

INDUSTRIAL OIL, GAS AND DUAL FUEL BURNERS

► TI SERIES

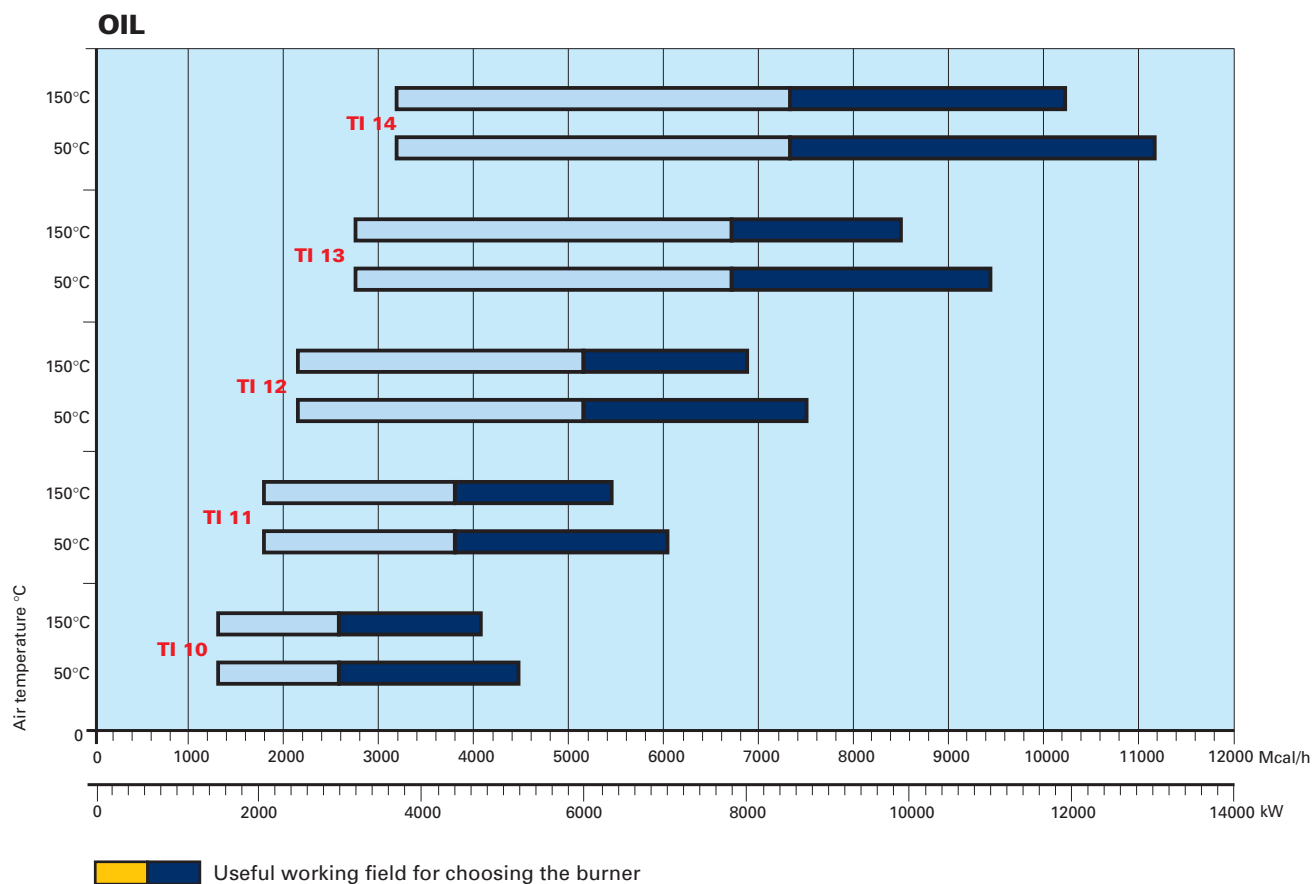
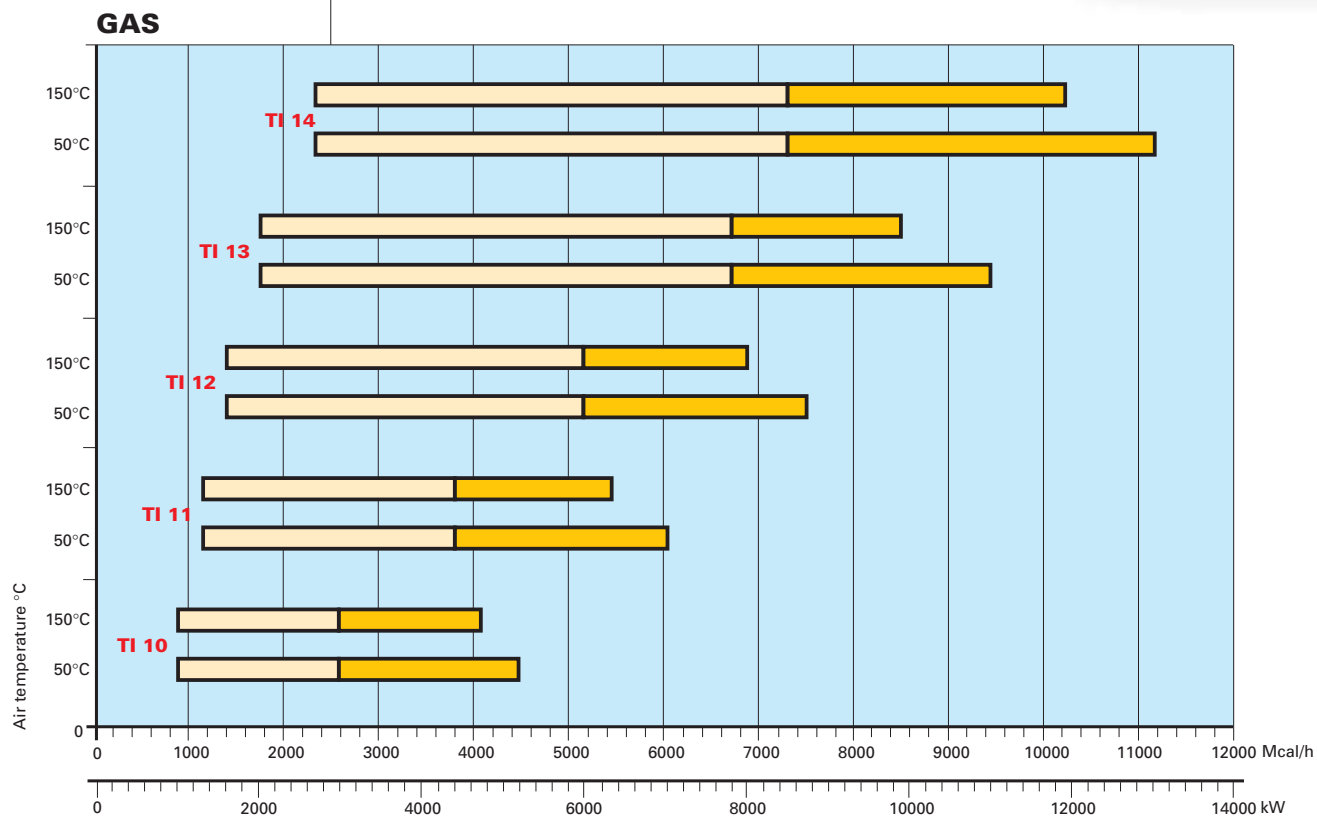
► TI 10	930/3000 ÷ 5200 kW
► TI 11	1165/4200 ÷ 7000 kW
► TI 12	2325/6000 ÷ 8720 kW
► TI 13	2600/7800 ÷ 11000 kW
► TI 14	6000/8500 ÷ 13000 kW



The industrial burners TI series are designed for big civil installations and industrial processes with a remarkable thermal demand. These series allows to realise a modular and flexible combustion system adding a preparation fuel unit (regulation pressure group set, preheating/pumping oil station), a gas train, a control panel and a fan. It can also be used a preheated air as in the oil diathermic generators and other heat recovery systems. The modulating regulation, with a variable geometry head combustion, always allows to reach a wide modulation ratio and optimal fluid-dynamics conditions for a good combustion.

TECHNICAL DATA

Model			▼ TI 10	▼ TI 11	▼ TI 12	▼ TI 13	▼ TI 14	
Burner operation mode			modulating					
Modulation ratio at max output		natural gas	1 : 6	1 : 6	1 : 6	1 : 6	1 : 5	
		LPG	1 : 5	1 : 5	1 : 5	1 : 5	1 : 4	
		light oil	1 : 4	1 : 4	1 : 4	1 : 4	1 : 3,5	
		heavy oil	1 : 3	1 : 3	1 : 3	1 : 3	1 : 3	
Servo-motor		type	SQM10					
	run time	s	42					
Heat output	natural gas	kW	870/3000 ÷5200	1160/4200 ÷7000	1450/6000 ÷8720	1830/7800 ÷11000	2400/8500 ÷13000	
		Mcal/h	748/2580 ÷4472	998/3612 ÷6020	1247/5160 ÷7482	1574/6708 ÷9460	2064/7310 ÷11180	
	LPG	kW	1040/3000 ÷5200	1400/4200 ÷7000	1740/6000 ÷5700	2200/7800 ÷11000	3000/8500 ÷13000	
		Mcal/h	894/2580 ÷4472	1204/3612 ÷6020	1496/5160 ÷7482	1892/6708 ÷9460	2580/7310 ÷11180	
	light oil	kW	1300/3000 ÷5200	1750/4200 ÷7000	2170/6000 ÷8700	2750/7800 ÷11000	3400/8500 ÷13000	
		Mcal/h	1118/2580 ÷4472	1505/3612 ÷6020	1866/5160 ÷7482	2365/6708 ÷9460	2924/7310 ÷11180	
	heavy oil	kW	1700/3000 ÷5200	2330/4200 ÷7000	2900/6000 ÷8700	3660/7800 ÷11000	4000/8500 ÷13000	
		Mcal/h	1462/2580 ÷4472	2004/3612 ÷6020	2494/5160 ÷7482	3148/6708 ÷9460	3440/7310 ÷11180	
Working temperature		°C min./max.	-15/60					
Fuel/Air Data	Light oil	net calorific value	kWh/kg 11,8					
			Kcal/kg 10200					
		viscosity at 20 °C	mm ² /s (cSt) 4 ÷ 6					
		delivery	kg/h	111/253 ÷438	148/354 ÷590	183/506 ÷734	232/658 ÷927	287/717 ÷1102
		fuel temperature	max. °C	50				
	Heavy oil	net calorific value	kWh/kg 11,1 ÷11,3					
			Kcal/kg 9545 ÷9720					
		viscosity at 20 °C	mm ² /s (cSt) 500					
		delivery	kg/h	152/268 ÷464	208/375 ÷625	259/536 ÷777	326/696 ÷982	357/759 ÷1164
		fuel temperature	max. °C	140				
	Atomised pressure		bar	25 ÷28				
	G20	net calorific value	kWh/Nm ³	10				
		density	kg/Nm ³	0,71				
		gas delivery	Nm ³ /h	87/300 ÷520	116/420 ÷700	145/600 ÷870	183/780 ÷1100	240/850 ÷1300
	G25	net calorific value	kWh/Nm ³	8,6				
		density	kg/Nm ³	0,78				
		gas delivery	Nm ³ /h	101/349 ÷605	135/488 ÷814	169/698 ÷1012	213/907 ÷1279	279/988 ÷1512
	LPG	net calorific value	kWh/Nm ³	25,8				
		density	kg/Nm ³	2,02				
		gas delivery	Nm ³ /h	40/116 ÷202	54/163 ÷271	67/233 ÷337	85/302 ÷426	116/329 ÷504
Fan		type	Centrifugal with reverse curve blades					
Air temperature		max. °C	150					
Electrical supply		Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)					
Control box		type	LFL 1.333 - LFL 1.335 (Intermittent working) - LGK 16 (Continuous working)					
Auxiliary electrical power		kW	0,63					
Total current		A	2,7 - 5,7					
Protection level		IP	54					
Ignition transformer		V1 - V2	230 V - 1x8 KV					
		I1 - I2	1,4A - 30 mA					
Operation			Intermittent (at least one stop every 24 h) - Continuous (at least one stop every 72 h)					
Sound pressure		dB(A)	–					
Sound power		W	–					
Emissions	Light oil	CO emission	mg/kWh < 110					
		Grade of smoke indicator	N° Bacharach < 1					
		NOx emission	mg/kWh < 250					
	Heavy oil	CO emission	mg/kWh Depending on the fuel amount					
		Grade of smoke indicator	N° Bacharach Depending on the fuel amount					
		NOx emission	mg/kWh Depending on the fuel amount					
	G20	CO emission	mg/kWh < 100					
		NOx emission	mg/kWh < 170					
Directive			89/336 - 73/23 - 98/37 - 90/396 CEE					





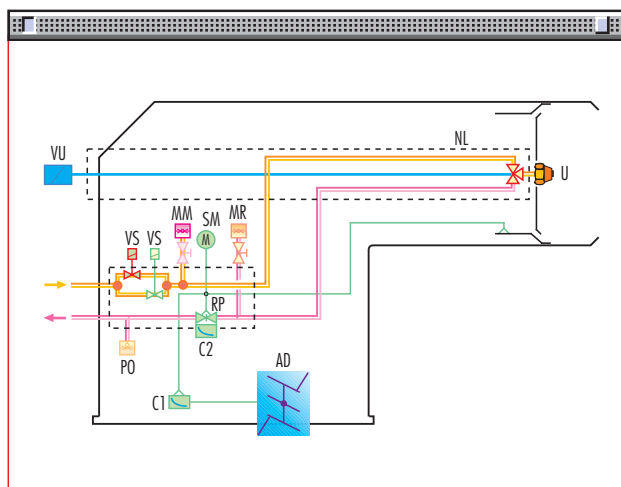
HYDRAULIC CIRCUIT

A variable profile cam connects the regulation of the fuel and the air guaranteeing an elevate combustion efficiency on all firing rates.



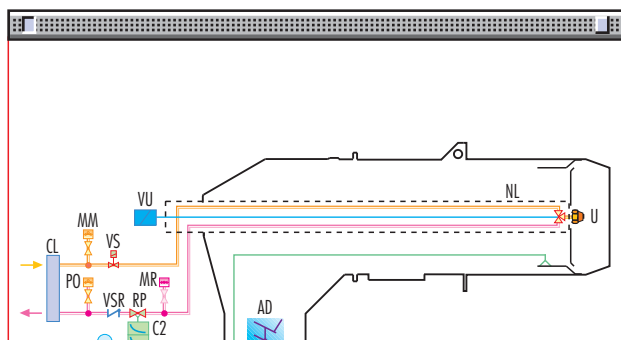
Example of oil unit T1 13

TI 10 - 11 - 12

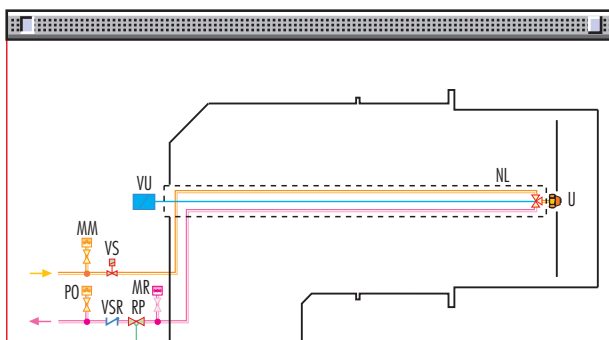


AD	Air damper
CL	Oil collector
C1	First adjusting cam
C2	Second adjusting cam
MM	Pressure gauge on the delivery circuit
MR	Pressure gauge on the return circuit
NL	Oil pipe
U	Nozzle
PO	Max. oil pressure switch on the return circuit
RP	Pressure regulator on the return circuit
SM	Servomotor
VS	Safety oil valve
VSR	Safety oil valve on the return circuit
VU	Nozzle safety valve

TI 13



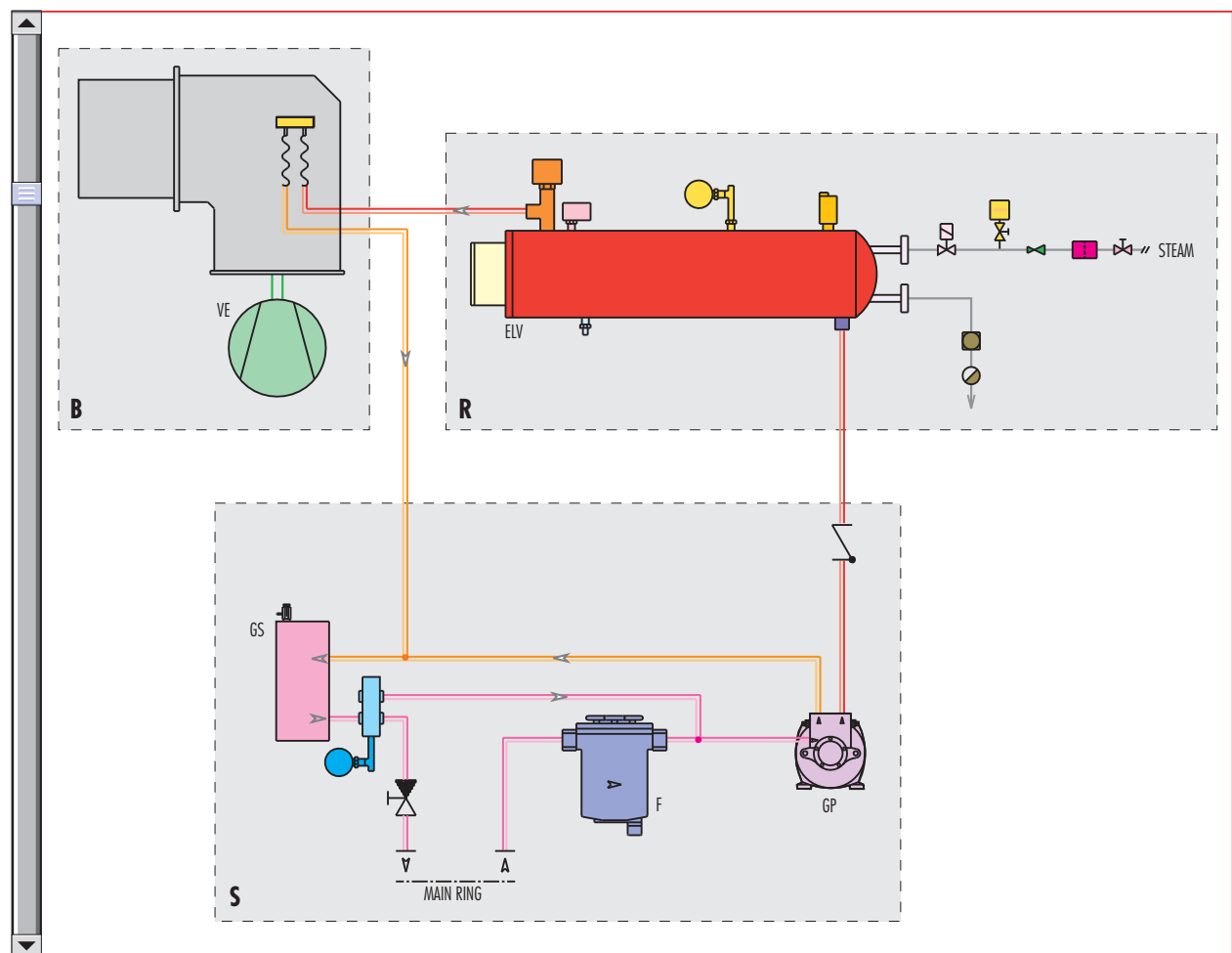
TI 14





▶

EXAMPLE OF COMPLETE SUPPLY OIL CIRCUIT

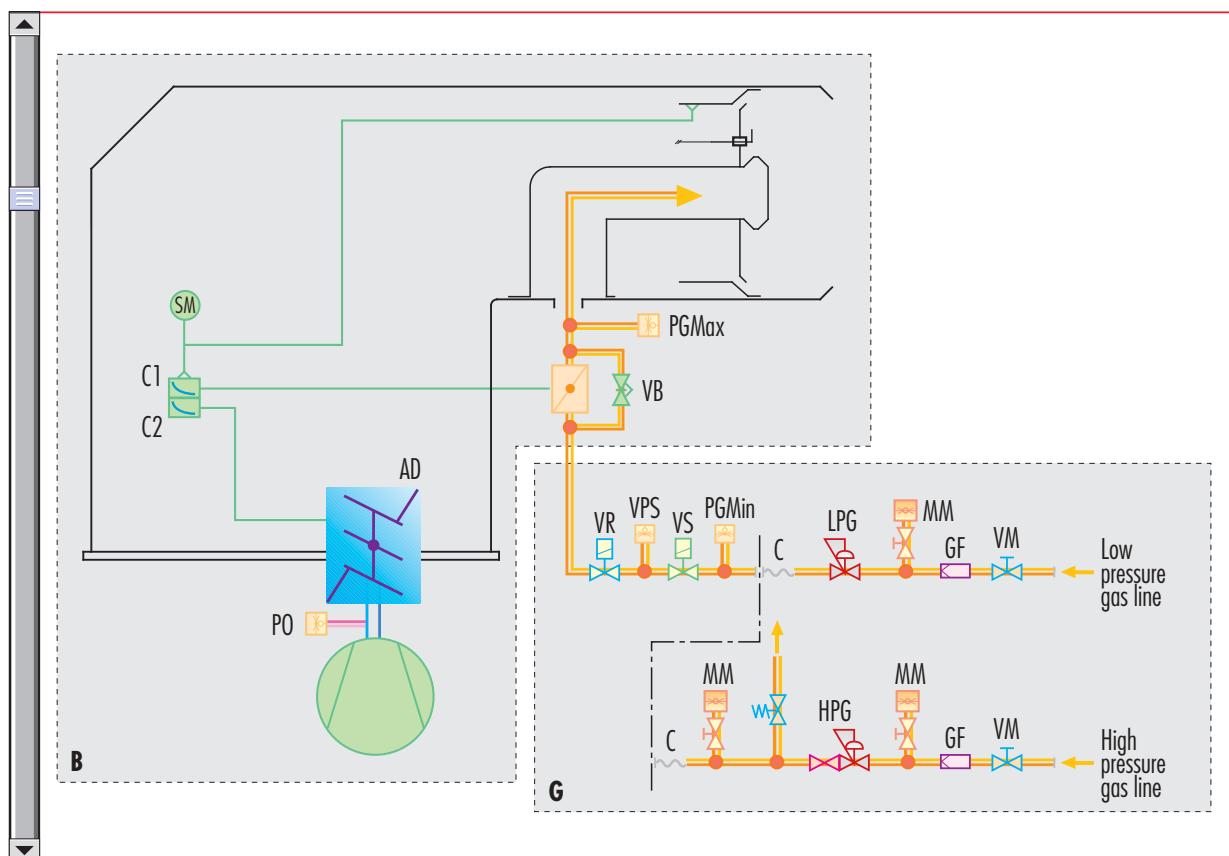


B	Burner and fan
VE	Fan
S	Pumping unit skid
R	Preheating group
ELV	Electrical/steam oil preheater
F	Selfcleaning filter
GP	Pump with pressure regulator
GS	Degasing tank



EXAMPLE OF COMPLETE SUPPLY GAS LINE

The TI burners series are fitted with a butterfly valve to regulate the fuel, controlled by a variable profile cam servomotor which guarantees, through the association of the air and fuel regulation, high thermal efficiency all over the firing rates.



B	Burner
G	Supply gas line
VE	Fan
PA	Minimum air pressure switch
AD	Air damper
C1	First adjusting cam
C2	Second adjusting cam
SM	Servomotor
PG max	Maximum gas pressure switch
RG	Butterfly valve
VB	By-pass valve
PO	Air pressure switch

VR	Gas train adjusting valve
VPS	Seal control
VS	Gas train safety valve
PG min	Minimum gas pressure switch
C	Anti-vibrant joint
LPG	Low pressure regulator
MM	Pressure gauge
GF	Filter
VM	Manual valve
SRV	Vent safety valve
HPG	High pressure regulator

COMBUSTION HEAD



Example of TI 13 combustion head.

Different lengths of the combustion head can be chosen for the TI series of burners. The choice depends on the thickness of the front panel and the type of boiler.

Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The TI burner series (except for TI 14 model), are provided with mobile head combustion adjustable on the basis of required output, through the same servomotor used for the air damper regulation. This system guarantees an optimal fuel/air mix all over the firing rates.



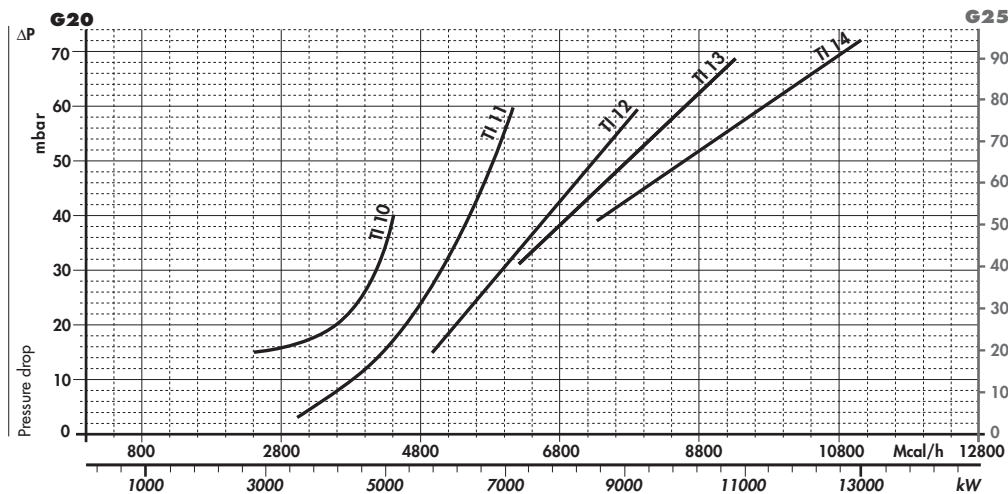
CHARACTERISTICS COMBUSTION HEAD CURVES

GAS PRESSURE LOSSES

The following diagrams indicate the gas side losses of the combustion head and the regulator butterfly valve.

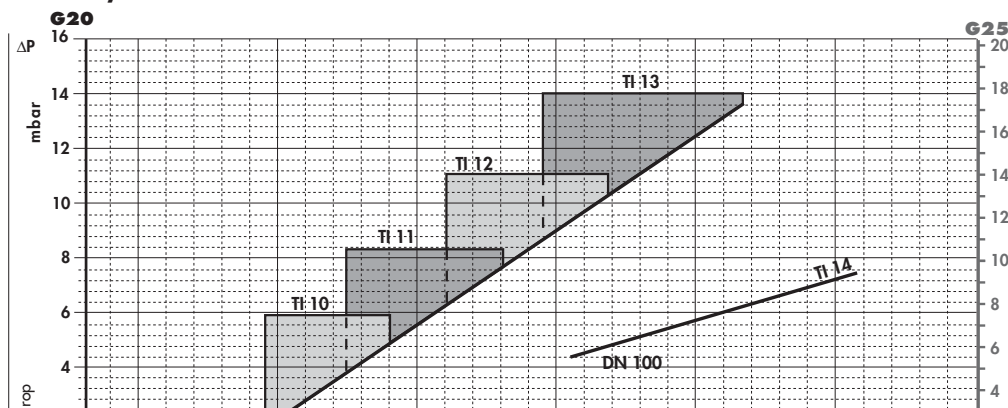
Adding to the value of these losses the combustion chamber pressure and total gas train loss, it is obtained the minimal input pressure necessary to the gas train.

Combustion head losses



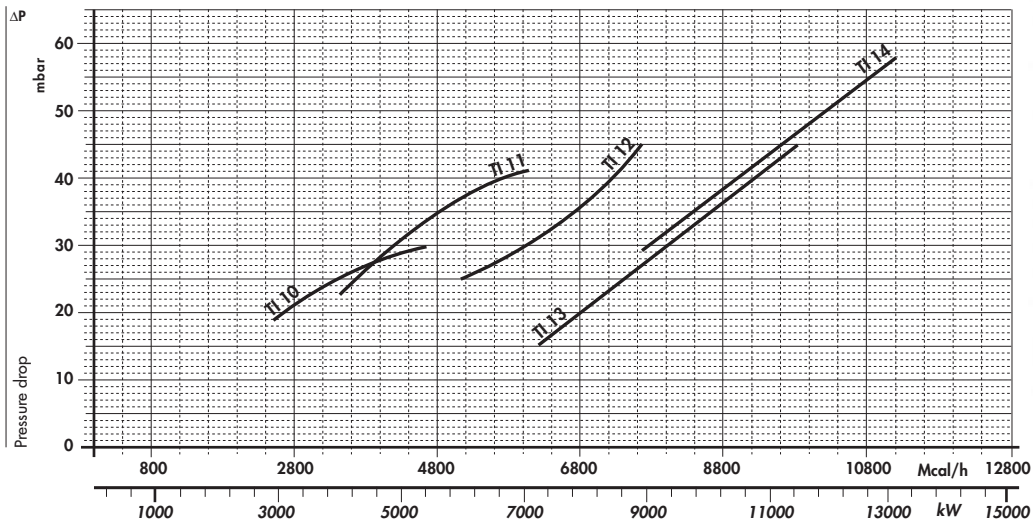
Reference conditions:
Temperature: 15°C
Pressure: 1013,5 mbar

Butterfly valve losses





AIR PRESSURE LOSSES (including air damper)



ADJUSTMENT



BURNER OPERATION MODE

The TI burner series can have "two stage progressive" or "modulating" operation.

"Two stage progressive" operation

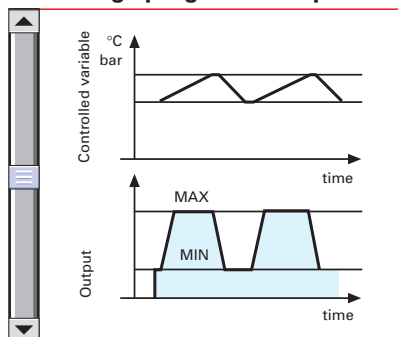


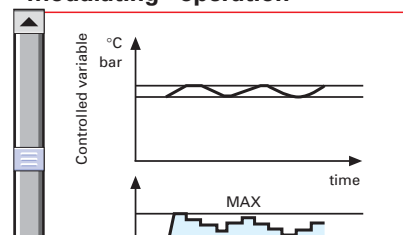
Figure A

On "two stage progressive" operation, the burner gradually adapts the output to the requested level, by varying between two pre-set levels (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

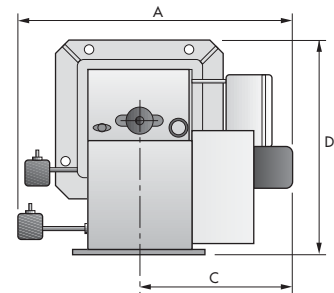
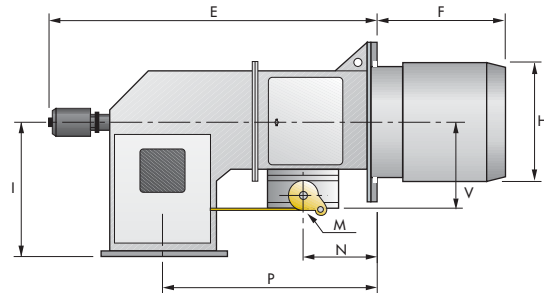
"Modulating" operation



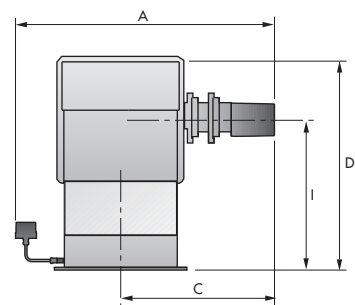
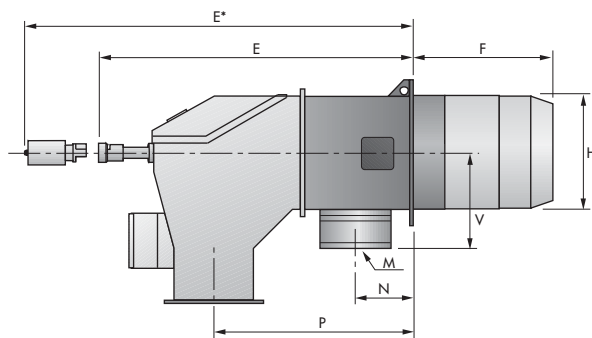
OVERALL DIMENSIONS (mm)

BURNER

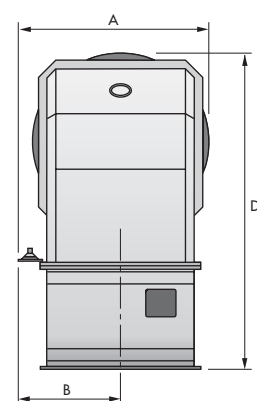
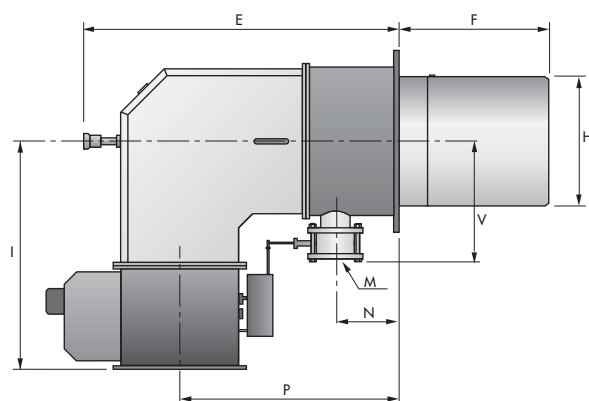
TI 10-11-12



TI 13



TI 14



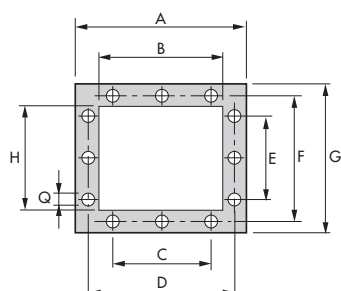
Model	A	B	C	D	E - E*	F	H	I	M	N	P	V
► TI 10	770	-	478	590	1080	470	336	390	DN80	208	604	257
► TI 11	770	-	478	590	1080	470	336	390	DN80	208	604	257
► TI 12	770	-	478	590	1080	470	386	390	DN80	208	604	257
►					1140 - 1406							



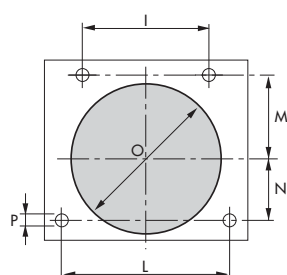
► MOUNTING FLANGES

TI 10-11-12

AIR CHANNEL FLANGE

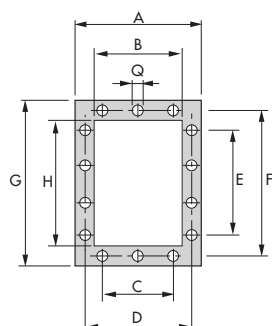


PERFORATION BOILERPLATE

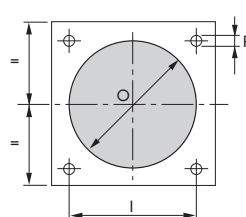


TI 13

AIR CHANNEL FLANGE

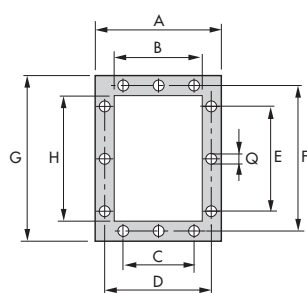


PERFORATION BOILERPLATE

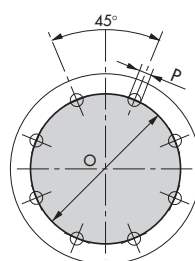


TI 14

AIR CHANNEL FLANGE

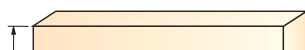


PERFORATION BOILERPLATE



Model	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q
► TI 10	368	300	240	340	220	320	348	280	240	350	175	120	350	M16	9
► TI 11	368	300	240	340	220	320	348	280	240	350	175	120	350	M16	9
► TI 12	368	300	240	340	220	320	348	280	260	390	195	130	400	M16	9
► TI 13	360	280	250	332	375	448	480	402	460	-	-	-	430	M18	11
► TI 14	542	452	410	510	390	620	652	562	-	-	-	-	645	M14	11

► PACKAGING



Model	X	Y	Z	kg
►				



BURNER ACCESSORIES



High pressure flexible tubes

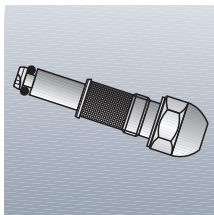
In order to facilitate the connection of the burner to the fuel line adduction there are flexible tubes available according to the following table.



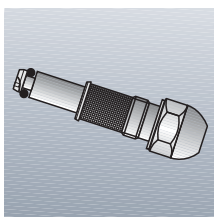
High pressure flexible tube				
Burner	Tube diameter	Tube length (mm)	Maximum working pressure (bar)	Tube code
TI 10	1/2"	1500	40	3094227
TI 11	1/2"	1500	40	3094227
TI 12	1/2"	1500	40	3094227
TI 13	3/4"	2000	40	3094226
TI 14	3/4"	2000	40	3094226

Nozzles

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



	Nozzles type "B3-30-AA" 30°		Nozzles type "B3-45-AA" 45°	
Burner	Rated delivery (kg/h)	Nozzle code	Rated delivery (kg/h)	Nozzle code
TI 10 - TI 11 TI12	150	3009625	150	3009626
	175	3009628	175	3009629
	200	3009631	200	3009632
	225	3009634	225	3009635
	250	3009637	250	3009638
	275	3009640	275	3009641
	300	3009643	300	3009644
	325	3009646	325	3009647
	350	3009649	350	3009650
	375	3009652	375	3009653
	400	3009655	400	3009656
	425	3009658	425	3009659
	450	3009661	450	3009662
	475	3009664	475	3009665
	500	3009667	500	3009668
	525	3009670	525	3009671
	550	3009673	550	3009674
	575	3009676	575	3009677
	600	3009679	600	3009680
	650	3009682	650	3009683
	700	3009685	700	3009686
	750	3009688	750	3009689



Nozzles type "B5-45-AA" 45°		
Burner	Rated delivery (kg/h)	Nozzle code
TI 10 - TI 11 TI 12 - TI 13	250	3009802
	275	3009803
	300	3009804
	325	3009805
	350	3009806
	375	3009807
	400	3009808
	425	3009809
	450	3009810
	475	3009811
	500	3009812
	525	3009813
	550	3009814
	575	3009815
	600	3009816
	650	3009817
	700	3009818
	750	3009819
	800	3009820
	850	3009821
	900	3009822
	950	3009823

Nozzles type "M14/3" 45°		
Burner	Rated delivery (kg/h)	Nozzle code
TI 14	600	3009900
	650	3009901
	700	3009902
	750	3009903
	800	3009904
	850	3009905
	900	3009906
	950	3009907
	1000	3009908
	1050	3009909
	1100	3009910
	1150	3009911
	1200	3009912



High pressure oil filter

In order to protect the hydraulic circuit of the burner from the possible presence of particles in the combustion line, these following filters are available.



High pressure oil filter			
Burner	Filter diameter	Filtering degree (µm)	Filter Code
TI 10	1/2"	500	In progress
TI 11	1/2"	500	In progress
TI 12	1/2"	500	In progress
TI 13	3/4"	500	In progress
TI 14	3/4"	500	In progress

Circulation group (by-pass valve)

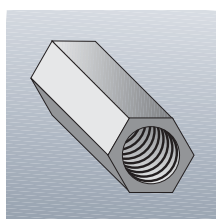
If the burner is far away from the pumping group it is possible to install a circulation group that allows the circulates of the heated fuel during the stand-by phase.



Circulation Group (by-pass valve)		
Burner	Group diameter	Group code
TI 10	1/2"	In progress
TI 11	1/2"	In progress
TI 12	1/2"	In progress
TI 13	3/4"	In progress
TI 14	3/4"	In progress

Check valve

In order to avoid fuel return, that could damage the hydraulic circuit, "check valve" are available.



Check valve		
Burner	Valve diameter	Valve code
TI 10	1/2"	In progress
TI 11	1/2"	In progress
TI 12	1/2"	In progress
TI 13	3/4"	In progress
TI 14	3/4"	In progress

Potentiometer kit

Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor. The KITS available for the various burners are listed below.



Potentiometer kit



SPECIFICATION

A specific index guides your choice of burner from the various models available in the TI series. Follows a clear and detailed specification description of the product.

DESIGNATION OF SERIES

Series : TI									
Size : 10 - 11 - 12 - 13 - 14									
Setting : P/ progressive (modulating, mechanic cam) E/ electronic cam									
Fuel : M Natural gas G Light oil N Heavy oil NA Heavy oil steam atomising P LPG NP Heavy oil/LPG NM Heavy oil/Natural gas NAM Heavy oil steam atomising/Natural gas GM Light oil/Natural gas GP Light oil/LPG NAP Heavy oil steam atomising/LPG									
Head : TC Standard head TL Extended head									
Air suction supply location : A-0 below A-90 right A-180 above A-270 left									
Flame control system : FS1 Standard (1 stop every 24 h) FS2 Continuous working (1 stop every 72 h)									
Auxiliary voltage : 230/50-60 230V/50-60Hz 110/50-60 110V/50-60Hz									
Air suction temperature : T50 Room temperature T150 Preheated at 150°C									
Installation : I Internal O External									
TI	13	P/	M	TC	A-0	FS1	230/50-60	T50	I
BASIC DESIGNATION				EXTENDED DESIGNATION					



AVAILABLE BURNER MODELS

TI 10	P/	M	TC	A0	FS1	230/50	T50		TI 12	P/	P	TC	A180	FS1	230/50	T50	
TI 10	P/	M	TC	A180	FS1	230/50	T50		TI 12	P/	NP	TC	A0	FS1	230/50	T50	
TI 10	P/	G	TC	A0	FS1	230/50	T50		TI 12	P/	NP	TC	A180	FS1	230/50	T50	
TI 10	P/	G	TC	A180	FS1	230/50	T50		TI 12	P/	NM	TC	A0	FS1	230/50	T50	
TI 10	P/	N	TC	A0	FS1	230/50	T50		TI 12	P/	NM	TC	A180	FS1	230/50	T50	
TI 10	P/	N	TC	A180	FS1	230/50	T50		TI 12	P/	GM	TC	A0	FS1	230/50	T50	
TI 10	P/	P	TC	A0	FS1	230/50	T50		TI 12	P/	GM	TC	A180	FS1	230/50	T50	
TI 10	P/	P	TC	A180	FS1	230/50	T50		TI 12	P/	GP	TC	A0	FS1	230/50	T50	
TI 10	P/	NP	TC	A0	FS1	230/50	T50		TI 12	P/	GP	TC	A180	FS1	230/50	T50	
TI 10	P/	NP	TC	A180	FS1	230/50	T50										
TI 10	P/	NM	TC	A0	FS1	230/50	T50		TI 13	P/	M	TC	A0	FS1	230/50	T50	
TI 10	P/	NM	TC	A180	FS1	230/50	T50		TI 13	P/	M	TC	A180	FS1	230/50	T50	
TI 10	P/	GM	TC	A0	FS1	230/50	T50		TI 13	P/	G	TC	A0	FS1	230/50	T50	
TI 10	P/	GM	TC	A180	FS1	230/50	T50		TI 13	P/	G	TC	A180	FS1	230/50	T50	
TI 10	P/	GP	TC	A0	FS1	230/50	T50		TI 13	P/	N	TC	A0	FS1	230/50	T50	
TI 10	P/	GP	TC	A180	FS1	230/50	T50		TI 13	P/	N	TC	A180	FS1	230/50	T50	
									TI 13	P/	NA	TC	A0	FS1	230/50	T50	
TI 11	P/	M	TC	A0	FS1	230/50	T50		TI 13	P/	NA	TC	A180	FS1	230/50	T50	
TI 11	P/	M	TC	A180	FS1	230/50	T50		TI 13	P/	P	TC	A0	FS1	230/50	T50	
TI 11	P/	G	TC	A0	FS1	230/50	T50		TI 13	P/	P	TC	A180	FS1	230/50	T50	
TI 11	P/	G	TC	A180	FS1	230/50	T50		TI 13	P/	NP	TC	A0	FS1	230/50	T50	
TI 11	P/	N	TC	A0	FS1	230/50	T50		TI 13	P/	NP	TC	A180	FS1	230/50	T50	
TI 11	P/	N	TC	A180	FS1	230/50	T50		TI 13	P/	NM	TC	A0	FS1	230/50	T50	
TI 11	P/	P	TC	A0	FS1	230/50	T50		TI 13	P/	NM	TC	A180	FS1	230/50	T50	
TI 11	P/	P	TC	A180	FS1	230/50	T50		TI 13	P/	NAM	TC	A0	FS1	230/50	T50	
TI 11	P/	NP	TC	A0	FS1	230/50	T50		TI 13	P/	NAM	TC	A180	FS1	230/50	T50	
TI 11	P/	NP	TC	A180	FS1	230/50	T50		TI 13	P/	GM	TC	A0	FS1	230/50	T50	
TI 11	P/	NM	TC	A0	FS1	230/50	T50		TI 13	P/	GM	TC	A180	FS1	230/50	T50	
TI 11	P/	NM	TC	A180	FS1	230/50	T50		TI 13	P/	GP	TC	A0	FS1	230/50	T50	
TI 11	P/	GM	TC	A0	FS1	230/50	T50		TI 13	P/	GP	TC	A180	FS1	230/50	T50	
TI 11	P/	GM	TC	A180	FS1	230/50	T50		TI 13	P/	NAP	TC	A0	FS1	230/50	T50	
TI 11	P/	GP	TC	A0	FS1	230/50	T50		TI 13	P/	NAP	TC	A180	FS1	230/50	T50	
TI 11	P/	GP	TC	A180	FS1	230/50	T50										
									TI 14	P/	M	TC	A0	FS1	230/50	T50	
TI 12	P/	M	TC	A0	FS1	230/50	T50		TI 14	P/	G	TC	A0	FS1	230/50	T50	
TI 12	P/	M	TC	A180	FS1	230/50	T50		TI 14	P/	N	TC	A0	FS1	230/50	T50	
TI 12	P/	G	TC	A0	FS1	230/50	T50		TI 14	P/	P	TC	A0	FS1	230/50	T50	
TI 12	P/	G	TC	A180	FS1	230/50	T50		TI 14	P/	NP	TC	A0	FS1	230/50	T50	
TI 12	P/	N	TC	A0	FS1	230/50	T50		TI 14	P/	NM	TC	A0	FS1	230/50	T50	
TI 12	P/	N	TC	A180	FS1	230/50	T50		TI 14	P/	GM	TC	A0	FS1	230/50	T50	
TI 12	P/	P	TC	A0	FS1	230/50	T50		TI 14	P/	GP	TC	A0	FS1	230/50	T50	

Other versions are available on request.



▶ **PRODUCT SPECIFICATION**

OIL BURNER

Combustion head:

Forced draught oil burner with two stage progressive or modulating operation, with separate supplies, fully automatic, made up of:

- sheet-steel airlock painted with a cover for access to the internal elements
- air damper for air setting with variable profile cam controlled by a servomotor
- mobile combustion head (except for TI 14 model), that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - pilot burner (TI13 - TI14 models) with gas train
 - flame stability disk
- photocell for flame detection
- minimum air pressure switch
- nozzle pipe
- safety nozzle valve
- valves group with safety oil valves
- automatic regulator of oil capacity controlled by a servomotor
- maximum oil pressure switch on the return circuit
- pressure gauge on the delivery circuit
- pressure gauge on the return circuit
- flame inspection window
- shunt box with ignition transformer
- IP 54 electric protection level.

Conforming to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- screws for fixing the burner flange to the boiler
- thermal screen
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- flexible tubes
- return nozzles
- high pressure oil filter
- circulation group (by-pass valve)
- check valve
- potentiometer kit for the servomotor.



GAS BURNER

Combustion Head:

Forced draught gas burner with two stage progressive or modulating operation, with separate supplies, fully automatic, made up of:

- sheet-steel airlock painted with a cover for access to the internal elements
- air damper for air setting with variable profile cam controlled by a servomotor
- mobile combustion head (except for TI 14 model), that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - pilot burner (TI13 - TI14 models) with gas train
 - ionisation probe (TI10 - TI11 - TI12 models), uv photocell (TI13 - TI14 models)
 - flame stability disk
- minimum air pressure switch
- maximum gas pressure switch
- butterfly valve for the dosage of the fuel with a variable profile cam controlled by a servomotor
- flame inspection window
- gas pressure test point to the combustion head
- shunt box with ignition transformer
- IP 54 electric protection level.

Conforming to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 90/396/EEC directive (gas)
- EN 676 (gas burners).

Standard equipment:

- screws for fixing the burner flange to the boiler
- thermal screen
- screws for fixing the gas train flange to the burner
- gas train gasket
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- potentiometer kit for the servomotor.



DUAL FUEL BURNER (OIL/GAS)

Combustion Head:

Forced draught dual fuel burner with two stage progressive or modulating operation, with separate supplies, fully automatic, made up of:

- sheet-steel airlock painted with a cover for access to the internal elements
- air damper for air setting with variable profile cam controlled by a servomotor
- mobile combustion head (except for TI 14 model), that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - pilot burner (TI13 - TI14 models) with gas train
 - flame stability disk
- photocell for flame detection
- nozzle pipe
- safety nozzle valve
- valves group with safety oil valves
- automatic regulator of oil capacity controlled by a servomotor
- maximum oil pressure switch on the return circuit
- pressure gauge on the delivery circuit
- pressure gauge on the return circuit
- minimum air pressure switch
- maximum gas pressure switch
- butterfly valve for the dosage of the fuel with a variable profile cam controlled by a servomotor
- flame inspection window
- gas pressure test point to the combustion head
- shunt box with ignition transformer
- IP 54 electric protection level.

Conforming to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 98/37/EEC directive (machinery)
- 90/396/ECC directive (gas)
- EN 267 (liquid fuel burners)
- EN 676 (gas burners)

Standard equipment:

- screws for fixing the burner flange to the boiler
- thermal screen
- screws for fixing the gas train flange to the burner
- gas train gasket
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- flexible tubes
- return nozzles
- high pressure oil filter
- circulation group (by-pass valve)
- check valve
- potentiometer kit for the servomotor.

