REGENCY 4

INSTALLATION AND SERVICING INSTRUCTIONS

FROM 9 TO 16 SECTION BOILERS

MHS BOILERS

COD. 1274061

The instructions are designed to assist the installation and servicing engineer with the installation and maintenance of Regency 4 Modulek series central heating boilers.

These atmospheric gas fired boilers are floor standing and suitable for heating large dwellings, commercial or industrial buildings.

They are designed for use on pumped circulation systems and if used for hot water production, calorifiers, indirect cylinders, plate heat exchangers or any other indirect method only must be used.

The Regency 4 Modulek series boilers are open flued, natural draught central heating appliances with outputs ranging from 122,8 kW (418,992 Btu/hr) to 272.4 kW (929,428 Btu/hr).

CONFORMITY STATEMENT

REGENCY 4 Modulek series boilers are manufactured to the highest standard of quality, performance and safety in accordance with EC standards. The Regency 4 Modulek series boilers carry the CE mark.

INSTALLATION REQUIREMENTS

The installation of REGENCY 4 Modulek series boilers must be in accordance with the relevant requirements of the Gas Safety (Installation and Use) Regulations 1994, Health & Safety at Work Act, Building Regulations, I.E.E. Regulations, Construction (Design & Management) Regulations 1994, Local Authority Byelaws, Local Gas Undertaking Regulations, Local & National Water Byelaws, Fire Authority Regulations and Insurance Company requirements. The following codes of practice are also applicable:

BS6880 Codes of practice for low temperature hot water heating systems of output greater than 45 kW. Parts 1,2 & 3 : 1988.
CP342 Part 2 : 1974 Code of practice for centralised hot water supply.
BS6644 1991 specification for gas fired hot water boilers of rated inputs between 60 kW and 2 MW.
IGE/UP/2 Gas installation pipework, boosters and compressors on industrial and commercial premises.
CIBSE Guide Reference sections B7, B11 and B13.
British Gas IM/11Flues for commercial and industrial gas fired boilers and air heaters.

GAS SAFETY (INSTALLATION AND USE) REGULATIONS

It is the law that all gas appliances are installed by competent persons, i.e. Corgi Registered, in accordance with above regulations. Failure to comply with regulations could lead to prosecution. It is in your own interest and that of safety, to ensure that the law is complied with.

LOCATION

The location chosen for the boiler must permit the provision of a satisfactory flue and an adequate space for servicing and air circulation around the boiler. The boiler room, whether specifically constructed or a modification of an existing space, should be designed in accordance with BS6644.
The boiler house must be kept clean and the boilers must not be permitted to operate during the installation of lagging materials or during dust making operations.

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1 DESCRIPTION

1.1 GENERAL REMARKS

The REGENCY 4 Modulek series appliances are gas fired cast iron sectional boilers whose features are high efficiency and low emissions.

The heat exchanger comprises:
- one front section
- a variable number of intermediate sections
- one rear section

connected to each other by means of biconical nipples.

The boiler is fitted with two multi-bar atmospheric gas burners (front and rear) made in stainless steel, for operation with natural gas or LPG.

A motor-driven damper fitted before the draught diverter helps to reduce heat losses through the chimney when the burner is switched off.

When Regency 4 Modulek series boilers operate in two stage mode, the damper runs accordingly in **three different situations**:

when **both burners are switched off**, the damper shuts down the chimney, avoiding heat losses through the chimney;

with **one firing burner**, the damper partially closes to avoid eccessive secondary air from passing through the boiler

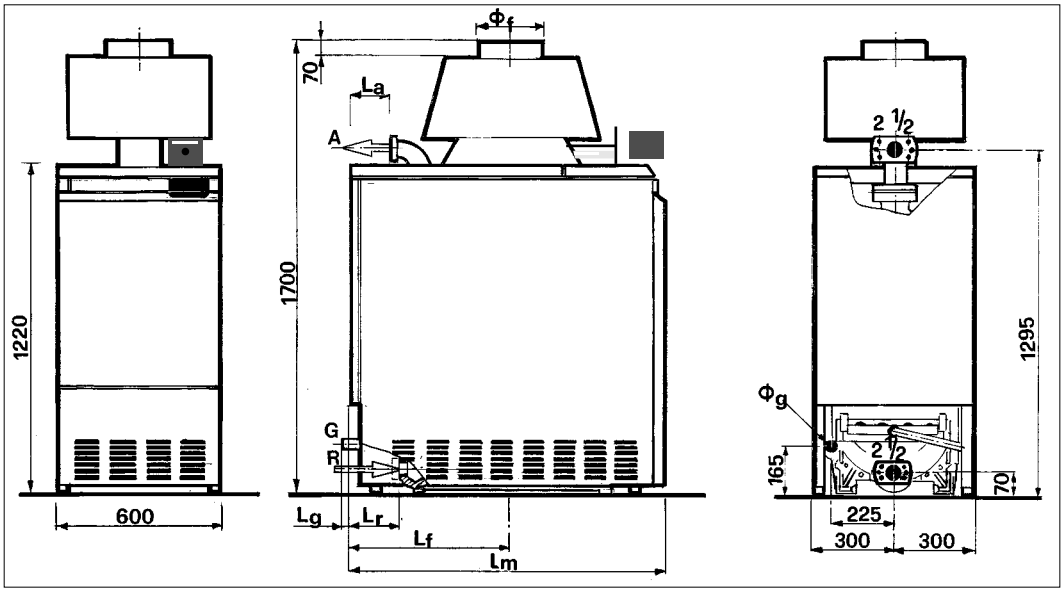
with **both firing burners**, the chimney remains completely open .

The control panel provides a selector to choose which of the two gas burners should run, thus allowing boiler operation at minimum output and equal use of both burners.
To operate in the “ON-OFF” mode (i.e. firing both front and rear burners) the user should push the relevant button on control panel (see § 1.6.2 for details).

1.2 BOILER MODELS

	NOMINAL HEAT OUTPUT	
Model	**kW**	**Btu/h**
REGENCY 4 MODULEK/152	**152.8**	**521,353**
REGENCY 4 MODULEK/169	**169.7**	**579,016**
REGENCY 4 MODULEK/186	**186.7**	**637,020**
REGENCY 4 MODULEK/203	**203.6**	**694,683**
REGENCY 4 MODULEK/220	**220.3**	**751,663**
REGENCY 4 MODULEK/237	**237.8**	**811,373**
REGENCY 4 MODULEK/255	**255.2**	**870,742**
REGENCY 4 MODULEK/272	**272.4**	**929,428**

1.3 DIMENSIONAL DRAWINGS AND LIST



BOILER MODEL	Øf	Øg	La	Lf	Lg	Lm	Lr
	mm		mm	mm	mm	mm	mm
Regency 4/152 9 sect.	300	R 1 1/4"	260	760	75	1450	310
Regency 4/169 10 sect.	300	R 1 1/4"	160	710	75	1450	210
Regency 4/186 11 sect.		300	R 1 1/4"	260	860	75 1650	310
Regency 4/203 12 sect.	300	R 1 1/4"	160	810	75	1650	210
Regency 4/220 13 sect.	300	R 1 1/4"	260	960	75	1850	310
Regency 4/237 14 sect.	350	R 1 1/4"	160	910	75	1850	210
Regency 4/255 15 sect.	350	R 1 1/4"	260	1060	75	2050	310
Regency 4/272 16 sect.	350	R 1 1/4"	160	1010	75	2050	210

1.4 TECHNICAL DATA

REGENCY 4 MODULEK boiler models from 9 to 16 sections, which are equipped with two pilot burners, two main burners, one main switch and one switch for each single burner.

BOILER MODEL			**152**	**169**	**186**	**203**	**220**	**237**	**255**	**272**
No. of sections			**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Nominal heat input net		**kW**	169.0	187.8	206.5	225.3	244.0	263.3	282.6	302.0
		Btu/hr	576,628	640,773	704,578	767,700	832,528	898,379	964,231	1,030,424
Nominal heat output		**kW**	152,8	169,7	186,7	203,6	220,3	237,8	255,2	272,4
		Btu/hr	521,353	579,016	637,020	694,683	751,663	811,373	870,742	929,428
Minimum heat input net		**kW**	95/74	94/94	112/95	113/113	139/105	132/132	153/130	151/151
(front/rear burner)		**Btu/hr(:1000)**	324/252	321/321	382/324	385/385	474/358	450/450	522/443	515/515
Minimum heat output		**kW**	86/67	85/85	97/90	102/102	125/95	119/119	138/117	136/136
(front/rear burner)		**Btu/hr(:1000)**	293/228	290/290	331/307	348/348	426/324	406/406	471/399	464/464
Inlet	**Natural gas**	**mbar**	20	20	20	20	20	20	20	20
pressure	**GPL G30**	**mbar**	30	30	30	30	30	30	30	30
	GPL G31	**mbar**	37	37	37	37	37	37	37	37
Burner	**Natural gas**	**mbar**	11,5	11,5	11,5	11,5	11,5	11,5	11,5	11,5
pressure	**GPL G30**	**mbar**	29,0	29,0	29,0	29,0	29,0	29,0	29,0	29,0
.	**GPL G31**	**mbar**	36,0	36,0	36,0	36,0	36,0	36,0	36,0	36,0
Pilot injectors	**Natural gas**	**Ø mm**	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
	GPL G30	**Ø mm**	0,0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	GPL G31	**Ø mm**	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Burner	**Natural gas**	**Ø mm**	3,6-4,1	4,1-4,1	4,1-4,3	4,3-4,3	4,3-5,0	5,0-5,0	5,0-5,3	5,3-5,3
injectors	**GPL G30**	**Ø mm**	2,2-2,45	2,45-2,45	2,45-2,55	2,55-2,55	2,55-2,9	2,9-2,9	2,9-3,1	3,1-3,1
	GPL G31	**Ø mm**	2,2-2,45	2,45-2,45	2,45-2,55	2,55-2,55	2,55-2,9	2,9-2,9	2,9-3,1	3,1-3,1
Gas rate	**Natural gas**	**m^3/h**	17,9	19,9	21,9	23,8	25,8	27,9	29,9	32,0
(15°C 1013 mbar)	**GPL G30**	**kg/h**	13,3	14,8	16,3	17,8	19,3	20,8	22,3	23,8
	GPL G31	**kg/h**	13,1	14,6	16,0	17,5	18,9	20,4	21,9	23,4
Water content		**l**	107	117	127	137	147	157	167	177
Flow/return connections		**Ø**	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2
Gas connection		**Ø**	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
Hydraulic pressure loss Δt**=10°C @ max. output**		**mm w.c.**	126	140	154	168	182	196	210	224

BOILER MODEL No. of sections		152 9	169 10	186 11	203 12	220 13	237 14	255 15	272 16
Volume of combustion chamber	m^3	0.087	0.096	0.106	0.115	0.125	0.135	0.144	0.154
Exchange surface	m^2	12.2	13.9	15.6	17.3	19.0	20.7	22.4	24.1
Flue gas mass flow	g/s	133	142	148	151	156	199	196	193
Flue temperature	°C	110	112	115	117	121	110	115	119
Electrical supply		230 V - 50 Hz - 40W							
Weight	Kg	810	880	950	1,030	1,100	1,180	1,250	1,320

1.5 COMPONENTS AND ACCESSORIES

1.5.1 GAS VALVES USED

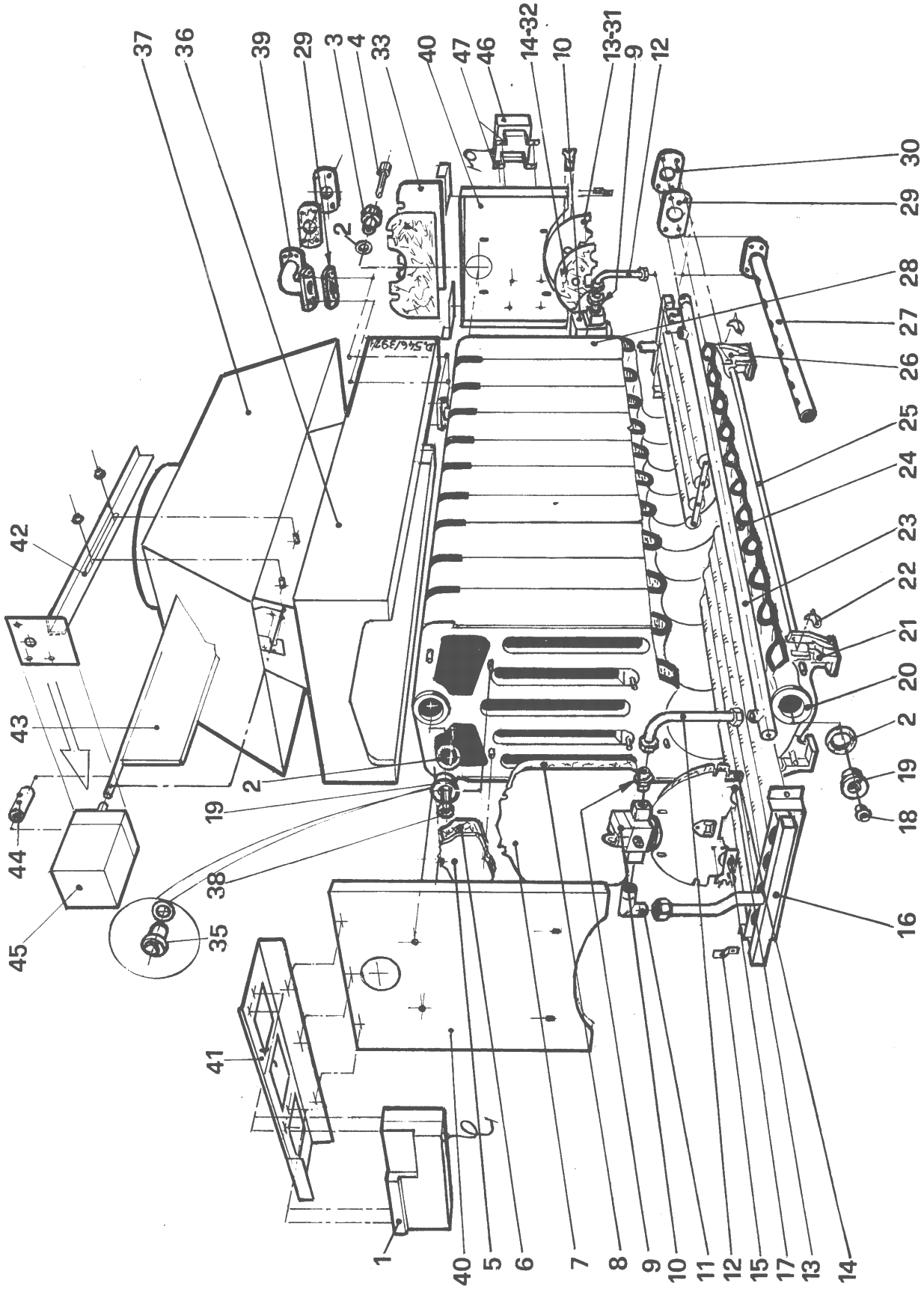
Each boiler includes No. 2 ROBERTSHAW 24V gas valves.

1.5.2 BOILER COMPONENTS

- On-off switch
- Flue damper assembly with motor
- Twin solenoid gas valves with pressure regulators
- Multi-bar atmospheric gas burner in stainless steel with venturi
- Pilot burners with intermittent operation specific for ionisation
- Ionisation controls
- Ignition and ionisation electrodes
- Illuminated burner lockout reset push-buttons
- Control thermostat
- Overrun relay
- High limit thermostats
- Thermometer
- External flue hood
- Unassembled casing
- Contacts arrangement for external controls
- Option to operate in the “two stage” or in the “on/off” mode
- Option to select either burner to operate for minimum output

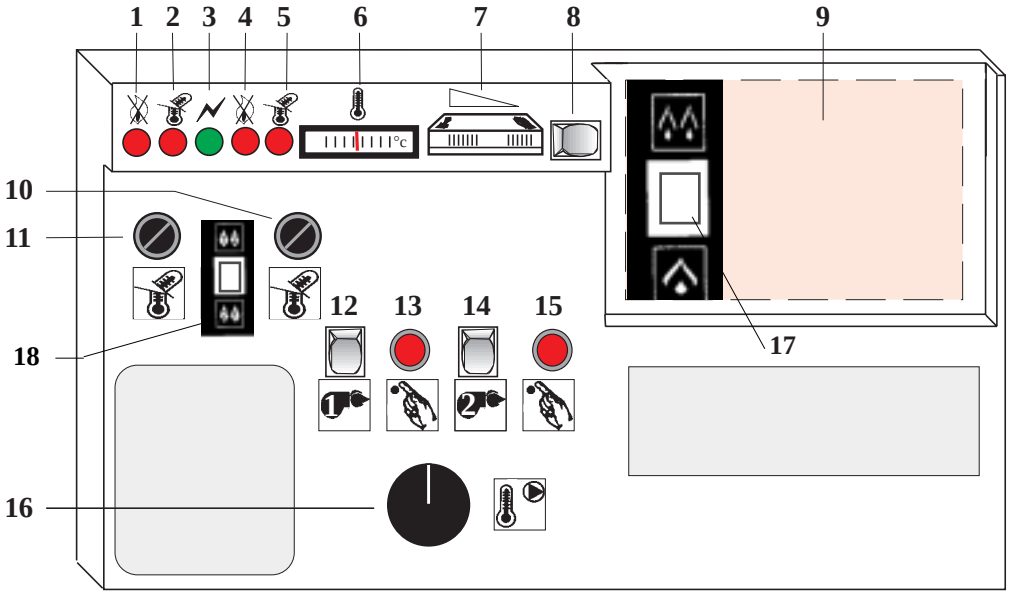
1.6 EXPLODED DRAWINGS AND PART LIST

1.6.1 EXPLODED VIEW OF BOILER BLOCK AND GAS ASSEMBLY



No.	DESCRIPTION	SECTIONS 9	10	11	12	13	14	15	16
1	CONTROL PANEL	1249109							
2	GASKET 61 x 48 x 3	8566000							
3	REDUCING BUSH 1”1/2 x 3/4	8588806							
4	THERMOSTAT POCKET	1764200							
5	RIGHT CAST IRON CLEANING ACCESS COVER PLATE	0633700							
5	LEFT CAST IRON CLEANING ACCESS COVER PLATE	0633800							
6	CERAMIC FIBRE PANEL FOR ITEM 5	0666700							
7	CAST IRON CLEANING ACCESS COVER PLATE	0633600							
8	CERAMIC FIBRE PANEL FOR ITEM 7	0666600							
9	CONNECTION PIECE	8589402							
10	GAS VALVE ROBERTSHAW	0656002							
11	ELBOW PIPE	0653310							
12	GAS DISTRIBUTION PIPE	0654100							
13	CAST IRON FRONT PLATE	0633200							
14	CERAMIC FIBRE FRONT PANEL	1266001							
15	FIXING BRACKET	0648600							
16	FRONT GAS BURNER	1255210	1255210	1255212	1255212	1255214	1255214	1255216	1255216
	REAR GAS BURNER	1255209	1255210	1255210	1255212	1255212	1255214	1255214	1255216
17	PILOT BURNER BRAHMA BPEMC70	0660101							
18	BLIND PLUG 1/2”	8589604							
19	REDUCING BUSH 1" 1/2x1/2	8588801							
20	FRONT SECTION	1230000							
21	RIGHT SUPPORT FOOT	0634304							
21	LEFT SUPPORT FOOT	0634305							
22	PIPE-FIXING BRACKET	0648000							
23	GAS FEED PIPE	1251509	1251510	1251511	1251512	1251513	1251514	1251515	1251516
24	INTERMEDIATE SECTION	1230500							
25	TIE RODS M14 (SET)	2384009	2384010	2384011	2384012	2384013	2384014	2384015	2384016
26	RIGHT SUPPORT FOOT	0634304							
26	LEFT SUPPORT FOOT	0634305							
27	DISTRIBUTION PIPE	0651501							
28	REAR SECTION	1230900							
29	RUBBER GASKET 155x105x70	2366200							
30	FLANGE 2" 1/2	8591853							
31	REAR CAST IRON PLATE	0633200							
32	REAR CERAMIC FIBRE PANEL	1266001							
33	REAR CAST IRON CLEANING ACCESS COVER PLATE	0633900							
34	REAR CER. FIBRE PANEL FOR ITEM 33	0666800							
36	FLUE HOOD	1246159	1246160	1246161	1246162	1246163	12460164	1246165	1246166
37	DRAUGHT DIVERTER	1246059	1246060	1246061	1246062	1246063	1246064	1246065	1246066
38	THERMOSTAT POCKET	8564200							
39	ELBOW PIPE	1251500							
40	FRONT/REAR APRON	1245101							
41	SIDE PANELS FIXING BRACKET	1245151							
42	MOTOR BRACKET	1248050							
44	JOINT	1277000							
45	DAMPER MOTOR	1272559							

1.6.2 CONTROL PANEL



No.	DESCRIPTION	FUNCTION
1	RED LAMP	FOR "TRIPPED" INDICATION OF IONISATION CONTROL (front burner assembly)
2	RED LAMP	FOR "TRIPPED" INDICATION OF HIGH LIMIT THERMOSTAT (front burner assembly)
3	RED LAMP FOR EL. SUPPLY	FOR INDICATION OF 220V VOLTAGE INTO THE BOILER
4	RED LAMP	FOR "TRIPPED" INDICATION OF IONISATION CONTROL (rear burner assembly)
5	RED LAMP	FOR "TRIPPED" INDICATION OF HIGH LIMIT THERMOSTAT (rear burner assembly)
6	BOILER THERMOMETER	FOR CHECKING BOILER WATER TEMPERATURE
7	BOILER THERMOSTAT	FOR REGULATING BOILER WATER TEMPERATURE
8	MAIN SWITCH	FOR ON/OFF OPERATION
9	KNOCKOUT	FOR OPTIONAL CLIMATIC CONTROLLER
10	SAFETY THERMOSTAT RESET	FOR RESETTING THE FRONT SAFETY HIGH LIMIT THERMOSTAT
11	SAFETY THERMOSTAT RESET	FOR RESETTING THE REAR SAFETY HIGH LIMIT THERMOSTAT
12	FRONT BURNER SWITCH	FOR ON/OFF OPERATION OF FRONT BURNER
13	IONISATION RESET BUTTON	FOR RESETTING THE FRONT IONISATION CONTROL
14	REAR BURNER SWITCH	FOR ON/OFF OPERATION OF REAR BURNER
15	IONISATION RESET BUTTON	FOR RESETTING THE REAR IONISATION CONTROL
16	PUMP OVERRUN CONTROL	TO PREVENT NUISANCE OVERHEAT TRIP
17	BUTTON FOR ON/OFF OR TWO STEPS MODE	TO CHOOSE THE OPERATING MODE OF THE BOILER
18	BURNER SELECTOR	TO CHOOSE THE FIRING BURNER

COMPONENTS OF THE CONTROL PANEL

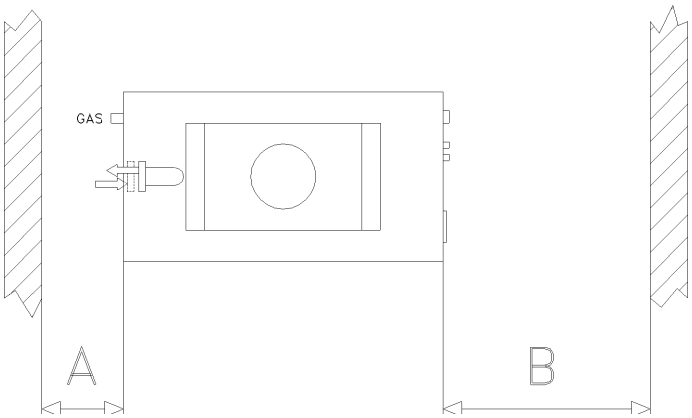
1249059	COMPLETE CONTROL PANEL
1872202	PANEL FRONT PLASTIC COVER
1872200	PANEL REAR PLASTIC COVER
8584747	HINGE 4x40 FOR COVER
1272503	P.C.B.
1871700	THERMOSTAT KNOB
1872207	PLASTIC CABLE CLAMP
1272501	FLAME CONTROLLER
1672704	FILTER
8562705	LIMIT THERMOSTAT 100°C 230V
8562810	BOILER THERMOSTAT
8562862	THERMOMETER
8572525	CONTROL FLAME RESET
8572539	RED LENS ø 6
8572540	GREEN LENS ø 6
8572541	RED LAMP
8572542	GREEN LAMP
8572543	BIPOLAR SWITCH
8562804	OVERRUN RELAY
8572561	BURNER/BOILER MODE SELECTOR

>Main supply cable: ref. No. 1272502. When cable has to be replaced, ask for original spare part.

2 INSTALLATION AND OPERATING INSTRUCTIONS

2.1 BOILER INSTALLATION

Siting of the boiler should be such that adequate space is provided at the front and rear of the unit to facilitate the withdrawal of the burner bars during servicing. Sufficient headroom over the boiler should be allowed to facilitate servicing with a minimum requirement of 1000 mm.



Allow minimum of 5 mm at sides of boiler for assembly

	A (rear)	**B (front)**
REGENCY 4 MODULEK - 152	450 mm	750 mm
REGENCY 4 MODULEK - 169	500 mm	750 mm
REGENCY 4 MODULEK - 186	550 mm	750 mm
REGENCY 4 MODULEK - 203	600 mm	750 mm
REGENCY 4 MODULEK - 220	650 mm	750 mm
REGENCY 4 MODULEK - 237	700 mm	750 mm
REGENCY 4 MODULEK - 255	750 mm	750 mm
REGENCY 4 MODULEK - 272	800 mm	800 mm

The boiler is delivered as a consignment of four packages. It is supplied complete with a draught diverter which must be fitted. The opening around this draught diverter must not be restricted in any way (i.e. boxing in boiler in alcove, etc...).
The boiler should be mounted on a level base of non-combustible material. A split collar should be fitted immediately above the draught diverter to allow servicing of the heat exchanger.

2.2 GAS SUPPLY

The availability of an adequate gas supply or the suitability of an existing supply and metering equipment, should be established by reference to the local Gas Undertaking before installation.
Gas supply pipework should be fitted in accordance with IGE/UP/2.
Do not use pipes of a smaller size than the boiler gas connection.

2.3 FLUE SYSTEM

Detailed recommendations for the flue are detailed in BS6644 and IM/11. The following notes are intended for your guidance.
The area of the flue serving the boiler must be not less than the area boiler flue outlet.
Nominal flue pipe diameters between the boiler and chimney should be in accordance with the following table:

REGENCY 4 MODULEK -152	300 mm	(12”)
REGENCY 4 MODULEK -169	300 mm	(12”)
REGENCY 4 MODULEK -186	300 mm	(12”)
REGENCY 4 MODULEK -203	300 mm	(12”)
REGENCY 4 MODULEK -220	300 mm	(12”)
REGENCY 4 MODULEK -237	350 mm	(14”)
REGENCY 4 MODULEK -255	350 mm	(14”)
REGENCY 4 MODULEK -272	350 mm	(14”)

Flue pipes and fittings should be constructed from aluminium, stainless steel or acid resistant vitreous enamel lined cast iron. Any double walled flue pipe, must be acceptable to British Gas. Chimneys should be lined with non-porous acid resistant material in accordance with BS5854, such as stainless steel flexible flue liner or similar British Gas approved material. The internal diameter of the liner must not be less than the recommended flue pipe and the number of joints should be kept to a minimum. Any joints between the flexible liner and the flue pipe from the boiler should be effected by means of a purpose built adaptor plate. Existing flues should be thoroughly swept before use and any register plates, restrictor plates or dampers should be removed. If the flue is not fitted with a terminal, then the flue outlet should be fitted with a wire mesh to protect against blockage. The terminal should not be sited adjacent to any opening window, air vent, or other ventilation opening and should be situated at least 1 m above the roof surface. All should be in accordance with BS6644.

2.4 AIR SUPPLY

Detailed recommendations for air supply are given in BS6644. The following notes are given as guidance.

2.4.1 AIR SUPPLY BY NATURAL VENTILATION

The purpose provided space housing the boiler(s) must have permanent air vents communicating directly with the outside air, at high level and at low level. Were communications with the outside air is possible only by means of high level air vents, ducting down to floor level for the lower vent(s) should be used. For an exposed boilerhouse, air vents should be fitted, preferably on all four sides but at least on two sides. Air vents should have negligible resistance and must not be sited in any position where they are likely to be easily blocked or flooded or in any position adjacent to an extraction system which is carrying inflammable vapour. Grilles or louvres should be so designed that high velocity air streams do not occurr within the space housing the boiler(s).
The air supply requirements stated below are related to the maximum rated heat INPUT of the boiler(s) and are equivalent to those specified in BS6644.
The total minimum free area requirements of the air vent are as follows:

Total input rating of boiler installation	Position of Air vent(s)	Air Vent areas (Air direct from outside)
Up to 2 MW	High level (outlet)	270 cm^2 plus 2.25 cm^2 per kilowatt in excess of 60 kW total rated input (gross)

	Low level (inlet)	540 cm^2 plus 4.5 cm^2 per kilowatt in excess of 60 kW total rated input (gross)

The actual minimum effective areas of the air vents required are as follows:

BOILER MODEL	POSITION OF AIR VENT	AREA OF VENT (Air direct from outside)
Regency 4 Modulek-152	High Level	567 cm^2 per boiler
	Low Level	1133 cm^2 per boiler
Regency 4 Modulek-169	High Level	615 cm^2 per boiler
	Low Level	1230 cm^2 per boiler
Regency 4 Modulek-186	High level	663 cm^2 per boiler
	Low Level	1326 cm^2 per boiler
Regency 4 Modulek-203	High level	709 cm2 per boiler
	Low Level	1418 cm^2 per boiler
Regency 4 Modulek-220	High level	757 cm2 per boiler
	Low Level	1514 cm^2 per boiler
Regency 4 Modulek-237	High level	808 cm^2 per boiler
	Low Level	1615 cm^2 per boiler
Regency 4 Modulek-255	High level	856 cm2 per boiler
	Low Level	1712 cm^2 per boiler
Regency 4 Modulek-272	High level	907 cm^2 per boiler
	Low Level	1813 cm^2 per boiler

2.4.2 AIR SUPPLY BY MECHANICAL VENTILATION

Mechanical ventilation systems serving the area containing the boiler should be designed with an extraction air rate of 0.45 m^3/sec per 1000 kW total rated input, and an inlet air rate of 1.1 m^3/sec per 1000 kW total rated heat input.

Systems employing an extract fan only must not be used, whereas the use of a single inlet fan, or an inlet together with an extract fan is acceptable.

All air inlet and extract fans should be electrically interlocked to cause safety shut-down or lock-out of the boiler in the event of malfunction of either fan.

The requirements of mechanical ventilation schemes is fully outlined in BS.6644.

The following table gives the minimum mechanical ventilation rates for the Regency 4 Modulek series range of boilers

	INLET AIR (Combustion, ventilation)	EXTRACT AIR (ventilation)
Regency 4 Modulek -152	0.21 m^3/s	0.086 m^3/s
Regency 4 Modulek -169	0.23 m^3/s	0.095 m^3/s
Regency 4 Modulek -186	0.25 m^3/s	0.105 m^3/s
Regency 4 Modulek -203	0.28 m^3/s	0.114 m^3/s
Regency 4 Modulek -220	0.30 m^3/s	0.124 m^3/s
Regency 4 Modulek -237	0.32 m^3/s	0.134 m^3/s
Regency 4 Modulek -255	0.35 m^3/s	0.144 m^3/s
Regency 4 Modulek -272	0.37 m^3/s	0.154 m^3/s

2.5 GAS CONNECTION

The gas inlet connection at the rear of the boiler terminates with a male BSP tapered thread. A gas cock (supplied separately in plastic bag) should be fitted between this point and the gas supply in an easily accessible position to facilitate servicing.

2.6 WATER CONNECTION

All REGENCY 4 MODULEK series boilers are provided with special flow and return flanged water connections located at the rear of the boiler. Mating flanges, gaskets and nut/bolt sets are provided.

2.6.1 SYSTEM WATER TREATMENT

In almost all heating and indirect hot water systems there is a need to treat the circulating water, particularly where the system type is open vented. The fill water will almost always produce a scale deposit on the waterways of the boiler. This deposit will reduce the heat transfer capacity of the boiler by insulating the metal of the heat exchanger from the system water. Water loss from the system is inevitable even when there is no obvious leakage. This is caused by surface evaporation from the feed tank. Over a heating season, water replenishment can be considerable. Make up water will, naturally, contribute to scale formation in the boiler. The rise and fall of water levels through expansion and contraction of the water on heating and cooling, allows dissolved oxygen to be drawn continuously into the system promoting corrosion. Corrosion debris can be carried into and laid down in the boiler increasing the potential for fouling which will severely reduce boiler efficiency and can lead to premature boiler failure.
It is for this reason that MHS Boilers Ltd., strongly recommends correct treatment of the system fill water after proper initial system cleansing and flushing.
For specific guidance on water treatment direct contact is advised with:

Fernox
Tandem House
Marlowe Way
Croydon
Surrey CRO 4XS
Telephone: 0870-601 5000

2.7 FLUE HOOD ASSEMBLY

Dismantle the counterflange supplied on the flow port, install the flow elbow pipe inserting the relevant gasket provided and tighten nuts and bolts securely.
Locate the flue hood on the boiler and secure the rear seal plate using the screws provided.

2.8 DRAUGHT DIVERTOR ASSEMBLY

Secure the four fixing brackets on the top side of the draught divertor tightening the self-tapping screws (brackets and screws provided).
Locate the draught divertor at the highest point on the studs, fixing it on to the flue hood by tightening securely the stud and nut fixings.

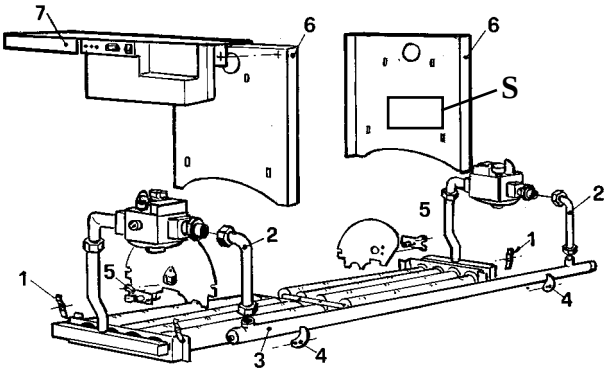
2.9 CHIMNEY CONNECTION

Size and material of non-flexible flue pipe between boiler and chimney should be in accordance with the Regulations in force.

2.10 GAS ASSEMBLY

The gas burner(s) assembly is supplied in a separate carton.
All REGENCY 4 MODULEK boilers are equipped with two gas valves and two burners.

GAS ASSEMBLY FOR BOILER MODELS REGENCY 4 MODULEK 152-272



- Secure the two brass spacers (using the hexagonal key 17 mm provided) on the screwed pivots positioned half the height of rear plate (nut should be removed and kept to fix the apron).
- Secure the aprons (6) to the front and rear plates using the stud and nut fixings (both aprons are delivered with the casing in a separate carton).
- Insert the two multi-bar burners into the combustion chamber and secure them to boiler block using the four side brackets (1).
- Insert the bulb of the thermometer into the front thermostat pocket and secure it with the retaining clip provided.
- Unscrew and free the facia panel from the bracket (7); secure the front apron to the bracket (7) using the three self-tapping screws F 4,2 x 9,5 (provided) and tighten again the facia panel to same bracket (7).
- Secure the White box (Gewiss) containing the rear ionisation controller to the rear apron (position S) using the self-tapping screws ø 4,2 x 9,5 (provided).
- Insert the four bulbs of the thermostats into the rear thermostat pocket and secure them with the retaining clip provided.
- Secure the gas feed pipe (3) to the side brackets (4) and join it to the gas assembly tightening the two connecting nuts (gaskets are provided).
- Secure the two pilot burners (5) to the relevant front cast iron plates (to facilitate the operation it may be necessary to temporarily slacken the pilot gas tube connections).
- Connect rear electrodes to the ignition and flame detection cables of the control panel.
- Any disturbed or newly made gas connections must be later tested for soundness.

2.10.1 DAMPER MOTOR CONNECTION

The motor of the damper has to be fitted on boiler as follows:

- secure the motor fixing bracket on flue hood using the studs and relevant nuts provided;
- with opened damper insert the motor shaft into the brass joint and tighten it with an allen key;
- push the motor cable into the fixing bracket of casing side panels, after having passed it through the casing front top panel (take off the plastic cap and position the cable bush provided) and then insert it through the slots of same bracket;
- screw the motor cable connector into the socket fixed on the bottom of control panel.

BEWARE: the motor has been already wired and pre-set at works; it is therefore unnecessary to adjust its limit switch.

The motor cams settings has been made according to following table and should not be changed:

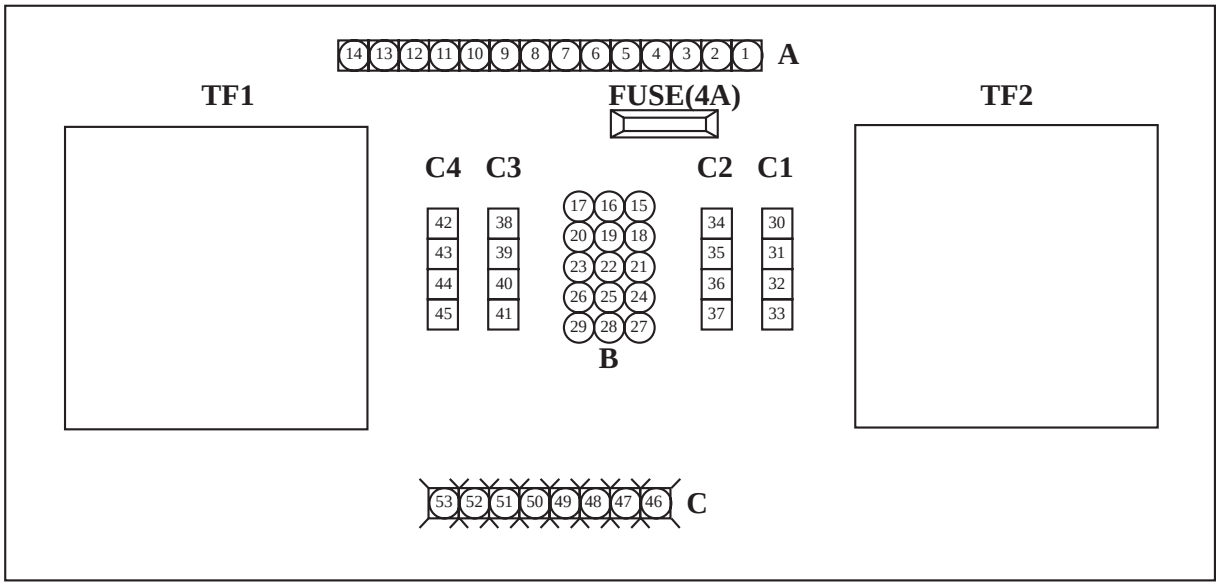
SETTING OF MOTOR CAMS
FOR REGENCY 4 MODULEK SERIES BOILERS

No. of sections	cams I	cams II	cams III	cams IV
9	90°	0°	55°	60°
10	90°	0°	65°	70°
11	90°	0°	45°	50°
12	90°	0°	40°	45°
13	90°	0°	40°	45°
14	90°	0°	55°	60°
15	90°	0°	35°	40°
16	90°	0°	15°	20°

2.11 ELECTRICAL SUPPLY AND CONNECTION

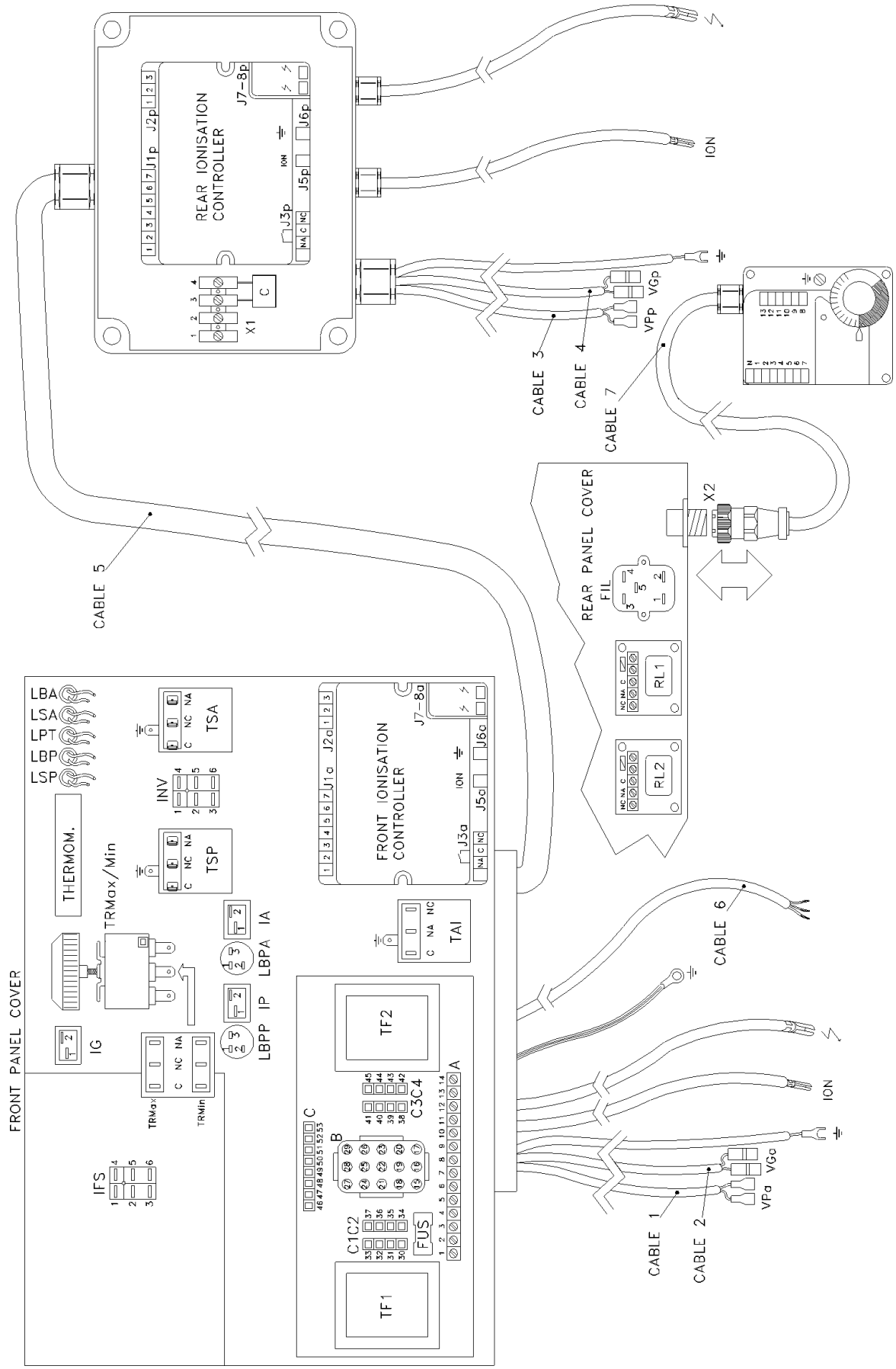
The electrical installation and connection must be in accordance with the latest and current I.E.E. and Local Authority regulations.
Connect the boiler to the electrical supply (230 V 50 Hz - 100 W max.) ascertaining that polarity is correct (PH = phase into terminal L - N = neutral into terminal N) and earthed properly.
The external controls should be connected between terminals marked 8 and 9, after having removed the test link between them.
When the boiler runs with the two steps mode the connection of a climatic controller can be made connecting the switch of the 1st step to terminals 48-49 and the switch of the 2nd step to terminals 50-51.
The overrun relay fitted avoids boiler nuisance trip of the limit safety thermostat when the circulating pump is stopped with a hot boiler block.
The overrun relay should be adjusted at a temperature of approx. 85°C, in any case 5°C over the regulating temperature of the boiler thermostat. In this way the external controls can also stop the circulating pump. The circulating pump runs in two situations:

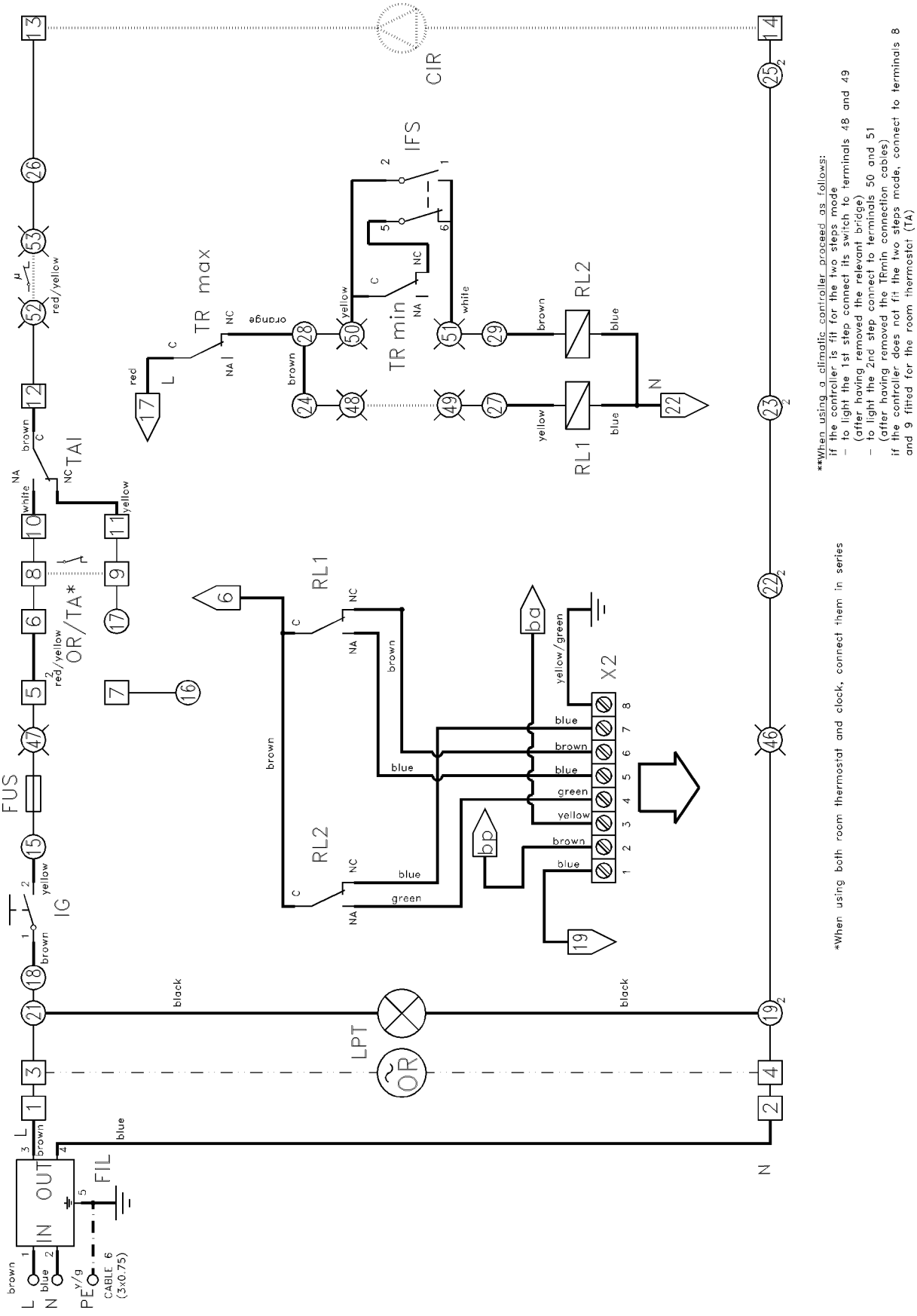
- when requested by the external controls
- when boiler temperature is higher than temperature adjusted on overrun relay.

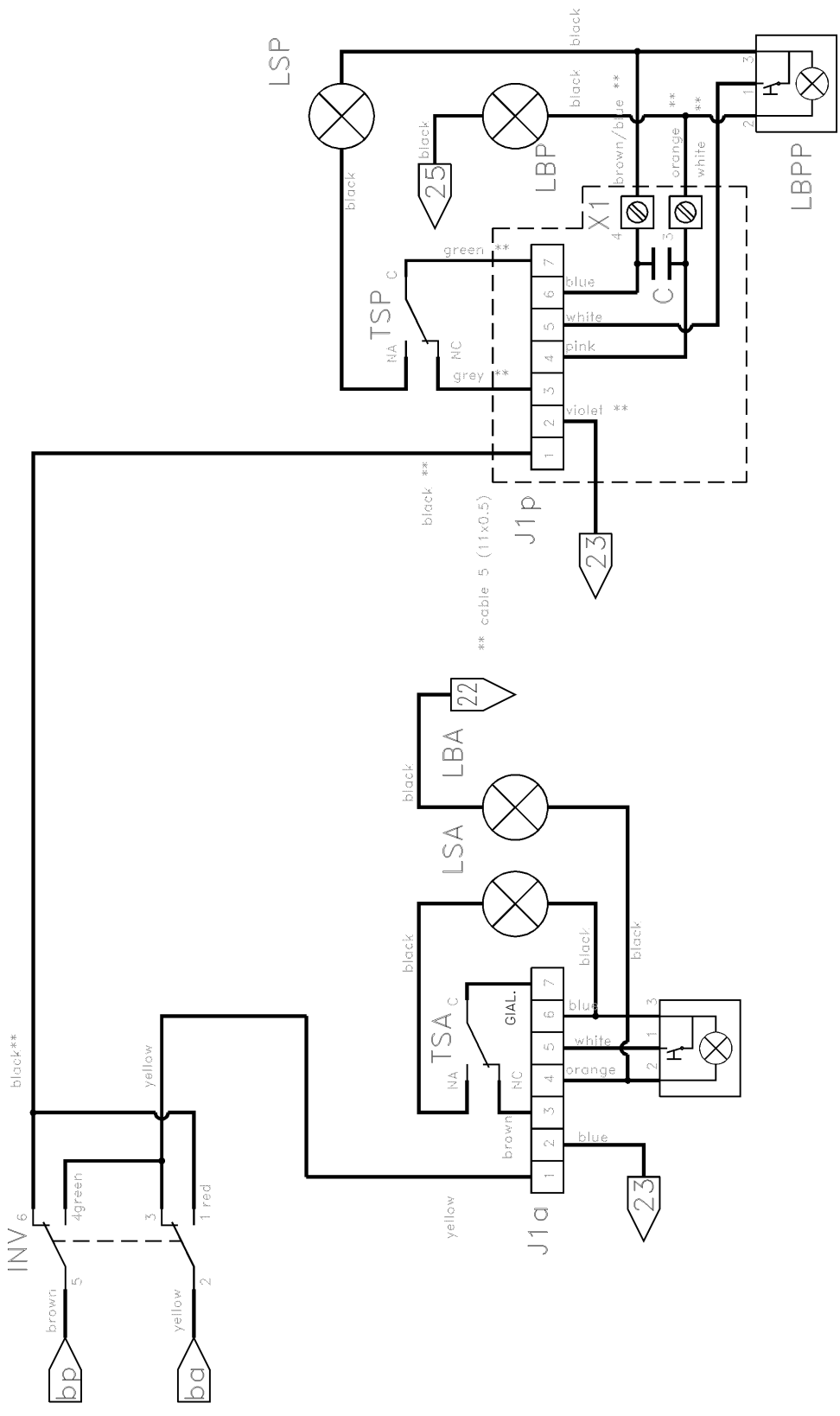


View of REGENCY 4 P.C.B.

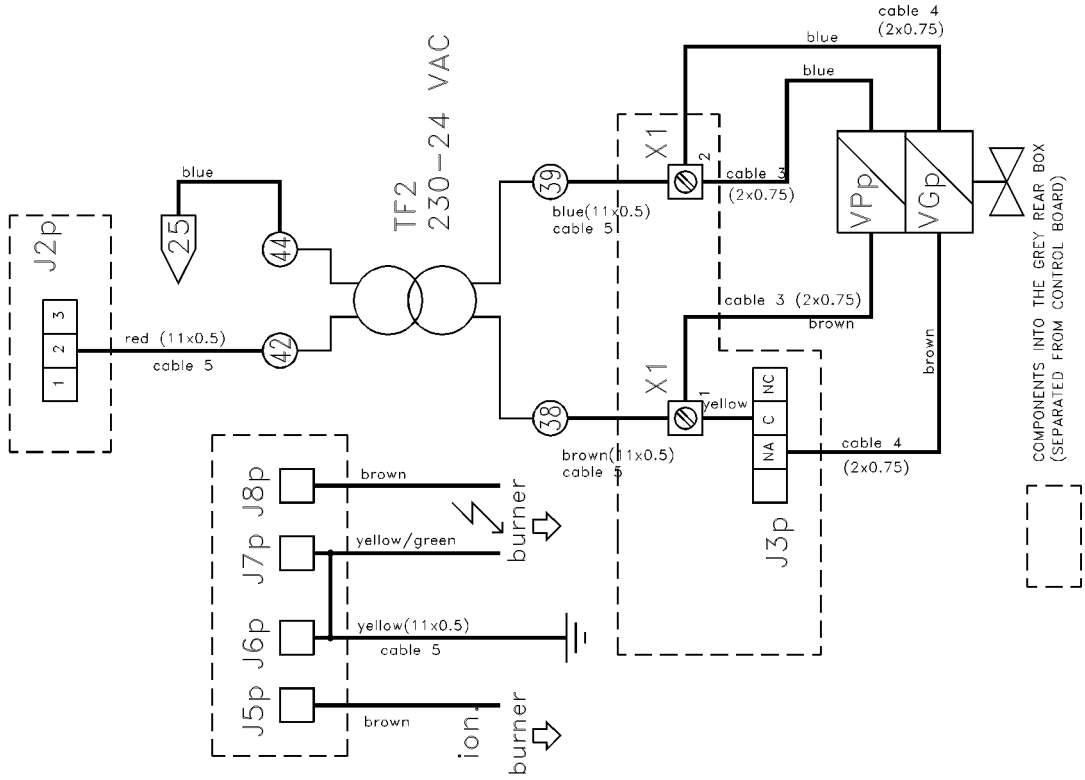
ELECTRICAL DIAGRAM REGENCY 4-152/272 - 9/16 SECTION BOILERS



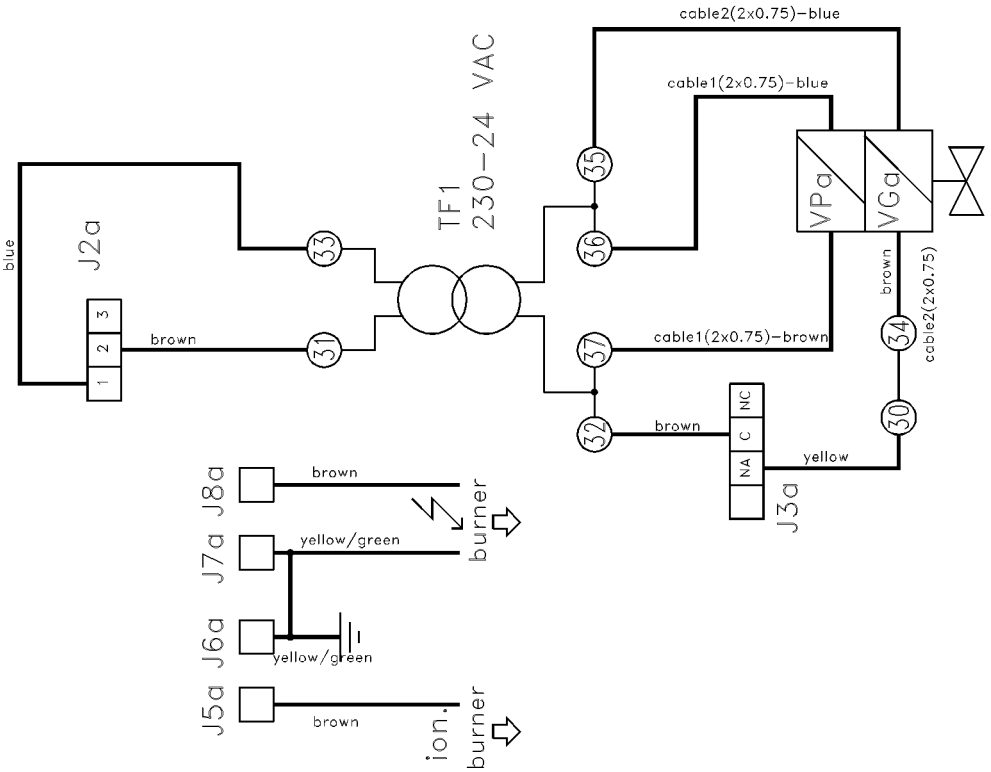

L
N
PE
brown
blue
y/g
CABLE 6
(3x0.75)
IN
OUT
FIL
FUS
IG
OR/TA*
TAI
TR max
TR min
IFS
CIR
RL1
RL2
LPT
OR
X2
ba
bp
red/yellow
yellow
brown
blue
green
yellow/green
black
white
orange
red
NC
NA
c
N
*When using a climatic controller proceed as follows:
if the controller is fit for the two steps mode
– to light the 1st step connect its switch to terminals 48 and 49
(after having removed the relevant bridge)
– to light the 2nd step connect to terminals 50 and 51
(after having removed the TRmin connection cables)
if the controller does not fit the two steps mode, connect to terminals 8
and 9 fitted for the room thermostat (TA)
*When using both room thermostat and clock, connect them in series

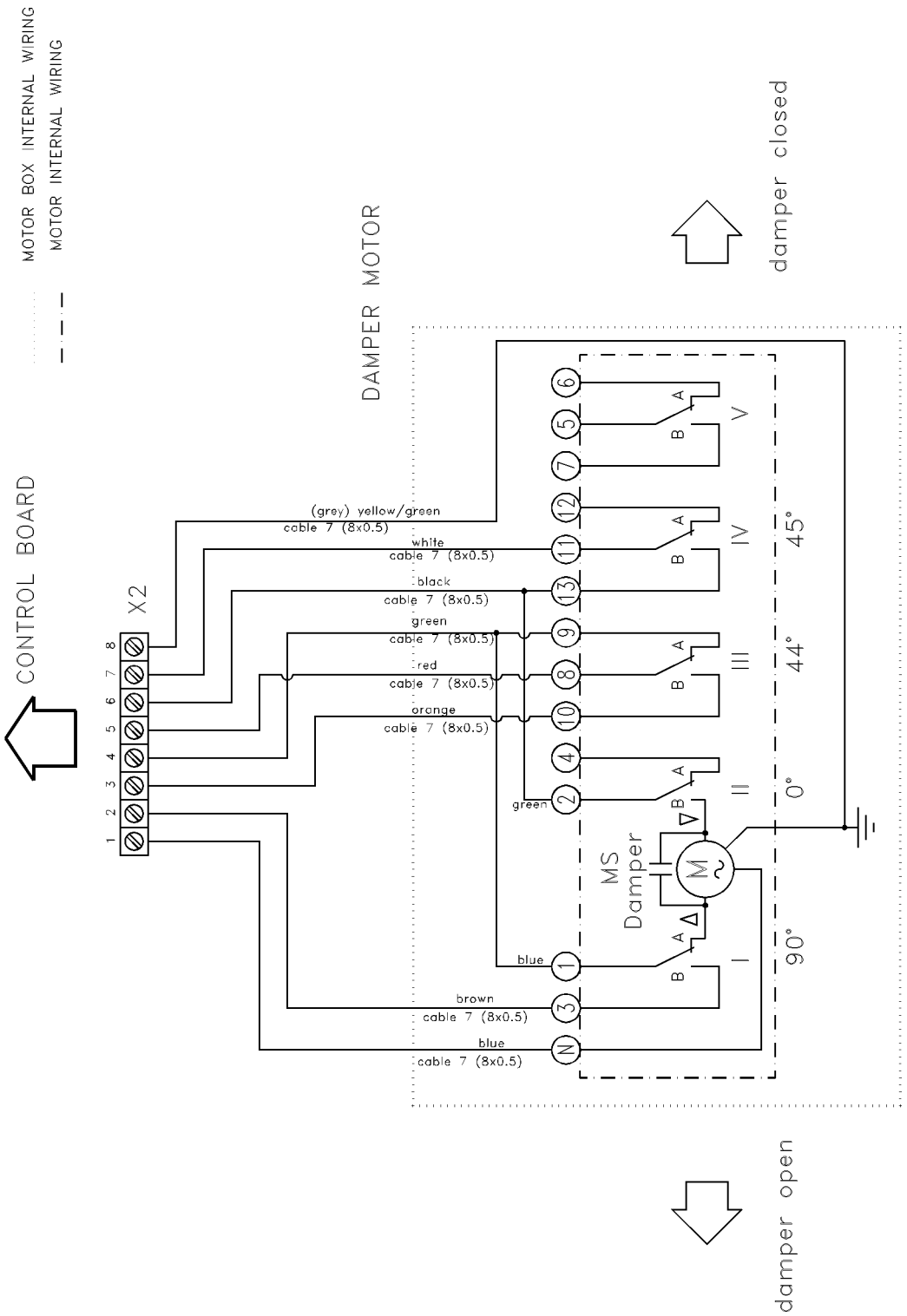

LSP
black
LBP
black
brown/blue **
orange **
white **
LBPP
25
X1
C
green **
TSP
C
NA
NC
grey **
blue
white
pink
violet **
black **
** cable 5 (11x0.5)
J1p
23
22
LBA
LSA
TSA
C
GIAL.
NA
NC
black
blue
white
orange
brown
blue
J1a
23
black**
yellow
INV
6
4green
3
1 red
5
2
brown
yellow
bp
ba

REAR IONISATION CONTROLLER

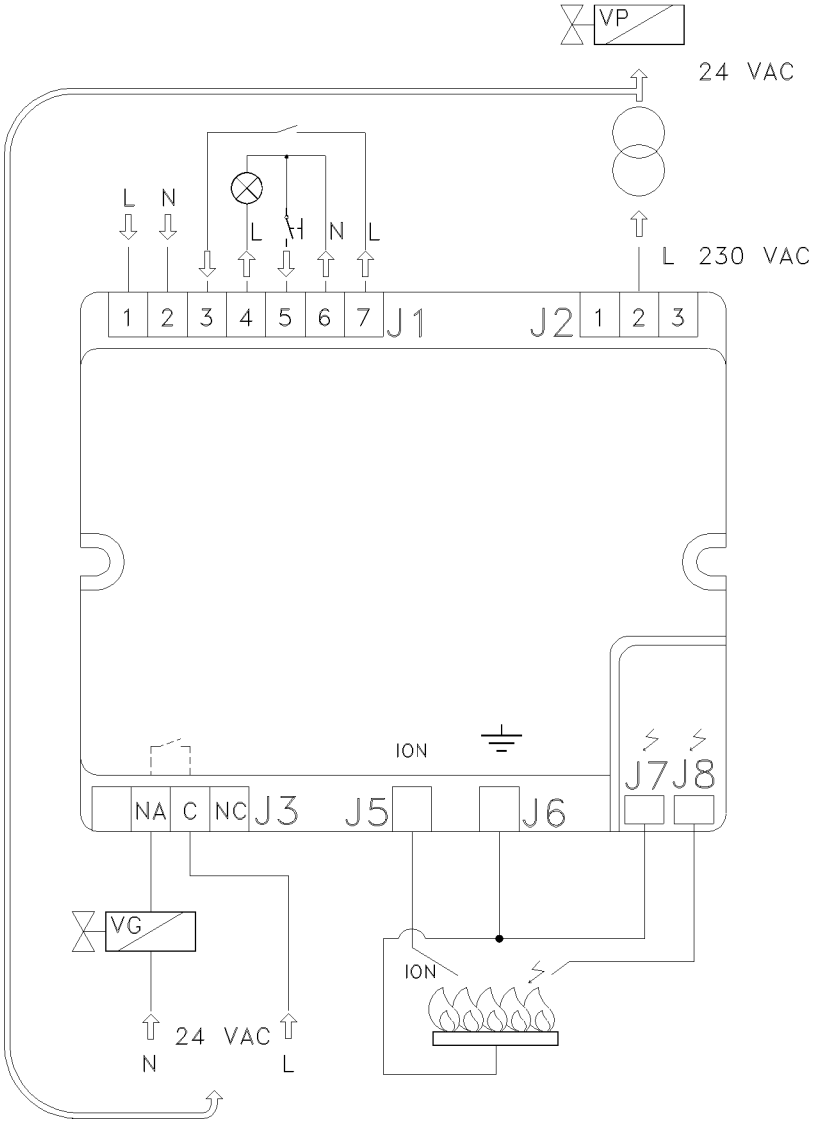


FRONT IONISATION CONTROLLER




MOTOR BOX INTERNAL WIRING
MOTOR INTERNAL WIRING
CONTROL BOARD
X2
1 2 3 4 5 6 7 8
DAMPER MOTOR
damper closed
damper open
(grey) yellow/green
cable 7 (8x0.5)
white
cable 7 (8x0.5)
black
cable 7 (8x0.5)
green
cable 7 (8x0.5)
red
cable 7 (8x0.5)
orange
cable 7 (8x0.5)
green
blue
brown
cable 7 (8x0.5)
blue
cable 7 (8x0.5)
MS
Damper
M
6 5 7 12 11 13 9 8 10 4 2 1 3 N
A B
V IV III II I
45° 44° 0° 90°

FRONT/REAR IONISATION CONTROLLER



REFER.	DESCRIPTION
FIL	Filter 230V∿
OR	Clock (not supplied)
LPT	Lamp (voltage indicator)
IG	Main switch
FUS	Fuse (4A)
TA	Room thermostat (not supplied)
TAI	Overrun relay
RLTA	Room thermostat relay
TRMax	Connections double thermostat - step 1
TRMin	Connections double thermostat - step 2
IFS	Selector double step/one step mode
X2	Connection motor-control board
CIR	Installation circulat.pump (not supplied)
INV	Burner selector switch
TSA	Front safety high limit thermostat
LSA	Front safety thermostat lockout lamp
LBA	Front burner lockout lamp
LBPA	Front burner reset button
TSP	Rear safety high limit thermostat
J1-8a	Front ionisat.controller terminal strips
J1-8p	Rear ionisat.controller terminal strips
LSP	Rear safety thermostat lockout lamp
LBP	Rear burner lockout lamp
C	Condenser
IA/IP	Front/rear burner switch

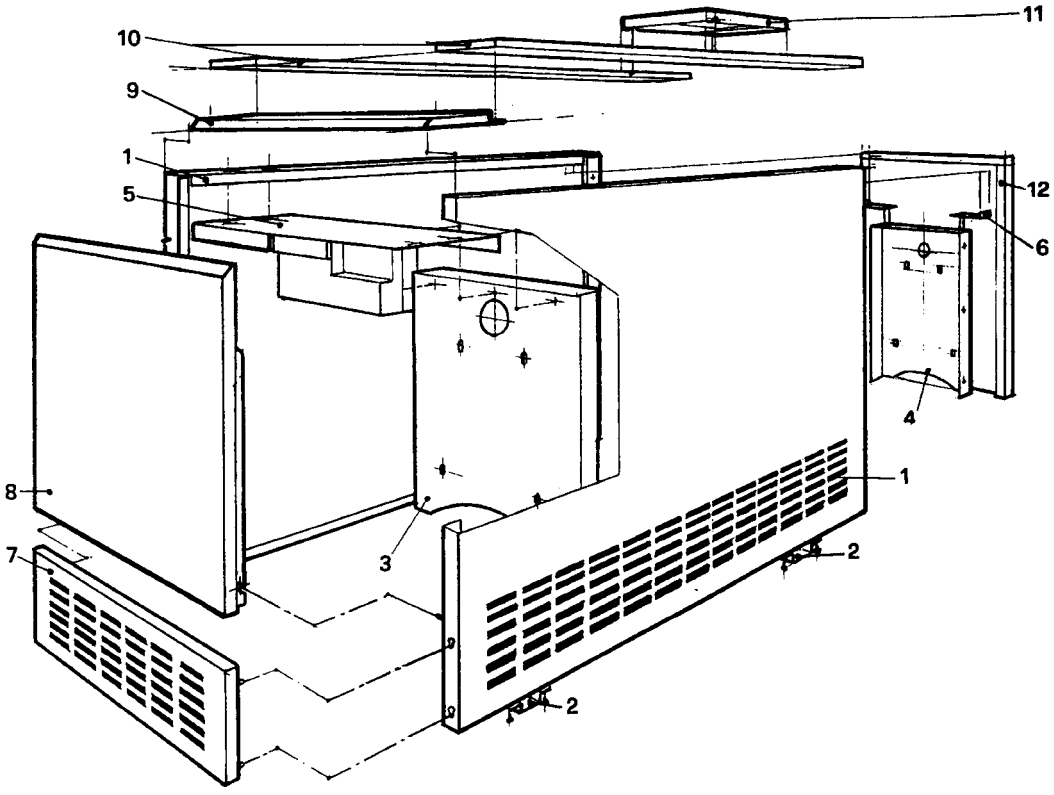
REFER.	DESCRIPTION
LBPP	Front burner reset button
TF1	Trasf. 230-24 V∿ per valv. br. ant.
VPa	Front pilot valve coil
VGa	Front main gas valve coil
TF2	Transf.230-24 V∿for rear burner valve
X1	Terminal strip
VPp	Rear pilot valve coil
VGp	Rear main gas valve coil
n	Terminal on P.C.B. connect. for user
n	Terminal on P.C.B. service connections
n	Terminal on P.C.B. connections for climatic controller
	Screw terminals
n	Reference for el. connection
n n	Derivated reference No.
	Cable connections
	P.C.B. connections
	Bridges
	Optional connections

2.12 CASING ASSEMBLY

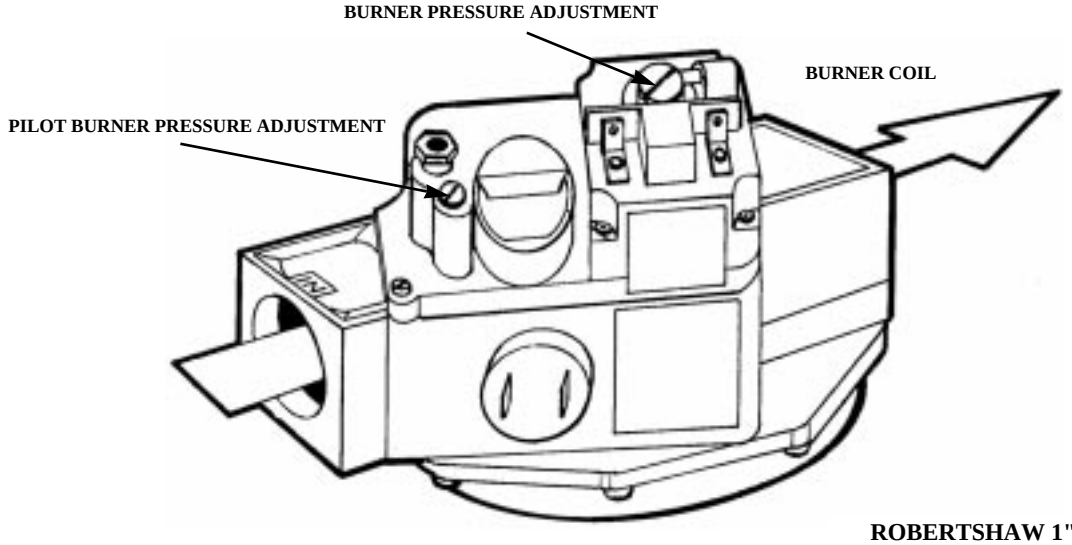
The casing of REGENCY 4 MODULEK boilers is supplied in a separate carton, in order to avoid any damage during transport.

Assemble the casing in the following manner:

- secure the rear brackets (6) to the rear apron (4) using the rear screws M 5 provided and keeping up the short part of the bracket.
- secure the feet (2) to the side panels (1)
- locate the side panels (1) on the cast iron block and secure by hooking the internal fold to the brackets (6)
- secure the link side panel to the front fixing bracket (5) using the screws F 4,2 x 9,5 (provided)
- secure the right side panel to the front fixing bracket (5) using the two self-tapping screws which provisionally held the facia panel to the bracket (5)
- hook the bottom panel (7) to the side panels
- hook the rear panel (12) to the side panels
- locate the front top panel (9) and the side panels
- locate the insert (11): use the one most suitable, discard the other
- assemble the swinging door.
- **VERY IMPORTANT:** Attatch self adhesive boiler data badge (supplied in instructions envelope) to the front inner apron (3).



2.13 FIRST LIGHTING AND BOILER CONTROL



ROBERTSHAW 1" GAS VALVE

Ensure that system and boiler are water filled and correctly vented.
Shut the gas valve, remove the inlet pressure test point screw on the valve and connect a pressure gauge. Open service cock and check with pressure gauge at inlet pressure point, that pressure value is as quoted in technical data sheet.
Warning: if pressure value is more than 35 mbar (350 mm. w.c.) it would be necessary to fit a reducing governor at gas inlet.

To regulate the boiler proceed as follows:

Select the ON-OFF mode.
Turn the boiler thermostat knob to the required temperature setting. Turn on the main switch and the front burner switch: as soon as gas flows out from front pilot burner, the ignition electrode shall spark for 10 seconds (check that spark is approx. 5 mm. in length). The ignition electrode shall stop sparking.
Should the front pilot burner not light in spite of electrode sparking ensure that:
- gas system is completely purged of air
- pilot coil of front gas control valve is energised (24Vcc).

Should the front pilot burner light and ignition electrode should continue to spark and if after a few seconds the ionisation control goes to “lockout”, then check:
- at the control panel: that the phase is connected to terminal 1 and neutral to terminal 2
- the ionisation electrode is not broken or incorrectly positioned or malfunctioning because of humidity
- installation has been correctly earthed and the earth cable connected to the front pilot burner is adequately secured.

After 20 seconds of front pilot burner ignition, the main front burner should light.

Should the main front burner not light, ensure that main coil of front gas control valve is energised (24Vcc) .

Should front pilot flame reduce or fail when main front burner is ignited, ensure that there is not a consistent pressure reduction, indicated by the pressure gauge. In this case check for cause of gas rate fall into gas feed pipe and its components.

Turn off the boiler through the front burner switch. Turn off the gas supply and remove the manometer from the inlet pressure test point and refit test point screw.

Attach manometer to front burner pressure test point and turn on gas supply. Turn on the front switch. When front burner is fully ignited and stable, adjust gas pressure on burner as per values quoted on technical data sheet, depending on gas type used.
Turn on the rear burner switch and repeat operations as described for the front burner.
Turn off the front and rear burners through the regulating thermostat.
Wait until the damper is closed.
Seal the regulations made.
Select the two stage mode, if required.

2.14 CHANGING GAS TYPE

REGENCY 4 MODULEK boilers are supplied for use on Natural Gas.
Each appliance can be equipped with injectors for changing from Natural Gas to LPG.

Changing from Natural Gas to LPG: kit on request

Exchange the injectors of main burner and pilot burner (see Technical Data Table § 1.4).

Remove the pressure regulator and install the cover provided with the kit (see Technical Data Table § 1.4).
Attatch the data plate “appliance for use on LPG” replacing the previous one.

Changing from LPG to Natural Gas: kit on request

Exchange the injectors of main burner and pilot burner (see Technical Data Table § 1.4).

Remove the cover and install the pressure regulator provided with the kit.
Attach the data plate “appliance for use on Natural Gas” replacing the previous one.

3 BOILER OPERATING AND MAINTENANCE Guidance for the User

The only operations that the user can do on the boiler are the following:

- check the water quantity of boiler and installation (once a week at least)
- reset of limit thermostat and burner when boiler is “tripped”
- should the boiler go to “lockout” for more than three times, apply to a Qualified Gas Service Engineer.

3.1 SWITCHING THE BOILER ON

- Open gas cock.
- Check that installation and boiler have been filled with water.
- Adjust boiler thermostat knob to the required temperature.
- Turn ON both main and front burner switches.
- As soon as gas flows out from front pilot burner, the ignition electrode shall spark for 10 seconds (check the spark is approx. 5 mm. in length) for lighting the front pilot burner.
- The ignition electrode shall stop sparking.
- After 20 seconds the main front burner shall light.
- Turn rear burner switch ON.
- As soon as gas flows out from rear pilot burner, the ignition electrode shall spark for 10 seconds (check the spark is approx. 5 mm. in length) for lighting the rear pilot burner.
- The ignition electrode shall stop sparking.
- After 20 seconds the main rear burner shall light.

3.2 SWITCHING THE BOILER OFF

- Turn main switch OFF.
- Turn OFF gas supply.

3.3 WARNING

Servicing must be carried out by a Qualified Gas Service Engineer on a regular basis with periods not exceeding 12 months, for ensuring boiler efficiency and accurate cleaning of the appliance.

3.4 CLEANING THE BOILER

Cleaning must only be carried out by a Qualified Gas Service Engineer.
The operations to be carried out are the following:

- disconnect and remove the burners and clean them thoroughly using a vacuum cleaner and dusting brush
- dismantle the flue hood for cleaning
- clean the fins/flue passes of the heat exchanger using flue brush
- clean the chimney/check for obstruction.

To clean the boiler outer case use a damp dusting cloth only.

Warning: always turn off the electrical supply before proceeding

Do not use detergents or solvents. To remove particularly resistant stains, use alcohol.
Re-check the position of thermostats and reconnect the boiler to electrical supply.

3.5 HIGH LIMIT SAFETY THERMOSTAT

TO RESET THE BOILER
If high limit safety thermostat operates then the corresponding lamp on the control panel illuminates.

WARNING: the boiler reset should be carried out by a Qualified Service Engineer, who will check the thermostat efficiency.

To reset the boiler proceed as follows:

- turn off electrical supply
- open the boiler door
- unscrew the plastic cap of limit thermostat on control panel
- push the red button
- refit the plastic cap and close the boiler door
- turn on electrical supply.

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BASILDON, ESSEX SS13 1LT
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