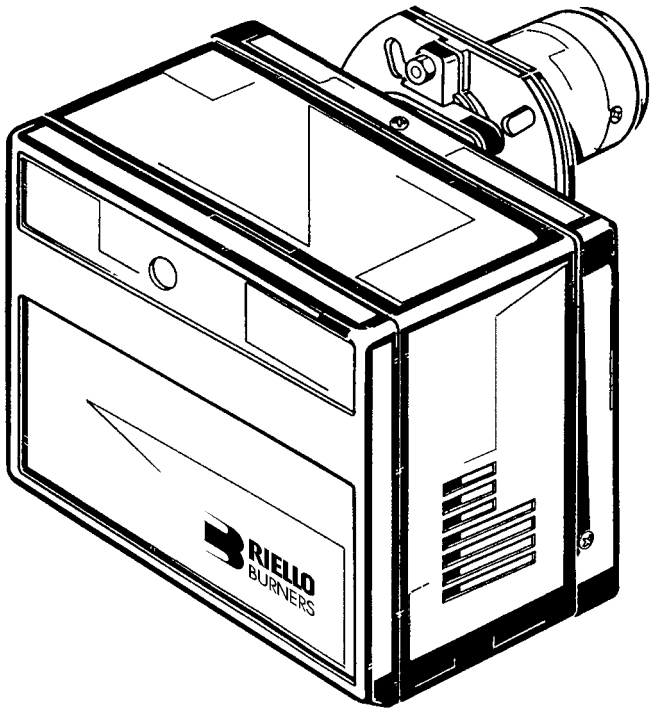
Light oil - kerosene burner

One stage operation



CODE	BOULTER CODE	MODEL	TYPE
3745964	8-716-111-550	COH 180	459 T55

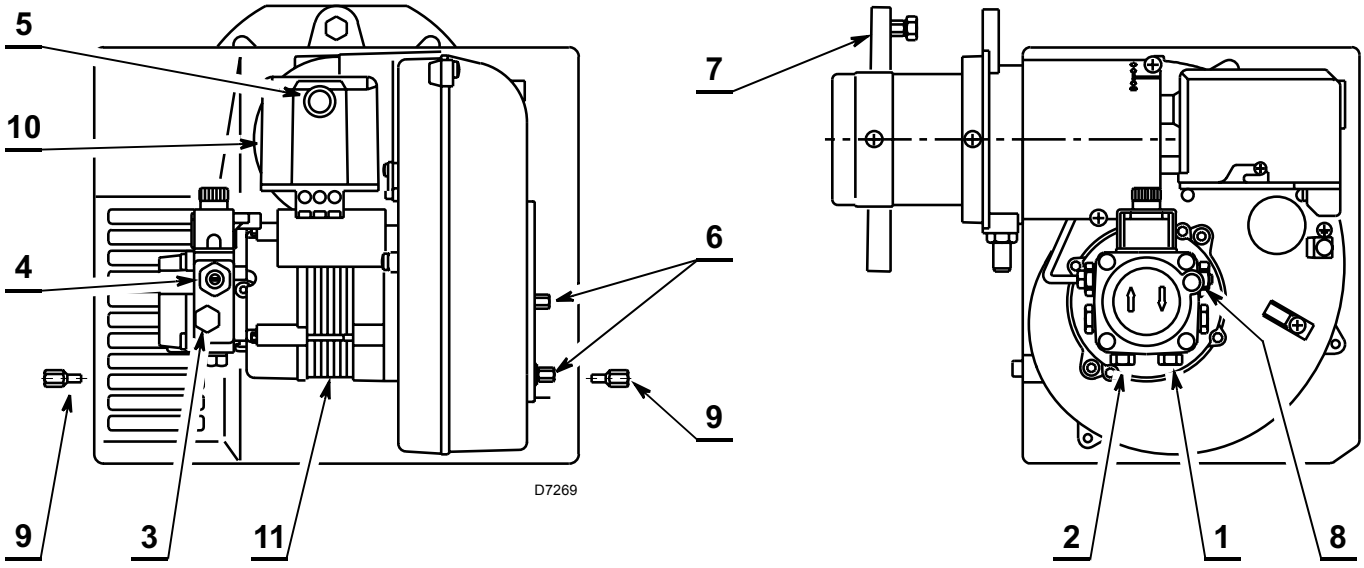
TECHNICAL DATA

Thermal power – output	29 – 69 kW – 2.45 – 5.8 kg/h
Fuel	Light oil, viscosity 4 – 6 mm^2/s at 20 °C Kerosene, viscosity 1.6 – 6 mm^2/s at 20 °C
Electrical supply	Single phase, 230 V ± 10% ~ 50Hz
Motor	Run current 0.85 A – 2850 rpm – 298 rad/s
Capacitor	4 µF
Ignition transformer	Secondary 8 kV – 16 mA
Pump	Kerosene, maximum pressure 10 bar (145 psi) Light oil, maximum pressure 15 bar (218 psi)
Absorbed electrical power	0.16 kW

➤ Burner with CE marking in conformity with EEC Directives: EMC89/336/EEC, Low Voltage 73/23/EEC, Machines 98/37/EEC and Efficiency 92/42/EEC.

➤ The burner meets protection level of IP X0D (IP 40), EN 60529.

Fig. 1

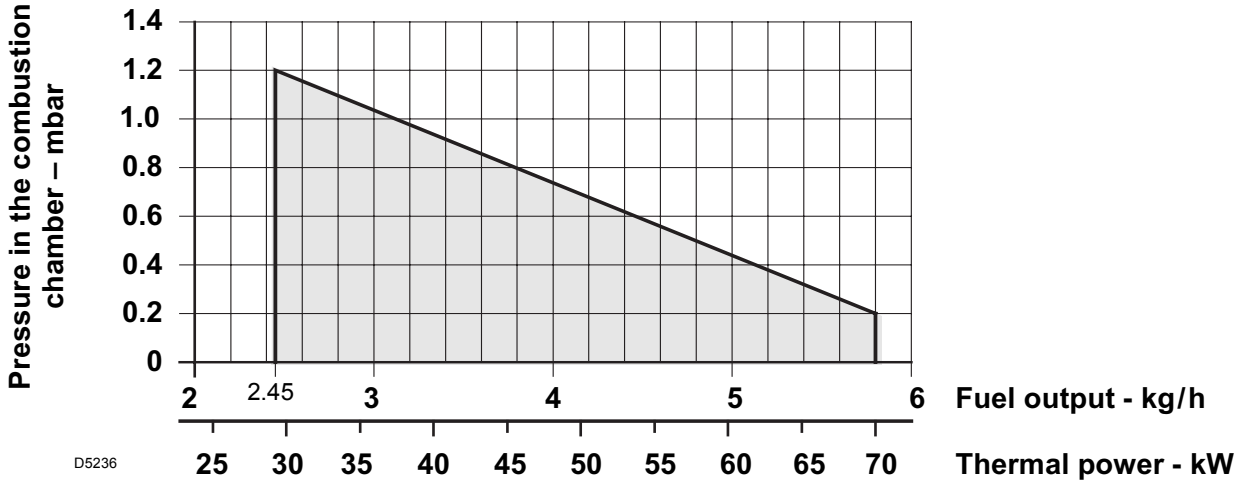


1 – Return line
2 – Suction line
3 – Gauge connection
4 – Pump pressure regulator
5 – Lock-out lamp and reset button
6 – Screws fixing air-damper
7 – Flange
8 – Vacuum gauge connection
9 – Screw for fixing the cover supplied whit the burner
10 – Control box
11 – Fan motor

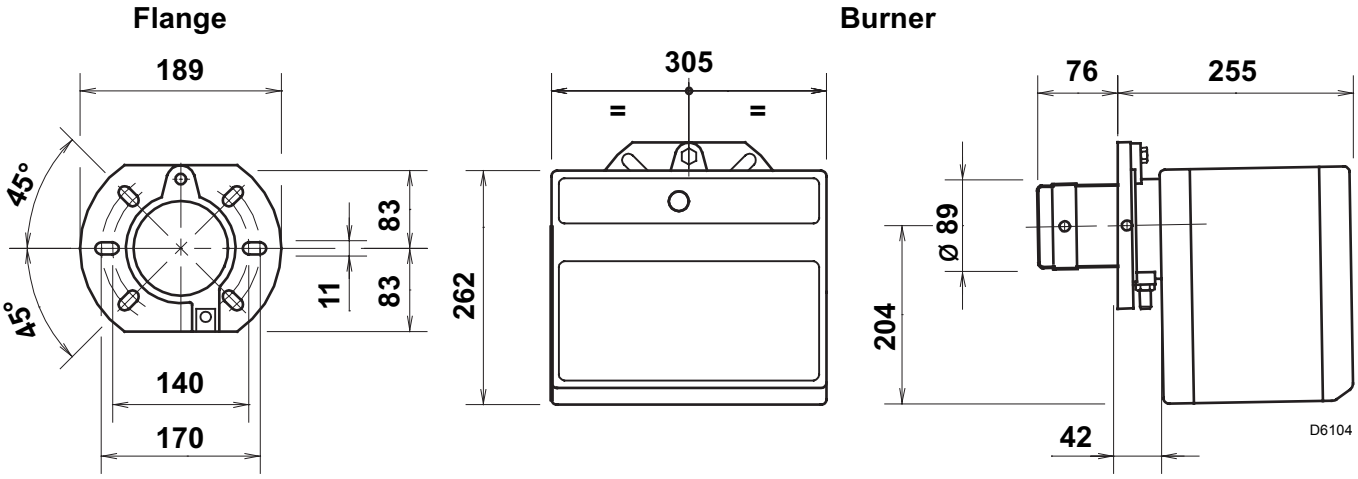
STANDARD EQUIPMENT

Quantity	Description
1	Flange
1	By-pass screw (clipped on the pump)
1	Screw with two nuts for flange
1	Cable grommet
1	Flexible oil pipe with nipple
2	Screws for fixing the cover

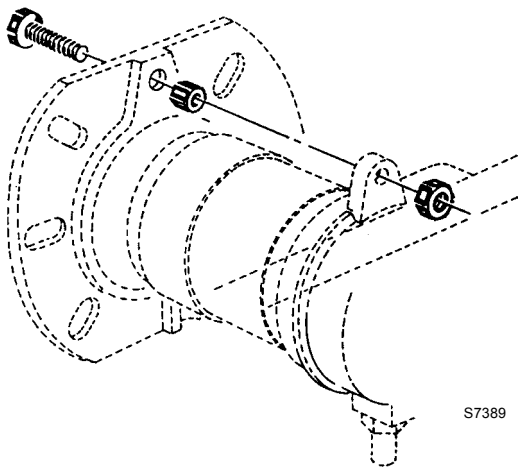
FIRING RATE (as EN 267)



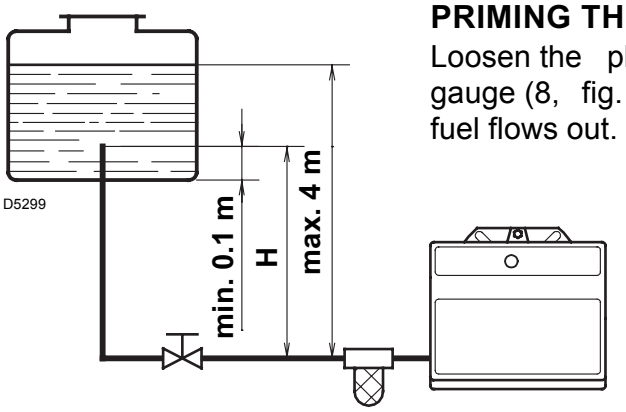
OVERALL DIMENSIONS



BOILER FIXING



HYDRAULIC SYSTEMS



PRIMING THE PUMP

Loosen the plug of the vacuum gauge (8, fig. 1) and wait until the fuel flows out.

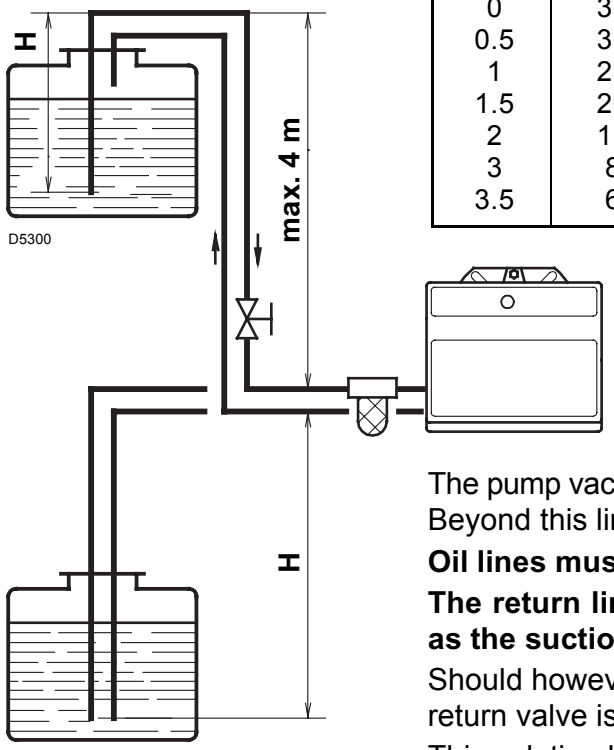
H meters	L meters	
	I. D. 8 mm	I.D. 10 mm
0.5	10	20
1	20	40
1.5	40	80
2	60	100

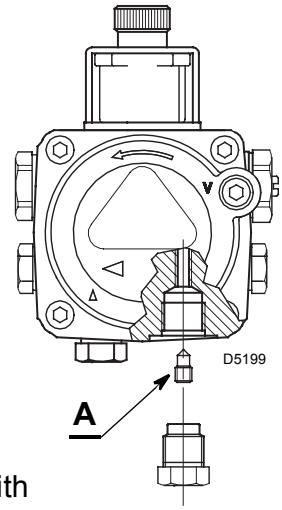
H = Difference of level.

L = Max. length of the suction line.

I.D. = Internal diameter of the oil pipes.

H meters	L meters	
	I. D. 8 mm	I.D. 10 mm
0	35	100
0.5	30	100
1	25	100
1.5	20	90
2	15	70
3	8	30
3.5	6	20





WARNING

The pump is supplied for use with a one pipe system. For use on a two pipe system, it is necessary to screw the **by-pass screw (A)** supplied as burner's accessory. (See figure).

The pump vacuum should not exceed a maximum of 0.4 bar (30 cm Hg). Beyond this limit gas is released from the oil.

Oil lines must be completely airtight.

The return line should terminate in the oil tank at the same level as the suction line; in this case a non-return valve is not required.

Should however the return line arrives over the fuel level, the non-return valve is indispensable.

This solution however is less safe than previous one, due to the possibility of leakage of the valve.

PRIMING THE PUMP:

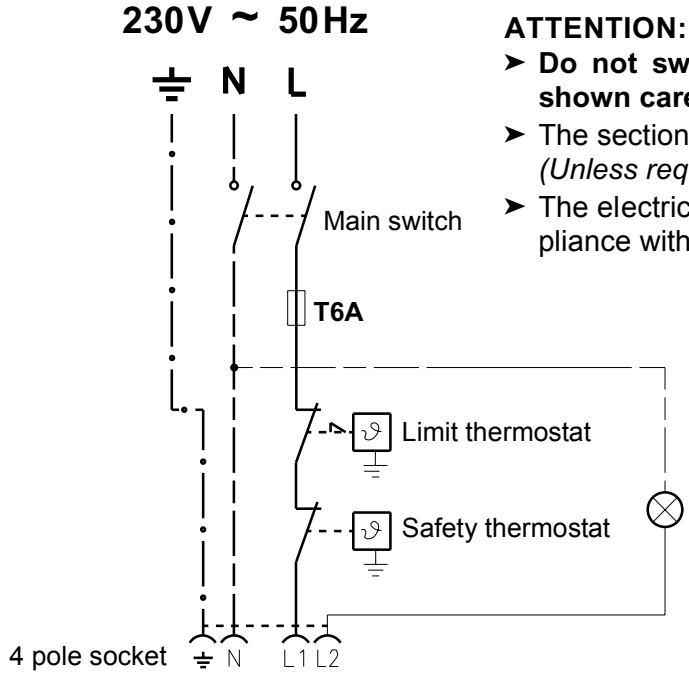
Start the burner and wait for the priming. Should lock-out occur prior to the arrival of the fuel, await at least 20 seconds before repeating the operation.

Warning: before starting the burner make sure that the return pipe-line is not clogged: any obstruction would cause the pump seals to break.

WARNING:

- Check periodically the flexible pipes conditions. Using kerosene, they have to be replaced at least **every 2 years.**
- A metal bowl filter with replaceable micronic filter must be fitted in the oil supply pipe.

ELECTRICAL WIRING



ATTENTION:

- **Do not swap neutral and phase over, follow the diagram shown carefully and carry out a good earth connection.**
- The section of the conductors must be at least 1mm².
  (Unless requested otherwise by local standards and legislation).
- The electrical wiring carried out by the installer must be in compliance with the rules in force in the country.

TESTING

Check the shut-down of the burn er by opening the thermostats.

TO BE DONE BY THE INSTALLER

CARRIED-OUT IN THE FACTORY

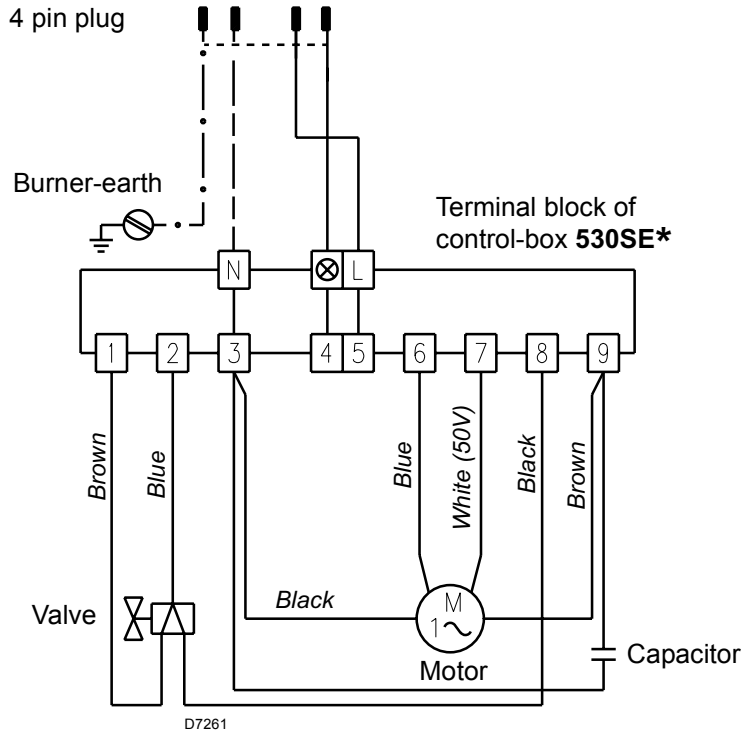
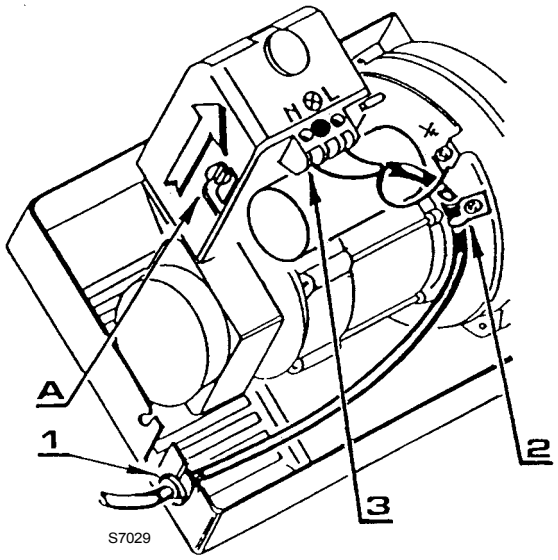


Fig. 2



CONTROL BOX

- **To remove the control box from the burner, loosen screw (A, fig. 2) and pull towards the arrow.**
- The photoresistance is fitted directly into the control box (underneath the ignition-transformer) on a plug-in support.

RUN OF THE ELECTRICAL CABLE

1 - Cable gland
2 - Cable-clamp
3 - Terminal block
N - Neutral
L - Phase
⏚ - Burner-earth

COMBUSTION ADJUSTMENT

In conformity with Efficiency Directive 92/42/EEC the application of the burner on the boiler, adjustment and testing must be carried out observing the instruction manual of the boiler, including verification of the CO and CO_2 concentration in the flue gases, their temperatures and the average temperature of the water in the boiler.
To suit the required appliance output, fit the nozzle then adjust the pump pressure, the setting of the combustion head and the air damper opening in accordance with the following schedule. The values in the table refer to 12.5% CO_2 at sea level and to "zero" pressure in the combustion chamber.

FUEL LIGHT OIL

Nozzle 1		Pump pressure 2	Burner output	Comb. head adjustment 3	Air damper adjustment 4
GPH	**Angle**	**bar**	**kg/h ± 4%**	**Set-point**	**Set-point**
0.60	60°/80°	12	2.5	1	1.2
0.65	60°/80°	12	2.8	1.5	1.4
0.75	60°	12	3.1	2	1.8
0.85	60°	12	3.6	2.5	2.2
1.00	60°	12	4.3	3	2.6
1.10	60°	12	4.7	4	3
1.25	60°	12	5.3	5	3.5
1.35	60°	12	5.8	6	4.2

Angle: **60°** in most cases.
80° in case of flame detachment, during ignitions at low temperatures.

FUEL KEROSENE

Nozzle 1		Pump pressure 2	Burner output	Comb. head adjustment 3	Air damper adjustment 4
GPH	**Angle**	**bar**	**kg/h ± 4%**	**Set-point**	**Set-point**
0.85	60°	8	2.5	1	1.2
1.00	60°	8.5	3.0	0	2.6
1.10	60°	8	3.3	2	1.8
1.25	60°	8	3.7	3	2.2
1.35	60°	8	4.0	3.5	2.4
1.50	60°	8	4.4	4.5	2.7
1.75	60°	8	5.2	6	3.2
2.00	60°	8	5.8	6	4.2

1 NOZZLES RECOMMENDED

Monarch type R - NS; Delavan type W - A - E - B;
Steinen type Q - H ; Danfoss type B - H - S;
Danfoss type ES (only for kerosene).

2 PUMP PRESSURE

The pump leaves the factory set for kerosene working.

10 bar: maximum pressure for kerosene.

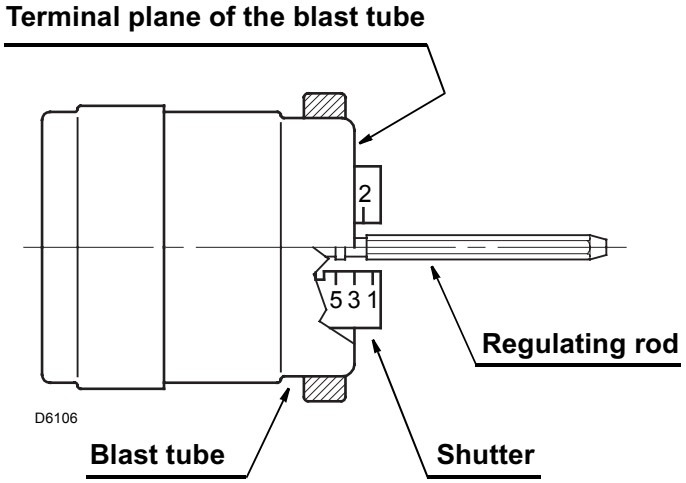
FOR LIGHT OIL INCREASE PRESSURE

12 bar: pressure suitable for light oil in most cases.

14 bar: improves flame retention; it is therefore suitable for ignitions at low temperatures.

3 COMBUSTION HEAD SETTING

This is done when fitting the nozzle, with the blast tube removed.
It depends on the output of the burner and is carried out by rotating the regulating rod, till the terminal plane of the blast tube is level with the set-point, as indicated in the schedule.



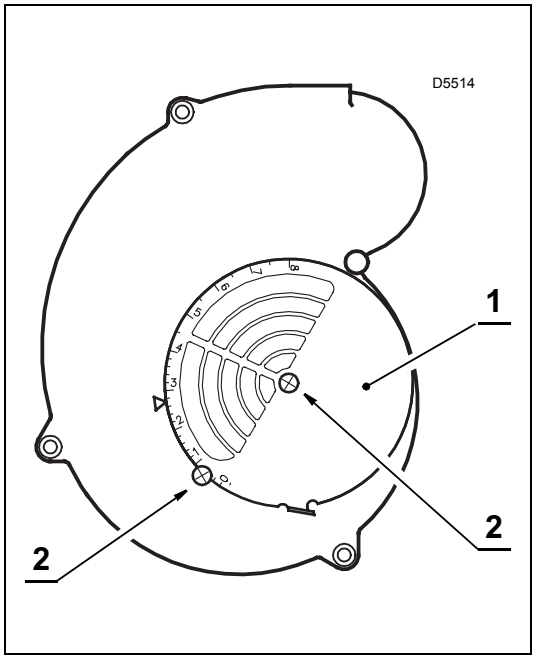
In the sketch on the left, the combustion head is set for an output of 1.00 GPH at 12 bar *(for light oil)* or 1.25 GPH at 8 bar *(for kerosene).*
The shutter is level with set-point **3**, as required by the table at page 5

4 AIR DAMPER ADJUSTMENT

The regulation of the air-rate is made by adjusting the air damper (1), after loosing the screws (2).

The settings indicated in the schedule refer to the burner with its metal cover fitted and the combustion chamber with “zero” depression.

These regulations are purely indicative. Each installation however, has its own unpredictable working conditions: actual nozzle output; positive or negative pressure in the combustion-chamber, the need of excess air, etc. All these conditions may require a different air-damper setting.



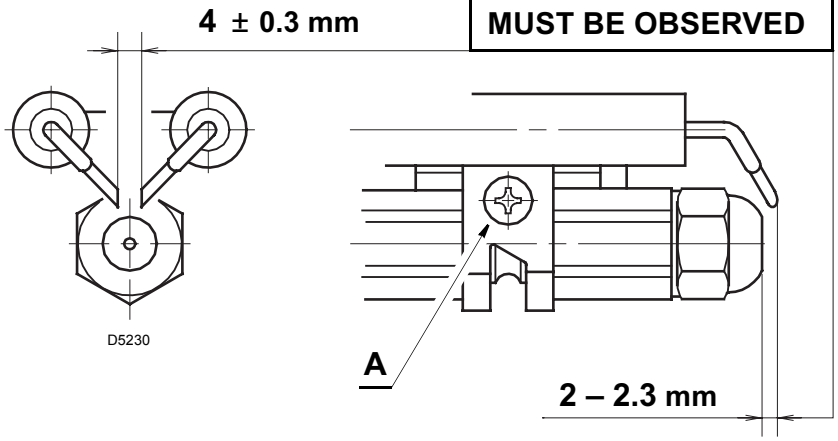
It is important to take account of the fact that the air output of the fan differs according to whether the burner has its metal cover fitted or not.
Therefore we recommended to proceed as follows:

- adjust the air damper as indicated in the schedule (4);
- mount the cover, simply by means of the upper screw;
- check smoke number;
- should it become necessary to modify the air output, remove the cover by loosening the screw, adjust the air damper, remount the cover and finally recheck the smoke number.

ELECTRODE SETTING

Attention:
Before removing or assembling the nozzle, loose n the screw **(A)** an d move the electrodes ahead.

Fig. 3



BURNER START-UP CYCLE

ONLY FOR LIGHT OIL

ADJUSTMENTS, TO AVOID FLAME - DETACHMENT, AT BURNER IGNITION

This inconvenience can occur, when the temperature of the light oil decreases below +8 °C.

1) CORRECT POSITIONING OF THE ELECTRODES

(See fig. 3)

2) PUMP - SETTING

When the temperature of the light oil decreases below +8 °C, increase the pressure to 14 bar.

3) COMBUSTION-HEAD SETTING

Regulate the combustion-head one set-point further ahead than indicated in the instructions.
Example: *the instructions require to set the combustion-head on set-point 3.*
Instead, the setting is made on set-point 4.

4) FAN - AIR DAMPER ADJUSTMENT

Adjust the air damper of the fan, such as to obtain a smoke number not inferior to 1.
(i.e. a combustion with the lowest possible excess-air).

SAFETY WARNINGS

The dimension of the boiler's combustion chamber must respond to specific values, in order to guarantee a combustion with the lowest polluting emissions rate.
The Technical Service Personnel will be glad to give you all the imformation for a correct matching of this burner to the boiler.

This burner must only be used for the application it was designed for.

The manufacturer accepts no liability within or without the contract for any damage caused to people, animals and property due to installation, adjustment and maintenance errors or to improper use.

BURNER IDENTIFICATION

The Identification Plate on the product gives the serial number, model and main technical and performance data. If the Identification Plate is tampered with, removed or missing, the product cannot be clearly identified thus making any installation or maintenance work potentially dangerous.

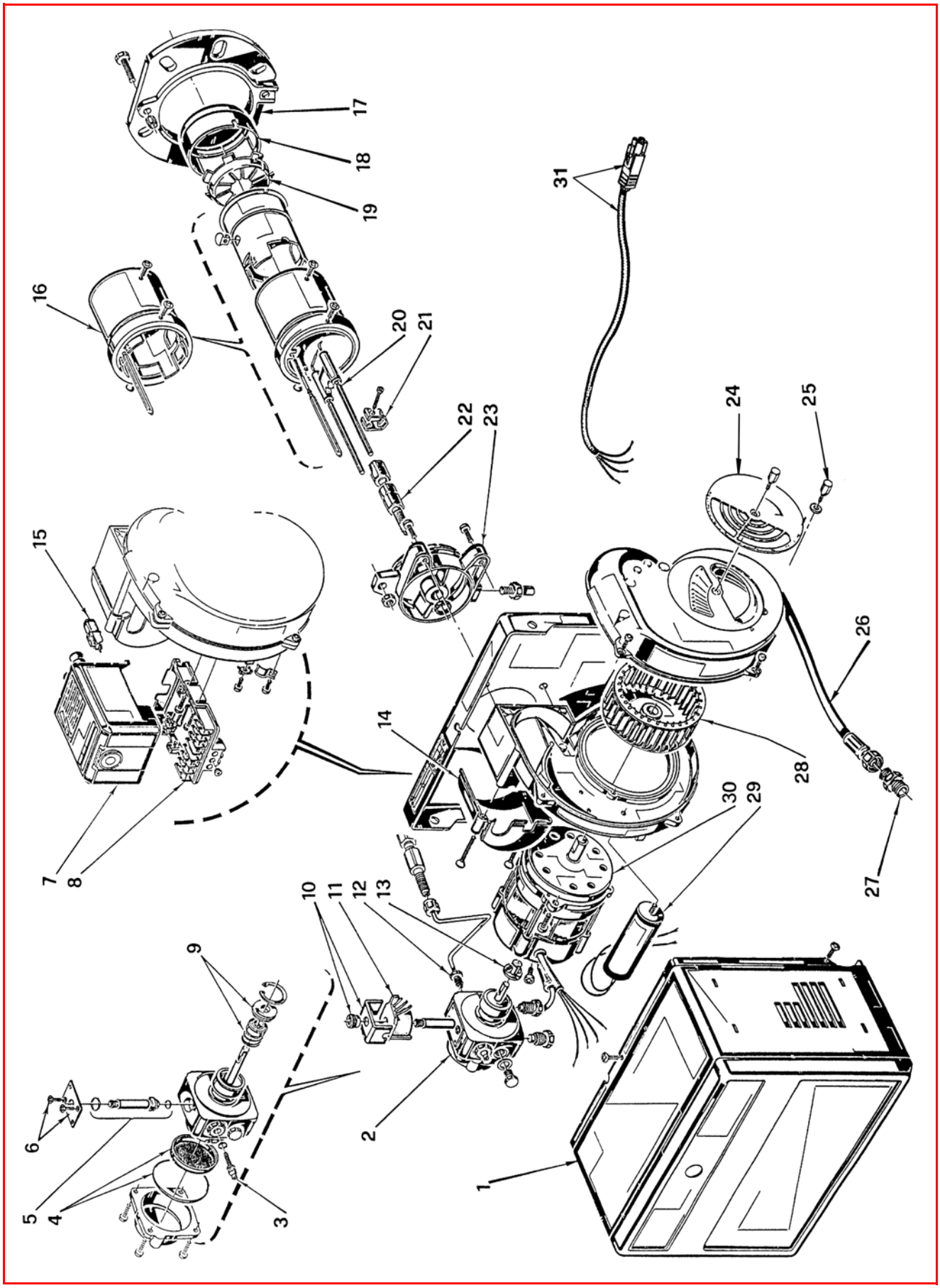
BASIC SAFETY RULES

- ➤ Children or inexpert persons must not use the appliance.
- ➤ Under no circumstances must the intake grids, dissipation grids and ventilation vents in the installation room be covered up with cloths, paper or any other material.
- ➤ Unauthorised persons must not attempt to repair the appliance.
- ➤ It is dangerous to pull or twist the electric leads.
- ➤ Cleaning operations must not be performed if the appliance is not disconnected from the main power supply.
- ➤ Do not clean the burner or its parts with inflammable substances (e.g. petrol, alcohol, etc.). The cover must be cleaned with soapy water.
- ➤ Do not place anything on the burner.
- ➤ Do not block or reduce the size of the ventilation vents in the installation room.
- ➤ Do not leave containers and inflammable products in the installation room.

RIELLO BURNERS

Oil - Kerosene burner • Bruciatore di gasolio - kerosene • Brûleur fioul domestique - kérosène
Öl-Kerosen - Gebläsebrenner • Stookoliebrander kerosine

MOD.	COD.	BOULTER COD.	TIPO/TYPE/TYP
COH 180	**3745964**	**8-716-111-550**	**459 T55**



N.	COD.	DESCRIPTION	DESCRIZIONE	DESCRIPTION	BESCHREIBUNG	BENAMING	ADVISED SPARE PARTS RICAMBI CONSIGLIATI RECHANGE CONSEIL EMPFOHLENE ERSATZTEILE AANGERADEN RESERVEONDERDELEN
1	**3008935**	BODY	CARENATURA	CAPOT	VERKLEIDUNG	BRANDERKAP	
2	**3007811**	PUMP	POMPA	POMPE	PUMPE	POMP	C
3	**3007202**	REGULATOR	REGOLATORE	REGULATEUR	REGLER	REGELAAR	A
4	**3008653**	FILTER - O - RING	FILTRO - ANELLO OR	FILTRE - JOINT TORIQUE	FILTER - O-RING-DICHTUNG	FILTER - DICHTING O - RING	A
5	**3006925**	NEEDLE VALVE	VALVOLA	VANNE MAGNETIQUE	MAGNETVENTIL-KÖRPER	VENTIEL	A
6	**3007203**	PLATE	PIASTRINA	PLAQUETTE ETRIER	PLATTE	BEUGELPLAATJE	A
7	**3001156**	CONTROL BOX 530SE*****	APPARECCHIATURA 530SE*****	BOITE DE CONTR. 530SE*****	STEUERGERÄT 530SE*****	CONTROLEDOOS 530SE*****	B
8	**3002278**	TERMINAL BOARD	MORSETTIERA	SOCLE	STECKSOCKEL	BASIS CONTROLEDOOS	C
9	**3000439**	PUMP SEAL	ORGANO DI TENUTA	ORGANE D'ETANCHEITE	DICHTUNGSEINSATZ ANTRIEBSWELL.	ASDICHTING	A
10	**3006553**	SHELL AND KNOB	MANTELLO E POMELLO	ETRIER ET ECROU	BÜGEL UND KNOPF	BEUGEL EN MOER	A
11	**3002279**	COIL	BOBINA	BOBINE V. M.	MAGNETVENTIL - SPULE	SPOEL	B
12	**3005789**	TUBE	TUBO	TUYAU	DRUCKROHR	DRUKLEIDING	
13	**3000443**	JOINT	GIUNTO	ACCOUPLEMENT	KUPPLUNG	KOPPELING	A
14	**3006557**	COVER	COPERCHIO	COUVERCLE	DECKEL	DEKSEL	
15	**3002280**	P.E. CELL	FOTORESISTENZA	CELLULE PHOTORESISTANCE	FOTOWIDERSTAND	FOTOCEL	A
16	**3007714**	BLAST TUBE ASSEMBLY	GRUPPO BOCCAGLIO	GROUPE GUEULARD	BRENNERROHR SYSTEM	BRANDERKOPGROEP	B
17	**3005796**	FLANGE	FLANGIA	BRIDE	FLANSCH	FLENS	
18	**3005714**	END RING	ANELLO	EMBOUT GUEULARD	FLAMMKOPF	BRANDERKOPRING	B
19	**3005713**	DIFFUSER DISC	ELICA	ACCROCHE FLAMME	STAUSCHEIBE	VLAMHOUDER	A
20	**3002917**	ELECTRODE ASSEMBLY	GRUPPO ELETTRODI	GROUPE ELECTRODES	ELEKTRODENBLOCK	ELECTRODENGROEP	A
21	**3006552**	ELECTRODE BRACKET	FASCETTA	SUPPORT ELECTRODES	ELECTRODEN HALTERUNG	ELECTRODENKLEM	
22	**3005709**	NOZZLE HOLDER	PORTAUGELLO	PORTE GICLEUR	DÜSENSTOCK	SPROEIERHOUDER	B
23	**3005791**	COLLAR	COLLARE	COLLIER	BRENNERFLANSCH	TEGENFLENS	
24	**3007907**	AIR DAMPER	SERRANDA	VOLET AIR	LUFTKLAPPE	LUCHTKLEP	
25	**3008448**	SCREW	VITE	VIS	SCHRAUBE	SCHROEF	
26	**3005720**	FLEXIBLE OIL LINE	TUBO FLESSIBILE	FLEXIBLE	ÖLSCHLAUCH	FLEXIBEL	A
27	**3003602**	CONNECTOR	RACCORDO	MAMELON	NIPPEL	NIPPEL	C
28	**3005788**	FAN	GIRANTE	VENTILATEUR	GEBLÄSERAD	VENTILATOR	C
29	**3005798**	CAPACITOR 4 µF	CONDENSATORE 4 µF	CONDENSATEUR 4 µF	KONDENSATOR 4 µF	CONDENSATOR 4 µF	B
30	**3007971**	MOTOR	MOTORE	MOTEUR	MOTOR	MOTOR	C
31	**3007793**	LEAD AND 4 -PIN PLUG	CAVO E SPINA A 4 POLI	CABLE ET FICHE A 4 POLES	VERBIN. UND 4 - POL. STECK.	KABEL EN 4 - POL. STEKKER	

A = Spare parts for minimum fittings - Ricambi per dotazione minima - Pièces détachées pour équipement mimimum - Erzatzteile für minimale Ausstattung - Reserveonderdelen voor minimale uitrusting.
A+B = Spare parts for basic safety fittings - Ricambi per dotazione base di sicurezza - Pièces détachées pour équipement standard de sécrité - Erzatzteile für Sicherheitsgrundausstattung - Reserveonderdelen voor basis veiligheidsuitrusting.
A+B+C = Spare parts for extended safety fittings - Ricambi per dotazione estesa di sicurezza - Pièces détachées pour équipement complet de sécurité - Erzatzteile für erweiterte Sicherheitsausstattung - Reserveonderdelen voor uitgebreide veiligheidsuitrusting.