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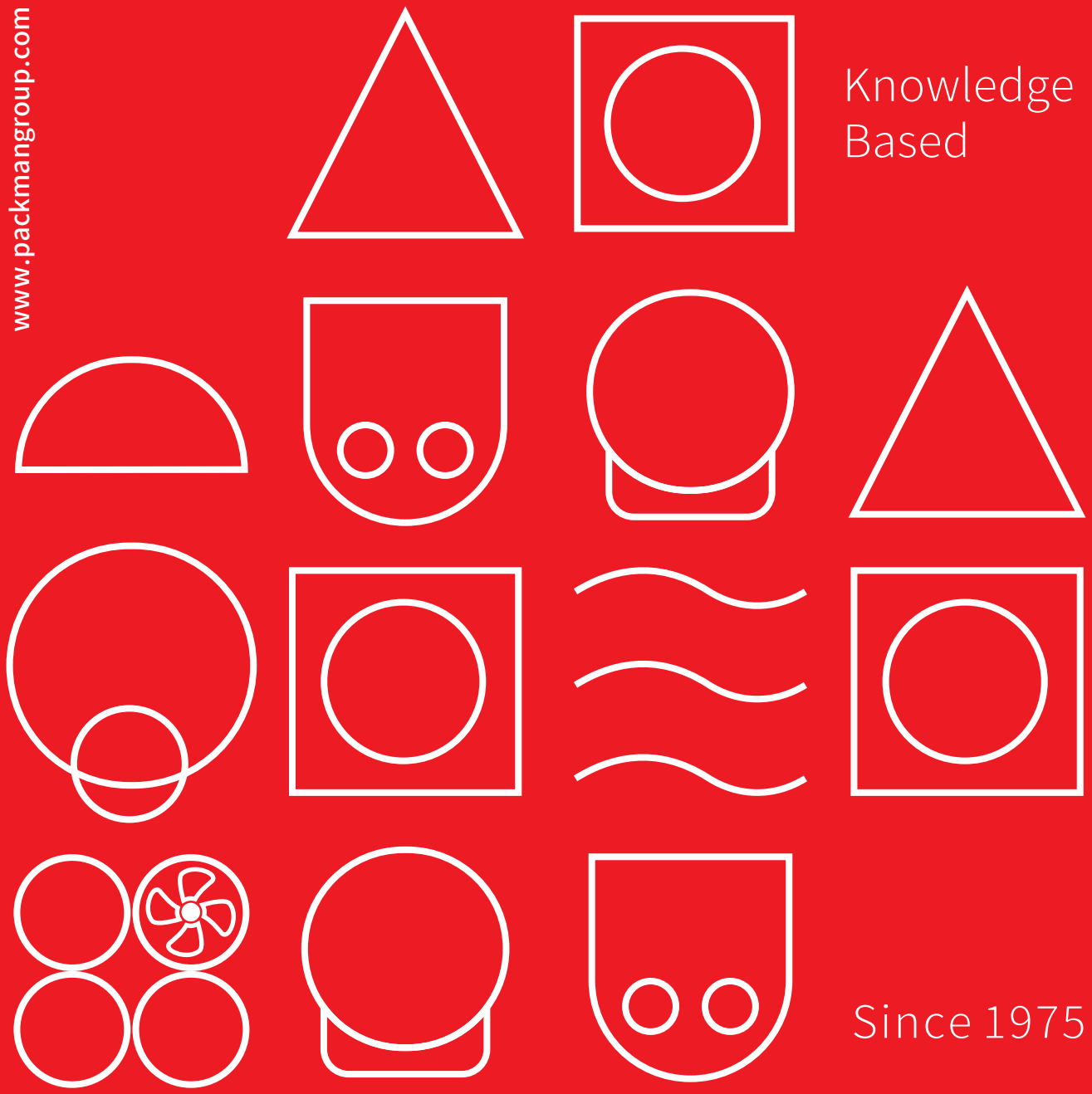
Knowledge Based



Since 1975

PACKMAN
Industrial Group

Horizontal Three Pass Fire-Tube Hot Water Boiler

Horizontal Three Pass Fire_ Tube Hot Water Boiler

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Product Description

Packman's Three Pass Boilers are fabricated in workshops equipped with most modern machines. Materials and workmanship are under a permanent quality control to construct reliable elements and groups.
Reliable to make sure that you can receive a highly efficient performance from your PACKMAN boiler, even after a number of years. Bellow are the advantages of packman's three pass boilers:

- The boilers are adjusted to the plant by heating circuit environment and construction conditions.
- Adaptability of the thermal layout to fuel, medium and operation
- Adjustability of the boiler to the plant with regard to heating,environmental and constructional conditions.
- Selection of dimensions and materials according to thermal stress and charge.
- Designed with the greatest possible elasticity to tolerate thermal stresses.
- Possible higher heating efficiency by cooling the flue gas touched surfaces with water and reducing the radiation heat losses.
- Highly economical operation made possible by optimum controllability.

Three-pass Boiler

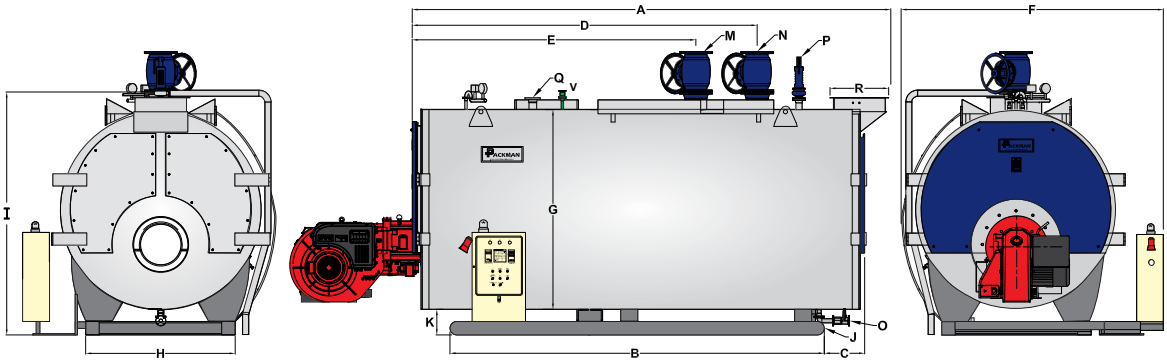
The three pass boiler is robust and economical. The furnace is formed with fire tubes.
flue gases pass through the furnace & are directed to the top smoke tubes where they are cooled down. Most of the large water capacity boilers are made of this type, it's been proven that three pass boilers are the most economical. Because of its structure three pass boiler is compatible with both liquid and gaseous fuels, or even coal and wood combustion.

- Fire tubes: In a three pass boiler the combustion chamber is formed with fire tubes. The chosen diameter guarantees the desired flame. Based on the diameter and working pressure, it is decided to employ either plane fire tubes or spiral ones.
- Boiler supports & skids: For boilers stand on supports. Most of the units are delivered with skids; So there is no need for special foundations or installation processes. Also all necessary accessories for operation, such as oil or gas firing

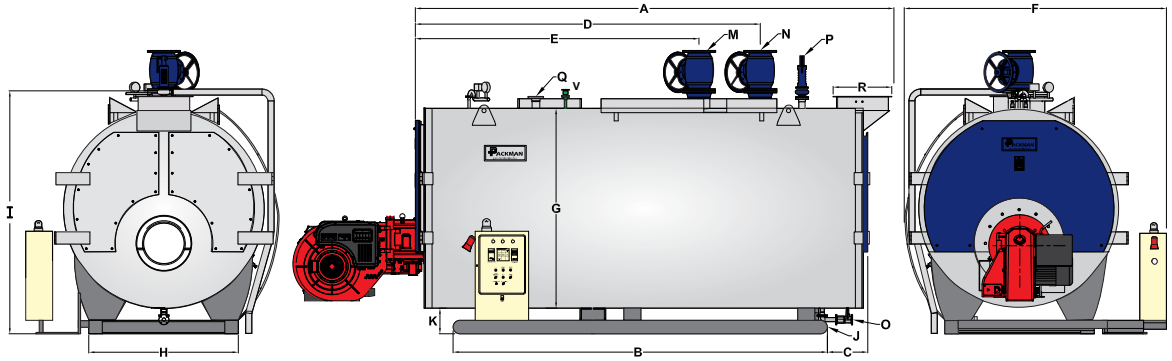
equipment, combustion air fan, oil pre heater, control panel or switchboard and feeding device, can be mounted on a skid.

- Boiler's insulation: The cylindrical part of the boiler contains water,steam and the heating surfaces. From outside, the boiler is covered with a higly effective insulation as well as a cladding of stainless steel sheets (at both sides). All connections and nozzles including, mountings, fittings, control instrument nozzles, service platforms, flue gas reversing chambers and flue gas duct are mounted or contained in the boiler's cylindrical part. man-holes and hand-holes that are provided on the boiler's body as well, allow inspection at the water side and heating surfaces.
- Smoke tubes: The second and third boiler's passes are formed by thick-walled smoke tubes which are welded into the end plates. The tubes are easily accessible and can be cleaned without difficulty. The arrangement of the smoke tubes is according to the required specifications of ascending flue passes in order to prevent the formation of residual-or lingering gases.
- Rear reversing chamber: Packman's three pass fire tube boilers have an interior flue gas reversing chamber, situated in the water space. Here the direction of the flue gases, coming out of the fire tube is changed and they are distributed to the smoke tubes of the second pass. The all over cooling of the reversing chamber in the boiler's water contributes to an optimum heat utilization. The exterior of this reversing chamber is formed of tightly welded tube walls; Which is water cooled (Wet Back) and absolutely gas tight. Access openings allow a flue gas side inspection of the interior and exterior reversing chambers.
- Front reversing chamber: Inside of a tightly welded and insulated chamber made of steel sheets the flue gases pass from the second to the third pass. The reversing chamber is equipped with large doors, allowing free access to the smoke tubes for the purpose of easy maintenance and cleaning. High quality sealing materials guarantee that the doors seal the gas tightly.

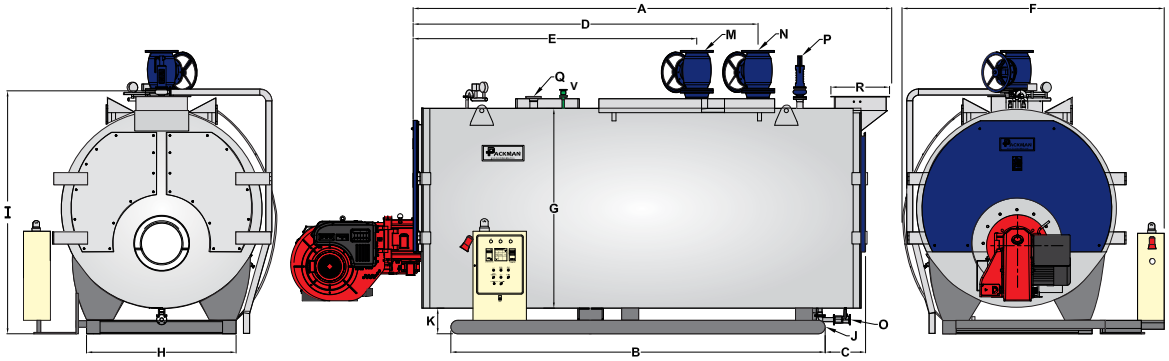
Specific explanations on three-pass boiler with wood or coal fuels and their special constructions can be sent upon request. In addition our engineers and other representatives are always at your service for further information and assistance.



Model	Unit	PHWBN-350	PHWBN-500	PHWBN-700	PHWBN-800	PHWBN-1000	PHWBN-1250
Technical Data							
Thermal Capacity	kw	350	500	700	800	1,000	1,250
Thermal Capacity	kcal/hr	300,000	430,000	620,000	690,000	860,000	1,070,000
Working Pressure	bar	up to 30 bar					
Heating Surface	m^2	16	17	26	27	30	34
Pressure Drop in Combustion Chamber	mbar	2.2	3.5	2.5	3.8	3.9	5.9
Design Standard	_	BS/EN 12953					
Max Gas Consumption @Sea Level	m^3/hr	35	50	70	80	100	125
Max Fuel Oil Consumption @Sea Level	liter/hr	29	42	58	67	83	104
Max Heavy Fuel Oil Consumption @Sea Level	liter/hr	25	36	50	57	71	89
Connectoins Size							
Water Outlet (M)	in	3	4	4	4	4	5
Water Inlet (N)	in	3	4	4	4	4	5
Safety Valve @ 10 bar Working Pressure (P)	in	1	1	1	1	1 1/4	1 1/4
Venting Valve (V)	in	1	1	1	1	1	1
Drain Valve (O)	in	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2
Stack I.D. (R)	in	8	10	12	12	14	14
Boiler Dimensions							
Length (A)	mm	2,750	3,200	3,400	3,500	3,540	3,910
Width (F)	mm	1,800	1,800	1,900	1,900	1,950	1,950
Height (I)	mm	1,850	1,850	1,920	1,920	2,000	2,000
Min Front Clearance	mm	2,400	2,800	3,000	3,150	3,300	3,700
Min Rear Clearance	mm	1,000	1,000	1,000	1,000	1,000	1,000
Min Side Clearance	mm	700	700	900	900	600	600
Min Boiler Room Length	mm	6,500	7,000	7,300	7,500	8,250	9,100
Weight							
Shipping Weight @ 10 bar Working Pressure	kg	2,450	2,700	3,350	3,450	3,700	4,000



Model	Unit	PHWBN-1500	PHWBN-1750	PHWBN-2000	PHWBN-2500	PHWBN-3000	PHWBN-3500
Technical Data							
Thermal Capacity	kw	1,500	1,750	2,000	2,500	3,000	3,500
Thermal Capacity	kcal/hr	1,290,000	1,500,000	1,720,000	2,150,000	2,580,000	3,010,000
Working Pressure	bar	up to 30 bar					
Heating Surface	m^2	44	48	75	82	100	110
Pressure Drop in Combustion Chamber	mbar	4.1	6.1	4.2	6.7	5.1	6.3
Design Standard	_	BS/EN 12953					
Max Gas Consumption @Sea Level	m^3/hr	150	175	200	250	300	350
Max Fuel Oil Consumption @Sea Level	liter/hr	125	146	167	208	250	292
Max Heavy Fuel Oil Consumption @Sea Level	liter/hr	107	125	143	179	214	250
Connectoins Size							
Water Outlet (M)	in	6	6	6	6	8	8
Water Inlet (N)	in	6	6	6	6	8	8
Safety Valve @ 10 bar Working Pressure (P)	in	1 1/4	1 1/2	1 1/2	1 1/2	2	2 1/2
Venting Valve (V)	in	1	1	1	1	1	1
Drain Valve (O)	in	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Stack I.D. (R)	in	16	16	16	16	20	20
Boiler Dimensions							
Length (A)	mm	3,890	4,250	4,700	5,110	5,120	5,420
Width (F)	mm	2,200	2,200	2,400	2,400	2,800	2,800
Height (I)	mm	2,180	2,180	2,350	2,350	2,550	2,550
Min Front Clearance	mm	3,600	4,000	3,900	4,300	4,200	4,500
Min Rear Clearance	mm	1,000	1,000	1,000	1,000	1,100	1,100
Min Side Clearance	mm	600	600	600	600	900	900
Min Boiler Room Length	mm	8,950	9,750	9,550	10,500	10,500	11,000
Weight							
Shipping Weight @ 10 bar Working Pressure	kg	5,000	5,250	7,390	7,890	9,260	9,570



Model	Unit	PHWBN-4000	PHWBN-5000	PHWBN-6000	PHWBN-7000	PHWBN-8000	PHWBN-9000	PHWBN-10000
Technical Data								
Thermal Capacity	kw	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Thermal Capacity	kcal/hr	3,440,000	4,300,000	5,160,000	6,020,000	6,880,000	7,740,000	8,600,000
Working Pressure	bar	up to 30 bar						
Heating Surface	m^2	130	150	183	220	260	290	330
Pressure Drop in Combustion Chamber	mbar	5.9	6.5	6.8	7.5	7.8	8.1	8.5
Design Standard	_	BS/EN 12953						
Max Gas Consumption @Sea Level	m^3/hr	400	500	600	700	800	900	1,000
Max Fuel Oil Consumption @Sea Level	liter/hr	333	417	500	583	667	750	833
Max Heavy Fuel Oil Consumption @Sea Level	liter/hr	286	357	429	500	571	643	714
Connectoins Size								
Water Outlet (M)	in	10	10	10	10	10	10	12
Water Inlet (N)	in	10	10	10	10	10	10	12
Safety Valve @ 10 bar Working Pressure (P)	in	3	3	3	3	3	3	3
Venting Valve (V)	in	1	1	1	1	1	1	1
Drain Valve (O)	in	2	2	2	2	2	2	2
Stack I.D. (R)	in	20	24	24	24	24	30	30
Boiler Dimensions								
Length (A)	mm	5,450	5,620	5,960	6,160	6,670	6,540	7,000
Width (F)	mm	3,000	3,200	3,400	3,600	3,700	3,800	3,900
Height (I)	mm	2,700	2,850	3,070	3,200	3,400	3,570	3,780
Min Front Clearance	mm	4,500	4,560	4,900	5,100	5,200	5,300	5,800
Min Rear Clearance	mm	1,200	1,300	1,400	1,500	1,500	1,600	1,800
Min Side Clearance	mm	1,200	1,200	1,200	1,200	1,200	1,500	1,500
Min Boiler Room Length	mm	11,100	11,400	12,200	12,700	13,100	13,550	14,600
Weight								
Shipping Weight @ 10 bar Working Pressure	kg	11,140	12,430	16,020	18,400	22,000	23,670	29,500

PACKMAN GROUP
History

The Packman Company was founded in February 1975, and was soon afterwards registered in companies Registration Office. In early years the Packman construction and service branch focused on building installations. Different mega power plants were built by cooperating with Brown Boveri and Asseck companies in 1976.

The company started its official activities in construction of High-Pressure Vessels such as Hot-Water Boilers, Steam Boilers , Storage Tanks, Softeners and Heat Exchangers from 1984.

Packman Company is one of the first companies which supplied the high quality and standard hot water boilers to the customers.

Packman has exported its products to countries such as Uzbekistan, United Arab Emirates and other countries in the Middle East. It is one of the largest producers of hot-water and steam boilers in the Middle East.

Now we are proud to announce that the Packman industrial group has five major sub-brands that have product titles in all field of HVAC equipment and engineering services, and we do not know this success except with the help and support of our customers.

1. Construction Services Industry Association
2. Industry Association
3. Construction Companies' Syndicate
4. Technical Department Association
5. Mechanical Engineering Association
6. Engineering Standard Association

Departements:

Sales Deps:
- ∩ Power Plant & Petrochemical
- ∩ Industrial
- ∩ Hospitally Service
- ∩ Commercial & Residential
- ∩ Sport Complex & Pool

Technical Deps:
- ≡ Manufacturing R&D
- ≡ Innovation Center
- ≡ EPC Execute Unit
- ≡ Product Develop Unit
- ≡ Sales Engineering Dep.

Others:
- ≈ After Sales Service
- ≈ Project Control
- ≈ Financial Office
- ≈ Commercial Office
- ≈ Marketing Department

PACKMAN GROUP
Brands

PACKMAN
Industrial Group

Designer&manufacturer of Condensing, Hot Water, Steam, Hot Oil& Waste Heat Boilers, Heat Exchangers, Autoclave Pressure&Storage Vessels&etc

GREENMAN
Green mindset, green future

Engineering& Designing Commercial Greenhouse Plant, CO2 Dosing System, Flue gas Condenser& Special HVAC Systems, Sustainable Agriculture &etc

ROMAN
Water solution

Designer&manufacturer Reverse Osmosis Plant& Package, Water Treatment, Softener& Filters and Chemical Dosing Systems&etc

RAADMAN
a look to the future

Designer&manufacturer of Industrial Mono&Dual Block Gas, LPG, Light& Heavy Oil Burners, Premixed&Postmixed Burners, Watertube burners, Process burners, Special application burners&Combustion Solutions&etc

CHILLMAN
Coolest hvac around

Designer&manufacturer of Air&Water Cooled Chillers, Air Handling Units, Fancoil, HVAC Equipment, Cold Storage Room&etc


1. Isfahan Factory


2. Vilashahr Factory


3. Parand Factory


4. Parand (2) Factory


5. Bonyad Factory

SOME OF

Certificates are














Knowledge Based

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