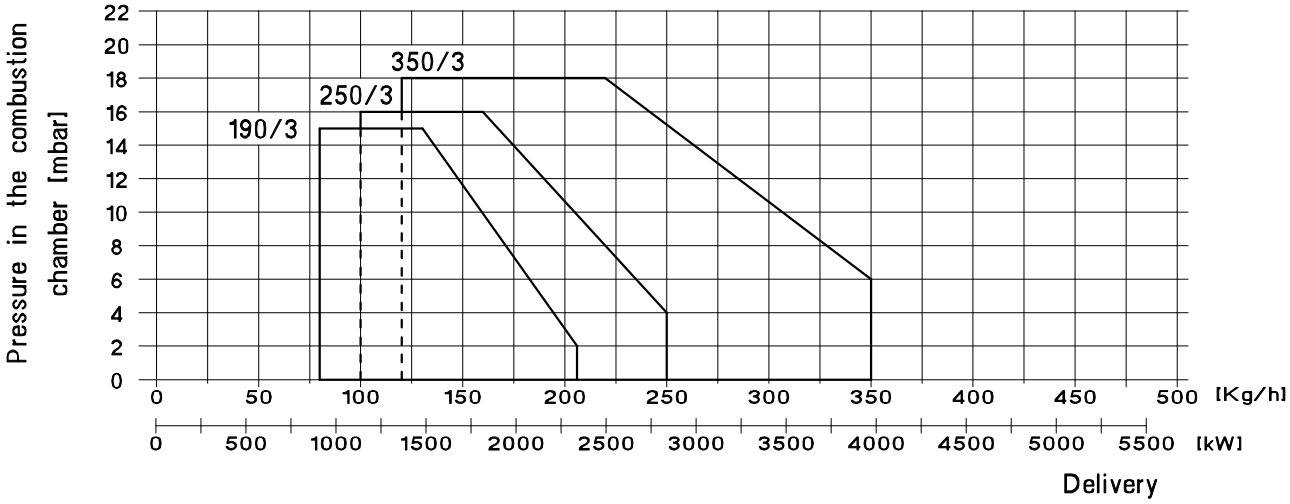
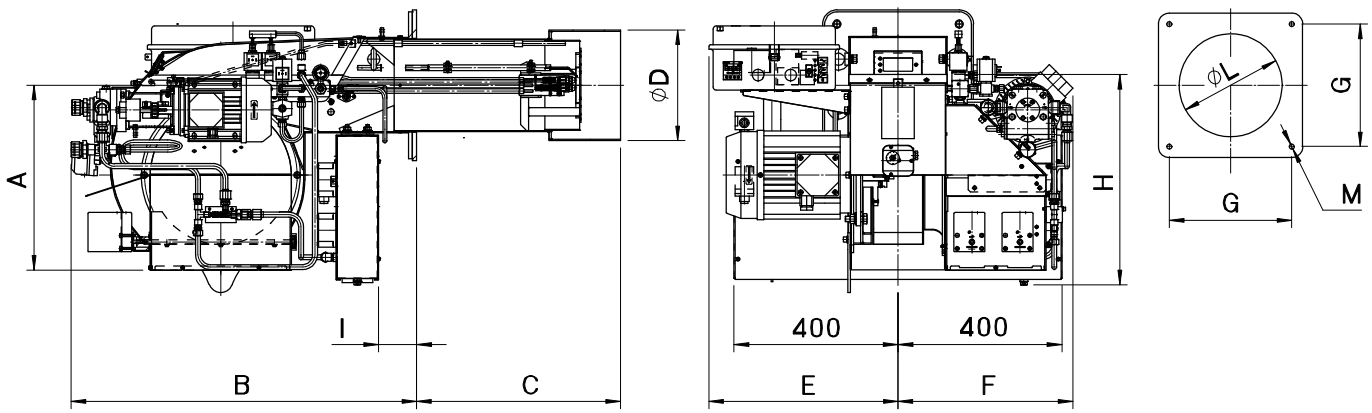
TECHNICAL DATA

MODEL		FNDP 190/3	FNDP 250/3	FNDP 350/3
Delivery	[Kg/h]	80-206	100-250	120-350
Thermal power	[Mcal/h]	784-2020	980-2450	1180-3430
Thermal power	[kW]	911-2343	1140-2840	1370-3980
Fan motor power	[kW]	5.6	7.5	9.5
Pump motor power	[kW]	0.75	0.75	0.75
Resistance	[kW]	15	20	24
Electrical supply		Three-phase 230/400V(-15%÷10%)-50Hz		
Fuel		Heavy oil 20°E to 50°C		
Safety time		≤ 5secs. at starting; ≤ 1sec. into operation		

OPERATING RANGE DIAGRAM: Delivery-Pressure in the combustion chamber

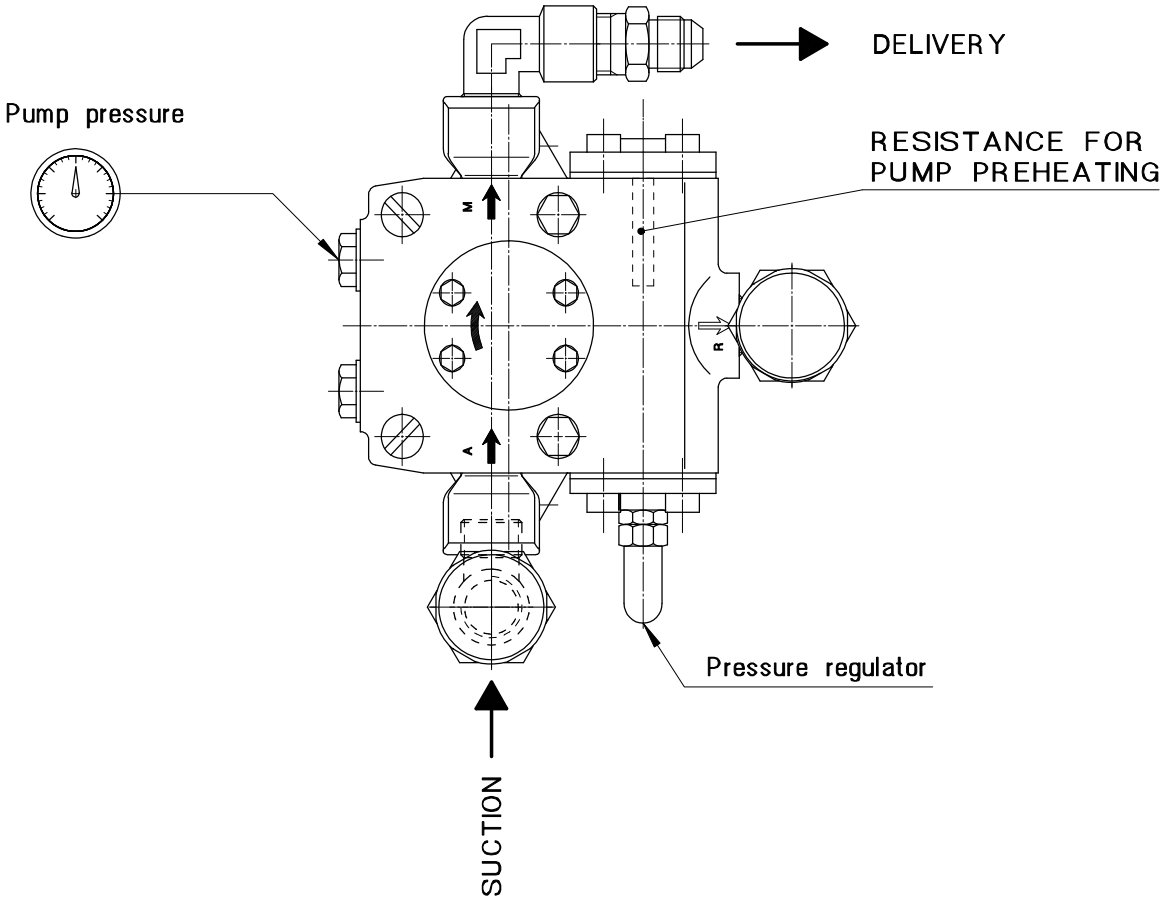


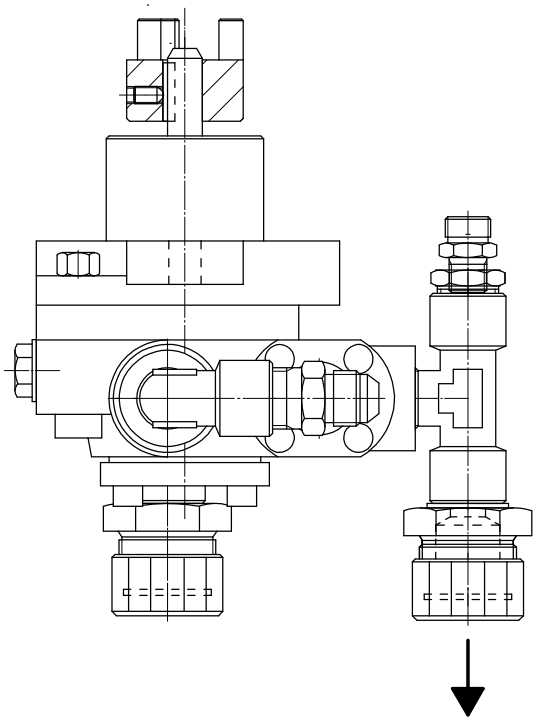
OVERALL DIMENSIONS [mm.]



MODEL	A	B	C	ØD	E	F	G	H	I	ØL	M
FNDP 190/3	453	850	495	234	464	430	300	490	93	245	M14
FNDP 250/3	453	850	500	271	464	430	300	490	93	280	M14
FNDP 350/3	453	942	520	292	575	488	390	494	75	300	M14

CALIBRATION OF PUMP





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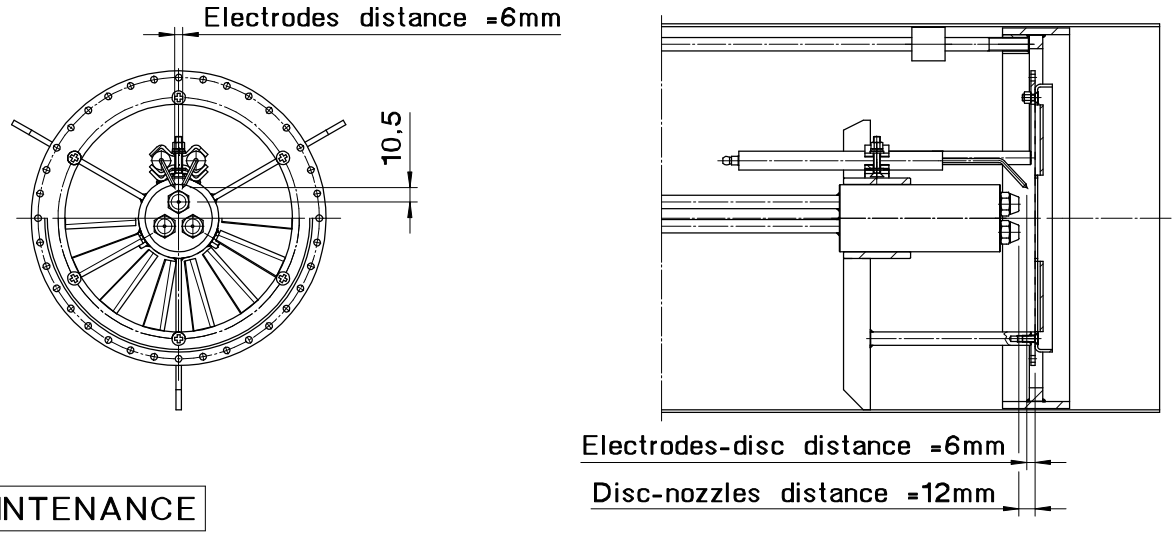
ELECTRODES CORRECT POSITIONING



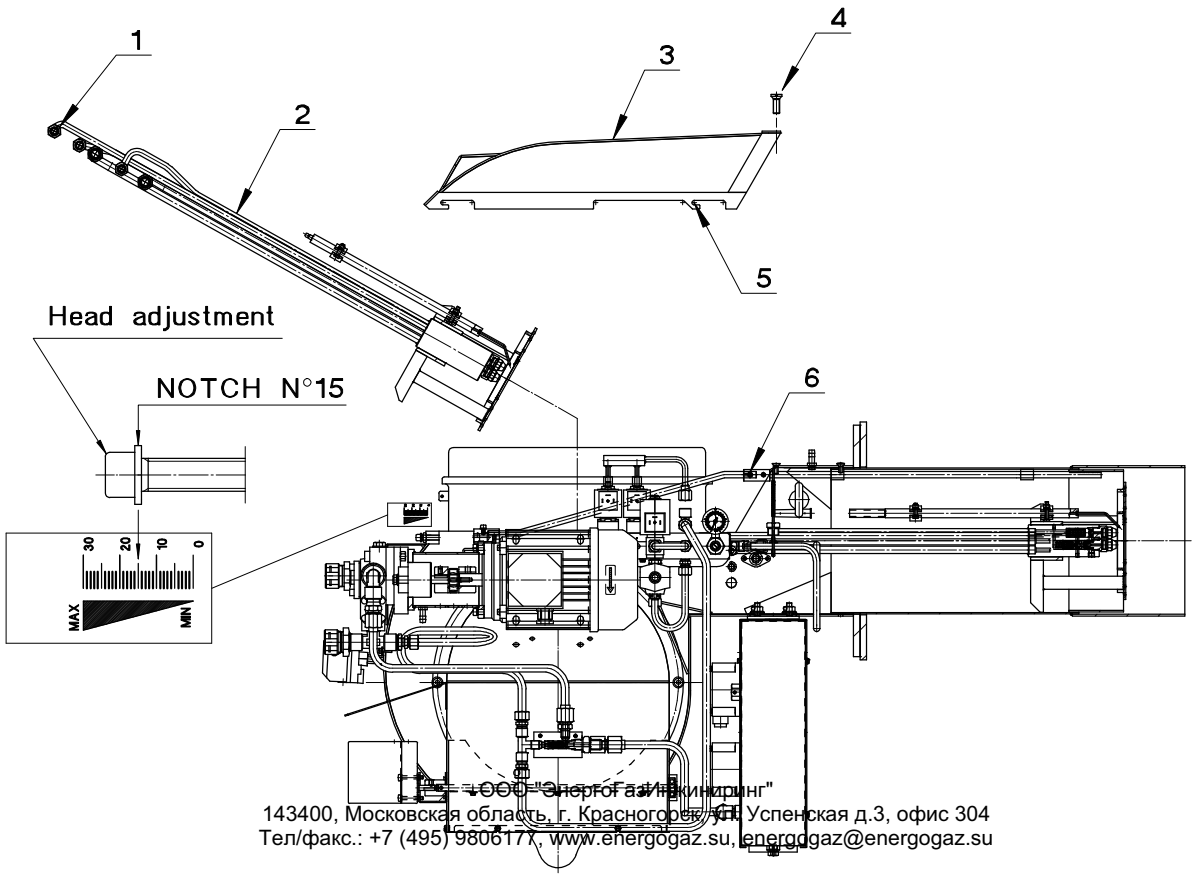
MAINTENANCE

Periodically (every 500-1000 operating hours approx.) it is necessary to execute:

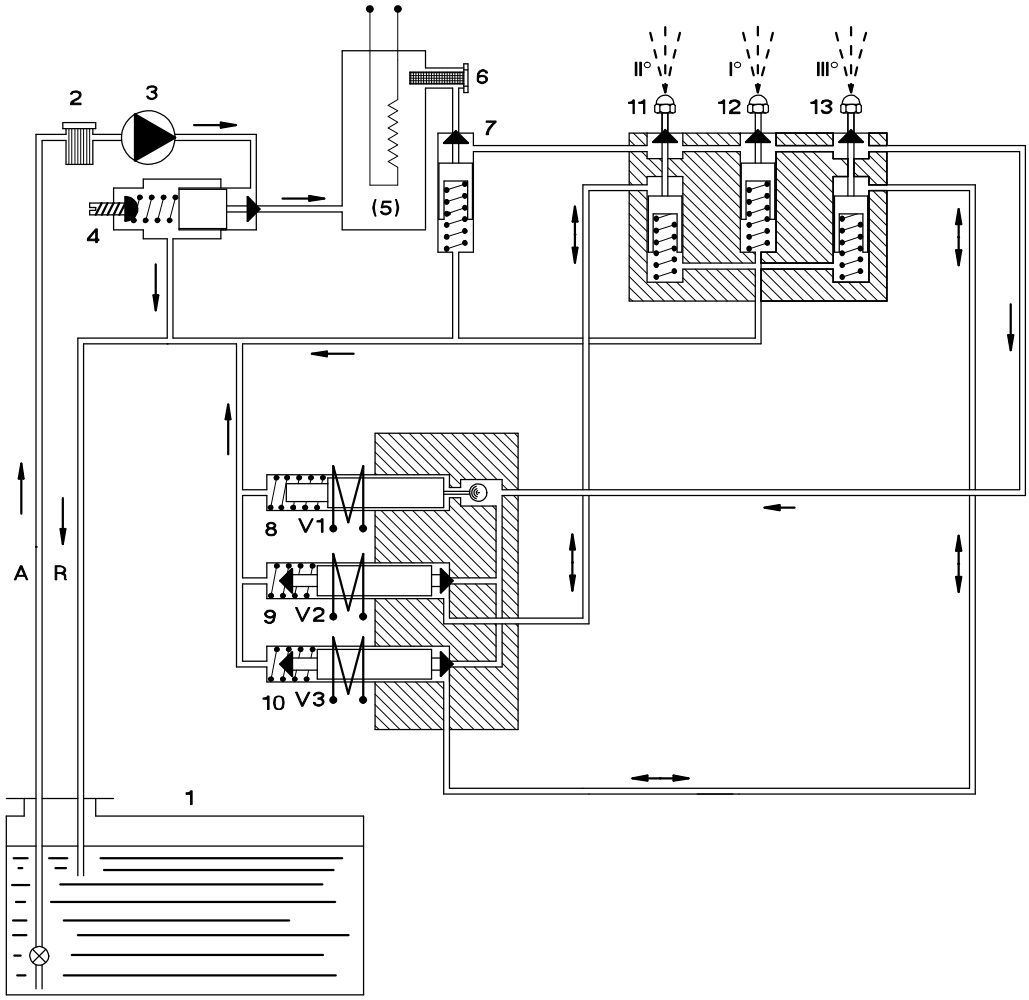
1° -Cleaning of cartridge filters placed on the preheater tank: take care not to break the OR ring.
2° -Cleaning of all the suction filters including that one inside the pump.
3° -Clean the electrical resistances (heaters). An excessive scaling considerably reduces the fuel oil heating thus causing a worse combustion and a worse efficiency.
4° -Carefully clean the disc blades and the air shutter in the air intake.
5° -Every 2000 operating hours replace the nozzles.

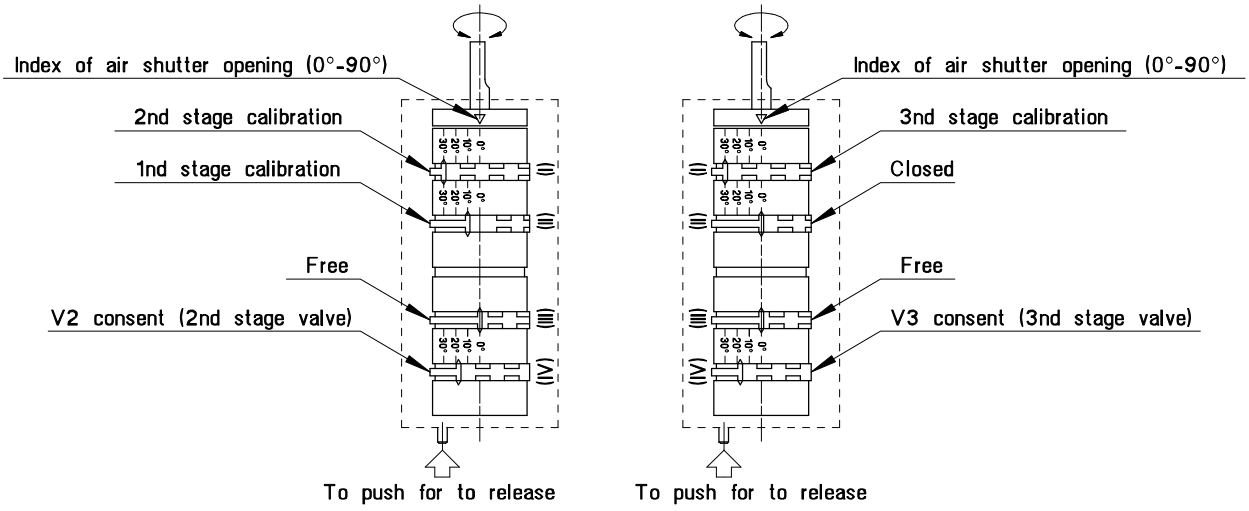
COMBUSTION HEAD EXTRACTION

The combustion head can be taken-out without removing the burner from the boiler:
-Take the lid (3) off, by loosening the 4 screw (5) and by taring the 2 screw (4) off.
-Loosen the screw (6) before remove combustion head.
-Take out the head group (2) by loosening the nuts (1); and pull the ignition cables.



HYDRAULIC DIAGRAM





AIR SERVOMOTOR 1°-2° ST.
LANDIS
type: SQN 30.111.A2700

AIR SERVOMOTOR 3° ST.
LANDIS
type: SQN 30.111.A2700

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DESCRIPTION OF THE HYDRAULIC DIAGRAM

PRE-WASHING

At each starting the heavy oil, which is inside the tank (1), is sucked by the pump (3), cleaned by the filter (2) and sent to the pressure regulator (4).
Then it goes to the preheater tank (5), to the filter (6) to the antigas valve (7), to the plungers (11 - 12 - 13), to the valve (8 usually open) and then it goes back to the tank throug the return pipe.

IGNITION 1° STAGE

After about 15 secs. of pre-washing, the control-box actuates the valve V1 and the oil under pressure lifts the plunger (12) and comes out atomized by the 1st nozzle.
The voltaic arc. generated by the transformer, ignites the heavy oil: thus obtaining the 1st stage.
To calibrate of the 1st stage air, operate on cam (II) of the servomotor air 1st-2nd stage.

NOTE: By moving the cam (II) towards lower values the air shutter automatically closes, to increase, it is necessary to release the shaft by pushing the pivot and open manually the shutter.

2° STAGE

After about 15 secs from 1st stage, the control-box runs the 2nd stage air servomotor and, throught the 2nd stage consent, the valve V2 gets excited, then the under pression oil lifts the pin (11) of the 2nd nozzle.To calibrate of the 2nd stage air, operate on cam (I) of the servomotor air 1st-2nd stage.

NOTE: By moving the cam (I) towards higher values the air shutter automatically closes, to increase, it is necessary to release the shaft by pushing the pivot and close manually the air.

V2 CONSENT (2nd stage valve)

The cam (IV) has to have the contact open when the burner is in the 1st stage and close such contact at about half of the stroke of the 2nd stage.

Example:
- -1st stage calibration: 14.5° cam (II)
- -2nd stage calibration: 23.5° cam (I)
- -V2 consent calibration: 19° cam (IV)

Important:

By removing the modulation control of 2nd stage the servomotor has to close the air to the value of the 1st stage and the cam (IV) has to take off tension to the valve V2. In this way there is the assurance thet the valve of the 2nd stage gets opened only if the air shutter opens: if the servomotor fails the burner remains in the 1st stage.

3° STAGE

After about 60 secs from 2nd stage, the temporizer runs the 3rd stage air servomotor and, throught the 3rd stage consent, the valve V3 gets excited, then the under pression oil lifts the pin (11) of the 3rd nozzle.To calibrate the 3rd stage air, operate on cam (I) of the servomotor air 3rd stage.

NOTE: By moving the cam (I) towards higher values the air shutter automatically closes, to increase, it is necessary to release the shaft by pushing the pivot and close manually the air.

V3 CONSENT (3rd stage valve)

The cam (IV) has to have the contact open when the burner is in the 2nd stage and close such contact at about half of the stroke of the 3rd stage.

Example:
- -3rd stage calibration: 31.5° cam (I)
- -V3 consent calibration: 16° cam (IV)
- -closed calibration: 0° cam (II)

Important:

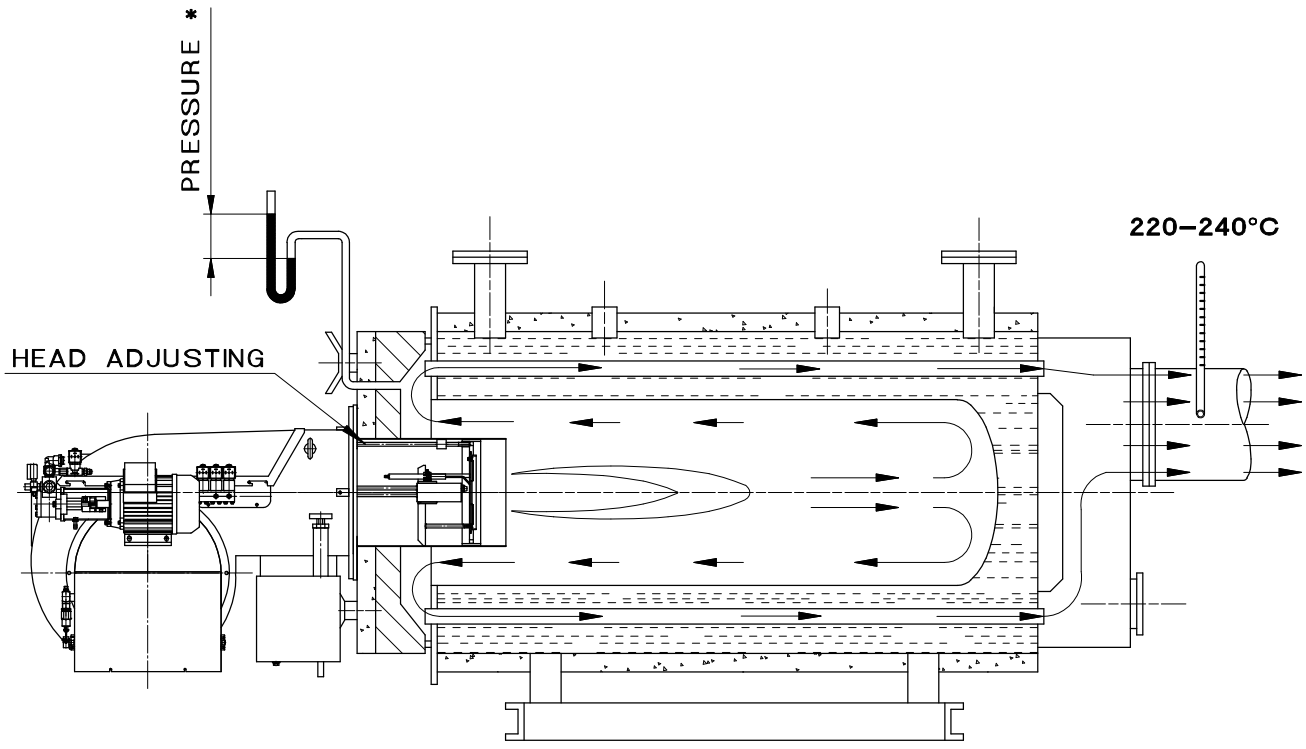
By removing the modulation control of 3rd stage the servomotor has to close the air to the value of the 1st stage and the cam (IV) has to take off tension to the valve V3. In this way there is the assurance thet the valve of the 3rd stage gets opened only if the air shutter opens: if the servomotor fails the burner remains in the 1st stage.

TABLE OF ADVISABLE CALIBRATIONS

NOTE: The definitive calibration must be executed when functioning with the employ of the exhaust gas analyser

NOZZLES G.P.H. 1ST + 2ND + 3RD 45° + 45° + 45°	PUMP PRESSURE bar	NOZZLES DELIVERY kg/h	COMBUSTION HEAD ADJUSTING NOTCH N°	AIR SHUTTER CALIBRATION 1ST STAGE	AIR SHUTTER CALIBRATION 2ND STAGE	AIR SHUTTER CALIBRATION 3RD STAGE	PRESSURE IN THE COMBUSTION CHAMBER * mmH_2O
4.5+4.5+4.5	24	87	0	9°	18°	18°	0
6 + 6 + 6	24	116	6	13.5°	27°	27°	5
7 + 7 + 7	24	135	12	18°	36°	36°	10
8 + 8 + 8	24	160	21	22.5°	45°	45°	20
9.5+9.5+9.5	24	183	30	31.5°	54°	54°	30

** It is suggested the employ of "MONARCH" type nozzles



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NOZZLES G.P.H. 1° + 2° + 3° 45° + 45° + 45°	PUMP PRESSURE bar	NOZZLES DELYVERI kg/h	COMBUSTION HEAD ADJUSTMENT TACCHE N°	AIR SHUTTER CALIBRATION 1° STADIO	AIR SHUTTER CALIBRATION 2° STADIO	AIR SHUTTER CALIBRATION 3° STADIO	PRESSURE IN THE COMBUSTION 3RD STAGE * mmH_2O
7 + 7 + 7	26	150	3	9°	18°	22.5°	40
8 + 8 + 8	26	170	6	11.5°	20.5°	27°	40
9 + 9 + 9	26	180	9	14.5°	23.5°	31.5°	35
10.5+10.5+10.5	26	210	15	18°	27°	36°	30
12 + 12 + 12	26	240	21	22.5°	31.5°	40.5°	25
13.5+12+12	26	250	30	31.5°	40.5°	45°	20

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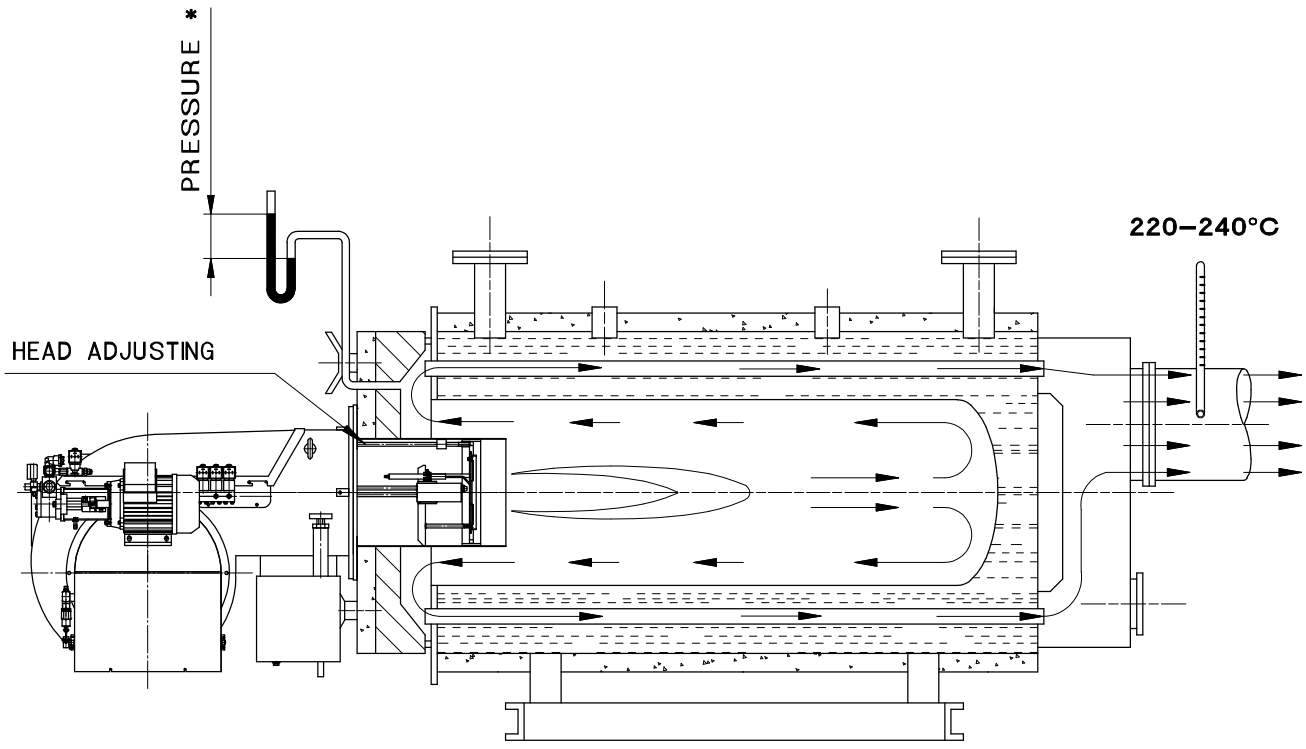

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NOZZLES G.P.H. 1ST + 2ND + 3RD 45° + 45° + 45°	PUMP PRESSURE bar	NOZZLES DELIVERY kg/h	COMBUSTION HEAD ADJUSTING NOTCH N°	AIR SHUTTER CALIBRATION 1ST STAGE	AIR SHUTTER CALIBRATION 2ND STAGE	AIR SHUTTER CALIBRATION 3RD STAGE	PRESSURE IN THE COMBUSTION CHAMBER * mmH_2O
7 + 7 + 7	26	150	0	13.5°	22.5°	9°	0
8 + 8 + 8	26	170	3	16.2°	31.5°	18°	5
10.5+10.5+10.5	26	210	6	18°	36°	27°	10
12 + 12 + 12	26	240	12	22.5°	40.5°	36°	15
13.5+13.5+13.5	26	278	18	27°	45°	45°	20
15.5+15.5+15.5	26	309	24	31.5°	54°	54°	25
15.5+17.5+17.5	26	350	30	36°	63°	63°	30

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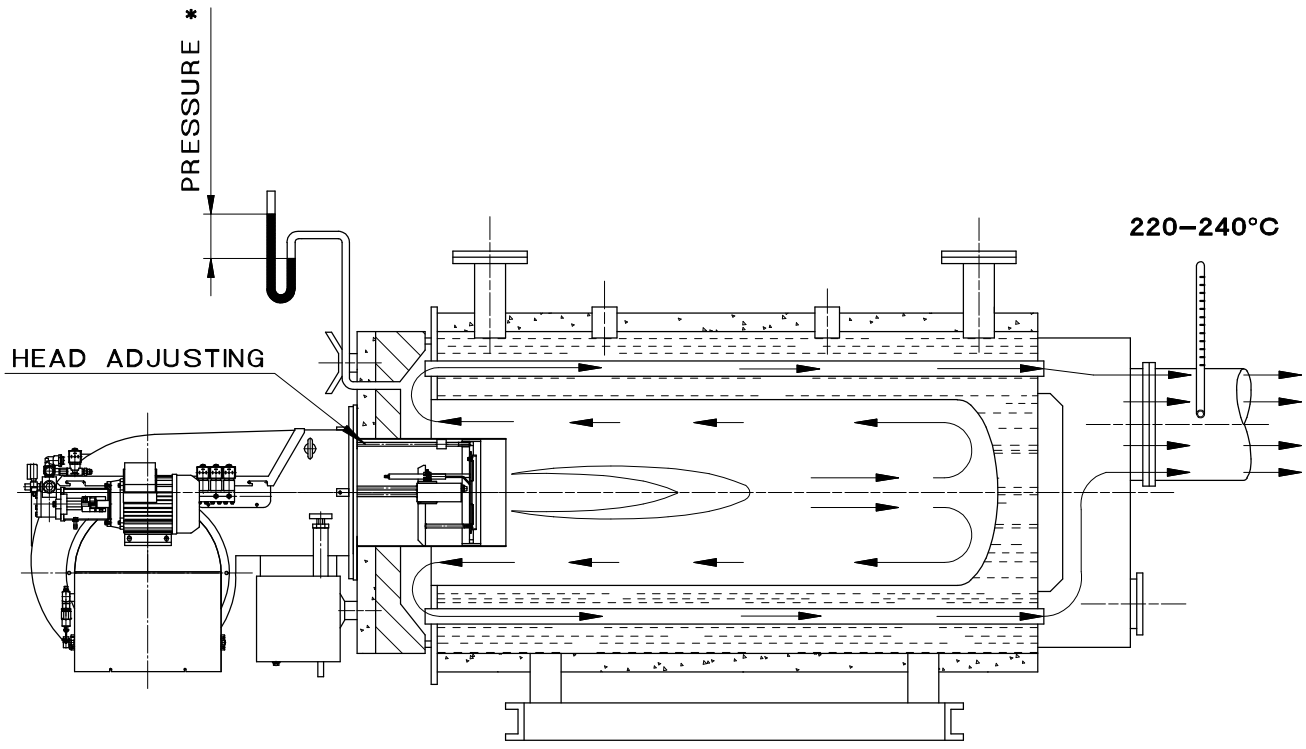

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