

Köber LTD Turturesti Vaduri Branch Office



WALL HUNG GAS BOILERS



TECHNICAL INSTRUCTIONS FOR INSTALLATION/ USAGE/ MAINTENANCE



MOTAN START BT

C11SPV 24 ME
C11SPV 24 MEF

MOTAN PLUS MT

C12 SPV 24 ME
C12 SPV 24 MEF



CE 1798

KÖBER LTD TURTURESTI VADURI BRANCH OFFICE

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GENERAL PRESENTATION OF THE WALL HUNG GAS BOILER

General description of the wall hung gas boiler

The wall hung gas boiler is a fuel gas-consuming appliance which has the role of turning the energy of the gaseous fuel into thermal energy by burning. This appliance functions unsupervised due to its protection and control systems.

The wall hung gas boiler is made of several parts that we are going to describe in the following chapters.

The gas enters into the heating unit through the gas feeding circuit consisting of a connector and a pressure regulator which will be adjusted to 20 mbar for G20 A(L) and A(H) subgroups. The pressure regulator will be set at 37 mbar for LPG (propane subgroups and propane-butane mixtures). Thus it reaches into the gas valve which has also the role of modulating the gas flow at the outlet to the burner.

The ignition is achieved by initiating the flame with an ignition electrode and an ignition transformer. During the combustion, the flame sensing is performed by means of an ionization sensor.

The variant with forced draft is foreseen with a fan which evacuates the exhaust gases. In the initiation phase, this evacuates an air volume to provide an unexplosive ignition. The explosive ignition may occur due to a gas accumulation during the non-operating period.

The combustion chamber, having a parallelepipedal shape, made of sheet iron, with an inner layer of ceramics fibre, is designed to allow the transfer to the heat exchanger with less heat losses.

In case of the central heating circuit of the bithermal heat exchanger type, the heat resulted from fuel gas combustion is carried out by the bithermal heat exchanger and sent to the thermal agent (water) which is transported by the circulating pump through the heating installation. In case of the domestic hot water circuit, the circulation pump does not function and the heat transfer is achieved in this circuit through the bithermal heat exchanger.

In case of the central heating circuit of the two heat exchangers type, the heat resulted from fuel gas combustion is taken over by the monothermal heat exchanger and transferred to the thermal agent (the water) which is transported by the circulating pump through the heating installation.

In the case in which a water flow is detected by the flow switch on the DHW circuit, the 3-way valve will be activated, which performs the transfer from the CH circuit to the short circuit through the plate heat exchanger (the primary circuit of the plate heat exchanger) and the heat transfer is performed through it to the DHW circuit (the secondary circuit of the plate heat exchanger).

The flue gases are evacuated with the help of the fan in the case of the the forced draft unit and through the chimney draft for the natural draft unit.

The protection and control of the functioning are performed electronically. The setting of the unit is achieved from the control panel (see the respective chapter).

DESCRIPTION OF THE BOILERS TYPES

BOILER TYPE	Useful Power	Accessories			DHW instant production
	[kcal/h]	The fan	The pump	The expansion vessel	
MOTAN START BT C11 SPV 24 MEF	20670	X	X	X	X
MOTAN START BT C11 SPV 24 ME	20670	—	X	X	X
MOTAN PLUS MT C12 SPV 24 MEF	20670	X	X	X	X
MOTAN PLUS MT C12 SPV 24 ME	20670	—	X	X	X

SYMBOLS

S - with instant production of DHW (without storage)

P - with pump

V - with closed expansion vessel

24 - the maximum power that the boiler may give, in kW

M - the burner is supplied by a continuous modulating valve

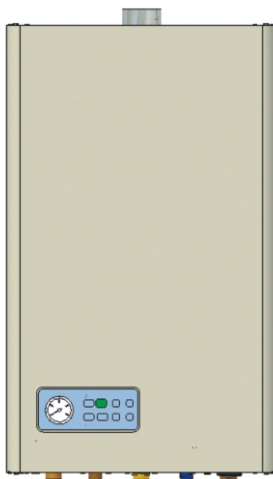
E - the ignition and the control of the flame is electronically-made

F - the forced scavenging

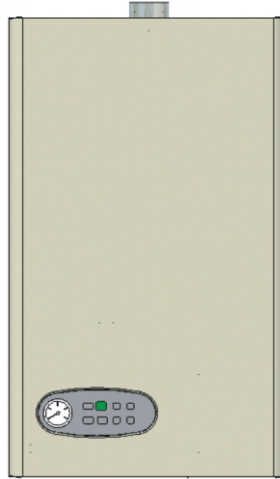
BT/MT bithermal / monothermal heat exchanger

GENERAL PRESENTATION

There are two types of boilers. Each of them has two versions: with natural and forced draft.



MOTAN START BT
C11 SPV 24 MEF
MOTAN START BT
C11 SPV 24 ME



MOTAN PLUS MT
C12 SPV 24 MEF
MOTAN PLUS MT
C12 SPV 24 ME

GENERAL INSTRUCTIONS CONCERNING THE BOILER SAFETY

- ✍ This manual is an integral and essential part of the product and it has to be handed over to the user.
- ✍ Read this manual carefully and keep it safe for a further use by the authorized mounting and installing personnel.
- ✍ The installation, the putting into service, service-repair operations and a periodical technical checking are performed only by the ISCIR authorized personnel in accordance with the norms in force (P.S.I., NTSM) as well as the normatives in force worked out by A.N.R.G.N. and C.O.N.E.L.. All the indications of this manual must be observed; any exception may cause damages and the producer isn't responsible for them.
- ✍ In case of a defective running of the device, shut it down and contact one of the service centers immediately on the attached phone numbers or contact directly the producer on the following phone numbers :0233/ 241746; 241946;241933;241935.
- ✍ To guarantee the efficiency of the wall hung gas boiler and its proper functioning it is recommended an yearly checking of the unit, by the specialized personnel, observing the manufacturer`s conditions.
- ✍ If the device is sold or alienated under any other form, make sure it is delivered with its technical handbook, for being consulted by the new user/ installer.
- ✍ In case of defective components there will be used only the original components for replacement. You must have the manufacturer`s acceptance to use some components from another company.
- ✍ This unit will be used properly. Any other use will be considered unsuitable.
- ✍ There is excluded any contractual or extra-contractual liability of the producer for the damages caused by the installation or usage errors and by the non-observances of its instructions.
- ✍ The maximum hardness limit of the water fed to the unit, on the domestic water circuit is maximum 5sF (French degrees), respectively the equivalent of 50 mg CaCO₃ or an equivalent quantity of other Ca and Mg salts. It is compulsory to install a softener filter on the domestic water circuit, a mechanical impurities retaining filter (Y filter) on the return of the central heating installation and a pressure controller on the gas supply circuit.
- ✍ It is recommended to use the units presented in this manual to heat dwelling areas of up to 200 sqm (at a medium height of 2,5 m of the heating rooms).
- ✍ The non-observance of the provisions of this technical manual as well as those those contained in the warranty certificate leads to warranty loss.

CONSTRUCTIVE AND FUNCTIONAL CHARACTERISTICS

Name	MOTAN START BT		MOTAN PLUS MT	
	C11 SPV 24 ME	C11 SPV 24 MEF	C12 SPV 24 ME	C12 SPV 24 MEF
Energetical efficiency symbol	***	***	***	***
Category	I12H3B/P	I12H3B/P	I12H3B/P	I12H3B/P
Draft	Natural	Forced	Natural	Forced
Combustion chamber	Opened	Sealed	Opened	Sealed
Efficiency at rated output - natural gases* - LPG**	93%	93%	93%	93%
	93%	93%	93%	93%
Nox class - natural gases* - LPG**	2	3	2	3
	1	2	1	2
Rated output	24kW	24kW	24kW	24kW
Minimum output	10,2 kW	10,2 kW	10,2 kW	10,2 kW
Burner rated load	25,28 kW	25,28 kW	25,3 kW	25,3 kW
Gas pressure NG at connection (after the reducer) NG at maximum admitted input LPG	20 mbar	20 mbar	20 mbar	20 mbar
	35 mbar	35 mbar	35 mbar	35 mbar
	30 - 37 mbar	30 - 37 mbar	30 - 37 mbar	30 - 37 mbar
Electrical characteristics	230V/50Hz 90 W	230V/50Hz 130 W	230V/50Hz 90 W	230V/50Hz 130 W
Weight	37 kg	39 kg	37 kg	39 kg
Heat exchanger output	1 l	1 l	1 l	1 l
Maximum rated fuel consumption. N.G.	2,64 Nmc/h	2,64 Nmc/h	2,64 Nmc/h	2,64 Nmc/h
Maximum rated fuel consumption LPG	2,00 Kg/h	2,00 Kg/h	2,00 Kg/h	2,00 Kg/h
Central heating				
Heat carrier flow	0,8 m ³ /h	0,8 m ³ /h	0,8 m ³ /h	0,8 m ³ /h
Minimum and maximum admitted pressure	0,5 și 3 bar	0,5 și 3 bar	0,5 și 3 bar	0,5 și 3 bar
Temperature on the heating circuit	30 - 80 °C	30 - 80 °C	30 - 80 °C	30 - 80 °C
Connections inlet outlet -central heating	3/4"	3/4"	3/4"	3/4"
DHW inlet-outlet gas supply	1/2"	1/2"	1/2"	1/2"
	3/4"	3/4"	3/4"	3/4"
Dimensions	length (mm)	700	700	700
	Width	415	415	415
	depth	332	332	333
	With mounted elbow	-	850	-
Expansion vessel with membrane	7 l	7 l	7 l	7 l
Hot domestic water producer DHW temperature	30 - 60°C	30 - 60°C	30 - 60°C	30 - 60°C
Flow values				
Δt = 25°C	13,8 l/min	13,8 l/min	13,8 l/min	13,8 l/min
Δt = 35°C	9,8 l/min	9,8 l/min	9,8 l/min	9,8 l/min
Δt = 45°C	7,7 l/min	7,7 l/min	7,7 l/min	7,7 l/min
Pressure	0,2 - 8 bar	0,2 - 8 bar	0,2 - 8 bar	0,2 - 8 bar

Exhaust gases (temperature)	130°C-150°C	130°C-150°C	T nominală 138°C	T nominală 126°C
Depression necessary on the flue	0.015 hPa	0.015 hPa	0.015 hPa	0.015 hPa
Exhaust gases pipe (inlet-outlet)	Ø 125	Ø 100/Ø 60	Ø 125	Ø 100/Ø 60
Length of the exhaust gases pipe	As smaller as possible+ flue	Maximum 3m	As smaller as possible+ flue	Maximum 3 m
Guiding values Water content into the installation Maximum surface of the enclosure	150 l 200 m ²	150 l 200 m ²	150 l 200 m ²	150 l 200 m ²

CONSTITUTIVE ELEMENTS OF THE WALL HUNG GAS BOILER

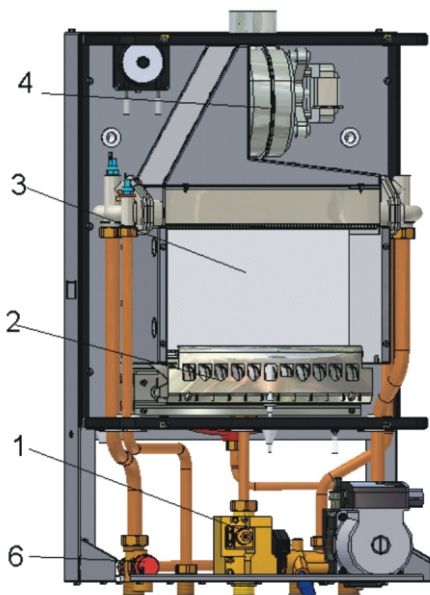
The heat generator

It is designed to supply the necessary heat for the heat exchange with the heating and DHW circuits. It is made of the following elements:

The gas feeding circuit will be achieved through a reducing valve which will set the inlet pressure at 20-25 mbar NG, respectively 30-37 mbar for LPG.



It is compulsory to mount a pressure controller on the gas feeding circuit.



1 The gas valve is designed to allow a continuous modulation of ignition, supplying the minimum, medium and maximum gas pressures required for the function of the wall hung gas boiler at the minimum, medium and maximum load. The connector between the gas valve and the burner is made of a copper/stainless steel pipe (14x1).

2 The burner is stainless-made, with forced or atmospheric suction, with 12 tubular inclines and it runs with gaseous fuel (NG or LPG). The burner output is adjusted in a modulated system by means of a gas modulating valve so that it may supply a maximum useful power of 26,6 kW.

3 The combustion chamber is designed to allow the heat transfer to the heat exchanger with less heat losses. It was selected a simple constructive solution having a shape of a rectangular piping with a maximum length of 170 mm between the burner and the heat exchanger. To reduce the heat losses, the piping walls are insulated on the inside with heat insulating material (ceramic fibers).

4 The ventilator (specific for the forced draft unit). The boiler is provided with a ventilator for evacuating the flue gases so that it may exhaust a minimum 30 Nm³/h of flue gases.

The kit for flue gases exhaustion and air supply (specific to the forced draft unit) consists of two concentric tubings connected to the outer part of the room where the unit is installed.

The exhaust gases/ water heat exchanger

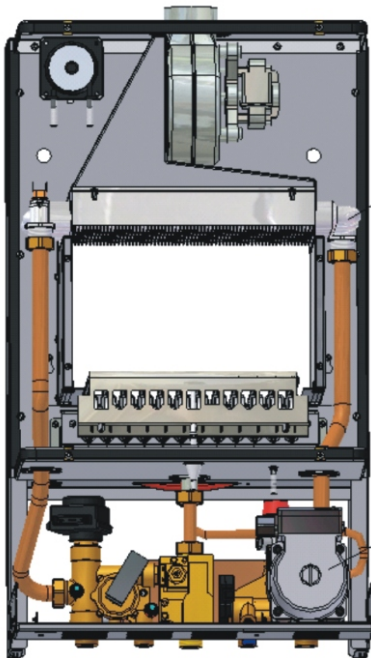
5 The exhaust gases/ water heat exchanger is bithermal for START BT, the forced and the natural draft types have the advantage that both the thermal agent on the heating circuit and DHW circuit are achieved in the same body. It is designed to supply the rated output required by 24 kW to the heating circuit, at a 93% average heat efficiency.

The exhaust gases/ water heat exchanger is monothermal for PLUS MT type, for the forced and the natural draft types, DHW heats through the plate heat exchanger.

From the energetic point of view, both wall hung gas boilers have the same features: the rated output of 24 kW and the efficiency over 93%.

The heating and DHW circuits Hydraulic circuits

They are designed to allow the thermal transfer to the external heating and DHW installations.



a) The heating circuit

✍ The loading circuit of the installation is made of the valve and the copper pipe connected with the domestic cold water supply line;

✍ the relief valve of the circuit is designed to reduce the pressure from the heating circuit and to open at 3 bar full pressure;

✍ the ventilation circuit of the installation is made of an air-release valve which allows the air exhausting from the heating circuit, mounted on the circulating pump shell;

✍ The heat carrier re-circulating pump (7) is designed to supply the output necessary for the heat carrier recycling through the heating circuit;

✍ Expansion vessel is designed to allow the expansion processes from the heat installation, preventing from hydraulics overstraining or damaging.

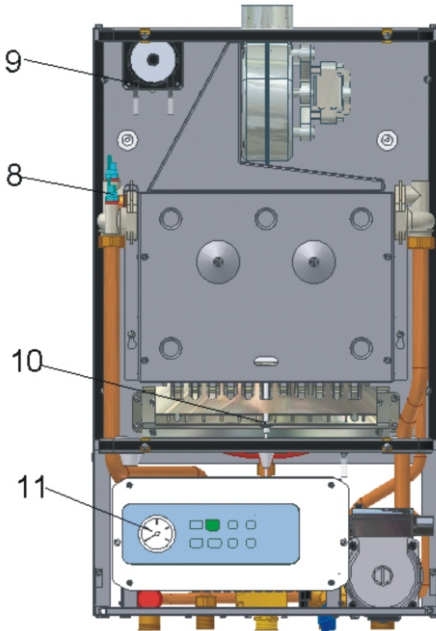
✍ The automatic by-pass circuit is made of a copper pipe of 14x1 mm fixed between the heating circuit turn and return, and a safety valve set to open at 0,3 bar so that to allow the heat carrier recycling through the heat exchanger and pump and in case of some pressure differences, between the external heating installation turn and return at over 0,3

b) The DHW circuit is of two types: pipe within pipe (bithermal heat exchanger) for START BT heating unit and plate heat exchanger for PLUS MT heating unit.

The command and control system of the functioning of the heating unit running realizes:

- the ignition and the protection when the flame is extinguished, provided by the electronic ignition;
- the protection when the gas is switched off, provided by the electro-valve;
- the signaling of the water pressure from the heating unit, provided by the manometer;
- the signaling of the temperature on the heating and DHW circuits, provided by the functions of the electronic board;
- the adjusting of the heating cycle according to the information provided by the temperature control thermostat;
- the heating unit safety against over-temperature, provided by the safety thermostat at overpressure, through the safety valve and through the minimum pressure switch from the circuit at water leakages ;
- protection at draft deficiency, by malfunction of the ventilator or clogging of the flue gases exhaust tubing, ensured by the combustion pressure switch .

The command and control system is made of the following components:



- **the electronic board** as a controller of the functioning of the wall hung gas boiler (see the attached drawing).

- **the measuring and control elements** of the functional parameters for the wall hung gas boiler

- 8. heating circuit temperature sensor** which sends the temperature signal to the electronic control block of the heating circuit.

- **DHW temperature sensor (8)** which transmits the temperature signal to the electronic control block of the DHW circuit.

- **Flow-meter** with turbine as a detector of the DHW consumption which transmits the functioning command of the DHW circuit to its electronic control block.

- 9. Air pressure switch (9)** as a detector and controller of the exhaust gases, which determines the functioning of the heating and DHW circuits.

- **Thermostat** as a detector and controller of the maximum temperature on the heating circuit which transmits the non-functioning command of the heating circuit in case of exceeding the admitted maximum temperature.

10 Ignition / ionization electrode (10) with double role of initiation and sensing the combustion flame.

Programmable ambient sensor having the purpose of adjusting the ambient temperature within a room (optional).

Water pressure switch as a detector of the minimum pressure on the heating circuit.

11 The manometer (11) having the purpose of indicating the feeding pressure of the domestic cold water.

Temperature sensors with the purpose of indicating the temperature in the heating circuit

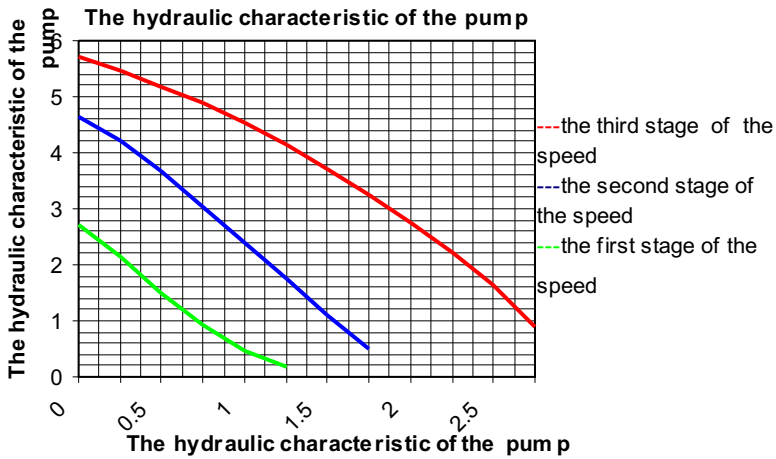
The external shell

It has a parallelepipedal shape. It is detachable and electrostatically painted.

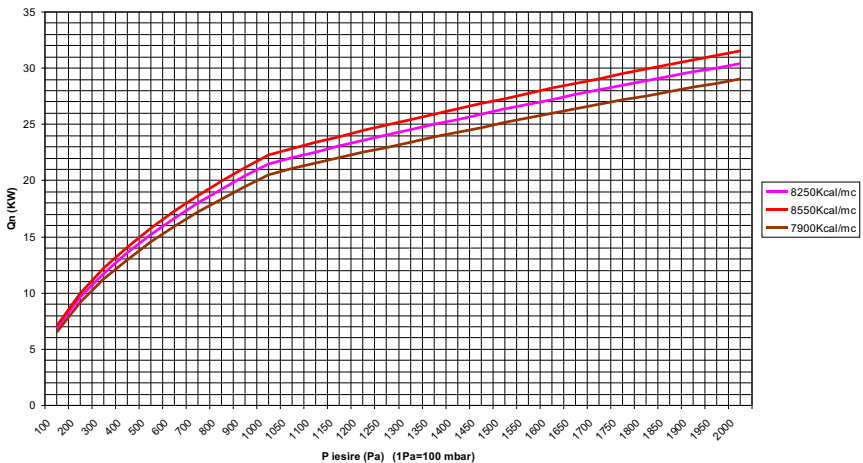
The shell protects the pressurized combustion chamber and the enclosed installations.

TECHNICAL FEATURES

While designing the CH installation we must have in mind the hydraulic features of the pump.



The energetic power of the unit depends on the thermal low value of the fuel gas and the outlet pressure on the burner.



MOUNTING-INSTALLATION INSTRUCTIONS

The chapter addresses both to the qualified persons which contribute to the installation of the boiler and to the beneficiary who is interested that the performed works to correspond to the safety operation norms of all the installations which contributes to the proper functioning of the boiler.



- **The installing of the boiler is not equivalent with its putting into operation.**
- **The putting into operation of the boiler must be done by the qualified and certified personnel, by KOBER LTD Turturesti Vaduri Branch Office and authorized according to the legislation in force.**
- **The warranty is not granted without signing the putting into operation protocol by the authorized personnel and the company declines any responsibility as regards warranty and the subsequent functioning of the boiler.**

The location of the wall hung gas boiler

According to the regulations in force: Technical norms for the designing and execution of the NG supply systems NT-DPE-01/2004, Technical norms for the NG supply systems utilization NT-DE-01/2004, Normative for the design and execution of the LPG feeding systems I31/99.

There are several conditions for installing the gas heating units:

-The appliances have the protection degree IP40 according to the Testing Report no. 16/ 11.03.2004.

-The heating unit may be installed in any room with an air humidity of maximum 90% between 20-30°C, according to the Testing Report no. 16/ 11.03.2004.

The central heating

The heating system will be designed by the qualified and authorized personnel according to PT A1-2002, for the mounting/installing activities, observing the normatives I 13-02 Standard for the designing and execution of the heating systems who performs these works, so that the installation could be used in the best conditions.

It is important to pay attention to the pipes dimensions and heat losses on these and on the heating elements while designing the heating system.

The installation must be filled up with softened water.




1. Couplings and sockets. Couplings may be executed by gluing or with compression fittings for the copper pipes, coupling etc. The pipes must be provided with the necessary slopes for an easy venting and evacuation to the adequate points foreseen in this purpose on the installation.

2. The evacuation. The evacuation points must be placed in the accessible places which may allow the water drainage from the heating circuit. It is recommendable that the minimum diameter should be "".

3. The venting. It is recommendable that the manual venting devices should be introduced on each heating element (central heating). At the first filling as well as for the subsequent completions with water of the heating system, the water contains a certain quantity of dissolved gases. Once the system has been heated, the gases will be collected in the highest points of the system where they must be evacuated. The installation of some (manual or automatic) venting devices, in these points of the system, will allow evacuation of the gases both at the first filling and during the operation.

4. The filling. After the connection of the pipes, the two circuits will be filled up with water gradually (the boiler and the installation, respectively the coil on the DHW circuit) until the complete filling is achieved and it should be checked so that there are no water losses.



-  **You must not use the boiler empty or only partly filled with water.**
-  **THE USE OF EMPTY OR PARTLY FILLED BOILER MAY LEADS TO EXPLOSION.**
-  **The domestic cold water supply pipe of the DHW processing circuit remains permanently open (closing of the network is performed only by the valves from the consumption points) to allow taking over the dilatation from this circuit.**

The gas supply

The gas supply (NG or LPG) must be done according specific normatives in force NT-DPE-01/2004 and I31/99).

- The minimum/maximum inlet pressure in the gas valve, in case of using the natural gas must be between 25-30 mbar static and between 20-25 mbar dynamic.
- The minimum/maximum inlet pressure in the gas valve, in case of using LPG, must be between 30-50 mbar static and 25-45 mbar dynamic.

In case you do not observe these standards the burning performances will lower.

During installation you must know the gas type for which the unit was set, so that you may reset it correctly for another gas type if it necessary.

On switching from NG operating for the LPG there are to be followed two operations:

- The setting from the electronic board is achieved by placing the JP1 jumper (see the Electrical Diagram from ADDITIONAL INFORMATION) on the two pins - LPG module. (The JP1 jumper is positioned on a single pin natural gas module).
- The mounting of the nozzles set of 0,77 mm diameter used for LPG functioning. (The diameter of these nozzles is 1,25 mm for natural gas).

Switching to the functioning with NG fuel is achieved by performing the above mentioned setting operations, in reverse order.

The setting will be performed by the producer following the beneficiary's request or by the authorized service personnel according to the regulations in force, the operation being performed



It is compulsory to install a pressure regulator on the gas supply circuit.



The gas supply pipes must not have diameters smaller than the fitting of the unit.

Electric power supply

The boiler must be connected to a monophasic network of 220 V-50 Hz with null protection, through a 5A fuse. The color semantics will be as follow: brown = phase, blue = null, green-yellow = grounding.

The external connections must be done according to the normatives in force. Connecting to the electrical network of the building must allow a complete electrical insulation of the boiler in situations in which an intervention must be done.



It's forbidden to install the heating unit without grounding.

CONNECTION FOR EVACUATION OF THE FLUE GASES

With connection to the stack

The diameter of the flue gases evacuation pipe is of 125 mm.
The exhaust gases pipe is connected through the sheet iron tubing, on the shortest way to the stack (evacuation column).
Tight loops will be avoided.
The exhaust gases piping is thermally insulated if necessary.
The size of the stack is designed taking into consideration the necessary mass flow rate of the combustion gases, which is 16,66g/s at their average temperature.

Without connection to the stack

The evacuation is achieved through a pipe of 60 mm diameter, coaxial with the air intake pipe of 100 mm diameter. The evacuation pipe is placed inside the air intake pipe.
The intake-evacuation kit is delivered together with the unit. It is made of an elbow, intake-evacuation pipe and the necessary gaskets.



You must not shut down the exhaust checking device, because your life and health will be in danger. Only the qualified personnel will do the replacement, in accordance with the legislation in force and using the original spare parts provided by the producer.



It is compulsory to install the heating units in places with adequate ventilation in accordance with the normatives in force. The technical instructions should be studied before mounting/ installing, starting or servicing.

INSTRUCTIONS FOR THE FINAL USER (BENEFICIARY)

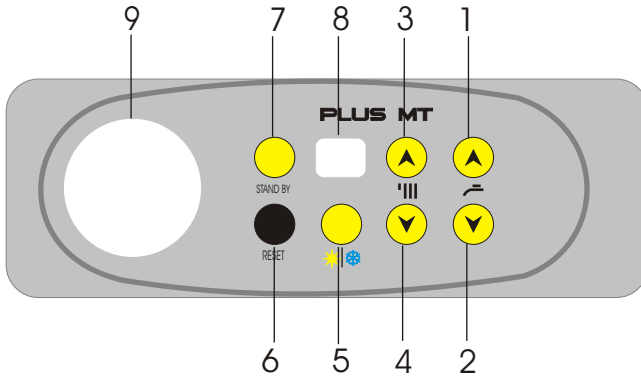
The control, protection and automation elements provide:

- The ignition of the flame
- Sensing of the presence of flame
- Signaling the temperature and pressure of the water in the unit
- Adjusting of the heating circuit temperature
- Adjusting the temperature of the domestic hot water circuit
- The starting of the pump, when sensing the need for hot water
- The boiler safety at overheating and overpressure
- Draft deficiency (air pressure switch)
- The boiler safety at minimum water level (water pressure switch) sensing the need of DHW (flow switch) and giving priority to this type of consumption

The monitoring devices and the operating buttons are layed on the control panel.
The chrono-thermostat or the room thermostat may be installed on demand.

OPERATING INSTRUCTIONS

The control panel



1.	+ DHW	5.	Summer/ winter mode
2.	- DHW	6.	Reset
3.	+ central heating	7.	Stand-by
4.	- central heating	8.	Display
		9.	Manometer

Operating mode

1. The starting of the boiler

To start the unit press STAND BY button. The pump and the ventilator will immediately start, after that the ignition will be done automatically.

2. The summer/winter setting mode

You may select summer or winter mode by pressing the button 5. You can see this selection on display 8.

3. The adjustment of temperature on the CH circuit (the heating circuit)

This can be achieved by pressing the buttons 3 and 4. Press the button 3 for temperature increasing and 4 for the temperature decreasing. The recorded temperature of the circuit will be displayed after 2 seconds.

4. The adjustment of water temperature on the DHW circuit.

This can be done in the same manner as for the adjustment of the temperature on the CH circuit, only pressing the buttons 1 and 2.

The boiler shutting down in safety conditions

In the case in which the final user concludes that the unit has an abnormal functioning, if the error codes keep displaying or if the unit manifestations can't be understood, he has the obligation of shutting-down the unit as soon as possible and under maximum safety conditions.

The user must perform the following operations:

- ✎ Press STAND BY and stop the functioning of the unit
- ✎ Disconnect the boiler from the electric power supply circuit by removing the plug from the socket (if necessary).
- ✎ Disconnect the gas supply circuit by switching off the gas valves
- ✎ Interrupt the circulation of domestic hot water and the heating water by switching off the valves of these circuits.

After boiler shutting down in maximum safety conditions, the user will call the service team to which he is rounded of (see the chapter 1, subchapter 1.4).

Error signals

Possible errors of the systems are indicated by the following codes:

E0	Problems on the electric part. Reset by using the RESET key. If the problem persists after several resets, shut down the unit in safety conditions and call the Service team.
E1	Lack of water in the heating circuit The malfunction disappears if the pressure increases over 0,5 bar. The working pressure will be 1,5 bar. If the problem persists after several attempts, shut down the unit in safety conditions and call the Service team.
E2	Lack of flame. Reset by using the RESET key. If the problem persists after several resets, shut down the unit in safety conditions and call the Service team.
E3	There is a deficiency on the temperature sensor on the central heating circuit. Shut down the unit in safety conditions. Call the service team!
E4	There is a deficiency of the temperature sensor of the domestic hot water circuit. Shut down the unit in safety conditions. Call the service team!
E5 Forced draft	The flue gases are not properly evacuated. Shut down the unit in safety conditions and call the service team.
E5 Natural draft	The flue gases are not properly evacuated, clogged aeration circuit, malfunction of the aeration thermostat. The error must be removed manually by the user. Returning from the state of error can be done only by pushing the RESET key. If the signal persists, shut down the unit in safety conditions and call the service team.

E6	Malfunction of the power feeding network. Reset by pressing the RESET key. If the problem persists after several resets, shut down the unit in safety conditions and call the Service team.
E7	Malfunction of the micro-controller. Reset by pressing the RESET key. If the malfunction persists after several resets, shut down the unit in safety conditions and call the Service team.
E8	Malfunction of the micro-controller or software problems. Reset by pressing the RESET key. If the malfunction persists after several resets, shut down the unit in safety conditions and call the Service team.
E9	The appearance of a high number of E5 malfunctions in a very short period of time. Reset by pressing the RESET key. If the malfunction persists after several resets, shut down the unit in safety conditions and call the Service team.
Eu	Malfunction of the power feeding network. Reset by disconnecting from the power feeding network. If the malfunction persists after several resets, shut down the unit in safety conditions and call the Service team.
En	Malfunction of the gas valve. Reset the malfunction by pressing the RESET key. If after resetting the malfunction appears again after approx. 5 minutes, shut down the unit in safety conditions and call the service team.

The manometer

The manometer shows the pressure in the installation and it is useful for filling the installation. The user should check recurrently whether the pressure in the installation hasn't lowered below the set filling value.

THE FUNCTIONING OF THE HEATING UNIT

The functioning of the unit will be <without permanent control> ensured automatically by the controllers mounted on the boiler and eventually by the environment devices (ambient thermostat). These devices must be set at the temperature which corresponds to the controlled environment.

a. the temperature setting on the heating circuit will be between 30-80°

b. the ambient thermostat will be set at the desired temperature in the room.

If the central heating installation is unplugged from the electric network during the cold season or in case in which, due to some malfunctions, the temperature of the water from the boiler will decrease below the freezing point (zero degrees) for more than 2-3 hours, the boiler, the heating installation and the domestic water installation will be emptied.

Also the boiler supply will be disconnected from the power and gases networks.

OTHER FUNCTIONS CONCERNING THE SAFETY OF THE UNIT

1. **Antifreeze function.** In the situation in which the water temperature in the installation decreases below 5°C, the system will start the heating at the minimum load until the temperature reaches 20°C.

2. **The post-circulation of the DHW and heating pump.** The post-circulation cycle begins only if the system is not on the functioning on the COMBUSTION status. The post-circulation cycle starts (the pump switches on) if:

- the temperature of the DHW exceeds the pre-set level (approx. 55°C)
- the temperature of the heating circuit exceeds the pre-set level

The post-circulation cycle ends if:

the temperature of the DHW circuit decreases under the pre-set level (approx 40°C)

the temperature of the heating circuit exceeds the pre-set level (approx 55°C)

the duration of the whole cycle exceeds the preset period of time (approx. 60 sec)

Advantages:

- a. it prevents keeping the water at high temperatures within the heat exchanger. In this way the limestone deposits are decreasing significantly.
- b. it is prevented the boiling of the water in the heat exchanger during the post-heating period.

These advantages contribute to the protection of the heat exchanger..

3. The pump non-blocking system. After a 18 hours period of unit standing-by, the pump is started for 10 seconds. This system prevents the blocking of the pump due to some possible limestone deposits.
4. The preventive unlocking of the deflection valve. On each time the pump is shut down, the deflection valve is activated for one second and then it returns to the initial position.

Additional facilities that may be obtained by:

- installing an external temperature sensor, the unit adjusts its power according to the temperature value from the outside of the building;
- functioning of the unit with DHW storage in a boiler.
- heating through the floor.

Handing over to the beneficiary

It is compulsory for the specialty services provider to instruct in detail the beneficiary during start-up about the following aspects:

1) The start-up and shutdown procedure of the boiler in safety conditions by checking especially the following elements

A. electric power supply with the observance of the polarity

B. fuel (gas) supply

C. feeding and filling the central heating circuit

D. the filling tap must be closed

E. the pressure within the unit by reading the manometer on the control panel (1-2 bar)

F. the valves on the domestic hot water circuit are to be open.

2) The operating mode of the boiler and possible problems that can occur. Also it will be explained the significance of each button or switch on the control panel.

3) The beneficiary will be warned that a decrease of the water pressure in the system is caused by a leakage that must be remedied before using again the boiler.

4) It is recommended that the beneficiary should requests at least once a year the checking of the functioning of the boiler by an authorized person.

5) The beneficiary will be warned about the cautions to be taken against freezing.

6) It is delivered the present manual of the boiler

At the end of the training it will be signed a start-up sheet in which the beneficiary signs that he has assimilated the correct mode of operation of the wall hung gas boiler. This sheet will be signed also by the authorized person who performs the start-up and the training.

The person who performs the start-up has the right to decline the performing of start-up if problems are noticed and will not conclude the start-up sheet until these are not remedied.

The person who performs the start-up is not obliged to remedy the installing errors, but assumes his responsibility that the installation corresponds from the functional and constructive point of view with the selected unit.

RECOMMENDATIONS FOR THE YEARLY CHECKING

It is compulsory that the periodical technical checking (PTC) of the unit is made at least every two years according to the Order 397/02.08.2002 regarding approval of the technical prescription PT A1-2002.

For a proper operation of the unit and for prolonging the duration of life of the unit it is necessary to perform the checking at least one time per year by an authorized person.








It is recommended to perform this checking before the cold season when the boiler is not used at its maximum capacity.

The following operations will be performed: it is checked the functioning of the main burner and the burner is cleaned if this operation is compulsory; there are checked and cleaned the exhaustion channels of the boiler, it is checked the gas valve adjustments, it is checked the pump, it is checked the functioning of the combustion gases exhaustion system, the functioning of the air pressure switch and the tightness of the exhaustion kit, it is checked the correctness of the combustion by analyzing the flue gases, it is checked the tightness of the fuel supply system, the central heating circuit and the domestic hot water circuit; it is checked the electric installation.

MARKING, DOCUMENTS, PACKING, STORAGE, QUALITY AND WARRANTY CONDITIONS

MARKING

On each unit it is fixed by sticking a tag inscribed visibly with the following information;

-  The manufacturing company;
-  Denomination of the product;
-  The serial number and the batch;
-  CE 1798;
-  The mark of the authorized Quality Control Department;
-  The type and size of the boiler;
-  The gas type that it has been set for and the input rated pressure;

DOCUMENTS

Each unit is delivered with: Technical manual, quality and warranty certificates, EC conformity statement, the putting into service protocol and the book of the unit (appendix D of PTA1)

PACKING

The units will be packed into cardboard boxes, protected by reinforced cardboard corners.

The unit will be delivered with all the components mounted, except the combustion gases evacuation kit.

STORAGE

The storage of the units is made in dry places and protected from the bad weather and chemical agents.

SHIPMENT

During the shipment all the necessary measures must be taken to avoid the shocks and damage of the unit.

QUALITY AND WARRANTY CONDITIONS

The Trading Company KOBER SRL TURTURESTI, VADURI BRANCH, in its quality of manufacturer, warrants the proper operation of the unit for a period of 3 years from the date of start-up.

The warranty is granted if the following conditions are met:

- proper installing and adjustment performed by authorized personnel.
- yearly revisions to be made upon beneficiary's request and expenditures, the 1 year revision being compulsory for maintaining the warranty for the first 2 years of use
- the replaced components will have a warranty period of 1 year. This does not imply the prolongation of the warranty period established for the whole apparatus.

The duration of the warranty period is prolonged with the period of time elapsed from the date on which the final user claimed the fault of the apparatus, until the date of restarting.

The design and execution of the heating installation will be made (if necessary) by specialized personnel and notified by a specialized unit.

For installations already existing it is necessary to check and clean the installation before installing the boiler.

Any repair performed by a person other than personnel authorized by the manufacturing company leads to the loss of the warranty.

The use of the boiler will be made according to the "Mounting, operating and maintenance instructions" delivered together with the boiler.

Non-observance of these instructions leads to the loss of the warranty.

RESPONSIBILITIES DURING THE WARRANTY PERIOD

MOTAN START BT heating unit C11 SPV 24 MEF (forced draft) and
 MOTAN START BT C11SPV 24 ME (natural draft) and
 MOTAN PLUS MT heating unit C12SPV 24MEF (forced draft) and
 MOTAN PLUS MT C12SPV 24ME (natural draft)

MALFUNCTIONS WHICH REFER TO THE MANUFACTURER'S RESPONSIBILITY

No. Crt.	Denomination of the component	Malfunctions	Possible error signal	Repair mode
1.	The pump	The non-operation or defective operation (noise, rotor blocking)		Unblock the pump, replace the pump
2.	Inlet hydro-block	Defective water pressure switch		Replace the pressure switch
3.	Outlet hydro-block	The overpressure relief valve doesn't open or it has pressure losses		Replace the relief valve
4.	Temperature sensors	Interrupted circuit or defective CH , DHW sensors	E3 E4	Repair the circuit or replace the sensors
5.	The gas valve	It doesn't function or it functions defectively	E2	Replace the gas valve
6.	The heat exchanger	Defective		Replace the exchanger
7.	The expansion vessel	Pressure losses		Replace the expansion vessel
8.	The burner	Burner distortions		Replace the burner
9.	The manometer	Defective functioning		Replace the manometer
10.	The control panel	The desired setting cannot be achieved by pressing the keys There are no information displayed		Repair the circuit Replace the panel
11.	The electronic board	The E0 error signal appears repeatedly Any other abnormal functioning due to the electronic board		Replace the board
12.	The spark inductor	Defective inductor		Replace the inductor
13.	Ignition/ ionization electrode	There is no spark between the electrode and the igniter or spark loss due to the defective insulation or there is no flame	E2	Adjust the gap Replace the electrode
14.	Overheating thermostat	Defective		Replace the overheating thermostat
15.	Fume sensor	It doesn't function properly	E5	Replace the sensor
16.	The ventilator	Defective	E5	Replace the ventilator
17.	The air pressure switch	Defective	E5	Replace the air pressure switch

MALFUNCTIONS WHICH REFER TO THE RESPONSIBILITY OF THE UTILITIES PROVIDER

Crt. No.	Symptoms	Cause	Affected system	Possible error signal	Remedying mode
1.	The unit is not functioning, no signals on the display	Absence of supply voltage (faulty electric circuit, burnt fuse)	Electric circuit		Contact the power supply unit
2.	The unit functions intermittently and is damaged or noise and vibrations within the unit	Absence of gas or unadjusted pressure at the inlet of the unit or outlet (at the burner)	Gas supply circuit	E2	Contact the fuel supplier
3.	Operation with inconstant temperature on the domestic hot water	Pressure too low on the domestic hot water circuit (under 1 bar)	Domestic water circuit		Contact the domestic water supplier

MALFUNCTIONS FOR WHICH THE MANUFACTURER IS NOT RESPONSIBLE

Crt. No.	Symptoms	Cause	Possible error signal	Remedying mode
1.	The unit is not functioning, no signals on the display	Absence of supply voltage, faulty electric circuit, burnt fusible		The user contacts the authorized service unit to which he belongs
2.	The unit starts but the flame does not ignite	The gas valve is closed, the ignition pressure is too low, the pressure regulator is not properly adjusted, aer in the gas pipe, the pressure on the central heating circuit is under 0,5 bar	E2	The user contacts the authorized service unit to which he belongs
3.	The flame ignites and then extinguishes	The phase was reversed with the null	E2	The user contacts the authorized service unit to which he belongs
4.	The central heating radiators do not warm up	The winter/summer button is on summer position, the boiler was adjusted to operate at a temperature too low, the environment thermostat was adjusted at a temperature too low, pipeline passing through an area with temperatures under 0° and is frozen, air in the installation.		The user contacts the authorized service unit to which he belongs

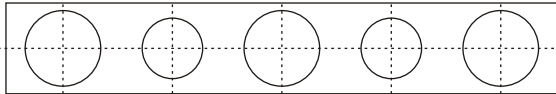
LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE

Plan1

The pipes arrangement of the MOTAN type

wall hung gas boiler

THE PIPE	DIMENSION
1. DHW inlet	1/2" - outside thread
2. DHW outlet	1/2" - outside thread
3. Outlet central heating	3/4" - outside thread
4. Inlet central heating	3/4" - outside thread
5. Gas supply	3/4" - outside thread



CH turn

3



DHW

2



gas supply

5



cold water

1

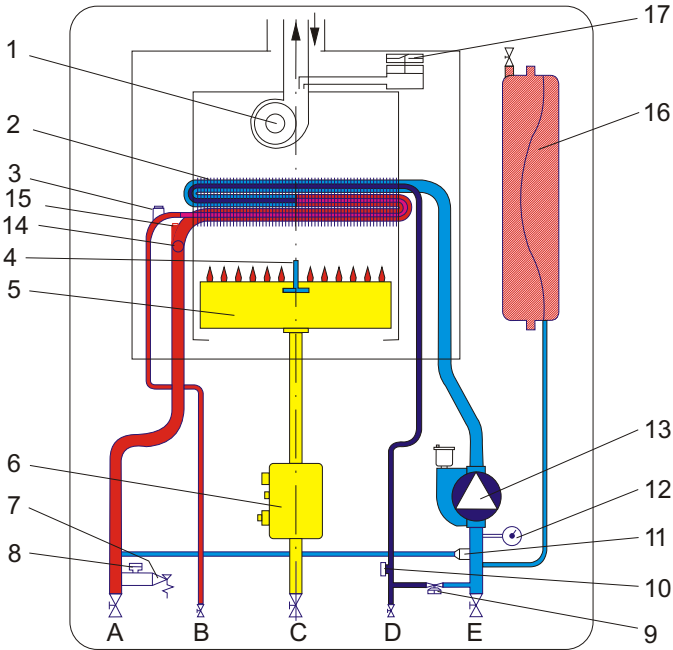


CH return

4

**LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE
Plan 2**

**Hydraulic diagram of MOTAN START BT C11 SPV 24MEF
wall hung gas boiler with forced draft**

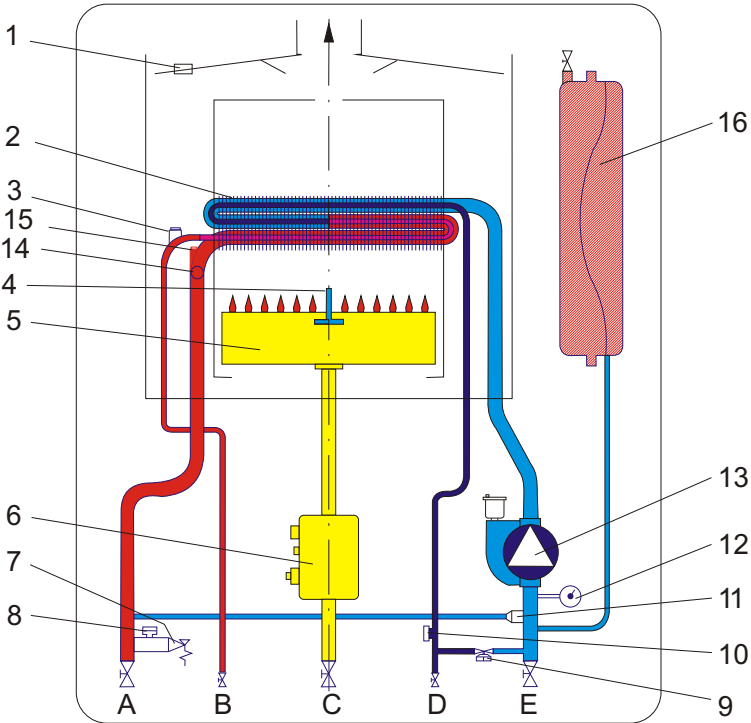


- 1. Electrical ventilator
- 2. Bithermal heat exchanger
- 3. Temperature probe for DHW
- 4. Ionization + ignition electrode
- 5. Burner
- 6. gas modulator
- 7. 3 bar safety valve
- 8. pressure switch of minimum pressure
- 9. filling valve
- 10. DHW flow meter
- 11. automatic by-pass
- 12. Manometer

- 13. electrical pump with air remover
- 14. over-temperature thermostat
- 15. temperature probe for heating
- 16. expansion vessel
- 17. air pressure switch
- A. heating circuit inlet
- B. DHW outlet
- C. gas inlet
- D. cold water inlet
- E. Heating circuit return

LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE
Plan 3

Hydraulic diagram of MOTAN START BT C11 SPV 24ME BT
wall hung gas boiler with natural draft

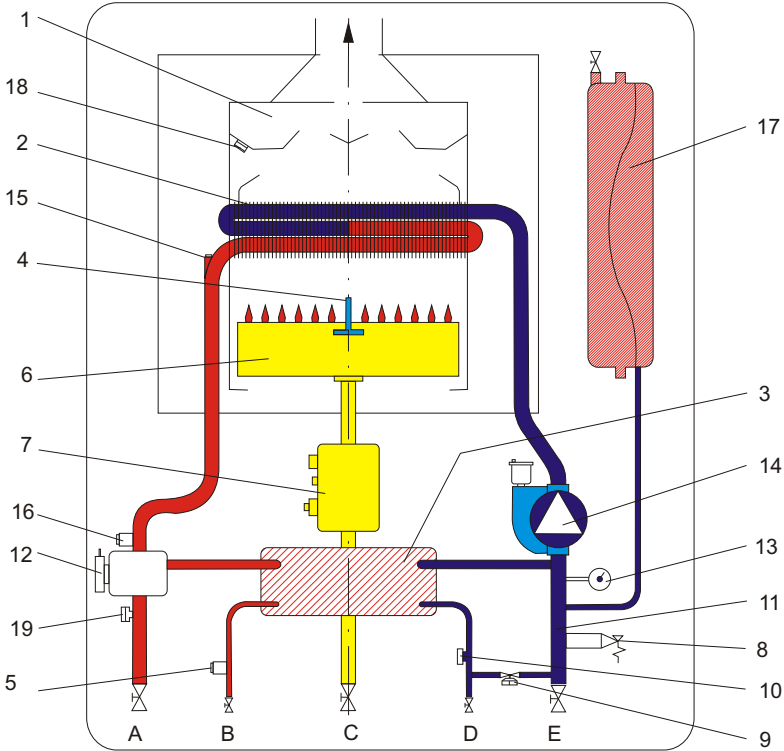


- | | |
|--|---|
| 1. fume sensor | 12. manometer |
| 2. bi-thermal heat exchanger | 13. electrical pump with air remover |
| 3. temperature DHW probe | 14. over-temperature thermostat |
| 4. ionization +ignition electrode | 15. temperature probe for heating circuit |
| 5. burner | 16. Expansion vessel |
| 6. gas modulator | |
| 7. 3 bar safety valve | A. inlet heating circuit |
| 8. pressure switch of minimum pressure | B. DHW outlet |
| 9. filling valve | C. gas inlet |
| 10. DHW flow meter | D. cold water inlet |
| 11. Automatic by-pass | E. Return heating circuit |

LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE

Plan 4

Hydraulic diagram of MOTAN PLUS MT C12 SPV 24ME wall hung gas boiler with natural draft

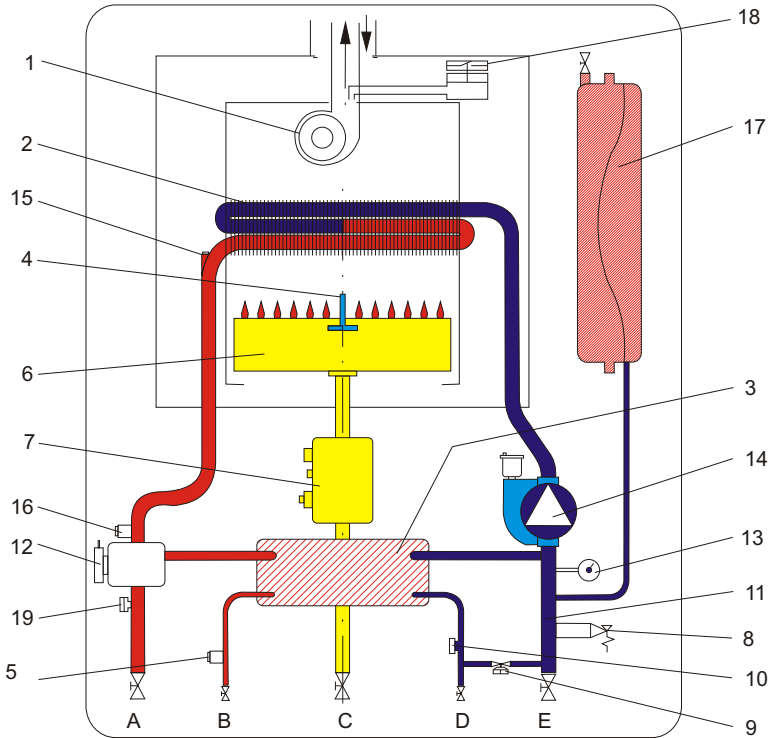


- | | |
|------------------------------------|--|
| 1. flue gases exhaust hood | 13. electrical pump with air remover |
| 2. primary heat exchanger | 14. safety thermostat |
| 3. secondary heat exchanger | 15. over-temperature probe for heating circuit |
| 4. ignition / ionization electrode | 16. expansion vessel |
| 5. DHW temperature probe | 17. fume sensor |
| 6. burner | 18. pressure switch for minimum water pressure |
| 7. gas modulator | |
| 8. 3 bar safety valve | A. heating circuit inlet |
| 9. filling valve | B. DHW outlet |
| 10. Flow meter | C. gas inlet |
| 11. automatic by-pass | D. cold water inlet |
| 12. 3- way valve manometer | E. Heating circuit return |

LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE

Plan 5

**Hydraulic diagram of MOTAN PLUS MT C12 SPV 24MEF
wall hung gas boiler with forced draft**

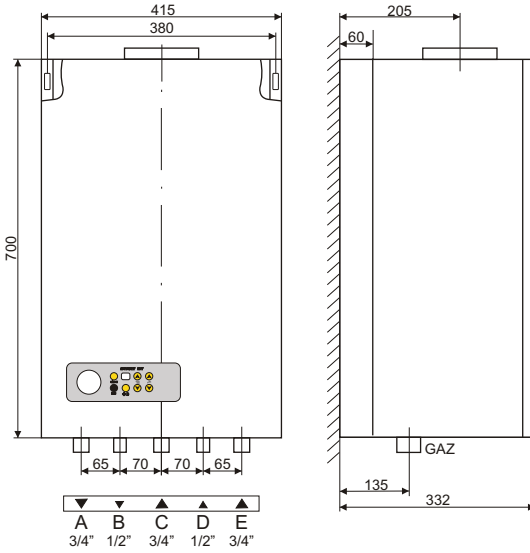


- 1.electrical ventilator
- 2.primary heat exchanger
- 3.secondary heat exchanger
- 4.ignition / ionization electrode
- 5.DHW temperature probe
- 6.burner
- 7.gas modulator
- 8.3 bar safety valve
- 9.filling valve
- 10.flow switch for the sanitary circuit
- 11.automatic by-pass
- 12.3-way valve
- 13.Manometer

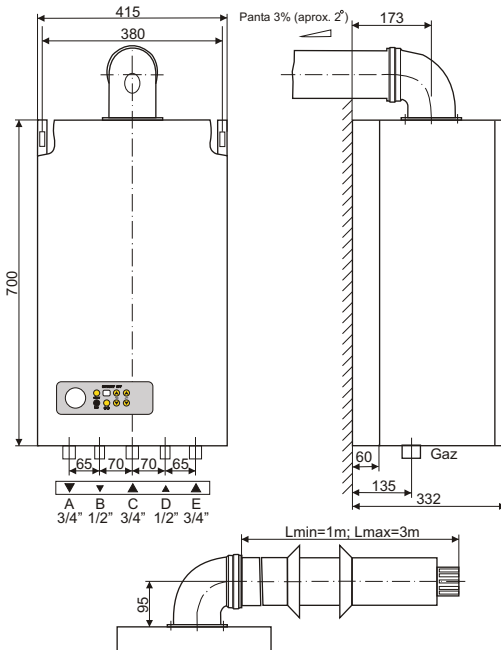
- 1.electrical pump with air remover
- 2.over-temperature thermostat
- 3.temperature probe for heating circuit
- 4.expansion vessel
- 5.air pressure switch
- 6.pressure switch for minimum water pressure

- A.heating circuit inlet
- B.DHW outlet
- C.gas inlet
- D.cold water inlet
- heating circuit return

LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE

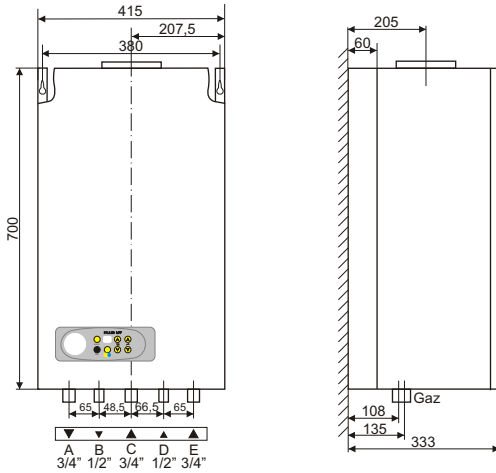


Plan 6
MOTAN START BT
C11 SPV 24ME
wall hung gas boiler with
natural draft
Connections

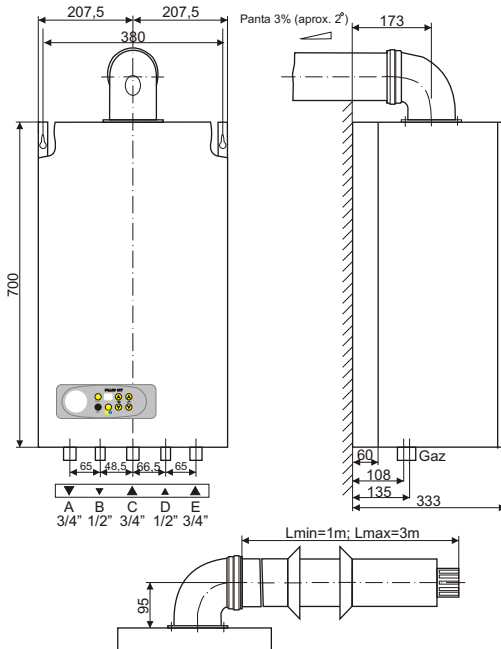


Plan 7
MOTAN START BT C11
SPV 24MEF wall hung gas
boiler with forced draft
Connections

**LISTS AND PLANS NECESSARY FOR
MOUNTING AND PUTTING INTO SERVICE**

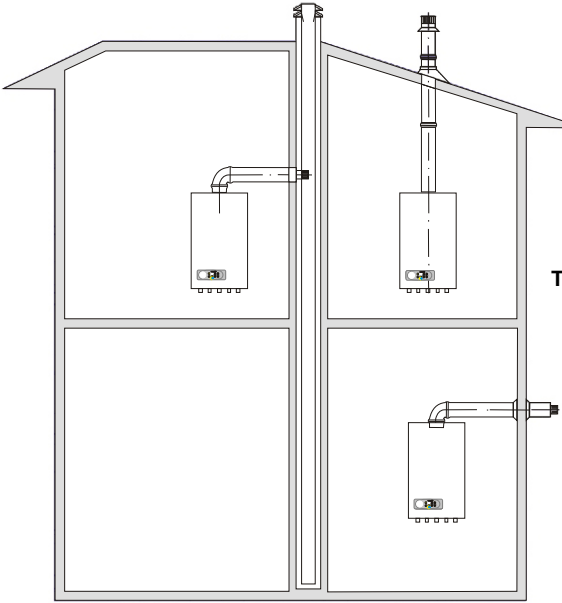


**Plan 8
MOTAN PLUS MT
C12 SPV 24ME wall hung gas boiler
with natural draft
Connections**

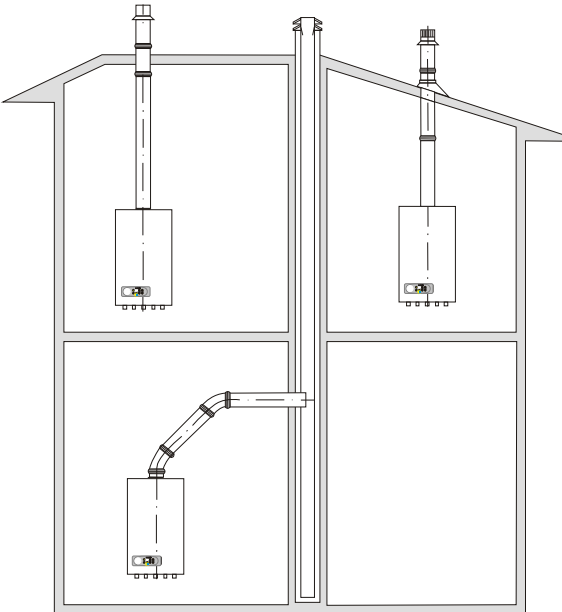


**Plan 9
MOTAN PLUS MT
C12 SPV 24MEF wall hung gas boiler
with forced draft
Connections**

**LISTS AND PLANS NECESSARY FOR MOUNTING
AND PUTTING INTO SERVICE**



Plan10
Types of configurations for
mounting the
C11 SPV 24 MEF BT and
C12 SPV MEF MT
wall hung gas boiler
with forced draft

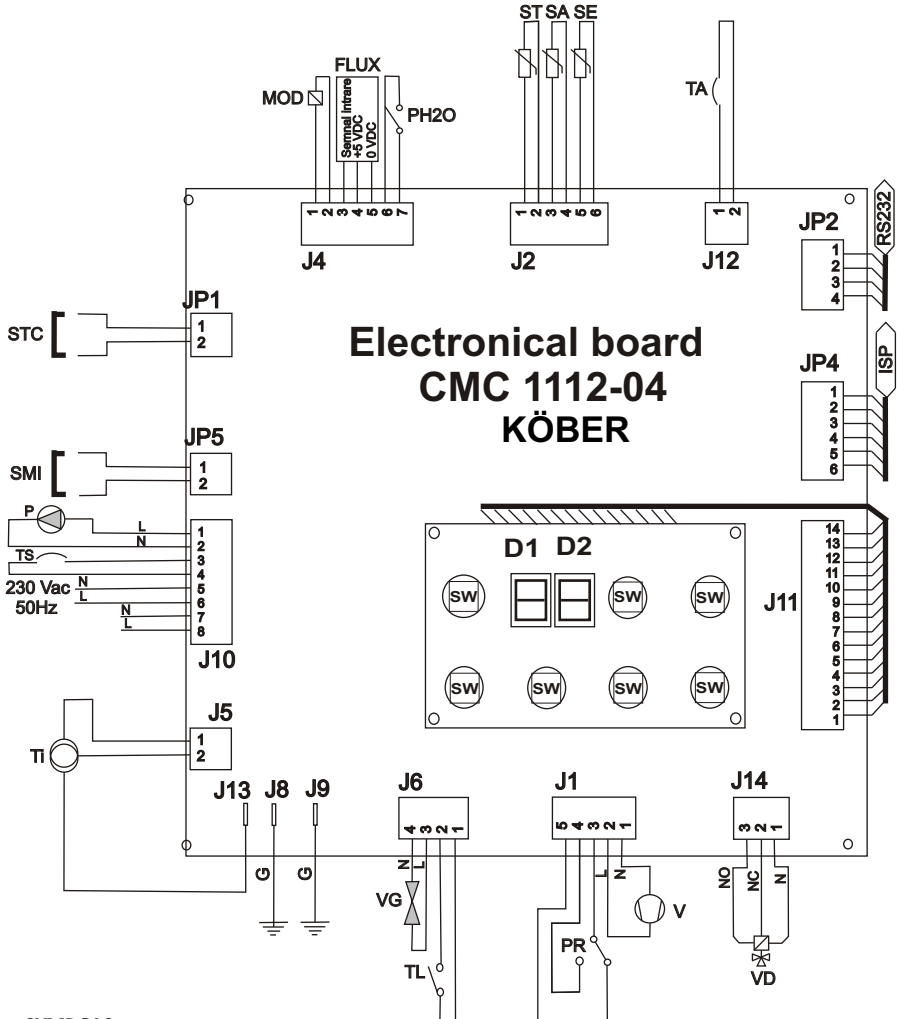


Plan11
Types of configurations
for mounting the
C12 SPV 24 ME BT and
C12 SPV ME MT
wall hung gas boiler
with natural draft

LISTS AND PLANS NECESSARY FOR MOUNTING AND PUTTING INTO SERVICE

Plan12

Electrical diagram for C11 SPV 24 ME/ MEF
and C12 SPV 24 ME/ MEF wall hung gas boilers



SYMBOLS

P Pump
TS Safety thermostat
N Power supply Null
L Power supply phase
G Protection null (grounding)
TI Spark inductor
VG Gas valve
TL Over-temperature thermostat

PR Air pressure switch
V Ventilator
VD 3-way valve
D1-D2 Display digits
SW Keys
ISP ISP interface
RS232 RS232 serial communication interface

ST Temperature sensor of the heating circuit
SA Temperature sensor of the DHW circuit
SE External temperature sensor
PH20 heating circuit water pressure sensor
FLUX flow sensor of the DHW circuit
MOD flame modulation