

## Data sheet

# Oil Preheaters Types FPHE 3-LE and 5-LE

## Application

FPHE-LE oil preheaters are special versions of the standard preheaters types FPHE 3 and 5 with built-in LE valve – a hydraulically operated diaphragm valve, which in combination with an LE-pump significantly reduces emissions during start and stop phases. The LE valve can also be used as a safety shut-off valve in accordance with DIN EN ISO 23553-1:2009.

FPHE-LE are designed for oil burners with capacity up to 6 kg/h using standard fuel oil with viscosity up to 10 cSt. They are available with different heating elements and thermostats for selection of release time and temperature.

### Features:

- Standard types of gasoil with viscosity of max. 10 cSt. (at 20° C)
- Capacity up to 6 kg/h
- Built-in LE valve
- Max. temperature limitation
- Improved atomisation
- High average efficiency of the burner

## Identification

The preheater is laser engraved with the following information (example):

<b>FPHE 5-LE</b>	Type
<b>030N5123</b>	Code no.
<b>230 V</b>	Voltage
<b>30-110 W</b>	Power consumption
<b>130805</b>	Date of manufacture

## Function

### Cold start

When the boiler thermostat cuts-in, voltage is applied to the PTC heating element and the oil in the heat exchanger is heated until it reaches the cut-in temperature of the preheater thermostat (see below table). Now the burner performs a normal starting sequence.

### Warm start

If the oil temperature in the preheater is higher than the cut-out temperature of the preheater thermostat, the burner starts immediately.

### Operation

If the oil temperature is low and the flow rate is high, compared with the preheater capacity, the preheater thermostat might cut off during operation. To avoid this an oil burner control with holding function must be used.

*Note! The LE- valve must be replaced after 250.000 operations or 10 years (approved life expectancy).*

### Release times and temperatures

Type	PTC	Thermostat 60/32 & 60/45		Thermostat 73/60	
		Release time, seconds	Release temp. in outlet, °C	Release time, seconds	Release temp. in outlet, °C
FPHE 3-LE	40	100	20	-	-
FPHE 5-LE	50	145	27	-	-
	70	80	20	135	35
	120	55	18	80	30

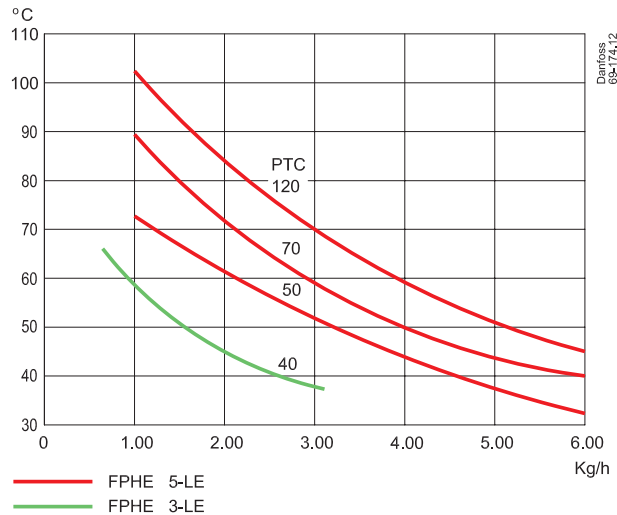
*The figures given are measured average values on cold start and without blown air. Note that the PTC element continues to heat during prepurge.*

Technical Data

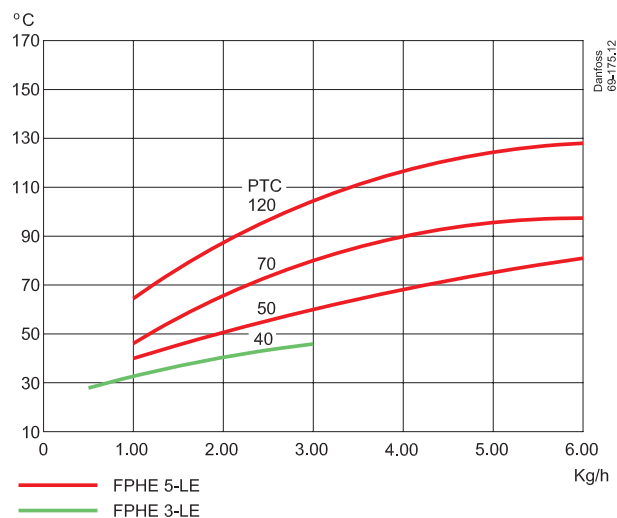
	FPHE 3-LE	FPHE 5-LE
Oil types	Standard fuel gas oil and fuel gas oil acc. to DIN 51603-6 EL A (bio content, FAME)	
Nominal voltage*	230 V, 50-60 Hz	
Contact load, thermostat	10 (3) A - 250 V	
Max. permissible pressure	30 bar	
Capacity	max. 3 kg/h	max. 6 kg/h
Max. ambient temperature	105°C	
Storage temperature	-20 to 105°C	
Max. pressure drop	0.12 bar at 3 kg/h	0.20 bar at 5 kg/h
Recommended tightening torque	15 to 20 Nm	
Valve opening pressure	6.5 bar	6.9 bar
Viscosity	max. 10 cSt. at 20°C	

\* Working voltage: 100 to 265 V, 50-60 Hz

Temperature / capacity



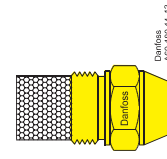
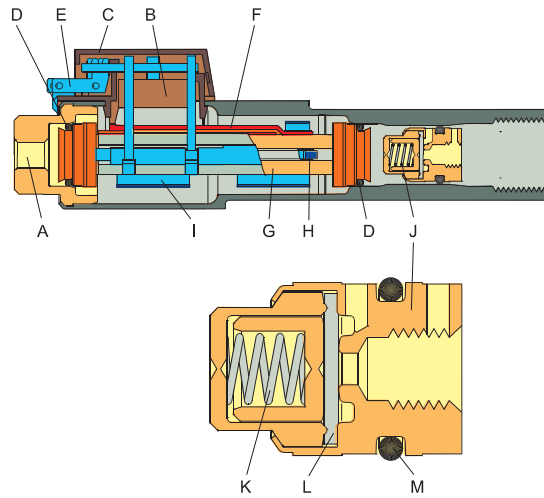
Power consumption / capacity



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Design

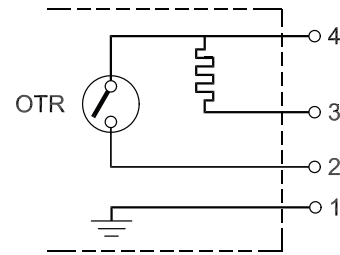


- A. Connection port
- B. Thermostat
- C. Cover
- D. O-ring
- E. Electrical connection
- F. Heat conductor (not FPHE 3-LE)
- G. Heat exchanger
- H. PTC element
- I. Clamp
- J. LE valve
- K. Spring
- L. Diaphragm
- M. O-ring

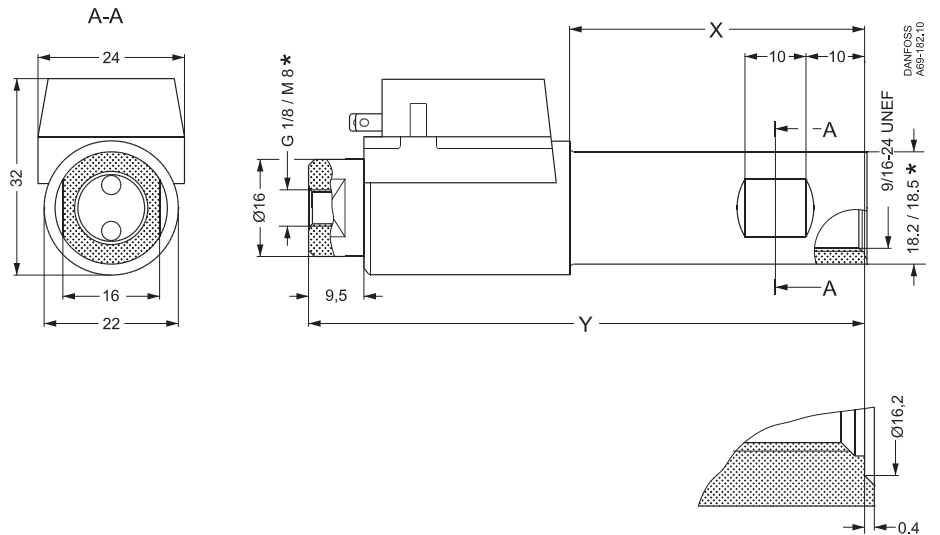
Electrical Connection

- 4 = Black
- 3 = Blue
- 2 = Brown
- 1 = Yellow / Green

OTR: Thermostat in oil preheater



Dimensions



\*Thread and neck diameter (see code nos.)

Type	X	Y
FPHE 3-LE	50	108
FPHE 5-LE	50	108