IMPORTANT

FOLLOW COMMISSIONING INSTRUCTIONS

OBSERVE THE WARRANTY CONDITIONS

READ THE WHOLE MANUAL CAREFULLY

NO SAFETY DISCHARGE TO BE REDUCED IN SIZE.

TECHNICAL INSTRUCTIONS

INSTALLATION AND SERVICING MANUAL FOR THE EBS TANKS

GEMINOX BOILERS

High technology heating

UK September 2006

DOMESTIC HOT WATER EFFICIENCY

Models	Heat output at ΔT 30 °K	Continuous flow rate at 40 °C	Specific flow rate (*1)	Pre-heating time at 60 °C (*2)	Load time at 60 °C	Volume drawn at 40 °C in 10 minutes	Volume drawn at 40 °C in 1 hour
						Storage 65 °C	
	kW	l/min	l/min	min	min	litres	litres
THI 0.9-9 C +BS 100	9.1	4.4	14.2	29	51	160	377
THI 0.9-9 C +BS 150	9.1	4.4	20.2	43	77	241	459
THI 0.9-9 C +BS 200	9.1	4.4	25.6	56	100	313	531
THI 0.9-9 C +BS 300	9.1	4.4	37.7	86	153	476	693
THI 2-13 C +BS 100	13.5	6.5	15.2	19	35	160	483
THI 2-13 C +BS 150	13.5	6.5	21.3	29	52	241	564
THI 2-13 C +BS 200	13.5	6.5	26.7	38	68	313	636
THI 2-13 C +BS 300	13.5	6.5	38.8	58	103	476	798
THI 5-25 C +BS 100	23.9	11.4	17.6	11	19	176	748
THI 5-25 C +BS 150	23.9	11.4	23.9	17	29	241	813
THI 5-25 C +BS 200	23.9	11.4	29.3	21	38	313	885
THI 5-25 C +BS 300	23.9	11.4	29.3	33	58	476	1047
THI 10-50 C +BS 100	35.0	16.7	22.9	7	13	229	1067
THI 10-50 C +BS 150	35.0	16.7	26.1	11	20	261	1098
THI 10-50 C +BS 200	48.7	23.3	35.4	11	19	354	1519
THI 10-50 C +BS 300	48.7	23.3	47.5	16	29	476	1641

Cold water temperature = 10 °C

(*1): According to EN 625

(*2): Pre-heating time following drawing that corresponds to the specific flow rate

ELECTRICAL CONNECTIONS
FOR EBS RANGE OF CYLINDERS

Please Note

The Electrical "Straight Line" wiring diagram supplied with this literature is intended to assist in the understanding of how the system works for fault finding and general assistance on the EBS cylinder, it has no knowledge of individual peripherals fitted to the beginning or the end of the line, it does not provide information on your chosen peripherals. Please refer to the manufacturer's literature supplied with each item you choose to install or please contact the Geminox-UK Technical helpline for further assistance on + 44 (0)1372 722277.

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Figures

Please ensure that prior to starting any Electrical work the cylinder has been isolated from the mains supply. Where possible, lock off and warning signs to be posted.
Only Qualified Electricians should carry out the work necessary.

EBS WRc APPROVAL AMENDMENT TO MANUAL

WRc Approval No : 0210132

****NOTE TO INSTALLER** :**
Please read fully prior to commencing installation. Leave manual with householder after installation.

1 TECHNICAL INFORMATION

Table 1

MODEL	EBS 100	EBS 150	EBS 200	EBS 300
Operating Pressure	3.5 Bar	3.5 Bar	3.5 Bar	3.5 Bar
Max Water Supply Pressure	12 Bar	12 Bar	12 Bar	12 Bar
Exp Relief Valve Setting	6 Bar	6 Bar	6 Bar	6 Bar
Nominal Storage Capacity	100 litres	150 litres	200 litres	300 litres
Pressure & Temperature Relief Valve	7 Bar/90 ^{o}C	7 Bar/90 ^{o}C	7 Bar/90 ^{o}C	7 Bar/90 ^{o}C
Expansion Vessel Charge Pressure	3.5 Bar	3.5 Bar	3.5 Bar	3.5 Bar
Weight without water	35 kg	45 kg	55 kg	70 kg
CONNECTIONS				
Cold Water Inlet	¾"	¾"	¾"	¾"
Domestic Hot Water Flow	¾"	¾"	¾"	¾"
Hot Water Secondary Returns	¾"	¾"	¾"	¾"
Primary Flow from Boiler	¾"	¾"	¾"	¾"
Primary Return to Boiler	¾"	¾"	¾"	¾"

2 MAINTENANCE

WARNING : BEFORE COMMENCING ANY MAINTENANCE WORK, ISOLATE ALL MAINS ELECTRICITY SUPPLIES TO THE SYSTEM

The Cylinder and Cold Water Supply Kit should be inspected annually.

- Close mains supply cock.
- Drain down hot water system including the cylinder. (Use drain cock and/or the expansion relief valve).
- Check pressure in expansion vessel(s) and recharge to 3.5 Bar, if necessary.
- Remove filter in line strainer. Clean or replace. Re-assemble. Refill system.
- Check all pipework for leaks.
- Open P & T valve and check that it discharges water.
- Open expansion relief valve and check that it discharges water.
- Check operation of all controls.

Every two years, the following additional maintenance should also be carried out after draining down.

- Remove Electric Immersion Heater cover (if fitted).
- Disconnect wiring to Immersion Heater Boss (if fitted).

- Undo securing nuts on heater flange and remove flange complete with Electric Immersion Heater.

- Inspect heater elements and de-scale if necessary.
- Inspect interior of cylinder and clean out any debris.
- Re-assemble using a new gasket on the flange and tighten bolts.
- Re-connect Immersion Heater wiring.
- Refill system and check for leaks around flange.
- Replace Electric Immersion Heater cover.
- Carry out annual inspection as above.

3 THE OPENING TEMPERATURE OF THE P & T VALVE IS 90 ^{o}C

The position of the tundish shall be visible to the occupants and shall be positioned away from any electrical devices.

See Fig no. 7, Page 13 of EBS manual for tundish position and discharge pipe.

The connection details are shown on Page 13, drawing no. Fig 7. The relief valve connections should not be altered or used for any other type of connection.

Details of the discharge pipe and installation requirements can be seen on drawing no. Fig 7, Page 13 and Table 2, Page 6.

Before connecting pipework, fit the Siemens safety shut off zone valve to the primary return outlet.

The incoming cold water supply pipe must be fitted with a stopcock before the cold water unvented kit. A drain cock must be fitted between the unvented kit and the cylinder.
The unit should be carried into position within its packaging and on its pallet.

Once in position, the pallet should be removed.

The cylinder should be installed on a floor designed to take the weight of the cylinder when full of water. Each litre of water weighs 1 Kg. The actual water content of each cylinder should be added to the cylinder weight to obtain the total weight of the cylinder when full to ascertain if the floor is of suitable construction.

300mm clearance should be left on the top of the cylinder for access to the anode and inspection door.

No valve shall be fitted between the cylinder and the expansion valve.

Our optional immersion heater control panel is unique in that you cannot heat the water using the boiler and the immersion on at the same time. The rocker switch on the control panel either sends power to the immersion heater or to the boiler safety circuit. So, if the immersion is on, the valve closes and the boiler cannot supply hot water to the cylinder.

No other immersion, other than our EBS Immersion Heater should be used on our EBS cylinders.

The EBS range of cylinders is ideally suited for connection to our Geminox boilers to match the coil ratings. However, connection to non – Geminox boilers can be carried out if required. Please contact our Technical Department for installation assistance on + 44 (0)1372 722277.

To flush through the cylinder, simply open inspection door, disconnect unvented kit and flush through the cylinder to the drain by using a hose through the inspection door.

	100	**300**
Results of supply temperature 1-50 – 220	19 mins	26 mins

Results of the reheat time 1-50 – 222	13 mins	16 mins

- This unit is only to be used with our oil or gas boiler with a thermostatic control. It should not be used with a solid fuel appliance.
- Please note that if a secondary circuit is used then an additional expansion vessel may be required.
- In hard water areas you should not exceed 60 ^{o}C as a store temperature.

4 COMMISSIONING

- Check all pipe connections for tightness. Close drain cock.
- Check pressure(s) in expansion vessel(s) 3.5 Bar. Recharge if necessary.
- Fill primary circuits, vent and check for leaks.
- Chock open P & T valve on top of cylinder (by fitting manual lever).
- Open stopcock and fill cylinder with water until if freely discharges through the outlet from the P &T valve.
- Remove chock and close P & T valve.
- Test delivery of water from cylinder by opening and running all taps, both hot and cold water and any other water discharge points (showers etc).
- Check operation of expansion relief valve on Cold Water Supply Kit by lifting manual release lever and discharging water.
- Check all pipework and connections for leaks.

5 HEATING OF TANK FROM BOILER

- Check any programmers are calling for HOT WATER. Set hot water thermostat on tank to Maximum. Run heating boiler until the temperature gauge on the cylinder indicates approximately 50 ^{o}C.
- Turn down the hot water thermostat and check that motorised valve closes and loading pump stops.

- Check that the boiler shuts down. If the boiler is also feeding a heating circuit, make sure that there is NO demand from the heating circuit (Room Stat, Programmer, Zone Valve etc).

6 HEATING OF TANK FROM ELECTRIC IMMERSION HEATER

- Switch on the power supply to the Electric Immersion Heater.
- Turn Electric Heater thermostat up and down to check that heater is turning on and off correctly.
- Select the desired hot water temperature.

The total fuse rating for the immersion heater is 13.04A, a suitable protective device should be selected. The boiler should be protected by a fused spur with a cartridge fuse of no higher than 3A.

Please Note

The Geminox range of products are designed to be used in installations where the complete system is supplied by Geminox therefore when used in conjunction with other products some slight alterations to the Electrical installation may have to be made.

Important Notice

When the system installed is "Unvented" controlling the Zone valve by way of the cylinder and overheat thermostats, follow the steps on page 4, in this instance the zone valve is called the "Safety shut off zone valve", the valve is supplied with the Unvented Kit and must be installed.

The safety shut off zone valve is an important safety device of the unvented EBS tank and must be installed. Fit the valve to the return connection of the tank connection, No. 4. The valve is to be controlled via terminal L2 of the immersion plug or if no immersion is fitted, terminal T1 of the tank top cable plug. Please find in attached photos and fig. 11 how to connect the "Safety shut off zone valve".

Safety Discharge Pipe from Tundish

See Table 2 below for sizing details of safety discharge pipe from our tundish.

Table 2

Sizing of copper discharge pipe D2 for common temperature relief valve outlet sizes

Valve Outlet Size	Minimum Size of Discharge Pipe D1	Minimum Size of Discharge Pipe D2 from tundish	Maximum resistant allowed, expressed as a length of straight pipe (ie. no elbows or bends)	Resistance created by each elbow or bend
G ½	15mm	22mm	Up to 9m	0.8m
		28mm	Up to 18m	1.0m
		35mm	Up to 27m	1.4m
G ¾	22mm	28mm	Up to 9m	1.0
		35mm	Up to 18m	1.4m
		42mm	Up to 27m	1.7m

Worked Example :

The example below is for a G ½ temperature relief valve with a discharge pipe (D2) having 4 no. elbows and length of 7m from the tundish to the point of discharge.

From Table 2

Maximum resistance allowed for a straight length or 22mm copper discharge pipe (D2) from a G ½ temperature relief valve is 9.0m.

Subtract the resistance for 4 no. 22mm elbows at 0.8m each = 3.2m

Therefore, the maximum permitted length equates to : 5.8m

5.8m is less than the actual length of 7m, therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G ½ temperature relief valve equates to 18m

Subtract the resistance for 4 no. 28mm elbows at 1.0m each = 4m

Therefore the maximum permitted length equates to : 14m

As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

HYDRAULIC CONNECTIONS FOR CYLINDERS

When the system installed is "Unvented" it is necessary to fit the "unvented kit" on the cold water supply. The "Unvented kit" contains pressure reducing valve, non-return valve, pressure relief valve and optional use balanced cold water connector. It is good practice to fit the "unvented kit" above the top level of the EBS tank. In this way if it is required to replace the "unvented kit" it is not necessary to drain all tank. Please find below how to install the "unvented kit"

Fig. 1 ¾" Unvented kit for EBS cylinders

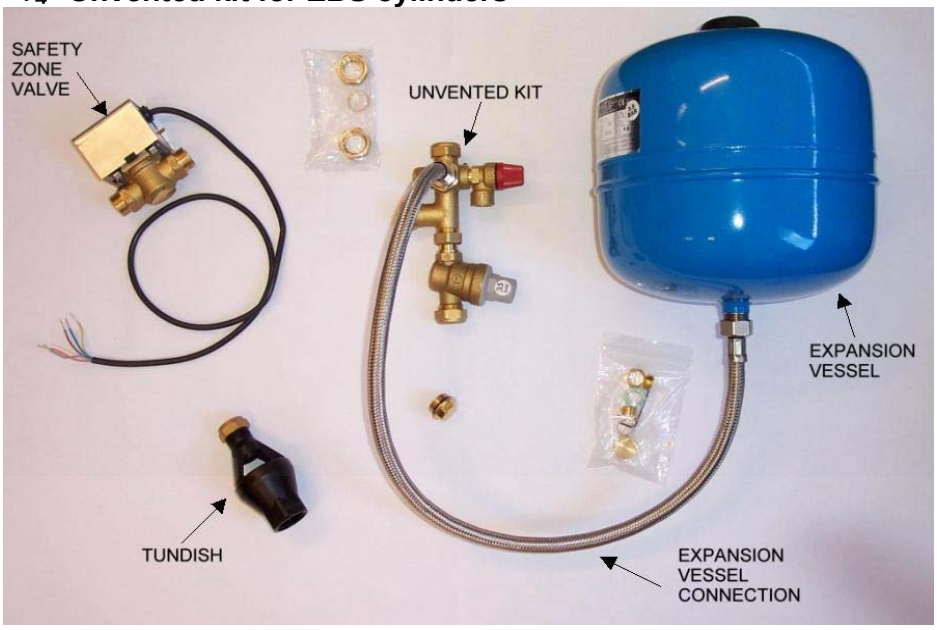


Fig. 2 ¾" Unvented kit for EBS cylinders

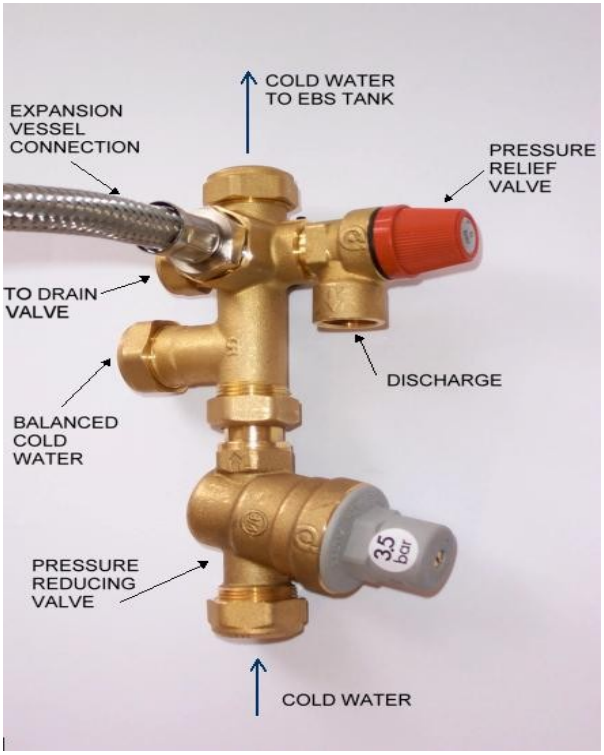


Fig. 3 1" Unvented kit for EBS cylinders

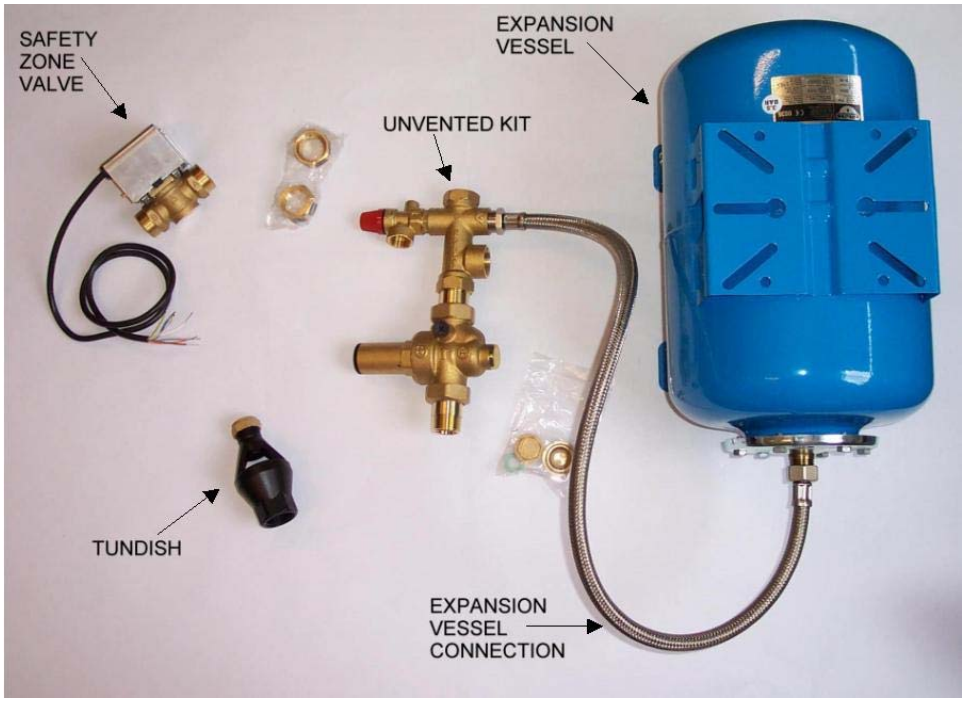
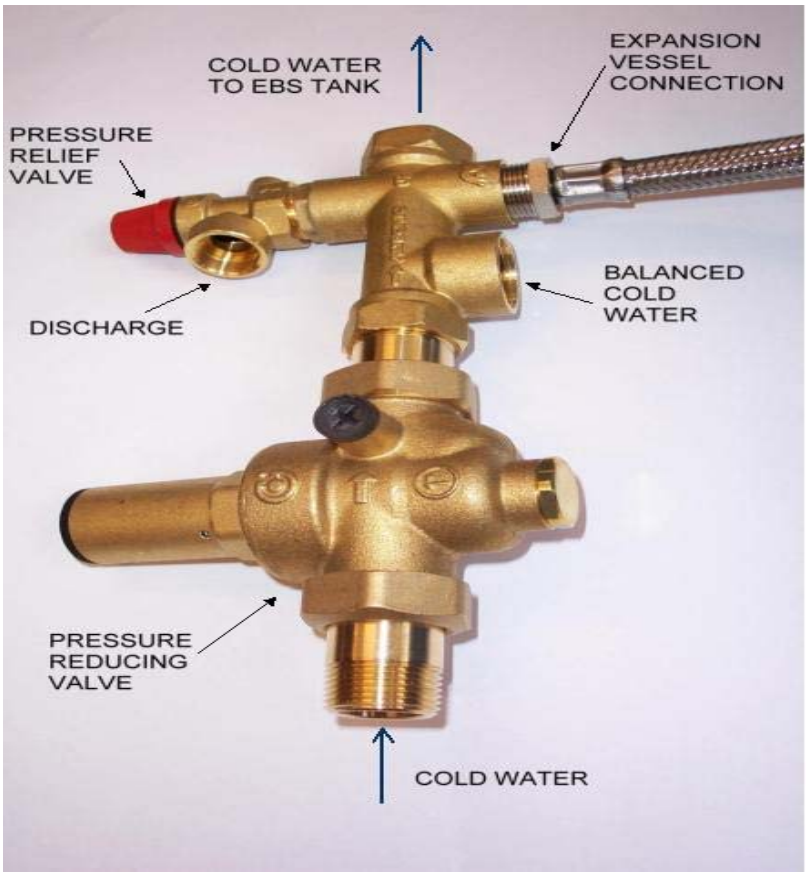


Fig. 4 1" Unvented kit for EBS cylinders



11 Whilst in heating cycle using the immersion heater the Green selector switch LED will illuminate and extinguish once desired temperature is reached.

Fig. 5 ¾" Safety zone valve

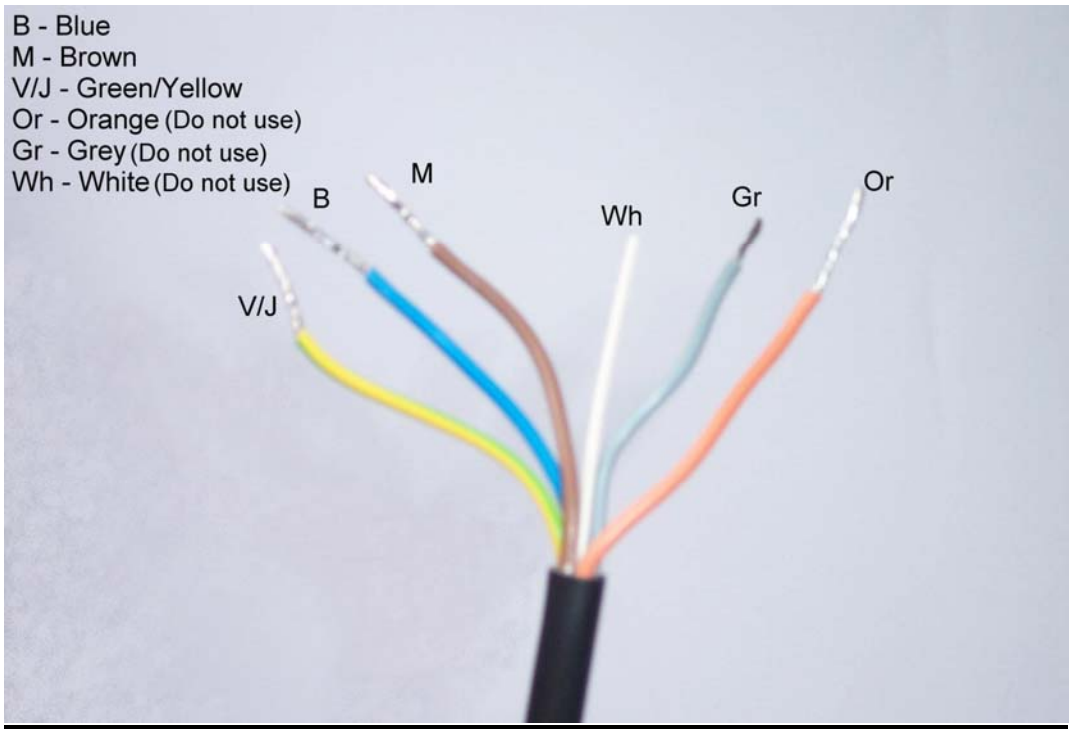
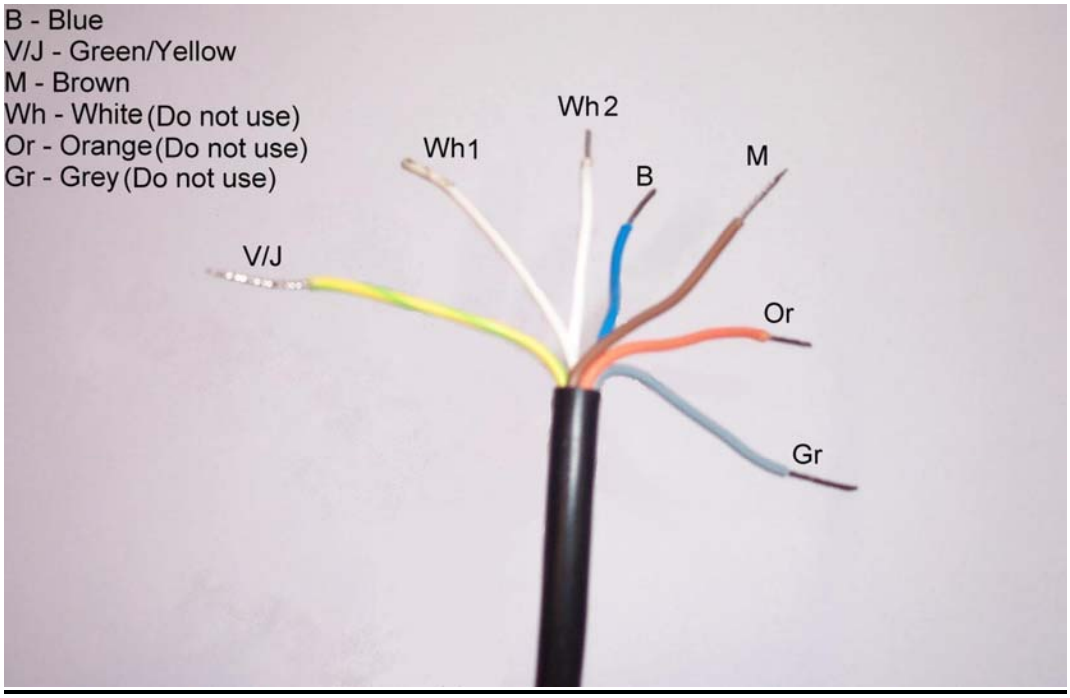


Fig. 6 1" Safety zone valve



ELECTRICAL CONNECTIONS FOR CYLINDERS WITHOUT IMMERSION

Please ensure the EBS cylinder has been installed and sited correctly in accordance with the Geminox-UK instructions supplied with the equipment.

Step

1 Remove the Black connector plug from the rear of the cylinder temperature control housing on the top of the cylinder.

2 Open the connector plug using a small flathead screwdriver inserted into the slots on the sides of the connector plug.

3 Looking at the terminals inside the connector plug they are marked 1, 2, CPC, N and 3.

4 Line in to No2 and line out to No1, when No voltage present or phase to No2 and switch line to No1, when voltage present.

5 In both cases the CPC must be supplied from a good and reliable source.

6 Terminate No. 1 to control the safety shut off zone valve as follows :

The safety shut off zone valve is wired as follows :

Brown	=	L2 (LIVE)
Blue	=	Neutral
Green/Yellow	=	CPC

7 The desired temperature setting should now be set using the controls on the top of the cylinder or should be left on maximum if the hot water is controlled via our boiler controls.

Technical note

The cylinder temperature control housing, on top of the cylinder, contains a high limit thermostat, an adjustable thermostat, and a temperature sensor, none of which require voltage to operate, both thermostats “Open” once the desired temperature is reached and break the circuit, the temperature gauge phial displays the temperature on the front of the cylinder and the sensor will display the temperature of the water inside the cylinder on the boiler controller.

Please Note

The Geminox range of products are designed to be used in installations where the complete system is supplied by Geminox therefore when used in conjunction with other **non**-Geminox products some slight alterations to the electrical installation may have to be made.

Important Notice

When the system installed is “Unvented” controlling the zone valve by way of the cylinder and overheat thermostats, follow the steps on page 9. In this instance the zone valve is called the “Safety shut off zone valve”. The valve is supplied with the unvented kit and must be installed.

Fig. 7

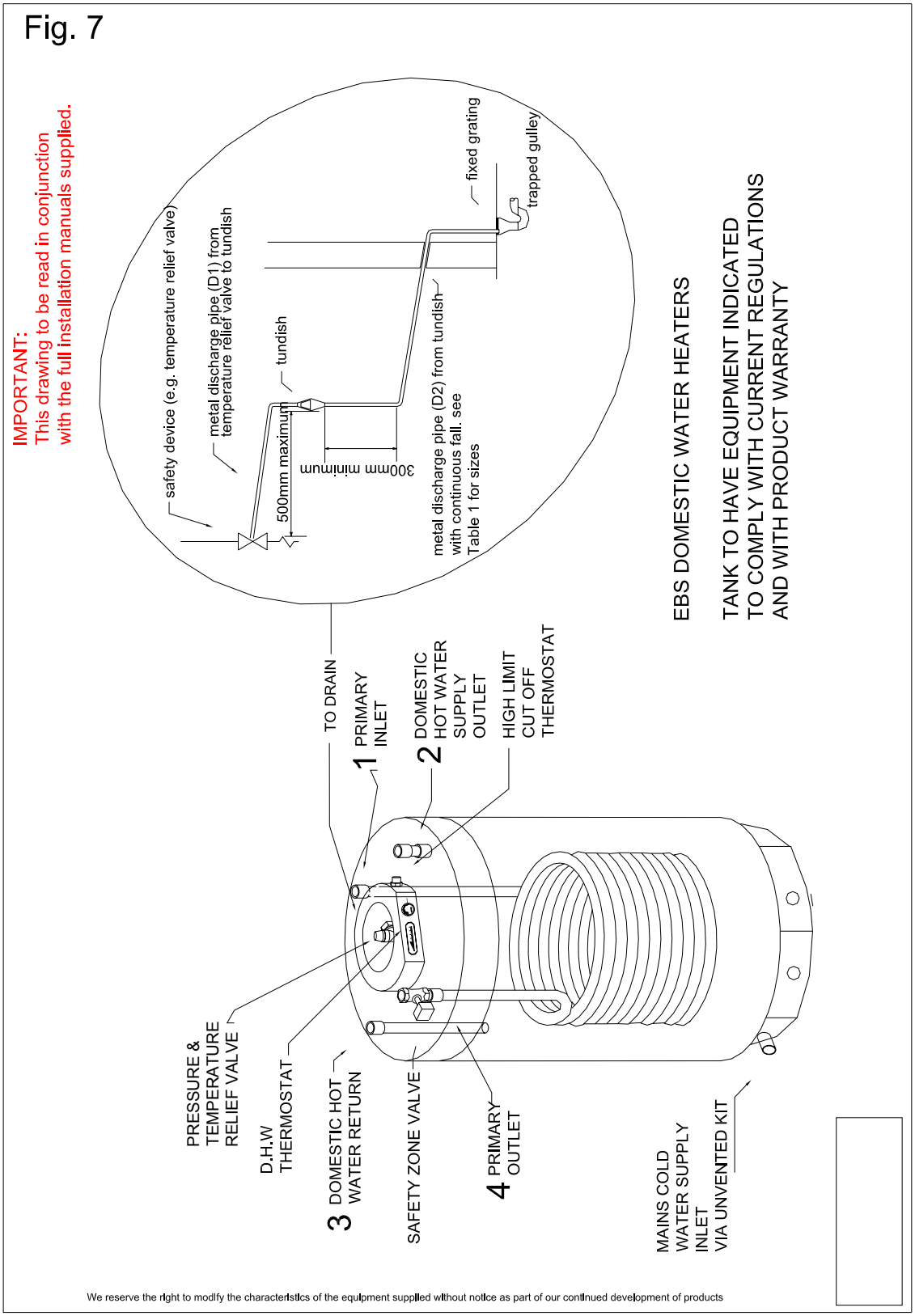
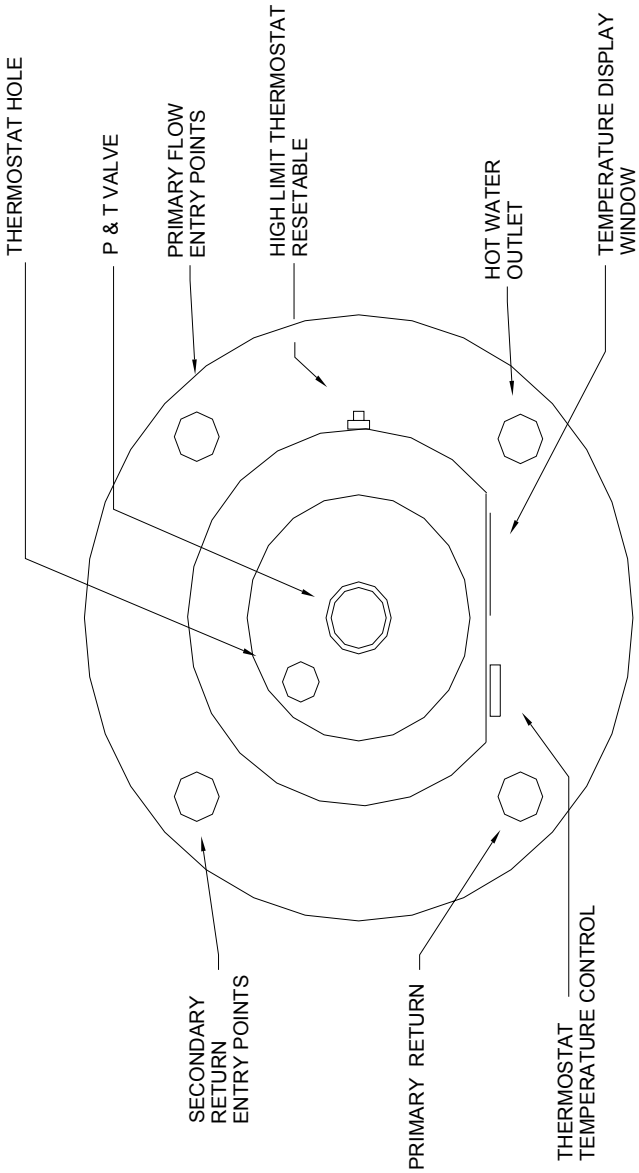


Fig. 8

IMPORTANT:
This drawing to be read in conjunction with the full installation manuals supplied.



We reserve the right to modify the characteristics of the equipment supplied without notice as part of our continued development of products

Fig. 9

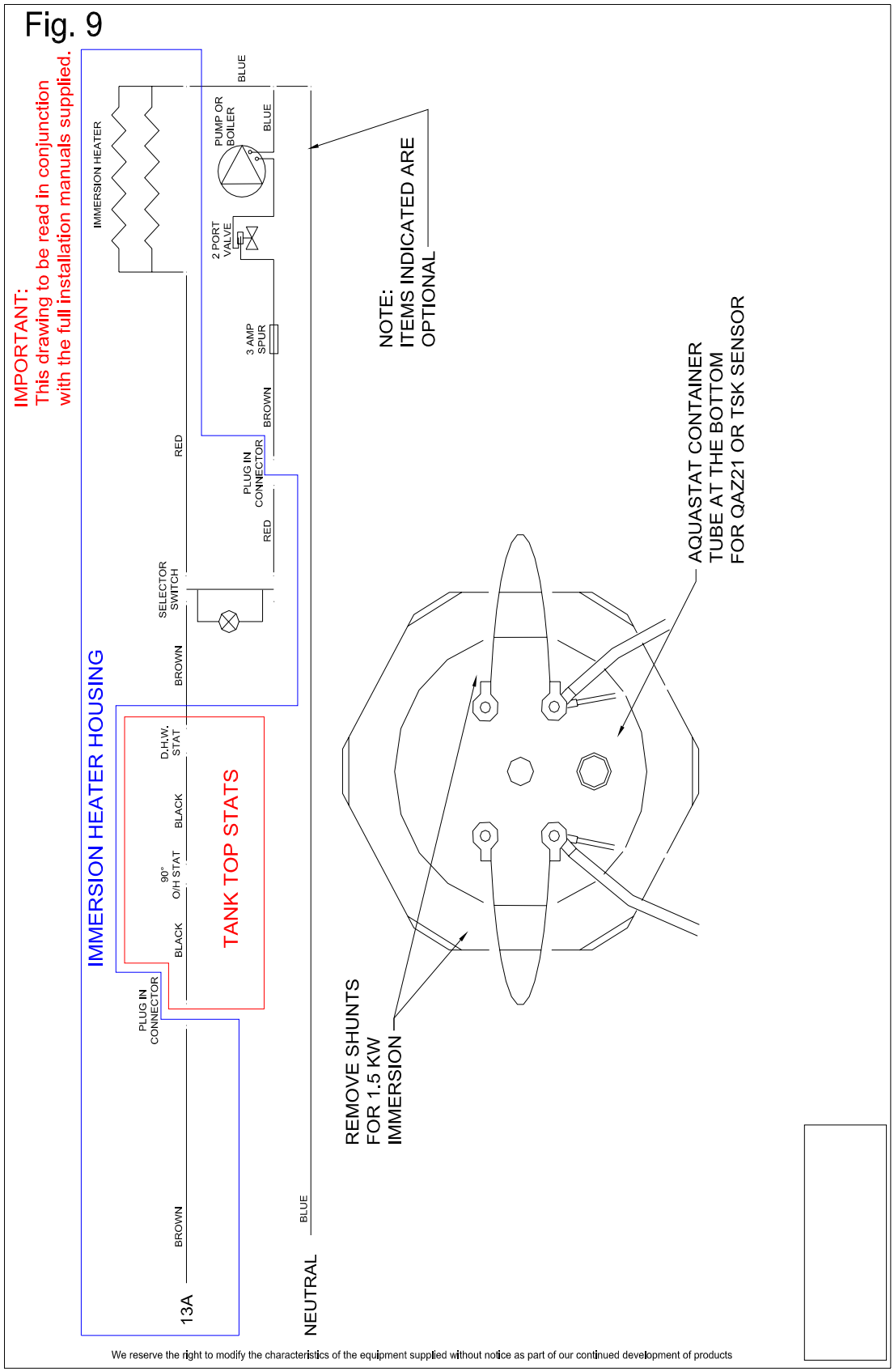


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Fig. 10

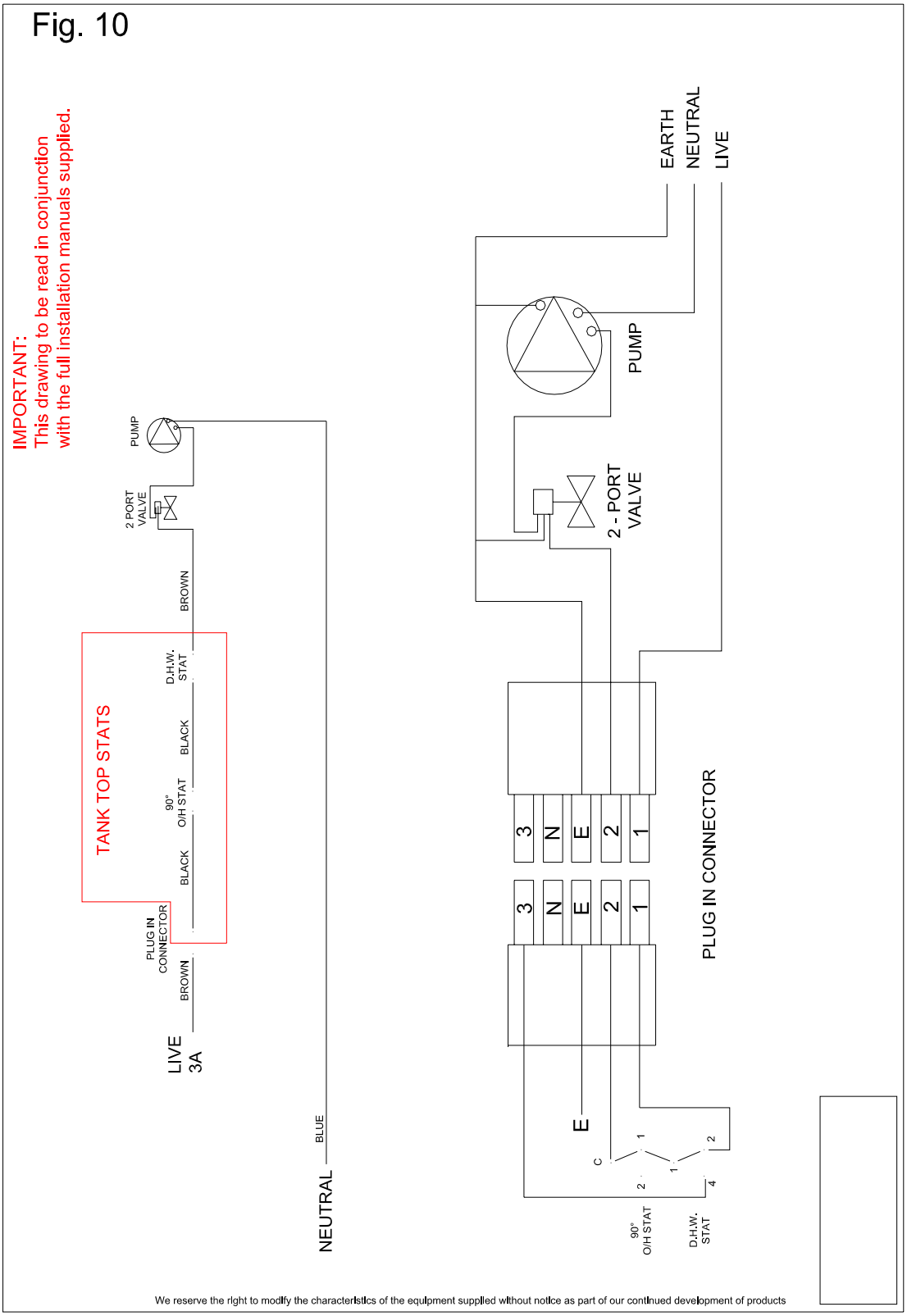

Fig. 12

IMPORTANT:
This drawing to be read in conjunction with the full installation manuals supplied.

NOTE:
THIS DETAIL IS ONLY TO BE USED WHERE THERE IS NO OTHER ALTERNATIVE. IT IS STRICTLY SUBJECT TO LOCAL DISPENSATION AND APPROVAL MUST BE SOUGHT FROM NHBC AND BUILDING CONTROL INSPECTOR PRIOR TO INSTALLATION