



**Three Pass Reverse Flame**  
**COCHRAN HW29**  
**Package Hot Water Boiler**

# **Technical Specification**

## COCHRAN HW29 HOT WATER BOILER SPECIFICATION

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The **COCHRAN HW29 HOT WATER BOILER** is built to BSEN 12953 with independent inspection by British Engineering Services (BES) and UKCA or UKNI marked as appropriate (**see footnote**).

This model has an output range of **1200 to 4100kw** and is suitable for both low and high temperature applications.

It is of horizontal three pass reverse flame type design developed for higher operational efficiencies and lower emissions to meet the requirements of the Medium Combustion Plant Directive (**MCPD**).

It is designed to meet the current UK building regulations with gross seasonal efficiency above 86% and complies with the requirements of the Factories Act (1961) and with HSE and UK Inspection Authority requirements. In addition, it meets the requirements of the:

- Pressure Equipment Directive
- Low Voltage Directive
- Electro-Magnetic Compliance Directive
- Machinery Safety Directive

Throughout the manufacturing process, in addition to the inspection carried out by BES, **COCHRAN** apply their own quality procedures that comply with the requirements of **ISO 9001**.

The following schedules detail the specification of the Boiler proposed in our tender.

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**Note** – Boilers destined for markets within the EU will be CE marked as appropriate.

## Schedule 1: Boiler Pressure Part

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### General

All plate used in the construction of the boiler is cut and profiled by computer controlled equipment. Shell plates and furnace are then rolled, assembled, welded and inspected in accordance with the Construction Codes.

Tube plates are drilled by computer controlled equipment to ensure correct ligaments are maintained and accuracy of tube hole finish and weld preparation for welded tubes.

### Boiler Shell

The Boiler shell, dependent on Boiler size, is constructed in suitable sections. Following the rolling process, longitudinal and circumferential seams are machine welded and subjected to X-Ray and NDT Inspection to comply with the latest standard requirements.

### Furnace

The furnace is constructed in suitable sections dependent on furnace size. Following the rolling process, longitudinal and circumferential seams are machine welded and subjected to X-Ray and NDT Inspection to comply with the Construction code requirements.

### Convection Tubes

The Boiler incorporates one pass of convection tubes fitted with purpose made turbulators. The required number of stay tubes and stay bars are fitted.

### Access Doors

Access to the front tubeplate and furnace are by means of a large hinged door that incorporates a flame sight glass. Access to the rear tubeplate is by means of removable lift off doors. Waterside access is provided by a manhole or headhole as appropriate on the top of the boiler and a muddoor on the rear tubeplate.

### Seatings

Mountings and controls are fitted to pads, standpipes and bosses welded to boiler shell. The Materials Specification for the Shell and Shell Attachments are:

|  |                       |
|--|-----------------------|
| Shell, Furnace & Tubeplates:                 | BS EN 10025-2 P265 GH |
| Stay Bars:                                   | BS EN 10273 P235 GH   |
| Play & Stay Tubes:                           | BS EN 10216-1-TR2     |
|  | BS EN 10216-2         |
|  | BS EN 10217-1-TR2     |
|  | BS EN 10217-2         |
| Mandoor, Head holes, Muddoor & Lifting Lugs: | BS EN 10025-2 P265 GH |
| Pads (Valves):                               | BS EN 10025-2 P265 GH |
| Standpipes:                                  | ASTM A106 GR B        |

## **Schedule 2: Boiler Mounted Fabrication – Casings; insulation & Supports**

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### **Rear Casing**

The rear casing incorporates a horizontal flue gas outlet and is made from mild steel plate, welded to the rear of the boiler shell. Lift-off doors for access to the convection tubes are provided.

### **Front Casing**

The front casing is made from mild steel plate, welded to the front of the boiler shell. A hinged insulation lined door supports the combustion equipment and provides access to the boiler furnace, convection tubes and turbulators.

### **Insulation and Sheeting**

The boiler shell is insulated with 50mm thick high density insulation to reduce radiation loss then clad in 0.7mm thick Embossed Aluzinc sheeting. Tubeplates, pads and standpipe penetrations are finished with Aluzinc collars.

To aid access for inspection purposes inspection doors and valves are not provided with insulation, if this is required then this is available on request as an option.

### **Support**

The boiler supports are an integral part of the front and rear casings. The front and rear supports are connected together using tie sections to provide rigidity and assist in installation.

Jacking points are provided on the support structure to assist in offloading, positioning and manoeuvring the boiler. The boiler supports are designed with integral jacking points

## Schedule 3: Boiler Mountings

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### General

Depending on the flow temperature of the system we offer valves and gauges to comply with EN12828 or EN12953 which are fitted to the boiler with suitable joints and flanges drilled to BS EN 1092. Standard valves and fitting are tabulated below:

| Qty | Description   | Manufacturer     | Material     |
|-----|---|------------------|--------------|
| 1   | Single Spring High Lift Safety Valve sized to provide 100% discharge capacity | Ari Armaturen    | SG Iron      |
| 1   | Manual Blowdown Valve, ball type  | RTK Control      | Carbon steel |
| 1   | Compact Vibrating fork low level switch (HT Only)                             | Emerson          | -            |
| 1   | Flush mounted Flow Temperature gauge  | Stewart Buchanan | Aluminium    |
| 1   | Excess Temperature Switch   | Honeywell        | -            |

### Standard Connections on Boiler Pressure Part

- 1 Flow Connection, excluding Control/Isolating Valve
- 1 Return Connecting, excluding Control/Isolating Valve

### Optional Equipment

We can provide optional equipment including

- 1 Vibrating Fork low level switch
- 1 Flash Trap Replacement Kit
- 1 Backend Protection system
- 1 Flue gas economiser solutions

### Notes

- Valve materials provided are suitable for the rating, pressure and temperature requirements.
- Please refer to tender for additional mountings offered.

## **Schedule 4: Combustion Equipment; Control Panel & Wiring**

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### **Combustion Equipment**

If required the Boiler can be fitted with a pressure jet burner matched to the Boiler furnace configuration and suitable for the fuel(s) specified in our tender. The burner can be provided as a complete unit pre-wired and fitted prior to leaving our factory. In the case of gas fired units a matched gas train is supplied.

### **Boiler / Burner Controls**

The burner controls would be mounted on the combustion equipment. In addition we provide a panel enclosure mounted on the boiler to house the boiler controls included

### **Electrical Wiring**

Heat resistant cabling is used for wiring between water level controls and the control panel, all other wiring is in P.V.C. covered wiring carried in flexible conduit. Colour Coding to BS EN 60204-1:2006.

### **Functional Testing**

An electrical functional test of the boiler safety and control system is carried out and witnessed by the Cochran Q.A. Department Inspectors.

## **Schedule 5: Painting**

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Surfaces are degreased prior to painting and one coat of primer, one coat of undercoat and one finishing coat is applied.

Standard Colours are as follows:-

|                        |                           |
|------------------------|---------------------------|
| All Valves             | Blue                      |
| Front and Rear Casings | Blue                      |
| Screen Plates          | Blue                      |
| Sheeting               | Embossed Aluzinc sheeting |
| Burner                 | Manufacturer's Standard   |
| Control Panel          | Manufacturer's Standard   |

## Schedule 6: Terminal Points

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Flanges to BS EN 1092 except where stated otherwise.  
Screwed connections BSP except where stated otherwise.

### Description

|                                    |                 |
|------------------------------------|-----------------|
| Safety Valve (Outlet)              | Flanged/Screwed |
| Drain Valve (Outlet)               | Flanged         |
| Drain Pipework (Outlets)           | Screwed         |
| Flue Gas (Outlet)                  | Horizontal      |
| Oil Flow (Connection)              | Screwed         |
| Oil Return (Connection)            | Screwed         |
| Gas (Inlet)                        | Flanged         |
| Pilot Gas (Inlet)                  | Screwed         |
| Flow Connection                    | Flanged         |
| Return Connection                  | Flanged         |
| Low Water Level Limiter Connection | Screwed         |

## Schedule 7: Tools & Documentation

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### Tools

Tube cleaning brushes and rod handle are provided.

### Documentation

General Arrangement Drawing and Electrical Wiring Diagrams are provided.  
Certificate of Compliance is provided, certified by an independent Inspection Authority.  
Operating and Maintenance Manual is provided.

### Notes:

Cochran reserve the right to amend or alter this Specification during the tender validity period or the manufacturing stage of any subsequent order to comply with any alteration or amendment to applicable Standards, Safety Codes, Guidance Notes or Revisions in Manufacturing Techniques.