

MANDÍK[®]

ECONOMIZER AWTM

INSTALLATION, OPERATION,
MAINTENANCE AND SERVICE
MANUAL

This manual is an integral part of the product and must be handed-over to the end-user with the equipment

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Economizer AWTM

Economizer is a counterflow heat exchanger which utilizes residual heat of flue gases for air heating. It consists of the heat exchanger itself, air fan and flange on the heated air exit. The internal heat transfer surface of the exchanger is made of aluminium, the external surface is made of galvanized steel plate. To the external surface of heat exchanger, there are connected air fan and air output neck with flange 130 by 130 mm. The flange is used for connecting a grille with adjustable blades to blow the heated air into the heated room or for connecting an air-duct transferring the heated air into another room.

The internal heat transfer surface has a standard DN100 (130) mm socket for connection to flue gases output of Helios tube heater and DN 100 (130) mm neck for connection to the socket of condensate trap and further to flue system.

There are three models:

AWTM 100/2000 with 2 m length of heat exchanger.

AWTM 100/400 with 4 m length of heat exchanger.

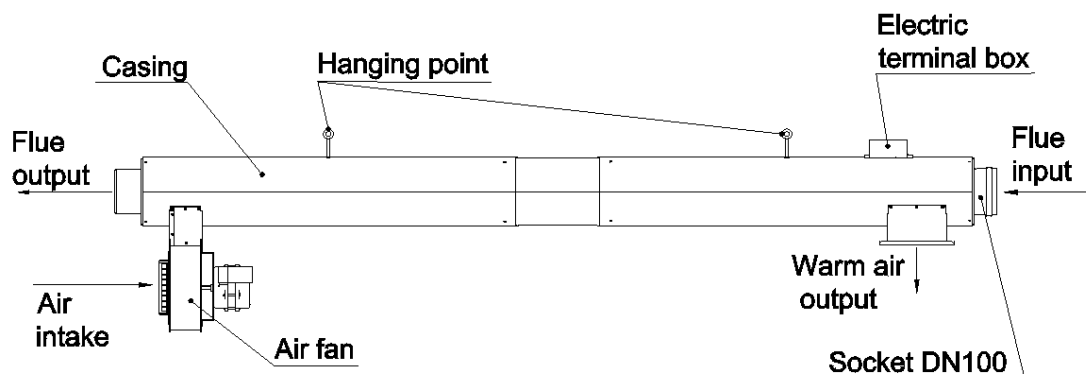
AWTM 130/400 with 4 m length of heat exchanger

Economizer is placed in flue system immediately after the tube heater. Electric supply has to be connected to the electric terminal box by cable from mains 230V/50Hz

Economizer function description

When the heater is started, the flue gases flow inside the internal heat transfer surface and heat it up. As soon as the surface temperature reaches 42°C, the air fan is started and blows the air between the internal heat transfer surface and external casing, the heated air goes out via the neck with connected grille or duct. If the temperature of internal surface decreases below 30°C, the air fan stops.

Fig. 1: Economizer AWTM



Pressure losses on flue gasses side

Pressure loss of economizer AWTM on flue gasses side when connected to Helios heaters

Type	Helios 10	Helios 20	Helios 30	Helios 40	Helios 50
AWTM 100/2000	5 Pa	7 Pa	8 Pa	9 Pa	-
AWTM 100/4000	9 Pa	13 Pa	15 Pa	18 Pa	-
AWTM 130/4000	-	-	-	-	12Pa

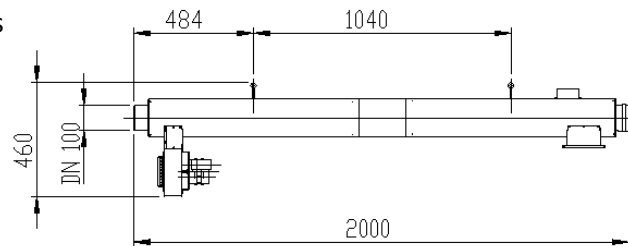
Available pressure for connection to air duct

Type	Available pressure [Pa]
AWTM 100/2000	45 Pa
AWTM 100/4000	35 Pa
AWTM 130/4000	35 Pa

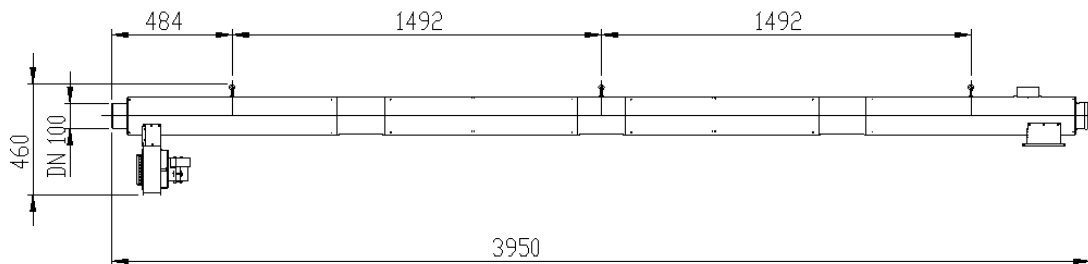
Dimensions

Fig. 2: Economizer AWTM - dimensions

AWTM 100/2000



AWTM 100/4000



Technical data

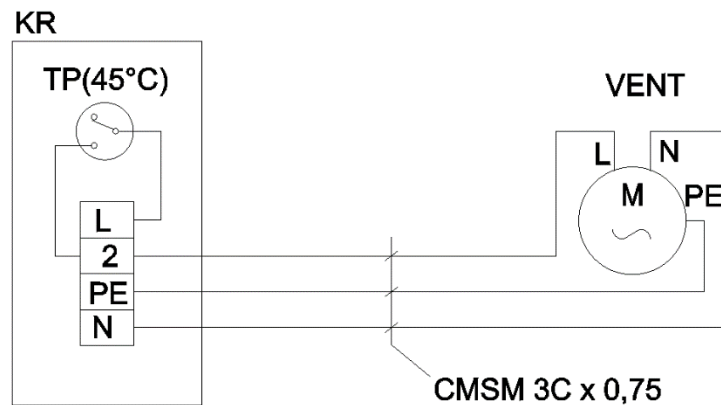
The thermal output of economizer depends on the heater adjustment and air temperature. The above data are for correctly adjusted heaters working on natural gas and air temperature of 20°C

Type	AWTM 100/2000	AWTM 100/4000	AWTM 130/4000
Length [mm]	2000	3950	4040
Weight [kg]	14,5	26	47
Power supply [V/Hz]	230/50		
Electric input[W]	50		75
Air flow [m ³ /h]	600		750
Thermal output with Helios 10	420 W	950 W	-
Thermal output with Helios 20	690 W	1200 W	-
Thermal output with Helios 30	1400 W	1720 W	-
Thermal output with Helios 40	1900 W	2350 W	-
Thermal output with Helios 50	-	-	2300 W
Available pressure	45 Pa	35 Pa	35 Pa

Wiring diagram

Fig. 3: Economizer AWTM wiring diagram

KR Terminal box
 VENT Fan



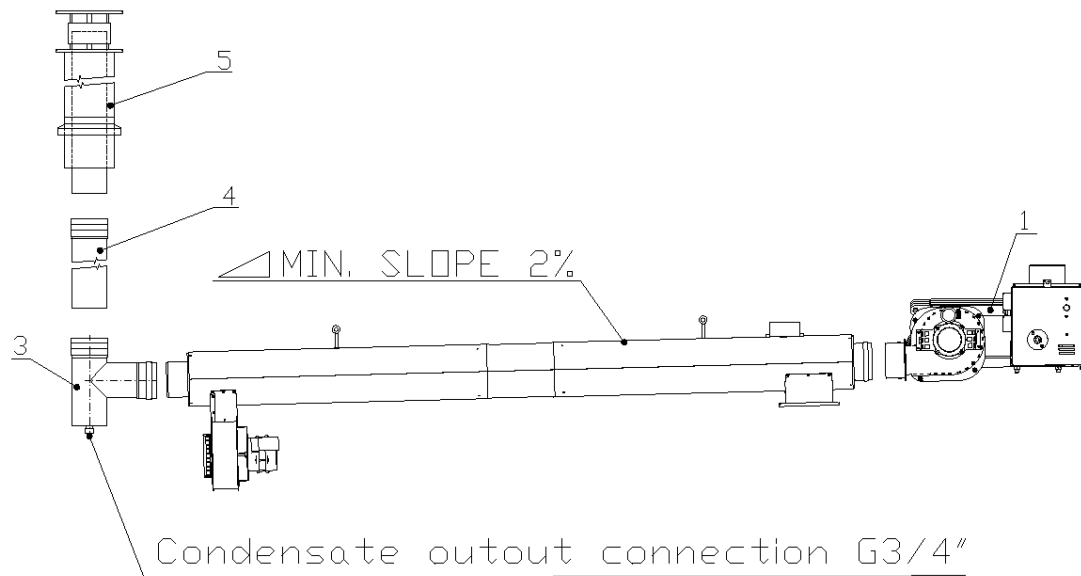
Installation

Economizer is placed in flue system immediately after the tube heater. The position of economizer is horizontal with slope 2% from the heater. Between heater and economizer, a bend may be inserted if necessary. For hanging, the economiser is equipped with hanging bolts which can be used for fine adjustment if its slope.

Immediately after economiser, there must be condensate trap with condensate output and output of flue gases out of the building.

For detailed information see TPM 047/05 Flue gas and combustion air intake systems.

Fig. 4: Installation of economiser AWTM

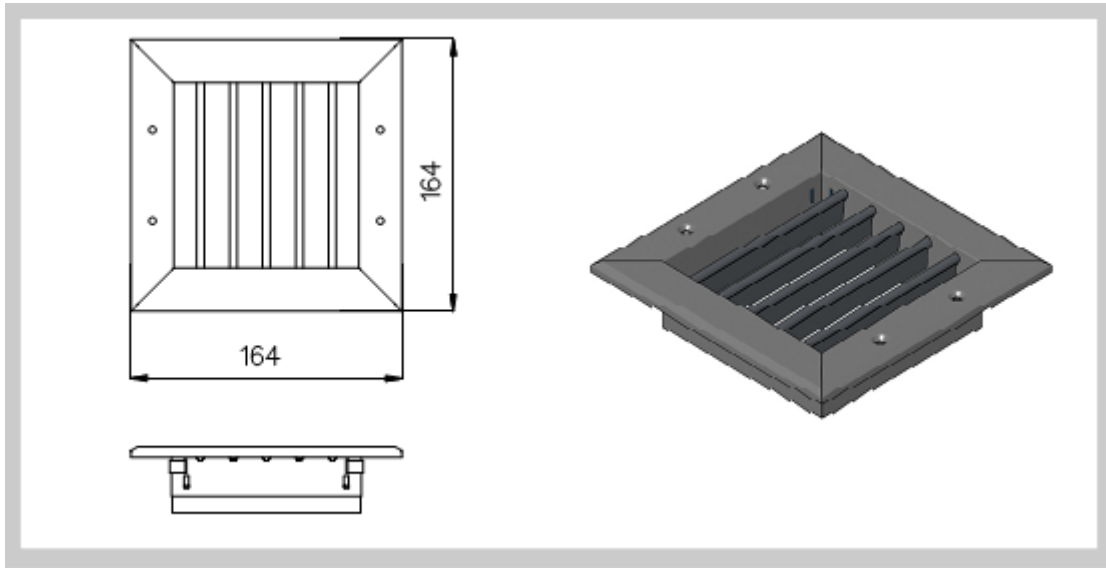


Description:

- 1 Helios tube heater
- 2 Economizer AWTM
- 3 Condensate trap – **flue gases measurement here**
- 4 Flue duct
- 5 Roof discharge head

Accessories

Fig. 5: Grille with adjustable blades for connecting to economizer flange



If air duct is connected to the economizer, following diffusers can be used for warm air input:

- VVM (TD 001/96)
- VVPM (TD 007/99)
- VVDM (TD 089/12)
- ALCM (TD 003/97)
- ALKM (TD 005/99)
- VASM (TD 017/01)
- VAPM (TD 010/00)

Type	Diffuser with EKOBX	
	Pressure loss [Pa]	Sound power level [dB]
VVM 600/24 (625/24) 28 37	28	37
VVM 600/48 (625/48) 20,00 30	20	30
VVPM 600(625) 28 41	28	41
VVDM 600(625) 12 33	12	33
ALCM 600 6 22	6	22
ALCM 625 5 21	5	21
ALKM 500 14 27	14	27
VASM 400 18 34	18	34
VAPM 400/D 20 30	20	30

Operation

Economizer AWTM works automatically when connected to electric supply.

In case of the long-term breakdown disconnect its electric supply.

Maintenance

Economizer AWTM is part of the flue system of tube heater and thus it is subject of annual inspections together with the heater.

The annual professional service inspection includes at least:

- Economizer and exhaust system permeability, their intactness and tightness
- Permeability check of condensate outlet
- Solidity check of all electric connections
- Functional check of control thermostat

Service

Before starting any works on the economizer, disconnect its electric supply

Removing of air fan

1. disconnect the electric supply of the economizer.
2. disconnect cable from the fan pulling the connector out
3. secure the fan against falling using string or rope with carabiners
4. screw out four bolts that fasten the fan into the neck of the economizer
5. pull the fan out

Installation of the fan

1. secure the fan against falling using string or rope with carabiners
2. perform the assembly in the reverse order than removing the fan

Replacing the thermostat

1. disconnect the electric supply of the economizer
2. open the electric terminal box
3. unscrew the two screws to release the electric terminal box from the economizer coat
4. release the thermostat from the internal heat exchanging surface – it is there stuck by silicone
5. remove the thermostat and disconnect it by pulling out the connectors
6. install the new thermostat in the opposite order

Troubles and their remedies:

Troubles of the economizer	cause	Remedy
It is not functional - fan does not work	Defective ventilator	Replace the fan
	Defective thermostat	Replace the thermostat
Fan of the economizer starts immediately when el. supply is connected	Defective thermostat	Replace the thermostat