McCallum Water Heating Operating and Maintenance Instructions Plate Heat Calorifiers (P.H.C)

Application

McCallum P.H.C calorifiers are specifically designed for use where high quantities of hot water are required over short periods of time such as, Sport Centres, Hospitals and Hotels.

Construction

The cylinders are constructed from copper C106 or stainless steel 316L with connections screwed BSP or flanged to suit. The Plate Heat Exchanger will be of stainless steel brazed construction with secondary shunt pump, isolation valves and regulating valve (if specified) all interconnected and mounted on shell. Cylinders can be supplied with 50mm thick mineral wool metal clad insulation and are manufactured from a client approved works drawing.

Delivery

Cylinders are generally delivered on transport without craneage facilities unless specifically requested. Great care should be exercised when off loading cylinders. A considerable weight factor is involved with some larger cylinders. Lifting eyes are fitted to certain cylinders to facilitate off loading. We would ask that chains are not used when off loading units, straps may be used when the unit is not fitted with metal clad type insulation. Ensure that vertical cylinders are transported in an upright position The weight of any individual cylinder can be provided on request, to assist with off loading and positioning.

Installation

Ensure that the base area, which has been allocated to the cylinder, is level and free from obstructions. Always make sure that there is room around the cylinder to allow for access to the manhole if fitted. When the unit is in final position make sure that the above precautions have been met, that the unit is stable and that the cylinder connections are aligned to those of the supply, flow etc. From the manufacturer's drawing all connections should be identifiable. Please ensure that all the connections are used for the purpose intended as shown on the drawing for the unit. P. T. F. E. tape on Secondary & hemp/paste on Primarys may be used for fittings where the cylinder connection is of the screwed type and the male thread is tapered. Parallel type threads will require a back nut and jointing ring.

We would ask that all pipework is connected up using good procedures and by persons suitably qualified or experienced in work of this nature. Two spanners should be used when joining screwed type connections. Avoid the use of unnecessary torque, use correct bolting procedures, and keeping flanges square. When a system is used that incorporates an expansion vessel supplied by us the complete unit may come pre assembled and mounted on a skid platform. If the expansion vessel is supplied loose with the necessary pipework tocomplete theconnection to the calorifier please follow the drawing detailing the positioning of the items of pipework. If the expansion vessel is not supplied by us or is supplied by us with no fittings, and is to be part of that system, please ensure that the items are connected up correctly. Do not allow the calorifiers to support any external weight by making sure all pipework is supported by means of individual pipe supports not fixed to the calorifier. Please check that all the combinations of materials are compatible avoiding the use of copper and galvanised steel.

Start-Up

The P.H.C. will be delivered set-up for the customer's purpose. Ensure that when the primary heat source is applied the secondary isolating valves are in the open position to avoid any damage to the plate itself. Care must be taken when filling the cylinder. Ensure the drain to the cylinder is closed and air vents are open. Always fill the cylinder slowly to prevent any air becoming trapped. The cylinder is designed to operate at a specific pressure. If air is trapped, there is a risk that shock waves will be produced when air is subsequently released and accordingly the pressure in the cylinder may exceed its design criteria. Also exercise care when filling the primary system, fill slowly and ensure no trapped air is in the system. Always make sure the primary system is clean by flushing out before the control valve is fitted. Once satisfied that the system is ready close the manual air vents and run the circulating pumps, then open slightly to allow any air generated to be vented. When the cylinder is filled check all connections, flanges, bolts etc for any evidence of leaks or seepage. Check for stability of the installation.

Testing & Running

It is worth considering before running commences several points that can influence the efficiency of the cylinder during its operation. The control valve will have to be adjusted carefully to allow the unit to settle to the required water temperature and the inlet temperature on the primary system to the unit together with the flow rate of the primary supply must be checked to operate within the design parameters. Make sure that you are familiar with all pressures and design parameters as shown on the manufacturers plate. Constantly check for any signs, changes or increases in pressures. On the first start up always bring the thermostatically operated control valve to the correct temperature and ensure that it will maintain this temperature, raising the temperature slowly till the correct temperature is achieved will assist in the process. Continuously monitor the unit for any leaks and after the initial run we recommend cleaning out any strainers and ensure bolts are tight and connections free from leaks. If it is required to check the recovery times etc of the unit, in an on site condition, we would stress that it is really only a test that can be carried out with a certain degree of difficulty to obtain accuracy. The procedure would be as follows: isolate the secondary return, ensure there is no flow from the secondary outlet, maintain the primary flow and temperature valve at their correct level and check the time taken to raise the water to its designed temperature from cold. As there can be many external influences affecting a test like this in a working environment, results obtained may be slightly different from theoretical calculations.

Installation and Maintenance Check List

- Ensure the Plate Heat Exchanger (P.H.E.). is mounted in the upright position with arrow pointing towards the top of the cylinder.
- Check pump speed is correct.
- Ensure secondary shunt isolating valves are open.
- Check regulating valve setting if fitted.
- Check for leaks around connections and manhole.
- The cleaning of the P.H.E. can be carried out by circulating a weak acid (5% Phosphoric or Oxalic Acid) through the heat exchanger. For maximum cleaning the flow rate should be at least 1.5 times normal flow, a backflush flow is more desirable.
- If there are particles greater than 1mm in either the primary or secondary mediums then we would recommend a strainer (16 20 mesh) is fitted in the line.
- The cylinder should be internally inspected every twelve months for corrosion, scaling and silt and cleaned out if necessary. This check should also give an indication to whether the P.H.E. will require cleaning.

Spares

When ordering any spares for the P.H.C. please ensure you quote the Works Order Number which can be found on the identification plate.

 Spares List :
 Replacement Heat Exchanger

 Replacement Secondary Shunt Pump
 Replacement Manhole Gasket

 Replacement Secondary Isolating Valve
 Replacement Secondary Regulating Valve

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