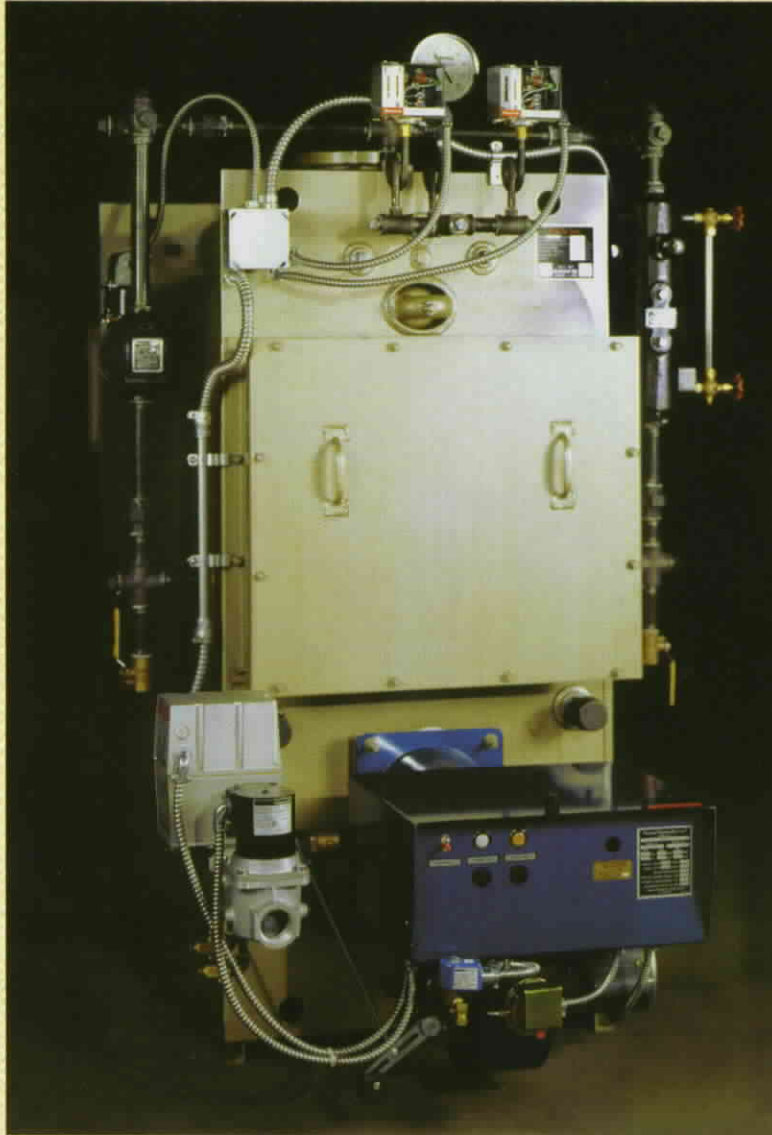


L.E.S. "Scotch Box" Boilers



Applications

*15 psi Steam or 30 psi Hot Water
30, 40, or 80 psi Hot Water*

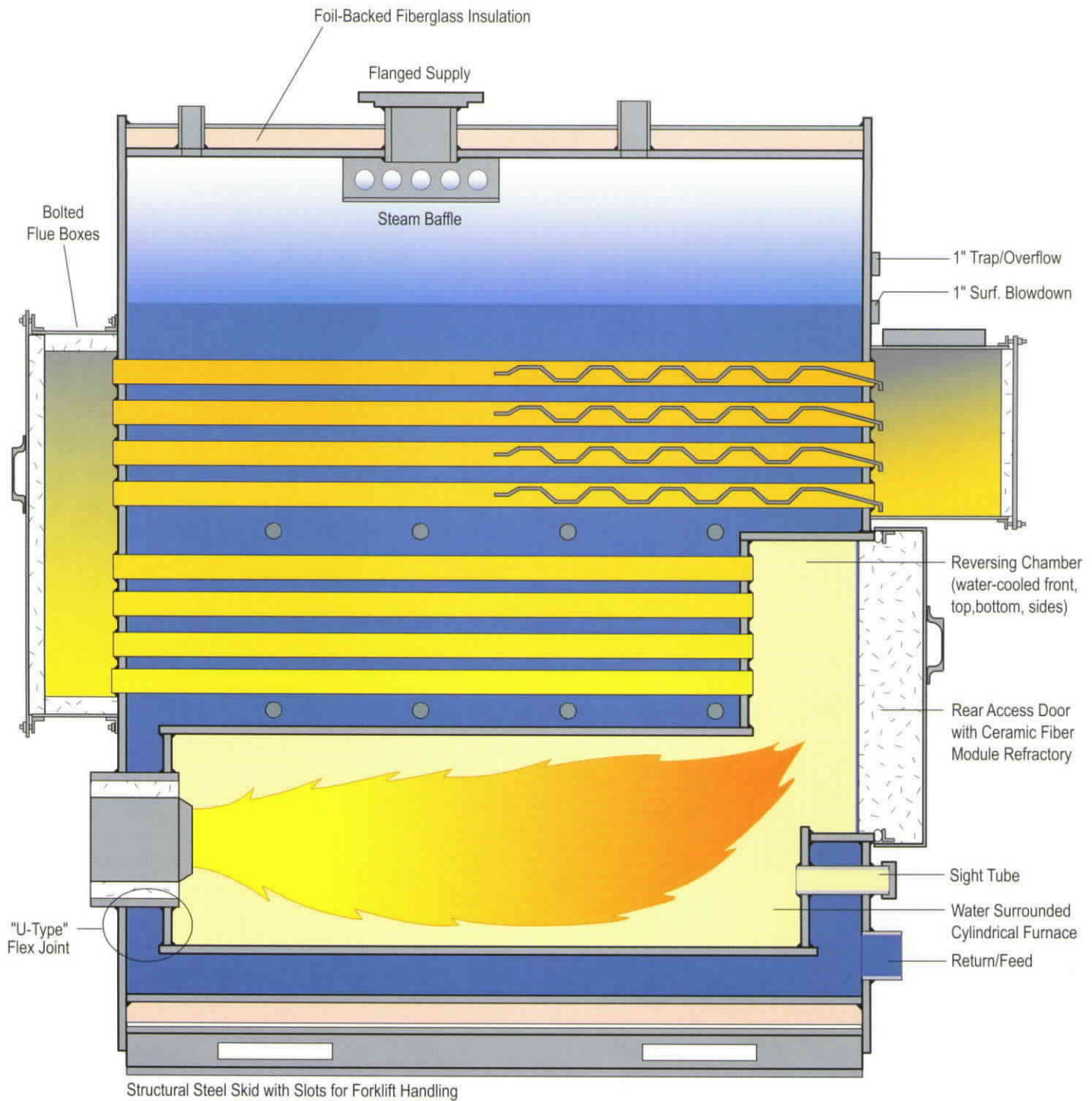
Outputs

*480 to 4000 MBH Packaged Boilers
Modular Heating Plants for Any Capacity*

Fuels

Natural or Propane Gas; #2 Oil; Combination

Schematic Cutaway: Series HF Boiler



Typical Series HF 50 BHP+ with Maximum Rear Waterleg and Modular Folded Ceramic Blanket Refractory
Series HW Mainshell Modified (steam space removed) for Quick Response with Minimum Height and Heat Loss

Series HF and HW Features

1. "Scotch Box" Design:

The best features of Scotch Marine and Firebox boiler design are combined to produce a compact and durable wetback boiler. Models up to 45 boiler horsepower fit through standard 30" doorways. All models fit through 36" doorways. Waterlegs front and rear eliminate need for side connections and walkways. Boilers can be set within 8" of adjacent boilers or walls.

2. Welded Construction:

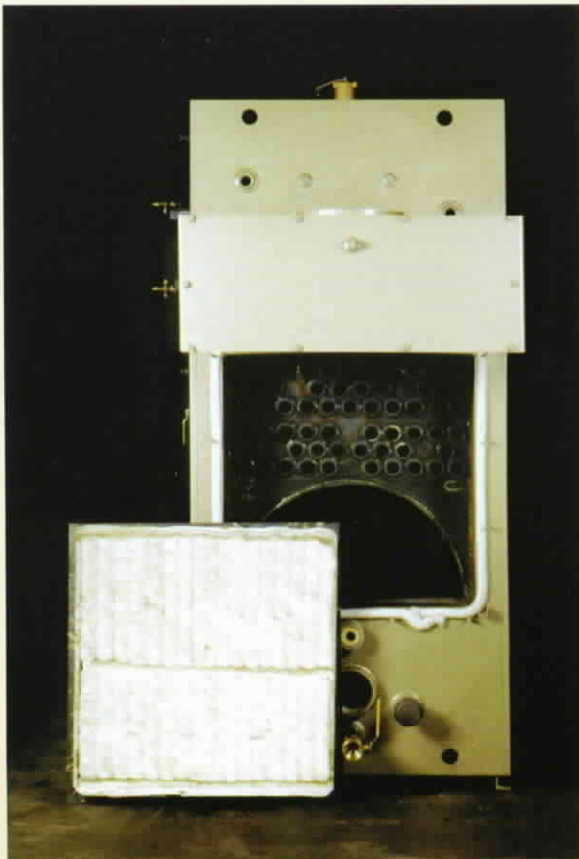
L.E.S. boilers are built, inspected, and stamped in accordance with Section IV of the ASME code. 100% welded construction eliminates nuisance tube leaks and repairs.

3. U-Type Flex Joint:

Reduced burner port design minimizes the destructive effects of differential stress as furnace expands at a greater rate than tubes during firing. Distributing expansion force among multiple perpendicular surfaces reduces potential for tubesheet damage. Boilers are warranted for 5 years against thermally induced stress cycling failures (commonly referred to as "thermal shock").

4. Structural Steel Skid:

Channel base with slots for forklift handling simplifies rigging. Full length skid allows rolling boilers into place on steel pipes. Lifting holes are standard on all models.



5. Custom-fabricated Turbulators:

Bent steel turbulators insure positive furnace pressure necessary for highest non-condensing combustion efficiencies (83%+).

6. Removable Smokeboxes:

Bolted and gasketed smokeboxes and covers provide convenient access to tubesheets for inspection and cleaning. Tube removal and replacement is practical from front or rear. Smokeboxes are easily removed for transporting boilers through existing elevators and stairwells.

7. Reversing Chamber Design:

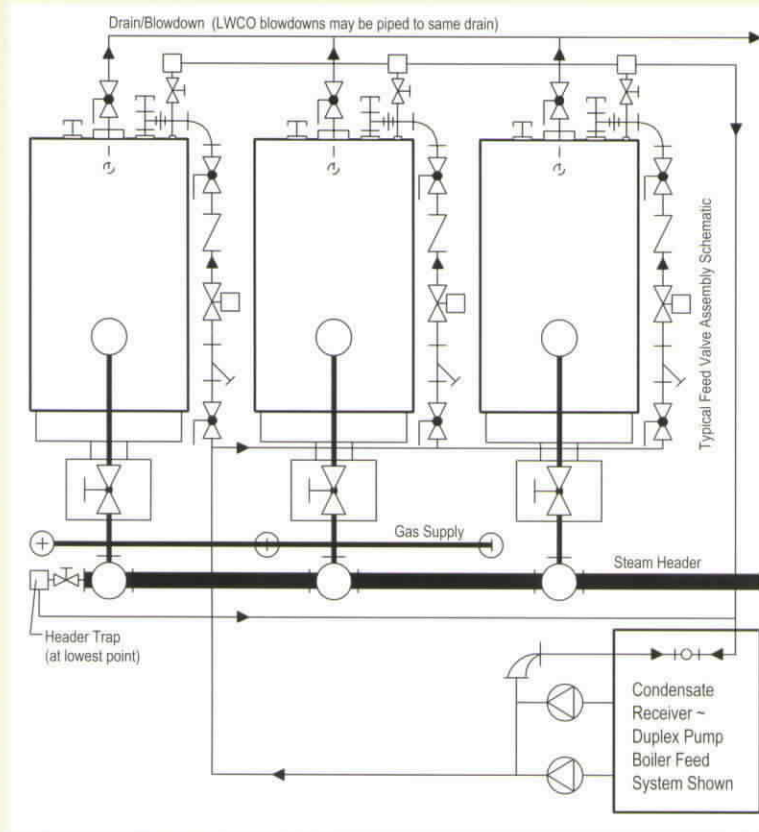
All flue gas reversing chamber surfaces except for rear access door are water-cooled, insuring true wetback boiler heat transfer efficiency. Bolted and gasketed rear door protected with a durable ceramic fiber blanket refractory provides easy access to furnace interior and furnace-to-tubes transition surfaces without costly and inconvenient burner removal.

8. Single Source Responsibility:

L.E.S. guarantees Series HF and HW combustion efficiency when boilers are purchased as complete packages with PowerFlame, Webster, or Gordon-Piatt burners approved, mounted, and tested by L.E.S. Customer requests for technical assistance and parts are directed to our factory via authorized L.E.S. representatives.

Series HF and HW Modular Heating Plants

Typical Series HF Modular Steam Heating Plant Layout



Modular Heating Plant Advantages

Highest Operating Efficiencies:

83% combustion efficiencies throughout load range from total turndown (individual turndown multiplied by number of modules) to rated capacity. Where single boilers are installed, typical heating loads between 15% and 30% of design force frequent burner cycling, leading to significant heat loss and early equipment failure. Correctly controlled modular heating plants minimize cycling-related operating expenses. Modules appropriately sized for actual loads operate as necessary. Capacity required only for design conditions is reserved off/cold with zero heat loss.

Reliability:

Modular heating plant components are standard products of leading manufacturers which can be repaired/replaced by qualified servicemen. With one boiler out of service for inspection or repair, adequate capacity remains on line.

Flexibility:

Individual modules can often be moved into place through existing elevators, doorways, and halls. Reduced burner noise levels increase plant location options. Modules can be grouped as desired to utilize available space. Modular groups (or banks) can be interconnected to increase total capacity and, when space is reserved, adding boilers to meet future expansion requirements is simplified.

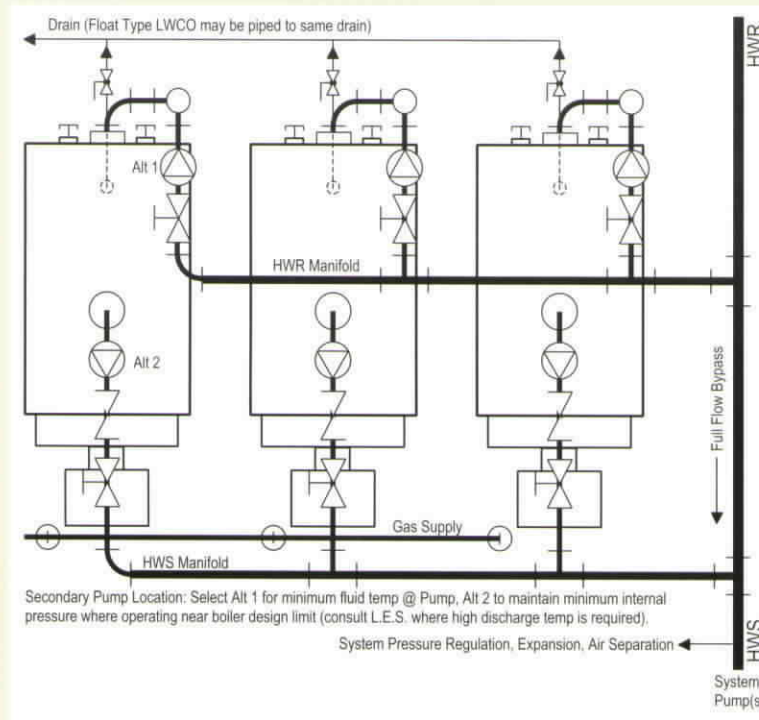
Actual Cost:

Operating advantages insure rapid payback of any initial price difference between modular heating plants and single boilers. When new construction space/location requirements or costs associated with moving large replacement boilers into an existing buildings are calculated, modular heating plants are frequently competitive even before long-term savings begin to accumulate.

Optimized Custom Control:

L.E.S. Series "LL" and "SC" Boiler Control Packages are designed specifically for firetube boilers and include interstage time delays essential to prevent overshoot as water stored in cold boilers is heated to operating temp. Integral control of system pumps is standard. Available options include control/proof of common combustion air supply, outdoor reset hot water heating plant control, time-of-day programming with digital temperature limits, start-up delay &/or boost, remote alarm interface, and provision for heating plant control from building EMS.

Typical Series HW Modular Water Heating Plant Layout



Represented by:



L.E.S. Incorporated

341 East Williams // P.O. Box 102
Wyoming, IL 61491
TEL: 309-695-2200 FAX: 309-695-3302