

TECHNICAL DOCUMENTATION FOR USERS OF AIR HEATERS

MTP, MTPAL, MTP-V

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Warranty card

Approved by:



Date: 12. 2. 2018

The manufacturer is responsible for defects in the product that have been proven to be incurred in the warranty period by a faulty construction or faulty design.

The warranty does not apply to cases where the user

- makes adjustments or changes to the product
- violently breaks the product
- connects the product with incorrect values (e.g. lower amount of air, higher heat output)
- chooses a different working environment for the product than that recommended by the manufacturer in the enclosed information
- does not comply with the technical conditions supplied with the product

Warranty period:

24 months from the date of delivery of the product, subject to all of the above stated conditions (instructions and recommendations of the manufacturer).

The manufacturer reserves the following as a warranty condition - commissioning and checking by a qualified worker of an assembly company and completing and signing the "Heat exchanger unit commissioning protocol", which is an integral part of this warranty card.

If it is contractually agreed in some cases during the sale, the manufacturer reserves commissioning or checking by their own personnel as a warranty condition.

The warranty can also be contractually conditioned by regular inspections by manufacturer's personnel.

Product name: **AIR HEATER**

Type/design: **MTP**

Combustion chamber used: **BK**

Serial number:

Product delivery date confirmed by the Seller:

Product commissioning date confirmed by the Supplier:

When you submit a claim, please, provide this warranty card together with the heater commissioning protocol with confirmed participation of a worker of the manufacturer during start-up of the equipment and together with the protocol on setting up the burner to the prescribed values.

The warranty card is invalid without confirmation of product commissioning!

AIR HEATER COMMISSIONING PROTOCOL

TO BE FILLED IN BY A QUALIFIED WORKER OF THE ASSEMBLY COMPANY

TYPE: MTP

Ser. No.:

Compliance with all installation conditions according to this “MTP Technical documentation” has been checked. Installation instructions (installation, safety distances, connection of the air-conditioning circuit, smoke flue connection including condensate drainage, assembly of burner and electrical installation).

In particular, connection of all thermostats has been checked:

- | | |
|-------------------------|--|
| T1 (safety) | - switches off the burner feed phase |
| T2 (operational) | - switches off the burner |
| T3 (operational) | - switches the fans and ensures their slowdown (cooling down the heat exchanger chamber) after switching off the unit |

The amount of air flowing through the heat exchanger chamber has been checked.

Overall installation (quality, completeness, craftsmanship) has been checked.

For heaters equipped with bypass, the following has been checked:

- control of valve actuators (in particular the direction of rotation)
- no valve position causes overheating of the heat exchanger and thus activation of the operating thermostat
- there is no excessive condensation

For heaters equipped with a fan, the following has been checked:

- correct direction of rotation of the fan
- correct belt tension, if it is a belt drive

The stated heater has been installed and connected according to the “Technical documentation” of the manufacturer and is capable of continuous operation.

The commissioning and check has been carried out by:

Name: signature: date:.....

Certificate
of product quality and completeness
Unit test report

By this certificate the manufacturer confirms that the properties of the product,

name: **AIR HEATER**

type/design: **MTP**

serial number:

basic tech. data:

Nominal heat input	kW
Nominal heat output	kW
Nominal air flow	m ³ /h
External air pressure	Pa
Nominal electrical input.....	kW
Weight.....	kg
Protection	IP
Voltage	3x400 V + N + PE 50 Hz
Electric engine used:	
V-belt:	

comply with the test regulations:

.....

date:

technical control department:



production plant director
Ing. Václav Šubrta

TECHNICAL CONDITIONS INSTRUCTIONS FOR INSTALLATION, OPERATION AND MAINTENANCE OF AIR HEATER MTP, MTPAL, MTP-V

1. Use:

Air heaters using gaseous fuels are used to heat the air for purposes of heating or ventilation with heating and are designed for separate operation or for installation in air-conditioning systems, air-conditioning units and other applications.

2. Function description

The basis of the heaters MTP, MTPAL, MTP-V is a closed air-flue gas exchanger which consists of a combustion chamber and a tube heat exchanger. The air-conditioning and combustion circuit of the air heater are therefore separated. The heater heats the air conveyed by the fan that is or is not part of the heater (depending on the type). The air is sucked directly from the heated space or via the air-conditioning piping. The air is heated while circling around the combustion chamber and the tube heat exchanger and being heated it flows through the heater to its discharge section.

The burners are always pressure burners and only separately certified high-quality burners are used. The burner is designed according to the fuel used, its inlet pressure and the regulation requirement. Flue gases are drawn from the combustion chamber by a chimney (the chimney is not a part of the heater).

3. Type designation:

Produced heaters are marked with a type designation, the meaning of which is as follows:

	MTP	50
	MTPAL	50
	MTP-V	50
designation of the heater		
type size (according to the table of basic parameters)		

MTP	25, 37, 50, 65, 85, 100, 125, 150, 175, 225, 300, 350, 400, 525, 650, 850, 1000, 1500, 2000, 2500
MTPAL	50, 80, 150, 200, 300, 500, 700, 900, 1200
MTP-V	P1, P2, 25, 37, 50, 65, 85, 100, 125, 150, 175, 225, 300, 350, 400, 525, 650, 850, 1000, 1500, 2000, 2500

4. Design description:

1. Heat exchanger

The heat exchanger used in the MTP, MTP-AL and MTP-V air heaters is a weldment consisting of a cylindrical or a drop-shaped combustion chamber and a subsequent tube heat exchanger. According to the size, heat exchanger is made as a three-tier (up to MTP 400) and four-tier for larger sizes. The combustion chamber is reversing, for the heat exchangers of P1 and P2 type, it is a one-way chamber. The heat exchangers are manufactured according to the thermal load and according to the customer requirements from the materials of the class 11, stainless steel and refractory materials.

The heat exchanger is circled around and cooled down from outside by the air that is thus heated.

2. Heat exchanger unit

The heat exchanger is located in a cabinet that is made of frame structure and casing, or can be made from components according to the customer requirements, but must always be made of insulated sandwich panels with a minimum thickness of 20 mm. Typically, the casing consists of a perimeter construction made from modular profiles filled with panels, possibly also a frameless casing structure. The combustion chamber is anchored in the casing by means of the heat exchanger legs, which are free due to the dilatation, and by means of a burner flange for fixing the burner and the chimney. The chimney serves for removing the spent fuel from the combustion chamber through a chimney outlet, usually in the rear wall of the heater, the heater with the heat exchanger 525 and higher, on the burner wall, optionally on another side.

In most cases, the heater is equipped with a bypass, which is a separate part in the casing outside the space that is occupied by the heat exchanger and is fitted with a valve. A portion of the heated air can then flow through the bypass completely outside the heat exchanger, however, in such a way that the amount of air passing through the heat exchanger is not less than the amount of air required for maximum heating on the heat exchanger (30-55 °C unless otherwise specified).

Each heat exchanger unit of the heater is fitted with a triple thermostat (T1, T2, T3) at the output of the heated air, which must be connected to the electrical control circuits of the complete air heater and which ensures its safe operation mode (for more information see instructions for installation/electrical installation).

The air is divided by the walls into the heat exchanger and bypass area. In the heat exchanger area, there are also guide plates which direct the air between the heat exchanger tubes and an aperture which provides air inlet for sufficient cooling of the combustion chamber.

3. MTP-V Specifications:

MTP-V are gas air heaters without their own fan that are designed for installation into the air-conditioning unit or air-conditioning piping. They do not contain an air fan, but it is always part of the system and the heater cannot be operated without it.

The MTP-V heaters cover the required dT heating range for air-conditioning heating from the outside air heating to the required temperature to small air heating to e.g. heat recovery.

The basis of the MTP-V heater is always the BK heat exchanger selected according to the required output; the required output is then the nominal output of the heater. The heat exchanger table is below. The heat exchanger may be extended or shortened according to the spatial disposition. Depending on customer requirements or specific needs, the heat exchangers are made of steel of class 11 and stainless-steel materials.

Each heater has a nominal amount of air determined. With less air, the heater cannot be operated for the required output.

The optimal air dT passing through the heat exchanger is c. 30 °C, so as to avoid unwanted excessive condensation, so that the flue gas temperature is relatively low, and the resistance of the heat exchanger on the side of the air is not too high. Basically, the bypass is designed to keep "excess" heated air in the heater out of the heat exchanger.

The specific technical parameters of the supplied heater are always included in this documentation in the "Certificate of product quality and completeness" and on the nameplate.

Table of MTP-V technical parameters

BK	maximum heat output standard design	minimum air flow standard design
	kW	m ³ /h
P1	45	2400
P2	60	3300
37	50	2700
65	85	4600
100	130	7100
150	180	9800
225	300	16300
400	500	27100
525	650	35300
650	790	42900
1000	1100	59700

4. MTP Specifications:

MTP heaters are always supplied as a composition of a heat exchanger unit and radial fan. The heat exchanger unit is not fitted with a bypass. The frame consists of welded steel profiles, usually in a compact monoblock design.

MTP air heaters are delivered in an upright or horizontal design. Both versions can be equipped with a wide range of accessories such as e.g. blind shutters, filters, elastic connections, etc. that do not affect the function of the gas heater.

The heaters are supplied with fans and engines as required by customers with the required disposition pressure for connection to air-conditioning piping.

The casing is made with sandwich panels with mineral insulation of 30 mm. Surface treatment of panels is made of galvanized sheet metal. At customer's request, the heater can be supplied in any desired colour according to the RAL sampler.

The design for the outdoor environment is supplemented with a cover for the burner, or with a roof. Compared to the standard technical parameters stated below, the parameters can be adjusted according to the application requirements by using the appropriate engines and by adjusting the amount of air and heat output, always only within the parameters of the corresponding heat exchangers and MTP-V. The specific technical parameters of the supplied heater are always included in this documentation in the "Certificate of product quality and completeness" and on the nameplate.

MTP air heaters can be equipped by the manufacturer with an electrical switchboard located on the heater or designed for a stand-alone installation that provides control of the burner, engine protection and start up and triple thermostat safety functions.

Table of MTP technical parameters

TYPE	Max. heat output	Air flow	Output pressure	Consumption - natural gas	Nominal input	Weight
	kW	m ³ /h	Pa	m ³ /h	kW	kg
MTP 25	29	2200	40 - 300	3.11	0.50 - 1.00	220
MTP 37	45	3000	40 - 260	4.87	0.50 - 1.00	220
MTP 50	60	4000	40 - 340	6.47	0.70 - 1.50	310
MTP 65	75	5100	40 - 260	8.06	1.15 - 1.90	310
MTP 85	100	6600	40 - 300	10.75	1.15 - 2.60	450
MTP 100	120	7500	40 - 280	12.94	1.15 - 2.60	450
MTP 125	150	10000	40 - 300	16.13	1.60 - 3.60	585
MTP 150	175	12000	40 - 340	18.82	2.70 - 4.50	590
MTP 175	200	14000	40 - 360	21.50	2.70 - 4.50	800
MTP 225	260	18000	40 - 260	29.97	4.70 - 6.20	803
MTP 300	350	24000	40 - 380	37.63	6.50 - 12.00	1100
MTP 350	400	28000	40 - 450	43.00	8.50 - 16.00	1120
MTP 400	465	32000	40 - 280	49.98	12.00 - 16.00	1200
MTP 525	600	41000	40 - 250	64.51	17.00 - 20.50	2300
MTP 650	750	52000	40 - 280	80.64	17.00 - 24.00	2800
MTP 850	990	62000	40 - 300	106.43	25.00 - 33.00	5700
MTP 1000	1160	73500	40 - 300	124.74	25.00 - 33.00	6000

5 MTP-AL Specifications:

MTPAL air heaters are produced in block and chamber designs. They are produced only in a horizontal design on the base frame.

The gas heating components are always equipped with a ventilation bypass with a valve. The fans are on a common frame with the engine and stored on the vibration isolators. The units are supplemented by a basic range of pocket filters, valves, mixing chambers and other common accessories that do not affect the function of the gas heater.

The unit frames are made from modular aluminium profiles of a square cross section with a side length of 50 mm. The casing is done with respect to the maximum thermal

insulation of the unit from sandwich panels filled with mineral wool of thickness of 45 mm. Panels are reinforced with glued and riveted profiles for firmness and durability.

Panels are attached into the aluminium frames according to their position with rivets, bolts and nuts, plastic fasteners or hinges and handles. In addition to standard high-quality seals, the panels without the need for access regarding the outdoor units are cemented. Panels can be supplied powder-coated in any colour according to the RAL sampler at the customer's request and for an extra charge.

All parts of the unit are produced as standard in silicon-free design.

The heaters are supplied in designs for indoor and outdoor use.

The fan component of the heaters is equipped with radial fans or fans with a free impeller, with the amount of air and heat output as required by the customer. The engines are together with the fans located on an integral frame.

The specific technical parameters of the supplied heater are always included in this documentation in the "Certificate of product quality and completeness" and on the nameplate.

MTPAL can be equipped with a wide range of accessories such as e.g. blind shutters, filters, recuperators, cooling exchangers, elastic connections etc. that do not affect the function of the gas heater.

Table of MTP technical parameters

parameters/type	50	80	150	200	300	500	700	900
max. output [KW]	50	80	140	200	275	460	700	900
max. flow at 300 Pa	5200	8800	12500	18000	25000	36000	48000	60000
standard engine [KW]	1.1 - 3	2.2 - 4	3 - 5.5	4 - 7.5	5.5 - 11	11 - 18.5	15 - 30	22 - 30
BK	P1-37	37-65	37-100	37-150	37-225	37-400	37-525	37-650
cross section width [mm]	900	1100	1350	1450	1600	2000	2400	2800
cross section height [mm]	700	900	1000	1250	1500	1650	2100	2200

6. Working conditions and conditions for installation

The function of the air heater can only be guaranteed if the following working conditions are met:

- (a) compliance with the following parameters:
 - nominal heat input (kW)
 - nominal air flow (m³/h)
 - external resistance must correspond to the proposed value
 - input temperature (for standard design up to 40 °C, unless otherwise specified)
 - prevention of the chimney effect and return flow
 - correct connection of thermostats T1, T2, T3
- b) compliance with the environment

The air heaters are made in indoor or outdoor designs.

- the indoor design with IP 40 electrical protection can be used in an ordinary basic environment.

- the outdoor design with IP 43 electrical protection is designed for outdoor environment. The burner and the triple thermostat are provided with appropriate covers to protect these devices against atmospheric precipitation.

- with this design, prevention of the possibility of sucking up coarse dirt (e.g. leaves from trees).

c) no flammable materials can be stored in the area of the air heater - fire hazard!!!

The heater interference suppression corresponds to ČSN 334200.

d) if the air heater is supplied in a design without the fan or without electrical installation and MaR system, it is necessary to ensure their connection and installation according to the applicable standards for gas equipment, thus in particular 2016/426.

7. Technical supervision and inspection

Technical supervision and inspection during production as well as acceptance are performed by the technical committee of the manufacturer.

Furthermore, the manufacturer reserves participation of their representative in putting the heater into service as the warranty condition.

8. Marking

On each heater there is a non-removable label that contains:

- a) manufacturer's designation
- b) product identification number
- c) type designation
- d) serial number
- e) year of production
- f) nominal heat input (kW)
- g) nominal heat output (kW)
- h) nominal air flow (m³/h)
- i) external air pressure (Pa)
- j) nominal electrical input (kW)
- k) weight (kg)
- l) voltage system (3x400 V + N + PE 50 Hz)
- m) protection
- n) destination country

In addition, on each heat exchanger unit there is a label with the following text:

"This heater must be installed in accordance with the applicable instructions and its use is permitted only in a well-ventilated area. Please read the instructions before installing and using it."

9. Testing

Type tests

These tests are carried out by the Engineering Test Institute, Public Enterprise in Brno, test room 202, Hudcova 56b, 621 00 Brno.

Production tests

These tests are carried out at production plant JINOVA s.r.o., Do Žlábku 733, Jilemnice on each produced heat exchanger unit.

The following tests and checks are carried out in terms of production tests:

- cabinet welds check
- heat exchanger welds check
- external connection dimensions check
- surface treatment check
- check of completeness of the device and accessories
- check of electrical connection

See: "Unit test report"

Packaging, transport and storage

- Supplied heaters are packaged on the request of the customer in a fixation foil to reduce damage of the surface treatment and are stored on wooden prisms or pallets.
- It is necessary to ensure careful handling during transport and loading. Handling must be carried out only via the pallet, the lower frame (between the wooden prisms) or the welded loop. If there are two loops on the device, it is necessary to use both of them, suspension on one loop is not permitted! Packaging must not be exposed to direct influences of weather, long-term exposure to humidity and impacts.
- Storage of heaters must be carried out in well-ventilated rooms without the effects of corrosive vapours and aggressive gases or under a shelter that safely covers the heater against atmospheric precipitation.

INSTRUCTIONS FOR INSTALLATION

Installation of the heater in place



The heater is placed on a horizontal, solid enough floor or frame. It is necessary to keep the horizontal position of the heater, or slight slope towards the condensate outlet to ensure its easy drainage. The slope must not be greater than 5 mm in width of the heater. The location must be such as to allow the combustion chamber to be replaced and the tube space to be cleaned. This means that at the front (on the side of the burner) there must be free space equal to the dimensions "length x width x height" of the heater. On the panel covering the tube plate of the heat exchanger chamber (opposite the chimney), nothing can be installed there due to dismantling when cleaning the tube plate.



For the outdoor design when placed on the roof of the building, the installation company is obliged to provide the heater with a lightning conductor in accordance with ČSN EN 62 305.

Safety distances

The actual distance of the air heater from the flammable material must not be less than the safety distance that is 200 mm, according to ČSN 06 1008:97. If this distance cannot be met, it is necessary to use a protective screen made of flammable material A or B. The thickness of the protective screen must be at least 3 mm. The protective screen must have a permanent position between the appliance and the protected material at a distance (30 + 5 mm) from the protected material. The protective screen must extend beyond the protected material to the nearest wall (ceiling) of non-flammable material, but at least 300 mm on the top and 150 mm on the sides. When using the protective screen, the required distance can be reduced by no more than half.

If the heater is installed on the floor of flammable material, an insulating, non-conducting pad is used in this case. The material used for insulating pads - the degree of flammability A, B, must be resistant to the mechanical effects of the load. The dimensions of the pad must be at least the same as the heater floor plan. The thickness of the insulating pad must be at least 5 mm.



No flammable materials can be stored at the location of the heater, as this could create a fire hazard!

Interconnection of air-conditioning circuit

The air-conditioning piping can be screwed directly onto the frame or through the flange damping insert. The connection on the inlet and outlet side of the air heating element must always be a full-area connection, in case of connection to sub-accessories according to the specification of this accessory.

Connection to smoke flue

The installation of the smoke flue must comply with all applicable regulations and must be carried out by a specialist company. For calculation of the smoke flue, 0 Pa per throat and the mass flow of flue gases according to the burner setting and the heat input (usually approx. 14 kg/h for every 10 kW of output) is considered.

Note : Each heater fitted with a gas overpressure burner must be connected through a separate smoke flue to a separate chimney flue.



The necessity for all designs of MTP heaters is to ensure condensate drainage from the chimney flue.

Condensate drainage

If the heater contains condensate drainage, it is advisable to ensure condensate drainage from the heater. Condensate drainage must be designed in such a way that it cannot be frozen in the winter period (for outdoor installations).

Assembly of burner

The heat exchanger units are fitted with pressure burners with one-stage, two-stage or continuous regulation for the respective heating medium and according to the required output given by the designer. Min. output of the burner is generally set to 50-65 % of the nominal output. It cannot be operated in the full range of the work field. The nominal output is set according to gas pressure, swirler and air damper. The burner is not part of the supply of heat exchanger units.



Prior to installing the burner, it is necessary to tighten the burner flange bolts. The heating medium connection must be carried out by a specialist company (according to the relevant project) and must comply with the standards for operation of the given type of burner.



The gas supply and orientation of the burner must be such that the gas inlet does not prevent service access to the tube plate cover. For this reason, it is advisable to lead the gas supply to the burner in the direction of the air flow. If this is not possible, it is necessary to allow easy dismantling of the part of the piping in front of the removable panel above the tube plate cover.

Assembly and adjustment of the burner will be performed by a service worker of the burner manufacturer or an authorized worker. After the burner adjustment protocol has been handed over and the relevant revisions have been made, the heat exchanger unit is ready for approval and operation.

Heat exchanger units are, as standard, fitted with flanges with seals for assembly of the burner by means of bolt connections. For the outdoor design of the heat exchanger unit, the corresponding cover is screwed over the burner.

Before installation, check that the local conditions of fuel distribution, fuel properties, overpressure and current heater settings are compatible.

Electrical installation

The electrical installation must be carried out by a specialist company which must also provide electrical revision in the sense of ČSN 33 2000-6-61.

Do not install any elements that make it difficult to dismantle the panel covering the tube plate cover.

The ESD3J safety thermostat is not designed to regulate the required temperature. It is placed in the heated air behind the heat exchanger, in its upper part max. 20 cm behind the heat exchanger tubes. The contact of the safety thermostat T1 must be connected to the burner feed phase to ensure that it is switched off in any (even malfunctioning) condition of the burner.

The contact of the operating thermostat T2 is connected to the control terminals circuit (usually marked T1 and T2) of the burner and it switches it off when the temperature is above the set value.

The contact of the fan thermostat T3 ensures switching on of the fan and its slowdown (cooling the combustion chamber) when the burner is switched off.

Recommended electrical connection, see drawing No.:
3-JH-2001C - for ESD3J electronic thermostat

The heater is equipped with a clamp for protective connection according to ČSN 32 2000-4.41.

For the outdoor design of the heater, the triple thermostat is provided with a cover.



Once connected, it is necessary to check the direction of speed of the fan engine!



In case of a triple thermostat, it is absolutely necessary to connect the clamp  with PE conductor to prevent the influence of any induced voltages on the thermostat sensor.



Note: It is not possible to switch off the whole device (both burner and fans) without ensuring fan slowdown to cool the heat exchanger. The heat accumulated in the heat exchanger could damage the surrounding equipment due to the flow! It must not be possible to switch off the fans and leave the burner on!

OPERATING INSTRUCTIONS

For the burner installed on the heat exchanger unit, the “Instructions” supplied together with it by the manufacturer, apply to it.

Each heater is fitted at the output with a triple thermostat that provides safe operating mode. This thermostat is not designed to regulate the required temperature.

T1 - safety

- switches the burner off by disconnecting its supply voltage and it is blocked in its off state. To enable a new automatic start of the burner, it is necessary to press the button on the triple thermostat. Between the moment of the burner blocking and the unblocking of the triple thermostat, the temperature must drop below the value set on the thermostat T1. The condition for restart of the heater is removing the cause of overheating.

The electronic thermostat used allows remote resetting of the safety thermostat T1 (e.g. by a button located on the door of the control cabinet), which is advantageous for heat exchanger units located in poorly accessible places (e.g. suspended from the ceiling).

In the event of a power supply failure (during burner operation), due to the accumulated heat in the heat exchanger chamber and the fan malfunction, the temperature will increase. If the temperature exceeds the value set on the safety thermostat T1, this thermostat will disconnect the burner supply. The electronic thermostat resets itself when the network is switched on again if the temperature has already dropped below the set value (for a long-term power outage). For a short-term power outage, it is necessary to wait for the fan to cool the chamber and to reset it by pressing the button on the thermostat.

T2 - operational

- switches off the burner when the set temperature is exceeded and switches it on again when the temperature drops

T3 - fan

- switches the fan on after reaching the set temperature, ensures fan slowdown and cooling the chamber after switching off the burner.



Important information

The main switch can only be switched off after the fan has been completely stopped. For longer shutdowns, it is necessary to close the fuel supply.

After professional commissioning, the set device parameters cannot be further changed to ensure trouble-free operation.

In order to increase safety, we recommend the operator to inspect this heating system at least once a year by a supplier worker or a service worker!

The heater can only be operated by persons over the age of 18.

The heater can only be operated by persons physically and mentally competent for this activity.

MAINTENANCE INSTRUCTIONS

The maintenance of the heater is always carried out while it is out of service. Maintenance service must be in accordance with the operating instructions.

The following activities are performed during maintenance:



a) To ensure at least once a year, in accordance with the valid Decree 85/1975 Coll., checking and adjusting of the burner by an authorized mechanic (preferably before the start of the heating season). The operation of the heater is required for adjusting the burner.

Inspections and revisions of gas equipment	Gas control	Gas control	Service inspection
When:	1 year	3 years	1 year
Who:	operator	inspecting technician	service technician
<u>What is done:</u>			
Check of the location, functionality and tightness of the main valve	X	X	
Check of the location, functionality and tightness of branch closures of ascending lines	X	X	
Check of the location, functionality and tightness of gas meters	X	X	
Check of the location, functionality and tightness of regulators	X	X	
Check of the location, functionality and tightness of gas appliances.		X	X
Check of the location of appliances in terms of space ventilation		X	
Visual check of the location and condition of the common space gas pipeline	X	X	
Overall visual check of the location and condition of the domestic gas pipeline		X	
Check of the tightness of all detachable joints	X	X	
Check of the presence of CO (carbon monoxide)		X	
Cleaning, adjustment and check of gas appliance			X



b) Tightening the bolts of the burner plate and the tube plate cover, check after the first month of operation, then regularly before the start of the heating season.

c) Cleaning the tube plate and the condensate drainage at least once a year (as needed). For LFO (light fuel oils) and diesel burners, cleaning of the tube plate must be carried out regularly whenever the heating efficiency decreases (even once a month, if needed). After cleaning, the bolts at the tube plate must always be tightened properly, or, if necessary, the seal should be replaced (check tightening of the bolts repeatedly after a month of operation!)

If the heater contains the following, we also check:



d) Check of V-belt tension and wear (as needed).



e) Regular check of input filters (min. once a month) - if the heater is equipped with them or they are in the air-conditioning line with the heater. When clogged, clean them or replace the filter cloth. Filter clogging time depends on the intake air pollution. Clogging of the filters significantly reduces the amount of air supplied by the heater and increases the temperature of the heat exchanger chamber. The heat exchanger may be overheated and thus its service life may be reduced.

f) Lubrication of fan bearings - applies only to some fans, e.g. fans with bearings for high temperatures (of ADH-RDH K / K2 type).

Note: for MTP (MTPAL) standard sets, maintenance-free bearings with permanent grease filling are used.

Defects:

- a) Overheating of heat exchanger, failure of safety thermostat T1
 - check whether the suction and discharge spaces (piping, ...) are passable
 - check fan condition, loose V-belts, seized bearings
 - check the filter cloth, or also filter inserts
 - if the filters are not clogged, it is necessary to consult the defect with the production plant.

- b) Flue gases flow into the heated space or higher oxygen content is measured in flue gases
 - check bolt tightening of the tube plate cover and the burner flange.
 - replace the seal of the burner flange and the tube plate cover.
 - check whether the combustion chamber is not burned.

LIST OF ACCESSORIES AND SPARE PARTS

Spare parts are not supplied with the heater. For warranty repairs, the spare parts are available at the production plant which is authorized to carry out warranty repairs on the heater (except the burner).

Post-warranty and non-warranty repairs are arranged by the customers themselves, the spare parts can be ordered at the production plant.

The warranty does not apply to V-belts and filter cloths.

This documentation provides the basis for elaboration of operating rules in accordance with ČSN 386405.

RELATED DOCUMENTS

This technical documentation follows the following standards:

ČSN EN 1020	Air heaters for solid, liquid and gaseous fuels.
ČSN 33 2000-1	El. regulations - El. equipment - Determination of basic characteristics.
ČSN 33 2000-5-51	El. regulations - El. equipment - Selection and construction of el. equipment. Chap. 51: General regulations
ČSN 33 2000-6	El. regulations - El. equipment - Initial revision procedures
ČSN 32 2000-4-41	Electrical equipment. Safety. Protection against electric shock.
ČSN 06 1008:97	Fire safety of local appliances and heat sources
ČSN EN 62305	ČSN el. regulations. Chapter: Lightning protection.
ČSN EN 60335-1	Safety of el. appliances for household and similar purposes part 1; general requirements Act No. 22/1997 Coll. as subsequently amended. Government Regulation No. 22/2003 Coll. EU Regulation 2016/426 on Gas Appliances (GAR) Final protocol No. 40-11101 SZU Brno

LIST OF WARRANTY AND POST-WARRANTY REPAIR SERVICES

Warranty and post-warranty service of MTP air heaters is provided by our company:

JINOVA s.r.o. , Do Žlábků 733, 514 01 Jilemnice

tel.: 481 541 518, 481 549 351, e-mail: servis@jinova.com

In case of use of **Weishaupt burners**, the warranty and post-warranty service is provided by Weishaupt company; our company only provides regular burner adjustment together with heater service.

Weishaupt s.r.o.

Strašnická 1C/3177

102 00 Praha 10

tel.: 272 652 142-5, 602 372 218, fax: 272,652,146

Alternatively, they recommend one of the contractual mechanics from the immediate vicinity.

In case of use of **Riello burners**, the warranty and post-warranty service is provided by the company:

GFE s.r.o.

Obránců Míru 132

503 02 Předměřice nad Labem

tel.: 495 581 864, fax: 495,582,045

Alternatively, they recommend one of the contractual mechanics from the immediate vicinity.

OPTIONAL EQUIPMENT

The air heater can be supplemented by additional, optional accessories, especially those stated below, according to the wishes and requirements of the customer.

Fan component

The fan component of the units is combined with a diffuser chamber of suitable length. The fans of MTPAL units are always radial fans with spiral cabinet, low-pressure or medium-pressure fans according to customer requirements. According to specific parameters, the fans are in basic design or in a reinforcing frame. Fan displacement can also be oriented up or down, and it is also possible to have the air suction into the fan component from vertical directions.

Engines are together with fans located on an integral frame that is stored in the unit frame and, if necessary, is completely removable. The frame is fastened to the structure and the unit cabinet panels; larger fans are attached to the base frame through a specially reinforced floor panel. Transmission is provided by euro pulleys with V-belts.

Non-standard units are equipped with double fans with a shared shaft, or two parallel fans.

The fan component, as a standard, includes a door for access to the engine and the fan. Upon request it is possible to deliver fan components with eye-slits and transmission coverings.

Filtration component

Standard filtration components can be equipped with a whole range of standard cartridge filters - EU-3 to EU-9 class pocket filters, frame pre-filters, filters from synthetic materials, from fibreglass etc. Upon request, we can also deliver carbon filters.

Pocket filters are produced from standard-size cartridges that are placed in lateral guide rails. Filter replacement is then carried out by the customers themselves by simply drawing the filters out one after another into the service side of the unit.

Mixing and valve components, valves

As a standard, the valve components are equipped with aluminium valves with plastic boxes that fully cover the control wheels. This significantly reduces the possibility of deposition of impurities in the wheel cogs and reduces demands on valve maintenance.

Mixing chambers are fitted with all-covering valves from outside, or with valves with a small hole inside the mixing chamber, upon request of the customer or according to the mixing ratio. In units for indoor use, the valves for suction of air from the surrounding

environment are covered with grids, in units for outdoor use they can be complemented by weather-proof blinds.

Valves with a small hole designed for connection of air-conditioning piping are, as a standard, supplied with an elastic cuff.

The valves are supplied ready for fitting with actuators (actuators may already be part of the supply) or with manual control. Large valves are split to allow multiple actuators to operate. Mixing valves can be coupled with a pull rod for one joint control.

Recuperation chamber

The chamber for recovery of heat from exhaust air may be equipped with a rotary heat exchanger or plate heat exchanger. The heat exchanger consists of a system of aluminium plates (slats) connected to each other in such a way as to allow for alternate passage of the exhaust and supplied air between the plates. In winter period, the exhaust air transfers heat to the aluminium plates, and they then heat the supplied fresh air. The plate heat exchanger can also be used for mixing.

Cooling chamber

The cooling chamber is equipped with a Cu/Al plate heat exchanger, where water, anti-freezing mix or other refrigerant can be the heat transfer medium, according to the request of the customer. The heat exchanger is equipped with a gradient stainless-steel condensate drainage pan and a dropper eliminator.

Burners

As a standard, Weishaupt pressure burners burning natural gas, propane-butane, ELFO (extra light fuel oils) and other types of fuel are supplied with the unit. Burners are supplied, as a standard, with two-stage or modulation regulation. Burners include complete gas fittings, electrical controls and all safety features.

Electrical equipment of the units and MaR

The units can be supplied with control and protection elements in any range according to the request of the customer. The units can be supplied, for example, only with fitted actuators, can be supplied incl. basic control cabinet only to protect and start up the main engines.

Regulation supplied with the unit is designed for particular action, e.g. in terms of regulation requirements on room temperature (halls) or inlet temperature (e.g. paint boxes).

Unit control can be manual (a combination of basic electrical control and manual valve control), manually electronically from a security cabinet or through advanced regulators with a link to other control systems.