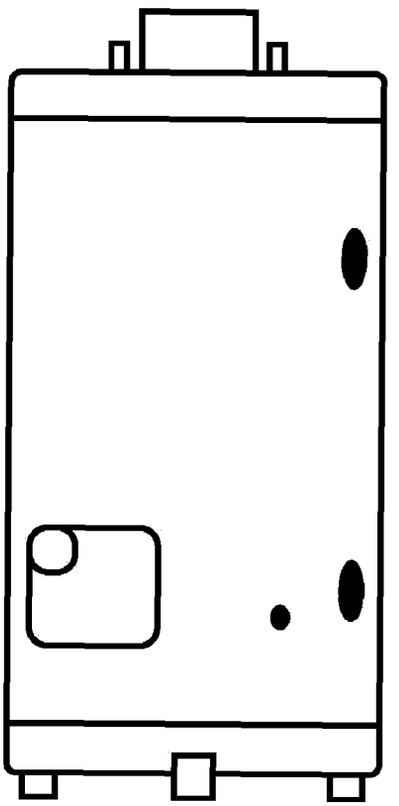
Duo 120, 150 & 200



Installation and Maintenance Instruction Manual

Including User Instructions

C&M
CHAFFOTEAUX & MAURY

Customer Care and Guarantee

Chaffoteaux & Maury Ltd., as a leading manufacturer of domestic and commercial water heating appliances, as well as domestic unvented direct and indirect storage cylinders, is committed to providing high quality products and a first class after sales service. If it is necessary to contact an engineer, then telephone your local Chaffoteaux Service Centre.

LOCAL CHAFFOTEAUX SERVICE CENTRE
Tel: 0807 243 0224

Advice on installation or servicing can also be obtained by contacting the Chaffoteaux Customer Services Department.

CUSTOMER SERVICES DEPARTMENT
Tel : 01952 222288 Fax. 01952 22402

The manufacturer's guarantee against faulty construction or materials for the cylinder is 5 years and for the electrical components, thermal controls and safety valves is for 12 months, from the date of purchase.

The guarantee will be invalidated if the factory fitted temperature and pressure relief valve is tampered with or removed. The Manufacturer or Distributors cannot be held responsible for any damage howsoever caused and which is a consequence of the removal or tampering.

The guarantee may also be invalidated if the appliance is not installed by a competent person in accordance with the recommendations made herein, current standards, regulations or in a manner not approved by the manufacturer, modified in any way, subjected to frost, misuse or neglect and that factory fitted parts have had unauthorised repairs or replacements carried out. Evidence of purchase and the date of supply must be made available at the time of any claim.

To assist us in providing you with an efficient after sales service, please return the guarantee registration card enclosed with the cylinder without delay.

Safety Notice

- Installation must be carried out by a suitably qualified installer and in accordance with current regulations and codes of practice.
- Only the safety valves supplied with the cylinder should be used.
- The cylinder must not be used without the safety valves and expansion vessels.
- The cylinder must not be used with a boiler without thermostatic control.
- The cylinder and ancillary controls must be adequately maintained.
- The installation must have a sufficient and constant supply of mains fed cold water.
- No valve should be fitted between the expansion relief valve and the storage cylinder.
- Only Chaffoteaux and Maury approved replacement parts should be used.
- The discharge pipe must be terminated where it is visible and will not cause danger to people in the vicinity of the discharge.

Note: The discharge could consist of scalding water and steam.

Contents

Table of Figures

Introduction

The Chaffoteaux & Maury DUO 120, 150 and 200 are designed for use as unvented storage cylinders to be heated indirectly by a sealed system boiler or directly by the ceramic core electrical element included with them. The cylinders are enamelled steel with a high power coil. They are contained within a white case insulated with CFC free polyurethane foam. There is a magnesium anode to protect the cylinders against corrosion.

The unvented storage cylinders will provide the advantages of mains pressure and higher flow rates to taps and showers.

Supplied directly from the main water supply they do not need a separate feed cistern or vent pipe in the loft space. They can benefit from the high efficiency and fast recovery provided by modern low water content sealed system boilers and particularly when used in conjunction with Chaffoteaux & Maury BRITONY SYSTEM, SYSTEM PLUS, or COMBI BOILERS. A better flow rate at main pressure can usually be achieved when compared with vented or instantaneous systems. The cylinders have been tested and approved by the WRc as meeting with the requirements of EN 60335 2.21. EN 60529.

The cylinders should be stored and installed in an upright position and be protected from extremes of temperature and humidity at all times. They must never be lifted or carried by the flow and return pipes or connections.

Specifications

DUO Cylinders	**120**	**150**	**200**
Storage Capacity ltrs	113	140	190
Weight of unit when empty	58kg	72kg	83kg
Weight of unit when full	171kg	212kg	273kg
Maximum operating pressure	6bar	6bar	6bar
Expansion vessel charge pressure	3bar	3bar	3bar
Expansion relief valve setting	6bar	6bar	6bar
Maximum primary working pressure	3.5bar	3.5bar	3.5bar
Set opening pressure of temperature and pressure relief valve	7bar	7bar	7bar
Set opening temperature of temperature and pressure relief valve	92˚C	92˚C	92˚C
Draw-off rate	30ltr	30ltr	30ltr
Consumption per day to maintain 65˚˚C in kW per 24h	1.2	1.55	1.75
Electrical protection index	IPX 3	IPX 3	IPX 3
Indirect System			
Capacity of primary coil	7ltr	10ltr	10ltr
Heating area primary coil	0.83m^2	1.15m^2	1.15m^2
Heating duration (Domestic water raised from 15˚C to 65˚C)	18min	17min	22min
Indirect heating power (primary flow temp. 82˚C @ 900l/hr)	21kW	27.2kW	27.2kW
Direct System			
Electrical power	3kW	3kW	3kW
Nominal current	12.5A	12.5A	12.5A
Heating duration (Domestic water raised from 10˚C to 65˚C)	2h 45	3h 20	4h 30
Efficiency	0.89	0.91	0.93

Dimensions

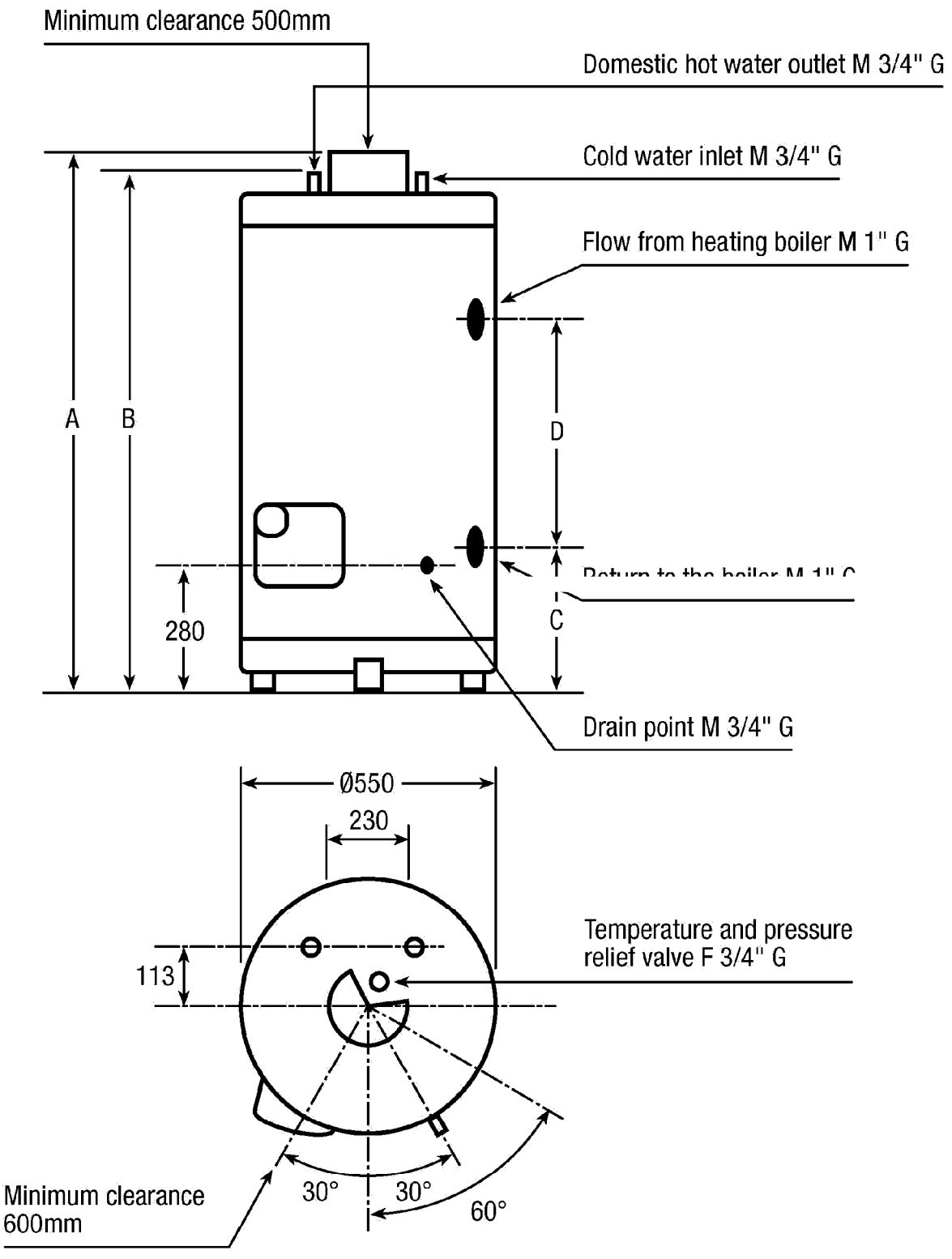


Fig. 1 - Dimensions

	A	B	C	D
120 l	960mm	935mm	300mm	350mm
150 l	1150mm	1125mm	300mm	500mm
200 l	1435mm	1401mm	300mm	500mm

Location of Components

The Cylinder

To enable the cylinder to comply with the current regulations, it is supplied with a safety controls pack. This comprises:

1. Cold water inlet
2. Pressure reducing valve with integral strainer
3. Check valve (non return valve)
4. Expansion relief valve
5. Cylinder thermostat and overheat thermostat beneath cover
6. Temperature and pressure relief valve
7. Expansion vessel
8. Tundish
9. Drain valve
10. Two port motorized safety cut-off valve
11. Balanced cold water supply
12. Connecting pipe to expansion vessel
13. Cold water inlet pipe to cylinder
14. Hot water outlet pipe
15. Flow from boiler to cylinder coil
16. Return from coil to boiler
17. Electrical supply for direct element
18. Cover for electrical element and thermostat
19. Discharge pipe
20. Flow to central heating
21. Gas supply
22. Return from central heating
23. Electrical connection from cylinder thermostat to boiler
24. Central heating zone valve

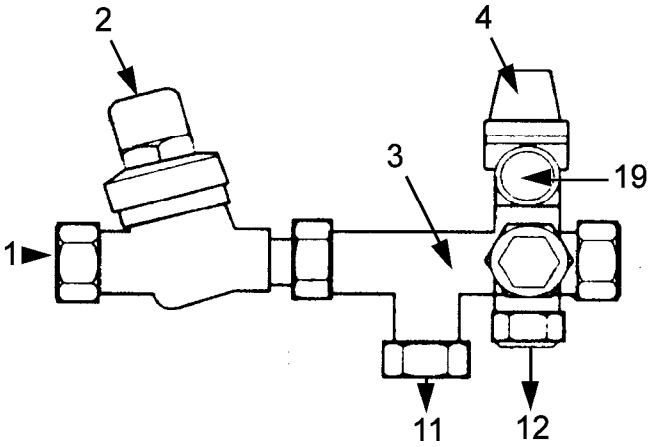


Fig. 2 - Combination safety control valves

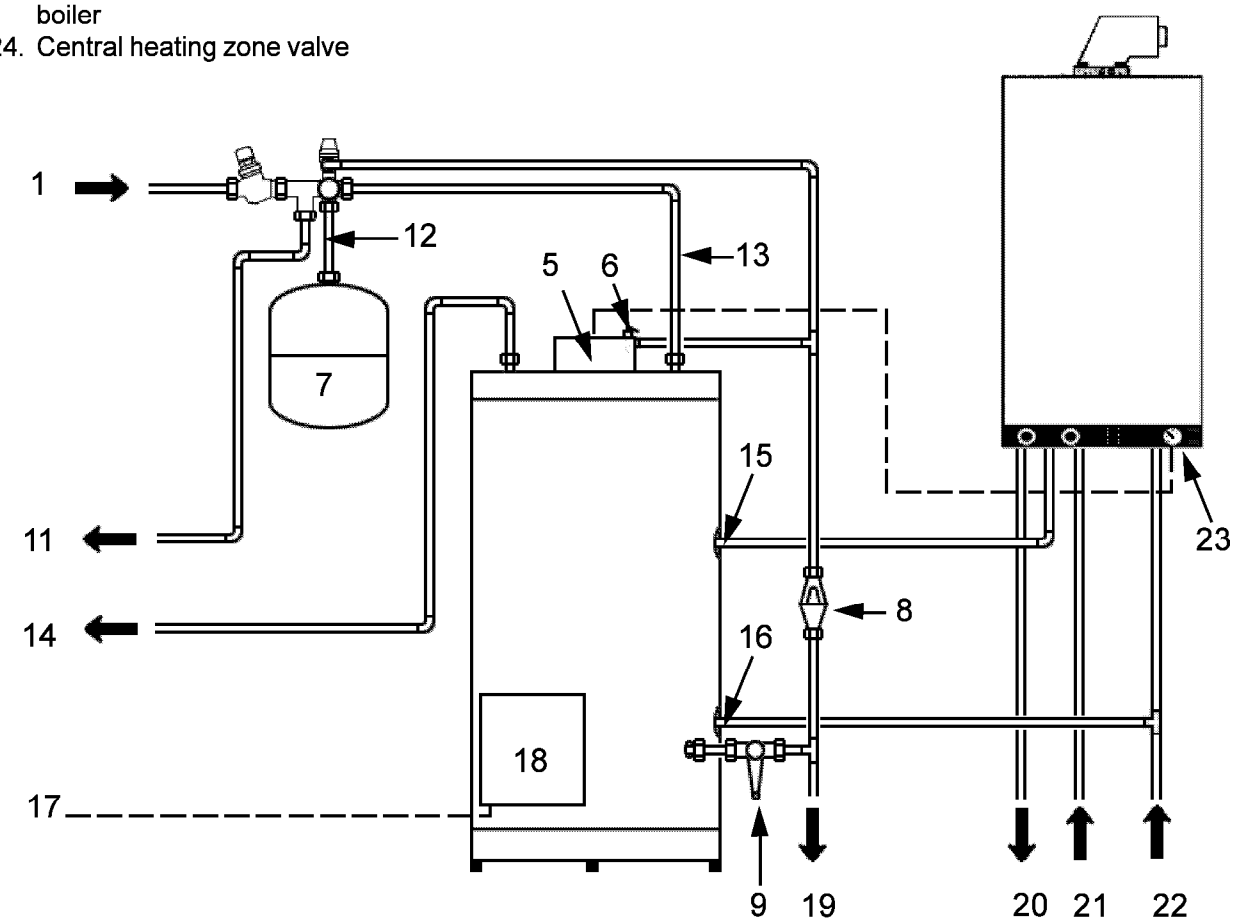


Fig. 3 - Cylinder connected to System Plus Boiler

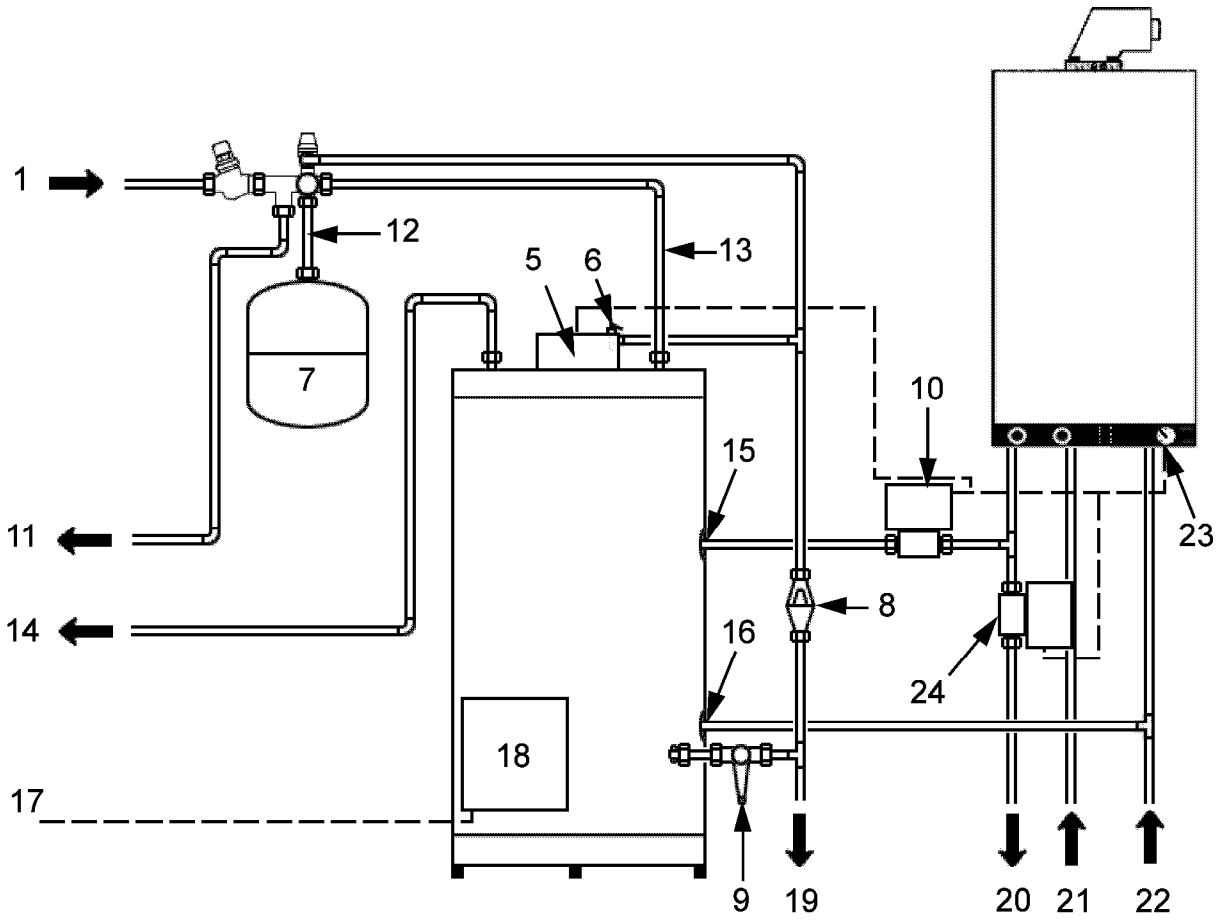


Fig. 4 - Cylinder connected to System Boiler

Please note: the motorised two port safety cut off valve is only necessary if the cylinders are linked to a boiler other than the **Britony System Plus** Boiler.

The Electrical Element

The cylinder contains an alternative source of power. It is fitted with a 23Ov 3 kW ceramic core element with a factory set thermostat and a manually re-settable thermal cut-out.

Planning

The efficient operation of this appliance depends upon a well-designed system and correct connection to the boiler. Please familiarise yourself with these installation instructions as well as the relevant British Standards and Statutory Regulations. For example, please consult current versions of the Building Regulations, The Building Standards for Scotland, the IEE Regulations, the Model Water Bylaws and the Health and Safety Document No. 635 (The Electricity at Work Regulations 1989), Approved Document G3. The domestic hot water pipework must be in accordance with BS 6700. All capillary joints must be made using lead free solder.

Check that the kit of components is complete.

- The cylinder must be installed vertically.
- All pipe runs should be kept as short as possible for economy.
- Allow a minimum of 600 mm frontal clearance to allow the removal of the electrical element and access to the thermostat.
- Allow 500 mm access to the top of the appliance to allow the removal of the sacrificial anode.
- Provision must be made for the positioning of the safety valves, expansion vessel and discharge pipes.
- Ensure that the floor is level and capable of supporting the weight of the cylinder when full (see page 3).
- Check that there is sufficient mains pressure and flow to cater for the combined demands of hot and cold water for the premises.

Installation

To obtain the best performance from the Chaffoteaux & Maury DUO, the lowest main working pressure (when demand on the main supply is at its highest and with a tap running) should not fall below 20 1/min at 1.5 bar.

Fitting Safety Components

The diagram should be used only for guidance for the positioning of the safety components and controls.

Discharge Pipes

Please refer to the Building Regulations Approved Document G3 for installation details.

Water will only flow from the discharge pipe under conditions of overheating or over-pressurisation. It is important that the discharge is visible at the tundish or termination point.

- The discharge pipe from the tundish must be of metal and positioned away from any electrical components.
- There must be at least 300mm of vertical pipe after the tundish before any bends or elbows.
- The discharge pipe must be installed with a continuous fall and terminate in a safe place where there is no risk of scalding anyone.
- The diameter of the discharge pipe can be calculated from the table below.
- The pressure relief valves cannot be used for any external appliance or other purpose.
- If unvented hot water storage systems are installed where discharges from safety devices may not be apparent, i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warm when discharge takes place.

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

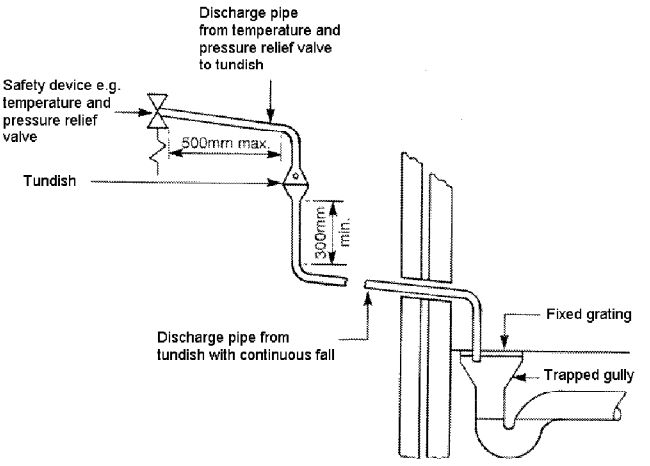


Fig. 5 - Discharge pipe arrangement

Valve outlet size	Minimum size of discharge pipe	Minimum size of discharge pipe from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
¾" G	22 mm	28mm 35mm 42mm	Up to 9m Up to 18m Up to 27m	1.0m 1.4m 1.7m

Fig. 6 - Discharge pipe sizing

Direct System

All wiring must comply with the latest version of the IEE Regulations. It must be possible to completely isolate the appliance electrically. Connection should be via a 13 amp fused double pole isolating switch with contact separation of at least 3mm on both poles. Alternatively, a fused 13 amp, 3 pin plug and unswitched socket may be used, provided it is not used in a room containing a bath or shower. It should only supply the appliance and be readily accessible and adjacent to the appliance.

- Remove the front cover
- Ensure that the supply voltage is correct for the appliance
- Connect the main electrical supply to the thermostat as shown in the diagram (Fig. 7) using PVC insulated cable of not less than 2,5 mm^2
- Ensure a good earth connection is made to the earth terminal.
- Ensure all electrical connections are well made to avoid overheating.
- Replace front cover.
- Never fit the electrical element without its regulation device.

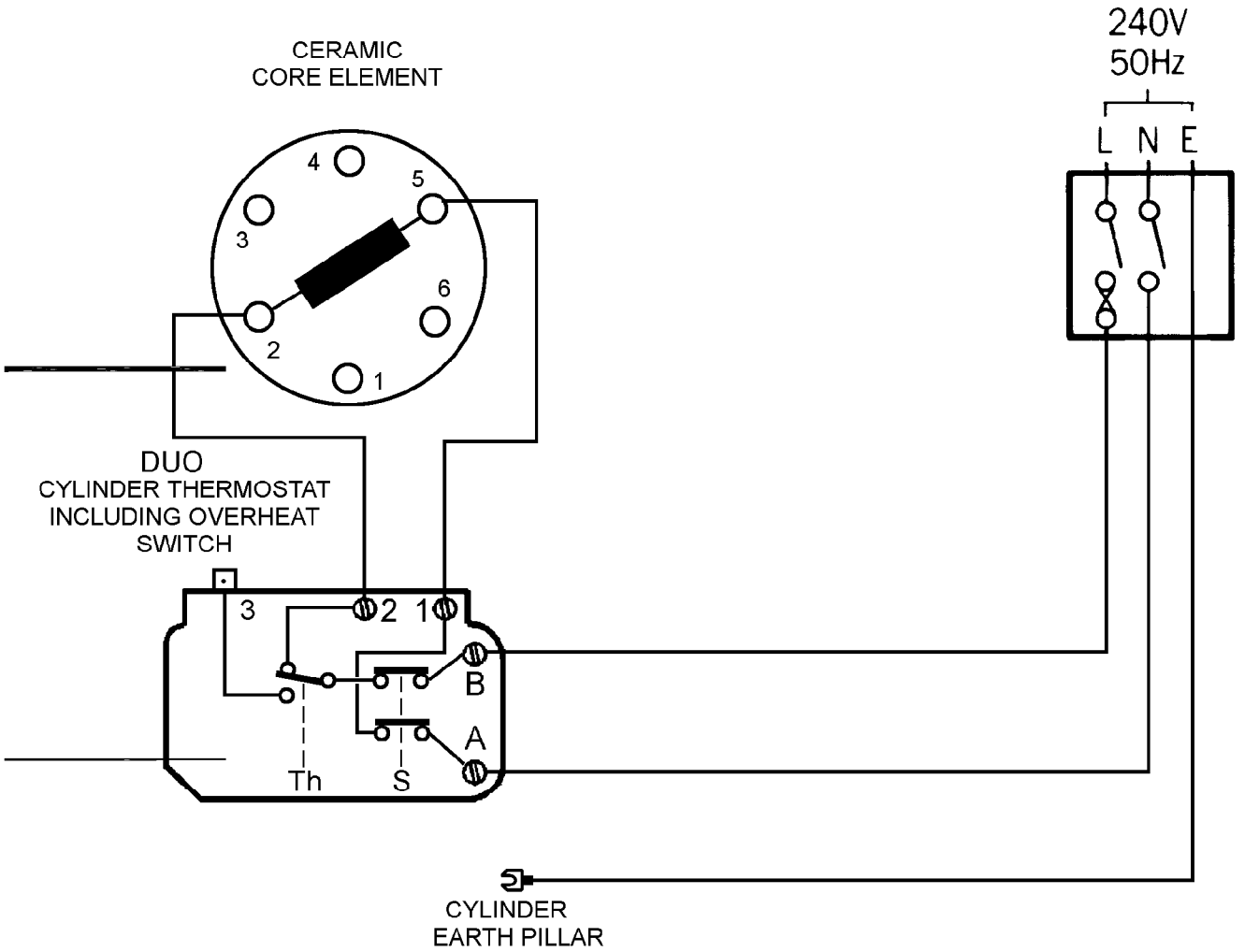


Fig. 7 - Wiring for electrical element

Indirect system

The Chaffoteaux & Maury DUO unvented cylinder is suitable for connection to most gas or oil fired boilers that are compatible with unvented systems. They must have thermostatic control. CONTACT THE BOILER MANUFACTURER IF YOU ARE ANY DOUBT.

Britony System Plus Boiler

The DUO 120, 150 and 200 cylinders have been designed to work in conjunction with the Britony System Plus Boiler to provide the best possible combination of performance and efficiency. They also utilize the boiler's built-in 3 port valve, which simplifies installation and wiring.

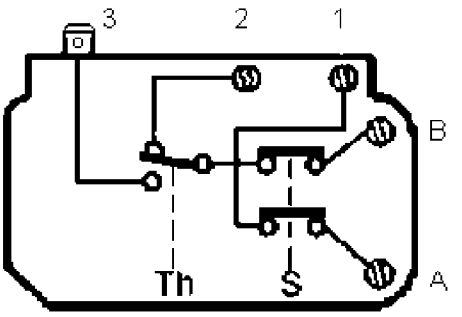


Fig. 8 - Thermostat connections

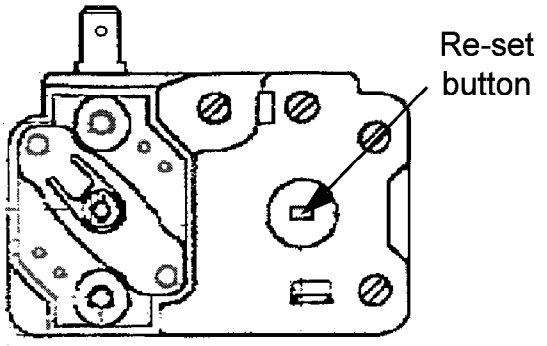


Fig. 9 - Thermostat re-set button

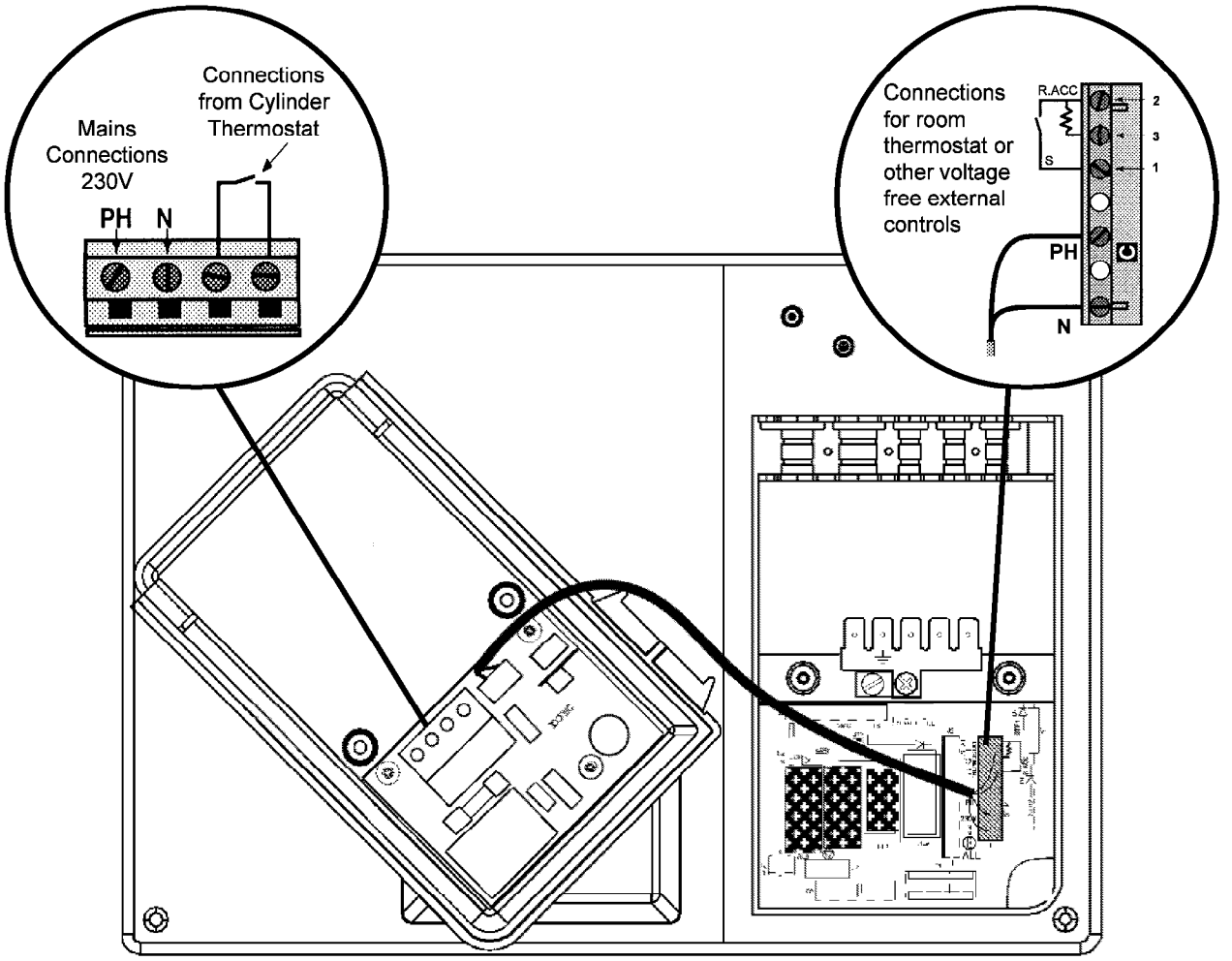


Fig. 10 - Electrical box detail on boiler

Option 1

Using a hot water priority system with the hot water on constantly and the heating timed. Asimple time clock can be use such as the Randall 103.

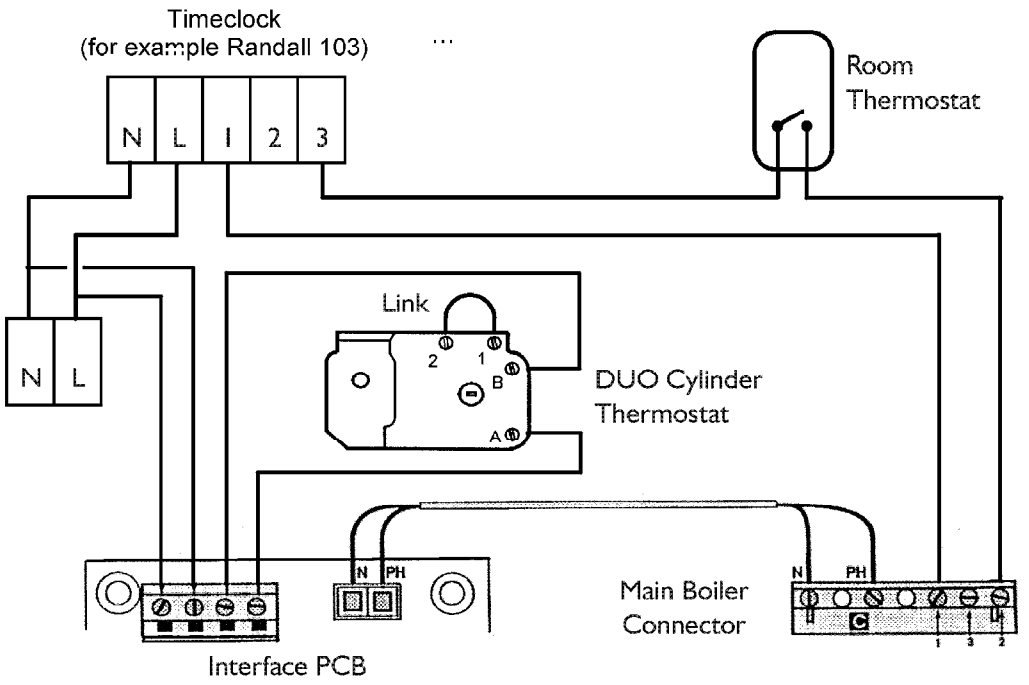


Fig. 11 - Hot water on constant and central heating timed

Option 2

Using hot water priority with a timed facility for both hot water and central heating. A twin channel clock such as the Horstman Channelplus Model H27 must be used.

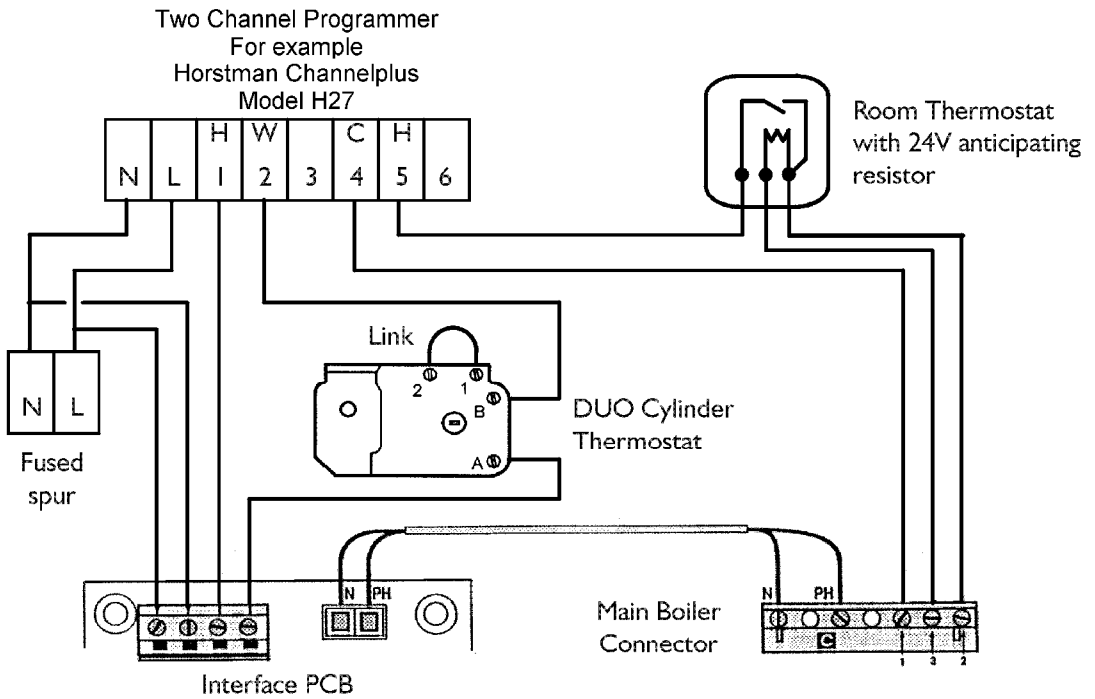


Fig. 12 - Hot water and heating timed

Britony System Boiler

When the Britony System boiler (or a boiler from another manufacturer) a two port safety cut off valve must be used. This is supplied with the cylinder. It can be used together with another two port valve, to provide timed control over the heating and hot water circuits.

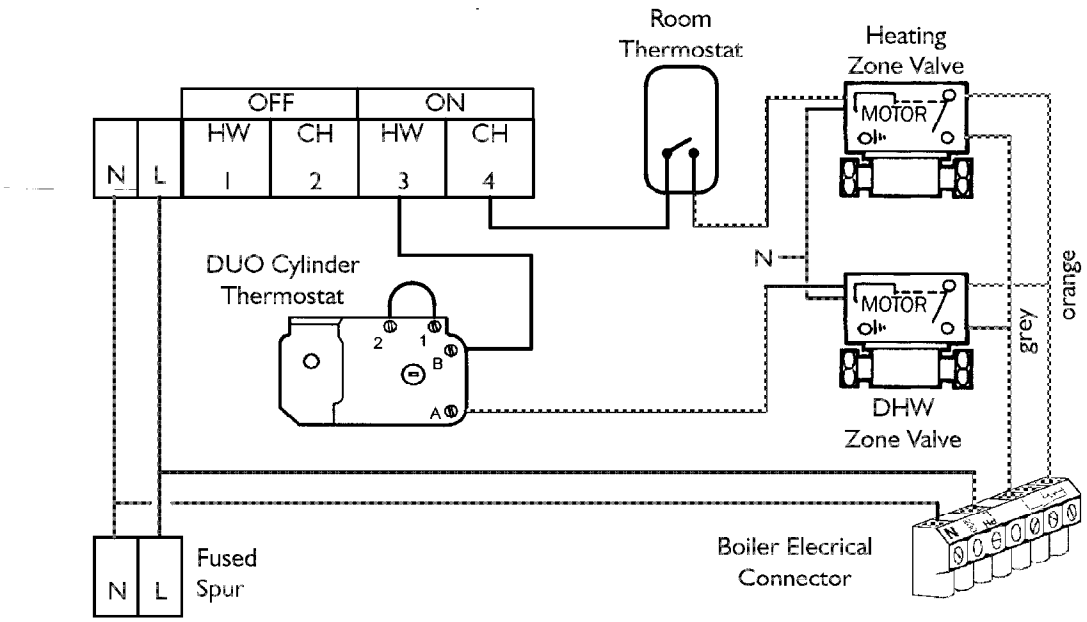


Fig. 13 - Britony System boiler using 2 x two port valves

Commissioning

Filling the Cylinder

- Do not turn on electrical power to the immersion heater without water in the cylinder.
- Ensure that all fittings, valves and the immersion heater are correctly installed and are watertight.
- Flush all debris from the supply pipes before connecting to the cylinder.
- Open the furthest hot water tap from the cylinder.
- Open the main valve and allow the cylinder to fill steadily. Allow water to flow from the tap for a few minutes to ensure any installation debris is flushed through the system.
- Open all other taps in turn to purge any remaining air from the system.
- Check all connections for leaks.

Check the operation of the safety valves

- Manually open the temperature and pressure relief valve (6 Fig. 3) for a few seconds.
- Check that the water flows away through the tundish and discharge pipework and does not overflow.
- Ensure that the flow of water has stopped and that the valve has reseated itself.
- Repeat the above check for the expansion relief valve.

Direct Heating Units

- Carry out an electrical test for earth continuity, correct polarity, short circuit and fuse continuity.
- Turn on the electrical supply and allow the water to heat up.
- Check the correct operation of the cylinder thermostat.
- Check that water is not discharged from either the expansion relief or the temperature and pressure relief valves.

Indirect Heating

- Refer to the boiler commissioning instructions.
- Ensure that the cylinder heating coils are filled and purged of air.
- Light boiler and allow the cylinder to heat up.
- Check the correct operation of the cylinder thermostat.
- Check that water is not discharged from either the expansion relief or the temperature and pressure.

Post Commissioning

Handing Over to the Householder

- Ensure system pressure has been set correctly
- Set boiler and cylinder thermostat and controls
- Demonstrate the lighting and operation of the boiler
- Demonstrate how to maintain system pressure
- Explain to the customer :
  1. the operation of the appliance and safety controls
  2. things to look out for such as a continual leak of water noticed at the tundish
  3. Explain the necessity for annual maintenance by a competent person
  4. what to do in an emergency
- Leave instruction manual with the customer
- Fill out guarantee card and return to Chaffoteaux & Maury Ltd.

In order to ensure that the cylinder continues to operate efficiently and safely, it is essential that it is serviced and inspected annually. This may be timed to coincide with the annual boiler maintenance.

- Servicing and repairs should only be carried out by a competent engineer.
- Any part replaced should be genuine Chaffoteaux & Maury spare parts.

Routine Maintenance

Before continuing with any maintenance, ensure that the boiler has been turned off and that the electrical supply has been isolated.

1. Electrical Element

Check the operation of the electrical element thermostat by turning off the boiler and running off some hot water. Allow the electrical element to reheat the water to its set temperature. Check that no water is discharged from the expansion or temperature relief valves. As the electrical element is not indirect contact with the water, it is not necessary to check it for scaling.

2. Sacrificial Anode

Drain the cylinder by turning off the main water inlet valve and opening the lowest hot water tap to depressurise the system. Open the drain valve (9 Fig. 3) and drain approximately 5 litres.

The anode is located at the top of the cylinder. Remove the cover. Disconnect the outlet pipe to from the T+P valve. Unscrew 6 screws and lift the top plate clear.

When new the diameter of the anode is 26mm. If at any point along its length the diameter has reduced to half or less than half its original diameter, then it should be replaced by unscrewing from the top plate.

Replace components in the reverse order using a new gasket for the top plate.

3. Strainer

While the cylinder is partially drained the strainer can be removed and cleaned.

4. Expansion Vessel

While there is no pressure in the system the pressure in the expansion vessel can be checked against the pressure on the data badge.

Refill and Re-pressurise the system as set out in the commissioning instructions.

5. Safety Valves

Manually operate the temperature, pressure and expansion relief valves. Check that water runs freely through the tundish and at the discharge point without overflowing. Check that the flow of water stops and that the valves reseat satisfactorily.

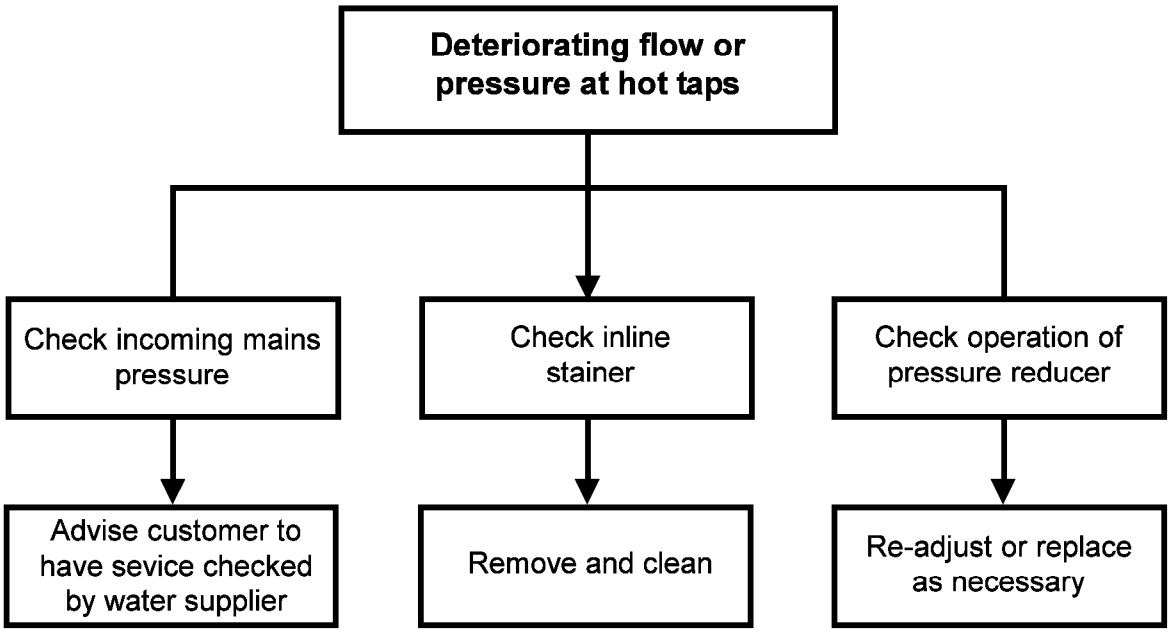


Fig. 14 - Deteriorating flow from taps

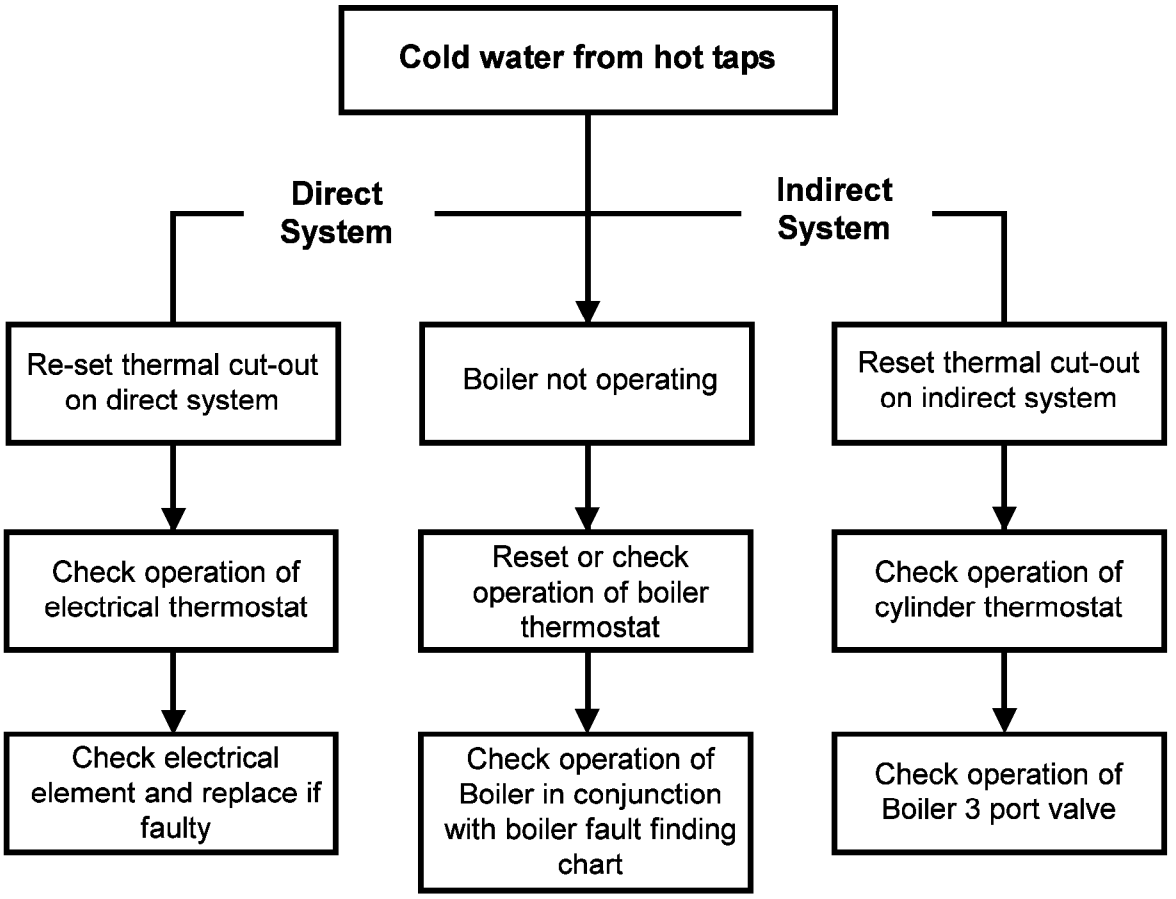
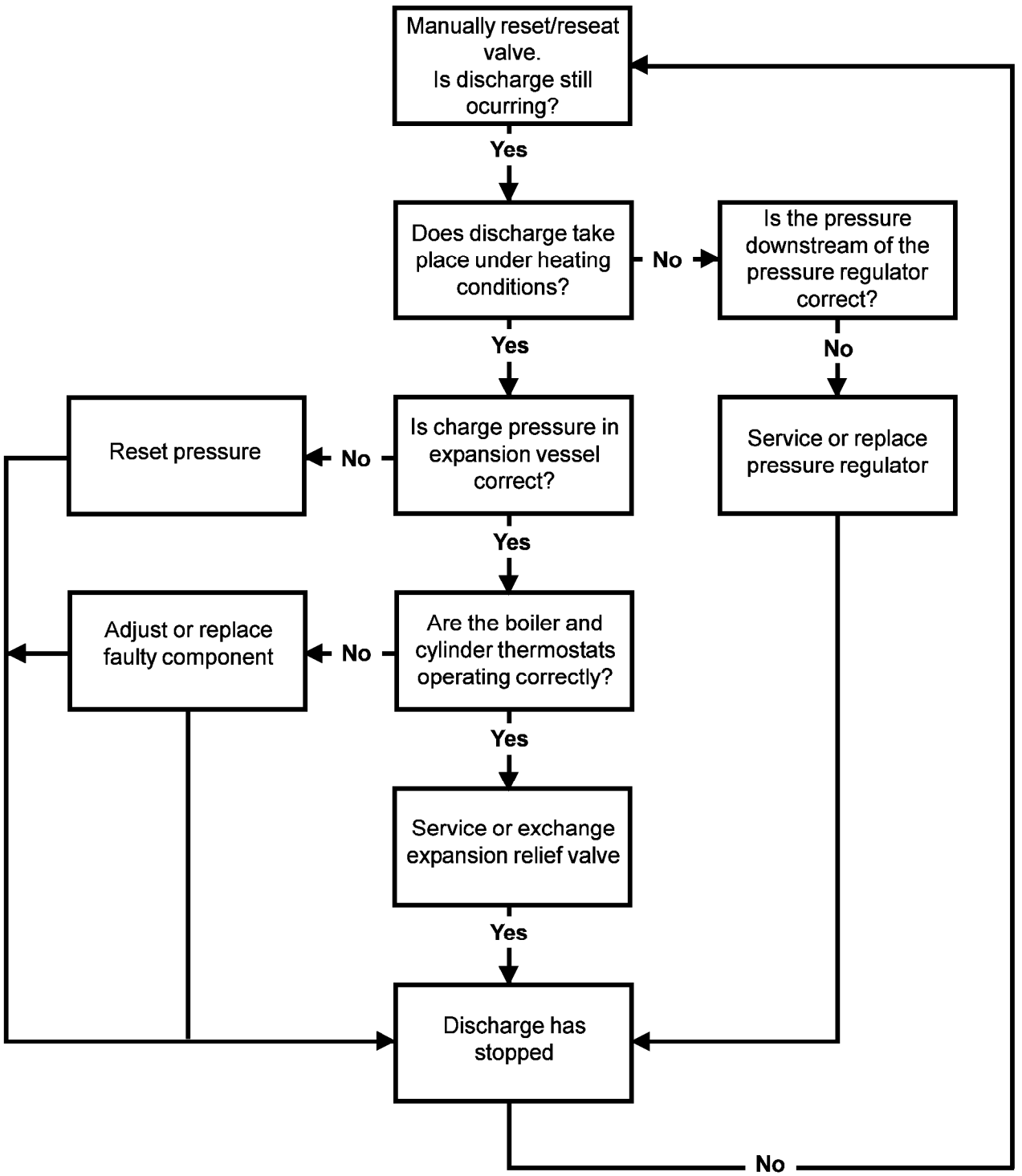


Fig. 15 - Cold water from taps

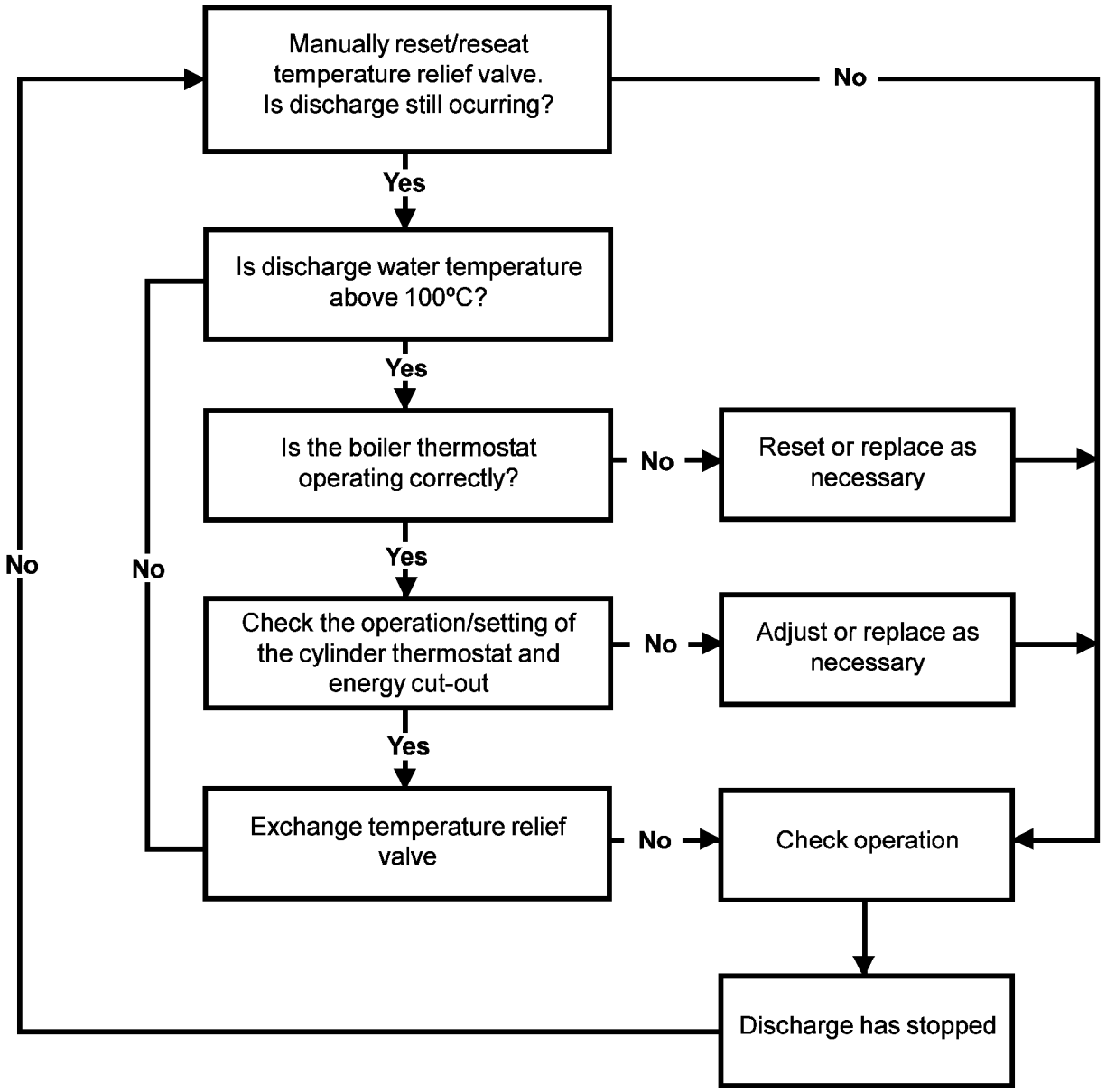
Discharge from Expansion Relief Valve



Please Note:
Use only genuine Chaffoteaux replacement parts

Fig. 16 - Discharge from expansion relief valve

Discharge from Temperature Relief Valve



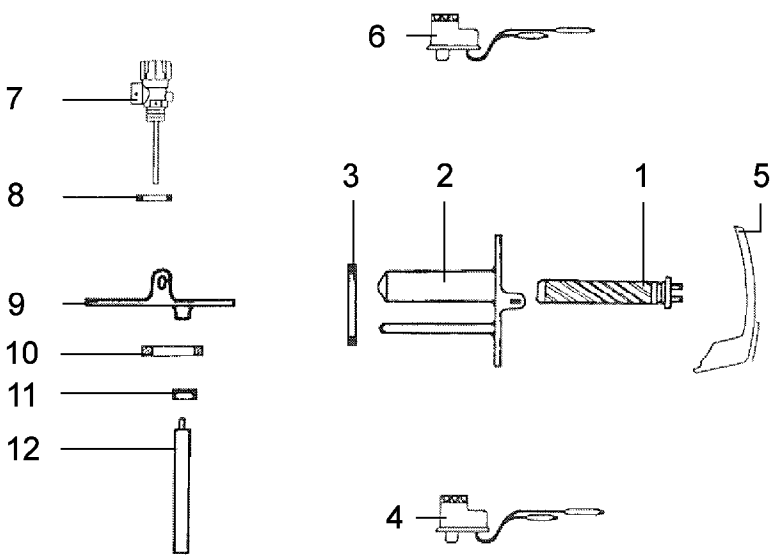
Please Note:
Use only genuine Chaffoteaux replacement parts

Fig. 17 - Discharge from temperature and pressure relief valve

Spare Parts List

Key No		DUO 120	DUO 150	DUO 200
1	Electrical ceramic core element	1013345	1013345	1013345
2	Sleeve for thermostat and element	1013341	1013341	1013341
3	Flange gasket	1013362	1013362	1013362
4	Electrical thermostat	1013346	1013346	1013346
5	Front cover	1005236	1005236	1005236
6	Cylinder thermostat	1013347	1013347	1013347
7	Temperature and pressure relief valve	1013350	1013350	1013350
8	T & P valve gasket	1013696	1013696	1013696
9	Top plate	1013342	1013342	1013342
10	Top plate gasket	1013361	1013361	1013361
11	Cap	1013760	1013760	1013760
12	Top cover	1013338	1013338	1013338
13	Sacrificial anode	1005906	1005906	1005907

Spare Parts Short List



There are no user adjustable controls on the DUO. The immersion heater thermostat will have been set on installation. A suitably qualified engineer, installer or electrician must carry out any adjustments or maintenance.

If water is seen discharging from the DUO Safety Valves

- Turn off the electrical supply to the immersion heater
- Turn off the boiler
- Do ***not*** turn off the water supply
- Contact the installer or other suitably qualified engineer.

In order to ensure that the cylinder continues to operate efficiently and safely, it is essential that it is serviced and inspected annually. This may be timed to coincide with the annual boiler maintenance.

- Servicing and repairs should be carried out by a competent engineer.
- Any part replaced should be genuine Chaffoteaux & Maury spare part.

If the thermal cut out is activated, it is necessary to reset and check the operation of both thermostats fitted to the cylinder (immersion heating and indirect heating thermostats).

Chaffoteaux & Maury Ltd are continuously improving their products and therefore reserve the right to change specifications without prior notice and accept no liability for any errors or omissions in the information contained in this document.

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ESP 042 June 1999