# PFC-B
## Hot Oil System

- **Heat Transfer Fluids[1] to 600°F**
- **9 - 600 kW (31 - 2,047 Mbh)[2]**
- **240 and 480V, 3 Phase, 60 Hz[3]**
- **Non-Pressurized (Atmospheric) Operation**
- **150 Lb Carbon Steel Construction**
- **Long Life 0.475" Dia. Steel Sheath Elements**
- **High Temperature Centrifugal Pump with Labyrinth Seal Ring — Requires No External Cooling up to 600°F**
- **Bypass Relief Line Protects System in Case of Blocked Flow**
- **Electronic Digital Temperature and Process Control**
- **Suction and Discharge Pressure Gauges Monitor Pump Performance**
- **NEMA 1 Electrical Enclosure Complete with Circuit Breaker, Contactors, Fusing, Switches, Transformers and Pilot Lights**
- **External Cold Expansion Tank (Optional) with Atmospheric Vent**

**WARNING** — In hazardous areas, pipe surfaces could achieve temperatures high enough to cause auto-ignition of the hazardous materials present. Consult Article 500 of the National Electrical Code for further information on the maximum allowable temperatures for a specific application.

### *Applications*

Chromalox PFC Hot Oil Heat Transfer Systems are engineered to operate up to 600°F at atmospheric pressure (non-pressurized). They are used with Mobiltherm®, Ucon®, Caloria® and other medium temperature heat transfer fluids[1] which do not require pressurization to operate at temperature.

PFC systems use a cold expansion tank (optional) that is open to the atmosphere. A cold expansion tank eliminates the need for nitrogen ($N_2$) purging and reduces the tendency of the heat transfer fluid to oxidize and deteriorate.

### *Construction*

PFC systems are ruggedly constructed and completely self contained (except for the optional external expansion tank). They are similar to the COS system except they use a high temperature centrifugal pump instead of a positive displacement pump. The centrifugal pump has a labyrinth seal ring which does not require cooling up to its maximum operating temperature of 600°F. PFC systems come complete with heaters, controls, pumps, valves, safety devices and necessary plumbing. Systems are factory tested and ready to operate.

### *Specifications and Ordering Information*

| kW | Pump Rate[A] (GPM) | Pump Motor (HP) | Inlet/Outlet Pipe Size 150 Lb Flg | Dimensions (In.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | D | H | A | B | C | E | G |
| 9-30 | 40 | 3 | 1-1/2 | 54 | 35 | 77 | 24 | 12 | 36 | 6 | 50 |
| 40 | 60 | 5 | 2 | 54 | 40 | 77 | 24 | 12 | 36 | 6 | 50 |
| 60 | 80 | 5 | 2 | 54 | 40 | 81 | 24 | 11-1/4 | 36 | 5-1/2 | 50 |
| 80 | 80 | 5 | 2 | 54 | 40 | 96 | 35 | 11-1/4 | 45 | 5-1/2 | 66 |
| 100 | 120 | 7-1/2 | 3 | 54 | 40 | 96 | 36 | 13-1/2 | 48 | 6-1/2 | 66 |
| 125-150 | 150 | 7-1/2 | 3 | 60 | 45 | 96 | 45 | 12 | 54 | 8 | 66 |
| 200 | 150 | 7-1/2 | 3 | 60 | 45 | 96 | 45 | 12 | 57 | 8 | 66 |
| 250-400 | 200 | 10 | 3 | 62 | 60 | 96 | 42 | 22 | 54 | 12 | 66 |
| 450-600 | 350 | 15 | 4 | 84 | 60 | 96 | 45 | 22 | 57 | 12 | 66 |

A. Pumping rate based on 100 ft. total discharge head (TDH) using heat transfer fluid with a viscosity of approximately 100 SSU @ 70°F.

**Other Notes —**
1. For a list of compatible heat transfer fluids, contact your Local Chromalox Sales office.
2. kW ratings above 600 (to 1,200 kW) available.
3. Other voltages to 575V available.

# PFC-B
## Hot Oil System *(cont'd.)*

### *Features*

**Overtemperature Cutout** protects elements and fluid from overheating

**Electrical Interlock** between pump motor and heating element contactors

**Flexible Piping** before and after pump absorbs vibration and prevents pump damage from thermal expansion

**Inline 0.030 Mesh Strainer** protects pump

**Full Port Manual Gate Valves** on all primary hydraulic piping minimize pressure drop

**2 Inch Thermal Insulation** around heating chambers minimizes heat loss

**16 Gauge Painted Steel Panels** on all exposed sides — powder coat heat resistant paint

### *Options*

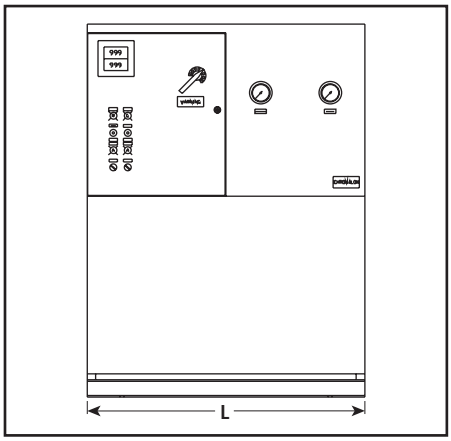
- Alternate Voltage and kW Ratings
- Microprocessor based PID or Ramp Soak Temperature Controls
- Electronic Solid State (SCR) Power Controllers
- Electronic Sequencers, Recorders, Monitors, Time Clocks and Digital Communication Interface available
- Mechanical Pump Seals and Special Pumps
- Type RJC Closed-loop Cooling Modules
- Expansion Tanks Matched to System (recommended)
- Float or Level Switches for Expansion Tank
- ASME Section VIII Certification 100 psi at 600°F

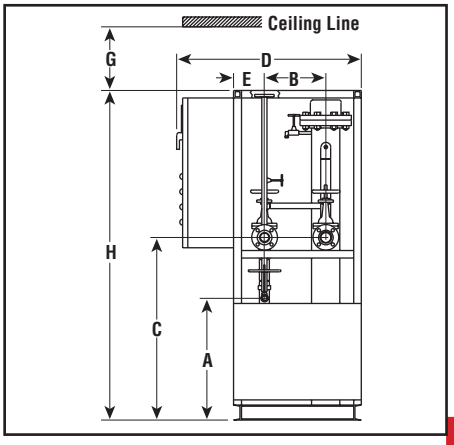
### *Electrical Enclosure Options*

NEMA 1 enclosures and open drip proof motors are standard on all Chromalox hot oil systems. All systems (except OTCS) available with optional enclosures that comply with:

- NEMA 4/12 Weather Resistant/Oil and Dust Tight with TEFC motors
- Explosion Resistant Class I, Group D, Div. 1 with TEFC Explosion Resistant motors.

### *Dimensions (Inches)*




### *Specifications and Ordering Information*

| kW | Volts | Btuh | Min. Rec. Expansion Tank (Gal.)[1] | System Volume (Gal.) | No. Heating Stages | Model[2] | Stock | PCN | Wt. (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 240 | 30,708 | 12 | 4 | 1 | PFC-600B-9 | NS | — | 1,000 |
| 9 | 480 | 30,708 | 12 | 4 | 1 | PFC-600B-9 | NS | — | 1,000 |
| 12 | 240 | 40,944 | 12 | 7 | 1 | PFC-600B-12 | NS | — | 1,100 |
| 12 | 480 | 40,944 | 12 | 7 | 1 | PFC-600B-12 | NS | — | 1,100 |
| 15 | 240 | 51,180 | 18 | 7 | 1 | PFC-600B-15 | NS | — | 1,100 |
| 15 | 480 | 51,180 | 18 | 7 | 1 | PFC-600B-15 | NS | — | 1,100 |
| 20 | 240 | 68,240 | 18 | 7 | 1 | PFC-600B-20 | NS | — | 1,200 |
| 20 | 480 | 68,240 | 18 | 7 | 1 | PFC-600B-20 | NS | — | 1,200 |
| 30 | 240 | 102,360 | 18 | 7 | 1 | PFC-600B-30 | NS | — | 1,300 |
| 30 | 480 | 102,360 | 18 | 7 | 1 | PFC-600B-30 | NS | — | 1,300 |
| 40 | 240 | 136,480 | 30 | 10 | 2 | PFC-600B-40 | NS | — | 1,400 |
| 40 | 480 | 136,480 | 30 | 10 | 2 | PFC-600B-40 | NS | — | 1,400 |
| 60 | 240 | 204,720 | 42 | 16 | 3 | PFC-600B-60 | NS | — | 1,700 |
| 60 | 480 | 204,720 | 42 | 16 | 3 | PFC-600B-60 | NS | — | 1,700 |
| 80 | 240 | 272,960 | 42 | 20 | 3 | PFC-600B-80 | NS | — | 1,800 |
| 80 | 480 | 272,960 | 42 | 20 | 3 | PFC-600B-80 | NS | — | 1,800 |
| 100 | 240 | 341,200 | 80 | 30 | 4 | PFC-600B-100 | NS | — | 1,900 |
| 100 | 480 | 341,200 | 80 | 30 | 4 | PFC-600B-100 | NS | — | 1,900 |
| 125 | 480 | 426,450 | 80 | 42 | 4 | PFC-600B-125 | NS | — | 2,000 |
| 150 | 480 | 511,811 | 80 | 42 | 4 | PFC-600B-150 | NS | — | 2,000 |
| 200 | 480 | 682,400 | 80 | 55 | 4 | PFC-600B-200 | NS | — | 2,100 |
| 250 | 480 | 852,900 | 115 | 76 | 6 | PFC-600B-250 | NS | — | 3,100 |
| 300 | 480 | 1,023,600 | 115 | 76 | 6 | PFC-600B-300 | NS | — | 3,200 |
| 350 | 480 | 1,194,200 | 115 | 100 | 6 | PFC-600B-350 | NS | — | 3,400 |
| 400 | 480 | 1,364,800 | 115 | 100 | 6 | PFC-600B-400 | NS | — | 3,500 |
| 450 | 480 | 1,535,400 | 215 | 110 | 6 | PFC-600B-450 | NS | — | 4,500 |
| 500 | 480 | 1,706,000 | 215 | 145 | 9 | PFC-600B-500 | NS | — | 4,700 |
| 600 | 480 | 2,047,200 | 215 | 145 | 9 | PFC-600B-600 | NS | — | 5,000 |

**Stock Status:** **S** = stock NS = non-stock
**To Order**—Specify model, volts, phase, kW, PCN, options and quantity.

1. Expansion tank size should be double the increase in volume due to thermal expansion of heat transfer fluid.
2. Does not include expansion tank; see System Options for details.