



SUPER BRAVO

ELECTRIC WATER HEATER

UNVENTED WATER STORAGE CYLINDER

Periodically, no longer than every 12 months, the magnesium anti-corrosion anode should be checked by your service engineer/installer.

Installation and Users Guide

IMPORTANT

Please read these instructions carefully
before installing the cylinder.
Failure to do so may invalidate the Warranty

WATER BYE-LAWS

These bye-laws ensure a good supply of wholesome water, that the wastage of water is prevented as far as is practical and that only approved materials, pipes and fittings are used to convey water.

BUILDING REGULATIONS

These are a statutory document and take priority over all other regulations and recommendations. The installation of an unvented hot water storage cylinder is classified as a "Controlled Service" and Regulation G3 applies. To meet the requirements of the Regulation, installation of an unvented system should be undertaken by a "competent installer".

All installations of unvented hot water storage systems having a capacity of more than 15 litres should be notified to the relevant Local Authority by means of building notice or by the submission of full plans. It is important to note that it is a criminal offence to install an unvented hot water storage system without notifying the Local Authority.

HOW THE HEATER WORKS

The Heating Element is connected through a capillary type Thermostat which senses the water temperature. The operating temperature can be pre-set by adjusting the spindle in the head of the thermostat. In addition to the thermostat there is a thermal cut-out incorporated if the Thermostat fails and the water temperature rises too high. Once the Cut-Out operates it can only be re-set manually after the fault has been rectified.

In addition to the above there is a separate Cylinder Thermostat and Thermal Cut-Out for controlling the indirect circuit. Again the Thermal Cut-Out operates if the Cylinder Thermostat is to fail by disconnecting the live (call for hot water) from the Time Clock.

There are two Magnesium Anodes provided to prevent corrosion of the water container.

The factory fitted Pressure & Temperature Relief Valve on the top of the cylinder is a safety device to back-up the Thermostat(s) and Thermal Cut-Out(s). It works by sensing an excess in water pressure or temperature and releasing the hot water into a Discharge Tundish and drain.

The cylinder will only work in the vertical position. The inlet pipe needs to deliver cold water to the bottom of the tank. When water is heated it expands. To accommodate this increase in volume an Expansion Vessel is provided. A Cold Water Combination Valve is also provided in two pieces, loose jointed for ease of installation. These comprise a Combined Line Strainer/Pressure Reducing Valve and Core Non Return Valve/Expansion Relief Valve.

The Strainer prevents any debris entering the other controls. The Pressure Reducer ensures the correct operation of the Expansion Vessel (making sure that water is always drawn from the vessel first).

The Non-Return Valve ensures the water expansion is forced into the Expansion Vessel and not the mains cold water supply. The Expansion Relief Valve will discharge expanded water to the Discharge Tundish if the Expansion Vessel fails.

INSTALLATION

COLD WATER SUPPLY

It is important to ensure that the cold water main is capable of supplying the increased demand which will be imposed on it. Hot and cold water are both drawn off the same source of supply. **Remember**, there will not be a storage tank to help compensate for variations in the demand on the system.

A minimum pressure of approximately 1.5 bar and 20 litres per minute is required for satisfactory operation. 85% of UK dwellings have a mains pressure above 2.0 bar.

THE MAINS WATER SUPPLY MUST NOT EXCEED 6 BAR

SITING AND FIXING

The cylinder may be installed at any convenient position, as it is connected to the mains cold water supply, it is equally effective on any floor.

However, do not install the unit in premises which may be subject to freezing. Ensure that the floor load bearing strength is adequate to take the weight of the cylinder when full of water (see table 1).

All models are free standing. These are supplied with feet which are attached to the heater via self tapping screws which are also supplied. All units must be installed in the VERTICAL POSITION.

For maintenance purposes leave at least 600 mm free space in front of the Immersion Heater cover for access to the electrical components, and 300 mm at the top for access to the upper anode.

CONNECTION OF MAINS WATER SUPPLY

On all of the range the mains cold water inlet is marked 'Blue' and the hot water outlet is marked 'Red'. The inlet and outlet port are at the top of the unit and a drain down point is also provided.

The heat exchange ports for the primary flow and return are on the top of the unit.

It is recommended that all mains cold water supply pipework is a minimum of 22mm. An Isolating Valve should be installed between the cold water supply and the cylinder for servicing. **ALL PIPEWORK MUST BE FLUSHED TO AVOID DAMAGE TO THE CONTROL VALVES.**

Please refer to fig. 2 for a suggested installation layout.

COLD WATER COMBINATION VALVE

The Cold Water Combination Valve can be connected either close by the unit or

alternatively it may be installed in a remote position from the unit as there is no requirement to site it in close proximity to the cylinder. This allows a flexible and convenient installation. However, it is important to note allowances for the discharge pipework from the Expansion Relief Valve must be accounted for.

A Balancing Port is supplied on the 22mm valve allowing balanced cold water supply to the rest of the building giving excellent results with mixer and shower valves. If the facility is not needed a plug is supplied. Refer to fig. 3.

CONNECTION TO SERVICES

Again it is recommended that a 22mm pipe run should supply the outlets throughout the building, especially to baths and showers. Short runs of 15mm pipe may be used to connect basins and sinks.

SECONDARY RETURN

A Secondary Return may be fitted via the special port fitted to the top of the cylinder. Refer to fig 5. A Non Return Valve (not supplied) must be fitted to prevent backflow and a Bronze Pump will be needed in conjunction with a Pipe Thermostat to circulate the hot water (both not supplied).

DISCHARGE PIPEWORK

The Pressure/Temperature Relief Valve and Expansion Relief Valve are both designed to discharge water if a fault occurs in the system.

To make sure the user is aware of the fault the discharge pipe must discharge water into the Tundish in a visible and safe position, refer to fig. 4. The following points must be observed as in accordance with Guidance Notes to Building Regulation G3.

- 1) The Tundish must be vertical and fitted within 500mm of the Pressure/Temperature Relief Valve and must be located with the cylinder.
- 2) Discharge pipes from the Pressure/Temperature Relief and Expansion Relief Valves may be joined together.
- 3) Pipe diameter must not be smaller than the diameter of valve outlet.
- 4) Minimum discharge pipe size should be one pipe size larger than the Pressure/Temperature Relief Valve discharge.
- 5) Discharge pipe must be heat resistant.
- 6) Discharge pipe must not exceed 9m in straight length or equivalent resistance with bends, without forming an air break.
- 7) Discharge pipe must fall continuously throughout its length.

8) Discharge pipe should terminate in a safe visible position.

WARNINGS

The outlet from the Pressure/Temperature Relief Valve must not be used for any other purpose. This also applies to the Expansion Relief Valve. No other valve is to be fitted between the Cold Water Combination Valve and the cylinder.

The Pressure/Temperature Relief Valve must not be removed in any circumstances. Any of the above will totally invalidate the warranty.

ELECTRICAL

The electrical installation must be in accordance with the current I.E.E. wiring regulations. When installing in conjunction with an ARISTON DIA System Boiler please refer to boiler manual for electrical connections.

CONNECTION TO THE BACKUP IMMERSION HEATER

A mains supply of 240V, 3kW (13 amps) is required. Heat resistant cable, round 3 core 2.5mm² (to BS6141 table 8) must be used to connect the electrical supply as illustrated in fig. 6.

To gain access to the appliance terminal block, the bottom element cover must be removed. The multi core cable from the isolating switch should then be passed through the grommet hole in the plastic cover. After having made the connection to the terminal block, as per fig. 6 the mains cable must be fixed securely in the clamp provided before replacing the cover. The clamp can be turned over to suit different cable sizes.

The Thermostat on the element should be adjusted to trip at 60°C. This is the ideal temperature to prolong element life in hard water areas. Scale on the sheath builds up more rapidly at temperatures above this causing the element to overheat and premature failure can occur. Higher temperatures without additional controls would result in scalding.

Thermal control of the Immersion Heater is through a capillary type Thermostat which senses the water temperature. The operating temperature can be adjusted by the spindle projecting from the thermostat.

In addition to the thermostat the Thermal High Temperature Cut-Out will switch power off to the element should the thermostat malfunction, causing an excessive rise in water temperature. The cut-out can be reset manually after the fault has been corrected.

INDIRECT CIRCUIT

For indirect controls a 240V, 3amp supply is required.

To gain access to the terminal blocks the element cover at the bottom of the unit must be removed. The cables must be clamped in position (as previously stated) and the control thermostat should be set at 60°C for the reasons above. In addition to the thermostat there is a thermal high temperature cutout should the thermostat fail. Refer to figs. 7a & 7b for full wiring instructions.

WARNING : THIS APPLIANCE MUST BE EARTHED.

The earth continuity conductor of the electrical installation must be effectively connected to all exposed parts of other appliances and services in the room in which the water heater is to be installed, conformity with the I.E.E. wiring regulations.

NOTE: Do not switch on the Immersion Heater or fire the boiler until the cylinder is full of water.

COMMISSIONING

Check for obvious signs of damage to the cylinder and controls and also that the controls fitted correspond with the reference quoted in these instructions.

Ensure that the Drain Cock at the base of the cylinder is closed before commencing.

- 1) Open all outlet taps.
- 2) Turn on mains water supply and allow the water heater to fill.
- 3) Close taps in turn after having purged the system of air.
- 4) Check for leaks around the controls and immersion Heaters and again after the unit has heated up.
- 5) Check that no water is passing to waste through the relief valves.
- 6) Test the operation of the Temperature/Pressure Relief and Expansion Valves by lifting/turning the manually operated test lever/cap and observing that water flows through freely and safely to waste.
- 7) Check that the discharge pipe is plumbed so that it falls continuously and that no taps, valves or other shut off devices are installed in the pipe.
- 8) Check that all thermostats are set at 60°C.
- 9) Switch on Immersion Heater and allow unit to heat up. Check operation of thermostat.
- 10) Fill the indirect (primary) circuit following the boiler instructions. Switch on the boiler, ensure that the programmer is to Domestic Hot Water. Allow unit to heat up and check operation of indirect thermostat on motorised valve(s).
- 11) Demonstrate operation to user, including operation of Pressure/Temperature Relief Valve and what to do if it operates.
- 12) Give this book to the user to retain for future reference and make the customer aware that periodic checks of the equipment are essential for safety.

MAINTENANCE

Periodically, no longer than every 12 months, the installer should check the Magnesium Anti-corrosion Anodes. Assessment of the condition of the bottom anode can be made by judging the condition of the top anode, as this is the most easily removed. If the heating element is heavily coated with scale we recommend descaling at the time of this inspection. The Expansion Vessel may need to be recharged periodically by your installer.

WARNING: SWITCH OFF THE POWER SUPPLY BEFORE WORKING ON THE APPLIANCE.

If the Thermal Cut-Out has operated the cause must be found before resetting.

REMOVAL OF TOP AND BOTTOM ANODES

Operations 1,2,3 and 4 are required for removal of both anodes.
Operations 1 and 2 are required for removal of top anode only.

- 1) Close the mains supply service valve.
- 2) Open hot water taps.
Access to the top anode is gained by removing the T&P valve and access cover from the top of cylinder. The anode is unscrewed using an Allen key.
- 3) Attach a hose and open the drain cock and allow the cylinder to empty.
- 4) Remove thermostat(s) retaining screws/nuts and remove phials from the element. Remove the nuts holding the element flange plate in position and withdraw the assembly from the cylinder. Remove the anode retaining nuts.

EXAMINE THE ANODES AND REPLACE IF THE DIAMETER IS LESS THAN 10mm.

Descale the element and remove any lime deposit from the cylinder. Replace in reverse order.

Extra care must be taken when fitting the top anode.

The use of P.T.F.E. sealing tape is recommended to ensure watertight connection.

Check controls as per the following:-

- 1) Check and clean the Line Strainer before refilling the system.
- 2) Check pressure in Expansion Vessel and top up as necessary.
- 3) Check manually by lifting the test lever, the Pressure/Temperature Relief Valve.
- 4) Check manually by turning the test knob the Expansion Relief Valve.
- 5) Check discharge pipes from both Pressure/Temperature Relief and Expansion Relief Valve for obstructions.

FAULT FINDING

FAULT	POSSIBLE CAUSES	REMEDY
NO HOT WATER FLOW	1) Mains Cold Water supply shut off	Check and open Isolating and/or Stop Valve. Check water, Local Water Authority
	2) Line Strainer blocked	Turn off mains water supply, remove Line Strainer and clean
	3) Cold Water Combination valve fitted incorrectly	Check direction of flow arrows on valve, refit in correct position if necessary
REDUCED FLOW RATE	1) Low Mains Water Pressure	Check pressure, consult Local Water Authority if necessary
	2) Line Strainer partially blocked	Turn off mains water supply, remove Line Strainer and clean
	3) Size of Service Pipe too small	Increase to size stated on page 4
WATER FROM HOT TAPS IS COLD	1) Direct Immersion Heater is not switched on	Check Immersion Heater, switch on if necessary
	2) Direct Thermal Cut-Out has operated	Test Thermostat operation and wiring, if faulty, correct/replace. Reset Cut-Out
	3) Boiler Programmer set to Central Heating only	Check switch on Domestic Hot Water if necessary
	4) Boiler is not functioning	Check boiler operation, if fault suspected consult Manufacturer's Instructions
	5) Indirect Thermal Cut-Out has operated	Test Thermostat operation and wiring, if faulty, correct/replace. Reset Cut-Out
	6) Motorized valve jammed or not wired correctly	Check wiring and operation of Motorized Valve correct/ replace as necessary
DISCHARGE FROM PRESSURE/ TEMPERATURE RELIEF VALVE	1) Pressure above 7 bar, failure of Pressure Reducing Valve. Temperature above 90° C failure of thermal control	Shut down boiler or immersion heater. Check pressure Reducing Valve and Thermal Controls. Replace if necessary
DISCHARGE FROM EXPANSION VALVE	1) Continually, Pressure Reducing Valve faulty	Check pressure from valve. Replace if over 3.5 bar
	When heater is heating Faulty Expansion Vessel or lost charge	Check charge of vessel. Re-charge vessel to 3.5 bar or replace if necessary

TABLE 1

TECHNICAL DATA

Max Water supply Pressure	6.0 bar
Operating Pressure	3.5 bar
Expansion Vessel Charge Pressure	3.5 bar
Expansion Valve Setting	6.0 bar
Pressure And temperature relief valve	7.0 bar / 90° C
Immersion Heater Rating for Each Heater	3000 W - 240 V.
Pressure Reducing valve set pressure	3.5 bar

STORAGE CAPACITY	UNITS	PIPES SIZE INLET	OUTLET	HEIGHT (mm)	WEIGHT WHEN FULL KG
125 L		3/4"	3/4"	920	181
150 L		3/4"	3/4"	1050	210
200 L		3/4"	3/4"	1320	269

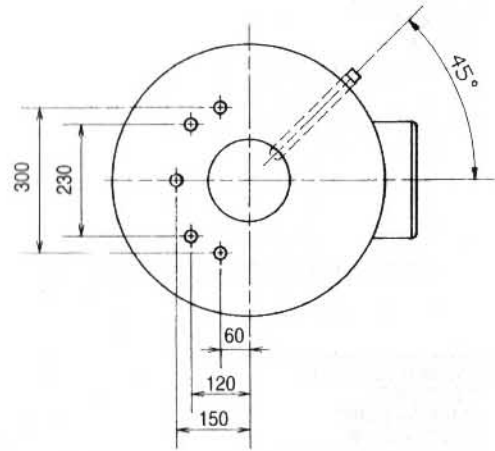
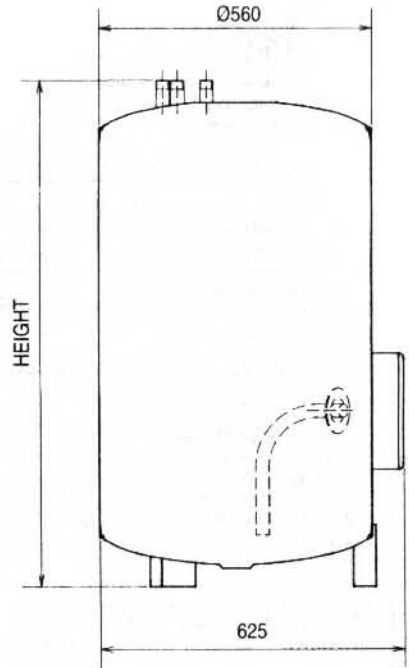


FIG. 2
MODELS 125-200

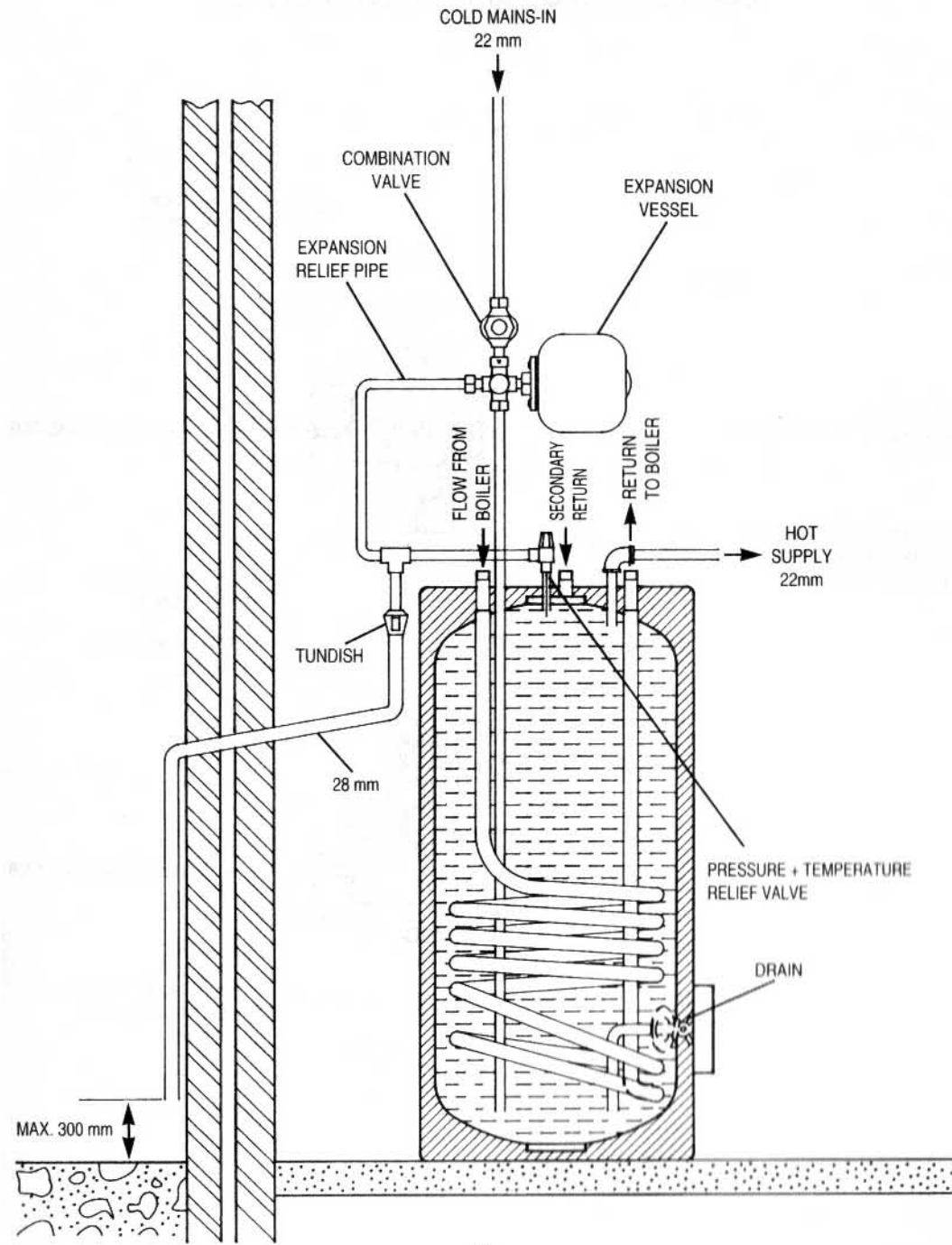


FIG. 3
COLD WATER COMBINATION VALVE 3/4"

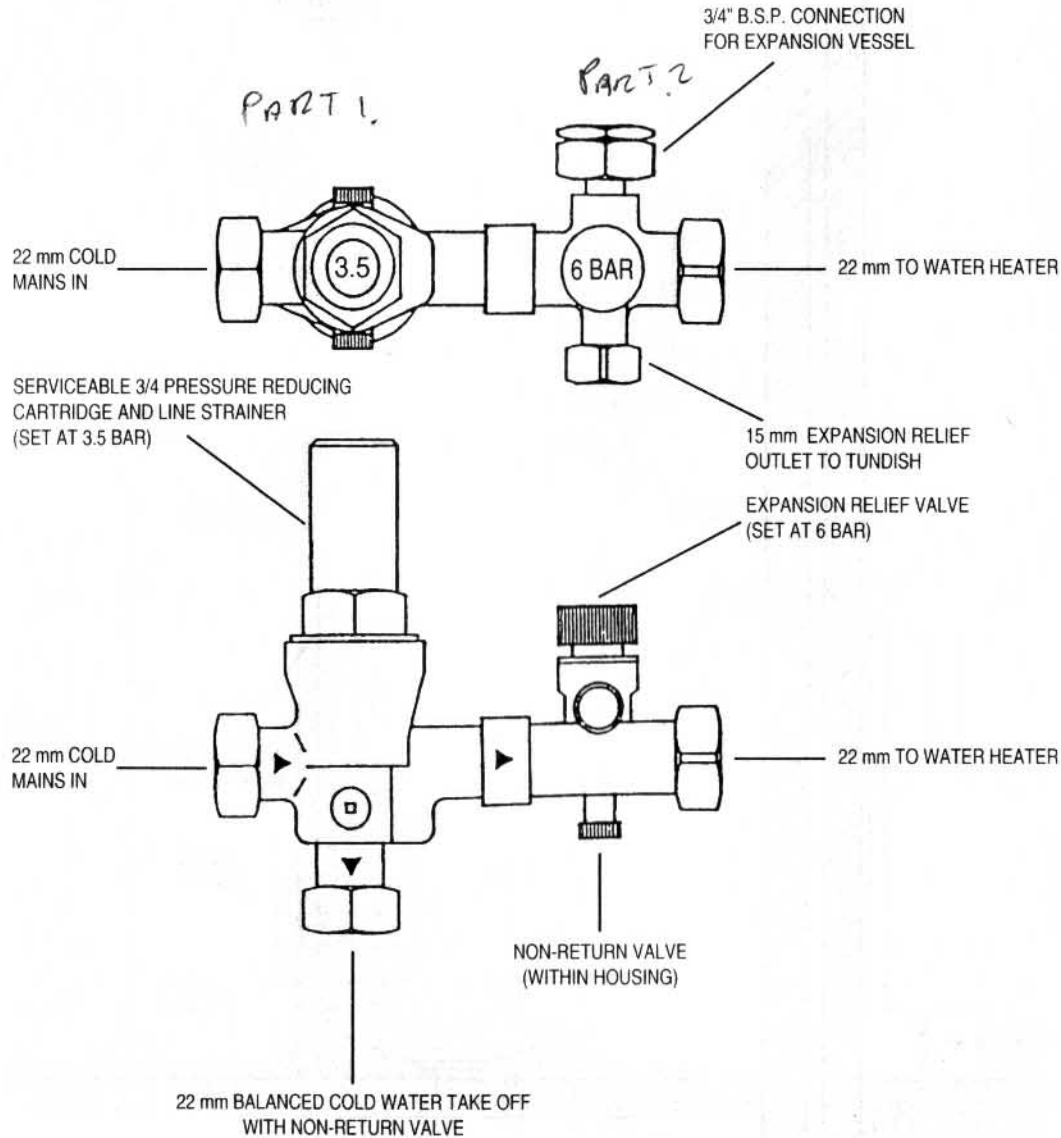


FIG. 4
SUGGESTED WAYS OF TERMINATING
DISCHARGING PIPES SAFELY

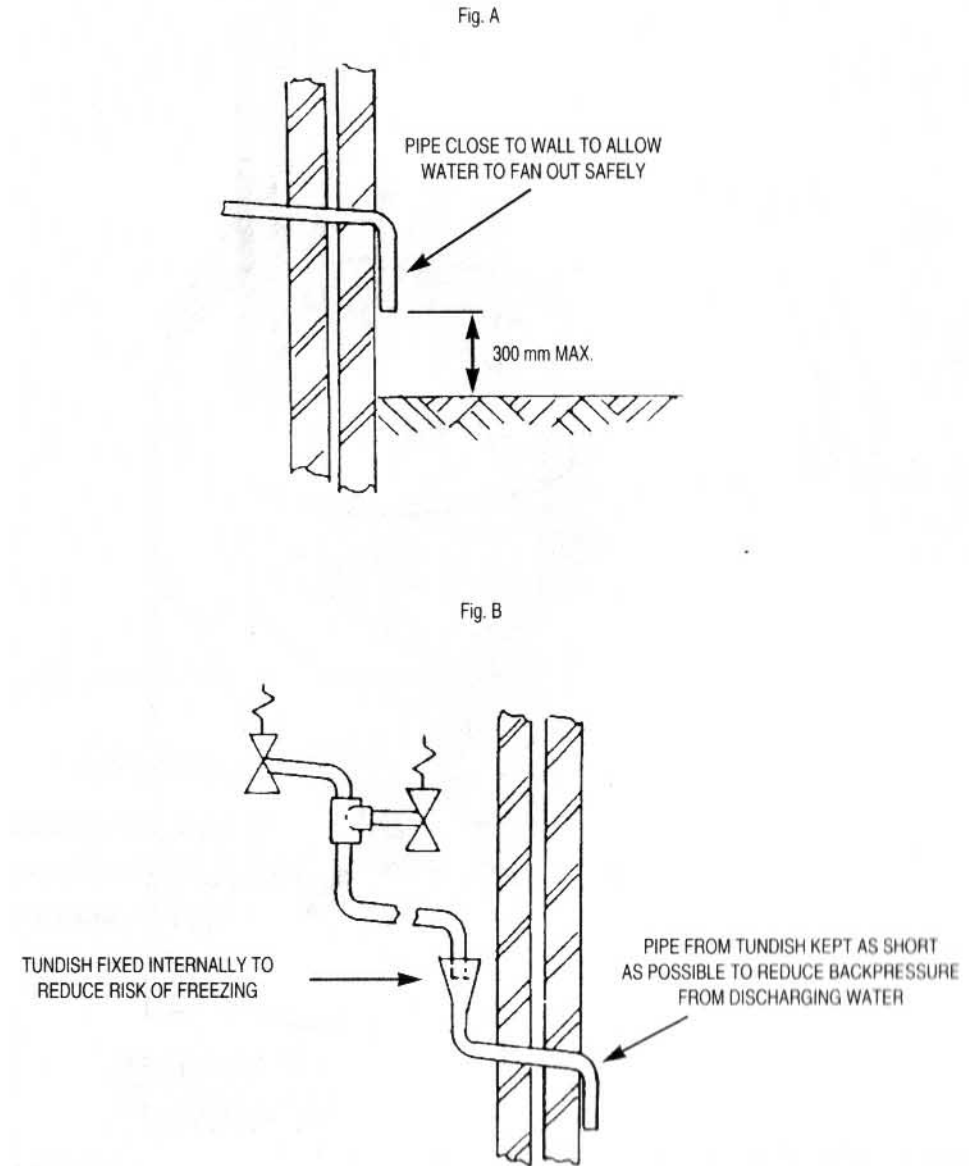
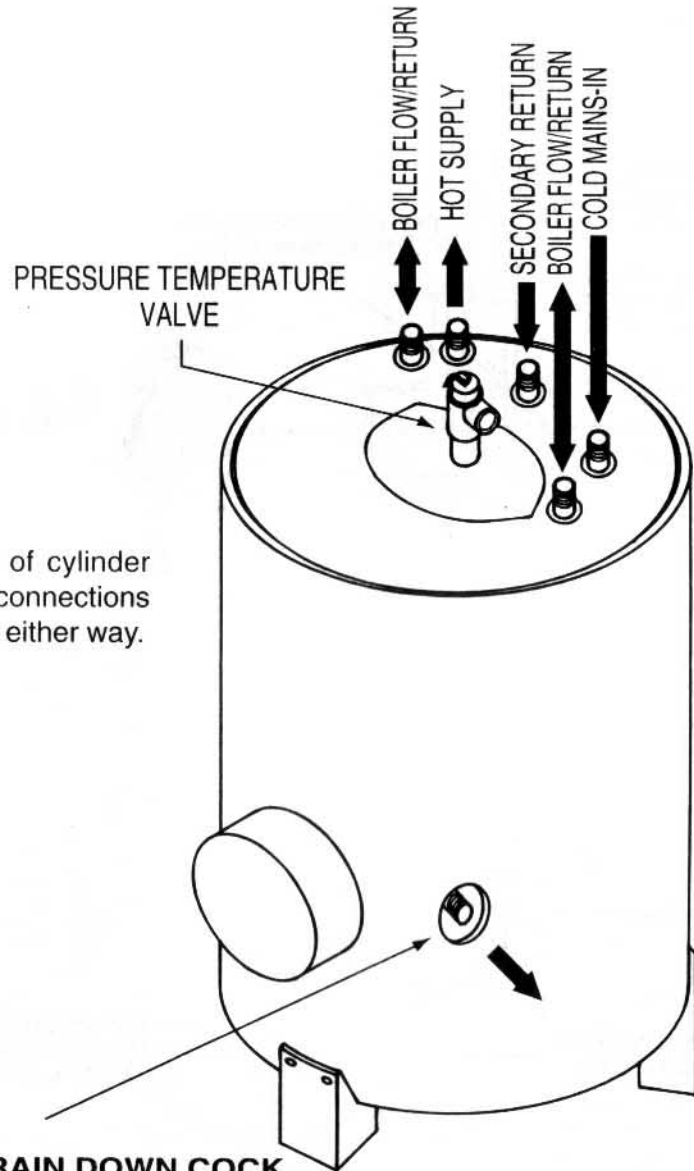


FIG. 5

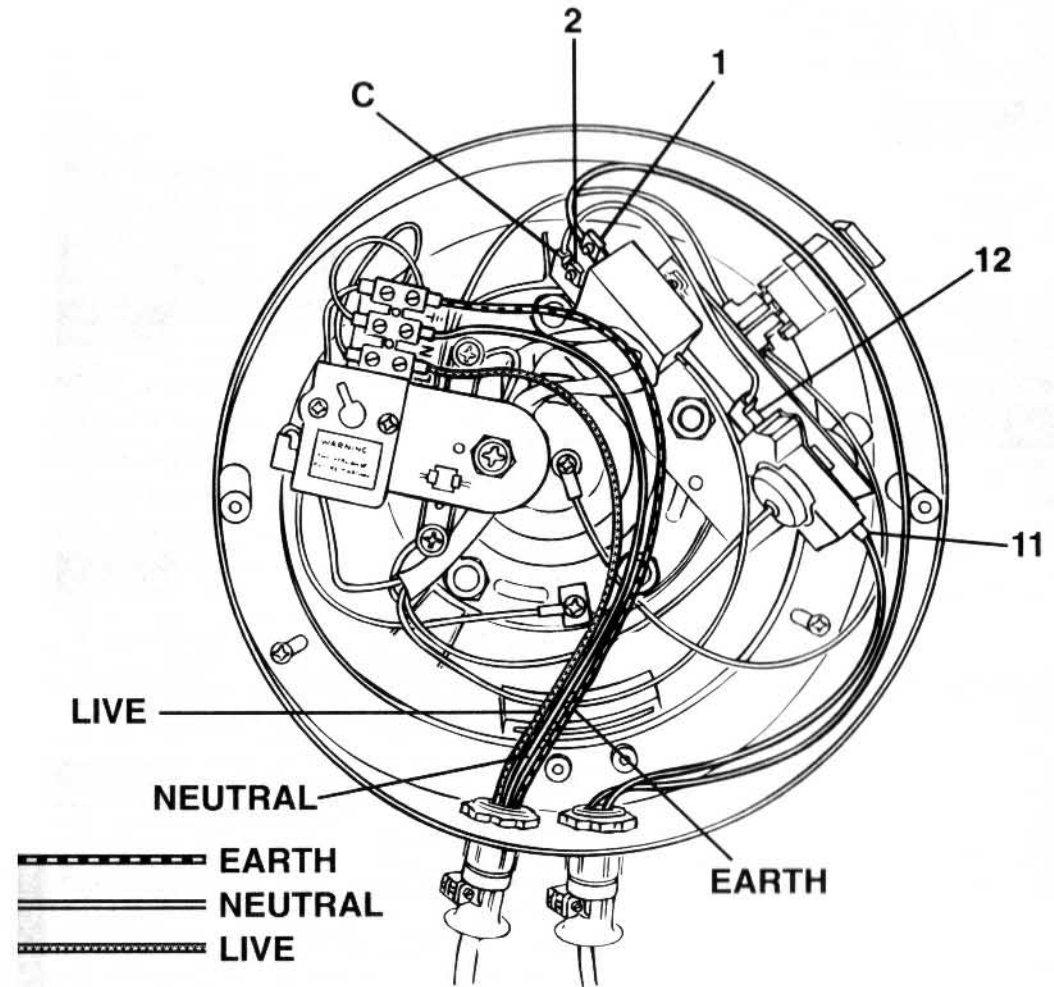


The design of cylinder coil allows connections to the boiler either way.

DRAIN DOWN COCK

EXTRA CARE MUST BE TAKEN WHEN FITTING THE DRAIN COCK TO ENSURE THAT A WATERTIGHT JOINT IS MADE. FAILURE TO DO THIS WILL ENTAIL DRAINING DOWN THE CYLINDER TO RELIEVE THE CONNECTION

FIG. 6
ELECTRICAL DIAGRAM

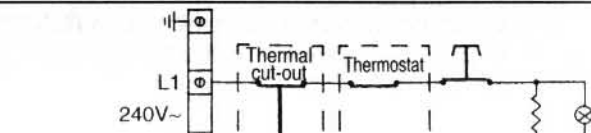
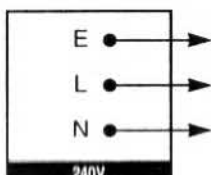
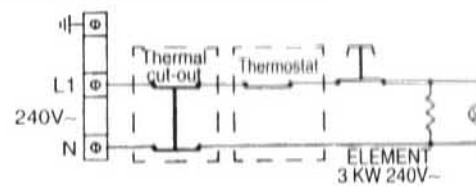


IMMERSION
HEATER WIRING

BOILER WIRING

When installing in conjunction with an ARISTON DIA System Boiler please refer to boiler manual for electrical connections.

SCHEME OF ELECTRICAL CONNECTIONS WITH MOTORIZED VALVE 3 WAY

[illegible][illegible]

Basic Boiler List

When installing in conjunction with an ARISTON DIA System Boiler please refer to boiler manual for electrical connections.

Baxi	FS - RS & CF range 401 - 801 WM - RS range 20/3 - 6/3 WM55/30 OF WM40/30 OF Bermuda 251 401 552 Solo range 20RS - 60RS		
Ferrol	Roma		
Glowworm	Camelot	240	246
	Galaxie	240	246
	Hideaway range	40 - 80 40B - 80B	
	Majorca	240	246
	Spacesaver MKII range		
	Spacesaver	30 - 80BR, 20 - 60RF, 65 - 75F, 60R	
Myson	Panda & Marathon range Orion before September 88		
Potterton	Flamingo (before June 89)	RS20/30 CF20/30 RS & CF range	40 50 40 - 100 10 - 16
	Kingfisher		
	Netaheat Electronic	6 - 10	
	(If pump over-run kit fitted, wire as 16 - 22)		
Stelrad	Ideal Mexico Super	RS & CF range	30 - 125
	Mexico Slimline	RS40 CF40	55 55
	Elan (Fully pumped only) & Elan II range		
	Elite	RS50	
	CF50		
	W2000 range		
	Cavalcade range		
	Classic range	NF30 - NF80	
Trianco	WM25/45RS	WM45/60RS	WM60/75RS
	Centrajet	TRO	
	Pressurejet	TRO	
	Walljet	TRO	

Guarantee

We, MTS, guarantee that should this water heater prove to be defective by reason of faulty workmanship or material during the periods stated below, we will replace the defective parts (or product) free of charge on the condition that :

- The appliance has been correctly installed by a competent installer and used only on the supply voltage stamped on the rating plate.
- The appliance has been used and maintained in accordance with these instructions and has not been tampered with or otherwise subjected to misuse neglect or accident.
- The appliance has not been taken apart, modified or repaired except by a MTS authorised Service Engineer*.
- Evidence of the date of purchase in the form of an invoice receipt (or hire purchase documents) is not included with the appliance returned under guarantee.

The guarantee will be applicable from the date of purchase or commencement of hire purchase for the following periods :

- 12 months on electrical parts and components
- 5 years on the cylinder tank

* **Important :** the 5 years guarantee period on the tank will apply only if the annual inspection will have been carried out by a MTS authorised Service Engineer.

* A MTS authorised Service Engineer is :

1. the installer of the appliance.
2. a MTS approved Service Centre
3. an engineer who has attended a MTS training course in unvented storage water heaters.

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