



COCHRAN HEAT RECOVERY Package Hot water Boiler

Technical Specification

COCHRAN HEAT RECOVERY PACKAGE HOT WATER BOILER SPECIFICATION

The **COCHRAN HEAT RECOVERY PACKAGE HOT WATER BOILER** is of single pass type constructed in accordance with BS EN 12953.

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. Additionally, the Boiler is CE Marked to meet the requirements of:

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

Throughout the manufacturing process, the **BOILER** is subject to inspection by a leading Independent Insurance Company. In addition, **COCHRAN** apply their own quality procedures that comply with the requirements of ISO 9001:2008.

The attached schedules detail the specification of the Boiler proposed in the tender enclosed.

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We 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.

Schedule 1: Boiler Pressure Part

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 420 × 320mm elliptical manway opening is provided on the top of the boiler. Two 320 × 220mm elliptical headhole openings are provided in the lower quadrants toward the rear of the boiler, one provided on each side. One 125 × 90mm 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 and Tube Plates:	BS EN 10025-2 P265 GH
Stay Bars:	BS EN 10273 P235 GH
Plain 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 Lifting Lug:	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 & 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

Exposed areas of boiler shell and tubeplates are insulated with 100 mm thick high density insulation to reduce radiation loss to a minimum and is retained in position with bands.

20G (0.812mm thick) "Stucco" aluminium sheeting to BS1470 SICH.H. is applied to the shell. Tubeplates, pads and standpipe penetrations are finished with aluminium collars.

To aid access for inspection purposes inspection doors and valves are not provided with insulation, this is available on request as an added option. Pipework is provided uninsulated as the client may find it easier to insulate on site with other connecting pipework between the package and the system.

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: Mountings and Controls

General

Depending on the flow temperature of the system we offer valves and gauges to comply with EN12828 or BS EN 12953 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	Spirax Sarco	SG Iron
1	Manual Blowdown Valve, ball type	RTK Control	Carbon steel
1	Compact Vibrating fork low level switch	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 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: 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.

Standard Colours are as follows:-

Baseframe, all Valves, Platform and Ladder (<i>when fitted</i>)	Black
Front and Rear Casings	Black
Screen Plates	Blue
Sheeting	Unpainted Stucco Aluminium
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:

Flow connection	Flanged
Return connection	Flanged
Safety Valve (Outlet)	Flanged
Blowdown Valve (Outlet)	Flanged
Drain Pipework (Outlet)	Screwed
Flue Gas (Outlet)	Flanged

Schedule 7: Tools/Documents

TOOLS

Tube cleaning brushes and rod handle are provided.

DOCUMENTS

General Arrangement Drawing and Electrical Wiring Diagrams are provided.

Certificate of Compliance is provided, certified by independent Inspection Authority.

Operation and Maintenance Manual is provided.

NOTE:

In order to take advantage of all Technical Developments, we reserve the right to amend details given in this Specification.