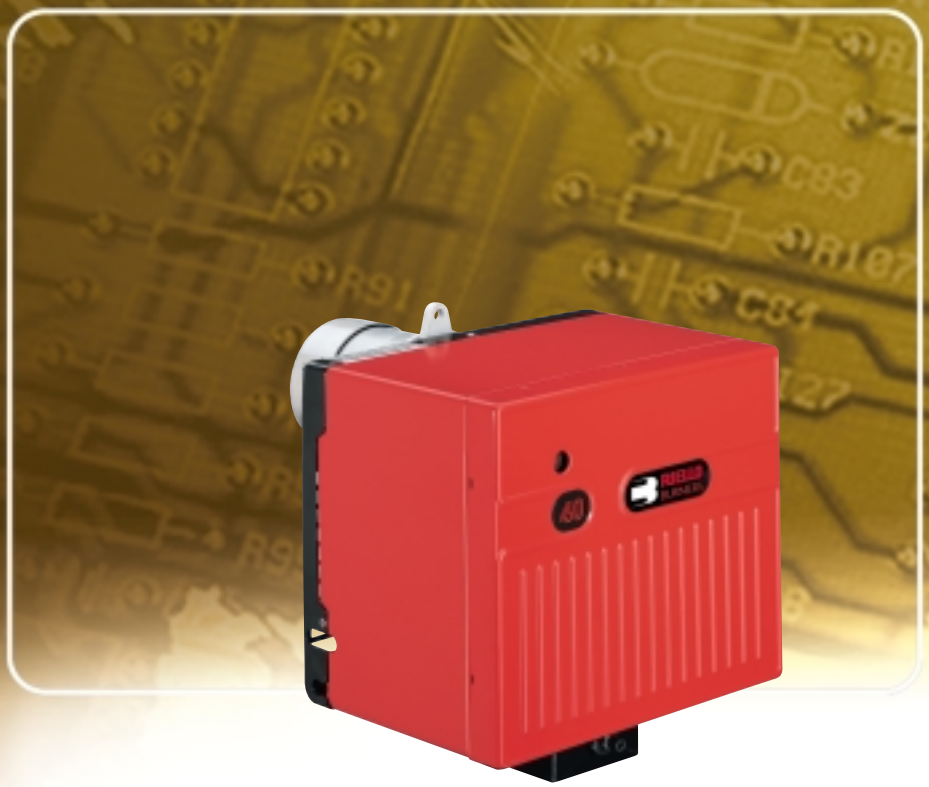
RIELLO BURNERS

CE

ONE STAGE HEAVY OIL BURNERS

RIELLO 40 N SERIES

N10	34 ÷ 102	kW
N20	102 ÷ 217	kW



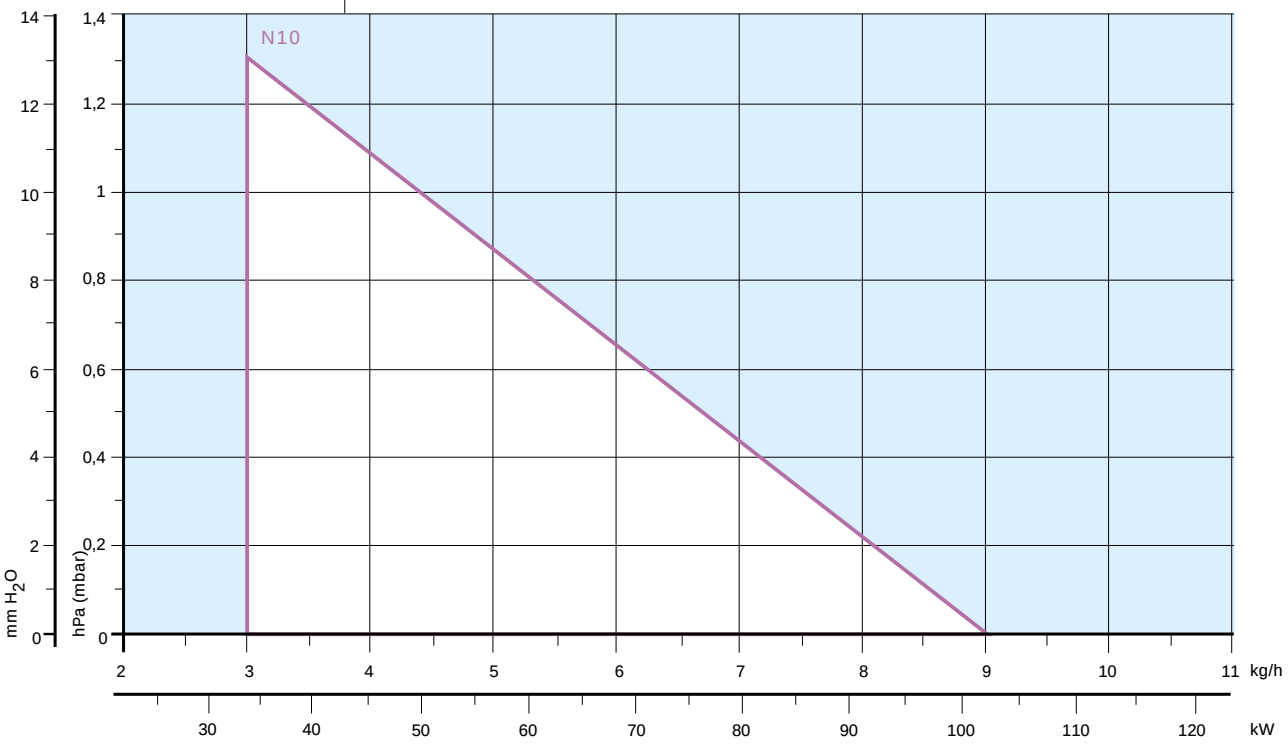
The Riello 40 N series of one stage heavy oil burners, is a range of products developed to respond to any request for home heating. The Riello 40 N series is available in two different models, with an output ranging from 34 to 217 kW, divided in two different structures. All the models use the same components designed by Riello for the Riello 40 N series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.
All the models are conform to European Directives for EMC, Low Voltage and Machinery.
All the Riello 40 N burners are tested before leaving the factrory.

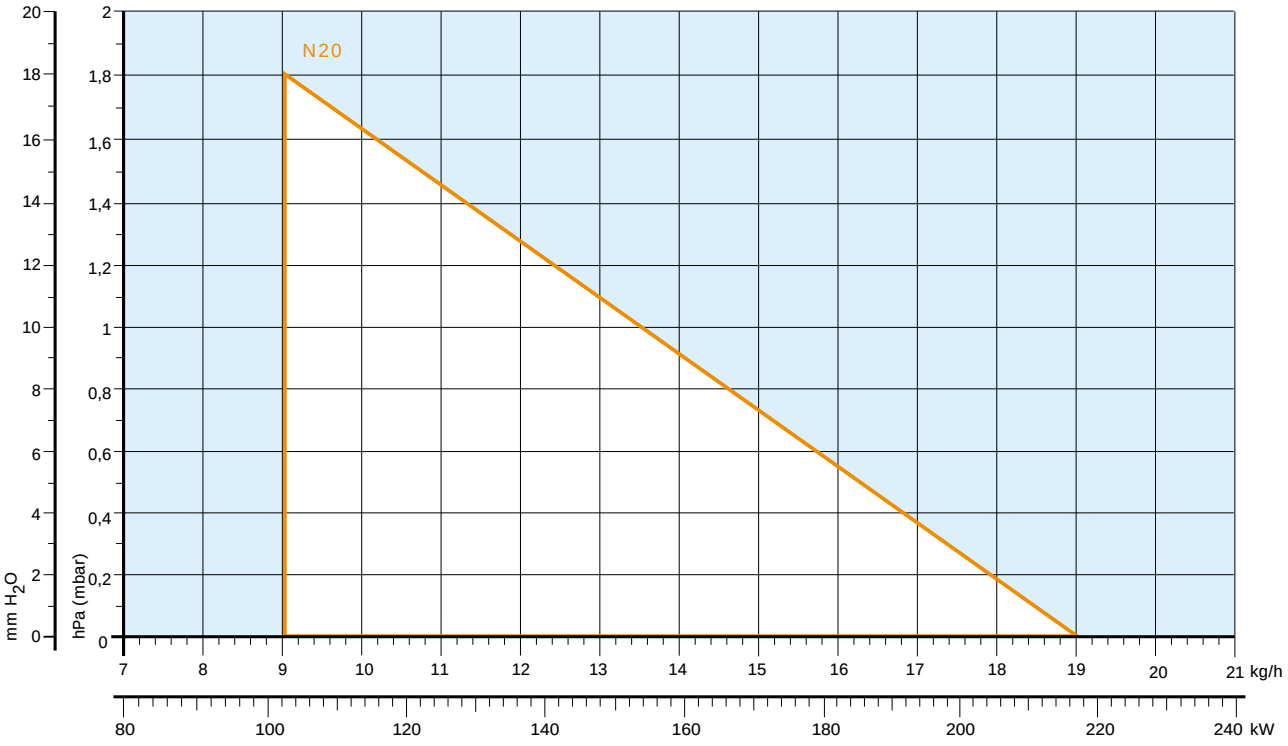
TECHNICAL DATA

	Model		N10	N20
	Burner operation mode		One stage	
	Modulation ratio at max. output		--	
	Servo-motor type		--	
	Servo-motor run time	s	--	
	Heat output	kW	34 - 102	102 - 217
		Mcal/h	29,4 - 88,2	88,2 - 186,2
		kg/h	3 - 9	9 - 19
	Working temperature	°C min./max.	0/40	
Fuel / air data	Net calorific value	kWh/kg	11,4	
		kcal/kg	9800	
	Viscosity	mm^2/s (cSt)	25 - 50 (at 50°C)	
	Pump type		SUNTEC	
	Pump delivery	kg/h	45 (at 20 bar)	
	Atomised pressure	bar	16-28	
	Fuel temperature	max. °C	50	
	Fuel pre-heater		NO	
	Fan	type	centrifugal with forward curve blades	
	Air temperature	max. °C	40	
Electrical data	Electrical supply	Ph/Hz/V	1/50/230±10%	
	Auxiliary electrical supply	Ph/Hz/V	--	
	Control box	type	LANDIS LOA 22	
	Total electrical power	kW	1,1	1,8
	Auxiliary electrical power	kW	--	
	Heaters electrical power	kW	--	
	Protection level	IP	40	
	Pump motor electrical power	kW	--	
	Rated pump motor current	A	--	
	Pump motor start up current	A	--	
	Pump motor protection level	IP	--	
	Fan motor electrical power	kW	0,14	0,30
	Rated fan motor current	A	0,85	1,5
	Fan motor start up current	A	3,5	6
	Fan motor protection level	IP	20	
	Ignition transformer	type	Incorporated in the control box	
		V1-V2	5 kV	
		I1-I2	30 mA	
	Operation		intermittent (at least one stop every 24h)	
Emissions	Sound pressure	dB(A)	65	74
	Sound power	W	--	
	CO emission	mg/kWh	<60	
	Grade of smoke indicator	N° Bach.	4 - 6	
	C_xH_y Emissions	mg/kWh	<10 (after the first 20s)	
	NOx Emissions	mg/kWh	<600	
Approval	Directive		89/336/EEC, 73/23/EEC, 89/392/EEC	
	Conforming to		--	
	Certification		--	

Reference conditions:
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.
Noise measured at a distance of 1 meter.

FIRING RATES





Useful working field for choosing the burner

Test conditions:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.

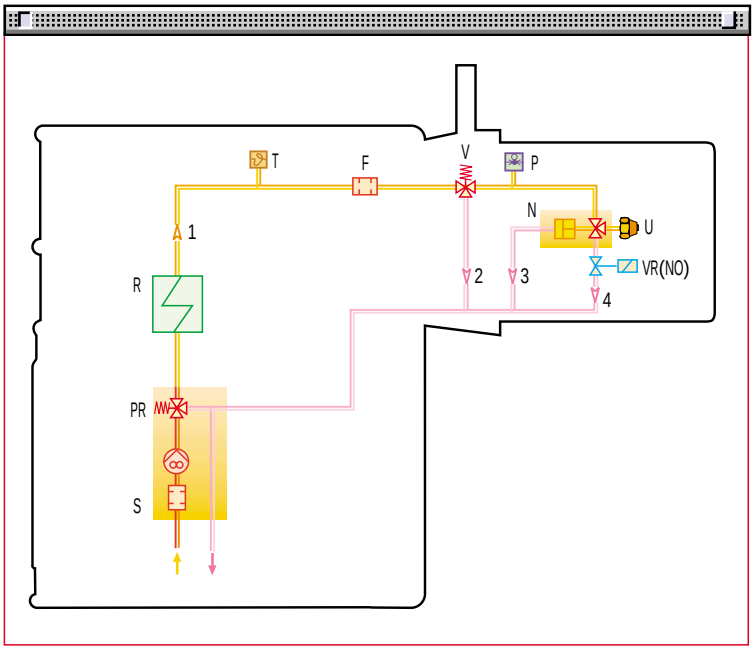
FUEL SUPPLY

HYDRAULIC CIRCUIT

All the burners have a Suntec geared pump with safety valve on the return circuit.

Fuel pump

N10 - N20

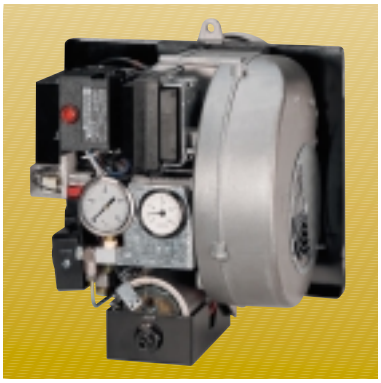


S	Pump with filter and pressure regulator on the delivery pipe
PR	Pressure oil regulator
R	Pre-heater
T	Thermostat
F	Filter
V	Degassing valve
P	Pressure gauge
N	Nozzle holder
U	Nozzle
VR(NO)	Oil return valve (usually open) on the delivery pipe
1	Oil input pipe to the nozzle
2	Oil return pipe from the degassing valve
3	Oil return pipe from the nozzle holder
4	Oil return pipe during pre-washing

Fuel feed to the burner can be from the right or the left side on all models.

HEAVY OIL PRE-HEATER

This burner series is provided with a electrical oil pre-heater included in the burner housing constantly on.



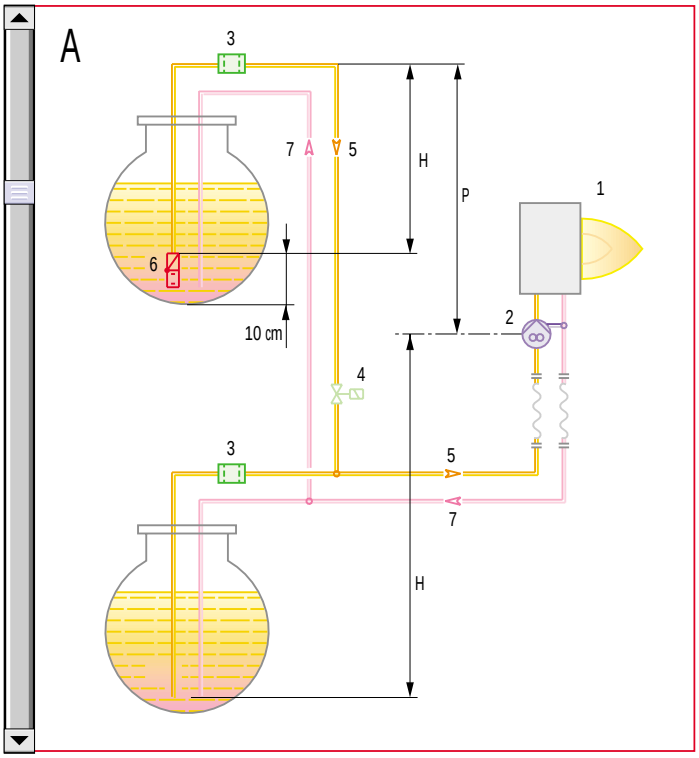
SELECTING THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local regulations in force.

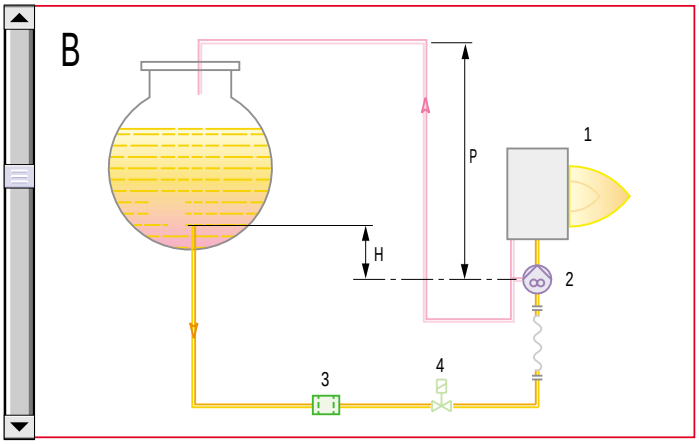
The table shows the choice of piping diameter for the various burners, depending on the difference in the height between the burner and the tank and the distance between them.

MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]

	Type A system		Type B system	
Pipe size	**Ø 1 1/4"**	**Ø 1 1/2"**	**Ø 3/4"**	**Ø 1"**
H (m)	**Lmax (m)**	**Lmax (m)**	**Lmax (m)**	**Lmax (m)**
0	22	45	10	20
0,5	19	39	14	26
1,0	16	33	18	32
1,5	13	27	22	38
2,0	10	21	26	44
2,5	7	15	-	-
3	0	8	-	-



Type of system that can be installed



H	Difference in height
Ø	Internal pipe diameter
P	Difference in height ≤ 10 m
1	Burner
2	Pump
3	Filter
4	Shut-off solenoid valve
5	Suction pipework
6	Bottom valve
7	Return pipework

VENTILATION

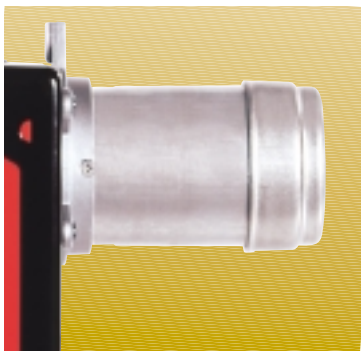
The ventilation circuits always ensure low noise levels with high performance of pressure and air delivery, inspite of their compact size.

Air suction

COMBUSTION HEAD

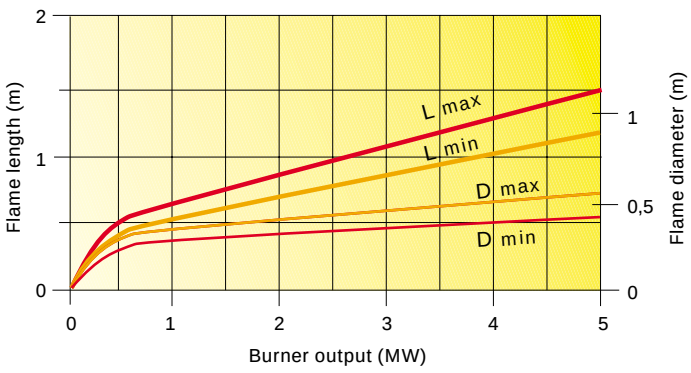
Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.

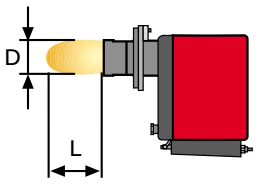
The following diagram shows the flame dimensions in relation to the burner output. The lenght and diameter shown in the diagram below should be employed for a preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.



Combustion head

Dimensions of the flame





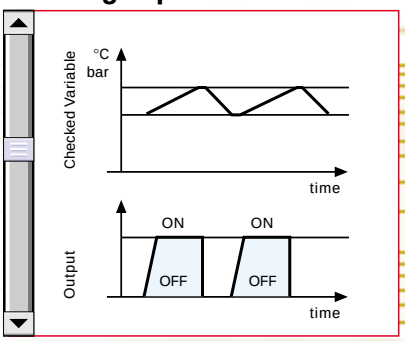
Example:
Burner thermal output = 350 kW;
L_{flame} (m) = 1,2 m (medium value);
D_{flame} (m) = 0,6 m (medium value)

BURNER OPERATION MODE

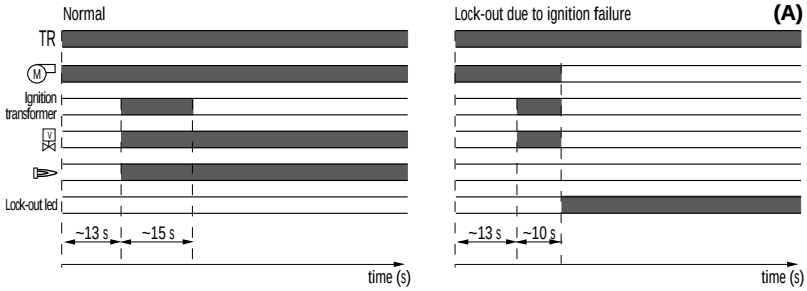
The models are one stage operation.

Air damper

One stage operation



START UP CYCLE



(A) Lock-out is shown by a led on the appliance.

Correct operation

0s	The burner begins the ignition cycle.
0s-13s	Pre-purge.
13s	Ignition.

Lock-out due to ignition failure

If the flame does not light within the safety limit (~10s) the burner locks-out.

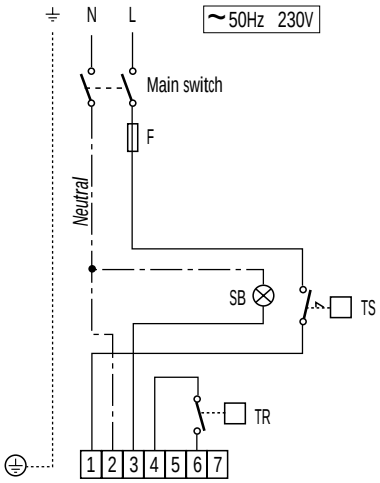
WIRING DIAGRAMS

Electrical connections must be made by qualified and skilled personnel, in conformity with the local regulations in force.

Control box and separated ignition transformer

"ONE STAGE" OPERATION

N10 - N20

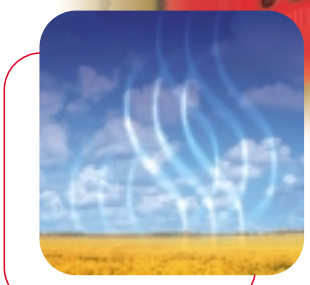


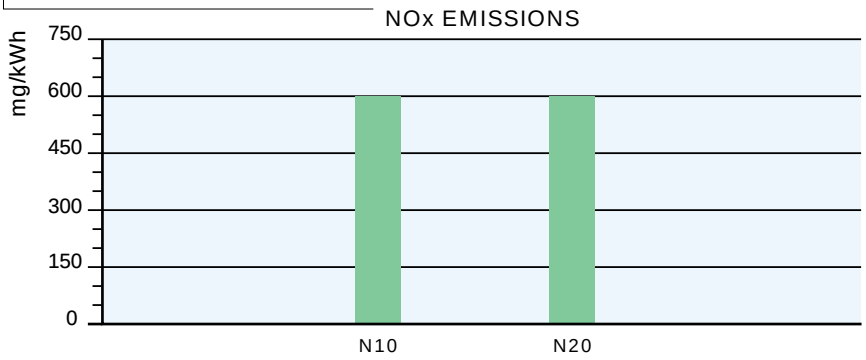
TR - Regulating thermostat
TS - Safety thermostat (with manual resetting)
SB - Remote lock-out lamp (230V 0,5A max)
F - Fuse

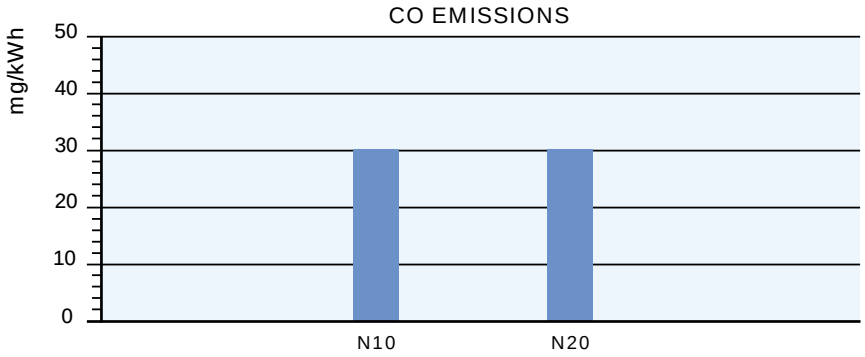
The following table shows the supply lead sections and types of fuse to be used.

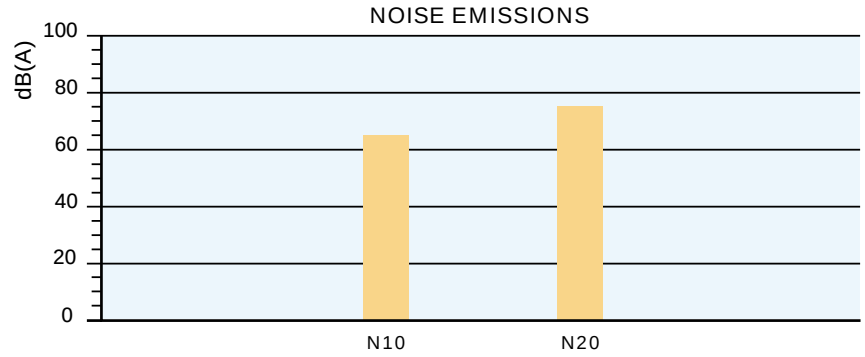
Model	N10	N20
	230V	230V
F A	6	T6
L mm²	1	1

EMISSIONS







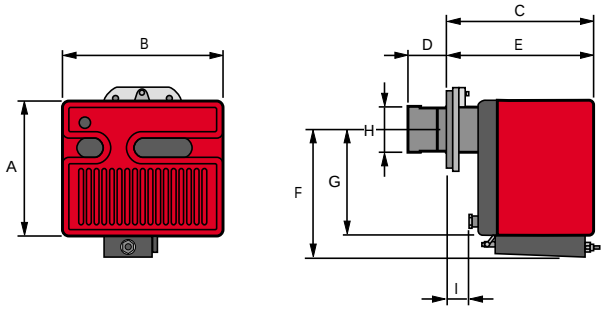


The emission data has been measured in the various models at maximum output.

Special attention has been paid to noise reduction. All models are fitted with sound-deadening material inside the cover.

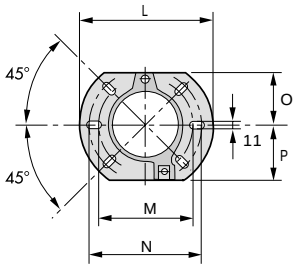
OVERALL DIMENSIONS (mm)

BURNER



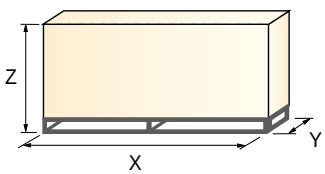
Model	A	B	C	D	E	F	G	H	I
N10	262	305	275	108	261	258	204	105	25
N20	298	350	-	118	295	280	230	125	35

BURNER - BOILER MOUNTING FLANGE



Model	L	M	N	O	P
N10	189	140	170	83	83
N20	213	160	190	99	99

PACKAGING



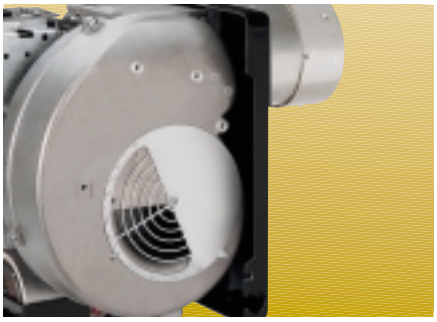
Model	X	Y	Z	kg
N10	395	307	375	26
N20	425	352	410	29

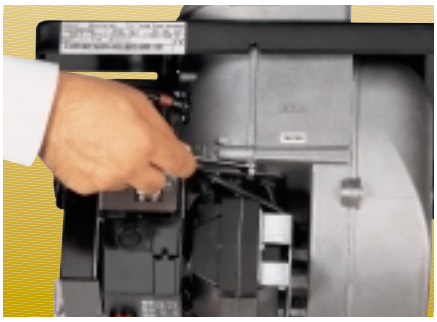
INSTALLATION DESCRIPTION

Skilled and qualified personnel must perform installation, start up and maintenance. A nozzle is fitted to the burner and used for tests in the factory. If necessary, change the nozzle on the basis of the maximum output of the boiler.
All operations must be carried in accordance with the technical handbook supplied with the burner.

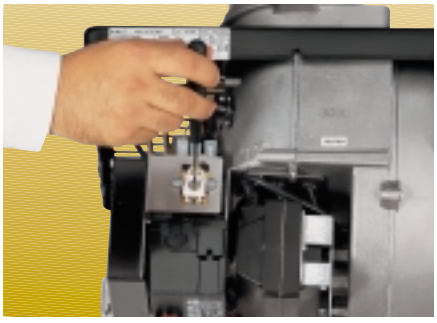
BURNER SETTING

- Air damper and head adjustment area are easily accessible and the operation is simple thanks to a graduated scale and following the manual instruction.



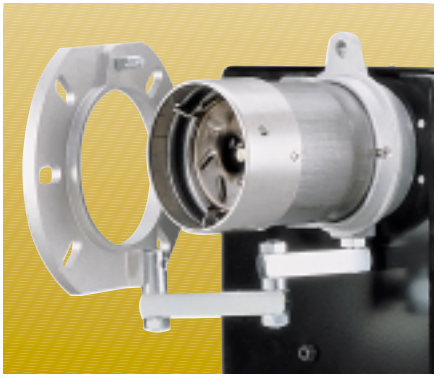


- The heavy oil vaporisation can be improved adjusting the fuel temperature by a screw fitted on the adjustment thermostat.



MAINTENANCE

- The maintenance position is easily carried out by hinge that joins the body of burner to the flange.



BURNER ACCESSORIES

Heavy oil filter

Heavy oil filter	
Burner	**Kit code**
N10 - N20	**3004588**

Self cleaning filter

Self cleaning filter	
Burner	**Kit code**
N10 - N20	**3000861**

SPECIFICATION

A special index will help you choose the right burner from the Riello 40 N models available. There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES

Series : N

Size

N	10

AVAILABLE BURNER MODELS

N10	34	÷	102	kW
N20	102	÷	217	kW

PRODUCT SPECIFICATION

Burner:

Completely automatic monobloc heavy oil burners, with one stage operation fitted with:
- Fan with forward inclined blades
- Metallic cover
- Air damper with adjustment
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
    - stainless steel head cone, resistant to high temperatures
    - ignition transformer
    - flame stability disk
- Geared pump for fuel supply, fitted with:
    - filter
    - pressure regulator
    - attachments for fitting a pressure gauge and vacuum meter
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Heavy oil nozzle
- Heavy oil pre-heater
- Pressure gauge
- Thermostat with adjustment
- IP 40 protection level.

Conforming to:
- Directive 89/336/EEC (electromagnetic compatibility)
- Directive 73/23/EEC (low voltage)
- Directive 89/392/EEC (machinery).

Standard equipment:
- Two flexible pipes for connection to the heavy oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal screen
- Grommet
- Nozzle
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue
- Hinge
- Seal for flexible tubes.

Available accessories to be ordered separately:
- Heavy oil filter
- Self-cleaning filter.

Lineagrafica

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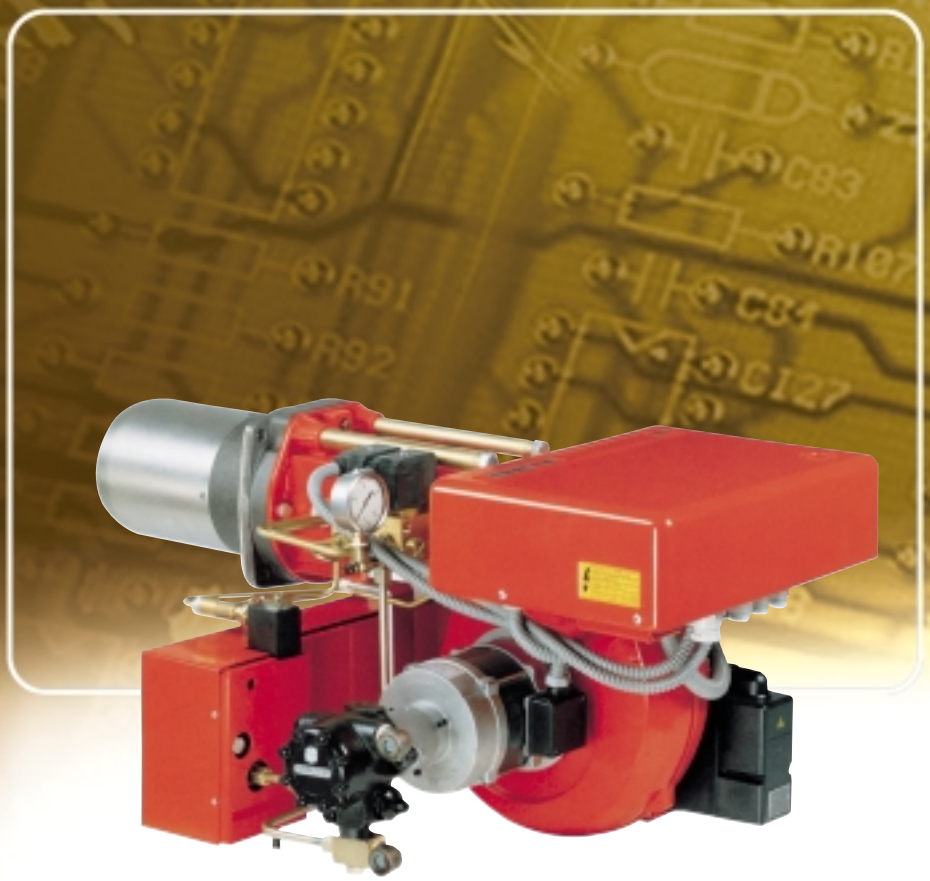
RIELLO BURNERS

CE

TWO STAGE HEAVY OIL BURNERS

PRESS N SERIES

PRESS 30	**N**	85/171 ÷ 342 kW
PRESS 45	**N**	114/205 ÷ 513 kW
PRESS 60	**N**	171/342 ÷ 684 kW
PRESS 100	**N**	285/490 ÷ 1140 kW



The PRESS N series of burners covers a firing range from 85 to 1140 kW and they have been designed for use in civil installations of average dimensions, like building areas and large apartment groups or for use in industrial applications, like small or medium plants. Operation is two stage; a servomotor adjust automatically air damper opening, to obtain the right air delivery on both stage.
The combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption and is available in two different length to be selected on the basis of specific application requirements. In basic version the burners are supplied for use with heavy oil 7°E viscosity, but they can be supplied with higher viscosity oil with a specific heaters kit.
Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head.

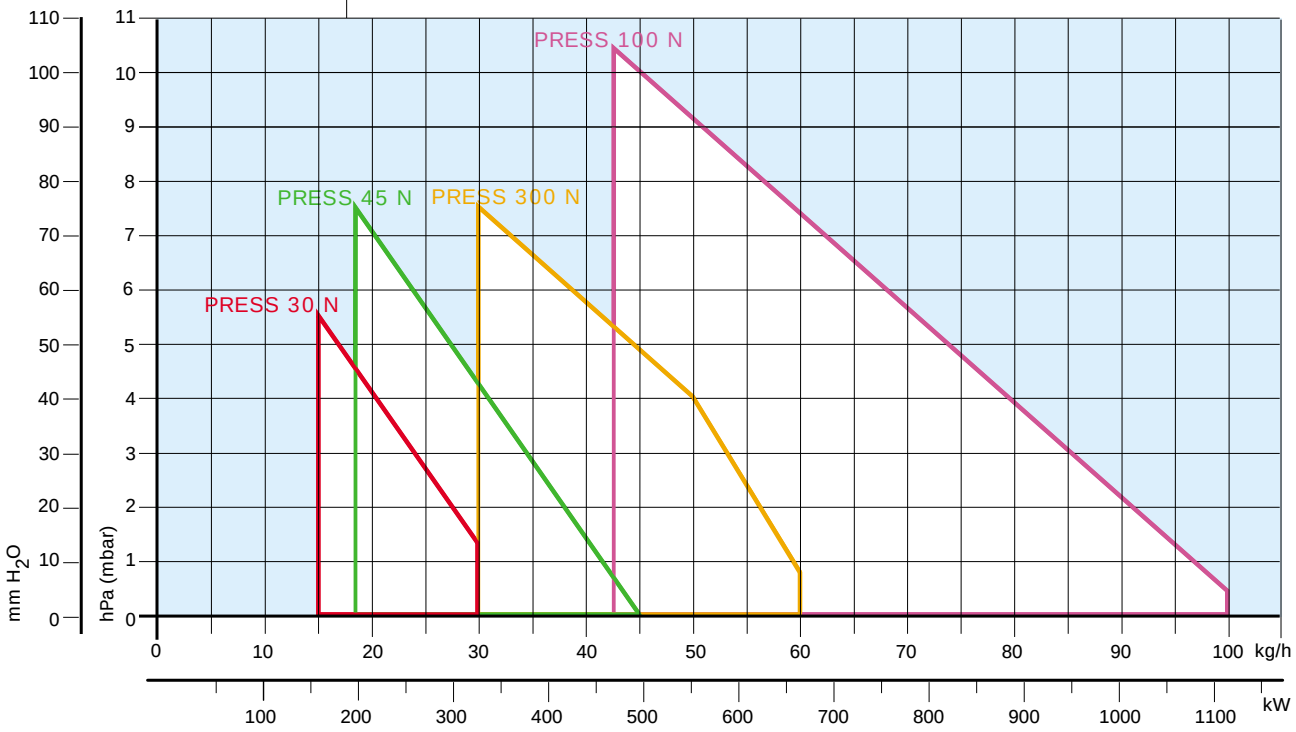
TECHNICAL DATA

	Model		PRESS 30 N	PRESS 45 N	PRESS 60 N	PRESS 100 N
	Burner operation mode		Two stage			
	Modulation ratio at max. output		2 : 1			
	Servomotor type		LKS 210			
	Servomotor run time	s	5			
	Heat output	kW	85/171÷342	114/205÷513	171/342÷684	285/490÷1140
	Heat output	Mcal/h	73/147÷294	98/176÷441	147/294÷588	245/421÷980
	Heat output	kg/h	7,5/15÷30	10/18÷45	15/30÷60	25/43÷100
	Working temperature	°C min./max.	0/40			
Fuel / air data	NCV Heavy Oil	kWh/kg	11,4			
Fuel / air data	NCV Heavy Oil	kcal/kg	9800			
Fuel / air data	Viscosity at 20°C	mm^2/s (cSt)	50 (150 with heavy oil kit)		50 (500 with heavy oil kit)	
Fuel / air data	Pump type		D67		E4	E6
Fuel / air data	Pump delivery	kg/h	65 (20 bar)		110 (20 bar)	200 (20 bar)
Fuel / air data	Atomised pressure	bar	20			
Fuel / air data	Fuel temperature	Max. °C	140			
Fuel / air data	Fuel pre-heater		YES			
Fuel / air data	Fan	type	Centrifugal with forward blades			
Fuel / air data	Air temperature	Max. °C	60			
Electrical data	Electrical supply	Ph/Hz/V	1/50/230~(±10%)	3N/50/400~(+10%) 人	3/50/230~(+10%)△	
Electrical data	Auxiliary electrical supply	Ph/Hz/V	1/50/230~(±10%)			
Electrical data	Control box	type	RMO			
Electrical data	Total electrical power	kW	3,5	3,7	5,5	9,0
Electrical data	Auxiliary electrical power	kW	0,33	0,45	0,5	0,5
Electrical data	Heaters electrical power	kW	2,8	2,8	4,2	7
Electrical data	Protection level	IP	40			
Electrical data	Pump motor electrical power	kW	--			
Electrical data	Rated pump motor current	A	--			
Electrical data	Pump motor start up current	A	--			
Electrical data	Pump motor protection level	IP	--			
Electrical data	Fan motor electrical power	kW	0,37	0,45	0,75	1,5
Electrical data	Rated fan motor current	A	2,9	1,9-1,1	2,9-1,7	6-3,5
Electrical data	Fan motor start current	A	9,5	9,5-5,5	14-8	28-16
Electrical data	Fan motor protection level	IP	54			
Electrical data	Ignition transformer	type	--			
Electrical data	Ignition transformer	V1 - V2	230 V - 2x6,5 kV			
Electrical data	Ignition transformer	I1 - I2	2 A - 35 mA			
Electrical data	Operation		Intermittent (at least one stop every 24 h)			
Emissions	Sound pressure	dB (A)	75	78	81	83
Emissions	Sound power	W	--			
Emissions	CO emission	mg/kWh	< 50			
Emissions	Grade of smoke indicator	N° Bacharach	< 5			
Emissions	C_xH_y emission	mg/kWh	--			
Emissions	NOx emission level	mg/kWh	< 650			
Approval	Directive		73/23 - 89/336 - 98/37- 92/42 EEC			
Approval	Conforming to		EN 267			
Approval	Certification		--			

Reference conditions:
Ambient temperature: 20°C
Barometric pressure: 1013.5 mbar
Altitude: 100 meters a.s.l.
Noise measured at a distance of 1 meter.

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.

FIRING RATES

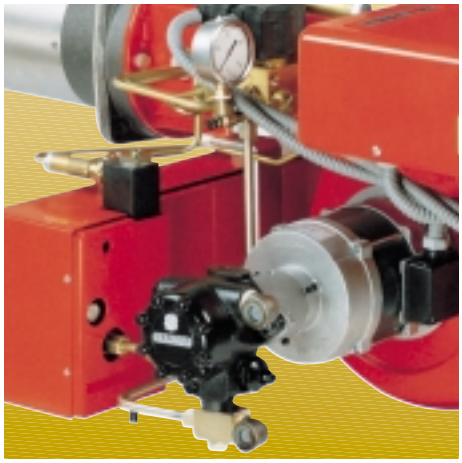


Useful working field for choosing the burner

Test conditions conforming to EN 267:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.

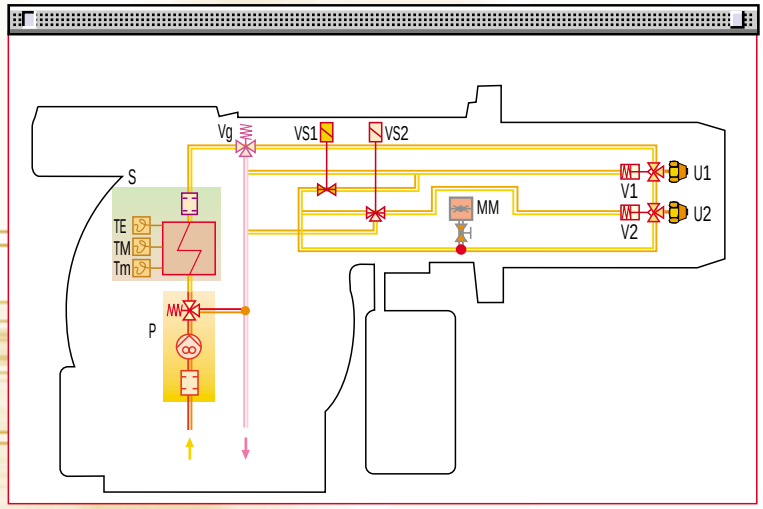
HYDRAULIC CIRCUITS

The burners are fitted with an oil pre-heater, a check valve and two delivery valves along the oil line from the pump to the nozzles.
The oil pre-heater is equipped with a filter with sheath for thermometer, a setting thermostat to adjust the oil temperature and two safety thermostats to control the max. and min. oil temperature.
A control device, on the basis of required output, regulates oil delivery valves opening, allowing oil passage trough the valves and the nozzles whose opening is regulated from a needle valve.
An oil delivery gauge allow to control the delivery pressure.
For heavy oil preheating, a special kit could be used; equipped with electrical heaters, it permits the employment of PRESS N burners with fuel oil of max. viscosity 20°E at 50°C (PRESS 30N - 45N) or 50°E at 50°C (PRESS 60 N - 100 N), (see Burner Accessory paragraph).



Example of the hydraulic circuit on PRESS N

PRESS 30 N - 45 N - 60 N - 100 N



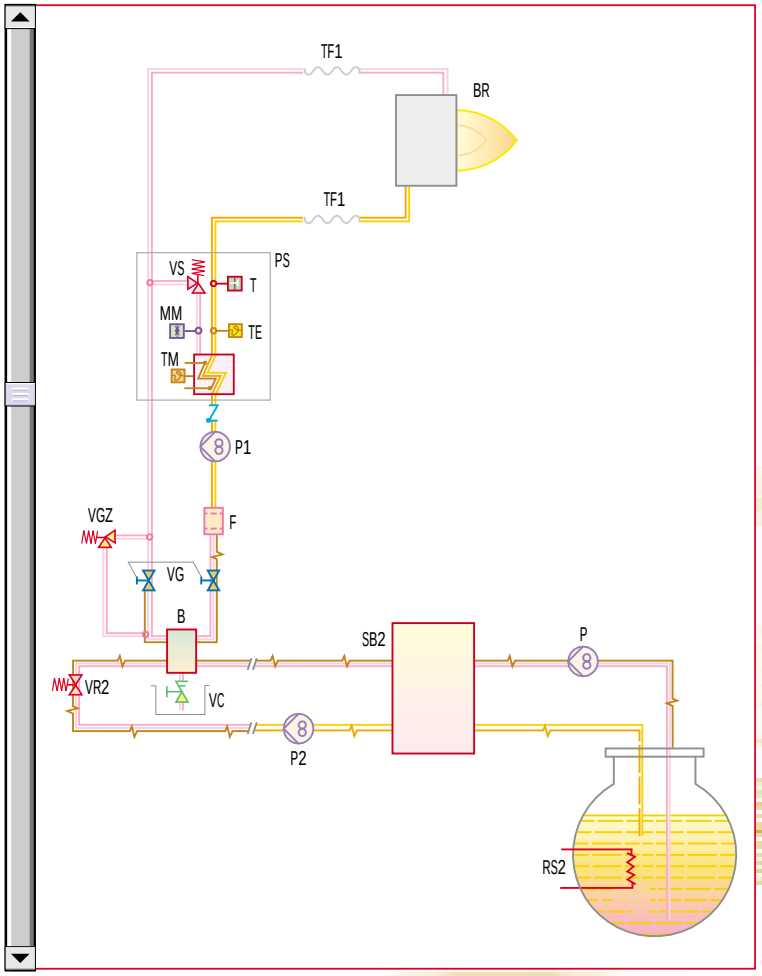
P	Pump with filter, heater and pressure regulator on the output circuit
S	Oil preheater with filter, maximum, minimum and regulation thermostat
TE	Oil temperature regulator
TM	Max oil temperature switch
Tm	Min oil temperature switch
Vg	Check valve
VS1	1st stage delivery valve
VS2	2nd stage delivery valve
V1	1st stage nozzle needle valve
V2	2nd stage nozzle needle valve
U1	1st stage nozzle
U2	2nd stage nozzle
MM	Oil delivery gauge

DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

IMPORTANT NOTES

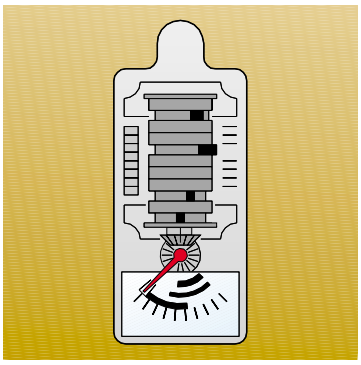
- The oil could easily flow through the pipes if those are properly sized, protected and heated (by electricity, steam or hot water)
- In order to limit gas or steam production the oil pressure into the gas separator shall be set in function of the supply temperature, see instructions manual.
- The forwarding pump should have at least a double capacity than that one of the burner. For several burners supplied through the same ring supply line, the forwarding pump should have a capacity of approximatively 30% more than the sum of the single burners outputs.



RS2	Tank heater
P	Double pumping unit with filter and heater on transfer ring
SB2	Service tank
P2	Double pumping unit with filter and heater on main ring
VR2	Oil valve – main ring
B	Gas separator bottle
VGZ	Safety valve – burner circuit
P1	Pump with heater – burner circuit
PS	Electrical preheater
VS	Preheater safety valve
BR	Burner
TF1	Flexible oil line
T	Thermometer
TM	Max oil temperature switch
TE	Temperature switch regulation
MM	Oil delivery gauge
VC	Vent valve
F	Oil filter

VENTILATION

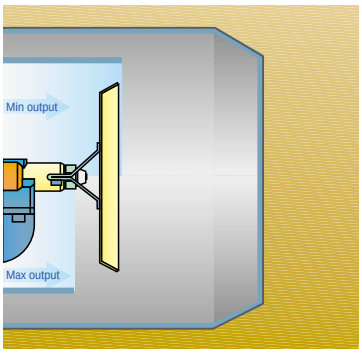
The ventilation circuit of PRESS N burners is inserted in a extremely compact structure and it is provided with a forward blades centrifugal fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.
A servomotor adjust automatically air damper opening, to obtain the right air delivery on both stage.



Example of the servomotor for air regulation on PRESS N burners

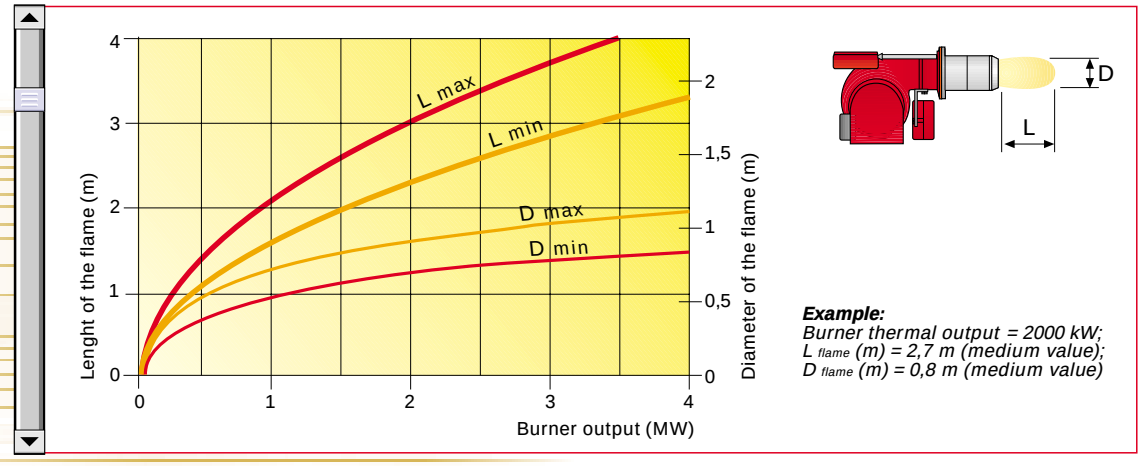
COMBUSTION HEAD

Two different lenghts of the combustion head can be chosen for the various models of the PRESS N series of burners.
The choice depends on the thickness of the front panel and the type of the boiler.
Depending on the type of heat generator, it is necessary to check the correct head penetration into the combustion chamber.
The internal position of the combustion head can easily be adjusted: refer to the burner instruction manual for the complete procedure.
The following diagram shows the flame dimensions in relation to the burner output. The lenght and diameter shown in the diagram below should be employed preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.



Example of a PRESS N burner combustion head

Dimensions of the flame



Example:
Burner thermal output = 2000 kW;
L flame (m) = 2,7 m (medium value);
D flame (m) = 0,8 m (medium value)

BURNER OPERATION MODE

Two stage operation

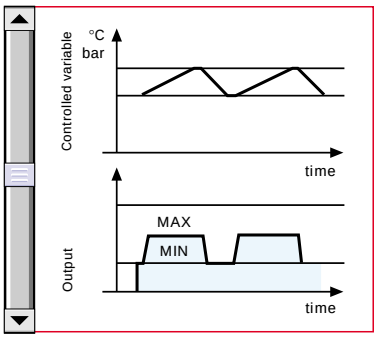


Figure **A**

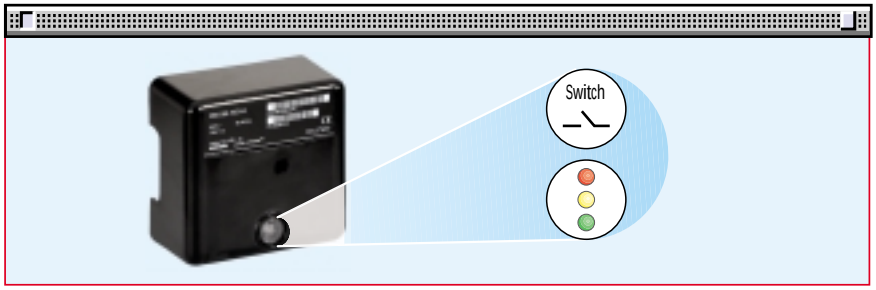
With two stage operation, the PRESS N burners can follow the temperature load requested by the system. A modulation ratio of 2:1 is reached, thanks to the “two nozzles” technique; the air is adapted to the servomotor positions.
On “two stage” operation, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see figure A).

All PRESS N series burners are fitted with a new microprocessor control panel for the supervision during intermittent operation.
For helping the commissioning and maintenance work, there are two main elements:

The lock-out reset button is the central operating element for resetting the burner control and for activating / deactivating the diagnostic functions.

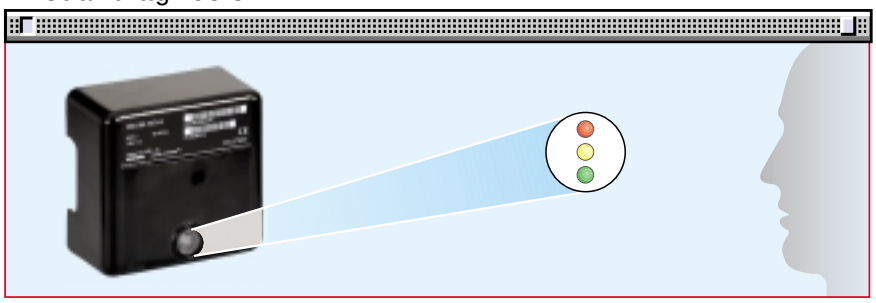
The multi-color LED is the central indication element for visual diagnosis and interface diagnosis.

Both elements are located under the transparent cover of lock-out reset button, as showed below.

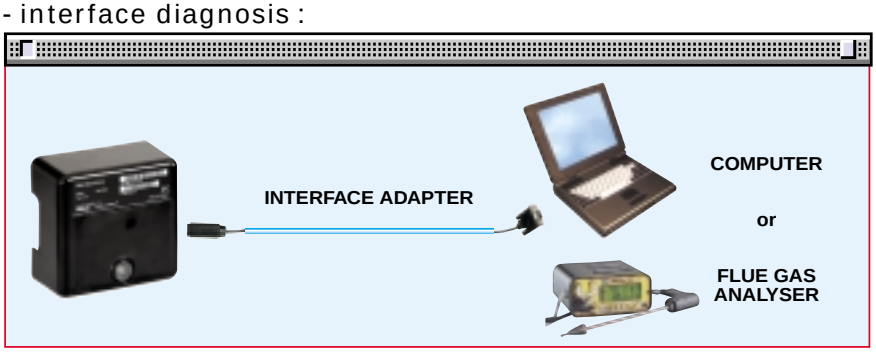


There are two diagnostic choices, for indication of operation and diagnosis of fault cause:

- visual diagnosis :



- interface diagnosis :



by the interface adapter and a PC with dedicated software or by a predisposed flue gas analyzer (see paragraph accessories).

Indication of operation :

In normal operation, the various statues are indicated in the form of colour codes according to the table below.
The interface diagnosis (with adapter) can be activated by pressing the lock-out button for > 3 seconds.

Color code table	
Operation statues	**Color code table**
Stand-by	○ ○ ○ ○ ○ ○ ○ ○
Pre-purging	☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼
Ignition phase	☼ ○ ☼ ○ ☼ ○ ☼ ○
Flame OK	● ● ● ● ● ● ● ●
Poor flame	● ○ ● ○ ● ○ ● ○
Undervoltage, built-in fuse	☼ ✹ ☼ ✹ ☼ ✹ ☼ ✹
Fault, alarm	✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹
Extraneous light	✹ ● ✹ ● ✹ ● ✹ ●

○ **LED off**

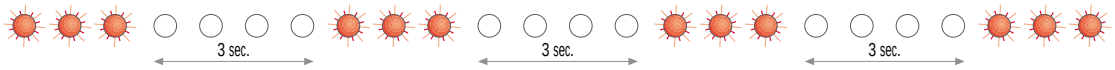
Diagnosis of fault causes :

After lock-out has occurred, the red signal lamp is steady on. In this status, the visual fault diagnosis according to the error code table can be activated by pressing the lock-out reset button for > 3 seconds. The interface diagnosis (with adapter) can be activated by pressing again the lock-out button for > 3 seconds.

The blinkers of red LED are a signal with this sequence :

(e.g. signal with n° 3 blinks – faulty air pressure monitor)

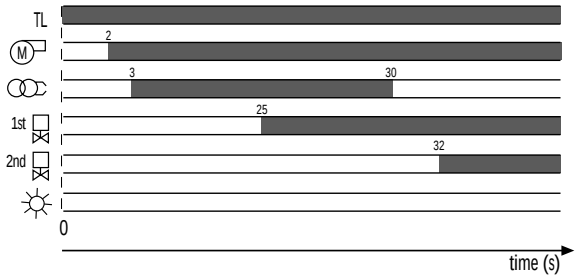
○ **LED off**



Error code table	
Possible cause of fault	**Blink code**
No establishment of flame at the end of safety time : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner, no fuel - faulty ignition equipment	✹ ✹
Faulty air pressure monitor	✹ ✹ ✹
Extraneous light or simulation of flame on burner start up	✹ ✹ ✹ ✹
Loss of flame during operation : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner	✹ ✹ ✹ ✹ ✹ ✹ ✹
Wiring error or internal fault	✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹

START UP CYCLE

PRESS 30 N - 45 N - 60 N - 100 N



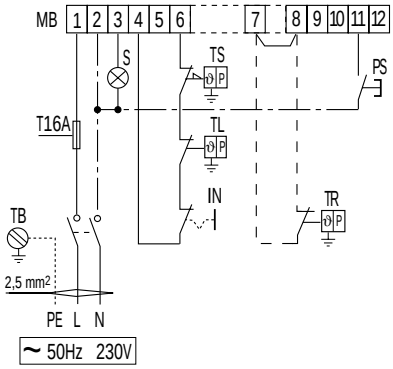
0s Control device TL closes.
2s The motor starts turning. Pre-purging phase begins.
3s The transformer are supplied.
25s 1st delivery valve opens and the fuel is ignited.
30s The ignition transformer switches off.
32s Output can be increased.

WIRING DIAGRAMS

Electrical connections must be made by qualified and skilled personnel, according to the local norms.

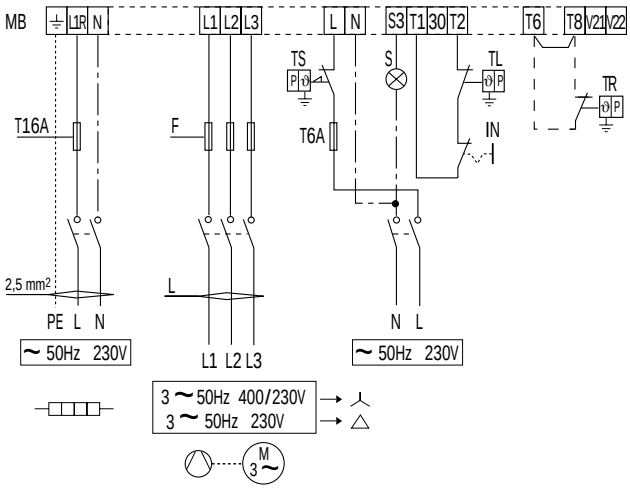
TWO STAGE OPERATION

PRESS 30 N - single-phase electrical connection



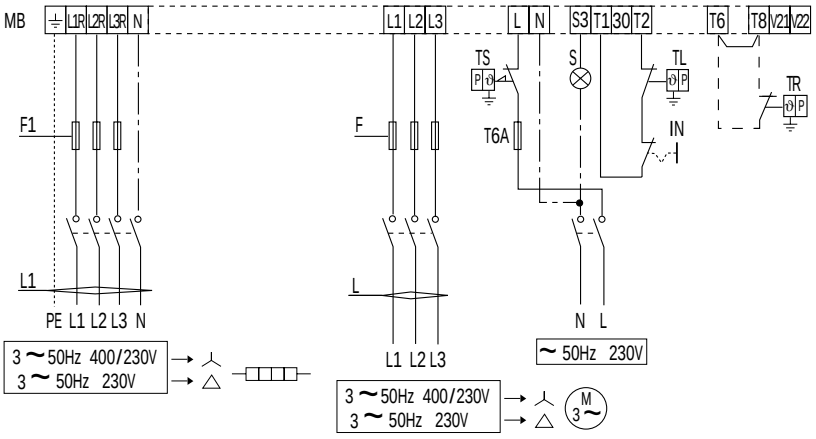
MB - Burner terminal board
TS - Safety thermostat
TL - Threshold thermostat
TR - High/low flame setting thermostat
S - External lock-out signal
TB - Burner ground (earth) connection
IN - Manual switch
T16A - 16A fuse
PS - Lock-out reset button

PRESS 45 N - three-phase electrical connection



MB - Burner terminal board
TS - Safety thermostat
TL - Threshold thermostat
TR - High/low flame setting thermostat
S - External lock-out signal
F - Fuse (see table A)
TB - Burner ground (earth) connection
IN - Manual switch
T6A - 6A fuse
T16A - 16A fuse
F - Fuse (see table A)
PS - Lock-out reset button
L - Lead section (see table A)

PRESS 60 N - 100 N - three-phase electrical connection



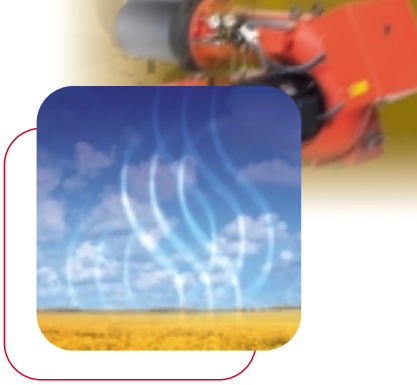
MB - Burner terminal board
TS - Safety thermostat
TL - Threshold thermostat
TR - High/low flame setting thermostat
S - External lock-out signal
F - Fuse (see table A)
TB - Burner ground (earth) connection
IN - Manual switch
T6A - 6A fuse
T16A - 16A fuse
F - F1 - Fuse (see table A)
PS - Lock-out reset button
L - L1 - Lead section (see table A)

The following table shows the supply lead sections and the type of fuse to be used.

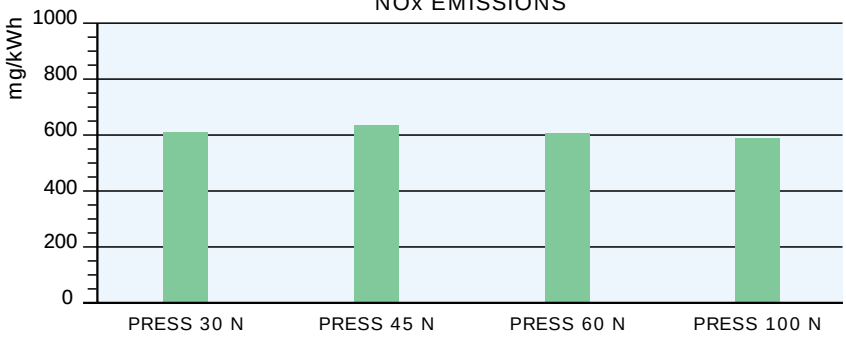
Model	PRESS 30 N	PRESS 45 N		PRESS 60 N		PRESS 100 N	
	230V	230V	400V	230V	400V	230V	400V
F A	T16	T10	T6	T10	T6	T16	T10
L mm²	2,5	1,5	1,5	1,5	1,5	1,5	1,5
F1 A	-	-	-	T16	T10	T25	T16
L1 mm²	-	-	-	4	2,5	6	4

Table A

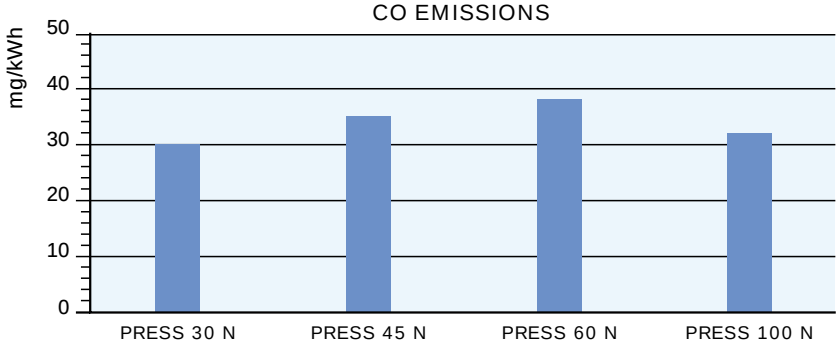
EMISSIONS



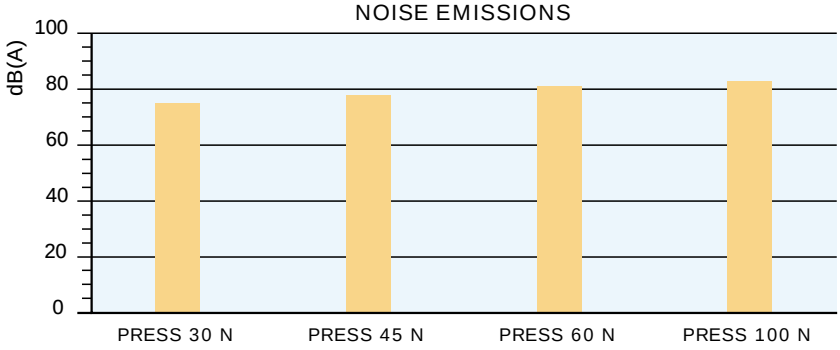
NOx EMISSIONS



CO EMISSIONS



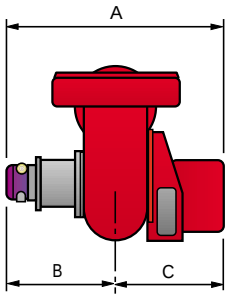
NOISE EMISSIONS

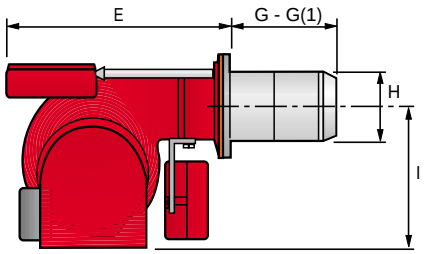


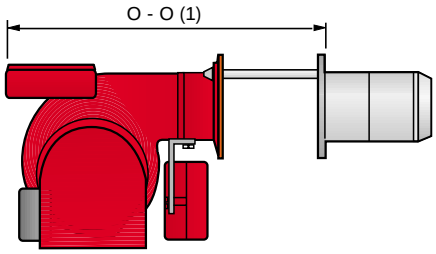
The emission data has been measured in the various models at maximum output, according to EN 267 standard.

OVERALL DIMENSIONS (mm)

BURNERS



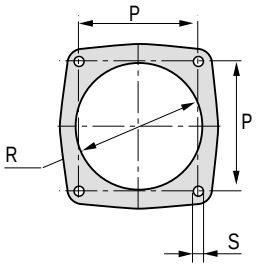




Model	A	B	C	E	G - G(1)	H	I	O - O(1)
PRESS 30 N	625	335	290	625	185 - 320	161	305	905 - 1080
PRESS 45 N	625	335	290	625	235 - 370	161	305	925 - 1100
PRESS 60 N	625	335	290	660	245 - 400	172	335	940 - 1115
PRESS 100 N	625	335	290	710	250 - 410	195	370	1010 - 1195

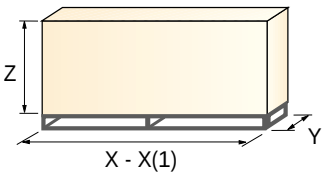
(1) Length with extended combustion head

BURNER - BOILER MOUNTING FLANGE



Model	P	R	S
PRESS 30 N	160	170	M 10
PRESS 45 N	160	170	M 10
PRESS 60 N	160	180	M 10
PRESS 100 N	195	205	M 12

PACKAGING



Model	X - X(1)	Y	Z	kg
PRESS 30 N	880 - 1015	690	522	84
PRESS 45 N	880 - 1015	690	522	84
PRESS 60 N	925 - 1095	760	552	87
PRESS 100 N	985 - 1145	790	552	104

(1) Length with extended combustion head

BURNER ACCESSORIES

Nozzles

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

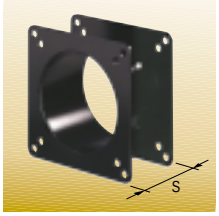
Nozzle type F80 45°			
Burner	**GPH**	**Rated delivery kg/h (*)**	**Nozzle code**
PRESS 30 N	1,25	7,5	**3041091**
PRESS 30 N - 45 N	1,5	9	**3041101**
PRESS 30 N - 45 N	1,75	10,5	**3041111**
PRESS 30 N - 45 N	2	12	**3041121**
PRESS 30 N - 45 N	2,25	13,5	**3041131**
PRESS 30 N - 45 N - 60 N	2,5	15	**3041141**
PRESS 45 N - 60 N	3	18	**3041151**
PRESS 45 N - 60 N - 100 N	3,5	21	**3041161**
PRESS 45 N - 60 N - 100 N	4	24	**3041171**
PRESS 60 N - 100 N	4,5	27	**3041181**
PRESS 60 N - 100 N	5	30	**3041191**
PRESS 100 N	5,5	33	**3041201**
PRESS 100 N	6	36	**3041211**
PRESS 100 N	6,5	39	**3041221**
PRESS 100 N	7	42	**3041231**
PRESS 100 N	7,5	45	**3041241**
PRESS 100 N	8,5	50	**3041261**

Nozzle type F80 60°			
Burner	**GPH**	**Rated delivery kg/h (*)**	**Nozzle code**
PRESS 30 N	1,25	7,5	**3041092**
PRESS 30 N - 45 N	1,5	9	**3041102**
PRESS 30 N - 45 N	1,75	10,5	**3041112**
PRESS 30 N - 45 N	2	12	**3041122**
PRESS 30 N - 45 N	2,25	13,5	**3041132**
PRESS 30 N - 45 N - 60 N	2,5	15	**3041142**
PRESS 45 N - 60 N	3	18	**3041152**
PRESS 45 N - 60 N - 100 N	3,5	21	**3041162**
PRESS 45 N - 60 N - 100 N	4	24	**3041172**
PRESS 60 N - 100 N	4,5	27	**3041182**
PRESS 60 N - 100 N	5	30	**3041192**
PRESS 100 N	5,5	33	**3041202**
PRESS 100 N	6	36	**3041212**
PRESS 100 N	6,5	39	**3041222**
PRESS 100 N	7	42	**3041232**
PRESS 100 N	7,5	45	**3041242**
PRESS 100 N	8,5	50	**3041262**

(*) *Nozzle rated delivery is reffered to atomised pressure*

Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



Spacer kit		
Burner	**Spacer thickness S (mm)**	**Kit code**
PRESS 30 N - 45 N - 60 N	142	**3000755**
PRESS 100 N	142	**3000802**

Sound proofing box

If noise emissions need reducing, sound proofing hoods are available, as given in the following table.

Sound proofing box		
Burner	**Box type**	**Box code**
PRESS 30 N - 45 N - 60 N - 100 N	C3	**3000778**

Selfcleaning filter

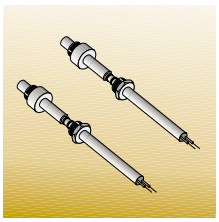
For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 50°E viscosity at 50°C.

Selfcleaning filter	
Type	**Filter code**
ø=1 50°E – 50°C	**3000790**

Thermostatic heater	
Type	**Heater code**
Thermostatic heater 80W	**3010059**

Heavy oil kit

Equipped with electrical heaters, it permits the employment of PRESS N burners with fuel oil of max. viscosity 20°E at 50°C (PRESS 30 N - 45 N) and 50°E at 50°C (PRESS 60 N - 100 N).



Heavy oil kit	
Burner	**Kit code**
PRESS 30 N - 45 N	**3000797**
PRESS 60 N - 100 N	**3010013**

Cartridge filter

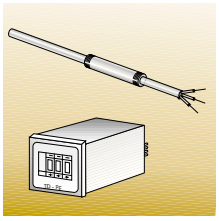
For cleaning heavy oil from dirty particles and impurities, it is equipped with a cartridge system for oil with 7°E viscosity at 50°C.

Type	Filter code
Cartridge 7°E – 50°C	**3005209**

Type	Heaters code
Thermo - resistance up to 30° E - 50°	**3010050**

Thermostats

Thermostats allow heavy oil temperature control and regulation during burner operation. They are available in electronic and maximum versions.



Thermostats		
Burner	**Thermostat**	**Kit code**
PRESS 30 N - 45 N - 60 N - 100 N	Electronic	**3000799**
PRESS 30 N - 45 N - 60 N - 100 N	Maximum	**3000800**
PRESS 30 N - 45 N - 60 N - 100 N	Kit electronic	**3010173**

Interface adapter kit

To connect the flame control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.

Interface adapter	
Burner	**Kit code**
PRESS 30 N - 45 N - 60 N - 100 N	**in progress**

INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied with the burner.

BURNER SETTING

- All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- Adjust the combustion head.
- Refit the burner casing to the slide bars.
- Install the nozzles, choosing these on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor.
- On start up, check:
  - Pressure pump (to max. and min.)
  - Combustion quality, in terms of unburned substances and excess air.

SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS N series. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES

Series : PRESS

Size

Operation :
- N Two stage
- T/N Three stage
- P/N Modulating

Emission : ... Class 1 EN267

Head :
- TC Standard head
- TL Extended head

Flame control system :
- FS1 Standard (1 stop every 24 h)
- FS2 Continuous working (1 stop every 72 h)

Electrical supply to the system :
- 1/230/50 1 / 230V / 50Hz
- 3/230/50 3 / 230V / 50 Hz
- 3/400/50 3N / 400V / 50Hz
- 3/230-400/50 3/ 230V / 50 Hz - 3N / 400V / 50Hz
- 3/220-380/60 3/ 220V / 60 Hz - 3N / 380V / 60Hz

Auxiliary voltage :
- 230/50 230V / 50Hz
- 220/60 220V / 60Hz

PRESS	60	N		TC	FS1	3/230-400/50	230/50
BASIC DESIGNATION							
EXTENDED DESIGNATION							

AVAILABLE BURNER MODELS

PRESS 30 N	TC	FS1	1/230/50	230/50
PRESS 30 N	TL	FS1	1/230/50	230/50
PRESS 30 N	TC	FS1	3/220-380/60	220/60
PRESS 30 N	TL	FS1	3/220-380/60	220/60
PRESS 45 N	TC	FS1	3/230-400/50	230/50
PRESS 45 N	TL	FS1	3/230-400/50	230/50
PRESS 45 N	TC	FS1	3/220-380/60	220/60
PRESS 45 N	TL	FS1	3/220-380/60	220/60

PRESS 60 N	TC	FS1	3/230-400/50	230/50
PRESS 60 N	TL	FS1	3/230-400/50	230/50
PRESS 60 N	TC	FS1	3/220-380/60	220/60
PRESS 60 N	TL	FS1	3/220-380/60	220/60
PRESS 100 N	TC	FS1	3/230-400/50	230/50
PRESS 100 N	TL	FS1	3/230-400/50	230/50
PRESS 100 N	TC	FS1	3/220-380/60	220/60
PRESS 100 N	TL	FS1	3/220-380/60	220/60

Other models are available on request.

PRODUCT SPECIFICATION

Burner:
Monoblock forced draught heavy oil burner with two stage operation, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curve blades, high performance pressure levels
- Air damper for air setting controlled by a servomotor
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the 30 N model)
- Combustion head, that can be set on the basis of required output, fitted with:
    - stainless steel end cone, resistant to corrosion and high temperatures
    - ignition electrodes
    - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
    - filter
    - pressure regulator
    - connections for installing a pressure gauge and vacuometer
- Oil pre-heater equipped with a filter with sheath for thermometer, a setting thermostat and two safety thermostats
- Valve unit with an check valve and two delivery oil valves
- Oil delivery gauge
- Photocell for flame detection
- Microprocessor-based flame control panel, with diagnostic functions
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

Conforming to:
- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:
- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- 2 nozzles
- 2 slide bar extensions (for the extended head models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:
- Nozzles
- Spacer kit
- Sound-proofing box
- Self cleaning filter
- Heavy oil kit
- Cartridge filter
- Thermostat
- Interface adapter kit.

Lineagrafica

RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy
Tel. ++39.0442630111 - Fax ++39.044221980
Internet: http://www.riellobumers.com - E-mail: rburners@riellobumers.com

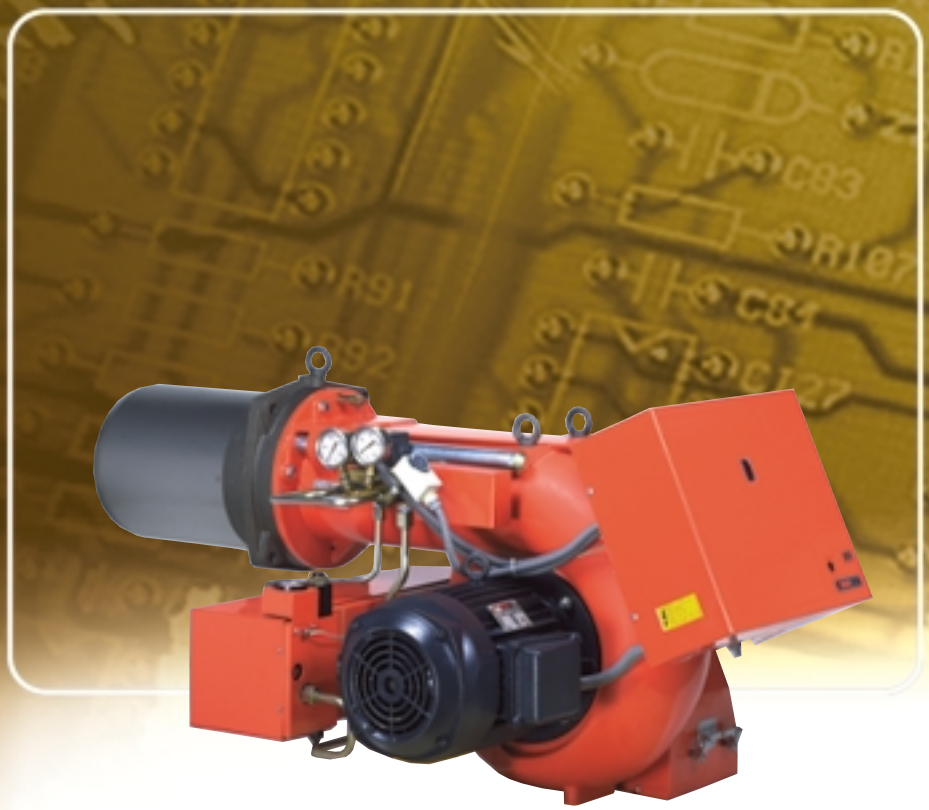
RIELLO BURNERS

CE

MODULATING HEAVY OIL BURNERS

PRESS P/N SERIES

P 140 P/N	400/800 ÷	1600 kW
P 200 P/N	570/1140 ÷	2280 kW
P 300 P/N	683/1710 ÷	3420 kW
P 450 P/N	1140/2615 ÷	5130 kW



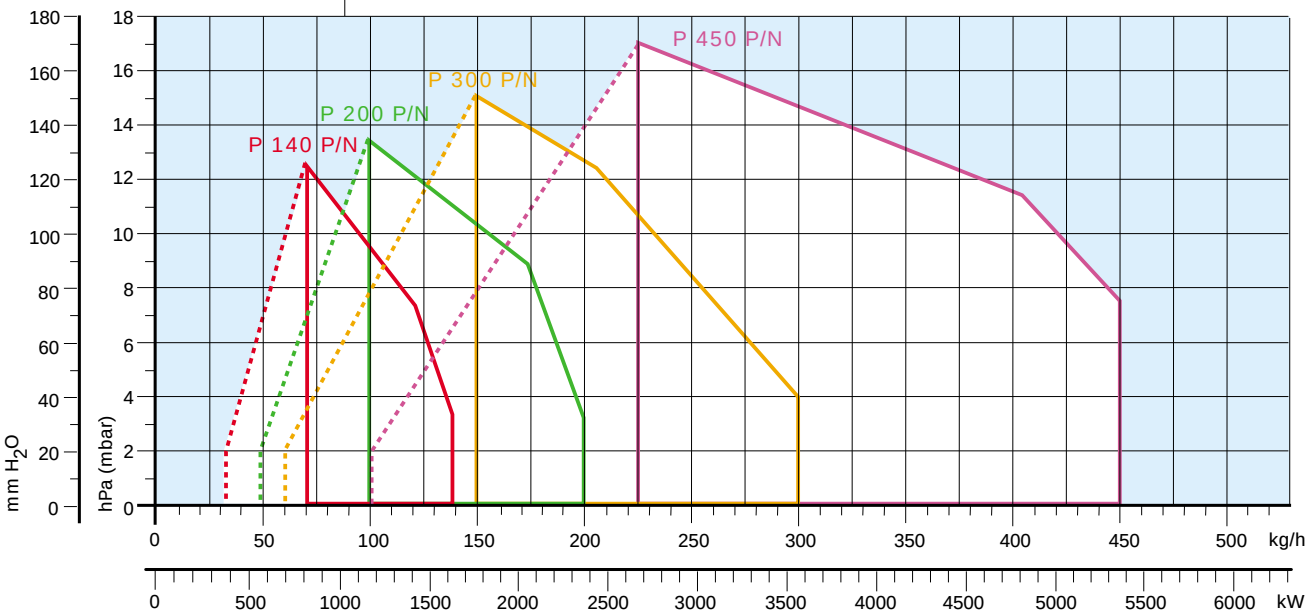
The PRESS P/N series of burners cover a firing range from 400 to 5130 kW.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes, which guarantees a turn down ratio of 3:1.
The versatility of this range makes the burner well suited for use on steam boilers where the load factor is subject to wide variations, on thermal oil boilers and on boilers for particular heating plants, as hospitals or similar.
Simplified maintenance is achieved by the Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

TECHNICAL DATA

	Model			P 140 P/N	P 200 P/N	P 300 P/N	P 450 P/N
	Setting type			Modulating (with regulator and probes accessories) or Two stage progressive			
	Modulation ratio to max. output			4 : 1			
	Servo-motor	type		SQM 10			
		run time	s	42			
	Heat output		kW	400/800÷1600	570/1140÷2280	683/1710÷3420	1140/2615÷5130
			Mcal/h	344/788÷1376	490/980÷1753	587/1471÷2941	980/2249÷4412
	Working temperature		°C min./max.	0/40			
Fuel / air data	NCV Heavy Oil		kcal/kg	9600			
			MJ/kg	40,2			
	Viscosity max. at 50°C		mm^2/s (cSt)	50 (500 with heavy oil kit)			
	Heavy oil delivery		kg/h	35/70÷140	50/100÷200	60/150÷300	100/225÷450
	Pump	type		SUNTEC E7	SUNTEC TA2	SUNTEC TA3	SUNTEC TA4
		delivery	kg/h at 25 bar	310	470	690	940
	Atomised pressure		bar	25			
	Fuel temperature		Max. °C	140			
	Fan		type	Centrifugal - curved forward blades			
	Air temperature		Max. °C	60			
Electrical data	Electrical supply		Ph/Hz/V	3N/50/400-230 (+10% -15%) 人 or 3/50/230 (+10% -15%) △			
	Electrical power consumption		Max. kW	18,5	19,5	30	34
	Electrical motor		kW	3	4	7,5	12
	Motor start current		A	51/86	48/83	113/195	150/260
	Motor running current		A	8/13,5	9,5/16,4	17,5/30	25/44
	Motor electrical protection		IP	55			
	Auxiliary electrical supply		Ph/Hz/V	1/50/230 (±10%)			
	Heaters electrical power		kW	14	14	19,6	19,6
	Auxiliary electrical power		kW	14+1,5	14+1,5	19,6+2,9	19,6+2,4
	Electrical protection		IP	40			
	Control box		type	LANDIS LAL 1.25			
	Ignition transformer		V1 - V2	230 V - 2x6 kV			
			I1 - I2	2,3 A - 35 mA			
	Operation			Intermittent (at least one stop every 24 h)			
Emissions	Sound pressure		dB (A)	86,2	85,4	89,5	90
	Sound power		W	--			
	CO emission		mg/kWh	< 130	< 145		< 170
	Grade of smoke indicator		N° Bacharach	< 6		< 5	< 4
	C_xH_y emission		mg/Nm^3	--			
	NOx emission level		mg/kWh	< 780	< 550		
Approval	Directive			89/336 - 73/23 EEC			
	Conforming to			EN 267			
	Certification			--	--	--	--

Reference conditions:
Ambient temperature: 20°C
Barometric pressure: 1000 mbar
Altitude: 100 meters a.s.l.
Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output.

FIRING RATES



Useful working field for choosing the burner

Modulation range

Test conditions conforming to EN 267:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.

HYDRAULIC CIRCUITS

Various hydraulic circuit are available, depending on fuel output asset according to local norms of steam generators.

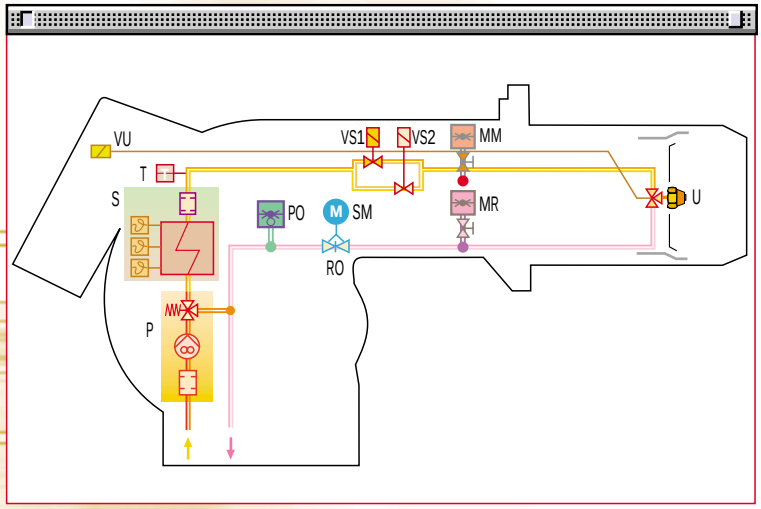
The burners are fitted with two valves and an oil preheater with thermostats along the oil line from the pump to the nozzle, which opening is regulated from a needle valve. A pressure regulator on the return circuit from the nozzle allows to vary the quantity of fuel burnt.

For heavy oil preheating, a special kit with three electrical heaters at the pump, at the regulator and at the nozzle could be used.

The models are fitted with a maximum pressure switch on the oil return circuit.

Example of the hydraulic circuit on PRESS 200 P/N

prEN 267 > 100 Kg/h



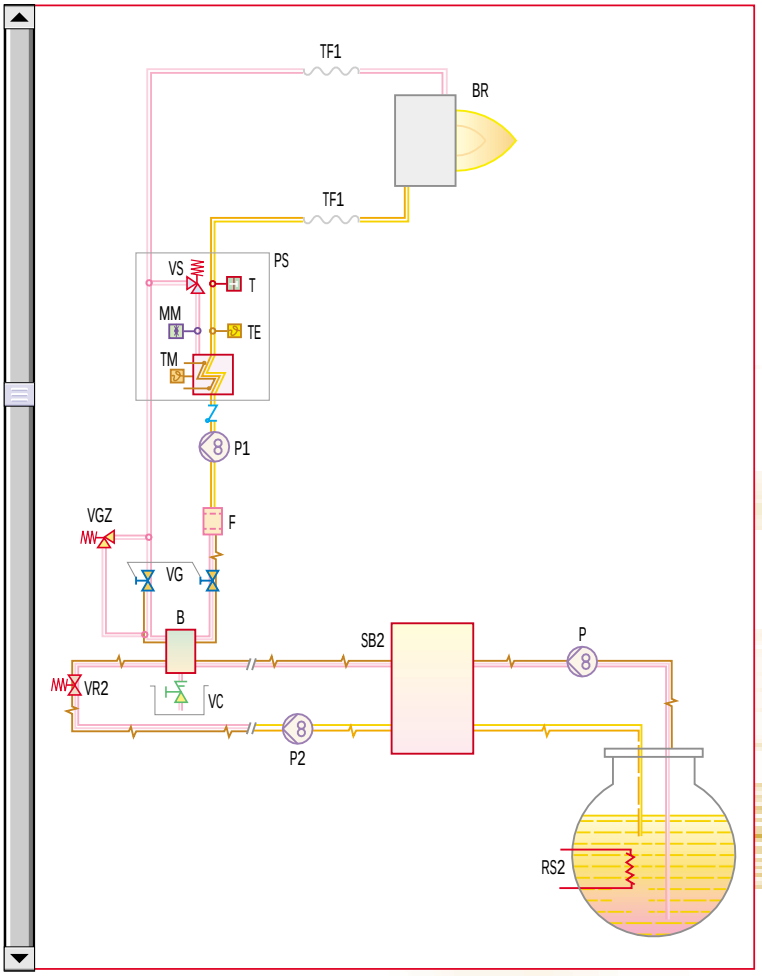
P	Pump with filter, heater and pressure regulator on the output circuit
S	Oil preheater with maximum, minimum and regulation thermostat
T	Thermometer
MM	Oil delivery gauge
SM	Servomotor
RO	Pressure regulator on the return circuit
PO	Oil pressure switch on the return circuit
U	Nozzle
MR	Pressure gauge on the return circuit
VU	Nozzle needle valve
VSn	Delivery oil valves

DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

IMPORTANT NOTES

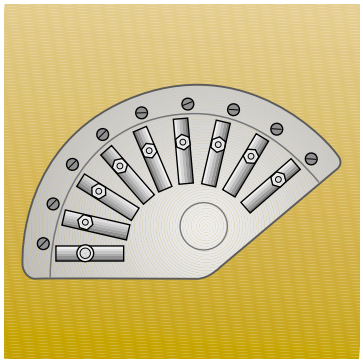
- The oil could easily flow through the pipes if those are properly sized, protected and heated (by electricity, steam or hot water)
- In order to limit gas or steam production the oil pressure into the gas separator shall be set in function of the supply temperature, see instructions manual.
- The forwarding pump should have at least a double capacity than that one of the burner. For several burners supplied through the same ring supply line, the forwarding pump should have a capacity of approximatively 30% more than the sum of the single burners outputs.



RS2	Tank heater
P	Double pumping unit with filter and heater on transfer ring
SB2	Service tank
P2	Double pumping unit with filter and heater on main ring
VR2	Oil valve – main ring
B	Gas separator bottle
VGZ	Safety valve – burner circuit
P1	Pump with heater – burner circuit
PS	Electrical preheater
VS	Preheater safety valve
BR	Burner
TF1	Flexible oil line
T	Thermometer
TM	Max oil temperature switch
TE	Temperature switch regulation
MM	Oil delivery gauge
VC	Vent valve
F	Oil filter

VENTILATION

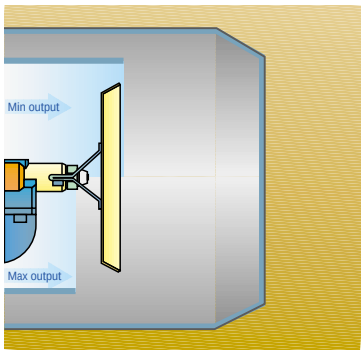
The ventilation circuit is provided with a forward blades centrifugal fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.
In spite of the remarkable output power and of the very high pressure performances, structures of PRESS models are extremely compact.
The use of sound proofing boxes help in reducing the noise level.
A variable profile cam connects fuel and air setting, ensuring fuel efficiency in all firing rates.



Example of servomotor for air/light oil setting

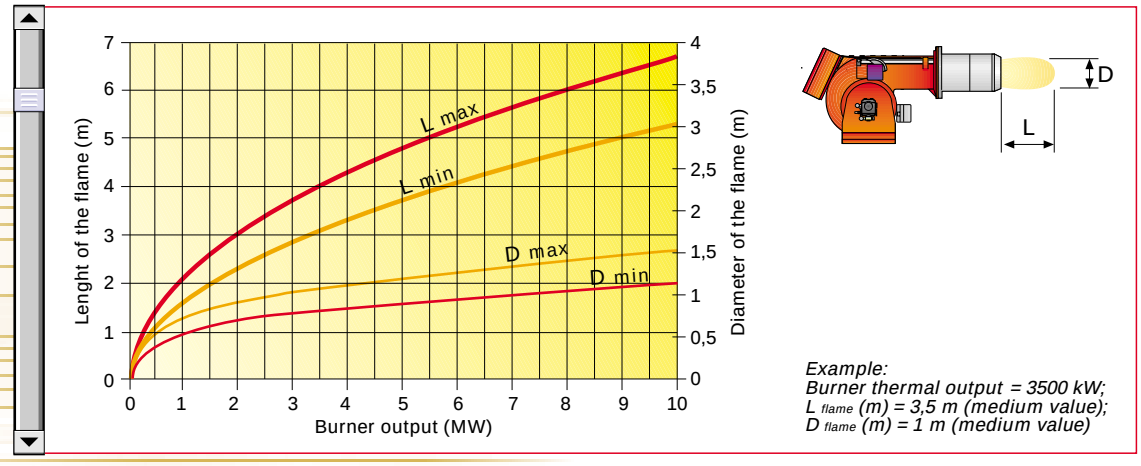
COMBUSTION HEAD

Two different lenghts of the combustion head can be chosen for the various models of the PRESS P/N series of burners.
The choice depends on the thickness of the front panel and the type of the boiler.
Depending on the type of heat generator, it is necessary to check the correct head penetration into the combustion chamber.
The internal position of the combustion head can easily be adjusted: refer to the burner instruction manual for the complete procedure.
The following diagram shows the flame dimensions in relation to the burner output. The lenght and diameter shown in the diagram below should be employed preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.



Example of a PRESS P/N burner combustion head

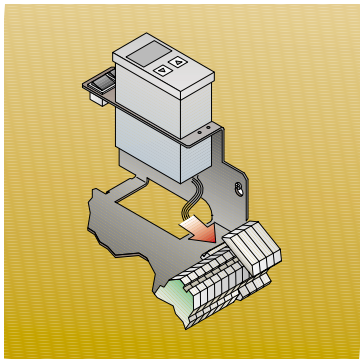
Dimensions of the flame



Example:
Burner thermal output = 3500 kW;
L flame (m) = 3,5 m (medium value);
D flame (m) = 1 m (medium value)

BURNER OPERATION MODE

The PRESS P/N series of burners can have “two stage progressive” or “modulating” operation.



Example of a regulator

On “two stage progressive” operation, the burner gradually adapts the output to the requested level, by varying between two pre-set levels (see figure A).

“Two stage progressive” operation

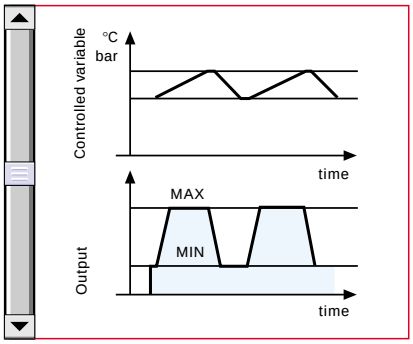


Figure A

On “modulating” operation, normally required in steam generators, in superheater boilers or diathermic oil burners, a specific regulator and probes are required. These are supplied as accessories that must be ordered separately. The burner can work for long periods at intermediate output levels (see figure B).

“Modulating” operation

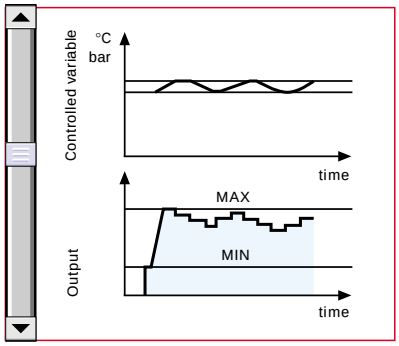
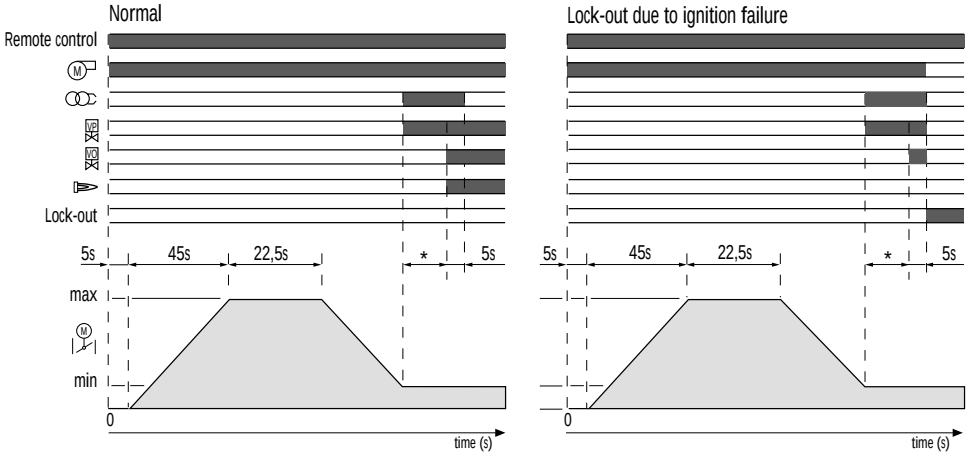


Figure B

FIRING



0”	The burner begins the start-up cycle: the motor starts turning.
5”-50”	The servomotor opens the air damper at the maximum position.
50”-72,5”	Chamber pre-purge phase with air damper open.
72,5”	The servomotor takes the fire damper to the firing position.
92,5”	Ignition transformer turns on. Pre-purge valves opens and oil circuit pre-purge phase takes place.
95”	Ignition valve opens and flame rilevation with P.E. cell is activated. (*)
100”	After a safety time of 7,5” the ignition transformer turns down if there is the flame otherwise lock-out happens.

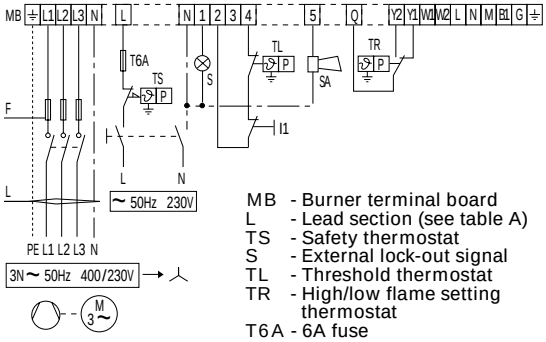
** Time adjustable with timer.*

ELECTRICAL CONNECTIONS
to be made by the installer

Electrical connections must be made by qualified and skilled personnel, according to the local norms.

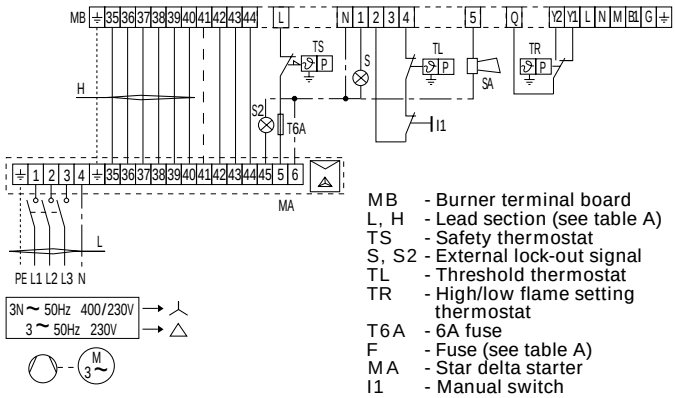
"TWO STAGE PROGRESSIVE" OPERATION

Direct start-up version
P 140-200-300 P/N



MB - Burner terminal board
L - Lead section (see table A)
TS - Safety thermostat
S - External lock-out signal
TL - Threshold thermostat
TR - High/low flame setting thermostat
T6A - 6A fuse
F - Fuse (see table A)
I1 - Manual switch
SA - High temperature oil alarm

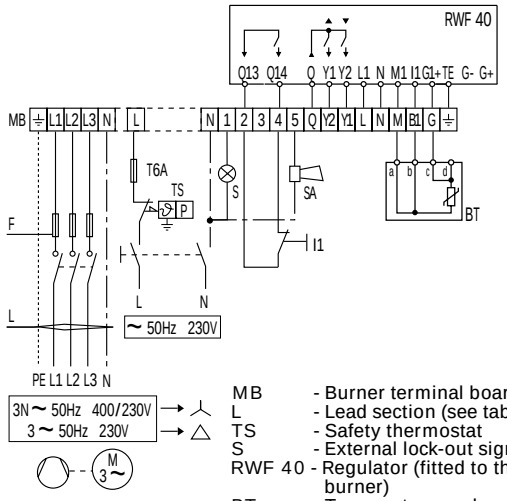
Star delta start-up version
P 300-450 P/N



MB - Burner terminal board
L, H - Lead section (see table A)
TS - Safety thermostat
S, S2 - External lock-out signal
TL - Threshold thermostat
TR - High/low flame setting thermostat
T6A - 6A fuse
F - Fuse (see table A)
MA - Star delta starter
I1 - Manual switch
SA - High temperature oil alarm

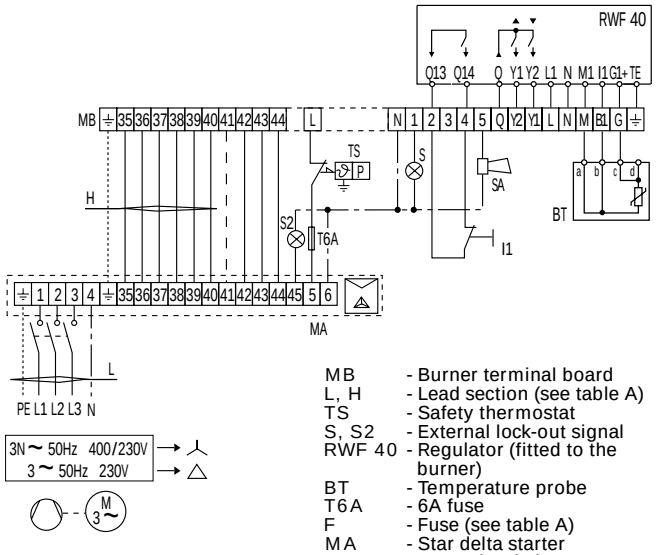
"MODULATING" OPERATION - temperature probe

Direct start-up version
P 140-200-300 P/N



MB - Burner terminal board
L - Lead section (see table A)
TS - Safety thermostat
S - External lock-out signal
RWF 40 - Regulator (fitted to the burner)
BT - Temperature probe
T6A - 6A fuse
F - Fuse (see table A)
I1 - Manual switch
SA - High temperature oil alarm

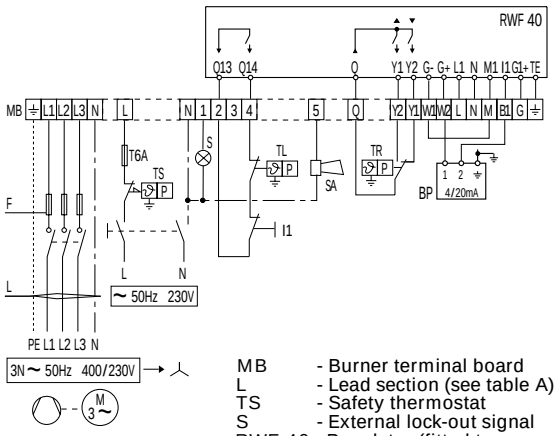
Star delta start-up version
P 300-450 P/N



MB - Burner terminal board
L, H - Lead section (see table A)
TS - Safety thermostat
S, S2 - External lock-out signal
RWF 40 - Regulator (fitted to the burner)
BT - Temperature probe
T6A - 6A fuse
F - Fuse (see table A)
MA - Star delta starter
I1 - Manual switch
SA - High temperature oil alarm

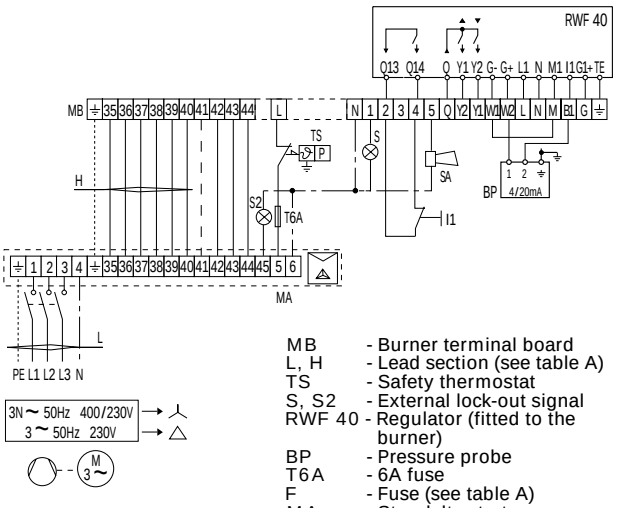
"MODULATING" OPERATION - pressure probe

Direct start-up version
P 140-200-300 P/N



MB - Burner terminal board
L - Lead section (see table A)
TS - Safety thermostat
S - External lock-out signal
RWF 40 - Regulator (fitted to the burner)
BP - Pressure probe
T6A - 6A fuse
F - Fuse (see table A)
I1 - Manual switch
SA - High temperature oil alarm

Star delta start-up version
P 300-450 P/N



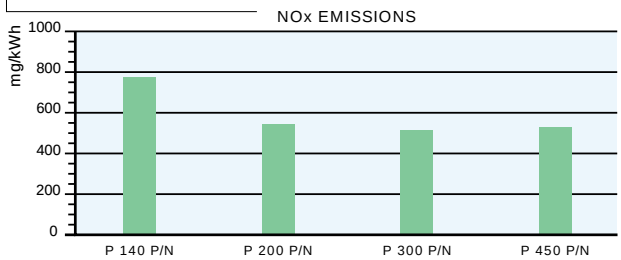
MB - Burner terminal board
L, H - Lead section (see table A)
TS - Safety thermostat
S, S2 - External lock-out signal
RWF 40 - Regulator (fitted to the burner)
BP - Pressure probe
T6A - 6A fuse
F - Fuse (see table A)
MA - Star delta starter
I1 - Manual switch
SA - High temperature oil alarm

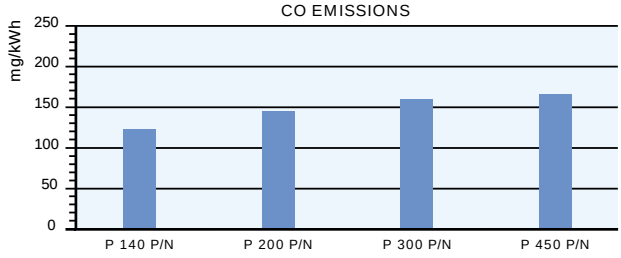
The following table shows the supply lead sections and the type of fuse to be used.

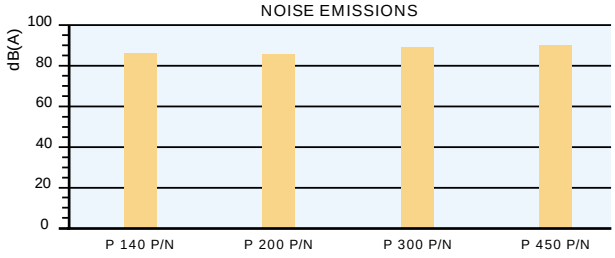
		Direct						Star delta			
Model		**P 140 P/N**		**P 200 P/N**		**P 300 P/N**		**P 300 P/N**		**P 450 P/N**	
		230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F	A	T25	T25	T35	T25	T63	T50	T50	T35	-	-
L	mm²	2,5	2,5	4	2,5	6	4	6	4	10	6
H	mm²	-	-	-	-	-	-	4	2,5	6	4

Table A

EMISSIONS



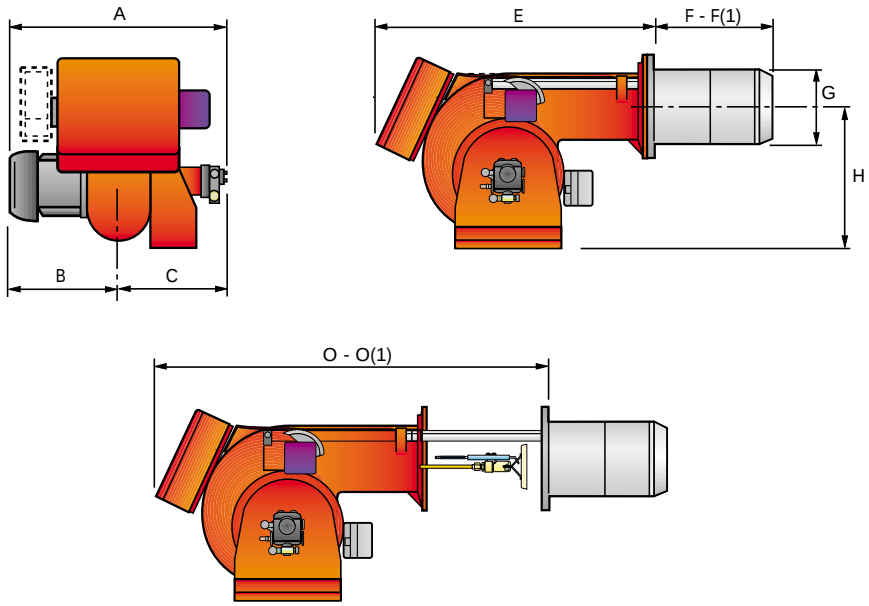




The emission data has been measured in the various models at maximum output, according to EN 267 standard.

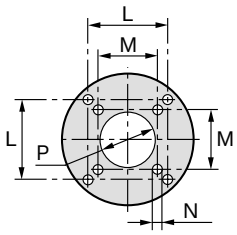
OVERALL DIMENSIONS (mm)

BURNERS



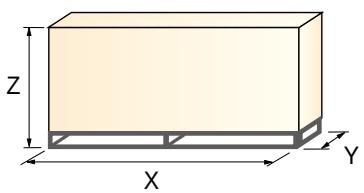
Model	A	B	C	E	F - F(1)	G	H	O - O(1)
P 140 P/N	796	396	400	910	323 - 433	222	467	1390 - 1390
P 200 P/N	796	396	400	910	352 - 462	250	467	1390 - 1390
P 300 P/N	858	447	411	1020	376 - 506	295	496	1535 - 1685
P 450 P/N	950	508	442	1090	435 - 565	336	525	1665 - 1820

BURNER - BOILER MOUNTING FLANGE



Model	L	M	N	P
P 140 P/N	260	230	M 14	225
P 200 P/N	260	-	M 16	255
P 300 P/N	260	-	M 18	300
P 450 P/N	310	-	M 20	350

PACKAGING



Model	X	Y	Z	kg
P 140 P/N	1500	930	900	180
P 200 P/N	1500	930	900	220
P 300 P/N	1780	1085	990	238
P 450 P/N	1780	1085	990	300

INSTALLATION DESCRIPTION

Installation, start-up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied to the burner.

BURNER SETTINGS

- All the burners have slide bars, for easier installation and maintenance.
- After removing the cover, the split pin and the pin, the nuts and the screws, dismantle the blast tube form the burner of approximatively 100-120mm and fix it to the boiler.
- Adjust the combustion head.
- Refit the burner casing to the slide bars.
- Install the nozzle, choosing it on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- Check the position of the electrodes.
- Close the burner, fasten the screws, the nuts, the split pin and the pin.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).
- On start up, check:
  - Pressure pump and valve unit regulator (to max. and min.)
  - Combustion quality, in terms of not-burnt substances and excess air.

ACCESSORIES

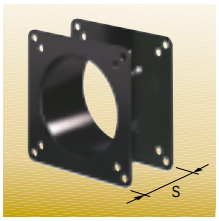
Return nozzles

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

Nozzle type B3 45° - with "AA" needle		
Burner	**Rated output kg/h**	**Nozzle code**
P 140 P/N	70	**3009613**
P 140 P/N	80	**3009615**
P 140 P/N	90	**3009617**
P 140 P/N – P 200 P/N	100	**3009620**
P 140 P/N – P 200 P/N	125	**3009623**
P 200 P/N – P 300 P/N	150	**3009626**
P 200 P/N – P 300 P/N	175	**3009629**
P 200 P/N – P 300 P/N	200	**3009632**
P 200 P/N – P 300 P/N	225	**3009635**
P 300 P/N – P 400 P/N	250	**3009638**
P 300 P/N – P 400 P/N	275	**3009642**
P 300 P/N – P 400 P/N	300	**3009644**
P 450 P/N	325	**3009647**
P 450 P/N	350	**3009650**
P 450 P/N	375	**3009653**
P 450 P/N	400	**3009656**
P 450 P/N	425	**3009659**
P 450 P/N	450	**3009662**

Spacers kit

If burner head penetration in the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.



Spacers to make the combustion head shorter		
Burner	**Spacer thickness S (mm)**	**Kit code**
P 140 P/N - P 200 P/N	110	**3000722**
P 300 P/N	130	**3000723**
P 450 P/N	130	**3000751**

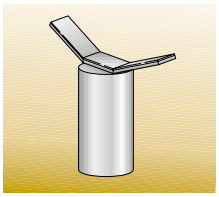
Sound proofing box

If noise emissions need reducing, sound proofing hoods are available, as given in the following table.

Sound proofing hood		
Burner	**Box type**	**Box code**
P 140 P/N - P 200 P/N	C5	**3000780**
P 300 P/N - P 450 P/N	C6	**3000781**

Burner support

For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.



Support	
Burner	**Code**
P 300 P/N - P 450 P/N	**3000731**

Accessories for modulating operation

To obtain modulating operation, the PRESS P/N series of burners require a regulator, with three point outlet control. The relative temperature or pressure probes fitted with the regulator must be chosen on the basis of the application.
The following table lists the accessories for modulating setting with their application range.

REGULATOR		PROBES		
Type	**Code**	**Type**	**Range (°C) (bar)**	**Code**
RWF 40	**3010211**	Temperature PT 100	-100 ÷ 500°C	**3010110**
		Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	**3010213**
		Pressure 4 ÷ 20 mA	0 ÷ 16 bar	**3010214**

Depending on the servomotor fitted to the burner, a three-pole potentiometer (0÷1000 W) can be installed to check the servomotor position. The kits available for the various burners are listed below:

Potentiometer kit	
Burner	**Kit code**
P 140 P/N - P 200 P/N - P 300 P/N - P 450 P/N	**3010021**

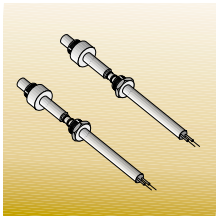
Gas separator bottle

It allows to recover heat in excess by discharge of the gas from the return circuit.

Degaser unit	
Burner	**Degaser code**
P 140 P/N - P 200 P/N	**3000748**
P 300 P/N - P 450 P/N	**3010012**

Heavy oil kit

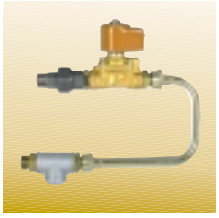
Equipped with electrcal heaters, it permits the employment of PRESS P/N burners with fuel oil of max. viscosity 65°E at 50°C.



Heavy oil kit	
Burner	**Kit code**
P 140 P/N - P 200 P/N - P 300 P/N - P 450 P/N	**3000721**

Heavy oil precirculation

This kit, used with oil with high viscosity, in maintains fuel circulation in the ol circuit for avoiding system stop at start up.



Heavy oil precirculation	
Burner	**Code**
P 140 P/N - P 200 P/N	**3000749**
P 300 P/N - P 450 P/N	**3000750**

Selfcleaning filter

For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 65°E viscosity at 50°C.

FILTER		HEATTERS AND THERMOSTATS	
Type	**Code**	**Type**	**Code**
Ø=1”1/2 (65°E – 50°C)	**3010022**	Thermostatic heater with LED	**3010060**
		Heater	**3010061**
		Thermostat (two-stage / regulalable)	**3010062**

Cartridge filter

For cleaning heavy oil from dirty particles and impurities, it is equipped with a cartridge system for oil with 7°E viscosity at 50°C.

Cartridge filter	
Burner	**Filter code**
P 140 P/N - P 200 P/N - P 300 P/N - P 450 P/N	**3005209**

SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS P/N series. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES PRESS HEAVY OIL BURNERS

Series : PRESS

Size

Operation :
- N Two stage
- T/N Three stage
- P/N Modulating

Emission : ... Class 1 EN267

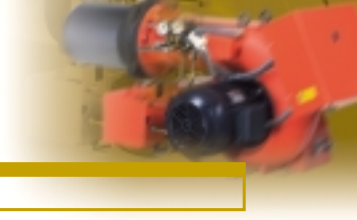
Head :
- TC Standard head
- TL Extended head

Flame control system :
- FS1 Standard (1 stop every 24 h)
- FS2 Continuous working (1 stop every 72 h)

Electrical supply to the system :
- 1/230/50 1 / 230V / 50Hz
- 3/230/50 3 / 230V / 50 Hz
- 3/400/50 3N / 400V / 50Hz
- 3/230-400/50 3/ 230V / 50 Hz - 3N / 400V / 50Hz
- 3/220-380/60 3/ 220V / 60 Hz - 3N / 380V / 60Hz

Auxiliary voltage :
- 230/50 230V / 50Hz
- 220/60 220V / 60Hz

PRESS	140	P/N		TC	FS1	3/230-400/50	230/50
BASIC DESIGNATION							
EXTENDED DESIGNATION							



LIST OF AVAILABLE MODELS

P 140 P/N	TC	3/230-400/50	230/50
P 140 P/N	TL	3/230-400/50	230/50
P 200 P/N	TC	3/230-400/50	230/50
P 200 P/N	TL	3/230-400/50	230/50
P 300 P/N	TC	3/230-400/50	230/50
P 300 P/N	TL	3/230-400/50	230/50
P 300 P/N	TC	3/230/50	230/50
P 300 P/N	TL	3/230/50	230/50
P 300 P/N	TC	3/400/50	230/50
P 300 P/N	TL	3/400/50	230/50
P 450 P/N	TC	3/230/50	230/50
P 450 P/N	TL	3/230/50	230/50
P 450 P/N	TC	3/400/50	230/50
P 450 P/N	TL	3/400/50	230/50

Other models are available on request.

PRODUCT SPECIFICATION

Burner:
Monoblock forced draught oil burner with two-stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Starting motor at 2850 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit
- Electrical preheater for heavy oil
- Safey oil pressure switch
- Photocell for flame detection
- Flame control panel, fitted with control function for the correct positioning of the servomotor and possibility of post-ventilaton by just changing the electric wiring
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 40 electric protection level.

Conforming to:
- 89/336/EC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage).

Standard equipment:
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- Wiring looms fittings for electrcial connections
- 4 screws for fixing the burner flange to the boiler
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue
- 2 slide bar extensions (for the extended head models of P 300 P/N e P 450 P/N)
- Gasket for flange
- Starter*

* *for versions with star-delta starting*

Available accessories to be ordered separately:
- Return nozzles
- Head lenght reduction kit (spacer)
- Sound-proofing box
- RWF 40 output regulator
- Pressure probe 0-2,4 bar
- Pressure probe 0-16 bar
- Temperature probe –100-500°C
- Potentiometer kit for the servomotor
- Burner support
- Gas separator bottle
- Selfcleaning filter
- Heavy oil kit
- Heavy oil precirculation
- Cartridge filter.

Lineagrafica

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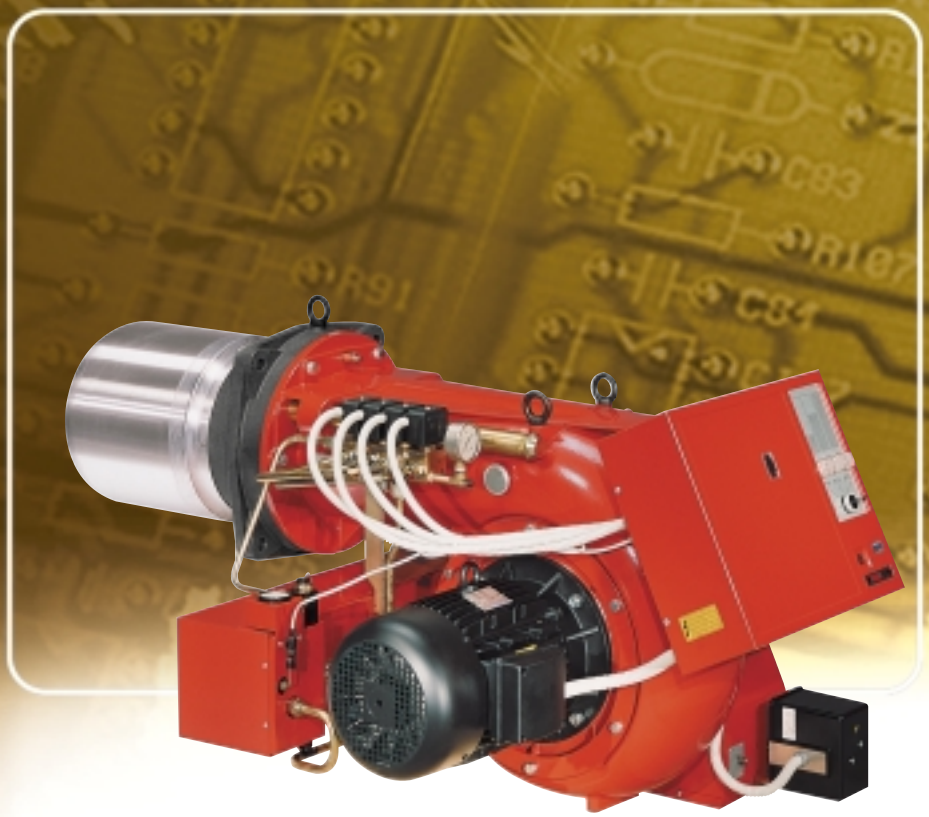
RIELLO BURNERS

CE

THREE STAGE HEAVY OIL BURNERS

PRESS T/N SERIES

P 140 T/N	320/800 ÷ 1600 kW
P 200 T/N	515/1140 ÷ 2280 kW
P 300 T/N	626/1710 ÷ 3420 kW
P 450 T/N	855/2560 ÷ 5130 kW



The PRESS T/N series of burners covers a firing range from 320 to 5130 kW and they have been designed for use on commercial or industrial installations. Operation is three-stage, thus making these burners suitable for installations that have variable but predictable heating requirments. A servomotor adjusts automatically air damper to the opening value, determined to obtain always the necessary fuel consumption. Every model of PRESS T/N series is available in two different combustion head lenght (short or long head) to be selected on the basis of specific application requirments. An electric preheater has been fitted to maintain the oil at the correct atomising temperature at maximum ouput and special heaters kits are separately supplied for burning high viscosity oil.
Simplified maintenance is achieved by the Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

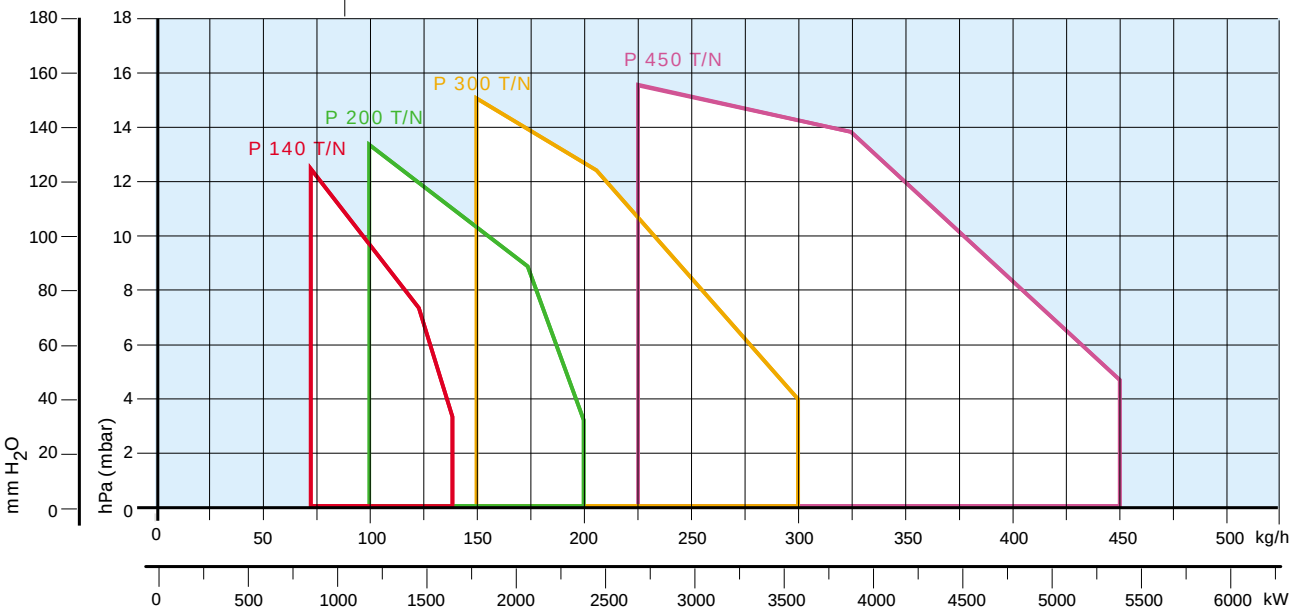
TECHNICAL DATA

	Model		P 140 T/N	P 200 T/N	P 300 T/N	P 450 T/N
	Burner operation mode		Three stage			
	Modulating ratio at max. output		2 : 1			
	Servo-motor type		LKS 210			LKS 300
	Servo-motor run time	s	5			4
	Heat output	kW	320/800÷1600	515/1140÷2280	626/1710÷3420	855/2560÷5130
		Mcal/h	275/688÷1376	443/980÷1961	538/1471÷2941	727/2202÷4412
		kg/h	29/72÷143	46/102÷204	56/153÷306	77/229÷460
	Working temperature	°C min./max.	0/40			
Fuel / air data	Net calorific value	kWh/kg	11,16			
Fuel / air data		kcal/kg	9600			
Fuel / air data	Viscosity	mm^2/s (cSt)	390 (max. at 50°C)			
Fuel / air data	Pump type		E 7	E 7	TA 2	TA 3
Fuel / air data	Pump delivery	kg/h	310 at 25 bar	310 at 25 bar	470 at 25 bar	940 at 25 bar
Fuel / air data	Atomised pressure	bar	25			
Fuel / air data	Fuel temperature	max. °C	60			
Fuel / air data	Fuel preheater		Yes			
Fuel / air data	Fan	type	Centrifugal - with forward curve blades			
Fuel / air data	Air temperature	max. °C	60			
Electrical data	Electrical supply	Ph/Hz/V	3/50/230 (±10%)		3N/50/230-400 (±10%)	
Electrical data	Auxiliary electrical supply	Ph/Hz/V	1/50/230 (±10%)			
Electrical data	Control box	type	RMO 88			
Electrical data	Total electrical power	kW	18,6	19,5	30	34
Electrical data	Auxiliary electrical power	kW	1,6	1,5	2,9	2,4
Electrical data	Heaters electrical power	kW	14	14	19,6	19,6
Electrical data	Protection level	IP	40			
Electrical data	Pump motor electrical power	kW				
Electrical data	Rated pump motor current	A				
Electrical data	Pump motor start up current	A				
Electrical data	Pump motor protection level	IP				
Electrical data	Fan motor electrical power	kW	3	4	7,5	12
Electrical data	Rated fan motor current	A	8/13,5	9,5/16,4	17,5/30	26/45
Electrical data	Fan motor start up current	A	51/86	48/83	113/195	151/261
Electrical data	Fan motor protection level	IP	55			
Electrical data	Ignition transformer	type				
Electrical data		V1 - V2	230 V - 2x6,5 kV			
Electrical data		I1 - I2	2 A - 35 mA			
Electrical data	Operation		Intermittent (at least one stop every 24 h)			
Emissions	Sound pressure	dB (A)	86,3	87	87,6	88,2
Emissions	Sound power	W	--			
Emissions	CO emission	mg/kWh	< 200			
Emissions	Grade of smoke indicator	N° Bacharach	< 10			
Emissions	C_xH_y emission	mg/kWh	--			
Emissions	NOx emission	mg/kWh	< 620			
Approval	Directive		89/336 - 73/23 EEC			
Approval	Conforming to		EN 267			
Approval	Certification		--	--	--	--

Reference conditions:
Ambient temperature: 20°C
Barometric pressure: 1000 mbar
Altitude: 100 m a.s.l.
Noise measured at a distance of 1 m

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.

FIRING RATES



Useful working field for choosing the burner

Test conditions conforming to EN 267:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.

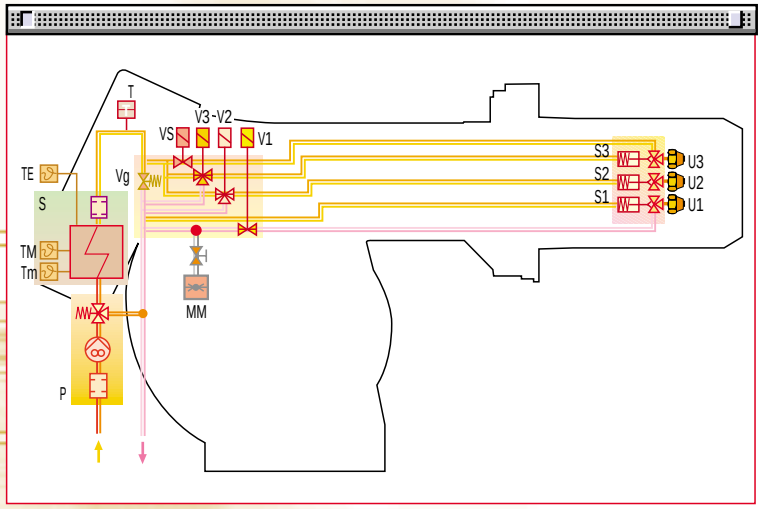
FUEL SUPPLY

HYDRAULIC CIRCUIT

The burners are fitted with a valve group (a safety valve fitted in series with three oil delivery valves), an oil filter and an oil preheater unit along the oil line from the pump to the nozzle.
A thermostatic control device, on the basis of required heat, regulates oil delivery valves opening, allowing heavy oil passage through the valves to the nozzles.
Delivery valves open contemporary to the air damper, controlled by a servomotor.
The pumping group is fitted with a pump, an oil filter and a regulating valve, that adjusts atomised pressure. This value is pre-set at 25 bar in the factory, but it can be changed (28 bar for higher viscosity oils) by adjusting pressure regulator fitted on the pump.
The preheater unit is fitted with an electrical heater, a minimum and a maximum oil temperature switch and an oil temperature regulator.

Example of valve groups for burners of T/N series

prEN 267 > 100 Kg/h



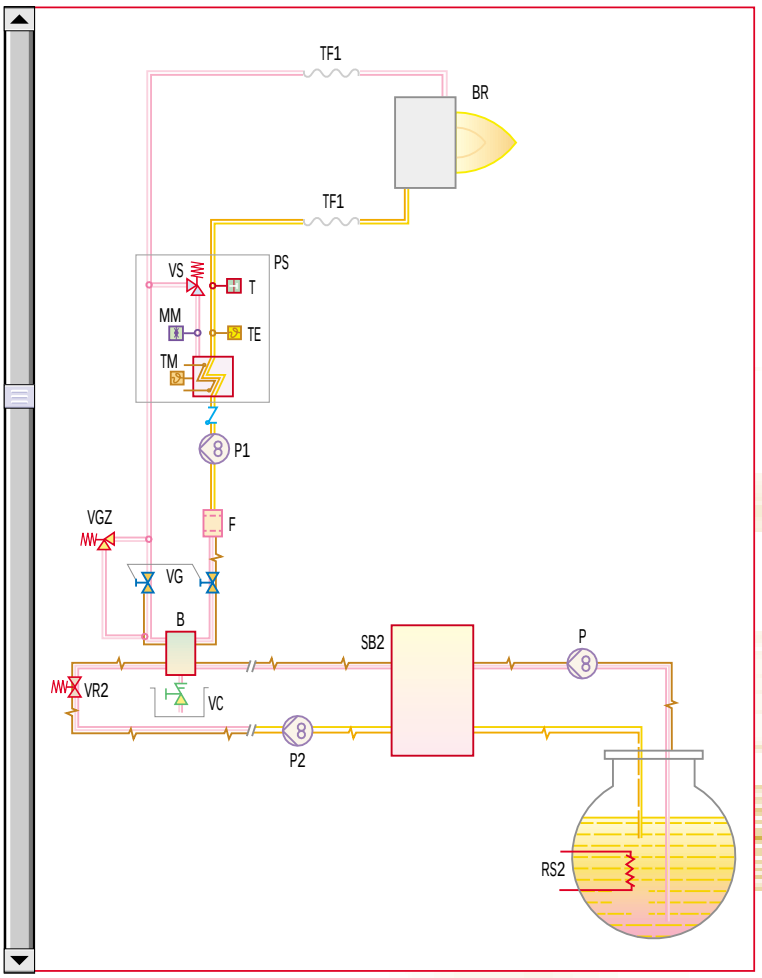
MM	Oil delivery gauge
P	Pump with oil filter
Tm	Min. oil temperature switch
TM	Max oil temperature switch
S	Oil pre-heater
TE	Oil temperature regulator
T	Thermometer
Vg	Oil pressure relief valve
VS	Safety valve
V1-2-3	Delivery oil valves
S1-2-3	Shutters
U1-2-3	Nozzles

SELECTING THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

IMPORTANT NOTES

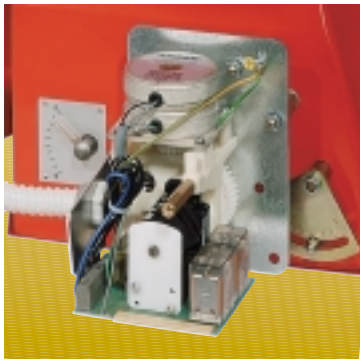
- The oil could easily flow through the pipes if those are properly sized, protected and heated (by electricity, steam or hot water)
- For starting-up: after excluding the burner by the shutter valves, let the oil flow into the supply ring up to reach the required circulation; after that open the valves and supply normally the burner.
- The forwarding pump should have at least a double capacity than that one of the burner. For several burners supplied through the same ring supply line, the forwarding pump should have a capacity of approximatively 30% more than the sum of the single burner output.



RS2	Tank heater
P	Double pumping unit with filter and heater on transfer ring
SB2	Service tank
P2	Double pumping unit with filter and heater on main ring
VR2	Oil valve – main ring
B	Gas separator bottle
VGZ	Safety valve – burner circuit
P1	Pump with heater – burner circuit
PS	Electrical preheater
VS	Preheater safety valve
BR	Burner
TF1	Flexible oil line
T	Thermometer
TM	Max oil temperature switch
TE	Temperature switch regulation
MM	Oil delivery gauge
VC	Vent valve
F	Oil filter

VENTILATION

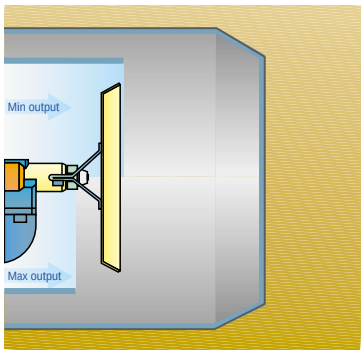
The ventilation circuit comes with a forward blades centrifugal fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.
In spite of the remarkable output power and of the very high pressure performances, PRESS T/N models are extremely compact.
Sound proofing boxes help to reduce the noise level.
A variable profile cam connects fuel and air setting, ensuring fuel efficiency in all firing rates.



Example of servomotor for burners of PRESS T/N series

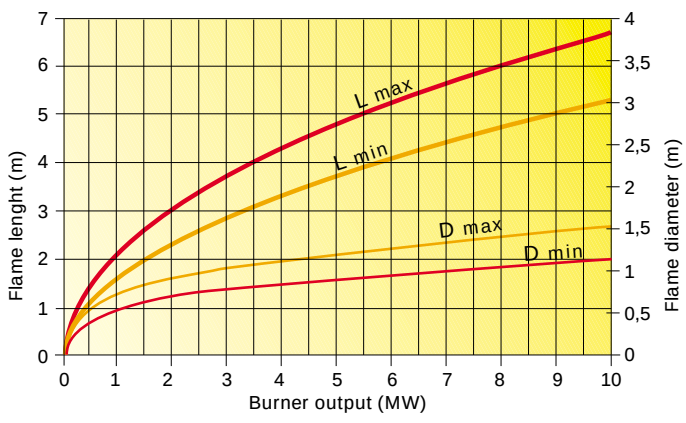
COMBUSTION HEAD

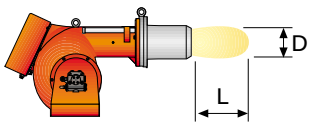
Two different combustion head length can be selected for the various models of PRESS T/N series of burners.
The choice depends on the thickness of the front panel and type of boiler.
Correct head penetration into the combustion chamber depends on the type of heat generator. The internal position of the combustion head can easily be adjusted: refer to the burner instruction manual for the complete procedure.
The following diagram shows the flame dimensions in relation to the burner output. The lenght and diameter shown in the diagram below should be employed for a preliminary check: if combustion chamber dimensions are different from the values in the diagram, further tests need to be done.



Example of a PRESS T/N burner combustion head

Flame dimensions





Example:
Burner thermal output = 3500 kW;
L flame (m) = 3,5 m (medium value);
D flame (m) = 1 m (medium value)

BURNER OPERATION MODE

With three stage operation, the PRESS T/N burners can follow the temperature load requested by the system.
A ratio between maximum and minimum working output of 3:1 is reached, thank to the servomotor: the air delivery is proportional to required output.
On three stage operation, the burner gradually adjusts output to the requested level, by varying between the three pre-set levels (see figure A).

Three stage operation

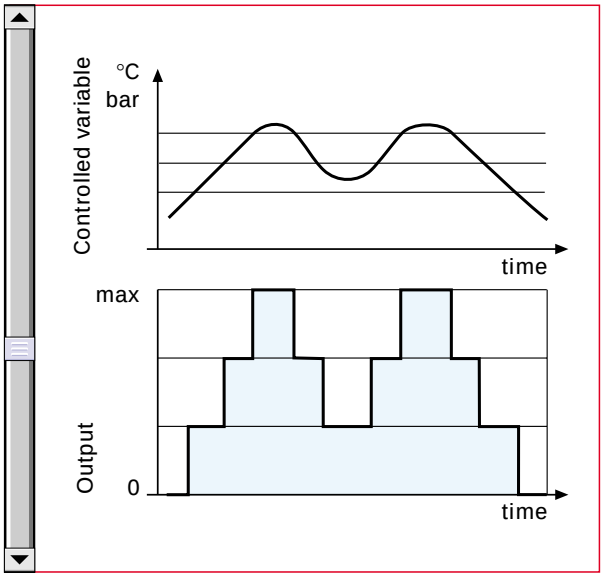


Figure A

In the table below operation, maximum output and fuel deliveries of the burners are shown.

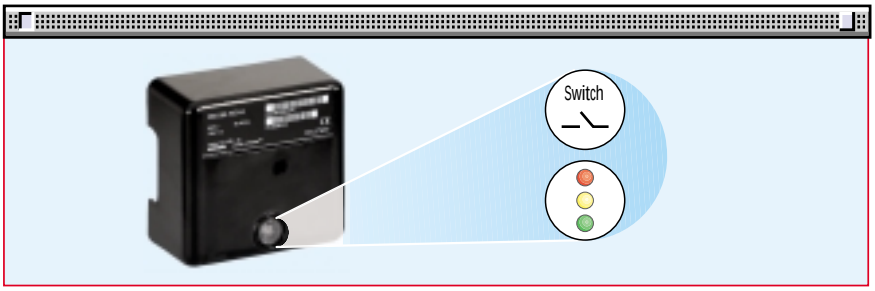
Model	Stage	Max output (kW)	Max delivery (kg/h)
P 140 T/N	1st	536	47
	2nd	1060	93
	3rd	1595	140
P 200 T/N	1st	763	67
	2nd	1516	133
	3rd	2279	200
P 300 T/N	1st	1140	100
	2nd	2280	200
	3rd	3420	300
P 450 T/N	1st	1710	150
	2nd	3420	300
	3rd	5130	450

All PRESS T/N series burners are fitted with a new microprocessor control panel for the supervision during intermittent operation.
For helping the commissioning and maintenance work, there are two main elements:

The lock-out reset button is the central operating element for resetting the burner control and for activating / deactivating the diagnostic functions.

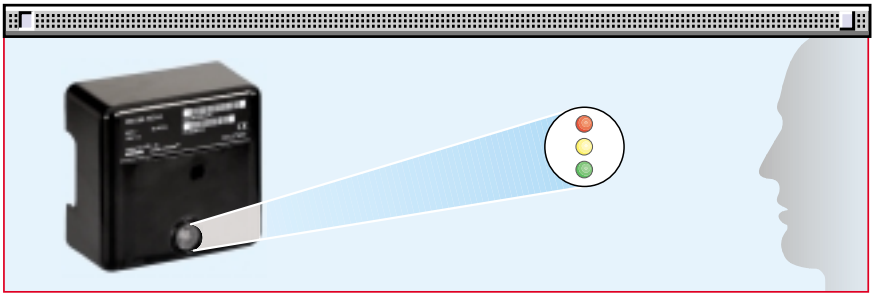
The multi-color LED is the central indication element for visual diagnosis and interface diagnosis.

Both elements are located under the transparent cover of lock-out reset button, as showed below.

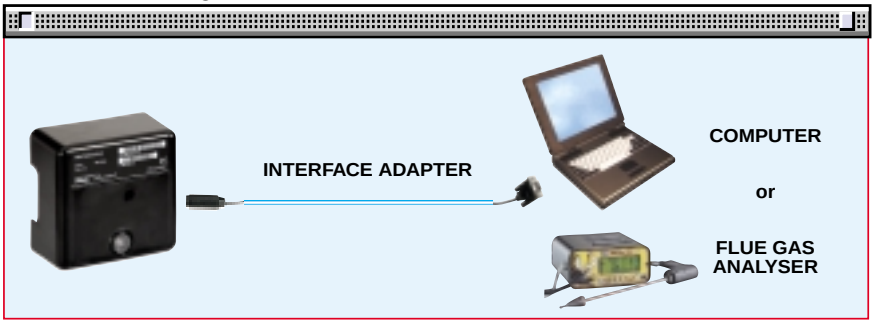


There are two diagnostic choices, for indication of operation and diagnosis of fault cause:

- visual diagnosis :



- interface diagnosis :



by the interface adapter and a PC with dedicated software or by a predisposed flue gas analyzer (see paragraph accessories).

Indication of operation :

In normal operation, the various statues are indicated in the form of colour codes according to the table below.
The interface diagnosis (with adapter) can be activated by pressing the lock-out button for > 3 seconds.

Color code table	
Operation statues	**Color code table**
Stand-by	○ ○ ○ ○ ○ ○ ○ ○
Pre-purging	☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼
Ignition phase	☼ ○ ☼ ○ ☼ ○ ☼ ○
Flame OK	✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹
Poor flame	✹ ○ ✹ ○ ✹ ○ ✹ ○
Undervoltage, built-in fuse	☼ ✹ ☼ ✹ ☼ ✹ ☼ ✹
Fault, alarm	✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹
Extraneous light	✹ ✹ ✹ ✹ ✹ ✹ ✹ ✹

○ **LED off**

Diagnosis of fault causes :

After lock-out has occurred, the red signal lamp is steady on. In this status, the visual fault diagnosis according to the error code table can be activated by pressing the lock-out reset button for > 3 seconds. The interface diagnosis (with adapter) can be activated by pressing again the lock-out button for > 3 seconds.

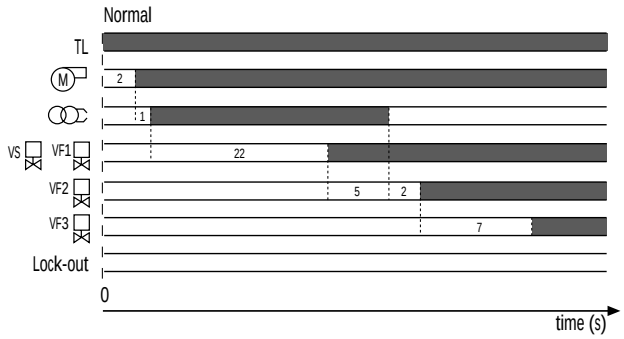
The blinkers of red LED are a signal with this sequence :

(e.g. signal with n° 3 blinks – faulty air pressure monitor)

Error code table	
Possible cause of fault	**Blink code**
No establishment of flame at the end of safety time : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner, no fuel - faulty ignition equipment	
Faulty air pressure monitor	
Extraneous light or simulation of flame on burner start up	
Loss of flame during operation : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner	
Wiring error or internal fault	

START UP CYCLE

P 140 T/N - P 200 T/N - P 300 T/N - P 450 T/N



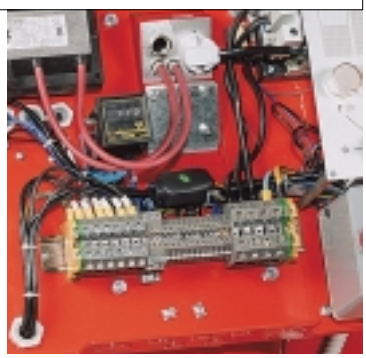
Start up procedure is referred to a three stage operation

0s The burner begins the start-up cycle: thermostat TL closes.
2s The motor starts turning.
3s Ignition transformer turns on.
25s Solenoid security valve VS and 1st stage valve VF1 open: 1st stage flame.
30s Lock out takes place if flame is not revealed by the photocell. Otherwise ignition transformer switches off.
32s 2nd stage solenoid valve VF2 opens.
39s 3rd stage solenoid valve VF3 opens.

For alternatives start-up procedures, consult the instructions' manual.

WIRING DIAGRAMS

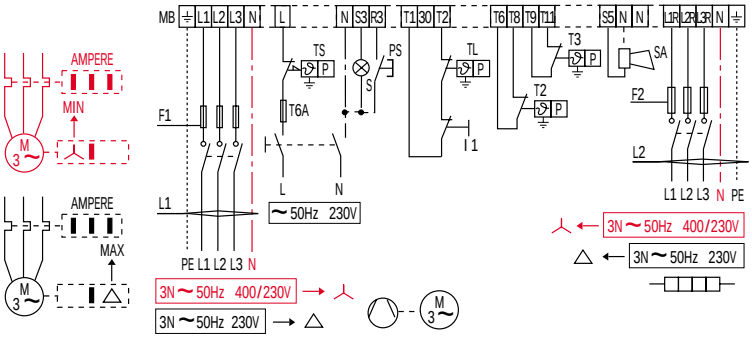
Electrical connections must be made by qualified and skilled personnel, according to the local norms.



Example of the terminal board for electrical connections for P 140-200-300-450 T/N models

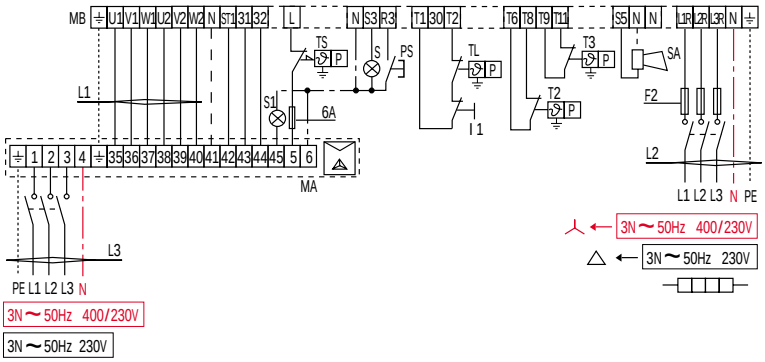
"THREE STAGE" OPERATION

Direct start-up version P 140-200-300 T/N



MB - Burner terminal board
L1, L2 - Lead section (see table A)
TS - Safety thermostat
S - External lock-out signal
TL - Threshold thermostat
TR - High/low flame setting thermostat
T6A - 6A fuse
F1, F2 - Fuse (see table A)
I1 - Manual switch
SA - High temperature oil alarm
T2 - 2nd stage load control system
T3 - 3rd stage load control system
PS - Lock-out reset button

Star delta start-up version P 300-450 T/N



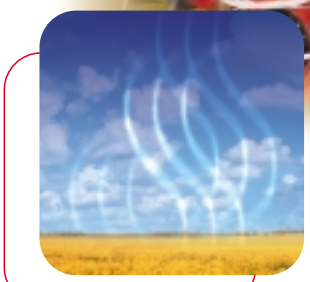
MB - Burner terminal board
L2, L3, H - Lead section (see table A)
TS - Safety thermostat
S, S2 - External lock-out signal
TL - Threshold thermostat
TR - High/low flame setting thermostat
T6A - 6A fuse
F1, F2 - Fuse (see table A)
MA - Star delta starter
I1 - Manual switch
SA - High temperature oil alarm
T3 - 3rd stage load control system
T2 - 2nd stage load control system
PS - Lock-out reset button

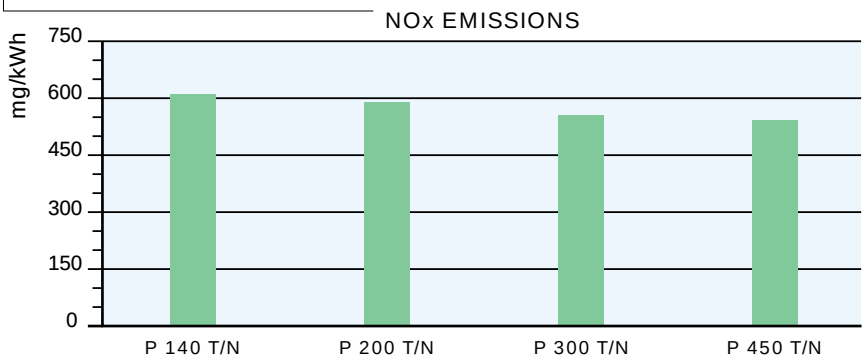
The following table shows the supply lead sections and the type of fuse to be used.

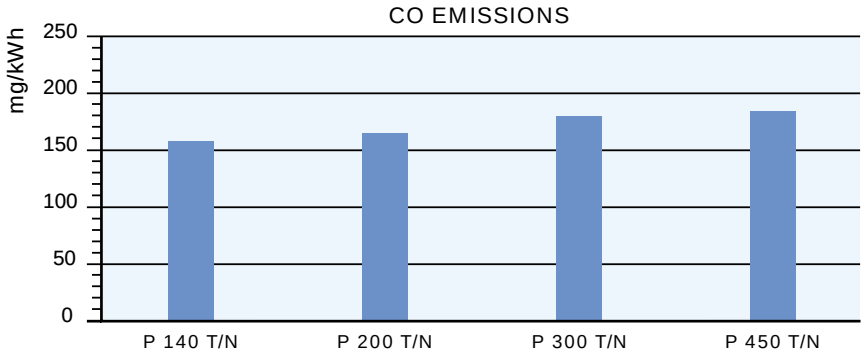
	Direct						Star delta			
Model	**▼ P 140 T/N**		**▼ P 200 T/N**		**▼ P 300 T/N**		**▼ P 300 T/N**		**▼ P 450 T/N**	
	230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F1 A	T25	T25	T35	T25	T63	T50	-	-	-	-
F2 A	T50	T35	T50	T35	T63	T50	T63	T50	T63	T50
L1 mm²	2,5	2,5	4	2,5	6	4	-	-	-	-
L2 mm²	10	6	6	6	10	6	10	6	10	6
L3 mm²	-	-	-	-	-	-	6	4	6	4
H mm²	-	-	-	-	-	-	4	2,5	6	4

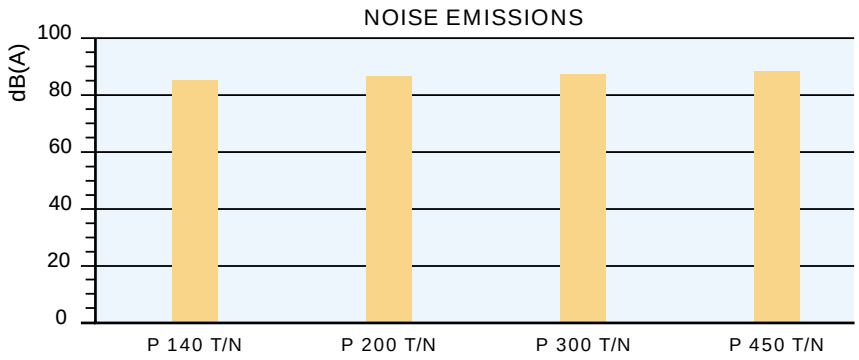
Table A

EMISSIONS





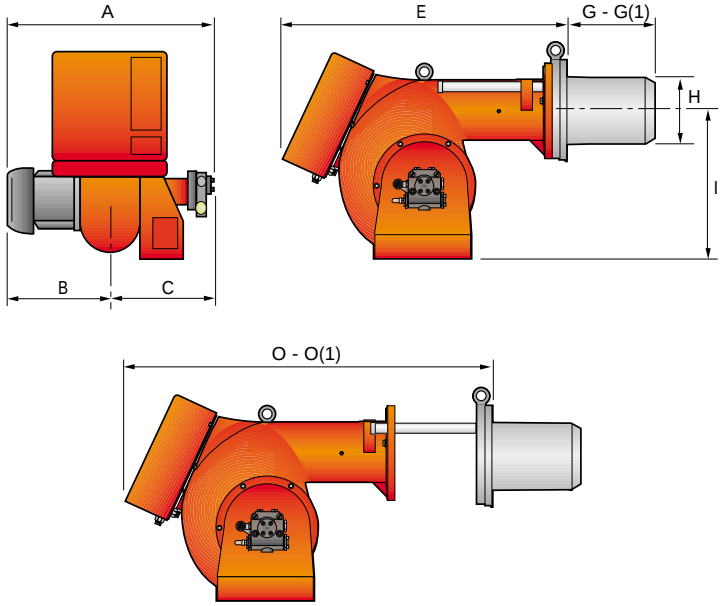




The emission data has been measured in the various models at maximum output, according to EN 267 standard.

OVERALL DIMENSIONS (mm)

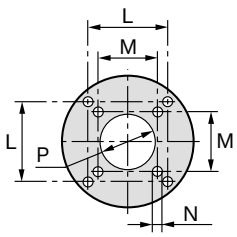
BURNERS



Model	A	B	C	E	G - G(1)	H	I	O - O(1)
P 140 T/N	796	396	400	890	323 - 433	222	467	1370 - 1370
P 200 T/N	796	396	400	890	352 - 462	250	467	1370 - 1370
P 300 T/N	858	447	411	1000	376 - 506	295	496	1515 - 1665
P 450 T/N	950	508	442	1090	435 - 565	336	525	1665 - 1820

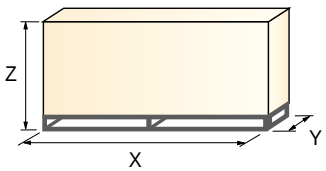
(1) Length with extended combustion head

BURNER - BOILER MOUNTING FLANGE



Model	L	M	N	P
P 140 T/N	260	230	M 14	225
P 200 T/N	260	-	M 16	255
P 300 T/N	260	-	M 18	300
P 450 T/N	310	-	M 20	350

PACKAGING



Model	X	Y	Z	kg
P 140 T/N	1500	930	900	180
P 200 T/N	1500	930	900	190
P 300 T/N	1780	1085	990	260
P 450 T/N	1780	1085	990	350

INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied with the burner.

BURNER SETTING

- All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- Adjust the combustion head.
- Refit the burner casing to the slide bars.
- Install the nozzle, choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).
- On start up, check:
  - Pressure pump and valve unit regulator (to max. and min.)
  - Combustion quality, in terms of unburned substances and excess air.

BURNER ACCESSORIES

Nozzles

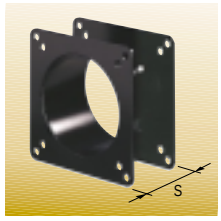
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

Nozzles type F80 - PLP 60°		
Burner	**Rated delivery (kg/h) (*)**	**Nozzle code**
P 140 T/N	20,8	**3041162**
P 140 T/N	23,8	**3041172**
P 140 T/N	26,8	**3041182**
P 140 T/N - P 200 T/N	29,8	**3041192**
P 140 T/N - P 200 T/N	32,7	**3041202**
P 140 T/N - P 200 T/N	35,7	**3041212**
P 140 T/N - P 200 T/N	38,7	**3041222**
P 140 T/N - P 200 T/N	41,7	**3041232**
P 140 T/N - P 200 T/N	44,6	**3041242**
P 200 T/N - P 300 T/N	50,6	**3041262**
P 200 T/N - P 300 T/N	56,5	**3041282**
P 200 T/N - P 300 T/N - P 450 T/N	62,5	**3041302**
P 300 T/N - P 450 T/N	71,4	**3041322**
P 300 T/N - P 450 T/N	80,3	**3041352**
P 300 T/N - P 450 T/N	92,2	**3041372**
P 450 T/N	104,1	**3041402**
P 450 T/N	116,1	**3041432**
P 450 T/N	128	**3041452**
P 450 T/N	142,8	**3041472**

(*) Nozzle rated delivery is referred to atomised pressure

Spacer kit

If burner head penetration in the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.



Spacers kit		
Burner	**Spacer thickness S (mm)**	**Kit code**
P 140 T/N - P 200 T/N	110	**3000722**
P 300 T/N	110	**3000723**
P 450 T/N	130	**3000751**

Sound proofing box

If noise emissions need reducing, sound proofing hoods are available, as given in the following table.

Sound proofing box		
Burner	**Box type**	**Box code**
P 140 T/N - P 200 T/N	C5	**3000780**
P 300 T/N - P 450 T/N	C6	**3000781**

Selfcleaning filter

For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 65°E viscosity at 50°C.

Type	**Filtering degree (µm)**	**Filter code**
Ø=1”1/2 (65°E at 50°C)	300	**3010022**

Heaters and thermostats	
Type	**Heater/thermostat code**
Thermostatic heater with LED	**3010060**
Heater	**3010061**
Thermostat (two-stage / regulable)	**3010062**

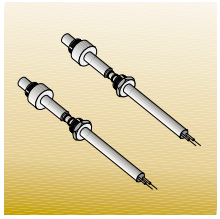
Degasing unit

It allows to recover heat in excess by discharge of the gas from the return circuit.

Degasing unit		
Burner	**Filter**	**Degaser code**
P 140 T/N - P 200 T/N	Without	**3000748**
P 300 T/N - P 450 T/N	Without	**3010012**

Heavy oil kit

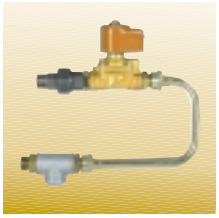
Equipped with electrcal heaters, it permits the employment of PRESS T/N burners with fuel oil of max. viscosity 65°E at 50°C.



Heavy oil kit	
Burner	**Kit code**
P 140 T/N - P 200 T/N - P 300 T/N - P 450 T/N	**3000721**

Heavy oil precirculation

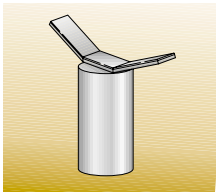
This kit, used with oil with high viscosity, in maintains fuel circulation in the ol circuit for avoiding system stop at start up.



Heavy oil precirculation	
Burner	**Code**
P 140 T/N - P 200 T/N	**3000749**
P 300 T/N - P 450 T/N	**3000750**

Burner support

For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.



Burner support	
Burner	**Support code**
P 300 T/N - P 450 T/N	**3000731**

Interface adapter kit

To connect the flame control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.

Interface adapter	
Burner	**Kit code**
P 140 T/N - P 200 T/N - P 300 T/N - P 450 T/N	**in progress**

SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS P/N series. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES

Series : PRESS

Size

Operation :
- N Two stage
- T/N Three stage
- P/N Modulating

Emission : ... Class 1 EN267

Head :
- TC Standard head
- TL Extended head

Flame control system :
- FS1 Standard (1 stop every 24 h)
- FS2 Continuous working (1 stop every 72 h)

Electrical supply to the system :
- 1/230/50 1 / 230V / 50Hz
- 3/230/50 3 / 230V / 50 Hz
- 3/400/50 3N / 400V / 50Hz
- 3/230-400/50 3/ 230V / 50 Hz - 3N / 400V / 50Hz
- 3/220-380/60 3/ 220V / 60 Hz - 3N / 380V / 60Hz

Auxiliary voltage :
- 230/50 230V / 50Hz
- 220/60 220V / 60Hz

PRESS	140	T/N		TC	FS1	3/230-400/50	230/50
BASIC DESIGNATION							
EXTENDED DESIGNATION							

AVAILABLE BURNER MODELS

P 140 T/N	TC	3/230-400/50	230/50
P 140 T/N	TL	3/230-400/50	230/50
P 140 T/N	TC	3/220-380/60	220/60
P 140 T/N	TL	3/220-380/60	220/60
P 200 T/N	TC	3/230-400/50	230/50
P 200 T/N	TL	3/230-400/50	230/50
P 200 T/N	TC	3/220-380/60	220/60
P 200 T/N	TL	3/220-380/60	220/60
P 300 T/N	TC	3/230-400/50	230/50
P 300 T/N	TL	3/230-400/50	230/50

P 300 T/N	TC	3/230/50	230/50
P 300 T/N	TL	3/230/50	230/50
P 300 T/N	TC	3/400/50	230/50
P 300 T/N	TL	3/400/50	230/50
P 450 T/N	TC	3/230/50	230/50
P 450 T/N	TL	3/230/50	230/50
P 450 T/N	TC	3/400/50	230/50
P 450 T/N	TL	3/400/50	230/50

Other models are available on request.

PRODUCT SPECIFICATION

Burner:
Monoblock forced draught heavy oil burner, three stage operation, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air dampers for air setting controlled by a servomotor
- Starting motor at 2850rpm
- Combustion head, fitted with:
    - stainless steel end cone, resistant to corrosion and high temperatures
    - ignition electrodes
    - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
    - filter
    - pressure regulator
    - connections for installing a pressure gauge and vacuometer
    - internal by-pass for single pipe installation
- Valve unit with a oil safety shut-off valve fitted in series with three valves controlling three-stage on the output circuit
- Oil preheater
- Servomotor for air damper regulation
- Photocell for flame detection
- Flame control panel
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 40 electric protection level.

Conforming to:
- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- EN 267 (liquid fuel burners).

Standard equipment:
- 2 flexible hoses for pipe connection
- 2 nipples for flexible hoses
- 1 thermal insulation screen
- 4 screws for fixing the burner flange to the boiler
- 3 nozzles
- 2 extensions for bars (for long head version of P 300 T/N and P 450 T/N)
- 5 wiring looms for fittings for electrical connections (7 for P 450 T/N version)
- 1 star delta starter (only for P 450 T/N version)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:
- Nozzles
- Head lenght reduction kit (spacer)
- Sound-proofing box
- Burner support
- Gas separator bottle
- Selfcleaning filter
- Heavy oil kit
- Heavy oil precirculation
- Interface adapter kit.

Lineagrafica

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