

FROST *Fighter*

PORTABLE HEATERS

**INDIRECT FIRED SPACE HEATERS
PROPANE AND NATURAL GAS**



MODELS
IDF 350LP/NG
IDF 500LP/NG

Installation - Operation Maintenance Instructions and Parts List

READ INSTRUCTIONS PRIOR TO STARTING HEATERS

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IMPORTANT INSTRUCTIONS

1. READ ALL INSTRUCTIONS BEFORE INSTALLING OR USING THIS HEATER.
2. This heater is hot when in use. To avoid burns do not touch hot surfaces. Keep combustible materials such as furniture, papers, clothes, curtains, tarps, plastic sheets, combustible building materials & partitions, other equipment, etc. at least 10 feet (3 m) from the front of the heater and keep them away from the sides and rear.
3. Do not operate any heater after it malfunctions. Disconnect power at the service panel and have it inspected by a qualified electrician before reusing.
4. To disconnect heater, turn controls to off and disconnect power supply cord from power source.
5. Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause overheating or fire or damage to the heater.
6. To prevent a possible fire, do not block air intake or exhaust in any manner.
7. Do not use it in areas where gasoline, paint, or flammable vapors or liquids are used or stored.
8. Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock or injury to persons.
9. This heater may include a visible or audible alarm to warn that parts of the heater are getting excessively hot. If the alarm illuminates (or sounds), immediately turn the heater off and inspect for any objects on or adjacent to the heater that may have blocked the airflow or otherwise caused high temperatures to have occurred. Do not operate with the alarm illuminating (or sounding)

SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

IDF350LPNG/IDF500LPNG

PAGE 1-3	SAFETY INFORMATION AND SAFETY INSTRUCTIONS
PAGE 4	GENERAL NOTES, ELECTRICAL NOTES, INSTALLATION INSTRUCTIONS
PAGE 5	MODELS AND SPECIFICATIONS
PAGE 6	INSTALLATION CLEARANCES, IMPORTANT INSTALLATION INSTRUCTIONS
PAGE 7	GAS REGULATOR SETUP
PAGE 8	OPERATING INSTRUCTIONS
PAGE 9	STANDARD GAS CONVERSION PROCEDURE
PAGE 9-10	IDF MAINTENANCE INSTRUCTIONS
PAGE 11-12	SEQUENCE OF OPERATION
PAGE 13	GAS PIPE SIZE AND BTU SUPPLY CHART
PAGE 14	FAN MOTOR WIRING DIAGRAM
PAGE 15	NATURAL/PROPANE COMPLETE
PAGE 16	ELECTRODE DRAWER ASSEMBLY
PAGE 17	ELECTRODE PANEL COMPLETE
PAGE 18-19	MANIFOLD COMPLETE
PAGE 20	SPARK ROD AND FLAME ROD SETTINGS
PAGE 21	LIMITS, FAN SWITCHES AND TEMPERATURE FEELERS
PAGE 22	HIGH LIMIT/FAN SWITCH WIRING ON IDF LP/NG HEATERS
PAGE 23	IDF 500 / IDF350 LP/NG WIRING DIAGRAM
PAGE 24	HEAT EXCHANGER FOR LP/NG UNITS
PAGE 25-26	IDF350 & IDF500 FROST-FIGHTER PARTS
PAGE 27	FROSTFIGHTER WARRANTY

SAFETY INFORMATION AND SAFETY INSTRUCTIONS

STANDARD WARNING SYMBOLS



DANGER

INDICATES EXTREME HAZARD THAT COULD RESULT IN INJURY OR DEATH



WARNING

INDICATES POSSIBLE HAZARD THAT COULD DAMAGE EQUIPMENT OR PROPERTY AND/OR RESULT IN INJURY



CAUTION

INDICATES POSSIBLE HAZARD THAT COULD CAUSE IMPROPER OPERATION OR DAMAGE EQUIPMENT

OTHER SPECIFIC HAZARD SYMBOLS

THESE SYMBOLS ARE USED THROUGHOUT THIS MANUAL TO INDICATE SPECIFIC HAZARDS



RISK OF FIRE OR EXPLOSION



RISK OF SHOCK OR ELECTROCUTION



HOT SURFACES – RISK OF BURNS



RISK OF ASPHYXIATION

INSTALLATION / OPERATION / MAINTENANCE INSTRUCTIONS

READ INSTRUCTIONS PRIOR TO OPERATING HEATER

GENERAL HAZARD WARNING

FAILURE TO COMPLY WITH 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 PERSON(S) WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATING UNIT.

IF YOU REQUIRE ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTION MANUAL, LABELS, ETC., CONTACT THE MANUFACTURER



DANGER



FIRE, BURN INHALATION, AND EXPLOSION HAZARD. KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIAL, PAPER AND/OR CARDBOARD A SAFE DISTANCE AWAY FROM THE HEATER AS REQUIRED BY THE INSTRUCTIONS. NEVER USE THE HEATER IN SPACES WHICH MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, ACETONE, DUST PARTICLES AND/OR UNKNOWN CHEMICALS. USE ONLY THE FUEL(S) SPECIFIED FOR THE HEATER.

DO NOT USE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPOURS ARE STORED OR USED.

THIS PRODUCT IS NOT INTENDED FOR HOME OR RECREATIONAL VEHICLE USE.



WARNING

INSTALLERS RESPONSIBILITY

THE INTENDED USE OF THIS HEATER IS FOR THE TEMPORARY HEATING OF BUILDINGS OR STRUCTURES AND THOSE UNDER CONSTRUCTION, ALTERATION OR REPAIR.

DO NOT INSTALL OR OPERATE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPOURS ARE STORED OR USED. ALL INSTALLATIONS MUST MEET CURRENT NATIONAL CODES AND THOSE OF THE LOCAL JURISDICTIONS.

OIL FIRED INSTALLATIONS – C.S.A. STANDARD B139 or NFPA 54

GAS FIRED INSTALLATIONS – STANDARD: ANSI Z83.7 – CSA 2.14

GAS INSPECTION AUTHORITIES REQUIRE THAT THE INSTALLATION AND MAINTENANCE OF HEATER AND ACCESSORIES SHALL BE ACCOMPLISHED BY A QUALIFIED GAS FITTER.

OPERATORS RESPONSIBILITY

Installation and adjustment of the burner requires technical knowledge and the use of combustion test instruments. **Do not** tamper with the unit or any safety controls. Call your qualified service technician. Incorrect operation of the burner could result in severe personal injury, death, or substantial property damage.

Have your equipment inspected and adjusted annually by your qualified service technician to assure continued proper operation.

Never store gasoline or other combustible materials near the heating equipment. This could result in a fire, or explosion with the risk of severe personal injury, death or property damage.

Do not permit person(s) unfamiliar with the equipment to operate the heater.

Use only the correct fuel intended for the heater and as stipulated in the manual. Using the wrong fuel(s) can result in fire, explosion, injury, and damage to equipment and property.

GENERAL NOTES

NATURAL/PROPANE GAS CODE: B149.1

ALL GAS INSPECTION AUTHORITIES IN CANADA
REQUIRE THAT THE INSTALLATION AND MAINTENANCE OF
HEATER AND ACCESSORIES SHALL BE ACCOMPLISHED BY A
QUALIFIED GAS FITTER.

GENERAL NOTES:

1. The heater is designed and approved for use as a construction heater under ANSI Z83.7 with the applicable requirements of UL 795 and under CSA 2.14 with applicable requirements of CAN/CSA 3.2. The intended use is for 5, the temporary heating of building or structures under construction, alteration or repair.
2. Frost Fighter cannot anticipate every use, which may be made of our heaters.
CHECK WITH YOUR LOCAL FIRE AND SAFETY AUTHORITY IF YOU HAVE QUESTIONS ABOUT SAFE APPLICATIONS.
3. Other standards govern the use of fuel gases and heat producing products in specific applications. Your local authority can advise you regarding these requirements.
4. Please retain this instruction manual for future reference.
5. The primary application of this heater is for temporary heating of construction sites and/or applications of this type.

ELECTRICAL NOTES:

1. All electrical connections and grounding shall be in compliance with the National Electrical Code and/or the Canadian Electrical Code (CSA Standard C22.1-98).
2. **WARNING:** Electrical grounding instructions... This appliance is equipped with a three prong(grounding) plug for your added protection against electrical shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not remove the cord end that is supplied from the factory and replace with similar type.



ADDITIONAL INSTRUCTIONS FOR PROPANE GAS:

1. Reference the Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58 and/or the National Standards of Canada CAN/CGA B149.2 installation codes for propane gas.
2. The heater must be located more than six (6) feet (1.83 meters) away from the propane source or propane tank.
3. When the heater is not in use ensure to shut off the gas supply from the propane source or propane tank.
4. Disconnect the heater from the propane source or propane tank when storing the heater indoors.
5. The heater must not discharge toward any propane gas container within 20 feet (6 M).

INSTALLATION INSTRUCTIONS

1. The National Fuel Code, ANSI 223.1/NFPA 54 and/or National Standards of Canada CAN/CGA B149.1 installation codes must be followed as well as the recommendations of local authorities having jurisdiction.
2. Inspect the heater before each use and have it annually inspected by a qualified agency.
3. Inspect the hose assembly for wear, cuts, etc. and replace if necessary.
4. When firing the unit in an enclosed area, three square feet (0.278 square meters), must be provided to allow free entry of the air required for operation.
5. Do not operate the unit in partly ventilated areas without a flue pipe connected to the unit.
6. Do not operate the unit in close proximity to combustible surfaces and materials.
7. The cylinder supply system must be arranged to provide for vapor withdrawal from the operating cylinder.
8. Propane tank size must be a minimum 100 lbs. (90 liters)

MODELS AND SPECIFICATIONS

MODEL	IDF350LP/NG	IDF500LP/NG/
HEATING CAPACITY	350,000 BTU	420,000 BTU
FUEL CAPACITY	NATURAL GAS/ PROPANE	NATURAL GAS/ PROPANE
FAN MOTOR	½ HP 1750RPM	1 HP 3450 RPM or 1 HP 1750 RPM
BURNER MOTOR	1/4 HP 3450 RPM	1/4 HP 3450 RPM
MANIFOLD PRESSURE	2.0" W.C.	3.0" W.C.
MAXIMUM INLET PRESSURE	14" W.C./ ½ LB	14" W.C./ ½ LB
MINIMUM INLET PRESSURE	5.0" W.C.	6.0" W.C.
MINIMUM TEMP RATING	-40°C/F	-40°C/F
FUEL CONSUMPTION PROPANE/NAT GAS	137FT3/3.8 USGPH 347FT3/9.7 USGPH	176FT3/ 5.0USGPH 446FT3/12.4USGPH
APPROVAL AGENCY		
OVERALL DIMENSIONS	70" X 35" X 52"	70" X 35" X 52"
CFM	2500	3100
WEIGHT	467 LBS.	467 LBS.

MAXIMUM ALLOWABLE DUCT LENGTHS (OHV200, IDF 350 & IDF 500)	
DISCHARGE OUTLET	LENGTH
Two 12"ducts	24 Feet
One 16"duct	45 Feet

MAXIMUM ALLOWABLE DUCT LENGTHS (IDF500 HS)	
DISCHARGE OUTLET	LENGTH
Two 12"ducts	48 Feet
One 16"duct	90 feet

INSTALLATION CLEARANCES

Ceiling - 24 inches (0.6 meters)
Sides - 6 inches (0.15 meters)
Burner End - 24 inches (0.6 meters)

Discharge End - 10 feet (3.0 meters)
Vent Connector - 24 inches (0.6 meters)
Floor - Combustible

IMPORTANT INSTALLATION INSTRUCTIONS

Frost Fighter heaters are suitable for outdoor use.

- For outdoor installations ensure minimum stated clearances are maintained and do not operate in partially ventilated areas. A suitable rain cap is required. The addition of a 36" pipe extension on the flue before the rain cap is highly advisable. Avoid placing heater closer than 3 feet (1 metre) from doorways or openings.

IF HEATER IS TO BE OPERATED INDOORS IT MUST BE VENTED TO THE OUTDOORS.

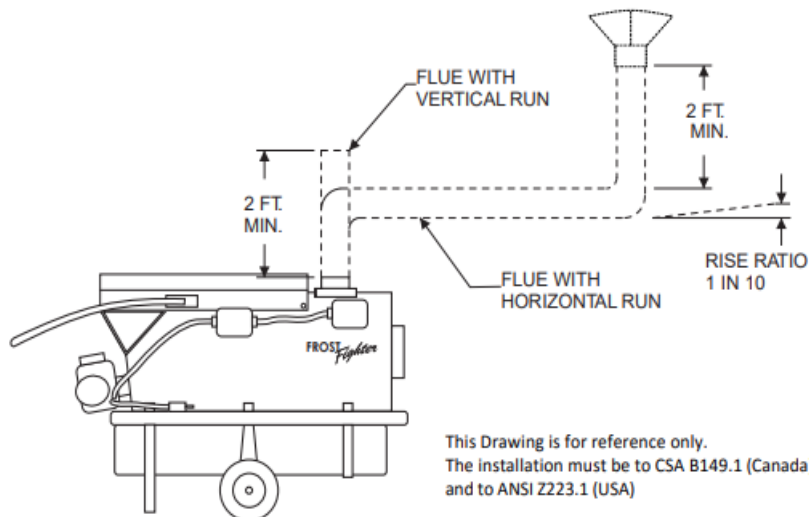
All venting must conform to CSA B149.1 /ANSI Z223.1 and with local authorities having jurisdiction.

The flue must be securely attached to the unit with tight joints and must not be sized to have a cross-sectional area less than that of the flue collar at the unit. Minimize connecting pipe length and the number of bends by locating the unit as close to the flue pipe as possible. Do not use tees or elbows greater than 90 degrees, (UNLESS NOTED). Ensure specified minimum installation clearances are maintained.

The flue pipe shall terminate in a vertical section at least two feet long and have a suitable rain cap. Horizontal runs should have rise ratio of 1 in 10 away from the heater. See flue pipe connection layout drawing.

Other appliances must not be connected so as to vent through the venting of this unit.

FLUE PIPE CONNECTION LAYOUT FOR INDOOR INSTALLATION



**ALWAYS ENSURE TO LEAVE UNIT
POWERED AFTER USE FOR COOLING
FAN TO DISSIPATE HEAT**

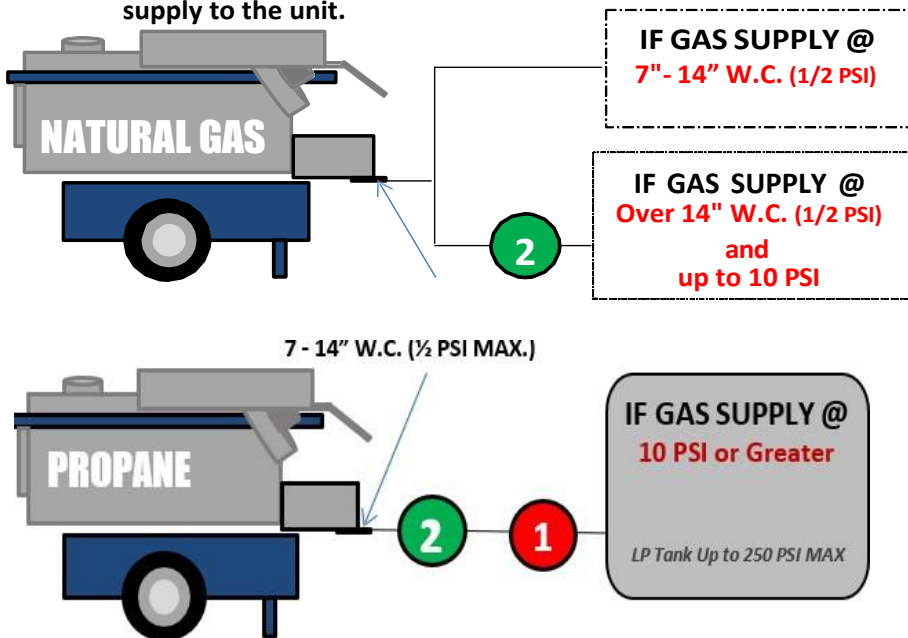


GAS REGULATOR SETUP

For the equipment to function correctly, the proper regulator setup is required.

For all units 7"-14" Water Column is necessary at the supply to the unit.

- 1 REG 1: 1ST Stage**
Required if gas supply pressure is above 10 PSI & up to 250 PSI Max. To reduce pressure down to 5 - 10 PSI and supply 2nd stage regulator.
P/N 50276A
- 2 REG 2: 2nd Stage**
Required if gas supply pressure is above 14" w.c. & up to 10 PSI Max. To reduce pressure down to the required 7"-14" w.c. for the heater.
P/N 50276B



NOTE: All piping/hoses must be as per national and/or local codes.

OPERATING INSTRUCTIONS

TO START HEATER

1. Ensure unit is flat and level.
2. Check that the operating switch on the unit is in the "OFF" position before plugging in supply cord to a 115 VAC outlet.
3. **Ensure that gas supply is 14" (½lb) pressure maximum that is being fed to the RV53 Maxitrol regulator.**
4. Check that the supply gas and conversion valves are set to the same gas type.
5. Once valve setting is verified, turn on main gas firing valves to open position.
6. Plug power supply cord to a 115 VAC outlet.
7. Place operating switch to "MANUAL" position. This will start the unit.
8. For use with a thermostat, the operating switch should be placed to "THERM" position.

****IF HEATER FAILS TO START, REFER TO TROUBLE SHOOTING GUIDE****

TO STOP HEATER

1. Place the operation switch into the "OFF" position. Allow for automatic cool down of heat exchanger to occur before disconnecting power supply cord from outlet.
2. If operation switch is in "THERM" position and operating, place into "OFF" position and allow for automatic cool down of heat exchanger to occur before disconnecting power supply cord from outlet.

AIR DAMPER SETTING

Damper adjustment will be required in colder weather and different elevations when there is reduced air density. The requirement will be that the damper be opened to allow more air into the burner. Adjustments may also be made to the damper of the burner when undesirable performance is observed -indicated by excessive pulsing or rumbling and/or smoke from the flue. Suggested air damper settings at sea level (OHV200, IDF 350 = 2 1/2) and (IDF 500 = 2)

1. Locate the adjustable damper connection on the right-hand side when facing the burner.
2. Loosen the nut on the adjustable connection, and manually move the damper connection until the desired position is achieved (i.e. no pulsations and/or smoke from flue).
3. Re-tighten the nut on the adjustable damper connection.
4. Do not adjust damper below 3/4 as unit will run too rich (fuel/air mixture) and carbon up spark rod.

NOTE:

1. Adjust air damper and gas regulator pressure for elevation correction.
2. For elevations above 2,000 feet (610 meters), the unit will be de-rated four percent (4%) for every 1,000 feet (305 meters) of elevation above sea level.

ELECTRODE AND FLAME ROD SETTING

1. Flame rod should be 1/8" above the retention plate (diagram on Page 15).
2. Electrode (porcelain end) should be 1/8" above the retention plate.

STANDARD GAS CONVERSION PROCEDURE

CHECK TYPE OF GAS BEING USED FOR OPERATION. SUITABLE GASES ARE NATURAL GAS AND PROPANE GAS.

For OHV200 & IDF350

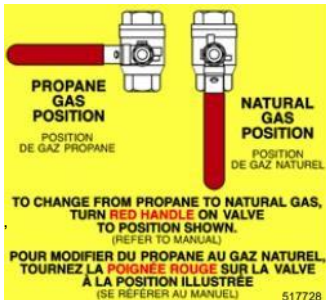
Propane Gas

1. For propane gas use, the conversion valve must be placed in the propane gas position as per the label on the unit. This is the closed position of the red handled ball valve on the manifold. Handle should be 90° to the valve.
2. Once in the closed position, the valve must be locked in that position so that the unit will operate safely.

Natural Gas

1. For natural gas use, the conversion valve must be placed in the natural gas position as per the label on the unit. This is the open or parallel position to the manifold. Red handled ball valve must be in line with the manifold.
2. Once placed in the open position, the valve must be locked in that position so that the unit will operate safely. Double check that you are using natural gas as propane used in this position could present a hazardous situation.

FOR THE IDF500 SERIES PLEASE SEE BELOW DECAL. IF THERE ARE ANY QUESTIONS, PLEASE CALL THE FACTORY.



IDF MAINTENANCE INSTRUCTIONS

HEATERS SHOULD BE FULLY SERVICED ANNUALLY BY QUALIFIED PERSONNEL. A LACK OF MAINTENANCE COULD RESULT IN HEATER NOT WORKING PROPERLY.

HIGH LIMIT SWITCH

The limit switch should be checked every heating season to ensure the burner will shut down if temperature exceeds 220° F. To test the high limit, remove red braided high temperature wire from terminal one. Start unit and run till burner shuts down on high limit. Disconnect power from unit, reconnect red wire then start unit to cool down heat exchanger. If unit runs longer than 2 minutes or less than one minute before high limit fails, replace high limit.

FAN SWITCH

The fan switch has been selected to allow for preheating of the heat exchanger to ensure that only heated air is allowed to enter the space. Upon satisfying the need for heat the fan switch will continue to run the supply fan until the heat exchanger has cooled sufficiently. This feature will help to prolong the life of your heat exchanger.

GAS LEAKAGE TESTING

After removal for service or replacing components on the gas manifold a gas leakage test must be performed.

1. Close main gas firing valve on the gas manifold.
2. Connect your source gas to the gas manifold.
3. Once connections are tightened, open-source gas, fire unit.
4. On each connection and fitting, apply soap solution and check for bubbles. This will indicate a gas leak if bubbles continue to form.
5. Fix any leaks that are found by applying pipe dope to the leaking fitting or connection and re-tighten. Check for leaks once repairs, if any, are made.
6. Open main gas firing valve and start the unit.
7. Once the unit is operating and burner is running, redo the soap test to ensure gas fittings are tight.
8. Fix any leaks found.

IDF MAINTENANCE INSTRUCTIONS (CONT'D)

AIR SWITCH

The air switch should be tested regularly to ensure it will cut out if any blockage or disruption to burner airflow occurs. With the unit running, slide a 6" X 8" piece of cardboard upwards if front of screen on burner (under control panel) slowly. When screen is 2/3 covered, solenoid valve(s) should close, shutting off gas supply. If necessary, adjust set screw clockwise if burner not cutting out soon enough.

FENWALL IGNITION MODULE

Upon start up, LED light should flash once. If not, refer to trouble shooting guide. Once signal is detected (after 4 seconds of trial for ignition, TFI) shut off gas then turn back on. Unit should retry to light after 60 seconds. With unit running, turn off gas supply. Burner should stop firing and LED should flash 3 times. If you try to fire unit and no response but LED light is staying on, then replace Fenwall controller. With unit running, connect D.C. Micro amp multimeter probes to FC pins controller (beside LED light). You should receive a reading between 3.5-5.5 microamp (fluctuating 10%). If reading is lower, check flame rod and wire as per trouble shooting instructions. Disconnect orange MVI wire from controller. Shut off gas and with AC voltage tester, check between 24v ground side of transformer and MVI terminal for voltage during TFI. Reading should be steady 24v.AC.

HEAT EXCHANGER

Cleaning Procedures

1. Remove the front cap (Part #48205/20205).
2. Remove the small cover panel (Part #48119/20119) located on the top of the unit between the flue and front cap (Part #48205).
3. Remove the fan thermostat cover on the outer jacket (Part #48112). Loosen thermostat and remove from jacket. Remove high limit thermostat cover (Part #48112).
4. Slide heat exchanger out of jacket and place front (discharge or closed) end face down on ground (Part #48115).
5. Access for combustion chamber and heat exchanger cleaning is provided through the burner head opening and by removing the heat exchanger cap ring(s) (Part#48115).
6. To reassemble, reverse procedure.

ELECTRODE DRAWERASSEMBLY

Should be removed when doing maintenance and flame and spark rod cleaned and checked for cracks or chips. Also inspect wires and connections. Do a continuity check between flame rod and end of wire to ensure good signal.

ELECTRICAL

Ensure all conduit (BX) connectors are tight. Open plug-in cord and check connections tight and no frayed wires exposed. Check inside connections in control box to ensure good connections.

FAN

Check for dust or dirt build up on blades. Check for tightness of the set screw. Run heater to check for fan vibration. Replace fan blade if vibration is noticeable.

MOTORS

No lubrication is necessary since the bearings are the sealed type. Clean motor of existing dust or dirt.

IMPORTANT

15 AMP CIRCUIT-OVH200, IDF350

20 AMP CIRCUIT IDF500, IDF500HS

EXTENSION CORD UP TO 50 FEET-12/3 AWG

OVER 50' TO MAX OF 100 FEET 10/3 AWG

SEQUENCE OF OPERATION

- 1- Flip toggle switch to either manual or thermostat position.
- 2- Red LED light on ignition controller will come on for 1 second.
- 3- Burner fan motor will start, unit will pre-purge for 45 seconds.
- 4- Spark ignitor energized for 4 seconds; gas solenoid valves will open during 4 second TFI (trial for ignition) The unit has three trials for ignition before lockout.
- 5- Burner lights, ignitor stops, and flame current is sensed by ignition controller.
- 6- When heat exchanger reaches certain temperature (temperature setting on fan switch) the fan switch will make and start supply fan.
- 7- When unit is shut off, burner will shut down and supply fan will run until heat exchanger temperature is below fan switch set point.

LP/NG TROUBLE SHOOTING GUIDE

****ALWAYS CHECK FOR SUFFICIENT POWER, GAUGE CORD, POLARITY AND GAS PRESSURE. POWER AND GAS SUPPLY MUST ALWAYS BE SHUT OFF/DISCONNECTED BEFORE REMOVING OR REPLACING ANY COMPONENTS ON THE HEATER****

1. UNIT WILL NOT START

- A- Check for 115 voltsAC across terminals 1 and 2. If no voltage check power source.
- B- Check for power across terminals 2 and 3. If no power, inspect toggle switch or thermostat, replace if faulty.
- C- Check the thermal overloads on burner supply fan motor. Reset by pushing the red button on motor housing.
- D- Ensure proper connection to burner fan. If power is at connection, and neutral wire secure, replace burner motor.

2. RED LED LIGHT DOES NOT FLASH ON START UP

- A- Check for power across terminals 2 and 4. If no power, remove high limit cover and check for power on high limit. If no power there, inspect air switch and tubing. Adjust and/or replace as necessary. If high limit powered on one side only, replace high limit.
- B- Check power at 2-amp fuse. Replace if faulty.
- C- Check across 120v side of transformer for power. On 24v side, should be 24v. If not replace transformer.
- D- Check across 5-amp fuse for power. Replace if faulty.
- E- Check L1 connection to terminal 4, ensure good connection.
- F- Ensure proper ground at gas primary.
- G- Bad controller, check LED for steady on or flashing codes.
- H- If LED light stays on during pre-purge cycle, replace ignition controller.

3. BURNER WILL NOT IGNITE.

- A- Always make sure gas supply pressure is 14" (½ lb) or less as over that amount could cause damage to manifold regulator.
- B- Check gas pressure at 1/8" tap on elbow of manifold. Ensure pressure is correct (1.2" for IDF200, 1.8" for IDF350 and 3.0" for IDF500). If no pressure there, remove cover and check for 24v across solenoid valve wires. If voltage present, replace solenoid valve.
- C- If no voltage, at solenoid valve, check gas primary control to ensure wired and grounded properly. If wired properly, and still no voltage to solenoid, replace gas primary.
- D- Remove the electrode assembly from burner housing. Shut off all manual gas valves then reset the unit. Install jumper wire between terminals 3 and 4. Lay electrode assembly across top of burner housing. Carefully check for spark across the ignition gap after 34 second pre-purge. If no spark, check for 120VAC at ignition transformer. If power there, replace transformer, no power, replace gas primary. If spark is arcing at another point other than tip of spark rod, ensure spark rod is in correct position. If it is then replace spark rod. After test remove jumper from terminals 3 and 4.

4. BURNER IGNITES BUT THEN SHUTS DOWN

A- Connect D.C. Micro amp multimeter probes to FC pins controller (beside LED light). You should receive a reading between 3.5-5.5 microamp (fluctuating 10%) during the time it fires. If reading is lower, check flame rod and wire as per trouble shooting instructions. Disconnect orange MVI wire from controller. Shut off gas and with AC voltage tester, check between 24v ground side of transformer and MVI terminal for voltage during TFI. Reading should be steady 24v. AC. Check flame current coming back to gas primary. Flame current is the current that passes through the flame from the sensor to ground. The minimum flame current necessary to keep the system from lockout is 1 microamp. To measure flame current, connect an analog DC microammeter to the FC terminals (beside LED light). Meter should read 1 microamp or higher. If meter reads below "0" on scale, meter leads are reversed. Disconnect power and reconnect meter leads for proper polarity.

B- If flame current measures below 1 microamp, replace gas primary control

C- If no flame current measured, remove electrode assembly. Check continuity on flame rod wire. Inspect flame rod for chips or cracks. Clean if necessary. Check and clean nozzle. Ensure all connections are tight.

D- Supply gas pressure to unit must be the proper pressure. (Refer to manual) If wrong size line is used to correspond with length, you may have to adjust to ensure correct supply pressure at unit.

E- Check polarity, ensure no AC voltage on terminal 2. Voltage supply must be consistent 108-132 volts.

F- If you are running more than one unit off of a single gas source and one unit is shutting down, be sure, size of hose is correct for the BTU's and the length of the hose. Check at test port on elbow to ensure proper and constant pressure to burner.

5. MAIN SUPPLY MOTOR DOES NOT COME ON, UNIT SHUTS DOWN ON HIGH LIMIT

A- Check temperature feeler, make sure it is in properly.

B- Jumper out fan switch to test motor. If you have voltage to motor and still does not start replace motor. Check line voltage to ensure proper voltage. Also check amp draw on motor, motor may be running too hot and not running due to thermal overload being tripped.

C- Replace fan switch if you have power on one side after unit heating up it does not make.

D- Replace high limit as it may be tripping too soon and not giving fan switch time to engage.

E- Make sure fan switch is at the correct temperature for conditions. See page 18 for settings.

6. IF THE UNIT DOES NOT RUN SMOOTHLY AND QUIETLY

A Check to ensure proper gas supply pressure and proper manifold pressure.

B Adjust the air setting on the adjustable damper connection.



CAUTION- DISCONNECT ALL POWER FROM HEATER AT THE SOURCE BEFORE ACCESSING ELECTRICAL COMPONENTS OR REMOVING ANY FUSES.

Gas Pipe Size and BTU Supply Chart

Natural Gas

Inlet Pressure: Less than 2 psi

Pressure Drop: 0.5 in w.c.

Specific Gravity: 0.60

Natural Gas flow is given in thousands of BTU/hour. One cubic foot of NG gas = 1000 BTU's. Pipe length must include additional length for all fittings.

Nominal	PIPE SIZE (inches)								
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Actual ID	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026
Length (ft)	Capacity in Cubic Feet of Gas per Hour								
10	172	360	678	1,390	2,090	4,020	6,400	11,300	23,100
20	118	247	466	957	1,430	2,760	4,400	7,780	15,900
30	95	199	374	788	1,150	2,220	3,530	6,250	12,700
40	81	170	320	657	985	1,900	3,020	5,350	10,900
50	72	151	284	583	873	1,680	2,680	4,740	9,660
60	65	137	257	528	791	1,520	2,430	4,290	8,760
70	60	126	237	486	728	1,400	2,230	3,950	8,050
80	56	117	220	452	677	1,300	2,080	3,670	7,490
90	52	110	207	424	635	1,220	1,950	3,450	7,030
100	50	104	195	400	600	1,160	1,840	3,260	6,640
125	44	92	173	355	532	1,020	1,630	2,890	5,890
150	40	83	157	322	482	928	1,480	2,610	5,330
175	37	77	144	296	443	854	1,360	2,410	4,910
200	34	71	134	275	412	794	1,270	2,240	4,560
250	30	63	119	244	366	704	1,120	1,980	4,050
300	27	57	108	221	331	638	1,020	1,800	3,670
350	25	53	99	203	305	587	935	1,650	3,370
400	23	49	92	189	283	546	870	1,540	3,140

Liquid Propane

Inlet Pressure: 11.0 in w.c.

Pressure Drop: 0.5 in w.c.

Specific Gravity: 1.50

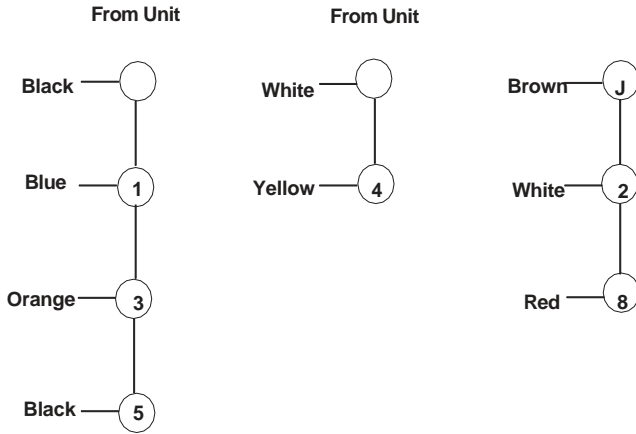
Liquid Propane gas flow is given in thousands of BTU/hour. One cubic foot of LP gas = 2516 BTU's. **This chart refers to low pressure Liquid Propane, after regulation.** Pipe length must include additional length for all fittings.

Nominal	PIPE SIZE (inches)								
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Actual ID	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026
Length (ft)	Capacity in Cubic Feet of Gas per Hour								
10	291	608	1,150	2,350	3,520	6,790	10,800	19,100	39,000
20	200	418	787	1,620	2,420	4,660	7,430	13,100	26,800
30	160	336	632	1,300	1,940	3,750	5,970	10,600	21,500
40	137	287	541	1,110	1,660	3,210	5,110	9,030	18,400
50	122	255	480	985	1,480	2,840	4,530	8,000	16,300
60	110	231	434	892	1,340	2,570	4,100	7,250	14,800
80	101	212	400	821	1,230	2,370	3,770	6,670	13,600
100	94	197	372	763	1,140	2,200	3,510	6,210	12,700
125	89	185	349	716	1,070	2,070	3,290	5,820	11,900
150	84	175	330	677	1,010	1,950	3,110	5,500	11,200
175	74	155	292	600	899	1,730	2,760	4,880	9,950
200	67	140	265	543	814	1,570	2,500	4,420	9,010
250	62	129	243	500	749	1,440	2,300	4,060	8,290
300	58	120	227	465	697	1,340	2,140	3,780	7,710
350	51	107	201	412	618	1,190	1,900	3,350	6,840
400	46	97	182	373	560	1,080	1,720	3,040	6,190

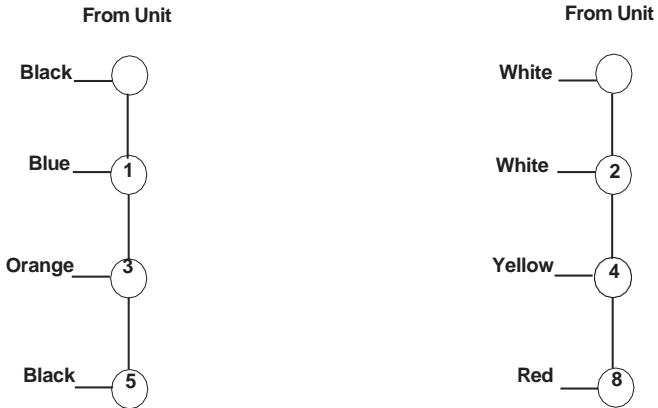
CONSULT WITH A LOCAL GAS PROFESSIONALS Use this chart as a guideline ONLY.

FAN MOTOR WIRING DIAGRAM

BALDOR MOTORS

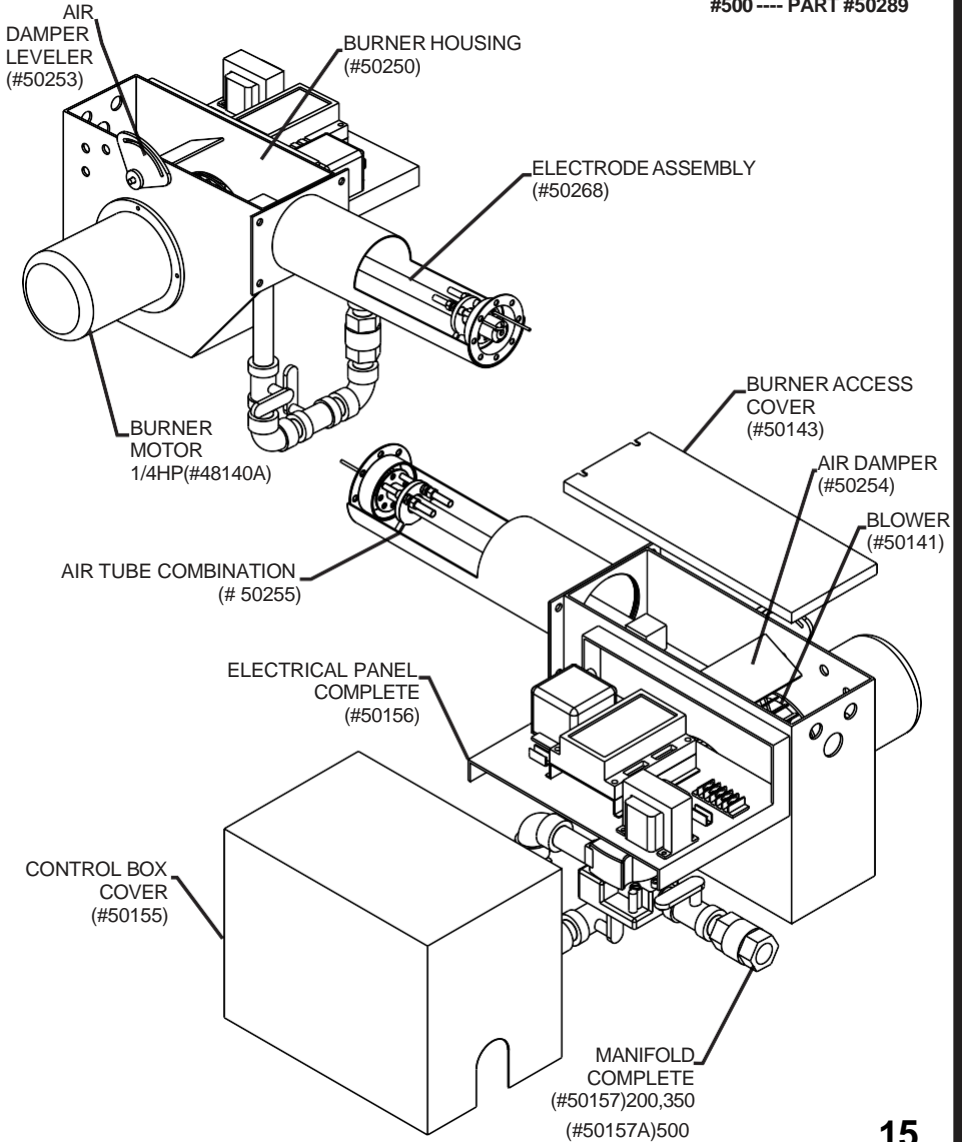


WEG MOTORS

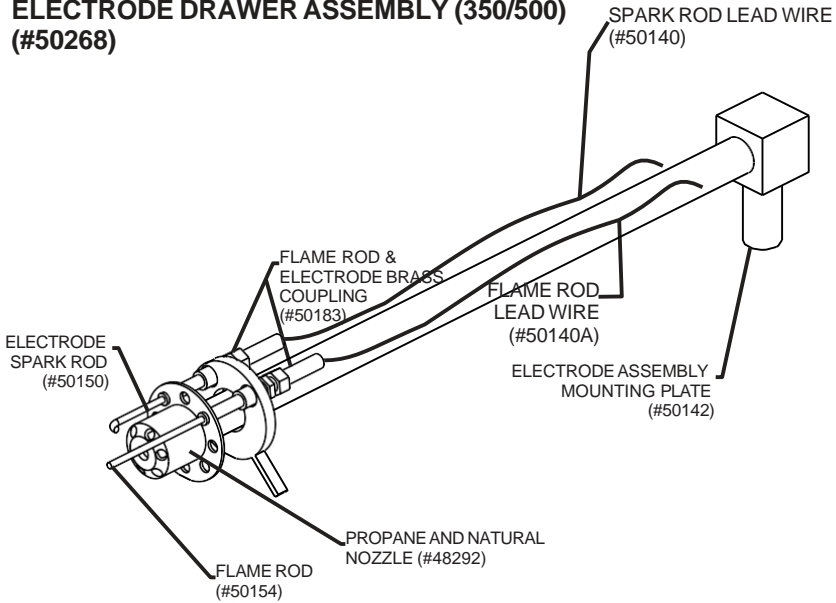


NATURAL/PROPANE BURNER COMPLETE

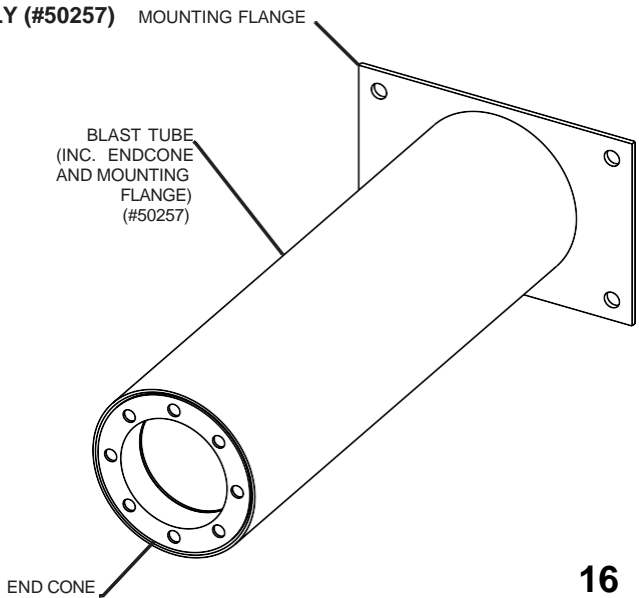
#200----PART #20223
#350----PART #50223A
#500----PART #50289



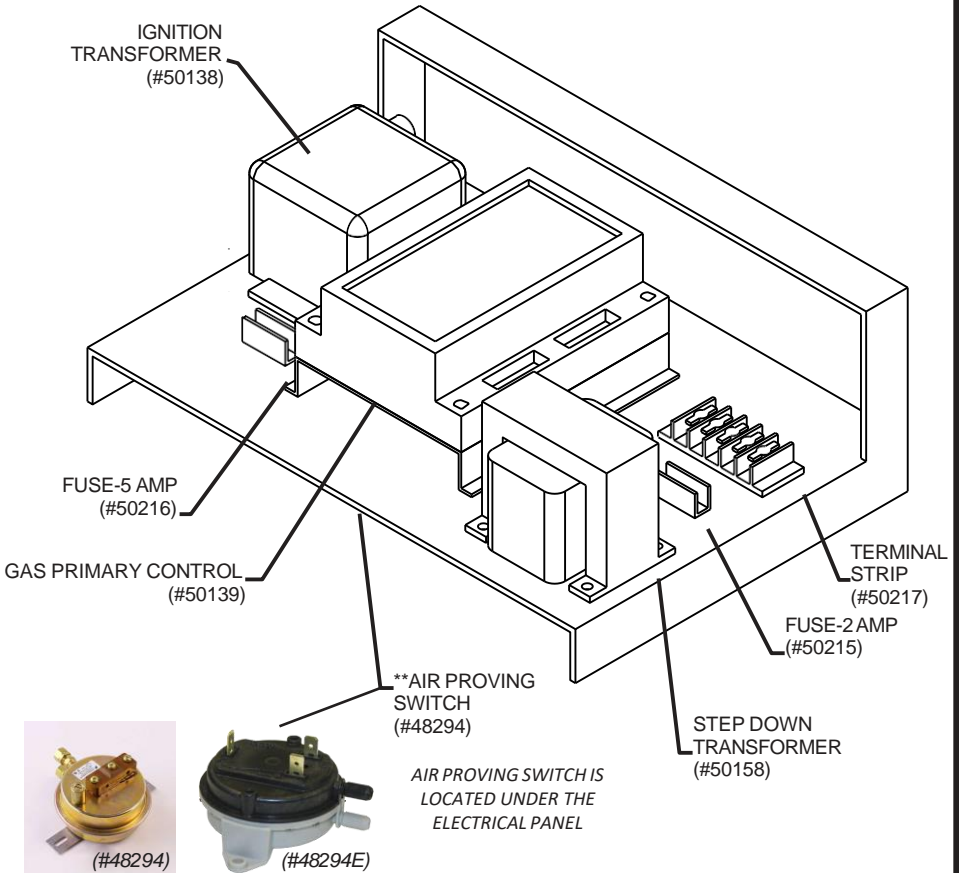
**ELECTRODE DRAWER ASSEMBLY (350/500)
(#50268)**



BLAST TUBE ASSEMBLY (#50257) MOUNTING FLANGE

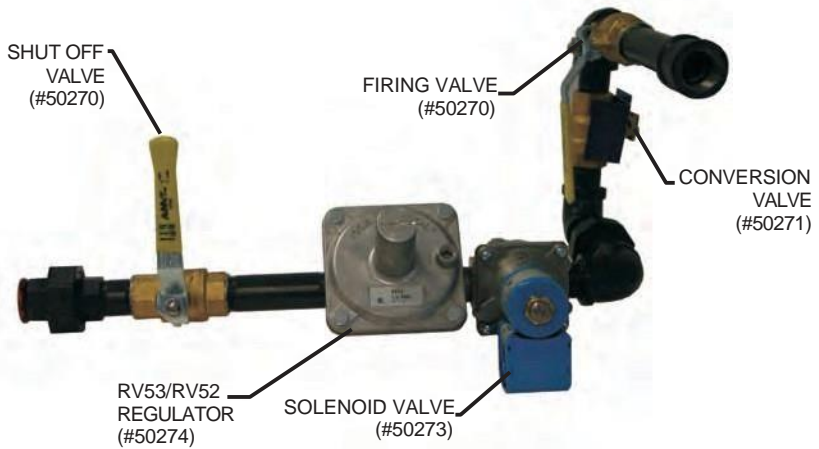


ELECTRICAL PANEL (COMPLETE #50156)



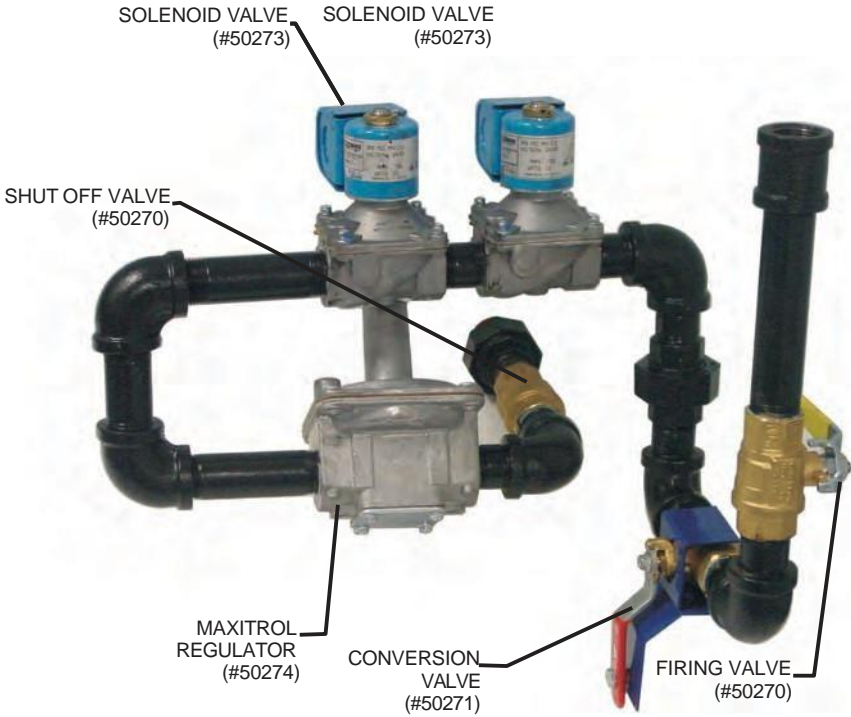
TWO TYPES OF AIR PROVING SWITCHES MAY BE PRESENT

**MANIFOLD COMPLETE IDF350
#50157**



NOTE: ALL UNITS WILL REQUIRE A "SECONDARY" POUNDS TO INCHES
REGULATOR TO OPERATE ON PROPANE/NATURAL GAS

**MANIFOLD COMPLETE IDF500
#50157A**



NOTE: All units will require a "secondary" pounds to inches regulator to operate on propane/ natural gas

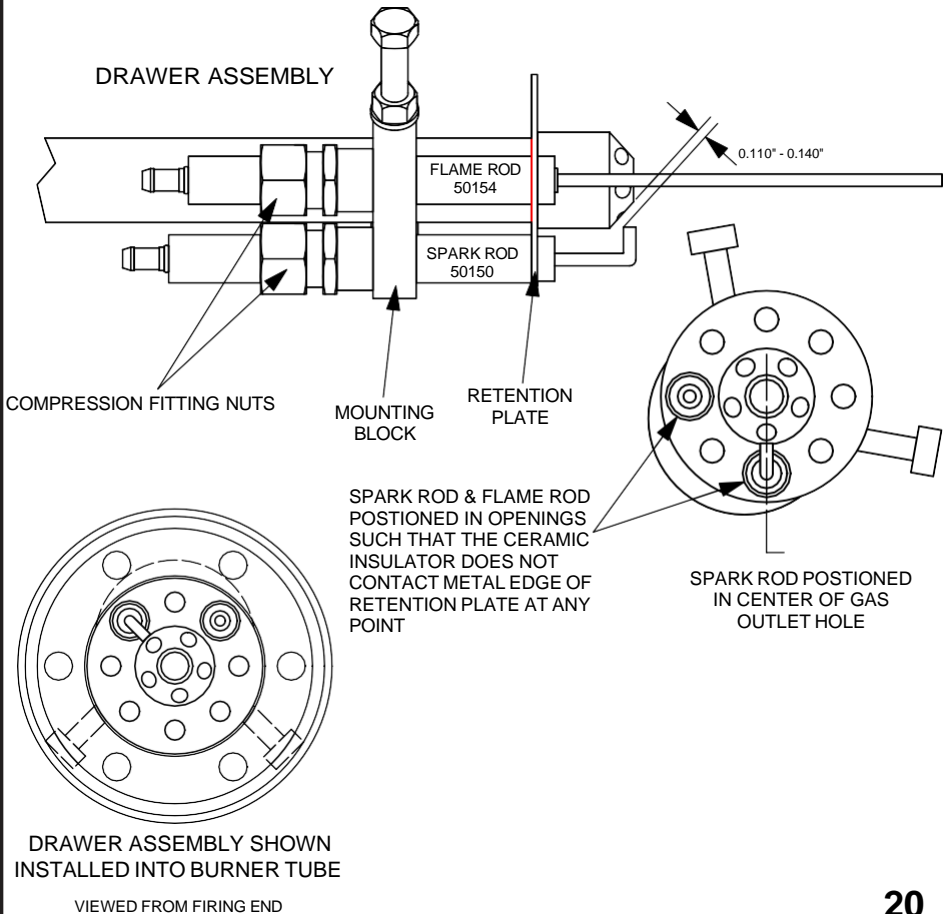
SPARK ROD AND FLAME ROD SETTINGS

Adjust by loosening compression fitting nuts and sliding / rotating spark rod or flame rod into correct position and then tightening compression fitting nuts.

It may be necessary to turn the entire compression fitting slightly where it threads into the mounting block in order to properly align the rods in the retention plate holes so they don't contact the metal edges at any point.

DO NOT OVERTIGHTEN COMPRESSION FITTING NUTS

DAMAGE TO THE CERAMIC INSULATOR MAY OCCUR FROM EXCESSIVE TIGHTENING



IDF350 LP/NG & IDF500 LP/NG LIMITS, FAN SWITCHES AND TEMPERATURE FEELERS



ADJUSTABLE FAN SWITCH 90-130°F (48111B)



MANUAL HIGH LIMIT (48109)



HIGH LIMIT
250°F (48110C)



FAN SWITCH FEELER
(48171)

Indoor and outdoor settings of fan switch

Indoors & if surrounding air is warm i.e. -5°C/23°F-Fan switch should be set to 115° or higher so as to shut down unit when heat exchanger is properly cooled, also keeps fan motor from excessive running on when discharging cooler air.

Outdoor-Fan switch should be set between 100°-90°. The colder the temperature the lower the setting.

HIGH LIMIT/FAN SWITCH WIRING
ON IDF LP/NG HEATERS

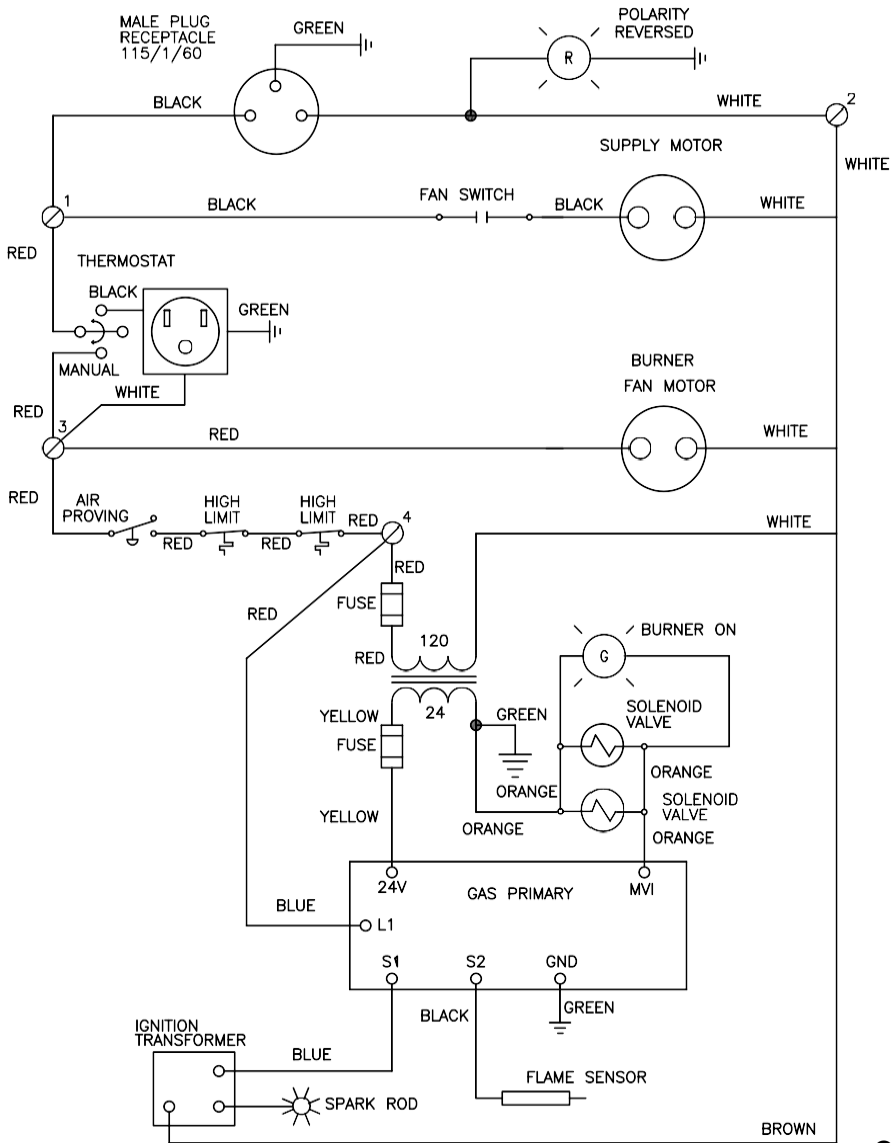
ADJUSTABLE FAN
SWITCH
48111B

300°F MANUAL HIGH
LIMIT SWITCH
48109

250°F AUTOMATIC
RESET HIGH LIMIT
SWITCH 48110C



IDF500/ IDF350 LP/NG WIRING DIAGRAM *



***IDF350 HAVE ONE LESS SOLENOID VALVE**

HEAT EXCHANGER FOR LP/NG UNITS

P/N 20200-OHV200LP/NG

P/N 50200- IDF350 & 500LP/NG

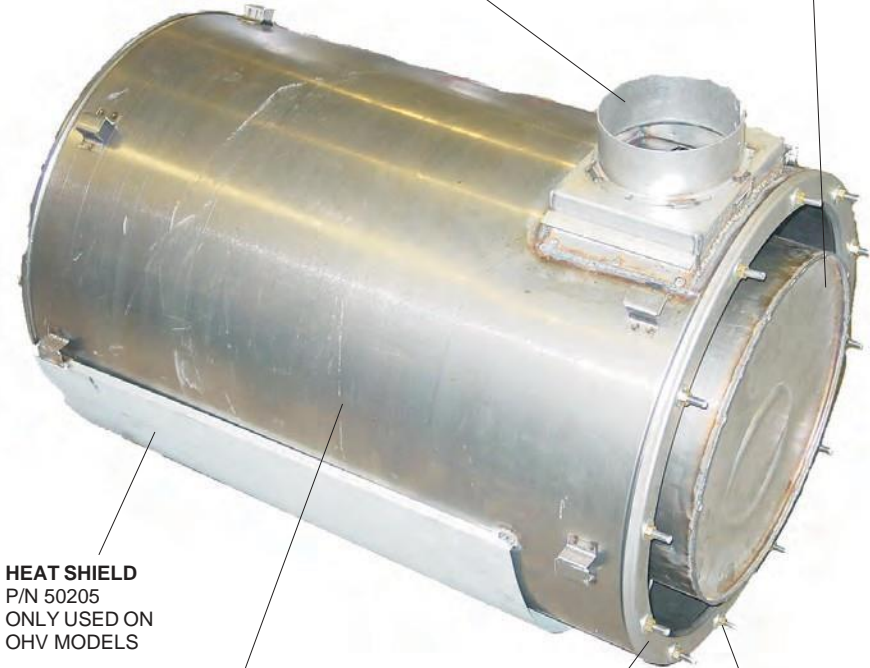
**COMBUSTION CHAMBER
ASSEMBLY**

P/N 20207-OHV200

P/N 50207-IDF350 & 500

FLUE COLLAR ASSEMBLY

P/N 48113-ALL UNITS



HEAT SHIELD

P/N 50205

ONLY USED ON
OHV MODELS

OUTER SHELL

P/N 20206-OHV200

P/N 50206-IDF350 & 500

CAP RING

2 PER ASSEMBLY

P/N 50115 ALL UNITS

**RETAINER BOLT
W/WASHER**

24 PER UNIT

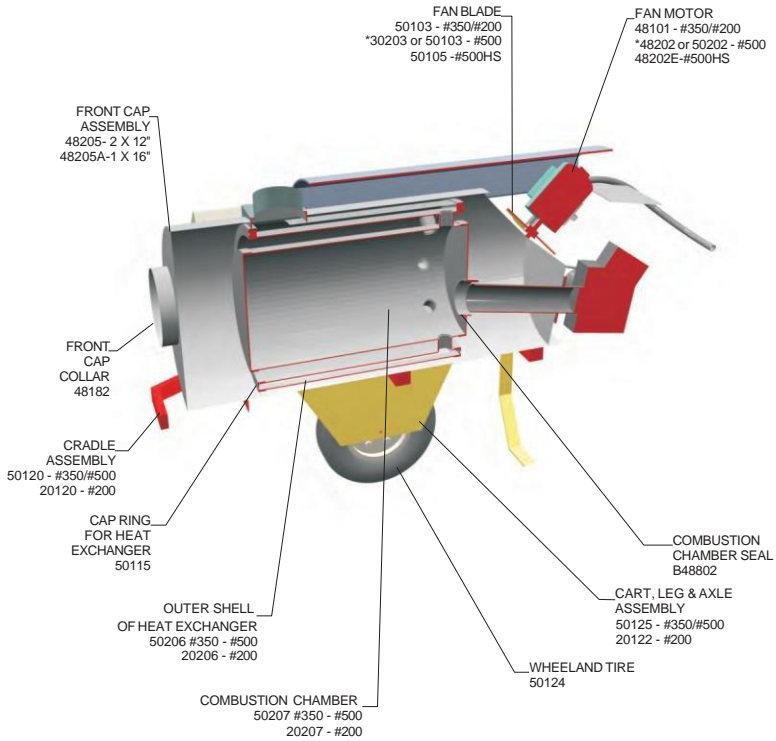
P/N 48116 ALL
UNITS



IDF350 & IDF500 FROST-FIGHTERS



IDF 350 & IDF500 FROST-FIGHTERS



*Please note: Please specify either 1 HP 3450 RPM or 1 HP 1750 RPM motor to make sure proper blade is being used.

FROSTFIGHTER WARRANTY

Frost Fighter Inc. warrants the Frostfighter heater to be free from defects in a workmanship and materials for a period of twelve (12) months from date of initial service not to exceed fifteen (15) months from date of shipment.

If during the warranty period, the heating elements or fan fail under normal use and service due to a defect in material or workmanship said components will be repaired or replaced free of charge F.O.B. the Winnipeg Factory...

All other mechanical and electrical components are covered by a one (1) year limited warranty. Normal maintenance items are excluded under the warranty. The warranty does **NOT** include any freight, labor or sales taxes incurred by the purchaser and is a subject to the following conditions:

1. The heater shall be operated in accordance with the manufacturer's operating and maintenance manual.
2. The heater shall be subject to normal use in service and shall not have been misused, neglected, altered, or otherwise damaged.
3. The unit shall be operated within the rated capacities, at the specified voltage and with the prescribed fuel.
4. The unit has not been allowed to exceed its proper temperature limits due to control malfunction or inadequate air circulation.
5. There is no evidence that the unit has been subject to tampering or deliberate destruction.
6. The heating elements and controls show no sign of overheating, explosion, implosion, or operation in conditions with corrosive or abrasive dusts or gasses.

No representative of Frost Fighter Inc., nor any of its distributors or dealers, is authorized to assume for Frost Fighter Inc. any other obligations or liability in connection with this product, nor alter the terms of the warranty in any way. This warranty is limited to the express provisions contained herein and does not extend to liability for labor costs incurred in replacing defective parts.

Part can be obtained from Frost Fighter Inc., Winnipeg, Manitoba on the basis that credit will be issued if the defective parts returned qualify for replacement pursuant to the terms and conditions of this warranty. Authorization to return any alleged defective parts must be first obtained from the factory prior to transporting the part. A.R.G.A.# must be provided from a Frost Fighter Inc representative. The transportation charges for the alleged defective part must be prepaid by the owner. Frost Fighter Inc. will not accept charges for parts purchased unless the conditions of this warranty have been satisfied and prior authorization to purchase the parts has been received from the factory.



125 FURNITURE PARK WINNIPEG, MANITOBA R2G
1B9, (204) 775-8252