



Strebel Boilers & Radiators  
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## INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS FOR STREBEL THERMAFLOW PLATE HEAT EXCHANGERS

### IMPORTANT NOTES.

Bolting Down: To minimise floorspace requirements the ThermaFlow unit is designed to have a small "footprint". To ensure stability during and after installation the unit must be bolted to the floor.

Separate instructions and a record of initial set-up are provided for the unit's digital controller and should be kept safe with these instructions and the unit wiring diagram by the unit operator for future reference.

### INSTALLATION

The unit must be installed indoors, away from damp, frost and ambient temperatures exceeding 40°C and bolted to a firm base. Provide adequate space at sides and front for access for operation and servicing.

The unit is supplied ready for connection to site services.

**Pipe-work considerations.** The unit has as standard one in-built primary pump which draws water from a low loss header or similar arrangement and circulates the water through the unit. This pump cannot be used as the boiler circulation pump. As an option, the unit may be fitted with an additional backup primary pump. If the boiler circulation pump generates a high differential pressure (>10kPa) at the connections to the unit the differential pressure should be reduced by fitting a bypass.

**Standard Units:** Secondary water flows through the unit under its own pressure.

**ThermaPak units** (for use with secondary buffer vessel): A secondary bronze pump is fitted which circulates water between plate heat exchanger and vessel.

Ensure that pipework is adequately sized and supported.

Fit isolating valves and make provision for air venting, draining and thermal expansion of both pipework and water.

The maximum working pressures of the unit (normally 6 BarG primary, 10 BarG secondary but check data plate) must not be exceeded.

**Electrical.** Electrical connection should be done by a competent person. Make Electrical connections in accordance with the wiring diagram supplied with the unit. For your information the Control Panel Specification is given below.

### CONTROL PANEL SPECIFICATION

#### General

Panel to IP55 or better

Steel Enclosure with hinged door, painted finish.

#### Inputs

Power supply with neutral & earth

Thermocouple Type T (West 6170 controller) or NTC thermistor (Carel IR32W controller)

Thermostat - Hi-Limit - Self-resetting (OPEN = Hi-Limit)

Remote Start Signal - 240V ac (continuous) = ON

(Late 1999 onwards units provide this internally and require only connection to an external switch for remote start)



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### Outputs

Pump Power: details will be specific to each unit  
Hi-Temperature limit volt-free contact (fail-safe - opens on power failure)  
Pump Trip volt-free contact (fail-safe - opens on power failure)  
Control Valve Positioning & Actuation - 2 at 240V AC  
Optional Output: 0-10V DC for remote temperature indication

### Panel Fascia

Door Interlock Isolator  
Door Lock with key  
LOCAL/STAND-BY/REMOTE switch  
Power on light  
High Temperature Light (red)  
To 1999 models: High Temperature Reset Button (late 1999 models onwards reset at thermostat)  
Pump Run light(s)  
Pump Trip light(s)(red)  
West Instruments 6170 Digital Temperature Controller/Indicator  
- or - (from May 2001 onwards) Carel IR32W Digital Temperature Controller/Indicator  
Traffolyte Label (black print on white background).

Twin primary pump option:-  
PUMP1/AUTO/PUMP2 switch

### Other Items

Pump starter and protection devices  
Control circuit protection device  
Terminal blocks for user connections to pump(s), switches etc.  
Relays and wiring to ensure correct operation.  
Earth block with connectors for pump(s) plus 4 spare.

### METHOD OF OPERATION

The door interlock isolator prevents door opening when in ON position. In OFF position it isolates main power AND remote start input.

When door interlock isolator is ON and LOCAL/STAND-BY/REMOTE switch is at STAND-BY the control circuit is energised but pump(s) will not run.

The pump(s) can be switched on by turning the switch to LOCAL

**Single primary pump units:** Primary pump (and secondary pump if fitted) will start

**Twin primary pump units:** Switch the Pump Select Switch to PUMP 1. This will start pump 1 (and secondary pump if fitted) . If Pump Select Switch is set at AUTO a primary pump will be automatically selected and started (and secondary pump, if fitted, will start).

If the unit is switched to REMOTE the control circuit will be energised and the pump(s) will start only when the REMOTE START signal (from an external source) is present.

### Fault Conditions:

**Pump Trip:** Light comes on and Pump Trip VFC opens. On twin primary pump units the back-up pump is automatically switched on if the other pump trips.

**High Temperature.** Light comes on, Pump(s) stop, Control Valve closes, Hi Temp. Limit VFC opens. Requires manual re-set.

**Power Failure:** VFC's open. Late 1999 units onwards self-reset on restoration of power. On most 1999 & earlier units (those with panel mounted Hi Temp. Limit alarm reset button) the system will require a manual re-set after power failure.



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## **COMMISSIONING**

Fill the secondary water side first. Fill the unit slowly, avoiding water hammer. Switch on any external secondary water recirculation pump.

Fill the primary side slowly, avoiding water hammer. The unit is designed to vent air to the primary pipework. Vent the pumps in accordance with the instructions specific to them and supplied as part of the unit's documentation package.

## **INITIAL OPERATION.**

Commission the unit first as above.

Ensure that the Control Panel door is closed

Turn LOCAL/STAND-BY/REMOTE switch to STAND-BY

Turn DOOR INTERLOCK ISOLATOR to ON

Turn LOCAL/STAND-BY/REMOTE switch to LOCAL

Set High Limit Thermostat to approximately 10°C above Control set-point temperature. (The high limit thermostat is not a precision device and is only there to shut the unit down in the event of main controller or control valve failure. Further adjustment of this may be required in the first day or so of operation to prevent nuisance shut-down)

### Single Primary Pump Units

- The OVER TEMP light should come on - press re-set button to clear this
- The PUMP RUN light should come on. Check that the pump is actually running in correct rotation.
- If PUMP TRIP light comes on the panel must be switched off and the overload inside be re-set before trying again.
- If PUMP TRIP light comes on repeatedly the pump may be seized and must be freed before trying again.

If remote starting and stopping of the unit is required then turn LOCAL/STAND-BY/REMOTE switch to REMOTE. Check the remote function using an external initiating signal.

### Twin Primary Pump Units

1) Turn Pump Select Switch to PUMP 1

- The OVER TEMP light should come on - press re-set button to clear this
- The PUMP 1 RUN light should come on. Check that the pump is actually running.
- If PUMP 1 TRIP light comes on the panel must be switched off and the overload inside be re-set before trying again.
- If PUMP 1 TRIP light comes on repeatedly the pump may be seized and must be freed before trying again.

Refer to pump manufacturer's instructions.

2) Turn Pump Select Switch to Pump 2. Repeat procedures in step 1.

3) Turn Pump Select Switch to AUTO. One of the pumps should run.

If remote starting and stopping of the unit is required then turn LOCAL/STAND-BY/REMOTE switch to REMOTE. Check the remote function using an external initiating signal.  
Pumps will auto-change-over with each remote start.

If remote starting and stopping of the unit is NOT required then turn LOCAL/STAND-BY/REMOTE switch to LOCAL. Turn Pump Select Switch to PUMP 1. Switch between PUMP 1 and PUMP 2 at intervals of 1 week.



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#### All units

If a secondary pump is fitted it will run when primary pump runs.

The unit is pre-set for a temperature of 60 to 65°C depending on order requirements. This can be altered on the digital temperature controller if required. In hard water areas a lower temperature (58-60°C) may be desirable to minimise potential for scale deposition. The instructions for the digital temperature controller are supplied with the unit and should be consulted before attempting to change settings. It is advisable to familiarise yourself with these instructions.

The unit can now be left running.

#### **MAINTENANCE**

Pump(s) and control valve should be maintained in accordance with the instructions specific to them and supplied as part of the unit's documentation package.

The plate heat exchanger plates may occasionally require cleaning or de-scaling. To do this the heat exchanger plates must be removed from the frame by un-bolting the heat exchanger:

**IMPORTANT:** Prior to disassembly measure the tightening distance (the gap between the thick pressure plates which clamp the heat exchanger together). Note sequence and orientation of plates on disassembly. Clean the plates with a soft non-metallic brush and cleansing agent appropriate to gasket and plate materials (usually 316 stainless steel plates and EPDM or nitrile rubber gaskets). Take care not to damage gaskets. Rinse plates with clean water prior to re-assembly. Re-assemble the heat exchanger in the same sequence as disassembly. Tighten the bolts up evenly until the required tightening distance is achieved. Do not over-tighten as this will damage the plates. If a tight seal is not obtained new gaskets may be required.