

INSTALLATION, OPERATION  
& MAINTENANCE



# ELECTRIC HEATER BATTERIES

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# 1. GENERAL

## 1.1. GENERAL DESCRIPTION

SPC electric duct mounted heater batteries can have either:

1) Incoloy 800 stainless steel sheathed elements (IS). Sheathed elements are 'inherently safe' and are commonly specified to comply with M & E 100 specification. Large numbers of elements can be banked together (to a maximum of 400kW) with a variable number of stages.

OR

2) Electric elements in chromium wire spirally wound (SW) to an exact load on ceramic formers, energised to give a very accurately controlled heat output. SW elements have low thermal inertia and give rapid heating up and cooling cycles.

There is also a High Temperature Thermal Cut-out to facilitate unit shut down in the event of fan failure, or low airflow. Resetting is auto or manual, to suit.

Casing is in 16G mild steel, fully welded and then grey stove enamelled, or as specified.

*Note. All circular heaters have galvanised steel casings.*

## 1.2. RECEIPT AND PREPARATION

On receipt, check that all details are correct to the delivery schedule. Damage should be reported to the Carrier and to SPC Office immediately. It is recommended that packaging is kept in place and the units stored in a safe area until the necessary services are completed, in order to avoid to possibility of damage on site.

# 2. INSTALLATION

## 2.1. MOUNTING

Duct mounted casing flanges are mated with the counter flanges of the connecting ductwork and should be drilled to suit site fitting. The airflow can be in either direction, with the terminals handed to either left or right. Ensure that the thermal cutout is above the elements to catch rising heat and that airflow across the elements is uniform and maintains black heat.

Duct Heaters should be installed at least 1m after a bend in the ductwork, to avoid air turbulence missing the cut-out.

## 2.2. WIRING

All wiring should be carried out in accordance with the latest edition of the IEE Regulations.

*NOTE THAT THE TERMINALS AND ELEMENTS ARE LIVE.*

The battery should be isolated before the cover is removed from the terminal box. The thermal cut-out must be connected in series with the operating coil of the controlling contactor so that the heater switches off if the cut-out trips.

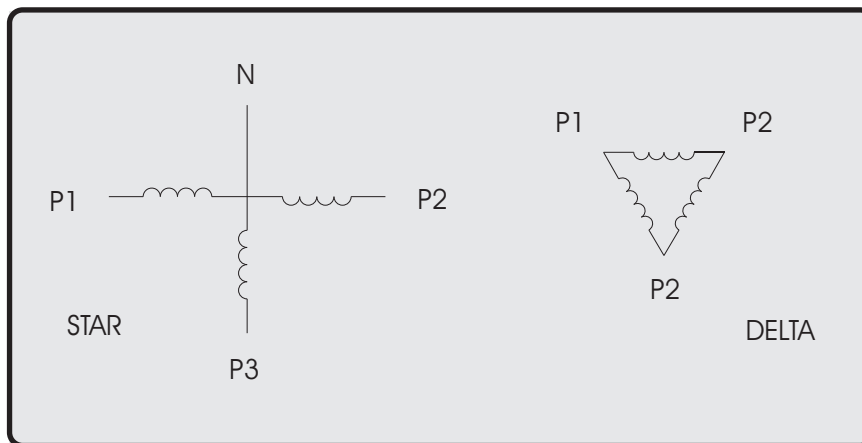
If the cut-out has been actuated, it can be reset when the problem has been cleared. The thermal cut-out is rated at 10A.

It is recommended that fans and heaters are inter-linked to ensure that heaters cannot be energised without the fans. An airflow switch in series with the controller coil may also be considered as an extra safety feature.

Mains leads must be safely installed under the terminal cover and be protected with a suitable heat resistant covering. Cable entry to the terminal box is by means of a 38mm or 27mm hole, according to specification.

Element arrangement is according to schedule with total rating, number of phases and number of heater stages to suit. This is marked on the casing, with the neutral terminal marked 'N'. Wiring arrangements for single and triple-phase are as shown in the wiring diagrams.

The standard wiring for 3-phase electric heater batteries is star configuration, with an incorporated neutral. The neutral can be omitted on the star arrangement, whereas for the delta wiring the neutral is not suitable. If wired in delta configuration, the actual duty will exceed rated duty by approximately 1.7 times.



As usual with multistage coils, if one fails, all will shut down, unless the neutral has been wired in, in which case the remaining stages will continue to operate.

**SPC does not supply the controls; they are to be supplied by others.**

### **3. MAINTENANCE**

#### **3.1. EASY ACCESS**

The Incoloy sheathed element sets can be removed from the duct for servicing and inspection of the elements without the need for removing the unit from the duct.

#### **3.2. CLEANING**

Air filters should be checked and cleaned regularly they must not be allowed to become clogged thus reducing the supply of air to the heating elements.

#### **3.3. SAFETY**

Safety devices should always be maintained in good condition, to ensure that heaters are switched off when insufficient air is flowing across the elements.

It is essential that the specified airflow be evenly distributed to all parts of the heater when any stage is switched on.



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