

HW96 Technical Specification

# HW96 Heat Recovery

Hot Water Boiler



## HW96 Package Hot Water Boiler

The COCHRAN HW96 SINGLE PASS HEAT RECOVERY PACKAGE 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).

The boiler complies with the requirements of the Factories Act (1961) and Arrangement 1 of Guidance on Safe Operation of Boilers Ref: BG01 developed by the Safety Assessment Federation (SAFED) and the Combustion Engineering Association (CEA), the latter being the acceptance criteria for compliance 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 Parts

## General

All plate used in the construction of the boiler is cut and profiled by computer controlled equipment. The shell, furnace and reversal chamber plates are then rolled, assembled, machine welded and subjected to NDT (either radiographic or ultrasonic) to ensure compliance with the latest construction standard requirements.

Tube plates are drilled by computer controlled equipment to ensure the correct ligament is maintained and a satisfactory tube hole finish is achieved.

## Boiler Shell

Single pass of convection tubes are fitted between the boiler front and rear tube plates.

All plain tubes are expanded then welded into position whilst stay tubes and stay bars are fully welded into position to ensure that stressing of the tube plates and tube nests are within construction code limits.

## Access and Inspection

For inspection purposes, openings are provided to gain access to the steam/water side of the boiler. One 420x320mm elliptical manway opening is provided on the top of the boiler. Two 320x220mm elliptical headhole openings are provided in the lower quadrants toward the rear of the boiler, one provided on each side. One 125x90mm elliptical handhole opening is provided in 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

#### Front and Rear Casings

Boiler front and rear casings are fabricated from mild steel plate fully welded to the Boiler tubeplates and shell.

Front casing is insulated internally to reduce radiation loss to a minimum and incorporates hinged doors with screen plates which allow access to boiler tubeplates and tubes to facilitate tube cleaning, tube removal and inspection.

Rear casing is provided with flanged outlet for economiser / chimney connection.

Hinged doors allow access to tubeplate and tube nest and are also fitted with screen plates.

#### Insulation and Sheeting

The boiler shell is insulated with 100mm 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.

#### Supports

Boiler supports are fabricated as an all-welded structure fabricated from suitably sized hollow sections, incorporating outriggers which are welded or bolted as appropriate for the boiler feed pump and control panel.

Jacking points are provided on the support structure to assist in offloading, positioning and manoeuvring the boiler.

#### Ladders and Platform (Optional Extra)

Access ladder and platform can be fitted to allow access to top of boiler and safety valve.

The ladder incorporates safety hoops beginning at a level of 2515 mm from floor level of the Boiler baseframe terminating above the level of the platform safety railing.

The platform is provided on three sides with safety handrailing to a height of 950 mm, the fourth side left open for access to the boiler valves.

## 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	Manufacturer	Material
1	Single Spring High Lift Safety Valve sized to provide 100% discharge capacity	Spirax Sarco	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 are provided for the rating, pressure and temperature requirements.
- Please refer to quotation for any additional valves or mountings offered.

## Schedule 4: Control Panel; Wiring & Testing

### **Control Panel**

A Boiler control panel is fitted to the Boiler supports and includes the necessary control equipment, starters, water level alarms, controls for feed pump and mains isolation. Control pressure switches are attached to the side of the panel.

### **Electrical Wiring**

Heat resistant cabling is used for wiring between water level controls and the control panel, all other wiring is in PVC 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.

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**Standard Colours are as follows:**


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Baseframe, all Valves, Platform and Ladder (when fitted)	Black
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Front and Rear Casings	Black
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Screen Plates	Blue
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Sheeting	Unpainted Stucco Aluminium
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Control Panel	Manufacturer's Standard
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## Schedule 6: Terminal Points

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

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**Description:**


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Flow connection	Flanged
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Return connection	Flanged
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Safety Valve (Outlet)	Flanged
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Blowdown Valve (Outlet)	Flanged
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Drain Pipework (Outlet)	Screwed
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Flue Gas (Outlet)	Flanged
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## 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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**+44(0) 1461 202 111**

**[www.cochran.co.uk](http://www.cochran.co.uk)**

Cochran Ltd, Newbie Works, Annan, Dumfries & Galloway, UK DG12 5QU. [info@cochran.co.uk](mailto:info@cochran.co.uk)