

MULTI ELEC



Electric Boilers

TECHNICAL MANUAL



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DESCRIPTION

The “Multi Elec” electric boilers have been designed for any heating system (maximum working pressure 4 Bars)

They are Class 1 boilers that required earth connections IP21 / IK 08

BOILER

- Output from 36 to 630 kW
- Boiler body in welded steel E 24
- Working pressure 4 bars
- Test pressure 6 bars
- Working temperature below 110°C
- 50mm thick mineral fibre insulation, polyester film aluminized glass cloth
- Safety thermostat with manual reset 110°C
- Internal expansion vessel

CONTROL PANEL

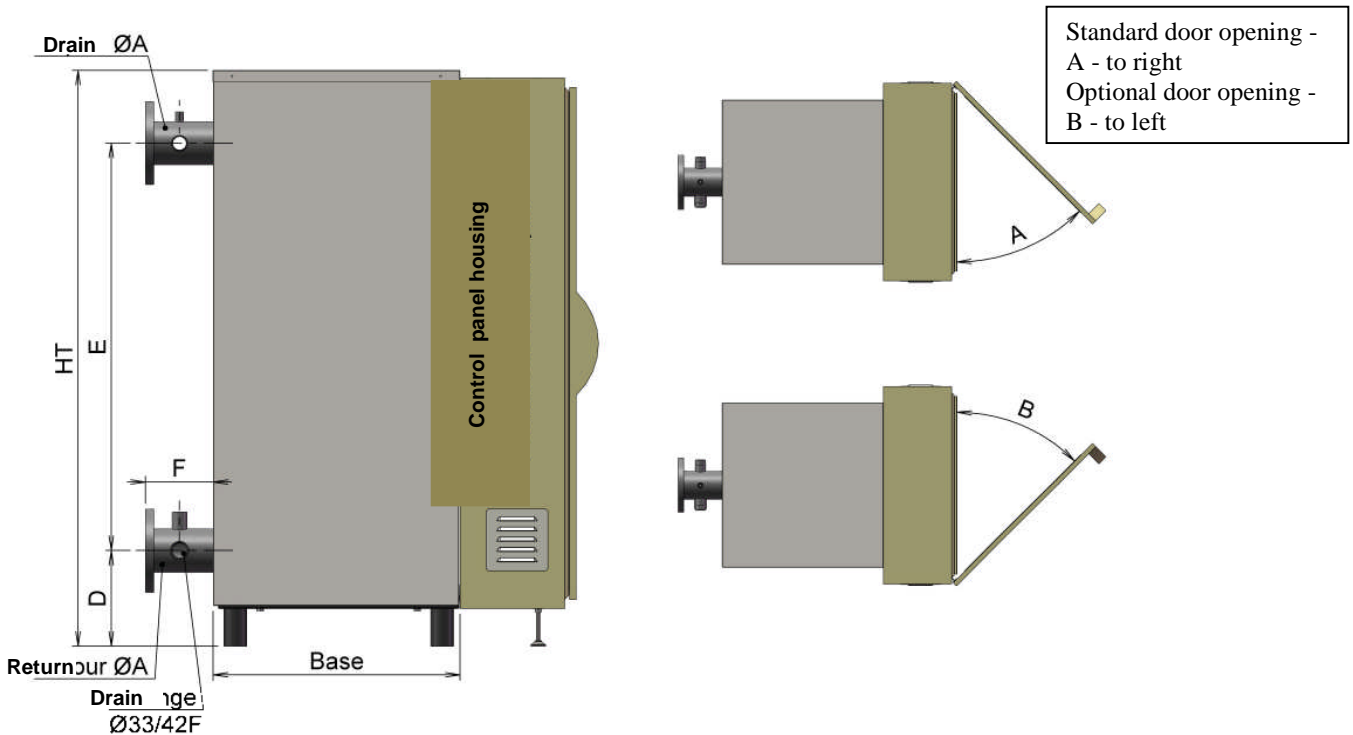
- 1 waterproof control panel mounted on the boiler including:
 - 1 main switch
 - 3 industrial cylinder cartridge fuse per stage
 - 3 contactors (1 per stage)
 - 1 protected transformer 415 / 240 V
 - 1 light « operation »
 - 1 light « lock out »
(circulation and safety thermostat)
 - 1 digital régulation
- Terminals for external connections

INCOLOY IMMERSION HEATERS

- For boiler output between 36 and 288 kW
 - Screwed elements diam.40
 - Power of each unit: 12 kW
 - 240/415Volts 3 phase + earth
 - Removal of the immersion heaters: minimum height of 2 m.
- For boiler output between 315 and 630 kW
 - Screwed elements diam.80
 - Power of each unit : 35 kW
 - R=1MΩ
 - 415 Volts 3 phase + earth
 - Removal of the immersion heaters: minimum height of 2.5 m.
 - Résistance d'isolement à froid à 1 mégohm

PERFORMANCE, DIMENSIONS & CONNECTIONS

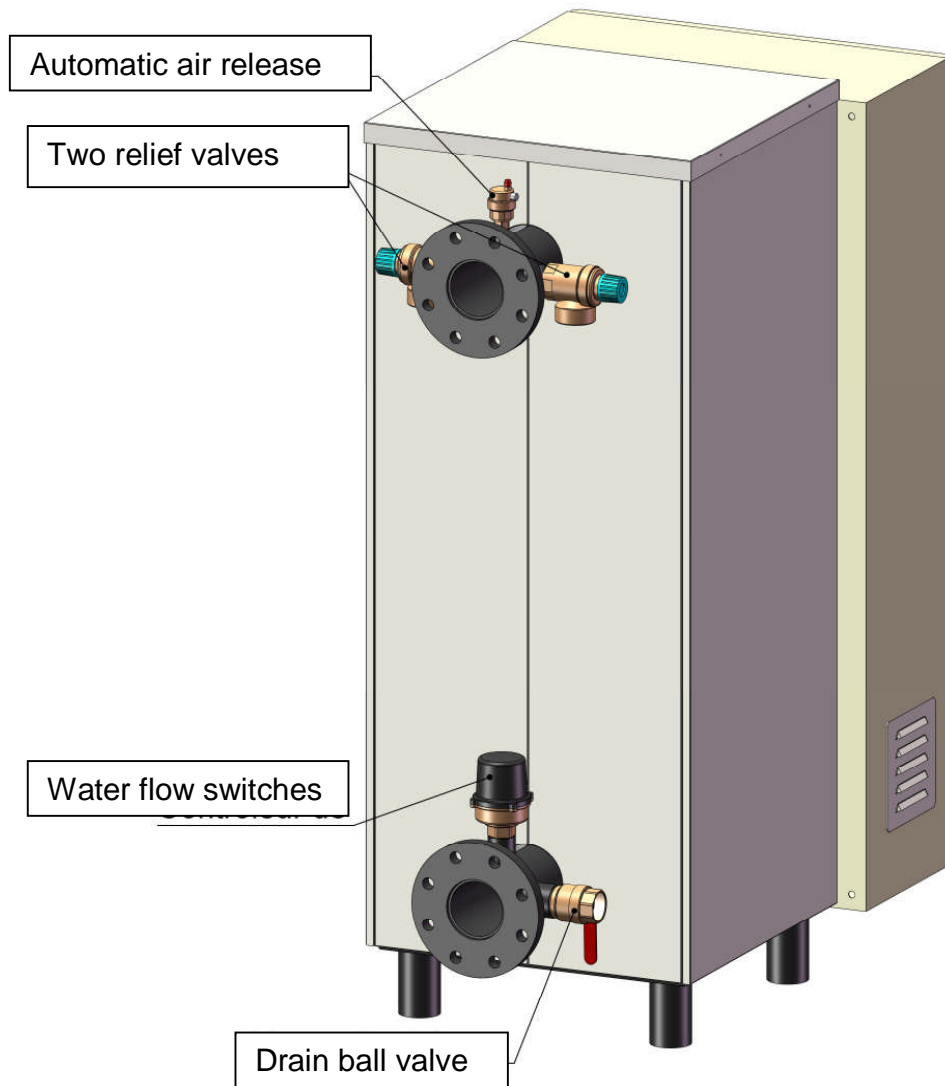
OUTPUT kW	No. of elements	kW per element	Boiler dimensions		Volume Litres	Flow rate l/s		Pressure drop max flow rate kPA	Ø A	D	E	F	Boiler dry weight kg	Overall dimensions H x L x P
			Foot print	Height		Min	Maxi							
90	3	30	□520	1330	128	0.6	5.0	0.8	DN 80	235	920	180	117	1200x600x300
120	4	30				0.9	5.0	0.8	DN 80				121	
150	5	30				0.9	9.7	2.8	DN 80				125	
180	6	30				1.1	9.7	2.8	DN 80				129	
210	6	35	□670	1520	283	1.7	12.0	1.6	DN 100	255	1075	180	233	1400x800x300
245	7	35				1.7	12.0	1.6	DN 100				238	
280	8	35				1.7	12.0	1.6	DN 100				243	
315	9	35				1.7	12.0	1.6	DN 100				248	
350	10	35				2.2	12.0	1.6	DN 100				253	1600x1000x400
385	11	35				2.2	12.0	1.6	DN 100				258	
420	12	35				2.2	12.0	1.6	DN 100				263	
455	13	35				2.8	26.0	1.6	DN 150				340	
490	14	35	□770	1520	395	2.8	26.0	1.6	DN 150	280	1020	180	345	1800x1000x400
525	15	35				2.8	26.0	1.6	DN 150				350	
560	16	35				2.8	26.0	1.6	DN 150				355	
595	17	35				3.6	26.0	1.6	DN 150				360	
630	18	35				3.6	26.0	1.6	DN 150				365	



OPTIONAL ACCESSORIES

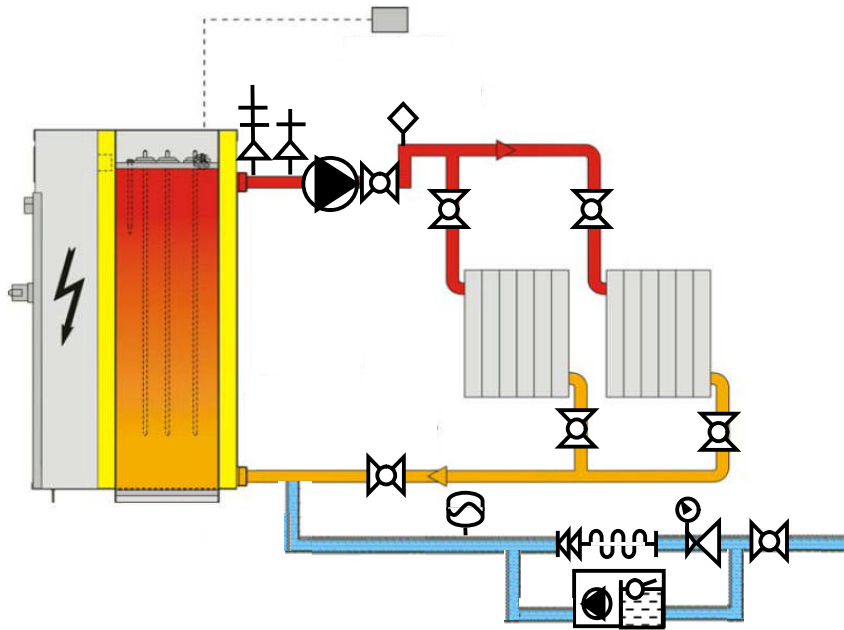
SHUNT PUMP with contact relay and run/lock-out lamps

MOUNTING PACK with automatic air release, water flow switch, drain ball valve, safety relief valve and temperature & pressure relief valve

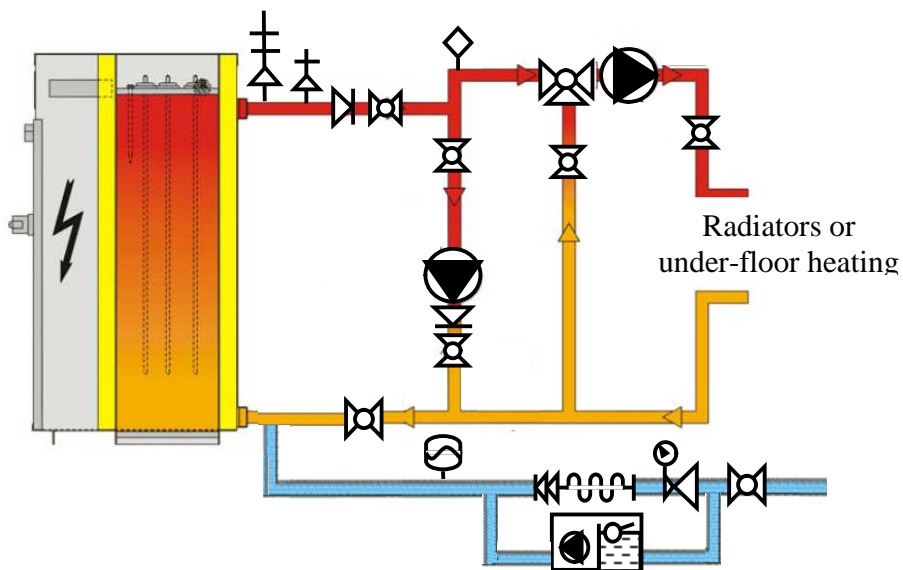


SCHEMATIC

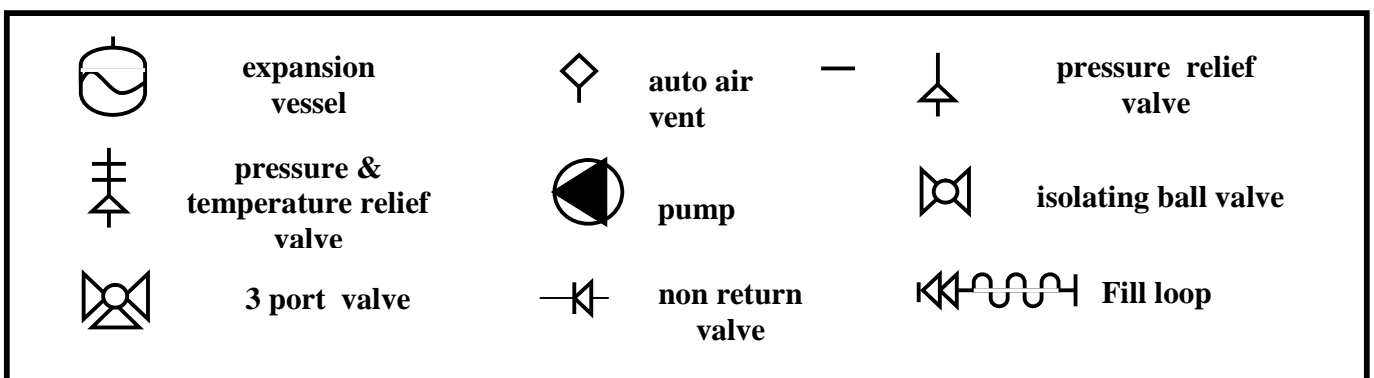
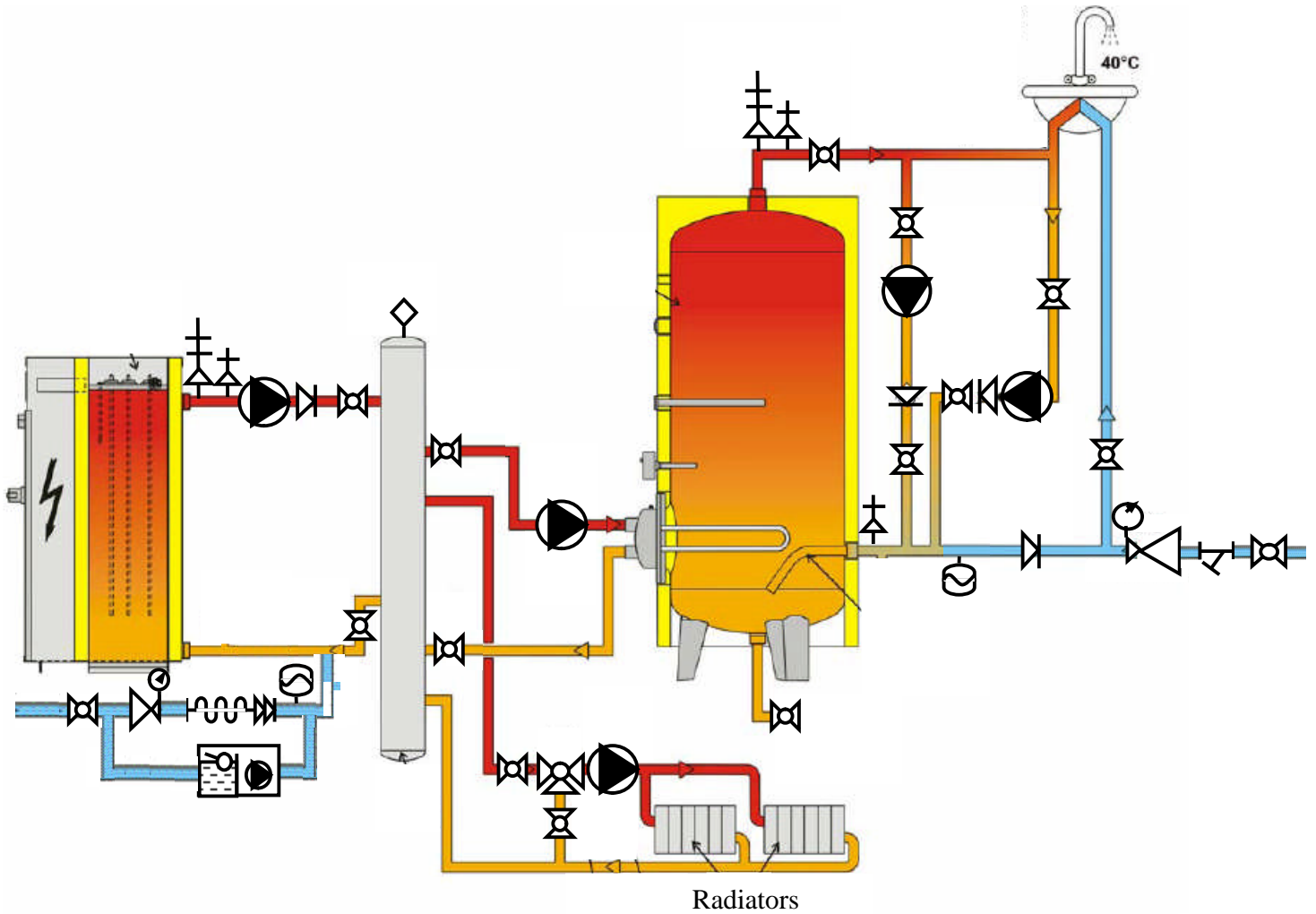
1) Conventional Pipework



2) Weather compensated Pipework

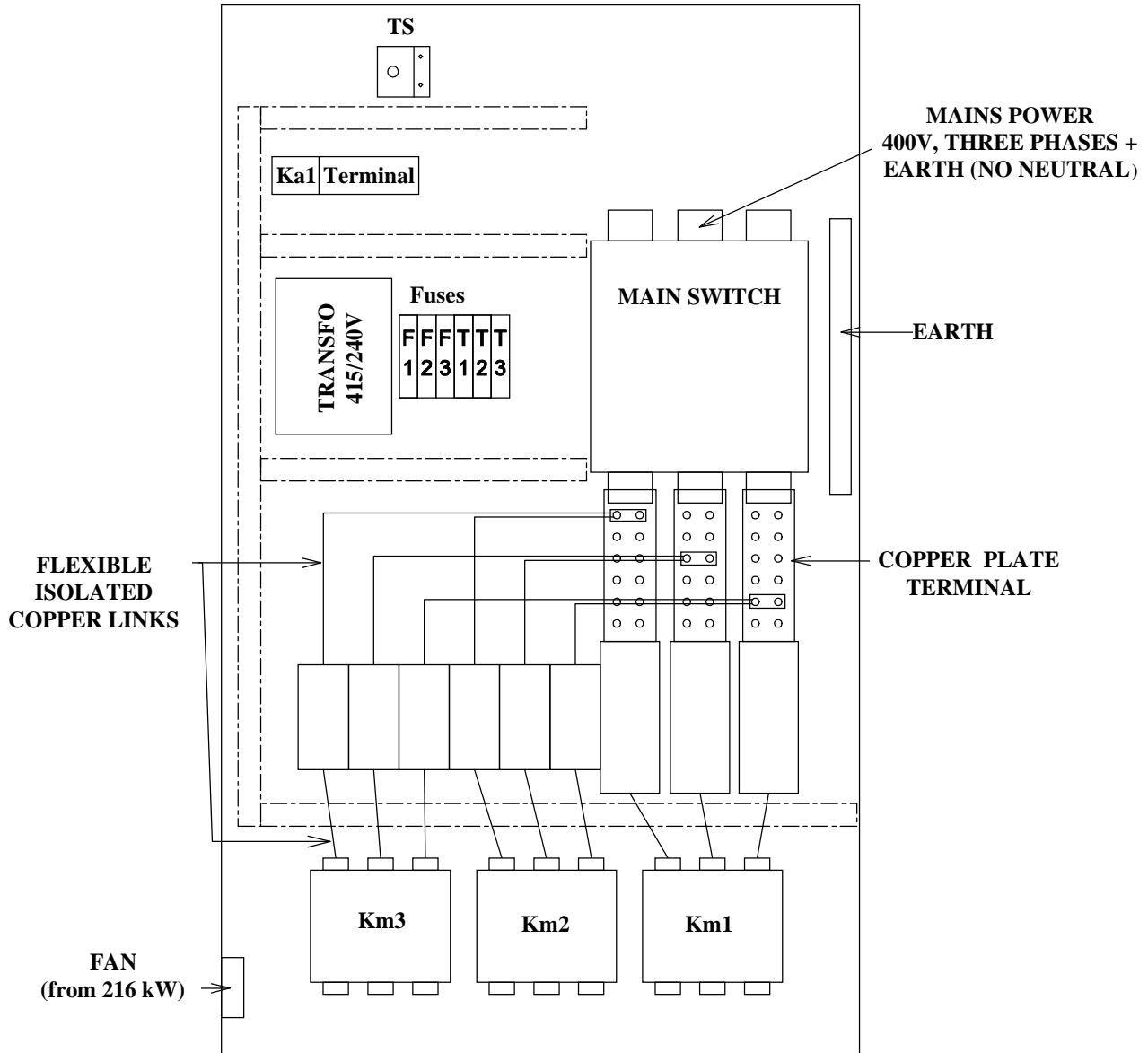


4) Heating and hot water pipework

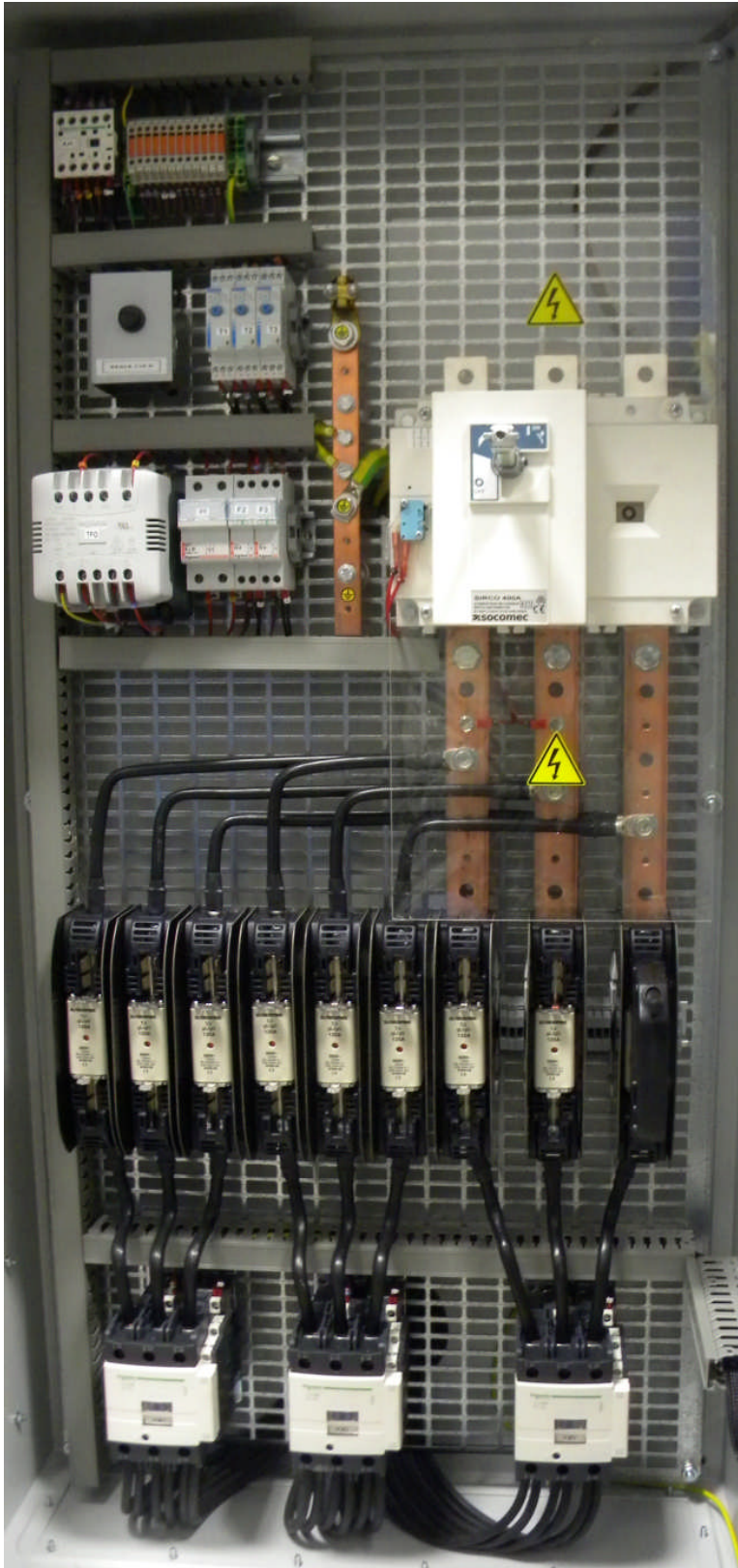


NB: Boiler pump flow should be 5% superior to the sum of heating and DHW primary pump

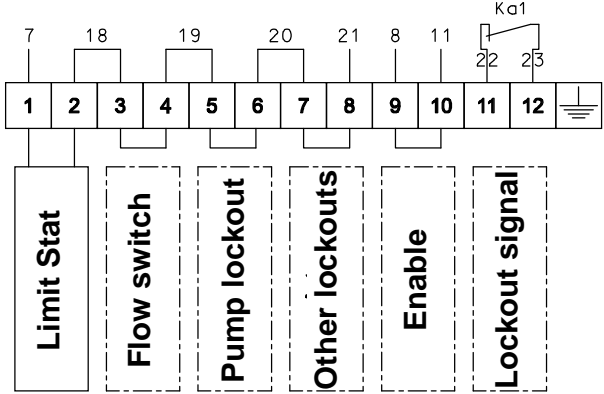
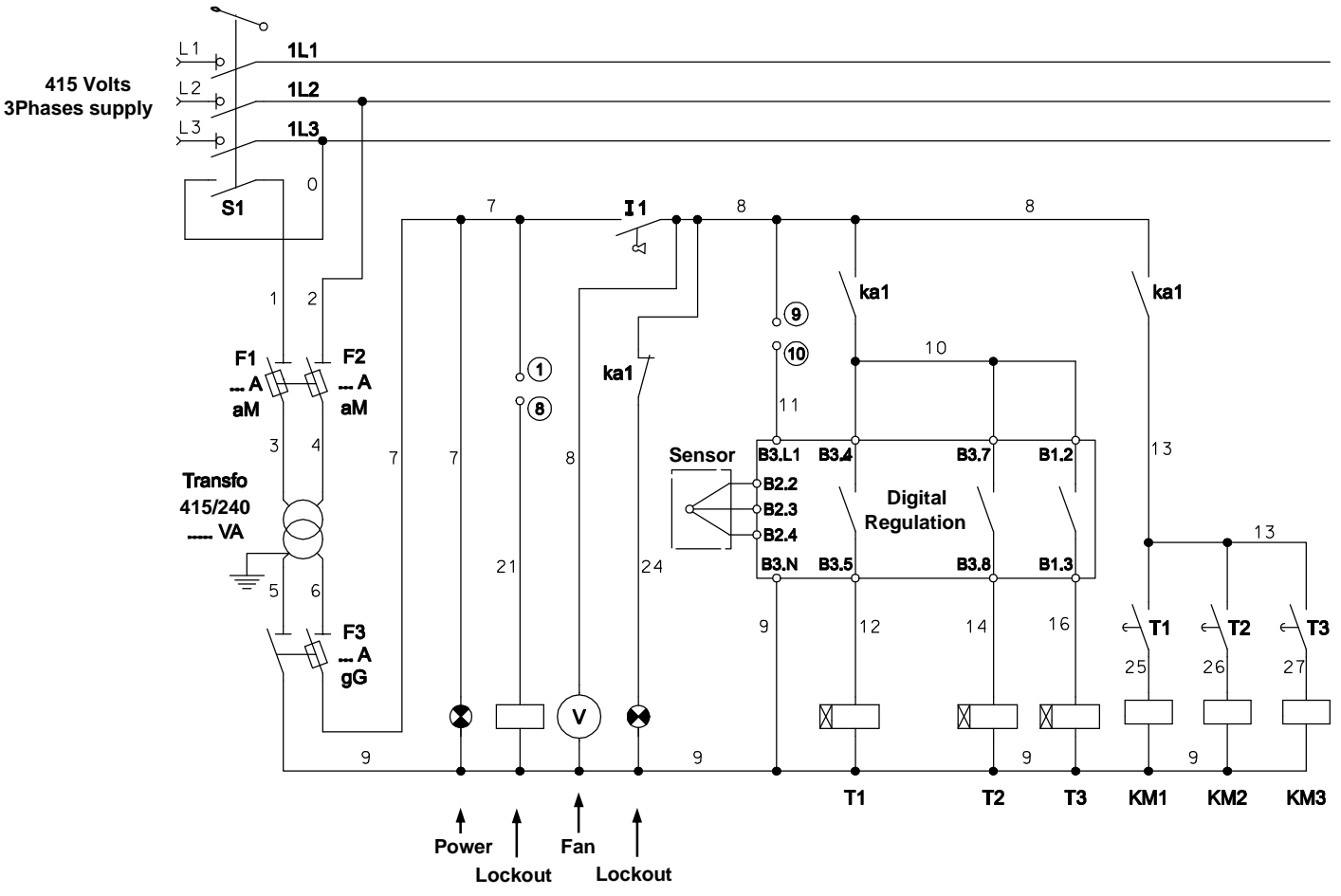
CONTROL PANEL DIAGRAM



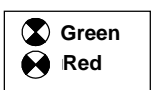
VIEW OF THE CONTROL PANEL



COMMAND ELECTRIC DIAGRAM



Fan V from 216 kW
 F1-F2-F3 and Transfo will vary according to boiler output

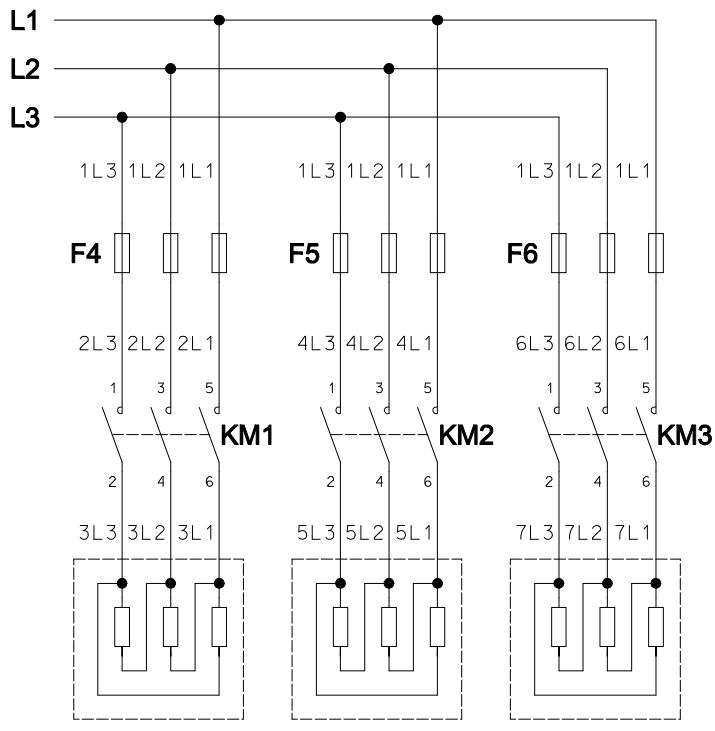


- S1: Power Switch
- I 1: Controller Switch
- T1: 30s delay
- T2: 1min delay
- T3: 2min delay

- Earth : Green/Yellow 4mm²
- Wires 0 to 6 : Red 1mm²
- Wire 9 : Black 1mm²
- Other wires : Brown 1mm²

BOILER ELECTRICAL OUTPUT

Output per step control



Output	Step 1	Step 2	Step 3
90 kW	30	30	30
120 kW	60	30	30
150 kW	60	60	30
180 kW	60	60	60
210 kW	70	70	70
245 kW	105	70	70
280 kW	105	105	70
315 kW	105	105	105
350 kW	140	105	105
385 kW	140	140	105
420 kW	140	140	140
455 kW	175	140	140
490 kW	175	175	140
525 kW	175	175	175
560 kW	210	175	175
595 kW	210	210	175
630 kW	210	210	210

BOILER ELECTRICAL PROTECTION

Selection of fuses

Fuses F1, F2 & F3 - cartridge size 8.5 x 31.5

90kW to 280kW

F1 - 1A type aM F2 - 1A type gG F3 - 0.5A type gG

315kW to 630kW

F1 - 1A type aM F2 - 2A type gG F3 - 0.5A type gG

Fuses F4, F5 & F6

Cartridge size 22 x 58 - 63A type gG

Miniature circuit breakers

output - 0 - 125A type gG

output - 1 - 160A type gG

output - 2 - 250, 315 & 400A type gG

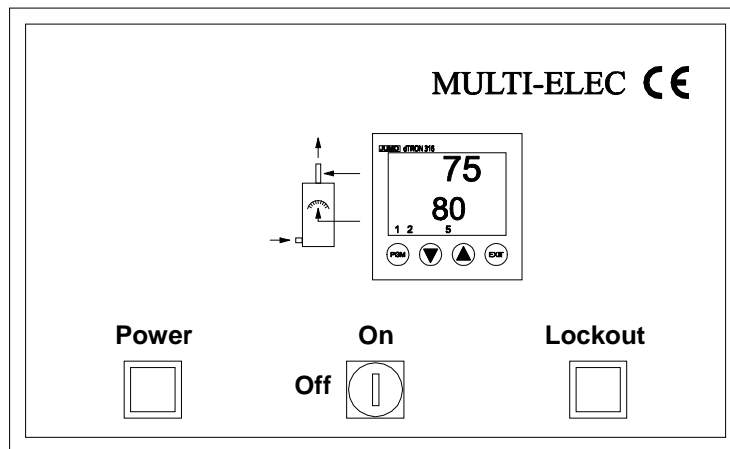
Selection of FUSES or CIRCUIT BREAKERS

Boiler output	F4	F5	F6
90 kW	63 A	63 A	63 A
120 kW	125 A	63 A	63 A
150 kW	125 A	125 A	63 A
180 kW	125 A	125 A	125 A
210 kW	125 A	125 A	125 A
245 kW	160 A	125 A	125 A
280 kW	160 A	160 A	125 A
315 kW	160 A	160 A	160 A
350 kW	250 A	160 A	160 A

Boiler output	F4	F5	F6
385 kW	250 A	250 A	160 A
420 kW	250 A	250 A	250 A
455 kW	315 A	250 A	250 A
490 kW	315 A	315 A	250 A
525 kW	315 A	315 A	315 A
560 kW	400 A	315 A	315 A
595 kW	400 A	400 A	315 A
630 kW	400 A	400 A	400 A

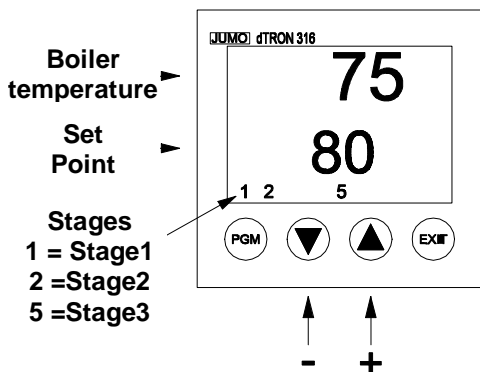
CONTROL PANEL + REGULATION

CONTROL PANEL

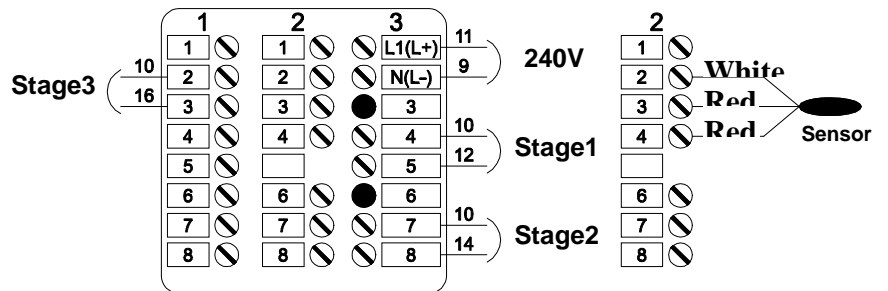


REGULATION

FRONT



BACK



Factory Settings (Heating Circuit)

Set Point Temperature :	80°C Stage 1
	77°C Stage 2
	74°C Stage 3
Maximum Temperature :	95°C
Minimum Temperature :	20°C
Delay T1 :	30 secondes
Delay T2 :	1 minute
Delay T3 :	2 minutes
Safety Thermostat :	110°C

Change the set point

- Increase the set point temperature: Press the key Δ
- Decrease the set point temperature: Press the key ∇

Never press the *PGM* and *EXIT* keys

For other settings, please contact Atlantic.

Information on the control panel

1. Identification number plate on the control panel
2. The maximum acceptable current is $I_{cw} = 23 \text{ kA}$.
3. Only authorised person should have access to the control panel
4. Connection to earth is compulsory. (Class 1)
5. After commissioning (8 days) :
 - A/ Check the immersion heaters tightness
 - B/ Check the power circuit connections tightnessFor information, advised tightness of the bolts:

M6	↻ 1,3 m.daN
M8	↻ 2,8 m.daN
M10	↻ 5 m.daN

Check the tightness annually.

6. Factory test
 - A/ Regulation
 - B/ Isolation of the power circuit
7. The boiler and the control panel should not be installed in a corrosive atmosphere or outside.
8. Ventilation (Natural convection or fan)
 - A/ Leave enough space to allow air circulation. . Do not obstruct the fan and the grid.

INSTALLATION

The “multi-elec” electric boiler should be installed in a louvered plantroom in order to ensure an ambient temperature below 30°C and relative humidity between 30 and 80%.

The boiler should not be used in a corrosive atmosphere or in an external position.

Adequate access should be left around the boiler in order to carry out maintenance.

The following safety devices are obligatory:

- Safety valve (4 Bars maximum)
- An automatic air vent on the boiler flow
- A blow down valve

Electrical wiring

The “multi-elec” electric boiler should be connected to 415V without neutral

The circuit breaker and the cables section should be chosen according to British standards.

Class 1 material IP21 / IK08

If the boiler is powered without any water, it will generate the thermocouple failure (no warranty)

Transport and storage

The unit should be transported and stored in the original package until it reached the installation point.

Ambiant temperature below 80°C

Relative humidity between 30 and 80%

STARTING THE BOILER

- Remove the power fuses
- Check that the boiler is filled with water
- Check that the immersion heaters are sound. If isolation is below $2M\Omega$, please find the reason and remedy it.
- Turn the power on using the main switch and the key switch
- Check that the circulation pump is running.
- Check that there is a lockout if the circulations pump stops
- Adjust the temperature settings
- Stop the boiler using the main switch
- Put the power fuse in
- Switch the boiler back on
- Check the immersion heaters electrically for faults. Tight all the connections up after one week of operation
- If the boiler is powered without any water, it will cause the immersion heaters or sensors to fail (no warranty)

SERVICING

Loss of water velocity through the boiler can lead to temperature rise

- Consider a sediment vessel on the return to capture sediment deposit
- Blocking immersion heaters irrigation can destroy them

NOTE : The immersion heaters can be destroyed by blockage of the water flow

It is essential that a periodical cleaning is carried out on the main heat exchanger and the sensors. The water also needs to be clean without any antifreeze or scale remover product

Removal of sludge and sediment reduce corrosion risks

On first start:

Check the electrical operation

Check each terminal to avoid any contact resistance or temperature rise

Activate the safety valve manually

Monthly servicing

Check

- ✓ The automatic air vent
- ✓ The safety valve

Biannual servicing


Check each terminal to avoid any contact resistance or temperature rise

THE COMMISSIONING OF THE ATLANTIC MULTI ELEC

All Atlantic boilers and water heaters are thoroughly tested for mechanical, electrical and combustion performance at the factory

The prime object of the site commissioning of the boiler(s) is, subject to installed conditions, to match the optimum combustion performance results reached at the factory and to ensure the boiler(s) is/are installed according to the conditions of guarantee.

The following check list should be satisfied before the commissioning takes place. To arrange the commissioning Atlantic should be given a minimum of ten days notice of the date and time required.

	Atlantic 2000	PO Box 11 Ashton Under Lyne OL6 7TR			
		TEL- 0161 621 5960 FAX- 0161 621 5966			www.atlanticboilers.com
					info@atlantic2000.co.uk
RESPONSE TO REQUEST FOR COMMISSIONING OF ATLANTIC 2000 BOILERS					
PLEASE CHECK AGAINST THE ASTERISKS					
To:					
DATE / / 2004					
CLIENT:					
FAX:					
TEL:					
SITE CONTACT:					
TEL/MOB:					
Site address					
BOILER(S) /HEATERS					
All Atlantic units are thoroughly tested at factory					
Site commissioning leads to the exceptional guarantee					
Thorough tests are repeated at the site commissioning					
Site conditions must be satisfactory for commissioning					
Please confirm if the following site conditions apply					
Please place a tick against YES or NO & FAX the reply					
Boiler ventilation adequate					
	YES	.....	NO	.....
Boilerhouse clean, boilers accessible					
	YES	.....	NO	.....
System flushed & filled with clean water					
	YES	.....	NO	.....
Water strainers fitted before boilers					
	YES	.....	NO	.....
Permanent electrical wiring complete					
	YES	.....	NO	.....
All motors have correct rotation					
	YES	.....	NO	.....
Control/management system in operation					
	YES	.....	NO	.....
Heating load(s) ready for boiler/heaters					
	YES	.....	NO	.....
If there are any "NO" ticks, wait until work is done					
If heat is needed, a pre-commissioning is a must					
PLEASE NOTE THAT A WASTED VISIT OR A PRE-COMMISSIONING					
WILL BE CHARGED AT THE FULL COMMISSIONING RATE					
PLEASE SIGN HERE					
..... DATE / / 2004					
DURING THE COMMISSIONING, please ensure your installer, the electrician (and BMS installer)					
are on site or close to hand					

Commissioning sheet

THE GUARANTEE ON THE ATLANTIC MULTI ELEC

This guarantee is to the purchaser of the boiler(s) who is deemed to be the installer. If the boiler(s) is (are) purchased by the eventual user who then arranges to install the boiler(s), the eventual user is deemed to be the installer. The details of the guarantee are given to assist the installer in obtaining effective action within the guarantee and they are in addition to the installer's legal rights under the relevant statutory enactments for the time being in force in England, Wales, and Scotland.

Electrical equipment:

The replacement or repair of the item, including the cost of its delivery to the site of the installation or its equal within England, Wales and Scotland, provided that the defect or flaw occurs within 1 calendar year of the commissioning date.

Removable component of the boiler assembly (other than the electrical equipment)

The replacement or repair of the item, including the cost of its delivery to the site of the installation or its equal within England Wales and Scotland if the defect or flaw occurs within 1 calendar year of the commissioning date.

The main body of the boiler.

The repair of any welding defects in the main body of the water heater including any necessary removal or replacement of that part of the water heater on site if the defect occurs within 3 calendar years of the commissioning date.

Definitions:

The effective actions stipulated in this guarantee are subject to the purchaser complying completely with the following:

- 1) The boilers are installed according to the recommendations of this technical booklet, the recommended codes of practice of the C.I.B.S.E and the B.S.I., and the checklist on page 13 is satisfied.
- 2) The commissioning of the boilers by ACM Atlantic and their regular annual servicing and maintenance.
- 3) The payment in full, by the purchaser unless otherwise agreed, of the invoice for the supply and delivery of the boiler(s) to site, any other relevant invoices connected with the boiler positioning and fixing, and the invoices for commissioning and any correction of installation error, all to be made within one calendar month of the date of the invoice.
- 4) The presentation, at the time of a claim under the guarantee, of the boiler registration number, the commissioning record with date, and the necessary information for defining any replacement part.
- 5) When a replacement item is supplied for a defective item, the defective item must be returned to ACM Atlantic at their registered office within 6 weeks of the date of notification of the defect carefully labeled with registration number of the boiler and the name and the order reference of the purchaser of the boiler. If this is not complied with, the purchaser will be charged with the cost of the item and its delivery.