Thermon
South Africa (Pty) Ltd.

Flat Elements

mica and ceramic type

Flat elements and box heaters are primarily used on extruder heads and blowmoulding heads in the plastics industry. Other applications include packaging machines and general heating of containers, pipes and flat metal surfaces.

A distinctive feature of these elements is even heat distribution over a large surface area. Construction consists of heating wire, insulated with either mica plates or ceramic formers. The elements are usually metal encapsulated for mechanical strength.

Mica and Ceramic insulation

Mica Insulation: Mica insulation offers thin construction (4mm), maximum Watts density of 3.5 W/cm• and operation up to 380°C. For process temperatures in excess of 280°, ceramic insulation is preferred.

Ceramic Insulation: Ceramic elements are thicker in construction (12mm) but offer a Watts density of 5.5 W/cm• and operating temperature up to 600°C. Generally ceramic elements are more durable than mica elements, thus offsetting the higher price with a longer life expectancy.

Calculation of maximum Power Rating

Flat Element (Mica):   P max (Watts) = Width (mm) x Length (mm) x 0.035
Box Heater (Mica):   P max (Watts) = Width (mm) x Circumference (mm) x 0.035
Flat Element (Ceramic):   P max (Watts) = Width (mm) x Length (mm) x 0.055

The power rating of the element has an influence on its lifespan. We therefore recommend that a lower power rating is chosen if the process allows it.

Mounting, Storage and Commissioning

Mounting: Good thermal contact between the element and metal surface to be heated is essential. Due to the large surface area and flat construction, warping of elements will result in air pockets, causing hot spots and possible failure of the element. It is therefore important that elements are clamped on tightly, and that clamps are retightened once the elements have reached operating temperature. On flat elements a backing plate of at least 2mm thickness and clamping screws at regular intervals are advisable.

Storage and Commissioning: Elements are susceptible to moisture and should be stored or used in a dry environment. It is recommendable to heat up the elements gently after a prolonged period out of commission. This allows moisture to escape and prevents damage to the elements. Some temperature controllers have a "soft start" feature, but a similar result is achieved by turning the temperature controller down initially.

Ordering Code and Options

When ordering please provide the product code as detailed below, *also specify element rating (Watts), supply voltage, length of cable (if applicable), inner dimensions (diameter,* *length, width...)* and a sketch with details of holes, cut-outs, the positions of terminations, etc.

Type	Termination
UH [ ]	————— [ ]

QM = mica box with 2 terminations and 2 clamping plates

FO = flat mica element

QH = mica box with 1 termination and 2 clamping plates

FM = mica metal-clad element

QF = mica box with 1 termination and 4 clamping plates

FP = mica metal-clad element with backing plate

QG = mica box with 2 terminations and 4 clamping plates

FC = flat ceramic element

QU = 3 sided mica box

FE = capsulated flat ceramic heater

QL = L shaped mica box

X = other (please specify on drawing)

Options [   ]

S3 = 9mm stainless steel backing plate
S6 = 6mm stainless steel backing plate
M3 = 9mm mild steel backing plate
M6 = 6mm mild steel backing plate
TB6 = 1/4' TC Bracket
TB7 = 3/8' TC Bracket

* Please refer to accessory page to order matching plugs / sockets
** Cable not included
*** Specify cable length when ordering
# Cable not shown

kettle plug (15A)*: **1R**   **1T**

flat pin kettle plug (15A)*: **ER**   **ET**

cable and connector block (15A)**: **2R**   **2T**

sealed termination (6A)***: **3B**   **3T**   **3R**

twin terminal post (15A): **4**

separate terminal posts (15A): **A**

sandwich tail (15A)***: **5**

cable termination (15A)***#: **6R**   **6T**

three phase termination (15A)**:

7 60 x 80 x W (mm) 35 A / 24 kW max.

C 55 x 55 x W (mm) 22 A / 15 kW max.

X = other (please specify on drawing)

Thermon SA reserves the right to make any kind of design or functional modification without prior notice.