



# High Efficiency Boilers



## HF/HW

Scotch Box Series Boilers

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## Scotch Box Series Boilers

15 to 200 HP Packaged Boilers  
15 psi Steam or 80 psi Hot Water

3-pass firetube boiler operates at high efficiencies due to effective heat transfer across all heating surfaces. Submerged combustion chamber improves water circulation and adds to direct heating surface.

Compact design fits through a 36" doorway and occupies a small footprint per boiler horsepower. Front and rear water legs eliminate the need for side connections.

Built, inspected, and stamped in accordance with Section IV of the ASME code. Tubes are rolled and flared to facilitate maintenance\*.

U-Type Flex Joint design minimizes the destructive effects of differential stress as furnace expands at a greater rate than tubes during firing.

Structural steel skid with slots for forklift handling.

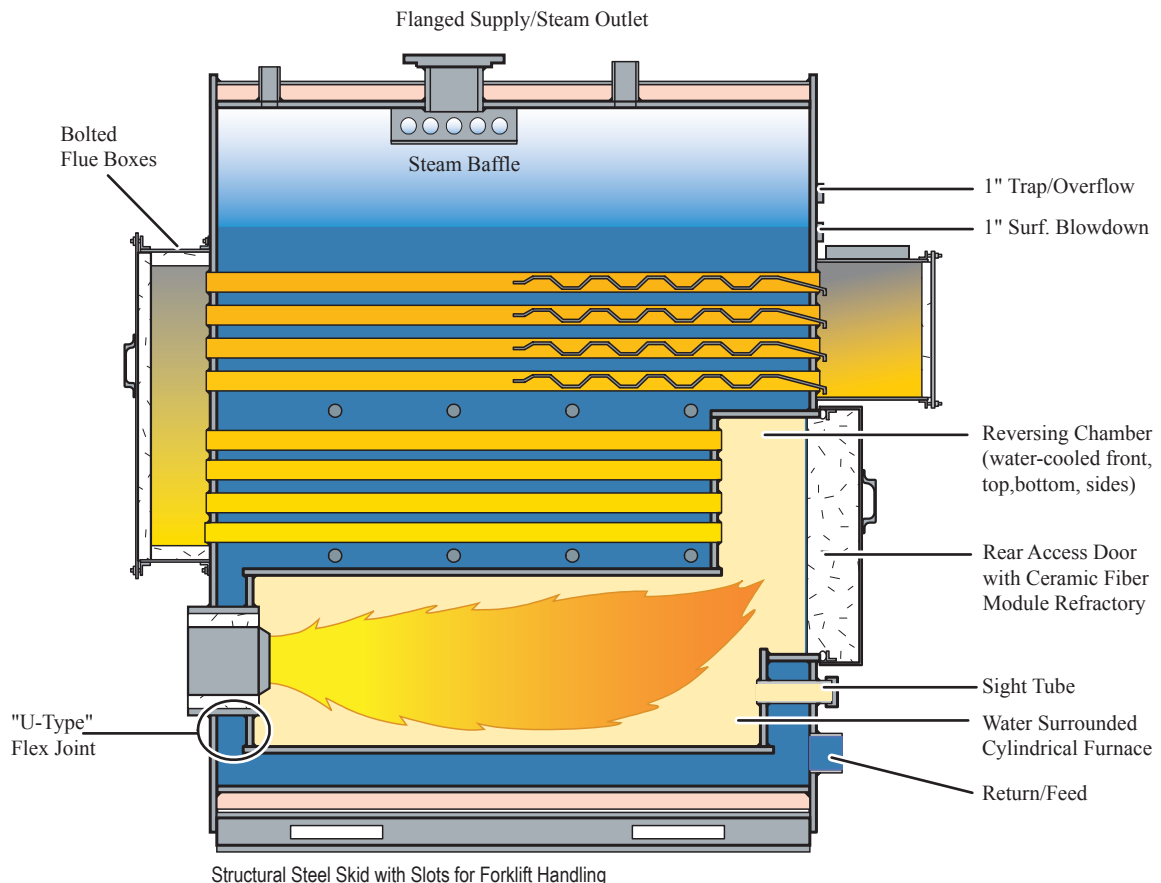
Custom fabricated bent steel turbulators insure positive furnace pressure necessary for highest non-condensing combustion efficiencies.

Smokeboxes are easily removed for transporting boilers through existing elevators and stairwells. Bolted and gasketed construction provides convenient access to tubesheets for inspection, cleaning, and tube maintenance.

All flue gas reversing chamber surfaces except for rear access door are water-cooled, insuring maximum heat transfer efficiency and minimal thermal shock. Removable rear door provides easy access to furnace interior.

\* Welded tubes available upon request.

### Schematic Cutaway: Series HF Boiler



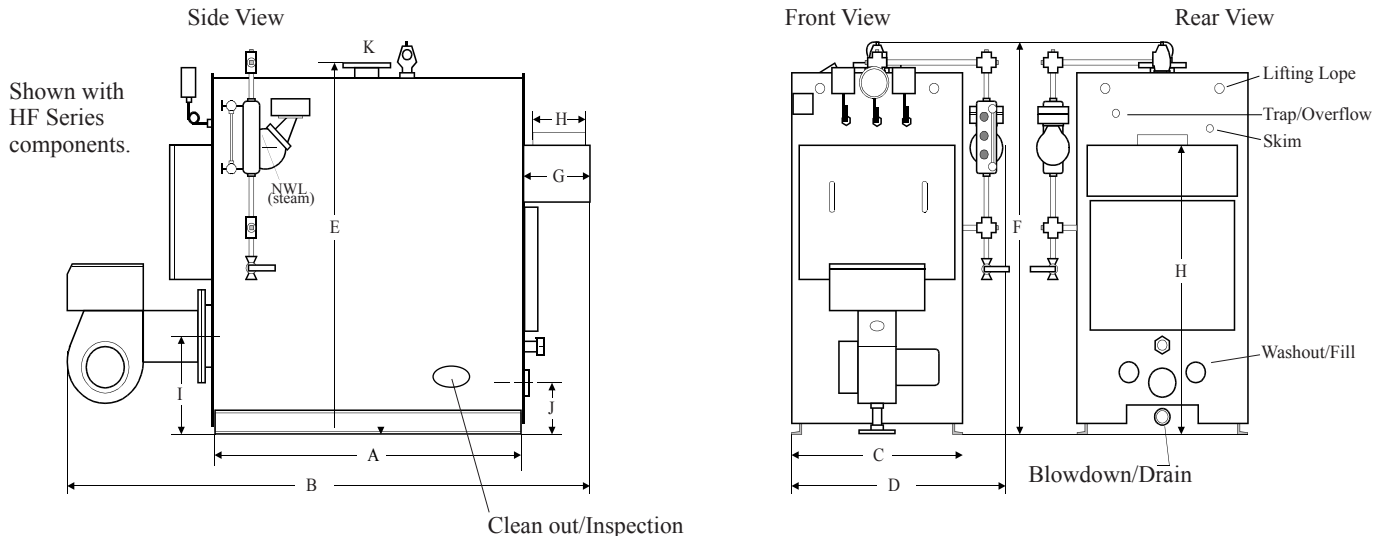
# L.E.S. Series HF/HW "Scotch Box" Boilers

3-Pass Firetube • 15# Steam / 30# Water • 83% Efficiency • 4 sq.ft. Fireside Heating Surface per BHP

## Ratings / Data / Dimensions

| Model                          | 15    | 20    | 25    | 30    | 40    | 50     | 60     | 70     | 80     | 90     | 105    | 120    | 130    | 140    | 150    | 175    | 200    |  |
|--------------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| <b>Input</b>                   |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |  |
| Gas (Cubic ft/hr)              | 600   | 800   | 1000  | 1200  | 1610  | 2010   | 2410   | 2820   | 3220   | 3620   | 4240   | 4865   | 5243   | 5646   | 6050   | 7038   | 8044   |  |
| Oil (Gallons/hr)               | 4.3   | 5.7   | 7.1   | 8.6   | 11.5  | 14.4   | 17.2   | 20.1   | 23.0   | 25.9   | 30.3   | 34.8   | 37.5   | 40.3   | 43.2   | 50.3   | 57.6   |  |
| <b>Output</b>                  |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |  |
| MBH                            | 500   | 670   | 835   | 1000  | 1340  | 1675   | 2010   | 2345   | 2680   | 3015   | 3520   | 4040   | 4352   | 4687   | 5021   | 5863   | 6700   |  |
| Boiler Horsepower              | 15    | 20    | 25    | 30    | 40    | 50     | 60     | 70     | 80     | 90     | 105    | 120    | 130    | 140    | 150    | 175    | 200    |  |
| Gas Burner Motor HP            | .25   | .33   | .33   | .33   | .5    | .75    | 1.0    | 1.0    | 2.0    | 3.0    | 3.0    | 5.0    | 5.0    | 5.0    | 5.0    | 7.5    | 7.5    |  |
| Oil Burner Motor HP            | .33   | .33   | .5    | .5    | .75   | 1.0    | 1.5    | 1.5    | 2.0    | 3.0    | 5.0    | 5.0    | 5.0    | 5.0    | 5.0    | 1.0    | 1.0    |  |
| <b>SQ. FT. Heating Surface</b> |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |  |
| Primary                        | 16.7  | 20.8  | 20.8  | 24.7  | 28.7  | 35.6   | 40.4   | 46.6   | 46.5   | 51.9   | 57.3   | 57.3   | 70.2   | 77.4   | 77.3   | 99.2   | 113.4  |  |
| Total Fireside                 | 62    | 86    | 102   | 125   | 163   | 200    | 242    | 286    | 325    | 359    | 424    | 424*   | 518    | 563    | 583    | 743    | 873    |  |
| Total Waterside                | 68    | 94    | 111   | 137   | 180   | 221    | 267    | 316    | 360    | 397    | 470    | 470    | 574    | 624    | 646    | 816    | 961    |  |
| <b>Boiler Data</b>             |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |  |
| Furnace Vol. (CU.FT.)          | 4.5   | 6.1   | 6.1   | 7.7   | 9.3   | 13.6   | 15.8   | 20.3   | 20.3   | 23.2   | 26.0   | 26.0   | 38.5   | 43.4   | 43.4   | 56.0   | 66.3   |  |
| Water Cap. (Gal; NWL)          | 89    | 116   | 111   | 138   | 160   | 206    | 237    | 282    | 270    | 312    | 344    | 344    | 392    | 445    | 439    | 590    | 694    |  |
| Water Cap. (Gal; Full)         | 112   | 146   | 141   | 176   | 206   | 275    | 318    | 363    | 350    | 404    | 447    | 447    | 536    | 608    | 602    | 756    | 889    |  |
| Dry Weight (LBS)               | 1350  | 1650  | 1725  | 2075  | 2435  | 3000   | 3450   | 3925   | 4075   | 4500   | 4975   | 4975   | 6500   | 7000   | 7000   | 8250   | 9550   |  |
| <b>Dimensions in Inches</b>    |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |  |
| A: Skid Length                 | 29    | 39    | 39    | 49    | 59    | 59     | 68     | 68     | 68     | 78     | 88     | 88     | 78     | 88     | 88     | 112    | 131    |  |
| B: Overall Length              | 64    | 76    | 76    | 86    | 96    | 112    | 121    | 123    | 128    | 138    | 154    | 154    | 146    | 156    | 156    | 137    | 156    |  |
| C: Width                       | 28    | 28    | 28    | 28    | 28    | 34     | 34     | 34     | 34     | 34     | 34     | 34     | 42     | 42     | 42     | 42     | 42     |  |
| D: Trimmed Width (Std)         | 40    | 40    | 40    | 40    | 40    | 46     | 46     | 46     | 46     | 46     | 46     | 46     | 54     | 54     | 54     | 54     | 54     |  |
| E: Height                      | 64    | 64    | 64    | 64    | 64    | 72     | 72     | 78     | 78     | 78     | 78     | 78     | 90     | 90     | 90     | 90     | 90     |  |
| F: Trimmed Height              | 72    | 72    | 72    | 72    | 72    | 79     | 79     | 86     | 86     | 86     | 86     | 86     | 100    | 100    | 100    | 98     | 98     |  |
| G: Rear Smokebox Depth         | 10    | 12    | 12    | 12    | 12    | 14     | 14     | 16     | 16     | 16     | 16     | 16     | 18     | 18     | 18     | 18     | 16     |  |
| H: Flue Connection Size        | 6     | 8     | 8     | 8     | 8     | 10     | 10     | 12     | 12     | 12     | 12     | 12     | 14     | 14     | 14     | 14     | 14     |  |
| Flue Connection Height         | 50    | 50    | 50    | 50    | 50    | 54     | 54     | 61     | 61     | 61     | 61     | 61     | 72 1/4 | 72 1/4 | 72 1/4 | 73     | 73     |  |
| I: Burner Port Height          | 18    | 18    | 18    | 18    | 18    | 20     | 20     | 20     | 20     | 20     | 20     | 20     | 24     | 24     | 24     | 24     | 24     |  |
| Burner Port ID                 | 9 1/4 | 9 1/4 | 9 1/4 | 9 1/4 | 9 1/4 | 12 1/4 | 12 1/4 | 14 1/4 | 14 1/4 | 14 1/4 | 14 1/4 | 14 1/2 | 14 3/4 | 14 3/4 | 14 3/4 | 14 7/8 | 14 7/8 |  |
| J: Return Size (NPT)           | 2     | 2     | 2     | 3     | 3     | 4      | 4      | 4      | 4      | 4      | 4      | 4      | 4      | 4      | 4      | 4      | 4      |  |
| Return Height                  | 8 1/2 | 8 1/2 | 8 1/2 | 8 1/2 | 8 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | 10 1/4 | 10 1/4 | 10 1/4 | 10 3/4 | 10 3/4 |  |
| K: Outlet Size                 | 3     | 3     | 3     | 4     | 4     | 6      | 6      | 6      | 6      | 6      | 8      | 8      | 8      | 8      | 8      | 8      | 8      |  |
| Height                         | 64    | 64    | 64    | 64    | 64    | 72     | 72     | 78     | 78     | 78     | 78     | 78     | 90     | 90     | 90     | 90     | 90     |  |

\* 3 1/2 Sq. Ft. Fireside heating surface per BHP



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