



INSTRUCTIONS MANUAL FOR BURNERS MODEL:

G 0H – G 0HR – G 0S (2001)

G 1H – G 1HR – G 1S – G 1F (2001)

G 2H – G 2HR – G 2S – G 2F (MAXI)

G X3H – G X3S – G X3F

G X4H – G X4S – G X4F

G X5H – G X5S – G X5F

[60Hz]



INDEX

MOD.: G0...-G1...-G2... GX3...-GX4...-GX5...	
070044_12A	00.01

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ONE STAGE LIGHT-OIL BURNERS [SERIES 2001] [60Hz]

MOD.: G0...-G1...-G2...

070044_12F

01

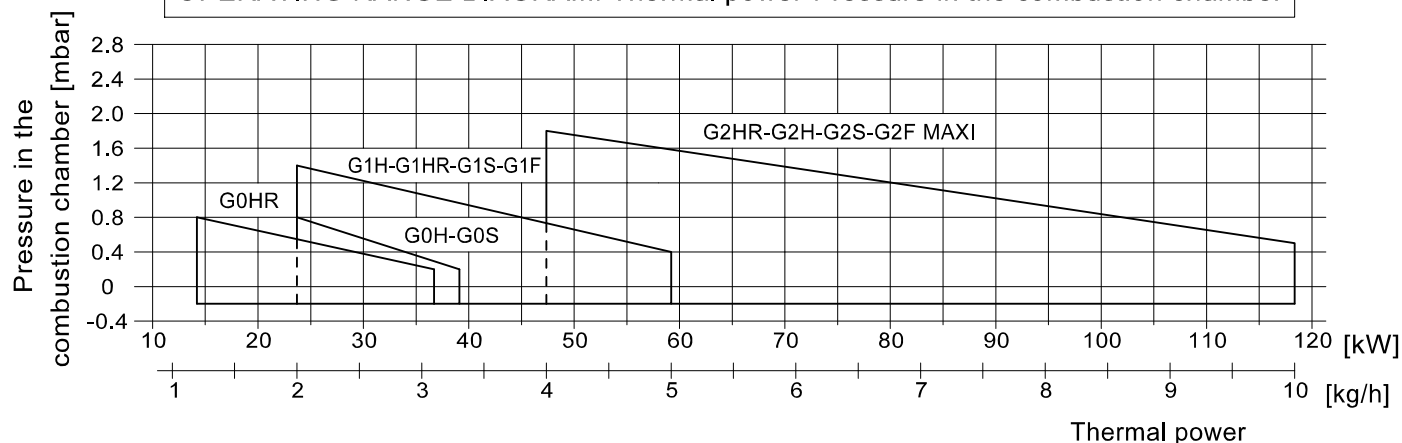
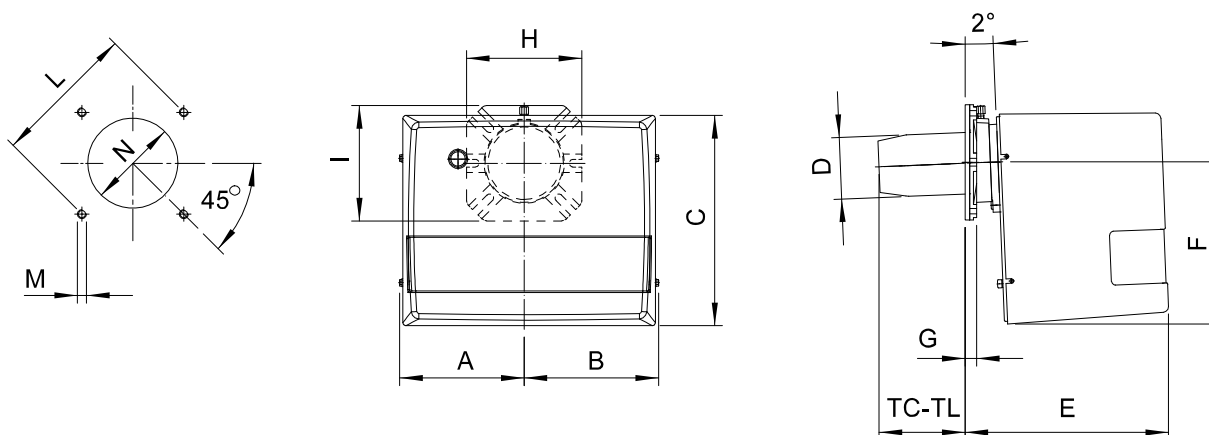
TECHNICAL DATA

MODEL		G0HR	G0H G0S	G1HR	G1H G1S G1F	G2HR MAXI	G2H MAXI G2S MAXI G2F MAXI
Flow min-max *	[kg/h]	1,2-3,1	2,0-3,3	2,0-5,0	2,0-5,0	4-9,8	4-9,8
Thermal power min-max *	[Mcal/h]	12,2-31,6	20,4-33,7	20,4-51	20,4-51	40,8-99,9	40,8-99,9
Thermal power min-max *	[kW]	14,2-36,7	23,7-39,1	23,7-59,2	23,7-59,2	47,3-116	47,3-116
Fuel : LIGHT-OIL 1.5° E to 20° C = 6.2 cSt = 35 sec Redwood N° 1							
Intermittent working operation (min. 1 stop every 24 hours) one stage							
Environmental conditions operation / storage : -15...+40°C / -20...+70°C , rel. humidity max. 80%							
Max temperature combustion air	[°C]	60	60	60	60	60	60
Nominal electric power	[W]	190	120	220	130	250	140
Fan motor	[W]	90	90	100	100	100	100
Nominal absorption	[A]	0,9	0,6	1	0,6	1,1	0,7
Preheated	[W]	30-110	-	30-110	-	30-110	-
Power supply:		1/N~220V-60Hz	1/N~220V-60Hz	1/N~220V-60Hz	1/N~220V-60Hz	1/N~220V-60Hz	1/N~220V-60Hz
Degree of electric protection:		IP40	IP40	IP40	IP40	IP40	IP40
Noisiness ** min-max	[dB(A)]	56-58	56-58	57-59	57-59	59-61	59-61
Weight burner ***	[kg]	9	9	10	10	10	10

* Conditions of reference: Environment temperature 20°C - barometric pressure 1013 mbars - Altitude 0 m o.l.s.

** Measured sonorous pressure in the laboratory combustion, with functional burner on beta boiler to 1m of distance. (UNI EN ISO 3746).

*** For burner with cover in steel (F) to add kg 3 to the weight.

OPERATING RANGE DIAGRAM: Thermal power-Pressure in the combustion chamber**DIMENSIONS [mm.]**

* : Suggested dimension of connection between burner and generator.

MODEL	A	B	C	D	E	F	G	H	I	min	L	max	M	min	N	max	TC	TL
G0...2001	137	137	240	80	223	169	15	150	150	130	150	170	M8	90	110	130	112	152
G1...2001	157	170	275	80	265	210	15	150	150	130	150	170	M8	90	110	130	112	152
G2...MAXI	157	170	275	90	265	210	15	150	150	130	150	170	M8	100	110	130	107	147



ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: GX3...-GX4...-GX5...

070044_12G

02

TECHNICAL DATA

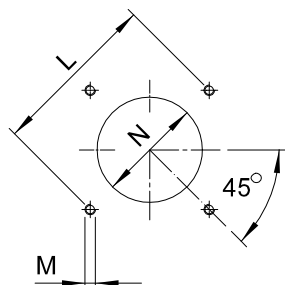
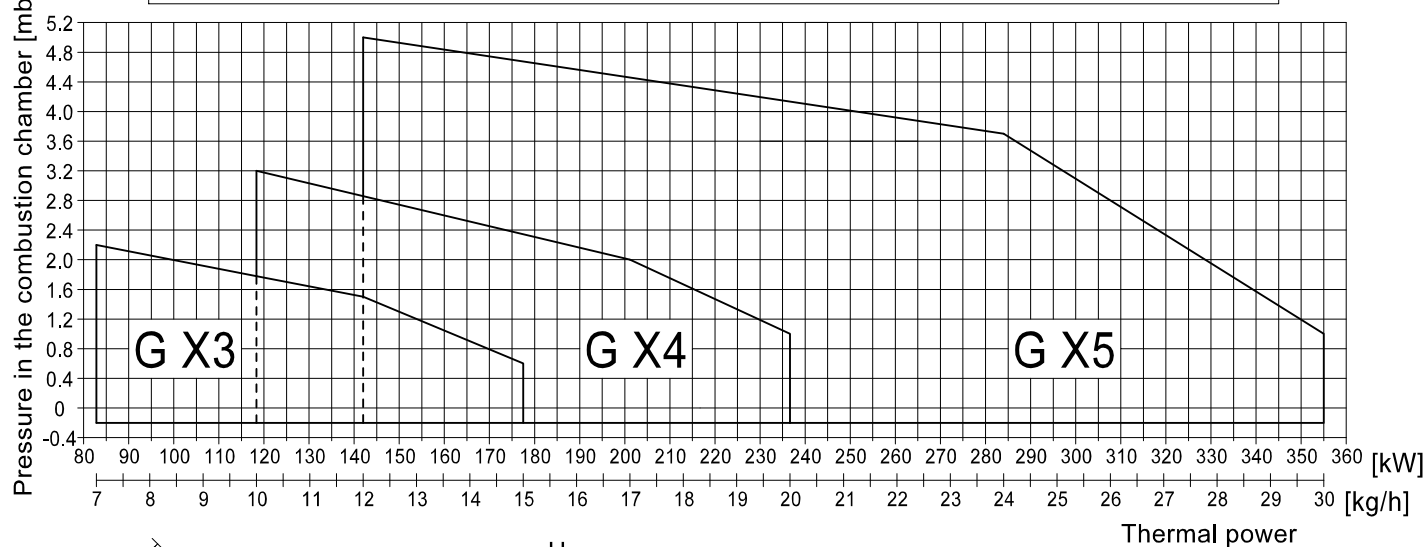
MODEL		GX3H GX3S GX3F	GX4H GX4S GX4F	GX5H GX5S GX5F
Flow min-max *	[kg/h]	7-15	10-20	12-30
Thermal power min-max *	[Mcal/h]	71-153	102-204	122-306
Thermal power min-max *	[kW]	83-178	118-236	142-355
Fuel : LIGHT-OIL 1.5° E to 20° C = 6.2 cSt = 35 sec Redwood N° 1				
Intermittent working operation (min. 1 stop every 24 hours) one stage				
Environmental conditions operation / storage : -15...+40°C / -20...+70°C , rel. humidity max. 80%				
Max temperature combustion air	[°C]	60	60	60
Nominal electric power	[W]	220	300	700
Fan motor	[W]	150	250	550
Nominal absorption	[A]	1	1.3	3.9
Power supply:		1/N~220V-60Hz	1/N~220V-60Hz	1/N~220V-60Hz
Degree of electric protection:		IP40	IP40	IP40
Noisiness ** min-max	[dB(A)]	66-66	67-68	71-72
Weight burner ***	[kg]	14	14	25

* Conditions of reference: Environment temperature 20°C - barometric pressure 1013 mbars - Altitude 0 m o.l.s.

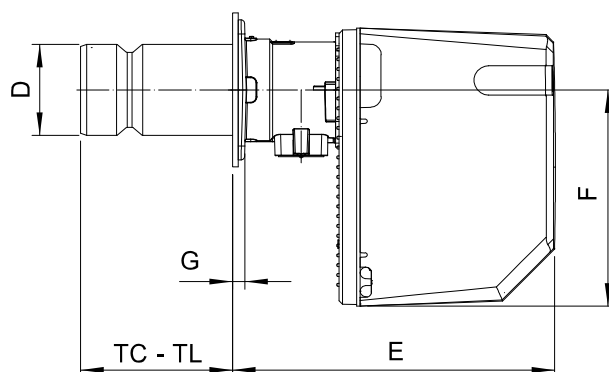
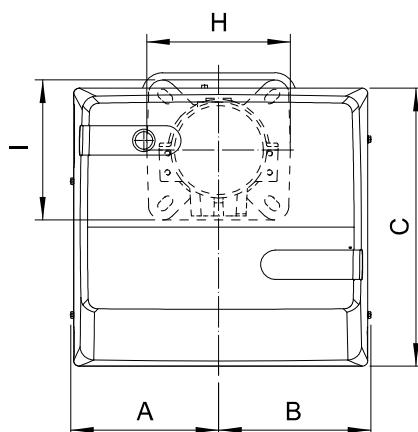
** Measured sonorous pressure in the laboratory combustion, with functional burner on beta boiler to 1m of distance. (UNI EN ISO 3746).

*** For burner with cover in steel (F) to add kg 5 to the weight.

OPERATING RANGE DIAGRAM: Thermal power-Pressure in the combustion chamber



DIMENSIONS [mm.]



* : Suggested dimension of connection between burner and generator.

MODEL	A	B	C	D	E	F	G	H	I	min	L	max	M	min	N	max	TC	TL
GX3...	182	192	318	110	306	248	17	200	200	160	170	226	M10	120	130	140	130	250
GX4...	182	192	318	124	306	248	17	200	200	170	205	226	M10	130	140	160	130	250
GX5...	210	218	400	130	461	310	18	200	200	205	220	226	M10	140	150	180	215	335



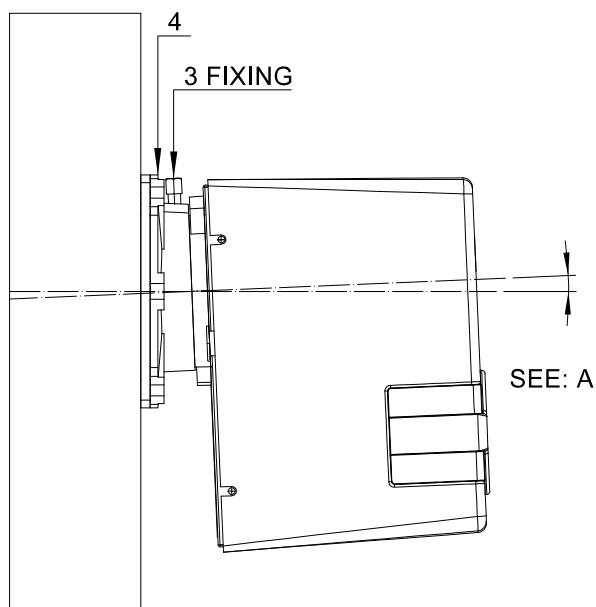
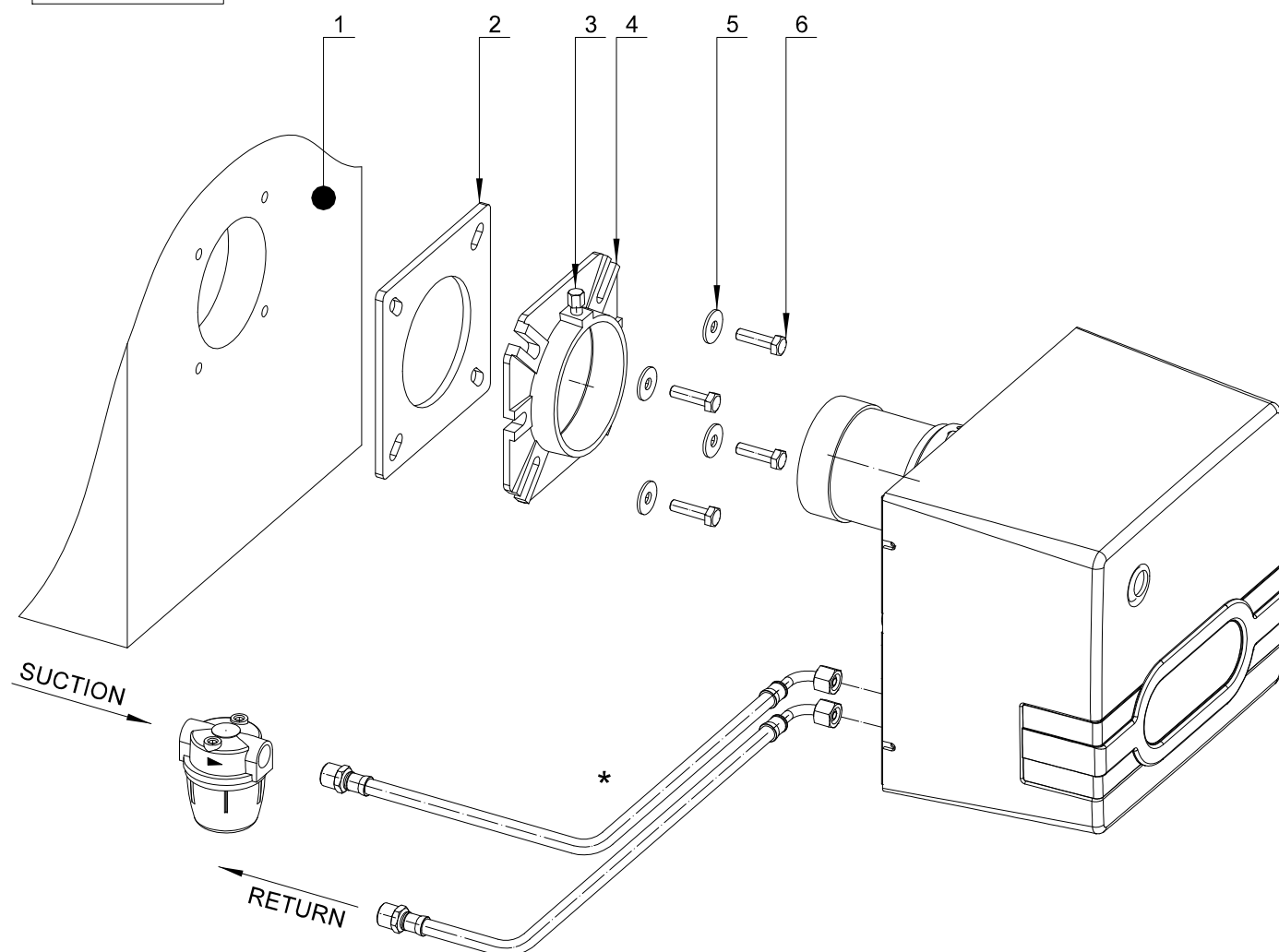
ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G0...-G1...-G2...
GX3...-GX4...

070044_12D

03

INSTALLATION



Fix the flange (4) to the boiler door (1) through the washers (5) and the screws (6), putting in the middle the insulating sheet (2). Then put the burner on the flange (4) and tighten the screw (3). After finishing the installation, verify that the burner is lightly inclined (see A).

* The burner is arranged to receive the light oil feeding pipes from right side, left side, upward or down word indifferently.



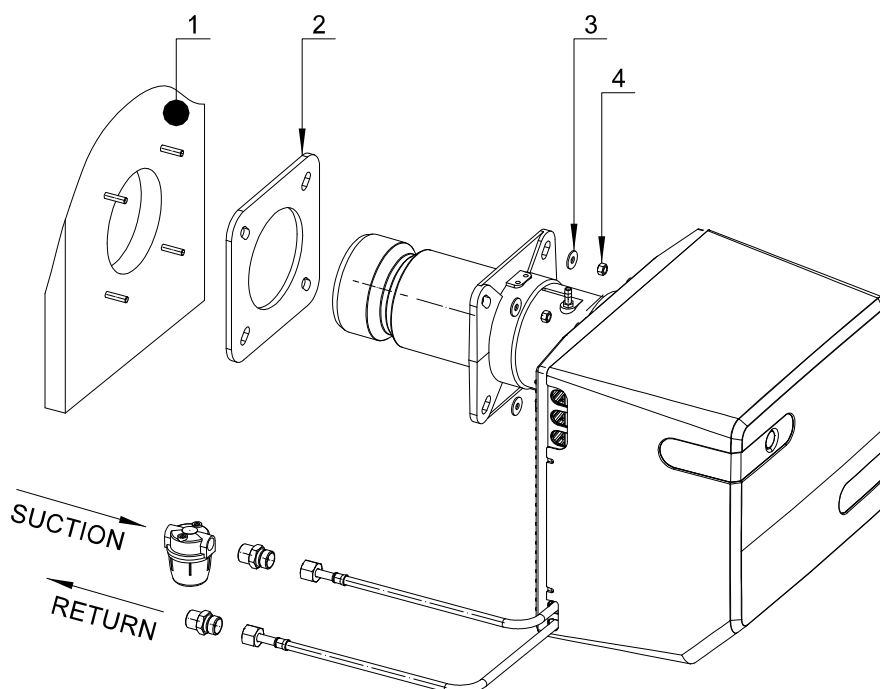
ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G X5...

070044_12D

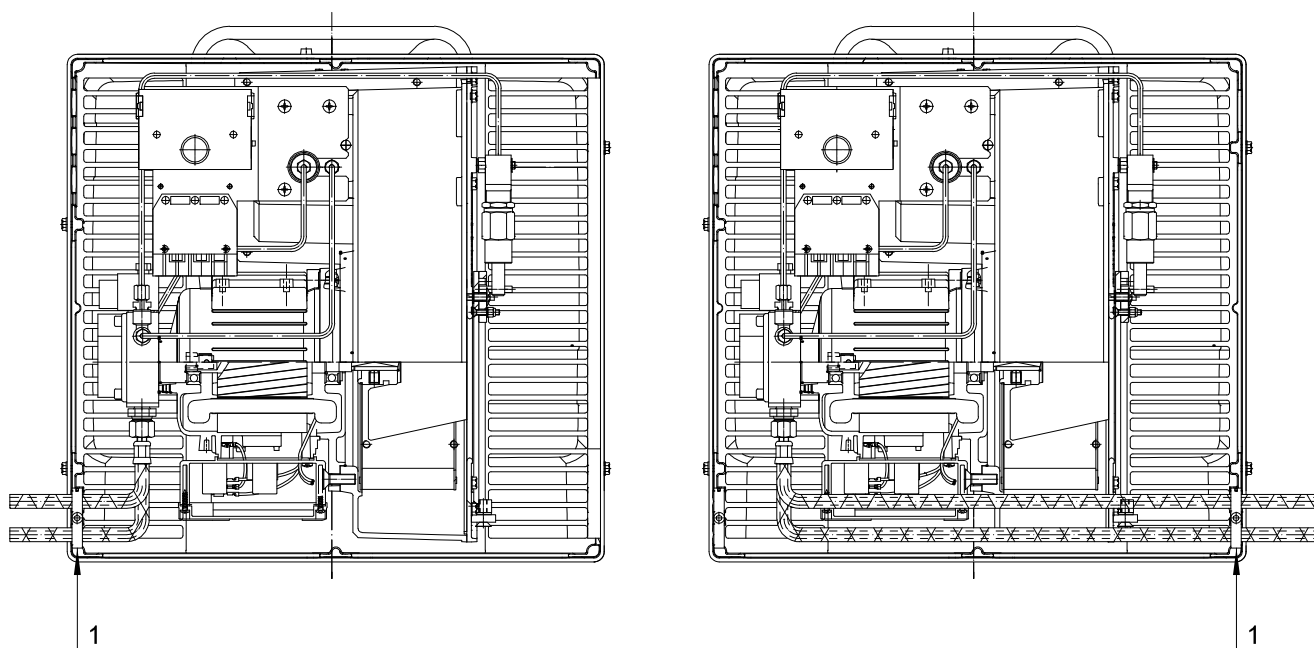
04

INSTALLATION



Fix to the boiler door (1) through the washers (3) and the nuts (4), putting in the middle the insulating sheet (2).

FUEL FEEDING



The burner is arranged to receive the light oil feeding pipes from right side or left side.
Depending on pipes exit (that should be right side or left side), it is necessary to invert the fixing plate (1).



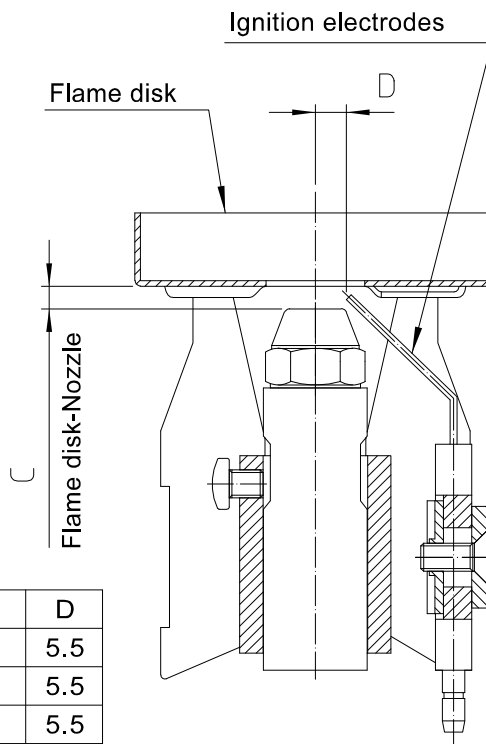
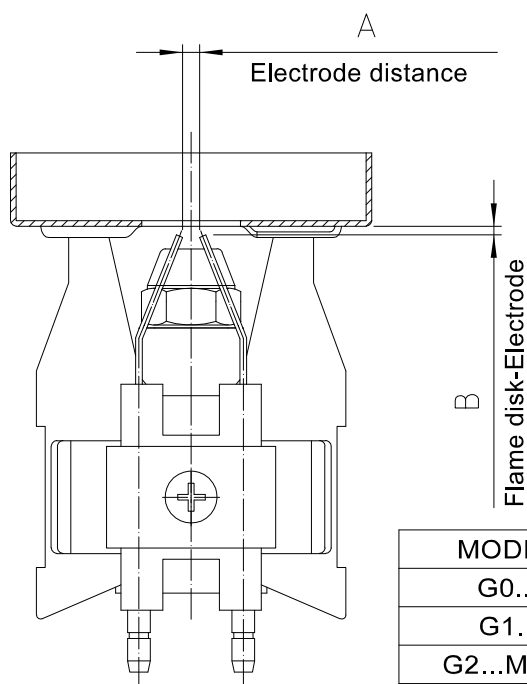
ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G0...-G1...-G2...
GX3...-GX4...GX5...

070044_12D

05

ELECTRODES POSITIONING [mm]



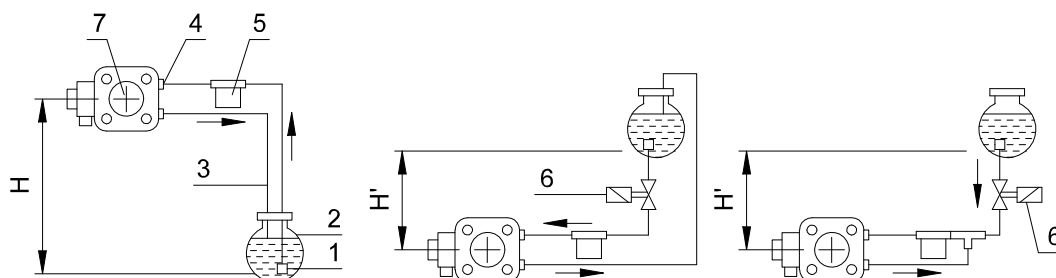
MODEL	A	B	C	D
G0...	3	1.5	4	5.5
G1...	3	1.5	4	5.5
G2...MAXI	3	1.5	4	5.5
GX3...	3	3	5	6
GX4...	4	1.5	6	6
GX5...	4	1.5	8	6

PUMP PRIMING

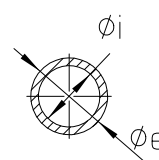
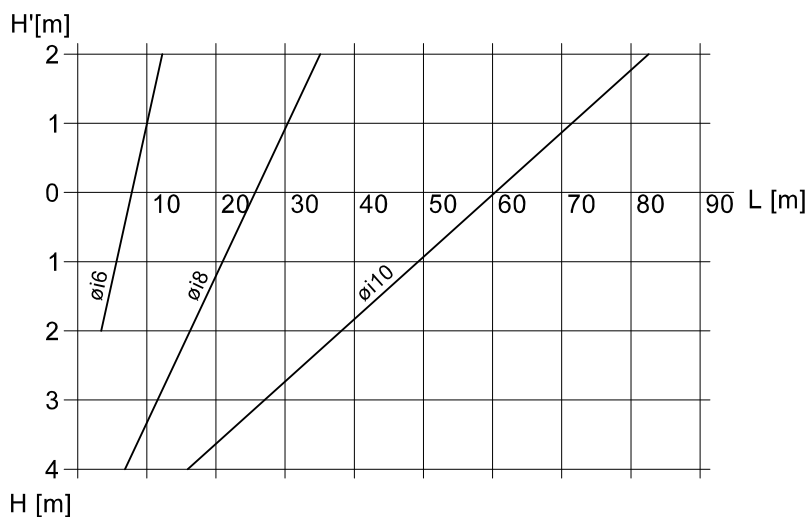
Connect correctly the suction and the return pipes (see the arrows on the pump), make sure that no closed gates exist on the return, then ignite the burner by keeping lighted the photoresistance and by bleeding from the pressure switch connection up until the light-oil comes out.

HYDRAULIC SYSTEM SCHEME AND PIPE DIAMETERS

- 1 : Filter
- 2 : Tank
- 3 : Return
- 4 : Suction
- 5 : Line filter
- 6 : Valve
- 7 : Pump



THE INSTALLATION MUST BE IN CONFORMITY WITH LOCAL LEGISLATION.



Details are referred to installatios without strugglings and perfectly sealing.
Copper pipes are recommended.
Negative pressure must not be higher than max. 0.4 bar.



ONE STAGE LIGHT-OIL BURNERS [SERIES 2001] [60Hz]

MOD.: G0...

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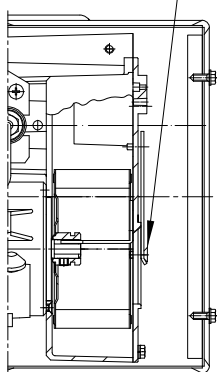
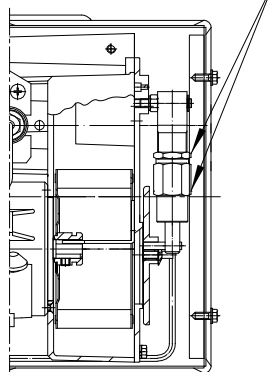
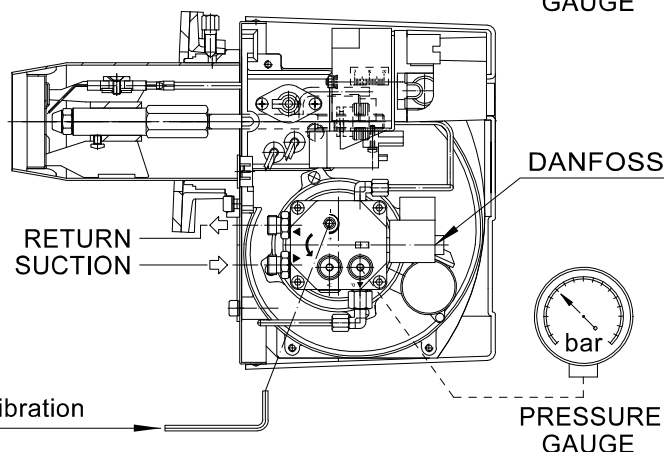
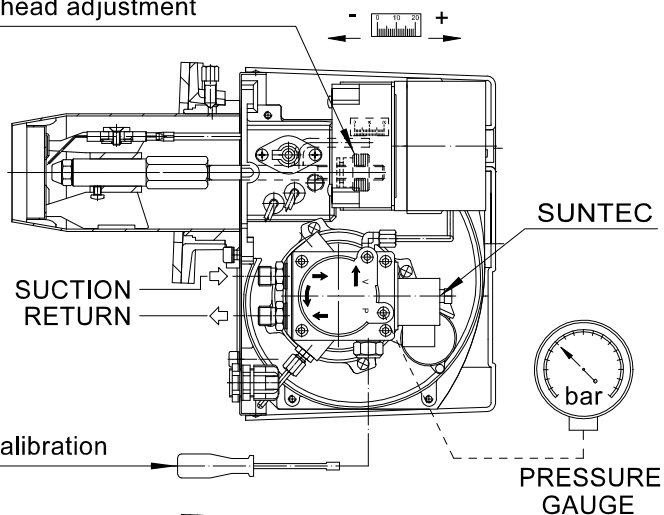
06

TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

The definitive calibration must be done in operation by means of a combustion analyser.

MODEL	NOZZLE G.P.H. x a°	PRESSURE [bar]	FLOW [kg/h]	THERMAL POWER [kW-Mcal/h]	AIR [NOTCHES N° ₆]	HEAD [NOTCHES N° ₆]
G0HR	0.40 x 60°S	10	1,2	14.2-12.2	3,5	2
		12	1,4	16.6-14.3	3,5	3
	0.50 x 60°S	10	1,7	20.1-17.3	6,5	5
		12	1,8	21.3-18.4	7	6
	0.60 x 60°S	10	1,9	22.5-19.4	9	8
		12	2,0	23.7-20.4	10	9
	0.65 x 60°S	10	2,2	26-22.4	10	10
		12	2,4	28.4-24.5	11	12
	0.75 x 60°S	10	2,6	30.8-26.5	9	13
		12	2,8	33.1-28.7	9,5	14
	0.85 x 60°S	10	3,1	36.7-31.6	9,5	16
		12	3,3	39-33.7	10	12
G0H G0S	0.50 x 60°S	10	2,0	23.7-20.4	5	7
		12	2,2	26-22.4	6	7
	0.60 x 60°S	10	2,4	28.4-24.5	7	8
		12	2,6	30.8-26.5	8	9
	0.65 x 60°S	10	2,8	33.1-28.7	9	10
		12	3,0	35.5-30.6	9,5	11
	0.75 x 60°S	12	3,3	39-33.7	10	12

Air-shutter
adjustmentLock-nut and ring-nut
for the air-shutter adjustmentRing-nut for the
head adjustment



ONE STAGE LIGHT-OIL BURNERS [SERIES 2001] [60Hz]

MOD.: G1...

070044_12F

07

TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

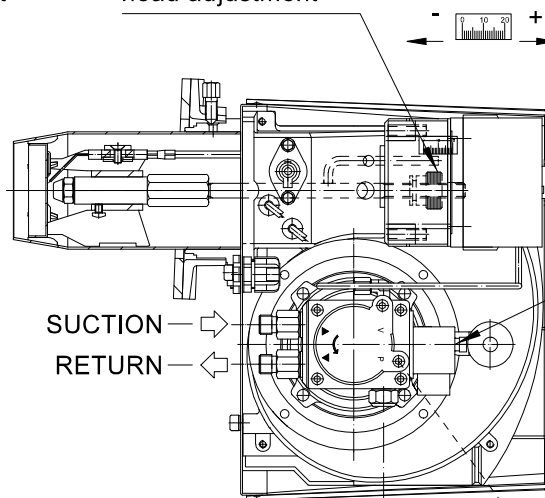
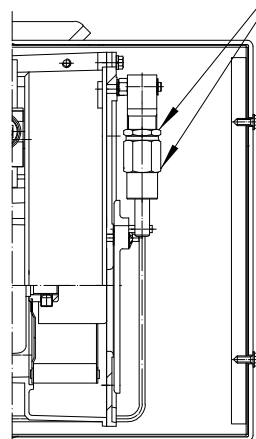
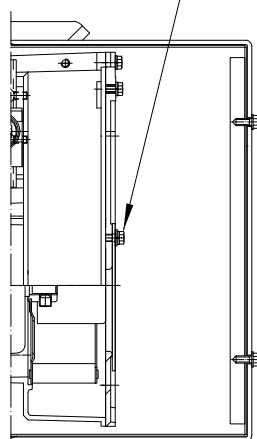
The definitive calibration must be done in operation by means of a combustion analyser.

NOZZLE G.P.H. x a°	PRESSURE [bar]	FLOW [kg/h]	THERMAL POWER [kW-Mcal/h]	AIR [NOTCHES N° ₆]	HEAD [NOTCHES N° ₆]
0.50 x 60° S	13	2.0	23.7-20.4	3.5	8
0.65 x 60° S	10	2.7	32 -27.5	5.0	12
	12	2.9	34.3-29.6	5.9	12
0.75 x 60° S	10	3.0	35.5-30.6	5.0	14
	12	3.3	39 -33.7	6.0	14
1.00 x 60° S	10	3.6	42.6-36.7	7.0	16
	12	4.0	47.3-40.8	8.0	16
1.25 x 60° S	10	4.5	53.2-45.9	8.5	20
	12	5.1	60.3-52	9.5	20

Air-shutter
adjustment

Luck-nut and ring-nut
for the air-shutter adjustment

Ring-nut for the
head adjustment



Pressure calibration

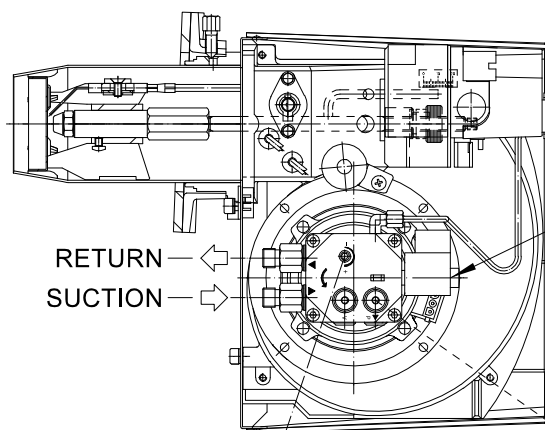


SUNTEC

SUCTION
RETURN



PRESSURE
GAUGE



Pressure calibration



DANFOSS

RETURN
SUCTION



PRESSURE
GAUGE



ONE STAGE LIGHT-OIL BURNERS [SERIES 2001] [60Hz]

MOD.: G2...MAXI

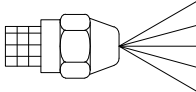
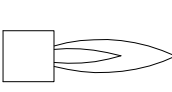
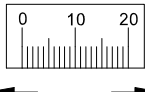
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08

TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

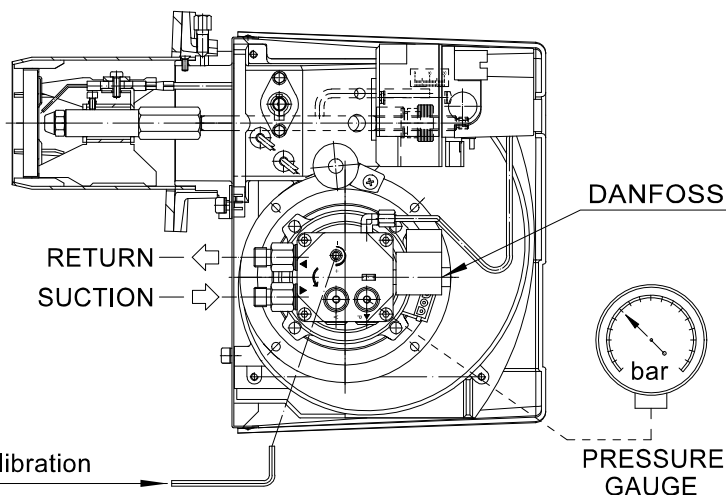
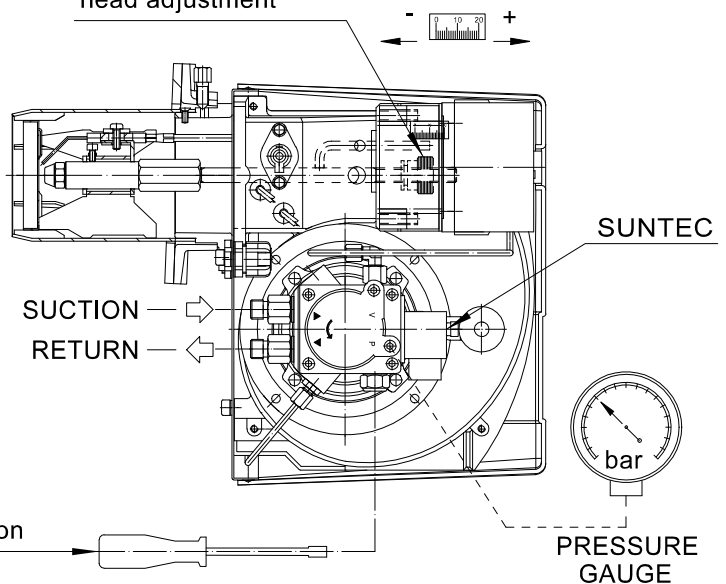
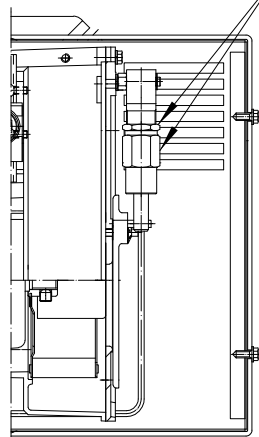
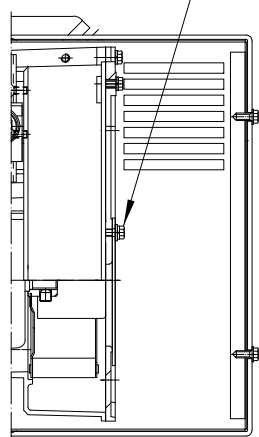
The definitive calibration must be done in operation by means of a combustion analyser.

 NOZZLE G.P.H. x a°	 PRESSURE [bar]	 FLOW [kg/h]	 THERMAL POWER [kW-Mcal/h]	 AIR [NOTCHES N° ₆]	 HEAD [NOTCHES N° ₆]
1.25 x 60° S	11	4,8	56,8-49	9	0
	12	5,1	60.3-52	9,5	0
1.50 x 60° S	10	5,6	66,3-57,1	10	3
	12	6	71-61,2	10,5	4
1.75 x 60° S	10	6,5	76,9-66,3	10,5	6
	12	7,1	84-72,4	11	8
2.00 x 60° S	10	7,3	86,4-74,5	11	9
	12	8	94,6-81,6	11,5	12
2.25 x 60° S	10	8,5	100,6-86,7	12,5	14
	12	9,5	112,4-96.9	13	18
2.50 x 60° S	10	9,5	112,4-96.9	13	18
	11	10	118,3-102	14,5	20

Air-shutter
adjustment

Luck-nut and ring-nut
for the air-shutter adjustment

Ring-nut for the
head adjustment





ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G X3...

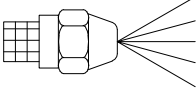
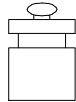
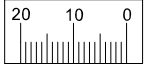
070044_12D

09

TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

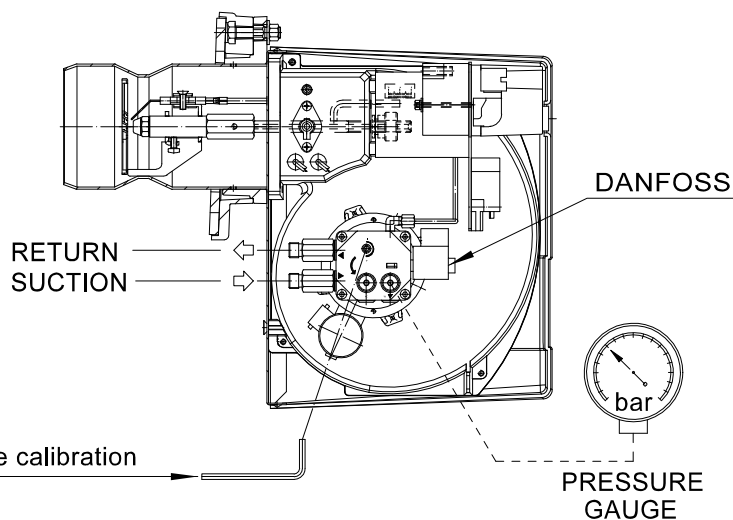
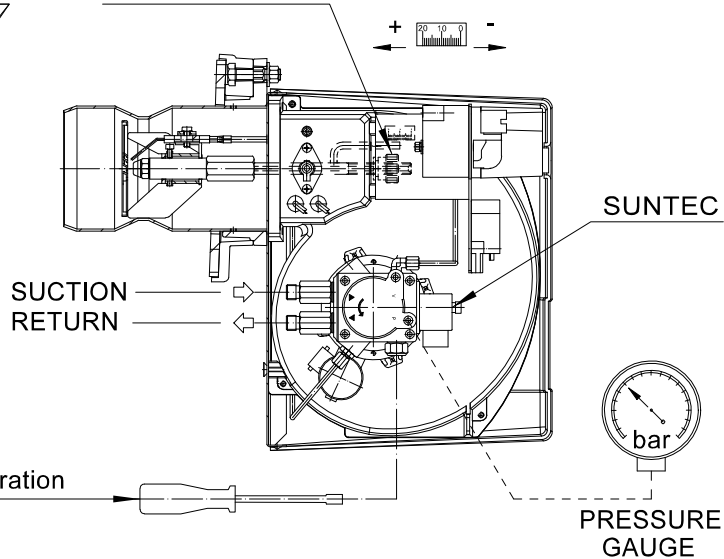
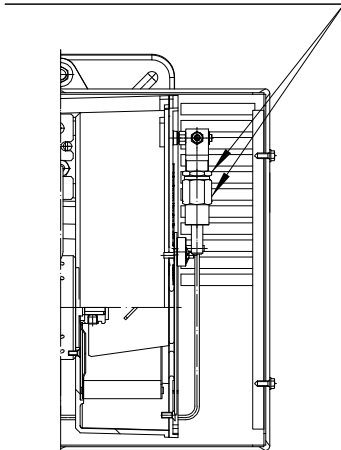
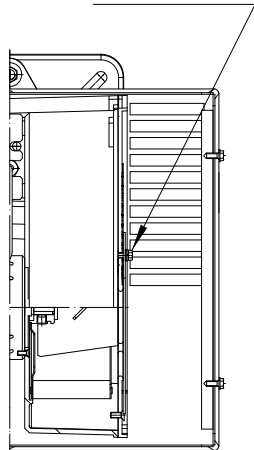
The definitive calibration must be done in operation by means of a combustion analyser.

 NOZZLE G.P.H. x a°	 PRESSURE [bar]	 FLOW [kg/h]	 THERMAL POWER [kW-Mcal/h]	 AIR X°	 HEAD [NOTCHES N° 6]
1.75 x 60° S	12	7	83-72	10°	2
2.00 x 60° S	12	8	95-82	12.5°	4
2.25 x 60° S	12	9	107-92	12.5°	6
2.50 x 60° S	12	10	119-102	15°	9
2.75 x 60° S	12	11	131-112	17.5°	11
3.00 x 60° S	12	12	142-122	17.5°	13
3.50 x 60° S	10	13	154-133	17.5°	15
3.50 x 60° S	12	14	166-143	20°	18
3.50 x 60° S	14	15	178-153	20°	20

Air-shutter adjustment

Luck-nut and ring-nut for the air-shutter adjustment

Ring-nut for the head adjustment





ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G X4...

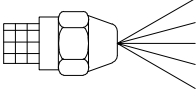
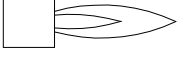
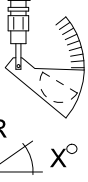
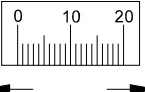
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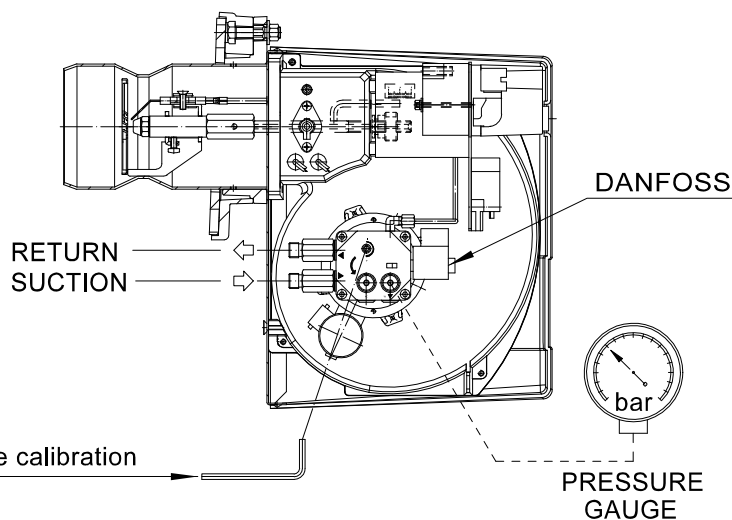
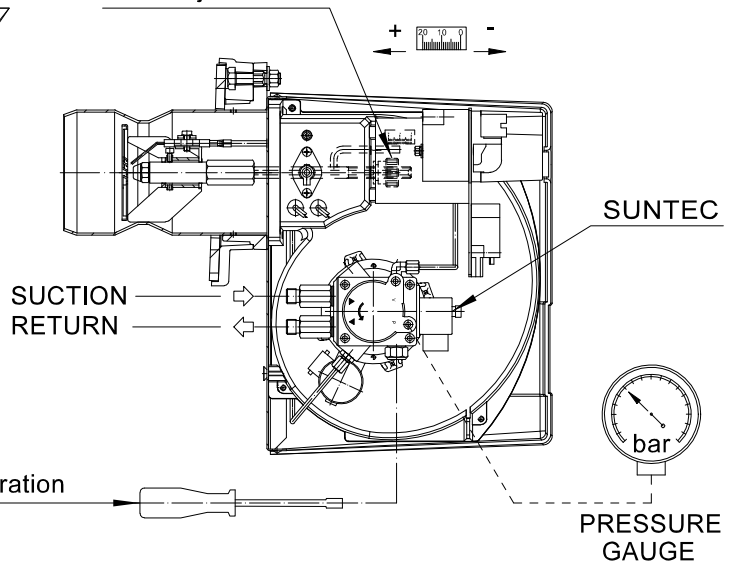
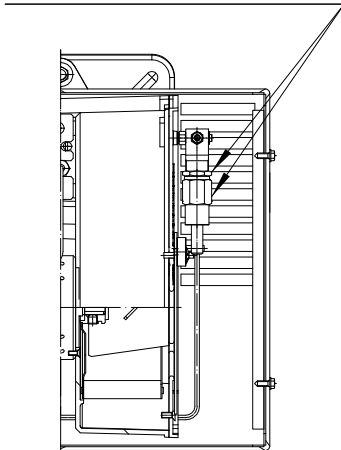
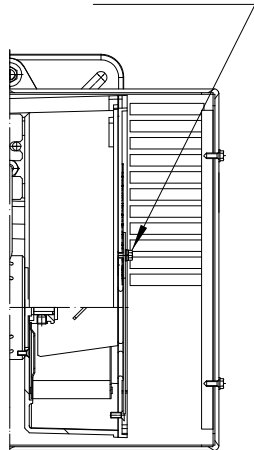
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TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

The definitive calibration must be done in operation by means of a combustion analyser.

 NOZZLE G.P.H. x a°	 PRESSURE [bar]	 FLOW [kg/h]	 THERMAL POWER [kW-Mcal/h]	 AIR X°	 HEAD [NOTCHES N° 6]
2.50 x 60° S	12	10	118-102	15°	3
2.75 x 60° S	11	11	130-112	15°	4
3.00 x 60° S	12	12	142-122	17.5°	6
3.50 x 60° S	10	13	154-133	20°	7
	12	14	166-143	20°	9
4.00 x 60° S	10	15	177-153	20°	10
	12	16	189-163	20°	12
4.50 x 60° S	11	17	201-173	25°	14
	12	18	213-184	25°	16
5.00 x 60° S	10	19	225-194	25°	18
	11	20	236-204	27.5°	20

Air-shutter
adjustmentLuck-nut and ring-nut
for the air-shutter adjustmentRing-nut for the
head adjustment



ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G X5...

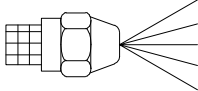
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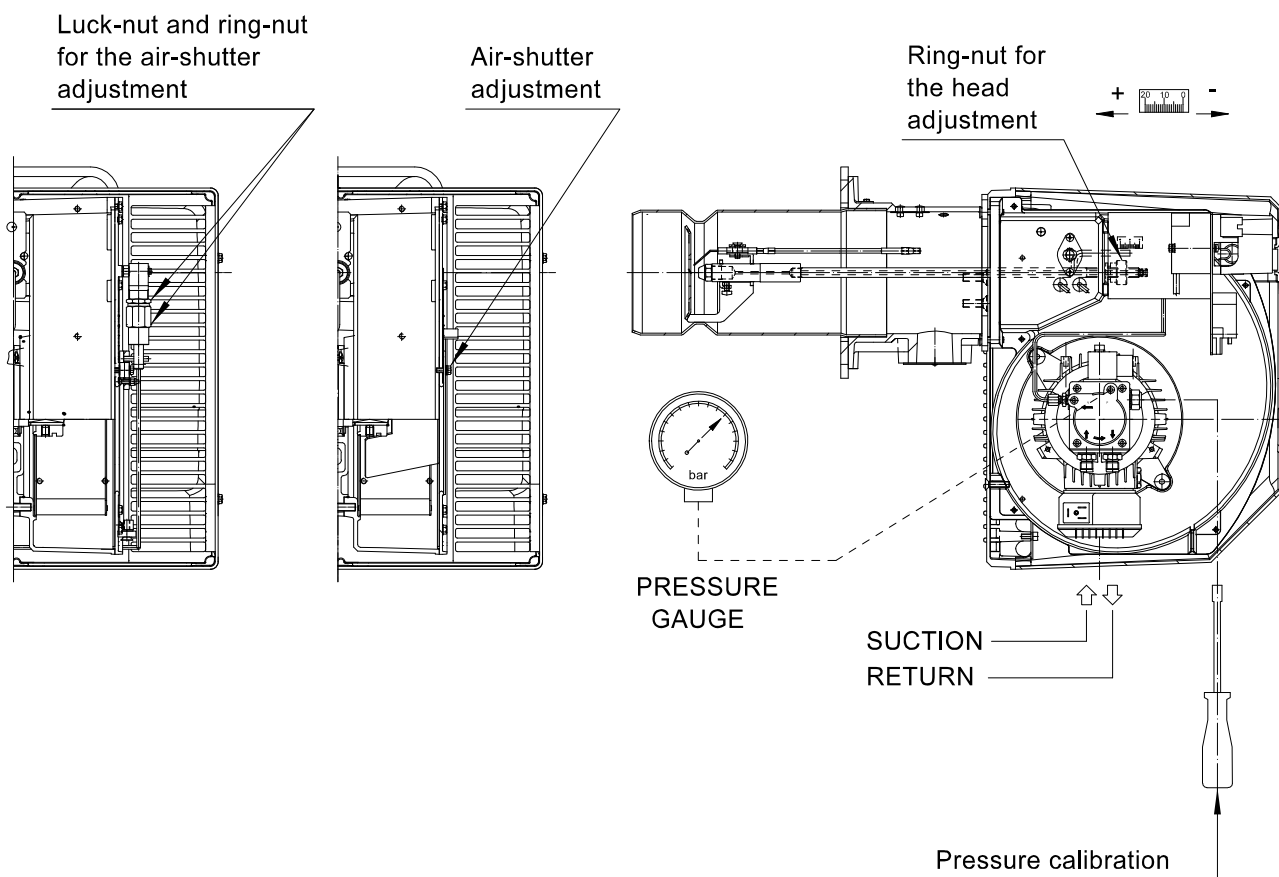
11

TABLE OF INDICATIVE CALIBRATIONS

Calibrations effected with pressure in chamber 0,1 mbar.

The definitive calibration must be done in operation by means of a combustion analyser.

 NOZZLE G.P.H. x a°	 PRESSURE [bar]	 FLOW [kg/h]	 THERMAL POWER [kW-Mcal/h]	 AIR X°	 HEAD [NOTCHES N° $\frac{1}{6}$]
3.00 x 60° S	12	12	142-122	12.5°	6
3.50 x 60° S	12	14	166-143	12.5°	8
4.00 x 60° S	12	16	189-163	15°	10
4.50 x 60° S	12	18	213-184	15°	12
5.00 x 60° S	12	20	237-204	17.5°	14
5.50 x 60° S	12	22	260-224	20°	16
6.00 x 60° S	12	24	284-245	22.5°	17
6.50 x 60° S	12	26	307-265	25°	18
7.00 x 60° S	12	28	332-286	25°	19
7.00 x 60° S	14	30	355-306	27.5°	20





ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G0...-G1...-G2...
GX3...-GX4...GX5...

070044_12A

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COMBUSTION CONTROL

In order to obtain the best combustion performance and efficiency, and for respect of the environment, checks and adjustment of the combustion must be carried out, and with appropriate tools.

Basic values to be considered are:

CO₂ indicates the amount of excess air during combustion; if air is increased, CO₂ % values decrease, and if combustion air is decreased, CO₂ % values increase .

SMOKE SCALE (Bacharach) indicates that solid un-burnt particles are present in the smoke. If N°2 on the BH scale is exceeded the nozzle must be checked for faults and that it is adapt to the burner and boiler (trade, type, pulverization angle). Usually the BH scale number tends to decrease, increasing pump pressure, in this case keep the increasing combustion levels under control.

SMOKE TEMPERATURE is a level which indicates heat loss through the chimney; higher the temperature, greater is the loss and lower combustion efficiency. If the temperature is too high the quantity of burned light oil needs to be lowered.

IMPORTANT :

Existing laws in some countries can require a different adjustment to that given here and may also have different parameters. The burners are designed to meet the toughest international laws on energy saving and respect of the environment.



ONE STAGE LIGHT-OIL BURNERS [60Hz]

MOD.: G0...-G1...-G2...
GX3...-GX4...GX5...

070044_12A

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FAULT FINDING

PROBLEM	PROBABLE CAUSE	SOLUTION
Motor does not work.	No power supply.	a) check fuses. b) check thermostats.
Motor works but there is no flame formation and with lock-out.	a) electrodes are not discharged. b) nozzle is dented. c) it doesn't arrive combustible.	a) check correct position of tips and clean them. b) clean or replace nozzle. c) check light oil level in tank and that there are no shutters closed along the light oil line.
Burner starts and flame forms, there is flame formation and goes in lock-out.	a) photoresistance is dirty. b) nozzle is pulverizing badly.	a) clean the photoresistance. b) clean or replace nozzle.
Flame is irregular, small and with sparks.	a) nozzle is pulverizing badly. b) pump pressure is too low. c) water in the light-oil.	a) clean or replace nozzle. b) check and increase pressure. c) extract water from tank, clean the filters.
Flame is smokey.	a) nozzle is pulverizing badly. b) little air of combustion.	a) clean or replace nozzle. b) check atmospheric air flap opens normally. Clean the fan.



MADE IN ITALY

F.B.R. BRUCIATORI S.r.l.

Via V. VENETO, 152 - 37050 Angiari (VR) ITALY

Tel. +39 0442 97000 - Fax +39 0442 97299

www.fbr.it - fbr@fbr.it - italia@fbr.it - export@fbr.it