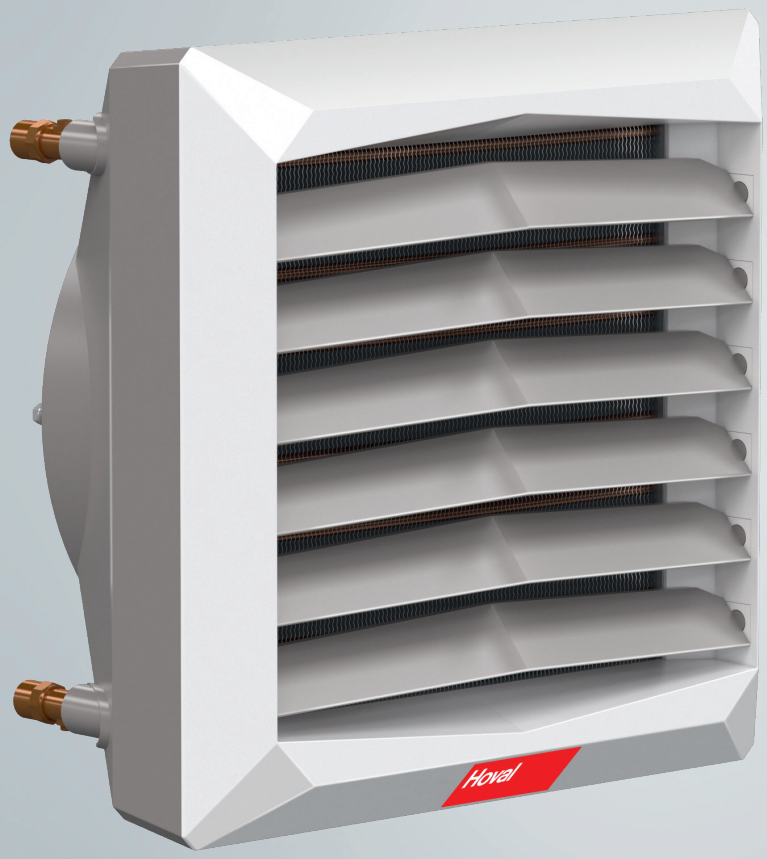
Hoval

Indoor climate systems

TopVent® TV

Design, installation and operation



Recirculation unit for heating spaces up to 6 m in height

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1 Use

1.1 Intended use

TopVent® TV units are recirculation units intended for heating spaces up to 6 m in height. They have the following functions:

- Heating (with connection to a hot water supply)
- Recirculation operation
- Air distribution via air outlet louvre

Intended use also includes compliance with the operating instructions. Any usage over and above this use is considered to be not as intended. The manufacturer can accept no liability for damage resulting from improper use.

1.2 User group

The units are only allowed to be installed, operated and maintained by authorised and instructed personnel who are well acquainted with the units and are informed about possible dangers.

The operating instructions are for operating engineers as well as specialists in building, heating and ventilation technology.

2 Safety

2.1 Symbols

Caution
This symbol warns against risk of injury. Please heed all instructions designated by this symbol to prevent injuries and/or death.

Attention
This symbol warns against property damage. Please heed the respective instructions to prevent risk of damage to the unit and its functions.

Notice
This symbol denotes information about the economic use of the equipment or special tips.

2.2 Operational safety

The unit is built to conform to the state-of-the-art and is operationally safe. Despite every precaution being taken, potential and not immediately obvious risks always remain, for example:

- Dangers when working with the electrical system
- Parts (e.g. tools) can fall down below when working on the ventilation unit.
- Malfunctions as a result of defective parts
- Hazards from hot water when working on the hot water supply

Therefore:

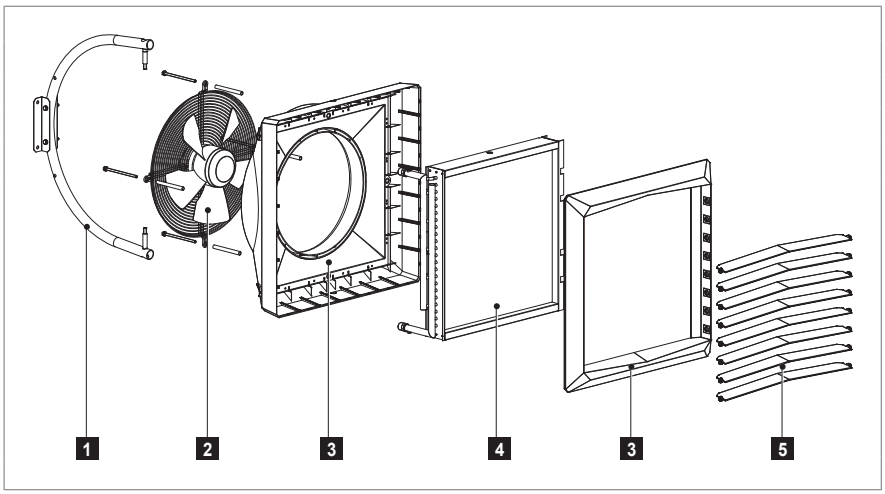
- Please read the operating instructions before unpacking, installing, commissioning and before maintaining the equipment.
- Store the operating instructions so that they are easily accessible.
- Observe any attached information and warning signs.
- Immediately replace damaged or removed informational and warning signs.
- Follow the local safety and accident prevention regulations at all times.
- Disconnect the power supply and wait at least 5 minutes before opening the unit.
- When working in the unit, take precautions against unprotected, sharp metal edges.
- The unit may only be installed, operated and serviced by authorised, trained and instructed skilled personnel:
  - Specialists as defined by these operating instructions are those persons who, based on their training, knowledge and experience as well as their knowledge of the relevant regulations and guidelines, can carry out the work assigned to them and recognise potential hazards.
- Unauthorised reconfiguration or modification of the unit is not permitted.

3 Construction and operation

The TopVent® TV is used to heat in recirculation operation; it was developed specially for use in rooms up to 6 m in height. The unit is installed on the wall or under the ceiling. It takes in room air, heats it in the heating coil and blows it back into the room through the air outlet louvre.
There are 3 unit sizes, which are each equipped with an infinitely variable fan and a custom-made heating coil.

3.1 Unit construction

The TopVent® TV consists of the following components:
- Heat exchanger consisting of copper tubes and aluminium fins
- Axial fan with energy-saving EC motor and flow-optimised fan blades, infinitely variable, maintenance-free and quiet with a high degree of efficiency
- Compact casing in modern industrial design, consisting of high-quality ABS, robust and easy to clean
- Suspension set for installing the unit on the ceiling or the wall
- Air outlet louvre with vanes for manual adjustment of air distribution



1	Suspension set
2	Fan
3	Casing
4	Heat exchanger
5	Air outlet louvre

Fig. 1: Unit construction

3.2 Operating modes

A room temperature controller with or without a timer regulates the operation of the unit.

EasyTronic EC
The EasyTronic EC is a room temperature controller with a timer. A maximum of 10 TopVent® units can be connected to 1 controller.

Function
- Recording the room temperature with the integrated temperature sensor
  - Optional: Recording the room temperature with the external temperature sensor
- Room temperature control in on/off mode: If the room temperature falls below the setpoint value, the connected TopVent® units switch on. Upon reaching the setpoint value, the units switch off again.
- Lowering of the room temperature setpoint value via week programme
- Controlling the TopVent® units using a door contact switch: The connected units are switched on via door contact if the door is open (digital input).
- Adjusting the fan speed: The required speed can be infinitely adjusted.
- Pump or valve control: The EasyTronic EC provides a signal for switching a pump or a valve (digital output).
- Alarm display
- Connection to the building management system via Modbus RTU

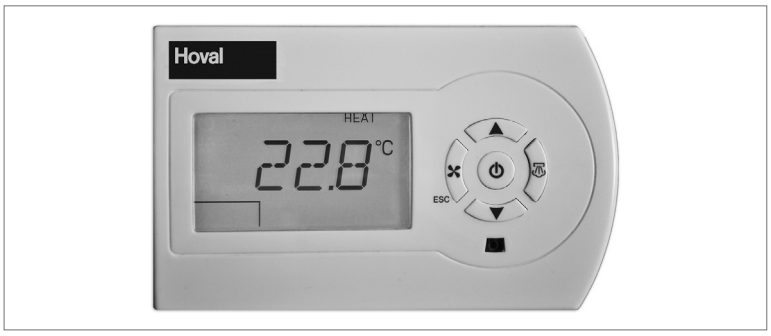


Fig. 2: EasyTronic EC room temperature controller

EasyTronic EC	
Power supply	110…230 VAC, ±10%, 50/60 Hz
Power consumption	max. 1.3 W
Temperature range	0...50 °C
Dimensions (W x H x D)	128 × 80 × 56 mm
Protection rating	IP 30, class 2
Installation	In a flush-mounted box (spacing between mounting holes 83.5 mm) or on the supplied base

Table 1: EasyTronic EC technical data

Room temperature sensor ET-R	
Temperature range	-30...+70 °C
Dimensions (W x H x D)	93 × 70 × 46 mm
Protection rating	IP 65
Installation	In plastic casing for wall mounting

Table 2: EasyTronic EC technical data

EasyTronic TV

The EasyTronic TV is a room temperature controller without a timer. A maximum of 8 TopVent® units can be connected to 1 controller.

Function

- Recording the room temperature with the integrated temperature sensor
- Room temperature control in on/off mode: If the room temperature falls below the setpoint value, the connected TopVent® units switch on. Upon reaching the setpoint value, the units switch off again.
- Adjusting the fan speed: The required speed can be infinitely adjusted.

Fig. 3: EasyTronic TV room temperature controller

EasyTronic TV	
Power supply	230 VAC, ±10%, 50 Hz
Working temperature	0...60 °C
Temperature control range	5...30 °C
Dimensions (W x H x D)	99 × 96 × 43 mm
Casing material	ABS
Protection rating	IP 30
Installation	Wall mounting (surface mounting)

Table 3: Technical data EasyTronic TV

4 Technical data

4.1 Application limits

Maximum operating pressure	1600	kPa
Maximum heating medium temperature	90	°C
Maximum supply air temperature	60	°C
Maximum extract air temperature	50	°C

The units cannot be used in:
- Areas where there is danger of explosion
- Places with a corrosive or aggressive environment
- Damp locations
- Spaces with a large amount of dust

Table 4: Application limits

4.2 Flow rate, product parameters

Type		TV-2	TV-4	TV-5
Nominal air flow rate	m³/h	2100	4850	5700
Power consumption	kW	0.10	0.25	0.37
Current consumption	A	0.51	1.30	1.70
Supply voltage	VAC	230	230	230
Frequency	Hz	50	50	50
Max. mounting height	m	5.5	5.5	5.5
Max. horizontal reach	m	14.0	22.0	25.0

Table 5: Technical data

4.3 Heat output

Temperature of the heating medium		80/60 °C				60/40 °C			
Type	t_{room}	Q	t_S	Δp_W	m_W	Q	t_S	Δp_W	m_W
	°C	kW	°C	kPa	l/h	kW	°C	kPa	l/h
TV-2	**15**	13.9	34.8	6.7	610	8.3	26.6	3.2	360
	20	12.6	37.9	5.6	560	6.8	29.7	2.3	300
TV-4	**15**	33.5	35.6	11.5	1480	19.4	26.9	4.8	850
	20	30.3	38.6	9.5	1340	15.9	29.8	3.5	700
TV-5	**15**	50.2	41.3	15.7	2220	29.2	30.3	6.5	1280
	20	45.4	43.8	13.0	2000	23.9	32.5	4.7	980

Legend:
t_{room} = Room air temperature
Q = Heat output
t_S = Supply air temperature
Δp_W = Water pressure drop
m_W = Water quantity

Table 6: Heat output

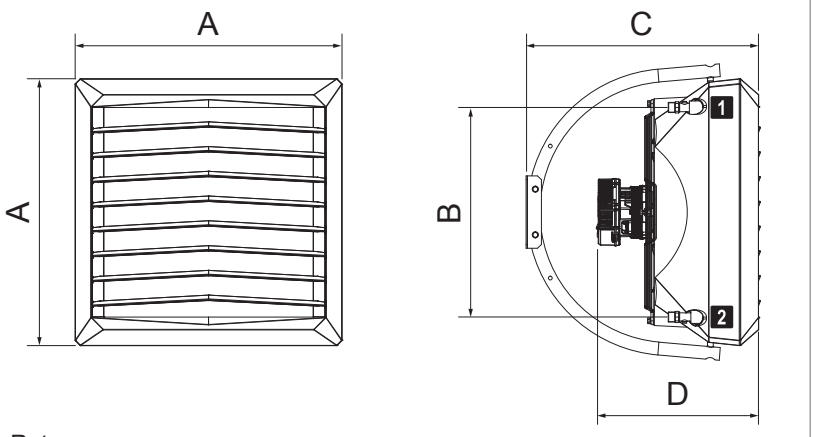
4.4 Sound data

Type		TV-2	TV-4	TV-5
Sound pressure level (at a distance of 5 m) [1]	dB(A)	50	54	56
Total sound power level	dB(A)	72	76	78

[1] Reference: room volume 1500 m³

Table 7: Sound levels

4.5 Dimensions and weights



Type		TV-2	TV-4	TV-5
A	mm	530	700	700
B	mm	381	550	550
C	mm	517	610	610
D	mm	300	350	350
Water content of the coil	l	1.12	2.16	3.10
Connection (external thread)	"	R ¾	R ¾	R ¾
Weight	kg	16.2	23.0	24.4

Table 8: Dimensions and weights

4.6 Specification text

TopVent® TV – Recirculation unit for heating spaces up to 6 m in height
Sturdy casing made of ABS with pigment additive for UV protection, front in RAL 9016 (Traffic white) and back in RAL 7037 (Dusty grey); heat exchanger consisting of copper tubes and aluminium fins; axial fan with highly efficient EC motor, infinitely variable, maintenance-free and quiet, protection rating IP 54, insulation class F; air outlet louvre with vanes for manual adjustment of air distribution; including suspension set for wall or ceiling installation. Electrical connection via connection box provided by the installer.

5 Transport and installation

Caution
Risk of injury from incorrect handling. Transport, assembly and installation work may only be performed by specialists. Observe safety and accident prevention regulations.

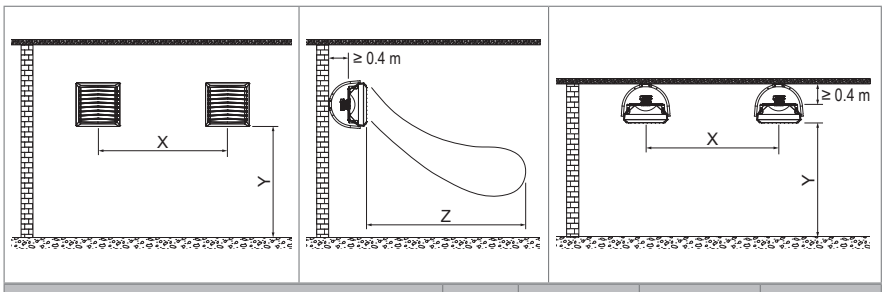
5.1 Delivery

TopVent® TV units are packed in cardboard boxes and delivered on a pallet.

- The scope of delivery includes:
  - Recirculation unit heater
  - Suspension set
  - Accessories for installation
- Ensure that the unit is undamaged.
- Report any missing parts, wrong deliveries and possible transport damage immediately in writing.

5.2 Requirements for the installation site

- Position the units according to the system layout. Comply with the minimum and maximum distances.
- All air inlet and air outlet openings must be freely accessible. The supply air jet must be free to spread out unhindered.



Size		TV-2	TV-4	TV-5
Distance X	m	3…7	6…12	6…12
Distance Y	m	2.5…5.5	2.5…5.5	2.5…5.5
Maximum horizontal reach Z	m	14.0	22.0	25.0
Minimum distance to the ceiling/wall	m	0.4	0.4	0.4

Table 9: Minimum and maximum distances

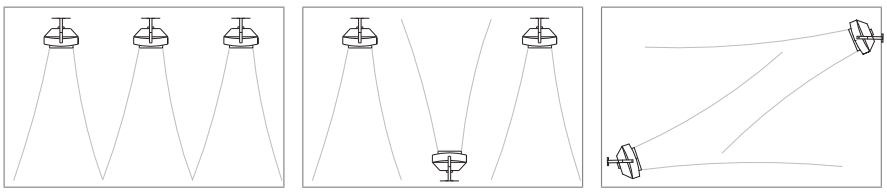


Fig. 4: Examples of unit arrangement for wall installation (top view)

5.3 Installation

Caution
Risk of injury caused by falling load and improper handling. During installation:
– Wear protective equipment (safety helmet, safety goggles, safety shoes).
– Do not stand under suspended loads.
– Use a forklift with sufficient load-bearing capacity.

Preparation

- Make sure that the following items are on hand for the assembly:
  – Installation platform
  – Drill Ø 16 mm
  – Socket wrench, width 17
  – Socket or open-end wrench, width 13

Installation

- Install the retaining bracket:
  – Cut 1 opening at the top and at the bottom of the casing with the drill (Ø 16 mm, see 7 in Fig. 6).
  – Insert the assembly bush 6 into the top opening.
  – Position the retaining bracket 3 over the openings.
  – Insert M10 screws 4 into the bushes.
  – Turn the retaining bracket to the desired position in relation to the unit.
  – Tighten the screws to secure the position.
  – Place the plugs 5 on the retaining bracket.
- Install both mounting angles 2 with the M8 screws onto the retaining bracket.
  – 3 different inclination angles can be used.
- Install the unit on the wall or on the ceiling (on-site fastening material).
  – Use the packaging box as a drilling template.

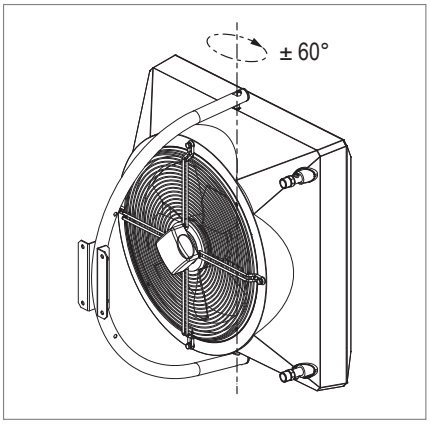
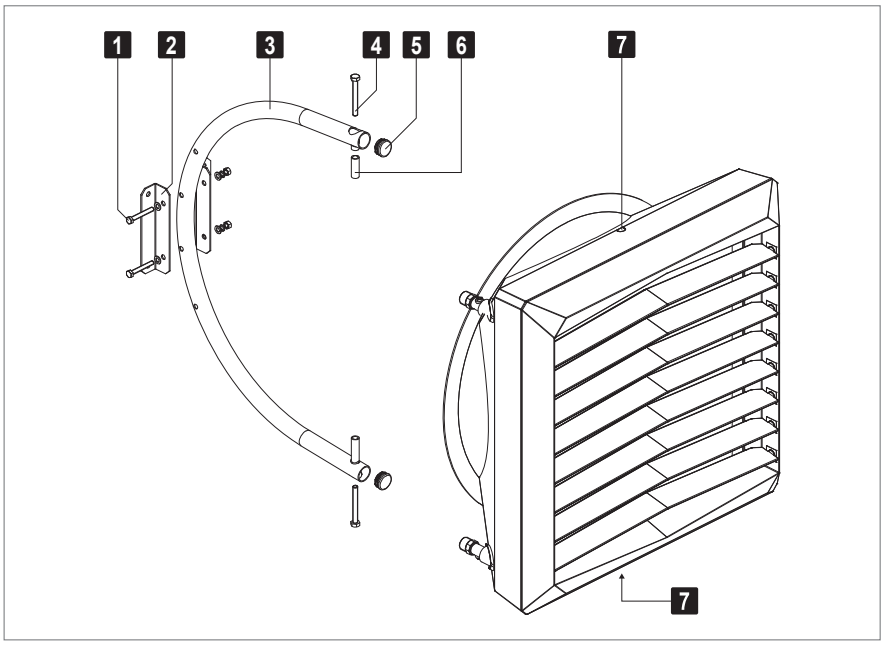


Fig. 5: Angle of rotation, left/right 60°



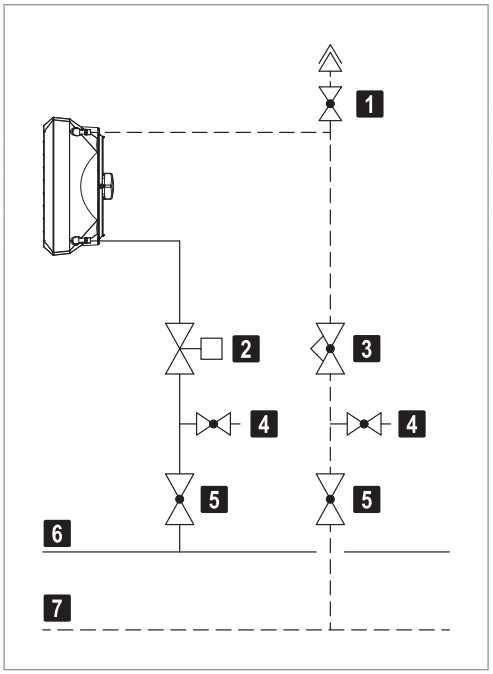
1	M8 screw with spring washer, nut and washers (2 sets)
2	Mounting angles (x2)
3	Retaining bracket
4	M10 screw (x2)
5	Plug (x2)
6	Assembly bush
7	Opening

Fig. 6: Unit installation

5.4 Hydraulic installation

- Connect the heating coil according to the hydraulic circuit diagram.
- Depending on local conditions, check whether compensators for linear expansion are required for the supply and return lines.
- If necessary, connect the unit with articulated connections so that it can be moved to adjust the air distribution.
- Insulate the hydraulic lines.
- Hydraulically balance the pipework for the the individual units within a control zone to ensure even distribution.

Attention
Danger of damaging the units. Do not fasten any loads to the coil, e.g. by means of the flow or return lines.



1	Air vent with shut-off
2	Control valve
3	Balancing valve
4	Drain valves
5	Shut-off valves
6	Flow
7	Return

Fig. 7: Connecting the heating coil

5.5 Electrical installation

Caution
Danger of electric shocks. The electrical installation must only be carried out by a qualified electrician.

Please note the following:
- Observe all relevant regulations.
- Choose the dimensions of the cable cross sections in line with the applicable regulations.
- Carry out the electrical installation according to the wiring diagram.
- Route the signal lines separately from the supply lines.
- Secure all connections against working loose.

Proceed as follows:
- Connect the power supply and the fan control to the units via field-supplied connection boxes.
  - Install the connection box close to the unit (distance ≤ 0.5 m).
- Options for EasyTronic EC:
  - Wire the external room temperature sensor to the EasyTronic EC.
  - Wire the door contact to the EasyTronic EC.
  - Wire the pump/valve control to the EasyTronic EC.
  - Wire the building management system to the EasyTronic EC.

Designation	Voltage	Cable		Comments
Power supply for TopVent®	1 × 230 VAC	NYM	3 × 1.5 mm² (min.)	
Power supply EasyTronic EC / TV	1 × 230 VAC	NYM	2 × 1.5 mm² (min.)	
Fan control	0-10 VDC	NYM	2 × 1.0 mm²	
External room temperature sensor		J-Y(St)Y	2 × 2 × 0.8 mm	shielded, max. 30 m length
Door contact	24 VDC	NYM	2 × 1.0 mm²	
Pump / Valve control	Volt-free	NYM	... × 1.5 mm² (min.)	max. 3 A
	max. 230 VAC			
	max. 24 VDC			
Modbus RTU		J-Y(St)Y	2 × 2 × 0.8 mm	max. 300 m length

Table 10: Cable list for on-site connections

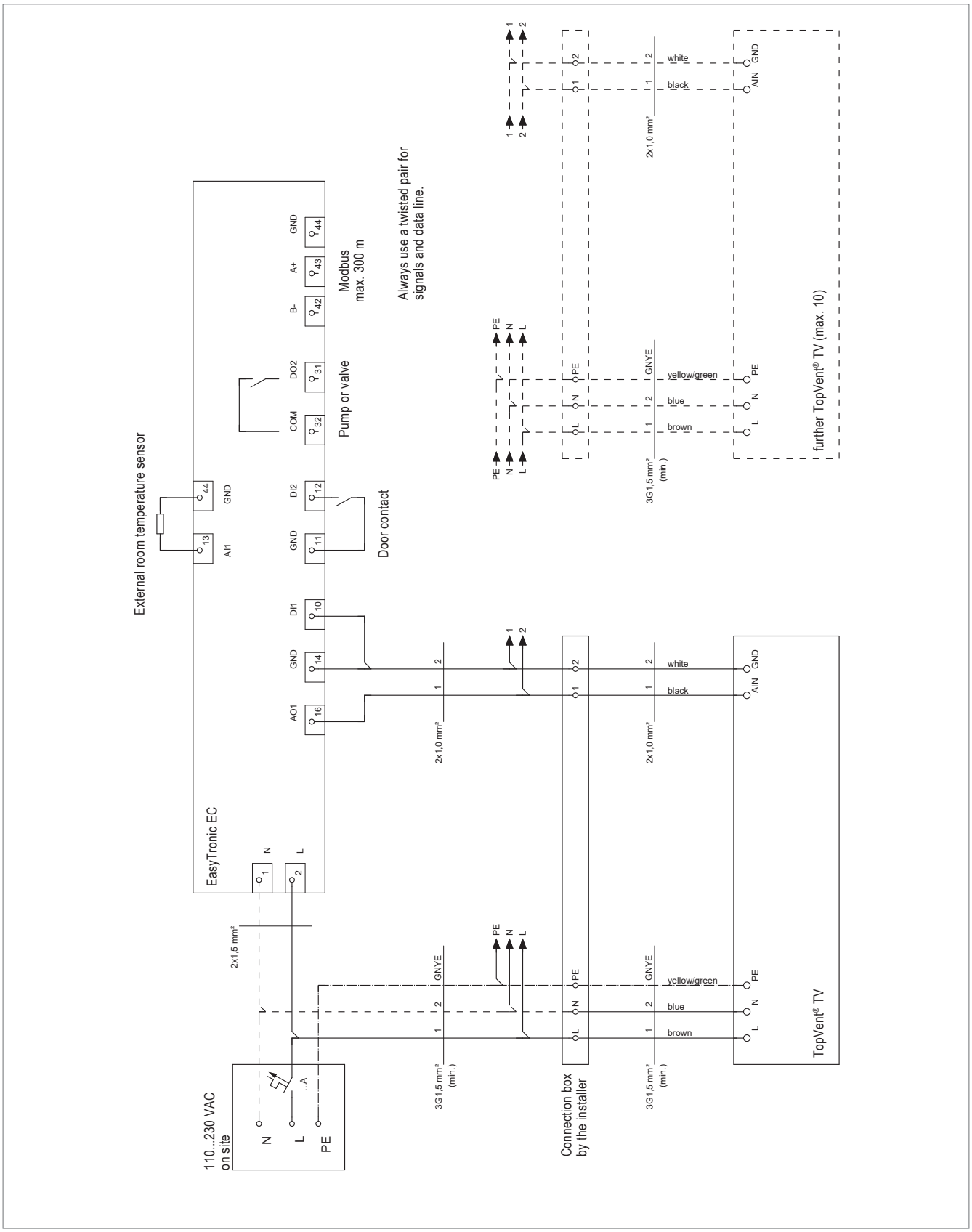


Fig. 8: Wiring diagram TopVent® TV with EasyTronic EC

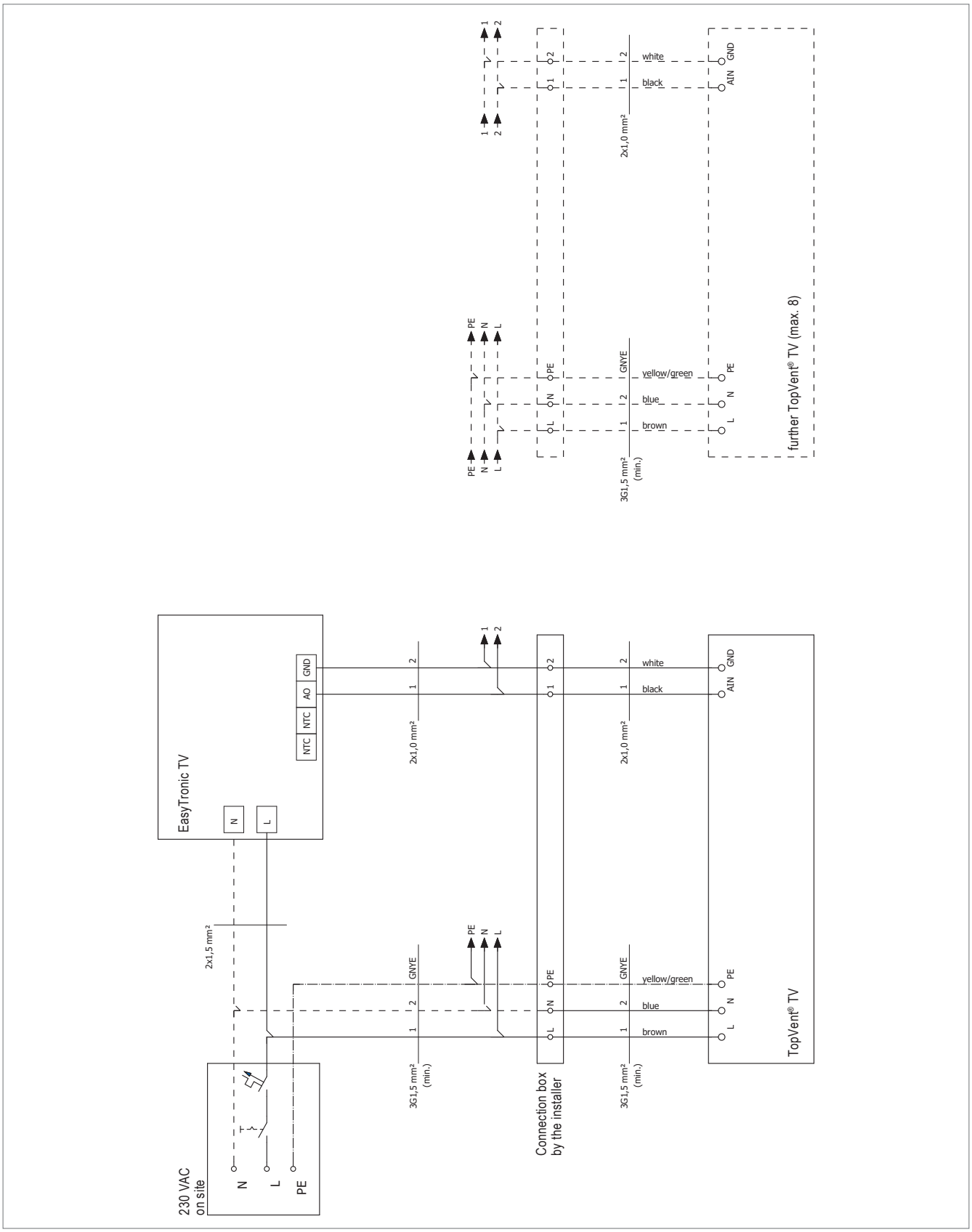


Fig. 9: Wiring diagram TopVent® TV with EasyTronic TV

Installation EasyTronic EC

- Follow the installation instructions included.

Installation EasyTronic TV

- Install the room temperature controller:
  - In the occupied area, at a height of about 1.5 m
  - Not near sources of heat or cold (windows, doors, machines, etc.)
  - Protected from sunlight
- Detach the casing base (e.g. using a screw driver).
- Break through the casing base along the perforation.
- Insert the cables through this opening.
- Connect the cables to the connectors.
- Screw the base onto a flush-mounted box (60 × 60 mm).
- Place the device on the base.
- Set the slide switch to the 'A+T' position.

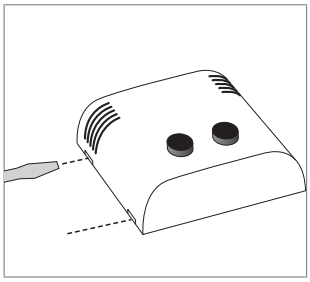


Fig. 10: Opening the casing

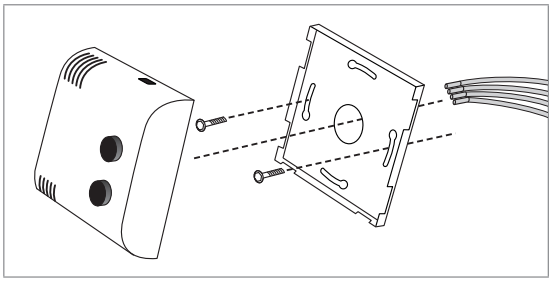


Fig. 11: Installing the EasyTronic TV

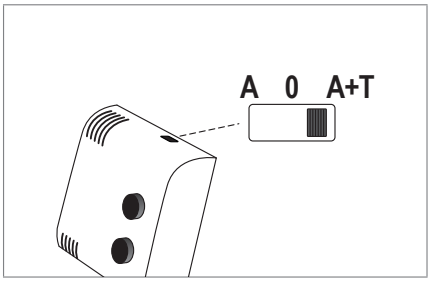


Fig. 12: Position of the slide switch

6 Operation

6.1 Initial commissioning

Attention
Risk of damage to property as a result of performing initial commissioning on your own authority. Initial commissioning must be performed by the manufacturer's customer service technicians.

Preparing for initial commissioning:
Checklist:
- Have all the media connections been made (electric cabling and water piping)?
- Is the heating medium available?
- Are the hydraulics aligned and balanced?
- Are all the control components installed and wired?
- Are all of the respective trade groups (installer, electrician, etc.) present at the scheduled time?
- Are the system operating personnel present for training at the scheduled time?

6.2 Operation

The system runs automatically.
- Observe the operating instructions for the control system.
- Ensure free air outlet and unhindered dispersion of the supply air.
- If necessary, the air outlet direction can be adjusted manually:
  – Hold the vanes of the air outlet louvre at both ends and turn them in the required direction.

7 Maintenance and repair

Caution
Risk of injury from incorrect work. Maintenance work must be carried out by trained personnel.

7.1 Safety

Before performing any work on the unit:
- Turn the on-site main switch to the 'Off' position and secure it against being switched back on.
- Wait at least 5 minutes after switching the unit off.

Caution
The use of condensers can pose a danger of fatal injury from directly touching live parts even after the unit is switched off. Only open the unit after waiting 5 minutes.

- Observe the accident prevention regulations.
- Observe the particular dangers involved when working on electrical systems.
- When working in the unit, take precautions against unprotected, sharp metal edges.
- Immediately replace damaged or removed informational and warning signs.
- Following maintenance work, professionally reassemble all dismantled protective devices.

7.2 Maintenance

Maintenance schedule

Activity	Interval
Cleaning the heat exchanger	If required, at least once per year before the heating season
Check function	1 x per year

Cleaning the heat exchanger
- Carefully clean the heat exchanger with compressed air via the air outlet louvre.
  - It is not necessary to dismantle the unit.
  - Ensure that you do not damage the fins.

7.3 Repair

If repairs are necessary, contact the manufacturer's customer service department.

8 Dismantling

Caution
Risk of injury caused by falling load and improper handling.
– Wear protective equipment (fall protection, safety helmet, safety shoes).
– Do not stand under suspended loads.

- Disconnect the power supply to the unit.
- Wait at least 5 minutes after switching the unit off.

Caution
The use of condensers can pose a danger of fatal injury from directly touching live parts even after the unit is switched off. Only open the unit after waiting 5 minutes.

- Drain the heating medium circuit.
- Dismantle all media connections.
- Disconnect the unit from any fastenings.
- Remove the unit.

9 Disposal

- Recycle metal components.
- Recycle plastic parts.
- Dispose of electric and electronic parts via hazardous waste.
- If required, dispose of oil-fouled parts in accordance with local regulations.

Hoval quality.
You can count on us.

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Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 75 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

Responsibility for energy and environment

Your Hoval partner

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