

# Flexible Ceramic Pad (FCP) Heating Elements

## Stork FCP Heating Elements Save You Money.

Stork use the highest quality materials available in the construction of our Flexible Ceramic Pad (FCP) heating elements. These materials make Stork heating elements highly durable, which extends the usable life of Stork heating elements, far beyond that of our competitors. This extended life, high durability and reliability combine to save you money by:

- Reducing rework and lost time due to heating element failures.
- Reducing your annual costs for replacing or repairing failed or damaged heating elements.

Stork ceramic heating elements are constructed from high grade sintered alumina ceramic beads, 80/20 Nickel-Chrome core wire and Nickel cold tail wire. The construction allows the heating element to be flexible and provide high heat transfer efficiency.

Stork avoid the use of low quality ceramic beads used by many other suppliers. We insist on using high quality, ceramic beads, with a high resistance to thermal and physical shock, in the construction of Stork's FCP ceramic heating elements.

The important physical properties, which make these beads superior to the beads used by other suppliers, are:

- Alumina content: 95%
- Bulk density fired: 3.7 Mg/m<sup>3</sup>
- Grain size: 6µm
- Vickers hardness: 12.5 (Gpa@Hv 0.5kg)
- Rockwell; hardness: 78 (R45N)
- Compressive strength: 2000 MPa
- Flexural strength: 320MPa  
(ASTM C1161, 3 point)
- Young's modulus: 325 Gpa
- Thermal conductivity: 21W/m<sup>3</sup>

These beads are supplied to Stork by one of the leading, ISO 9002 accredited, specialist ceramic manufacturers in the UK ceramic industry.

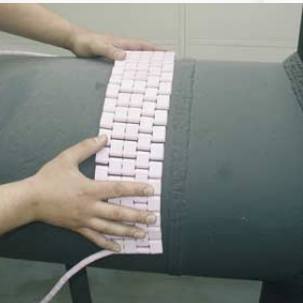
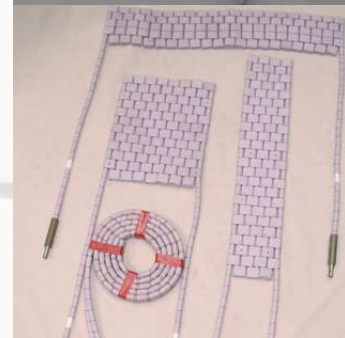
The cold tails of Stork ceramic heating elements are butt welded to the heater core wire which eliminates the cold tail/core wire junction failures often seen with low quality heaters which use steel ferrules.

Any pipe size or pipe configuration can be covered from the extensive range of Stork FCP heating elements, so that the correct amount of heating power can be applied to successfully heat treat the pipe weld or other fabrication. Stork FCP heating elements are manufactured with a range of power ratings for use with a selection of standard voltages.

If you require any special heating element configuration, voltage or power rating, Stork will use their heat treatment engineering expertise to provide you with a heating element custom built to meet you exact needs

If handled correctly, Stork FCP heating elements can be used approximately fifty times at temperatures up to 1050°C (1922°F). Stork can provide higher temperature heating elements if required which can be used repeatedly at temperatures up to 1200°C (2192°C)

Stork equipment is manufactured incorporating ISO 9001:2000 quality controlled designs. These designs are based upon the results of third party testing for compliance with European Safety Directives and Stork's extensive experience in the field of heat treatment engineering.



Cost Efficient, Innovative,  
Reliable, Safe

**At Stork we deliver excellence in the design, manufacture and product support of Heat Treatment Equipment. Contact us today for all your heat treatment requirements.**

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# Flexible Ceramic Pad (FCP) Heating Elements

## Specifications *(All dimensions are nominal.)*

| Stock Reference | Type Reference | Width (tail to tail) |       | Length (of heater body) |       | Volts<br>V | Power<br>kW |
|-----------------|----------------|----------------------|-------|-------------------------|-------|------------|-------------|
|                 |                | mm                   | inch  | mm                      | inch  |            |             |
| 20030           | CP3            | 75                   | 3.00  | 670                     | 26.50 | 60         | 2.70        |
| 20031           | CP4            | 100                  | 4.00  | 500                     | 19.50 | 60         | 2.70        |
| 20032           | CP6            | 150                  | 6.00  | 335                     | 13.00 | 60         | 2.70        |
| 20033           | CP8            | 205                  | 8.00  | 250                     | 9.75  | 60         | 2.70        |
| 20034           | CP10           | 255                  | 10.00 | 205                     | 8.00  | 60         | 2.70        |
| 20035           | CP12           | 305                  | 12.00 | 165                     | 6.50  | 60         | 2.70        |
| 20036           | CP15           | 380                  | 15.00 | 145                     | 5.75  | 60         | 2.70        |
| 20037           | CP16           | 410                  | 16.25 | 125                     | 5.00  | 60         | 2.70        |
| 20038           | CP21           | 525                  | 20.50 | 105                     | 4.00  | 60         | 2.70        |
| 20039           | CP24           | 600                  | 23.50 | 85                      | 3.25  | 60         | 2.70        |
| 20040           | CP10L          | 250                  | 10.00 | 85                      | 3.25  | 30         | 1.35        |
| 20041           | CP48           | 1200                 | 47.25 | 45                      | 1.75  | 60         | 2.70        |
| 20042           | CP20L          | 500                  | 19.50 | 45                      | 1.75  | 30         | 1.35        |
| 20050           | CP4MG60        | 100                  | 4.00  | 670                     | 26.50 | 60         | 2.40        |
| 26260           | CT78           | 25                   | 1.00  | 1950                    | 77.00 | 60         | 2.70        |
| 26261           | CT36L          | 25                   | 1.00  | 915                     | 36.00 | 30         | 1.35        |
| 21030           | CP3H           | 75                   | 3.00  | 925                     | 35.50 | 80         | 3.60        |
| 21031           | CP4H           | 100                  | 4.00  | 690                     | 27.00 | 80         | 3.60        |
| 21032           | CP6H           | 150                  | 6.00  | 465                     | 18.25 | 80         | 3.60        |
| 21033           | CP8H           | 205                  | 8.00  | 360                     | 14.25 | 80         | 3.60        |
| 21034           | CP10H          | 255                  | 10.00 | 295                     | 11.25 | 80         | 3.60        |
| 21035           | CP12H          | 305                  | 12.00 | 230                     | 9.00  | 80         | 3.60        |
| 21036           | CP15H          | 380                  | 15.00 | 190                     | 7.50  | 80         | 3.60        |
| 21037           | CP17H          | 420                  | 16.50 | 165                     | 6.50  | 80         | 3.60        |
| 21038           | CP21H          | 535                  | 21.00 | 145                     | 5.75  | 80         | 3.60        |
| 21039           | CP33H          | 840                  | 33.00 | 85                      | 3.25  | 80         | 3.60        |
| 21040           | CP15L          | 380                  | 15.00 | 85                      | 3.25  | 40         | 3.25        |
| 21041           | CP66H          | 1680                 | 66.00 | 40                      | 1.50  | 80         | 3.60        |
| 21042           | CP30L          | 760                  | 30.00 | 40                      | 1.50  | 40         | 1.80        |
| 21050           | CP4MG80        | 100                  | 4.00  | 800                     | 31.5  | 80         | 3.60        |
| 22005           | CP24H          | 610                  | 24.00 | 335                     | 13.00 | 220        | 9.90        |
| 22006           | CP26H          | 660                  | 26.00 | 335                     | 13.00 | 240        | 10.80       |
| 22007           | CP28H          | 710                  | 28.00 | 335                     | 13.00 | 255        | 11.50       |

- Notes:
- 1) Stock References: 22005, 22006 and 22007 are for use up to a maximum temperature of 600°C
  - 2) Stock References: 20050 and 21050 are replacement heating elements for Flexible Insulated Pad (FIP) heating elements (stock Reference: 22062 and 22063 respectively) with integral magnets.
  - 3) For heating elements for use at temperatures up to 1200°C add the prefix 'K' to the stock reference

## Heating Element Selection Guide *(For heat treatment cycles up to 800°C)*

*To be used as a guide only. Reference should always be made to specific code or specification heated band width requirements.*

| Nominal Bore<br>Inches | mm     | Pipe wall thickness inches / (mm) |                 |                 |                 |                 |                 |
|------------------------|--------|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                        |        | 0-0.8/(0-20)                      | 0.8-0.9/(20-23) | 0.9-1.1/(23-28) | 1.1-1.4/(28-36) | 1.4-1.8/(36-46) | 1.8-2.4/(46-61) |
| 1                      | 25.4   | 1 x CP48                          | n/a             | n/a             | n/a             | n/a             | n/a             |
| 2                      | 50.8   | 1 x CP8                           | n/a             | n/a             | n/a             | n/a             | n/a             |
| 3                      | 76.2   | 1 x CP12                          | n/a             | n/a             | n/a             | n/a             | n/a             |
| 4                      | 101.6  | 1 x CP15                          | n/a             | n/a             | n/a             | n/a             | n/a             |
| 6                      | 152.4  | 2 x CP12                          | 2 x CP12        | n/a             | n/a             | n/a             | n/a             |
| 8                      | 205.2  | 2 x CP15                          | 2 x CP10        | 2 x CP10        | n/a             | n/a             | n/a             |
| 10                     | 254.0  | 3 x CP12                          | 4 x CP8         | 4 x CP8         | n/a             | n/a             | n/a             |
| 12                     | 304.8  | 4 x CP10                          | 4 x CP10        | 4 x CP10        | 2 x 4 x CP10    | n/a             | n/a             |
| 14                     | 355.6  | 3 x CP15                          | 4 x CP12        | 6 x CP8         | 6 x CP8         | 2 x 4 x CP12    | n/a             |
| 16                     | 406.4  | 2 x 4 x CP12                      | 2 x 4 x CP12    | 2 x 4 x CP12    | 2 x 5 x CP10    | 2 x 5 x CP10    | n/a             |
| 18                     | 457.2  | 2 x 4 x CP15                      | 2 x 4 x CP15    | 2 x 4 x CP15    | 2 x 5 x CP12    | 2 x 5 x CP12    | n/a             |
| 20                     | 508.0  | 2 x 5 x CP12                      | 2 x 5 x CP12    | 2 x 5 x CP12    | 2 x 5 x CP12    | 2 x 6 x CP10    | 2 x 6 x CP10    |
| 22                     | 558.8  | 7 x CP10                          | 7 x CP10        | 8 x CP10        | n/a             | n/a             | n/a             |
| 24                     | 609.6  | 2 x 5 x CP15                      | 2 x 5 x CP15    | 2 x 6 x CP12    | 2 x 6 x CP12    | 2 x 6 x CP12    | 2 x 7 x CP10    |
| 47                     | 1193.8 | 2 x 12 x CP12                     | 2 x 12 x CP12   | 2 x 12 x CP12   | 3 x 12 x CP12   | 3 x 12 x CP12   | 3 x 12 x CP12   |
| 63                     | 1600.2 | 2 x 15 x CP12                     | 2 x 15 x CP12   | 2 x 15 x CP12   | 2 x 15 x CP12   | 2 x 15 x CP12   | 3 x 15 x CP12   |

Example: 2 x 12 x CP12 = Two rows of twelve CP12 FCP heating elements.