



INSTALLATION AND MAINTENANCE INSTRUCTIONS

DSH – Direct Steam Injection Humidifiers

GENERAL

1. These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.
2. The installation procedure is a critical stage in a life of a direct steam injection humidifiers and care should be taken to avoid damage to the equipment.

WARNING!

- If malfunction of any other equipment or system operation failure may result in a dangerous overpressure, over temperature or even vacuum condition, a safety device must be included in the system to prevent such situations.
- Do not touch the equipment without appropriate protection during working operation because it may conduct heat if the used fluid is at high temperature.
- Before starting maintenance be sure that the equipment is not pressurized or hot .
- If the separator top connection is not being used, it must be closed with an appropriate plug.
- Do not remove the nameplate attached to the equipment. Serial number and other useful information is stamped on it.

INSTALLATION

1. Prior to install check that the product is suitable for the intended application: materials and pressure/temperature ratings.
2. Before to install remove plastic covers placed on flanges or connection ends. The equipment has an arrow or Inlet/Outlet designations. Be sure that it will be installed on the appropriate flow direction.
3. External stresses that may be induced by the system doing to pipe expansion, etc, can affect this product. The necessary precautions are recommended during the system design and equipment assembly.
4. The separator must be installed on horizontal position always with the condensate discharge pointing downwards. A steam trap is necessary to automatically discharge the condensate. The steam supply to the humidifier must always be taken off the top of the steam main, never the side or bottom.
5. In order for the steam trap to remove condensate, it is essential that pressure in the condensate return line be well below the pressure in the supply line to the humidifier. If the condensate line is pressurized, we recommend the use of an Adcamat pumping system .
6. Check to see that the injection steam emission ports face upstream. If the unit has been pre-assembled at the factory and the direction of steam release is not upstream, simply open the union, remove the nipple / elbow assembly from the tube, rotate 180 degrees and re-install the nipple / elbow assembly.



7. Cut hole in the duct or plenum slightly larger than the injection tube. Duct plates are furnished to tightly seal around the tube. Insert injection tube, if tube is horizontal, it should be mounted level. Support outboard end of tube by securing to duct wall with support bolt.
8. Vertical tube models must always be installed with the tube support bracket installed in the upward location to avoid trapping condensate in the outboard end of the injection tube.
9. Whenever possible, install the injection tube in the centre of the duct. If the duct has an height of 250mm or less we recommend the use of an expanded duct section to prevent restricting of air flow.
9. While the steam emitted from the injection tube is still visible it can collect on devices in the duct and be a potential source of trouble. It is preferable to locate downstream of these devices, but if this is not possible, the humidifier should be located far enough upstream for the steam to vanish before making such contact. The following spacing is recommended :
 - Not less than 3500 mm upstream from high efficiency filters. Locate high-limit duct humidity controller immediately upstream from the filter.
 - Humidifiers should not be placed less than 1000 mm upstream from fan inlets, tees, turning vanes, discharge grills or other devices.
 - To guard against faulty readings do not install humidifier less than 3000 mm upstream from temperature controller.
 - When installing in a multi-zone packaged air handling system, installation should be in the centre of the active air flow and as close to the discharge as possible.

MAINTENANCE

1. The separator and injection tube doesn't need any specific type of maintenance. Local authorities according to specific or general pipe and/or vessels assembly procedures may recommend regular inspection.
Estimated lifetime under satisfactory working conditions: 5 years, after this period we recommend the wall thickness examination using appropriated inspection equipment. Pour quality water or corrosive fluids will reduce this period.
2. Control valves and steam traps: please see specific IMI.

APPLICATION LIMITS :

Separator body design conditions	PN 6
Maximum operating pressure	4 bar
Maximum operating temperature	152 °C
Minimum operating temperature	-10 °C

CE Marking :

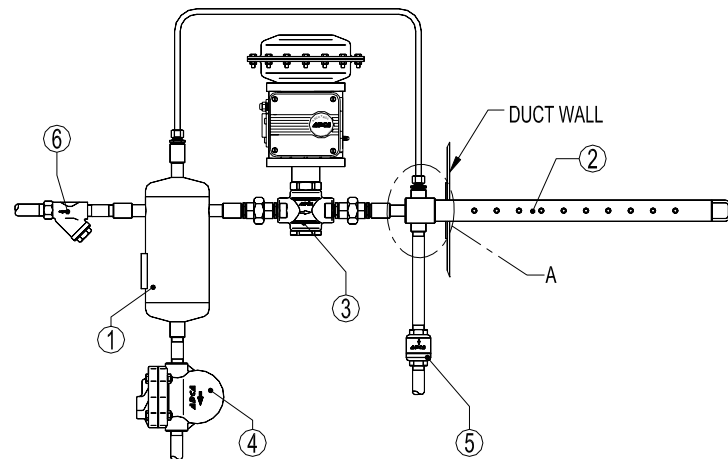
This product have been designed for use on water, steam and other gases which are in Group 2 of the PED-European Pressure Equipment Directive 97/23/EC and it comply with those requirements.

The product does not carry the CE mark.

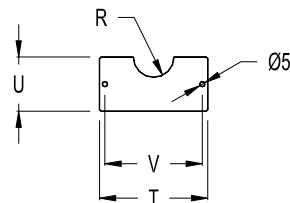
Typical installation

MATERIALS		
POS.	DESIGNATION	MATERIAL
1	STEAM SEPARATOR	STAINLESS STEEL
2	INJECTION TUBE	STAINLESS STEEL
3 *	CONTROL VALVE	(UNDER REQUEST)
4 *	FLT FLOAT TRAP	CAST IRON
5 *	TSS22 THERMOSTATIC TRAP	STAINLESS STEEL
6	IS16 Y STRAINER	CAST IRON

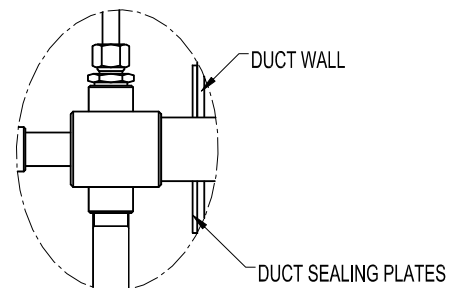
* Available spare parts



Duct sealing plates



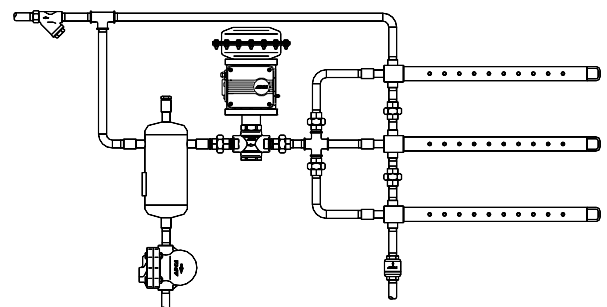
	T	U	V	R
DSH15-10	100	50	228	19
DSH20-20/DSH2520	110	55	100	25.4
DSH40-30	130	75	120	38.25



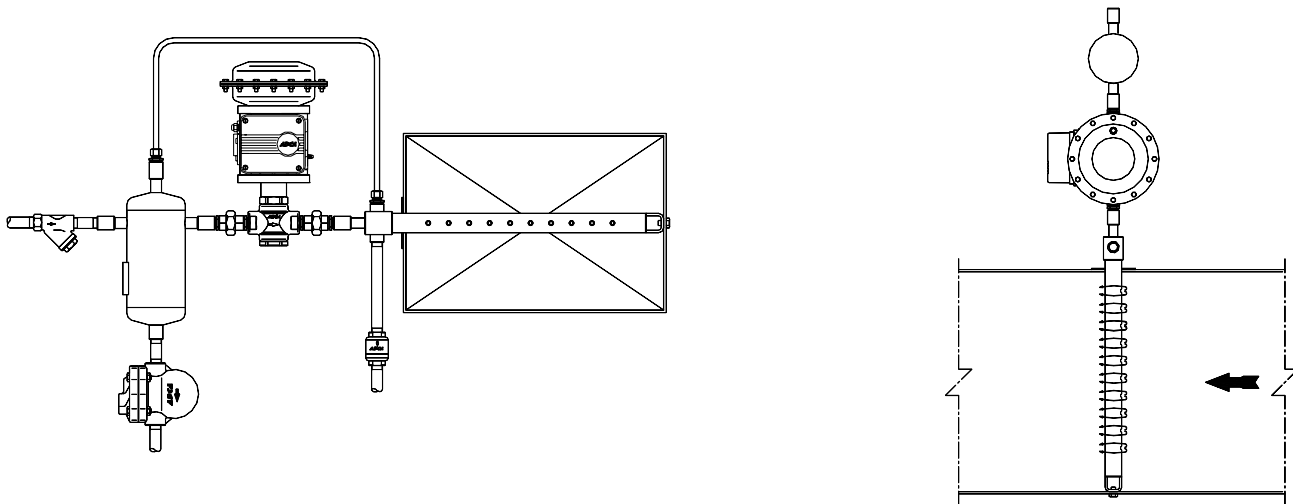
Detail "A"

Alternative installation

When using multiple tube pipe design, the injection tubes are piped and trapped separately to ensure that the additional resistance created by extra piping does not reduce the steam supply to the humidifier and also to provide extra trap capacity to handle the additional condensate created within the multiple injection tube steam jackets.



Horizontal duct – Horizontal lance



Plan View

Vertical duct – Horizontal lance

