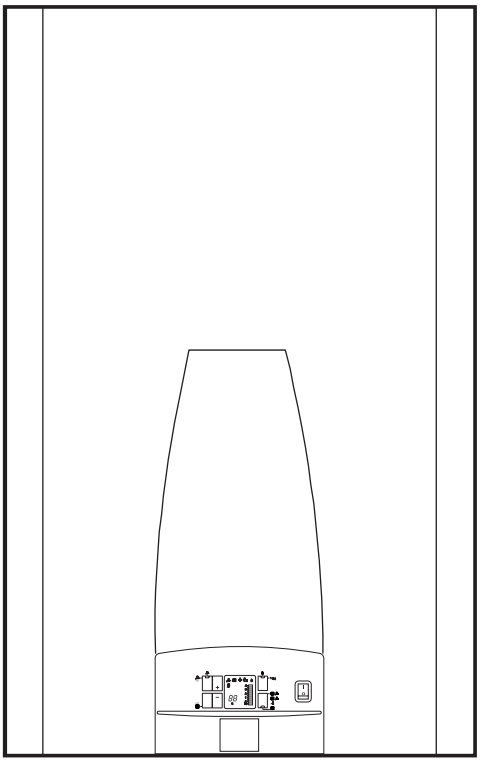
schuster®



BWA

R 50 R 70

INSTALLATION AND SERVICING MANUAL

Attention: this manual contains instructions for the exclusive use of the professionally qualified installer and/or maintenance technician in compliance with current legislation.
The user is NOT qualified to intervene on the boiler.
The manufacturer will not be held liable in case of damage to persons, animals or objects resulting from failure to comply with the instructions contained in the manuals supplied with the boiler.

General information

Technical Features

Installation Instructions

Maintenance instructions

1 GENERAL INFORMATION

1.1 -GENERAL WARNINGS

The instruction booklet is an integral and essential part of the product and must be kept by the user.

Read the warnings contained in this instruction booklet carefully as they provide important guidelines regarding installation, use and maintenance safety.

Keep the booklet with care for further consultation.

Installation and maintenance must be performed in compliance with the standards in force according to the instructions of the manufacturer, up to standard and by personnel qualified and certified in compliance with law.
Systems for the production of domestic hot water MUST be constructed entirely with compliant materials.

By professionally qualified personnel we mean: personnel with specific technical skill in the field of heating system components for civil use, domestic hot water production and maintenance. Personnel must have the qualifications provided for by current legislation.

Incorrect installation or improper maintenance can cause damage to persons, animals or objects for which the manufacturer is not responsible.

Before performing any cleaning or maintenance, disconnect the appliance from the energy mains by acting on the switch of the system and/or through the specific cut-off devices.
Do not obstruct the terminals of the intake/exhaust ducts.

In case of failure and/or malfunctioning of the appliance, switch it off and do not try to repair it or intervene on it directly. Contact only personnel qualified in compliance with law.

Any repairs must be performed solely by personnel authorised by Schuster, using original spare parts only. Failure to comply with the above can compromise the safety of the appliance and void the warranty.

To guarantee appliance efficiency and its correct operation, yearly maintenance must be performed by qualified personnel.

Should you decide not to use the appliance, parts entailing potential sources of hazard must be made safe.
Before commissioning an appliance that has not been used, wash the domestic hot water production system, making the water flow until it has been fully replaced.

Should the appliance be sold or transferred to a new owner or if you move and leave the appliance, always make sure that the instruction booklet accompanies it in order to be consulted by the new owner and/or installer.

Only original accessories must be used for all appliances with optionals or kits (including electric).

This appliance is intended solely for the use for which it was expressly designed.
Any other use is to be considered improper and therefore dangerous (*).

1.2 -SYMBOLS USED IN THE MANUAL

Pay special attention when reading this manual to the parts marked by the symbols:

DANGER!
Serious danger to safety and health

ATTENTION!
Possible dangerous situation for the product and the environment

NOTE!
Tips for the user

1.3 -APPROPRIATE USE OF APPLIANCE

The BWA R 50 / 70 boiler has been built according to the current level of engineering and acknowledged technical safety rules.
Nonetheless, if improperly used, dangers could arise for the safety and life of the user and other persons or damage to the equipment or other objects.
The appliance is designed to work in heating systems, with hot water circulation, for the production of domestic hot water.
Any other use is considered improper.
For any damage resulting from improper use Schuster assumes no responsibility.
Use according to the intended purposes also includes strict compliance with the instructions in this manual.

1.4 -INFORMATION PROVIDED TO THE USER

The user must be instructed concerning the use and operation of his heating system, in particular:

- Deliver these instructions to the user, as well as other documents concerning the appliance inserted in the envelope inside the packaging. **The user must keep this documentation safe for future consultation.**
- Inform the user about the importance of the air vents and the flue gas exhaust system, highlighting their essential features and the absolute prohibition of modifying them.
- Inform the user concerning controlling the system's water pressure as well as operations to restore it.
- Inform the user concerning correct temperature control, control units/thermostats and radiators for saving energy.
- Please note that, in compliance with the standards in force, the inspection and maintenance of the appliance must be carried out in compliance with the regulations and frequency indicated by the manufacturer.
- Should the appliance be sold or transferred to a new owner or if you move and leave the appliance, always make sure that the instruction booklet accompanies it in order to be consulted by the new owner and/or installer.

The manufacturer will not be held liable in the event of damage to persons, animals or objects resulting from failure to comply with the instructions contained in this manual.

1.5 - SAFETY WARNINGS

ATTENTION!
The boiler cannot be used by children.
The boiler can be used by adults and only after having carefully read the user's manual
Children should be supervised to ensure that they do not play or tamper with the device.

ATTENTION!
The appliance must be installed, adjusted and maintained by professionally qualified personnel, in compliance with the standards and provisions in force. Incorrect installation can cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

DANGER!
NEVER attempt performing maintenance or repairs on the boiler on your own initiative.
Any work must be done by professionally qualified personnel. We recommend stipulating a maintenance contract. Insufficient or irregular maintenance can jeopardise the operating safety of the appliance and cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

Changes to the parts connected to the boiler (once the boiler installation is complete)
Do not modify the following parts:
- the boiler
- the gas, air, water and electricity supply lines
- the flue gas pipe, the safety valve and the exhaust pipe
- the construction parts which affect the operating safety of the appliance.

Attention!
To tighten or loosen the screwed fittings, use only appropriate fixed spanners.
Incompliant use and/or inappropriate tools can cause damage (e.g. water or gas leakage).

ATTENTION!
Indications for propane gas-fired appliances
Make sure that the gas tank has been deaerated before installing the appliance.
For state-of-the-art tank venting, contact the LPG supplier or person qualified in compliance with the law requirement.
If the tank has not been professionally deaerated, ignition problems could arise.
In that case, contact the supplier of the LPG tank.

Smell of gas
Should a smell of gas be perceived, follow these safety guidelines:
- do not turn electric switches on or off
- do not smoke
- do not use the telephone
- close the gas shut-off valve
- air out the area where the gas leakage has occurred
- inform the gas supplier or a company specialised in installation and maintenance of heating systems.

Explosive and easily flammable substances
Do not use or store explosive or easily flammable materials (e.g. petrol, paints, paper) in the room where the appliance is installed.

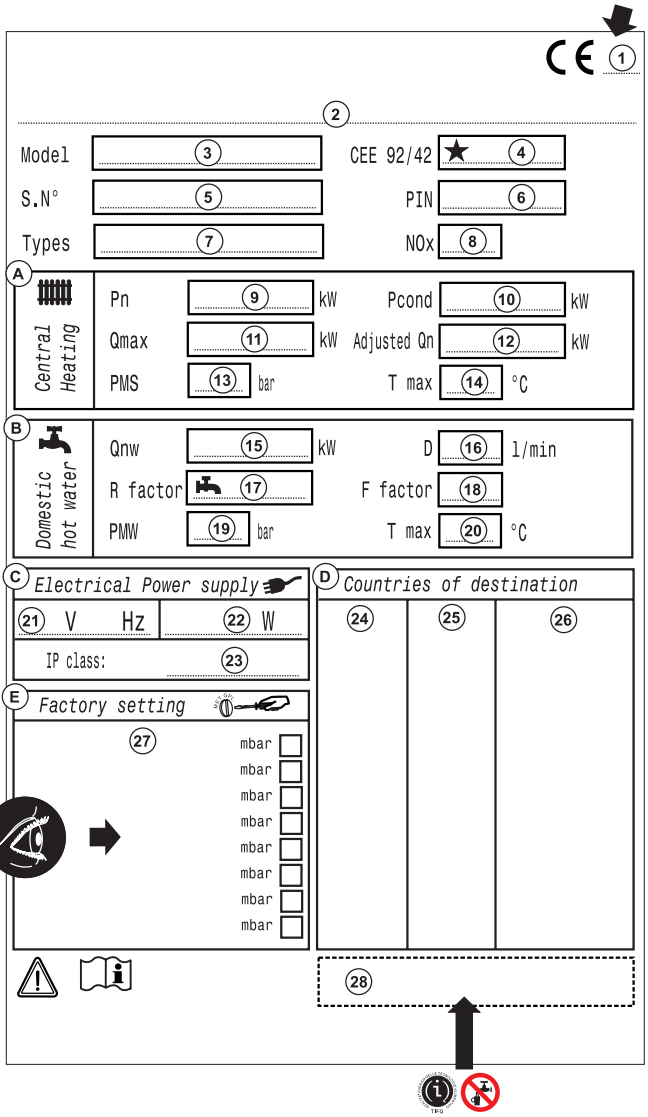
ATTENZIONE!
DANGER!
Do not use the appliance as a supporting base for objects.
In particular, do not place receptacles containing liquids (Bottles, Glasses, Jars or Detergents) on top of the appliance.
If the appliance is installed inside a housing, do not insert or rest other objects inside this housing.

1.6 -TECHNICAL DATA PLATE

CE marking

The CE marking certifies that the boilers meet:

- The essential requirements of the gas appliance directive (directive 2009/142/EEC)
- The essential requirements of the electromagnetic compatibility directive (2004/108/EEC)
- The essential requirements of the efficiency directive (92/42/EEC)
- The essential requirements of the efficiency directive (directive 2006/95/EEC)



KEY:

1 = CE monitoring body
2 = Type of boiler
3 = Boiler model
4 = Number of stars (directive 92/42 EEC)
5 = (S.N°) Serial Number
6 = P.I.N. Product Identification Number
7 = Types of approved flue gas exhaust configurations
8 = (NOx) NOx Class

A = Heating circuit characteristics
9 = (Pn) Effective nominal output
10 = (Pcond) Effective output in condensation
11 = (Qmax) Maximum heat output
12 = (Adjusted Qn) Adjusted for rated heat output
13 = (PMS) Max. heating operating pressure
14 = (T max) Max. heating temperature

B = Domestic hot water circuit characteristics
15 = (Qnw) Rated heat output in domestic hot water function (if different to Qn)
16 = (D) Specific D.H.W. flow rate according to EN 625 - EN 13203-1
17 = (R factor) No. of taps according to the declared amount of water (EN 13203-1)
18 = (F factor) No. of stars according to the declared quality of the water (EN 13203-1)
19 = (PMW) Max. domestic hot water operating pressure
20 = (T max) Max. domestic hot water temperature

C = Eletrical characteristics
21 = Electrical power supply
22 = Consumption
23 = Protection rating

D = Countries of destination
24 = Direct and indirect countries of destination
25 = Gas category
26 = Supply pressure

E = Factory settings
27 = Adjusted for gas type X
28 = Space for national brands

1.7 - WATER TREATMENT

The treatment of the supply water allows to prevent inconveniences and maintain the functionality and efficiency of the generator over time.

The ideal water pH in heating systems must be within:

VALUE	MIN	MAX
PH	6,5	8
Hardness [°fr]	9	15

To minimise corrosion, it is crucial to use a corrosion inhibitor; in order for it to work properly, the metal surfaces must be clean. (see system protection ACCESSORIES sect. in domestic price list)

ATTENTION!
ANY DAMAGE TO THE BOILER CAUSED BY THE FORMATION OF FOULING OR BY CORROSIVE WATER WILL NOT BE COVERED BY THE WARRANTY.

ATTENTION (*) see general warnings 1.1
The heating only models are NOT suitable for the production of water for human consumption according to Ministerial Decree D.M. 174/2004.

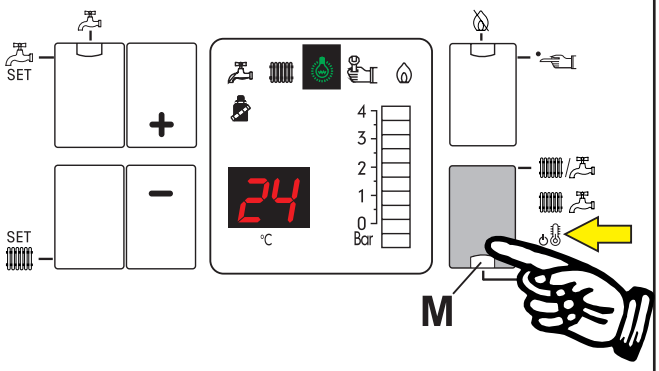
1.8 - BOILER ANTIFREEZE PROTECTION

This protection can intervene only if the electricity and gas supplies are connected.
If one of the two is not available and upon reset **11 (SR)** a temperature between 2 ÷ 5°C is detected, the appliance will behave as described in tab. **pos 2.**

The heating system can be protected effectively from frost by using antifreeze products with inhibitor for heating systems (specific for multidmetal)

Do not use car engine antifreeze products as they could damage the water gaskets.

ANTIFROST PROTECTION



Press the button, up to led **M** OFF.

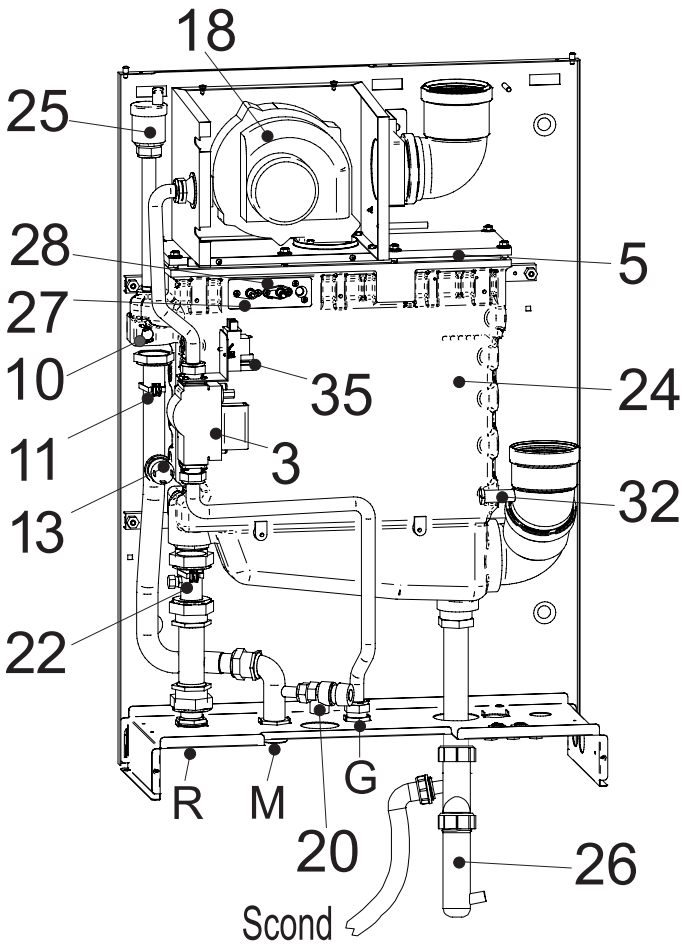
POS	ANTIFREEZE FUNCTION				
	Power supplies		**11 - SR** (*)	Status function antifreeze	Actions
	Electric	Gas			
1	ON	ON	T < 7 °C	ON	- Burner and Pump ON until T > 15°C
2	ON	OFF	< 2 T < 5 °C	ON	Only when both the power supplies are ON: FAULT CODE Fr (E16) (see par. 4.6 ERROR CODES). Ignition disabled.
	OFF	ON			
	OFF	OFF			
(*) Sensor 11 par. 2.2					

2 TECHNICAL FEATURES AND DIMENSIONS

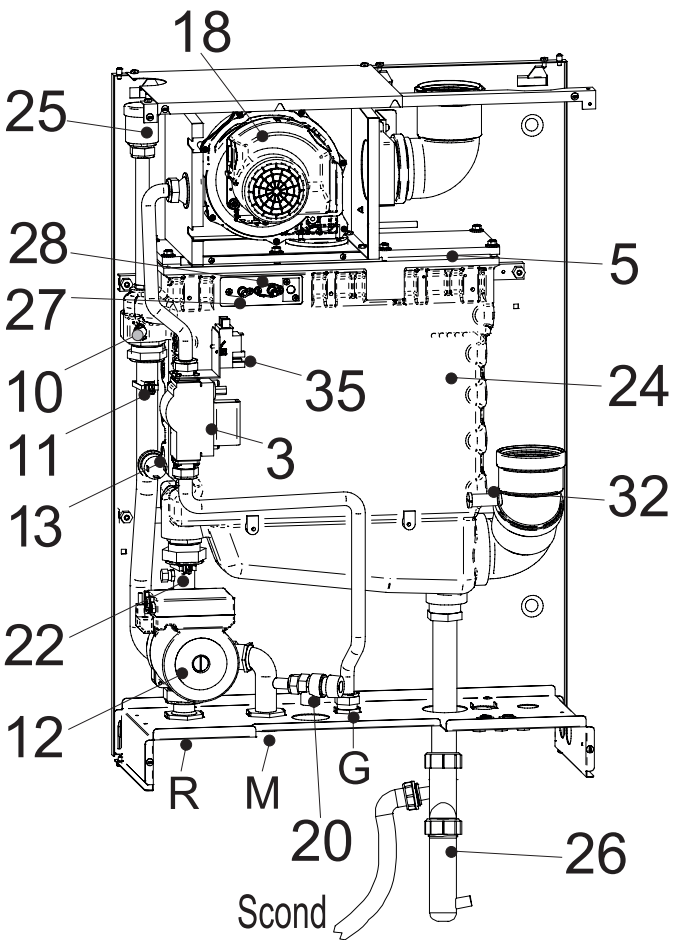
2.1 -TECHNICAL FEATURES

2.2 - VIEW WITH THE INDICATION OF THE MAIN COMPONENTS

BWA R 50

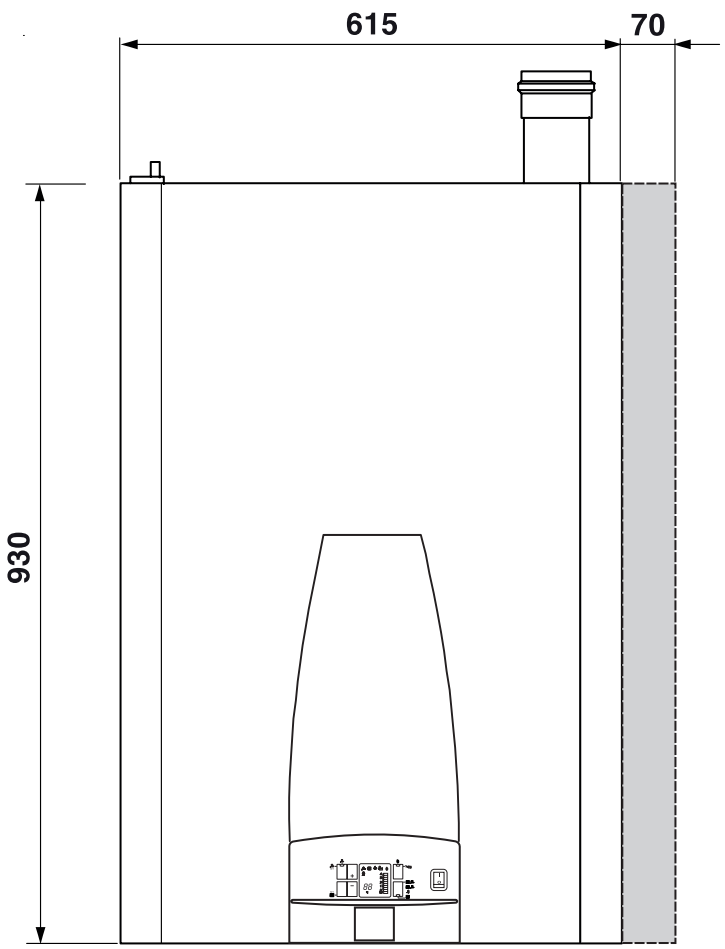


BWA R 70

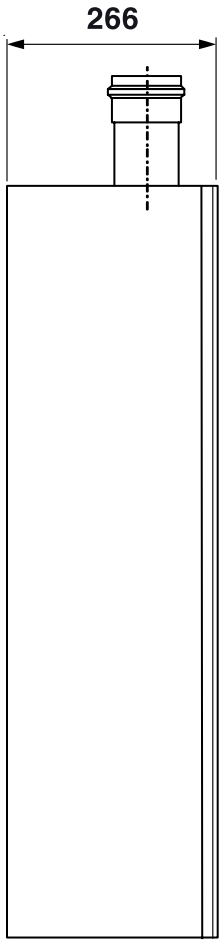


2.3 - DIMENSIONS

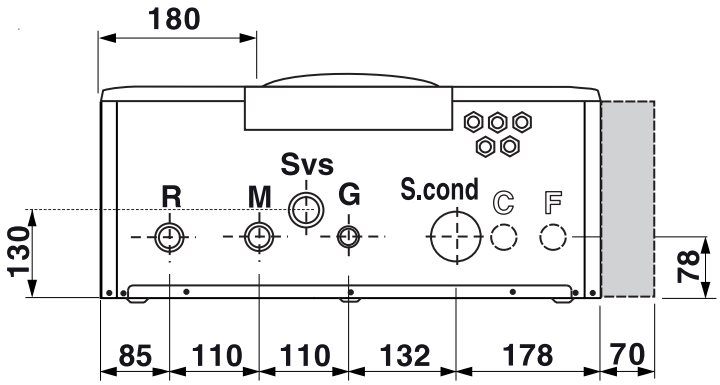
Front view



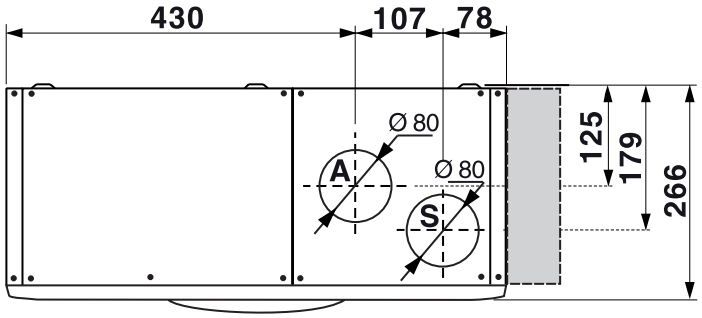
Side view



View from below



View from above



(*)	The parts shown in gray are relative to the ACS kit.

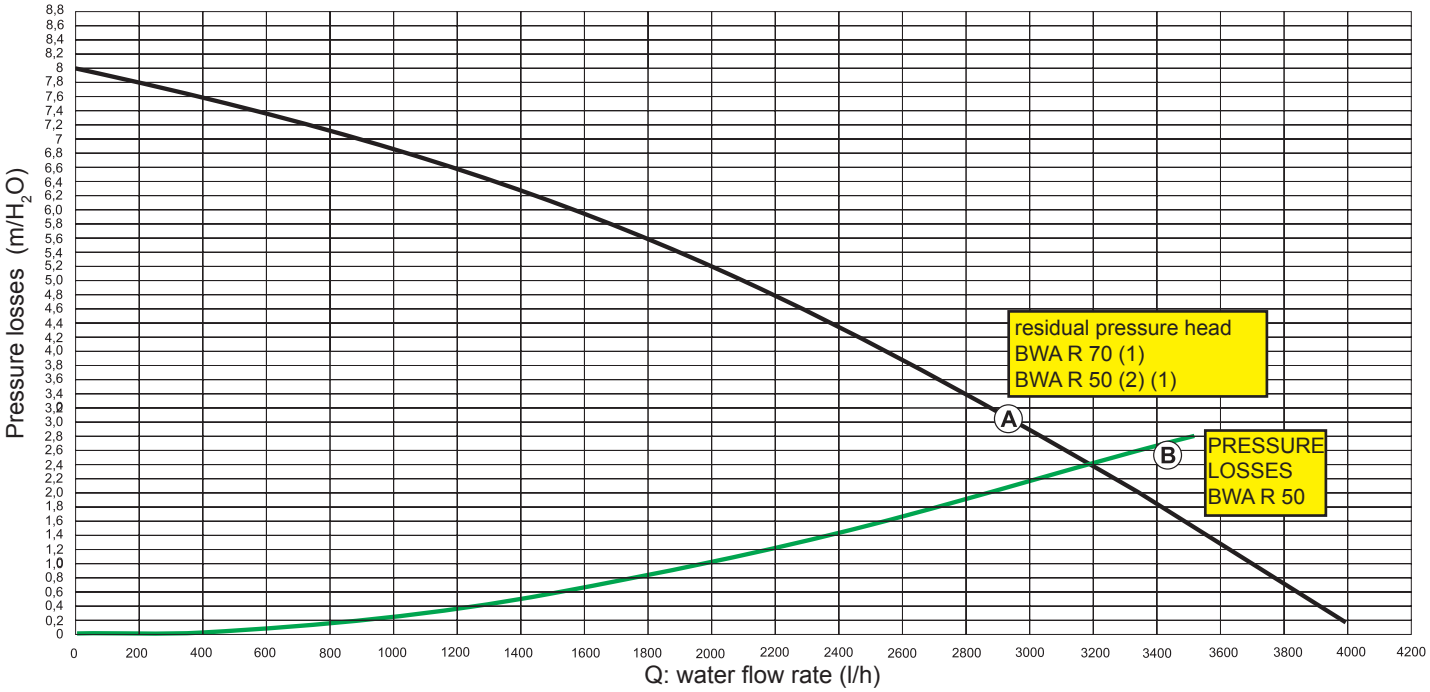
KEY			
N°	C.E.	S.E.	Description
1	db	SS	Domestic hot water temperature sensor (N.U.)
2		FLS	Flow switch with cold water filter (N.U.) Optional
3		VG	Gas valve
4	Fd	E. ACC /RIL	Ignition/detection electrode (N.U.)
5			Burner
6			Combustion chamber (N.U.)
7	AF	TF	Flue gas anti-overflow thermostat (N.U.)
8			Expansion vessel (N.U.)
9	FR HT		Heat exchanger (N.U.)
10	HL	TL	Safety thermostat
11	Hb	SR	Heating temperature sensor
12	Ht	P	Pump (optional on BWA 50)
13	Lp	DK	Water deficiency pressure switch
14			Boiler drain valve (N.U.)
15			Filling valve (N.U.)
16			Diverting Valve (N.U.)
17			Plate heat exchanger (N.U.)
18	FL FH	VM	Fan
19	AF AS	PV	Flue gas pressure switch (N.U)
20			Safety valve
21			Automatic by-pass (N.U.)
22	rb	SRR	Return temperature sensor
23	tf	TLC	Flue gas collector safety thermo-stat (N.U.)
24			Aluminium Heat Exchanger/ Capacitor
25			Vent valve
26			Condensation drain trap
27		E. RIL.	Detection electrode
28		E. ACC.	Ignition electrode
29			Return shut-off valve (N.U.)
30		SMG	Sensor Flow General (N.U.)
31			Condensation drain trap (N.U.)
32			Outlet flue inspection
33			Heatthing Controller HSCP (N.U.)
34			Gas cocks (N.U.)
35			Ignition Trasformer
36			Non return valve (N.U.)

BWA				50	70
C			Domestic hot water outlet (only with ACS kit)		
G			Ingresso gas	G ¾"	G ¾"
F			Cold water inlet (only with ACS kit)		
M			Heating system flow	G 1"	G1 ¼"
R			Heating system return	G 1"	G1 ¼"
Rc			Filling valve (N.U.)		
Sc			Boiler drain (N.U.)		
Svs			Safety valve drain (N.U.)		
Scond			Condensation drain		
A			Air Suction	Ø 80	
S			Exhaust Smoke	Ø 80	
	C.E.		= ERROR CODES see par. 4.6		
		S.E.	=WIRING DIAGRAM KEY see par. 4.5		
(N.U)	Component not used				

2.4 - DIAGRAM OF FLOW RATE/PRESSURE AVAILABLE FOR INSTALLATION

A) Head gain available net losses of boiler (for boilers with pump supplied by Schuster)

B) Head losses between flow and return
(For boilers supplied without pump)



(1) VALUES REFER TO THE MAX SPEED
(2) ONLY IF EQUIPPED WITH OPTIONAL PUMP

The table provides an indication the flow the pump in function of the Δt of the primary circuit.			
		BWA R 50	BWA R 70
Power supply in kW		49,3	68,5
Max flow rate demanded l/h (Δt 15 K)		2826	3927
Nominal flow rate request (Δt 20 K)		2120	2946

If the pump are determined by the installer or designer must be sized according to the data of the boiler and system.
It is recommended to choose a pump with the rate and delivery head at about 2/3 of its characteristic heating curve.

The Δt between supply and return boiler must never be less than 15 ° K.

NOTE:
The use of a mixing header fitted between the boiler circuit and the system circuit is always advisable. It becomes INDISPENSABLE if the system requires flow rates superior to the maximum permitted boiler flow rates, which is to say lower than 15K.

2.5 -OPERATING DATA ACCORDING TO UNI 10348 and GENERAL FEATURES

For the adjustment data: NOZZLES - PRESSURE - DIAGRAMS - FLOW RATES - CONSUMPTION refer to the paragraph ADAPTATION TO OTHER TYPES OF GAS.

			BWA R 50 c	BWA R 70
Appliance category			II_{2H3P}	II_{2H3P}
Modulation Ratio			1:5	1:7
Nominal Heat Input on P.C.I. Qn	kW		48,5	67,5
Minimum Heat Input on P.C.I. Qmin	kW		9,6	9,6
Nominal Output (Tr 60 / Tm 80 °C) Pn	kW		47,2	65,5
Minimum Output (Tr 60 / Tm 80 °C) Pn min	kW		9,1	9,1
Nominal Output (Tr 30 / Tm 50 °C) Pcond	kW		49,3	68,5
Minimum Output (Tr 30 / Tm 50 °C) Pcond min	kW		10,3	10,3
Efficiency at max. output (Tr 60 / Tm 80°C)	%		97,29	97,29
Efficiency at min. output (Tr 60 / Tm 80°C)	%		94,9	94,9
Efficiency at max. output (Tr 30 / Tm 50°C))	%		101,62	101,51
Efficiency at min. output (Tr 30 / Tm 50°C)	%		104,3	104,3
Rendimento al 30% del carico (Tr 30°C)	%		107,33	107,33
Number of stars (according to 92/42 EEC)			★★★★	★★★★
Combustion efficiency with nominal load	%		97,80	97,41
Combustion efficiency with minimum load	%		98,42	98,42
Heat loss at casing with burner in operation (Qmin)	%		3,61	3,61
Heat loss at casing with burner in operation (Qn)	%		0,51	0,12
Stand-by losses (with Δt 30°C)	%		0,2	0,2
Flue gas temperature tf-ta (min)(**)	°C		33	33
Flue gas temperature tf-ta (max)(**)	°C		43,6	51,3
Flue gas mass flow rate (min)	kg/h		15,9	15,9
Flue gas mass flow rate (max)	kg/h		80,0	111,4
Excess λ air	%		26,84	20,57
(***) CO_2 (min/max)	%		9,0- 9,2	9,5 - 9,5
Flue losses with burner in operation (min)	%		1,58	1,58
Flue losses with burner in operation (max)	%		2,20	2,59
Flue losses with burner off (depression “0”)	%		0,2	0,2
Portata d’acqua alla potenza nominale (ΔT 15°C)	l/h		2837	3927
Portata d’acqua alla potenza nominale (ΔT 20°C)	l/h		2120	2946
Minimum heating circuit pressure	bar		0,5	0,5
Maximum heating circuit pressure	bar		6	6
Max allowable pressure of the generator	bar		8	8
Water content	l		3,9	3,9
Gas Consumption Natural (20 mbar) gas G 20 a Qn	m^3/h		5,13	7,14
Gas Consumption Natural gas (20 mbar) G 20 a Qmin	m^3/h		1,02	1,02
Gas Consumption G25 (supply pressure 25 mbar) Qn	m^3/h			
Gas Consumption G25 (supply pressure 25 mbar) Qmin	m^3/h			
Gas Consumption G31 (supply pressure 37/50 mbar) Qn	kg/h		3,76	5,24
Gas Consumption G31 (supply pressure 37/50 mbar) Qmin	kg/h		0,75	0,75
Max. available pressure at the chimney base	Pa		40	40
Condensate production max	kg/h		7,8	10,87
Emissioni				
CO at Minimum Heat Input with 0% of O2	mg/kWh		19,7	19,7
NOx at Nominal Heat Input with 0% of O2	mg/kWh		68	68
NOx at Minimum Heat Input with 0% of O2	mg/kWh		37	37
NOx Weighted value according EN 15420)	mg/kWh		33,9	34,68
NOx Class			5	5
Electrical Data				
Voltage/Frequency electric power supply	V/Hz		230/50	230/50
Fuse on main supply	A (R)		4	4
Maximum absorbed output	W		172	290
Minimum absorbed output	W		77	145
Standby Consumption	W		16	16
Insulation degree	IP		X4D	X4D
(*) (*) Room Temperature = 20°C				
(**) Temperatures detected with the unit in operation (Tr 60 / Tm 80°C)				
(***) See table INJECTORS PRESSURES				

3 INSTALLATION INSTRUCTIONS

3.1 - GENERAL WARNINGS

ATTENTION!

This boiler is intended solely for the use for which it was expressly designed. Any other use is to be considered improper and therefore dangerous.
This boiler heats water at a temperature lower than the atmospheric pressure boiling temperature.

Before connecting the boiler, have professionally qualified personnel:

a) Thoroughly wash all the piping of the system to remove any residues or impurities which could jeopardise proper operation of the boiler, even from a hygienic point of view.

b) Check that boiler is set up to operate with the available type of fuel. This can be seen written on the package and on the technical feature plate;

c) Check that the chimney/flue has an appropriate draught, without any bottlenecks, and that no exhausts from other appliances are inserted, unless the flue has been implemented to accommodate several utilities according to specific standards and regulations in force. Only after this check can the fitting between the boiler and chimney/flue be mounted;

ATTENTION!
If there is dust and/or if there are aggressive/ corrosive vapours present in the installation room, the appliance must be protected suitably and must be able to operate independently from the air in the room.

ATTENTION!
Only mount the appliance on a closed wall, made of non-flammable material, flat, vertical so that the minimum distances required for installation and maintenance can be observed.

The boiler must be connected to a central heating system and/or domestic hot water supply network compatible with its efficiency and output.

3.2 - INSTALLATION STANDARDS

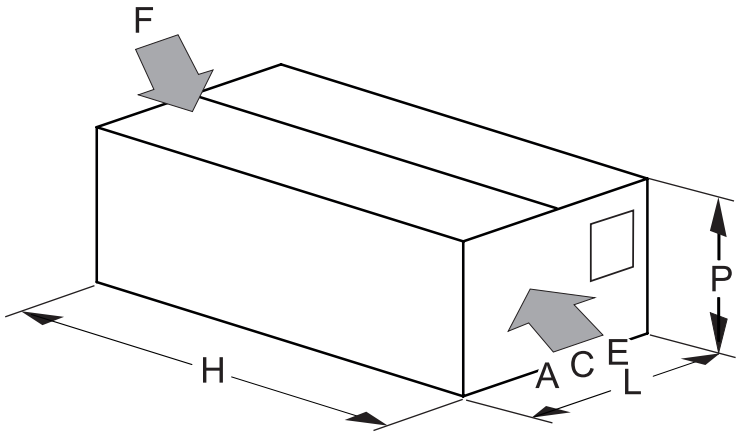
t must be installed by a professionally qualified technician, **who shall take the responsibility of observing all local and/or national laws published in the official journal, as well as the applicable technical standards.**

3.4 - PACKAGING

The boiler **BWA 50 / 70 c** is supplied completely assembled in a sturdy cardboard box.

After having removed the appliance from the packaging, make sure that the supply is complete and undamaged.

The packaging elements (cardboard box, straps, plastic bags, etc.) **must be kept out of the reach of children as they are potential sources of danger**.
Schuster will not be held liable for damage to persons, animals or objects due to failure to comply with the instruction above.



BWA R 50				
P depth	L width (mm)	H heigh (mm)	Net Weight (kg)	Gross Weight (kg)
370	**715**	**1025**	**50**	**55**

BWA R 70				
P depth	L width (mm)	H heigh (mm)	Net Weight (kg)	Gross Weight (kg)
370	**715**	**1025**	**58,4**	**64**

As well as the appliance, the packaging contains:

A DOCUMENTATION ENVELOPE
- User operating instructions booklet
- Instruction booklet for the installer and maintenance engineer
- Certificate of conformity
- Gas conversion label

C - 3 rawlplugs for boiler attachment

E - Boiler support bracket

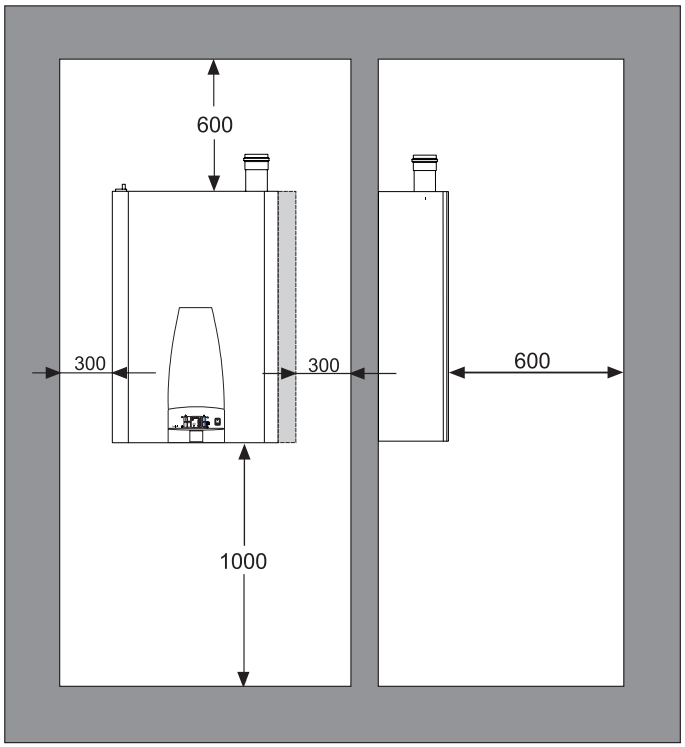
F - Condensate evacuation siphon

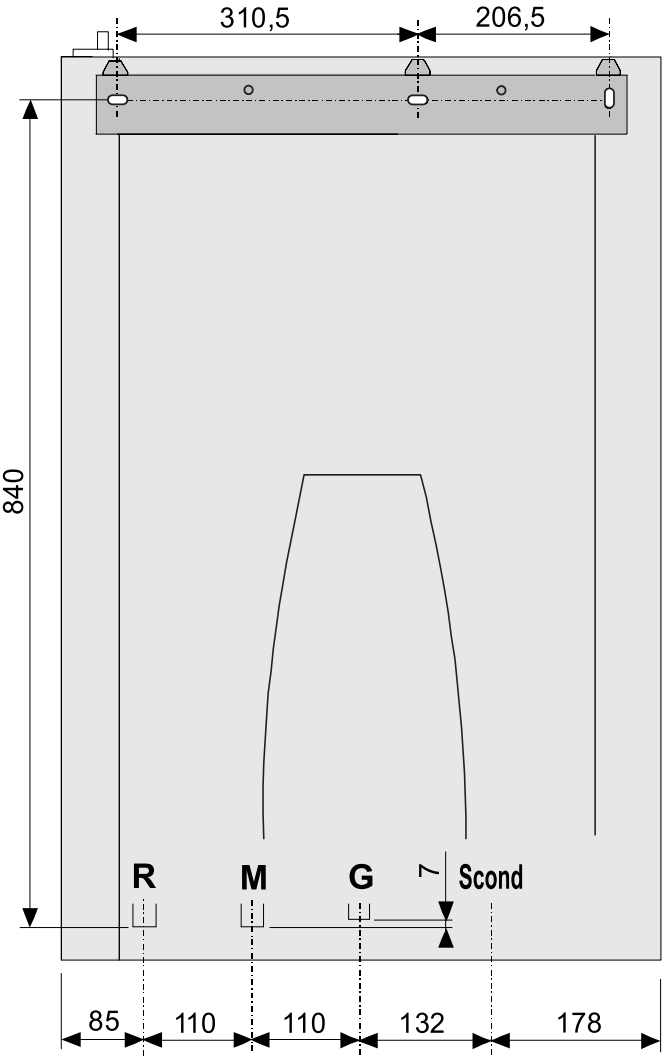
G - Aluminum pipe Ø 80 mm for smoke evacuation (located inside the boiler)

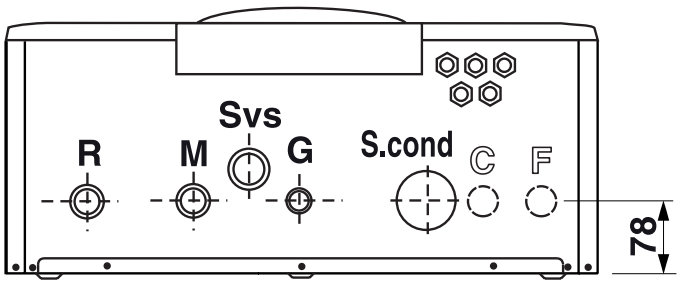
3.5 - POSITIONING IN BOILER ROOM

Particular importance should be given to local regulations and laws in terms of boiler room and especially the minimum distance that must be kept clear around the boiler.
The installation must conform to the requirements contained in the most recent regulations and laws in terms of boiler room, installations of heating and production of hot water, ventilation, chimneys suitable to discharge the products of combustion of condensing boilers, and everything else applicable.
When choosing the place of the installation of the appliance, follow the safety instructions below:

- Place the appliance in rooms protected from frost.
- Avoid installation in rooms with a corrosive or very dusty atmosphere.
- The appliance must only be installed on a vertical and solid wall which can support its weight.
- The wall must not be made of flammable material.







Observe the minimum distances of encumbrance in order to perform the operations of normal maintenance and cleaning.

Solo con kit ACS	
C	CALDA
F	FREDDA

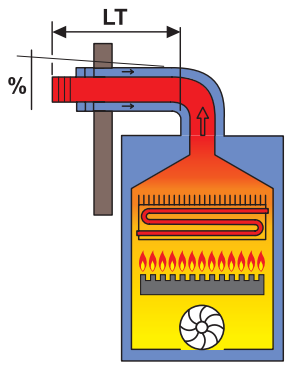
3.6 - FLUE GAS EXHAUST PIPE CONNECTION FOR BOILERS WITH FORCED DRAUGHT

To connect the flue gas exhaust pipe, local and national standards must be observed

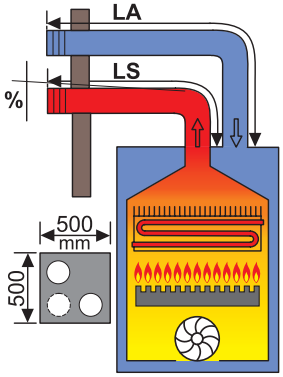
In the event the boiler is replaced, ALWAYS replace the flue gas pipe as well.

The boiler is type approved for the exhaust configurations listed below:

C13x



C13



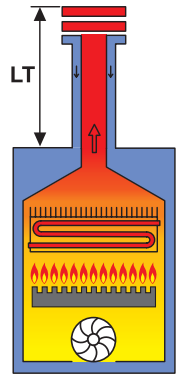
% Slope towards outlet = 3%

TOTAL LENGTH (LA intake + L Exhaust)

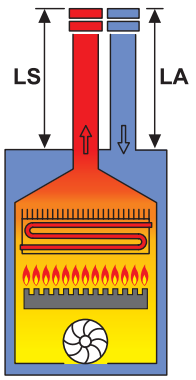
COAXIAL Ø60/100		DOUBLE Ø80	
FROM [m]	UP TO [m]	FROM [m]	UP TO [m]
1	**5,5**	**1 + 1**	**40 (20A+20S)**
COASSIALE Ø80/125		SDOPPIATO Ø60	
FROM [m]	UP TO [m]	FROM [m]	UP TO [m]
1	**8**	**1 + 1**	**20 (10A+10S)**
		nlet pipe and flue gas exhaust pipe: min 250 mm - max 500	

Horizontal exhaust and intake terminals directed outside via coaxial or double pipes

C33x



C33

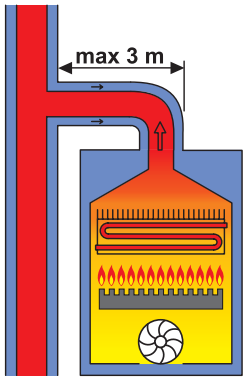


TOTAL LENGTH (LA intake + L Exhaust)

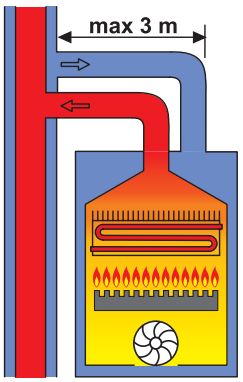
COAXIAL Ø60/100		DOUBLE Ø80	
FROM [m]	UP TO [m]	FROM [m]	UP TO [m]
1	**7**	**0,5 + 0,5**	**40 (20A+20S)**
COAXIAL Ø80/125		DOUBLE Ø80	
FROM [m]	UP TO [m]	FROM [m]	UP TO [m]
1	**9**	**1 + 1**	**20 (10A+10S)**

Vertical exhaust and intake terminals directed outside via coaxial or double pipes..

C43x

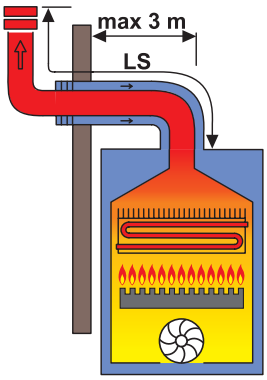


C43

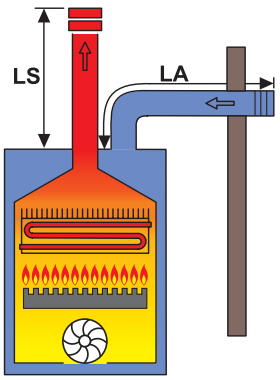


Collective chimney flue system, consisting of two pipes, one for combustion air intake and the other one for combustion products evacuation, coaxial or double.

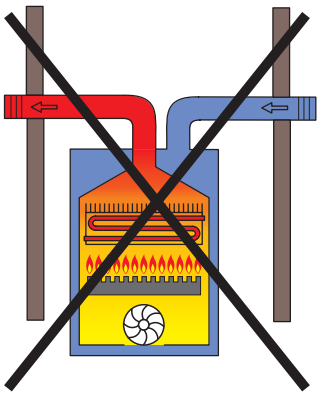
C53x



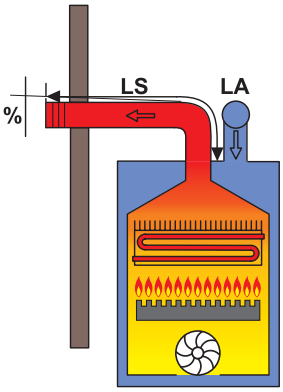
C53



C53 NOT ALLOWED



C53



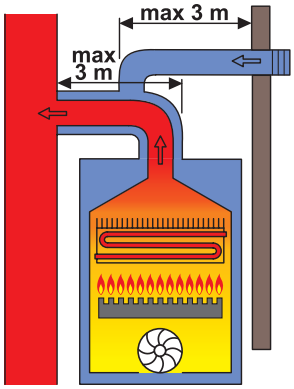
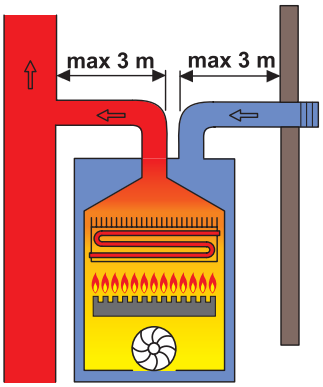
TOTAL LENGTH (LA intake + L Exhaust)

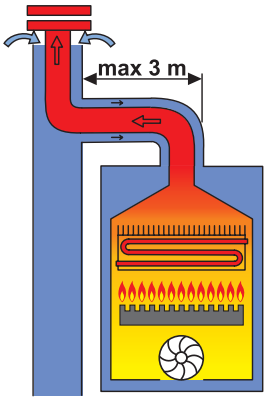
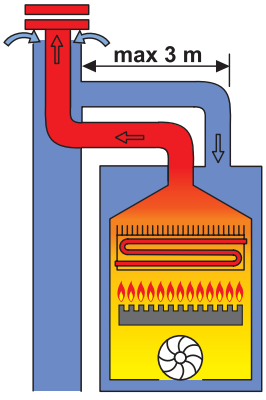
DOUBLE Ø80		DOUBLE Ø60	
FROM [m]	UP TO [m]	FROM [m]	UP TO [m]
1 + 1	**40 (max 30 S)**	**1 + 1**	**20 (max 15 S)**

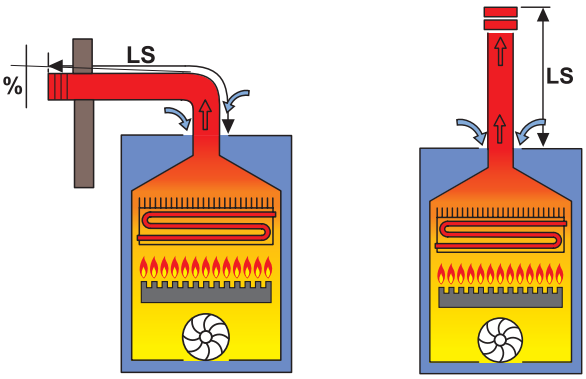
Separate combustion air intake and combustion products evacuation pipes.
These pipes can discharge into areas with different pressure.

C63x	C63
Boiler intended for connection to a combustion air intake and combustion products evacuation system, approved and sold separately.	

ATTENTION:
The flue must comply with standards in force

C83x	C83
	
Connection to a terminal for combustion air intake and flue gas exhaust via a single or collective chimney.	

C93x	C93
	
Air / flue gas through concentric pipes in the boiler room and single pipes in the chimney (combustion air with counterlow in the chimney)	

B23P

LUNGHEZZA TOTALE (LScarico)
DOUBLE Ø80

UP [m]	TO [m]
1	**30**

Connection to a combustion products evacuation pipe outside the room; the combustion air is taken directly from the room where the appliance is installed.

ATTENTION:
For the type of connection **B23P** the room follows the same installation rules for boilers with natural draught.

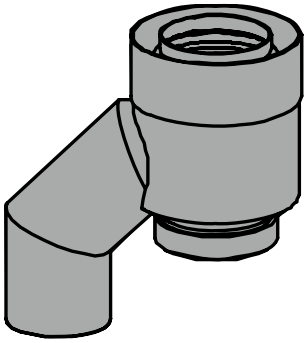
CAUTION
LT total length is a reference value for the dimensioning of the ducts of **A** (intake) and **S** (Exhaust). Subtracting the values of **LT** reported, at values of bends* / terminals* / extensions* you get the value:
if > 0 = OK - POSSIBLE configuration
if < 0 = NO - WRONG configuration

(*) Values in the **MT018** available on the website.

Please note:
These values relate to exhausts/ made by means of rigid pipes and smooth original Schuster

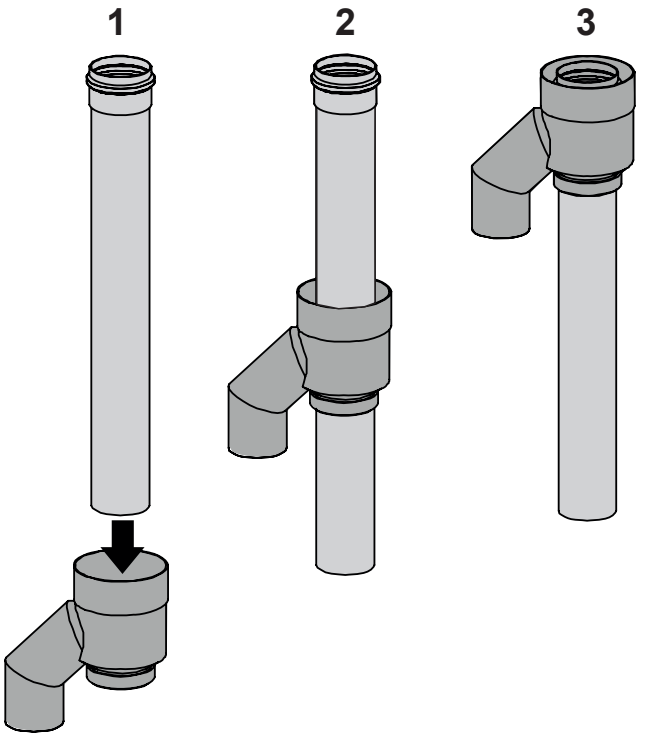
GENERAL INFORMATION ON THE FLUE GAS EXHAUST SYSTEM

00361255

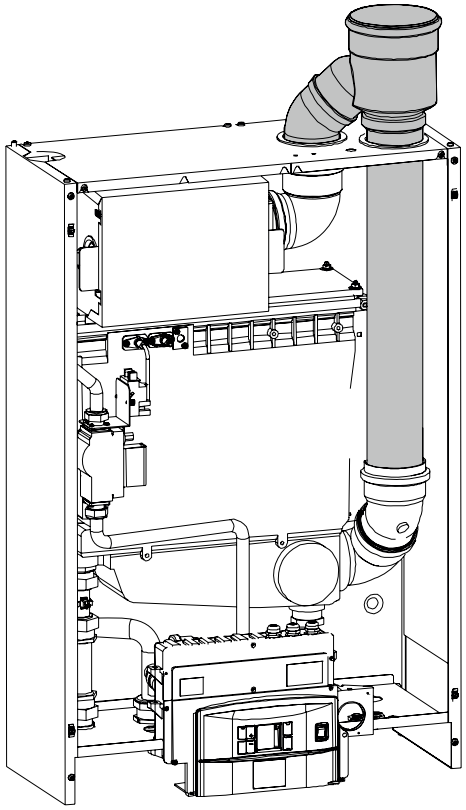


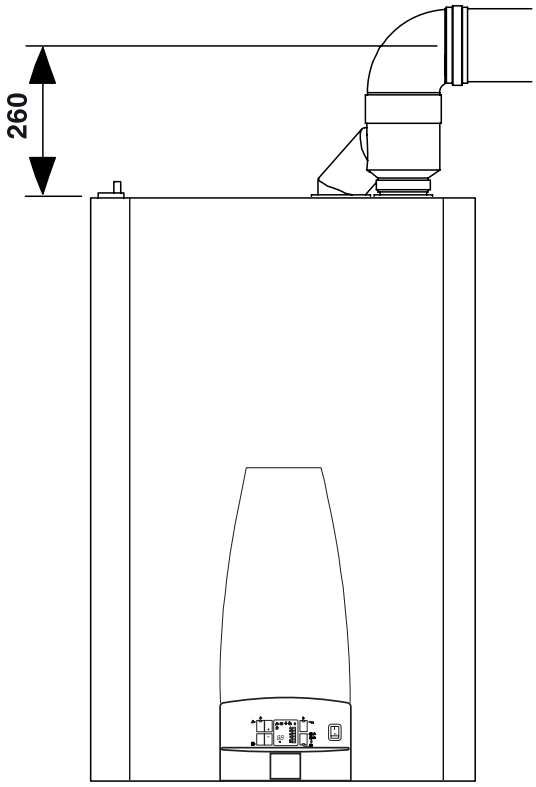
(+) Adapter for double systems 80/125

It is recommended to only use original Schuster exhaust pipes.
The supplier will have no contractual or extra-contractual liability for damage caused due to incorrect installation and use and in any case failure to comply with the instructions provided by the manufacturer.

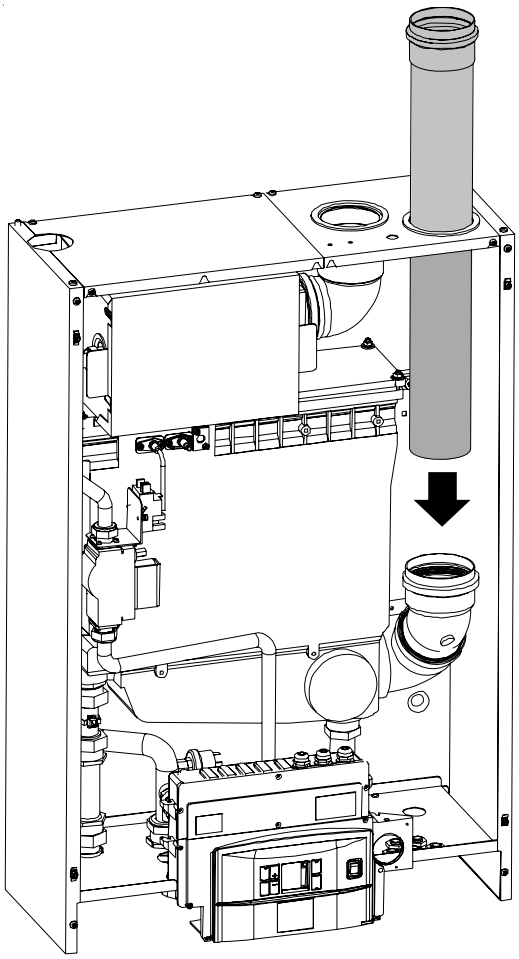


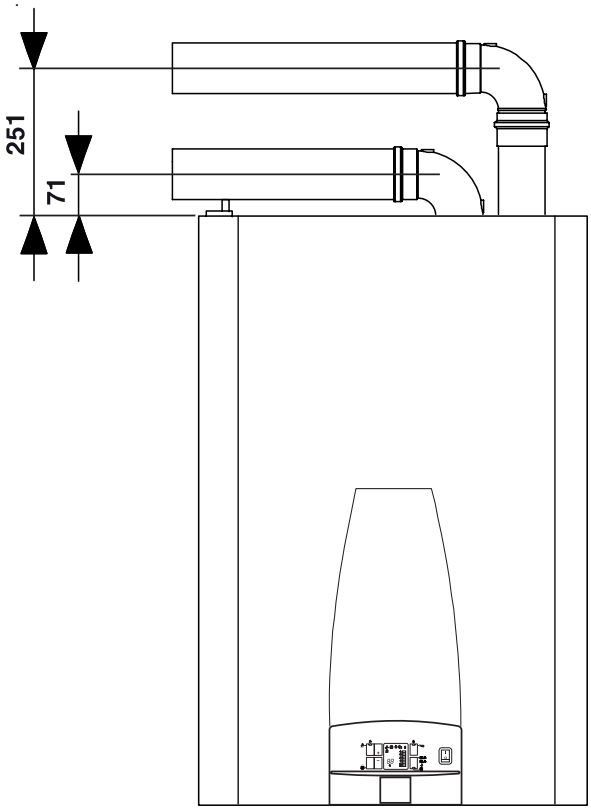
COAXIAL DUCT Ø 80/125





DOUBLE Ø 80





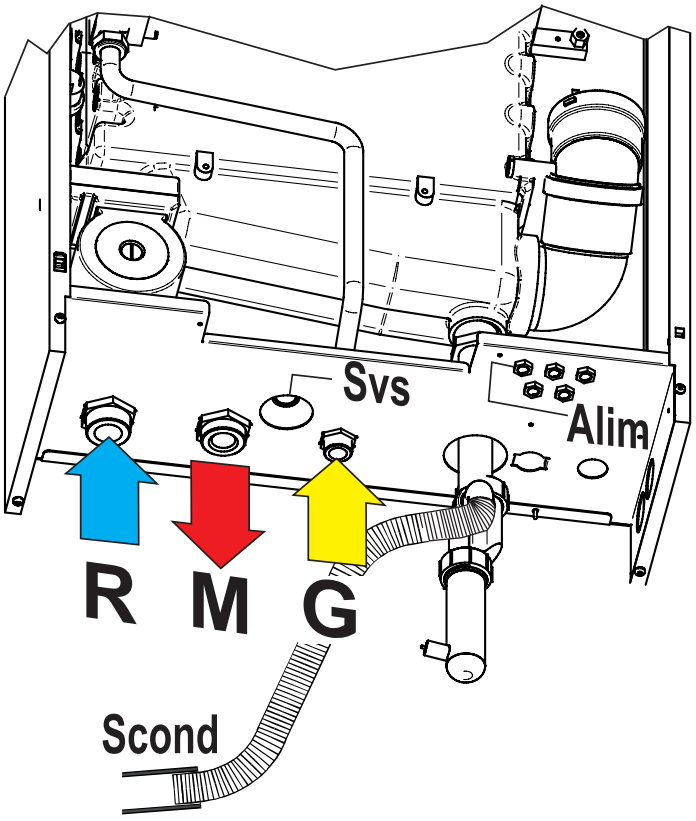
3.7 -CONNECTION

G	**GAS**	G ¾"

Danger!
The gas connection must be carried out only by a qualified installer who must respect and apply that foreseen by relevant laws in force in the local prescriptions of the supply company. Incorrect installation can cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

If you smell gas:

a) Do not operate electric switches, the telephone or any other object that may cause sparks;
b) Immediately open doors and windows to create air current to purify the room;
c) Shut the gas cocks.



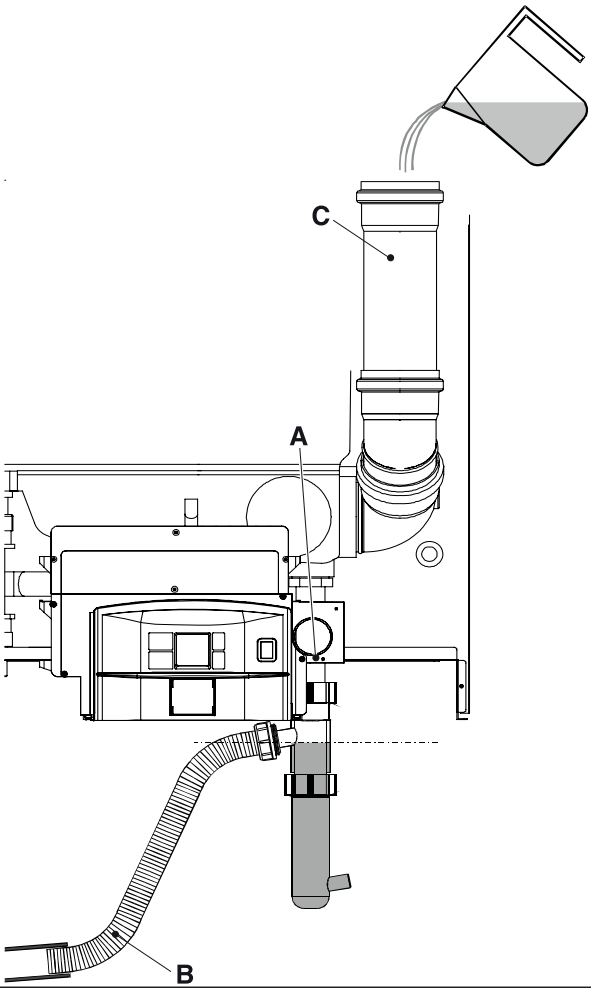
		BWA R 50	BWA R 70
M	**FLOW**	G 1"	G1 ¼"
R	**RETURN**	G 1"	G1 ¼"

S.cond	CONDENSATION DRAIN
Svs	SAFETY VALVE DRAIN Provide a drain pipe with funnel and a trap that lead to a suitable drain, in correspondence of Svs. This drainage must be controlled on sight. If this precaution is not taken, triggering of the safety valve can cause damage to persons, animals and objects, for which the manufacturer cannot be held responsible..

Condensation drain
The boiler, during the combustion process, produces condensation that, through pipe "A", flows into the trap.
The condensation that forms inside the boiler flows into a suitable drain via pipe "B".

Danger!
Before commissioning the appliance:
- check that the trap is assembled properly
- fill the trap and check that the condensation is drained properly

If the appliance is used with an empty condensation drain trap, there is an intoxication hazard due to the release of exhaust gasses..



Condensation outlet, pipe to be connected to the drainage system

The connection between the appliance and the domestic waste system must be made in compliance with the specific reference standards..

3.8 - FILLING THE SYSTEM

Attention!
Do not mix the heating water with incorrect concentrations of antifreeze or anti-corrosion substances! This could damage the gaskets and cause noise during operation.
Schuster will not be held liable for damage to persons, animals or objects due to failure to comply with the above instruction.

Pressure in the mains supply must be between 0.5 and 6 bar (In case of higher pressure a pressure reducer it must be installed)

To fill the system is necessary to provide a loading tap on the heating circuit, or use the optional accessories.

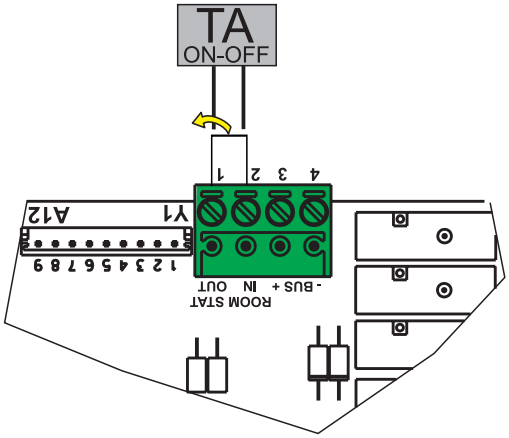
The system must be equipped with its own drain valve, with a size suitable to the capacity of the system.

3.9 - ELECTRICAL CONNECTIONS

Danger!
Only a qualified technician may perform the electrical installation.

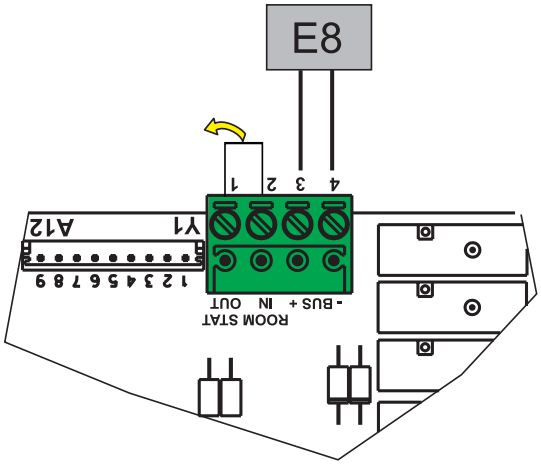
Before performing connections or any type of operation on electrical parts, always disconnect electrical power and make sure that it cannot be reconnected accidentally.

ON/OFF room thermostat connection (*)



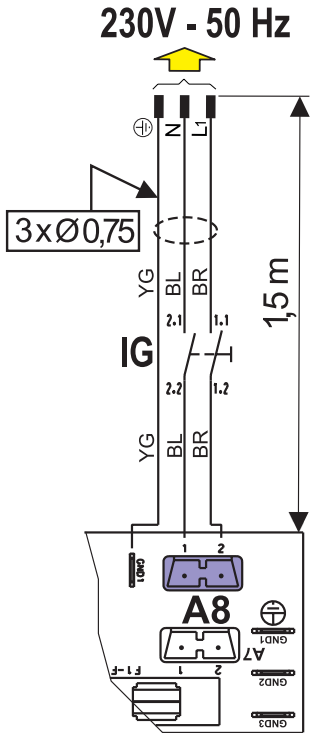
- Remove the jumper and connect the room thermostat wires between terminals ROOM STAT 1-2

HSCP Heating Slave Controller Programmer / E8 connection eBUS (*)



- Connect the HSCP Heating Slave Controller Programmerwire between terminals - BUS + after having removed the jumper

Electric power supply connection



See par. 4.5 positioning on the board
(*) Optional

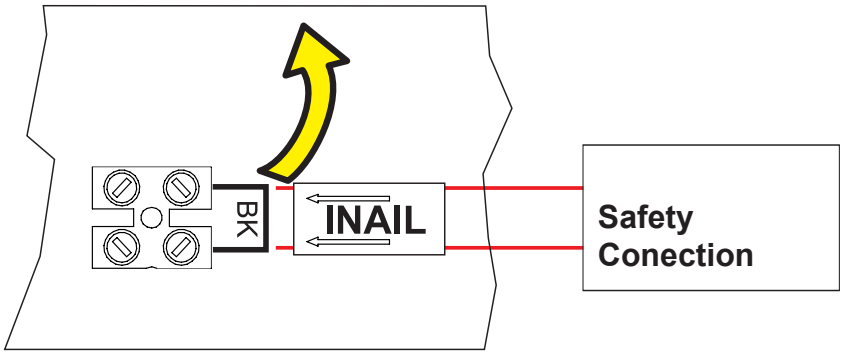
The boiler is equipped with a power cable, boiler installation requires electric al connection to the mainspower supply. This connection must be made up to standard, as required the regulations in force.

Remember that a bipolar switch must be installed on the boiler power line with over 3 mm between contacts, easy to access, making maintenance quick and safe.

The power cable must be replaced by **Schuster** authorised technical staff, using original spare parts only. Failure to comply with the above can jeopardise the safety of the appliance.

Danger!
Only a qualified technician may perform the electrical installation.
Before performing connections or any type of operation on electrical parts, always disconnect electrical power and make sure that it cannot be reconnected accidentally.

Safety connection (*)



- Remove the jumper and connect the wires between terminals as indicated

3.10 - COMMISSIONING

Commissioning must be done by professionally qualified personnel. Schuster will not be held liable for damage to persons, animals or objects due to failure to comply with the above instruction.

Before commissioning the boiler, check that:

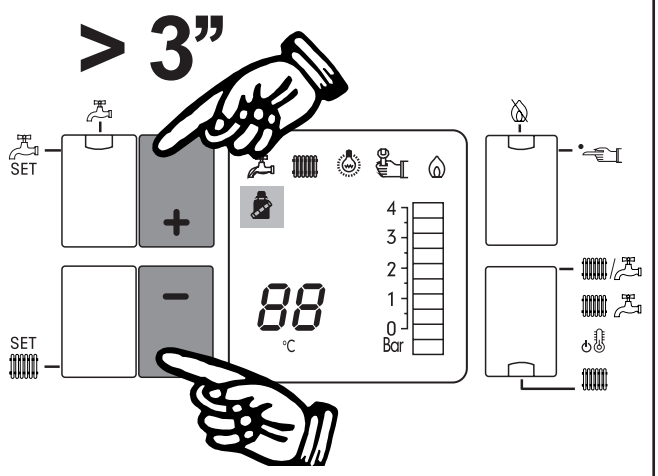
does the installation meet the specific standards and regulations in force, both relating to the gas part as well as the electrical part?	☐
do the combustion air intake and flue gas exhaust take place properly according to what is defined by the specific rules and regulations in force?	☐
is the fuel supply system sized according to the capacity required by the boiler? Is it equipped with all safety and control devices required by the standards in force?	☐
is the power supply of the boiler 230V - 50Hz?	☐
has the system been filled with water (approximately 0.8/1 bar pressure on the pressure gauge with the pump stopped)?	☐
Has the condensation drain trap been filled with water as indicated in chapter 3.7?	☐
are any system shut-off gate valves open?	☐
does the gas to be used correspond to the boiler calibration gas?: otherwise, perform the boiler conversion in order to use the gas available (see section: 4.3”); this operation must be carried out by technical staff qualified in compliance with the standards in force;	☐
is the gas supply valve open?	☐
has the system been checked for gas leaks?	☐
is the outside main switch ON?	☐
is the system safety valve efficient and is it connected to the drains? is the condensation drain trap connected to the drains?	☐
has the system been checked for water leaks?	☐
are the ventilation conditions and minimum distances to perform any maintenance ensured?	☐
have the GAS, HEATING and DOMESTIC HOT WATER pipes been cleaned thoroughly with products suitable for each circuit?	☐
has a surveillance and protection system against gas leaks been installed? (Optional)	☐
are the system pipes NOT used as the electrical system earthing?	☐
has the system been sized properly bearing in mind the radiator pressure drops? thermostatic valves, radiator stop valves	☐
has the operator been trained and has the documentation been supplied?	☐
Please tick the operations performed	

3.11 -MEASUREMENT OF COMBUSTION EFFICIENCY DURING INSTALLATION

3.11.1- ACTIVATION OF THE CALIBRATION FUNCTION

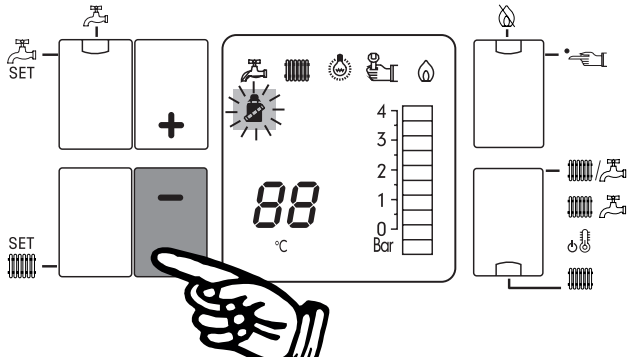
ATTENTION!
Function reserved for Authorised Assistance Centres only.

1 ACTIVATION / MAXIMUM OUTPUT



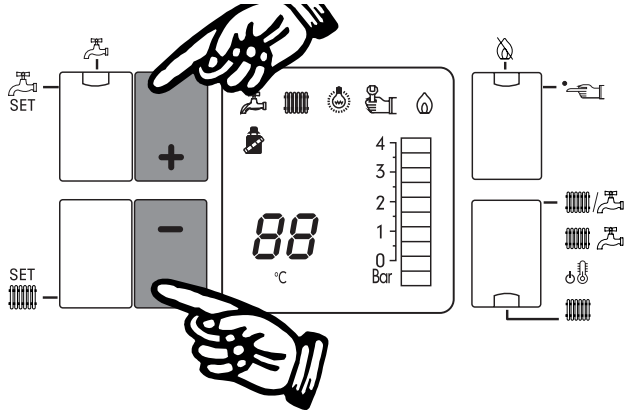
Press the key + (**PLUS**) and - **(MINUS)** for at least 3 seconds: boiler at max power, symbol light .

3 MINIMUM OUTPUT



Press key - **(MINUS)**
boiler at mimum power, symbol flashing.

4 DISABLING



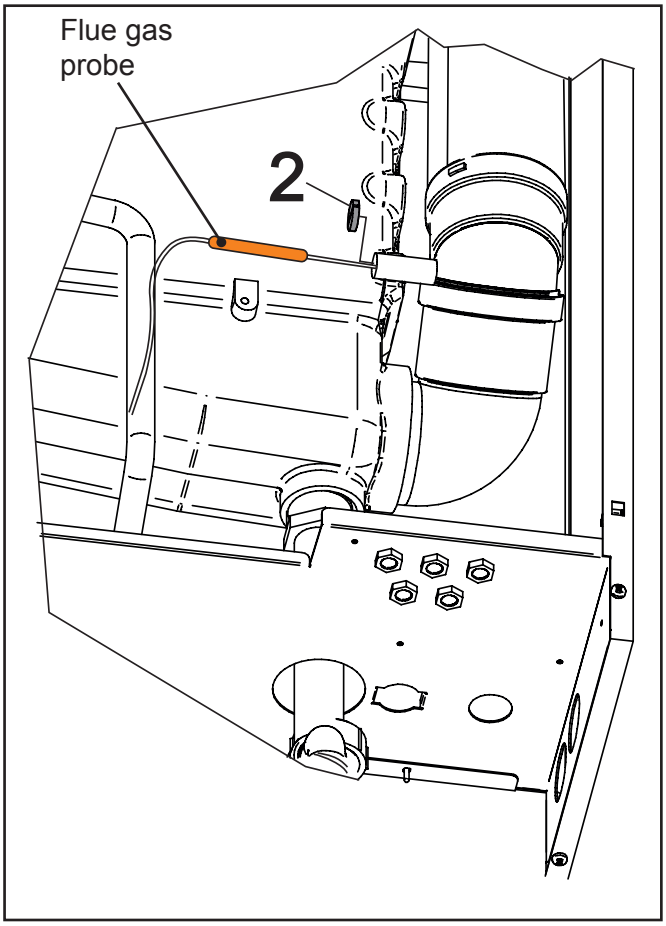
After calibration, press the + (PLUS) and - (MINUS) at the same time, the symbol off.

3.11.2 - POSITIONING THE PROBES

To determine the combustion efficiency
one must make the following measurements:

- measurement of the combustion air temperature
- measurement of the flue gas temperature and content of CO_2 taken in the relevant hole **2**.

Take the measurements with the generator in steady state conditions (see par. 3.11.1).



3.12 - ADJUSTING THE BURNER

All boilers leave the factory already calibrated and tested, however in the event the gas valve recalibration are required:

The following instructions are intended exclusively for **authorised service personnel**.

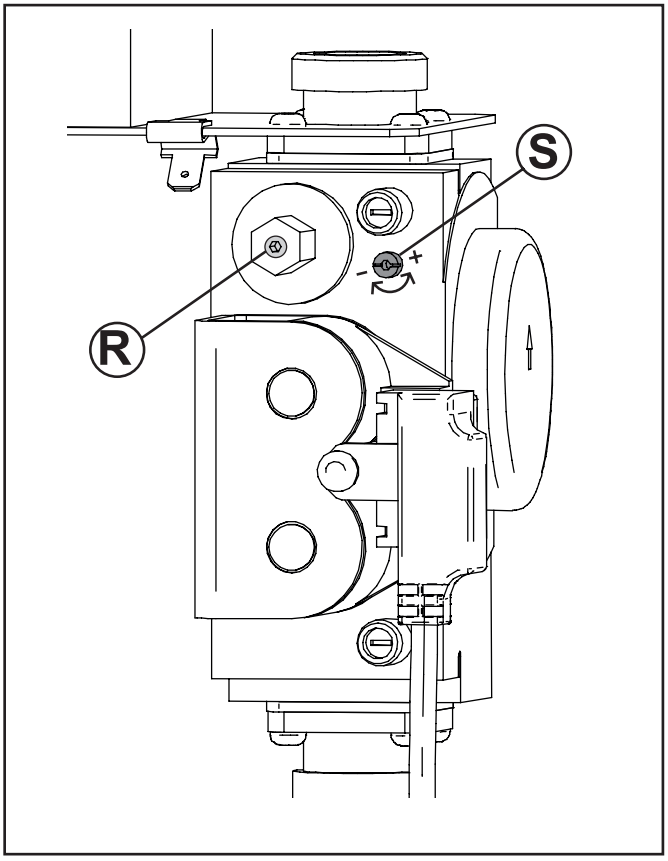
- Remove the cap and insert the CO2 analysis probe in the flue gas sample point of the intake/exhaust terminal, see chap. 3.11.2.

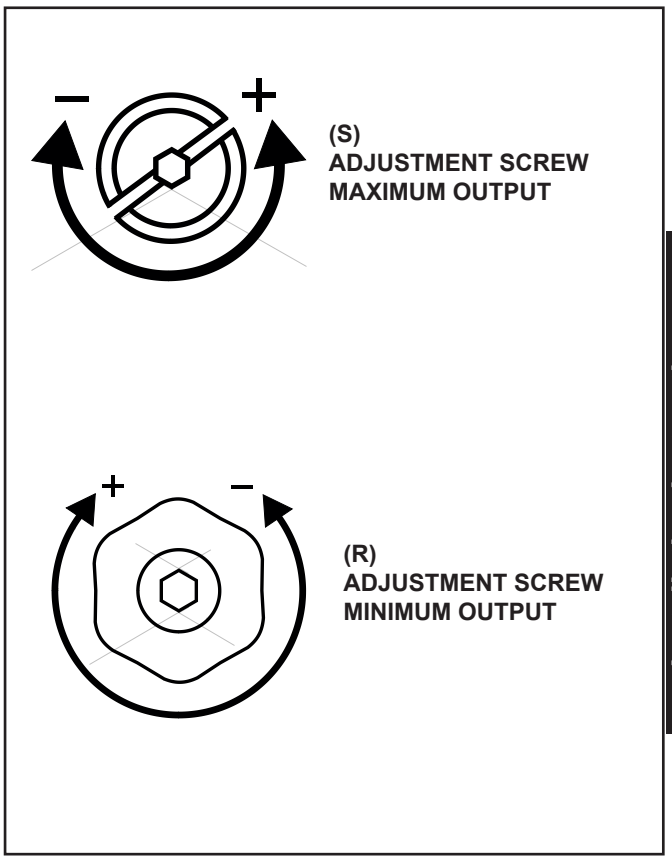
1) Maximum output adjustment

- Operate the boiler in “calibration” mode at MAXIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO_2 “MAXIMUM” value corresponds to that indicated in the table “NOZZLES - PRESSURE”.
- if it does not correspond, correct it by turning the screw **“S”** CLOCKWISE to decrease it, ANTICLOCKWISE to increase it.

2) Minimum output adjustment

- Operate the boiler in “calibration” mode at MINIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO_2 “MINIMUM” value corresponds to that indicated in the table “NOZZLES - PRESSURE”.
- Correct it if needed by turning (with a screwdriver) the screw **“R”;** CLOCKWISE to increase it, ANTICLOCKWISE to decrease it



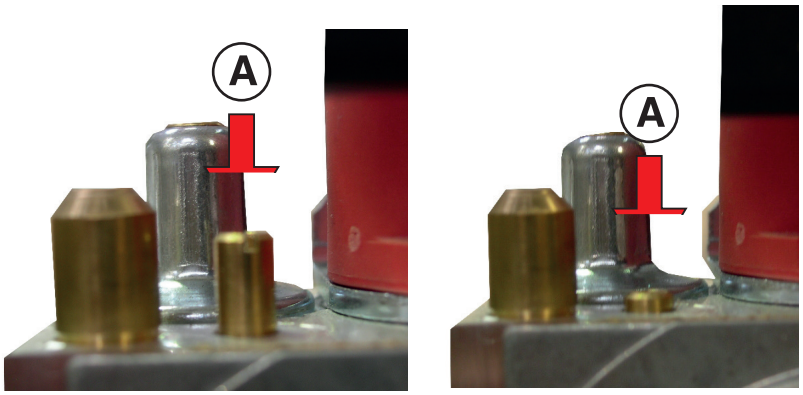


3) Conclusion of the basic calibrations

- once the CO_2 values at minimum and maximum output have been checked and any adjustments have been made (sections 1-2):
- disable the timed “calibration” function by switching off the main switch.
- close the flue gas inspection sample points of the intake and exhaust terminal
- **check that there are no gas leaks.**

For proper operation, the CO_2 values must be calibrated with particular attention, observing the values indicated in the table.

In case of gas valve replacement or difficult ignition:
Tighten the maximum adjustment screw “A” in a clockwise direction until you arrive to the abutting end, than slacken for 7 turns.
Verify the boiler ignition; if the boiler goes into lockout slacken the screw “A” again of one turn, than retry the ignition. If the boiler goes into lockout again, carry out the above indicated operations until the boiler is lighted.
At this point carry out the burner adjustment as previously indicated.



If the CO2 percentage is too low, check if the air and smoke ducts are not obstructed. If they are not obstructed, check if the burner and/or the exchanger (aluminium sections) are well cleaned.

NOZZLES - PRESSURE - FLOW RATES TABLE

Check the levels of CO2 often, especially with low flow rates. They refer to the boiler with a closed combustion chamber.

BWA R 50										
Type of Gas	Supply Press.	Ø Nozzles	Collector diaphragm	Fan speed				CO_2 levels		Start-up power.
	[mbar]	(mm)	[Ø/n. holes]	min		max		[%]		[%]
				FL	[rpm]	**FH**	[rpm]	min	max	**IG**
Nat gas (G20)	20	5,6	-	26	1550	95	5700	9,5	9,5	40
Nat gas (G25)	25	7,0	-	26	1550	95	5700	9,5	9,5	50
Propane (G31)	37	5,6	-	24	1460	92	5500	11,0	11,0	45

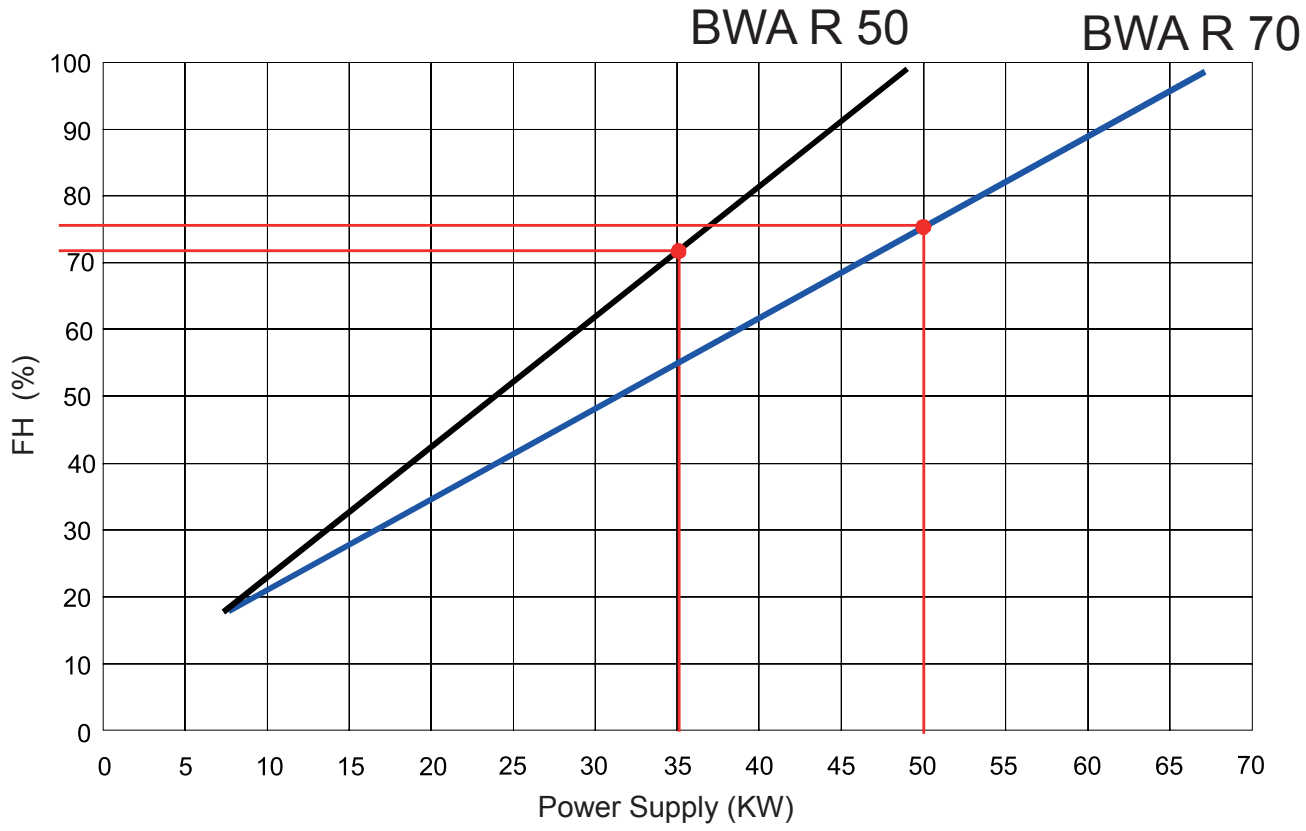
BWA R 70										
Type of Gas	Supply Press.	Ø Nozzles	Collector diaphragm	Fan speed				CO_2 levels		Start-up power.
	[mbar]	(mm)	[Ø/n. holes]	min		max		[%]		[%]
				FL	[rpm]	**FH**	[rpm]	min	max	**IG**
Nat gas (G20)	20	9	-	20	1440	95	6850	9,5	9,5	50
Nat gas (G25)	25	9	-	20	1440	95	6850	9,5	9,5	50
Propane (G31)	37	9	-	20	1440	90	6500	11,0	11,0	60

3.12.1 - ADAPTATION OF THE POWER TO THE HEATING SYSTEM

ATTENTION!
Function reserved for Authorised Assistance Centres only.
The user is NOT authorised to activate the function described below.

It is possible to adjust the maximum thermal capacity in heating mode, by decreasing the burner pressure value.

Act on parameter **HP** (par. 4.2 SE parameters list) to achieve the value corresponding to the desired output.



E.g. **BWA R 50**
to decrease the output of the boiler to 35 kW, edit parameter HP (about 72).

Es: **BWA R 70 c**
to decrease the output of the boiler to 50 kW, edit parameter HP (about 76).

4 INSPECTIONS AND MAINTENANCE

Inspections and maintenance performed professionally and according to a regular schedule, as well as the use of original spare parts, are of the utmost importance for fault-free operation of the boiler and to guarantee its long life.
Yearly maintenance of the appliance is mandatory in compliance with Laws in force.

Failure to perform Inspections and Maintenance can entail material and personal damage.

4.1 - INSPECTION AND MAINTENANCE INSTRUCTIONS

To assure long-term functioning of your appliance and to avoid altering its approved status, only original Schuster spare parts must be used.

If a component needs to be replaced:
- Disconnect the appliance from the electrical mains and make sure that it cannot be reconnected accidentally.
- Close the gas shut-off valve upstream the boiler.
- If needed, and depending on the intervention to be carried out, close any shut-off valves on the flow and return line of the heating system, as well as the cold water inlet valve.

Once all maintenance operations are complete resume boiler operation.
- Open the heating flow and return pipes, as well as the cold water inlet valve (if closed previously).
- Vent and, if necessary, restore the heating pressure until reaching a pressure of 0.8/1.0 bar.
- Open the gas shut-off valve.
- Switch the boiler on
- Make sure the appliance is gas tight and watertight.

TABLE OF RESISTANCE VALUES, ACCORDING TO THE TEMPERATURE, TO THE HEATING PROBE 11 (SR) AND TO THE DOMESTIC HOT WATER PROBE 1 (SS) AND ANY HEATING RETURN PROBE 22 (SRR) see par. 4.5.

T°C	0	1	2	3	4	5	6	7	8	9
0	32755	31137	29607	28161	26795	25502	24278	23121	22025	20987
10	20003	19072	18189	17351	16557	15803	15088	14410	13765	13153
20	12571	12019	11493	10994	10519	10067	9636	9227	8837	8466
30	8112	7775	7454	7147	6855	6577	6311	6057	5815	5584
40	5363	5152	4951	4758	4574	4398	4230	4069	3915	3768
50	3627	3491	3362	3238	3119	3006	2897	2792	2692	2596
60	2504	2415	2330	2249	2171	2096	2023	1954	1888	1824
70	1762	1703	1646	1592	1539	1488	1440	1393	1348	1304
80	1263	1222	1183	1146	1110	1075	1042	1010	979	949
90	920	892	865	839	814	790	766	744	722	701

Relation between the temperature (°C) and the nom. resistance (Ohm) of the heating probe SR and of the domestic hot water probe SS
Example: At 25°C, the nominal resistance is 10067 Ohm At 90°C,the nominal resistance is 920 Ohm

ROUTINE YEARLY VERIFICATION OPERATIONS		
COMPONENT:	**VERIFY:**	**CONTROL/INTERVENTION METHOD:**
VG (Gas valve) **(3)**	Does the valve modulate properly?	The verification is performed on the "Calibration" requiring 100%, in 50%, the minimum percentage of modulation. Make sure that the flame modulate.
SR (heating sensor)**(11)** SS (domestic hot water sensor) **(1)**	Do the sensors maintain the original characteristics?	12571 ohm at 20° C / 1762 ohm at 70° C. Measurement to be taken with the wires disconnected (see table Res/Temp).
E ACC (ignition electrode) **(28)** E RIV (detection electrode) **(27)**	Does the discharge of sparks before putting the boiler in safe conditions last less than 3 sec.? Flame present but not detected	Detach the electrode ionisation wire and check the securing time. Check connection cable (oxidation socket) or condizoni / detection electrode placement.
TL (anti-overheating limit thermostat) **(10)**	Does the TL put the boiler in safety conditions when overheating?	Heat the TL until it intervenes at 102°C and check that it intervenes at 102°.
DK (safety pressure switch against water deficiency) **(13)**	Does the pressure switch block the boiler if the water pressure is below 0.4 bar?	Without request: close the shut-off valves of the heating circuit, open the drain valve to make the water pressure decrease. Before pressurising again, check the pressure of the expansion vessel.
Condensation drain trap **(27)**	Has the trap got deposits on the bottom?	Clean the trap with water.
Heat exchanger body **(9)**	1) Measure the Thermal Capacity using a meter and compare the value with that contained in table 3.12. The data measured indicates if the exchanger needs cleaning. 2) Check that the space between the rungs of the exchanger are not clogged	It is recommended to use the products purposely created by Schuster (see system protection ACCESSORIES sect. in the domestic price list), being careful to wash the area with most rungs first (lowest part visible from above) and then the upper part if necessary.
Burner **(5)**	Check the state of cleanliness of the burner mesh	Remove any deposits using compressed air, blowing from the mesh side.
(Num) = see key Par. 2.2		

4.3 - ADAPTATION TO THE USE OF OTHER GAS

The boilers are produced for the type of gas specifically requested upon ordering.

DANGER!
The conversion for the operation of the boiler with a type of gas other than that specifically required in the order, must be performed by professionally qualified personnel, in compliance with the standards and regulations in force.
The manufacturer cannot be held liable for any damage resulting from a conversion operation that is incorrect or not performed in compliance with the laws in force and/or with the instructions given.

ATTENTION!
After performing the conversion for the operation of the boiler with a type of gas (e.g. propane gas) other than that specifically requested when ordering, the appliance will only work with this new type of gas.

ATTENTION!
Indications for propane gas-fired appliances
Make sure that the gas tank has been deaerated before installing the appliance.
For state-of-the-art deaeration of the tank, contact the LPG supplier or a person qualified in compliance with law.
If the tank has not been professionally deaerated, ignition problems could arise.
In that case, contact the supplier of the LPG tank.

Gas Conversion

For the conversion of the boiler from a gas to an other one it is necessary to proceed as follows:

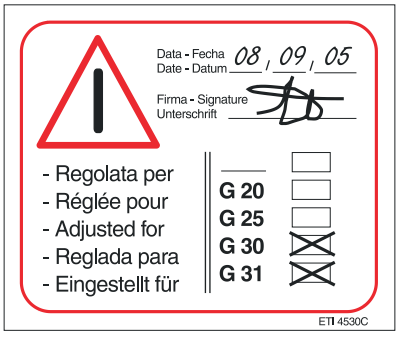
1. Remove the front casing
2. Set the maximum pressure adjusting screw (S.) at approximately half range and screw of a turn the minimum pressure adjusting screw (R), as shown on page 3.12.
3. Try to ignite the boiler: if it fails proceed unscrewing of a turn the maximum pressure adjusting screw (S) and retry the ignition. Repeat more times the operation, till the igni tion of the boiler.
4. Adjust the CO2 value according to the type of gas as described in the paragraph “3.12 - Adjustment of the burner.

In order to change the gas one must change the Factory parameter FH and FL.
(*) for values, see TABLE NOZZLES - PRESSURE-FLOW

METHANE / PROPANE	Simb.	Desciption	Value
	FH	Fan Speed: maximum	(*)
	FL	Ventilatore: minimum	(*)

- **when the conversion is complete, fill in the information required on the label supplied in the documentation envelope and apply it next to the technical data label of the boiler.**

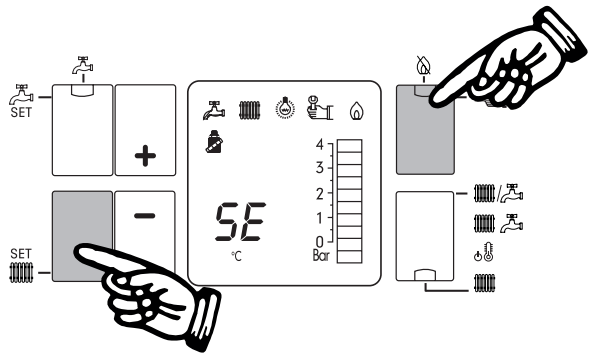
EXAMPLE OF COMPILATION



4.4 - PROGRAMMING THE OPERATING PARAMETERS

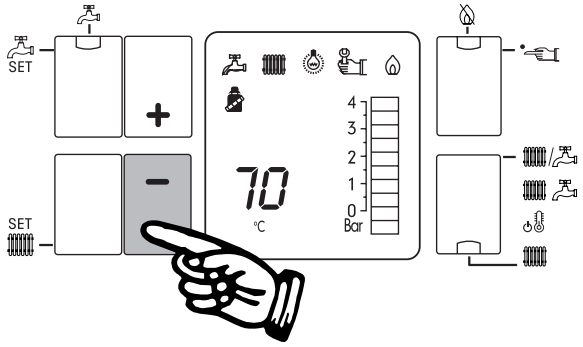
ATTENTION!
Function reserved for Authorised Assistance Centres only.
The user is NOT authorised to activate the function described below.

SE **SERVICE PARAMETER**



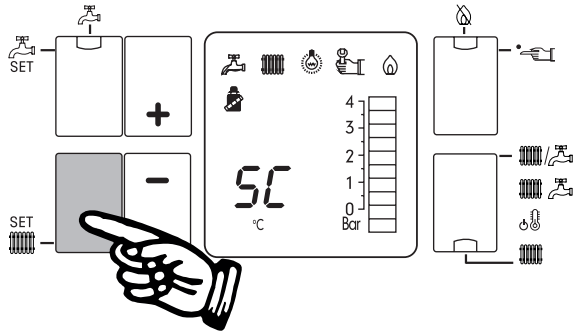
Press the **BUTTON** simultaneously to enter in the service mode SE and change value.

B Operazion CHANGE PARAMETER



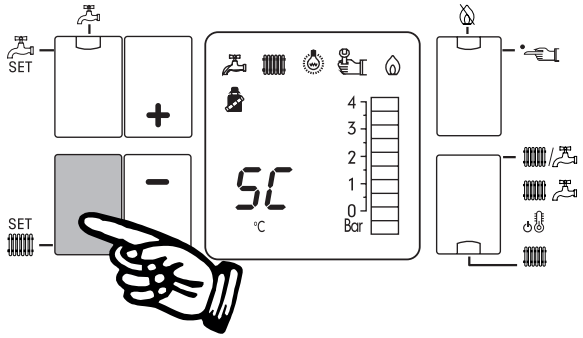
Press key **+ (PLUS)** / **- (MINUS)** to modify

eBUS IDENTIFICATION CODE



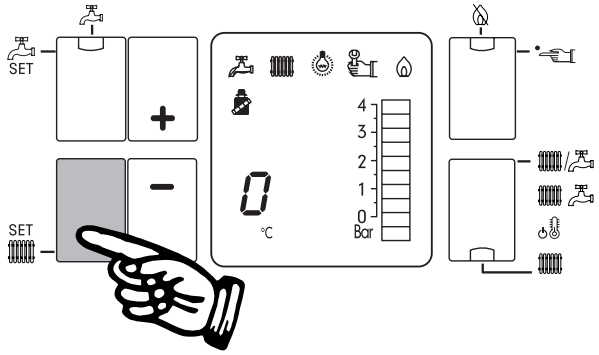
eBUS IDENTIFICATION CODE		
VALUE		
FROM	**TO**	**DEFAULT**
0	**10**	**0**

C Operazion SET MODIFY PARAMETER



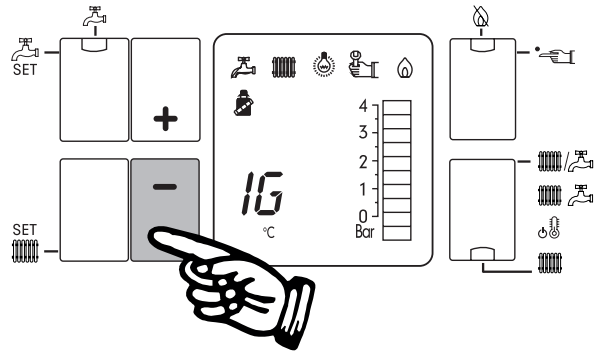
Press the **YELLOW** key

A Operation READING PARAMETER



Press the **YELLOW** key to view default setting

BURNER MODULATION LEVEL IN IGNITION

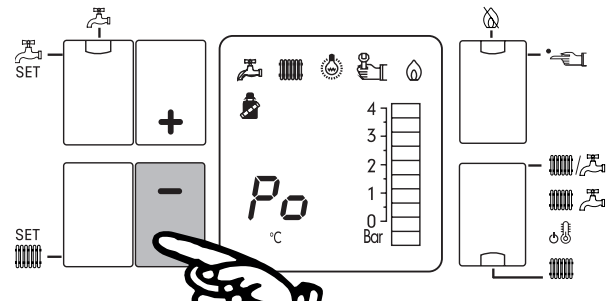


Continue with the modification of parameters by pressing the (MINUS)

Repeat the operations A-B-C to change value

VALUE				
FROM	TO		DEFAULT	
			BWA R 50	BWA R 70
0	99	Methane	60	55
0	99	Propane	60	45

PUMP OVERRUN



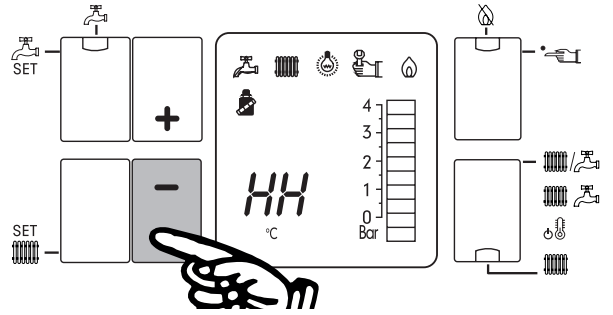
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
1 min	**10 min**	**5** min

SETTING OF THE MAXIMUM HEATING TEMPERATURE



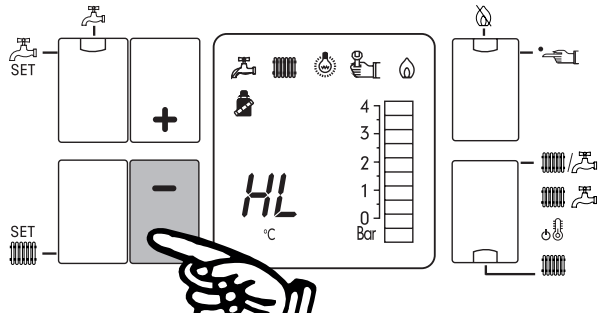
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
65 °C	**85 °C**	**80 °C**

MODULATING PUMP MINIMUM MODULATION LEVEL



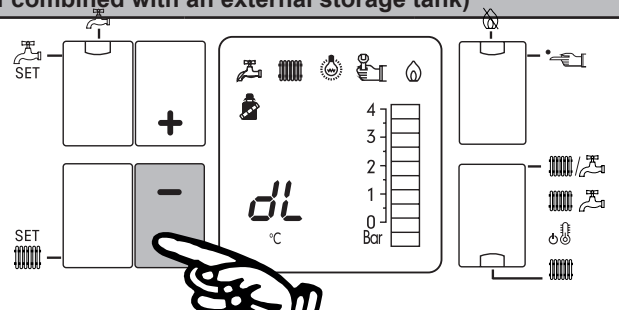
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT	
		BWA 50	BWA 70
0 %	99 %	19	25

SETTING OF THE MINIMUM DHW TEMPERATURE (only if combined with an external storage tank)



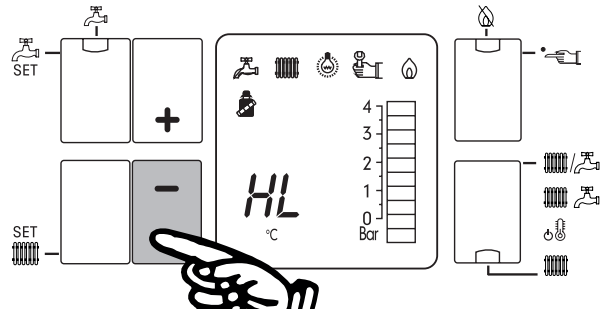
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
35 °C	**45 °C**	**40 °C**

SETTING OF THE MINIMUM HEATING TEMPERATURE



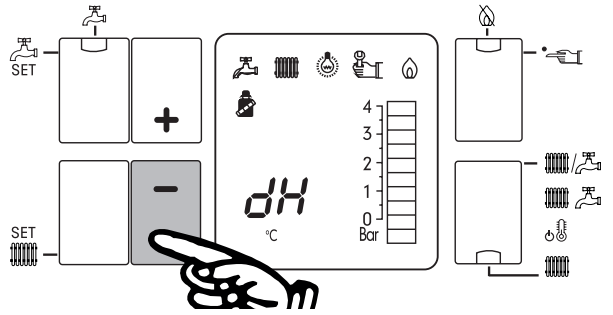
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
20 °C	**60 °C**	**35 °C**

SETTING OF THE MAXIMUM DHW TEMPERATURE (only if combined with an external storage tank)



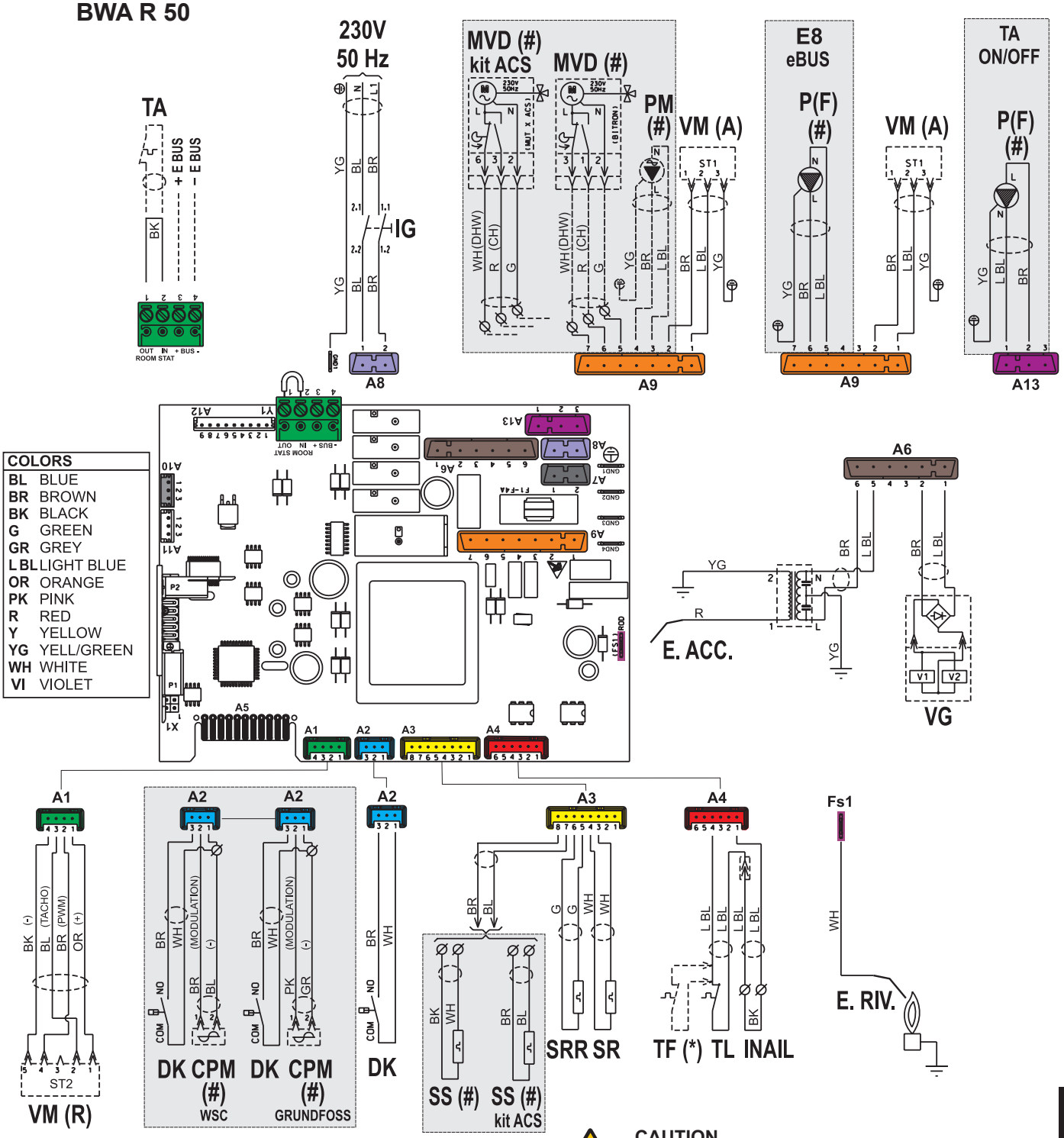
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
50 °C	**65 °C**	**60 °C**

4.5 - WIRING DIAGRAM
BWA R 50

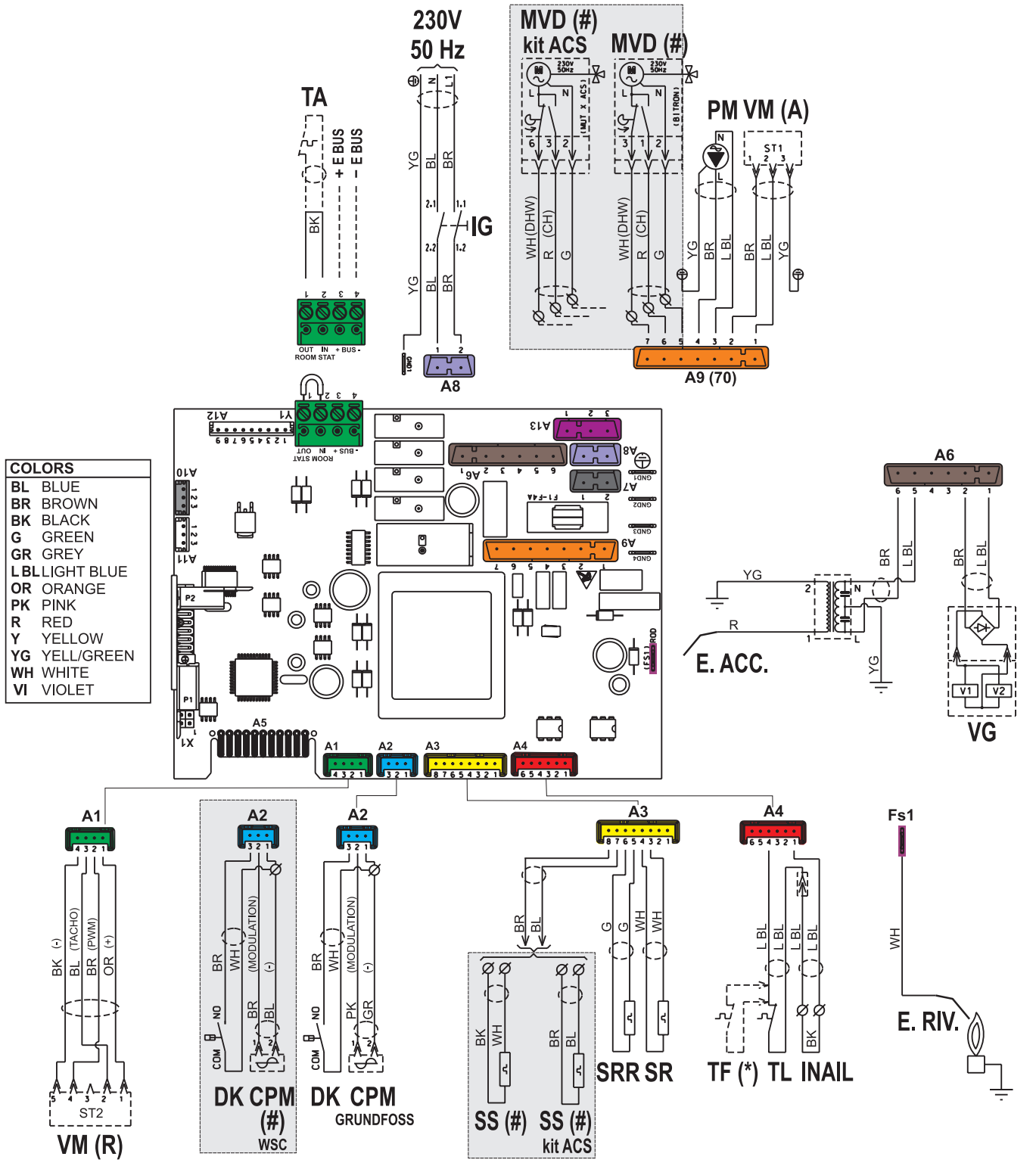


CAUTION
THE KIT ACS / BOILER MUST BE CONNECTED WITH A MODULATION PUMP

KEY	
(#)	Optional KIT
(*)	Predisposition
A1.....A13	Services connectors
CMP	Modulating pump control
DK	Water deficiency safety pressure switch
e-BUS	Connection terminals HSCP / E8
E. ACC	Ignition Electrode
E. RIV	Detection Elecrode
MVD	Diverter valve motor (external tank)
MDV kit ACS	Diverter valve motor DHW kit

P(F)	Pump (BWA 50 - NOT AVAIBLE)
PM	Modulating Pump
SR	Flow heating sensor
SRR	Return heating sensor
SS	Domestic hot water probe
TL	Limit thermostat
TF	Smoke Thermostat (Predisposition)
VG	Gas Valve
VM	Modulating fan
TA	On/off TA connection terminals

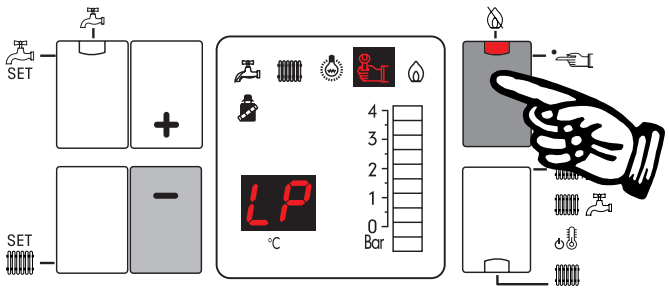
BWA R 70



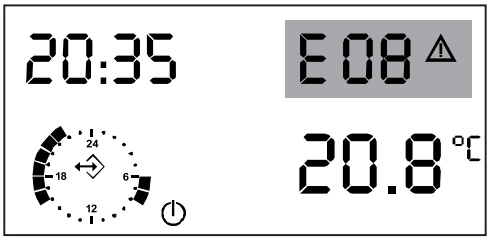
KEY	
(#)	Optional KIT
(*)	Predisposition
A1.....A13	Services connectors
CMP	Modulating pump control
DK	Water deficiency safety pressure switch
e-BUS	Connection terminals HSCP / E8
E. ACC	Ignition Electrode
E. RIV	Detection Elecrode
MVD	Diverter valve motor (external tank)

MDV kit ACS	Diverter valve motor DHW kit
PM	Modulating Pump
SR	Flow heating sensor
SRR	Return heating sensor
SS	Domestic hot water probe
TL	Limit thermostat
TF	Smoke Thermostat (Predisposition)
VG	Gas Valve
VM	Modulating fan
TA	On/off TA connection terminals

4.6 - ERROR CODES



Control panel
When indicator fault light,
press the BUTTON to view the error code on the display.

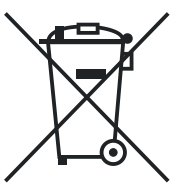


DIsplay Controller E8 (Optional)
For error codes relating to the heating system, refer to the section “Faults Finding” in Instructions for use supplied with the contoller E8.

(Num) = see legenda Par. 2.2

CODE DISPLAY	E8 CODE	PRIORITY	DESCRIPTION	SOLUTION
db	E13		DHW sensor failure (only if the boiler is combined with an external storage tank)	Check the sensor’s efficiency and/or its wiring
LL	E32		Mains voltage < 190 Vac	Check that the mains voltage is <190 Vac, if the mains voltage is correct replace the control board.
dt	E15		Difference between the heating temperature sensor (SR) and the heating return sensor (SRR) > 35°C.	Check the installation
rb	E14		HEATING RETURN SENSOR (22) Failure of the heating return sensor (SRR)	Check the efficiency of the sensor and/or wiring **(22)**
LC	E40		INSUFFICIENT WATER CIRCULATION (Δt > 35° C)	Check the operation the pump **(12)** and its speed - remove any obstructions in the heating system - clean heat exchanger health encrusted.
Ht	E06		HIGH TEMPERATURE Over high temperature detected by the heating sensor (SR) (>95°C)	Check the operation the pump and possibly clean the heat exchanger. (24)
LF	E05		Loss of flame signal during boiler operation	Press the reset key on the panel
- -	E04		No flame detected during the ignition phase.	Press the reset key on the control panel
FL	E24		FAN SPEED OUT OF CONTROL Alteration of the fan speed. Fan speed is not achieved.	Check the operation of the fan (18) and connections
FH	E26		SPEED OUT OF CONTROL Alteration of the fan speed Fan speed hightest than that required	Check the operation of the fan (18) and connections
LP	E08		LACK OF WATER	Fill-up the water circuit

Fr	**E16**		FREEZING EXCHANGER (24) Is detected, the freezing of the heat exchanger. If the heating sensor detects a temperature below 2 ° C, the burner ignition is inhibited until the sensor detects a temperature higher than 5 ° C.	Remove power supply, close the gas valve, defrost the heat exchanger carefully.
HL	**E01**		INTERVENTION OF THE HIGH LIMIT thermostat (10)	Press the reset button on the panel and / or verify that the thermostat or its connections are not interrupted
Hb	**E12**		HEATING SENSOR (11) Damage to the sensor heating	Check the efficiency of the sensor (see table Res / Temp) (Pr.4) or its connections.
FP	**E30**		PARAMETERS OF FACTORY Alteration of the factory settings due to any electromagnetic interference.	Press the reset button if the fault does not clear, replace the board
Fd	**E11**		FLAME PARASITE Flame detected in ignition	Check the wiring electrode Acc / Ril. and remove any oxidation, press the reset button, if the fault does not clear, replace the electrode (4).
GL	**E20**		FLAME PARASITE Flame detected after shutdown	Check the wiring and leakage of the gas valve (3) eventually replace Gas Valve
IF	**E10**		INTERNAL FAULT	Replace the control board.
Sr			REQUEST FOR MAINTENANCE After 10,000 switching On or 2,000 hours of operation of the burner, boiler needs servicing	The blink code (Sr) does not preventthe normal operation of the boiler. Service the appliance and subsequently reset the counter by selecting “Cr” from the parameters menù and introducing the relevant resetting code.



Provisions for proper disposal of the product in accordance with Directive 2002/96/EC

At the end of its life cycle the product must not be disposed of as urban waste. It can be taken to a special recycling centre managed by the local authorities, or to a dealer who offers this service.
Separate disposal of a domestic appliance avoids possible negative consequences for the environment and human health deriving from inappropriate waste handling and allows the recovery of the materials of which it is made, in order to obtain significant energy and resource savings.

schuster®

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