

Z.M. HEATERS

Automatic Multi-Fuel 'Waste Oil' Heaters

At a time of rising fuel costs, the Automatic multi-fuel 'waste oil' Heaters from ZM Heaters, which can burn nearly all Vegetable, Animal, Bio, Conventional and Waste Oils, will save you money.

It provides you with flexibility in choosing your preferred choice of fuel source.



Read the operation instructions carefully, prior to installing and commissioning the heater - All details stated, referring installation, and setting into operation must be affected and observed carefully for an economic operation free of malfunctions. Technical changes in the sense of product improvement reserved.

INTRODUCTION

These Warm Air Generators are for commercial or industrial use.

Warm Air Generators should be installed as per instructions and flued correctly as in the installation manual of oil-fired appliances.

Provided you pay attention to the following hints, you will be a part of the large community of satisfied ZM Automatic Warm Air Generator users.

ZM Warm Air Automatic heaters can be adapted to all possible requirements: The right quantity of warm air from 42 kW e.g. for garages up, to 300kW for large industrial premises. Without long heat up periods, the units ensure immediate heat in the following applications, and suit all size of buildings: Factories, Agricultural Buildings, Production Warehouses, Halls, Workshops, Garages, Sport facilities and Greenhouses.

ZM Warm Air Automatic Heaters are instantly ready for use. The warm air is instantly emitted into the required area, as opposed to an indirect heating system that utilizes steam or water, which often has long start up periods.

Fan group includes one or more Soler & Palau centrifugal double intake fans, statically and dynamically balanced. Electric equipment - for automatic or manual fan control and for emergency stopping of the burner in case of air overheating. Inclusive of electric switchboard and Honeywell FAN-LIMIT double thermostat.

High efficiency heat exchanger combustion chamber made of AISI 310 heat resistant stainless steel, cylindrical, perfectly cooled in all its points.

Exchange elements with AISI 430 18% chromium stainless steel plate exhaust flues.

Exhaust manifold front and rear, stainless steel, with wide inspection doors for rational and easy cleaning.

Technical Specifications

PRECAUTIONS Waste oil may contain many foreign materials. Waste oil may also contain gasoline. Therefore, specific precautions on the handling and storage of waste oils are to be observed when using, cleaning, and maintaining this heater. Use a screen in a funnel when pouring oil into storage tank to catch foreign material, i.e., gasket material and sealant fibres, etc.

WARNING: This appliance is not designated for use in hazardous atmospheres containing chlorinated or halogenated hydrocarbons. Do not expose this unit to rain or moisture. These burners are designed to provide economic disposal of used oils. Used oil is an inconsistent fuel and may contain water and/or foreign materials which may cause the unit to shut down. A secondary source of heat should always be provided to the building.

WARNING: Do not attempt to burn any grade of gasoline, paint thinners, or non-approved fluids. Adequate ventilation must be provided in any enclosure where storage tanks, pump or accessories are installed. Identical to any gas or oil burning appliance, without adequate draft over the fire, the combustion gases cannot escape the appliance. The flame will lengthen resulting in overheated combustion chamber. Even if the heater is installed correctly and adequate draft. Burning used oil is like burning wood. A fine grey ash accumulates in the chamber and flue passage. This accumulation of ash will eventually affect the draft. It is important to remove this ash before the draft is affected.

WARNING: Collect and store your oil continuously and be aware that: Water and Sludge are Not combustible! New motor oil does NOT burn!

VENTING: Failure to provide proper venting could result in death, serious injury, and/property damage. Units must be installed with a flue connection and a proper vent to the outside of the building. Safe operation of any oil-burning equipment requires a properly operating vent system, correct provision for combustion air, and regular maintenance and inspection.

WARNING: Any cases of consequential damage due to the failure of the space heaters and boilers during operation will be excluded.

WARNING: Turn off electric power to the unit before doing any service or maintenance on the Hot air generator and burner.

AUTOMATIC WARM AIR BLOWERS & MULTI-OIL BURNERS								
Technical Data		ZM40	ZM55	ZM80	ZM120	ZM170	ZM230	ZM300
Burner		JUNIOR	JUNIOR	JUNIOR	G2p+	G3p	G3p+	G4p+
Heat output (Burner Req)	kw	47	62	81	137	190	258	336
	Btu/h	159,000	211,000	307,000	468,000	648,000	883,000	1,150,000
Warm Output Heat	kw	42	55	81	123	168	230	300
Hot air flow	Btu/h	144000	190,000	277,000	422,000	573,000	786,000	1,025,000
	m3/h	2900	2900	4500	7900	12400	15800	23700
Electricity consumption Energy	kw	0,245	0,245	0,373	1,1	1,5	2,2	3,3
	Volt	220-240v (1 phs)			400v (3 phs)			
Diamention A	mm	750	810	810	1010	1140	1200	1750
Diamention B	mm	460	610	610	610	810	910	910
Diamention C	mm	1600	1950	1950	1950	1950	2350	2350
Flue Ø	mm	115	154	154	154	204	204	204

In the event of an increasing exhaust gas temperature have the heating installation cleaned (see picture).

Periodically inspect heat exchanger. Consumption will raise if heat exchanger is full of ash. Ash is insulator and it prevent heat to reach exchanger surface!



Installation

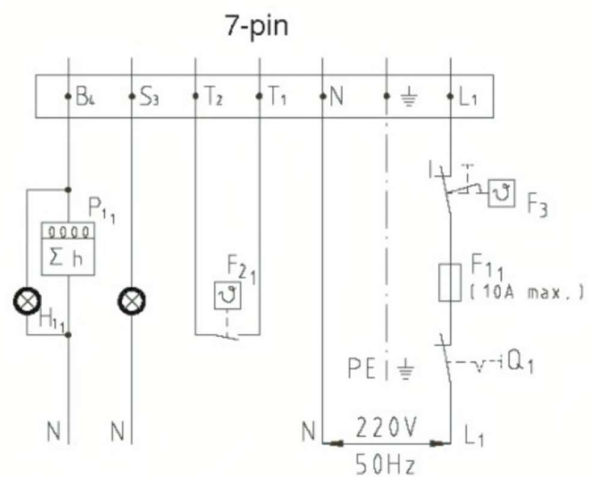
Connecting 7-th pin connector to power supply

B4 - can be connected to hour meter.

S3 – signal for malfunction

T1 & T2 – room thermostat

F3 – Boiler thermostat



Compressed Air

For those who don't have an existing compressed air supply, you will need a small compressor.

We have a huge choice of compressors and recommend the oil free units as these require very little maintenance and are also super quiet (only 70 dba max).

Many industrial sites and workshops already have a compressed air supply. This can be used to supply our universal oil burner with the compressed air it requires.

All units are automatic ignition and require a compressed air supply.

SETTINGS AND ADJUSTMENTS

CAUTION

When adjusting the fan and limit set point levers (Fig. 10), hold the scaleplate dial to keep it from turning and straining the sensing element. Move each indicator lever to the control point recommended by the burner or furnace manufacturer. Use gentle finger pressure.

FAN SETTING ADJUSTMENT

1. Move the FAN OFF lever to the temperature at which the fan is to stop to prevent circulation of cool air.
2. L4064B - Move the FAN ON lever to the temperature at which the fan is to come on.

MANUAL FAN SWITCH

For constant fan operation, push the FAN switch button in. For fan to cycle automatically, pull button out.

LIMIT SETTING ADJUSTMENT

These controllers have a limit stop which prevents the limit indicator lever from being adjusted beyond the equipment manufacturer's specifications.

1. Push the small end of Limit Adjust Tool (196722) through hole in scaleplate (located at caution marking) to depress the stop disc not more than 1/16 in. (1.6 mm) to release stop lock (Fig. 10). Stop disc is on back of scaleplate.
2. While depressing the stop disc, insert the long end of Limit Adjust Tool next to limit stop (Fig. 10) and move the stop to desired setting. *If the L4064 is a replacement control, high limit stop setting should be the same as that of the control being replaced.* (Move stop clockwise to lower the setting, counterclockwise to raise it.) Then remove the limit stop adjust tool.
3. Set the LIMIT OFF lever to the temperature at which the high limit switch is to open to stop the burner. If the high limit stop has been properly set, the LIMIT OFF lever should be as high as the stop permits.

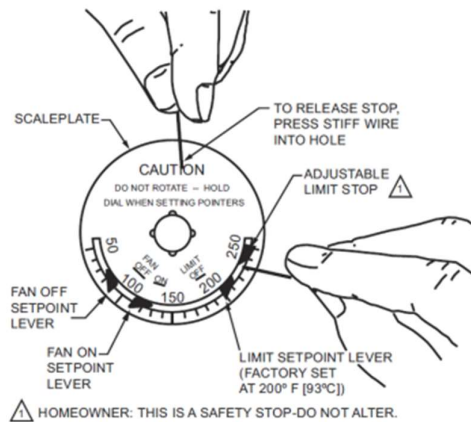


Fig. 10. Changing the high limit stop.

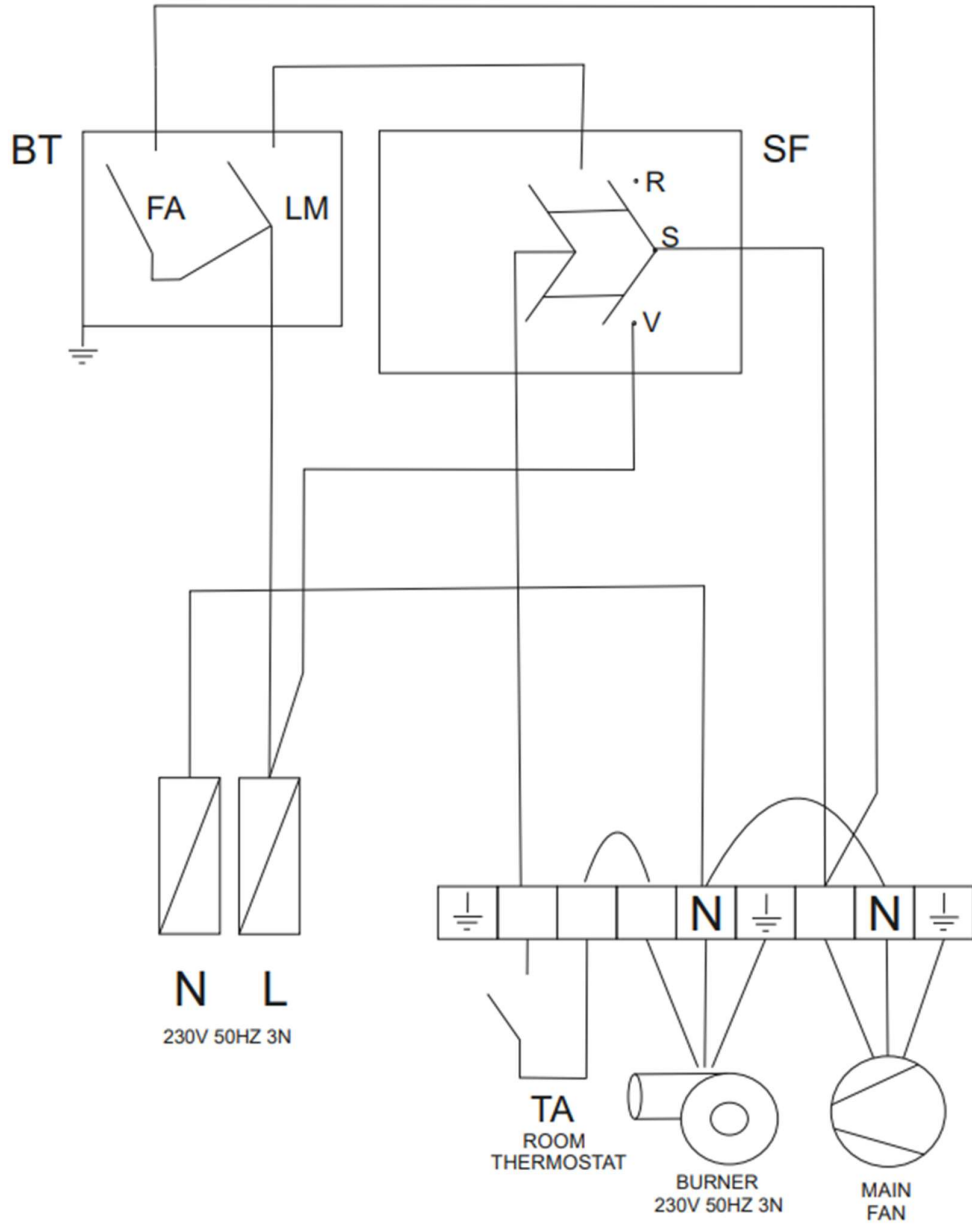
OPERATION

As the plenum temperature rises, the bimetal sensing element of the control wraps and mechanically makes the fan contacts (at the FAN ON temperature setting). During normal operation, the call for heat ends before the LIMIT setting is reached, and the fan contacts break as the plenum temperature falls and the FAN OFF setting is reached. If the call for heat continues until the temperature in the plenum rises to the LIMIT setting, the bimetal element will mechanically break the limit contacts and de-energize the gas control circuit.

CHECKOUT

When installation is complete, disconnect the fan motor circuit at the L4064. Turn on power and set thermostat to call for heat. Burner should come on and limit controller should shut burner off when plenum temperature reaches the limit set point. Turn off power, reconnect the fan switch, turn on power and again set thermostat to call for heat. Fan should come on when plenum temperature has reached fan-on setting.

Wiring Diagrams

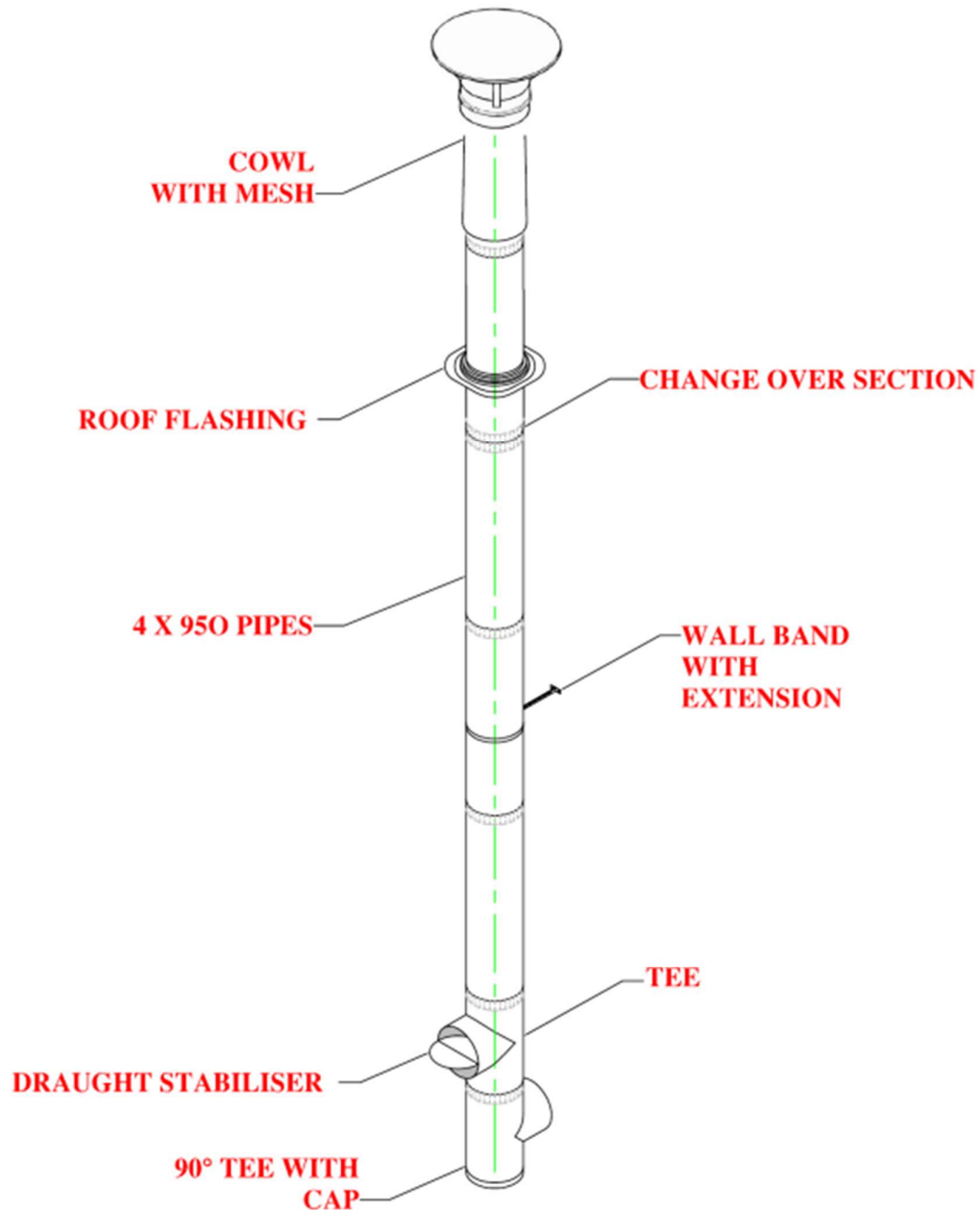


BT – Thermostat

SF – 3-way switch

Standard Waste Oil Flue Kit – Single Wall – Stainless Steel

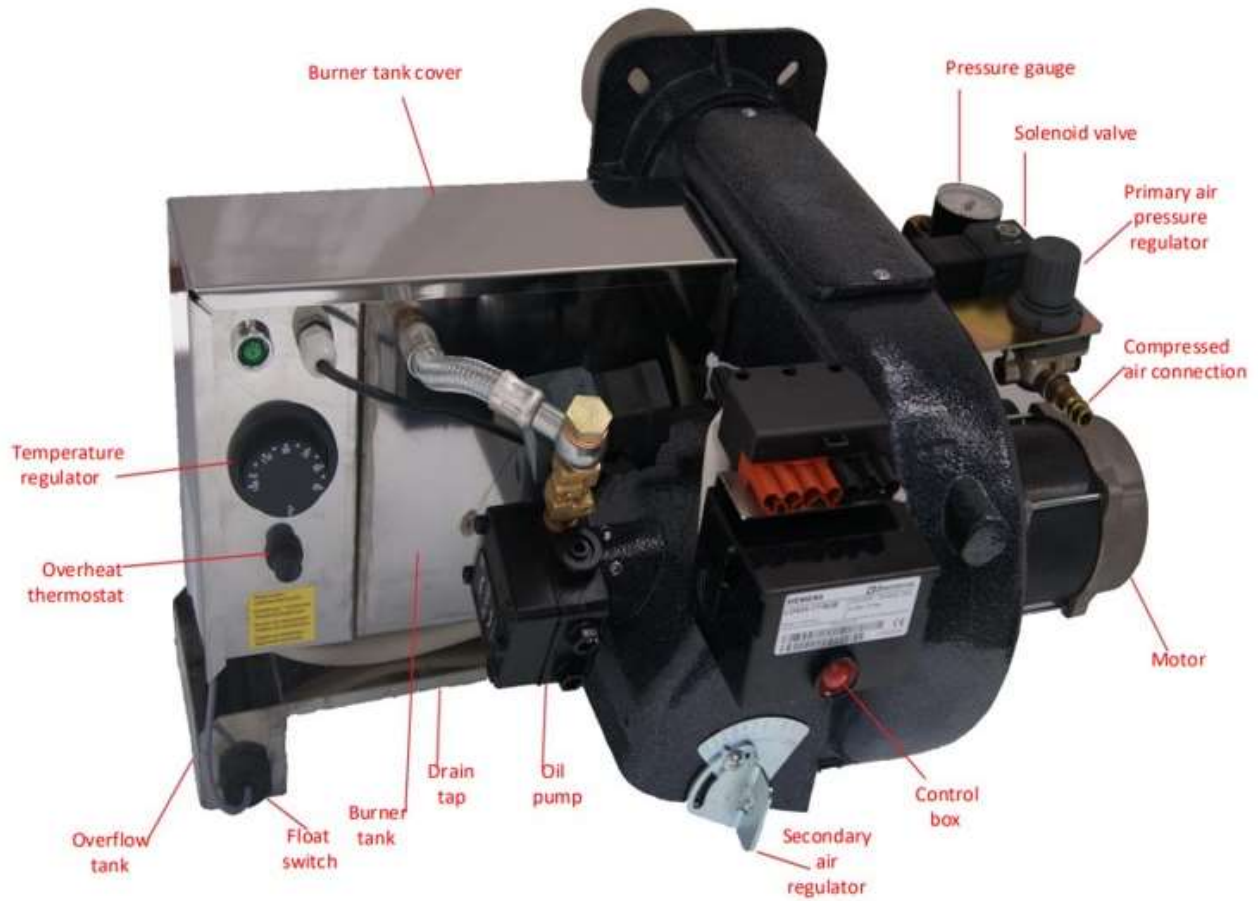
Below is a flue kit example that we recommend, these are also available from ZMO Systems.



Flue gases cannot rise in a horizontal stack and bends also restrict their movement.

If flue bends are used, then we recommend 45° bends and not to use 90° as the flue gases need a gradual sloping stack.

Multi-Fuel Burner



MAINTENANCE SCHEDULE

EVERY 4-6 WEEKS – (OR 250 Burning Hours)

CLEAN OUT HEAT EXCHANGER AND COMBUSTION CHAMBER

AND CHECK FLUE IS NOT BLOCKED.

DRAIN WATER & SLUDGE FROM INTERMDIATE TANK

CLEAN BURNER FLAME RING & ELECTRODES

REMOVING ANY CARBON BUILD UP

DRAIN WATER & SLUDGE FROM PRE-HEAT TANK ON

BURNER

DRAIN WATER FROM COMPRESSED AIR WATER TRAP

FAILURE TO CARRY OUT THIS SHEDULE CAN LEAD TO

FAILURE OF THE BOILER

WARNING!

WEAR INDUSTRIAL RUBBER GLOVES, OVERALLS AND PROTECTIVE FACE MASK
TO CLEAN COMBUSTION CHAMBER.

BAG AND SEAL CONTENTS.

Waste Oil Fuels

Please ensure the following

NO Water, Petrol or Paint Thinners

NO Brake or Clutch Fluid

NO Anti-Freeze

DO NOT use unused (Virgin) engine oil as it does not burn very well at all.

Synthetic Oils – If your oil is all synthetic then you must add at least 15% heating oil /diesel to ensure reliable starting.

If the synthetic oil content is more 50:50 to mineral oil in your waste oil, then you must add at least 15% heating oil/diesel to ensure reliable starting.

If burning used cooking oil, please ensure all fats are removed prior to entering the pre heat tank of the burner.

Warranty

The usual warranty period granted on our devices are cover with a 12-month parts only warranty after the delivery date of Invoice being decisive.

Any cases of consequential damage due to the failure of the hot air generators and boilers during operation will be excluded.

WARRANTY IS VOID IF:

Burner is not maintained in accordance with maintenance requirements.

Wiring is not in accordance with circuit diagram.

EL fuel oil according to the DIN Standard No.51 603-1 is used at temperature below +4 C or if winter diesel is used below stipulated temperatures. (IT IS STRICTLY PROHIBITED TO ADD ANY PETROL!!!).

The Burners must not be modified or tampered with under circumstances, and repair work must be carried out by a specialist.

If the pump pressure is set at a higher value, the motor will be overheated and may be damaged, excluding any warranties.

The Warranty will only be granted if a regular servicing is carried out at least once a year in accordance with the CITERM operating instructions.

Any use, installation, maintenance that is not affected according to the rules as asserted in the technical manual, or unauthorized modifications on the original version as delivered from manufacturer leads to expiration of any right to warranty.

Further on our "Conditions of Sales and Delivery" are valid.

Technical modification for product improvement is subject to change without notice.