

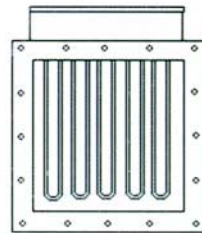


# Electric Heaters for Industry



**Tubular and Finned Heating Elements**

**Air Duct Heaters**



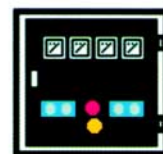
**Liquid Immersion Heaters**



**Water Circulation Heaters**



**Heating Controls**



# TUBULAR ELEMENTS

## Introduction

All EIDCO electric heating elements are manufactured to designs developed since 1938 by Eltron (London) Ltd. They are therefore backed by over 60 years of practical experience

## Application

Tubular and finned heating elements are used for many applications, including heating air, gases or liquids.

The choice of materials and watts density will however vary for each different installation.

Our standard range of elements is designed to operate at black heat in forced duct air and convector systems, or in low temperature drying ovens.

## Construction

The standard construction of our heating elements is shown in figure 1. This consists of 80/20 nickel Chrome resistance wire coiled to form a helix, which is welded to terminal pins.

This is centered in a metal tube, which is filled with magnesium oxide and compressed to ensure rapid heat transfer.

The terminal pins are insulated from the metal tube by ceramic bushes and form a non-heated or dead section to the element.

Kilowatt rating and voltage can be varied to meet a customers' special requirements.

Finned elements consists of a tubular element of standard construction, having a crimped metal fin wound tightly around it to form an extended surface in order to increase its heat transfer and efficiency.

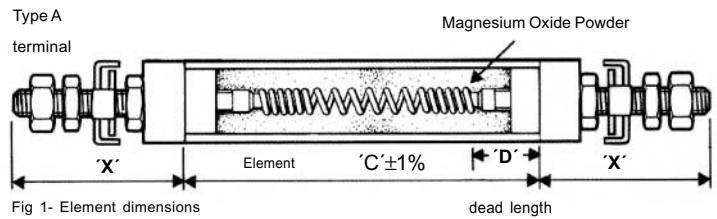


Fig 1- Element dimensions

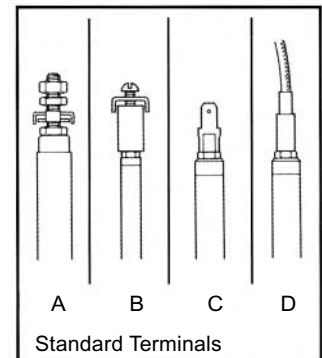
## Bending

Heating elements may be bent in almost any mechanically practical shape. Over bending can cause the element to break or fracture and therefore minimum and maximum bending radii must be respected. We recommend that all elements are factory bent by our experienced work force.

## Terminals

EIDCO manufacture all heating elements with a type 'A' terminal as standard.

Other terminal arrangements are available to meet individual customers' needs. (see table Fig. 2)



Standard Terminals

## Terminals (Fig. 2)

- A 4BA terminal
- B Pillar terminal
- C Male spade connector
- D Flexible tail

## Fixing Glands

EIDCO fits type 'G1' glands to all heating elements that require fixings to retain or bolt them into position. Other types of glands are supplied to meet different working conditions or special applications.

(see table Fig. 3)

Gland Thread	G1	G2	G3	G4
1/4 BSP				

## Fixing Glands (Fig. 3)

- G1 Clamp Gland
- G2 Crimped Gland
- G3 Soldered Gland
- G4 Pressure Gland

## Manufacturing Tolerance

The processes and materials used in the manufacture of heating elements can result in a variation of about 1% in the straight element length of a manufacturing batch. These variations may be taken up on an unimportant bend.

# TUBULAR ELEMENTS

## Quality Control

Our manufacturing and operating standard are to ISO 9000.

Our quality control department is responsible for ensuring that each department's personnel follow the detailed manufacturing and test procedures and standards, which have been laid down.

## Electrical Inspection

All heating elements are subjected to two electrical tests:

1. Dielectric Strength  
(line voltage x 2 + 1000V AC)

Passing a high voltage between the element and the outer metal sheath carries out this high voltage insulation test. The applied voltage is increased from zero to the test voltage and held for 1 minute.

2. Insulation Resistance  
(500V / 1000V DC)

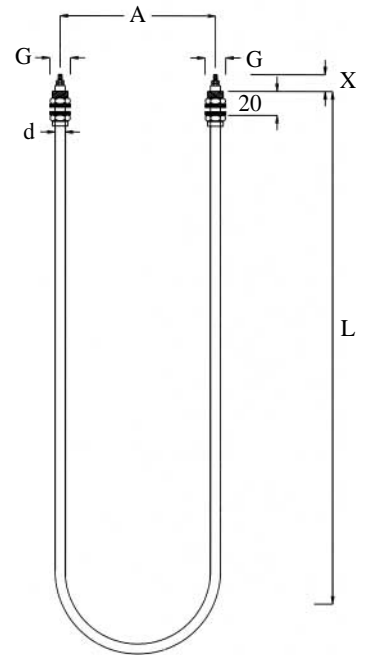
This insulation resistance test measures the resistance passing between the central element coil and terminal to the outer metal sheath.

The insulation resistance of a heating element may deteriorate after long periods of storage. This is because of the hygroscopic nature of magnesium oxide insulating material and the humidity inhibitor sealing materials used to manufacture elements.

Any elements which are below  $2M\Omega$  should be dried out for about 12 hours in an oven at 250-300°C.

## Standard Tubular Elements

Type	Watts	Volts	L mm
S2010	1000	220	660
S2012	1250	220	820
S2015	1500	220	975
S2020	2000	220	1300
S2025	2500	220	1620
S2030	3000	220	1920



## Table of Dimensions

d	G	X	A
8.0	15	17	50

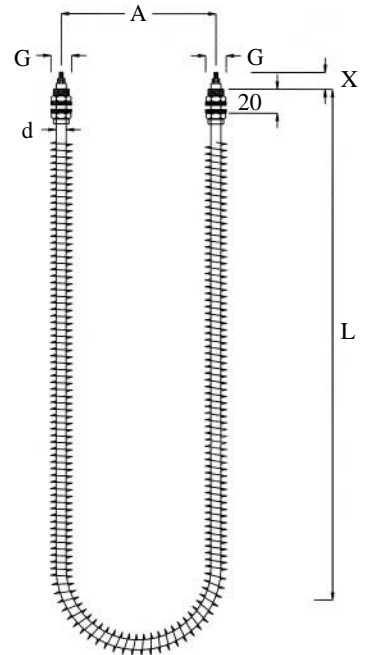
## Standard Finned Elements

Type	Watts	Volts	L mm
F5010	1000	220	350
F5015	1500	220	480
F5020	2000	380	610
F5030	3000	380	870
F5040	4000	380	1130
F5050	5000	380	1400

220 volt types available

## Table of Dimensions

d	D	G	X	A
8.0	27	15	17	65



# AIR DUCT HEATERS

## Application

Air duct heaters are used for comfort and space heating in many applications including, computer rooms, hotels, hospitals and offices, as well as to meet industrial heating and drying process requirements.

## Construction

Heaters are fitted with heavy duty EIDCO finned heating elements, which have good heat transfer characteristics and are designed for low temperature operation.

The elements are mounted on a removable terminal plate, which is fitted into a mild steel fabricated case of welded construction. The element bundle may therefore be easily withdrawn for inspection without dismantling the ductwork.

The heaters have 40mm flanged connection at each end for bolting to connecting ductwork. These are either drilled to our standard table (see Fig. 6), or left undrilled.

The heater cases have a steel zinc finish, or a painted finish.

All air duct heaters are fitted with a high temperature safety cutout as standard, to protect against overheating in the event of a Fan failure or the system's filters becoming blocked.

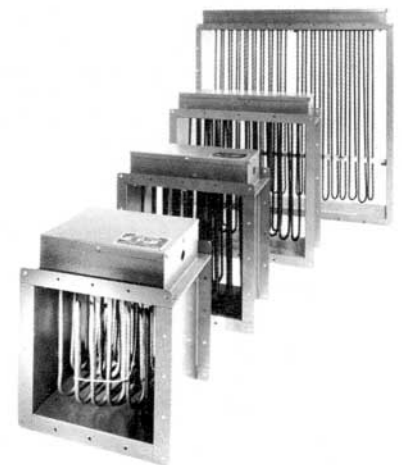
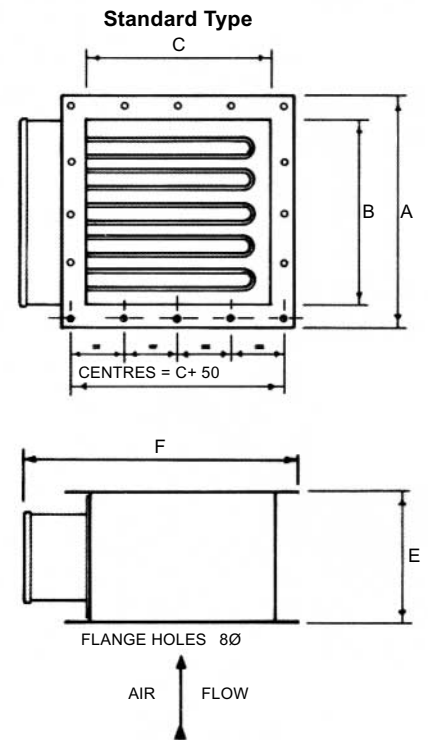
The heating elements are factory pre-wired in single or three-phase steps according to each customer's requirements.

## Built in electrical components

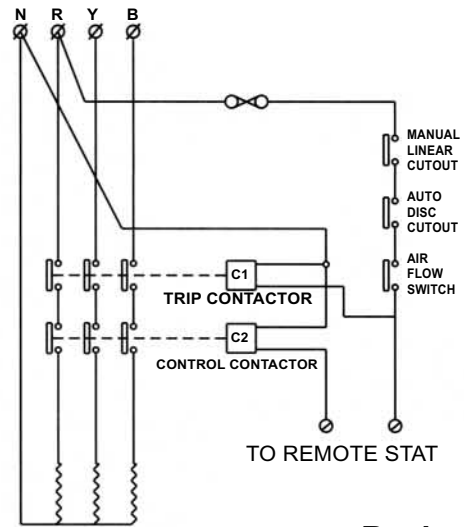
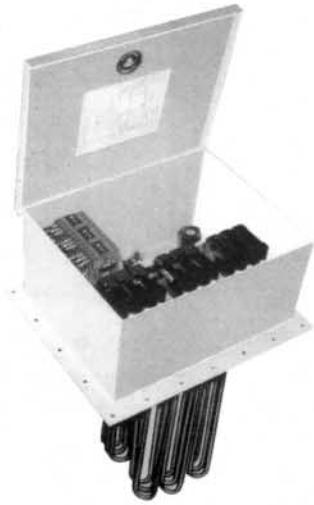
Control components, such as step-controllers, Fuses, airflow switches, or other equipment, may be factory pre-wired into special heater terminal boxes.

## Standard Air Duct Heaters

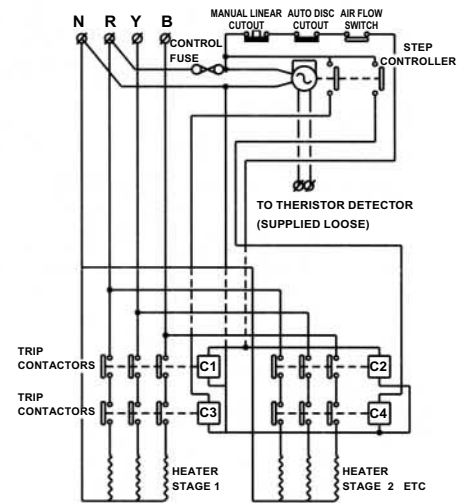
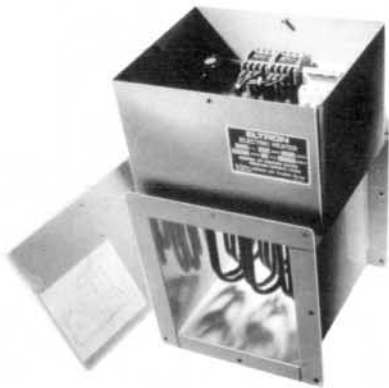
Type	Case	kW	step/phase
A4-1	400x200	1	1
A4-2	400x200	2	2
A4-3	400x200	3	1/3
A4-4	400x200	4	2
A4-6	400x200	6	2/3
A4-9	400x200	9	3/3
A4-12	400x200	12	4/3
A5-1	500x250	1.5	1
A5-3	500x250	3	2
A5-3	500x250	4.5	1/3
A5-6	500x250	6	4
A5-7	500x250	9	2/3
A5-13	500x250	13.5	3/3
A5-18	500x250	18	4/3
A6-1	600x300	1.5	1
A6-3	600x300	3	2
A6-4	600x300	4.5	1/3
A6-6	600x300	6	4
A6-9	600x300	9	2/3
A6-13	600x300	13.5	3/3
A6-18	600x300	18	4/3
A8-6	800x400	6	1/3
A8-12	800x400	12	2/3
A8-18	800x400	18	3/3
A8-24	800x400	24	4/3
A10-9	1000x500	9	1/3
A10-18	1000x500	18	2/3
A10-27	1000x500	27	3/3
A10-36	1000x500	36	4/4
A12-12	1200x600	12	1/3
A12-24	1200x600	24	2/3
A12-36	1200x600	36	3/3
A12-48	1200x600	48	4/3
A15-15	1500x750	15	1/3
A15-30	1500x750	30	2/3
A15-45	1500x750	45	3/3
A15-60	1500x750	60	4/3



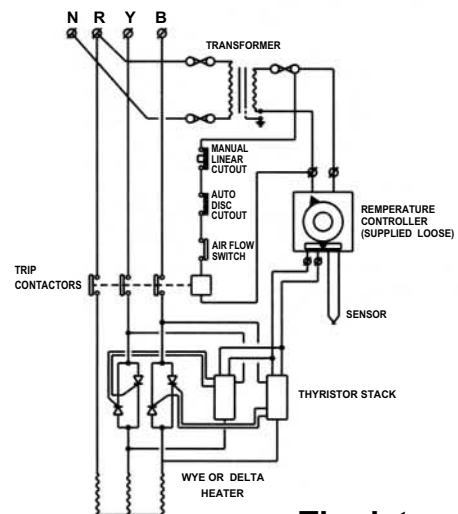
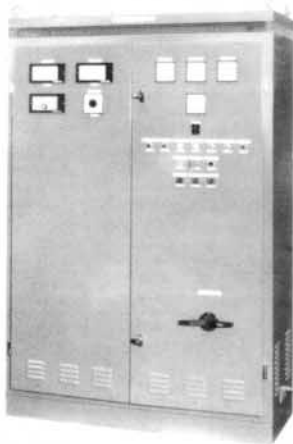
# Typical Air and Water Heater Control Systems



**Basic control**



**Step Control**



**Thyristor control**

Detailed specification, wiring diagrams and spare parts take off List are supplied with each order

# IMMERSION HEATERS

## Application

Immersion heaters form a very efficient means for the direct heating of liquids.

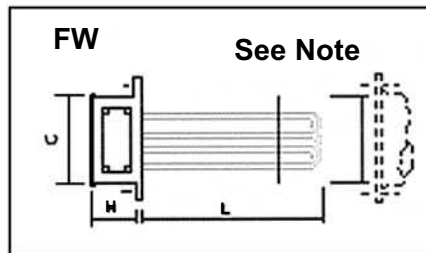
The FW range is specially designed for heating water in calorifiers, storage tanks, flow boilers, washing plants, or other industrial processes.



## Construction

The heaters consist of tubular heating element mounted on ASA 150 flanges and fitted with terminal enclosures.

Although the tables list standard heaters, special heaters can be designed and manufactured for different applications. Watts rating of heating elements will be varied to suit each application and design.



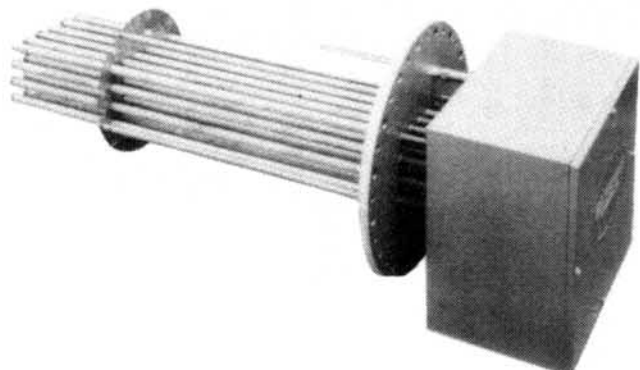
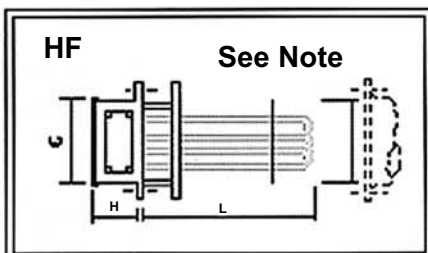
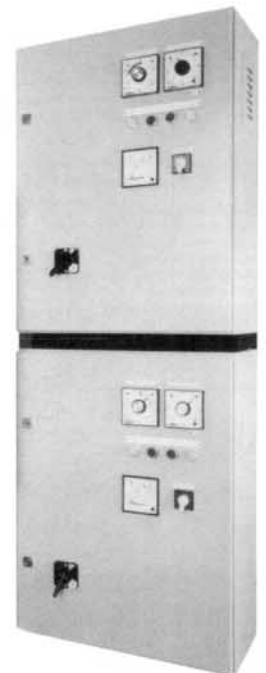
## Controls

ALL heaters can be fitted with an integral high limit safety cut out and thermostat if required. These are incorporated within the terminal enclosure.

Fully pre-wired contactor, step, or thyristor, control panels are designed and manufactured to meet each customer's individual application and requirements.

## Standard Water Immersion

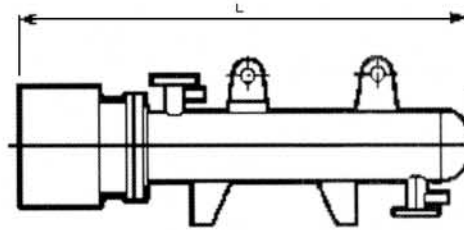
Type	kW	Flange NB Ins	Immersed Length mm
FW0015	15	8	1600
FW0030	30	8	1600
FW0045	45	8	1600
FW0060	60	8	1600
FW0075	75	8	1600
FW0090	90	10	1600
FW0120	120	10	1600
FW0150	150	12	1600
FW0180	180	12	1600
FW0255	255	14	1600



# WATER CIRCULATION HEATERS

## Application

Water Circulation heaters are an ideal hot water source for many applications where space is at a premium. These are ideally suited for providing hot water services, either as a direct in inline flow boiler, or as a recirculating boiler, which feeds a hot water storage tank.



## Construction

The heaters consist of tubular heating elements mounted on flanges and fitted with terminal enclosures.

The flange heater is bolted to a fabricated carbon steel vessel, which is designed and constructed to meet ASME VIII code requirements.

The heaters are lagged and cleaded with a steel jacket.

Inlet and outlet nozzle sizes and orientation may be varied to suit customer's specific requirements.

## Standard Water circulation

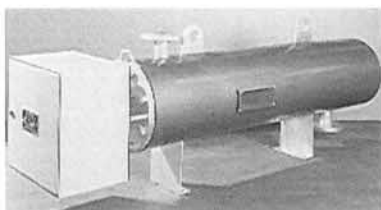
Type	kW	Flange NB Ins	Immersed Length mm	Nozzle NB
LW0015	15	8	100	2
LW0030	30	8	1 00	2
LW0045	45	8	1 00	2
LW0060	60	8	1 00	2
LW0075	75	8	1 00	2
LW0090	90	10	103	2
LW0120	120	10	103	2
LW0150	150	12	106	2
LW0180	180	12	106	2
LW0225	225	14	106	2.5



## Controls

All heaters are fitted with an integral high limit safety cutout and a thermostat unless otherwise required. These are incorporated within the heater terminal enclosure.

Fully pre-wired contactor, step, or thyristor control panels are designed and manufactured to meet each customer's individual application and requirements.



LW range



## Standard Hot Water Calorifiers

Type	kW	Capacity Litres	Size mm Dia. x high
CAL015	15	700	750 x 1500
CAL030	30	1000	850 x 2000
CAL045	45	2000	1000 x 2300
CAL060	60	2500	1220 x 2350
CAL090	90	3500	1370 x 2550



## Electric Heaters for Industry

Typical multibent element shapes - a selection of over 200 standard formations

