve | ZHG.7080 | Diameter 80/125 mm, length 0.5 m, Al |
| | ZHG.7010 | Diameter 100/150 mm, length 0.5 m, Al |
| | ZHG.7180 | Diameter 80/125 mm, length 1 m, Al |
| | ZHG.7110 | Diameter 100/150 mm, length 1 m, Al |
| | ZHG.7280 | Diameter 80/125 mm, length 2 m, Al |
| | ZHG.7210 | Diameter 100/150 mm, length 2 m, Al |
| Elbow fitting 90° with sleeve | ZHG.4380 | Diameter 80 mm, metal mixture Al |
| | ZHG.4310 | Diameter 100 mm, metal mixture Al |
| Coaxial elbow fitting 90° with sleeve | ZHG.7380 | Diameter 80/125 mm, metal mixture Al |
| | ZHG.7310 | Diameter 100/150 mm, metal mixture Al |
| Elbow fitting 45° with sleeve | ZHG.4480 | Diameter 80 mm, metal mixture Al |
| | ZHG.4410 | Diameter 100 mm, metal mixture Al |
| Coaxial elbow fitting 45° with sleeve | ZHG.7480 | Diameter 80/125 mm, metal mixture Al |
| | ZHG.7410 | Diameter 100/150 mm, metal mixture Al |
| T-fitting 45° with a condensate container | ZHG.4580 | Diameter 80 mm, Al |
| | ZHG.4510 | Diameter 100 mm, Al |
| T-fitting with sleeve | ZHG.4680 | Diameter 80 mm, Al |
| | ZHG.4610 | Diameter 100 mm, Al |
| Condensate container | ZHG.4780 | Diameter 80 mm, Al |
| | ZHG.4710 | Diameter 100 mm, Al |
| Pipe with sleeve and with condensate drain | ZHG.4880 | Diameter 80 mm, Al |
| | ZHG.4810 | Diameter 100 mm, Al |
| Windproof hood (wall) | ZHG.4980 | Diameter 80 mm, Al |
| | ZHG.4910 | Diameter 100 mm, Al |
| Coaxial windproof hood (wall) | ZHG.7980 | Diameter 80/125 mm, Al |
| | ZHG.7910 | Diameter 100/150 mm, Al |
| Roof air-intake hood | ZHG.5080 | Diameter 80 mm, Al |
| | ZHG.5010 | Diameter 100 mm, Al |
| Coaxial weather protection hood (ceiling) | ZHG.9080 | Diameter 80/125 mm, Al |
| | ZHG.9010 | Diameter 100/150 mm, Al |
| Flexi - pipe with sleeve - intake | ZHG.5180 | Diameter 80 mm, max. length 1 m. Al |
| | ZHG.5110 | Diameter 100 mm, max. length 1 m. Al |
| Flexi - pipe with sleeve - draft | ZHG.5280 | Diameter 80 mm, max. length 1 m. Al |
| | ZHG.5210 | Diameter 100 mm, max. length 1 m. Al |
| Connecting piece | ZHG.9380 | Diameter 80/125 mm, Al |
| | ZHG.9310 | Diameter 100/150 mm, Al |
| Reducer | ZHG.5480 | Diameter 80/100 mm, Al |
| Collar | ZHG.5680 | Diameter 80 mm, rubber |
| | ZHG.5610 | Diameter 100 mm, rubber |
| | ZHG.9680 | Diameter 125 mm, rubber |
| | ZHG.9610 | Diameter 150 mm, Al |
| Roof duct for flat roof | ZHG.5710 | For the flue gas pipework diameter 80, 100 a 125 mm, plastic |
| | ZHG.9710 | For the flue gas pipework diameter 150 mm, Al |
| Duct through slanted roof | ZHG.5810 | For the flue gas pipework diameter 80, 100 a 125 mm, plastic |
| Chimney collar for roof duct | ZHG.5980 | For the flue gas pipework diameter 80 mm, plastic |
| | ZHG.5910 | For the flue gas pipework diameter 100 mm, plastic |
| | ZHG.9980 | For the flue gas pipework diameter 125 mm, plastic |
| Set with 45° T-piece D45 | ZHG.6080 | Diameter 80/125 mm, Al |
| | ZHG.6010 | Diameter 100/150 mm, Al |

Tab. 2-7: Accessories of the flue gas pipework and gas distribution

| Description | Type | Dimensions - model |
|---------------------------|-----------------|---------------------------|
| Set with 90° T-piece D90 | ZHG.6180 | Diameter 80/125 mm, Al |
| | ZHG 6110 | Diameter 100/150 mm, Al |
| Set D90L | ZHG.6380 | Diameter 80/125 mm, Al |
| | ZHG.6310 | Diameter 100/150 mm, Al |
| Set horizontal mounting W | ZHG 6280 | Diameter 80/125 mm, Al |
| | ZHG 6210 | Diameter 100/150 mm, Al |
| Pressure-side hose R 3/4" | ZHG.0040 | Length 0.4 m |
| | ZHG.0070 | Length 0.7 m |
| | ZHG.0010 | Length 1 m |

Tab. 2-7: Accessories of the flue gas pipework and gas distribution

3 Shipping and storage

3.1 Shipping

The notices of the manufacturer must be taken into account for shipping and storage.



Notice!

- After unpacking the heating unit, the shipment must be examined for correctness and completeness on the basis of the dispatch note.
- Ship and store units in original packing!



Damage to the unit!

- After shipment, check to make sure that the unit is not damaged.



Notice!

Incorrectly delivered quantities or damages caused by shipping must be entered immediately in the shipping voucher, or possibly the goods should not be accepted and the manufacturer or supplier immediately informed.

3.2 Shipping and handling of the unit

- Attach the load equipment to the intended points on the transport unit!

Only lifting gear with sufficient load-bearing capacity is allowed.



Danger due to overhead loads!

Do not move air heaters over people.



Danger of sharp cutting edges!

Use personal protective gear such as safety gloves, footwear and protective clothes during shipping.



Risk of personal injury!

Do not use damaged transport units.

Air heaters can only be transported by fork lifter if they are stored on a pallet. Pay special attention to equal weight distribution!

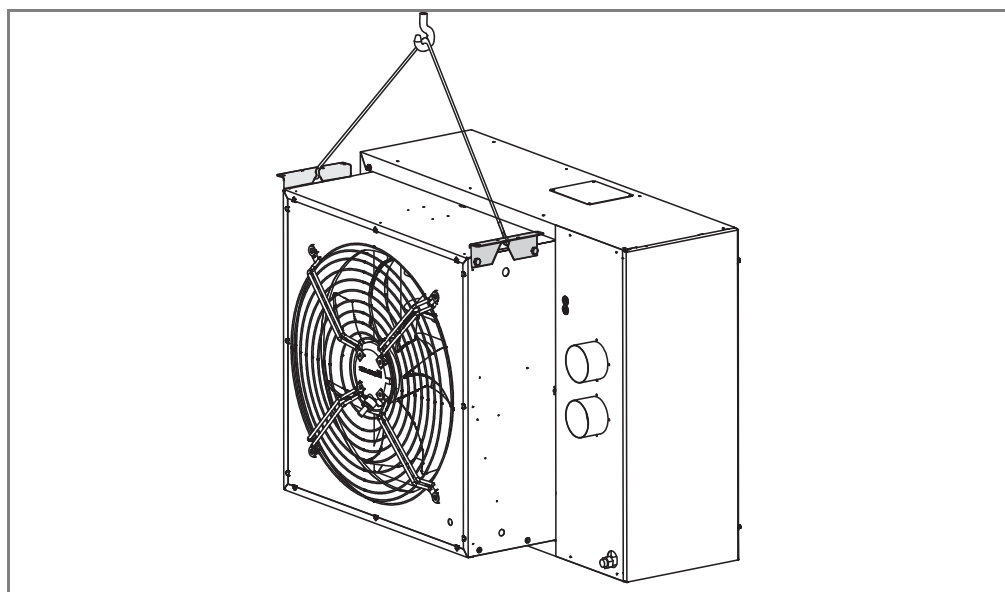


Fig. 3-1: Shipping the MultiMAXX HG unit

3.3 Storage

Protect MultiMAXX HG Air Heaters against moisture, soiling (dust and sand) and sun/radiant heat.

Store only in areas protected from weather influences, mildews, rodents, and vibrations.

The air heater or control system and other accessory items must not be stored or operated in areas subject to salt spray

**Notice!**

Allowable storage conditions:

Air temperature: -15 °C to +40 °C

Air humidity: max. 80% without condensation

4 Mounting



Notice!

When mounting MultiMAXX HG air-handling units, the safety regulations and standards and generally approved technical practice applicable in the respective countries must be observed.

4.1 Load-bearing capacity of the installation site



Notice!

The installation site must be suited as a durable and vibration-free weight bearer of the unit heater, and be checked by a structural engineer or architect if necessary. For mounting the suspension of the MultiMAXX HG Air Heaters, the following are provided 2 x 4 nutserts M8 are provided on the sides of the fan module (see Fig. 2-2).

The fixing material is included with the suspensions.

Unused M8 nutsert openings should be closed with M8 screws from the transport securing unit.

4.2 Ceiling installation

The following must be planned: Suspension height, unit spacing (see Fig. 4-2), and minimum ceiling spacing (see Fig. 4-1).



Risk of personal injury!

The minimum permissible height above the floor is 2.7 m.



Notice!

We recommend that the suspension height of the unit from the floor to the lower edge of the diffuser be selected such that (see Fig. 4-1) 2 m above the floor in the work area the air velocity is 0.2 m/s.

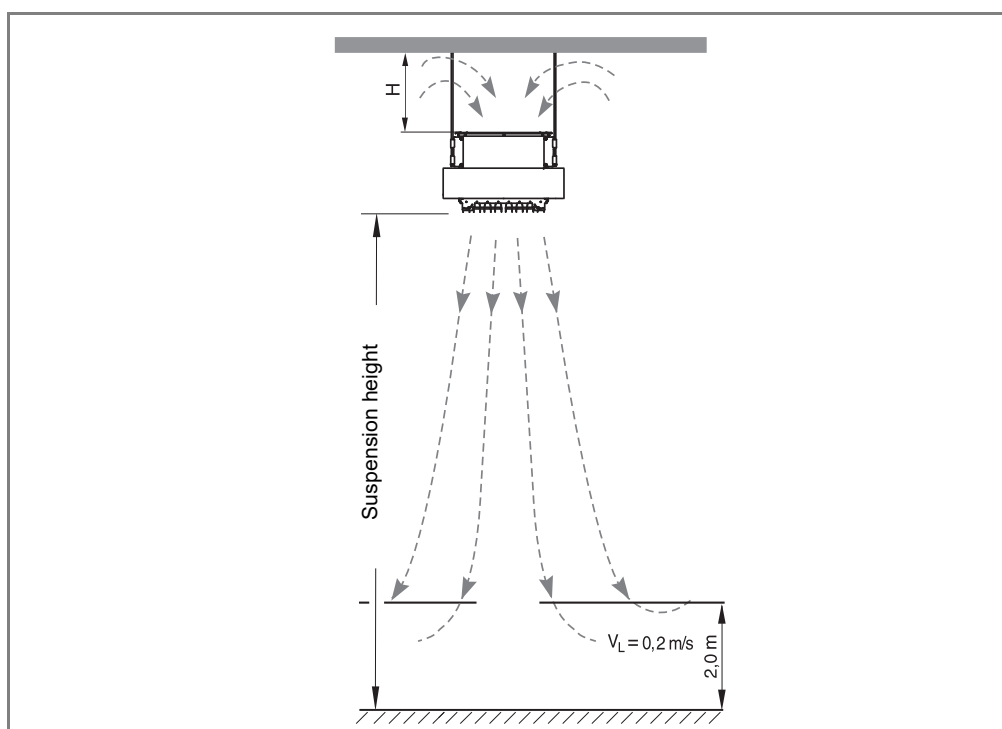


Fig. 4-1: Suspension height for ceiling mounting

Minimum ceiling spacing H (see Fig. 4-1)

Provide a minimum distance to ceiling to allow sufficient air circulation and ensure adequate access for maintenance.

| Model size | 2 | 4 |
|----------------|-----|-----|
| Spacing H [mm] | 300 | 400 |

Max. suspension height

The maximum suspension height for the ceiling mounting varies depending on the discharge temperature, lower speed stages and lower airflow rate (results from the pressure difference of the accessory or external pressure difference).

Examples of the mounting height for the respective types are listed in following table (Tab. 2-4).

Unit spacing for ceiling mounting (see Fig. 4-2)

In order to achieve a favorable air distribution pattern of the occupied zone, we recommend the following unit spacing:

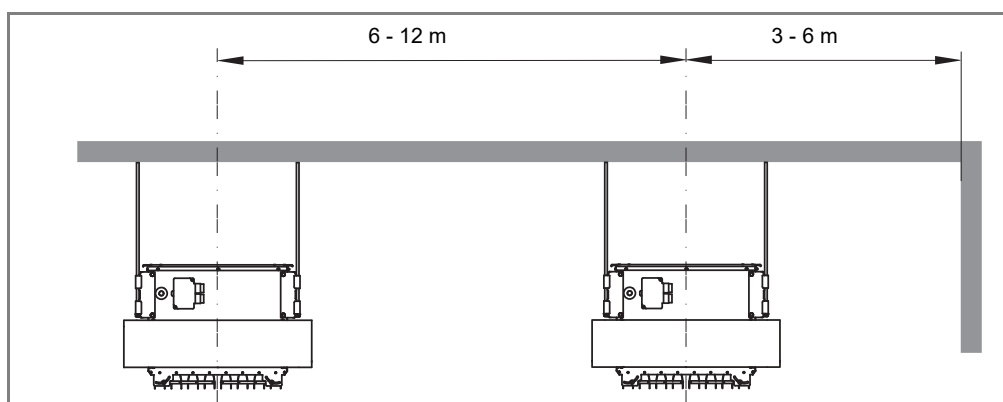


Fig. 4-2: Unit spacing for ceiling mounting

Example of ceiling mounting with mixed air module and ceiling suspension (ZH#.5602), see Fig. 4-8.

4.3 On-wall mounting

Please observe: Minimum suspension height, air jet direction of discharge, unit spacing among each other (see Fig. 4-4) and minimum spacing to the wall (see Fig. 4-3).



Risk of personal injury!

The minimum permissible height above the floor is 2.7 m.

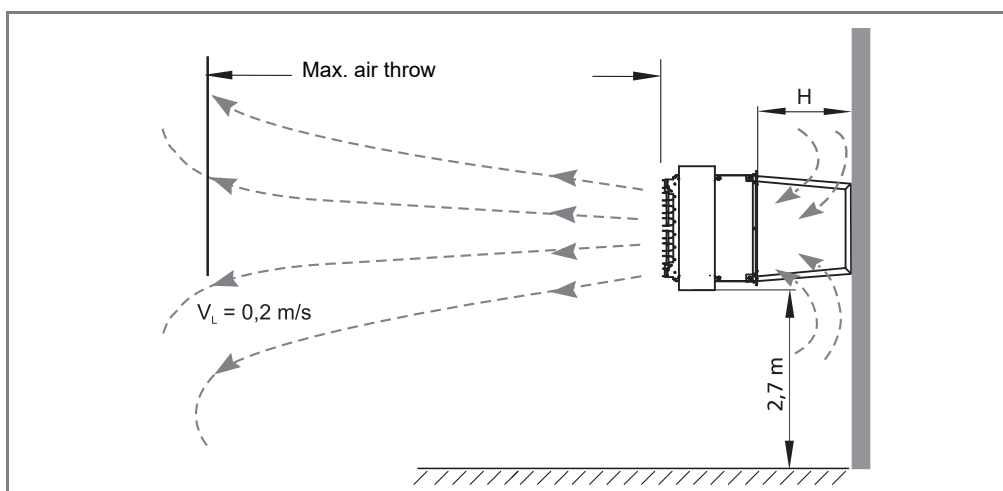


Fig. 4-3: Air throws with on-wall mounting

**Notice!**

For heating technology reasons, on-wall mounting of air-handling units should not be too high in order to ensure that the air is also properly mixed at ground level as well.

Direction of discharged air jet

Set the direction of discharge so as to prevent air draughts in the occupied zone. The primary air jet must not be directed against walls, beams, cranes, shelves, columns or similar obstacles! (see chapter 4.4)

Minimum wall spacing H (see Fig. 4-3)

Provide a minimum distance to the wall to allow sufficient air circulation and ensure adequate access for maintenance.

| Model size | 2 | 4 |
|-----------------|-----|-----|
| Distance H [mm] | 300 | 400 |

Air throw

The maximum air throw for on-wall mounting varies depending on the discharge temperature, lower speed stages, and lower airflow rate (resulting from the pressure difference of the accessory or external pressure difference).

Examples of the air throw distances for each unit are shown in the table below. (See Tab. 2-4).

Recommended unit spacing for on-wall mounting (see Fig. 4-4)

In order to achieve a favorable air distribution pattern of the occupied zone, we recommend the following unit spacing:

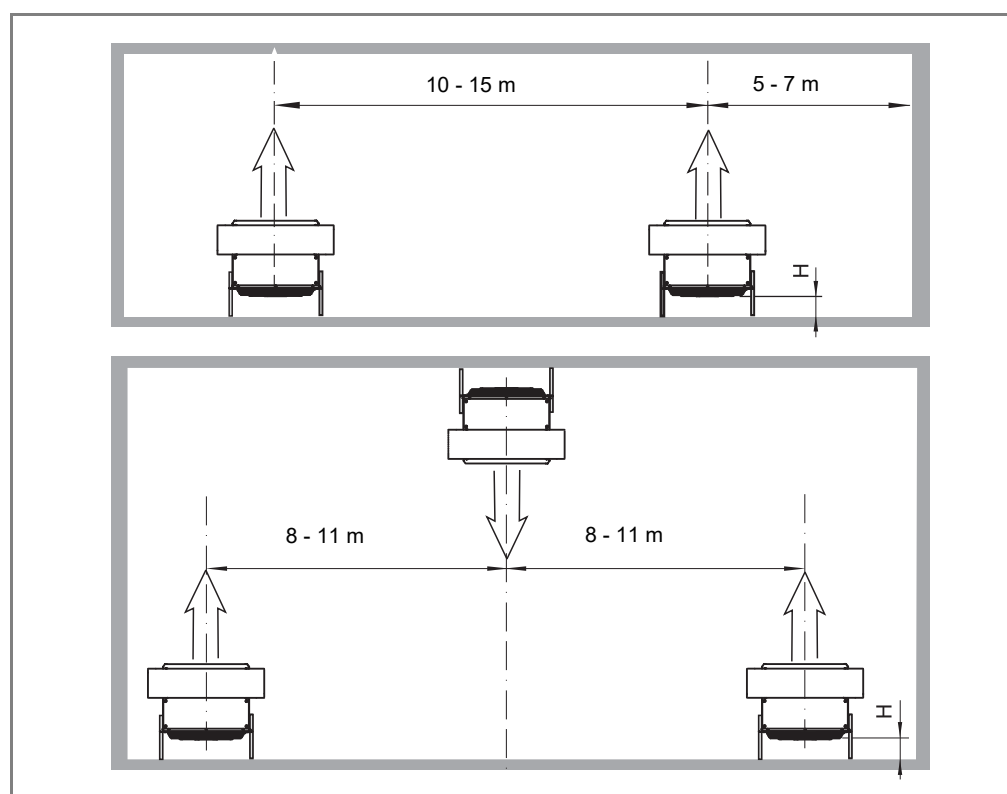


Fig. 4-4: Unit spacing for on-wall mounting

Example of on-wall mounting with a mixed-air module and wall mounting Modular (ZH#.5502), see Fig. 4-6 and Fig. 4-7

4.4 Safety clearance



Notice!

When installing a heating unit, observe safety clearances of burnable materials: at least 500 mm from the unit side parts and 1500 mm in the airflow direction and the flue gas pipework. In areas with fire hazards (fire masses, dust, liquids, gases and vapors), the distance must be at least 1500 mm in all directions. Otherwise a partition wall made of inflammable material of min. 3 mm thickness must be employed. No objects may be set up in the vicinity of the units.



Notice!

When installing a heater, the minimum distance between units (see Fig. 2-2) must be observed. The unit must be installed such that the unit accessible, possibly with the aid of a platform or ladder.

4.5 Unit mounting

The gas air heaters must be mounted in a safe, reliable, and visually adequate manner. For this reason it is recommended to use the manufacturer's suspensions and mounting brackets. The units must be mounted in agreement with the project and the notices in this operating manual .



Notice!

For correct mounting, the following rules must be observed without fail:

- The unit must be mounted in a safe, reliable, and visually adequate manner. For this reason, only the suspensions from the manufacturer may be employed.
- The gas air heater must always be operated with a control panel OSHG 0.000M (OSHG 0.EC0M) or with the remote control controller PCB OSHG 0.RDDO.
- Projects and operators are obligated to provide correct and safe mounting and safe operation of the unit.



Damage to the unit!

The unit must be installed in a voltage-free, vibration-free and twist-free fixation.



Notice!

Operation on final construction work:

The units must not be operated in dusty areas, especially during finishing work such as drilling, concrete grinding, cutting plasterboard, floor grinding or similar.

4.6 Mounting the flue gas pipework

The flue gas pipework must be carried out according to all standards and regulations valid in the respective country. The flue gas pipework must fundamentally be supplied with a condensate container with drainage. The flue gas pipework must be arranged so that the exit through the wall into the open is not placed below the unit. The pipe closure must be on the wall hood ZHG 49## (ZHG 79##) or roof hood ZHG 50## (ZHG 90##). The insertion length of the individual flue gas pipework parts must be at least 50 mm. The total length of the smoke vent system may not exceed 16 m. Supply air and smoke extract must together also not exceed a length of 16 m.

A minimal length of 1 m must be observed when using coaxial flue gas pipework. Regarding a possible overheating of the air, the maximum lengths of the flue gas pipework given in the following table must be observed (Tab. 4-1 and Fig. 4-5).

1 elbow fitting 90° single model corresponds to 1 m length of a direct pipe with a sleeve as single model. 1 elbow piece 90° coaxial model corresponds to 1 m length of a straight tube with coupling sleeve coaxial type or 2 m of the single type.

4.6.1 Maximum lengths of the flue gas pipework

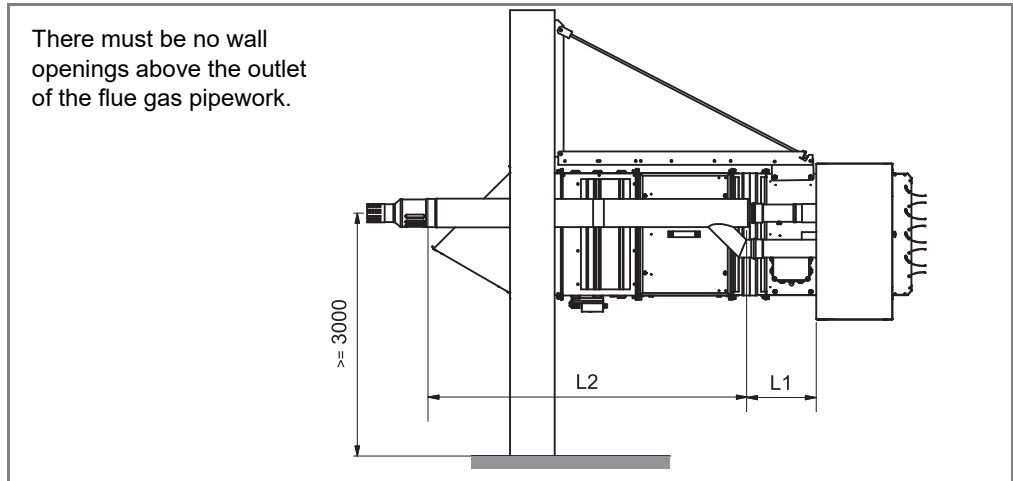


Fig. 4-5: Length of the flue gas pipework

| Unit type | Combination of the flue gas pipework | Thermal output of the unit Q_T | Length of the flue gas pipework (for a unit with suction side accessories) L2 | Length of the flue gas pipework (for a unit without suction side accessories) L2 |
|-----------|--------------------------------------|----------------------------------|---|--|
| | | (kW) | (m) | (m) |
| HG 24 | Coaxial | 25 | 5 | 6 |
| | Coaxial + 1 m Single (L1) | 25 | 6 | 7 |
| | Coaxial + 2 m Single (L1) | 25 | 7 | 7 |
| HG 25 | Coaxial | 30 | 2 | 3 |
| | Coaxial + 1 m Single (L1) | 30 | 3 | 4 |
| | Coaxial + 2 m Single (L1) | 30 | 6 | 6 |
| HG 44 | Coaxial | 45 | 4 | 5 |
| | Coaxial + 1 m Single (L1) | 45 | 5 | 6 |
| | Coaxial + 2 m Single (L1) | 45 | 6 | 6 |
| HG 45 | Coaxial | 60 | 3 | 4 |
| | Coaxial + 1 m Single (L1) | 60 | 4 | 5 |
| | Coaxial + 2 m Single (L1) | 60 | 5 | 6 |

Tab. 4-1: Maximum lengths of the flue gas pipework

4.7 Mounting examples

4.7.1 Wall models of the mixed-air unit with single flue gas pipework

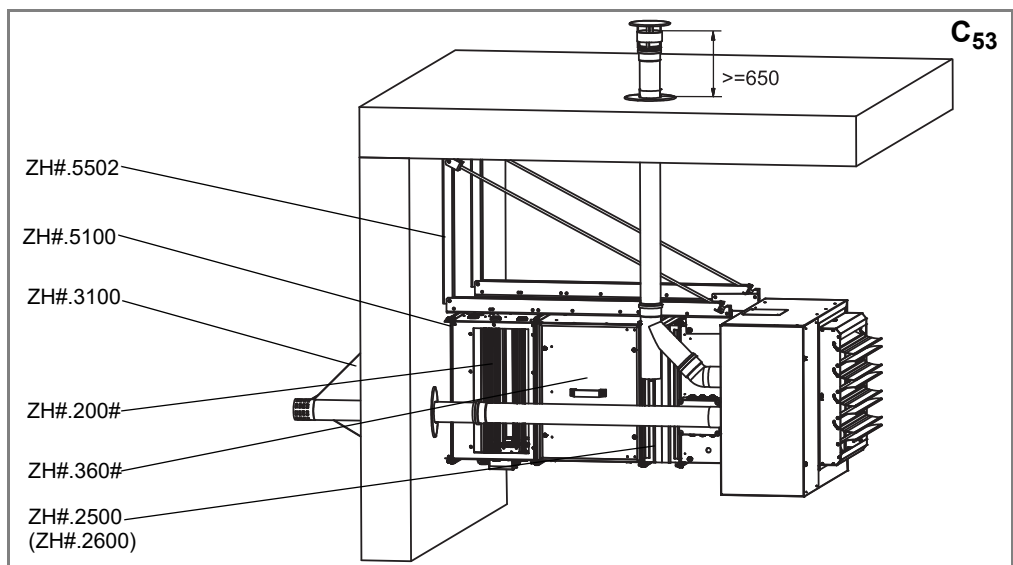


Fig. 4-6: Wall models of the mixed-air unit with single flue gas pipework

In the case of mixed air units, the flange for mounting accessories is fitted at the factory; in the case of recirculation air units, the flange (ZH#.5200) must be ordered as an accessory and fitted on site.

4.7.2 On-wall mounting of a mixed-air unit with coaxial flue gas pipework

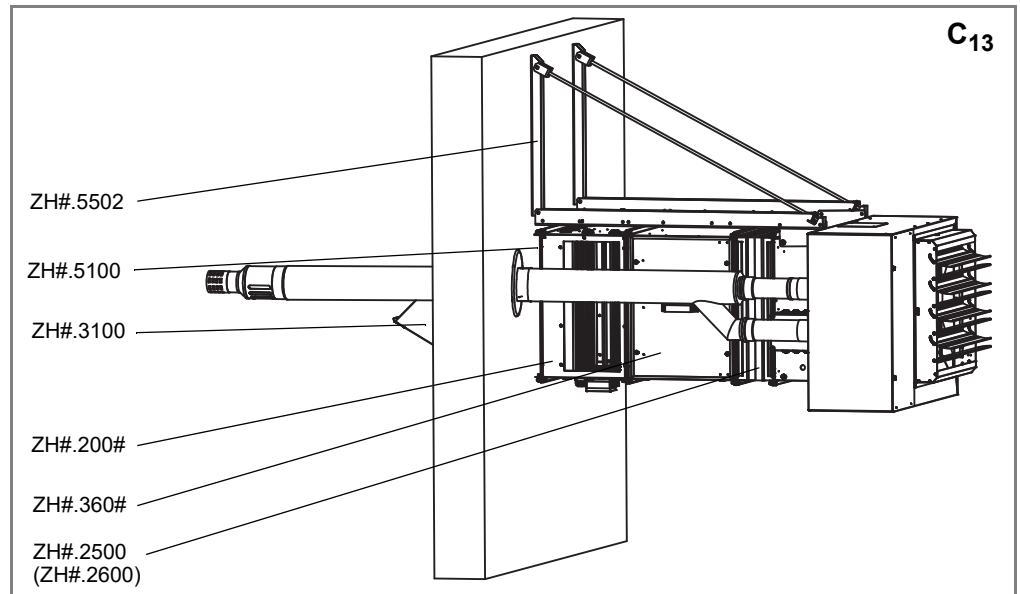


Fig. 4-7: On-wall mounting of the mixed-air unit with coaxial flue gas pipework

4.7.3 Ceiling mounting of a mixed-air unit with coaxial flue gas pipework

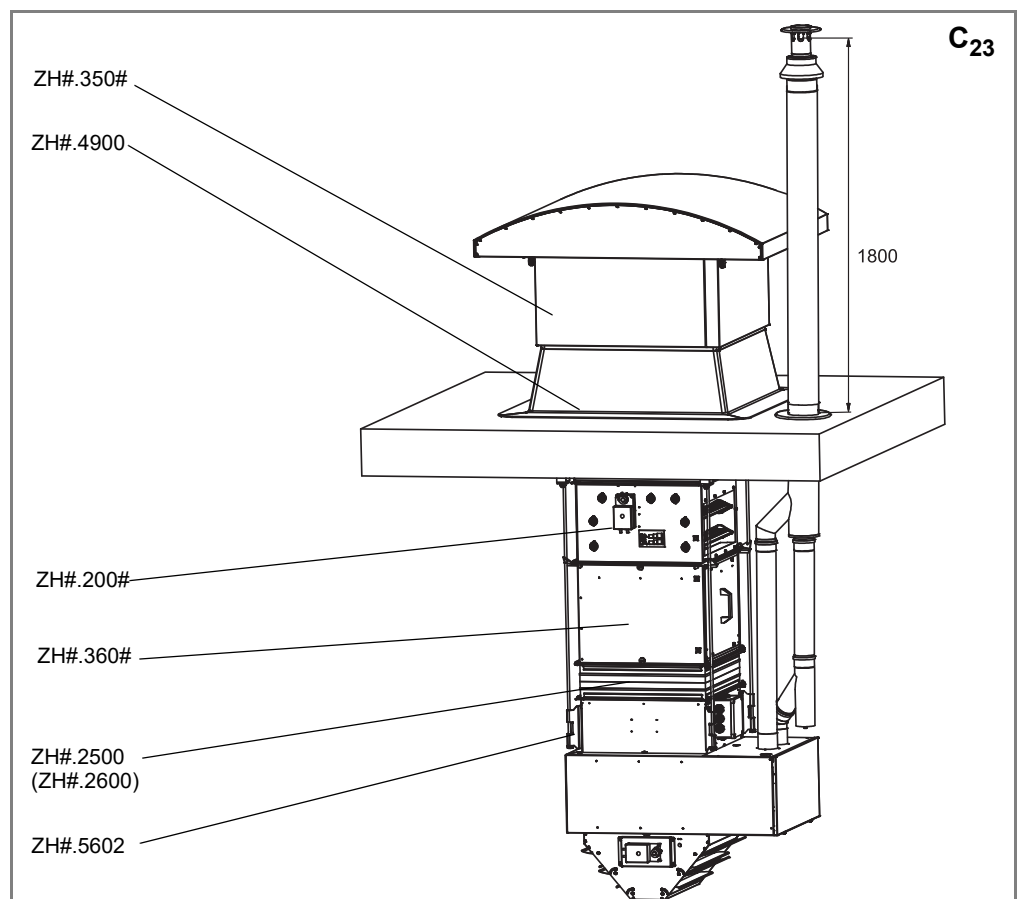


Fig. 4-8: Ceiling mounting of a mixed-air unit with coaxial flue gas pipework



Notice!

The first accessory module to be fitted to the mixed-air unit is either a "flexible connection" (ZH#.2500) or a "rectangular duct 150" (ZH#.2600). See mounting examples in Fig. 4-7 and Fig. 4-8.



Notice!

The installation examples given here for MultiMAXX HG Air Heaters must comply with Regulation (EU) No. 1253/2014.

5 Electrical Connection



Danger of electrical current!

The electrical installation may only be carried out by trained electrical workers in compliance with valid building codes.

Power down the unit heater and the control unit before beginning all work.

Ensure that the unit is isolated and secured against being energized at an appropriate point of the on-site electrical power supply.



Danger of damage due to static discharge!

When connecting and/or adjustment work on the MultiMAXX air-handling unit, make sure that you statically discharge yourself before touching PCBs and electrical components.



Notice!

Before commissioning, it is necessary to carry out an inspection according to all prevailing standards.

The operator is obliged to carry out regular checks and maintenance of the electrical and gas connections in accordance with all applicable standards (see Page 61).



Notice!

When commissioning MultiMAXX HG air-handling units, the safety regulations and standards and generally approved technical practice applicable in the respective countries must be observed.



Notice!

The electrical connection must be carried out with an all-pole separator with a contact breaker gap of min. 3 mm. Furthermore, a power circuit breaker (10 A) must be included as overcurrent protection for the fan.



Notice!

Pay attention to the correct rotation direction of the fan. The rotation direction is designated with an arrow on the fan motor.

You can change the rotation direction by interchanging 2 phases.

The three phase fan may not be operated on two phases. Otherwise the fan might be damaged.



Notice!

The cable type and cable cross-section must be selected by a qualified electrical engineer.

For the connection of the control panel, the remote control board, use twisted multi-wire shielded cables.

The max. total length of the individual communication cables must not exceed 50 m! For the connection of the BP1 differential pressure switch, use, e.g., the CYLY cables.

The max. cross section of the connecting conductors is given by the terminal strip and is 2.5 mm².

5.1 Electric switch cabinet

The unit heater is furnished with an electrical switch cabinet for Multi Operation. The box is mounted on one side of the fan module.

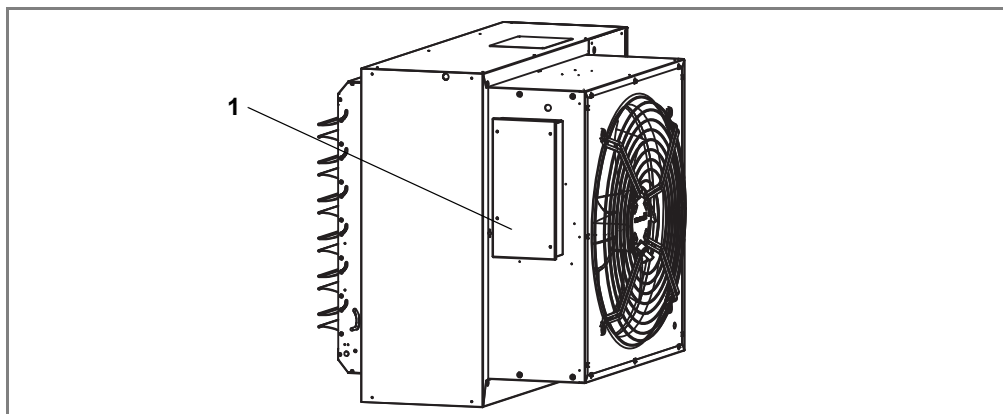


Fig. 5-1: Electric switch cabinet

Pos. 1: Electrical switch cabinet for Multi Operation (sheet steel)

5.2 Connection diagrams

The electrical connection of the air heaters must be carried out according to the valid connection diagrams (Fig. 5-4 to Fig. 5-8). The connection diagrams are shown on the inner side of the lid of the unit connection box or enclosed as separate information.



Danger of electrical current!

The connection diagrams do not specify any protective measures.

5.2.1 Motor contactor using thermal contact

The fans of the MultiMAXX HG Air Heaters are equipped with thermal contacts as standard, which must always be connected. No warranty can be assumed if other on-site fuse protection of the fan are used.

5.2.2 Connection of actuators of the mixed-air modules, blocking dampers and outlets

The standard design of the actuators of the mixed-air modules involves so-called two-wire technology without a limit switch.

For wiring diagrams of the respective actuators, see chapters 5.4 and 5.5.

5.3 Multi Operation

For Multi Operation, the control system is a mandatory accessory for the MultiMAXX HG unit heater.



Notice!

For Multi Operation, the electrical switch cabinet is mounted to the unit heater by the manufacturer.

The OSHG 0.EC0M (OSHG 0.000M) control panel or the OSHG 0.RDDO remote control controller PCB OSHG 0.RDDO must be installed close to the user.



Notice!

The OSHG 0.EC0M (OSHG 0.000M) control panel can only be operated by trained personnel.

The OSHG control must not be operated with mechanical damage!



Notice!

Before handing over the system to the user, check the correct functioning of all components of MultiMAXX HG Air Heaters and the control system.

5.3.1 Control panel OSHG 0.EC0M (OSHG 0.000M) - Control system for a unit group (1 to 10 units)

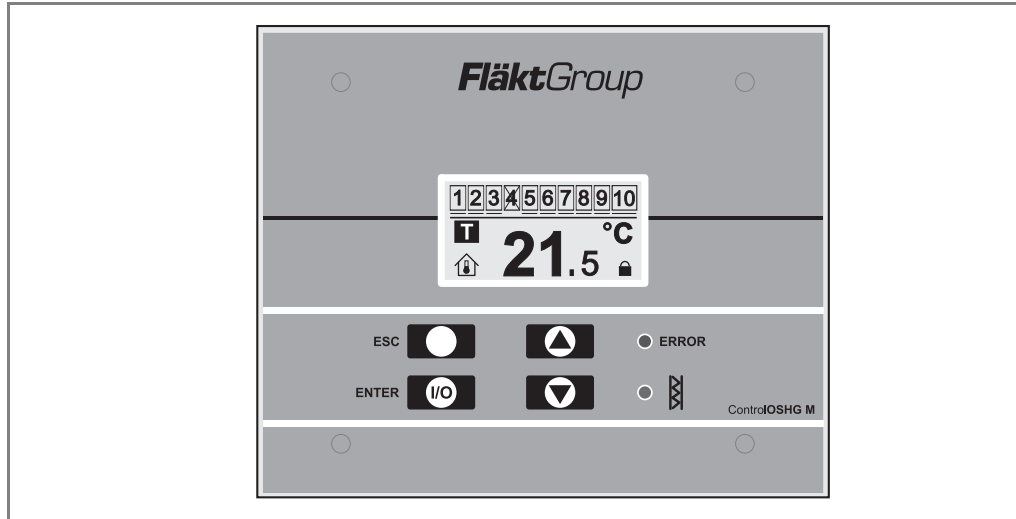


Fig. 5-2: Control panel OSHG 0.EC0M (OSHG 0.000M)

For Multi Operation, the electric switch cabinet is mounted on site to the air heater. Up to 10 units can be controlled with one control panel OSHG 0.000M (OSHG 0.EC0M) with graphic display.

Ambient temperature: 0 °C to +40 °C

Dimensions: 178 x 138 x 80 mm (can be recessed)

Weight: 0.7 kg

Protection class: IP 40

The units do not have to be of the same type. For the control system, independent combination is possible.

The connection is carried out according to the wiring diagram Fig. 5-4 and Fig. 5-8.

5.3.2 Remote control controller PCB OSHG 0.RDDO - Control of 1 to 10 remote controlled units

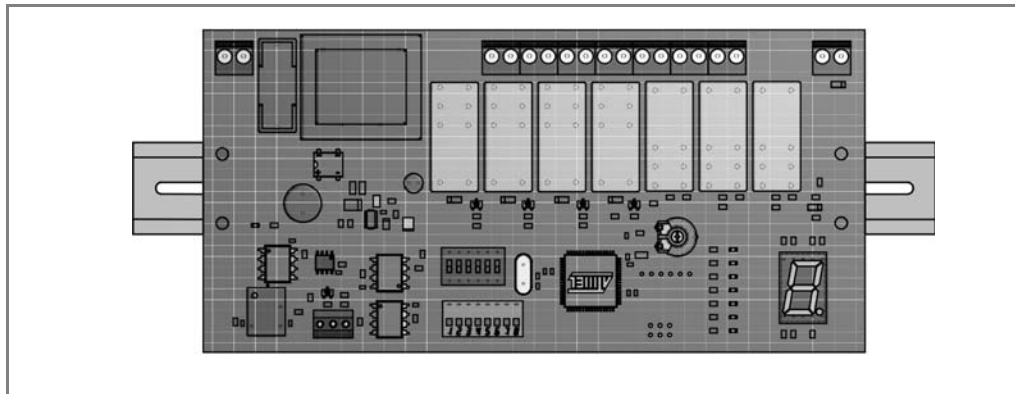


Fig. 5-3: Controller PCB OSHG 0.RDDO

The OSHG 0.RDDO remote control controller PCB is intended for remote control of the units and consists of a controller PCB and clips for mounting on a DIN strip (without switch box).

One remote control controller PCB OSHG 0.RDDO can operate a group of 1 to 10 units each. The same values are set for the control gear for all units in the respective group.

Room temperature: 0 °C to +40 °C

Dimension: 175 x 85 x 30 mm

Weight: 0.5 kg

The connection is made according to the wiring diagrams, see Fig. 5-4 and Fig. 5-8.

5.3.3 Connection diagram of MultiMAXX HG units (fans D, E, Y - 1 x 230 V/50 Hz) with control panel OSHG 0.EC0M (OSHG 0.000M) (Multi Operation) or remote control controller PCB OSHG 0.RDDO O

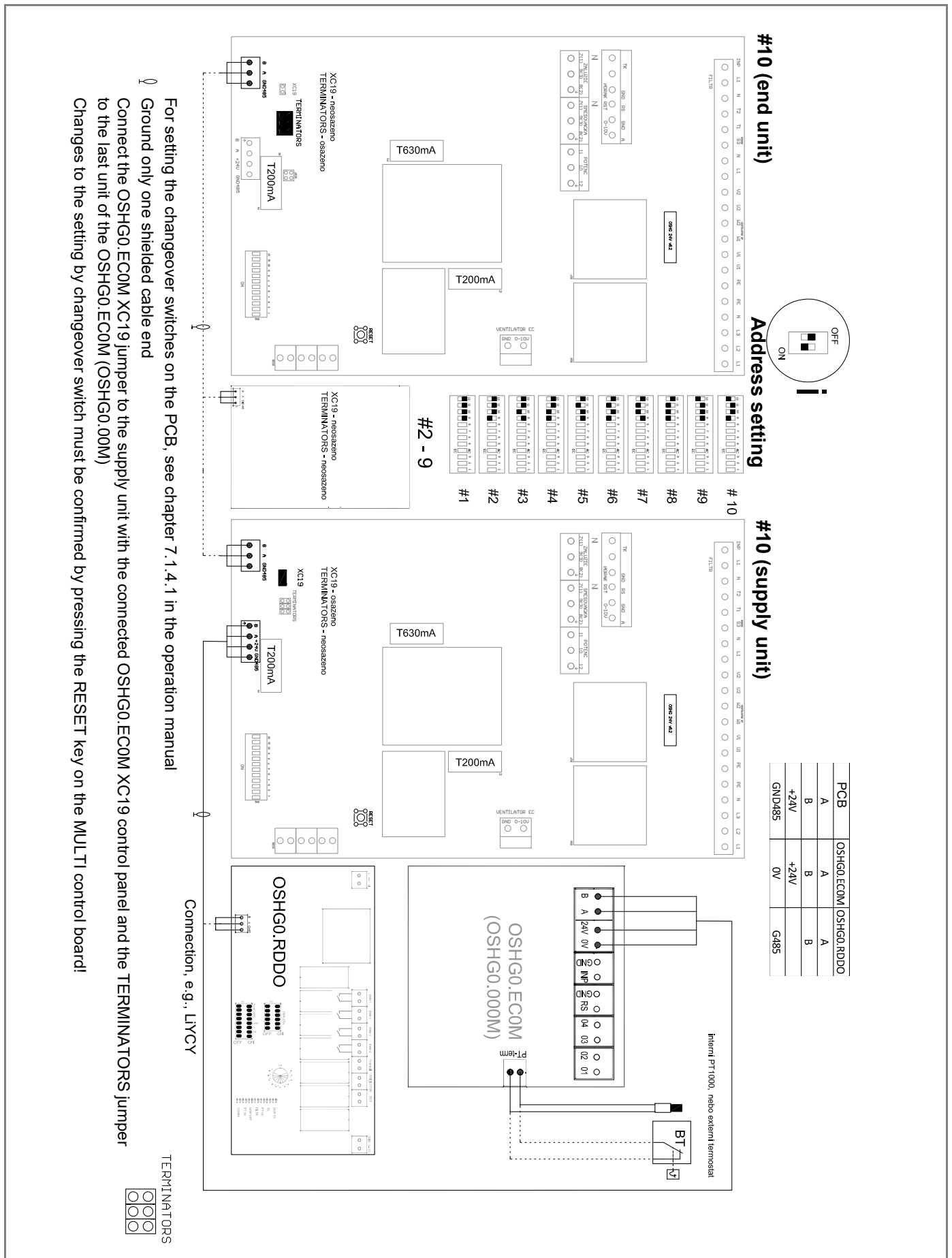
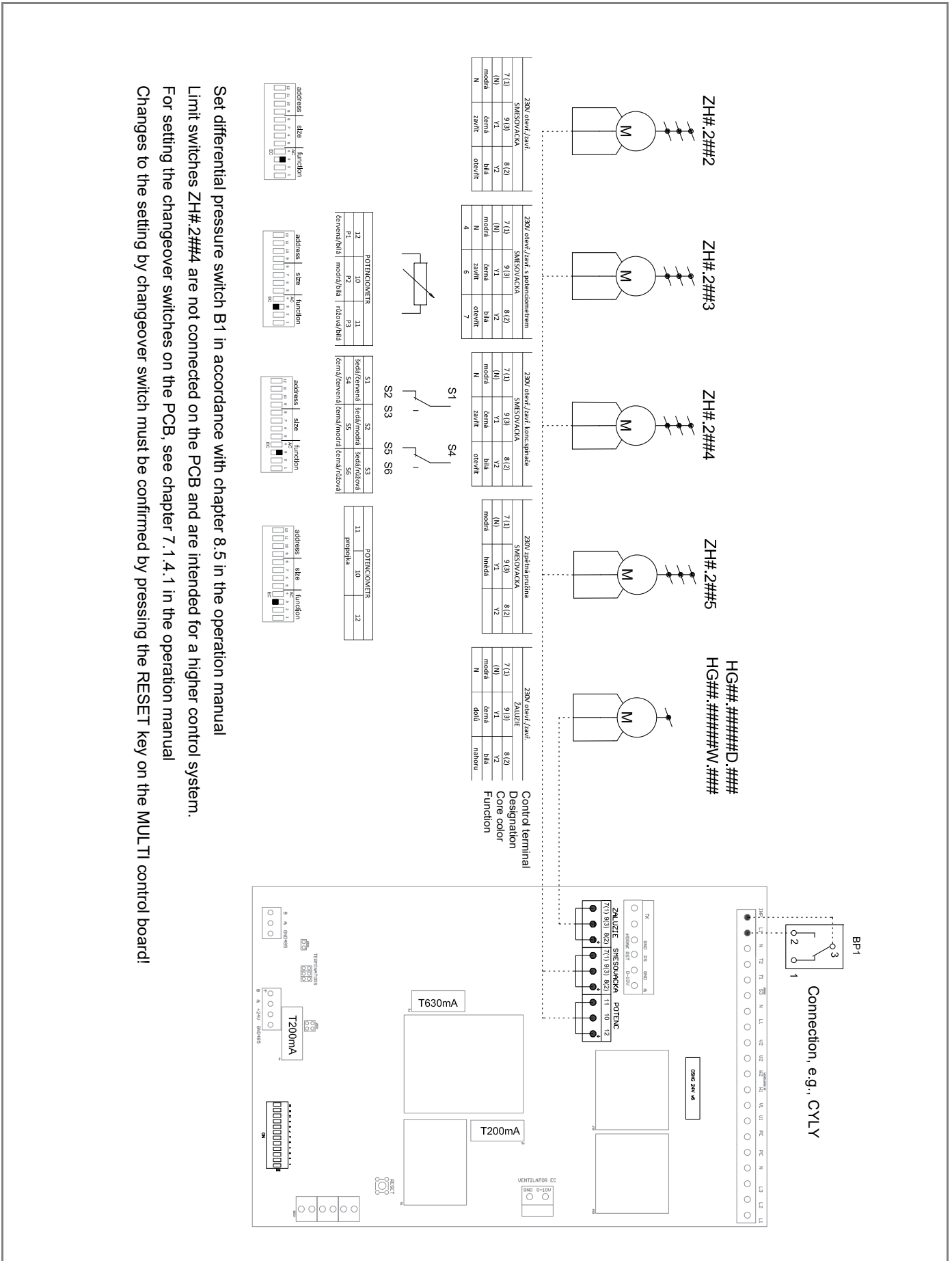


Fig. 5-4: Controller PCB



Set differential pressure switch B1 in accordance with chapter 8.5 in the operation manual
 Limit switches ZH# 2##4 are not connected on the PCB and are intended for a higher control system.
 For setting the changeover switches on the PCB, see chapter 7.1.4.1 in the operation manual
 Changes to the setting by changeover switch must be confirmed by pressing the RESET key on the MULTI control board!

Fig. 5-5: Controller PCB

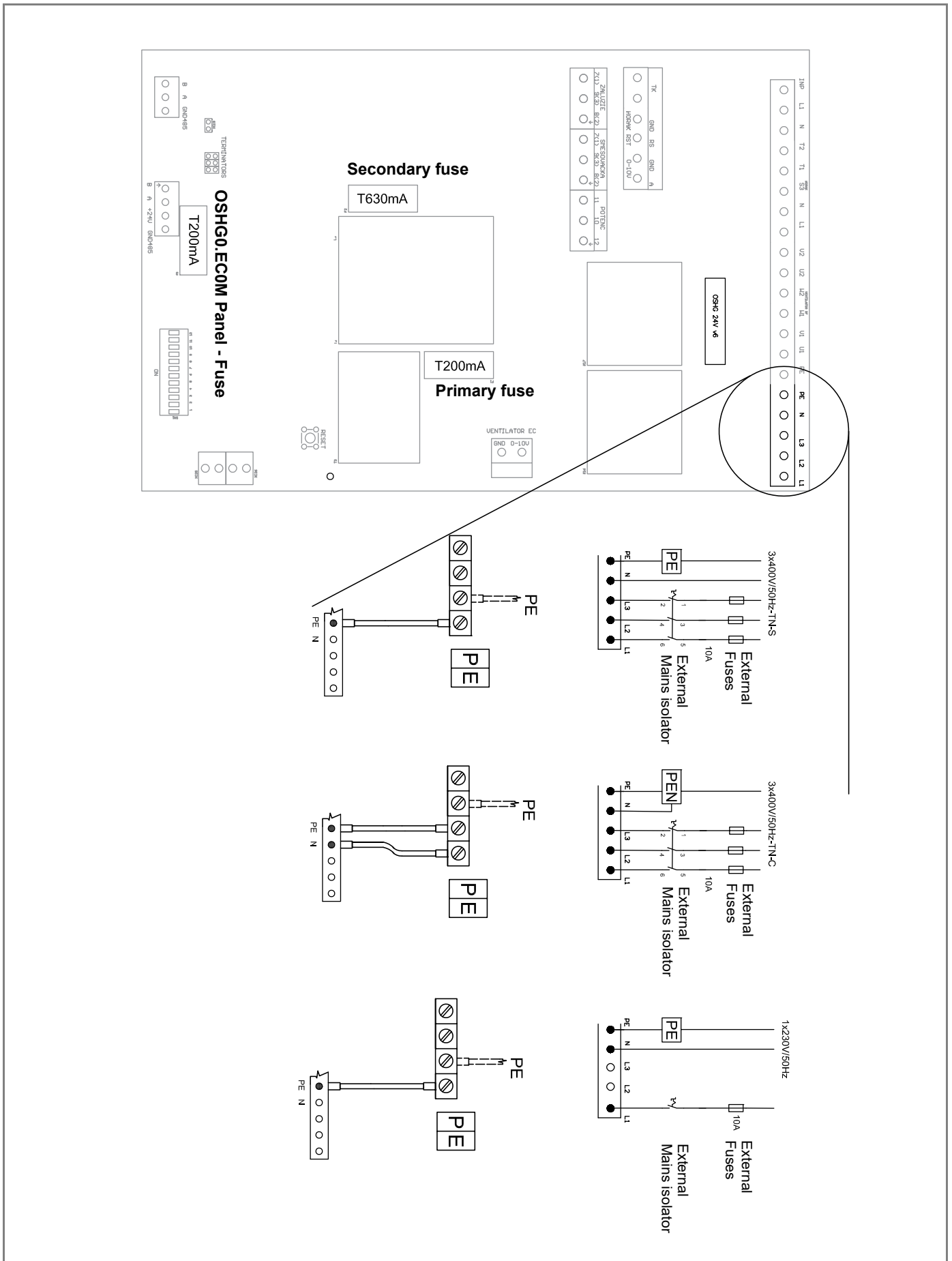


Fig. 5-6: Controller PCB

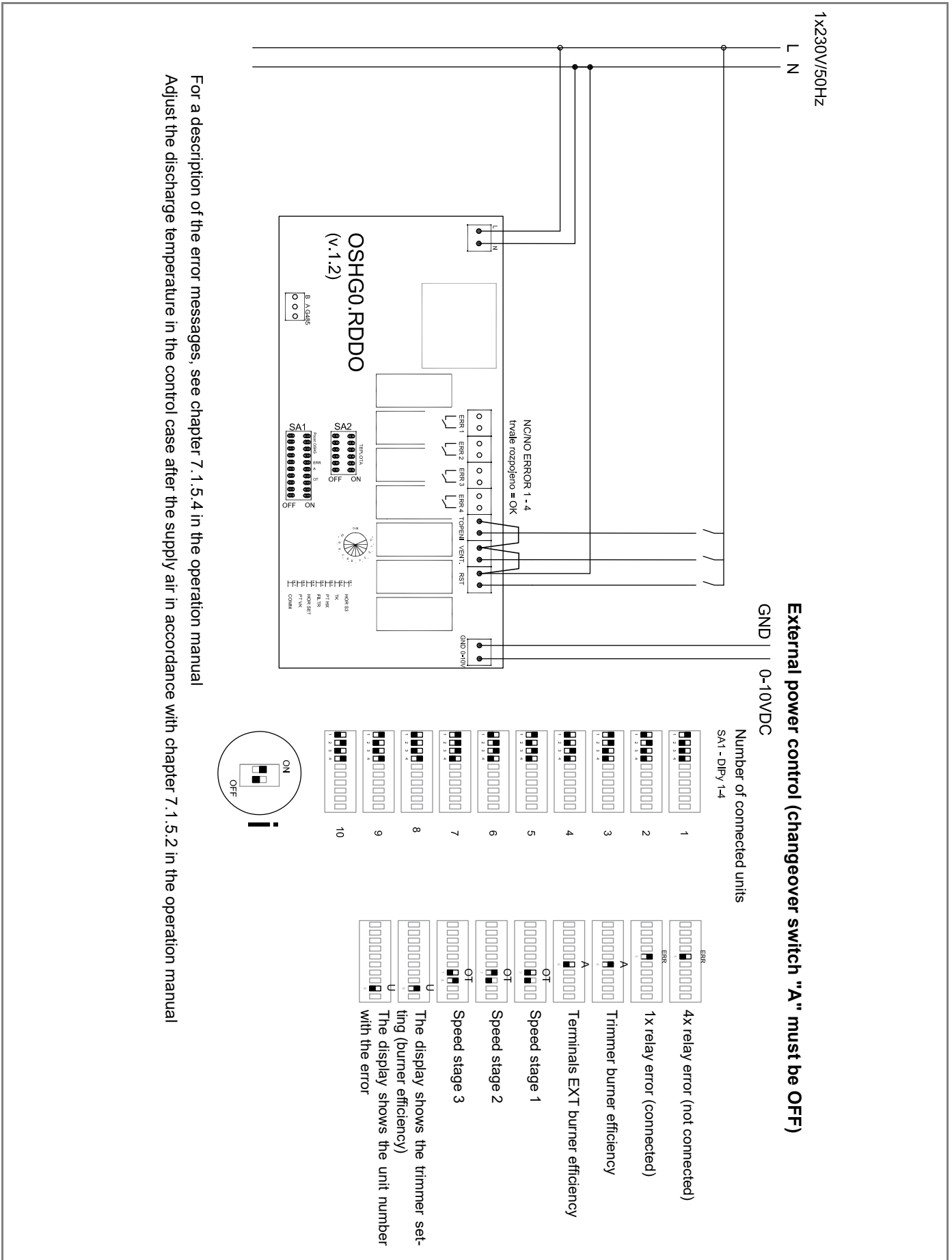


Fig. 5-7: Controller PCB

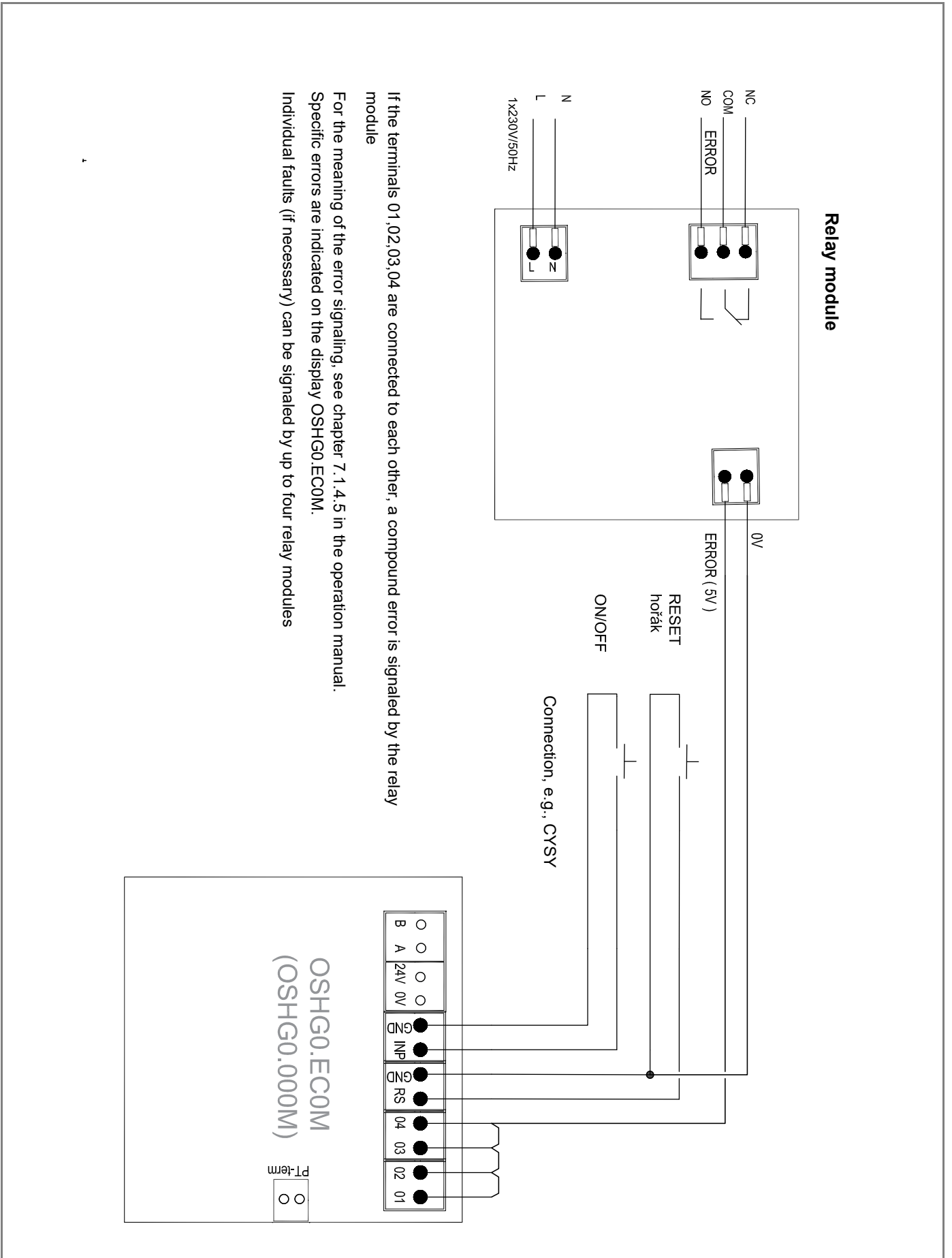


Fig. 5-8: Controller PCB

6 Gas Connection



Danger of accident due to gas explosion!

Gas installation may only be carried out by trained gas workers observing valid building codes.



Notice!

When commissioning MultiMAXX HG air-handling units, the safety regulations and standards and generally approved technical practice applicable in the respective countries must be observed.

Before commissioning, an inspection according to all prevailing standards must be carried out. The operator is obliged to carry out regular checks and maintenance on the electrical and gas connections in accordance with all applicable standards (see Page. 61).



Risk of personal injury!

The gas mains must be blocked for all work on the gas-air heating unit!



Notice!

If it smells of gas:

- Do not use electrical equipment (e.g., mobile phone) that can generate sparks
- Open doors, gates and windows for the rapid ventilation of the area.
- Close the gas shut-off valves.
- Call specialists from a safe place.

6.1 Gas distribution

6.1.1 Gas mains

The installation and connection of the gas mains to the burner of the heating unit must take place according to the valid standards and the relevant building codes.

Standard connection gas burner = internal screw thread R 1/2". The connection of the burner to the gas mains is produced with an elastic heating gas hose with internal screw thread R 3/4" including reduction piece R 1/2" - R 3/4" (ZHG.0040 (length 0.4 m), ZHG.0070 (length 0.7 m) or ZHG.0010 (length 1 m)).

6.1.2 Gas distribution system



Notice!

An incorrectly designed gas distribution system and failure to maintain the required pressure differences at the unit burner inlet are the most common sources of failure.

When connecting the unit to the consumer gas line by means of a connection hose, the European standard DIN EN 1775 Ed.2 must be taken into account. A manual shut-off valve must be used in the consumer gas line upstream of each unit. This gas valve must be placed in such a way that it is accessible for operation without any restriction (height restriction, etc.) with the designation of the limit positions. When connecting more units to one consumption line, it is recommended to install a gas filter (with a filtering capacity of min. 20 µm) and a gas governor upstream of the shut-off valve. Especially when there are large distances between units or the gas mains is complicated, the regulators with filters are necessary for proper unit operation. The gas pressure regulator must be selected in such a way that the pressure at the burner inlet is ensured within the range specified in chapter 2.4 at the max. gas flow rate of 7 m³/h for the HG4# unit and 4 m³/h for the HG2# unit. The recommended connection diagrams for connecting the unit to the gas mains can be found at Fig. 6-1.



Danger of accident due to gas explosion!

The connection diagram contains no safety precautions. These must be ensured for the installation of the unit.

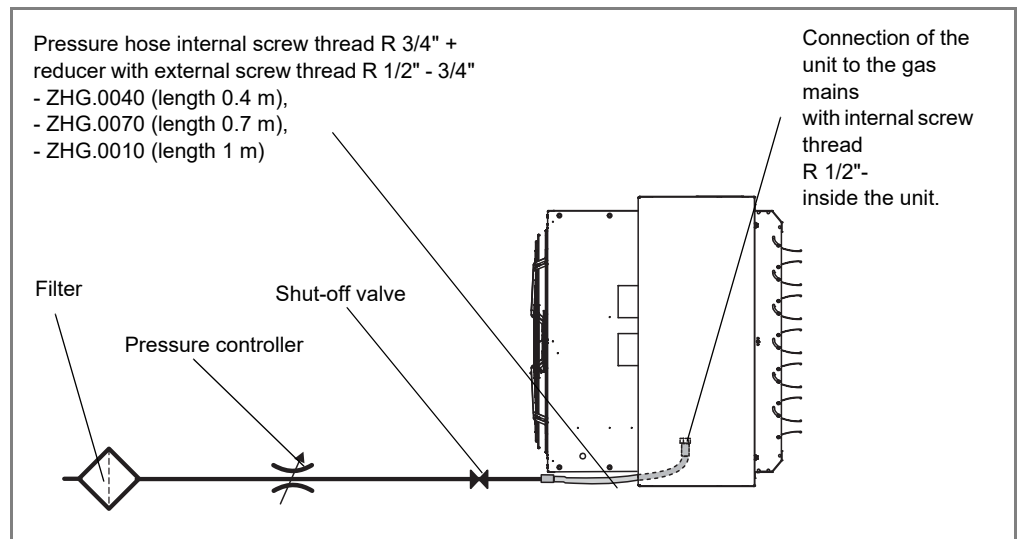


Fig. 6-1: Gas distribution

7 Commissioning



Danger of electrical current!

The air heater may only be electrically installed by skilled electricians trained for this task who observe all valid regulations.



Danger of hot surfaces!

The coil and the flue-gas venting reach very high temperatures during operation.



Danger of accident due to gas explosion!

Before all work at the gas air heaters, cut off the gas supply with the shut-off valve. Block the gas mains, since it otherwise can lead to a gas flow which can cause an explosion, fire etc.

The gas installation of the air heaters may only be carried out by trained skilled workers observing the valid regulations.



Notice!

Initial commissioning may only be carried out by qualified personnel who are familiar with the applicable standards and regulations and who are included in the list of authorized service companies (see Page 68).



Notice!

When commissioning MultiMAXX HG air-handling units, the safety regulations and standards and generally approved technical practice applicable in the respective countries must be observed.

7.1 Initial commissioning - information for service companies



Notice!

Before commissioning, an inspection according to all prevailing standards must be carried out.

Observe the provisions of this operation manual at all times during commissioning. The operator is obligated to conduct regular inspections and maintenance of the electrical and gas connections according to all the prevailing standards. (see Page 61).

7.1.1 Initial commissioning of the burner



Notice!

The burner feed connector is covered with adhesive tape with FläktGroup company logo. Before the first commissioning, check that the tape has not been damaged and that there has been no improper burner startup. Any defects (damage) must be noted immediately in the warranty certificate and the complaint report.

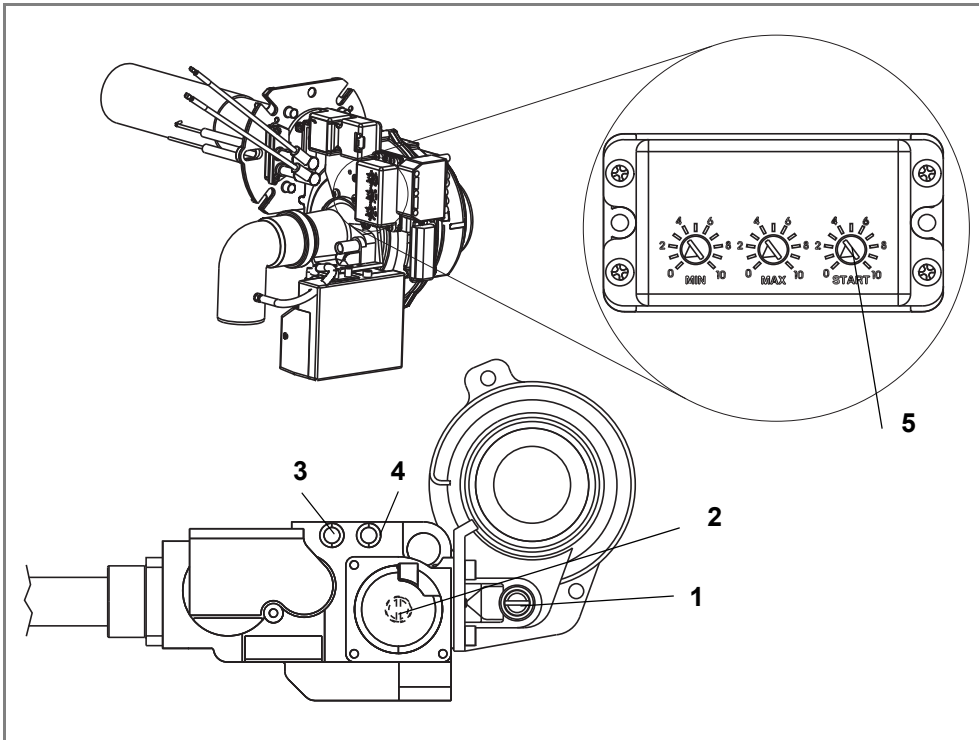
Before commissioning, check the following:

- The model of the gas mains has no visible defects and complies with the TPG 704 01 standard.
- The setting of the main control element in the main gas distribution corresponds to the value > 3 kPa, so that the operating pressure according to chapter 2.4 is secured on all units. If controllers are installed upstream of each unit, the gas pressure in the main distribution system shall not exceed the value permitted by the manufacturer of the controller.

- The setting of the main control element in the main gas distribution corresponds to the value > 3 kPa, so that the operating pressure according to chapter 2.4 is secured on all units. If controllers are installed upstream of each unit, the gas pressure in the main distribution system shall not exceed the value permitted by the manufacturer of the controller.
- Unit arrangement corresponds to these instructions (see chapter 4) and fuel used corresponds to the unit model local conditions of power supply or fusing (the details on the unit name plate must be taken into account).
- Electrical connection corresponds to the wiring diagrams (see Fig. 5-4 to Fig. 5-5)

The following settings on the burner must also be carried out:

- Start by adjusting the farthest unit in relation to the gas distribution.
- Open the manual shut-off valve located upstream of the unit.
- Vent the gas mains. For venting, do not open the screw on the socket P1 (see Fig. 7-1, Pos. 3)! There is a risk of contamination from the impurities created while mounting the gas mains.
- Check the connection of the unit to the gas mains for air tightness.
- Install a pressure gauge to check the gas pressure P1 at the inlet (see Fig. 7-1, Pos. 4).
- The gas pressure at the inlet P1 should be between 3 and 4 kPa for each unit at standstill. If this is not the case, you should consider increasing the pressure at the main pressure regulator.
- Connect the communication cable to the burner and with the use of service software track the burner status.
- Do not operate it directly through the "Test Mode". There is a risk of damage to the fan.
- Set the desired room temperature on the OSHG 0.EC0M (OSHG 0.000M) control panel and switch on the unit. The burner fan starts automatically. Once the gas mains is properly vented, the gas burner is lit. If there is no flame after the safety time has elapsed, the burner switches to lockout mode (the operating error ERR1 is displayed on the control panel OSHG 0.EC0M (OSHG 0.000M)).
- After startup of the burner, make sure that the unit fan has also started. The fan is in danger of being destroyed.
- Observe the gas pressure at the inlet (P1) when the burner is switched on. The gas pressure should have values in the range 2.5 - 3.5 kPa. If there are large pressure differences in individual units, it is necessary to increase the pressure in the gas mains and install a gas pressure regulator (see Fig. 6-1). Caution! If other units are switched on, the gas pressure can drop considerably! Use a gas analyzer to adjust the burner with regard to the existing installation and unit model (see chapter 7.1.2).



- Pos.1: Screw (V1) for changing the minimum gas flow rate of the burner
- Pos.2: Screw (V2) for changing the maximum gas flow rate of the burner
- Pos.3: Test point of the gas pressure in the inlet (P1)
- Pos.4: Test point of the gas pressure in the outlet (P2)
- Pos.5: Burner setting with the trimmer

Fig. 7-1: Gas burner

7.1.2 Burner settings



Notice!

The actual setting may only be carried out by specialized or authorized companies. Observe the provisions of this operation manual at all times during commissioning.

To ensure optimum control of the burner, a service program ESYS S4965 V 2208 with communication cable DI100001U and an waste gas analysis must be carried out.

Carry out the following inspection steps in this sequence (see Fig. 7-1, Pos. 5 and Tab. 7-2):

- Maximum power - MAX
- Minimum power - MIN

Adjustment of the burner exhaust/waste gas

Using an waste gas analyzer, measure the O_2 , CO_2 and CO values at the min. and max. thermal output in order to optimize the gas combustion. The correct oxygen value is 4-5.5%, the oxygen value must not exceed the value of 9.5%, the CO value must be 0%, the NO_x value must not exceed the value of 35 ppm or 70 mg/kWh exceed. The chimney draught should not exceed -15 Pa, the ionization current should be min. 27 μA at maximum power and 20 μA at minimum power.

First set the values for the **max. thermal output**. Set the correction of the values at the gas valves as follows:

- To increase the gas volume and decrease the oxygen (O_2): Turn screw V1 (see Fig. 7-1, Pos. 1) counterclockwise (unscrew).
- To reduce the gas volume and increase the oxygen (O_2): Turn screw V1 (see Fig. 7-1, Pos. 1) clockwise (screw in).

The settling time of the values after changing the setting is min. 10 minutes.

To set the max. heat output, switch the burner to **min. thermal output**. Set the correction of the values at the gas valves as follows:

- To increase the gas volume and decrease the oxygen (O_2): Turn screw V2 (see Fig. 7-1, Pos. 2) clockwise (screw in).
- To reduce the gas volume and increase the oxygen (O_2): Turn screw V2 (see Fig. 7-1, Pos. 2) counterclockwise (unscrew).

The V2 gas valve is covered with a metal cap! Only use a T40 bit to set the V2 valve. The screw is made of plastic and can be damaged if an unsuitable tool is used!

The settling time of the values after changing the setting is min. 10 minutes.

Set the unit power back to maximum and check the setting. Turning screw V1 also changes the min. capacity.

Repeat this procedure until the above values for max. and min. capacity are in tolerance. After completing the exhaust/waste gas adjustment, replace the screw cap. Enter the set and measured parameters in the tables in the warranty and claim form (see chapter 11.1). During the regular annual check of the burner, compare the newly determined values of the ionization current (e.g., the flue gas temperature or coil temperature) with the recorded values. If there has been a significant drop, dismantle the burner tip and check the burner inner screen for contamination.

Procedure for adjusting a severely misaligned burner

Use a caliper gauge to measure the screw depth of valves V1 and V2 (see Fig. 7-2). The screw depth should correspond to the values given in Tab. 7-1.

If this is not the case, adjust the valves to the correct position and try to start the burner. If the oxygen concentration is very low, the burner will produce a whistling sound.

| Unit type | Gas burner type | Valve screw depth [mm] | |
|-----------|-----------------|------------------------|-----|
| | | V1 | V2 |
| HG 24 | RX 35 | 14,5 | 7,1 |
| HG 25 | RX 35 | 14,5 | 7,1 |
| HG 44 | RX 70 | 9,8 | 7,9 |
| HG 45 | RX 70 | 9,4 | 7,2 |

Tab. 7-1: Depth of valve screws V1 and V2

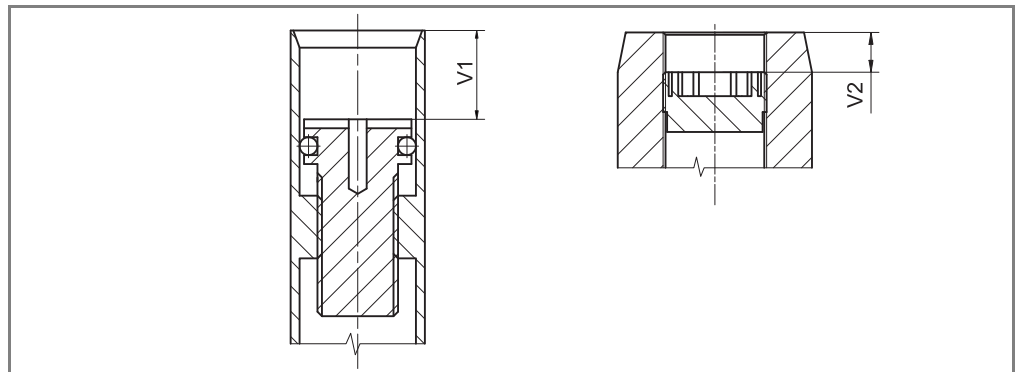


Fig. 7-2: Depth of valve screws V1 and V2

| Unit type | Gas burner type | Gas type | Trimmer | | Gas burner fan speed [m ⁻¹] | Burner efficiency [kW] |
|-----------|-----------------|----------|-------------|---------------------|---|------------------------|
| | | | Designation | Orientation setting | | |
| HG 24 | RX 35 | NG | MIN | 4 | 2600 | 15 |
| | | | MAX | 3,5 | 4250 | 25 |
| | | | START | 7 | 3600 | 20 |
| | | LPG* | MIN | 4,5 | 2400 | 15 |
| | | | MAX | 3,5 | 4000 | 25 |
| | | | START | 8 | 3400 | 20 |
| HG 25 | | NG | MIN | 5 | 3500 | 20 |
| | | | MAX | 5 | 5100 | 30 |
| | | | START | 6,5 | 4100 | 25 |
| | | LPG* | MIN | 5,5 | 3200 | 20 |
| | | | MAX | 4,5 | 4800 | 30 |
| | | | START | 6 | 4000 | 25 |
| HG 44 | RX 70 | NG | MIN | 4 | 2650 | 25 |
| | | | MAX | 5,5 | 4700 | 45 |
| | | | START | 7 | 4000 | 40 |
| | | LPG* | MIN | 3,5 | 2400 | 25 |
| | | | MAX | 5 | 4150 | 45 |
| | | | START | 6,5 | 3800 | 40 |
| HG 45 | | NG | MIN | 8 | 4150 | 40 |
| | | | MAX | 10 | 6600 | 60 |
| | | | START | 4 | 4600 | 45 |
| | | LPG* | MIN | 7,5 | 3650 | 40 |
| | | | MAX | 9,5 | 6150 | 60 |
| | | | START | 3,5 | 4300 | 45 |

Tab. 7-2: Setting the gas trim values (* reference gas G30)



Notice!

When commissioning units using propane as a heating medium, it is necessary, in the case of a new propane tank filled for the first time, to make a final adjustment to the optimum combustion mode after it has been completely emptied and refilled. The new tank is filled with nitrogen and it is necessary to process this mixed gas with a lower calorific value. Re-adjustment is also necessary when changing supplier from gas with a lower calorific value.



Notice!

If the unit is equipped with an air filter with differential pressure switch, it is necessary to set a correct pressure drop (see chapter 8.5) on this switch. Otherwise, the coil will overheat after filter contamination.

7.1.3 Principles of Multi Operation

The control system permits continuous control of the gas burner (from the available thermal output range together with 2-level fan). The actuator of the mixed-air module (Open/Close, continuous with poti or with spring return) always closes the outdoor-air supply when the unit is switched off. The fan of the unit and gas burner (200 s) continues to run on to discharge the hot exhaust/waste gas from the flue gas pipework. The run-on circuitry protects the coil against corrosion formation and simultaneously also against overheating.

Control of the thermal output (setting see chapter 7.1.4):

a) Room temperature control:

In our example, the desired room temperature is 21°C. If the temperature difference (setpoint temperature/actual temperature) T_p is -1°C (20°C), the thermal output is reduced to 50% of the set thermal output. Once the desired room temperature (21°C) has been reached, the gas burner heats to the minimum

thermal output. If the temperature difference (setpoint/actual temperature) is $T_p + 1^\circ\text{C}$ (22°C), then for the recirculating-air unit (HG##.U#####.###), the gas burner and fan of the unit is switched off; for the mixed-air unit (HG##.M#####.###) only the gas burner is switched off - the fan of the unit continues to run. From a temperature difference (setpoint temperature/actual temperature) of $T_p - 1.5^\circ\text{C}$ (19.5°C), the unit operates with the preset thermal output.

b) Supply-air temperature control:

The desired supply-air temperature is adjusted with this control. The thermal output of the unit is set according to the desired discharge temperature on the basis of the intake temperature.

7.1.4 Settings for Multi Operation

7.1.4.1 Setting the changeover switches in the Multi electric switch cabinet (HG ##.#####.M#)

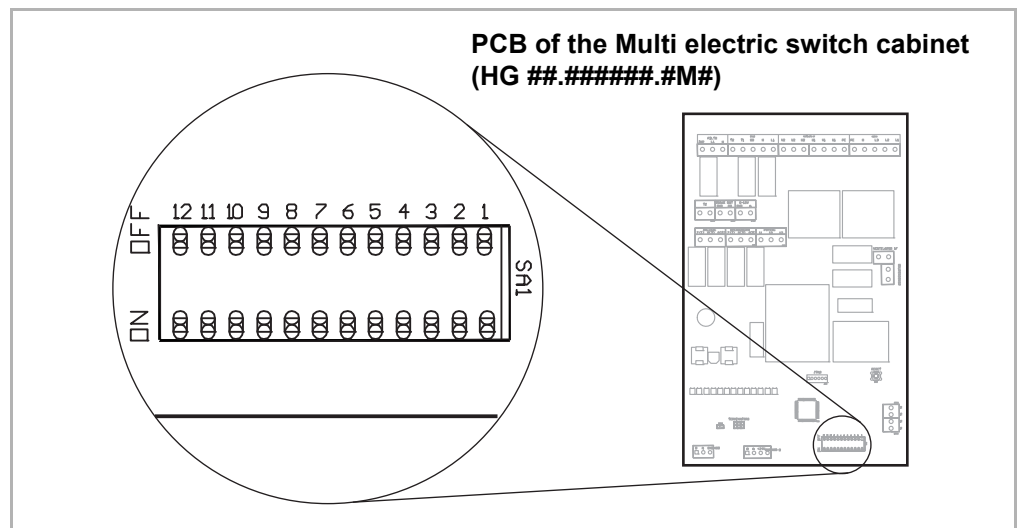


Fig. 7-2: Setting the changeover switch

| Changeover switch no. | Function | Changeover switch position | | | |
|--|----------------------------------|---|--|------------------------------------|-----------------|
| | | OFF (0) | ON (1) | | |
| 1 | Control of the thermal output | According to room temperature (HG##.###T##.###) | According to supply-air temperature (HG##.###P##.###) | | |
| 2 | Set temperature reached | Only the burner switches off | The burner and fan of the unit switch off | | |
| 3 | Actuator of the Mixed air module | Actuator 230 V, Open/Close (ZH#.2#02) | Actuator 230 V, Open/Close + potentiometer (ZH#.2#03) | | |
| | | Actuator 230 V, Open/Close + final position switch (ZH#.2#04) | Actuator 230 V, spring return (ZH#.2#05) + connection of terminals 10 and 11 | | |
| 4 | Motor type | AC motor | EC motor | | |
| Model size | | | | | |
| | | HG 24.#####.### | HG 25.#####.### | HG 44.#####.### | HG 45.#####.### |
| 5 | | OFF (0) | OFF (0) | ON (1) | ON (1) |
| 6 | | OFF (0) | ON (1) | OFF (0) | ON (1) |
| Unit fan type - for changeover switch no. 4 - OFF (0) | | | | | |
| | | HG ##.#####.R## | HG ##.#####.D## HG ##.#####.E## | HG ##.#####.A## HG ##.#####.B## | |
| 7 | | OFF (0) | OFF (0) | ON (1) | |
| 8 | | OFF (0) | ON (1) | OFF (0) | |
| Unit fan type - for changeover switch no. 4 - ON (1) | | | | | |
| | | HG ##.#####.Z## | | HG ##.#####.Y## | |
| 7 | | OFF (0) | | ON (1) | |
| 8 | | OFF (0) | | OFF (0) | |
| 9-12 | Unit addresses | see Tab. 7-4 | | | |

Tab. 7-3: Setting the changeover switch

**Notice!**

Depending on the type of unit or unit combination with accessories on the air side, it is required to set the changeover switches in the electric switch cabinet HG ##.#####.M# (Multi) accordingly (see Fig. 7-2 and Tab. 7-3).

Changeover switch no. 1

- OFF(0) - Room temperature control
- ON(1) - Supply-air temperature control (only for mixed-air units)

The switch position OFF means that the thermal output is controlled with a room air temperature sensor (internal or external – with logic as described in chapter 7.1.3) or with a room thermostat (the burner switches off after reaching the entered temperature).

The switch position ON means that the thermal output is based on an internal calculation of the desired (entered) supply-air temperature, air pressure drop, unit type and fan type (see below). The thermal output of the unit is adjusted depending on the difference between outdoor air/mixed air, measured in the fan chamber, and the desired supply-air temperature.

The thermal output is reduced with smaller temperature differences. The thermal output is increased with larger temperature differences. The unit heats until the intake temperature is not 5 K smaller than the desired supply-air temperature. Thereafter, the heater of the unit switches off, but the fan of the unit runs on.

Changeover switch no. 2

- ON(1) - the burner and fan of the unit switch off
- OFF(0) - only the burner switches off

ON means - after reaching the set temperature, the burner and the fan switch off.
OFF means - after reaching the set temperature only the burner is switched off, fan remains in operation.

The burner operates according to the functional principle set at changeover switch 1.

If the control is set:

- After the room temperature (OFF) - the burner switches off after reaching the temperature set on the room thermostat or after reaching the temperature +1°C (sensed by an internal or external room temperature sensor) - first the thermal output of the unit is reduced by the minimum set by the control.
- According to the supply-air temperature (ON) - the burner switches off when the temperature difference is less than 5°C (between the supply-air temperature and the set temperature).

A setting in the OFF position can also be required for the recirculating-air unit if the fan should be employed for continued air circulation.

Changeover switch no. 3

ON(1) - Control of the mixed air module by means of actuator ON/OFF (230 V) with feedback potentiometer (if necessary with spring return)

OFF(0) - control of the mixed air module with an actuator ON/OFF (230 V) (alt. ON/OFF (230 V) with end position switch.)

If the mixed air module is equipped with an actuator with spring return, the terminals 10 and 11 on the controller board (HG##.#####.#M#) must be coupled.

Changeover switch No. 4

ON(1) - EC motor ((HG ##.#####.Y##, HG ##.#####.Z##)
Incorrect setting may result in damage to the unit.

OFF(0) - AC motor

Changeover switch no. 5-6

Setting the unit size.

An incorrect setting can affect the safety functions of the unit. Incorrect setting may result in damage to the unit.

Changeover switch no. 7-8

The setting must match the controlled basic unit. The correct setting has significant influence on the automatic control of the thermal output according to the supply-air temperature (changeover switch no. 1 - ON). In the case of the HG44 unit with EC motor (changeover switch no. 4 and 5 - ON and no. 6 - OFF), an incorrect setting of changeover switch no. 7 can cause error message ERROR 2.

Changeover switch no. 9-12

Setting the unit addresses - ON(1), OFF(0)
see Tab. 7-4

| Unit number | Connection of the terminal pins and their combinations | | | |
|-------------|--|--------------------------|--------------------------|-------------------------|
| | Changeover switch no. 12 | Changeover switch no. 11 | Changeover switch no. 10 | Changeover switch no. 9 |
| 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 1 |
| 3 | 0 | 0 | 1 | 0 |
| 4 | 0 | 0 | 1 | 1 |
| 5 | 0 | 1 | 0 | 0 |
| 6 | 0 | 1 | 0 | 1 |
| 7 | 0 | 1 | 1 | 0 |
| 8 | 0 | 1 | 1 | 1 |
| 9 | 1 | 0 | 0 | 0 |
| 10 | 1 | 0 | 0 | 1 |

Tab. 7-4: Setting the unit addresses



Notice!

An address (Tab. 7-4) must be assigned to each control board located in the electric switch cabinet of the HG ##.#####.M# (control multi) unit by means of the changeover switches 9-12 (Fig. 7-2).

7.1.4.2 Jumpers for Multi Operation (HG ##.#####.M#)



Notice!

In the electrical switch cabinet (Multi Operation) of the last heater HG ##.#####.M# of a group, the three TERMINATOR terminals are to be coupled in each case (see Fig. 7-3). Do not make any other couples for any of the other units of the group. At the air heater HG ##.#####.M#, to which the control panel OSHG 0.EC0M (OSHG 0.000M) is connected, the terminal XC19 must be additionally coupled (see Fig. 7-3). Do not make any other couples for any of the other units of the group.

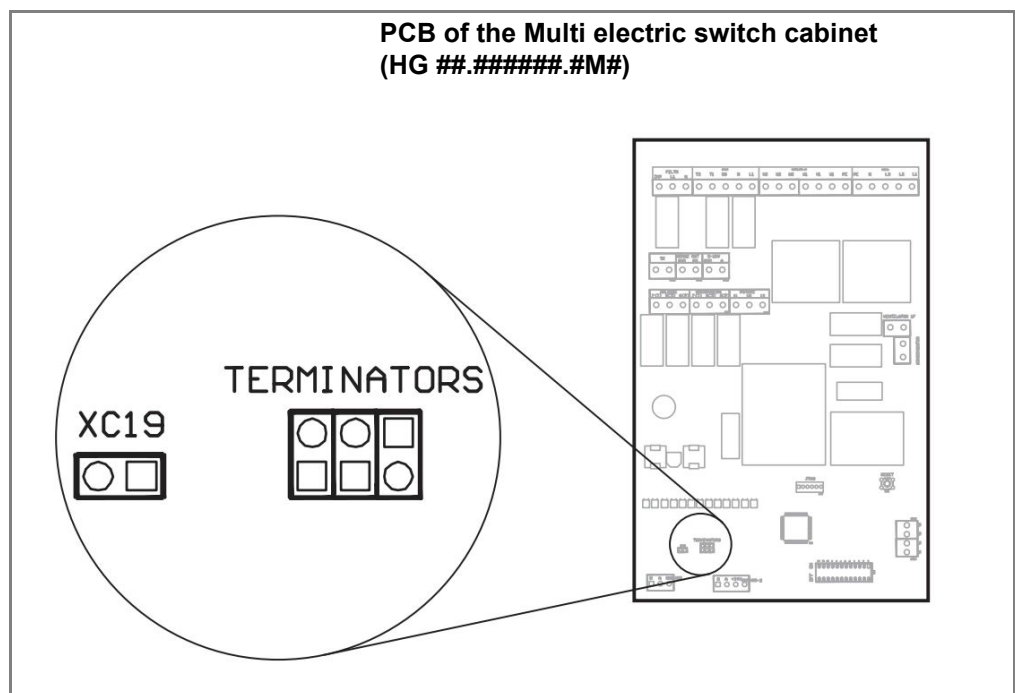


Fig. 7-3: Terminal position

7.1.4.3 Setting the air pressure drop (control according to supply-air temperature)

Control panel OSHG 0.EC0M (OSHG 0.000M) - Multi Operation (only for mixed-air units)

To set the pressure loss of the mixed air units, proceed as described in chapter 8.3 and Fig. 8-3 (Page 54).

The value of the pressure loss is set using the Tab. 7-5. Add the values of any additional accessories for the unit (on the intake or discharge side) to the values in the table. The total pressure drop must not exceed the maximum value given in the table. Exceeding the max. pressure drop leads to overloading the fan and to insufficient cooling of the coil. The setting must be carried out for both speed stages.

| Unit type | Speed | Pressure drop of the unit with accessories [Pa] | | |
|-----------------|-------|---|-------------------------------------|--------------------|
| | | Ceiling and wall version without filter | Ceiling and wall models with filter | Max. pressure loss |
| HG 24.#####.A## | 1 | 15 | 27 | 35 |
| | 2 | 25 | 40 | 56 |
| | 3 | 25 | 40 | 56 |
| HG 24.#####.D## | 1 | 5 | 9 | 11 |
| | 2 | 19 | 35 | 57 |
| | 3 | 19 | 35 | 57 |
| HG 24.#####.Y## | 1 | 31 | 56 | 84 |
| | 2 | 50 | 82 | 103 |
| | 3 | 70 | 118 | 142 |
| HG 25.#####.B## | 1 | 24 | 40 | 54 |
| | 2 | 45 | 80 | 122 |
| | 3 | 45 | 80 | 122 |
| HG 25.#####.E## | 1 | 10 | 15 | 21 |
| | 2 | 13 | 43 | 59 |
| | 3 | 13 | 43 | 59 |
| HG 44.#####.A## | 1 | 12 | 19 | 24 |
| | 2 | 24 | 36 | 50 |
| | 3 | 24 | 36 | 50 |
| HG 44.#####.Y## | 1 | 33 | 49 | 72 |
| | 2 | 38 | 57 | 86 |
| | 3 | 49 | 69 | 98 |
| HG 44.#####.Z## | 1 | 33 | 49 | 72 |
| | 2 | 38 | 57 | 86 |
| | 3 | 49 | 69 | 98 |
| HG 45.#####.B## | 1 | 21 | 40 | 44 |
| | 2 | 29 | 61 | 72 |
| | 3 | 36 | 82 | 99 |
| HG 45.#####.E## | 1 | 31 | 55 | 81 |
| | 2 | 55 | 110 | 179 |
| | 3 | 55 | 110 | 179 |
| HG 45.#####.R## | 1 | 31 | 55 | 81 |
| | 2 | 55 | 110 | 179 |
| | 3 | 55 | 110 | 179 |

Tab. 7-5: Accessories pressure drop

7.1.4.5 External control Multi Operation

The connection is carried out with a cable (6-wire shielded) for signaling faults and burner reset and a cable (2-wire shielded) for switching the units ON/OFF. First the desired temperature, fan speed, thermal output of the burner and if required the supply-air temperature control must be set in order to be able to activate the external control. After a waiting time of approx. 5 min. the data are stored in the control panel. In SETUP (chapter 8.2.2), the external control can subsequently be activated.

- The external control is connected to the terminals (GND + INP) (see Fig. 5-4 and Fig. 5-8). This allows the units to be switched ON and OFF. Coupling means: Switching the units on (24 V). The mode that was selected at least 5 minutes ago is always switched on.
- The alarm signal is tapped at the terminal strip (01 - 04 + GND), see Fig. 5-4 and Fig. 5-8).

If the output voltage drops to 0 V, this is an error:

- 01 - Burner error
- 02 - Fan TC error
- 03 - Coil sensor error
- 04 - Dirty filter
- 5 V - No current load possible (signal output resistance 10 k Ω)
- Connect a system with a large input resistance (min. 100 k Ω)

- c) The connection for the RESET of the burner is made at the terminal strip (GND + RS, see Fig. 5-4 and Fig. 5-8). Coupling means: RESET of the unit (24V).

7.1.5 Setting the remote control controller PCB OSHG 0.RDDO

7.1.5.1 Setting the changeover switches on the remote control controller PCB

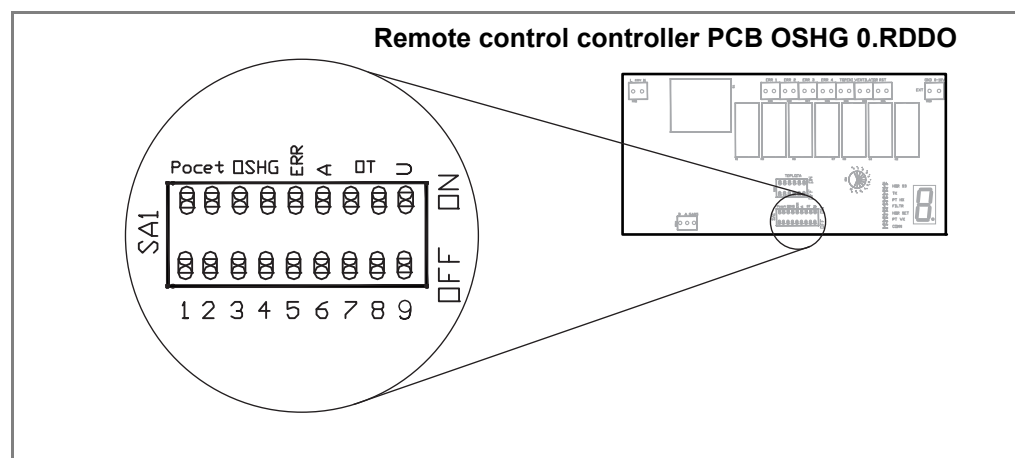


Fig. 7-4: Changeover switch setting



Notice!

Depending on the unit type used or the unit structure with accessories on the air side, the changeover switches on the remote control controller PCB OSHG 0.RDDO (Fig. 7-4) must always be set.

Changeover switches no. 1-4

Number - setting of unit addresses - ON(1), OFF(0)
see Tab. 7-6

Changeover switch no. 5

ERR - Switch over of alarm signals ERR1-4 from 4 relays
to 1 relay (OFF=4/ON=1)

Changeover switch no. 6

A

- Switch over of the burner efficiency on the trimmer (OFF) or
- Changeover switch of the burner efficiency on the terminals
for external control EXT (ON)

Changeover switches no. 7,8

OT - Switch over of the fan speed for the entire
unit section
(DIP 7 OFF = Speed 1/ON= Speed 2,
DIP 7 OFF, DIP 8 - ON= Speed 3 EC motor)

Changeover switch no. 9

U

In the OFF position, the affected unit number is displayed in the event of a fault

Number is displayed. In the ON position, the exact burner capacity value set with the trimmer is displayed.

| Unit number | Display in the event of a fault | Setting the changeover switches and their combination | | | |
|-------------|---------------------------------|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 1 | 0 | 1 | 0 | 0 | 0 |
| 2 | 1 | 0 | 1 | 0 | 0 |
| 3 | 2 | 1 | 1 | 0 | 0 |
| 4 | 3 | 0 | 0 | 1 | 0 |
| 5 | 4 | 1 | 0 | 1 | 0 |
| 6 | 5 | 0 | 1 | 1 | 0 |
| 7 | 6 | 1 | 1 | 1 | 0 |
| 8 | 7 | 0 | 0 | 0 | 1 |
| 9 | 8 | 1 | 0 | 0 | 1 |
| 10 | 9 | 0 | 1 | 0 | 1 |

Tab. 7-6: Setting the unit addresses

7.1.5.2 Setting the temperature switch on the remote control controller PCB

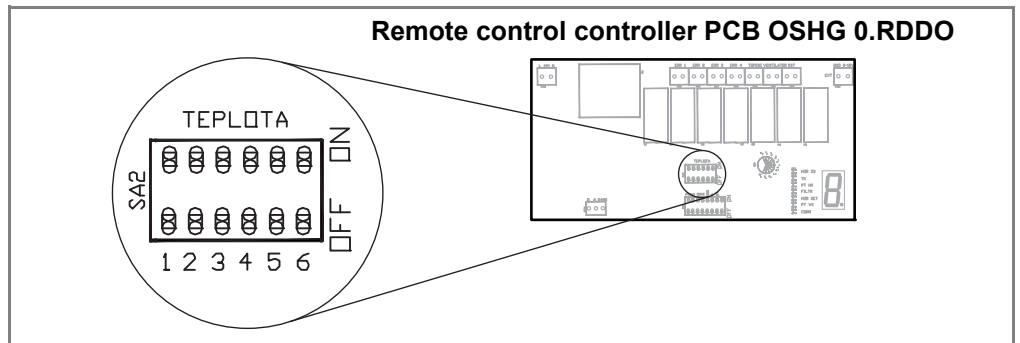


Fig. 7-5: Setting the temperature switch



Notice!

The setting is only made for the air outlet temperature (control according to the supply-air temperature). See Fig. 7-5 and Tab. 7-7.

| Air outlet temperature °C | Changeover switch setting | | | | | | Air outlet temperature °C | Changeover switch setting | | | | | | Air outlet temperature °C | Changeover switch setting | | | | | |
|---------------------------|---------------------------|---|---|---|---|---|---------------------------|---------------------------|---|---|---|---|---|---------------------------|---------------------------|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 1 | 0 | 1 | 1 | 0 | 51 | 1 | 0 | 1 | 1 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 1 | 30 | 0 | 1 | 0 | 1 | 1 | 1 | 52 | 1 | 0 | 1 | 1 | 0 | 1 |
| 9 | 0 | 0 | 0 | 0 | 1 | 0 | 31 | 0 | 1 | 1 | 0 | 0 | 0 | 53 | 1 | 0 | 1 | 1 | 1 | 0 |
| 10 | 0 | 0 | 0 | 0 | 1 | 1 | 32 | 0 | 1 | 1 | 0 | 0 | 1 | 54 | 1 | 0 | 1 | 1 | 1 | 1 |
| 11 | 0 | 0 | 0 | 1 | 0 | 0 | 33 | 0 | 1 | 1 | 0 | 1 | 0 | 55 | 1 | 1 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 1 | 0 | 1 | 34 | 0 | 1 | 1 | 0 | 1 | 1 | 56 | 1 | 1 | 0 | 0 | 0 | 1 |
| 13 | 0 | 0 | 0 | 1 | 1 | 0 | 35 | 0 | 1 | 1 | 1 | 0 | 0 | 57 | 1 | 1 | 0 | 0 | 1 | 0 |
| 14 | 0 | 0 | 0 | 1 | 1 | 1 | 36 | 0 | 1 | 1 | 1 | 0 | 1 | 58 | 1 | 1 | 0 | 0 | 1 | 1 |
| 15 | 0 | 0 | 1 | 0 | 0 | 0 | 37 | 0 | 1 | 1 | 1 | 1 | 0 | 59 | 1 | 1 | 0 | 1 | 0 | 0 |
| 16 | 0 | 0 | 1 | 0 | 0 | 1 | 38 | 0 | 1 | 1 | 1 | 1 | 1 | 60 | 1 | 1 | 0 | 1 | 0 | 1 |
| 17 | 0 | 0 | 1 | 0 | 1 | 0 | 39 | 1 | 0 | 0 | 0 | 0 | 0 | 61 | 1 | 1 | 0 | 1 | 1 | 0 |
| 18 | 0 | 0 | 1 | 0 | 1 | 1 | 40 | 1 | 0 | 0 | 0 | 0 | 1 | 62 | 1 | 1 | 0 | 1 | 1 | 1 |
| 19 | 0 | 0 | 1 | 1 | 0 | 0 | 41 | 1 | 0 | 0 | 0 | 1 | 0 | 63 | 1 | 1 | 1 | 0 | 0 | 0 |

Tab. 7-7: Temperature switch combinations

| Air outlet temperature °C | Changeover switch setting | | | | | | Air outlet temperature °C | Changeover switch setting | | | | | | Air outlet temperature °C | Changeover switch setting | | | | | |
|---------------------------|---------------------------|---|---|---|---|---|---------------------------|---------------------------|---|---|---|---|---|---------------------------|---------------------------|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 |
| 20 | 0 | 0 | 1 | 1 | 0 | 1 | 42 | 1 | 0 | 0 | 0 | 1 | 1 | 64 | 1 | 1 | 1 | 0 | 0 | 1 |
| 21 | 0 | 0 | 1 | 1 | 1 | 0 | 43 | 1 | 0 | 0 | 1 | 0 | 0 | 65 | 1 | 1 | 1 | 0 | 1 | 0 |
| 22 | 0 | 0 | 1 | 1 | 1 | 1 | 44 | 1 | 0 | 0 | 1 | 0 | 1 | 66 | 1 | 1 | 1 | 0 | 1 | 1 |
| 23 | 0 | 1 | 0 | 0 | 0 | 0 | 45 | 1 | 0 | 0 | 1 | 1 | 0 | 67 | 1 | 1 | 1 | 1 | 0 | 0 |
| 24 | 0 | 1 | 0 | 0 | 0 | 1 | 46 | 1 | 0 | 0 | 1 | 1 | 1 | 68 | 1 | 1 | 1 | 1 | 0 | 1 |
| 25 | 0 | 1 | 0 | 0 | 1 | 0 | 47 | 1 | 0 | 1 | 0 | 0 | 0 | 69 | 1 | 1 | 1 | 1 | 1 | 0 |
| 26 | 0 | 1 | 0 | 0 | 1 | 1 | 48 | 1 | 0 | 1 | 0 | 0 | 1 | 70 | 1 | 1 | 1 | 1 | 1 | 1 |
| 27 | 0 | 1 | 0 | 1 | 0 | 0 | 49 | 1 | 0 | 1 | 0 | 1 | 0 | | | | | | | |
| 28 | 0 | 1 | 0 | 1 | 0 | 1 | 50 | 1 | 0 | 1 | 0 | 1 | 1 | | | | | | | |

Tab. 7-7: Temperature switch combinations

7.1.5.3 Setting the burner output on the remote control controller PCB

The desired burner capacity is set by means of a trimmer for the whole section 0-10 (0-100%) (see Fig. 7-6).

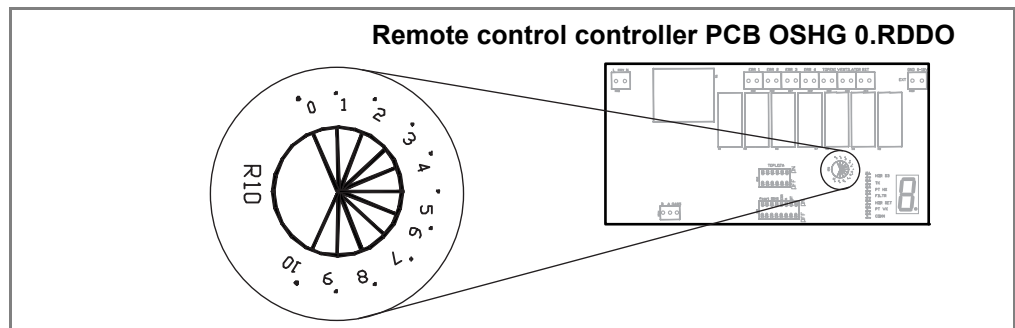


Fig. 7-6: Setting the burner output

7.1.5.4 Alarm signals on the remote control controller PCB

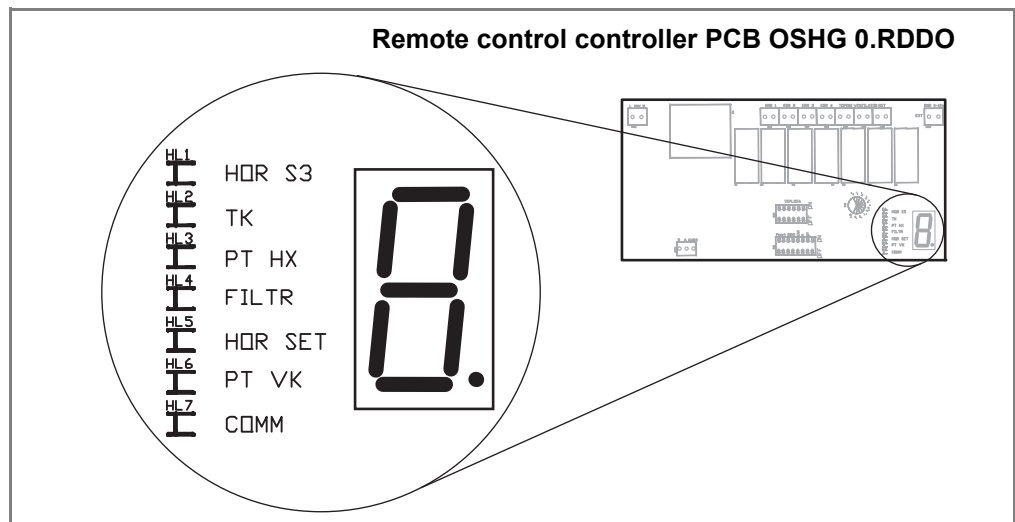


Fig. 7-7: Setting the temperature switches

If a fault occurs on the unit, the number of the affected unit is displayed. At the same time, a light-emitting diode (LED) begins to light up, indicating the type of fault (see Fig. 7-7 and Tab. 7-8).

If there is a fault on more than one unit, the number of the displayed unit is switched/changed within 2 s (for the units addressed as 1-9, the number 1-9 is displayed in sequence; for the unit with the address 10, the number 0 is displayed). At the same time, the corresponding faults for the displayed unit are signaled by the LEDs.

If there is no fault, the "-" sign is displayed.

| Light-emitting diode (LED) | Designation | Alarm signal |
|----------------------------|-------------|--|
| HL1 | HOR S3 | Burner |
| HL2 | TC | Fan thermal contacts |
| HL3 | PT HX | Coil temperature sensor |
| HL4 | FILTR | Dirty filter |
| HL5 | HOR SET | Incorrectly adjusted burner |
| HL6 | PT VK | Temperature sensor in the fan chamber (PT1000) |
| HL7 | COMM | There is no communication between the unit and the remote control controller PCB OSHG 0.RDDO |

Tab. 7-8: Alarm or error messages

Error contacts (NC/NO contacts 16 A/250 V/AC1)

| Error contacts | Contact status | Alarm signal |
|----------------|----------------------|---|
| ERR1 | Permanently unpacked | Burner S3 |
| | Changes regularly | Incorrectly adjusted burner |
| ERR2 | Permanently unpacked | Fan thermal contacts |
| | Changes regularly | Units do not communicate |
| ERR3 | Permanently unpacked | PT HX - Coil temperature sensor |
| | Changes regularly | PT VK - Temperature sensor in the fan chamber |
| ERR4 | Permanently unpacked | Dirty filter |

Tab. 7-9: Error contacts ERR1 and ERR4

8 Operation of the Gas Unit Heater

8.1 General operation

Before switching on the unit, please check the opening of the gas shut-off valve and control gear of the electric current supply.

First, the following parameters must be set on the OSHG 0.EC0M (OSHG 0.000M) control panel:

- Select the desired (setpoint) room temperature
- Turn on the burner
- Adjust the thermal output of the unit
- Set the fan speed (the thermal output, the setpoint temperature and the fan speeds can be changed as desired during operation).

After the unit is switched off, the parameters set within the last 5 min. are stored. When switching on again, these parameters are selected as the start settings. If a power outage occurs within 5 min. after setting the parameters, the parameters must be reset once again at restart.

The unit can only be employed for ventilation, without inclusion of the burner. This function can be selected by pressing the Ventilate function in the menu of the OSHG 0.EC0M (OSHG 0.000M) control panel.

8.2 Operation and adjustment of the units by means of the control panel OSHG 0.EC0M (OSHG 0.000M)

Unit group control system. Via the OSHG 0.EC0M (OSHG 0.000M) control panel a maximum of 10 heating units can be controlled. (see Fig. 8-1)



Notice!

For fast, simultaneous switch-on/switch-off of all connected units, press the ENTER key for 5 seconds.

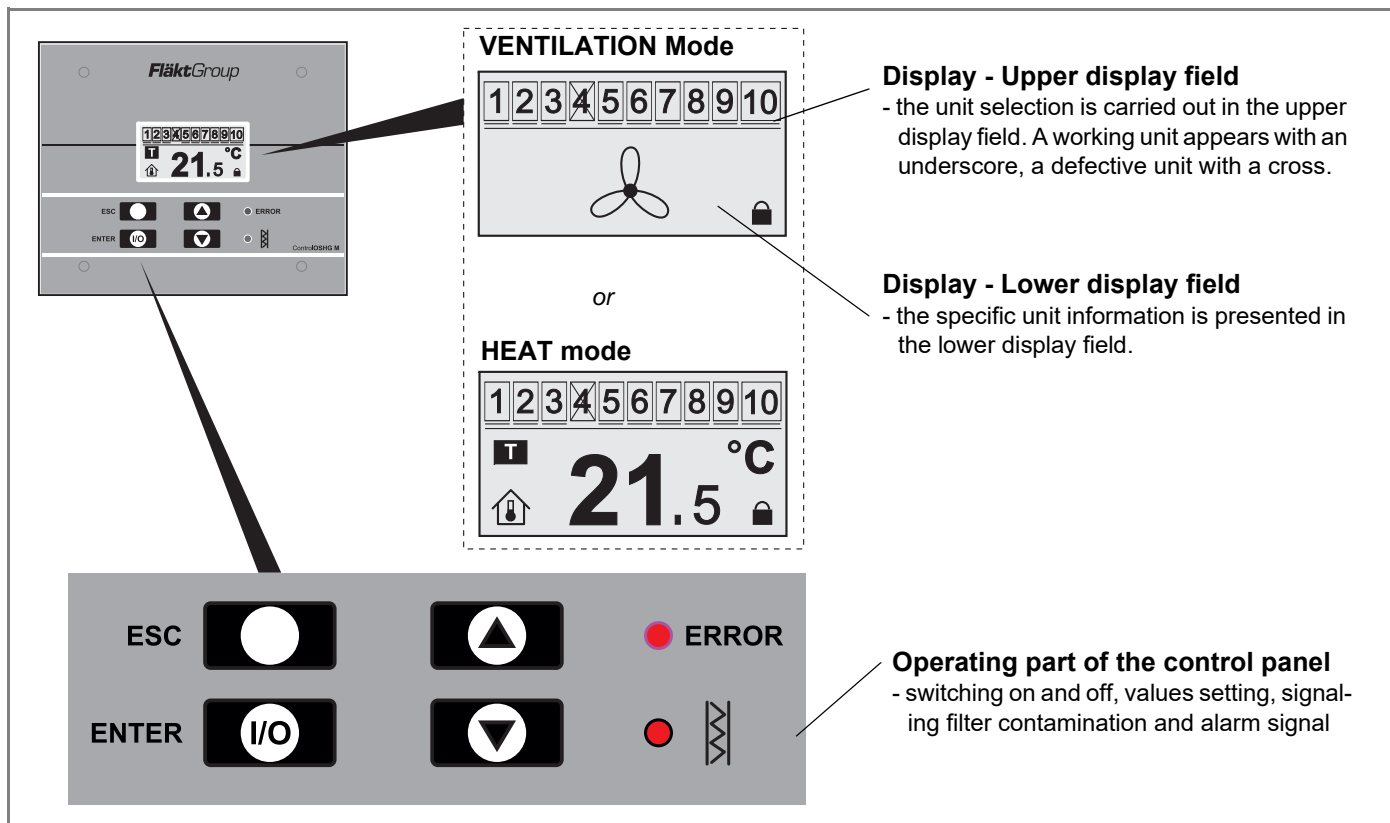









Fig. 8-1: Control panel OSHG 0.EC0M (OSHG 0.000M)

Operating part of the control panel

| Key (Symbol) | Function |
|--|--|
| ENTER  | After pressing the ENTER key for longer than 5 sec, the complete group of units is switched on or off. At the same time, this key is used to confirm selected menu items. |
| ESC  | The ESC key serves to conclude a menu selection or to return to the previous menu. After pressing the key for longer than 5 sec, the main menu appears. |
|   | The setting buttons (Up - Down) are used to set the values within the menu, i.e., e.g., setting the number of units, the desired temperature, thermal output, selection of a unit, setting the outdoor-air rate, position of the sec. louvre, etc. |
|  ERROR | Signaling a fault. The fault is also shown on the display. |
|   | Signaling the filter contamination. |

8.2.1 SETUP menu



Notice!

In order to open or close the SETUP menu, press the keys ESC and UP for at least 5 sec.

Representation of the SETUP MENU for the OSHG 0.000M control panel (see Fig. 8-2)

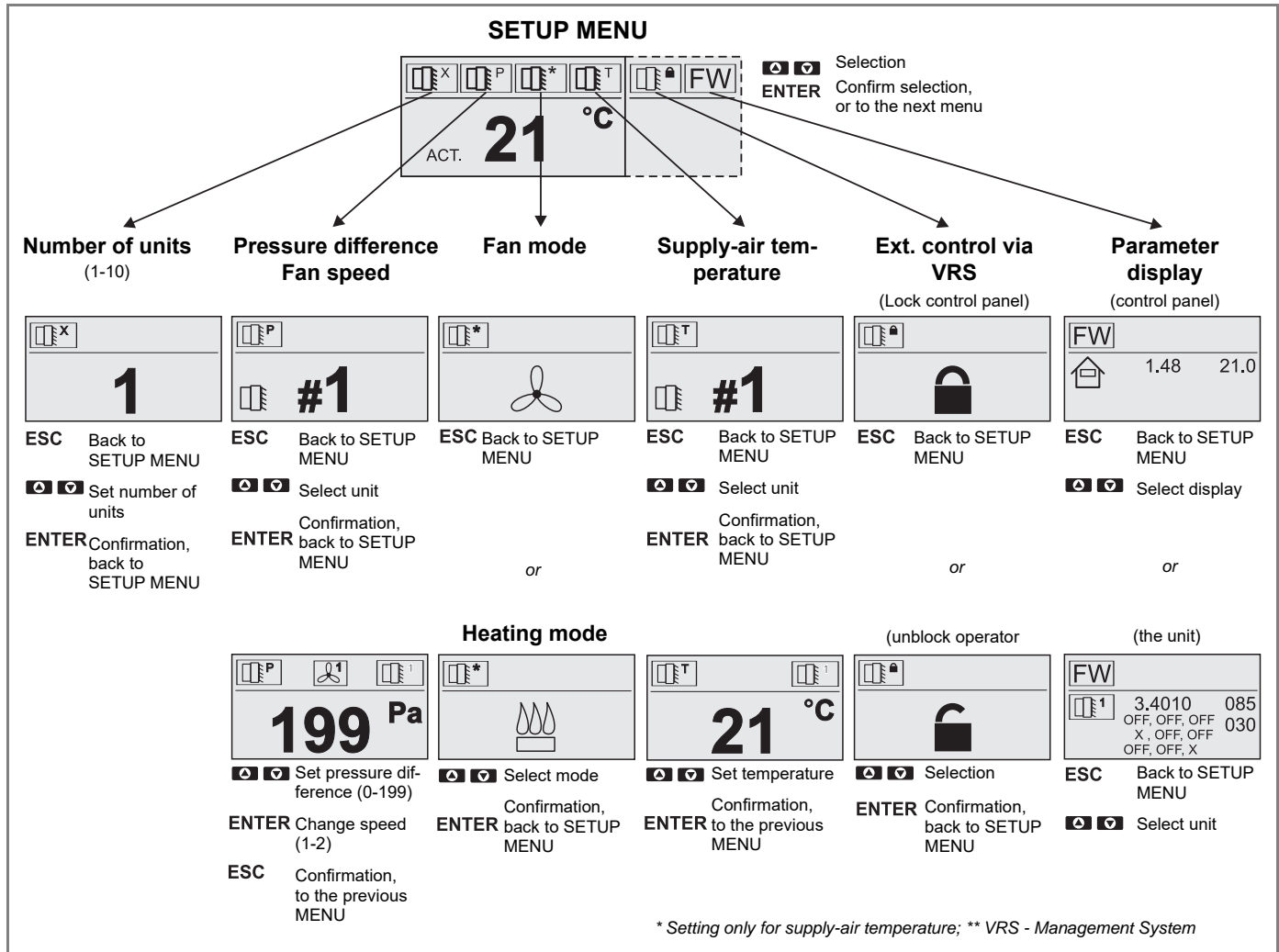
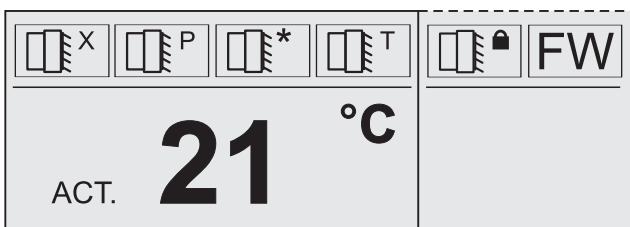


Fig. 8-2: Display of the SETUP MENU



SETUP MENU - adjustment of the control group

Before commissioning, check the following settings:

- Number of units in a control group,
- Pressure drop depending on the fan speed (only for supply-air temperature control)
- Heating or ventilating mode
- Supply-air temperature (only for supply-air temperature control)
- Keys lock for control via external signal

Select the individual control parameters by using the setting keys (Up - Down), confirm with the ENTER key, return to previous menu with ESC.

The current room temperature is displayed in the lower display of the MENU.

| Symbol | MENU | MENU display on the control panel | Setting options |
|--------|--|-----------------------------------|---|
| | Number of units | | 1 to 10 Number of units in one control group |
| | Pressure drop (only for supply-air temperature control) (only for mixed air units with supply-air temperature control) | | #1 to #10 Number of the unit for which the pressure loss is set. |
| | | | Fan speed 1 |
| | | | Fan speed 2 |
| | | | Fan speed 3 |
| | | 0 to 199 | Pressure loss range |
| | Mode | | Heating mode |
| | | | Ventilation mode |
| | Supply-air temperature (only for supply-air temperature control) | | #1 to #10 Number of the unit for which the supply-air temperature is set. |
| | | | 0 to 70 Supply-air temperature Number of the selected unit. If the difference between the set and supply-air temperature is less than 5°C, the burner switches off. |
| | Key lock for control via external signal | | Keys locked, control via external signal |
| | | | Keys are unlocked. Operation via the control panel |

| Symbol | MENU | MENU display on the control panel | Setting options | |
|--------|---|-----------------------------------|-----------------|--|
| FW | Display of the control panel parameters | | | Information about the control panel |
| | | | 1.48 | FW model of the control panel |
| | | | 21.0 | Room temperature measured by the PT1000 control panel sensor (when an external thermostat is used, the "EX" sign is displayed; in the fault case, a dash "-" is displayed) |
| | Display of the unit parameters | | | Information about the unit, the number of the last selected unit. |
| | | | 6.4047 | FW model of the control board Multi |
| | | | 085 | Coil temperature (T6); a dash "-" is displayed in the fault case |
| | | | 030 | Temperature in the fan chamber (T8); in the fault case, a dash "-" is displayed |
| | | | ON, OFF, X | Setting of the changeover switches ON=1, OFF=0, X=not occupied |

8.2.2 Heating menu

Display of the Heating MENU on the OSHG 0.EC0M (OSHG 0.000M) control panel (see Fig. 8-3)

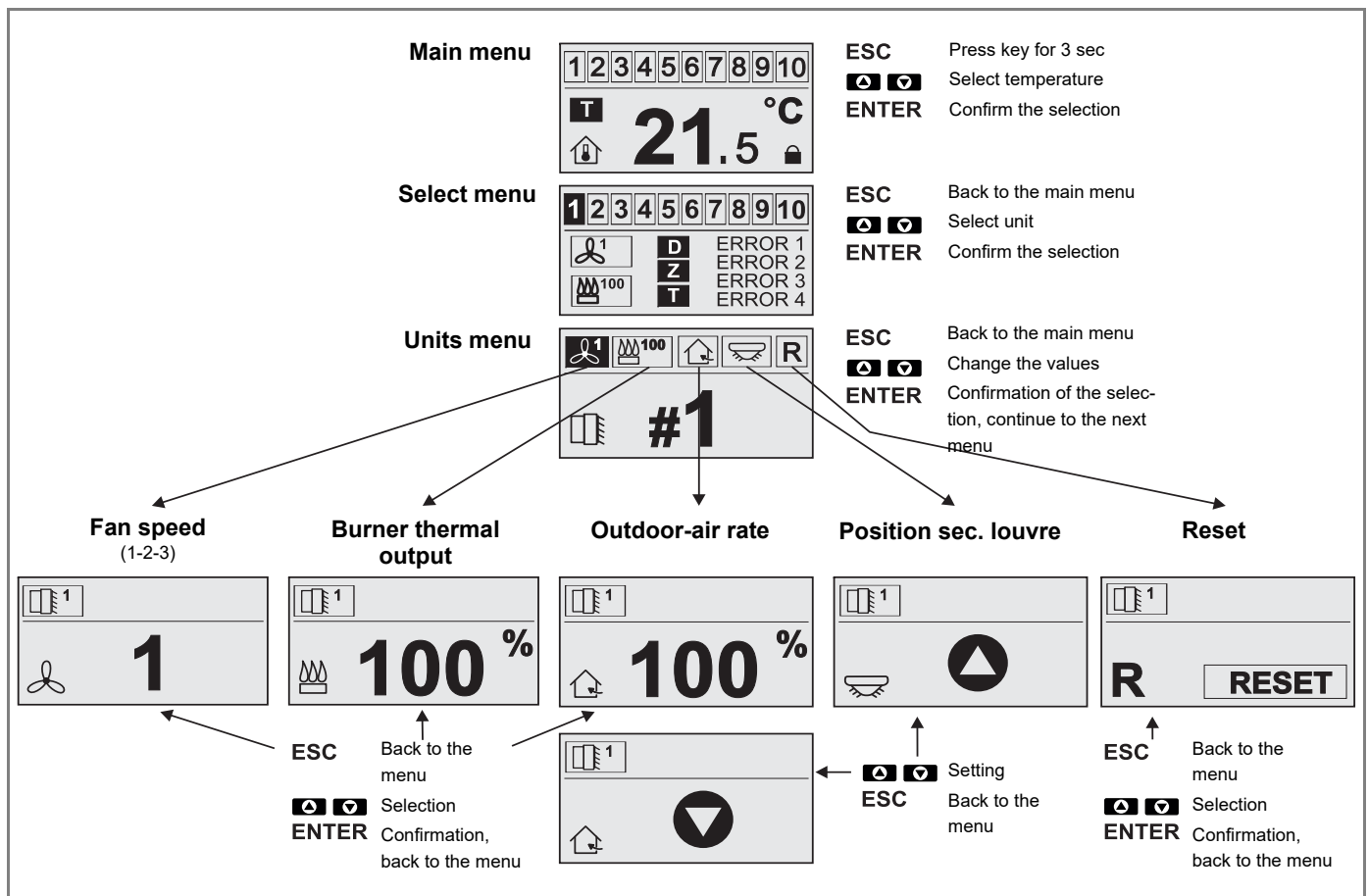
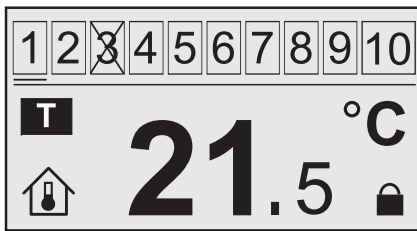


Fig. 8-3: Display of the Heating MENU

8.2.2.1 Main menu

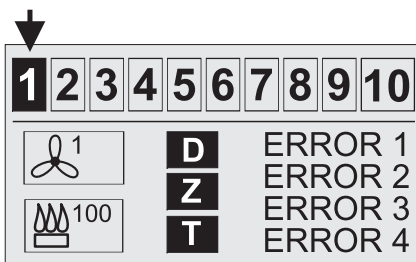
In the main menu, the desired temperature is adjusted in steps of 0.5 K.



| Symbol | Function |
|------------|--|
| | In order to cancel the key lock, press the ESC key longer than 3 sec. |
| T | The set temperature has been achieved up to +1 K. (The unit is controlled by an external or internal room temperature sensor and heats with reduced capacity.) |
| <u>1</u> | The specified unit functions faultlessly. |
| | A fault has occurred at the specified unit or no data connection is available. |
| EXT | External thermostat connected (temperature display is replaced by EXT). |
| | Room temperature control |

8.2.2.2 Unit selection menu

The operating and fault states of the units are recorded in the Unit selection menu. After selecting the unit, the Unit menu can be reached by pressing the ENTER key. Return with the ESC key.



| Symbol | Function |
|----------------------------|--|
| | Operation with fan speed 1 |
| | Operation with fan speed 2 |
| | Operation with fan speed 3 |
| | The set thermal output of the unit in the range 0 to 100% in 10% steps |
| | Display of the current thermal output from 0 to 100% in 10% steps |
| | Incorrectly adjusted range of the gas burner Overheating or undercooling of the coil occurred |
| R or D | The unit is in start-up mode (the fan of the unit waits until the coil is heated up) The unit is in run-on mode (fan of the unit runs until the coil has cooled down) |
| S or Z | The unit operates with reduced thermal output (protection of the coil against overheating) The unit is running with increased thermal output (protecting the coil against condensation) |
| T | The set temperature has been achieved up to +1 K. (The unit is controlled by an external or internal room temperature sensor and heats with reduced capacity.) |
| ERROR 1 | Alarm signal of the gas burner |
| ERROR 2 | Alarm signal of the thermal contact |
| ERROR 3 | Alarm signal of the coil temperature sensor |
| ERROR 4 | Filter is dirty |
| ERROR 5 | Alarm signal of the room temperature sensor |
| ERROR 6 | Alarm signal T8 of the fan chamber temperature sensor |

8.2.2.3 Unit menu (and other submenus)


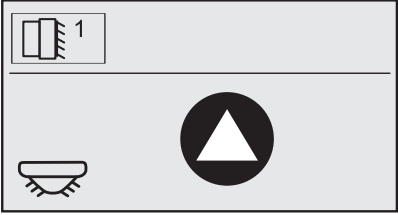



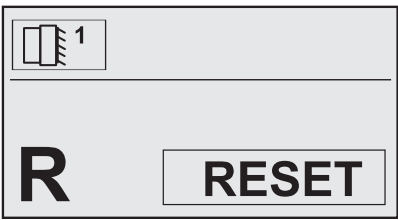

The submenu is selected in the Unit menu with the setting keys. The ENTER key confirms the action and enters into the submenu. The entered values in the submenus are confirmed with the ENTER key.

Return with the ESC key.



| Symbol | Function |
|-----------|-----------------------------|
| #1 to #10 | Number of the selected unit |

| Symbol | MENU | MENU display on the control panel | Setting options |
|--------|------------------------------|---|--|
| | Setting the fan speeds | | 1 Fan speed 1 |
| | | | 2 Fan speed 2 |
| | | | 3 Fan speed 3 |
| | Setting the thermal output | | The thermal output can be set from 0 to 100% in 10% steps. (0% is the min. thermal output of the unit, 100% is the max. thermal output of the unit) In the case of supply-air temperature control, the symbol A is displayed, the calculation of the corresponding thermal output is carried out automatically. |
| | Setting the outdoor-air rate | | Setting of the outdoor-air rate from 0 to 100% in 10% steps. (0% recirculation only, 100% outdoor air only) |
| | | | Increase of the outdoor-air rate. Function for actuator without feedback potentiometer |
| | | Decrease of the outdoor-air rate. Function of the actuator without feedback potentiometer | |

| Symbol | MENU | MENU display on the control panel | Setting options |
|---|--|---|--|
|  | Adjust the air outlet angle |  | <div style="display: flex; flex-direction: column; gap: 10px;"> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">Increase the air outlet angle</div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">Decrease the air outlet angle</div> </div> </div> |
|  | Unit RESET |  | <div style="display: flex; flex-direction: column; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">RESET</div> <div style="margin-left: 10px;">RESET of the selected unit</div> <div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">ESC</div> <div style="margin-left: 10px;">ESC Return to previous MENU</div> </div> |
|  | This symbol shows the number of the currently selected unit (can be between 1 and 10). | | |

8.2.3 Ventilation mode

Display of the Ventilation MENU on the OSHG 0.000M control panel (see Fig. 8-4)

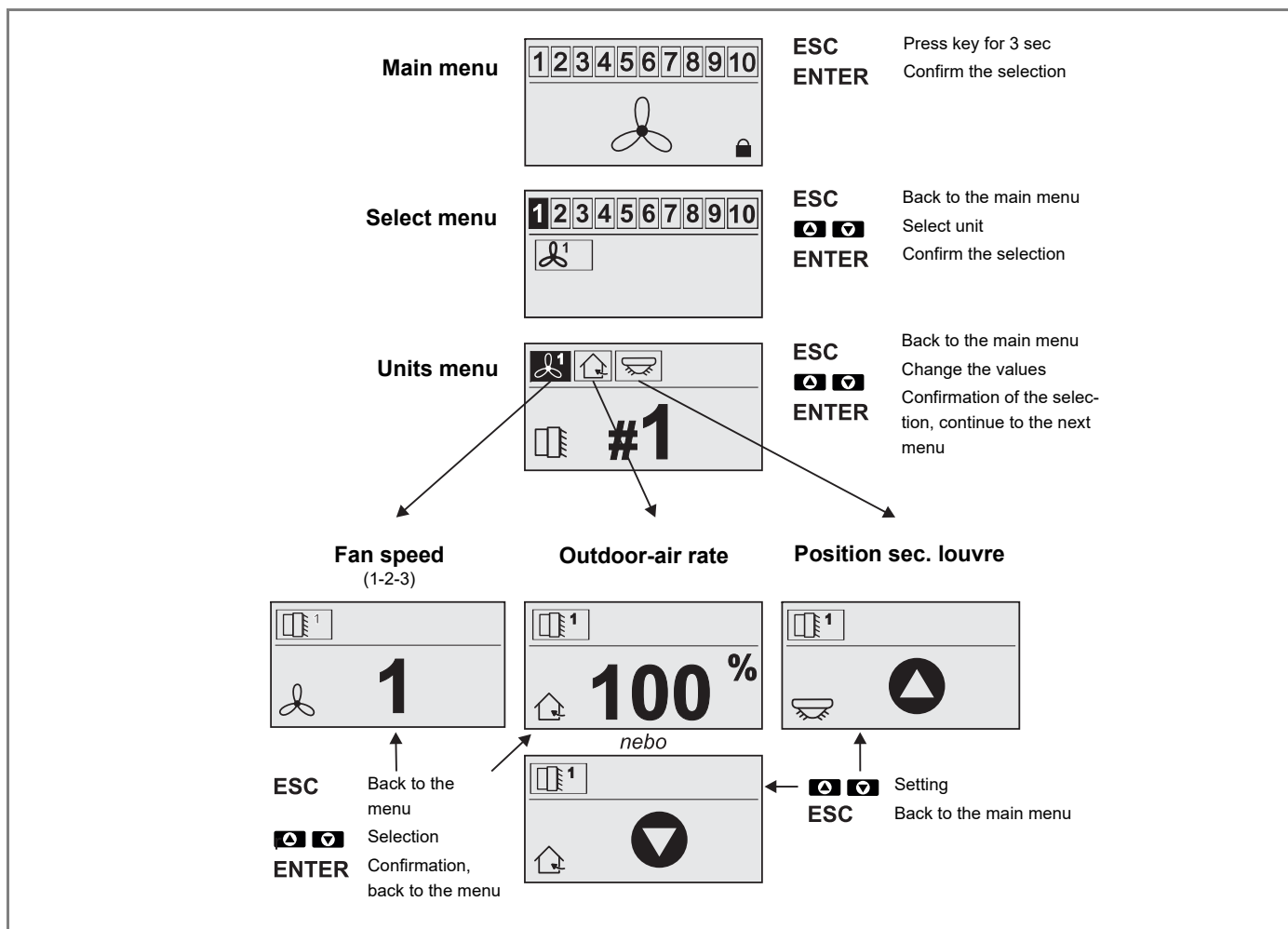
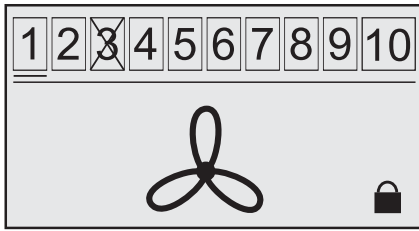


Fig. 8-4: Display of the Ventilation MENU

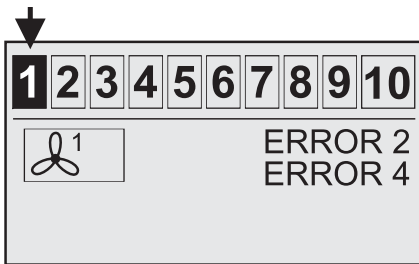
8.2.3.1 Main menu



| Symbol | Function |
|--------|--|
| | In order to cancel the key lock, press the ESC key longer than 3 sec. |
| | The specified unit operates without interference |
| | A fault has occurred on the specified unit or no data connection is available. |
| | Ventilate mode |

8.2.3.2 Unit selection menu

In the Unit selection menu, the operating state of the selected unit can be queried. After pressing the ENTER key, you reach the Unit selection menu. After selecting the unit, the Unit menu can be reached by pressing the ENTER key. Return with the ESC key.



| Symbol | Function |
|---------|-------------------------------------|
| | Fan switched off |
| | Operation with fan speed 1 |
| | Operation with fan speed 2 |
| | Operation with fan speed 3 |
| ERROR 2 | Alarm signal of the thermal contact |
| ERROR 4 | Filter is dirty |

8.2.4 Unit menu (and other submenus)

A submenu can be selected with the setting keys. The selected submenu is opened by pressing the ENTER key. The entered values in the submenus are confirmed with the ENTER key.

Return with the ESC key.



| Symbol | Function |
|------------------|-----------------------------|
| #1 to #10 | Number of the selected unit |

| Symbol | MENU | MENU display on the control panel | Setting options | |
|--------|--|-----------------------------------|---|----------------------------------|
| | Setting the fan speeds | | 0 | Fan switched off |
| | | | 1 | Fan speed 1 |
| | | | 2 | Fan speed 2 |
| | | | 3 | Fan speed 3 |
| | Setting the outdoor-air rate | | Adjustment of the outdoor-air rate from 0 to 100% in steps of 10% steps. (0% recirculating air, 100% outdoor air) | |
| | | | | Increase of the outdoor-air rate |
| | | | | Decrease of the outdoor-air rate |
| | Adjust the air outlet angle | | | Increase the air outlet angle |
| | | | | Decrease the air outlet angle |
| | This symbol shows the number of the currently selected unit (can be between 1 and 10). | | | |

8.3 Adjustment of the mixed-air module

The mixed-air module is controlled via the display of the OSHG 0.EC0M (OSHG 0.000M) control panel from 0% to 100% or ON/OFF.



Notice!

The running time of the actuator is approx. 90 sec.

8.4 Adjustment of the secondary-air louvre

The secondary-air louvre optimizes the introduction of supply air into the room. An optimal discharge angle for the secondary louvre is set with the control system. The occupied zone can be heated without air draught. Simultaneously, thermal stratification is minimized.

Adjustment of the secondary-air louvre

- Fig. 8-3 Manual setting
- The actuator is brought into the desired position via the display on the control panel OSHG 0.000M (OSHG 0.EC0M).

The actuator with potentiometer can be used to control the secondary air louvre (only in the case that no mixed air chamber is built on the unit or the control is performed outside the Multi control).

The actuator with a final position switch can be used, for example, to control other systems once a certain mixed air ratio has been reached. The final position switch can be set such that the switch switches after a certain (preset) actuator position has been reached, thus giving a command to start other equipment.

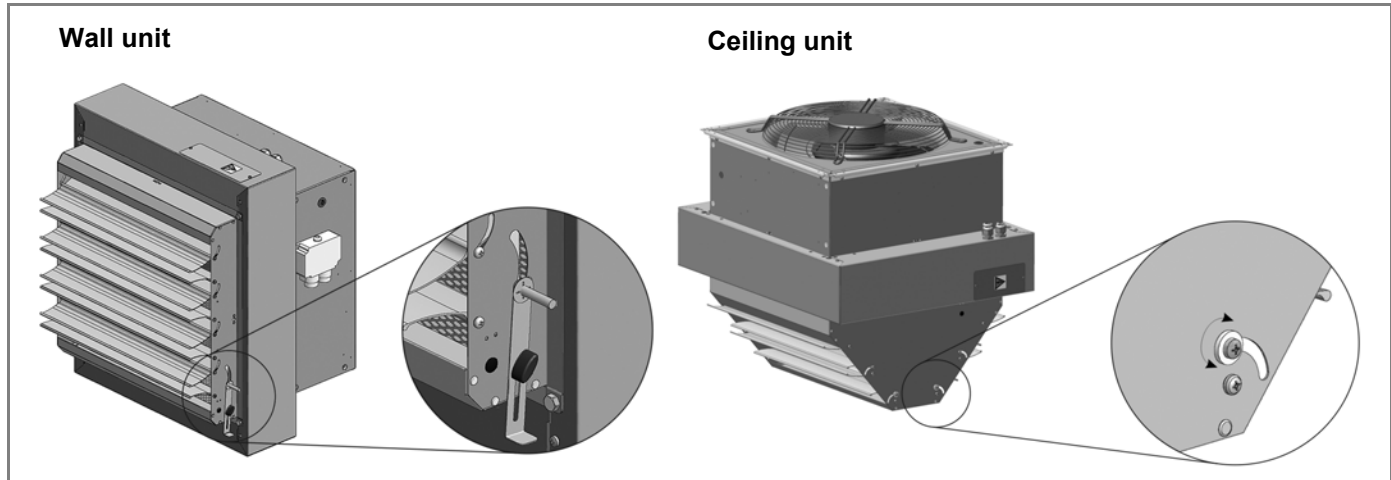


Fig. 8-3: Manual adjustment of the secondary-air louvre

8.5 Differential pressure switch

If the system is equipped with a differential pressure switch, a message is displayed on the OSHG 0.EC0M (OSHG 0.000M) control panel when the preset value is reached, i.e., the filter must be replaced.

If no error was found on the unit, a pause sign "-" is displayed.

| Unit type | The pressure loss [Pa] set at the differential pressure switch |
|---|--|
| HG 24.#####.A## HG 24.#####.D## | 220 |
| HG 24.#####.Y## | 180 |
| HG 25.#####.B## HG 25.#####.E## | 220 |
| HG 44.#####.A## | 220 |
| HG 44.#####.Y## HG 44.#####.Z## | 180 |
| HG 45.#####.B## HG 45.#####.E## HG 45.#####.R## | 220 |

Tab. 8-1: Max. pressure drop of the filter inserts

8.6 Decommissioning

The unit is decommissioned on the control panel OSHG 0.000M (OSHG 0.EC0M) by pressing the I/O key (ENTER) for at least 5 s.

The gas shut-off valve must be closed manually.

9 Maintenance

9.1 Maintenance



Notice!

It is recommended to conclude a contract with one of the authorized service companies.



Danger of electrical current!

Power down air-handling unit and secure against unintentional subsequent switch-on.



Risk of rotating unit components!

Rotating fan impellers pose a risk and may cause injury! Before performing any work on the unit, ensure that the unit is disconnected and powered down. Ensure that the unit is insulated and secured against being switched on at an appropriate point of the on-site power supply.

Wait for the fan rotational momentum to cease!



Danger of accident due to gas explosion!

Shut off the gas mains, otherwise gas leaks may occur. Explosions and fire can occur through escaped gas.



Danger of damage due to static discharge!

When connecting and/or adjusting MultiMAXX HG air-handling units, be sure to discharge any static electricity before touching the PCB and electrical components.



Danger of hot surfaces!

Wait until the coil and the air-handling unit cool down!



Notice!

Observe regular intervals for inspection and repair for the maintenance of air-handling units. Maintenance may only be carried by qualified specialists, after the gas mains have been blocked.

List of regular maintenance work

The following maintenance tasks must be performed at the indicated time intervals.

| Components | Interval of the maintenance work | | |
|--|----------------------------------|---------------|----------|
| | Quarterly | Semi-annually | Annually |
| Check the filter (if present) | x | | |
| Check the air-intake grille * | | x | |
| Check the diffuser * | | x | |
| Check the fan or fan chamber * | | x | |
| Inspect the coil (authorized company) * | | x | |
| Burner control (authorized company) * | | x | |
| Check the exhaust/waste gas setting (authorized company) | | | x |
| Check the electrical connections (authorized personnel) | | | x |
| Check the gas mains for tightness, connections and accessory items | | | x |
| * If required, clean and remove foreign objects | | | |

Tab. 9-1: Overview of maintenance work

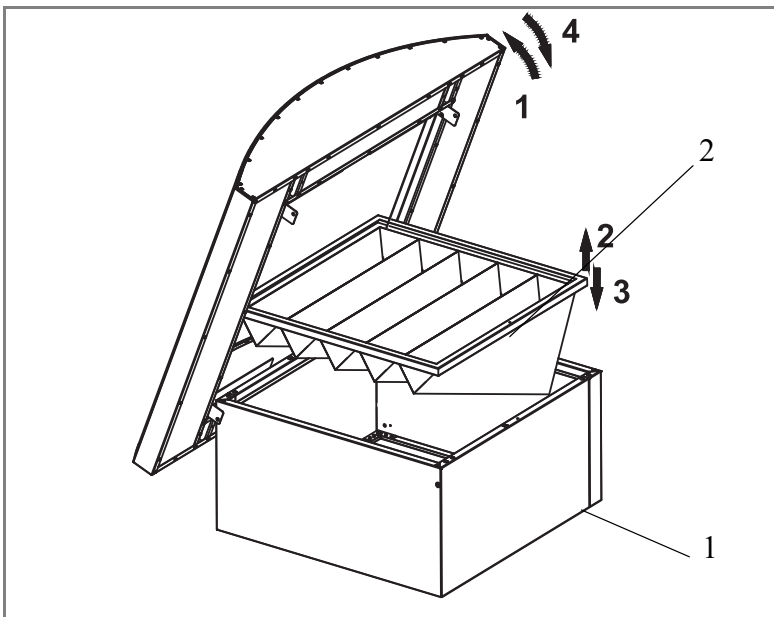
9.2 Quarterly maintenance

9.2.1 Replacing filter

If an air-handling unit is fitted with a filter module, the filter insert must be checked for clean condition. If there is a maximum pressure drop as defined by the project, the filter insert must be replaced.

If the air-handling unit is fitted with a filter module and differential pressure switch, the project-defined value must be set. The differential pressure switch is not adjusted by the manufacturer. If the pressure loss reaches the set value, filter monitoring is activated at the OSHG 0.000M (OSHG 0.EC0M). The filter insert should be exchanged.

To order the spare filter, please use the type code on page 3.

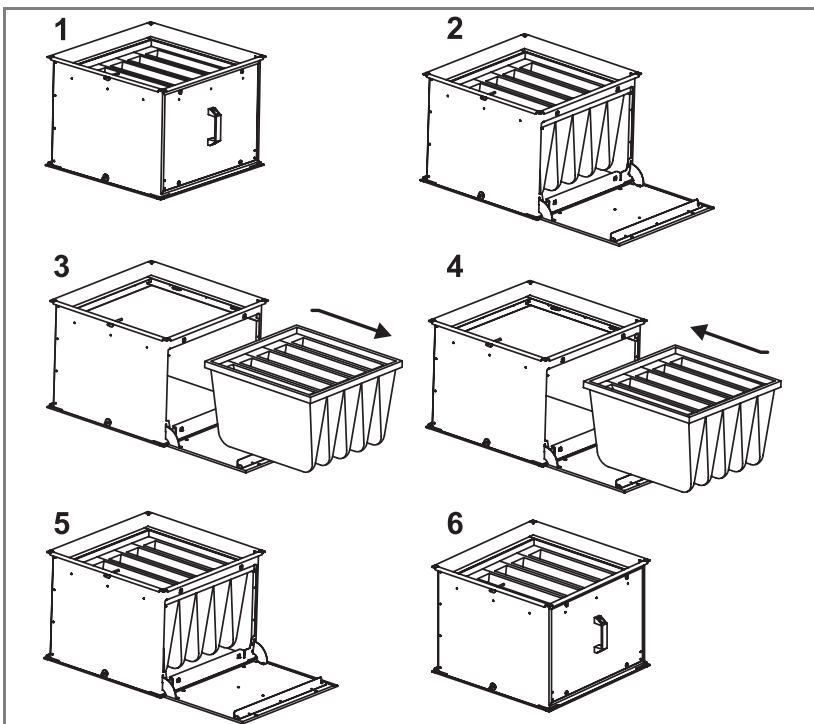


Pos. 1: Roof hood intake side
Pos. 2: Bag filter G2, G4 or F7

Remove the lateral screws (screws with a plastic cap) and open the upper part of the roof hood.

Remove the filter insert and replace it. Close the roof hood and tighten the screws.

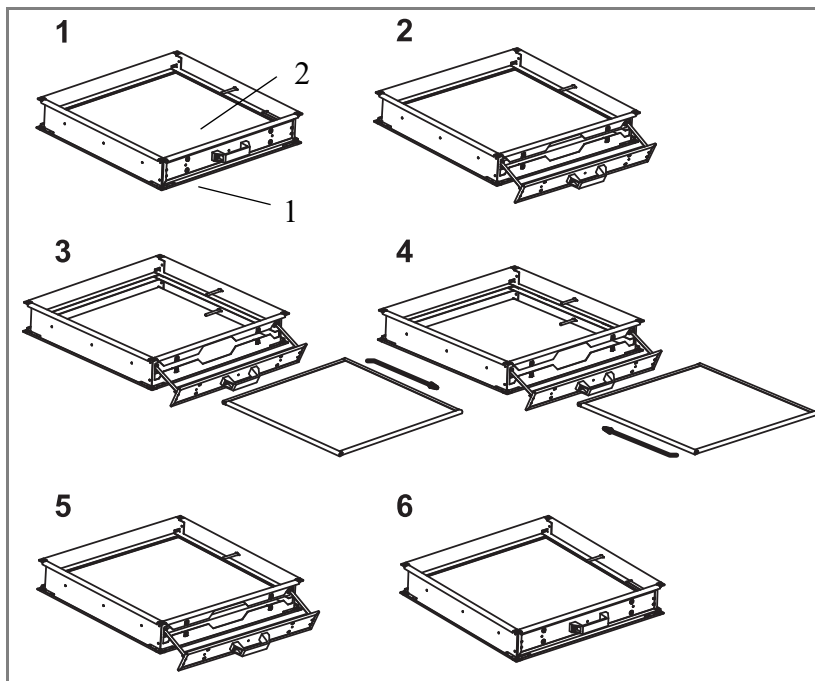
Fig. 9-1: Filter replacement in the roof hood ZH#.35##



Pos. 1: Roof hood intake side
Pos. 2: Bag filter G2, G4 or F7

Unlock the side panel of the filter section (1) by slightly turning quick-action clamps by 90°, open the panel and remove and replace the filter insert (2). After inserting the bag filter insert, close the side part of the filter chamber and secure it by turning the quick-release lock by 90°.

Fig. 9-2: Replacing the bag filter insert in the ZH#.36## bag filter



Pos. 1: Filter chamber
Pos. 2: Mat filter G2, G3 or G4

Unlock the side panel of the filter section (1) by slightly turning quick-action clamps by 90° and remove the filter. Pull out the mat filter insert and replace it (2).

Slide the new mat filter element into the filter chamber, close the filter side panel and secure it by turning the quick-release locks 90°.

Fig. 9-3: Replacing the bag filter insert in the bag filter ZH#.370#

9.3 Semi-annual maintenance

9.3.1 Check the fan

Part of the equipment check is the functional check of the fan. The fan must run freely and demonstrate uniform clearance to the air-intake nozzle.

9.3.2 Check suction environment

The inspection consists of a visual check of the suction environment; especially the awning, weather protection louvre and roof hood. The contamination must be removed if necessary, e.g., with compressed air or water flow.

9.3.3 Check outlet louvre

The inspection consists of a visual check of contamination, which is to be removed if necessary. Dirty louvre blades can be cleaned with compressed air. Do not damage other parts of the unit during cleaning.

9.3.4 Check unit burner

The gas burner check consists of a visual inspection of the burner and its surroundings. Furthermore, it is necessary to check the air tightness, unobstructed discharge of the exhaust/waste gases and the air intake for the burner. Pollution must be removed. Furthermore, it is necessary to check the coil temperature in the Setup menu (see chapter 8.2.1) at the unit switch. The coil temperature is not updated after entering the Setup menu. To perform the update, you must exit the menu and return to it. The coil temperature must not drop below 60°C (in all heating modes except startup and run-on). It is important to record and store (archive) this value. If the coil temperature value differs significantly from the last measured value, check the burner exhaust/waste gases.

9.3.5 Check coil

Any contaminations of the coil must be removed. The contaminated coil can be cleaned with compressed air. No other parts may be damaged during cleaning.

**Unit damage!**

When cleaning with a water jet, do not direct it at the fan motor, burner or other electrical parts; if necessary, remove the fan motor and burner (qualified personnel only).

9.4 Annual maintenance

9.4.1 Check exhaust/waste gas setting

The inspection may only be carried out by an authorized company. The inspection consists of checking the fuel inlet pressure and adjusting the burner exhaust/waste gases. The procedure and the setting values can be found in chapter 7. These values must be compared with the values measured during the previous check or during the first adjustment. If a low exhaust/waste gas and coil temperature or a low ionization flow is detected, dismantle and clean the burner inner screen or the entire exhaust gas and fresh air supply pipe. Furthermore, the status of the burner electrodes must be checked. No visible occupancy may appear here. Enter the setting values in the table in chapter 11 and keep them for the next inspection.

9.4.2 Check electrical connections

Check that no changes have been made to the connections and that the electrical installation complies with chapter 5.

9.4.3 Check gas mains, connections and accessories for leaks


The gas mains must comply with standard TPG 704 01. The leak test must be carried out with the aid of a gas detector. Any leaks must be repaired immediately. Or rather, the unit must be put out of operation with immediate effect.

9.4.4 Check exhaust/waste gas paths

Check the chimney pipe for air tightness and free passage. The chimney system must comply with the parameters given in chapter 4.6.

9.5 Breakdowns

| Symptom | Possible cause | Troubleshooting |
|--|---|--|
| Fan does not work Valve gate switch is switched on. On the OSHC 0.000M control panel, the unit number is not underlined but crossed out. | Unit not switched on | Switch on unit |
| | No mains voltage | Check fuse/circuit breaker/power supply (technical personnel only) |
| | Electric lines not connected | Connecting the electrical cables (qualified personnel only) |
| | Defective unit fuse | Replace fuses (technical personnel only) |
| Fan fails to start The fan switch is on. ERROR 2 - Display on the control panel OSHC 0.000M | The fan protection has reacted | Check the motor temperature and let it cool down if required. Switch it on again *(in case of repeatedly switching off, try to determine the cause) |
| The burner is not in operation (a unit number is not signed on the OSHC 0.000M control panel) - ERROR 3 | Overheating fuse on the coil has tripped. | Operate the manual fuse (Service required) |
| | The phase is present at the terminal box on P1, but not on L1. | Operate the manual fuse (Service required) |
| Fan of the unit is running, but conveys little air. | Air flow interrupted or restricted, Filter dirty. | Ensure free air passage |
| | Wrong rotation direction of fan | Check the electrical connection (qualified personnel only) |
| Unit too noisy | Air intake or discharge areas blocked | Clear diffuser/air intake of obstructions or bends Constrictions and bends |
| | Noisy fan bearings | Replace defective fan (technical personnel only) |
| | Filter is dirty | Replace filter |
| Unit does not heat/heats insufficiently | Fan fails to start | See above |
| | Airflow rate of unit too low | Check air flow paths |
| | Air intake or exhaust area obstructed | Clear or clean air flow paths |
| | Fan blocked/defective | Check fan, replace if necessary (technical personnel only) |
| | Filter is dirty | Exchange filter |
| | No electrical voltage or defect | Check fuse/circuit breaker/power supply (technical personnel only) |
| | Setpoint temperature at the room thermostat is set too low | Adjust higher setpoint temperature at the controller |
| | Switchgear/thermostat or sensor located above a heat source or exposed to direct sunlight | Place switchgear/thermostat room thermostat at a suitable location (qualified personnel only) |
| Unit indicates alarm signal ERROR 1 - Display on the control panel OSHC 0.000M | Insufficient pressure in the gas mains | Open the shut-off valve of the gas mains |
| | Damaged gas distribution - gas release | Close the gas mains. Contact the authorized Service |
| | Electrical voltage is defect | Check fuse/circuit breaker/power supply (technical personnel only) |

| Symptom | Possible cause | Troubleshooting |
|---|--|---|
| Jednotka je v poruchovém stavu  - zobrazení na ovládacím panelu OSHG 0.EC0M (OSHG 0.000M) | Nízká teplota výměníku. Zanesené vnitřní sítko hořáku, nebo špatně nastavený výkon hořáku. | Prověřte teplotu výměníku při hoření na plný výkon. Pokud je teplota výměníku pod 60°C, zkontrolujte ionizační proud hořáku, otáčky ventilátoru hořáku, obsah spalin ve výfukových plynech a vyčistěte vnitřní sítko hořáku. (pouze kvalifikovaný personál) |
| | Vysoká teplota výměníku. Zanesený filtr nebo špatně nastavený výkon hořáku. | Prověřte teplotu výměníku při hoření na plný výkon. Pokud je teplota výměníku vysoká (závisí na typu a velikosti jednotky), zkontrolujte filtr jednotky, nebo nastavení hořáku. (pouze kvalifikovaný personál) |

* Reconnection after elimination of the fault.



Notice!

If the fault cannot be rectified by the maintenance personnel, please request our authorized service.

10 Disassembly and Disposal



Environmental damage!

Disassembly and disposal of the unit may only be carried out by qualified personnel!

10.1 Dismantling

To dismantle the gas-air heating unit, proceed as follows:



Danger of electrical current!

Power down air-handling unit and secure against unintentional subsequent switch-on.



Danger of accident due to gas explosion!

Shut off the gas mains, otherwise gas leaks may occur. Explosions and fire can occur through escaped gas.



Danger of hot surfaces!

Wait until the coil and the air-handling unit cool down!



Risk of rotating unit components!

Wait for the fan rotational momentum to cease!



Risk of personal injury!

Secure the unit against slipping. The unit is ready for transport.

10.2 Recycling



Recycling!

The disposal of MultiMAXX HG units or individual components must be carried out by an authorized appointed contractor with the necessary expertise. The appointed contractor must ensure that:

- the components are separated according to material types
- the used operating materials are sorted and separated according to their respective properties.



Environmental damage!

Depending on the material type, dispose of all components and operating supply materials in an environmentally-friendly manner in accordance with local codes, practices, and relevant regulations.

11 Warranty Conditions

- The manufacturer is liable for the quality and any possible defects of the gas heating unit within the warranty period, whose term begins on the day the gas heating unit is taken over by the customer, or from the day of commissioning. Commissioning must be requested at the latest 3 weeks after the unit has been taken over by the customer.
- The gas heating unit must be put into operation by a company specified in the directory of service organizations, or a company which demonstrably has a contract with one of these organizations to set up/commission heating units and has provided assurance of their subsequent warrantable repairs. The costs of the commissioning are covered by the purchaser. The company which performs the commissioning of the gas heating unit must ensure repairs within the guarantee period.
- The purchaser asserts to the seller his or her rights concerning the liability for defects and, after commissioning of the gas heating unit, to the company which has carried out the commissioning and has confirmed this on the warranty certificate.
- The warranty period is always extended by the time period from the assertion of claims for the right of elimination of defects until the time of their elimination, possibly up to the time when the purchaser was obligated to accept the repaired unit.
- The indispensable condition for the warranty is the proper completion of the warranty certificate (page 61) together with a report of the installation of the unit by the authorized company which put the unit into operation.
- The costs associated with dispatching a repair mechanic in cases where no breakdowns have been determined which relate to warrantable repair, or a breakdown which was not caused by the unit, are charged to the expense of the party who asserted this claim.

11.1 Authorized service companies for warranty and repairs in Germany

Warranty and repair service for MultiMAXX HG gas heater units must be performed by the same company that performed the installation.

11.2 Warranty certificate

| Warranty period 24 months | |
|--|-----------------------|
| Product: MultiMAXX HG Type: | Manufacturing number: |
| Burner: Type: | Manufacturing number: |
| The manufacturer guarantees that the unit was inspected and that this model conforms to all valid standards. | |
| <i>Stamp and signature</i> | |
| The unit was installed by: | |
| <i>Date, stamp of the company and signature</i> | |
| The commissioning and warranty work of the unit was/is ensured by | |
| <i>Date, stamp of the company and signature</i> | |

For service requirements, the manufacturer (together with the order or complaint report) requires a copy of the completed warranty certificate (type and identification number of the MultiMAXX HG unit and the burner).

EC DECLARATION OF CONFORMITY

pursuant to Directive 2006/42/EC of the European Parliament and of the Council
(original EC Declaration of Conformity) 2020/062/5AB16354

Manufacturer:

FläktGroup Czech Republic a.s., Slovanská 781, 463 12 Liberec XXV – Vesec, Czech Republic;
ID No.: 46708375

Entity authorized to compile technical documentation:

FläktGroup Czech Republic a.s., Slovanská 781, 463 12 Liberec XXV – Vesec, Czech Republic;
ID No.: 46708375

Description and identification of machinery:

Gas heating units
SAHARA[®] MAXX / MultiMAXX[®]
Type designation
HG24.#####.###
HG25.#####.###
HG44.#####.###
HG45.#####.###

The gas heating units SAHARA[®] MAXX / MultiMAXX[®] type HG serve for the heating, ventilation or filtering of indoor or outdoor air. They are installed in industrial, warehouse, retail and exhibition premises.

Declaration:

The machinery complies with all relevant provisions of Directives 2006/42/EC, 2014/30/EU and 2014/35/EU.

List of harmonized standards applied in the conformity assessment:

EN ISO 14120:2015, EN ISO 13857:2019, EN ISO 12100:2010, EN ISO 11202:2010, EN ISO 3746:2010,
EN 60335-1:2012, EN 60335-2-102:2016, EN 62233:2008, EN 61000-6-2:2005

List of other technical standards and regulations:

EN 60335-2-102:2007, EN 62233:2008, EN 55014-2:1998

This declaration relates exclusively to the machinery in the state in which it was placed on the market and excludes components which are added and/or operations carried out subsequently by the final user.

Issued at Liberec: 01.05.2020

Name, title: Ing. Eduard Hrobal', chairman of the board



Signed

EXCELLENCE *IN SOLUTIONS*

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

PRODUCT FUNCTIONS BY FLÄKTGROUP

Air Treatment | Air Movement | Air Diffusion | Air Distribution | Air Filtration
Air Management | Air Conditioning & Heating | Controls | Service

» Learn more on www.flaktgroup.com
or contact one of our office