



Hamworthy Dorchester DR-RS

Room Sealed, Fully Automatic Ignition
Direct Gas-Fired Storage Water Heaters

25.9kW to 100.3kW, Natural Gas or LPG
Continuous outputs 507l/h to 1960l/h



Heating ***at work.***

Dorchester DR-RS

Room Sealed, Gas-Fired Storage Water Heaters

The Dorchester DR-RS range is designed to operate as a room sealed system, making it particularly suited to applications where a conventional flue is impractical, or where the heater is to be located closer to the point of use. Units are available with either vertical or horizontal flue arrangements using twin duct or concentric flue systems.

The Dorchester DR-RS range consists of 5 models with maximum output powers from 25.9kW to 100.3kW and continuous outputs from 507 to 1960 litres/hour, based on a 44°C temperature rise. Storage capacities range from 265 to 324 litres. Two or more water heaters can be installed where there is demand for larger capacity.

Each model comprises a room sealed atmospheric burner with fully automatic ignition and fan-forced air supply, and can be specified for natural gas or LPG use. The up-firing burner connects to a multiple fire tube heat exchanger within a steel water storage cylinder. Water-side surfaces of the cylinder and heat exchanger are fully enamelled for hygienic water storage and to protect against corrosion, with magnesium anodes providing further protection.

Water heater operation is governed by thermostatic controls, including a manual control thermostat, high limit, safety, and frost protection thermostats. Volt free contacts are available for remote monitoring via a building management systems (BMS).

At less than 60 dBA, the Dorchester DR-RS water heater's quiet operation is an added benefit for close to point-of-use applications.

Options

- **Natural gas or LPG**
- **Unvented supply kit**
- **Top-to-bottom pump recirculation kit**
- **Flexible replacement magnesium anodes**
- **Electrical anode protection**
- **Close temperature control kit**

- **Simple and safe operation**
- **Ideal for ventilation-limited rooms**
- **Rapid recovery—only 8 minutes***
(*Dorchester DR-RS 105 @44°C ΔT)
- **Exceeds Part L minimum requirements**
- **Low noise <60 dBA**
- **Clean out doors for easy maintenance**
- **Magnesium anode corrosion protection**

BENEFITS

If ventilation is restricted then the room-sealed Dorchester DR-RS is the ideal choice, whether the water heater is to be sited in a plant room or close to the point-of-use.

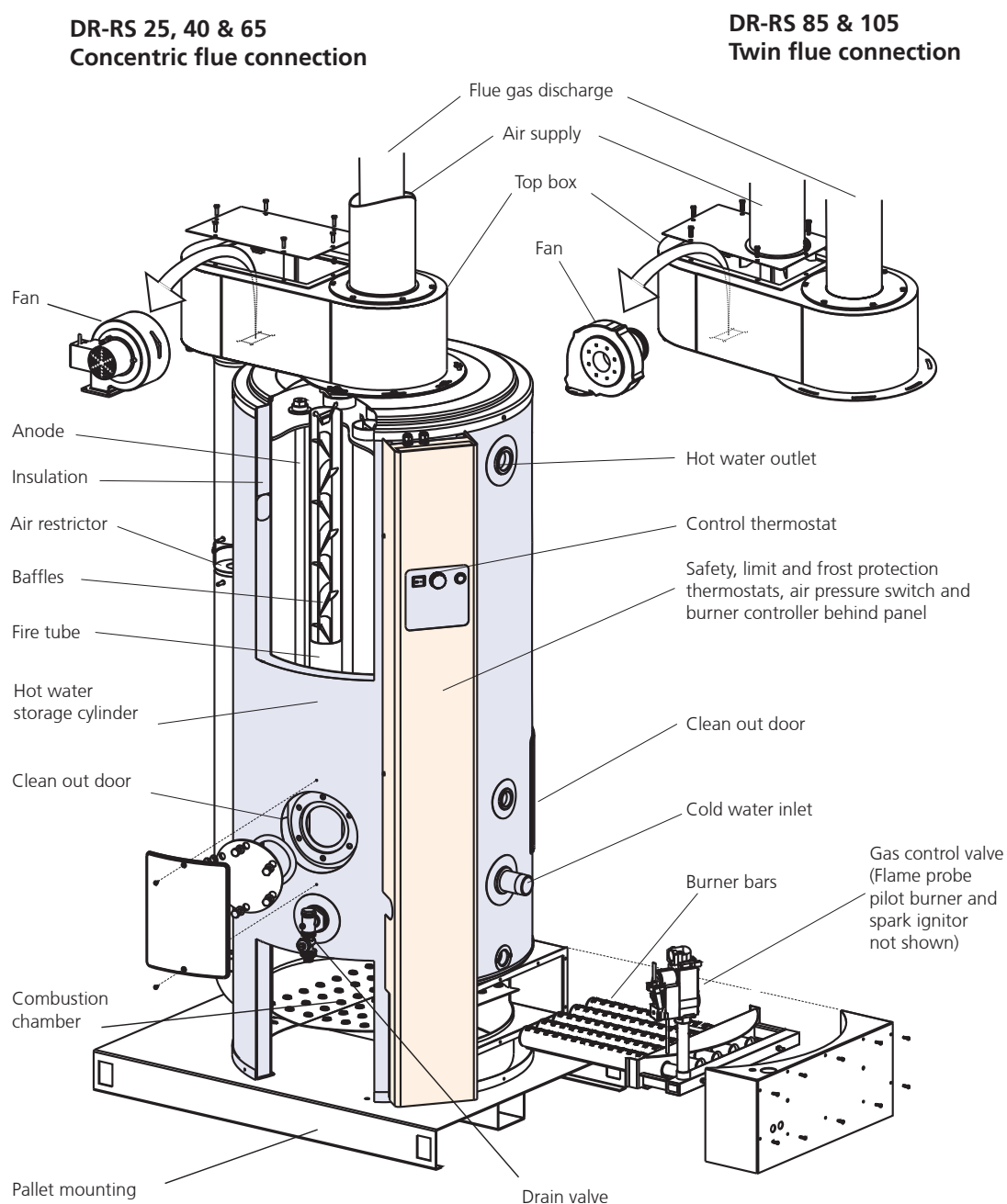


Dorchester DR-RS direct fired water heater in a typical plant room

Typical Layout

Dorchester DR-RS

Dorchester DR-RS General Arrangement with Flue Connection Details



Specification

Dorchester DR-RS

The Dorchester DR-RS water heaters are atmospheric storage water heaters with multiple fire tube heat exchangers and up-firing burners, and are available configured with an appropriate gas train for either natural gas or LPG.

Featuring fully automatic two-stage spark igniter and pilot flame ignition, these atmospheric water heaters with fan-assisted air supply/flue discharge provide a high energy output to the vertical fire tube heat exchanger in the cylinder. Each fire tube in the multiple tube arrangement is baffled to increased heat transfer to the stored water, ensuring fast heating up times and substantial continuous output capabilities.

The Dorchester DR-RS range of water heaters are manufactured to the highest standards using the latest production technology to ensure a high quality long lasting finish in every product configuration. Compliance is assured with stringent controls in accordance with the European Standards and each model carrying the CE mark for compliance with the European standard BS EN 89:2000.

Water Heater Construction

The water heater cylinders are constructed from high grade steel and given a high quality vitreous enamel coating. The fabrication of the cylinder and welding is completed fully before the enamelling is applied, ensuring that the integrity of the coating is not affected during manufacture.

During enamelling, the cylinder and associated heat exchanger fire tubes undergo a precise glass coating process where the unit is rotated in every direction to ensure an even glaze is applied throughout. Surplus material is drained before the unit is then baked at 840°C to complete the adhesion of the glaze to water-side surfaces of the cylinder and heat exchanger fire tubes, providing a long lasting, hygienic and corrosion resistant finish.

The cylinder is covered with a 50mm layer of CFC-free foam insulation to minimise standing losses.

Burner

The burner arrangement consists of multiple stainless steel burner bars, the number of which varies according to the output of each model. The atmospheric burner assembly is mounted below the cylinder and is quiet in operation.

Inspection and Clean Out Door

The Dorchester DR-RS models have easily accessible clean out doors that allows for the inspection and cleaning of the tank's interior, as required by the recommendations of the HSC for the control of Legionellosis, including Legionnaires' disease, along with and suitable tapings to facilitate an optional top-to-bottom recirculation kit.

Open Vented or Unvented Water Supplies

The water heaters are suitable for open vented water supplies but can also be used with unvented water supplies using an optional unvented supply kit.

Unvented Supply Kit (Optional)

All Dorchester water heaters are suitable for installation in direct unvented water supply systems. The expansion vessel is sized for the water heater and local pipe work only, and should be re-sized if used on larger systems.

The unvented supply kit allows the water heater to be fed directly from the mains water supply or from a booster pump set without the need for header tanks. The kit contains all the essential components to comply with the Water Supply (Water Fittings) Regulations 1999: including:

- Strainer
- Pressure reducing valve
- Isolating non-return valve
- Expansion relief valve
- Tundish
- 24 litre expansion vessel with wall bracket
- Pressure and temperature relief valve (which locates directly into the water heater).

Controls and Safety

A control thermostat (40°C to 70°C) governs the water heater operating temperature via a control panel with safety lockout indicator light and reset button. Overheat protection is provided by high limit (84°C) and safety (93°C) thermostats, and a frost protection (20°C) thermostat protects the water heater from freezing.

A flame proving circuit with ionisation detection flame probe ensures safe burner operation, and will stop gas flow if a flame cannot be detected. Also a pressure switch monitors the air supply and flue discharge pressure to ensure correct combustion and flue discharge conditions are maintained, and will interrupt the heating cycle if pressure falls below a preset limit.

All Dorchester DR-RS models exceed the minimum efficiency requirements of the Building Regulations, Part L, and each is designed to meet the latest HSC requirements for the control of Legionellosis.

Corrosion Protection: Magnesium Sacrificial Anodes

Dorchester DR-RS models are all fitted with removable magnesium sacrificial anodes as standard, ensuring excellent protection against corrosion. Clearance is required above the unit for maintenance and replacement of the magnesium sacrificial anodes. In plant rooms with insufficient headroom clearance for fixed anodes, flexible magnesium sacrificial anodes may be specified as an option.

Flexible Replacement Magnesium Sacrificial Anodes (Optional)

Flexible replacement magnesium anodes can be ordered as an option where clearance above the unit is restricted, and used to replace fixed anodes when they become sufficiently depleted. These sausage-shaped anodes comprise several small magnesium bars chain-linked together.

Specification

Dorchester DR-RS

Electrical Anode Protection (Optional)

In areas of the country with particularly soft water supplies having electrical conductivity less than 200 microsiemens, such as Scotland, Devon and Cornwall, magnesium sacrificial anodes may not be fully effective in providing protection against internal corrosion. The optional electrical protection replaces the magnesium sacrificial anodes and is effective in providing internal corrosion protection with water supplies having electrical conductivity levels as low as 125 microsiemens.

It is essential for correct operation that an uninterrupted 24-hour power supply is maintained at all times to ensure proper protection of the unit. Electrical anode protection will be factory fitted where specified at the time of ordering.

Top-to-Bottom Pump Recirculation Kit (Optional)

In order to prevent stratification within the heater, thus creating a zone of lower temperature water that can possibly lead to the proliferation of Legionella bacteria, a top to bottom re-circulation kit should be specified. The top to bottom circulator should be controlled to run during the anti-legionella purge cycle.

Close Temperature Control Kit (Optional)

An optional electronic thermostat is available for applications requiring close control of the flow temperature to within a tolerance of $\pm 2.5^{\circ}\text{C}$.

Fuel Options

All Dorchester DR-RS water heaters are suitable for natural gas or LPG. The fuel type must be specified at the time of ordering. It is strongly recommended that on LPG installations gas detection equipment is fitted and that this equipment is positioned near the heater and at low level. It is also imperative that the plant room is ventilated at high and low level. The LPG variants of the Dorchester DR-RS must not be installed in basement plant rooms.

Flue System

The Dorchester DR-RS water heaters are suitable for room sealed C13 horizontal and C33 vertical flue scheme applications. The maximum flue run is 7m, using a maximum of two 90° or 45° bends. The DR-RS 25, 40 and 65 models use concentric flue components throughout. The DR-RS 85 and 105 use twin and concentric flue components and concentric terminals.

Hamworthy offer dedicated flue terminals and flue components with

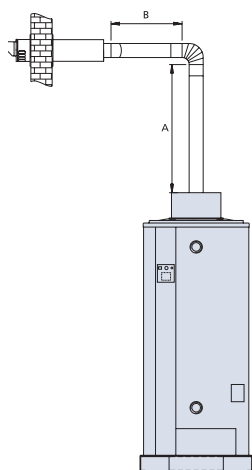
pressure-tight silicon-sealed joints using simple push-fit and clamp connections for the Dorchester DR-RS water heater.

We also work in partnership with Midtherm Engineering to provide a comprehensive flue design and installation package for all of the range of Dorchester water heaters. Contact your Hamworthy area sales manager about your bespoke flue requirements:

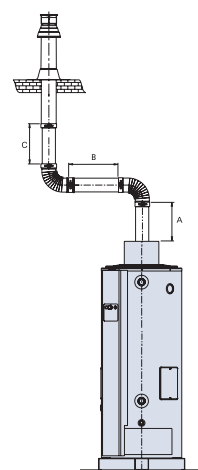
Tel 0845 450 2865

Email
sales@hamworthy-heating.com

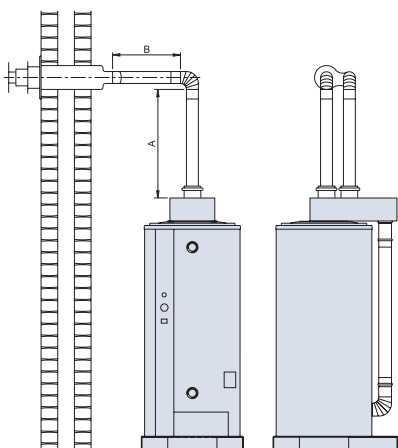
**Dorchester DR-RS 25/40/65
Flue Type C13**



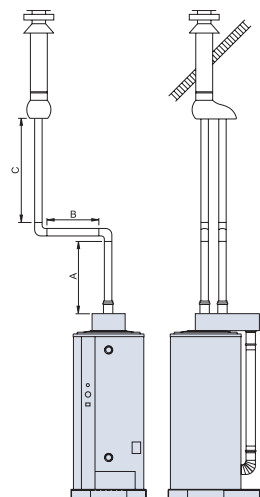
**Dorchester DR-RS 25/40/65
Flue Type C33**



**Dorchester DR-RS 85/105
Flue Type C13**



**Dorchester DR-RS 85/105
Flue Type C33**



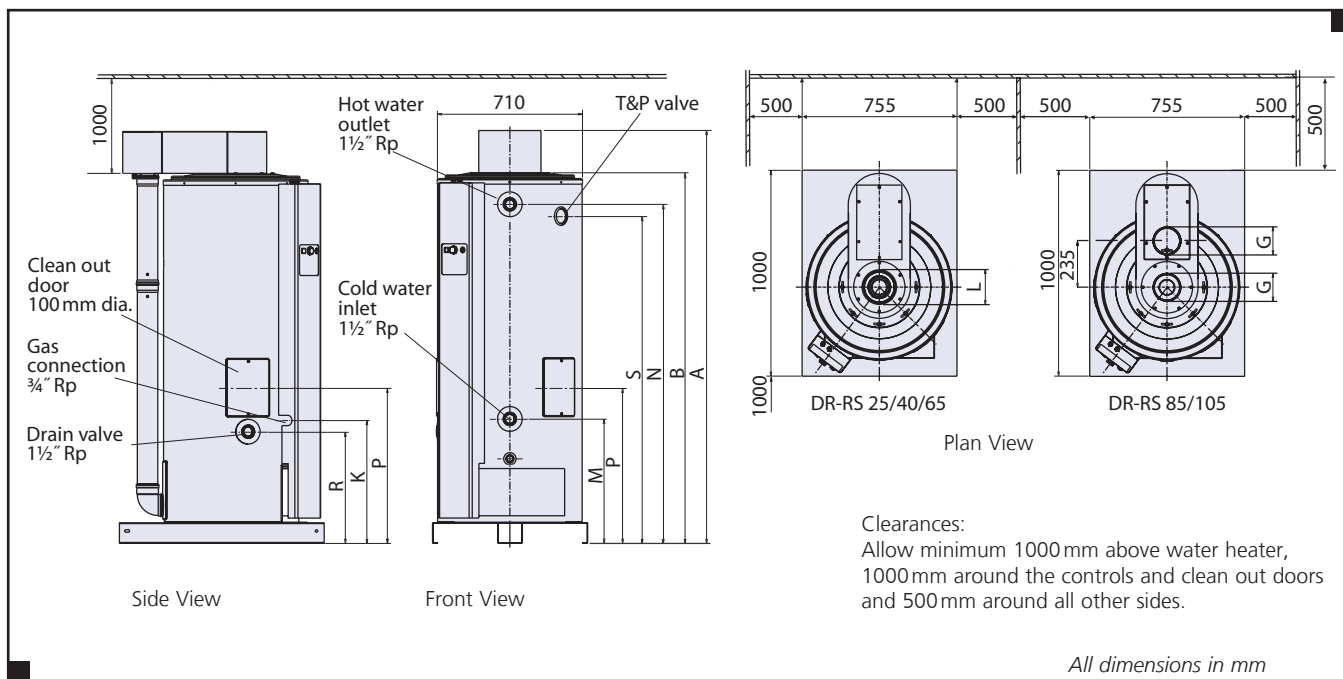
Technical Data

Dorchester DR-RS

| | | Specification | Units | Dorchester DR-RS Model | | | | | | |
|---------|---|---|-----------------|--|----------|----------|----------|-----------|-------|-----|
| | | | | DR-RS 25 | DR-RS 40 | DR-RS 65 | DR-RS 85 | DR-RS 105 | | |
| Water | Continuous output with 44°C ΔT | | l/h | 507 | 811 | 1293 | 1740 | 1960 | | |
| | Continuous output with 50°C ΔT | | l/h | 446 | 714 | 1138 | 1531 | 1725 | | |
| | Continuous output with 55°C ΔT | | l/h | 406 | 649 | 1034 | 1392 | 1568 | | |
| | Storage capacity | | litres | 324 | 312 | 265 | | | | |
| | Maximum operating water pressure (open vented) | | bar | 8 | | | | | | |
| | Maximum operating water pressure (unvented) | | bar | 3.5 (=cold feed pressure reducing valve preset in unvented kit option) | | | | | | |
| | Expansion relief valve setting (open vented kit) | | bar | 5 | | | | | | |
| Energy | Building Regulations thermal efficiency gross | | % | 82.31 | 81.11 | 81.15 | 80.15 | 80.20 | | |
| | Heating-up time, ΔT = 44°C | | min. | 38 | 23 | 12 | 9 | 8 | | |
| | Heating-up time, ΔT = 50°C | | min. | 43 | 26 | 14 | 10 | 9 | | |
| | Heating-up time, ΔT = 55°C | | min. | 47 | 28 | 15 | 11 | 10 | | |
| | Standby losses | | kW/24h | 9 | 10.4 | 8.3 | 9.0 | 9.9 | | |
| Gas | Nat. Gas G20-20mbar | Input power, gross–maximum | | kW | 31.6 | 51.2 | 81.6 | 111.1 | 125.2 | |
| | | Output power–maximum | | kW | 25.9 | 41.5 | 66.2 | 89.0 | 100.3 | |
| | | Gas inlet pressure–nominal | | mbar | 20 | | | | | |
| | | Gas flow rate–maximum@1013.25 mbar and 15°C | | m³/h | 3.1 | 5.0 | 7.9 | 10.8 | 12.2 | |
| | LPG G31-37mbar | Input power, gross/ (net)–maximum | | kW | 29.9 | 47.0 | 75.7 | 108.7 | n/a | |
| | | Output–maximum | | kW | 25.0 | 38.9 | 62.6 | 89.0 | n/a | |
| | | Gas inlet pressure–nominal | | mbar | 37 | | | | | n/a |
| | | Gas flow rate–maximum@1013.25 mbar and 15°C | | kg/h | 2.2 | 3.4 | 5.5 | 7.9 | n/a | |
| Flue | Approximate flue gas volume @15°C, 9.8% CO ₂ , N.T.P. (Nat. Gas-G20) | | m³/h | 39.3 | 63.4 | 100.2 | 137.0 | 154.8 | | |
| | Flue gas temperature–maximum | | °C | 130 | 150 | 145 | 180 | 185 | | |
| General | Power consumption DR-SE (DR-SA) | | W | 100 | | | 275 | 300 | | |
| | Electrical supply | | V _{AC} | 230V 1 PH 50 Hz | | | | | | |
| | Weight when empty | | kg | 230 | 245 | 295 | 320 | | | |
| | Approximate shipping weight | | kg | 235 | 250 | 300 | 325 | | | |
| | Maximum floor load/ weight filled with water | | kg | 554 | 557 | 560 | 585 | | | |

Dimensional Details

Dorchester DR-RS Dimensions and Clearances



| Ref | Dimensions | Units | Dorchester DR-RS Model | | | | |
|-----|--|-----------|----------------------------------|----------|----------------------|----------------|--------------------|
| | | | DR-RS 25 | DR-RS 40 | DR-RS 65 | DR-RS 85 | DR-RS 105 |
| A | Total height | mm | 2000 | | 2020 | | |
| B | Cylinder height | mm | 1800 | | 1820 | | |
| G | Twin duct flue and air spigot diameters | mm | n/a | | | 2 x 130 dia. | |
| K | Gas inlet connection height/(size) | mm/(inch) | 600 (Rp ¾" female) | | | | 760 (Rp 1" female) |
| L | Concentric flue/air spigot diameters | mm | 80/125 | 100/150 | 130/200 | n/a | |
| M | Cold water inlet connection height/(size) | mm/(inch) | 600 (R 1½" male) | | 590 (R 1½" male) | | |
| N | Hot water outlet connection height/(size) | mm/(inch) | 1640 (Rp 1½" female) | | 1655 (Rp 1½" female) | | |
| P | Inspection opening height/(diameter) | mm/(inch) | 770 (100 dia.) | | | 760 (100 dia.) | |
| R | Drain connection height/(size) | mm/(inch) | 550 (Rp 1½" female) | | 540 (Rp 1½" female) | | |
| S | Temperature and pressure relief valve connection height/(size) | mm/(inch) | 1600 (1"–11.5 t.p.i. NPT female) | | 1600 (Rp 1½" female) | | |

Air Supply and Ventilation

An adequate supply of fresh air for combustion and ventilation must be provided in accordance with BS5440 (<70kW Net) and BS6644 (>70kW Net). For room-sealed Dorchester DR-RS water heaters the air supply referenced here is for ventilation only.

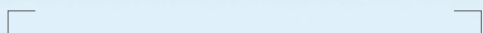
The minimum recommended ventilation areas for high and low level vents depends on the kW net input, and must be calculated using the factors quoted in BS5440 and BS6644 as appropriate. The kW net input factor quoted refers to the sum of the net heat inputs of all gas fired appliances in the plant room or compartment.

To calculate minimum vent areas for high and low-positioned vents in compartment installations:

- If vents are open to outside air, use a factor of 5cm² per kW net input for both high and low level vents.
- If vents are to room or internal space, use a factor of 10cm² per kW net input for both high and low level vents.

For plant room installations with a total net heat input greater than 70kW, and vents are open to outside air, then use a factor of 2cm² per kW net input for both high and low level vents.

Your local contact is:



**British engineering excellence from Hamworthy Heating;
the commercial heating and hot water specialists.**



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