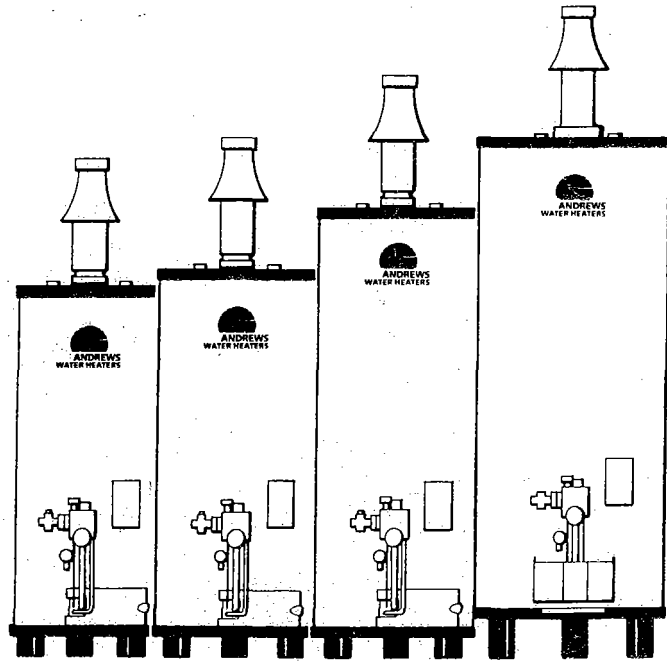


# ANDREWS WATER HEATERS

## Natural Gas Fired Water Storage Heaters Standard Range

Models 25/49, 33/49  
41/55 & 62/75  
'F' Series



Part No. C451

## Installation, Operation and Servicing Manual

Printed in England

The purpose of this manual is to provide up to date information necessary to the user for installing, operating and servicing the Heater, together with technical data and spare parts list.

The information given however, may be subject to revision in compliance with the Andrews policy of continual improvement.

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These Andrews Storage Water Heaters are tested and certified by British Gas plc for use in domestic and commercial installations with natural gas only in open-vented water heating systems.

The Andrews Water Heater has been designed and built to give efficient and reliable service. Like any other piece of mechanical equipment, however, the Heater will only operate at maximum efficiency if the correct installation and servicing procedures are followed.

The purpose of this manual is to provide up to date information necessary to the user for installing, operating and servicing the Heater, together with technical data and spare parts list.

IT IS THE LAW THAT THE INSTALLATION BE CARRIED OUT BY A COMPETENT PERSON.

THE HEATER SHOULD BE INSTALLED IN ACCORDANCE WITH THE BRITISH STANDARDS AND CODES OF PRACTICE REFERRED TO IN THIS MANUAL, THE GAS SAFETY (INSTALLATION & USE) REGULATIONS 1984, BUILDING REGULATIONS, MODEL WATER BYE-LAWS AND ANY REQUIREMENTS OF THE LOCAL GAS UNDERTAKINGS, LOCAL AUTHORITY, WATER AND FIRE AUTHORITIES.

This water heater is for use with NATURAL GAS only.

## Health and Safety at Work Act, 1974

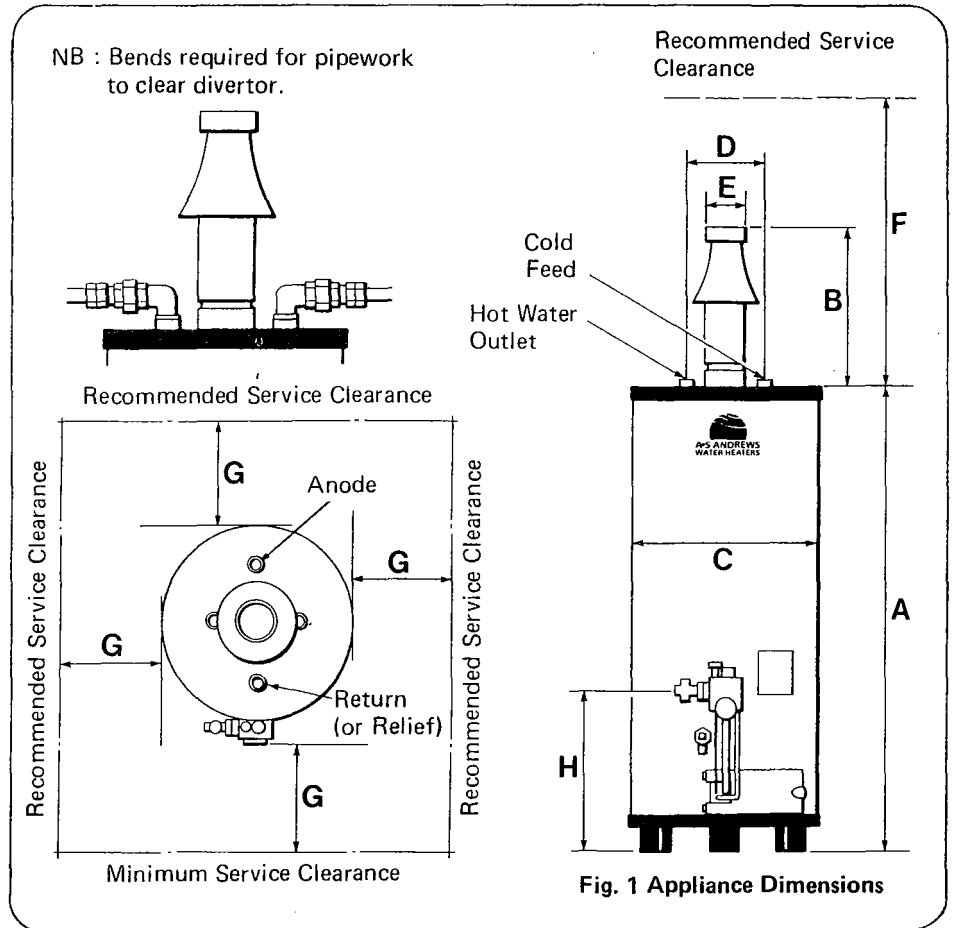
Under section 6 of the above Act, it is the duty of manufacturers and suppliers of products for use at work to ensure, so far as it is reasonably practicable, that such products are safe and without risk to health when properly used and to make available to users of such products adequate information about their safe and proper operation.

Andrews Heaters should only be used in the manner and purpose for which they were intended, and in accordance with the recommendations detailed in this Manual. Our Heaters have been designed, produced and inspected with safety in mind, but there are certain basic precautions which should be taken by the user and in particular attention is drawn to the safety precautions in this Manual and on the Operating Instructions on the Heater.

It is imperative, therefore, that all persons who may make use of our Heaters have all the information and instruction they require to ensure that they are fully aware of any hazards, and that they know both the purpose and the correct manner of use of our Heaters.

The Andrews water storage heater is supplied for use on an open vented system. When required for use with an unvented system the water heater is supplied by Andrews Water Heaters with an Unvented System Kit.

It is important that in the design of the installation the water heaters are not undersized.



**Appliance Dimensions - Standard Range - Natural Gas**

	25/49		33/49		41/55		62/75	
	SI	Metric Imp.	SI	Metric Imp.	SI	Metric Imp.	SI	Metric Imp.
A	1175mm	44 1/4in	1229mm	48 3/8in	1460mm	57 1/2in	1651mm	65in
B	330mm	13in	330mm	13in	330mm	13in	330mm	13in
C	457mm	18in	508mm	20in	508mm	20in	622mm	24 1/2in
D	203mm	8in	203mm	8in	203mm	8in	203mm	8in
E	118mm	4 5/8in	118mm	4 5/8in	118mm	4 5/8in	118mm	4 5/8in
F	762mm	30in	762mm	30in	762mm	30in	762mm	30in
G	305mm	12in	305mm	12in	305mm	12in	305mm	12in
H	305mm	12in	356mm	14in	362mm	14 1/4in	495mm	19 1/2in

Model British Gas Number	25/49 5503602	
	SI Metric	Imperial
Storage Capacity	113.7 litre	25.0 gallons
Recovery Rate Vol/hr thru' 80°F	221.8 l/h	48.8 gph
Heat Input	15.9 kW	54,250 Btu/h
Gas Flow Rate	1.5 m <sup>3</sup> /h	52.4 ft <sup>3</sup> /h
Inlet & Flow Connections	R1	1in BSPT/Ext
Return Connection	Rp½	¾ BSP P/Int
Weight Empty	44 kg	98 lb
Weight Full	160 kg	350 lb
Hydraulic Working Pressure (Max)	3.5 bar	50.8 psi
Hydraulic Working Pressure (Min)	0.15 bar	2.2 psi
Gas Type	Natural	
Gas Connection	Rp½	½in BSP Int
Burner Pressure	10.0 mbar	4.0wg
Injector Diameter	3.43 mm	0.135 in
Shipping Weight	45 kg	99.2 lb
Shipping Dimension Carton	540 x 520 x 1213mm	21¼ x 20½ x 47¾ in
Fittings Pack Dimensions	190 x 340 x 190mm	7½ x 13½ x 7½ in
Fittings Pack Weight	1.75 kg	3.85 lb

Maximum Test Pressure 8.62 bar 125 psi.

## Technical Data

Model British Gas Number	33/49 5503603	
	SI Metric	Imperial
Storage Capacity	151.4 litre	33.3 gallons
Recovery Rate Vol/hr thru' 80°F	223.3 l/h	49.1 gph
Heat Input	16.0 kW	54,600 Btu/h
Gas Flow Rate	1.5 m <sup>3</sup> /h	52.7 ft <sup>3</sup> /h
Inlet & Flow Connections	R1	1in BSP T/Ext
Return Connection	Rp½	¾ BSP P/Int
Weight Empty	55 kg	122 lb
Weight Full	210 kg	462 lb
Hydraulic Working Pressure (Max)	3.5 bar	50.8 psi
Hydraulic Working Pressure (Min)	0.15 bar	2.2 psi
Gas Type	Natural	
Gas Connection	Rp½	½in BSP Int
Burner Pressure	10.0 mbar	4.0" wg
Injector Diameter	3.43 mm	0.135 in
Shipping Weight	56 kg	123.5 lb
Shipping Dimension Carton	595 x 570 x 1238mm	23½ x 22½ x 48¾in
Fittings Pack Dimensions	190 x 340 x 190mm	7½ x 13½ x 7½in
Fittings Pack Weight	1.75 kg	3.85 lb

Maximum Test Pressure 8.62 bar 125 psi.

# Technical Data

Model British Gas Number	41/55 5503604	
	SI Metric	Imperial
Storage Capacity	189.1 litre	41.6 gallons
Recovery Rate Vol/hr thru' 80°F	248.2 l/h	54.6 gph
Heat Input	17.78 kW	60,675 Btu/hr
Gas Flow Rate	1.7 m <sup>3</sup> /h	58.6 ft <sup>3</sup> /h
Inlet & Flow Connections	R1	1in BSP T/Ext
Return Connection	Rp½	¾ BSP P/Int
Weight Empty	64 kg	142 lb
Weight Full	256 kg	562 lb
Hydraulic Working Pressure (Max)	3.5 bar	51.5 psi
Hydraulic Working Pressure (Min)	0.15 bar	2.2 psi
Gas Type	Natural	
Gas Connection	Rp½	½in BSP Int
Burner Pressure	11.5 mbar	4.60" wg
Injector Diameter	3.57 mm	0.140 in
Shipping Weight	67 kg	147.7 lb
Shipping Dimension Carton	595 x 570 x 1472mm	23½ x 22½ x 59¼in
Fittings Pack Dimensions	220 x 350 x 220mm	8¾ x 13¾ x 8¾in
Fittings Pack Weight	2.16 kg	4.76 lb

Maximum Test Pressure 8.62 bar 125 psi.

## Technical Data

Model British Gas Number	62/75 5503605	
	SI Metric	Imperial
Storage Capacity	284.1 litre	62.5 gallons
Recovery Rate Vol/hr thru' 80°F	340.9 l/h	75.0 gph
Heat Input	24.4 kW	83325 Btu/h
Gas Flow Rate	2.3 m <sup>3</sup> /h	80.4 ft <sup>3</sup> /h
Inlet & Flow Connections	R1	1in BSP T/Ext
Return Connection	Rp $\frac{3}{4}$	$\frac{3}{4}$ BSP P/Int
Weight Empty	100 kg	220 lb
Weight Full	386 kg	850 lb
Hydraulic Working Pressure (Max)	3.5 bar	51.5 psi
Hydraulic Working Pressure (Min)	0.15 bar	2.2 psi
Gas Type	Natural	
Gas Connection	Rp $\frac{1}{2}$	$\frac{1}{2}$ in BSP Int
Burner Pressure	12.7 mbar	5.1 in wg
Injector Diameter	4.04 mm	0.159 in
Shipping Weight	109 kg	240.3 lb
Shipping Dimension Carton	705 x 685 x 1690mm	27 $\frac{3}{4}$ x 27 x 66 $\frac{1}{2}$ in
Fittings Pack Dimensions	220 x 350 x 220mm	8 $\frac{3}{4}$ x 13 $\frac{3}{4}$ x 8 $\frac{3}{4}$ in
Fittings Pack Weight	2.16 kg	4.76 lb

Maximum Test Pressure 8.62 bar 125 psi.



**Installation must be carried out by a competent person.**

Install in accordance with current British Standard Code of Practice 342 part 2 and British Standards 5440, 5546, 6644, 6700, 6798 and 6891.

### **A. Location**

The location chosen for the heater must permit the provision of a satisfactory flue and an adequate air supply.

The heater must not be installed in a room which contains a bath or a shower and must not be installed in a bedroom or bedsitting room.

A clearance of 300mm (12in) should be left around the heater for fitting and servicing purposes and 762mm (30in) above the heater for removal of the flue baffle. The above clearances are recommended for ease of servicing. They can be reduced if necessary but a clearance of 300mm (12 in) must be left in front of heater for access to the burner and controls. The flue baffle clearance should also be maintained if possible to avoid servicing problems.

The floor on which the heater is installed must be flat, level and of sufficient strength to withstand the weight of the heater when filled with water, and should satisfy the requirements of the Local Authority & Building Regulations.

Any combustible material adjacent to the heater must be so placed or shielded as to ensure that its temperature does not exceed 65°C (150°F).

### **B. Flue System**

Detailed recommendations for flueing are given in IM11 and BS 5440 part 1.

The following notes are intended to give general guidance:

Fit the draught diverter to the flue spigot on top of the water heater. Light quality asbestos to BS 567, mild steel to BS 715 or stainless steel flue can then be fitted to the spigot on top of the diverter. Fit a split flue clip or flange joint close to the diverter for servicing purposes.

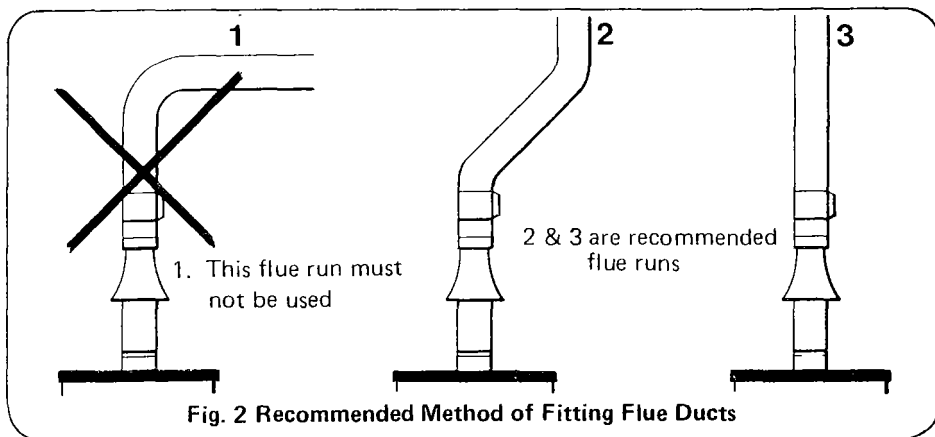
The flue must terminate with a British Gas tested flue terminal in accordance with the relevant recommendations given to BS 5440 part 1, table 4. The height from the roof to the base of the terminal is given in the table on page 8.

Flue pipes, flue linings and fittings should be of a type tested and certified by British Gas plc.

Minimum Heights from Roof to Base of Flue Terminal						
Type of roof		Not within 1.5 m (5 ft) of a vertical surface of a structure ‡ on the roof		Within 1.5 m (5 ft) of a vertical surface of a structure ‡ on the roof		
		Internal Route		External Route	Internal Route	External Route
		On Ridge	Not on Ridge			
Pitched	Pitch exceeding 30°	At or above ridge level	1m (3.3 ft) above roof intersection	The base of the terminal should be 250 mm (10 in) above the level of the adjacent roof edge	The base of the terminal should be 250 mm (10 in) above the level of the top of the structure	
	Pitch not exceeding 30°		250 mm (10 in) above roof intersection			
Flat	With parapet	Not applicable	600 mm (2 ft) above roof intersection			
	Without parapet		250mm (10 in) above roof intersection			

‡ Chimney stack, dormer window, tank room, lift motor room, parapet etc.

If using an existing brick chimney it should be swept clean before connecting the flue and should be suitably lined with an approved lining. As far as practical the flue should rise continuously to the terminal avoiding the use of 90° bends where a change of direction is required. Horizontal and very shallow runs of flue should be avoided since they impede the flow of gases and increase local cooling.



### C. Air Supply

Detailed recommendations for air supply are given in BS 5440 part 2 and BS 6644.

The following notes are intended to give general guidance:

Where the heater is to be installed in a room or internal space the heater requires the room or internal space containing it to have a permanent air vent. The vent must be either direct to outside air or to an adjacent room or internal space which must itself have a permanent vent of at least the same size direct to outside air. The minimum effective area of the permanent air vent(s) required is as follows:

$$4.5 \text{ cm}^2 \text{ per kW in excess of 7 kW}$$

$$(1 \text{ in}^2 \text{ per 5000 Btu/h in excess of 25000 Btu/h})$$

Where the heater is to be installed in a compartment, permanent air vents are required in the compartment at high and low level. These air vents must either communicate with a room or internal space or be direct to outside air.

The minimum effective areas of the permanent air vents required in the compartment are as follows:-

Position of Air Vents	Air Vent Areas	
	Air from room or internal space	Air direct from outside
High Level	9cm <sup>2</sup> per kW (2in <sup>2</sup> per 5000 Btu/h)	4.5cm <sup>2</sup> per kW (1in <sup>2</sup> per 5000 Btu/h)
Low Level	18cm <sup>2</sup> per kW (4in <sup>2</sup> per 5000 Btu/h)	9cm <sup>2</sup> per kW (2in <sup>2</sup> per 5000 Btu/h)

**Note:** - Both air vents must communicate with the same room or internal space or must both be on the same wall to outside air.

Where compartment air vents are open to a room or internal space, the room or internal space must itself have a permanent air vent(s) as previously specified.

For multiple installations where the total heat input exceeds 60 kW (204,720 Btu's/hr), reference must be made to BS 6644. The table opposite should be used to calculate requirements. Detailed recommendations are given in BS 6644 Clause 19.

The following notes are intended to give general guidance.

Ventilation shall prevent the heater environment from exceeding 32°C (90°F).

The purpose provided space housing the heater(s) must have permanent air vents **communicating directly** with the outside air, at high and low level. Where communication with the outside air is possible only by means of high level air vents, ducting down to floor level for the lower vents should be used.

For an exposed building, air vents should be fitted preferable on all four sides, but on at least two sides.

Air vents should have negligible resistance and must not be sited in any position where they are likely to be easily blocked or flooded or in any position adjacent to an extraction system which is carrying flammable vapour.

Grilles or louvres should be so designed that high velocity air streams do not occur within the space housing the heater(s).

The grilles should have a total minimum free area for the water heater(s) in addition to any other requirements as follows:-

Low-Level (inlet)	540cm <sup>2</sup> plus 4.5cm <sup>2</sup> per kilowatt in excess of 60 kW total rated input
High-Level (outlet)	270cm <sup>2</sup> plus 2.25cm <sup>2</sup> per kilowatt in excess of 60 kW total rated input

**IMPORTANT:**

1. The effective area requirements specified in the table are related to the maximum heat input of the heater(s), and are equivalent to those specified in BS 6644.
2. The free area of the grilles should not be less than the size of the recommended ventilation opening.
3. The supply of air to a space housing the heater(s) by mechanical means should be:-
  - (a) Mechanical inlet with natural extraction.
  - (b) Mechanical inlet with mechanical extraction.

**NB!!** Natural inlet with mechanical extraction must not be used.

Where a mechanical inlet and mechanical extraction system is used, the design extraction rate must not exceed one third of the design inlet rate.

All mechanical ventilation systems must be fitted with automatic gas shut off safety systems which cut off the supply of gas to the heater(s) in the event of failure of either the inlet or extract fans.

The requirements for air supply by mechanical ventilation are given in BS 6644 Clause 19.3.

The permanent air vents shall be sited away from any extract fans. Where an extract fan is fitted, check for spillage at the draught diverter as set out in BS 5440 part 1, appendix B. It may be necessary to increase the ventilation area to compensate for the extractor fan.

4. **Some halogen containing compounds can cause rapid corrosion of the Gas Burner, Thermocouple and Storage Vessel if drawn into the combustion air.**  
 Therefore, if heaters are to be installed in any of the following locations or in any applications where the above compounds are present they should be sealed off from atmospheres which may contain these compounds, and all ventilation air must be taken completely from outside.
  - (i) Hairdressing salons and adjoining rooms or basement.
  - (ii) Establishments where dry-cleaning solutions are used.
  - (iii) Industrial use near chemical de-greasing processes or where solvents are used or stored.
  - (iv) Installations where refrigerant gases are used or stored.

#### D. Water Connections — Vented Systems

The water heater must be supplied from a cold water feed cistern and the hot water supply pipe must be fitted with an open vent pipe in accordance with BS 5546 and 6644. Local regulations and bye-laws must be observed when installing the system but typical water service layouts are shown in Figs. 3 and 4.

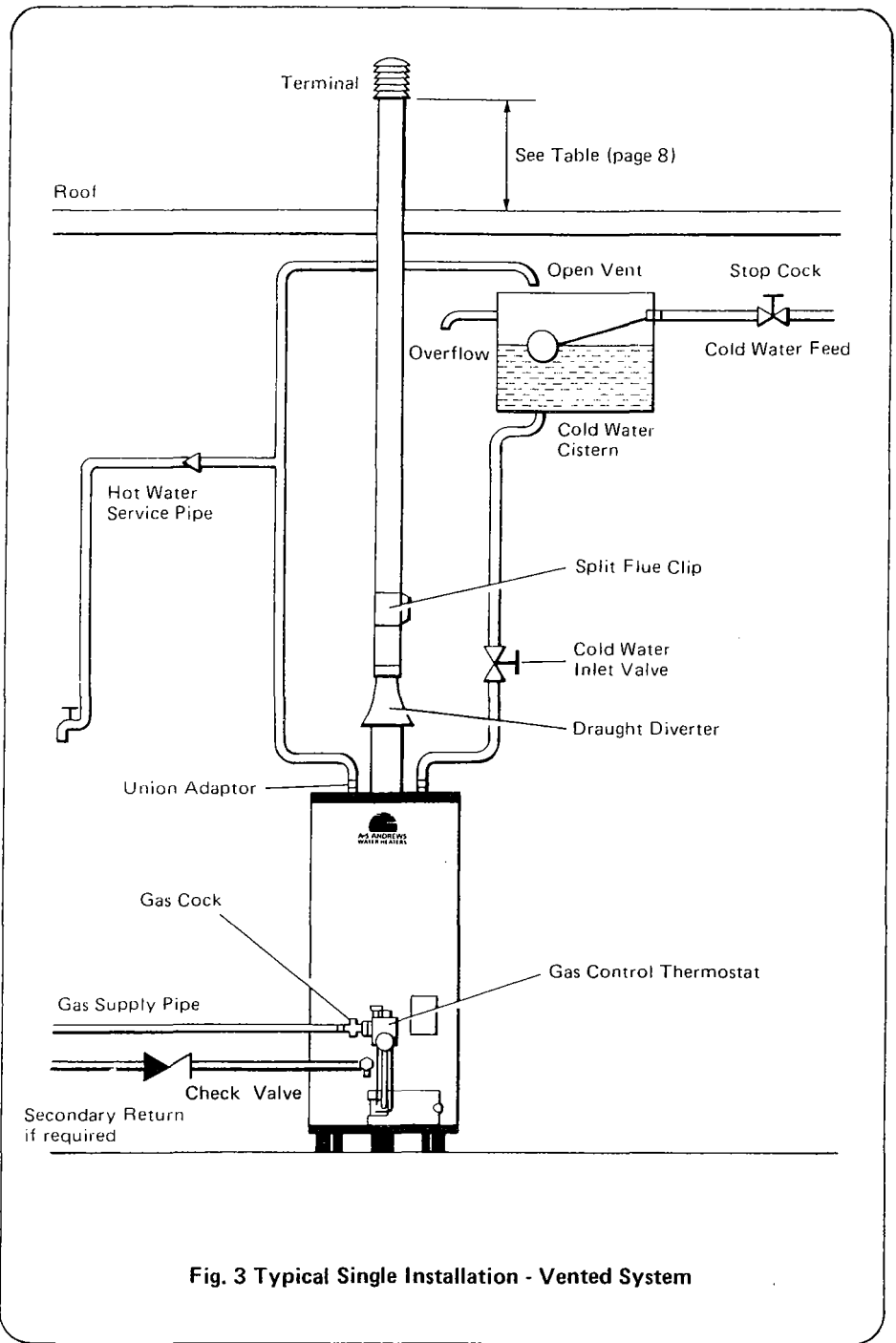
The cold water feed cistern must have an actual capacity greater than the hourly recovery rate of the heater or heaters to which it is fitted, the minimum actual capacity allowed for a feed cistern is 50 gall (227 litres) ref. bye-law 30.

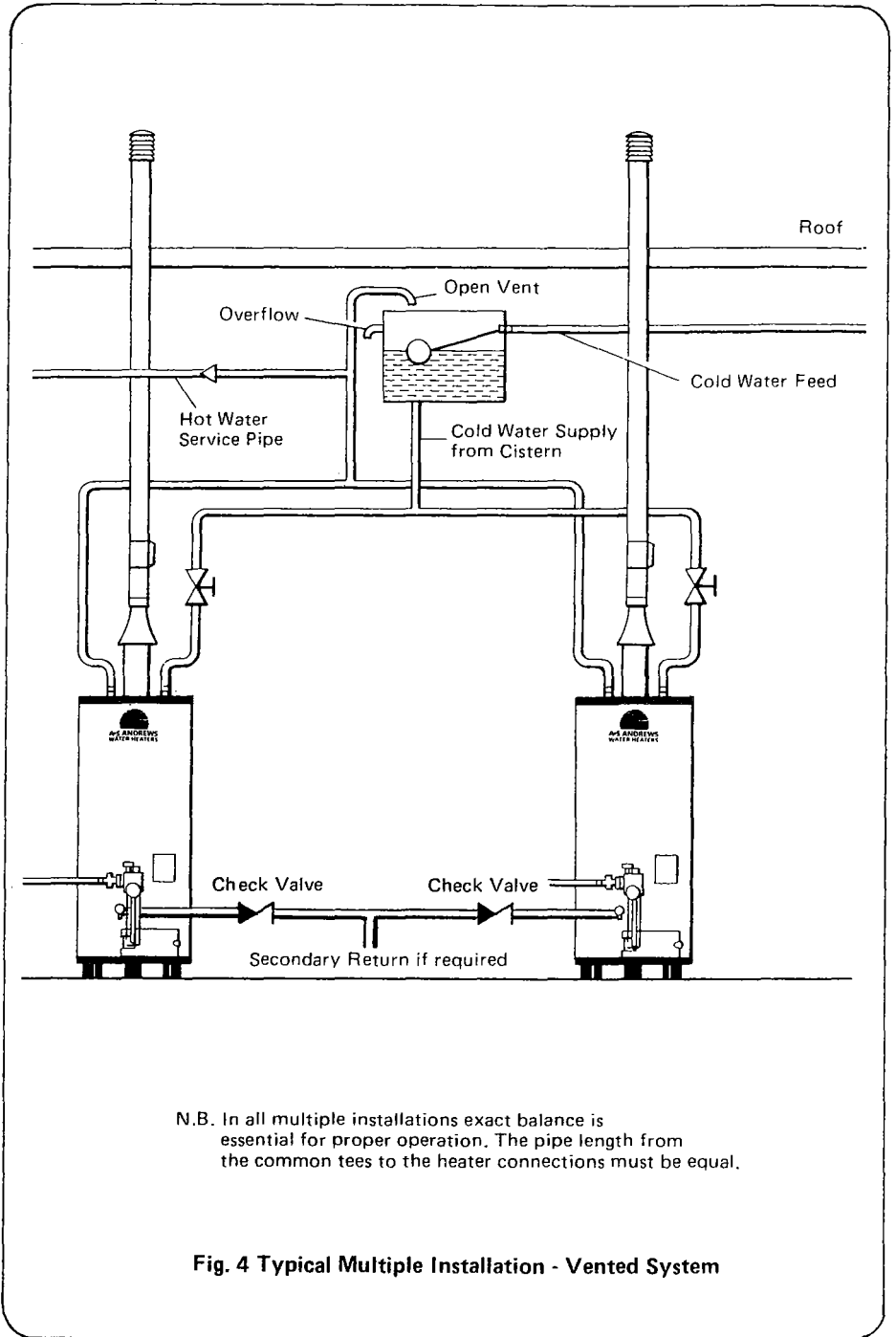
The actual cistern capacity is the capacity to the normal water line of the cistern. All cisterns used should be to the relevant British Standard and the distance from the normal water line to the top of the cistern should be as laid down by the water authorities.

The cold water inlet and hot water outlet are identified on top of the heater. Connect the cold water feed and hot water outlet to these nipples with union adaptors for ease of servicing. (See Servicing Section 4).

**CAUTION** - DO NOT APPLY HEAT TO THESE NIPPLES IF MAKING CAPILLARY SOLDERED JOINTS AS THEY ARE FITTED WITH PLASTIC INSERTS. MAKE THE CAPILLARY JOINTS TO THE PIPES BEFORE CONNECTING TO THE HEATER. A DRAIN COCK IS SUPPLIED WITH THE HEATER AND THIS SHOULD BE FITTED TO THE APPROPRIATE BOSS AS SHOWN ON THE DRAWING.

After installation of the water system open the main water supply valve, flush the system and fill the heater. Open the hot taps to allow air to escape from the system. When the system is free of air, close the taps and check for leaks at the gas control thermostat, drain cock and pipe connections at the top of the heater.





N.B. In all multiple installations exact balance is essential for proper operation. The pipe length from the common tees to the heater connections must be equal.

Fig. 4 Typical Multiple Installation - Vented System

### Water Connections - Unvented Systems

When used in an unvented system, the Andrews water storage heater will supply hot water at a pressure of 3.5 bar (50.8 psi) providing this pressure is available at the mains feed. During conditions of no flow, whilst the burner is operating, the pressure of the system will rise to a maximum of 6 bar (87.0 psi).

When testing the system, it is recommended that a maximum test pressure of 10.34 bar (150 psi) be employed.

The Andrews range of storage water heaters can be used on unvented hot water storage systems with the addition, to the standard heater, of an "Unvented Systems Kit" Part No. 80 000 107 obtainable from the Water Heater Division of Andrews Industrial Equipment Limited.

All fittings and materials must be suitable for use with potable water and listed in the current Water Research Centre "Materials and Fittings Directory".

Installation of unvented hot water storage systems must comply with The Building Regulations 1985 Section G3.

Models 25/49, 33/49, 41/55, 62/75 with reference to Figs. 5, 6 and 7

The kit consists of the following items (see Fig. 6).

- a) Line strainer
- b) Pressure limiting valve
- c) Check valve
- d) Expansion
- e) Expansion vessel
- f) Temperature/Pressure relief valve
- g) Tundish

Items a, b and c are "in line" fittings and are threaded R $\frac{3}{4}$ " ( $\frac{3}{4}$ " BSP male) and should be connected into suitable "tee" fittings.

Item f must be fitted into the "relief" port tapping (see Fig. 1), item g must be fitted to the outlet of item f using suitable tubing and an elbow (see Figs. 5 and 7).

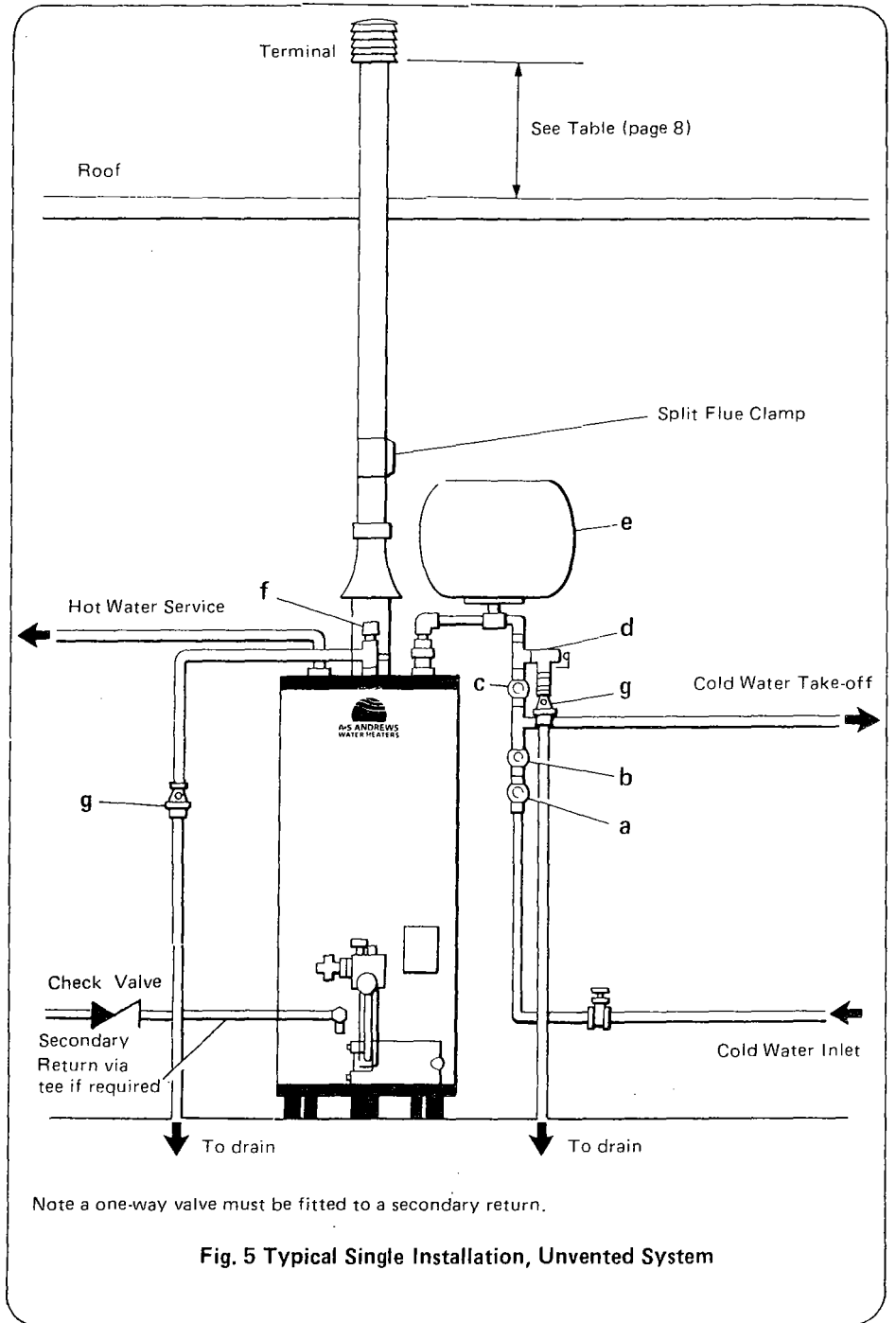
When assembling the line strainer (a), pressure limiting valve (b) and check valve (c) care must be taken to ensure that the flow arrows marked on the units are pointing in the correct direction i.e. that of the water flow.

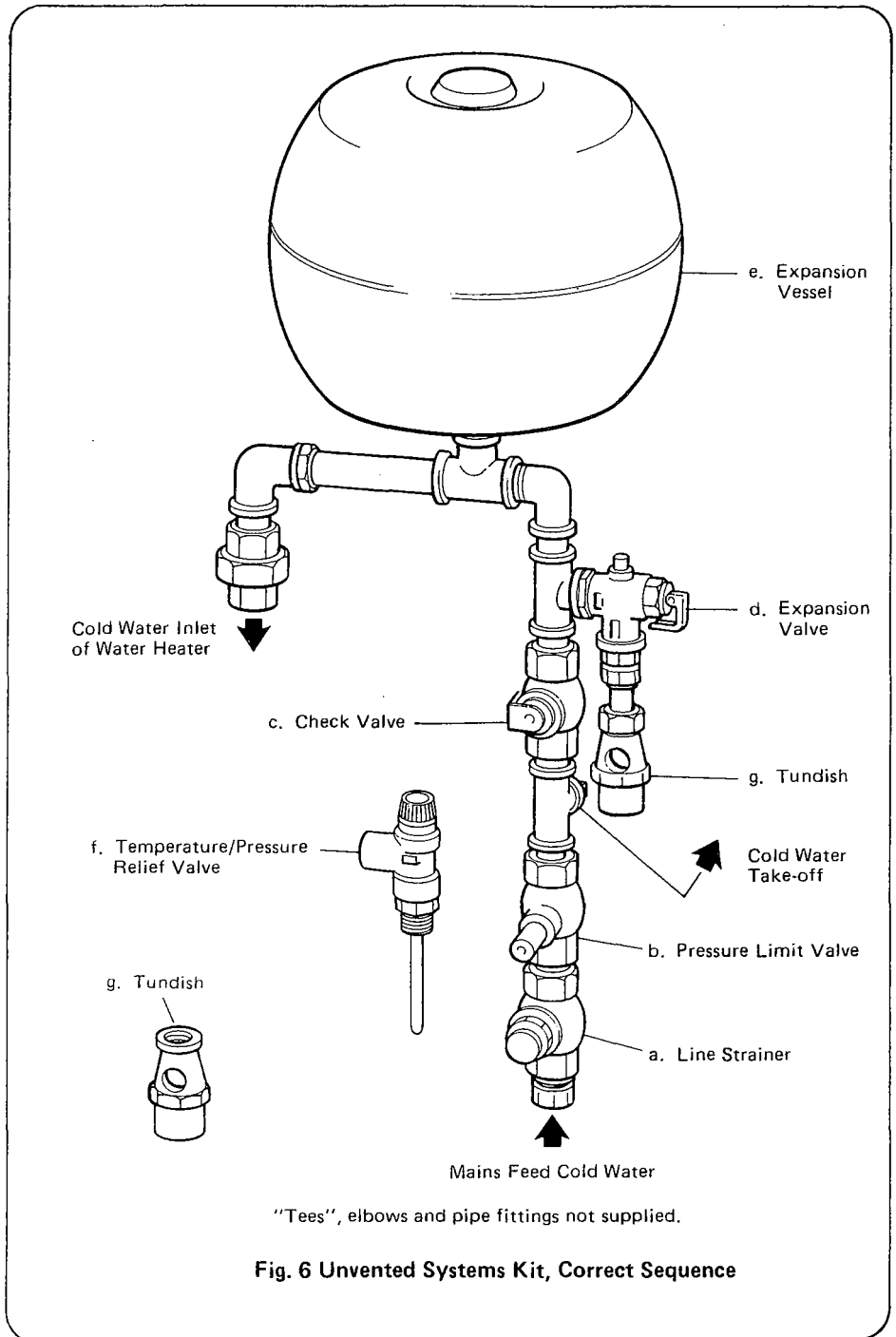
The cold water for services may be drawn off via a "tee" fitting between items b and c, the pressure at which will be similar to the hot water supplied by the water heater.

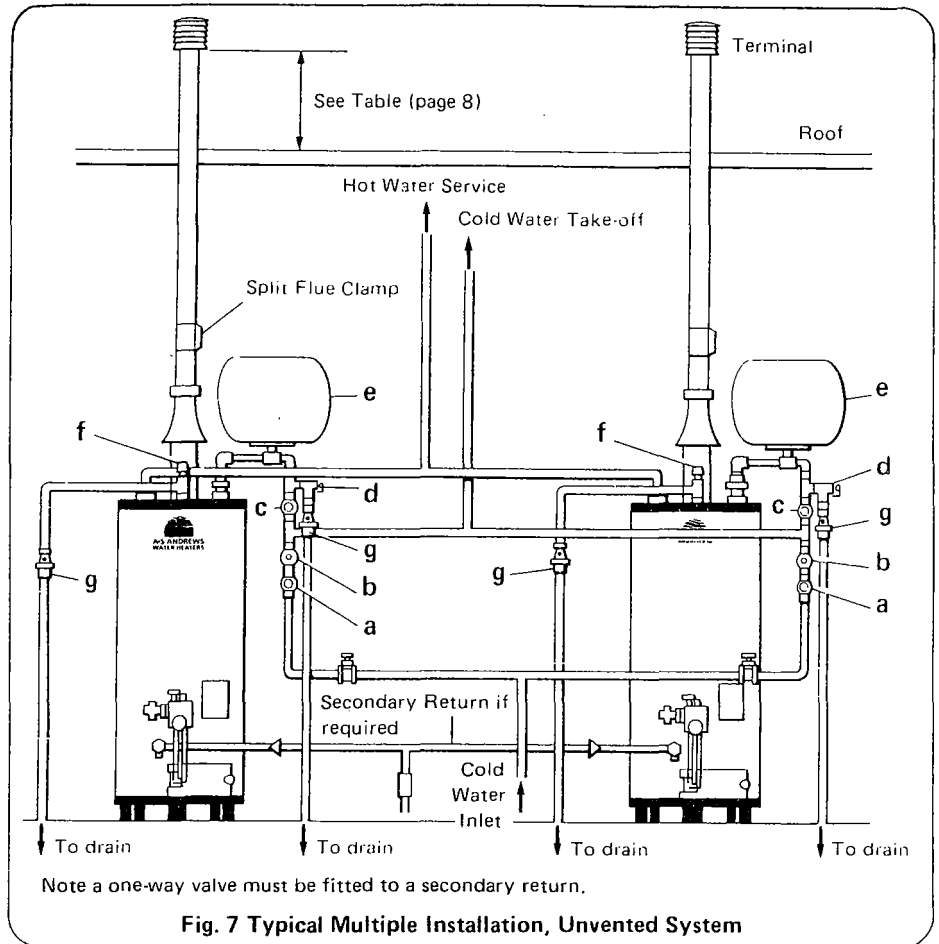
If higher flow rates are required for the cold water services a "tee" should be added before item a. If required an additional pressure limiting valve can be fitted in this line to give balanced pressure.

The pipework fitted to both tundishes should be 28mm diameter and terminated at a suitable drain close to floor level.









### Dead Legs

Dead legs to water draw off points should be as short as possible and in no case should they exceed the lengths laid down in the water bye-laws.

The water bye-laws state that the maximum lengths of pipe supplying a hot water draw off tap, measured along the axis of the pipe from the heater, cylinder or tank or from a secondary circuit are as listed below.

Pipes not exceeding 19 mm inside dia. - maximum dead leg length 12.0 metres.

Pipes exceeding 19 mm inside dia. but not exceeding 25 mm inside dia. - maximum dead leg length 7.6 metres.

Pipes exceeding 25 mm inside dia. - maximum dead leg length 3.0 metres.

In case of a compound pipe of differing diameters the dead leg length must be sized on the largest diameter of pipe.

For a spray tap the maximum dead leg length allowed is 0.9 metres.

**Water Treatment**

Where extreme conditions of water hardness exist scale can form in any water heating equipment, especially when the equipment is working under conditions of constant heavy demand.

This problem can be minimised by reducing the water temperature in the heater and by fitting suitable water pre-treatment plant.

If doubt exists contact a water treatment specialist or the manufacturer for further advice.

**E. Multiple Installations**

Two or more heaters may be connected in parallel to increase the capacity of the system. Install as Figs. 4 or 7 ensuring that the pipe lengths are equal to maintain a balanced system.

**NOTE:**

If the heater is out of use during a period of heavy frost and is likely to be in an exposed position it is recommended that the whole system is drained down to prevent damage due to formation of ice inside the storage vessel.

**F. Gas Connections**

**THE APPLIANCE MUST ONLY BE USED WITH NATURAL GAS.**

The installation of the gas supply should conform to the requirements of IM/16 published by British Gas p.l.c. or BS 6891. Jointing compound used must conform to BS 5292.

**CAUTION - DO NOT APPLY HEAT IN CLOSE PROXIMITY TO THE GAS CONTROL THERMOSTAT AS THIS WILL RESULT IN DAMAGE OCCURING TO THE CONTROL.**

Fit a ½" gas supply cock immediately upstream of the gas control thermostat and connect to the gas supply. Pressure test the gas installation for soundness. If any doubt exists as to size of gas supply pipe, consult your local Gas Region.

It is recommended that a pressure test point is fitted on the input next to the gas supply cock.

**CAUTION: DO NOT OPERATE THE WATER HEATER UNTIL THE STORAGE VESSEL IS COMPLETELY FILLED WITH WATER, WITH WATER RUNNING FROM ALL HOT TAPS.**

Open the main gas supply cock after all connections to the gas control thermostat are complete, and test all connections with soap solution.

### To Light the Burner

1. Remove outer cover and slide the inner cover to the right, turn the gas control knob to OFF (depress spring catch under control knob) and wait 3 minutes for any unburnt gas to vent.
2. Turn the gas control knob to pilot.
3. Fully depress the RED button and light the pilot burner. With the pilot burner alight, hold the red button in for 20 seconds. When the red button is released the pilot should remain lit, if not repeat the operation.
4. Slide the inner cover to the left and replace the outer cover.
5. Set the temperature indication dial to the required temperature (see below).
6. Turn the gas control knob to ON, the burner should now light, if not repeat the operation.

Note for model 62/75, the inner cover is removed at step 1. Replace at step 4.

Thermostat Setting	1		2		3		4	
Approx. Water Temperature	105°C	41°C	120°F	49°C	135°F	57°C	150°F	66°C

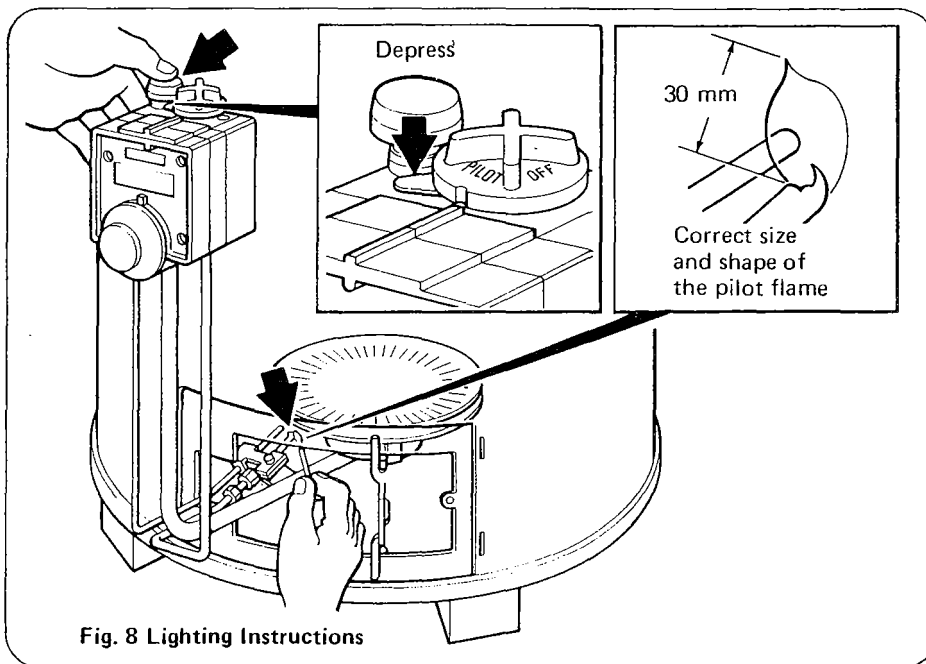


Fig. 8 Lighting Instructions

### To Shut Off the Burner

For long periods only, eg. holidays or periods of 7 days or more, turn the control knob to 'PILOT' position, depress the spring catch and turn clockwise to 'OFF'. Turn off the gas service cock.

For shorter periods, eg. less than 7 days, leave the heater under the control of the thermostat.

**N.B.** If the pilot should become extinguished for any reason, turn off the appliance, and wait three minutes before attempting to relight.

### To Check Main Burner Pressure

1. Turn burner OFF as above.
2. Remove plastic dial (pull off).
3. Release bleed screw (A) one turn and connect pressure gauge tube.
4. Light burner according to the preceding instructions.
5. Adjust burner pressure at screw (B) in accordance with data plate. Turn screw clockwise to increase pressure and anti-clockwise to decrease pressure. When replacing plastic dial ensure correct alignment of dial with locating lug (C).
6. Turn burner OFF. Remove pressure gauge tube and tighten screw (A).

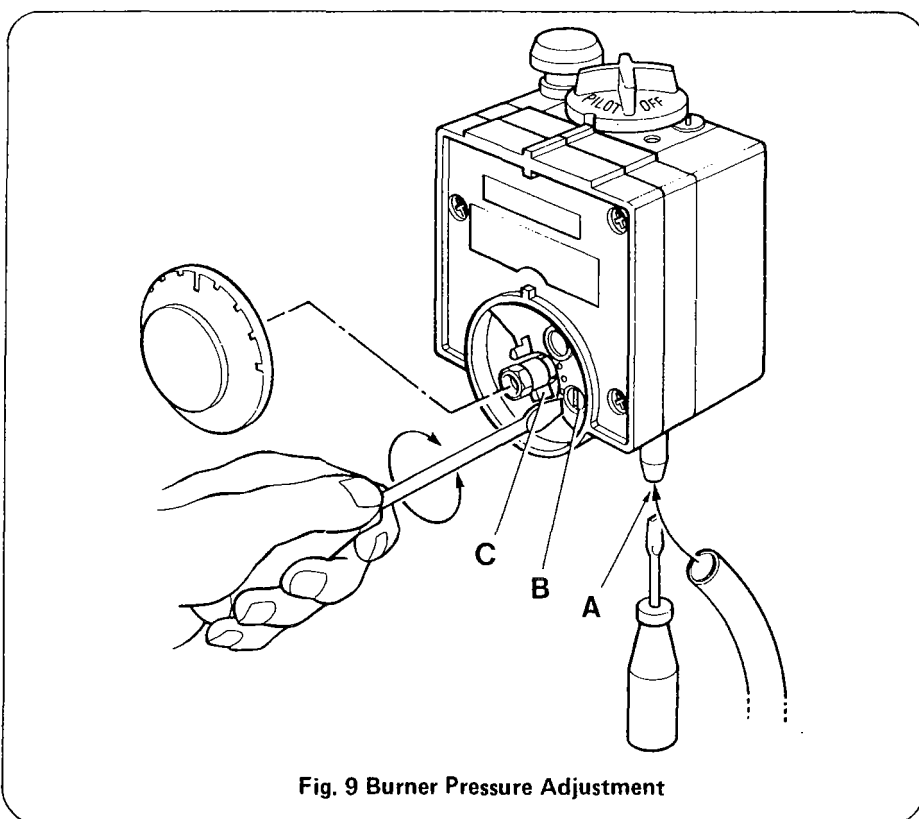


Fig. 9 Burner Pressure Adjustment

When properly installed and adjusted the Heater will require the minimum of attention. Should it become necessary to completely drain the heater, close the cold water inlet valve, open a hot water tap to allow air to enter the system. Fit a suitable hose to the drain cock and open.

Whenever the Heater is filled with cold water, condensation will form on the cold storage vessel surfaces when the burner is lit. Condensation is normal and does not indicate a leak. It will disappear when the storage vessel becomes heated.

The gas control fitted to this heater has a built in limit thermostat. In case of dangerous water temperatures, the gas supply will be automatically shut off. The heater cannot be relit until the gas control has been changed. The reason for such high temperature must be corrected before the heater is relit. The gas control must be replaced with an identical model having the same code number Robertshaw 110R2TSPL - A.

Whilst giving the following instructions for the care of the Andrews Water Heater, we would recommend that an arrangement is made with your local gas region or installer to carry out periodic checks of the appliance to ensure trouble free operation and continued satisfaction.

### Burner Assembly

The burner assembly should be cleaned and checked annually as follows:-

1. Depress the catch under the control knob and turn to "OFF". Remove the outer burner cover and slide the inner door to the right. Note 62/75, the inner cover must be lifted out.
2. Disconnect from the bottom of the control valve the pilot tube, thermocouple and main burner supply tube. Withdraw the burner assembly from the heater.
3. Remove the screw securing the pilot assembly to the main burner supply tube.
4. Remove the gland nut connecting the pilot tube to the pilot assembly. Withdraw the pilot tube and remove the pilot restrictor from the end. Clean the pilot restrictor with acetone and blow through the pilot burner with compressed air.
5. Remove the two screws securing the main burner supply tube to the bottom of the burner to gain access to the main jet. Remove the main jet and clean with acetone. Blow through the main burner with compressed air.

**DO NOT ATTEMPT TO CLEAN ORIFICES WITH SHARP METALLIC OBJECTS, IF NECESSARY, USE A WOOD SPLINTER TO CLEAR.**

6. Re-assemble in the reverse order of steps 2 to 5 but note:
  - i) Be sure to engage the rear section of the main burner supply pipe in its location bracket on the base pan of the heater.
  - ii) **DO NOT OVERTIGHTEN THE THERMOCOUPLE CONNECTION, SCREW IN FINGER TIGHT AND TIGHTEN A FURTHER ¼ TURN USING A SPANNER.**
7. Turn the control knob to "PILOT" and depress. Using a leak detection fluid check the joints at both ends of the pilot supply tube. Seal if necessary.
8. Allow 3 minutes for any unburnt gas to disperse and light the pilot flame, check that the flame is correct, see Fig. 8. Slide the inner door to the left (replace 62/75) and turn the control knob to 'ON', the main burner will light.
9. Check the main burner tube connection at the control valve with leak fluid and seal if necessary. Replace the outer cover.



### Gas Control Valve

This should be checked and serviced by an engineer fully conversant with every aspect of this piece of equipment. A field information bulletin is obtainable on application from Andrews Water Heater Division.

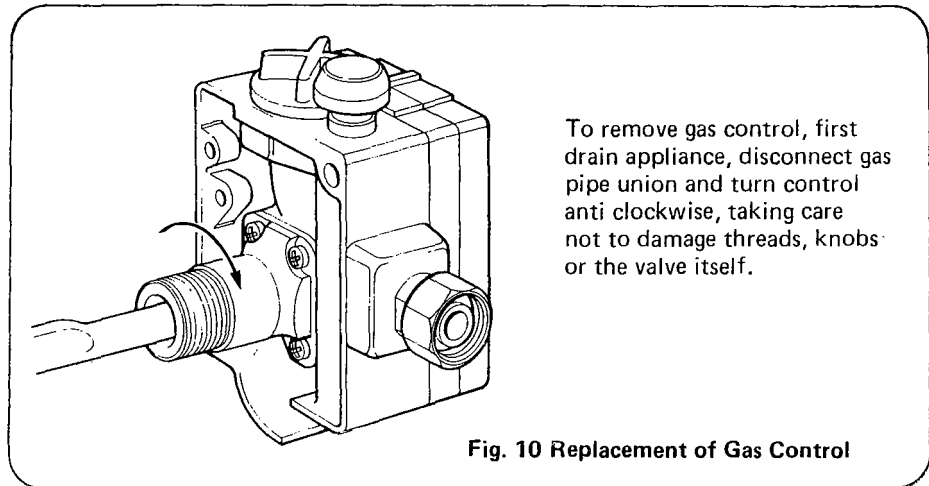


Fig. 10 Replacement of Gas Control

### Flueway

The burner and flueway should be checked annually and if necessary cleaned as follows:-

1. Depress catch under the control knob and turn to "OFF". Remove outer burner cover and slide inner door to the right. Note 62/75, the inner cover must be lifted out.
2. Disconnect burner gas tube, pilot tube and thermocouple at gas control.
3. Remove burner assembly complete with pipes and thermocouple lead.
4. Remove split flue clip from the flue and lift off the draught diverter.
5. Inspect and clean the secondary flue installation as necessary.
6. Lift out the baffle from inside the central flueway.
7. Clean the flueway with a brush and clean any deposit from the underside of the storage vessel bottom and from the flue baffle.
8. Re-assemble in the reverse order.  
IT IS IMPORTANT THAT THE BURNER IS CORRECTLY LOCATED IN THE BURNER SUPPORT BRACKET ON BASE OF COMBUSTION CHAMBER. DO NOT OVERTIGHTEN THE THERMOCOUPLE CONNECTION. Screw in hand tight and tighten an extra ¼ turn with a spanner.
9. Re-light and carry out commissioning check as above.

### Magnesium Anode

A sacrificial magnesium anode is fitted into the top of the water vessel. This anode is to prevent corrosion of the storage vessel. The condition of the anode should be checked at least annually during service. Turn the gas control to "OFF" and turn off the cold water supply valve. Open a hot water tap and also the drain cock to remove all water above the heater. Unscrew the anode using a 1 1/16" AF socket spanner and withdraw. The anode when new is 21mm Dia. The anode should be replaced if at any point along its length, the diameter is reduced to half, or less, of the original. Particular attention should be paid to the ends.

If the anode is encrusted with limescale, it should be either cleaned or replaced.

### Cleaning the Storage Vessel

Scale formation in the base area of the storage vessel may occur in hard water areas and is usually associated with high usage and high water temperatures. It is characterised by a rumbling noise (kettling) when the burner is lit and should be rectified by chemical descaling.

#### Equipment Required

- 1 - 25 litre heavy plastic drum complete with drain valve.
- 1 - hose of sufficient length to reach from the heater to a suitable drain, internal bore 20mm to suit the drain valve of the water heater.
- 1 - 2 metre length of hose internal bore 25mm.
- 1 - 3/4" BSP gate valve with Rp3/4" inlet fitted with R3/4" nipple about 100mm long at its outlet.

Also required, are various hose clips and 10 litres of Andkem Descale Fluid.

1. Turn the gas control knob and gas service cock to "OFF".
2. Turn off the cold water supply valve to the heater.
3. Turn on the hot water draw off taps served by the water heater or (for multiple installations) turn off the hot water outlet connection valve and secondary return valve.
4. Drain down using the drain valve on the heater.
5. Slacken a water union on the heater (to allow displaced air to escape whilst descaling).
6. Remove the heater drain valve and fit the 3/4" BSP gate valve complete with 3/4" BSP nipple to the drain port nipple of the heater.
7. Connect the 2 metre length of hose between the gate valve nipple and the drain valve of the 25 litre plastic drum using suitable hose clips.
8. Ensuring both the gate valve at the heater and the drain valve of the plastic drum are closed, add 10 litres of the descale fluid to the plastic drum. BEWARE! THE FLUID IS CORROSIVE.
9. With the plastic drum resting on the floor, open both the gate valve and the drain valve.
10. Raise the plastic drum so that the solution runs into the heater tank.
11. Close both the gate valve and the drum drain valve, and leave to soak.
12. After about 60 minutes (not before), restore the gas supply and light the pilot. Turn on the main burner for 1 MINUTE MAXIMUM.
13. Turn the gas control knob and gas service cock to "OFF".

14. Allow 30 minutes for the descale fluid to cool. With the plastic drum at floor level, open both gate valve and drum valve to allow the descale fluid to drain back into the drum.
15. Remove the gate valve from the drain port nipple and re-fit using a suitable jointing compound, the heater drain cock in the closed position.
16. Turn off all hot water draw off taps served by the water heater(s), and open all valves to fill the heater tank.
17. Fit the 20mm bore hose between the drain valve and a suitable drain. Open the drain valve fully and allow the tank to flush for a minimum of 30 minutes. Turn on all hot water draw off taps served by the heater(s) and allow to run for 5 minutes, once the drain valve is turned off.
18. Restore the gas supply and re-light the heater.

**CAUTION:** DUE TO THE CORROSIVE NATURE OF THE DESCALE FLUID, IT IS ESSENTIAL THAT EYE PROTECTION AND PROTECTIVE CLOTHING ARE WORN. IF CONTACT IS MADE WITH THE SKIN WASH OFF IMMEDIATELY IN COLD WATER.

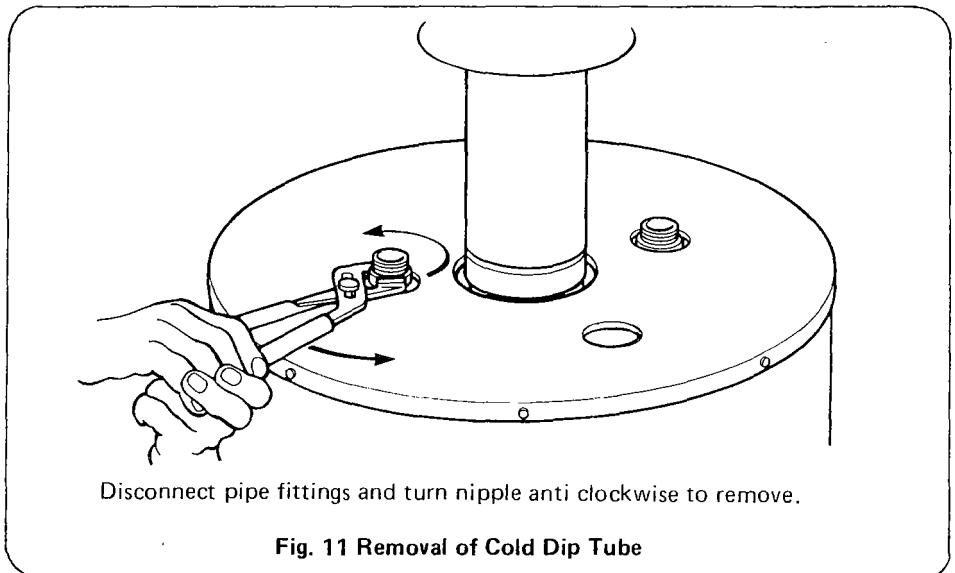
#### **Restart**

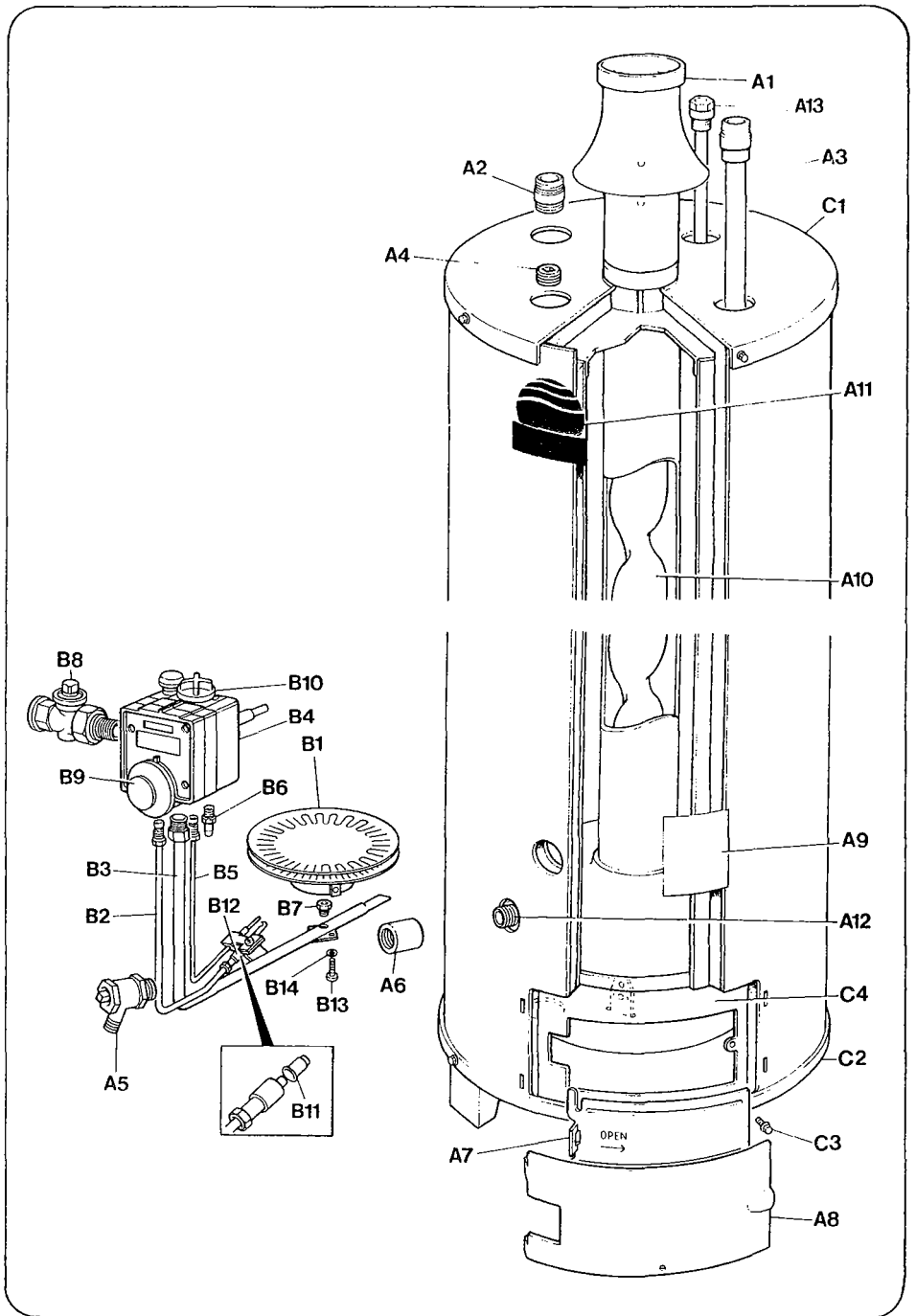
Re-light and carry out commissioning checks, see Section II.

Set the thermostat control to the desired setting.

FAULT	ACTION
1. WATER DOES NOT GET HOT	(a) Check gas cock is open. (b) Check water valves are open. (c) Check that pilot is alight. (d) Check thermostat setting. (Reset to higher temperature). (e) Check gas pressures at burner and at gas inlet to appliance (see below). (f) Check cold inlet dip tube to see if it is broken or missing (see Fig. 11).
2. PILOT FLAME IS OUT	(a) Try to light burner as detailed in lighting instructions. (b) Pilot will not light wait 3 mins and try again then see below.
3. PILOT WILL NOT STAY ON	(a) Check gas available. (b) Check thermocouple, replace if necessary. (c) Check inlet gas pressure as this may be too high or too low. Inlet gas pressure to heater multifunctional control should be 17.5 mbar (7" Wg) to 25 mbar (10" Wg). (d) Pilot jet blocked, clean or replace pilot jet. (e) Faulty magnet, replace multifunctional control. (f) E.C.O. safety thermostat operating at too low a temperature. Replace multifunctional control.
4. BURNER WILL NOT LIGHT - PILOT ESTABLISHED	(a) Water already at correct temperature. (b) Replace multifunctional control.
5. THERMOCOUPLE BURNS OUT FREQUENTLY	(a) Check pilot pipe for loose joints. (b) Check that correct amount of fresh air ventilation is available. (c) Check that flue is clear and is correctly designed and that the British Gas Tested and Certified flue terminal is correctly positioned. (d) Check for presence of halogen vapours (see page 10).
6. HEATER SOOTING, YELLOW FLAME (POOR COMBUSTION)	(a) Clean burner and injector. (b) Flue obstruction, clean flueways. (c) Check flue design and termination position. (d) Check burner pressure. (e) Check for correct ventilation.
7. WATER TEMPERATURE TOO HIGH	(a) Reset thermostat to lower temperature. (b) If water temperature is still too high replace multifunctional control.

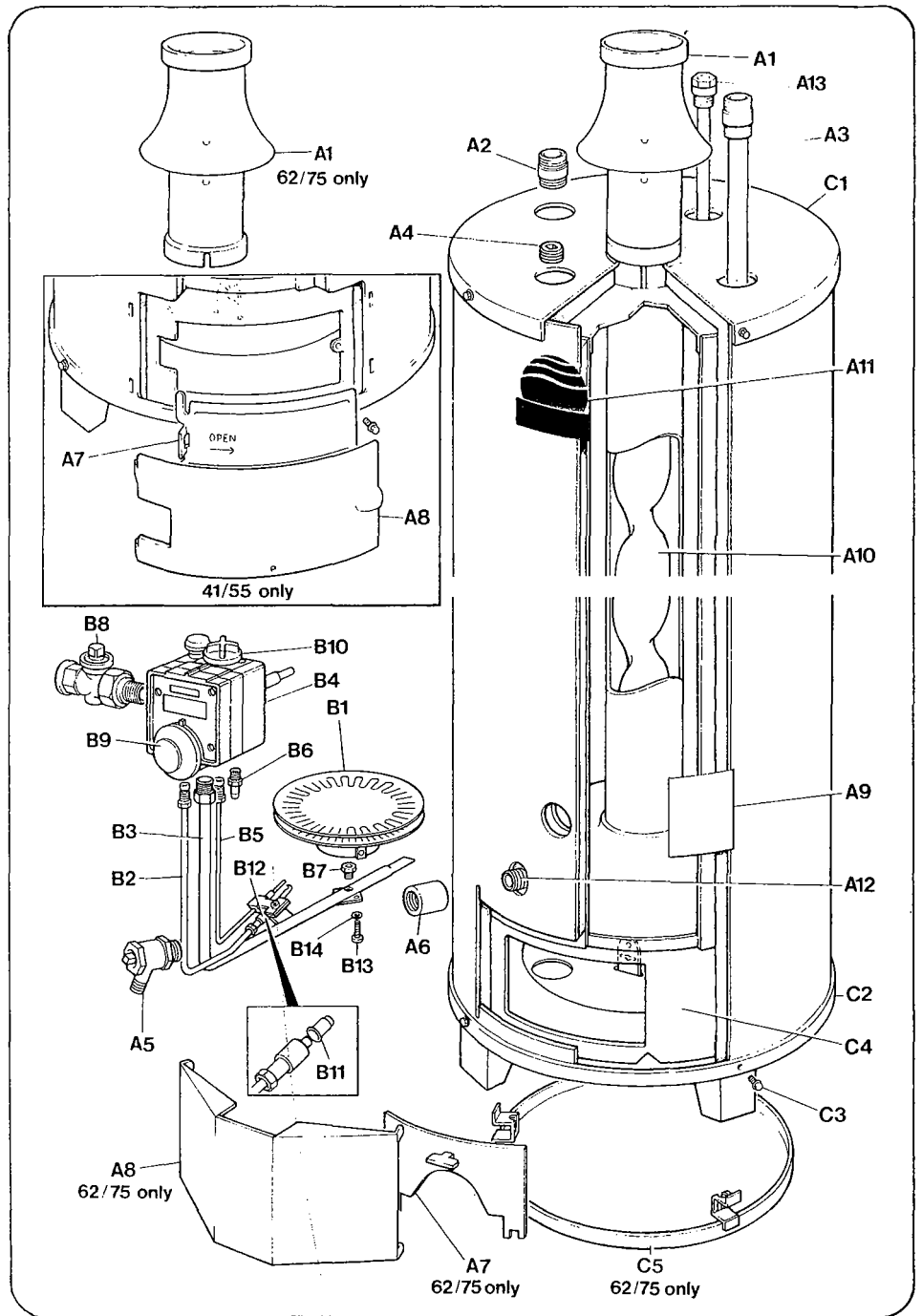
FAULT	ACTION
8. WATER TEMPERATURE TOO LOW	(a) Reset thermostat to higher temperature. (b) Check gas pressures at burner and at gas inlet to appliance.
9. NOT ENOUGH HOT WATER	(a) Check gas pressures at burner and at gas inlet to appliance. (b) Check amount of water being used against recovery rate given on Data Plate.
10. WATER DRIPPING FROM BASE OF HEATER	(a) Check if water stops dripping when water in heater is hot. If water stops problem is condensation caused by incorrectly designed flue or by tank cooling excessively i.e. more hot water being used than recovery rate of the heater. (b) If water continues to drip when heater is hot. Problem is a leaking joint or storage vessel.
11. RUMBLING NOISE (KETTLING)	(a) Scale formation in heater, consult water treatment specialist. Heater must be descaled and suitable water treatment provided to avoid problem re-occurring.





Model	25/49		33/49		Description	Qty
Ref.	Andrews Part No.	GC Part No.	Andrews Part No.	GC Part No.		
A1	C105	306 601	C105	306 601	Draught Diverter	1
A2	C285	306 551	C285	306 551	Hot Outlet Nipple	1
A3	C286	306 552	C292	306 603	Cold Inlet Dip Tube	1
A4	C641	306 503	C641	306 503	Plug Return	1
A5	C381	306 604	C381	306 604	Connection	1
A6	C103	306 505	C103	306 505	Drain Cock	1
A7	C449	306 605	C449	306 605	Socket Coupler 3/4"	1
A8	C450	306 607	C450	306 607	Cover Combustion Chamber	1
A9	C453	306 608	C454	306 609	Cover Burner Access	1
A10	C398	306 612	C398	306 612	Data Badge	1
A11	C642	306 615	C642	306 615	Flue Gas Baffle	1
A12	C247	306 509	C247	306 509	Label Andrews Water Heater	1
A13	C288	306 554	C289	306 555	Nipple 3/4" BSP	1
B1	C401	306 618	C402	306 619	Magnesium Anode	1
B2	C405	306 622	C406	306 623	Burner Assy Comp- prising items B2, B3 B5, B7, B12, B13	1
B3	C643	306 625	C420	306 626	Pilot Supply Pipe	1
B4	C107	386 603	C107	386 603	Burner Supply Pipe	1
B5	C126	386 599	C126	386 599	Multifunctional Con- trol Robertshaw 110 R2TSPL-A	1
B6	C136	306 643	C136	306 643	Thermocouple Rob- ertshaw 2C	1
B7	C408	306 644	C409	306 645	Pressure Test Nipple	1
B8	C382	386 600	C382	386 600	Injector	1
B9	C111	306 515	C111	306 515	Gas Cock	1
B10	C112	306 516	C112	306 516	Knob Thermostat Adjustment	1
B11	C252	306 517	C252	306 517	Knob Thermostat Gas Cock	1
B12	C412	306 640	C412	306 640	Pilot Burner Jet Type N18	1
C1	C464	306 628	C465	306 629	Pilot Burner c/w Jet	1
C2	C416	306 631	C417	306 632	Top Cover Outer Jacket	1
C5	N/A	N/A	N/A	N/A	Base Assy c/w Radiation Pan	1
					Deposit Tray	1

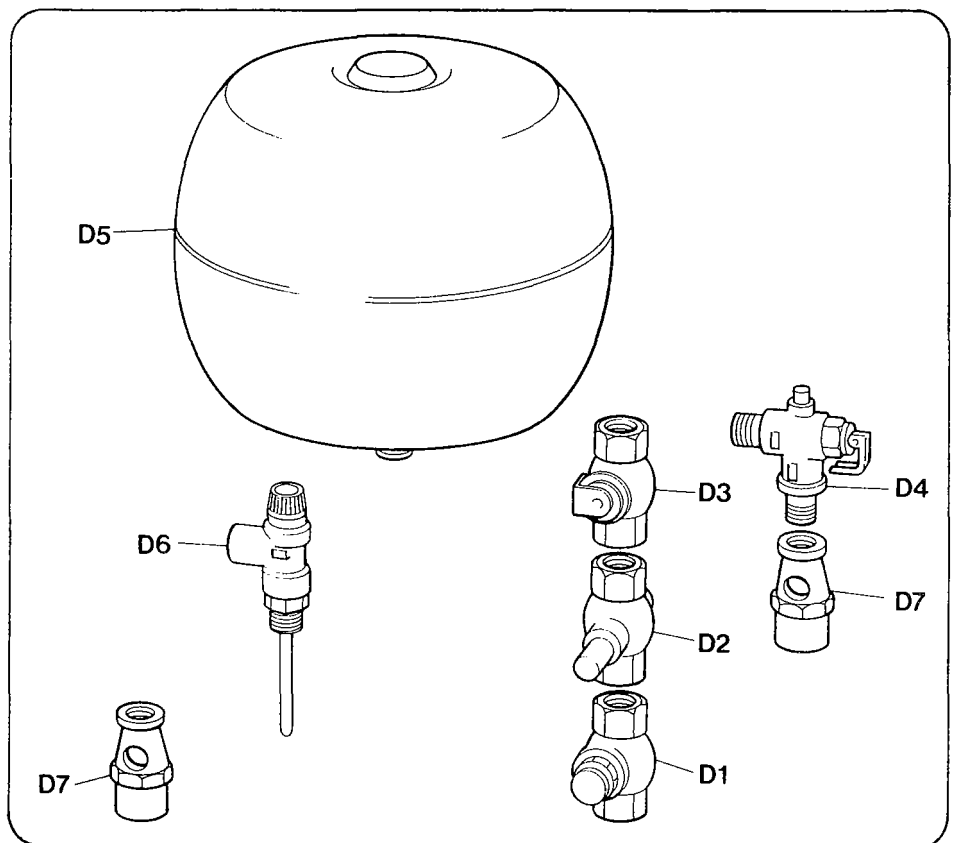
# Parts Illustration - 41/55 & 62/75 Models





Model	41/55		62/75		Description	Qty
Ref.	Andrews Part No.	GC Part No.	Andrews Part No.	GC Part No.		
A1	C105	306 601	C378	306 602	Draught Diverter	1
A2	C285	306 551	C285	306 551	Hot Outlet Nipple	1
A3	C293	306 603	C293	306 603	Cold Inlet Dip Tube	1
A4	C641	306 503	C641	306 503	Plug Return Connection	1
A5	C381	306 604	C381	306 604	Drain Cock	1
A6	C103	306 505	C103	306 505	Socket Coupler 3/4"	1
A7	C449	306 605	C422	306 606	Cover Combustion Chamber	1
A8	C450	306 607	C329	306 648	Cover Burner Access	1
A9	C455	306 610	C387	306 611	Data Badge	1
A10	C399	306 613	C400	306 614	Flue Gas Baffle	1
A11	C642	306 615	C642	306 615	Label Andrews Water Heater	1
A12	C247	306 509	C247	306 509	Nipple 3/4" BSP	1
A13	C290	306 616	C291	306 617	Magnesium Anode	1
B1	C403	306 620	C404	306 621	Burner Assy Comprising items B2, B3 B5, B7, B12, B13	1
B2	C406	306 623	C407	306 624	Pilot Supply Pipe	1
B3	C420	306 626	C421	306 627	Burner Supply Pipe	1
B4	C107	386 603	C107	386 603	Multifunctional Control Robertshaw 110 R2TSPL-A	1
B5	C132	386 599	C132	386 599	Thermocouple Robertshaw 2C	1
B6	C136	306 643	C136	306 643	Pressure Test Nipple	1
B7	C410	306 646	C411	306 647	Injector	1
B8	C382	386 600	C382	386 600	Gas Cock	1
B9	C111	306 515	C111	306 515	Knob Thermostat Adjustment	1
B10	C112	306 516	C112	306 516	Knob Thermostat Gas Cock	1
B11	C252	306 517	C252	306 517	Pilot Burner Jet Type N18	1
B12	C412	306 640	C412	306 640	Pilot Burner c/w Jet	1
C1	C465	306 629	C466	306 630	Top Cover Outer Jacket	1
C2	C417	306 632	C418	306 633	Base Assy c/w Radiation Pan	1
C5	N/A	N/A	C644	306 637	Deposit Tray	1

## Parts Illustration - Unvented Systems Kit



## Parts List - Unvented Systems Kit

Ref.	Part No.	Description	Qty
	B139	Complete Unvented System Kit	1
Comprises			
D1	C317	Line Strainer ¼" LS 75	1
D2	C321	Pressure Limiting Valve ¾" PS 75	1
D3	C318	Check Valve ¾" NR 75	1
D4	C319	Expansion Valve ¾"	1
D5	C322	Expansion Vessel ¾"	1
D6	C456	Temperature/Pressure Relief Valve ¾" HT 575	1
D7	C379	Tundish 1"/22mm	2