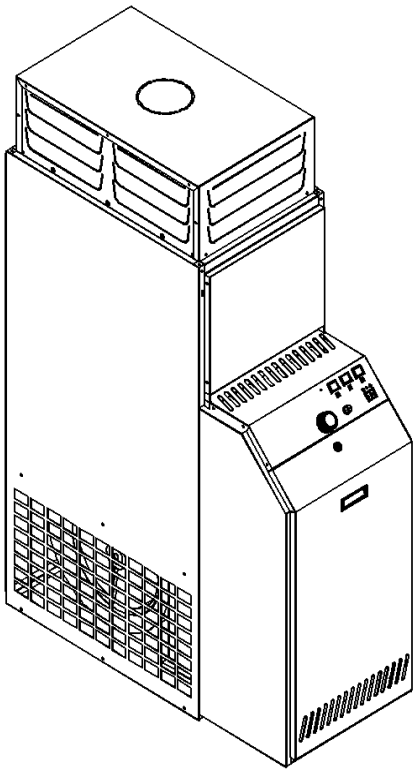
GB – Hot air generator

Operation and maintenance manual



BF 35

BF 45

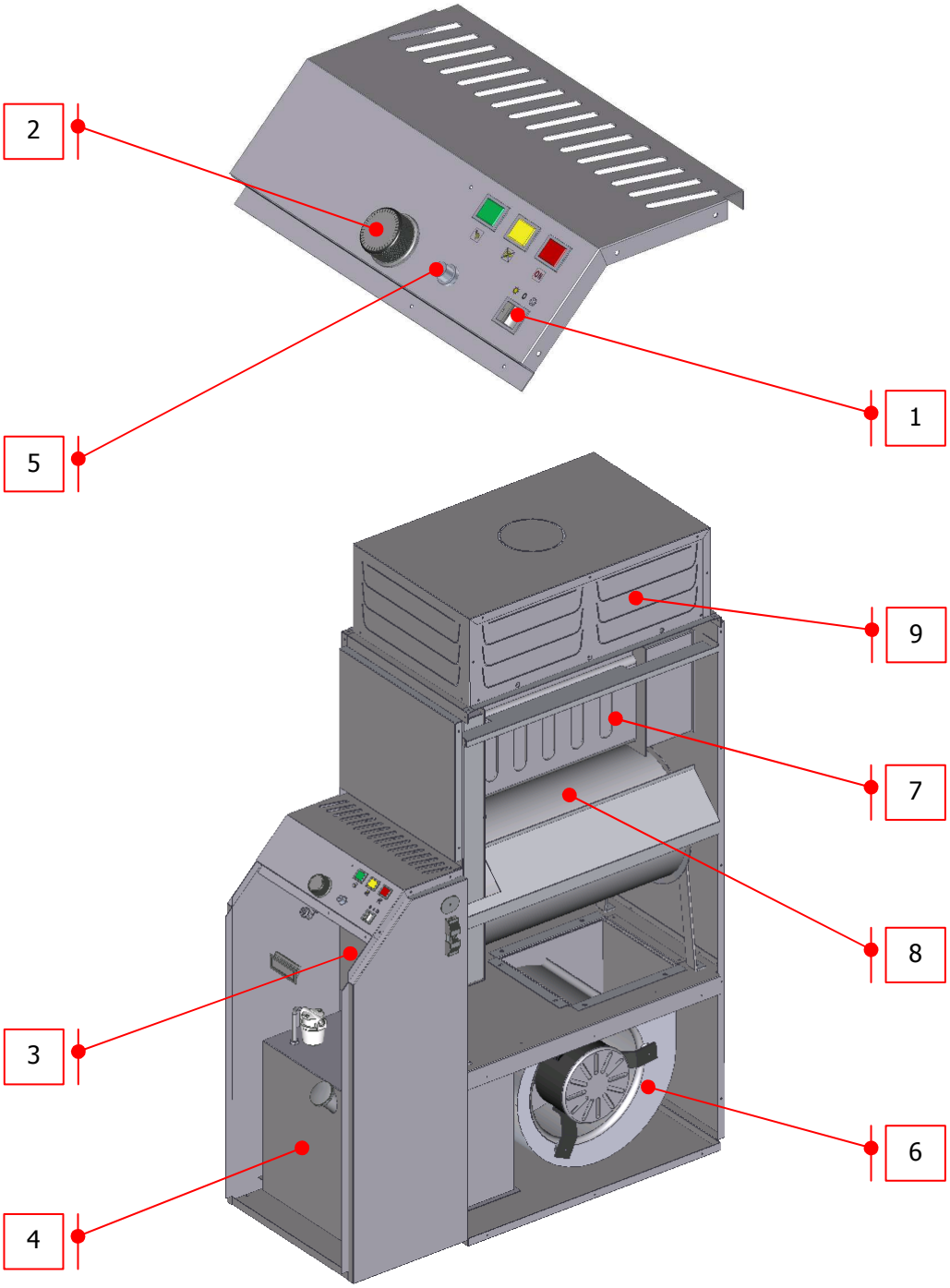
BF 75

BF 95

BF 105

4111.805
Edition 10
Rev. 01

CONTROL BOARD



1. Commutator
2. Room thermostat
3. Burner
4. Fuel tank
5. Limit thermostat
6. Fan
7. Heat exchanger
8. Combustion chamber
9. Adjustable air head

WARNING: To avoid an overheating of the combustion chamber the fins must never be completely closed. For this reason a blocking bar prevents the complete closure of the fins.

BF space heaters have been designed for use in medium to big sized rooms and buildings where a fixed heating system is needed.

Heat is produced by combustion and the heat from smoke is transmitted to fresh air through the metal walls of the combustion chamber and the heat exchanger. The combustion chamber is of the type where smoke follows a course of two modules.

Air and smoke pass through separated ducts, both of which are welded and sealed. When, after combustion, the waste gases have cooled, they get expelled through a duct that has to be connected to a chimney or chimney flue which must be big enough to guarantee that smoke gets efficiently expelled.

Air used for combustion gets aspirated directly from the room or building that is being heated. It is therefore very important the room or building to be properly ventilated so that there is enough fresh air circulating at all times.

Hot air can be sent in the desired direction by moving the fins on the air head.

BF heaters can operate with ON-OFF type and fuelled by heating oil burners. Where burners use oil, a front attached fuel tank is provided (4). There are two safety devices which are activated in case of serious malfunctioning. The burner control device, which is mounted on the burner and is provided with a restart button that automatically stops the burner if the flame turns off, while the manual restarting type overheat thermostat activates if the temperature of the combustion chamber reaches the set maximum limit.

If any of those safety devices are activated, you should check carefully what the problem is before pressing the restart button and restarting the heater (check the "FUNCTIONING PROBLEMS: CAUSES AND SOLUTIONS" paragraph).

GENERAL ADVICE

WARNING: Only chosen and by the manufacturer supplied burners can be used. If another type of burner is used, the heater no longer complies with the CE regulations.

The space heater has to be installed, set up and used in accordance with existing laws. Here are a few general guidelines which should be followed:

- Follow the instructions of this manual very carefully.
- Don't install the heater in places where there might be risk of explosion or fire.
- Flammable material should be kept at a safe distance from the heater (3 meters minimum).
- All fire prevention measures have to be enforced.
- The room or building to heat has to be sufficiently ventilated so that the heather disposes of the needed ait to work properly.
- The heater has to be near a chimney or a chimney flue and a suitable electric switchboard.
- Don't let any children or animal get near the heater.
- After use, make sure that the disconnecting switch if off.

When using any type of space heater, it is compulsory to:

- Not exceed the maximum furnace heat output level.
- Make sure that a proper air circulation and supply is provided and that nothing might obstruct the air aspiration and expulsion: that can be caused, for example, by placing covers or other objects on the heater, or by positioning it too close to walls or other large objects. If there is an inadequate air supply, the combustion chamber might start overheating, getting the overheat thermostat to intervene.

INSTALLATION

WARNING!

The following operations must be carried out by qualified personnel only.

ELECTRIC CONNECTIONS AND SETTINGS:

WARNING!

The main heater electricity supply has to be provided with grounding and a magneto-thermal switch with a differential. The power wire has to be connected to a switch board linked to a disconnecting switch.

The basic equipment of the heater includes all control and safety devices which can guarantee the correct functioning of the machine: control board, room thermostat (2), fan and manual safety thermostat are already connected.

The following operations have now to be carried out:

- Plug the power wire in after having read the adhesive label that shows electricity supply characteristics;

After having completed those operations, make carefully sure that all the electric connections match with the wiring diagram. When the heater gets turned on for the first time, you should make sure that the fan does not absorb more current than the maximum indicated limit. Eventually, to regulate the burner, follow the instructions of the burner manual.

HOT AIR DUCTS CONNECTION

The space heater provides heat by releasing and diffusing hot air.

An air head which can be connected to air ducts, if the users chooses this option, is supplied with every machine. In this case, and in particular if the diameter and length of the ducts get changed, or if the number of bends gets modified, air output may vary. Consequently, it is very important to check and regulate air output when any modification is made to air heads or ducts.

In all circumstances, you should make sure that:

- The fan engine does not absorb more current than the maximum indicated limit.
- The air flow volume matches with its recommended level.

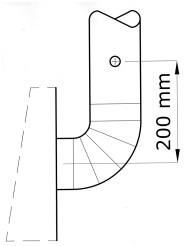
CHIMNEY AND CHIMNEY FLUE CONNECTION

Efficient combustion and trouble-free working of the burner depend on an efficient smoke evacuation:

- The pipe which through which smoke passes should as short as possible and ascending.
- There should be no sharp bends and the diameter of the pipe should never be reduced.
- Every heater should have its own chimney.
- The chimney draught should at least enough and adequate for the needs of the equipment.

WASTE PRODUCTS ANALYSIS

The probes to check the combustion waste products composition and smoke temperature have to be positioned as the picture below indicates.



When those tests have been completed, the hole drilled has to be sealed using a high temperature resistant material which will ensure that the pipe remains airtight.

SWITCHING ON

To start the heater:

- Set the commutator (1) in the "O" position.
- Turn the disconnecting switch on the electric board on.
- Set the room thermostat (2) at the maximum level and set the commutator (1) in the position: the burner will start and, after the combustion chamber has begun to heat, the fan will start too.
- If the heater does not start after you have completed the operations above, you should check the "FUNCTIONING PROBLEMS: CAUSES AND SOLUTIONS" paragraph.
- If the heater is working normally:
  1) Set the room thermostat at the desired level.
  2) Move the adjustable fins of the air head (9) to reach the desired position.

TURNING OFF

WARNING!

You should never stop the heater by simply turning off the disconnecting switch on the electric board. The electricity supply must only be disconnected when the fan has completely stopped.

Turn the commutator (1), in the "O" position. The burner will stop, while the fan might turn off and on a few times until the combustion chamber has completely cooled down.

VENTILATION

When the commutator (1) gets turned to the position, the heater will work in continuous fan mode.

MAINTENANCE

WARNING!

The following operations have to carried out by qualified personnel only

For a correct work of the machine, it is necessary to perform the following operations periodically, remembering to disconnect the power line before beginning.

Before carrying out any maintenance operation, you should:

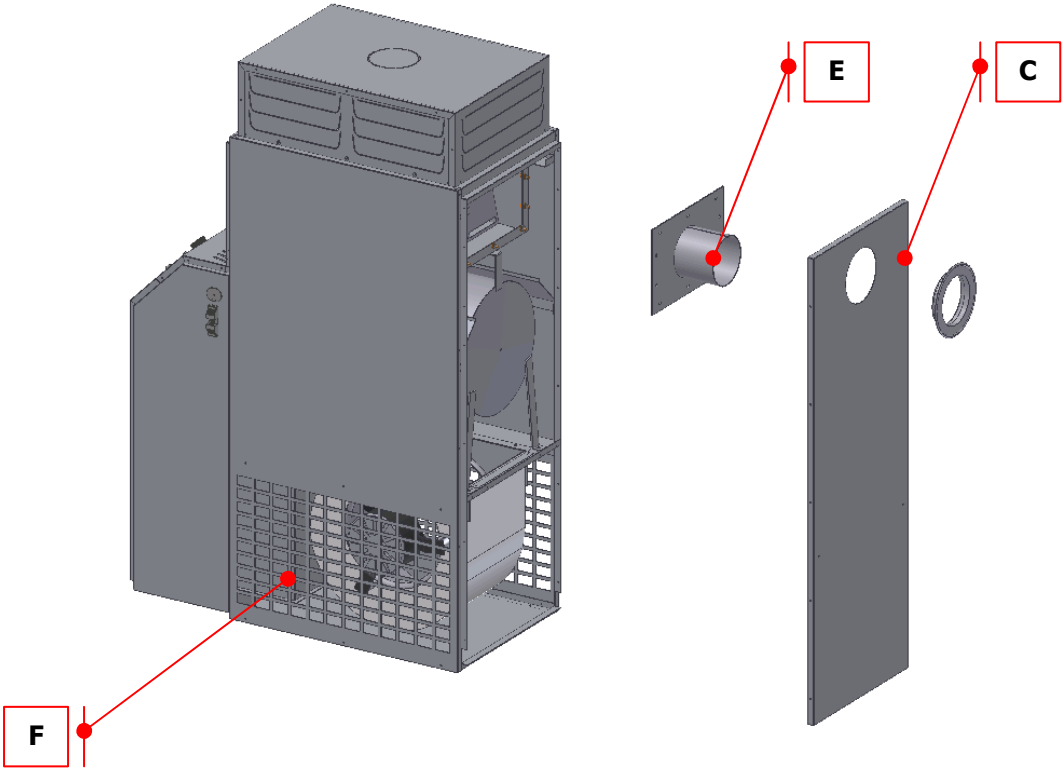
- **Stop the machine as indicated in the previous paragraph.**
- **Turn the disconnecting switch on the off position on the electric board.**
- **Wait until the heater has completely cooled down.**

HEAT EXCHANGER AND COMBUSTION CHAMBER CLEANSING

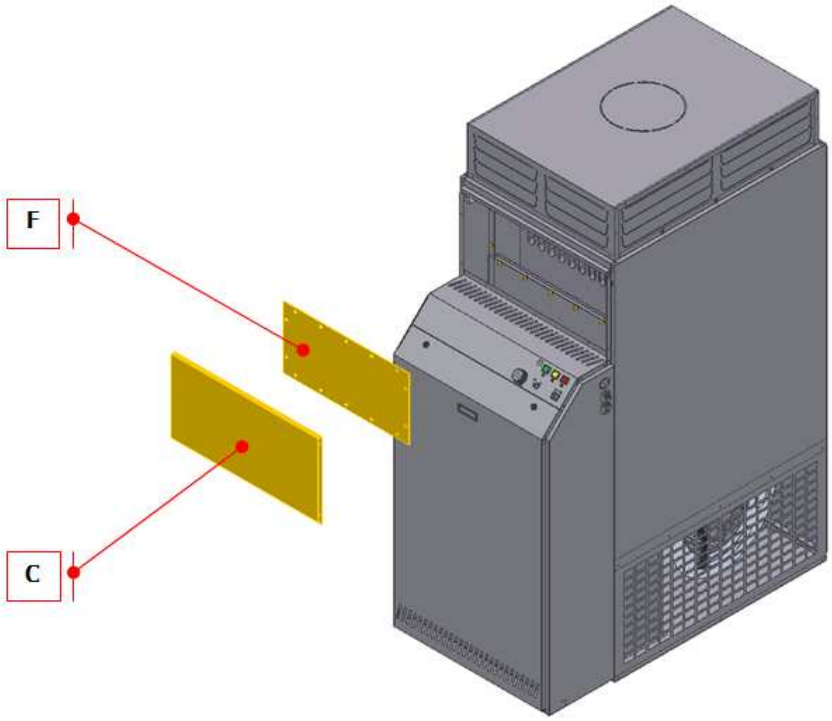
For the heater to operate efficiently, the heat exchanger and the combustion chamber have to be cleaned after a period of prolonged use or even more frequently if you notice too much soot forms: that might happen with un incorrect chimney draught, with a very bad quality fuel, with an incorrectly set burner or when the heater gets turned on and off too often. If the heater starts vibrating when it is in the on position, there is probably too much deposited soot.

To reach the internal part of the heat exchanger and the combustion chamber, remove the burner, the back lower panel (C) as well as the exchanger inspection panel (E).
Using a vacuum cleaner or a ramroad, remove soot and extraneous material.

Models BF 35 – BF 45 – BF 75:



Models BF 95 – BF 105:



FAN CLEANSING
Remove any extraneous material from the net of the aspiration grate (F) and, if necessary, clean the blades with pressurized air blows.

BURNER CLEANSING
For the heater to function efficiently, the burner has to be regularly services by an authorized service technician. All cleaning, servicing and regulation operations have to be performed as indicated in the burner manual.

TRANSPORTING AND MOVING THE HEATER

To move or transport the unit, place it on a raised base and then lift it with a forklift truck. There are no eyebolts or other hooking points. The unit can also be placed on supports laying it down on the side that cannot be seen on the first picture of the heater.

Before moving the machine, you should:

- **Stop the machine as indicated in the previous paragraph.**
- **Turn the disconnecting switch on the off position on the electric board.**
- **Wait until the heater has completely cooled down.**

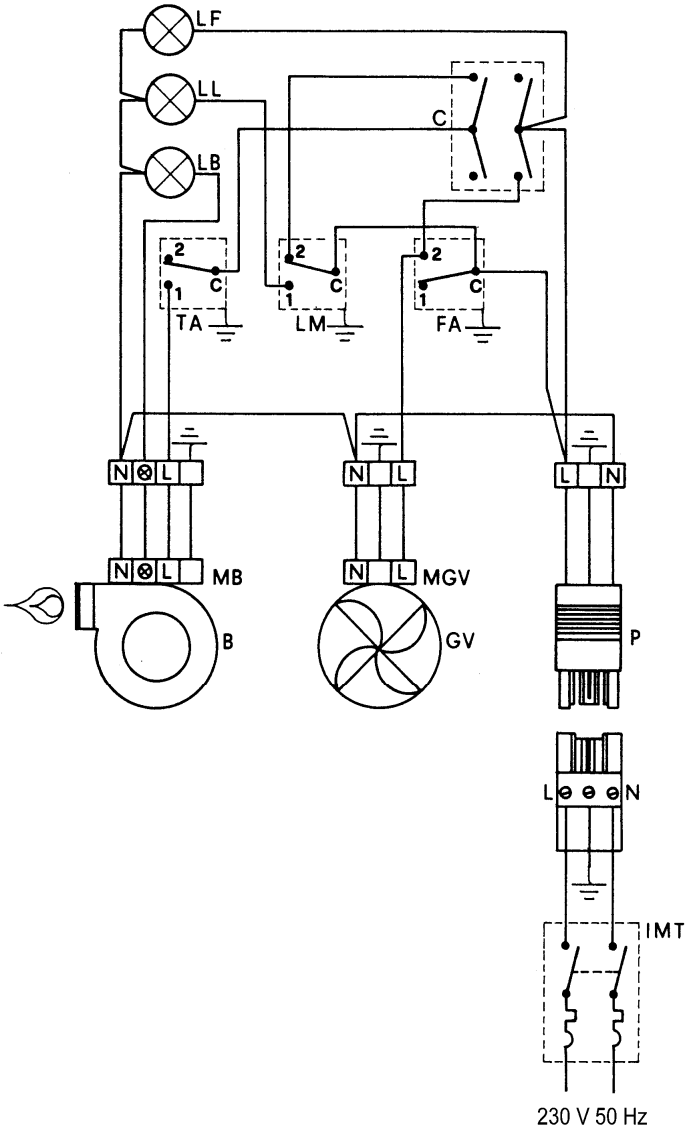
FUNCTIONING PROBLEMS: CAUSES AND SOLUTIONS

PROBLEM	CAUSE	SOLUTION
Heater won't start	1. Faulty electric supply 2. Wrong main switch position 3. Wrong room thermostat setting 4. Safety device (burner, safety thermostat) non restarted after repair	1. Check functioning and positioning of main switch 1. Check power wire 1. Check electric connections 1. Check fuses 2. Set main switch in the correct position 3. Check room thermostat setting and functioning 4. Press restarting button
Limit Thermostat intervention	1. Combustion chamber has overheated	1. Check fuel flow 1. Check registers, draw-holes, etc. position 1. Remove extraneous material from air ducts and ventilation grates
Burner starts working but the flame does not light up and reset light turns on	1. Irregular burner functioning	1. Press restarting button to turn on the heater. If the same problem arises again call an authorizes service technician
Fan does not start or does it late	1. Faulty electric supply 2. Out of order fan 3. Burnt or interrupted engine winding 4. Burnt engine condenser 5. Blocked engine bearings	1. Check fuses 1. Check electric connections 2. Check the thermostat, set it and replace it if necessary 3. Replace fan engine 4. Replace condenser 5. Replace bearings
Vibrating or producing unusual noise fan	1. Extraneous material on fan blades 2. Low air circulation	1. Remove extraneous materiel 2. Remove obstacles to air circulation
Insufficient heating	1. Burner insufficient capability	1. Call an authorized Service Technician

TECHNICAL DATA

MODEL	BF 35	BF 45	BF 75	BF 95	BF 105
Single phase power supply	230V ~ 50 Hz				
Air flow	1.900 m³/h	2.800 m³/h	4.500 m³/h	5.300 m³/h	6.300 m³/h
Cosumption	2,84 kg/h	3,95 kg/h	6,0 kg/h	7,84 kg/h	8,82 kg/h
Fuel	Oil				
Maximal thermal power	33,7 kW	46,8 kW	71,1 kW	93,0 kW	104,6 kW
Fan electric power	245 W	245 W	590 W	736 kW	736 kW
Flue diameter	120 mm	120 mm	150 mm	180 mm	200 mm
Fan starting temperature	+35 °C				
Safety limit temperature	+100 °C				
Fuel tank	55 litres	55 litres	75 litres	105 litres	135 litres
Dimensions L x P x H	460x1050x1600 mm	460x1050x1600 mm	540x1120x1700 mm	680x1220x1885 mm	760x1400x2000 mm
Net weight (without burner)	132 kg	137 kg	173 kg	197 kg	264 kg
Riello Burner	REG 3	REG 5	R40 G10S	R40 G10S	R40 G10S

ELECTRIC DIAGRAM



LF	Tension signal
LL	LIMIT intervention signal
LB	Burner block signal
C	Heating / stop / fan commutator
TA	Room thermostat
LM	LIMIT thermostat
FA	FAN thermostat
MB	Burner terminal board
B	Burner
MGV	Fan group terminal board
GV	Fan group
P	External plug
IMT*	Magneto-thermal interruptor qitt

* Outside the machine, under installer's responsibility.

DECLARATION OF CONFORMITY CE:

The company:

DESA Italia s.p.a. - Via Tione, 12 - 37010 Pastrengo (Vr) - ITALY

Declares under its responsibility that the machine:

Hot air generator:

BF 35 – BF 45 – BF 75 – BF 95 – BF 105

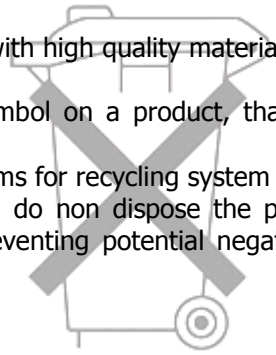
Complies with:

98/37 CE, 91/368, 93/44, EMC 89/336, 92/31, 93/68, 73/23.

Pastrengo, september 2010

Raffaele Legnani (Managing Director)

PRODUCT DISPOSAL



Your product is designed and manufactured with high quality materials and components which can be recycled and reused.
When you find this crossed-out wheeled symbol on a product, that means that it is covered by the European Directive 2002/96/EC.
Please inquire about the local collection of items for recycling system for electric and electronic products.
Please act according to your local rules and do non dispose the product with the normal domestic waste: the correct disposal of this product will help preventing potential negative consequences for both environment and human health.

DESA ITALIA s.p.a.
Via Tione, 12 – 37010
Pastrengo (Verona) – Italy
www.desaitalia.com
info@desaitalia.com

DESA POLAND Sp. Z.o.o
ul Magazynova 5A, 62-023
Gadki, Poland
www.desapoland.pl
office@desapoland.pl

DESA HEATING EQUIPMENT SHANGHAI CO., LTD
Rm. 2203, 218, HengFeng Rd,
Shanghai, China, 200070
www.desa-china.com
info@desa-china.com