

MAINTENANCE



WARNING: NEVER SERVICE HEATER WHILE IT IS PLUGGED IN OR WHILE HOT!

USE ORIGINAL EQUIPMENT REPLACEMENT PARTS. Use of third party or other alternate components will void warranty and may cause unsafe operating conditions.

A.) FUEL TANK

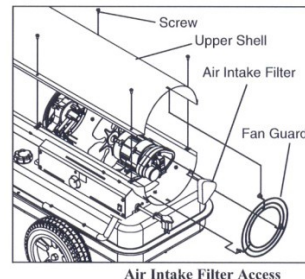
FLUSH EVERY 200 HOURS OF OPERATION OR AS NEEDED

B.) AIR INTAKE FILTER

- Dirt and debris can gather at different rates depending on environment and type of work being performed in that environment.
- If not cleaned and/or replaced as needed it may result in low air pressure.
- Probable signs of this issue include:
 - * Unit failing to ignite
 - * Unit not staying lit (no consistent length of time)
 - * Flame sputtering
 - * Small amounts of soot production

WASH AND DRY WITH SOAP AND WATER EVERY 500 HOURS OF OPERATION OR AS NEEDED.

- Remove screws along each side of heater using medium Phillips screwdriver.
- Lift upper shell off.
- Remove fan guard.
- Wash or replace air intake filter.
- Reinstall fan guard and upper shell.



Air Intake Filter Access

C.) AIR OUTPUT FILTER, LINT FILTER

REPLACE EVERY 500 HOURS OF OPERATION OR ONCE A YEAR.

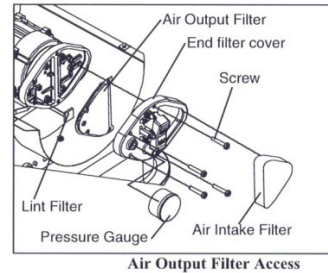
- Remove upper shell and fan guard (See Air Intake Filter).
- Turn Air pressure gauge counter---clock wise and remove.
- Remove end filter cover screws using medium Phillips screwdriver.
- Remove end filter cover.
- Replace air output and lint filter.

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MAINTENANCE

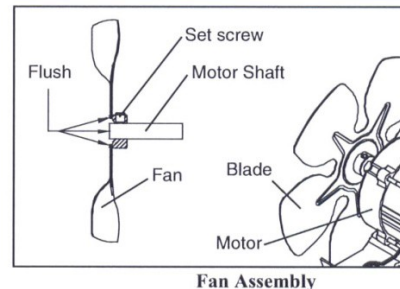
- Reinstall end filter cover and air pressure gauge.
- Reinstall fan guard and upper shell.



D.) FAN BLADES

CLEAN EVERY SEASON OR AS NEEDED.

- Remove upper shell (See Air Intake Filter).
- Use M6 Allen wrench to loosen set screw which holds fan blade to motor shaft.
- Slip fan blade off motor shaft.
- Clean fan blade using a soft cloth moistened with kerosene or solvent.
- Dry fan blade thoroughly.
- Reinstall fan blade on motor shaft. Place fan blade hub flush with end of motor shaft.
- Place set screw on flat of shaft. Tighten set screw firmly (40---50 inch---pounds/4.5---5.6 N---m).
- Reinstall upper shell.



E.) NOZZLE

- Petroleum based fuels will leave a residue in supply lines which can build-up over time (diesel will do this at a much higher rate than kerosene).
- Build-up may be severe enough to hinder atomization and alter the spray pattern of the nozzle.
- Nozzle should be checked throughout and at the end of every heating season.
- Remove and blow out nozzle using pressurized air or replace as needed.
- Issues with the above can result in extreme soot or creosote like build-up in the combustion chamber.
- Probable signs of this issue include:
 - * Black soot and or ashy flakes shooting out of the front of the unit.
 - * Combustion chamber failure
 - * Foul smell (partially or unburned fuel and/or carbon)
 - * Small amounts of black or grayish smoke

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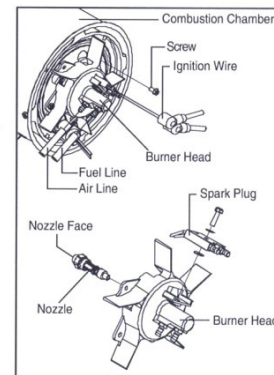
- Build-up in the nozzle may also lead to:
 - * Unit failing to ignite
 - * Puff of gray or white smoke at ignition or when unit shuts down
 - * Unit not staying lit (no consistent length of time)
 - * Foul smell (partially or unburned fuel)

Note: When maintaining nozzle, be sure o-ring is structurally sound and there is no rust or corrosion present on nozzle spring or washers.

REMOVE DIRT IN NOZZLE AS NEEDED

(For DFA50-DFA180CV Models Only)

- Remove upper shell.
- Remove fan blade.
- Remove fuel and air line hoses from burner head.
- Remove ignition wire from spark plug.
- Remove three screws using medium Phillips screwdriver and remove burner head from combustion chamber.
- Remove spark plug from burner head using medium Phillips screwdriver.
- Carefully remove nozzle from burner head using 5/8" socket wrench.
- Blow compressed air through face of nozzle. (this will remove any dirty in nozzle)
- Reinstall nozzle into burner head and tighten firmly. (80~110 inch---pounds)
- Reinstall spark plug in burner head.
- Attach burner head to combustion chamber.
- Attach ignition wire to spark plug.
- Attach fuel and air line hoses to burner head.
- Reinstall fan blade and upper shell.



(For DFA210-DFA220CV Model Only)

- Remove upper shell.
- Remove fan.
- Remove fuel and air line hoses from adaptor---nozzle.
- Remove ignition wire from spark plug.
- Remove four screws using medium Phillips screwdriver and remove burner---bracket from

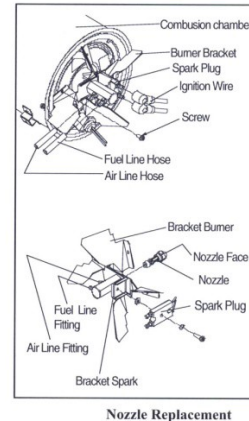
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MAINTENANCE

combustion chamber.

- Remove spark plug from burner head using medium Phillips screwdriver.
- Carefully remove nozzle from adaptor---nozzle using 5/8" socket wrench.
- Blow compressed air through face of nozzle. (this will remove any dirt in nozzle)
- Reinstall nozzle into adaptor---nozzle and tighten firmly. (80~110 inch---pounds)
- Reinstall spark plug in spark---bracket.
- Attach burner---bracket to combustion chamber.
- Attach ignition wire to spark plug.
- Attach fuel and air line hoses to adaptor---nozzle.
- Reinstall fan blade and upper shell.



F.) SPARK PLUG

- The spark plug will slowly gather a build-up of soot on the electrodes over time (this will happen at a much faster rate with diesel than kerosene).
- Build-up could prevent arching from occurring or push the arch further away from the combustion chamber; ultimately not allowing ignition of the fuel and air mixture in the combustion chamber.
- Spark plugs should be checked throughout and at the end of every heating season, and be replaced if any damage or cracks are visible.
- Issues with the above will result in ignition issues.
- Probable signs of this issue include:
 - * Unit failing to ignite (spark visible)
 - * Unit failing to ignite (no spark visible)
 - * Inconsistent spark when fuel passes over electrodes

Note: If all of the above is followed and a spark is still NOT visible; remove and replace Igniter (ignition transformer)

CLEAN AND REGAP EVERY 600 HOURS OPERATION OR REPLACE AS NEEDED.

(For DFA50-180CV Models Only)

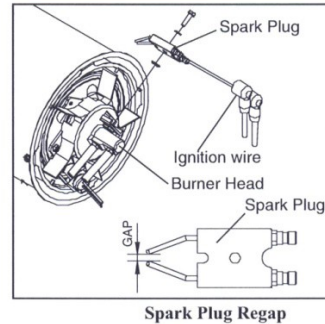
- Remove upper shell.
- Remove fan.
- Remove ignition wire from spark plug.

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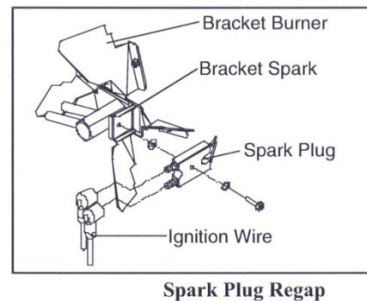
MAINTENANCE

- Remove spark plug from burner head using medium phillips screwdriver.
- Clean and regap spark plug electrodes to 3.5mm gap.
- Reinstall spark plug in burner head.
- Attach ignition wire to spark plug.
- Reinstall fan and upper shell.



(For DFA210-220CV Model Only)

- Remove upper shell.
- Remove fan.
- Remove ignition wire from spark plug.
- Remove spark plug from spark---bracket using medium phillips screwdriver.
- Clean and regap spark plug electrodes to 3.5mm gap. (0.138)
- Reinstall spark plug in spark---bracket.
- Attach ignition wire to spark plug.
- Reinstall fan and upper shell.



G.) PHOTOCCELL

- Photocell's can receive a build-up of soot on their lens with normal usage (this will happen at a much faster rate with diesel than kerosene).
- The photocell is designed to detect flame in the combustion chamber and allow the unit to continue to supply the fuel.
- This is a safety feature that should NEVER be bypassed for normal usage.
- Photocells should be checked throughout and at the end of every heating season.
- Issues with the above will result in termination of power to the unit.
- Probable signs of this issue include:
 - * Unit does not stay lit (consistently runs for only 10-15 seconds)

Note: Do not use any liquids or solvents on the photocell lens.

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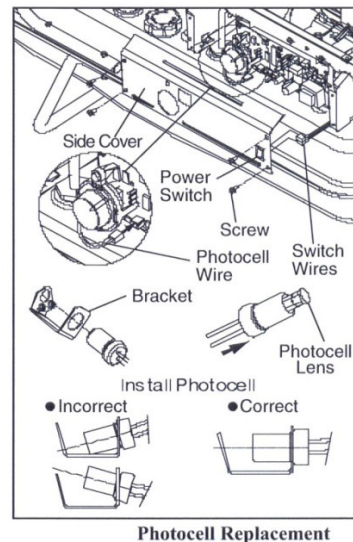
MAINTENANCE

CLEAN PHOTOCELL ANNUALLY OR AS NEEDED.

- Remove upper shell.
 - Remove fan.
 - Remove photocell from its mounting. ---
- Clean photocell lens with a clean, dry cotton swab.

TO REPLACE:

- Remove side cover screws using medium phillips screwdriver.
- Disconnect switch wires from power switch and remove side cover.
- Disconnect wires from circuit board and remove photocell.
- Install new photocell and connect wires to circuit board.
- Replace switch wires to power switch and side cover.
- Replace fan and upper shell.



H.) FUEL FILTER

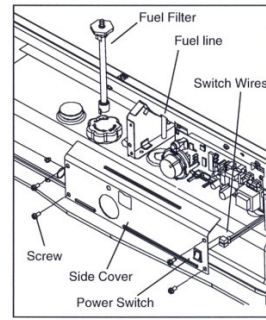
CLEAN OR REPLACE TWICE A HEATING SEASON OR AS NEED.

- Remove side cover screws using medium Phillips screwdriver.
- Disconnect switch wires from power switch and remove side cover.
- Pull fuel line off fuel filter neck.
- Turn fuel filter 90° to counter clockwise and pull to remove. (DFA20-80T Models only)
- Turn fuel filter 90° to clockwise and pull to remove (DFA125-220CV Models only) .
- Wash fuel filter with clean fuel and replace in tank.
- Attach fuel line to fuel filter neck.
- Replace switch wires to power switch.
- Reinstall side cover.

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MAINTENANCE



Fuel Filter Replacement

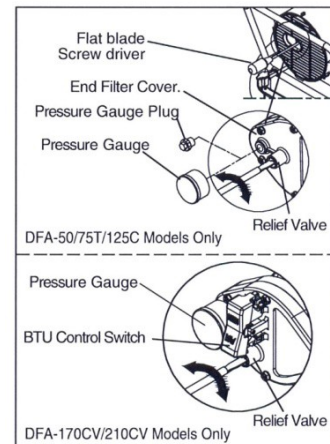
I.) PUMP PRESSURE ADJUSTMENT

NOTE: If the pump pressure needs to be adjusted, make sure the heater is running on the HIGH BTU setting.

- Push the BTU CONTROL Switch to HIGH.
(DFA170-220CV Models only)
- Remove Pressure Gauge Plug from End Filter Cover.
Install accessory Pressure Gauge.
(DFA50-135C Models only)
- Start heater
Allow motor to reach full speed
- Adjust pressure (Using a flat blade screwdriver) Turn relief valve to clockwise to increase pressure. Turn relief valve to counter clockwise to decrease pressure.
- Stop heater

MODEL	Pump Pressure	
	High BTU level	Low BTU level
DFA-50	3.8 psi	N/A
DFA-75T	3.8 psi	N/A
DFA-125C	5.5 psi	N/A
DFA-170CV	6.5 psi	4.5 psi
DFA-210CV	8.5 psi	6.5 psi

MODEL	Pump Pressure	
	High BTU level	Low BTU level
DFA50	3.8 psi	N/A
DFA80T	3.8 psi	N/A
DFA135C	5.5 psi	N/A
DFA180CV	6.5 psi	4.5 psi
DFA220CV	8.5 psi	6.5 psi



Adjusting Pump Pressure

J.) ROTOR KIT (Carbon Rotor, Blades Insert)

- Wear and tear can cause surface to become uneven and thickness to deteriorate.
- Extended usage can lead to chipping or hairline fractures.
- Issues with the above will result in low or inconsistent air pressure output.

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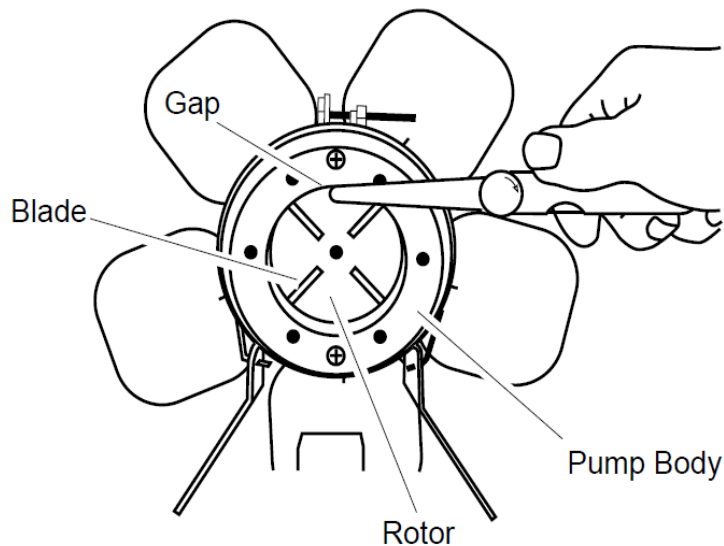
MAINTENANCE

- Probable signs of this issue include:
 - * Unit failing to ignite
 - * Unit not staying lit (no consistent length of time)
 - * Flame sputtering
 - * Small amounts of soot production
 - * Motor fan seizing or sticking

Note: It is ideal to replace the whole rotor kit instead of individual blades (veins) due to the Rotor Kits being made to spec together.

CHECK THROUGHOUT AND AT END OF SEASON AND REPLACE AS NEED.

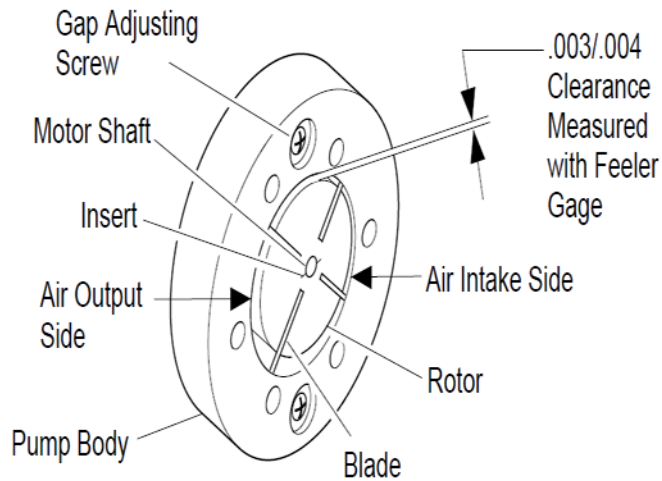
- Disassemble the end cover filter and end pump cover from rear of motor
- Make sure rotor and blades are free of any type of lubricant. Rotor and blades must be clean and dry for proper operation
- Check rotor with feeler gauge for proper clearance (.003"-.004") between rotor and pump body



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NOTE: USE ONLY ORIGINAL EQUIPMENT REPLACEMENT PARTS.

Use of alternate or third party components will void any warranty and may cause unsafe operating condition.

NOTICE: This heater is fuse protected.

If your heater fails to ignite, **DO NOT RETURN YOUR HEATER TO THE STORE.** Please follow the simple instruction below to inspect and change the fuse.

PROCEDURE FOR REPLACING FUSE



WARNING: SHOCK HAZARD

To prevent personal injury, unplug the power cord before replacing fuse.

1. Unplug heater.
2. Remove side cover screws using medium phillips screw driver.
3. Disconnect switch wires from power switch.
4. Remove fuse from fuse holder.(See Replacing Fuse.)
5. Replace fuse with enclosed fuse.



WARNING: FIRE HAZARD

To avoid fire, Do not substitute with a higher or lower current rating.

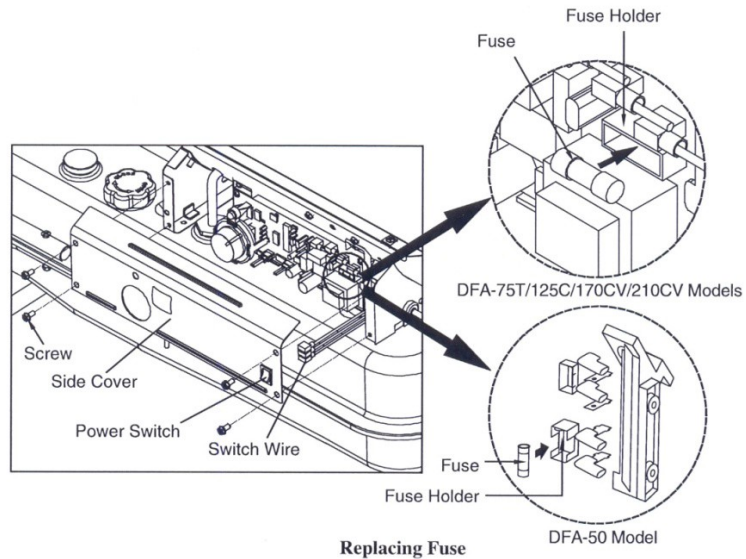
6. Replace switch wires to power switch.
7. Replace side cover.

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NOTE: Specified fuse rating: AC 125/8A



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