

## HeatMAX

### Instantaneous Hot Water System

#### Description

The Forbes Marshall HeatMax is a compact, versatile & ready to install, instantaneous hot water system. HeatMax is a highly efficient and low maintenance steam to water heat transfer solution that delivers effective heat transfer, accurate temperature control, efficient condensate removal and recovery.

#### Features and Benefits

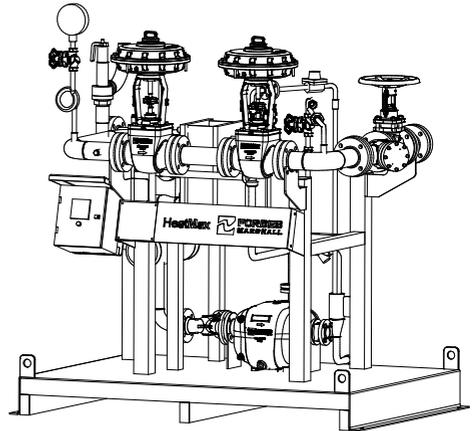
Built on a module-based concept and are designed to provide maximum efficiency Compact and complete heat transfer solution Ergonomically designed system with compact and efficient plate type heat exchanger High quality components requiring low maintenance Instant hot water generation with precise temperature control Efficient condensate removal and recovery minimum heat loss Skid mounted, fully assembled and tested, Ready to install Customised solutions to meet all process requirements

#### Precise Temperature Control

Forbes Marshall HeatMax control system is designed to provide precise & accurate control of hot water. Forbes Marshall Control Valve is specifically selected for steam. The steam flowrate is modulated to exactly match the heat demand. The Control System uses Electro-pneumatic Positioner, fully functioned PID Controller & fast acting Temperature Sensor. Precisely matched control instrumentation ensures all of the useful energy in the steam is used within the unit, which in turn, reduces both fuel demand and Co2 emissions.

#### Efficient Condensate Removal and Recovery

The innovative Forbes Marshall Steam Operated Pumping Trap is capable of working in Trapping & Pumping mode automatically, depending on the process conditions. The unit provides the total solution to all stall conditions, by removing condensate under all operating conditions.



#### Efficient Plate Type Heat Exchanger

Gasketed plate and frame heat exchanger provide efficient heat transfer in compact equipment with a small footprint. The units have flexible design and are easy to service and maintain

#### Fail-safe overheat protection

Forbes Marshall HeatMax is supplied with a pneumatically actuated, fail-safe, overheat protection on-off valve that will automatically isolate the steam supply if a pre-set hot water outlet temperature is exceeded.

### Maximum Output for Minimum Footprint

Forbes Marshall HeatMax is supplied as a preconfigured, tested, pre-assembled, skid mounted unit. High quality low maintenance components. Minimal installation time. Trouble free commissioning. With its compact design and low weight, HeatMax is easily installed, even in the tightest of spaces. Fits through standard doorway. Saves floor space.

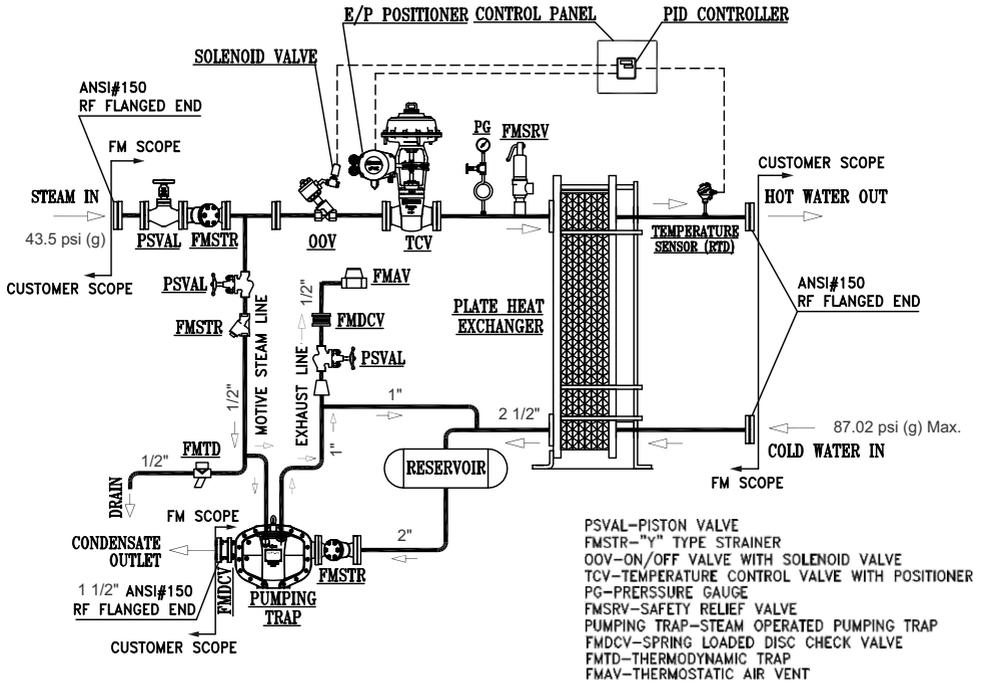
### Application Areas

Pharma, Food, HVAC, Hospitals, Hotel, Textile, Breweries etc

### Limiting Conditions

Design Condition	ASME Class 150
Maximum Saturated Steam Supply Pressure	50.7 Psi(g)
Minimum Saturated Steam Supply Pressure	29.0075 Psi(g)
Maximum Steam Temperature:	302°F
Maximum Water Pressure	87.0226 Psi(g)
Maximum Water Temperature	203 °F
Maximum Cold Hydrotest Pressure	113.129 Psi(g)

### P and ID for HeatMax



## Material

	Description	Material		Remark
1.	Piston Valve	Body/Bonnet	ASTM A216. Gr. WCB	Size - 2" to 4"
			ASTM A 105N	Size -1/2" to 1 1/2"
		Piston	ASTM A276 Type 304	Size -1/2" to 2"
			ASTM A 351 CF8	Size -2 1/2" to 4"
Packing	Stainless steel reinforced graphite			
2.	" Y " Type Strainer	Body	IS 210 Gr. FG260	
		Screen	IS 210 Gr. FG260	
3.	Pneumatic Actuated Globe Valve with Electro-Pneumatic Positioner	Body	ASTM A216 Gr. WCB	
		Bonnet	ASTM A351 CF8	
		TRIM	ASTM A276 SS316 Nitrided	
		Packing	Graphite	
4.	Pneumatic Actuated On-Off Globe Valve with Solenoid Valve	Body	ASTM A216 Gr. WCB,	Size -2 1/2" to 4"
		Bonnet	ASTM A351 CF8	
		TRIM	ASTM A276 SS316 Nitrided	
		Packing	Graphite	
	Piston Actuated On-Off Valve with Solenoid Valve	Body/Bonnet	AISI 316L	Size -1" to 2"
		TRIM	SS316	
Packing		PTFE		
5.	Safety Relief Valve	Bonnet	IS210 Gr. FG260	
		Seat/Seat Ring/Valve	Gun Metal	
		Spring	Stainless Steel	
6.	Plate Heat Exchanger	Heat Transfer Plate	SS316	
		Gasket	EPDM	
		Frame & Pressure Plate	IS 2062 Gr. B	
		Stud/Nut/Washer	IS 1367 CLASS 8.8/8.0 Zn Plated	
		Tightening Bolt/Nut	IS 1367 CLASS 8.8/8.0 Zn Plated	
		Carrying Bar	SS 304	
7.	Steam Operated Pumping Trap	Body	ASTM A515/516 Gr. 70 / SG Iron	
		Cover	ASTM A515/516 Gr. 70 / SG Iron	
		Cover Gasket	Stainless steel reinforced graphite	
		Internal Mechanism	Stainless steel	
8.	Spring loaded disc check valve (FMDCV)	Body	ASTM A351 CF8M	
		Spring	SS316	
9.	Thermodynamic Trap	Body/Cap/Disc/STR Cap	ASTM A 743 Gr-CA40	
		Strainer Screen	ASTM A 240 Type 304	
10.	Thermostatic Air Vent	Body	ASTM A105	
		Internals	Stainless Steel	
11.	Pressure Gauge - Bourdon Type	Bourdon Tube & Socket	SS316	
		Movement & Case	SS304	
		Syphon-Pig Tail	ASTM A106 Gr.B	
12.	RTD (PT-100)	Sheath /Thermowell	SS316	
		Head	Die cast aluminium	
		Insulation	MgO	
13.	Pipe	ASTM A106 Gr. B		
14.	Flange	ASTM A515/516 Gr. 70		
15.	Bolt	ASTM A 193 Gr. B7		
16.	Nut	ASTM A 194 Gr. 2H		
17.	Gasket	Spiral Wound Gasket	SS304(ID Ring) x SS304+Graphite x CS (OD Ring)	
18.	Support Frame	Base Plate/Brackets	IS 2062 Gr. B	
		Square/Rectangular Tube	IS4923 Gr. 240	

## Battery Limit End Connections

Steam Inlet	Flanged end as per ASME B16.5, Class 150, SORF with mating flanges	Flange material - ASTM A515/516 Gr. 70
Condensate Outlet		
Water Inlet		
Water Outlet		

## HeatMax Models

Models	Heat Load (BTU/hr)	Steam Line (inches)	Water Flowrate (gal/min)	Water Inlet/Outlet Lines (inches)
25HEATMAX	59485 to 257768	1"	13.21 to 95.10	1" / 1 1/2" / 2" / 2 1/2"
40HEATMAX	259751 to 654335	1 1/2"	13.21 to 241.71	1" / 1 1/2" / 2" / 2 1/2" / 3" / 4"
50HEATMAX	656317 to 1031073	2"	18.05 to 381.73	1" / 1 1/2" / 2" / 2 1/2" / 3" / 4"
65HEATMAX	1033056 to 1586266	2 1/2"	28.62 to 585.58	1 1/2" / 2" / 2 1/2" / 3" / 4"
80HEATMAX	1588249 to 2577683	3"	44.03 to 616.40	1 1/2" / 2" / 2 1/2" / 3" / 4"
100HEATMAX	2579666 to 4084636	4"	71.32 to 616.40	2" / 2 1/2" / 3" / 4"

## Notes :

- The heat load has been calculated based on a steam inlet pressure of 50.8Psi(g) and 0 Psi(g) backpressure.
- Difference between water inlet and outlet temperature is minimum 5.4°F & Maximum 63 °F.
- Maximum water outlet temperature is 203°F.
- For water flowrate from 18624.13 gal/hr to 36984.1 gal/hr, system with water bypass arrangement will be provided. Water inlet/outlet sizes will be as per required water flowrate.
- For operating conditions other than mentioned above, please consult Forbes Marshall.

## Skid Dimensions and Weight

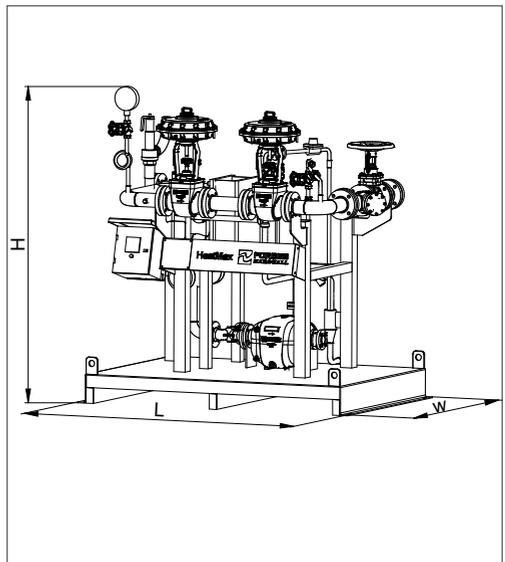
HeatMax Size (inches)	Overall Dimensions, inches (Approx)	Weight (Approx)
1" , 1 1/2" , 2"	58.1" X 39.4" X 82.7"	2204.62 lbs
2 1/2" , 3" , 4"	74.8" X 51.2" X 94.5"	3306.94 lbs

## Electric and Pneumatic Supply

Power Supply	110VAC / 220VAC, 60Hz
Instrument Air Supply	58.1 - 87.1 Psi(g)

## Controller Options

- Weather proof (standard)
- Flame proof – gas group IIA/IIB,T3
- Weatherproof with RS485 Modbus RTU
- Flameproof with RS485 Modbus RTU
- PLC based intelligent HeatMax



### Piping Work

All piping work is accurately sized for steam and water applications and is fabricated using modern welding techniques, approved welders and qualified welding procedures. Flanged products are used wherever possible for easy maintenance.

### Support Frame

The Forbes Marshall HeatMax is pre-assembled on a compact frame and base plate ready to move with a fork lift truck to the position of installation.

### How to Order

Forbes Marshall HeatMax is designed for the required heat load and controls suitable for application. For further details, please contact Forbes Marshall with the following information

1. Application
  2. Hot water flowrate, gal/hr
  3. Cold water inlet temperature, °F
  4. Hot water outlet temperature, °F
  5. Saturated steam pressure, Psi(g)
  6. Total Condensate Back Pressure, Psi(g)
  7. Controller options
- Any special requirement should be specified with detailed application, scope of supply and operating parameters.



Forbes Marshall  
Krohne Marshall  
Forbes Marshall Arca  
Codel International  
Forbes Solar  
Forbes Vyncke  
Forbes Marshall Steam Systems

Forbes Marshall USA (FM USA Inc.)  
480 South California Avenue, Unit 102  
Palo Alto, CA 94306  
P: 650-327-4227  
F: 650-327-4127  
Email :  
fm.northamerica@forbesmarshall.com

Forbes Marshall Canada Inc.  
2425 Matheson Blvd East, 8th Floor  
Mississauga, ON L4W 5K4  
P: 905-361-2880  
F: 905-361-6401

Forbes Marshall Pvt. Ltd.  
B-85, Phase II, Chakan Incl. Area,  
Sawardari,  
Chakan, Tal. Khed.  
Dist. Pune - 410 501, India  
Tel. 91(0)2135-393400  
www.forbesmarshall.com

All contents herein are the property of Forbes Marshall Private Limited ("FMPL") or Forbes Marshall Steam Systems Private Limited ("FMSSPL"), as the case may be, and having protection under the intellectual property rights. Any reproduction, distribution or disclosure without prior written permission is prohibited. Information in this document is subject to change without notice.