



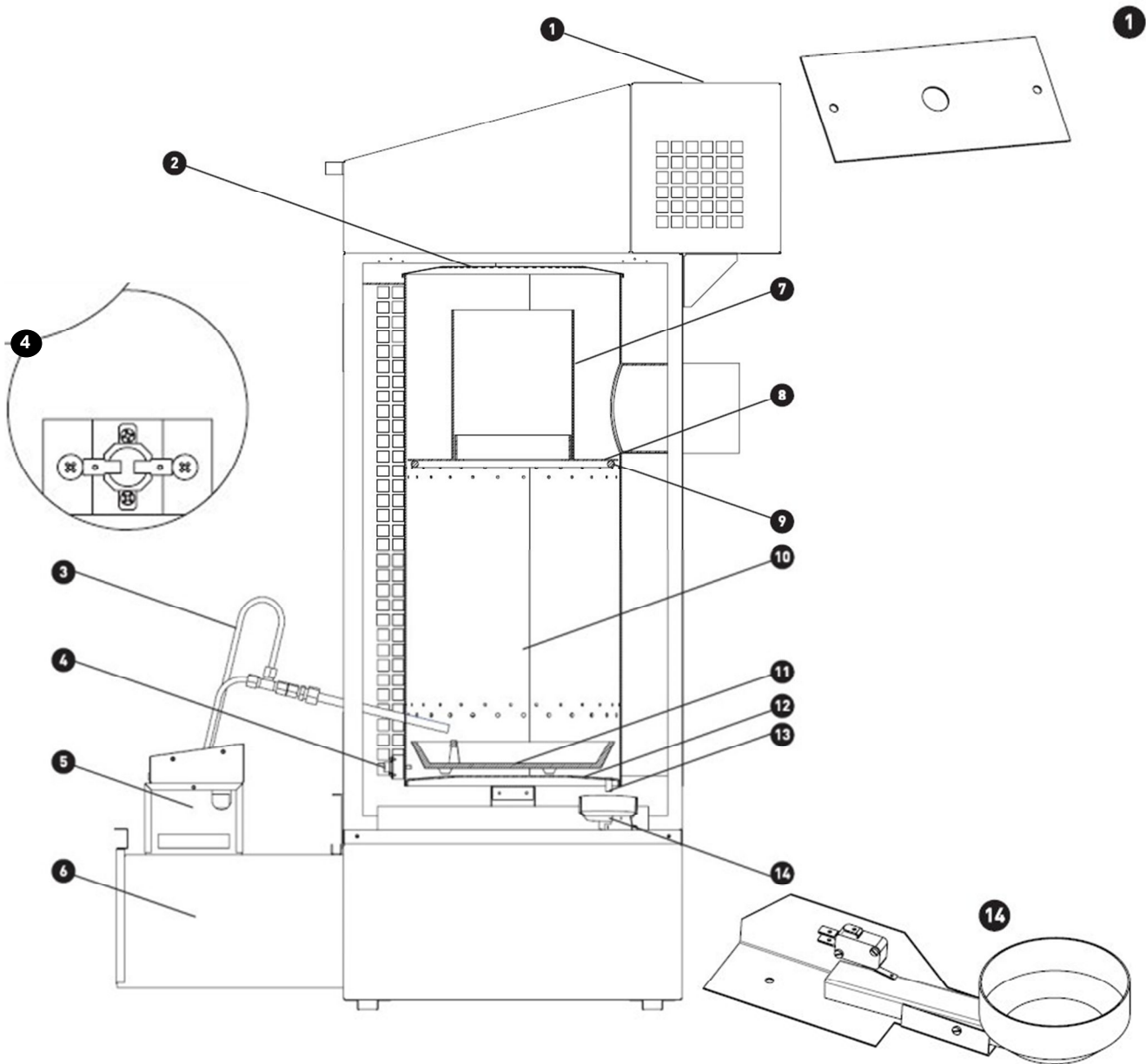
## Installation & Operating Manual

# ZM-130

16 – 32kW Universal Oil Heater

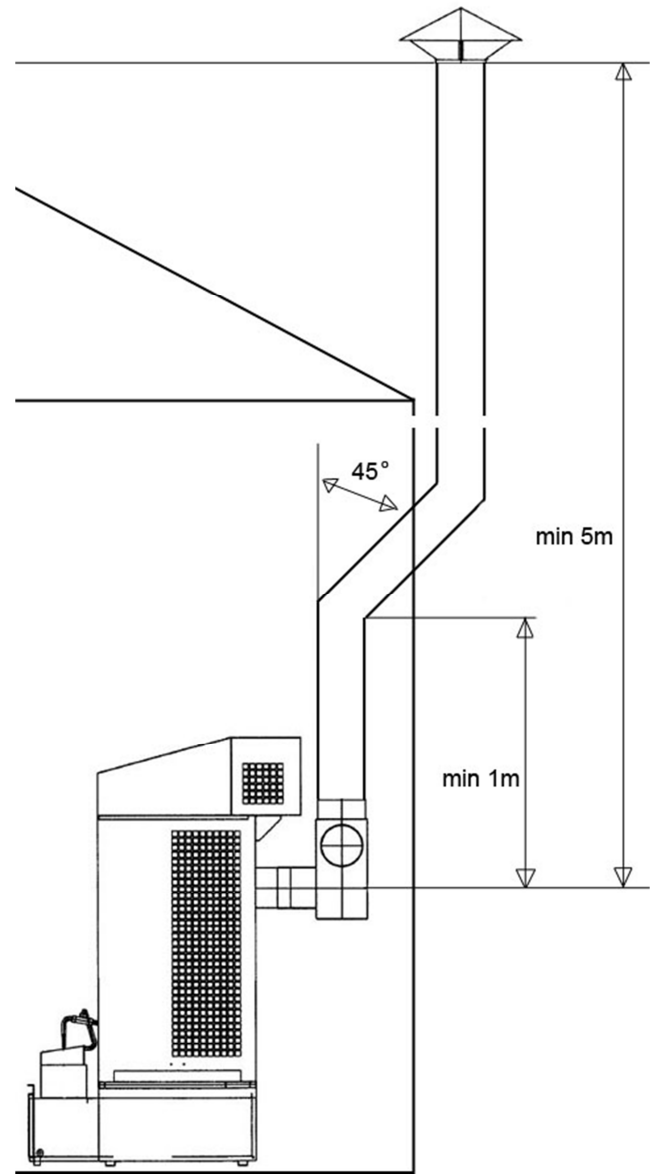
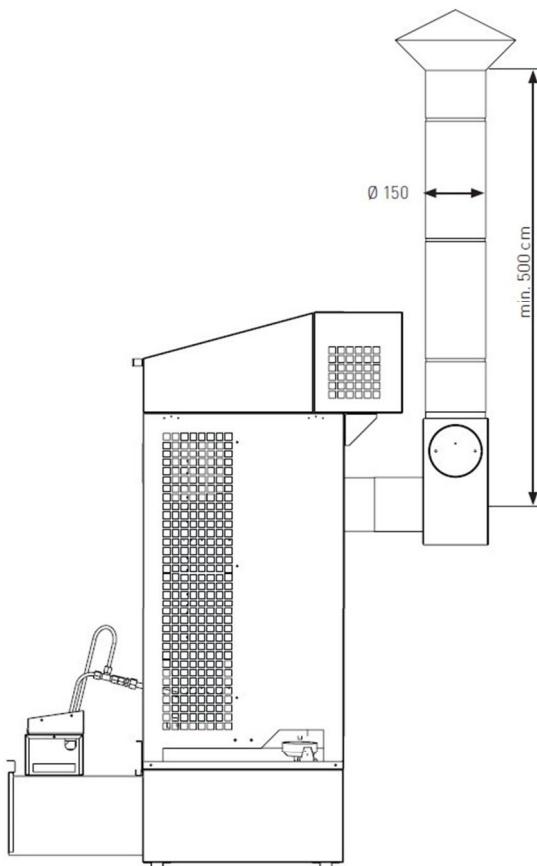


# OVERVIEW



- |    |                            |     |                             |
|----|----------------------------|-----|-----------------------------|
| 1. | Overheat thermostat        | 8.  | Deflector                   |
| 2. | Combustion chamber lid     | 9.  | Wire ring                   |
| 3. | Oil feed line              | 10. | Combustion chamber          |
| 4. | Activation thermostat      | 11. | Vaporising pan              |
| 5. | Control panel & pump motor | 12. | Combustion chamber base     |
| 6. | Fuel tank                  | 13. | Overflow drain point        |
| 7. | Cylinder                   | 14. | Overflow catch pan & switch |

## FLUE INSTALLATION



## FITTING

Ensure a suitable quality flue is used (SW430 grade). Maintaining the velocity of flue gases is important to ensure efficient combustion.

- Min flue Ø 150mm
- Ensure the draft stabiliser is fitted
- Seal joints with suitable paste or silicone
- Aim for minimum height of 6m where possible
- The top of the flue should be above roof line (apex where possible)
- Run vertically where possible. If this is not possible then use 45° elbows to exit walls. Keep the non-vertical section as short as possible (1m)

## ⚠ CAUTION

Flues can be extremely hot. Safe precautions should be taken to avoid touching the flue.

Flues running through ceilings or walls should be sleeved, double-skinned (insulated) or used with high temperature roof seal flashings where appropriate.

Avoid placing combustible materials near the flue. Ensure good ventilation around the heater for efficient combustion.

# GENERAL INSTRUCTIONS

## OVERVIEW

The ZM-130 universal oil heater is designed for warm air heating of industrial spaces like workshops, warehouses etc.

The heater will burn a wide range of fuel oils, bio fuels and used oils. These include engine oil, gear oil, hydraulic oil and diesel oil.

Oil specifications: HBO I, II and III type of viscosity not higher than SAE 80 viscosity grade and minimum kinematic viscosity of 6.00 mm<sup>2</sup>/s at a temperature of 20°C and minimum ignition temperature not lower than 40°C and density above 0.94 g/cm<sup>3</sup>

### CAUTION

Transformer oils or similar should not be used. They contain additives that may damage the heater or be harmful to the operator.

It is the responsibility of the operator to comply with applicable legislation related to burning waste oils (including applications for Part B LAPPC Permit applications, or any similar future legislation).

Care should be taken to ensure only suitable oils are used without contamination from petrol, water, solvents (thinners) etc.

### SAFETY

- Do not allow untrained people to operate the heater
- Ensure all electrical safety guidelines are followed as required by UK law
- Ensure adequate ventilation
- Keep combustibles a safe distance from the heater (min. 2m)

- Keep spare fuel in safe containers away from sources of heat
- Use on level non-combustible surfaces only
- Do not use near flammable liquids, gases, solids, dust or compressed gas cylinders or in explosive atmospheres
- Never leave the heater unattended whilst burning or connected to a power source
- Never refill the fuel tank whilst the heater is operating or still hot
- Do not handle when hot, the heater will remain hot after switching off
- Do not obstruct the air inlet or air outlets or use duct work
- Do not allow children or animals near the heater whilst in use or hot
- To minimise the risk of electric shock do not expose the heater to water or wind
- Ensure the heater is switched off, unplugged when not in use
- Be sure to follow all maintenance schedules and use approved parts

Please note that failure to use the product correctly may cause damage to property or personal injury and will invalidate the warranty.

### ELECTRICAL SAFETY

It is the responsibility of the owner to check this electrical product before use to ensure it is safe. You must inspect power cables, plugs, sockets etc for signs of wear or damage. You must ensure the risk of electric shock is minimised by the installation of appropriate safety devices. A residual current circuit breaker (RCCB) should be incorporated in the main distribution board.

Any fault rectification or electrical work including the connection of a plug must be carried out by a qualified electrician.

The Health & Safety at Work Act 1974 places responsibility for safe condition of electrical appliances upon owners. Power cables and plugs should always be regularly inspected for safety. If in doubt about electrical safety you must consult a qualified electrician.

### **HEATER SAFETY CONTROLS**

- 1A control panel fuse
- **Activation** thermostat – this ensures the oil pump will not deliver fuel into the combustion chamber unless the heater is hot
- **Overheat** thermostat – this will turn off the fuel supply but keep the fan running at 90°C
- **Overflow** catch pan & switch – if the pan overflows oil will fill the catch pan and trigger the overflow switch to turn off fuel. It is essential that the heater is clean, the drain point is clear and the pan is correctly aligned for this to work

### **STORAGE CONDITIONS**

Please store in a clean dust free environment with temperature -20 to 85°C and humidity 5 - 85% and pressure 800 – 1200 hPa

### **USAGE CONDITIONS**

Please ensure conditions as above except temperature 0 - 30°C with IP65 environmental protection and good ventilation.

### **INSTALLATION**

1. Place the heater on a strong, flat, level, surface of concrete or similar
2. Unpack the contents of the heater combustion chamber carefully.
3. Level the heater, checking a small amount of diesel oil (250ml) stays in the middle of the pan may help.
4. Fit the draft stabiliser onto the heater combustion outlet.
4. Install flue (as per page 3) and make sure all joints are tight and sealed with tape, high temp silicone or paste.
6. Make sure that the vaporising pan is placed centrally in the combustion chamber.
7. Seat the wire ring correctly in the chamber
8. Place the deflector on top of the wire ring with the centre lip pointing upwards.
9. Place the cylinder on top of the deflector.
10. Check the power (220-240V/50Hz) and connect the heater to the power supply.

## OPERATION

### CONTROL PANEL

The control panel features a variable control to adjust the heat output within its operating range.

The five LED lights, coloured either red or green indicate the operating status.

- Power – 1<sup>st</sup> green LED
- Work – 2<sup>nd</sup> green LED shows the heater is at operating temperature
- Pump – 3<sup>rd</sup> green LED shows the fuel pump is operating
- Overheat – red LED failure mode
- Overflow – red LED failure mode

“START” button should be pressed immediately after lighting the heater and the “STOP” button should be pressed to stop the fuel supply and allow the heater to cool.



### SPECIFICATIONS

Type	ZM-130
Max output	32 kW
Min output	16 kW
Airflow	1,000m <sup>3</sup> / hr
Max oil use	3.3 ltr / hr
Min oil use	1.5 ltr / hr
Elec supply	220-240V / 50 hz
Power use	190 W
Weight	90 kg
Height	137 cm
Width	54 cm
Depth	85 cm

## STARTING

1. Drain any water in the fuel tank (when necessary) and fill with oil
2. Check overflow protection – push down and ensure the level returns to position and there is a ‘click’
3. Open the top of the heater and remove all accessible components and clean thoroughly
4. Check the burner pipe from the oil feed line is pushed fully into the combustion chamber
5. Plug into the power supply
6. Ensuring the heater is cool, pour 250 ml of heating oil or diesel into the pan
7. Light the oil with paper or rag
8. Reassemble the ring, deflector and cylinder
9. Close the lid of the heater
10. Press the “START” button
11. After 10 – 20 minutes the activation thermostat will start the fan and oil pump. The heater will automatically run initially on low setting
12. After 30 minutes the heater will automatically revert to the output level set on the power output control and you will be able to vary this

## STOPPING

Press the “STOP” button on the control panel. The pump will stop and the green LEDs will turn off. The fan will continue to operate until the heater has cooled down to below the activation temperature.

## SAFETY CUT-OUT & RESET

The heater will stop as above if either the overheat thermostat or overflow switch are triggered.

To clear the overheating signal and return to normal operation, wait until the furnace is cooled down and the fan is switched off then press the push-button overheat thermostat to reset.

Press “START” to turn off the LED signalling ‘overheat’ and then start as normal.

To restart after overflow, ensure the heater has fully cooled and clear up any excess oil in or around the chamber. Then empty the overflow catch pan and press “START” to turn off the LED signalling ‘overflow’ and then restart as normal.

## WARNING

**Never** attempt to add oil directly into the chamber or relight whilst the heater is still hot. Vapours may cause explosion or burns. Wait for the heater to fully cool down first.

**Never** try turn off the power to stop the heater. Use the “STOP” button so the heater can cycle through it’s cool down process. Remember the vaporising pan and other parts will stay hot after the heater has been switched off.

## MAINTENANCE

### DAILY

- Clean the combustion chamber and all internal parts
- Check the oil overflow drain point is clear

### WEEKLY

- Clean the combustion chamber base
- Check the combustion chamber air inlet holes are clear
- Check and clean the oil feed line and pipe

### MONTHLY

- Clean the fuel tank and check oil pump filter

# WIRING TO CONTROL PANEL

