



**WILLIAMS & DAVIS BOILERS**

*Established 1921*

# *California Special*

*4-Pass Water-Back Scotch Marine Boiler*

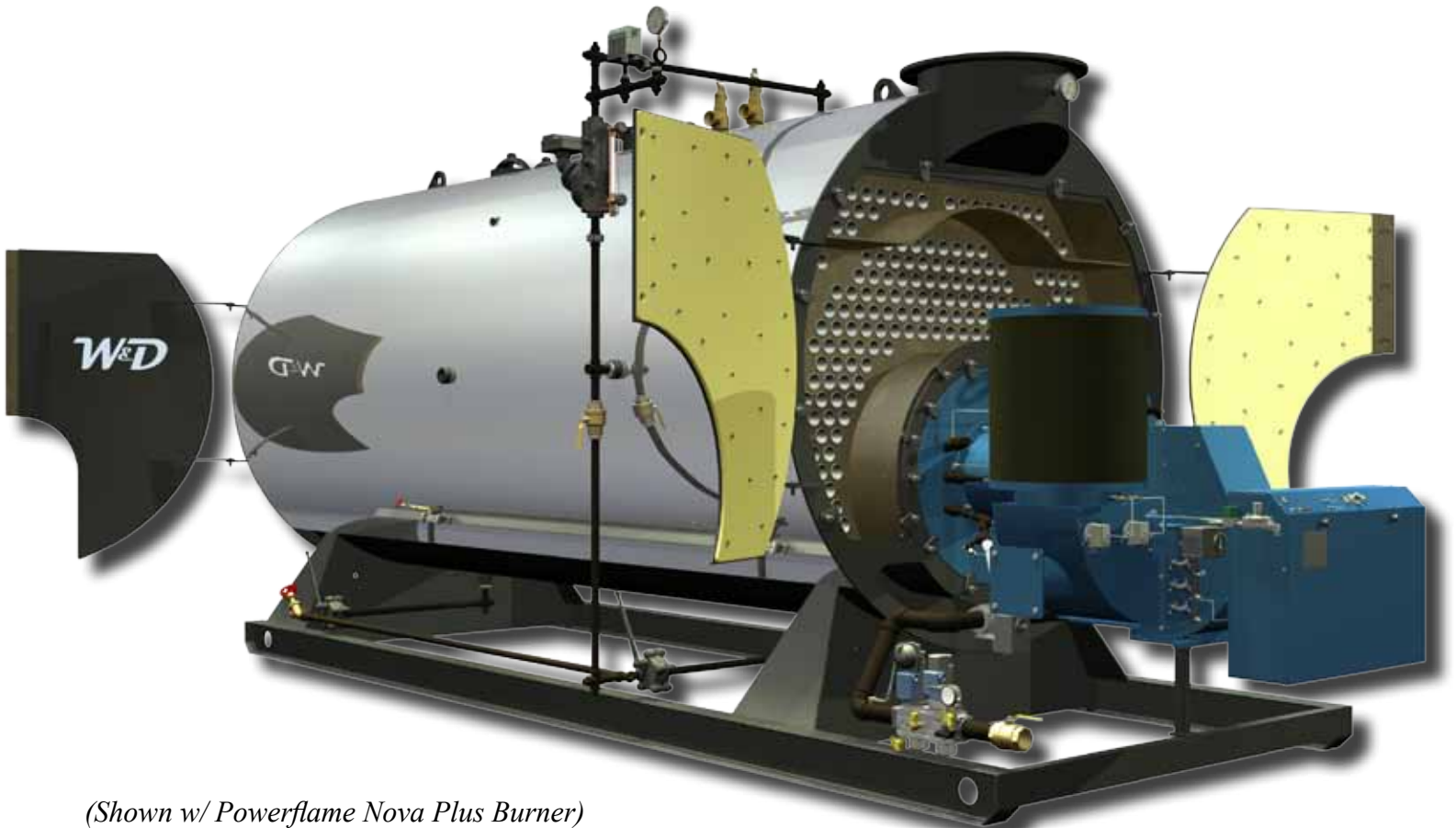


**SIZES 15HP THROUGH 1500HP  
GAS, OIL OR COMBINATION BURNER  
FIRETUBE HOT WATER & PRESSURE STEAM BOILERS**

E1001-03



## 4000CA Standard Features



*(Shown w/ Powerflame Nova Plus Burner)*

- Engineered and Built in Accordance With the Latest ASME Boiler Codes.
- McDonnell Miller Combination Pump Controller and Primary Low Water Cutoff.
- Completely Wired and Piped for Service Connections.
- Fully Modulating Burner Operation.
- Premium 2" Thick High-Density Insulation.
- "Off-the-Shelf" Industry Standard Parts Used Where Possible for Serviceability.
- Probe Type Auxiliary Low Water Cutoff.
- Epoxy Painted 20ga. Galvanized Steel Jacket.
- Solid State Honeywell Combination Pressure Control, Automatic Operating Control, and High Limit Manual Reset Control.
- Exceeds Industry Standards for Heating Surface Area for Exceptional Efficiency.
- Pressure Tested to 1.5X Operating Pressure. (225psi for 150psi Vessels)
- Flanged Exhaust Stack – Includes Additional Flange for Installation.
- Furnace Diameters and Combustion Area Volume Optimized For Lox NOx Operation.

### Standard Available Options

- Customizable Controls and Connections
- Additional Hand Holes and Manway Access
- Davited Front and Rear Doors.
- Burner Make and Model
- O2 Trim System
- "Linkage-less" Modulation

The Williams & Davis 4000CA fortifies our everlasting reputation for building the most rugged and serviceable scotch marine boiler in the industry. The 4000CA further offers a high efficiency design built to maximize flue gas velocities and transfer as much heat energy as possible to the process water instead of exhausting it through the stack or radiating heat into the boiler room. Through stringent and methodical building practices perfected over almost 90 years in the industry,

Williams & Davis guarantees each of our boilers will meet, and typically exceed, every ASME standard. All units are operationally tested and shipped as an integrated package when practical, ready for quick connection to utilities. As such, we demonstrate our confidence in our boilers by offering the industry's best pressure vessel warranty of 10 years (25 year available) with an approved water testing and treatment program.



*(Shown w/ Powerflame Nova Plus Burner)*

- *4Pass Water-back*
- *Low Radiant Heat Losses*
- *High Gas Velocities*
- *High Efficiency*
- *Space Saving Design*

*Galvanized Metal Jacket Available>>*





## Flanged Exhaust Stack

All 4000CA boilers are equipped with a vertical flanged exhaust stack and are supplied with a matching installation flange. Flanges ease vent positioning during installation and provide more reliable exhaust seals during operation.

## Burner

Burners are available to operate with natural gas, a variety of fuel oils, or a combination of gas and oil. NOx output levels may be specified as low as sub 7 PPM when burning natural gas and 70 PPM for burning #2 fuel oil when the fuel-bound nitrogen is at 0.02% or less. Control cabinet is typically mounted to the front of the burner. Side mounting or remote boiler room mounting is available upon request.

## Safety Relief Valves

Wide hex on valve nozzle provides wrenching service clearance for easy installation and maintenance. Dual control rings offer easy adjustability for precise opening with minimum pre-open or simmer and exact blow-down control.

## Tubes & Turbulators

All fire tubes are industry standard 2.5" outside diameter and 0.109" typ. wall thickness. The fire tubes are inserted with uniquely-shaped corrosion resistant alloy steel Turbulators designed to break up laminar flow and maximize heat transfer.

## Pressure Controller

Standard Honeywell P7810 Pressuretrol provides solid state automatic operating control, automatic limit protection, manual reset limit protection, and 4-20ma modulating firing rate control for pressure systems up to 300 psi. Other pressure and temperature controllers are available upon request.

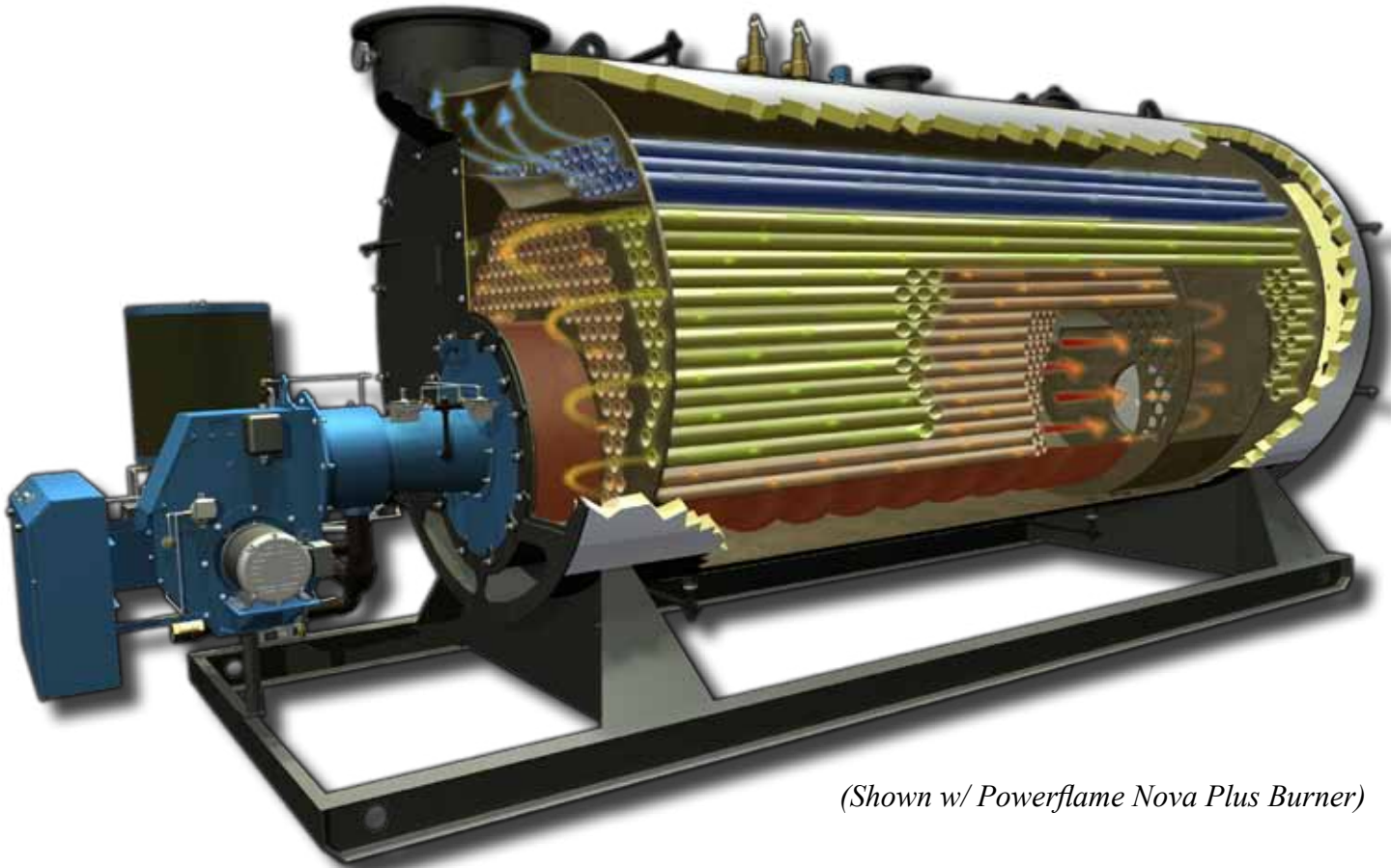
## Structural Skid

The 2000D's rugged structural steel skid provides stability during transport and installation. Wide beam flanges distribute weight evenly across the boiler room floor during flooded operation.

## Low Water Controls

McDonnell Miller 157S float level system provides reliable feedwater pump control and primary low-level shut down. Probe type sensor and Warrick relay are used for reliable secondary shutdown and to provide code-required manual reset.





*(Shown w/ Powerflame Nova Plus Burner)*

## **4000CA Heating Passes**



**First Pass** - The burner fires at the entrance of the furnace, transferring up to 70% of the available heat energy into the water.

**Second Pass** - Hot flue gas travels from the water-backed turnaround chamber through the central tubes to the boilers heavily-insulated front turnaround chamber.

**Third Pass** - The flue gas is directed laterally into the outer tubes by heavily-insulated front doors and a single steel baffle. Flue gas then travels the entire length of the pressure-vessel in its third pass.

**Fourth Pass** - From the insulated rear chamber, flue gas is directed vertically into the top rows of submerged tubes, travels across the length of the pressure vessel, and exits the system through the exhaust stack.

# Wide Range of Applications

*Asphalt Cement*



*Bottling Companies*



*Clothing*



*Feed Mills*



*Hospitals*



*Hotels*



*Laundry*



*Lumber Mill*



*Meat Processing*



*Nat. Gas Refineries*



*Oil Drilling*



*Pharmaceutical*



*Polystyrene Foam*



*Power Generation*



*Research*



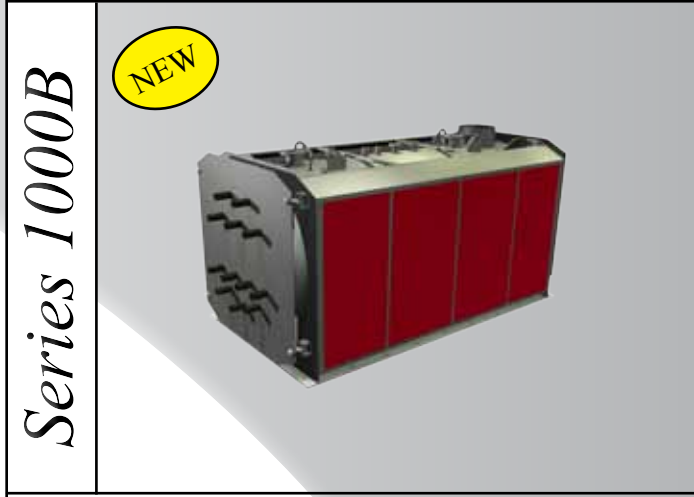
*Schools*



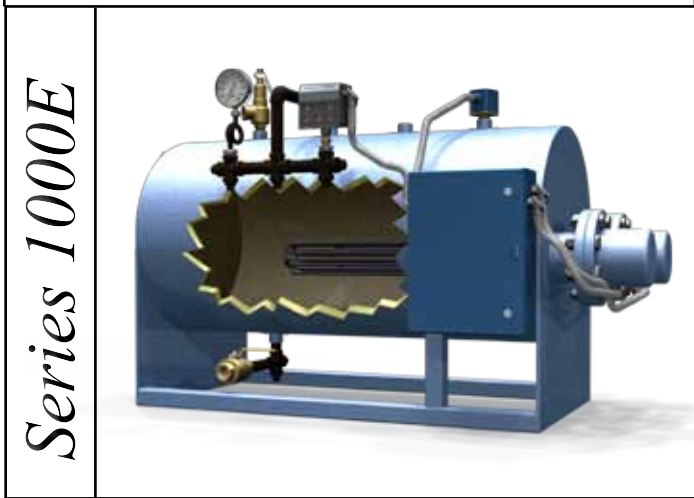
*Additional Product Offering*



Fully Condensing Hydronic Boilers



Heat Recovery Systems



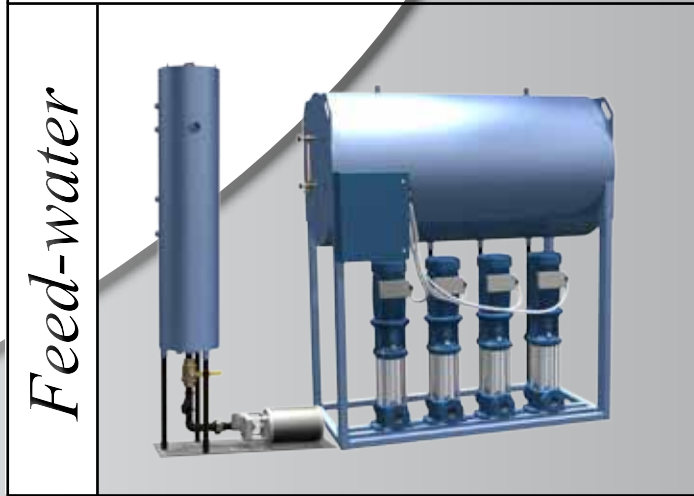
Electric Boilers



Vertical Tube and Tubeless Boilers



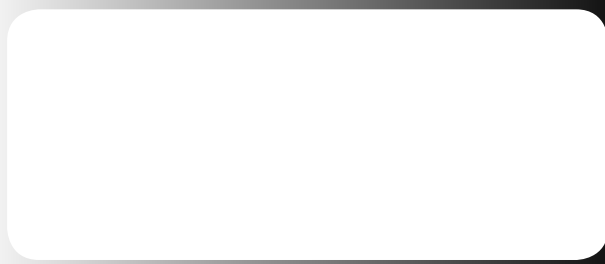
Blow-down Separators



Vertical or Horizontal Feed-water Systems



Your Authorized Williams & Davis Representative



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