Marshall ‘B’ Boiler
High Efficiency Oil and Gas Fired Packaged Boilers
Marshall ‘B’ Boiler

Over 2000 Forbes Marshall 3-pass wetback boilers are generating steam in plants all over India, the Gulf, Africa and South-east Asia. These boilers provide the driest steam possible from the least amount of fuel and floor space. The true 3-pass fully wetback design ensures low flue exit temperatures resulting in high thermal efficiency.

Our boilers are designed for easy maintenance and inspection. Hinge mounted front doors and rear lift-off doors give you clear and instant access. Every Marshall B boiler is manufactured with the latest submerged arc fabrication technology to ISO 9001, IBR standards. Every boiler is a complete packaged unit, compact and occupies minimum floor space.

Direct and Indirect Benefits

Marshall B boilers are truly packaged boilers with plug and play concept and involve no site work.

Workmanship

Manufacturing and construction activity carried out at the factory is much better in quality as compared to it being done on-site by contractors.

Time and Effort

The packaged boiler helps save time and the effort of finding the right contractor, supervising the activity, testing and ensuring correct finish for the package.

<table>
<thead>
<tr>
<th>Scope</th>
<th>Forbes Marshall (cost in Rs.)</th>
<th>Others (cost in Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>-</td>
<td>0.50 L</td>
</tr>
<tr>
<td>Electrical works</td>
<td>-</td>
<td>0.75 L</td>
</tr>
<tr>
<td>Civil work</td>
<td>-</td>
<td>0.55 L</td>
</tr>
<tr>
<td>Value added products</td>
<td>-</td>
<td>0.65 L</td>
</tr>
<tr>
<td>Labour charges</td>
<td>-</td>
<td>0.50 L</td>
</tr>
<tr>
<td>Total cost</td>
<td>Nil</td>
<td>2.95 L</td>
</tr>
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</table>

Co-ordination Required

<table>
<thead>
<tr>
<th>Activities</th>
<th>Forbes Marshall</th>
<th>Others</th>
</tr>
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<tbody>
<tr>
<td>Boiler manufacturer</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Civil contractor</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Mechanical contractor</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Superior mountings and accessories</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Insulation / cladding contractor</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Electrical supplier</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Electrical contractor</td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Salient Features

Truly Packaged
- Pre-wired
- Skid mounted
- Pre-insulated

Compact design
- Less floor space required
- Helps keep radiation losses lower
- No requirement of heavy civil foundation

Specially developed pressure jet monobloc burner
- Takes care of practical aspects of maintenance
- The only company in India offering monobloc design, a preferred burner world wide

Boiler and burner – same design source
- Design source for boiler and burner are the same
- Optimum flame configuration hence enhanced furnace life
- Highest turndown in its range

Easy access to working parts
- Ease of inspection and maintenance

Mountings and accessories
- All mountings and accessories comply to highest quality standards
- Feedwater pumps from WILO
- Forbes Marshall spring loaded disc check valves
- All steam line and water line valves are piston valves
- Boiler provided with full platform for ease of maintenance

Efficiency monitoring system (optional)
- Boilers can be equipped with online efficiency monitoring system for continuous monitoring of boiler efficiency
- Boiler blowdown control systems
### Comparison of Marshall B with a Conventional Boiler

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Description</th>
<th>Standard Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Forbes Marshall</strong></td>
</tr>
<tr>
<td>1</td>
<td>Boiler efficiency</td>
<td>89% (No tolerance)</td>
</tr>
<tr>
<td>2</td>
<td>Burner turndown</td>
<td>1:3 to 1:4</td>
</tr>
<tr>
<td>3</td>
<td>Type of burner</td>
<td>Monobloc</td>
</tr>
<tr>
<td>4</td>
<td>Insulation for boiler</td>
<td>Included</td>
</tr>
<tr>
<td>5</td>
<td>Cladding for boiler</td>
<td>Included</td>
</tr>
<tr>
<td>6</td>
<td>Control cabling from control panel to boiler mounted instruments</td>
<td>Included</td>
</tr>
<tr>
<td>7</td>
<td>Power cabling from control panel to all drive motors</td>
<td>Included</td>
</tr>
<tr>
<td>8</td>
<td>Cable trays for Power cabling</td>
<td>Included</td>
</tr>
<tr>
<td>9</td>
<td>Structural supports for cable trays</td>
<td>Included</td>
</tr>
<tr>
<td>10</td>
<td>Skid for boiler</td>
<td>Included</td>
</tr>
<tr>
<td>11</td>
<td>Type of foundation required</td>
<td>Platform in PCC for skid</td>
</tr>
<tr>
<td>12</td>
<td>Foundation for feedwater pumps and oil pre-heating system</td>
<td>Not required</td>
</tr>
<tr>
<td>13</td>
<td>Type of valves on steam and water lines</td>
<td>Piston valves</td>
</tr>
<tr>
<td>14</td>
<td>Mobrey level controller</td>
<td>2 nos.</td>
</tr>
<tr>
<td>15</td>
<td>Number of feedwater lines and spring loaded disc check valves</td>
<td>2 nos.</td>
</tr>
<tr>
<td>16</td>
<td>Energy conservation and efficiency monitoring systems</td>
<td>EffiMax and Boiler blowdown control system</td>
</tr>
</tbody>
</table>

### Manufacturing facility

Modern manufacturing facility at Chakan for quality manufacturing of global standards

### Service

Forbes Marshall provides services directly to customers through a wide service network spread over Asia and Africa. A robust complaint tracking system has ensured quick turnaround for closure.

### One-stop steam shop

Forbes Marshall is in a position to offer complete steam systems including optimal solutions based on specialized knowledge and latest technology.

### Many firsts

Forbes Marshall has many firsts to its credit including a 3-pass wet back design in India, concentric furnace design, modular boiler house, piston valves, electronic compound regulation for burners besides others.
<table>
<thead>
<tr>
<th>Boiler Range (F&amp;A 100°C)</th>
<th>Kg/hr</th>
<th>1120</th>
<th>1500</th>
<th>2000</th>
<th>2500</th>
<th>3000</th>
<th>3500</th>
<th>4500</th>
<th>5000</th>
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<tbody>
<tr>
<td>Evaporation kW</td>
<td></td>
<td>703</td>
<td>942</td>
<td>1256</td>
<td>1570</td>
<td>1758</td>
<td>1884</td>
<td>2198</td>
<td>2826</td>
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<tr>
<td>Fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Overall length mm</td>
<td></td>
<td>3605</td>
<td>3750</td>
<td>4250</td>
<td>4190</td>
<td>4190</td>
<td>4875</td>
<td>5065</td>
<td>5300</td>
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<tr>
<td>Overall width mm</td>
<td></td>
<td>2455</td>
<td>2630</td>
<td>2630</td>
<td>3055</td>
<td>3055</td>
<td>3255</td>
<td>3375</td>
<td>3375</td>
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<tr>
<td>Overall height mm</td>
<td></td>
<td>2230</td>
<td>2450</td>
<td>2450</td>
<td>3055</td>
<td>3055</td>
<td>3055</td>
<td>3105</td>
<td>3190</td>
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<tr>
<td>Space for tube removal D mm</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
<td>2500</td>
<td>2500</td>
<td>2500</td>
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<td>2800</td>
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<tr>
<td>Boiler house length mm</td>
<td></td>
<td>6160</td>
<td>6765</td>
<td>7265</td>
<td>6935</td>
<td>6935</td>
<td>7925</td>
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<td>Boiler house width mm</td>
<td></td>
<td>5455</td>
<td>5630</td>
<td>5630</td>
<td>6055</td>
<td>6055</td>
<td>6255</td>
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<tr>
<td>Boiler house height mm</td>
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<td>4920</td>
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<td>5500</td>
<td>5500</td>
<td>5500</td>
<td>5550</td>
<td>5600</td>
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<tr>
<td>Weight boiler full* Kgs</td>
<td></td>
<td>6400</td>
<td>6800</td>
<td>9600</td>
<td>13300</td>
<td>13300</td>
<td>16000</td>
<td>17800</td>
<td>19800</td>
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<tr>
<td>Weight boiler water upto NWL* Kgs</td>
<td>5910</td>
<td>6200</td>
<td>8800</td>
<td>12000</td>
<td>12000</td>
<td>14700</td>
<td>16200</td>
<td>18000</td>
<td>23800</td>
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<tr>
<td>Safety valve (inlet / outlet)* mm</td>
<td>25 / 50</td>
<td>25 / 50</td>
<td>25 / 50</td>
<td>40 / 50</td>
<td>40 / 50</td>
<td>40 / 65</td>
<td>40 / 80</td>
<td>50 / 80</td>
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<td>Main steam stop valve DN</td>
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<td>50</td>
<td>50</td>
<td>80</td>
<td>80</td>
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<td>100</td>
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<tr>
<td>Blow down valve DN</td>
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<td>25</td>
<td>25</td>
<td>25</td>
<td>40</td>
<td>40</td>
<td>40</td>
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<tr>
<td>Water level gauge DN</td>
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<td>Nos.</td>
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<td>2</td>
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<tr>
<td>Spring loaded disc check valve DN</td>
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<td>25</td>
<td>25</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
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<tr>
<td>Quantity</td>
<td>Nos.</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>PB inspector test gauge mm</td>
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<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Pressure gauge dial mm</td>
<td></td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Pressure gauge range kg/cm² (g)</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
<td>0 - 40</td>
</tr>
<tr>
<td>Chimney diameter mm</td>
<td></td>
<td>230</td>
<td>305</td>
<td>305</td>
<td>355</td>
<td>355</td>
<td>380</td>
<td>400</td>
<td>455</td>
</tr>
<tr>
<td>Feedwater pump Type / make</td>
<td>Vertical multi-stage stainless steel centrifugal pump / WILO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Flow LPH</td>
<td></td>
<td>1400</td>
<td>1875</td>
<td>2500</td>
<td>3125</td>
<td>3500</td>
<td>3750</td>
<td>4375</td>
<td>5625</td>
</tr>
<tr>
<td>Quantity Nos.</td>
<td></td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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</tbody>
</table>

* Details of boiler with design pressure for 10.5 kg/cm² (g)
The above data is indicative and may be subject to change
### Garment Industry
- Ambattur Clothing
- Baraka Garments
- Bogani Industries Ltd
- Brandix
- Celebrity
- Ceylon Knitwear
- Color Plus
- Cottonline S.A, Antsirabe
- Gil Garments
- Jay Jay Mills
- Martin Empress
- MRC Textiles
- Orient Kraft
- Pearl Style
- Phoenix Fashions
- Regency Garments
- Richa Global
- Shahi Exports
- Silver Crest Clothing
- Uganda Hessian Bags
- Zodiac Clothing

### Pharmaceutical Industry
- Abbott Healthcare
- Apex Pharma
- Beta Healthcare
- Biocon Ltd
- Bioken Ltd
- Cadila Ethiopia
- Cadila Healthcare
- Cipla Ltd
- Dr. Reddy's Laboratories
- Emcure Pharma
- Glenmark Pharma
- Herbal Pharma
- IPCA Laboratories
- Jubilant Organosys
- Lupin Laboratories
- Oman Pharmaceuticals
- Pfizer Pharmaceuticals
- Pharmed Healthcare
- Ranbaxy Ltd
- Sun Pharmaceuticals
- Wockhardt Limited

### Food and Beverages
- Brindavan Beverages
- Candy Confectionery
- Coastal Bottlers
- Confec Industries
- Darbur Ltd
- Gentec Energy
- Goa Bottling
- Haldiram Foods
- Himalaya Dairy
- Himalayan Bamboo
- Hindustan Coca Cola
- ITC Foods
- Mars
- McCain Foods
- Mondal Agro
- Mondelez India
- Pepsi/Co India Holdings
- Sentrim Ltd.
- Uttara Foods
- Varun Beverages
- Varun Beverages

### Hospitality Industry
- Westin Hotels
- Taj Mansingh
- Intercontinental Hotels
- Sahara Hospital
- KLES Hospital
- Infosys Technologies
- Ruby Hall Clinic
- Claridges Hotel
- Taj Coromandel
- Taj Krishna
- Marriott
- Trident Oberoi
- Hyatt
- Leela
- ITC Windsor Manor
- St. John Hospital
- Soaltee Hotels
- Red Court Hotel
- Nazareth Hospital
- Adama General Hospital
- Aitken Spence Hotels

### Other Industries
- Afroticity Tobacco
- Hero Honda
- Hikal India
- Hindustan Unilever
- ICI India
- Indian Oil Co., Lanka
- Insteel Co.
- ITC Ltd
- Jindal Steel
- Kohler Faucets
- Mabati Rolling Mills
- Naturlle LLC
- Nuplus LLC
- PHP Steel
- R. A. K. Ceramics
- Saint Gobain Glass
- Sun Pharmaceuticals
- Tata Bluescope Steel

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**Forbes Marshall Steam Systems**

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