

# MODEL 210 SPACE HEATER

## SPECIFICATIONS

### PERFORMANCE

CAPACITY.....210, 000 BTU/HR / 59,920 KCAL/HR  
CONTINUOUS OPERATION BEFORE REFUEL ..... 7.5 HOURS  
TEMPERATURE LIMIT ..... OPEN @ 140°F - CLOSED @180°F  
HEATED AIR ..... 1930 CFM  
COMBUSTION SMOKE/BACHARACH SCALE ...#1 OR #2 SMOKE  
CARBON MONOXIDE ALLOWED ..... 0.01%

### GENERAL

WEIGHT (DRY) ..... 215 LBS / 98 KG  
DIMENSIONS ..... L 42" X W 21" X H 47"  
FUEL TANK CAPACITY .....15 GALLON / 57 LITERS  
COMBUSTION CHAMBER ..... STAINLESS STEEL  
FUEL FILTER ELEMENT..... P/N V04-0000305-01  
TIRE & RIM .....P/N G02-00018A  
PULLEY, FAN .....P/N R03-00280  
BELT, FAN ..... P/N R02-00044  
FAN ..... P/N Z01-00110

### ELECTRICAL

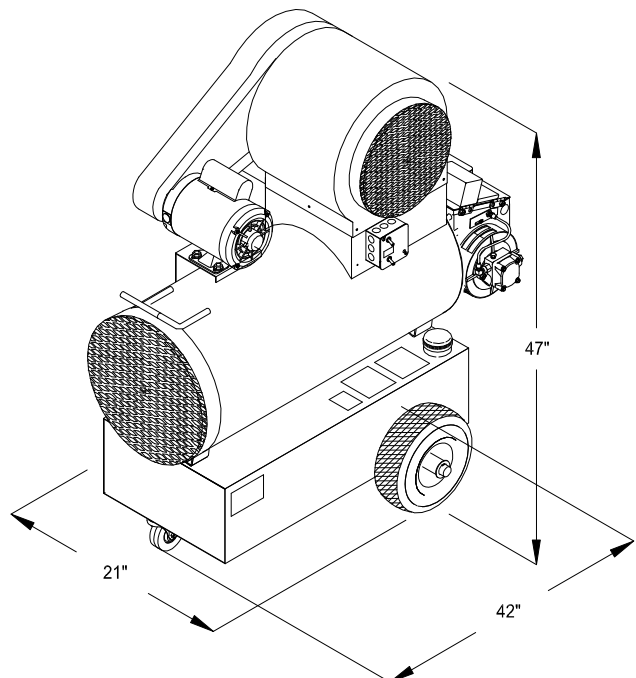
VOLTAGE ..... 115V 1PH 60HZ  
HIGH LIMIT SWITCH ..... P/N F04-00862  
TOGGLE SWITCH - 20AMP ..... P/N F04-00699  
POWER CORDSET ..... P/N F04-00110  
THERMOSTAT ..... P/N F04-00831  
CONTROL, HIGH LIMIT .....P/N F04-00832  
CURRENT ..... 28 AMPS

### BURNER

NAME BRAND ..... WAYNE HOME  
BURNER ..... P/N V00-173127  
BURNER TYPE..... PRESSURE ATOMIZING  
FUEL TYPE.....KEROSENE, #1 OR #2 DIESEL  
FUEL PRESSURE.....120 PSI / 8 BAR  
FUEL NOZZLE.....(1.50 90DA DEGREE A) P/N V1.50 90DA  
FUEL CONSUMPTION..... 1.68 GPHR / 6.36 LPHR  
FUEL PUMP.....(DAN FOSS) P/N V-100714-001  
MOTOR HORSEPOWER.....1/7 HP  
MOTOR SPEED.....3450 RPM

### FAN MOTOR

MOTOR VOLTAGE ..... 115V 1PH 50/60HZ  
MOTOR ..... P/N F02-00035  
MOTOR PULLEY ..... P/N R03-00049  
MOTOR SPEED ..... 1530 RPM  
CURRENT ..... 115V 60HZ 1PH



# SAFETY, INSTALLATION, AND OPERATION

## SPACE HEATER

### MACHINE UNPACKING


ALL CLEANERS ARE CAREFULLY INSPECTED AND CARTONED TO PROTECT AGAINST SHIPPING DAMAGE. IF THERE IS DAMAGE OR MISSING PARTS, THE TRANSPORTATION COMPANY AGENT SHOULD MAKE A NOTATION TO THAT EFFECT ON THE BILL. REFER TO THE PARTS LIST IN THIS MANUAL AND ADVISE WHAT PARTS ARE MISSING OR DAMAGED. IF AVAILABLE, GIVE THE INVOICE NUMBER ON ALL ORDER BILLS. THIS PROCEDURE WILL ENABLE NEEDED PARTS TO BE SHIPPED QUICKLY.

**THANK YOU** for selecting our product. **READ ALL** Installation, Operation, and Maintenance instructions before operating the machine


**NOTE:** Refer to CLEANER MODEL for **SERIAL NUMBER** location


**NOTE:** Dimensions are in inches unless otherwise noted


### IMPORTANT SAFETY INSTRUCTIONS

The safety alert symbol  is used to identify safety information about hazards that can result in personal injury.

A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard

 **DANGER** indicates a hazard which, if not avoided, **will result in death or serious injury**.

 **WARNING** indicates a hazard which, if not avoided, **could result in death or serious injury**.

 **CAUTION** indicates a hazard which, if not avoided, **might result in minor or moderate injury**.


**CAUTION**, when used **without** the alert symbol, indicates a situation that **could result in damage to the equipment**.


### GENERAL SAFETY

1. Before operating this machine, read and observe all safety, unpacking, and operating instructions. Failure to comply with these instructions could create a hazardous situation.
2. The operator of this equipment should not operate this equipment when fatigued or under influence of alcohol or drugs.
3. The operator of this equipment should be thoroughly familiar with its operation and controls.
4. All installations must conform to all applicable local codes. Contact your electrician, plumber, utility company or seller for details.
5. If a fuel leak is found, **DO NOT OPERATE THE MACHINE**. Shut off the motor and repair.
6. Do not operate the machine if any mechanical failure is noted or suspected.
7. Disconnect the power before performing any maintenance or repair on this machine.
8. Before starting the heater, survey the area for possible hazards and correct before proceeding.

 **DANGER HOT DISCHARGES AND SURFACES** may be produced.



9. During normal operation of this machine, hot discharges and hot surfaces may be produced. Avoid burns by being aware of these areas and staying clear of them during and immediately after equipment operation.
-  **10. DO NOT DIRECT THE EXHAUST TOWARD ANY COMBUSTIBLE OR HEAT SENSITIVE SURFACE. KEEP AT LEAST 10 FEET AWAY.**
11. **DO NOT** start the burner unless a good flow of air is coming from the heater.

 **WARNING: OPEN FLAME:** Do not operate this machine in an area with combustible materials. A suitable fire extinguisher should be available in the operating area.





**DANGER: CARBON MONOXIDE HAZARD**



**WARNING:** This machine emits carbon monoxide, a deadly gas, and must be vented if used in an enclosed area. Improper venting can cause poor combustion, delayed ignition, and could result in death or serious injury.

**MECHANICAL SAFETY**

1. All guards, shields, and covers must be in place to prevent accidental contact with hazardous parts.
2. Drive belts must be inspected and tightened periodically to operate at optimum levels
3. Inspect machine for damaged or worn components and repair or replace to avoid potential hazards. Do not operate the machine if any mechanical failure is noted or suspected.

**ELECTRICAL SAFETY**

1. This machine must be electrically grounded. Failure to have the machine grounded may result in the operator being electrically shocked and even death.
2. Do not plug-in or un-plug machine with wet hands.
3. Keep power cords and connections (connectors) out of water.
4. If an extension cord must be used to operate this machine, it should be as short as possible. The extension cord must be properly sized and fitted with a grounding type plug and receptacle.
5. All wiring and electrical connections should comply with the National Electrical Code (NEC) and with local codes and practices.
6. Fuses or circuit breakers should be compatible with machine requirements. (See ELECTRICAL section of **MODEL SPECIFICATIONS** for power requirements.)
7. High voltage may be present within this machine. Servicing should only be performed by properly trained personnel.

**FUEL SAFETY**

**DANGER:** To avoid possible injury, fire, or explosion, please read and follow these instructions.

1. Use only Kerosene, #1 or #2 fuel oil, or #1 Diesel. The use of incorrect fuel may result in fire or explosion and severe injury to the operator.



**WARNING:** DO NOT USE GASOLINE, CRANKCASE DRAININGS, OR OIL CONTAINING GASOLINE OR SOLVENTS.



**AVERTISSEMENT:** NE PAS UTILISER D'ESSENCE DE PRODUITS DE VIDANGE NI D'HUILE CONTENANT DE L'ESSENCE OU DES SOLVANTS

2. Fuel burning equipment must have proper ventilation for cooling, combustion air, and exhausting of combustion products.
3. Personnel trained in and familiar with the type of equipment being serviced should only perform adjustments to fuel burning equipment.
4. Do not refuel machine while it is running or hot. Allow it to cool sufficiently to prevent ignition of any spilled fuel. Clean up any spilled fuel before resuming operation.

**SAVE THESE SAFETY INSTRUCTIONS**

## **INSTALLATION**

1. **LOCATION:** This machine should be installed by only qualified technicians. The machine should be set upon a solid level surface where it will not be affected by strong winds, rain, or snow. Install the machine considering the direction of the exhaust. **DO NOT DIRECT EXHAUST TOWARD ANY COMBUSTIBLE OR HEAT SENSITIVE MATERIAL.** Install the machine considering . locations of electrical connections, venting, and maintenance. All wiring and electrical connections should comply with the National Electrical Code (NEC) and with local codes and practices. Use the chart on the next page for your cord selection.
2. **LOCAL CODES:** Installation and servicing must only be performed by qualified personnel and must conform to local codes and ordinances.



**WARNING: ELECTRIC SHOCK HAZARD**



3. **ELECTRICAL:** Connect the machine to an electrically grounded circuit that is fuse or circuit breaker protected. Do not use any type of adapter. If the correct type of receptacle is not available, have one installed by a qualified electrician. The circuit must match that specified in the ELECTRICAL section under **MODEL SPECIFICATIONS.**
4. **EXTENSION CORD:** The use of an extension cord that has undersize wire compared to the amp draw of your machine will adversely limit the starting load carrying abilities of the motor and machines performance. Use only 3-wire extension cords that have 3-prong plugs and 3-pole cord connectors that accept the plug from the product. Use only extension cords that are intended for outdoor use. These extension cords are identified by a marking "Acceptable for use with outdoor appliances; store indoors while not in use." Use only extension cords having an electrical rating not less than the rating of the product. Do not use damaged extension cords. Use an extension cord in good repair free of frays or cracks in

the outer covering. Do not abuse extension cord and do not yank on any cord to disconnect. Keep cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting the product from the extension cord.



**WARNING:** To reduce risk of electrocution, keep all connections dry and off the ground. Do not touch plug with wet hands.

<b>COPPER WIRE SIZE MINIMUM AWG</b>	<b>MACHINE AMP DRAW * 3 CONDUCTOR WIRES</b>	<b>MACHINE AMP DRAW * 2 CONDUCTOR WIRES</b>
16	10	13
15	--	--
14	15	18
12	20	25
10	25	30
8	35	40
6	45	55
4	60	70
2	80	95

CHART FIGURES ARE BASED ON NOT MORE THAN 100 FOOT  
(Based on Ambient Temperature of 86°F (30°C).  
\*Use Amp Draw indicated the same or higher than your machine output

**EXAMPLE:** Machine Amp Draw 51, use 55 (2 Conductor).

The thermostat type of cord shall be C, PD, E, EO, EN, S, SO, SRD, SJ, SJO, SV, SVO, SP.

The thermostat plastic types shall be ET, ETT, ETLB, ETP, ST, STO, SRDT, SJT, SJTO, SVT, SVTO, and SPT.B

5. **FIRE HAZARD:** Keep combustible materials away from gas machines. DO NOT allow lint or dust collect in the burner area.
6. **FUEL SUPPLY:** This machine must have a fuel supply as specified in the FUEL section of the **MODEL SPECIFICATIONS.**
7. **COLD WEATHER:** As the weather becomes colder, fuel becomes thicker and may become so viscous that the fuel will not flow properly.

As viscosity increases, the thicker oil can cause delayed ignition, poor spray patterns, and rumbling fires. As moisture will quickly destroy fuel pumps, make certain that tank openings are secure and moisture cannot enter. In cold weather areas, frost build up will occur in fuel tanks. As the weather warms it turns to condensate, and the water will be in the tank. Keep the tank clear of water, as moisture reaching the fuel pump will cause rust, and the pump will bind. A full fuel tank will lessen condensation build up.

## OPERATING INSTRUCTIONS

### PRE START-UP

The first time the machine is operated, after repairs have been made, or if the machine has set for a period of time (30 days or more) follow the following procedures.

1. Check the tension of the belt per instructions in **MACHINE MAINTENANCE**.
2. Read and observe all items in "SAFETY" and "INSTALLATION".
3. The high limit safety switch is designed to turn off the burner if the blower fails. Adjust the high limit safety switch to 125°F.

### START-UP

1. Refer to the **MAINTENANCE SCHEDULE** for any maintenance to be performed before operation.



**WARNING: ELECTRIC SHOCK HAZARD**



2. **ELECTRICAL:** Connect the machine to an electrically grounded circuit that is fused or circuit breaker protected. Do not use any type of adapter. If the correct type of receptacle is not available, have one installed by a qualified electrician.

3. **BELT** (if so equipped): Make sure belt tension and condition is as specified in **MAINTENANCE**.
4. **FUEL FILTER:** Inspect fuel filter for evidence of water contaminants.
5. **FUEL:** Use only Kerosene, #1 or #2 fuel oil, or #1 Diesel. The use of incorrect fuel may result in fire or explosion and severe injury to the operator.
6. **FUEL QUANTITY:** Make sure the fuel supply is sufficient to complete the job. See the **GENERAL** section of **MODEL SPECIFICATIONS** for the fuel tank capacity.
7. **TEMPERATURE CONTROL:** Adjust the temperature control to the desired temperature. (if so equipped)
8. **HIGH LIMIT SWITCH:** The high limit safety switch is designed to turn off the burner if the blower fails. Adjust the high limit safety.



**DANGER: DO NOT operate in a confined area. Indications of inadequate ventilation are headache, dizziness, burning eyes and nose, nausea, dry mouth, or sore throat.**

9. Adjust the temperature control to desired temperature. (if so equipped)

**CAUTION: DO NOT DIRECT EXHAUST TOWARD ANY COMBUSTIBLE OR HEAT SENSITIVE SURFACE SUCH AS BUILDING MATERIALS, PAPER, PLASTICS, OR CARDBOARD. KEEP AT LEAST TEN FEET AWAY FROM SUCH ITEMS**



**WARNING: DO NOT OPERATE IN SUCH AREAS CONTAINING VOLATILE OR AIRBORNE COMBUSTIBLES. OTHER PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNERS, DUST PARTICLES, OR UNKNOWN CHEMICALS**

10. Turn the fan switch to the on position.

**Do not** start the burner unless a good flow of air is coming from the heater.

**CAUTION:** Do not run the machine with the burner switch in the on position when the fuel tank is empty. This will cause damage to the fuel pump and void warranty.

11. Select temperature (if so equipped)
12. Turn the burner switch to the on position.

### *SHUT-DOWN*

1. Turn the burner switch to the off position.
2. After cool air is coming from the end of the heater, turn the blower switch to the off position.
3. Disconnect from the electrical supply.

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## **MAINTENANCE SCHEDULE**

### **DAILY**

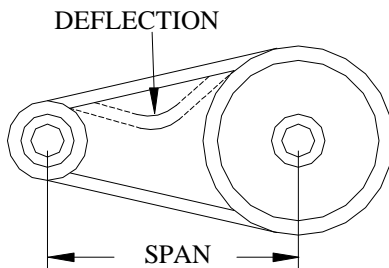
#### **FUEL LEVEL:**

Check and add as needed using a filter screened equipped funnel.

#### **BELTS: -**

##### **Cracks or fraying.**

##### **Belt Tension**



1. Deflection for each inch of span between pulley centers with a 6-pound force applied in the middle of the span. **EXAMPLE:** A 6-pound force applied at the middle of an 8 inch span should produce a deflection of 8/64 inch or 1/8 inch.
2. Belts can be tightened or loosened by loosening the nuts holding the motor to the motor mount. Then move motor tightening or loosening the belt. Retighten the motor nuts after the desired tension is reached.

#### **FILTER, FUEL:**

If contaminants are present see **FUEL FILTER** insert.

Remove and Replace fuel filter per **FUEL FILTER** insert.

### **50 HOURS**

#### **BELT TENSION:**

**Belt Tension.**

### **100 HOURS**

#### **FILTER, FUEL - ELEMENT:**

**FUEL FILTER ELEMENT-** Remove & replace per **FUEL FILTER** page.

## **STORAGE**

1. **FUEL TANK**—Drain and flush the tank with clean fuel oil. **DO NOT** use gasoline or water. To prevent rusting from condensation, refill the tank with the fuel specified using a filter screen equipped funnel.
2. **BLOWER**—Clean each season as needed

# OIL BURNER MAINTENANCE

## OIL FIRED CLEANERS

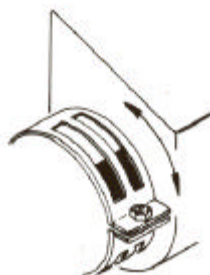
### AIR BAND ADJUSTMENT

NOTE: The air band adjustment on this burner has been preset at the factory (elevation approximately 1400 feet). On equipment installed where elevation is substantially different, the air band(s) must be readjusted.

1. Loosen the cap screw retaining the air bands.
2. Move the air bands as indicated below with the machine in operation.

NOTE: The air band should be set so the exhaust gives the smoke spot specified in the GENERAL section of the **MACHINE SPECIFICATIONS** on a Shell-Bacharach scale.

If a smoke tester is not available, a smoky exhaust, oily odor, or sweet smell indicates insufficient air while eye-burning fumes indicate too much air.

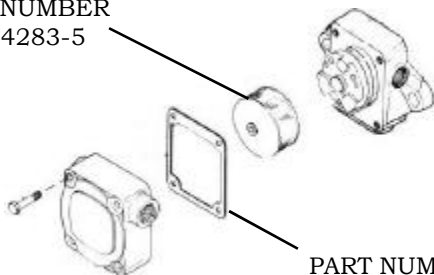


3. Tighten the cap screw retaining the air bands.

### FUEL PUMP FILTER SUNDSTRAND PUMP

1. Shut off fuel supply.
2. Loosen the 4 screws holding the cover to the fuel pump housing.
3. Take cover and cover gasket off and pull strainer off of pump housing.
4. Clean out any dirt remaining in the bottom of strainer cover. If there is evidence of rust inside of the unit, be sure to remove water in supply tank and fuel filter.
5. Turn on fuel supply. Failure to do so will result in fuel pump damage.

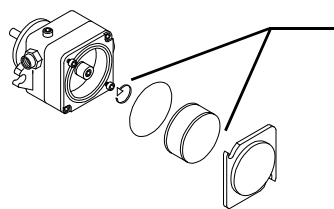
PART NUMBER  
V00-14283-5



PART NUMBER  
V00-14283-2

### DANFOSS PUMP

1. Shut off fuel supply.
2. Loosen the 2 screws with 7/64 allen wrench one turn.
3. Turn cover counter clockwise and pull strainer and cover off of pump housing.
4. Clean out any dirt remaining in the bottom of strainer cover. If there is evidence of rust inside of the unit, be sure to remove water in supply tank and fuel filter.
5. Reinstall reverse of removal.
6. Turn on fuel supply.



PART NUMBER  
V00-99004

### TRANSFORMER TEST

1. Remove burner junction box cover.
2. Turn on burner and make sure ignition transformer is receiving rated voltage.
3. Turn off burner.
4. Loosen screw and swing transformer away from burner gun assembly.
5. Turn on burner.
6. Short the high voltage terminals. **CAUTION:** Use screwdriver with a well insulated handle to avoid shock.
7. Open gap by drawing screwdriver away from one electrode while touching the other.
8. The spark should jump between 5/8 inches and 3/4 inches, if it doesn't jump, replace the transformer.
9. Turn burner off.
10. Partially close transformer. Check if buss bars align and contact transformer electrodes. If buss bars do not contact, see Buss Bar Alignment.
11. Close transformer, reposition retainer clip and tighten screw



# OIL BURNER MAINTENANCE

## OIL FIRED CLEANERS

### BUSS BAR ALIGNMENT

1. With burner off, loosen screw and swing the transformer away from burner gun assembly.
2. Inspect the buss bars and transformer electrodes for pitting or corrosion.
3. Partially close the transformer. Check if the buss bars contact and are in alignment with transformer electrodes.
4. Proper adjustment is obtained by gently bending the buss bars until they spring against, parallel, and are in full contact with the transformer electrodes.
5. With buss bars aligned, carefully close and fasten the transformer.



7. Partially close transformer. Check if buss bars align and contact the transformer electrodes. If buss bars do not contact, see Buss Bar Alignment.
8. Close transformer, reposition retainer and tighten screw.

### ACCESSORIES

- Z01-00095 – Fuel Nozzle Changing Wrench
- Z01-00092 – Fuel Pump Wrench (Sundstrand)
- Z01-00093 – Solenoid Wrench (ASCO)

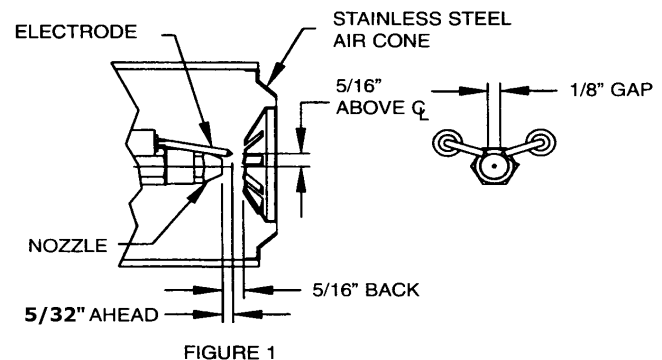
### ELECTRODE ASSEMBLY ADJUSTMENT

1. Loosen screws holding electrode assemblies.
2. Raise electrode tips  $5/32$  inches above surface plane or end of oil nozzle.
3. Place each electrode tip  $5/16$  inches from center of spray nozzle hole, maintaining previous measurement.
4. Spread electrode tips to  $1/8$ -inch gap maintaining previous measurements.
5. When the proper measurements are obtained, gently tighten screws that hold electrode assembly in place. **CAUTION:** Do not over tighten, as this will cause the electrode insulator to fail.

### BURNER GUN REMOVAL & INSTALLATION

1. Disconnect the fuel line from the burner gun assembly oil line fitting. Loosen the other end of the line and swing line out of the way.
2. Remove the retaining nut.
3. Loosen screw and swing transformer away from burner gun assembly.
4. Carefully remove the burner gun assembly.
  - A. Check and replace electrode insulators if cracked.
  - B. Clean burnt buss bars.
  - C. Clean carbon off electrodes.
  - D. Clean carbon off oil nozzle. (Use caution not to scratch face of nozzle or orifice.)
  - E. Check for a loose oil nozzle. **NOTE:** Check with dealer and/or replace nozzle with proper nozzle.
5. Gently replace burner gun assembly in air tube. **CAUTION:** Do not force. Forcing will cause electrode misalignment
6. Reinstall the retaining nut.

Reinstall the oil line making sure both ends are tight.





## OIL FIRED BURNER TROUBLESHOOTING

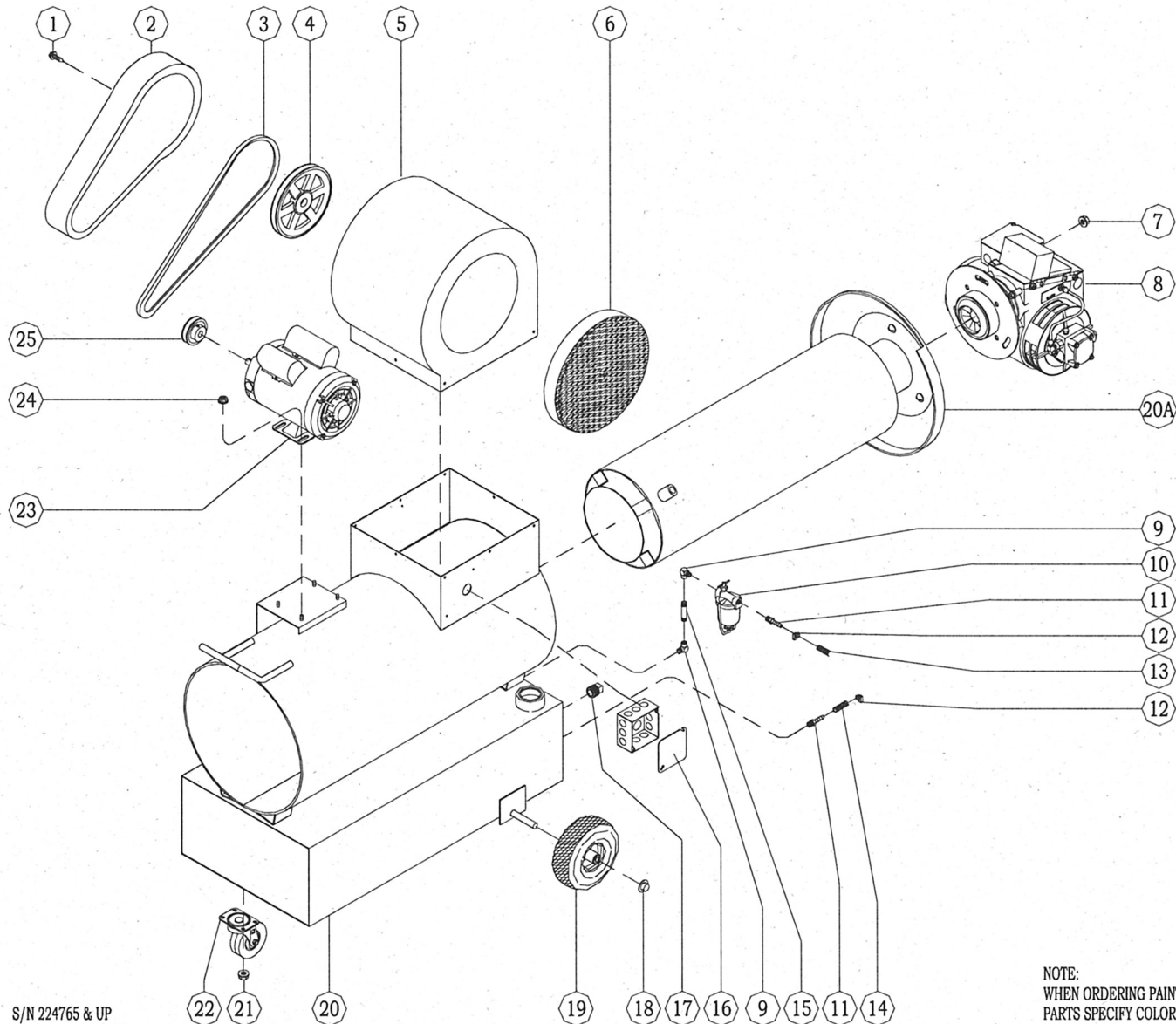
<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
1. Burner will not ignite.	<p>A. Electrodes out of alignment.</p> <p>B. Electrode insulator failure.</p> <p>C. Water flow switch not closing.</p> <p>D. Vacuum switch not closing.</p> <p>E. Temperature control switch not closing.</p> <p>F. Fuel solenoid valve not opening.</p> <p>G. Weak transformer.</p> <p>H. Faulty cad cell (if equipped).</p> <p>I. Faulty primary control (if equipped).</p> <p>J. Burner motor thermal protector locked out.</p> <p>K. Wiring.</p> <p>L. Burner switch.</p> <p>M. Pump pressure.</p> <p>N. Venting.</p> <p>O. Sooting.</p> <p>P. No fuel</p>	<p>A. See "ADJUSTING ELECTRODE ASSEMBLY" in <b>BURNER MAINTENANCE SECTION</b>.</p> <p>B. Remove and replace if there are breaks, cracks, or spark trails.</p> <p>C. Adjust, repair, or replace switch.</p> <p>D. Adjust, repair or replace switch.</p> <p>E. Adjust or replace the TEMPERATURE CONTROL.</p> <p>F. Clean, repair, or replace solenoid.</p> <p>G. Clean and check transformer terminals. Check transformer for spark per "TRANSFORMER TEST" in <b>BURNER MAINTENANCE SECTION</b>.</p> <p>H. Clean and test cad cell, replace if required.</p> <p>I. Replace primary control.</p> <p>J. See "Burner motor thermal protector locked out."</p> <p>K. All wire contacts are to be clean and tight. Wire should not be cracked or frayed.</p> <p>L. Test switch operation. Remove and replace as necessary.</p> <p>M. See "Low fuel pressure".</p> <p>N. A downdraft will cause delayed ignition. Soot deposits on the coil and burner can interrupt air flow, and cause shorting of the electrodes. Clean as required.</p> <p>O. Soot deposits on the coil and burner can interrupt air flow, and cause shorting of the electrodes. Clean as required.</p> <p>P. See "No fuel."</p>
2. No fuel	<p>A. Clogged fuel filter.</p> <p>B. Fuel leak.</p> <p>C. Kinked or collapsed fuel line.</p> <p>D. Low fuel pressure.</p> <p>E. Faulty burner oil pump.</p> <p>F. Air leak in intake lines.</p> <p>G. Clogged burner nozzle</p>	<p>A. Remove and replace filter per <b>FUEL FILTER SECTION</b>.</p> <p>B. Repair as necessary.</p> <p>C. Remove and replace fuel line.</p> <p>D. See "Low fuel pressure".</p> <p>E. Adjust pressure or replace.</p> <p>F. Tighten all fittings.</p> <p>G. Remove and replace (Do not clean).</p>
3. Low fuel pressure	<p>A. Clogged fuel filter.</p> <p>B. Clogged fuel pump filter screen.</p> <p>C. Fuel oil too viscous.</p> <p>D. Air leaks in intake lines.</p> <p>E. Kinked or collapsed fuel line.</p> <p>F. Burner shaft coupling slipping.</p> <p>G. Fuel Nozzle worn.</p> <p>H. Faulty oil pump</p>	<p>A. Remove and replace filter per FUEL FILTER page.</p> <p>B. Remove pump cover and clean strainer using a brush and clean fuel oil, diesel oil or kerosene.</p> <p>C. Operate a lighter oil or in warmer area.</p> <p>D. Tighten all fittings.</p> <p>E. Remove and replace.</p> <p>F. Remove and replace.</p> <p>G. Remove and replace with specified nozzle on BURNER ASSEMBLY.</p> <p>H. Remove and replace.</p>

## **OIL BURNER TROUBLESHOOTING**

<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
4. Pulsating pressure	<p>A. Partially clogged fuel pump strainer or filter.</p> <p>B. Air leaking around fuel pump cover.</p>	<p>A. Remove and replace strainer per FUEL PUMP FILTER in <b>OIL BURNER MAINTNANCE</b> Section.</p> <p>B. Check fuel pump cover screws for tightness and damaged gasket.</p>
5. Unit smokes	<p>A. Improper fuel.</p> <p>B. Air to burner insufficient.</p> <p>C. Fuel nozzle interior loose.</p> <p>D. Water in fuel.</p> <p>E. Gun out of alignment.</p>	<p>A. Refuel with FUEL specified on <b>MACHINE SPECIFICATIONS</b>.</p> <p>B. See AIR BAND ADJUSTMENT in <b>OIL BURNER MAINTENANCE</b> section.</p> <p>C. Replace nozzle.</p> <p>D. Inspect fuel filter for water presence.</p> <p>E. Bend oil pipe to center burner nozzle.</p>
6. Burner motor thermal protector kicked out.	<p>A. Low voltage.</p> <p>B. Fuel too viscous.</p> <p>C. Fuel pump defective.</p> <p>D. Motor defective.</p>	<p>A. Voltage must match those specified in the BURNER section of <b>MACHINE SPECIFICATIONS</b> section.</p> <p>B. Operate in warmer conditions or with fuel adapted to cold weather conditions.</p> <p>C. Check that fuel pump turns freely.</p> <p>D. Call service technician or take motor to repair/warranty station.</p>
7. Delayed ignition (rumbling, noisy starts)	<p>A. Dirty or damaged electrodes.</p> <p>B. Air adjustment open too far.</p> <p>C. Poor fuel spray pattern.</p> <p>D. Incorrect electrode setting.</p> <p>E. Weak transformer</p>	<p>A. Clean or replace.</p> <p>B. Readjust per AIR BAND ADJUSTMENT in <b>OIL BURNER MAINTENANCE</b> section.</p> <p>C. Remove and replace with fuel nozzle specified in <b>BURNER ASSEMBLY</b>.</p> <p>D. Readjust per ADJUSTING ELECTRODE ASSEMBLY in <b>OIL BURNER MAINTENANCE</b> section.</p> <p>E. See TRANSFORMER CHECK on <b>OIL BURNER MAINTENANCE</b> section</p>
8. Burner does not electrically come on	<p>A. Burner motor reset button tripped.</p> <p>B. High limit temp control reset tripped if so equipped.</p>	<p>A. Reset if necessary. CAUTION: Do not keep hitting the "reset button" if you have oil pressure you are just filling the burner combustion chamber with oil and if ignited will cause an explosion.</p> <p>B. Reset if necessary.</p>

# ASSEMBLY, SPACE HEATER

## EXPLODED VIEW - P/N SH-00694

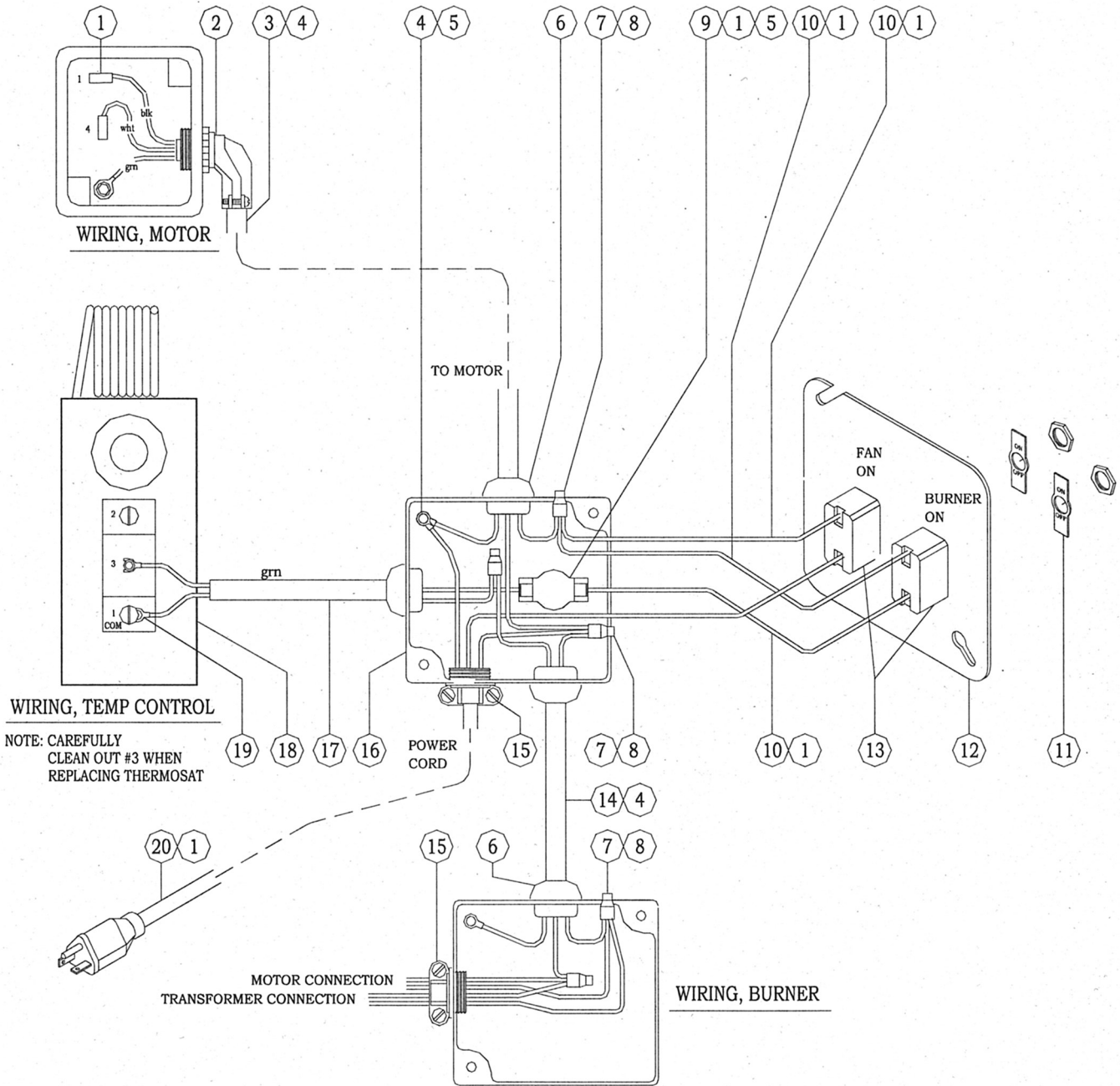


### PARTS LIST

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	H04-19011	SCREW, THREAD CUTTING	16	SH-00301A	ASSEMBLY, WIRING - J-BOX
2	SH-00150	SHIELD, PULLEY	17	E09-0002-2	PLUG, PIPE
3	R02-00044	BELT, V	18	H06-62500	NUT, PAL
4	R03-00280	PULLEY, V	19	G02-00018A	ASS'Y, WHEEL & TIRE
5	Z01-00110	BLOWER	20	SH-00105	CHASSIS - INCLUDES SH-00200
6	SH-00157	SHIELD, BLOWER	20A	SH-00200	CHAMBER, COMBUSTION
7	H06-37500	NUT, HEX	20AA	SH-00205	DEFLECTOR, EXHAUST
8	SH-00400	ASSEMBLY, BURNER	20AB	H04-25000	SCREW, CAP
9	E08-00006-5	ELBOW, STREET	20AC	H06-25003	NUT, HEX
10	V04-00305	FILTER, FUEL	21	H06-31300	NUT, HEX
11	W02-10019-8	BARB, HOSE	22	G02-00010	CASTER, SWIVEL
12	W02-00033-P	CLAMP, HOSE	23	F02-00035	MOTOR, ELECTRIC
13	Z01-00813-2	HOSE, POLYBRAID	24	H06-25003	NUT, HEX
14	Z01-01213-2	HOSE, POLYBRAID	25	R03-00049	PULLEY, V
15	E13-00030-2	NIPPLE, PIPE			

# ASSEMBLY, WIRING - W/THERMOSTAT

## EXPLODED VIEW - P/N SH-00301A



S/N 224765 & UP

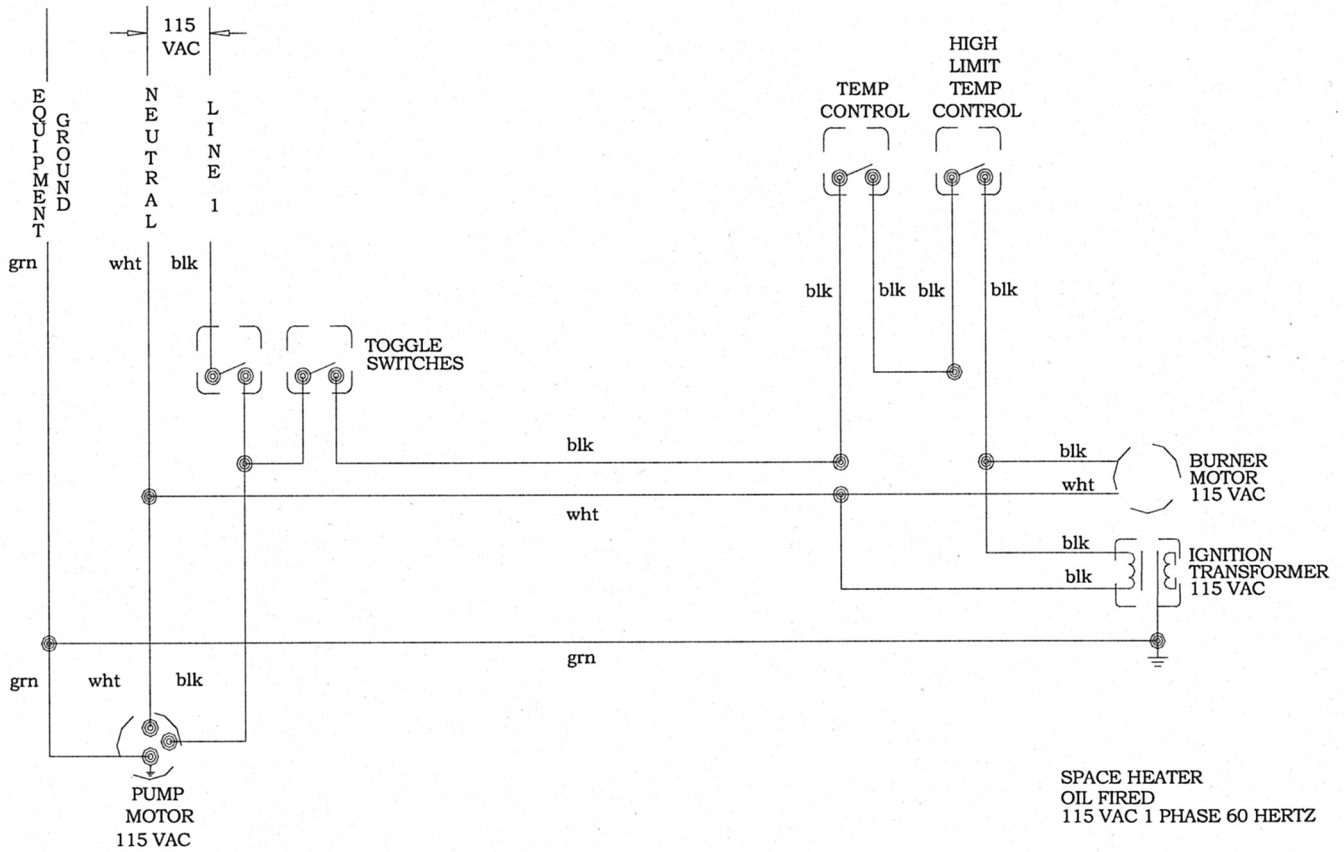
### PARTS LIST

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	F04-00611	TERMINAL, QUICK DISCONNECT	11	F04-00716-1	PLATE, TOGGLE
2	F04-00312	CONN, CONDUIT - 90	12	F04-00512-P4	COVER, J-BOX
3	F04-02031	CORD, ELECTRICAL - 14/3SO X 20"	13	F04-00716	SWITCH, TOGGLE
4	F04-00609	TERMINAL, RING	14	F04-03351	CORD, ELECTRIC - 16/3SO X 33"
5	H04-19011	SCREW, THREAD CUTTING	15	F04-00310	CONNECTOR, CONDUIT - STR
6	F04-00411	BUSHING, STRAIN RELIEF	16	F04-00518	EXTENSION, J-BOX
7	F04-00615	TERMINAL, SPLICE	17	F04-01850	CORD, ELECTRIC - 16/2SO X 18"
8	F04-00616	INSULATOR, TERMINAL	18	F04-00831	THERMOSTAT
9	F04-00832	CONTROL, HIGH LIMIT	19	F04-00610	TERMINAL, FORK
10	F14-00810	WIRE, BLACK - 14GA X 8"	20	F04-00110	CORSET, MALE

# SCHEMATIC, ELECTRICAL

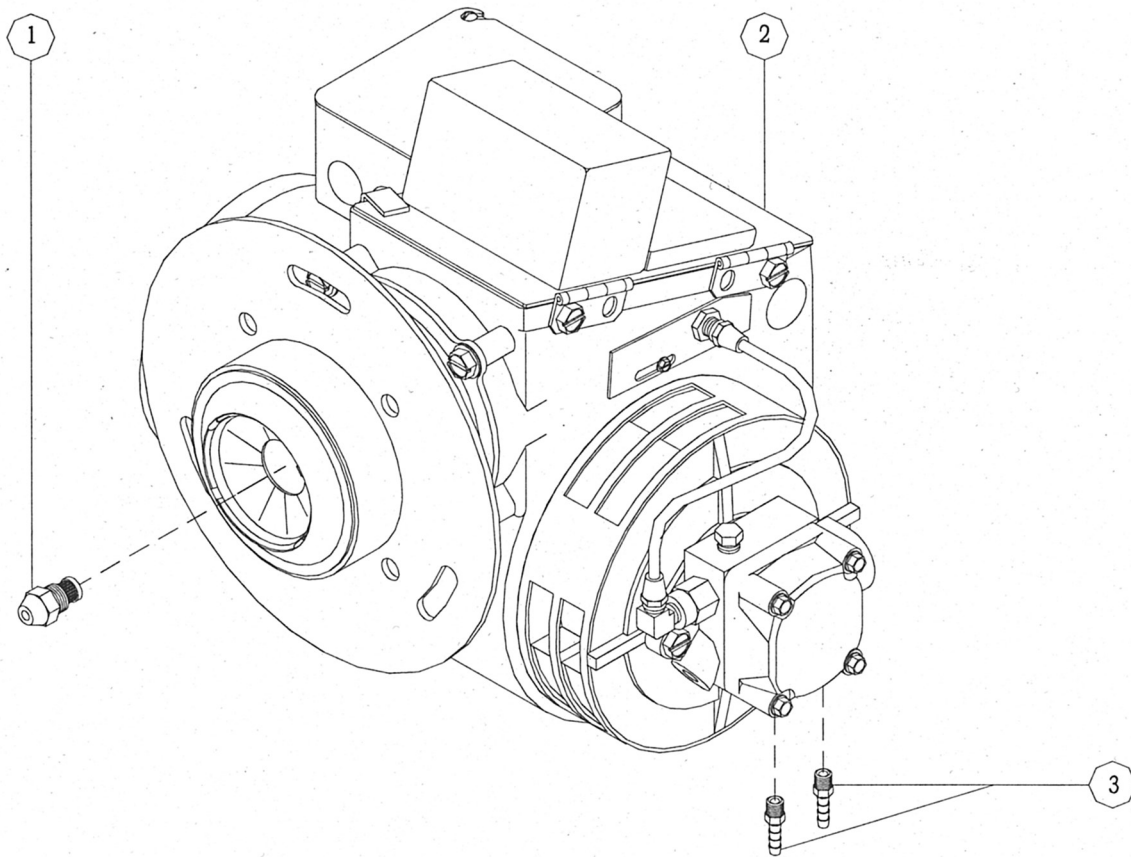
115 VAC 1 PHASE 60 HERTZ

ES-00109



# ASSEMBLY, BURNER

EXPLODED VIEW - P/N SH-00400



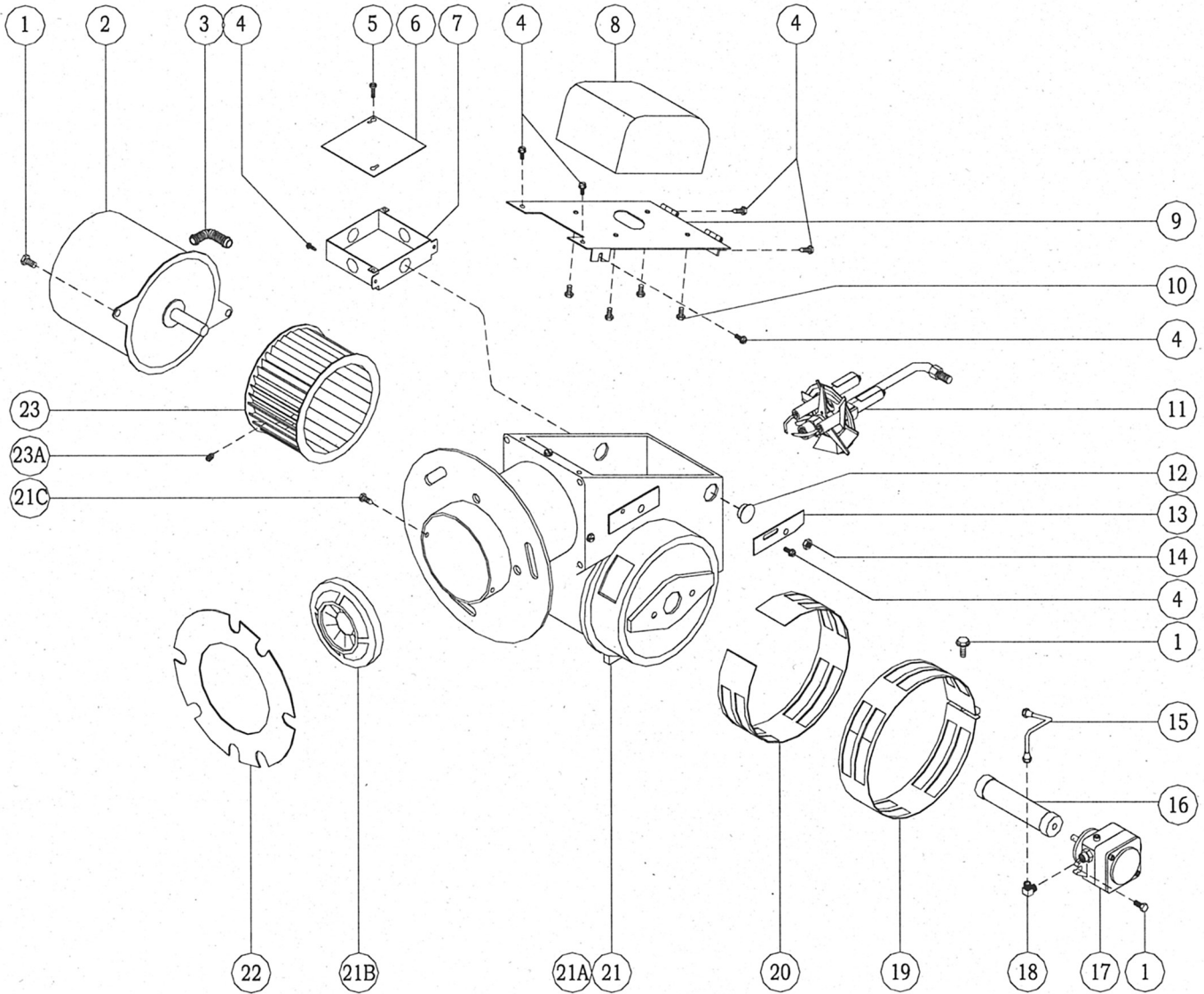
## PARTS LIST

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	V1.50 90DA	NOZZLE, BURNER	3	W02-10019-8	BARB, HOSE
2	V00-173127	BURNER, OIL			



**BREAKDOWN, BURNER - OIL**  
**EXPLODED VIEW - P/N V00-173127**

173-127



**PARTS LIST**

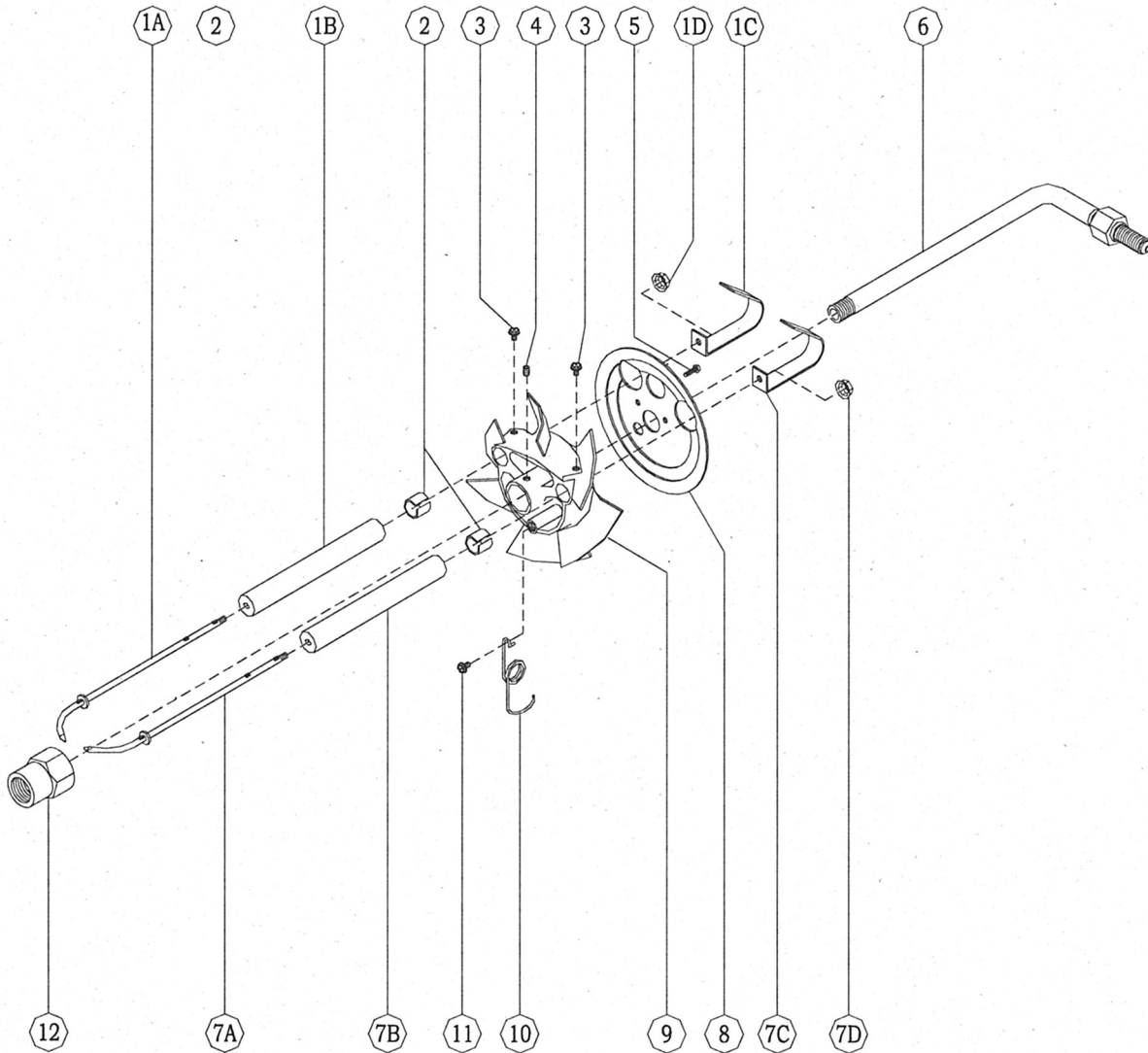
ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	V00-12701	SCREW, THREAD CUTTING	15	V00-14451	ASSEMBLY, OIL LINE - 6"
2	V00-20554	MOTOR, ELECTRIC - 115V 1/5HP	16	V00-13279	COUPLING, SHAFT - 3 3/4"
3	V00-13029	STRAIN RELIEF, CORD	17	V-100714-001	PUMP, FUEL - DAN FOSS
4	H04-19000	SCREW, THREAD CUTTING	18	V00-13494-1	ELBOW, FLARE
5	V00-13511	SCREW, MACHINE	19	V00-02668	BAND, AIR - OUTER 1 1/2" X 5"
6	V00-13073	COVER, JUNCTION BOX	20	V00-02669	BAND, AIR - INNER 1 1/2" X 5"
7	V00-21319	BOX, JUNCTION	21	V-31086-004	HOUSING, FAN - w/TUBE
8	V00-21659	TRANSFORMER, 115V 60HZ	21A	V00-20970	TUBE, AIR - w/FLANGE
9	V00-23200	COVER, HOUSING - w/GASKET	21B	V00-14159	CONE, AIR - #3A
10	H04-13801	SCREW, MACHINE	21C	V00-14116	SCREW, THREAD CUTTING
*11	V00-30540-07	ASSEMBLY, BURNER GUN	21D	V00-20372	HOUSING, FAN
12	V-12689	PLUG	22	V00-12484	GASKET, FLANGE
13	V00-13392	COVER, SLOT	23	V00-20288	FAN, AIR - 5 1/4" OD
14	V00-14296	NUT, HEX	23A	H04-31302	SCREW, SET

\*For Breakdown See Z08-00030

ASSEMBLY, BURNER GUN - P/N V00-30540-07

EXPLODED VIEW

30540-003



PARTS LIST

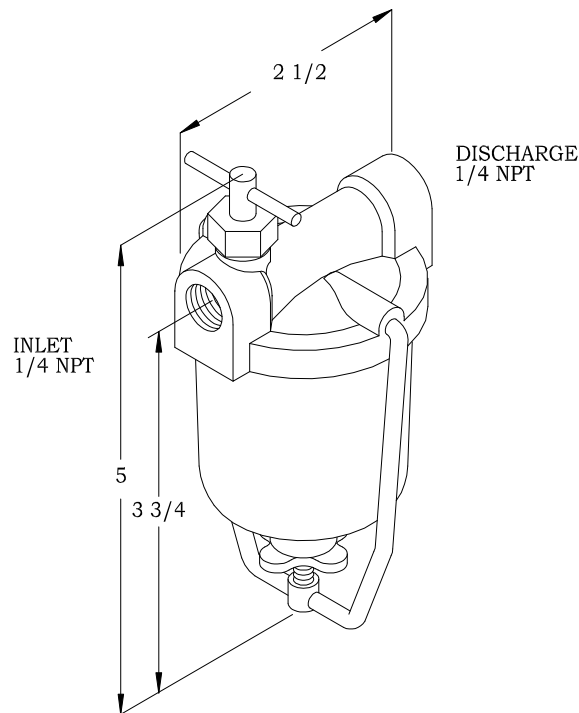
ITEM		DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	V00-147332RH	ASSEMBLY, ELECTRODE - RH	7	V00-147342LH	ASSEMBLY, ELECTRODE - LH
*1A	-----	STEM, ELECTRODE - RH	*7A	-----	STEM, ELECTRODE - LH
1B	V00-12574	INSULATOR, ELECTRODE	7B	V00-12574	INSULATOR, ELECTRODE
1C	V00-12945	BAR, BUSS - CURVED	7C	V00-12945	BAR, BUSS - CURVED
1D	V00-13110	NUT, PAL	7D	V00-13110	NUT, PAL
2	V00-12408	BUSHING, INSULATOR	8	V00-13408	PLATE, BAFFLE - 3"
3	V00-12694	SCREW, MACHINE	9	V00-14310	SUPPORT, ELECTRODE
4	H04-19002	SCREW, SET	10	V00-14442	SPRING, ELECTRODE SUPPORT
5	V00-12695	SCREW, MACHINE	11	H04-16400	SCREW, THREAD CUTTING
6	-----	ASSEMBLY, OIL PIPE	12	V00-12362	ADAPTER, NOZZLE

\*ELECTRODE STEMS AVAILABLE IN ELECTRODE ASSEMBLIES ONLY



**FILTER, FUEL - P/N V04-00305, V04-00306**

**DIMENSIONS**



ALL DIMENSIONS ARE  
IN INCHES UNLESS OTHERWISE  
NOTED. 25.4 MM = 1 INCH

**SPECIFICATIONS**

MAXIMUM FLOW.....60 GPH / 230 LPH	MAXIMUM FILTRATION.....25 MICRONS
MAXIMUM TEMPERATURE.....212°F / 100°C	WEIGHT.....12 OZ / 340 GM
MAXIMUM PRESSURE.....100 PSI / 7 BAR	INLET AND OUTLET PORT SIZE.....1/4 NPT

**TROUBLESHOOTING**

<p>1. Fuel leaking around valve stem</p>	<p>A. Rough stem B. Loose valve stem nut C. Valve stem packing deteriorated D. Burr on casting E. Valve stem threads stripped</p>	<p>A. Remove and replace valve assembly B. Tighten valve stem nut C. Remove and replace valve assembly  D. Lightly file smooth E. Remove and replace valve stem assembly and filter housing</p>
<p>2. Fuel bowl leaking</p>	<p>A. Deteriorated gasket B. Housing cracked C. Bowl rim cracked, nicked, or scratched D. Star nut loose E. Star nut's threads stripped out F. Gasket missing</p>	<p>A. Remove and replace gasket B. Remove and replace housing C. Remove and replace bowl  D. Tighten star nut E. Remove and replace filter bowl retainer  F. Replace gasket</p>
<p>3. Air leaking into system (Air bubbles in bowl during operation)</p>	<p>A. Loose valve assembly B. Cracked component  C. Loose filter bowl</p>	<p>A. Tighten valve assembly nut slightly B. Inspect filter bowl, filter housing, and gasket C. Tighten star nut on fuel bowl retainer</p>

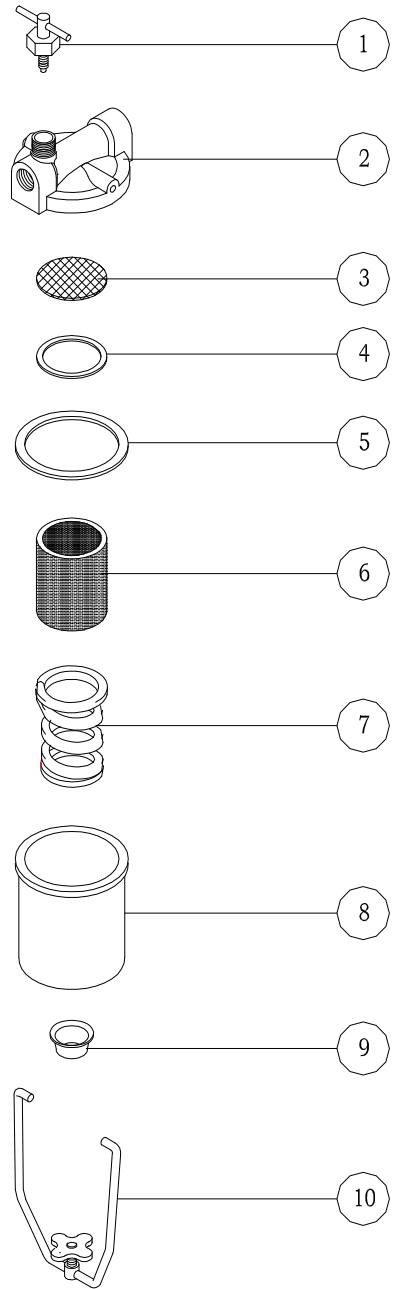
**FILTER, FUEL - P/N V04-00305, V04-00306**

**MAINTENANCE PROCEDURE**

1. Close valve (ITEM 1) by turning clockwise.
2. Loosen star nut while supporting bowl and swing retainer (ITEM 10) to the side freeing bowl and its components.
3. Remove element (ITEM 6) and clean by using a soft brush and naphtha or clean fuel.
4. Inspect element for damage or deterioration.
5. Inspect the rim of the bowl (ITEM 8) to insure it is free of nicks and scratches.
6. Remove the gasket (ITEM 4) and screen (ITEM 3).
7. Clean and inspect gasket and screen.
8. Reinstall gasket and screen.
9. After cleaning bowl, reinstall spring (ITEM 7) and element.
10. Reinstall bowl and components swinging retainer back in place and tightening star nut.
11. Open valve assembly and check for leaks.

**NOTE:** Foul smelling diesel fuel is an indication of micro biological contamination. A change in fuel source is recommended. Always carry spare elements as one thankful of contaminated fuel will plug filter elements prematurely.

**EXPLODED VIEW**



**MAINTENANCE SCHEDULE**

ITEM:	WEEKLY	100 HRS
<b>GASKETS:</b>		
A. Inspect for deterioration or tearing.	●	
B. Remove and replace.		●
<b>BOWL:</b>		
Inspect rim and bowl to insure it is free of nicks, cracks, or scratches.	●	
<b>FILTER ELEMENT:</b>		
A. Inspect for damage or deterioration.	●	
B. Remove and replace.		●
<b>FUEL BOWL:</b>		
A. If contaminants are found, check more frequently.	●	
B. If no contaminants are found, check less frequently.		

**PARTS LIST**

ITEM	PART NO.	DESCRIPTION
1	V04-00305-09	ASSEMBLY, VALVE
2	V04-00305-04	HOUSING, FILTER
3	V04-00305-10	SCREEN, FILTER
4	V04-00305-06	GASKET, FILTER
5	V04-00305-05	GASKET, BOWL
6	V04-00305-01	ELEMENT, FILTER
7	V04-00305-07	SPRING, COMPRESSION
8	V04-00305-02	BOWL, FILTER - GLASS (V04-00305)
8	V04-00307	BOWL, FILTER - METAL (V04-00306)
9	V04-00305-03	CUP, RETAINER
10	V04-00305-08	RETAINER, FILTER BOWL

**NOTE:** Intervals stated are for normal operating conditions. The intervals suggested may be shortened (or lengthened) as determined by the presence (or absence) of the indicated condition.