

Operating, Installation and Service Instructions

GRY-D GRY-I



Direct-fired Diesel or Kerosene Heaters

GRY-D 15 HU
GRY-D 20 HU
GRY-D 20 WU
GRY-D 28 WU
GRY-D 40 WU
GRY-D 60 WU
GRY-I 15 WU
GRY-I 25 WU
GRY-I 40 WU



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1. GENERAL SAFETY RULES

- READ INSTRUCTIONS CAREFULLY. READ AND FOLLOW ALL INSTRUCTIONS. PLACE INSTRUCTIONS IN A SAFE PLACE FOR FUTURE REFERENCE. DO NOT ALLOW ANYONE WHO HAS NOT READ THESE INSTRUCTIONS TO ASSEMBLE, LIGHT, ADJUST OR OPERATE THE HEATER.
- IF THE INFORMATION IN THIS MANUAL IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.
- SERVICE MUST BE PERFORMED BY A QUALIFIED SERVICE AGENCY.
- UNVENTED PORTABLE HEATERS USE AIR (OXYGEN) FROM THE AREA IN WHICH IT IS USED. ADEQUATE COMBUSTION AND VENTILATION AIR MUST BE PROVIDED. REFER TO INSTRUCTIONS.

WARNING

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

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

COMBUSTION BY-PRODUCTS PRODUCED WHEN USING THIS PRODUCT CONTAIN CARBON MONOXIDE, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS (OR OTHER REPRODUCTIVE HARM).

GENERAL HAZARD WARNING

FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS 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, LABELS, ETC. CONTACT THE MANUFACTURER.

WARNING

NOT FOR HOME OR RECREATIONAL VEHICLE USE

WARNING

YOUR SAFETY IS IMPORTANT TO YOU AND TO OTHERS,
SO PLEASE READ THESE INSTRUCTIONS BEFORE YOU OPERATE THIS HEATER

- THE ELECTRICAL SYSTEM TO WHICH THE APPLIANCE IS CONNECTED MUST COMPLY WITH CURRENT LEGISLATION. INSTALLATION REQUIRES A SUITABLE CIRCUIT BREAKER IN THE MAIN DISTRIBUTION BOARD.
- UNPLUG THE APPLIANCE BEFORE PERFORMING ANY MAINTENANCE OPERATIONS.
- ALWAYS CHECK THE POWER CABLE BEFORE USING THE APPLIANCE. IT MUST NOT BE BENT, TAUT, STREACHED, CRUSHED OR ANY WAY DAMAGED.
- THE POWER CABLE CONNECTION MUST BE MADE BY QUALIFIED PERSONNEL ONLY. USE AN ORIGINAL POWER CABLE ONLY WITH A 3-PIN APPROVED PLUG.
- DANGER (BURNS)! DO NOT TOUCH THE EXHAUST GAS OUTLET.

2. APPLIANCE DESCRIPTION

- Mobile space heater with:
 - closed combustion chamber and gas exhaust duct (indirect-fired models)
 - open combustion chamber (direct-fired models)

- automatic cooling function (indirect-fired models and GRY-D 60)

3. TECHNICAL SPECIFICATIONS

3.1 Direct-fired heaters

Model #	GRY-D 15 HU	GRY-D 20 HU	GRY-D 20 WU	GRY-D 28 WU	GRY-D 40 WU	GRY-D 60 WU
Heat Input (BTU/hr)	51,600	80,500	80,500	101,260	140,200	211,000
Air Flow Rating (ft ³ /min)	210	240	240	300	620	765
Fuel Type	Diesel Kerosene #1-2 Fuel Oil	Diesel Kerosene #1- 2 Fuel Oil	Diesel Kerosene #1- 2 Fuel Oil	Diesel Kerosene #1-2 Fuel Oil	Diesel Kerosene #1-2 Fuel Oil	Diesel Kerosene #1-2 Fuel Oil
Fuel Consumption (gal/hr)	0.39	0.58	0.58	0.73	1.01	1.51
Fuel Nozzle Size	0.40 gph	0.65 gph	0.65 gph	0.75 gph	1.00 gph	1.50 gph
Efficiency (%)	(100)	(100)	(100)	(100)	(100)	(100)
Noise Level at 2m (dB(A))	69	71	71	72	75	75
Voltage (V)	115V 60Hz	115V 60Hz	115V 60Hz	115V 60Hz	115V 60Hz	115V 60Hz
Electrical Power	1/6 HP	1/6 HP	1/6 HP	1/4 HP	1/3 HP	1/3 HP
Current Rating (A)	1.8	2.0	2.0	3.5	4.0	4.2
Weight (lb)	41	44	57	68	81	84
Length (in)	32	32	33	34	37	42
Width (in)	14	14	17	19	22	22
Height (in)	16	16	18	21	24	25
Tank Capacity (gal)	5.6	5.6	5.6	8	12	12
Air Pressure Setting (psi)	4.1	4.5	4.5	4.8	5.8	4.9

3.2 Indirect-fired heaters

Model #	GRY-I 15 WU	GRY-I 25 WU	GRY-I 40 WU
Heat Input (BTU/hr)	50,630	91,750	133,000
Air Flow Rating (ft ³ /min)	412	557	710
Fuel Type	Diesel Kerosene #1-2 Fuel Oil	Diesel Kerosene #1-2 Fuel Oil	Diesel Kerosene #1-2 Fuel Oil
Fuel Consumption (gal/hr)	0.36	0.66	0.94
Fuel Nozzle	0.40 gph	0.75 gph	1.00 gph
Efficiency (%)	84.4	80.0	81.4
Noise Level at 2m (dB(A))	63	75	75
Voltage (V)	115V 60Hz	115V 60Hz	115V 60Hz
Electrical Power	1/4 HP	1/3 HP	1/3 HP
Current Rating (A)	3.5	4.0	4.0
Weight (lb)	77	88	93
Length (in)	34	37	42
Width (in)	19	22	22
Height (in)	22	25	26
Tank Capacity (gal)	8	12	12
Air Pressure Setting (psi)	4.4	4.8	4.9

4. INSTALLATION INSTRUCTIONS

4.1. General instructions

- THE INSTALLATION OF THE EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REGULATION OF AUTHORITIES HAVING JURISDICTION AND CSA B139.

- The heater must be operated only by properly trained personnel. The manufacturer's instructions must be followed.
- The heater must be installed and operated so that people are not exposed to dangers deriving from exhaust gases, from the hot air flow and in such a way that no fire risks exist.
- It is forbidden to install the heater in the surroundings of flammable materials, combustible products, or in explosive atmosphere.
- When an **indirect-fired** heater connected to a flue pipe is used in a closed room, provide a minimum opening area of 1 ft³ per US gallon capacity at the unit level.
- When a **direct-fired** heater - or an **indirect-fired** heater **not** connected to a flue pipe - is used in a closed room, provide a minimum opening area of 3 ft² per US gallon capacity at the unit level and a continuous, natural air circulation through windows and doors.

For the use of the heater the general and special fire safety regulations in force in all fields of applications must be followed. In any case the following minimum safety clearances from materials or objects in the surroundings of the heater must be assured:

Side:	2 ft	(610 mm)
Air inlet side:	2 ft	(610 mm)
Top:	5 ft	(1525 mm)
Hot air outlet side:	10 ft	(3050 mm)
Floor:	0 ft	(0 mm)
Flue pipe:	3 ft	(915 mm)

- Floors and ceilings must be made of fireproof materials in the place where the heater is operated.
- The air inlet and outlet must never be blocked for any reason.
- Install the heater on a flat, level floor in a steady position.
- It is forbidden to connect direct-fired heaters to air ducts.

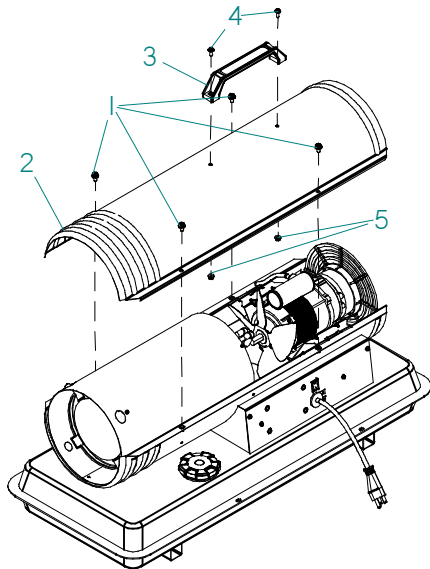
4.2 Maintenance and checks

- Depending on the operational conditions, usually every year, the heater should be checked by qualified personnel. Prior to start-up, the user must check for any evident non-compliance with rules of use, safety and protection.

4.3 Assembly instructions

GRY 15/20 HU (model without wheels)

Before use, assemble the handle as follows:



- 1) Unscrew the four screws (1) to remove the upper cover (2).
- 2) Align handle (3) to holes on upper shell (2), fix handle using screws (4) and nuts (5) supplied with the unit.
- 3) Reassemble the upper shell (2).

GRY-D 20/28/40/60 WU , GRY-I 15/25/40 WU (models with wheels)

Before use, assemble wheels, handle and accessories. Wheels, handle and the mounting accessories are found in the shipping carton.

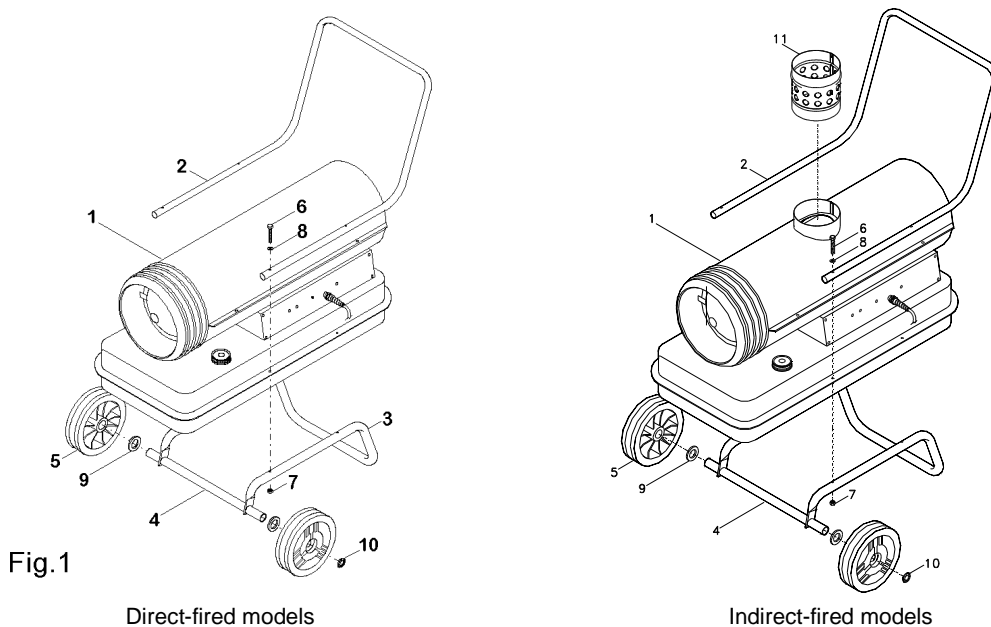
- 1) 1 body of the heater
- 2) 1 handle
- 3) 1 wheel support frame
- 4) 1 axle
- 5) 2 wheels
- 6) 4 screws
- 7) 4 nuts
- 8) 4 washers
- 9) 2 spacer rings
- 10) 2 cap nuts
- 11) flue adaptor (GRY-I models only)

To assemble the heater, proceed as follows (see ill.1):

Slide axle (4) through wheel support frame (3). Install in the following order: spacer rings (9), wheels (5), and cap nuts (10) on axle ends, by tapping lightly. Connect the flue adaptor (11) to the exhaust collar and then to a flue pipe (indirect-fired heaters only).

Place heater on wheel support frame and line up holes on the fuel tank flange with holes on wheel support frame.

Insert screws and washers through handles, fuel tank flange and wheel support frame. Attach nut finger tight after each screw is inserted, then tighten all nuts firmly.



5. Instructions for use

5.1. Start-up

Fill the tank with clean fuel.

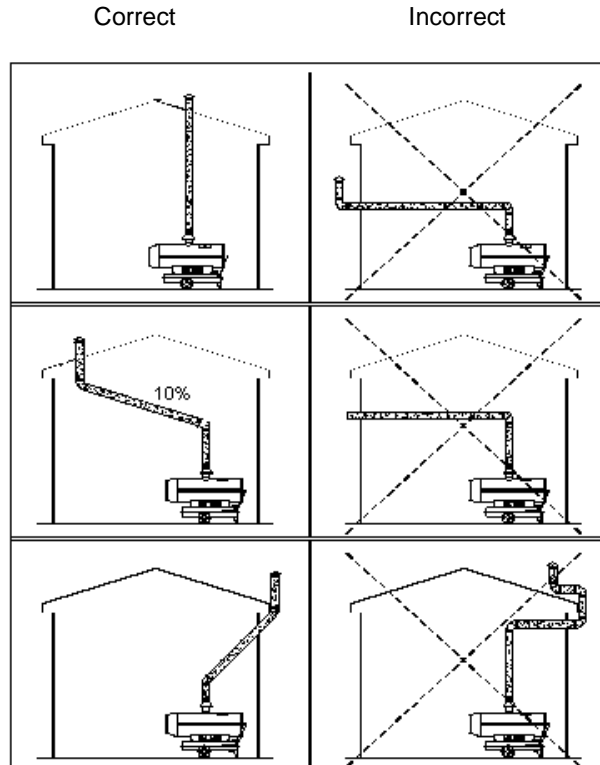
Connect the power plug to a 115V ~ 60 Hz single-phase, grounded power outlet. Electrical grounding is mandatory.

Move the ON/OFF (I/O) switch to the "ON"(I) position.

Models GRY-I 15 WU / 25WU / 40WU / GRY-D 60WU:

For operation with remote thermostat, remove the thermostat outlet cover on control panel and plug the thermostat connector.

- Indirect fired heaters: connect the heater to a chimney or to a exhaust duct. To get a proper draught (at least 0,1 mbar) in the chimney the exhaust gas path must rise. Avoid any elbows and bends in the first part of the exhaust ducts for at least 3 m. For operation of heater in closed rooms without flue refer to the instructions for installation (par. 4)
- If a remote thermostat is used, set it on maximum temperature.
- Turn switch to position "ON"
- Set the desired temperature on room thermostat.



5.2. Manual reset/restart (ON/OFF switch)

When the appliance locks out, move the ON/OFF switch to position OFF and then to position ON again to restart the appliance (see also "Troubleshooting")

5.3. Air pressure switch

The heater is equipped with an air pressure switch that controls the airflow pressure. In the event of overheating the pressure switch shuts the heater down. If this occurs, detect and eliminate the cause of overheating before using the heater again. Have the heater inspected by a qualified technician if required. To reset, let the unit cool unit down and then restart it as described above (see par. 5.2).

5.4. Shut-down

Move switch to "OFF" (O) position.

DIRECT-FIRED MODELS: the unit shuts down immediately.

INDIRECT-FIRED MODELS and GRY-D 60 WU: the fan continues to rotate for about 2 minutes to cool the combustion chamber. Then the appliance automatically shuts down.

Do not unplug while in operation. Allow the heater to cool before stop

The big amount of heat produced could damage the components

6. Maintenance

BEFORE ANY MAINTENANCE OPERATIONS, SHUT DOWN, UNPLUG AND LET THE HEATER COOL.

Maintenance must be carried out by qualified personnel (see also section 7).

The appliance must be thoroughly cleaned once a year to assure correct combustion and long life.

In addition the following must be cleaned more often depending on fuel and operating environment:

Fan

Clean fan using a cloth moistened with kerosene or light solvent. Dry fan thoroughly using compressed air. Clean fan blades at least every 500 hours of functioning.

Nozzle

Carefully remove nozzle from the nozzle fitting. Blow compressed air through the face of nozzle to free any dirt.

Air Filters (ill. 2)

Clean the air filter regularly, especially if the appliance is used in dusty environments. Remove filter end cover (1), wash air intake filter (2) using a light detergent and dry it thoroughly before reinstalling. Replace air delivery filter (4) at least once a year.

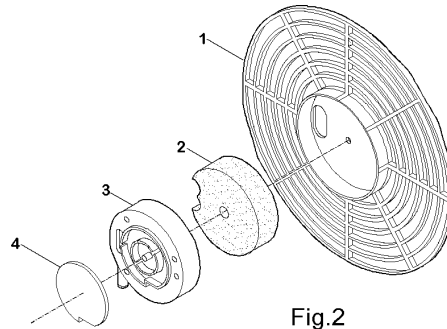


Fig.2

Ignition Electrodes

Clean, adjust and if necessary replace ignition electrodes every 300 hours of functioning. For electrode gap see illustration.

Pump Pressure Adjustment

Remove pressure gauge cap from filter end cover. Install a pressure gauge with a precision of at least 0.1 psi. Start heater and read air pressure value. If necessary adjust pressure as follows:

Model	Air Pump Pressure(psi)
GRY-D 15 HU	4.1
GRY-D 20 HU	4.5
GRY-D 20 WU	4.5
GRY-D 28 WU	4.8
GRY-D 40 WU	5.8
GRY-D 60 WU	4.9
GRY-I 15 WU	4.4
GRY-I 25 WU	4.8
GRY-I 40 WU	4.9

Electrical

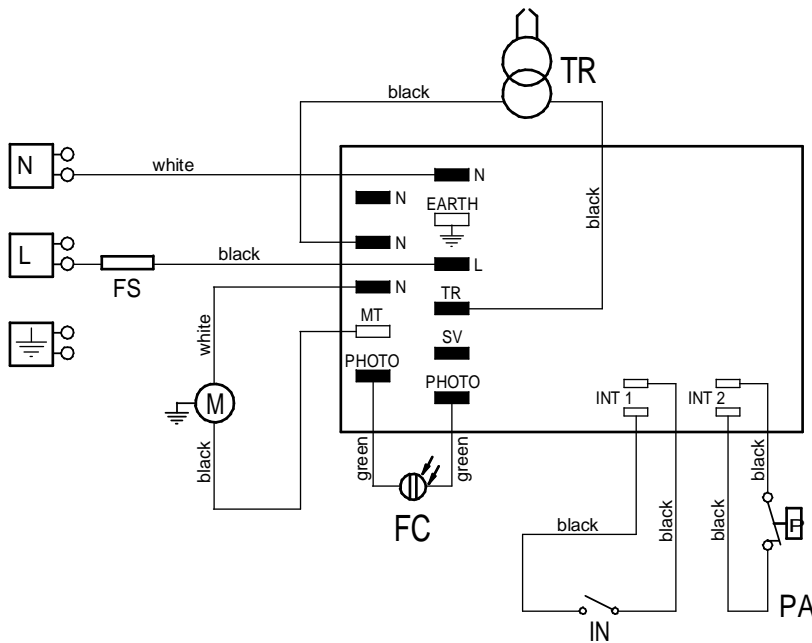
A periodic inspection of cables, electrical parts and connections by qualified personnel is recommended.

7. Troubleshooting

PROBLEM	CAUSE	REMEDY
Motor does not start	No power or low voltage Faulty or damaged power cord Faulty motor/capacitor Lock-out of appliance due to overheating	Check power line and voltage Check fuse and replace if necessary Check power cord Replace power cord Check and if necessary replace Detect the cause of overheating Shut the appliance down Check air inlet and outlet Wait some minutes and restart the appliance If required clean/replace air pressure switch
Motor runs, but the heater does not ignite and locks out after a short time	Empty fuel tank, dirty or wrong fuel Fuel filter clogged Air leaks in oil line Burner nozzle clogged Fuel viscosity increased due to low temperature	Remove wrong or dirty fuel Fill the tank with clean oil or kerosene Clean or replace fuel filter Check pipes, tighten connections, if necessary replace Clean nozzle blowing compressed air, replace if necessary Mix oil with 10-20% kerosene
Flames come out of flue outlet	Insufficient air flow into combustion chamber Compressor pressure too high	Check fan Check pump air pressure Set air pressure to correct rating

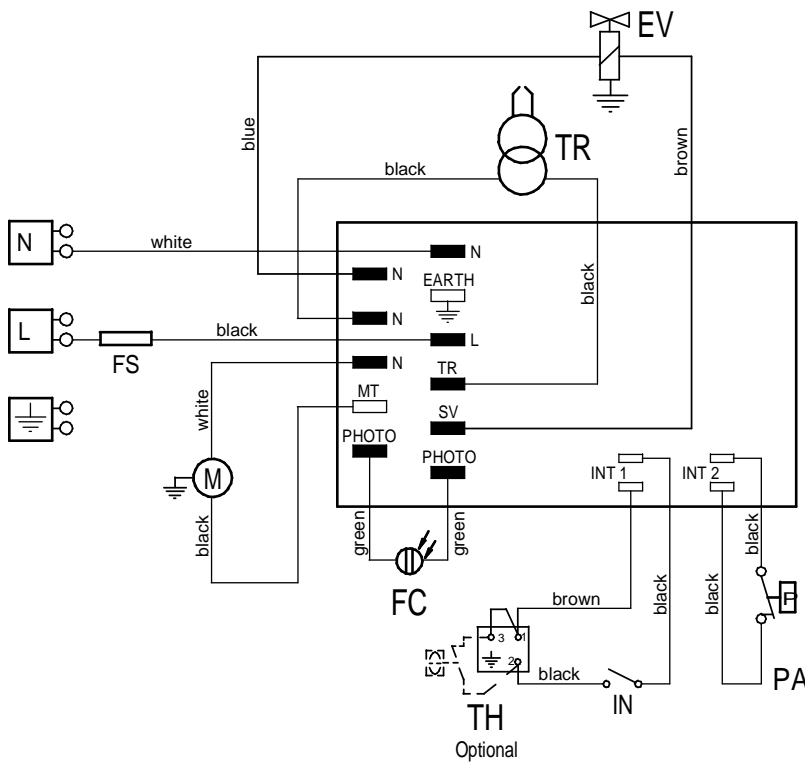
8. Wiring diagrams

GRY-D 15HU / 20WU-HU / 28WU / 40WU



- FC Photocell
- FS Fuse
- IN Switch
- M Motor
- TR Transformer
- PA Air pressure switch

GRY-I 15 WU / 25WU / 40WU
GRY-D 60WU



- EV Air solenoid valve
- FC Photocell
- FS Fuse
- IN Switch
- M Motor
- TH Remote thermostat (optional)
- TR Transformer
- PA Air pressure switch



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