

SPACE HEATERS



JUMBO

Ed. 06/08

INSTRUCTIONS MANUAL

MANUFACTURER

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MODEL

JUMBO 65 M, 65 T, 90 M, 90 T, 90 M/C, 115 M, 115 T, 115 M/C, 115 T/C
JUMBO 150 M, 150 T, 150 M/C, 150 T/C, 200 M, 200T, 200 T/C

Before using the heater, read and understand all instructions and follow them carefully.
The manufacturer is not responsible for damages to goods or persons due to improper use of units.

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GENERAL HAZARD WARNING

FAILURE TO COMPLY WITH THE PRECAUTION AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARD OF FIRE, EXPLOSION, BURN, ASPHYXIATION, CARBON MONOXIDE POISONING, AND / OR ELECTRICAL SHOCK.

ONLY PERSONS WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATER.

IF YOU NEED ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTIONS MANUAL, LABEL, ETC., CONTACT THE MANUFACTURER.

WARNING: FIRE, BURN, INHALATION AND EXPLOSION HAZARD

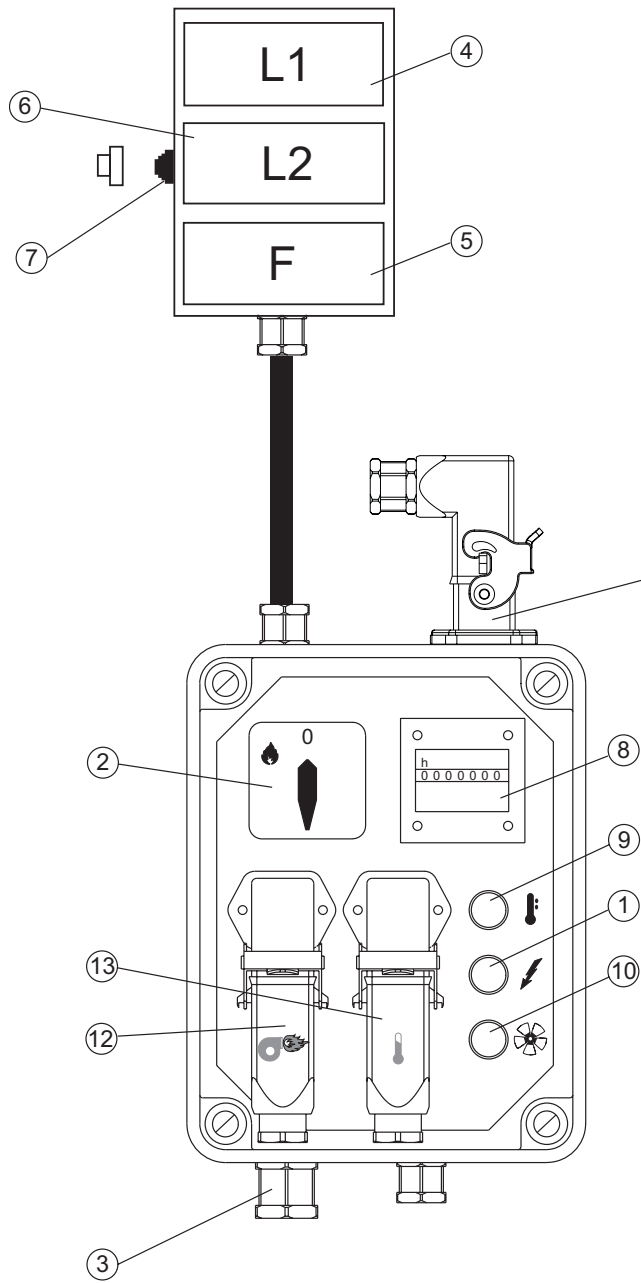
KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIALS, PAPER OR CARDBOARD, A SAFE DISTANCE AWAY FROM THE HEATER AS RECOMMENDED BY THE INSTRUCTIONS.

NEVER USE THE HEATER IN SPACES WHICH DO OR MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS.

WARNING

NOT FOR HOME OR RECREATIONAL VEHICLE USE.

CONTROL BOARD - TABLEAU DE COMMANDE



- 1 CONTROL LAMP
- 2 CONTROL KNOB HEAT - STOP - VENTILATION ONLY
- 3 POWER CORD FASTENER
- 4 OVERHEAT SAFETY THERMOSTAT, L1
- 5 FAN THERMOSTAT, F
- 6 LIMIT THERMOSTAT WITH MANUAL RESTART, L2
- 7 THERMOSTAT RESET SWITCH
- 8 HOUR COUNTER
- 9 OVERHEAT THERMOSTATS CONTROL LAMP, L1, L2
- 10 FAN STOP CONTROL LAMP
- 11 HEATED DIESEL FILTER PLUG
- 12 BURNER PLUG
- 13 ROOM THERMOSTAT PLUG

DESCRIPTION

JUMBO space heaters have been designed for use in small to medium-sized rooms and buildings where a fixed or mobile heating system is required.

Heat is produced by combustion and the heat from the smoke is transmitted to the fresh air through the metal walls of the combustion chamber and the heat exchanger. The combustion chamber is of the type where smoke circulates twice.

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

The air which is used in combustion is aspirated directly from the room or building which is being heated. It is therefore of utmost importance that the room or building be properly ventilated so that enough fresh air is circulating at all times.

The air outlet can be replaced by outlet panels with two or four openings, all of which must be kept open.

Jumbo heaters can operate with burners that are fuelled by diesel oil #2 max., natural gas or propane.

Warning



Only the burners which are chosen and supplied by the manufacturer can be used. If another type of burner is used the heater no longer complies with CSA / UL regulations.

Applied burners are listed in the final "TECHNICAL CHARACTERISTICS" sheet

There are three safety devices which are activated in case of serious malfunction. The Burner Control Device, which is mounted on the burner and has a restart button, automatically stops the burner if the flame goes out. The Overheat Thermostat, L2, of the manual restart type, is activated if the temperature of the combustion chamber rises above the set maximum limit; the warning light (9) lights up and the heater stops working. The Thermal Relay, RM, is activated if the fan motor starts to use more electrical current than the maximum permitted limit; the warning light (10) lights up and the heater stops working.

If any of these safety devices are activated you should check carefully what the problem actually is before pressing the restart button and starting the heater off again ("OBSERVED FAULTS, CAUSES AND REMEDIES").

Overheat safety thermostat, L1, shuts down the heater if air flow is not sufficient to cool off combustion chamber: the heater will restart automatically as soon as the heater has cooled down enough (The lamp (9) lights up and then it cuts down).

GENERAL ADVICES

The heater is designed and approved for use as a construction heater in accordance with Standard ANSI Z83.7 - CGA 2.14.

Intended use is the temporary heating of buildings or structures under construction, alteration or repair.

Warning



CHECK WITH YOUR LOCAL FIRE SAFETY AUTHORITY IF YOU HAVE QUESTIONS ABOUT APPLICATIONS.

Here are a few general guidelines which should be followed:

- Follow the instructions in this booklet very carefully.
- Don't install the heater in places where there may be a risk of fire or explosion.
- Inflammable material should be kept at a safe distance from the heater (Minimum 6 feet).
- All fire prevention regulations must be adhered to.
- The room or building which is being heated must be sufficiently ventilated so that the heater has enough air to function properly.
- The heater must be near a chimney or chimney flue and a suitable electric switchboard.

- Don't let animals or children near the heater.
- Make sure heater is inspected before each use, and at least annually by a qualified service person.
- After use make sure the disconnecting switch is off.

When using any type of space heater it is obligatory:

- not to exceed the maximum level of heat output of the furnace ("TECHNICAL SPECIFICATION TABLE");
- to make sure that there is adequate air circulation and air supply to the heater and that nothing is obstructing the aspiration and expulsion of air; movement of air may be obstructed in various ways including placing covers or other objects on the heater or positioning the heater too near a wall or other large object. If the airflow is not adequate, the combustion chamber will overheat and the overheat safety thermostat L1 will turn the burner off and on continuously ("OBSERVED FAULTS, CAUSES AND REMEDIES").

INSTALLATION

Warning

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

ELECTRICAL CONNECTIONS AND SETTINGS

The space heater is supplied along with the safety and control devices which are indispensable to the correct functioning of the unit. The electric switchboard, burner, the fan thermostat, overheat safety thermostat and the overheat thermostat with manual restart have already been connected.

Warning

Power supply cord of proper dimension shall be connected to the main switchboard and heater shall be grounded.

Electrical grounding shall be in compliance with the National Electrical Code ANSI/NFPA 70 or the CSA C22.1 Canadian Electrical Code, Part I.



The following operations must now be carried out:

- Plug in the power cord having read the adhesive label which details electricity supply characteristics.
- The burner must be connected to the fuel supply (Burner Instruction Manual).
- Connect the burner to the electricity supply with the burner plug.
- Connect accessories such as the room thermostat or clock to the unit's electric switchboard with the thermostat plug.

Having completed all these operations check carefully that all electrical connections correspond to the wiring diagram. When the heater is first turned on you must check that the fan does not use more current than the maximum permitted limit.

Finally, to regulate the burner follow the instructions in the Burner Instruction Manual.

CONNECTION TO HOT AIR DUCTS

The space heater provides heat by releasing and dispersing hot air. An air head is supplied with each unit but it can be replaced by other types of head with two or four openings which allow for flexible tubes in heat distribution. The screws which hold the original outlet in place should be removed and the new outlet should be screwed on in place of the old.

The new head may be connected to new air ducts if the user wishes to satisfy specific needs. In this case and in particular if the diameter and length of the ducts have been changed or if the number of bends has been 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 air ducts. In all circumstances you must ensure

that:

- The fan motor does not absorb more current than the maximum permitted limit;
- The volume of air flow corresponds to the recommended level.

If the heater is equipped with centrifugal fan and if the volume of hot air differs from preset values proceed as follows (Fig. 1):

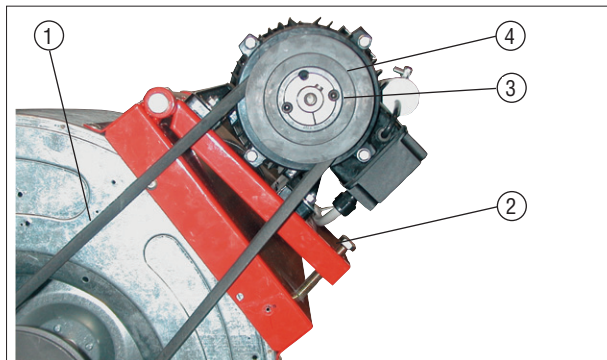


Fig. 1

- 1) Remove the aspiration grill which is on fan motor side of the unit.
- 2) Remove the screws (2) from the motor slide.
- 3) Remove the belt (1).
- 4) Loosen the bolts (3).
- 5) Turn the pulley clockwise and anti-clockwise in order to increase or reduce the volume of air.
- 6) Tighten the bolts (3).
- 7) Put back the aspirations grill
- 8) Repeat operations from (1) to (7) until the correct volume of air flow has been achieved.

DRAFT

The evacuation smoke flues shall be made with steel.

Efficient combustion and trouble-free working of the burner depend on efficient flue draft. The unit must be connected to the chimney flue in accordance with current legal regulations and in line with the following guidelines:

- The tube which carries the smoke should cover as short a distance as possible and should slant upwards.
- There should be no sharp bends in the tubes and the diameter of the tubes must never be reduced.
- Every heater must have its own chimney.
- Flue draft must at least correspond to the minimum compulsory level in the Technical Specifications.

ANALYSIS OF COMBUSTION WASTE PRODUCTS

The probes which check the composition of combustion waste products and smoke temperature must be positioned as indicated in Fig. 2.

When these tests have been completed the hole which was drilled for the probe must be sealed with a material which is resistant to high temperatures and which ensures that the tube remains airtight.

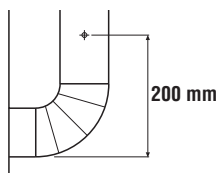


Fig. 2

CONNECTION TO FUEL SUPPLY

To connect the burner to the fuel supply follow the instructions in the Burner Instruction Manual.

The gas burner can use both methane gas or propane. Burners are predisposed at factory to be used with natural gas. If propane shall be

used, burners shall be adapted according to the instruction manual of the burner.

In case of connection of heater to natural gas, the installation shall conform with local codes, or, in the absence of local code, with the National Fuel Gas Code ANSI Z223.1/NFPA and the Natural Gas and Propane Installation Code, CSA B149.1.

In case of connection of heater to propane supply cylinder, the installation shall conform with local codes or, in the absence of local code, with the Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/FNPA 548 and the Natural Gas and Propane Installation Code, CSA B149.1.

Heater must be located at least 6 ft in the U.S. or 10 ft in Canada from any propane gas container.

Propane gas cylinder shall be in compliance with national standards and shall be arranged to provide for vapor withdrawal from the operating cylinder.

The gas shall be turned off at the propane supply cylinder when the heater is not in use.

Visually inspect hose assembly prior to each use of the heater. If it is evident there is excessive abrasion or wear, or the hose is cut, it must be replaced prior to the heater being put into operation.

After installation, proper instruments or devices shall be used to check and avoid any gas leakage. Gas leakage testing shall be regularly operated.

REGULATION OF COMBUSTION - 1st OPERATION

After having checked the hermetic seal and of combustion waste products line, heater may be operated for the first time.

To perform regulation of combustion correctly, combustion waste products must be analyzed using appropriate instruments: values recommended by actual standards must be reached.

The regulation procedure has been on the Burner Instruction Manual; final values of CO₂ shall be correspondent to excess air factor of 1,2 (12,5 for gas-oil, 9,7% for G20, 9,6% for G25, 11,7% for G30 and 11,7% for G31) while CO level shall be less than 75 ppm.

INSTRUCTIONS FOR USE

SWITCHING ON

- Set the control knob (2) in position "0";
- Turn on the disconnecting switch on the electric switchboard;
- If the unit is operated manually turn the control knob to . The burner starts up, the combustion chamber heats up and then the fan starts;
- If the unit operates automatically set the room thermostat at the desired level and turn the control knob (2) to : the heater will now start and stop automatically.
- If the heater doesn't start after you have completed the above operations consult the Troubleshooting section of this manual.

TURNING OFF

In manual operation turn control knob (2) to "0" or turn off control in automatic operation.

The burner stops while the fan turns itself on and off until the combustion chamber has completely cooled down.

Warning



Never stop the heater by simply turning off the disconnecting switch on the electric switchboard. The electrical supply must only be disconnected when the fan has come to a complete stop.

VENTILATION

When the control knob is turned to the symbol the heater operates in continuous fan mode.

MAINTENANCE

Warning



The following operations must be carried out by qualified personnel only. Before carrying out any maintenance operation the heater must be disconnected from the mains. Therefore:

- Stop the machine as instructed above
- Turn off the disconnecting switch on the electric switchboard.
- Wait until the heater has cooled.

CLEANING THE HEAT EXCHANGER AND THE COMBUSTION CHAMBER

For the heater to operate efficiently the heat exchanger and combustion chamber must be cleaned after a period of prolonged use and more frequently if too much soot builds up. Soot builds up when there is not enough chimney draft, when the fuel is of very poor quality, when the burner is regulated incorrectly or when the heater is switched on and off too frequently. If the heater starts vibrating when it is turned on there is probably too much soot.

To get at the heat exchanger (1) take off the front panel (3) and then remove the smoke box panel (2) and remove baffle plates (7). To get at the combustion chamber (4) remove the burner (5).

CLEANING THE FAN

Remove any dirt or extraneous material from the mesh of the aspiration grill (6) and if necessary clean the propeller with an air-suction tool.

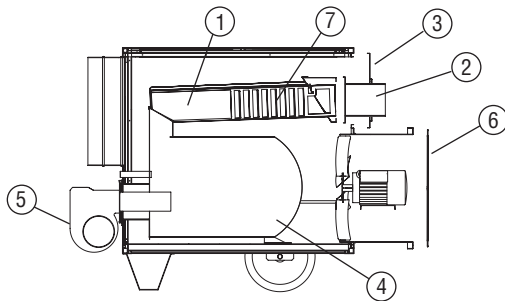


Fig. 3

CLEANING THE BURNER

For the heater to work efficiently the burner must be serviced regularly by an Authorized Service Technician. All cleaning, servicing and regulation operations must be carried out as indicated in the Burner Instruction Manual.

Warning



After every type of technical maintenance, please verify that the machine starting regularly.

TRANSPORTING AND MOVING THE HEATER

To move the Jumbo use the front handles and back wheels.

Warning



Before moving the unit:

- Turn it off as indicated above.
- Disconnect electricity by pulling out the plug.
- Wait until the heater cools down

Suitable equipment must always be used when moving a unit and the instructions given above must be scrupulously adhered to.

Warning



Never try to lift the heater manually. Doing so could result in physical injury.

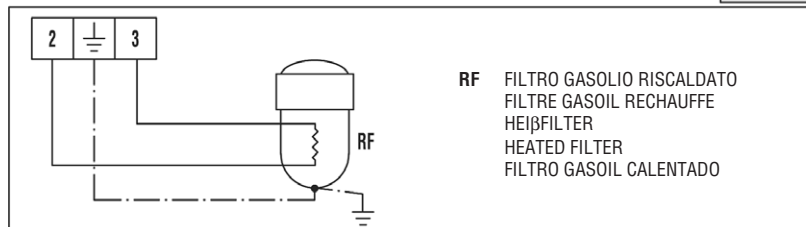
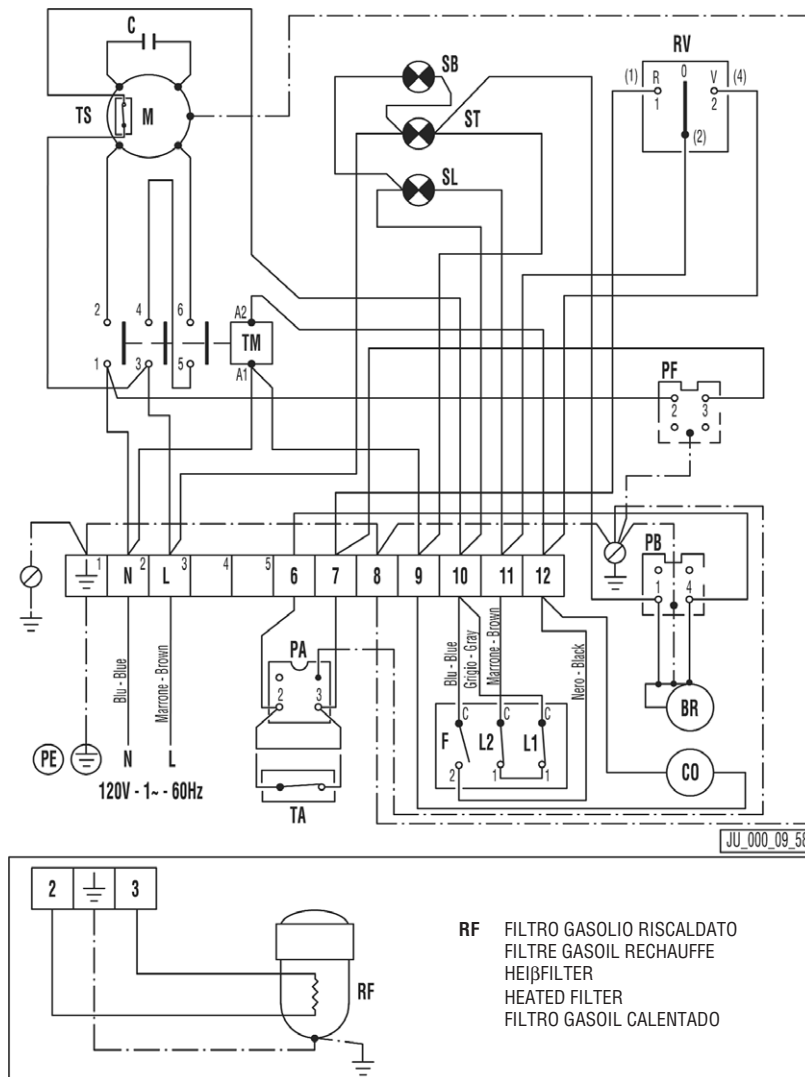
If heater is connected to propane supply cylinder and it is to be stored indoors, the connection between the propane cylinder and the heater must be disconnected and the cylinder removed from the heater and stored in accordance with Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58 and CSA B149.1, Natural Gas and Propane Installation Code.

OBSERVED FAULTS, CAUSES AND REMEDIES

OBSERVED FAULT	CAUSE	REMEDY
• The heater won't start	• Faulty electrical supply	• Check function and positioning of main switch
		• Check power cord
	• Wrong positioning of main switch	• Check electrical connections
		• Check fuses
• Wrong setting of room thermostat	• Safety device (burner, thermostat L2, fan thermal relay) not restarted after repairs	• Put main switch in correct position
		• Check setting of room thermostat
	• Check function of room thermo-stat	
• Thermostat L1 cuts in (the lamp (9) light up and then it cuts down)	• The combustion chamber has overheated	• Press the appropriate restart button: • burner (button on control device) • thermostat (button (6)) • fan thermal relay (button (11))
		• Check fuel flow
		• Check position registers, draw - holes, etc.
• Thermostat L2 cuts in (Warning lamp (9) lights up)	• Excessive combustion chamber over heating	• Remove extraneous material from air ducts and ventilation grills
		• Check as indicated above
• Thermal relay RM cuts in (warning light (10) lights up)	• Fan motor current absorption is excessive	• If fault persists contact our Service Center
		• Heater with helicoidal ventilator: remove eventual debris preventing free flow of air on intake and outlet. Check length of air ducts, reduce if excessive.
		• Heater with centrifugal ventilator: check setting of transmission belt as indicated in chapter ("CONNECTION TO HOT AIR DUCTS").
• The burner starts up, the flame doesn't light up and the restart light on the control device comes on	• Burner not working correctly	• Always check that current absorption remains below value indicated on motor manufacturer plate
		• Press the restart button to turn on the heater. If the same problem arises again call an Authorized Service Technician
• The fan doesn't start up or starts up late	• No electrical power	• Check fuses
	• F thermostat out of order	• Check electrical connections
	• Winding of motor burnt or interrupted	• Check the thermostat, set it and replace it if necessary
	• Condenser burnt (mod. "M")	• Replace the fan motor
	• Motor bearings blocked	• Replace the condenser
• The fan vibrates or makes unusual noise	• Extraneous material on fan blades	• Replace the bearings
	• Not enough air circulation	• Remove extraneous material
• Not enough heat	• Wrong burner	• Remove obstacles to air circulation
		• Call an Authorized Service Technician

WIRING DIAGRAM

JUMBO 400

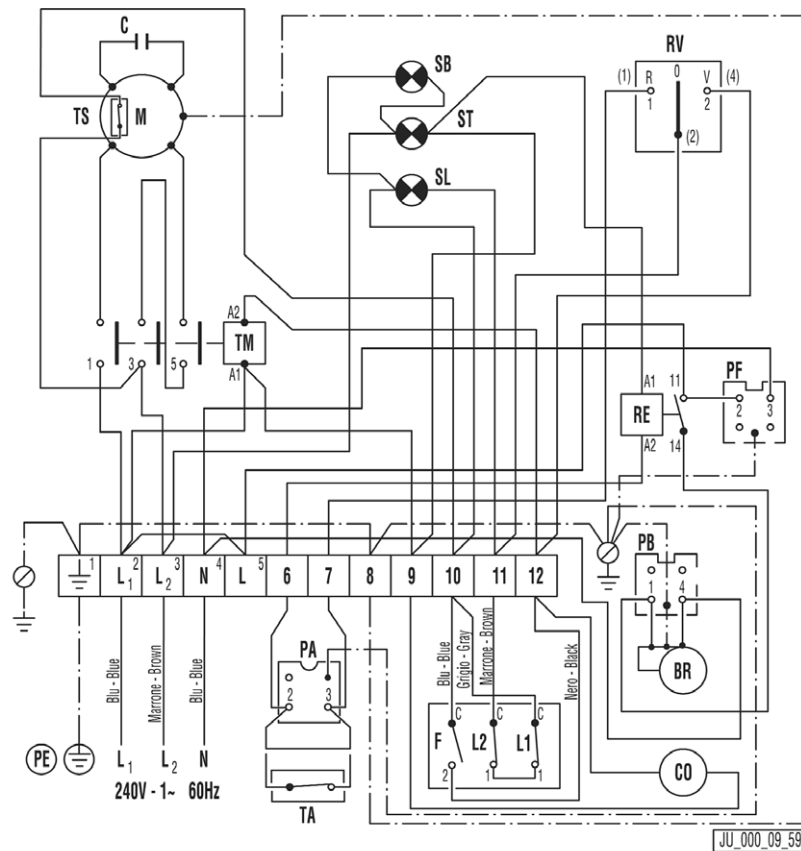


RF FILTRO GASOLIO RISCALDATO
 FILTRE GASOIL RECHAUFFE
 HEIßFILTER
 HEATED FILTER
 FILTRO GASOIL CALENTADO

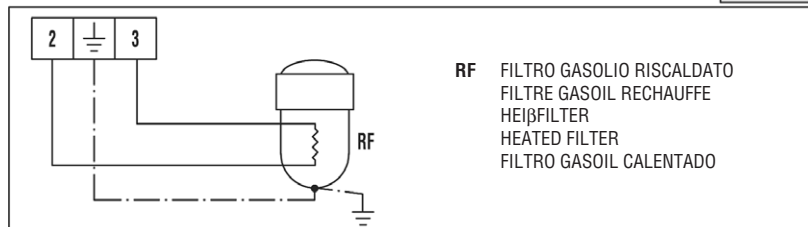
- | | |
|--|---|
| <p>M MOTORE VENTILATORE
 MOTEUR DU VENTILATEUR
 VENTILATOR MOTOR
 FAN MOTOR</p> <p>F TERMOSTATO VENTILATORE, F
 THERMOSTAT VENTILATEUR, F
 LUFTREGLER, F
 FAN THERMOSTAT, F</p> <p>L1 TERMOSTATO DI SOVRARISCALDAMENTO, L1
 THERMOSTAT DE SECURITE DE SURCHAUFFE, L1
 ÜBERHITZUNGSSCHUTZ THERMOSTATT, L1
 OVERHEAT SAFETY THERMOSTAT, L1</p> <p>L2 TERMOSTATO DI SICUREZZA A RIARMO MANUALE, L2
 THERMOSTAT DE SECURITE A REARMEMENT MANUEL, L2
 SICHERHEITSTHERMOSTAT MIT MANUELLER ENTRIEGELUNG, L2
 LIMIT THERMOSTAT WITH MANUAL RESTART, L2</p> <p>RV COMMUTATORE RISCALDAMENTO - - VENTILAZIONE
 COMMUTEUR CHAUFFAGE - - VENTILATION
 SCHALTERHER HEIZUNG - - LUFTUNG
 CONTROL KNOB - - VENTILATION ONLY</p> | <p>BR BRUCIATORE
 BRULEUR
 BRENNER
 BURNER</p> <p>TA TERMOSTATO AMBIENTE
 THERMOSTAT D'AMBIANCE
 RAUMTHERMOSTAT
 ROOM THERMOSTAT</p> <p>FB FUSIBILE BRUCIATORE 6 A
 FUSIBLE BRULER 6 A
 SICHERUNG FÜR BRENNER 6 A
 BURNER FUSE 6 A</p> <p>ST SPIA TENSIONE QUADRO
 LAMPE TEMOIN MISE SOUS TENSION
 KONTROLLAMPE
 CONTROL LAMP</p> <p>SL SPIA TERMOSTATI DI SICUREZZA
 LAMPE TEMOIN SECURITE DE SURCHAUFFE
 ÜBERHITZUNGSSCHUTZ KONTOLLAMPE
 OVERHEAT THERMOSTATS CONTROL LAMP</p> |
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WIRING DIAGRAM

JUMBO 400C
JUMBO 700 - 700C
JUMBO 900 - 900C



JU_000_09_59



RF FILTRO GASOLIO RISCALDATO
 FILTRE GASOIL RECHAUFFE
 HEIßFILTER
 HEATED FILTER
 FILTRO GASOIL CALENTADO

- | | | | |
|-----------|--|-----------|---|
| TS | TERMOSTATO DI SICUREZZA
THERMOSTAT DE SECURITE
SICHEREITSTHERMOSTAT
FANS THERMAL RELAY | SB | SPIA BLOCCO VENTILATORE
LAMPTE TEMOIN ARRET VENTILATEUR
VENTILATOR 'AUS' KONTOLLAMPE
FAN STOP CONTROL LAMP |
| TM | TELERUTTORE VENTILATORE
TELERUPTEUR VENTILATEUR
FERNSCHALTER FUR VENTILATOR
FANS TELE-CONTACTOR | PB | PRESA BRUCIATORE
PRISE BRULER
BRENNER
STECKDOSE BURNER PLUG |
| C | CONDENSATORE MOTORE
CONDENSATEUR DU MOTEUR
KONDENSATOR MOTOR
CONDENSER MOTOR | CO | CONTAORE
COMTE-HEURES
STUNDENZÄHLER
HOUR-COUNTER |
| PA | PRESA TERMOSTATO AMBIENTE
PRISE THERMOSTAT D'AMBIANCE
RAUMTHERMOSTAT
ROOM THERMOSTAT PLUG | PF | PRESA FILTRO GASOLIO RISCALDATO
PRISE FILTRE GASOIL RECHAUFFE
RAUM HEIßFILTER
HEATED FILTER PLUG |
| RE | RELE 220V/60Hz
RELAIS 220V/60Hz
RELAIS 220V/60Hz
RELAY 220V/60Hz | | |

TECHNICAL SPECIFICATIONS		JUMBO 400	JUMBO 400	JUMBO 700	JUMBO 700 C/H/D	JUMBO 900	JUMBO 900 C/H/D
Heat input	[kBTU/h]	400	400	700	700	900	900
Air flow	[cfm]	4.240	4.240	7.420	7.420	8.830	8.830
Heat output	[kBTU/h]	340	340	595	595	765	765
Oil N°2 Max fuel consumption	[LB/H]	20,4	20,4	35,8	35,8	46,0	46,0
Natural gas fuel consumption	[CFH]	391,4	391,4	684,9	684,9	880,6	880,6
Propane fuel consumption	[CFH]	157,0	157,0	274,7	274,7	353,2	353,2
Power supply	Phase	1	1	1	1	1	1
	Voltage [V]	120	220	220	220	220	220
	Frequency [Hz]	60	60	60	60	60	60
Electric consumption	[W]	1.240	1.760	2.120	2.300	2.850	4.330
	[A]	13,5	14,5 / 5,8	7,0	14,8	13,2	13,9
Diesel burner model		Riello 40 F10		Riello 40 F15		Riello 40 F20	
Nozzle	[L/gal/h]	2,25 GPH 60° B	2,25 GPH 60° B	3,50 GPH 60° B	3,50 GPH 60° B	4,50 GPH 60° B	4,50 GPH 60° B
Gas burner model (natural gas or propane)		Riello 40 G400		Riello 40 G750		Riello 40 G900	
Gas supply pressure: natural gas		min 4" w.c. max 10" w.c.	min 4" w.c. max 10" w.c.	min 7" w.c. max 14" w.c.	min 7" w.c. max 14" w.c.	min 7" w.c. max 14" w.c.	min 7" w.c. max 14" w.c.
Gas supply pressure: propane		min 8" w.c. max 13" w.c.	min 8" w.c. max 13" w.c.	min 8" w.c. max 14" w.c.	min 8" w.c. max 14" w.c.	min 8" w.c. max 13" w.c.	min 8" w.c. max 13" w.c.
Static pressure	[in WC]	0,4	0,8	0,4	0,8	0,4	0,8
Flue diameter	[in]	5,9	5,9	7,9	7,9	7,9	7,9
Compulsory flue draft	[in WC]	0,05	0,05	0,05	0,05	0,05	0,05
Maximum air temperature	°F	250,0	250,0	250,0	250,0	250,0	250,0
JUMBO Dimensions, L x W x H	[in]	72x31x43	82x31x43	85x35x53	101x35x53	95x38x59	114x38x58
Weight	[lb]	353	364	550	562 (HD VERSION)	793	815 (HD VERSION)