

YOSHIMINE WATER TUBE BOILER

FOR HEAVY OIL OR GAS BURNING TYPE **NHA**



YOSHIMINE CO., LTD.

HIGH-PERFORMANCE BOILER FOR HOSPITALS, BUILDINGS AND INDUSTRIES

YOSHIMINE

WATER TUBE BOILER

TYPE NHA

{ FEATURES of TYPE NHA }

1 HIGH EFFICIENCY OF 86-88%.

Complete combustion can be achieved without heat loss by burning fuel in the spacious combustion chamber covered with water-tube walls. Accordingly high boiler efficiency of 86-88% can be maintained.

2 WIDE COMBUSTION RANGE.

Adjustable range of boiler capacity by burner control is 20 to 120%. Within this range, complete combustion and long continuous operation can be realized.

3 OUTER WALL TEMPERATURE OF BOILER EQUIVALENT TO ROOM TEMPERATURE.

Wholly double casing construction provides perfect heat insulation, making radiant heat of outer walls nil.

4 MINIMUM NOISE.

Forced-draft fan is so silent that it is virtually noiseless.

5 EASY CLEANING OF THE INSIDE AND OUTSIDE.

Tube inside is completely cleaned by tube cleaner. Outer walls of tube bank are readily cleaned by a mechanical soot blower even during operation. All water tubes can be perfectly removed of soot at the time of performance test.

6 EASY HANDLING AND ABSOLUTELY SAFE OPERATION.

Simple construction makes handling easy. Safety is insured by safety devices. Double safety devices each different in type are used for burner cut-off at low water level.

7 LOW RUNNING AND MAINTENANCE COST.

Annual running and maintenance cost including power and boiler cleaning expenses are far lower than those required by other types.

8 DURABILITY.

Simple construction, easy inspection and no parts subjected to corrosion and burning guarantee exceptionally long durability.

9 MINIMUM WEIGHT.

Fin panel construction eliminates the needs for brick walls and make boiler weight lighter.

10 SMALL FOUNDATION AREA.

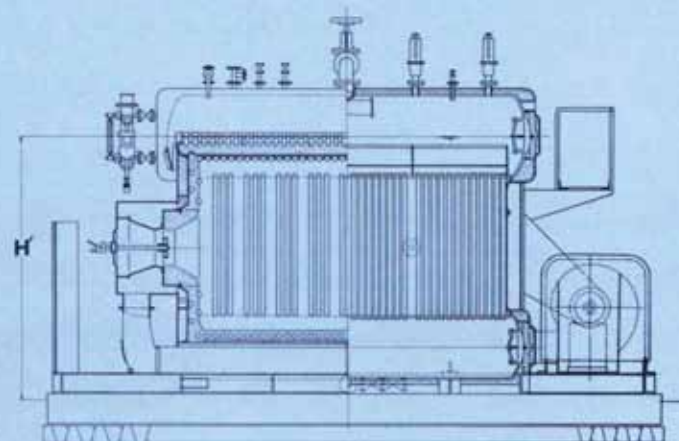
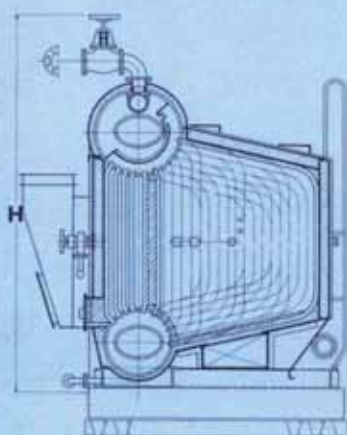
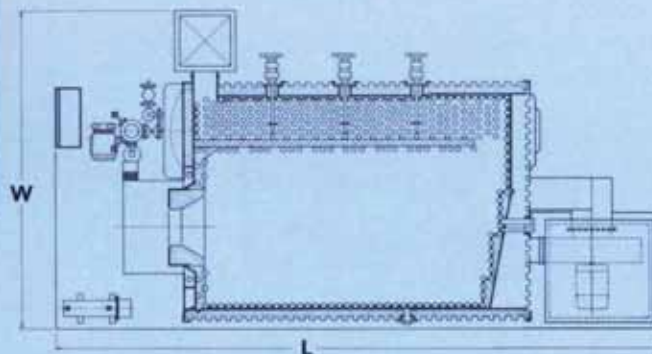
Both boiler and its accessories are assembled on the minimum area with the height shorter than ever.

11 MEASURES TO BE TAKEN TO REDUCE NO_x EMISSION.

Multiplied effect obtained by the combination of Low NO_x Burner with reduced load in a combustion chamber can Keep NO_x emission less than regulated figures.

TYPE NHA

UNIQUE AND EPOCH-
MAKING CONSTRUCTION
AND COMBUSTION
CONTROL



SPECIFICATION OF TYPE NHA

TYPE			Number	1,200	1,500	2,000	2,500	3,000	3,500
Equivalent Steam	Rating	Kg/h	1,500	1,800	2,400	3,000	3,600	4,200	
	Evaporated Output:	Normal	kg/h	1,200	1,500	2,000	2,500	3,000	3,500
Heating Surface Normal (Gross Equivalent Direct Radiation)			m ²	1,000	1,250	1,670	2,100	2,500	2,900
Fuel Consumption	Heavy Oil	kg/h	76.6	95.8	127.7	159.6	191.5	223.5	
	Normal	Gas	Nm ³ /h	165.2	206.4	275.2	344.1	412.9	481.7
Main Steam valve			mm dia.	80	80	80	100	100	100
Feed Water Valve			mm dia.	25	25	25	25	25	25
Blow-Off Valve			mm dia.	25	25	25	25	25	25
Dimen- sions	Height-Floor to Top of Boiler		mm (H)	2,592	2,592	2,592	2,643	3,113	3,113
	-Floor to Center of Drum		mm (H')	1,950	1,950	1,950	1,950	2,300	2,300
	Width (Overall)		mm (W)	1,684	1,689	1,769	1,809	2,051	2,051
	Length (Overall)		mm (L)	4,029	4,320	4,491	4,722	4,899	5,284
Net Weight			kg	6,640	6,910	7,130	7,750	9,680	10,410
Weight with Full Water			kg	7,840	8,270	8,680	9,510	12,180	13,290

- Remarks :
1. Dia of main steam valve shows the case under normal pressure of 6-10 kg/cm²
 2. Nominal rating of standard design pressure is to be 10kg/cm² upto 50kg/cm² are obtainable on application.
 3. Fuel consumption is calculated on a basis of calorific value per 9,700K cal/kg of Heavy Oil and 4,500K cal/Nm³ of Gas, both in lower level.
 4. Either Heavy Oil or Gas as Fuel can be used.
 5. The maker reserves the right to alter, without notice, dimensions, designs and components of the unit.

CONSTRUCTION OF YOSHIMINE BOILER TYPE NHA.

Boilers installed as a heat source in the industrial mills or various including hospitals are generally required to maintain 24-hour continuous operation without any trouble and also they must hold responsible for durability and safety enough to withstand burning damage caused by heat and corrosion by water quality.

Yoshimine NHA type boiler can satisfy not only these conditions but also pollution regulations performing high efficiency by employing the following construction.

NHA type boiler has a simple construction which consists of convection zone of the vertically connected tubes to spacious upper and lower drums and a combustion chamber covered with shape bent tubes installed at the side of this zone.

Zigzag arrangement of the tubes is employed at convection zone to obtain best heat absorption letting gas pass in a single passage method. The tubes at convection zone can be easily inspected by removing them temporarily for the wall separating convection zone from furnace is made of demountable fire bricks inserted between water tubes.

The tubes forming a combustion chamber side walls are bent on such a large radius that tube cleaners can easily pass through the tubes. Tubes outside cleaning can be conducted by soot blower even during boiler operation and when stopping water washing can be also conducted.

In addition to these merits this type of boiler as also a suitable construction for pressurized burning for fin tubes are employed for the front, rear and side walls, around which double casings are installed to prevent gas leakage.

That the associated equipment except feed water tank and water softening equipment are all shop assembled makes boiler operation very easy.

Gas fuels such as LNG, LPG and City gas are all available for this type of boiler by selection of each suitable burner.

Your good understanding and favourable response leading to order for Yoshimine packaged boiler of this type taking full advantage of the merits of water tube boiler should be highly appreciated.

4,000	5,000	6,000	7,000	8,000	10,000	12,000	16,000	20,000
4,800	6,000	7,200	8,400	9,600	12,000	14,000	19,200	24,000
4,000	5,000	6,000	7,000	8,000	10,000	12,000	16,000	20,000
3,300	4,150	5,000	5,800	6,600	8,300	10,000	13,300	16,600
255.4	319.2	383.1	446.9	510.8	638.5	766.2	1,021.5	1,276.9
550.5	688.1	825.7	963.4	1,101	1,376.2	1,651.5	2,202	2,752.5
130	130	130	150	150	200	200	200	250
25	40	40	40	40	50	50	65	65
25	40	40	40	40	40	40	40	40
3,177	3,477	3,477	3,527	3,627	3,716	3,966	4,777	5,033
2,300	2,600	2,600	2,600	2,700	2,700	2,950	3,030	3,030
2,131	2,309	2,469	2,574	2,579	2,659	2,659	3,150	3,200
5,334	5,842	5,842	6,273	6,581	7,220	7,632	7,894	8,460
11,300	12,230	13,610	14,760	17,500	19,550	22,220	24,610	27,460
14,270	15,550	17,130	18,670	21,640	24,400	27,700	33,000	37,050

**YOSHIMINE
WATER
TUBE
BOILER**



MANUFACTURE DIVISION :

Designing and manufacturing

Yoshimine water tube boilers & Pressure Vessel :

TYPE NHA : heavy oil or gas burning

TYPE H : chps, bagasse, coal, mixed burning
and oil palm shell

TYPE HDN : heavy oil or gas burning

TYPE NHD : heavy oil or gas burning

TYPE SHA : heavy oil or gas burning

TYPE HAS : heavy oil or gas burning

Environmental Protection and Equipments :

Desulfurizer for exhaust smoke

Dirt cake Burner

Neutralization Device for alkali waste water

Soot and Dust collector

Waste Material Burner

WORK DIVISION :

Installation and piping of boilers
and related equipments



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