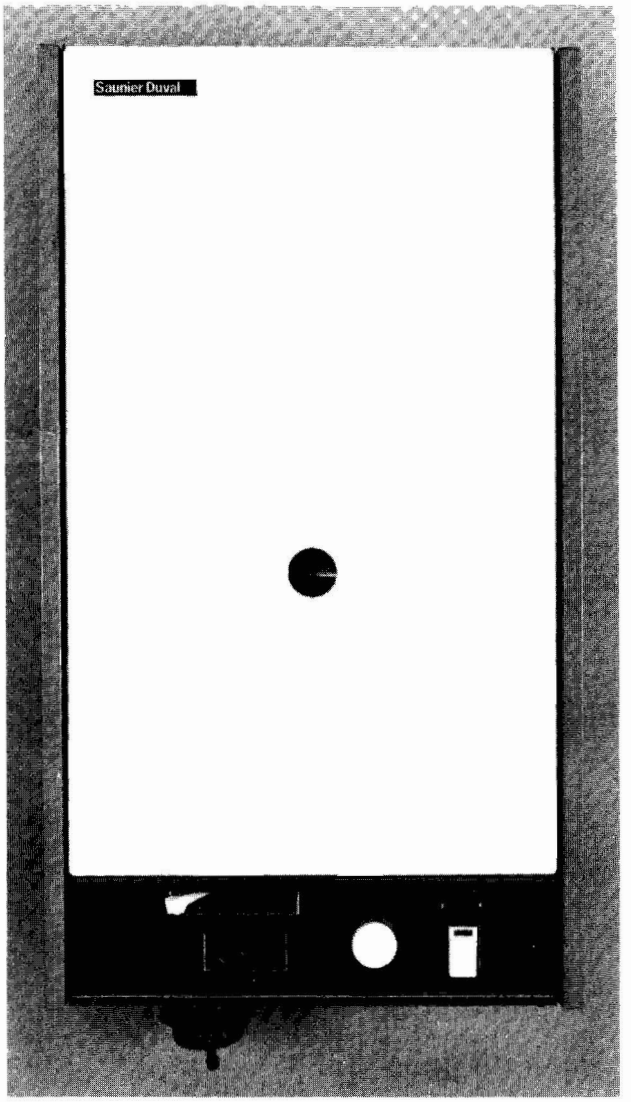
Saunier Duval

Installation Instructions
SD620F Combination Boiler



Model SD620F

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INSTALLATION INSTRUCTIONS

These installation instructions are the property of the user and must be left with the boiler when installation is completed.

1 INTRODUCTION

The Saunier Duval SD620F is a combination boiler providing both central heating and domestic hot water.
It is designed for use as part of a sealed central heating system with pumped circulation. The necessary pump, expansion vessel and associated safety devices are all incorporated within the appliance.
The boiler uses a fan-assisted balanced flue which both discharges the products of combustion to, and draws the combustion air from, the outside air.
The boiler can be installed on either an outside wall, or on an adjacent inside wall.
The SD620F combination boiler is available in the following versions:

SD620/05F2
for use with natural gas and LPG

SD620/05FV2
for use with town gas and LPG/air mixtures

(Refer to **4 Technical data section** for details.)

2 PACKAGING

The boiler is supplied as three packages, as follows:

2.1 A large cardboard carton, which contains:
The boiler, complete with all casing panels fitted.
Two metal rear closure pieces.
Also within this package is a small polythene bag containing sealing washers and filters.
N.B. This small bag can be found attached to the front panel of the boiler.

2.2 A small cardboard carton, which contains:
The complete wall fixing jig.
The small domestic expansion vessel.
Also within this package are two small polythene bags which contain:
Jig fixing screws, wall plugs, and the connecting pipe for the domestic expansion vessel.
Brass connecting strips, plastic grommets, cable clamps and screws for the electrical connection box of the boiler.

2.3 A long cardboard carton, which contains:
The flue kit (refer to **6.7** for details).
A short metal rear closure piece.
*Please check that you have **all** the above items before* commencing the installation of the boiler.

3 CONSTRUCTION

3.1 Boiler

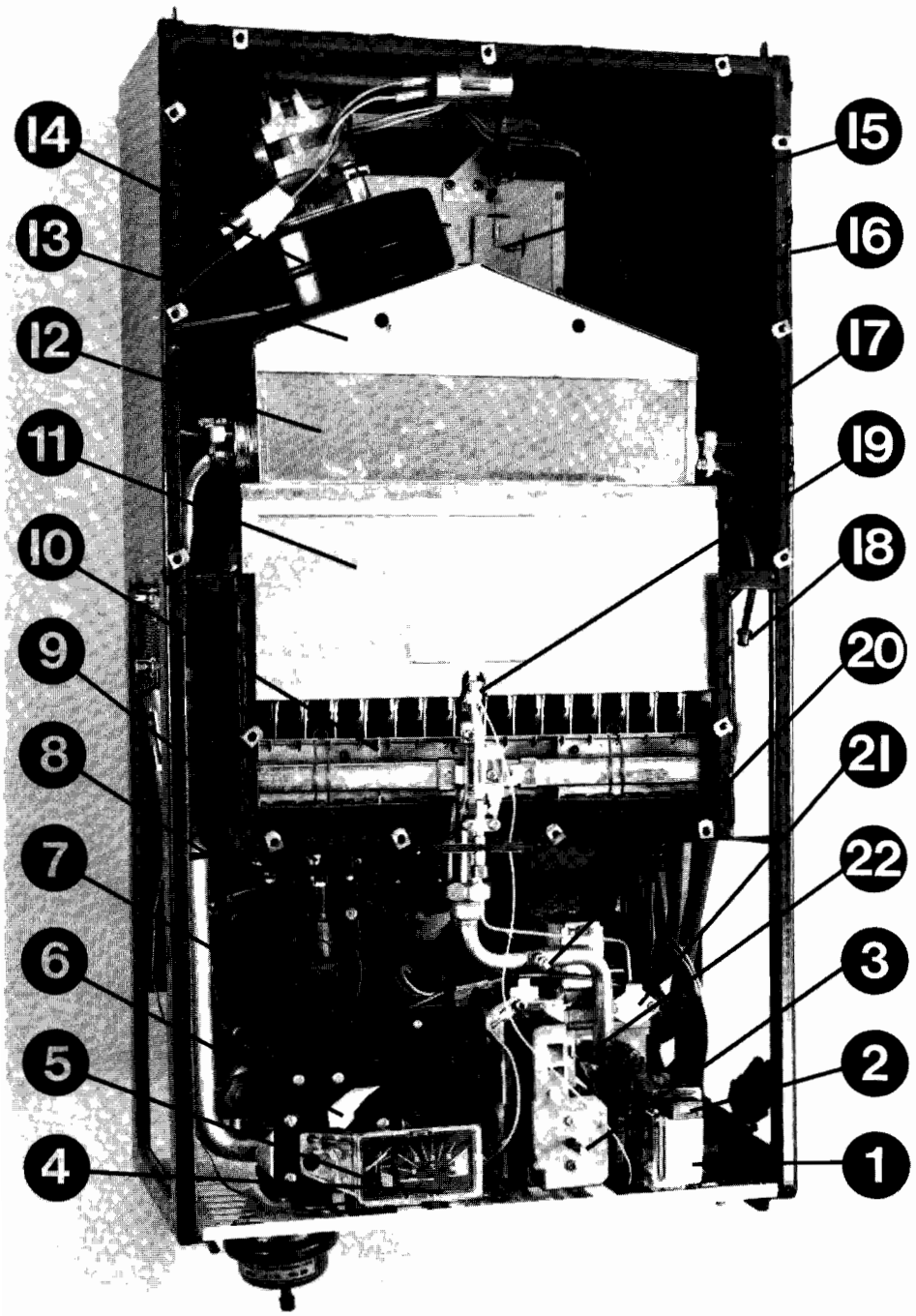


Fig. 1 *Boiler shown with casing panels and front of sealed chamber removed.*

1 *Start push-button.*
2 *Stop push-button.*
3 *Aquastat – to regulate central heating water temperature.*
4 *Temperature gauge.*
5 *Pressure gauge.*
6 *Summer-winter selector lever.*
7 *Pump assembly.*
8 *Automatic air vent assembly.*
9 *Automatic air vent cap.*
10 *Burner.*
11 *Heat exchanger skirt.*
12 *Heat exchanger.*
13 *Fan hood.*
14 *Fan.*
15 *Air flow switch.*
16 *Expansion vessel (not visible – behind boiler).*
17 *Domestic hot water thermistor.*
18 *Heat exchanger air vent.*
19 *Pilot.*
20 *Burner gas pressure test point.*
21 *Gas valve assembly.*
22 *Potentiometer – to adjust heating output.*

3.2 Wall fixing jig

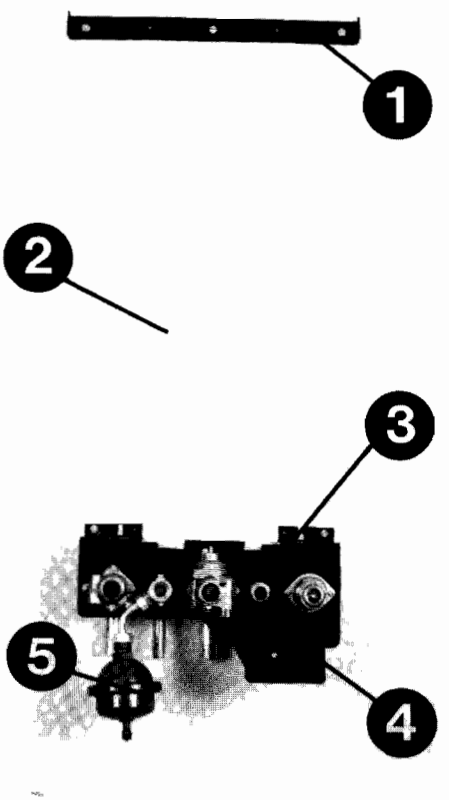
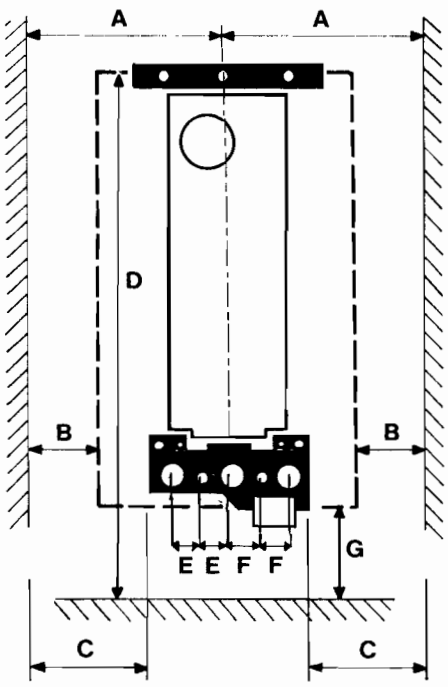


Fig. 2

1 *Hook.*
2 *Template.*
3 *Connecting plate.*
4 *Electrical connection box.*
5 *Domestic hot water expansion vessel.*

4 TECHNICAL DATA

4.1 Dimensions



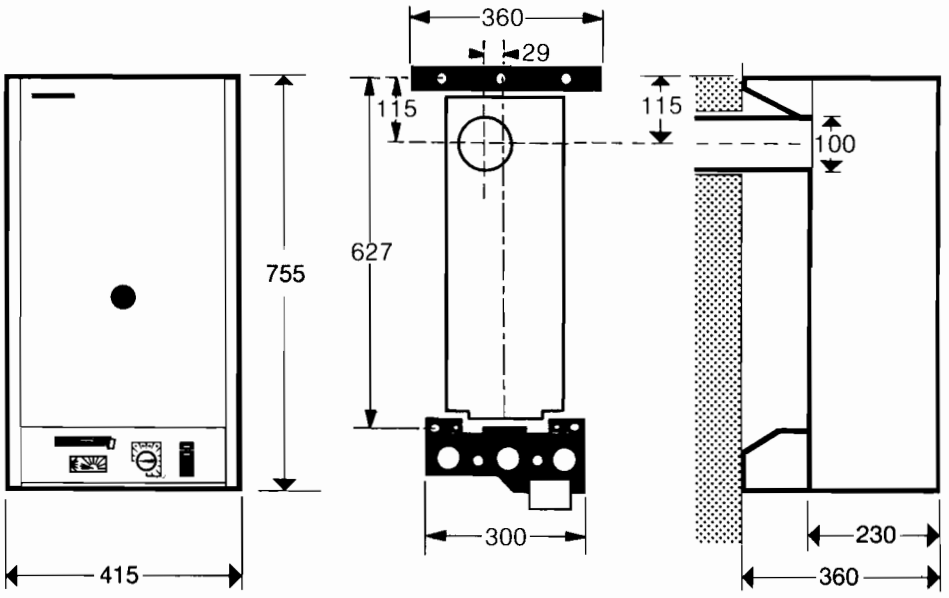


Fig. 3

Dimensions and clearances

A	283 minimum	**D**	1055 minimum
B	75 minimum	**E**	55 **F** 57.5
C	133 minimum	**G**	300 minimum

All dimensions shown are in millimetres.
Dotted line shows outline of boiler.
Drawings are not to scale.

4.2 Gas pressures

4.2.1 Burner pressures

Gas	Boiler Code	Burner Pressure (at maximum output)	Burner injector	Pilot injector
Natural	N	12.1 mbar (4.8 in wg)	1.15 mm	0.28 mm
Propane	L	37 mbar (14.9 in wg)	0.73 mm	0.18 mm
Butane	L	28 mbar (11.3 in wg)	0.73 mm	0.18 mm
Towns	V2	—	2.4 mm	0.60 mm

4.2.2 Inlet pressures

The gas valve assembly is factory set for the inlet pressure given below, and requires no further adjustment.

Gas	Inlet Pressure mbar (in wg)
Natural	20 (8.0)
Propane	37 (14.9)
Butane	28 (11.3)

4.3 Central heating

4.3.1 The boiler is range rated from 8.7 kW (30,000 Btu/hr) to 23.3 kW (80,000 Btu/hr), and may be adjusted by the installer to suit the requirements of individual systems. The table below gives approximate burner gas pressure settings and corresponding heat outputs (refer to **8 Commissioning** for details of adjustment method).

Heat Output	Burner Gas Pressure mbar (in wg)					
Btu/hr	30,000	40,000	50,000	60,000	70,000	80,000
kW	8.7	11.7	14.7	17.6	20.5	23.3
Natural Gas	1.7 (0.7)	3.0 (1.2)	4.8 (1.9)	6.9 (2.8)	9.3 (3.8)	12.1 (4.8)
Propane	5.2 (2.1)	9.3 (3.7)	14.5 (5.8)	20.8 (8.4)	28.3 (11.4)	37.0 (14.9)
Butane	4.0 (1.6)	7.0 (2.8)	10.9 (4.4)	16.0 (6.4)	21.5 (8.6)	28.0 (11.3)

4.3.2 The boiler is supplied with the central heating output set to maximum.

4.3.3 Maximum heat output: 23.3 kW (80,000 Btu/hr).
Maximum heat input: 28.4 kW (97,000 Btu/hr).

4.3.4 Heating water flow temperature is adjustable by the user from 30°C to 90°C approximately.

4.4 Domestic hot water

4.4.1 Heat output is automatically controlled by a thermistor from 8.7 kW (30,000 Btu/hr) to 23.3 kW (80,000 Btu/hr).

4.4.2 Specific temperature rise: 30°C at 11 litres/min (54°F at 2.4 gall/min).

4.4.3 Minimum water flow rate (threshold rate): 3.0 litres/min.

4.4.4 Water pressure:
Maximum: 10 bar (145 psi)
Minimum: 1 bar (14.5 psi).
Minimum for shower installations: 2 bar (29 psi).

4.5 Electrical supply

Supply voltage: 240v 50Hz – fused 3A.
Absorbed power: 100W.

5 INSTALLATION REQUIREMENTS

5.1 Statutory requirements

5.1.1 *Important:* The installation of this boiler must be carried out by a competent person, and must be in accordance with the relevant requirements of the Gas Safety Regulations, relevant Building Regulations, I.E.E. Wiring Regulations and the Byelaws of the local water undertaking.

5.1.2 Installation should be in accordance with any relevant requirements of the local authority. It is in your interest, and that of safety, to ensure that the law is complied with.

5.1.3 Detailed recommendations are contained in the following British Standards Codes of Practice, which must be referred to:

BS6891: 1988 Specification for the installation of low pressure gas pipework in domestic premises.

CP.342: Centralised hot water supply
Part 1: Individual dwellings
Part 2: Buildings other than individual dwellings.

BS6798: 1987 Specification for installation of gas fired hot water boilers of rated input not exceeding 60 kW.

BS5440: Flues and air supply for gas appliances of rated input not exceeding 60 kW. (1st and 2nd family gases).
Part 1: 1978 Flues
Part 2: 1976 Air supply.

BS5449: Central heating for domestic premises
Part 1: Forced circulation hot water systems.

BS5546: 1979 Installation of gas hot water supplies for domestic purposes. (2nd family gases).

BS5482: Domestic butane and propane gas burning installations
Part 1: 1979 installations in permanent dwellings.

5.2 Boiler location

5.2.1 The boiler must be located such that the flue can be satisfactorily positioned with respect to external building features – refer to **5.5.**

5.2.2 As it is a room-sealed appliance, the SD620 combination boiler can be installed in any room. However, reference must be made to the I.E.E. Regulations and, in Scotland, the electrical provisions of the Building Standards (Scotland) Regulations, with regard to the installation of the boiler in a room containing a bath or shower.

5.2.3 When the boiler is to be installed in a cupboard or compartment, it should be designed and constructed for this purpose. An existing cupboard or compartment must be suitably modified for the purpose. Any installation in a cupboard/compartment or airing cupboard must comply with the requirements of BS6798.

5.2.4 Where the boiler is installed in a more unusual location, detailed guidance on any special procedures which may be required is given in BS5546 and BS6798.

5.2.5 If the appliance is to be installed in a timber framed building it should be fitted in accordance with the British Gas Publication – 'Guide For Gas Installation in Timber Framed Housing' reference DM 2. If in doubt, advice must be sought from the local Gas Region of British Gas.

5.3 Gas supply

5.3.1 The local gas region should be consulted at the design/planning stage to ensure that an adequate supply of gas will be available to operate the appliance.

5.3.2 An existing gas service pipe must not be used without prior consultation with the local gas region.

5.3.3 A gas meter must be connected to the service pipe by the local gas region, or the local gas region contractor.

5.3.4 An existing meter must be checked to ensure that it is capable of passing an additional 2.96 m^3/hr (104 ft^3/hr) before the SD620 is installed.

5.3.5 For an LPG boiler – ensure that the gas storage/supply installation (i.e. the storage cylinders or bulk storage tank) is of sufficient size to provide the required quantity of gas, as given below, before the boiler is installed.

Propane gas (at 37 mbar)	1.14 m^3/hr (40 ft^3/hr)
Butane gas (at 27 mbar)	0.86 m^3/hr (30 ft^3/hr)

If it is an existing LPG supply installation, ensure that it is capable of providing an *additional* quantity of gas as given above.

5.3.6 Installation pipes should be fitted in accordance with BS6891: 1988.

5.3.7 Pipework from the meter or, in the case of an LPG installation the low pressure regulator, to the boiler must be of adequate size to carry the maximum flow of gas without excessive pressure loss.
Do not use pipes of a smaller size than the boiler gas connection.

5.3.8 The complete installation, including the meter, must be tested for soundness and purged as described in the above code.

5.4 Electrical

5.4.1 All electrical wiring must be carried out by a competent electrician. All external components shall be of the approved type and shall be connected in accordance with the I.E.E. wiring regulations, and any local regulations which apply.

5.4.2 The boiler must be earthed, and connection of the appliance and any sustem controls to the mains supply should be through an unswitched shuttered socket outlet and a 3 amp fused three-pin plug. Alternatively, a 3 amp fused double-pole isolating switch may be used, having a minimum double pole contact separation of 3 mm, servicing only the boiler and system controls.

5.4.3 The boiler is connected to the 240v, 50Hz supply using the connection box mounted on the wall fixing jig.

For electrical wiring instructions refer to **7 Electrical Wiring.**

5.5 Flue system

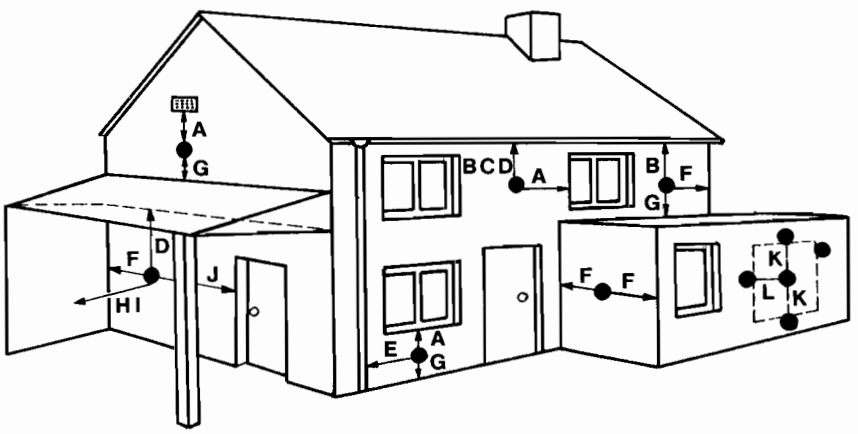


Fig. 4

Terminal position for fan-assisted balanced flue boiler

(minimum distance)	mm
A *Directly below or beside an openable window or other opening (e.g. air brick)*	300
B *Below gutters, soil pipes or drain pipes*	75
C *Below eaves*	200
D *Below balconies or car port roof*	200
E *From vertical drain pipes and soil pipes*	75
F *From internal or external corners*	300
G *Above ground or balcony level*	300
H *From a surface facing a terminal*	600
I *From a terminal facing a terminal*	1200
J *From an opening in the car port (e.g. door, window) into dwelling*	1200
K *Vertically from a terminal on the same wall*	1500
L *Horizontally from a terminal on the same wall*	300

BS5440: Part 1 gives detailed recommendations for the flueing of the boiler which must be complied with. The following notes are for general guidance only.

5.5.1 The flue must be positioned such that the combustion products can disperse freely at all times – refer to Fig. 4.

5.5.2 Under certain weather conditions the flue may produce a plume of steam (because the boiler is a high efficiency appliance), thus any position where this could cause a nuisance should be avoided.

5.5.3 If the terminal is fitted within 850 mm of a plastic or painted gutter or 450 mm of painted eaves, an aluminium shield of minimum length 750 mm should be fitted to the underside of the gutter or painted surface.

5.5.4 The flue pipe and terminal must not be closer than 50 mm (2 ins) to any combustible material. Detailed recommendations on protection of combustible materials are given in BS5440: Part 1.

5.5.5 Where the lowest part of the terminal is less than 2 metres above the level of any ground, balcony, flat roof or place where people have access, the terminal must be protected by a guard, or cage, of durable material. (A suitable guard is available as an optional accessory.)

5.5.6 If the flue discharges onto a public or private highway, path, or alleyway, and is less than 1.8 metres above ground level, a flue deflector must be fitted. (The deflector kit is available as an optional accessory.)

5.6 Air supply

BS5440: Part 2 gives detailed recommendations for the air supply required by the boiler. The following notes are for general guidance only.

5.6.1 Being a room-sealed appliance, the SD620 combination boiler does not require the room, or internal space, in which it is installed to have a permanent air vent.

5.6.2 When the boiler is to be installed in a cupboard, or compartment, permanent air vents are required at both high and low level for cooling purposes.
These vents must either communicate with the room or internal space in which the cupboard is situated, or be direct to outside air.

The minimum effective areas for the permanent air vents required in the cupboard or compartment (in accordance with

BS5440: Part 2) are given in the table below.

Air vent position	Air from room or internal space	Air direct from outside
High level	260 cm² (40.0 in²)	130 cm² (20.0 in²)
Low level	260 cm² (40.0 in²)	130 cm² (20.0 in²)

N.B. Both air vents must communicate with the same room or internal space, or must be both on the same external wall to the outside air.

5.7 Central heating circulation system

5.7.1 The SD620 combination boiler is suitable for use with small bore, micro-bore, single-pipe and two-pipe central heating systems. Detailed recommendations for the water circulation system are given in BS6798, BS5449: Part 1 (small bore and micro-bore systems) and CP342.

5.7.2 Horizontal pipe runs should be avoided wherever possible to prevent air collecting in the system. If horizontal runs are unavoidable they should rise towards a vent point.

5.7.3 Draining taps must be located in accessible positions which permit the draining of the whole system, including the boiler and the hot water system. Draining taps should be at least ½ inch nominal size and comply with BS2876.

5.7.4 Pipework not forming part of the useful heating surface should be insulated to help prevent heat loss and possible freezing, particularly where pipes are run through roof spaces and ventilated underfloor spaces.

5.7.5 Copper tubing to BS2871: Part 1 is recommended for the water-carrying pipework.

For general guidance reference should be made to the British Gas publication – Materials and Installation Specifications for Domestic Central Heating and Hot Water and also BS6798 and BS5449: Part 1.

5.8 Hot water system

5.8.1 The boiler will supply instantaneously heated hot water to a limited number of draw-off points – but to only ONE point at a time.

5.8.2 To ensure economic operation, the pipe runs between the boiler and taps should be in 15 mm copper – and be as short as possible.
N.B. Reference should be made to the byelaws of the local water undertaking, which limited the length of pipe runs from water heating devices.

5.8.3 Any exposed sections of pipework should be insulated to reduce heat loss.

5.8.4 The water supply pipework should have NO loose jumper washers on any stop taps, or any non-return valves fitted.

Important: The SD620F combination boiler has a maximum domestic water working pressure of 10 bar (145 psi). This pressure must *not* be exceeded in service, as damage to the boiler may result. Such water pressures are unnecessarily high and cause noisy operation of the boiler. Under such circumstances, it is strongly recommended that either a pressure reducing, or limiting valve – set to approximately 3.5 bar (50 psi) – be fitted in the cold water supply to the boiler.

5.8.5 In hard water areas, a scale controlling device should be fitted to the cold water supply to the boiler, to prevent premature scaling of the heat exchanger.

6 INSTALLATION

6.1 General

6.1.1 The SD620 combination boiler is a wall-mounted appliance. An area of vertical flat wall of sufficient size to accommodate the boiler is thus required.

6.1.2 The boiler should be fitted on a fire-resistant wall. If the wall is of combustible material, the wall must be protected by a sheet of fireproof material.

6.1.3 Do not fit the boiler above a cooker. The grease present in the atmosphere over the cooker may result in poor performance or malfunction of the boiler.

Important: Ensure that the structure and condition of the wall is such that it is capable of supporting the weight of the boiler. Where necessary, use an alternative method of fixing to obtain the required strength.

6.2 Clearances

The location of the boiler *must* be such that adequate space for servicing and air circulation exists around the appliance.

6.2.1 A minimum clearance of 75 mm (3 in) either side of the boiler is required.

6.2.2 A minimum clearance of 600 mm (24 in) must be available in front of the boiler to enable servicing of the appliance.

6.2.3 A minimum clearance of 300 mm (12 in) below the boiler is required.

6.2.4 If the boiler is to be installed in a cupboard a minimum distance of 100 mm (4 in) is required between the front of the boiler and the inside face of the door.

6.3 Central heating system

6.3.1 The circulating pump is incorporated within the boiler.
The performance of this pump, running at maximum speed, varies according to the pump by-pass setting, as shown on the graph below (refer to Fig. 5).

No other circulating pump is required, or should be fitted, in the heating circuit connected to the boiler.

6.3.2 The pump by-pass, incorporated in the diverter valve assembly, causes a partial re-cycling in the heating circuit within the boiler.
This is adjusted by turning the brass screw located under the reversing valve (refer to Fig. 6). Turning the screw clockwise closes the by-pass, and turning anti-clockwise opens the by-pass.

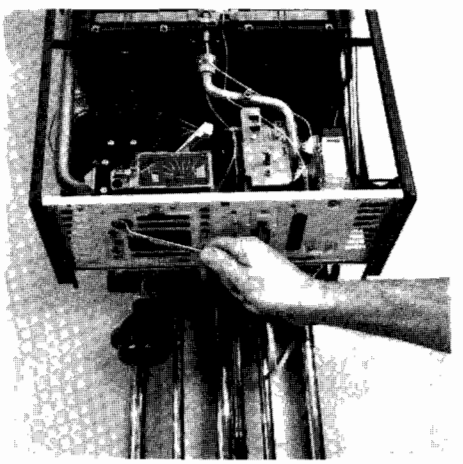


Fig. 6

6.3.3 When using thermostatic radiator valves (T.R.V.s) a separate adjustable by-pass must be fitted between the flow and return of the heating circuit.

6.3.4 If an existing boiler on an heating/hot water system is being replaced, it is strongly recommended that both systems are thoroughly cleaned out, using a suitable proprietary cleaner, before installed the SD620.

PUMP PERFORMANCE CHARACTERISTICS

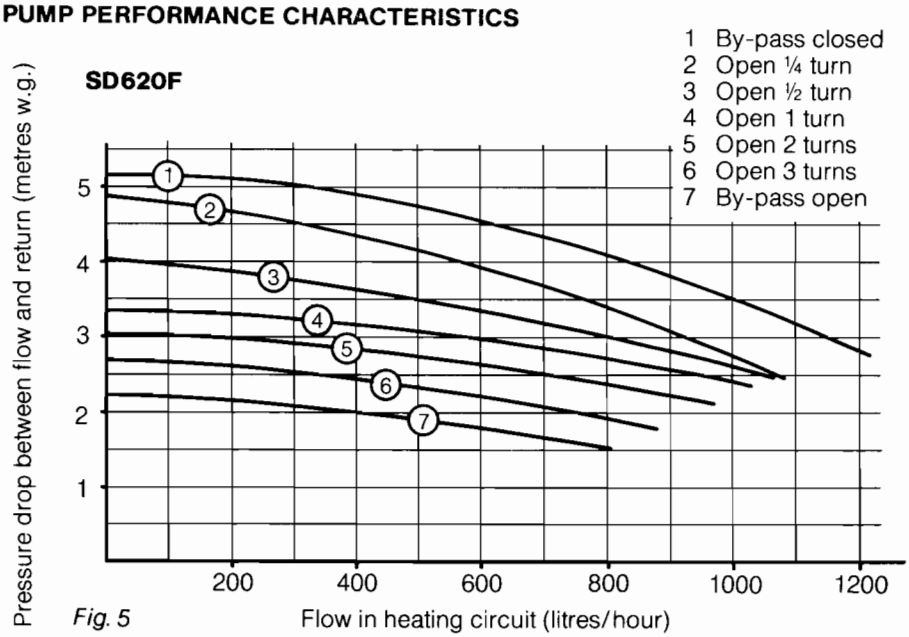


Fig. 5

6.3.5 If the water in the central heating system is being treated, the additive must not be aggressive or capable of causing corrosion or damage within the boiler and heating system.
Any such additive should be suitable for use with a copper tube heat exchanger, and also be compatible with the pipe and radiator materials used.

6.4 Sealed systems

Sealed systems do not require feed or expansion cisterns, open vents, etc.
It is important that only good quality radiator valves and fittings are used to minimise the possibility of leaks, and the consequent detrimental 'topping-up' of the system.

6.4.1 An expansion vessel is incorporated in the boiler to maintain a pressure in the sealed heating system and accommodate the expansion of the heated water.

6.4.2 The expansion vessel is pressurised to 0.5 bar (7.5 psi) at the factory – this corresponds to a maximum static head of 5 metres.

6.4.3 The size of the expansion vessel is sufficient for a sealed system with a maximum volume of 140 litres (31 gallons), at an average temperature of 75°C and a maximum working pressure of 3 bar.

6.4.4 A pressure relief valve is required on all sealed heating systems. This is incorporated in the heating flow connection on the wall fixing jig. The lift pressure is pre-set at 3 bar (45 psi) and is non-adjustable.

6.5 Filling the system

6.5.1 The system should be filled with water via a separate filling point (i.e. a 'valved tee') fitted at a convenient point on the heating circuit.

6.5.2 *Important:* No direct filling connection between the heating system and incoming cold main is incorporated in the boiler.
The heating system will not be automatically filled from the domestic cold main.

6.5.3 Filling *must* be carried out in a manner approved by the local water undertaking.

6.5.4 Where the local water undertaking allows, the filling of a sealed heating system through a temporary connection from the mains supply may be used provided that:

a) The temporary connection is made to a double check valve assembly which is *permanently* connected to the sealed circuit.
b) the connection between the mains supply pipe and the sealed circuit must be *removed* when filling is completed.

Such an arrangement is shown in Fig. 7.

6.6 Wall fixing jig

6.6.1 The wall fixing jig serves a triple function:
The connecting plate facilitates the connection and soundness testing of all the pipework, and the connection of the electrical wiring, *before* the boiler is installed.
The hook supports the weight of the boiler.
The template ensures that the hook and connecting plate are correctly located relative to each other. The position for the hole for the flue (rear outlet only) is also indicated on the template.

6.6.2 The connecting plate incorporates the following for the installers/service engineer's convenience – refer to Fig. 8.
Isolating valves in both the central heating flow and return connections.
An isolating valve in the cold water inlet connection.
A drain screw for the central heating.
A spring loaded gas inlet valve.

6.6.3 A small expansion vessel is supplied with the fixing jig. This must be fitted to the ¼ BSP nipple on the cold inlet connection using the cranked copper connecting pipe provided. Refer to Fig. 9.
Important: Do not touch the Schrader valve on this expansion vessel. This is not

Proposed method for filling a sealed heating system from water main

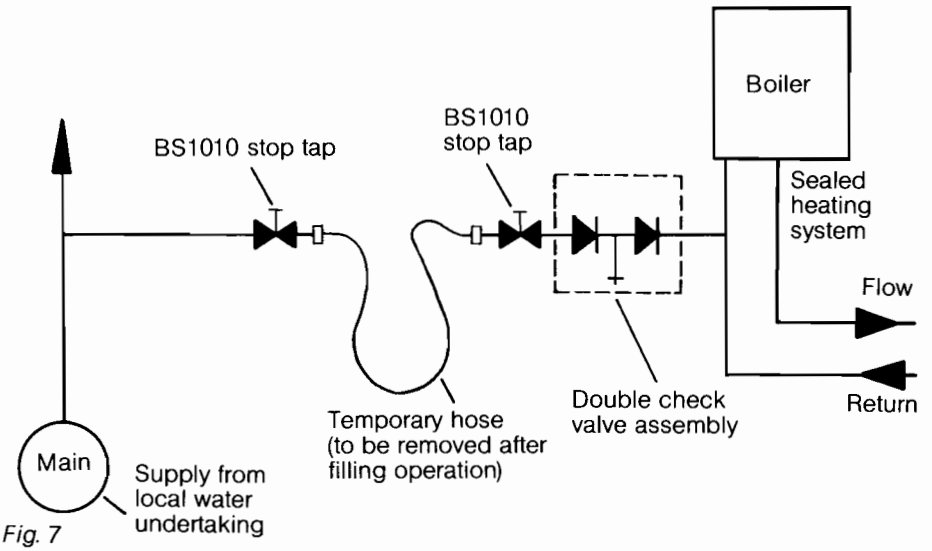


Fig. 7

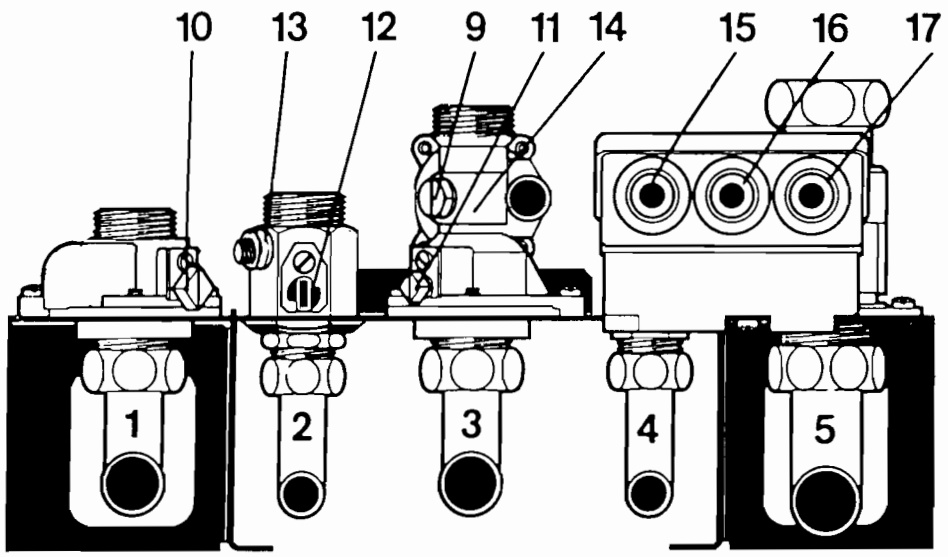


Fig. 8

		Pipe diameters
1	*Heating return*	*22mm*
2	*Cold water main inlet*	*15mm*
3	*Heating flow*	*22mm*
4	*Domestic hot water out*	*15mm*
5	*Gas supply*	*22mm*
9	*Drain screw for the central heating*	
10	*Isolating tap for the central heating – return*	
11	*Isolating tap for the central heating – flow*	
12	*Isolating tap for domestic hot water*	
13	*Fitting for expansion vessel*	
14	*Pressure relief valve*	
15, 16, 17	*Cable entry to electrical connection box*	

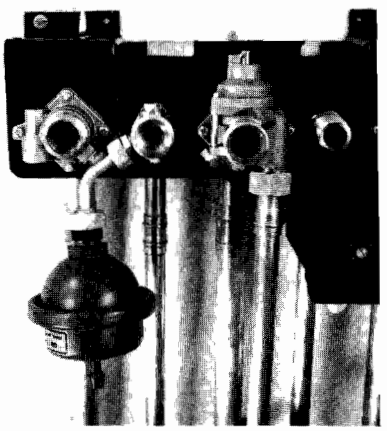


Fig. 9

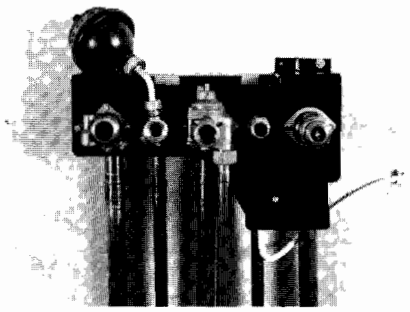


Fig. 10

an air vent, or bleed valve. The vessel is pressurised at the factory to accept any expansion of the domestic hot water.

6.6.4 Alternatively, the expansion vessel can be relocated out of sight above the connecting plate, provided that there is no vertical pipework behind the boiler. In order to do this, the positions of the blanking plug and nipple on the cold inlet connection must be reversed – resulting in the nipple being at the top. Refer to Fig. 10.

6.6.5 Sealing washers and filters are provided with the boiler. These MUST be used when making the connections between boiler and connecting plate. Fig. 11 identifies and gives the correct location of all the filters/washers required.
Any items provided, other than those mentioned above, may be discarded as they are not required for use with this boiler.

6.6.6 A discharge pipe should be connected to the ½ in BSP threaded pressure relief valve discharge – on the central heating flow connection. This pipe should be of suitable metal and its size should be the same as the discharge outlet size.
The discharge should be via an air-break to a tun dish, and the pipe should be laid with a continuous fall with a maximum overall length of 9 metres – unless the pipe size is increased.
The pipe should discharge in a visible but safe place – such as a gully, where there is no risk of contact with the hot water by persons using the building.

Important: No stop taps, or shut off valves, of any type should be installed in this discharge pipe.

6.7 Flue assembly

6.7.1 The flue kit supplied with the boiler comprises of

A PVC pipe – 100mm diameter
B Aluminium pipe – 55mm diameter
C Rubber sealing collar
D Plastic flange
E Rubber connecting sleeve
F Flue elbow

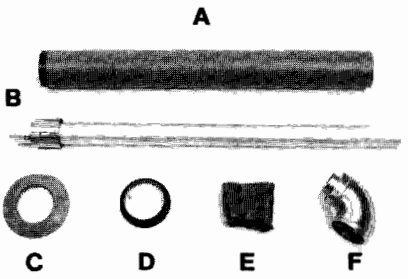


Fig. 12

6.7.2 Construction – the flue assembly basically consists of two pipes:
an outer PVC pipe
an inner aluminium pipe.
These are positively locked in relation to each other on assembly.
The inner pipe conveys the products of combustion, forced out of the boiler by the fan, whilst fresh air for combustion is drawn in through the annular gap between the pipes.

6.7.3 The flue assembly can be connected to the boiler in either one of two ways.
Direct, to rear of boiler.

Direct

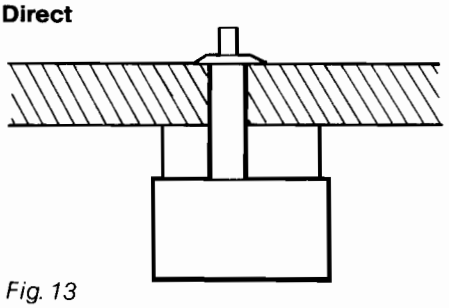


Fig. 13

Lateral, to one side or the other to suite the requirements of the installation.

Lateral

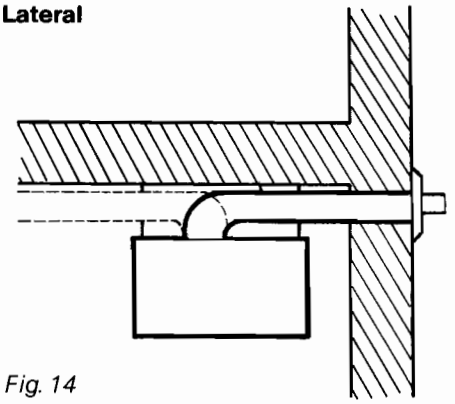


Fig. 14

6.7.4 The flue kit supplied with the boiler is nominally 1000 mm long – i.e. the length of the aluminium tube is 1000 mm.
Flue extension kits of 850 mm nominal length are available if required (Ref. No. 52695).

6.7.5 The maximum permissible length of straight flue which can be used with the SD620 is:
3600 mm (straight) – direct connection.
3000 mm (+ elbow) – lateral connection.

6.7.6 Cutting lengths – the following instructions should be adhered to when cutting the flue kit supplied with the boiler.
Important – all cutting lengths should be measured from the pipe ends with the locking fitting – as shown in Fig. 15.

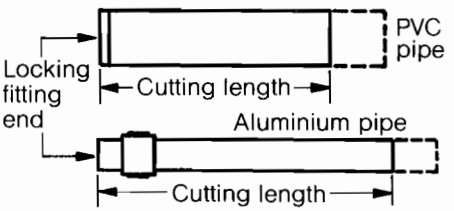


Fig. 15

A. Direct outlet – to rear of boiler
Cut the two flue pipes to the following lengths:
PVC pipe:
length = **wall thickness + 65mm**
Aluminium pipe:
length = **wall thickness + 200mm**

B. Lateral outlet – to right hand side

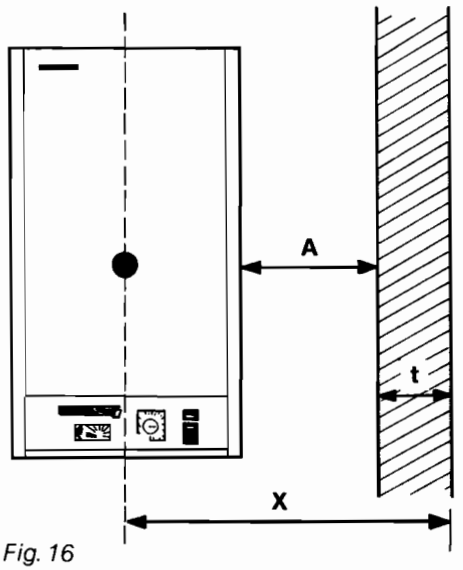


Fig. 16

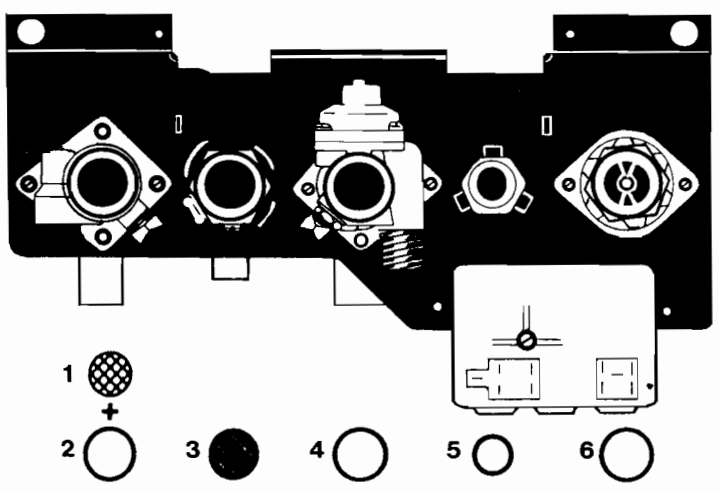


Fig. 11

1 *Metal filter*
2 *Green fibre washer*
3 *White plastic filter*
4 *Green fibre washer*
5 *Black fibre washer*
6 *Green fibre washer*

Referring to Fig. 16.
When distance 'X' is less than 977 mm, cut the flue pipe to the following lengths:
PVC pipe: length = **t + A + 105mm**
Aluminium pipe: length = **t + A + 220mm.**

N.B. If distance 'X' is greater than 977mm, flue extension kits will be required as follows:
For distance 'X' between
977 to 1827: 1 kit
1827 to 2677: 2 kits
2677 to 2987: 3 kits
Refer to **6.8** for cutting and connection details on extension kits.

C. Lateral outlet – to left hand side.

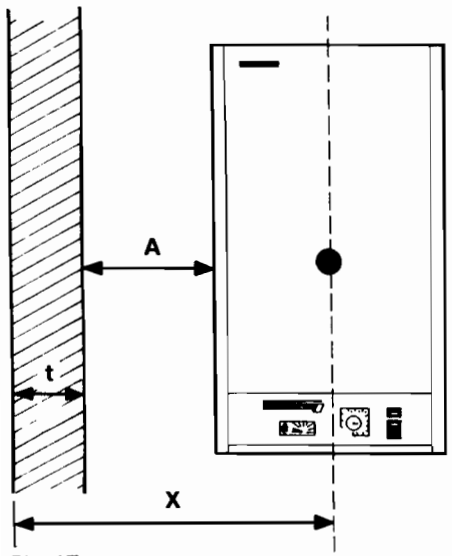


Fig. 17

Referring to Fig. 17.
When distance 'X' is less than 1035mm, cut the flue pipe to the following lengths:
PVC pipe: length = **t + A + 45mm**
Aluminium pipe: length = **t + A + 160mm.**

N.B. If distance 'X' is greater than 1035mm, flue extension kits will be required as follows:
For distance 'X' between
1035 to 1885: 1 kit
1885 to 2735: 2 kits
2735 to 3045: 3 kits
Refer to **6.8** for cutting and connection details on extension kits.

6.8 Flue extension kit

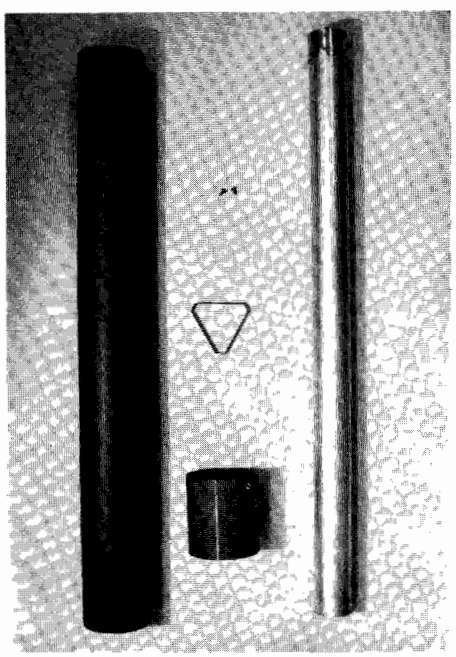


Fig. 18

6.8.1 The flue extension kit comprises:

A PVC pipe – 100mm diameter
B PVC connector
C Aluminium pipe – 55mm diameter – with connector fitted
D Triangular pipe support
E Two fixing screws
Refer to Fig. 18.

6.8.2 Assembly – the PVC connector is used to connect the PVC extension pipe to the PVC pipe supplied with the boiler (or to another extension pipe – if more than one is used). It is a secure push fit onto the pipe ends, no adhesive is required.
The connector fitted to the aluminium extension pipe is a push fit onto the aluminium pipe supplied with the boiler (or onto another extension pipe – if more than one is being used). The two screws provided *must* be used to fasten the two pieces together once assembled – using the pre-drilled holes in both the connector and pipe end. Refer to Fig. 19

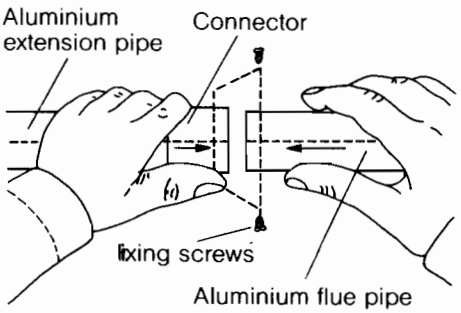


Fig. 19

The triangular pipe support should be slid onto the aluminium pipe (before final assembly) and positioned near the pipe joint to support and locate the inner pipe correctly within the outer PVC pipe. Refer to Fig. 20.

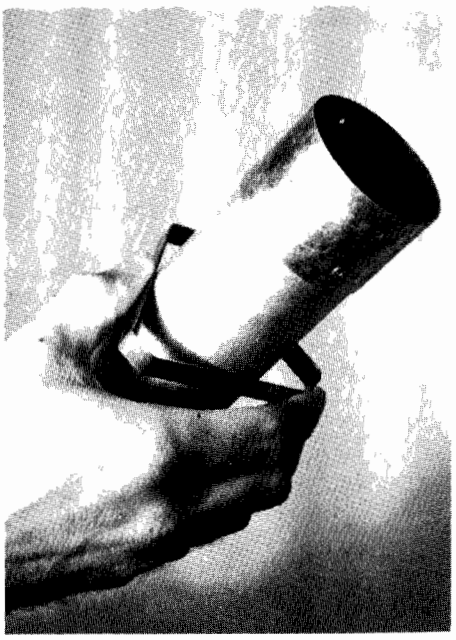


Fig. 20

6.8.3 Cutting lengths – the following instructions should be adhered to when cutting *extended* flue pipes to the required length.
Using the correct number of extension kits – refer to **6.7.6** – assemble both the extended PVC pipe and aluminium pipe, by adding the extension pieces to the flue pipe supplied with the boiler.
DO NOT fasten the aluminium tubes together at this stage.

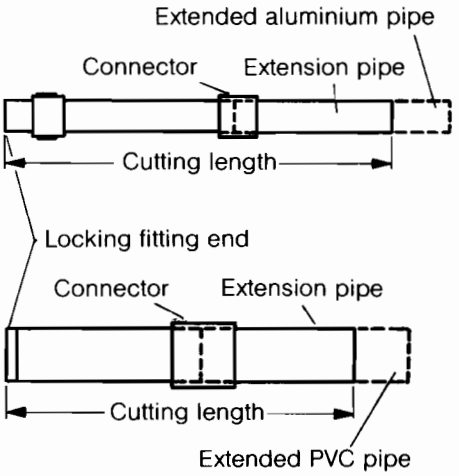


Fig. 21

Mark and cut both *extended* flue pipes – referring to Fig. 21 – using the cutting lengths given in **6.7.6** as follows:

A. Lateral outlet – to right hand side
PVC pipe: length = **t + A + 105mm**
Aluminium pipe: length = **t + A + 220mm.**

B. Lateral outlet – to left hand side
PVC pipe: length = **t + A + 45mm**
Aluminium pipe: length = **t + A + 160mm.**

Important. CHECK *BEFORE* CUTTING – if the distance between the end of either of the cut flue pipes, and the pipe connector, will be 30mm, or less (refer to Fig. 22), it will be necessary to reduce the length of *both* the PVC and aluminium extension pipes, and those supplied with the boiler, to achieve the required overall cutting lengths for the extended PVC and aluminium flue pipes.

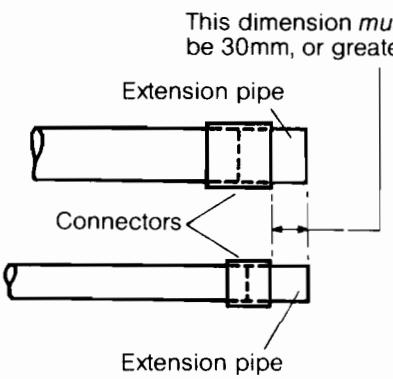


Fig. 22

N.B. If the length of any aluminium pipes – other than the final extension pipe – have to be reduced in this manner; it will be necessary to drill two fixing holes in these pipes to match the fixing holes in the aluminium connector to accommodate the fixing screws provided.

6.9 Flue installation

6.9.1 Make a 105mm diameter hole through the external wall. For direct outlet flue (to rear of boiler): mark correct position of hole from template, then remove jig from wall before making hole.

Important: Ensure that this hole will allow the flue to be installed with a 1–3° fall *away* from the boiler – to prevent any water in the flue from running back into the boiler. The flue should never slope back towards the boiler.

Fig. 23

6.9.2 Cut the PVC outer pipe to the required length – refer to **6.7** or **6.8** – and fit into hole in wall.

Fig. 24

6.9.3 Fit the rubber sealing collar into the groove at the outer end of the PVC pipe.

Fig. 25

6.9.4 Pull the PVC pipe inwards so as to bring the rubber sealing collar hard against the external wall surface.

If necessary, make good the internal wall surface around the flue pipe.

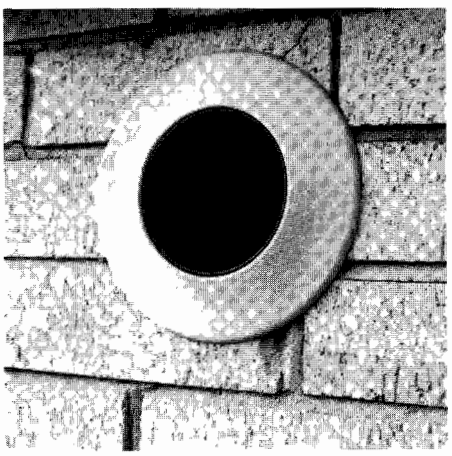


Fig. 26

6.9.5 Refit the jig, locating hole in template over flue pipe. Fit the plastic flange as shown – drive it along the pipe until hard against internal wall surface. The flange may be glued in position using a suitable adhesive, if required.

N.B. When using extension kit(s), plastic flange must be fitted before PVC extension pipe(s) is connected.

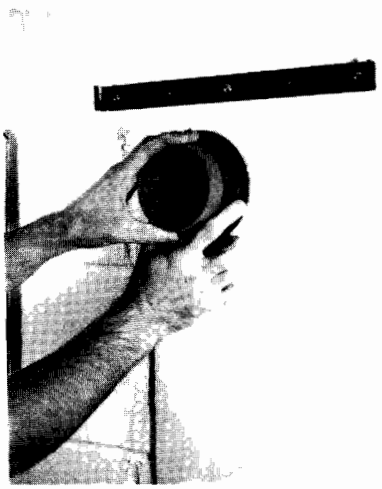


Fig. 27

6.9.6 Cut the aluminium inner pipe to the required size – refer to **6.7** or **6.8** – and fully insert into PVC pipe.
Rotate aluminium pipe anti-clockwise (viewed from inside) as far as possible.

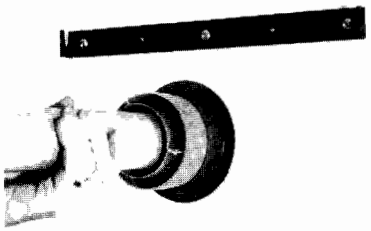


Fig. 28

6.9.7 Fit the rubber connecting sleeve, plain end first, onto the end of the PVC pipe.
Push it on as far as possible.

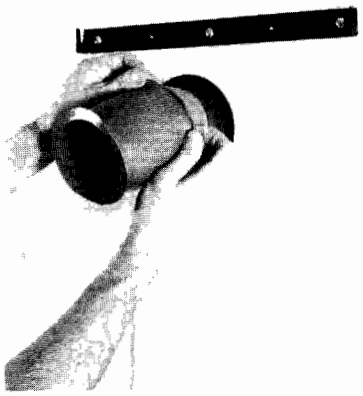


Fig. 29

6.9.8 If boiler is to have a lateral flue – to either right or left – the flue connector in the back of the boiler must be replaced by the flue elbow provided:

Fig. 30
– remove wire clip

Fig. 31

– pull out flue connector

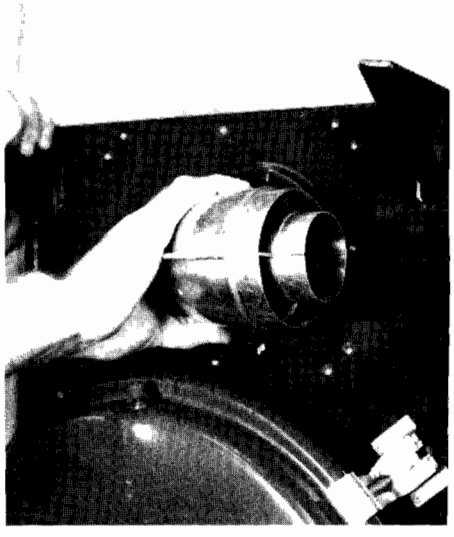


Fig. 32

– fit elbow (flush end into boiler) to point in correct direction

Fig. 33

– re-fit wire clip.

Important. When removing flue connector ensure that fan outlet spigot is not also removed. If it is, replace on fan outlet before fitting elbow.

6.9.9 After hanging the boiler connect the aluminium inner pipe on to the central fan outlet of either the straight flue connector or flue elbow.
To do this the aluminium pipe must be grasped and rotated clockwise viewed from the front of boiler – the aluminium pipe will move out from the PVC pipe and can be twisted onto the centre of the flue connector or elbow.

Fig. 34

6.9.10 Ensure that aluminium pipe is firmly fitted to the flue connector, or elbow, and is correctly locked into the PVC outer pipe.
N.B. The aluminium pipe is correctly located and locked only when the concentric spacer ring is FLUSH with the outermost end of the PVC pipe.

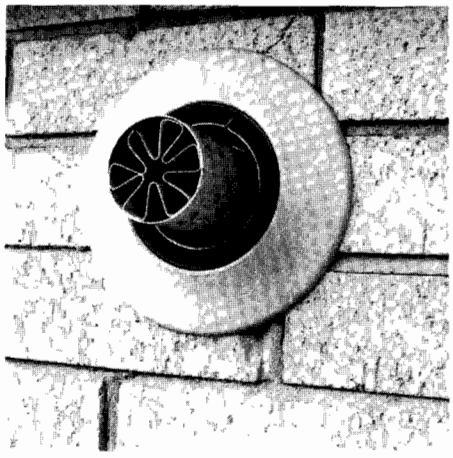


Fig. 35

6.9.11 After checking that the aluminium pipe is correctly located – pull the rubber sleeve towards the boiler, and fit the FLANGED END over the boiler flue connector or elbow to make a seal.

Fig. 36

6.9.12 For lateral flue (to right or left) the centre of the hole for the flue should be 60mm from the face of the wall on which the boiler is mounted.

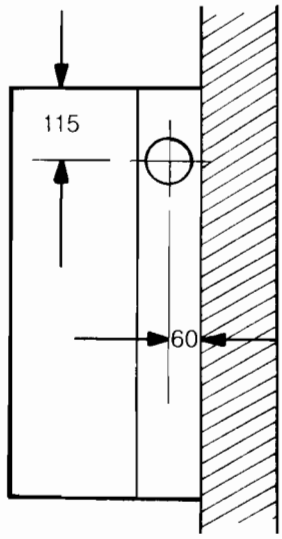


Fig. 37

6.10 Installation procedure

6.10.1 Position the wall fixing jig in the required location, after considering *all* aspects relating to boiler siting.
Check that hanging hook and connection plate are level.
Mark fixing hole centres for hook.
Drill and plug holes, fix hook to wall.
With template flat to the wall, mark fixing hole centres for connecting plate.
Drill and plug holes, fix connecting plate to wall.
Check again that both hook and connecting plate are level.

6.10.2 Install flue assembly, as per **6.9** – using hole in template to locate flue in correct position (direct outlet connection only).

6.10.3 Remove the five pipe connection elbows from the rear of the connecting plate before making the pipe connections.

Important: Do not solder pipework with these connections in position as damage to the joints, isolating valves and gas inlet valve may result.

6.10.4 Make all electrical connections to boiler connection box – refer to **5.4** and **Section 7.**
Connect the 240V 50Hz supply.
Connect the room thermostat and/or time-switch (if fitted).

6.10.5 Thoroughly flush through the heating system pipework to ensure that all foreign matter is removed before the boiler is installed.

N.B. Any such foreign matter (e.g. swarf, grit, flux residues, etc.) will eventually cause boiler operating problems, and may result in damage to internal boiler components such as the pump, heat exchanger or reversing valve.

6.10.6 Unpack the boiler, and remove any plastic caps protecting the pipe connections.

Important: Before hanging the boiler on the fixing jig, check the operating of the gas inlet valve operating rod by pushing in the white (start) button on the front of the boiler.
As a result, the operating rod, located at the back of the gas valve, will be pushed out. Check that the rod is central in the gas valve inlet, then push it FULLY back into the gas valve.
Failure to do the above may result in the gas inlet valve not being opened when the start button is pressed – preventing the gas from reaching the boiler.

6.10.7 Lift the boiler and engage both fixing jig hooks in two support brackets on the rear of the boiler.
Using the sealing washers and filters provided, make the connections between the boiler and connecting plate.
THE SEALING WASHER PROVIDED MUST BE USED WHEN MAKING THE GAS CONNECTION.

Important: Always make the gas connection *first* as this is not flexible.

6.10.8 Connect the boiler to the electrical connection box – refer to **7.3.8.**

6.10.9 Connect the flue to the boiler in accordance with the instructions given in **6.9.**

6.11 Boiler casing

The boiler is supplied with all casing panels fitted. However, during installation it will be necessary to remove the panels – to do so proceed as follows:

6.11.1 Front panel
Grasp panel by the round inspection hole and remove by lifting panel upwards and away from boiler.

6.11.2 Control panel fascia
Having removed front panel, unscrew and remove the two self-tapping screws holding fascia to side panels.
Unscrew and remove the two self-tapping screws holding fascia to underside of boiler.
Remove aquastat knob by pulling off spindle.

6.11.3 Side panels
Having removed front panel and control panel fascia, unscrew and remove the panel retaining screw from the underside of the boiler.
Pull bottom edge of panel away from boiler, until botton flange is clear of boiler frame.
Lift panel upwards and off the two retaining lugs at the top of the boiler.
Repeat procedure for other side panel.

6.11.4 To replace panels – reverse the removal procedure described.

N.B. The casing panels can only be removed in the order given, and must be replaced in the reverse order.

6.11.5 Two closure pieces are supplied to conceal the rear expansion vessel when the boiler is installed. These are attached to the back edges of the boiler side panels. Both full height closure pieces are only used when a direct flue connection is employed.
If a lateral flue is used the short closure piece (supplied with the flue kit) must be fitted on the side to which the flue runs.

6.11.6 To fit the rear closure pieces:
Remove the boiler side panels.
Fit the flange of the closure piece inside the flange on the back edge of the side panel.
Using the small self tapping screws provided, fasten the closure piece to the side panel (refer to Fig. 38).

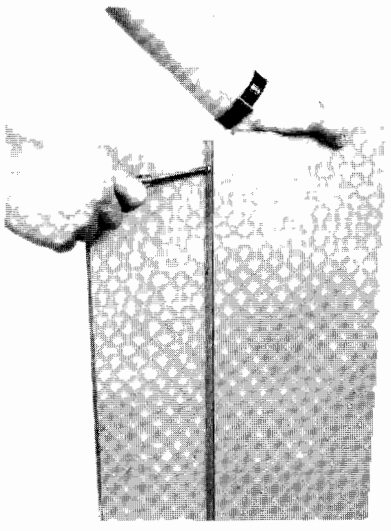


Fig. 38

Repeat with other side panel, and replace both side panels.

7 ELECTRICAL WIRING

7.1 Safety

Important: Always isolate the appliance from the electrical supply before removing the boiler and connection box covers.
The appliance *must* be earthed, and protected by a 3 amp fuse – refer to **5.4**

7.2 General

7.2.1 The 240V 50Hz electrical supply must be *maintained* at all times in order that the boiler can produce domestic hot water when required.
Do not interrupt the mains supply to the appliance with a timeswitch or programmer.

7.2.2 In the interests of energy conservation, the central heating function of the SD620 combination boiler can be controlled using a room thermostat with an accelerating shunt resistance and/or a simple 4-wire timeswitch.

7.2.3 As it is not possible to 'program' instantaneous domestic hot water, the use of a programmer with a combination boiler is unnecessary – although it may be possible to use a programmer as a 'timeswitch' for the central heating function ONLY – depending on the type.

7.3 Electrical connection box

7.3.1 The electrical connection box is situated at the right hand end of the connecting plate.

7.3.2 All external wiring connections, including the mains supply, can be made prior to the hanging/connection of the boiler.

7.3.3 Remove connection box cover.

7.3.4 Connect mains supply live and neutral to centre left and upper left terminals respectively.

7.3.5 For use WITHOUT timeswitch and / or room thermostat: link together terminals 2 and 3 using the brass bridging piece provided.

7.3.6 For use with timeswitch and / or room thermostat: connect room thermostat and / or timeswitch switching contacts in series between terminals 2 and 3.

N.B. The timeswitch should be of the 4-wire type – having an independant power supply to the clock motor and 'voltage free' switching contacts.

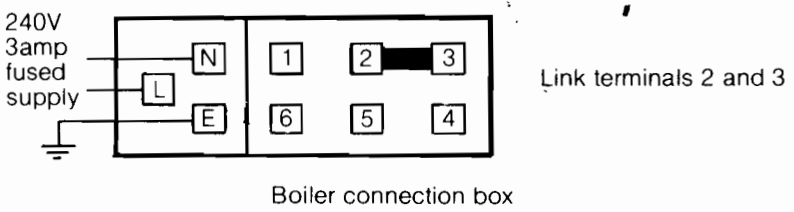
The neutral from the anticipatory resistance (shunt heater) of the room thermostat must be connected to terminal 5 (neutral connection) in the connection box.

7.3.7 *Frost protection thermostat.* This should be connected with its switching contacts between terminals 2 and 3 in the connection box. A frost protection thermostat *must* be used in conjunction with a room thermostat and/or timeswitch – the frost thermostat being connected in *parallel* with the other controls between terminals 2 and 3 in the connection box. Refer to external wiring connection diagrams.
Important: This appliance must be wired according to these instructions. Any fault arising from incorrect wiring cannot be rectified under the terms of the Saunier Duval product guarantee.

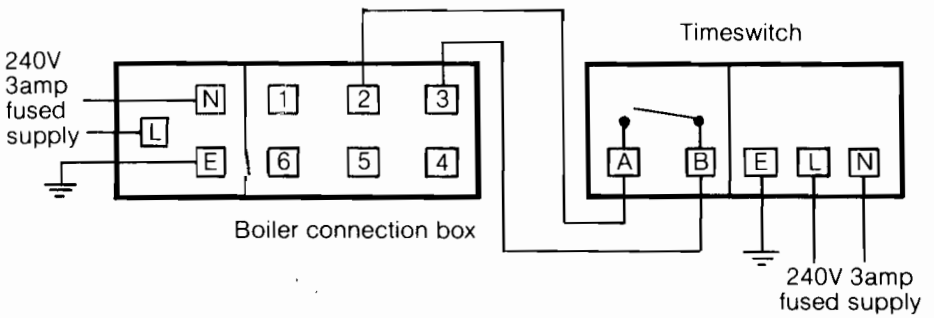
7.3.8 After the boiler has been hung and connected to the fixing jig:
Unscrew the crosshead screw and remove the connection box from the connecting plate. Take the two flying leads from the boiler wiring loom around the right of the gas inlet valve and plug into the sockets at the rear of the connection box.
Check that the plugs are fully pushed home into the sockets.
Check that the terminals have not been pushed through by the plugs.
Using the crosshead screw re-fix the connection box to the connecting plate.
Replace the cover on the box.

7.4 External wiring connection diagrams

I Boiler with no external controls



II Boiler with timeswitch



III Boiler with timeswitch and room thermostat

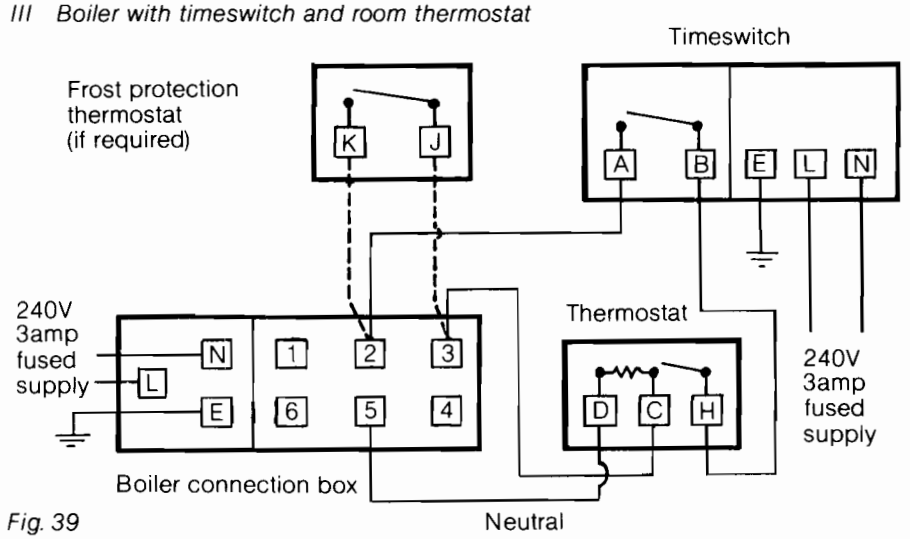


Fig. 39

Connect timeswitch and room thermostat using terminals shown below:

Timeswitch type	A	B	L	N	Comments
Randall 103	1	3	6	5	Fit NO links
Randall 911	5	6	L	N	Fit NO links
Switchmaster 300	1	4	L	N	*Remove* link between L and 4
Towerchron T2001C	4	7	L	N	Fit NO link between L and 4
Horstmann 425 Coronet	4	5	L	N	Fit NO link between L and 5
Landis & Gyr RWB30	2	4	L	N	Fit NO link between L and 2
Potterton EP2000	5	4	L	N	Fit NO link between L and 5
Potterton EP3000	5	4	L	N	Fit NO link between L and 5
ACL Lifestyle LS111	1	3	L	N	Fit NO link between L and 1
ACL Lifestyle LS711	1	3	L	N	Fit NO link between L and 1
Sangamo SET 1	5	4	L	N	Fit NO link between L and 5
Sangamo E1	2	1	4	5	Fit NO links
Smiths ERS1	L	1	–	–	Connect N to neutral

Thermostat type	C	D	H
Saunier Duval TA.2	2	4	1
Honeywell T.6160 B	3	2	1

Frost thermostat type	J	K
Honeywell 4160A	3	1
Sopac TA.340.06	3	1

7.5 Internal wiring diagrams

SD620F Electrical schematic

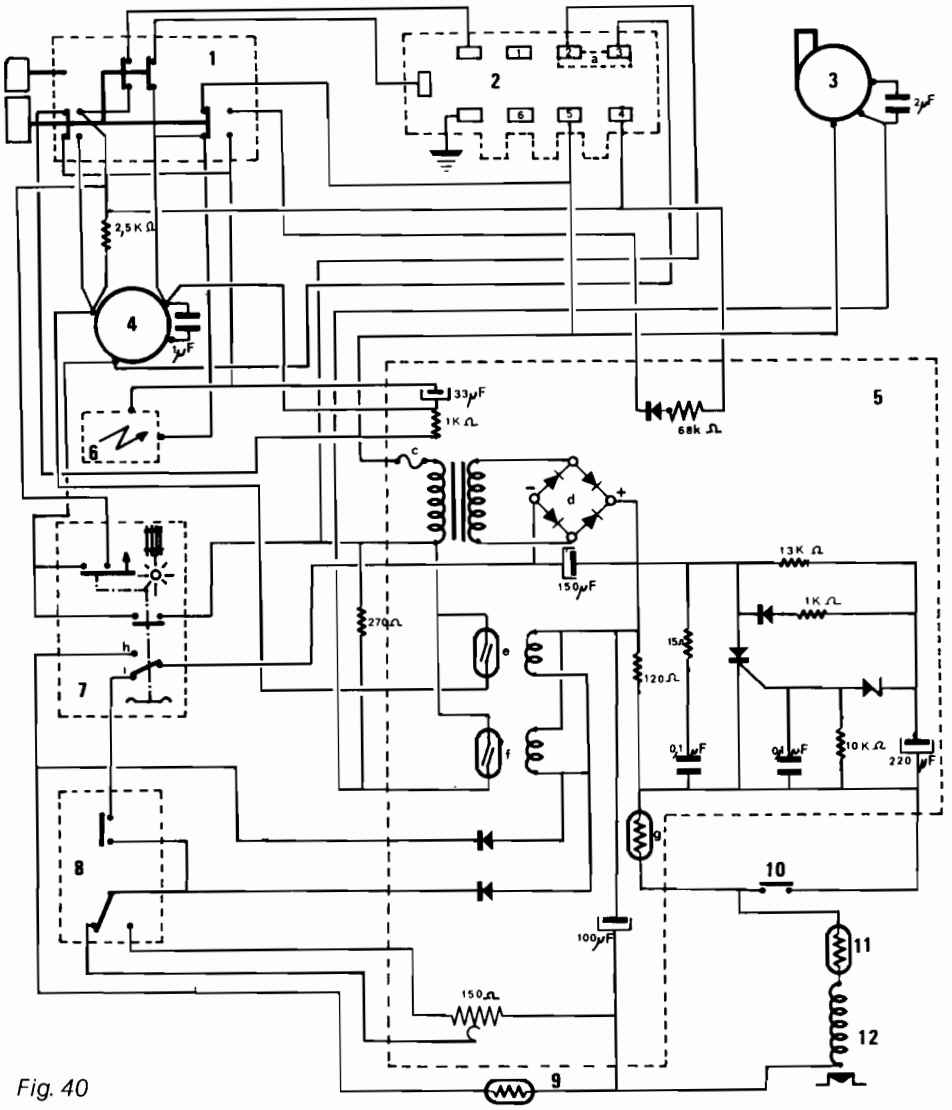


Fig. 40

1 *Push button box.*
2 *Electrical connection box.*
3 *Pump.*
4 *Fan.*
5 *Printed circuit.*
6 *Spark generator.*
7 *Reversing valve.*
8 *Aquastat.*
9 *DHW thermistor.*
10 *Air flow switch.*
11 *Limit thermistor.*
12 *Gas valve coil.*
A *Shunt.*
C *Fuse.*
D *Rectifier.*
E *Relay – fan.*
F *Reed relay – pump.*
G *Thermistor – slow ignition.*
H *Domestic hot water contact.*
I *Heating contact.*

8 COMMISSIONING

8.1 Gas installation

8.1.1 The complete gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of BS6891: 1988.

8.1.2 It is recommended that the air be purged from the gas supply pipe at the pressure test point on the inlet to the gas valve (refer to Fig. 41).
After ensuring that the boiler is isolated from the electrical supply:
Remove the screw from the test point.

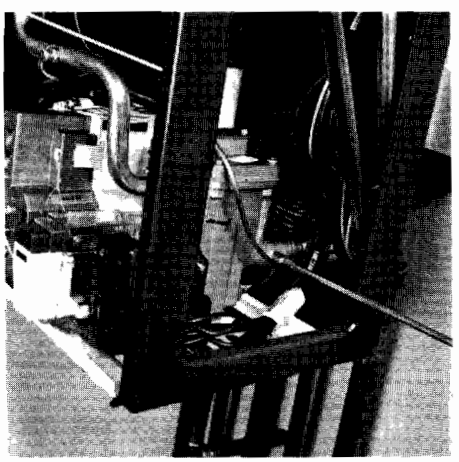


Fig. 41

Push in white (start) button on the front of the boiler, and hold in until gas is present at test point.
Replace screw and, while holding white button in, test for gas soundness.

8.1.3 It is also recommended that the air be purged from the pilot gas supply pipe (small diameter aluminium pipe).
After ensuring that the boiler is isolated from the electrical supply:
Disconnect the supply pipe from the pilot injector tube by unscrewing nut, using a 10 mm spanner (refer to Fig. 42).

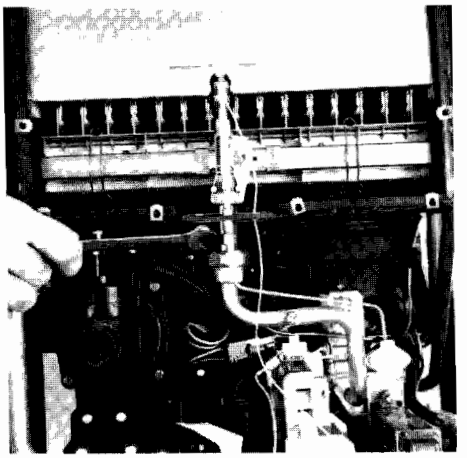


Fig. 42

Carefully pull end of supply pipe downwards from the tube.
Push in and hold white (start) button until gas is present at the end of the pipe.
Immediately release white button, and reconnect pipe to pilot injector tube. *Do not overtighten nut.*
Push in white button again and check around connection for gas soundness.

8.2 Electrical installation

8.2.1 All checks to ensure electrical safety should be carried out by a competent person.

8.2.2 In the event of an electrical fault after installation, preliminary system checks must be carried out as described in the British Gas Multimeter Instruction Book.

8.3 Heating system

8.3.1 With the boiler mounted on the fixing jig, and all the connections tight, move the summer/winter selector to the right hand (winter) position.
Fill the heating system – as per **6.5** – until the pressure gauge indicates a pressure of approximately 1.5 bar. Vent any air from the boiler.

8.3.2 Briefly operate the boiler, thoroughly checking the heating system pipework and fittings for leaks.
Check all boiler hose connections and, if necessary, *slightly* tighten the hose clips.
Upon reaching maximum temperature the boiler should be shut down and the complete system drained to remove any residues from the pipework.
Re-fill the system and vent as before.

8.3.3 Re-start the boiler and operate until maximum temperature is reached. Shut-down the boiler and vent the heating system.
If necessary, top up the heating system to ensure that a pressure of 1 BAR is indicated on the gauge when the system is COLD.

8.3.4 To vent air from the boiler.
Unscrew the cap on the pump automatic vent outlet 1–2 turns, and leave (refer to Fig. 43).

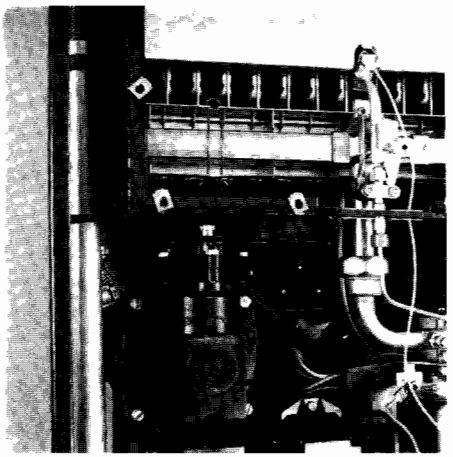


Fig. 43

Unscrew the knurled brass cap on the end of the heat exchanger vent pipe (on right hand side of boiler, between sealed chamber and side panel) 1–2 turns. When a consistent jet of water is obtained from this vent, screw the cap back tight (refer to Fig. 44).

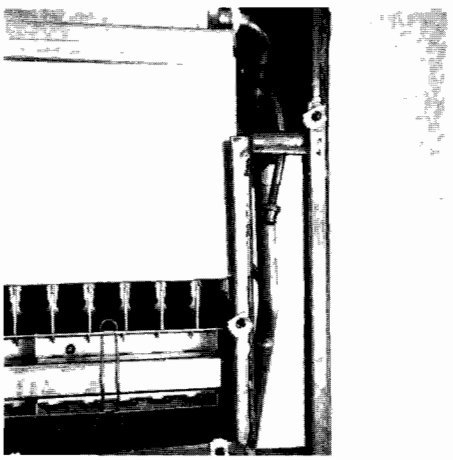


Fig. 44

N.B. Do not unscrew this cap completely as the small ball located inside may fall out and be lost!
Important: When venting air from the boiler, do not touch the Schrader valve on each of the expansion vessels – these are NOT air vents.

8.3.6 It is recommended that the cap on the automatic air vent outlet, on the pump, is left unscrewed for at least 2–3 days, to ensuring that any air in the system is purged out.

8.4 Domestic hot water system

8.4.1 To fill the domestic hot water circuit in the appliance:
Open the isolating valve in the cold main inlet connection.
Open a hot water tap, connected to the boiler, and draw off water.
Shut the hot water tap.

8.4.2 Using the isolating valve in the cold main inlet connection, adjust the flow of cold water through the boiler to give 11 litres per minute at a hot water tap (refer to Fig. 45).

N.B. The tap at which this measurement is made should be fully open.
With the boiler running, check that the temperature rise of the water, at the above flow, is 30°C.

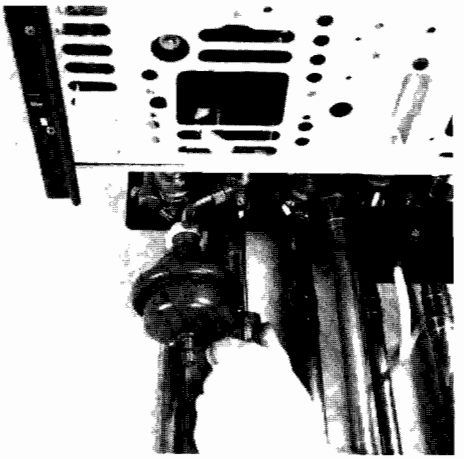


Fig. 45

8.4.3 Finally, adjust the water flow, as before, to give hot water to the customer's requirements.

8.4.4 Thoroughly check all domestic hot water pipework for leaks.

8.4.5 Due to the design of the SD620 heat exchanger, i.e. the domestic hot water coil is situated *inside* the central heating heat exchanger, *water must be present in the central heating circuit* for the boiler to produce domestic hot water.

8.4.6 The boiler can be used to provide domestic hot water only (i.e. if, say, the heating system is to be installed or connected at a later date) as follows:
Connect the central heating flow and return connections together, incorporating a 'valved tee' as filling point in this connecting pipe.
Fill and vent the heating circuit of the boiler – as per the instructions given in **8.3.**
Set the summer/winter selector lever to the left hand (summer) position.

8.5 Starting the boiler

Caution: The first firing of the boiler should be carried out by a qualified installer/gas service engineer only.
He should also give clear verbal instructions to the user on how to operate the boiler, and its associated system controls.

8.5.1 Before starting the boiler, rotate the pump impeller to ensure it is not stuck:
Unscrew black cap on front of pump.
Place a screwdriver in slot of spindle.
Push in spindle and rotate pump impeller 3–4 times to ensure free rotation.
Replace black cap.

8.5.2 Start the boiler using the method described in the 'User Instructions' supplied with the boiler.

8.6 Gas soundness

Important: With the boiler running, test for gas soundness around ALL boiler gas components – using sense of smell and leak detection fluid (or soapy water).

8.7 Flue

With the boiler running, check the flue installation for soundness.

8.8 Burner gas pressure

8.8.1 The gas valve, incorporated in the boiler, is factory set and requires no adjustment during commissioning.

8.8.2 The main burner pressure should be checked during commissioning to ensure that full boiler output is obtained:
Shut down the boiler by pressing the red button on front of the boiler.
Remove screw from test point on the main burner gas supply pipe (refer to Fig. 46).

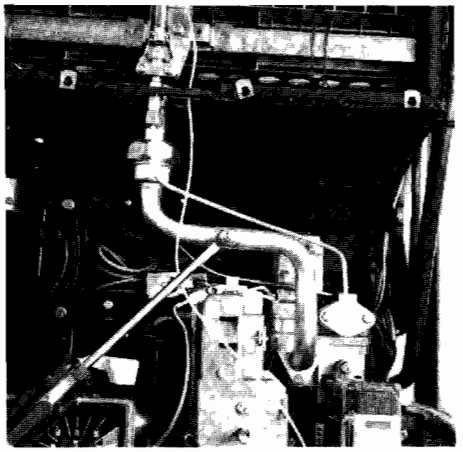


Fig. 46

Connect U-tube pressure gauge to test point using rubber tube.
Set summer/winter switch to right hand (winter) position.
Check that aquastat knob is set to maximum, i.e. turned fully clockwise.
Check that all external heating controls are 'calling' for heat, i.e. room thermostats and timeswitches.
Start the boiler (as per the 'User Instructions').
Check that the reading on the U-tube pressure gauge matches that given in **4.2** for the type of gas being used.
Move summer/winter lever to left hand (summer) position, remove rubber tube and replace screw in test point.

Re-set lever to winter position and check test point for gas soundness with boiler operating.
N.B. If measured burner pressure differs significantly from the specified figure check the gas inlet pressure to the boiler – see **8.9.**

8.8.3 The central heating output of the boiler can be adjusted by the Installer between 8.7 kW (30,000 Btu/hr) to 23.3 kW (80,000 Btu/hr), if required, as follows:
Connect U-tube pressure gauge to test point on main burner supply pipe (as per **8.8.2**).
Un-wind seal and wire from small plastic slide on side of aquastat housing (refer to Fig. 47), and remove slide.

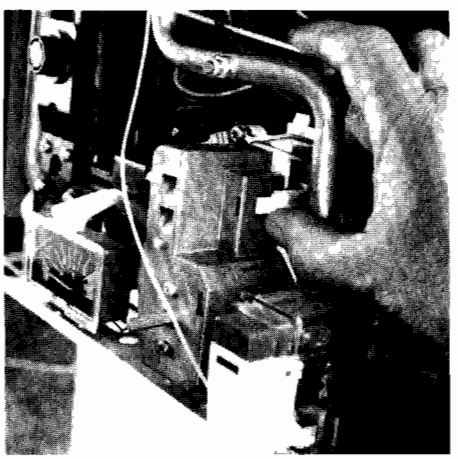


Fig. 47

Using a screwdriver, rotate the potentiometer knob inside the aquastat housing (refer to Fig. 48) anti-clockwise as far as possible – approximately three-quarters of a turn.
Set aquastat knob to maximum.
Check that all external controls are 'calling' for heat.
Start the boiler (as per the 'User Instructions').

Slowly rotate aquastat control anti-clockwise until *first* click is heard – then turn aquastat back to maximum.

With the boiler operating, slowly rotate the potentiometer knob clockwise until the burner gas pressure on the U-tube gauge corresponds to the required central heating output (see **4.3**).

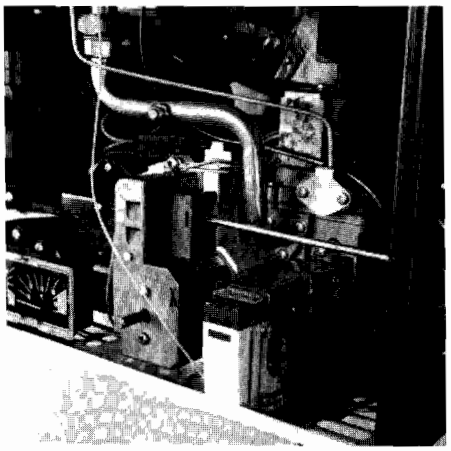


Fig. 48

Move summer/winter lever to summer position, remove rubber tube and replace screw in test point.
Reset lever to winter position and check test point for gas soundness with boiler operating.
Replace plastic slide into aquastat housing and re-fit wire and seal.
N.B. This adjustment does not affect the heat output for the domestic hot water.

8.9 Inlet gas pressure

To check the gas inlet pressure (gas flow pressure) to the boiler.
Shut down the boiler by pressing red button on front of boiler.
Remove screw from test point on inlet to gas valve at rear of boiler (refer to Fig. 41).
Connect U-tube pressure gauge to test point using rubber tube.
Start the boiler (as per the 'User Instructions').
Check that the reading on the U-tube presure gauge matches that given in **4.2** for the type of gas being used.
Shut down boiler, remove rubber tube and replace screw in test point.
Re-start boiler and check test point for gas soundness.
N.B. If inlet gas pressure is below that specified the gas supply pipework/meter must be checked, and the condition rectified.
In the case of an LPG Installation check the storage tank (or cylinder), regulator and pipework.

8.10 Boiler/system controls

8.10.1 After operating the boiler briefly on heating to bring it up to temperature, check the operation of the boiler aquastat, with the summer/winter selector in the winter position, and with external controls 'calling' for heat:
Turn aquastat control knob fully anti-clockwise: the burner should go out.
Slowly turn the aquastat knob clockwise; the burner should first light and run on low flame.
Continue turning the knob until the burner fires on high flame.

8.10.2 With the summer/winter switch in the winter position, and the aquastat set to maximum (full clockwise), manually operate the room thermostat and/or the timeswitch to check that they switch the burner off and on when required.

8.10.3 Finally, set all central heating controls to the customers requirements.

8.11 Draining of system or boiler

8.11.1 Draining the heating circuit:
Open the drain tap situated at the lowest point of the system.
Finish draining by removing drain screw from the central heating flow connection on the connecting plate.

8.11.2 Draining the hot water circuit:
Shut off water at stop cock.
Open one, or more, hot water taps.
Finish draining by removing small expansion vessel connection (or drain screw) fitted to cold water inlet connection on connecting plate.

8.11.3 Draining the boiler – heating:
Close isolating valves in the flow and return connections on connecting plate.
Lift spindle of pressure relief valve to drain boiler.
Finish draining by removing drain screw from central heating flow connection on connecting plate.

8.11.4 Draining the boiler – hot water:
Close isolating valve on cold water inlet.
Open one, or more, hot water taps.
Finish draining by removing small expansion vessel connection (or drain screw) fitted to cold water inlet connection on connecting plate.

Important: Shut down boiler by depressing stop button BEFORE commencing any draining operation.

9 FAULT FINDING

9.1 Pilot does not light

Check that sparking occurs at the electrode.
If not, check position of thermocouple in relation to electrode. Spark should jump between electrode and pilot *not* to thermocouple.
Check that gas cock at meter is open.
Air may be present in piping – purge via test point on gas valve.
If no gas present at test point; disconnect boiler from jig and check that inlet valve operating pin is correctly positioned (refer to **6.10.6**).

If fan is not heard to run when white (start) button is pressed, check power supply to boiler and ensure that rubber plugs are correctly fitted to the electrical connection box (refer to **7.3.8**).

9.2 Pilot will not remain alight

Check position of thermocouple in relation to pilot flame.
Check that thermocouple is tightly connected to the solenoid; and that the solenoid is fully screwed into the gas valve assembly.
Check that the screw holding the stop/start push button box to front of gas valve is tight.
Check the connections to overheat protection (klixon) device – if fitted.

Check that fan is running on low speed when burner is off.
Check that flue is not blocked or obstructed.

N.B. The pilot flame should burn steadily in a V shape with two sharp points. Each leg of the V should be approx. ½ inch long. If the flame has a 'limp' or rounded appearance then the pilot burner tube is dirty. Remove it by unscrewing the retaining clip and blow through the pipe to clear it. Refit pipe to boiler.

9.3 Pilot flame alight – but boiler will not start

Check power supply to the boiler; ensure that both rubber plugs are correctly fitted to the electrical connection box (refer to **7.3.8**).
If burner lights up and then goes out; check that the pump is free to rotate (refer to **8.5.1**).
Also, check that central heating flow and return valves (on connecting plate) are open.
Check that fan is running at full speed.
Check that flue is correctly connected to boiler and is free of obstructions.
Check operation of airflow switch (inside sealed chamber).

9.4 Hot water is O.K. – but no central heating

Check that summer/winter selector switch is set to WINTER (right hand) position.
Check that room thermostat (if fitted) has not been set too low.
Check that timeswitch (if fitted) is not in an 'OFF' position.
Check that boiler thermostat (Aquastat) has not been set too low.
Check that right hand rubber plug is correctly fitted to the electrical connection box (refer to **7.3.8**).
Check that room thermostat and/or timeswitch is correctly connected to the boiler (refer to **7.4**).

To check operation of room thermostat and/or timeswitch – directly connect terminals 2 and 3 in boiler connection box (refer to **7.4**). If boiler now operates on heating, fault is with external controls.

9.5 Central heating is O.K. – but no hot water

Check that valve on cold water inlet to boiler is not closed; set valve to give required flow (refer to **8.4.2**).
Check that at least 3 litres/min (5.5 pints/min) of water is being drawn off at the tap.
Check that the supply water pressure is sufficient (refer to **4.4.4**).

9.6 Hot water not hot enough

Check that water flow at tap is not too much.
Check that temperature rise is 30°C at the flowrate specified in **4.4.2**. If it is, then boiler is operating correctly.
Check the burner gas pressure when maximum flow is being drawn at tap – compare value obtained with that specified in **4.2**.
If burner pressure is low; check inlet pressure to the boiler *when* maximum flow is being drawn at tap – compare the value obtained with that specified in **4.2** (refer to **8.9**).

More detailed fault-finding information is available on request, from Saunier Duval Limited.

10 SPARE PARTS

10.1 General

10.1.1 The following is a 'short' parts list covering the more commonly used components.

10.1.2 Use the item key number to identify each part shown in Figs. 49 and 50.

10.1.3 When ordering spare parts, please quote the part number and description – stating the appliance model number and serial number of the data badge.

10.2 Short parts list

No.	Description	Part No.
1	*Pump*	52365
2	*Spark generator*	52669
3	*Thermocouple*	52159
4	*Thermocouple with interruptor*	52664
5	*Thermocouple solenoid*	52798
6	*Printed circuit board*	52675
7	*Aquastat*	59216
8	*Water valve – diaphragm kit*	52519
9	*Domestic hot water thermistor*	52908
10	*High limit thermistor*	52332
11	*Fan*	52534
12	*Pressure/temperature gauge*	52342
13	*Microswitch assembly*	52338
14	*Jig/boiler washer/filter kit*	52128
15	*Hoses – pump/heat exchanger (pack of 5)*	54538
16	*Hoses – diverter valve (pack of 3)*	54948
17	*Hose clips (pack of 10)*	54529
18	*Gas washer kit (not shown)*	5707
19	*Water washer kit (not shown)*	7506

These instructions are accurate at the date of printing but due to a continuous policy of product improvement they may be superseded and should be disregarded if specification and/or appearances change.

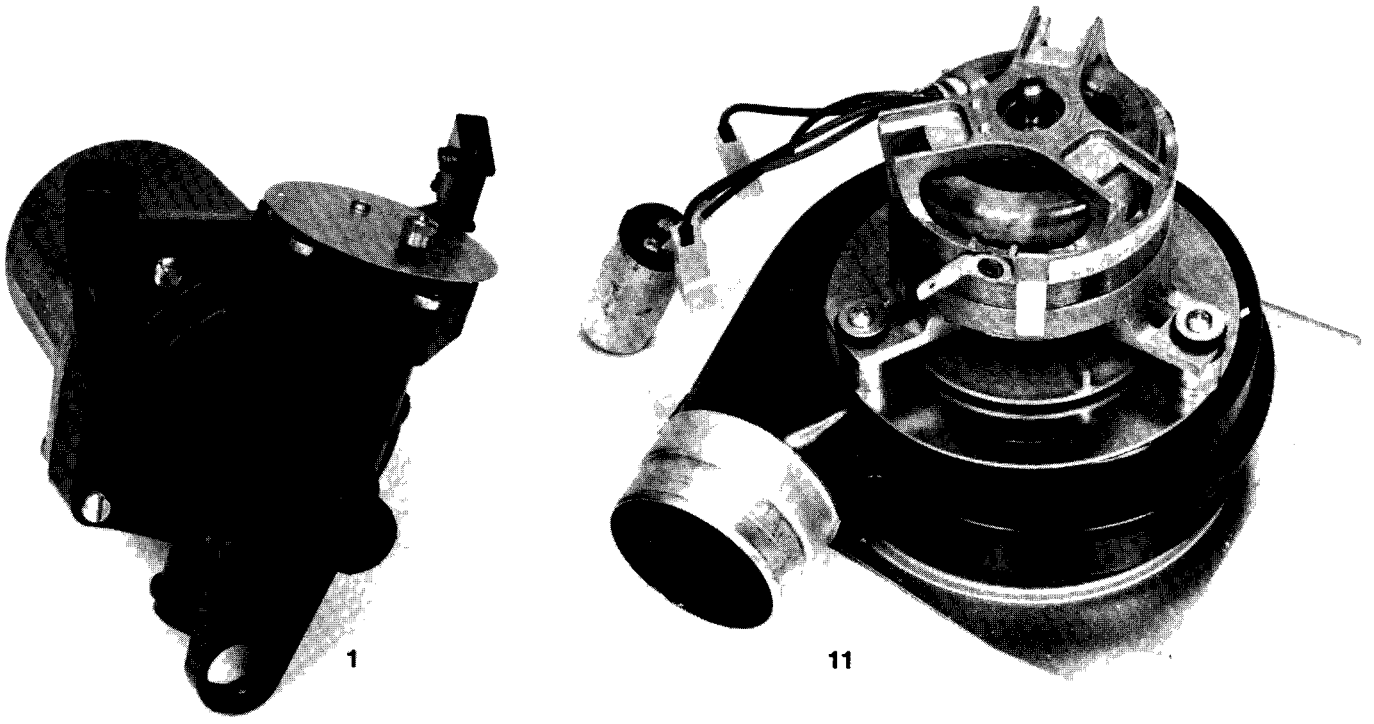


Fig. 49

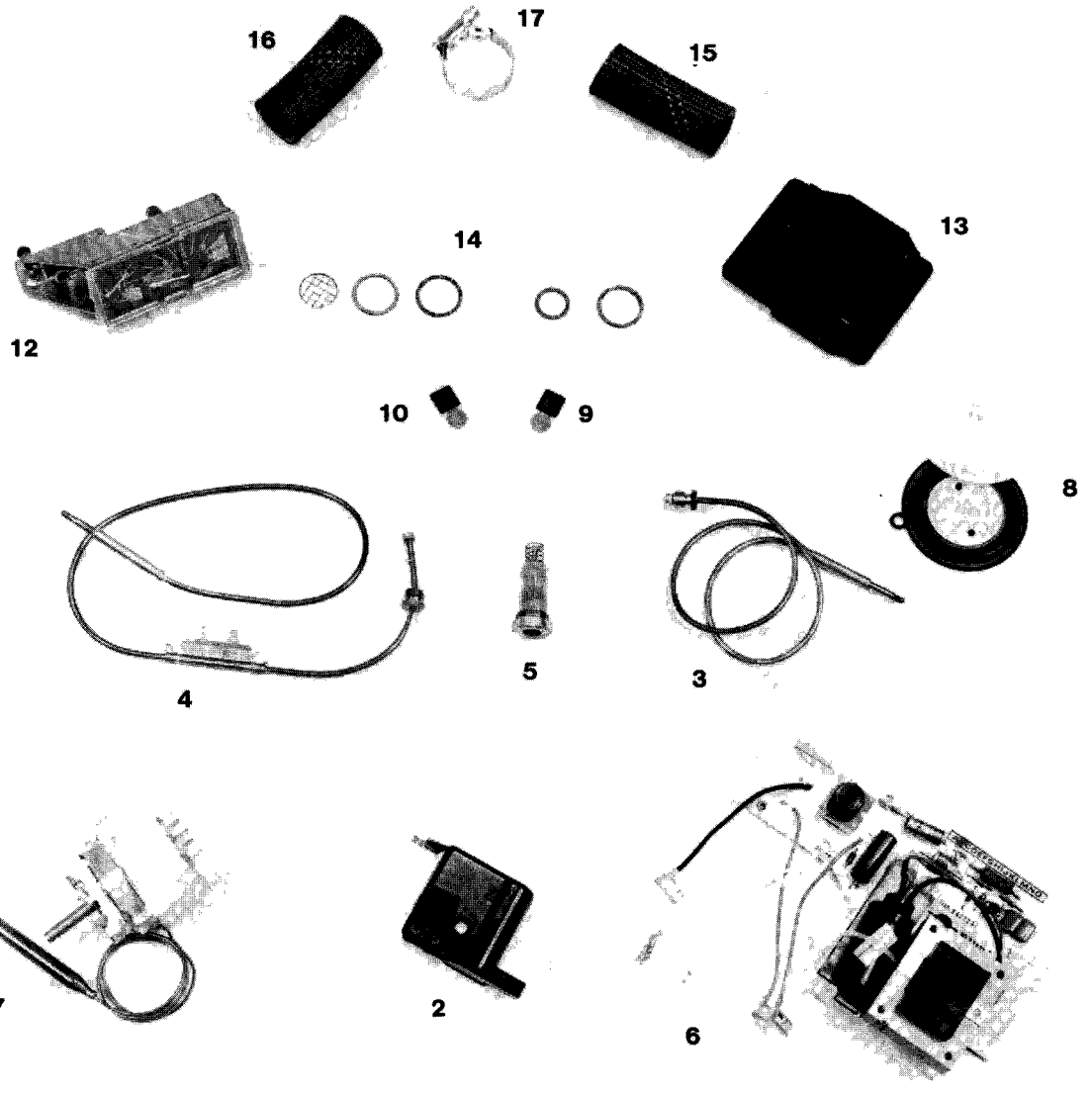


Fig. 50

Saunier Duval

Norfolk House Southdownview Way Worthing West Sussex BN14 8NQ
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Reference Instal SD620F 6/88

Designed by Atelier Marketing Services / Printed in England

Saunier Duval
Norfolk House Southdownview Way Worthing West Sussex BN14 8NQ
Service Telephone: (0903) 35702–3–4

Instructions for use
SD620F Combination Boiler

IMPORTANT

Before acquainting yourself with these simple instructions that will enable you to get the best use from your Saunier Duval boiler, check that it has been installed by a qualified heating engineer in accordance with the relevant legislation and Codes of Practice in force.

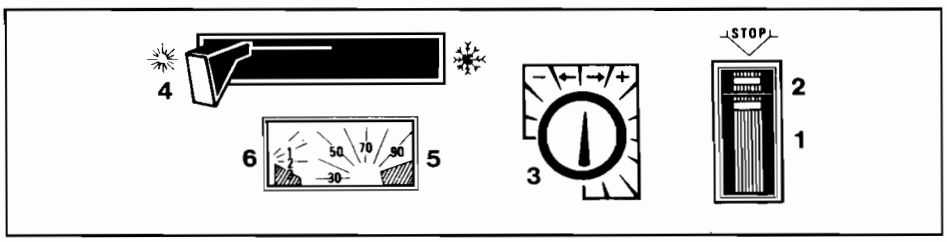

Fig. 1

1 *'Start' push-button – White*
2 *'Stop' push-button – Red*
3 *Control knob for central heating water temperature*
4 *Summer/Winter selector switch*
5 *Temperature gauge – central heating water*
6 *Pressure gauge – central heating system*

GENERAL

The SD620F is a Combination boiler and will provide full central heating and instantaneous hot water as detailed below.

CENTRAL HEATING

The heat output has been set by your installation engineer, within the range 8.7 to 23.3 kW (30,000 to 80,000 Btu/hr), to meet the heating needs of your home. This adjustment ensures that you achieve optimum comfort and economy.

DOMESTIC HOT WATER

The automatically variable heat output of your SD620F combination boiler will enable you to choose the water delivery or temperature, depending on your needs, within the heat output limit of the appliance.

FLUE

As the SD620F boiler is a 'room sealed' appliance – drawing air and discharging burnt gasses through the wall, DO NOT OBSTRUCT the outside flue terminal to which it is connected. The fan powered extraction of these burnt gases ensures that the adverse effects of high winds is overcome, facade stains are avoided, and efficiency is improved.

N.B. The fan fitted to your boiler will run at a low speed throughout periods when the burner is off. This is to remove the burnt gases from the pilot, which would otherwise build up and eventually extinguish the pilot.

CONTROLS AND MONITORING GAUGES

The control panel, located at the lower front of the boiler casing, allows the appliance to be started, shut-down, controlled and monitored during normal use – refer to Fig. 1.

CONNECTING PLATE

The connecting plate facilitates the connection of the boiler to the central heating, domestic hot water and gas supply pipework. It is situated under the boiler, at the rear, and is mainly for the installers convenience. Fig. 2 shows the connecting plate.

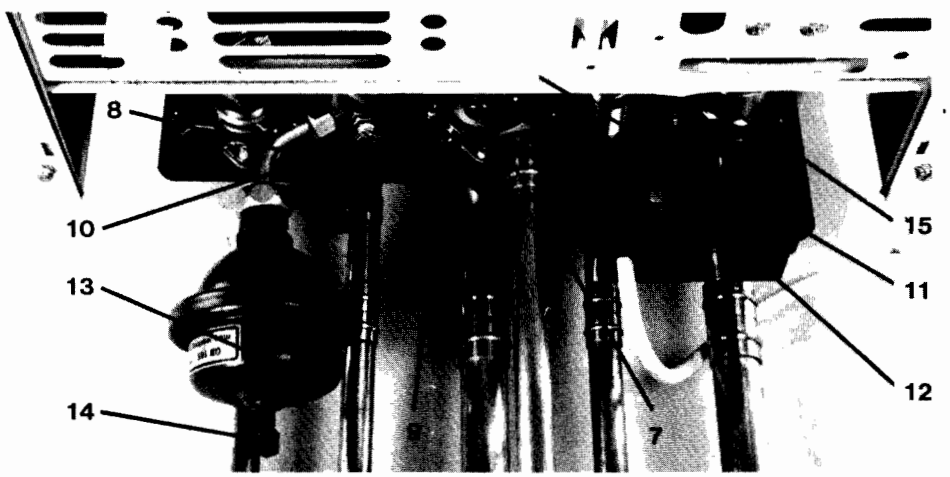

Fig. 2

7 *Drain screw*
8 *Isolating valve – C.H. return*
9 *Isolating valve – C.H. flow*
10 *Isolating valve – D.H.W.*
11 *Safety valve – behind casing*
12 *Electrical connection box*
13 *Domestic expansion vessel*
14 *Schraeder valve*
15 *Gas inlet valve*

STARTING THE BOILER

Preliminary checks

Before attempting to start the boiler, check that:

The gas meter tap is open (if using butane or propane check that valve on gas storage cylinder or tank is open).

The boiler is connected to the electricity supply.

The central heating system is full of water, even if you only want to use boiler to supply hot water during the summer.

The pressure indicated on the gauge (**6**) is 1 bar. If it is not, consult your installer or service engineer to refill the heating system.

Important. Operating the boiler when it is not correctly filled with water can result in the heating circulation pump being damaged.

The central heating isolating valves on the flow (**9**) and return (**8**) connections are open.
N.B. Valves are open when slot on tap is in line with the direction of flow.

To start the boiler

Depress the white 'start' push-button (**1**), and hold in while the gas flows to the pilot. It may be necessary to wait while the air is purged from the pipes.
When gas is ignited, pilot will be visible through the circular inspection window on the front of the boiler.

Wait approximately 20 seconds after pilot is lit before releasing white push-button. This enables the flame failure device (thermocouple) to heat up and energise.

DOMESTIC HOT WATER OPERATION

In order to use the boiler to give hot water only:

Move the summer/winter selector switch (**4**) fully to the left ('summer' position).
N.B. With the selector switch in this position, your boiler will only supply hot water – whatever the room temperature is. Any room thermostat or timeswitch you may have connected to your boiler will *not* have any effect on the supply of hot water.

Open a hot tap fully. if you require hotter water, progressively close the tap until the desired water temperature is obtained.

A control device incorporated in your boiler automatically controls the burner to ensure that the chosen temperature is maintained.

When the tap is closed, the boiler is automatically switched off – you heat ONLY the water you use!

CENTRAL HEATING AND HOT WATER OPERATION

In order to use the boiler to provide central heating *OR* hot water:

Move the summer/winter selector switch (**4**) fully to the right ('winter' position).

Set your room thermostat, or thermostatic radiator valves, to maximum to place the boiler under its own control.

With the boiler operating, adjust the central heating water temperature using control knob (**3**), and observing the temperature gauge (**5**), to the desired level. Turning the knob clockwise increases the temperature of the radiators, and anticlockwise reduces the temperature.

Reset your room thermostat or thermostatic radiator valves to your required setting(s).

N.B. As the temperature of your heating system increases, the pressure as indicated on the pressure gauge (**6**), will also increase to a value dependant on the initial cold pressure, the size of your heating system, and the heating water temperature.

Central heating adjustment

In order to make the best use of your boiler – and to achieve a better level of comfort and economy – it is necessary to adjust it to suit the outside temperature.

On colder days increase the temperature of the water in the radiators – as described above.

On milder days the water temperature can be decreased – as described above.

Domestic hot water

With the selector lever in the 'winter' position:

Domestic hot water has priority over the central heating.

When a hot tap is opened the boiler automatically switches over to heating hot water.

The heating system is isolated from the boiler whilst the hot tap is open so all the boiler heat output is given to the hot water.

N.B. Adjustment of the control knob (**3**) will *NOT* have any effect on the temperature of the domestic hot water.

When the tap is closed the boiler automatically goes back to providing central heating, and is again under the control of your room thermostat, timeswitch and the control knob (**3**).

TO STOP THE CENTRAL HEATING

Move the selector lever to the left hand ('summer') position. Your boiler is no longer under the control of your room thermostat or timeswitch, but will still provide hot water on demand.

COMPLETE BOILER SHUT DOWN

Depress the red (stop) push-button (**2**) and release. This immediately isolates the boiler from the gas supply and the pilot will go out within a few seconds.

The electrical supply to the boiler, from its electrical connection box (**12**), is cut off.

IMPORTANT

Even when the boiler has been shut down (as described above), there is still a 240v supply to the electrical connection box.

Always isolate the appliance from the electrical supply before removing the boiler or connection box covers.

CARE AND MAINTENANCE

Air in heating system

Your hot water central heating system can only work properly if it is completely full of water – and free from any trapped air.

Air present in the system may cause the noise of falling water in the radiators. To cure, bleed the air from the radiators by opening the air vents using a radiator key.

Should the pressure fall below 1 bar on gauge (**6**) when the system is cold – the system will require filling or topping up by your installer or service engineer.

Continual loss of pressure

If your heating system continually loses pressure, and requires frequent topping up, this may indicate minor leaks in the installation.

These should be found and remedied as soon as possible by your installer or service engineer.

Absence during winter months

If you leave your home during periods when freezing weather is likely, we recommend that you leave the boiler operating – with the control knob (**3**) set fully to the left. This will maintain a reduced level of heating.

The gas consumption will be very low, and this action will protect your home against frost, and prevent damage to your pipework.
If this is unacceptable, for any reason, it will be necessary to have the boiler shut down and the system drained by your installer or service engineer to prevent frost damage to it.

Cleaning

Clean the outer casing panels of your boiler using a damp cloth and a little soap. Do not use any form of abrasive, or solvent based, cleaning materials, as these will damage the finish of the panels and the plastic control fittings.

Servicing

The comfort of your home depends on your boiler working properly.

We therefore recommend, with both your comfort and safety in mind, that the boiler is serviced ONCE A YEAR.

This annual service should not be confused with the Saunier Duval product guarantee, which covers manufacturing defects and faulty components *within* the boiler.

Guarantee

The guarantee registration card supplied with the boiler must be completed by the installer and user, immediately upon completion of the installation, and returned to Saunier Duval Limited.

Notification of any fault should be made to the installer or supplier from whom the unit was purchased.

PROBLEMS IN USE

In case of power failure

The boiler will stop operating, but the pilot flame will remain alight.

When power is restored, the boiler will automatically re-start.

If the power to the boiler is cut off for an extended period, the pilot may eventually go out. Re-start the boiler following the procedure given in these instructions.

In case of gas supply failure

The pilot flame will go out, and the safety device will automatically shut down the boiler.

When the gas supply is restored, re-start the boiler in the way described in these instructions.

If the pilot will not light after numerous attempts, then it is possible that the automatic ignition device is faulty and requires replacement. Consult your installer or service engineer.

In case of burner cutting out

If, for any reason, either the burnt gases cannot be evacuated from the boiler, or fresh air cannot be drawn into the boiler for combustion, the safety device will operate and the burner will be shut off.

Make sure that the outside flue terminal is not obstructed, if it is remove the obstruction.

If flue has been blocked for an extended period the pilot may have gone out. Re-start the boiler following the procedure given in these instructions.

Failure of the heating to re-start

Make sure that:

The selector switch (**4**) is set to the right ('winter' position).

The heating flow and return isolating valves (**8**) and (**9**) are open.

The room thermostat and/or timeswitch is properly set to 'call' for heating.

The control knob (**3**) is properly adjusted.

If radiators warm up during summer

Set selector switch (**4**) to the left ('summer' position).

CHANGES AND ALTERATIONS

Change of gas

If the type of gas supplied to the boiler is to change it will be necessary to modify some parts of the boiler (burner, pilot and gas controls).

This work must only be carried out by a qualified installer or service engineer.

Under no circumstances should the type of gas be changed without these alterations to the boiler being made *first.*

Moving the boiler

If the boiler is to be moved for any reason, the work must only be carried, out by a qualified installation engineer – in strict accordance with the installation instructions.