



OR broag - remeha



Advanced boiler technology

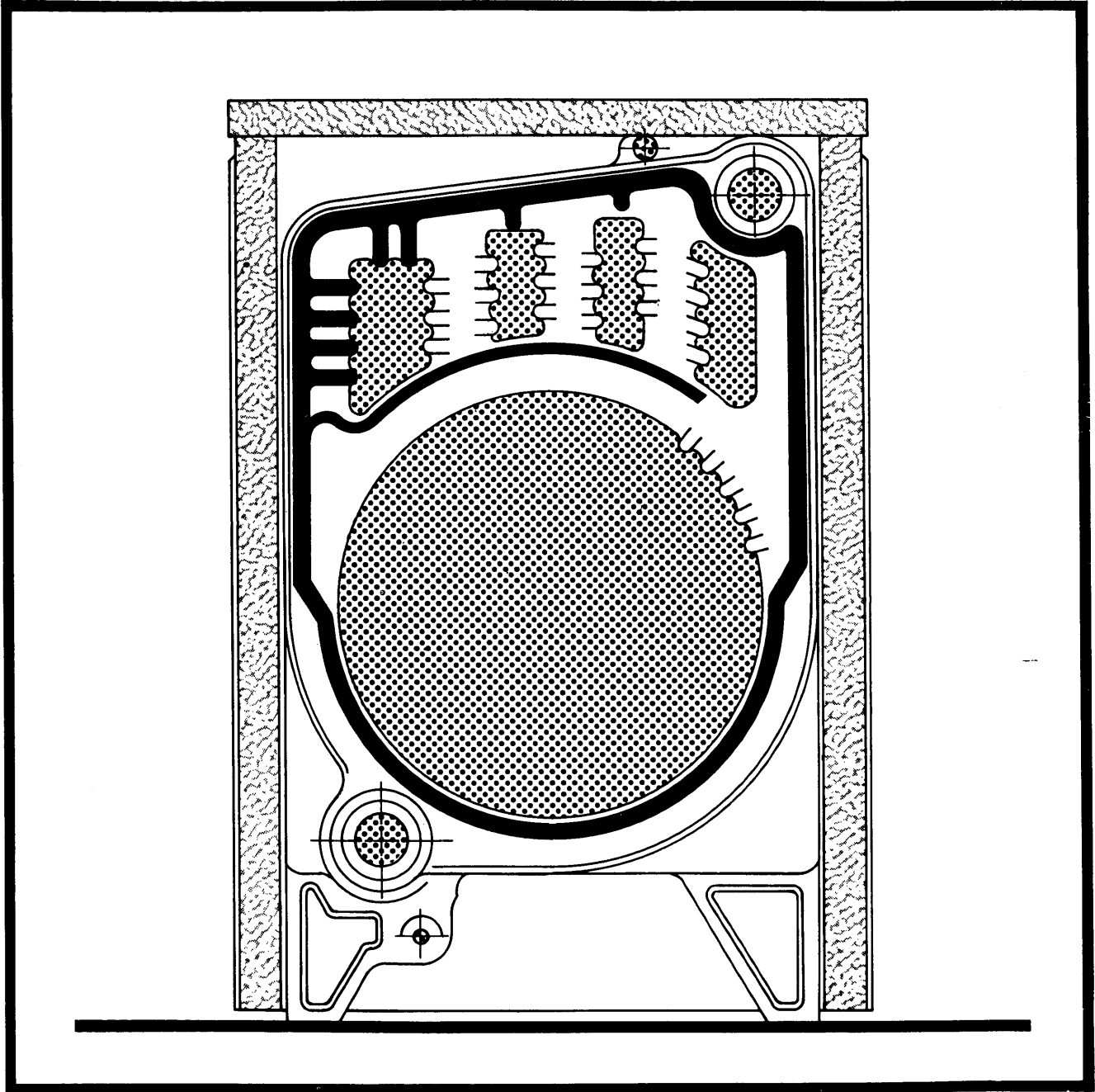
Seagold

GP110 boiler

CI/SfB reference by RIBA SfB Agency

(5-12) x L1

technical information



Broag Burners Ltd

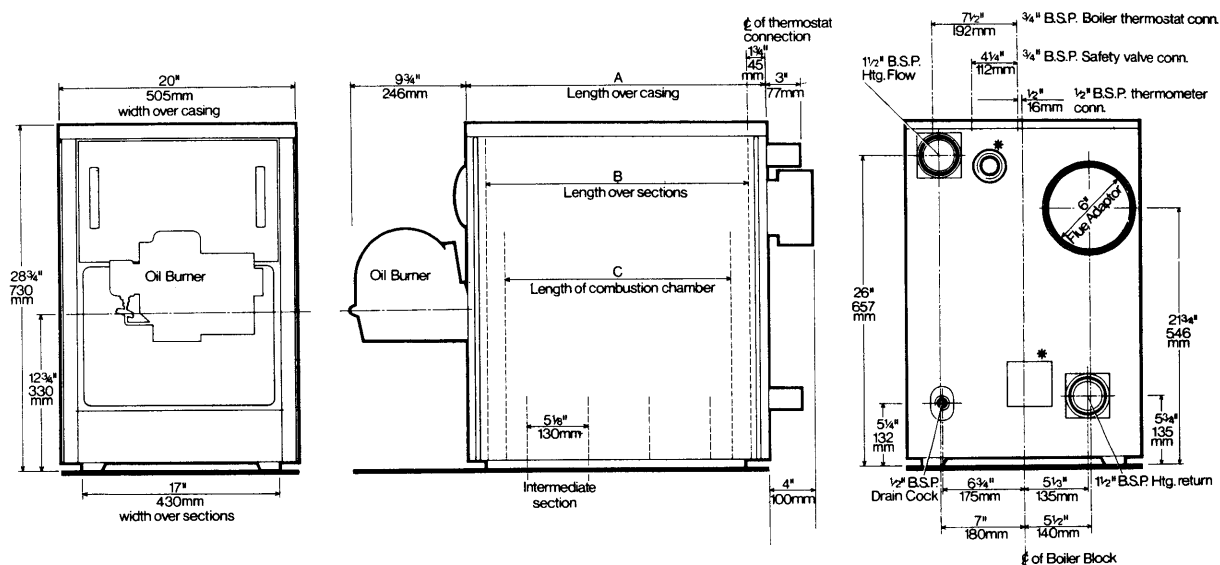
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Molly Millars Lane
Wokingham, Berks
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SEAGOLD boiler applications include indirect hot water and central heating for schools, hospitals, banks, hotels and high street shops. Visits to a variety of commercial installations throughout the UK can be arranged on request.



Model	A	B	C	Boiler weight (dry)				
GP110-3	14 $\frac{7}{8}$ "	380mm	11 $\frac{7}{8}$ "	300mm	8 $\frac{5}{8}$ "	220mm	308 lbs	140 kg
GP110-4	20"	510mm	17"	430mm	13 $\frac{3}{4}$ "	350mm	386 lbs	175 kg
GP110-5	25 $\frac{1}{8}$ "	640mm	22 $\frac{1}{8}$ "	560mm	18 $\frac{7}{8}$ "	480mm	463 lbs	210 kg
GP110-6	30 $\frac{1}{4}$ "	770mm	27 $\frac{1}{4}$ "	690mm	24"	610mm	540 lbs	245 kg
GP110-7	35 $\frac{3}{8}$ "	900mm	32 $\frac{3}{8}$ "	820mm	29 $\frac{1}{8}$ "	740mm	617 lbs	280 kg
GP110-8	40 $\frac{1}{2}$ "	1030mm	37 $\frac{1}{2}$ "	950mm	34 $\frac{1}{4}$ "	870mm	695 lbs	315 kg

GP110 series boiler
principal dimensions



* These two connections are used on the GP114 (boiler/cylinder combination) only

To ensure competitive performance, prices and specification Seagold maintains a continuous development programme and reserve rights of modification or alteration without notice

Model	Output		Water content		Draught at boiler exit		Gas content		Flue gas temperature		Burner firing rate	
	Btu/h 1000's	kW	Imp gal	litres	In. wg	mm wg	FT ³	m ³	°C	°F	Imp gal/h	kg/h
GP110-3	75	22	5.28	25	0.07	1.90	1.24	0.035	195	383	6	2.25
GP110-4	120	35	6.16	28	0.07	1.90	1.80	0.052	236	456	1.0	3.75
GP110-5	150	44	6.82	31	0.068	1.75	2.47	0.070	245	473	1.18	4.5
GP110-6	180	53	7.48	34	0.08	2.05	3.07	0.087	228	442	1.5	5.55
GP110-7	215	63	8.14	37	0.10	2.45	3.71	0.105	242	468	1.63	6.2
GP110-8	245	72	8.80	40	0.13	3.00	4.31	0.122	257	494	1.83	6.9

GP110 boiler

technical information

The SEAGOLD GP110 is a new high output cast iron sectional boiler engineered to the rigorous demands of European users for fast, indirect hot water recovery and high central heating temperatures. Manufactured in considerable quantities by one of Europe's most modern and sophisticated boiler foundries, the GP110 series is produced in accordance with British Standards and Codes of Practice under the SEAGOLD label.

The GP110 series of exceptionally compact boilers is produced in six sizes with outputs ranging from 75,000 Btu/h to 245,000 Btu/h (22 kW an hour to 72 kW an hour). Its unusually small size enables conventionally designed boilers to be used for multiple applications where plant flexibility is of high priority.

The standard oil fired matched burner supplied by SEAGOLD is Nu-Way's C2 burner with micro control air shutter developed for this type of ultra-compact, high efficiency boiler.

Other types of blown burner of British or Continental manufacture have been matched to the GP110 series and may be used where specified. However, reference should be made to SEAGOLD before an alternative burner is installed.

The GP110 series was specifically designed and developed for the supply of indirect hot water and central heating systems for commercial applications – small public buildings, hospitals, schools, high street shops, apartment blocks and hotels where expensive floor space is at a premium. For direct hot water supply, a calorifier system must be incorporated, or a variation of the GP110 – the GP114 – which includes a hot water cylinder within the boiler casing.

All boilers are supplied with a stove-enamelled mild steel casing in a neutral grey finish with 1 in. thick fibre glass insulation. SEAGOLD'S distinctive livery of yellow and charcoal is displayed on the front top and bottom panels.

Boiler Specification

The GP110 series is produced in cast iron for long, trouble-free life with minimum standards to BS779:1961 for cast iron sectional boilers. The sophisticated section design incorporates a circular combustion zone with a gas "swirl" configuration for high heat transfer. Each section is accurately machined for gas tight joints.

Boilers are factory assembled with ground nipples, external tie rods and hydraulically tested to pressures in excess of 100 lbs f/in². Cast iron legs eliminate expensive boiler base preparation.

The top half of the boiler sections include three pass flue passages terminating in an off-set horizontal flue socket. The boiler is provided with an inspection port in the front plate to facilitate burner setting.

Water Connections

1½ in. BSP flow and return connections are flanged to rear section of boiler providing exceptionally easy installation. Top and bottom entries are diagonally opposite.

A ¾ in. BSP tapping for the boiler thermostat provided, is located on the top of the rear section. A ½ in. tapped boss for a drain cock is located at the bottom of the rear section.

A thermometer or altitude gauge can be fitted to a tapped ½ in. boss on the top of the rear section or fitted in the flow pipe near the boiler.

A safety valve may also be fitted in the ¾ in. tapped boss provided on the top of the rear section.

Water Temperatures

To minimise the possibility of condensation on light up, it is recommended that the return water temperature is raised quickly to operating temperature. In exceptional conditions a boiler by-pass valve can be installed, controlled by a pipeline thermostat to mix a proportion of hot water with the cooler return water.

Flue Connection

A flue adaptor is provided to accept 6 in. diameter asbestos or cast iron flue pipe. Flue pipe and chimney connection should be in accordance with British Standard Code of Practice CP3002: Part 1: 1961. Practical guidance details are provided in the GP110 installation instruction leaflet.

Electrical Supply

Single phase, 220-240 volt, AC 50 hz. A fused isolating switch should be fitted between the burner controls and the mains supply (see separate wiring diagram).

Electrical and Burner Components Standard

AEI or Ranco motor AC220-240 volt with Parmeko ignition transformer.
Burner fitted with WHS solenoid valve.
Fuel pump Danfoss RSL028.
Danfoss H1 controller.
Danfoss boiler thermostat.

Oil Burner

The standard oil-fired burner for SEAGOLD'S GP110 series is the Nu-Way C2 using 35 second fuel oil – Redwood No. 1 at 100°F – to BS.2869:1970 Class D. The burner is pre-wired, tested and pre-set for instant oil firing with direct spark ignition. The burner construction is of monoblock metric design using fasteners to ISO standards, the body being hinged for access to fan and inner assembly. For the accurate control of combustion conditions a micro disc control is incorporated for combustion air regulation. The burner is suitable for single pipe gravity feed or a two pipe suction lift system. A solenoid cut-off valve is fitted as standard as is a fuel filter with disposable element. Fuel pipe connection is $\frac{1}{2}$ in. BSP. A special safety feature of this burner is a flame supervised photo-electric cell with sequence controller complying to British Standard 799: Part 3: 1970. With Nu-Way's C2 burner an efficiency of 78-80% is obtainable from gross C.V. of fuel oil. Various ranges of other British and Continental burners are matched to SEAGOLD'S GP110 series.

Location

The boiler room or building must be accessible by road to facilitate off-loading and it is recommended that adequate protection from weather conditions should be provided if the boiler or parts are to be stored on site prior to installation.

Builders Work

The boilers are supplied completely assembled to reduce site work, with burner and casing in separate containers. Front and back sections incorporate short legs to eliminate boiler base preparation but designers may specify a raised base in order that the boiler is safe from possible flooding in suspect locations. Such a base should be fireproof but the inherent water way design and construction makes insulation and sealing procedures unnecessary.

Boiler Room Ventilation

As free air is essential to support combustion, adequate provision should be made for a permanent low level air entry direct from outside for an approximate rate of 75 CFM per 100,000 Btu boiler power. It is also recommended that high level ventilation be provided of not less an area than 50 per cent of the low level intake. If only a high level air inlet source is available, combustion air should be ducted to low level. Engineers should consult Local Authority by-laws, British Standards and Codes of Practice CP3002:Part 1:1961 and CP342:Clean Air Act:1956, together with the Memorandum of Chimney Heights and the current IHVE Guide.

Access for Servicing

Ample room for cleaning of flue ways and burner servicing must be left at the front of the boiler. The engineer's discretion should be applied as to the amount of side access necessary or provided.

Oil Supply Systems

A single or two-pipe delivery system can be used to suit site requirements. For an installation where the distance between the boiler and oil storage tank is relatively short, fully annealed $\frac{3}{8}$ in. (10 mm) o.d. copper tube and flare fittings are recommended. Steel pipe work may be used but **UNDER NO CIRCUMSTANCES SHOULD GALVANISED TUBE AND FITTINGS BE EMPLOYED.** Any screwed joints used must be made oil tight by using a compound that is insoluble with oil. **UNDER NO CIRCUMSTANCES SHOULD HEMP BE USED.** For connections directly to the burner, flexible armoured hose may be used to advantage for installation and ease of maintenance. An isolating valve should be installed as close to the oil storage tank as possible followed by the oil filter supplied (to protect the burner and firing mechanism) and also a fire valve, see BS.799:1961 for type of fire valve and siting. A further isolating valve close to the burner but before the flexible connection is also recommended.

Maintenance

A bolted machine faced front opening door is provided for easy cleaning of flueways. Reference should be made to SEAGOLD'S separate boiler maintenance recommendations. To ensure trouble-free operation, regular inspection and maintenance is essential, preferably by the appointed SEAGOLD SERVICE engineer in local area.

Commissioning

It is strongly recommended that a SEAGOLD SERVICE engineer should inspect and commission the boiler installation and provide an independent report to heating engineer and client. Commissioning will eliminate a high proportion of the initial problems associated with new plant installations.

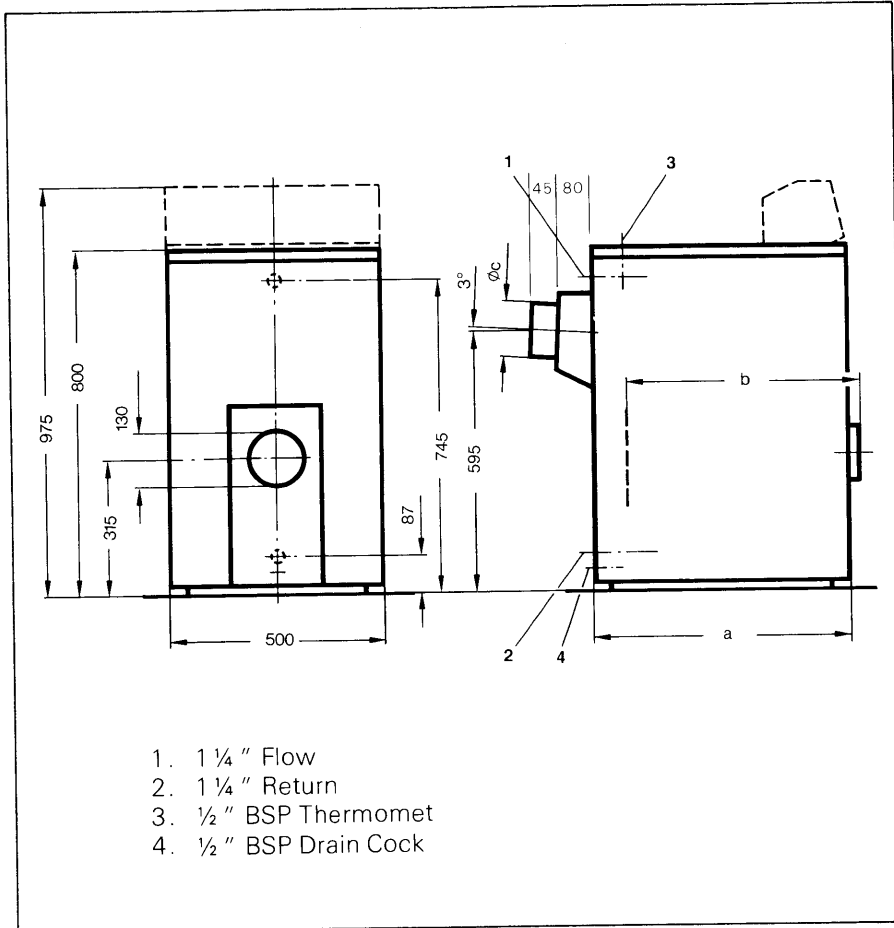


SEAGOLD

GP 120

Oil and Gas Fired Boilers

23KW to 60.5KW (79,120 to 208,120 BTUs)



- 1. 1 1/4" Flow
- 2. 1 1/4" Return
- 3. 1/2" BSP Thermomet
- 4. 1/2" BSP Drain Cock

Introduction

The Seagold GP 120 is a new high output cast iron sectional boiler engineered to very high specification. All mating surfaces of sections are machined to close limits. Boilers are factory-assembled with ground nipples, external tie rods and are all tested to 6.9 bars for working pressures up to 4 bars. All boilers are supplied with stove enamelled mild steel casings with 1" compressed fibreglass insulation, these casings being finished in a neutral grey with front panels in dark green. Due to the low combustion chamber resistance most makes of oil or gas pressure jet burner will fire the GP 120 efficiently but we offer as standard either BGOB or Nuway burners.

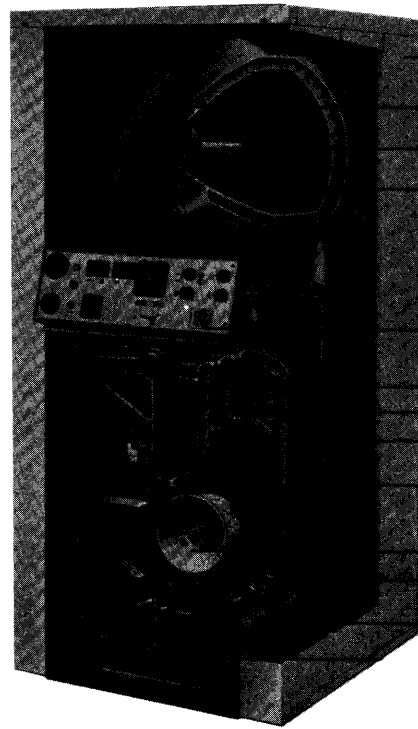
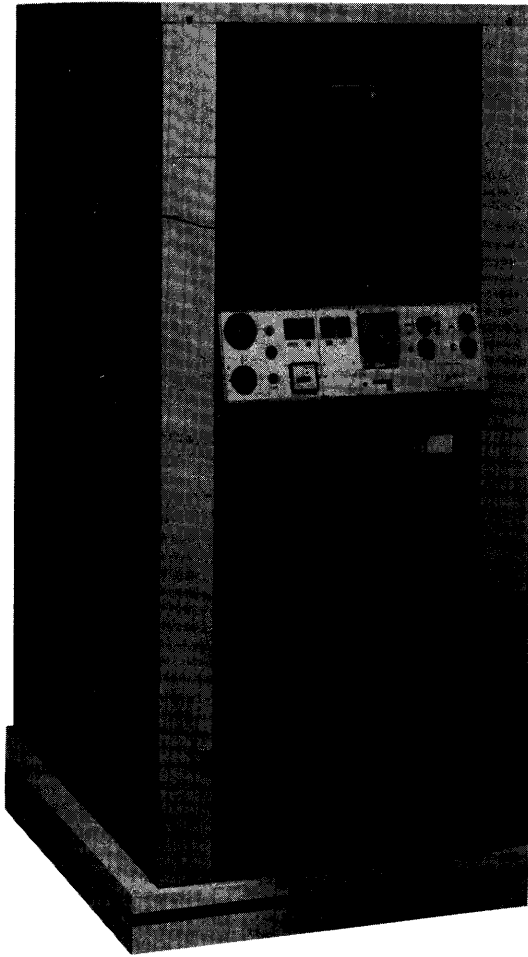
Technical Information GP 120

Model	Output BTU/s	kw	a	b	Ø DIA.	Water Resistance at 20° Δ t m bar	Water Content Litres	Weight Dry KG	Combustion Chamber Resistance m bar
GP 120.3	78,500	23	385	315	130	0.94	24	123	0.06
GP 120.4	106,800	31.3	505	435	130	1.6	30	155	0.06
GP 120.5	138,154	39.6	625	555	130	2.5	42	190	0.06
GP 120.6	163,284	48	745	675	160	3.6	54	223	0.09
GP 120.7	178,158	52.2	865	795	160	4.1	60	252	0.13
GP 120.8	206,486	60.5	985	915	160	5.4	66	284	0.19

Seagold

Oil or Gas Fired
Combination Boiler
Series GP 124
Series 120 (Boiler only)

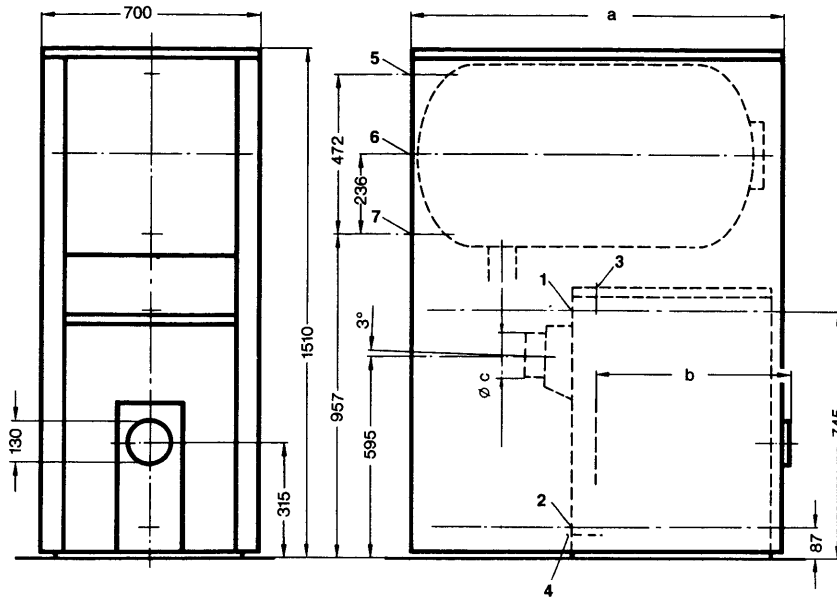
Technical Information



Boiler Ltd.
Seagold
Many Mills Lane
Widmore
Barnsley
Tel: 01226 811111

DESCRIPTION

SEAGOLD COMBINATION BOILERS are supplied for low pressure central heating systems. The boilers incorporate an integral glass lined cylinder for supplying an abundance of domestic hot water at all times. Boilers are suitable for oil or gas firing. Special units can be supplied for oil gas or solid fuel firing on request.



Type	Dimensions mm		
	A	B	C
124.23	755	315	130
124.32	875	435	130
124.36	995	555	130
124.40	995	555	130
124.44	1115	675	160
124.48	1115	675	160
124.53	1235	795	160
124.61	1235	795	160

1. Heating flow
2. Heating return
3. 1/2" & 3/4" BSP connections for thermostats
4. Boiler drain 1/2"
5. D.H.W. draw off 3/4" BSP
6. D.H.W. return 3/4" BSP
7. D.H.W. cold feed 3/4" BSP

Boiler type	GP 120 GP 124	23	32	36	40	44	48	53	61	
Nominal heat output		23 78,500	31.3 106,800	35.3 121,160	39.6 135,154	43.8 150,000	48.0 163,824	52.2 178,158	60.5 206,486	kW BTUs
Output range	from to from to	16 23 54,608 78,500	24 31.3 81,900 106,800	32.3 35.5 110,239 121,160	36.5 39.6 124,574 138,154	40.6 43.8 138,567 150,000	44.8 48.0 152,902 163,824	49.0 52.2 167,237 178,158	53.2 60.5 181,571 206,486	kW BTUs
No. of sections		3.1	4.1	5	5.1	6	6.1	7.1	8.1	
Length/combustion chamber		315	435	555	555	675	675	795	915	mm
Hydraulic Δt at 20°C		0.94	1-6	2.1	2.5	3.0	3.6	4.1	5.4	mbar
Flue gas Δt		0.06	0.06	0.06	0.06	0.06	0.09	0.13	0.14	mbar
Draught requirement ¹		0.12	0.12	0.12	0.12	0.12	0.15	0.17	0.19	mbar
Operating pressure	Boiler Cylinder	4 10								bar
Max temperature		90								°C
Cylinder capacity		108	150	150	150	190	190	230	230	litre
DHW output 10 mins ⁵		170	210	210	210	240	240	290	290	1/10 min.
DHW output 1 hr		350	510	560	612	650	650	680	680	1/hr
Gas volume boiler		48	59	69	69	80	80	90	100	litre
Weights GP 120	Nett Water content Gross	123 24 147	155 30 185	188 36 224	190 36 226	220 42 262	223 42 265	252 48 300	284 54 338	kg
Weights GP 124	Nett ² Boiler	178 24	225 30	254 36	256 42	300 48	303 54	345 60	374 66	
Water content	Cylinder Total weight ³	108 310	150 405	150 410	150 448	190 538	190 547	230 635	230 670	
Dimensions height	GP 120 GP 124	800 1510	800 1510	800 1510	800 1510	800 1510	800 1510	800 1510	800 1510	
width	GP 120 GP 124	500 700	500 700	500 700	500 700	500 700	500 700	500 700	500 700	mm
Depth (in flanges)	GP 120 a1 GP 124 a2	385 785	505 1025	625 1025	625 1025	745 1145	745 1145	865 1385	985 1385	
Flue outlet		130	130	130	130	160	160	160	160	mm ϕ
May burner door opening		130								mm ϕ
Connections	flow/return Boiler drain Thermostat pockets	Flanges with 1 1/4" int. thread 1/2" 1/2" BSP 3/4" BSP								
Cylinder connections ⁴		3/4" BSP								

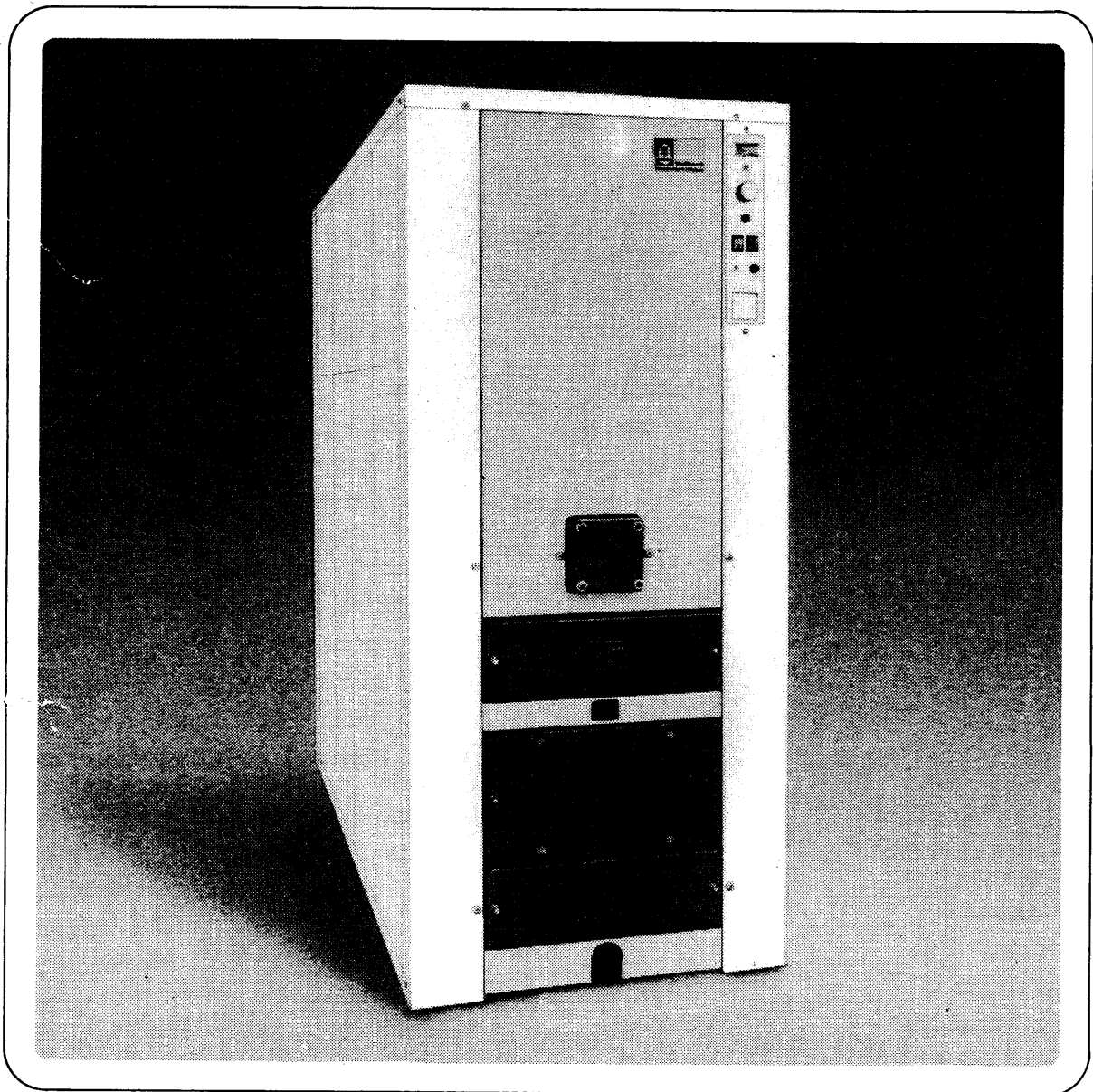
¹ Sections 1 denotes turbulators fitted.

Seagold

Oil/Gas-Fired Special-Purpose Boiler GP300

Oil/Gas-Fired Special-Purpose Combination Boiler GP304

Technical Sales Information



Broag Ltd

Seagold Boilers
Molly Millars Lane
Wokingham Berks
Tel: 0734-783434
Telex: 849137

Oil-fired special-purpose boiler	Designation		Number of sections	Nominal heat output	
	Oil-fired special-purpose combination boiler			kW	BTUs/HR
GP 300- 4	GP 304.1 SA 1- 4		4	70	238,840
GP 300- 5	GP 304.1 SA 1- 5		5	87	296,844
GP 300- 6	GP 304.1 SA 1- 6		6	105	358,260
GP 300- 7	GP 304.1 SA 1- 7		7	122	416,266
GP 300- 8	GP 304.1 SA 1- 8		8	140	477,680
GP 300- 9	GP 304.1 SA 1- 9		9	157	535,684
GP 300-10	GP 304.1 SA 1-10		10	175	597,100
GP 300-11			11	192	655,104
GP 300-12			12	209	713,108
GP 300-13			13	227	774,524

2 Application

Seagold Special-Purpose Boilers are used as heat generators for low-pressure (open-vent systems) hot water central heating installations to DIN 4751, Parts 1 and 2. The possibility of combining the boiler with a remote cylinder or as a combination boiler with integral cylinder means that the unit offers all the characteristics required of an efficient central heating and hot water supply system.

Seagold Special-Purpose Boilers meet the requirements of DIN 4702 as regards their construction and operating characteristics. They have been tested as a heating appliance and bear the appropriate type approval mark on the boiler rating plate.

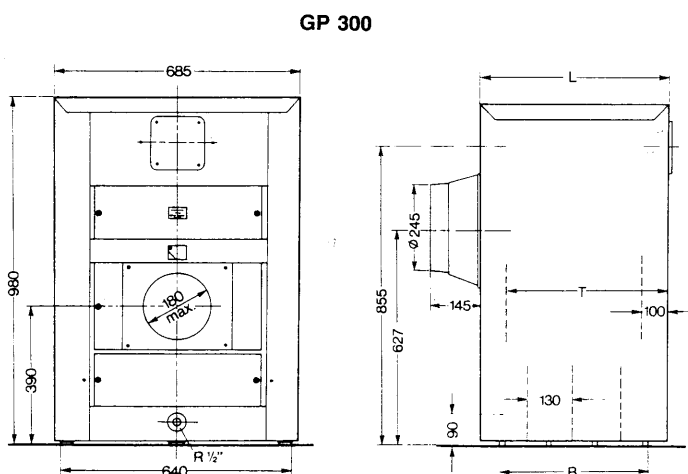
Seagold Special Purpose Boilers can be operated with the following fuels:

1. Heating oil EL to DIN 51603. (35 SEC. GAS OIL)
2. Town gas, natural gas and liquefied gas.

Seagold Special-Purpose Boilers can be operated with the following burners: Blown Gas or Oil.

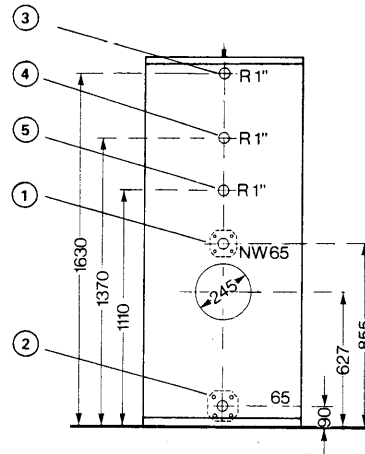
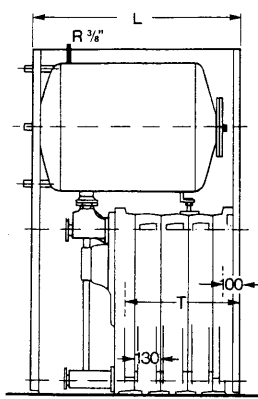
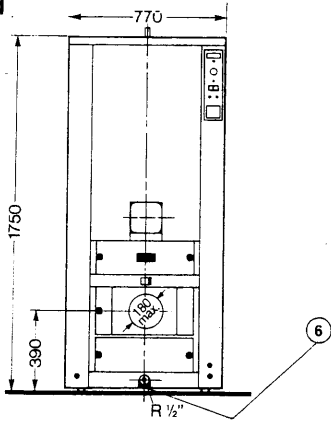
Fully matched burners must be used to match the dimensions of the combustion chamber.

3 Dimensions



Number of sections	Dimensions in mm		
	l	w	d
4	520	445	430
5	650	575	560
6	780	705	690
7	910	835	820
8	1040	965	950
9	1170	1095	1080
10	1300	1225	1210
11	1430	1355	1340
12	1560	1485	1470
13	1690	1615	1600

GP 304.1



1. Primary Flow 65 mm
2. Primary Return 65 mm
3. DHW Draw Off 1" BSP
4. DHW Return 1" BSP
5. Cold Feed to Cylinder 1" BSP
6. Boiler Drain 1/2" BSP

No of Sections	L	T	No of Sections	Type Approval
4	925	430	4	08/NDH 25 1/1
5	1055	560	5	08/NDH 25 1/2
6	1185	690	6	08/NDH 25 1/3
7	1315	820	7	08/NDH 25 1/4
8	1445	950	8	08/NDH 25 1/5
9	1575	1080	9	08/NDH 25 1/6
10	1705	1210	10	08/NDH 25 1/7

3.1 Domestic hot water output data GP 304.1

Heat Output KW	Heat Output BTU/hr	No Sections	Cylinder Test Pressure Bar	Cylinder Capacity Litres	DHW Output L/10 min	DHW Output L/HR
70	240,000	4	10	180	220	640
87	300,000	5	10	250	310	900
105	360,000	6	10	250	310	900
122	420,000	7	10	250	310	900
140	480,000	8	10	340	420	1200
157	540,000	9	10	340	420	1200
175	600,000	10	10	340	420	1200

Hot water outlet temperature 45°C
 Cold water inlet temperature 10°C
 Cylinder temperature 60°C
 Mean boiler temperature 80°C

No of Sections	No of Tubulators GP 300	No of Tubulators GP 304.1
4	4	4
5	6	6
6	6	6
7	8	8
8	10	10
9	10	10
10	12	12
11	14	—
12	14	—
13	16	—

3.2 Turbulators

6.2.1 Installation and connection of the domestic hot water cylinder

Installation sequence:

Install the connection unit — boiler/cylinder flow (1) check valve (2). Wrap enclosed sealing cord (3) around the check valve underneath the support rim, see fig. 11.

Position check valve together with sealing cord firmly into the connection unit; the plastic sealing cord prevents extraneous circulation between the boiler and the directly connected cylinder.

Assemble the connection unit — boiler/cylinder flow (1) and return pipe (4) including the charging pump (5) loosely to the boiler and place gaskets (7 + 8) onto the upper flanges (cylinder connection). Screw cylinder support bracket (6) to the cylinder (9). Position upper boiler insulating mat (11). Push $\frac{3}{4}$ " BSP pipe section into the four lateral eyes. Position storage tank (9) and bolt on the flanges. Whilst doing so align the cylinder (9) so that the connection points of cylinder (9) and boiler (10) coincide vertically. After alignment of the connection points, proceed as described below.

First tighten firmly the flange connection to the cylinder (9) then the flange connection on the boiler (10).

Important: Do not forget to insert the gaskets (7 + 8, 12 + 13) at the flanged connections! To facilitate venting, position cylinder (9) on the bracket (6) with a forward inclination of 1° .

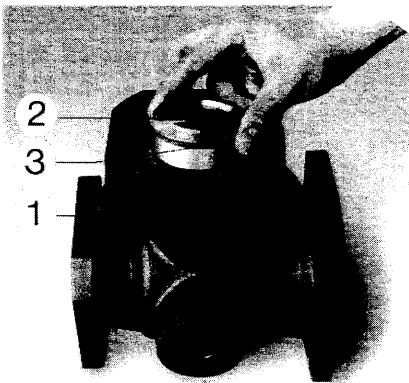


FIG. 11

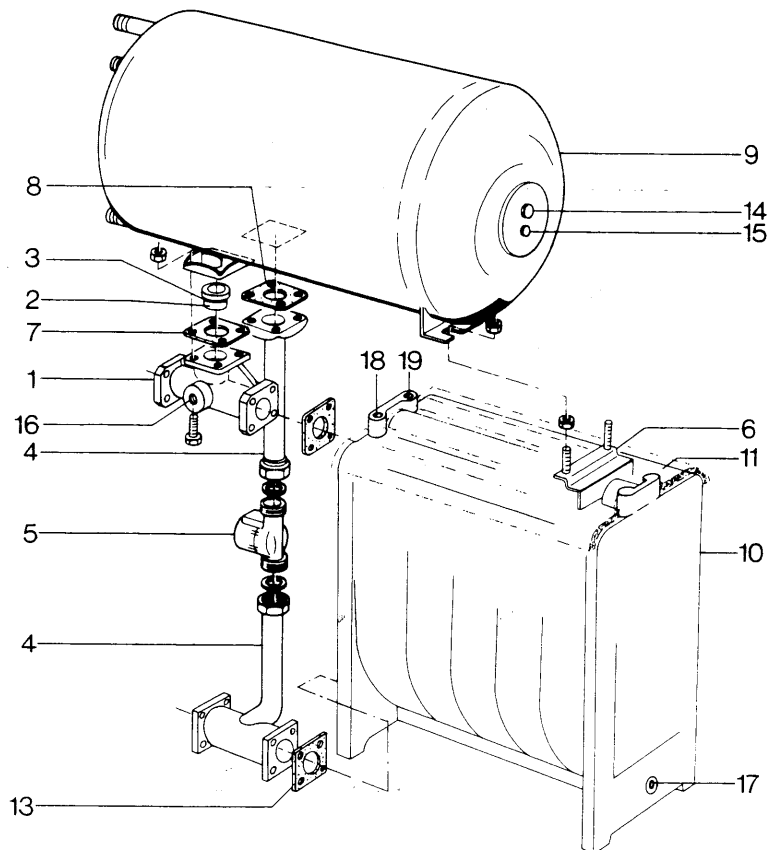


FIG. 12

Captions to figs. 11 and 12

- | | | | |
|----|--|----|--|
| 1 | Connection unit — boiler/cylinder flow | 15 | Protective magnesium anode, replaceable |
| 2 | Check valve | 16 | Protective pipe connection, $\frac{1}{2}$ " BSP (controls) |
| 3 | Plastic sealing cord | 17 | $\frac{1}{2}$ " BSP connection for boiler drain |
| 4 | Return pipe | 18 | Connection for immersion pocket, $\frac{1}{2}$ " BSP |
| 5 | Cylinder charging pump | 19 | Connection for immersion pocket, $\frac{3}{4}$ " BSP |
| 6 | Cylinder support bracket | | |
| 7 | Gasket | | |
| 8 | Gasket | | |
| 9 | Domestic hot water cylinder | | |
| 10 | Block of assembled boiler sections | | |
| 11 | Upper boiler insulating mat | | |
| 12 | Gasket | | |
| 13 | Gasket | | |
| 14 | $\frac{1}{2}$ " BSP socket for cylinder thermostat | | |

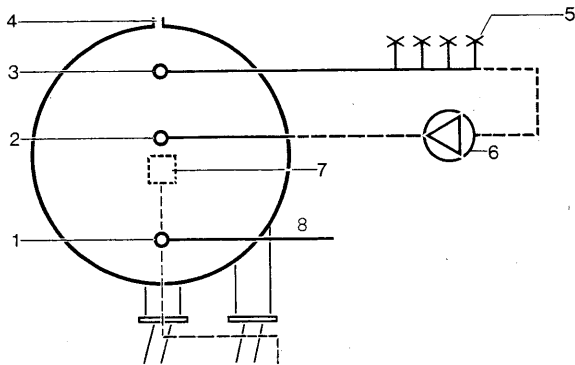


FIG. 13

EXAMPLE OF PIPE LAYOUT

FIG. 13

- 1 Cold water connection, 1" BSP
- 2 Circulation, 1" BSP
- 3 Hot water connection, 1" BSP
- 4 Venting (Primary)
- 5 Hot water taps
- 6 Circulation pump
- 7 Domestic hot water thermostat
- 8 Cold water feed

After the plant has been assembled and tested for leaks, apply the insulation to the cylinder.

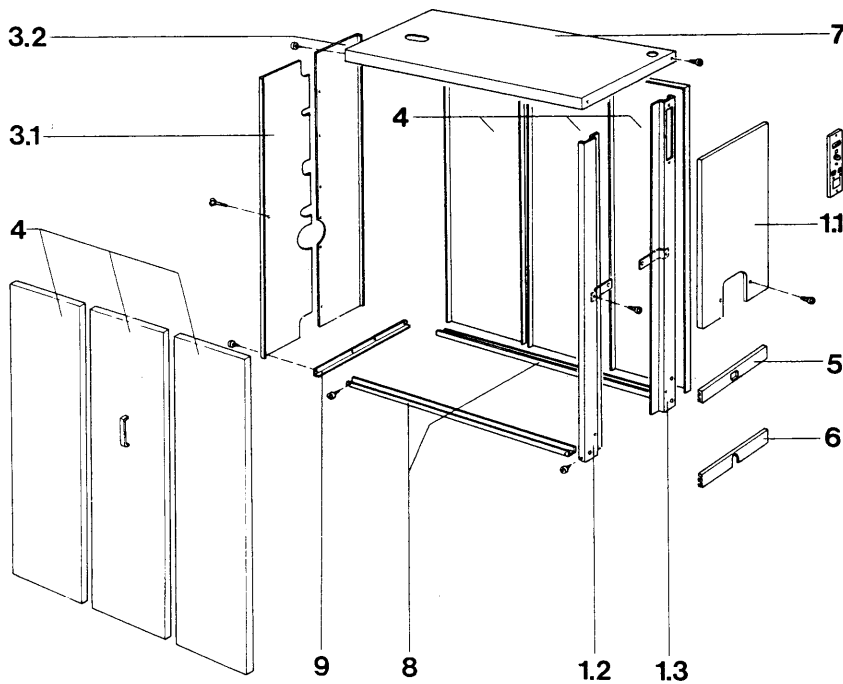


FIG. 15

The complete outer casing for the GP 304.1 is delivered in a separate cardboard box.

Assembly:

Screw on the front panelling strips (1.2) and (1.3). Install lower longitudinal braces (8), rear sheets (3.1) and (3.2) and rear transverse brace (9). Position upper panel (7) and screw in place. Position instrument panel in the recess of the front right-hand panelling strip (1.3) and screw in place.

Install capillary pipework for safety temperature limiter, boiler temperature monitor/regulator as well as for boiler thermometer to the protective pipe and insert sensor.

Do not kink the capillary tubes!

Pass the burner connection cable within the boiler through the grommet in the front panelling. Install lateral panelling sections (4), the sections with the handle last. Put in the fixing screws and tighten lightly. Hook in the panelling elements (1.1), (5) and (6).

6.7 Boiler control panel

(Does not form part of the supply for the GP 300 boiler).

Installation of the Seagold Control Panels KS, see also fig. 6, page 12 and fig. 14, page 20.

Screw the permanently attached immersion tube of the boiler control panel (control box) into the 1/2" BSP tapped hole of the rear boiler section. Seal the thread with hemp or teflon tape.

Break out the corresponding knock out in the boiler cover panel.

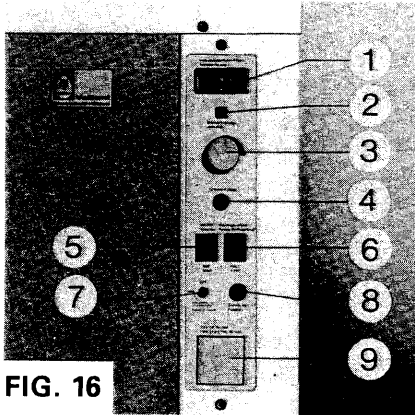


FIG. 16

Controls

- 1 Boiler thermometer
- 2 Fault lamp (burner)
- 3 Boiler thermostat
- 4 Safety temperature limiter test button
- 5 Operating switch
- 6 Operating switch, circulating heating pump
- 7 Safety temperature limiter
- 8 Fuse
- 9 Spare position for hour meter

Circuit diagram for the instrument panel GP 304.1

SL = earth terminal

MP = neutral

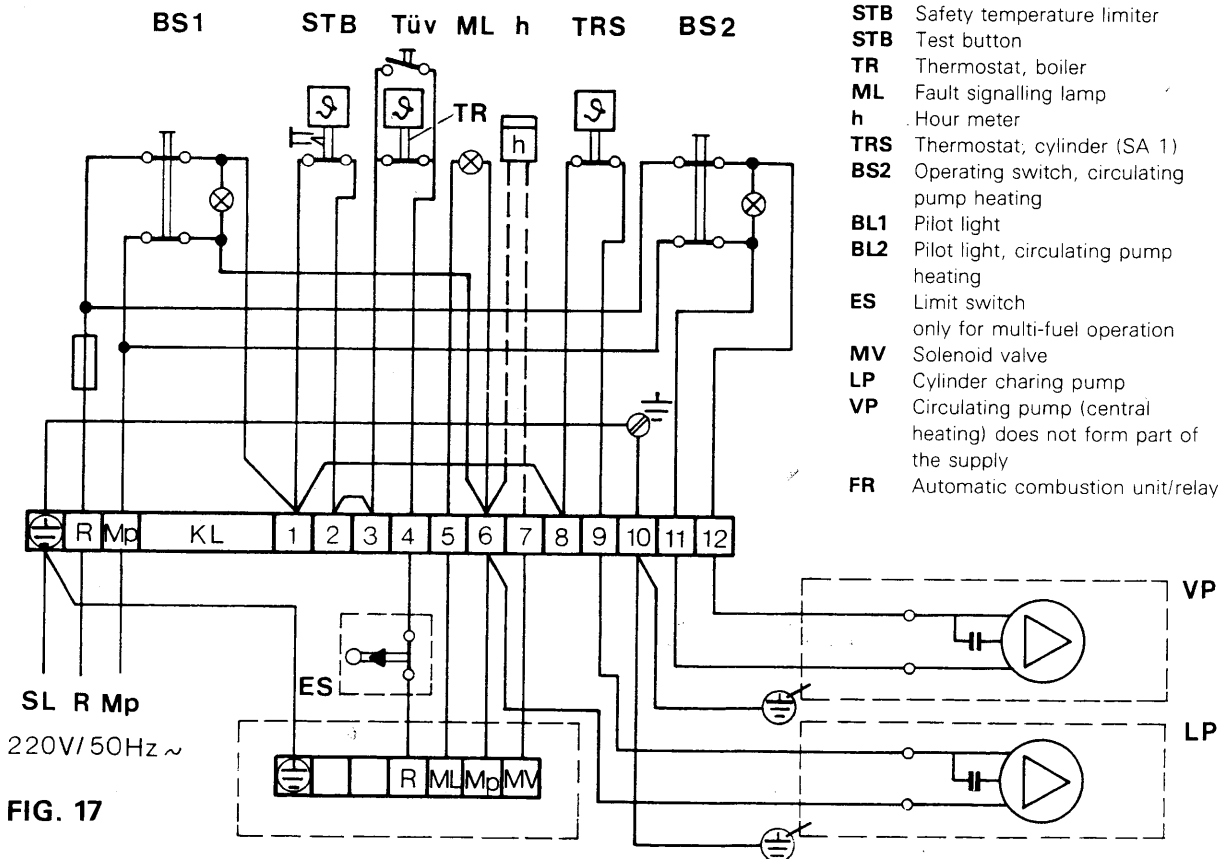


FIG. 17

6.8 Leak Test

Fill the boiler and the central heating system with water and check for leaks. Bear in mind the max. permissible working pressure of 4 bar.

Technical Data

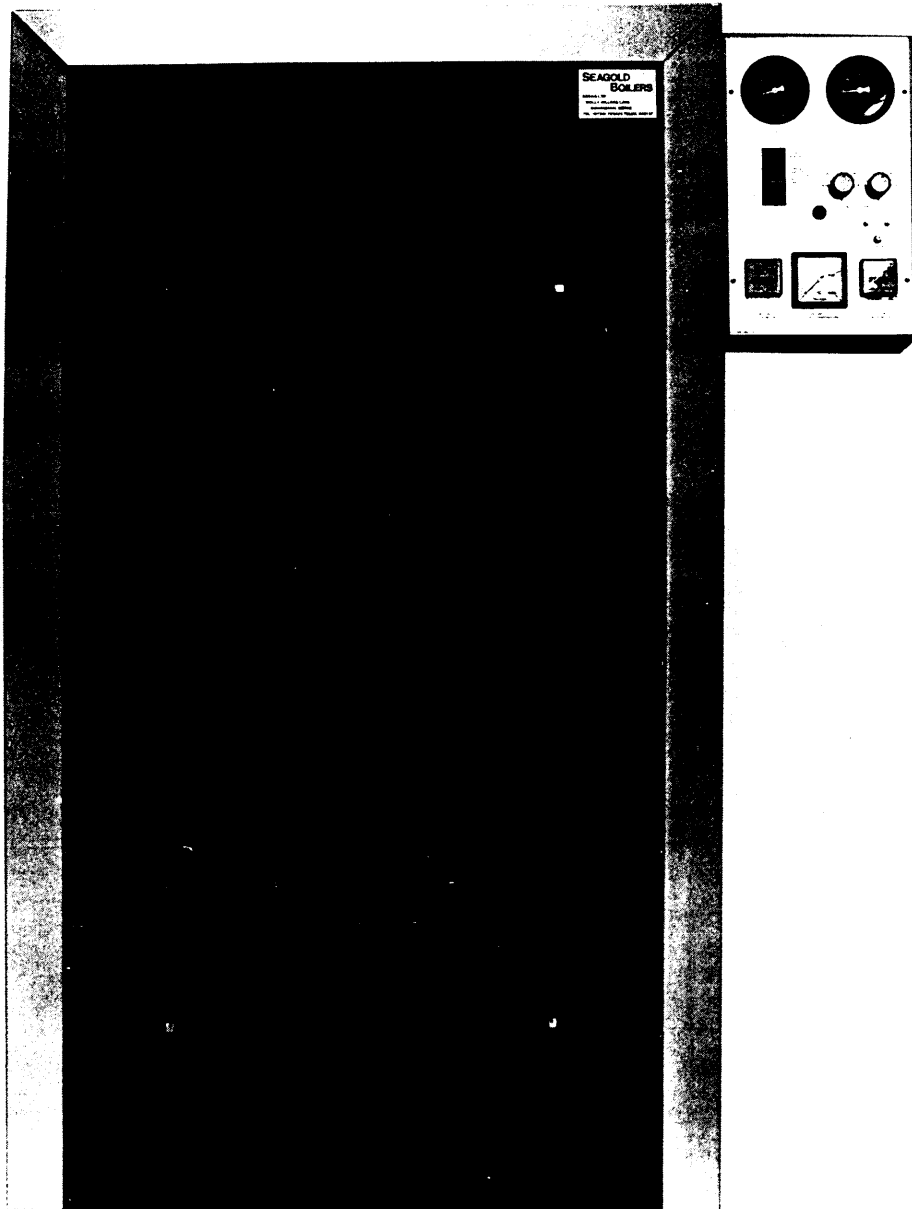
- 1) At nominal output and 12.5% CO₂ — content for heating oil, (about 10% CO₂ — content for natural gas). In the case of gas firing the combustion chamber h is slightly higher than the mentioned values.
- 2) Total water content of boiler + cylinder.
- 3) For GP 304.1 only DN 65 is available.
- 4) Combustion Chamber h in the case of oil-fired installations may be affected by the length and shape of the flame. Starting-up resistance is three to five times the specified draught requirement.

We do not accept any responsibility for damage caused as a result of non-observance of these installation instructions.

Boiler type	GP 300	—	4	5	6	7	8	9	10	11	12	13	
	GP 304.1 SA 1	—	4	5	6	7	8	9	10				
Nominal output			70	87	105	122	140	157	175	192	209	227	KW
			238,840	296,844	358,260	416,264	477,680	535,684	597,100	655,104	713,108	774,524	BTU/hr
Number of sections			4	5	6	7	8	9	10	11	12	13	
Depth of combustion chamber T			430	560	690	820	950	1080	1210	1340	1470	1600	mm
Water-side resistance at T = 20K = t 20°C			3,5	4,0	5,5	7,0	3,1	4,0	4,9	6,0	7,0	8,0	mbar
Combustion chamber h 1)			0,30	0,30	0,30	0,30	0,31	0,31	0,32	0,33	0,34	0,36	mbar
Draught requirement *) (negative)					min 0,05 - 0,1								mbar
Permissible operating pressure (total pressure) w.g. heating for GP 304.1 Domestic hot water					4								bar
Max. flow temperature					10								bar
Gas volume of the boiler			0,10	0,14	0,18	0,21	0,25	0,29	0,32	0,36	0,40	0,44	m ³
Weights GP 300 net weight			362	434	503	573	644	718	790	861	930	1002	KG
water content			75	92	109	126	143	160	177	194	210	228	Lt
gross weight			437	526	612	699	787	878	967	1055	1141	1230	KG
Weights GP 304.1 net weight			590	684	755	828	946	1022	1096				KG
water content boiler			135	152	169	186	218	235	252				Lt
cylinder			180	250	250	250	340	340	340				Lt
total weight 2)			905	1086	1174	1264	1504	1597	1688				KG
Dimensions													
Height GP 300			980	980	980	980	980	980	980	980	980	980	
Height GP 304.1			1750	1750	1750	1750	1750	1750	1750				
Width GP 300			685	685	685	685	685	685	685	685	685	685	mm
Width GP 304.1			770	770	770	770	770	770	770				
Depth GP 300			520	650	780	910	1040	1170	1300	1430	1560	1690	
incl Flanges GP 304.1			925	1055	1185	1315	1445	1575	1705				
Flue Outlet					245								mm
Burner Flange Max.					180								mm
Connections Flow/Return					40, 50, 65 ³ , 80, 100 mm								
Boiler Drain					½" BSP								
Sensor Pockets					½" and ¾"								
Cylinder Flow/Return					1" BSP								
Cylinder Cold Feed					1" BSP								

Seagold

GP 310 boiler
gas & oil fired
technical sales information



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SEAGOLD boiler applications include indirect hot water and central heating for schools, hospitals, shops, hotels and high street sites.
Visit our website at www.broag.co.uk for all the information you need on the gas and oil fired GP 310 boiler.

Easy Transport and Installation by Sectional Design

The modern heating industry is designed for oil and gas, the most important sources of energy for today and tomorrow. For these combustibles the GP 310 cast iron heating boiler has been developed; a compact boiler ensuring a large heating capacity in a small space.

Valuable Space Saving

For positioning of a GP 310 only a small space is necessary. This is achieved by the special design of the boiler having a positive pressure and of sectional construction. As a positive pressure boiler the flue has only to eliminate the flue gas. This results in small flue diameters, decreasing not only the building costs but enabling the boiler to be used for roof top installations.

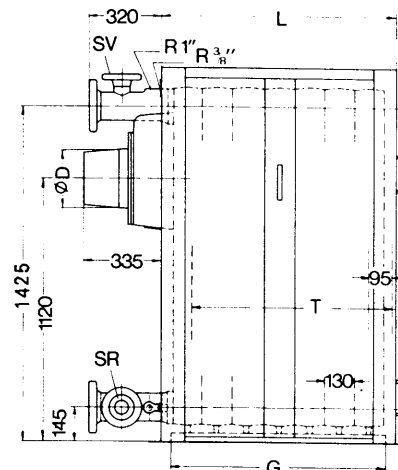
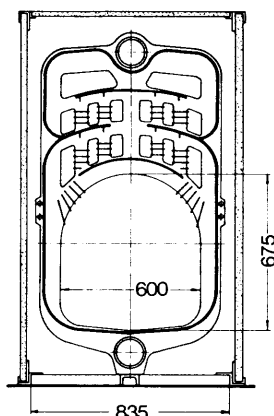
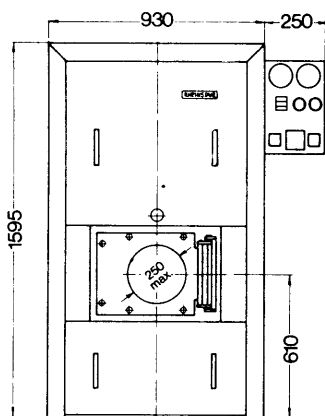
Low Loss of Heating

The combustion chamber of this boiler corresponds to the flame shape of the oil and gas burners. The hot combustion gases are exhausted over the complete boiler length passing constantly over the heating surface. This enables an equal distribution in temperature and simultaneously a high exploitation of the combustibles. A water distribution tube is positioned in the lower hub of the boiler to ensure that the return water is balanced all over the length of the boiler.

Easy Erection

This boiler can easily be erected. Square asbestos rope seals the sections and fittings against the overpressure in the combustion chamber. Measuring, indicating and control instruments are ready wired to a terminal strip. Owing to the favourable dimension of the combustion chamber and its low overpressure of max. 30 mm WG approved marketable types of oil/gas positive pressure burners can be used, operating on a two-stage or modulating principle. Heating surfaces can be easily cleaned from the front. The GP 310 is mounted on a base plate.

Design Features, Technical Data



Design Features

The GP 310 is a cast-iron-sectional boiler having flueways for high turbulence. The individual sections and fittings are made tight against leakage of gases by asbestos rope. The sections are held together by longitudinal tie rods. Short tie rods at the outside of the sections additionally ensure reliable sealing of the boiler. The boiler is placed on a base plate. The cleaning doors on the front section are easily accessible permitting simple cleaning. A heat insulated burner door can be swung out to left or right. Flame gun diameter up to 250 mm. The smoke box is equipped with a horizontal flue socket. Flow socket and return socket have connections for safety flow and safety return and connections for

immersion shells for boiler control. The water distribution tube is installed in the lower hub. The boiler is enclosed in a well insulated cover of sheet steel. The control panel ready wired for installation up to the terminal strip consists of measuring, indicating and control instruments.

Two flanges are supplied with the boiler comprising of 100 mm (4") and 65 mm (2½") connection for the flow and 100 mm (4") and 65 mm (2½") connection for the return. Two 100 mm (4") welding counter flanges are supplied and two 65 mm (2½") welding counter flanges are supplied for each boiler.

Application

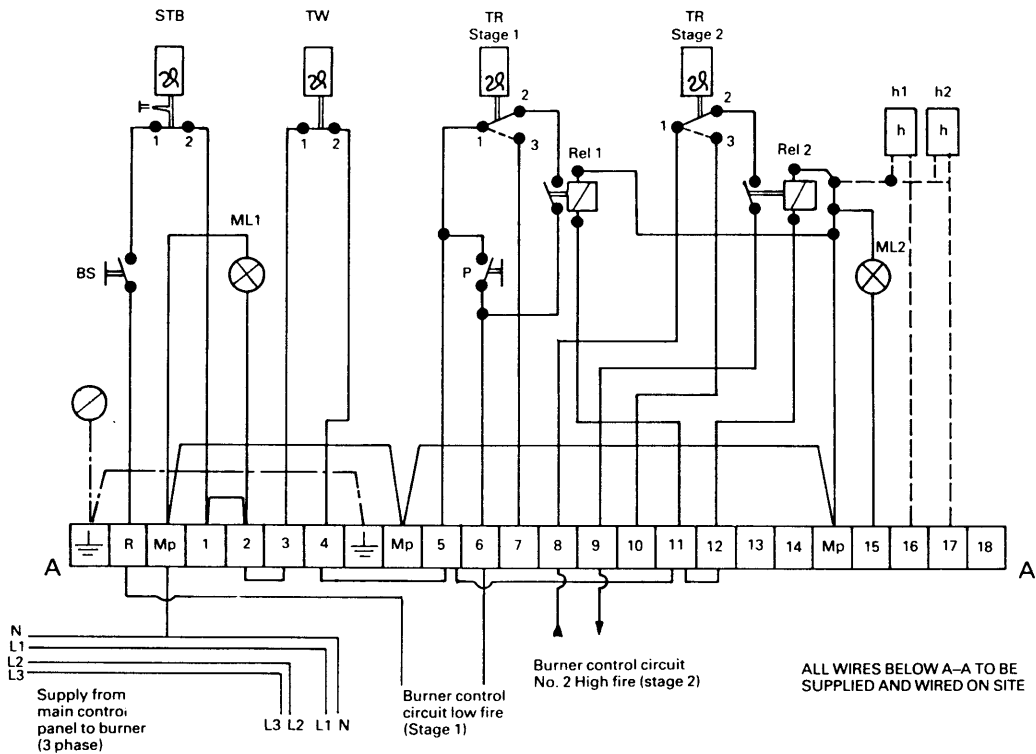
For hot water heating installations of normal design up to 110°C* 4 atü (4 bar overpressure) and for tall building type up to 110°C* 6 atü (6 bar overpressure) according to DIN 4751 design regulation number 84/NH 478.

*Safety regulations requiring special equipment the effective attainable average flow temperature will be 10–15°C lower.

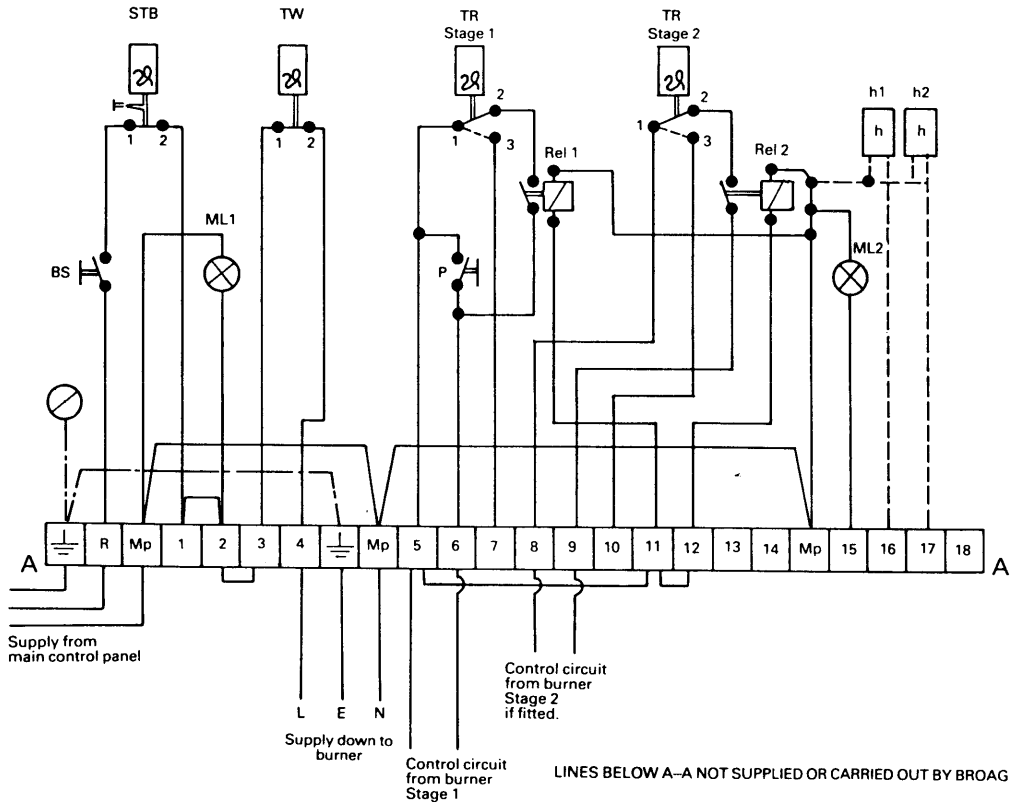
** At nominal capacity and 12, 5% CO₂-content for fuel oil, about 10% CO₂-content for natural gas. For gas heating overpressure of combustion chamber is a little higher than the undermentioned values.

Boiler Rating		Number of Sections	Boiler Weight	Combustion chamber resistance		Boiler Content		Dimensions		Combustion chamber length T	Flue Dia Ø D
Btu/hr	kw			mm WG	mbar	Water litres	gas m ³	Boiler length L	Boiler length over sections G		
700.000	204	5	1065	20	2,0	150	0,28	730	650	520	250
860.000	250	6	1218	21	2,1	180	0,35	860	780	650	250
1,020.000	297	7	1371	22	2,2	210	0,42	990	910	780	250
1,180.000	343	8	1524	22	2,2	240	0,49	1120	1040	910	250
1,340.000	390	9	1677	23	2,3	270	0,56	1250	1170	1040	250
1,500.000	436	10	1830	24	2,4	300	0,63	1380	1300	1170	250
1,660.000	483	11	1983	25	2,5	330	0,70	1510	1430	1300	300
1,820.000	529	12	2136	25	2,5	360	0,77	1640	1560	1430	300
1,980.000	576	13	2289	26	2,6	390	0,84	1770	1690	1560	300
2,140.000	627	14	2289	26	2,6	420	0,91	1900	1820	1690	300

GP 310 CONTROL BOX 3 PHASE

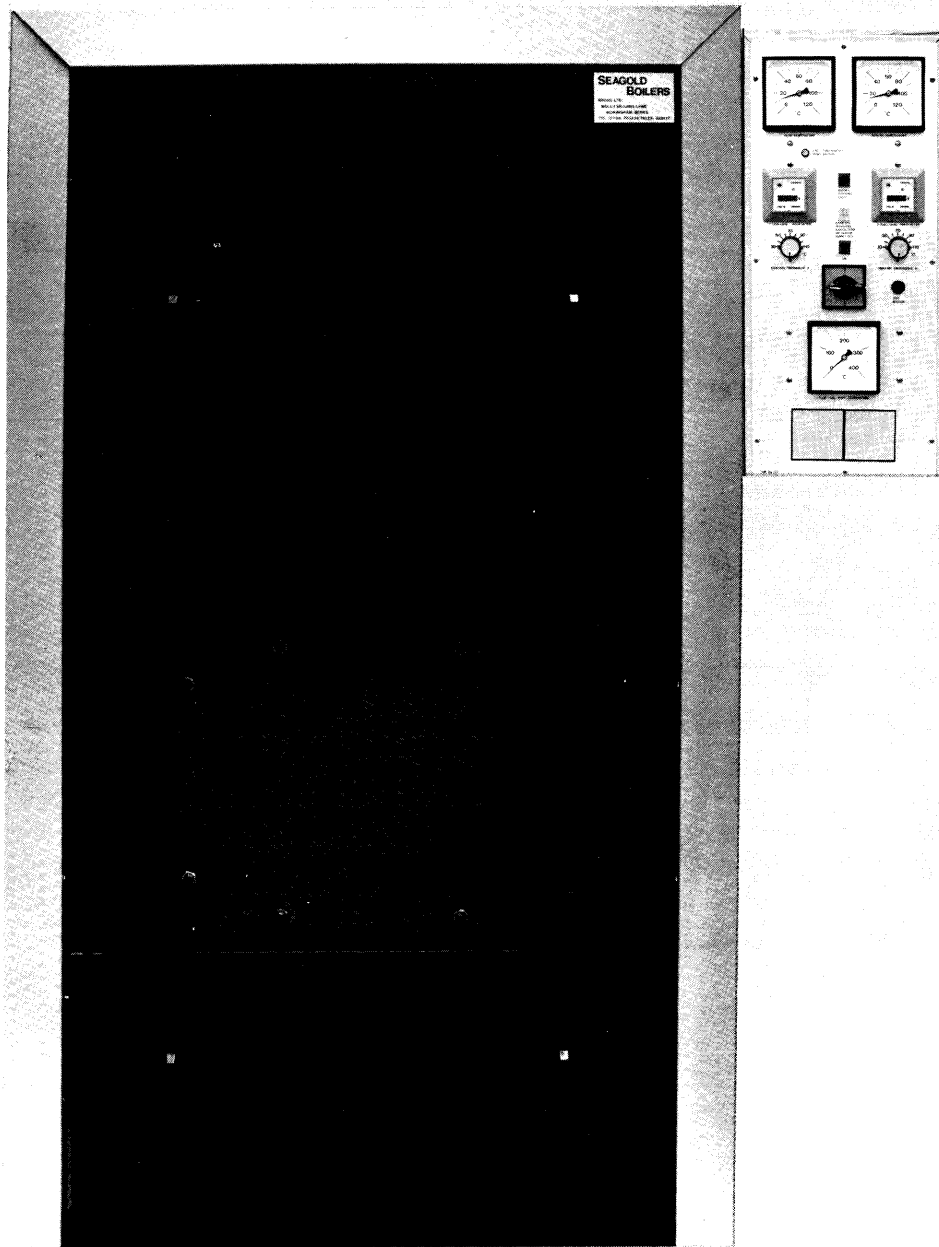


SINGLE PHASE



- BS Burner Switch.
- STB Manual re-set high limit thermostat.
- ML1 Control Light OFF denotes excess temperature.
- TW Thermal re-set high limit thermostat.
- TR Thermostats stage 1 and stage 2.
- h1 Hour run meter stage 1. Optional extra.
- h2 Hour run meter stage 2. Optional extra.
- ML2 Warning light.
- P Thermostat over ride button.
- REL1 Relay 1.
- REL2 Relay 2.
- ⊥ - Earth R - Live Mp - Neutral

Seagold



Easy Transport and Installation by Sectional Design

The modern heating industry is designed for oil and gas, the most important sources of energy for today and tomorrow. For these combustibles the GP 410 cast iron heating boiler has been developed; a compact boiler ensuring a large heating capacity in a small space.

Low Loss of Heating

The combustion chamber of this boiler corresponds to the flame shape of the oil and gas burners. The hot combustion gases are exhausted over the complete boiler length passing constantly over the heating surface. This enables an equal distribution in temperature and simultaneously a high exploitation of the combustibles. A water distribution tube is positioned in the lower hub of the boiler to ensure that the return water is balanced all over the length of the boiler.

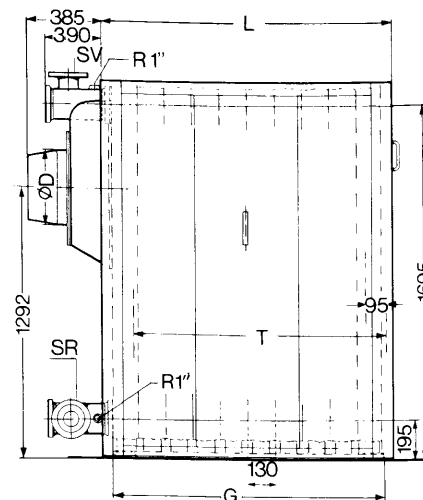
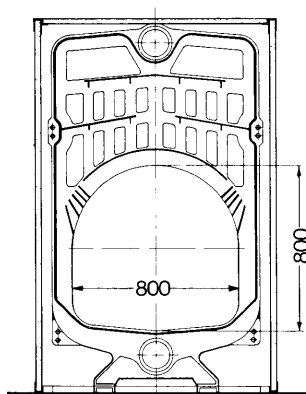
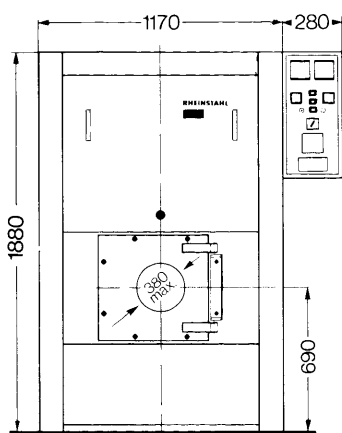
Valuable Space Saving

For positioning of a GP 410 only a small space is necessary. This is achieved by the special design of the boiler having a positive pressure and a sectional construction. As a positive pressure boiler the flue gas has only to eliminate the flue gas. This results in small flue diameters, decreasing not only the building costs but enabling the boiler to be used for roof top installations.

Easy Erection

This boiler can easily be erected. Square asbestos rope seals the sections and fittings against the overpressure in the combustion chamber. Measuring, indicating and control instruments are ready wired to a terminal strip. Owing to the favourable dimension of the combustion chamber and its low overpressure of max. 45 mm WG approved marketable types of oil/gas positive pressure burners can be used, operating on a two-stage or modulating principle. Heating surfaces can be easily cleaned from the front. The GP 410 is mounted on a base plate.

Design Features, Technical Data



The GP 410 is a cast-iron sectional boiler having flueways for high turbulence. The individual sections and fittings are made tight against leakage of gases by asbestos rope. The sections are held together by longitudinal tie rods. Short tie rods at the outside of the sections additionally ensure reliable sealing of the boiler. The boiler is placed on a base plate. The cleaning doors on the front section are easily accessible permitting simple cleaning. A heat insulated burner door can be swung out to left or right. Flame gun diameter up to 380 mm. The smoke box is equipped with a horizontal flue socket. Flow socket and return socket have connections for safety flow and safety return and connections for immersion thermostats for boiler

control. The water distribution tube is installed in the lower hub. The boiler is enclosed in a well insulated cover of sheet steel. The control panel ready wired for installation up to the terminal strip consists of measuring, indicating and control instruments. A temperature limit switch can also be fitted (for compact installations).

Two flanges are supplied with the boiler comprising of 150mm (6") and 100mm (4") connection for the flow and 150mm (6") and 100mm (4") connection for the return. Two 150mm (6") welding counter flanges are supplied and two 100mm (4") welding counter flanges are supplied for each boiler.

For hot water heating installations of normal design up to 110°C* 4 atü (4 bar overpressure) and for tall building type up to 110°C* 6 atü (6 bar overpressure).

Nominal steam pressure with steam drum maximum 0,5 atü (0,5 bar overpressure).

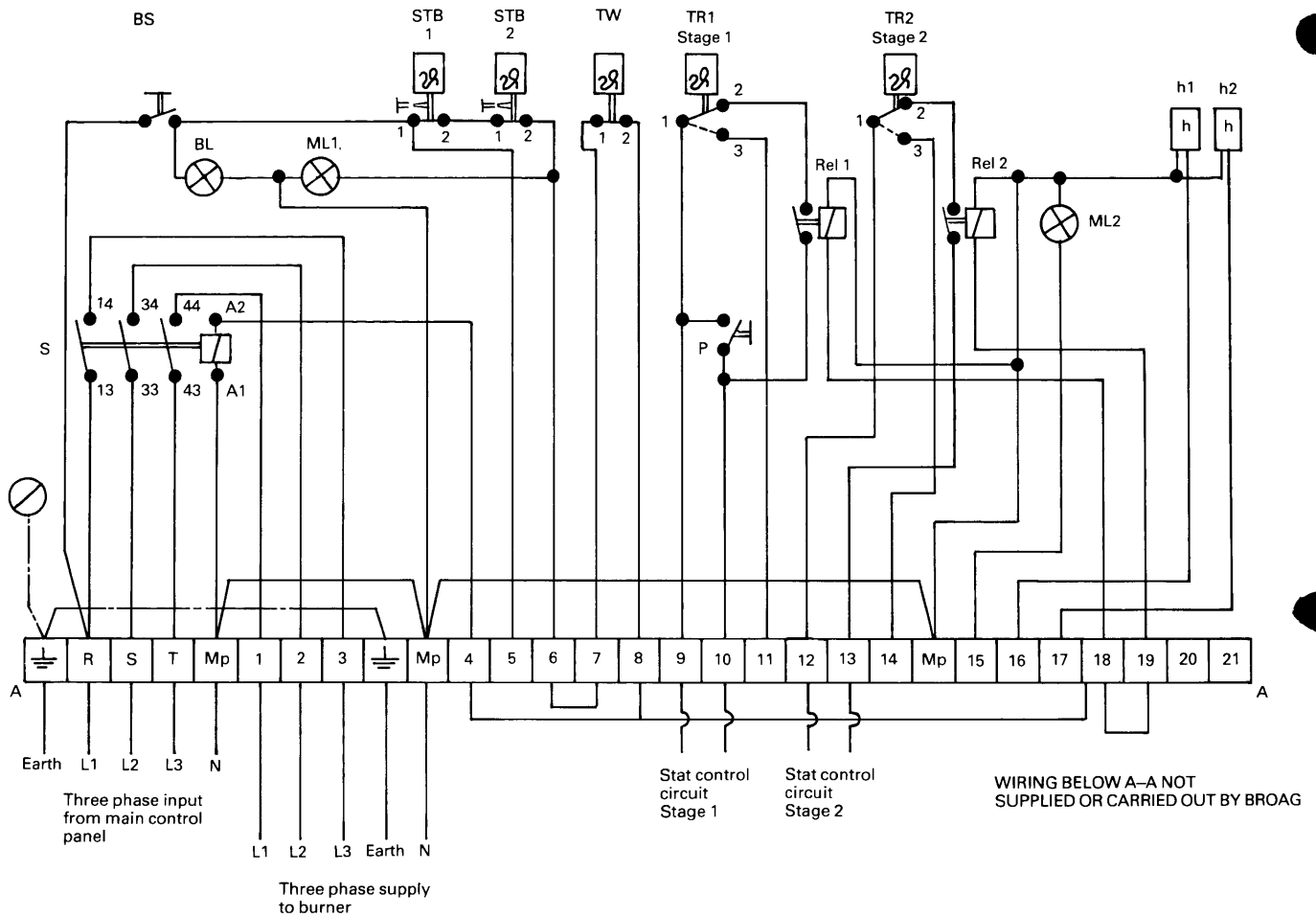
Boiler DIN 4702 K 1824/73

Design regulation number 84/NH 416.

* Safety regulations requiring special equipment the effective attainable average flow temperature will be 10–15°C lower.

** At nominal capacity and 12% CO₂ — content for fuel oil, about 10% CO₂ — content for natural gas. For gas heating overpressure of combustion chamber is a little higher than the undermentioned values.

Boiler Rating		Number of Sections	Boiler Weight	Combustion chamber resistance	Boiler Content		Dimensions		Combustion chamber length T	Flue Dia Ø D
Btu/hr	kw				Water	gas	Boiler length L	Boiler length over sections G		
			kg	mbar	litres	m ³	mm	mm	mm	mm
1,920,000	558	10	2775	2.0	546	1,225	1390	1300	1205	300
2,240,000	651	11	3035	2.4	596	1,357	1520	1430	1335	300
2,560,000	744	12	3295	2.6	646	1,489	1650	1560	1465	300
2,880,000	837	13	3555	2.8	696	1,621	1780	1690	1595	300
3,200,000	930	14	3815	3.0	746	1,753	1910	1820	1725	300
3,520,000	1023	15	4075	3.2	796	1,885	2040	1950	1855	300
3,840,000	1116	16	4335	3.2	846	2,017	2170	2080	1985	400
4,160,000	1210	17	4595	3.2	896	2,149	2300	2210	2115	400
4,480,000	1303	18	4855	3.2	946	2,281	2430	2340	2245	400
4,800,000	1396	19	5115	3.2	996	2,413	2560	2470	2375	400
5,120,000	1489	20	5375	3.2	1046	2,545	2690	2600	2505	400



- S Main relay.
- BS Burner Switch.
- BL Burner run light.
- ML1 Power on to burner light extinguished when manual reset thermometer has locked out.
- STB1 Manual reset high limit thermostat number 1.
- STB2 (when fitted) Second manual reset high limit thermostat.
- TW Thermal reset high limit thermostat.
- TR1 First stage thermostat.
- TR2 Second stage thermostat.
- ML2 Burner warning light if required.
- h1 Hour run meter first stage.
- h2 Hour run meter second stage.
- P Temporary thermostat override switch.
- Rel 1 & Rel 2 Both relays