



SFKG 150-200

1. GENERAL FEATURES

The SFKG 150-200 units are floor standing, indoor and hot water only, condensing gas water heaters. The unit is equipped with three (SFKG 150) or four (SFKG 200) highly efficient exchangers of 50 kW each.

The exchangers are independent each other, which guarantees the running of the unit even in case of a failure of a single exchanger. The stainless steel exchangers are designed and made in-house.

The inner diameter of 28 mm. makes the exchanger extremely reliable and robust, even in case of hard waters. The exchanger is easy to clean and user-friendly in case of maintenance.

Each individual exchanger features an ample 1:10 air/gas ratio, the unit runs each exchanger according to the flow-rate and the actual operational times to guarantee a proper rotation among the exchangers.

The SFKG 150 unit is therefore enhanced by a nice 1:30 air/gas ratio, whilst the SFKG 200 unit features an even better 1:40 air/gas ratio. The inner D.H.W. collectors are copper made, which also helps to prevent the possible production of legionella.

The unit is a kind of “plug and play” product, where the water-gas-exhausts collectors and the condensate neutralyser are included in the factory supply. The cascade controller, along with all the other functional parts, are tested and set-up at the factory, which leads to a remarkable time savings.

The SFKG 150-200's can be arranged as re-circulation or storage mode, thus feeding the tank load pump or re-circulation pump,

thru dedicated sensors and programs.



2. MAIN SPECIFICATIONS

HYDRAULIC AND FLUE MANIFOLDS ALREADY
INSTALLED EX-FACTORY

GAS MANIFOLD COMPLETE WITH SHUTTER
SHUT-OFF VALVE FOR EACH INDIVIDUAL
EXCHANGER

SLOPED - SELF CLEANING
PIPES FOR CLOSED
LOOPS (RE-CIRCULATION
- TANK LOAD)

CASCADE
CONTROLLER WIRED
AND TESTED EX-
FACTORY

ELECTRICAL PANEL
FOR PROTECTION
AND DISARMING OF
EACH EXCHANGER

FRONT SIPHON FOR
AN EASY ACCESS

COLLECTION TANK AND
NEUTRALISATION OF THE
CONDENSATE

LIFTING FEET



3. TECHNICAL DATA

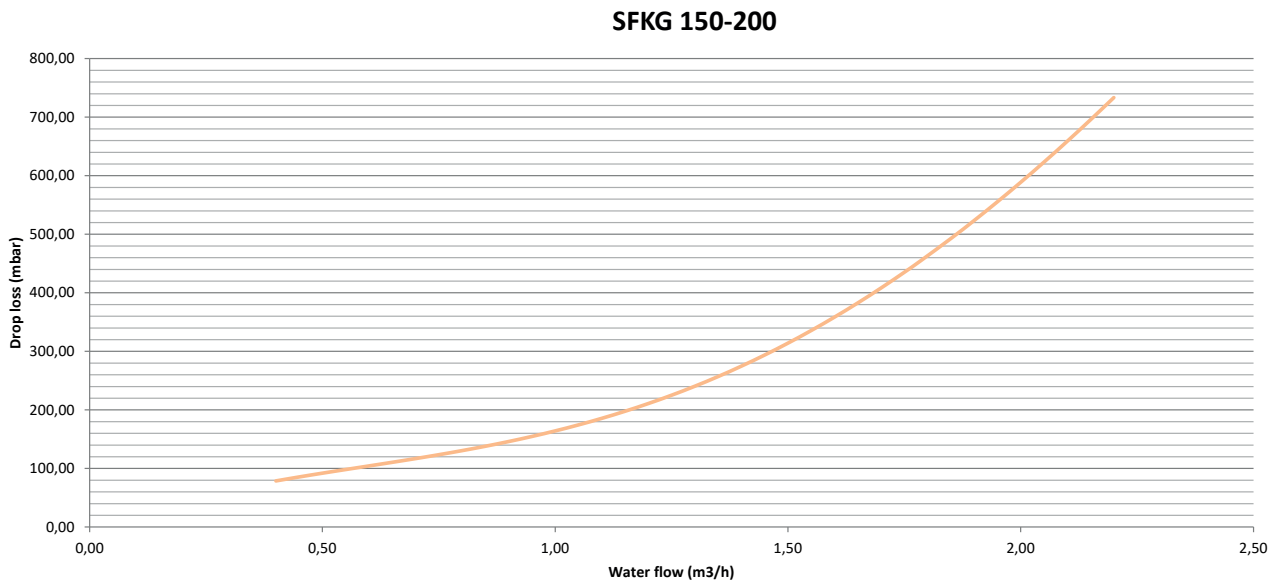
MODEL		SFKG 150	SFKG 200
CE certification	n°		
Gas category	cat	II2H3B/P	II2H3B/P
Flue system type	tipo	B23-B23p-B33-B53	B23-B23p-B33-B53
Thermal unit	kW	3 x 50	4 x 50
Heat Input max (D.H.W.)	kW	150	200
Heat Input min (D.H.W.)	kW	5	5
Heat Output max.	kW	161,25	215,00
Heat Output min.	kW	5,60	5,60
Combustion data			
Maximum combustion efficiency	%	99,2	99,2
Minimum combustion efficiency	%	99,80	99,80
Efficiency at 100% Heat Output	%	107,50%	107,50%
Efficiency Heat Output min.	%	112,00%	112,00%
Flue efficiency losses with burner on (Heat Input max.)	%	0,80%	0,80%
Flue efficiency losses with burner on (Heat Input min.)	%	0,20%	0,20%
Fumes temperature - Heat Input max.	°C	41	41
Fumes temperature - Heat Input min.	°C	28	28
CO ₂ - Heat Input max. - G20 ⁽¹⁾	%	9,3 - 9,1	9,3 - 9,1
CO ₂ - Heat Input min. - G20 ⁽¹⁾	%	9 - 8,8	9 - 8,8
CO ₂ - Heat Input max. - G30 ⁽¹⁾	%	11,3 - 11,1	11,3 - 11,1
CO ₂ - Heat Input min. - G30 ⁽¹⁾	%	10,9 - 10,7	10,9 - 10,7
CO ₂ - Heat Input max. - G31 ⁽¹⁾	%	10,3 - 10,1	10,3 - 10,1
CO ₂ - Heat Input min. - G31 ⁽¹⁾	%	9,9 - 9,7	9,9 - 9,7
CO - Heat Input max. ⁽¹⁾	ppm	68	68
Fumes mass - Heat Input max.	g/s	66,27	89,28
Fumes mass - Heat Input min.	g/s	2,31	2,31
Weighted NO _x (0% O ₂) ppm	ppm	28	28
Weighted NO _x (0% O ₂) on GCV mg/kWh	mg/KWh	45	45
Domestic Hot Water (D.H.W.) circuit			
Temperature setting - D.H.W.	°C	35-60	35-60
Max. operating pressure - D.H.W.	bar	8	8
Min. operating pressure - D.H.W.	bar	0,5	0,5
D.H.W. flow rate - continuous flow - Δt 25°C	litri/min	88.14	117,52
D.H.W. flow rate - continuous flow - Δt 30°C	litri/min	73.44	97,92
D.H.W. flow rate - continuous flow - Δt 35°C	litri/min	62.94	83,92
Main flowmeter minimum flow rate	litri/min	3	3
Dimensions			
Width	mm	710	710
Depth	mm	775	775

MODEL		SFKG 150	SFKG 200
Height	mm	1880	1880
Gross weight	kg	190	230
Hydraulic Connections			
Raccordi idrici			
Cold water inlet	Ø	1 1/2"	1 1/2"
D.H.W. outlet	Ø	1 1/2"	1 1/2"
Gas	Ø	1 1/2"	1 1/2"
Condensate Outlet	Ø	29	29
Flue systems			
Fan - Max. available pressure	Pa	100	100
Fan - Min. available pressure	Pa	30	30
Max. Flue length Ø160 - Horiz. Pipe	m	10	10
Flue bend 90° MF - Pressure loss	m	4	4
Electrical specifications			
Voltage-frequency	V/Hz	120/60	120/60
Nominal power consumption	A	1.12	1.49
Max Power consumption	W	114	152
Max Power Boiler Off	W	10,5	14
Protection rating	IP	X4D	X4D
Gas supply			
Supply pressure - G20	mbar	20	20
Supply pressure min. - G20	mbar	17	17
Supply pressure max. - G20	mbar	25	25
Gas consumption - G20	m ³ /h	15.87	21.16
Supply pressure - G30	mbar	28-30	28-30
Supply pressure min. - G30	mbar	20	20
Supply pressure max. - G30	mbar	35	35
Gas consumption - G30	kg/h	11.82	15.76
Supply pressure - G31	mbar	37	37
Supply pressure min. - G31	mbar	25	25
Supply pressure max. - G31	mbar	45	45
Gas consumption - G31	kg/h	11.64	15.54

⁽¹⁾ Data from a single thermal unit

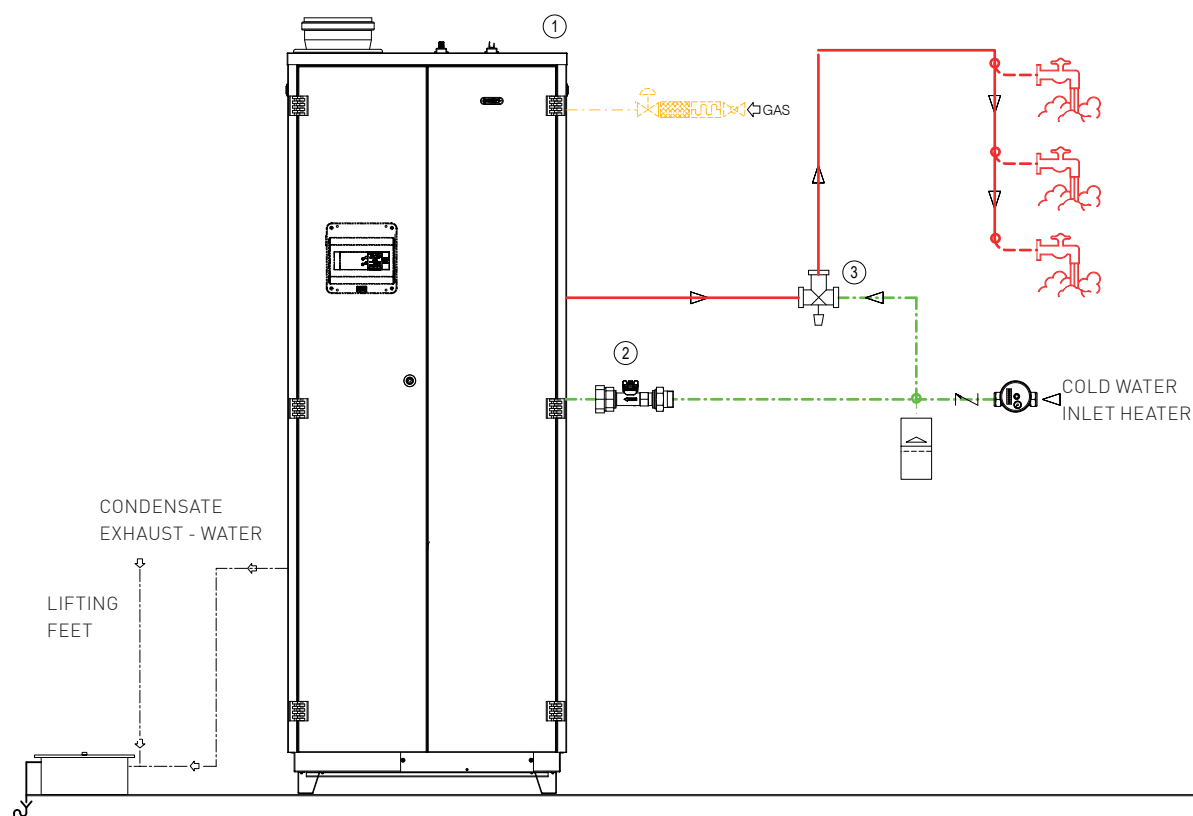
4. LOAD LOSSES

When dimensioning the tank load pump, refer to this value as the maximum pressure drop for SFKG 150 - SFKG 200's. The flow rate in the graph refers to a single internal exchanger/module, to find this value divide the total flow rate of the whole system by the number of the internal exchangers-modules (# 3 for SFKG 150 and # 4 for SFKG 200).



5. WATER CIRCUIT

FUNCTIONAL SCHEME FOR THE INSTANTANEOUS PRODUCTION OF THE DOMESTIC HOT WATER



KEY:

- 1 SFKG WATER HEATER
- 2 FLOW METER
- 3 THERMOSTATIC MIXING VALVE

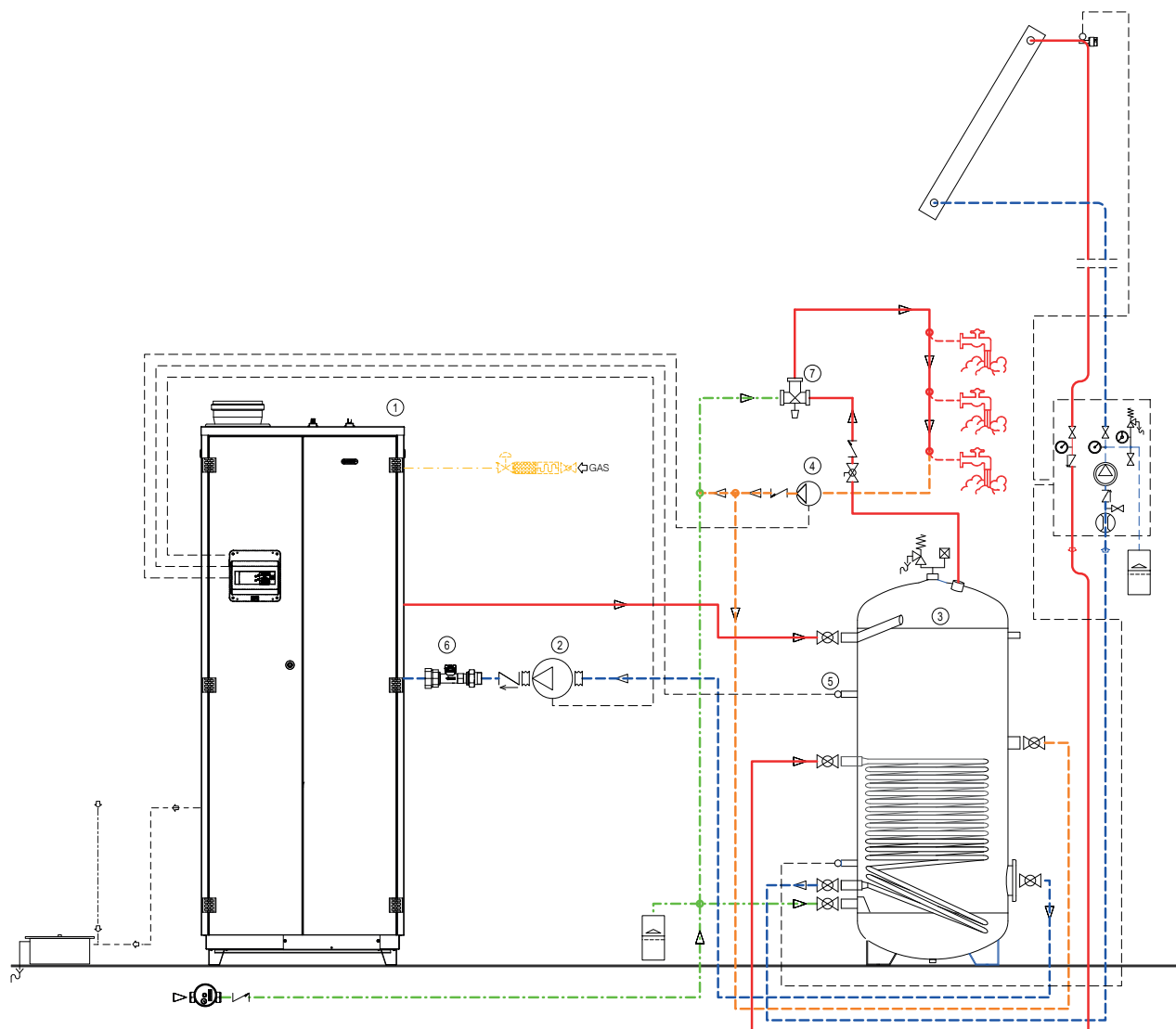
WARNING

Avoid components that create high turbulences in the section immediately close to the flow-meter.

These turbulences can mislead the flow-rate reading and misrepresent the values received by the cascade manager.

Maintain a straight section of pipe for at least 20 cm. for the connection of the cold water pipe to the main flow-meter.

FUNCTIONAL SCHEME FOR THE DOMESTIC HOT WATER PRODUCTION BY MEANS OF A SEPARATE TANK

IMPORTANT NOTE

The tank load pump is not included within the standard supply. As for the pump sizing, refer to the pressure drops of the whole sanitary hydraulic circuit, including tank + pipes, valves and fittings + SFKG according to the internal pressure loss graph shown in this document. For a proper seizing of the pump, we highly recommend to run with a delta of 30° C. between inlet and outlet from from the SFKG unit, it is however possible to make small adjustments on this value according to the plant specifications. During the dimensioning, bear in mind that:

- If the selected load pump has a flow rate which is too high, the movement of the water inside the tank will be very quick and this will lead to a rapid breakdown of the stratification, stirring up the entire water mass within the tank;

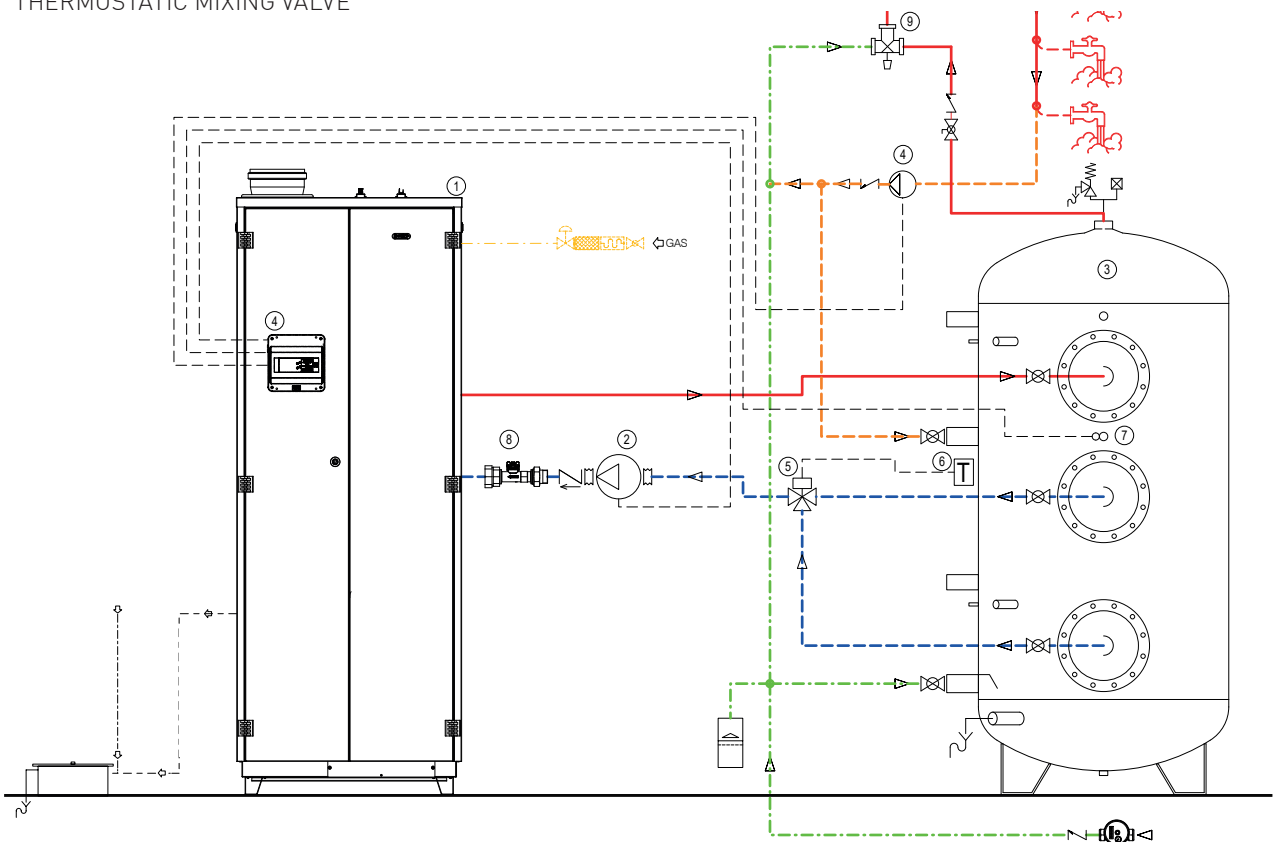
- If, on the contrary, the selected load pump has a flow-rate which is too low, the delta between flow and return will be high, the set point shall be therefore achieved too quickly leading the system to modulate the power burnt and lengthen the recovery time of the tank;

- We strongly recommend to maintain a delta such to insert in the upper layer of the tank, water with a temperature directly available at the home owner. For example, if in the toughest winter conditions we might find an expected inlet of domestic cold water into the tank of 10° C., it is recommended to have the domestic hot water input in the upper top of the tank of at least 40 °C, and thus size the pump for a delta of 30° C.

FUNCTIONAL DIAGRAM FOR THE HOT WATER PRODUCTION THROUGH AN EXTERNAL TANK, WITH A PROPOSAL TO QUICKLY DISSECT AND STRATIFY THE ACCUMULATION.

LEGENDA

- 1 SFKG WATER HEATER
- 2 LOAD PUMP
- 3 DOMESTIC HOT WATER TANK
- 4 RE-RICULATION PUMP
- 5 DIVERTOR VALVE FOR THE STRATIFICATION
- 6 LOW-LIMIT THERMOSTAT
- 7 TANK SENSOR
- 8 FLOW-METER
- 9 THERMOSTATIC MIXING VALVE



IMPORTANT NOTE

In addition to the information outlined in the previous page, here we add a divortor valve run by thermostat located at the middle of the tank. The divortor valve deviates the water drawn by the load pump and directed to the SFKG unit, to section the tank, which prepares the domestic hot water as half, or full accumulation. The goal of this arrangement is to quickly discharge the firing power of the SFKG unit into a smaller volume of water, in order to restore a volume of water in a few minutes which is immediately available at the home owners.

This arrangement delivers quicker a volume of water ready to satisfy the systems and can be beneficial at times of higher demand for D.H.W. production.

When the thermostat reaches the set temperature, it supplies power to the tank to switch the divortor valve and circulate the entire volume of the tank.

The thermostat can be freely set according to the system requirements, we recommend keeping the temperature set between 20 and 30° C.

When selecting this setting keep in mind that:

- If the temperature is set to a very low value, the temperature difference between the two layers will be little, thus the benefits of the modification;
- If the temperature is set to a very high value, the upper layer of the tank shall quickly reach a high temperature, but the SFKG unit will run longer and longer in modulation. The SFKG will resume its full power after the switchover of the divortor valve, when the water suction in the tank will bring the suction to cold water at the bottom of the tank.

6. ACCESSORIES

Model	Code	SFKG 150	SFKG 200
SOLAR CONTROL BOARD - P.C.B. for solar thermal management	65-00691	√	√
SOLAR PANELS SENSOR CABLE - This accessory, combined with the cascade controller, allows the management of the solar panels	31409LA	√	√
SENSOR CABLE FOR HEATING FLOW MANIFOLD - MIXED CIRCUIT - SOLAR TANK	40-00351	√	√
STAINLESS STEEL VERTICAL FLUE KIT, C/W FLUE TERMINAL	80019LA	√	√
POLYPROPYLENE HORIZONTAL FLUE KIT DIA. 160 MM. MF	50-00496	√	√
POLYPROPYLENE SPIGOT REDUCER 160 - 200 MM.	50-00522	√	√
FLUE EXTENSION MF 160 MM. L.= 500 MM.	50-00498	√	√
FLUE EXTENSION MF 160 MM. L.= 1.000 MM.	50-00499	√	√
FLUE EXTENSION MF 160 MM. L.= 2.000 MM.	50-00500	√	√
POLYPROPYLENE FLUE BEND 87° - 160 MM.	50-00510	√	√
POLYPROPYLENE FLUE BEND 45° - 160 MM.	50-00514	√	√
POPYPROPYLENE SPIGOT REDUCER 160 M/200F	50-00522	√	√
JOINT 160 MM. MF C/W SIPHON	50-00525	√	√
CONDENSATE DISCHARGE PUMP	82156LA	√	√



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