



FOCÓS G

**INSTALLATION, USE AND
MAINTENANCE**



IST 04 C 072 - 01

To the user

Thank you for choosing and buying our burners. Please read these installation and maintenance instructions with care. Please note that the burners must only be installed, repaired and serviced by qualified personnel.

General information for the fitter, maintenance technician and user

This INSTRUCTION MANUAL, which is an integral and indispensable part of the product, must be handed over to the user by the fitter and must be kept in a safe place for future reference. The manual must be handed over with the burner should it be sold or transferred.

This burner must be used for the purpose for which it has been designed. Any other use shall be considered incorrect and therefore dangerous.

The burner must be installed in compliance with applicable laws and standards and according to the manufacturer's instructions given in this manual. Incorrect installation may cause injury to persons or animals or damage to property. The manufacturer cannot be held liable for any such injury or damage.

Damage or injury caused by incorrect installation or use or failure to observe the

manufacturer's instructions shall relieve the producer of all liability whether under the contract or otherwise.

Before installing the burner, check that the specification meets the requirements of the system in which it is to be installed.

Check that the burner is intact and has not been damaged during transport or handling. Do not install burners which are clearly damaged or faulty.

Do not obstruct the air intake or heat dissipation grates.

All the packaging materials can be recycled and should be sent to specific waste management sites.

Keep all packaging out of the reach of children as it constitutes a serious hazard.

In the event of a malfunction, switch off the boiler immediately. Do not attempt to make any

repairs and contact a qualified technician.

Original parts must be used for all repairs made.

Failure to do this may jeopardise the safety of the burner and cause a serious hazard.

To guarantee efficiency and correct operation, it is a legal requirement to service all burners once a year according to the schedule indicated in the relevant section of this manual.

If the burner is not used for a certain length of time, switch off the electricity and fuel supply.

IMPORTANT

Read carefully the warranty conditions and clauses on the warranty certificate attached to the burner.

Table of contents

Important points to remember	.....page	2
General information for the fitter, maintenance technician and user	.....page	2
1 Instructions for the user	.....page	4
1.1 How the burner operates	.....page	4
1.1.1 Switching on	.....page	4
1.1.2 Burner shutdown	.....page	4
1.2 Maintenance	.....page	4
1.3 Information for the user	.....page	4
2 Dimensions and specification	.....page	4
2.1 Technical Features	.....page	4
2.2 Dimensions	.....page	5
2.3 Specification	.....page	6
2.4 Table of Capacities and Pressures	.....page	6
3 Instructions for the fitter	.....page	7
3.1 Installation instructions	.....page	7
3.2 Installation	.....page	7
3.2.1 Packaging	.....page	7
3.2.2 Fixing the burner	.....page	7
3.2.3 Hydraulic system	.....page	7
3.2.4 Combustion adjustment	.....page	8
3.2.5 Ignition cycle	.....page	8
4 Diagrams of Operating Ranges	.....page	9
5 Wiring diagrams	.....page	10
6 Faults/Solutions	.....page	12
7 Testing the burner	.....page	12
7.1 Preliminary checks	.....page	12
7.2 Switching the burner on and off	.....page	12
8 Maintenance	..... page	12
8.1 Maintenance Schedule	.....page	12
8.2 Removing the nozzle	.....page	13
8.3 Regulating the electrodes	.....page	13
8.4 Replacing the control unit	.....page	13

1 Instructions for the user

1.1 How the burner works

1.1.1 Switching on

IMPORTANT

The oil burner can only operate if installed on a boiler.

This means that the burner can only be started up from the instrument panel on the boiler.

In FOCÓS burners fitted with a thermostatic resistance for preheating the oil **there is up to a three-minute delay before the flame ignites**. The actual time depends on the initial temperature of the oil.

1.1.2 Burner shutdown

If the burner does not function correctly, it shuts down automatically and the **red** light on the reset button comes on (Fig. 1). It is necessary to proceed as follows:

- * First check that there is fuel.
- * If there is, press the burner reset button. **If the burner still does not ignite after two attempts, contact an authorised Service Centre or a qualified service engineer.**

If the burner cuts out frequently, this means there is a recurring malfunction, so contact a qualified service engineer or an authorised Service Centre.

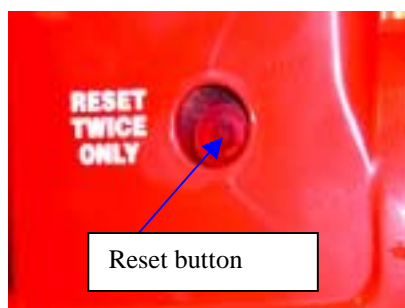


fig. 1

1.2 Maintenance

It is a legal requirement to have the burner serviced once a year.

If the burner is serviced regularly, it will optimise efficiency, safeguard the environment and not cause damage or injury.

The burner must be serviced by qualified personnel.

The user may only clean the plastic casing, using a product for cleaning furniture.

Do not use water!

1.3 Information for the user.

The user only has access to parts of the burner which can be reached without the need for specific tools.

NO ONE IS AUTHORISED TO MODIFY THE BURNER IN ANY WAY, NOT EVEN QUALIFIED TECHNICIANS.

The producer declines all liability for injury or damage resulting from attempts to tamper with the burner or incorrect operation.

2 Dimensions and specification

2.1 Technical features

FOCÓS is a blown-air oil burner available in the following models:

FOCÓS 1 GTFR 3 with a thermal power range of 23.7-37.95 kW, 55 W oil pre-heater with thermostat.

FOCÓS 1 GTFR 4 with a thermal power range of 23.7-37.95 kW, 55 W oil pre-heater with thermostat.

FOCÓS 1 GTF 5 with a thermal power range of 29.6-59.3 kW.

FOCÓS 1 GTF 6 with a thermal power range of 55.7-113 kW;

FOCÓS 1 GTF 7 with a thermal power range of 55.7-113

FOCÓS 1 GTF 8 with a thermal power range of 55.7-113 Kw.

The Focós burner comes with the nozzle already mounted. The preset values are given in the specification table.

The **FOCÓS** burner meets the basic requirements of the following EC Product Directives:

- * Thermal Efficiency Directive 92/42 EEC of 21 May 1992
- * Machinery Directive 98/36/EEC.
- * EMC Directive 89/336/EEC of 3 May 1989 amended by Directive 92/31/EEC of 28 April 1992.
- * European Community's Low Voltage Directive 73/23/EEC of 19 February 1973 amended by Directive 93/68/EEC of 22 July 1993.

They are fitted with all the safety features required under current laws on product liability.

The main technical features of **FOCÓS** burners are listed below:

- * die-cast aluminium burner
- * ABS casing
- * combustion head with stainless steel ring
- * geared pump with:
 - built-in pressure regulator
 - fittings for the pressure gauge and the vacuumeter
 - oil circuit opening solenoid valve
- * single-phase motor operating the fan and pump
- * air lock with front adjustment / * and graduated scale
- * 55W oil pre-heater with thermostat (model GTFR 3 and GTFR 4).

2.2 Dimensions

models FOCÓS 1 GTFR 3; FOCÓS 1 GTFR 4; FOCÓS 1 GTF 5

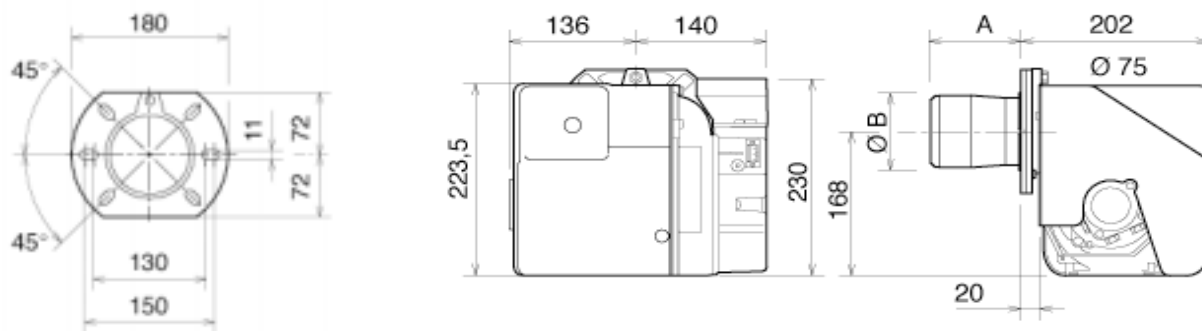
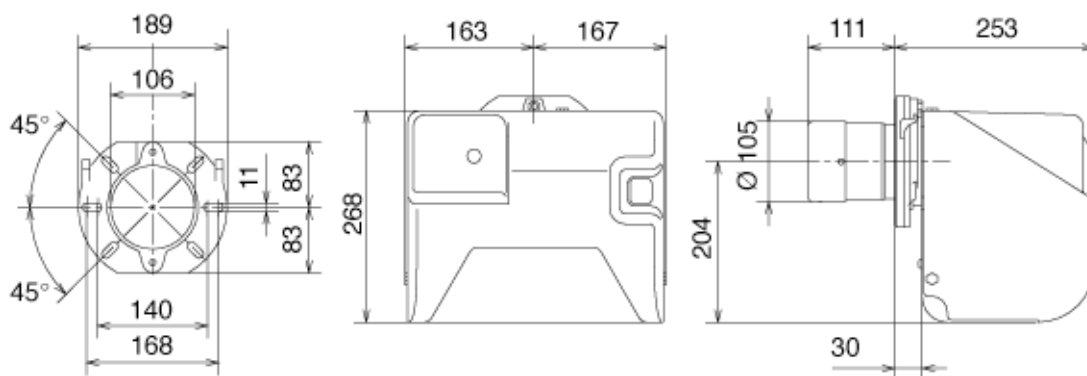


fig. 2

Model	A	ØB
GTFR3 – GTFR 4	86	89
GTF 5	76	90



models FOCÓS 1 GTF 6; FOCÓS 1 GTF 7; FOCÓS 1 GTF 8

fig. 3

2.3 Specification

Burner model		FOCÓS 1 GTFR 3	FOCÓS 1 GTFR 4	FOCÓS 1 GTF 5	FOCÓS 1 GTF 6	FOCÓS 1 GTF 7	FOCÓS 1 GTF 8
Fuel	-	Oil viscosity = 1,4°E, Hi= 42,7 MJ/kg (10200 kcal/kg) t= 20°C					
Thermal power range	kW (kg/h oil)	23,8÷37,9 (2 ÷ 3,2)		29,6÷59,3 (2,5 ÷ 5)	55,7÷113 (4,7 ÷ 9,5)		
Thermal capacity setting	kW	27,28	35,58	46,97	52,19	61,67	74,72
Nozzle recommended	-	Delavan W - Steinen Q - Danfoss S					
Nozzle	USgal/h	0,60	0,75	1,00	1,10	1,35	1,65
Nozzle: angle/cone	-	60°W			60°B		
Oil consumption (± 4%) *	kg/h	2,30	3,00	3,80	4,40	5,20	6,30
Oil pressure setting*	bar	12	13	11	12	11	11
Air setting*	-	4,6	8,0	7,7	3,2	4,5	5,75
Combustion head setting*	-	fija		2,5	2,0	2,5	2,5
CO ₂ value*	%	12,5					
Maximum back pressure *	Pa	100	60	75	137	123	118
Combustion head diameter (B)	mm	89		90	105		
Combustion head length (A)	mm	86		76	111		
Pump pressure range	bar	8 ÷ 15					
Pump vacuum	bar	> -0,4					
Oil pre-heater	W	55	55	-	-	-	-
Power supply	-	230 V - 50 Hz single-phase					
Motor condenser	µF	4			5		
Electric power/motor current	KW / A	0,165 / 0,85		0,115 / 0,85	0,160 / 1,3		
Class of protection	-	IP 40					

* **IMPORTANT:** The data shown in the table above refer to the factory-set burner settings.

2.4 Table of Capacities and Pressures

The table below shows how the thermal capacity of the burner

changes when modifying to the pressure of the oil at the nozzle.

Let us take the example of a **FOCÓS 1GTF 6** burner (without pre-heater) with an oil pressure of 12 bar and a rated capacity of 4.86

kg/h (equal to about 57.64 kW). If the oil pressure at the nozzle is increased from 12 to 14 bar, **the rated capacity increases by about 8%** to 5.25 kg/h (equal to about 62.25 kW).

Nozzle / Pressure	10,5	11,0	11,5	12,0	12,5	13,0	13,5	14,0	
0,60	-6	-4	-2	100	2	4	6	8	Indicative percentage variations in capacity for pre-heated oil; temperature 40°C
0,75	-10	-8	-6	-4	-2	100	2	4	
1,00	-2	100,00	2	4	6	9	11	13	Indicative percentage variations in capacity for unheated oil; temperature 20°C
1,10	-6	-4	-2	100	2	4	6	8	
1,35	-2	100,00	2	4	6	9	11	13	
1,65	-2	100,00	2	4	6	9	11	13	

3 Instructions for the fitter

3.1 Installation instructions

FOCÓS burners must be installed in compliance with the applicable standards and laws, **which are considered an integral part of this handbook.**

3.2 Installation

3.2.1 Packaging

The **FOCÓS** burner comes packed in a sturdy cardboard box. Take it out of the box and check that it is intact. All the packaging materials can be recycled and should be sent to specific waste management sites.

Keep the packaging out of the reach of children as it is a source of hazard.

The producer declines all liability for damage or injury resulting from failure to follow this rule.

The box also contains the following:

- the handbook for installation, use and maintenance
- the aluminium flange for fixing the burner, insulation gasket, and screws and nuts.
- two 900mm BAM-DIN hose pipes with fittings.

3.2.2 Fixing the burner

The burner must be fixed onto the boiler using the aluminium flange. All the necessary material is included in the supply.

Screw the burner supporting screw **V** into the aluminium flange **1** (fig. 4).

Then fix the flange **1** onto the boiler burner plate using the screws **2** and, if necessary, the nuts **3**, with the insulation gasket **4** in between (fig. 5).

The burner is now fixed and supported by the screw **V** and the nut **A**.

When it is necessary to remove the burner for maintenance purposes, unscrew the nut **A** to release the burner (fig. 4).

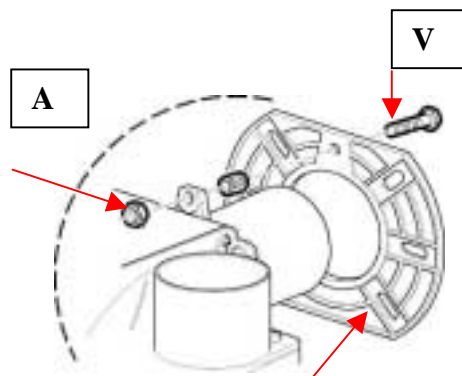


Fig. 4

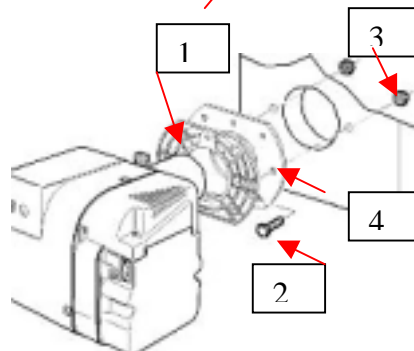


Fig. 5

3.2.3 Hydraulic system

The burner pump can generate a maximum negative pressure of 0.4 bar. If this value is exceeded, steam is generated, so the oil pipes must be absolutely airtight. **It is mandatory to fit a filter in the oil circuit because any impurities in the fuel would damage the pump and reduce its operating life.**

The pump is designed to operate with a supply system having one or two pipes. When working with one pipe only (single-pipe system), it is necessary to unscrew the plug **2** and remove the grub screw **3**. Afterwards, screw the plug **2** back in (fig. 6).

Important

Before starting up the burner with a two-pipe system, make sure the return pipe is not blocked, because excessive back pressure would damage the pump.

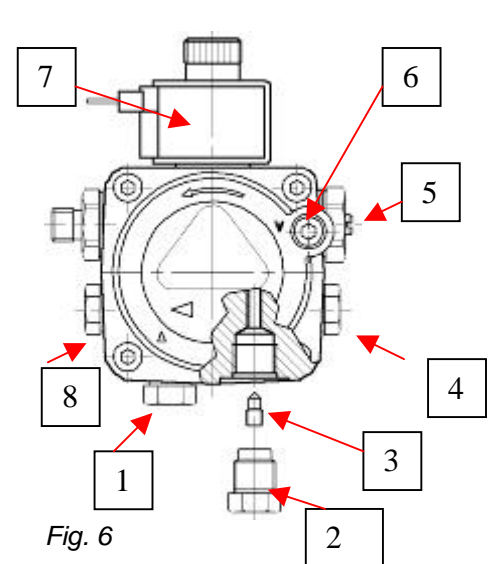


Fig. 6

- 1 – Oil suction line
- 2 – Return line
- 3 – By-pass screw
- 4 – Gauge connection
- 5 – Pressure adjuster
- 6 – Suction gauge connection
- 7 – Solenoid valve coil
- 8 – Auxiliary pressure test point

Fig. 7 is an example of supply with a single-pipe gravity circuit.

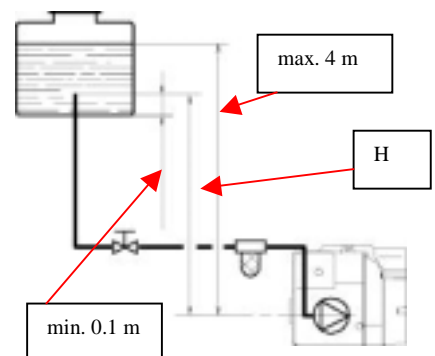


Fig. 7

H [m]	Pipe L [m]	
	Pipe ID 8 mm	Pipe ID 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

ID = inside diameter of pipe
L = maximum length of the oil suction line
H = difference in level

Fig. 8 shows a two-pipe system. When oil is sucked up from the tank, the return pipe must end at the same height as the suction pipe. If the pipe is above the oil level, you need to fit a non-return valve on the suction pipe to prevent it from emptying. The best burner performance can be obtained with a system in which the return pipe is immersed in the oil.

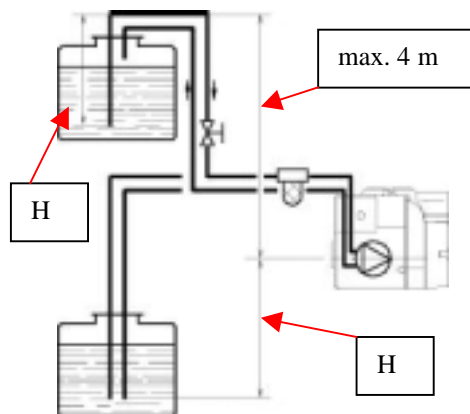


fig. 8

H [m]	Pipe L [m]	
	Pipe ID 8 mm	Pipe ID 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

ID = inside diameter of pipe
L = maximum length of the oil suction line
H = difference in level

Fig. 9 shows a single-pipe system.

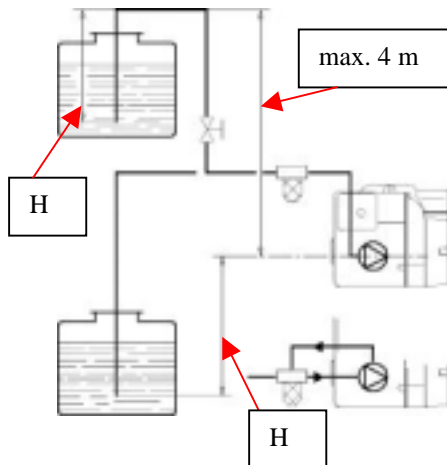


fig. 9

Important
A manually or electrically operated cut-off valve must be fitted in the oil delivery circuit.

With burner supply by gravity, it is mandatory to fit a solenoid valve in parallel with the burner.

Check the burner connecting pipes periodically.

3.2.4 Combustion adjustment

When regulating combustion, keep to the CO₂ values, flue gas temperature, Bacharach number and oil pressure given in the specification tables.

The combustion head of the Focós 1 GTFR 3 and 1 GTFR 4 burners is the fixed type and does not need to be regulated.

The combustion head in the other models is adjustable. To do this, it needs to be removed. It is factory set as shown in the specification table.

For limited thermal capacity variations ($\pm 10\%$), there is no need to regulate combustion.

To regulate the combustion head, you need access to screw A in fig. 10. Unscrew the screw V (fig. 16) and remove the combustion head from the burner.

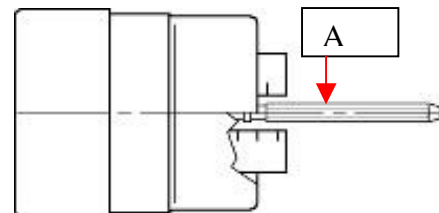


fig. 10

The combustion air can be regulated via the socket screw A shown in fig. 11. The value is displayed on the graduated scale B.

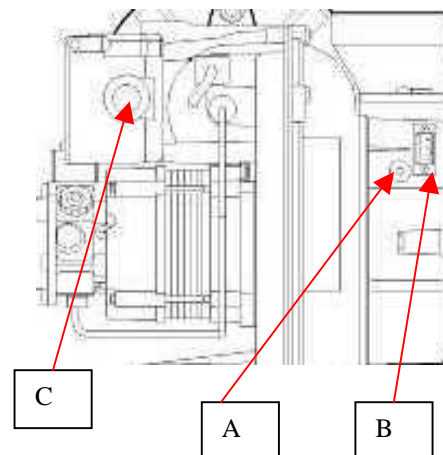


fig. 11

The oil pressure can be regulated via the screw 5 in fig. 6. The pressure must correspond to the values shown in the specification table.

If you need to modify the thermal capacity to meet the requirements of specific installations, refer to section 2.4 – Capacities and Pressures.

Important
Each installation has its own operating values, which cannot be predicted exactly. It is always necessary to perform some checks after installation and regulate combustion if necessary.

3.2.5 Ignition cycle

The burner ignition cycle is represented schematically in fig. 12.

In the event of a shutdown, the light on the reset button on the burner (fig. 1) comes on and needs to be pressed before the burner can be re-ignited.

thermostat
 resistance
 motor
 ignition transformer
 solenoid valve
 flame
 emergency light

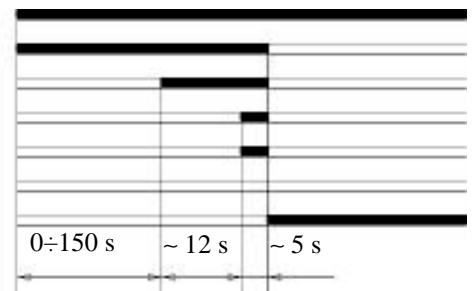
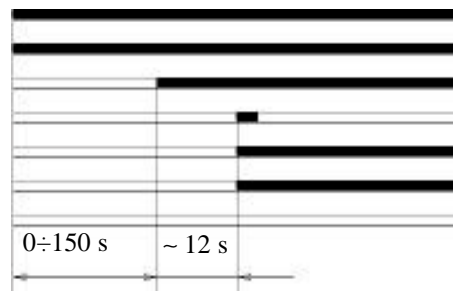


Diagram for

FOCÓS 1 GTFR 3
 FOCÓS 1 GTFR 4

thermostat
 resistance
 motor
 ignition transformer
 solenoid valve
 flame
 emergency light

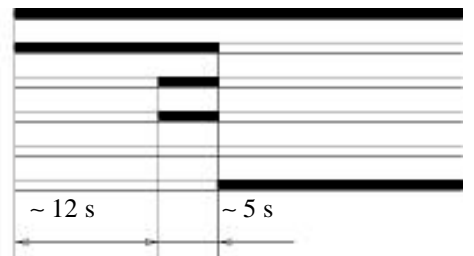


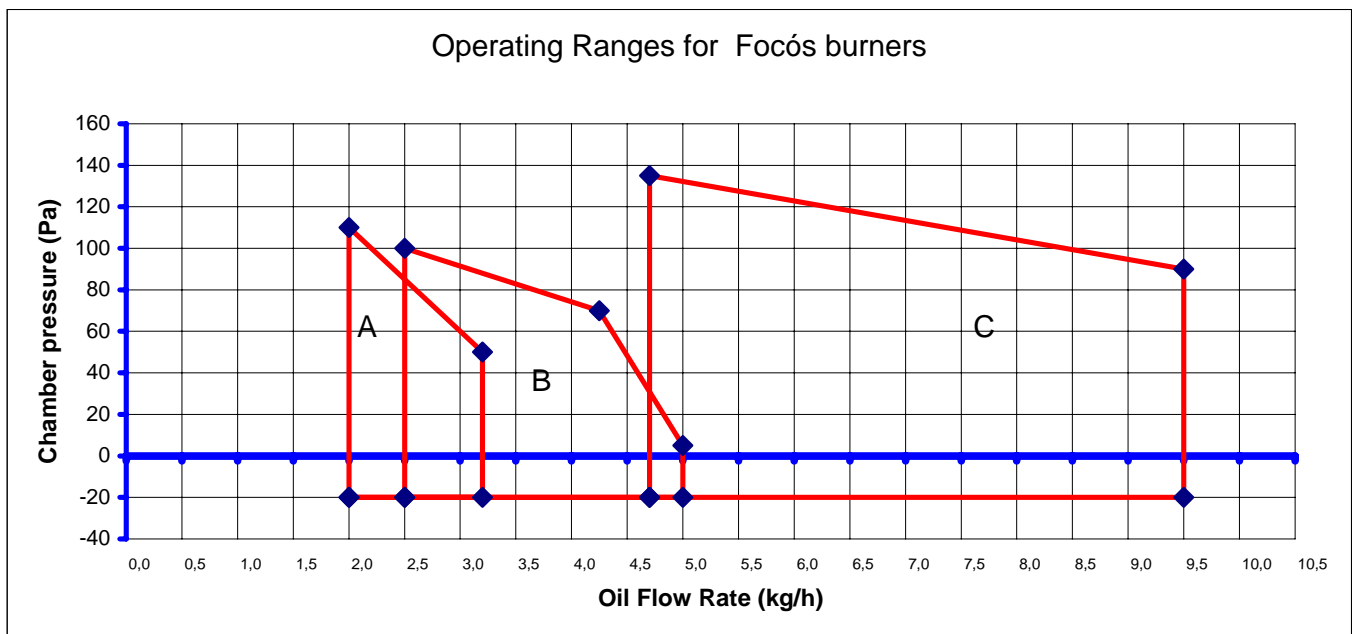
Diagram for

FOCÓS 1 GTF 5
 FOCÓS 1 GTF 6
 FOCÓS 1 GTF 7
 FOCÓS 1 GTF 8

fig. 12

4 Diagrams of Operating Ranges

Fig. 13 shows the burners' operating ranges



A - Operating range for FOCÓS 1 GTFR 3 and FOCÓS 1 GTFR 4

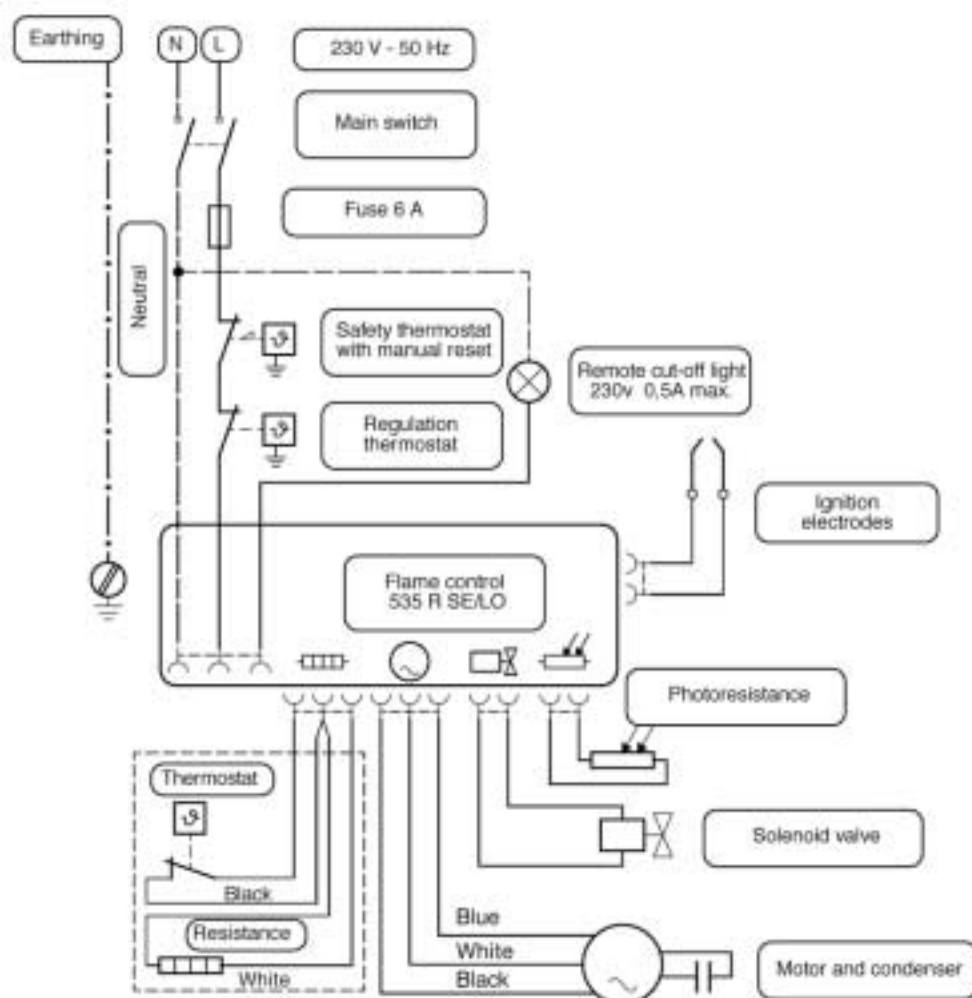
B - Operating range for FOCÓS 1 GTF 5

C - Operating range for FOCÓS 1 GTF 6, FOCÓS 1 GTF 7 and FOCÓS 1 GTF 8

fig. 13

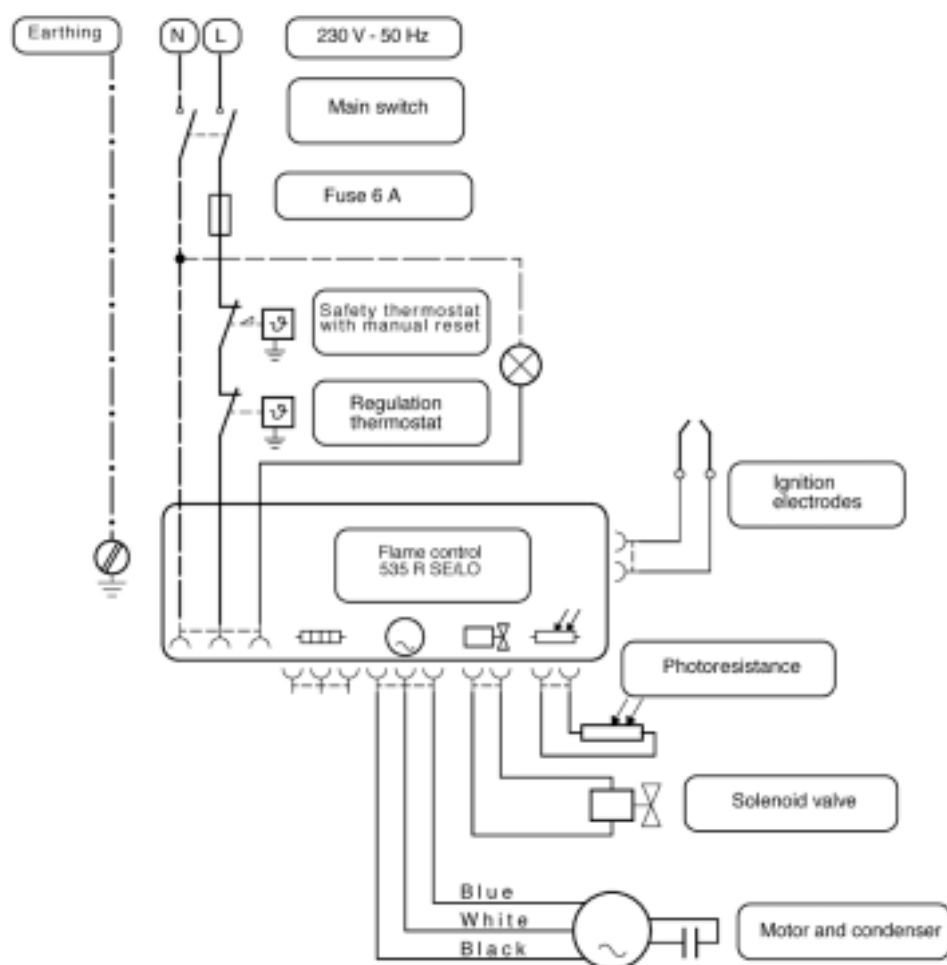
5 Wiring diagrams

Figures 14 and 15 show the wiring diagrams for the burners.



Focós 1 GTFR 3
Focós 1 GTFR 4

fig. 14



Focós 1 GTF 5
Focós 1 GTF 6
Focós 1 GTF 7
Focós 1 GTF 8

fig. 15

6 Faults / solutions

Problem	Possible causes	Solution
The burner does not ignite when it receives the signal from the ambient thermostat.	Power failure.	Check for voltage at the terminals.
		Check the fuse.
		Check whether the thermostat is faulty.
	The photoresistance reads a false light.	Eliminate the false light.
	The oil preheating resistance is faulty (model Focós 1 GTFR 3 and Focós 1 GTFR 4).	Replace the resistance.
	The thermostat controlling the oil preheating resistance is faulty (model Focós 1 GTFR 3 and Focós 1 GTFR 4).	Replace the thermostat.
	Possible wrong connections at the control unit.	Check the terminal block connections.
The burner performs pre-washing correctly and then shuts down.	The photoresistance is dirty.	Clean the photoresistance.
	The photoresistance is faulty.	Replace the photoresistance.
	The flame burns unevenly or not at all.	Check the oil pressure.
		Check that oil flows from the nozzle.
		Check the air.
		Check the solenoid valve.
		Change the nozzle.
The burner ignites after a failed attempt.	The ignition electrodes are wrongly positioned.	Position them as instructed.
	Excessive air flow.	Regulate the air flow.
	The nozzle is dirty or damaged.	Replace the nozzle.
	The resistance is faulty (model Focós 1 GTFR 3 and Focós 1 GTFR 4)	Replace the resistance.

7 Testing the burner

7.1 Preliminary checks

Before igniting the burner for the first time, it is advisable to carry out the following checks.

- Make sure the installation complies with the relevant legal requirements and the manufacturer's instructions.
- Make sure the flue gas discharge pipe complies with the applicable standards and laws.
- Check that the supply voltage is 230 V- 50 Hz.
- Make sure the system is full of water.
- Make sure any cut-off valves in the pipes are open.
- Check for fuel leaks.
- Operate the master switch.

- Check for water leaks.

If the burner is not installed in compliance with the relevant standards and laws and the manufacturer's instructions, do not attempt to ignite it and inform the person in charge of the system.

7.2 Switching the burner on and off

For full details, refer to the section entitled **Instructions for the User**.

8 Maintenance

8.1 Maintenance Schedule

To ensure that the burner is kept in proper running order, it needs

to be serviced annually following the schedule below.

Maintenance and repairs must be carried out by a properly qualified person.

The producer advises all customers to have their burners serviced and repaired by an authorised service centre, which can send a fully qualified technician.

Before servicing or replacing any of the components or cleaning the inside, switch off the electricity supply.

Perform the following **routine checks**.

Maintenance Schedule

- Check that the overall burner is intact.
- Check the oil delivery circuit for leaks.
- Check the ignition electrodes.
- Check boiler ignition.
- Check the photoresistance.
- Measure the oil pressure at the nozzle.
- Check the state of the nozzle.
- Check the boiler combustion parameters by means of flue gas analyses.
- Check the flue gas discharge pipes for leaks and make sure they are in a good state of preservation.

Cleaning operations:

- Clean the burner thoroughly.
- Clean the oil filter.
- Clean the nozzle.
- Clean the combustion head.
- Clean the ventilation grille in the boiler room.

When servicing the burner for the first time, check that the following are present:

- the Declaration of Conformity for the boiler.
- the instruction manual.

Perform the following checks as well:

- Make sure the burner is installed in a suitable room.
- Make sure the room is adequately ventilated.

- Check the diameters and lengths of the flue gas ducts.
- Make sure the burner is installed in compliance with the instructions in this manual.

If the burner does not operate correctly or causes a hazard for people, animals or property, inform the person in charge of the system and prepare a written statement.

8.2 Removing the nozzle

Proceed as follows to remove the nozzle.

- Unscrew the two screws **V** (fig. 16) and remove the head of the burner.
- Unscrew the screw **A** (fig. 17) and remove the electrodes.
- Remove the nozzle using one 16 mm and one 17 mm spanner.

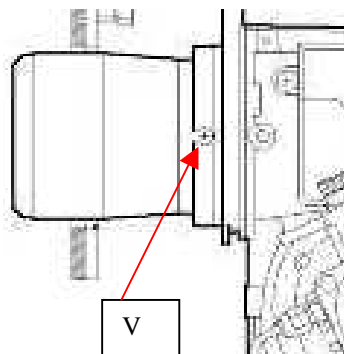


fig. 16

8.3 Regulating the electrodes

If the burner is to work correctly, it is important to keep to the distances between the electrodes and between the nozzles and electrodes (fig. 17).

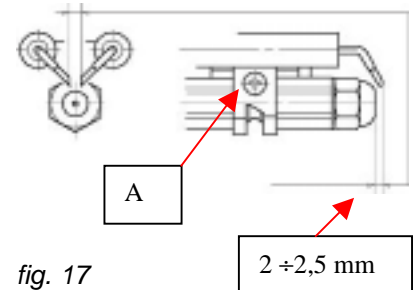


fig. 17

8.4 Replacing the control unit

Proceed as follows to replace the burner control unit.

- Unscrew screw **1**, open the lid **2** and disconnect the wires.
- Remove the coil **3**.
- Unscrew the two screws **4**.
- Move the box slightly and remove the high-voltage connections.

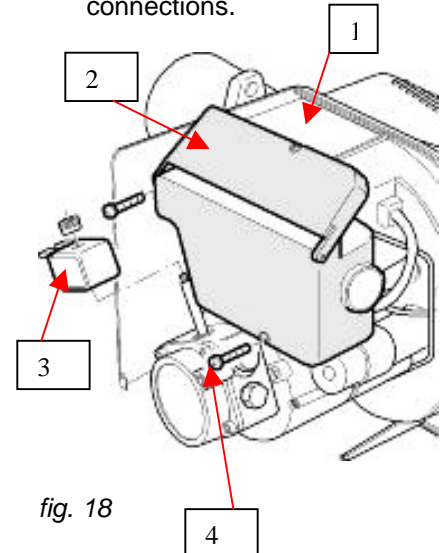


fig. 18



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