

HeatMaster[®] TC

Installation, Operating and Servicing Instructions



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SPARE PARTS	See at the end of this manual

WHO SHOULD READ THESE INSTRUCTIONS

These instructions should be read by:

- the specifying engineer
- the installer
- the user
- the service engineer

SYMBOLS

The following symbols are used in this manual:



Essential instruction for the correct operation of the installation.



Essential instruction for the safety of persons and the environment.



Danger of electrocution.



Risk of scalding.

RECOMMENDATIONS



- Please, carefully read this manual before installing and commissioning the boiler.
- It is prohibited to carry out any modifications to the inside of the appliance without the manufacturer's prior and written agreement.
- The product must be installed and serviced by trained engineers, in compliance with current standards.
- Any failure to follow instructions relating to tests and test procedures may result in personal injury or risks of pollution.
- To guarantee safe and correct operation of the appliance, it is important to have it serviced and maintained every year by an approved installer or maintenance company.
- In case of anomaly, please call your service engineer.
- Despite the strict quality standards imposed by ACV during the manufacture, inspection and transport of its appliances, you might notice some errors. Please report immediately any fault to your approved installer. Remember to note the fault code displayed on the screen.
- The parts may only be replaced by genuine factory parts. You will find a list of the spare parts and their ACV reference number at the end of this document.
- The burners are preset in our factory for use with natural gas [equivalent to G20].

- Specific regulation applicable in Belgium: The CO₂ level, the air and gas flows and the gas / air ratio are factory set . Any field adjustments of those settings is not allowed in Belgium.



- It is important to switch the boiler off before carrying out any work.
- There are no user accessible parts inside the boiler casing.

APPLICABLE STANDARDS

The appliances carry the CE mark in accordance with the standards in force in the various countries (European Directives 92/42/EC "Efficiency", 90/396/EC "Gas appliances").

They also carry the "HR-TOP" label (Gas condensation boilers).



WARNINGS

IF YOU SMELL GAS:

- Immediately isolate the gas supply.
- Open windows and doors to ventilate the area.
- Do not use any electrical appliances and do not operate any switches.
- Immediately notify your gas supplier and/or your installer.

This documentation is part of the information delivered with the appliance and must be given to the user and stored in a safe place!

An approved installer must carry out the assembly, commissioning, maintenance and repair of the system, in accordance with current standards in force.

ACV shall not accept any responsibility for damage caused by non-compliant location of the system or by use of the parts or connections not approved by ACV for this application.



The manufacturer reserves the right to change the technical characteristics and specification of its products without notice.



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TOTALLY CONDENSING :

The HeatMaster® TC combines the unique ACV Tank-in-Tank concept with a dual primary circuit resulting in exceptional performance from a totally condensing combination boiler.

Tank-in-Tank technology

ACV's advanced implementation of thermal storage technology is tried and tested and is remarkably simple, efficient and reliable. At the heart of the HeatMaster® TC is a stainless steel tank through which the flue tubes pass.

This is surrounded by a mild steel shell containing the primary water, which extends down to the combustion chamber and even around the flue tubes. The burner fires onto the primary water which indirectly heats the stainless steel tank containing the hot water. As with all Tank-in-Tanks, this is corrugated over its full height and is suspended in the HeatMaster® TC by its hot and cold water connections.

The area of the heat transfer surface is therefore much greater than that of standard direct fired water heaters. A much larger heat transfer surface means that Tank-in-Tank units recover much faster than any other kind of hot water storage device - and keeps boiler cycling to a minimum. The high storage temperature within the inner tank also results in exceptional hot water outputs.

Dual primary circuit technology

The HeatMaster® TC primary circuit is split into two sections - a high temperature upper circuit and a low temperature lower circuit, divided by a separation plate. The hot water storage tank is located in the upper circuit which always operates at a temperature of between 60°C and 90°C. This is ideal for hot water production as it maintains the stored water at constantly high temperatures, eliminating bacterial formation such as Legionellae, as well as resulting in high volume hot water production.

The down-firing flue tubes pass through the upper circuit, through the separation plate and into the lower circuit. The primary water here operates at a temperature typically between 30°C and 60°C for heating (dependent on the heating return temperature), perfect for condensing when working in heating mode.

Dual domestic hot water tank technology

During hot water mode, the bottom circuit operates at a much lower temperature, typically 5°C to 20°C depending on the cold water inlet temperature. The incoming cold water enters the lower primary circuit via an indirect water preheater.

As this preheater is wrapped around the lower flue tubes of the combustion chamber, it is able to absorb the remaining heat from the flue gases. The result is that during hot water mode the HeatMaster® TC totally condenses whether on full or part-load.

Operating modes

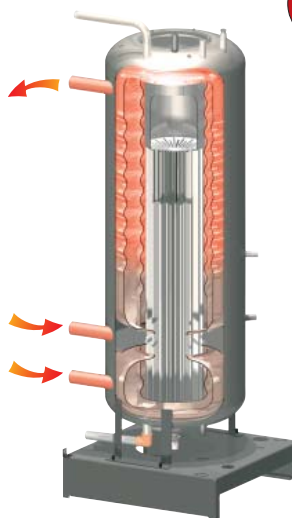
In both heating and hot water modes, the premix gas burner fully modulates the power to match the system demand.

1

Heating

The heating return enters the lower circuit of the boiler, which allows the boiler to operate in condensing mode.

The upper circuit of the HeatMaster® TC is kept at a consistently high temperature due to the internal shunt pump which ensures that the primary water circulates around the heat exchanger flue tubes.



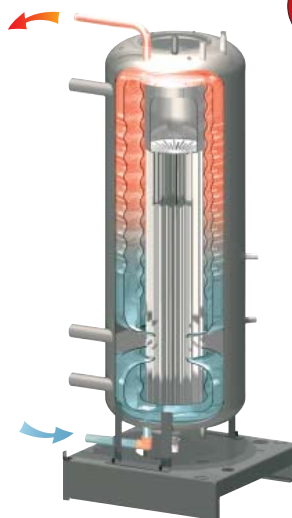
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Hot water

With the upper circuit maintained at high temperature, the HeatMaster® TC is always ready to supply hot water on demand.

The cold water enters through the indirect water preheater at the base of the heat exchanger and is preheated before entering the hot water tank.

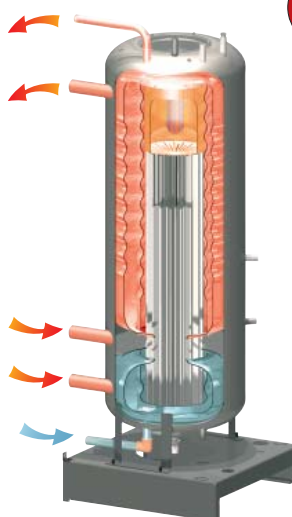
The low temperature of the bottom circuit results in continuous condensation of the flue gases in hot water mode.



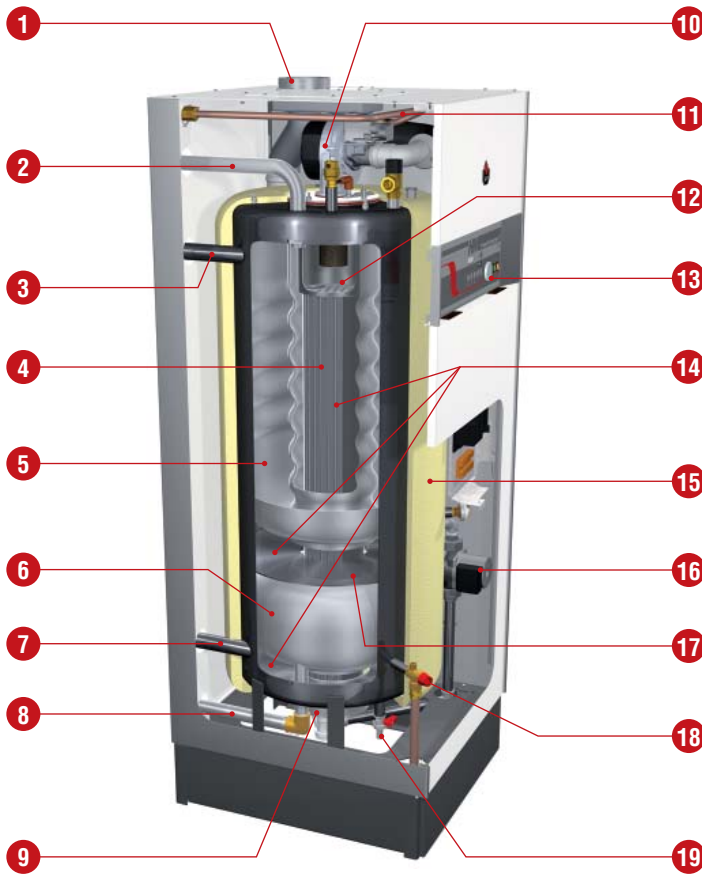
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Heating and hot water

Once up to temperature, the HeatMaster® TC is capable of producing heating and hot water simultaneously.

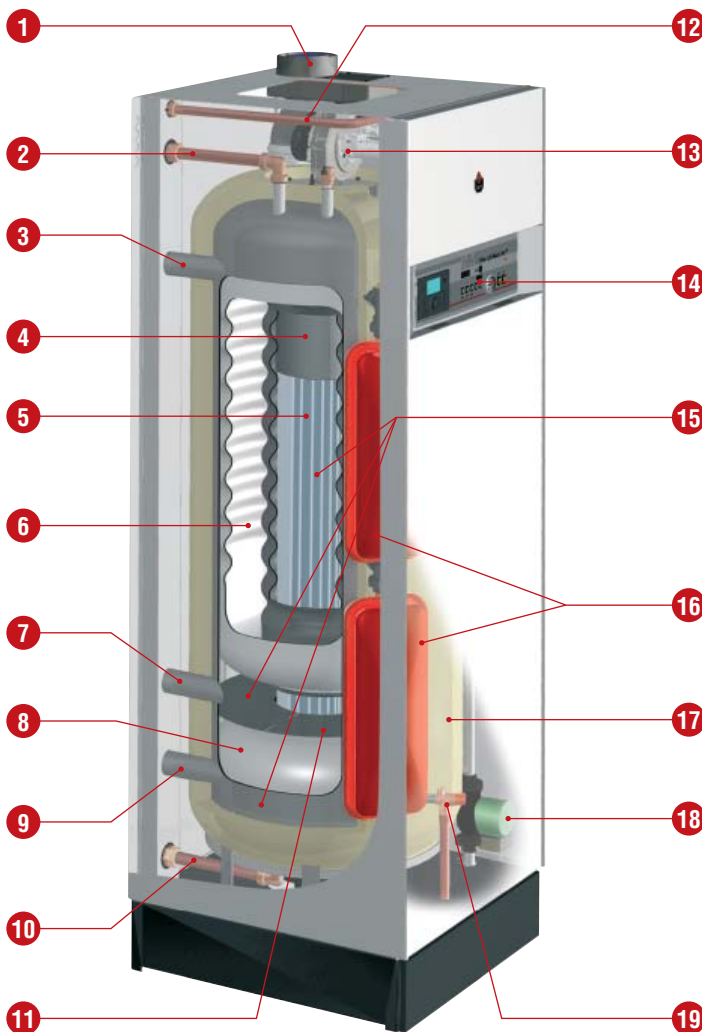


HeatMaster® 35 TC



1. Flue connection concentric Ø 80/125 mm convertible to parallel connection Ø 80/80 mm.
2. Domestic hot water outlet
3. Heating flow
4. Stainless steel heat exchanger
5. Stainless steel Tank-in-Tank hot water store
6. Indirect water preheater
7. Heating return
8. Cold water inlet
9. Condensstrap
10. Modulating premix gas burner
11. Gas connection
12. Combustion chamber
13. Control panel
14. Primary heating circuit
15. Polyurethane foam insulation
16. Boiler shunt pump
17. Separation plate
18. Primary safety valve (3 bar)
19. Drain cock

HeatMaster® 85 TC



1. Flue connection concentric Ø 100/150 mm convertible to parallel connection Ø 100/100 mm
2. Domestic hot water outlet
3. Heating flow
4. Combustion chamber
5. Stainless steel heat exchanger
6. Stainless steel Tank-in-Tank hot water store
7. Auxiliary tank primary return
8. Indirect water preheater
9. Heating return
10. Cold water inlet
11. Separation plate
12. Gas connection
13. Modulating premix gas burner
14. Control panel
15. Primary heating circuit
16. Primary expansion vessel (2x)
17. Polyurethane foam insulation
18. Boiler shunt pump
19. Primary safety valve (3 bar)

DESCRIPTION OF THE SPECIFICATIONS

The **HeatMaster® TC** is a hot water producer combined in a condensing boiler in accordance to the Belgium "HR-Top" standard. The boiler is certified compliant with "CE" standards as a connected appliance **C13(x)** - **C33(x)** - **C43(x)** - **C53** - **C83(x)**, but it can also be connected as an open appliance in category **B23** or as an appliance of category **B23P**, which can operate with a positive pressure.

Lining

The boiler is protected by a steel lining that first of all undergoes a degreasing and phosphation process before being lacquered and heated at 220°C. The inside of this lining is coated with a layer of thermal and acoustic insulation, reducing losses to a minimum.

Heat exchanger

The core of the **HeatMaster® TC** features a new stainless steel heat exchanger. This piece of technology represents the fruit of exhaustive research and intensive laboratory testing. It reflects ACV's eighty years of experience in using stainless steel for heating and hot water functions. The particular geometry of the exchanger pipes is calculated to obtain a very large Reynolds number throughout its cycles.

The **HeatMaster® TC** achieves an exceptional output that remains stable throughout the boiler's life, given that it causes no oxidation on the exchanger, which is manufactured entirely from quality steel.

Burner

ACV uses its BG 2000-M burner for the **HeatMaster® TC**: this is an air/gas premix burner providing safe and silent operation while limiting emissions (NOx and CO) to an incredibly low level. Although the ACV BG 2000-M boiler is very modern, it uses proven technology and is manufactured from standard spare parts that are easily available on the market.

Temperature regulation

The basic version of the **HeatMaster® TC** is fitted with a microprocessor controlled regulator (MCBA) which takes over both the safety functions (ignition, monitoring the flame, limiting the temperature, etc.) and control of the boiler temperature.

This MCBA also includes a weather-dependent regulator. All you need to do is connect the outdoor temperature sensor available as an option to the device. However, this regulator can also operate with a standard ON/OFF room thermostat. In addition, with the combination of a weather-dependent regulator and a room thermostat, you can control the temperatures based on the weather with compensation for the indoor temperature.

There are four user adjustable parameters. By entering a special maintenance code, qualified installers can access several other parameters to adapt the boiler to special requirements. In principle, these parameters are factory set for all normal applications.

PRODUCTION OF HOT WATER

In addition to its exceptional hot water performances, the **ACV Tank-in-Tank** concept provides the following advantages :

- **A solution for scale deposits:** thanks to the specially designed corrugations, the hot water tank expands and contracts during the heating cycle, preventing the formation of scale.

- **A guarantee against the risk of Legionellae Disease and bacteria:** the hot water tank is fully immersed in the primary circuit and the hot water is constantly kept at a temperature above 60°C.

- **Exceptional resistance against corrosion and aggression:** provided by the stainless steel.

FROST PROTECTION

The boiler is equipped with an integrated frost protection: as soon as the boiler temperature drops below 7°C, the system activates the central heating pump. As soon as the NTC1 flow temperature drops below 3°C, the system automatically ignites the burner until the temperature rises above 10°C. The pump continues to run for about 10 minutes.

If an outdoor temperature sensor is connected to the system, the pump is activated as soon as the outside temperature drops below the specified threshold.

To provide efficient protection for the whole system against frost, all the valves on the radiators and the convectors should be completely open.

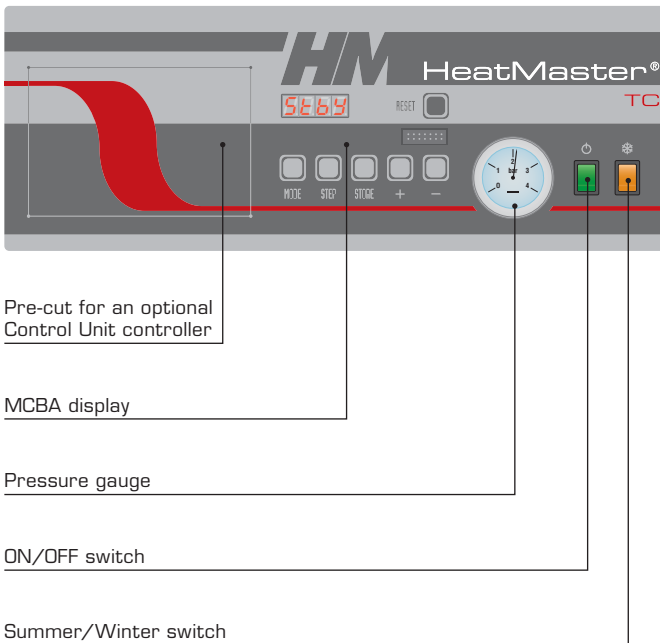
DIRECTIONS FOR USE

Your system must be checked once a year by an approved installer or maintenance company.

Starting the burner

During operation, the burner starts automatically as soon as the boiler temperature drops under the required set point and it stops as soon as the boiler reaches that temperature.

Control panel



Heating system

The central heating circuit must be pressurized (see in the chapter "Installation" how to define the system pressure). The pressure indicator is located on the right-hand side of the display.



If your system needs to be refilled more than twice a year, please contact your installer.

The CH pressure must be a minimum of 1 bar and must be checked by the end user on a regular basis. If the pressure drops under 0.5 bar, the integrated water pressure switch blocks the appliance until the pressure in the system returns to a level above 0.8 bar. The connection for a fill valve is provided underneath the appliance. The installer can also fit the system with a separate valve. Make sure that the appliance is powered off when filling the system. To do this, toggle the Start/Stop switch located on the left of the screen to Off. (see the Control panel).

For more information, please ask your installer when the system is delivered.

A safety valve is provided at the underneath of the appliance. If the system pressure exceeds 3 bars, this valve opens and drains the water from the system. In this case, please contact your installer.

SETTINGS PARAMETERS

Setting the domestic hot water temperature:

(Hot water temperature)

- Press **Mode**: The screen displays **PARA**.
- Press **Step**: the first character is **1** and the last two characters give the current hot water temperature setting.
- To change this temperature, press + or - until the last two digits show the desired temperature value.
- Press **Store** to save the new temperature setting.
- Press **Mode** twice to return to Pilot mode (normal operating mode).

Enabling or disabling the hot water heating mode:

(hot water)

- Press **Mode**: The screen displays **PARA**.
- Press **Step** twice: the first character is **2** and the last two characters give the current setting:
00 = disabled; **01** = enabled.
- To change this parameter, press + or - until the screen displays the desired value:
00 = disabled; **01** = enabled.
- Press **Store** to save.
- Press **Mode** twice to return to Pilot mode (normal operating mode).

Enabling or disabling Central Heating mode:

(heating)

- Press **Mode**: The screen displays **PARA**.
- Press **Step** three times: the first character is **3** and the last two characters give the current setting:
00 = disabled; **01** = enabled.
- To change this parameter, press + or - until the screen displays the desired value:
00 = disabled; **01** = enabled.
- Press **Store** to save.
- Press **Mode** twice to return to Pilot mode (normal operating mode).

Setting the central heating temperature:

(maximum temperature for the heating circuit)

- Press **Mode**: The screen displays **PARA**.
- Press **Step** four times: the first character is **4** and the last two characters give the current central heating temperature setting.
- To change this temperature, press + or - until the last two digits show the desired temperature value.
- Press **Store** to save the new temperature setting.
- Press **Mode** twice to return to Pilot mode (normal operating mode).

Fault:

The temperature setting for the appliance and the safety functions for its various parts are continuously monitored by a regulator controlled by a microprocessor (the MCBA). In the event of a fault, this MCBA disables the appliance and displays an error code: the screen flashes displaying **E** as the first character, followed by the error code.

To reset the appliance:

- Press **"Reset"** on the screen.
- Contact your installer if the fault happens again.

TECHNICAL CHARACTERISTICS

Central heating		HeatMaster® 35 TC		HeatMaster® 85 TC	
		Natural gas	Propane	Natural gas	Propane
Max. Input 80/60°C	kW	34,9	30,6	85,0 [92,0]	85,0 [92,0]
Min. Input 80/60°C	kW	10,0	10,0	17,2	17,2
Max. output 80/60°C	kW	34,1	29,9	82,5	82,5
Min. output 80/60°C	kW	9,8	9,8	16,7	16,7
Efficiency 30% load [EN677]	%	108,5	108,5	107,8	107,8
Efficiency domestic hot water mode [$\Delta t = 30^\circ\text{C}$]	%	105,9	105,9	104,0	104,0

Flue gases

CO emissions max. / min. Input	mg/kWh	70 / 6	105 / 17	58,9 / 4,3	90,0 / 45,0
NOx emissions max. / min. Input	mg/kWh	59 / 29	72 / 31	72,4 / 19	85 / 27
NOx classification [EN483]		5	5	5	5
Flue gas temperature — max. Input 80/60°C	°C	60	60	61,6	61,6
Flue gas temperature — max. Input 50/30°C	°C	32	32	35,1	35,1
Mass flow rate of combustion products	kg/h	55	46,5	137 [148]	134 [145]
Flue gas pipe - Max. pressure drop	Pa	130	130	150	150
Concentric flue gas channel maximum length	m	20	20	20	20

Gas

Gas pressure	mbar	20 / 25	30 / 37 / 50	20 / 25	30 / 37 / 50
G20 gas flow rate	m³/h	3,7	—	8,99 [9,73]	—
G25 gas flow rate	m³/h	4,3	—	10,46 [11,32]	—
G31 gas flow rate	m³/h	—	1,25	—	1,25
CO ₂ max. Input	% CO₂	9,4	10,5	9,3	10,9
CO ₂ min. Input	% CO₂	9,0	10,1	8,6	9,0

Hydraulic parameters

Max. operating temperature	°C	90	90	90	90
Total capacity	L	189	189	315	315
Heating circuit capacity	L	108,5	108,5	125	125
Maximum operating pressure central heating	bar	3	3	3	3
Heat exchanger pressure drop [$\Delta T = 20^\circ\text{C}$]	mbar	30	30	200	200

Electrical connection

Class	IP	30	30	30	30
Supply voltage	V/Hz	230/50	230/50	230/50	230/50
Maximum absorbed electrical power	A	0,8	0,8	1,0	1,0

Weight empty	kg	174	174	284	284
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[...] = Domestic hot water mode

Gas categories HeatMaster® 35 / 85 TC

	I2E(S)B * I2E(R)B **	II2H3B/P	II2H3P	II2E3B/P	II2Er3P	II2L3B/P	II2L3P	I3P
G20	20 mbar	20 mbar	20 mbar	20 mbar	20 mbar			
G25	25 mbar				25 mbar	25 mbar	25 mbar	
G30		30 - 50 mbar		30 - 50 mbar		30 - 50 mbar		
G31		30 - 50 mbar	37 - 50 mbar	30 - 50 mbar	37 - 50 mbar	30 - 50 mbar	37 - 50 mbar	37 mbar
BE Belgium	●							●
CH Switzerland		●	●					
CZ Czech republic		●	●					
DE Germany				●				
DK Denmark		●						
EE Estonia		●						
ES Spain			●					
FR France			●		●		●	
GB Great Britain			●					
GR Greece		●	●					
IE Ireland			●					
IT Italy		●	●					
LU Luxembourg				●				
LT Lithuania		●						
NL Netherlands						●	●	
PL Poland				●				
PT Portugal			●					
SI Slovenia		●	●					
SK Slovakia		●	●					
SE Sweden		●						

(*) HeatMaster® 35 TC

(**) HeatMaster® 85 TC

MAXIMUM OPERATING CONDITIONS

Maximum service pressure (tank full of water)

- Primary circuit : 3 bar
- Secondary circuit : 10 bar

Maximum operating temperature : 90°C

Water quality:

- Chlorures : < 150 mg/L
- $6 \leq \text{PH} \leq 8$



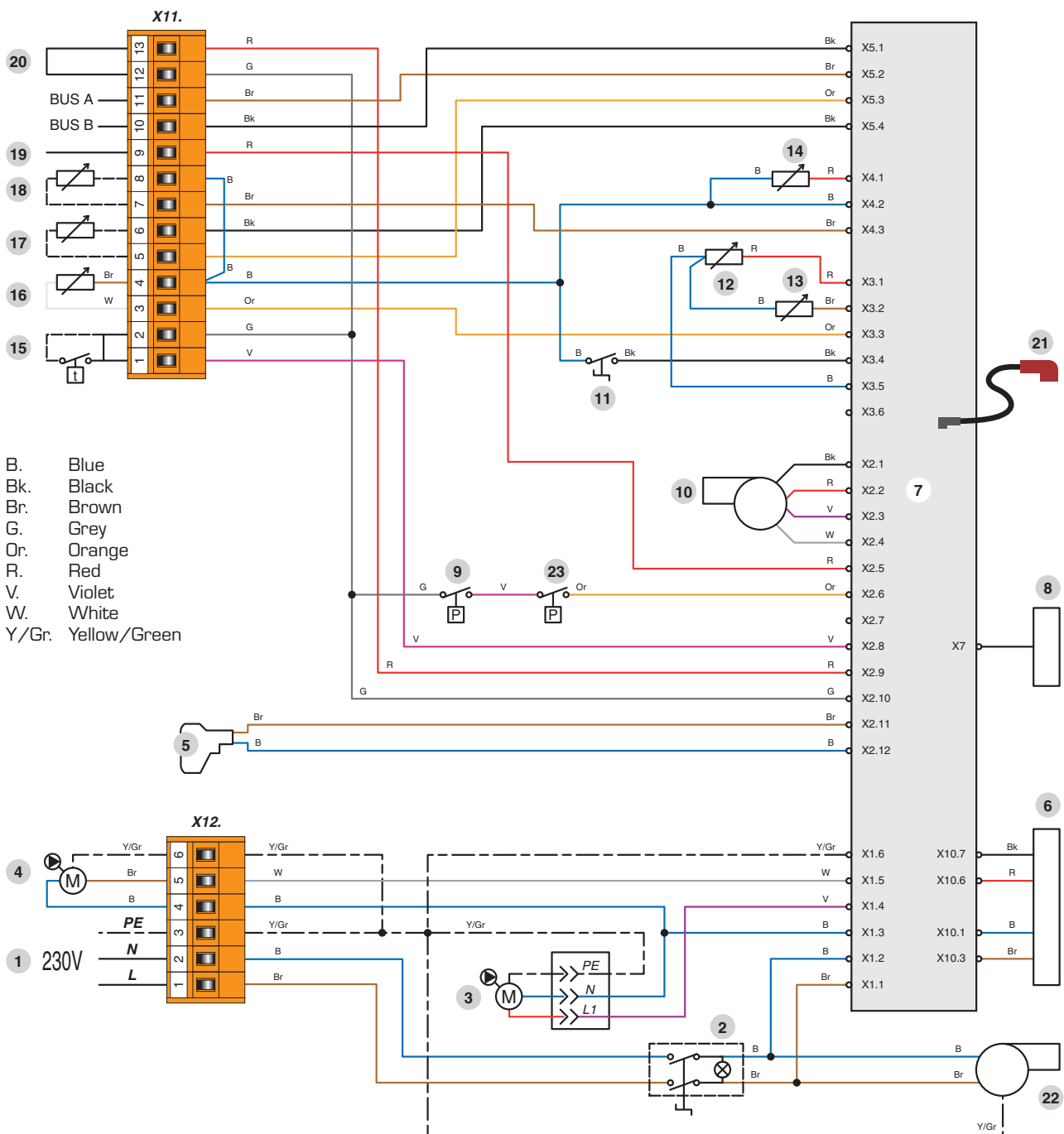
DOMESTIC HOT WATER FEATURES

Operating conditions at 90°C		HeatMaster® 35 TC	HeatMaster® 85 TC
Peak flow at 40°C [$\Delta T = 30^\circ\text{C}$]	L/10'	472	868
Peak flow at 40°C [$\Delta T = 30^\circ\text{C}$]	L/60'	1322	3076
Constant flow at 40°C [$\Delta T = 30^\circ\text{C}$]	L/h	1070	2713
Peak flow at 45°C [$\Delta T = 35^\circ\text{C}$]	L/10'	389	718
Peak flow at 45°C [$\Delta T = 35^\circ\text{C}$]	L/60'	1116	2513
Constant flow at 45°C [$\Delta T = 35^\circ\text{C}$]	L/h	917	2325
Peak flow at 60°C [$\Delta T = 50^\circ\text{C}$]	L/10'	243	413
Peak flow at 60°C [$\Delta T = 50^\circ\text{C}$]	L/60'	731	1594
Constant flow at 60°C [$\Delta T = 50^\circ\text{C}$]	L/h	642	1617
Pre-heat time	minutes	37	35

WIRING DIAGRAM : HeatMaster® TC



- 1. Power supply 230 V
- 2. ON/OFF switch
- 3. Boiler shunt pump
- 4. Heating pump (optional)
- 5. Gas valve rectifier
- 6. 230Volt - 24Volt transformer
- 7. MCBA
- 8. Display
- 9. Water pressure switch
- 10. Fan PWM control
- 11. Summer/Winter switch
- 12. NTC1 flow sensor
- 13. NTC2 return sensor
- 14. NTC5 flue gas temperature
- 15. Room thermostat (optional)
- 16. NTC3 domestic hot
- 17. NTC4 outdoor temperature (optional)
- 18. NTC6 second heating circuit flow sensor (optional)
- 19. Zero volt of 24V circuit.
- 20. Safety contact thermostat RAM (optional)
- 21. Ionisation and ignition cable
- 22. Burner power supply 230 V (only HeatMaster® 85 TC)
- 23. Gas pressure switch HeatMaster® 85 TC

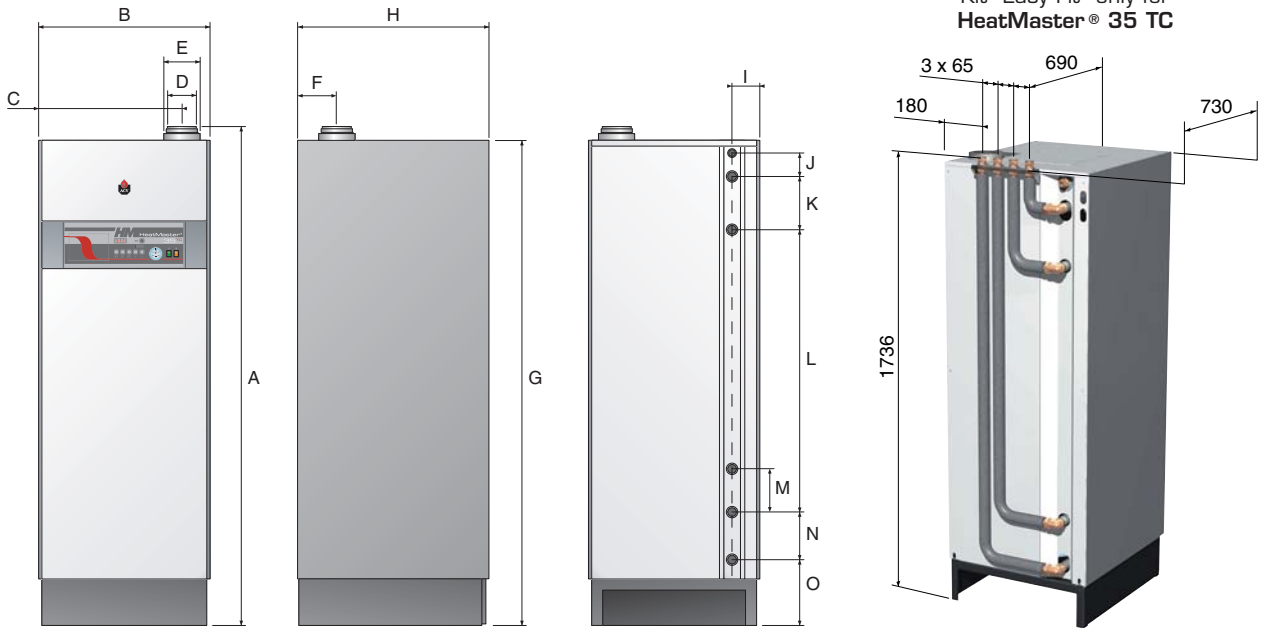


DIMENSIONS

	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	K mm	L mm	M mm	N mm	O mm
HM 35 TC	1720	600	500	80	125	140	1700	670	110	100	200	960	—	170	230
HM 85 TC	2145	690	580	100	150	160	2095	725	125	105	270	1210	200	235	240

HYDRAULIC CONNECTIONS

	HeatMaster® 35 TC	HeatMaster® 85 TC
Heating connection [F]	Ø 1"	1"1/2"
Domestic hot water connection [M]	Ø 1"	1"1/2"
Gas connection [M]	Ø 3/4"	3/4"

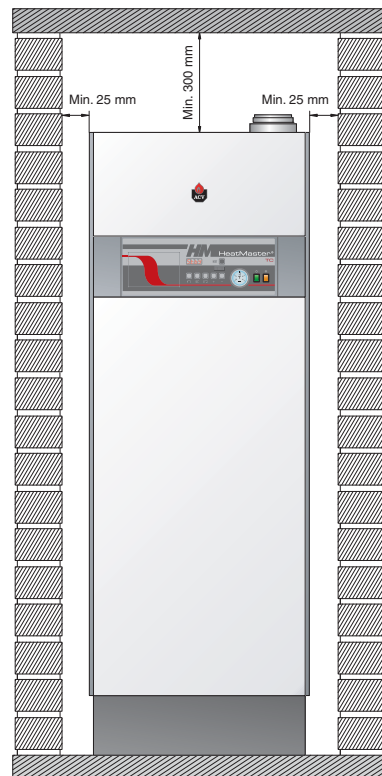


BOILER ROOM

- Make sure that all air vents are unobstructed any times.
- Do not store any flammable products in the boiler room.
- Do not store any corrosive products, paint, solvents, salts, chlorine products and other detergent products near the appliance.
- If you smell gas, do not switch on any lights, turn off the gas tap at the meter, ventilate the rooms and contact your installer.

ACCESSIBILITY

The appliance must be positioned in such a way to be accessible any time. In addition, the following distances are required around the appliance.



CONNECTION TO THE CHIMNEY

- The chimney connections must comply with the applicable standards (in Belgium: NBN D51-003), the local energy supplier's instructions, the fire regulation and neighbourhood good practices.
- The **HeatMaster® TC** has an inbuilt gas/air ratio regulator, which makes it largely independent of the pressure drop in the air intake and flue gas extraction system. However, the maximum pressure drop for this system may not be exceeded, or the pressure will diminish. Nevertheless, the gas/air ratio regulator continuously guarantees optimum combustion with very low emission levels.
- The horizontal flue gas pipes must always be installed with a min. slope of 5 mm per meter, upwards from the boiler side.
- There must be no obstruction or openings for any other appliances within a radius of 0.5 metres around the flue terminal of the **HeatMaster® TC**.
- **The maximum flue resistance is 130 Pascal for the HeatMaster® 35 TC and 150 Pascal for the HeatMaster® 85 TC.** You can use the following table as the basis for calculating this value *(please also refer to the specimen calculation presented under the table).*

Table of flue resistance in Pascal

(1 Pascal = 0,01 mbar)

	Pipe concentric		Air inlet separate		Air extraction separate	
	HM 35 TC Ø 80/125 mm	HM 85 TC Ø 100/150 mm	HM 35 TC Ø 80 mm	HM 85 TC Ø 100 mm	HM 35 TC Ø 80 mm	HM 85 TC Ø 100 mm
1 m straight pipe	5.0	13,5	1.5	4,1	2.0	5,5
Pipe with a monitoring section	2.5	6,8	—	—	1.0	2,7
90° pipe bend	6.0	16,4	1.9	5,2	3.4	9,3
45° pipe bend	4.0	10,9	1.3	3,5	2.3	6,3
Vertical pipe	20.0	54,5	—	—	—	—
Horizontal pipe	15.0	40,9	—	—	—	—

This table is based on the equipment offered by ACV and cannot be applied generally.

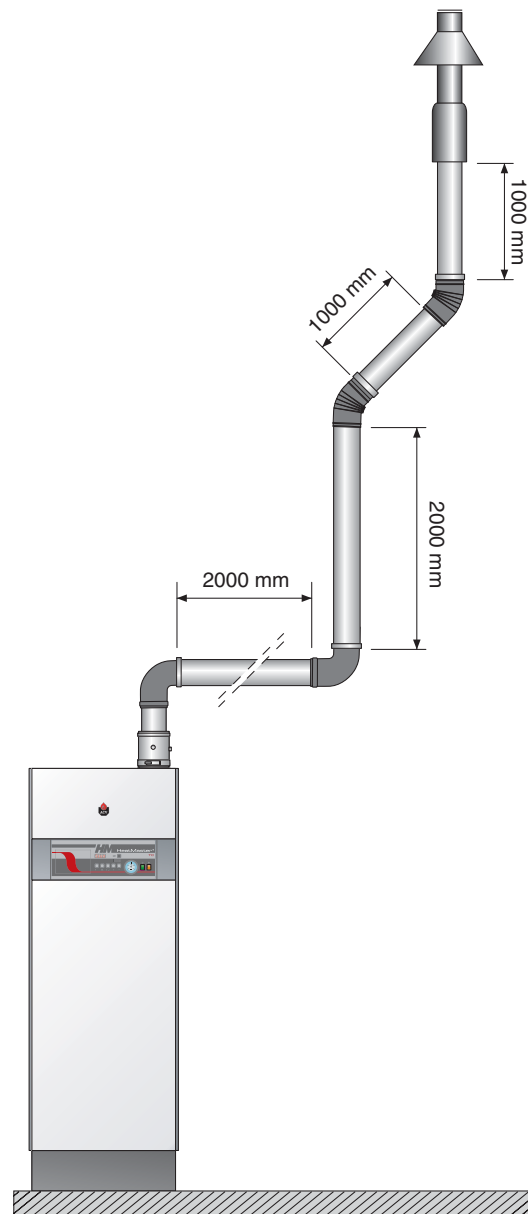
Sample calculation:

The diagram below consists of the following parts: pipe with monitoring section + 2 * 90° pipe bends + 2 metres of horizontal pipe + 2 * 45° pipe bends + (2 + 1 + 1) metres of vertical pipe and fall back + discharge.

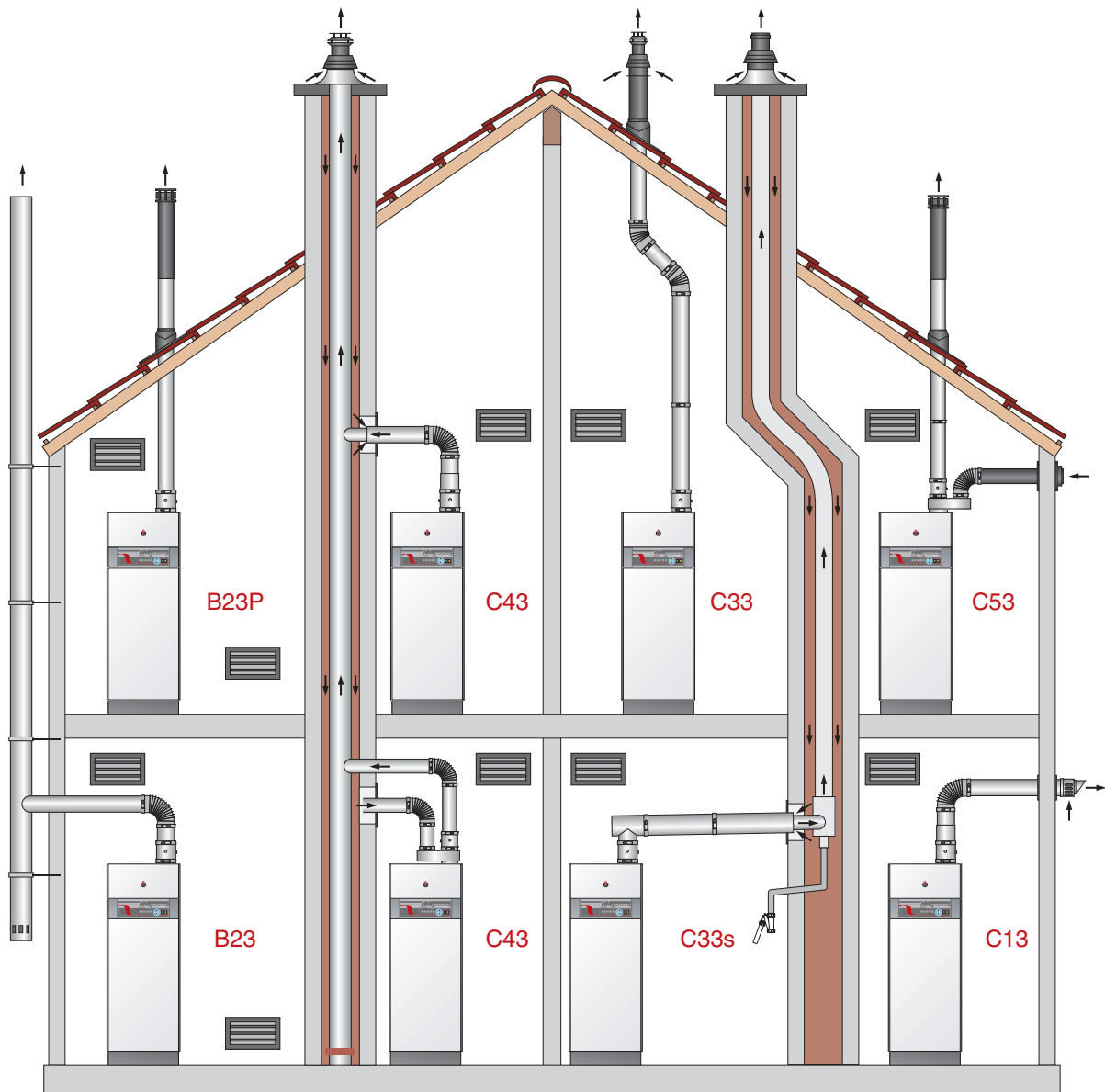
Therefore, the resistance of this system is as follows:

$$2.5 + (2 \times 6.0) + (2 \times 5.0) + (2 \times 4.0) + (4 \times 5.0) + 20 = 72.5 \text{ Pa.}$$

This value is less than the maximum authorised resistance, therefore the installation is compliant.



Options for connection to the chimney



B23 : Connection to an exhaust duct venting the combustion products outside of the installation area, with the combustion air being drawn directly from this area.

B23P : Connection to an exhaust system of the combustion products designed to operate with positive pressure.

C13 : Connection by pipes with horizontal terminal units that simultaneously intake the combustion air and discharge the combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions.

C33 : Connection by pipes with vertical terminal units that simultaneously intake fresh air and discharge the combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions.

C33s : Connection with an individual system of which the exhaust duct for the combustion products is installed in an exhaust pipe that is part of the building. The appliance, the exhaust duct and the terminal units are certified as an assembly that cannot be dissociated.

C43 : Connection by two ducts to a collective duct system serving more than one appliance; this system of collective ducts features two ducts connected to a terminal unit that simultaneously intakes fresh combustion air and discharges the combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions.

C53 : Connection to separate ducts for the supply of combustion air and for venting the combustion products; these ducts may end in zones with different pressure levels.

CONNECTION TO THE GAS

- The **HeatMaster® TC** is fitted with a Ø 3/4" male fitting connector, on which you can connect the gas tap.
- The gas connection must comply with the applicable regulations (e.g. NBN D51-003 in Belgium) in the country of installation.
- Where there is a risk of dirt stemming from the network, place a gas filter upstream from the connection.
- Drain the gas pipe and check in minute detail that all the boiler pipes, both inside and outside, are sealed.
- Check the gas pressure in the system. Consult the technical characteristics.
- Check the gas pressure and consumption when commissioning the appliance.

DOMESTIC HOT WATER CONNECTION



Before pressurising the central heating circuit (primary) you should first pressurise the domestic hot water tank (secondary).

The **HeatMaster® TC** boiler can be connected directly on the domestic hot water circuit.

Flush out the system before connecting the domestic hot water part.

The installation must be fitted with an approved safety unit with a 7-bar safety valve, a non-return valve and a shut-off valve.

During the heating process, the domestic hot water dilates and the pressure increases. As soon as the pressure exceeds the safety valve setting, the valve opens and discharges a small quantity of water. Using a hot water expansion vessel (2 litres at least) will prevent this phenomenon and reduce water hammer effect.



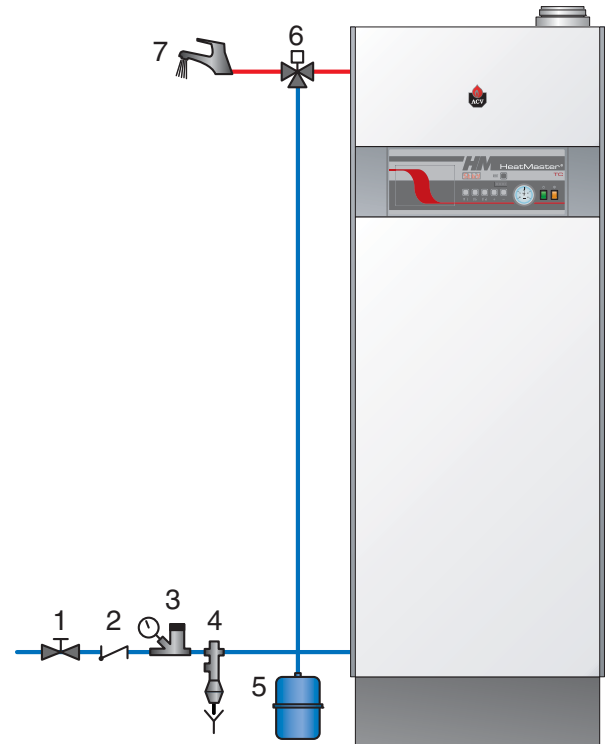
The hot water output temperature may reach temperatures in excess of 60°C, which can cause burns. We therefore recommend that you install a thermostatic mixer immediately after installing the appliance.



If stop valves are used in the domestic hot water system, they can cause pressure waves when closed. Use devices designed to reduce water hammer to avoid this phenomenon.



If the **HeatMaster® 35 TC** is used as a DHW-boiler without connection to heating circuit, an external primary expansion vessel of minimum 16 litres should be installed in the system (no internal expansion vessel on **HeatMaster® 35 TC**).



1. Cold water supply tap
2. Non-return valve
3. Pressure reducing valve
4. Safety group
5. Hot water expansion vessel
6. Thermostatic mixer
7. Drawoff tap

HEATING CONNECTIONS

Recommendations



Before pressurising the central heating circuit (primary) you should first pressurise the domestic hot water tank (secondary).

- The central heating system must be completely flushed out with tap water before connecting the boiler.
- The central heating safety valve is incorporated under the appliance and must be routed to the drain with an open connection (to allow inspection).
- Two primary expansion vessels of 10 litres are integrated in the **HeatMaster® 85 TC** (none in the **HeatMaster® 35 TC**). In function of the installation, an external expansion vessel has to be installed.
- A temperature homogenisation pump fits the boiler. That pump runs aswell during hot water mode aswell in heating mode. The speed selection of the pump must be set to 3.
- Fill the system with fresh water. Contact your ACV representative about the use of inhibitors.
- **It is possible that the pumps are locked due to the presence of residual water from tests completed on the appliance. Therefore, we recommend that you unblock the pumps before filling the appliance.**
- You will find the connection for the filling valve and/or drainage valve on the bottom of the appliance. Fill the appliance to a minimum pressure of one bar. Drain the whole system and re-fill the appliance to a pressure of 1,5 bar.
- Fit the condens strap, fill it with tap water and connect the hose to the drain using a connection with an inspection section. Make sure you prevent the freezing of the condensates.



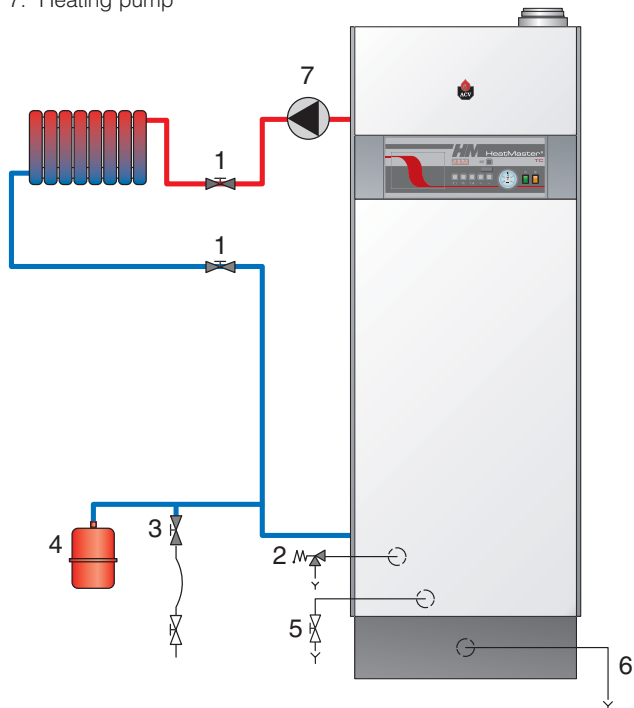
The condense water-trap must be connection to the drainage system in accordance with current standards in force.



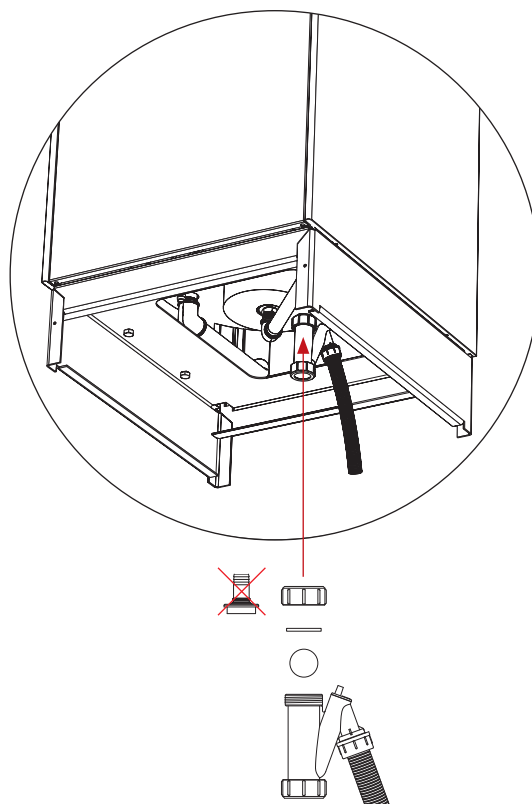
If there is a risk of low pressure in the hot water circuit (installation of HeatMaster® on the roof of a building), it is essential to install a vacuum breaker device onto the cold water supply.

HEATING CONNECTIONS : GENERAL

1. Isolating valve, heating system
2. Internal primary safety valve calibrated to 3 bar
3. System filling valve
4. Expansion vessel
5. Drain cock
6. Condenstrap
7. Heating pump



ASSEMBLING THE BALL CONDENSATE TRAP



INSTALLATION OF A SINGLE HIGH TEMPERATURE CIRCUIT WITH ROOM THERMOSTAT ACV 15 CONTROL

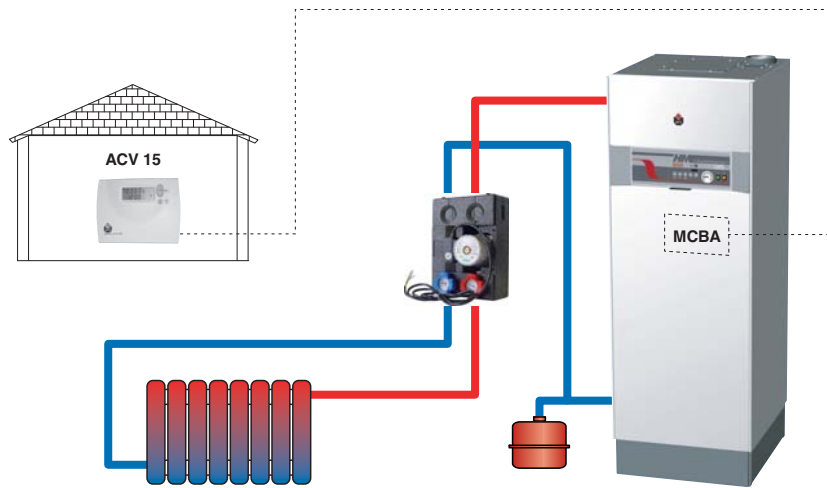
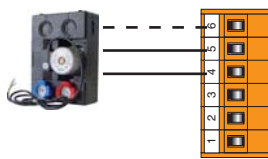
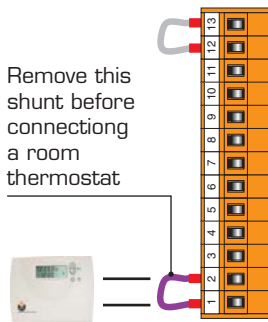
General diagram




The On/Off room thermostat controls the central heating system (radiators only).

The pump is powered as soon as the room thermostat generates an heat demand.

Advantages for the user:

- Simplicity of the system
- Direct connector to existing installations



Optional accessories		
Code	Description	
	10800018	Room thermostat ACV 15
	10800097 [HM 35 TC]	High temperature kit DN 20 Including: one circulation pump, two isolating valves, check valve, two thermometers
	10800107 [HM 85 TC]	High temperature kit DN 32 Including: one circulation pump, two isolating valves, check valve, two thermometers

PARA

Factory setting

PARA

Typical setting

Description

3 01

3 01

00 : Heating mode "OFF"
01 : Heating mode "ON"

4 85

4 85

Setting temperature for the heating water (adjustable between 30 and 85°C).

P 34

P 34

00

00

00 : Using a outside temperature sensor and a room thermostat

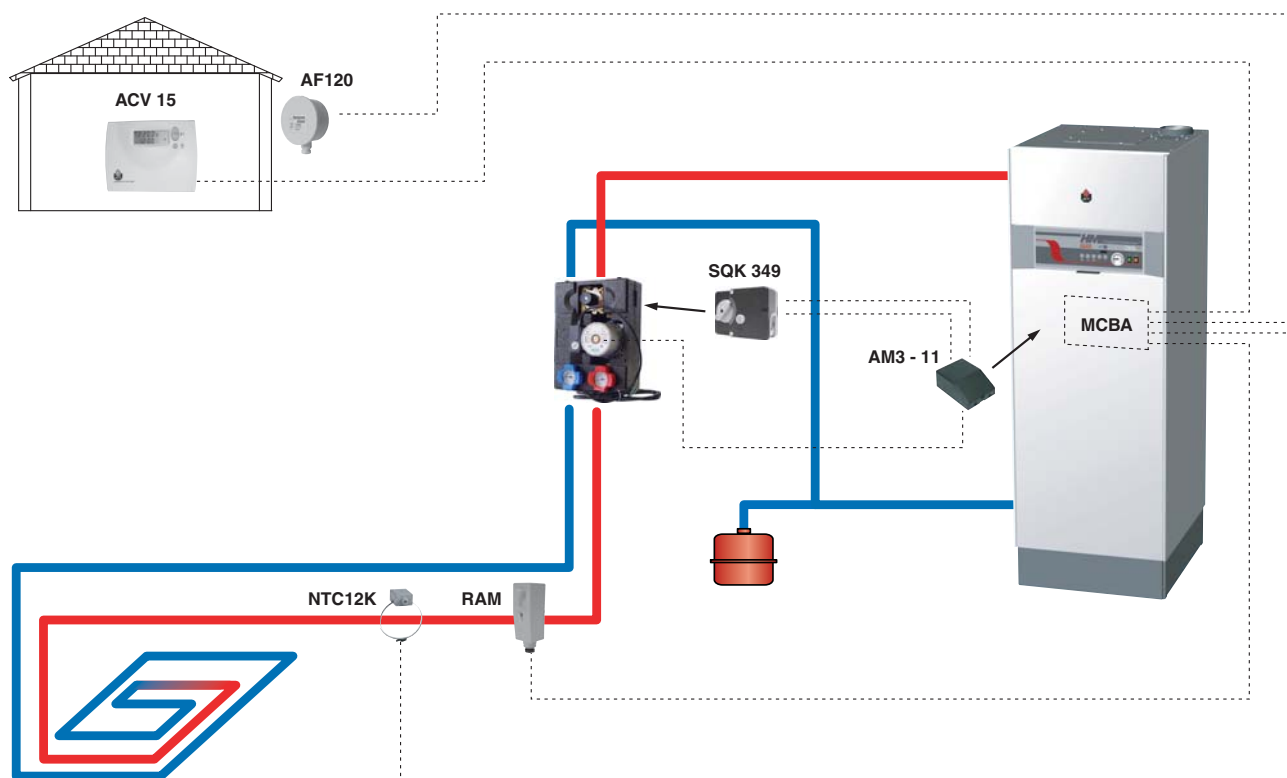
INSTALLATION OF A WEATHER DEPENDENT HEATING CIRCUIT HIGH OR LOW TEMPERATURE

General diagram









This is a simple way to control two heating circuits (radiators or floor heating) with weather depending control.

Advantages for the user:

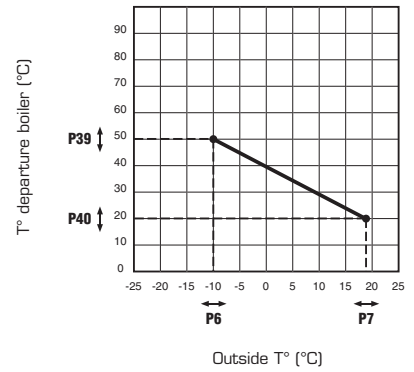
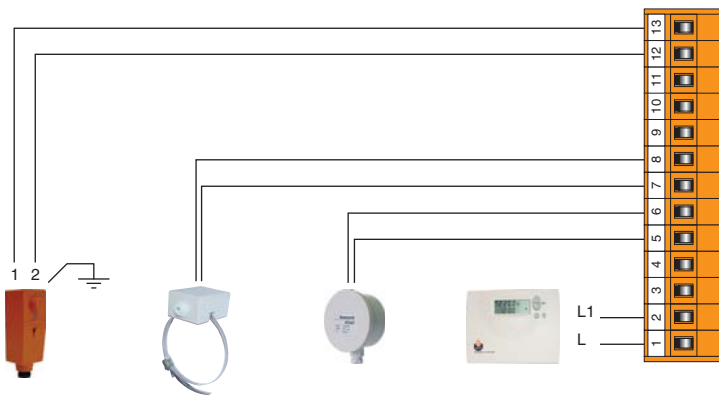
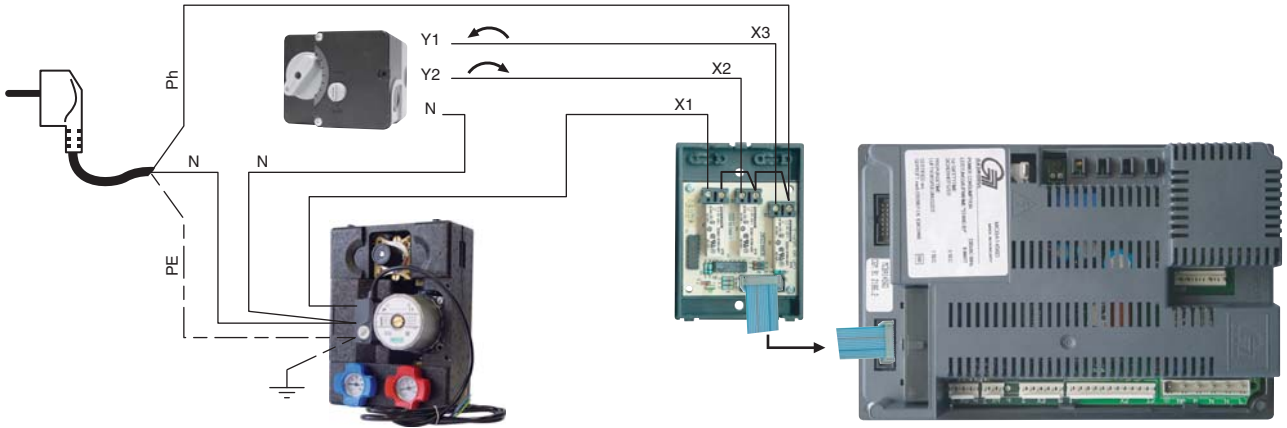
- Comfort
- Efficiency



Optional accessories

Code	Description	Code	Description
 10800018	Room thermostat ACV 15	 10510100	Outside temperature sensor 12kΩ — AF120
 10800095	AM3-11 module Controls the second heating circuit - communicates directly with the MCBA	 10800152 [HM 35 TC]	Low temperature kit DN 20 Including: one circulation pump, two isolating valves, check valve, two thermometers, the 3-way valve with integrated bypass.
 537D3040	Contact sensor 12kΩ To be mounted on the outlet of controlled circuit	 10800106 [HM 85 TC]	Low temperature kit DN 32 Including: one circulation pump, two isolating valves, check valve, two thermometers, the 3-way valve with integrated bypass
 10510900	Contact thermostat RAM 5109 Required to protect all floor heating circuits	 10800019	Servomotor SQK 349 Electromechanical servomotor SQK 349 for the three-way valve included in low temperature kit (opening times : 150 seconds)

To be wired in accordance with the applicable regulations.



Factory setting	Typical setting	Description
1.60	1.60	Maximum setpoint in domestic hot water mode
2.01	2.01	00 : Domestic hot water mode "OFF" 01 : Domestic hot water mode "ON"
3.01	3.01	00 : Heating mode "OFF" 01 : Heating mode "ON"
4.85	4.85	Maximum temperature of the heating circuit (must be higher than hot water setpoint)
P.06 -10	P.06 -10	Minimum outside temperature [T4] (adjustable between -20 and 10°C).
P.07 18	P.07 18	Maximum outside temperature [T4] (adjustable between 15 and 25°C).
P.34 00	P.34 20	10 : Heating pump controlled by room thermostat - hot water priority active 21 : Heating pump runs continuously - hot water priority active 50 : Heating pump controlled by room thermostat - hot water priority not active 61 : Heating pump runs continuously - hot water priority not active
P.39 50	P.39 50	Maximum temperature of the heating circuit
P.40 20	P.40 20	Minimum temperature of the heating circuit

INSTALLATION OF TWO HEATING CIRCUIT CONTROLLED BY ROOM UNIT AND ZMC-1 MODULE

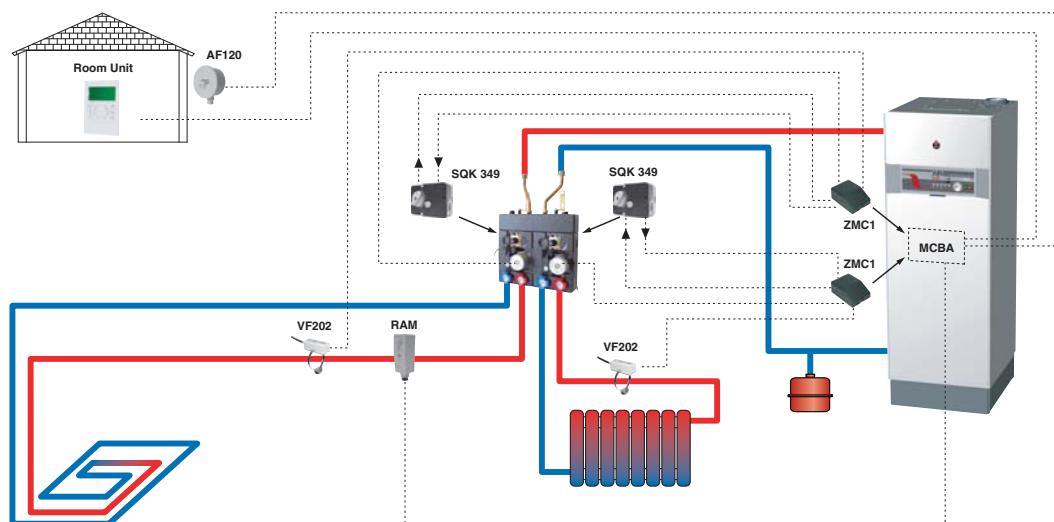
General diagram

This configuration controls two heating circuits (radiators or floor heating). In addition, the Room unit features a remote monitoring of the two circuits

You can adjust those two circuits depending on the outside temperature.

This is the ideal configuration for floor heating with additional heating provided by radiators.

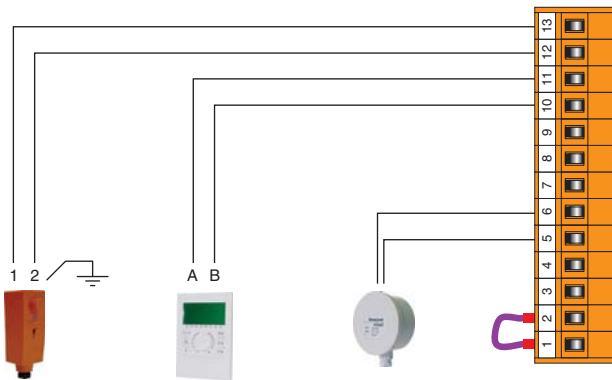
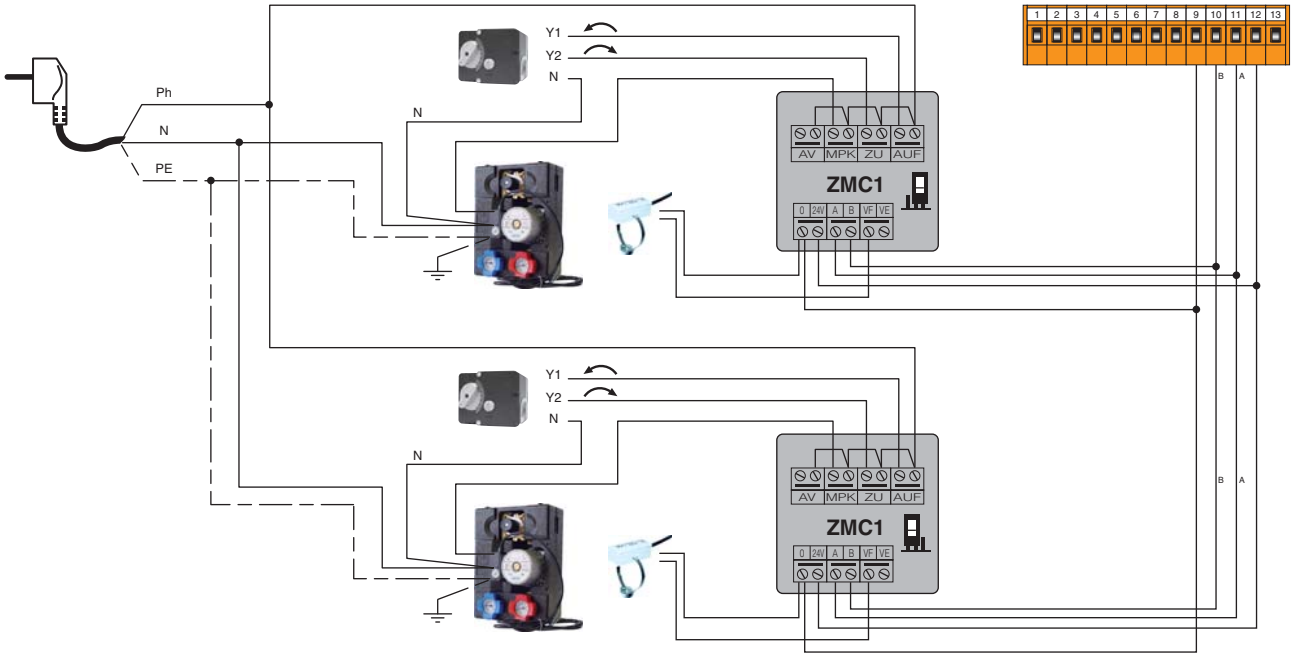
You can select various heating functions, and program up to three weekly schedules, as well for the central heating as for the hot water production.



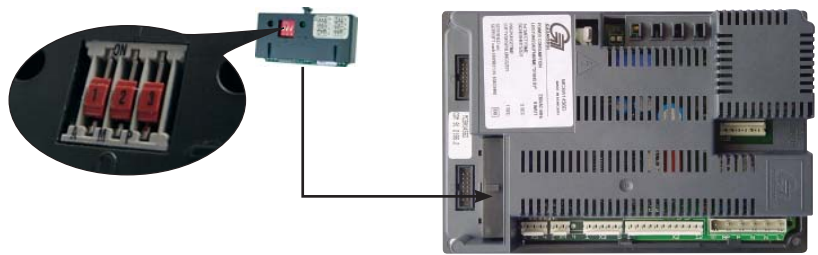
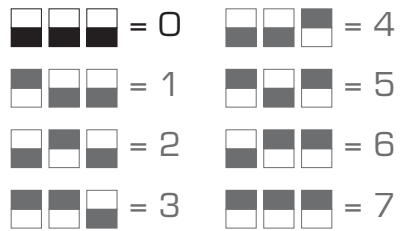
Optional accessories

Code	Description	Code	Description
 10800034	Room Unit RSC Supplied with outside temperature sensor	 10800077 [HM 35 TC]	Collector 2 circuits DN 20 With bypass, connecting tubes and integrated wall brackets
 10800119 X2	ZMC-1 module (kit) Controls the second heating circuit - alarm contact - operates only in conjunction with the Room Unit RSC.	 10800152 [HM 35 TC] X2	Low temperature kit DN 20 Including: one circulation pump, two isolating valves, check valve, two thermometers, the 3-way valve with integrated bypass.
 10800036	Clip-in interface RMCIEBV3 Enables communications between the MCBA and the Room Unit RSC.	 10800104 [HM 85 TC]	Collector 2 circuits DN 32 With integrated wall brackets
 10800045 X2	Contact sensor 2kΩ — VF202 To be mounted on the outlet of controlled circuit	 10800142 [HM 85 TC]	Connection kit DN 32 to the manifold Including: Two flexible 1"1/2 hoses and 1"1/4 reduction fittings
 10510900	Contact thermostat RAM 5109 Required to protect all floor heating circuits	 10800106 [HM 85 TC] X2]	Low temperature kit DN 32 Including: one circulation pump, two isolating valves, check valve, two thermometers, the 3-way valve with integrated bypass
 10510100	Outside temperature sensor 12kΩ — AF120	 10800019 X2	Servomotor SQK 349 Electromechanical servomotor SQK 349 for the three-way valve included in low temperature kit (opening times : 150 seconds)

To be wired in accordance with the applicable regulations.



10800036: Interface address "0"



PARA
Factory setting

PARA
Typical setting

Description

1.60	1.60	Maximum setpoint in domestic hot water mode
2.01	2.01	00 : Domestic hot water mode "OFF" 01 : Domestic hot water mode "ON"
3.01	3.01	00 : Heating mode "OFF" 01 : Heating mode "ON"
4.85	4.85	Maximum temperature of the heating circuit (must be higher than hot water setpoint)

COMMISSIONING THE SYSTEM



Before pressurising the central heating circuit (primary) you should first pressurise the domestic hot water tank (secondary). Both the domestic hot water tank and the central heating circuit must be filled before using the boiler.



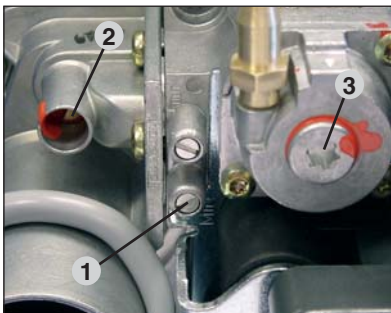
- Slowly fill the tank and drain it by opening a hot water tap. Drain all the taps and check that there are no leaks in the domestic hot water system.
- Fill the whole system up to a minimum pressure of 1 bar (preferably 1.5 bar), using the boiler's fill valve. Fill the system slowly. Also check that the automatic air vent on the tank is working. Check that there are no leaks in the central heating system.
- Vent the shunt pump and unblock it if necessary.
- Open the gas tap, drain the pipe and check that there are no leaks in the system.
- Place the condensing trap on the bottom face of the boiler and check it is fill with water.
- Connect the plug to the wall socket and power on the appliance. If needed, place the room thermostat to its highest position. The boiler should start. Check the gas pressure and allow the boiler to heat up for a few minutes. Set the boiler to High Power mode and check the CO₂ level (see the table of Technical Characteristics). Then, set the boiler to Low Power mode and check the CO₂ level again (see the table of Technical Characteristics).
- Set the central heating and hot water temperatures following the values given in the Directions for Use.
- Drain the central heating system again and, if necessary, re-fill it.
- Make sure the central heating system is correctly balanced and, if necessary, adjust the valves to prevent a greater or lesser flow than planned to some circuits or radiators.



The condensate flow pipe diameter can not be decreased. Moreover this pipe can never be blocked.

CHECKING THE SETTING

- Check that the parameters are set in accordance with the user's needs: see page 3, Directions for Use.
- Check the boiler settings: this task can only be carried out by an ACV-trained installer or by the ACV maintenance department.
- Set the appliance to High Power mode by simultaneously pressing the mode and Plus keys.



Réf. 3:
The gas valve offset setting is a sealed factory setting. In principle, it may not be modified.

- Check the dynamic gas pressure at the gas valve (see diagram below, ref. 1). This must be at least 18 mbars. Wait a few minutes for the appliance to heat up to a minimum temperature of 60°C. Check the CO₂ setting using a measurement instrument. Please see in the Technical Characteristics for optimum value.
To increase the CO₂ value, turn the venturi screw counterclockwise; turn it clockwise to reduce the value (see diagram below ref. 2). Then put the appliance to High Power mode by simultaneously pressing the mode and Plus keys. Wait a few minutes to stabilise.
Check the CO₂ value. It should be either equal to the full power value or a maximum of 0.5% less than this value. If you record a significant deviation, please contact the ACV maintenance department.

INSPECTION AND MAINTENANCE



ACV recommends that you have your boilers inspected and cleaned if need be at least once a year.

Plug out the appliance before undertaking any work, even if only recording measurements and adjusting the settings.

- Check that the condensate trap is not fouled, fill it, if need be, and check that there are no leaks.
- Check that the safety valves are operating correctly.
- Drain the whole system and if necessary re-fill the appliance to pressure of 1.5 bar.



If you have to refill your circuit more than twice a year, please contact your installer.

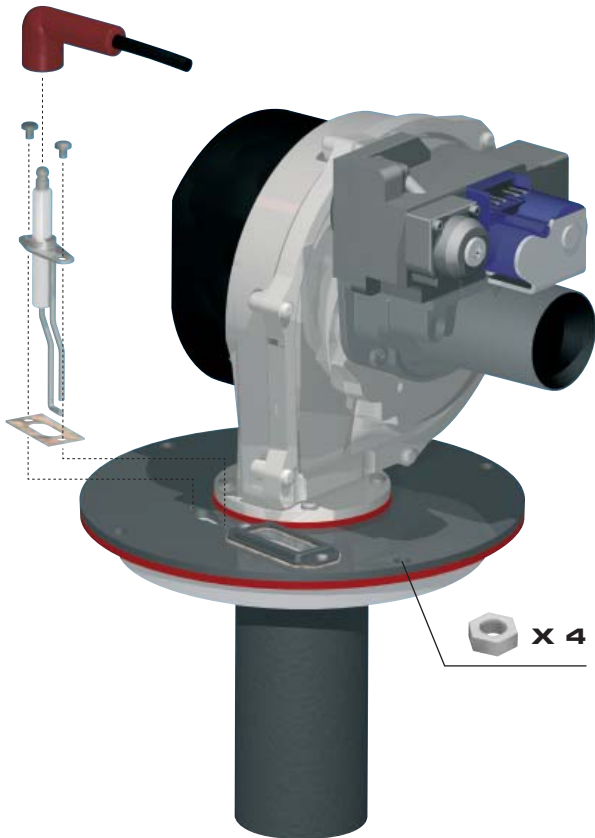
- Check the boiler charge in High Power mode. If there is a big difference between this value and the original setting, the deviation could mean a blockage in the air intake pipes or flue gas extraction pipes, or that the exchanger has become fouled with an accumulation of dirt.

TEMPERATURE SENSOR RESISTANCE TABLES

T° [°C]	R Ω	T° [°C]	R Ω	T° [°C]	R Ω
- 20	98200	25	12000	70	2340
- 15	75900	30	9800	75	1940
- 10	58800	35	8050	80	1710
- 5	45900	40	6650	85	1470
0	36100	45	5520	90	1260
5	28600	50	4610	95	1100
10	22800	55	3860	100	950
15	18300	60	3250		
20	14700	65	2750		

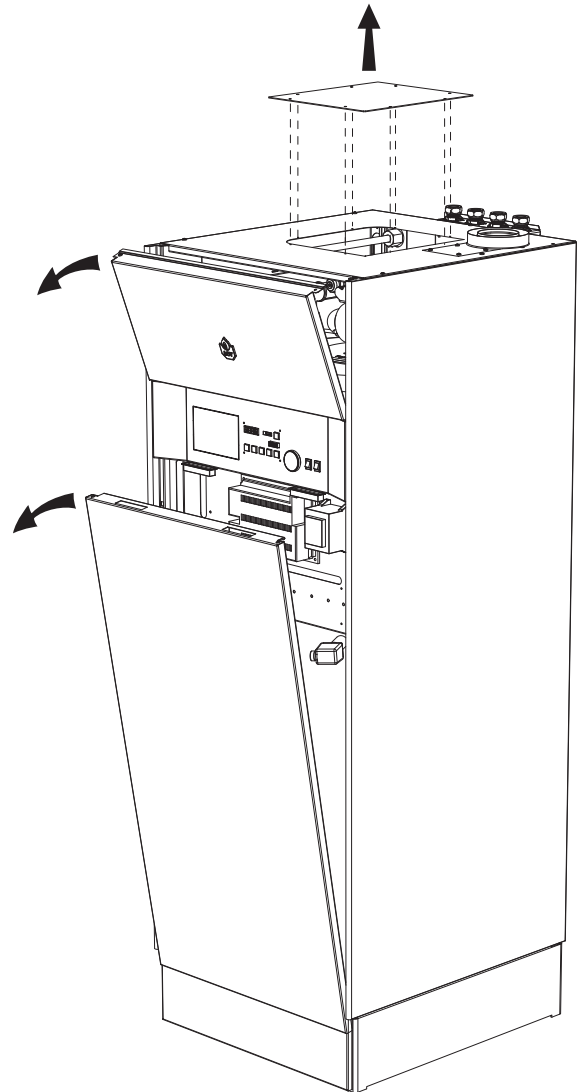
DISASSEMBLING THE BURNER

- Close the inlet gas valve.
- Remove the top front panel of the boiler.
- Unplug the fan plugs (24 Volt), the ignition cable, the gas valve control and the ignition electrode earth.
- Loosen the 4 burner nuts using a ratchet wrench.
- Unscrew the three-way coupling on the gas pipe.
- In one unit, lift up the burner with the fan and the gas valve to remove them from the exchanger. Be careful not to damage the burner insulation in the exchanger.
- Check the condition of the insulation and the seals and replace them if necessary before re-assembling the burner following the same procedure but in the reverse order.



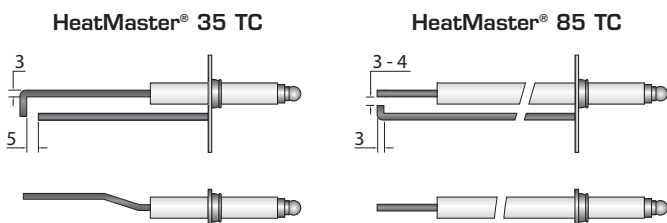
CLEANING THE HEAT EXCHANGER

- Remove the burner assembly as described above.
- Remove the burner gasket.
- Clean the combustion chamber using a vacuum cleaner.
- It could be necessary to clean the flue tubes by putting water in the combustion room. After that operation, it is necessary to clean the condensing trap.
- Check the burner insulation and the burner gasket; replace the parts if necessary.
- Check the igniter, replace if necessary
- Reassemble the burner and check for leakages.
- Power up the appliance, set the boiler in full power mode and recheck for leaks.
- Check the gas pressure and the CO₂ level as explained in previous paragraph.



DISASSEMBLING AND CHECKING THE ELECTRODE

- Remove the ignition cable.
- Remove the two fixing screws.
- Remove the electrode earth but make sure the serrated washer is fixed between the earth cable and the electrode when re-assembling.
- Check the condition of the seals and replace them if necessary before re-assembling the electrode following the same procedure but in the reverse order.



STANDBY MODE

Standby Mode

5t6y

After you power down the appliance the screen displays Pilot mode, as shown in the figure above.

This is the standard MCBA mode. The MCBA automatically returns to this mode after 20 minutes if no keys have been pressed on the screen. Any parameters that were modified are then enabled.

The first character shows the current status of the boiler depending on the condition of both the boiler and the burner. The last 2 characters indicate the start temperature.

Status	Boiler function
0 3 8 8	Standby, no demand for heat
1 3 8 8	Fan first, fan after
2 3 8 8	Ignition
3 3 8 8	Operation of the boiler burner for the heating
4 3 8 8	Operation of the boiler burner for the domestic hot water
5 3 8 8	Air pressure limit or obtaining the number of start revolutions
6 3 8 8	The burner goes out when the specified value is reached. A demand for heat is present nonetheless.
7 3 8 8	Pump over-run time after the demand for central heating
8 3 8 8	Pump over-run time after the demand for domestic hot water
9 3 8 8	Burner blocked: <ul style="list-style-type: none"> • 6 1 8 : T1 > 95°C • 6 1 9 : T2 > 95°C • 6 2 4 : T2 - T1 > 10°C after 90 seconds • 6 2 5 : dT1/dt > maximum gradient T1 • 6 2 6 : water pressure switch not off • 6 2 8 : no fan signal • 6 2 9 : erroneous fan signal • 6 3 0 : T1 - T2 > Δ max. • 6 3 3 : NTC3 short-circuit • 6 3 5 : NTC5 short-circuit • 6 3 8 : NTC3 interrupt • 6 4 0 : NTC5 interrupt • 6 5 2 : T5 > T5 max • 6 6 5 : wait for the fan to start

Once the cause of the blockage has been resolved, the burner starts automatically within 150 seconds at most.

Status	Boiler function
A 3 8 8	Internal check — three-way valve
G 3 8 8	Boiler burner in hot water ready function
H 3 8 8	Test function: Central heating high power
L 3 8 8	Test function: Central heating low power
E 3 8 8	Test function: Boiler with fixed number of revolutions

SETTING THE MCBA PARAMETERS

Parameter Mode


PARA





To access Parameter mode when the system is in Pilot mode, press **MODE** once.

To scroll through the list of parameters, simply press "**step**". To modify a parameter value, use the + or - keys.

Then press "**Store**" to save the value you just changed. The screen flashes once to confirm the data has been saved.

To activate the parameters you changed, press **MODE** once more (which brings you into Info mode). However, if you do not press a key, the system returns to Pilot mode after 20 minutes and automatically enables the changes.

Key	Screen
 MODE	PARA



Key	Screen	Description of parameters	Factory setting	
			HeatMaster® 35 TC	HeatMaster® 85 TC
 STEP	1.867	Adjusting the hot water temperature	1.860	1.860
 STEP	2.801	Production of hot water 00 = Stop 01 = Start	2.801	2.801
 STEP	3.801	Turn On/ Turn Off the heating 00 = Stop 01 = Start	3.801	3.801
 STEP	4.870	Maximum temperature in Central Heating mode	4.885	4.885

REQUEST FOR INFORMATION ON THE INSTALLATION











Info Mode

INFO

To switch from Standby to Info mode, press **Mode** twice.

Key	Screen
	PARA
MODE	
	INFO
MODE	

Press **STEP** until the system displays the information you need. The point located behind the first position flashes to indicate that the boiler is in **INFO** mode.

Key	Screen	Description of parameters
	1.60	Boiler temperature T1 [Top of the primary]
STEP		
	2.50	Boiler temperature T2 [Top of the primary]
STEP		
	3.65	Hot water temperature T3 in °C [Bottom of the hot water tank]
STEP		
	4.03	Outdoor temperature T4 in °C
STEP		
	5.55	Flue gas temperature
STEP		
	6.45	Calculated boiler temperature in °C
STEP		
	7.00	Rate of increase of T1 temperature in °C/s
STEP		
	8.00	Rate of increase of T2 temperature in °C/s
STEP		
	9.00	Rate of increase in the hot water temperature in °C/s
STEP		
	A.34	Flow temperature of the heating circuit (with module AM3-11 only)
STEP		

ENTERING THE CODE

Code Mode



CODE

You can access the following parameters by entering the service code:



- Parameters 5 - 42
- Communication mode
- Fan Speed mode
- ERROR mode

Stby

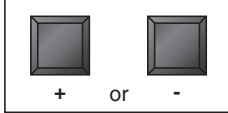

To access Code mode, press **MODE** and **STEP** simultaneously [only from Standby mode!].


→




Press **STEP** once and the system displays **C** in position 1, followed by arbitrary characters in positions 3 and 4.


→


Press + or - to change the code.


→


Press **STORE**, the screen flashes briefly to indicate that the code has been accepted.











→


Press **MODE** until the system displays the correct mode.

 Only ACV authorised installers know the access code.

For further information, please contact our after-sales department.








MCBA PARAMETERS WITH CODE RESTRICTED ACCESS

Key	Screen	Description of parameters	Factory setting		
			HM 35 TC	HM 85 TC	
 STEP	P.05	Minimum temperature of the top part of the boiler in heating mode when using an outdoor sensor In order to avoid cycling between heating and hot water mode, it is preferable to set that parameter higher than DHW set point [Para 1]	8860	8860	
 STEP	P.06	Minimum outdoor temperature [adjust the heating curve]	8-10	8-10	
 STEP	P.07	Maximum outdoor temperature [adjust the heating curve]	8818	8818	
 STEP	P.08	Frost protection temperature	8-30	8-30	
 STEP	P.09	Correction of outdoor temperature	8800	8800	
 STEP	P.10	Blockage T 0 = Disabled	8800	8800	
 STEP	P.11	Acceleration time lag 00 = Stop [minute]	8800	8800	
 STEP	P.12	Night reduction heating (°C)	8810	8810	
 STEP	P.13	Maximum number of fan revolutions in CH mode [rpm x 100]	Natural gas	8863	8860
			Propane	8863	8865
 STEP	P.14	Maximum number of fan revolutions in CH mode [rpm /min.]	Natural gas	8800	8800
			Propane	8800	8800
 STEP	P.15	Max. number of revs in domestic hot water mode [rpm x 100]	Natural gas	8863	8865
			Propane	8863	8860
 STEP	P.16	Maximum number of fan revolutions in domestic hot water mode [rpm]	Natural gas	8800	8800
			Propane	8800	8800
 STEP	P.17	Minimum number of fan revolutions [rpm x 100]	Natural gas	8820	8815
			Propane	8820	8815

MCBA PARAMETERS FOR THE SPECIALIST



Factory setting





Key	Screen	Description of parameters	HM 35 TC	HM 85 TC	
STEP	P. 18	Minimum number of fan revolutions [rpm]	Gaz naturel	8800	8800
			Propane	8800	8800
STEP	P. 19	Number of fan revolutions at ignition [rpm x 100]	Gaz naturel	8836	8839
			Propane	8836	8839
STEP	P. 20	CH pump over-run 0 = 10 sec. [step = 1 minute]	8800	8800	
STEP	P. 21	Domestic hot water pump over-run time [step = 10.2 sec]	8806	8806	
STEP	P. 22	Central Heating modulation hysteresis enabled	8802	8802	
STEP	P. 23	Central Heating modulation hysteresis disabled	8803	8803	
STEP	P. 24	Domestic hot water modulation hysteresis enabled	8800	8800	
STEP	P. 25	Domestic hot water modulation hysteresis disabled	8806	8806	
STEP	P. 26	Detection of domestic hot water hysteresis enabled	8805	8805	
STEP	P. 27	Detection of domestic hot water hysteresis disabled	8800	8800	
STEP	P. 28	Central Heating blockage time [sec. x 10,2]	8805	8805	
STEP	P. 29	Domestic hot water blockage time [sec. x 10,2]	8800	8800	
STEP	P. 30	Domestic hot water → Central Heating blockage time [sec. x 10,2]	8800	8800	

Key	Screen	Description of parameters	Factory setting	
			HM 35 TC	HM 85 TC
 STEP	P. 31	Re-modulate the difference T1 - T2	8.810	8.810
 STEP	P. 32	Bus address [-1 = disabled]	8.-01	8.-01
 STEP	P. 33	Temperature increase set point for the production of hot water	8.820	8.805
 STEP	P. 34	00 : High temperature circuit - heating pump controlled by room thermostat - hot water priority active 10 : Controlled circuit (outside sensor + AM3-11 module) - heating pump controlled by room thermostat - hot water priority active 21 : Controlled circuit (outside sensor + AM3-11 module) - heating pump runs continuously - night reduction possible - hot water priority active 50 : Controlled circuit (outside sensor + AM3-11 module) - heating pump controlled by room thermostat - hot water priority not active 61 : Controlled circuit (outside sensor + AM3-11 module) - heating pump runs continuously - night reduction possible - hot water priority not active	8.800	8.800
 STEP	P. 35	Selection of the type of hot water production - That parameter is fixed in a HeatMaster® TC and must not be changed	8.802	8.802
 STEP	P. 36	Manual fan speed	8.-01	8.-01
 STEP	P. 37	First position: PWM pump level during burning in, not used Second position: PWM pump level during over-run time, not used	8.811	8.811
 STEP	P. 38	T set hold boiler warm	8.800	8.800
 STEP	P. 39	Maximum temperature for the 2nd heating circuit	8.850	8.850
 STEP	P. 40	Minimum temperature for the 2nd heating circuit	8.820	8.820
 STEP	P. 41	2nd circuit temperature hysteresis	8.803	8.803
 STEP	P. 42	First position: Special pump [0 = disabled] Second position: Minimum disable cycle [0 = disabled]	8.800	8.800





COMMUNICATION MODE [with code]

When in this mode, the system displays the communication between the boiler and the control module, the optional interface kit or the optional programmable room thermostat.

Key	Screen
	
MODE	



Key	Screen	Description of parameters
		No communication
		Communication between the boiler module and the optional control modules only
		Communication between all the devices connected













FAN MODE [with code]

Key	Screen	Description of parameters
		Fan speed
MODE		
		The current fan speed is 5.500 rpm.
STEP		

ERROR MODE [with code]

ERROR mode indicates the most recent error, as well as the status of the boiler and its readings at the time this error occurred.

Key	Screen
	
MODE	

Key	Screen	Description of parameters
		Code error of the last lock-out
STEP		
		Status of the boiler at the time of the error
STEP		
		Temperature T1 at the time of the error
STEP		
		Temperature T2 at the time of the error
STEP		
		Hot water temperature T3 at the time of the error
STEP		
		Outdoor temperature T4 at the time of the error
STEP		

SAFETY STOP [ERROR mode]

If a fault occurs while the appliance is running, the system locks and the screen starts to flash. The first character is an E and the next two characters give the code for this fault, as illustrated in the table below.



To unlock the system:

- Press **RESET** on the screen.
- Contact your installer if the fault happens again.

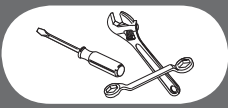
Codes	Description of the fault	Resolution of the fault
	Abnormal flame signal	<ul style="list-style-type: none"> - Check the wiring (short-circuit in the 24V wiring) - Check the electrode - Replace the MCBA (water damage)
	No flame signal after five attempts at firing the boiler	<ul style="list-style-type: none"> - Check the ignition cable - Check the electrode and the position of the electrode - Check that there is gas at the burner.
	Rectifier or gas valve error	Replace the rectifier or gas valve
	Persistent lock	Press "RESET"
 	Internal error	If the problem persists after two RESET attempts, replace the MCBA.
	EPROM error	If the problem persists after two RESET attempts, replace the MCBA.
	Max input, thermostat open or 24V fuse gone.	<ul style="list-style-type: none"> - Check the wiring - Check the 24V fuse on the MCBA. - Shunt12-13 missing
 	Internal error	If the problem persists after two RESET attempts, replace the MCBA.
	T1 > 110°C	<ul style="list-style-type: none"> - Check the NTC wiring and replace if necessary. <p>If NTC1 is OK, please verify that the water flows through the boiler.</p>
	T2 > 110°C	<ul style="list-style-type: none"> - Check the NTC wiring and replace if necessary.
	T1 gradient too high	<ul style="list-style-type: none"> - Check that the pump is turning. - If there is no problem with the pump, drain the system.
	No fan signal present	<ul style="list-style-type: none"> - Check the fan control connection - Check the fan wiring <p>If the problem persists after two RESET attempts, replace the MCBA.</p>
	The tachometer signal of the blower doesn't go to zero.	<ul style="list-style-type: none"> - Check that the convection flow through the chimney is not high enough to rotate the blower. <p>If not, exchange the blower.</p>
	NTC1 short-circuit	<ul style="list-style-type: none"> - Check the connection of the NTC1 sensor - Check the wiring of the NTC1 sensor <p>If the problem persists, replace the NTC1 sensor</p>
	NTC2 short-circuit	<ul style="list-style-type: none"> - Check the connection of the NTC2 sensor - Check the wiring of the NTC2 sensor <p>If the problem persists, replace the NTC2 sensor</p>

MCBA PARAMETERS FOR THE SPECIALIST

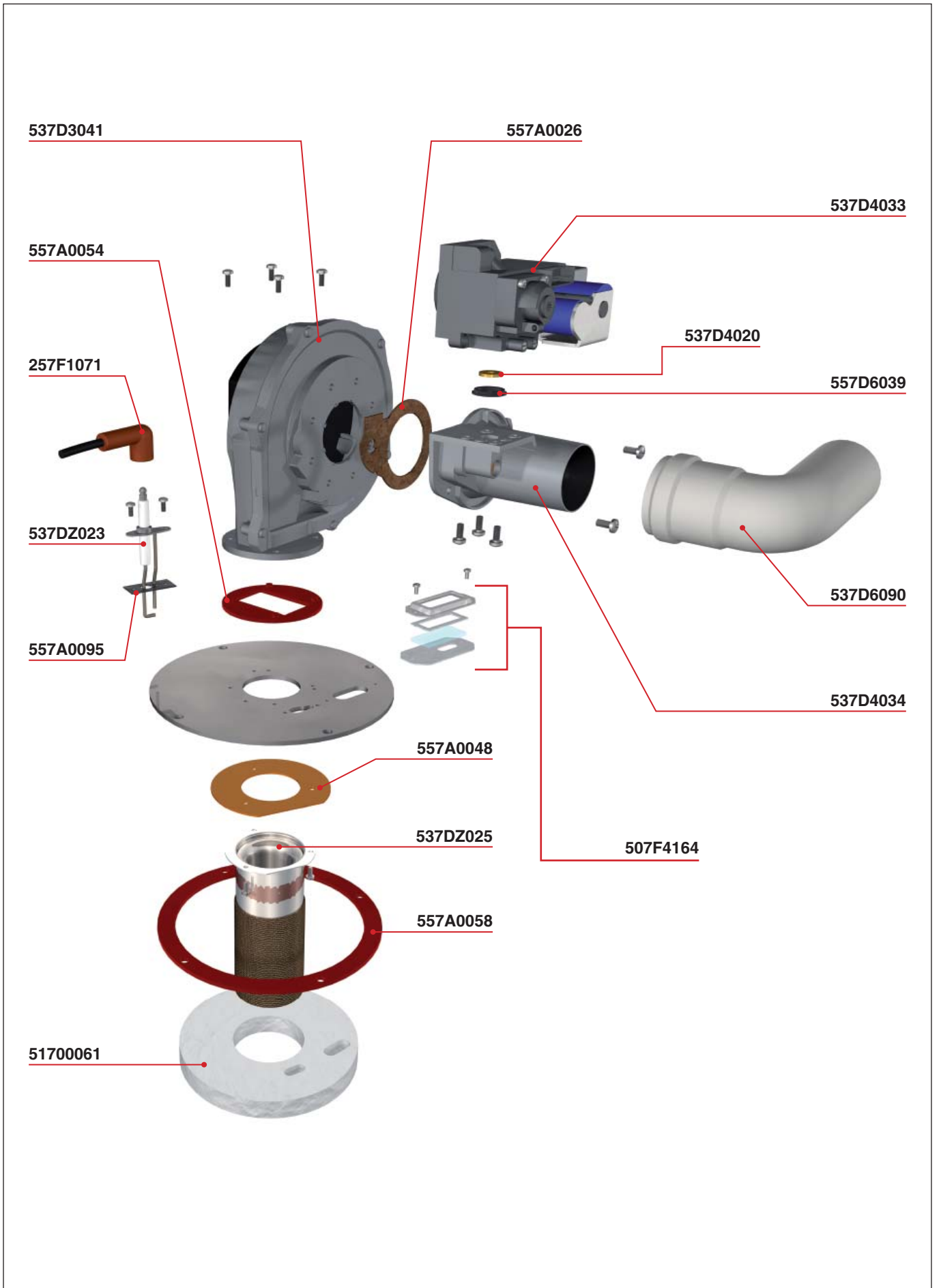
Codes	Description of the fault	Resolution of the fault
E833	NTC3 short-circuit	<ul style="list-style-type: none"> - Check the connection of the NTC3 sensor - Check the wiring of the NTC3 sensor <p>If the problem persists, replace the NTC3 sensor</p>
E836	NTC1 connection open	<ul style="list-style-type: none"> - Check the connection of the NTC1 sensor - Check the wiring of the NTC1 sensor <p>If the problem persists, replace the NTC1 sensor</p>
E837	NTC2 connection open	<ul style="list-style-type: none"> - Check the connection of the NTC2 sensor - Check the wiring of the NTC2 sensor <p>If the problem persists, replace the NTC2 sensor</p>
E838	NTC3 connection open	<ul style="list-style-type: none"> - Check the connection of the NTC3 sensor - Check the wiring of the NTC3 sensor <p>If the problem persists, replace the NTC3 sensor</p>
E844	Internal error	<p>If the problem persists after two RESET attempts, replace the MCBA.</p>
E852	Flue gas temperature too high (NTC5)	<ul style="list-style-type: none"> - Check the connection of the NTC5 sensor - Check the wiring of the NTC5 sensor <p>If the problem persists, replace the NTC5 sensor</p>
E860	Error while reading the parameters	<p>Press RESET</p> <p>If the error persists, replace the MCBA.</p>
E865	Problem with the power supply to the fan	<ul style="list-style-type: none"> - Check the MCBA power supply voltage. <p>If it is OK, replace the fan.</p>

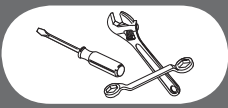


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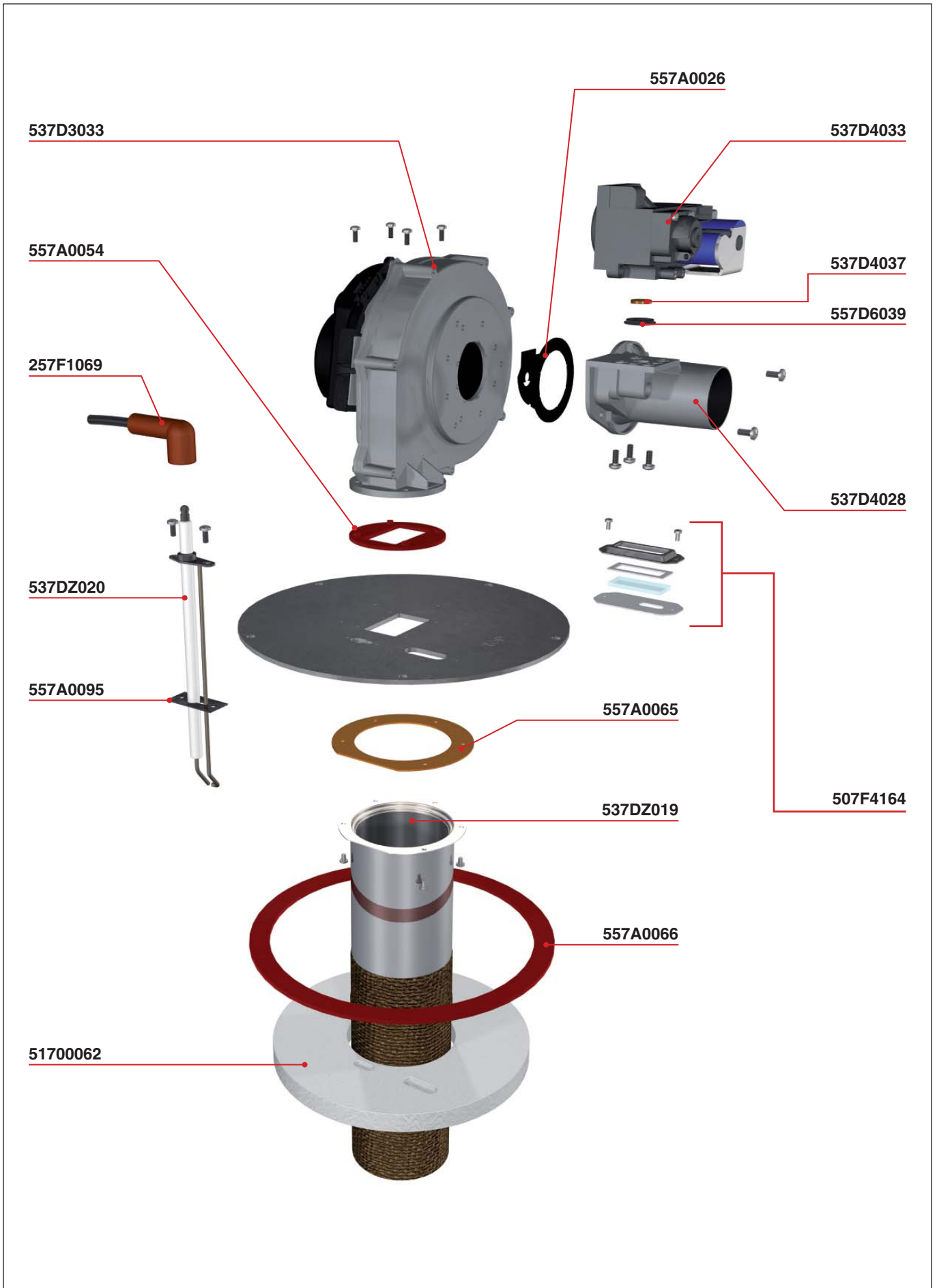


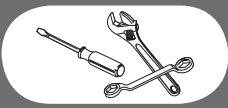
HeatMaster® 35 TC



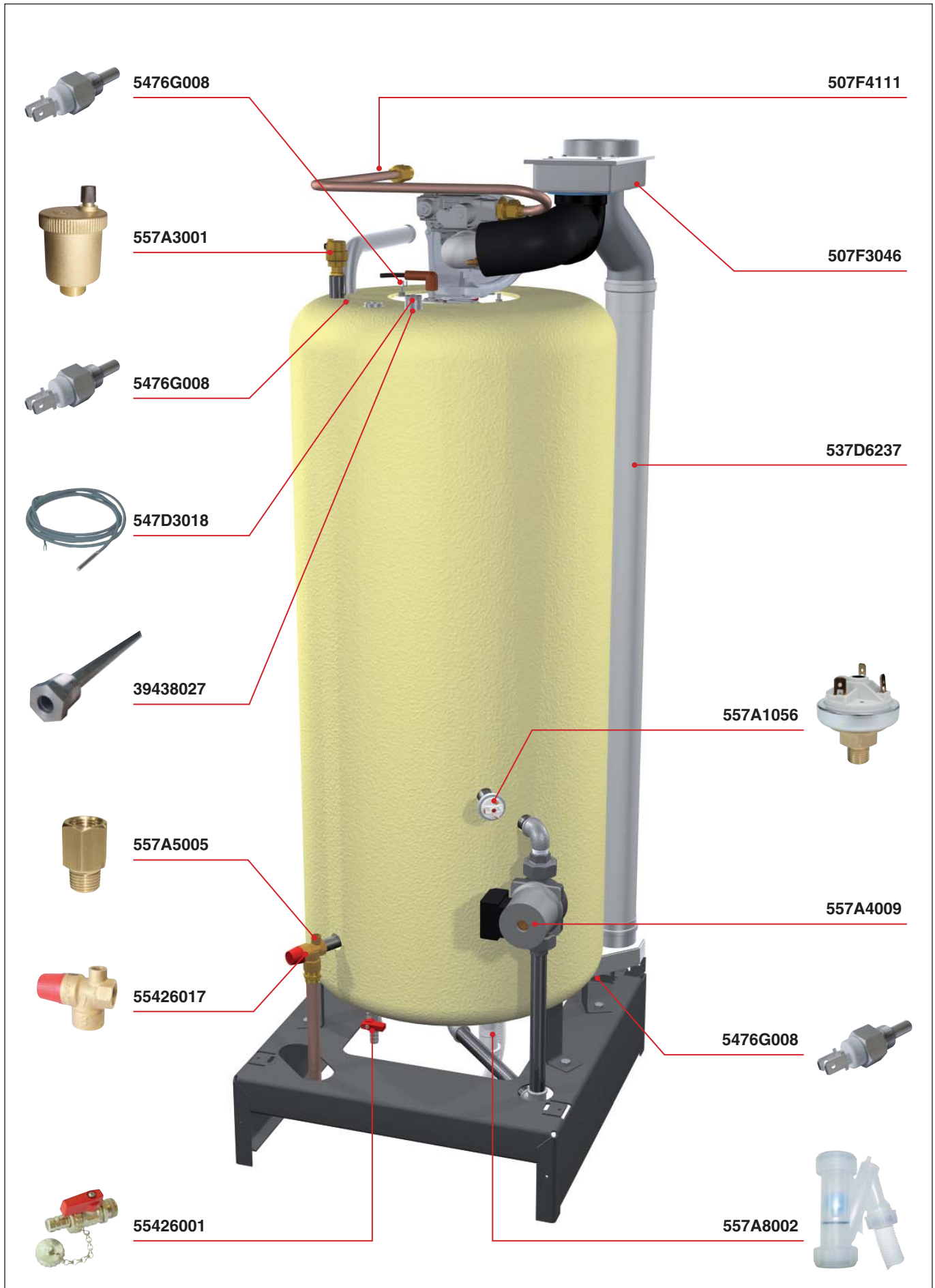


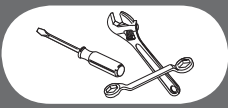
HeatMaster® 85 TC



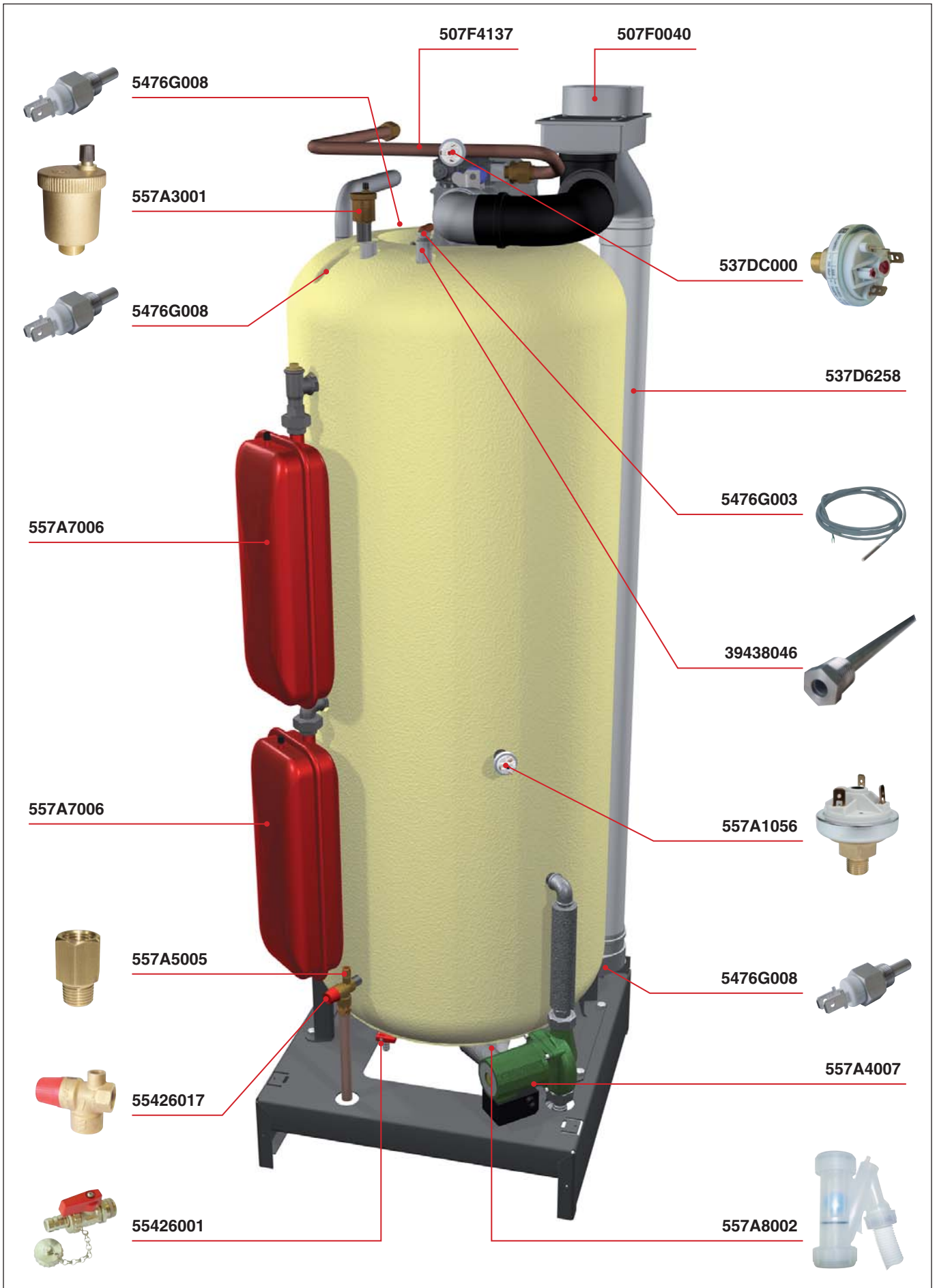


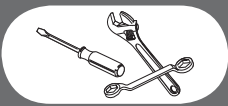
HeatMaster® 35 TC





HeatMaster® 85 TC





HeatMaster® 35 - 85 TC

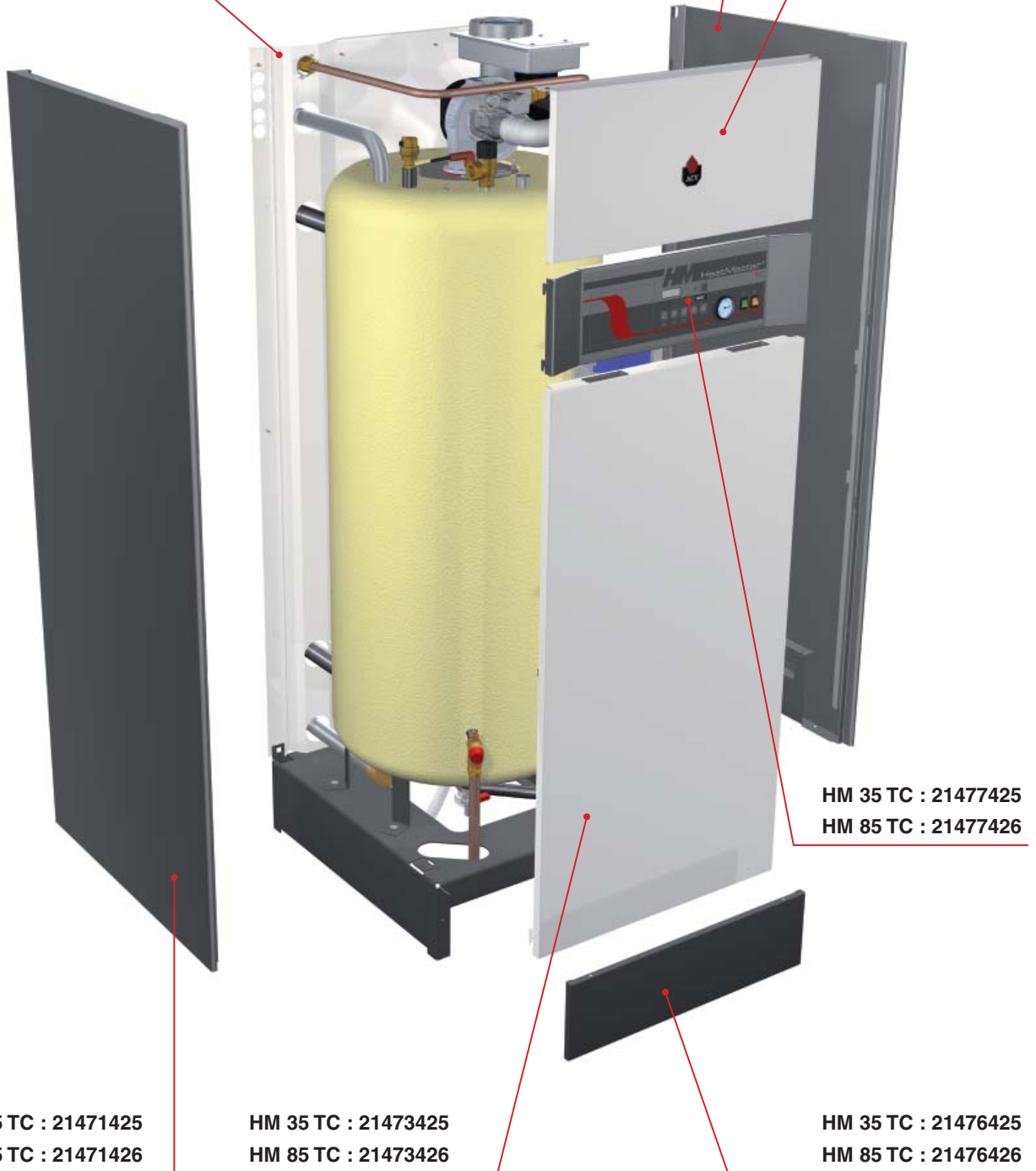
HM 35 TC : 21475425
HM 85 TC : 21475426

HM 35 TC : 2147C425
HM 85 TC : 2147C426

HM 35 TC : 21471425
HM 85 TC : 21471426

HM 35 TC : 21474425
HM 85 TC : 21474426

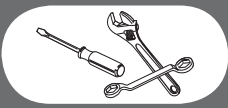
HM 35 TC : 21478425
HM 85 TC : 21478426



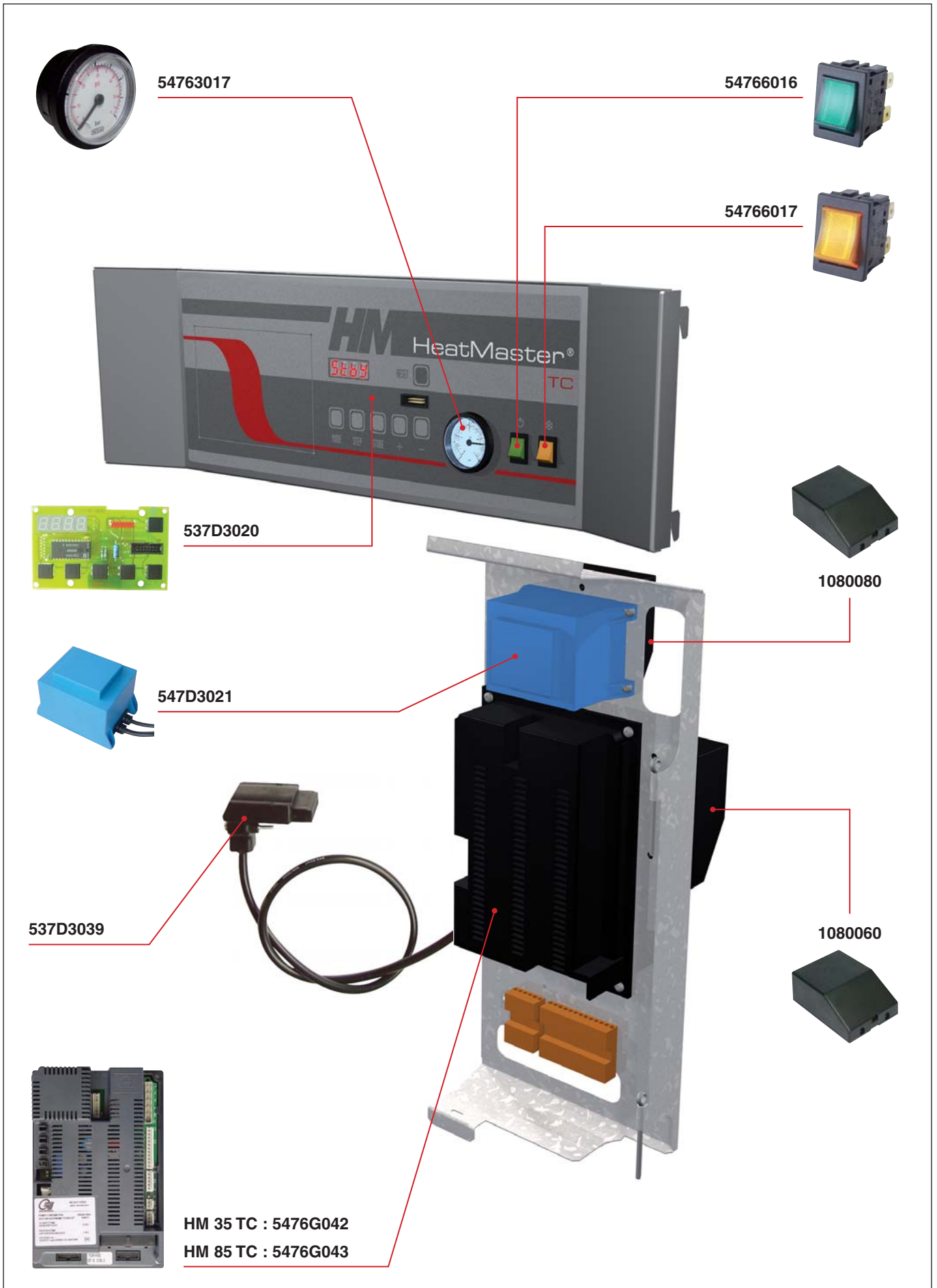
HM 35 TC : 21471425
HM 85 TC : 21471426

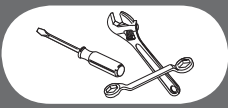
HM 35 TC : 21473425
HM 85 TC : 21473426

HM 35 TC : 21476425
HM 85 TC : 21476426



HeatMaster® 35 - 85 TC

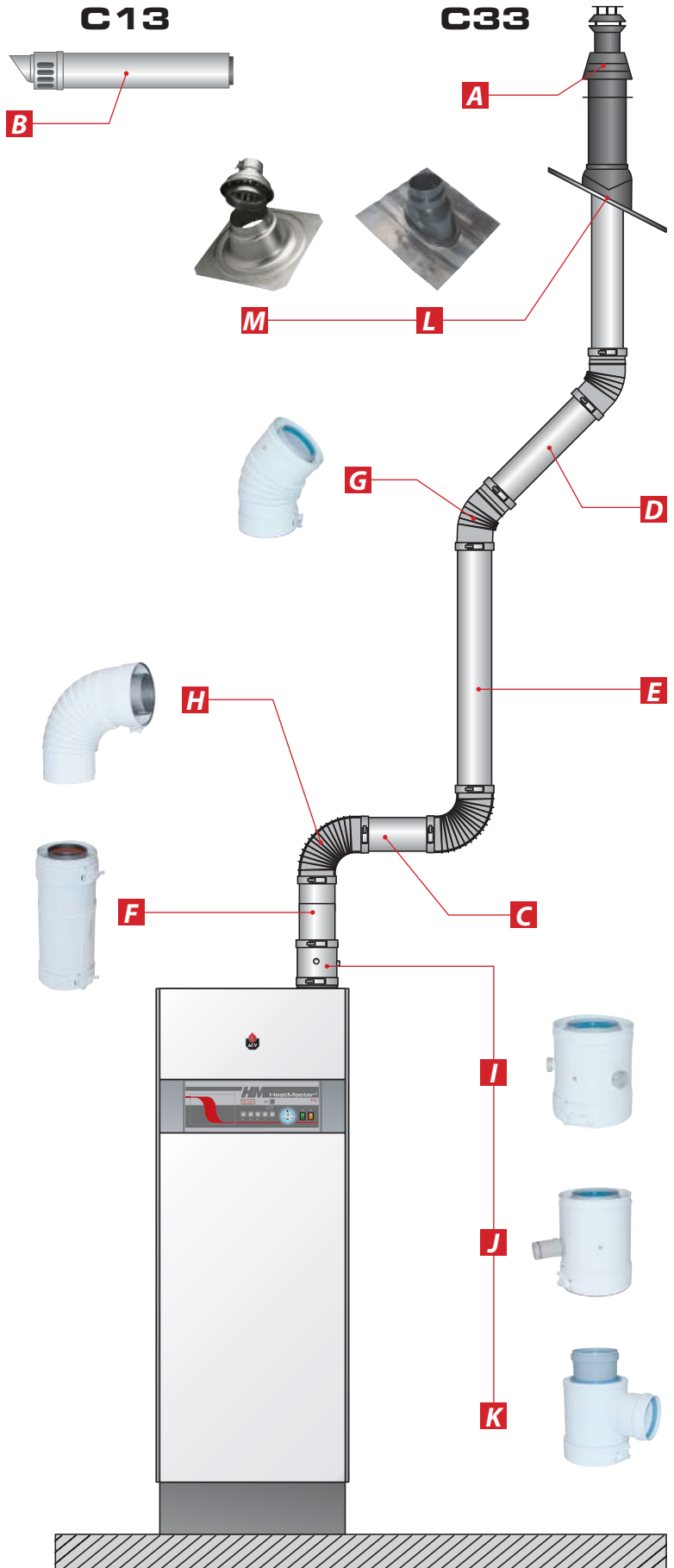


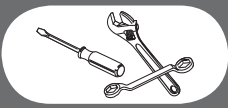


HeatMaster® 35 TC - (Ø 80/125 mm)

HeatMaster 35 TC

A	537D6184
B	537D6185
C	537D6186 L. 250 mm
D	537D6187 L. 500 mm
E	537D6188 L. 1000 mm
F	537D6189 L. 325 / 400 mm
G	537D6190 43° - 45°
H	537D6191 87° - 90°
I	537D6193
J	537D6192
K	537D6232 Ø 80/125 mm - 2 x Ø 80 mm
L	537D6182
M	537D6194 Ø 390 mm
N	537D6183 Ø 125 mm

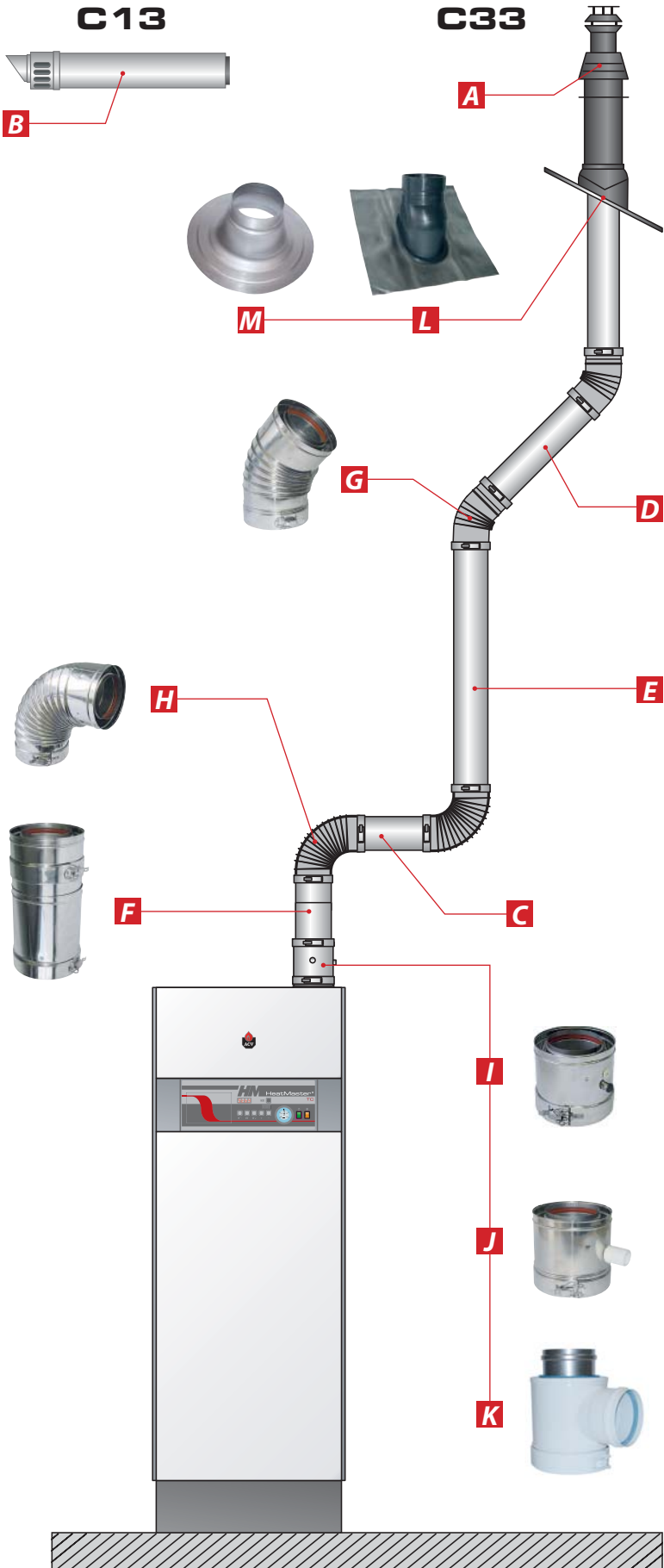




HeatMaster® 85 TC - (Ø 100/150 mm)

HeatMaster 85 TC

A	537D6197
B	537D6198
C	537D6199 L. 250 mm
D	537D6200 L. 500 mm
E	537D6201 L. 1000 mm
F	537D6202 L. 325 / 400 mm
G	537D6203 43° - 45°
H	537D6204 87° - 90°
I	537D6206
J	537D6205
K	537D6207 Ø 100/150 mm - 2 x Ø 100 mm
L	537D6209
M	537D6208 Ø 430 mm
N	537D6210 Ø 150 mm





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