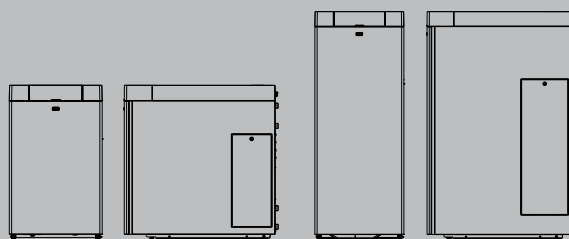




INSIEME EVO COND

Steel floor-standing oil condensing units

In conformity with Directive 2009/125/EC
Stainless steel units with oil burner for the heating and the domestic
hot water production
Low NOx version - class 3 according to EN 267



CENTRALIZED HEATING

Floor-standing oil condensing units

INSIEME EVO COND

PRODUCT OVERVIEW

Oil condensing thermal group equipped with single-stage burner for heat outputs up to 45 kW, dual-stage for 55, 70 kW models with low polluting emissions. The boiler body has an horizontal layout in stainless steel, coated with insulating and sound absorbing material. **Insieme EVO COND** is available with open chamber as standard, transformable into sealed chamber with specific accessories kit. Only heating or combined versions for the production of domestic hot water with storage tank are available. All the models are equipped with a new control panel with a backlighted graphical display with 5 buttons and LED for the operating status visualization.

The control system allows climatic regulation, the management of distribution up to 3 zones by means of specific accessory kits and the management of the domestic hot water.

The electronics also offers the possibility of remote management via 0-10V input or with the Modbus protocol.

- Low sound emissions
- Flexible and cheapness installation. All the accessories for the operation and the safety are included in the furniture
- Simple maintainability: combustion chamber, flue manifold, control panel and hydraulic connections are easily accessible
- Low pollutant emissions (class 3 according to EN 267 with Nox emissions $\leq 100 \text{ mg/kWh}$)
- Maximum working pressure: 3 bar
- Complete with flexible oil hoses

Insieme EVO COND 20÷35 V LN: thermal groups for the room heating with integrated 3 way valve for the connection with an external tank (accessory).

Insieme EVO COND 25-35 B/130 LN: thermal groups for room heating and domestic hot water production with integrated 130 liters tank.

TECHNICAL DATA

MODEL	U.M.	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	45 LN	55 LN	70 LN	25 B/130	35 B/130
Appliance type		Oil condensing unit with forced draught burner with low emissions							
Type		Horizontal							
Combustion chamber		Horizontal							
Flue discharges approvals		B23-B23P-C13(*)-C33(*)-C63(*)							
POWERS AND EFFICIENCIES									
Maximum rated heat input at furnace LHV	kW	20	25	34,9	45	55	70	25	34,9
Maximum rated heat input at furnace HHV	kW	21,2	26,5	37,1	47,7	58,3	74,2	26,5	37,1
Maximum useful heat output 80-60°C	kW	19,5	24,2	33,8	43,7	53,3	67,7	24,2	33,8
Maximum useful heat output 60-40°C	kW	20,2	25,5	35,3	45,5	55,4	70,4	25,5	35,3
Maximum useful heat output 50-30°C	kW	21	26,2	36,4	46,7	57,2	72,8	26,2	36,4
Minimum rated heat input at furnace (LHV)	kW	20	25	34,9	45	40	55	25	34,9
Minimum rated heat input at furnace (HHV)	kW	21,2	26,5	37,1	47,7	42,4	58,3	26,5	37,1
Minimum heat output 80/60°C	kW	19,5	24,2	33,8	43,7	38,9	53,4	24,2	33,8
Minimum heat output 50/30°C	kW	21	26,2	36,4	46,7	41,8	57,4	26,2	36,4
Efficiency with nominal heat output 80-60°C (LHV)	%	97,3	96,9	96,5	97,2	96,9	96,8	96,9	96,5
Efficiency with minimum heat output 80-60°C (LHV)	%	97,3	97,3	96,5	97,2	97,25	97,09	96,9	96,5
Efficiency with nominal heat output 50/30°C (LHV)	%	105,0	104,8	104,3	103,8	104,0	104,0	104,8	104,3
Efficiency with minimum heat output 50-30°C (LHV)	%	105,0	104,8	104,3	103,8	104,5	104,4	104,8	104,3
Efficiency at 30% 50/30°C HHV (LHV)	%	105,9	105,6	104,8	104,8	104,9	104,8	105,6	104,8
Chimney losses with burner off	%	0,1	0,15	0,15	0,1	0,1	0,1	0,15	0,15
Chimney losses with burner on P.max 80-60°C	%	2,4	2,6	3	2,4	2,5	2,6	2,6	3
Chimney losses with burner on 30% P.max 50-30°C	%	0,2	0,3	0,3	0,2	0,2	0,2	0,3	0,3
Chimney losses with burner on P.min 80-60°C	%	2,40	2,40	3,20	2,50	2,45	2,61	2,80	3,20
Blanket losses with burner on with 70°C average temperature	%	0,30	0,50	0,50	0,40	0,60	0,60	0,50	0,50
Blanket losses with burner off with 70°C average temperature	%	0,2	0,35	0,35	0,4	0,5	0,6	0,35	0,35
Flue temperature at max heat output 80-60°C	°C	68,8	72,1	73,8	67	67	69,1	72,1	73,8
Flue temperature at max and min heat output 50-30°C	°C	43-43	44-44	44-44	45-45	44-43	44-43	44-44	44-44
Air index λ at P.max	no.	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
Air index λ at P.min	no.	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
Flue mass flow rate at P.max	g/s	9	11	15	20	24	31	11	15
Flue residual head at P.min	Pa	180	200	200	200	185	205	200	200
Flue residual head at P.max	Pa	180	200	200	200	180	200	200	200

(*) Configurations possible only with the installation of dedicated accessories (available separately).

MODEL	U.M.	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	45 LN	55 LN	70 LN	25 B/130	35 B/130
ELECTRICAL DATA									
Power supply	V-Hz	230/1 – 50							
Electrical protection level	IP	X0D							
Electrical boiler consumption at full load	W	190	190	190	300	300	300	190	190
Electrical boiler consumption at partial load	W	57	57	57	90	90	90	57	57
Electric power pumps consumption at full load	W	52	52	52	-	-	-	52	52
Electric power pumps consumption at partial load	W	10	10	10	-	-	-	10	10
HEATING OPERATION									
Temperature selection range	°C	20-82							
Safety thermostat intervention temperature	°C	110							
Maximum working temperature	°C	82							
Maximum working pressure	bar	3							
Minimum working pressure	bar	0,5							
Water content	l	36,8	37,3	38,0	79,0	76,0	74,0	37,3	38,0
Water-side resistance (ΔT 20°C)	mbar	-	-	-	17	25	40	-	-
Available useful discharge head (ΔT 20°C)	mbar	650	600	400	-	-	-	600	400
Max. condensation at 100% rated heat output (40-30°C)	l/h	1,1	1,4	1,8	2,1	2,5	3,9	1,4	1,8
Noise level (sound power)	dB(A)	68	69	75	77	77	77	69	75
DHW OPERATION									
Type of storage tank		-	-	-	-	-	-	Vitrified	
Storage tank layout		-	-	-	-	-	-	Horizontal	
Heat exchanger layout		-	-	-	-	-	-	Horizontal	
Maximum power absorbed	kW	-	-	-	-	-	-	24,5	27,7
Rated heat input in DHW operation	kW	-	-	-	-	-	-	25	35
DHW temperature setting range	°C	-	-	-	-	-	-	40-70	40-70
Storage tank capacity	l	-	-	-	-	-	-	130	130
Coil water capacity	l	-	-	-	-	-	-	6	6
Heat exchange surface	m²	-	-	-	-	-	-	1,32	1,32
Production of domestic water with (ΔT 35°C) (**)	l/h	-	-	-	-	-	-	600	685
Water draw in 10' with storage tank at 48°C	l	-	-	-	-	-	-	184	192
Water draw in 10' with storage tank at 60°C	l	-	-	-	-	-	-	230	240
Specific flow rate (EN 13203)	l/min	-	-	-	-	-	-	23	24
Reset time (ΔT 35°C)	min	-	-	-	-	-	-	20	20
Maximum operating pressure of storage tank	bar	-	-	-	-	-	-	6	6
Volume of expansion vessel (DHW)	l	-	-	-	-	-	-	6	6
Precharge of expansion vessel (DHW)	bar	-	-	-	-	-	-	3,5	3,5
Insulation thickness	mm	-	-	-	-	-	-	50	50
Quantity/diameter/length of magnesium anode	mm	-	-	-	-	-	-	1/22/400	1/22/400
Flange internal diameter	mm	-	-	-	-	-	-	130	130
Length of 2-tube probe holder (Ø 8 mm)	mm	-	-	-	-	-	-	210	210
Maximum operating pressure of coil	bar	-	-	-	-	-	-	3	3
Maximum working temperature	°C	-	-	-	-	-	-	82	82
Dissipation according to EN 12897:2006 ΔT= 45°C (environment 20°C and storage at 65°C)	W	-	-	-	-	-	-	120	120
Discharges according to UNI 11300	W/K	-	-	-	-	-	-	2,7	2,7
Domestic hot water continuous efficiency (DHW 10-45°C), boiler with water at 80°C ΔT 20°C	kW	-	-	-	-	-	-	24,5	27,7
	l/h	-	-	-	-	-	-	600	685
Running time to warm up the heater at 60°C, boiler with water at 80°C ΔT 20°C	min	-	-	-	-	-	-	24	24
Thermal output coefficient NL according to DIN 4708 (**)		-	-	-	-	-	-	1,66	1,83
LIGHT OIL SUPPLY DATA									

(**) Inlet water temperature 10 ° C and average outlet water temperature 45 ° C with coil inlet temperature 80 ° C.

(***) The NL index indicates a number of apartments having 3.5 people that can be fully supplied, with a 140 l bathtub and two other drawing points.

CENTRALIZED HEATING

Floor-standing oil condensing units

MODEL	U.M.	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	45 LN	55 LN	70 LN	25 B/130	35 B/130
Maximum light oil supply	bar	15	15	15	15	25	25	15	15
Nominal light oil pressure supply 1° STAGE	bar	12	12	13	12	13	14,5	12	13
Nominal light oil pressure supply 2° STAGE	bar	-	-	-	-	23	23,7	-	-
Minimum light oil pressure supply	bar	8	8	8	8	7	7	8	8
DIMENSIONAL DATA									
Heating delivery	Inch	1" M	1" M	1" M	1"1/4 M	1"1/4 M	1"1/4 M	1" M	1" M
Heating return	Inch	1" M	1" M	1" M	1"1/4 M	1"1/4 M	1"1/4 M	1" M	1" M
Light oil inlet	inch	2x3/8" M	2x3/8" M	2x3/8" M	2x3/8" M	2x3/8" M	2x3/8" M	2x3/8" M	2x3/8" M
Condensate drain	ø mm	21	21	21	21	21	21	21	21
Boiler height	mm	1000	1000	1000	1138	1138	1138	1540	1540
Boiler width	mm	600	600	600	600	600	600	600	600
Boiler depth	mm	994	994	994	1155	1155	1155	975	975
Flue discharge diameter	mm	80	80	80	110	110	110	80	80
Empty weight	kg	125	125	132	185	191	191	197	203
CONCENTRIC DISCHARGE PIPES									
Flue discharge/air intake diameter	mm	80/125	80/125	80/125	110/160	110/160	110/160	80/125	80/125
Wall crossing hole	mm	130	130	130	165	165	165	130	130
TWIN DISCHARGE PIPES									
Flue discharge/air intake diameter	mm	80/80	80/80	80/80	110/110	110/110	110/110	80/80	80/80
Wall crossing hole	mm	85/85	85/85	85/85	115/115	115/115	115/115	85/85	85/85

LAW 10 TABLE

MODEL	U.M.	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	45 LN	55 LN	70 LN	25 B/130	35 B/130
Nominal heat output	kW	20	24	34	44	53	68	24	34
Efficiency at nominal power	%	97,3	96,9	96,5	97,2	96,9	96,8	96,9	96,5
Generator average temperature under test conditions at nominal power	°C	70	70	70	70	70	70	70	70
Useful thermal power at partial load 30%	kW	6,4	7,9	11	14,2	17,3	22	7,9	11
Efficiency at partial load 30% LHV	%	105,9	105,6	104,8	104,8	104,9	104,8	105,6	104,8
Generator average temperature under test conditions at partial load	°C	33	33	33	33	33	33	33	33
Power lost in stand-by (power lost at zero load)	W	55	121	170	220	320	475	121	170
Chimney losses with burner off	%	0,1	0,15	0,15	0,1	0,1	0,1	0,15	0,15
Chimney losses with burner on at P.max	%	2,4	2,6	3	2,4	2,5	2,6	2,6	3
Chimney losses with burner on at P.min	%	2,40	2,40	3,20	2,50	2,45	2,61	2,80	3,20
Blanket losses with burner on with 70°C average temperature	%	0,30	0,50	0,50	0,40	0,60	0,60	0,50	0,50
Blanket losses with burner off with 70°C average Temperature	%	0,2	0,35	0,35	0,4	0,5	0,6	0,35	0,35
Power absorbed by the auxiliaries at nominal load	W	190	190	190	300	300	300	190	190
Power absorbed by the auxiliaries at partial load	W	57	57	57	90	90	90	57	57
Power absorbed by auxiliaries with no load	W	18	18	18	18	18	18	18	18
Minimum generator operating temperature	°C	20	20	20	20	20	20	20	20
Minimum continuous heat input with flame on	kW	20	25	34,9	45	40	55	25	34,9
Temperature difference between fumes and return water in the boiler at maximum power	°C	8,8	12,1	13,8	7	7	9,1	12,1	13,8
Oxygen content in the flue gases at maximum power	%	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6
Temperature difference between fumes and return water in the boiler at minimum power	°C	8,8	12,1	13,8	7	3	3	12,1	13,8
Oxygen content in combustion gases at minimum power	%	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6

ERP TECHNICAL DATA

	MODEL	U.M.	INSIEME EVO COND							
			20 V LN	25 V LN	35 V LN	45 LN	55 LN	70 LN	25 B/130	35 B/130
Seasonal efficiency class in central heating mode			A	A	A	A	A	A	A	A
Useful (rated) heat output	kW		20	24	34	44	53	68	24	34
Seasonal energy efficiency in room heating mode η_s	%		93	93	93	93	93	93	93	93
USEFUL HEAT OUTPUT										
At useful heat output and at high temperature capacity P ₄ (HHV)	kW		19,5	24,2	33,8	43,7	53,3	67,7	24,2	33,8
At 30% of useful heat output and at low temperature capacity P ₁ (HHV)	kW		6,4	7,9	11	14,2	17,3	22	7,9	11
EFFICIENCY										
Efficiency at rated heat output in high temperature mode η_4 (HHV)	%		91,8	91,4	91	91,7	91,4	91,3	91,4	91
Efficiency at 30% rated heat output in low temperature mode η_1 (HHV)	%		99,9	99,6	98,9	98,9	98,9	98,9	99,6	98,9
AUXILIARY ELECTRICAL CONSUMPTION										
At full load El _{max}	W		190	190	190	300	300	300	190	190
At partial load El _{min}	W		57	57	57	90	90	90	57	57
In standby mode P _{sb}	W		18	18	18	18	18	18	18	18
OTHER PARAMETERS										
Heat losses in standby mode	W		55	121	170	220	320	475	121	170
Pilot flame energy consumption	W		-	-	-	-	-	-	-	-
Annual energy consumption Q _{HE}	GJ		62	78	109	140	170	217	78	109
Noise level, indoor (sound power)	dB(A)		68	69	75	77	77	77	69	75
Nitrogen oxide (NO _x) emissions (**)	mg/kWh		80	89	99	93	86	97	89	99
NO _x class	no.		4	4	4	4	4	4	4	4
Emission values at maximum and minimum flow rate (**)										
CO s.a. less than (max)	p.p.m.		6	8	11	12	10	8	8	11
CO ₂ (***) (Max)	%		12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5
T fumes	°C		68,8	72,1	73,8	67	67	69,1	72,1	73,8
CO s.a. less than (min)	p.p.m.		6	8	11	12	8	8	8	11
CO ₂ (***) (Min)	%		12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5
T fumes (Min)	°C		68,8	72,1	73,8	67	63	63	72,1	73,8
FOR COMBI BOILERS										
Energy efficiency in DHW mode η_{wh}	%		-	-	-	-	-	-	78	78
Daily electrical energy consumption Q _{elec}	kWh		-	-	-	-	-	-	0,101	0,103
Daily fuel consumption Q _{fuel}	kWh		-	-	-	-	-	-	24,93	26,7
Annual electrical energy consumption AEC	kWh		-	-	-	-	-	-	26,2	28,5
Annual fuel consumption AFC	GJ		-	-	-	-	-	-	33,85	35,4

(**) Weight values calculated according to EN 15502

(***) Values referring to atmospheric pressure above sea level

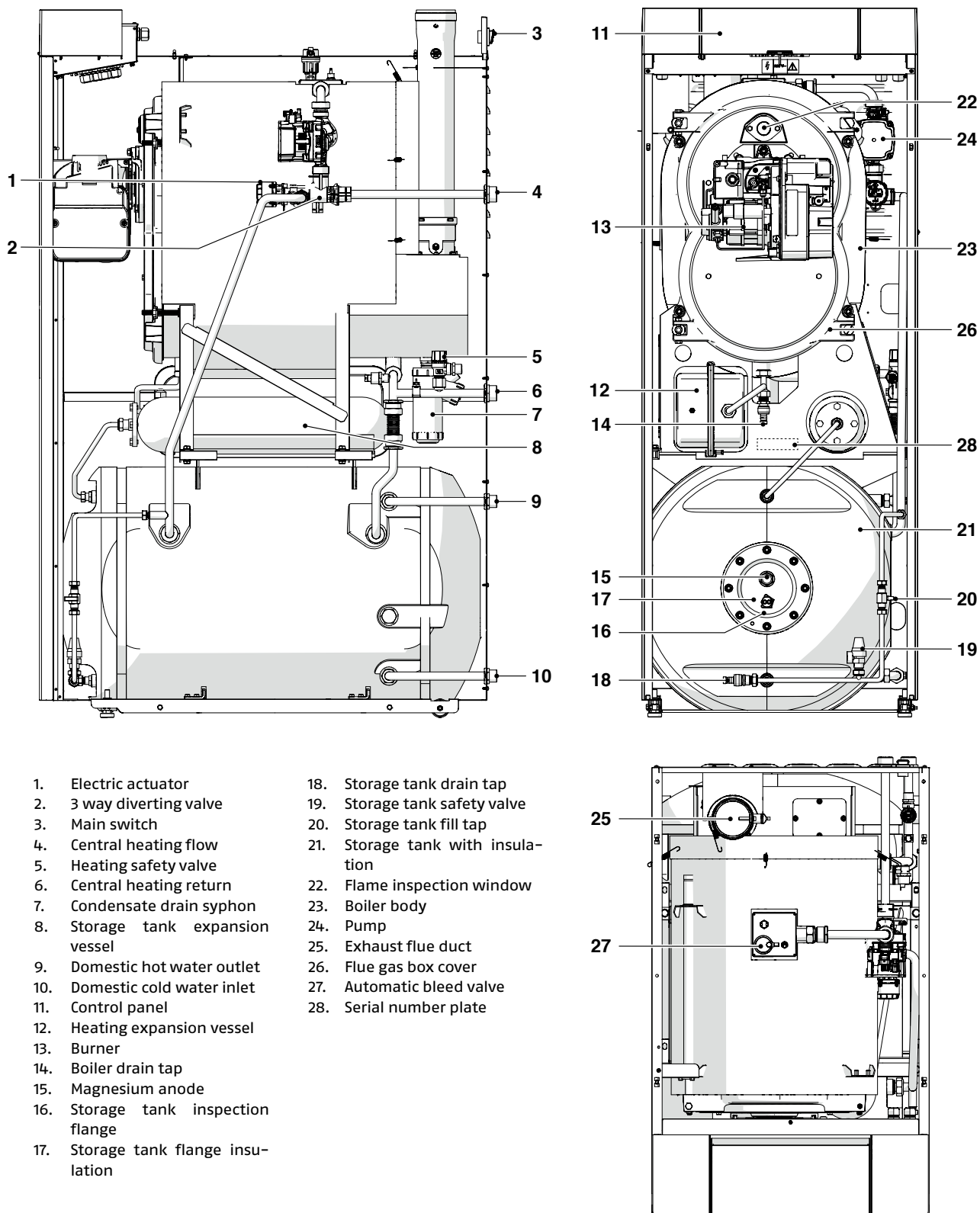
CENTRALIZED HEATING

Floor-standing oil condensing units

INSIEME EVO COND 25-35 B/130 LN LAYOUT

The INSIEME EVO COND 25-35 B / 130 LN thermal unit is supplied on a pallet, protected by a scratch-resistant sheet and triple-wave cardboard packaging. Inserted in a plastic bag positioned inside the thermal unit, the following material is supplied:

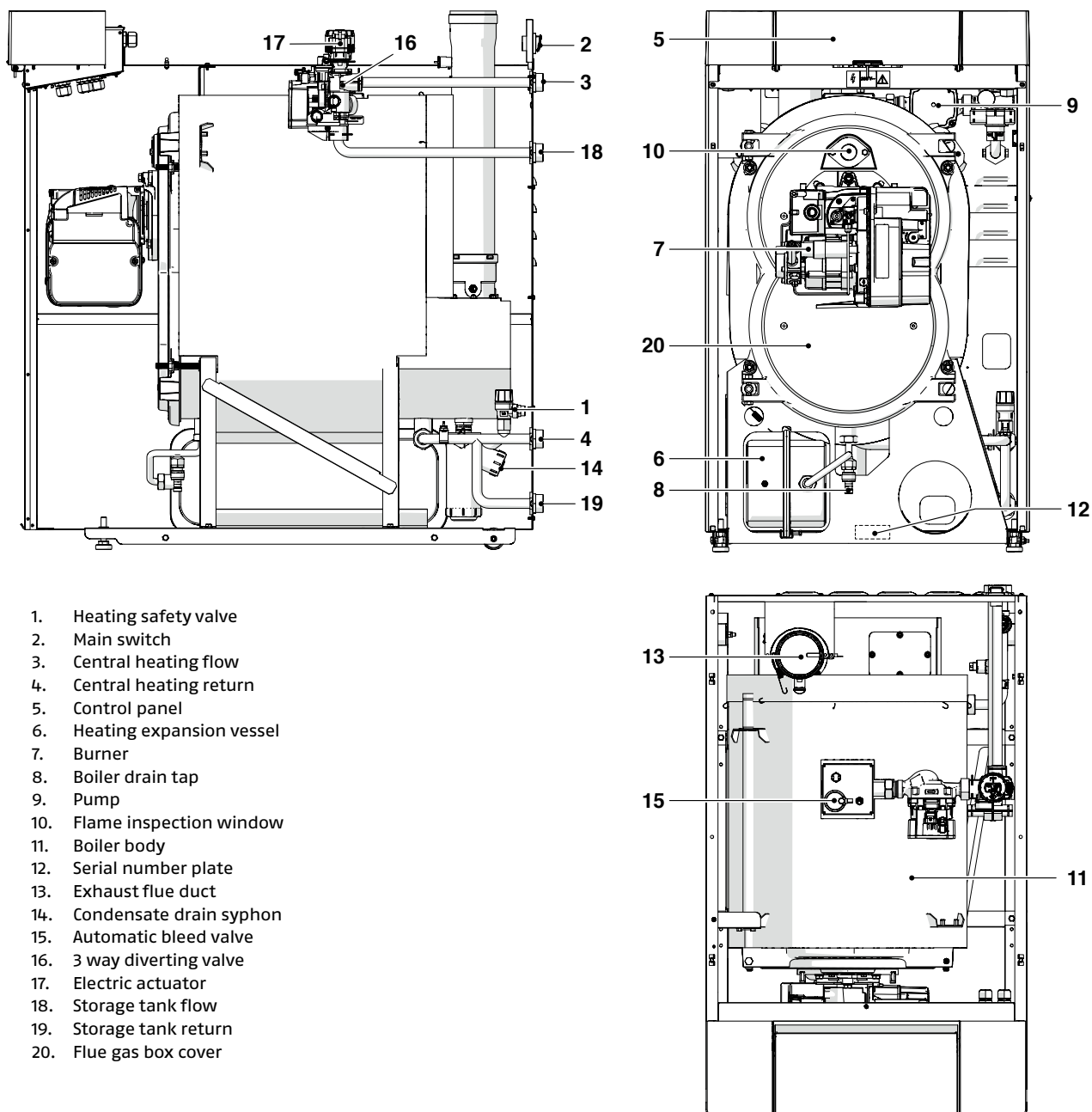
- instruction booklet
- hydraulic test certificate
- energy label
- conventional warranty conditions



INSIEME EVO COND 20-25-35 V LN LAYOUT

The INSIEME EVO COND 20-25-35 V LN thermal unit is supplied on a pallet, protected by a scratch-resistant sheet and triple-wave cardboard packaging. Inserted in a plastic bag positioned inside the thermal unit, the following material is supplied:

- instruction booklet
- hydraulic test certificate
- energy label
- conventional warranty conditions



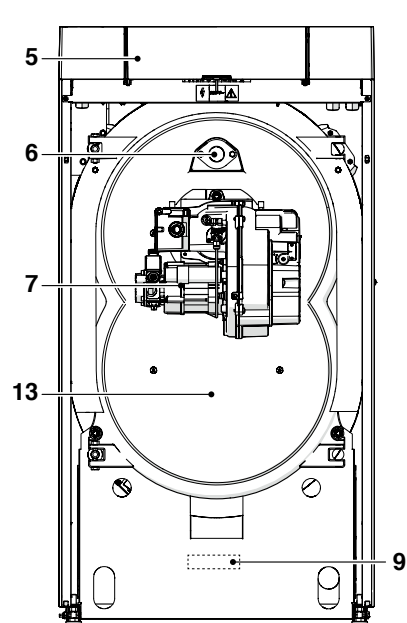
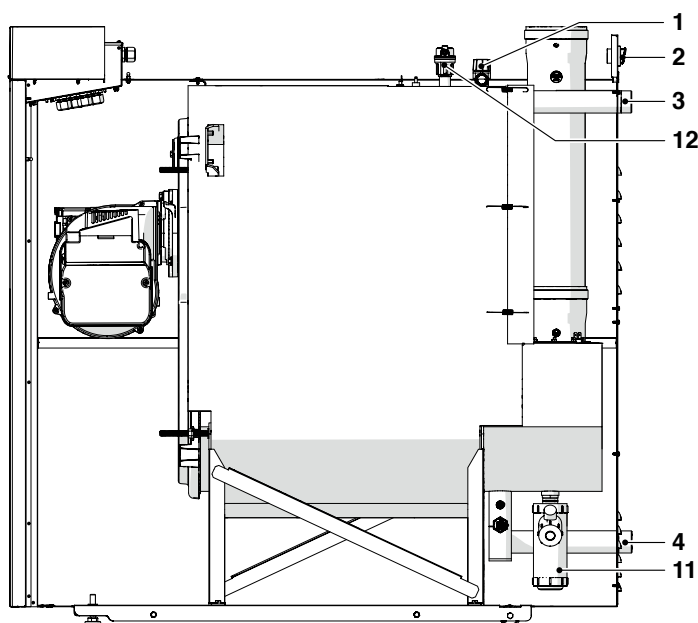
CENTRALIZED HEATING

Floor-standing oil condensing units

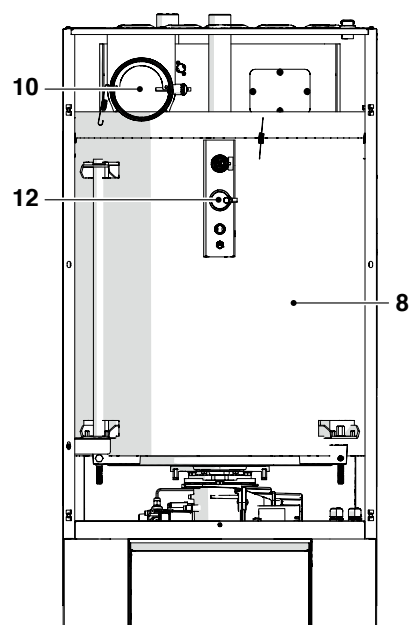
INSIEME EVO COND 45-55-70 LN LAYOUT

The INSIEME EVO COND 45-55-70 LN thermal unit is supplied on a pallet, protected by a scratch-resistant sheet and triple-wave cardboard packaging. Inserted in a plastic bag positioned inside the thermal unit, the following material is supplied:

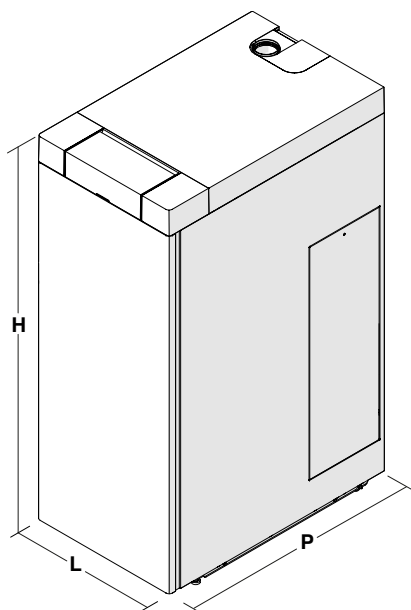
- instruction booklet
- hydraulic test certificate
- energy label
- conventional warranty conditions



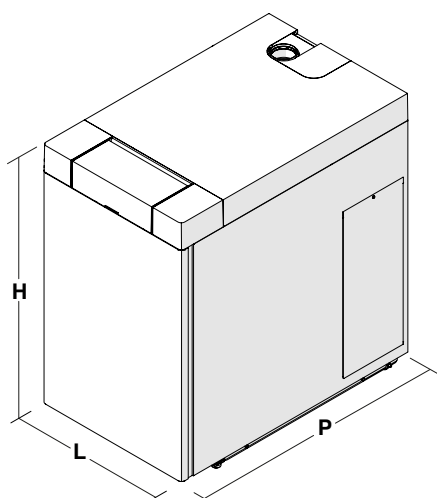
1. Safety valve
2. Main switch
3. Central heating flow
4. Central heating return
5. Control panel
6. Flame inspection window
7. Burner
8. Boiler body
9. Serial number plate
10. Exhaust flue duct
11. Condensate drain syphon
12. Automatic bleed valve
13. Flue gas box cover



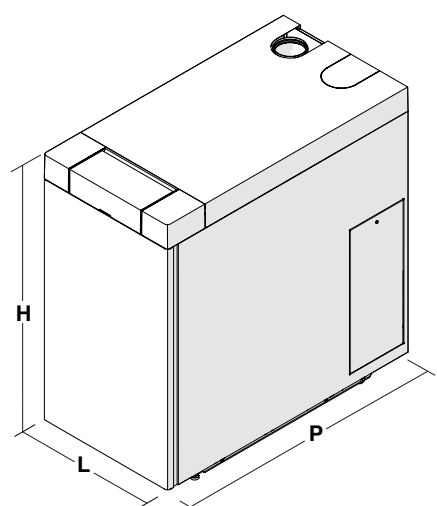
OVERALL DIMENSIONS



MODELS	U.M.	INSIEME EVO COND	
		25 B/130 LN	35 B/130 LN
L	mm	600	600
P	mm	975	975
H	mm	1540	1540
Net weight	kg	197	203



MODELS	U.M.	INSIEME EVO COND		
		20 V LN	25 V LN	35 V LN
L	mm	600	600	600
P	mm	994	994	994
H	mm	1000	1000	1000
Net weight	kg	125	125	132



MODELS	U.M.	INSIEME EVO COND		
		45 LN	55 LN	70 LN
L	mm	600	600	600
P	mm	1155	1155	1155
H	mm	1138	1138	1138
Net weight	kg	185	191	191

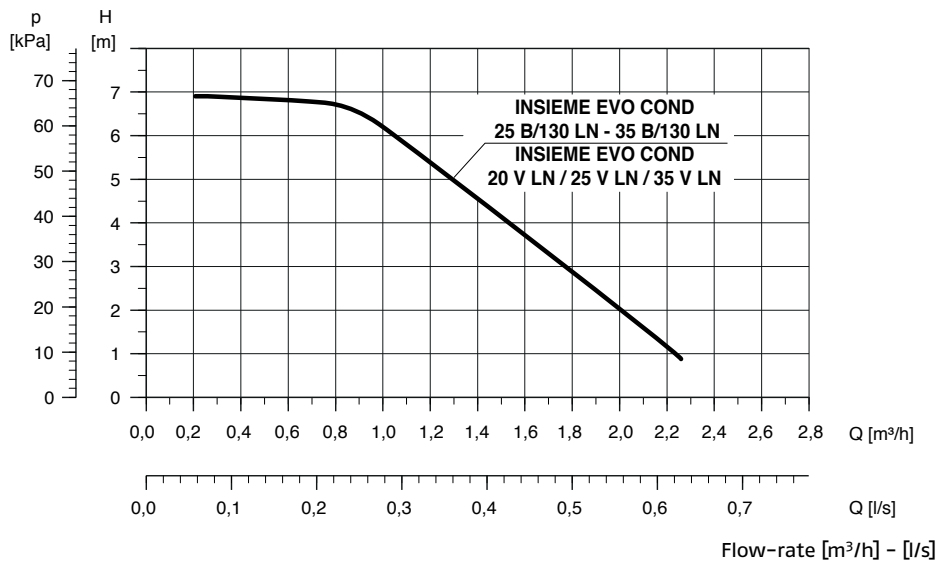
CENTRALIZED HEATING

Floor-standing oil condensing units

PUMP CURVES

INSIEME EVO COND 20 V LN / 25 V LN / 35 V LN, INSIEME EVO COND 25 B/130 LN – 35 B/130 LN thermal groups are equipped with a circulator already connected both hydraulically and electrically, able to offer the performances listed below, to be used for the system sizing.

Residual head [m] – [kPa]

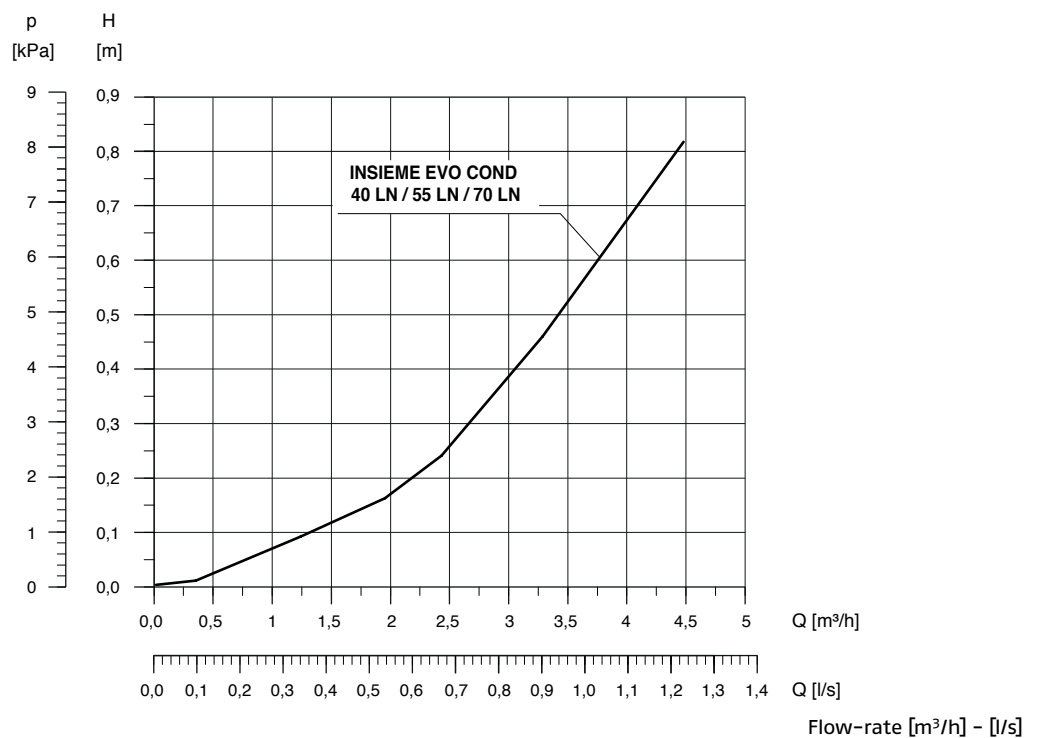


The curves refer to a density of 983,2 kg/m³, a water temperature of +20°C and a kinematic viscosity of 0,474 mm²/s (0,474 cSt).

PUMP SIZING

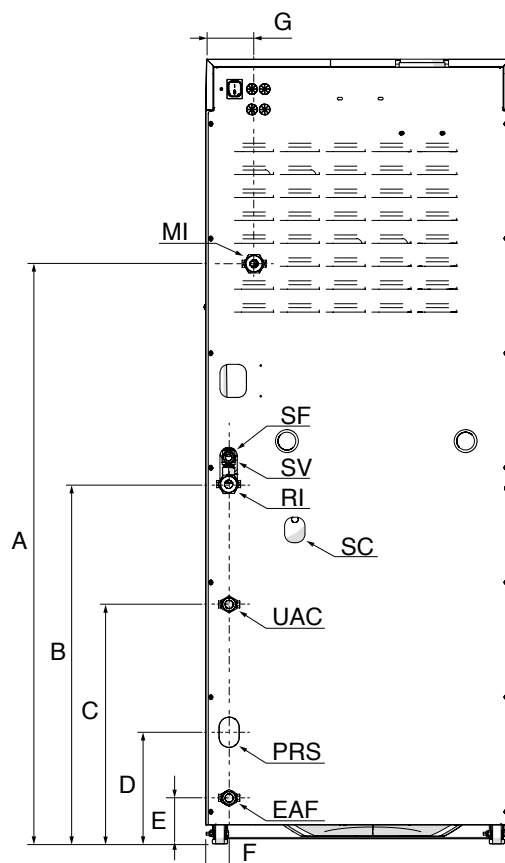
The INSIEME EVO COND 45–55–70 LN thermal groups aren't equipped with pump, which must be provided on the system. For its sizing, consider the water side pressure drops of the heating unit, shown below in the graph.

Pressure drop [m] – [kPa]



HYDRAULIC CONNECTIONS

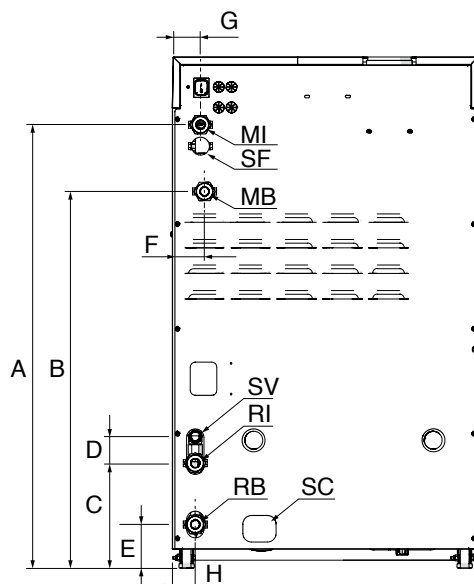
The INSIEME EVO COND units are designed and developed to be installed on heating and domestic hot water production circuits. The features of the hydraulic connections are the following:



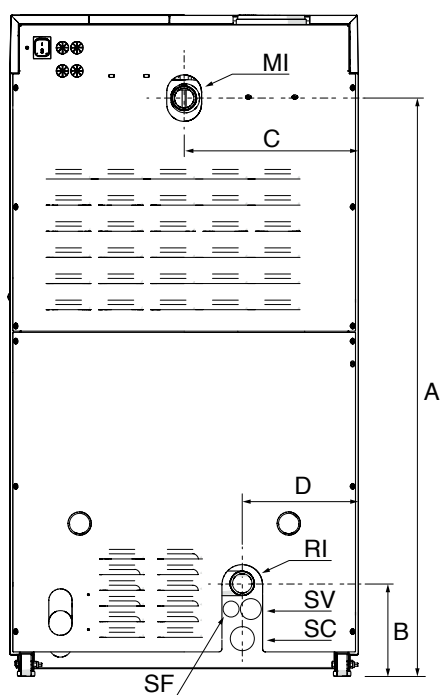
DESCRIPTION	U.M.	INSIEME EVO COND	
		25 B/130 LN	35 B/130 LN
A	mm	1139	1139
B	mm	706	706
C	mm	470	470
D	mm	220	220
E	mm	90	90
F	mm	45	45
G	mm	95	95
MI - (system flow)	Ø	1" M	1" M
RI - (system return)	Ø	1" M	1" M
UAC - (domestic hot water outlet)	Ø	3/4" M	3/4" M
PRS - (sanitary recirculation predisposition)	Ø	3/4" M	3/4" M
EAF - (domestic cold water inlet)	Ø	3/4" M	3/4" M
Sf - (automatic bleed valve discharge)	Ø mm	11	11
SV - safety valve discharge	Ø mm	21	21
SC - condensate drain	Ø mm	21	21

CENTRALIZED HEATING

Floor-standing oil condensing units



DESCRIPTION	U.M.	INSIEME EVO COND		
		20 V LN	25 V LN	35 V LN
A	mm	867	867	867
B	mm	737	737	737
C	mm	205	205	205
D	mm	50	50	50
E	mm	85	85	85
F	mm	63	63	63
G	mm	55	55	55
H	mm	45	45	45
MI - (system flow)	Ø	1" M	1" M	1" M
RI - (system return)	Ø	1" M	1" M	1" M
MB - (tank flow)	Ø	1" M	1" M	1" M
RB - (tank return)	Ø	1" M	1" M	1" M
Sf - (automatic bleed valve discharge)	Ø mm	11	11	11
SV - safety valve discharge	Ø mm	21	21	21
SC - condensate drain	Ø mm	21	21	21



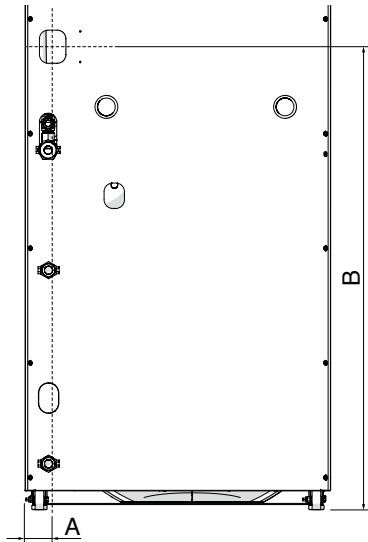
DESCRIPTION	U.M.	INSIEME EVO COND		
		45 LN	55 LN	70 LN
A	mm	995	995	995
B	mm	160	160	160
C	mm	300	300	300
D	mm	200	200	200
MI - (system flow)	Ø	1"1/4 M	1"1/4 M	1"1/4 M
RI - (system return)	Ø	1"1/4 M	1"1/4 M	1"1/4 M
Sf - (automatic bleed valve discharge)	Ø mm	11	11	11
SV - safety valve discharge	Ø mm	21	21	21
SC - condensate drain	Ø mm	21	21	21

CENTRALIZED HEATING

Floor-standing oil condensing units

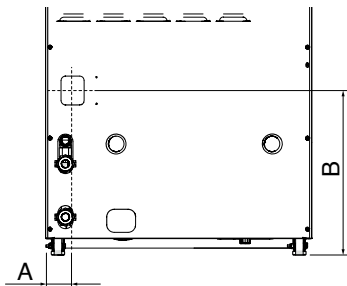
FUEL CONNECTION

The INSIEME EVO COND heating unit is supplied with two flexible oil hoses for the burner supply, to be connected by the installer.

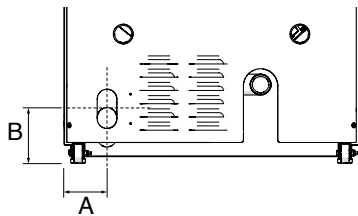


If the system is in depression, the return pipe must reach the same height as the suction pipe. The foot valve is not so necessary, which is indispensable if the return pipe reaches above the fuel level.

DESCRIPTION	Unit of measurement	INSIEME EVO COND	
		25 B/130 LN	35 B/130 LN
A	mm	46	46
B	mm	910	910
Connections	Ø	2x3/8" M	2x3/8" M



DESCRIPTION	Unit of measurement	INSIEME EVO COND		
		20 V LN	25 V LN	35 V LN
A	mm	61	61	61
B	mm	370	370	370
Connections	Ø	2x3/8" M	2x3/8" M	2x3/8" M



DESCRIPTION	Unit of measurement	INSIEME EVO COND		
		45 LN	55 LN	70 LN
A	mm	87	87	87
B	mm	113	113	113
Connections	Ø	2x3/8" M	2x3/8" M	2x3/8" M

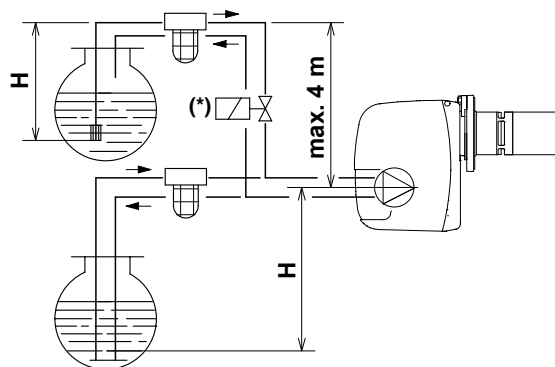
Dual-pipe system

Dual-pipe vacuum systems have a negative fuel pressure (depression) at the burner inlet.

They typically have the tank at a lower height than the burner.

The return line should terminate in the light oil tank at the same level as the suction line; in this case a non-return valve is not necessary.

Should however the return line arrives over the fuel level, the non-return valve is indispensable.



(*) VIC: Fuel shut-off valve

H (m)	L (m)	
	Øi (8mm)	Øi (10mm)
0	35	100
0,5	30	100
1	25	100
1,5	20	90
2	15	70
3	8	30
3,5	6	20

H = height difference

L = maximum length of suction hose

Øi = internal diameter of hose

The table shows the approximate maximum lengths for the supply line, depending on the height difference, length and diameter of the fuel line.

CENTRALIZED HEATING

Floor-standing oil condensing units

Single-pipe system

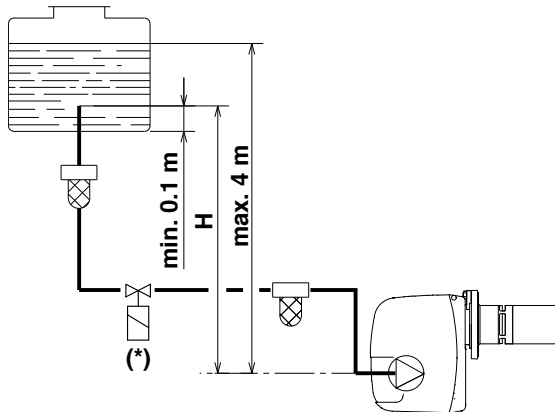
Pressurised single-pipe systems have a positive fuel pressure at the burner inlet.

Usually the tank is higher than the burner, or the fuel pumping systems are on the outside of the boiler.

Single-pipe vacuum systems have a negative fuel pressure (depression) at the burner inlet.

Usually the tank is lower than the burner.

Single-pipe pressurised systems



(*) VIC: Fuel shut-off valve

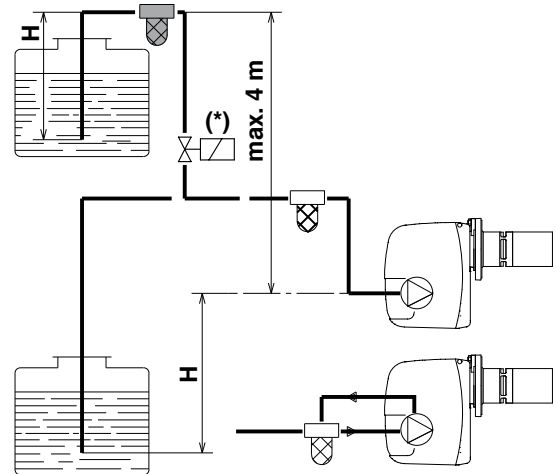
H (m)	L (m)	
	Øi (8mm)	Øi (10mm)
0,5	10	20
1	20	40
1,5	40	80
2	60	100

H = height difference

L = maximum length of suction hose

Øi = internal diameter of hose

Single-pipe vacuum systems



(*) VIC: Fuel shut-off valve

H (m)	L (m)	
	Øi (8mm)	Øi (10mm)
0	35	100
0,5	30	100
1	25	100
1,5	20	90
2	15	70
3	8	30
3,5	6	20

H = height difference

L = maximum length of suction hose

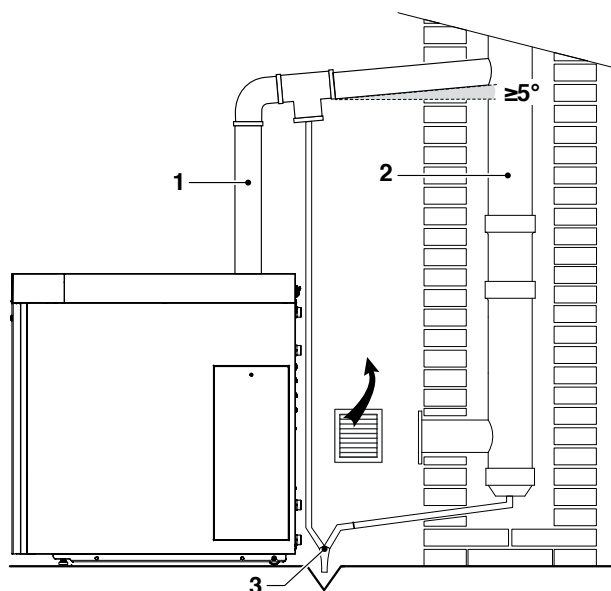
Øi = internal diameter of hose

NOTE:

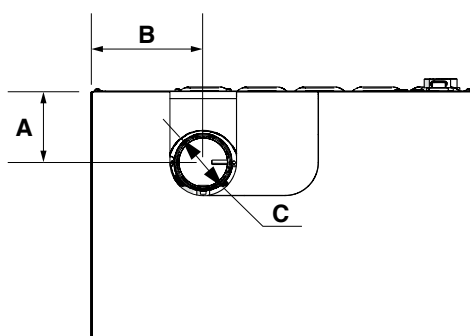
The tables show the approximate maximum lengths for the supply line, depending on the height difference, length and diameter of the fuel line.

FLUE DISCHARGE AND AIR INTAKE

The exhaust duct (1) and the chimney (2) must be made in conformity with the standards, current legislation and local regulations.



The thermal unit **INSIEME EVO COND** intakes the combustion air from the installation room through the ventilation openings that must be made in conformity with the Technical Standards.



DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
A	mm	110	110	112	112	112	106	106	106
B	mm	175	175	175	175	175	150	150	150
C	Øi	80	80	80	80	80	110	110	110

CENTRALIZED HEATING

Floor-standing oil condensing units

OPEN CHAMBER CONFIGURATION (TYPE B)

The equipment is supplied as standard in type B configuration, hence prepared to suck air directly in the installation room through the venting openings, that must be carried out in conformity with the Technical Standards.

It can become a type C equipment with the use of specific accessories. In this configuration the equipment will suck air directly from the outside with the possibility to have coaxial or twin pipes.

DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
L _{MAX} (*)	m	10	10	20	10	20	20	20	20

(*) This length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve.

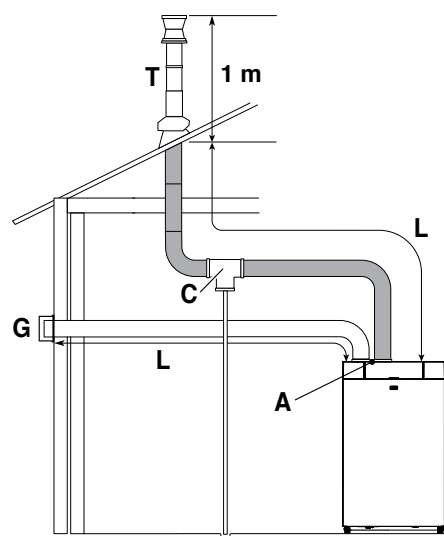
SEALED CHAMBER CONFIGURATION (TYPE C)

If comburent air is drawn from outdoors, the appliances are type C "sealed" and the boiler room does not require ventilation.

Twin pipes

For these configurations, the type C transformation accessory must be installed (following the instructions supplied with the accessory itself).

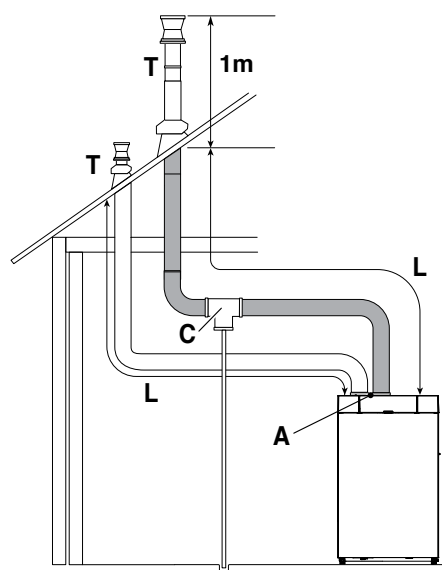
Twin ducts can be oriented in the direction most suitable to the room needs, respecting the specified maximum lengths.



- A Type C transformation accessory
- C Condensate discharge system (not provided)
- G Protection grid (not provided)
- T Terminal
- L Maximum straight length (L_{max})
(this length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve)

DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
L _{MAX} Flue discharge and air intake (*)	m	20	20	30	20	30	30	30	30
L _{MAX} Air intake (*)	m	10	10	15	10	15	15	15	15
Twin pipes	Ø	80/80	80/80	80/80	80/80	80/80	110/110	110/110	110/110

(*) This length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve.



- A** Type C transformation accessory
- C** Condensate discharge system (not provided)
- G** Protection grid (not provided)
- T** Terminal
- L** Maximum straight length (L_{MAX})
(this length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve)

DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
L_{MAX} Flue discharge and air intake (*)	m	20	20	30	20	30	30	30	30
L_{MAX} Air intake (*)	m	10	10	15	10	15	15	15	15
Twin pipes	Ø	80/80	80/80	80/80	80/80	80/80	110/110	110/110	110/110

(*) This length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve.

NOTES:

- Use of flues longer than the specified maximum leads to a loss of heat output from the boiler.
- Never obstruct or choke the comburent air intake pipe.

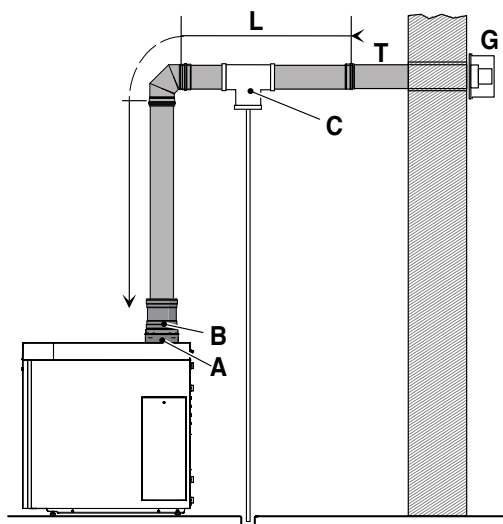
CENTRALIZED HEATING

Floor-standing oil condensing units

Coaxial flues

For these configurations, the type C transformation accessory and the concentric flue gas exhaust accessory must be installed (following the instructions supplied with the accessories themselves).

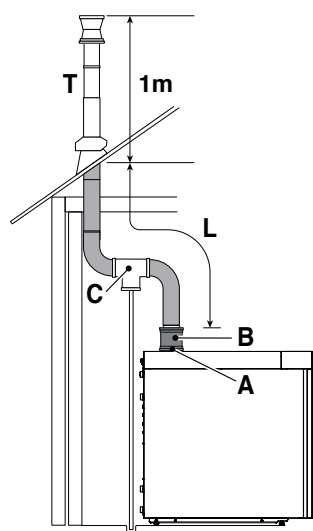
Coaxial flues can be oriented in whatever direction is most convenient for the room, provided the maximum specified lengths are respected.



- A Type C transformation accessory
- B Concentric flue discharge accessory
- C Condensate discharge system (not provided)
- G Protection grid (not provided)
- T Terminal
- L Maximum straight length (L_{MAX})
(this length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve)

DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
L_{MAX} (*)	m	7	7	7	7	7	7	7	7
Coaxial flues	Ø	80/125	80/125	80/125	80/125	80/125	110/160	110/160	110/160

(*) This length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve.



- A Type C transformation accessory
- B Concentric flue discharge accessory
- C Condensate discharge system (not provided)
- G Protection grid (not provided)
- T Terminal
- L Maximum straight length (L_{MAX})
(this length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve)

DESCRIPTION	Unit of measurement	INSIEME EVO COND							
		20 V LN	25 V LN	35 V LN	25 B/130 LN	35 B/130 LN	45 LN	55 LN	70 LN
L_{MAX} (*)	m	7	7	7	7	7	7	7	7
Coaxial flues	Ø	80/125	80/125	80/125	80/125	80/125	110/160	110/160	110/160

(*) This length must be reduced by 1 meter for every 90° curve and by 0.5 meters for every 45° curve.

NOTES:

- Use of flues longer than the specified maximum leads to a loss of heat output from the boiler.
- Never obstruct or choke the comburent air intake pipe.

INSTALLATION ROOM

The thermal unit **INSIEME EVO COND** must be installed in rooms with appropriately sized vent openings which comply with the Technical Standards and Regulations in force in the place of installation.

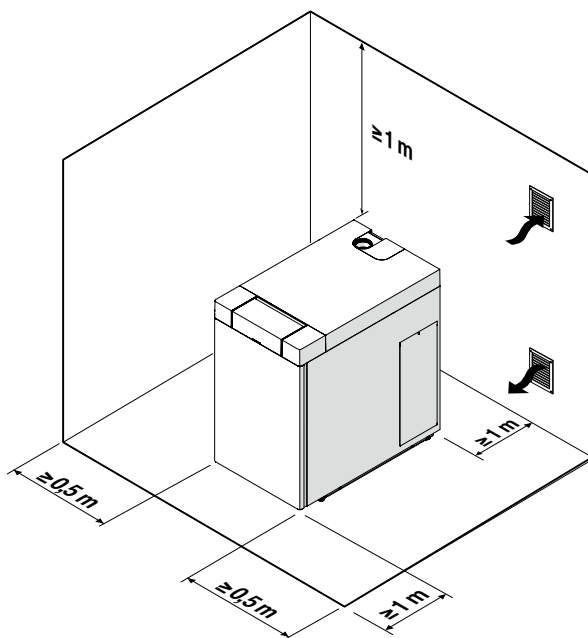
When installing the boiler, allow sufficient space around it to access all safety and control devices and to permit easy maintenance.

Check that the electric protection level of the appliance is suitable for features of the room where it is installed.

These thermal groups cannot be installed outdoors because are not designed to operate outdoors.

Do not obstruct or restrict the air vents in the room where the boiler is installed. A free air supply is essential for correct combustion.

Make sure that comburent air is not contaminated by substances containing chlorine or fluorine (elements found in sprays, paints, detergents etc.).



INSTALLATION IN OLDER SYSTEMS OR SYSTEMS REQUIRING MODERNISATION

When installing these boilers in older systems or systems requiring modernisation, always perform the following checks:

- The flue is able to withstand the temperature of the combustion gases and that it has been designed and made in compliance with applicable standards. The flue must also be as straight as possible, sealed, insulated and not blocked or choked
- The flue discharge duct must be equipped with a connection for the evacuation of condensate
- The electrical supply system has been installed by a qualified electrician in compliance with applicable standards
- The flow rate, head and direction of flow of the pumps are suitable and correct
- The fuel feed line and any tank are made according to the specific standards
- Make sure that expansion vessels are big enough to contain the additional volume generated by thermal expansion.

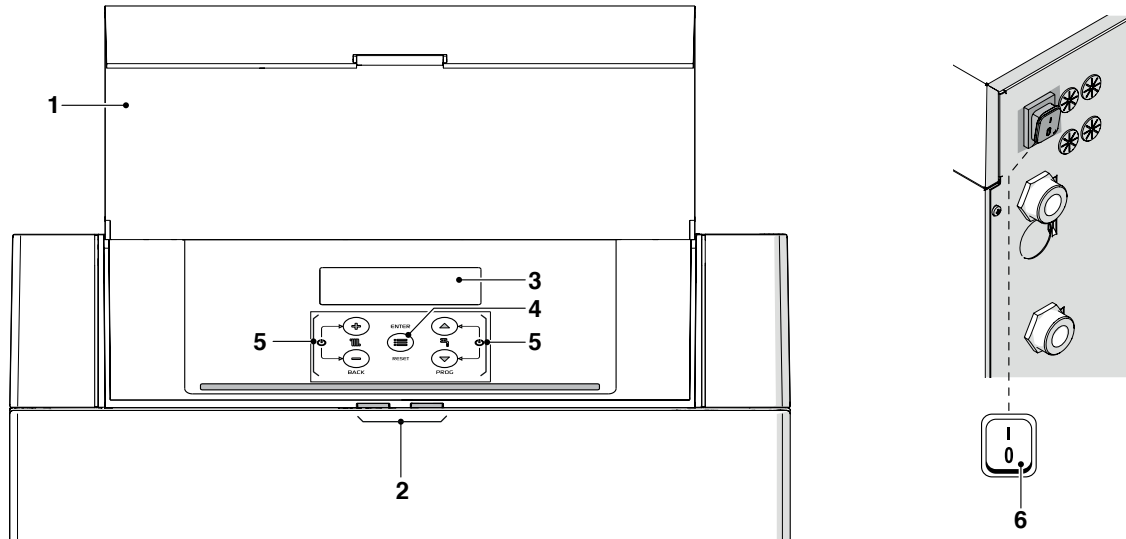
Make sure that the central heating circuit has been flushed out to remove all sludge and lime scale, and that it has been bled and seal tested.

CENTRALIZED HEATING

Floor-standing oil condensing units

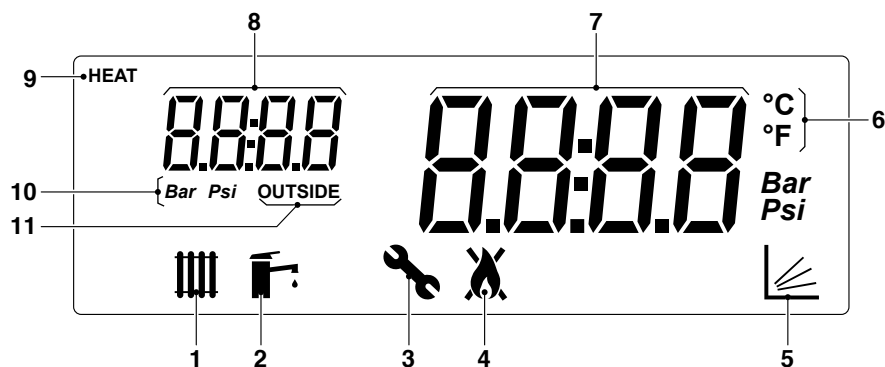
CONTROL PANEL

Command interface



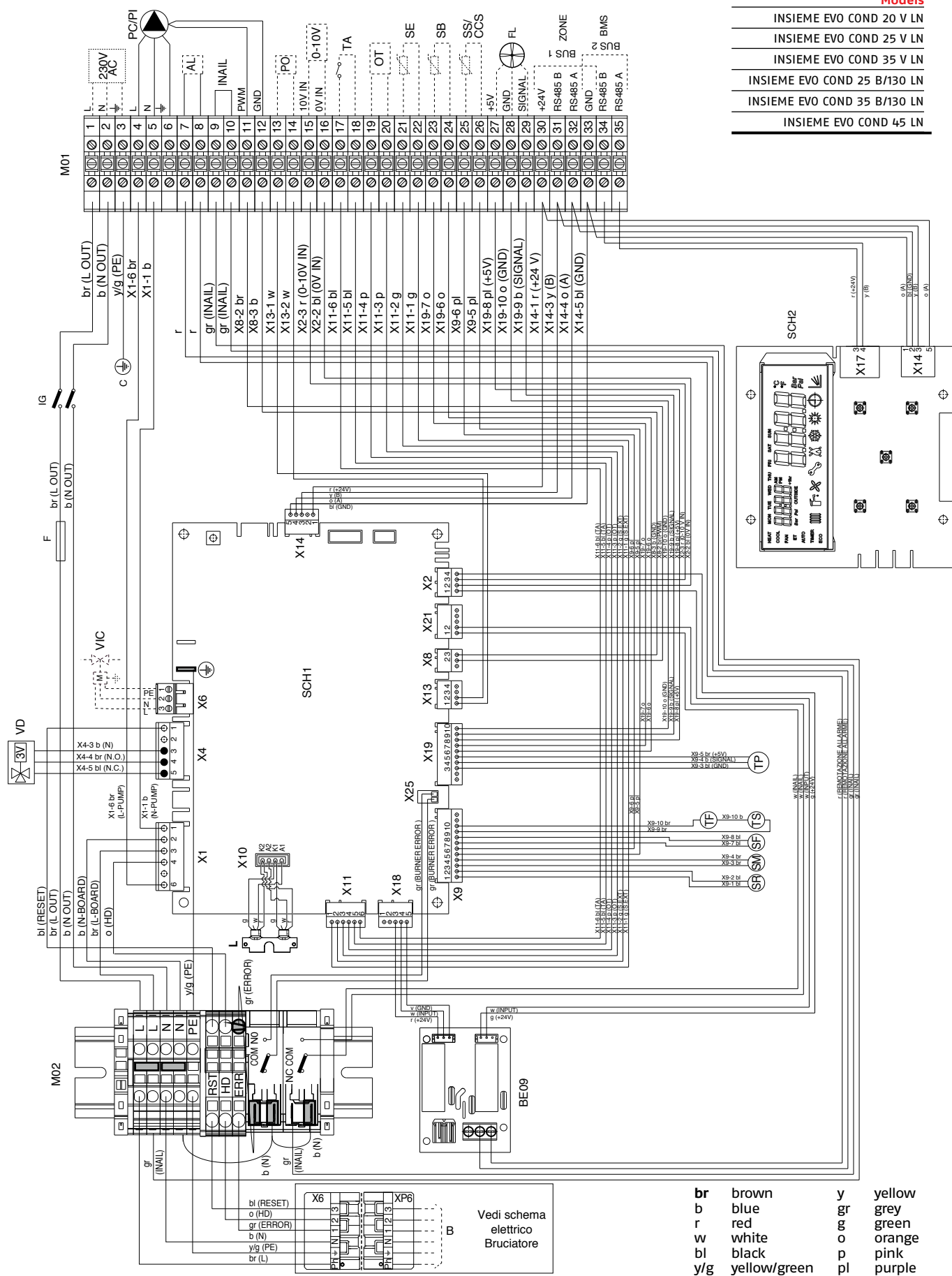
1. Door
2. Light guide:
 - Green blinking: Thermal unit drain cycle and initialization in progress after the power supply reset.
 - Steady green: Thermal unit on
 - Steady red: Thermal unit in alarm mode
 - Red blinking: Thermal unit in lock-out mode
3. Backlit display
4. ENTER/RESET key: it allows accessing the main menu and restoring the operation after a stop due to an anomaly
5. Navigation keys
6. Main switch (located on the rear of the appliance)

Display visualization



1. Icon displayed when heating mode is enabled. Blinking when there is a heat demand
2. Icon displayed when DHW mode is enabled. Blinking when there is an DHW Demand
3. Icon displayed when entering the "Installer" menu
4. Icon displayed when the burner of the equipment is on. The icon will be marked with a cross in case of Permanent or Temporary error.
5. Icon displayed when the climatic mode operation is active (Par. 2001= 1 or 2)
6. Celsius/Fahrenheit temperature
7. Displays current value
8. Displaying of system pressure or parameter number or external temperature
9. Icon displayed when the circulator is operating
10. Pressure in Bar/Psi
11. Icon displayed when the outdoor probe is connected

WIRING DIAGRAM



CENTRALIZED HEATING

Floor-standing oil condensing units

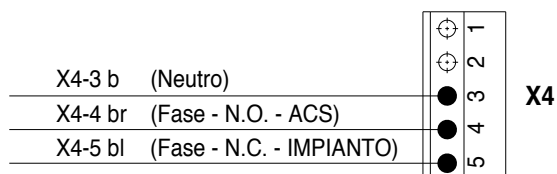
Key

M01	Terminal board	VD	3 way valve (**)
PC/PI	Thermal unit pump/System pump (Par. 2033)	VIC	Fuel shut-off valve (Par.2030)
AL	Remote activation of alarm (Par. 2031)	M02	Terminal board
INAIL	INAIL safety measures (Par. 2029)	L	Light guide
PWM-GND	PWM pump control output (Par. 2059-2060)	SCH1	Main board
P0	Timer (Par. 2027-2045) (*)	B	Burner
0-10V	0-10 V input (Par. 1063-2001-2025-2026)	BE09	Relay interface card
TA	Room thermostat (Par.2001)	SR	Return probe
OT	OpenTherm (Par. 2001)	SM	Flow probe
SE	External probe (Par. 2001)	SF	Flue probe
SB	Tank probe/thermostat (Par.2035)	TF	Flue thermostat
SS/CCS	System probe /cascade control probe (Par. 2088)	TS	Safety thermostat
FL	Flowmeter/flow switch (Par. 2027)	TP	Pressure transducer
ZONE	Modbus zone	SCH2	Display and control card
BMS	Modbus		
IG	Main switch		
C	Ground conductor delivery		
F	Mains power fuse 6.3 A-T		

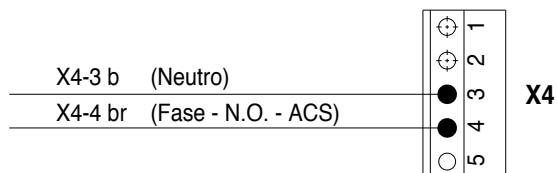
(*) Operation only with storage tank sensor (not applicable with storage tank thermostat).

(**) The INSIEME EVO COND 45 LN model is without DHW diverter valve.

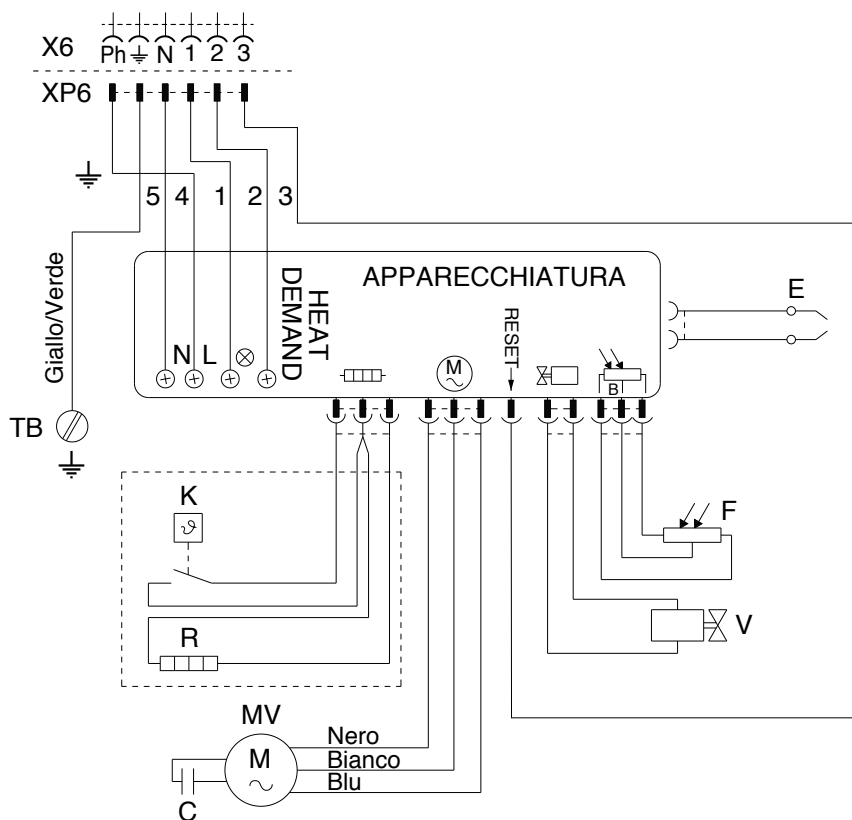
- If a DHW diverter valve is required on the system, connect it as indicated in the wiring diagram:
"X4-3 b" (Neutral) / "X4-4 br" (Phase - NO - DHW) / "X4-5 bl" (Phase - NC - SYSTEM)



- In case of use of a DHW charging pump, use a remote control switch wired on the terminals:
"X4-3 b" (Neutral) and "X4-4 br" (Phase - NO - DHW)



BURNER WIRING DIAGRAM



Models	
INSIEME EVO COND 20 V LN	
INSIEME EVO COND 25 V LN	
INSIEME EVO COND 35 V LN	
INSIEME EVO COND 25 B/130 LN	
INSIEME EVO COND 35 B/130 LN	
INSIEME EVO COND 45 LN	

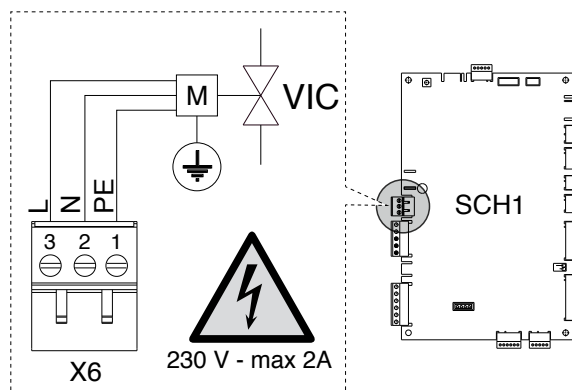
C	Capacitor
E	Electrodes
F	Flame sensor
K	Thermostat enabling start-up after pre-heating
MV	Fan motor
R	Heater
TB	Ground - Burner
V	Light oil valve
X6	6 pin plug
XP6	6 pin socket

FUEL SHUT-OFF VALVE VIC

X6 Connector on main boiler card
VIC Fuel shut-off valve (not supplied as a standard and valid only if required).

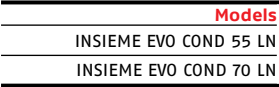
NOTE:

- Check that the value 1 (default) is set at parameter 2030. If the burner's post-ventilation time is changed, a value (in seconds) $\geq$ the value just set on the burner must be set in parameter 2079.



Floor-standing oil condensing units

WIRING DIAGRAM



Key

M01	Terminal board
PC/PI	Thermal unit pump/System pump (Par. 2033) (*)
AL	Remote activation of alarm (Par. 2031)
INAIL	INAIL safety measures (Par. 2029)
PWM-GND	PWM pump control output (Par. 2059-2060)
PO	Timer (Par. 2027-2045) (**)
0-10V	0-10 V input (Par. 1063-2001-2025-2026)
TA	Room thermostat (Par.2001)
OT	OpenTherm (Par. 2001)
SE	External probe (Par. 2001)
SB	Tank probe/thermostat (Par.2035)
SS/CCS	System sensor / cascade control sensor (Par. 2088)
FL	Flowmeter/flow switch (Par. 2027)
ZONE	Modbus zone
BMS	Modbus
IG	Main switch
C	Ground conductor delivery
F	Mains power fuse 6.3 A-T
VD	3 way valve (***)
VIC	Fuel shut-off valve (Par.2030)

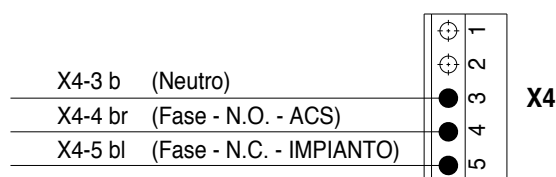
M02	Terminal board
L	Light guide
SCH1	Main board
B	Burner
R1	N0 relay – second stage burner
R2	N0 relay – alarm remote
BE09	Relay interface card
SR	Return probe
SM	Flow probe
SF	Flue probe
TF	Flue thermostat
TS	Safety thermostat
TP	Pressure transducer
SCH2	Display and control card

(*) Pump connection and PWM control by the installer.

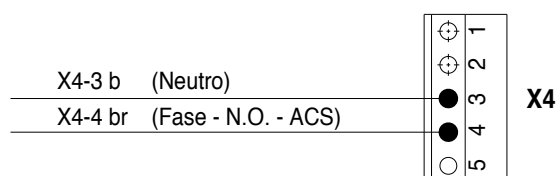
(**) Operation only with storage tank sensor (not applicable with storage tank thermostat).

(***) Terminal X4:

- If a DHW diverter valve is required on the system, connect it as indicated in the wiring diagram:
"X4-3 b" (Neutral) / "X4-4 br" (Phase - NO - DHW) / "X4-5 bl" (Phase - NC - SYSTEM)



- In case of use of a DHW charging pump, use a remote control switch wired on the terminals:
"X4-3 b" (Neutral) and "X4-4 br" (Phase - NO - DHW)



CENTRALIZED HEATING

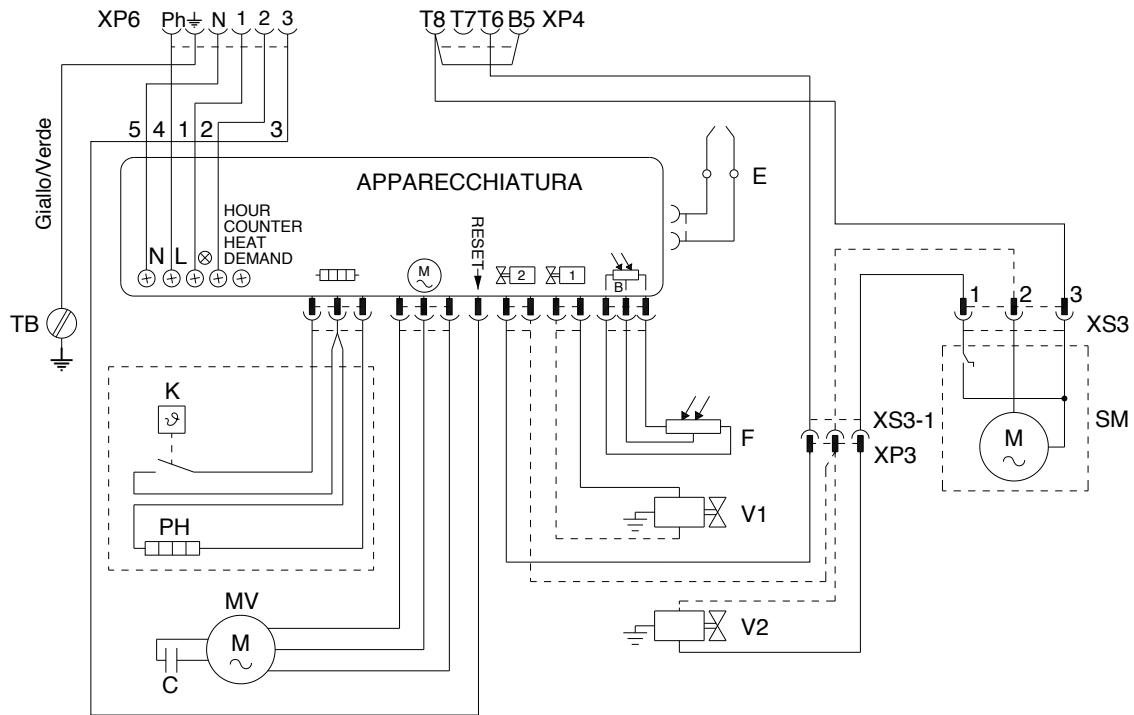
Floor-standing oil condensing units

BURNER WIRING DIAGRAM

Models

INSIEME EVO COND 55 LN

INSIEME EVO COND 70 LN



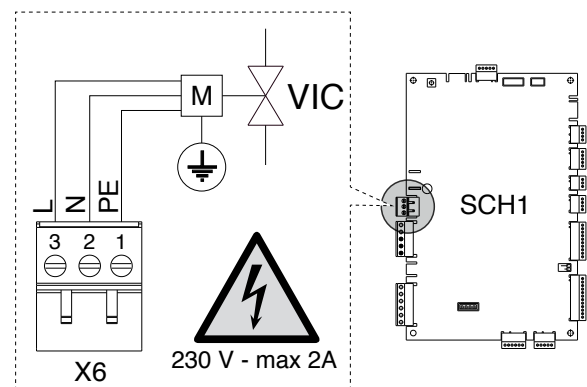
C	Capacitor
E	Electrodes
F	Flame sensor
K	Thermostat enabling start-up after pre-heating
MV	Fan motor
PH	Heater
SM	Air damper opener servomotor
TB	Burner ground
V1	1st stage light oil valve
V2	2nd stage light oil valve
XP..	Socket

FUEL SHUT-OFF VALVE VIC

X6 Connector on main boiler card
VIC Fuel shut-off valve (not supplied as a standard and valid only if required).

NOTE:

- Check that the value 1 (default) is set at parameter 2030. If the burner's post-ventilation time is changed, a value (in seconds) $\geq$ the value just set on the burner must be set in parameter 2079.



WATER IN THE HEATING SYSTEMS

It is **ABSOLUTELY NECESSARY** to treat the water system in order for the heat generator to work properly and to guarantee its service life, as well as that of all its components. This not only applies to jobs carried out on existing installations but also on new installations. Sludge, lime-scale and pollutants contained in the water can cause permanent damage to the heat generator, also within a short time and notwithstanding the quality standards of the materials used. Contact the Technical Assistance Service for any further information on type and use of additives.

Comply with the laws in force in the country of installation.

CHEMICAL-PHYSICAL FEATURES

It is recommended to use water as a thermal agent in the heating system. A chemical water treatment plant must also be provided. The chemical-physical features of the water must comply with both the European standard EN 14868 and the table below:

REFERENCE VALUES	
ph	6-8
Electrical conductivity	less than 200 µS/cm (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm

If the hardness of the water exceeds the value specified in the table, it is mandatory to install a water softening system.

Excessive water softening (leading to a total hardness <15°F) can cause corrosion in metal parts (pipes and boiler components). Keep the electrical conductivity of the water under 200 µS/cm.

Do not top up the central heating circuit on a frequent or continuous basis as this can damage the boiler's heat exchanger. The use of automatic topping up systems should be avoided for this reason.

HEATING SYSTEMS

NEW HEATING SYSTEMS

The first fill up of the system must occur slowly; once filled and deaerated, it should not undergo more restoration.

During the first firing the system must work at the maximum operating temperature to ease deaeration (a temperature that is too low prevents the gas from escaping).

Renewal of existing heating systems

In case of boiler replacement, if the existing water quality complies with the requirements, a new filling is not recommended. If the water quality does not comply with the requirements, instead, it is recommended to recondition the water or to separate the boiler from the systems (the water in the boiler circuit must comply the quality requirements).

CORROSION

Under deposit corrosion

Under-deposit corrosion is an electrochemical phenomenon, due to the presence of sand, rust, etc. within the mass of water. These solid substances generally settle on the bottom of the boiler (sludge), on the tube heads and in the tube interstices. In these points, micro-corrosion phenomena can be triggered due to the difference in electrochemical potential between the material in contact with the impurity and the surrounding one.

Corrosion from stray currents

Corrosion from stray currents can occur due to different electrical potentials between the boiler water and the metal mass of the boiler or pipe. The phenomenon leaves unmistakable traces, namely small regular conical holes.

REMOVAL OF AIR AND GASES IN HEATING SYSTEM

If there is a continuous or intermittent supply of oxygen in the systems (eg underfloor heating without synthetic pipes

impermeable to diffusion, open vessel circuits, frequent topping up) the systems must always be separated.

Mistakes to avoid and precautions.

It is therefore important to avoid contact between air and water and the periodic reintegration with new water. To avoid air-water contact it is necessary that:

- The expansion system is a closed vessel, correctly sized and with the right pre-loading pressure (to be checked periodically)
- The system is always at a pressure higher than atmospheric at any point (including the suction side of the pump) and in any operating condition (in a plant, all seals and hydraulic junctions are designed to withstand the pressure towards the external, but not to depression);
- The plant was not built with gas permeable materials (for example plastic pipes for radiant floor systems without anti-oxygen barriers).

We also remind you that the faults of the boiler caused by deposits and corrosion, are not covered by warranty.

CENTRALIZED HEATING

Floor-standing oil condensing units

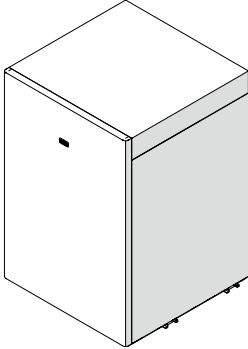
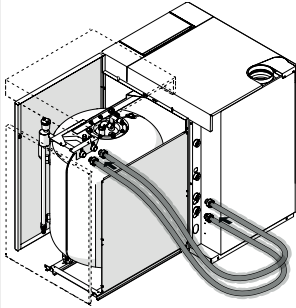
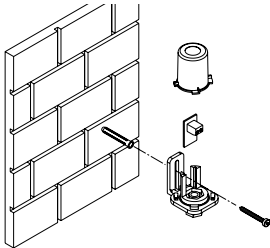
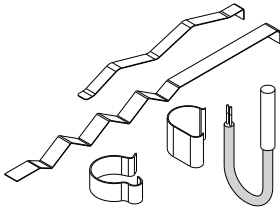
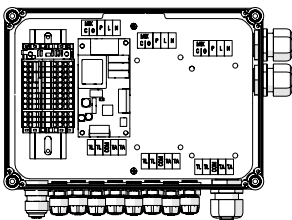
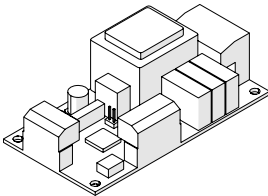
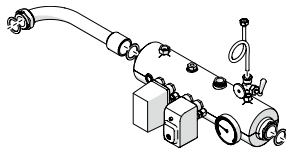
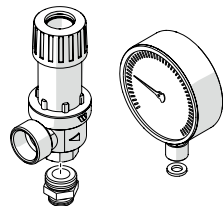
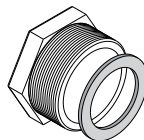
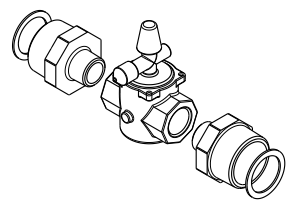
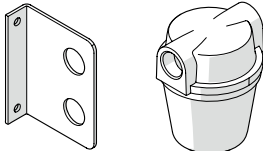
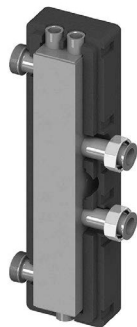
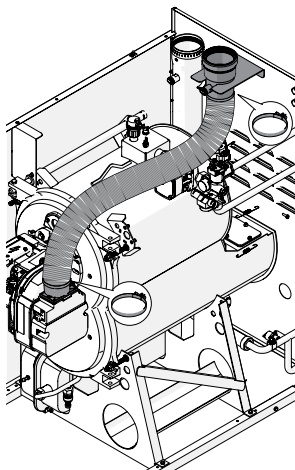
SHIELDED DHW TANK								
IMAGE	DESCRIPTION	INSIEME EVO COND						
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN
	120 liter storage tank: 120 liter floor-standing DHW tank, complete with painted casing. Rigid thermal insulation, energy efficiency class "C". CAUTION: the tank has a white casing (sides included), while the boiler has a white front and dark grey sides			●	●	●		
	Boiler-storage tank connection pipes: flexible piping kit (no.2 pieces) and relative insulation to connect the boiler to the remote 120 liter boiler. Flexible pipes lenght: 1600 mm			●	●	●		
ELECTRICAL / ELECTRONIC EXPANSIONS AND SECONDARY CIRCUIT MANAGEMENT								
IMAGE	DESCRIPTION	INSIEME EVO COND						
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN
	External probe: external temperature probe (to be installed facing north/north-east) to enable operation with climatic curves	●	●	●	●	●	●	●
	Boiler / room probe: temperature probe (NTC 10kOhm @ 25 ° C β3435) complete with clips for manholes ("immersion" use) and fixing clips for pipes ("contact" use). The probe can be used to manage a remote tank or to manage the room temperature, connecting it to the dir-mix circuits managing boards or to the Bag³ Hybrid. In case of use as a room probe, the camouflage in the room will be responsibility of the installer. The remote control panel for additional zone / hybrid system management (REC10H) will therefore only act as a centralizer and system programmer. The use of the probes allows to have only one panel in the room.	●	●	●	●	●	●	●

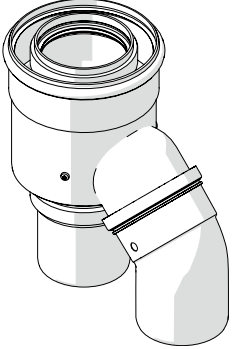
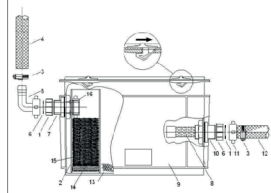
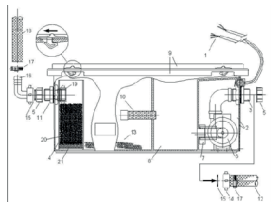
IMAGE	DESCRIPTION	INSIEME EVO COND							
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN	70 LN
	1st zone dir / mix control: allows the management of a direct (circulator) or mixed (circulator and mixing valve) zone by communicating via Modbus with the regulator of the thermal group that will manage the zone. Two further zones (direct or mixed) can be managed using the accessory "2nd/3rd zone dir/mix control". The accessory includes an electrical box (to be fixed to the wall, measures 250 x 175 x 75 mm) with internal terminal block designed to contain 3 electronic boards, 1 electronic board for 1 dir / mix circuit and relative wiring, power supply and ModBus connection, 1 probe and 2 probe fixing clips INSIEME EVO LN COND can manage a maximum of 3 zones	●	●	●	●	●	●	●	●
	2nd / 3rd zone dir / mix control: allows the management of an additional direct (circulator) or mixed zone (circulator and mixing valve). The zones are all independent from each other. The accessory (to be installed inside an electrical box contained in the accessory "1st zone dir / mix control") is made up of 1 electronic board for 1 dir / mix circuit and relative wiring for power supply and ModBus connection, 1 probe and 2 probe fixing clip. INSIEME EVO LN COND can manage a maximum of 3 zones	●	●	●	●	●	●	●	●
SAFETY ACCESSORIES AND FUEL LINE									
IMAGE	DESCRIPTION	INSIEME EVO COND							
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN	70 LN
	Safety accessories: - Safety manifold with thermal insulation - Generator-manifold connecting bend - Minimum pressure switch - Safety/block pressure switch (maximum pressure) - 0-120 °C thermometer	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	●	●	●
	Pressure gauge-2,5 bar safety valve: - INAIL approved safety valve set at 2.5 bar - INAIL approved 0-4bar pressure gauge - Reduction nipple	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	●	●	●
	Reduction for safety ki from 1"1/2 M to 1"1/4 F with gaskets (no.1 piece)						●	●	●
	Fuel shut-off valve(VIC-ø G.1"-TS=97°C-Capillary tube L=5 m. If a "stand alone" installation is carried out, it is recommended the use of this accessory for all powers above 35 kW; if instead a cascade installation is performed, the accessory is recommended for each boiler The code contains: - VIC (1piece) - G 2" M / G 1" M Reductions (2 pieces) - Gaskets	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	● ⁽¹⁾	●	●	●

●⁽¹⁾ Only for cascade systems managed with RielloTech

CENTRALIZED HEATING

Floor-standing oil condensing units

FUEL FILTER									
IMAGE	DESCRIPTION	INSIEME EVO COND							
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN	70 LN
	Light oil filter with support bracket 3/8" threaded connections and 60 µm filter cartridge	●	●	●	●	●	●	●	●
HYDRAULIC KITS									
IMAGE	DESCRIPTION	INSIEME EVO COND							
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN	70 LN
	Hydraulic separator: hydraulic separator complete with vent and drain pits and for temperature probe. Thermal insulation supplied. Main features: - primary side hydraulic connections: G1" F (with union) - primary side hydraulic connections: G1" 1/2 F (with union) - maximum recommended mass flow rate: 4m3/h - maximum pressure: 6bar - maximum temperature: 110°C - water content: approx. 2.5 litres	●	●	●	●	●	●	●	●
SEALED COMBUSTION TRANSFORMATION KIT (TYPE C) AND FLUE ADAPTERS									
IMAGE	DESCRIPTION	INSIEME EVO COND							
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN	70 LN
	ø80 mm "type C" transformation: transformation kit that allows to channel the combustion air intake of the burner. The kit consists of: - flexible air intake pipe - burner connection flange - ø80 mm air duct connection socket with analysis socket - hose clamps and gaskets - connection bracket and small parts	●	●	●	●	●			
	ø110 mm "type C" transformation: transformation kit that allows to channel the combustion air intake of the burner. The kit consists of: - flexible air intake pipe - burner connection flange - ø110 mm air duct connection socket with analysis socket - hose clamps and gaskets - connection bracket and small parts							●	●

FLUE DUCT KIT								
IMAGE	DESCRIPTION	INSIEME EVO COND						
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN
	Adapter from Ø80 mm to Ø80/125 mm It allows to perform a concentric flues discharge Ø80/125 mm. The accessory requires the Ø80 mm "type C" conversion kit in order to work properly	•	•	•	•	•		
	Adapter from Ø110 mm to Ø110/160 mm It allows to perform a concentric flues discharge Ø110/160 mm. The accessory requires the Ø110 mm "type C" conversion kit in order to work properly						•	•
TREATMENT SYSTEMS FOR CONDENSATE NEUTRALIZATION								
IMAGE	DESCRIPTION	INSIEME EVO COND						
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN
	DNO 1 neutralizer: acid condensate neutralizer (without extraction pump) suitable to neutralize strong acids (such as sulphuric acid) produced by the condensation of the oil fumes	•	•	•	•	•	•	•
	HNO 1.6 neutralizer: acid condensate neutralizer (with extraction pump) suitable to neutralize strong acids (such as sulphuric acid) produced by the condensation of the oil fumes	•	•	•	•	•	•	•

CENTRALIZED HEATING

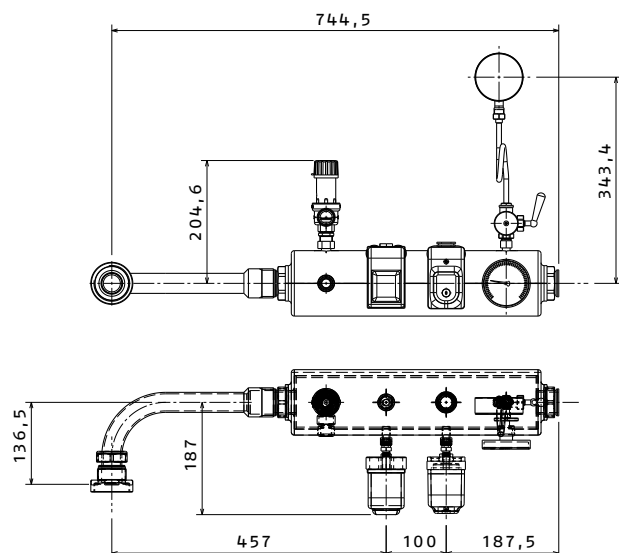
Floor-standing oil condensing units

HI, COMFORT T100 ROOM CONTROLS FOR MANAGING HOME COMFORT BY SMARTPHONE AND TABLET								
IMAGE	DESCRIPTION	INSIEME EVO COND						
		25 B/130 LN	35 B/130 LN	20V LN	25V LN	35V LN	45 LN	55 LN
	Hi, Comfort T100 room control with Wi-Fi box: complete kit for Wi-Fi installation, containing Hi, Comfort T100 room control and Wi-Fi box. The package also includes batteries, connection cables, transformer, screws, plugs, double-sided adhesive, magnetic adhesive and technical manual. ErP CLASS-CONTRIBUTION: VI-4% (*); I-1% (**) (*) with OT BUS connection (**) with ON/OFF management	●	●	●	●	●	●	●
	Hi, Comfort T100 room control: room control suitable for replacement or new installations, both with single zone or for expansions for Multizone applications. Hi, Comfort T100 is compatible for Internet connection in combination with the Wi-Fi box (supplied as an accessory). The package also includes batteries, screws, dowels, double-sided adhesive and technical manual. ErP CLASS-CONTRIBUTION: VI-3% (*); I-1% (**) (*) with OT BUS connection (**) with ON/OFF management	●	●	●	●	●	●	●
	Wi-Fi box: device that allows connection to the Internet through the home Wi-Fi network. It also allows connection to the boiler BUS for advanced remote management. The package also includes: connection cables, transformer, magnetic sticker.	●	●	●	●	●	●	●
	RF-Wireless boiler receiver: radio frequency device that allows wireless connection of the Hi, Comfort T100 room control to the boiler (both on / off and via BUS). It can also be used in cases where the weakness of the Wi-Fi signal does not allow the connection of the Wi-Fi box near the boiler.	●	●	●	●	●	●	●

SAFETY ACCESSORIES

MANIFOLD WITH SAFETY DEVICES KIT

The boiler is internally equipped with a safety thermostat set at 110°C; all the other devices required by safety certification agency (INAIL) are installed on the manifold (with the exception of the flow meter and the VIC which, being a function of the respective project flow rates, are available as separate accessories):



The manifold includes:

- Safety manifold with reduction nipples and thermal insulation
- Generator-manifold connection bend (to be used depending on the system requests)
- INAIL certified safety valve with certificate supplied
- Minimum pressure switch
- Safety/block pressure switch (maximum pressure)
- 0-10 bar pressure gauge with shock absorber loop
- 0-120 °C thermometer

Features of the safety devices

The safety valve (accessory supplied with the pressure gauge) has the following features:

- EC mark: the VST series safety valves are compliant with the requirements of the 97/23/EC (PED) Directive, concerning pressure equipments. The valves fall into the IV category, considered the maximum risk category, as they are safety devices and bear the EC mark followed by the 1115 number that identifies the approval authority.
- INAIL: the VST Series safety valves are manufactured in compliance with the specifications and requirements defined in the R Chap. R.2.A (2009 Edition) Collection and are accompanied by the homologation certificate and the calibration certificate of the INAIL. The INAIL approval certificate is issued to the manufacturer, following verification of the full compliance of the valve with the operating characteristics required by the legislation. The valves are tested individually and supplied complete with calibration report, in a single copy (NOT DUPLICABLE to be kept) bearing the serial number of the valve, punched on the non-removable metal disc fixed in the knob. The calibration report must accompany the valve for its entire service life.

CENTRALIZED HEATING

Floor-standing oil condensing units

Model	VST 15 1/2 "x 3/4" 2,5 bar
Body and shell	CW617N brass
Membrane and sealing gaskets	EPDM
Nominal pressure	PN10
Overpressure	10%
Closing gap	<20%
Maximum working temperature	-10°C / +120°C
PED category	IV
Hydraulic connections	1/2" inlet / 3/4 F drain
Opening pressure	2,5 bar
Discharge pressure	2,75 bar
Closing pressure	2,0 bar
Discharge orifice diameter	15 mm
Discharge orifice section	1,7671 cm ²
Discharge coefficient (K)	0,71
Discharge flow rate	221,40 kg / h
Nominal power of the generator	128,41 kW

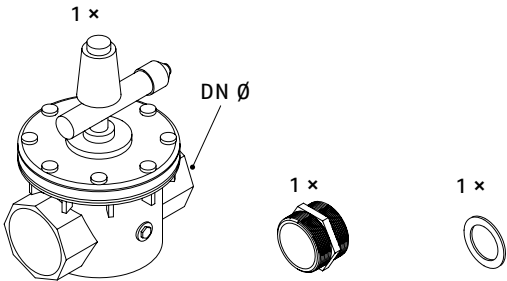
The minimum pressure switch meets the requirements of point 8 of Collection R Chap. R.3.B (2009 Edition) and has the following features:

Type	Minimum pressure switch with manual reset
Maximum pressure	5 bar
Adjustment field	0,5 ÷ 7 bar
Pressure calibration (in the factory)	1,0 bar
Room temperature range	-10°C ÷ +55°C
Maximum working temperature	0°C ÷ 110°C
Hydraulic connections	G 1/4" F

The safety / block pressure switch (maximum pressure) meets the requirements of point 1.7 of Collection R Chap. R.2.B (2009 Edition) and point 10.3 of Collection R Chap. R.1.B (2009 Edition) and has the following characteristics:

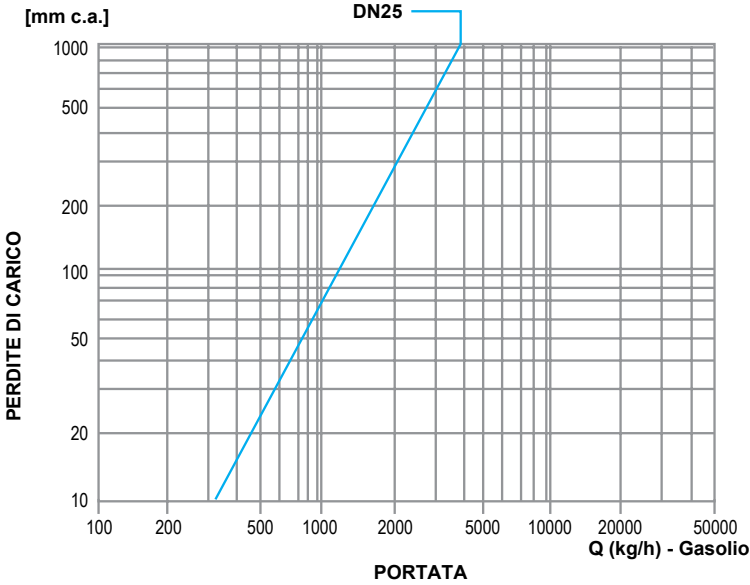
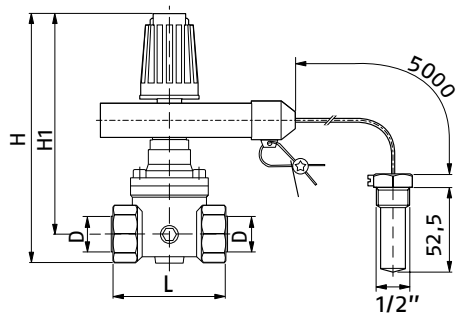
Model	PMR5
Type	Safety/block pressure switch (maximum pressure) with manual reset
Maximum pressure	5 bar
Adjustment field	2,0 ÷ 4,5 bar
Pressure calibration (in the factory)	3,0 bar
Manufacturing tolerance	± 0,15 bar
Room temperature range	55°C
Maximum working temperature	20°C ÷ 110°C
Hydraulic connections	G 1/4" F

FUEL SHUT-OFF VALVE (VIC)



TECHNICAL FEATURES

Body	Die-cast aluminium
Liquid-dilatation	thermosensitive element
Connections	Threaded gas FF (ISO 228/1)
No.2 1/4" Pressure sockets (mod. 1/2" ÷ 2")	.
Sheath connection sensitive element	G 1/2"M (ISO 228/1)
Calibration temperature	97°C (±3°C)
Max. temperature on sensor side	120°C
Max. temperature on valve side	50°C
Maximum working pressure	6 bar (G 1") – 1 bar (G 1" 1/2)
Reference	Recommended for maximum power of 131 kW (20 mbar gas supply)
DN	G 1" F
L [mm]	90
H [mm]	196
H1 [mm]	169
Capillary length [mm]	5000



CENTRALIZED HEATING

Floor-standing oil condensing units

INSIEME EVO COND 20, 25, 35 V LN

PRODUCT DESCRIPTION FOR SPECIFICATIONS SUMMARY

INSIEME EVO COND 20, 25, 35 V LN are condensing heat generators working with low sliding temperature and composed by a stainless steel boiler body resistant to the sulfuric acid corrosion, typical of the oil with <1000 ppm sulphur content (class A, $\eta_s = 93\%$), with single-stage oil burner with very low polluting emissions, in conformity with the ErP ($\text{NO}_x \leq 99 \text{ mg/kWh}$ referred to HHV e $\text{CO} < 11 \text{ ppm}$) and with an electronic board for the management of the boiler functions, equipped with a pocket user interface, easy and intuitive.

Generators can work with oil fuel as declared in UNI 6579 (< 1000 ppm sulphur content) and with low sliding temperature, with an horizontal, reverse flame boiler body configuration in order to reduce the boiler size and optimize the space in the installation room, with pressurized flame with reduced thermal load and specifically studied for the low polluting emissions. Insieme EVO Cond born with open chamber configuration but it can be converted into sealed room (type C) with an optional kit. The boiler layout is "heating only" with integrated 3 way valve for the DHW production.

PRODUCT DESCRIPTION FOR SPECIFICATIONS

INSIEME EVO COND 20, 25, 35 V LN are condensing heat generators working with low sliding temperature and composed by:

- Boiler structure characterized by:
 - Lifting/positioning brackets integrated in the boiler body
 - Hydraulic connections on the back to facilitate the installation
 - Wheels installed on the back to facilitate the handling on the installation room
- High quality stainless steel boiler body with high thickness, working with low sliding temperature (class A, $\eta_s = 93\%$) with the features listed below:
 - Reverse flame combustion chamber with high volume and surface that minimize the fumes and plates overheating risk, avoiding the "thermal NO_x " production
 - Material: AISI 316Ti – EN 1.4571 – titanium stabilized austenitic stainless steel, part which avoid the precipitation of chromium carbides between the 450°C and 800°C temperatures, offering an higher corrosion resistance at these temperature (in particular the pitting phenomena), typical of areas subjected to welding, even in particularly reducing environments
 - Dimensions: The combustion chamber was been developed (volume and exchange surface) in order to drastically reduce both the volumetric thermal load and the specific thermal load and then the production of polluting emissions. The higher dimensions of the reverse flame tube ensure the minimization of the fumes pressure drops, giving, where requested, an high head availability (B23P homologated)
 - AISI 316Ti – EN 1.4571 Front tube head with high thickness
 - Anterior steel door with lateral hinges and burner holder flange, which can be open for the usual maintenance and clean operations. Internally, the door is equipped with a thermal insulation with high thickness in order to minimize the thermal losses
 - Fire tubes:
 - Material: AISI 22-05 – EN 1.4462 – dual-phase stainless steel, characterized by a microstructure consisting of ferrite islands with austenitic matrix, present in equal volumetric percentage. This ensure This allows to obtain a steel with better mechanical characteristics than those of traditional stainless steel and a better behaviour against pitting corrosion and corrosion under stress. As example, compared to AISI 904L, AISI 22-05 can boast a higher yield strength of about 96%, a higher tensile strength of about 20%, a lower linear expansion coefficient of about 16%, a Brinell hardness higher by about 17% and a thermal conductivity higher by about 25%, all to the advantage of the mechanical strength and efficiency of the boiler body.
 - This steel is used for the production of parts subjected to very severe corrosive conditions, as it is resistant to hot oxidation up to 1000 °C. It is better than the austenitic Cr-Ni types even in the presence of chlorides and especially when the corrosive conditions are combined with mechanical tension situations (stress-corrosion) typical of thermal expansion and mechanical stress in general. Its corrosion resistance is maximum in the solubilized state. The optimal range of use is in the temperature range between -50 °C and 250 °C, typical of a boiler exchanger.
 - "Smooth tube" design: allows both an easy cleaning of the boiler and reduced losses on the fumes side (high useful head – B23P) with "self-cleaning" effect.
 - Posterior steel door that can be opened to facilitate maintenance and cleaning, built using thick sheets in AISI 22-05 – EN 1.4462 material
 - All the heat exchange surfaces in contact with the condensate are suitable for the heating oil condensation in accordance with UNI 6579 (< 1000 ppm sulphur content)
 - Carbon steel external planking (in contact with the heat transfer fluid)
 - AISI 430 – EN 1.4016 turbulators for a long life even in presence of aggressive environments (oil with high content of sulphur)
 - With high water volume with stratification effect: very low water content on the hot side, quick start up, and large reserve of water in the cold part below, for maximize the condensation phenomenon
 - Maximum pressure 3 bar
 - Maximum allowed temperature of 110°C
 - Maximum flow temperature (electronically calibrated) equal to 82°C
 - No limit on return temperature
 - High punctual and seasonal efficiencies:
 - Efficiency with nominal heat output and high temperature, 80–60°C (referred to LHV) equal to 97,3% (for the 20 kW model), 96,9% (for the 25 kW model) and 96,5% (for the 35 kW model)
 - Efficiency with nominal heat output and high temperature η_4 , 80–60°C (referred to HHV) equal to 91,8% (for the 20 kW model), 91,4% (for the 25 kW model) e al 91,0% (for the 35 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to LHV) equal to 105,9% (for the 20 kW model), 105,6% (for the 25 kW model) e al 104,8% (for the 35 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to HHV) equal to 99,9% (for the 20 kW model), 99,6% (for the 25 kW model) e al 98,9% (for the 35 kW model)
 - Seasonal energy efficiency in central heating mode η_s (referred to HHV) equal to 93% for all models
- Single-stage oil burner featured by:

- "BLU flame" combustion head, type "BG" with very low polluting emissions, equipped with long penetration mouthpiece with recirculation of combustion fumes
- Pollutant emissions in conformity with ErP ($\text{NO}_x \leq 99 \text{ mg/kWh}$ referring to HHV and $\text{CO} < 11 \text{ ppm}$)
- Low consumption electric motor
- Pre-heating electrical resistance with very low consumption always active to facilitate the ignition
- Oil pump with high pressure for a better fuel nebulization and emission reduction
- High head fan
- Burner pre-calibration by the factory
- Full "fire" test at the factory (burner ignition on test bench for safety and quality tests)
- B23-C13(*)-C33(*)-C63(*) homologation for the open chamber operation (type B) or, by means of a specific accessory kit, for the sealed chamber (type C)
- Electronic board for the control of the boiler functions characterized by:
 - Main switch (located on the rear of the appliance)
 - Easy and intuitive user electronic interface protected by a small door with controlled soft closing
 - Backlit display
 - Multi-level tree menu
 - User profile management protected by password
 - Multifunctional button:
 - ENTER/RESET: allows to enter to the main menu and restore the operation after a crash
 - Navigation keys
 - Setting / adjustment buttons
 - Soft light operating status LED
 - Flow temperature probe
 - Safety thermostat
 - Return temperature probe
 - Water pressure transducer
 - Climatic regulation
 - Management direct circuit and DHW production with anti-legionella function by means of an integrated 3 way valve
 - Additional heating zones (up to 3) with additional accessory modules
 - Possibility of modulating water flow regulation (PWM pump) with minimum return temperature control
 - Management of the alarm history
 - Room thermostat or Open Therm probe input
 - Input for time programmer
 - 0-10 V input for power control from external device
 - Modbus output
 - Support terminal block
- Hydraulics featured by:
 - Modulating pump (PWM pump) for constant ΔT operation to maximize seasonal average efficiency at partial loads
 - Integrated 3-way diverter valve for DHW production
 - 12 liter expansion vessel for all models

CENTRALIZED HEATING

Floor-standing oil condensing units

SAFETY DEVICES

The control panel besides the management of the **INSIEME EVO COND V LN** thermal group functions, allows to highlight each anomaly affecting the proper operation, making the boiler safe and stopping it and automatically closing the burner oil valve. The burner control and adjustment board also performs the safety functions by managing the correct operation of the burner itself.

Any anomaly that affects the correct functioning of the generator places it in forced stop (lock) and is promptly signaled by a numerical error code on the controller display.

The following are installed on the water circuit:

- Safety thermostat: it is installed on the boiler body, it intervenes stopping (permanent error) the thermal group when the boiler temperature exceed the limit threshold of 110°C;
- Safety valve: intervenes when the boiler pressure exceed the limit threshold of 3 bar;
- Pressure transducer: send a signal to the electronic regulator that continuously visualize and verify the primary circuit pressure in order to allow starting or stopping the generator in case of low pressure;
- Boiler temperature probes (flow and return): the immersion probe on the flow collector of the generator is used by the regulator both to visualize and verify the water temperature on the flow connection and to control the ignition and the switch off of the burner referring to the set point. The regulator use the same probe to switch off the burner in case of overheating, before the intervention of the safety thermostat. The probe positioned on the boiler return is used by the regulator for the return temperature visualization in order to calculate, in combination with the flow temperature, the temperature difference between flow and return (ΔT), which allows the management of the circulator in heating mode.

COMPLIANCE

Thermal units **INSIEME EVO COND V LN** comply with:

- – Efficiency Directive 92/42/EEC.
- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Ecodesign Directive 2009/125/CE for energy-related products
- Regulation (EU) 2017/1369 Energy labelling
- Delegated Regulation (EU) No. 811/2013;
- Delegated Regulation (EU) No. 813/2013;

SUPPLIED MATERIAL

The thermal group **INSIEME EVO COND V LN** comes on pallet, protected by a scratch-resistant cloth and triple-wave cardboard packaging.

The specific features of the product are indicated on the outside: model, power, equipment, type of fuel.

Inserted in a plastic bag positioned inside the thermal unit, the following materials are supplied:

- User instruction booklet
- Installer and technical service instruction manual
- Hydraulic test certificate
- Energy label
- Conventional warranty conditions

INSIEME EVO COND 25, 35 B/130 LN

PRODUCT DESCRIPTION FOR SPECIFICATIONS SUMMARY

INSIEME EVO COND 25, 35 B/130 LN are condensing heat generators working with low sliding temperature and composed by a stainless steel boiler body resistant to the sulfuric acid corrosion, typical of the oil with <1000 ppm sulphur content (class A, $\eta_s = 93\%$), with single-stage oil burner with very low polluting emissions, in conformity with the ErP ($\text{NO}_x \leq 99 \text{ mg/kWh}$ referred to HHV e $\text{CO} < 11 \text{ ppm}$) and with an electronic board for the management of the boiler functions, equipped with a pocket user interface, easy and intuitive.

Generators can work with oil fuel as declared in UNI 6579 (< 1000 ppm sulphur content) and with low sliding temperature, with an horizontal, reverse flame boiler body configuration in order to reduce the boiler size and optimize the space in the installation room, with pressurized flame with reduced thermal load and specifically studied for the low polluting emissions. Insieme EVO Cond born with open chamber configuration but it can be converted into sealed room (type C) with an optional kit. The boiler layout is "with integrated tank" with an embedded 130 lt. vitrified tank, arranged horizontally (class B, $\eta_{wh} = 78\%$, XL load profile).

PRODUCT DESCRIPTION FOR SPECIFICATIONS

INSIEME EVO COND 25, 35 B/130 LN are condensing heat generators working with low sliding temperature and composed by:

- Boiler structure characterized by:
 - Lifting/positioning brackets integrated in the boiler body
 - Hydraulic connections on the back to facilitate the installation
 - Wheels installed on the back to facilitate the handling on the installation room
- High quality stainless steel boiler body with high thickness, working with low sliding temperature (class A, $\eta_s = 93\%$) with the features listed below:
 - Reverse flame combustion chamber with high volume and surface that minimize the fumes and plates overheating risk, avoiding the "thermal NO_x " production
 - Material: AISI 316Ti – EN 1.4571 – titanium stabilized austenitic stainless steel, part which avoid the precipitation of chromium carbides between the 450°C and 800°C temperatures, offering an higher corrosion resistance at these temperature (in particular the pitting phenomena), typical of areas subjected to welding, even in particularly reducing environments
 - Dimensions: The combustion chamber was been developed (volume and exchange surface) in order to drastically reduce both the volumetric thermal load and the specific thermal load and then the production of polluting emissions. The higher dimensions of the reverse flame tube ensure the minimization of the fumes pressure drops, giving, where requested, an high head availability (B23P homologated)
 - AISI 316Ti – EN 1.4571 Front tube head with high thickness
 - Anterior steel door with lateral hinges and burner holder flange, which can be open for the usual maintenance and clean operations. Internally, the door is equipped with a thermal insulation with high thickness in order to minimize the thermal losses
 - Fire tubes:
 - Material: AISI 22-05 – EN 1.4462 – dual-phase stainless steel, characterized by a microstructure consisting of ferrite islands with austenitic matrix, present in equal volumetric percentage. This ensure This allows to obtain a steel with better mechanical characteristics than those of traditional stainless steel and a better behaviour against pitting corrosion and corrosion under stress. As example, compared to AISI 904L, AISI 22-05 can boast a higher yield strength of about 96%, a higher tensile strength of about 20%, a lower linear expansion coefficient of about 16%, a Brinell hardness higher by about 17% and a thermal conductivity higher by about 25%, all to the advantage of the mechanical strength and efficiency of the boiler body.
 - This steel is used for the production of parts subjected to very severe corrosive conditions, as it is resistant to hot oxidation up to 1000 °C. It is better than the austenitic Cr-Ni types even in the presence of chlorides and especially when the corrosive conditions are combined with mechanical tension situations (stress-corrosion) typical of thermal expansion and mechanical stress in general. Its corrosion resistance is maximum in the solubilized state. The optimal range of use is in the temperature range between -50 ° C and 250 ° C, typical of a boiler exchanger.
 - "Smooth tube" design: allows both an easy cleaning of the boiler and reduced losses on the fumes side (high useful head – B23P) with "self-cleaning" effect.
 - Posterior steel door that can be opened to facilitate maintenance and cleaning, built using thick sheets in AISI 22-05 – EN 1.4462 material
 - All the heat exchange surfaces in contact with the condensate are suitable for the heating oil condensation in accordance with UNI 6579 (< 1000 ppm sulphur content)
 - Carbon steel external planking (in contact with the heat transfer fluid)
 - AISI 430 – EN 1.4016 turbulators for a long life even in presence of aggressive environments (oil with high content of sulphur)
 - With high water volume with stratification effect: very low water content on the hot side, quick start up, and large reserve of water in the cold part below, for maximize the condensation phenomenon
 - Maximum pressure 3 bar
 - Maximum allowed temperature of 110°C
 - Maximum flow temperature (electronically calibrated) equal to 82°C
 - No limit on return temperature
 - High punctual and seasonal efficiencies:
 - Efficiency with nominal heat output and high temperature η_4 , 80-60°C (referred to LHV) equal t, 96,9% (for the 25 kW model) and 96,5% (for the 35 kW model)
 - Efficiency with nominal heat output and high temperature η_4 , 80-60°C (referred to HHV) equal to 91,4% (for the 25 kW model) e al 91,0% (for the 35 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to LHV) equal to 105,6% (for the 25 kW model) e al 104,8% (for the 35 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to HHV) equal to 99,6% (for the 25 kW model) e al 98,9% (for the 35 kW model)

CENTRALIZED HEATING

Floor-standing oil condensing units

- Seasonal energy efficiency in central heating mode η_s (referred to HHV) equal to 93% for all models
-
- Single-stage oil burner featured by:
 - "BLU flame" combustion head, type "BG" with very low polluting emissions, equipped with long penetration mouthpiece with recirculation of combustion fumes
 - Pollutant emissions in conformity with ErP ($\text{NO}_x \leq 99 \text{ mg/kWh}$ referring to HHV and $\text{CO} < 11 \text{ ppm}$)
 - Low consumption electric motor
 - Pre-heating electrical resistance with very low consumption always active to facilitate the ignition
 - Oil pump with high pressure for a better fuel nebulization and emission reduction
 - High head fan
 - Burner pre-calibration by the factory
 - Full "fire" test at the factory (burner ignition on test bench for safety and quality tests)
 - B23-C13(*)-C33(*)-C63(*) homologation for the open chamber operation (type B) or, by means of a specific accessory kit, for the sealed chamber (type C)
- Electronic board for the control of the boiler functions characterized by:
 - Main switch (located on the rear of the appliance)
 - Easy and intuitive user electronic interface protected by a small door with controlled soft closing
 - Backlit display
 - Multi-level tree menu
 - User profile management protected by password
 - Multifunctional button:
 - ENTER/RESET: allows to enter to the main menu and restore the operation after a crash
 - Navigation keys
 - Setting / adjustment buttons
 - Soft light operating status LED
 - Flow temperature probe
 - Safety thermostat
 - Return temperature probe
 - Water pressure transducer
 - Climatic regulation
 - Management direct circuit and DHW production with anti-legionella function by means of an integrated 3 way valve
 - Additional heating zones (up to 3) with additional accessory modules
 - Possibility of modulating water flow regulation (PWM pump) with minimum return temperature control
 - Management of the alarm history
 - Room thermostat or Open Therm probe input
 - Input for time programmer
 - 0-10 V input for power control from external device
 - Modbus output
 - Support terminal block
- Hydraulics featured by:
 - Modulating pump (PWM pump) for constant ΔT operation to maximize seasonal average efficiency at partial loads
 - Integrated 3-way diverter valve for DHW production
 - Horizontal tank with high thickness insulation, wide thermal exchange surface for short recovery times and high heat exchanged, DHW production efficiency in class B ($\eta_{wh} = 78\%$, XL load profile).
 - 6 bar safety valve for the DHW tank
 - 6 liters DHW expansion vessel
 - 12 liter expansion vessel for all models

SAFETY DEVICES

The control panel besides the management of the **INSIEME EVO COND B/130 LN** thermal group functions, allows to highlight each anomaly affecting the proper operation, making the boiler safe and stopping it and automatically closing the burner oil valve. The burner control and adjustment board also performs the safety functions by managing the correct operation of the burner itself.

Any anomaly that affects the correct functioning of the generator places it in forced stop (lock) and is promptly signaled by a numerical error code on the controller display.

The following are installed on the water circuit:

- Safety thermostat: it is installed on the boiler body, it intervenes stopping (permanent error) the thermal group when the boiler temperature exceed the limit threshold of 110°C;
- Safety valve: intervenes when the boiler pressure exceed the limit threshold of 3 bar;
- Tank safety valve: intervenes when the tank pressure exceed the limit threshold of 6 bar;
- Pressure transducer: send a signal to the electronic regulator that continuously visualize and verify the primary circuit pressure in order to allow starting or stopping the generator in case of low pressure;
- Boiler temperature probes (flow and return): the immersion probe on the flow collector of the generator is used by the regulator both to visualize and verify the water temperature on the flow connection and to control the ignition and the switch off of the burner referring to the set point. The regulator use the same probe to switch off the burner in case of overheating, before the intervention of the safety thermostat. The probe positioned on the boiler return is used by the regulator for the return temperature visualization in order to calculate, in combination with the flow temperature, the temperature difference between flow and return (ΔT), which allows the management of the circulator in heating mode.

COMPLIANCE

Thermal units **INSIEME EVO COND B/130 LN** comply with:

- – Efficiency Directive 92/42/EEC.
- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Ecodesign Directive 2009/125/CE for energy-related products
- Regulation (EU) 2017/1369 Energy labelling
- Delegated Regulation (EU) No. 811/2013;
- Delegated Regulation (EU) No. 813/2013;
- Delegated Regulation (EU) No. 814/2013;

SUPPLIED MATERIAL

The thermal group **INSIEME EVO COND B/130 LN** comes on pallet, protected by a scratch-resistant cloth and triple-wave cardboard packaging.

The specific features of the product are indicated on the outside: model, power, equipment, type of fuel.

Inserted in a plastic bag positioned inside the thermal unit, the following materials are supplied:

- User instruction booklet
- Installer and technical service instruction manual
- Hydraulic test certificate
- Energy label
- Conventional warranty conditions

CENTRALIZED HEATING

Floor-standing oil condensing units

INSIEME EVO COND 45, 55, 70 LN

PRODUCT DESCRIPTION FOR SPECIFICATIONS SUMMARY

INSIEME EVO COND 45, 55, 70 LN are condensing heat generators working with low sliding temperature and composed by a stainless steel boiler body resistant to the sulfuric acid corrosion, typical of the oil with <1000 ppm sulphur content (class A, $\eta_s = 93\%$), with single-stage oil burner (dual-stage for 55, 70 models) with very low polluting emissions, in conformity with the ErP ($\text{NO}_x \leq 97 \text{ mg/kWh}$ referred to HHV e $\text{CO} < 12 \text{ ppm}$) and with an electronic board for the management of the boiler functions, equipped with a pocket user interface, easy and intuitive.

Generators can work with oil fuel as declared in UNI 6579 (< 1000 ppm sulphur content) and with low sliding temperature, with an horizontal, reverse flame boiler body configuration in order to reduce the boiler size and optimize the space in the installation room, with pressurized flame with reduced thermal load and specifically studied for the low polluting emissions. INSIEME EVO COND born with open chamber configuration but it can be converted into sealed room (type C) with an optional kit.

The boiler layout is "only heating".

PRODUCT DESCRIPTION FOR SPECIFICATIONS

INSIEME EVO COND 45, 55, 70 LN are condensing heat generators working with low sliding temperature and composed by:

- Boiler structure characterized by:
 - Lifting/positioning brackets integrated in the boiler body
 - Hydraulic connections on the back to facilitate the installation
 - Wheels installed on the back to facilitate the handling on the installation room
- High quality stainless steel boiler body with high thickness, working with low sliding temperature (class A, $\eta_s = 93\%$) with the features listed below:
 - Reverse flame combustion chamber with high volume and surface that minimize the fumes and plates overheating risk, avoiding the "thermal NO_x " production
 - Material: AISI 316Ti – EN 1.4571 – titanium stabilized austenitic stainless steel, part which avoid the precipitation of chromium carbides between the 450°C and 800°C temperatures, offering an higher corrosion resistance at these temperature (in particular the pitting phenomena), typical of areas subjected to welding, even in particularly reducing environments
 - Dimensions: The combustion chamber was been developed (volume and exchange surface) in order to drastically reduce both the volumetric thermal load and the specific thermal load and then the production of polluting emissions. The higher dimensions of the reverse flame tube ensure the minimization of the fumes pressure drops, giving, where requested, an high head availability (B23P homologated)
 - AISI 316Ti – EN 1.4571 Front tube head with high thickness
 - Anterior steel door with lateral hinges and burner holder flange, which can be open for the usual maintenance and clean operations. Internally, the door is equipped with a thermal insulation with high thickness in order to minimize the thermal losses
 - Fire tubes:
 - Material: AISI 22-05 – EN 1.4462 – dual-phase stainless steel, characterized by a microstructure consisting of ferrite islands with austenitic matrix, present in equal volumetric percentage. This ensure This allows to obtain a steel with better mechanical characteristics than those of traditional stainless steel and a better behaviour against pitting corrosion and corrosion under stress. As example, compared to AISI 904L, AISI 22-05 can boast a higher yield strength of about 96%, a higher tensile strength of about 20%, a lower linear expansion coefficient of about 16%, a Brinell hardness higher by about 17% and a thermal conductivity higher by about 25%, all to the advantage of the mechanical strength and efficiency of the boiler body.
 - This steel is used for the production of parts subjected to very severe corrosive conditions, as it is resistant to hot oxidation up to 1000 °C. It is better than the austenitic Cr-Ni types even in the presence of chlorides and especially when the corrosive conditions are combined with mechanical tension situations (stress-corrosion) typical of thermal expansion and mechanical stress in general. Its corrosion resistance is maximum in the solubilized state. The optimal range of use is in the temperature range between -50 °C and 250 °C, typical of a boiler exchanger.
 - "Smooth tube" design: allows both an easy cleaning of the boiler and reduced losses on the fumes side (high useful head – B23P) with "self-cleaning" effect.
 - Posterior steel door that can be opened to facilitate maintenance and cleaning, built using thick sheets in AISI 22-05 – EN 1.4462 material
 - All the heat exchange surfaces in contact with the condensate are suitable for the heating oil condensation in accordance with UNI 6579 (< 1000 ppm sulphur content)
 - Carbon steel external planking (in contact with the heat transfer fluid)
 - AISI 430 – EN 1.4016 turbulators for a long life even in presence of aggressive environments (oil with high content of sulphur)
 - With high water volume with stratification effect: very low water content on the hot side, quick start up, and large reserve of water in the cold part below, for maximize the condensation phenomenon
 - Maximum pressure 3 bar
 - Maximum allowed temperature of 110°C
 - Maximum flow temperature (electronically calibrated) equal to 82°C
 - No limit on return temperature
 - High punctual and seasonal efficiencies:
 - Efficiency with nominal heat output and high temperature, 80–60°C (referred to LHV) equal to 97,2% (for the 45 kW model), 96,9% (for the 55 kW model) and 96,8% (for the 70 kW model)
 - Efficiency with nominal heat output and high temperature η_4 , 80–60°C (referred to HHV) equal to 91,7% (for the 45 kW model), 91,4% (for the 55 kW model) and 91,3% (for the 70 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to LHV) equal to 104,8% (for the 45 kW model), 104,9% (for the 55 kW model) e al 104,8% (for the 70 kW model)
 - Efficiency at 30% with nominal heat output and low temperature η_1 (referred to HHV) equal to 98,9% (for the 45 kW model), 98,9% (for the 55 kW model) e al 98,9% (for the 70 kW model)
 - Seasonal energy efficiency in central heating mode η_s (referred to HHV) equal to 93% for all models
- Oil burner featured by:

- "BLU flame" combustion head, type "BG" with very low polluting emissions, equipped with long penetration mouthpiece with recirculation of combustion fumes
- Single stage operation for the 45 kW model
- Dual stage operation for both 55 kW (Minimum rated heat input at furnace referred to LHV =40 kW) and 70 kW (Minimum rated heat input at furnace referred to LHV =55 kW) models
- Polluting emissions in conformity with ErP ($\text{NOx} \leq 97 \text{ mg/kWh}$ referring to HHV and $\text{CO} < 12 \text{ ppm}$)
- Low consumption electric motor
- Pre-heating electrical resistance with very low consumption always active to facilitate the ignition
- Oil pump with high pressure for a better fuel nebulization and emission reduction
- High head fan
- Burner pre-calibration by the factory
- Full "fire" test at the factory (burner ignition on test bench for safety and quality tests)
- B23-C13(*)-C33(*)-C63(*) homologation for the open chamber operation (type B) or, by means of a specific accessory kit, for the sealed chamber (type C)
- Electronic board for the control of the boiler functions characterized by:
 - Main switch (located on the rear of the appliance)
 - Easy and intuitive user electronic interface protected by a small door with controlled soft closing
 - Backlit display
 - Multi-level tree menu
 - User profile management protected by password
 - Multifunctional button:
 - ENTER/RESET: allows to enter to the main menu and restore the operation after a crash
 - Navigation keys
 - Setting / adjustment buttons
 - Soft light operating status LED
 - Flow temperature probe
 - Safety thermostat
 - Return temperature probe
 - Water pressure transducer
 - Climatic regulation
 - Management direct circuit and DHW production with anti-legionella function by means of an integrated 3 way valve
 - Additional heating zones (up to 3) with additional accessory modules
 - Possibility of modulating water flow regulation (PWM pump) with minimum return temperature control
 - Management of the alarm history
 - Room thermostat or Open Therm probe input
 - Input for time programmer
 - 0-10 V input for power control from external device
 - Modbus output
 - Support terminal block

CENTRALIZED HEATING

Floor-standing oil condensing units

SAFETY DEVICES

The control panel besides the management of the **INSIEME EVO COND LN** thermal group functions, allows to highlight each anomaly affecting the proper operation, making the boiler safe and stopping it and automatically closing the burner oil valve.

The burner control and adjustment board also performs the safety functions by managing the correct operation of the burner itself.

Any anomaly that affects the correct functioning of the generator places it in forced stop (lock) and is promptly signaled by a numerical error code on the controller display.

The following are installed on the water circuit:

- Safety thermostat: it is installed on the boiler body, it intervenes stopping (permanent error) the thermal group when the boiler temperature exceed the limit threshold of 110°C;
- Safety valve: intervenes when the boiler pressure exceed the limit threshold of 3 bar;
- Pressure transducer: send a signal to the electronic regulator that continuously visualize and verify the primary circuit pressure in order to allow starting or stopping the generator in case of low pressure;
- Boiler temperature probes (flow and return): the immersion probe on the flow collector of the generator is used by the regulator both to visualize and verify the water temperature on the flow connection and to control the ignition and the switch off of the burner referring to the set point. The regulator use the same probe to switch off the burner in case of overheating, before the intervention of the safety thermostat. The probe positioned on the boiler return is used by the regulator for the return temperature visualization in order to calculate, in combination with the flow temperature, the temperature difference between flow and return (ΔT), which allows the management of the circulator in heating mode.

COMPLIANCE

The thermal groups **INSIEME EVO COND LN** comply with:

- – Efficiency Directive 92/42/EEC.
- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Ecodesign Directive 2009/125/CE for energy-related products
- Regulation (EU) 2017/1369 Energy labelling
- Delegated Regulation (EU) No. 811/2013;
- Delegated Regulation (EU) No. 813/2013;

SUPPLIED MATERIAL

The thermal group **INSIEME EVO COND LN** comes on pallet, protected by a scratch-resistant cloth and triple-wave cardboard packaging.

The specific features of the product are indicated on the outside: model, power, equipment, type of fuel.

Inserted in a plastic bag positioned inside the thermal unit, the following materials are supplied:

- User instruction booklet
- Installer and technical service instruction manual
- Hydraulic test certificate
- Energy label
- Conventional warranty conditions

RIELLO



INSIEME EVO COND

RIELLO S.p.A.
37045 Legnago (VR) Italy
tel. +39 0442 630111

www.riello.com

The company is constantly working to perfect the features of its entire production range so the design and size, technical data, equipment and accessories may be subject to change.

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