

YARWAY MODEL 25 VEN-TEMP DESUPERHEATER INSTALLATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be fully read and understood



UNPACKING

The Ven-Temp Desuperheater, Model 25, is packed with the greatest of care in wooden boxes or cartons for protection during handling and transit to site. After hydrostatic testing, the Ven-Temp Desuperheater is flushed through with a high grade of preservative to protect machined and internal surfaces from corrosion. If it is found, however, that damage has occurred during shipment, then this should be reported immediately to your forwarder or Yarway representative.

Particular care should be taken when removing the Ven-Temp Desuperheater from its packing and your special attention is required to check carefully that no damage has occurred to flange faces, threadings and butt weld profiles (see figure 1).

INSTALLATION OF THE VEN-TEMP DESUPERHEATER

Before installation, check the Ven-Temp Desuperheater for any visible damage. Make sure that protective covers are removed and that butt weld ends and flange faces are clean and without blemish. Any damage to the unit should be reported immediately to your forwarder or Yarway representative.

Check that the information on the documentation, identification plate and tag number complies with the order specification. Remove the Ven-Temp Desuperheater carefully from its packaging, lifting by means of straps around the body, or use the hoisting lug if provided. Do not use the water inlet connection for lifting.

The minimum pipe run, required downstream of the Ven-Temp Desuperheater, varies with each individual application and would be specified by Yarway at the enquiry stage. This straight run is needed to prevent erosion due to impingement of water droplets against pipe walls, valves and fittings. Upstream straight run is normally $2 \times D$ and the outlet straight run 4 meters, as a minimum. The distance from the Ven-Temp Desuperheater to the temperature sensor is nominally 12 - 15 meters, although the distance specific to the application would be advised by Yarway at the enquiry stage. Longer distances will ensure that full evaporation of the water will take place at lower steam velocities.

The temperature sensor should be located in the upper half of the pipe, avoid branching of the steam pipework between the Ven-Temp Desuperheater and the sensor.

When installing the Ven-Temp Desuperheater use gaskets and bolting material in accordance with the relevant piping code, for example ASME B31.1 or EN. Butt weld Ven-Temp Desuperheaters should be welded inline using proper weld procedures. Carefully check the material compatibility of both body and piping. In case of doubt consult Yarway. Post weld heat treatment should be done with the pipeline filled with an inert gas. Oxidation of the vena contracta area may lead to significant higher pressure drop over the Ven-Temp Desuperheater than calculated. The unit shall be installed with the water connection vertically upwards. For an installation example, see figure 2.

Note: the Ven-Temp Desuperheaters should be free of 'forces, moments and torques'.

RECOMMENDATIONS

(acid cleaning of steam boilers)

Remove Ven-Temp Desuperheaters from the piping prior to acid cleaning!

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Pipe bends should always be of the long radius type to assist in keeping the water droplets in suspension, until complete evaporation has taken place. Installation may be in vertical or horizontal piping, but the direction of water injection should always be with the steam flow, vertical downwards injection is not advised. The steam flow direction is marked on the Ven-Temp Desuperheater body by an arrow. The position of the water inlet should be 12 o'clock.

The water supply should be of a good quality, clean and filtered for example boiler feed water and should have a constant pressure as specified in the order documents. Each water supply line should be protected with its own individual strainer (7) with a maximum element perforation size of 0.1 mm. As in the case of the steam pipework, use gasketing and bolting in accordance with the relevant piping code. Flush out the water line before connecting to the Ven-Temp Desuperheater mounting flange.

FIGURE 1

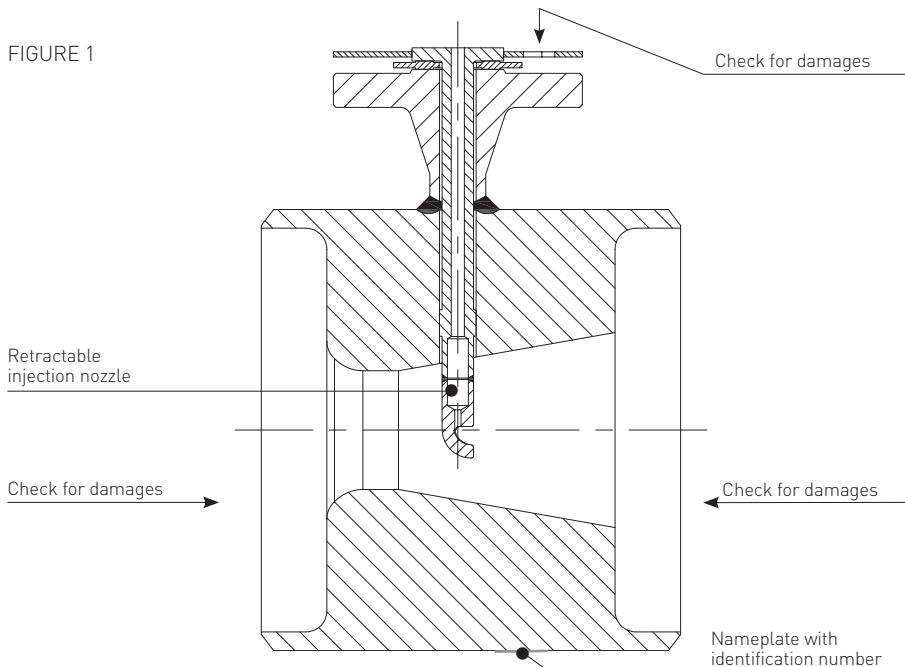
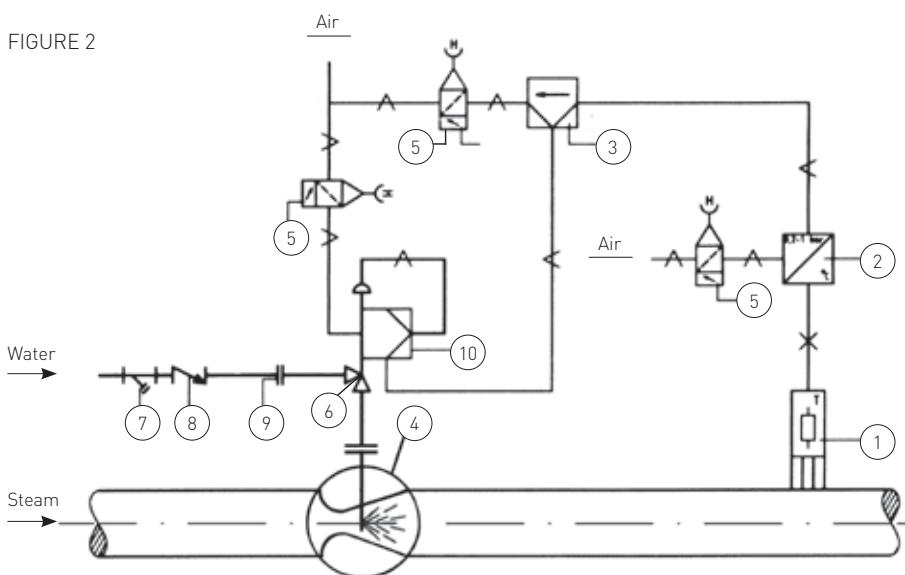


FIGURE 2



Item	Description
1	Temperature sensor
2	Temperature transmitter
3	Temperature controller
4	Ven-Temp Desuperheater
5	Air filter regulator
6	Water control valve
7	Strainer
8	Check valve
9	Flange
10	Pneumatic or E/P positioner

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START-UP

Ensure that all components are installed correctly. Connection of electrical supplies and instrument air piping should be in accordance with the manufacturer's instruction manual. Verify and adjust, if necessary, set points for filter regulator (5) and valve positioner (10), following the manufacturer's recommendations. Similarly, calibrate the temperature transmitter/controller (2) (3), verifying automatic response to temperature changes.

Warm the steam main and open the valve in the water supply. Check the water pressure at the Ven-Temp Desuperheater. Verify the operation of the temperature transmitter and controller by manually increasing and decreasing the output signal and observing indicated and recorded temperatures. When satisfactory coordination between instrument signals and temperature is attained, adjustment of the set point can be made and the system transferred to automatic operation. It is advisable to record the various steam coordinates, over a sustained period, to verify operation, adjusting where necessary.

MAINTENANCE

Note

Maintenance of the Ven-Temp Desuperheater is straight forward and does not require any special tools or training. Care should be taken during any maintenance operation, particularly when working with grinders, compressed air and rotating machinery. It is imperative that safety glasses and protective workwear are used in accordance with standard safety procedures. In case of doubt, consult your supervisor or safety officer before commencing any work on the equipment.

Removal

Before removing the Ven-Temp Desuperheater from the system, ensure that both the steam- and water pipework are pressureless and vented. Isolate any electrical/pneumatic supply to the actuator of the water valve, prior to disconnection. Loosen steam flanges/butt welds and water flange, but vent connections before complete removal.

The Ven-Temp Desuperheater may now be removed from the system. It is recommended that the Ven-Temp Desuperheater is transported to a convenient workshop which has a workbench and vice. Lift the unit by means of straps around the body, or use the hoisting lug if provided.

Injection nozzle

Injection nozzles may be retractable, depending on execution. Nozzles with holders can be ordered as a complete spare part from Yarway. Check your certified order drawing for the nozzle type supplied.

Re-installation

When re-installing the Ven-Temp Desuperheater make sure that the injection nozzle opening points into the downward flow direction!!! Use a high temperature nickel compound on the flange bolting. Do not re-use the graphite seals. Replace these seals when overhauling the Ven-Temp Desuperheater.

SPARE PARTS

Make sure that the identification number (indicated on the nameplate) is verified and specified when ordering spare parts. For cross sectional drawing and part list, see next page.

STORAGE PROCEDURE

Upon receipt, check both the Ven-Temp Desuperheater and the packing case for any transit damage. Any damage to the packing container should be rectified to prevent the ingress of dust or water, prior to placing the equipment into storage.

Check the information contained on the identification plate and documentation and return the unit to its packing with protective covers in place (see figure 1).

For short term storage, up to 6 months duration, no additional preservation measures are necessary. Retain the unit in its original packing in a clean, dry indoor location. If outdoor storage is unavoidable, then the packing case should be enclosed in a waterproof covering.

For long term storage use only a dry indoor location. Apply a cosmoline type grease to machined faces. Retain in its original packing and inspect at 3 monthly intervals to ensure that no deterioration has occurred.

Note

Materials and data of units supplied, may deviated from this Instruction Manual. Please consult order documents in case of doubt.

CE marking depends on line size and will be determined when ordered.

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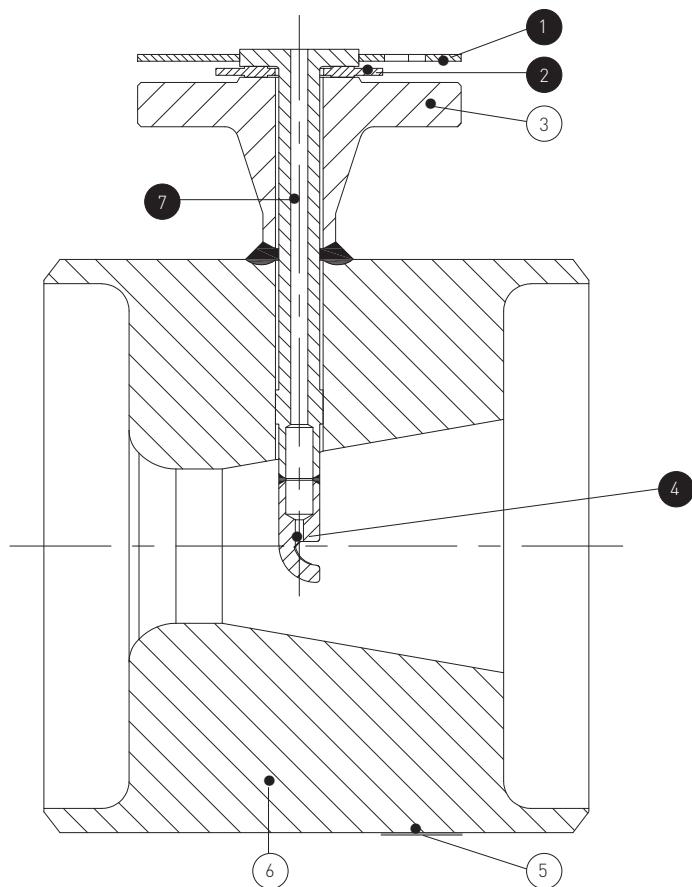


TABLE 1 - STANDARD MATERIALS

Item	Name	Carbon steel		Low alloy		High alloy	
		ASTM	EN	ASTM	EN	ASTM	EN
1•	Spray direction indicator						
2•	Gasket	St.st./Graphite	1. 4541/Graphite	St.st./Graphite	1.4541/Graphite	St.st./Graphite	1.4541/Graphite
3	Water flange	SA 105	P250GH	SA 182 F11	1.7335	SA 182 F22	1.7380
4*•	Nozzle	SA 182 F316	1.4401	SA 182 F316	1.4401	SA 182 F316	1.4401
5	Nameplate	St. steel	St. steel	St. steel	St. steel	St. steel	St. steel
6	Body	SA 105	P250GH	SA 182 F11	1.7335	SA 182 F22	1.7380
7*•	Nozzle pipe	SA 182 F316L	1.4404	SA 182 F316L	1.4404	SA 182 F316L	1.4404

NOTES

* Supplied as assembled spare part

• Recommended spares

Other materials are available upon request

Certification

Ven-Temp Desuperheaters are approved by authorized authorities to comply with the requirements of ASME B31.1 Non-BEP or EN 13445. All data subject to changes.

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