

HW39 Technical Specification

# HW39 Hot Water Boiler

Three Pass Reverse Flame



  
COCHRAN

# HW39 Package Hot Water Boiler

The COCHRAN HW39 HOT WATER BOILER is built to BSEN 12953 with independent inspection by British Engineering Services (BES) and UKCA or UKNI marked as appropriate. It is of horizontal three pass reverse flame type design developed for higher operational efficiencies and geared for our Export markets (see footnote).

This model has an output range of 450 to 4100kw and is suitable for both low and high temperature applications. It also 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 Parts

## 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.

## Materials, Specification, Shell and Shell Attachments:

Shell, Furnace and Tubeplates:	BS EN 10025-2 P265 GH
Stay Bars:	BS EN 10273 P235 GH
Play and Stay Tubes:	BS EN 10216-1-TR2
	BS EN 10216-2
	BS EN 10217-1-TR2
	BS EN 10217-2
Mandoor, Head holes, Muddoor and 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 Fabrications

## Casings, Insulation and Supports

### 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

## General

As standard, the valves and gauges we offer comply with BS EN 12953 and are fitted to the boiler standpipes with suitable joints and flanges drilled to BS EN 1092. Flange fixing is by metric studs and nuts or bolts. Standard valves and fitting are tabulated below:

Quantity	Description	Material
1	Single Spring High Lift Safety Valve sized to provide 100% discharge capacity	SG Iron
1	Manual Blowdown Valve, ball type	Carbon steel
1	Compact Vibrating fork low level switch (HT Only)	-
1	Flush mounted Flow Temperature gauge	Aluminium
1	Excess Temperature Switch	-

## 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 are provided for the rating, pressure and temperature requirements.
- Please refer to quotation for any additional valves or mountings offered.

## Schedule 4: Combustion Equipment/ Control Panel/Wiring & Testing

### **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

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	Embossed Aluzinc sheeting
Burner	Manufacturer's Standard
Control Panel	Manufacturer's Standard

## Schedule 6: Terminal Points

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

**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 & Documents

## Tools Provided

Tube cleaning brushes and rod handle are provided.

## Documents Provided

- 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.

## Important Note:

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.

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