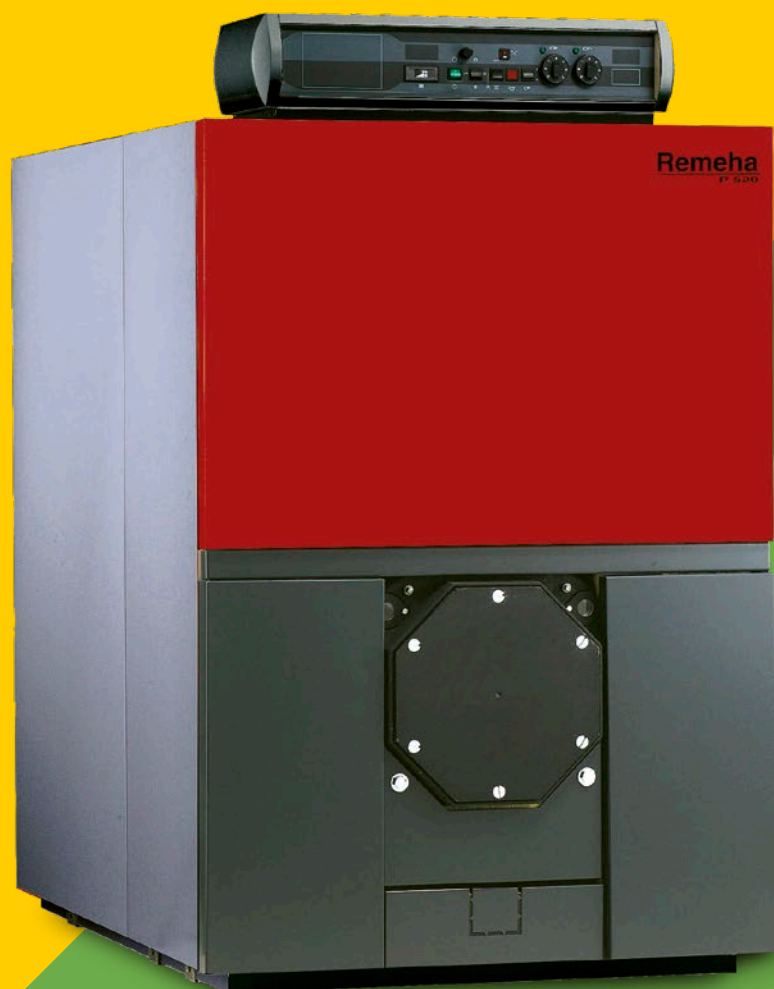


P Series range.

Specification guide



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Remeha, the expert choice.

Complete commercial solutions from the expert in sustainable heating and hot water. Choose Remeha's Pressure Jet range for your next commercial project.

We invest heavily in research and development which enables our specialist teams to design high performance products at every level. From using the latest materials and manufacturing techniques to meticulously designing and engineering each product, we ensure they're efficient to specify, install, run and maintain.

We're the experts in heating and hot water solutions, built with sustainable technology. Our teams will guide you through the right choices for your commercial heating and hot water project. So from specification to sign-off through to supply and handover, our customer service and product support is second to none.

Introducing the Remeha P Series Pressure Jet Range.

Our P Series is a range of three-pass cast iron sectional boilers ideal for use with gas and dual fuel through a pressure jet burner for commercial and industrial applications.

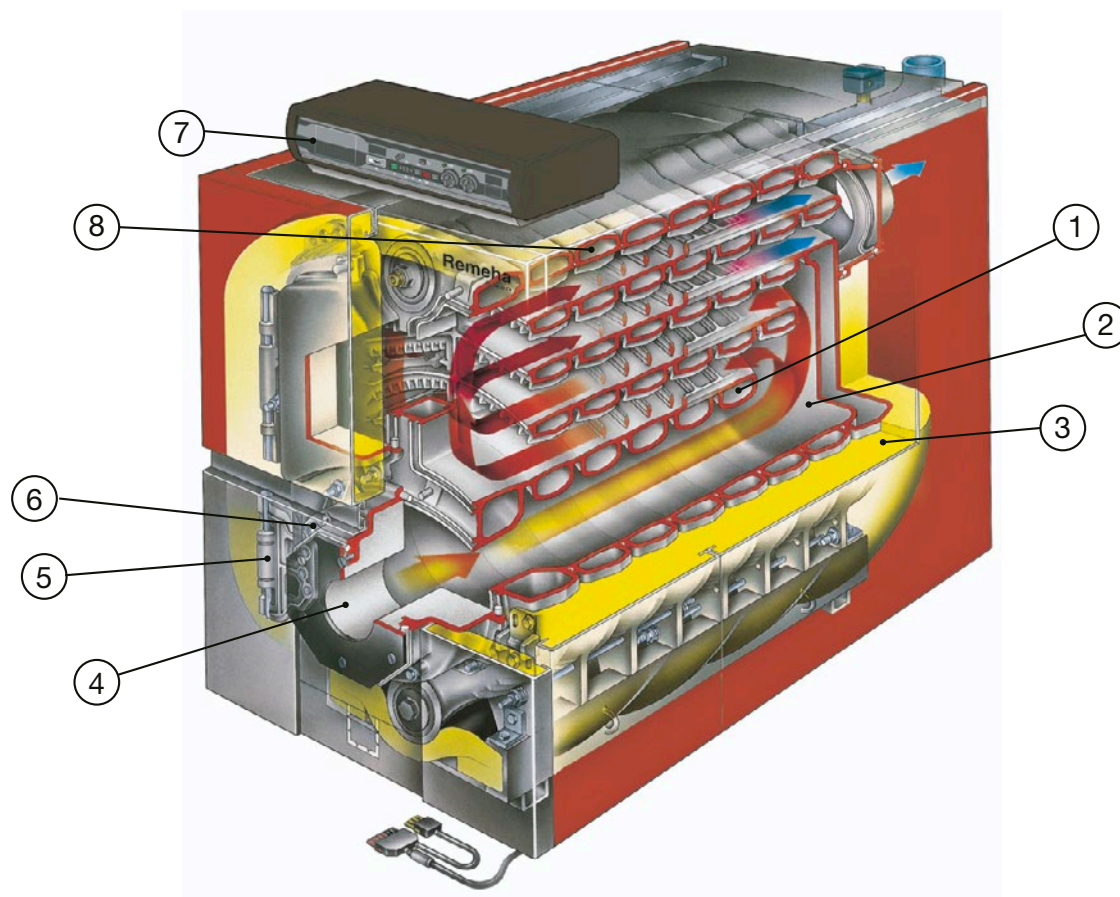
Compact yet extremely powerful, they deliver high operating efficiency and low emissions.

Suitable for open and sealed systems up to pressure of six bar and can be installed in basement or rooftop boiler houses.

Features and benefits

Designed on basis of triple pass principle	Maximum efficiency
Generously sized combustion chamber	Optimal combustion efficiency for low NOx and CO ₂ emissions
Low noise operation	Improved environment
Easy installation and adaptation to traditional burners as well as new burners with low NOx emissions	Improved ease of maintenance and upgrade
Eutectic cast iron boiler body	Exceptional resistance to temperature variations, thermal shocks and corrosion
Reinforced fibreglass wool insulation (80-100mm) and double insulation of the boiler front	Minimises heat loss, reduces stand-by consumption, improves thermal efficiency
Hinged cleaning door, left or right hand opening	Easy access for service operation

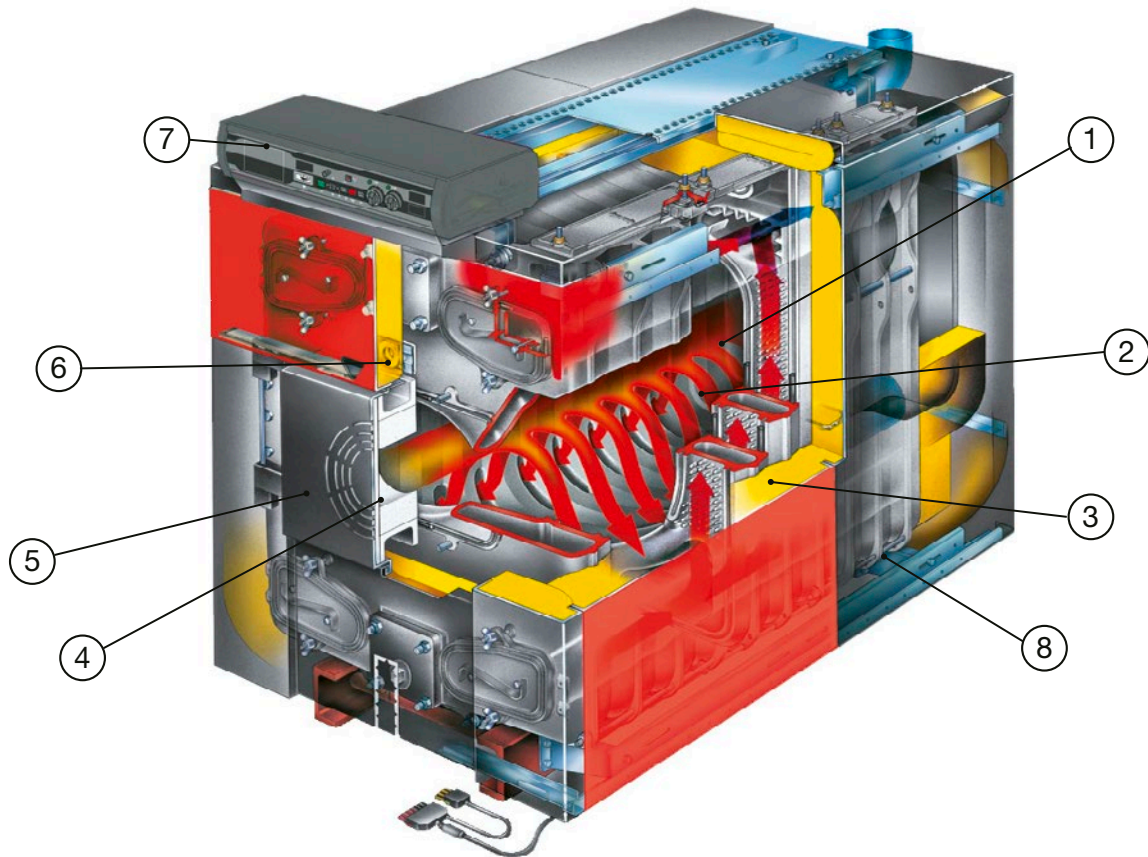
Typical P Series P420 Pressure Jet boiler construction.



Key

1	Boiler body with pass flue ways	6	Flame observation window
2	Large-sized combustion chamber	7	Control panel designed to enable easy wiring connections
3	Complete insulated boiler body with fibreglass wool, 100mm thick	8	Eutectic cast iron body, thermal shock and corrosion resistant, allowing low modulated temperature operation and complete stop between two heating periods
4	Ceramic fibre insulated burner door		
5	Hinged burner door fitted (right hand side or left hand side)		

Typical P Series P520 Pressure Jet boiler construction.



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P Series

operating principle.

The P Series is designed on the triple-pass principle for maximum efficiency with a generously sized combustion chamber for minimising NO_x production.

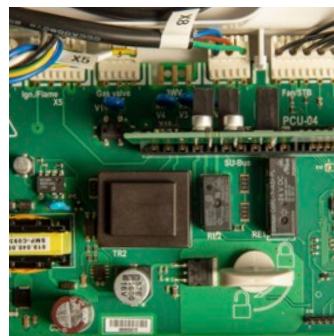
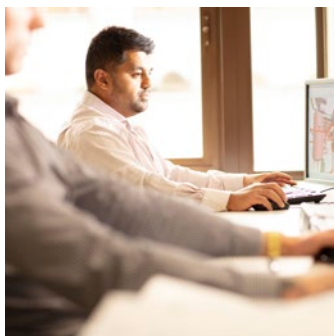
The main boiler casing is sheet steel with a powder-coated enamel finish complete with 80-100mm thick steel wool insulation.

The heat exchanger is manufactured from corrosion-resistant eutectic cast iron. The instrument panel contains all the necessary control and measuring instruments required to control the boiler with the external connections on a terminal strip.

The capillaries and sensor wires of the control panel are placed in the instrument pockets fitted at the front of the boiler. For the discharge of flue gases, chimney draught isn't required. Tests prove that excellent combustion results are obtained with zero draught at the boiler outlet.

The boilers are suitable for open and sealed systems up to a maximum pressure of six bar.

The boilers are also suitable for installation in basement or rooftop plant rooms as the compact size of the parts ensures easy access into plant rooms through a standard doorway.



P Series P420

technical information.

	9-Section	10-Section	11-Section	12-Section	13-Section	14-Section
Performance						
Nominal heat output central heating operation @ 80/60°C kW (max)	450	540	600	670	720	780
Efficiency						
Efficiency – full load 100% NCV (average)	88	88	88	88	88	88
Seasonal efficiency GCV (average)	82.2	82.2	82.2	82.2	82.2	82.2
Burner type / Pressure jet						
Standard fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel
Max gas consumption	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Oil consumption kg/hr @ 12 bar pump pressure	43.33	52	57.77	64.52	63	75.11
Min op gas pressure mbar	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Flue (Conventional connection)						
Flue diameter mm I/D	250	250	300	300	300	300
Chamber resistance mbar	+1.5	+2.0	+2.5	+2.5	+2.5	+3.5
Flue gas flow rate kg/h gas	810	972	1080	1207	1297	1450
Flue gas flow rate kg/h oil (full output 80/60°C)	750	900	1000	1116	1200	1405
Average flue gas temperature boiler temperature 80°C	<220	<220	<220	<220	<220	<220
Hydraulics						
Water content litres	409	452	495	538	581	624
Hydraulic resistance @ 20°C ΔT mbar	12	20	25	33	40	49
Resistance @ 11°C ΔT mbar	39.7	66	82.6	109.2	132.17	162.23
Nominal flow rate @ 20°C ΔT l/s	5.38	6.45	7.17	8.0	8.6	9.32
Nominal flow rate @11°C ΔT l/s	9.77	11.73	13.03	14.55	15.64	16.94
Min flow rate l/s based on ΔT of 45°C	2.39	2.85	3.18	3.54	3.8	4.12
Test press bar	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual

P Series P420

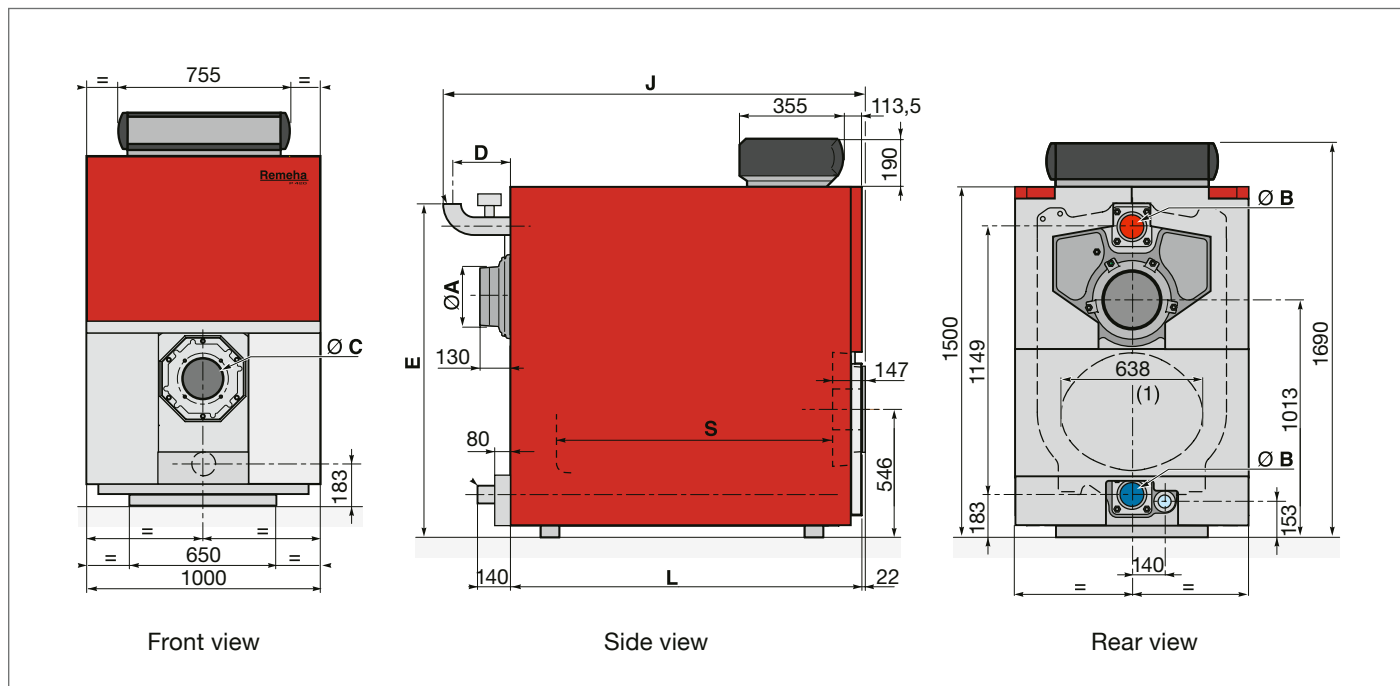
technical information.

	9-Section	10-Section	11-Section	12-Section	13-Section	14-Section
Hydraulics						
Connection size	2½" flanged	2½" flanged	3" flanged	3" flanged	3" flanged	3" flanged
Standard operating temperature °C	80	80	80	80	80	80
Max operating temperature °C	90	90	90	90	90	90
Max water operating pressure bar	6	6	6	6	6	6
Min return temp °C	50	50	50	50	50	50
High limit set point °C	110	110	110	110	110	110
General						
Shipping weight kg	1650	1830	2010	2190	2370	2550
Dimension (WxHxD) (include flow/ return and gas pipe work) (mm)	1000 x 1690 x 1950	1000 x 1690 x 2120	1000 x 1690 x 2305	1000 x 1690 x 2465	1000 x 1690 x 2625	1000 x 1690 x 2785
Noise levels dB(A) at 1 metre	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Min operating gas pressure	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Radiated losses (w) based on ΔT 45°C	358	413	451	494	505	555
Combustion chamber diameter	530	530	530	530	530	530
Electrical						
Nominal power supply	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz
Fuse rating (amps)	10	10	10	10	10	10

Note: 1ph burners obtain their power supply via the boiler. Fuse rating amps: 10Amp 3ph burners require a 3ph supply + a 1ph to the boiler.

Engineering specification and dimensions and connections.

P Series P420 Dimensions and Connections



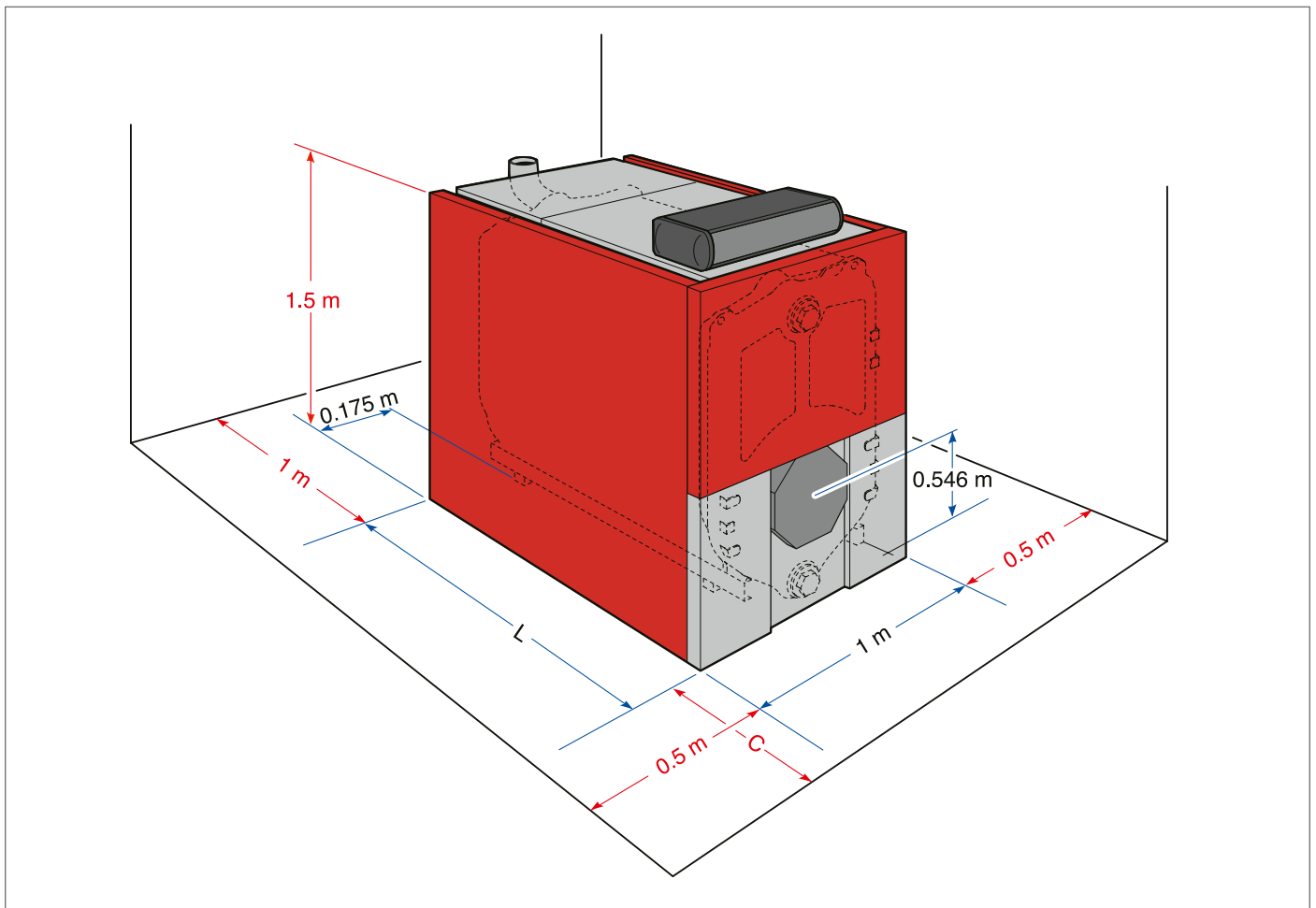
Number of sections	9	10	11	12	13	14
$\varnothing A$ (mm)	250	250	300	300	300	300
$\varnothing B$ (mm)	2.5"	2.5"	3"	3"	3"	3"
$\varnothing C$ (mm)	Plate intact or pre-drilled to the diameter specified on order					
D (mm)	235	235	254	254	254	254
E (mm)	1427	1427	1447	1447	1447	1447
J (mm)	1950	2120	2305	2465	2625	2785
L (mm)	1665	1825	1985	2145	2305	2465
S (mm)	1343	1503	1663	1823	1983	2143

Engineering specification and dimensions and connections.

P Series P420 Dimensions and Connections

The Remeha P420 boilers do not require a special base for their assembly. Their closed furnace system means that the floor does not need to have refractory properties.

Ensure that the floor can support the weight of the boiler when it's fitted for operation. If the boiler location is not determined precisely, leave enough space around the boiler to facilitate monitoring and maintenance operations.



Number of sections	9	10	11	12	13	14
L (mm)	1665	1825	1985	2145	2305	2465

C min = 1.5 mtrs min and max dependent on make and model of burner.

P Series P520

technical information.

	13-Section	15-Section	17-Section	19-Section	21-Section	23-Section	25-Section
Performance							
Nominal heat output central heating operation @ 80/60°C kW (max)	754	870	986	1102	1218	1334	1450
Efficiency							
Efficiency – full load 100% NCV (average)	90.7	90	90	90	90	90	90
Seasonal efficiency GCV (average)	84.1	84.3	84.3	84.5	84.5	84.2	84.8
Burner type / Pressure jet							
Standard fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel	Natural gas/ dual fuel
Max gas consumption	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Max oil consumption kg/hr @ 12 bar pump pressure	71.01	81.95	92.28	103.73	114.66	125.59	136.52
Min op gas pressure mbar	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Flue (Conventional connection)							
Flue diameter mm I/D	350	400	400	400	Cut plain plate as required (max 500 x 700mm)	Cut plain plate as required (max 500 x 700mm)	Cut plain plate as required (max 500 x 700mm)
Chamber resistance mbar	+2.2	+2.4	+2.6	+2.85	+3.1	+3.3	+3.5
Flue gas flow rate kg/h gas	1120	1280	1440	1590	1750	1910	2070
Flue gas flow rate kg/h oil (full output 80/60°C)	1070	1220	1370	1520	1670	1820	1970
Average flue gas temperature boiler temperature 80°C	<190	<190	<190	<190	<190	<190	<190
Hydraulics							
Water content litres	617	693	769	845	943	1019	1095
Hydraulic resistance @ 20°C ΔT mbar	14.4	19.4	7.6	10.4	13.4	16.2	19.6
Resistance @ 11°C ΔT mbar	47.53	64.13	25.10	34.39	44.28	53.58	64.79

P Series P520

technical information.

	13-Section	15-Section	17-Section	19-Section	21-Section	23-Section	25-Section
Hydraulics							
Nominal flow rate @ 20°C ΔT l/s	9.01	10.39	11.78	13.16	14.55	15.93	17.32
Nominal flow rate @ 11°C ΔT l/s	16.37	18.89	21.41	23.94	26.45	28.97	31.49
Min flow rate l/s based on ΔT of 45°C	3.98	4.6	5.21	5.83	6.44	7.08	7.76
Test press bar	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual	As per assembly manual
Connection size mm (weld)	140	140	140	159	159	159	159
Standard operating temperature °C	80	80	80	80	80	80	80
Max operating temperature °C	90	90	90	90	90	90	90
Max water operating pressure bar	As per technical manual	As per technical manual	As per technical manual	As per technical manual	As per technical manual	As per technical manual	As per technical manual
Min return temp °C	50	50	50	50	50	50	50
High limit set point °C	110	110	110	110	110	110	110
General							
Dry weight kg	3000	3364	3756	4124	4538	4930	5297
Dimension (WxHxD) (include flow/return) (mm)	1172 x 1760 x 1955	1172 x 1760 x 2245	1172 x 1760 x 2445	1172 x 1760 x 2645	1172 x 1760 x 2955	1172 x 1760 x 3155	1172 x 1760 x 3355
Noise levels dB(A) at 1 metre	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Min operating gas pressure	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details	Check burner details
Radiated losses % based on maintenance consumption @ 30° ΔT	0.08	0.07	0.07	0.07	0.06	0.06	0.06
Electrical							
Nominal power supply	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz	230v x 1ph x 50hz
Fuse rating (amps)	10	10	10	10	10	10	10

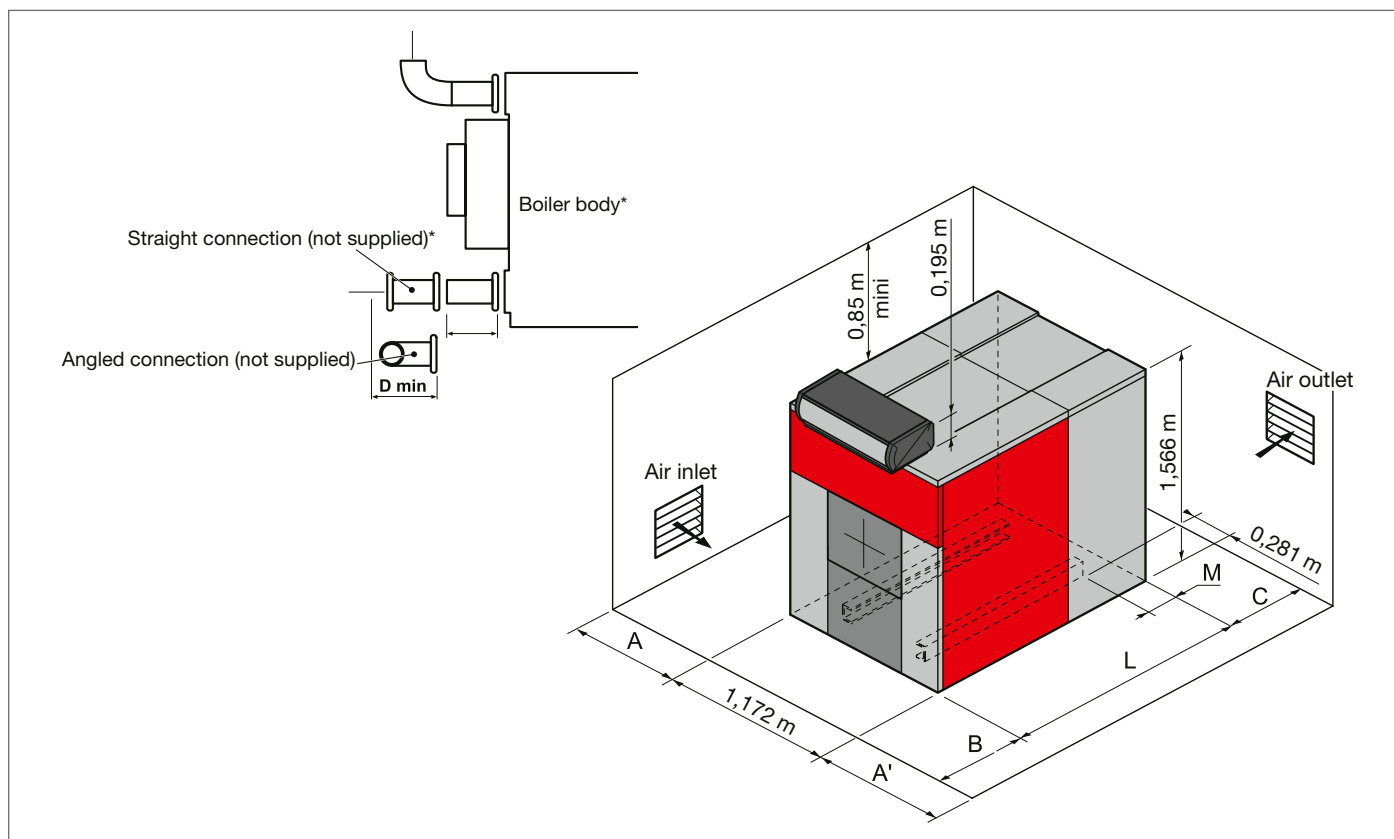
Note: 1ph burners obtain their power supply via the boiler. Fuse rating amps: 10Amp 3ph burners require a 3ph supply + a 1ph to the boiler.

Engineering specification and dimensions and connections.

P Series P520 dimensions and connections

For the assembly and because of their design, P520 boilers require no special base. Their closed furnace system means that the floor does not need to have refractory properties.

Ensure is that the floor can support the weight of the boiler when it is fitted for operation. If the boiler location is not determined precisely, leave enough space around the boiler to facilitate monitoring and maintenance operations.



Number of sections	13	15	17	19	21	23	25
L (mm)	1955	2245	2445	2645	2955	3155	3355
M (mm)	275	324	321	299	324	324	303
C min	300	436	656	656	936	1266	1266
D min	-	136	356	356	636	966	966

* In order to facilitate subsequent work on the boiler (replacing the water distributing tube etc.) use a flanged connection from the boiler to the system, making sure you comply with minimum clearance dimension D. If A = 1.2m (door opening side), A' = 0.5m. If A = 0.5m, A' = 1.2m (door opening side): adapt the dimensions on the basis of the dimensions of the burner when the door is open. B = 1.5m: adapt the dimensions on the basis of the dimensions of the burner.



Water treatment.

The system should be filled with mains cold water (for the UK, this will usually have a pH of between seven and eight). Pressurised installations with a boiler/system content ratio of 1:10 or less should not require water treatment, provided that the following conditions apply:

- 1 The system is flushed thoroughly to remove all fluxes and debris and then filled completely once
- 2 Make up water is limited to 5% per annum.
- 3 The hardness of the water does not exceed 360ppm (20°C)

All scale deposits will reduce the efficiency of the boiler and should be prevented. However, provided the above is complied with, any scale produced will not be too detrimental to the boiler efficiency and will not reduce the anticipated life expectancy of the boiler.

NOTE: Scale deposits in excess of 3-5mm will reduce boiler efficiency and greatly increase the risk of premature casting failure.

As most systems contain a variety of metals which can react with each other to cause corrosion, it is considered good practice to provide some form of water treatment (especially in open vented systems) in order to prevent or reduce the following:

- > Metallic corrosion
- > Formation of scale and sludge
- > Microbiological contamination
- > Chemical changes in the untreated system water

Suitable chemicals and their use should be discussed with a specialist water treatment company prior to carrying out any work. The specification of the system and manufacturers' recommendations must be taken into account, along with the age and condition of the system.

New systems should be flushed thoroughly to remove all traces of flux, debris, grease and metal swarf generated during installation. Care should be taken with old systems to ensure any black metallic iron oxide sludge and other corrosive residues are removed, again by thorough flushing, ensuring that the system is drained completely from all low points.

NOTE: Please ensure that the new boiler plant is not in circuit when the flushing takes place, especially if cleansing chemicals are used to assist the process.

Under no circumstances is the boiler to be operated with cleaning chemicals in the system.

To summarise:

- > Minimise water loss
- > Prevent pumping over in open vented systems
- > Provide adequate air venting at all high points
- > Keep pH level between 7-9 when using additives
- > Maximum chlorine content of 200mg/l
- > Take advice on the suitability of inhibitors



Technical support and declaration of compliance.

Technical support

From brochures to CAD drawings and BIM files, you can access all the information you need at remeha.co.uk

Or call our sales or technical departments on **0345 070 1055**.

We're always happy to help.

We can provide you with:

- > Brochures
- > Technical specification sheets
- > Case studies
- > Installation manuals
- > BIM files
- > CAD files
- > Energy-related products directive data
- > Commissioning
- > Technical information
- > Spare parts (part of our aftersales service)

Declaration of compliance

The boilers meet the requirements of the following EC regulations:

- > 97/23/Sound engineering (article 3.3)
- > 90/396/Gas appliance directive
- > 73/23/Electrical low voltage directive
- > 89/336/E.M.C. directive
- > 92/42/Efficiency directive



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