Ormandy Rycroft
Heating & Cooling Solutions

A60B
No Controls

A62B
2 Port Control

A63B
3 Port Control

AquaSave 6 Bar Storage
Operating & Instruction Manual

600 -2000
Litres

Content

Content cont.

1.   Dimension Details

AquaSave A60B Dimensional Details

1. Primary Inlet
2. Primary Outlet
3. Secondary Flow
4. Secondary Return
5. Cold Feed
6. Instrument Connections (3-off)
7. Gauge Connections
8. Immersion Heater(s) - See Table
9. Safety Valve Connection(s) - Subject to Duty
10. Inspection Opening (DN250)
11. 50mm Mineral Wool Insulation c/w Al. Stucco Cladding
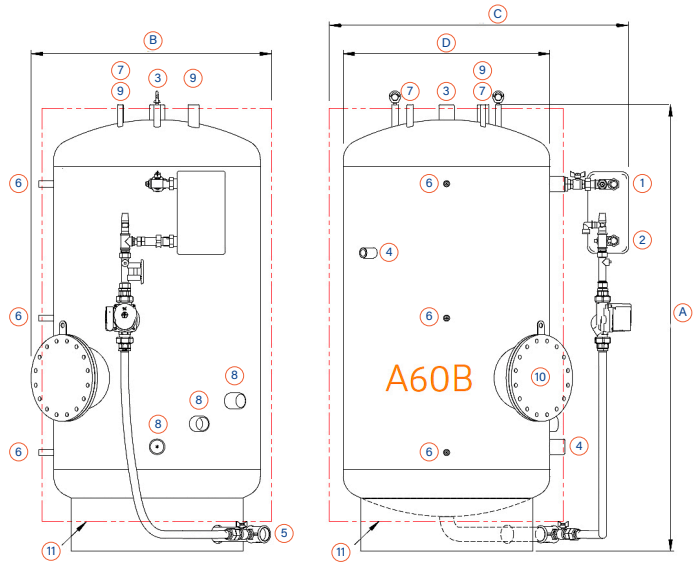
Volume (Ltrs)	Dimensions				Connections (Screwed BSP F)									Weight (kg)
	A	B	C	D	1	2	3	4	5	6	7a	7b	8	
600	1910	880	1105	700	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	260
800	1965	965	1205	800	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	295
1000	1945	1050	1305	900	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	335
1250	2020	1135	1405	1000	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	365
1500	2020	1220	1505	1100	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	400
2000	2275	1305	1605	1200	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	540

AquaSave A62B & A63B Dimensional Details
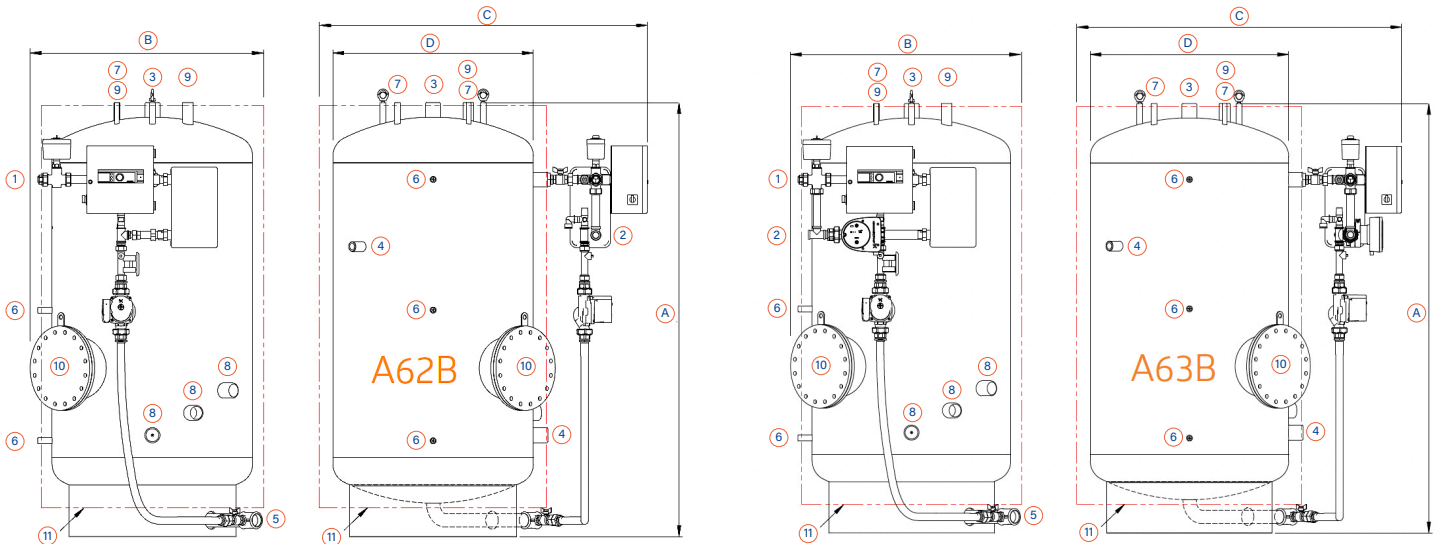
Volume (Ltrs)	Dimensions				Connections (Screwed BSP F)									Weight (kg)
	A	B	C	D	1	2	3	4	5	6	7a	7b	8	
600	1910	910	1265	700	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	280
800	1965	965	1365	800	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	315
1000	1945	1050	1465	900	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	355
1250	2020	1135	1565	1000	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	385
1500	2020	1220	1665	1100	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	420
2000	2275	1305	1765	1200	1"	1"	2"	1"	2"	½"	½"	⅜"	2"	560

2.   Product **Overview**

The basic version of the Aquasave DHW heater, indirect (semi-instantaneous) system, comprises of:

A60B
No Controls

A62B
2 Port Control

A63B
3 Port Control

1.   Storage tank, stainless steel storage tank with a heat-insulated cover

2.   Plate heat exchanger, 316-grade stainless steel copper-welded

3.   Balancing valve

4.   Charging pump

5.   Connector hose between tank and charging pump, thermally-insulated.

6.   Charging kit support

2.1   Working Pressure and Temperature

Aquasave Model Type	PRIMARY SIDE		SECONDARY SIDE	
	Max Working Pressure (bar)	Max Temperature (°C)	Max Working Pressure (bar)	Max Temperature (°C)
A60B	10	110	6	95
A62B	10	110	6	95
A63B	10	110	6	95

2.2   Packing Format

Aquasave is delivered it two packages:

▪ Storage Tank
▪ Exchanger Kit

3. Options

There are three different control systems available as options.

3.1 A60B - No Controls

Supplied with only the secondary charging circuit.

Follow the assembly instructions in *Section 18, Assembly of the charging kit to the AquaSTOR*

Primary Flow Connection

Primary Return Connection
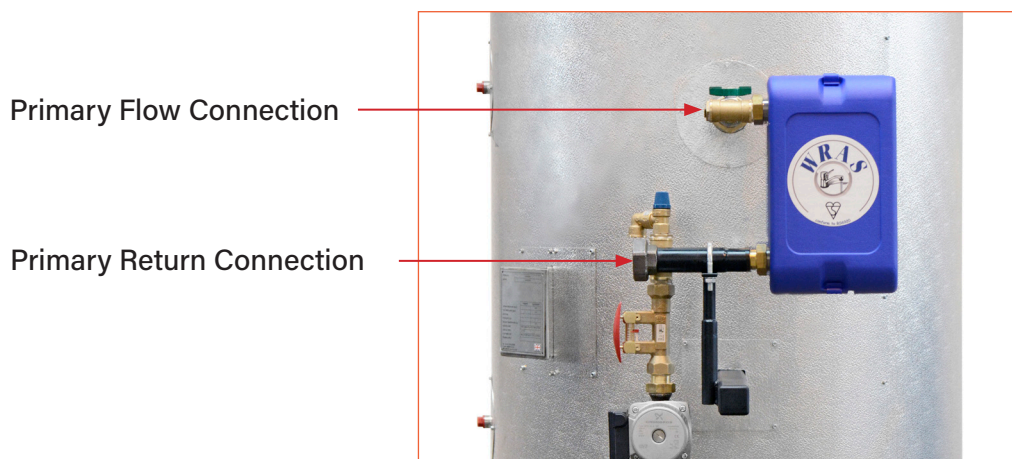
3.2 A62B - 2 Port Control Valve

- 1 x two-port PN25 valve body.
- 1 x PT100 temperature sensor.
- 1 x actuator, 230V 3 points with return to zero.
- 1 x PID controller box with piping and support, depending on the model selected.

The primary circuit is pre-assembled on the exchanger. Follw the assembly instructions in *Section 18, Assembly of the charging kit to the AquaSTOR.*

Actuator

Control Valve

Control box, mounted on its support
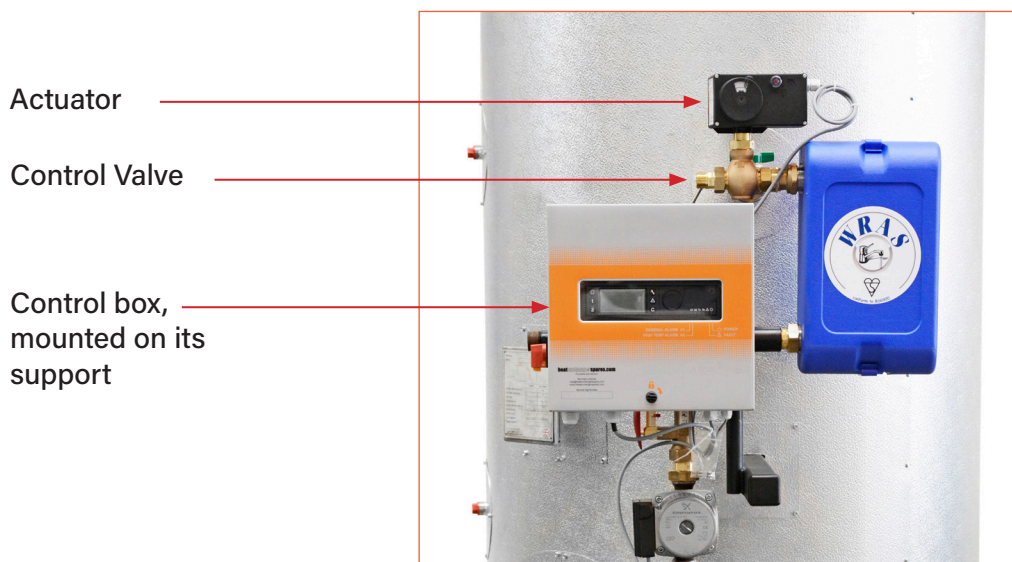
3.3 A63B - 3 Port Control Valve

- 1 x three-port PN16 valve body.
- 1 x primary shunt pump PN10.
- 1 x actuator, 24V AC feed-in and 0-10V DC controller current.
- 1 x PID controller box with Pt100 temperature sensor
- Primary piping, sized differently, according to heat exchanger type.
- Controller support

The primary circuit is pre-assembled on the exchanger. Follw the assembly instructions in *Section 18, Assembly of the charging kit to the AquaSTOR.*

Actuator

Control Valve
Control box

Piping

Primary Shunt Pump

Balancing valve

Charging Pump
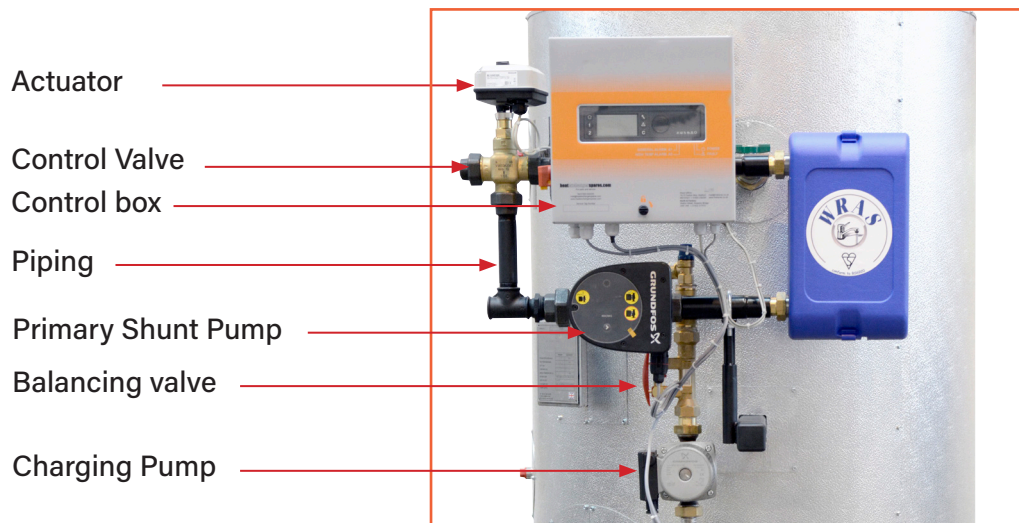
4.   Installation

4.1   Siting

The AquaSave hot water heater must be installed in a dry place, where room temperature is below 40°C and ideally in ventilated premises. AquaSave is placed preferably on a sub-base footing.

4.2   Hydraulic Connections

Connect the charging kit (exchanger + control valve + pump) to the storage tank, using the interlink kit.

⚠️ **Make arrangements for fitting the insulation onto the tank, before connecting up the piping.**

The indirect AquaSave module can run without a recirculation system fitted.

To avoid creating a galvanic coupling, check that the materials used in the installation have similar corrosion potentials.

4.3   Basic Assembly Instructions

Assembly: Refer to the full instructions given in *18 Assembly of the charging kit to the AquaSTOR.*
Connect the primary supply and return connections.
Connect the cold water supply, hot water outlet and the recirculation system to the tank.

Fit he tank wth a safety valve, a drain valve in the top section and a draw off in the bottom section.

NOTE: The valve is a compulsory fixture that has to be pre-loaded at the storage tank operating pressure.

NOTE: The safety valve on the charging kit only protects the secondary system. It will neither protect, nor surge-feed the installation and the volume stored, in corresondence with local rules.

The safety valve must have the same diameter as the cold water inlet fixture.

Top Section Connection
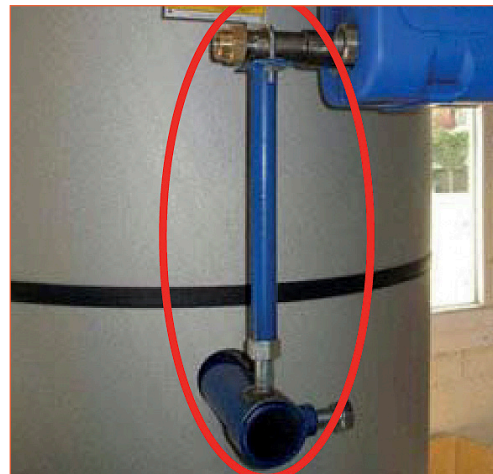
Exchanger Support + Accessories

Bottom section connection. Shut-off valve inserted between the conduit hose and the cold-water inlet fixture.

4.4 Commissioning

- Flood the various circuits and flush-bleed the pumps
- Power-up.
- Set the secondary (charging) flow rate using the TACO valve (read-off + setting)

NOTE:

**When first heated, the water in the tank will expand, increasing the pressure.
A water hammer-arrester- type surge tank qualified for DHW systems may be fitted to prevent the relief valve from opening (check the water network pressure).**

5. Setting the DHW Flow Rate

The secondary DHW flow rate is set with the tank full and the primary circuit at nominal operating temperature and at the available exchanger power capacity required for the generator.

1. Fully open up the control valve on the primary side.
2. If a 3-way control valve is fitted, wait for it to open completely.
3. Adjust the secondary flow circuit, as set out in the table below. The flow rate can be read by pressing on the red push button and reading the index marker against the float.

Control box

Read-off index marker

Read-off push button
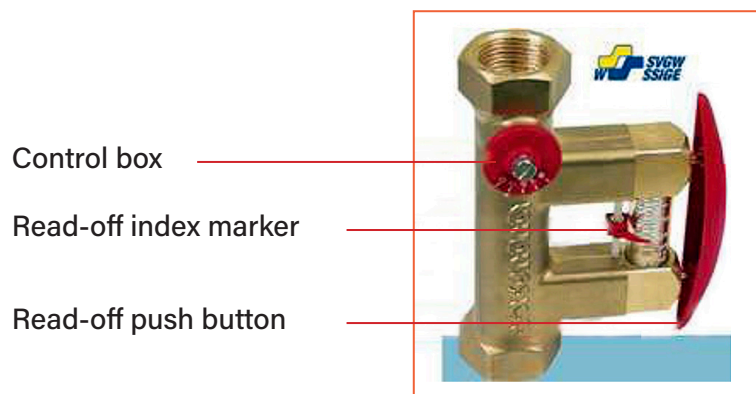
P(kW) DHW T(°C)	30	40	50	60	70	80	90	100	125	150	175	200	240
10 > 55°C	9.5	13	16	19	22	25.5	28.5	32	40	48	56	63	76
10 > 60°C	8.5	11.5	14	17	20	23	26	28	35	43	50	57	68
5 > 70°C	6	9	11	13	15	17	20	22	27	33	38	44	53

⚠️ **The recirculation flow rate must be 60% maximum of the secondary flow rate.**

6. Electrical Connections

All devices must be connected up in compliance with the governing standards.

⚠️ All work on the control box and other electrical components, must be done by qualified people.

⚠️ The main electrical box should be equipped with short-circuits protection.

6.1 A60B

⚠️ All charging pump has to be powered constantly.

6.2 A62B & A63B

For more information about the Operator Control box, see *Chapter 6 electrical installation of the control box option* and forward.

⚠️ Power the control box via a single-phase 230V + ground.
Electrical system components pre-cabled according to the hardware ordered.

6.3 Electrical Power Ratings Table

Unit Type	Primary Pump Type	Primary Pump Consumption W, A	Secondary Pump Type	Secondary Pump consumption, W	TOTAL + Control Box [1]
A60B 80-200 kW	-	-	UP20-45N	115W 0.5A	125W 0.6A [2]
A60B >200 kW	-	-	UPS 32-80N	240W 1.05A	245W 1.15A [2]
A62B 80-200 kW	-	-	UP20-45N	115W 0.5A	125W 0.8A
A62B >200 kW	-	-	UPS 32-80N	240W 1.05A	250W 1.17A
A63B 80-200 kW	Magna 1 32-80	151W 1.22A	UP20-45N	115W 0.5A	266W 2.02A
A63B >200 kW	magna 1 32-80	1.51W 1.22A	UPS 32-80N	240W 1.05A	391W 2.57A
Single-Phase 230 Volts + Ground					

[1]   The electrical consumption of the control box and the actuator is 10W, 0.3A. Figures are rounded up to the nearest value.

[2]   Has no control box.

6.4 Current Limiting Fuses

Power cards are equipped with fuses, labelled FU1 to FU5 on the printed circuit.

Fuse	FU1	FU2	FU3	FU4	FU5
Protection	Pump 1	N/A	Pump	N/A	PCB
Size (mm)	6.3 x 32	6.3 x 32	6.3 x 32	6.3 x 32	6.3 x 32
Calibre	2.5A		2.5A		250mA
Voltage	250V	250V	250V	250V	250V

Safety fuses are supplied inside the control box.

7. Electric Installation of Control Box A62B & A63B Only

Power supply the control box with 230VAC 50 Hz. The control box with the controller Micro 3000 is called the secondary control box.

⚠️ Human protections and protections against short circuits and over intensity must be installed in the main electric box.

7.1 Controller Components
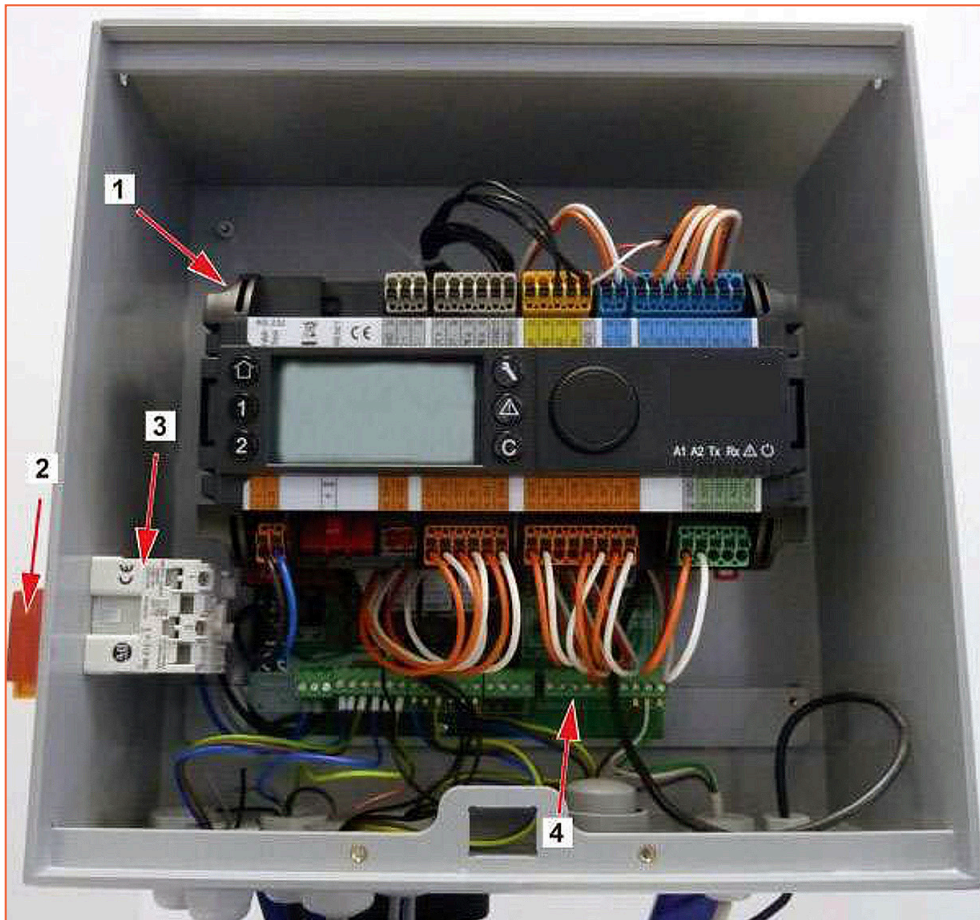
Picture 16

1	Controller, Micro 3000	3	Power Supply Contact
2	Main Switch	4	Printed Circuit Board

7.2   Electrical Wiring Diagram A62B

NOTE: When the remote control contact is open, the unit operates normally. If it is closed, the unit is in standby.
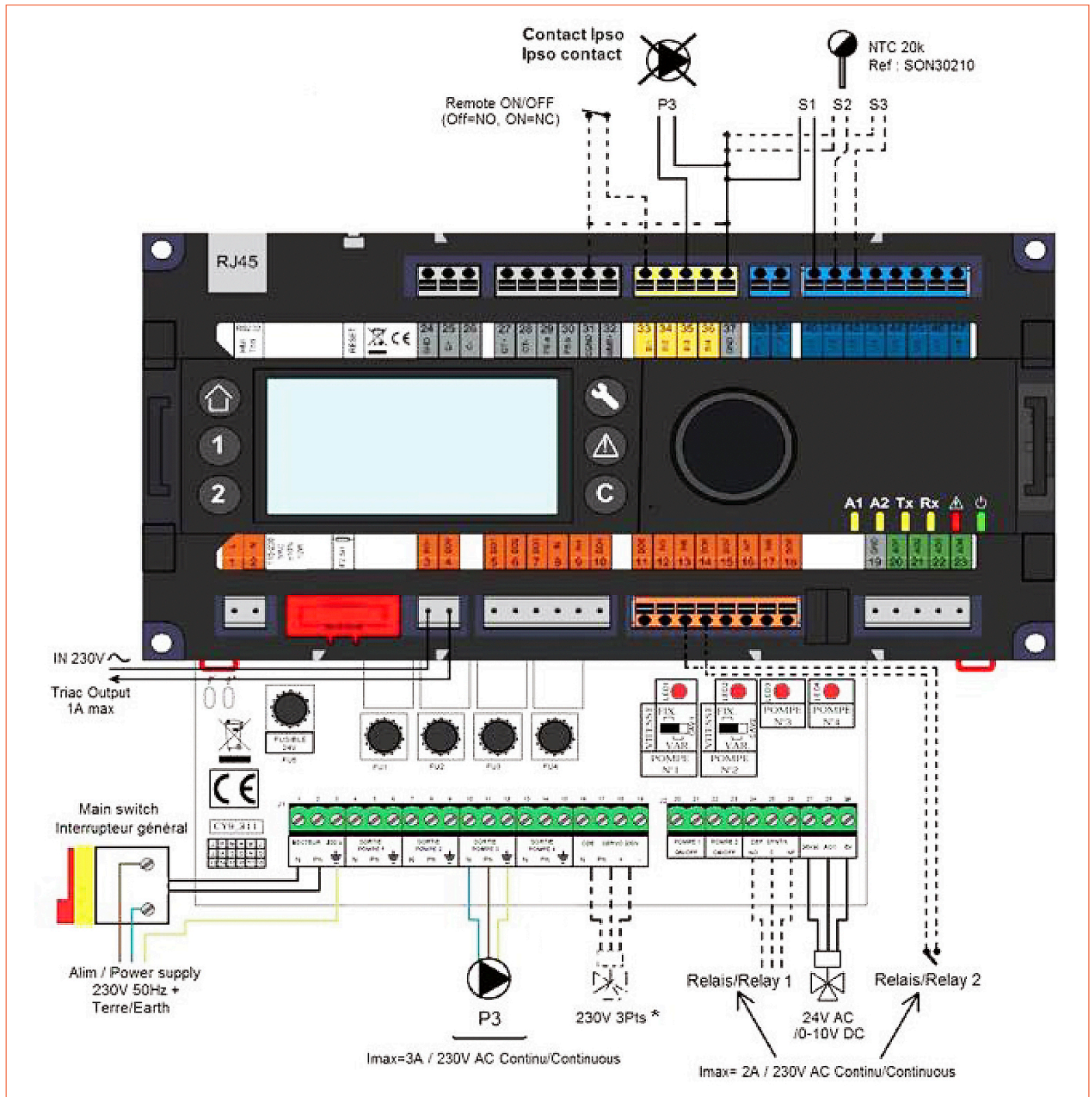
NOTE: *) 230V 3pts actuator wiring. See *Section 21, Special instructions for options.*

7.3 Electrical Wiring Diagram A63B

NOTE: When the remote control contact is open, the unit operates normally. If it is closed, the unit is in standby.
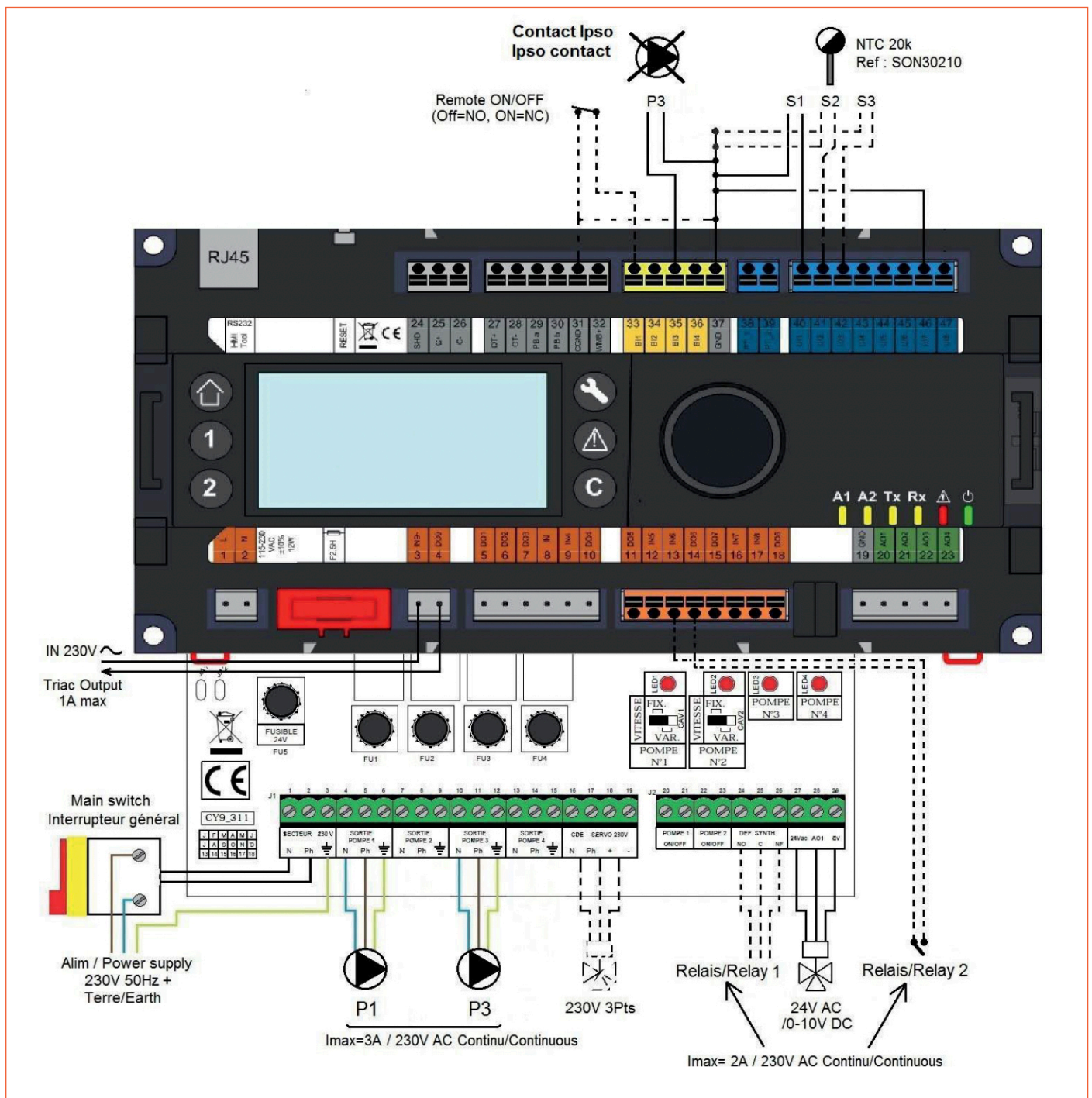
8. User Instruction Operator Control panel Micro 3000

Button	Function
	Rotary button for scrolling through the menus. Access sub-menus and change settings by pressing it. To activate the line, or change a highlighted value, simply press the wheel. Works like an 'Enter' key.
C	Press to exit a level to the previous menu / parameter. Works like an 'ESC' key.
	Press to access the maintenance / monitoring menu. **NOTE**: Requires a password.
	Press to go to the 'Home' screen, Main menu.
	Press to access the 'Alarm' menu.
1	Not used
2	Not used
A1	Relay 1 activated.
A2	Relay 2 activated.
Tx	Active data transmission.
Rx	Active data reception.
	Alarm indicator
	The contro box is switched on.

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8.2   Home Screen

When starting up the Micro 3000 controller, this menu displays on the screen.
The menu is called the Home Screen.

Date / Hour	→	18-09-2012 16:47 🔒	←	Access Level: Locked=restricted Key=total (3333)
DHW Temperature	→	T_Secondary_Out ⟳ 60.2 °C		
DHW Set Point	→	S1_PID_Setpoint ⟳ 60.0 °C	←	Command Symbols
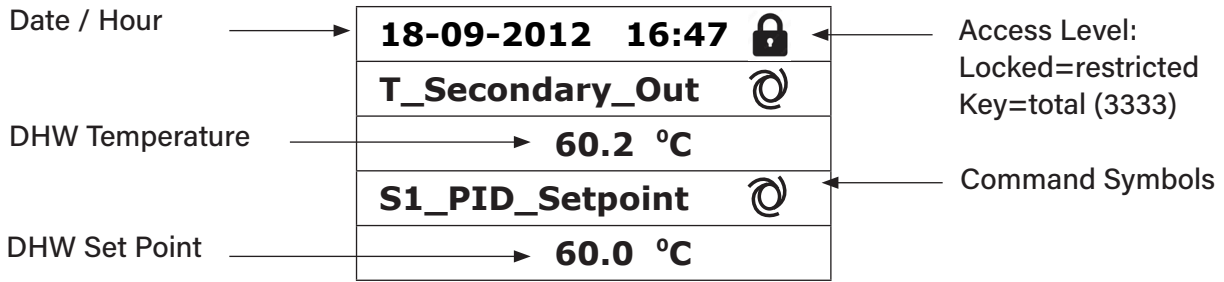
NOTE: If there is an ongoing alarm when starting up the Aquamodule, an alarm text will be displayed on the screen. Press the House button to enter the Home screen.

8.3   Command Symbols

Auto
Datapoint is in automatic operation and can be switched into manual operation.

Manual
Datapoint is in manual operation and can be switched into automatic operation.

Today Function
Datapoint value can be overridden for a particular time within the next 24 hours. Datapoint must have a daily time program assigned.

Time Program
Datapoint has a daily time program assigned. Daily time program can be selected and edited.

Edit
Item (datapoint, time program etc.) can be edited.
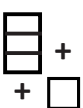
Add
Item (datapoint, time program etc.) can be added to a list e.g., datapoint can be put to a list of trended datapoints.

Deleted
Item can be deleted.

Enable / disable
- Checked: Item is enabled
- Unchecked: Item is disabled

8.4   Password and Login

The controller has password protection, allowing accesses to different menus.
- **End User Level** - requires no login. Marked with a locker in the upper right corner.
- **Technician Level** - Access to all menus requires login. Marked with a key in the upper right corner.

8.5   Setting the Time and Date

1. Turn the wheel anticlockwise to highlight the line with time and date at the top of the screen. Press the wheel to enter the Date/Time menu.

18-09-2012 16:47	🔒
T_Secondary_Out	⟳
60.2 °C	
S1_PID_Setpoint	⟳
60.0 °C	

2. Press the wheel to change the first variable, the year.

3. When the year flashes, increase, or reduce the set value by rotating the wheel. Once the right value is displayed, press the wheel to confirm the setting. Next parameter to change starts to flash.

4. Proceed in the same way to set the month, date, and time (hour: minute).

Date / Time	
Date:	**18-09-2012**
Time:	16:49
Format:	31-12-2009
Daylight Saving Time	

Date / Time	
Date:	18-09-2012
Time:	16:55
Format:	**31-12-2009**
Daylight Saving Time	

8.6   Changing the Date Format

In the Date/Time menu the date format can be changed. Choose between the following formats:

- yyyy-mm-dd   mm-dd-yyyy
- **dd-mm-yyyy**   **dd.mm.yyyy**
- **dd/mm/yyyy**

The formats in bold are the most used in the UK.

Date / Time	
Date:	18-09-2012
Time:	16:56
Format:	**31-12-2009**
Daylight Saving Time	

8.7   Setting the Daylight-Saving Time

Summertime
Changing between summer/wintertime can be automatic or turned off. You can also define the dates for changes if they are altered.

The default settings for summertime are:
Last Sunday in March to last Sunday in October.

Daylight Saving Time	
Sunday of Month	
Begin:	Last Mar
End:	Last Oct

8.8   Saving Changes

Once a value has been changed and confirmed by pressing the wheel, the corresponding change will be immediately updated.

Press the **C** or ⌂ to return to the home screen.

9.   End User Mode

The following changes can be done in end user mode:

- Settings which are identical/different for each day of the week at defined times.
- Normal temperature(s).
- Lower temperature(s).
- Special period of defined duration during the current year.
- Waiver with change of setting at a specific time.

Please set a hot water production temperature in line with current national legislation and recommendations (UTD, Standards EN, ISO etc.)

All countries have different rules for how hot or cold tap water should be.

Ormandy Rycroft Engineerinns, recommends the hot water temperature is at least 55°C and a hot water circulation not less than 50°C.

At a temperature below 50°C there is a risk of bacterial growth.

Note that at temperatures above 60°C the risk of scalding increases.

Set points above 63°C result in an increased risk of precipitation of lime scaling on the surface of the heat exchanger.

9.1   Set the Hot Water Temperature

Please set a hot water production temperature in line with current National legislation and recommendationns (UTD, Standards EN, ISO etc). All countries have different rules for how hot or cold tap water should be.

Ormandy recommends that the hot water temperature is at least 55°C and a hot water recirculation, not less than 50°C. At a temperature below 50°C, there is a risk of bacterial growth. Note, that at temperatures above 60°C, the risk of scalding increases.

Set points above 63°C, result in an increased risk of precipitation of lime scaling on the surfaces of the heat exchanger.

9.2   Time Programs

The time programs used in Aquamodule are adjusted the same way.

The time programs:

- SP_T_Sec_Outlet, to be found in the menu *S1 Menu Secondary Outlet*. It is to set the DHW temperature
- ThTr_Activated to be found in *Thermal Treatment Menu*, to activate a thermal treatment (1 sensor mode).

The time program has two different temperature modes, week-temperature or weekend-temperature. Define for each day of the week which mode to use.

By default the weekend-temperature mode has the same settings as the week-temperature mode.
It is even possible to customize the temperature programs with special dates (holidays periods or free days).

Each temperature mode can have a number of different times set per day. For each time a different temperature can be selected, that are then in effect until the next time occurs. If only one time is set, the program will run with the selected temperature.

9.3   Changing Time and Temperature in a Time Program

By default the DHW set point (SP_T_Sec_Outlet), is set to 60°C by default, at any time, all the days of the week.

Add extra temperature set points at different times of the day.

These changes will be reported to all days within the time program week, excluding the time program; weekend.

1.   Use the wheel and mark the clock logo. Press the wheel.

S1 Menu.Sec Outlet	🔒
SP_T_Sec_Outlet	↻ 🕐
60.0 °C	⧗
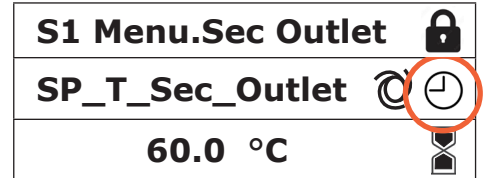
2.   Mark the day you want to change. Press the wheel.

Main	Spcl.Day
Mo Week	✎
Tu Week	✎
Wed Week	✎
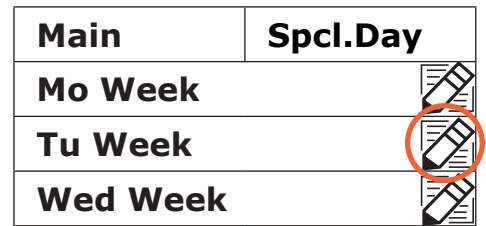
Now you can choose to:

a) Change a time or temperature.
Mark the line and press the wheel. Change the value by turning the wheel.
Confirm the new setting by pressing the wheel. **C**

Week	⊟+ +☐
06:00 SP_T_Sec 60.0	
22:00 SP_T_Sec 60.0	
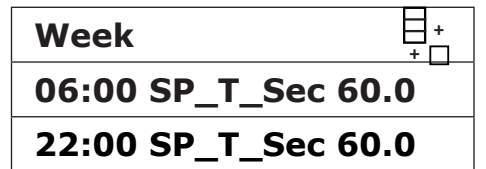
b) Add a new time or set point; choose ⊟+ +☐

c) To delete a time or set point; choose 🗑

Week	⊟+ +☐
06:00 SP_T_Sec 60°C	
22:00 SP_T_Sec 60°C	

In this example the set point is 60°C at 22h00.
You can choose to reduce the temperature during the night, in this example the night temperature is set to 55°C.

Week	🗑
23:00 SP_T_Sec Outlet	
55.0	
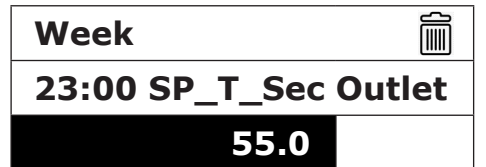
9.3.1   Special Days

Exception days, so called special days, can be defined. The calendar in the controller, controls the exceptions that can be selected in the Time program. Exception days override the weekly schedule.

1.   In the Main screen menu, mark 'Spcl.Days' and press the wheel. Choose between:

▪   Annual - holiday periods where you have to specify beginning date, end date and DHW set point. This mode is applicable to schools, offices and so on.

▪   Bank Holiday - special days during the year where set points can be different eg: Christmas, New Year.

▪   Daily programs - particular days where you want to change the temperature set point.

Main	**Spcl.Day**
Mo Week	✎

Special Day
Annual
Bank Holiday
Daily Programs
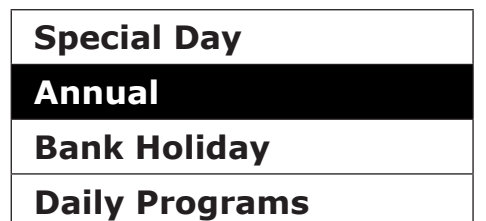
9.4　Making a Quick Temperature Change

You can quickly define a "one time" temperature change, a period of the day with a different setting. When the change period has expired, the temperature set point goes back to a standard time schedule program.

1.　In the home-screen, mark the hour glass icon and choose it, by pressing the wheel.

S1 Menu.Sec Outlet 🔒
SP_T_Sec_Outlet ⟳ 🕐
60.0 °C ⧗

2.　Define the starting and ending time, and the temperature set point value.

SP T Sec Outlet 🗑
11:47 to　12:30
Value:　55.0　°C

10. Technician Menu, Total Read and Write level

In the Technician menu you can: .

- Make settings for the secondary outlet temperature.
- Enable/disable functions like Eco, booster, thermal treatment.
- Enable/disable the fouling function (option).

- Start an auto test.
- Clear alarm.

You need to be logged in to:

- See all sub-menus and change pre-set values.
- Have full read and write access in the technician menu.

Note: You will be automatically logged out after ten minutes if no data has been entered.

10.1 Login

1   Mark the lock 🔒 in the upper right corner of the screen and press the wheel.
2   Enter: 3333, to access the technician level.

Note: You will automatically logout after ten minutes if no data has been entered.

10.2 The Technician Main Menu

To enter the Main menu you press the ⬠ key.

The grey marked parameters or menus are not available in the Aquasave application. Their value does not have any impact on the Aquasave.

Main Menu		
T_Secondary_Out	Read Only	Measured temperature ECS
S1_PID_Setpoint	Read Only	DHW temperature setpoint
T_Secondary_Inlet	Read Only	N/A
T_Primary_Outlet	Read Only	The temperature measured by S3 (option)
T_Primary_Inlet	Read Only	N/A
T_Recovery1	Read Only	N/A
T_Recovery2	Read Only	N/A
T_Outdoor	Read Only	N/A
Configuration	Sub Menu	See 7.3 configuration menu
S1 Menu Sec.Outlet	Sub Menu	See 7.4 S1 Menu Secondary Outlet
S2 Menu Sec.Inlet	Sub Menu	N/A
Delta T (S3-S2)	Sub Menu	N/A
S4 Menu Prim Inlet	Sub Menu	N/A
S5 Menu Outdoor T	Sub Menu	N/A
Thermal Treatment	Sub Menu	See 7.5 Thermal Treatment Menu
SAFETY Function	Sub Menu	See 7.6 Safety Function
Eco Booster Fcts	Sub Menu	See 7.7 Eco-Booster Function
Fouling Function	Sub Menu	See 7.8 Fouling Function
Pumps Menu	Sub Menu	N/A
Solar Menu	Sub Menu	N/A
Aquaprot_Heating	N/A	N/A
230V Triac Menu	Sub Menu	See 230V Triac Menu
Auto Test	Sub Menu	See Autotest Menu
Clear Alarm(s)	Sub Menu	See Clear Alarm Menu

10.3 Configuration Menu

NOTE: After resetting the controller, this sub menu should be accessed to configure pumps' number.

Parameter	Factory Setting	Optional Setting	Description
Type 0 = First 1 = Eff	0	0 = AquaFirst 1 = AquaEff	Set to 0
S5 Active Heating	0	0 Disables / 1 Enables heat curve	Set to 0
Cooling Mode AO1	0	0 = Heating/ 1 = Cooling Mode	Set to 0
P12 Nbr of Pumps	1/0	0/1/2	Primary pump(s) number
Min Speed P1P2	40	10>100	N/A
P34 Nbr of Pumps	1	0/1	Set to 1
Modbus Factor	1	1/10/100	To set displayed decimals on Modbus values. 1=integer value, e.g., 58°C 10=1 decimal, e.g., 583/10=58,3°C 100=2 decimals, e.g., 5836/100=58,36°C
Relay 1 function*)	1	0.7	0=No action 1=General Default (GD) 2=High temp alarm (HA) 3=Eco function (E) 4=Booster function (B) 5=Thermal Treatment (TT) 6=Pump Fault (PF) 7=Tank loaded (TL) N/A
Relay 2 function*)	2	0.7	
Renewable Config 0:N 1:SF 2:AA 3:AP	Keep 0	N/A	N/A
APilot rev 0=Off 1=On	Keep 0	N/A	N/A
SP distrib 0=1 1=E	0	N/A	N/A
SW AL Version	4.0	N/A	Firmware Version

*) Both relay 1 and 2 are programmable

10.4 S1 Menu Secondary Outlet

Parameter	Factory Default Setting	Optional Setting	Description
SP_ T_Sec_ Outlet ⏰ + ⏳	60°C	DHW Setpoint	Change setpoint value in clock program
Delta T S1 HiAlm	10°C	0 - 50	High temperature Alarm if Ts1 SP_T_Sec_Outlet+Delta Ts1 HiAlm
High T Alarm Delay	1 min	0 - 60	High temp alarm is effective after this time.
High Alarm Auto Reset	0	0 / 1	0 = MANUAL alarm clear / 1 = AUTO alarm clear
High_Alm_Reset	Off	Off / On	Put ON to clear a high temp alarm, then put off.
P_Main AquaFirst	40	0<P< 200°C	↑ P to be less reactive/more accurate
	(-200 to 200)	Negative values in cooling	↓ P to be less reactive (be careful of "pumping" effect).
I_Time AquaFirst	15	0 - 200 sec	↑ P to be less reactive
			↓ P to be more reactive (be careful of "pumping" effect).
D_Time AquaFirst	2 sec	0 - 200 sec	Derivative
P_Main AquaEff	80	0<P< 200°C	N/A
	(-200 to 200)	Negative values in cooling	
I_Time AquaFirst	15	0 - 200 sec	N/A
D_Time AquaFirst	2 sec	0 - 200 sec	N/A

10.5   Thermal Treatment Menu

This function is activated as per a time program. It is disabled by default.

Activate it by setting TrTh_Activated to ON.

The clock program logically activates it automatically or not.

The thermal treatment starts when the thermal treatment is switched on inside the clock program and ends at the end of the thermal treatment duration (Therm Tr Duration), or at the end of the authorised period, when thermal treatment is OFF in the clock program.

The user has to define a one (1) sensor mode - fixed duration as per Therm. Tr duration parameter.

Parameter	Factory Default Setting	Optional Setting	Description
ThTr_Setpoint	70°C		Usual value
TrTh_Activated ⏱ + ⏳	Off	Off / On	Enable or disable the function as per clock program.
Sensor_Nbr NS 0=Auto/1/2S	Auto	Auto/1 sensor/ 2 sensors	Use 1 sensor (Set to 1)
ThermTr duration	1 min	1-240 min (4 hours max)	Adjust value according to the installation + buffer vessel capacity.
Fixed duration (1 sensor)	1	0/1	Set to 1
TT Max try time	1 min	1-240 min	N/A
DeltaT S1S2 ThTr	7°C	1 - 20°C	N/A
Inhibition time	30 min	0-180 (0 to 3 hours)	High temp alarm inhibition time after thermal treatment

10.6   Safety Function

This function activates all the pumps power relays at the same time, without considering ipsothermic contacts' inputs.

Note: This function can be enabled from base access level.

Parameter	Factory Default Setting	Optional Setting
SAFETY_Speed	75%	Not used
SAFETY FCT	Off	Off / On

⚠️ In case of high temperature alarm on S1, the primary pumps are stopped, even if the function is activated.

10.7   Eco-Booster Function

- **ECO**: When the control valve is sufficiently closed (valve Hysteresis) during a sufficient long time (ECO delay), primary pump switches off and primary mixing valve close down.

  The system is switch ON when S1 temperature has gone down more than the set value of "Eco Hysteresis".

  If secondary pumps are connected (SS/DS/DD series), they are still in operation during the Eco function.

- **Booster**: Function is not available in AquaCompact.

Parameter	Factory Default Setting	Optional Setting	Description
1: Eco 2: Booster 3: EcoBoost	0	0/1/	0 = No function 1 = Eco Function only 2 = N/A 3 = N/A
Fct_Selection	Normal	Normal/Eco/Boost/ EcoBoost	Playback function selected in 1: Eco 2: Booster 3: EcoBoost
Eco Delay	5 min	1-30 min	Scan time before activating function if possible.
Eco Hysteresis	5°C	1 - 20°C	Temperature range in which the function is applicable.
Valve Hysteresis	10%	0 - 80%	Maximum opening of the valve before switching function.
Booster Delay	2 sec	2 - 200 sec	Time delay between the Booster functions stop and the second pump stops (N/A).
Booster Gradient	2°K/s	1 - 20°K/sec	Minimum temperature fall speed at which the function operates. (N/A)

10.8   Fouling Function

Scaling function can be activated when the sensor S3 is connected. Accessing the scaling-menu requires login at Technician level.

If the temperature in S3 is too high for a long time this function activates an alarm that consider the heat exchanger fouled.

Parameter	Factory Default Setting	Optional Setting	Description
Fouling alm activ	0	0/1	0 = disabled / 1 = enabled
Fouling_alarm	Normal/Default		Read only
SP_Fouling	65°C	60-80	Depends on the HE types and Primary inlet temperature.

10.9   230V Triac Menu

Accessing the 230C Triac-menu, requires login at Technician level.

This menu allows using a 230VAC Triac output.

Parameter	Factory Default Setting	Optional Setting	Description
Multi P 🕐 + ⏳	Off	Off / On	Enable or disable the 230V output as per clock program.
Pulse Duration	5 sec	1-3600	230V pulse duration in seconds
Bypass 0=Off, 1 =On	N/A	N/A	N/A
DeltaT bypass	N/A	N/A	N/A

The 230V electrical output can be configured as a pulse function. For example it can be used to shortly activate an electrical drain valve.

In this configuration, the pulse duration can be programmed to be active a day, week or special day. For example each Sunday at 10h00 for 5 seconds.

Connected device must not exceed 230VAC 1A.
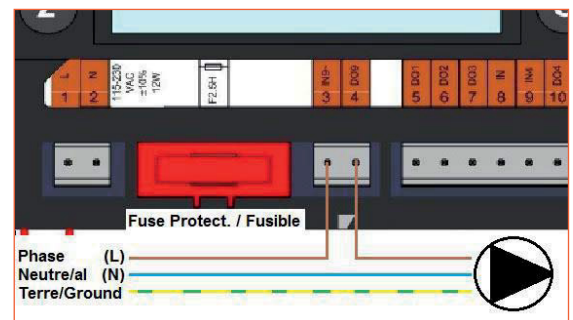
10.10 Autotest Menu

Accessing the Autotest menu requires login at Technician level.

This submenu allows testing analog (contacts) and digital (0-10V) outputs, that mange pumps start/stop, both programmable relays, 230V Triac output and valve signal. It is possible to run an automatic sequence or to test manually each output individually.

In case of Auto test (automatic sequence), it is possible to reduce or increase tests' temporizations. Pump, valve, and relays test times can be adjusted individually. The time test value will impact on the total auto test time sequence.

Parameter	Factory Default Setting	Optional Setting	Description
Start Auto Test	0	0/1	Set 1 to start auto test. When finished, the value goes back to zero
Pump_Fault_Reset	Off	Off/On	Set to On after an Auto test.
Pump time test	4 sec	1-600 sec	Pumps activated this time value
Valve time test	4 sec	1-600 sec	Valve activated this time value
Alarm time test	4 sec	1-600 sec	Relays 1 and 2 test
Cmd_P1	On/Off	On/Off	Activates Pump 1 relay
Cmd_P2	Off/On	On/Off	Activates Pump 2 relay
Speed_P1P2	xx %	0-100 %	Not used
Cmd_P3	On/Off	On/Off	Activates Pump 3 relay
Cmd_P4	Off/On	On/Off	Activates Pump 4 relay
Speed_P3P4	xx %	0-100 %	Not used
Relay 2	Off	On/Off	Activates relay 2
Reay 1	Off	On/Off	Activates relay 1
Triac_Output	Off	On/Off	Activates 230V Triac Output
Valve signal	xx %	0-100 %	Valve opening / closing
Valve2 signal	xx %	0-100 %	N/A
Valve_DO	xx %	0-100 %	N/A

Note: Once the test is manually done and finished, remember to put the point on Automatic mode, logo. ⊚

The Auto test, described in the picture, is a general test procedure. It may vary depending on connected components.

```
┌─────────────────────┐         ┌─────────────────┐  Pump time   ┌─────────────────┐
│ Closing Valves 1    │ ──────> │ Pump 1 starts   │  test        │ Pump 2 starts   │
│ Stop all pumps      │         │ Signal at 50%   │ ───────────> │ Signal at 50%   │
│ (off+0 volt)        │         │                 │              │                 │
└─────────────────────┘         └─────────────────┘              └─────────────────┘
          │                            Pump time test                     │
          ▼                                                               ▼
┌─────────────────┐  Pump time   ┌─────────────────┐              ┌──────────────────┐
│ Pump 3 starts   │  test        │ Pump 4 starts   │              │ Valve1 (AO1) opens│
│ Signal at 50%   │ ───────────> │ Signal at 50%   │ ──────────>  │ Signal at 50%    │
└─────────────────┘              └─────────────────┘              └──────────────────┘
          │                            Valve time test                    │
          ▼                                                               ▼
┌─────────────────┐  Valve time  ┌─────────────────┐  Valve time  ┌─────────────────┐
│ Valve 1 closes  │  test        │ Valve 2 closes  │  test        │ 230V Triac      │
│                 │ ───────────> │                 │ ───────────> │ pulse           │
└─────────────────┘              └─────────────────┘              └─────────────────┘
          │                            Relay time test                    │
          ▼                                                               ▼
┌─────────────────┐  Alarm time  ┌─────────────────┐
│ Relay 1         │  test        │ Relay 2         │
│ activated DO5   │ ───────────> │ activated DO6   │
└─────────────────┘              └─────────────────┘
```

Note: A pump fault may occur after Auto test. In this case, clear the alarm according to *10.11 Clear alarm menu*

10.11   Clear Alarm Menu

Accessing the Clear Alarm menu, requires login at Technician level.

All alarms are cleared the same way.

Parameter	Factory Default Setting	Optional Setting	Description
High_Alm_Reset	Off	Off / On	Select **On** to clear the alarm, then return to **Off** or wait a few seconds for automatic return to **Off**. Off: the alarm is cleared.
Pump_Fault_Reset	Off	Off / On	Select **On** to clear the alarm, then return to **Off** or wait a few seconds for automatic return to **Off**. Off: the alarm is cleared.

11. Service Menu 🔧

Press the 🔧 key to enter the service menu. In the service menu, you can:

- Change password for technician level.
- Trending parameters.
- Display the trend buffer.
- Check operating hours.

From Point Data sub-menu, you can, read or change binary or analog outputs to start/stop a pump, open/close control valve for example.

11.1   Change Password for Technician Level

Note: To change the password, you need the password for the Technician level, level 3.

1. Press 🔧 key to access to Service Menu. Go to "Login Installer". then press the wheel.
2. Enter the current password. Press the wheel to validate.

Service Menue
Continue
Login Installer

3. Mark "Change password", then press the wheel.

Enter your password
****
Next
Change Password

4. Go to Level 3 line and then click on the password to change it. Press the wheel to validate.

Note: Level 2 password is not in use.

Change Password	
Level 2:	2222
Level 3:	**3333**
Installer Service	

11.2   Login Installer

Login Installer	****		Enter 3333 if not in technician mode
	Change password		

11.3   Menu Continued

Menu	Sub-menu	Sub menu	Description
Continue	**Operating hours**		Viewing operating hours of internal parameters.
	Trending	**Points in trend**	Selected variables to trend, for example, temperature sensors.
		Display trend Buffer	View the records
	Interface Config (com)	**C-bus active**	Factory pre-set
		Ctr#1 9600	Factory pre-set
		B-port 9600	Factory pre-set
		Append bus number to data point name	Activated
		RF Teach in (N/A)	Factory pre-set
		Modbus	Device ID: 10 Baud rate: 9600 Parity: None No. stop bits: 1
	Time Programs	**Solar**	Not used
		Main	It is SP_T_Sec_Outlet (main temperature program). *See menu Secondary Outlet.*
		TSP_Amb	Not used
		Multi Pulse	See *230V Triac Menu*
		Therm. treatment	*See Thermal Treatment Menu*
	Point Data	**Internal parameters +I/O visualisation**	
		Analog Input	Sensor Values
		Pseudo Analog	Can be set points or internal parameters
		Analog Output	Valve and pump output signals
		Binary Input	Ipsothermic contacts from pumps, remote contact
		Pseudo Binary	Internal flags
		Binary Output	Pump start / stop contacts, relays contacts, 230V Triac
		Totalizer	N/A
		Remote Analog	N/A
		Remote Binary	N/A
	System Data	**System information**	
		Parameters	N/A
		Date / Time	Clock settings
		System Info	Hardware / software info (version, date)
		Interface Config	Sccess to Modbus parameters. *See Modbus*
		DDC Times	Programs time constant
		Flash Memory	Info on flashing. Allows saving all settings. It can be reloaded after a Reset.

11.4 Operating Hours

Operating hours for the following variables can be checked:

- Therm_Protec_P1/P2/P3/P4
- Cmd_P1/P3
- High_Temp_Alarm
- Main _Alarm

- AFF_leg_active
- SAFETY_FCT
- Multi P
- ECO

For more information and descriptions, see Parameter list.

1. Press 🔧 key to access to Service Menu, then go to "continue".

Service Menue
Continue
Login Installer

2. Select "Operating Hours" in the menu.

The first time you enter this menu, the list is empty.

Service
Operating hours
Trending
Interface Config
Time Program

3. To add a variable to trend, choose ⊟₊ ₊☐

4. Mark one variable to follow and press the wheel.

Activate Oper. Hours
Cmd Distant
Therm_Protec_P1
Therm_Protec_P2

Activate Oper. Hours
Therm Protec_P4
Cmd_P1
Cmd_P2

5. Validate the variable by ticking in the Operating Hours box. If this box is empty the variable is in the list, but it is not recorded.

Operating Hours	☑

When you go back in the menu (Ⓒ Key), you can see the list with "Cmd_P1" parameter, and on the right side, the operating hours.

Cmd_P1	
Operating Hours	☑

Operating Hours (h) ⊟₊ ₊☐	
Cmd_P1	**0**

For more details, click on the line to open the sub-menu.
Here you can read that P1 has been operating less than 1 hour, has been switched one time and status is On.

Proceed the same way to add extra variables.

Cmd_P1	
Operating Hours	☑
Hours:	0
Switches:	1
Status:	On

11.5 Trending Parameters

A lot of different variables can be recorded or trended. It can be temperatures' measurement, valves, or pumps' signals, ipsothermic contacts, alarms, thermal treatments etc.

1. Press 🔧 key to access to Service Menu, then click on "Continue.

Service Menue
Continue
Login Installer

2. Select "Trending" in the menu.

Service
Operating hours
Trending
Interface Config
Time Program

3. Select "Points in Trend"; choose
   The first time you enter this menu, the list is empty.

Trending
Points in Trend
Display Trend Buffer

4. To add a variable to trend; choose ⊟+ +☐

5. Mark the variable to follow and press the wheel.
   In this example the Secondary outlet temperature, S1.

Set Points in Trend
Pilot_Signal
Pt1
Pt2
S1

6. Validate the variable by ticking in the Trend Log box. If this box is empty the variable is in the list, but it is not record.

There are two different ways to record (method a and b):
a) Only the temperature change is recorded. This saves memory and allows a longer sampling period compared to method b.

Select the record hysteresis. In our case, every 1°C temperature change is recorded. You can change the hysteresis value by clicking on it.

S1	
Trend Log:	☑
Trend Hyst:	**1**
Trend Cycle:	0 min

b) Record on a time base, whether the temperature changes or not. Note that this method consumes memory, especially if a long-time base is selected. Here is the time base selected to 10 minutes recording (1 record every 10 minutes).

For method "a" set "Trend cycle" different to zero, for method "b", set "Trend Hyst" different to zero.

S1	
Trend Log:	✓
Trend Hyst:	**1**
Trend Cycle:	**10** min

11.6   Display the Trend Buffer

1. Press 🔧 key to access to Service Menu, then click on "Continue".

Service Menue
Continue
Login Installer

2. Select "Trending" in the menu.

Service
Operating hours
Trending
Interface Config

3. Select "Display Trend Buffer".

Trending
Points in Trend
Display Trend Buffer

4. Select the variable to display, S1 in this case, and press the wheel.

Trend Buffer
S1

Date, time and temperature at the time, can be read.
For example, on 21st of September at 14h22, the temperature of S1 was 58°C

S1		
21-09	**14:22**	**58**
21-09	**14:22**	**60**
21-09	**14:22**	**59**
21-09	**14:22**	**57**

11.7   Point Data

From the menu Point Data, you can:

- Read or change binary or analog outputs
- Start and stop pumps
- Open or close control valve

This sub menu is very similar with Autotest, as it perfoorms same actions in manual mode.

NOTE: Once the tet is manually done and finished, remember to put the point on Automatic mode, logo ⊚

12. Alarm Menu ⚠

Alarm indication: Is Volt Free Contacts (VFCs), 2 Amps maxi, each under 230 V.

Press ⚠ key for access to Alarm menu. The menu contains four different lists:

- **Alarm Buffer**
  Lists all events with, date, time and type of event.
- **Points in Manual**
  List of all points actually in manual mode should be empty. When point values are forced for tests, e.g., they should be placed in automatic mode at the end.
- **Points in Alarm**
  Lists all events with alarm condition.
- **Critical Alarms**
  Lists all alarms with critical alarm condition.
  Critical alarms are important alarms, like high temp.
- **Non-Critical Alarms**
  Lists all non-critical alarm condition.
  These alarms are more information, like power failure.

For example, in the alarm buffer, you can read:

15.52	SAFETY_FCT
15.51	SAFETY_Speed
15.41	SAFETY_Speed
15.40	SAFETY_FCT

Note that the alarms are listed with the latest at the top.

Press a line to see more information about the alarm.

Displayed	Meaning
19-06-2012 15.52 SAFETY_FCT On Auto Operation	The safety function has been set to auto mode, stopping the safety function at 15h52.
19-06-2012 15.51 SAFETY_Speed 100% Auto Operation.	The safety speed has been set in Auto mode at 100% at 15h51.
19-06-2012 15.41 SAFETY_Speed 75% Manual Operation	The speed pump has been set manually to 75% at 15h41.
19-06-2012 15.40 SAFETY_FCT On Manual Operation	The safety function has been activated manually the 19th of June 2012 at 15h40.

13. Parameter List

There are more than 100 different variables used in the controller. Most of them are used for internal programs and calculations. Here we describe the main points.

Name	Description	Unit	Modbus Address*
Therm_Protec P1	Ipsothermic input from P1 pump	0/1	11
Therm_Protec P3	Ipsothermic input from P3 pump	0/1	13
PD_Cmd_P1	P1 command. It is the pump start/stop output	On/Off	15
PD_Cmd_P3	P3 command. It is the pump start/stop output	On/Off	17
PriP1_Alarm_On	Primary pump 1 default	0/1	19
PriP2_Alarm_On	Primary pump 2 default	0/1	20
Sec_P3_Fault	Secondary pump 3 default	0/1	25
PDMain_Alarm	General Alarm	0/1	28
High_Temp_Alarm	High temperature alarm on S1 sensor	0/1	29
Fouling_Alarm	Fouling heat exchange alarm	0/1	30
Ret_High_Alarm	High temperature alarm on S2	0/1	31
ThermTr_Alarm	Thermal treatment failed	0/1	32
SAFETY_FCT	The safety function state	0/1	35
Disp_Leg_Active	Thermal treatment running	0/1	36
Remote_Control	The unit is remotely controlled	0/1	37
ECOMode	ECO function activated	0/1	42
Tank Load	Tank loaded (Sensor S2 need to be connected)	0/1	44
PA10_Valve1	Primary valve actuator	0-100%	47
S1_10	Secondary outlet temperature measurement (S1 sensor)	°C	50
S2_10	Secondary Inlet temperature measurement (S2 sensor if present)	°C	51
S3_10	Primary Outlet temperature measurement (S3 sensor if present)	°C	52
S1_PID_SP_10	Current temperature set point of the main control loop on S1	°C	62
High_Alm_Reset	To reset a high temperature alarm	On/Off	201
Pump_Fault_Reset	Resets a pump fault	On/Off	202
SP_T_Sec_Outlet	Domestic Hot water Setpoint (S1)	°C	211
THTR_Setpoint	Thermal treatment temperature set point	°C	213
PD_Triac_Output	230V Triac output state	On/Off	33

* Please refer to *Modbus*

14. Factory Reset

⚠️ After a reset, the controller must be configured, see *Section 10.3, Configuration menu*. Especially the number of pumps must be configured.

1. Press both 🔧 and Ⓒ for 5 seconds. Display appears as shown here.
2. Rotate the wheel; select the last line (program name with a star at the end).
3. Press the wheel a few seconds and the program will start after 1 minute.

Settings are now factory settings.

15-10-2012	13.41
Wiring Check	
C-Bus	☑
CTR# 1	**19200**
AL 09 2ST	**12-10-12***

Note that on some software versions, the displayed language can be changed.
1. Rotate the wheel clockwise to display all available languages.
2. Select and press the wheel.
3. Then, press on "Factory" line and press the wheel. The controller will restart.

NOTE: If another line is available, it contains previous set parameters and function, before Reset was done. You can then recover all the parameters.

02/07/2013	15:27
Startup	
C-Bus config	☑
CTR# 1	**38400**
Select Language:	

| |
|---|
| **English (1)** |
| **French** |

15. Modbus

15.1 Modbus Communication

The controller includes a Modbus slave communication protocol - type Modbus RTU RS485.

Connection between BMS (building management system) and Micro 3000 requires two polarized wires on C+ and C-, respectively labelled 25 and 26 on controller C Bus terminal.

The connection via shielded cable is not required but can be performed with the terminal 24. For this, it is necessary to unscrew the front panel.
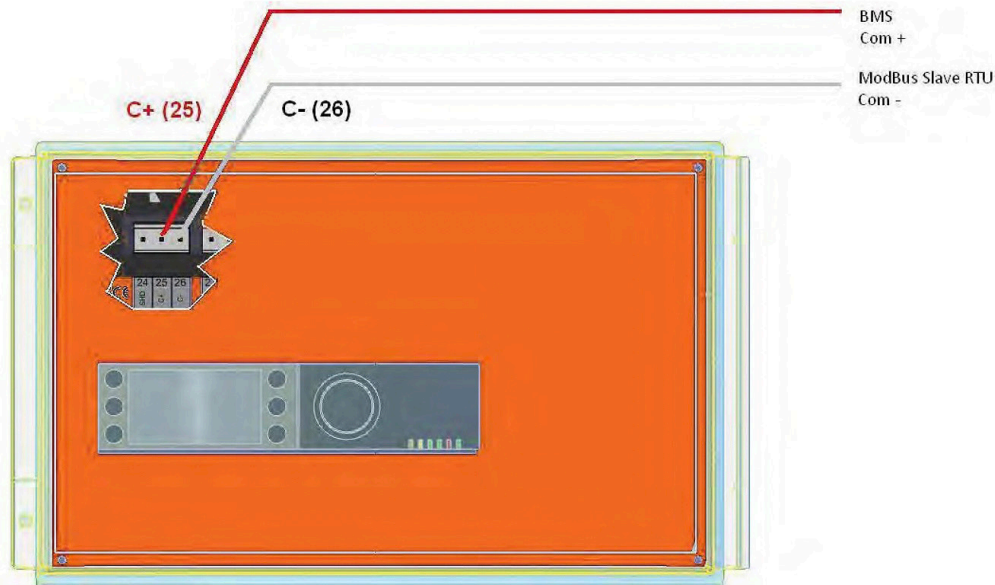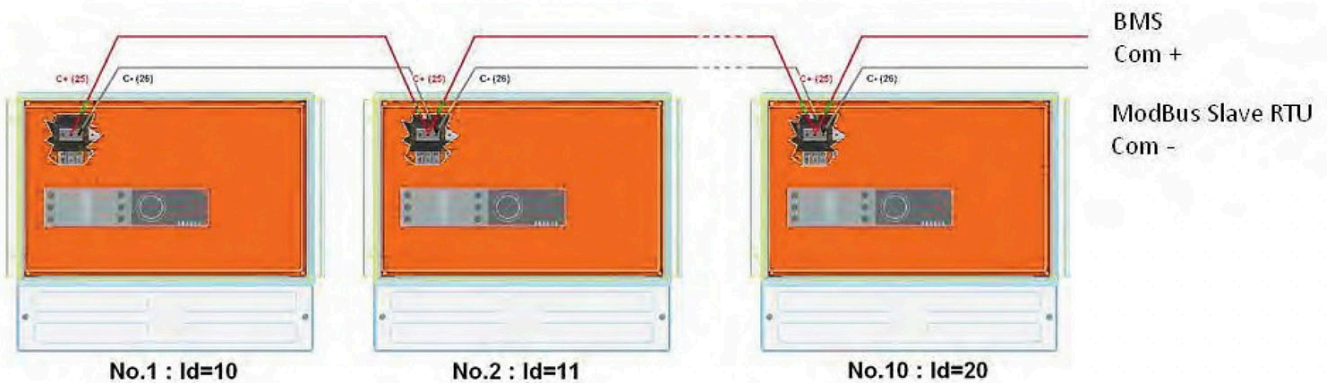

15.2 Connecting Multiple Micro 3000 Control Boxes

Rules to respect

Max length between BMS and farer control box: 500 meters

Connection continuity (C+ and C-) must be done directly on the controller C Bus terminal, without using derivation boxes. Respecting this, there are two wires per terminal, except in the last control box.

15.3　Change Modbus Parameters

1. Press 🔧 key to access to Service Menu. Go to "Login Installer". then press the wheel.

2. Enter the current password. Press the wheel to validate.

Service Menue
Continue
Login Installer

3. Mark "Next", then press the wheel.

Enter your password
****
Next
Change Password

Select "Interface Config".

Service
Operating hours
Trending
Interface Config

Select "Modbus".

Interface Config
Append bus number to
data point name　✓
RF Teach-in
Modbus

Select the variable to change.

Press the wheel to validate.

- Device ID = Modbus Address of the controller
- Baud Rate - Com speed
- Parity = None (0) / Even / Odd
- No of Stop Bits = 0/1

Modbus Communication	
Device ID:	**10**
Baud Rate:	**9600**
Parity:	**NONE**
No. Stop Bits:	**1**

15.4　Modbus Slave Communication Parameters

Modbus Parameters	Speed	9600
	Bit Number	8
	Stop bit	1
	Parity	None
	Mode	RTU

In case of multiple controllers, change ModBus slave number.

Read Only Digital						
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Value	Comment
PD_Cmd_P1	15	HR_16	BOOL	R	0=Off, 1=On	Command P1
PD_Cmd_P3	17	HR_16	BOOL	R	0=Off, 1=On	Command P3
PriP1_Alarm_On	19	HR_16	BOOL	R	0=OK, 1=Alarm	Pl Fault
PriP2_Alarm_On	20	HR_16	BOOL	R	0=OK, 1=Alarm	P2 Fault
SecP3_Alarm_On	23	HR_16	BOOL	R	0=OK, 1=Alarm	P3 Fault
PD_High_Alarm	27	HR_16	BOOL	R	0=OK, 1=Alarm	S1 High Temp Alarm
PD_Main_Alarm	28	HR_16	BOOL	R	0=OK, 1=Alarm	General Default
Fouling_Alarm	30	HR_16	BOOL	R	0=OK, 1=Alarm	Fouling Alarm (S3)
Therm Tr Alarm	32	HR_16	BOOL	R	0=OK, 1=Alarm	Therm.Treat. Failed
PD_Triac_Output	33	HR_16	BOOL	R	0=Off, 1=On	230V Triac. output
SAFETY_FCT	35	HR_16	BOOL	R	0=Off, 1=On	Safety Function
Disp_Leg_Active	36	HR_16	BOOL	R	0=Off, 1=On	Therm. Treat. Ongoing
Remote_Control_Rev	37	HR_16	BOOL	R	0=Off, 1=On	Remote Control
AFF_FD20	39	HR_16	BOOL	R	0=Off, 1=On	Heating Mode
AFF_FD22	40	HR_16	BOOL	R	0=Off, 1=On	Cooling Mode
EcoMode	42	HR_16	BOOL	R	0=Off, 1=On	ECO Activated
PD_Pumps_Fault	43	HR_16	BOOL	R	0=Off, 1=On	Synthesis Pump(s) Fault
Tank_Load	44	HR_16	BOOL	R	0=Off, 1=On	Tank Loaded
(16 bit integer)*						

Read Only Analogic						
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Value	Comment
SW AL Version	34	HR_16	int16	R		Software Version
PA10 valve1	47	HR_16	int16	R	%	Control valve 1 signal
S1_10	50	HR_16	int16	R	^{o}C	Sensor 1 measurement
S2_10	51	HR_16	int16	R	^{o}C	Sensor 2 measurement***
S3_10	52	HR_16	int16	R	^{o}C	Sensor 3 measurement***
S1_PID_SP_10	62	HR_16	int16	R	^{o}C	Calculated S1 setpoint
(16 bit integer)*						

Read-Write Digital					
Modbus Points	**Modbus Address***	**Type**	**Sub Type**	**Mode**	**Comment**
High_Alm_Reset	201	HR_16	BOOL	R/W	1=Reset fault. Pulse point necessary, 30 seconds On/Off
Pump_Fault_Reset	202	HR_16	BOOL	R/W	1=Reset fault. Pulse point necessary, 30 seconds On/Off
(16 bit integer)*					

Read-Write Analogic						
Modbus Points	**Modbus Address***	**Type**	**Sub Type**	**Mode**	**Value**	**Comment**
SP_T_Sec_Outlet	211	HR_16	int16	R/W	^{o}C	S1 fixed setpoint (DHW)
THTr_setpoint	213	HR_16	int16	R/W	^{o}C	Thermal treatment setpoint
(16 bit integer)*						

*   For some supervisors, it is necessary to implement BOOL as int16
**   For some supervisors, remove 1 to address number (ex: S1_10 address=49
***   If present

16. Trouble Shooting

Findings	Probable Causes	Remedies
Pump not operating	Locked rotor or damaged	Force to rotate. replace if required
	Corresponding led is not lit	Replace Power Board
	Pump relay damaged	Replace Power Board
	Pump protection fuse blown	Check, then replace if necessary
	High Alarm condition detected	Clear alarm, then reset system
	No voltage to control board terminals	Check power supply cable and fuses
	No voltage to pump motor terminals	Check protection fuse on main board, cable condition and connections
	Controller improperly set	Contact After Sales Service
Low temp alarm condition	Primary pump stopped	see "pump not operating"
	Too low primary temperature	Check for closed valve in the primary
	Too high tap water flow rate (S1)	Reduce buffer vessel charging flow rate
	Set point too high. 3-way valve remains closed	See "Modulating valve does not operate"
Modulating valve does not operate.	Damaged or broken actuator	Test and replace if necessary
	Broken or improperly tightened coupling	Check and replace if necessary
	Valve blocked	Replace
	No signal from the controller	Check, then replace if necessary
	Supply wires improperly tightened	Check wires, re-tighten connections
	Actuator stroke restricted	Dismount, then clean the valve
High alarm condition detected	Charging pump stopped	Refer to, "Pump not operating", above
	Low recirculation flow rate	Check and fix problem
	Alarm differential too low	Check and set the controller
	Alarm differential too low	Refer to "The actuator does not operate" above
	Too much differential of pressure across the modulating valve	Check the way the TWM is piped up. Mixing arrangements should be used
Correct temperatures across the exchanger not obtained. Valve and pumps operating satisfactorily	excessive exchanger scaling at the primary or secondary side	Open and clean he exchanger according to cleaning instructions
	Primary pipework obstructed or strainer upstream clogged	Inspect primary pipe work. Clean strainer on the primary side
	Isolation valve closed	Open shut off valves.
	Air presence in the primary	Purge. Check no high parts where air could be trapped, exist
	Excessive pressure drops	Check pipe size is suitable for nominal flow rate
Temperature does not increase in the buffer vessel and the tap water value is correct	Recirculation flow rate exceeds charging flow rate	Check and measure charging and recirculation flow rates. adjust when necessary
		Recirculation FR < 0.6 x Charging FR FR = Flow Rate

17. Maintenance and Repairs

We recommend that you take out a low cost annual service contract from Heat Exchange Spares.com, which covers all parts and labour. Please contact us for more information.

The frequency of the inspection, depends on the water hardness, temperature and flow rate.

Weekly Inspections

- Check for leaks on pipes and components.
- Check that the operation control system is stable and that the temperature does not fluctuate. Temperature hunting causes unnecessary wear of valves, actuators.

Annually

- Check the control box electrical connections tightening.
- Check the control valve that no leaks are detected.
- Check the electric current requirement of the circulation pump.
- Clean and disinfect the system at least once a year. *See Antibacterial treatment of the AquaSTOR*

Regularly

- The cleaning schedule for the exchanger will depend on the quality of the water and how much demand is placed on the system.
- Flush out the tank on a regular basis.
- Check regularly that the safety devices (like safety valve etc.) are working properly.
- Lime scaling on the connected devices.

Scaling of the secondary side will be evidenced by:

- High pressure drop on the secondary side of the exchanger that should not exceed 50kPa on all models (heat exchanger only).
- Improper temperature range on the secondary side of the exchanger.
- Low temperature difference between inlet and outlet on the primary side of the exchanger when the control valve is fully open.

⚠️ Only replace any defective parts with **original** spare parts.
Please contact your HeatExchangerSpares.com for spare parts, noting the serial number and model designation.

⚠️ Maintenance work must be carried out by a qualified and authorised technician

⚠️ Hazard of severe electrical shock or burn.
Before cleaning and servicing, disconnect power supplies.

⚠️ Risk of burns. Let the pipes cool down before starting out with maintenance work.

17.1   Antibacterial Treatment of the AquaSTOR

Clean and disinfect the system at least once a year.

⚠️ Whenever the AquaSTOR or exchanger circuits are to be drained, it is crucial to let the water cool down to preclude any risk of scolding or burns.

The AquaSTOR is fitted with a dismounting inspection hole.

In order to work on the inside of the tank:

- Use the shut-off to isolate the exchanger kit.
- Isolate the installations power circuit.
- Close the cold water inlet and drain out the tank.

Access is through the inspection hole, once the tightening screws have been loosened.

NOTE: Comply with all currently applicable governing standards of, cleaning and disinfecting the system at least once a year.

17.2   Clean the Brazed Plate Heat Exchangers

⚠️ Only the specially designed, pre-fitted cleaning kit and compatible agents should be used for cleaning brazed plate heat exchangers.
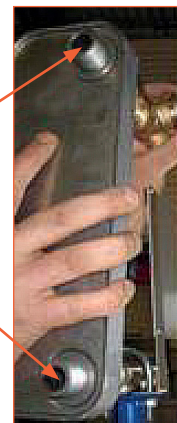
⚠️ Protective gloves and glasses should always be worn with these operations.

Use the specially engineered plugs and isolate the secondary circuit using the gate valves.
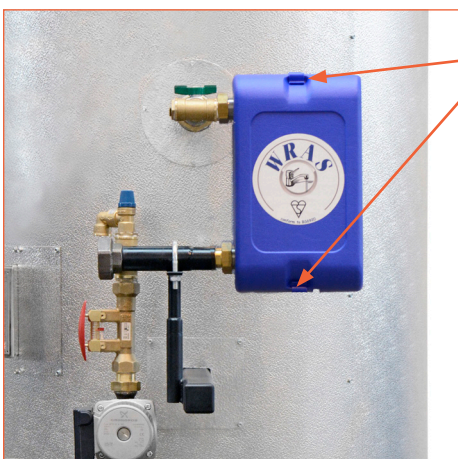
Unclip the heat insulator at the top and bottom of the exchanger.

Isolate the exchanger and use the special connective fittings for cleaning, and removing the plugs.
CIP connector: 3/4"

- The circulator systems and pumps require no specific maintenance action.
- The motor-driven control valves do not need any particular maintenance. Run annual checks to ensure that the value glands do not show signs of leakage.
- The control box requires no specific maintenance action. Run an annual check to make sure the electrical connections hold tight.

17.3   Open the Control Box

Remove the front panel by turning the lock button counter clockwise and lift up the cover.
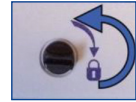
Then, unscrew the two screws in bottom and lift up the black panel.
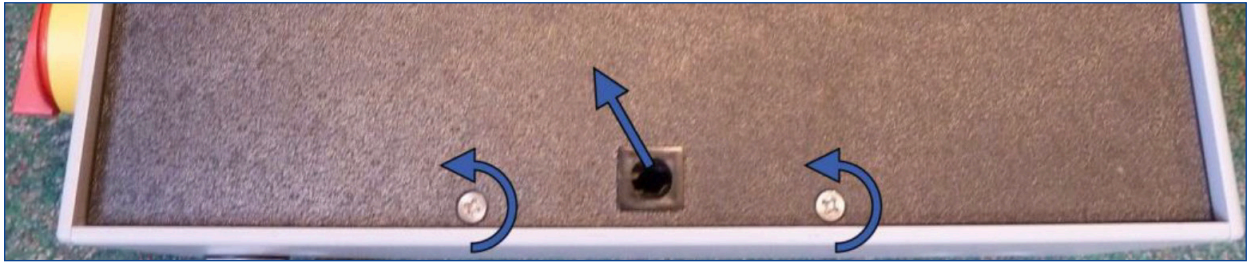
17.4   Change Fuses

The control box is fitted with a set of fuses to protect the different components against overload.

Extra fuses are included in the control box for quick servicing.

The service work must be carried out by an authorized service technician.
Turn off the power supply before starting to work.
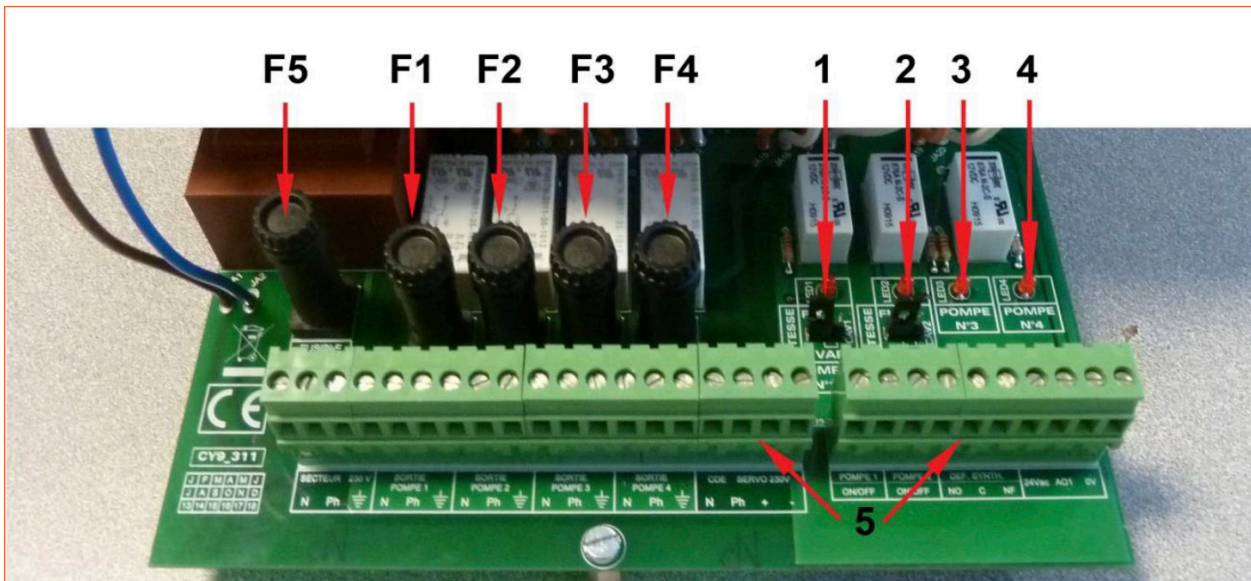
F5	Fuse F5
F1	Fuse F1
F2	Fuse F2
F3	Fuse F3
F4	Fuse F4

1	LED 1, lit when pump P1 is power supplied
2	LED 2, lit when pump P2 is power supplied
3	LED 3, lit when pump P3 is power supplied
4	LED 4, lit when pump P4 is power supplied
5	Terminal block

For technical information about the fuses, *see Section 6.4, current limiting fuses.*

17.5   Set the number of pumps

The pump configuration and connections is factory made.

In a servicing situation the correct pump must be identified.

| Codification	Meaning	Connected pump(s)
A62B	1 charging pump	P3
A63B	1 primary pump + 1 charging pump	P1 + P3

17.6   Add an extra sensor

⚠️ Please see *Section 7.3, Electrical wiring diagram, option A62B and Electrical wiring diagram, option A63B.* S1-S3 are temperature sensors, NTC20k.

17.7   Connect to 230V Triac Output

The 230V electrical output can be configured as a pulse function. For example it can be used to shortly activate an electrical drain valve.

In this configuration, the pulse duration can be programmed to be active a day, week, or special day.

For example each Sunday at 10h00 for 5 seconds. *See 230V Triac menu.*
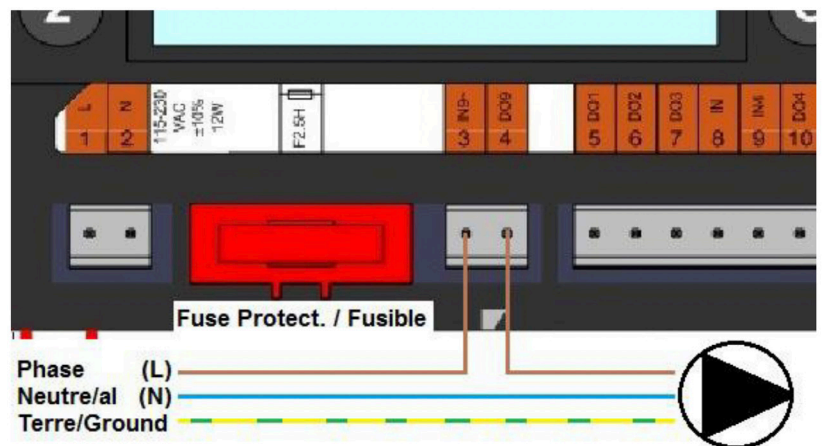
Connected device must not exceed 230VAC 1A.

17.8   Add relay 1 and relay 2

Relay 1 can be NO (normally open) or NC (normally closed).
Relay 2 is always NO (normally open).

Connect the relay 1:

Operating Mode	Connections on PCB bottom terminal
No	C-NO (25-24)
NC	C-NF (25-26)

Connect relay 2 to the controller terminal 13 (IN6) and 14 (OUT6).

See Electrical wiring diagram, option A62B and A63B Electrical wiring diagram, option A63B.

⚠️ If using 230V phase through this contact, do not exceed 2A load.

17.9 Add a Remote Control Contact

The Aquasave can be operated by a remote controller. To enable that, connect a volt free contact between BI1 and GND.

Wire Terminal Name	Wire Terminal Number
BI1	33
GND	31 0r 37

NOTE: When the contact is open, the unit operates normally. If it is closed, the unit is in standby (mode), but the controller display remains activated.

DO NOT power supply this contact. It is a volt free contact.

See Section 7.3, Electrical wiring diagram, option A62B and Electrical wiring diagram, option A63B

18. Assembly of the Charging Kit to the AquaSTOR

NOTE: The photos are non-binding - changes are liable to be made without notice.

1. Unpack secondary charging kit and check all parts for damage.

2. Tools required to install the secondary charging kit:

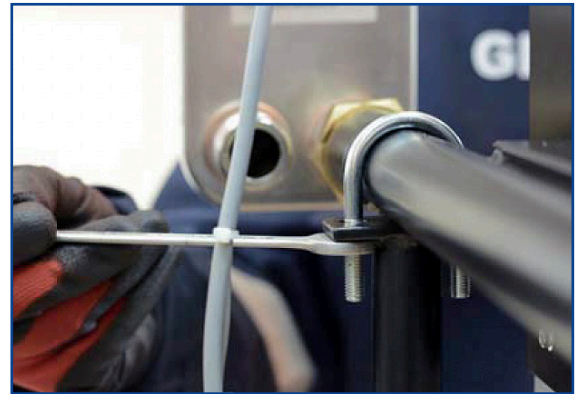   Adjustable spanner, 10mm spanner, Phillips No2 screwdriver and small flat electricians screwdriver.

3. Connect the secondary isolation valve to the AquaSTOR.

4. Connect the heat exchanger support to the support connection on the AquaSTOR.

5. Mount the heat exchanger on the support bracket and connect to the secondary isolation valve.

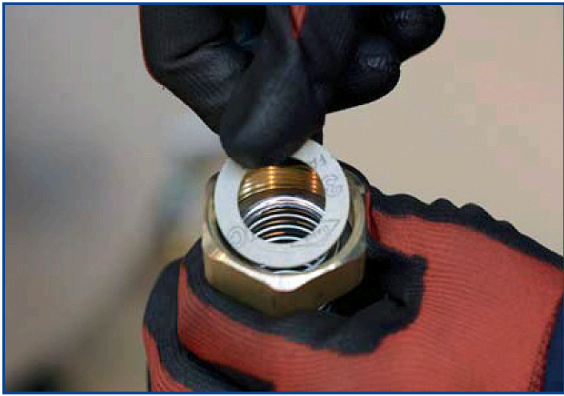6. Tighten the "U" bracket on the heat exchanger support.

7. Install a fibre washer on the inlet connection of the heat exchanger.
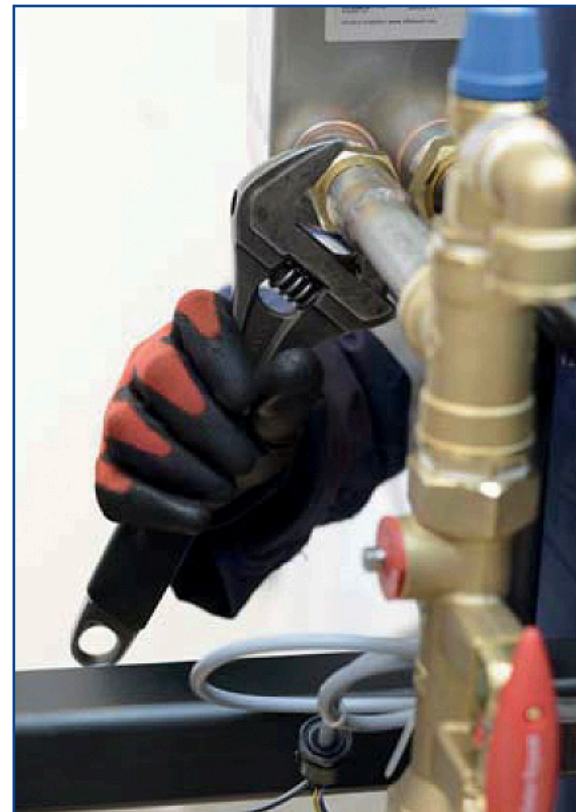
8. Connect the secondary inlet sub-assembly (pressure relief valve, taco flow and secondary pump) to the inlet connection of the heat exchanger.

10. Install a fibre washer into one end of the flexible hose.

11. Connect the flexible hose to the secondary pump.

12. Insure the pump connection is tight.

13. Install a fibre washer in the flexible hose and connect to the bottom connection on the AquaSTOR.
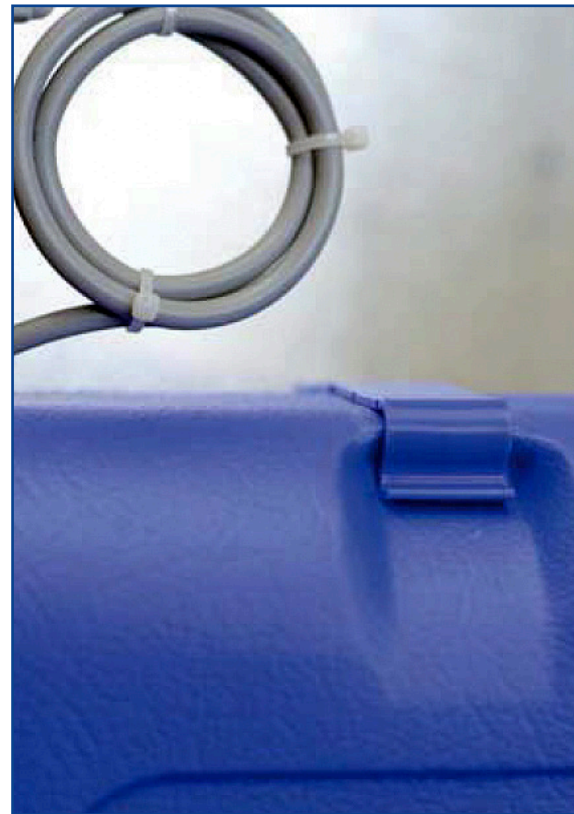

14. Insure the flexible hose connection is tight.

15. Mount the first half of the insulation jacket, aligning with the heat exchanger secondary connections.

16. Mount the second half of the insulation jacket, aligning with the heat exchanger primary connections.
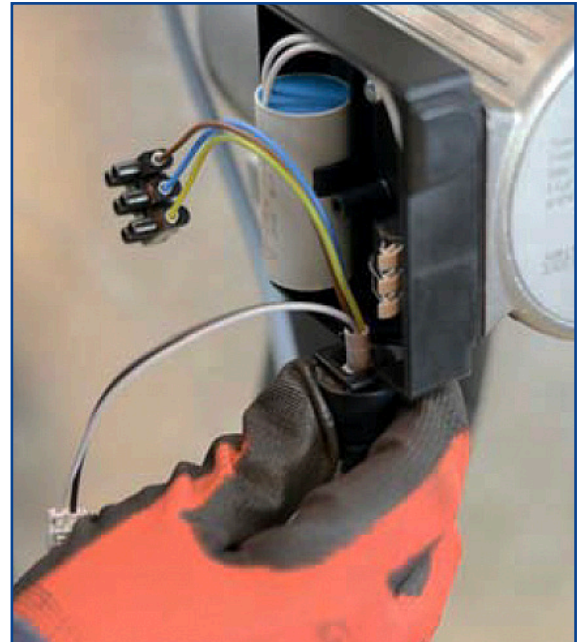

17. "Snap" on the insulation retaining clips.

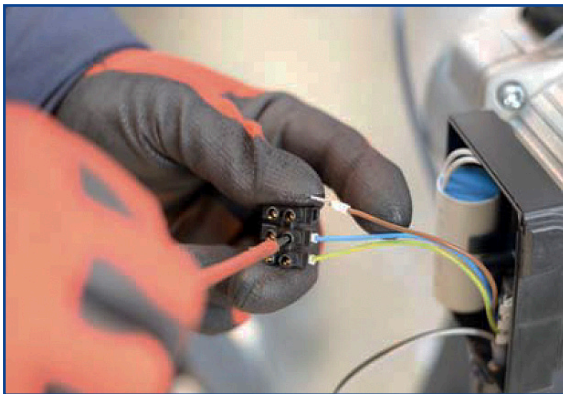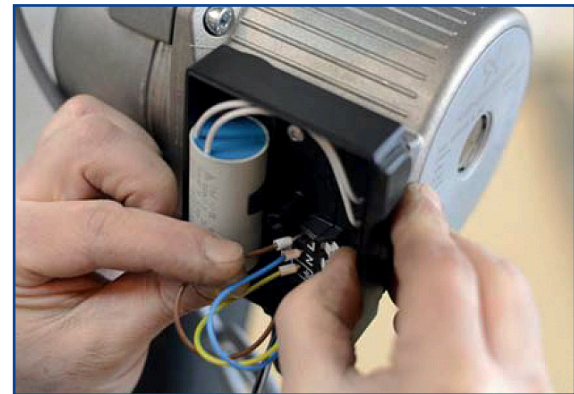18. Ensure both top and bottom clips are fully seated.

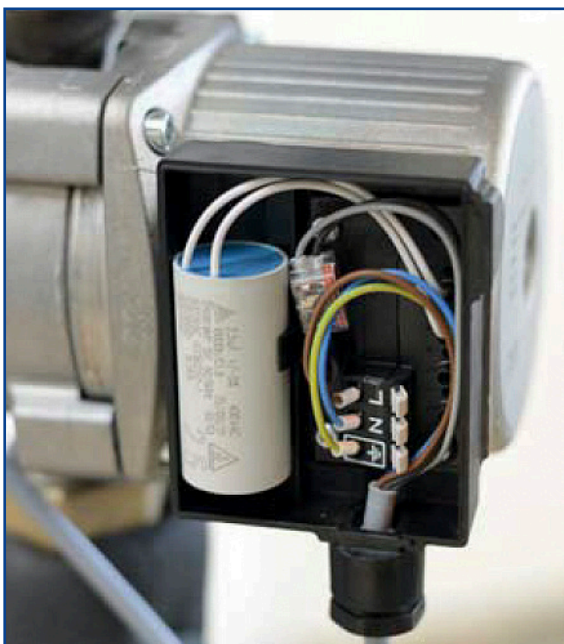19. Remove the secondary pump terminal box cover.

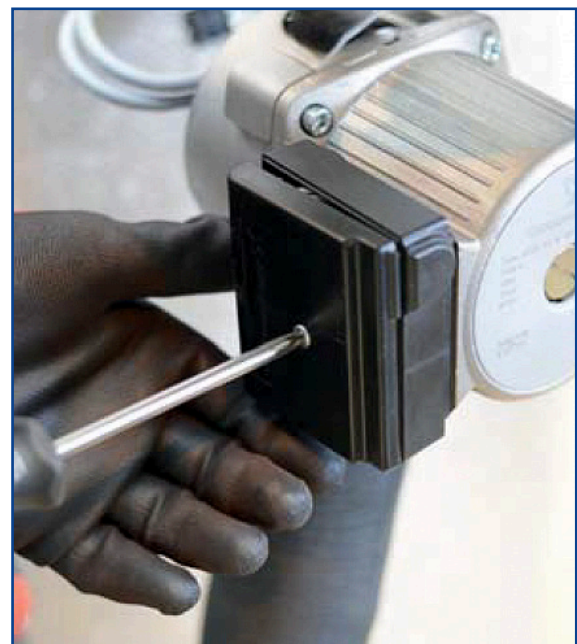20. Attach the gland and wiring loom to the terminal box.

21. Remove the protective terminal strip.

22. Connect the secondary pump wiring. Brown : Live, Blue: Neutral and Green/Yellow: Earth

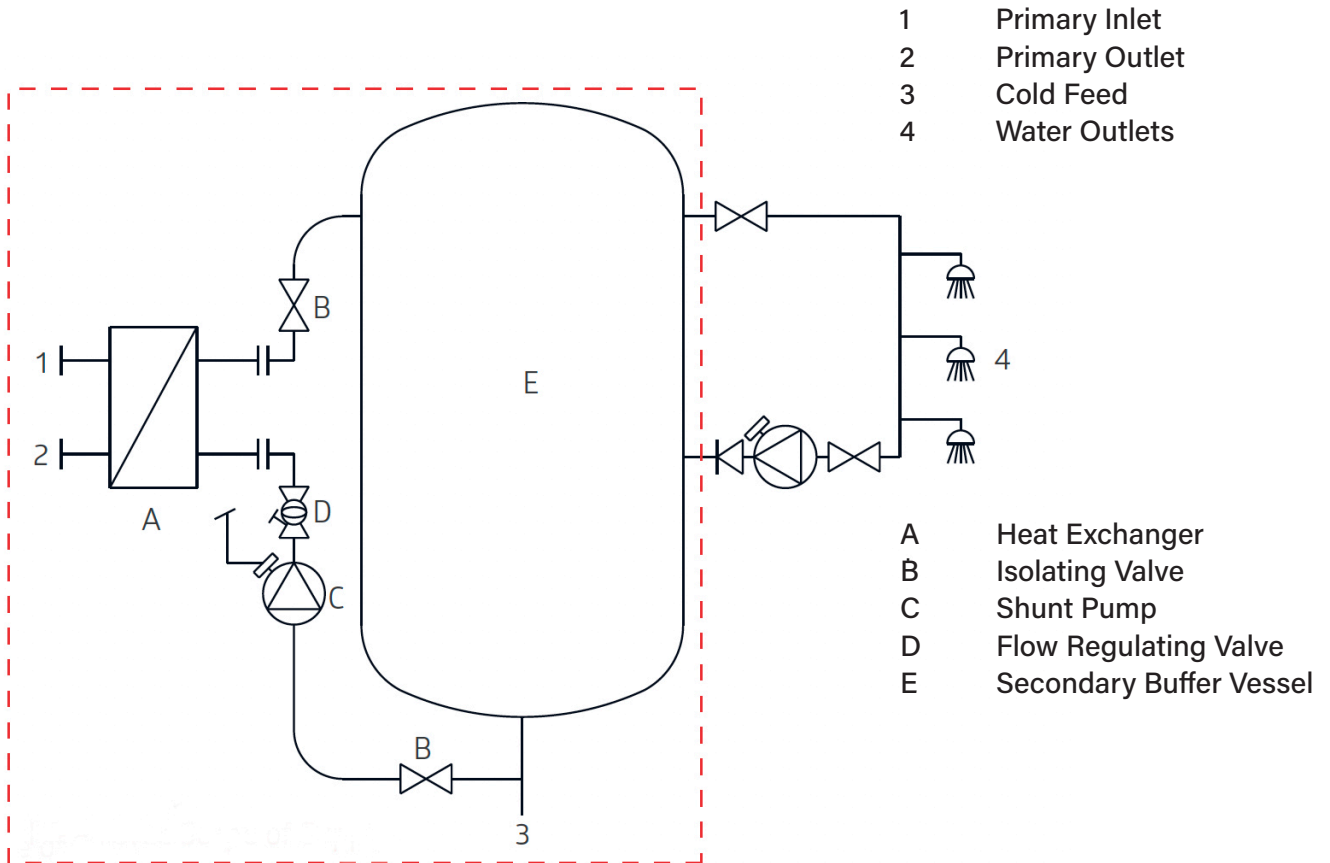23. Ensure that the wiring will not be trapped by the terminal cover.

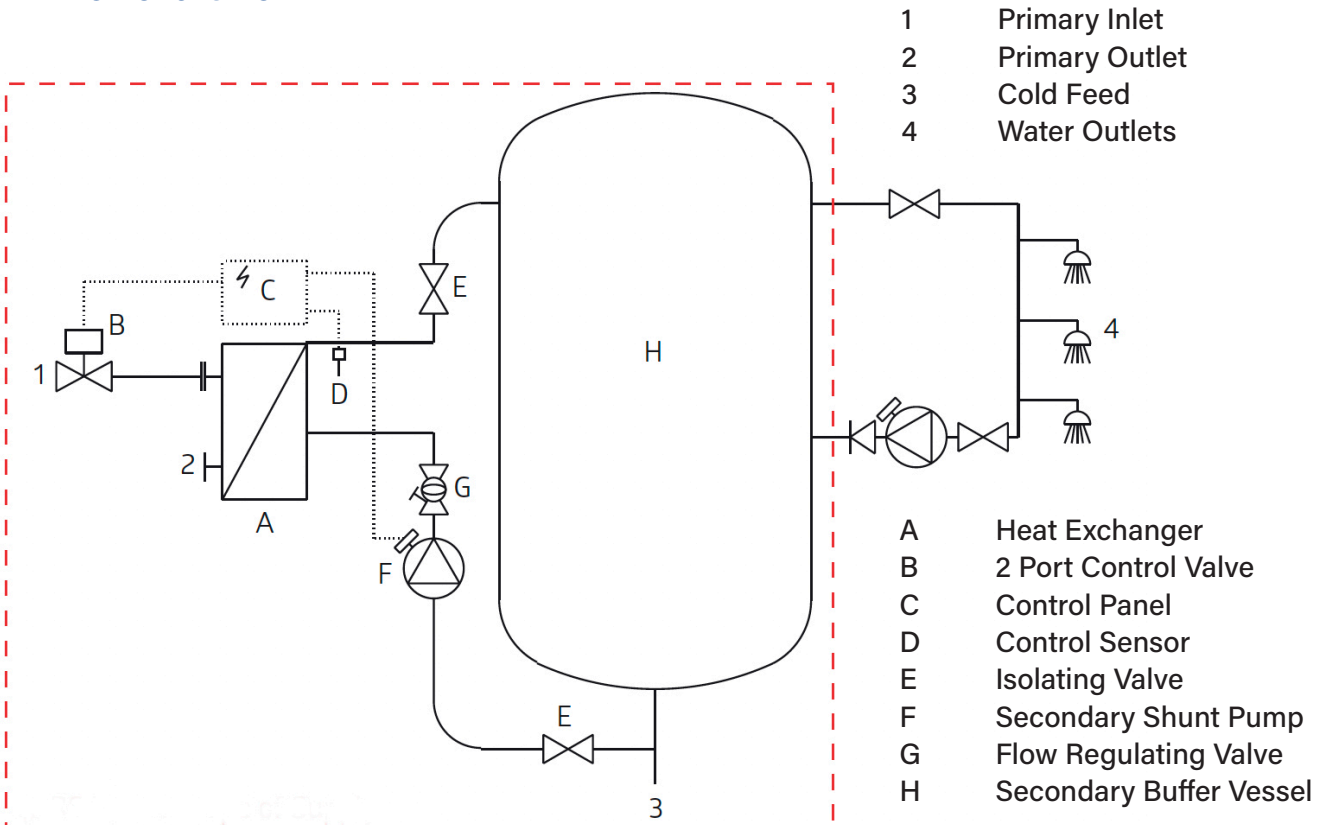24. Re-attach the secondary pump terminal box cover

19. Flowcharts

19.1 Flowchart A60B

1	Primary Inlet
2	Primary Outlet
3	Cold Feed
4	Water Outlets

A	Heat Exchanger
B	Isolating Valve
C	Shunt Pump
D	Flow Regulating Valve
E	Secondary Buffer Vessel

19.2 Flowchart A62B

1	Primary Inlet
2	Primary Outlet
3	Cold Feed
4	Water Outlets

A	Heat Exchanger
B	2 Port Control Valve
C	Control Panel
D	Control Sensor
E	Isolating Valve
F	Secondary Shunt Pump
G	Flow Regulating Valve
H	Secondary Buffer Vessel

19.3   Flowchart A63B

1	Primary Inlet
2	Primary Outlet
3	Cold Feed
4	Water Outlets

A	Heat Exchanger
B	Primary Shunt Pump
C	3 Port Control Valve
D	Control Panel
E	Control sensor
F	Isolating Valve
G	Secondary Shunt Pump
H	Flow Regulation Valve
I	Secondary Buffer Vessel

20. Wiring the Charging Pump

NOTE: The charging pump has not been wired previous to delivery.
The five wires cable connected to the control box, must be wired to the charging pump.
Please proceed as follows:

1   Ensure the system is not connected to the main power supply. If the control box is connected to the main power supply, ensure that the main switch is turned off and locked.

2   Open the electric box of the charging pump.

3

| Yellow/Green wire to Earth	⏚
Blue wire to Neutral	N
Brown wire to Phase	L

4   With a UPS32-80N pump:

To allow the pump to report Ipsothermic contact to the control box, wire the two black wires to the heating protection plug (mark 2 & mark 4).

To proceed, remove the plug from its location.

5   Place the gland back in place to provide sealing of the cable.

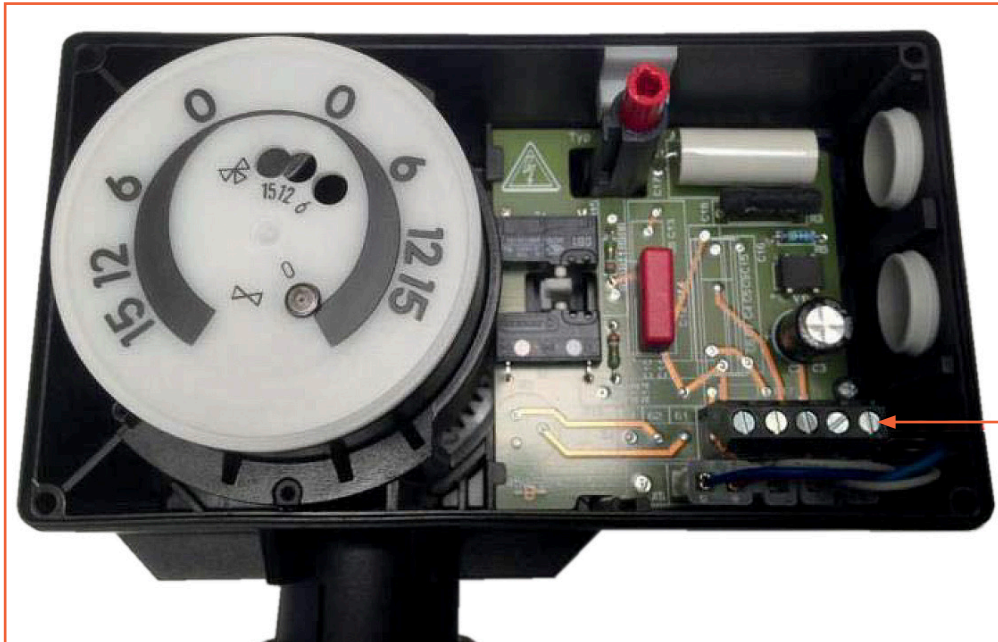6   Close the electric box of the pump.

With a UPS32-80N   Mark 2   Mark 4
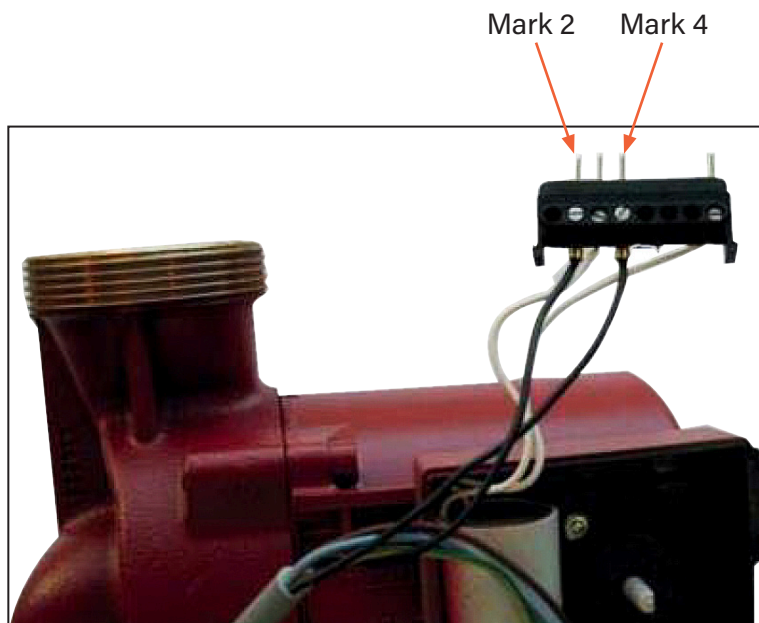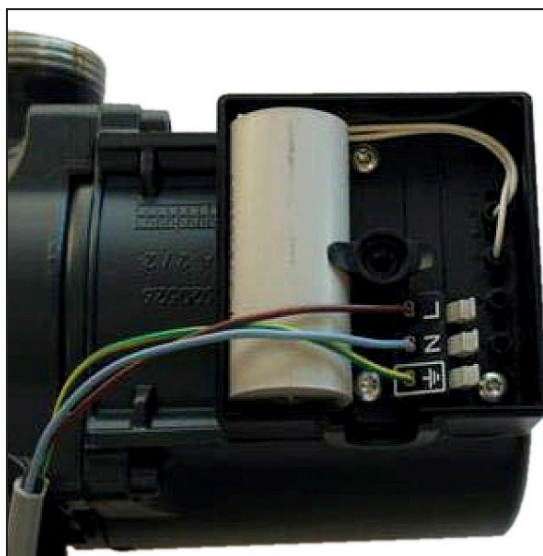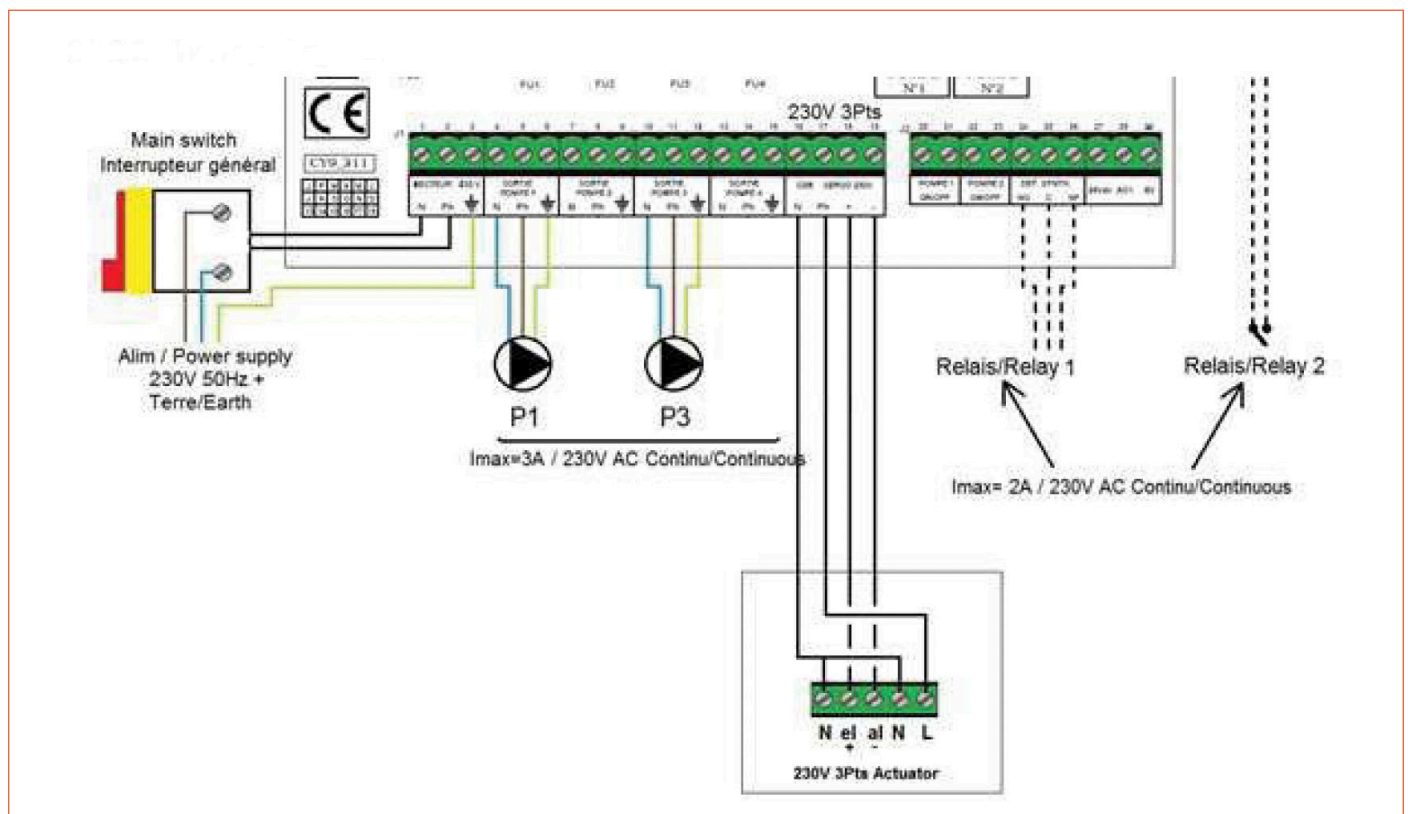
21. Special Instructions for Options

21.1 Special Instructions for A62B

The actuator has been factory-calibrated. No special setting is needed.

21.1.1 Electrical Wiring

21.1.2 Wiring Diagram

22. Commissioning Report

Installation	
Tightening Dimension Control	
Air Vent Position	
Settling Pot presence on primary	
Boiler Brend, Installation and Power	
Mixing bottle required / presence	
Balancing valve presence on indirect (semi-instantaneous) installations	
Close drain valves	
Primary conformity	
Secondary conformity	
Accessibility of unit and components	

Configuration Menu					
Sensors					
Pumps					
Other					
Primary Pumps			Secondary pumps		
Pump 1		Pump 2	Pump 3		Pump 4
Electrical bridges control for pumps on power plate					
Pump 1		Pump 2	Pump 3		Pump 4
Control valve working					

Settings					
DHW secondary outlet T° settings: S1					
PID setting					
High alarm setting		Manual		Auto	
Thermal Treatment:		Type:	Setting:		Time:
Eco function activation					
Booster function activation					
Other functions activated					
Relay 1 functon					
Relay 2 function					
Trending and/or Modbus valve activated					
Volt free Remote contact wired or not					
TRIAC 230V connections wired or not					
Other comments					

Identification of the unit			
Unit ID No.	**Installer/Company Name**	**Installation Site**	**Date**

23. Warranty

23.1 Spare Parts

Our equipment comes with a 12-month warranty from the date of shipment. This may be extended to an addtional 6 months from the date of commissioning of the equipment, subject to commissioning by Heat Exchange Spares.com. The warranty period is limited to 18 months from the actual date of shipment from the factory. The manufacturer's liability is limited to the replacement of any defective part that cannot be repaired. No other financial compensation may be claimed in any case under the warranty The nature and probable cause of the defect must be reported to the manufacturer before any action is taken. The defective part should then be returned to our Factory or Head Office for assessment unless written agreement to proceed otherwise has been obtained from Ormandy Rycroft Engineering. The results of the assessment can only state whether or not the terms of the warranty apply.

Exclusion factors:

Non-compliance with the guidelines for installation, configuration and maintenance:
Over pressures, water-hammer, scaling, noncompliant water quality

Also excluded from the warranty:

- Fitting costs, refitting costs, packaging, transport, and any accessories or equipment not supplied by Ormandy Rycroft Engineering, which will only be covered by any warranties issued by said third-party manufacturers.

- Any damage caused by connection errors, insufficient protection, misapplication or faulty or careless operations.

- Equipment disassembled or repaired by any other party than Ormandy Rycroft Engineering or HeatExchangerSpares.com.

Non-payment will lead to all operational warranties covering the delivered equipment being terminated.

23.2 How to contact us

Our contact details are updated on our website www.ormandygroup.com

Head Office: **Ormandy Rycroft Engineering Limited**, Duncombe Road, Bradford BD8 9TB

Tel: +44 (0)1274 490 911

Email: sales@ormandygroup.com

Website: www.ormandygroup.com

For parts, servicing and service contracts.

HeatExchangerSpares.com Limited
PO BOX 230, Watford, Herts. WD18 8AF, UK.

T: +44 (0)1923 232335

E: mail@heatexchangerspares.com

www.heatexchangerspares.com

Ormandy Rycroft

Heating & Cooling Solutions

Duncombe Road,
Bradford, England BD8 9TB.

Telephone: +44 (0) 1274 490911. Email: sales@ormandygroup.com

www.ormandygroup.com