

# **TECHNICAL DOCUMENTATION OF AIR HEATER EXCHANGER UNITS MTP-V, MTP-KLM, MTP-AT**

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## Warranty Certificate

The Manufacturer shall be liable for any defects of the Product which undisputedly occurred during the Warranty Period as a result of defective design and/or manufacture.

The Manufacturer shall not be held liable for any defects if:

- the Product is changed or amended in any way by the Purchaser or any party working on his behalf;
- the seals affixed on the Product are broken;
- the Product is damaged by applying too much force;
- the Product and any part thereof is not set up and/or connected according to the Manufacturer's instructions;
- the Product is situated in an environment not recommended by the Manufacturer in the relevant documents; and
- the Purchaser does not follow the Technical Conditions provided by the Manufacturer.

### Warranty Period:

Provided the conditions set forth herein (i.e. the Manufacturer's instructions and recommendations) are met, the Product shall have a Warranty Period of twenty four (24) months, commencing on the day of delivery of the Product.

As another Warranty Condition, the Manufacturer hereby expressly reserves the right to appoint a person to be present, at the expense of the Purchaser, during the start of operation of the Product at the Purchaser's premises.

Product: **EXCHANGER UNIT OF THE AIR**  
Type: **MTP -**

Serial Number:

Date of Delivery of the Product (as affirmed by the Seller):

Go-Live Date (as affirmed by the Supplier):

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This Warranty Certificate is to be produced by the Purchaser with any claim; it has to be supported by the Go-Live Certificate, duly validated by the person appointed for this purpose by the Manufacturer, and the Burner Setup Certificate.

**This Warranty Certificate is void unless produced together with the Go-Live Certificate!**



## **PROTOCOL OF THE PUT INTO OPERATION OF THE AIR HEATER EXCHANGER UNIT**

***TO BE COMPLETED BY A QUALIFIED WORKER OF THE ASSEMBLY  
COMPANY***

**TYPE : MTP –**

**Ser.No.:**

Check of compliance with all installation condition was executed according to this document „Technical documentation of MTP-V „, point 2. Installation instructions (installation, safety distance, connection of the air handling circuit , connection of the flue way including condensate outlet, burner installation and electro installation).

**Special attention was paid to the check of connection of following thermostats:**

- |                         |  |
|-------------------------|--|
| <b>T1 (safety)</b>      | <b>- switches off the supply phase of the burner</b>   |
| <b>T2 (operational)</b> | <b>- switches off the burner</b>   |
| <b>T3 (operational)</b> | <b>- switches on ventilators and assures their circulation (cooling of the exchange chamber) after switching of the unit</b> |

**Check of the air amount agitated through the exchanger chamber was completed.**

Check of the installation for quality and completeness was completed.

Exchangers equipped with bypass were checked for:

- regulation of the servo-drive of valves (especially the rotation direction and their contrarotaion)
- any position of the valves doesn't cause overheating of the exchanger leading to deactivation of the operational thermostat
- the exchanger valve does not close completely
- there isn't an extreme condensation

**The above specified exchanger unit of the air heater was installed and put into operation according to the „Technical documentation” of the Manufacturer. The exchanger is ready for enduring operation.**

Put into operation and above described checks were executed by:

Name:..... Signature:..... Date:.....



# Quality and Completeness Certificate

(Product Test Sheet)

The Manufacturer hereby attests and confirms that the Product specified hereinafter meets the requirements of the applicable testing regulations, i.e. ....

Product: **EXCHANGER UNIT OF THE AIR HEATER**  
Identification number of the product CE-1015BN0038

Type : **MTP -**

Seriál Number : .....

Basic Technical Data :

Nominal Heat Input.....	kW
Nominal Heat Output.....	kW
Nominal Airflow.....	m <sup>3</sup> /h
External Air Pressure.....	Pa
Weight.....	kg
IP Degree of Protection	IP

Complies with the testing directives:  
.....

Date :

OTK :

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Manufacturing Director  
Ing. Václav Šubrta

**TECHNICAL CONDITIONS  
ASSEMBLY, OPERATING AND MAINTENANCE  
INSTRUCTIONS**

**EXCHANGER UNIT OF THE AIR HEATER  
MTP-V, MTP-KLM, MTP-AT**

## PRODUCT DESCRIPTION

The exchanger unit of the air heaters can, according to the burner type, burn:

- earth gas
- coal gas
- propane butane,
- heating oil
- LTO

They are used for air heating in the air-conditioning units or in other applications.

The exchanger unit has a shape of a box. The base contour of the exchanger unit is made by a frame. The frame is made from profiles enabling its easy covering. The combustion chamber welded from sheet metal is mounted through screws. The exchanger unit is equipped with covers with inbuilt thermo isolation.

There is a flange on the front part of the exchanger that enables mounting of the burner. The spent fuel is lead off from the exchanger chamber through a chimney outlet. The outlet should be connected to the piping for flue gas exhaust into the chimney.

The air is heated through circulation around the combustion chamber and its tube plate. By the exchanger unit operation it is necessary to keep the airflow and the required heat intake defined in the technical documentation, on the Manufacturer's label and in the sales contract. .

Every exchanger unit has a triple thermostat (T1, T2, T3) placed on the air outlet. The thermostat has to be connected into the electric control circuits of the heat exchanger; it assures its safety operation. The thermostat is not meant for regulation of the temperature.

There are two types of the exchanger units – with and without bypass.

The exchanger unit with bypass has installed flaps, which control airflow. It is recommended to regulate these flaps using servo drive and control system so that the temperature in the chimney stays always around 160 °C. It is possible to deliver the described control system together with the exchanger unit.

The heater is also equipped with condensate outlet from the combustion chamber (pipe ½“).

Heaters have a specific type identifier with the following meaning:

	<b>MTP-V</b>	<b>25</b>
	<b>MTP-KLM</b>	<b>2,5</b>
	<b>MTP-AT</b>	<b>10.10</b>
exchanger unit	_____	
Type Size (according to the table of the base parameters)		

### **Base technical parameters:**

Lost through heat exchange into the surroundings	2,- %
Lost through heat of the flue gas (chimney lost)	10,9 %

Other parameters according to the "Product quality certificate" page 4.

### **Operating Conditions**

Smooth and safe operating can be guaranteed only on the following conditions:

- a) All parameters set forth by the manufacturer have to be observed, in particular:
- Nominal Heat Input ( kW )
  - Nominal Airflow ( m<sup>3</sup>/hod )
  - Input temperature (standard implementation - up to 40°C)
  - Assurance of the exchanger chamber's bypass
  - Prevention of the chimney effect and the backlash
  - Ccorrect connection of thermostats T1, T2, T3

- b) Working environment

In terms of working environment, there are two main heater types: indoor heaters and outdoor heaters.

- Indoor systems equipped with IP 40 protection degree can be used in standard / basic environments.

- Outdoor systems with IP 43 protection degree are intended for outdoor use; here, the burner and thermostat are equipped with special shields protecting them from atmospheric precipitations.

### **Labeling**

Every heater bears a non-removable label with the following information:

- a) Manufacturer
- b) Product ID
- c) Type identifier
- d) Serial number
- e) Year of manufacture
- f) Nominal heat input (kW)
- g) Nominal heat output (kW)
- h) Nominal airflow (m<sup>3</sup>/h)
- i) Weight (kg)
- j) IE degree of protection
- k) Voltage ( 3 x 400 V + N + PE 50Hz )
- l) Intended country

Every exchanger pat has got a label with following description:

This heater has to be installed according to the valid instruction. Its operation is allowed only in a good ventilated room. Before the installation and put into operation it is necessary to read the instructions.

### **Engineering Supervision and Inspection**

#### *Type Tests*

Type tests are performed by: Strojírenský zkušební ústav Brno s.p., zkušebna 202, Hudcova 56b, 621 00 Brno, the Czech Republic.

#### *Production Tests*

Production tests of every exchanger part are performed by the manufacturer in his production plant: JINOVA s.r.o., Do Žlábků 733, Jilemnice, the Czech Republic.

Production tests comprise of the following tests and inspections:

- weld tests of the casing
- weld tests of the exchanger
- inspection of external interface dimensions
- surfacing inspection
- inspection of the device and its accessories in terms of completeness

For further information consult the “Product Test Sheet”.

Subsequent supervision is carried out by Strojírenský zkušební ústav Brno (SZU Brno) according to EC Directive No. 2009/142/EC (as transposed into Czech national law in government regulation No. 22/2003 Coll.), Annex II.2, Art. 2.3. Supervision takes place in the form of random inspections of the heaters according to the EC Certificate.

### **Packaging, Transportation and Storage**

- If requested by the customer, supplied heaters are wrapped in fixation foil to reduce possible surface damage and mounted on wooden bases or pallets.
- All persons taking part in the transportation and loading of the heaters are advised to proceed with caution. Handling allowed only by means of the pallet, lower frame (between the wooden bases) or welded loops. Where there are two loops, both have to be used; in such cases, using one loop only is strictly prohibited! Packages must not be subjected to atmospheric exposure, continuous humidity and shocks.
- Heaters have to be stored in well ventilated rooms with no corrosive vapors or active gases, or outdoors under a shelter protecting the heater from any atmospheric precipitations.

## **ASSEMBLY INSTRUCTIONS**

### **Positioning**

! The heater has to be positioned on a level and sufficiently solid ground or frame. In order to allow condensed fluids to flow off, the heater has to be positioned horizontally (minor downward grade helping the outflow is acceptable). The heater has to be positioned in a way to allow the combustion chamber to be replaced and the tube zone to be cleaned. In other words, there has to be a free space in front of the front (burner) side of the heater at least equal to its size ("length x width x height"). The cover of the tube plate of the exchanger chamber (opposite the chimney) has to be kept free to allow easy removal when cleaning the tube plate.

### **Safe Distances**

True distance between the heater and any combustible material must comply with all applicable standards, i.e. must not be smaller than 200 mm.

If it is not possible to meet this condition, a protective screen has to be used. The screen has to be at least 3 mm thick and made of a material of flammability class A or B. The screen has to be in a fixed position between the heater and the protected substance, 30 mm ( $\pm 5$  mm) from the protected material. The screen has to stretch to the nearest wall (ceiling) made of a non-combustible material, but at least 300 mm beyond the upper and 150 mm beyond the lateral edges of the protected material. When a protective screen is used, the minimum distance allowed can be halved.

When installing a gas heater on a floor made of a combustible material, a non-conducting insulation pad has to be used. The pad has to be resistant to mechanical load and made of a material of flammability class A or B. In terms of ground plan, the pad must not be smaller than the heater; moreover, it has to be at least 5 mm thick.

! Do not store combustibles in the vicinity of the heater – possible fire hazard!

### **Connection to Air Ducts**

The exchanger unit is to be connected into the air-conditioning units closest to the ventilation units. It is necessary to achieve optimal bypass around the combustion chamber.

The exchanger part MTP-V can be connected into the air-conditioning units only through steel sheet piping with appropriate thermo-stable surface finish (for example galvanized sheet). The connection has to enable air admission through the full cross section of the exchanger chamber.

## Connection to Smoke Flue

The smoke flue has to be installed by a qualified company and according to all applicable regulations.

Note: Every heater equipped with a high-pressure gas boiler has to be connected with a separate smoke flue to a separate vent stack.

If the heater includes a condensed fluid receptacle (20 – 30 l), it is intended both for combustion chamber condensate (1/2" discharge pipe) and chimney-bottom condensate.

! Note: Irrespective of their type, the operation of any MTP heater requires proper drainage of flue-gas condensate.

## Installing the Burner

Typically, heaters are fitted with pressure burners (single-stage, double-stage or smooth fuel input regulation). Burners are not a part of the heater delivery. Fuel intake has to be installed by a qualified company and has to meet all applicable regulations according to the fuel and/or burner type used.

The installation and setup of the burner has to be done by an engineer appointed by the manufacturer of the burner. After the burner has been duly inspected and set up, a setup certificate is issued; at this point, the heater is ready for final inspection and to go live. As already given herein, the manufacturer of the heater reserves the right to have one of his engineers present during the go-live procedure at the expense of the purchaser. Not meeting the following requirement may result in the warranty becoming void.

Typically, heaters are fitted with flanges and seals into which the burner is mounted using bolts. In outdoor heaters, an appropriate cover has to be fitted above the burner.

Before installation always check the compatibility of local conditions relevant for the operation of the heater, i.e. fuel intake, fuel properties, and fuel pressure and heater setup.

## Electro-installation

Electro- installation and revision has to be performed by qualified company according to the ČSN 33 2000-6-61.

The switch contact of the safety thermostat T1 has to be connected into the supply phase of the burner in order to assure its switch of in any situation (also in case of fault).

The switch contact of the operation thermostat T2 is connected in the circuit of terminals T1 and T2 of the burner. It switches off the burner during its operation in case of temperature increases above the defined level.

The switch contact of the ventilator's thermostat T3 assures switching on of the ventilator as well as its stopping after switch off of the burner (cooling of the combustion chamber).

See following pictures for recommended circuitry:

3-JH-2001C - for electric thermostat ESD3J or ES3M, ES3A

The heater is equipped with terminal for safety connection according to the ČSN 32 2000-4.41...

The triple thermostat of the outdoor heater is equipped with a cover.

! Under any circumstances, the  $\perp$  clamp of the triple thermostat has to be connected to the PE conductor in order to make sure that the thermostat sensor is not influenced by possible induced voltage.

! **Comment: It is not possible to switch off the complete equipment (burner and ventilators) without assurance of the ventilators stopping after cooling of the exchanger. Convention of the heat accumulated in the exchanger could damage the surrounding equipment! Switch off of the ventilators while the burner is running has to be disabled!**

## OPERATING INSTRUCTIONS

The burner installed in the exchanger unit has its own operation instruction delivered by its Manufacturer.

### ! **Drop out of the safety thermostat**

Exceeding of the maximal temperature, which is set up on the triple thermostat T1 (100÷120°C) placed on the left or on the right from the burner, leads to switch off and lock of the burner. In order to enable new automatic start of the burner it is necessary to push the button on the triple thermostat. The triple thermostat can be unlocked only if the temperature drops under the value set on the thermostat T1. It is required to eliminate the reason of the overheating before restarting the burner.

The applied electronic thermostat enables remote reset of the safety thermostat T1 (for example through a button placed on the control box). This function is particularly advantageous by exchanger parts with difficult accessibility (for example on the roof).

Outage of the supply line voltage (while the burner is running) causes increase of the temperature through the heat accumulated in the exchanger chamber while the ventilator is not working. If the temperature exceeds the value pre-set on the safety thermostat T1, the thermostat disconnects the burner supply. The electronic thermostat resets itself by resumption of the power supply, in the case that the temperature has dropped under the pre-set value (in the case of longer outage). In the case of shorter outage it is necessary to wait until the chamber is cooled by the ventilator and perform the reset manually using the button on the thermostat.

### ! **Attention!**

Once properly set up and commissioned by professionals, the device and its parameters cannot be Alfred in order to ensure smooth and safe operation.

## MAINTENANCE INSTRUCTIONS

! The heater has to be maintained after every scheduled shut-down. Maintenance and all related actions have to take place in accordance with the instructions set forth herein.

### Maintenance Works:

- ! a) Perform regular checks of intake filters (at least once a month); if needed, clean or replace filter fabric. The speed of filter clogging depends on the purity of suction air. Any dirt substantially decreases the volume of air supplied by the heater, thus increasing exchanger chamber temperature.
- ! b) Check whether the bolts of the burner plate and tube plate lid are tight; first check to take place after one month of operation, subsequent checks before every heating period.
- ! c) Clean the tube plate at least once in a year (or as needed).

In case of fuel oil and light heating oils, clean the tube plate every time there is a decrease in heating efficacy (as needed, possibly even once a month). Once cleaning is finished, be sure to tighten the bolts of the tube plate lid properly and, if needed, replace washers. (Check tightness again after a month of operation!)

### Defects

- b) Drop out of the thermostat T1 (overheating)
  - make sure that intake and outlet areas are not clogged (ducts, etc...)
- c) Combustion products detected in heated area or increased oxygen content discovered in combustion products
  - make sure that the bolts of the tube plate lid and burner flange are tight.
  - change the washers in the tube plate lid and/or burner flange.
  - make sure there is no hole in the combustion chamber.

## LIST OF ACCESSORIES AND SPARE PARTS

Spare parts are not delivered with the exchanger unit. There are available by the Manufacturer in the case of warranty service (it applies mainly for spare parts of the triple thermostat ESD3J). The Manufacturer is qualified for warranty service for all parts except of the burner. The post warranty service has to be assured by the customer, the spare parts for this purpose should be ordered by the Manufacturer

## **RELATED DOCUMENTS**

**This technical documentation complies with following technical norms:**

ČSN EN 1020	Air heaters with forced convection and ventilator using gas fuels
ČSN 32 2000-4.41	Electrical equipment. Safety rules. Protection from injury through electric current. eqv. HD 384.4.41 mod IEC 364-4-41
ČSN EN 60335-1	Safety rules of electrical equipment for household and other applications Part1; Common rules
ČSN 33 2000-6-61	Revision of electrical equipment
ČSN 33 2000-3	Environment types for electrical equipment
ČSN 06 1008:97	Fire safety of local heat sources

Law nr. 22/1997 Sb.

Government direction nr. 22/2003 Sb.

Final protocol Nr. 30-5181 SZÚ Brno

## **LIST OF CERTIFIED REPAIR CENTRES**

Warranty and post-warranty repair services of MTP heaters are provided by the manufacturer:

**JINOVA s.r.o. , Do Žlábku 733, 514 01 Jilemnice, the Czech Republic**

tel.: +420 481 541 518, +420 481 549 351, fax.: +420 481 544 184, +420 481 543 163