

# TECHNICAL MANUAL

## RELAX DIGITAL ELECTRIC BOILER

01/2008

CODE: 560965



CE Directive 2006/95/CEE  
British Standard EN 60335-1 (C73800)

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## 1). INTRODUCTION

### 1.1). British standard & other requirements

The Relax Digital electric boiler is designed to operate in sealed space heating circuits with maximum static pressures up to 4BARS.

The Relax Digital electric boilers satisfy Class 1 earth connections to IP21/IK08

The following standards also apply :-

EN 95-1081 to guarantee correct materials which ensure safety for personnel & animals

Directive 2006/95/CEE

BS EN 60335 – 1 (classification C 73800, 1<sup>st</sup> part – general regulations)

The Relax Digital electric boiler must be sited with ambient temperatures below 30degC

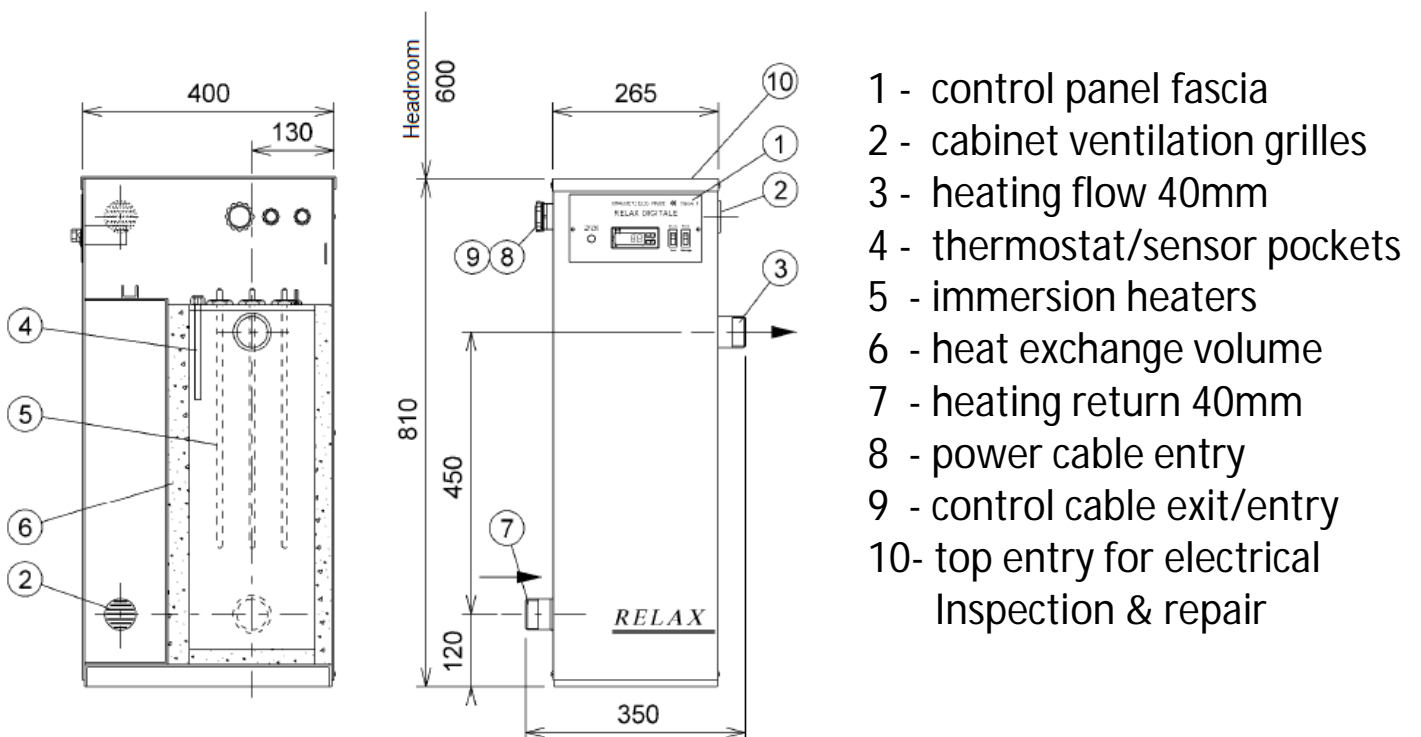
The Relax Digital electric boiler must be sited with ambient temperatures above 10degC

The Relax Digital electric boiler must not be sited in a corrosive atmosphere

The Relax Digital electric boiler must not be sited externally

### 1.2). Description

RELAX DIGITAL Dry weight – 22kgs; water content – 16litres



## 2). ELECTRICAL ARRANGEMENTS

### 2.1) Electrical power circuitry

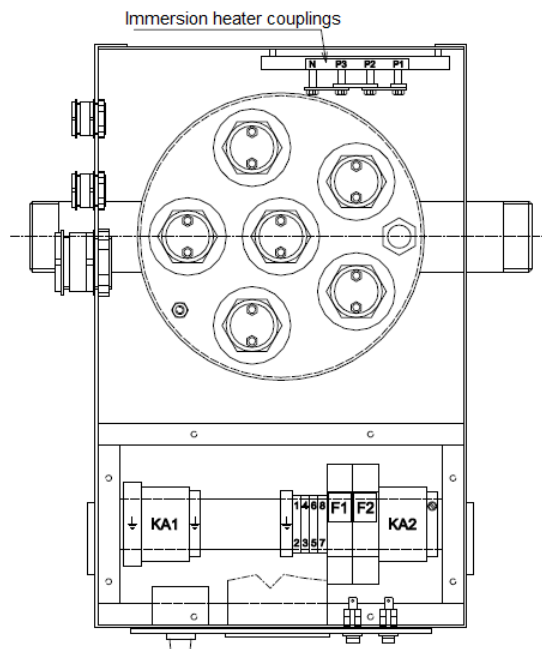
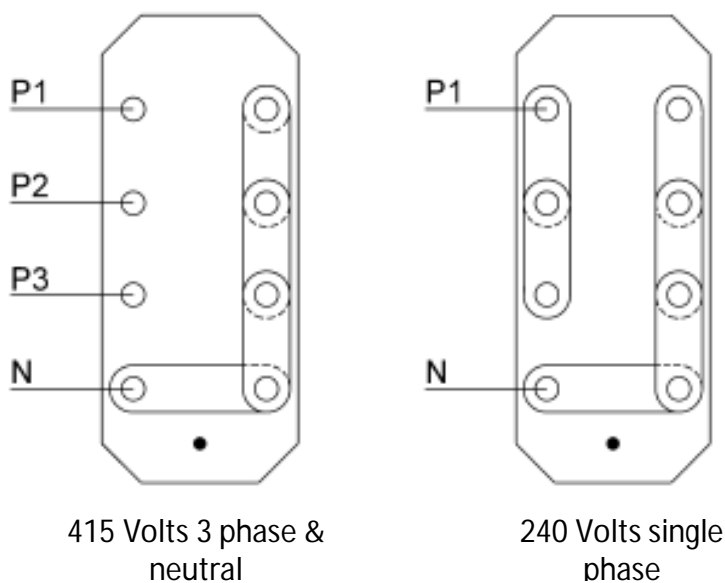
The Relax Digital can accept up to 415volts 3phase and neutral, on 50Hz & 60Hz  
 The Relax Digital must have an automatic cut-out against failure of the neutral isolation  
 The automatic cut-out must conform to BS C 15100 – protection are indicated below

Power output	Amperes protection per phase			Cable size in mm2	
	415V 3PH	240V 1PH		415V 3PH	240V 1PH
6 kW	10 A	30 A		2.5	6
9 kW	16 A	50 A		4	10
12 kW	20 A	63 A		4	16
18 kW	32 A	-		6	-
24 kW	40 A	-		10	-

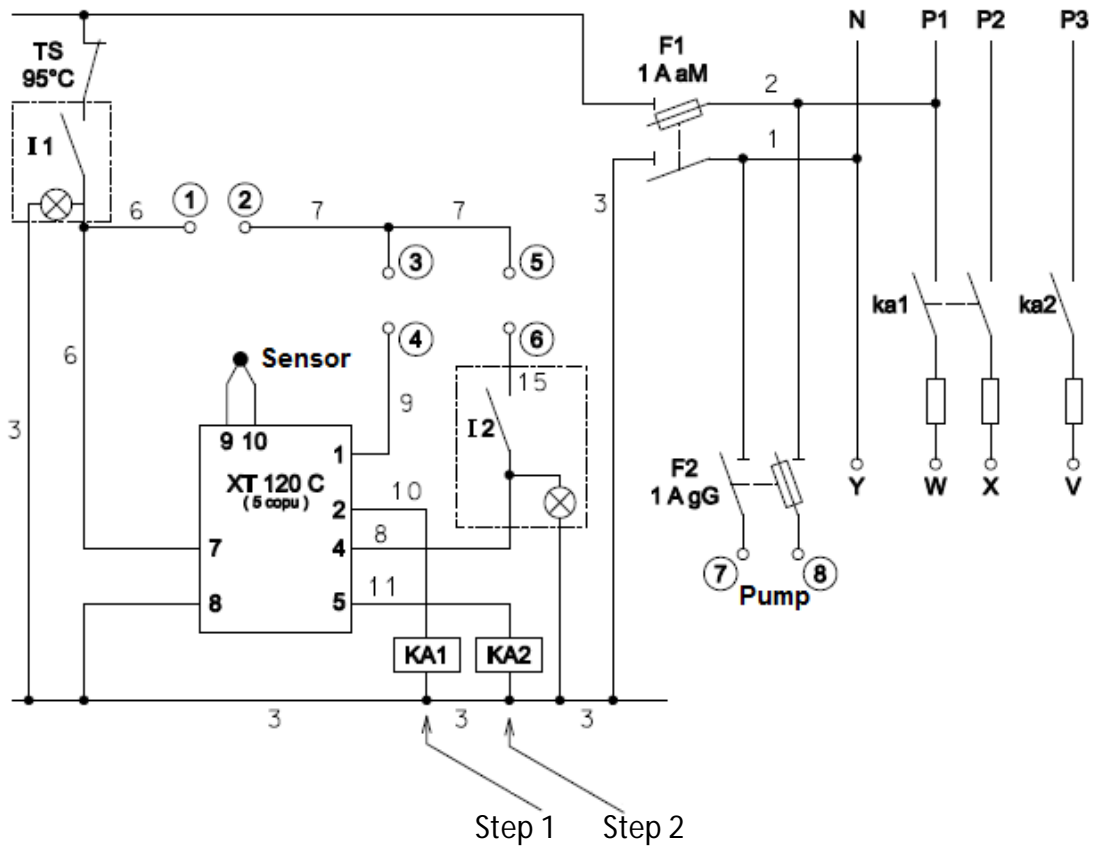
**Correct connection of the earth terminal is absolutely essential**

### 2.2) Voltage couplings

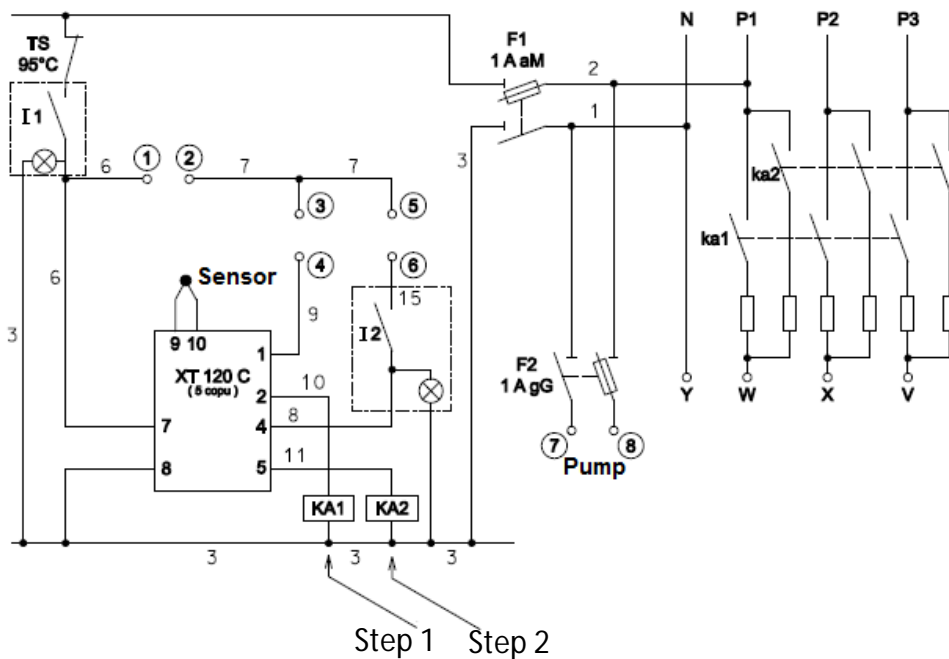
Coupling of the plate arrangement, for the single & 3phase supplies, are shown below  
 The horizontal view of the boiler shows the immersion heater positions and the plate Arrangement alongside, where the different couplings are made.



### 2.3) Relax Digital (6, 9 & 12kW series)



### 2.4) Relax Digital (18 & 24kW series)



Cartridge fuse types – 6, 9, 12, 18 & 24kW

Cylindrical 8.5mm dia x 31.5mm long

Relax	F1 type aM	F2 type gG
	2x 1amp	2x 1amp

## 2.5) External terminals

Terminals 1 & 2 - remote stop/start

- Pump stop/start

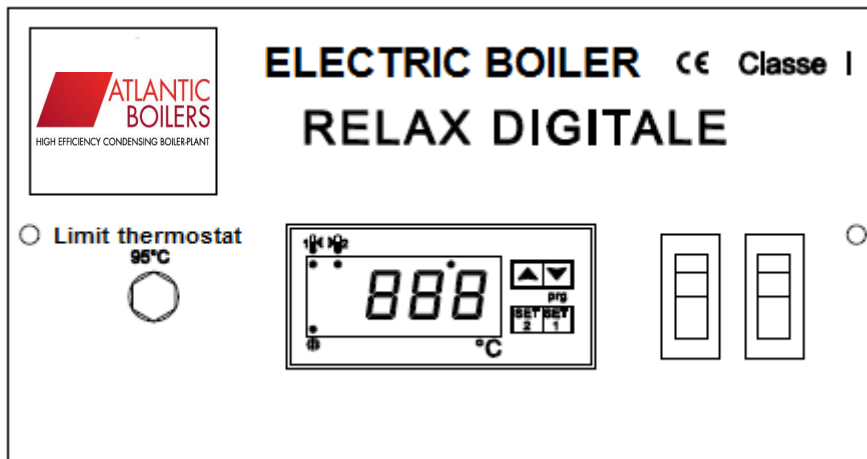
- Room thermostat

Terminals 3 & 4 - enable stage one

Terminals 5 & 6 - enable stage two

Relax	Stage one	Stage two
6 kW	4 kW	2 kW
9 kW	6 kW	3 kW
12 kW	8 kW	4 kW
18 kW	9 kW	9 kW
24 kW	12 kW	12 kW

## 2.6) Control Panel fascia



1. Limit thermostat 95degC – manual re-set
2. Controller XT120C
3. On/Off manual switch (with light)
4. Relay 12 (with light)

### 3). COMMISSIONING

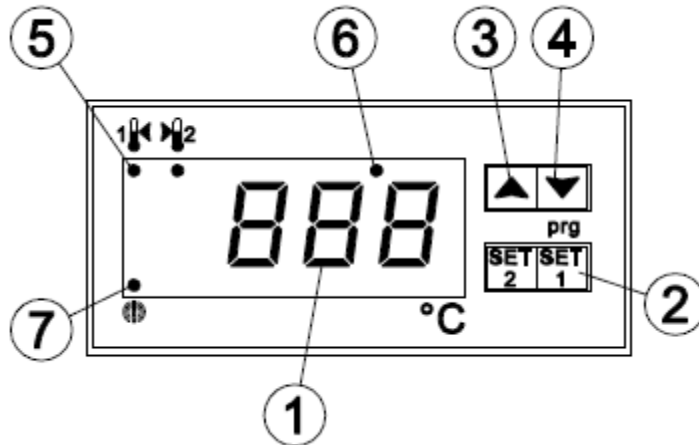
#### 3.1) Precautions

ESSENTIAL - a safety valve at 3BARS, an automatic air vent and an expansion vessel

- a). make sure that the heating system is primed with water
- b). check the pump for circulation
- c). check the boiler for electrical power
- d). press the ON/OFF button
- e). check the two-stage output switching
- f). switch back to the first stage

#### 3.2) Setting control temperatures

Setting the control – stage 1 = 80degC: stage 2 = 75degC



- 1 - 7 weekdays setting
- 2 - touch change control band
- 3 - touch control setting positive
- 4 - touch control setting negative
- 5 - indication of touch control – light means action
- 6 - light means controls in action
- 7 - light means alarm

#### PROCEDURE

SET 1 – stage one    SET 2 – stage two

SET 1 – temperature must be greater than SET 2

Minimum temperature is 20degC

Maximum temperature is 90degC

Possible resetting of SET 1 is 3degC below and allow 3 minutes to reset

Leave the settings as provided at the Factory

#### 3.3). Altering the settings

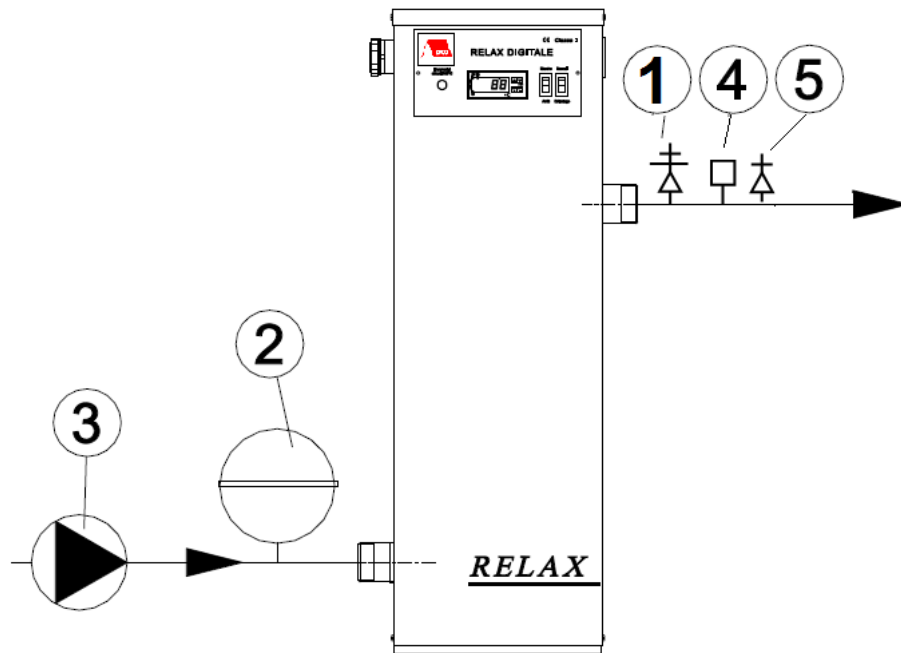
- A). Touch SET 1, hold for 5 seconds – light 6 illuminates
- B). Make up & down adjustments on 3 or 4
- C). Touch SET 1 to fix the setting  
Main screen flashes acceptance and light 6 goes out  
After about 10seconds, the actual measured temperature is given
- D). Touch SET 2, hold for 5 seconds – light 6 illuminates
- E). Make up & down adjustments on 3 or 4
- F). Touch SET 2 to fix the setting  
Main screen flashes acceptance and light 6 goes out  
After about 10seconds, the actual measured temperature is given

#### ALARM SIGNALS

Alarm light 7 ignites and the main screen signals :-

- < 000 > faulty thermostat sensor
- < HA > high temperature lockout
- < LA > low temperature recorded

#### 4). RELAX DIGITAL ACCESSORIES



- ITEM 1 – 95degC temperature & pressure relief valve
- ITEM 2 – expansion vessel – minimum size 12 litres
- ITEM 3 - circulating pump
- ITEM 4 - flow control switch
- ITEM 5 - 3BARS safety valve plus pressure gauge



## 5). HYDRAULIC SYSTEM PERFORMANCE

### 5.1) General requirements

The RELAX DIGITAL electrical boilers must be installed according to :-

- (i) The recommendations of this manual
- (ii) The recommended BS and BSRIA codes of practice
- (iii) The Atlantic Boilers commissioning check list

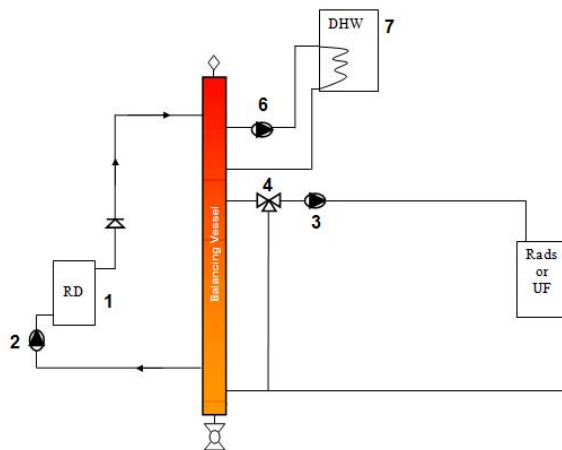
### 5.2) Essential components

- (i) Easy access for delivery and eventual removal of the RELAX DIGITAL boiler
- (ii) Adequate space around the RELAX DIGITAL boiler for installation & maintenance
- (iv) It is essential to install
  - a safety valve, a temperature & pressure relief valve
  - an automatic air vent & isolating valve
  - a combined drain & sludge valve
  - a heating flow & return at 40mm

Pay attention to the following precautions

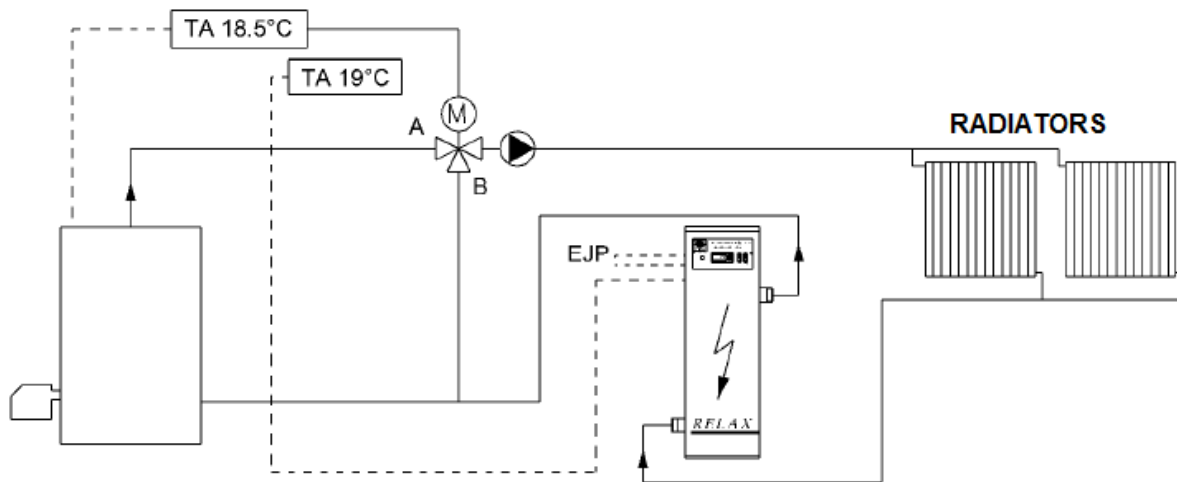
- Do not mix copper and galvanised steel in the installation
- Do not cover over the ventilation louvres on the RELAX DIGITAL boiler
- Do not prevent full water circulation in the RELAX DIGITAL boiler
- Full circulation – 6 & 9kW = 0.07l/sec – 12, 18 & 24kW = 0.14l/sec
- Observe maximum working pressure of 4BARS
- Protect the RELAX DIGITAL boiler with
- Protect the RELAX DIGITAL boiler with correctly-rated earth connections
- ENSURE that the RELAX DIGITAL immersion heaters are fully immersed in water

### 5.3) Combined space heating & domestic hot water supply system



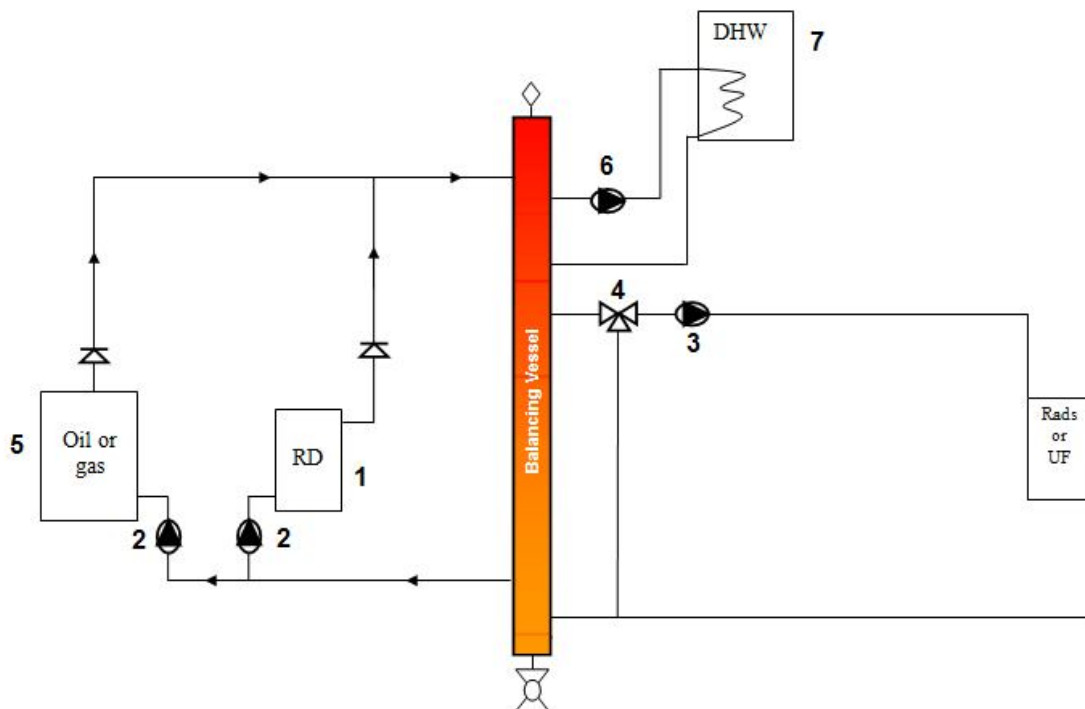
1. RELAX DIGITAL boiler
2. Shunt pumps
3. Space heating pump
4. 3-way mixing valve
5. Existing boiler, if on site
6. Domestic hot water primary pump
7. Domestic hot water calorifier

#### 5.4) Bio-energy system with Relax Digital as back-up



- Install a 2-position 3-way valve in the existing heating flow
- Install a room thermostat (TA-18.5degC) controlling gas/oil boiler & 3-way valve
- If TA is less than 18.5degC, 3-way valve is in position B, gas/oil boiler is on
- If TA is more than 18.5degC, 3-way valve is in position A, gas/oil boiler is off
- Install second room thermostat at 19degC to control the Relax Digital
- Set each boiler flow temperature at same value

#### 5.5) Weather-compensated Relax Digital systems



6). **DELIVERY and OFFLOADING**

Keep the RELAX DIGITAL in its original packing until it arrives on site  
The ambient temperature must be maintained between 10degC & 50degC  
The relative humidity must be maintained between 30% & 80%

Arriving on site, the RELAX DIGITAL must be handled safely  
Make use, if possible, of the factory pallet & a fork truck  
Make use, if possible, of the RELAX DIGITAL lifting eyes

7). **MAINTENANCE**

The maintenance intervals can be predicted for each installation

**AT COMMISSIONING**

- Check the cold feed & expansion system operates correctly
- Check all immersion heater couplings are sound
- Manipulate & check the safety & temperature/pressure relief valves
- If the high temperature limit locks out, correct any fault & reset by hand

**ANNUALY**

- Check all immersion heater couplings are sound
- Flush out the immersion heater cells
- Check all automatic air vents, safety & relief valves, thermostat switches
- Check the shunt pump circulation

**DO NOT**

- Stop the pump whilst the boiler is operating
- Release water from the system whilst the boiler is operating

## 8). GUARANTEE

### THE GUARANTEE ON ATLANTIC BOILERS

This GUARANTEE is to the PURCHASER of the Boiler(s) who is deemed to be the INSTALLER of the Boiler(s). 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, Scotland, Wales and Northern Ireland.

#### GAS, OIL or ELECTRICAL EQUIPMENT

The Replacement or Repair of the item, including the Cost of its Delivery to the site of the installation or its equal, provided that the Defect or Flaw occurs within one Calendar Year of the Commissioning Date.

#### REMOVABLE COMPONENTS OF THE BOILER ASSEMBLY (other than the gas, oil or electrical equipment)

The Replacement or Repair of the item, including the Cost of its Delivery to the site of the installation or its equal, provided that the Defect or Flaw occurs within two Calendar Years of the Commissioning Date.

#### THE MAIN BODY OF THE BOILER

The repair of any Defect or Flaw in the Main Body of the Boiler including any necessary removal or replacement of that part of the Boiler on site if the Defect or Flaw occurs within five 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 Boiler(s) is(are) installed according to the Recommendations of the Atlantic Boilers' Manual, the Recommended Codes of Practice of the EEC and the Atlantic Boilers' Commissioning Check List.
2. The Commissioning of the Boiler(s) by an Engineer authorised by Atlantic Boilers, and regular servicing & maintenance according to the Atlantic Boilers' Manual & Service Booklet.
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.
4. The Presentation at the time of a Claim under the Guarantee, of the Boiler Registration number, the Commissioning Record and the necessary information for defining any Replacement Part.
5. When a Replacement Part is supplied for a Defective Item, the Defective Item must be returned to Atlantic Boilers at their Head Office within 6 weeks of the Date of Notification of the Defect and must be carefully labelled with Registration Number of the Boiler together with the Name and 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.

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## 9). IDENTIFICATION OF SPARE PARTS

Description	Code
Heating element 2kW (for 6kW RELAX)	790 082
Heating element 3kW (for 9 & 18kW)	790 083
Heating element 4kW (for 12 & 24kW)	790 084
Set of 5 gaskets	2565
Power relay (KA1 – KA2)	582 062
Main Circuit Breaker (11 – 12)	585 003
Limit thermostat	581 104
Controller XT120C	583 042
Temperature sensor	583 024

## 10). FAULT DETECTION

Be sure to switch off the boiler, whilst examining any component fault

FAULT	ACTION
Control panel lights are off	Check power to the immersion heater couplings
The control panel screen is off	Check fuse F1 is sound & the limit thermostat is set
Check circuit breaker 11 position	
The pump does not revolve	Check fuse F2
<b>If the fault persists</b>	<b>Call in a qualified engineer</b>



HIGH EFFICIENCY CONDENSING BOILER-PLANT

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