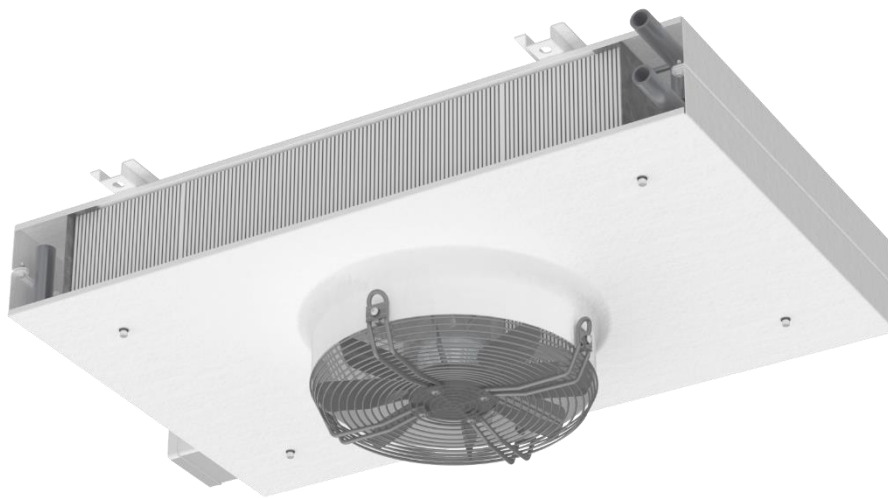


AIR HEATING UNIT **STAVOKLIMA**

Installation and operation manual

Warmex model





EN



1. Table of Contents

- 1. Table of Contents 2
- 2. Unpacking, check after transport or warehousing 3
 - 2.1. Unpacking and check 3
 - 2.2. Storing of the unit, additional transport recommendations 3
- 3. Safety measures 4
- 4. Basic information about the unit and its use 4
- 5. Dimensions of the unit 5
- 6. Unit installation 5
 - 6.1. Suspensions ceiling 6
 - 6.2. ZS-Warmex suspensions under ceiling 6
- 7. Connection of the unit to heating system 7
 - 7.1. Heat exchanger control using a valve with thermostatic heat 8
 - 7.2. Heat exchanger control with a valve with electrothermic head 8
 - 7.3. Setting of independent valve flow pressure (ETVQ) 9
- 8. Types of controllers and options for controlling 9
- 9. Electric connection of the unit 9
- 10. Commissioning, starting of the unit 10
- 11. Optional accessories - depending on equipment level 10
- 12. Basic service and maintenance information 10
 - 12.1. Troubleshooting 11
- 13. Decommissioning – disposal 11
- 14. Important notes 11

Explanation of symbols used

	<p>Instructions for mechanical repairs and maintenance.</p>		<p>Important safety information, technical information, data and device output.</p>
	<p>Important electric information - read carefully - unit damage hazard in case of wrong installation.</p>		<p>Important information - please read carefully.</p>

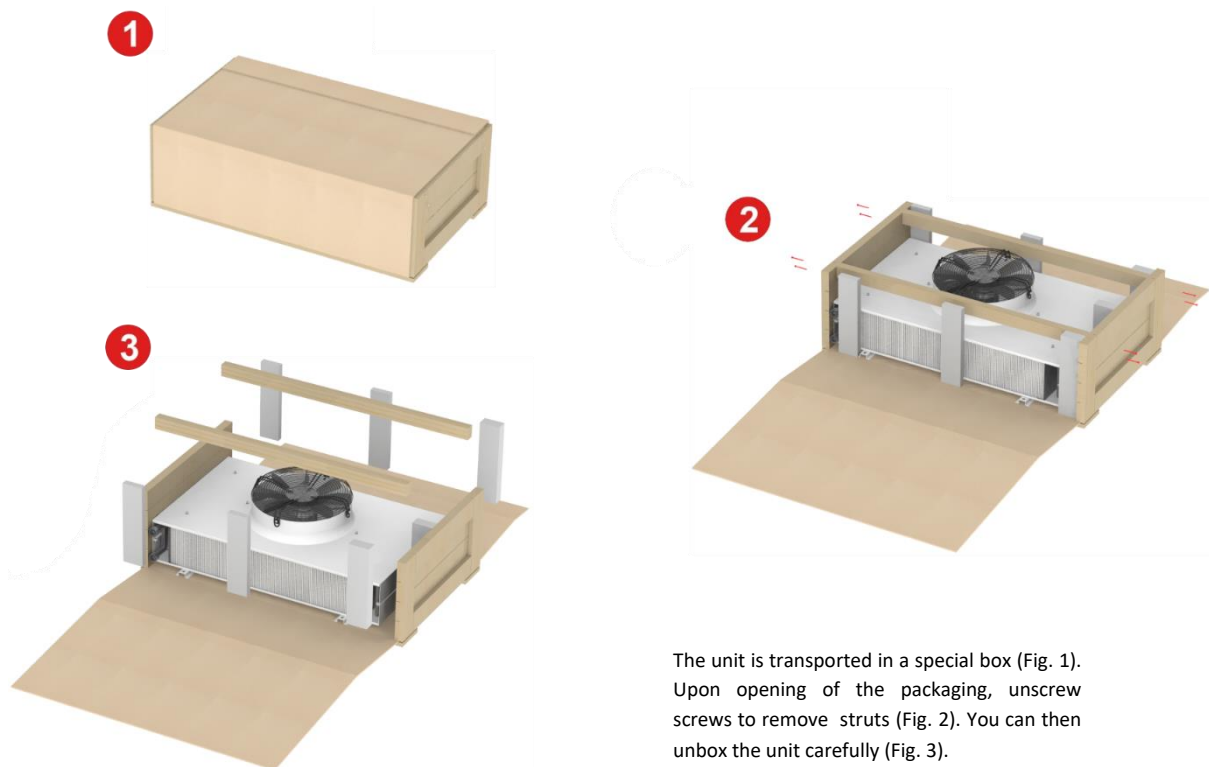
2. Unpacking, check after transport or warehousing

2.1. Unpacking and check

Carefully check the delivery note attached to the delivery. For components identified as extra accessories in the delivery note (not included in the unit or installed therein), please check completeness to the parcel and perfect condition (usually delivered in a separate box). Report any serious damage to packaging or boxes, and make a basic record to the parcel transport documents. Inform the transport company or manufacturer (if the manufacturer arranges transport) immediately.

All packaging material used is environmentally friendly and may be reused or recycled. Dispose of or reprocess the non-environmentally friendly components correctly.

When unpacking, follow the procedure diagrammatically shown below.



2.2. Storing of the unit, additional transport recommendations



- Observe packaging decals on the unit. The device in its packaging must not be turned or placed in transport positions other than those supplied and recommended by the manufacturer. Packaging also contains production number and unit type for easy unit type identification.
- Use genuine packaging for further transport of the unit. The packaging is tested for re-use, and a different packaging may cause damage to the unit.
- Use means with certified sufficient loading capacity for transport and handling; properly qualified persons only may operate the transport means.
- Permissible warehousing conditions: $-10^{\circ}\text{C} \div 50^{\circ}\text{C}$, 50-85% humidity without condensation.
- Do not remove genuine packaging until installation is complete (to avoid device damage). At least 2 persons are recommended for safe handling.
- **Upon unboxing, do never put the unit standing on the fan grid. This is to avoid deformation and irreparable destruction of the unit.**



3. Safety measures

The unit has been manufactured in line with the government decrees and Czech standards harmonized with the EU regulations mentioned in the manufacturer's declaration of conformity.

The above mentioned product complies with the following standards:

ČSN EN 60335-1 ed.3 ČSN EN 60335-2-30 ed. 3
ČSN EN IEC 61000-6-2 ed. 4 ČSN EN 61000-6-3 ed. 2

The above mentioned product complies with the following directives:

- Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of eco-design requirements for energy-related products.
- Government Decree No. 118/2016 Coll. Directive 2014/35/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
- Government Decree No. 117/2016 Coll. Directive 2014/30/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
- Government Decree No. 481/2012 Coll. (Regulation of the European Parliament and of the Council No. 2014/35/EU, Regulation of the European Parliament and of the Council No. 2011/65/EU).
- Government Decree on restriction the use of some hazardous materials found in electrical and electronic products.

Observe generally applicable national provisions and other related regulations. Unplug the unit from mains before any service intervention. Connection and earthing of the electric device or components thereof must be in line with laws applicable in the country of use. Only qualified staff may carry out any electric service works.



Observe applicable laws, in particular:

- on safety of electric and thermal appliances,
- on central heat distribution systems,
- on fire safety,
- do never exceed working pressure and temperature specified in the production label.

Follow standards and rules applicable in the country of use, in particular the fire safety of appliances and heat sources, and the fire technical properties of materials - flammability levels. Place the unit 150mm from B, C1, C2 level flammable materials, and 400mm and 1000mm for C3 level easily flammable materials in the radiation direction (air flow from the unit).

4. Basic information about the unit and its use

The heating unit covers losses of the heated room. The units are suitable for basic spaces, i.e., without moisture. Not suitable for dusty rooms. Air heated by either hot water heater is used for heating. These devices are suitable for shops, industrial, and warehouse environments. The permitted temperature range in the space is 5–40 °C.

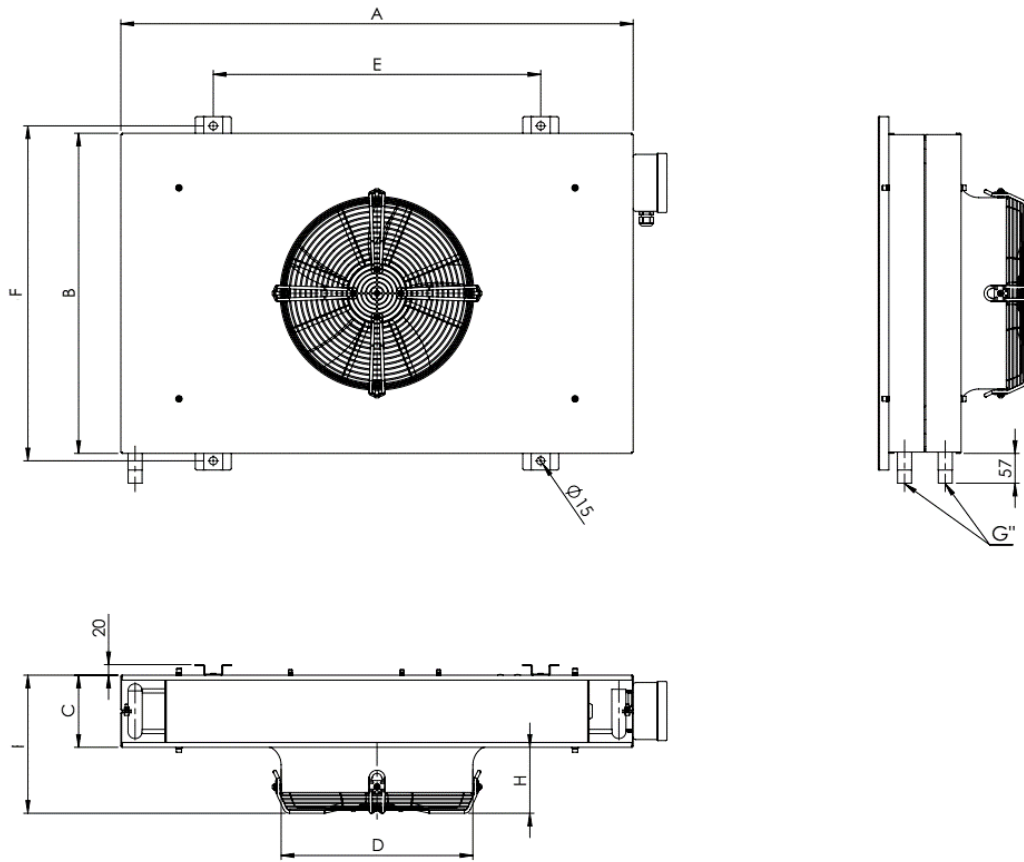
Full performance of the unit may be provided only when maintenance is regular and proper. All controls are accessible and well maintained.

Technical conditions for unit operation:



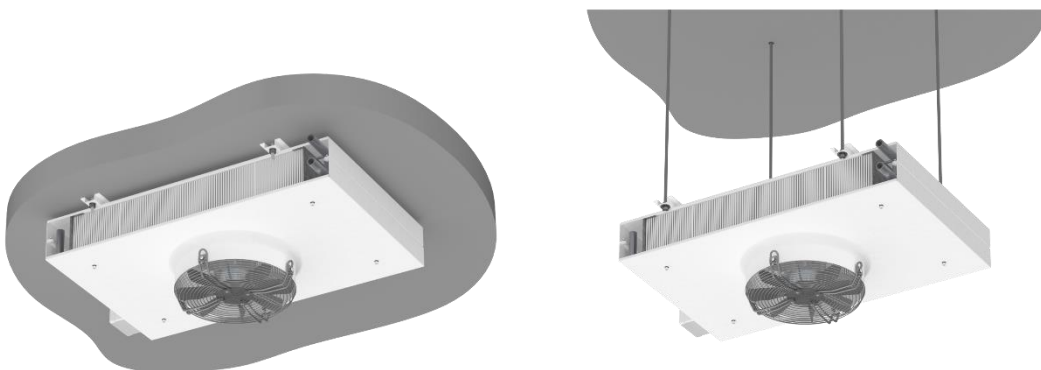
- max. media working temperature 90°C/pressure 1.6MPa – unless specified otherwise,
- operating voltage of the hot water unit – 230V-50Hz,
- max. surrounding temperature 40 °C,
- hot water IP rating – IP 54,
- the unit is intended for basic and non-aggressive environment,
- minimum pressure difference 23kPa must be provided for use of a 2W valve (applies only to a pressure-independent valve,
- the unit is designed only for heating and not cooling.

5. Dimensions of the unit



Model	Dimension (mm)								
	A	B	C	D	E	F	G	H	I
Warmex 0	650	540	110	365	310	570	3/4"	125	235
Warmex 1	970	605	135	400	620	635	3/4"	125	315
Warmex 2	1170	705	215	500	820	735	5/4"	155	415

6. Unit installation



Installation ceiling

Installation under ceiling

6.1. Suspensions ceiling



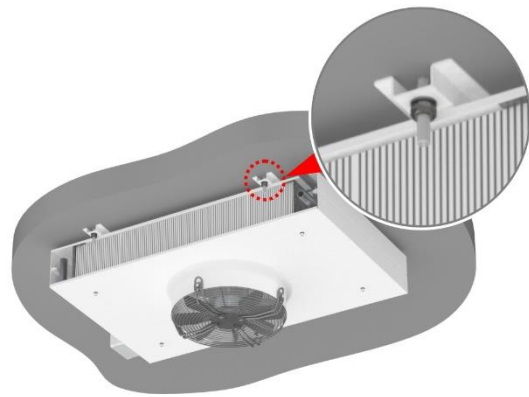
The heating unit is suspended through the suspension holes accessible from the outside on the beams.

Measure position of the unit, mark the anchoring points and drill holes in the ceiling for installation of wall plugs (not included in the supply). Apply the chemical anchor into the drilled holes and insert the wall plugs/anchors to the ceiling. Let the chemical anchor dry. Fit the unit to the prepared holes on the ceiling and fix it using the screws of minimum size M8 (not included in the supply). Tighten the connection elements carefully and check for proper and safe suspension of the heating unit.



Use quality anchors and wall plugs only. Consider installation situation and suitability of anchoring and installation material, including loading capacity of the structure properly. Always properly consider loading capacity of the ceiling. Install the device to structurally solid beams. The manufacturer accepts no liability for improperly used wall plugs or other installation and hanging material.

Always suspend the device to all suspension points.



6.2. ZS-Warmex suspensions under ceiling

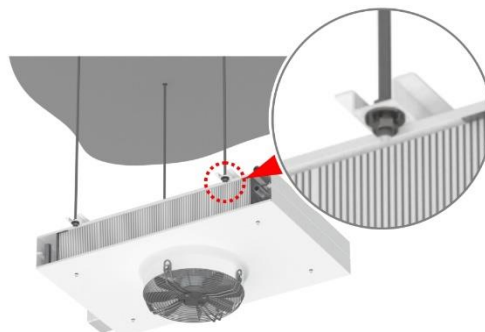
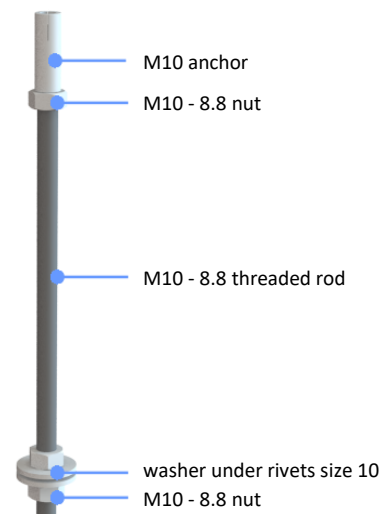


The heating unit is suspended through the suspension holes accessible from the outside on the beams.

Upon special purchase order, the following is supplied as accessories to the ZS-Warmex under-ceiling suspensions:

4 pcs threaded rod M10x1000 - 8.8, 4 pcs anchor M10/40, 12 pcs nuts M10 - 8.8, 8 pcs washer under rivets size 10, 4 pcs spring washers size 10 (for assembly, refer to Figure on the right).

Measure the position of the unit and its distance from the ceiling, and cut the threaded bars to required length. Mark the anchoring points according to drilling scheme and drill the ceiling holes for installation of anchors. Fit the threaded rods into the prepared ceiling anchors and rotate the nuts. Slide the unit through the holes in the beams onto the threaded rods and secure with a nut.



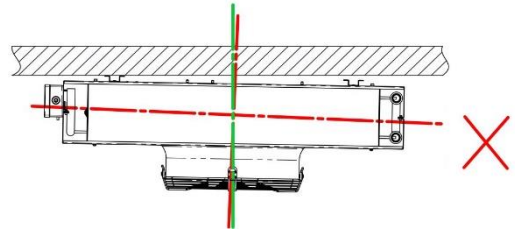
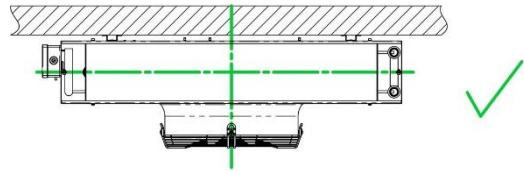


Pay attention to correct fitting of all nuts to all assembly components. Pay attention to the end position of the threads to avoid loosening and falling the unit by rotation.

Use quality anchors and wall plugs only. Consider installation situation and suitability of anchoring and installation material, including loading capacity of the structure properly. The manufacturer accepts no liability for improperly used wall plugs or other installation and hanging material.

Following the assembly, check for horizontal position in both directions. Make sure that tightening up of individual hangers and sleeves do not cause crossing and twisting of the unit. Always properly consider loading capacity of the ceiling or of the wall. Install the device to structurally solid beams.

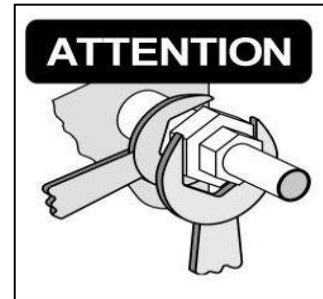
Always suspend the device to all suspension points.



7. Connection of the unit to heating system



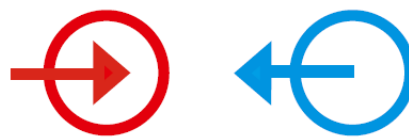
Please check all hot water connections for readiness and perfect condition before connecting media to the unit. Furthermore, please check the hot distribution for components or other measures to ensure zero transmission of static, dynamic, and dilatation forces at the input and output neck connections. No excessive force may be applied when connecting the hot water circuit of the building to the unit's heat exchanger. By the neck of the air conditioner there is a mark that notes use of two keys so that no stressing of the necks occurs in the course of tightening or loosening. **When bolting and tightening up the screw union of the heat exchanger must be secured by a clamp against undesired rotation that may subsequently result in deformations or damage to pipe necks on the heat exchanger.**



Considering the above the manufacturer clearly recommends that flexible connection hoses are used for connection of the heat exchanger necks (available as PPH accessories, length 300mm, DN 20, 32) or a bellows compensator.

Any non-compliance with the instructions above results in rejection of any complaint.

The hot water heater necks are usually located on the right hand side of the unit (when viewed from the interior). The inputs are identified by round marks – **medium input red** with arrow pointing inside, and **medium output blue** with arrow pointing outside.



Media input

Media output



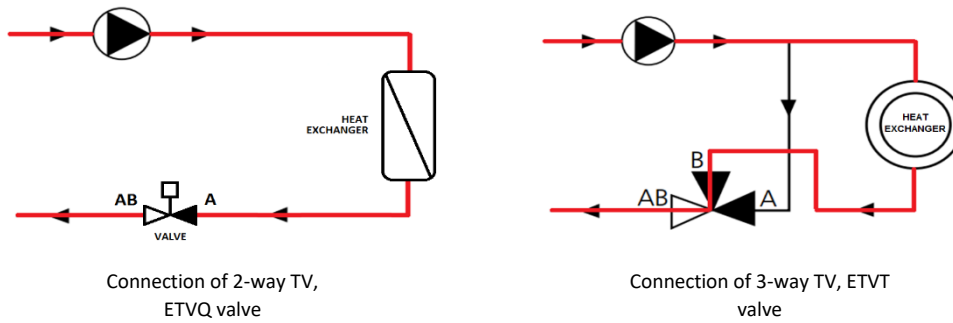
Do not swap the return and supply neck positions - this may cardinaly change performance and parameters of the heater with consequent impact on the hydraulic system. Do not exceed max temperature and pressure for which the unit is rated.

The value of thermostatic head is pre-set, and the function of the electrothermic valve drive is given by a control type. The connection is then made directly on the neck for media input (third neck is blind). For setting up the thermostatic head, refer to article 7.1 of the function of the electrothermic drive, refer to article 7.2.

Pay attention to quality of media fed to the unit; check for installation of cleaning valve downstream the unit (not included in the supply). Observe max temperature and media pressure to avoid heat exchanger damage. To make sure the heat exchanger operates correctly, drain the exchanger (sludge valve) and purge the cleaning valve because construction or assembly impurities may be present in the system. Deaerate the heat exchanger for perfect operation of the heat exchanger. Install the closing valves on both pipes downstream the unit (ball valves) \bowtie . Connection thread right above the unit must be removable and not fixed.

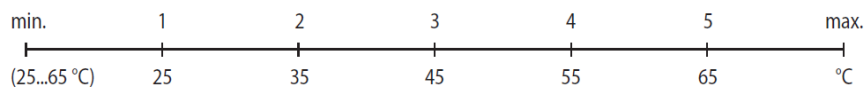
As required by the customer, a not embedded 2-way or 3-way valve with control head can be delivered for the hot water heat exchanger. The valve drive may be either self-acting (thermostatic) or electrothermic.

Instructions for electric connection of the valve is included in the wiring scheme for connection of the unit. Specific wiring scheme or valve instructions are available upon request only.



7.1. Heat exchanger control using a valve with thermostatic heat

The thermostatic head for 2-way (TV) and 3-way (TVT) valves is always supplied with the sensor separated (temperature range 25–65 °C) – exhaust air temperature control. Setting of the required closing temperature is made on the head scale (1–5). Temperature degrees with respect to the numbers on the head are expressed as follows:

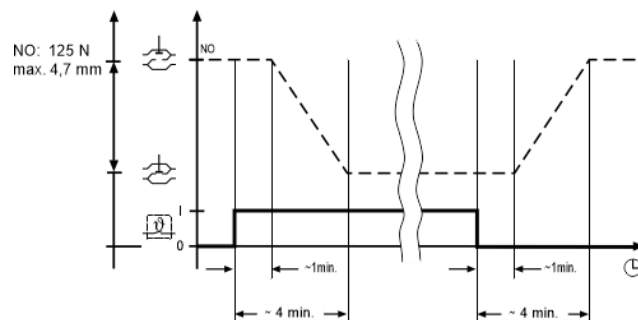
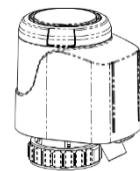


7.2. Heat exchanger control with a valve with electrothermic head

The electrothermic valve drive can be supplied to the hot water heat exchanger as not embedded either as 2-way (ETVQ) or 3-way (ETVT).

“Normally open” version (NO).

When the thermal drive is under voltage, the electrically heated sensor heats up. Upon “dead time” expiration for continuous opening of thermic drive due to cooling down of the sensor.

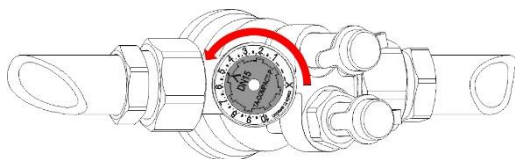


Note:

The time delay (dead time) needs to be considered during the functional test; the opening and closing time depends on surrounding temperature. Electric data: 230V/50Hz-3V, IP 54.

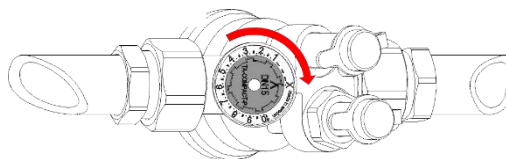
7.3. Setting of independent valve flow pressure (ETVQ)

Setup



Turn the setting wheel to required value, e.g., 5.0.

Closing



Turn the setting wheel counterclockwise to position X.

q_{\max} values

Setup

	1	2	3	4	5	6	7	8	9	10
DN 20	210	335	460	575	680	780	890	990	1080	1150
DN 25	370	610	830	1050	1270	1490	1720	1870	2050	2150

q_{\max} = l/h for each setting with the control cone fully open

8. Types of controllers and options for controlling

Ox

The O series controller is a five-step transformer controller of revolutions for fans powered by 230V and provided with a standalone button for light signalling of the connection. The O series controllers allow for connection of multiple units. The selection of an appropriate controller type must consider the power input of the unit (output power limitation in "A").

Type of control	O2	O3	O5	O7	O10
For max. unit current	2A	3A	5A	7A	10A
IP rating	IP 54		IP 54		IP 54
Dimensions (length x width x height)	86x166x91mm		123x240x125mm		146x272x140mm



9. Electric connection of the unit



The heating unit must be protected by a suitable circuit breaker according to its electric parameters – refer to attached electric wiring. The connection terminals of the unit are accessible after unscrewing the electrical terminal cover. Connect the ready-to-install cables to the terminals following the attached electric wiring schemes, make connection check, equipotential bonding, and finally turn the power supply on. Use the cable wires with cross section suitably rated according to the current load – refer to electric wiring documentation.

Make sure the cable is neither twisted nor deformed in any way. Keep free ends of the cable wires sufficiently long for easy handling and cut the wire only after you are sure the wire is long enough.



Observe generally applicable national provisions, particularly ČSN 12 2002 and other related regulations. Unplug the unit from mains before any service intervention. Provisions of ČSN 332190, 332000-5-51 ed. 3, and 33 2000-5-54 ed. 3 must be observed for connecting and earthing of the electric devices. Qualified electrician only may perform any electric service works (qualification according to Section 6 of Decree of ČBU No. 50/78 Coll.).

During assembly, carefully check everything and carry out the initial review of the device. Check operation of the FU1-FU3 electric fuses (Ditronic) for interior circuits (for fuse values, refer to the box of electronics), and make sure that the external components (accessories), which may have an essential impact on correct function of the device, operate.

ATTENTION: The delivery note serves as a warranty sheet!

10. Commissioning, starting of the unit



Before commissioning make and check:

- covers and shell of the unit are in perfect condition,
- mechanic fixing and anchoring of the unit,
- fixing of thermostatic head and its setting,*
- function of circulating pump (not included in the device),
- correct connection of media and tight connections,
- tightness and function of the valves,*
- availability of power voltage,
- correct connection of all unit cables,
- fitting and setting of a pre-circuit breaker (not included in the device),
- free from mechanical impurities or objects.

*- if installed

Initial review of the electric appliance according to ČSN 331500 and ČSN 33 2000-6-61 ed. 2 must be made upon commissioning.

11. Optional accessories - depending on equipment level



The most frequent accessories include thermostatic or electrothermic valves for the temperature control (chapter 7.1 and 7.2). The valves are supplied as **not embedded**, for all available valve types refer to the catalogue.

An optional accessories may be e.g., room thermostat, hanging of the unit. Selection of an appropriate type of accessories must be supported by the controller type.

For all accessories offered for the Warmex unit, refer to the catalogue documentation.

12. Basic service and maintenance information



All units are thoroughly checked and tested by the manufacturer before dispatch. The most frequent errors root from misunderstanding of the unit function or incorrect cabling and connection. For this, observe instructions from the manufacturer to avoid complex troubleshooting. In no case try to operate the unit when connected in a different way - the unit may operate for a while as you wish or expect but this irreversible step may result in damage beyond repair and loss. No warranty claims can be accepted with respect to this damage.

The Warmex heating units are supplied **without a filter** in front of the heat exchanger in standard, and therefore, special attention needs to be paid to the heat exchanger condition check.



Before any work with the unit, disconnect the electric power supply, mains supply for the unit. Electric shock hazard!!!

Observe generally applicable national provisions, particularly ČSN 12 2002 and other related regulations. Unplug the unit from mains before any service intervention. Provisions of ČSN 332190, 332000-5-51 ed. 3, and 33 2000-5-54 ed. 3 must be observed for connecting and earthing of the electric devices. Qualified electrician only may perform any electric service works (qualification according to Decree of ČBU No. 50/78 Coll., § 6 is required).

Please contact your vendor or distributor for a service agreement. You will get regular service and excellent care of your unit.



Quarterly checks:

- Unit hanging and tightening of all bolt connections.
- Heat exchanger space check and remove dirt or foreign objects (use vacuum cleaner for dedusting, or steam for stuck dirt). When using steam for removal of dirt, always proceed downstream the air flow. Set as lowest temperature as possible and as lowest steam pressure as possible for not to damage the heat exchanger by cleaning.
- Before winter check function superior circulating pump (not included in the supply of the device), setting of thermostatic or electrothermic valve.*



- Re-test tightness of the unit or of installed fittings on the water side. If a sludge filter is installed before the unit – clean the filter and check deaeration of the heat exchanger.
- Check unit safety with respect to electric shock hazard according to applicable ČSN or national standards, including earthing inspection.

* if installed

12.1. Troubleshooting

Problem	Possible cause	Remedy
The unit can not be turned on	Unit circuit-breaker is off	Turn on
	Mains failure	Inspection
	Controller position "0"*	Check, > position than "0"
	External contact*	Check connection or interconnection
Noisy motor	Defective motor mount	Check - replacement
Motor overheats (motor thermal contact turns off)	Defective motor mount or winding	Replace fan unit
	Heavily soiled motor – insufficient cooling	Check, clean
	Excessive temperature of intake air	Inspection
The unit does not heat	Broken or clogged medium supply	Check - replacement
	Little air flows through the heat exchanger	Check - remove
	Soiled heat exchanger splines	Check – clean
	Insufficient media temperature	Remove
	Medium does not circulate	Check, deaerate
	Temperature achieved in line with controller setup	Controller setup
	Defective drive of electrothermic valve	Check setup, or replace if defective
Automatic operation disconnection	Overheated motor	Find out and clear the cause

* if installed

13. Decommissioning – disposal



After the expiration of the service life, the unit must be disassembled and disposed of. Only qualified company may disassemble the device. The product or components thereof must be disposed in environmentally-friendly manner at the end of its service life.

The components of the unit must be separated and sorted out by type of material for disposal. Dispose of the metal and plastic components at your local collection yard. The transport packaging of the product is made of common recyclable material (paper, polyethylene, wood) and is labelled as such according to ČSN 77 0052-2.

As far as disposal is concerned, it is operator's responsibility to comply with applicable national provisions in the country of use. In addition, follow regulations and laws of your country applicable to waste disposal. Separated collection and recycling of the products may help to protect environment and human health.

14. Important notes



The heating unit covers losses of the heated room. Other uses are not intended. The manufacturer accepts no liability for damage resulting from use other than intended. Observe this manual in operation of the units.

Installation, electric connection, and repairs must be carried out by qualified persons according to § 6 of Decree No. 50/78 Coll. or according to applicable national standards and regulations. An expert company is needed to connect the heating medium.

Before the start of the heating season, it is necessary to provide the required amount of heating medium with the design values for units with the hot water heater.

The manufacturer reserves right to changes for marketing or production reasons without prior notice!



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