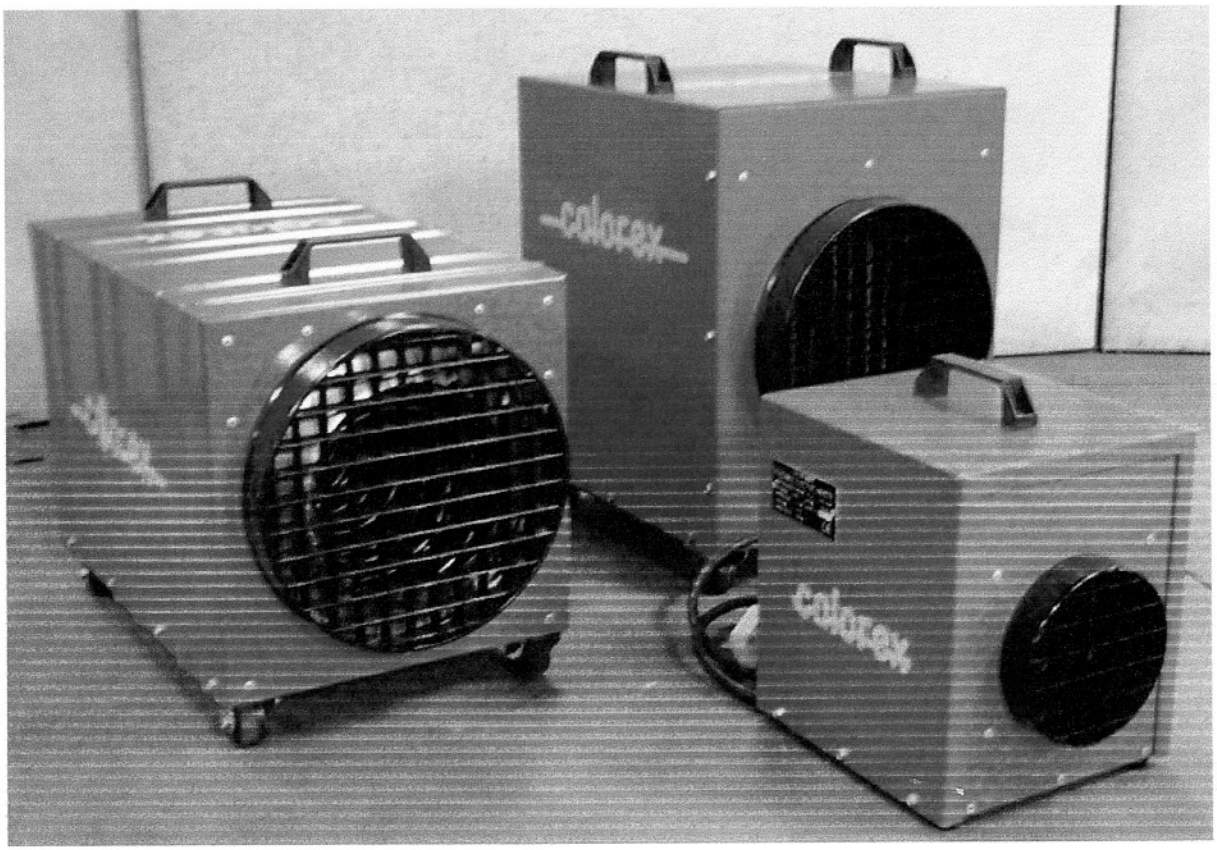
USER & SAFETY INSTRUCTIONS

PORTA-CAL

ELECTRIC HEATERS

(SD462950 Issue 1)



THE PORTACAL RANGE OF UNITS

These mobile industrial fan electric heaters are designed and manufactured to withstand the arduous operating conditions encountered within the Construction and Plant Hire Industries, whilst being compact enough to suit Industrial and Commercial premises. They produce clean, warm and dry air instantaneously. **PLEASE READ THIS USER MANUAL CAREFULLY BEFORE PUTTING INTO OPERATION.**

CONTENTS PAGE

1 GENERAL SAFETY

» As Suppliers of products for use at work, we/you are required by the Health and Safety at Work Act 1974, so far as it is reasonably practicable, to ensure that such products are safe and without risk to health when properly used, and, to make available to users of such products, adequate information about their safe and proper operation.

The units are designed for "indoor" use only.

The units should be mounted on the floor. If this is impossible, ensure that they are provided with a very stable platform.

Do not position on surface water or where airborne water (liquid) is present.

Position the unit to allow clear air input and exit from the unit. A minimum distance of 2 Metres should be allowed between the outlet nozzle of the heater and any obstruction.

Do NOT use the units when surrounded by combustible materials.

Maximum surrounding air temperature...40°C.

2 ELECTRICAL SAFETY

The units must be installed in compliance with the appropriate requirements of the I.E.E Regulations, 15th Edition.

The units must ONLY operate in conjunction with a permanent EARTH connection.

The electrical supply should be appropriately protected by fuse or circuit breaker as follows:-

»DFE.25	110 Volt	**32 Amps Maximum.**
»DFE.25	240 Volt	**13 to 16 Amps Maximum.**
»DFE.65	415 Volt	**20 Amps/phase Maximum.**
»DFE.95	415 Volt	**32 Amps/phase Maximum.**

For use on Construction Sites, refer to CP1017 - Electrical Distribution on Building Sites.

Disconnect electrical supply before removing covers.

Do not operate units with covers off.

Supply cable lengths should be kept to a minimum and maintained to be damage free at all times. For extended runs of cable across large floor areas, armoured cable is preferred.

3 PRINCIPLE OF OPERATION

The source of the heat in each unit is a range of sheathed electric elements. These are mounted within a "metal tube" inside the outer casing, thus the outer case remains cool at all times.

An electric fan draws air in at the rear of the heater and blows the air over the heating elements.

Should the air flow be restricted, either because the inlet or outlet are blocked, or, because the fan motor fails, the elements will overheat. This possible condition is constantly monitored by one, or more, overheat switches mounted above the elements and which switch off the electrical supply to the elements. As the elements cool down, the overheats re-set automatically. When this characteristic is observed, the unit should be isolated from electricity immediately and the reason for the overheat identified and remedied...see "Trouble Shooting".

4 PRINCIPLES OF CONSTRUCTION

Electrical Wiring Diagrams are mounted inside the units. Remove cover to refer. Units are built to IP.44 standards.

The Dual Voltage (110/240V) version of the Model DFE.25 can be wired internally at a reduced capacity of 1.5kW on 110 Volts.

To alter the supply on the Dual Voltage unit, 110V to 240V, or vice versa, refer to the Wiring Diagram.

REMEMBER TO ROTATE THE SUPPLY IDENTIFICATION PLATE ON THE TOP OF THE UNIT TO MATCH THE APPROPRIATE WIRING CONFIGURATION FOR THE DUAL VOLTAGE DFE.25. Connecting the wrong supply to the unit can damage components and, as such, is **NOT** classed as a Warranty Fault.

No NEUTRAL wire is required for the 415/3/50 units...just 3 Phases and Earth wires.

The units are all provided with carrying handles on the Top Cover.

The Top Cover consists of the sides and top and is held in place by screws along the bottom of the sides. These screws are most easily removed using a socket spanner.

The remainder of the "fixings" in the unit are rivets. Although we acknowledge that this makes the exchange of parts potentially more difficult, as compared with the use of screws or bolts, experience has shown that any such exchanges are so intermittent that the advantages of not having screws coming loose and/or them "seizing" over long periods, more than outweighs any disadvantage.

5 PLUGS AND CABLES

Plugs and Sockets have to be carefully selected to suit the capacity and voltage of the unit.

The "bare ends" of the cable supplied with the heater are "tinned". This is appropriate for connection into large terminal blocks. For smaller terminals, remove the length of tinning, leaving a short length of bare strands.

Recommended Plugs

The DFE.25 - 240 Volt.	13 Amp 3 Pin Plug (best quality) 16 Amp 2 Pole + E Industrial Plug
The DFE.25 - 110 Volt.	32 Amp 2 Pole + E Industrial Plug
The DFE.65 - 415 Volt.	32 Amp 3 Pole + E Industrial Plug
The DFE.95 - 415 Volt.	32 Amp 3 Pole + E Industrial Plug

The DFE.25, on a 110 Volt supply requires, a minimum of 3kVA continuously rated Transformer Power. Any less Transformer Power, reduce the heat output by reference to the Wiring Diagram inside the unit.

For extended runs of supply cable, in excess of the cable supplied with the unit, the following schedule will allow for a maximum volt drop at the unit of 10 Volts on maximum heat setting:-

DFE.25 - 110 Volt

0 to 20 Metres	-	2.50mm² cables
25 to 40 Metres	-	4.00mm² cables

DFE.25 - 240 Volt

0 to 50 Metres	-	2.50mm² cables
50 to 100 Metres	-	4.00mm² cables

DFE.65 - 415 Volt

0 to 50 Metres	-	2.50mm² cables
50 to 75 Metres	-	4.00mm² cables
75 to 100 Metres	-	6.00mm² cables

DFE.95 - 415 Volt

0 to 50 Metres	-	4.00mm² cables
50 to 75 Metres	-	6.00mm² cables

At the unit, a voltage drop of more than 15% below the "nominal supply rating" will cause damage to the heater.

6 INSTALLATION

Ensure that the units are always provided with a sound EARTH connection.

Usually, and to keep running costs to a minimum, it is best to keep outside Doors and Windows closed. However, when drying out a room or building it may be preferable to keep windows open "a crack" to allow some through draft. The internal air can only support so much water vapour before condensation will start. Condensation means lack of ventilation.

Position a single unit as centrally as possible in the heated area.

Where a number of units are present in one area, space them out equally throughout the area. Ensure that one heater outlet is NOT blowing directly towards another's inlet.

Do NOT fit air transfer ducting to the DFE Range of units (units are available in the DFE.T Range that are designed to be used in conjunction with ducting)

THE "DFE" Range of units is NOT fitted with thermostats. (They are fitted as standard on the "DFE.T" Range). Automatic daily programming and air temperature control can be easily arranged if required. Please speak to your Supplier.

The DFE.65 and DFE.95 are fitted with a 5 Position Selector Switch that allows the User to choose from 3 separate heat outputs and a Fan Only position for "Summer Ventilation".

DFE.65

Setting			
	0	Off	
	1	Fan Only	
	2	6.5 kW	9.1 Amps/ph
	3	9.7 kW	13.6 Amps/ph
	4	13.0 kW	18.3 Amps/ph

DFE.95

Setting			
	0	Off	
	1	Fan Only	
	2	10.0 kW	14.0 Amps/ph
	3	15.0 kW	21.0 Amps/ph
	4	20.0 kW	28.0 Amps/ph

7 TROUBLE SHOOTING

» ALWAYS ISOLATE UNIT FROM ELECTRICITY SUPPLY BEFORE MAINTENANCE

Fault	Likely Problem	Remedial Action
No fan	No electricity supply.	Check fuses/breakers.
		Check supply cable.
		*Meter heater terminal block for correct supply voltage.
		Meter Selector Switch for continuity.
		Check security of terminals and cables.
		Check fan blade is secure on motor shaft.
		Exchange Motor.
No heat	Lack of air	*Meter correct voltage at unit.
		Ensure clear access for air through unit.
		Check fan as above.
		Check that heat returns after cool down period.
		If unit continues to cycle, identify faulty overheat protector and exchange.
		Check for continuity through each heating element and exchange as appropriate.

*NOTE: A valid check of the correct voltage at the unit can only be carried out when unit is operating under full load. This requires the unit to be run with covers removed. **Any fault finding work should be carried out by a qualified Electrical Engineer and the unit run with covers off for the minimum period possible.** During Maintenance always check that all components are securely mounted and that»»»

»»»» ALL ELECTRIC TERMINALS ARE TIGHT ««««