

AIR HEATING UNIT **STAVOKLIMA**

Installation and operation manual

Multiflow model





EN



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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>

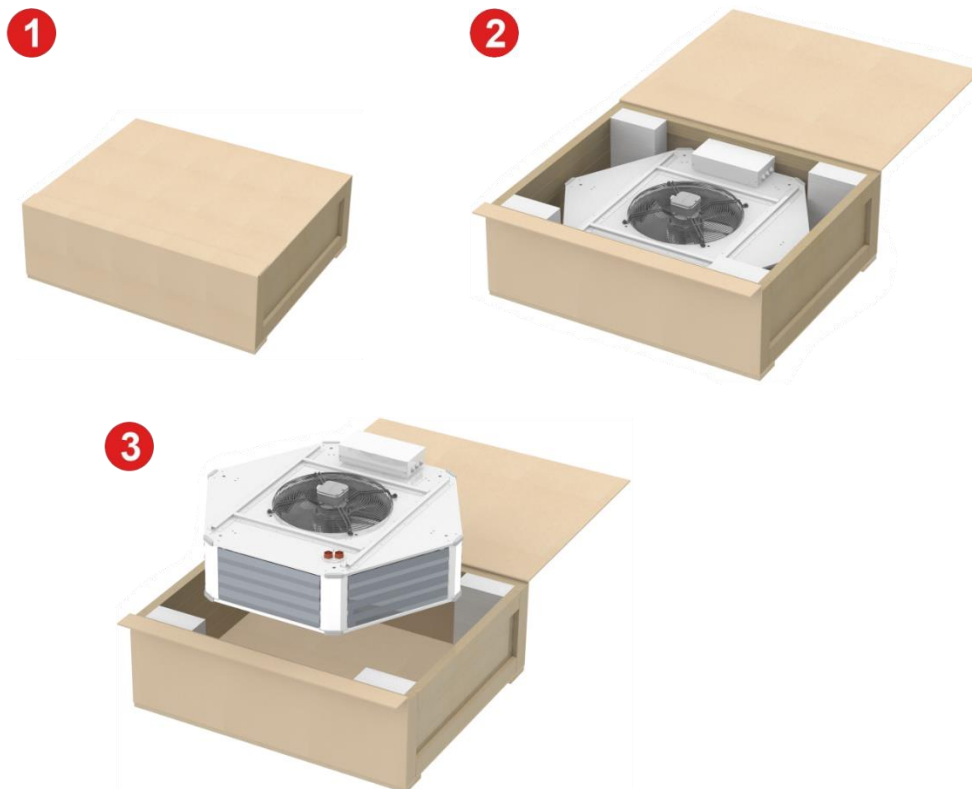
2. Unpacking, check after transport or warehousing

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.

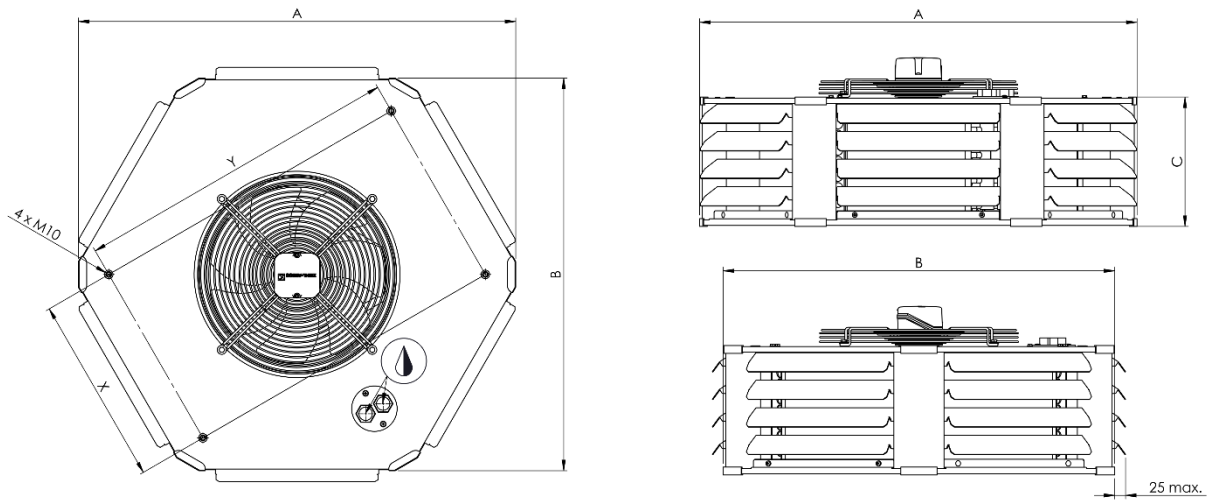
Full performance of the unit may be provided only when maintenance is regular and proper. All controls are accessible and well maintained.

Technical conditions for unit operation:



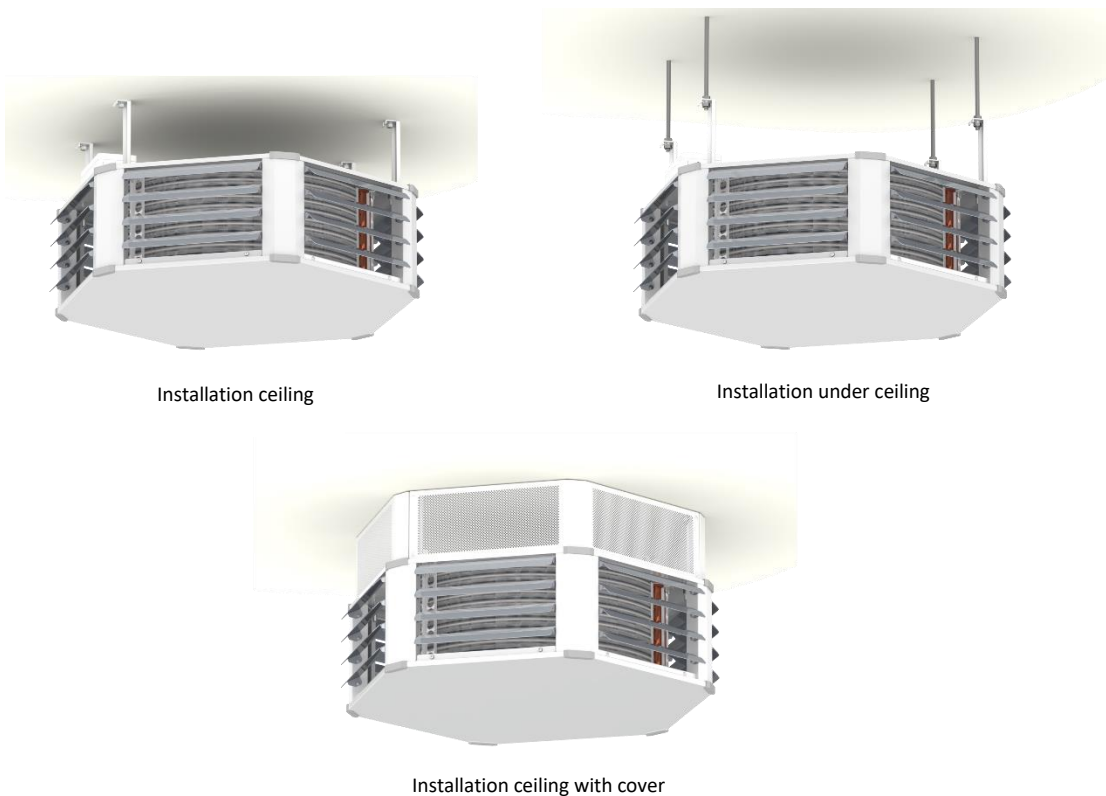
- max. media working temperature 90°C/pressure 1.6MPa – unless specified otherwise,
- operating voltage of the hot water unit – 230V-50Hz,
- max. surrounding temperature 40 °C,
- hot water IP rating – IP 54,
- the unit is intended for basic and non-aggressive environment,
- minimum pressure difference 23kPa must be provided for use of a 2W valve (applies only to a pressure-independent valve).

5. Dimensions of the unit



Model	Dimension (mm)					
	A	B	C	Y	X	max exhaust height
Multiflow MF1	865	775	225	375	645	2300
Multiflow MF2	1100	975	225	490	845	4000

6. Unit installation



6.1. Suspensions ceiling



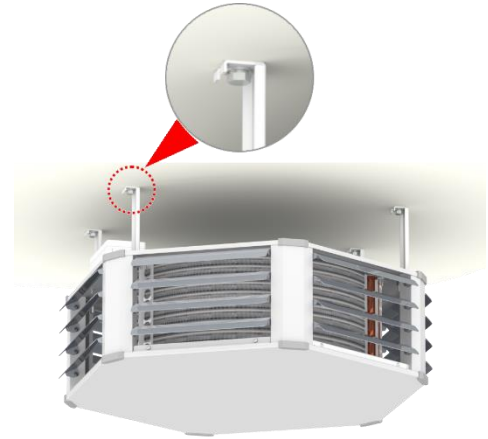
The heating unit is suspended in four suspension points on the unit casing. The suspension points are accessible from outside and rivet nuts (M10 threads) are installed on the unit from production plant.

The following accessories for the ceiling suspension (based on a special purchase order) is available:

4 pcs suspensions, 4 pcs bolts M10x45 - 8.8, 4 pcs flat washer size 10, 4 pcs spring washers size 10.

Assembly procedure:

1. Measure out position of the unit and mark anchoring point on the ceiling.
2. Drill the holes for installation of the anchors. Always use corresponding drilling bit for wall plugs.
3. Apply the chemical anchor into the drilled holes and insert the wall plugs/anchors to the ceiling.
4. Install the bolts having minimum size M10 (not included in the supply) to the prepared ceiling anchors. Do not tighten the bolts yet.
5. Connect the hinges onto the unit using supplied fasteners.
6. Put the unit on the pre-prepared not fully tightened bolts.
7. Carefully tighten the bolts. Check for proper and safe suspension of the heating unit.



6.2. PK ceiling cover



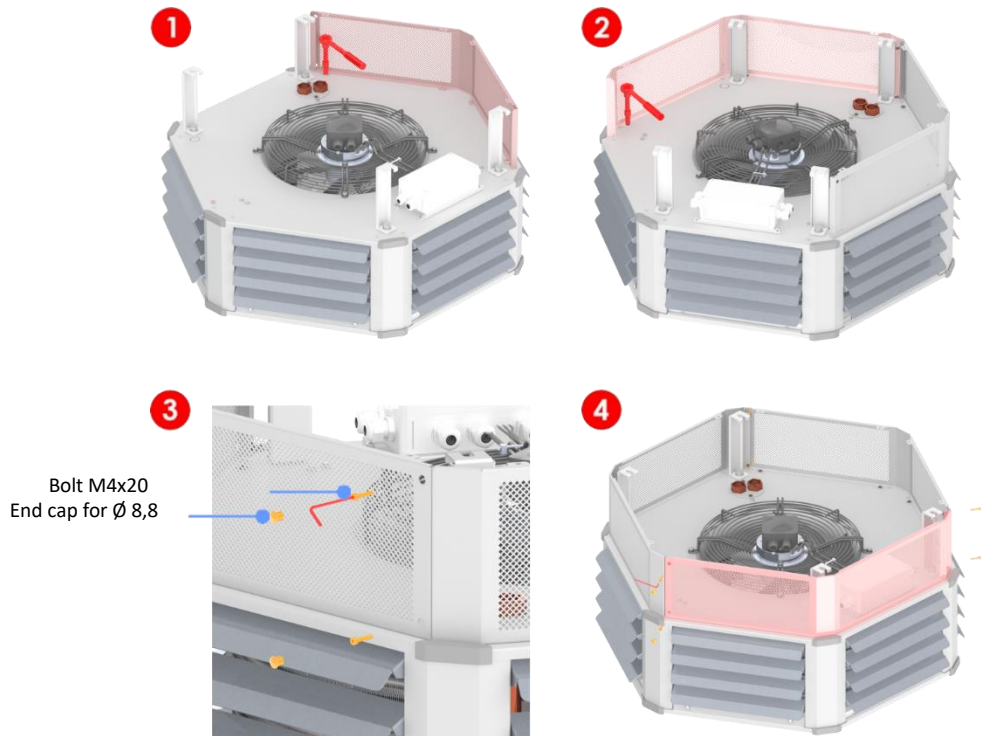
A cover, which is used to cover the components and operates as a suction grid of the unit, may be used for the ceiling suspension of the Multiflow unit. The cover is attached by bolts into riveting nuts being located on the outer shell of the unit – M4 threads.

The following accessories for the PK ceiling cover (based on a special purchase order) is available:

1 pc ceiling cover, 6 pcs bolts M4x20, 6 pcs end caps for \varnothing 8.8, 5 pcs bolts M4x12.

Assembly procedure:

1. Prior to suspension of the unit to the ceiling, first attach the first cover part using the bolts M4x12 to the pre-prepared nuts on the shell of the unit. (Fig. 1 on page 7)
2. Measure out position of the unit and mark anchoring point on the ceiling.
3. Drill the holes for installation of the anchors. Always use corresponding drilling bit for wall plugs.
4. Apply the chemical anchor into the drilled holes and insert the wall plugs/anchors to the ceiling.
5. Install the bolts having minimum size M10 (not included in the supply) to the prepared ceiling anchors. Do not tighten the bolts yet.
6. Connect the hinges onto the unit using supplied fasteners.
7. Put the unit on the pre-prepared not fully tightened bolts.
8. Carefully tighten the bolts. Check for proper and safe suspension of the heating unit.
9. Attach the other part of the cover using bolt M4x12 to the nut on the shell of the unit. (Fig. 2 on page 7)
10. Use bolts M4x20 to secure the first and second portion of the ceiling cover together. Cover the holes with end caps. (Fig. 3 on page 7)
11. Fasten the remaining third portion of the cover that is used as a service lid for connections. Use bolts M4x20 to secure the first and second portion. Cover the holes with end caps. (Fig. 4 on page 7)



6.3. Suspensions under ceiling



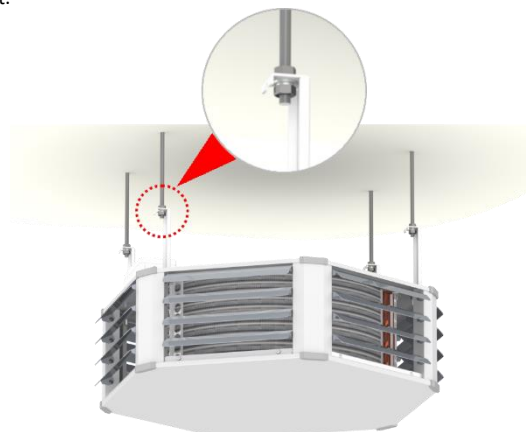
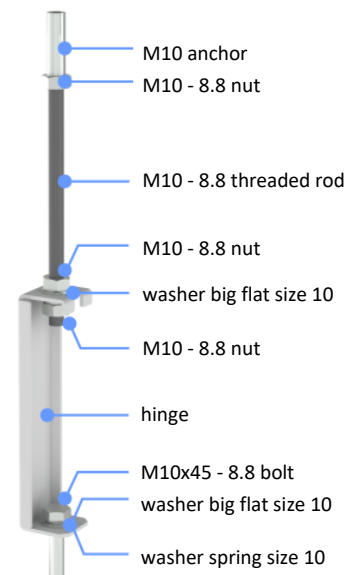
The heating unit is suspended in four suspension points on the unit casing. The suspension points are accessible from outside and rivet nuts (M10 threads) are installed on the unit from production plant.

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

4 pcs hinge, 4 pcs bolt M10x45 – DIN 933, 12 pcs big flat washer size 10, 8 pcs spring washers size 10, 4 pcs M10x1000 thread bar, 12 pcs M10 nuts, 4 pcs M10/40 anchor.

Assembly procedure:

1. Measure out position of the unit and mark anchoring point on the ceiling.
2. Drill the holes for installation of the anchors. Always use corresponding drilling bit for wall plugs.
3. Cut the threaded bars to required length.
4. Apply the chemical anchor into the drilled holes and insert the wall plugs/anchors to the ceiling.
5. Fit the threaded rods into the prepared ceiling anchors and rotate the nuts.
6. Connect the hinges onto the unit using supplied fasteners.
7. Lead the threaded rods through the holes on the suspensions of the unit. Fit the unit to the required height and fasten with the nut.
8. Carefully tighten the bolts and nuts. Check for proper and safe suspension of the heating unit.



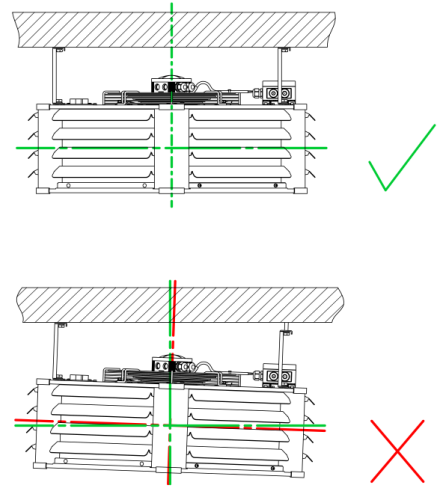


Pay attention to correct fitting of all nuts to all assembly components. Pay attention to the end position of the threads to avoid loosening and falling the unit by rotation.

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.

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.

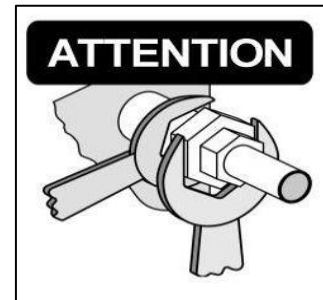
Always suspend the device to all suspension points.



7. Connection of the unit to heating system



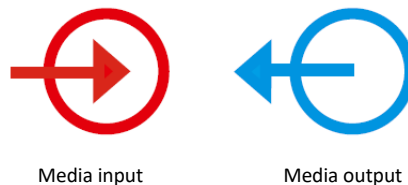
Please check all hot water connections for readiness and perfect condition before connecting media to the unit. Furthermore, please check the hot distribution for components or other measures to ensure zero transmission of static, dynamic, and dilatation forces at the input and output neck connections. 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) 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 top part of the unit. The inputs are identified by round marks – **medium input red** with arrow pointing inside, and **medium output blue** with arrow pointing outside.



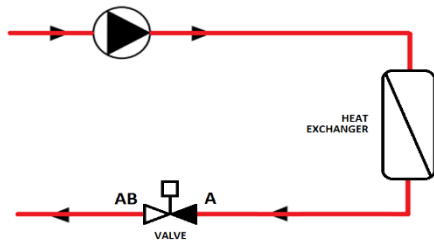
Do not swap the return and supply neck positions - this may cardinaly change performance and parameters of the heater with consequent impact on the hydraulic system. Do not exceed max temperature and pressure for which the unit is rated.

The function of the electrothermic valve drive is given by a control type. The connection is then made directly on the neck for media input. For electrothermic drive functions, refer to clause 7.1.

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 valve with control head can be delivered for the hot water heat exchanger. The valve drive is 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.



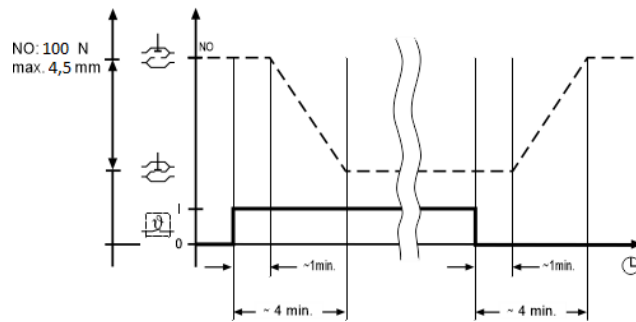
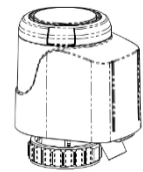
Connection of 2-way ETVS valve

7.1. 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 (ETVS).

“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 thermal 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: power voltage AC 24V, control signal DC 0-10V, IP 54.

8. Types of controllers and options for controlling

AC1 - O3

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.

Type of control	O3
For max unit current	3A
IP rating	IP 54
Dimension (length x width x height)	86x166x91mm



EC1 - OE

The OE series control for continuous control of EC fan revolutions with integrated 10V power source. The OE controller is powered by 230V, respectively. The controller enables connection of multiple units with maximum power part up to 10A. It enables connection of the room thermostat and the "FAILURE (TK)" fan contacts can be connected using the multi-functional input.

Type of control	OE
Unit power supply	230V
For max unit current	10A
IP rating	IP 40
Dimension (length x width x height)	230x180x90mm



AC2 - UNIREG MF AC2 + PR 160

Control option with 3-stage PR 160 output controller with 24V voltage supply and output for actuators controlled by 0-10V signal. Optional control by an external spatial sensor. The electronic for the unit control including accessories is installed in a plastic cabinet with cooling ribs. Unireg MF AC2 is fitted with safety and power elements with output for connection of 2-way electrothermic valve (ETVS). Multiple units can be connected.

Type of control	Unireg MF AC2	PR 160
Unit power supply	230V	24V
For max unit current	2,5A	-
IP rating	IP 20	IP 30
Dimension (length x width x height)	300x400x170mm	93x128x31mm



AC3 - UNIREG MF BMS + PR 160

Control option with 3-stage PR 160 output controller with 24V voltage supply and output for actuators controlled by 0-10V signal. Optional control by an external spatial sensor. The electronic for the unit control including accessories is installed in a plastic cabinet with cooling ribs. Unireg MF AC3 is fitted with safety and power elements with output for connection of 2-way electrothermic valve (ETVS). Optional control from superior control system via BMS. Multiple units can be connected.

Type of control	Unireg MF BMS	PR 160
Unit power supply	230V	24V
For max unit current	2,5A	-
IP rating	IP 20	IP 30
Dimension (length x width x height)	300x400x170mm	93x128x31mm



EC2 - UNIREG MF EC2 + PR 160

Control option with continuous output control using 0-10V signal PR 160 with 24V voltage supply and output for actuators controlled by 0-10V signal. Optional control by an external spatial sensor. The electronic for the unit control including accessories is installed in a plastic cabinet. Unireg MF EC2 is fitted with safety and power elements with output for connection of 2-way electrothermic valve (ETVS). Multiple units can be connected.

Type of control	Unireg MF EC2	PR 160
Unit power supply	230V	24V
For max unit current	10A	-
IP rating	IP 54	IP 30
Dimension (length x width x height)	300x400x170mm	93x128x31mm



EC3 - UNIREG MF BMS EC + PR 160

Control option with continuous output control using 0-10V signal PR 160 with 24V voltage supply and output for actuators controlled by 0-10V signal. Optional control by an external spatial sensor. The electronic for the unit control including accessories is installed in a plastic cabinet. Unireg MF EC3 is fitted with safety and power elements with output for connection of 2-way electrothermic valve (ETVS). Optional control from superior control system via BMS. Multiple units can be connected.

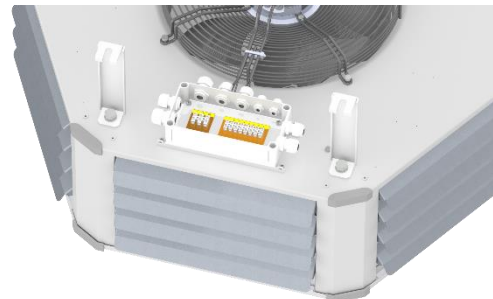
Type of control	Unireg MF BMS EC	PR 160
Unit power supply	230V	24V
For max unit current	10A	-
IP rating	IP 54	IP 30
Dimension (length x width x height)	300x400x170mm	93x128x31mm



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 clamps are accessible on the top part of the unit after the cover of the electric installation cabinet is screwed off. 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 electrothermic valves for the temperature control (chapter 7.1). 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, room sensor, hanging of the unit, ceiling cover, 0–10V signal control of the unit over the superior BMS, and more. Selection of an appropriate type of accessories must be supported by the controller type.

For all accessories offered for the Multiflow 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 Multiflow 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. The regularity of checks depend on environment in which the device is operated. To access the heat exchanger, demount the lower plate of the unit being fixed around the circumference by bolts.



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. Then, check tightening of bolts of exhaust splines.
- To check the heat exchanger space and remove any potential impurities or things, remove the lower plate of the unit being connected by the circumferential bolts. Use vacuum cleaner to remove dust from the heat exchanger. When using steam for cleaning, set as lowest temperature as possible and as lowest pressure as possible for not to damage the heat exchanger.
- Before winter, check in particular superior circulating pump (not included in the supply of the device), setting of 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 cleanliness of the motor suction grid and inner or outer parts of the unit. Do not wash the motor body with water! Wipe with lukewarm towel only – motor winding damage hazard; after the motor is cleaned, do not turn the unit on for at least 60 minutes – let the unit dry. Use vacuum cleaner to remove dust from the suction grid. Proceed carefully when wiping the exhaust splines!
- Check unit safety with respect to electric shock hazard according to applicable ČSN or national standards, including earthing inspection.
- Thorough cleaning of the exhaust splines (tighten up, if necessary).

* 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 fan delivers little air only	Soiled suction grid of the fan	Check – clean
The unit does not heat	Broken or clogged media 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
	External clock	Check correct function (refer to controller description)

* 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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