



**INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE WORLD HEAT
ATMOSPAK RANGE OF PACKAGED STEAM/WATER PLATE HEAT EXCHANGERS**

1.0 DESCRIPTION

World Heat AtmosPak range of Packaged Steam/Water Plate Heat Exchangers are typically used for the generation of Domestic Hot Water (DHW) or Low Temperature Hot Water (LTHW). The unit is specifically designed to provide an instantaneous supply using primary steam as well as simplifying system design and installation for the end user. All necessary temperature control, steam and condensate conditioning is provided as standard.

WARNING: This equipment may use dangerous high voltage and can present an electrical shock hazard.

- **Only suitably qualified personnel should carry out installation and commissioning of this equipment.**
- **Ensure that the equipment is correctly earthed.**
- **Ensure that the equipment is fully powered down before attempting any work on the unit.**
- **The equipment must be installed to relevant standards and good practices, only appropriate tools should be used.**

2.0 PED INFORMATION

The World Heat standard AtmosPak range of Packaged Steam/Water Plate Heat Exchangers are designed and manufactured in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU. As per the requirements of the directive, units that fall within the SEP (Sound Engineering Practice) category are not supplied with a CE Mark. Units that fall within categories I to IV are CE Marked and provided with the necessary markings, certification and inspectorates.

It is the responsibility of the user and/or installer to ensure that the unit is installed and operated safely, and in accordance with the instructions detailed within this document.

3.0 COSHH

Research has suggested that there are no specific items to highlight during normal operating conditions. However, during manufacture, dye-penetrant may be used as part of our pre-inspection process of testing welds. It is therefore essential that adequate flushing and sterilization is carried out before use and that the quality of water produced is to acceptable standards.

4.0 INSTALLATION

4.1 LIFTING AND HANDLING

- Lifting lugs, where fitted, should be used for lifting purposes.
- For units without lifting lugs, the user must arrange suitable lifting arrangements (i.e. the use of slings, lifting eyes etc.) to avoid damaging the vessel or its attachments during installation, taking into consideration the weight and design of the unit.
- Where fitted, insulation should not be used for lifting purposes.
- Pipe-work and pipe-work components should not be used for lifting purposes.



- e) Due to the insulation and case characteristics, care should be taken when lifting and handling the unit to prevent damage.
- f) Avoid the use of lifting straps where insulation is fitted, as they may damage or crush the insulating material or case.
- g) Do not lift the unit using chains which are directly in contact with the actual unit (skid-base only).
- h) Do not allow operatives to stand on the actual unit (skid-base only).
- i) Care should be taken so as to not damage the control panel or wiring.

WARNING: When lifting, please ensure a clean lift of the unit using the lifting lugs or skid-base provided. The skid-base is not designed for pivoting during lifting/siting/installation. Units should be kept in the upright position.

4.2 STORAGE – *If storing the unit for any period of time before installation*

- a) Upon receipt of the unit, please check the packaging to ensure that it has not been damaged during transport. Any damage to the packaging should be fixed or replaced as necessary.
- b) Due to the electrical aspect of the unit, it must be stored indoors within a dry, frost-free environment with ambient temperatures between 4°C and 40°C.
- c) The integrity of the packaging should be checked monthly. Should the seal be found to have broken or its condition deteriorated (i.e. become wet, hardened or split), the packaging should be repaired or replaced.
- d) Once sited and the packaging has been removed, the condition of the unit should be thoroughly examined for any signs of corrosion or contaminant ingress.

4.3 SITING

- a) Unless specified at enquiry stage and specifically ordered to suit an external installation, the unit must be sited indoors.
- b) Foundations or plinths must be firm and level to prevent settling, pipe strain or distortion of shell.
- c) Unless specified at enquiry stage and specifically ordered, the unit must be installed in a level position.
- d) Ensure that there is sufficient maintenance spare surrounding the unit, in particular the control panel should be easily accessible and the panel door able to be opened fully.

4.4 INSTALLATION

- a) Protective covers and plugs may be fitted to connections to protect them in transit, these must be removed prior to use.
- b) If a connection is not required for any reason, the connection must be sealed appropriately.
- c) Check for any signs of contaminant ingress which could have got into the unit during transportation or storage on site.
- d) Pipe-work connected to the unit must be adequately supported to prevent any loads being transmitted to the unit. Consideration must be taken with regards to thermal expansion through the use of bends and expansion joints.
- e) Isolation valves should be fitted prior to the unit (EXCLUDING ANY VENT OR SAFETY VALVE CONNECTIONS) to facilitate future maintenance and servicing.
- f) Strainers should be fitted to the unit inlets to prevent heat exchanger blockage by debris.
- g) Provisions should also be made on the pipe-work prior to the unit for air venting and draining.
- h) To avoid corrosion, use appropriate pipe materials to suit the unit.
- i) To connect to the units screwed connections, a suitable thread sealant should be used.



- j) To connect to the units flanged connections, bolts should be tightened in a diametrically opposite sequence in order to load the flanges evenly onto the gasket. The gasket should be suitably chosen for the application.
- k) Suitable safety relief valves should be fitted to the unit (if a connection supplied) or on the pipe-work going to and from the unit to prevent over-temperature and over-pressure. The discharge should be piped away to a safe disposal point, preferably an air break and tundish so that the discharge is unrestricted and easily visible.

NOTE REGARDING CONTROL PANELS

Prior to commissioning, ensure that all control circuitry and main circuit connections are tight. Remove all loose items from inside the panel and items fastened to the unit cables.

Please refer to the unit specific wiring diagrams and local regulations to determine the power supply required. If a control panel has not been included within our scope of supply, ensure that the maximum current is not exceeded.

Separate instructions can be provided by request for initial set-up instructions of the unit's digital controller or downloaded on our website www.whcylinders.co.uk/technical-literature/.

NOTE REGARDING SECONDARY UNVENTED SYSTEM

Arrangements are required on unvented systems to prevent excessive pressure, temperature and the formation of a vacuum. This includes the supply and installation of suitable equipment such as; Pressure Relief Valve, Temperature Relief Valve, Expansion Relief Valve, Expansion Vessel etc. For further information, please consult the most recent edition of the UK Building and Water Regulations.

NOTE REGARDING CONDENSATE REMOVAL

As the Control Valve on the primary side of the unit modulates, steam pressure within the heat exchanger can vary considerably. Back pressure in the condensate line of the unit may cause the heat exchanger to flood (i.e. stall) when the steam pressure is low which could cause control problems. If the primary steam pressure is likely to fluctuate it is recommended that a Condensate Receiver and Pump is installed as part of the package to drain condensate from the heat exchanger to the condensate line at a lower level.

5.0 COMMISSIONING & OPERATION

Do not operate the equipment at pressures or temperatures in excess of those specified on the nameplate of the unit. Do not subject the unit to conditions of vacuum or partial vacuum. For example, partial vacuum may occur if the cold feed or vent is restricted during draw off or drain down.

To access the Control Panel interior the DOOR INTERLOCK ISOLATOR must be switched to the OFF position, this will isolate the main power to the unit. When the DOOR INTERLOCK ISOLATOR is switched to the ON position, it prevents the door from opening.

WARNING: THE DOOR ISOLATOR ONLY ISOLATES THE MAIN POWER TO THE UNIT, OTHER INPUTS (I.E. VOLT FREE CONTACTS ETC.) MAY STILL BE LIVE. THESE SHOULD BE ISOLATED EXTERNALLY.



SWITCHING ON/OFF PUMPS

There are three modes of operation available as standard; LOCAL, STAND-BY and REMOTE.

If the unit is switched to LOCAL the control circuit will be energised and the pump(s) will be switched on.

If the unit is switched to STAND-BY the control circuit will be energised but the pump(s) will not run and valves will close.

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.

In order to commission the unit;

a) Assumptions

- It is assumed that the secondary pipe-work before the unit is already full of water.
- On sealed systems, it is assumed that the secondary side expansion vessel has been pre-charged and that any cold water booster set and/or pressure reducing valve, has been commissioned and set to the correct pressure.
- It is assumed that the West Controller has been configured as per the instructions provided. Please request a copy from our technical team or download the relevant Set-Up Instructions from www.whcylinders.co.uk/technical-literature/.

1. All isolating valves isolating the unit from the system should be closed and any circulation pumps etc. turned off.
2. Switch the unit to STAND-BY position on the front of the Control Panel. Ensure any secondary circulation pumps are switched off.
3. Ensure any secondary vents are fitted and operational. Open any manual air vents.
4. Open both the secondary inlet and outlet isolating valves (in addition to any pump isolation valves).
5. Switch the unit to LOCAL position on the front of the Control Panel. Ensure that the secondary circulation pump(s) operates correctly.
6. Observe the control panel. The Control Panel's digital display should display the actual secondary outlet temperature (top) and the set-point temperature (bottom). For commissioning purposes, the secondary outlet temperature should lie around 10-15°C.
7. Adjust the set-point temperature of the controller to 5°C (i.e. less than the secondary outlet temperature).
8. Switch the unit to STAND-BY position on the front of the Control Panel. Check that the secondary circulation pump stops.
9. Switch the unit to LOCAL position on the front of the Control Panel. Check that the high limit valve opens (there will be a short delay of a few seconds).
10. Adjust the timer to a delay of 30 seconds.
11. Adjust the set-point temperature of the controller to 40°C (i.e. more than the secondary outlet temperature).
12. Check that the control valve opens (there will be a short delay of a few seconds).
13. Switch the unit to STAND-BY position on the front of the Control Panel.
14. Close the isolation valves on the steam pressure gauges supplied as part of the unit.
15. Open the isolation valves on the separator drain line and condensate line.
16. Open the main steam isolation valve very slowly to a quarter open. (There will be some noise as condensate in the steam line is drained). Check that the steam trap on the separator drain line is operational.



17. Allow the noise of the condensate within the steam line to quieten.
18. Open the steam isolation valve fully.
19. Switch the unit to LOCAL position on the front of the Control Panel. Check that the high limit valve opens (there will be a short delay of a few seconds). The control valve should gradually open also.
20. Allow a few minutes for the condensate to build up in the pig-tail siphons of the Pressure Gauges.
21. Open the isolation valves on the Pressure Gauges.
22. Check that the steam pressure indicated on the Pressure Gauges is within the limits of the unit indicated on the nameplate affixed to the package. If not, the unit should be isolated immediately and the pressure reduced.
23. Check that the unit is controlling the secondary outlet temperature as required and that the steam traps and control valves are operating correctly.
24. Re-adjust the set-point temperature of the controller to 5°C (i.e. less than the secondary outlet temperature).
25. Switch off the secondary circulation pump.
26. Close both the secondary inlet and outlet isolating valves.
27. Now there is effectively no load on the system.
28. Check that the temperature at the top of the digital display does not rise and listen for steam passing through the control valve. If any of these are observed then the control valve should be adjusted to give tight shut off.
29. Open both the secondary inlet and outlet isolating valves (in addition to any pump isolation valves).
30. Adjust the set-point temperature of the controller to 40°C.
31. Carry out additional tests by drawing hot water from the system in a controlled manner to vary the demand.
WARNING: When carrying out additional testing by draw off, you could be exposed to high temperatures. Ensure that hot water use is prohibited whilst commissioning to prevent accidental scalding. Ensure temperature of draw off is safe before allowing users access.
32. Adjust the set-point temperature of the controller to the actual set-point required for the application.
33. Switch the unit to REMOTE position on the front of the Control Panel to check the unit operates in this setting (link the terminals in the panel if necessary).
34. Record all settings and leave unit running.

Whilst the unit is operating, check that all of the gaskets supplied with the unit are effective. Some bolt tightening may be required after the unit has been subjected to its first heating cycle and subsequently maintained.

Following installation and commissioning, it is advisable to remove, clean and reassemble any strainers prior to operation.

When the unit is taken out of operation, all fluids must be drained from the unit to prevent freezing or possible corrosion.

6.0 MAINTENANCE

World Heat provides an Annual Maintenance Contract service which covers our full range of Plate Heat Exchanger Packages, please contact our sales team for further information.

In order to switch off the unit safely;

1. Switch the unit to STAND-BY position on the front of the Control Panel. This will close the steam control and high limit valves and turn the secondary circulation pump off.



2. Close both the secondary inlet and outlet isolating valves.
3. Close the main steam isolating valves on the inlet to the unit.
4. Allow the water/unit to cool.
5. Drain the unit using drain connections provided.
6. Isolate the unit electrically as required.

For specific information regarding the maintenance of the Control Valves, High Limit Valves, Thermostats etc., please refer to the model specific IOMs supplied separately.

For specific information regarding the maintenance of the Plate Heat Exchanger, please refer to WH-IOM-009 – Gasketed Plate Heat Exchanger, which is available for download from our website www.whcylinders.co.uk/technical-literature/.

For specific information regarding the maintenance of the Steam Separator, please refer to WH-IOM-020 – Steam Separator, which is available for download from our website www.whcylinders.co.uk/technical-literature/.

6.1 FAULT FINDING

Scaling of the secondary side of the unit (i.e. water side) would be evidenced by the following;

- Increased pressure drop on the secondary side of the unit.
- Incorrect secondary side outlet temperature.
- Lower than expected temperature difference on the primary side of the unit, when the control valve is fully open.

7.0 RECYCLING

For details on the end of life disassembly, recycling and disposal requirements of the unit, please consult the general assembly drawing and technical data sheet issued at quote/order stage, to determine the materials used.

All materials should be disposed of responsibly and in accordance with local regulations.

Please consult our technical team for further information.

8.0 SPARES

World Heat recommends the following spares for a standard AtmosPak – Packaged Steam/Water Plate Heat Exchanger;

- Plate Heat Exchanger Plate and Gasket Set
- Control Valve Actuator
- High Limit Valve Actuator
- Control Thermostat
- High Limit Thermostat
- Digital Controller
- Control Panel Lamps
- Control Panel Fuses
- Control Panel Contactors



WORLD HEAT
C Y L I N D E R S

WH-IOM-012

Installation, Operation & Maintenance Instructions

Unit 4, Tudor Industrial Estate, Ashton Street, Dukinfield SK16 4RN
Tel: 0161 343 8610 Email: sales@whcylinders.co.uk

- Control Panel Circuit Breakers
- Spiral Wound Gaskets (various sizes)
- Pump Seals Kit (if supplied on original unit)

Please contact our sales department for recommended spares and availability, please quote the unit serial number in order for our sales team to correctly specify the spares required.