GAS / HEAVY-OIL DUAL BURNERS

Ecoflam

CE

Multiflam 700.1
Multiflam 800.1
Multiflam 1000.1
Multiflam 1200.1

PR/PR

Natural Gas / Heavy oil

254/440V 60Hz

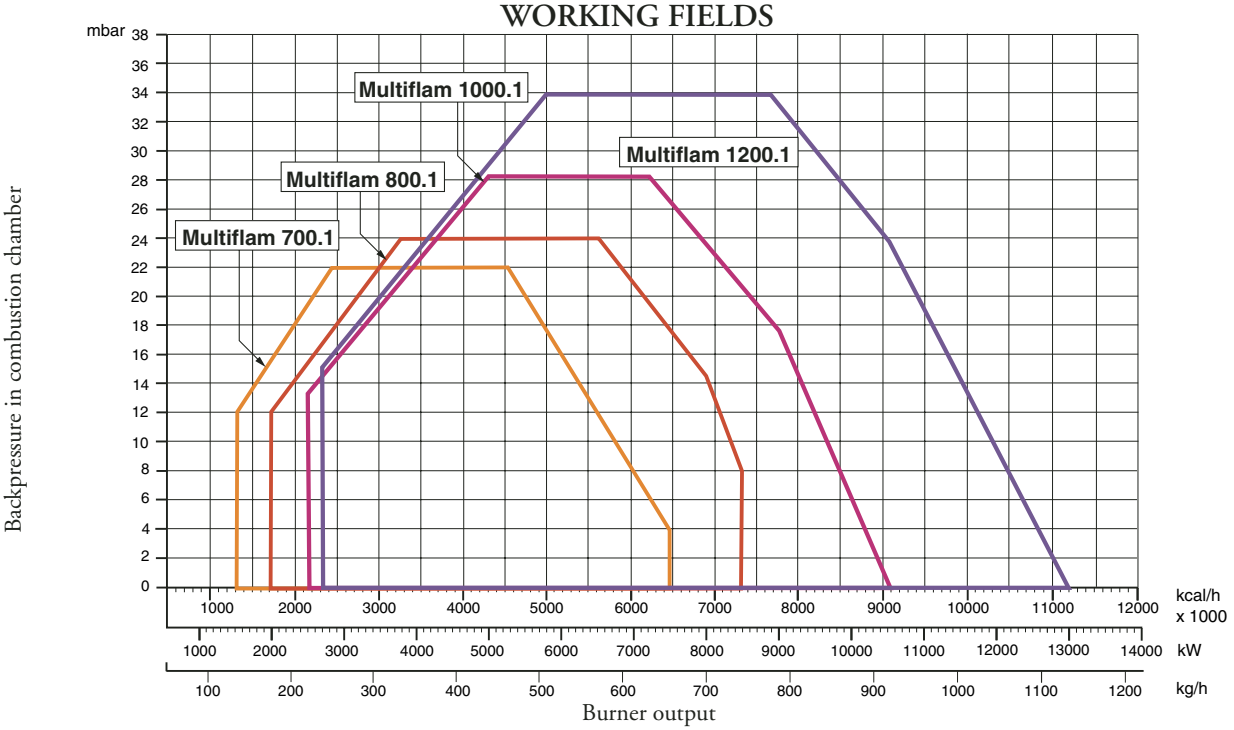
420010248200

420010248200

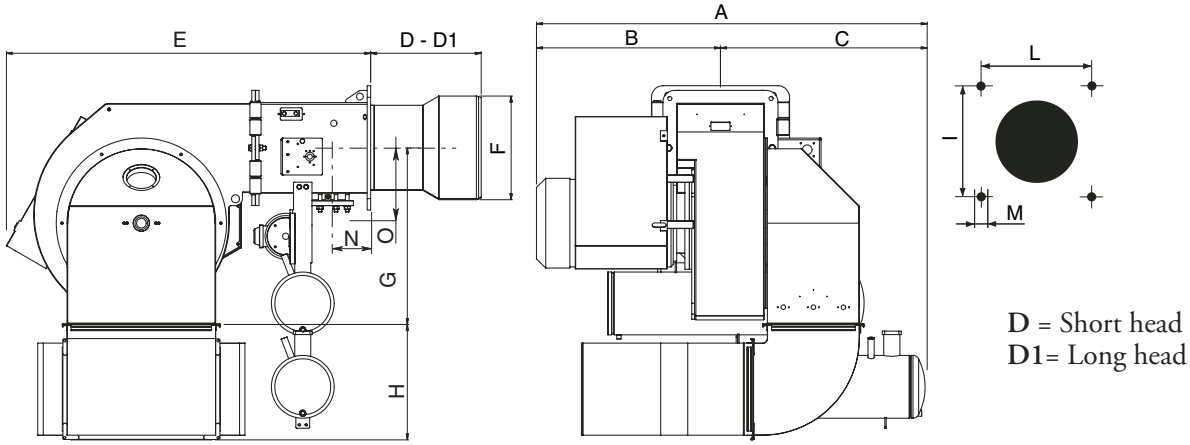
22.09.2009

Models	Multiflam	700.1 PR	800.1 PR	1000.1 PR	1200.1 PR
Thermal power max.	kW	7.500	8.500	10.500	13.000
	kcal/h	6.465.000	7.327.500	9.052.000	11.207.000
Thermal power min.	kW	1.500	2.000	2.500	2.700
	kcal/h	1.290.000	1.724.000	2.155.000	2.327.600
Max. capacity (Natural Gas)	Nm^3/h	729	855	1.056	1.318
Min. capacity (Natural Gas)	Nm^3/h	150	201	251	272
Max. heavy oil flow rate	kg/h	660	748	924	1.143
Min. heavy oil flow rate	kg/h	132	176	220	237
Gas pressure	mbar	300	300	300	300
Voltage 60 Hz	V	254/440	254/440	254/440	254/440
Motor	kW	15	18,5	22	37
Rpm	N°	3400	3400	3400	3400
Fuels:	Nat. Gas L.C.V. 8.570 kcal/Nm^3; Heavy Oil L.C.V. 9.800 kcal/kg max. visc.50°E at 50 °C				

WORKING FIELDS



OVERALL DIMENSIONS



D = Short head
D1= Long head

MODELS	A	B	C	D	D1	E	F	G	H	I	L	M	N	O
Multiflam 700.1		585		470		1582	420	770	500	460	460	M20	195	232
Multiflam 800.1		655		470		1582	420	770	500	460	460	M20	195	232
Multiflam 1000.1		685		470		1582	420	770	500	460	460	M20	195	232
Multiflam 1200.1	1690	800	890	470	-	1582	450	770	500	460	460	M20	195	232

ELECTRICAL CONNECTIONS

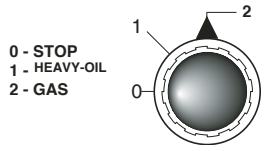
All burners factory tested at 440 V 60 Hz three-phase for motors and 220 V 60 Hz monophase with neutral for auxiliary equipment. If mains supply is 254 V 60 Hz threephase withuot neutral, change position of connectors on burner as in fig. Protect burner supply line with safety fuses and any other devices required by safety standards obtaining in the country in question.

CONNECTION TO THE GAS PIPELINE

Once connected the burner to the gas pipeline, it is necessary to control that this last is perfectly sealed. Also verify that the chimney is not obstructed. Open the gas cock and carefully bleed the piping through the pressure gauge connector, then check the pressure value trough a suitable gauge. Power on the system and adjust the thermostats to the desired temperature. When thermostats close, the sealing control device runs a seal test of valves; at the end of the test the burner will be enabled to run the start-up sequence.

BURNER START-UP

Before starting the burner, make sure it is mounted correctly. Then check connections are correct according to the diagram and piping is appropriate to the system. Before connecting the burner to the electricity supply, make sure voltage corresponds to burner plate data. The connection diagram and start-up cycle are shown separately. For wiring from control box to burner, see the enclosed connection diagram. Pay particular attention to neutral and phase connections : never exchange them!. Vent air and impurities of gas pipe. Check gas pressure conforms to the limits stated on the burner plate when connecting a master gauge to the test port provided on the burner. Blower motor starts and pre-purging begins. Since pre-purging has to be carried out with the max. air delivery, the burner control circuit turns the air damper to the max. delivery position by the air servocontrol in approximately 30 seconds time. When the servocontrol is fully open, a signal to the electronic control unit starts the 66 seconds pre-purge cycle. At the end of the prepurging time, the air servocontrol gets to the Low Flame position so that burner ignition is ensured at min. output. Simultaneously the ignition transformer receives voltage and after 3 seconds (pre-ignition) opens the pilot gas valve. Fuel flows to the combustion head and ignites. Two seconds after pilot gas valves have opened, the ignition transformer is excluded from the circuit. In case of no ignition the burner goes to lock-out within two seconds. After 6 sec. open the working gas valve, governed by the gas firing butterfly valve.Now the burner is operating at the min. firing rate (about 30% of the max. firing rate). The air servocontrol runs at the Low Flame position and in case the temperature control has to be set at the max. output it goes to a fully open position of air damper and butterfly valve. During the burner-off periods the air damper closes up fully.



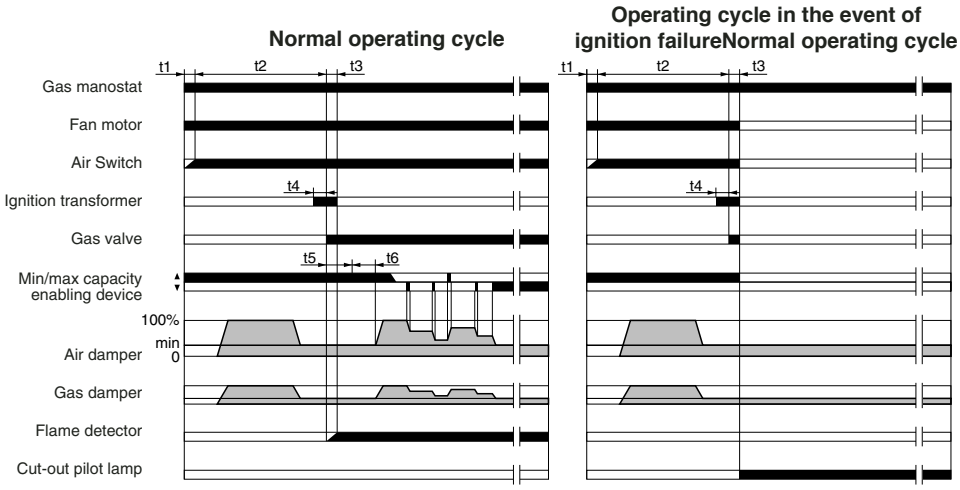
ADJUSTING THE COMBUSTION PROCESS

IMPORTANT: to obtain the right adjustment of the combustion and thermal capacity it is important to analyze the reducts of combustion with the aid of suitable instruments. The combustion and thermal capacity adjustment is done simultaneously, together with the analysis of the products of combustion, making sure that the measured values are suitable and that they comply with current safety standards. On this matter, please refer to the table and figure below.
THESE OPERATIONS MUST BE DONE BY PROFESSIONALLY-QUALIFIED TECHNICIANS.

NOTE:
ALL SAFETY DEVICES (AIR PRESSURE SWITCH, MINIMUM GAS PRESSURE SWITCH, GAS SOLENOID VALVES AND GAS GOVERNOR) SHALL BE DULY SEALED AFTER CALIBRATION AND BURNER START UP BY ECOFLAM'S TECHNICIANS.

LANDIS & STAEFA, Model LFL1.622-LFL1.333 OPERATING CYCLE

Ref.	Description	Duration
t1	Duration Waiting time for confirmation	
t2	of air pressure	8”
t3	Preventilation time	66”
t4	Safety time	2”
t5	Pressurizing time	4”
	Time for enabling operation of the main gas valve on minimum capacity	10”
t6	Time for enabling operation of the main gas valve on maximum capacity	10”



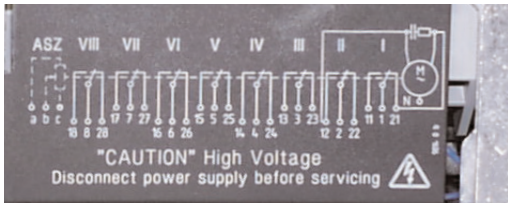
The control box starts the burner fan, to carry out the prepurging of the combustion chamber, and cheks the vent air pressure through the air pressure switch. At the end of prepurging, the ignition transformer cuts-in and generates a spark between the electrodes. At the same time the two gas valves open (Vs safety valve and Vl working valve). The total safety, in case of missed ignition or casual burner's flame-out, is granted by a ionisation probe which cuts-in and sets the burner shutdown within the safety time. In case of gas lack or a major pressure drop, the minimum air pressure switch shuts down the burner.

LANDIS & STAEFA SQM 50.481A2 AIR DAMPER MOTOR

Remove cover to gain access to the adjusting cams.The cams are to be adjusted through the suitable key provided for. Description:

Manual change

I - High flame operating opening position adjusting cam (Heavy-Oil)
II - Limit switch for the air damper position at burner’s shut down
III - Ignition flame opening position adjusting cam (Gas).
IV - Ignition flame opening position adjusting cam(Heavy-Oil)
V - Low flame operating opening position adjusting cam (Gas)
VI - Low flame operating opening position adjusting cam (Heavy-Oil)
VII - High flame operating opening position adjusting cam (Gas)
VIII - Not used cam



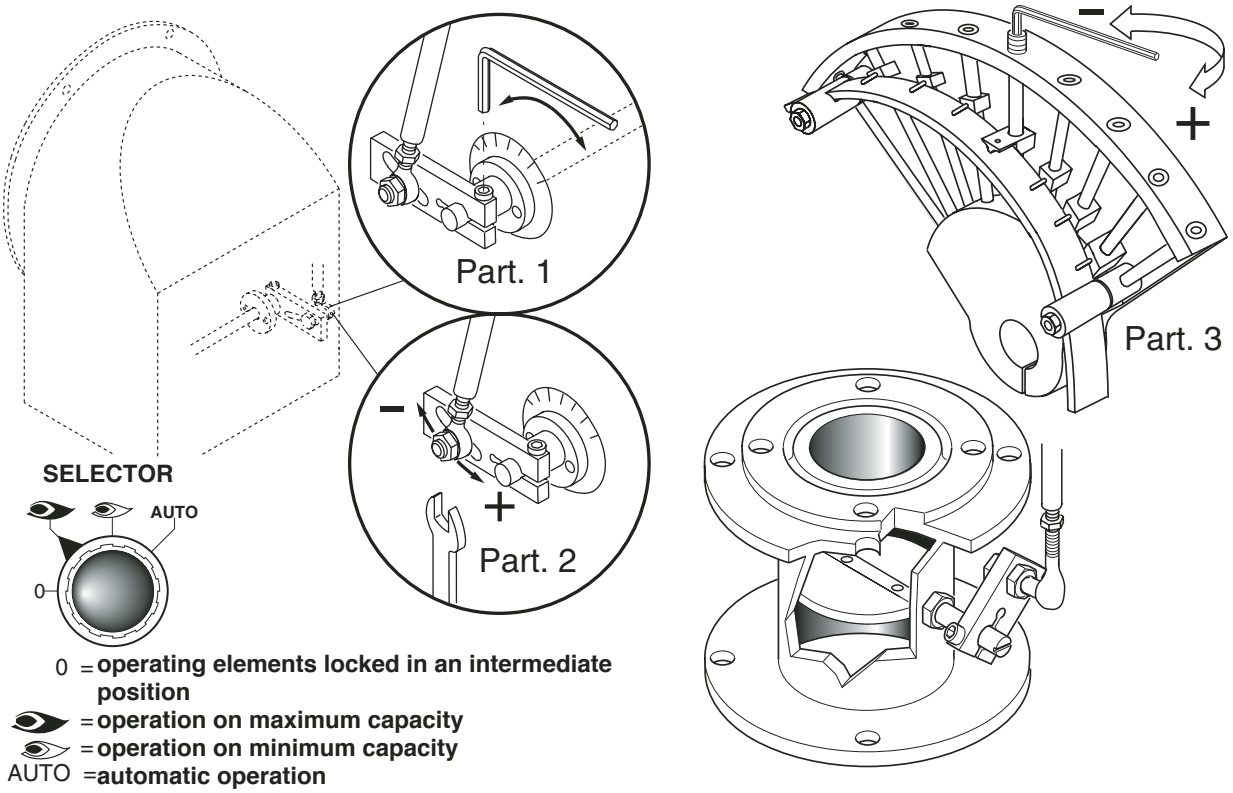
CALCULATING THE BURNER CAPACITY

To calculate the burner's capacity in kW, proceed as follows: Check the gas flow rate (in liters) on the counter and the time of the reading in seconds.

Proceed with the calculation using the following formula: $\frac{e}{sec} \times f = kW$

e = Litres gas
sec = Time in second
f: G20 = 34,02; G30 = 116; G31 = 88

AIR ADJUSTMENT



ADJUSTING THE MINIMUM CAPACITY OF THE BURNER – AIR and GAS

Position the selector placed on the control panel on position 2 and proceed as follows:
Adjust the minimum gas flow rate using a suitable wrench, turn the butterfly valve until you reach the correct gas flow, as established by analyzing the combustion process.

ADJUSTING THE MAXIMUM CAPACITY OF THE GAS

Position the selector, situated on the control panel, on position 1 and proceed as follows:
Adjusting the maximum gas flow rate (see figure on solenoid valve adjustments) or adjust the gas pressure in the governor.

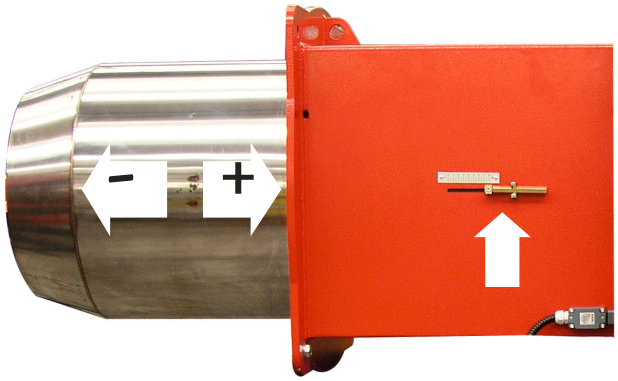
ADJUSTING THE MAXIMUM AIR FLOW RATE

Adjusting the maximum air flow rate (see figure, detail 2). Loosen the nut holding the air damper transmission rod; The correct air flow as established by analyzing the combustion process.

ADJUSTING THE INTERMEDIATE BURNER CAPACITY

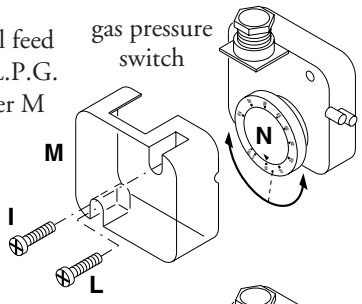
Using the selector, start the servomotor (closing or opening) and position on 0 to stop the stroke; the adjustment is made as outlined below. Repeat the operation for the other cam points.
Adjustment the intermediate gas flow rates (see figure, detail 3): - using a suitable Allen wrench, change the position of the cam guide blade; if you screw it down, the flow rate is reduced; if you unscrew it, the flow rate increases.

SETTING THE FIRING HEAD



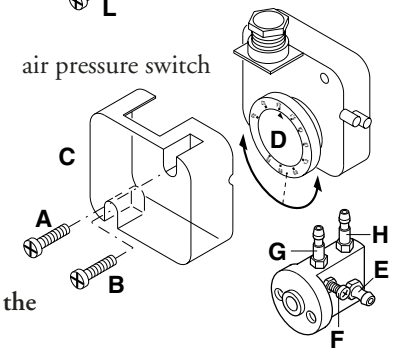
ADJUSTMENT OF GAS MINIMUM PRESSURE SWITCH

Unscrew off and remove cover M. - Set regulator N to a value equal to 60% of gas nominal feed pressure (i.e. for nat. gas nom. pressure = 20 mbar, set regulator to a value of 12 mbar; for L.P.G. nom. pressure of G30/G31- 30/37 mbar, set regulator to a value of 18 mbar).Screw up cover M



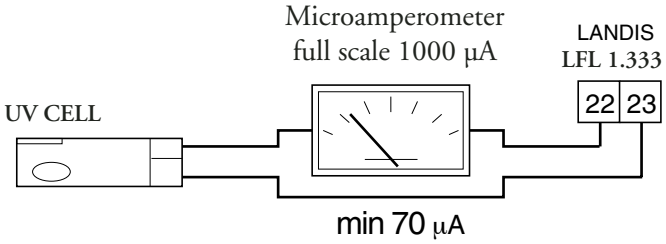
ADJUSTMENT OF THE AIR PRESSURE SWITCH

Unscrew screws A and B and remove cover C.- Set the pressure switch to the minimum by turning regulator D to position 1.
- Start the burner and keep in low flame running, while checking that combustion is correct. Through a small cardboard, progressively obstruct the air intake until to obtain a CO2 increase of 0,5÷0,8% or else, if a pressure gauge is available, connected to pressure port E, until reaching a pressure drop of 1 mbar (10 mm of W.G.). - Slowly increase the adjustment value of the air pressure switch until to have the burner lockout. Remove the obstruction from the air intake, screw on the cover C and start the burner by pressing the control box rearm button.



Note: The pressure measured at pressure port E must be within the limits of the pressure switch working range. If not, loose the locking nut of screw F and gradually turn the same: clockwise to reduce the pressure; counterclockwise to increase. At the end tighten the locking nut.

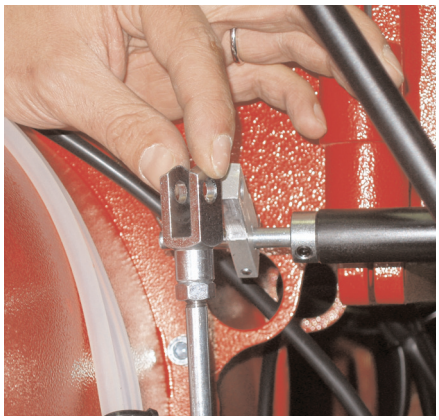
DETECTOR CURRENT

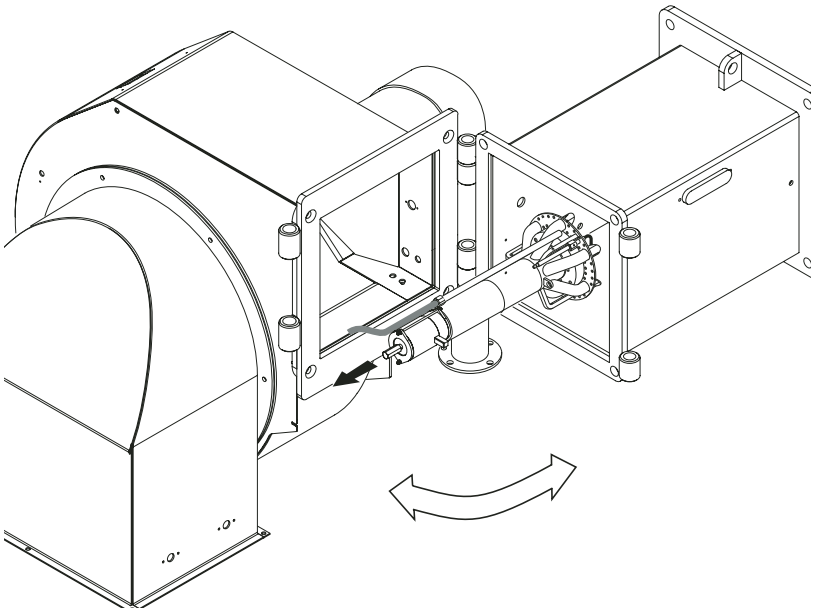


The detector current is checked by inserting a microammeter (scale 1000 µA - d.c.) in series with the uv cell..
The flame detector current has to been > 70 µA.

REMOVING THE FIRING HEAD

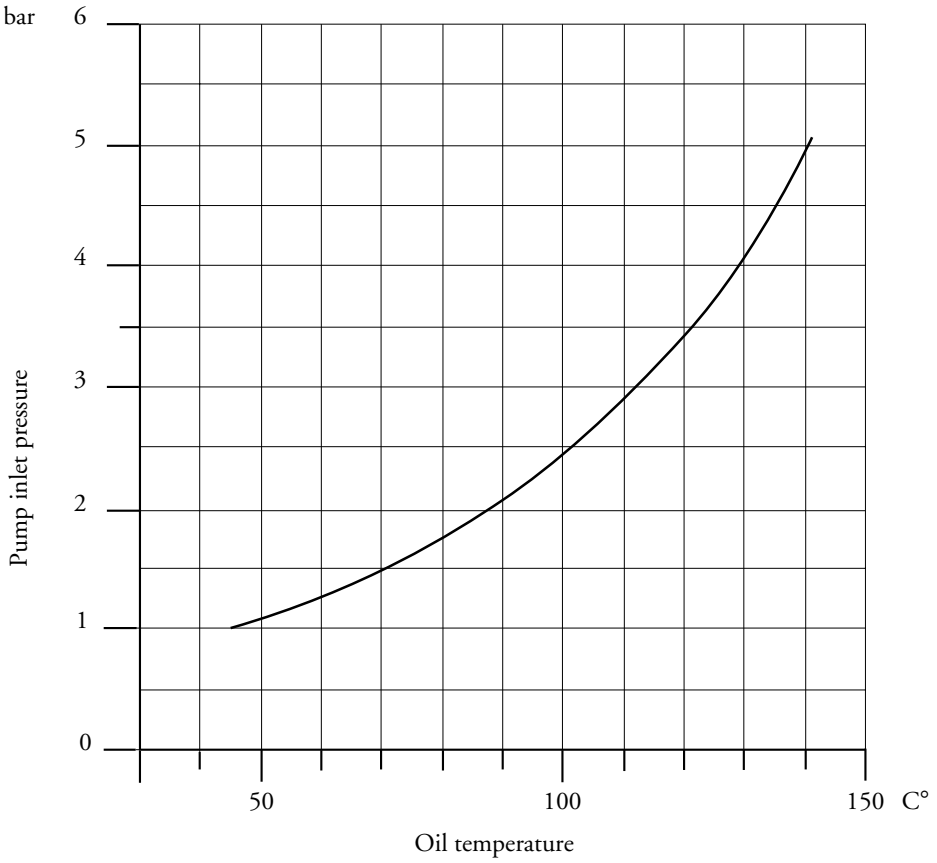
WARNING !





PUMP'S PRESSURE / OIL TEMPERATURE DIAGRAM

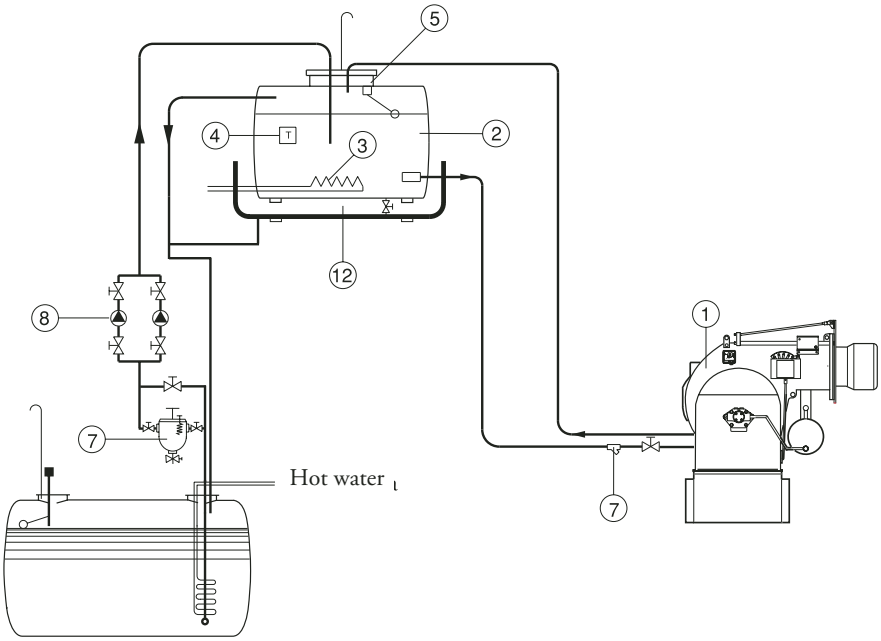
Pump inlet pressure:the vaporisation of light fraction of heated heavy oil causes premature pump wear, to avoid this, use the inlet pressures shown in the graph.



TYPE OF INSTALLATION

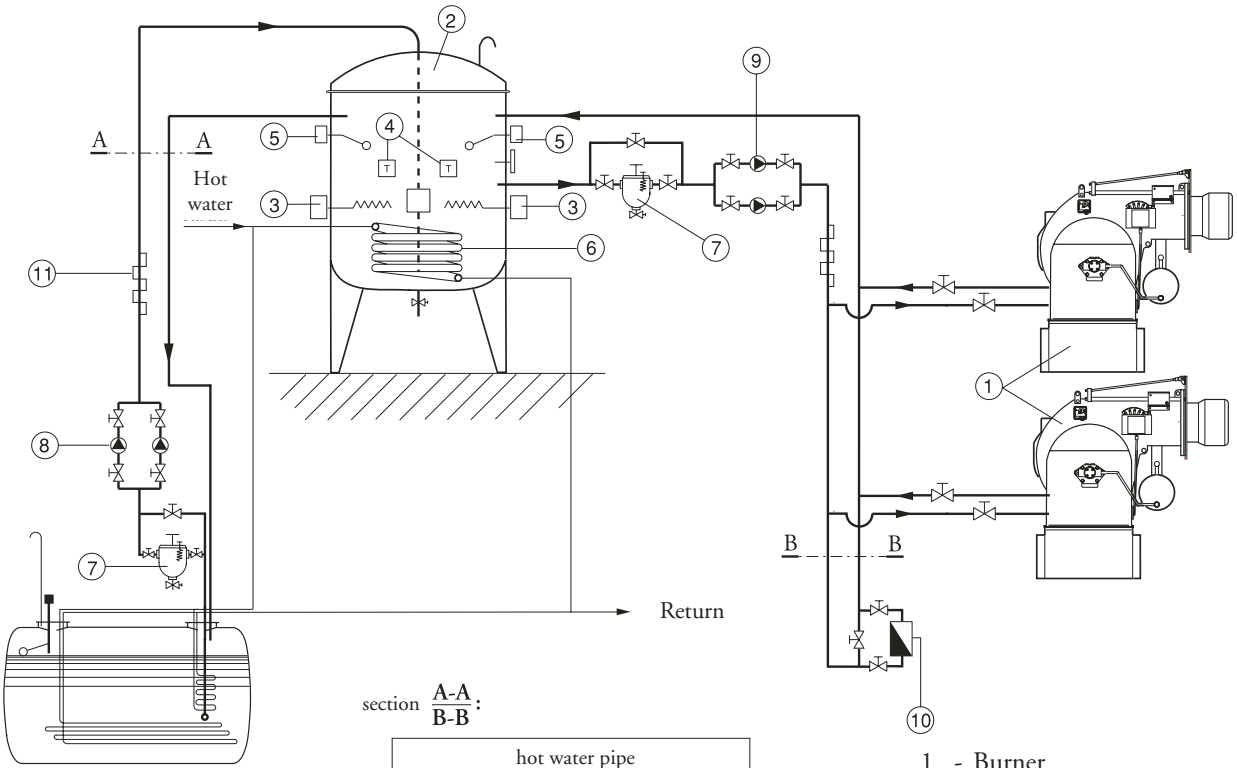
The burner must be supplied with oil heaving a min. temperature at the pump (50° C).

Drawing for fluid fuel oil up to 50°E at 50°C

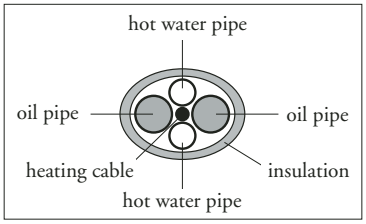


1 - Burner
2 - Tank
3 - Heater
4 - Safety/operation thermostat
5 - Level switch
6 -
7 - Filter
8 - Load pumps
9 - Holding basin

Drawing for heavy fuel oil up to 50°E at 50°C



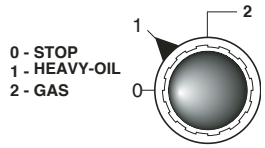
section $\frac{A\text{-}A}{B\text{-}B}$:



1 - Burner
2 - Tank
3 - Heater
4 - Safety/operation thermostat
5 - Level switch
6 - Self cleaning filter
7 - Heating coil
8 - Load pumps
9 - Ring pumps
10 - Regulator
11 - Heating cable

MODULATING OPERATION

With the bumer in the start position and the appliance thermostats enabled, power is delivered to the resistances (G) of the preheater and heating cartridges for the pumps and the fuel supply line to the head (O). When the preheater thermostat reaches the set value, (usually a minimum of about 90°C is necessary to guarantee a good level of circulation) the pump start-up is enabled (set point on out 1, if using the GEFRAN 200 thermoregulating device). If the preheating system of the tank is also equipped for a fluid exchanger (hot water, steam, diathermic oil) the thermostat may enable a contact in the terminal block for any stop-start of the fluid electrovalve. This is not a standard solution as the heated fluid is normally always connected. The pump starts to send oil (the head has already been heated by its cartridge (O) and therefore has no residue of cold dense oil) which flows from the tank to the head and then to the return line of the ring. When the head thermostat reaches the set value (usually about 70-30°C the cycle starts properly and the control programmer enables start-up. The servomotor sets itself at minimum (see chapter on regulation) acting on the air and fùel via the pressure regulator on the return.



The electromagnet (A) opens the nozzle (Q) in the followmg condition :

- sparks from the ignition electrodes are generated by the transformer also governed by the burner control device.

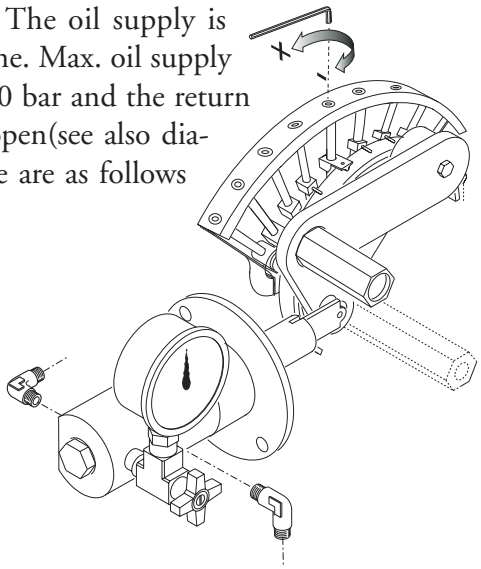
If the cell fails to detect the flame the burner shuts down (with the cyclic control programmer cutting in). Once ignition has taken place and after the flame stabilisation period, the system starts operating in modulating mode.

- Before start-up make sure that the pump and delivery pipes are completely filled with hot fuel oil; the absence of fuel oil can cause pump seizure.
- If there is a block, a specific waring light on the programmer and on the burner front control board lights up and this signal is usually sent to the main control board of the equipment using the burner, setting off a buzzer and warning light.
- A few blocks are normal on first starting up (up to about 4); to release press the button on the programmer (also found on the front of the bumer control board) for repeating the start cycle. Should they continue to occur seek the help of a specialised technician.

N.B. The position of the programmer at the time of the block is memorised to supply an indication of the cause of this block.

OIL DELIVERY ADJUSTMENT

The diagram illustrates the fuel feeding system of these type of burners, which incorporates a by-pass nozzle with oil flow regulation on its return pipe. The oil supply is varied by acting on the nozzle through the pressure in the return line. Max. oil supply is therefore reached when the pressure in the pump line is about 30 bar and the return line is fully closed; min. oil supply when the return line is fully open(see also diagram BERGONZO). Relevant pressure readings in the return line are as follows (return oil pressure has to be measured on “M” pressure gauge):

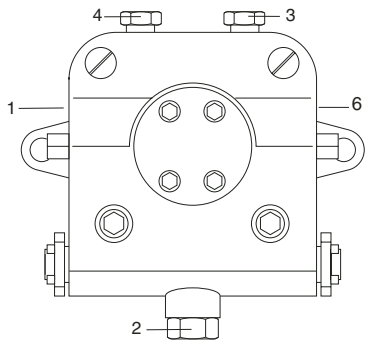


Pump pressure 25-30 bar.
Max Burner output, return oil pressure:
FLUIDICS nozzle : 16 ÷19 bar.
BERGONZO nozzle : 20 ÷24 bar.

Min Burner output, return oil pressure:
FLUIDICS nozzle : 6 ÷9 bar
BERGONZO nozzle : 4 ÷8 bar

PRIMING AND ADJUSTMENT OF OIL PUMP

SUNTEC TA.....



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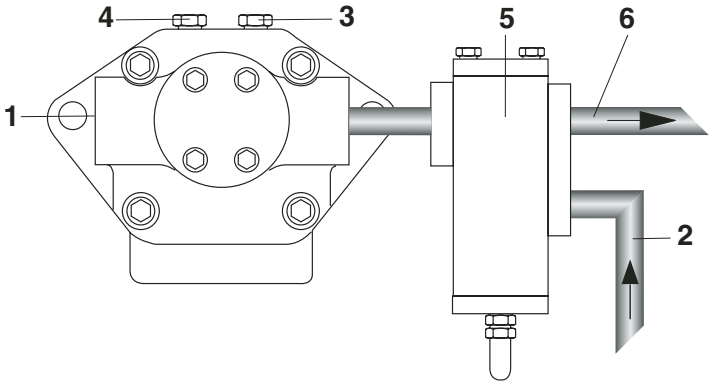
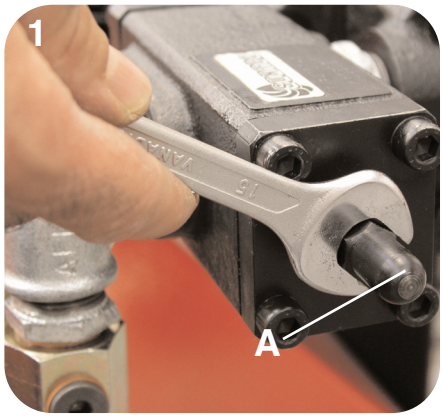


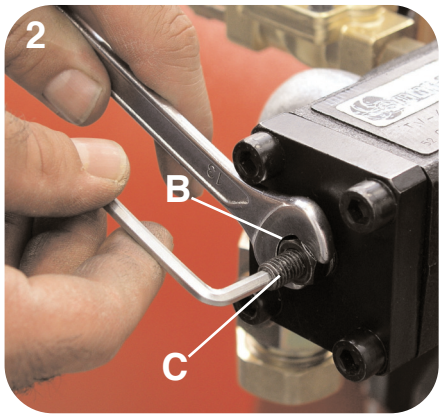
1 - INLET
2 - RETURN
3 - BLEED AND PRESSURE GAUGE PORT
4 - VACUUM GAUGE PORT
5 - REGULATING VALVE TV
6 - TO NOZZLE

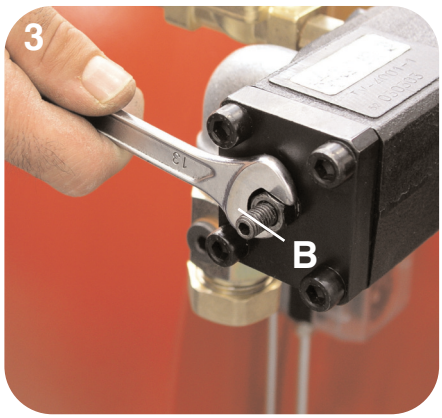
VERIFY:
- That piping system is perfectly sealed;
- That the use of hoses is avoided whenever is possible (use copper pipes preferably);
- That depression is not greater than 0,45 bar, to avoid pump's cavitation;
- That check valve is suitably designed for the duty;

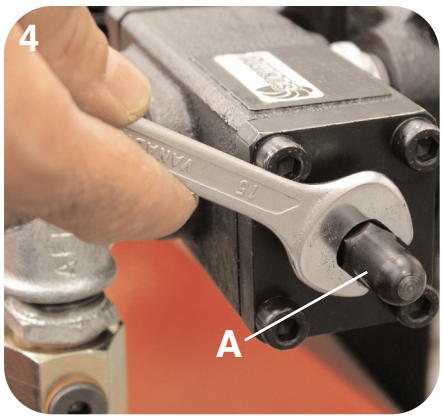
The pump pressure is set at a value of 22-25 bar during the testing of burners. Before starting the burner, bleed the air in the pump through the gauge port. Fill the piping with light-oil to facilitate the pump priming. Start the burner and check the pump feeding pressure. In case the pump priming does not take place during the first prepurging, with a consequent, subsequent lock-out of the burner, rearm the burner's lock-out to restart, by pushing the button on the control box. If, after a successful pump priming, the burner locks-out after the prepurging, due to a fuel pressure drop in the pump, rearm the burner's lock-out to restart the burner. Do never allow the pump working without oil for more than three minutes. Note: before starting the burner, check that the return pipe is open. An eventual obstruction could damage the pump sealing device.

PRESSURE REGULATING VALVE ADJUSTMENT









1) Remove the cap A of the pressure regulating valve TV.

2) Loosen the fixing nut B and use an allen wrench on the screw C to adjust the delivery oil pressure. To increase the pressure turn clockwise, to decrease the pressure turn anticlockwise.

3) Tighten the nut B and pay attention not to turn also the adjusting screw.

4) Screw on the cap A, back to its previous position.

OIL PUMP TYPE TA
GEAR SIZES 2-3-4-5

TA

TA - 11 - Ed 6 - May 2004

This is a general specification leaflet ; for specific applications not covered herein, contact Suntec.

The SUNTEC **TA** oil pump is specially designed for industrial heating applications using light or heavy oils. It is fitted with a preheater location to render cold starting easier.

APPLICATIONS

- Light and heavy oil.
- One or two-pipe system.

PUMP OPERATING PRINCIPLE

The gear set draws oil from the tank and transfers it to the valve that regulates the oil pressure to the nozzle line. All oil which does not go through the nozzle line will be dumped through the valve back to the return line in two pipe installation or, if it is a one-pipe installation, back to the gear-set.

Bleed :

The plug of the pressure gauge port must be loosened until the air is evacuated from the system.

Note :

All TA models are delivered for two-pipe system (by-pass plug fitted in vacuum gauge port).

For one-pipe system,the by-pass plug must be removed and the return port sealed by steel plug and washer.

PREHEATING FACILITY

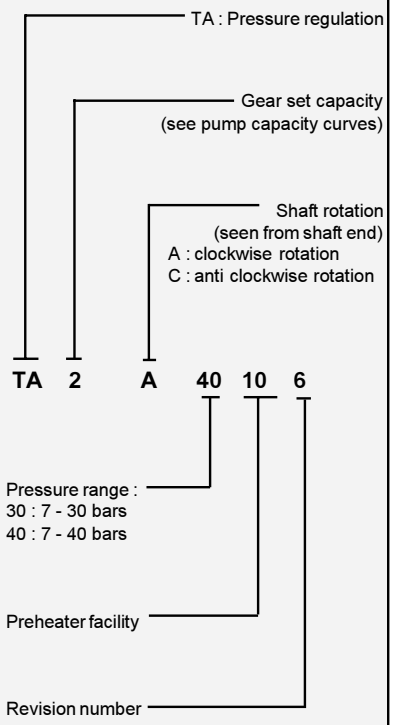
Care should be taken to avoid starting pump with high viscosity cold oil leading to pump and coupling damage. For this reason, the TA pump body includes a drilling to accept an electric preheater. This drilling has been located to give maximum heat transfer from the heater to the oil in the pump without there being direct contact between the heater cartridge and the oil.

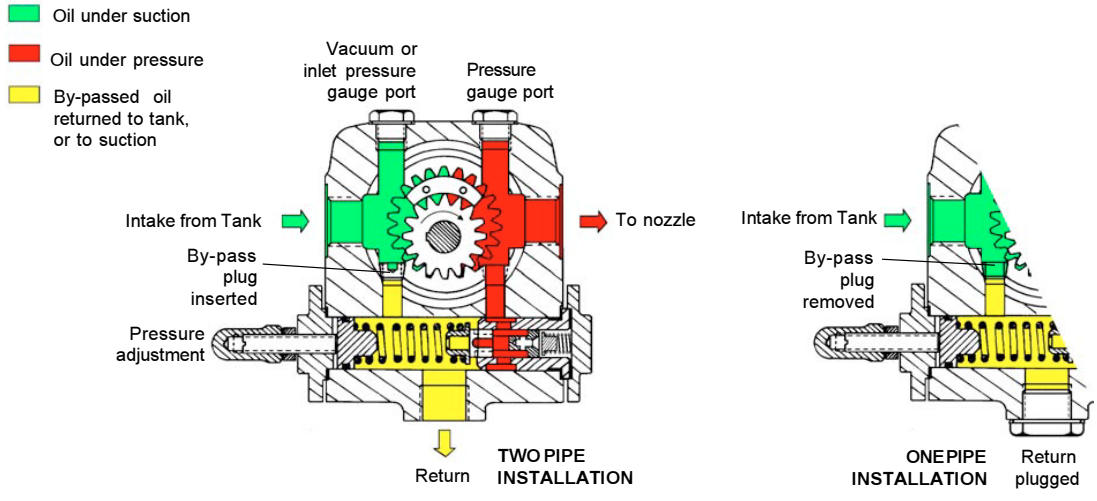
Heaters should be connected for a period of time prior to starting the pump. When the right temperature is reached, they can be switched off or left permanently switched on to maintain fluid oil in the pump during the periodic burner shut-downs.

The oil supply, pipes and filters must be separately heated.

PUMP IDENTIFICATION

(Not all model combinations are available Consult your Suntec representative)





TECHNICAL DATA

General

Mounting	Flange mounting
Connection threads	Cylindrical according to ISO 228/1
Inlet and return	G 1/2
Nozzle outlet	G 1/2
Pressure gauge port	G 1/4
Vacuum gauge port	G 1/4
Shaft	Ø 12 mm
By-pass plug	Inserted in vacuum gauge port for 2 pipe system; to be removed with a 3/16" Allen key for 1 pipe system
Weight	5,4 kg (TA2) - 5,7 kg (TA3) 6 kg (TA4) - 6,4 kg (TA5)

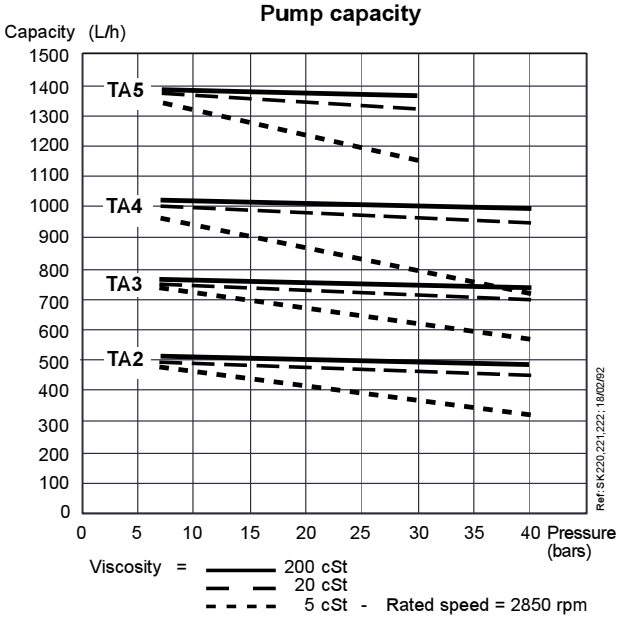
Hydraulic data

Nozzle pressure ranges	30 : 7 - 30 bars 40 : 7 - 40 bars
Delivery pressure setting	30 bars
Operating viscosity	4 - 450 mm²/s (cSt)
Oil temperature	0 - 140°C in the pump
Inlet pressure	light oil : 0,45 bars max. vacuum to prevent air separation from oil heavy oil : 5 bars max.
Return pressure	light oil : 5 bars max. heavy oil : 5 bars max.
Rated speed	3600 rpm max.
Torque (@ 40 rpm)	0,3 N.m

Choice of heater

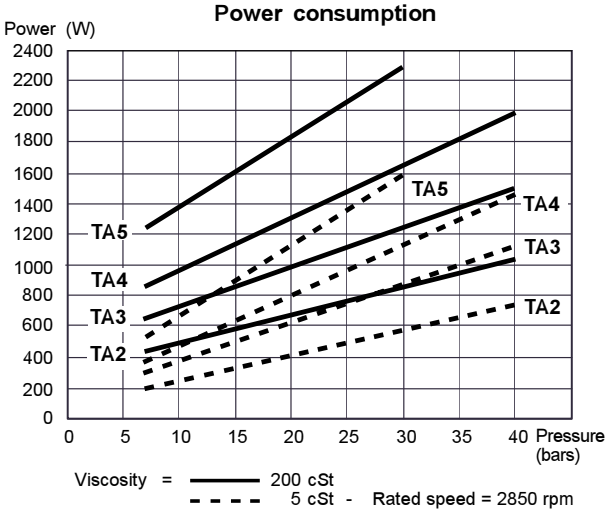
Cartridge	Ø 12 mm
Fitting	according to EN 50262
Rating	80-100 W

Pump capacity



Data shown are for new pumps, with no allowance for wear.

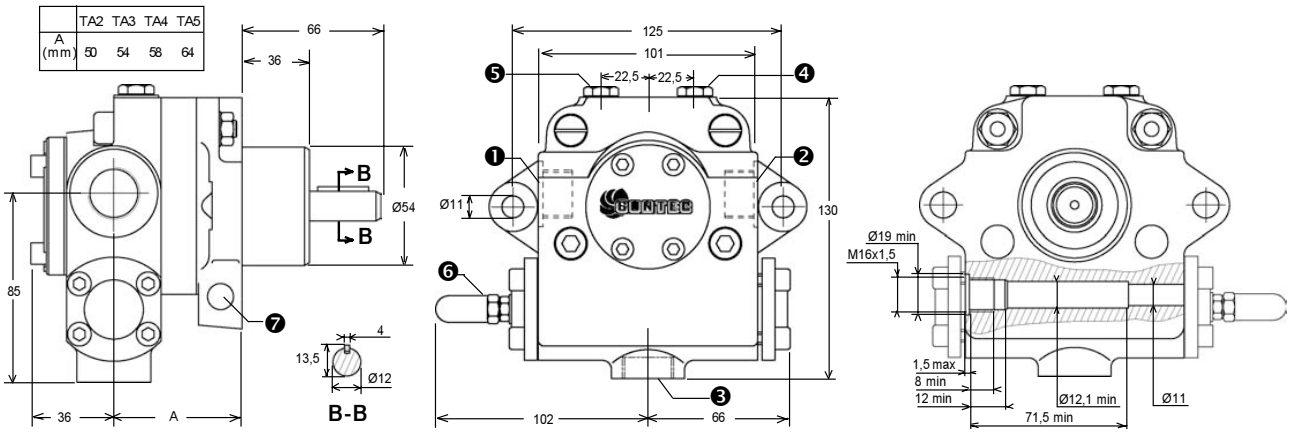
Power consumption



Data shown are for new pumps, with no allowance for wear.

PUMP DIMENSIONS

Example shows "C" rotation - Reverse all pump connections for "A" rotation.



❶ Suction ❷ Nozzle outlet ❸ Return ❹ Pressure gauge port ❺ Vacuum or inlet pressure gauge port and internal by-pass plug ❻ Pressure adjustment ❼ Preheater cavity

We reserve the right to change specifications without prior notice.

TA - 11 - Ed 6 - May 2004

TV VALVE

TV

TV - 11 - Ed 4 - June 99

This is a general specification leaflet ; for specific applications not covered herein, contact Suntec.

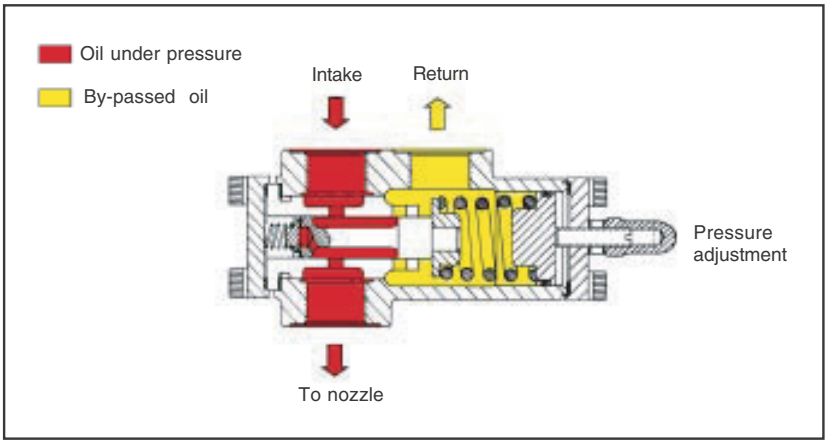
The SUNTEC **TV** valve is a pressure regulating valve.

APPLICATIONS

- Light and heavy oil.
- Capacity up to 5000 l/h.
- May be used with the SUNTEC **T** pump.

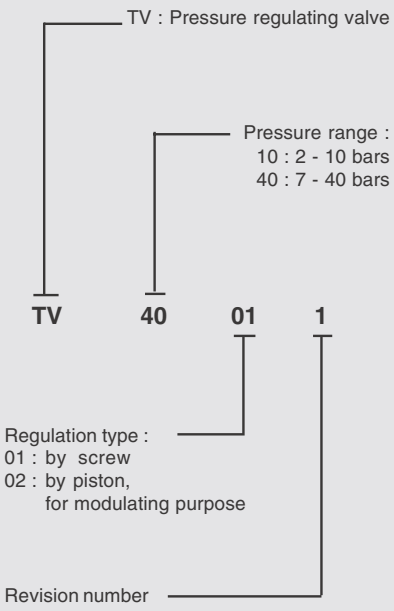
VALVE OPERATING PRINCIPLE

The pressure of the nozzle line is adjusted with the adjusting screw of the TV valve.
The oil in excess to nozzle requirement is dumped to the return.



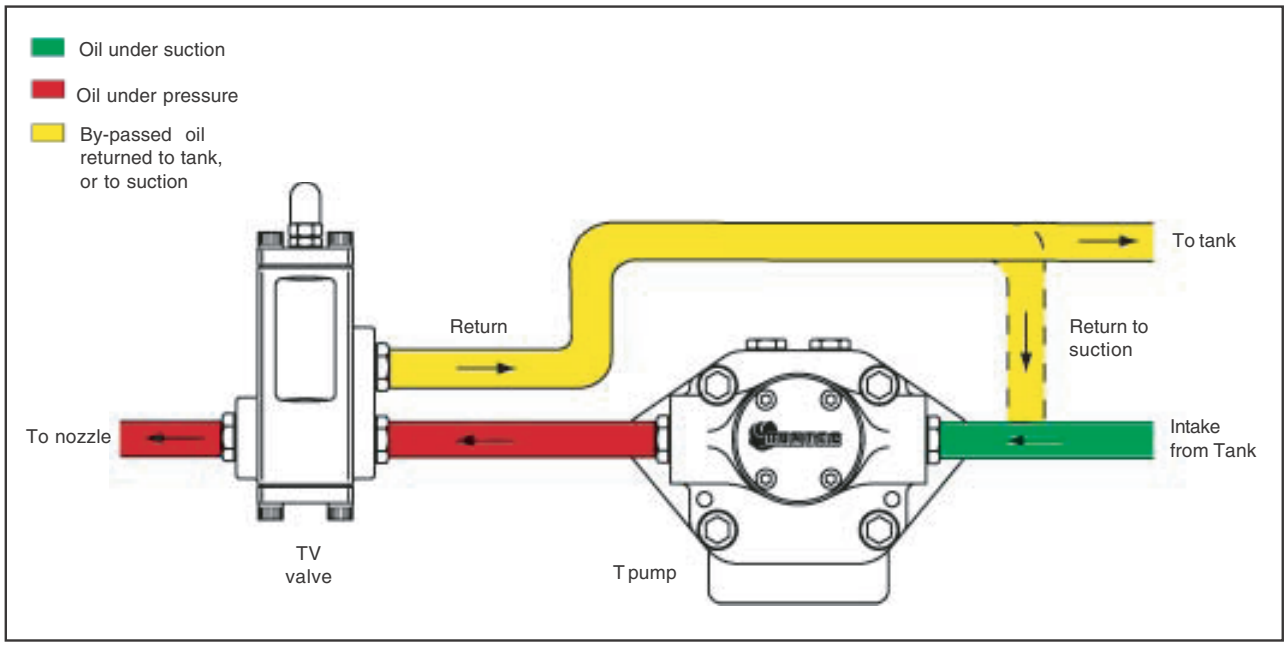
VALVE IDENTIFICATION

(Not all model combinations are available Consult your Suntec representative)



INSTALLATION

Two pipe system : oil in excess is returned to tank.
One pipe system : oil in excess is returned to pump suction.



TECHNICAL DATA

General

Connection threads	Cylindrical according to ISO 228/1
Inlet	G 3/4
Nozzle outlet	G 3/4
Return	G 3/4
Weight	3 kg

Hydraulic data

Pressure ranges	10 : 2 - 10 bars (delivery pressure setting : 7 bars) 40 : 7 - 40 bars (delivery pressure setting : 20 bars)
Operating viscosity	4 - 450 cSt
Oil temperature	0 - 140°C max. in the valve.

MOUNTING POSITION

TV valve may be mounted in any position.

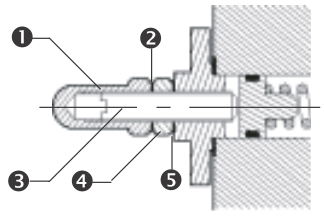
PRESSURE ADJUSTMENT

Remove cap-nut ❶ and washer ❷, unscrew lock-nut ❹.

To increase pressure, turn adjusting screw ❸ clockwise.

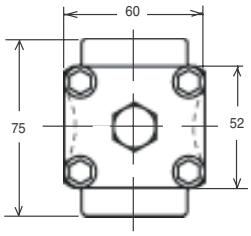
To decrease the pressure, turn screw anticlockwise.

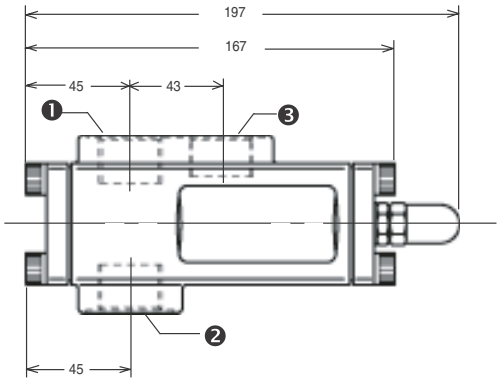
Block lock-nut ❹, refasten washer ❷ and cap-nut ❶.



❶ Cap-nut
❷ Washer
❸ Adjusting screw
❹ Lock nut
❺ Washer

DIMENSIONS





❶ Intake or nozzle outlet
❷ Nozzle outlet or intake
❸ Return

OIL PUMP TYPE T
GEAR SIZES 2-3-4-5

T

T - 11 - Ed 10 - May 2004

This is a general specification leaflet ; for specific applications not covered herein, contact Suntec.

The SUNTEC **T** oil pump is specially designed for industrial heating applications using light or heavy oils with high capacity. It is fitted with a preheater location to render cold starting easier.

APPLICATIONS

- Light and heavy oil.
- SUNTEC recommend the use of a SUNTEC TV valve to regulate the pump pressure.

PUMP OPERATING PRINCIPLE

The gear set draws oil from the tank and transfers it to an external valve that regulates the oil pressure.

Bleed :

The plug of the pressure gauge port must be loosened until the air is evacuated from the system.

Note :

The bypass plug inserted beween high pressure and shaft seal is only intended to change the pump rotation, check the presence of this plug with a 4 mm Allen key in the pressure outlet of the pump.
Caution : changing the direction of pump rotation involves changing of all pump connections.

PREHEATING FACILITY

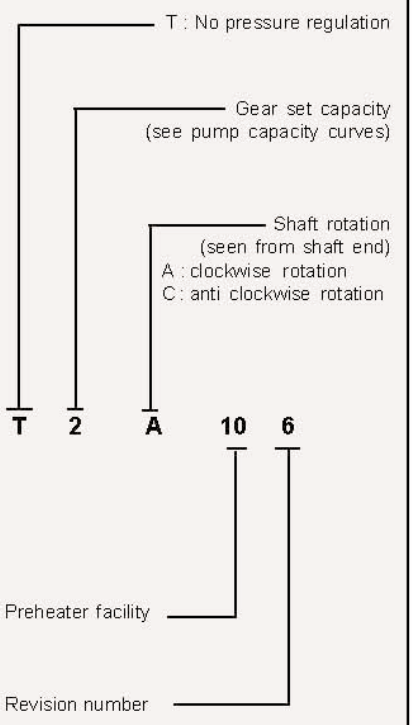
Care should be taken to avoid starting pump with high viscosity cold oil leading to pump and coupling damage. For this reason, the T pump body includes a drilling to accept an electric preheater. This drilling has been located to give maximum heat transfer from the heater to the oil in the pump without there being direct contact between the heater cartridge and the oil.

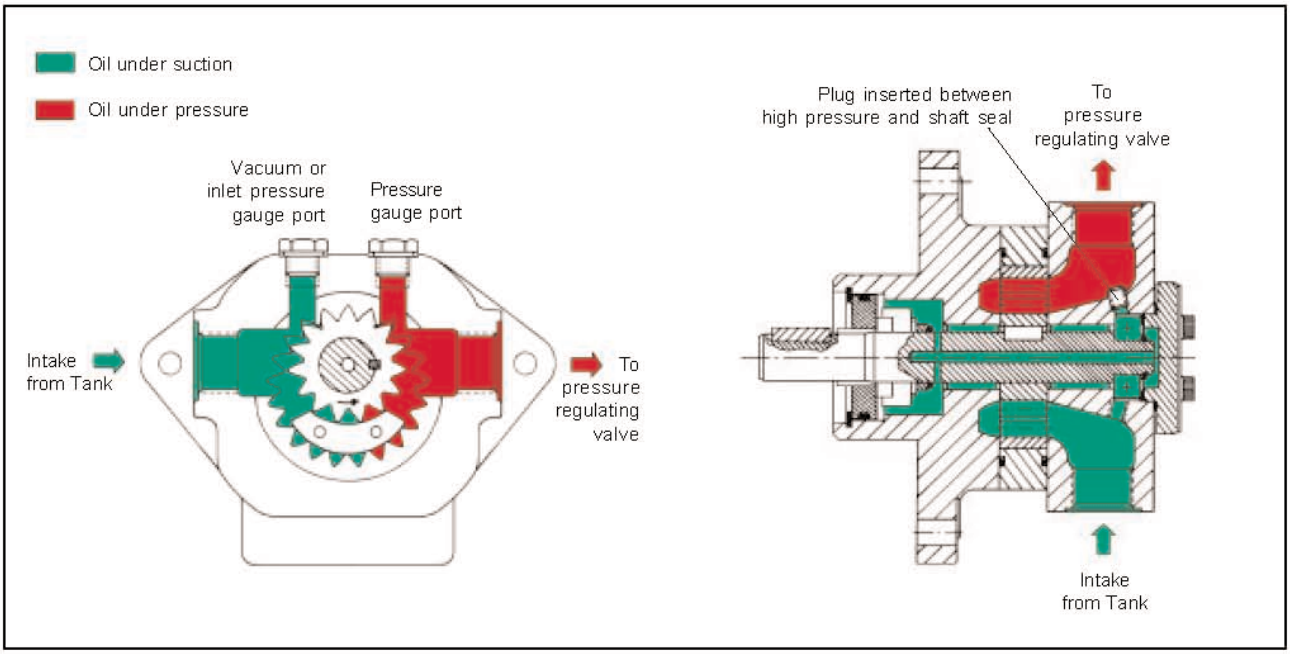
Heaters should be connected for a period of time prior to starting the pump. When the right temperature is reached, they can be switched off or left permanently switched on to maintain fluid oil in the pump during the periodic burner shut-downs.

The oil supply, pipes and filters must be separately heated.

PUMP IDENTIFICATION

(Not all model combinations are available Consult your Suntec representative)





TECHNICAL DATA

General

Mounting	Flange mounting
Connection threads	Cylindrical according to ISO 228/1
Shaft	Ø 20 mm
Weight	7,8 kg (T2) - 8,1 kg (T3) 8,7 kg (T4) - 9,4 kg (T5)

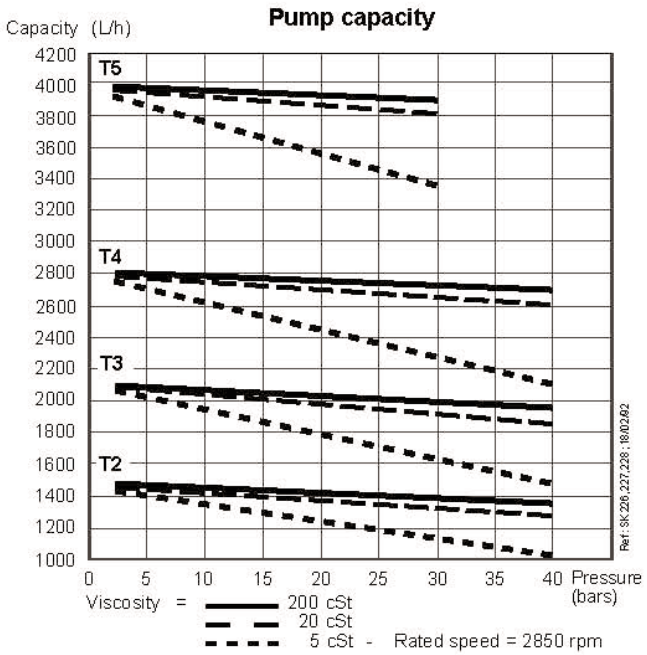
Hydraulic data

Nozzle pressure range	40 bars max. (T2, T3, T4) 30 bars max. (T5)
Operating viscosity	4 - 450 mm²/s (cSt)
Oil temperature	0 - 140°C in the pump
Inlet pressure	light oil : 0,45 bars max. vacuum to prevent air separation from oil heavy oil : 5 bars max.
Rated speed	3600 rpm max.
Torque (@ 40 rpm)	0,4 N.m

Choice of heater

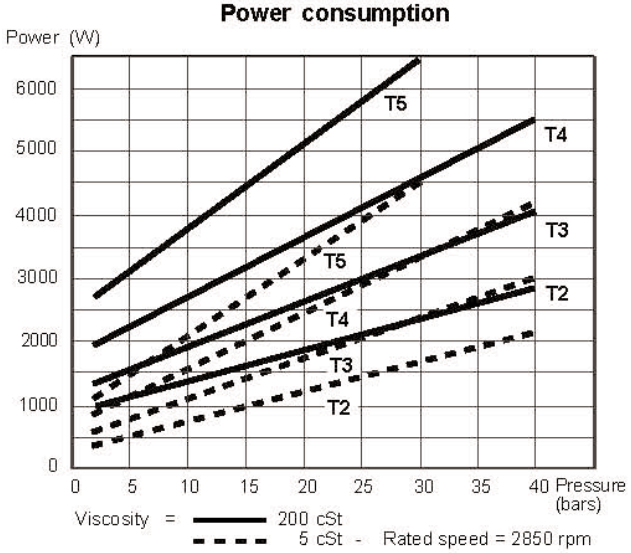
Cartridge	Ø 12 mm
Fitting	according to EN 50262
Rating	80-100 W

Pump capacity



Data shown are for new pumps, with no allowance for wear.

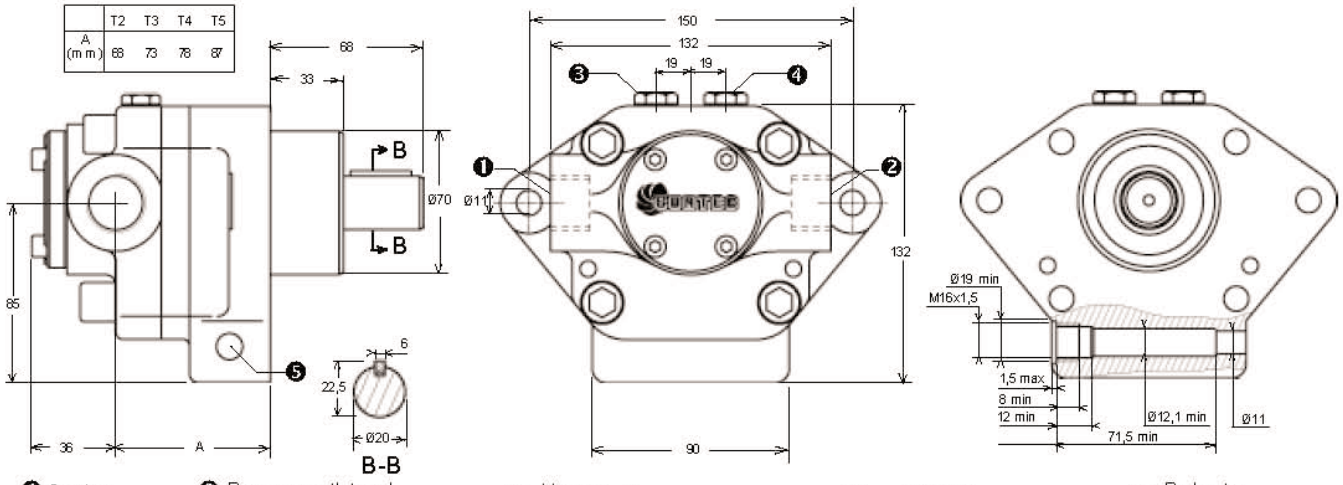
Power consumption



Data shown are for new pumps, with no allowance for wear.

PUMP DIMENSIONS

Example shows "A" rotation - Reverse all pump connections for "C" rotation.



❶ Suction
❷ Pressure outlet and internal by-pass plug
❸ Vacuum or inlet pressure gauge port
❹ Pressure gauge port
❺ Preheater cavity

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T - 11 - Ed 10 - May 2004

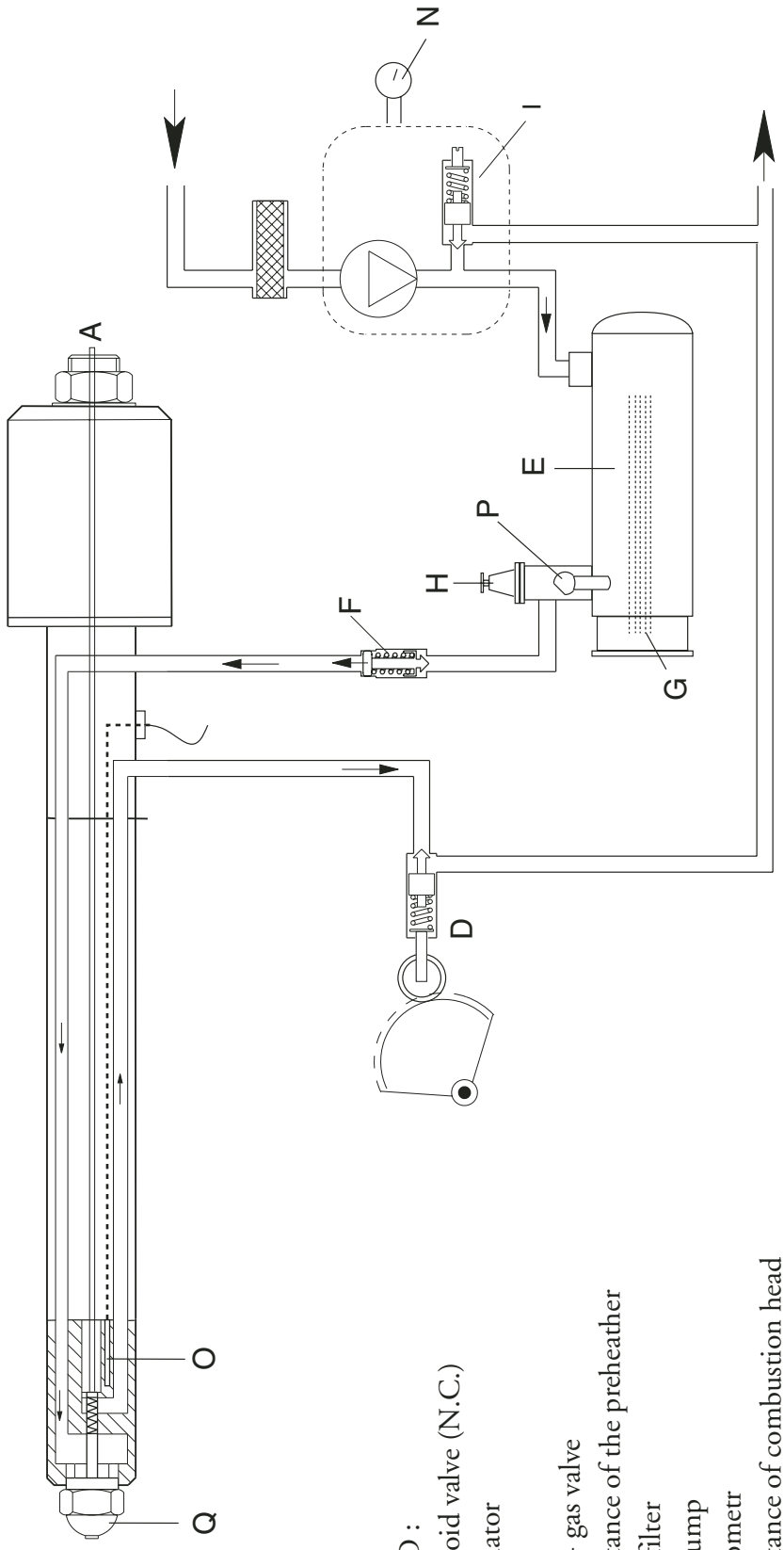
ADJUSTMENT OF FUEL TEMPERATURE

The display shows oil temperature.
The 4 leds are related to the following functions:
Out 1: contact driving working heaters
Out 2: contact driving upper heaters KMRL1
Out 3: contact driving upper heaters KMRL2
Out 4: Burner start driving contact (as the oil reaches this temp the pump is activated)

- The temperatures are already properly Factory setted :
  Out 1(**113°**)- Out 2(**115°**)- Out 3(**120°**)- Out 4(**105°**).
- To modify factory temperature setting act as follows:
- press key "**F**"
- the led Out1 starts to flash, if You need to modify minimum oil temperature press increase or decrease button, after confirm the new value pressing again "**F**"
- if You need to modify an other temperature press again "**F**" untill You the relevant led flashes.

Please take care: if key "**F**" is pressed for a too long time, You enter in "configuration level" phase1, (see "CF1" on the display); these parameters are Factory setted and they have not to be modified: if You enter this function – You see CF1 flashing on the display – wait 10 seconds untill the regulator automatically goes out from "configuration level".

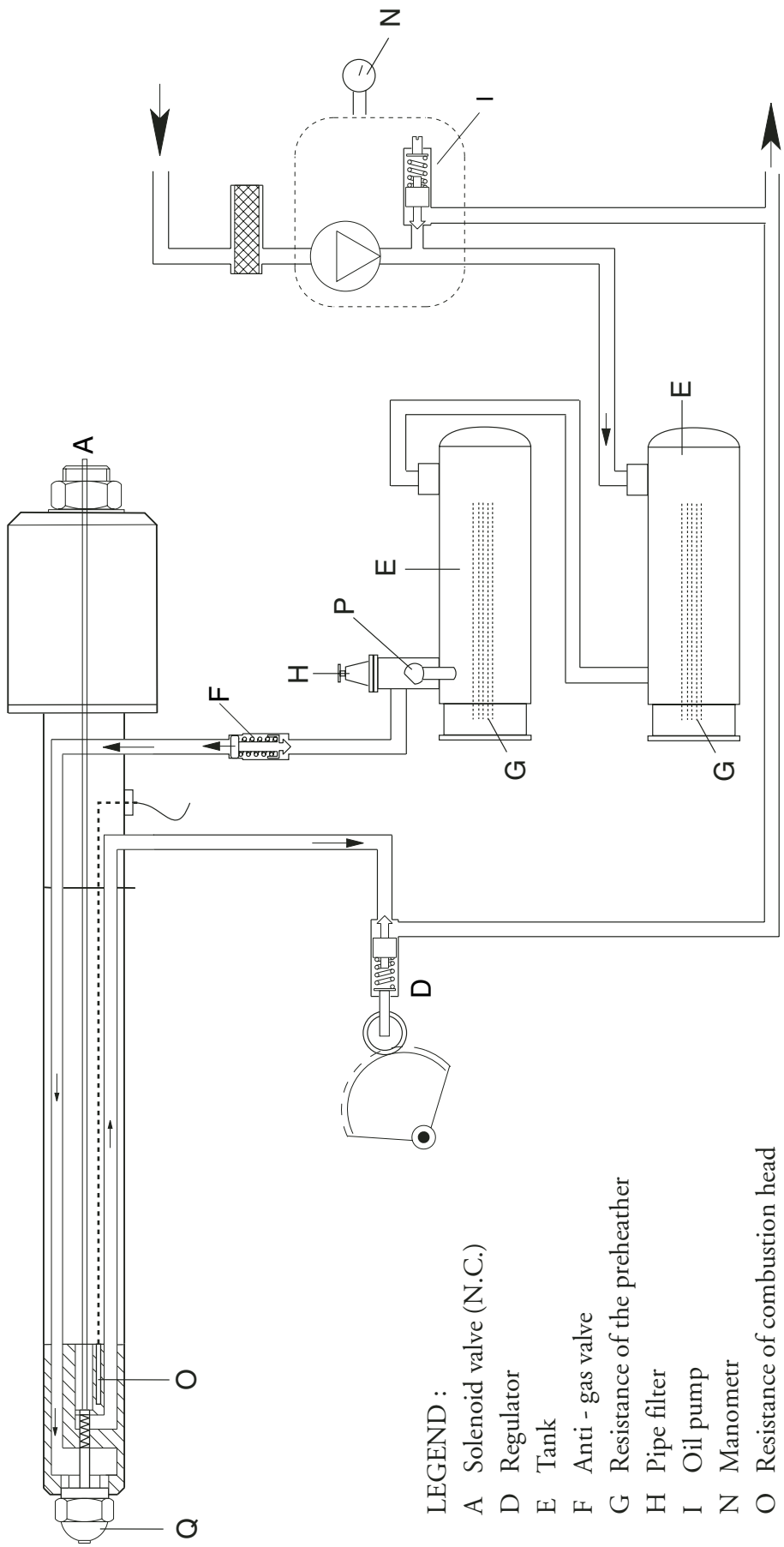
PRE - PURGING PHASE



LEGEND :

A Solenoid valve (N.C.)
D Regulator
E Tank
F Anti - gas valve
G Resistance of the preheather
H Pipe filter
I Oil pump
N Manometr
O Resistance of combustion head
P Oil temperature sensor
Q Oil nozzle

PRE - PURGING PHASE



LEGEND :

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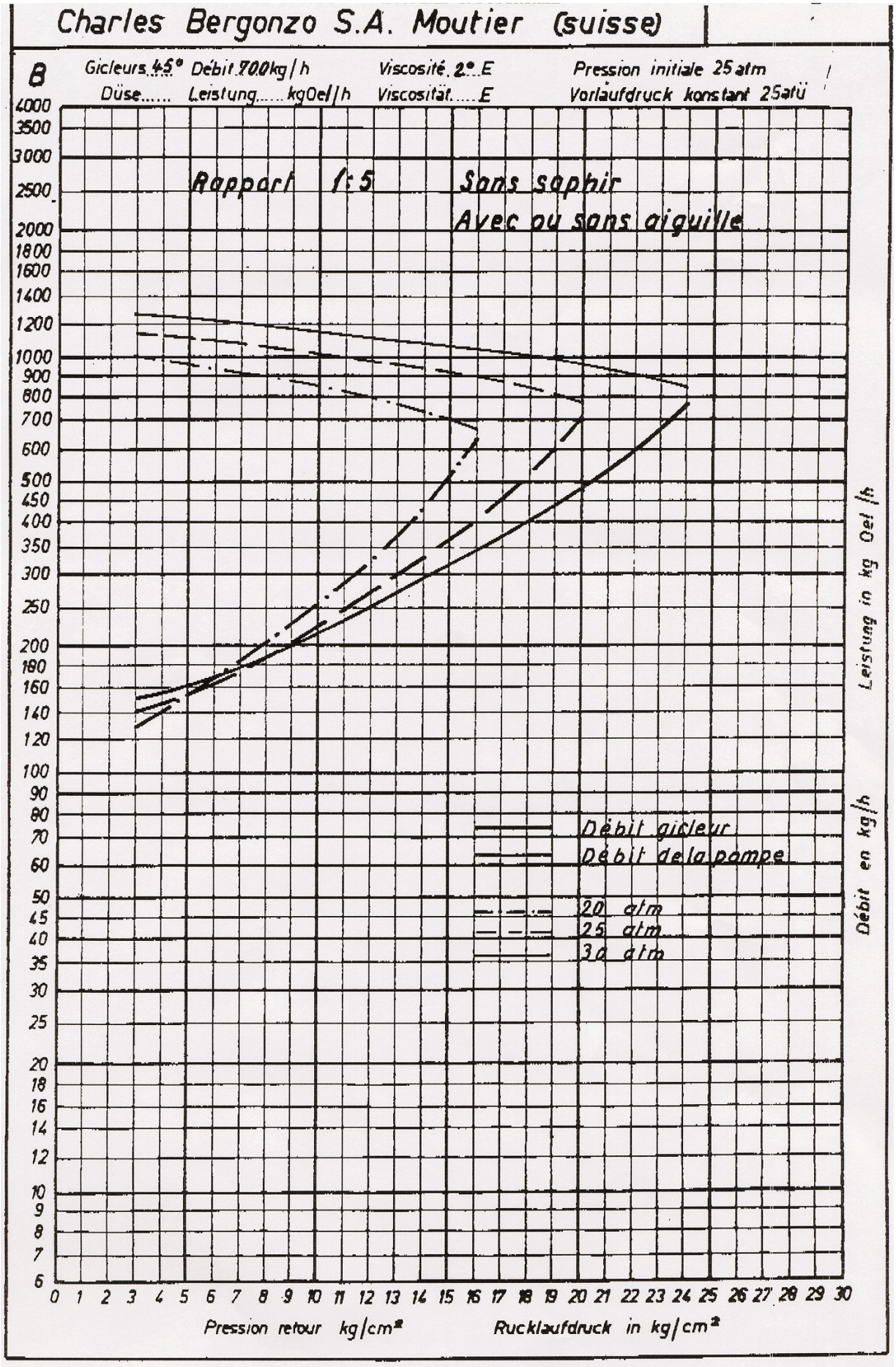
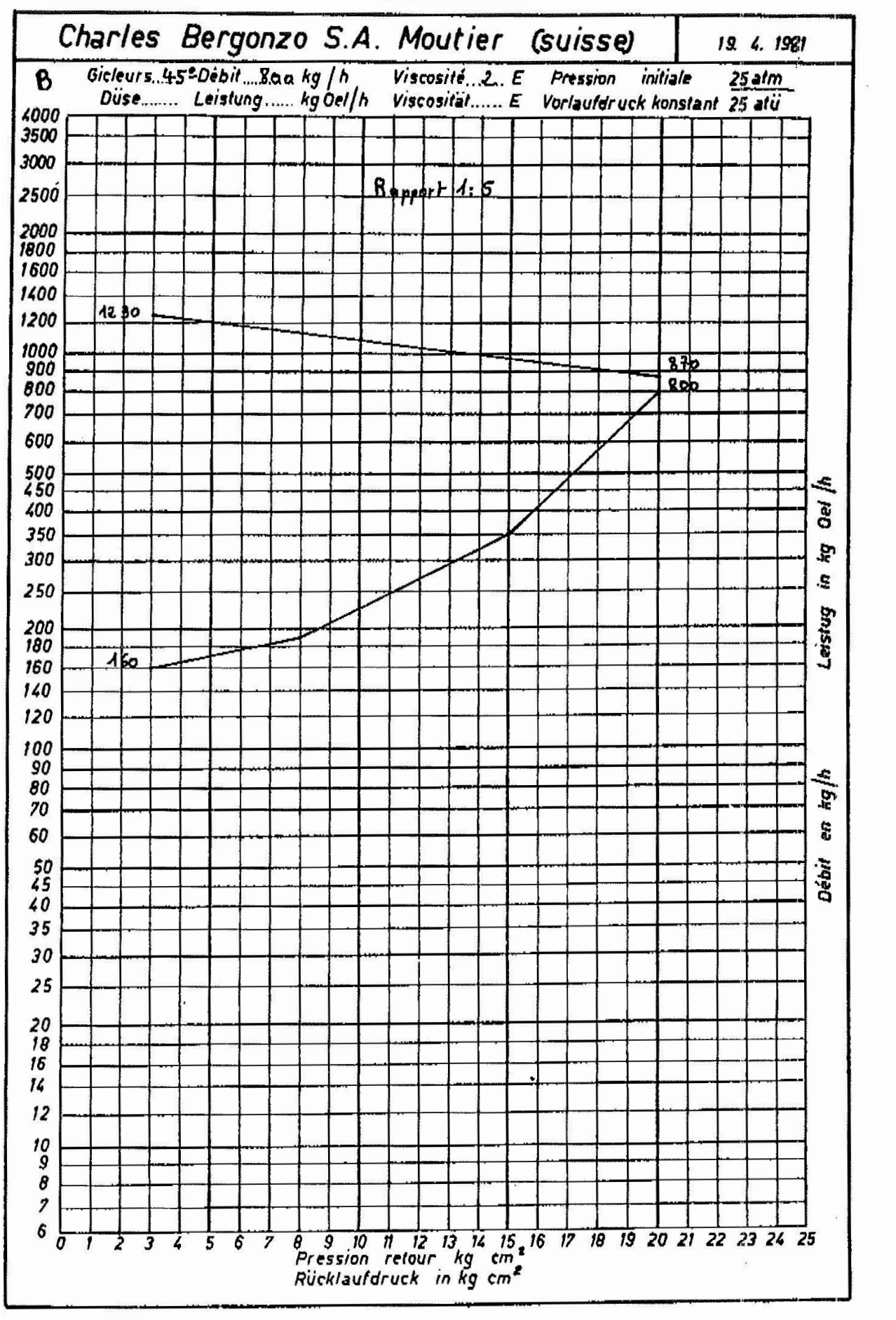
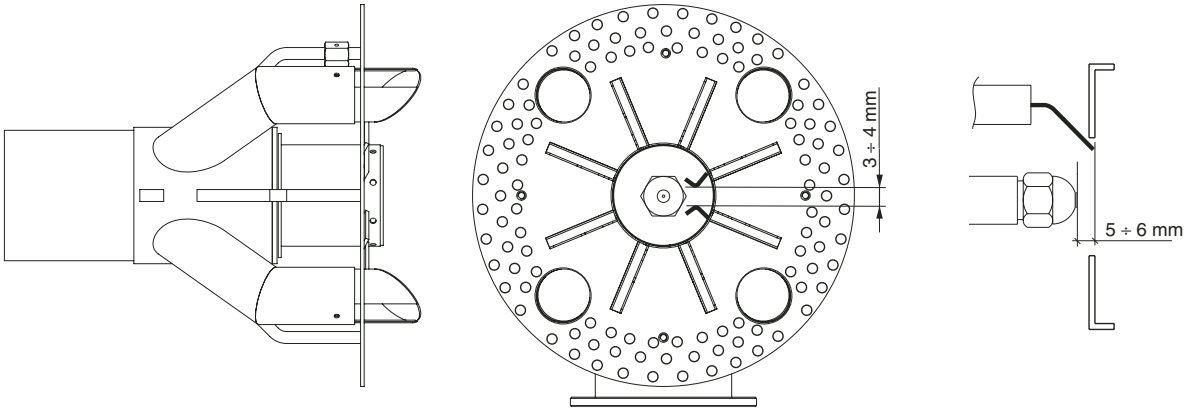

Charles Bergonzo S.A. Moutier (suisse)
B
Gicleurs 45° Débit 700kg/h
Düse..... Leistung..... kgOel/h
Viscosité 2° E
Viscosität..... E
Pression initiale 25 atm
Vorlaufdruck konstant 25atü
Rapport 1:5
Sans saphir
Avec ou sans aiguille
Débit gicleur
Débit de la pompe
20 atm
25 atm
30 atm
Leistung in kg Oel/h
Débit en kg/h
Pression retour kg/cm²
Rucklaufdruck in kg/cm²

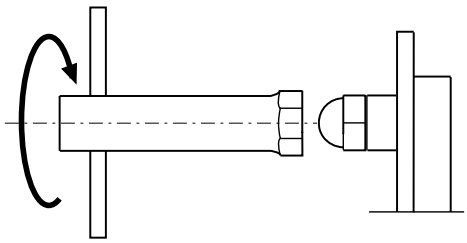

Charles Bergonzo S.A. Moutier (suisse)
19. 4. 1981
B
Gicleurs..45°-Débit....800 kg/h
Düse..... Leistung..... kg Oel/h
Viscosité...2.. E
Viscosität..... E
Pression initiale 25 atm
Vorlaufdruck konstant 25 atü
Rapport 1:5
1230
870
800
160
Leistug in kg Oel/h
Débit en kg/h
Pression retour kg cm²
Rücklaufdruck in kg cm²

POSITION OF IGNITION ELECTRODES



NOZZLE CLEANING AND REPLACEMENT

Use only the suitable box wrench provided for this operation to remove the nozzle, taking care to not damage the electrodes. Fit the new nozzle with the same care.
Note: Always check the position of electrodes after having replaced the nozzle (see illustration). A wrong position could cause ignition troubles.



MAINTENANCE

YEARLY CHECKS

The burner's periodical check (firing head, electrodes etc.) must be carried out by authorised personnel one or two times per year, depending on the utilisation. Before going on with the maintenance controls of the burner, it should be advisable to check its general conditions, according to the following steps:
Unplug the burner; close the fuel cock; shut down the gas supply; remove burner's cover and clean the fan and air intake; clean the firing head and check the electrode's position; reassemble all the parts; check the connection's sealing; check the chimney; start the burner and check the combustion flue (CO_2 = 9.5 ÷ 9.8; O = lower than 75 ppm).

BEFORE EVERY INTERVENTION CHECK:

The electric system is duly powered and the burner is plugged in.
The gas pressure must be the suitable one and the gas cock open.
The control devices must be properly connected.
When all the above conditions are met, start the burner by pressing the lockout enable pushbutton.
Check the burner's cycle.

THE BURNER DOES NOT START:

Check the ON/OFF switch, the thermostats, the motor and the gas pressure.
The master switch is in position "0". Fuses are blown out.
The control box is faulty.

THE BURNER RUNS THE PREPURGING AND SWITCHES TO LOCKOUT AT THE END OF CYCLE:

Check the fan and the air pressure.
Check the air pressure switch.
Control box faulty. Ignition transformer faulty.

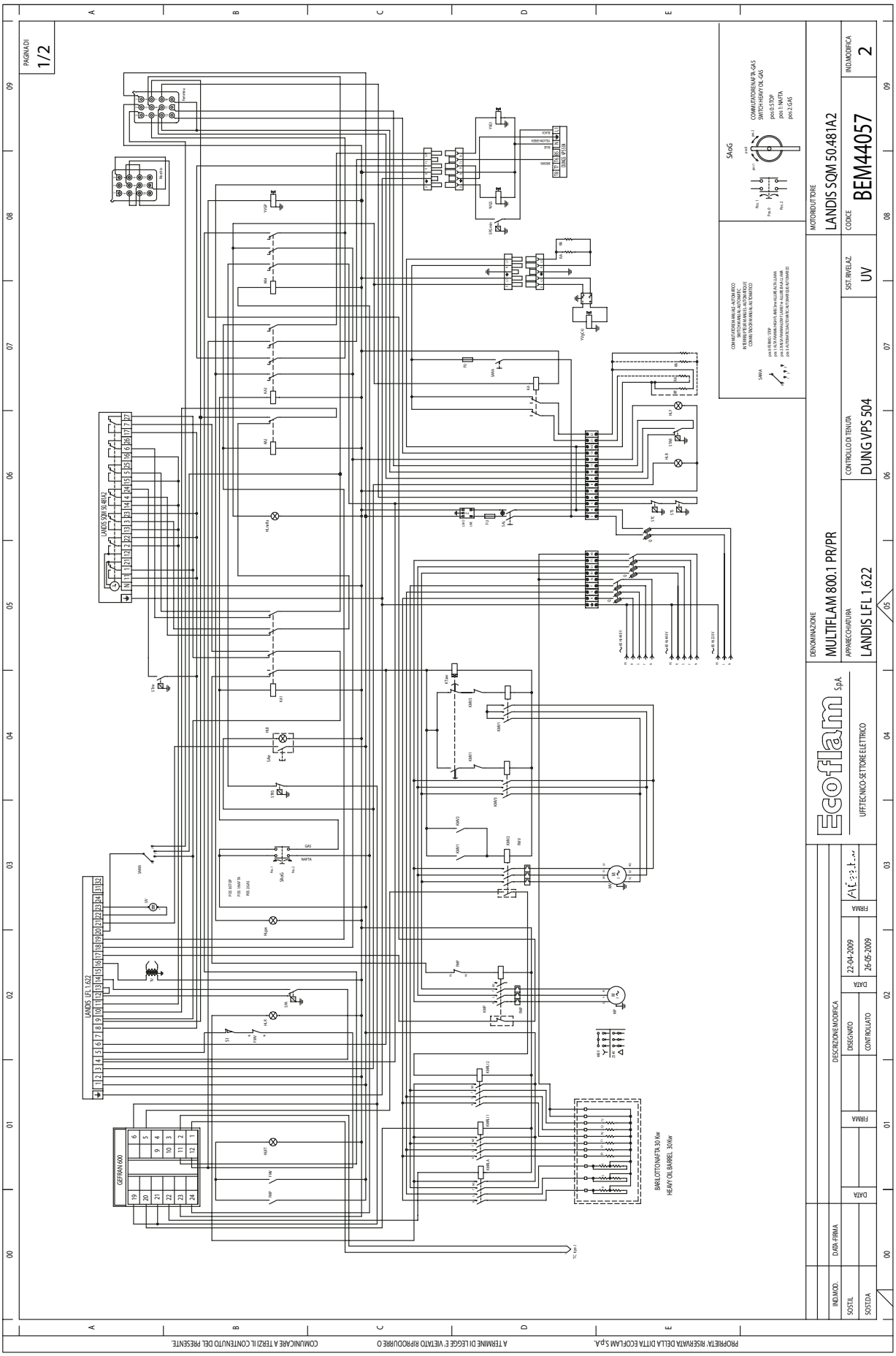
Check the ignition cable. Electrodes are dirty or in wrong position.
Nozzles are clogged or worn. Filters are clogged. Heavy-oil pressure is too low.
Combustion air's flow rate too high related to nozzle output.

THE BURNER RUNS THE PREPURGING BUT DOES NOT IGNITE:
Check the position of the electrodes; check the ignition cable;
Check the ignition transformer;
Check the control box.

THE BURNERS IGNITES BUT SWITCHES TO LOCKOUT AFTER THE SAFETY TIME:
Check phase and neutral for a correct connection.
Check gas solenoid valve.
Check the position of ionisation probe and its connection.
Check the control box.
Check nozzles (clogged or worn).
The photoresistor does not detect the flame.
The filters are clogged. Heavy-oil pressure too low.
Combustion air's flow rate too high related to nozzle output.

THE BURNERS IGNITES BUT SWITCHES TO LOCKOUT AFTER FEW MOMENTS:
Check gas governor and gas filter.
Check gas pressure through a manometer.
Check ionization value (min. 70 µA).

THE BURNER DOES NOT SWITCHES TO HIGH FLAME:
Manual selector switch in wrong position.
Faulty control box. High flame solenoid valve's coils faulty.
Air damper's jacket faulty or wrongly adjusted.


PAGINA DI
1/2
DENOMINAZIONE
MULTIFLAM 800.1 PR/PR
APPARECCHIATURA
LANDIS LFL 1.622
CONTROLLO DI TENUTA
DUNG VPS 504
SIST. RIVELAZ.
UV
CODICE
BEM44057
MOTORIDUTTORE
LANDIS SQM 50.481A2
IND.MODIFICA
2
Ecoflam S.p.A.
UFFTECNICO-SETTORE ELETTRICO
DESCRIZIONE MODIFICA
DISEGNATO
CONTROLLATO
DATA
22-04-2009
26-05-2009
FIRMA
IND.MOD.
SOSTIL.
SOSTDA
DATA
FIRMA
LANDIS LFL 1.622
GEFRAN 600
BARILOTTO NAFTA 30 Kw
HEAVY OIL BARREL 30 kW
SAoG
PROPRIETA' RISERVATA DELLA DITTA ECOFLAM S.P.A.
A TERMINE DI LEGGE E' VIETATO RIPRODURRE O
COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE

Q	INTERRUTTORE GENERALE CON FUSIBILE MAIN SWITCH WITH FUSE INTERRUPTEUR GENERAL AVEC FUSIBLE INTERRUPTOR GENERAL CON FUSIBLE
Z	FILTRO ANTIDISTURBO ANT JAMMING FILTER FILTRE ANTIPARASITES FILTRO DE PROTECION ANTIDISTURBIO
FU	FUSIBILE FUSE FUSIBLE FUSIBLE
FU	FUSIBILE FUSE FUSIBLE FUSIBLE
KA	RELE' RELAY RELAIS RELE'
MV	MOTORE VENTILATORE MOTOR FAN MUTEUR VENTILATEUR MOTOR VENTILADOR
RA	RESISTENZA AUSILIARIA AUXILIARY RESISTOR RESISTANCE AUXILIAIRE RESISTENCIA AUXILIARIA
RP	RESISTENZA POMPA PUMP RESISTOR RESISTANCE POMPE RESISTENCIA BOMBA
TV	TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR D'ALLUMAGE TRANSFORMADOR
UV	FOTOCELLULA UV CELL CELLULE UV FOTOCELULA
FMP	RELE' TERMICO MOTORE POMPA MOTOR PUMP THERMAL RELAY RELAIS THERMIQUE MOTEUR POMPE RELE' TERMICO MOTOR BOMBA
FMV	RELE' TERMICO MOTORE VENTILATORE MOTOR THERMAL RELAY (FAN MOTOR) RELAIS THERMIQUE MOTEUR VENTILATEUR RELE' TERMICO MOTOR VENTILADOR
HLgas	LAMPADA GAS 1.ST FLAME LAMP LAMPE DE 1^ ALLURE ESPIA DE 1^a LLAMA
HLnafta	LAMPADA NAFTA 2.ST FLAME LAMP LAMPE DE 2^ ALLURE ESPIA DE 2^a LLAMA
HLB	LAMPADA DI BLOCCO LOCK-OUT LAMP LAMPE DE SECURITE ESPIA DE BLOQUEO
HLR	LAMPADA RESISTENZE RESISTOR LAMP TEMOIN RESISTENCES INDICADOR RESISTENCIAS
KA1	RELE' RELAY RELAIS RELE'
KA2	RELE' RELAY RELAIS RELE'
KA3	RELE' RELAY RELAIS RELE'

KA4	RELE' RELAY RELAIS RELE'
S1	FINECORSA LIMIT SWITCH INTERRUPTEUR DE FIN DE COURSE LIMITADOR DE CARRERA
KMP	CONTATTORE MOTORE POMPA POMP REMOTE CONTROL SWITCH CONTACTEUR MOTEUR POMPE EMPALME MOTOR BOMBA
KMV2	CONTATTORE MOTORE VENTILATORE REMOTE CONTROL SWITCH (FAN MOTOR) CONTACTEUR MOTEUR VENTILATEUR TELERRUPTOR MOTOR VENTILATOR
KMV1	CONTATTORE DI STELLA STAR CONTACTOR CONTACTEUR D'ETOILE CONTATTORE DI STELLA
KMV3	CONTATTORE DI TRIANGOLO DELTA CONTACTOR CONTACTEUR TRIANGLE CONTATTORE DI TRIANGOLO
SAL	INTERRUTTORE DI LINEA WORKING SWITCH INTERRUPTEUR DE LIGNE INTERRUPTOR DE LINEA
SPA	PRESSOSTATO ARIA AIR PRESSURE SWITCH PRESSOSTAT AIR PRESOSTATO AIRE
STC	TERMOSTATO CALDAIA BOILER THERMOSTAT THERMOSTAT CHAUDIERE TERMOSTATO CALDERA
STRS	TERMOSTATO DI SICUREZZA RESISTENZE RESTOR SAFETY TERMOSTAT TERMOSTAT DE SECURITE RESISTANCES TERMOSTATO DE SEGURIDAD RESISTENCIAS
STS	TERMOSTATO DI SICUREZZA SAFETY THERMOSTAT THERMOSTAT DE SECURITE TERMOSTATO DE SEGURIDAD
SAoG	INTERRUTORE OLIO-GAS SWITCH HEAVY OIL - GAS INTERRUPTEUR FUEL LOURD - GAZ INTERRUPTOR ACEITE PESADO - GAZ
YVG1	ELETTROVALVOLA GAS DI PRIMA FIAMMA FIRST STAGE GAS SOLENOID VALVE ELECTROVANNE GAZ PETITE ALLURE ELECTROVALVULA GAS DE 1^ LLAMA
YVGS	ELETTROVALVOLA GAS DI SICUREZZA EXTRA SAFETY GAS SOLENOID VALVE ELECTROVANNE GAZ DE SECURITE ELECTROVALVULA GAS DE SEGURIDAD
YVgC-U	SOLENOIDE CHIUSURA UGELLO OIL SHUT-OFF SOLENOID
KMRLA	CONTATTORE RESISTENZE DI LAVORO WORKING RESISTOR SWITCH INTERRUPTEUR DES RESISTANCES DE TRAVAIL INTERRUPTOR DE LAS RESISTENCIAS DE TRABAJO
SPGmin	PRESSOSTATO GAS DI MINIMA GAS PRESSURE SWITCH MIN PRESSOSTAT GAZ PRESSION MIIN PRESOSTATO GAS DE MINIMA POT.
KMRLI 1	CONTATTORE RESISTENZE DI LIVELLAMENTO LEVELLING RESISTOR SWITCH INTERRUPTEUR DES RESISTANCES DE NIVELLEMENT INTERRUPTOR DE LAS RESISNCIAS DE NIVELACION
KMRLI 2	CONTATTORE RESISTENZE DI LIVELLAMENTO LEVELLING RESISTOR SWITCH INTERRUPTEUR DES RESISTANCES DE NIVELLEMENT INTERRUPTOR DE LAS RESISNCIAS DE NIVELACION

YVGP	ELETTROVALVOLA GAS PILOTA PILOT FLAME SOLENOID GAS VALVE ELECTROVANNE GAZ PILOTE ELECTROVALVULA GAS PILOTO
STAB	TERMOSTATO DI ALTA-BASSA FIAMMA HIGH-LOW FLAME THERMOSTAT THERMOSTAT GRANDE-PETITE ALLURE TERMOSTATO DE ALTA-BAJA LLAMA
MP	MOTORE POMPA OIL PUMP MOTOR MOTEUR POMPE MOTOR BOMBA
HLF	LAMPADA DI FUNZIONAMENTO WORKING LAMP LAMPE DE FONCTIONNEMENT ESPIA DE FUNCIONAMIENTO
HLBT	LAMPADA DI BLOCCO TERMICO THERMAL LOCK-OUT LAMP LAMPE DE THERMAL DE SECURITE ESPIA DE BLOQUEO RELE TERMICO
SAsr	PULSANTE DI SBLOCCO APPARECCHIATURA RESET LOCK OUT BUTTON BOUTON DE DEBLOCAGE DU COFFRE DE SECURITE REARME DE LA CENTRALITA
SAMA	COMMUTATORE MANUALE-AUTOMATICO SWITCH (MANUAL-AUTOMATIC) INTERRUPTEUR MANUEL-AUTOMATIQUE CONMUTADOR MANUAL-AUTOMATICO
TC	TERMOCOPPIA THERMOCOUPLE THERMOCOUPLE
SARA	INTERRUTTORE RESISTENZE AUSILIARIE AUX HEATER SWITCH INTERRUPTEUR DES RESISTACES AUXILIAIRES INTERRUPTOR RESISTENCIA AUXILIAR

USCITE RELE DEL REGOLATORE

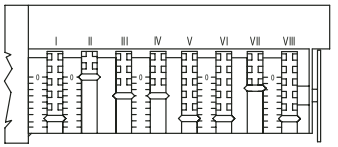
OUT 1:KMRLA (MORS 21-22)

OUT 2:KMRLI 1 (MORS 19-20)

OUT 3:KMRLI 2 (MORS 5-6)

OUT 4:TERMOSTATO DI ACCENSIONE (MORS 11-12)

REGOLAZIONE CAMME PER MULTIFLAM 800.1 PR/PR



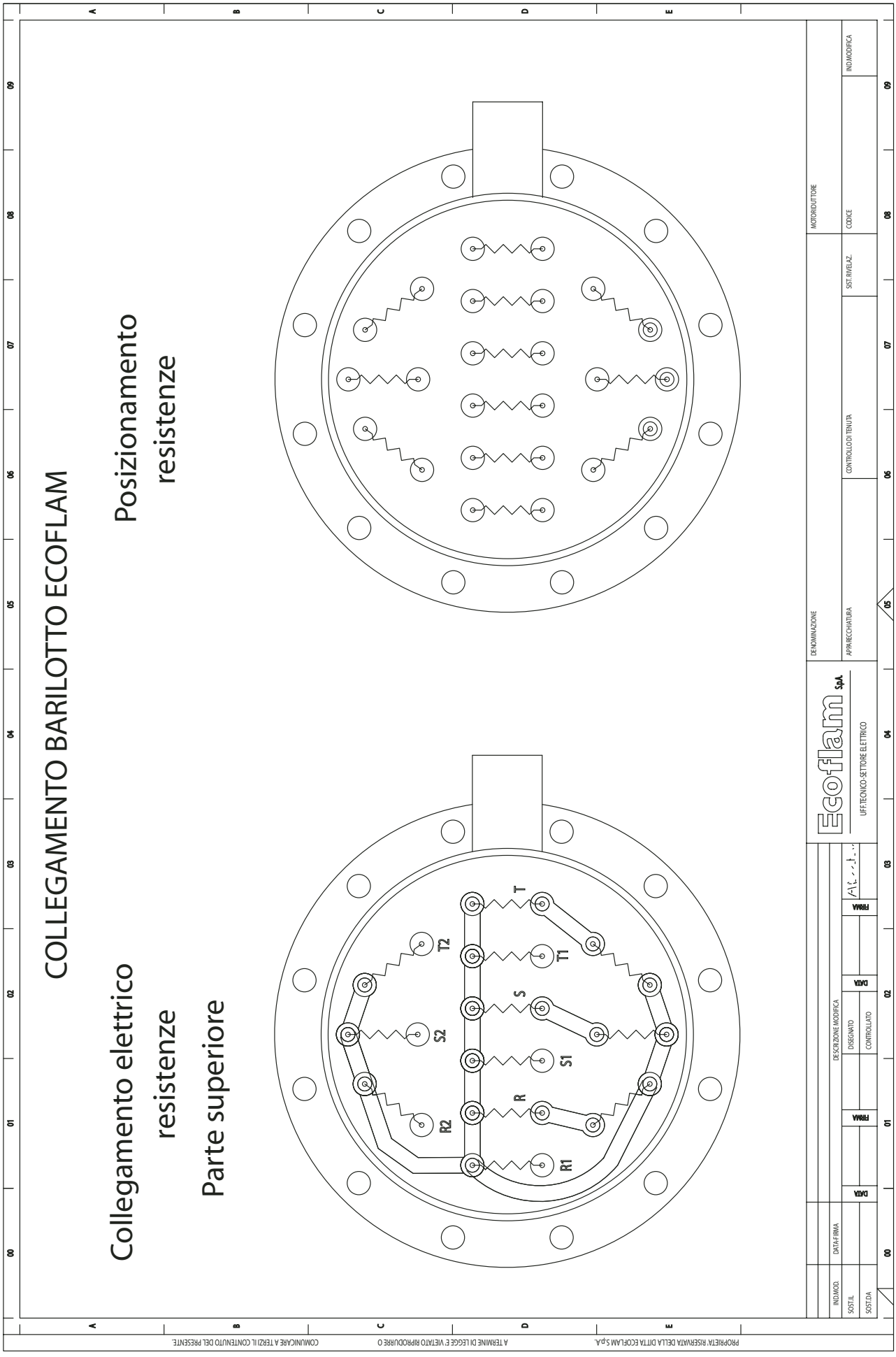
(60°) I: CAMMA DI REGOLAZIONE ARIA MASSIMA FIAMMA NAFTA
(0°) II: CAMMA DI REGOLAZIONE CHIUSURA TOTALE
(30°) III: CAMMA DI REGOLAZIONE ARIA ACCENSIONE GAS
(32°) IV: CAMMA DI REGOLAZIONE ARIA ACCENSIONE NAFTA
(40°) V: CAMMA DI REGOLAZIONE ARIA BASSA FIAMMA GAS
(42°) VI: CAMMA DI REGOLAZIONE ARIA BASSA FIAMMA NAFTA
(65°) VII: CAMMA DI REGOLAZIONE ARIA MASSIMA FIAMMA GAS
(0°) VIII: CAMMA NON UTILIZZATA

IND.MOD.	DATA-FIRMA	DESCRIZIONE MODIFICA							
SOST.IL		DATA		FIRMA		DISEGNATO	DATA	22-04-2009	FIRMA
SOST.DA						CONTROLLATO			

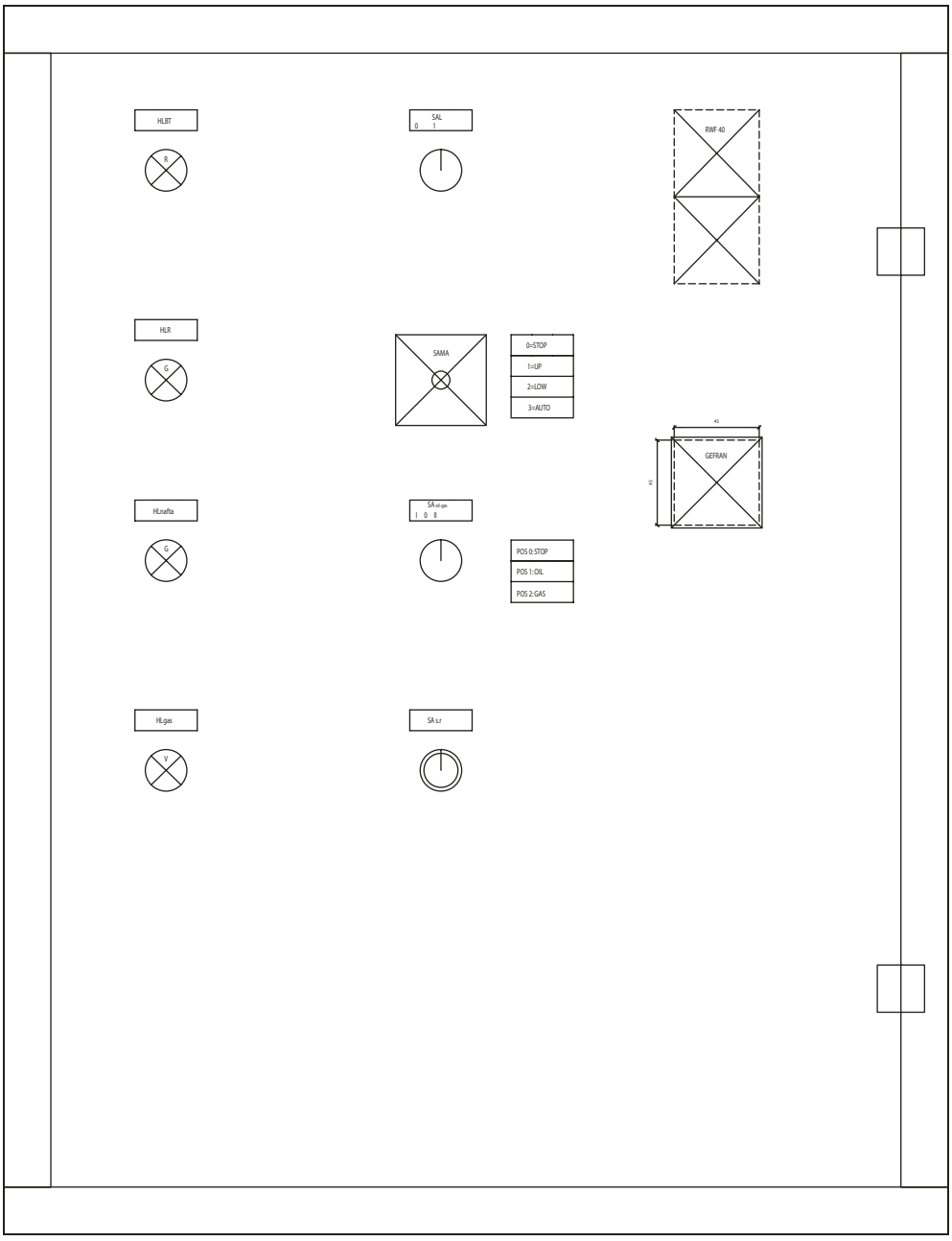
Ecoflam S.p.A.
UFF.TECNICO-SETTORE ELETTRICO

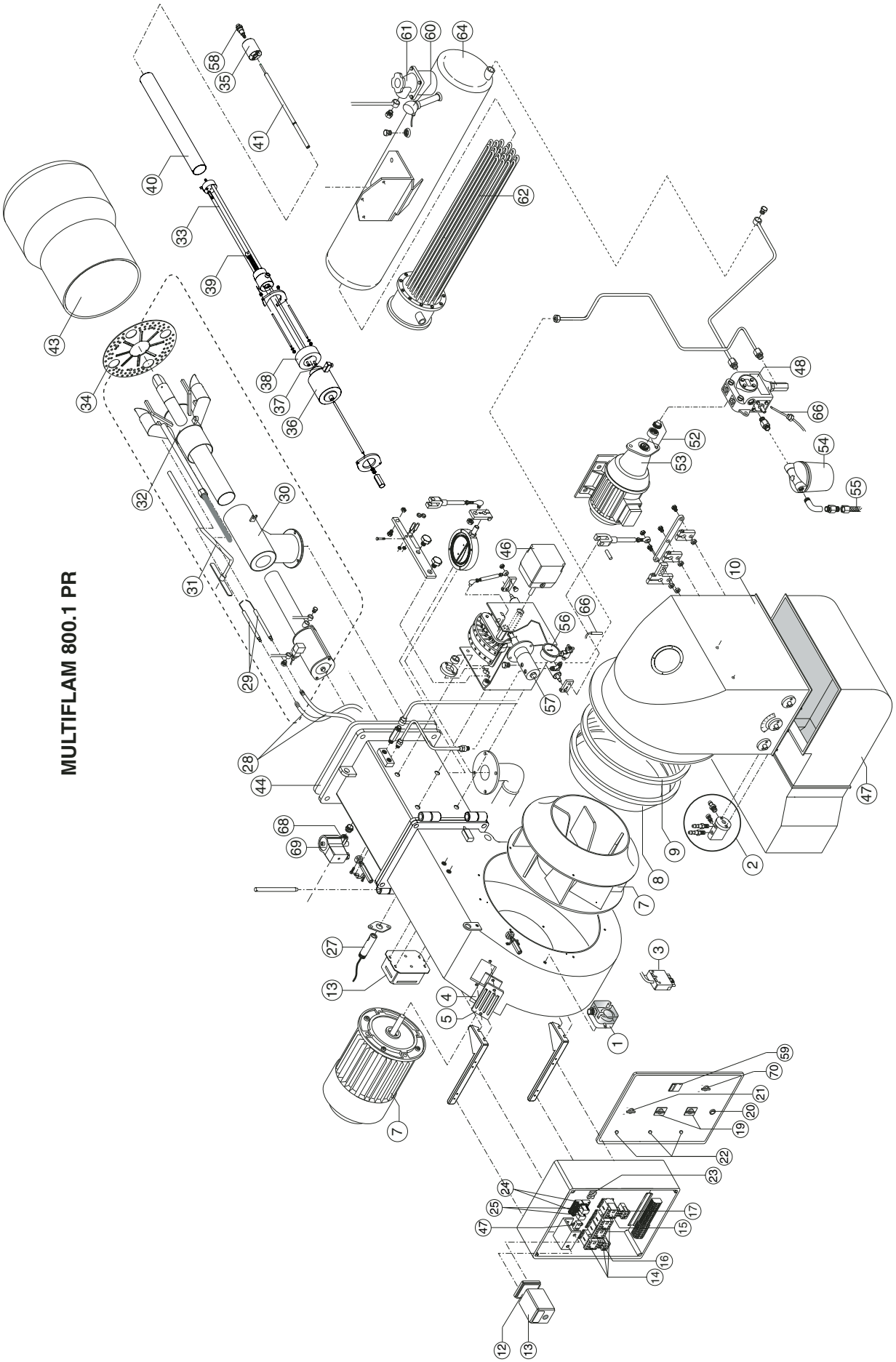
DENOMINAZIONE			MOTORIDUTTORE
MULTIFLAM 800.1 PR/PR			LANDIS SQM 50.481A2
APPARECCHIATURA	CONTROLLO DI TENUTA	SIST. RIVELAZ.	CODICE / IND.MODIFICA
LANDIS LFL 1.622	DUNGS VPS 504	UV	BEM44057

Ecoflam
4200102482200 MULTIFLAM 700.1 ÷ 1200.1 PR/PR


COLLEGAMENTO BARILOTTO ECOFLAM
Collegamento elettrico resistenze
Parte superiore
Posizionamento resistenze
T
T2
T1
S
S2
S1
R
R2
R1
Ecoflam SpA
UFF.TECNICO-SETTORE ELETTRICO
DENOMINAZIONE
APPARECCHIATURA
CONTROLLO DI TENUTA
SST. RIVELAZ.
MOTORIDUTTORE
CODICE
IND.MODIFICA
DESCRIZIONE MODIFICA
DISEGNATO
CONTROLLATO
DATA
FIRMA
IND.MOD.
SOST.IL
SOST.DA
DATA FIRMA
PROPRIETA' RISERVATA DELLA DITTA ECOFLAM S.p.A.
A TERMINE DI LEGGE E' VIETATO RIPRODURRE O
COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE

DESCRIPTION OF CONTROL PANEL




MULTIFLAM 800.1 PR

N°	DESCRIPTION		MULTIFLAM 800.1 code
1	AIR PRESSURE SWITCH	DG 10 U	Q112/2
2	AIR INTAKE SET		GRPA100
3	WIELAND PLUG	6 pin	E226
4	GLASS		BFC02004
5	PEED WINDOM FRAME		BFC02006
6	MOTOR	18,5 kW	M171/4
7	FAN	RU-560 M.D.42	BFV10410/001
8	AIR CONVEYOR		BFC08261
9	CONVEYOR RING		BFC08258/038
10	AIR INTAKE		BFC04259/038
11	CONTROL BOX BASE	LANDIS	A401
12	CONTROL BOX	LANDIS LFL1.333	A124
13	IGNITION TRANSFORMER	T8 13000/35 220/60	T115
14	REMOTE CONTROL SWITCH	AEG LS4K.10	R621/1
		AEG LS7K.10	R621/3
15	REMOTE CONTROL SWITCH (PUMP)	AEG LS05.10	R621
16	MOTOR THERMAL RELAY	AEG B18K-260	R521/15
17	MOTOR THERMAL RELAY (PUMP)	AEG 4-6.3A	R521/13
18	MAIN SWITCH	COMEPI art.ECX1252	R1011/11
19	RESET BUTTON KEY	COMEPI a.ECX1430	R1011/15
20	SELECTOR	GIOVENZANA A.C01600029	R1010/3
21	SELECTOR GAS/HEAVY OIL	COMEPI ART.ECX1370	R1011/10
22	LAMP	LYVIA 10x28 BA9S	E1512/06
23	FUSE SUPPORT	HK 520 04/1 10A	E803
24	RELÉ BASE	FINDER 95.75	R910
		FINDER 5532	R905
		FINDER 5534	R906
25	RELÉ	FINDER MINI 40.52	R712/1
		FINDER 5532	R711
		FINDER 5534	R712
26	TIMER		-
27	UV CELL	LANDIS QRA 2	A205
28	IGNITION CABLE	TC	BFE01403/4
29	IGNITION ELECTRODES SET		E612
30	GAS PIPE SUPPORT		BFT14077/001
31	ROD	TC	BFA08059/001
32	GAS FIRING HEAD		BFT14078/001
33	OIL FIRING HEAD		BFT15264/001
34	FRONT DISC		BFD03027
35	NOZZLE HOLDER	7/8 UNEF	BFC11025
36	COIL	EL011	V523
37	CONNECTOR WITH RECTIFIER		V1119/07
38	RING		BFT15224/001
39	SPRING HOLDER		BFT15222/001
40	PIPE		BFT15266/001
41	ROD NOZZLE HOLDER	TC	BFT15265/001
42	DIFFUSER		BFT14027/001
43	BLAST TUBE	TC	BFB08005
44	GASKET ISOMART		BFG04059/1
45	ANTIJAMMING FILTER		S132/4
46	AIR DAMPER MOTOR	LANDIS SQM50.481A2	M212/91
47	SILENCER		BAA11001/038
48	OIL PUMP	SUNTEC TA5C30106	P148/2
49	OIL PUMP VALVE		-
50	COUPLING (MOTOR)		-
51	UNION		-
52	COUPLING (PUMP)		MP501/4
53	PUMP MOTOR	SIMEL 2200W	M147/182
54	OIL FILTER	70501/03	S107/5
55	HOSES	25X1500	S901/2
56	MANOMETER	CEWAL R1/4 D50-40BAR	S601/1
57	ADJUSTMENT OF OIL PRESSURE	B-GH-PRO-2	S1108/07

TC = SHORT HEAD TL = LONG HEAD

N° DESCRIPTION		Multiflam 800.1 code
58 - NOZZLE	Bergonzo 700 kg/h	U701/007
59 - ADJUSTMENT OF FUEL TEMPERATURE	Gefran 600	E1216
60 - THERMOCOUPLE	TC6MD2JBC	E1216/1
61 - FILTER	U21008/01	S107/7
62 - UP HEATER	30 kW 440 V 60 Hz	R127/01
63 - DOWN HEATER		-
64 - UP OIL TANK		BFP01045/017
65 - DOWN OIL TANK		-
66 - HEATING ELEMENT	50 W	R110
67 - THERMOSTAT		-
68 - PILOT GAS VALVE	KROMSCH.VAS 125R/LW	V1996/11
69 - COIL	KROMSCH.VAS 125R/LW	
70 - SELECTOR	COMEPI ART.ECXECX1350	R1011/18

TC = SHORT HEAD TL = LONG HEAD

NOTE :

ECOFLAM BRUCIATORI S.p.A. reserves the right to make any adjustments, without prior notice, which it considers necessary or useful to its products, without affecting their main features.

Ecoflam

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