ATAG
HEATING TECHNOLOGY

APPLIANCE TECHNICAL GUIDE

FOR THE COMPLETE i-BOILER RANGE

SERVICE ENGINEER EDITION (2019 ONWARDS)

Trustpilot

www.atagheating.co.uk atagheating

IT'S BETTER WITH ATAG

- 1948 — Founding of ATAG
- 1983 — Focus solely on proprietary design, engineering and manufacturing of efficient heating products
- 1986 — Began export sales throughout Europe
- 1987 — Designed and engineered super-efficient pre-mix ceramic burner to lower NOx emissions
- 1991 — Designed and engineered revolutionary condensing boiler
- 1996 — Introduction of award winning super-efficient blue angel II condensing boiler
- 2001 — Expansion of commercial and domestic boiler technology in the UK
- 2005 — Designed and engineered OSS super-efficient heat exchanger engine with a 10 years guarantee
- 2005 — Export sales go global
- 2008 — Introduction of award winning super-efficient A-range domestic boiler which is the most efficient in Europe
- 2011 — Introduction of award winning super-efficient commercial XL boiler for large projects
- 2013 — Designed and engineered super-efficient iCon heat exchanger with a lifetime replacement guarantee
- 2014 — Introduction of new super-efficient i-Series range of solar products and cylinders
- 2014 — Introduction of new super-efficient i-Series range of compact boilers, which are the most efficient in Europe
- 2015 — Introduction of revolutionary and super-efficient iC Economiser combination boiler and ATAG ONE controller, which is the most efficient in Europe
- 2017 — Leads industry by offering 10 years warranty across entire i-Series range of boilers
- 2019 — Introduction of upgraded control display and multiple zoning capabilities
- 2020 — Competitor beating warranty packs with up to 14 years launched
- 2021 — Launch of our Installer rewards programme Installer Direct

THE ONLY BOILER MANUFACTURERS TO OFFER A 14 YEAR WARRANTY WHEN ANY OF OUR BOILERS ARE INSTALLED WITH A COMPLETE CARE PACK

WE EMBARKED ON A 20 YEAR MISSION TO DESIGN AND PERFECT THE HEART OF OUR BOILERS. THE RESULT WAS OUR INNOVATIVE iCON HEAT EXCHANGER. WE'RE SO CONFIDENT WE GAVE IT A LIFETIME REPLACEMENT GUARANTEE*

WE KNOW HOW BUSY YOU ARE, SO TO HELP YOU DO WHAT YOU DO BEST WE HAVE A CHOICE OF DELIVERY OPTIONS TO SUIT YOU

WITH INCREASING FUEL PRICES IT'S NOW IMPORTANT MORE THAN EVER TO YOUR CUSTOMERS TO SAVE MONEY. WITH AN ATAG iC ECONOMISER YOUR CUSTOMERS COULD SAVE UP TO £500 ON THEIR GAS BILLS**

FREE GAS SAFE REGISTER AND BENCHMARK FOR ALL OUR INSTALLER DIRECT MEMBERS

JOIN INSTALLER DIRECT AND START SAVING ON EVERY PURCHASE, PLUS COLLECT REWARD POINTS TO SPEND ON ITEMS OF YOUR CHOICE!

Rated **'Excellent'** on Trustpilot

(*) Heat exchanger lifetime guarantee - subject to terms & conditions.
(**) Save up to £500. Visit our website for the terms & conditions www.atagheating.co.uk/termsandconditions

Contents

Appliances covered and serial number

MODEL	GC NUMBER
i24C Combination Boiler	47-310-36
i28C Combination Boiler	47-310-37
i36C Combination Boiler	47-310-38
i40C Combination Boiler	47-310-39
iC Economiser 27 Plus Combination Boiler	47-310-40
iC Economiser 35 Plus Combination Boiler	47-310-41
iC Economiser 39 Plus Combination Boiler	47-310-42
i15S System Boiler	41-310-44
i18S System Boiler	41-310-45
i24S System Boiler	41-310-46
i32S System Boiler	41-310-47
i40S System Boiler	41-310-48
i15R Regular Boiler	41-310-49
i18R Regular Boiler	41-310-50
i24R Regular Boiler	41-310-51
i32R Regular Boiler	41-310-52
i40R Regular Boiler	41-310-53

LPG conversion kits for each boiler available

SERIAL NUMBER: P184510289				
P	18	45	1	0289
	YEAR	WEEK	DAY	No.

iC & iC Economiser Plus combination boilers technical data

IC COMBINATION BOILERS	i24C	i28C	i36C	i40C
Part number	BC100324	BC100328	BC100336	BC100340
ErP Seasonal space heating energy efficiency class	A	A	A	A
ErP Seasonal space heating energy efficiency (%)	94	94	94	94
ErP Water heating energy efficiency class	A	A	A	A
ErP Water heating energy efficiency (%)	85	84	90	90
ErP Declared load profile DHW	XL	XL	XL	XL
DHW input (kW)	26.6	30.3	39.3	42.0
CH output (kW)	23.2	23.2	31.2	31.2
Hot water flow rate @ 35°C rise (l/min)	10.1	11.5	14.9	16.2
SEDBUK 2009 (%)	89.7	89.7	89.7	89.7
Dimensions (H x W x D) (mm)	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355
Boiler lift weight with jig (Kg)	41	41	44	44
Standard warranty (years)	10	10	10	10
LPG conversion kit available	Yes	Yes	Yes	Yes
NOx class / NOx mg / kWh	6 / 30.02	6 / 30.02	6 / 25.71	6 / 27.10
Ingress protection (IP)	IPX4D	IPX4D	IPX4D	IPX4D
Maximum equivalent horizontal flue length (m) 60/100mm	15	15	9	9
Maximum equivalent vertical flue length (m) 60/100mm	15	15	9	9
Maximum equivalent horizontal flue length (m) 80/125mm	50	50	45	45
Maximum equivalent vertical flue length (m) 80/125mm	50	50	45	45

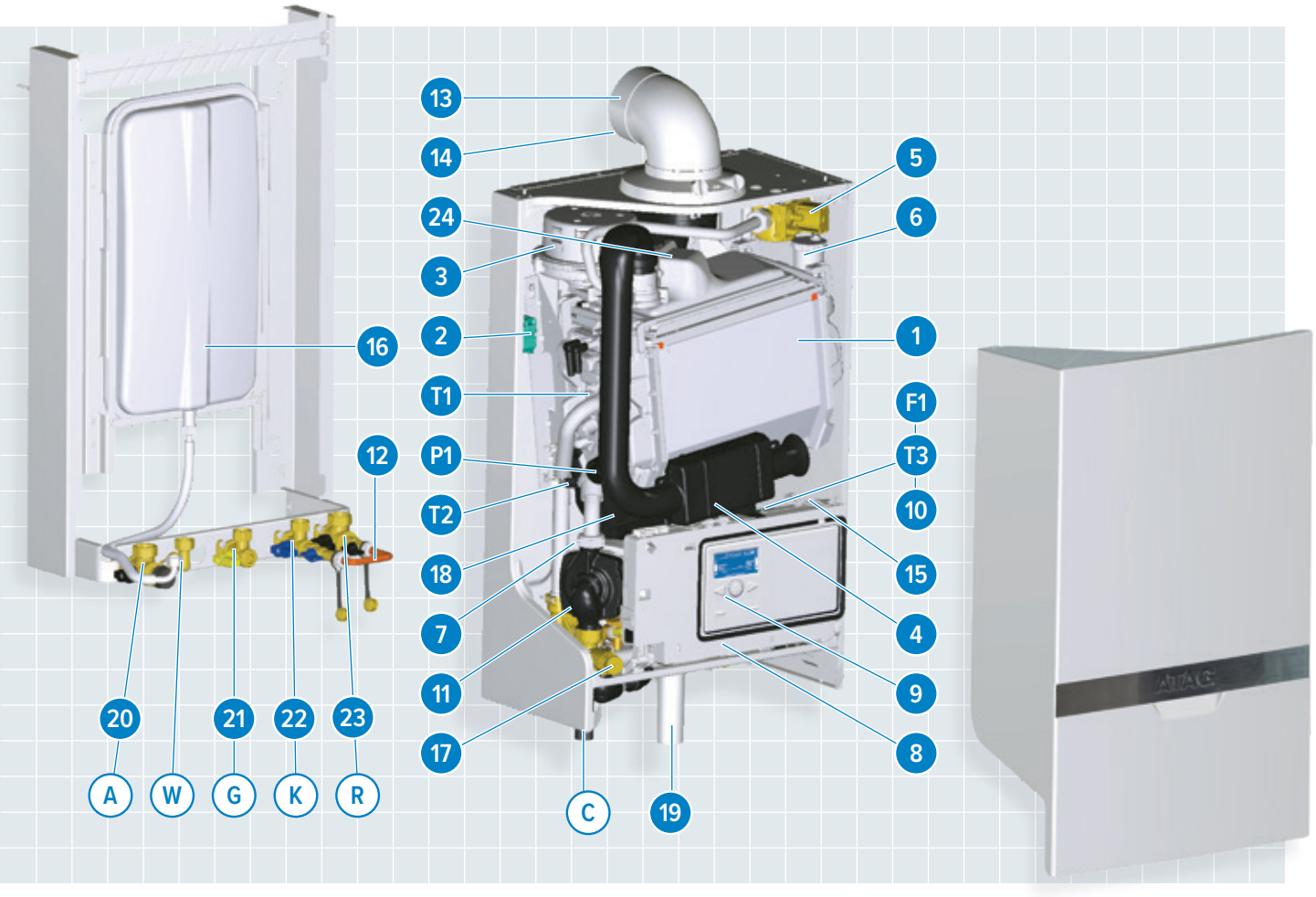
iC ECONOMISER PLUS COMBINATION BOILERS	iC Economiser 27 Plus	iC Economiser 35 Plus	iC Economiser 39 Plus
Part number	BE200327	BE200335	BE200339
ErP Seasonal space heating energy efficiency class	A	A	A
ErP Seasonal space heating energy efficiency (%)	94	94	94
ErP Water heating energy efficiency class	A	A	A
ErP Water heating energy efficiency (%)	94	96	96
ErP Declared load profile DHW	XXL	XXL	XXL
DHW input (kW)	29.8	40.3	42.5
CH output (kW)	23.2	31.2	31.2
Hot water flow rate @ 35°C rise (l/min)	12.6	16.1	17.0
SEDBUK 2009 (%)	89.7	89.7	89.7
Dimensions (H x W x D) (mm)	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355
Boiler lift weight with jig (Kg)	43	46	46
Standard warranty (years)	10	10	10
LPG conversion kit available	Yes	Yes	Yes
NOx class / NOx mg / kWh	6 / 30.02	6 / 25.71	6 / 25.71
Ingress protection (IP)	IPX4D	IPX4D	IPX4D
Maximum equivalent horizontal flue length (m) 60/100mm	15	8	8
Maximum equivalent vertical flue length (m) 60/100mm	15	8	8
Maximum equivalent horizontal flue length (m) 80/125mm	50	40	40
Maximum equivalent vertical flue length (m) 80/125mm	50	40	40

iS system and iR regular boilers technical data

iS SYSTEM BOILERS	i15S	i18S	i24S	i32S	i40S
Part number	BS300315	BS300318	BS300324	BS300332	BS300340
ErP Seasonal space heating energy efficiency class	A	A	A	A	A
ErP Seasonal space heating energy efficiency (%)	93	93	94	94	94
CH output kW (50/30°C)	14.7	17.5	23.2	31.2	38.8
SEDBUK 2009 (%)	89.8	89.8	89.8	89.8	89.8
Dimensions (H x W x D) (mm)	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355
Boiler lift weight with jig (Kg)	39	39	39	42	42
Standard warranty (years)	10	10	10	10	10
LPG conversion kit available	Yes	Yes	Yes	Yes	Yes
Solar compatible	Yes	Yes	Yes	Yes	Yes
NOx class / NOx mg / kWh	6 / 28.90	6 / 28.74	6 / 30.02	6 / 25.71	6 / 27.10
Ingress protection (IP)	IPX4D	IPX4D	IPX4D	IPX4D	IPX4D
Maximum equivalent horizontal flue length (m) 60/100mm	15	15	15	9	9
Maximum equivalent vertical flue length (m) 60/100mm	15	15	15	9	9
Maximum equivalent horizontal flue length (m) 80/125mm	50	50	50	45	45
Maximum equivalent vertical flue length (m) 80/125mm	50	50	50	45	45

iR REGULAR BOILERS	i15R	i18R	i24R	i32R	i40R
Part number	BR400315	BR400318	BR400324	BR400332	BR400340
ErP Seasonal space heating energy efficiency class	A	A	A	A	A
ErP Seasonal space heating energy efficiency (%)	94	94	94	94	94
CH output kW (50/30°C)	14.7	17.5	23.2	31.2	38.8
SEDBUK 2009 (%)	89.8	89.8	89.8	89.8	89.8
Dimensions (H x W x D) (mm)	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355	700 x 440 x 355
Boiler lift weight with jig (Kg)	32	32	32	35	35
Standard warranty (years)	10	10	10	10	10
LPG conversion kit available	Yes	Yes	Yes	Yes	Yes
Solar compatible	Yes	Yes	Yes	Yes	Yes
NOx class / NOx mg / kWh	6 / 28.90	6 / 28.74	6 / 30.02	6 / 25.71	6 / 27.10
Ingress protection (IP)	IPX4D	IPX4D	IPX4D	IPX4D	IPX4D
Maximum equivalent horizontal flue length (m) 60/100mm	15	15	15	9	9
Maximum equivalent vertical flue length (m) 60/100mm	15	15	15	9	9
Maximum equivalent horizontal flue length (m) 80/125mm	50	50	50	45	45
Maximum equivalent vertical flue length (m) 80/125mm	50	50	50	45	45

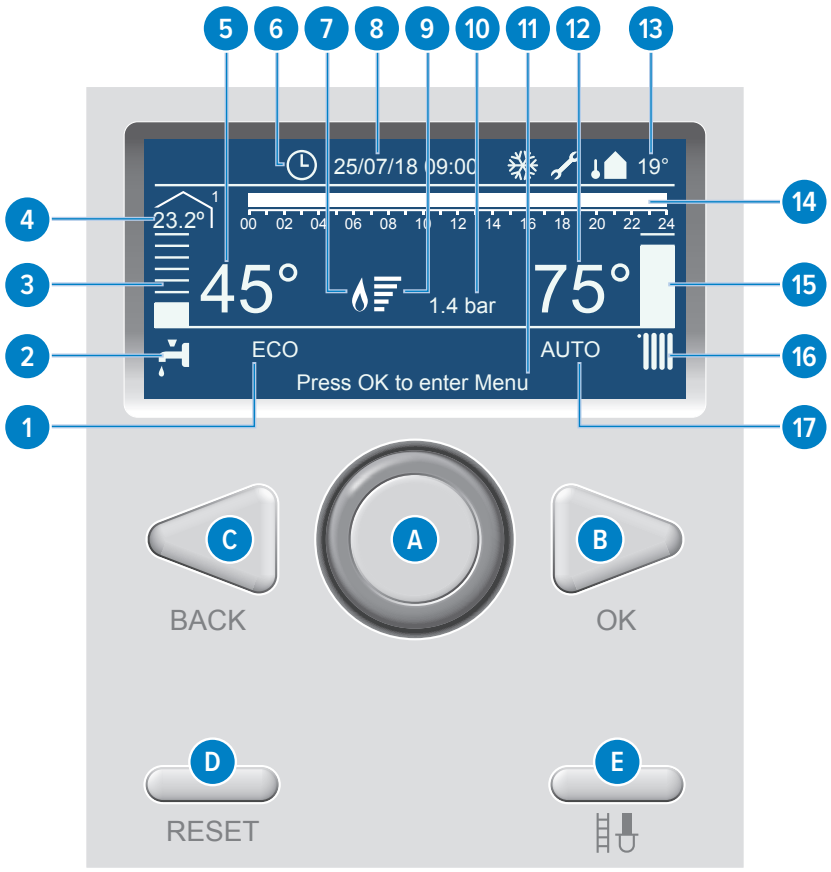
Boiler layout



iC ECONOMISER PLUS COMBINATION BOILER LAYOUT					
1	Heat exchanger	9	Control panel	17	Safety valve
2	Ignition unit	10	Three-way valve	18	DHW Economiser
3	Fan unit	11	Circulation pump	19	Siphon
4	Air supply damper	12	Filling loop	20	Isolation valve flow CH
5	Gas valve	13	Flue gas exhaust	21	Isolation valve gas
6	Automatic de-aerator	14	Combustion air supply	22	Isolation valve cold water
7	DHW plate heat exchanger	15	Boiler data plate	23	Isolation valve return CH
8	Control unit	16	Expansion vessel	24	Flue non return valve

T1	Flow sensor	P1	Water pressure	C	Condensation pipe
T2	Return sensor	G	Gas pipe	K	Cold water pipe
T3	Hot water sensor	A	Flow pipe CH	W	Hot water pipe
F1	DHW flow sensor	R	Return pipe CH		

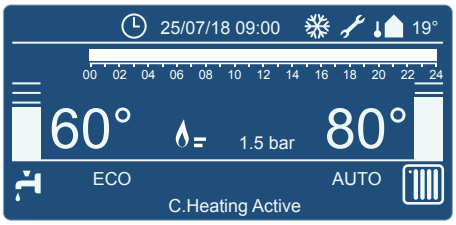
Control panel (All ATAG boiler range)



Controller buttons	
A	Selector Wheel Turn the wheel left or right to scroll through available menu options
B	OK button Press to select/confirm an item
C	BACK button Press to go back one screen
D	RESET button Press to reset a fault code
E	Chimney sweep button Press to enter into service mode which button allows adjustment of high fire/low fire and CO2 settings

Controller display			
1	DHW comfort or economy mode is active	11	Boiler status indicator, such as "Press OK to enter Menu", error messages and other status information
2	DHW status symbol. A box around the tap symbol indicates DHW is in operation	12	Heating supply setpoint
3	Visual illustration of current hot water temperature. Scale changes as the set temperature is changed	13	Outdoor temperature (if connected)
4	Internal room temperature (if present)	14	Time program
5	DHW set point temperature	15	Visual illustration of current central heating temperature. Scale changes as the set temperature is changed
6	CH time program active	16	Central heating status symbol. A box around the radiator symbol indicates central heating is in operation
7	Flame Burner on	17	Thermoregulation function enabled
8	Current date and time		
9	Actual Power Level		
10	Current central heating system water pressure		

Controls and explanation of the functions



Central heating system

The CH program is always active after start-up.
This is indicated by a rad symbol.

If there is heat request, it is indicated by a square around the rad symbol and the description at the bottom of the screen of **'C.Heating Active'**.

The heating will be put into operation. The circulation pump will switch on and the burner will switch on after 1 to 2 minutes (flame icon).

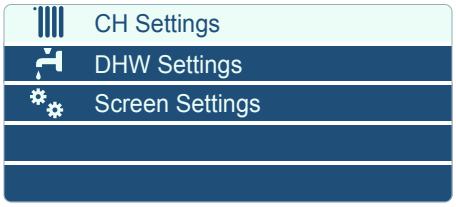
When there is no more heat requested the radiator symbol may have the square around it or not, but the flame (flame icon) symbol will disappear. The pump will continue to run for 60 seconds due to the pump over run feature. The description at the bottom of the screen of **'CH Pump Overrun'**.

Change the central heating setpoint temperature

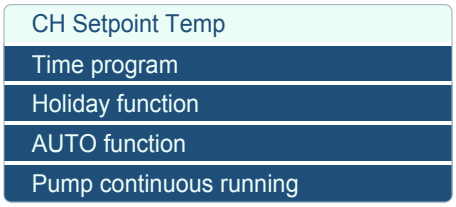
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

3 CH Settings is highlighted. Press **OK**.



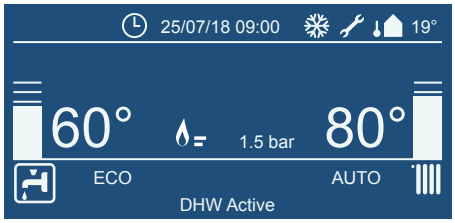
4 Option **CH Setpoint Temp** is highlighted. Press **OK**.



5 Option T set Z1 is highlighted. Press **OK**.

Note: T set Z2 and T set Z3 are inactive functions.

6 Turn the selector wheel until the desired temperature appears on the screen. Press **OK**.
Available temperature settings:
20°C - 80°C



Hot water supply

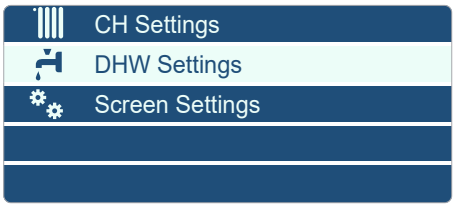
The DHW program is always active after start-up.
This is indicated by a tap symbol.
If there is a hot water request, this is indicated by a square around the tap symbol and the description at the bottom of the screen of ' **DHW Active**'. The hot water supply will be activated.
The circulation pump will start circulating and the burner will switch on (flame icon).
The pump will continue to run for 30 seconds due to the pump over run feature. The description at the bottom of the screen of **'DHW pump over run'** (combi boiler or system boilers with ATAG 3-port diverter kit).

Change the domestic hot water setpoint temperature

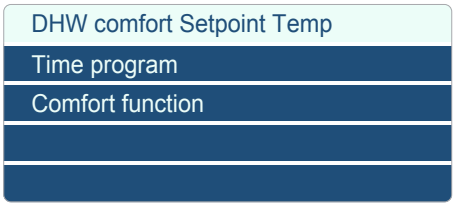
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

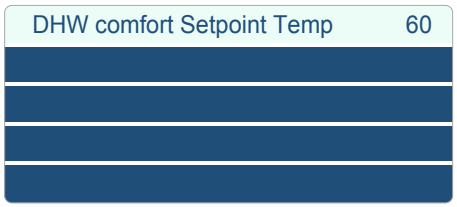
3 Turn the selector wheel to highlight **DHW Settings**. Press **OK**.



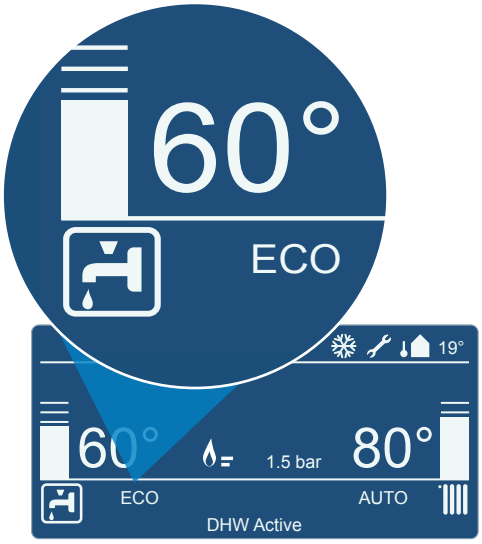
4 Option **DHW Comfort Setpoint Temp** is highlighted. Press **OK**.



5 The current DHW comfort Setpoint temperature is displayed. Press **OK**.



6 Turn the selector wheel until the desired temperature appears on the screen. Press **OK**.
Available temperature settings:
40°C - 65°C



Comfort and eco

ECO and **COMFORT** are the hot water preheat settings, **COMFORT** for **ON** or **ECO** for **OFF**. By default the hot water supply is set to **ECO**.

COMFORT mode is a domestic hot water setting that enables the boiler to fire up more often to maintain the heat exchanger temperature. If **COMFORT** is selected the keep hot facility will heat the water to the selected DHW temperature on the front of the boiler. This enables quicker delivery of hot water to hot water fixtures.

ECO mode will result in a possible longer DHW waiting time, because the boiler will not being fired up for pre-heating the hot water supply.

By default the hot water supply is set to **ECO** and **COMFORT** mode is disabled (turned off). To enable (turn on) **COMFORT** mode, follow the steps below.

COMFORT MODE HAS THREE OPTIONS:

Option 1: Always Active

This option provides continuous hot water all day long. The boiler maintains the primary heat exchanger temperature to quickly deliver hot water to the plate heat exchanger. This selection provides the quickest delivery of hot water to hot water taps, but uses the most energy (**COMFORT** mode will be displayed on the home screen).

Option 2: Time Based

The boiler maintains the primary heat exchanger temperature based on the time selections. This selection requires more energy use than when disabled, but not as much energy use as the “Always Active” option (**COMFORT** or **ECO** with a time clock logo will be displayed on the home screen depending which mode it is in).

Option 3: Disabled

The boiler operates and produces hot water; however, it will not maintain the primary heat exchanger temperature for quicker hot water production. This selection saves some energy, but requires longer time to provide hot water to the hot water taps (**ECO** mode will be displayed on the home screen).

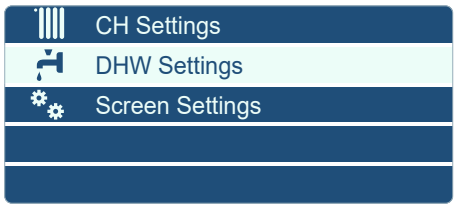
Always Active

In always active mode **COMFORT** will be displayed continuously on the front display. To enable the Always Active comfort mode setting, Follow the steps below.

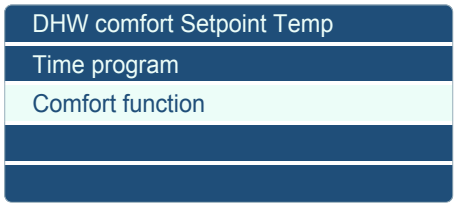
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

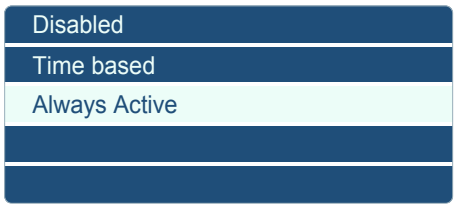
3 Turn the selector wheel to highlight **DHW Settings**. Press **OK**.



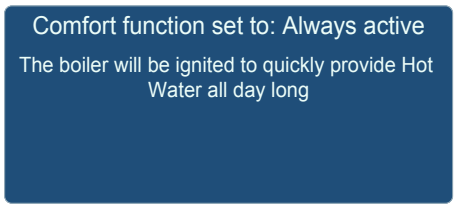
4 Turn the selector wheel to highlight **Comfort function**. Press **OK**.



5 Turn the selector wheel to highlight **Always Active**. Press **OK**.



6 The message in the screen appears. The **Always Active** mode is now selected.



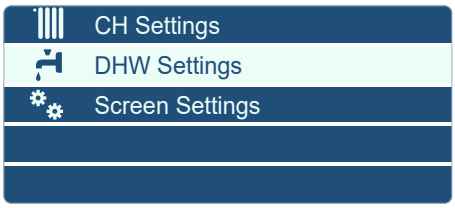
Time Based

In time based mode a clock icon is displayed next to the **ECO** or **COMFORT** on the front screen to indicated this time based mode.
To enable the **Time Based** comfort mode setting, follow the steps below.

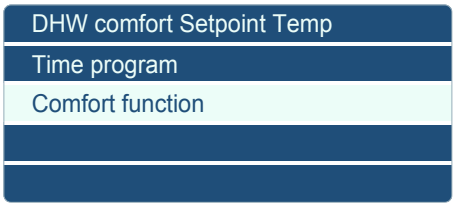
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

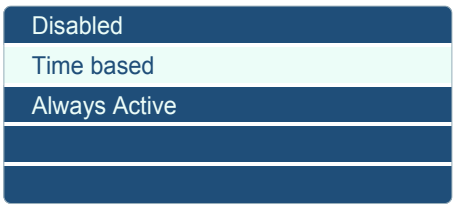
3 Turn the selector wheel to highlight **DHW Settings**. Press **OK**.



4 Turn the selector wheel to highlight **Comfort function**. Press **OK**.

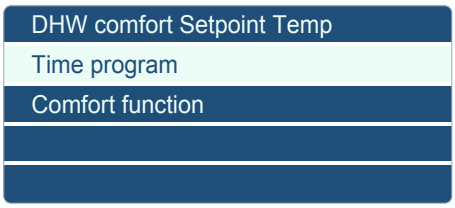


5 Turn the selector wheel to highlight **Always Active**. Press **OK**.



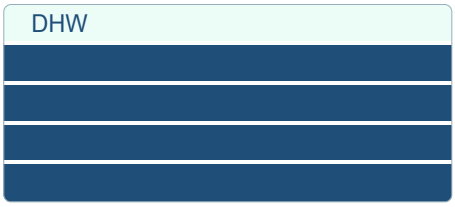
6 The message in the screen appears. The **Time Based** mode is now selected.

7 Press the **BACK** button one time. Turn the selector wheel to highlight **Time program**. Press **OK**.

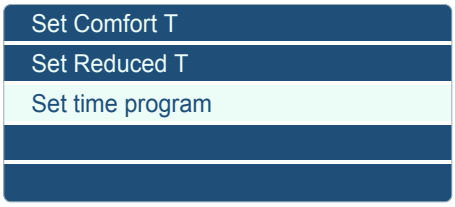


8 **Select one of the two options:**
Free Time Programming - User defined times for when confort is acive
Preset programs - options for preset times for comfort mode to be active.

9 **DHW** is highlighted. Press **OK**.



10 Turn the selector wheel to highlight **Set time program**. Press **OK**.



11 You then select the days with the same time program. Use the selector wheel to scroll to the day(s) you want the same. Select **OK** on each day that will have the same schedule.

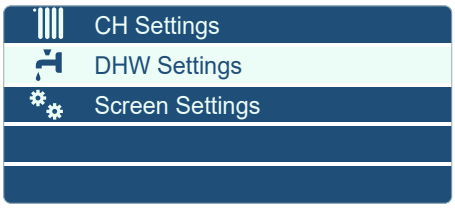
Disabled

In disabled mode **ECO** will be displayed continuously on the front display.
To enable Disabled (factory setting) comfort mode setting, follow the steps below.

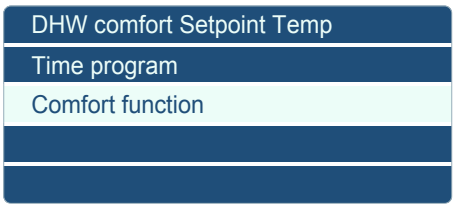
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

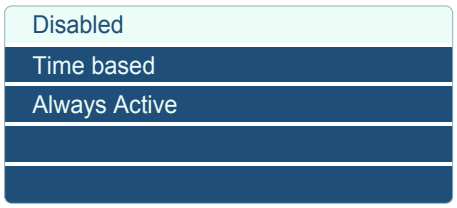
3 Turn the selector wheel to highlight **DHW Settings**. Press **OK**.



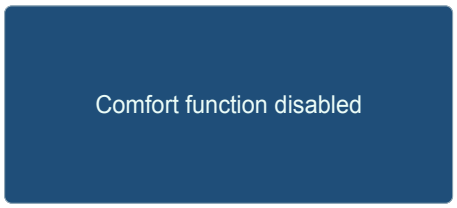
4 Turn the selector wheel to highlight **Comfort function**. Press **OK**.



5 Option **Disabled** is highlighted. Press **OK**.



6 The message in the screen appears. Comfort mode is now disabled.



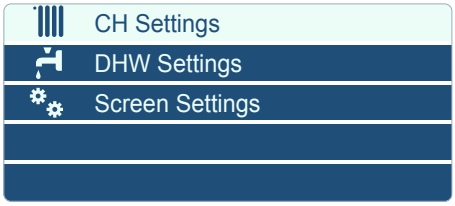
Frost protection - the danger of frost

If there is danger of frost damage to the CH installation and there is no outside sensor connected, it is advisable to let the pump run continuously. If the pump is set to continuously this is displayed by a solid frost symbol (frost icon) ❄.
To set pump to continuously on, proceed as follows:

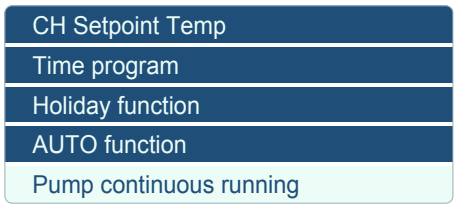
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

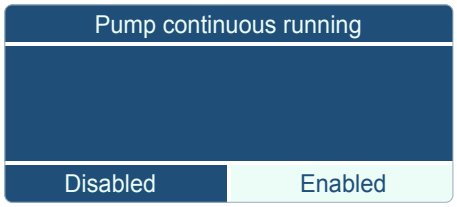
3 CH Settings is highlighted. Press **OK**.



4 Turn the selector wheel to highlight **Pump continuous running**. Press **OK**.



5 Turn the selector wheel to highlight Enable. Press **OK**.



❄ If the pump is set to continuously running the frost icon is displayed.

THERE ARE TWO TYPES OF FROST PROTECTION INTEGRATED IN THE BOILER, FROST PROTECTION OF THE BOILER AND FROST PROTECTION OF THE INSTALLATION.

Boiler frost protection

The boiler frost protection is based on the water temperature measured by the flow T1 sensor in the heat exchanger. When the measured T1 temperature gets below 8°C in the boiler, the boiler pump starts for 2 minutes and the 3-way valve will switch 1 minute to CH and 1 minute to DHW. if the T1 temperature has descended < 4°C the pump will run and the burner will be started on low load for 30 seconds, when T1 temperature is > 8°C, burner will be switched OFF.

DHW frost protection: if the cylinder temperature is below 8°C the burner will be started and stops when temperature reaches 12°C
In this mode the frost symbol (frost icon) will flash.

Installation frost protection

For this type of protection an outside sensor must be connected, if no outside sensor is connected the installation frost protection is not active.

When the outside sensor measures a temperature between 1.5°C and -4°C the boiler pump will come on for 10 minutes every 6 hours. When the outside temperature gets to -5°C or lower the pump will run continuously.

When the outside temperature gets above 1.5°C again, the installation frost protection is off. In this mode the frost symbol (frost icon) will be continuously on solid.

Pump kick and diverter valve kick
Every 24 hours, if there is no heat demand from heating or DHW the pump will be started for 10 seconds and the diverter valve will be opened and closed again. This is done to prevent the pump and diverter valve from sticking.

Boiler anti-cycle time
If during a demand for central heating the burner switches off, because the desired flow temperature is exceeded, there will be an anti-cycle time in operation for 5 minutes. This means that the burner switches on again after 5 minutes if there is still a demand for the heating.

Pump overrun
After the heating demand the burner will shut down and the pump will run for a further 60 seconds. This can be changed in parameter 2.3.7 from 1 - 16 minutes. After DHW demand it would be 30 seconds if T1 is <75°C or 3 minutes if T1 >75°C.

Air Purge Program (Combi and System boilers)
The boiler is equipped with an automatic air purge program.
The installation system needs to be filled with water and bled free of air before turning power onto the boiler. Then the automatic air purge program will ensure that the boiler is free of air before firing up.

The automatic air purge program starts when the water pressure in the boiler gets to 1.1 bar. The display will show **'Air purge Active'** on the screen with the current central heating system water pressure.
The complete program for the boiler air purge takes 7 minutes.

During these 7 minutes, the pump is started and stopped, and the three-way diverter valve is alternately sent to the heating and to the DHW position several times and with short pauses to make sure that the air inside the boiler leaves through the automatic air vent.

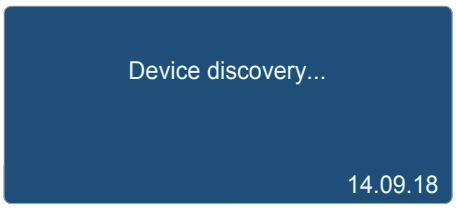
System boiler
Same as combi, but there is no internal diverter valve to move.

Regular boiler
Same as combi, but there is no diverter valve to move or a pressure reading and there is a feed & expansion tank.

Commissioning the boiler

Make sure before the boiler is put into operation that the boiler and installation have been fully vented. Vent the gas line and open the gas isolation valve to the boiler. The boiler requires no adjustment of the burner pressure and quantity as it has been set in the factory and should not be reset.

1. Turn on the boiler electrical supply.

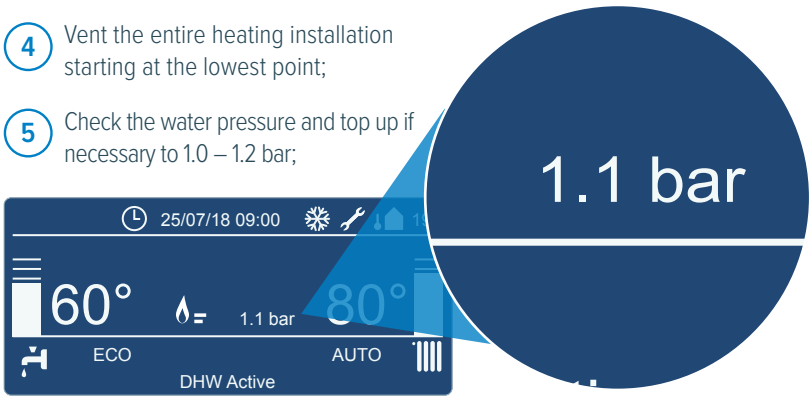


2. When the boiler starts up for the first time the following screens will be shown:

3. After filling the 7 minute air purge program starts;

4. Vent the entire heating installation starting at the lowest point;

5. Check the water pressure and top up if necessary to 1.0 – 1.2 bar;



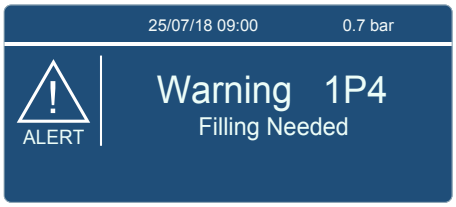
The iC, iC Economiser Plus & iS boilers are supplied with a pressure sensor.

Water pressure sensor

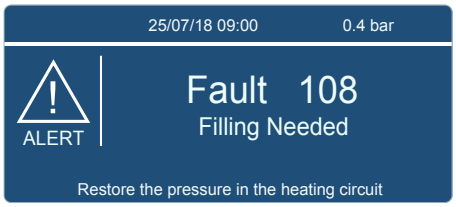
This sensor control has following settings:

0.5 bar:	below this pressure the burner is blocked for operation
0.5 to 0.8 bar:	boiler will reduce Tset max by 5°C
0.8 to 3.0 bar:	boiler fully functional
3.0 bar:	above this pressure the boiler is blocked for operation

The pressure sensor is also used to set the boiler free before every start. Before the burner is set free the boiler does a pump check, it checks for an increase in pressure when the pump starts. If there is an increase of water pressure, the boiler will fire up. If there is no increase the burner is blocked.



If the water pressure drops below 0.8 bar the text "Warning 1P4 Filling Needed" will appear in the screen;
Between 0.5 and 0.8 bar and the boiler will reduce Tset max by 5°C.

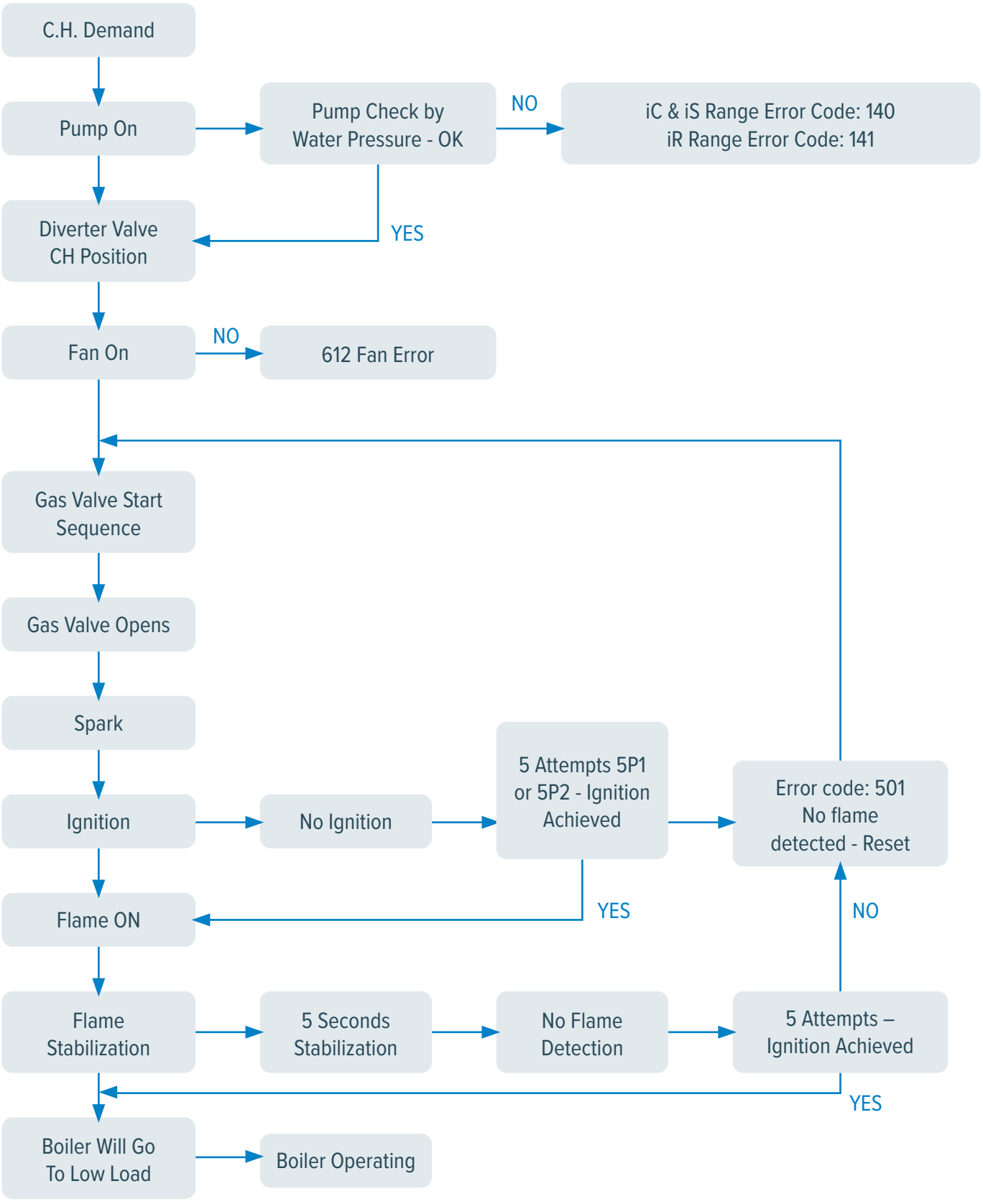


If the water pressure drops below 0.5 bar the text "Fault 108 Filling Needed, Restore the pressure in the heating circuit " will appear in the screen; The air purge program starts when the water pressure has been below 0.5 bar. The automatic air purge program will take approx. 7 minutes and will be followed by the home screen when the water pressure is taken above 1.2 bar.

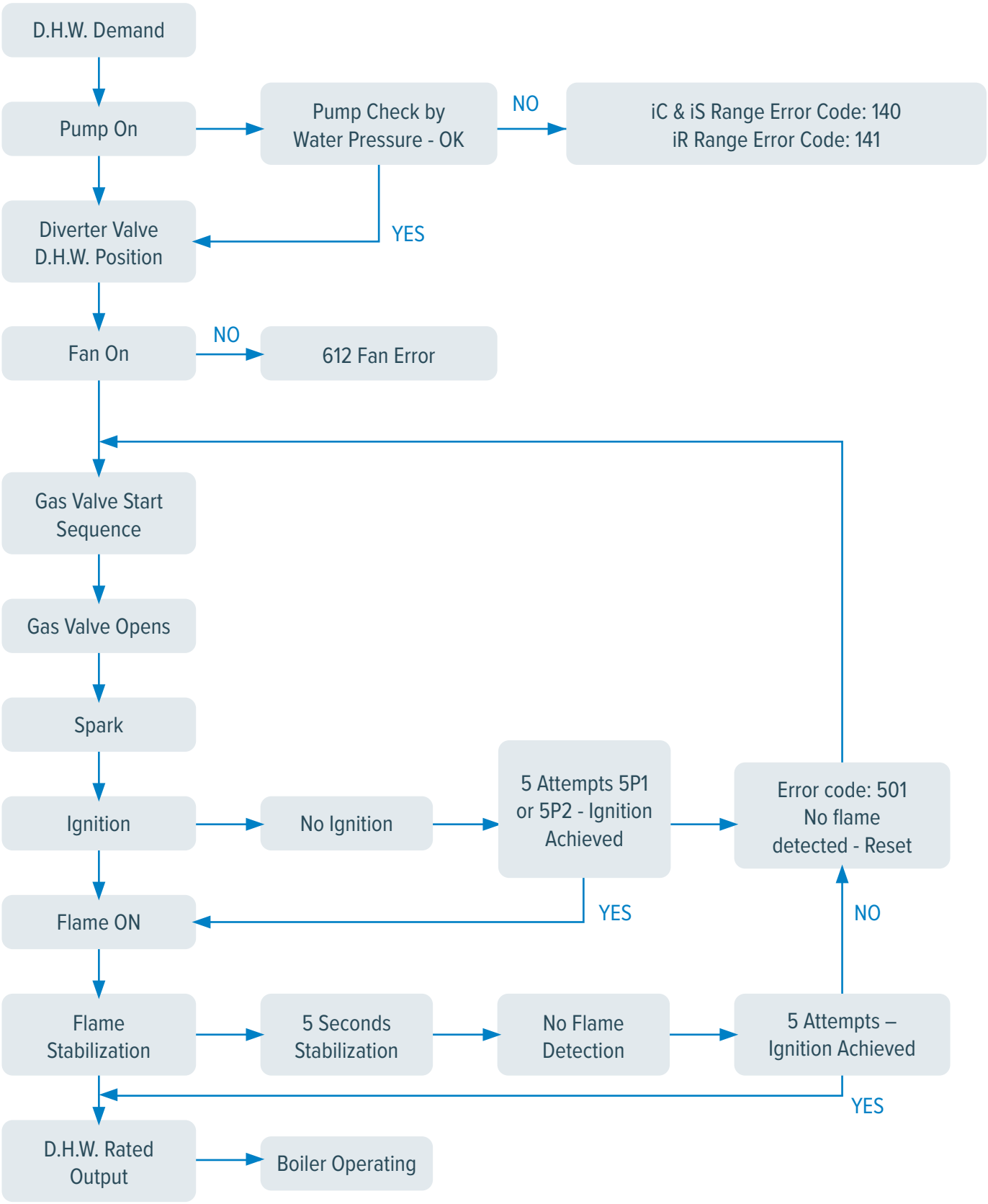
Flow switch (Regular boiler)

In the regular boiler there is no pump inside and because of the low pressure there is no pressure sensor inside as well.
To register if the system pump is working and there is water in the system there is a flow switch and this flow switch sets the burner free.

Combi boiler central heating mode (CH)



Combi boiler hot water mode (DHW)



Combi boiler CH mode

CH controls
With a demand from the heating controls after DHW demand, the boiler activates its 1 minute delay period. This is to prevent the heat exchanger from losing its heat too quickly in the event of a hot water demand. Then the pump starts and after 30 seconds the gradient control becomes active and the boiler fires up. The starting point of the gradient control is the currently existing flow temperature. A Delta-T control (25K) ensures a stable control according to heat request.

If the flow temperature is below the T-set value of 20°C the boiler will immediately start. If during a demand from the heating the burner switches off, because the desired flow temperature is exceeded, there will be an anti-cycle time in operation for 5 minutes.

This means that the burner switches on again after 5 minutes if there is still a demand from the heating.

Combi boiler DHW mode

DHW controls (combination boilers)
If a hot water tap is opened the flow sensor measures (F1) the amount drawn off. Depending on the desired DHW temperature and volume the controls will calculate an output. This realises the desired water temperature in an efficient way.

The hot water sensor (T3) will adjust any minor deviations caused by temperature fluctuations so that even under these circumstances the desired temperature is constant.

System & regular boiler central heating mode

CH controls
With a demand from the heating controls, the boiler activates its 1 minute delay period. This is to prevent the heat exchanger from losing its heat too quickly in the event of a hot water demand.

Then the pump starts and after 30 seconds the gradient control becomes active and the boiler fires up. The starting point of the gradient control is the currently existing flow temperature. A Delta-T control (25K) ensures a stable control according to heat request.

If the flow temperature is below the T-set value of 20°C the boiler will immediately start.
If during a demand from the heating the burner switches off, because the desired flow temperature is exceeded, there will be an anti-cycle time in operation for 5 minutes.

This means that the burner switches on again after 5 minutes if there is still a demand from the heating.

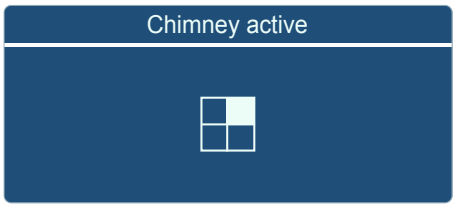
Checking combustion CO_2

The CO_2 percentage is set in the factory. This has to be checked during commissioning, inspection, maintenance and in case of a failure.

This can be verified by means of the following action:

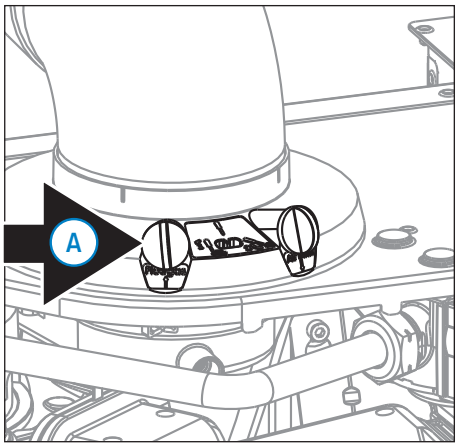
- Ensure that the boiler is in operation and that the heat, which it produces, can be discharged
- If taps are opened the internal diverter motor will move and heat can be discharged through the hot water side of the boiler. (multiple taps open is preferred)
- Calibrate the flue gas analyser
- Place the lance of the flue gas analyser into the flue gas test point

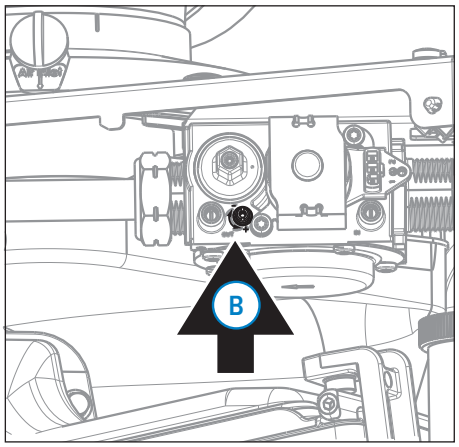
Step 1: Set the full load



You can set the full load of the boiler as follows:

- Press the **chimney sweep** button for 5 seconds;
- Turn the selector wheel until you reach 100%;
- Press **OK**; The boiler will switch to maximum power output (full load) of the boiler; the screen shows 100% (heating capacity)
- Calibrate the Flue Gas Analyser, and then insert the flue gas probe of the Flue Gas Analyser into the measuring point of the flue gas pipe "**A**" (see illustration)
- Wait for one minute and then carry out a combustion analysis
- Check whether the CO_2 values that are listed below correspond to the measured value





If required, you may turn the setting screw "**B**" (see above illustration) to set the correct CO_2 percentage.

A - Measuring point for the flue gas probe **B** - Set screw for CO_2

CO_2 High Load reading

FULL LOAD	NATURAL GAS (G20)	PROPANE GAS (LPG) (G31)*
CO_2	Nominal 9.0%	Nominal 10.3%
	Minimum 8.6% – Maximum 9.6%	Minimum 9.9% – Maximum 11.0%

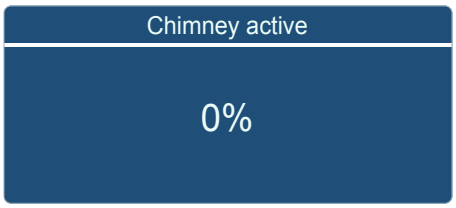
* Only possible if LPG conversion kit is installed! Note: Values are valid with closed cover/air box.

After this check has been done at full load, the CO_2 value at low load need to be tested. If there are any deviations in the result, then these must be corrected (see Step 3).

Step 2: CO_2 check on low load

The low load of the boiler can be set by you as follows:

- Turn the selector wheel until you reach 0%;
- Press **OK**; The boiler will switch to minimum power output (low load) of the boiler; the screen shows 0% (heating capacity)



The CO_2 value at low load must be lower than the CO_2 value at full load. The measuring procedure must be carried out, until a constant value is achieved.

NATURAL GAS (G20)		PROPANE GAS (LPG) (G31)*	
Full load recorded	Accepted low load range	Full load recorded	Accepted low load range
9.6%	9.3% – 7.5%	11.0%	10.9% – 8.9%
9.5%	9.2% – 7.5%	10.9%	10.8% – 8.9%
9.4%	9.1% – 7.5%	10.8%	10.7% – 8.9%
9.3%	9.0% – 7.5%	10.7%	10.6% – 8.9%
9.2%	8.9% – 7.5%	10.6%	10.5% – 8.9%
9.1%	8.8% – 7.5%	10.5%	10.4% – 8.9%
9.0%	8.7% – 7.5%	10.4%	10.3% – 8.9%
8.9%	8.6% – 7.5%	10.3%	10.2% – 8.9%
8.8%	8.5% – 7.5%	10.2%	10.1% – 8.9%
8.7%	8.4% – 7.5%	10.1%	10.0% – 8.9%
8.6%	8.3% – 7.5%	10.0%	9.9% – 8.9%
		9.9%	9.8% – 8.9%

* Only possible if LPG conversion kit is installed! Note: Values are valid with closed cover/air box.

NOTE: UNDER ALL CIRCUMSTANCES THE CO_2 AT LOW LOAD MUST BE LOWER THAN THE CO_2 AT FULL LOAD.

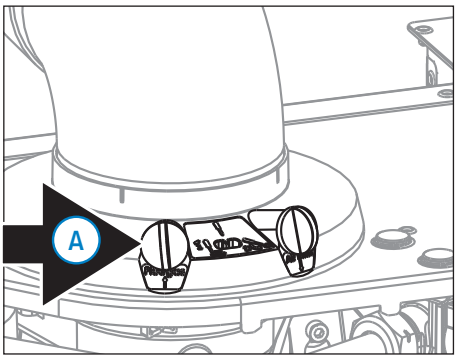
End of measuring:

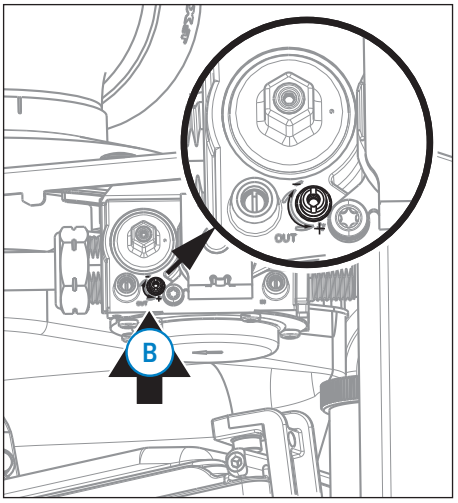
- Press the back button for 5 seconds to exit chimney sweep mode
- This completes the procedure
- The maximum duration of the commissioning function, without interruption, is 20 minutes

Checking combustion CO_2

Step 3: Adjustment on the gas valve

Adjust the gas valve only in case the measured values lie out of the range of the values mentioned in step 1 or 2.





- Take the case off the boiler;
- Set the boiler on full load (see Step 1)
- The CO_2 values are set by using an Allen key (2 mm), or a large flat head screwdriver, on the screw "**B**"

Please observe the following rotating direction:

- Clockwise means less CO_2
- Counter clockwise means more CO_2

AFTER THIS SETTING HAS BEEN MADE, ONCE MORE TEST THE CO_2 VALUE AT FULL LOAD AND LOW LOAD WITH THE CASE ON. SEE STEP 1 AND 2.

Technical menu

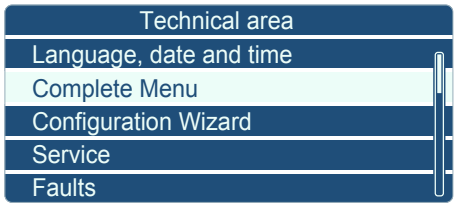
The boiler has a technical menu for engineers to use for altering settings / parameters and gaining information for example flow and return temperatures.

To gain access to the technical menu follow these steps:

1. From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2. Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

3. **The screen below then appears with the options:**
   Language, date and time
   Complete Menu
   Configuration Wizard
   Service
   Faults



Parameter chapter

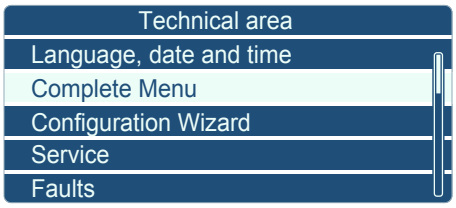
When the boiler is installed, it is in principle ready to be put into service. Most settings of the control system are already programmed from factory.

To change this setting, proceed as follows:

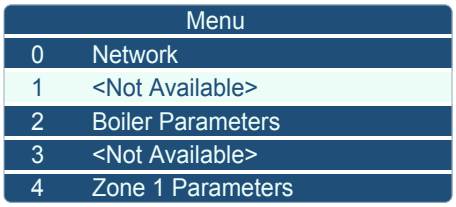
1. From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2. Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

3. The screen below then appears. Turn the selector wheel to highlight **Complete Menu**. Press **OK**. It takes a while to load the menu.



4. The screen below appears. This way you have access to the complete parameter level.



Parameter listing

Parameter number	Name	Description	Unit	Range	Default Combi
2. BOILER PARAMETERS					
2.0 General					
2.0.0	DHW Set point	Water set point temperature in DHW mode during comfort periods	°C	40 - 65 (Combi)	60
2.0.2	Gas Type	0 = Nat Gas		0 - 2	0
		1 = LPG			
		2 = G230			
2.0.3	Maximum water temp	Maximum absolute water temperature	°C	80 - 90	80
2.0.4	Altitude	Parameter for altitude compensation	m	0 - 7000	0
2.0.5	Fan inc. Percentage	Percentage of fan speed increase when reaching ionisation threshold	%	0 - 25	Do Not Change
2.0.6	T-Gradient	Gradient Function	°C/min	0 - 15	5
2.1 Free					
2.1.7	Pump continuous running	0 = Disabled		0 - 1	0
		1 = Enabled			
2.1.8	Pump mode max DHW	Max pump speed during DHW burning cycle	%	pump mode min - 100%	90
2.2 Settings					
2.2.4	Thermoregulation	Thermoregulation function enable 0 = OFF 1 = ON		0 - 1	1
2.2.7	Boiler Hybrid	Used to set the boiler as a part of a hybrid system		0 - 1	0
		(Energy manager presence detection)			
2.2.8	Boiler Version	Type of boiler selection		0 - 2	0
		0 = Combi			
		1 = Storage with NTC (Used with ATAG Hot water priority kit)			
		2 = Storage with Thermostat (Used with standard cylinder stat)			
2.3 Central Heating - 1					
2.3.1	Max CH Adjustable	CH power level adjustable by engineer to the level required by the building	%	0 - 100	100
2.3.7	CH pump overrun	CH post circulation time	Min	0 - 16	1
2.4 Central Heating - 2					
2.4.5	Max pump Modulation	Maximum pump speed in CH mode	%	min - 100	95
2.4.6	Min pump Modulation	Minimum pump speed in CH mode	%	25 - Max	50
2.4.9	External Temp correction	Offset of the Outdoor temperature reading	°C	-3 to +3	0
2.5 Domestic Hot Water					
2.5.0	Comfort function	DHW pre-heating or storage heating operation mode selection		0 - 2	0
		0 = Disabled (When disabled the display will show ECO)			
		1 = Time Based			
		2 = Always active			
2.6 Boiler Manual Settings					
2.6.0	Manual mode activation	To enable or disable manual mode 0 = OFF 1 = ON		0 - 1	0
2.6.1	Pump Control	0 = OFF 1 = ON		0 - 1	0
2.6.2	Fan Control	0 = OFF 1 = ON		0 - 1	0
2.6.3	Diverter valve control	0 = Hot water 1 = central heating		0 - 1	0
2.6.7	External Pump	0 = OFF 1 = ON		0 - 1	0

Parameter number	Name	Description	Unit	Range	Default Combi
2. BOILER PARAMETERS (CONTINUED)					
2.7 Test & Utilities					
2.7.0	Test mode	Chimney sweeper function active 0 = OFF 1 = ON		0 - 1	0
2.7.1	Air purge	Air purge function activation 0 - OFF 1 = ON		0 - 1	0
2.7.3	Force backup	0 = OFF 1 - ON		0 - 1	0
2.7.6	Force restore	1 = OFF 1 - ON		0 - 1	0
2.8 Reset Menu					
2.8.0	Reset factory settings	OK = Yes ESC = No (an EPROM chip is required when factory resetting LPG boilers)			
2.9 Others					
2.9.0	GPI function	Selected input for GPI function		0 - 2	1
		0 = Burner block NO			
		1 = Burner block NC			
		2 = DHW Timer			
2.9.1	Building Frost protection	0 = OFF 1 = ON		0 - 1	1
4. ZONE 1 PARAMETERS					
4.0 Set Point					
4.0.0	T Day	Room temperature set point for day period	°C	10 - 30	20
4.0.1	T Night	Room temperature set point for night period	°C	10 - 30	15
4.0.2	T set zone 1	Fixed T set for zone 1	°C	Para 4.2.5 to Para 4.2.6	85HT/50LT
		(used with Thermoregulation on type 0)			
4.0.3	Zone Frost protection		°C	2 - 15	5
4.1 S/W Changeover					
4.1.0	S/W changeover Activation	0 - OFF 1 - ON (only active when outside temperature influence)		0 - 1	0
4.1.1	Threshold	The set temperature the CH will turn off at, when using weather compensation	°C	0 - 30	25
4.1.2	Delay time	Time before S/W changeover becomes active	min	0 - 300	300
4.2 Zone 1 settings					
4.2.0	Zone 1 system type	0 = low temperature system 1 = high temperature system		0 - 1	1
4.2.1	Zone 1 thermoregulation type	0 = Fixed flow temperature or Opentherm		0 - 4	0
		1 = do not use			
		2 = Room temperature only (Used with e-bus connector for One Zone or Cube)			
		3 = Outdoor temperature and low voltage controls only (On/Off Thermostat works)			
		4 = Room + Outdoor temperature used with e-bus connector and One Zone Controller. (e-bus thermostat needed)			
4.2.2	Slope Heating Line	0.2 - 1 for Low temperature installations		0.2 - 3.5	0.6 LT / 1.5 HT
		1 - 3.5 for high temperature installations			
4.2.3	Offset heating line	Off set heating line adjustable per °C	°C	-7 to +7 LT -14 to +14 HT	0
		Low temperature system -7 to +7			
		High temperature system -14 to +14			
4.2.5	Maximum Temperature	Zone 1 Maximum Flow Temperature	°C	20 - 50LT / 20 - 85HT	50 - LT / 80 - HT
4.2.6	Minimum Temperature	Zone 1 minimum Flow Temperature	°C	20 - 50LT / 20 - 85HT	20 - LT / 20 - HT
4.2.8	Quick night set back	Do not change		OFF - ON	OFF
4.2.9	Heat Request Mode	Do not change		0 - 2	0
4.3 Zone 1 Diagnostics					
4.3.4	Heat Request Zone1	Is there a Heat demand from this zone 0 - OFF 1 - ON		0-1	
4.7 Zone 1 Regulation parameters					
4.7.0	Heating Type	0 = Floor Heating		0 - 5	1
		1 = Radiators			
		2 = Floor heating (main) + Radiators			
		3 = Radiators (main) + Floor heating			
		4 = Convection			
		5 = Air heating			
4.7.1	Room influence	0 = OFF		0 - 3	0
		1 = Less			
4.7 Zone 1 Regulation parameters (Continued on page opposite)					

Parameter number	Name	Description	Unit	Range	Default Combi
4. ZONE 1 PARAMETERS (CONTINUED)					
4.7 Zone 1 Regulation parameters (Continued)					
(4.7.1 Cont.)		2 = Medium			
		3 = Good			
4.7.2	Building insulation level	0 = Poor		0 - 2	0
		1 = Average			
		2 = Good			
4.7.3	Building size	0 = Small		0 - 2	0
		1 = Average			
		2 = Large			
4.7.4	Climate Zone	Setting as a base for the heatline calculation		-60 to +50	-12
4.7.5	Auto slope adaptation	0 = Off 1 - On		0 - 1	0
4.7.6	Pre-heat Function	0 = Off 1 - On		0 - 1	1
5. SETTINGS ZONE 2 (SEE ZONE 1 CHAPTER 4)					
6. SETTINGS ZONE 3 (SEE ZONE 1 CHAPTER 4)					
8. SERVICE PARAMETERS					
8.0 Boiler statistics - 1					
8.0.0	diverter valve	Number of diverter valve cycles	times		xx
8.0.1	Pump	Number of running hours pump	h		xx
8.0.3	Boiler lifetime	Number of hours since 1st boiler power up.	h		xx
8.1 Boiler statistics - 2					
8.1.0	Burner on CH	Number of hours burner active for CH	h		xx
8.1.1	Burner on DHW	Number of hours burner active for DHW	h		xx
8.1.3	Ignition	Number of ignition cycles	times		xx
8.2 Boiler					
8.2.1	Fan status	Fan: 0 = OFF 1 = ON			
8.2.2	Fan speed	Number of revolutions	Rpm		
8.2.4	Diverter valve position	Position of the diverter valve 0 = DHW 1 = CH			
8.2.5	DHW flowrate		l/min		
8.2.7	pump modulation		%		
8.2.8	gas power	Actual boiler power based on fan revolutions	kW		
8.2.9	system pressure		bar		
8.3 Boiler temperatures					
8.3.0	CH T-Set	Calculated target flow temperature	°C		
8.3.1	CH flow temperature		°C		
8.3.2	CH Return temperature		°C		
8.3.3	DHW Temperature		°C		
8.3.4	flue gas temperature	Only if flue gas sensor is connected	°C		
8.3.5	Outside temperature	Only if outside sensor is connected or connected to the internet	°C		
8.4 Storage					
8.4.0	N/A				
8.4.2	N/A				
8.5 Service					
8.5.0	Months to next maintenance	Months to go before next Maintenance warning comes up		0-60	12
8.5.1	Maintenance warning active	Switch on or of the maintenance warning 0 = OFF 1 = ON		0 - 1	0
8.5.2	Maintenance warning reset	Reset the maintenance warning in the display and the timer		0 - 1	
8.6 Error History					
8.6.0	Error history	Overview of the last 10 errors occurred			
8.6.1	Reset Error list	OK = Yes ESC = No			
8.7 Free Parameter					
8.7.5	Ionization Current				
8.7.6	Safety Flame Sensor	Burner status of the boiler 0 = OFF 1 = ON			
8.7.7	CH Flow switch State	0 = OFF 1 = ON (used for Regular boiler only)			

Testing the boiler and changing settings

The setting are accessible through a code:

1 From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2 Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

Insert Code
Insert technical code
007
Save

3 The screen below then appears. Turn the selector wheel to highlight **Complete Menu**. Press **OK**. It takes a while to load the menu.

Technical area
Language, date and time
Complete Menu
Configuration Wizard
Service
Faults

4 Turn the selector wheel to highlight **2 Boiler Parameters**. Press **OK**.

Menu	
0	Network
1	<Not Available>
2	Boiler Parameters
3	<Not Available>
4	Zone 1 Parameters

5 Turn the selector wheel to highlight **2.6 Boiler manual setting**. Press **OK**.

2 Boiler Parameters	
2.2	Settings
2.3	Central Heating-1
2.4	Central Heating-2
2.5	Domestic Hot Water
2.6	Boiler manual settings

6 2.6 Manual settings.

2.6 Boiler manual settings
2.6.0 Manual mode activation
2.6.1 Boiler pump control
2.6.2 Fan control
2.6.3 Diverter valve control
2.6.4 <Not Available>

2.6 Boiler manual settings
2.6.3 Diverter valve control
2.6.4 <Not Available>
2.6.5 Additional Output Control
2.6.6 <Not Available>
2.6.7 External Pump control

Boiler Manual test setting

Select manual mode activation 2.6.0 and change from 0 = OFF to 1 = ON to enable manual testing mode.

Change parameter 2.6.1 to 2.6.7 component from 0 = OFF to 1 = ON to enable manual testing of the pump, fan, diverter valve, additional output control or external pump control.

2.6. Boiler manual settings	Name	Description	Range	Default
2.6.0	Manual mode activation	To enable or disable manual mode 0 = OFF 1 = ON	0 - 1	0
2.6.1	Pump Control	0 = OFF 1 = ON	0 - 1	0
2.6.2	Fan Control	0 = OFF 1 = ON	0 - 1	0
2.6.3	Diverter valve control	0 = OFF 1 = ON	0 - 1	0
2.6.5	Additional output control	0 = OFF 1 = ON	0 - 1	0
2.6.7	External Pump	0 = OFF 1 = ON	0 - 1	0

Gradient speed CH

The gradient allows the boiler to increase the CH water temperature with a pre-set (parameter 2.0.6) number of degrees per minute. The number of degrees can be set between 1 and 15 per minute (factory set to 5 (NG) or 0 (LPG)).

The Gradient control is a calculated increase of the T-Set value. When the flow temperature is 5 degrees higher than the T-set temperature, the boiler will switch off. So, if you set the max flow temperature to 80 the boiler will switch off at 85.

Scenario:
Boiler set with parameter (2.0.6) with a gradient speed CH of 5 = 5°C per minute increase. CH T-max 80°C

If the boiler starts with 35°C flow temperature the boiler will calculate a T-set temperature using the gradient line. This will look to raise the flow temperature to 40°C after 1 minute and look to raise it a further 5°C the minute after, as an on ongoing gradient line, which is recalculated as the boiler is working. If the boiler goes past this gradient line T-set temperature by more than 5°C the boiler will switch off. The boiler 5 minute anti-cycle feature will operate. When the boiler comes back on again it will start the process off again with the new flow temperature.

A boiler / system that cannot get rid of this heat effectively will see a rapid increase in the flow temperature (more than the 5°C per minute it has been set up to do). The flow temperature will quickly go over the calculated T-set temperature (gradient) by the 5°C and would switch off.

The following gradient speed settings are recommended for each type of heating system:
1 – 2 underfloor heating
4 – 5 Radiator convectors
7 – 8 Indirect heated air heater

Setting the gradient parameter to 2.0.6 = 0

If you set this to 0, you switch off the gradient control and the T-set is the temperature set with the CH button (normally 80°C).

In this case there is no limit to the number of degrees temperature increase per minute and the boiler will try to reach its set point as quickly as possible.

So, the boiler will go to full load and try to reach the set water temperature set under the CH button.
There is no restriction to the number of degrees temperature increase per minute (The brake is off). The boiler will then modulate, because the delta T is reached. The boiler will try and maintain the delta T across the heat exchanger around 20°C.
Select manual mode activation to enable manual testing of the pump, fan, diverter valve or external pump.

2.6. General	Name	Description	Unit	Range	Default
2.0.6	T-Gradient	Gradient Function	°C/min	0 - 15	5 (NG) 0 (LPG)

Setting up integral and external controls options

With the upgraded i-range of ATAG boilers, there may be some settings you need to change depending on what controls you are using externally or in case you use the new integral programmer function.

If you are just connecting a control that is working with the volt free On/Off, OpenTherm or 230V SwL connection, then there are no changes as this is the factory default set up. So, you can just plug in and play.

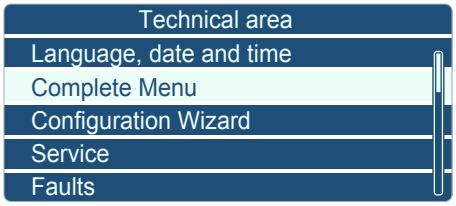
If you are using an ATAG ONE^{Zone}, ATAG Cube or outside weather compensator, then you will need to change the 'Thermoregulation setting'.

This can be done as follows:

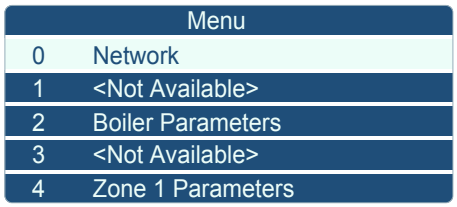
1. From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2. Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

3. The screen below then appears. Turn the selector wheel to highlight **Complete Menu**. Press **OK**. It takes a while to load the menu.



4. The screen below appears. This way you have access to the complete parameter level.



5. **Now select 4. Zone 1 Parameters**
   a. Next select 4.2 Z1 Settings
   b. Next select 4.2.1 Thermoregulation.
   Within this parameter of the boiler you can select from 0 – 4. See the table below

No.		Description	Volt Free Connector Colour	Controls
0	=	Fixed flow temperature (On/off or OpenTherm controller) (Factory setting) manual mode 0 = OFF 1 = ON	OT Bus or On / Off	On / Off stat OpenTherm
1	=	Do not use	-	-
2	=	Room control with ATAG ONE^{Zone} controller (Room temp only / thermostat mode)	Bus T B	ATAG ONE^{Zone} or Cube
3	=	Weather Compensation (Outside sensor only or with On/off or OpenTherm controller) (4.7.0 & 4.7.2)	Out + OT Bus or On / Off	Outside sensor with On / Off stat or OpenTherm
4	=	Weather dependent control - with Room compensation (Only for ATAG ONE^{Zone} controllers) (ATAG ONE^{Zone} in weather dependent mode)	Bus T B	ATAG ONE^{Zone}

Integral programmer

If you are using the built-in programmer to control the heating times going On and Off then these are the settings to change.

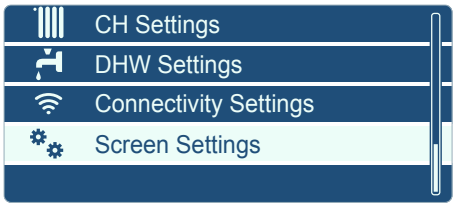
The built-in time program of the boiler display works in two different ways. There is a setting within the customer 'Complete menu', 'Screen Settings', then 'Time Program service type' and there the setting can be changed to either 'Extended Time Program' (default) or 'Program'.

'**Extended Time Program**' (default) would be for the ATAG eBus connect products, like ATAG ONE^{Zone} & ATAG Cube (Thermoregulation setting no.2 & 4), which work with the built-in timer. These time settings are shown in the boiler and within the ATAG ONE^{Zone} app/portal heating schedule.

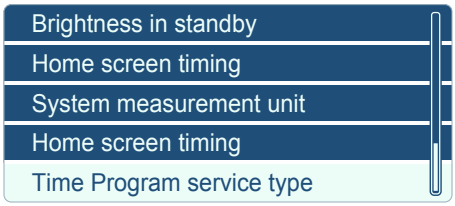
'**Program**' would be used where the front display integral timer is used for the time setting element with the 230V SwL or Volt free On/Off contacts. (Thermoregulation setting no.0 & 3, including SwL)

1 Customer **Complete Menu**

2 **Screen Settings**

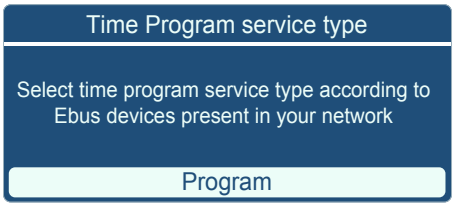


3 **Time Program service type**



4 Scroll the wheel to select **Extended Time Program** and press **OK** to confirm selection.

5 Scroll the wheel to select **Program** and Press **OK** to confirm selection.



Range rating the ATAG iSeries boilers

1. Access the Technical Area as per the picture below.
2. Select Complete Menu and then number 2 Boiler parameters.
3. Go to parameter 2.3 Central Heating 1, then 2.3.1 Max CH Adjustable, which is the range rating setting.
4. Set the range required per the chart opposite by turning the dial and pressing OK to save.

   *Note the range is calculated in percentage and varies between the types of boilers.

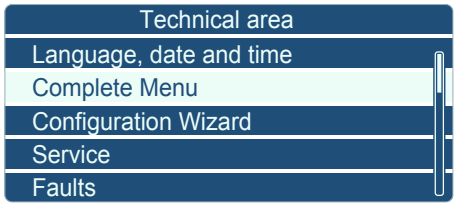
5. Once saved, press the Back button until at the home screen.

To gain access to the technical menu follow these steps:

1. From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2. Turn the selector wheel to highlight **007** as the Technical Code. Press **OK**.

3. **The screen below then appears. with the options:**
   Language, date and time
   Complete Menu
   Configuration Wizard
   Service
   Faults



iS System and iR Regular boilers

MODEL	BOILER PERCENTAGE TO kW										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
18.0	5.0	6.3	7.6	8.9	10.2	11.5	12.8	14.1	15.4	16.7	18.0
24.0	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0
32.0	6.9	9.4	11.9	14.4	16.9	19.5	22.0	24.5	27.0	29.5	32.0
40.0	6.9	10.2	13.5	16.8	20.1	23.5	26.8	30.1	33.4	36.7	40.0

iC Combination boilers

MODEL	BOILER PERCENTAGE TO kW										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
24.0	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0
28.0	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0
36.0	6.9	9.4	11.9	14.4	16.9	19.5	22.0	24.5	27.0	29.5	32.0
40.0	6.9	9.4	11.9	14.4	16.9	19.5	22.0	24.5	27.0	29.5	32.0

iC Economiser boilers

MODEL	BOILER PERCENTAGE TO kW										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
27.0	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0
35.0	6.9	9.4	11.9	14.4	16.9	19.5	22.0	24.5	27.0	29.5	32.0
39.0	6.9	9.4	11.9	14.4	16.9	19.5	22.0	24.5	27.0	29.5	32.0

Boiler information

The boiler information is accessible through a code. To gain access to the boiler information, proceed as follows:

1 From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2 Turn the selector wheel to highlight **007** as the Technical Code. Press **OK**.

Insert Code
Insert technical code
007
Save

3 The screen below then appears. Turn the selector wheel to highlight **Complete Menu**. Press **OK**. It takes a while to load the menu.

Technical area
Language, date and time
Complete Menu
Configuration Wizard
Service
Faults

4 As an example we take the **CH Flow Set T**.

Menu	
0	Network
1	<Not Available>
2	Boiler Parameters
3	<Not Available>
4	Zone 1 Parameters

5 Turn the selector wheel to highlight **8 Service Parameters**. Press **OK**.

Menu	
4	Zone 1 Parameters
5	Zone 2 Parameters
6	Zone 3 Parameters
7	<Not Available>
8	Service Parameters

6 Option **8.3 Boiler Temperature** is highlighted. Press **OK**.

8 Service Param	
8.3	Boiler Temperature
8.4	Storage
8.5	Service
8.6	Error History
8.7	Free parameters

7 Option **8.3.0 CH Flow Set T** is highlighted. Press **OK**.

8 Service Param	
8.3.0 CH Flow Set T	80
8.3.1 CH Flow T	48
8.3.2 CH Return T	48
8.3.3 DHW Flow T	47
8.3.4 Exhaust Flue T	--

8 The screen appears.

8.3.0 CH Flow Set T
80°C

A list of the most common boiler information can be found in the table below.

No.	Description
8.2.2	Fan Speed in Rpm
8.2.5	DHW Flow Rate in l/min
8.2.8	Gas Power in kW
8.2.9	Heating circuit pressure in bar
8.3.0	CH Flow Set T in °C
8.3.1	CH Flow T in °C
8.3.2	CH Return T in °C
8.3.3	DHW Flow T in °C
8.3.5	Outdoor T (only if an outside sensor is connected) in °C
8.7.5	Ionization current in µA

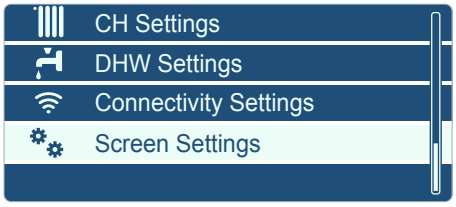
Set the heating time periods (if using integral programmer)

The built-in time program of the boiler needs to be enabled. This change needs to be made in the 'Time Program service type' section and changed from the default 'Extended Time Program' to 'Program'.

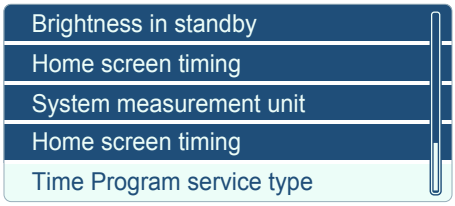
'**Program**' would be used where the front display built-in timer is used for the time setting element with the 230V SwL or Volt free On/Off contacts. (Thermoregulation setting No.0 & 3, including SwL)

1 Customer **Complete Menu**

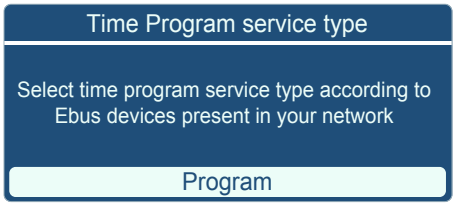
2 **Screen Settings**



3 **Time Program service type**



4 Scroll the wheel to select **Program** and press **OK** to confirm selection.



If the time program service type is set from 'Extended Time Program' to 'Program' you will switch from day heating line (contact open) to night heating line (contact closed), which would mean on and off.

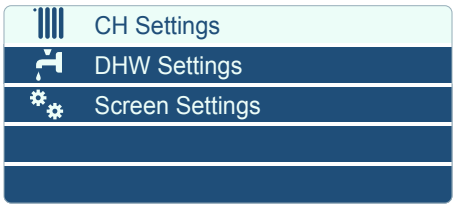
If the integral programmer function is not being used then is should be left as the default setting, Extended time program.

To set in time periods

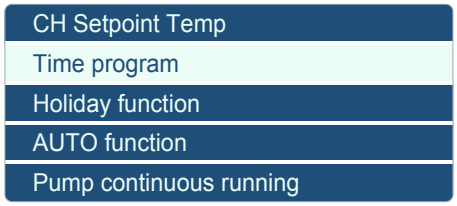
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

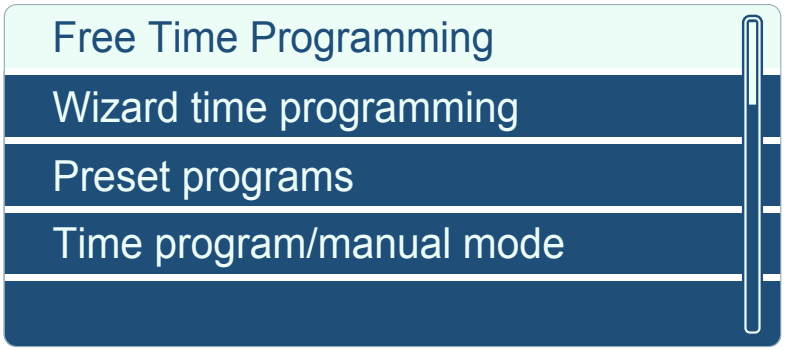
3 **CH Settings** is highlighted. Press **OK**.



4 Option Time program. Press **OK**.



There are four settings



Free Time Programming
This is where you can set in your individual time settings for each day.

Wizard time programming
This setting goes through setting up the programming by asking some question to help decide what to set up. For example, 'What time do you want to enable rooms heating?' or 'What time do you want the first time slot to end?'

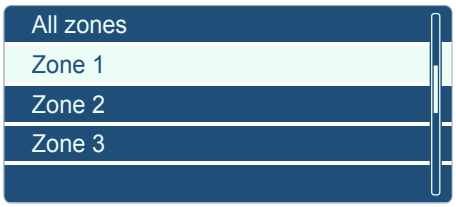
Pre-set programs
This setting has pre-set programs called 'Family program, No lunch program, Midday program and Always active.

Time program / manual mode
This setting switches between using the time programs that have been set on the boiler or manual mode

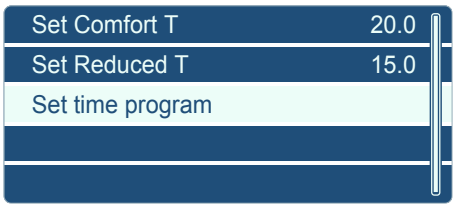
Free time programming

When selecting free time programming the next screen gives you a selection of 'All zones' or you can select the individual zone.

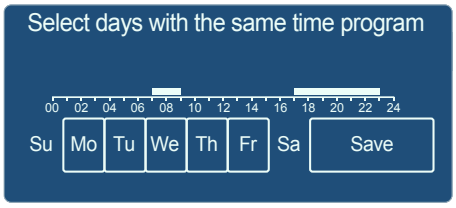
1. Most will only have one zone being Zone 1, highlight **Zone 1** and press **OK** to select.



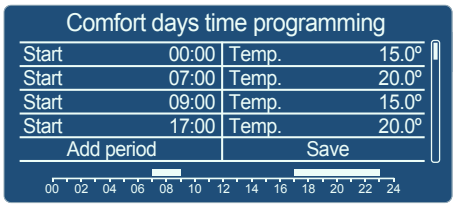
2. Then select **Set time program**



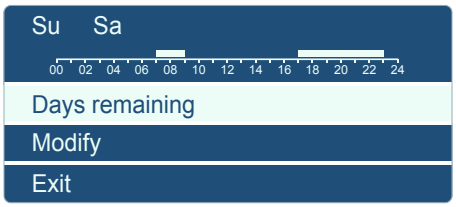
3. Highlight all the days you want to set with the same on/off times. Like Monday – Friday or all week. Then press **Save**.



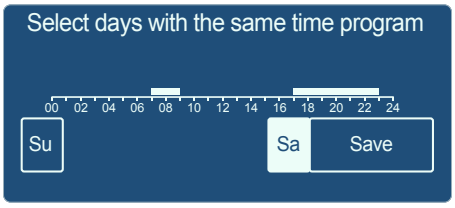
4. This screen is where you can have the heating start from 00:00 (midnight) with an off period (shown as 15°C) to the 07:00 where the heating is set to an on period (shown as 20°C). The settings for the rest of the day can be put in by selecting **Add period**. When finished select **Save**.



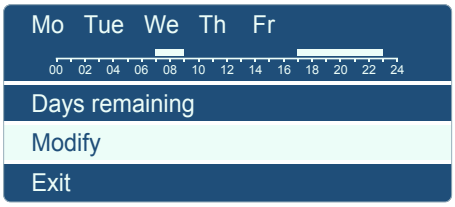
5. The screen then shows **Days remaining**.



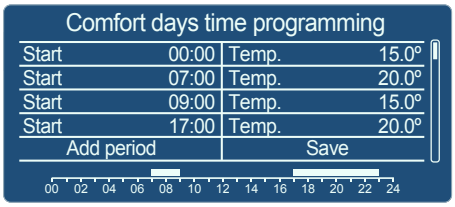
6. The days remaining will then ask what days do you want with the same time program.



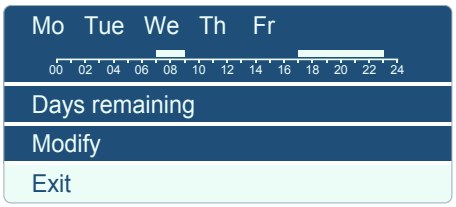
7. The next selection choice is **Modify** to go back into the time settings.



8. This allows you to modify the settings that you have entered if required. Press **Save** when finished.



9. Once all time settings are done, select **Exit** to return to the time programming options screen. Press the back button a few times to get back to the front screen.



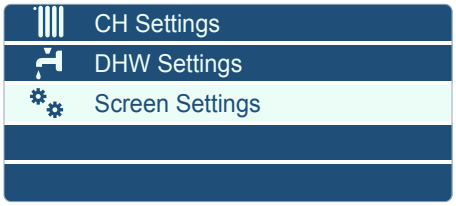
Home screen settings

There are two screen settings that can be chosen 'Boiler base' & 'Boiler complete'.

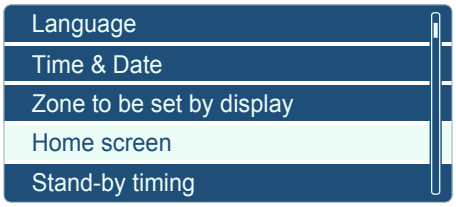
1 From the controller Home screen, press **OK**.

2 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

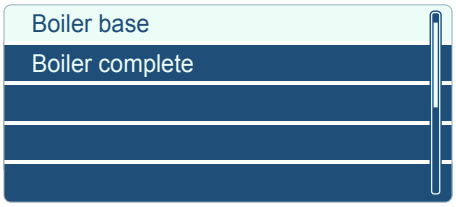
3 Turn the selector wheel to highlight **Screen Settings**. Press **OK**.



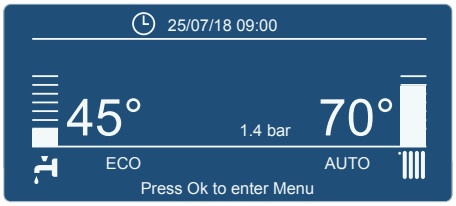
4 Turn the selector wheel to highlight **Home screen**. Press **OK**.



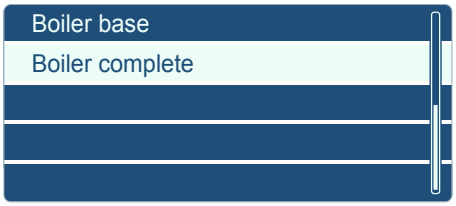
5 Boiler base is highlighted. Press **OK**. Press **BACK** button until you get back to the home screen.



6 Screen shown **Boiler base**.



7 Turn the selector wheel to highlight **Boiler complete**. Press **OK**. Press **BACK** button until you get back to the home screen.



8 Screen shown. **Boiler complete**.

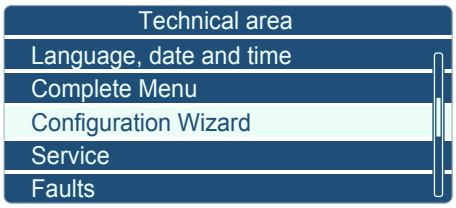
Setting up installer details to display on boiler

This function allows you to have an installers name and phone number displayed on the boiler when the annual service is due (if service maintenance reminder function is enabled) or when some faults occur.

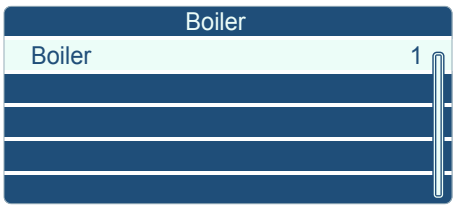
1 From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2 Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

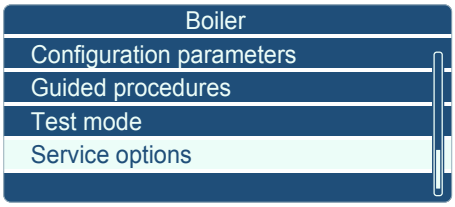
3 Turn the selector wheel to highlight **Configuration wizard**. Press **OK**.



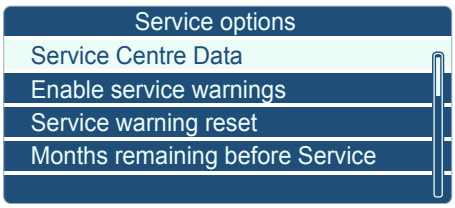
4 Select device, select **Boiler 1**.



5 The next screen Boiler, select **Service options**.

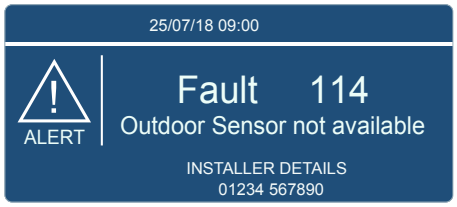


6 The next screen **Service options**, select **Service Centre Data**.



7 In the service options screen you can enter a **Company name** and **phone number**. These details will show up when the annual service is due (if service maintenance reminder function is enabled) or when some faults occur.

8 Example of fault with installer details.



Annual Service reminder

This function allows a warning message to come up when the annual service is now due. The message will come up on the screen at a given time interval (months) that an installer has set in the boiler e.g. 12 months. This annual service reminder can also display the installers name and phone number display on the boiler if it has been entered.

1 From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2 Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

Insert Code
Insert technical code
007
Save

3 Turn the selector wheel to highlight **Complete Menu**. Press **OK**.

Technical area
Language, date and time
Complete Menu
Configuration Wizard
Service
Faults

4 Then, turn the selector wheel to **8 Service Parameters**. Press **OK**.

Menu	
4	Zone 1 Parameters
5	Zone 2 Parameters
6	Zone 3 Parameters
7	<Not Available>
8	Service Parameters

5 Next, turn the selector wheel to **8.5 service**. Press **OK**.

8 Service Param	
8.1	Boiler Statistics -2
8.2	Boiler
8.3	Boiler Temperature
8.4	Storage
8.5	Service

6 **8.5.0 Months to next Maintenance** should be set to 12, for 12 months.

8.5 Service	
8.5.0 Months to Next Maintenance	12
8.5.1 Mainten On Days Act	0
8.5.2 Main Warn Reset	
8.5.3 < Not Available >	
8.5.4 SW Version Interface	

7 **8.5.1 Maintenance on Days Act**, this should be selected to 1, so the maintenance reminder comes up after the selected months period. If set to zero, then it will be set to off and no reminder will operate.

8.5 Service	
8.5.0 Months to Next Maintenance	12
8.5.1 Mainten On Days Act	1
8.5.2 Main Warn Reset	
8.5.3 < Not Available >	
8.5.4 SW Version Interface	

8 When the warning message comes up that the annual service is due, it can be reset by selecting **8.5.2**. This will reset the service reminder when a Gas Safe registered engineer has serviced the boiler. This will reset it to the selected months period from when actioned.

8.5 Service	
8.5.0 Months to Next Maintenance	12
8.5.1 Mainten On Days Act	1
8.5.2 Main Warn Reset	
8.5.3 < Not Available >	
8.5.4 SW Version Interface	

8.5.2 Main Warn Reset
Do you really want to perform the reset? If you press OK buton, the reset command will be executed otherwise, by way of ESC, the previous page is shown.

9 The boiler can also hold the installer's company name and phone number. So, when the annual service reminder comes up the installer detail will also show if that function has been set up.

25/07/18 09:00
Warning
Sched.Maintenance-Call Service
INSTALLER DETAILS
01234 567890

ATAG ONE zone

If the customer has a ONE Zone controller, it also displays the scheduled maintenance is due on the screen. It will not go until the maintenance warning reset 8.5.2 is carried out on the boiler.

Weather compensation

To set the boiler to weather compensation, please set parameter 4.2.1 to 3 with an ON/OFF or OpenTherm controller or to 4 with an ATAG ONE^{Zone}.

1. Turn the selector wheel to highlight the Parameters Zone you want to set. In this case **Zone 1 Parameters**. Press **OK**.

Menu	
0	Network
1	<Not Available>
2	Boiler Parameters
3	<Not Available>
4	Zone 1 Parameters

2. Turn the selector wheel to highlight **4.2 Z1 Settings**. Press **OK**.

4	Zone Parameters
4.0	Setpoint
4.1	SW Changeover
4.2	Z1 Settings
4.3	Z1 Diagnostics
4.4	< Not Available>

3. Turn the selector wheel to highlight **4.2.1 Thermoregulation**. Press **OK**.

4.2	Z1 Settings
4.2.0	Zone temperature range
4.2.1	Thermoregulation
4.2.2	< Not Available >
4.2.3	Offset
4.2.4	< Not Available>

4. Select no. 3 **Outdoor Weather Compensation** (Outside sensor only or with ON/OFF or OpenTherm controller) (4.7.0 & 4.7.2).

4.2.1	Thermoregulation	
	3	
	Outdoor T Only	
Maximum value		4
Minimum value		0

Setting the weather compensation

To set up the weather compensation, follow the steps below:

1. Turn the selector wheel to highlight the Parameters Zone you want to set. In this case **Zone 1 Parameters**. Press **OK**.

Menu	
0	Network
1	<Not Available>
2	Boiler Parameters
3	<Not Available>
4	Zone 1 Parameters

2. Turn the selector wheel to highlight **4.7 Zone regulation Parameters**. Press **OK**.

4	Zone1 Parameters
4.3	Z1 diagnostics
4.4	< Not Available>
4.5	< Not Available>
4.6	< Not Available>
4.7	Zone Regulation Parameters

3. Turn the selector wheel to highlight **4.7.0 Heating Type**. Press **OK**.

Make a choice between:
0 **Underfloor** or
1 **Radiator** or
2 **Underfloor (main) + radiator** or
3 **Radiators (main) + underfloor** or
4 **Convector** or
5 **Air heating**

Press **BACK** to the **4.7 Zone regulation Parameters** screen.

4.7 Zone Regulation Parameters
4.7.0 Heating type
4.7.1 Room Influence
4.7.2 Building Insulation Level
4.7.3 Building Size
4.7.4 Climatic Zone

4. Turn the selector wheel to **highlight 4.7.2 Building Insulation Level**. Press **OK**.
Make a choice between:
0 Poor or
1 Average or
2 Good

4.7 Zone Regulation Parameters
4.7.0 Heating type
4.7.1 Room Influence
4.7.2 Building Insulation Level
4.7.3 Building Size
4.7.4 Climatic Zone

5. Turn the selector wheel to highlight **4.7.3 Building Size**. Press **OK**.

4.7 Zone Regulation Parameters
4.7.0 Heating type
4.7.1 Room Influence
4.7.2 Building Insulation Level
4.7.3 Building Size
4.7.4 Climatic Zone

Make a choice between:
0 Small or
1 Average or
2 Large

6. Turn the selector wheel to highlight **4.7.1 Room Influence**. Press **OK**.

4.7 Zone Regulation Parameters
4.7.0 Heating type
4.7.1 Room Influence
4.7.2 Building Insulation Level
4.7.3 Building Size
4.7.4 Climatic Zone

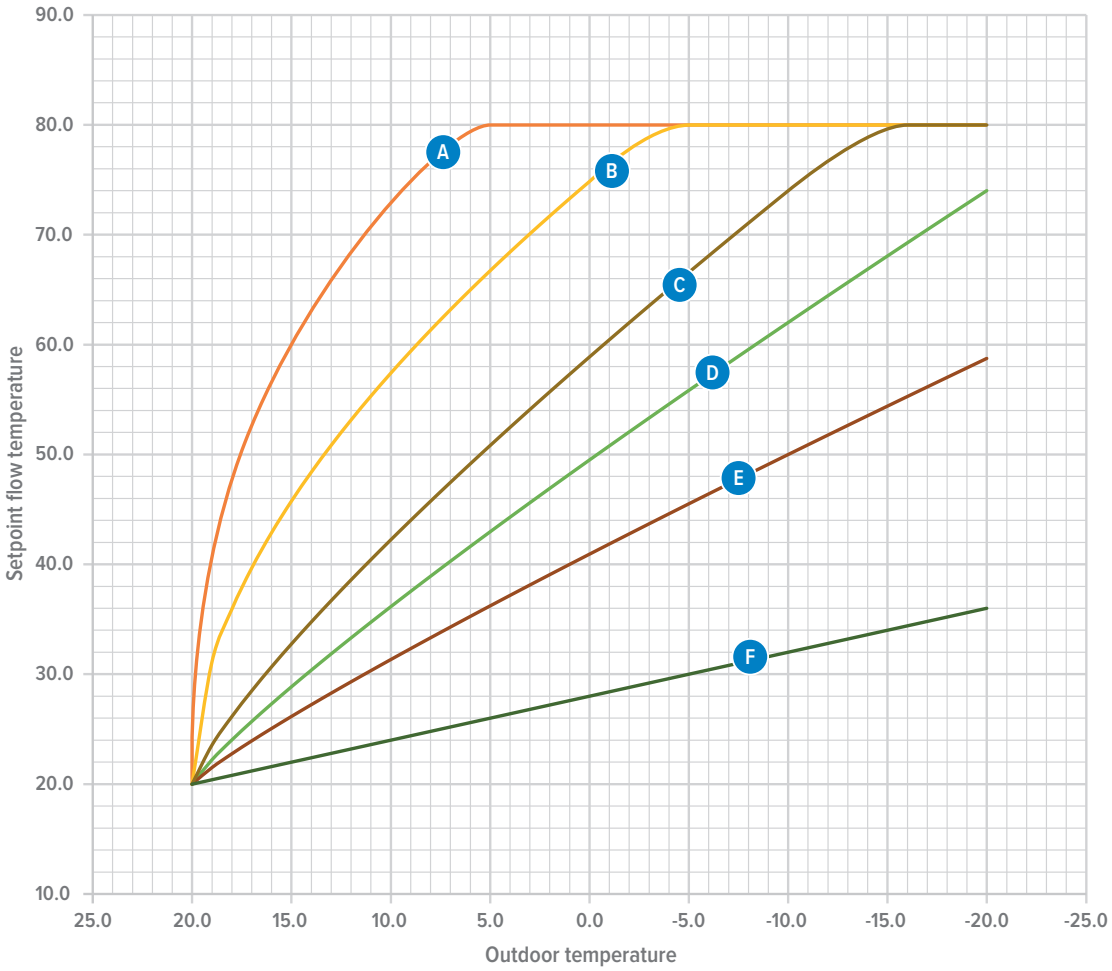
7. Turn the selector wheel to set the **Room Influence 0 OFF**.
(0 OFF is the default setting)

4.7.1 Room Influence	
0 OFF	
Maximum value	3
Minimum value	0

Make a choice between:
0 OFF or
1 Less or
2 Medium or
3 Good

Weather compensation settings calculation

All these settings below calculate the ideal heating line for this specific property. For the Heating type, Building Insulation Level and the Building Size.



Thermoregulation offset

Where a ONE^{Zone} controller is fitted the front display gives and thermoregulation offset temperature of ± 14 for high temperature systems and ± 7 for low temperature systems. This offset setting can alter the flow temperature being produced by the boiler by the adjusted amount.

For example

If the boiler has a heat line 'C' which is 'Heating type – Radiators', 'Building insulation level – Average' & 'Building size – Average', then when the outside temperature is 5.0°C the flow temperature will be 51°C. Therefore if the thermoregulation offset was set to +4°C then the adjusted flow temperature will be 55°C.

A	Heating Type	Air heating
	Building Insulation Level	Poor
	Building size	Small
B	Heating Type	Convectors
	Building Insulation Level	Average
	Building size	Average
C	Heating Type	Radiators
	Building Insulation Level	Average
	Building size	Average

D	Heating Type	Radiators (main) + floor
	Building Insulation Level	Good
	Building size	Average
E	Heating Type	Underfloor
	Building Insulation Level	Average
	Building size	Average
F	Heating Type	Underfloor
	Building Insulation Level	Good
	Building size	Average

Equivalent flue lengths

With the introduction of the upgraded ATAG i-range, there are some changes to the maximum equivalent flue lengths applicable to our boilers. The revised figures are:

Flue lengths

Concentric Flue system Ø 60 / 100mm & 80 / 125mm

BOILER	MAXIMUM HORIZONTAL OR VERTICAL EQUIVALENT FLUE LENGTH	
	(Ø 60/100mm)	(Ø 80/125mm)
i24C, i28C, iC Economiser 27 Plus i15S, i18S, i24S i15R, i18R, i24R	15m	50m
i36C, i40C i32S, i40S i32R, i40R	9m	45m
iC Economiser 35 Plus iC Economiser 39 Plus	8m	40m

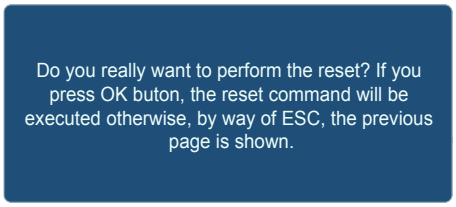
Dimensions flue gas system and air supply system.
Maximum equivalent flue length = distance between boiler (from elbow or vertical adapter) and the end of terminal.

FLUE BEND	EQUIVALENT FLUE LENGTH	
	(Ø 60/100mm)	(Ø 80/125mm)
45° bend resistance length	1.3m	1.9m
87° bend resistance length	1.9m	3.0m

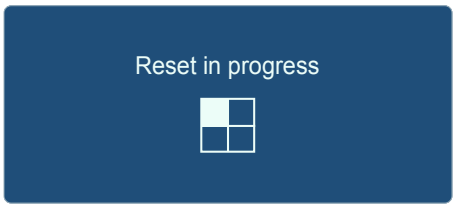
Reset a fault code

1. When an error occurs, the fault code and description appears on the screen. To reset the fault code, press the **RESET** button.

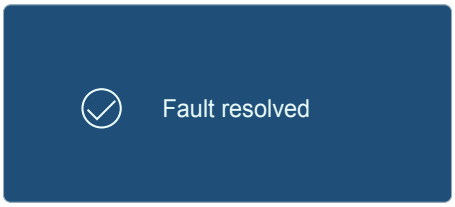
2. The message on the screen left appears. Press **OK** to reset the error, otherwise the previous screen is shown.



3. The Reset in Progress message appears.



4. After a while the **Fault Solved** message appears. After the code is reset, the Home screen appears.

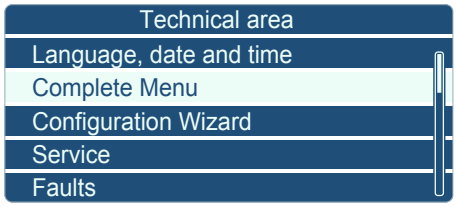


View error code history

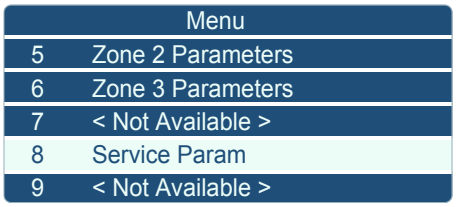
1 From the controller Home screen, press the **BACK** and **OK** buttons at the same time for 7 seconds

2 Turn the selector wheel to highlight **007** as the Technical Code. Press **OK** to Save.

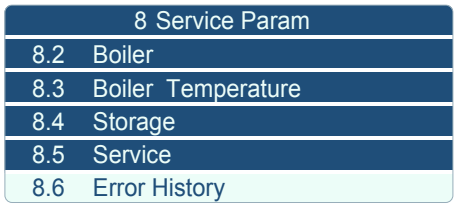
3 The screen below then appears. Turn the selector wheel to highlight **Complete Menu**. Press **OK**. It takes a while to load the menu.



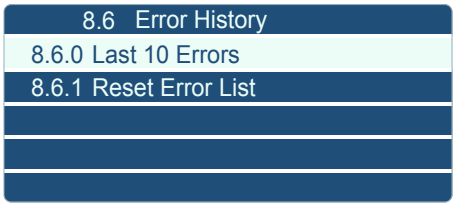
4 Turn the selector wheel to highlight **8 Service Param**. Press **OK**.



5 Turn the selector wheel to highlight **8.6 Error History**. Press **OK**.



6 Option **8.6.0 Last 10 Errors** is highlighted. Press **OK**.



7 A survey of the last 10 Errors appears. An example of an error message.

Error codes **A detected failure is indicated on the display in blocking or error messages.**

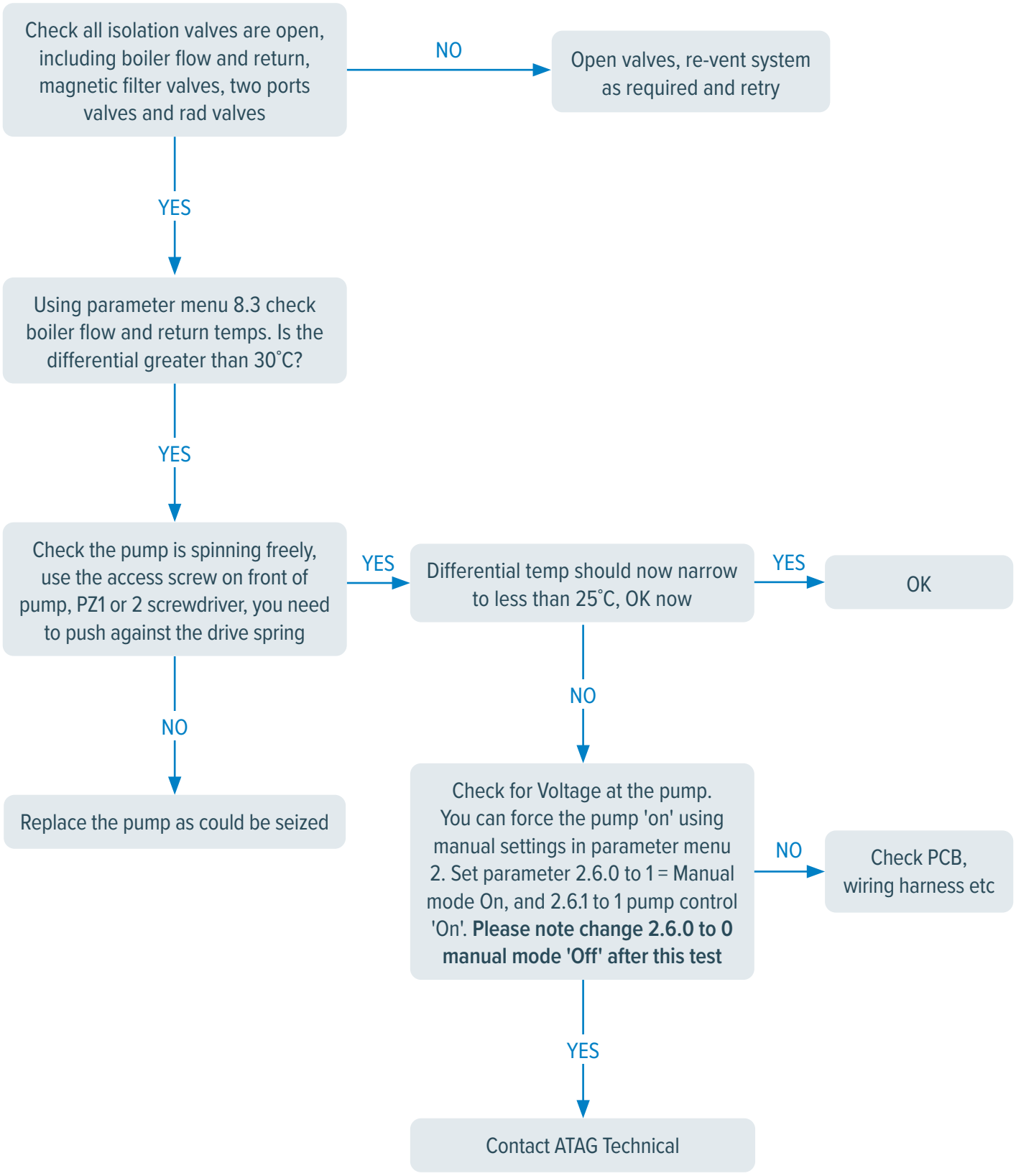
ERROR CODE	ERROR DESCRIPTION	CHECKS
101	Overheat	Temperature rise too fast. Check correct circulation of the water and pump
102	Pressure Sensor Error	Check water pressure on analogue gauge
		Check the sensor
		Check wiring harness not shorting to earth
		Check the connection plug on top of sensor and PCB
104	Flow Check Failed	Check pump is spinning via de-blocking centre screw
		Check PWM pump connection pins, cable and PCB connection CN9
108	Pressure < Pmin (< 0.5 bar), Filling needed	Check water pressure on analogue gauge
1P4	Pressure < Pmin (0.5 - 0.8 bar), Filling needed	Check water pressure on analogue gauge

ERROR CODE	ERROR DESCRIPTION	CHECKS
1P9	Water pressure dynamic check	Check 230V to pump Check pump is spinning via de-blocking centre screw Check PWM pump connection pins, cable and PCB connection CN9
109	Pressure > Pmax	Check water pressure on analogue gauge
		Take any excess water out of the system
		Check expansion vessel air pressure with boiler drained of water
110	Send Probe Damaged	Check the sensor not short or open circuit
		Check wiring harness connections between sensor & PCB
112	Return Probe Damaged	Check the sensor not short or open circuit
		Check wiring harness connections between sensor & PCB
114	Outdoor Sensor Damaged	Look at parameter 4.2.1 & that the thermoregulation is set right
		Check the sensor
		Check the wiring harness for continuity
		Check wiring harness not shorting to earth
		Check no water leaks affecting wiring harness
		Check connection on PCB are connected properly
140	Dynamic Pressure Check Failed (or no pump detection)	Check 230V to pump
		Check pump is spinning via de-blocking centre screw
		Check PWM pump connection pins, cable and PCB connection CN9
141	CH Flow Switch open (iR Boiler)	Flow switch open circuit
		Check water flowing around system
		Check no air lock or air in the system
201	DHW Probe Damaged (Combi or iS boilers)	Check the sensor
		Check the wiring harness for continuity
		Check wiring harness not shorting to earth
		Check no water leaks affecting wiring harness
		Check connection on PCB are connected properly CN12
		iS boilers should have parameter 2.2.8 - Boiler version, should be set to no.2 Storage with thermostat where no hot water sensor is used
203	Tank Probe Damaged (iS Boilers)	Cylinder sensor faulty
		Check the wiring harness for continuity
		Check wiring harness not shorting to earth
		Check no water leaks affecting wiring harness
		Check connection on PCB are connected properly Yellow plug
303	PCB Fault	Check PCB
304	Too many resets	Too many (> 5) resets in 15 minutes
306	PCB Fault	Check PCB
309	Gas Relay check Failed	Check PCB
3P9	Scheduled Maintenance - Call Service	Scheduled Maintenance - Call Service
41Z	Room sensor z not available	Check for C/htg Zone (X) sensor faulty
501	No flame detected	Check gas supply and flue system correct (in. condensate) Check connection between gas valve and PCB Check connection between spark generator and PCB Check connections between spark generator and electrode Check sensing lead connection between electrode and PCB
502	Flame detected with Gas Valve closed (False flame)	
504	Flame lift	
5P1	1st Ignition Failed	
5P2	2nd Ignition Failed	
5P3	Flame lift	
612	Fan error (fan does not start up)	Check fan and cable

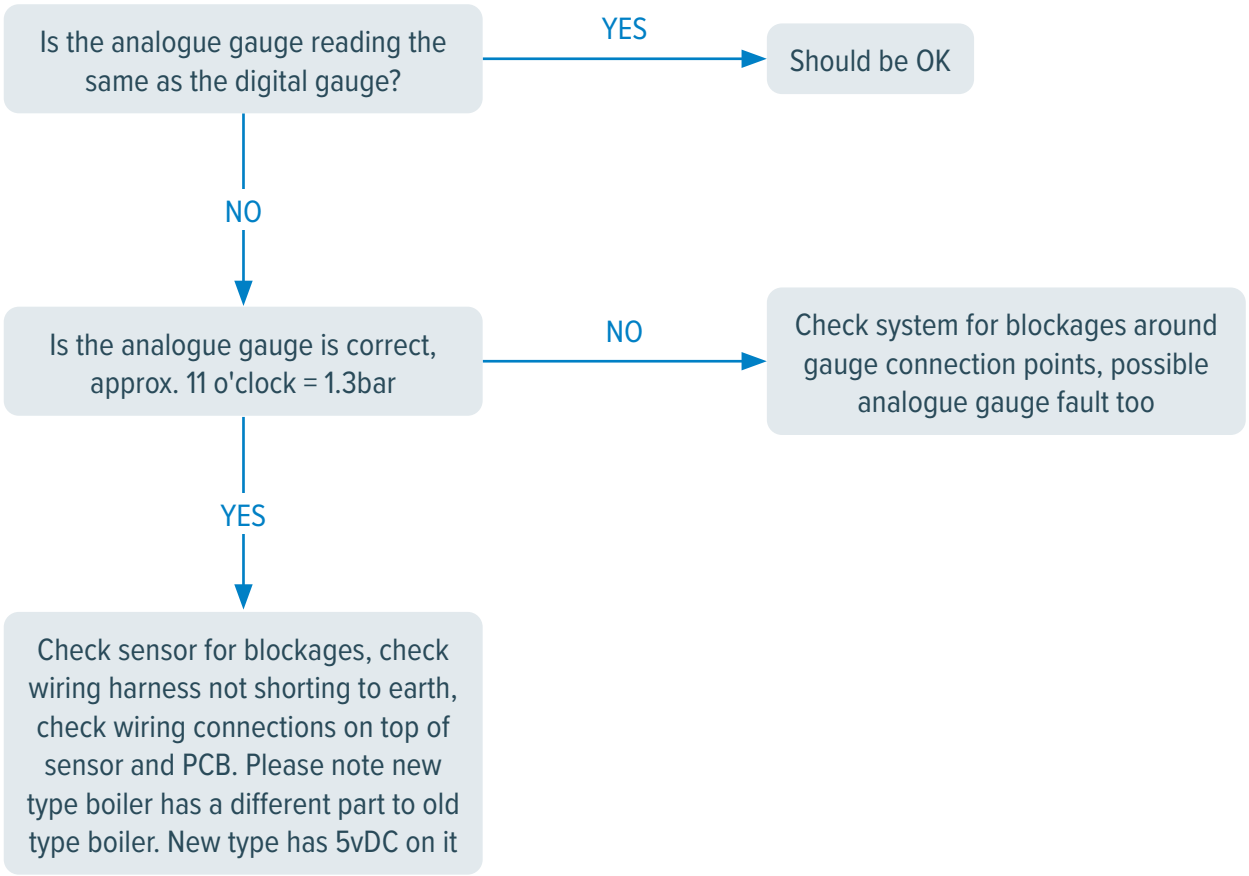
ATAG fault finding chart (2019 boilers onwards)

FAULT CODE	DESCRIPTION	PAGE
101	Overheat	50
102	Pressure sensor fault	51
103, 104, 105, 106, 107	Flow check failed	50
IP4	Pressure < Pmin (0.5 to 0.8 bar)	53
108	Pressure <Pmin 0.5 bar Filling needed	53
IP1, IP2,IP3	Flow check failed	53
IP9	Pressure > Pmax	54
110	Send (flow) probe damaged	55
112	Return sensor fault	55
114	Outside sensor damaged	55
118	Send (flow) and return probe plausibility checks failed	56
140	Dynamic pressure check failed (or no pump detection)	57
141	CH flow switch open (IR boiler)	58
201	DHW probe damaged	59
203	Tank probe damaged	59
303	PCB fault	60
304	Too many resets	60
306	PCB fault	60
309	Gas relay check failed	60
3P9	Scheduled maintenance - call service	61
41Z (Z = zone number, e.g. 411, 412 etc)	Room sensor faulty	62
501	No flame detected	63
502	Flame detected with gas valve closed	63
504	Flame lift	63
5P1	1st Ign failed	63
5P2	2nd Ign failed	63
5P3	Flame lift	63
612	Fan fault	64

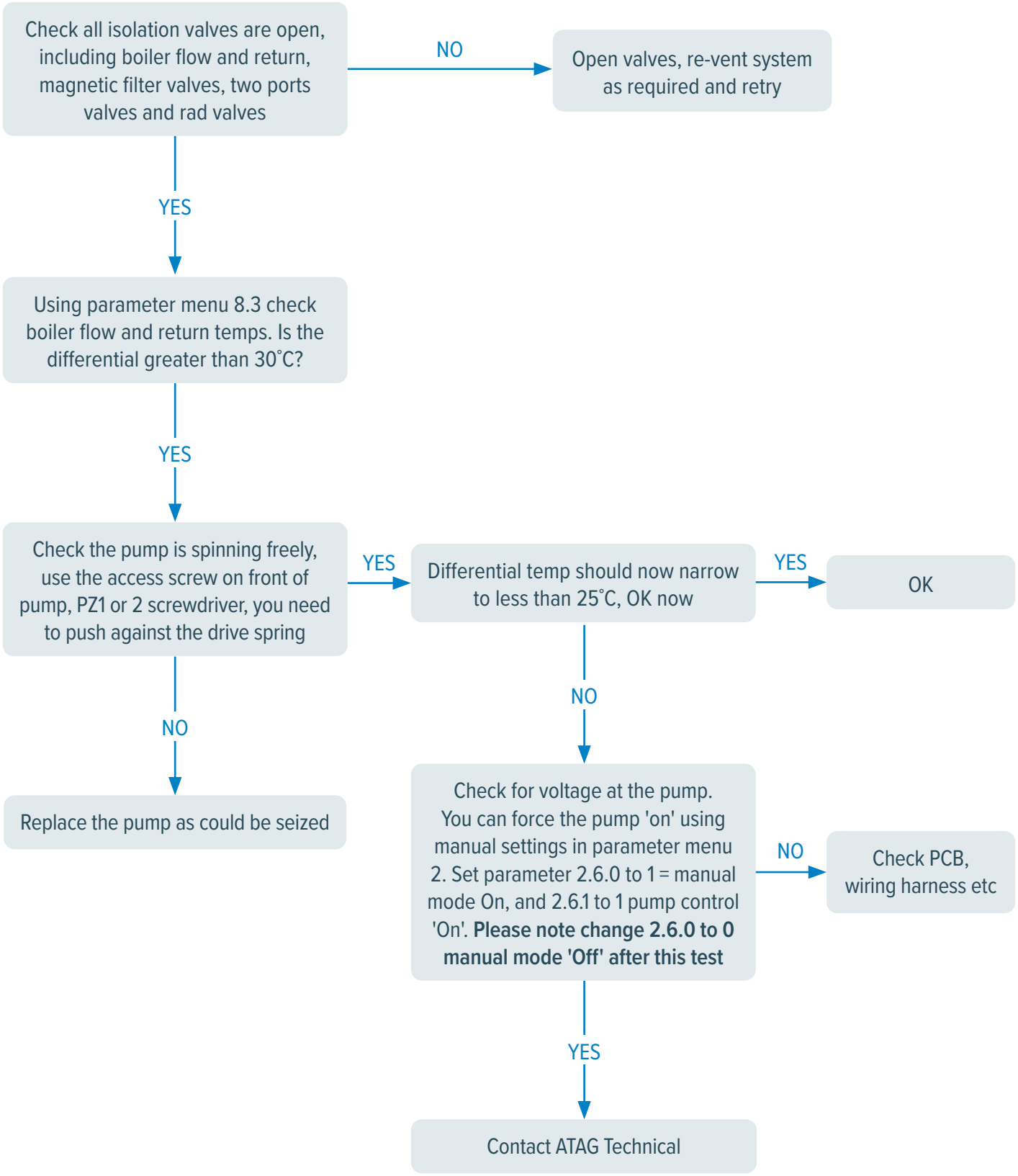
Fault code 101 - overheat



Fault code 102 - pressure sensor fault



Fault codes 103, 104, 105, 106, 107 - flow check failed



Fault code IP4 - pressure < Pmin (0.5 to 0.8 bar)

Top up pressure as required. **Please note update rate of new screen is slow at approx 10 secs refresh rate. OVER FILLING POSSIBLE. Use analogue gauge set to approx 11 o'clock on a cold system, this should correlate to 1.2/1.3 bar on the digital display**

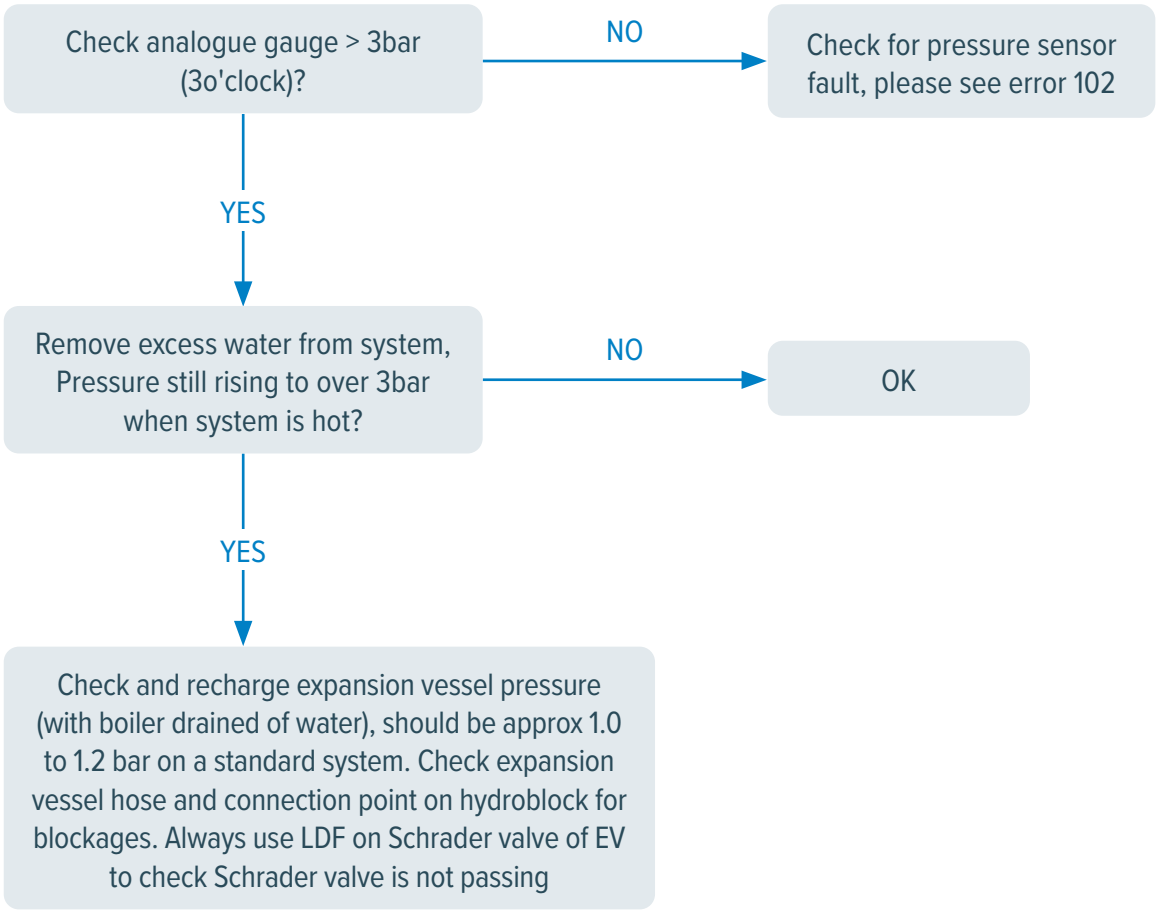
Fault code 108 - pressure <Pmin 0.5 bar Filling needed

Top up pressure as required. **Please note update rate of new screen is slow at approx 10 secs refresh rate. OVER FILLING POSSIBLE. Use analogue gauge set to approx 11 o'clock on a cold system, this should correlate to 1.2/1.3 bar on the digital display**

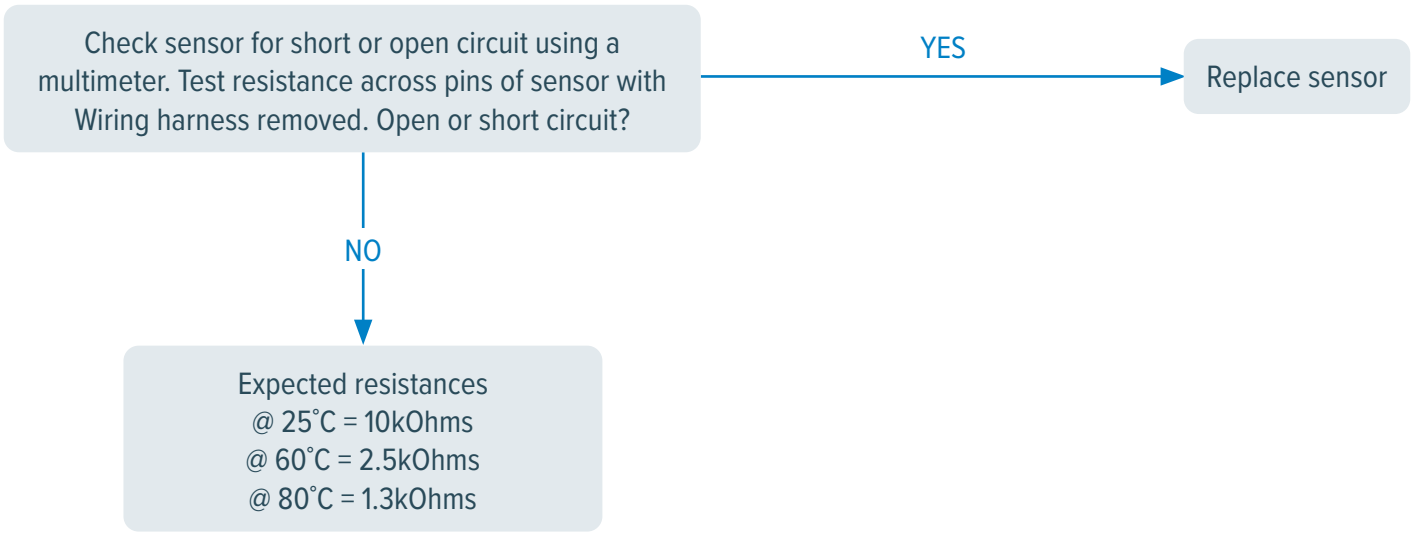
Fault code IP1, IP2,IP3 - flow check failed

See fault 101, 103, 104,105, 106, 107

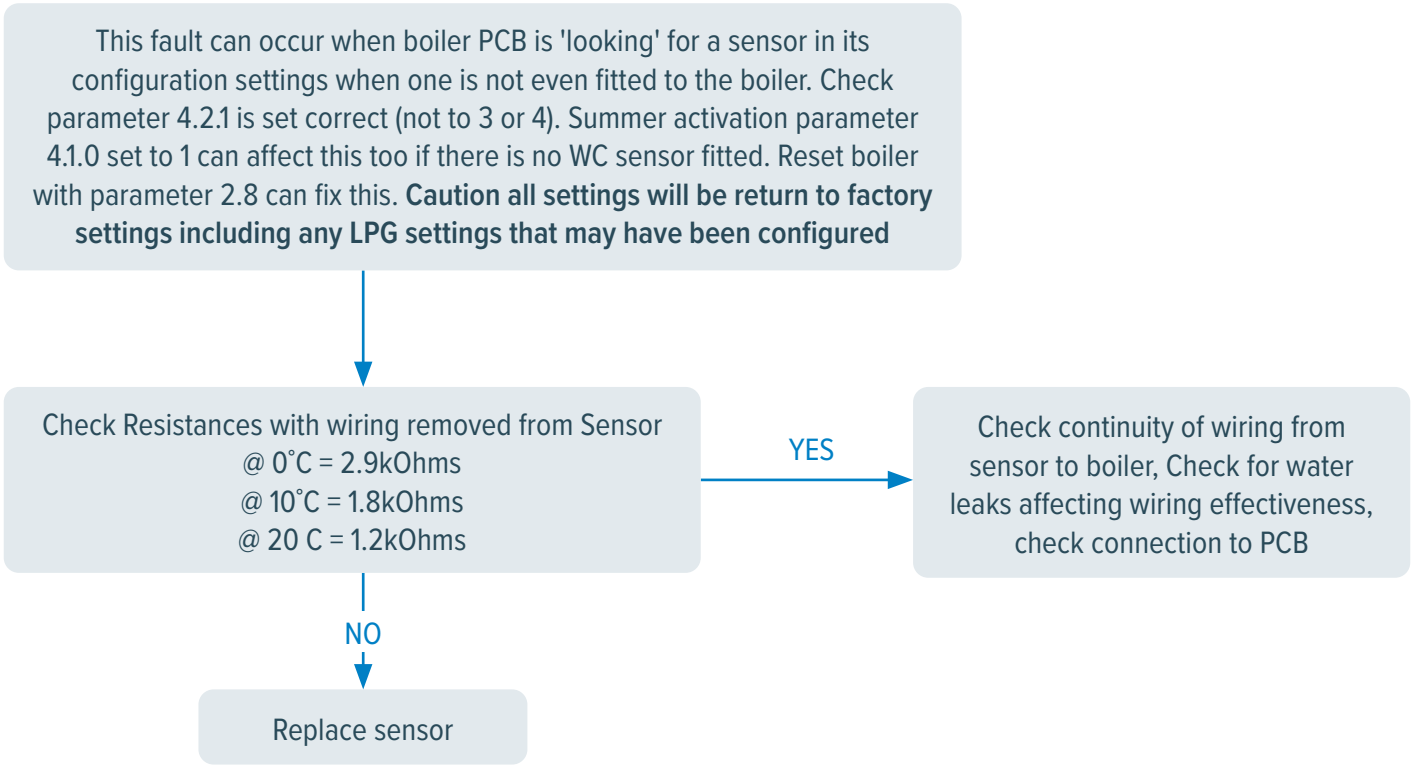
Fault code IP9 - pressure > Pmax



Fault codes 110 - send (flow) probe damaged / 112 return sensor fault



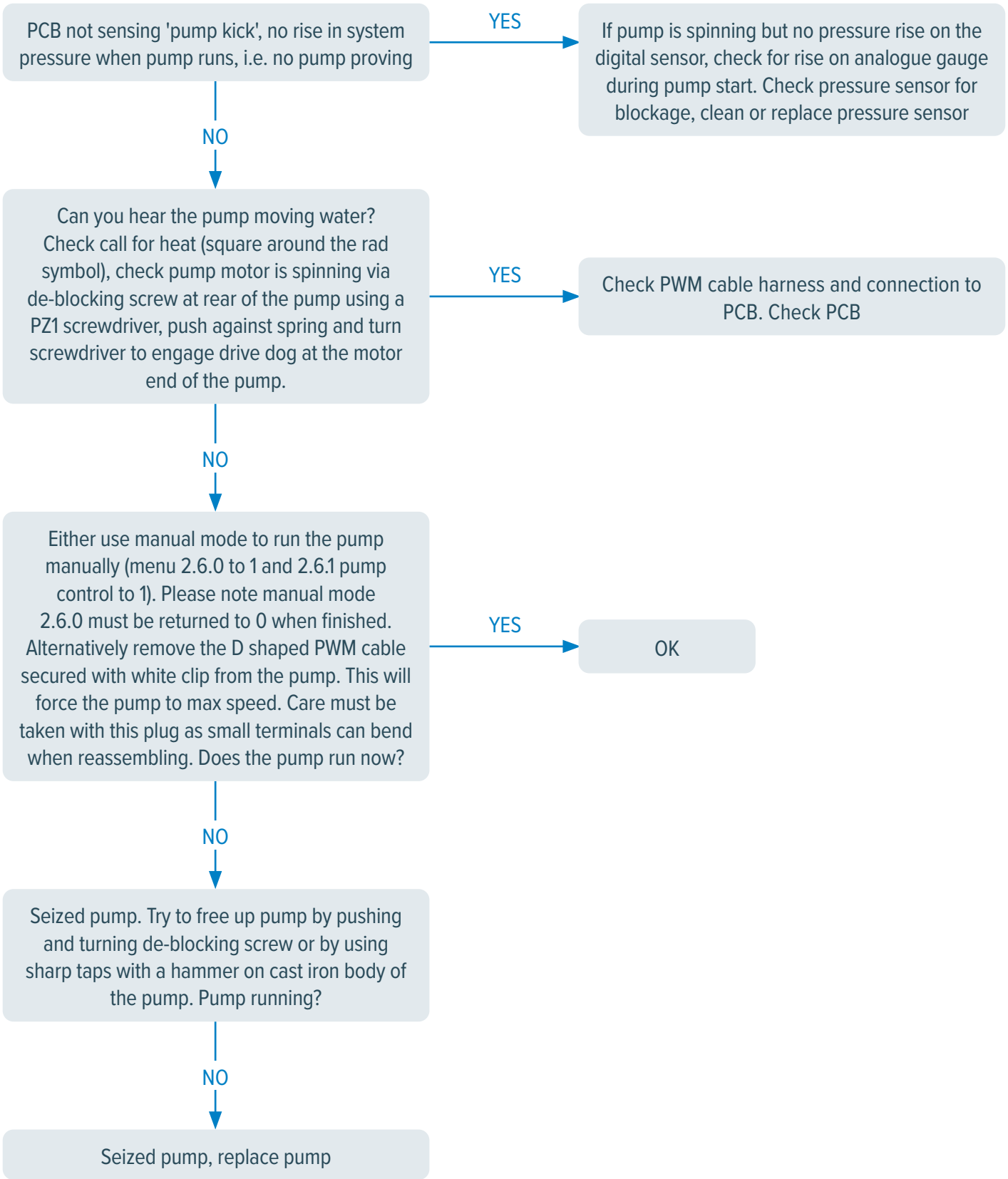
Fault code 114 - outside sensor damaged



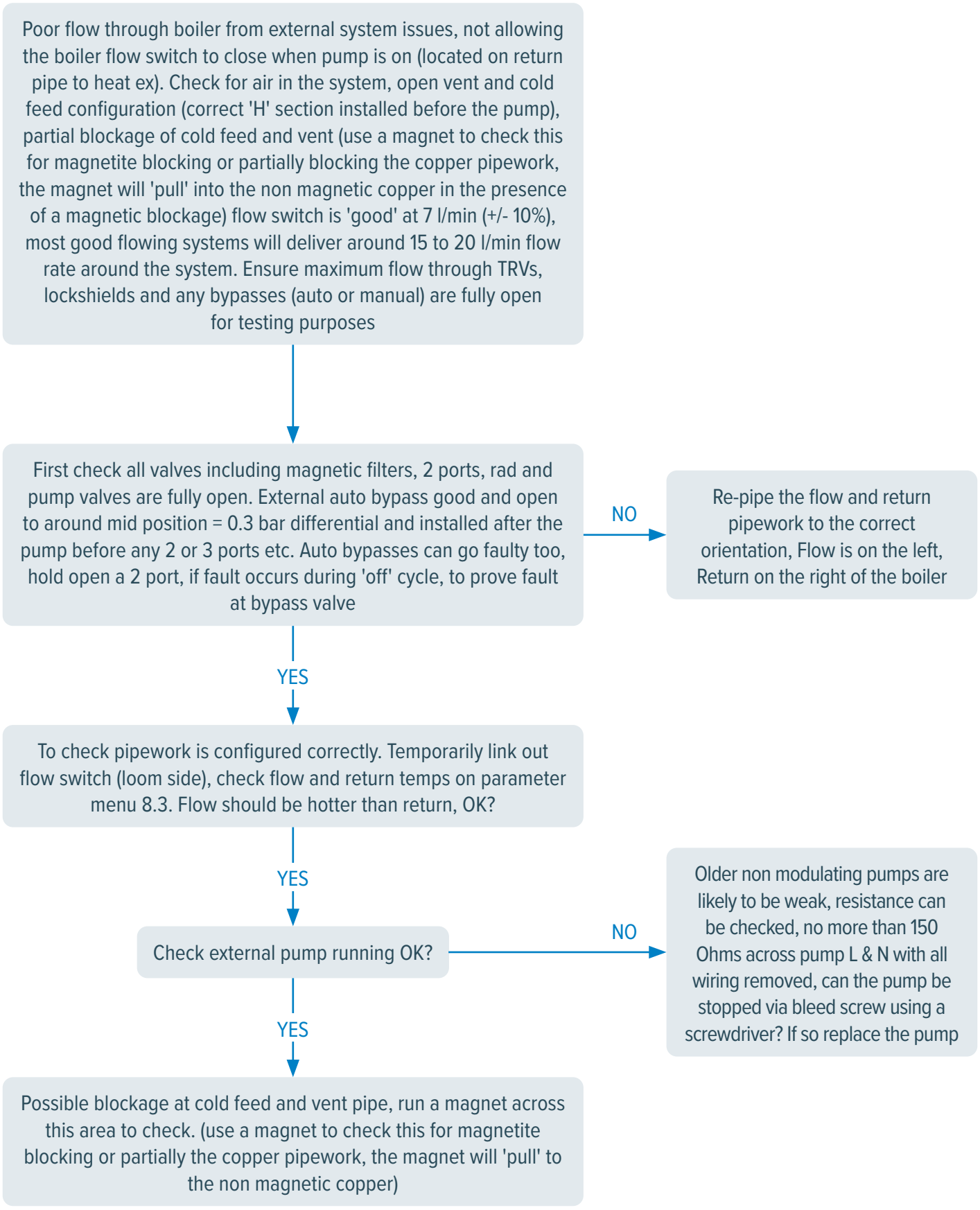
Fault code 118 - send (flow) and return probe plausibility checks failed

This check is looking at flow and return sensor readings. Usually where the boiler has been piped up incorrectly, where flow and return are reversed. Check sensor temperature readings in parameter menu 8.3 to confirm

Fault code 140 - dynamic pressure check failed (or no pump detection)



Fault code 141 - CH flow switch open (IR boiler)



Fault code 201 - DHW probe damaged

Check boiler version in 2.2.8. Should be set for combi = 0, system boiler with NTC = 1 (typically HWP systems), system boiler with thermostat = 2, Please note for combis and for system boilers with NTC (HWP kits) will be looking for a good resistance reading from the NTC sensor installed. Check NTC resistances

↓

Check Resistances (with wiring removed) from HW Sensor
@ 25˚C = 10kOhms
@ 50˚C = 3.6kOhms
@ 60 C =2.5kOhms

↓

Other checks to carry out, Check Sensor, Check Wiring harness for continuity, Check Wiring harness not shorting to earth, Check no water leaks affecting wiring harness, Check connection CN12 on PCB is located properly

Fault code 203 - tank probe damaged

Check boiler version in technical menu 2.2.8. Combi = 0, System boiler with NTC = 1 (typically HWP systems), system boiler with thermostat = 2, Please note for combis and for system boilers with NTC HW sensor (HWP kits for example) PCB will be looking for a good resistance reading from the NTC sensor installed. Check NTC resistances

↓

Check resistances (with wiring removed) from HW sensor
@ 25˚C = 10kOhms
@ 50˚C = 3.6kOhms
@ 60 C =2.5kOhms

↓

Other checks to carry out, check sensor, check wiring harness for continuity, check wiring harness not shorting to earth, check no water leaks affecting wiring harness, check connection to the yellow plug on PCB is located properly and terminal screws are tight

Fault code 303 / 304 / 306 / 309

Fault code 303 - PCB fault

Check PCB

Fault code 304 - too many resets

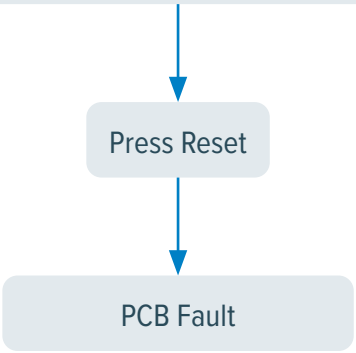
Too many resets (>5) in 15 minutes

Fault code 306 - PCB fault

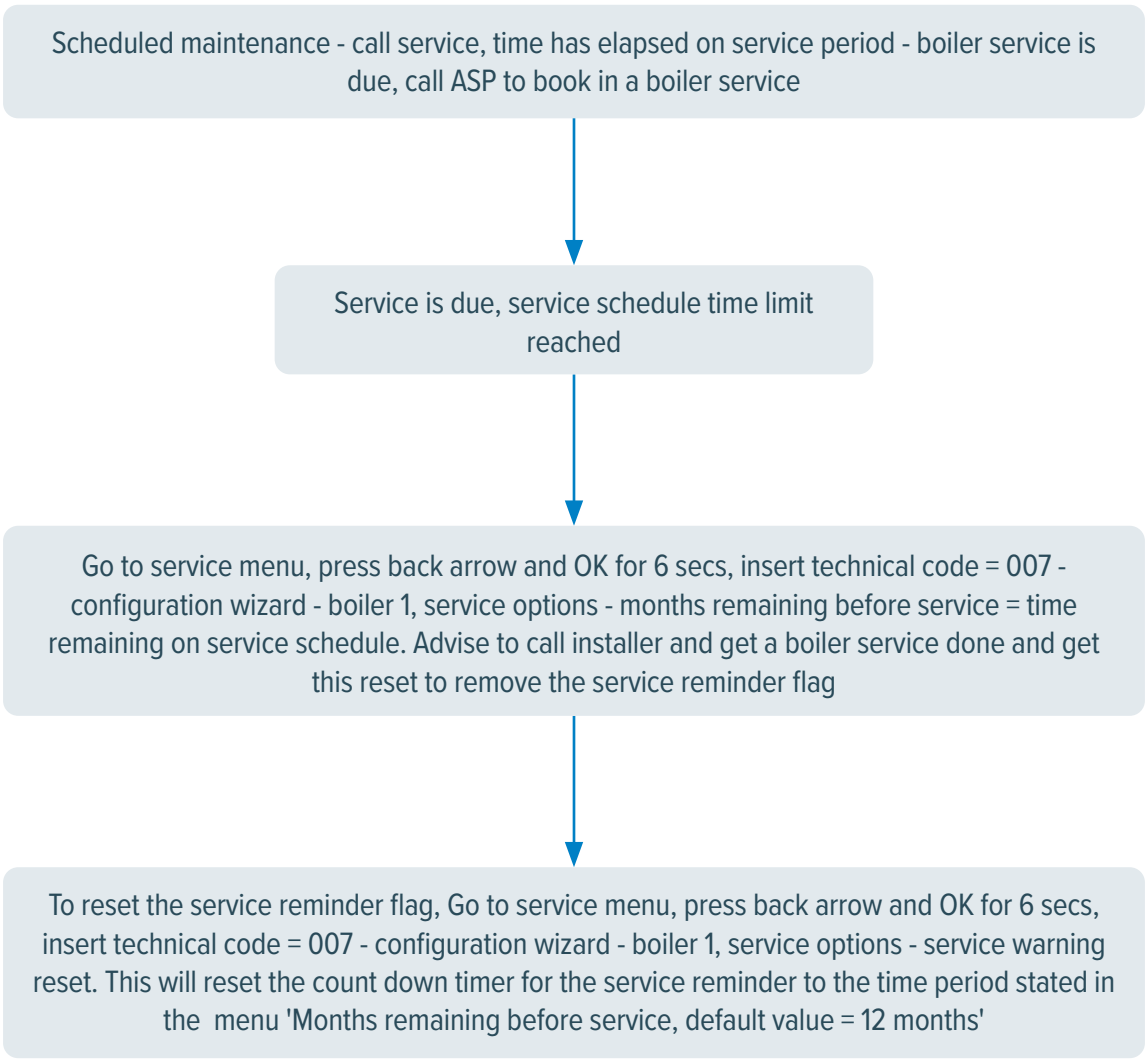
Check PCB

Fault code 309 - gas relay check failed

Check wiring harness connections, from PCB to Gas Valve CN2 on PCB, check earth connections



Fault code 3P9 - scheduled maintenance - call service



Fault code 41Z - room sensor faulty

(Z = zone number, e.g. 411, 412 etc)

Check PCB settings for configuration issue where a zone parameter has been configured incorrectly for the heating control equipment used. Room Sensors are either ATAG ONE^{Zone} controllers or ATAG Cubes only. No other 3rd party thermostat will act as a 'room sensor' into this boiler

Check Thermoregulation type in technical area 'complete menu' Zone Number.2.1 (e.g. 4.2.1 or 5.2.1 etc). This parameter can be set to 2 or 4 if ATAG ONE^{Zone} or ATAG Cube is fitted. Please note the zone assignment must be correct on the stat as well, so ATAG ONE^{Zone} or ATAG Cube zone assignment must correspond to the zone parameter in question. i.e., zone 1 thermostat = zone 1 parameter 4.2.1, zone2 = 5.2.1 and so on

Other 3rd party thermostats must have this parameter set to either 0 (on/off fixed flow temp) or 3 (weather comp with on/off, if 3 is selected an outside sensor must be fitted as well)

Fault codes:

501 - No flame detected, 502 - flame detected with gas valve closed 504 - flame lift, 5P1- 1st Ign failed, 5P2 - 2nd Ign failed, 5P3 - flame lift

Check for blocked condense along its entire length and termination point. Check flue for blockage. PCB is checking ionisation current (flame rectification) to flag the fault i.e. no flame = no ionisation current. Is there gas to the boiler? Is it is NG or LPG?

Is there gas to the boiler? Is it is NG or LPG? Check Gas at other appliances like a gas hob, oven or gas fire

NO → Re-establish gas supply → If LPG has the UPSO valve been reset if the LPG ran out previously?

YES

Check condense for blockages, you will be able to see water in the clear pipe of the condense outlet pipework just after the PRV connection under the boiler if its blocked. If this fault is intermittent it could be poor flow on the external pipework due to a blockage downstream (kitchen sink or washing machine waste pipe etc being blocked due to foreign objects / waste for example). Check the entire length

YES → Remove blockage in pipework, caution boiler could be full of water when you remove the pipework!

NO

Determine if the gas valve is opening by fitting a manometer to the inlet of the gas valve (RHS test point on the gas valve). Ascertain standing pressure with boiler at idle state (approx 21 - 26 mbar for NG and approximately 36mbar for LPG). Make a call for heat and during the ignition process does the inlet pressure drop slightly? If the pressure drop is too high then check gas supply, check working pressure difference at meter during ignition process and the boiler inlet test point

NO → Gas valve not opening, Check wiring and voltages, CN2 on the board should have 230v during ignition sequence across pins 1 and 2

NO → Check wiring thoroughly. If OK, PCB issue

YES → Replace gas valve

YES → Is there a spark? Check electrodes

NO → Check wiring connections on electrodes back to PCB and spark generator. Check wiring from Spark generator to PCB. Check earth connection of PCB and boiler. Possible electrode fault or spark generator

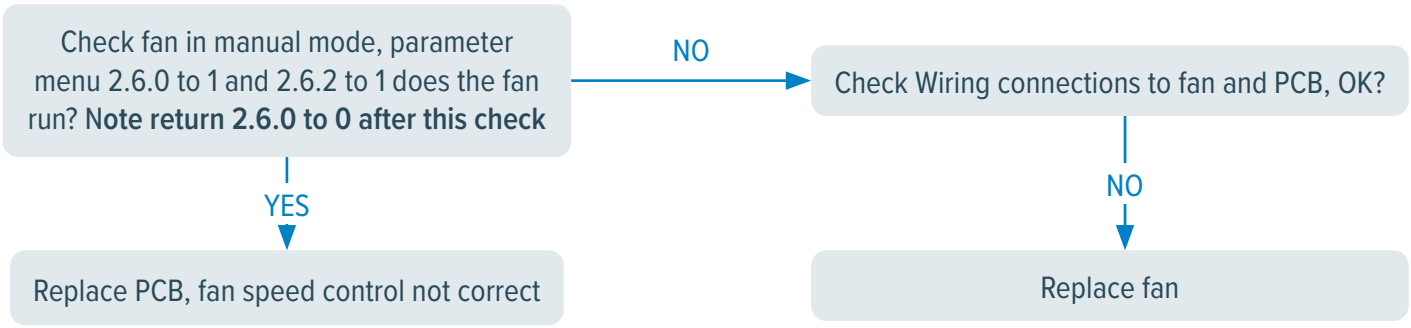
YES

Check combustion readings at high and low fire. Low ionisation current (low CO_2) will create a flame lift fault. Reset combustion on gas valve to higher than nominal CO_2 readings. (>9.0% on high and >8.7% on low for NG, and >10.3% on high and >10.2% on low for LPG). OK now?

NO

Possible adjustments required to fan speeds via altitude parameter, this is only relevant to boiler between P1845XXXXX - P1917XXXXX. For only those boilers parameter 2.0.4 can be adjusted up to 1200m. Combustion at high and low must be rechecked after these adjustments. Otherwise contact ATAG Technical

Fault code 612 - fan fault

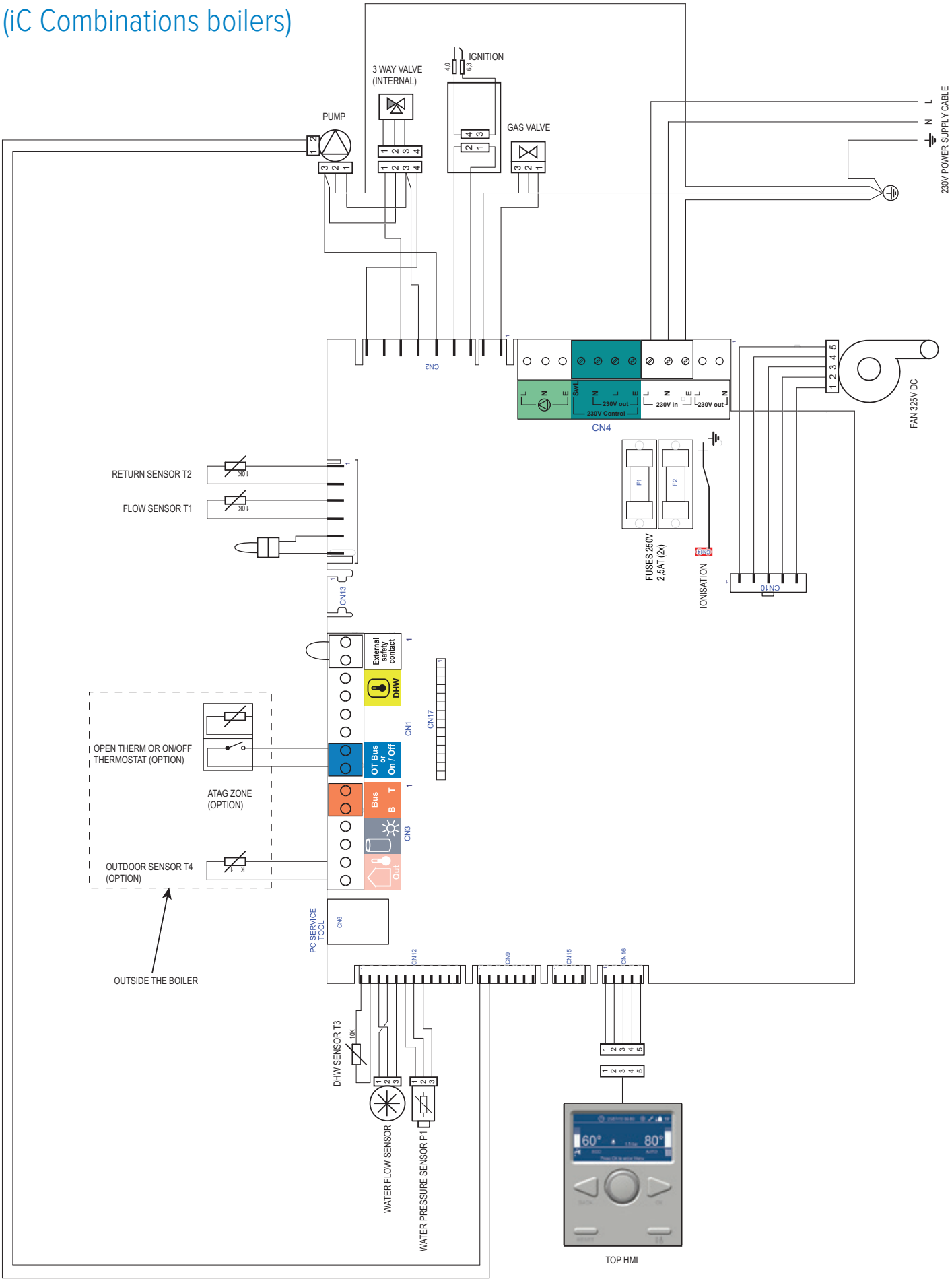


Resistance table sensors

RESISTANCE TABLE SENSORS			
Outside Sensor		Flow Sensor, Return Sensor, DHW Sensor	
NTC 1k (25°C)		NTC 10k (25°C)	
Temperature (°C)	**Resistance (KΩ)**	**Temperature (°C)**	**Resistance (KΩ)**
-10	4.574	-10	55.047
-9	4.358	0	32.555
-8	4.152	10	19.873
-7	3.958	12	18.069
-6	3.774	14	16.447
-5	3.600	16	14.988
-4	3.435	18	13.674
-3	3.279	20	12.488
-2	3.131	22	11.417
-1	2.990	24	10.449
0	2.857	26	9.573
1	2.730	28	8.779
2	2.610	30	8.059
3	2.496	32	7.406
4	2.387	34	6.811
5	2.284	36	6.271
6	2.186	38	5.779
7	2.093	40	5.330
8	2.004	42	4.921
9	1.920	44	4.547
10	1.840	46	4.205
11	1.763	48	3.892
12	1.690	50	3.605
13	1.621	52	3.343
14	1.555	54	3.102
15	1.492	56	2.880
16	1.433	58	2.677
17	1.375	60	2.490
18	1.320	62	2.318
19	1.268	64	2.159
20	1.218	66	2.013
21	1.170	68	1.878
22	1.125	70	1.753
23	1.081	72	1.638
24	1.040	74	1.531
25	1.000	76	1.433
26	0.962	78	1.341
27	0.926	80	1.256
28	0.892	82	1.178
29	0.858	84	1.105
30	0.827	86	1.037
35	0.687	88	0.974
40	0.575	90	0.915

Electrical diagram

(iC Combinations boilers)



Electrical functions

PLUG	FUNCTION	COMPONENT CONNECTION No.'S	VOLTAGE	RESISTANCE
CN12 (3-5)	Water flow sensor No demand	1 - 2	4.9v DC	
		1 - 3	4.9v DC	
		2 - 3	0v DC	
	Water flow sensor DHW demand	1 - 2	4.9v DC	
		1 - 3	2.5v DC	
		2 - 3	2.3v DC	
R29 (3,4)	Flow sensor T1	1 - 2		10KΩ@ 25°C
R29 (1,2)	Return sensor T2	3 - 4		10KΩ@ 25°C
CN1 (1,2)	External safety contract (link wire)	White		0KΩ
CN1 (3,4)	DHW cylinder sensor	Yellow (DHW)		10KΩ@ 25°C
CN1 (7,8)	OpenTherm BUS & ON / OFF connection	Blue	22v DC	
CN3 (1,2)	ATAG BUS connection	Red	20v DC	
CN3 (5,6)	Outside sensor T4 option	Peach (Out)		1KΩ@ 25°C
CN12 (1,2)	DHW sensor T3			10KΩ@ 25°C
CN12 (6 -8)	Water pressure sensor P1 (@ + 1.0bar)	8 - 9		
		5 - 6	32v DC	
		5 - 7	22v DC	
CN2 (5,6,7,9)	Actuator 3 way valve		DHW on	CH on
		1 - 2	230v AC	0v AC
		1 - 3	0v AC	169v AC
		1 - 4	0v AC	0v AC
		2 - 3	230v AC	230v AC
		2 - 4	0v AC	230v AC
		3 - 4	0v AC	0v AC
CN12 (1, 5)	Fan			
CN2 (1, 2)	Gas valve	1 - 2	230v AC	
CN2 (3, 4)	Spark generator (ignition)	4	230v AC	

External safety contact (white)

This connection comes with a loop of wire. This loop enables the boiler to work. Removing the loop will stop the boiler from firing up.

The connection can be used to connect a condensate pump safety overflow switch, where this will stop the boiler from firing if the condensate pump cannot get rid of the condensate water and the safety overflow switch is triggered.

DHW sensor connection (yellow)

N/A not applicable.

OpenTherm BUS & ON / OFF connection (blue)

This PCB will detect if an OpenTherm or an On / Off device is connected to the blue plug on the terminal block.

An OpenTherm compatible device as well as a volt free on / off thermostat or programmable room thermostat can be used to switch on or off the heat demand to the boiler.

ATAG Zone connection (red)

The ATAG ONE^{Zone} smart room thermostat is the primary candidate for use of the ATAG zone eBus connection. The smart room thermostat can also be substituted by another ATAG zone compatible room controller, this eBus enables the boiler to modulate set point temperatures for optimal efficiency.
On top of the thermostats, the connection is used for other ATAG zone compatible devices such as zone management accessories.

Solar inlet sensor connection (grey)

N/A not applicable.

ATAG Outside sensor (rose)

When a weather compensation sensor (supplied with the iC Range of combination boilers) is used, the two wires from the outside sensor get wired into the plug supplied on the terminal block in the rose connector position.

230V Out (230V live output, white)

Not used.

230V In (230V live input, white)

This is the 230V mains power input to the boiler connection.

230V Control Block (230V live output, aqua blue)

If a live, neutral or earth wire is required for an external clock/programmer these can be taken from the (L) live, (N) Neutral or (E) earth 230V live output aqua blue connections on the 230v control terminal block.

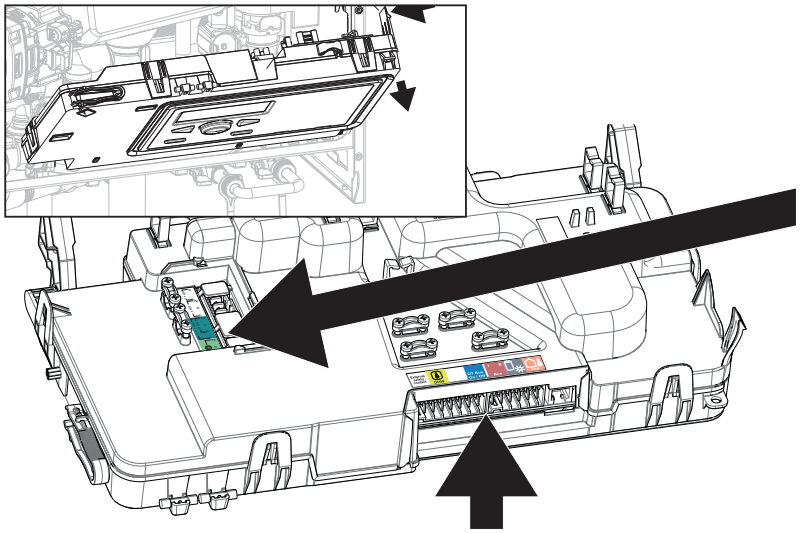
If an external 230V clock/programmer is used, then a switched live is required from the control(s) to connect to the 230V control aqua blue connector in position (SwL) Switched live to fire up the boiler.

230V Control Block (SwL Switched live, aqua blue)

If a 230V room thermostat is used, then a switched live is required from the control(s) to connect to the 230V control aqua blue connector in position (SwL) Switched live to fire up the boiler. This could be in series after the clock/ programmer to the room stat, then to SwL on the 230V control aqua blue connector.

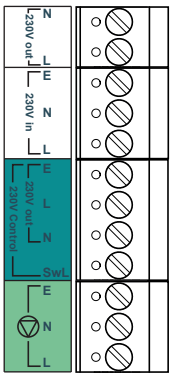
External pump (230V live output, green) optional extra

If an external pump needs to be controlled and switched on when heating mode is operating on the boiler, 230v power (outlet) can be used to power an external pump on the system. (optional extra plug required).



terminal block

230V control terminal block iC-Range



N:	Neutral	**230V out**
L:	Live	
E:	Earth	**230V in LNE**
N:	Neutral	
L:	Live	
E:	Earth	**230V live output**
L:	Live	
N:	Neutral	
SwL:	Switched live	**230V live input only!**
E:	Earth pump	**230V live output to pump**
N:	Neutral pump	
L:	Live pump	

*Note for Y Plan systems, the supplied capacitor must be fitted in neutral and SwL connections.

ATAG 3-port external diverter valve kit

including the ATAG ONE^{ZONE} controller or ATAG Cube used with a vented hot water cylinder (iS System boiler only)

Vented hot water cylinders

The ATAG 3-port diverter valve is to be fitted external to the boiler on the system pipework with the electrical wiring routed back to the 3 way valve electrical connection on the back of the PCB housing.

The installation will use the cylinder sensor supplied within the 3-port diverter valve kit to control the hot water temperature. Therefore no other cylinder thermostat is required.

The ONE^{ZONE} controller will control the heating and hot water time and temperature requirements. If the ATAG Cube room thermostat is used then the heating and hot water times are controlled on the boilers built in programmer option.

The weather compensation for heating will be controlled by the boiler and ONE^{ZONE} controller via the internet connection and local weather station data. An optional outside sensor (ARZ0055U) can be added to the 3-port diverter valve kit to sense the outside temperature specifically for the individual property.

With an ATAG Cube fitted the optional outside sensor would be needed if weather compensation was required for the central heating.

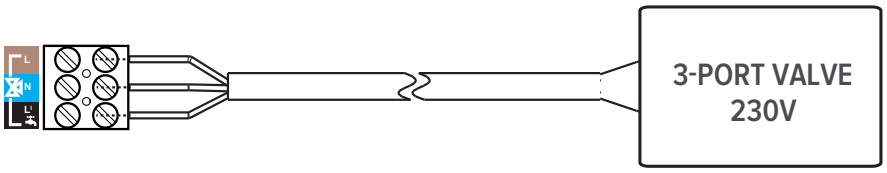
When put into heating mode the diverter is powered.
Brown & Blue 230V, Black & Blue 0V.
When put in hot water mode there is a switch of power.
Brown & Blue 230V, Black & Blue 230V.
So, hot water power put on Black & Blue, heating power taken off Black & Blue.

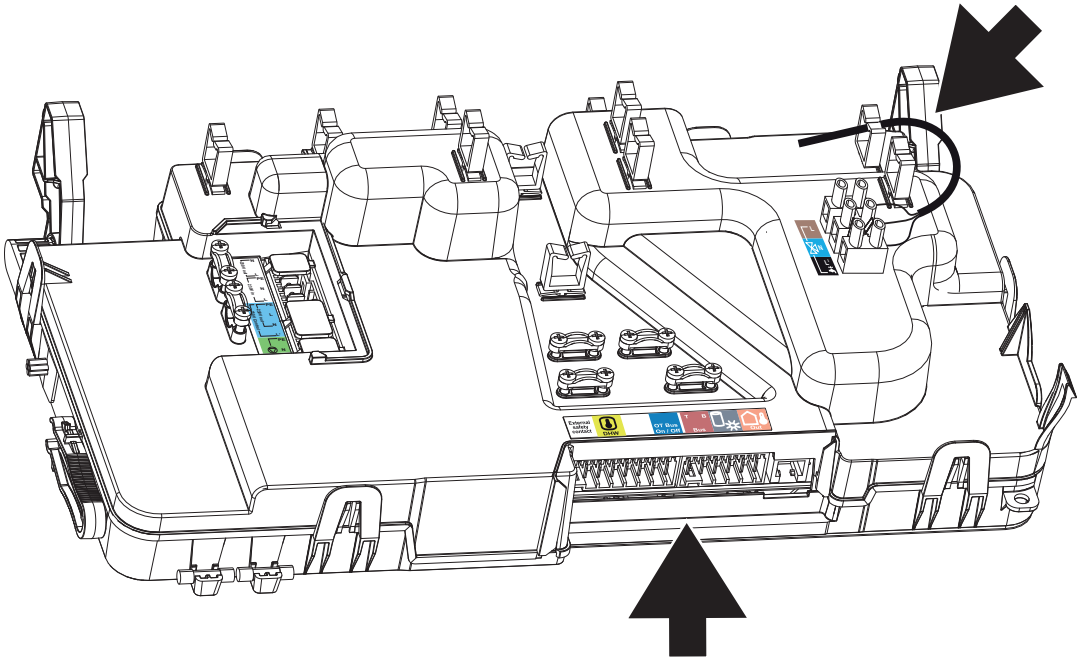
The ATAG 3-port diverter valve

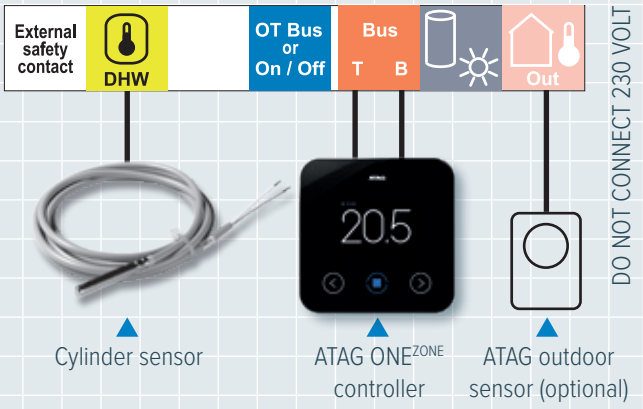
Install the 3-port valve on the system pipework with the valve ports in the following orientation, **AB** port iS System boiler, **A** port hot water cylinder and **B** port heating system (see diagram on page opposite).

Connection 3 way valve

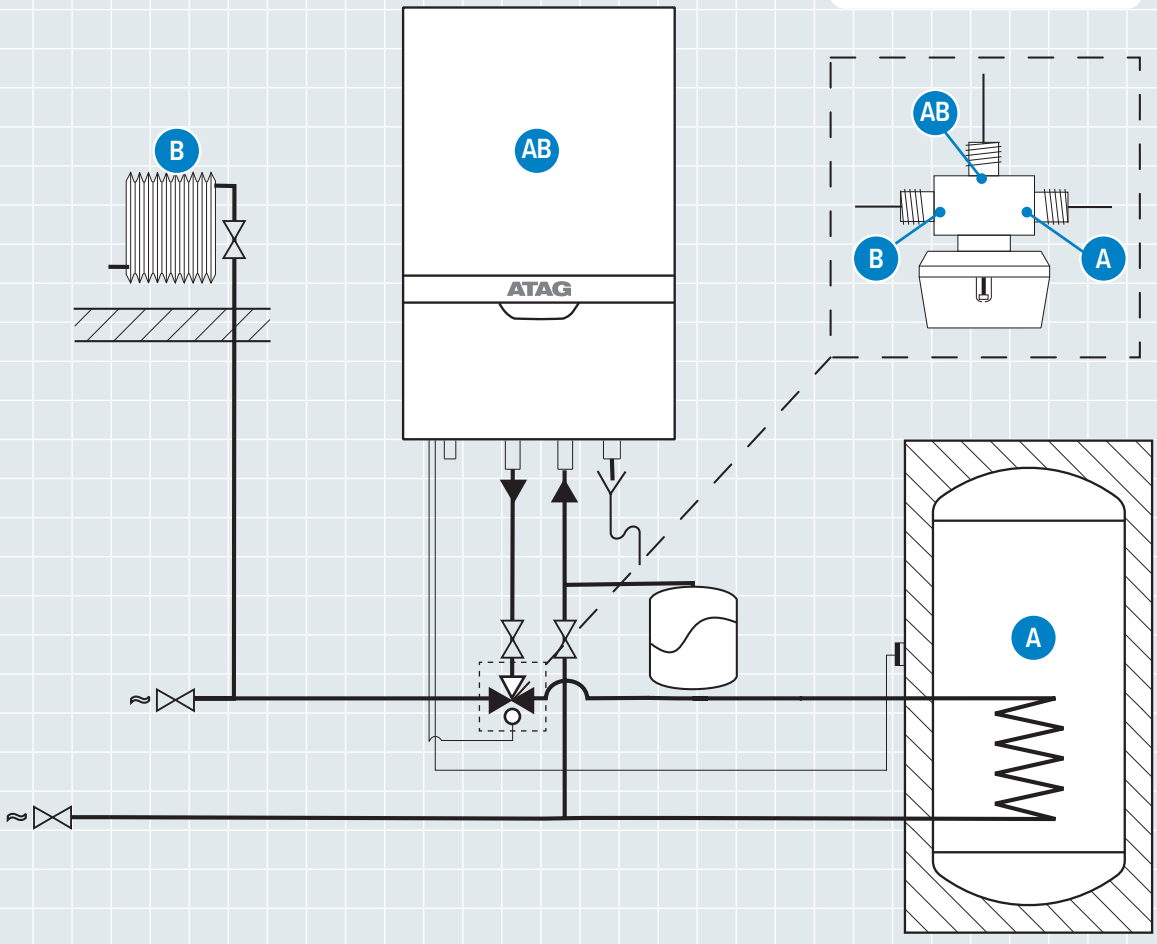
L: Live
N: Neutral
L': Signal DHW







AB: iS System boiler
A: DHW Cylinder
B: Heating system



ATAG 3-port external diverter valve kit

including the ONE^{ZONE} controller or ATAG Cube used with an unvented hot water cylinder (iS System boiler only)

Unvented hot water cylinders

The installation may have altered wiring of the dual thermostat (depending on the cylinder manufacturer) to only use the high limit thermal cut-out of the dual thermostat.

The high limit thermal cut-out of the dual thermostat MUST be wired to interrupt the power to the 2-port valve supplied with the unvented cylinder.

Fitting of the cylinder temperature sensor
The cylinder sensor is to be fitted into a sensor pocket of the unvented cylinder along with the dual thermostat supplied with the unvented cylinder.

Wiring of components
The 3-port diverter valve will be connected to the spare 3-port valve connector on the wiring loom.

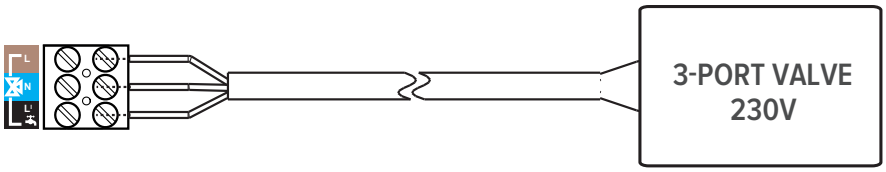
Connect the cylinder sensor with the yellow connector to the yellow DHW volt free position and the ATAG ONE^{Zone} control or ATAG Cube wires with the red connector to the red BUS volt free position on the top front of the control panel.

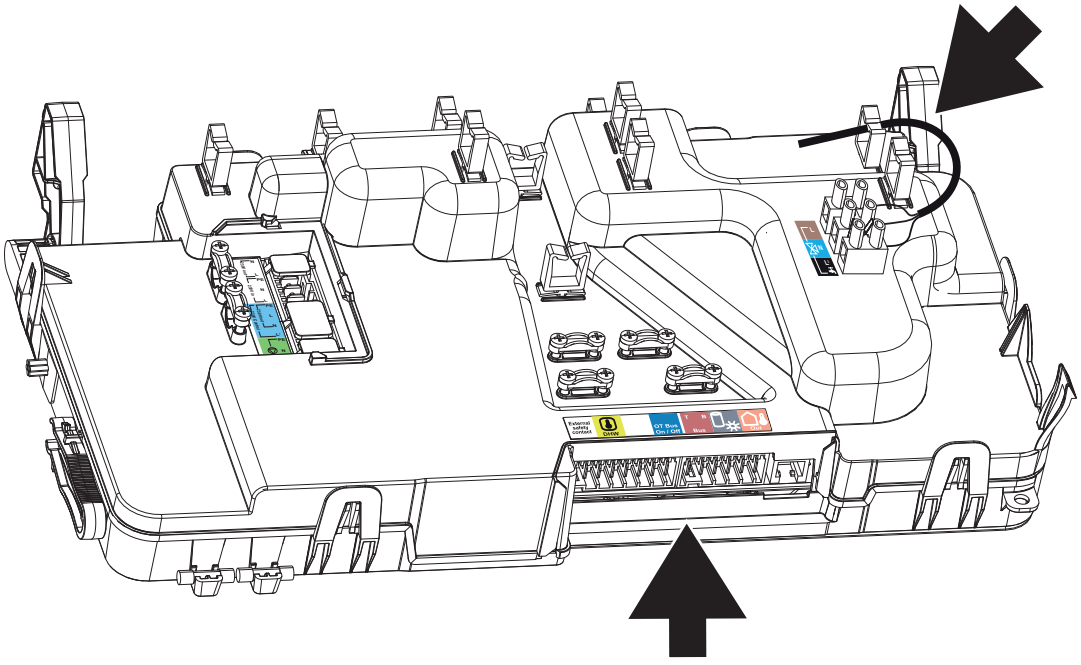
2 port zone valve & dual thermostat (supplied with unvented cylinder)
The 2-port zone valve must be installed in the primary flow pipework between the 3-port valve and the cylinder connection as per the following diagram and G3 unvented hot water requirements.

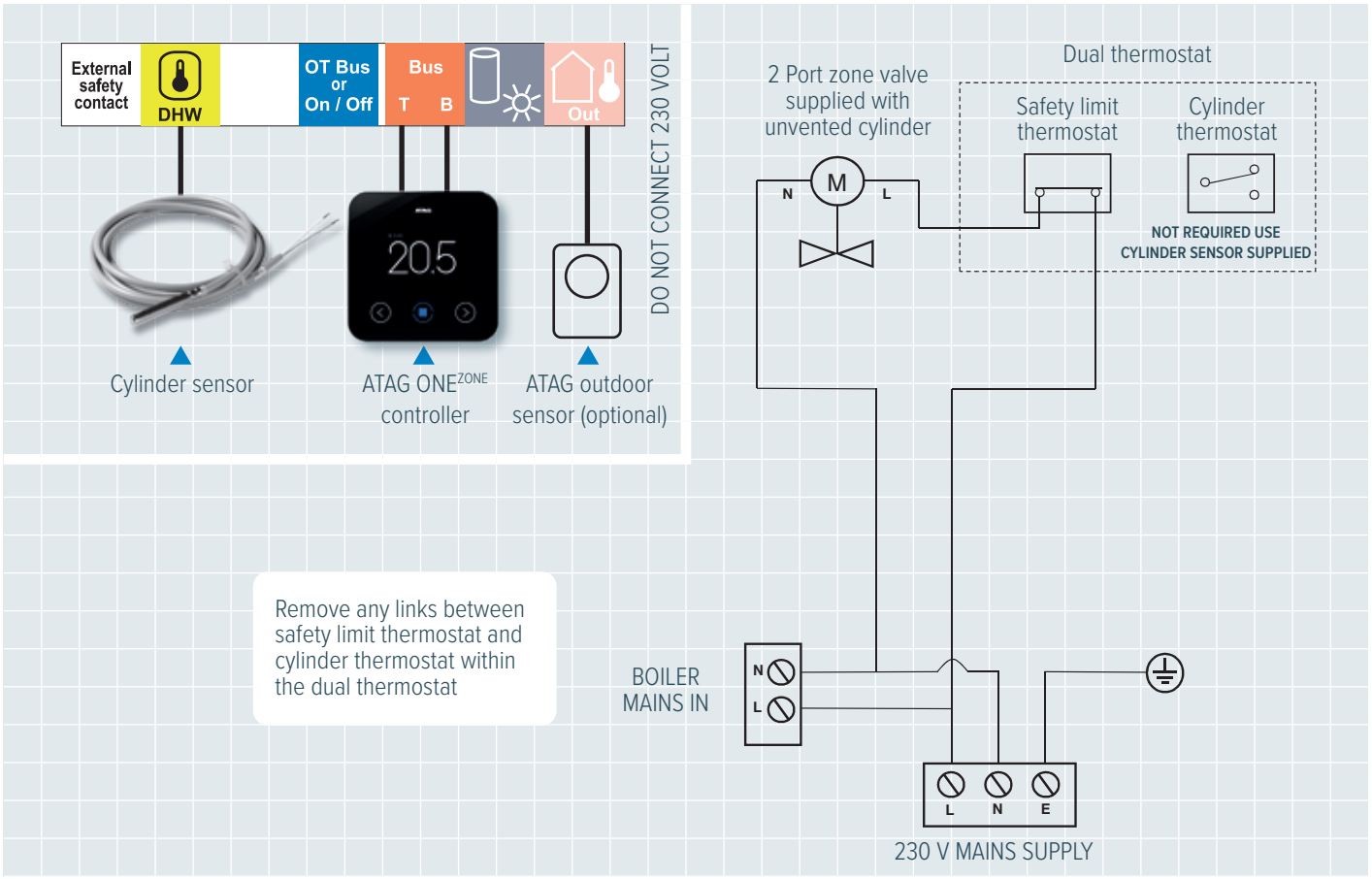
The 230v mains power supply MUST be wired only to the high limit thermal cut-out of the dual thermostat and be wired to interrupt the power to the motor of the 2-port valve as per electrical diagram below.

Connection 3 way valve

L: Live
N: Neutral
L': Signal DHW

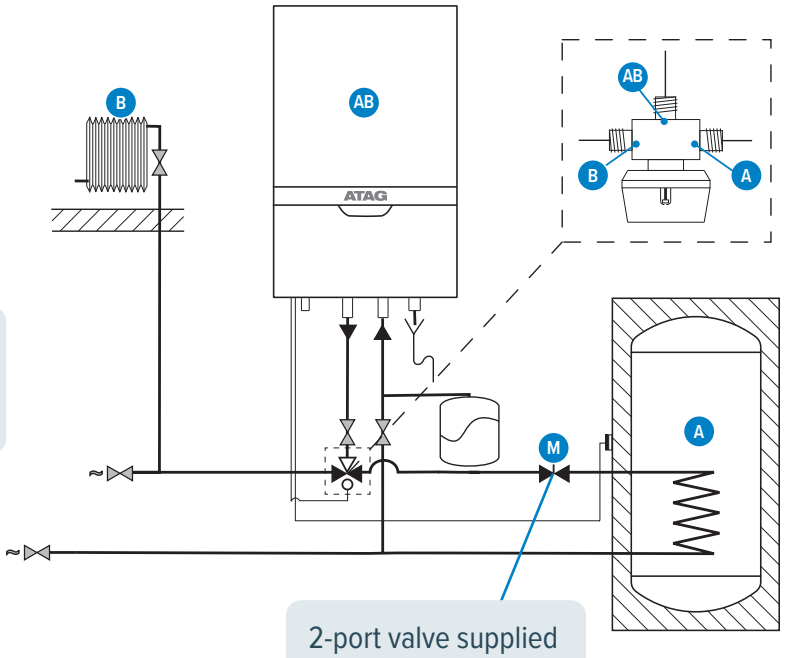






3-port diverter valve

The 3-port diverter valve on the system pipework with the valve ports is the following orientation, (**AB**) port iS System boiler, (**A**) port hot water cylinder & (**B**) port heating system.



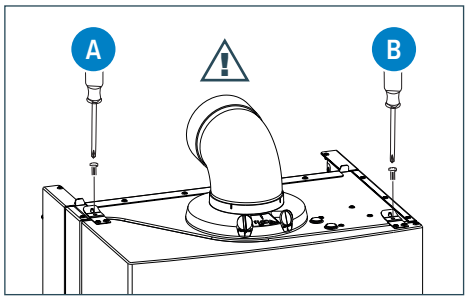
AB: iS System boiler
A: DHW cylinder
B: Heating system

2-port valve supplied with unvented

Routine servicing

ATAG Heating Technology advises on an interim service inspection with a flue gas analyser. A full strip down service is required every 4 years or where analyser readings are not within correct safety standards.

Required tools:
- Cross head screwdriver
- T-handle key set with 3 bits (hex key 4mm, hex key 5mm and cross head PZ2)
- Open end wrench 8mm



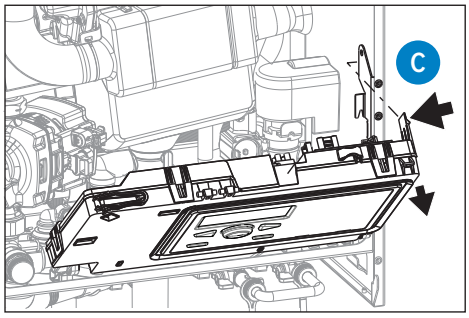
NOTE ALWAYS REFIT AND TURN THE 2 SCREWS TIGHT IN THE FASTENERS A AND B.

Interim Service

For reasons of safety and economy, it is recommended that the boiler is serviced annually. Servicing must be performed by a competent person in accordance with BS 7967.

After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on the inside back page of this document.

In order to perform maintenance, the following actions have to be taken:
- Switch off the electrical power to the boiler
- Remove the screws from the 2 fasteners (**A**) and (**B**)
- Unlock the fasteners (**A**) and (**B**) and remove the cover in a forward motion



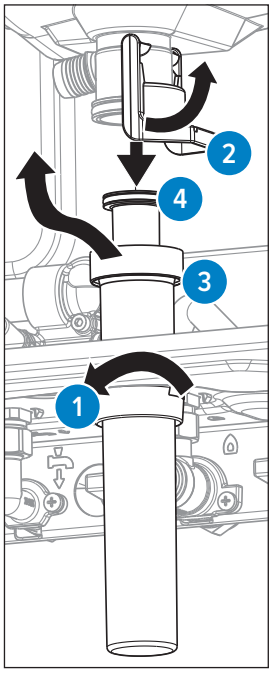
Air box/cover

The cover also doubles as air box:
- Clean the air box/cover with a cloth and a non-abrasive cleaner

Siphon

The degree of pollution residue in the siphon is an important indication for the need of maintenance

- Turn the control unit forwards by moving the handle (**C**) slightly to the left
- Turn/pull the sealing ring (**1**) downwards
- Turn the siphon securing clip (**2**) anti-clockwise
- Pull the siphon cup (**3**) and siphon pipe (**4**) out of the heat exchanger
- Take the siphon cup and pipe out of the boiler by moving it downwards or turn it in forward motion upwards along the heat exchanger
- Clean the parts by rinsing them with water
- Check the O-ring of the siphon cup and replace it if necessary
- Grease the O-ring again with acid-free O-ring grease to simplify the reassembly



Reassembly takes place in reverse order
- Fill the siphon with 150 ml of water
- If a leakage has occurred to the siphon, replace the entire siphon

Check expansion vessel pressure (every year)

Isolate the boiler by the flow and return valves underneath the boiler. (The 2 outer black handled valves).

Drain down the boiler and with the boiler still vented remove the dust cap on the boiler expansion vessel. If the boiler is a combi, then remove the diverter vale head. Check the pre-charge pressure of the expansion vessel and re-pressurise in **accordance with the static height of the heating** installation as per the table below. If fitted in a **loft/attic space**, the expansion vessel pre-pressure should be 0.5bar.

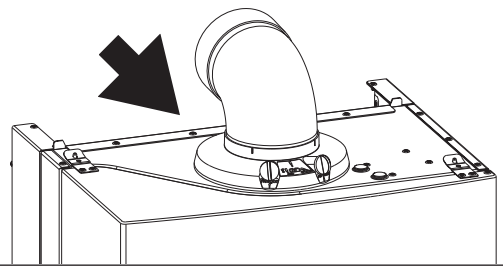
Ensure the drain off is open when re-pressurising the expansion vessel.

INSTALLATION HEIGHT ABOVE THE EXPANSION VESSEL	PRE-CHARGE PRESSURE OF THE EXPANSION VESSEL
5m	0,5 bar
10m	1,0 bar
15m	1,5 bar

Refill boiler and allow boiler to carry out the air purge function for its 7 minutes.

Test expansion vessel re-pressurisation point (Schrader) with leak detection fluid to ensure no pressure is leaking through the Shrader core after this work. If the Shrader core is passing, replace as part of the service.

Expansion vessel & repressurisation point



Note: The vessel can lose some of its charge pressure over time. Also check whether the installed expansion vessel is adequate for the system water volume.
Note: If the interior of the boiler looks heavily polluted with dust / dirt, then a full service should be performed even with acceptable combustion readings (CO/CO_2 ratio).

Flue gas analysis

Put the boiler back into operation and carry out a flue gas analysis as described on page 22.

Always put back the cover after (maintenance) work and secure it with screws **A** and **B**.

Note: During routine servicing, and after any maintenance or change of part of the combustion circuit, the following must be checked: -

Checking the CO_2

Check the CO_2 readings at full load and low load as described on page 22.

Checking flue integrity

The integrity of the complete flue system and the flue seals by checking air inlet sample to eliminate the possibility of recirculation as described in the installation & servicing instructions.

Checking CO readings and Combustion Performance (CO/CO_2 ratio)

Check CO readings and Combustion Performance as described in the installation & servicing instructions.

The combustion reading (CO/CO_2 ratio) must be less than 0.004. If the combustion reading (CO/CO_2 ratio) is greater than this, and the integrity of the complete flue system and combustion circuit seals has been verified, and the inlet gas pressure and gas rate are satisfactory either:-

- Perform the 'Full Service'
- Perform 'Setting the Gas Valve'

Full Service

For reasons of safety and economy, it is recommended that the boiler is serviced annually. Servicing must be performed by a competent person in accordance with BS 7967-4.

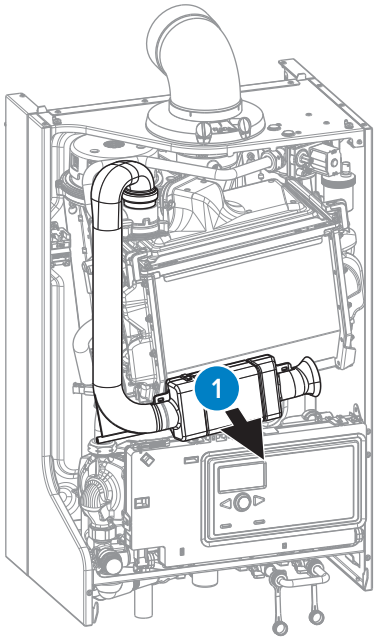
A full strip down service is required every 4 years or where analyser readings are not within correct safety standards.

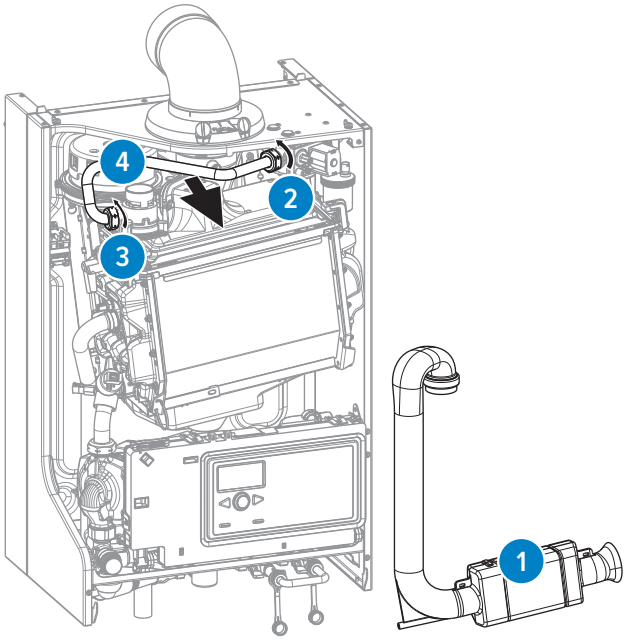
After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist, located on the inside back page of the installation & servicing instructions.

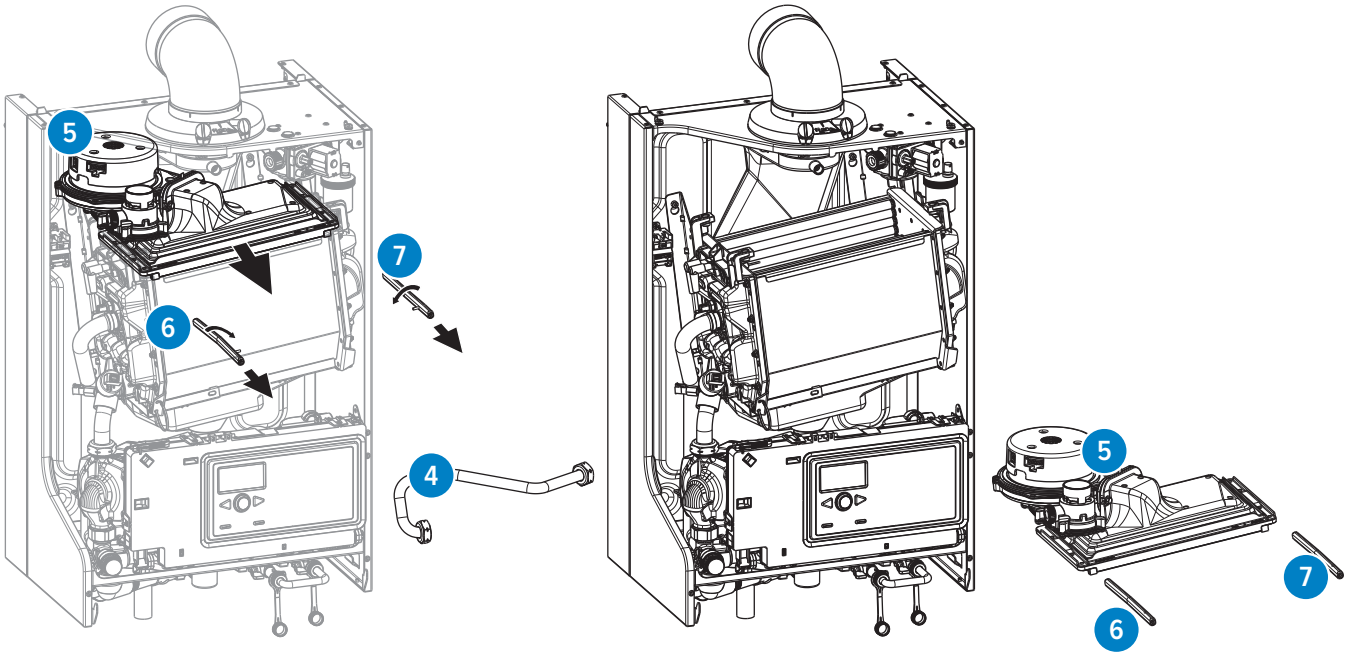
Where a full service is required the following steps must be followed:
Carry out the actions as described in the interim service section.

Fan unit and burner cassette

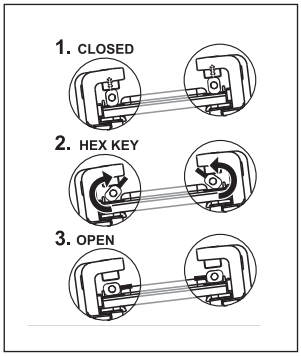
- Remove the Velcro from the silencer and remove the silencer (**1**)
- Unscrew the coupling (**2**) of the gas block and the coupling on the venturi (**3**) and remove the gas line (**4**)





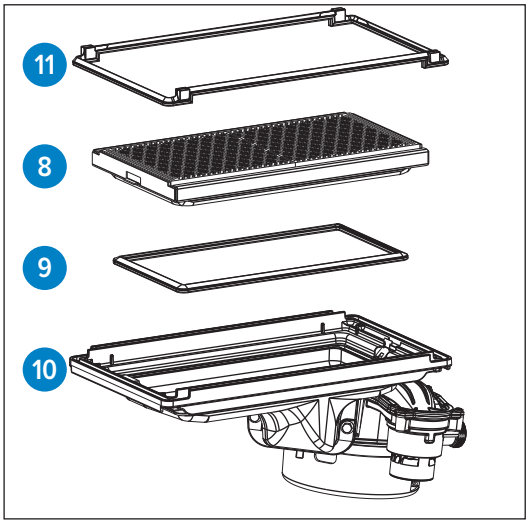


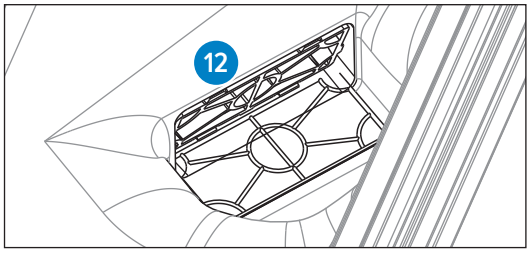
- Disconnect the electrical connections from the fan (**5**)
- Turn the left (**6**) and right (**7**) clamp bars a quarter turn with a 4mm Allen key and pull these out in a forward motion. Mind the direction of rotation (red control cams);
- Now lift the complete fan unit (**5**) with the upper tray of the heat exchanger and remove it in a forward-motion
- Turn the unit upside down and remove the burner cassette (**8**) from the ventilator unit
- Check the burner cassette for wear and tear, pollution and any breakages. Clean the burner cassette with a soft brush and vacuum cleaner
- In the case of breakages, always replace the complete burner cassette (**8**)

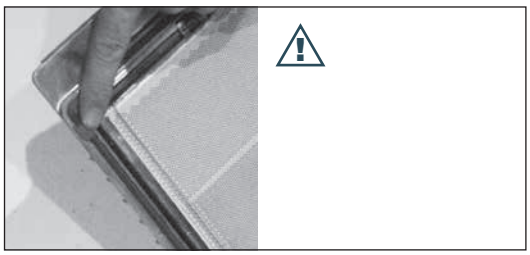


The following operations must be performed carefully in relation to the vulnerability of the non return valve.

- After removing the burner cassette (**8**) the non return valve (**12**) becomes visible. Check that the non return valve entire circumference closes / seals completely. The valve should be able to move freely from fully open to fully closed. Replace the non return valve if the valve does not seal properly.





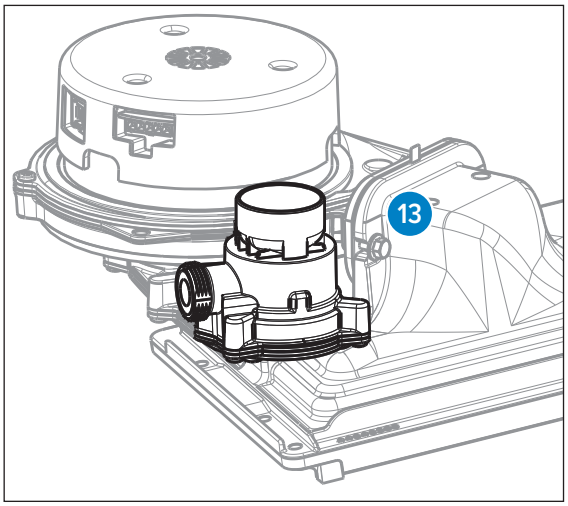


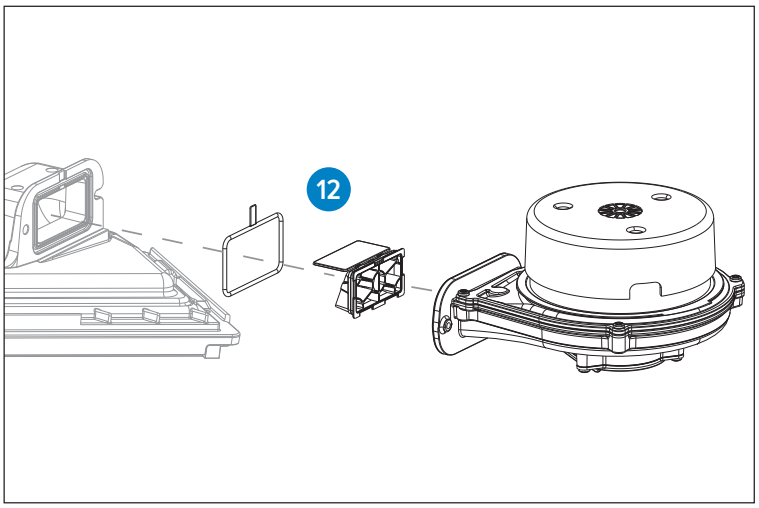
- **Replace the gasket** (**9**) between the burner (**8**) and upper casing (**10**)
- **Replace the gasket** (**11**) between the upper casing (**10**) and exchanger

- Check the venturi (**13**) for pollution and clean them with a soft brush in combination with a vacuum cleaner, if necessary

If the inside of the boiler casing is heavily polluted with dust, it is likely that the fan impeller is also polluted.

To clean the fan, it has to be removed from the upper tray and the venturi.Remove the non return valve and clean the impeller with a soft brush and a vacuum cleaner. **Replace the gasket** and take care that the new gasket is installed properly when reassembling the fan parts.





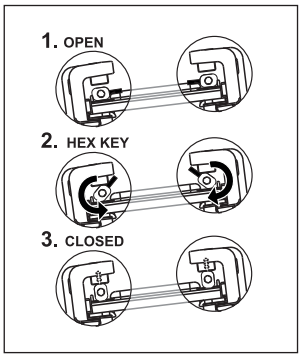
Heat exchanger

- Check the heat exchanger for pollution. Clean it, if necessary, with a soft brush and a vacuum cleaner. Avoid any pollution falling down

⚠ TOP-FLUSHING THE EXCHANGER WITH WATER IS NOT ALLOWED.

Reassembly takes place in reverse order.

⚠ DURING INSTALLATION PAY ATTENTION TO THE CORRECT POSITION OF THE CLAMP BARS. THESE HAVE TO BE IN A VERTICAL POSITION.



Note: During routine servicing, and after any maintenance or change of part of the combustion circuit, the following must be checked: -

Checking the CO_2

Check the CO_2 readings at full load and low load as described on page 22).

Checking flue integrity

The integrity of the complete flue system and the flue seals by checking air inlet sample to eliminate the possibility of recirculation as described in the installation & servicing instructions.

Checking CO readings and Combustion Performance (CO/CO_2 ratio)

Check CO readings and Combustion Performance as described in the installation & servicing instructions.

The combustion reading (CO/CO_2 ratio) must be less than 0.004. If the combustion reading (CO/CO_2 ratio) is greater than this, and the integrity of the complete flue system and combustion circuit seals has been verified, and the inlet gas pressure and gas rate are satisfactory either:-

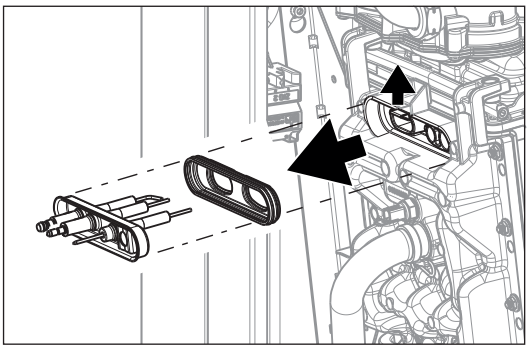
- Perform the 'Full Service'
- Perform 'Setting the Gas Valve'

Ignition electrode

Inspect and clean the electrodes and **replace the gasket**. Worn electrodes should be replaced as part of the service.
If the inspection hole is damaged, the entire ignition electrode has to be replaced.
It is replaced as follows:

- Take away the plug connections on the ignition electrode
- Push the clip on top of the electrode upwards and take away the electrode
- Remove and replace the **gasket**

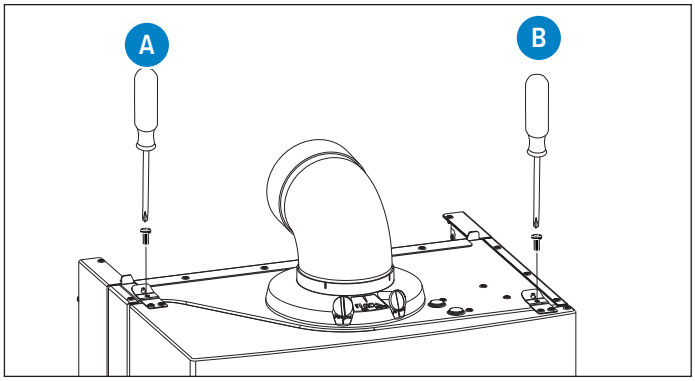
Reassembly takes place in reverse order.



ALWAYS REPLACE THE GASKETS OF THE REMOVED PARTS DURING MAINTENANCE.

Put the boiler back into operation and carry out a flue gas analysis.

ALWAYS PUT BACK THE COVER AFTER MAINTENANCE WORK AND SECURE IT WITH SCREWS A AND B.



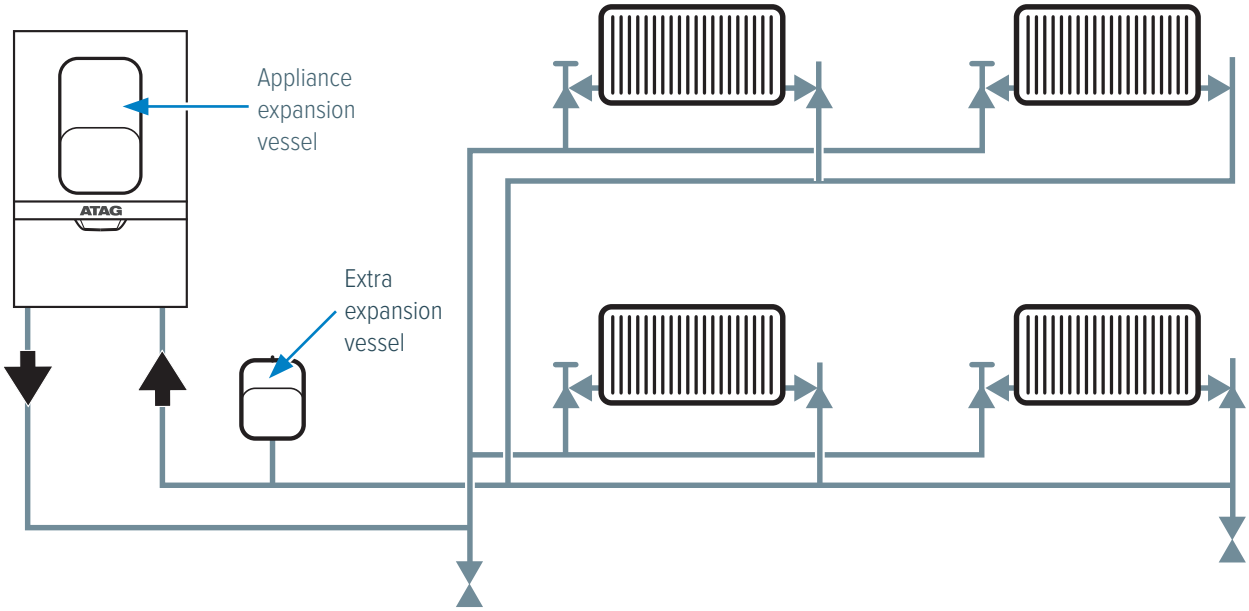
AFTER SERVICING, COMPLETE THE RELEVANT SERVICE INTERVAL RECORD SECTION OF THE BENCHMARK CHECKLIST LOCATED ON THE INSIDE BACK PAGE OF THE INSTALLATION AND SERVICING INSTRUCTIONS.

Expansion vessel

The iC & iS boilers are featured with a built-in expansion vessel with a capacity of 8 litres and a pre-pressure charge 1 bar. Where the system volume is more than 100 litres or exceeds 2.65 bar at maximum heating temperature, **then the expansion vessel size is insufficient for the CH system, an additional expansion must be installed.**

The additional expansion vessel must be installed as close as possible to the appliance in the central heating return. The additional expansion vessel should, together with the built-in expansion vessel, be sized to the water content of the installation.

The pre-pressure charge depends on the height of the installation above the installed expansion vessel as per the table on page 75. Pressurise the extra expansion vessel to the same figure as the expansion vessel built into the appliance.



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