Light oil burner

REG 35.5 Code **3772216** Type **722T**

TECHNICAL DATA

Output - Thermal power	2.3 – 5 kg/h – 27 – 60 kW
Fuel	Light oil, viscosity 4 – 6 mm^2/s at 20 °C
Electrical supply	Single phase 230 V ± 10% ~ 50Hz
Motor	Run current 0.75 A – 2750 rpm – 289 rad/s – Capacitor 4 µF
Ignition transformer	Secondary 8 kV – 16 mA
Pump	Pressure: 8 – 15 bar – min. output 22 kg/h
Absorbed electrical power	0.17 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.
- CE Certification No.: **0036 0342/03** as 92/42/EEC.

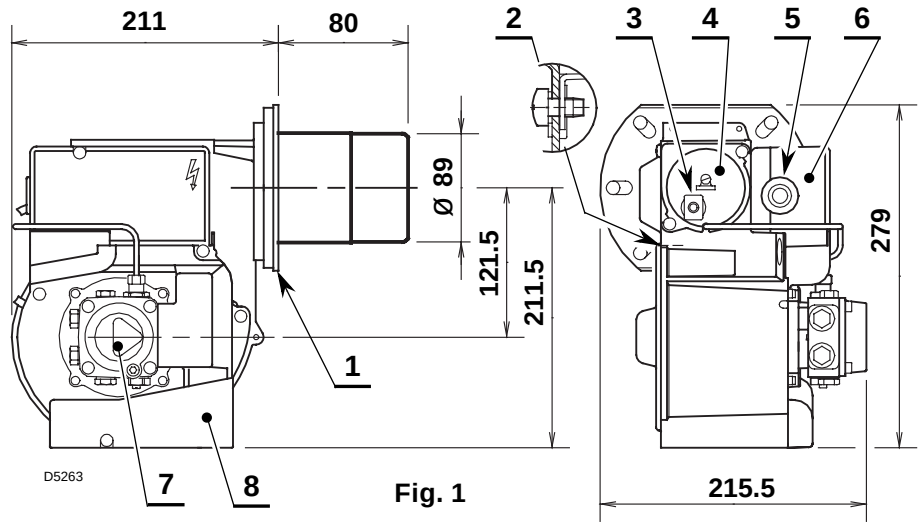
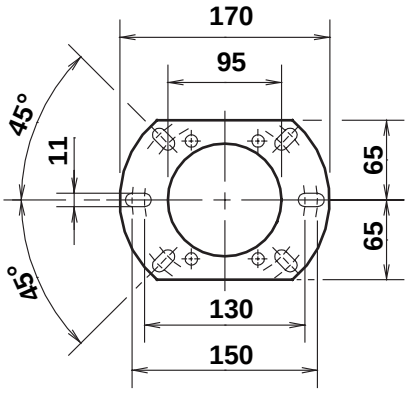


Fig. 1



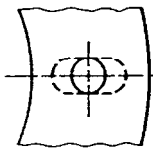
BOILER FIXING

Remove 4 screws **(1)**, insert the flange **(2)** and tighten screws **(1)** again. Insert the insulating gasket **(3)** *(if necessary increase the holes as shown in fig. 2)* and fix the burner to the boiler, (see fig. 3).

1 – Flange with insulating gasket
2 – Air damper
3 – Photoresistance
4 – Nozzle holder assembly
5 – Reset button with lock-out lamp
6 – Control box
7 – Oil pump
8 – Protection crankcase

BURNER EQUIPMENT
No. 1 - Flange with insulating gasket
No. 2 - Flexible pipes with nipples

Fig. 2



FIRING RATE (as EN 267)

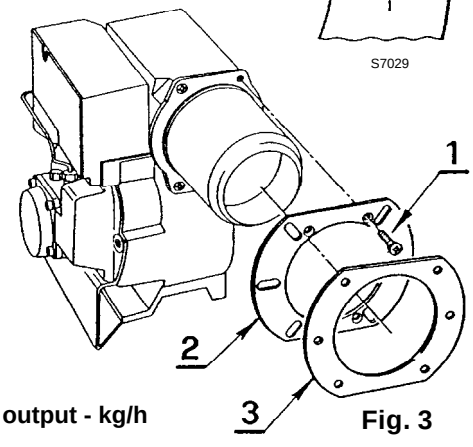


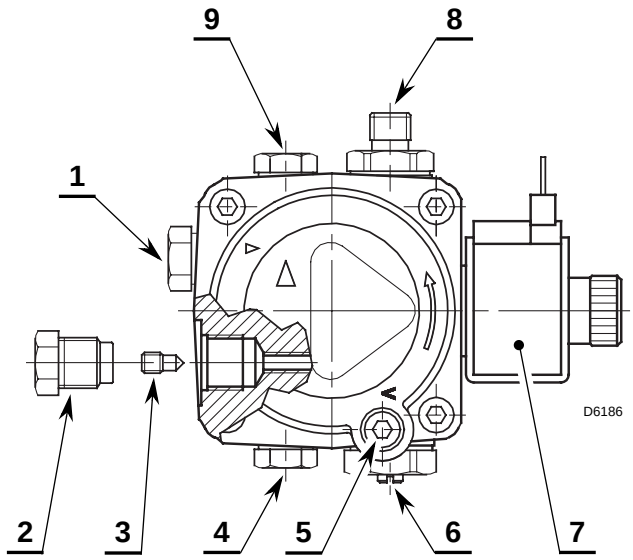
Fig. 3

HYDRAULIC SYSTEMS

■ Before starting the burner make sure that the return pipe-line is not clogged. An excessive back pressure would cause the damage of the pump seal.

■ The pump is designed for operation on a two line system. In order to convert it for single line system it is necessary to unscrew the return plug (2), **remove the by- pass screw (3)** and then to tighten the plug (2) (see fig. 4).

Fig. 4

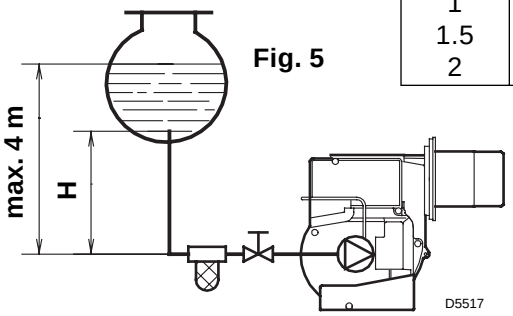


1 - Suction line
2 - Return line
3 - By-pass screw
4 - Gauge connection
5 - Suction gauge connection
6 - Pressure adjuster
7 - Coil
8 - Main line port
9 - Auxiliary pressure test point

SYSTEM NOT PERMITTED IN GERMANY

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

Fig. 5



PRIMING PUMP

On the system in fig. 5 it is sufficient to loosen the suction gauge connection (8, fig. 4) and wait until oil flows out.

On the systems in fig. 6 and 7 start the burner and wait for the priming.
Should lock-out prior to the arrival of the fuel, await at least 20 seconds before repeating the operation.
The pump suction should not exceed a maximum of 0.4 bar (30 cm Hg).
Beyond this limit gas is released from the oil. Oil pipes must be completely tight. In the vacuum systems the return line should terminate within 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 arrive over the fuel level, a non return valve is required. This solution however is less safe than previous one, due to the possibility of leakage of the valve.

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

Fig. 6

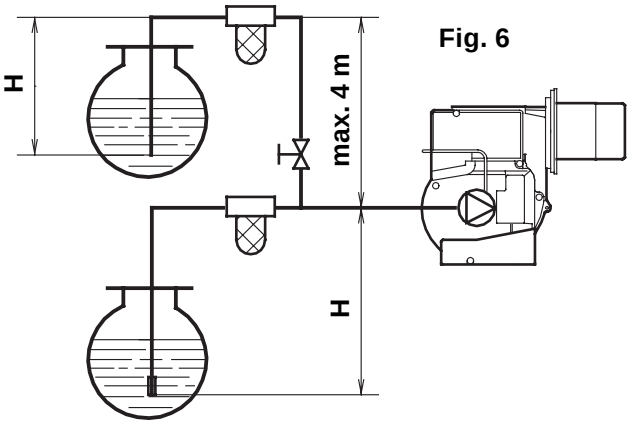
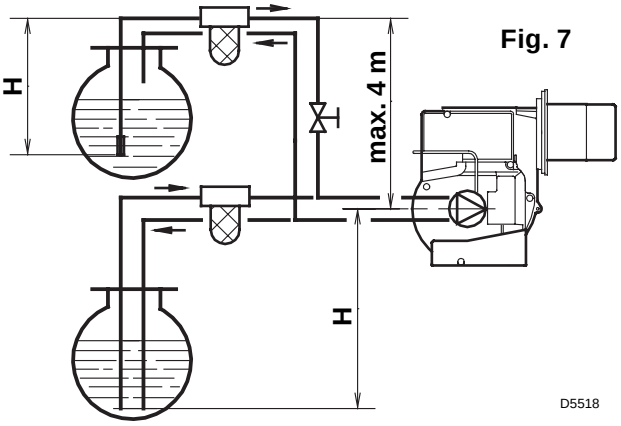


Fig. 7



It is necessary to install a filter on the fuel supply line.

H = difference of level; **L** = max. lenght of the suction line; **I.D.** = internal diameter.

REMOVAL OF NOZZLE HOLDER ASSEMBLY (Fig. 8)

– Disconnect the oil pipe fitting **(1)** from the pump. Take out the photoresistance **(2)**, loosen the retainer screws **(3)** of the cover.

– Remove the nozzle holder assembly after turning and sliding it out. The nozzle holder assembly must stay on the left side of the burner during its sliding.

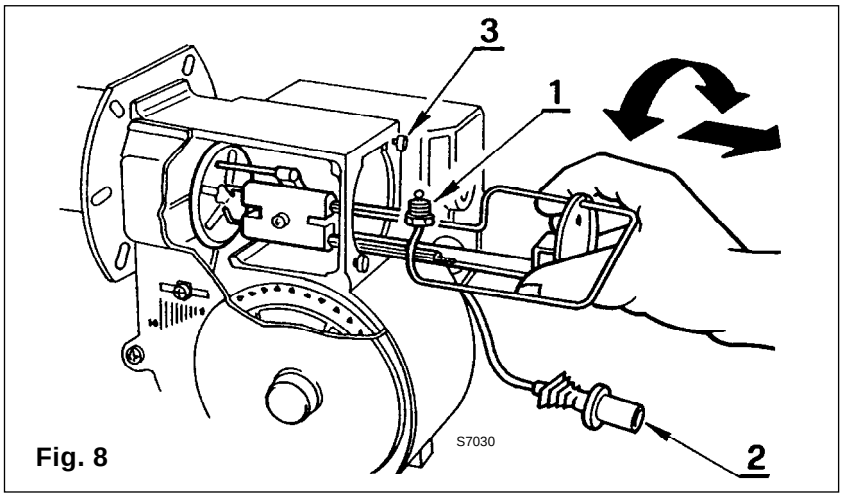
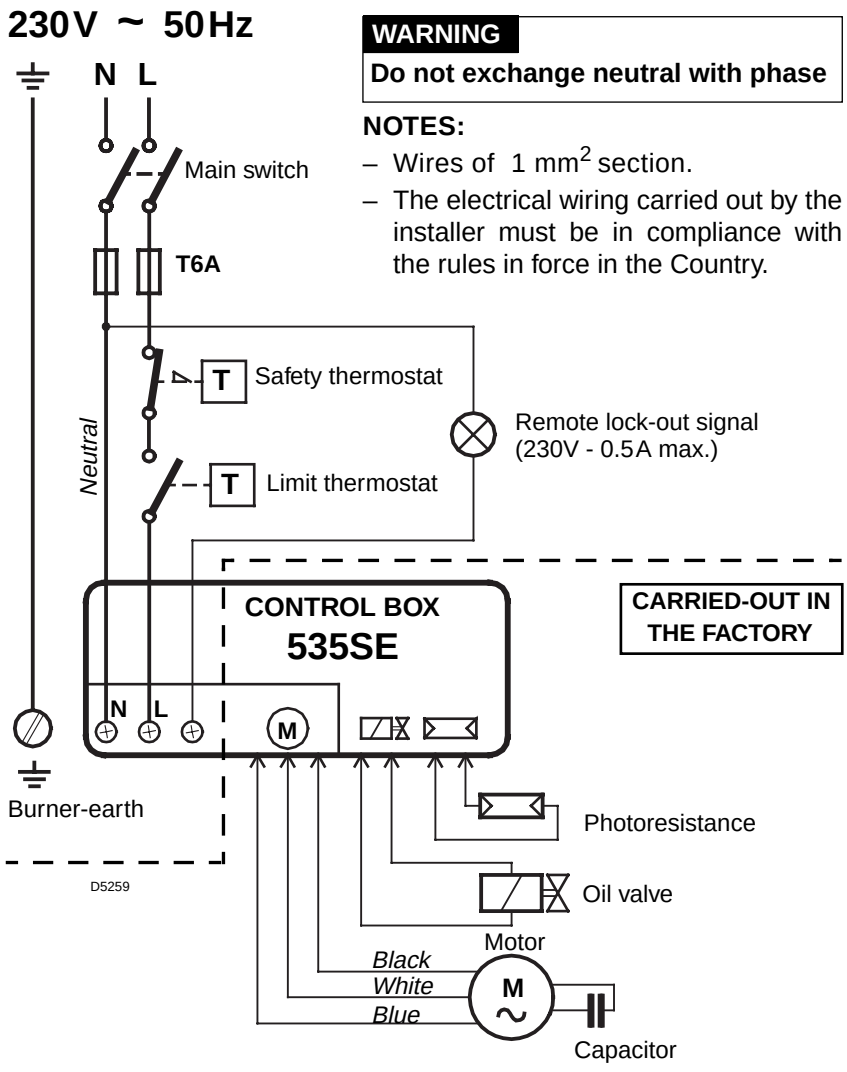


Fig. 8

ELECTRICAL WIRING



WARNING

Do not exchange neutral with phase

NOTES:

– Wires of 1 mm^2 section.

– The electrical wiring carried out by the installer must be in compliance with the rules in force in the Country.

ELECTRICAL CONNECTIONS

– Remove the protection crankcase (8, fig. 1, page 1) after removing the 3 retainer screws. Widen the upper slit and remove the protection crankcase, inserting the oil pipe and the flexible oil lines.

– Insert PG 13.5 cable-gland **(1)** into the wire access hole and tighten it with the nut.

– Insert the electrical cable into the connector and make electrical connections as shown in fig. 9.

– Put the protection crankcase back in place.

TESTING:

Check the shut-down of the burner by opening the thermostats and the lock-out by darkening the photoresistance.

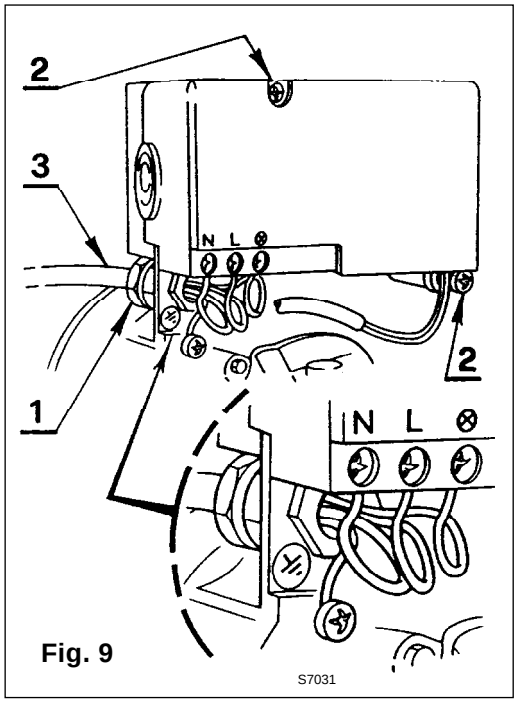


Fig. 9

TO REMOVE THE CONTROL BOX FROM THE BURNER PROCEED AS FOLLOWS:

– Take out the photoresistance (2, fig. 8).

– Remove the nozzle holder assembly (see fig. 8).

– Remove the protection crankcase (8, fig. 1, page 1), as above mentioned.

– Disconnect the main voltage cable (3, fig. 9).

– Remove screws (2, fig. 9) and disconnect wires of motors, photoresistance and coil.

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, choose the proper nozzle and adjust the pump pressure, the setting of the combustion head, and the air damper opening in accordance with the following schedule.
The values shown in the table are measured on a CEN boiler (as per EN 267). They refer to 12.5% CO_2 at sea level and with light oil and room temperature of 20°C.

Nozzle GPH	Nozzle Angle	Pump pressure bar	Burner output kg/h ± 4%	Comb. head adjustment Set-point	Air damper adjustment Set-point
0.60	80°	11	2.3	0.5	2.5
0.65	60°	12	2.6	1	3.5
0.75	60°	12	3.0	1.5	3.5
0.85	60°	12	3.4	2.5	5.0
1.00	60°	12	4.0	3	7.5
1.10	60°	12	4.4	4	9.0
1.25	60°	12	5.0	4	10.0

PUMP PRESSURE: 12 bar, the pump leaves the factory set at this value.
RECOMMENDED NOZZLES: Delavan type W -B; Danfoss type S - B; Monarch type R; Steinen type S - Q.

NOZZLE POSITIONING (Fig. 10)

– Remove the nozzle holder assembly from the burner (see page 3).
– Remove the diffuser-disc assembly **(1)** from the nozzle holder **(2)** after loosening the screw **(3)**.
– Insert the proper nozzle **(6)** into the nozzle holder and tighten securely.
– **REPLACE THE DIFFUSER-DISC ASSEMBLY (1) AND INSERT IT IN THE NOZZLE HOLDER (2) UNTIL THE END. LOCK WITH SCREW (3).**

ELECTRODE SETTING (Fig. 10)

– Remove the nozzle holder assembly (see page 3).
– Loosen the screw **(4)**, move the electrodes assembly **(5)** and lock the screw **(4)**.

COMBUSTION HEAD SETTING (Fig. 11)

It depends on the output of the burner and is carried out by rotating clockwise or counterclockwise the setting screw **(1)** until the set-point marked on the regulating rod **(2)** is level with the outside plane of the nozzle holder assembly **(3)**.

WARNING: MEASURES MUST BE RESPECTED

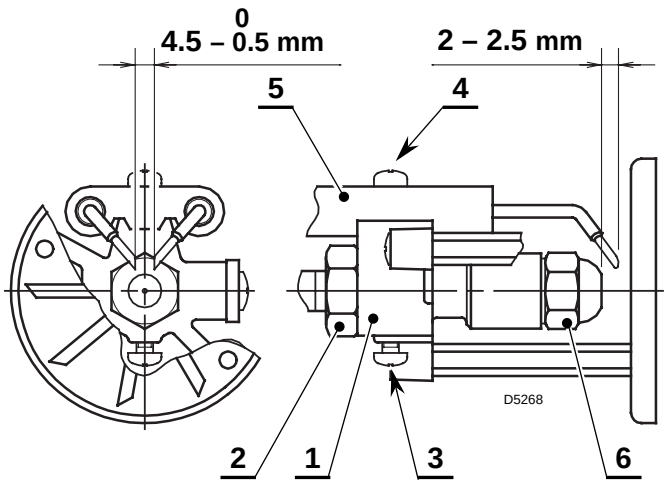


Fig. 10

AIR DAMPER ADJUSTMENT (Fig. 12)

Loosen the screw **(1)** and move the indicator towards the required set-point and then lock the screw **(1)**.

Fig. 11

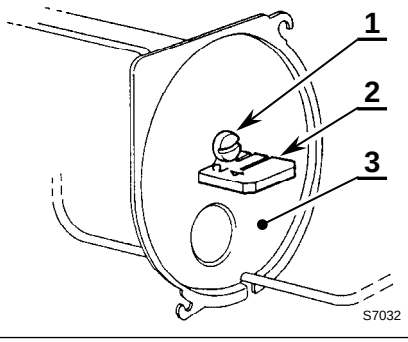


Fig. 12