

Wall Hung Condensing Boiler

Paramount

INSTALLATION, OPERATION & MAINTENANCE MANUAL



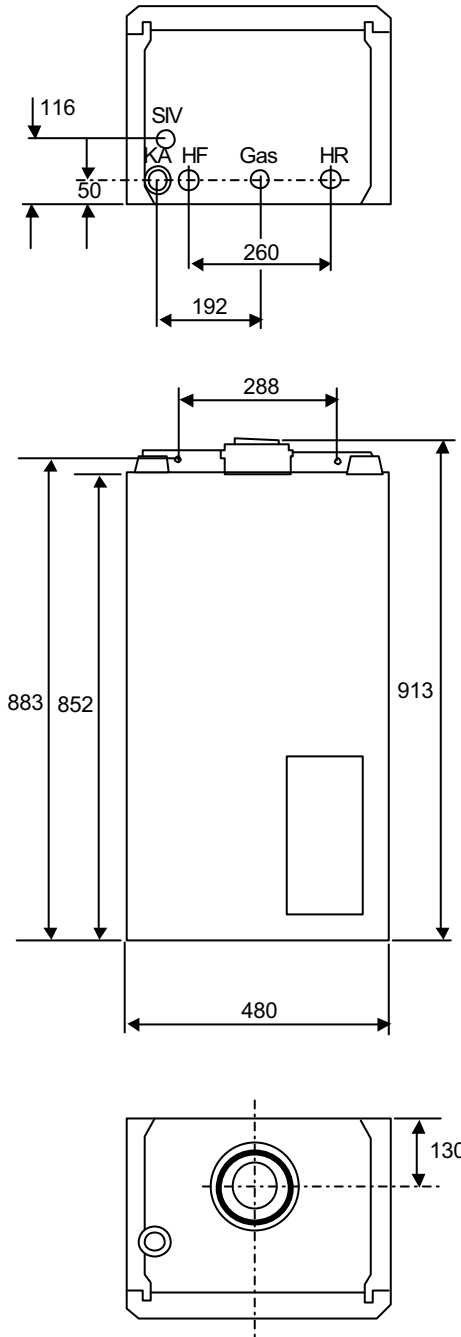
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POTTERTON
COMMERCIAL

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Fig 1 – General Data and Dimensions Paramount 40



Model - Paramount	40
HF – Flow	1"
HR – Return	1"
Gas – Gas Connection	3/4"
SIV – Safety Valve	3/4"
KA – Condensate Drain	Ø25 mm

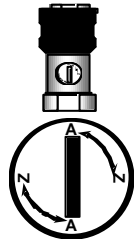
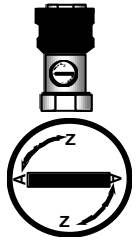
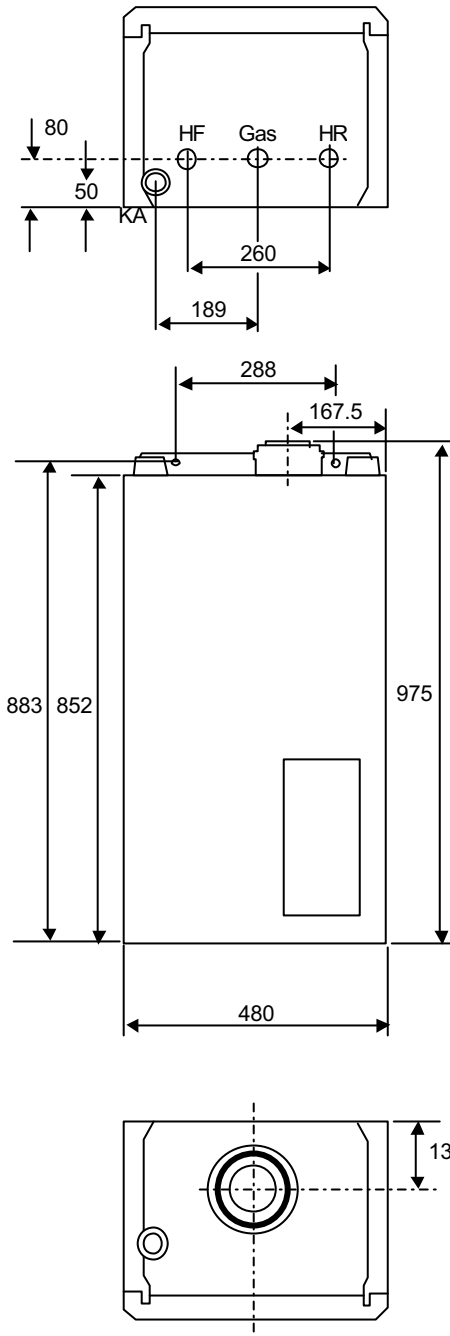
Non Return valve Paramount 40 only	NRV inoperative Flow in any direction	NRV operative Flow to boiler only
		

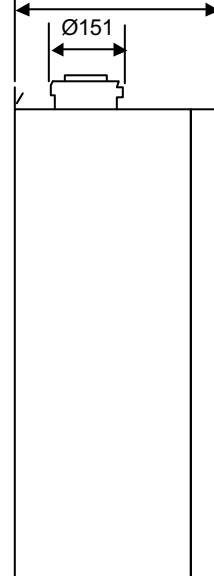
Fig 2 – General Data and Dimensions Paramount 60 & 80



Model - Paramount	60	80
HF – Flow *	1 1/2"	1 1/2"
HR – Return *	1 1/2"	1 1/2"
Gas – Gas Connection	3/4"	3/4"
SIV – Safety Valve **	3/4"	3/4"
KA – Condensate Drain	Ø 25 mm	

* When PARAFIT 60/80 is used, connection size is 1 1/4" for both models
 ** not supplied

Paramount 80 – 541.5
 Paramount 60 – 446.5



NOTE: 75mm side clearance required for access to Control Unit when located next to wall

Table 1 – Technical Data

Model		Paramount 40	Paramount 60	Paramount 80
CE Number		0085BL0514		
VDE Reg No.		137392G		
Nominal Heat Input Range (net)	kW	9.0 – 38.0	14.0 – 58.0	20.0 – 77.0
Nominal Heat Input Range (gross)	kW	10.0 – 42.2	15.5 – 64.4	22.2 – 85.5
Nominal Heat Output Range 80/60°C	kW	8.7 – 36.8	13.5 – 56.2	19.2 – 74.6
Nominal Heat Output Range 50/30°C	kW	9.6 – 39.0	14.9 – 59.5	21.3 – 79.1
Gas Consumption (NG)	m ³ /hr	4.0	6.0	8.0
Gas Consumption (LPG)	m ³ /hr	1.61	2.46	3.21
Flue Temperature 80/60°C	°C	67	64	66
Flue Temperature 50/30°C	°C	50	48	48
Flue Gas Volume (15°C & 1013mbar Pressure)	m ³ /hr	53.4	81.7	108.4
Nominal Gas Inlet Pressure (NG)		20 mbar		
Gas Inlet Pressure (LPG)		Min 35mbar – Max 45 mbar		
CO ₂ for Natural Gas		8.3 – 8.8		
CO ₂ for LPG		9.5 – 10.0		
Ventilation to BS5440	cm ²	155	245	N/A
High Level Ventilation to BS6644	cm ²	N/A	N/A	191.25
Low Level Ventilation to BS6644	cm ²	N/A	N/A	382.5
Hydraulic Resistance at 11°C Δt	kPa	39	25.4	27
Hydraulic Resistance at 20°C Δt	kPa	15	8.4	9.0
Water Flow at 11°C Δt	lit/sec	0.80	1.22	1.67
Minimum Water Flow at 20°C Δt	lit/sec	0.44	0.67	0.92
Cold Feed Size	mm	19	19	25
Open Vent Size	mm	25	25	32
Max Pressure at Boiler Flue Outlet	mbar	1.1		
Combustion Air/Flue Connection Size	mm	125/80	150/110	150/110
Electrical Supply	V/Hz	230/50		
Maximum Electrical Power Consumption	W Amps	60 0.26	75 0.3	105 0.45
Minimum Operating Pressure	Bar	1		
Maximum Water Pressure	Bar	3	4	4
Maximum Flow Temperature	°C	85		
Boiler Weight	kg	58	63	76
Water Content	lit	3.6	4.7	5.8
Boiler Height	mm	852		
Boiler Width	mm	480		
Boiler Depth	mm	407	447	542

General Safety Precautions

Installation of System: Important: The boiler must be commissioned following completion of installation. Operations of an un-commissioned appliance may cause injury to personnel and damage to the boiler unit would invalidate the warranty.

Commissioning must only be carried out by personnel approved and competent to do so. This facility is available from Potterton Commercial Service Offices.

Important: The boiler unit is supplied in accordance with Potterton Commercial quality assurance plan registered to meet the requirements of BSN ISO 9002. A condition of the supply of the appliance for compliance with this is the return of the appliance commissioning report.

Electrical Installation: The electrical installation work must be carried out by a qualified electrician.

Gas Installation: Boiler installation as well as commissioning, servicing and maintenance must be carried out by an approved gas installer. For use with natural gas (G20) nominal supply pressure 20 mbar (LPG option available).

Use

The POTTERTON PARAMOUNT wall hung condensing boiler is available in three sizes with outputs from 40 kW to 80 kW.

They are CE marked for use on Natural Gas (LPG) on open vented systems (min 1 bar) and are suitable for use on sealed systems with a maximum operating pressure of 3 bar (40 kW), 4 bar (60 and 80 kW). Refer to relevant British Standards and Codes of Practice for installation of condensing boilers on sealed systems. The heat exchanger consists of aluminium – silicon alloy, which allows very compact and lightweight boiler construction. The fully pre-mixed burner works in a modulating range between 25% and 100%. Therefore the boiler is adapted to the particular heat requirements of the circuit. The gas/air ratio control ensures uniform CO₂ emissions and low NO_x. This is obtained by comparing the target boiler temperature and actual boiler temperature. If there is a difference between these two values then the internal microprocessor calculates a new fan speed. The change in fan speed in turn changes the combustion chamber static pressure which is monitored by the gas/air ratio controller and the gas rate is adjusted thus maintaining the correct gas to air in the boiler. This ensures that a uniform gas/air ratio is maintained over the total range of the boiler modulation and that constant CO₂ values are achieved.

For optimum utilisation condensing boilers should be operated at a low return temperature. However the PARAMOUNT will also work at design temperatures of 70/50°C in the condensing mode as the return

water temperature is below dew point (dew point is 53°C at 8.5% CO₂).

They fulfil EN 483 and EN 677, Type C.

Installation types B₂₃, B₃₃, C_{13x}, C_{33x}, C_{43x}, C_{63x}.

Emission value group G 61. Category II_{2H3P}.

Installation

Before starting work a risk assessment should be carried out in the boiler house and its access to ensure a safe installation and working environment. Any person installing or working on the boiler **must** be qualified and attention is drawn to the mandatory requirements of C.O.R.G.I. registration for all gas installers.

Manual Handling:- Any person or persons moving or lifting the boiler or any part thereof should be trained in manual handling techniques and if necessary use suitable lifting equipment to reduce the risk of injury to themselves or other people.

The installation should comply with relevant British Standard Specifications, Codes of Practice and current Building Regulations, together with any special regional requirements of the Local Authorities, Gas Undertaking and Insurance Company. All electrical wiring must comply with I.E.E. Regulations for the Electrical Equipment of Buildings. The installation of the boiler must be in accordance with the relevant requirements of:

Health and Safety at Work Act 1974

Building Regulations 2000

Electricity at Work Regulations 1989

Management of H&S at Work Regulations 1998

Manual Handling Regulations 1992

Model Water By-Laws 1986

BS 7671: 1992 – Requirements for Electrical Installations, IEE Wiring

Regulations Sixteenth Edition

BS 5440: 2000: Part 1 - Specifications for Installation of Flues

BS 5440: 2000: Part 2 – Specifications for Installation of Ventilation for Gas Appliances.

BS 6644: 1991 – Installation of Gas Fired Hot Water Boilers for inputs between 60 kW and 2MW.

BS 7074: 1989: Part 2 – Application Selection and Installation of Expansion Vessels and Ancillary Equipment for Sealed Water Systems.

BS 6880: 1988 – codes of Practice for Low Temperature Hot Water Systems.

EN 677: 1997 – Gas Fired Central Heating Boilers for Condensing Boilers with a nominal heat input not exceeding 70 kW.

CP 342:2 – Centralised Hot Water Supply

Gas Safety (Installation and Use) Regulations 1998.

IM/II – Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters

IGE/UP/1 – Soundness Testing and Purging Procedure for Non Domestic Installations.

IGE/UP/2 – Gas Installation Pipework, Boosters and Compressors for Industrial and Commercial Premises.

Manufacturer's notes must not be taken in any way as over-riding statutory obligations

C.E Approvals: The CE approval symbol means that the PARAMOUNT fulfils the basic requirements of the Gas Equipment Directive 90/396/EEC, the Low Voltage Directive 73/23/EEC as well as Directive 89/336/EEC (Electromagnetic Compatibility EMC) of the Council for Unification of Legal Regulations of the Member Countries. The PARAMOUNT boiler fulfils the basic requirements of the Boiler Efficiency Directive 92/43/EEC for condensing boilers.

Corrosion Protection/Frost Protection

The combustion air must be free of corrosive substances – particularly vapours containing fluoride and chloride such as are contained in solvents and cleaning agents, propulsion gases etc. When boilers are connected to under floor heating systems with plastic piping, which is not impermeable to oxygen, heat exchangers must be used to separate the systems.

System Water Quality

To ensure the boiler heat exchanger remains in good condition it is essential to condition and monitor the system water to the following criteria:

Water hardness: if the system fill water has a hardness in excess of 250 mg/l (17.5°Clark) the water should be softened prior to filling the system to ensure that excessive scaling does not occur within the heat exchanger.

Water acidity: the system fill water should have a pH value between 7 – 8.3 to ensure corrosion of the heat exchanger does not occur.

Copper ions: the copper content of the system water should be less than 0.05 mg/l. If large quantities of copper are present red and black copper oxide Cu₂O and CuO and grey/green copper carbonate, CuCO₂ will be produced. Copper will corrode any iron and aluminium within the system. A special water treatment company should be consulted if in doubt.

Use of Inhibitors

If a requirement for inhibitors exists ensure that the pH value of the heating water does not increase to above a value of 8.3 pH. Also observe specifications of additive supplier. When using tap water with hardness range above 3 as well as with heating systems with large water volumes, a decision should be made individually regarding the use of hardness stabilising agents. Recommendations can be obtained from POTTERTON.

Combustion Air

For conventional flue operation of the PARAMOUNT, ensure that the installation room has a sufficiently dimensioned opening for combustion air. Inform the operator of the system that it is not permissible to obstruct or plug the opening and that it is necessary to keep the connection fitting for the combustion air at the top of the PARAMOUNT free from obstacles.

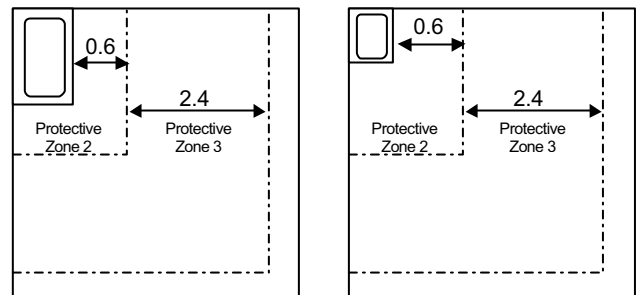
Clean Combustion Air: Ensure that the PARAMOUNT is installed only in rooms with clean combustion air. Ensure that pollen or similar cannot penetrate through the inlet openings into the inside of the equipment under any circumstances!

PARAMOUNT in Loft Space: If the PARAMOUNT is used as a loft centre, POTTERTON recommends installing a water catch pan below the hot-water tank.

Operation in Shower Room: When installed in shower rooms, ensure that the following conditions are fulfilled:

1. Balanced flue operation
2. To maintain protective system IPX4D
 - Operate only with room control module RRG in living area or
 - Operate with heating circuit module HKM (without EMS timer) with DSU timer in living areas.
3. All incoming and outgoing electric cables must be installed through and restrained by pull relief glands. Tighten the glands tightly so that water cannot get into the inside of the housing!

Clearances for Paramount in bath and shower rooms

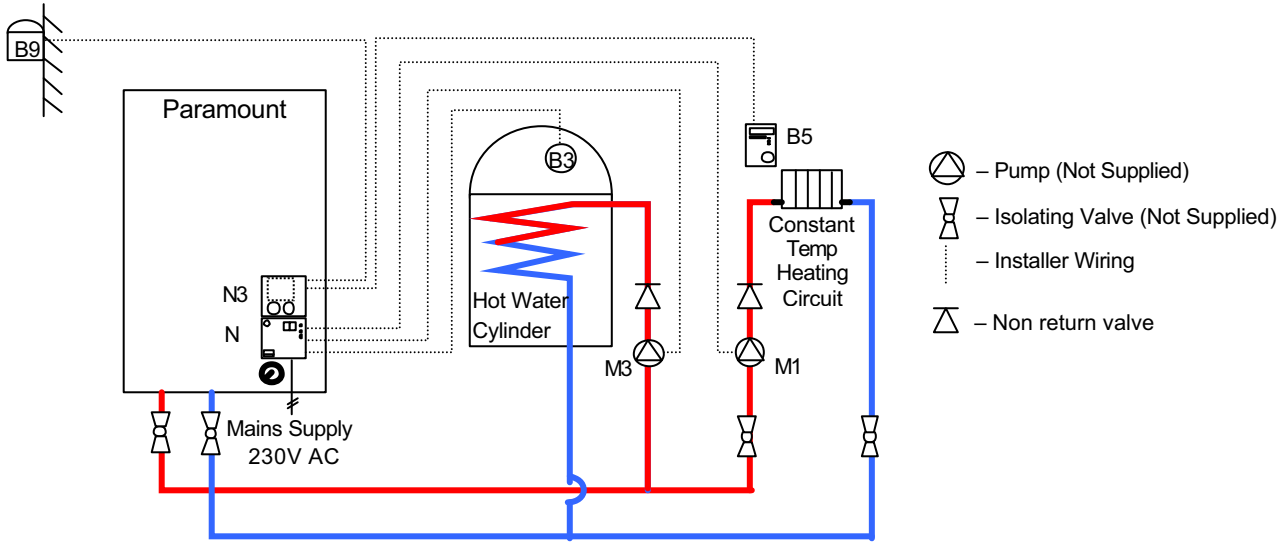


The PARAMOUNT wall mounted boiler fulfils the protection Standard IPX4D (protection range 2) according to VDE 0100, Part 701 and may be

installed in protective zone 2 (see also note above "Operation in wet rooms"). In protection zone 1 and 2, only permanently installed lines are permissible according to VDE 0100.

Applications and Installation Details

Application example 1a 1 pumped heating circuit (CTC) with remote room control module RRG (B5) or with boiler mounted control (Hydraulic system "2") HKM (N3) & EMS (Grasselin Time Clock), including hot-water tank temperature control WWF tank sensor

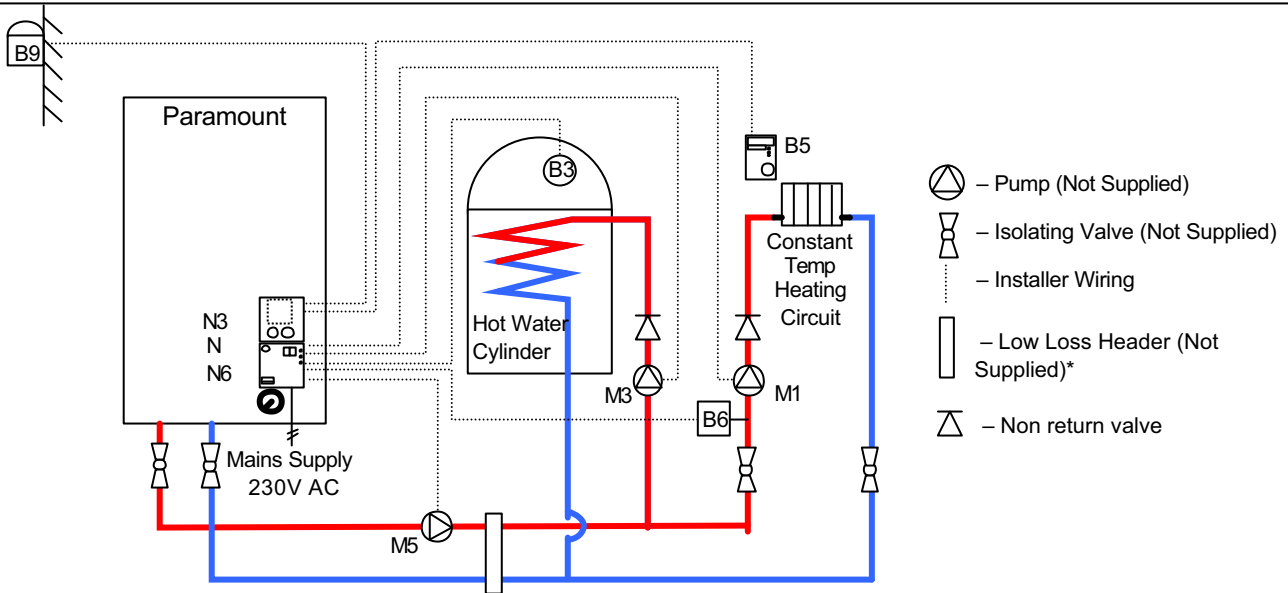


- B3 – Tank Sensor WWF (QAZ36)*
- B5 – Room Control Module RRG (QAA73)*
- B9 – Outdoor Temp Sensor (QAC34)
- M1 – Heating Pump (CTC)
- M3 – Hot Water pump
- N – Control Module
- N3 – Heating Circuit module HKM

* Available Optional Extra

- Please note that when a RRG unit is used then the HKM (supplied with boiler) unit must be disconnected.

Application example 1d 1 pumped heating circuit (CTC) with remote room control module RRG (B5) or with boiler mounted control (Hydraulic system "2") HKM (N3) & EMS (Grasselin Time Clock), including hot-water tank temperature control WWF, with primary loop (or hydraulic switch for Under floor heating).

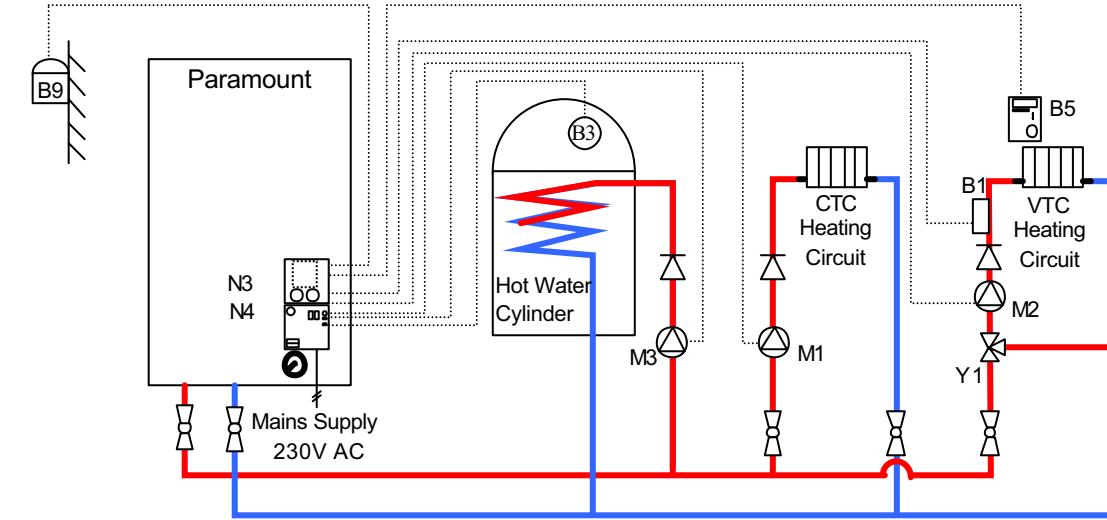


- B3 – Tank Sensor WWF (QAZ36)*
- B5 – Room Control Module RRG (QAA73)*
- B9 – Outdoor Temp Sensor (QAC34)
- M1 – Heating Pump
- M3 – Hot Water pump
- M5 – Primary Pump
- N3 – Heating Circuit module HKM
- B6 – Flow Sensor QAD36*
- N – Control Module
- N6 – Temperature Module CITF* (for B6)

* Available Optional Extra

- Please note that when a RRG unit is used then the HKM (supplied with boiler) unit must be disconnected.

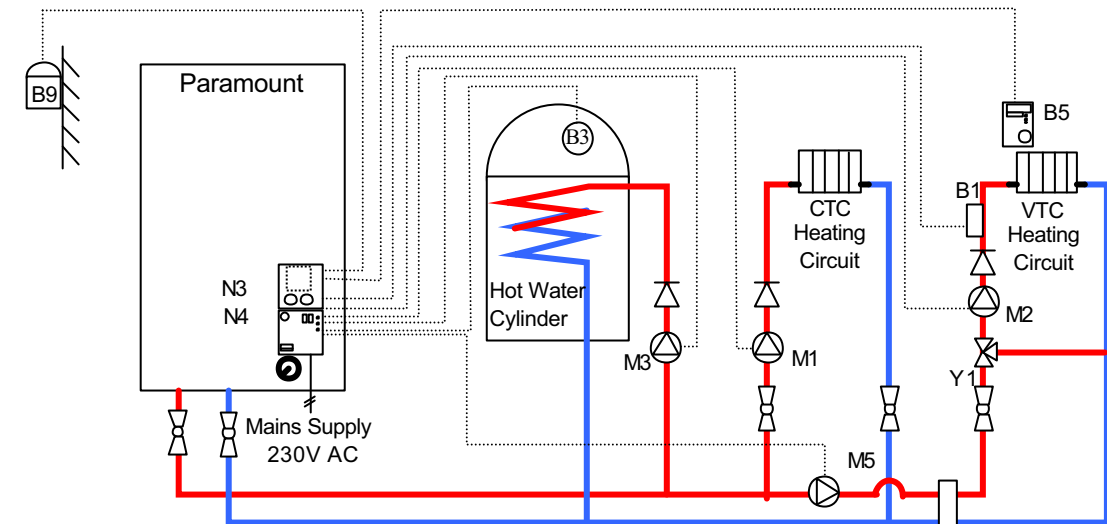
Application example 2a (Hydraulic system "50") 1 constant temperature circuit and one compensated circuit with remote room control module RRG (B5), including hot-water tank temperature WWF
 Alternatively: 1 CTC with heating circuit module HKM & EMS and 1 VTC with room control module RRG
 Alternatively: VTC with zone control ZR EC1/2 (N7, K1)



- ⊗ – Pump (Not Supplied) ⌵ – Isolating Valve (Not Supplied) - - - - - Installer Wiring ⚠ – Non return valve
- B1 – Flow Sensor QAD 36* M1 – CT Pump N3 – Heating Circuit module HKM K1 – Bus module CIB*
- B3 – Tank sensor QAZ 36* M2 – VT pump N4 – Mixer Module CIM*
- B5 – Room Control Module RRG* M3 – Hot water pump Y1 – 3-way valve
- B9 – Outdoor temp Sensor QAC 34 N – Control Module N7 – Zone controller ZR EC1/2*

* Available Optional Extra
 • Please note that when a RRG unit is used then the HKM unit must be disconnected.

Application example 2b (Hydraulic system "50") 1 constant temperature circuit and one compensated circuit with remote room control module RRG (B5), including hot-water tank temperature WWF
 Alternatively: 1 CTC with heating circuit module HKM & EMS and 1 VTC with room control module RRG
 Alternatively: VTC with zone control ZR EC1/2 (N7, K1)



- ⊗ – Pump (Not Supplied) ⌵ – Isolating Valve (Not Supplied) - - - - - Installer Wiring □ – Low loss header ⚠ – Non return valve
- B1 – Flow Sensor QAD 36* M1 – CT Pump N4 – Mixer Module CIM* N3 – Heating Circuit module HKM
- B3 – Tank sensor QAZ 36* M2 – VT pump Y1 – 3-way valve N – Control Module
- B5 – Room Control Module RRG* M3 – Hot water pump N7 – Zone controller ZR EC1/2*
- B9 – Outdoor temp Sensor QAC 34 M5 – Primary Loop pump

* Available Optional Extra
 • Please note that when a RRG unit is used then the HKM unit must be disconnected.

Explanations on Hydraulic Diagrams

For certain applications it is necessary to set the boiler controller to the correct hydraulic setting, below are the settings required.

Application example 1a:

- Hydraulic system "2" (Factory Preset)

Application example 1d:

- Hydraulic system "2" (Factory Preset)
- Set parameter 618 to 6
- Connect flow sensor B6 to the temperature module C1TF.

Header pump M5 (exit M5):

- Set Parameter 615 to 9 and parameter 632 as follows: b2 = 1, b3 = 1
 - Connect primary loop pump to exit M5
- Connect pump for CTC to M1

Application example 2a:

- Set hydraulic system to "50" ⇒ Set Parameter 552 to 50
- Alternatively, 1 mixer circuit with zone control (M5)
- Set hydraulic system to "66" ⇒ Set Parameter 552 to 66

Application example 2b:

- Set hydraulic system to "50" ⇒ Set Parameter 552 to 50
- Header pump M5 (exit M5):
- Set parameter No 615 to 9 and parameter 632, b1 = 1

Special Applications

For other applications please contact the Potterton Commercial Technical department who will be pleased to discuss any requirements you have.

INSTALLATION

Connecting Heating Circuit: Connect heating circuit to boiler flow and boiler return with flat sealing threaded fittings. Welded or brazed connection is not permissible (guarantee void). We recommend installation of a filter in the heating return. On old systems, the entire heating system should be flushed thoroughly before installation. Install isolation valves in flow and return.

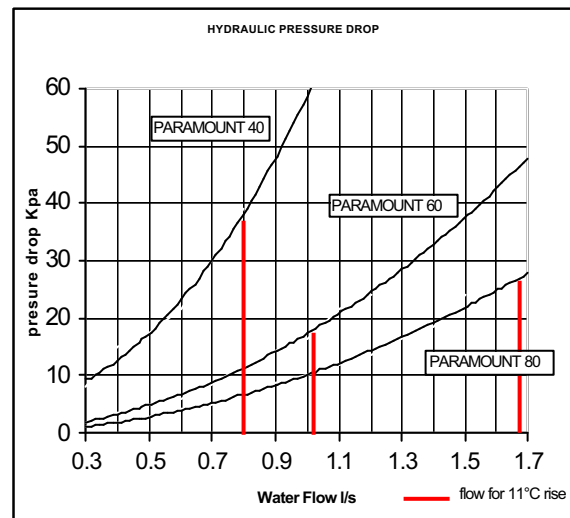
Safety Valve: Ensure that the blow-out pipe for the safety valve is installed so that a pressure increase, when the safety valve actuates, is not possible. The pipe should not lead outside, the outlet must be free and observable. It must be possible for any heating water escaping to drain without danger e.g. through a trap.

Sealing and Filling the System: Fill the heating system through the return on the PARAMOUNT. For this purpose, open the non-return valve (PARAMOUNT 40 ONLY, SEE Fig.1) after filling, move the non-return valve back into the operating position. Check for leakage (max. water test pressure 3 bar).

Condensate: It is only permissible to drain the condensate directly into a domestic sewer system when the system consists of corrosion-resistant materials (e.g. PP pipe, stoneware etc.). If this is not applicable, it is possible to install the POTTERTON condensate treatment tank. It must be possible for the condensate to drain freely into a funnel. A trap must be installed between the funnel and sewer system. Root the condensate hose from the PARAMOUNT out of the boiler on the left, next to the heating flow.

Caution: Before commissioning, fill the condensate drain in the boiler with water. For this purpose, fill 0.25L of water into the flue fitting before installing the flue pipe.

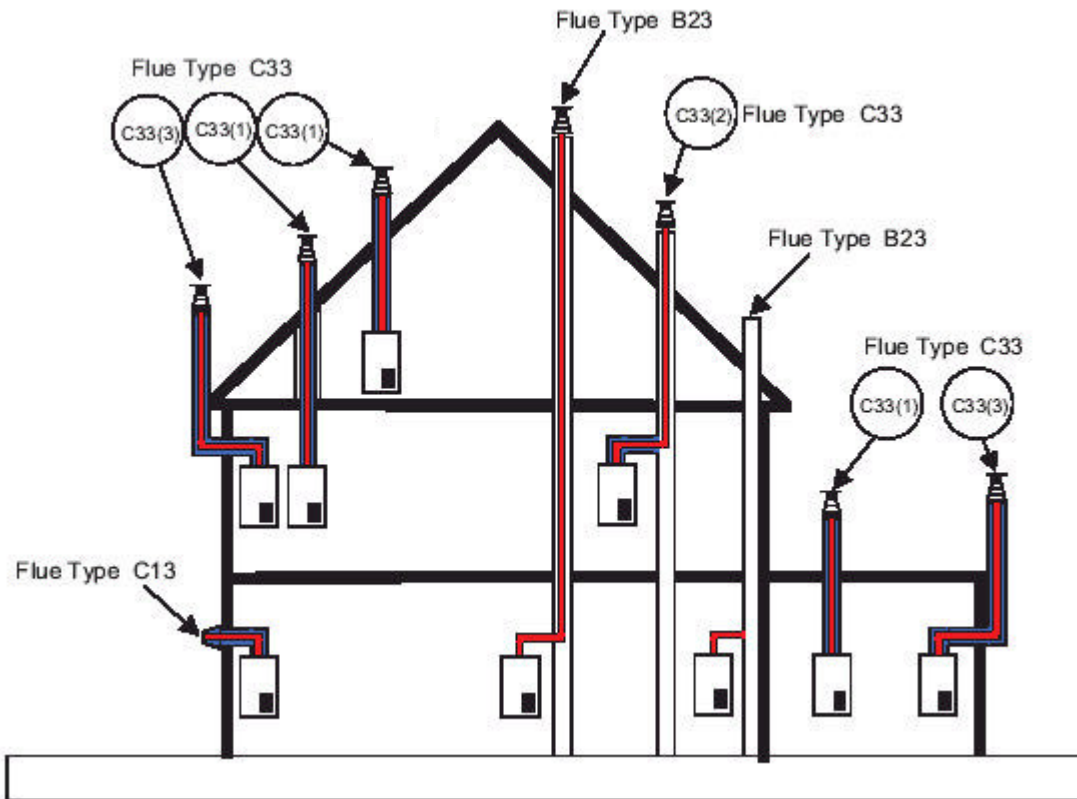
Fig 3. Hydraulic resistance.



FLUE CONNECTION

The flue pipe must be installed for flue temperatures below 120°C for operation of the Paramount as a condensing boiler (Flue Type B). Observe the installation instructions, which are included with the flue pipe when installing.

Fig 4. Paramount Flue Options



Flue Type	Paramount 40			Paramount 60			Paramount 80		
	Flue Size	Max Flue Length*	Max. No of Bends (90°)	Flue Size	Max Flue Length*	Max. No of Bends (90°)	Flue Size	Max Flue Length*	Max. No of Bends (90°)
C13 (Balanced Flue)	80/125	10(5)	2	110/150	5(5)	2	110/150	5(5)	2
C33(1) (Concentric Vertical)	80/125	13	0	110/180	22	0	110/180	13	0
	110/160 ²	20	0				120/180 ²	20	0
C33(2) (Concentric Vertical)	80/125	15(3)	2	110/180	24(3)	2	110/180	15(3)	2
C33(3) (Concentric Vertical)	80/125	10(3)	2	110/180	13(2)	2	110/180	9(3)	2
B23 (Conventional Flue)	80	20(3)	3	110	25(3)	3	110	16(3)	3

* This is the maximum flue length, the allowable horizontal run within total flue length is shown in brackets.

For lengths longer than specified in the table please contact the Technical Department for suitability

Note: Flue sizes shown for the Concentric Vertical Flue are adapted sizes for flues supplied by Potterton Commercial. For flues supplied by other manufacturers, please refer to technical data for standard spigot sizes.

² not supplied by Potterton

C13 the maximum flue length shown may give an output reduction of 5% with the maximum flue shown.

Note: BS 5440 states a suitable guard should be provided whenever the appliance terminal is fitted less than 2 m above ground, above a balcony or flat roof

Additional Bends -

Reduction of total length of flue pipe by:

- per 87° elbow = 1.00 m
- per 45° elbow = 0.50 m
- per 30° elbow = 0.35 m
- per 25° elbow = 0.20 m

Existing Chimneys: If a chimney, which was previously used for oil or solid fuel furnaces, is used for installing a concentric flue gas pipe, it is necessary for the chimney to be thoroughly cleaned.

Installation: The flue gas pipe must be installed with a slope from the PARAMOUNT so that condensate from the flue gas pipe can drain into the central condensate sump in the PARAMOUNT.

The minimum slope is as follows:

- Horizontal flue pipe: min. 3°

Height above Roof: Refer to relevant British Standards and Code of Practice.

GAS CONNECTION

Factory Settings: The PARAMOUNT is set at the factory to a maximum heat load either for

- G20 gas (natural gas type H, Wobbe index $WoN = 15.0 \text{ k Wh/m}^3$) or
- optional extra PARAKLPG.

LPG Version: In case error message "133" appears (Table 13, Page 54) the cause can be gas error message "133" insufficiency. In this case check the LPG gas tank.

Supply Pressure: The supply pressure should be between the following values:

- for natural gas - min. 17 mbar - max. 25 mbar
for LPG - nominal 37 mbar

The supply pressure should be read off as the flow pressure at the measuring point on the gas valve. The PARAMOUNT should never be put into operation at supply pressures outside the specified range. Advise the gas company if insufficient pressure available.

CO₂ Content: During initial operation and regular maintenance of the PARAMOUNT measure the CO₂ content in the flue gas.

The CO₂ content should be as follows:

- with natural gas: between 8.3% and 8.8%
with LPG: between 9.5% and 10.0%

Exceptionally high CO₂ values can lead to incorrect combustion (high CO values) and damage to the burner. CO₂ values which are too low can lead to ignition problems. The CO₂ value can be set by adjusting the gas pressure on the gas valve.

ELECTRICAL CONNECTION

Electrical Connection (General):

Supply power 1/N/PE

AC230 V + 10% - 15%, 50 Hz max. 140 W, fuse: 6A

Observe the IEE and local regulations

The electrical connection should be made so that the polarity cannot be mixed up and is connected correctly.

Electrical Supply: A 230V 50 Hz AC single phase electrical supply is required. The incoming mains supply should be terminated via a double pole fused isolator to the boiler, see wiring diagram for wiring details. A fused supply is required. The boiler has a 6.3A internal fuse.

Cable Lengths: Cables for sensors of bus cables do not carry mains voltage, but low voltage. They should not be put parallel to mains wires (this may

lead to disturbances) otherwise screen cable should be used.

Maximum lengths of wires for all sensors:

- Copper wires up to 20 m 0.6 mm dia
- Copper wires up to 80 m 1 mm²
- Copper wires up to 120m 1.5 mm²

Inside the boiler, all cables have to be laid in the cable clips and when led put of the boiler, fixed in the strain clamps.

Circulation Pumps: The electrical permitted load for each pump output is $I_{Nmax} = 1A$.

If pump has higher load a contactor should be used.

Fuses: Fused in control unit:
F1 – T 6.3 H 250; line

Connecting Sensors/Components: Observe wiring diagram. Install and connect optional extras according to the instructions enclosed. Complete supply power connection. Check protective earth. Connect optional extras according to wiring diagram.

Outdoor Temperatures Sensor (Supplied): The outdoor temperature sensor is included in a separate package. Connect according to wiring diagram.

Replacing Wires: All connection wires apart from the mains connection must be replaced when necessary with correct connection wiring. When replacing the mains cable, only cables Type H05VV-F complying with BS6500.

Contact Protection: After opening the PARAMOUNT, refasten, the covering parts to be screwed on with the appropriate screws to ensure that no one can touch conductive parts on the inside

START-UP AND CHECK LIST

Start Up: Before commissioning the boiler read the operating instructions and observe the “check list” in the table below!

Initial operation should be accomplished by a heating engineer who advised the user regarding handling and operation of the unit and its safety equipment and submits to the operator the operating instructions for the heating system.

Important Notes: These instructions should always be kept in the boiler room where they are readily available.

For optimum fault free operation:

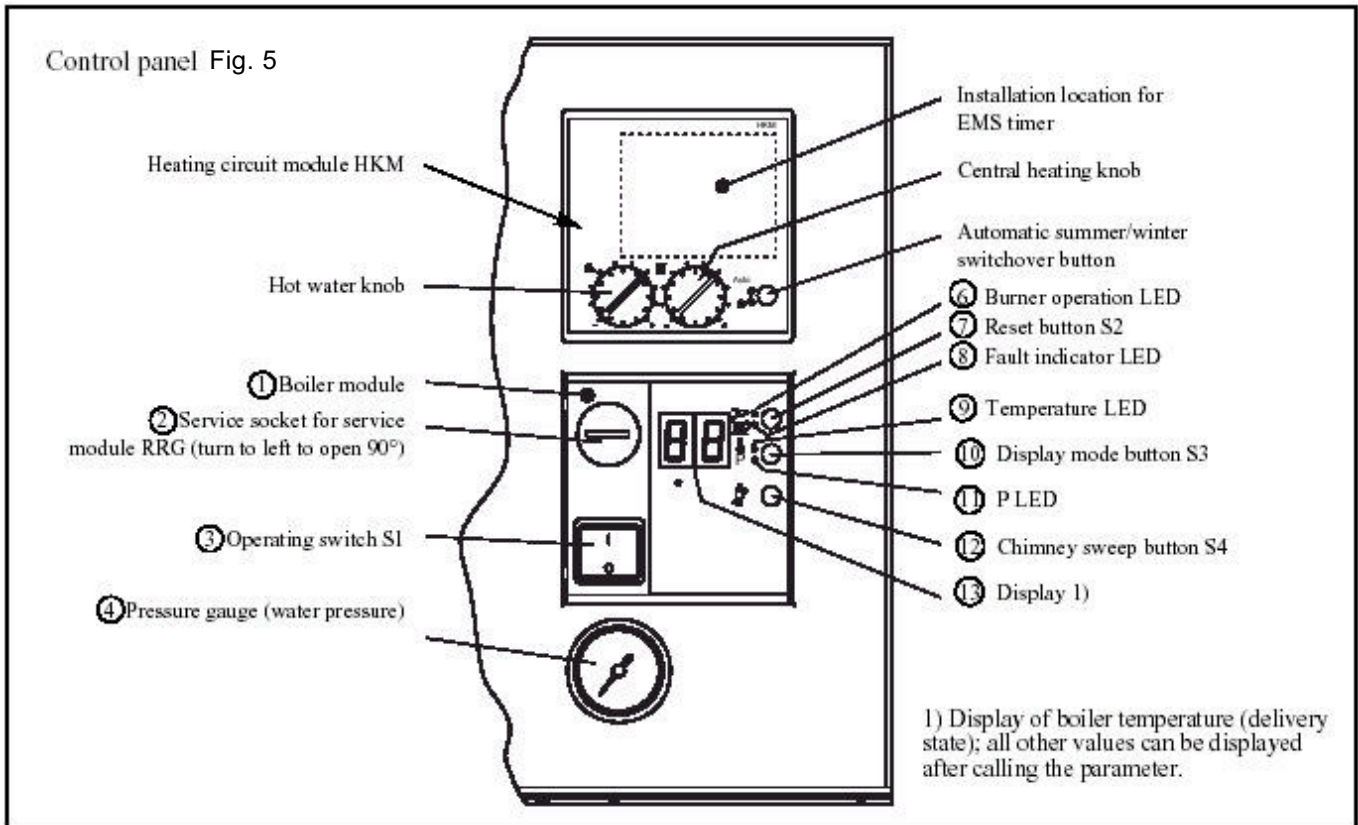
- set hydraulic system correctly (parameter 552)
- refer to wiring diagram (page 8)
- set the suitable heating curve, room control RRG is used or a HKM with a room thermostat.

Table 2 – Check List for Start Up and Faults

Problem	Cause	Remedy
Heating system does not start up	<ul style="list-style-type: none"> - Main switch for mains power not switched on - Operating switch (3) on control panel on PARAMOUNT switched off - No heat requirement present - Wrong day/time on RRG/EMS (e.g. daylight savings time) - Wrong operating mode set on room control module. - Gas shut-off device CLOSED - Gas connection pressure too low. - External mains fuse tripped - Fuse F1 in BMU control module defective 	<ul style="list-style-type: none"> ◇ Switch on ◇ Switch on ◇ On <u>systems with outdoor sensor</u>: it is too warm outdoors for heating (heating curve) ◇ Hot water circuit not activated ◇ Correct day and time (see instructions for RRG/EMS). ◇ Check operating mode (AUTO Manual or Ready). ◇ Open gas cock ⊖ Check gas connection pressure ⊖ Check mains fuse for the boiler. ⊖ Replace fuse F1
Insufficient Heat <ul style="list-style-type: none"> - For operation <u>without</u> outdoor temperature - For operation <u>with</u> outdoor temperature sensor No heating program from RTW or EMS Hot water not heated sufficiently	Boiler temperatures heats up only to approx. 55°C PARAMOUNT in night set-back mode Heating curve not “matched” to personal requirements. Jumper at X6, terminal N5 and P2 not removed Hot water temperature set too low. Resistor R3 not removed at X6, B3	<ul style="list-style-type: none"> ◇ Always operate PARAMOUNT boiler with outdoor temperature sensor! ◇ Check the heating program ◇ Have you pressed the Presence button (RRG only) ◇ Set room temperature knob on RRG or parameter “P 1” on Control Module higher. ◇ Adjust steepness of heating curve as required ⊖ Remove jumper, see wiring diagram (only RAV/RTW/RTD or EMS/DSU) ◇ Check hot water temperature on heating circuit module HKM or on RRG and set higher if required. ⊖ When a hot water tank is connected, resistor R3 must be removed!
Flashing numbers on controller BMU	Various causes depending on error message	⊖ Observe error message in Error message table (Table 11, p. 34)
No problems with operation of PARAMOUNT boiler	Perform maintenance/cleaning once a year	◇ We recommend concluding a service contract with Potterton Commercial.

⊖ This work should always be left to a heating engineer.

CONTROL PANEL



Commissioning



- Switch on the mains switch (3) on the boiler module (1). When sufficient water pressure is present the PARAMOUNT can start operating.
- Set the central heating knob of the HKM to the desired boiler temperature value (without) outdoor temperature sensor) or to the desired room temperature value (if an outdoor temperature sensor is connected). While turning the knob the set point is displayed.
- Set the hot water knob to the desired hot water temperature value. While turning the knob, the set point is displayed.
- If the summer/winter switch is set to “Automatic” or “Winter”, the PARAMOUNT starts operating in the heating or DHW mode. If it is set to “Summer” the PARAMOUNT starts operating in the DHW mode.

Manual summer	Manual Winter	Automatic mode
LED “Auto” ○	LED “Auto” ○	LED “Auto” ●
LED “Ø” ○	LED “Ø” ●	LED “Ø” ○ or ●



- The current boiler temperature is indicated on the display (13) and the green burner operating LED (6)

illuminates when the burner is in operation.

Note: If an outdoor temperature sensor is not connected the PARAMOUNT is heated up to a boiler temperature of approx. 55°C.

Fault Display (8)



- If the burner does not start up the red fault indicator LED (8) and display (13) flash with the error code

Reset Button (7)



- The PARAMOUNT can be reset with the reset button (7) and the burner is then ready for a new start attempt. After a number of unsuccessful start attempts inform a heating engineer depending on the error code present.

Display Mode Button (10)



- With the display mode button (10) the values (parameters, actual values or nominal values) listed can be checked and changes made.

**CO₂ COMMISSIONING AND SETTING /
 CONVERSION TO OTHER TYPES OF GAS**

Gas/Air Ratio Control: With the gas/air ratio control for the PARAMOUNT, the gas supply is adapted to the air supply, which is factory set. Adjustment should be accomplished at maximum and minimum nominal heat input, called full load and minimum load below.

Changing over from LPG to Natural Gas or Vice Versa: The type of gas for the PARAMOUNT boiler should be changed only by an authorised gas installer. To convert, replace the gas injector (Table 5) and adjust the CO₂ content by adjusting the injector pressure on the gas valve. The CO₂ content should be between the following values at full load as well as at minimum load:

CO₂ content (natural gas): 8.3% - 8.8%

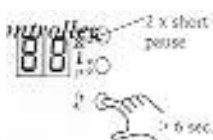
CO₂ content (LPG) 9.5% - 10.0%

Put the sticker with the gas (provided with the kit) on the gas pipe.

Adjusting and Checking the Values: Operate the PARAMOUNT in the **controller stop mode** to adjust and CO₂ values.

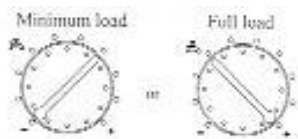
Controller Stop Mode (manual adjustment of burner capacity): In the controller stop mode, the burner can be set to all loads within the modulation range. Check the adjustment of the CO₂ values at full load and minimum load. **Activate the controller stop mode on the boiler module (1)**

Activating Controller Stop Mode:



Hold the "Chimney Sweep" button (12) down for **more than 6 sec.** until the display "Fault" (8) **flashes in red** at intervals (2 x short and pause). The current, relative burner load then appears on the display (0=min; 100 = max.) whereby the number 100 is output in the form of a 1 and 00 in sequence.

Setting Controller Stop Mode 1st possibility, on heating circuit module HKM:



After activating the controller stop mode on the boiler module, adjust the burner capacity on the HKM with the hot water control.

Left Stop: Minimum load (-)

Right Stop: Full Load (+)

New settings are taken over immediately by the BMU.

Important: It is always necessary to adjust both settings (full load and minimum load)! After adjusting the minimum load, check the full load again.

On Room Control Module RRG: Not Possible: It is not possible to activate and adjust the controller stop mode on the RRG! However, the display can be called up at the RRG info level.

Completing CO₂ Adjustment: To complete the CO₂ adjustment, deactivate the controller stop mode by pressing the "Chimney Sweep" button (12) > 1 sec. and then releasing.

2nd Possibility, on boiler module:



Adjustment of the full load and minimum load on the boiler module can be accomplished with the following steps:

100 does not appear on display (13):

To set the max. boiler load momentarily press the "Display Mode" button (10). The value "100" appears on display (13) i.e. the burner (fan) is now running at the setting for the max burner load.

GAS VALVE Setting

Full Load Setting On Gas Valve Then set the gas valve to full load adjustment screw for full load, (Fig.9) (see guide value For CO₂).

Minimum Load Setting:



To adjust the minimum boiler load momentarily press the "Chimney Sweep" button (12). The value "0" appears on the display (13) i.e. the burner (fan) is now running at the setting for min. burner load. Then, the minimum load can be set on the gas valve (adjustment screw for minimum load) (see guide value for CO₂). Then check the full load, if the gas valve has been readjusted, check the minimum load again!

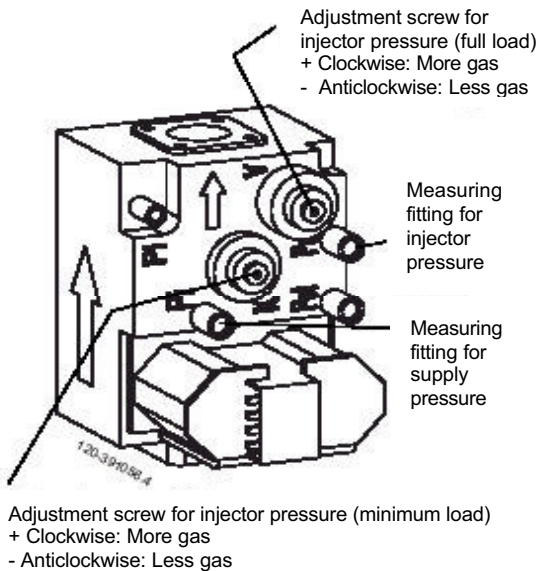
CO₂ Adjustment



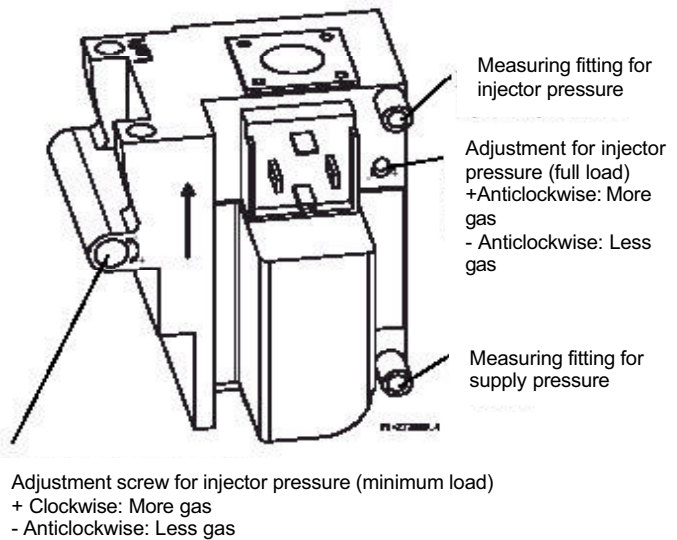
To complete the CO₂ adjustment, deactivate the controller stop mode by pressing the "Chimney Sweep" button (12) > **1 sec** and then releasing.

Fig. 6 gas valve (injector pressure settings can be made with 2.5 mm Allen key) (not provided)

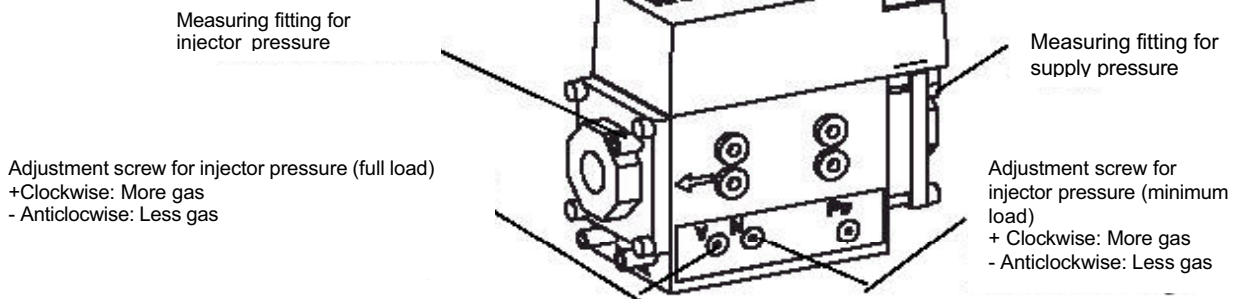
Landis & Staefa Co. VDU (PARAMOUNT 40)



Kromschroder Co. CG 10...No.847 55 366
 (PARAMOUNT 60)



Fabr. Kromschroder CG 120 Ro1-Vt2WF1
 (PARAMOUNT 80)



GUIDE VALUES FOR INJECTOR PRESSURE

Guide Values for Gas Flow Rate Injector Pressure and CO₂ Content: The values given in Table 3 are guide values. It is important that the gas quantity is set via the injector pressure so that the CO₂ value is within the specified values.

Boiler Control via 0 – 10V DC input signal (relay clip-in module CISP): The boiler is provided with an input for a 0-10V DC signal to control the boiler temperature of the boiler output directly.

- to activate this function, set param 618 to 4 or 5 (see parameter for details)
- For a proper use of this input, disconnect all external controls from the boiler (e.g. room control RRG) and set the heating curve to “___” (parameters 532 and 533 see parameter listings).

NOTE: If another relay clip-in is installed (e.g. CIR, CIST, CITF), the CISP must be taken out and Parameter 618 must then be programmed according to the installation manual of the specific clip-in module.

Table 3 Guide Values for Injector Pressure (full load)

Model		Paramount 40	Paramount 60	Paramount 80
Nominal heat input	kW	9.0 – 38.0	14.0 – 58.0	20.0 – 77.0
Nominal heat output	80/60°C kW	8.7 – 36.8	13.5 – 56.2	19.2 – 74.6
	50/30°C kW	9.6 – 39.0	14.9 – 59.5	21.3 – 79.1
Injector for:				
Natural Gas E (G20)	mm	7.8	8.5	7.8
LPG (propane)	mm	5.8	6.2	6.2
Type of gas:		Guide values for injector pressure**		
G20 (15,0)*	mbar	6.0 – 6.6	6.0 – 7.0	11.0 – 12.5
Propane	mbar	6.0 – 6.6	8.0 – 9.0	12.0 – 13.5

* Values in parenthesis = Wobbe index W_{ob} in kWh/m³

** At pressure at end of boiler 0 mbar, 1013 hPa, 15°C the CO₂ content should be

- between 8.3 and 8.8% for natural gas
- between 9.5 and 10.0% for LPG

OPERATING MODES

Table 4 Operating modes (operation with outdoor temperature sensor)

Operation With	Room Temperature Setting	Hot Water Temperature Setting	Heating Program
Room control module RRG ¹⁾	On room control module RRG	On room control module RRG	On room control module RRG
Heating circuit module HKM ²⁾ with timer	On heating circuit module HKM heater control	On heating circuit module HKM hot water control	On EMS or DSU timer
Heating control module HKM with room thermostat	On room thermostat RAV, RTD or RTW (HKM heater control must be set to max. position)	On heating circuit module HKM hot water control.	On room thermostat RAV, RTD or RTW

- 1) On mixed heating systems (application example 2) the room temperature setting applies for the constant and variable temperature circuit.
- 2) On separate heating systems (application example 3) the room temperature setting on the heating circuit module HKM applies for the CT heating circuit. The room and hot-water temperature setting on the room control module RRG applies for the VT heating circuit.

CHECKING VALUES

Calling Parameter Values - Proceed as follows to obtain the various parameter values (see Fig. 5 "Control Panel").

Entering the Display Mode - The display mode can be entered by pressing the display mode button (10) for a longer period (>3 sec) (Display (13): "A"). Continue to hold down the button to proceed to the various display levels b, C, d, P and then A again. Release the button in the desired display level (A, b, C, d, P).

Selection and Display of Individual values or Parameters - It is possible to switch between the various values/parameters (0 to max. 7) In the various display levels (A, b, C, d, P) by then momentarily pressing the display mode button (10). Approx. 2 sec. after selecting the parameter the current value is displayed.



Changing Parameters (only P0 to P6) - It is only possible to change parameters (P0 through P6). For this purpose wait until the value for the parameter flashes on the display (13). Basic procedure:

- (+) To increase value (+): Press display mode button (10) a number of times (<3 sec).
- (-) To decrease value (-): Press chimney sweep button (12) a number of times (<3 sec.)
- Store value (Enter): Press display mode button (10) for long period >3 sec.
- Reject value (Esc)

For confirmation "P 0" and the newly set value appears alternately in the display (13). The new value set is taken over by the control centre only **after it is stored!**

Operating Note: Complete changes/settings for values within 25 sec. Otherwise the BMU automatically returns to normal operation. This display (13) automatically returns to the boiler temperature ("A1" after 8 min)

When the HKM is fitted please note that P1 & P2 are not displayed and are altered automatically via the HKM unit.

DISPLAY AND PARAMETER VALUES**Table 5:** Display and Parameter values for BMU control centre**NOTE:** Parameters in the groups "A, b, C & d" can only be displayed, parameters in group "P" can be altered.

Display	Description	Adjustment Range	(Units)	Display 1)	
				Temperature	P
General ²⁾					
A0	Fault diagnosis code (system) ³⁾		(Code. No.)	*	* ⁴⁾
A1	Boiler temperature (flow)		(°C)	•	o
A2	Hot-water sensor 1		(°C)	*	o
A3	Water or air pressure (not activated)		(-- --)	o	•
A4	Automatic boiler operating phase (See Table 10)		(Code. No.)	o	o
Actual Temperatures					
b0	Internal BMU SW diagnosis code ⁵⁾		(Code.No.)	*	* ⁴⁾
b1	Boiler temperature (return)		(°C)	•	•
b2	Hot-water sensor 2 (not present)		(°C)	•	•
b3	Flue gas temperature (not present)		(°C)	•	•
b4	Currently outdoor temperature		(°C)	•	•
b5	Mixed outdoor temperature		(°C)	•	•
b6	Attenuated outdoor temperature		(°C)	•	•
b7	Mixer flow temperature (only when mixer module CIM is connected).		(°C)	•	•
Other process values					
C 1	Ionisation current	(max.30µA)	(µA)	•	•
C2	Fan speed (value x 100)		(rpm)	•	•
C3	Current fan control (PWM signal)		(%)	•	•
C4	Relative power (percent of max. output)		(%)	•	•
C5	Pump setting (PWM)		(%)	•	•
C6	Difference between flow and set-point temperature		(K)	•	•
Settings					
d1	Setting for two point or modulation control (PID)		(°C)	•	•
d2	Current boiler temperature set-point		(°C)	•	•
d3	Setting for room temperature	(10-30°C)	(°C)	•	•
d4	Setting for hot water temperature	(10-65°C)	(°C)	•	•
d5	Max. degree of modulation in heating mode	(PHZ max.)	(%)	•	•
d6	Max. fan speed at max. output in heating mode	(NHZ max.)	(rpm)	•	•
Parameters (setting only for special functions or ⁶⁾					
P0	Burner capacity (controller stop without potentiometer) 0 = min., 100 = max	(0-100)	(%)	•	*
P1	Room/flow temperature setting (with/without potentiometer)	(10-30/20-85°C)	20/55 (°C)	•	*
P2	Setting for hot water temperature (without potentiometer)	(10-65°C)	45 (°C)	•	*
P3	Function not used		--	•	*
P4	Min. pump speed for heating system (N _{qmod} Min)	(10-100%)	28 (%)	•	*
P5	Steepness of heating curve	(1-40)	25 (Value)	•	*
P6	Parallel offset for heating curve	(-31K...+31K)	(Value)	•	*

Note: Other parameters displayed are not used.

- 1) Display * = Flashing, • = Illuminated, o = Not illuminated
- 2) Parameters in the group "A" can be selected by momentarily pressing the display mode button.
- 3) For error messages, see Table 11, or instructions for EUROCONTROL controls
- 4) Display flashes alternately
- 5) Internal BMU SW diagnostic code (POTTERTON Customer Service) selection of a few error codes

Code No.	Explanation	Remedy
295	Gas valve possible short Circuit to Earth	Check & eliminate (Internal BMU fuse faulty)
477	Parameter P1 (Table ?) > TksNorm (Prog.No.505)	Adjustment error: Check settings & correct
479	Parameter P1 (Table?) > TrSMax (Prog.No.502)	
425/426/427	STB_ too steep a temperature increase	Probably air in heating or hot-water system or no water circulation; bleed boiler and heating system
433/435	STB_DELTA_T1, STB_DELTA_T£	
	(Delta-T too high for boiler flow & return)	
531	Exit M5 is already used	Check Parameter 615

6) For boilers in delivery state or for heating curve setting for operation with heating circuit module HKM

Note: After 8 min. the display (15) automatically returns to the boiler temperature (A1).

ADJUSTMENT TABLE FOR HEATING ENGINEERS

Table 6 – Setting system dependent parameters in heating engineer level of control centre BMU (with RRG room control module or RRG service module).

Procedure for changing parameters:

- press info button, then press +/- ▲ or +/- ▼ buttons until “Initialise BMU parameters” appears on the display (final user level, only parameters with “X” are displayed)
- Select heating specialist level: Press both buttons ▲ and ▼ for longer than 3 sec until the display “Initialisation BMU specialist” appears (Level for heating specialist)
- Select the desired program no. by pressing the programming keys.
- Set the desired value by pressing the +/- keys.
- After selecting the next program No. the new value is taken over.
- Press the info. button to quit the programming level.

Display on room control module RRG		Function	Basic Setting (set at factory)	New settings *
Program No.	BUM parameter final user level			
501	TrSmin	Min. room temperature setting	10°C	
502	TrSmax	Max room temperature setting	30°C	
503	TkSmin	Min. boiler temperature setting	20°C	
504	TkSmax	Max. boiler temperature setting.	85°C	
505	TkSnorm	Boiler temperature setting at standard outdoor temperature	80°C ⁵⁾	
506	TvSmin	Min. flow temperature setting 2 nd heating circuit	20°C	
507	TvSmax	Max. flow temperature setting 2 nd heating circuit	70°C	
510	TuebBW	Boiler temperature setting increase for hot water charging	18°C	
511	TkSfrostEin	Boiler frost protection switch on temperature	5°C	
512	TkSfrost Aus	Boiler frost protection switch off temperature	10°C	
514	TruebVor	Boiler temperature setting increase for VTC	10K	
516	THG	Summer/winter switchover temperature	20°C => 17°C	
517	dTbreMinP	Max. control difference for termination when minimum pause time is exceeded.	30K	
519	TiAussen Norm	Standard outdoor temperature	-20 °C ⁵⁾	
520	dTrAbsenk	Reduction of room temperature setting when timer is connected (HKM + EMS)	10K	
521	dTkTrNenn	Flow/return temperature spread at standard outdoor temperature	20K ⁵⁾	
523	SdHzEin	Switch on difference – burner in heating mode	4 K ²⁾	
524	SdHzAusMin	Min. switch off difference – burner in heating mode	5 K ²⁾	
525	SdHzAusMax	Max. switch off difference – burner in heating mode	5 K ²⁾	
526	SdBwEin1	Switch on difference – burner in hot water mode on sensor 1	4 K ²⁾	
527	SdBwAus1Min	Min. switch off difference – burner in hot water mode on sensor 1.	2 K ²⁾	
528	SdBwAus1Max	Max. switch off difference – burner in hot water mode on sensor 1.	2 K ²⁾	
529	SdBwEin2	Switch on difference – burner in hot water mode on sensor 2.	3 K ²⁾	
531	SdBwAus2Max	Max switch off difference – burner in hot water mode on sensor 2	3 K ²⁾	
532	Sth1	Heating curve steepness, heating circuit 1	25 ¹⁾	
533	Sth2	Heating curve steepness, heating circuit 2	25 ¹⁾	
534	DrR1	Correction, room temperature setting, heating circuit 1	0 K	
535	DrR2	Correction, room temperature setting, heating circuit 2	0 K	
536	NhzMax	Max. speed at max. output in heating mode	6100 or 5400 ^{rpm}	
537	NqmodNenn	Speed stage at heating system design point	30 ⁵⁾	
538	NqmodMin	Min. pump speed for heating system	34% ⁵⁾	
539	NqmodMinBw	Min. pump speed for layer tank charging	40% (not activated)	
541	PhzMax	Max. degree of modulation in heating mode	100 or 90 % ³⁾	
542	PminHuKw	Min. boiler input in kW (Hu)	9,14 or 20 kW ³⁾	
543	PmaxHuKw	Max. boiler input in kW (Hu)	38, 58 or 77 kW ³⁾	
544	ZqNach	Pump overrun delay time, max 218 min.	10 min	
545	ZbreMinP	Minimum pause time for burner	120 s ²⁾	

Display on room control module RRG Program No.	BUM parameter final user level	Function	Basic Setting (set at factory)	New Setting *)
546	ZbreMinL	Minimum running time for burner.	0 s	
547	ZregiVerz	Control delay after burner start-up.	60 s ²⁾	
551	Kon	Constant for rapid reduction (without room influence)	4	
552	HydrSystem	Hydraulic system setting	2	
553	KonfigHks	Assignment of HKM or RRG to heating circuit (0...255), see Table 11.	21	
555	KonfigRg1	Adjustment codes	00110100	
556	KonfigRg2	Adjustment codes	00000000 (not used)	
557	KonfigRg3	Adjustment codes	00000100 (not used)	
558	KonfigRg4	Adjustment codes	01000000	
561	KonfigRg7	Adjustment codes	00001110	
562	pH2Omin	Min. boiler water pressure	0.7bar (not activated)	
563	PHOmax	Max. boiler water pressure	2.5bar (not activated)	
584	ZkickFkt	Time for pump output kick function	5 s ²⁾	
596	ZeitAuZu	Running time for drive in heating circuit 2(CIM);30 to 873s	150 s	
598	LmodRgVerz	Output during control delay time	25% ²⁾	
604	LPBKonfigO	Adjustment code for bus module CIB	00010000	
605	LPBAdrGerNr	LPB application address for BMU	1 - -	
606	LPBAdrSegNr	LPB segment address for BMU	0 - -	
607	TbwBereit	Reduced setting for hot water	40°C	
614	KonfigEingang	Programmable input F2 0 = Standard; 1 = Modem function 2 = Modem function "neg. logic"; 3 = Door veil 7 = not used on PARAMOUNT	0	
615	KongigAusgang	Programmable output M5 0 = Standard; 1 = Signal output; 2 = Alarm output 3 = Operating signal; 4 = External transformer (transformer T2); 5 = M5 (Q2Y2); 6 = DHW circulation pump; 7 = Door veil 8 = Primary loop pump M1; 9 = Primary loop pump M5; 10 = Basic function K2; 11 = DHW loading function (layer tank only); 12 = Analogue threshold 13 = control of flue gas flap	2	
618	KonfigEingangR	Programmable input on relay module CISP 0 - 3 = not available with CISP relay module 4 = temperature setpoint; 5 = heat output setpoint; 6 = sensor hydraulic switch 7 = not used on PARAMOUNT	0	
619	KonfigAusgang 1R	Function of output 1 relay module CISP 0 = Standard; 1 = Signal output; 2 = Alarm output; 3 = Operating signal; 4 = External transformer (transformer T2); 5 = M2 (Q2Y2) 6 = DHW circulation pump; 7 = Door veil 8 = Primary loop pump; 9 = Primary loop pump M 5 10-11 = not available; 12 = Analogue threshold 13 = control of flue gas flap	2	
620	KonfigAusgang2R	Function of output 2 relay module CISP Setting possibilities as parameter 619	3	
621	KonfigAusgang3R	Function of output 3 relay module CISP Setting possibilities as parameter 619	4	
622	TanfoExtMax	Max. value of heat demand in case of external temperature setpoint (if param. 618 = 4)	100°C	
623	PAngoExtSchwelle	Switchpoint of the analogue threshold (% of max. value) (if param. 618 = 4)	5%	
632	WanfoQ8	Heat demands to be satisfied by primary loop pump M5 (only if param. 615 or 619 or 620 or 621= 9)	b0.0, b1.0, b2.0, b3.0, b4.0, b5.0, b6.0, b7.0	

Display on room control module RRG Program No.	BUM parameter final user level	Function	Basic Setting (set at factory)	New Settings *)
700	Stoer1	1 st history value for fault code counter	Display ⁴⁾	
701	StrPn1	1 st history value for fault phase	Display ⁴⁾	
702	StrDial	1 st history value for SE diagnostic code b0	Display ⁴⁾	
703/706	Stoer2/Stoer3	2 nd /3 rd /4 th and 5 th history value for	Display ⁴⁾	
709/712	Stoer4/Stoer5	fault code counter		
710/707	StrPn2/StrPn3	2 nd /3 rd /4 th and 5 th history value for	Display ⁴⁾	
710/713	StrPn4/StrPn5	fault phase		
705/708	StrDia2/StrDia3	2 nd /3 rd /4 th and 5 th history value for SW	Display ⁴⁾	
711/714	StrDia4.StrDia5	diagnostic code b0		
715	Stoer_akt	Current value of fault code counter	Display ⁴⁾	
716	StrPn_akt	Current value of fault phase	Display ⁴⁾	
717	StrDia_akt	Current value of internal SW diagnostic code b0	Display ⁴⁾	
718	BetrStd	Burner operating time	Display (h)	
719	BetrStdHz	Heating mode operating time	Display (h)	
720	BetrStdBw	Hot-water mode operating time	Display (h)	
721	BetrStdZone	Zone operating time	Display (h)	
722	InbetrSetz	Start-up counter	Display (h)	
723	Pmittel	Average boiler output	Display (kW)	
724	MmiStatus	Current summer/winter setting for boiler module	Display	
725	OT_SwVersLMU	Parameter level	Display	
755	IonStrom	Display of actual ionisation current value	Display	

Other parameters displayed are not relevant for operation of PARAMOUNT!

*) Note : Any new settings to be recorded in manual

1) **These parameters should be altered to suit the specific heating system for optimum comfort and performance.**

2) These parameters should be adjusted only when absolutely necessary

3) These parameters should never be adjusted

4) For a list of the internal software diagnosis codes, see RRG manual of the Service Module for a selection of the fault codes see table 6

5) Parameters only valid if the boiler is equipped with a PWM pump (modulating pump) (Not Potterton supply)

The PARAMOUNT boilers are factory-preset to a single step pump (Parameter 561.0 OFF).

EXPLANATIONS ON ADJUSTMENT TABLE FOR HEATING ENGINEERS

Explanations of heating engineer level: The PARAMOUNT boiler is factory-set for operation and requires no changes as a rule.

However, a few parameters (see ¹⁾) in the adjustment table for heating engineer serve for adaptation to the specific heating system and should be altered to suit the specific heating system for optimum comfort and performance.

Note: The parameters marked with ²⁾) should only be readjusted in exceptional cases when absolutely necessary.

Explanations on Table 6: A room control module RRG or service module RRG (optional extra) is required for adjusting the parameters.

505 (TkSnorm) (modulating pump only): NOT REQUIRED U.K.

510 (TuebBw) Boiler temperature setting increase for hot water charging: This ensures efficient hot-water charging. The boiler temperature setting is increased when hot water is required. **Increase** Quicker charging time; greater overshoot. **Reduction:** Slower charging time; less overshoot.

514 (TuebVor) Boiler temperature setting increase for VT heating circuit:

Increasing the flow temperature achieves a constant Variable flow temperature. **Increasing:** Variable flow temperature undershoot is avoided. **Lowering:** Variable flow temperature undershoot possible.

516 (THK) Summer/Winter – Changeover Temp:

The automatic S/W changeover is a function with a long-term effect which switches off the heating during the summer when the outdoor temperature is **higher** than the S/W changeover temperature, and switches it back on only when the outdoor temperature is **below** the value set here for a longer period of time. S/W changeover via 2 methods:

- By pressing button on heating circuit module HKM (Fig 7)
- With automatic S/W changeover via outdoor temperature.

When operated with the room control module RRG, this module takes over automatic S/W changeover for the appropriate heating circuits (See RRG Manual).

When operated with the heating circuit module HKM and other EUROCONTROL controllers, the automatic S/W changeover feature (program No. 516) is effective.

Turning off S/W changeover: The automatic S/W changeover feature operates with a switching difference of ± 1 K. If a temperature of equal to or greater than 30°C is set. in program No.516, changeover is **not** accomplished.

519 (TiAussen/Norm) (modulating pump only): NOT REQUIRED U.K.

ADJUSTING HEATING CURVE

520 (dTrAvsenk) Night Setback room temperature setting: The room temperature setting is reduced by the value set here by a connected timer (e.g. EMS) in night setback mode. Adjustment range 0 to 10K the room temperature setting made here is included in calculating the boiler temperature setting when outdoor compensation control is used.

521 (dTkTrNenn) (modulating pump only): NOT REQUIRED IN THE U.K.

532 (Sth1) bzw. 533 (Sth2) Heating curve steepness HC1 or 2: When used without the room control module RRG the steepness of the heating curves can be set here for the CTC (HC 1) or VTC (HC 2). **Note:** When used with a RRG, the heating curves in the RRG are effective and can be set there! Standard value for heating curve (delivery state): The settings at the heating engineer level for the BMU control centre can be made with the room control module RRG.

The parameters, which can be set are shown in Table 5.

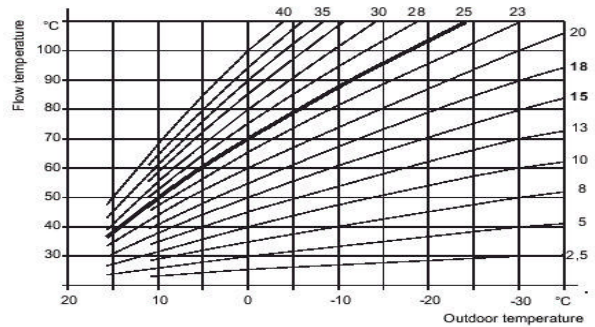
The factory settings for the heating curve as follows:

- CT heating circuit 25 and
- VT heating circuit 25 (See below)

The heating curve can be adjusted as follows, depending on the system equipment.

- with room control module RRG: On heating engineer level for RRG program No.70 or 80. The values from the RRG write over parameters "532" and "533"!
- with heating circuit module HKM: On boiler module parameter "P 5" or with RRG as service unit (Table 5)

534 (DtR1) and (DtR2) Correction of room temperature setting HC1 and 2: These two parameters shift the heating curve for heating circuit 1 and 2 parallel. If the room temperature setting is not achieved with the heating curve set, this allows adaptation. (See table below)



536 (NHZmAX) Fan maximum speed for output adjustment of Paramount: The maximum boiler output in the heating mode can be limited by reducing the speed of the fan to the desired output. For this purpose, set the maximum speed in program no. 536 (NhzMax) and program no.541 (PhzMax) according to Table 9.

Table 7: Max boiler output in heating mode (guide values)

Model	Max heat load	Para 536 rpm	Para 541 %
Paramount 40	32	4900	75
	22	3300	44
	11	1700	18
Paramount 60	50	4900	76
	45	4400	69
	40	3900	60
Paramount 80	60	4750	80
	50	3950	67
	40	3150	53

537 (NqmodNenn) Speed stage at design point of heating system: NOT REQUIRED IN THE U.K.

538 (NqmodMin) Min pump speed for heating system: NOT REQUIRED IN THE U.K.

541 (PhzMax) Degree of modulation in heating mode: In order to ensure optimum operation of the PARAMOUNT, it is necessary to adapt the PWM signal (% increments) for the max. degree of modulation in the heating mode to the maximum speed, program No. 536 (NhzMax) (see Table 7).

SETTINGS FOR THE BURNER

542 (PminHuKw) Min boiler input in kW: Differ depending on type of boiler:
PARAMOUNT 40 → 9kW or
PARAMOUNT 60 → 14 kW or
PARAMOUNT 80 → 20 kW

543 (PmaxHuKw) Max boiler input in kW: Differ depending on type of boiler:
PARAMOUNT 40 → 38 kW or
PARAMOUNT 60 → 58 kW or
PARAMOUNT 80 → 77 kW

Programs No. 542 and 543 serve only for indication of the specific boiler output (no function) and balancing the output when the cascade controller EUROCONTROL BCA 2 is used.

545 (ZbreMinP) Minimum pause time for burner: The PARAMOUNT is provided with a minimum pause time or start-up disable of 2 min. to reduce the number of burner start-ups.

547 (ZreglVerz) Delay after burner start-up: The controller delay time after burner start-up is set to 60 sec. This should **not be re-adjusted** to ensure reliable burner operation! During this time, the PARAMOUNT is operated at the boiler output set in program No. 598 (LmodRgVerz)

551 (Kon) Constant for quick reduction: This function switches off the heating circuit pump when the system is switched over to a lower room temperature setting (e.g. night set back/reduction). This function is provided for systems operated with an outdoor temperature sensor or without room control module. The switch-off time for the heating circuit pump is set as specified in Table 9 by entering a constant (Kon). The heating circuit pump is switched off for a maximum of 15 hours. At outdoor temperature below -5°C, the pump is not switched off.

Note: Low “constant” for “lightweight” buildings which cool down quickly
 High “constant” for “heavy” well insulated buildings.

Table 8 – Switch off Times

Mixed Outdoor Temp	Pump switch-off times in hours (h) for Para 551 (Kon) =				
	Kon=0	Kon=4	Kon=8	Kon=12	Kon=15
-20°C	0	0	0	0	0
-10°C	0	0.5	1h	1.5h	2h
0°C	0	3h	6h	9h	11h
+10°C	0	5h	11h	15h	15h

552 (HydrSystem) Hydraulic system setting: The hydraulic system is set to “2” at the factory i.e. the PARAMOUNT can be used for the max. possible number of hydraulic systems. However, in order to ensure optimum heating operation for application examples 1 through 8 (without unnecessary increases in boiler temperature), program no.552 should be set accordingly:-

- Application example 1a/1d Hydr system “2”
- Application example 2a/2b Hydr system “50”
- Application example 3 Hydr system “34”
- Application example 4 Hydr system “66”
- Application example 5a/5b Hydr system “50”
- Application example 6a/6b Hydr system “66”
- Application example 37 Hydr system “2”
- Application example 8 Hydr system “2”
- Application example 9a/9b Hydr system “66”

ADJUSTMENT CODES

Various options for adjustment codes: The various options described below can be set by setting the various bits in program nos. 555, 558 and 561 (KonfigReg 1, 4 and 7)

Note: Program nos. 556 and 557 (KonfigRg 2 and 3) should not be adjusted!

Example (e.g. Program no.555):
 00110100 = > 0 0 1 1 0 1 0 0
 Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0

Display on room control module RRG: 555.0 On (or Off)

Whereby the number following the decimal point indicates the bit (here bit 0) and the value 1 of 0 is indicated by the designation “On” or “Off”!

555 (KonfigRg1) Bit setting for hot-water priority:

555.0 Off: Absolute priority (factory setting)

555.0 On: Sliding priority

555.1 On: No priority (parallel operation)

Depending upon the setting the heating circuit is limited while hot water is heated.

At the factory, absolute priority is set for CTC. When sliding priority is set and the heating capacity of the PARAMOUNT is not sufficient, the heating circuit is limited accordingly until the hot demand is satisfied. Parallel operation is possible, however, not recommended. This setting applies for all heating circuits.

Bit setting for terminal assignment N5:

555.2 Off: Room thermostat (factory setting)

555.2 On: Timer

Factory setting: room thermostat: The switching state of the room thermostat contact is decisive for the heat demand. When the contact is open, the heat demand is inhibited, when the contact is closed, the heat demand from the room temperature thermostat acts on the PARAMOUNT. The pump is switched on and off according to the heat demand (with switch off delay).

If N5 is set to the timer function, in the reduced mode (timer contact open) the room temperature setting is reduced by the value set in program no.520 (dTrAbsenk) by 10K (factory setting). The pump runs in standard mode and in reduced mode except for quick reduction.

Note: When program no. 520, code = 0, the heating mode is switched off completely when the timer contact is open.

Table 9 Assignment of HKM or RRG to the Heating Circuit (Program No.553; KonfigHks)

Setting (e.g. Setting)		Program No.553	Function Effect of HKM or RRG on HC 1 and HC 2
HC 1 (CTC)	HC 2 (VTC)		
HKM (plus EMS)		0	- HKM controls heating circuit 1 (HC 1 of PARAMOUNT)
RRG	HKM (plus EMS)	1	- RRG (heating curve 1 and TP 1) controls HC 1 (CTC) - HKM (heating curve 2 of PARAMOUNT 2) controls HC 2 (VTC)
RRG	HKM (plus EMS)	2	- RRG (heating curve 1 and TP2) controls HC 1 (CTC) - HKM (heating curve 1 of PARAMOUNT) controls HC 2 (VTC)
HKM (plus EMS)	RRG	10	- HKM (heating curve 1 of PARAMOUNT) controls HC 1 (VTC) - RRG (heating curve 1 and TP 1) controls HC 2 (CTC)
RRG	RRG	11	- RRG (heating curve 1 and TP 1) controls HC 1 and HC 2
RRG	RRG	12	- RRG (heating curve 2 and TP 1) controls HC 1 (CTC) - RRG (heating curve 1 and TP 1) controls HC 2 (VTC)
HKM (plus EMS)	RRG	20	- HKM (heating curve 1 of PARAMOUNT 2) controls HC 1 (CTC) - RRG (heating curve 2 and TP 2) controls HC 2 (VTC)
RRG	RRG	21 Factory setting	- RRG (heating curve 1 and TP 1) controls HC 1 (CTC) - RRG (heating curve 2 and TP 2) controls HC 2 (VTC)
RRG	RRG	22	- RRG (heating curve 2 and TP 2) controls HC 1 and HC 2

Key: HKM = Heating circuit module; RRG = Room control mode; CTC = constant temp. circuit
VTC = variable temperature circuit; TP 1 and 2 = time program 1 or 2 in RRG
Note: If an RRG is not connected, the HKM always controls HC 1.

ADJUSTMENT CODES**Bit setting for system frost protection:**

555.4 On: System frost protection On (factory setting)

555.4 Off: System frost protection OFF.

None of the other bit settings should ever be readjusted.**558 (KonfigRg4) Bit settings for header functions:**

558.0 Off: Header function OFF (factory setting)

558.0 On: Header function On

When it is necessary for hydraulic reasons, a header pump can be connected (terminal X1; output M5)

Note: Param. 615 has to be set to "0" then.

Bit setting for type of building:

558.1 off: Lightweight building (factory setting)

558.1 On: Heavy building

The heat storage capacity of the building is taken into consideration beginning on the type of building. With lightweight building, the control reacts more quickly to variations in the outer temperature than for heavy buildings.

Bit setting for selection of connection terminal for hot water thermostat:

558.2 Off: Hot water thermostat OFF (factory setting)

558.2 On: Hot water thermostat ON.

With the factor setting, this function is not activated. When a tank control is connected instead of a tank sensor, set bit 2 to 1 (On). This tank control can be connected to terminal X6/B3 instead of the tank sensor B3. The tank control must be equipped with high quality contact material (e.g. gold contact) due to the switching voltage of 5V DC!

None of the other bit settings should ever be readjusted!**561 (KonfigRg7) Bit setting for heating circuit pump:**

561.0 Off: Heating circuit pump in stages (factory setting)

561.0 On: heating circuit pump modulating.

Bit setting for Delta T limit:

561.1 off: Delta T limit OFF

561.1 On: Delta T limit ON (factory setting)

Bit setting for Delta T control:

561.2 off: Delta T control OFF

561.2 On: Delta T control ON (factory setting)

In program No.561, it is only permissible to change bits 0, 1 and 2, when the pump function is modified according to the application schematics or the PWM pump is replaced by a stage pump!

Bit setting for system volume:

561.3 On and 561.4 Off: Medium system volume (factory setting)

561.3 Off and 561.4 Off: Small system volume

561.3 Off and 561.4 On: Large system volume

A medium system volume corresponds to that for a single family house.

Small system volume corresponds to that for a flat heater.

Large system volume corresponds to that of a multiple family house.

Bit setting for Delta T control in reduced mode:

561.5 off: Delta T control in reduced mode OFF (factory setting)

561.5 On: Delta T control in reduced mode ON

When bit 5 = 0, the pump is generally operated at the minimum pump speed setting program No. 538 (NqmodMin) in the reduced mode.

When the heat requirement is too low in poorly insulated buildings, this function should be activated (bit 5 = 1) so that the pump can operate in the same manner as in the standard mode!

None of the other bit settings should ever be readjusted.

598 (LmodRgVerz) Output during controller:

In program No. 598 (LmodRgVerz) the burner output can be set at which the PARAMOUNT operates during the delay time set in program No.547 (Zreg1Verz) This output must **never be changed!**

SPECIAL FUNCTIONS

604 (LPBKonfig0) 605 (LPBAdrGerNr) 606 (LPBAdrSegNr):

Parameters 604, 605 and 606 are required only for the PARAMOUNT in combination with zone controllers, series EC ZR 1 / 2

On the PARAMOUNT the following settings are always required:

- LPB equipment address 605 (PBADRGerNr) Code = 1 and
- LPB segment address 606 (LPBAdrSegNr) = Code 0

Adjustment via bus module CIB: This setting can be made according to the instructions for the CIB bus module.

Special function, modem function or door veil function 614 (KonfigEingang) Programmable input F2 (low voltage):

Input F2 can be programmed for the special functions modem function (e.g. remote telephone switch) or door veil function. Only one function can be used for input F2 in each case!

A floating contact suitable for low voltage is required for actuation of input F2! To prevent contact problems, we recommend installation of the HTS 2 module in between (see HTS 2 instructions).

Code 0 = Standard (factory setting) No effect

Code 1 = Mode function (e.g. remote control telephone switch) The heating system can be switched off or switched to the stand-by mode centrally when a remote control telephone switch is connected. All protective functions (e.g. frost protection, pump kicks etc.) remain active. The heating requirements from external heating controls (e.g. ZR EC 1 / 2 or EC MSR) are also inhibited.

Note: The modem function is active when the contact is closed.

Code 2 = Modem function "negative logic" See Code 1 for Function. Note: The modem function is active when the contact is open!

Code 3 = Door veil. In this setting the boiler temperature setting is set to the max. setting (TkSmax) as well as a heat requirement for heating

circuit 1. This function is independent of summer and winter mode. Modulation of the burner output and hot water priority remain unchanged. The door veil function can be activated with the HTS 2 (optional extra) on the PARAMOUNT heating circuit pump. Relay closed: PARAMOUNT is heated up to max. boiler temperature. Relay open: PARAMOUNT is held at temperature according to heating curve. See HTS 2 instructions for connection.

Special function output M5 (programmable output) -Program No. 615 KonfigAusgang) (Code 0 to 12):

Only one function of output M5 can be used in each case!

Code 0 = Standard (no function)

Code 1 = Message output (e.g. for sub-terrain LPG systems).

This output serves for control of an additional gas valve for operation with LPG. When heat is required from the PARAMOUNT, the signal output is actuated by the BMU.

The signal output is not relevant for safety and is therefore not monitored. If a fault is present, the signal output is switched off.

Code 2 = Alarm output (external fault signal): Factory setting on PARAMOUNT. If a fault is indicated, manual reset is required. The alarm output is set in case of a fault.

Code 3 = Operation message: The PARAMOUNT burner mode is displayed.

Code 4 = External transformer (transformer T2): Not available

Code 5 = Exit M5 (Q2Y2) Pump M2 (Q2) for 2nd pump circuit. See example 3, hydraulic system "34" or example 3b, hydraulic system "35".

Code 6 = Tank circulation pump M7 (Room control with software > 1.4) Pump runs according to timer program of room control.

Code 7 = Door veil function Pump M8 when door veil function activated.

Code 8 = Primary loop lump M6. Hydraulic system "2" (Parameter 552).

Code 9 = Primary loop lump M5 (see example 1b). Hydraulic system "2" or "50" (Parameter 552). Set param 632 to define which heat demand will make the primary loop pump start

Code 10, 11 = Function not available for Paramount

Code 12 = Analogue threshold, M5 activated via limits set by the entry of the relay modules CIR, CIST or CISP.

Connect header pump for X1/M5:

If hydraulic schematic requires a header pump connect its plug to X1/M5. A heating circuit pump (CTC) is connected to exit M1.

Programming header pump function:

-Program No. 615;Code 9 - 1. Set program No. 615 to Code 9

-Program No. 632 (see below): Set bits b0 to b3 according to when the header pump has to start operating.

618 (KonfigEingangR):

- 618 = 0 (factory setting): No function
- 618 = 4: Temperature setpoint

The temperature setpoint is given by an external analogue signal (0-10V).

The maximum setpoint is set at parameter No.622.

The setpoint can be between 5 and 100°C (limited by the max boiler temperature of 85°C). 5°C is the minimum threshold, i.e. the boiler is switched on at 6°C and switched off at 4°C

The heat demand is valid for HC 1. An additional heat demand (e.g. from a VTC, is accepted, the boiler temperature setpoint is then the maximum of the two heat demands).

- 618 = 5: Output setpoint

The analogue signal (0-10V) gives the output setpoint. This analogue signal is handed over to the boiler control BMU and is interpreted as a percentage value on the specific output range of the boiler. The minimum threshold switching on and off the boiler can be set at parm. No. 623. The range between min. and max. value is calculated into a power signal of 0-100%. If the analogue signal is higher than the minimal value, the boiler operates at min. output. At the max. value, the boiler operates at max. output. If the analogue signal is below the minimum threshold, the output is not active. Other settings of Parameters No. 618 are not possible with the CISP connected.

If other clip in modules are connected, see the specific installation manual for other setting possibilities.

619 – 621 (KonfigAusgang1R to KonfigAusgang3R):

The CISP clip-in has 3 outputs that can be programmed.

The setting possibilities are the same as for param. No. 615, codes 0-12.

Factory-presettings are:

- 619 (output 1) = 2 (alarm signal)
- 620 (output 2) = 3 (operating signal)
- 621 (output 3) = 4 (no function)

622 (TanfoExtMax) Temperature setpoint: The heat demand is given by an analogue signal via input N11, see wiring diagram. Set this parameter to define the max. value of heat demand (Factory setting 100°C). Only applicable if param. No 618 = 4.

623 (PanfoExtSchwelle) Heat output setpoint: The relative heat output is given by an analogue signal via input N11, see wiring diagram. Set this parameter to define the minimum threshold from which on the heat demand is accepted (in % of the max. value of the analogue signal. Only applicable if parameter No.618 =5).

632 (WanfoQ8) Heat demands to be satisfied by primary loop pump (Only if param. 615 or 619 are set to "9"): To define which heat demand will make pump M5 start. The activation is independent from the hydraulic system and can be used for both central heating and DHW generation.

b0.1: M5 ON for zone control ZR EC 1 / 2

b1.1: M5 ON for heating circuit 2 (VTC)

b2.1: M5 ON for heating circuit 1 (CTC)

b3.1: M5 ON for DHW generation

Note: These bits can be set in any combination

724 (MmiStatus) Current summer/winter setting for boiler module: The current summer/winter setting for the boiler module is displayed:

724.0 0 or 1: Current summer/winter setting (Value 0 = Summer, Value 1 = Winter)

724.1 0 or 1: Current summer/winter switchover (Value 0 = Manual, Value 1 = Automatic)

755 (IonStrom) Ionisation current actual value display: The current ionisation current is indicated when the burner is in operation.

Hot-water control: The hot water requirement has priority over heat demand from a heating circuit.

Automatic day heat limit: The automatic day heat limit is effective only when the outdoor temperature sensor is connected.

This is a rapid-acting economy function, which switches off the boiler when the mixed outdoor temperature is higher than the room temperature setting (standard or reduced)

The boiler switches back on when the mixed outdoor temperature is 2K below the room temperature setting.

For outdoor temperature control with no room influence, the actual room temperature is taken into consideration.

The automatic day heating limit is active, "ECO" appears on the display of the room control module RRG.

Quick heat-up: Only possible when room control module RRG is connected and room sensor active. Quick heat-up/quick reduction is effective only when the heating circuit is switched over from frost protection or reduced mode to standard operation and the room temperature is simultaneously more than 1.5°C below the room temperature setting (even when room temperature setting is increased on room control module).

Quick heat-up is terminated when the room temperature is less than 0.25°C below the room temperature setting,

Rapid reduction (with room sensor): When the heating circuit is switched over from Standard mode to Reduced mode or Frost protection mode, the rapid reduction feature is active (heating circuit pump is switched off).

Boiler frost protection: On systems with outdoor temperature sensor, the system frost protection feature is switched on and off by the outdoor temperature. In this case the heating circuit pump is switched as follows:

Outdoor Temperature	Pumps
<4°C	Continuous operation pumps ON
-5°C to 1.5 C	Pumps on for 10 min. every 6 hours
>1.5°C	Pumps OFF

Building Frost Protection:

The building is protected against frost in all operating modes:

- Room control module RRG (with effective room sensor): The frost protection room temperature setpoint is effective in all modes.

- Heating circuit module HKM with timer EMS or room control module RRG (without effective room sensor): The building frost protection is ensured by the heat requirement in the Standard and reduced mode.

- Room thermostat RAV/RTW/RTD: Building frost protection is ensured by the heat requirement from the room thermostat.

Hot Water Frost Protection: The tank is protected against freezing because the tank is automatically charged when the temperature drops below the setting.

Restart Inhibit (burner starts): To reduce the number of burner start-ups, the boiler is equipped with a start-up inhibit of 3 min.

Anti-Legionnaires disease function (only with room control module RRG): Heat-up is started once a week on Monday with the first hot-water charge and lasts for a maximum of 2.5 hours. In the “Stand-by” mode, the function is inhibited. If it is inhibited for longer than 1 day, the anti legionnaires disease function is repeated as soon as the hot water is enabled.

Chimney Sweep Function: The so-called “Chimney Sweep” function can be activated by pressing the Chimney Sweep button (12) (>3 sec) (fault display (8) **flashes once**). The burner is switched on and heats up the PARAMOUNT at the maximum boiler output until the temperature monitor trips at 82°C.

Note: “SF” appears on display (13) and the fault indicator (8) flashes!

Deactivation of Chimney Sweep function: Press the Chimney Sweep button (12) (min 1 sec) to deactivate the chimney sweep function.

Emergency Operation Functions: In the event of component failure, an error message is output (see Table 11) leading to start-up prevention and emergency operation function, however not to fault switch-off.

Moreover, emergency operation is accomplished in the event of the following faults:

- Hot water mode:

Defective tank sensor: The hot water mode is inhibited, heating operation for the heating circuit is still ensured.

Defective room control module RRG or heating circuit module HKM: The hot water temperature is regulated to the value set on the boiler module under parameter “P2”.

- Heating mode:

Defective outdoor temperature sensor: In the event of a defective outdoor temperature sensor, the system is regulated to a boiler temperature corresponding to an outdoor temperature of 0°C.

Heating Circuit Module HKM and Room Control Module (Optional Extra)

Fig. 7 Heating circuit module HKM

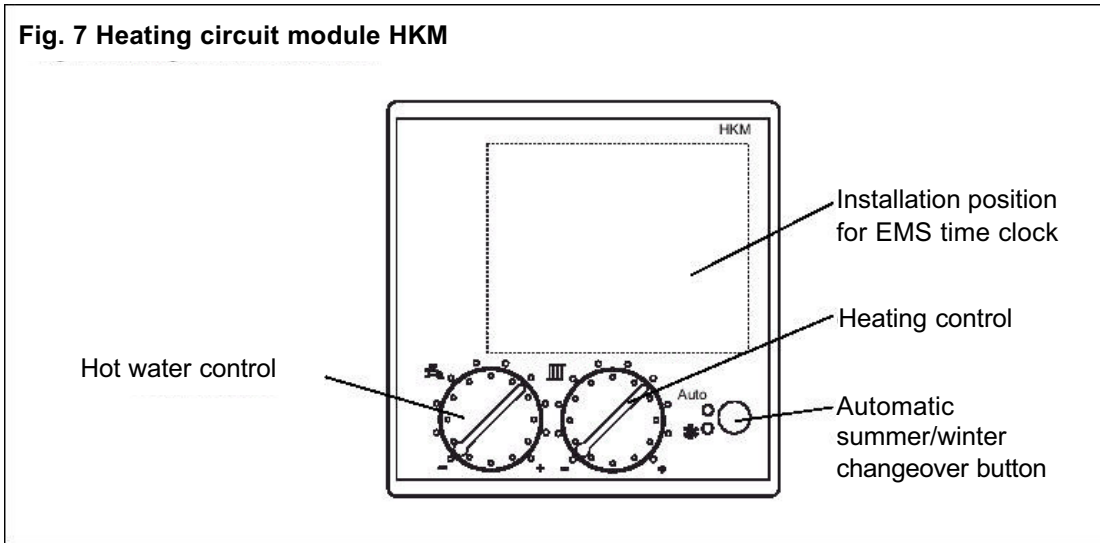


Fig. 8 Room control module RRG (Optional Extra)

The diagram shows the RRG module with numbered callouts (1-8) pointing to specific features:

- 1: Presence button
- 2: Temperature knob
- 3: Info button
- 4: Display field
- 5: Mode buttons
- 6: Hot water button
- 7: Program buttons
- 8: Adjustment buttons

Legend:

- 1 Presence button
- 2 Temperature knob
- 3 Info button
- 4 Display field
- 5 Mode buttons
- 6 Hot water button
- 7 Program buttons
- 8 Adjustment buttons

Operating modes:

Mode button	Function
Auto	Automatic operation Heating function according to heating program Holiday function effective
	Continuous operation Heating circuit continuous (according to room temp setting Or reduced setting); holiday function not active
	Stand-by Heating circuit switched off Holiday function not effective; Frost protection functions active

Heating Circuit Module HKM (Fig.7) Supplied with the PARAMOUNT

- Operation without Outdoor Temperature Sensor:
- Boiler temperature setting on heating circuit control
 - Hot water temperature setting on hot-water control

- Operation with Outdoor Temperature Sensor:
- Room temperature setting on heating circuit control
 - Hot water temperature setting on hot water control.

Automatic Summer/Winter Switchover:
 With the automatic Summer/Winter switchover button it is possible to switch back and forth manually between Summer and Winter and Automatic mode.

LED "Auto" ○	LED "Auto" ○	LED "Auto" ●
LED ○	LED ●	LED ○ OR ●*)

*) For example the display for winter mode is active (● = active) depending on the automatic setting.

Room Control Module RRG (Fig 8)

- With the room control module (optional extra) you can
- control the functions from the room (remote control)
 - make settings (e.g. your own timer programs)
 - call up information (e.g. temperature values) etc.

All possibilities are described in the instructions included with the room control module. Only a few of the most important functions are described below.

Presence Button

With the Presence button you can manually manipulate the set timer program (heating program):

- "Sun" symbol: Heating operates at set temperature.
- "Moon" symbol: Heating operates at reduced temperature

The Presence button is effective until the timer program switches the next time.

The Presence button has no effect on the hot water heating!

Temperature Knob

You can readjust the set temperature with the temperature knob. One increment corresponds to approx. 1°C. Before changing the temperature

setting on the temperature knob, set the thermostatic valves to the desired temperature. Correct again only after the temperature has adapted.

Temperature Sensor in Room Control Module

The temperature sensor integrated into the room control module is effective only when the room influence is enabled on the PARAMOUNT.

Error Messages

- No display: - Faulty connection from room control module to PARAMOUNT
- PARAMOUNT switched off or no mains
 - Room control module defective
 - Room control module and PARAMOUNT not compatible
- Display OFF - PARAMOUNT not set to "Automatic mode"
- Display ---: No sensor present or sensor defective.

SERVICE

Cleaning: The heat exchanger and burner should be cleaned by a certified gas installer. Before starting the work, shut off the gas shut-off device and the hot water shut-off valves and disconnect all power to the boiler.

Condensate Trap: The condensate trap should be cleaned every one to two years. For this purpose, loosen the threaded fitting on the trap and pull the trap off downward. Completely remove the trap together with hose from boiler, disassemble and rinse with clear water. Reinstall the trap in the opposite order.

Replacing Air Vent: Ensure that the air vent is replaced only with genuine replacement part when defective to ensure optimum venting!

Removing Gas Burner: Burner: Before cleaning the heat exchanger, remove the gas burner. For this purpose, disconnect the electric connections to the fan at the plug connector, pull the air hose off the fan and disconnect the plug from the electrodes.

- Remove silencer
- Disconnect threaded fittings for gas connection pipe on mixing duct and on gas valve. Remove gas connection pipe and gas injector. Loosen the 5 mounting nuts on the mixing duct/heat exchanger. Pull burner out toward front together with mixing duct and fan.
- Clean burner pipe with soft brush.

When installing, use new gaskets, particularly for the gas connection pipe.

Fig. 9 Views of Boiler Paramount 40

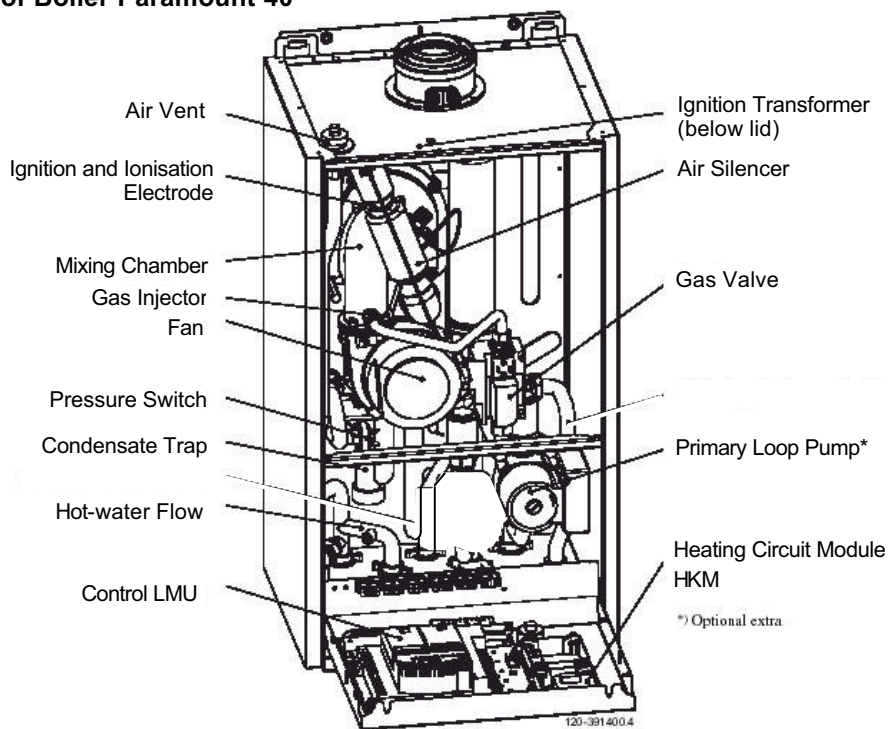
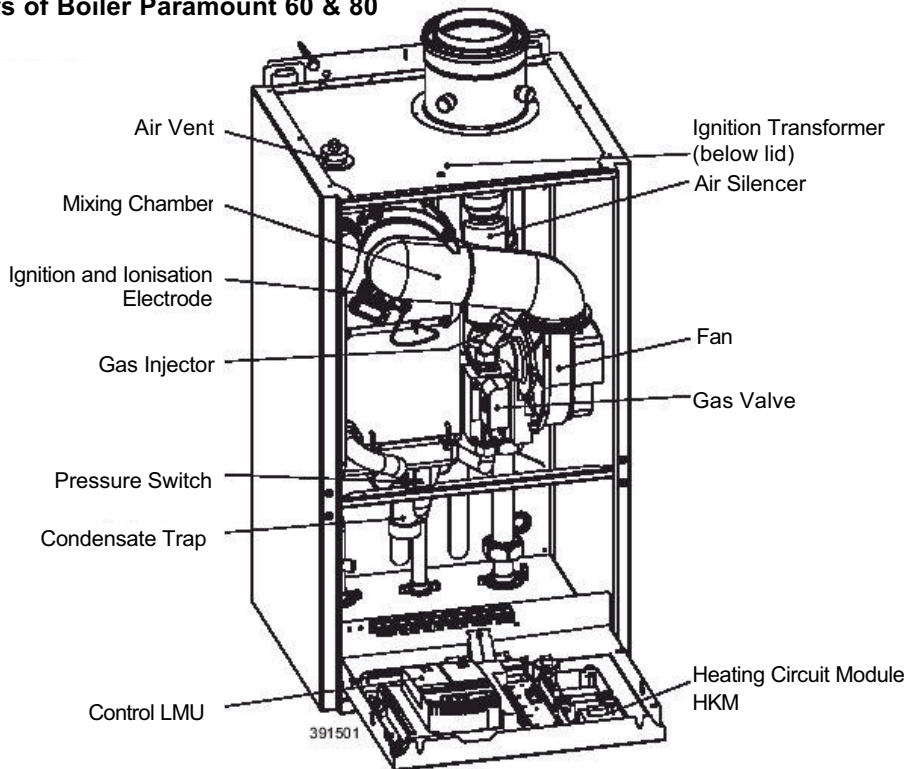
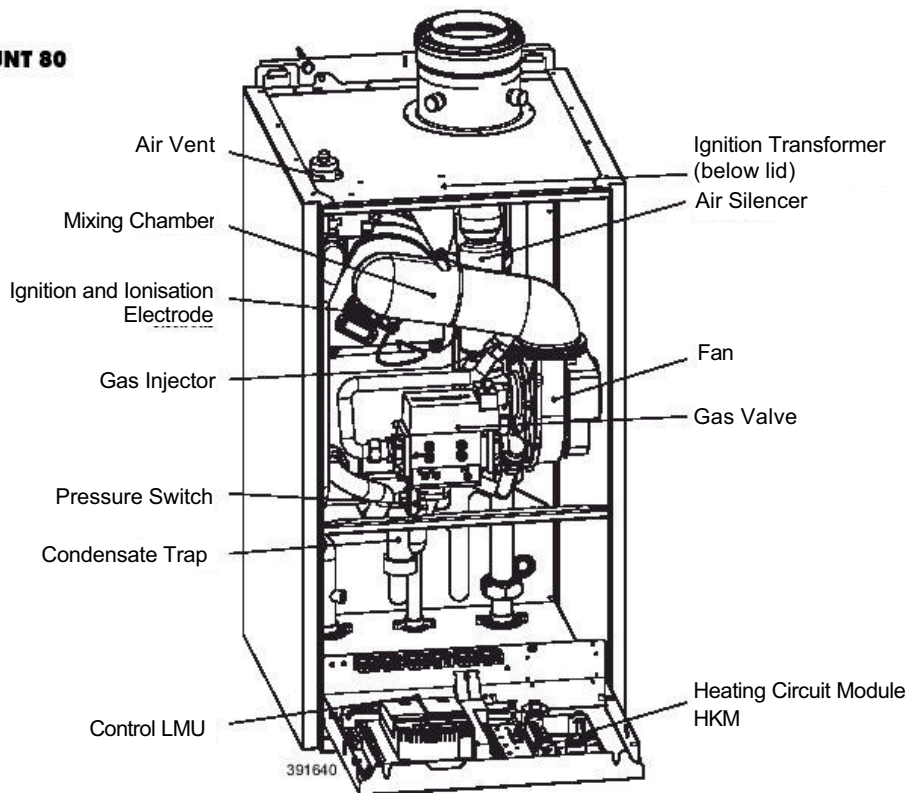


Fig 10 Views of Boiler Paramount 60 & 80



PARAMOUNT 80



REMOVING HEAT EXCHANGER**Remove Heat Exchanger PARAMOUNT 40**

Follow the steps below to completely remove the heat exchanger:

- Burner must be removed
- Close shut-off fitting for flow and return and drain boiler water
- Disconnect plug for boiler sensor (flow and return)
- Loosen 2 nuts on condensate sump and remove bracket
- Loosen flow and return fittings on heat exchanger (flat sealing)
- Unscrew mounting screw on heat exchanger at top left and loosen hex. rod (10 mm).
- Lift heat exchanger from condensate sump and remove.

PARAMOUNT 60/80

- Burner must be removed
- Close shut-off fitting for flow and return and drain boiler water.

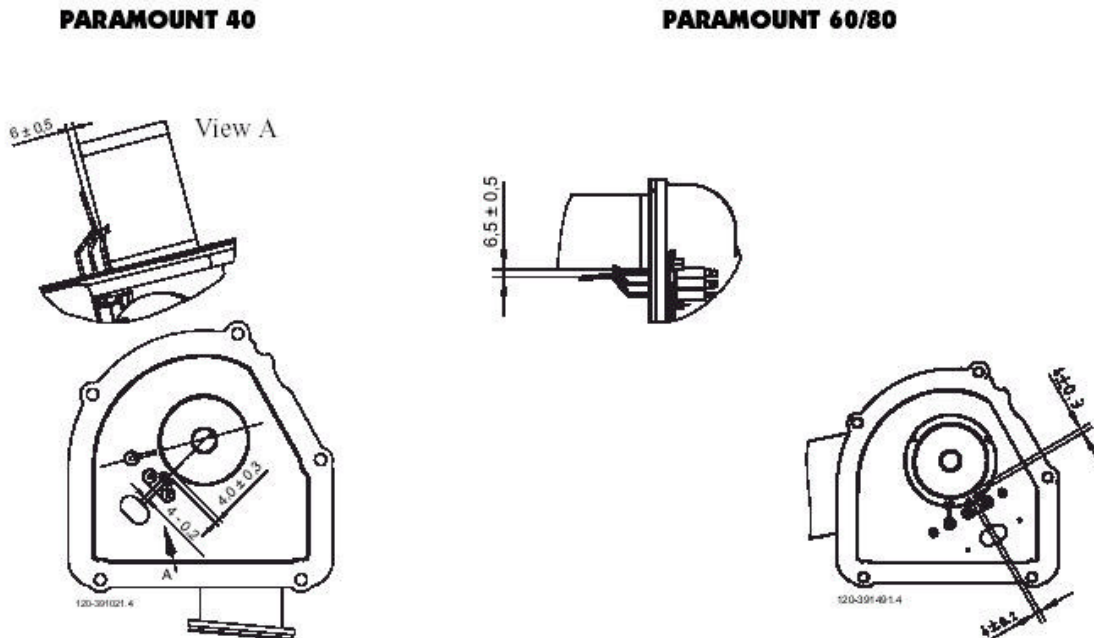
- Disconnect plug for boiler sensor (flow and return)
- Loosen flow and return fittings on heat exchanger (flat sealing)
- Disconnect cable from water pressure switch
- Unscrew nut at pipe that replaces a pump. Take out return pipe.
- Disconnect plug from gas valve, take out gas valve.
- Loosen 2 nuts on condensate sump and remove bracket.

Remove air vent

Unscrew nuts in the metal sheet from the black casing and lift heat exchanger with metal sheet from the condensate sump.

- To clean the heat exchanger, rinse off with soft water jet (without additives).
- After completing the cleaning work, reinstall heat exchanger and burner
- Check the nominal heat load and CO₂ emission values.

Fig. 11 Electrodes



CONTROL CENTRE

Electrodes: To ensure proper function of the ignition and ionisation, ensure that installation length and spacings are observed as shown in Fig.11.

The ionisation current should have the following values for burner operation:

- at min. output > 5 μ A, DC (switching threshold at 0.7 μ A, DC)
- at max. output > μ A, DC

Ionisation Current Indicator: The current ionisation current can be checked as follows directly in μ A:

- on boiler module (1) under parameter "C 1"
- using room control module RRG (optional extra)

Function Description: Control and monitoring of burner by BMU control centre with ionisation electrode.

- Automatic start-up according to program with monitoring of flame formation

The operation itself can be varied using parameters

- The display on the control panel indicates the individual operating or program states with numbers or letters (see Table 10)

Reset: Following Reset (power OFF/ON) the BMU control centre starts in the Home mode.

Fault Switch Off: Safety switch-off in the event of flame failure during operation. After each safety switch-off, a new ignition attempt is accomplished according to program. If this does not lead to flame formation, a fault shut-off is accomplished. In the event of a fault shut-off, press the Reset button on the control panel.

In the event of fault (red light) the numbers on the display on the control panel indicates the cause of the fault (see Table 11).

Burner Does Not Operate: No power to control centre, e.g. no "Burner ON" signal from heating circuit control (see Table 11).

Burner Goes to Fault: Without flame formation: No ignition, ionisation electrode has short circuit to ground, no gas. In spite of flame formation, burner goes to fault after expiration of safety time: Ionisation electrode defective or dirty. Ionisation electrode not submerged in flame, boiler connected with reverse polarity.

Table 10 Operating Phases of Control Centre

Code "A 4"	Operating State	Function Description
0	Standby (no heat requirement)	Burner on standby
1	Start disable	
2	Fan start-up	Self-test for burner start and fan start-up
3	Pre-purging time	Pre-purging fan deceleration time to starting load speed
4	Waiting time	
5	Ignition phase	Ignition and start of safety time Flame formation, ionisation current build up
6	Safety time constant	
7	Safety time variable	
10	Heating operation	Room heating mode, burner in operation
11	Hot water mode	Hot-water tank charging, burner in operation
12	Parallel operation for heating and hot water	
20	Subsequent ventilation with last operating fan speed	Fan continues to run
21	Subsequent ventilation with pre-purging fan speed	Fan continues to run
22	Shut down	Self-test after controlled shut-down
99	Fault position	The current fault code is indicated, see Table 13

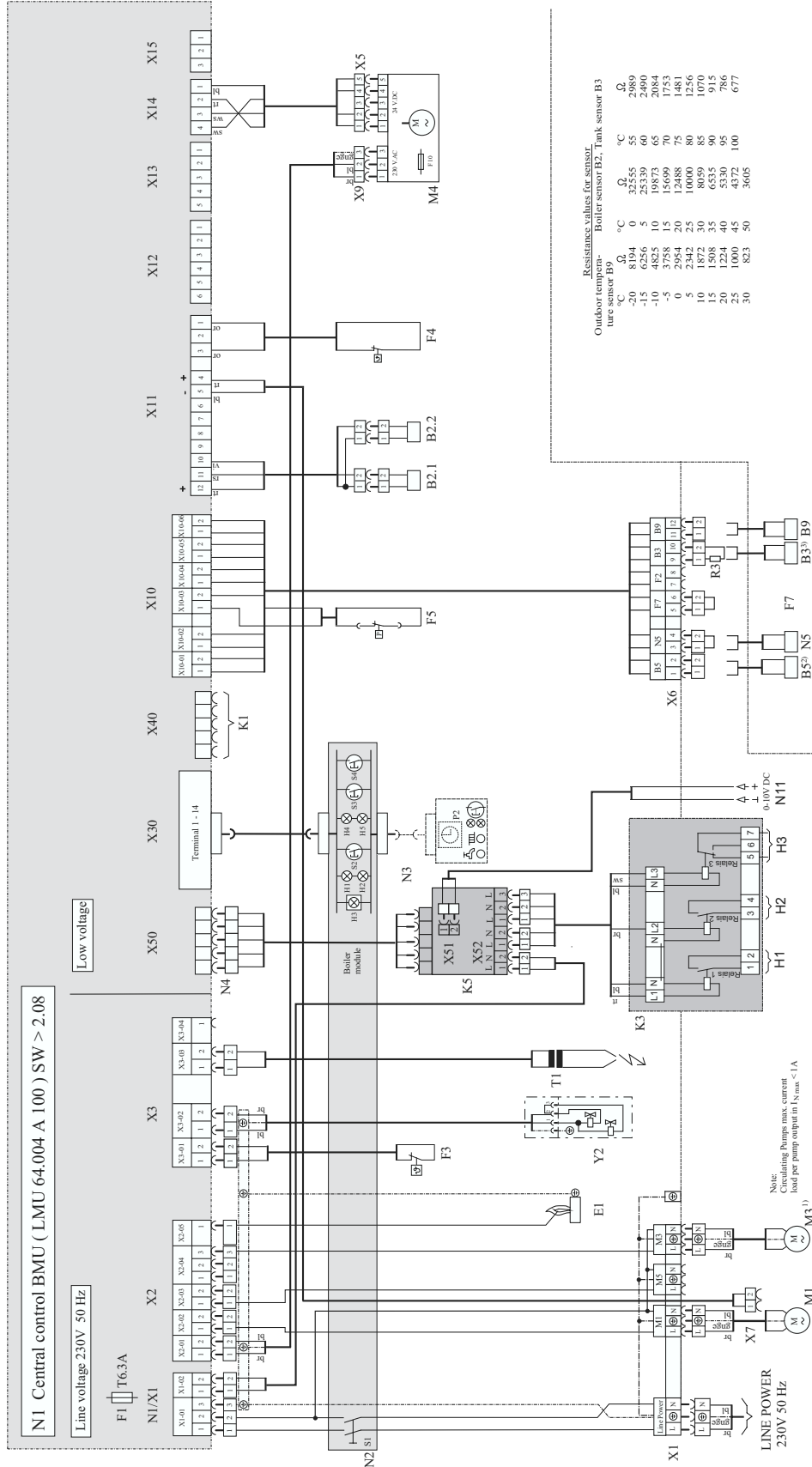
FAULT MESSAGES**Table 11 Fault Messages (display 13 flashing)**

Display flashing (Code No)	Description	Explanations Possible caused and function sequence
10	Outdoor temperature sensor short circuit or discontinuity	Check connection and outdoor temperature sensor
20	Boiler flow sensor short circuit or open circuit	Check connection 2)
40	Boiler return sensor short circuit or open circuit	Check connection 2)
50	Hot water sensor 1 short circuit or open circuit	Check connection; emergency operation 2)
52	Hot water sensor 2 short circuit or open circuit	Check connection 2) (not present)
61	Fault, room control module RRG	Check room control module RRG
62	Wrong room control module connected	Connect compatible room control module
81	Short circuit on LPB bus or no bus feed	Check bus
82	Address conflict on LPB bus (EUROCONTROL)	Check addresses of connected control modules
91	EEPROM data loss	Internal BMU error, process sensor, change BMU
92	Hardware error	internal BMU error, process sensor, change BMU
100	Two time master	Check EUROCONTROL time master
110	Limit stat tripped	Allow unit to cool down and reset. If fault occurs several times, notify heating engineer 1) temperature stat open circuit (possible short circuit in gas valve) 3)
111	Max. temperature tripped	No heat requirement, pump defective, radiator valves closed
119	Water pressure switch tripped	Check water pressure and add water if required 2)
132	Safety switch off	e.g, contact F7 open (Pressure Switch) Possible low gas pressure
133	No flame detected (no flame message after expiration of safety time)	Reset, if fault occurs a number of time, notify heating engineer, insufficient gas 9see Page 20) check polarity of line power connection, ignition electrodes and ionisation current 1) 2)
134	Flame failure during operation	Automatic restart attempt by PARAMOUNT
135	Incorrect air supply	Fan speed above or below speed threshold 2)
140	Impermissible LPB segment number or equipment number	Check setting on EUROCONTROL
148	Incompatibility between LPB interface basic unit	Check setting on EUROCONTROL
151	Internal error in BMU	Check parameters (Tables 5 and 6) heating engineer 1) 2)
152	Error in BMU parameter settings	Repeat parameter settings
153	PARAMOUNT disabled	Press reset button 1)
154	Temperature fault	1. Boiler temperature rises too fast. 2. Return temperature higher than flow temperature 3. Return temperature more than 50°C below flow temp, check water flow through boiler. 4. Parameter incorrectly set (tables 5 & 6) check parameters 1) 3)
160	Fan speed error	Fan speed not reached 1)
161	Max. speed exceeded	Max. fan speed exceeded
180	Chimney sweep function active	4)
181	Controller stop mode active	4)
183	PARAMOUNT in parameter setting mode	1)
bu	Faulty connection between Control unit and LMU	Check wiring in-between and replace control unit if necessary

Display of 3-digit error messages: The 1 in the number 100 is displayed alternately with the 10's position

- 1) Switch off and disable; can be enabled only with reset
- 2) Switch off, start prevention; starts backup after fault disappears
- 3) Check parameters according to Table 8 and program basic settings or check value "b 0" (internal BMU-SW diagnostic code, Table 5) and correct parameter error according to error specification!
- 4) Error display only, no switch off.

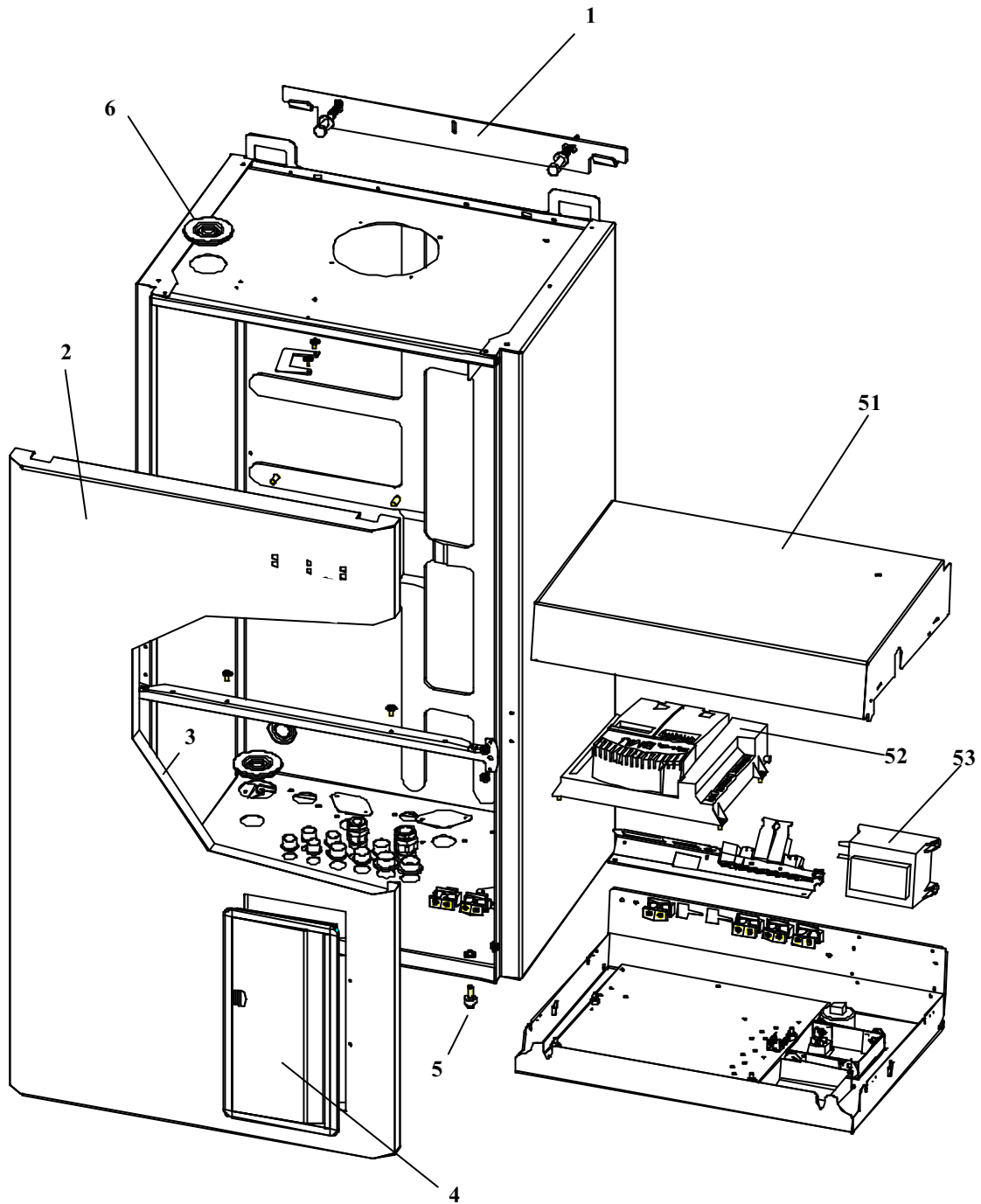
POTTERTON Gas condensing boiler, Series PARAMOUNT 80



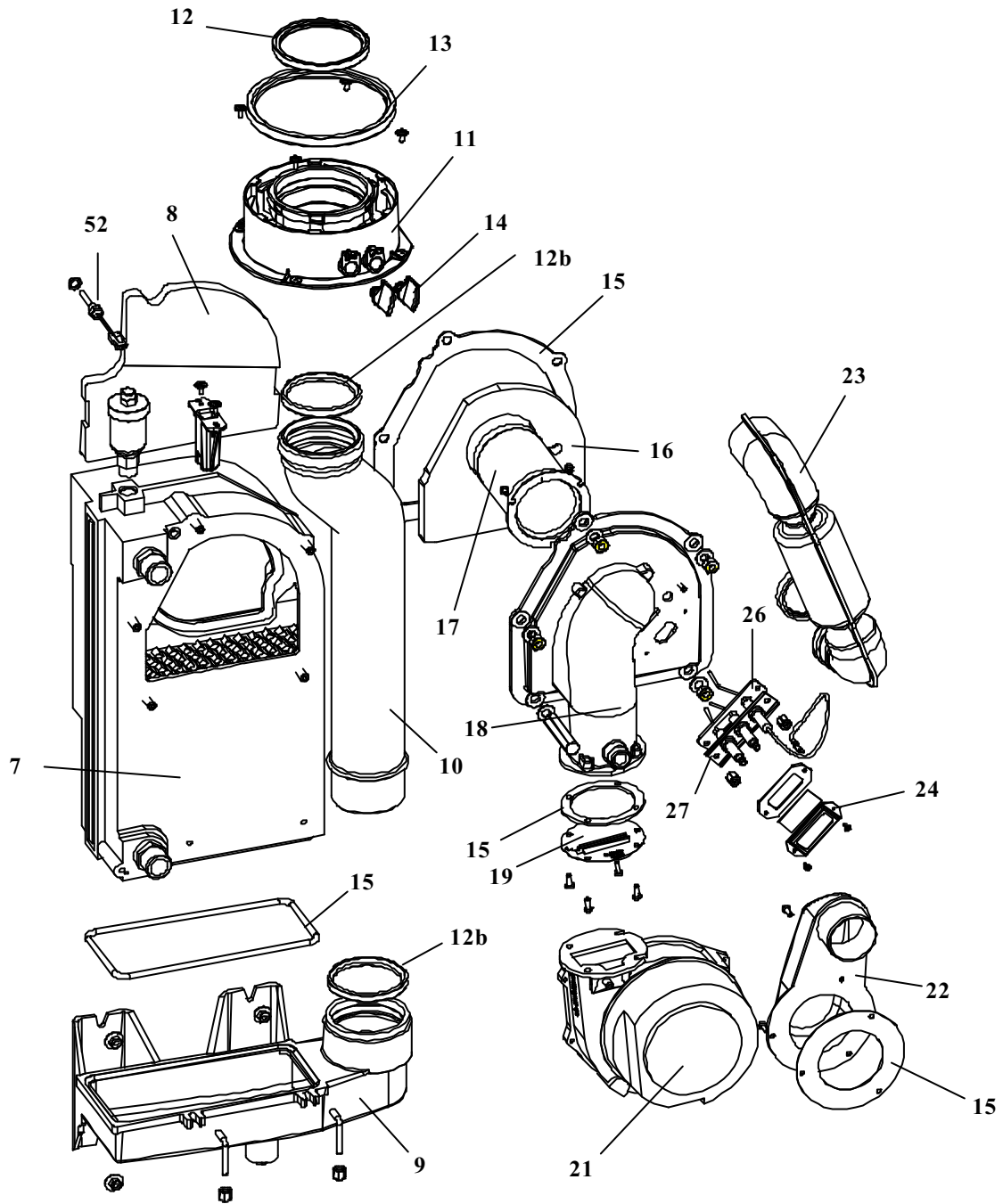
- Legend:**
- B2.1 Boiler flow sensor QAK 36/670
 - B3 Tank sensor QAZ 36¹⁾
 - B5 Room control module RRG
 - B9 Outdoor temperature sensor QAC 34
 - E1 Ionization electrode
 - F1 Fuse T6.3A
 - F2 Programmable input
 - F3 Safe temperature limiter 110°C
 - F4 Water pressure monitor
 - F5 Gas pressure monitor
 - F7 Safety interlock
 - F10 Fuse (burner fan)
 - H1 Fault indicator (red)
 - H2 Burner operating indicator (green)
 - H3 Operation state indicator
 - H4 Temperature display
 - H5 P display
 - K3 Fault connector
 - K5 0-10 V DC relay module
 - M1 Pump, pump heating circuit
 - M3 Tank charging pump¹⁾
 - M4 Fan
 - M5 Programmable output
 - N1 Control center LHMU (4.001 A 100
 - N2 Boiler module
 - N3 Heating circuit module HKM
 - N5 Room temperature regulator / timer¹⁾
 - N11 0-10 V DC signal
 - P2 Time clock
 - S1 Operating switch
 - S2 Reset button
 - S3 Display mode button
 - S4 Chimney sweep button
 - R3 Substitute resistor 1 K Ohm
 - T1 Gas solenoid valve (230 V AC)
 - Y2 Gas solenoid valve (230 V AC)
 - X1 Terminal strip LINE POWER
 - X5 Terminal strip
 - X6 Terminal strip, sensor
 - X7 Terminal strip, pump M1
 - X9 Terminal strip, fan
 - 1) Optical extras
 - 2) When RRG is connected, remove jumper at N5 (optimum operation)
 - 3) Remove resistor for connection of B3!
- Note:** Heating Pump max. current load per pump output in I_{N, max} < 1A

- Legend:**
- br = brown
 - gr = green/yellow
 - bl = blue
 - rt = red
 - sw = black
 - vi = violet
 - or = orange
 - ws = white

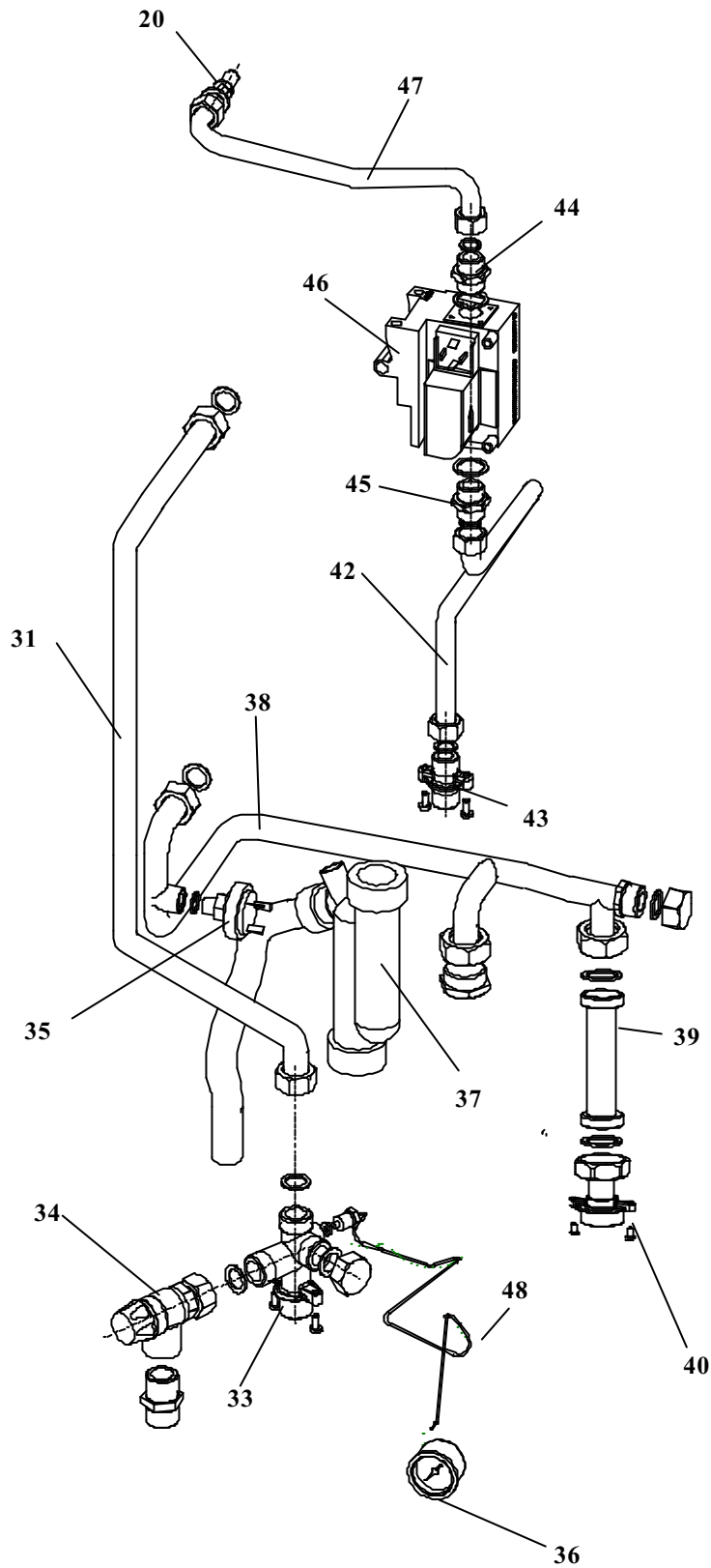
Paramount 40-80



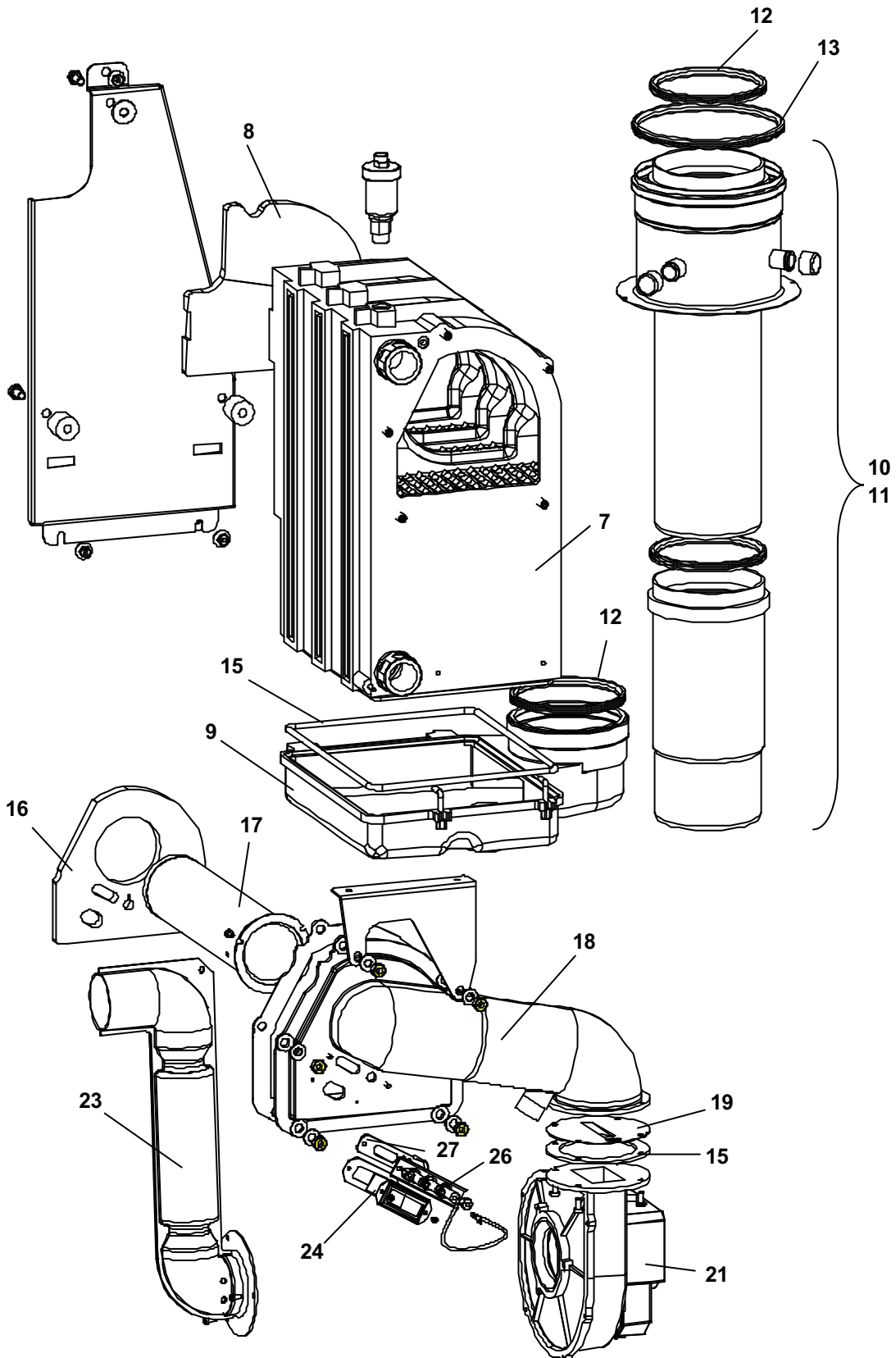
Boiler and Burner Paramount 40



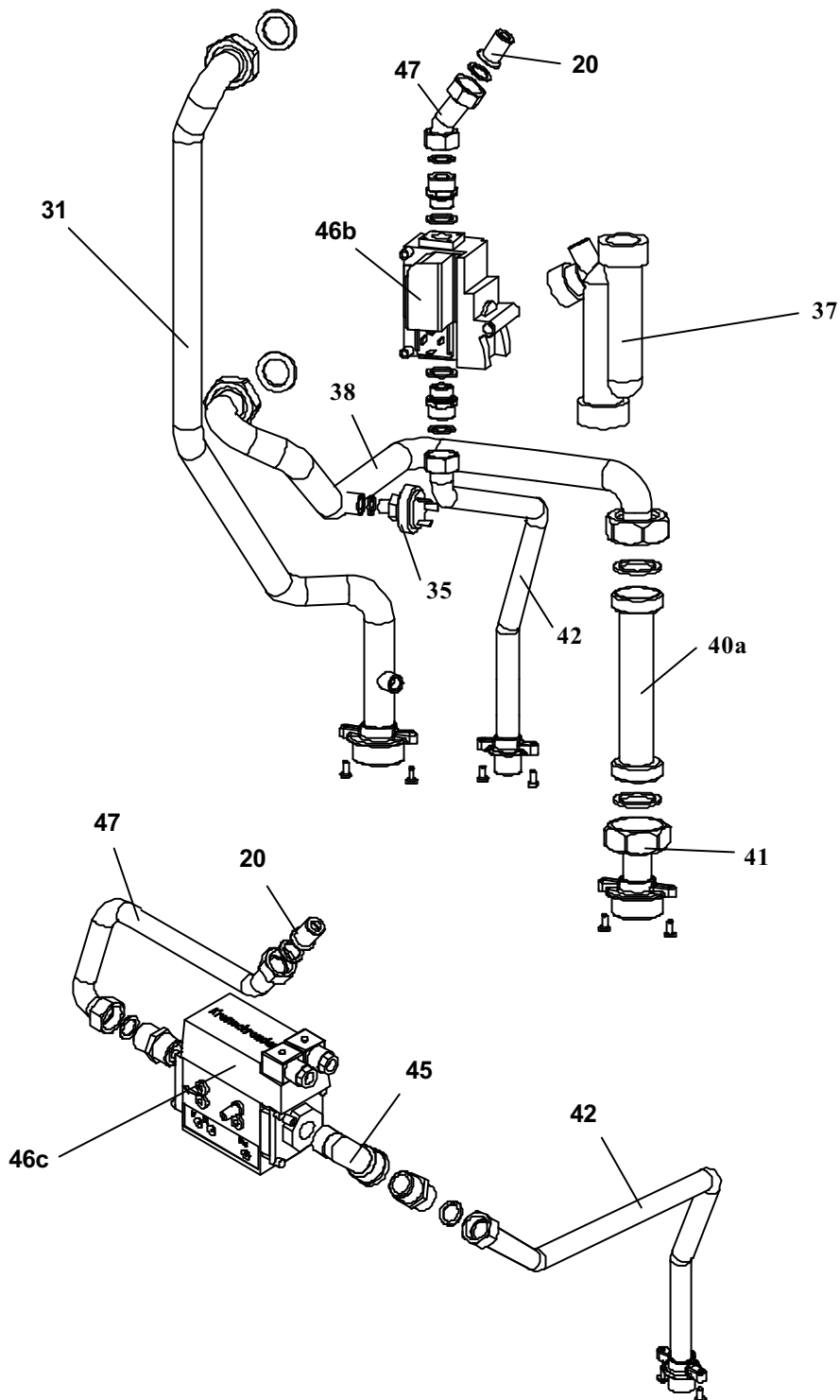
Pipework Paramount 40



Boiler and Burner Paramount 60/80



Pipework Paramount 60/80



Spares Listings Paramount 40, 60, 80

Item Number	Part Number	Description
Casing		
1	988 896	Wall Mounting Plate 40 – 80
2	998 208	Front Door (Round Edges)
3	986 090	Insulation for Front Door
4	986 106	Door for Control
5	986 113	Door Lock Screw
6	986 311	Seal for Air Vent
Boiler & Burner		
7	988 582	Heat Exchanger 40kW
7	991 070	Heat Exchanger 60kW
7	991 087	Heat Exchanger 80kW
8	986 670	Inner Insulation of heat exchanger
9	988 599	Condensate Collector 40kW
9	991 094	Condensate Collector 60kW
9	991 100	Condensate Collector 80kW
10	986 144	Flue Pipe 40kW
11	998 239	Flue Adapter 40kW, 80/125mm
10 + 11	991 117	Flue Pipe and adapter 60/80kW
12	998 253	Gasket 80mm 40kW
12 b	972 192	Gasket 70mm 40kW
13	998 260	Gasket 125mm 40kW
12	992 008	Gasket 100mm 60/80kW
13	992 015	Gasket 150mm 60/80kW
14	998 246	Test Screw 40kW
15	986 168	Set of gaskets for heat exchanger and burner
16	986 175	Inner Insulation of burner flange 40kW
16	991 124	Inner insulation of burner flange 60/80kW
17	988 605	Burner Pipe 40kW
17	991 131	Burner Pipe 60kW
17	991 148	Burner Pipe 80kW
18	986 199	Burner Flange 40kW
18	991 155	Burner Flange 60/80kW
19	988 995	Burner Diaphragm 40kW
19	998 437	Burner Diaphragm 60kW
19	993 555	Burner Diaphragm 80kW
20	989 015	Injector 40/80kW gas G20, Ø7.80mm
20	996 112	Injector 60kW gas G20, Ø8.50mm
20	987 677	Injector 40kW propane, Ø5.80mm
20	991 940	Injector 60/80kW propane, Ø6.20mm
21	989 039	Fan 40kW
21	991 186	Fan 60/80kW
22	986 298	Adapter for fan, 40kW
23	986 304	Air inlet pipe, 40kW
23	991 193	Air inlet pipe 60kW
23	998 444	Air inlet pipe 80kW
24	972 239	Silicone Tube
25	972 338	Sight Glass
26	986 328	Ignition and Ionisation unit
27	986 335	Gasket for ignition and ionisation unit
28	972 789	Ignition transformer ZAG 2/230 V for 40kW
28	991 209	Ignition transformer EBI 052F0030 for 60/80kW
Not Shown	986 342	Ignition lead 40kW
Not Shown	991 216	Ignition lead 60/80kW

Spares Listings Paramount 40, 60, 80

Item Number	Part Number	Description
Pipework		
31	988 643	Flow Pipe 40kW
31	991 223	Flow Pipe 60kW
31	991 230	Flow Pipe 80kW
32	541 848	Air Vent
33	986 380	Flow distributor
34	972 703	Safety Valve 3 bar (40 only)
35	562 034	Water pressure switch ¼" Type 901.41
36	953 399	Pressure Gauge
37	577 564	Condensate siphon
38	988 650	Return pipe 40kW
38	991 247	Return pipe 60kW
38	991 254	Return pipe 80kW
Not Shown	988 667	Non return valve (40kW)
41	988 674	Return pipe 40kW
41	993 531	Return pipe 60/80kW
42	988 681	Gas pipe 40kW
42	991 278	Gas pipe 60kW
42	991 285	Gas pipe 80kW
43	986 441	Nipple for gas pipe
44	988 698	Upper screwed joint for gas valve
45	988 704	Lower screwed joint for gas valve
46	989 046	Paramount 40 Gas Valve (Siemens)
46	625 180	Paramount 60 Gas Valve with Gas pressure switch fitted (Kromschroeder)
46	991 292	Paramount 80 Gas Valve (Kromschroeder)
47	988 711	Pipe from gas valve to burner 40kW
47	991 308	Pipe from gas valve to burner 60kW
47	991 315	Pipe from gas valve to burner 80kW
Not Shown	986 472	Set of gaskets for the pipes
Not Shown	986 489	Plastic bag
Controls		
Not Shown	982 801	Tank sensor QAZ36 2m
Not Shown	972 833	Tank sensor QAZ36, 6m
Not Shown	993 593	Complete control unit for 40kW
Not Shown	998 383	Complete control unit for 60kW
Not Shown	993 616	Complete control unit for 80kW
51	986 663	Cover for Control
52	993 654	Control LMU for 40kW
52	998 390	Control LMU for 60kW
52	993 678	Control LMU for 80kW
Not Shown	986 519	Bridge plug X3
Not Shown	986 571	Lead from LMU to boiler module
Not Shown	986 588	Internal wiring harness for control box
Not Shown	986 618	Wiring harness for low voltage
Not Shown	986 625	Wiring harness for mains voltage 40kW
Not Shown	986 632	Wiring harness for mains voltage 60kW
Not Shown	993 692	Wiring harness for mains voltage 80kW
Not Shown	988 728	Mains plug
Not Shown	988 735	Plug for pump M1
Not Shown	988 742	Plug for M5/BSM2
Not Shown	992 190	Plug for a mixing valve
Not Shown	988 759	Plug for pump M3

Spares Listings Paramount 40, 60, 80

Item Number	Part Number	Description
Not Shown	993 708	Bridge X3
Not Shown	986 533	Blind cover
Not Shown	993 289	Fuse holder with 2 fuses
Not shown	987 882	Volt free relay board (BSM2)
53	986 540	Transformer
Not Shown	986 557	Resistor 1k
Not Shown	986 564	Boiler sensor QAK 36 (Flow temp)
Not Shown	972 819	Boiler sensor QAL 36 (Return temp)
Not Shown	972 826	Sensor QAC 34 (Outdoor temp)
Not Shown	987 219	Flow sensor QAD 36 (e.g. for mixer circuit)
Not Shown	986 595	Screwing PG 9
Not Shown	986 649	Screwing PG 11
Not Shown	986 656	Screwing PG 13.5
Not Shown	986526	KM (Boiler Module)
Not Shown	978941	HKM (Heating Control Module)



Brooks House, Coventry Road
Warwick CV34 4LL
Telephone 08706 050607 Fax 08706 001516

REPORT SENT TO INSTALLER:	YES	NO
SITE VISIT		COMMISSIONING
Date:.....		
Signature:		
INSTALLER NAME & ADDRESS:		
.....		
.....		
VISIT/COMMISSIONING DATE:		

REPORT No:

SITE ADDRESS:

.....

.....

.....

1.0	BOILER	
1.1	Type:	
1.2	No of Sections:	
1.3	Boiler No/Position:	RH LH Centre
1.4	Serial No:	
1.5	Fuel: N/Gas	LPG
2.0	BURNER	
2.1	Type: Standard	Low NOx Ultimate
2.2	Flame Detection Probe:	UV Cell Thermocouple
2.3*	Control Box Type:	
2.4	Electrical Supply:	
2.5	Main Gas Valve Type & Size:	
2.6	Pilot Gas Valve Type & Size:	
2.7	Gas Train Serial Number:	
3.0	BURNER SETTINGS	
3.1	Main Burner Injector Size:	mm
3.2	Pilot Burner Injector Size:	mm
3.3	Are Burners & Injectors Clean?:	
3.4	Kanthal Bars Fitted? (Modified & Ultimate only):	
3.5*	Is the Probe of the Correct Type?	
3.6	Electrode Settings as Manual?	
4.0	PRE-COMMISSIONING CHECKS (See Note)	
4.1	Is boiler house ventilation as per manual?	
4.2	Electric supply fused, isolated & earth wire attached?	
4.3	Check external controls allow operation	
4.4	Check boiler/system flooded and pumps operational and any isolation valves open	
4.5	Check gas available at burner	
4.6c	Check condensate trap fitted, filled and connected to drain with air break	
4.7	Check gas meter sizing adequate	
4.8	Check flue system clear	

5.0	COMBUSTION				
		Pilot	Low	High	Unit
5.1	Gas rate				m ³ /hr
5.2	Main Burner Pressure				mmwg
5.3	Pilot Burner Pressure				mmwg
5.4*	Ionisation Probe/UV Cell Current				uA
5.5c	Air Shutter Position				-
5.6	CO2 or O2				%
5.7	CO				ppm
5.8	Gross Flue Gas Temperature				°C
5.9	Ambient Temperature				°C
5.10	Flue Draught				mmwg
5.11	Inlet Gas Pressure (Main Burner). If multi-boiler installation, inlet gas pressure all boilers high fire)				mmwg

NOTE: 5.5 to 5.9 TO BE MEASURED IN SECONDARY FLUE 600mm UP FROM THE FLUE SOCKET OR AT THE SAMPLING POINT PROVIDED (CONDENSING BOILERS ONLY). THESE MEASUREMENTS ARE INTENDED AS SAFETY CHECKS ONLY. LEVELS ARE DEPENDENT ON FLUE DRAUGHT AND SITE CONDITIONS AND HENCE CANNOT BE USED FOR COMBUSTION EFFICIENCY DETERMINATION.

- * FULLY ELECTRIC BOILERS ONLY
- ¶ THERMO-ELECTRIC BOILERS ONLY
- c CONDENSING BOILERS ONLY
- § CONVENTIONAL ATMOSPHERIC BOILERS ONLY

NOTE: It is the installer's responsibility to ensure that the boiler is correctly commissioned by a competent engineer and that this report is completed and kept as a record. A commissioning service available from Potterton at the address listed on the back page of this manual. When a Potterton engineer commissions, this completed report will be sent to the installer. It is the installers responsibility to action any points arising. Commissioning by Potterton engineers is restricted to equipment of our supply. No responsibility is accepted for the on site assembly or installation of the equipment unless specifically carried out by Potterton. The installer must ensure that the boiler is installed in accordance with the manufacturer's instructions and all relevant BS Codes of Practice and Regulations (see manufacturers instructions for full details). Items 4.1 to 4.6 are related to the boiler installation and as such these pre-commissioning checks should be carried out in the presence of the installer.

Potterton is a Member of the Boiler & Radiator Manufacturers Association (BARMA), and the terms of this Commissioning Document follow the generally agreed conditions of the Association. Potterton, in line with its policy of continuous product development, reserves the right to alter and amend this Document as is deemed necessary at any time.

6.0	OPERATIONAL SAFETY CHECKS	
6.1	Check control stat operation	
6.2	Check limit stat operation	
6.3	Check high/low stat operation	
6.4*	Check for gas leaks	
6.5*	Check for gas leakage past valve assembly	
6.5¶	Check for oil leaks	
6.6	Check boiler locks out on loss of flame signal	
6.7	Check boiler locks out on air pressure switch operation	
6.8	Check boiler locks out on all other safety functions	
6.9*	Check gas booster interlocks operational	
6.10	Record INLET and OUTLET pressure switch settings: INLET OUTLET	
7.0	BOILER/SYSTEM CHECK LIST	
7.1	Control stat left at	°C
7.2	Limit stat left at	°C
7.3	High/low stat left at	°C
7.4	Maximum flow temperature recorded	°C
7.5	Maximum return temperature recorded	°C
7.6	Boiler water pressure	
7.7	Are pipework connections as per manual?	
7.8	Is safety valve fitted? If so, SIZE _____ PRESSURE RATING _____	
7.9	Are water isolating valves fitted?	
7.10	Are water flow switches fitted?	
7.11	Are return water shut off or diverter valves fitted?	
7.12	Is shunt pump fitted?	
7.13	Is pump overrun fitted?	
7.14	Flue type and diameter of connection to boiler:- TYPE DIAMETER (mm) Where appropriate and for multi boiler installations sketch details of flue system showing length of runs and diameters. Conventional <input type="checkbox"/> Fan Assisted <input type="checkbox"/> Flue Dilution <input type="checkbox"/> Approximate overall height m Is the fan interlocked with the boiler? YES / NO	
7.15	Are flue dampers fitted? YES / NO If so, interlocked? YES / NO	
7.16	Fan assisted ventilation? YES / NO	
7.17	Any evidence of condensate formation? YES / NO	
7.18	Any evidence of water leakage? YES / NO	
7.19	Any evidence of flue gas leakage? YES / NO	
7.20	Has boiler been built and cased correctly? YES / NO	
7.21*	Is gas service cock installed? YES / NO If so, accessible? YES / NO	
7.22¶	Is oil filter fitted? YES / NO	
7.23¶	Is fire valve fitted? YES / NO	
7.24¶	Oil supply:	Single Pipe
		Two Pipe
		Ring Main

8.0	COMMENTS ON ACCESSIBILITY FOR MAINTENANCE

9.0	NOTES & COMMENTS BY COMMISSIONING ENGINEER

FINDINGS		
	YES	NO
Is the installation safe for use?		
If the answer is NO, has a warning label been raised?		
Is any remedial work required?		
Have warning labels been fitted?		
Has RIDDOR form been raised?		

Customer Signature:

Print Name:

Date:

ENGINEER DETAILS
NAME
COMPANY
SIGNATURE
DATE

CONVERSION TABLE

	IMPERIAL TO METRIC	METRIC TO IMPERIAL
HEAT 1 Therm = 100,00 Btu/hr	1 Btu/hr = 0.291 W 1 Btu = 1055 J 1 Btu/hr = 0.252 kcal/hr	1 KW = 3412Btu/hr 1 J = 0.0009478 Btu 1 kcal/hr = 3.968 Btu/hr
FUEL CONSUMPTION 1 dm ³ = 1 LITRE 1,000 dm ³ = 1 m ³	1 ft ³ = 28.317 dm ³ (litre) 1 UK Gall = 4.546 litre 1 UK Gall = 1.2 U.S. Gallon	1 m ³ = 35.3147 ft ³ 1 litre = 0.2199 Imp 1 U.S. Gallon = 0.83 UK Gallon
PRESSURE 1 PSI = 2.307 FT 1 kPa = 1000 Pa 1 bar = 1000 mbar = 100 kPa	1 lb/in ² = 6895 Pa 1 lb/in ² = 68.95 mbar 1 in.w.g = 249.1 Pa 1 in.w.g = 2.491 mbar 1 in.w.g = 25.4 mm.w.g	1 bar = 33.45 ft.w.g 1 kPa = 0.3345 ft.w.g 1 bar = 14.5 lb/in ² 1 Pa = 0.358 in.w.g 1 mm.w.g = 0.0394 in.w.g 1 mm.w.g = 9.8 Pa
LENGTH 1m = 1000mm	1 inch = 25.4 mm 1 ft = 0.3048 m 1 yard = 0.9144 m 1 mile = 1.609 km	1 mm = 0.03937 in 1 m = 3.281 ft 1 m = 1.094 yard 1 km = 0.6214 mile
VOLUME	1 ft ³ = 0.02832 m ³ 1 ft ³ = 28.32 litre	1 m ³ = 35.3147 ft ³ 1 litre = 0.03531 ft ³
AREA	1 in ² = 645.2 mm ² 1 in ² = 6.452 cm ² 1 ft ² = 929 cm ² 1 ft ² = 0.0929 m ²	1 mm ² = 0.00155 in ² 1 cm ² = 0.155 in ² 1 m ² = 1550 in ² 1 m ² = 10.76 ft ²
FLOW RATE 1 kg/sec = 1 lit/sec @ 0°C Reference temperature	1 gall/min = 0.7577 lit/sec 1 ft ³ /min = 0.4719 lit/sec 1 ft ³ /min = 0.00047 m ³ /sec	1 lit/sec = 13.2 gall/min 1 lit/sec = 2.119 ft ³ /min 1 m ³ /sec = 2119 ft ³ /min
TEMPERATURE	°F to °C = ("X"°F-32) x 0.5556	°C to °F = ("X"°C x 1.8) + 32
TEMPERATURE DIFFERENCE 1°C = 1°K	"X"°F x 0.5556 = °C	"X"°C x 1.8 = °F
WEIGHT	1 lb = 0.4536 kg 1 cwt = 50.8 kg 1 ton = 1016 kg	1 kg = 2.205 lb 1 tonne = 0.9842 ton 1 tonne = 2204.6 lb

For further details on Potterton Commercial boiler products contact the following:-

COMMERCIAL SALES & TECHNICAL ENQUIRIES

Potterton Commercial Products Division
Brooks House
Coventry Road
WARWICK
CV34 4LL

Tel: (08706) 050607
Fax: (01926) 001516
Sales Direct Line: (08706) 001991
Technical Direct Line: (08706) 002322
e-mail: commercial@potterton.co.uk
Web Site: www.pottertoncommercial.co.uk

COMMERCIAL SERVICE OFFICES

Our service organisation covers the whole of the U.K. to look after your needs for all Potterton Commercial Products. We are also able to offer our services for other manufacturers products.

SOUTHERN REGION

Potterton Commercial Service Dept
Unit 2 Borehamwood Enterprise Centre
Theobald Street,
BOREHAMWOOD
Herts WD6 4RU
Tel: (08702) 412759
Fax: (02082) 072466

NORTHERN REGION

Potterton Commercial Service Dept
Unit 102, Batley Enterprise Centre
513 Bradford Road
BATLEY
West Yorkshire WF17 8JY
Tel: (08702) 412759
Fax: (01924) 420276

Our service offices offer a wide range of specialised services including:-

- Boiler Site Assembly
- Burner Commissioning for all Fuels
- Boiler Maintenance & Maintenance Contracts
- Breakdown & Repair Services
- Boiler Dismantling & Re-Jointing
- Burner & Boiler Replacement
- Oil/Gas Conversions
- System Conditioning
- Water Treatment & Descaling
- Packaged Units

SPARES

Potterton Commercial spares are available nationwide through the Potterton Interpart network. Alternatively please contact:-

interpart

Brooks House, Coventry Road, Warwick - Telephone: 08706 00454 Fax: 08706 000545

"All descriptions and illustrations contained in this leaflet have been carefully prepared but we reserve the right to make changes and improvements in our product which may affect the accuracy of the information contained in this leaflet"



A Baxi Group Company

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