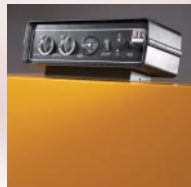
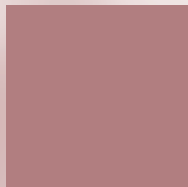
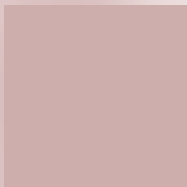
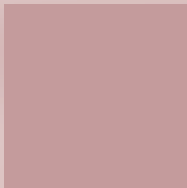
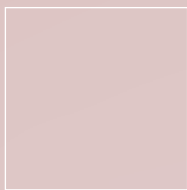


Regency AK



High power cast iron sectional,
atmospheric gas fired boiler,
outputs from 130kW to 260kW.



Simplicity and reliability



The Regency AK and AK2 series cast iron sectional atmospheric gas fired boilers from MHS Boilers includes nine models with outputs from 130 to 260kW.

Manufactured using the latest casting technologies and material with high resistance to thermal stress, the AK/AK2 appliances will provide long and dependable service. All models are high low firing with fully automatic ignition and return excellent efficiency for products of their type – up to 91% and 92.5% net at full and part load respectively. Utilizing a low line draught diverter, the boilers are especially suited to low head-room installation situations and are a perfect choice for new or retrofit applications where an atmospheric type appliance is required. With water and gas connections located at the side of the unit, the AK/AK2 is ideally suited to multiple /modular installations arranged in a back-to-back configuration.

Standard features

Flexibility in connection possibilities

The heat exchanger block is equipped with flow and return connections at both the right and left hand sides of the boiler. This creates four different options for connection to the water system, allowing for choice in connection locations, and best matching to existing pipe work in retrofit situations.

Functional simplicity

The reliable atmospheric burner system is not only an uncomplicated arrangement but is also almost silent in operation. This concept is extremely dependable and easy to maintain and a perfect choice for noise sensitive locations.

Two Stage – High/Low Firing Arrangement

Each appliance is equipped with a high/low (2:1) firing burner; the AK2 models with an enclosed double gas valve assembly applicable the boilers with 9 to 11 sections and the AK models with an externally mounted two stage gas valve arrangement on boilers from 12 to 17 sections.

High Standard of Insulation

To reduce standing losses and minimize plant room temperatures, the boiler body and flue gas collector hood is heavily insulated with a thick blanket of glass wool material which is foil backed for added insulating property and strength.

Industry standard parts

For ease of obtaining spare parts, industry standard gas valves, burner controls, ignition generators etc are used which are widely available in the spare parts market.

Easy to Handle Delivery Consignments

AK/AK2 Boilers are delivered to site in sectional form for low piece part manageable weight and ease of handling. The casing and burner parts are supplied in a sturdy crate offering good protection from damage during handling or storage on site

Option of Control Panel with In-built Climatic Controller.

In addition to the well appointed two stage boiler control pod, an optional alternative panel is available that includes a climatic controller. The features of the climatic panel include the ability to control two heating circuits with weather variable flow temperature (with or without mixing valves) and domestic hot water.

Suitable for Natural Gas or LPG

The Regency AK & AK2 boilers are suitable use on Natural Gas (G20) and LPG (G31) (with optional conversion kit) and meet the requirements of Building Regulations Approved Document L2 (2002) with both fuel options.

Warranty

The heat exchanger carries a 5 year guarantee; all other components carry a 12 month guarantee. All guarantees are against manufacturing or material defects only.

Dimensions & clearances

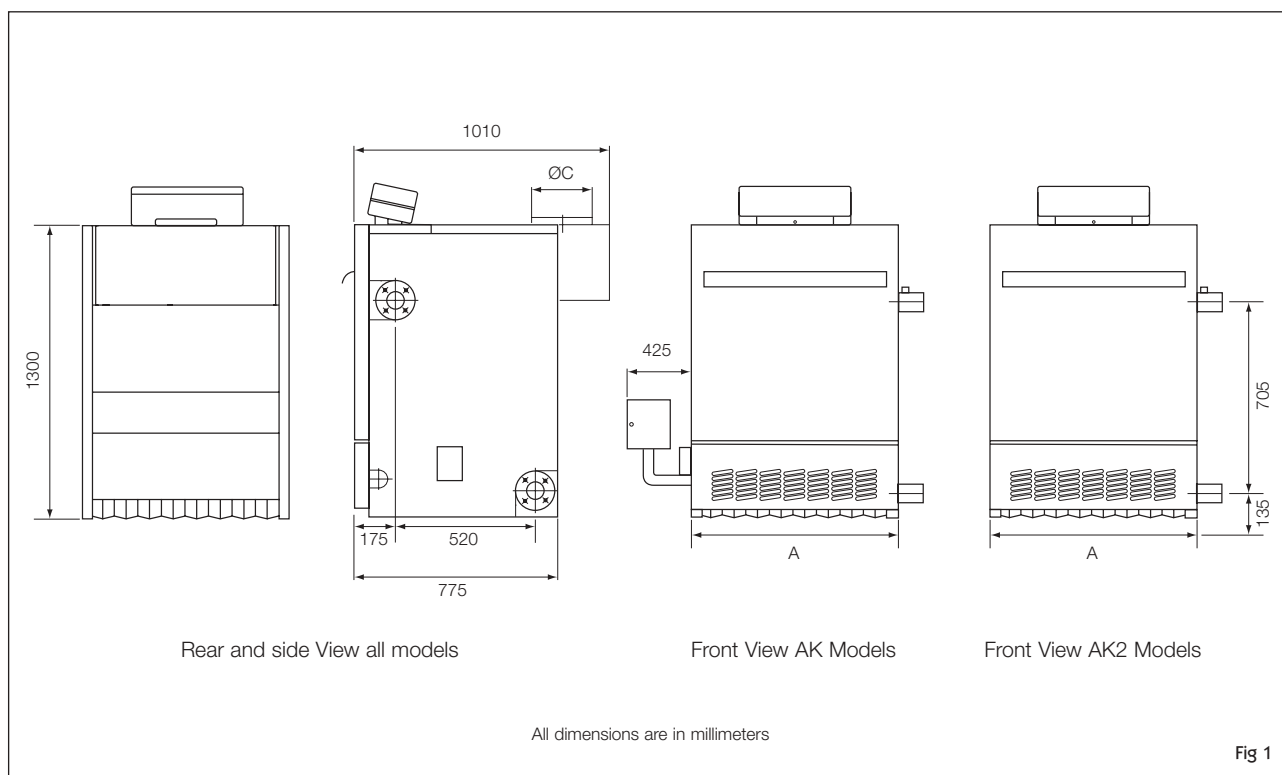


Fig 1

Technical data

Model		AK2-9	AK2-10	AK2-11
Number of Sections		9	10	11
Product ID Number-Notified Body		86/AT/574-CE086		
Rated Heat Output	kW	130.2	146.5	162.8
Heat Input Net	kW	142.6	161.1	178.5
Gas Consumption Nat Gas G20	m ³ /hr	14.89	16.82	18.64
Gas Consumption LPG G31	m ³ /hr	10.97	12.39	13.73
Nominal Gas Inlet Pressure Nat Gas	mbar	20	20	20
Max Gas Inlet Pressure Nat Gas	mbar	60	60	60
Nominal Gas Inlet Pressure LPG	mbar	37	37	37
Max Gas Inlet Pressure LPG	mbar	60	60	60
Max/Min Working Water Pressure	bar	0.5/6.0	0.5-6.0	0.5/6.0
Flow/Return Connections	BSP-M	2 1/2"	2 1/2"	2 1/2"
Gas Connection	BSP-M	1"	1"	1"
Design Flowt $\Delta 10^{\circ}\text{C}$	l/s	3.1	3.48	3.87
Design Flow $\Delta t 20^{\circ}\text{C}$	l/s	1.55	1.74	1.93
Hydraulic Resistance $\Delta t 10^{\circ}\text{C}$	kPa	12.8	14.4	16
Hydraulic Resistance $\Delta t 20^{\circ}\text{C}$	kPa	3.2	3.6	4
Min Water Flow Rate	l/s	0.52	0.58	0.63
Flue Connection $\varnothing C$	mm	250	300	300
Flue Gas Volume Nat Gas	kg/h	347.5	391	434.5
Flue Gas Volume LPG	kg/h	334.3	376.1	418
Nominal Flue Gas Temperature	$^{\circ}\text{C}$	128	128	128
Water Content	l	104	114	124
Weight Boiler Body Empty	kg	605	670	735
Width A	mm	1060	1166	1271
Standby Losses	watt	353	387	421
Flow Temperature Control	$^{\circ}\text{C}$	30-90	30-90	30-90
Power Supply		230V 1phase	230V 1phase	230V 1phase

Technical data

Model		AK-12	AK-13	AK-14	AK-15	AK-16	AK-17
Number of Sections		12	13	14	15	16	17
Product ID Number-Notified Body		86/AT/574-CE086					
Rated Heat Output	kW	179	195.3	211.6	227.9	244.2	260.5
Heat Input Net	kW	196.7	214.6	232.5	250.4	268.3	286.2
Gas Consumption Nat Gas G20	m³/hr	20.54	22.41	24.28	26.14	28.01	29.88
Gas Consumption LPG G31	m³/hr	15.13	16.51	17.89	19.27	20.64	22.02
Nominal Gas Inlet Pressure Nat Gas	mbar	20	20	20	20	20	20
Max Gas Inlet Pressure Nat Gas	mbar	60	60	60	60	60	60
Nominal Gas Inlet Pressure LPG	mbar	37	37	37	37	37	37
Max Gas Inlet Pressure LPG	mbar	60	60	60	60	60	60
Max/Min Working Water Pressure	Bar	0.5/6.0	0.5/6.0	0.5/6.0	0.5/6.0	0.5/6.0	0.5/6.0
Flow/Return Connections	BSP-M	2½"	2½"	2½"	2½"	2½"	2½"
Gas Connection	BSP-M	1"	1"	1"	1¼"	1¼"	1¼"
Design Flow Δt 10°C	l/s	4.26	4.65	5.03	5.42	5.81	6.2
Design Flow Δt 20°C	l/s	2.13	2.32	2.51	2.71	2.9	3.1
Hydraulic Resistance Δt 10°C	kPa	17.6	19.2	20.8	22.4	24	25.6
Hydraulic Resistance Δt 20°C	kPa	4.4	4.8	5.2	5.6	6	6.4
Min Water Flow Rate	l/s	0.72	0.77	0.88	0.91	0.97	1.02
Flue Connection øC	mm	300	350	350	350	350	350
Flue Gas Volume natural gas	kg/h	477.8	521.3	564.8	608.3	651.8	695.3
Flue Gas Volume LPG	kg/h	459.6	501.4	543.3	585.1	627	668.3
Nominal Flue Gas Temperature	°C	128	128	128	128	128	128
Water Content	l	134	144	154	164	174	184
Weight Boiler Body Empty	kg	800	865	930	995	1060	1125
Width A	mm	1377	1482	1588	1693	1800	1906
Standby Losses	watt	454	488	523	557	592	624
Flow Temperature Control	°C	30-90	30-90	30-90	30-90	30-90	30-90
Power Supply		230V 1phase	230V 1phase	230V 1phase	230V 1phase	230V 1phase	230V 1phase

Boiler base dimensions and clearances

Recommended dimensions of boiler base mm

Model	AK2-9	AK-10	AK2-11	AK-12	AK-13	AK-14	AK-15	AK-16	AK-17
Width	1100	1250	1325	1425	1525	1650	1750	1850	1950
Depth	850	850	850	850	850	850	850	850	850
Height	100	100	100	100	100	100	100	100	100

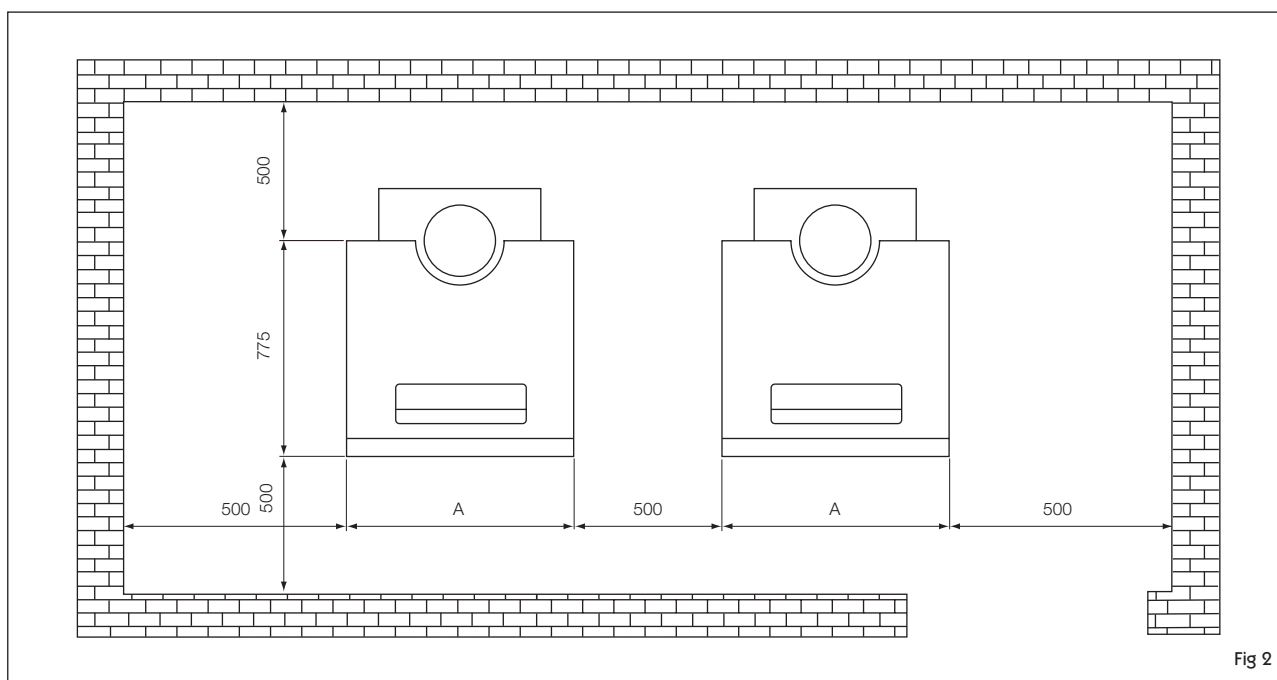


Fig 2

Installation Requirements

Code of practice

The Regency AK/AK2series boilers must be installed in accordance with (as appropriate) the requirement of the Building Regulations, Health and Safety Executive Regulation PM5, IEE Regulations, Gas Safety

(Installation and Use) Regulation, National Water Bylaws, Clean Air Act Memorandum on Chimney Heights and any Insurance Company requirements.

BS 6880 Code of Practice for low temperature hot water heating systems for output greater than 45kW, Parts 1, 2 and 3: 1988.

BS 6644 1991 - Specification for installation of gas fired hot water boilers of rated inputs between 60kW and 2MW.

IGE/UP/2 Gas Installation pipework, boosters and compressors

on industrial and commercial premises.

IGE/UP/10 Installation of gas appliances in industrial and commercial premises, Part 1: Flued appliances.

CISBE Guide Reference sections B7, B11 and B13.

LPG When boilers are fired with LPG, it is recommended that gas leakage detection equipment is installed at low level, near the boiler or boilers.

Air Supply & Ventilation

An adequate supply of air for combustion and ventilation must be provided to the boiler house in accordance with the current edition of BS6644. The air supply may be achieved using either:

- Natural ventilation with high and low level openings direct to the outside air
- Using a fan to supply air to low level and natural discharge at high level direct to the outside air
- Using a fan to supply air to low level and a fan to extract air at high level

If using natural ventilation, suitable permanent openings must be provided. The openings should be fitted with grilles that cannot be easily blocked or flooded. The free area of the grilles must be as follows: Low Level – 540cm² plus 4.5cm² per kW in excess of 60kW of total rated gross heat input. High Level – 270cm² plus 2.25cm² per kW in excess of 60 kW total rated gross heat input. If mechanical ventilation is used, then air must be supplied at the rate of 1.1m³/s per 1000kW of input and extraction at a rate of 0.45m³/s per 1000kW of input. Alternative guidance on ventilation may be found in IGE/UP/10.

Filling the System

The system to which the boilers are connected may be open vented or sealed and pressurized (recommended). If the system is to be of the sealed type, then the Initial filling of a sealed heating system, and subsequent refilling, must be by a method that has been approved by the Water Regulation Advisory Scheme (WRAS) for the type of heating system, i.e. Domestic (in-house) Fluid Category 3 (C-3). Non Domestic (other than in-house) Fluid Category 4 (C-4).

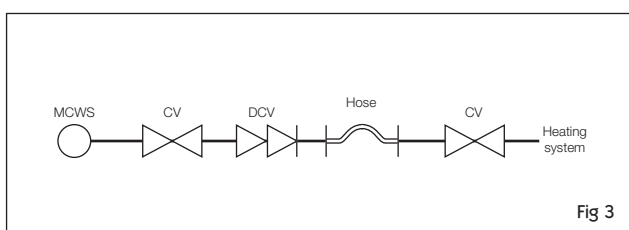
For Category 3 systems

The approved method of filling must comprise of the following components in the arrangement shown;

- Control Valve incorporating Double Check Valve on the Mains Cold Water Pipework.
- Temporary Connection Hose, which shall be disconnected after use.
- Control Valve, on the Heating System pipework.

Furthermore, in accordance with BS6644, for boiler/s with an input greater than 60kW (Gross), an automatic pressurization unit must be installed to automatically replenish any lost system water.

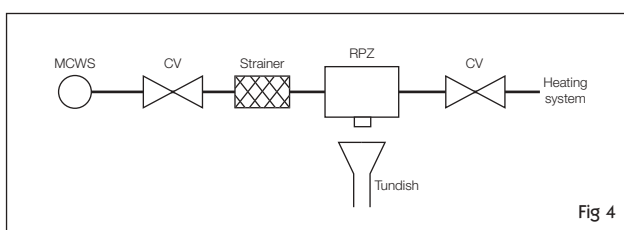
For information on the comprehensive range of pressurization units available from MHS boilers, please visit our website, www.mhsboilers.com



For Category 4 systems

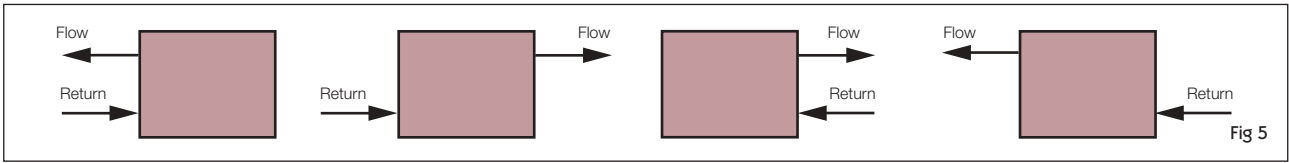
The approved method of filling must comprise of the following components in the arrangement shown;

- Control Valve, on the Mains Cold Water pipework.
- Strainer.
- Verifiable Backflow Device with Reduced Pressure Zone (RPZ Valve) Incorporating a 'Type BA' air gap.
- Tundish
- Control Valve, on the Heating System pipework.

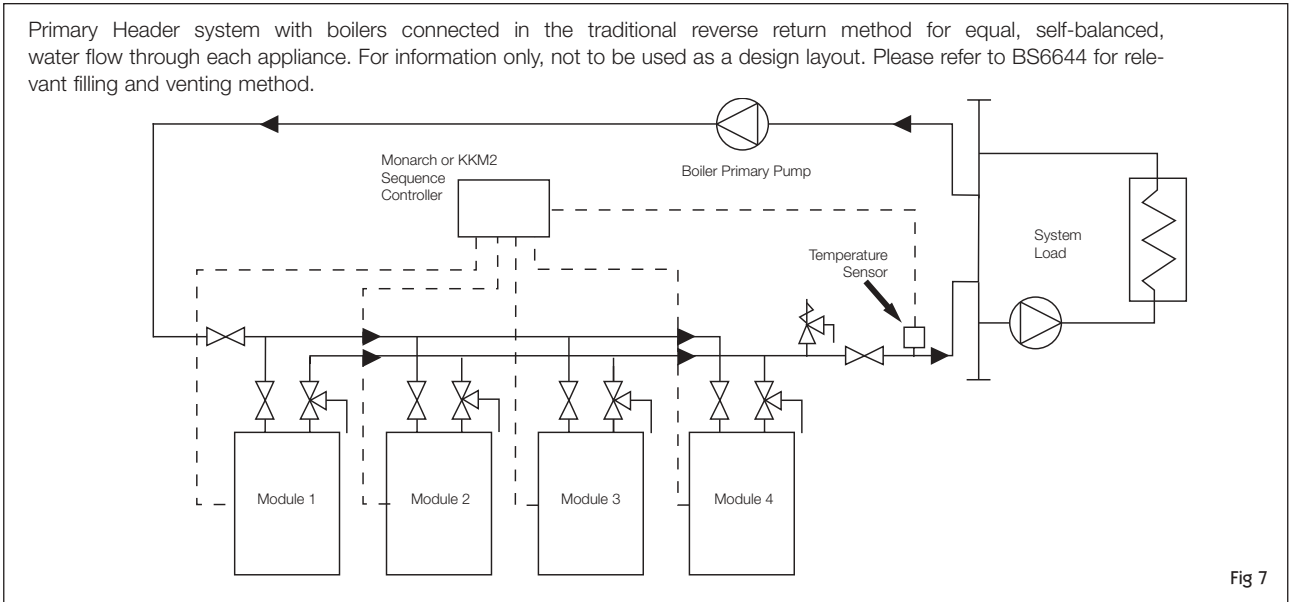
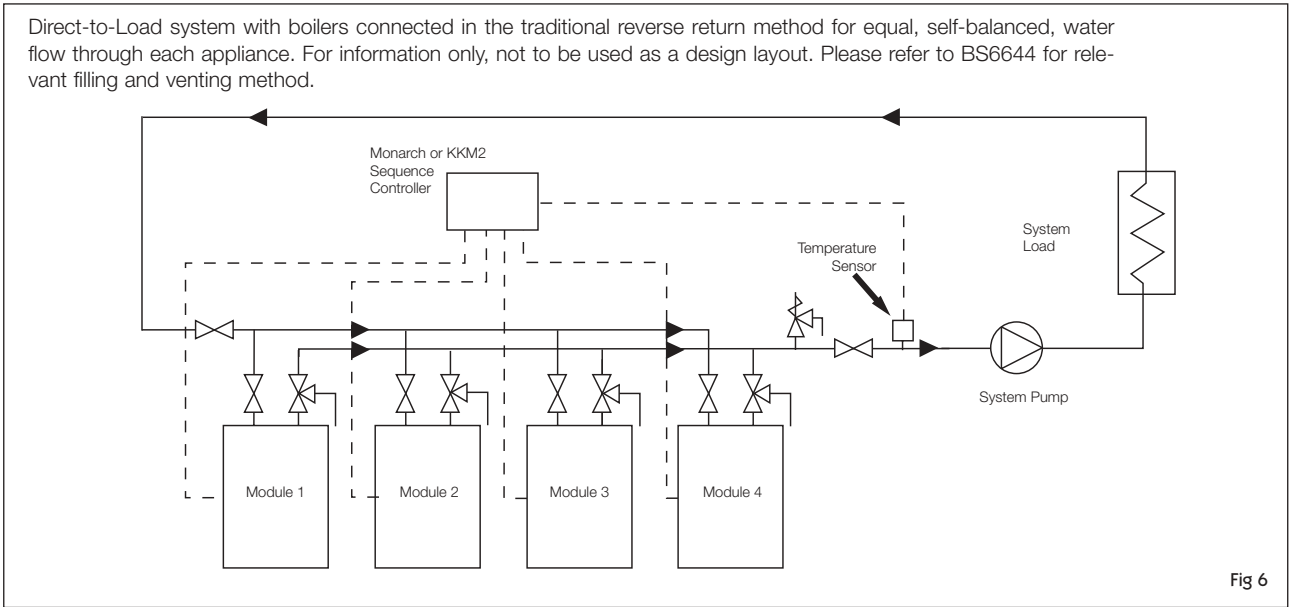


Connection options

The AK/AK2 Series Boilers are equipped with a pair of flow and return connections located at either side of the boiler which allows for the appliance to be connected in any one of the four following options. Note that it is possible to make only one flow and one return connection to a boiler and that the gas connection must always be opposite to the return water connection.



Typical pipework schematics



Note:

To satisfy the requirements of BS 6644, and all other relevant installation standards, each module must be equipped with a safety relief valve and installed onto the module flow pipe between the module and any isolation valve. Alternatively a common safety valve may be used where the modules flow isolation valves are of the T-port type as shown above. For further information, an Installation and Maintenance Manual can be obtained from our website, www.mhsboilers.com.

Flue systems

Any flue serving Regency AK/AK2 Boilers must not be of a diameter less than the flue connection size on the appliance. It is recommended to use twin wall flue to protect the buoyancy of the flue gases and the draught generated should be capable of overcoming the resistance of the flue components (alternatively a mechanically assisted arrangement should be utilised).

The flue must be adequately supported and the weight of the system must not be applied onto the boiler. For guidance on flue system requirements and design, refer to BS 6644 1991, the Clean Air Act Memorandum on Chimney Heights and IGE/JP/10.

Multiple boiler controls

In accordance with the requirements of Building Regulation Approved Document Part L2, the building should be provided with space heating controls and reference should be made to CIBSE Guide H, 2000: Building Control Systems.

The following boiler sequencer control devices from MHS Boilers will provide the necessary control to meet the requirements for multiple/modular boiler control.

Monarch 2 Boiler Sequencer

The Monarch sequencer is a wall mounted unit with hinged, tinted cover, of compact dimensions of 257mm Wide x 215mm High x 135mm Deep, and is available in two models;

Sequence 4 - For the control of up to 4 boilers/Stages
(4 No ON/OFF Boilers or 2 No High/Low Boilers)

Sequence 8 - For the control of up to 8 boilers/Stages
(8 No ON/OFF Boilers or 4 No High/Low Boilers)

The Monarch 2 is designed for precise and versatile control of a modular boiler arrangement, and can be set to control the system flow temperature with the following additional benefits;

- Control Inputs from either Time Switch/Optimiser (Volt Free) or a BMS System (0-10V).
- Traditional Step Control with rotation to equalize boiler operation times.
- Adjustable Timing Parameters
- Large LCD Display with Simple Menu Programming.
- Individual 'Hand-Off-Auto' switches with 'Boiler On' Indicator Lamps.
- System Pump Operation control. (If utilised, number of stages is reduced by 1)
- Safety Interlocks
- Boost & Night Setback Facility
- Direct-on-boiler Weather Compensation (Limited curve operation recommended)



KKM2 Cascade Manager

The KKM2 Cascade Manager is a wall mounted unit with hinged, tinted cover, compact dimensions of 240mm Wide x 205mm High x 125mm Deep, and can control up to six boilers, from a single unit. The KKM2 can also be connected in a Master and Slave arrangement allowing additional Cascade units to be connected.

As well as sequencing the boilers to their optimum efficiency, the KKM2 has the following special functions;

- Control Inputs from either Time Switch/Optimiser (Volt Free), BMS System (0-10V), or RE2132 Modulating Room Unit.
- Traditional Step Control with rotation to equalize boiler operation times.
- Adjustable Timing Parameters
- Large LCD Display with Simple Menu programming.
- Direct-on-boiler Weather Compensation (Limited curve operation recommended)
- Control of heating circuit pump
- Stored hot water temperature control with priority operation
- Hot Water Primary control.

OPTIONAL EXTRAS:

- RE2132 Modulation Room Unit with 3 On/Off times per day over 7 days, Night Setback & Frost Protection, and Optimum Start/Stop
- QAW44 Remote Tamper Proof Sensor for use with the RE2132 Room Unit.



Optional Climatic Control Panel

As an alternative, a boiler may be equipped with an enhanced full automatic control panel (at additional cost) which includes a comprehensive system controller (Siemens RVA53.280). This controller can will manage either one boiler with a 2 stage burner or two boilers with single stage burners plus provide control over two heating zones with weather compensation, plus control over an indirect hot water storage calorifier such as the MHS Boilers Gemini HSC. The features of the "P3" Control Panel are as follows:

- Control over 2 separate heating circuits with or without mixing valves
- Quick setback and boost facility
- Automatic summer/winter changeover
- Remote operation via digital room unit
- Self adaptive in line with thermal dynamics of the building
- Automatic adjustment of heating curve to type of building construction and the heat demand (provided a room unit is connected)
- Adjustable flow temperature boost with mixing heating circuit
- Protective boiler start-up
- Protection against boiler over temperature (pump overrun)
- Adjustable minimum and maximum limitation of boiler temperature (boiler flow temperature)
- Burner cycling protection by observing a minimum burner running time
- Frost protection for the house or building, domestic hot water, the heating circuit, and boiler
- Protection for the pump and the mixing valve through periodic control (pump and valve exercising).
- Domestic hot water heating with a charging pump or diverting valve
- DHW. heating with one or 2 sensors
- Selectable DHW Program
- Integrated anti-legionella function
- Selectable priority for DHW heating
- Adjustable boost of the DHW Charging temperature
- DHW demand with a sensor or thermostat
- Two 7-day heating programs
 - 7-day heating program no. 1 for heating circuit 1
 - 7-day heating program no. 2 for heating circuit 2
 - Separate 7-day heating program for DHW heating
- Temperature adjustment with the setpoint knob
- Manual operation at the touch of a button
- Straightforward selection of operating mode via buttons
- Output and input tests to assist commissioning and a functional test
- Service connection facility for local parameter settings and data logging



A superb range of designer and traditional radiators is also available from our sister company MHS Radiators Ltd.

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