ANDREWS
WATER HEATERS

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ANDREWS
WATER HEATERS

Installation, Operation and Servicing Manual

MODELS: 69/188 & 63/324
'A' SERIES

Andrews Natural Gas Fired Water Storage Heaters

Hi-Flo Range

INDEX

REF.	DESCRIPTION	MODEL No. 69/188 PART No.	QTY.	MODEL No. 63/324 PART No.	QTY.
B10	MULTIFUNCTIONAL CONTROL ROBERT ROBERTSHAW 7000 BGOR	24.00.134	1	24.00.134	1
B11	CONTROL THERMOSTAT ROBERTSHAW CWH 3L	24.00.136	1	24.00.136	1
B12	UPPER SET THERMOSTAT ROBERTSHAW CWH3	24.00.137	1	24.00.137	
B13	LIMIT THERMOSTAT ROBERTSHAW H33-F	24.00.138	1	24.00.138	1
B14	PRESSURE TEST NIPPLE	24.00.038	1	24.00.038	1
B15	CONTROL THERMOSTAT PIPE	30.19.234	1	30.19.237	1
B16	UPPER SET THERMOSTAT PIPE	30.19.235	1	30.19.238	1
B17	THERMOSTAT CONNECTING PIPE	30.19.236	1	30.19.239	1

INTRODUCTION

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.

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

THE HEATER SHOULD BE INSTALLED IN ACCORDANCE WITH THE BRITISH STANDARD CODES OF PRACTICE REFERRED TO IN THIS MANUAL, THE GAS SAFETY REGULATIONS, RELEVANT BUILDING REGULATIONS AND MODEL WATER BYE-LAWS.

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.

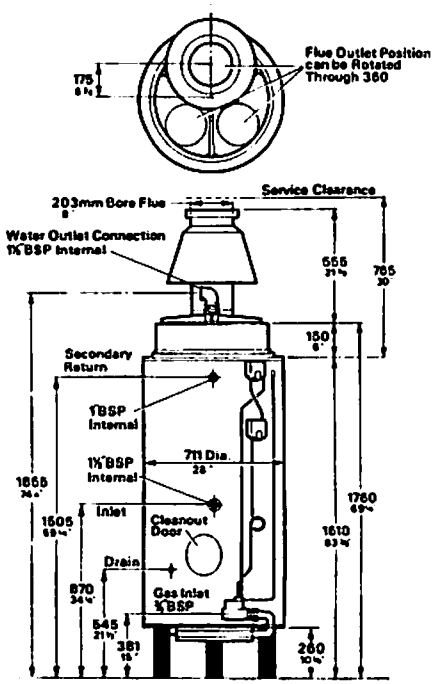
THE ANDREWS WATER HEATER MUST BE USED ON AN OPEN VENTED SYSTEM

GENERAL DESCRIPTION

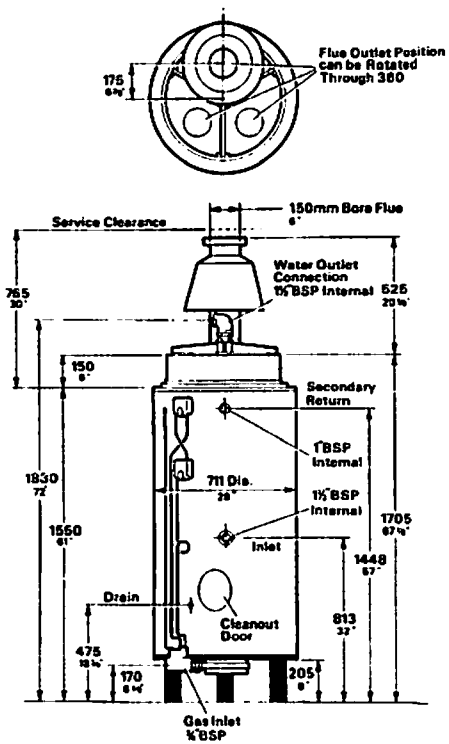
The Andrews Hi-Flow Water Heater is a gas fired natural draught water heater which is range rated between 62 and 104 kW. (212,000 Btu/h and 355,000 Btu/h) heat inputs.

The Heater is floor mounted and is intended for supplying hot water in commercial or industrial premises, and is fitted with an atmospheric burner. The heater is supplied with a loose draught divertor, which is fitted as detailed in the installation instructions. An individual open flue system, or in multi heater installation, a common open flue system may be fitted.

APPLIANCE DIMENSIONS



MODEL 63/324

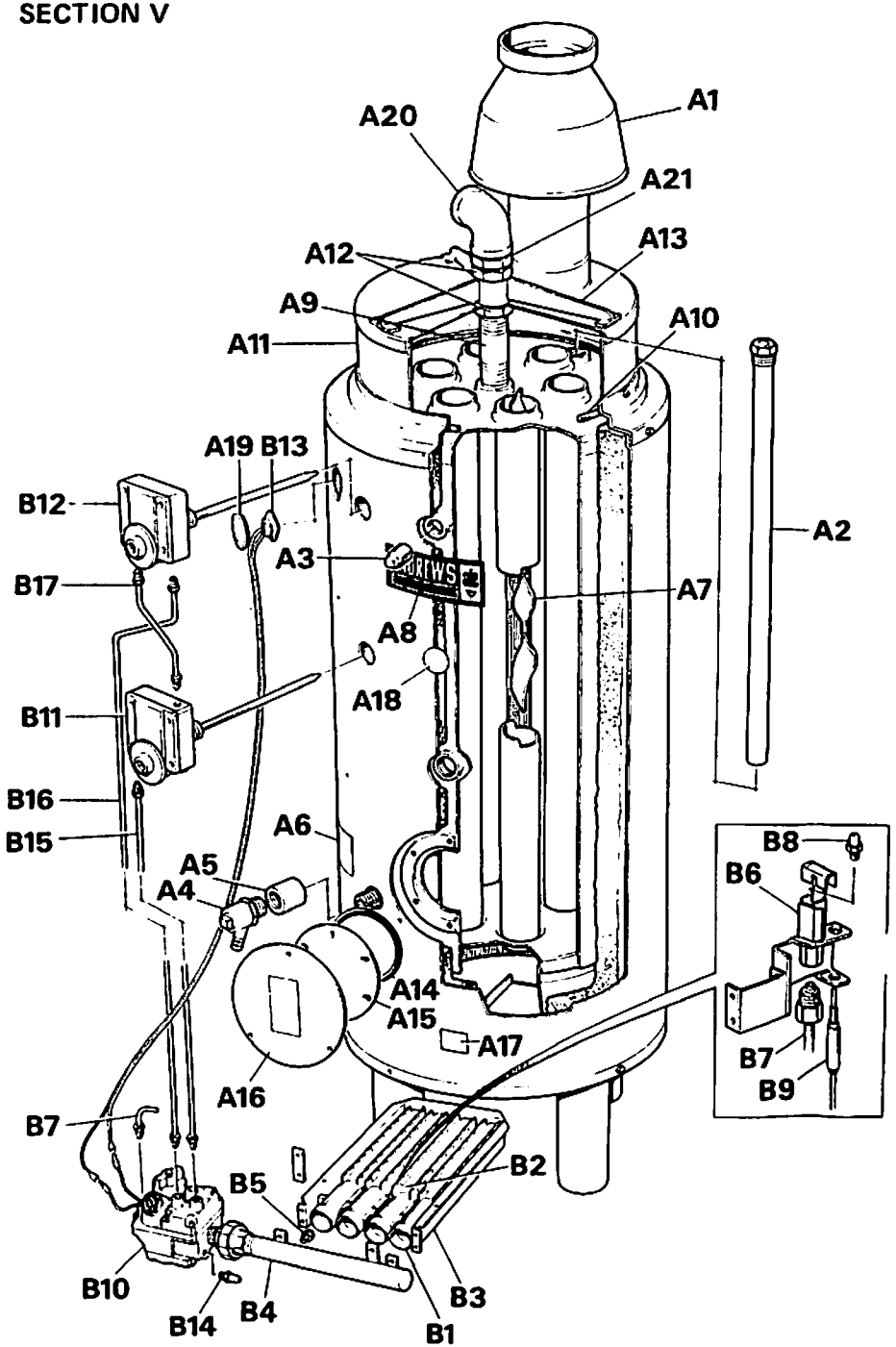


MODEL 69/188

HIGH FLOW WATER STORAGE HEATER NATURAL GAS MODELS.

PARTS LIST

REF.	DESCRIPTION	MODEL No. 69/188 PART No.	QTY.	MODEL No. 63/324 PART No.	QTY.
A1	DRAUGHT DIVERTOR	30.19.172	1	30.19.173	1
A2	SACRIFICIAL ANODE	30.19.174	2	30.19.174	2
A3	PLUG, RETURN CONNECTION				
A4	DRAIN COCK PRESTEX BS 834 TYPE B ¾"	30.19.003	1	30.19.003	1
A5	SOCKET COUPLER ¾"	23.08.018	1	23.08.018	1
A6	DATA BADGE	30.19.159	1	30.19.158	1
A7	FLUE GAS BAFFLE	30.19.175	6	30.19.176	11
A8	ANDREWS LABEL	30.19.044	1	30.19.044	1
A9	HOT OUTLET CONNECTION	30.19.177	1	30.19.177	1
A10	FLUE BOX SEAL	30.19.180	1	30.19.180	1
A11	FLUE BOX	30.19.178	1	30.19.179	1
A12	CLAMP NUT	30.19.182	2	30.19.182	2
A13	FLUE BOX CLAMP	30.19.181	1	30.19.181	1
A14	CLEAN OUT PAD SEAL	30.19.224	1	30.19.224	1
A15	CLEAN OUT PAD	30.19.225	1	30.19.225	1
A16	CLEAN OUT PAD COVER	30.19.226	1	30.19.226	1
A17	WARNING LABEL USE NATURAL GAS ONLY	30.19.042	1	30.19.042	1
A18	¾" BSP PLASTIC LINED NIPPLE	30.19.062	1	30.19.062	1
A19	PLASTIC PLUG	30.19.227	1	30.19.227	1
A20	BRONZE ELBOW	23.02.026	1	23.02.026	1
A21	BACKNUT	23.08.055	1	23.08.055	1
A22	BURNER ASSEMBLY COMPRISING ITEMS B2, B3, B4, B5 & B6.	30.19.228	1	30.19.229	1
B2	BURNER BAR	30.19.183	4	30.19.183	7
B3	BURNER SUPPORT TRAY	30.19.230	1	30.19.231	1
B4	BURNER MANIFOLD	30.19.184	1	30.19.185	1
B5	INJECTOR No. 30	30.19.186	4	30.19.186	7
B6	PILOT ASSEMBLY C/W JET	30.19.187	1	30.19.187	1
B7	PILOT SUPPLY PIPE	30.19.232	1	30.19.233	1
B8	PILOT JET No. 70	30.19.188	1	30.19.188	1
B9	THERMOCOUPLE	24.00.036	1	24.00.036	1



ANDREWS GAS FIRED WATER HEATERS – TECHNICAL DATA

MODEL GC. No.	69/188 5503606		63/324 5503607	
	SI Metric	Imp	SI Metric	Imp
Storage Capacity	312.8 l	68.8 gal	286.4 l	63.0 gal
Recovery Rate	855.0 l/h	188.0 gph	1473.0 l/h	324.0 gph
Heat ɔut	62.0 kW	212,000 Btu/h	104.0 kW	355,000 Btu/h
Height	1800 mm	70.875"	1855 mm	73"
Jacket Diameter	711 mm	28"	711 mm	28"
Flue size I.D. (Nominal)	150 mm	6"	200 mm	8"
Flow Connection	R 1½	1½ in BSP Taper INT.	R 1½	1½ in BSP Taper INT.
Inlet Connection	Rc 1½	1½ in BSP Taper Int.	Rc 1½	1½ in BSP Taper Int.
Return Connection	Rc 1	1 in BSP Taper Int.	Rc 1	1 in BSP Taper Int.
Weight Empty	189 kg	417 lb	213 kg	470 lb
Weight Full	502 kg	1105 lb	500 kg	1100 lb
Hydraulic Working (Max) ssure	10.3 bar (106 m)	150 psi (346 ft)	10.3 bar (106 m)	150 psi (346 ft)
Hydraulic Working (Min) pressure	3 m	10 ft.	3 m	10 ft.
Gas Family	NATURAL		NATURAL	
Burner Pressure	13 m bar	5.2" wg	12.5 m bar	5.0" wg.
Injector	Rc ¾.	¾ in BSP T/INT.	Rc ¾.	¾ in BSP T/INT.
Injector	3 mm	No. 31	3 mm	No. 30

MAXIMUM TEST PRESSURE / 176 m water / 577 ft. head / 250 psi

SECTION 1

INSTALLATION PROCEDURE

Install in accordance with current British Standard Codes of Practice CP 331 Part 3, CP 342 Part 1 or Part 2 as appropriate and CP 332 Part 3.

The water heater is supplied in three boxes, the large box contains the water heater complete with burner and controls, the remaining two cartons contain the following items:—

1 – ¾" Gas Cock
1 – Flue Collector Hood
1 – Flue Collector Hood Seal
1 – Flue Collector Hood Clamp
1 – Hot Outlet Connector
2 – Clamp Nuts
1 – Drain Cock
1 – Draught Divertor
1 – Installation & Service Manual
1 – Users Instruction Leaflet
1 – 1½" BSP Elbow
1 – 1½" BSP Backnut
1 – Warranty Card
1 – Coupler Socket ¾"
1 – Barrel Nipple ¾"

Please check that all items are included before proceeding.
The water heater is provided with four lifting lugs on top, to assist with the positioning of the heater.

(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 baths or showers.

A clearance of 600mm (24") should be left at front of heater for removal of burner and 914mm (36") above the heater for removal of flue baffles. Clearance at sides and rear of heater should be 150mm (6").

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 and 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 British Gas publication "Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters."

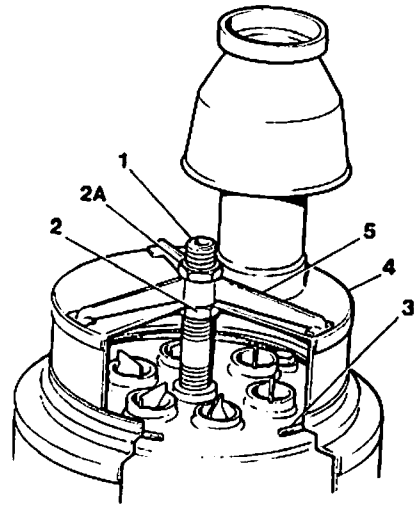
The following notes are intended to give general guidance.

Fit the Flue collector hood to the water heater as shown in the sketch overleaf using the method described.

6. HEATER SOOTING, YELLOW FLAME (POOR COMBUSTION)	(a)	Clean burner & injector.
	(b)	Flue obstruction, clean flueways.
	(c)	Check flue design and termination position.
7. WATER TEMPERATURE TOO HIGH	(a)	Reset thermostat to lower temperature.
	(b)	Thermostat faulty, check & replace.
	(c)	Leak in bleed gas line.
	(d)	Clean or replace gas valve.
8. WATER TEMP TOO LOW	(a)	Reset thermostat to higher temperature.
	(b)	Check gas pressures at burner and at gas inlet to appliance.
	(c)	Thermostat faulty, check & replace.
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.

FAULT FINDING

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).
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 7" to 10" wg. (d) Pilot jet blocked, clean or replace pilot jet. (e) Faulty Magnet, replace Gas Control Valve. (f) E.C.O. Safety thermostat operating at too low a temperature. Replace multifunctional control.
4. BURNER WILL NOT LIGHT – PILOT ESTABLISHED	(a) If solenoid valve fitted in burner pipe, check external controls. (b) Check thermostats and gas bleed control lines. (c) Check Gas Control Valve.
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 Approved flue terminal is correctly positioned.



(a) Screw the outlet connector (1) into the tapping on the top centre of the heater. NB!! Short thread into heater tapping.

(b) Screw on clamp nut (2) down to bottom of the long thread.

(c) Fit flue collector hood seal (3) around inside of casing socket.

(d) Slide the flue collector hood (4) down over the hot outlet connector onto the seal. The collector hood can be rotated through 360°, select the most convenient position for connection to the flue, passing through the roof, and secure the collector hood by means of the fixing clamp (5) and a further clamp nut (2A) ENSURE THAT THE SEAL IS COMPRESSED TO APPROX. HALF IT'S NORMAL THICKNESS. Screw up internal clamp nut (2) until it touches inside of collector hood, then tighten clamp nut (2A) down a further ¼ turn.

Fit down draught divertor to socket on connector hood, approved flue of the following types can then be fitted to the spigot on top of the divertor. Fit a split flue clip or flange joint close to the divertor for servicing purposes.

Light quality asbestos, heavy quality asbestos, mild steel or stainless steel sheet metal flue pipe may be used.

The flue should be fitted with a suitable British Gas Approved Terminal. Terminal position is important. See recommendations in the British Gas Publication (see page 4).

Flue pipes, flue linings and fittings shall be of a type acceptable to the local gas region.

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 CP332 part 3.

The following notes are intended to give general guidance.

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 preferably on all four sides, but at least on 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 basic minimum effective area requirements of the air vents, based on Heat Inputs, are as follows:—

TOTAL INPUT RATING OF HEATER INSTALLATION	POSITION OF AIR VENTS	AIR VENT AREAS (AIR DIRECT FROM OUTSIDE)
UP TO 730 kW (2,500,000 Btu/h)	HIGH LEVEL	4.5CM^2 PER kW (1in^2 PER 5000 Btu/h)
	LOW LEVEL	9 CM^2 PER kW (2in^2 PER 5000 Btu/h)

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 CP 332 part 3.
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 should 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 CP 332 part 3.

(c) FLUEWAY: The flueway should be checked annually and if necessary cleaned as follows.

1) Remove burner as detailed in section (b).
2) Remove split flue clip and lift off Draught Divertor.
3) Slacken off flue collector hood top clamp nut (see 2A Page 5) as far as possible. This must be slackened to full amount to avoid damage to flue box seal when rotating hood.
4) Turn flue collector hood to give access to each flueway in turn, through flue socket, remove each flue baffle and clean each flueway with brush.
5) Remove any deposit from flue baffle, and replace before turning to next flueway.
6) After cleaning all flueways and baffles, return flue socket to original position, re-tighten clamping nut and re-fix draught divertor and flue. CHECK FLUEBOX SEAL. RENEW IF NECESSARY.
7) Remove deposit from underside of vessel bottom.
8) Reassemble burner.
9) Re-light and carry out commissioning check, see section II.

(d) MAGNESIUM ANODES: Two sacrificial magnesium anodes are fitted to the top of the heater. These anodes are to prevent corrosion of the storage vessel walls so the condition of the anodes should be checked every two to three years. Check condition by draining down heater and inspecting anodes through the hand hole cleanout. To replace the anodes it is necessary to drain down and remove the flue collector hood from the top of the heater.

(e) 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.

SECTION IV

SERVICING

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

The area around the heater, and openings to an enclosed heater should be kept clear of dust and lint. Keep piping, ducts, and tops of heaters clear of towels, dust rags, mops and other combustibles. In hard water areas commercial heaters should be supplied water through a softener of lime inhibitor. Without a softener or lime inhibitor, the heater should be opened and inspected through the hand hole cleanout, at regular intervals. If lime or silt has accumulated the deposits should be removed. Failure to do so will shorten the life of the heater and may void the warranty.

These checks will cover flueway, control and burner and should be carried out at regular intervals.

(a) 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 available on application from Andrews Water Heater Division.

(b) BURNER: The burner should be cleaned and checked annually as follows.

1) Turn gas control knob to OFF.
2) Disconnect burner manifold pilot tube and thermocouple at the gas control.
3) Remove two bolts securing burner tray to underside of heater, and disconnect two support straps at front of burner, slide out burner assembly. Disconnect pilot tube and thermocouple from burner taking care not to damage these.
4) Disconnect Manifold from heater tray by removing four bolts.
5) Clean burners by brushing internally and externally and blowing through with air.
6) Remove burner and pilot injectors and clean in a suitable solvent i.e. ACETONE. DO NOT ATTEMPT TO CLEAN BY PUSHING SHARP ITEMS INTO ORIFICES.
7) Reassemble in reverse order.
DO NOT OVERTIGHTEN THE THERMOCOUPLE CONNECTION, SCREW IN HAND TIGHT AND TIGHTEN EXTRA ¼ TURN WITH SPANNER.

4) Do not ventilate via rooms where dry cleaning fluids or chemicals are used or stored as the above items cause damage to the heater flueways. This also applies to degreasing chemicals, aerosol hairsprays, waving and setting lotions etc.

   Heater should be sealed off from atmospheres which may contain the above chemicals or solutions and all ventilation air must be taken completely from outside.

(d) WATER CONNECTIONS: This water heater must be supplied from a cold water feed cistern or static water tank.

A low pressure open vented system can be used or where the natural circulating pressure is insufficient, pumped circulation can be employed. (N.B. maximum working pressure must not exceed 150 psi/10.3 bar).

The hot water supply pipe must be fitted with an open vent pipe in accordance with CP 332 Part 3 & CP 342. Local regulations and bye-laws must be observed when installing the system but a typical water services layout is shown on Page 8.

Connect the cold water feed pipe to the 1½" tapping in the centre of the heater. When using a secondary return circuit connect to the 1" tapping at the top of the heater next to the top thermostat. Connect the hot water service pipe to the 1½" tapping on the top of the heater:—

Fit the 1½" BSP Backnut to the hot outlet connection, screw on the 1½" BSP elbow using a suitable jointing compound. Position the elbow as required and tighten the backnut against the elbow to form a watertight connection.

Connect the Hot water supply pipe to the 1½" BSP Elbow.

It is recommended that all water connections be made to the heater(s) using union fittings for ease of servicing.

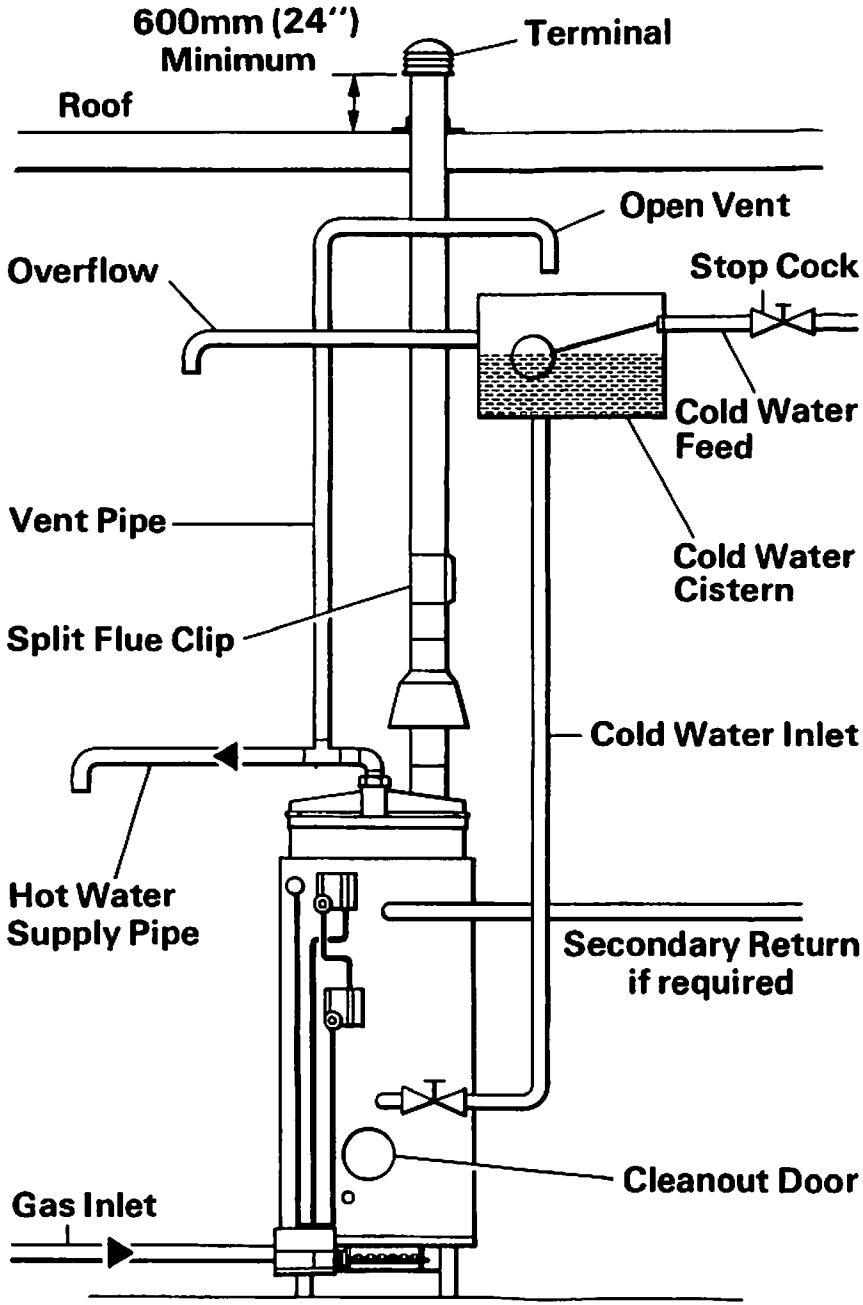
After installation of the water system open the main water supply valve, flush the system and fill the heater. Open the hot taps to allow air to escape from the system. When the system is free of air, close the taps and check for leaks at the gas control thermostats, drain cock and pipe connections on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

WATER TREATMENT

Where extreme conditions of water hardness exists, 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.



TYPICAL INSTALLATION

USERS INSTRUCTIONS

Upon satisfactory completion of commissioning and testing, hand the user Instructions to the user or purchaser, and explain the method of economic and efficient operation of the system.

Ensure that the user or purchaser is fully conversant with the lighting, shut down and general operational procedure.

Advise of precautions necessary to prevent damage to the heater(s) and system in the event of the system remaining inoperative during frost conditions.

Advise the user or purchaser that for continued efficient and safe operation of the heater(s), it is important that adequate servicing is carried out at regular intervals by the installer or by the local gas region.

NB!! DO NOT LEAVE INSTALLATION AND SERVICING INSTRUCTIONS WITH USER.

SECTION III

SEQUENCE OF OPERATION

1. With pilot lit, mag coil holds inlet gas port open on gas valve.
2. Control knob on gas valve is set to the 'ON' position.
3. Adjustable thermostat is set to desired water temperature (120-180°F). Adjustment dial is marked with two temperatures i.e. 180°F and 140°F and the dial is calibrated with unmarked notches. Each notch gives a 5°F increase or decrease in temperature. To adjust thermostat pull out dial and turn to required temperature notch then release dial.
4. Both thermostats should now be in the open position allowing gas to flow through tubing and controls in direction of arrows shown in Bleed Gas Control Systems on Page 11.
5. This flow of gas allows valve to open. A slow opening feature is incorporated in the gas valve. Burners will light several seconds after setting thermostat.
6. Burners will continue to heat water until temperature setting is reached. With thermostat closed, flow of gas is blocked through bleed tubing. This drop in pressure causes gas valve to close, shutting off burners.

ECO (Energy Cut-Off)

All Andrews commercial gas water heaters are equipped with an ECO (Energy Cut-Off) device. This is a temperature sensitive switch which opens on high temperature. Its function is to shut off all gas to the burners, including pilot, in case of an overheat condition. Pilot must be relit if system shuts down on ECO.

Stacking – when small amounts of hot water are drawn repeatedly the thermostat responds to each inrush of cold water and brings the main burners on. Each time this occurs, more heat may be put back in the tank than was drawn off. As this continues, water in the upper level of the tank gets hotter than the thermostat setting. This higher temperature water does not completely mix with the cold incoming water but rises, in a 'chimney effect' to the top of the tank. Many repetitions of this, over a short period of time, result in an accumulation of excessively hot water in the upper portion of the tank, even when the thermostat control is within limits. This is known as 'stacking'.

To counteract this situation an upper thermostat with a fixed setting (Factory set at two notches below the 190°F mark), senses this rise in temperature and closes, interrupting the flow of bleed gas, shutting down the burners.

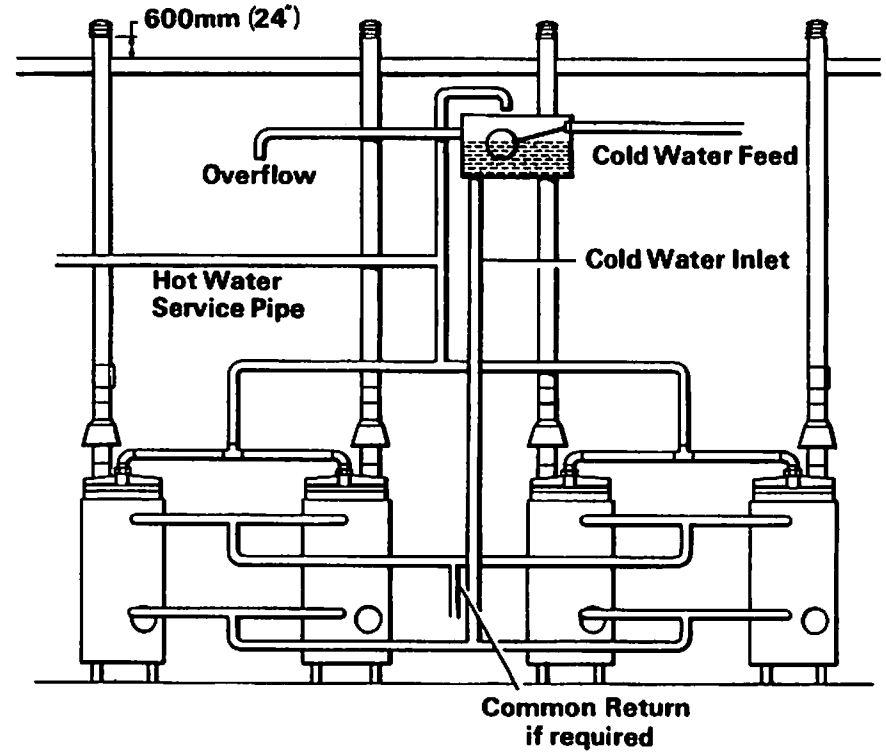
Most present day commercial piping installations include a circulating pump which keeps hot water moving continuously through the heater. This tends to stabilize temperatures in the water heater tank and throughout the piping system.

IMPORTANT- THE HEATER MUST BE LEFT UNDER THE CONTROL OF THE GAS CONTROL THERMOSTAT AT ALL TIMES. THE USE OF TIME CLOCKS IS NOT RECOMMENDED.

(e) GAS CONNECTIONS: THE APPLIANCE MUST ONLY BE USED WITH NATURAL GAS. The installation of the gas supply should conform to the requirements of British Standards Code of Practice CP 331 Part 3.

Fit the ¾" gas cock, which is supplied loose in the parts carton, immediately upstream of the gas control valve 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.

(f) MULTIPLE INSTALLATIONS: Two or more heaters may be connected in series to increase the capacity of the system. Install as below ensuring that the pipe lengths are equal to maintain a balanced system.



MULTIPLE INSTALLATION

NB!! IN ALL MANIFOLD INSTALLATIONS EXACT BALANCE IS ESSENTIAL FOR PROPER OPERATION. THE PIPE LENGTHS FROM THE COMMON TEES TO THE HEATER CONNECTIONS MUST BE EQUAL

SECTION II

COMMISSIONING

CAUTION: DO NOT OPERATE THE WATER HEATER UNTIL THE STORAGE VESSEL IS COMPLETELY FILLED WITH WATER.

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

(a) **To light burner**

1. Ensure gas supply to the appliance in 'ON'.
2. Turn control knob clockwise to 'PILOT' position, partially depress knob and turn clockwise to 'OFF'.
3. Pull out adjustment dial on lower thermostat and turn anti-clockwise to its stop position.
4. Turn control knob to 'PILOT' position.
5. Apply a lighted taper to the pilot burner and push in control knob.
   Keep the knob pressed in for 20 secs. after the pilot lights, then release and check that the pilot remains alight.
   If the pilot goes out repeat step 5.
6. Turn control knob to 'ON' position and turn the lower thermostat dial clockwise to the desired water temperature. The burner will now light.

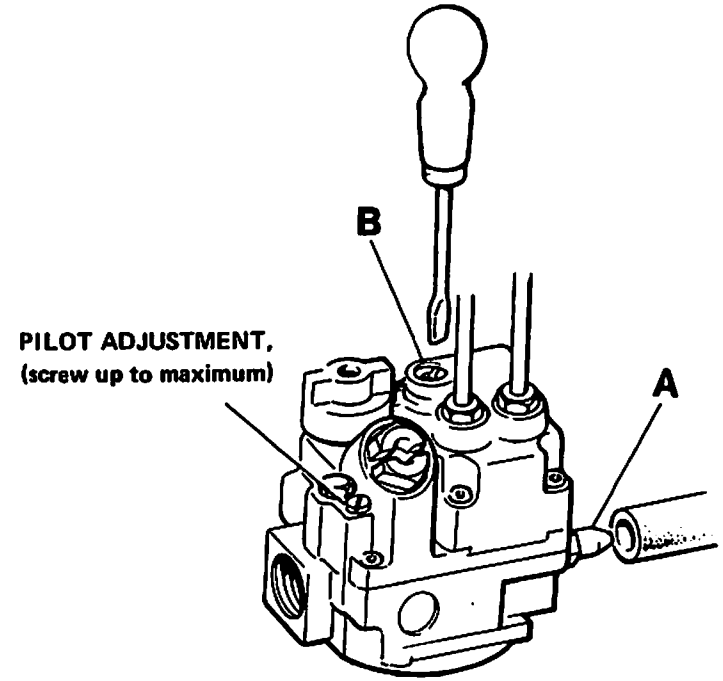
(b) **To shut off burner**

1. For short periods:— Turn the lower thermostat dial to its lowest setting.
2. For long periods:— Turn control knob clockwise to 'PILOT' position, partially depress knob and turn clockwise to 'OFF'.

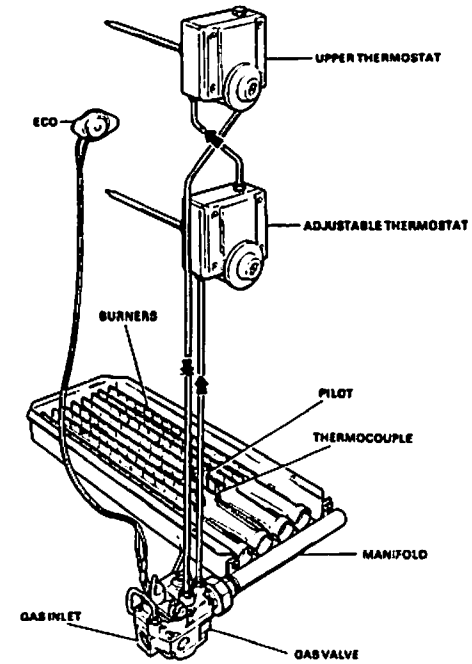
WARNING: If the pilot should become extinguished for any reason, no attempt should be made to relight the gas until at least 3 minutes have elapsed.

(c) TO CHECK MAIN BURNER PRESSURE:

1. Turn burner OFF as above,
2. Release bleed screw A one turn and connect pressure gauge tube.
3. Light burner according to the preceding instructions.
4. Adjust burner pressure at screw B in accordance with data plate. Turn screw clockwise to increase pressure and anti-clockwise to decrease pressure.
5. Turn burner OFF. Remove pressure gauge tube and tighten screw A.



BURNER PRESSURE ADJUSTMENT



BLEED GAS CONTROL SYSTEMS