



INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE WORLD HEAT RANGE OF CONDENSATE PUMP-SETS

1.0 DESCRIPTION

World Heat range of Condensate Pump-sets are designed to receive, recover and return hot condensate to Boiler Feed Water Tank.

World Heat manufacture Condensate Pump-Sets in the following materials; Mild Steel, Stainless Steel (various grades) and Galvanised Mild Steel. The standard range covers up to 70m head at 22,000 kg/hr of condensate.

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 range of Condensate Pump-Sets 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 sterilisation 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. If lifting lugs have been installed on the vessel, these should only be used to lift the vessel alone (i.e. not the entirety of the skid). The lifting lugs on the vessel will have been designed for the weight of the cylinder and not the entire unit.
- 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 unit 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.



- d) 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 vessel 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 and vessel supports are 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 space 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 loads being transmitted to the vessel. 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 prior 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.

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 the Digital Temperature Controller Set-Up Instructions.

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.

In order to commission the unit;

- a) Assumptions
 - It is assumed that the unit is piped up correctly.
 - It is assumed that the power supply into the control panel has been wired through a suitably protected isolation switch and in accordance with Electrical Regulations.
 - It is assumed that the unit has been adequately earthed and that an electrical safety check has been completed.

Prior to commissioning;

1. Ensure pipe work and receiver is free from debris and flushed.
2. Ensure pump isolating valves are fully open.
3. Ensure pump impellers are free by removing the fan casing and turning by hand. Make sure the fan casing is replaced once a check has been made.

WARNING: Pumps must not be run dry at anytime.

In order to commission the unit;

1. Switch on the electrical supply to the panel and select 'Pump 1'.
2. Allow condensate to enter the vessel and check that the pump operates as required.
3. Switch to 'Pump 2' and ensure that the pump operates correctly.
4. Leave the unit operating.

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 out of operation, all fluid must be drained from the vessel to prevent freezing or possible corrosion.

NOTE REGARDING VENT CONNECTION

A vent head may be supplied with the unit which is fitted to maximise the separation of any entrained water. The vent head will impose a minimal back pressure on the vessel.

The vent connection must never be blanked off and under no circumstances should an isolating valve or check valve be fitted in the vent pipe.

For specific information regarding the maintenance of any Vent Heads supplied, please refer to WH-IOM-017 – Vent Head, which is available for download from our website www.whcylinders.co.uk/technical-literature/.

NOTE REGARDING OVERFLOW PIPE WORK

The overflow connection must never be blanked off and under no circumstances should an isolating valve or check valve be fitted in the overflow pipe work.

The overflow connection must incorporate a u-trap to prevent flash steam passing through it.

NOTE REGARDING MAXIMUM PUMP FLOW RATE

Each unit's pumps are selected to provide the design flow rate against the design head, without cavitations. In many cases, the pump will be capable of pumping a higher design flow rate. Pumping at a higher flow rate will increase the NPSH and potentially cause cavitations within the pump. To prevent this, the flow rate of the pump should be adjusted to match that detailed on the General Assembly Drawing.

5.1 OPERATING PHILOSOPHY

Condensate enters the receiver and the unit slowly fills up until a level is reached whereby a float switch (middle) activates the duty pump. The pumps pump hot condensate from the vessel to the condensate return main. If the duty pump is not capable of matching the incoming rate of condensate, the level in the receiver rises until a second float switch (high) activates the standby pump. Both pumps will operate simultaneously until the level is reduced to a level whereby a third level switch (low) turns off the pumps.

Extra high and low level float switches can be added as an additional safety precaution or for additional functionality.

6.0 MAINTENANCE

Annual maintenance of the unit should consist of internal inspection of the vessel shell and inspection of the gaskets supplied as part of the unit. It is recommended that the vessel internals are cleaned.

Maintenance frequency will depend on the characteristics of operation and fluid passing through the unit, however it is recommended to regularly action the following;



- Alternate the duty/standby pumps on a weekly basis. [For units with auto-cascade features, pumps will automatically change over at the end of each running cycle]
- Periodically check for leaks from any pipe-work or pipe-work components.
- Periodically check that electrical connections are tight and cabling is tidy.
- Periodically check for any signs of scaling.

For specific information regarding the maintenance of the valves, pumps, level switch etc., please refer to the model specific IOMs supplied separately.

For specific information regarding the maintenance of any Vent Heads supplied, please refer to WH-IOM-017 – Vent Head, which is available for download from our website www.whcylinders.co.uk/technical-literature/ .

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 the standard Condensate Pump-Set;

- Pump Seals Kit
- Digital Controller
- Control Panel Lamps
- Control Panel Fuses
- Control Panel Contactors
- Control Panel Circuit Breakers
- Inspection Opening Gasket
- Level Switch

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.