

FMDH

Forbes Marshall Deaerator Head

Description

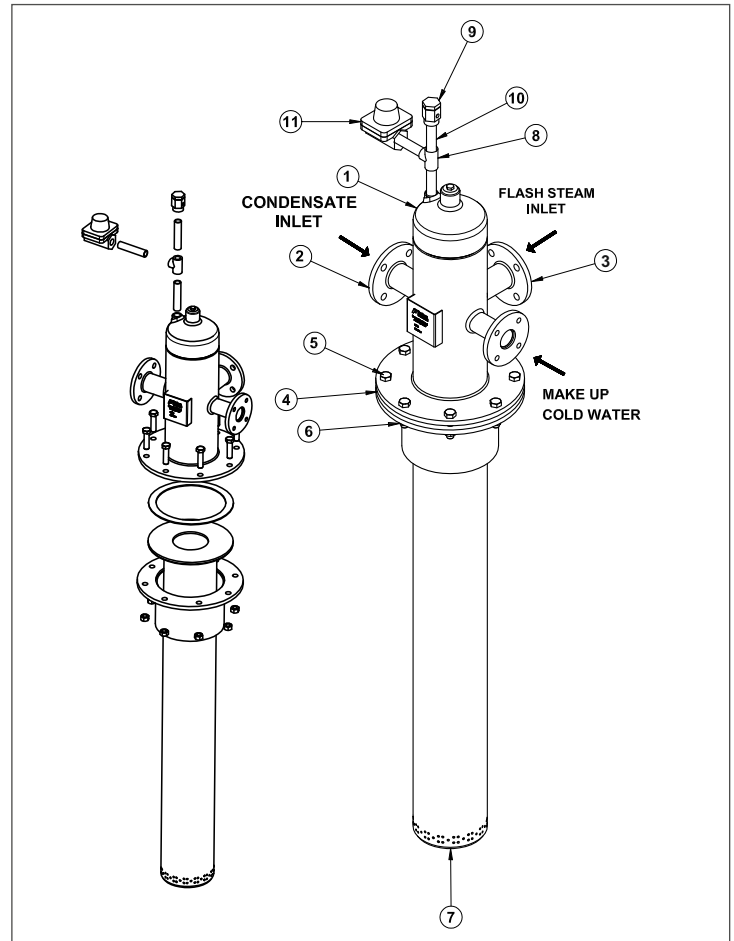
The Forbes Marshall Deaerator Head, FMDH, is designed to mix incoming flows of cold make-up, condensate return and flash steam to the boiler feed tank. This mixing action is achieved by directing the downward flow through a baffle arrangement within the unit. This liberates dissolved gases from the cold make-up, which are vented to atmosphere. The cold make-up inlet is fitted with a spray screen which diffuses the flow, increasing its surface area to promote thorough mixing with the condensate and flash steam.

A FMDH consists of

- A mixing unit, which is bolted to the top of the tank and is supplied with connections to customer specifications for cold make-up, condensate return, flash steam from blowdown, etc.
- An immersion tube, which distributes the mixed fluids into the tank and has an integral plate flange which is sandwiched between the tank and mixing unit flanges.

The immersion tube is designed to distribute condensate return into the feedtank to ensure efficient distribution of hot condensate.

Gaskets : Two gaskets are required, one fitted each side on the immersion tube flange.



Available Types

The mixing unit : DN 150, 200, 250 and 300 Flanged to ANSI class 150

Immersion tubes are available in diameters to suit the deaerator heads and lengths of 1200, 1800 and 2400 mm to suit feed tanks. Since each deaerator head is built to suit specific plant requirements we recommend that you contact your local Forbes Marshall engineer for a connection layout sheet and to discuss your requirements.

Limiting Conditions

Max. working pressure	1 bar g
Max. working temperature	120°C
Cold hydraulic test pressure	2 bar g .

Material

Sr. No.	Part	Material
1	Mixing Unit Assembly	Stainless Steel, 304
2	Condensate Inlet Nozzle Assembly	Stainless Steel, 304
3	Flash Steam Inlet Nozzle Assembly	Stainless Steel, 304
4	Flange Gasket	AF 154
5	Hex Bolt	Stainless Steel, 304
6	Hex Nut	Stainless Steel, 304
7	Immersion Tube Assembly	Stainless Steel, 304
8	DN15 BSPT Tee	Stainless Steel, 304
9	Vacuum Breaker	Stainless Steel, 304
10	DN15 Both Side BSPT Pipe 100mm Long	Stainless Steel, 304
11	DN15 BSPT Airvent FMAV53	ASTM A105

Selection Table

Total Steam Generation Rate kg/h	Atmospheric Deaerator Head			
	Size-DN	Tank Depth mm(ft.)		
		1220(4)	1830(6)	2440(8)
5000	150	150FMDH3 150FMDH3.5 150FMDH4	150FMDH6	150FMDH8
10000	200	200FMDH4	200FMDH6	200FMDH8
20000	250	250FMDH4	250FMDH6	250FMDH7 250FMDH8
30000	300	-	300FMDH6	300FMDH8

Note: Size 150FMDH3 means DN 150 shell size with 3' immersion tube length.

Application

FMDH is ideal for boiler feedtank applications. It is suitable for both new and retrofit applications. Each head is fitted with a connection for air vent and recirculating feedwater spray nozzle. The air vent is for the immediate venting of liberated gases.

Forbes Marshall immersion tubes are ideal for boiler feedtank applications. They are suitable for both new and retrofit applications. They offer a much neater and more convenient solution to distributing condensate return than traditional sparge pipes. Additionally, they reduce the common problem of waterhammer found in sparge pipes.

This is achieved by slowing down the flow of the condensate return, in particular any flash steam, as it enters the immersion tube with its larger cross sectional area. This gives an opportunity for the flash steam to pass through the holes into the feedtank without creating sudden shocks. When combined with a mixing unit they form an atmospheric deaerator head.

How to Order

Example : Forbes Marshall Deaerator Head FMDH, SS 304, DN150, immersion length 4 ft.

Installation

1. Place one gasket on flange face of tank connection
2. Insert immersion tube, place second gasket on face of the immersion tube.
3. Now put bottom flange of mixing unit on this gasket. Ensure that orientation of the connection is correct. Tighten all nuts and bolts uniformly.

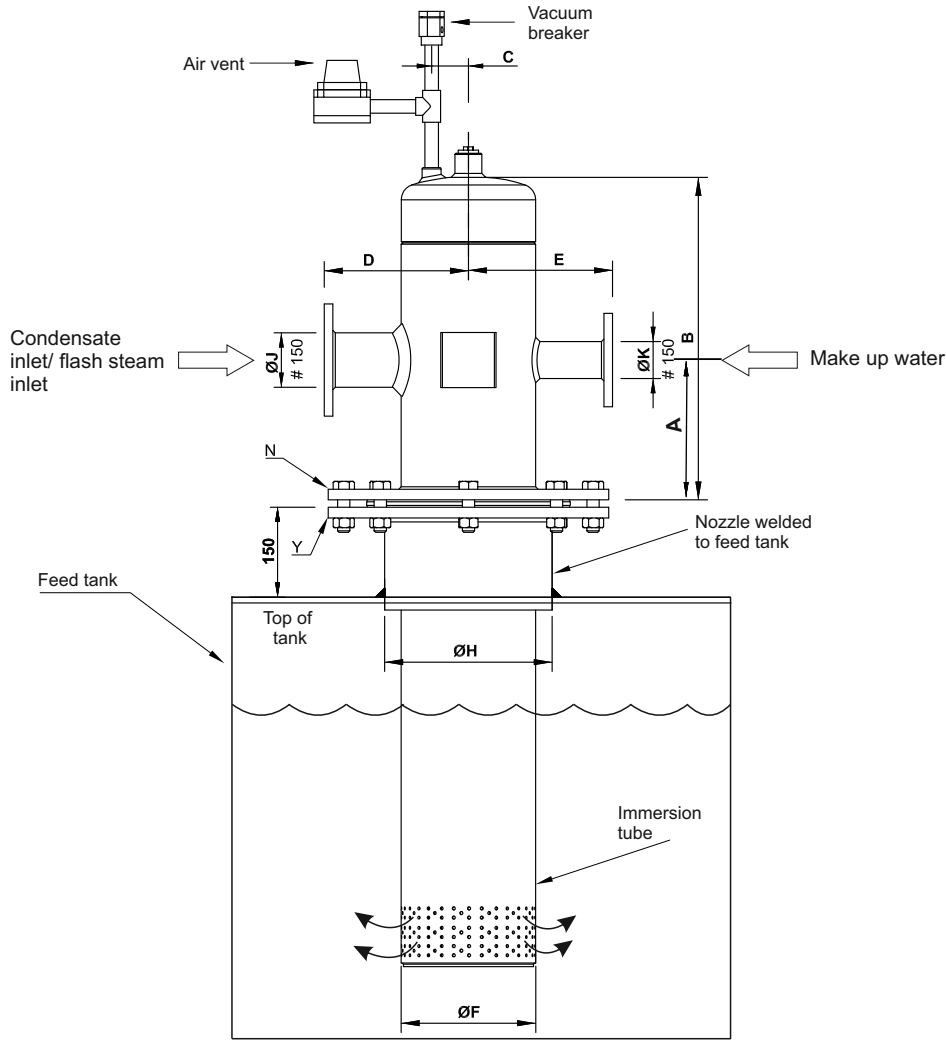
Remove all plastic plugs and wooden blanks from the mixing unit connections. Any connection which is not to be used must be plugged or blanked off.

Insulation

The whole mixing unit should be insulated in order to conserve heat. When selecting a lagging material it is essential that one with a low or zero chloride content is selected. This is because leaching of the chloride from lagging on to moist / wet austenitic stainless steel surfaces has been known to cause stress corrosion cracking.

Air Vent / Vacuum Breaker

The air vent / vacuum breaker can both be fitted to one connection by using a tee piece. The air vent should be installed horizontally and the vacuum breaker vertically. It is recommended that stainless steel or brass / bronze fittings are used. It is not necessary to pipe the discharge away.



Dimensions (mm)

Type	A	B	C	D	E	F (# 150)	G	H(# 150)	K (# 150)	J (# 150)	N (# 150)	Y(# 150)
150FMDH3	210	495	60	185	185	DN150	915	DN200	DN40	DN50	DN200 BTS DN150	DN200
150FMDH3.5	210	495	60	185	185	DN150	1067	DN200	DN40	DN50	DN200 BTS DN150	DN200
150FMDH4	210	495	60	185	185	DN150	1229	DN200	DN40	DN50	DN200 BTS DN150	DN200
150FMDH8	210	495	60	185	185	DN150	2447	DN200	DN40	DN50	DN200 BTS DN150	DN200
200FMDH4	225	525	60	235	235	DN200	1220	DN250	DN50	DN80	DN250 BTS DN200	DN250
200FMDH6	225	525	60	235	235	DN200	1837	DN250	DN50	DN80	DN250 BTS DN200	DN250
250FMDH4	225	535	60	275	275	DN250	1229	DN300	DN80	DN100	DN300 BTS DN250	DN300
250FMDH6	225	535	60	275	275	DN250	1838	DN300	DN80	DN100	DN300 BTS DN250	DN300
250FMDH7	225	535	60	275	275	DN250	2100	DN300	DN80	DN100	DN300 BTS DN250	DN300
250FMDH8	225	535	60	275	275	DN250	2447	DN300	DN80	DN100	DN300 BTS DN250	DN300
300FMDH8	275	620	60	300	300	DN300	2447	DN350	DN100	DN125	DN350 BTS DN300	DN350

BTS : Bore To Suit Flange



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