HEATWAVE

WARM IT UP WITH A FREE SOURCE OF HEAT!

HW150 HW250 HW350

Siebring Manufacturing, Inc. Ph. 712-475-3317
303 S. Main St. PO Box 658 Fax 712-475-3490
George, IA. 51237 www.siebringmfg.com

SECTION 1 - WARRANTY

1.1 KAGI WARRANTY. Kagi Heating Supplies & Manufacturing, Inc. (KHS) will warranty parts and labor to the consumer for a period of twelve months from the date of purchase. KHS warranties each burner sold will be free of defects in materials and workmanship under normal use and service for a period of one year. Date of purchase will be date received by the customer. See Kagi Burner manual for detailed warranty information.

1.2 HEATWAVE WARRANTY. HEATWAVE Warrants to the purchaser of this Multi-Oil Fueled Heater Unit that it will repair or replace any part which in normal use proves to be defective in material or workmanship within a period of ONE (1) YEAR from the date of purchase, provided same is returned for factory inspection and warranty determination. The combustion chamber (Limited Warranty) is warranted for a period of TEN (10) YEARS at a pro-rated schedule, provided the heater is properly installed and maintained.

HEATWAVE does not warrant the paint finish as this is subject to abrasion, scratching, and discoloration during installation and operation. The warranty does NOT cover any labor charges involved with parts replacement or service unless preauthorized by Siebring Mfg., Inc. in writing.

1.3 CONDITIONS THAT WILL VOID WARRANTY.
Using in the heater or adding to the storage tank substances, including, but not limited to the following: paint, thinner, gasoline, other volatile liquids, or solvents, transformer oils, or gear lubes. Some of these substances have a high chloride content which can oxidize HEATWAVE stainless steel targets and chambers. It is illegal to mix any of these substances with waste oil and doing so can cause a hazardous condition.

Tampering with internal components.

Not installing the heater properly as per instruction in this manual and/or according to local and state codes.

Not maintaining the heater according to instructions in this manual or by authorized personnel.

Any part altered or abused.

Using parts other than those supplied by Siebring Mfg., Inc. to operate this heater

Over-firing the unit.

Warranty is limited to the original purchaser only, and is void if moved form original site of installation.

SECTION 2 – GENERAL INFORMATION & HAZARDS

2.1 INTRODUCTION. The Heatwave heater by Siebring Mfg. provides the owner with a dependable, versatile and simple means of burning # 1 and # 2 fuel oils, 10W – 50W used crank case oils and used automatic transmission fluid. Maintained correctly, the heater will give years of service. Carefully read the owner's manual before installing and using the unit. In the event there is a problem with your heater or the installation of your heater, contact your distributor for assistance.

2.2 DIMENSIONS. Dimensions are calculated without the burner.

Heatwave 150	65" x 35" x 39"H Crated weight 700 lbs.	(see figure 1)
Heatwave 250	75" x 36" x 49"H Crated weight 840 lbs.	(see figure 2)
Heatwave 350	60" x 36" x 82"H Crated weight 1080 lbs.	(see figure 3)

2.3 FIRING CAPACITIES.

Heatwave 150	1.1 – 1.5 gallons per hour.
Heatwave 250	1.7 – 2.0 gallons per hour.
Heatwave 350	2.5 – 3.2 gallons per hour.

2.4 NON-RESIDENTIAL WARNING. This heater is for commercial and industrial use only. This unit is NOT rated for residential use.

2.5 ADHERANCE TO CODES. Installation of this unit is to be done in accordance with all state and local codes or authorized having jurisdiction over environmental control, fuel, fire and electrical safety.

2.6 APPLICABLE CODES FOR HEATER INSTALLATION. National Fire Protection Association (N.F.P.A.) codes for heater install.

NFPA 30 Flammable and Combustion Liquids Code
NFPA 31 Standards for the Installation of Oil-Burning Equipment Code
NFPA 70 National Electrical Code
NFPA 88A Standard for Parking Structures Code
NFPA 88B Standard for Repair Garages Code
NFPA 211 Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

The above codes available from the National Fire Protection Association,
1 Batterymarch Park, Quincy, MA. USA 02169-7471 Tel. 617 770-3000 www.nfpa.org

2.7 INSTALLATION. This heater and systems must be installed by an experienced, qualified waste oil fired heater installer.

2.8 DUCTWORK. This heater is not designed for attachment or use with ductwork.

2.9 WARNING. Do not attempt to start the burner when excess oil, oil vapor or fumes have accumulated. To prevent backfire that could harm personnel or possibly damage the unit, NEVER press the reset on the primary control more than two times.

2.10 WARNING. Do not store gasoline or any other flammable liquids, or vapor producing materials near the heater.

2.11 WARNING. This heater is not designed for use in hazardous atmospheres such as: paint shops, feed mills, or any installations where explosive or flammable conditions are present or could occur.

2.12 WARNING. Heatwave heaters by Siebring Mfg. rely on a natural gravity draft. Down drafts (positive) pressures in the heater's chimney will occur in buildings where negative pressures are created by exhaust fans (car exhaust vents, spray booths, ventilation fans, etc.), Do not try to use a power vent to overcome a downdraft pressure. An adequate air make-up system is needed when exhaust fans are used.

SECTION 3 – HEATER INSTALLATION

3.1 Do not install heater on a combustible material of any kind.

3.2 Install heater in a location to utilize total heat throw.

3.3 Install heater in a location to permit a correct outdoor chimney exit to eliminate down drafts, provide easy chimney installation and maintenance.

3.4 Install the heater in a location to permit as close as possible fuel supply.

3.5 Do not install heater more than 10 feet above top of fuel tank (see page ?? Learn about special pump installations).

3.6 Before suspending the heater, check the supporting structure and reinforce if necessary to support the heater/system. See figure 4 for unit weights.

3.7 Minimum clearances to combustibles:

Top	6”	Chimneys	18”
Sides	18”	Rear	18”
Front	24”	Bottom	18”

3.8 Use threaded rod rated for applicable heater weight to suspend from a capable load carrying ceiling structure.

3.9 Heater should be installed level for proper operation. Heater installed “not level” could cause a hazardous situation in which personal injury or property damage could result.

3.10 When installing the heater, keep in mind that you must have reasonable access to the unit for servicing.

3.11 Installation Diagram Page:

1. Chimney Cap
2. Class “A” insulated pipe
3. Barometric Damper
4. Capped Chimney “Tee”
5. Draft Reading Port
6. Oil Regulator (on burner)
7. Secondary Air Regulator
8. Burner
9. Room Thermostat
10. Primary Air Regulator
11. Electrical Service panel
12. Air Compressor (2.4 CFM+)
13. Pump with vacuum gauge
14. Fill Pipe
15. Water/sludge Drain
16. Lenz Oil Filter
17. Vent Pipe
18. Check Valve
19. Oil Pick-up Strainer
20. Supply Tank

Notes:

*-**Do Not** use compression fittings or unions on the suction side. Use flare fittings and threaded fittings with thread compound.*

*-**Do Not** use Teflon tape.*

*-**Do Not** use air lines that have an automatic oiler.*

-If shop air is 125 PSI or lower, the primary air regulator (item 10) is not required. If shop air is 125 PSI or greater, install primary air regulator and adjust air to 125 PSI or below.

-A moisture/water trap must be installed in the air line prior to the burner.

-Some state/local codes may require the supply tank to be vented outside (item 17).

SECTION 4 – CHIMNEY INSTALLATION

4.1 Failure to provide proper venting of the heater exhaust gases could result in death, serious injury and/or property damage.

4.2 Safe operation of any gravity vented heating equipment requires a proper air make-up system to prevent heater exhaust gases from being drawn into the building which may cause death, serious injury and/or property damage.

4.3 Never vent this heater into another heater's chimney. This heater must have it's own separate chimney.

4.4 Inspect and maintain the chimney and air make-up system regularly.

4.5 Install a U.L. listed barometric draft control in chimney. Do not reduce or enlarge the vent pipe.

4.6 To prevent drawing exhaust gases into the building, keep barometric draft control at least two feet form the heater, exhaust fans, etc.

4.7 Position draft control as shown in pages ??, gate hinge pins must be horizontal for proper operation.

4.8 Secure all chimney/piping connections with 3 screws/rivets per joint.

4.9 Chimney clearance to combustibles – 18 inches.

4.10 Do not install heat reclaimers, manual draft controls or any other type of restrictive controls in the chimney.

4.11 Install an 8" diameter steel vent "tee" with a cap (for clean out) at the transition of the chimney.

4.12 Use 8" inside diameter class A insulated chimney pipe to vent exhaust gases through walls, ceilings, attics, roofs, combustibles, etc. Consult state and local codes.

4.13 Vent chimney at least 3 feet above the roof and at least 3 feet higher than any portion of the building, roof or obstruction within 10 feet of the chimney.

4.14 Do not use a rotating chimney cap. Use a non-restrictive cap.

4.15 Chimney caps should be at least 4 inches above chimney exit.

4.16 The chimney must be capable of producing a negative -.02 - .04 W.C. draft when hot as measured between the heater and the draft control. Refer to section 5 "Draft." Refer to section 3 for typical chimney installation.

SECTION 5 – DRAFT

5. The chimney system connected to the Heatwave should have a negative -.02 - .04 W.C. draft when hot (minimum of 10 minute run time) as measured between the heater and the draft control.

SECTION 6 – FUEL SUPPLY TANK INSTALLATION

6.1 The fuel supply tank and supply line must be installed in accordance with the National Fire Protection Association requirements, state and local codes and ordinances.

6.2 Regulations require oil storage tanks located inside the building not to exceed 275 gallons individually and not to exceed 550 gallons in one building.

6.3 Locate fuel tank inside the building as close to the heater as possible. Not to exceed 25 feet to avoid oil flow problems.

6.4 If possible, pitch/position fuel tank with the drain valve at the lowest point to drain off water. Sludge may have to be removed manually.

6.5 Some areas may have special requirements for the fuel tank vent (exiting outdoors, above the roof line, etc,) check local codes and ordinances. Keep vent clear.

INDEX OF DRAWINGS

HW150

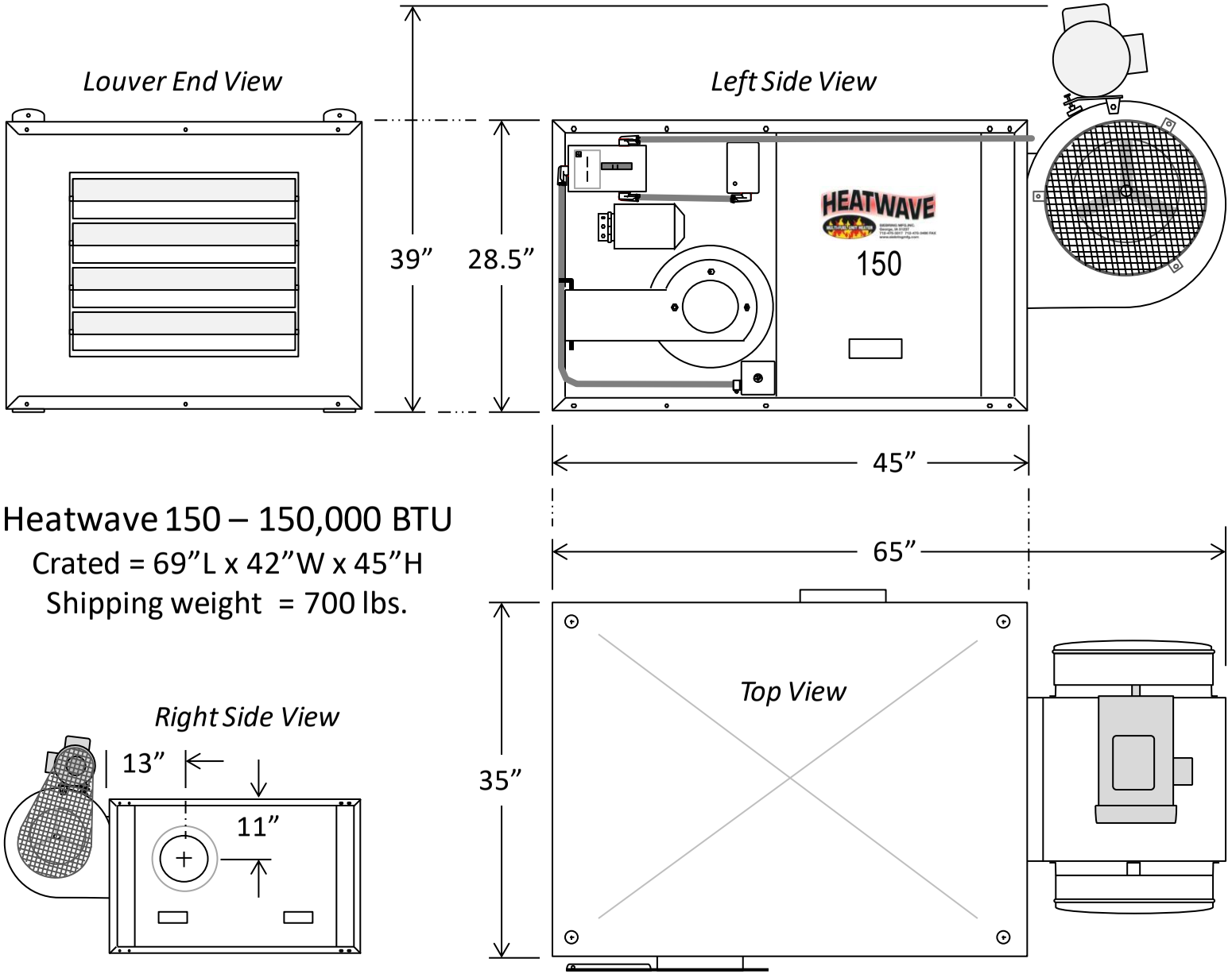


Figure 1

HW250

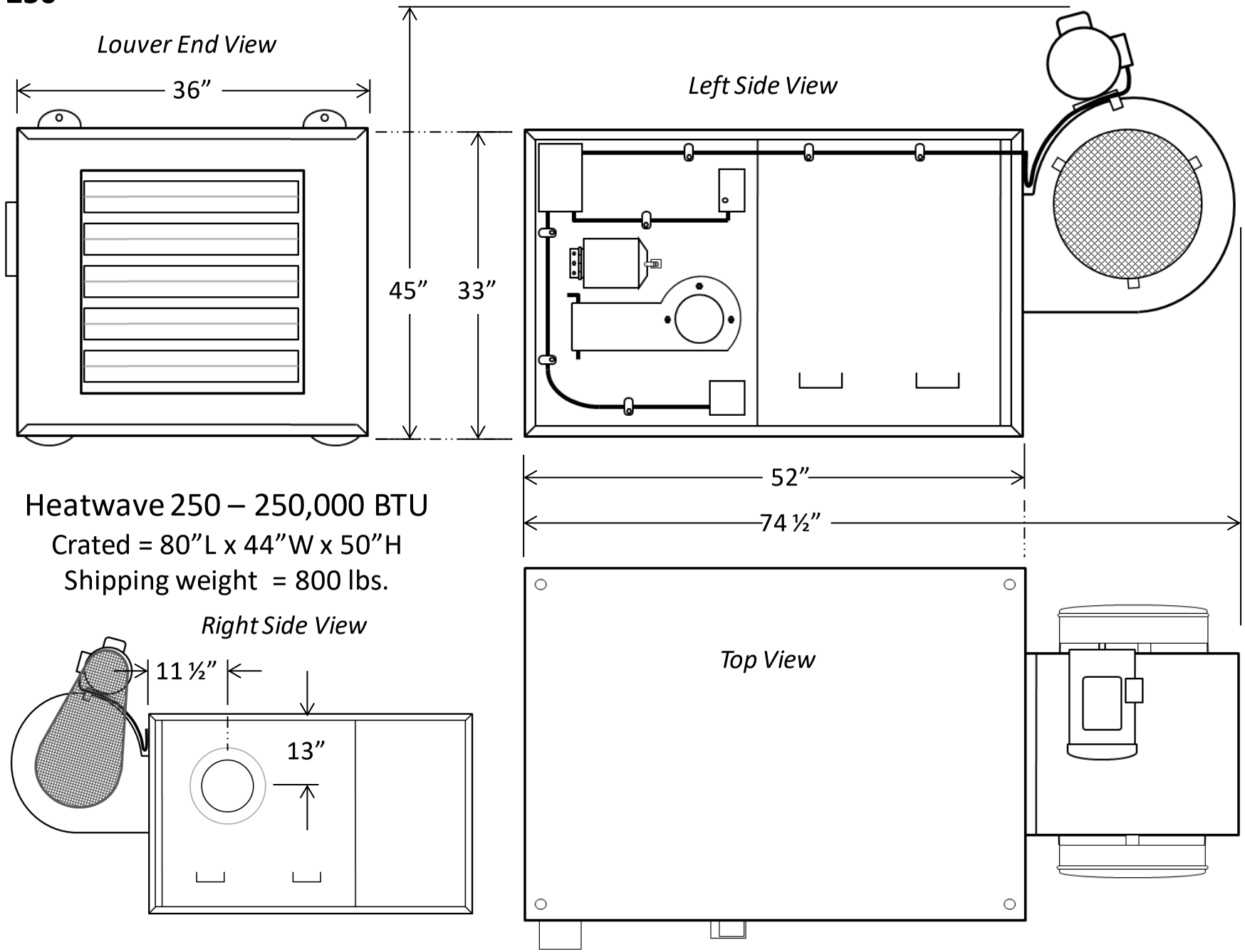


Figure 2

HW350

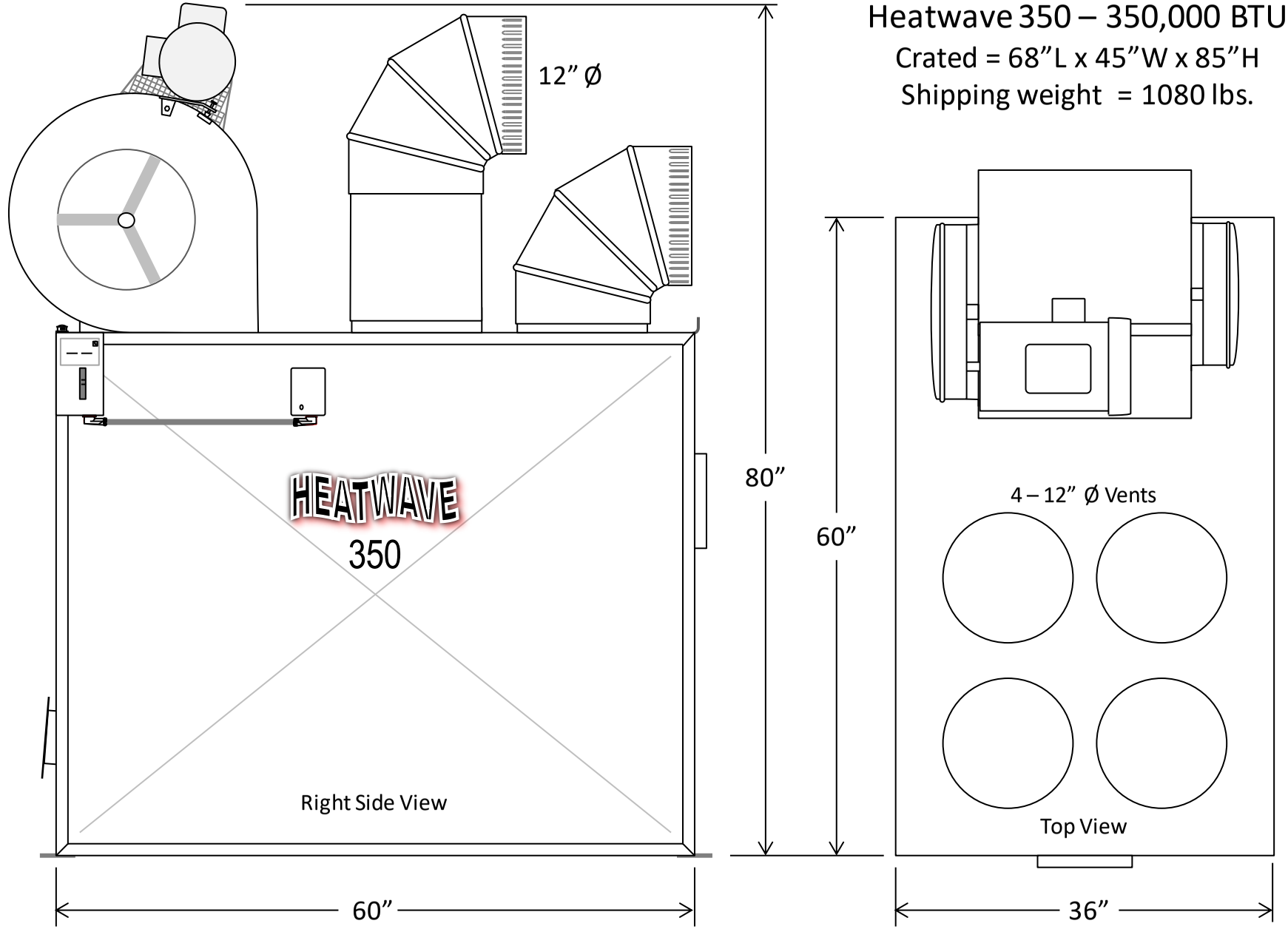


Figure 3

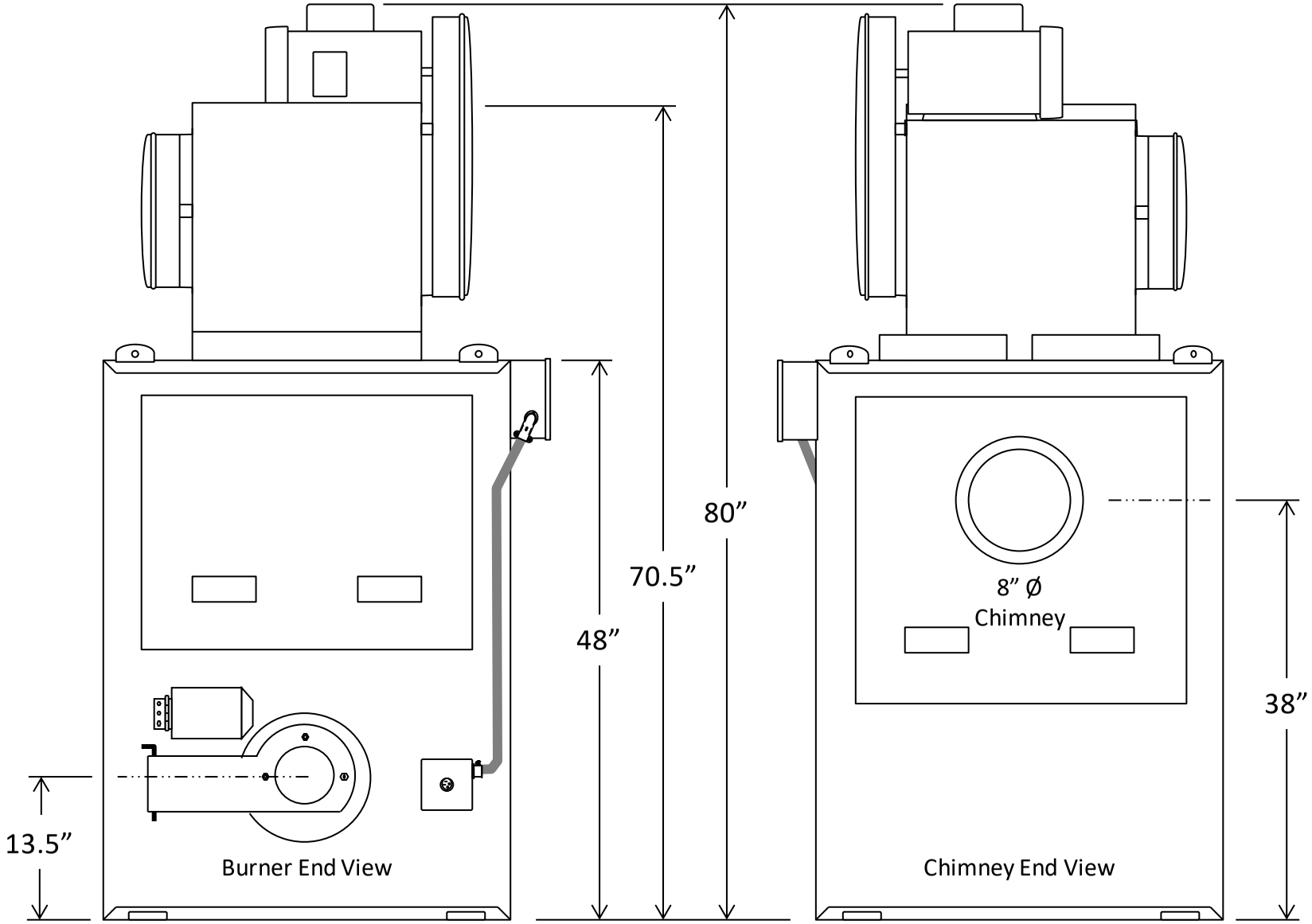


Figure 4

SIEBRING MANUFACTURING - HEATWAVE SPECIFICATIONS

28-Apr-09 D. Hollander

Model	HW150	HW250	HW350
BTU Input	150,000 BTU	250,000 BTU	350,000-380,00 BTU max
Square Foot Coverage	Up to 4,500 sq. ft.*	Up to 6,000 sq. ft.*	Up to 8,000 sq. ft.*
Hourly Fuel Usage	1.1 - 1.5 gallons	1.7 - 2.0 gallons	2.5 - 3.1 gallons
Compressed Air Requirements	2 CFM**	2.5 CFM**	3 CFM**
PSI Air	15	20	25
Flue Size	8 inches	8 inches	8 inches
Cabinet Size (w/o burner)	35" W x 45" L x 29" H	36" W x 52" L x 34" H	36" W x 60" L x 48" H
Width Overall (w/blower & burner)	48 inches	48 inches	36 inches
Length Overall (w/blower & burner)	65 inches	75 inches	70 inches
Height Overall (w/blower & burner)	40 inches	49 inches	82 inches
Crated Dimensions	42" W x 69" L x 45" H	44" W x 80" L x 50" H	45" W x 70" L x 84" H
Ductable Heat Discharge	Yes	Yes	4 12" Elbows
Air Movement Type	Belt Driven Blower	Belt Driven Blower	Belt Driven Blower
Blower CFM Free Air	3140	3950	4800
Blower Motor HP	3/4 HP	3/4 HP	2 HP
Plenum Dimensions	18 X 23	23 x 23	4 -12" or 22" X 22"+
Hanging Mount	5/8 " All Thread	5/8 " All Thread	Floor / Stand
Mounting Design (Floor or tank stand)	Floor, ceiling hung or tank stand	Floor, ceiling hung or tank stand	Floor / Stand
Stand Mount / Oil Tank	Yes	Yes	No
Electrical Voltage	115 Volt 60 Hz	115 Volt 60 Hz	115 Volt 60 Hz
Average Total Amperage Draw	12 - 13***	15 - 16***	19 - 20***
Weight (with blower & burner)	520 lbs.	700	900
Approximate Shipping Weight	700 lbs.	840	1,040
Warranty	1 yr burner, blower, controls. 10 yrs. Cabinet	1 yr burner, blower, controls. 10 yrs. Cabinet	1 yr burner, blower, controls. 10 yrs. Cabinet

* Depending on building insulation, ** Owner must supply compressed air, *** Total Amps = Burner, blower and oil pump

Construction (All Models): 10 GA - Combustion chamber barrel, swing-out bracket 11 GA - Exchanger tube bulkheads 12GA 309 SS - Target

12 GA - Burner mount tube, cleanout doors 14 GA - Shell (case) bottom, pot tubes 16 GA - Shell (case) top 18 GA - Shell (case) sides

Figure 5

KAGI S250/500
WASTE OIL BURNER

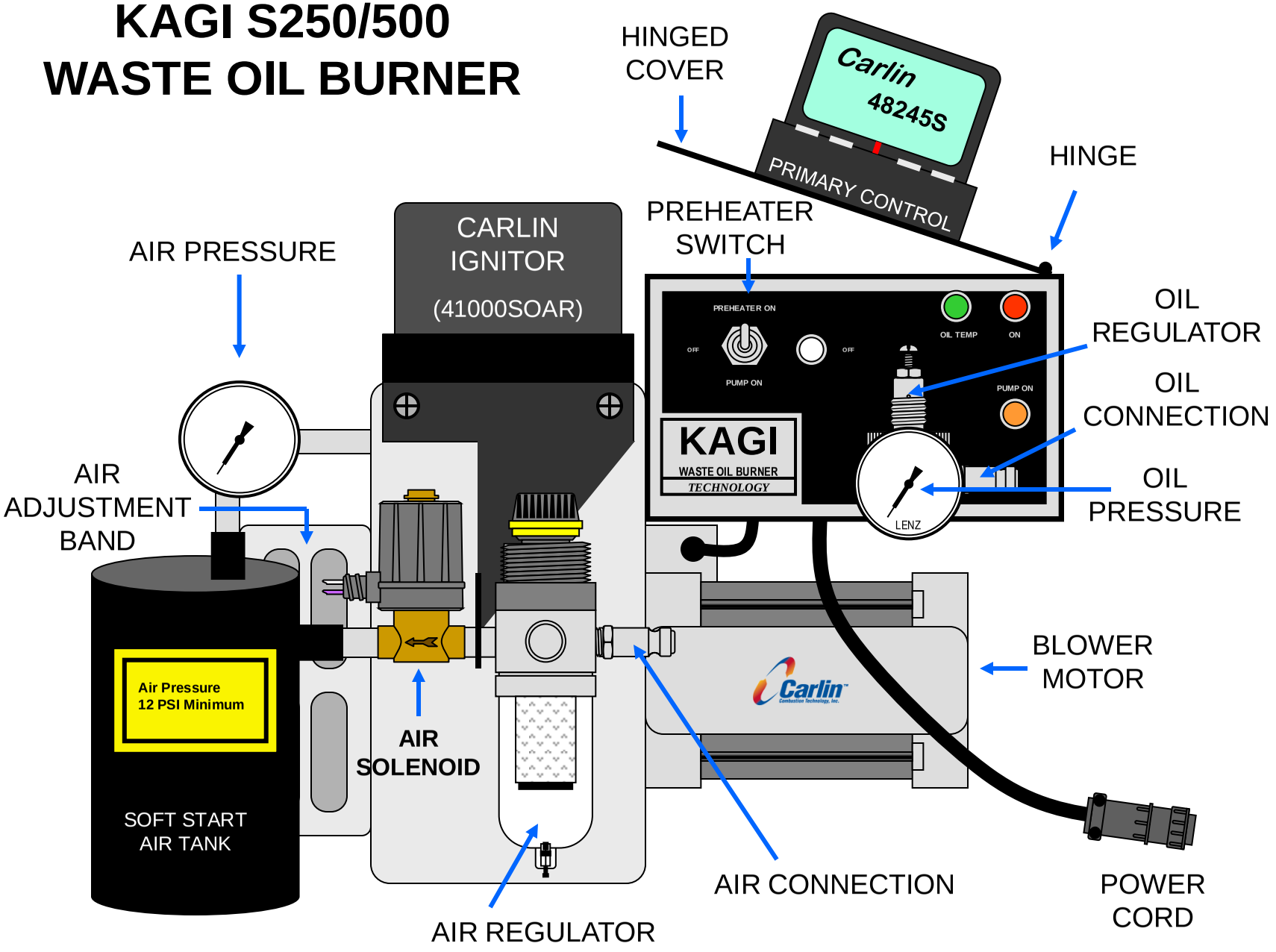


Figure 6

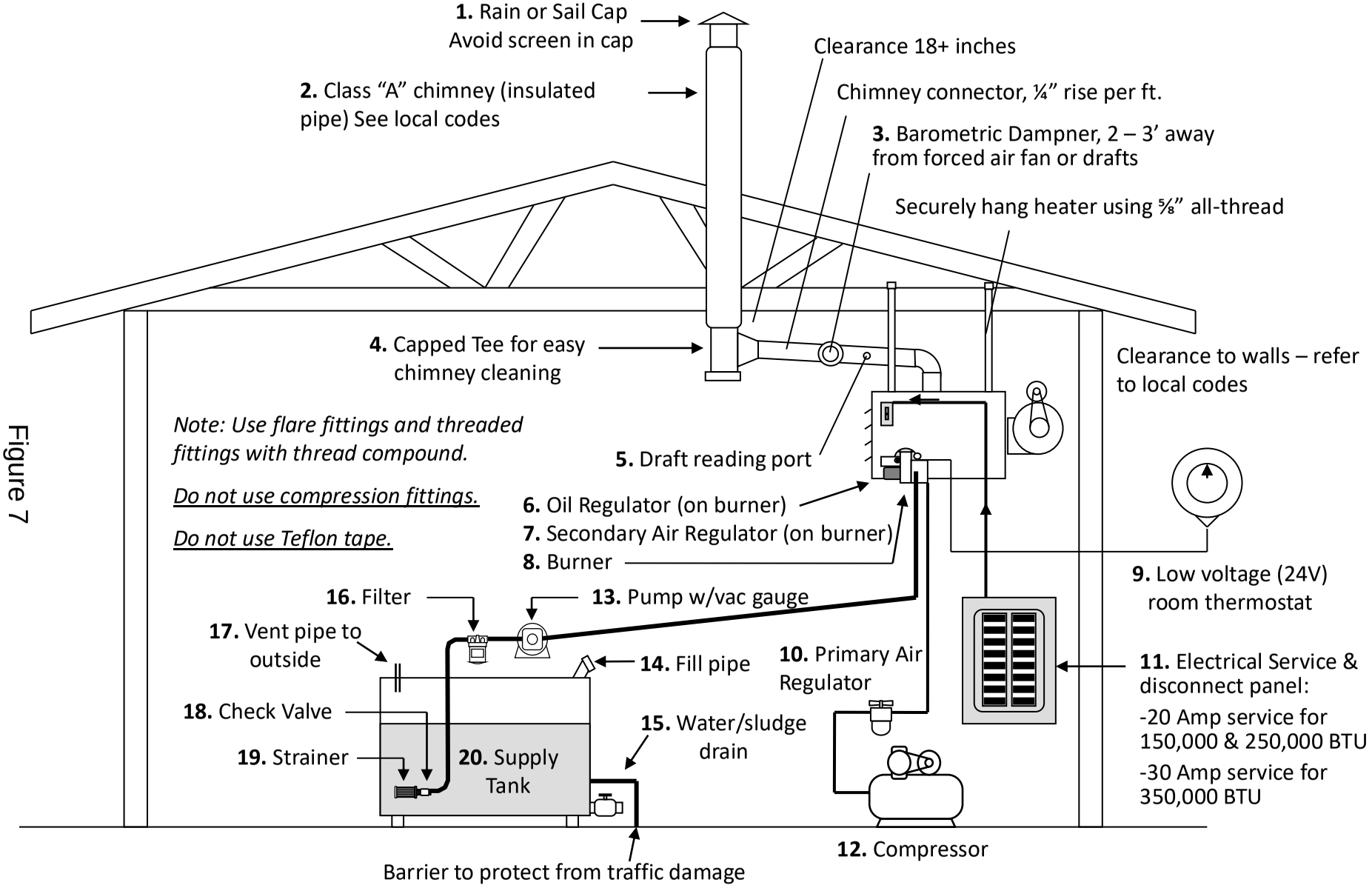


Figure 7

150,000/250,000 BTU Heater Installation Example

MULTIPLE WALL INSULATED CHIMNEY INSTALLATION

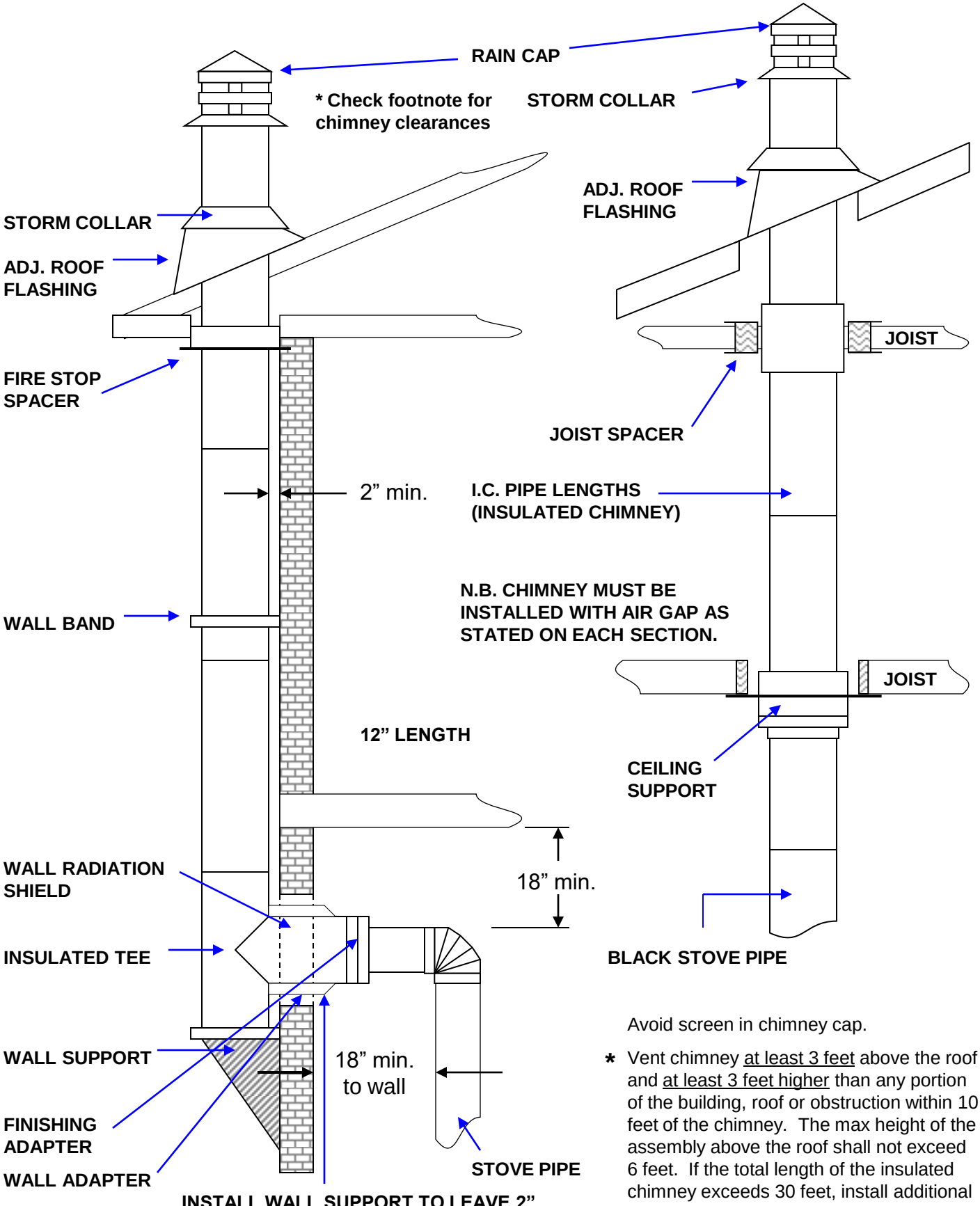


Figure 8

Avoid screen in chimney cap.

* Vent chimney <u>at least 3 feet</u> above the roof and <u>at least 3 feet higher</u> than any portion of the building, roof or obstruction within 10 feet of the chimney. The max height of the assembly above the roof shall not exceed 6 feet. If the total length of the insulated chimney exceeds 30 feet, install additional supporting assemblies supplied by the chimney manufacturers. Never locate a joint inside walls or in a joist spacer.

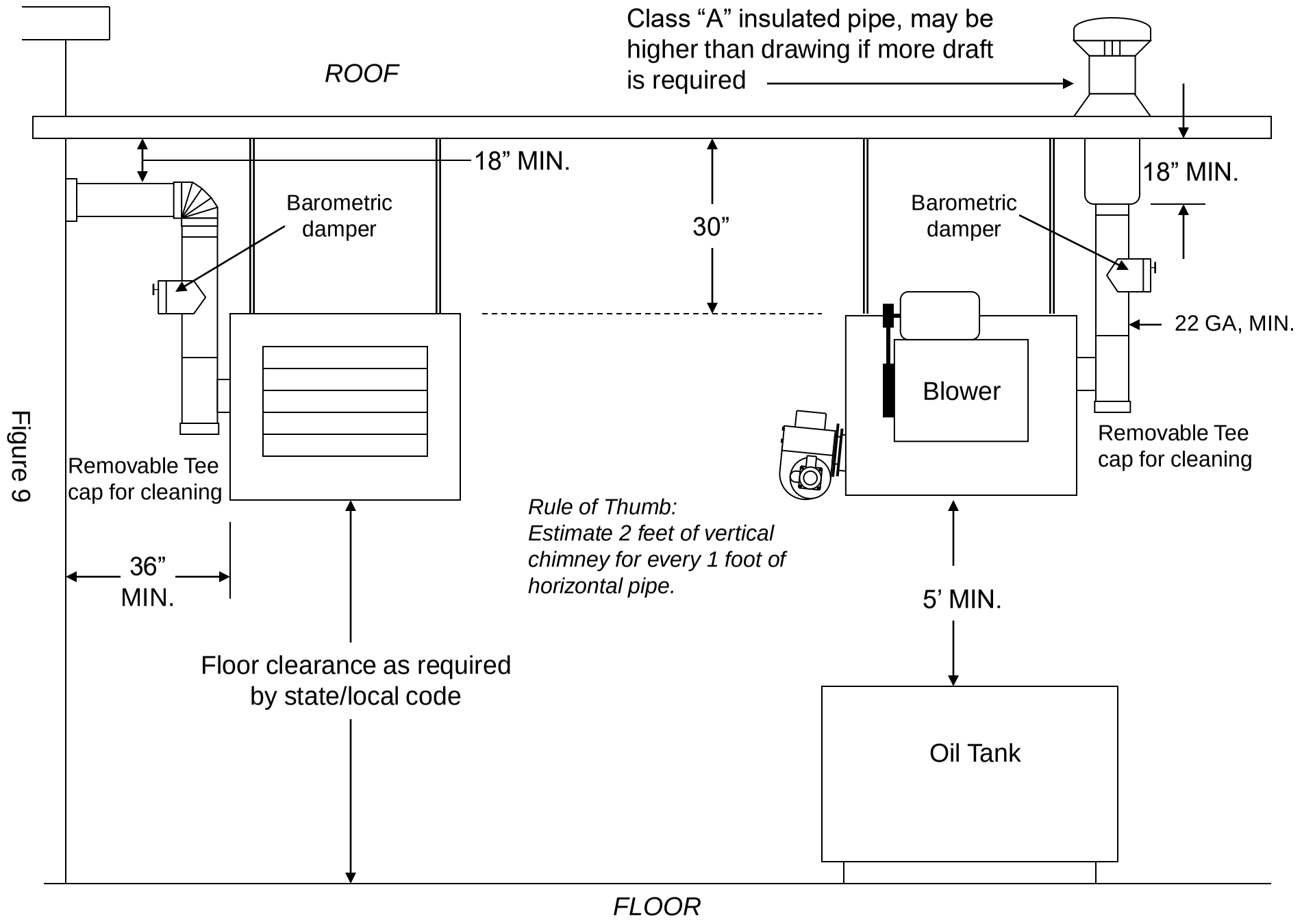

ROOF
Class “A” insulated pipe, may be higher than drawing if more draft is required
18” MIN.
Barometric damper
30”
Barometric damper
18” MIN.
22 GA, MIN.
Blower
Removable Tee cap for cleaning
Removable Tee cap for cleaning
Rule of Thumb:
Estimate 2 feet of vertical chimney for every 1 foot of horizontal pipe.
36” MIN.
5’ MIN.
Floor clearance as required by state/local code
Oil Tank
FLOOR

Figure 9

FLOATING PICKUP SUMP FOR DIRTY STORAGE TANKS

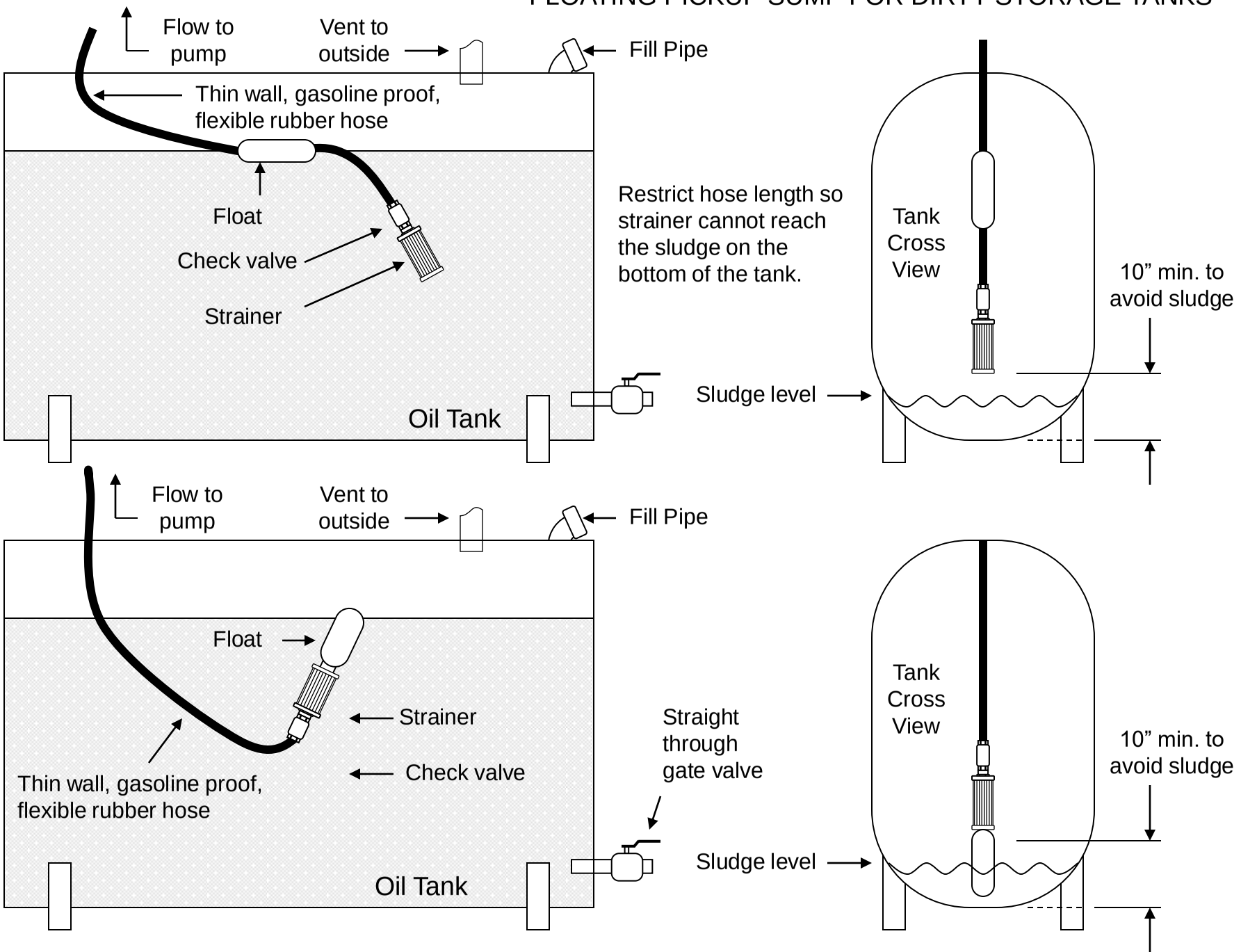
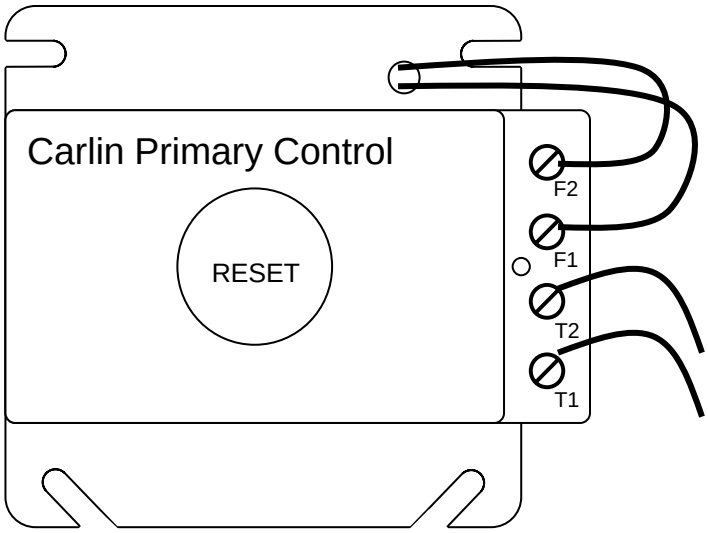


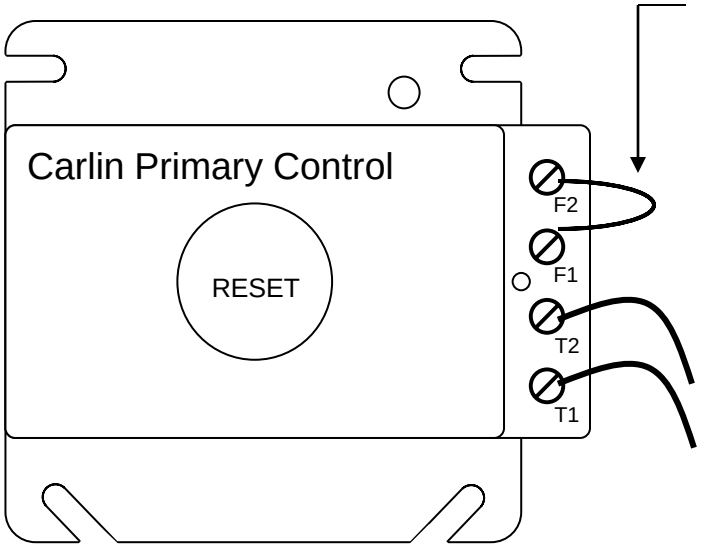
Figure 10

Oil Primary Control



← Yellow wires to cad cell

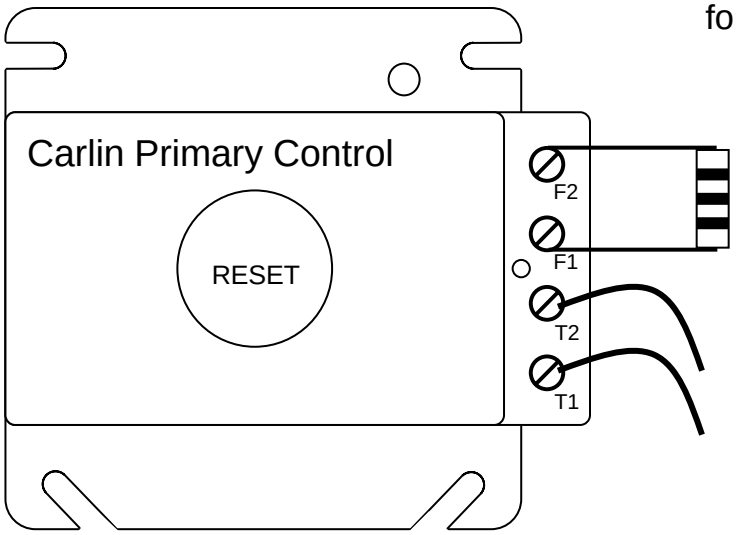
← The primary control provides 24 volt thermostat connections. Use # 18-2 wire (Bell wire).



At unit start-up, a jumper wire can temporarily be installed to by-pass cad cell to allow for priming of oil lines and pump. Additionally, jumper can be reinstalled to check for cad cell malfunction.

Note: Do not connect jumper up first as burner will not start. Start burner without jumper wire, then connect jumper across F1 & F2 terminals to keep burner and pump operating.

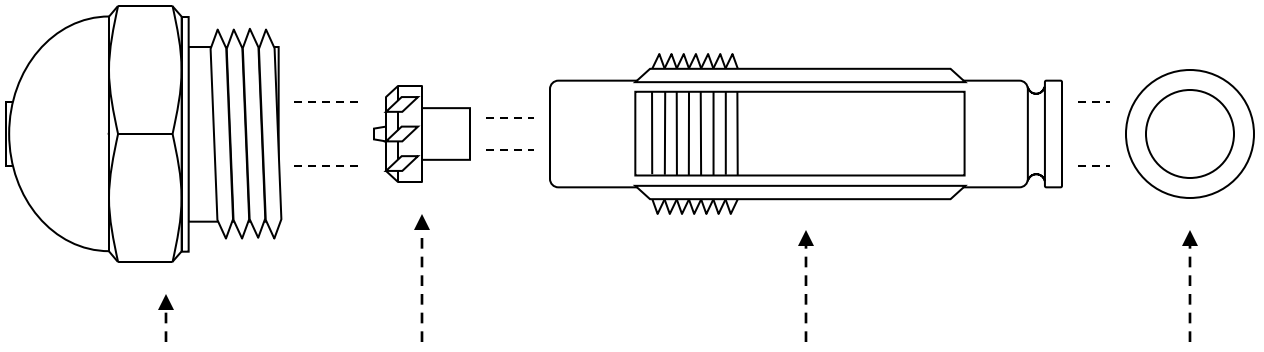
WARNING! Do not operate burner continuously or unattended with jumper connected. The safety shutdown will be disabled in this configuration. Install for troubleshooting only.

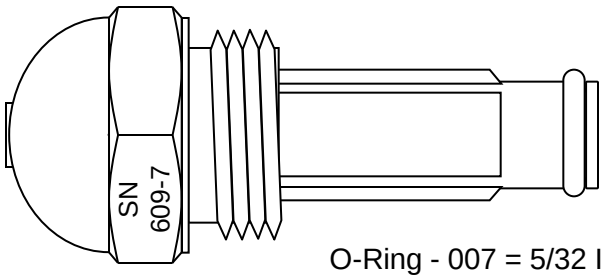


1500 ohm ½ watt resister to check control cad cell circuitry.

Figure 11

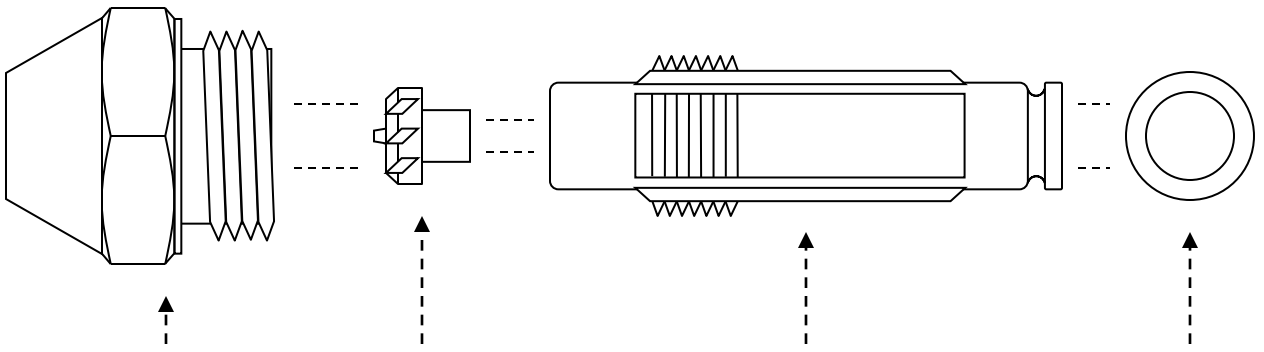
HEATWAVE NOZZLE – TYPICAL (HAGO)

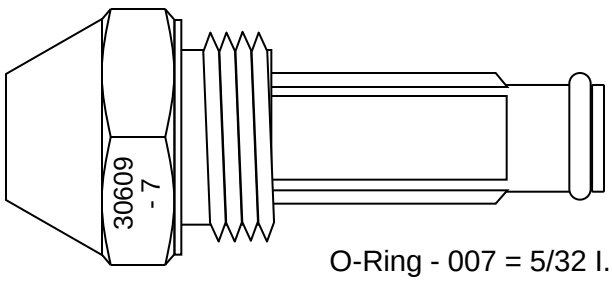




O-Ring - 007 = 5/32 I.D. x 9/32 O.D. x 1/16

HEATWAVE NOZZLE – TYPICAL (DELAVAN)



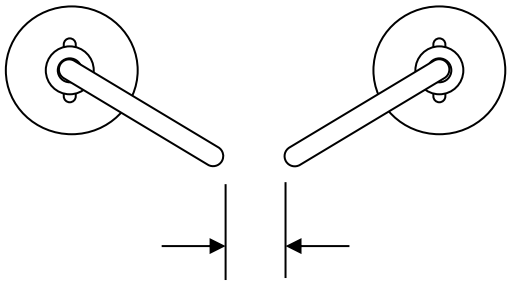


O-Ring - 007 = 5/32 I.D. x 9/32 O.D. x 1/16

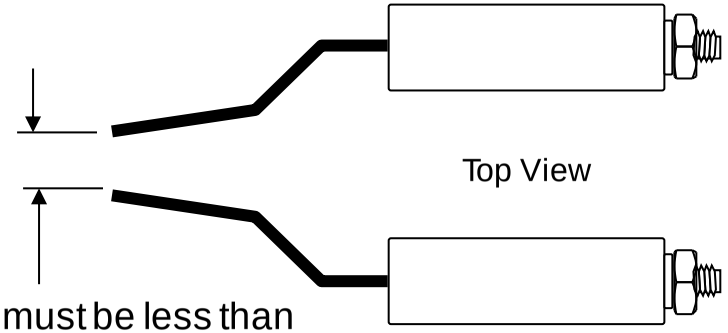
Normal application: HW150 = 609-5, HW250 = 609-7, HW350 = 609-9

Figure 12

Adjustment of the Electrodes

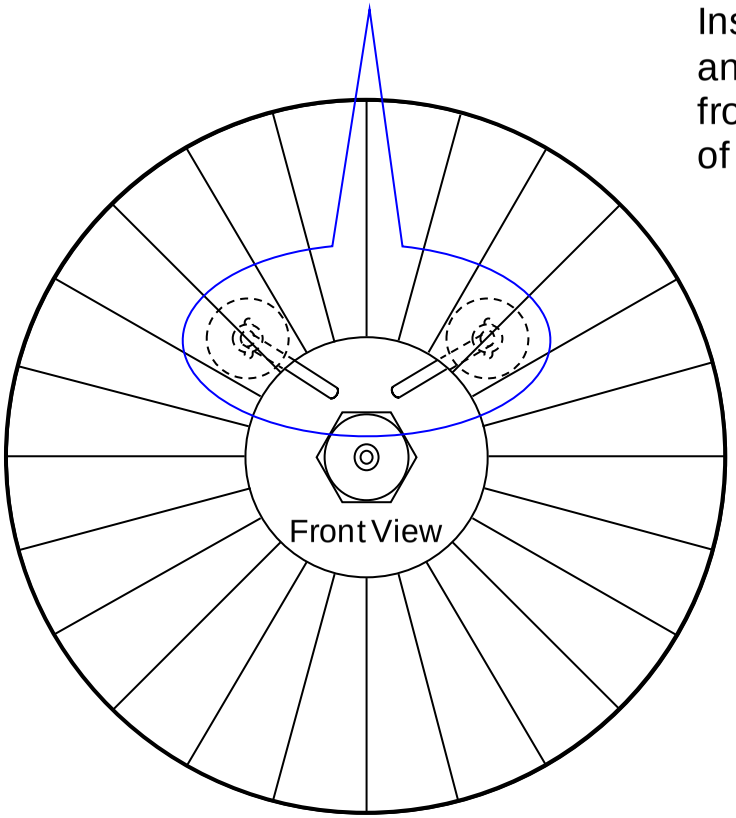


Do not exceed 5/32”.



Top View

This gap must be less than electrode to ground. Do not exceed 5/32”.

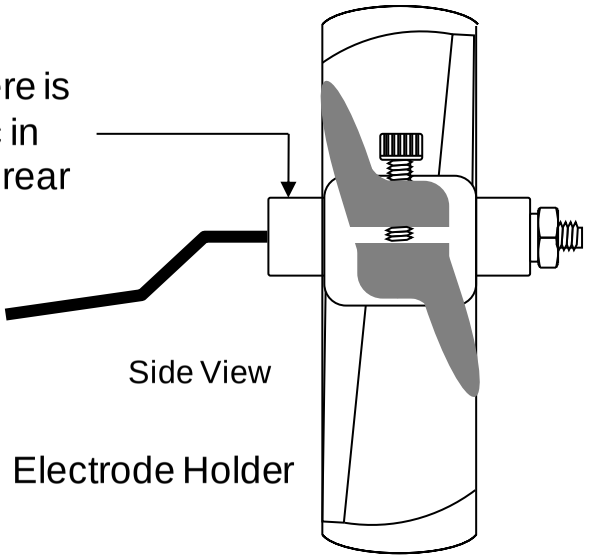


Front View

Retention Head

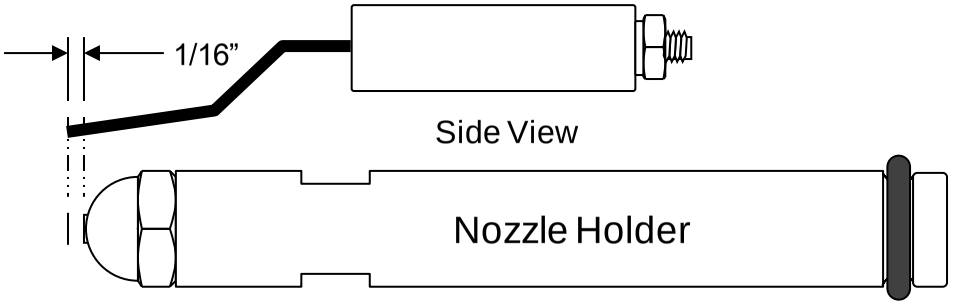
Install electrodes so that there is an equal amount of ceramic in front of electrode and to the rear of the electrode holder.

Tip Tapers down parallel to nozzle



Side View

Electrode Holder



1/16”

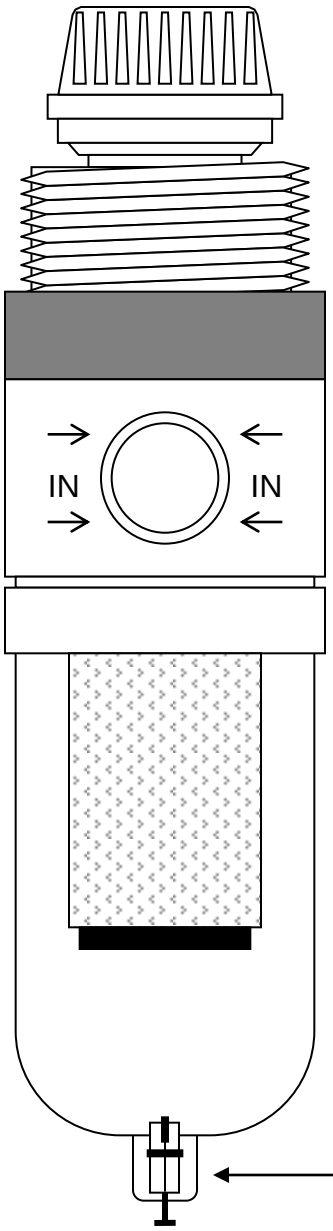
Side View

Nozzle Holder

O-Ring - 113 = 9/16 I.D. x 3/4 O.D. x 3/32

Figure 13

AIR REGULATOR



Pressure Adjustment Knob

Cap

Flat Washer

Main Spring

Diaphragm & Stem

Stem Guide

O-ring

Seat & Seat Spring

Regulator Body

Air Spinner

Filter Element

Filter Element Retainer

Bowl O-ring

Filter Bowl

Water Drain

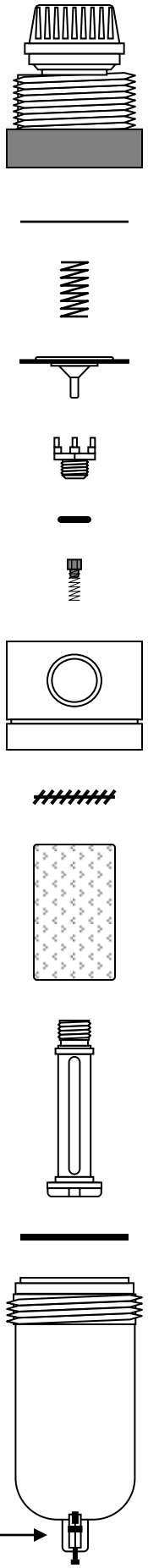


Figure 14

OIL REGULATOR

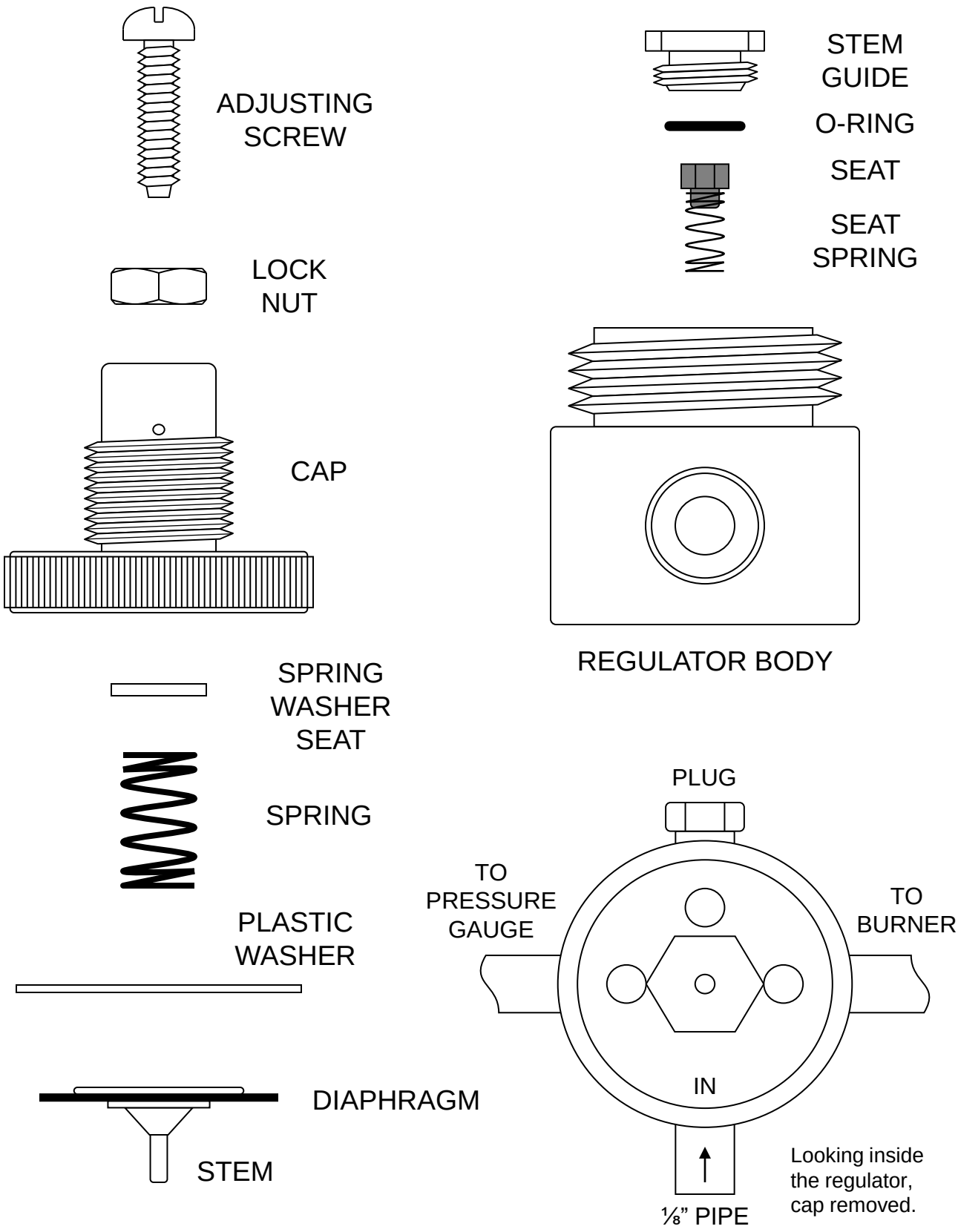
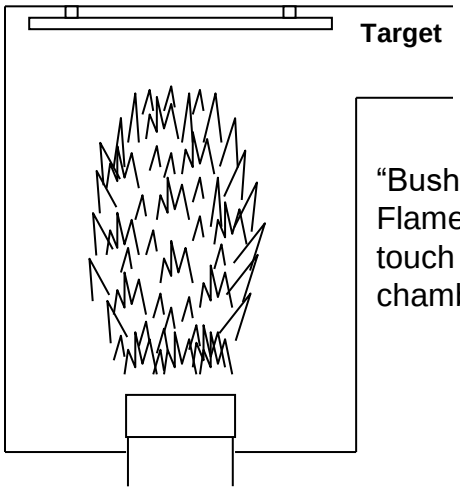


Figure 15

Flame Characteristics

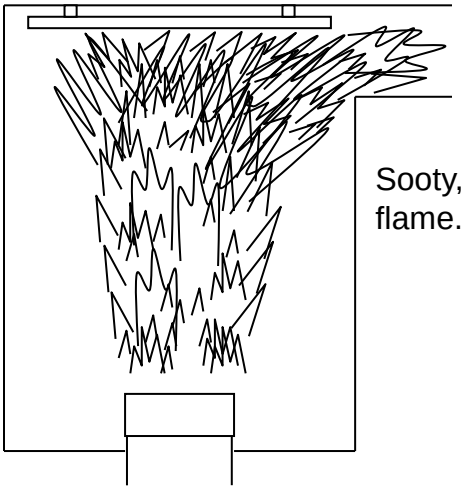
for adjusting oil pressure and troubleshooting

Warning: Over-firing the Heatwave will void the warranty and create a fire hazard.



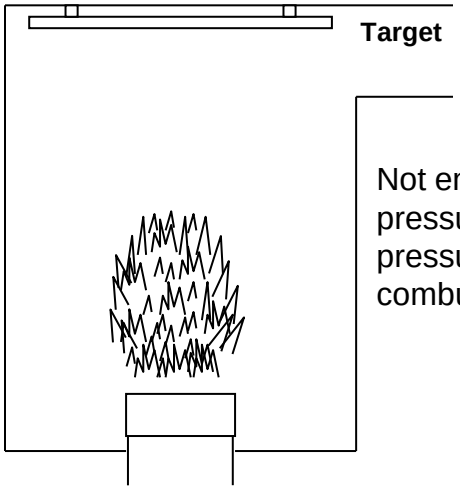
"Bushy" flame. Flame does not touch target or chamber walls.

Correct maximum flame



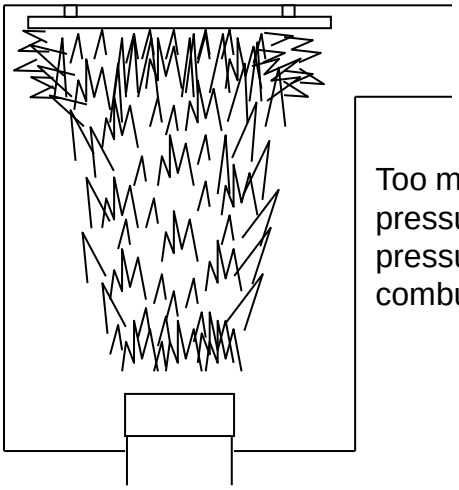
Sooty, smokey flame.

Excessive oil pressure.
Insufficient combustion air.



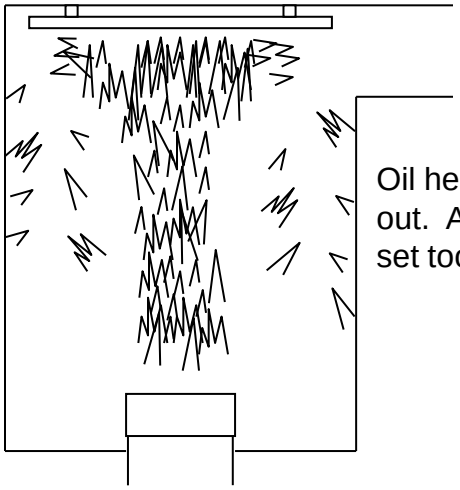
Not enough oil pressure, air pressure and combustion air.

Under fired



Too much oil pressure, air pressure and/or combustion air.

Over fired.
Target area red hot.

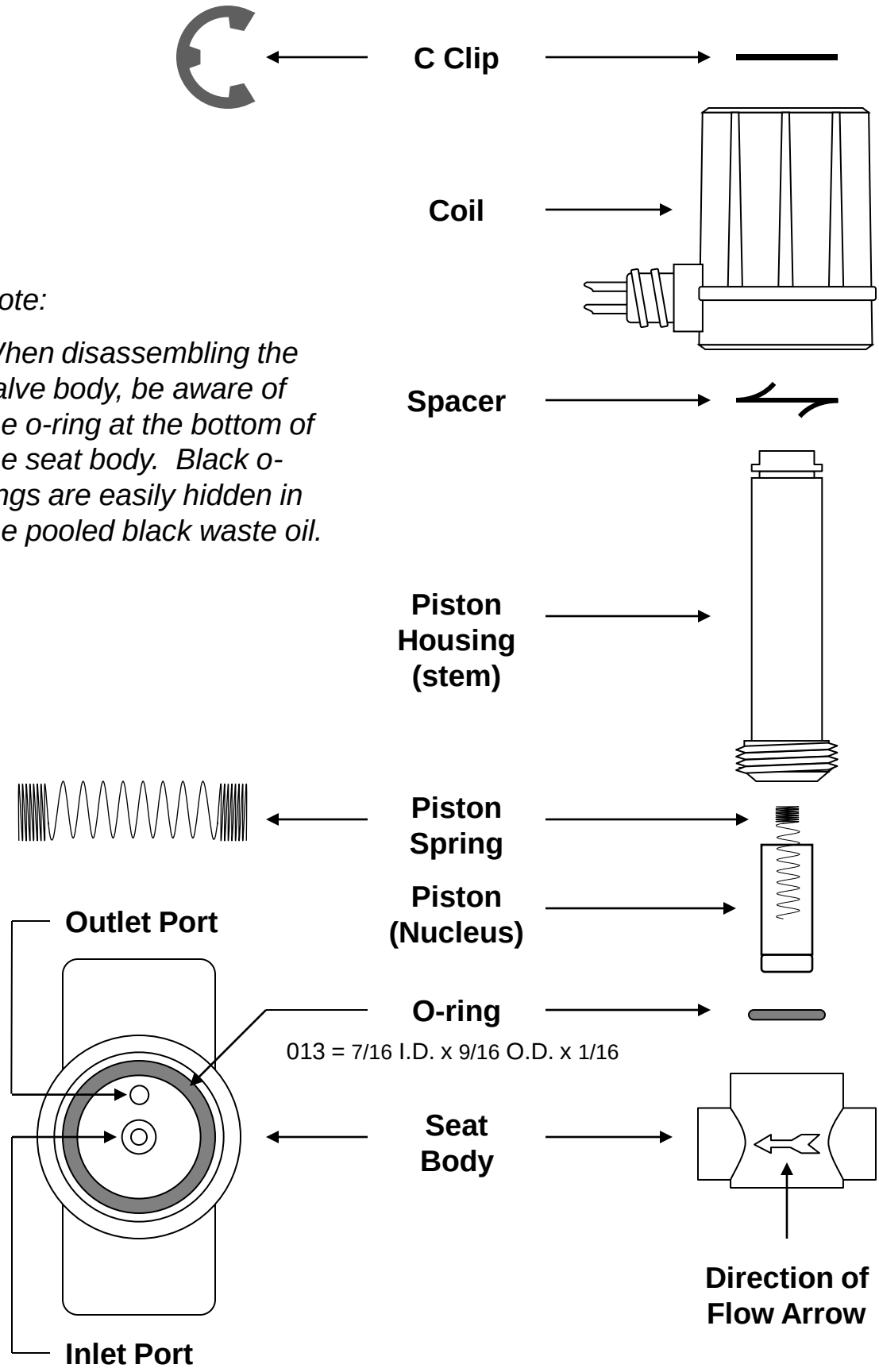


Oil heater burnt out. Air pre-heater set too low.

Oil too cold

Figure 16

EXPLODED VIEW OF AIR / OIL SOLENOID



Note:

When disassembling the valve body, be aware of the o-ring at the bottom of the seat body. Black o-rings are easily hidden in the pooled black waste oil.

Figure 17

DELTA PUMP
CV2RR
(remote, non burner mounted)

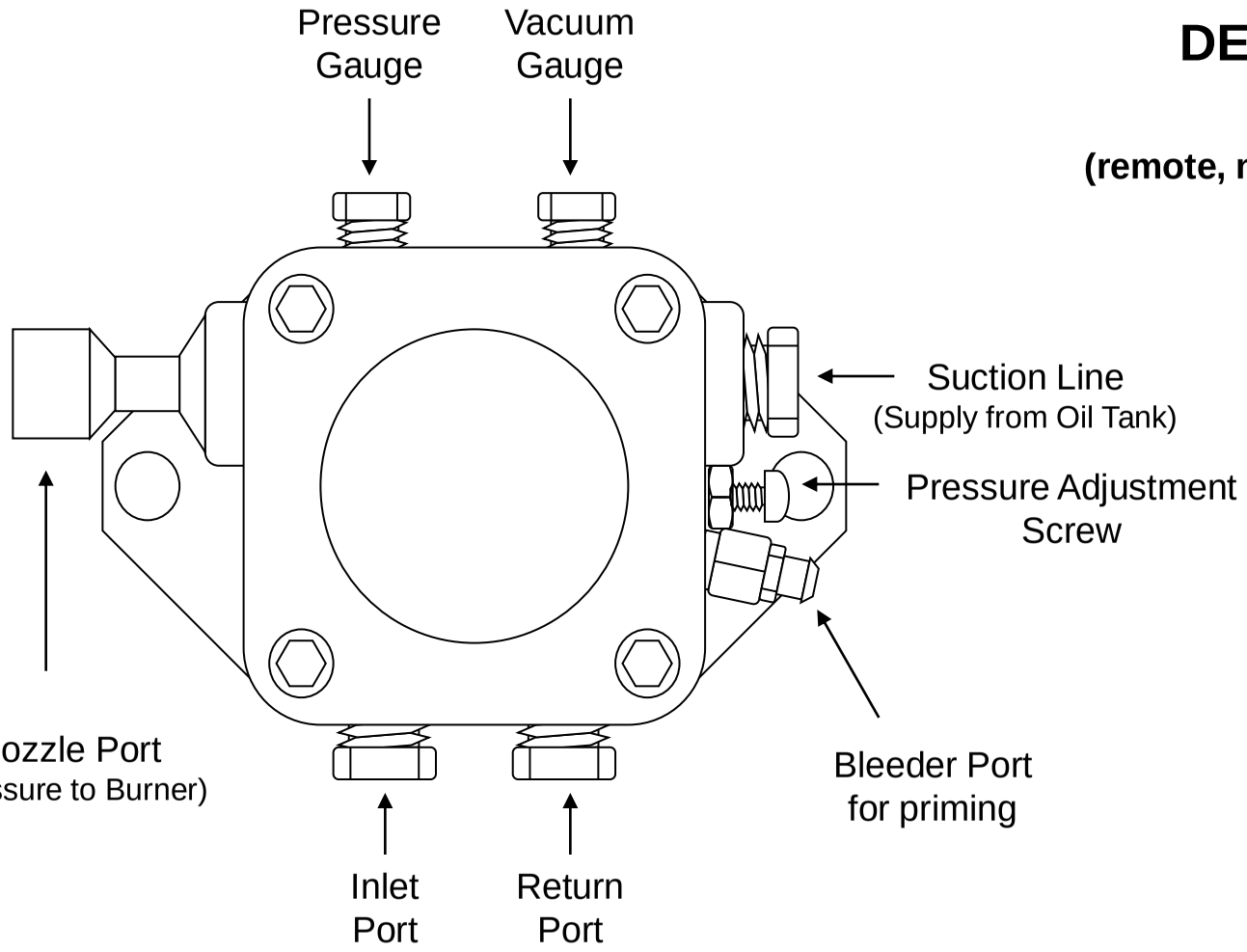
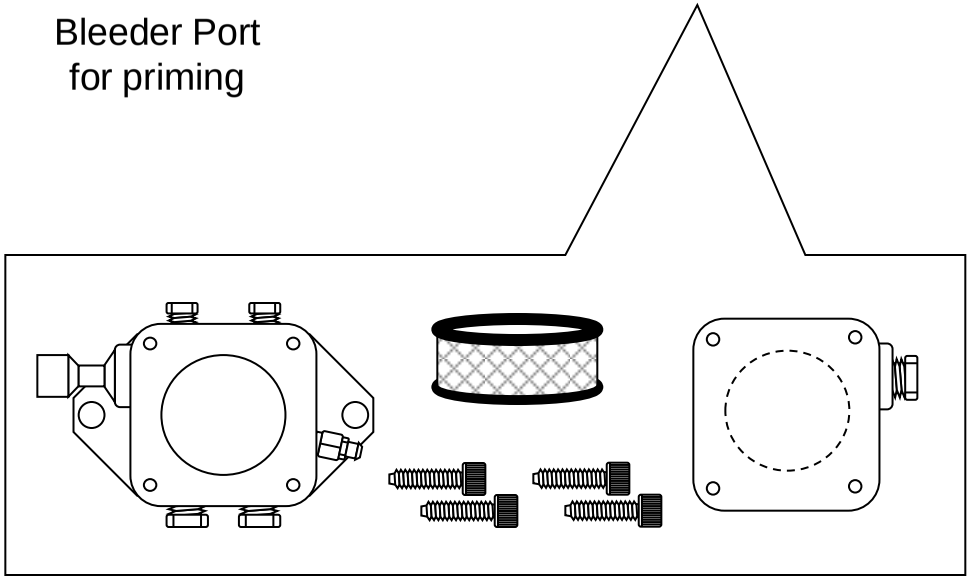


Figure 18

Delta pump shown with screws, cover and screen removed for cleaning.



Note:

Pump will not prime if mounted upside down

SUNTEC “J” PUMP

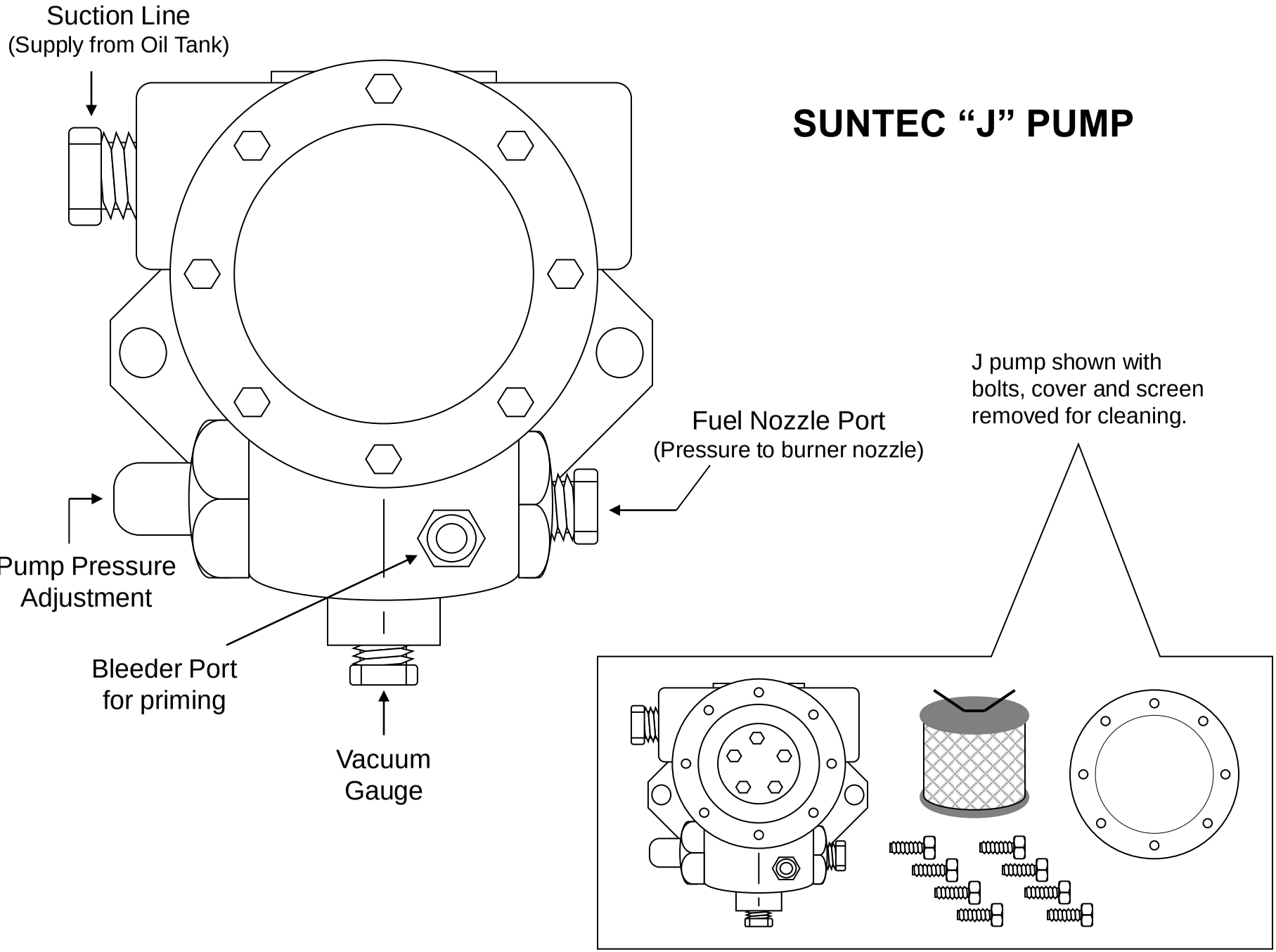
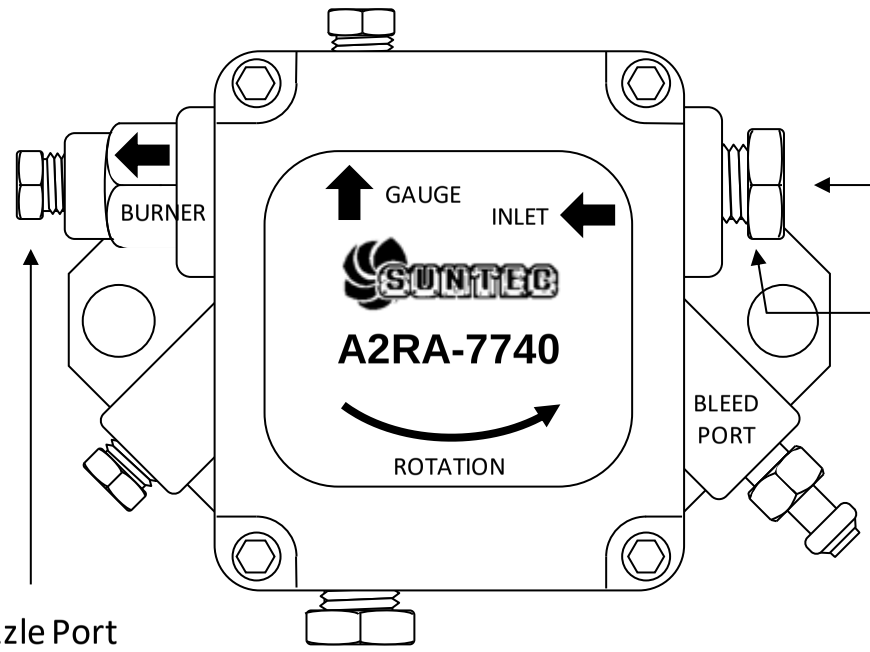


Figure 19

SUNTEC PUMP
A2RA-7740
(remote, non burner mounted)



Suntec pump shown with screws, cover and screen removed for cleaning.

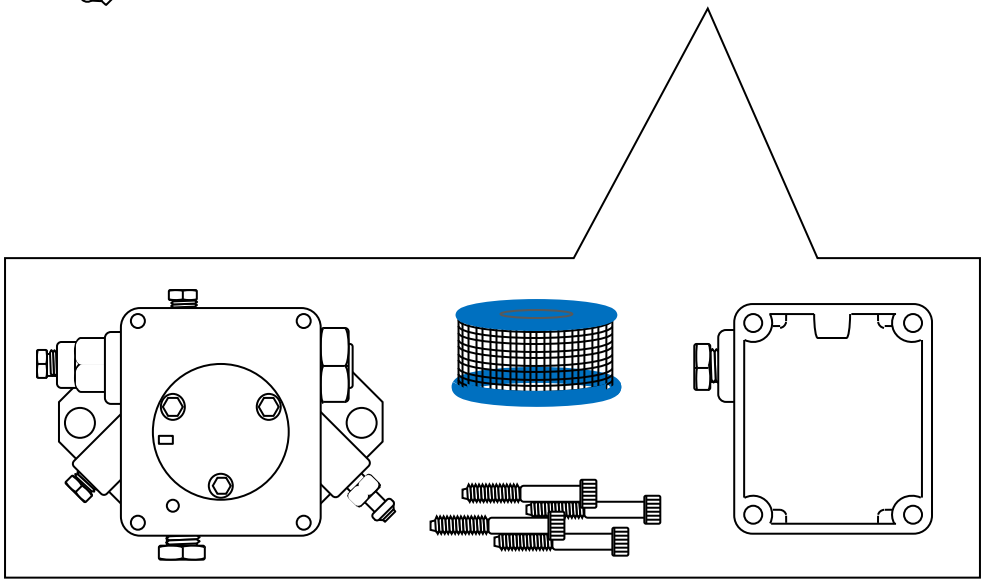
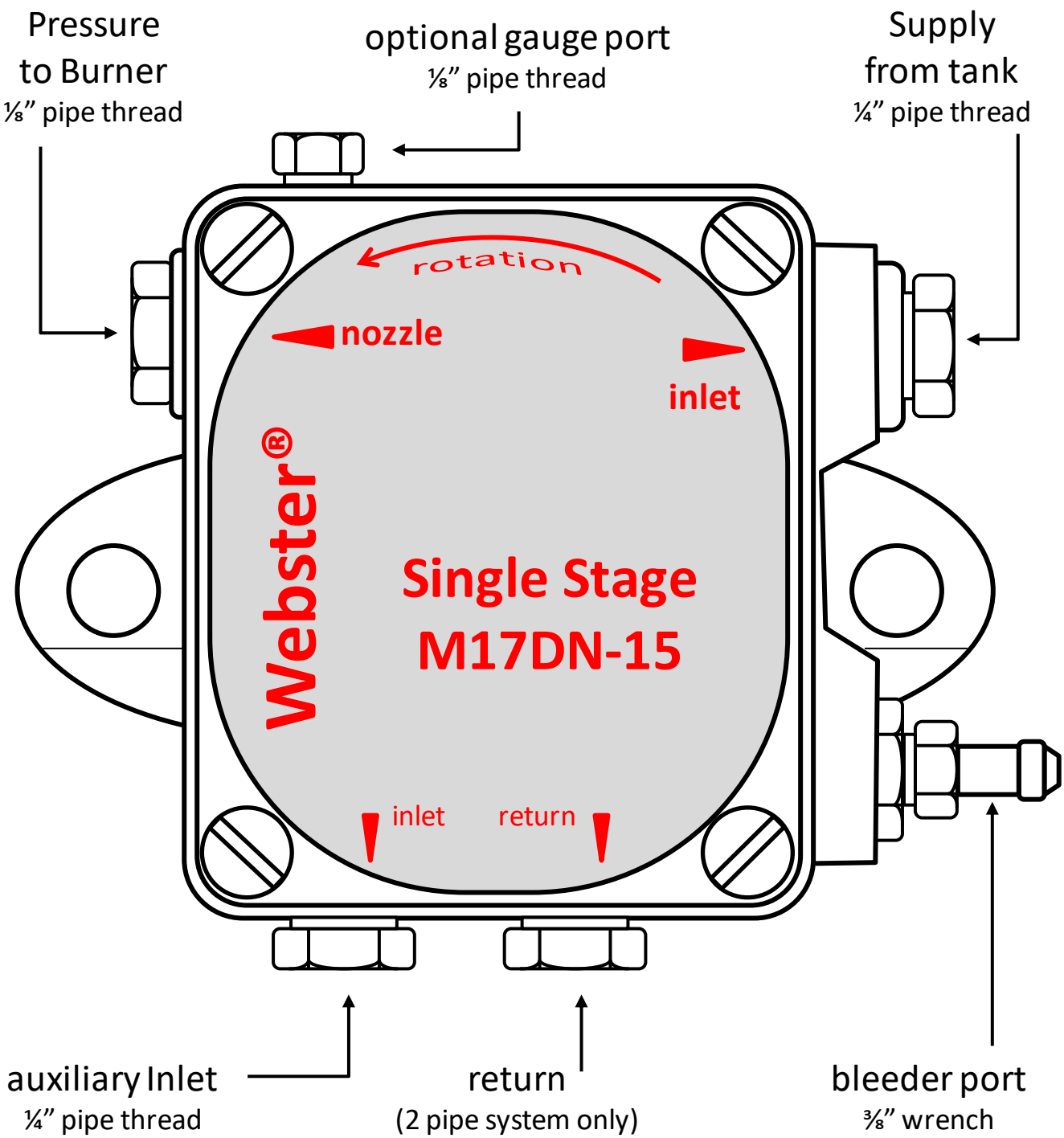


Figure 20

WEBSTER M17DN-15



Attention – Webster pumps are maintenance free and do not have an internal filter. DO NOT disassemble!

Figure 21

WEBSTER

1RR14004EK13

(REPLACES SUNTEC J-SERIES)

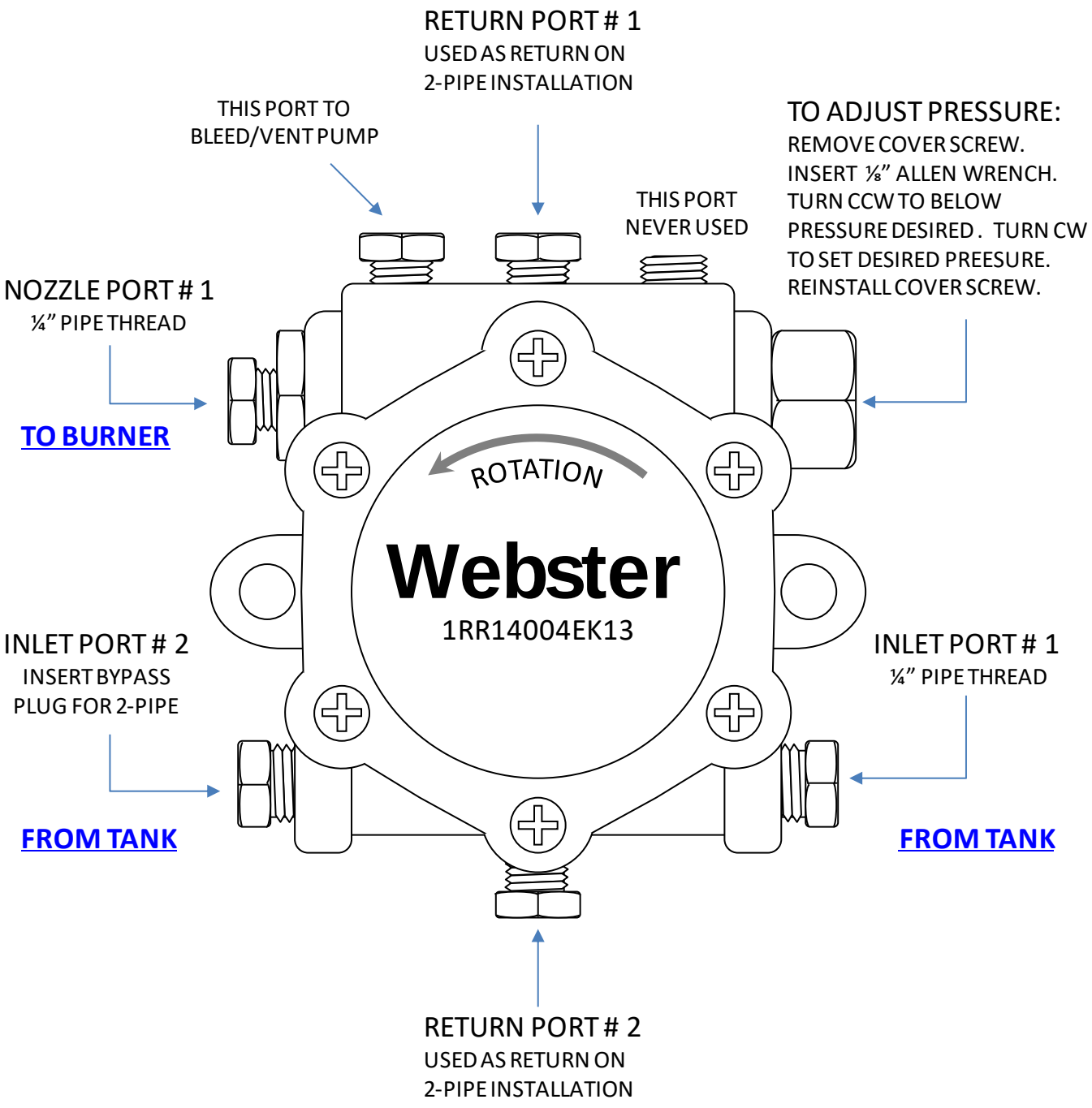
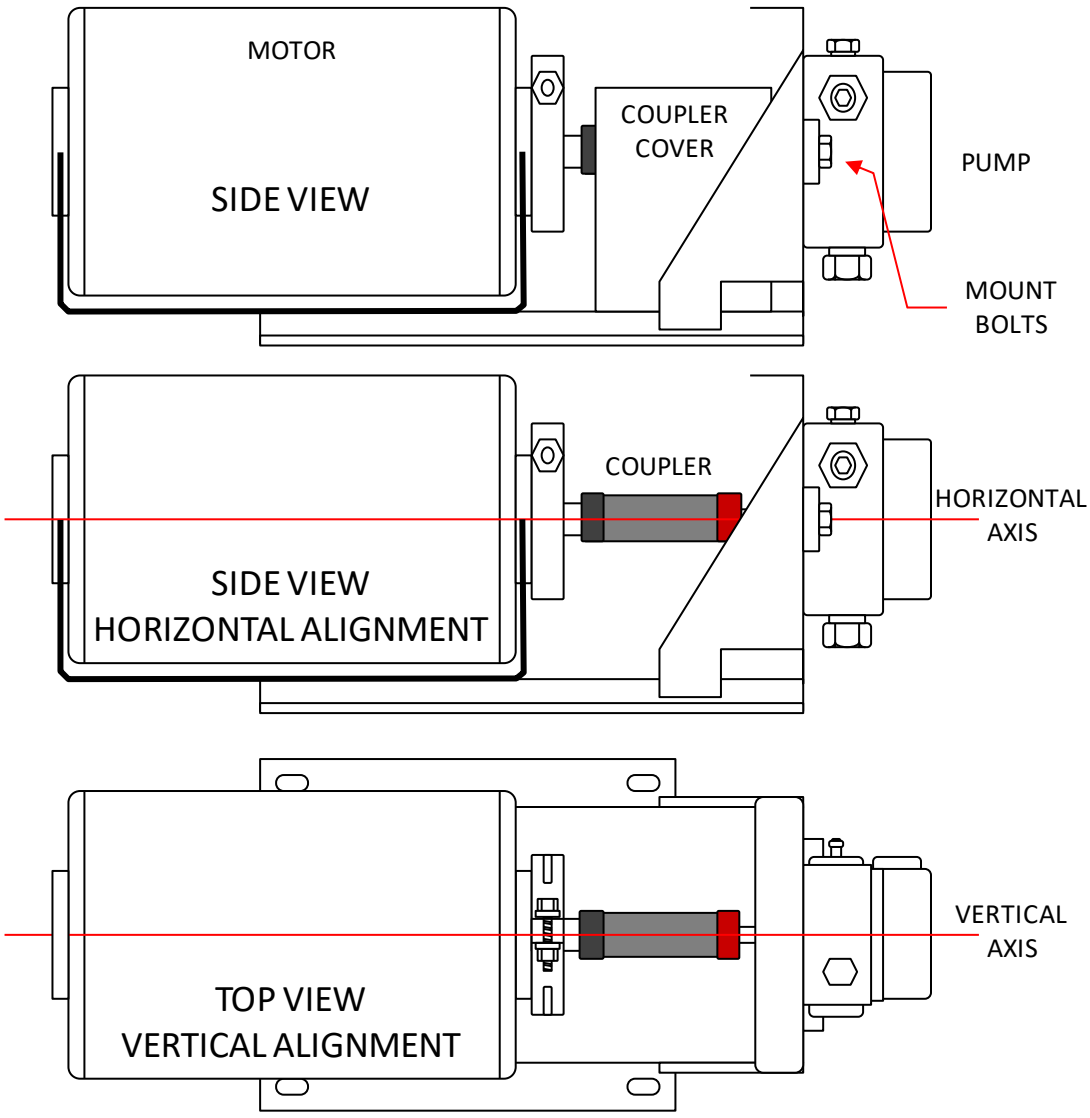
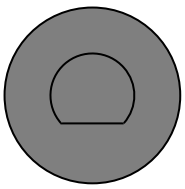


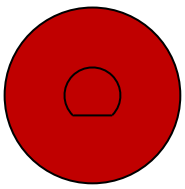
Figure 22

Pump to Motor Alignment



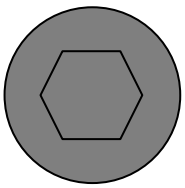


MOTOR SHAFT END ½" Ø

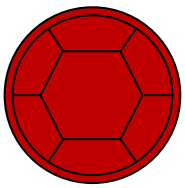


PUMP SHAFT END 5/16" Ø

LOOK FOR WEAR IN THESE AREAS



COUPLER SHAFT MATERIAL

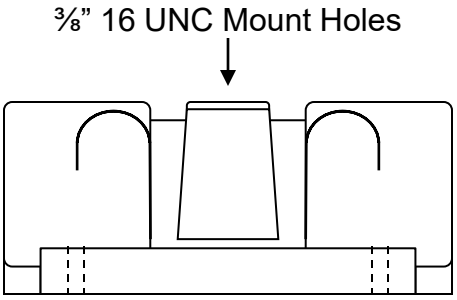


INSIDE PUMP SHAFT END

Note: "J" pump, pump shaft end is 7/16" blue

Figure 23

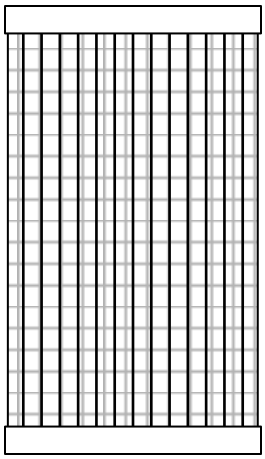
LENZ FILTER SYSTEM



Filter Head

¾” NPT

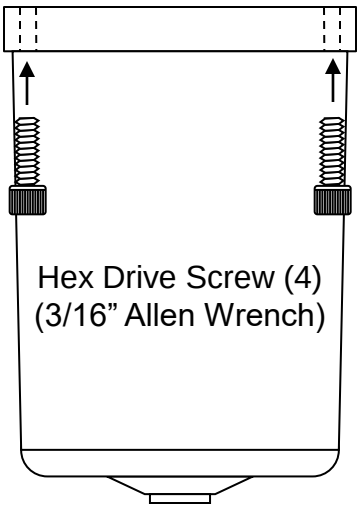
Bowl O-ring



100 Mesh
SS Filter

ATTENTION!

DO NOT USE FILTER ASSEMBLIES WITH RELIEF OR BYPASS



Filter Bowl

Drain Plug O-ring

Drain Plug

Internal Wrenching Plug
(¼” Allen Wrench)

To Clean:

Remove 4 hex head screws and lower filter bowl. Filter element can be removed by pulling downward with a slight twisting motion. Clean element and bowl with solvent.

Be careful not loose, cut or twist bowl o-ring upon reinstallation.

Fill bowl approximately ⅔ full with clean oil prior to installing to aid in pump priming.

Install bowl (with o-ring in place) and tighten screws evenly to reduce the possibility of suction leaks.

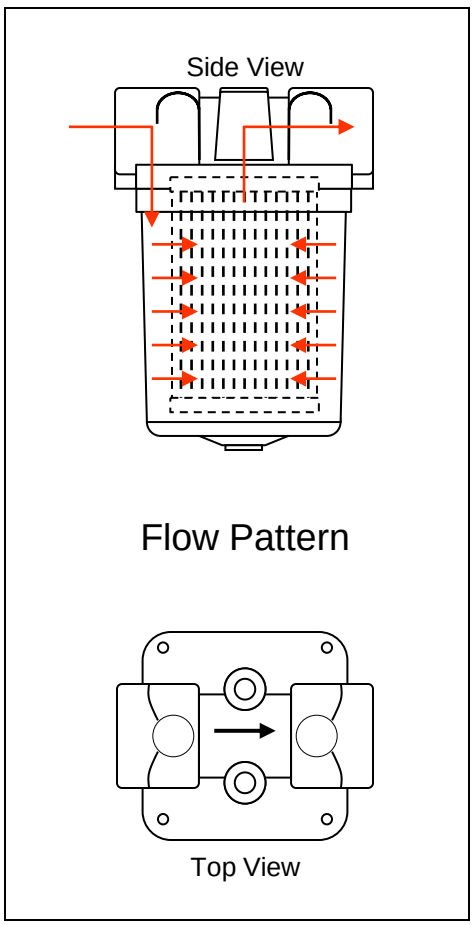
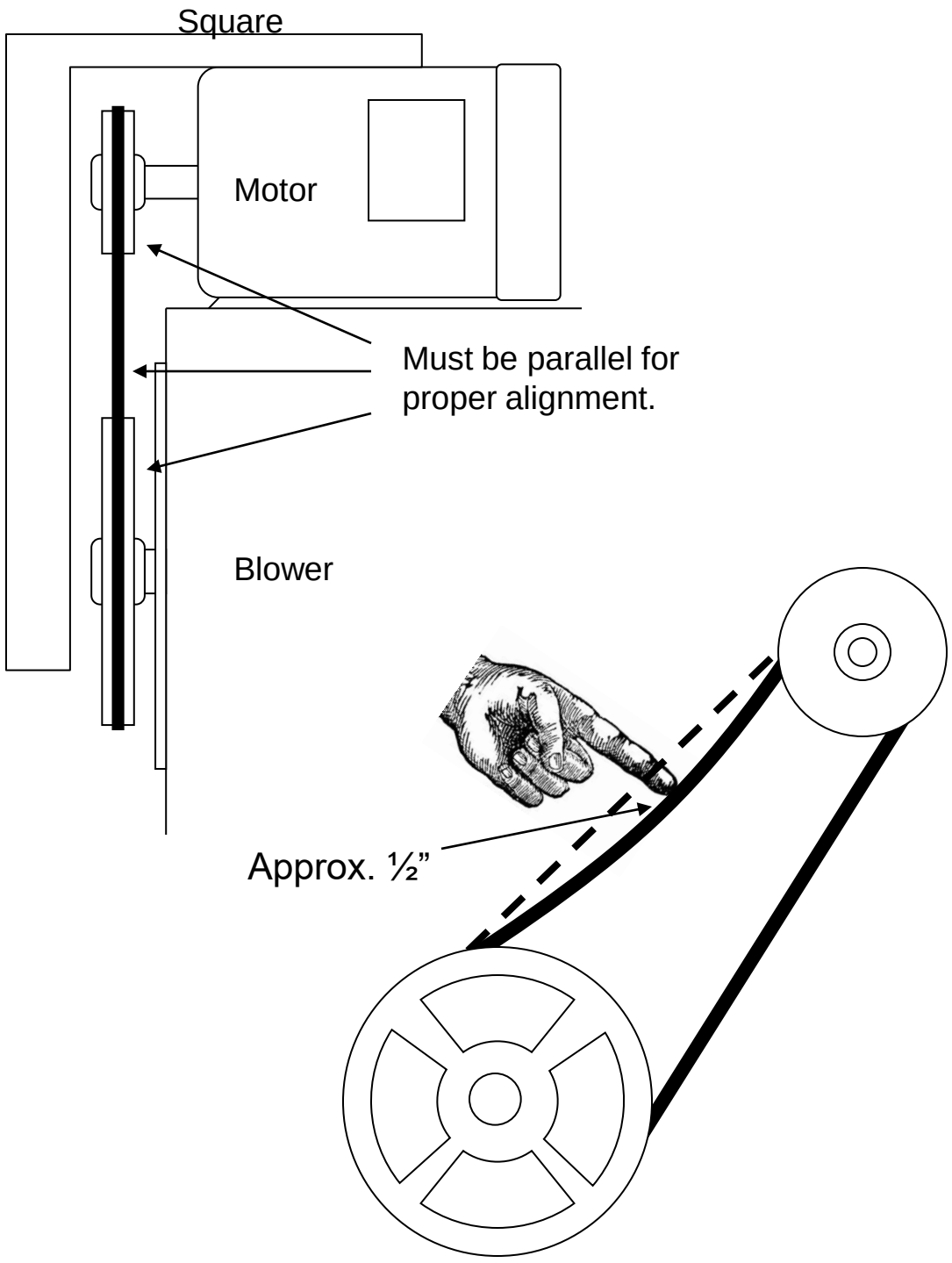


Figure 24



Blower Belt – Alignment and Tension

Figure 25

SQUARE D BREAKER BOX – HEATWAVE (120V)

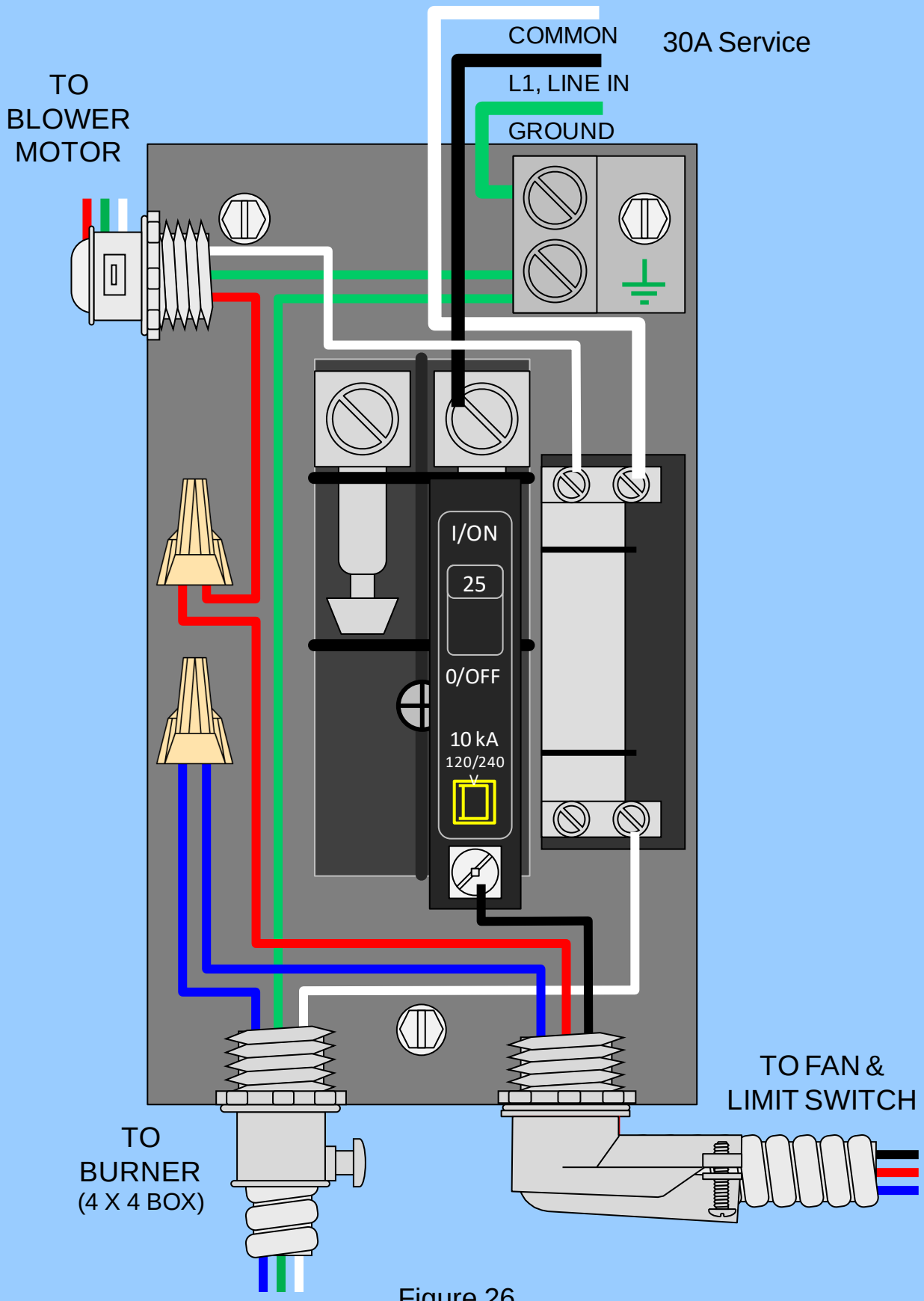


Figure 26

WIRING SCHEMATIC – TYPICAL HEATWAVE

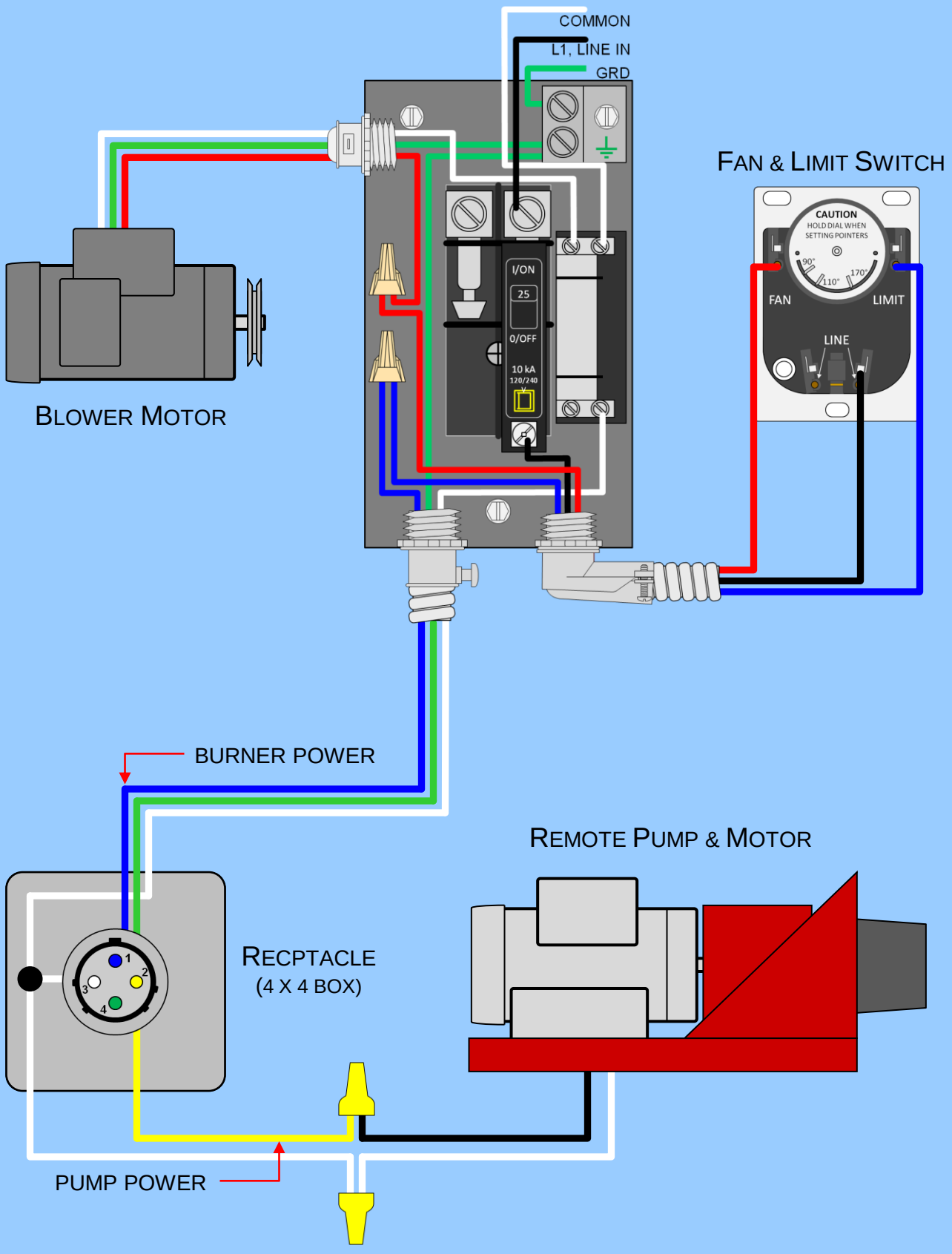


Figure 27

BURNER WIRING DIAGRAM

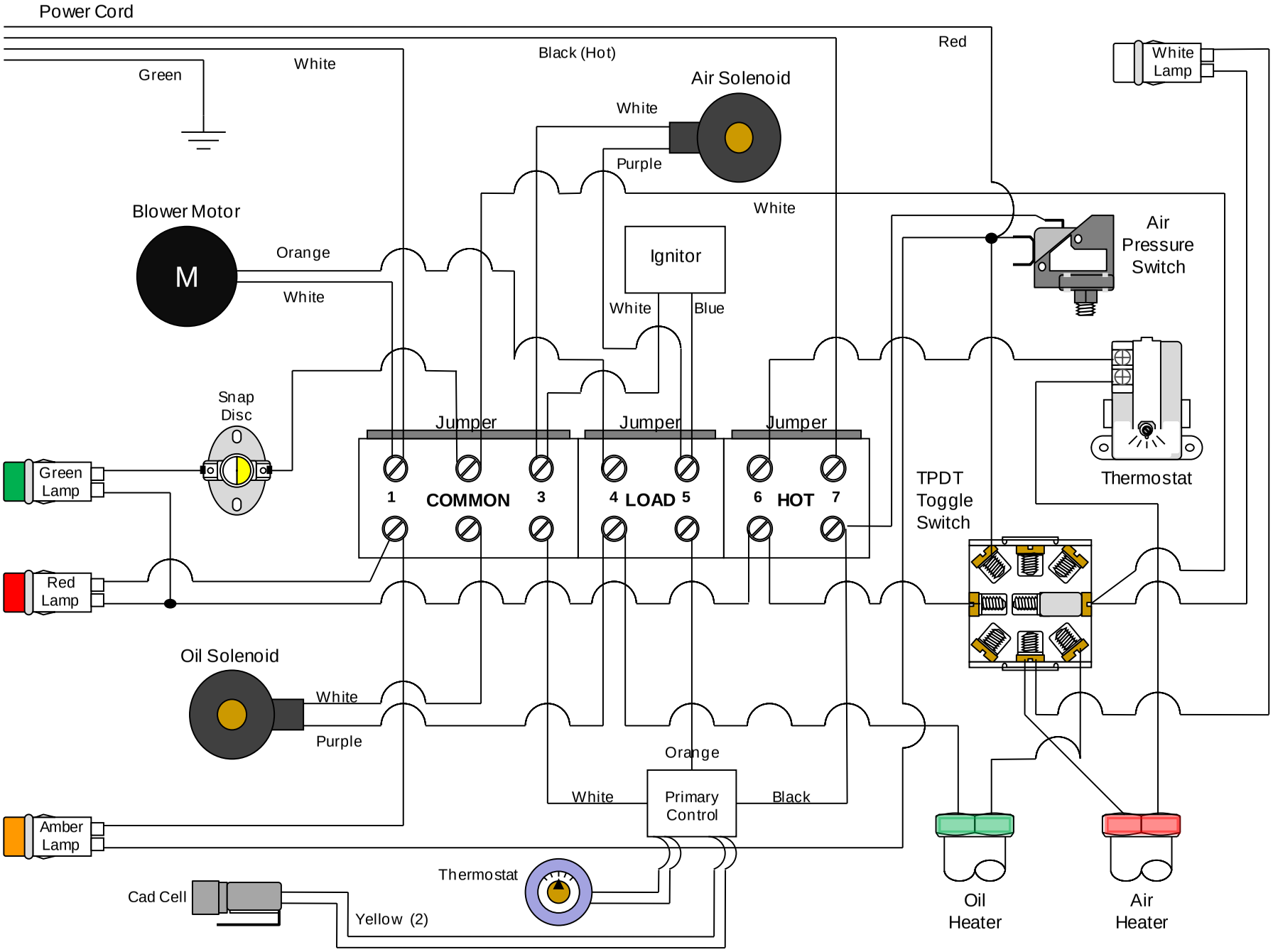


Figure 28

4 X 4 Junction Box

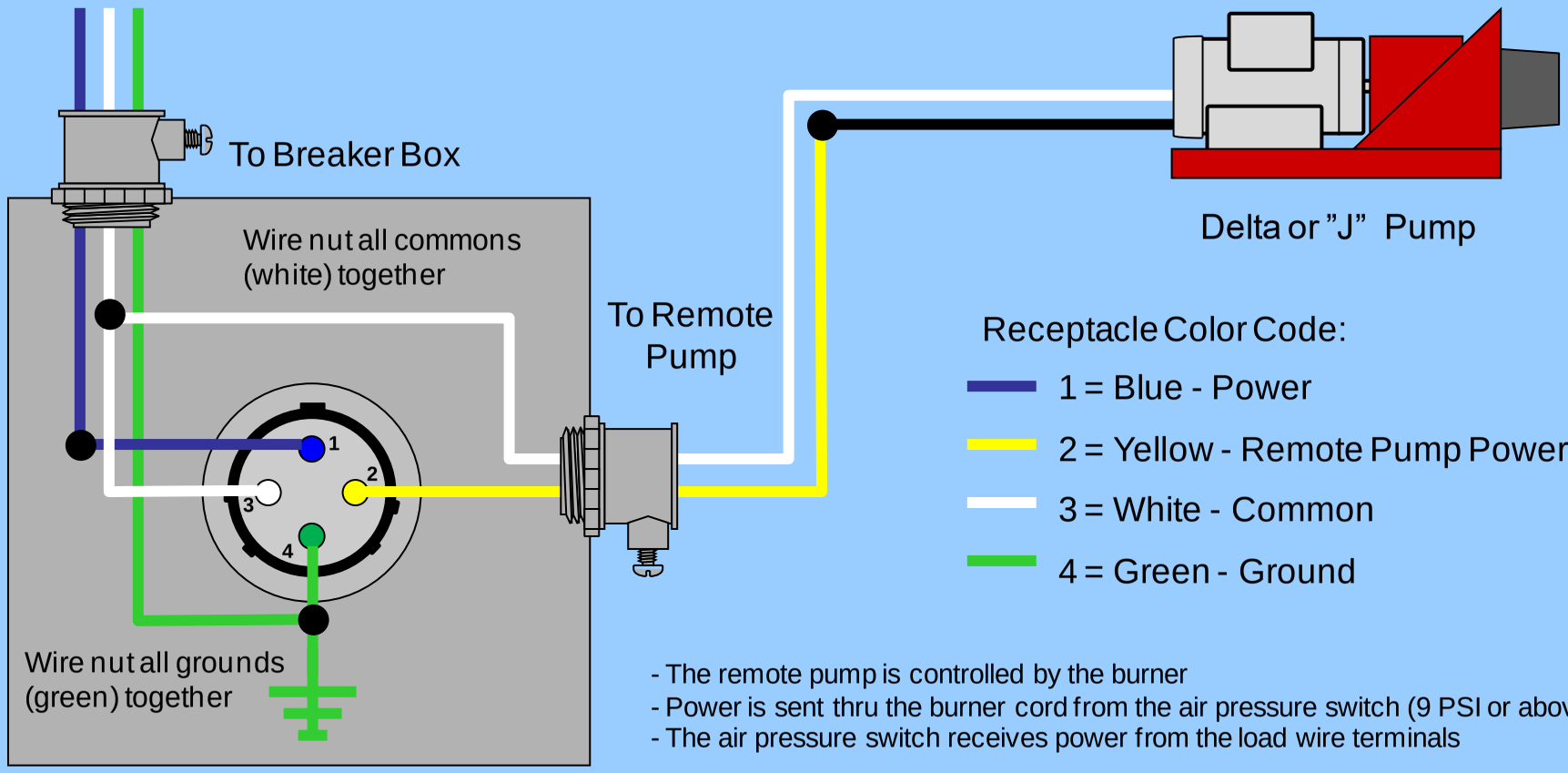
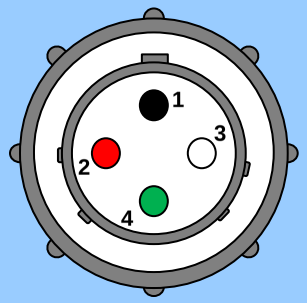


FIGURE 29

Receptacle Color Code:

- 1 = Blue - Power
- 2 = Yellow - Remote Pump Power
- 3 = White - Common
- 4 = Green - Ground

- The remote pump is controlled by the burner
- Power is sent thru the burner cord from the air pressure switch (9 PSI or above)
- The air pressure switch receives power from the load wire terminals

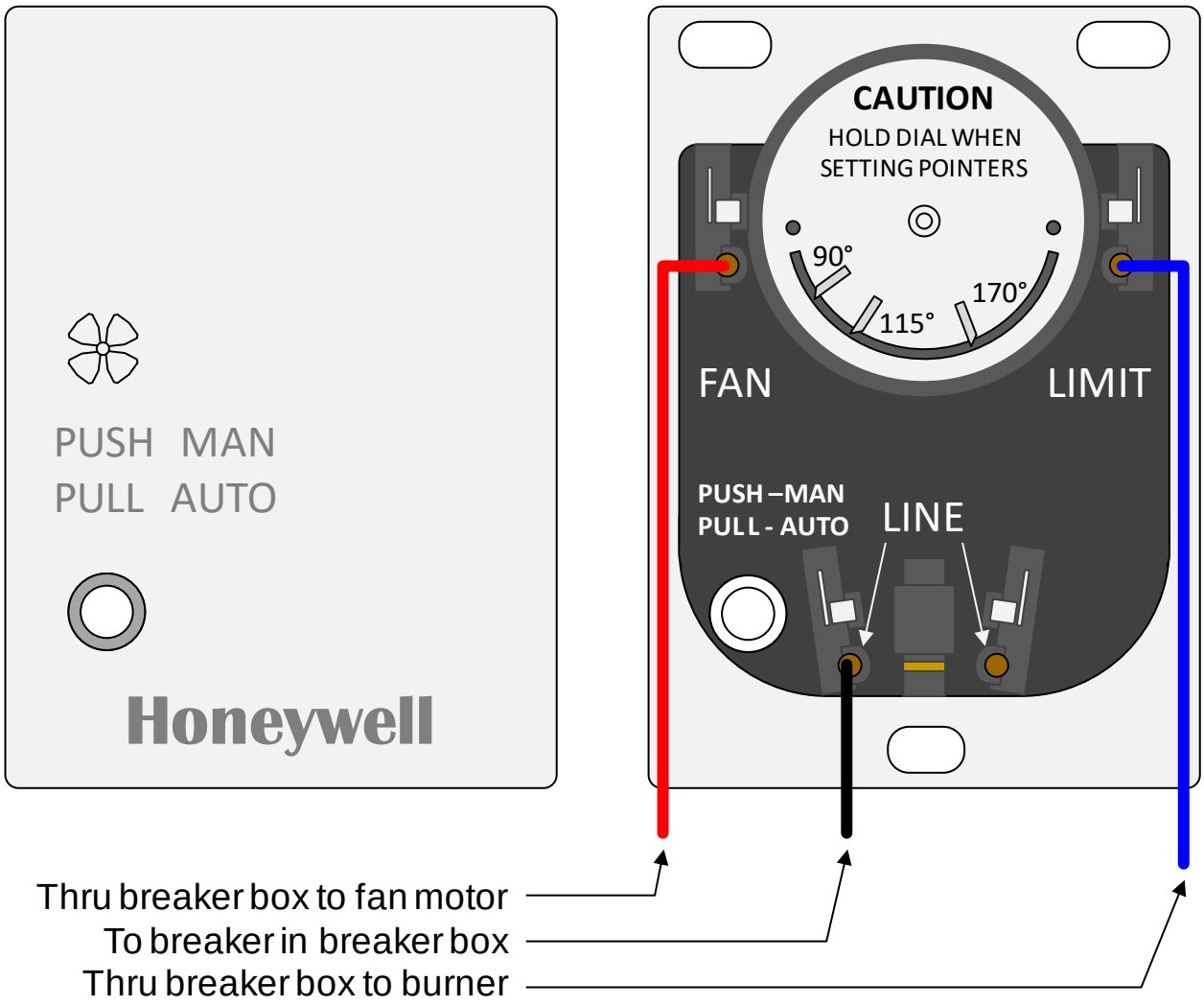


Cord Color Code:

- 1 = Black - Power
- 2 = Red - Remote Pump Power
- 3 = White - Common
- 4 = Green - Ground

Honeywell Fan & Limit Control L4064B2236

Fan Off: 90 Fan On: 115 High limit: 170



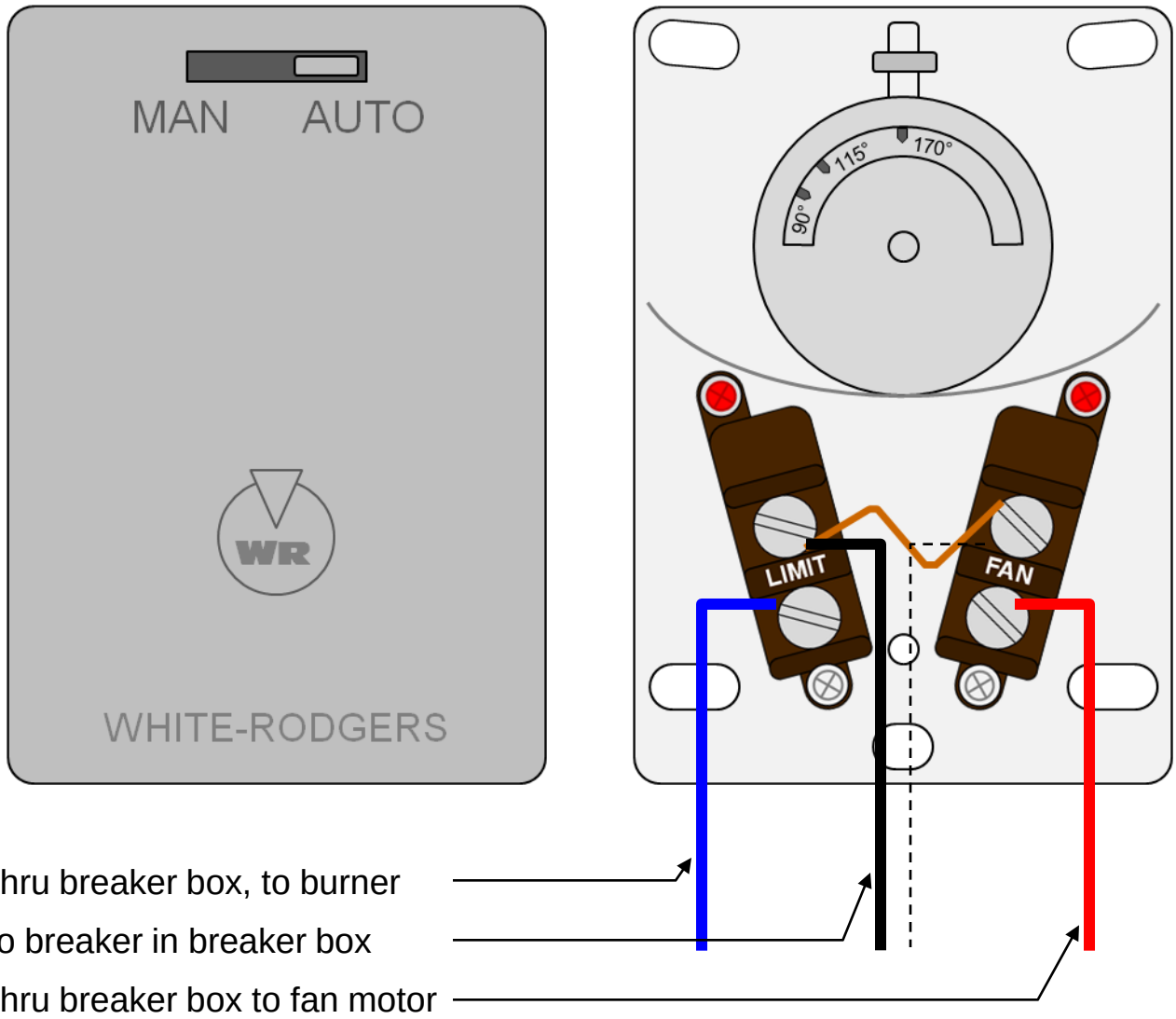
Caution: When adjusting set point levers, hold the scaleplate dial to keep it from turning and straining the sensing equipment

Note: For constant fan operation, push button in to "MAN". For fan to cycle automatically, set (pull) switch to "AUTO".

Figure 30

White- Rodgers Fan & Limit Control 5D51-90

Fan Off: 90 Fan On: 115 High limit: 170

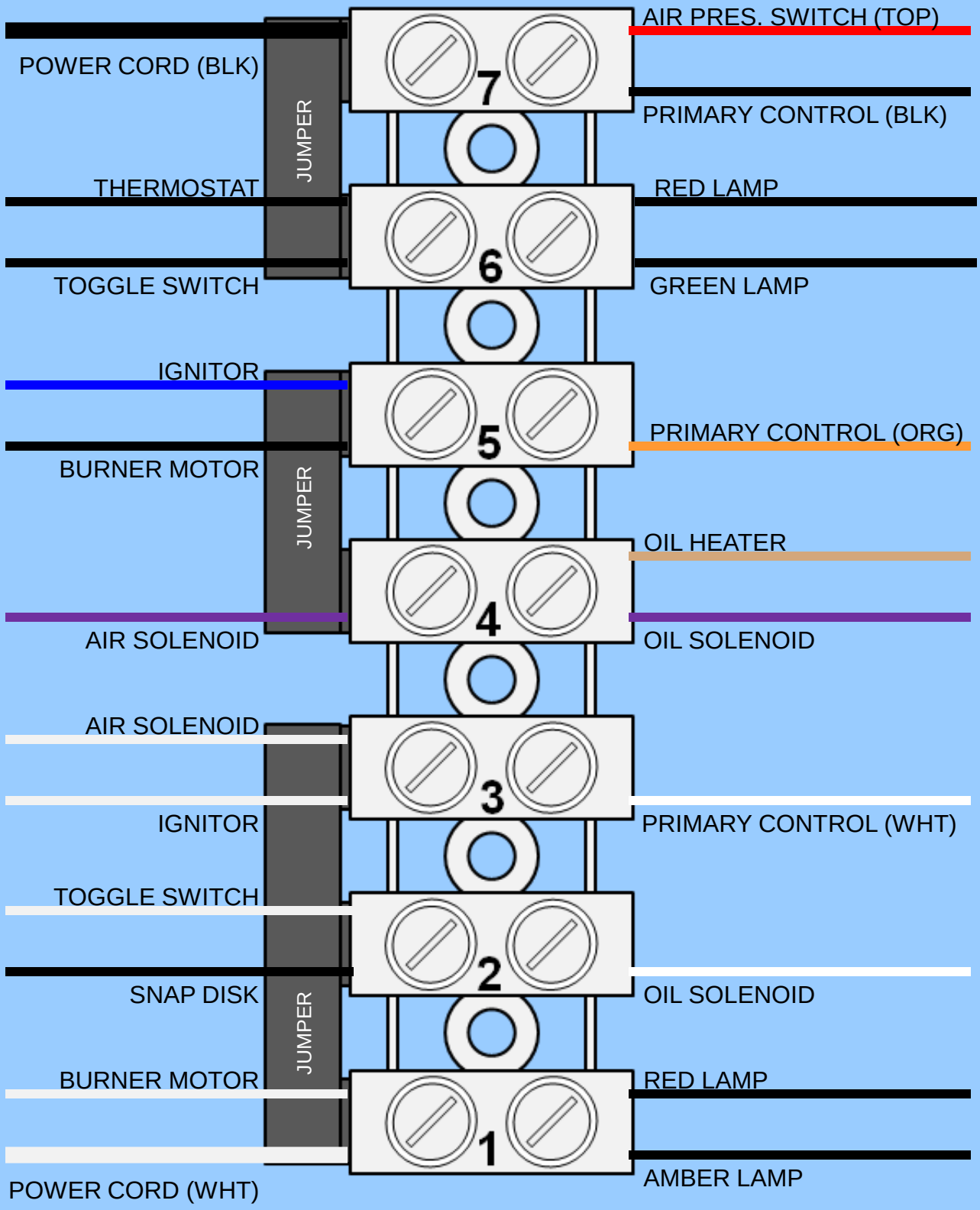


Caution: When adjusting set point levers, hold the scaleplate dial to keep it from turning and straining the sensing equipment

Note: For constant fan operation, slide manual fan switch to "MAN". For fan to cycle automatically, set switch to "AUTO".

Figure 31

KAGI TERMINAL BLOCK



Note: Actual wire colors may differ

Figure 32

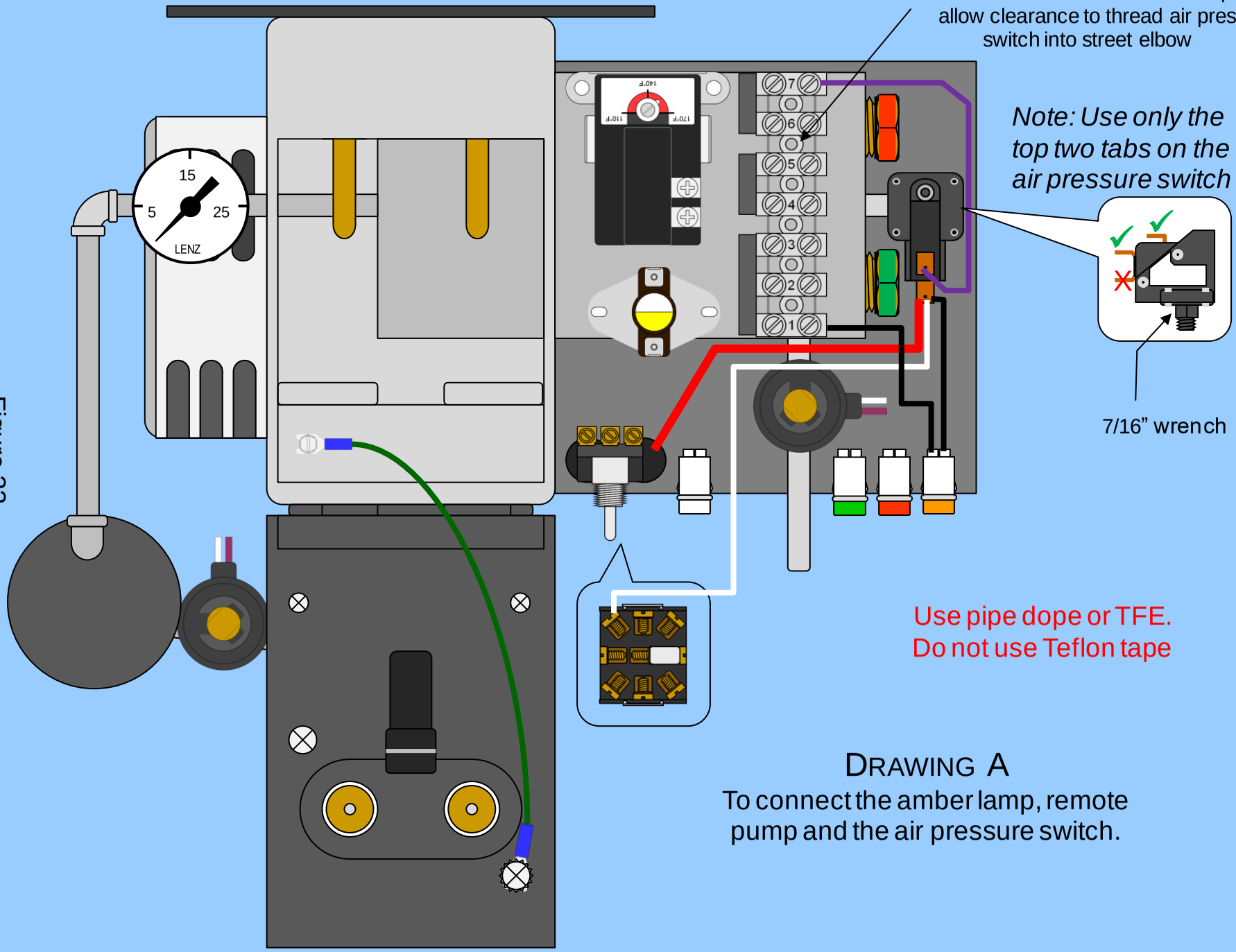


Figure 33

DRAWING A

To connect the amber lamp, remote pump and the air pressure switch.

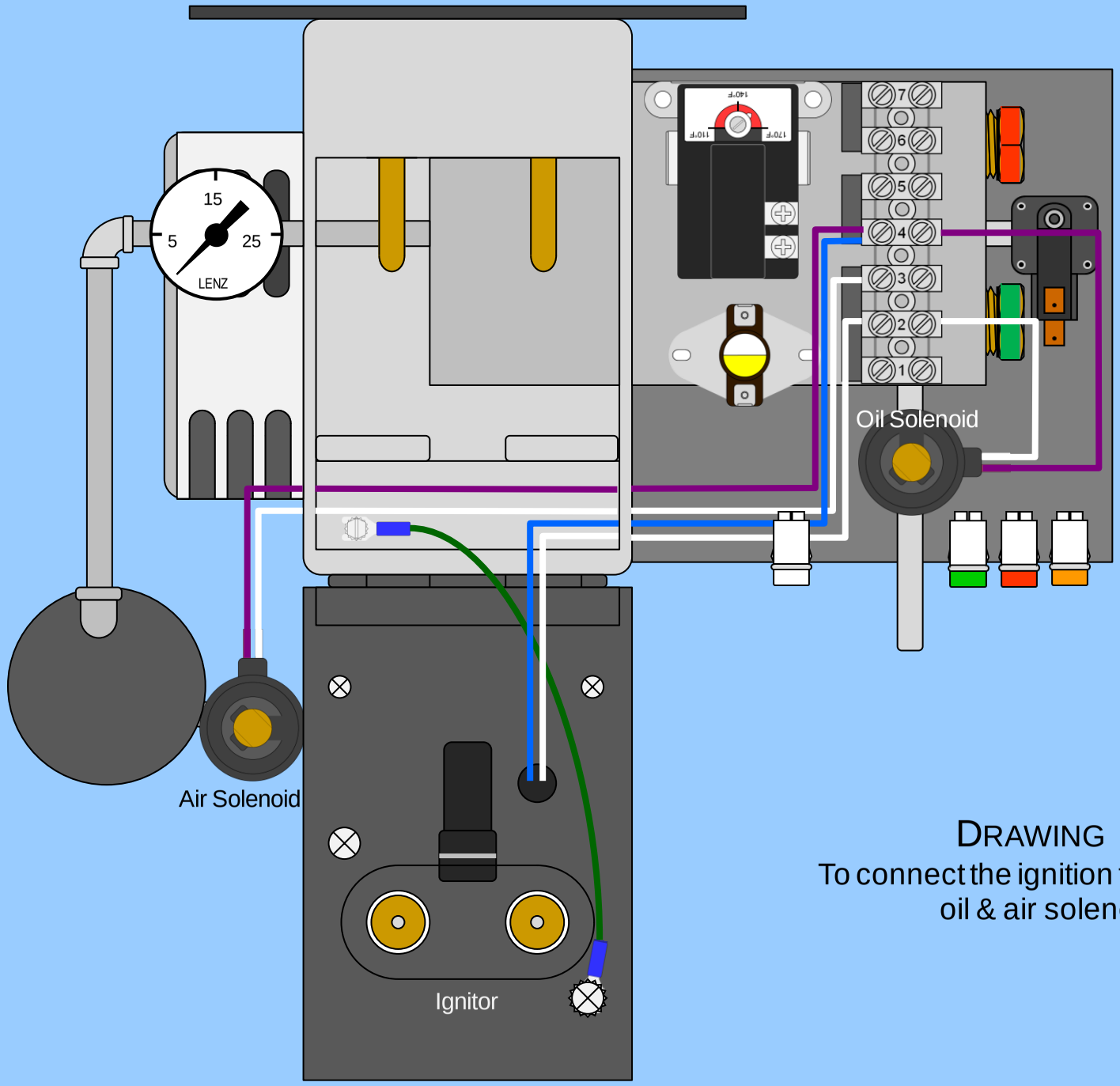


Figure 34

DRAWING B

To connect the ignition transformer,
oil & air solenoid

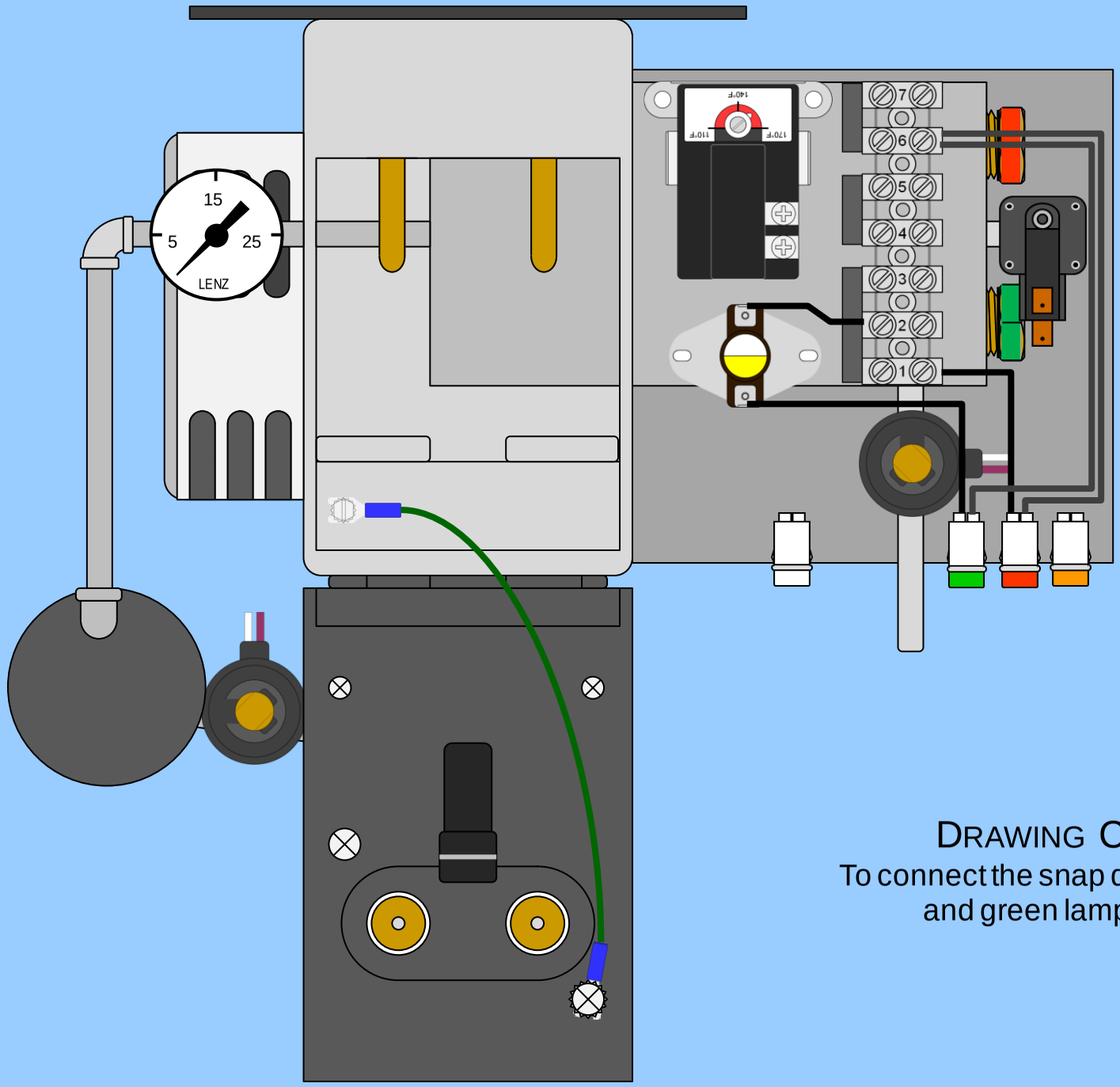


Figure 35

DRAWING C

To connect the snap disk, red and green lamp.

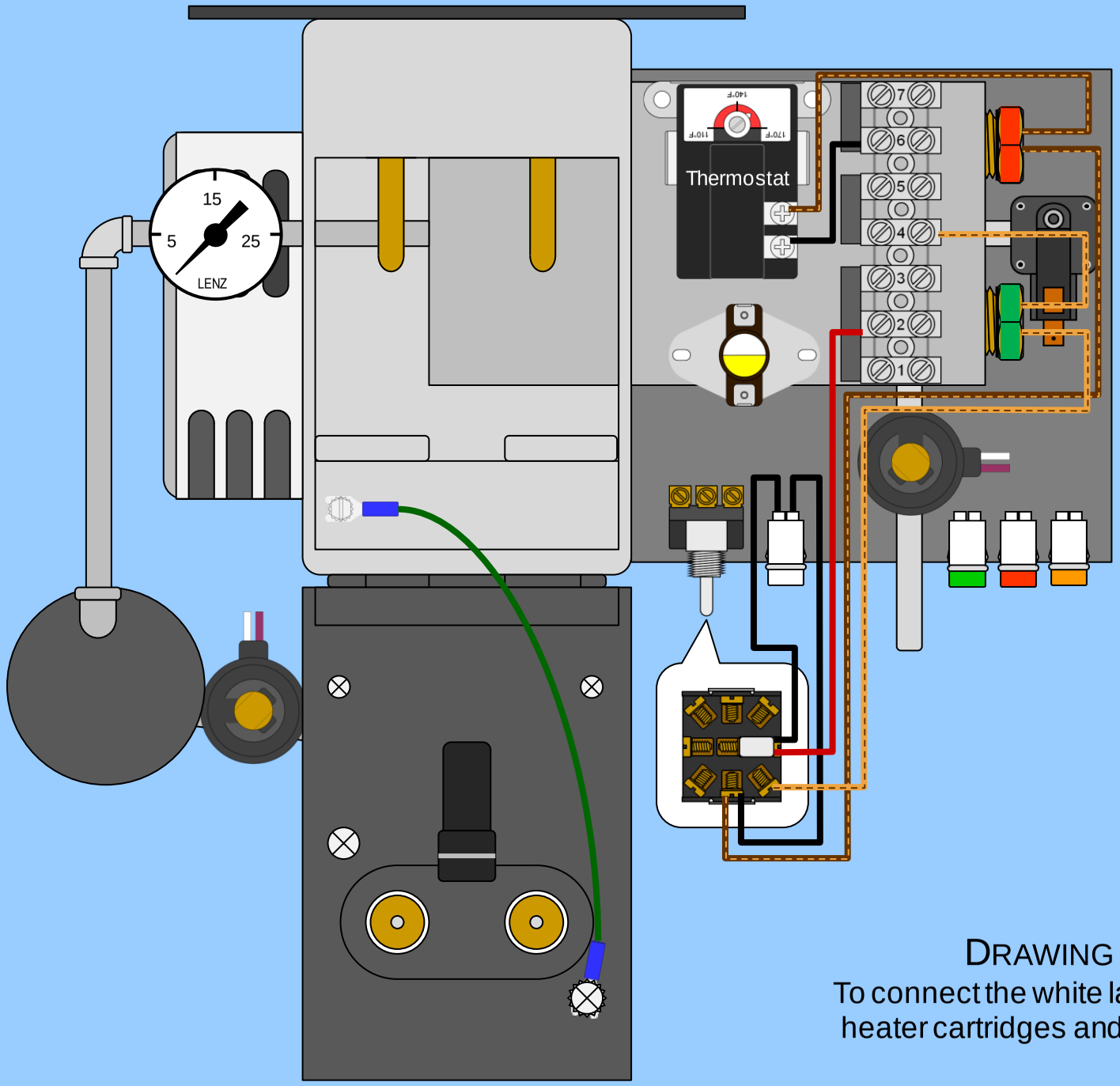


Figure 36

DRAWING D

To connect the white lamp, air & oil heater cartridges and thermostat.

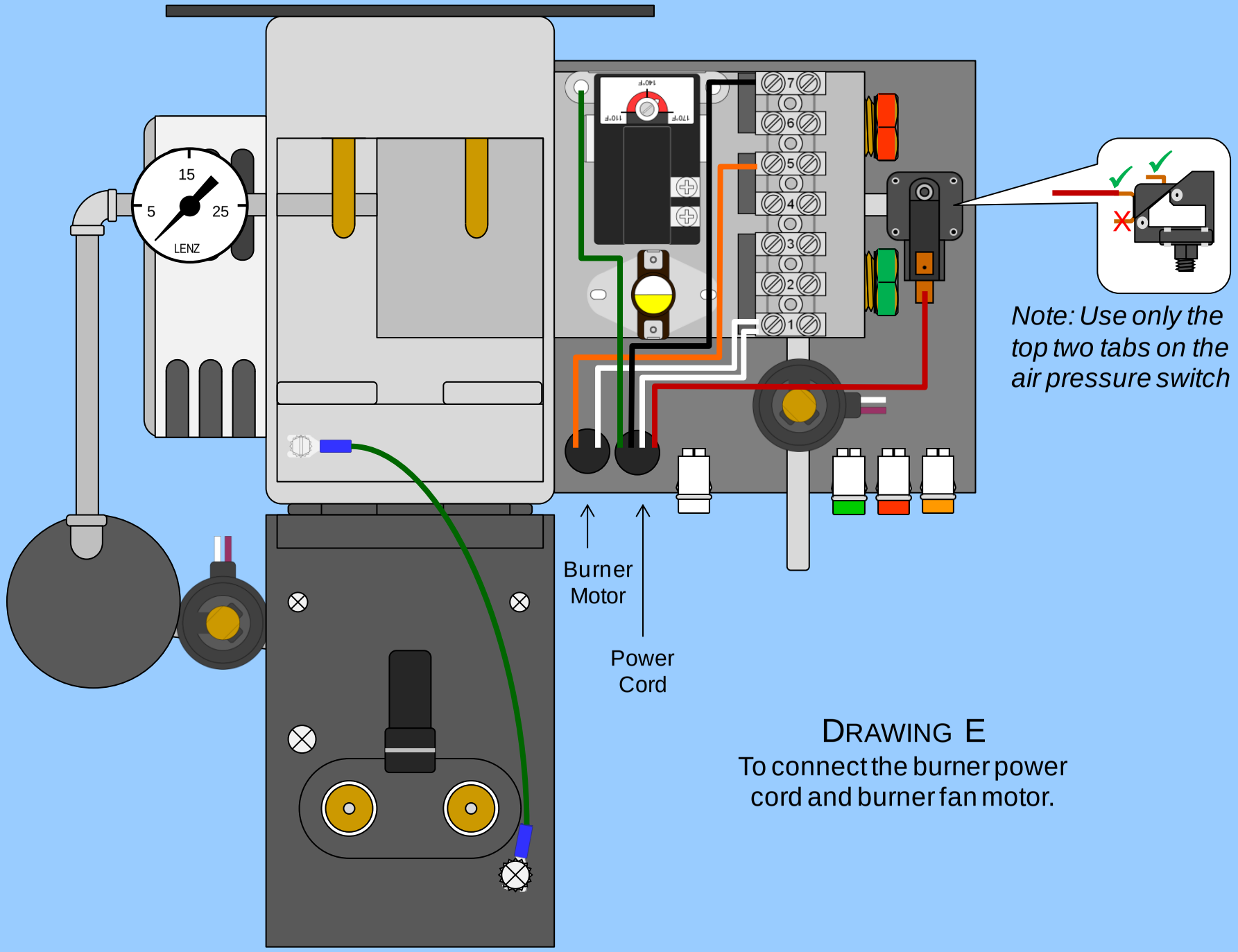


Figure 37

DRAWING E

To connect the burner power cord and burner fan motor.

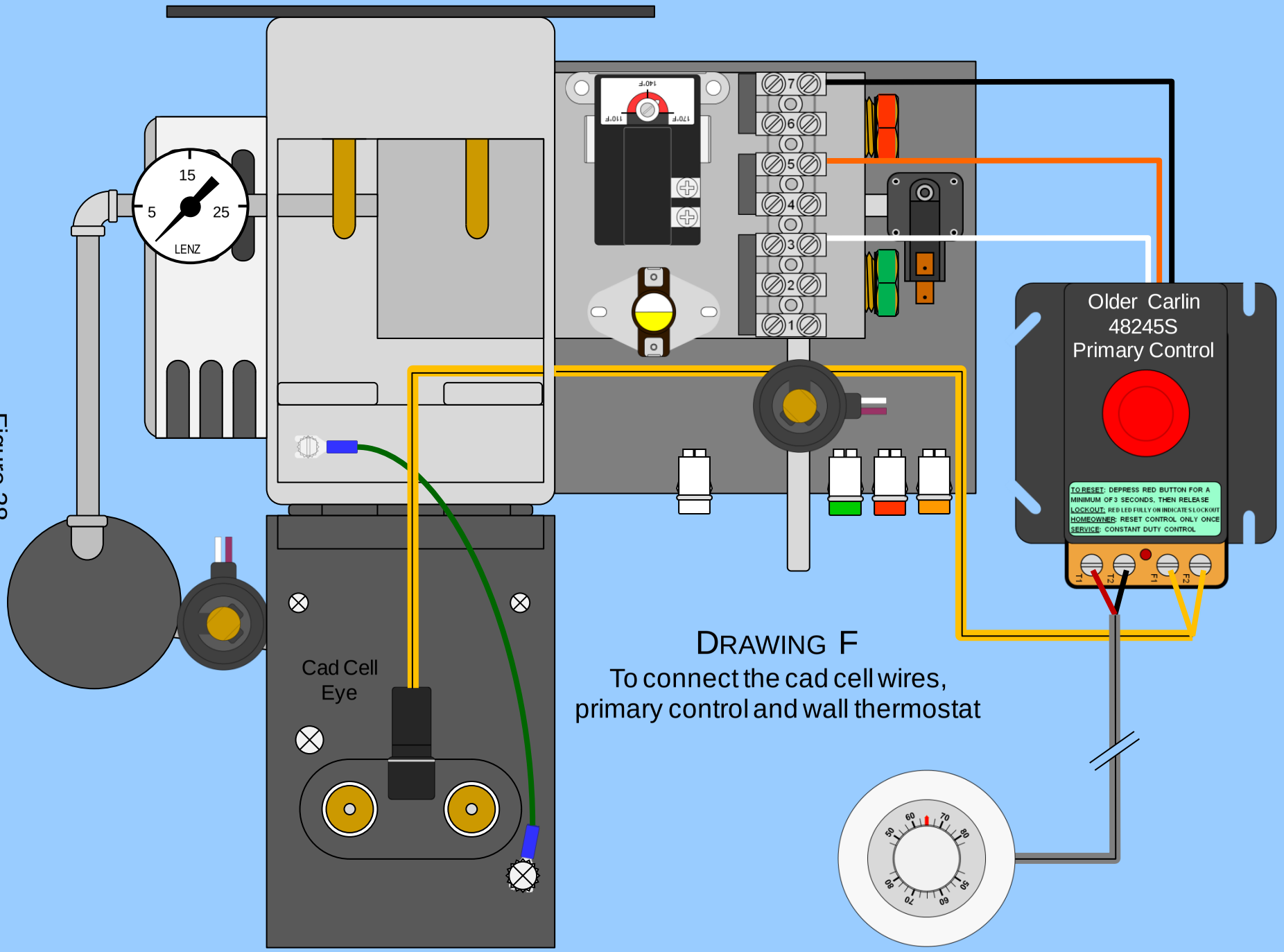


Figure 38

DRAWING F

To connect the cad cell wires, primary control and wall thermostat

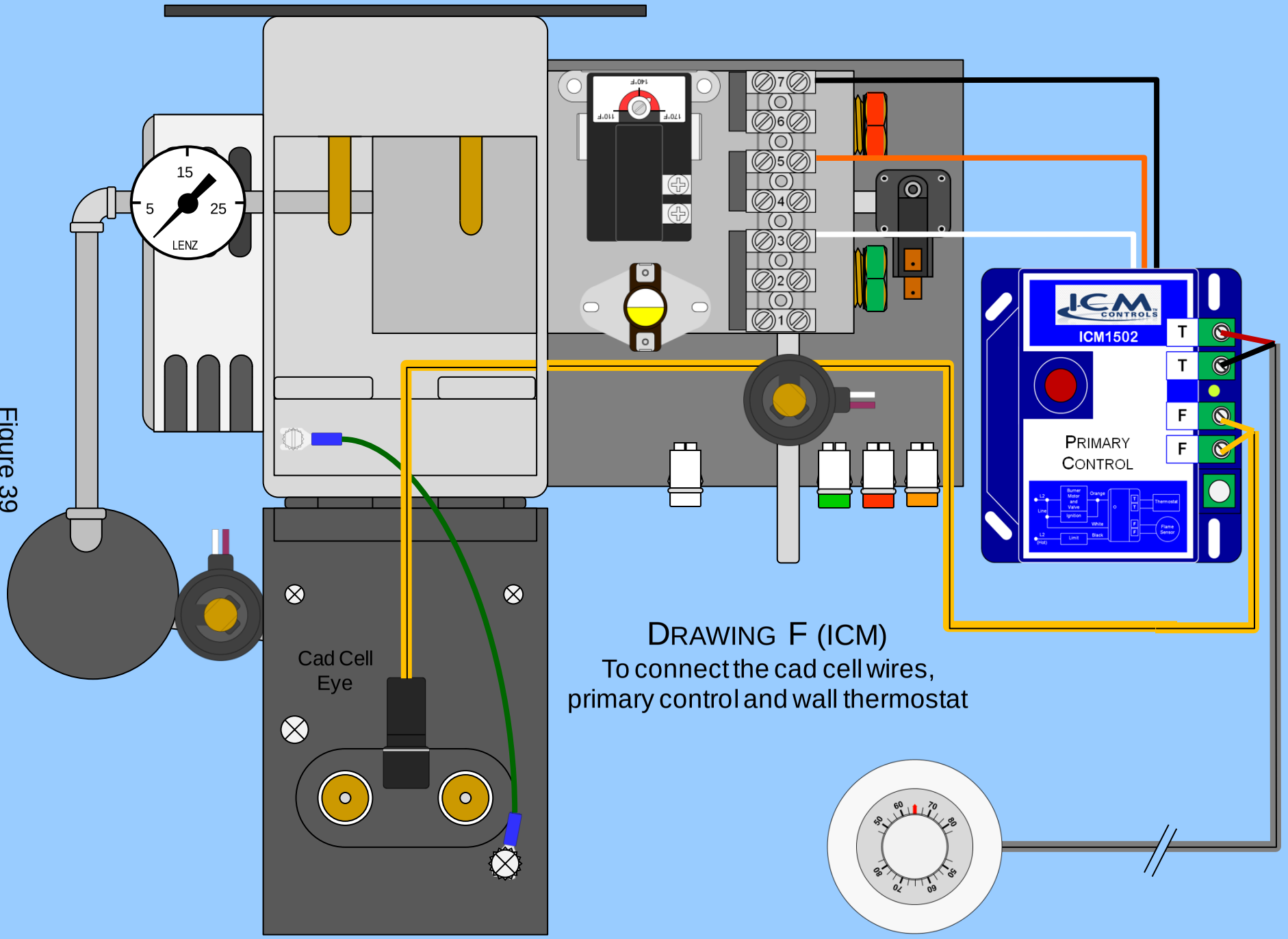


Figure 39

DRAWING F (ICM)

To connect the cad cell wires, primary control and wall thermostat

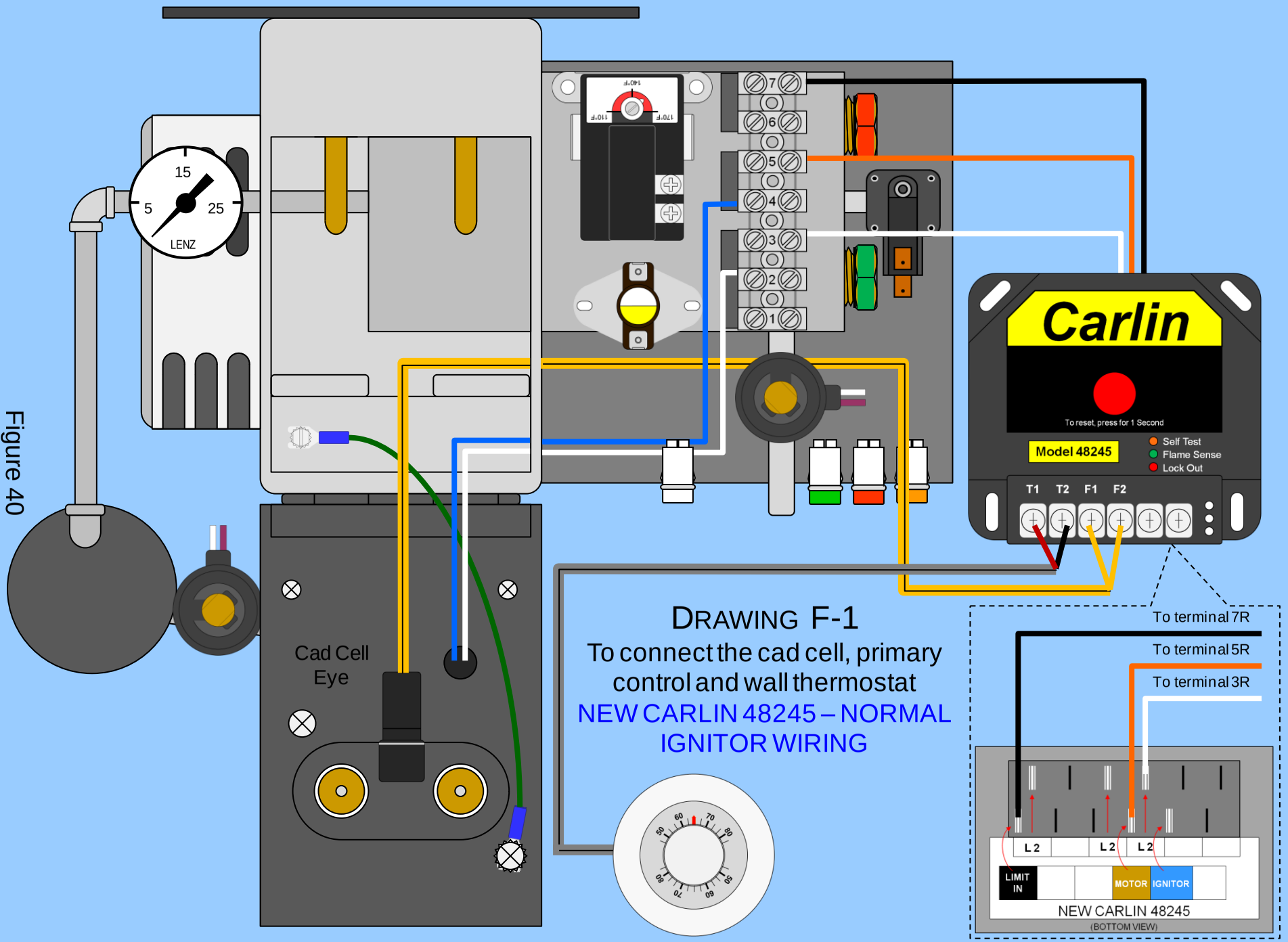
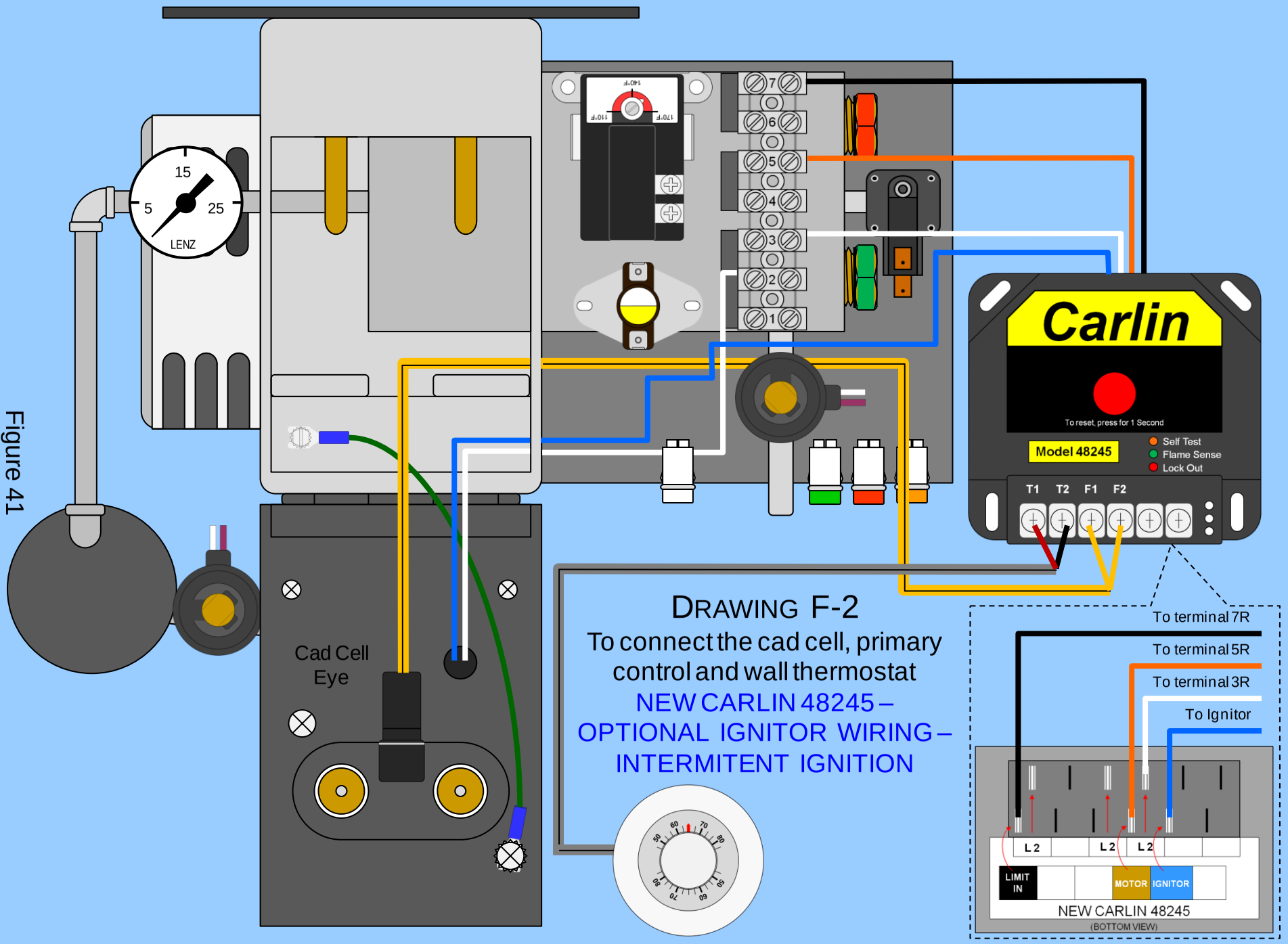
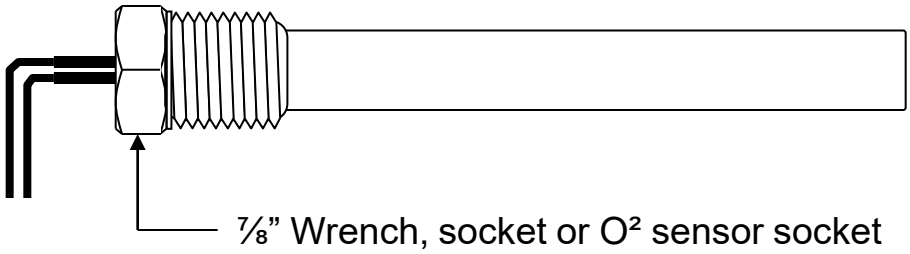

Carlin
To reset, press for 1 Second
Model 48245
Self Test
Flame Sense
Lock Out
T1
T2
F1
F2
LENZ
Cad Cell Eye
DRAWING F-1
To connect the cad cell, primary control and wall thermostat
NEW CARLIN 48245 – NORMAL IGNITOR WIRING
To terminal 7R
To terminal 5R
To terminal 3R
L2
L2
L2
LIMIT IN
MOTOR
IGNITOR
NEW CARLIN 48245
(BOTTOM VIEW)

Figure 40

Figure 41


15
5
25
LENZ
Cad Cell
Eye
Carlin
To reset, press for 1 Second
Model 48245
Self Test
Flame Sense
Lock Out
T1
T2
F1
F2
DRAWING F-2
To connect the cad cell, primary control and wall thermostat
NEW CARLIN 48245 –
OPTIONAL IGNITOR WIRING –
INTERMITENT IGNITION
To terminal 7R
To terminal 5R
To terminal 3R
To Ignitor
L2
L2
L2
LIMIT IN
MOTOR
IGNITOR
NEW CARLIN 48245
(BOTTOM VIEW)

Air / Oil Pre-Heater Cartridges

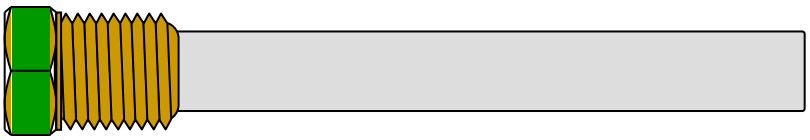


To test with ohm meter:

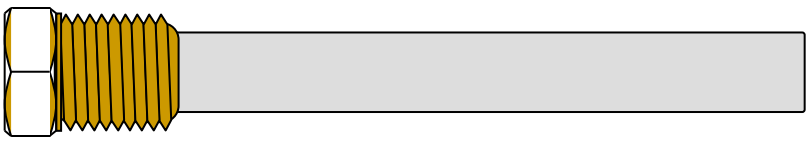
Heater lead to heater lead should read within 10% of values listed below = good cartridge

Under value or an “open” reading = bad cartridge – replace

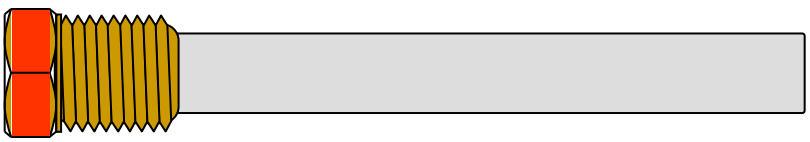
High reading = may be failing - replace



50 watt Oil Pre-heater 288 +/- 10% = 259-316 ohms
Kagi Model S250 Burners (HW150/250)



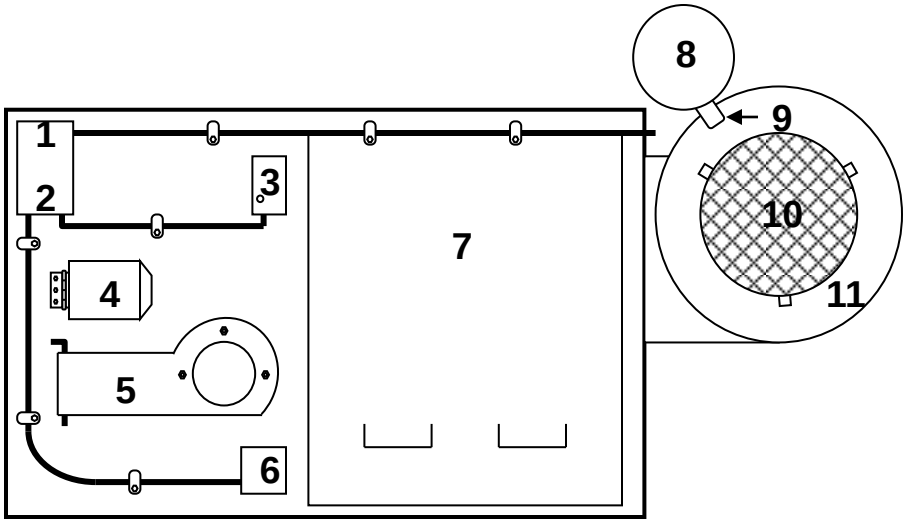
100 watt Oil Pre-heater 144 +/- 10% = 130-158 ohms
Kagi Model S500 Burners (HW350)



250 watt Air Pre-heater 58 +/- 10% = 52-63 ohms
Kagi Model S250 & S500 Burners

Figure 42

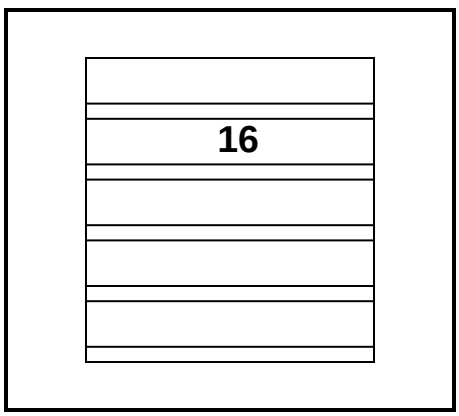
HEATWAVE 150 / 250 PARTS



1. Breaker Box
2. 25A Breaker
3. Fan & Limit Switch
4. Inspection Door
5. Swing-out Bracket
6. 4 X 4 Junction Box
7. Shell Cleanout Door
8. Blower Motor *
9. Motor Mount Bracket
10. Blower screen
11. Blower
12. Drive Pulley
13. Driven Pulley
14. Blower Guard
15. Belt
16. Louvres
17. Lt. Pot Cleanout Door (not shown)
18. Rt. Pot Cleanout Door (not shown)

Note: For burner parts see Kagi manual

* ***DO NOT*** *replace blower motor with farm duty or manual reset model*



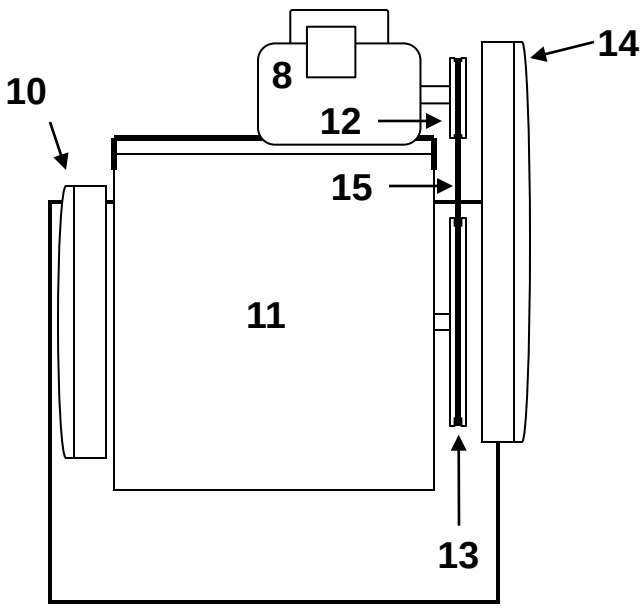
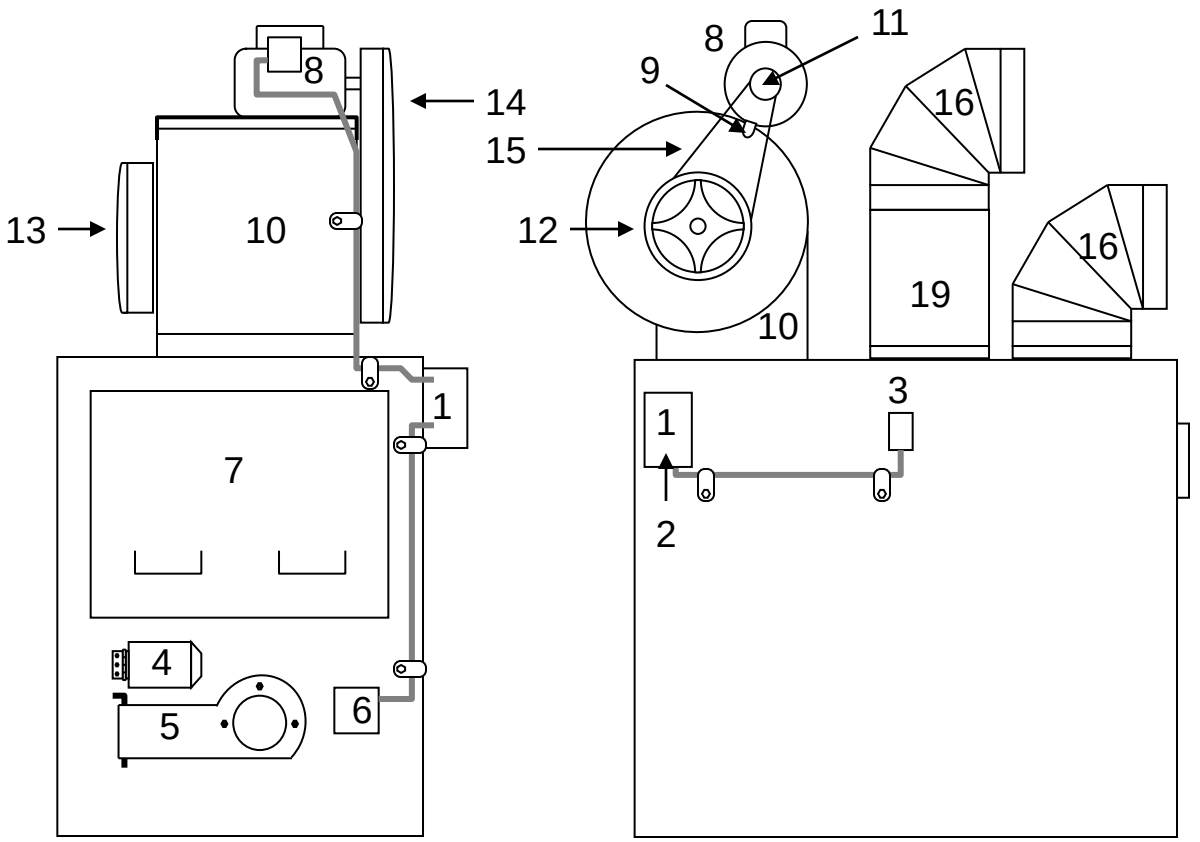


Figure 43

HEATWAVE 350 PARTS



Note: For burner parts see Kagi manual

1. Breaker Box
2. 25A Breaker
3. Fan & Limit Switch
4. Inspection Door
5. Swing-out Bracket
6. 4 X 4 Junction Box
   (burner cord safety disconnect)
7. Shell Cleanout Door
8. Blower Motor
9. Motor Mount Bracket
10. Blower
11. Drive Pulley
12. Driven Pulley
13. Blower Guard
14. Belt Guard
15. Belt
16. 12” Elbow
17. Front Pot Cleanout Door (not shown)
18. Rear Pot Cleanout Door (not shown)
19. 12” X 12” Elbow Extension

Figure 44

HEATWAVE CLEANING

Caution: Wear industrial dust mask and protective clothing.

Refer to section 7.06 “Seasonal Cleaning” for more information.

1. Turn thermostat to off or set below room temperature and allow furnace to cool completely.

2. Disconnect power from furnace, turn unit breaker to off.

3. Disconnect burner power cord, thermostat wires, air and oil lines and remove burner.

Note: Remove sheet metal screws from access panels prior to panel removal.

4. Remove chimney flue, clean and inspect.

5. Remove left and right shell access panel by lift upward and pulling out.

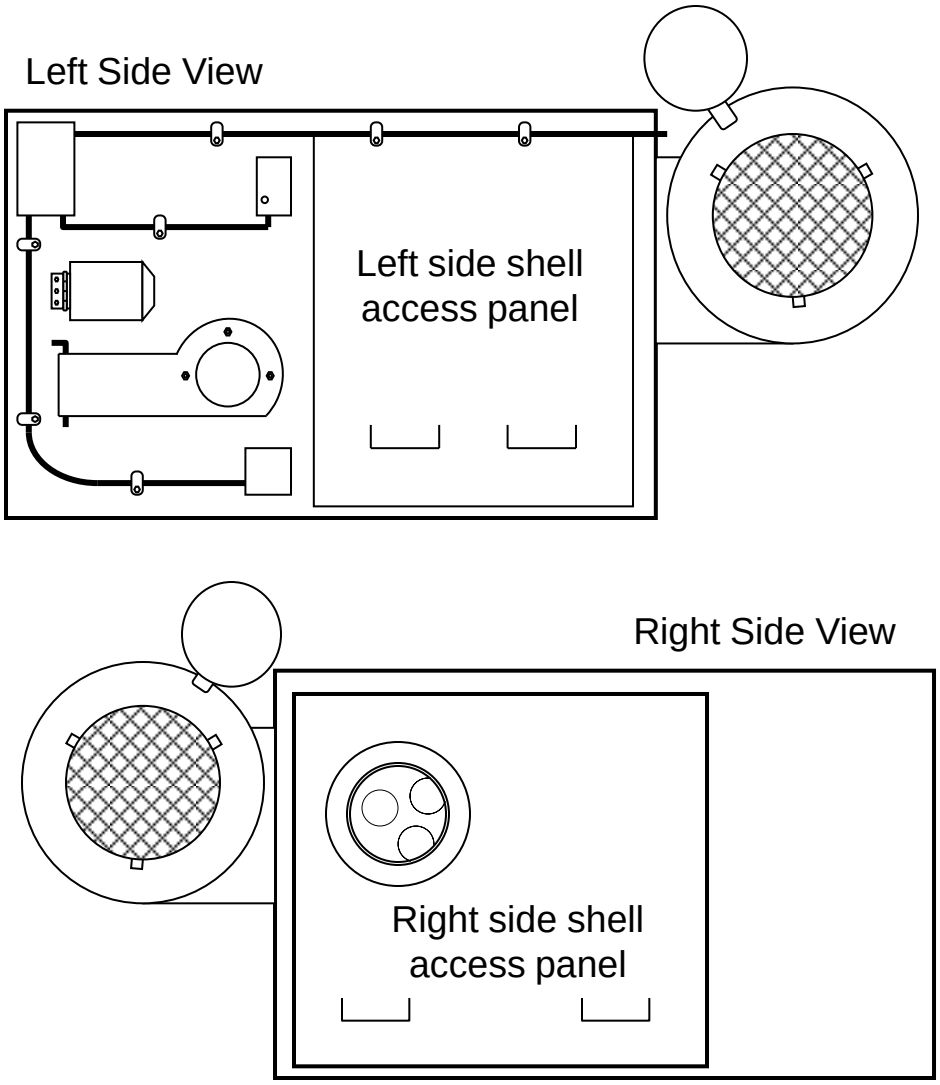


Figure 45

6. Loosen the brass nuts and clamps around left and right clean-out doors.

7. Remove center nut form right side (chimney) door.

8. Remove left and right clean-out doors to expose exchanger tubes and combustion chamber.

9. Clean all dust and residue with a shop vac. Gentle brushing may be required to remove dust and build up.

10. Check for “clinkers” and other build-up by the burner tube.

11. Inspect fiber gasket material on the clean-out doors and the left side tube area, replace as required.

12. Assembly is the reverse of the disassembly.

Note: Replace the doors carefully, making sure of a good seal. Light tapping around the perimeter of the doors with a mallet or dead blow hammer will help to ensure a good seal. There should be NO combustion chamber air leaks.

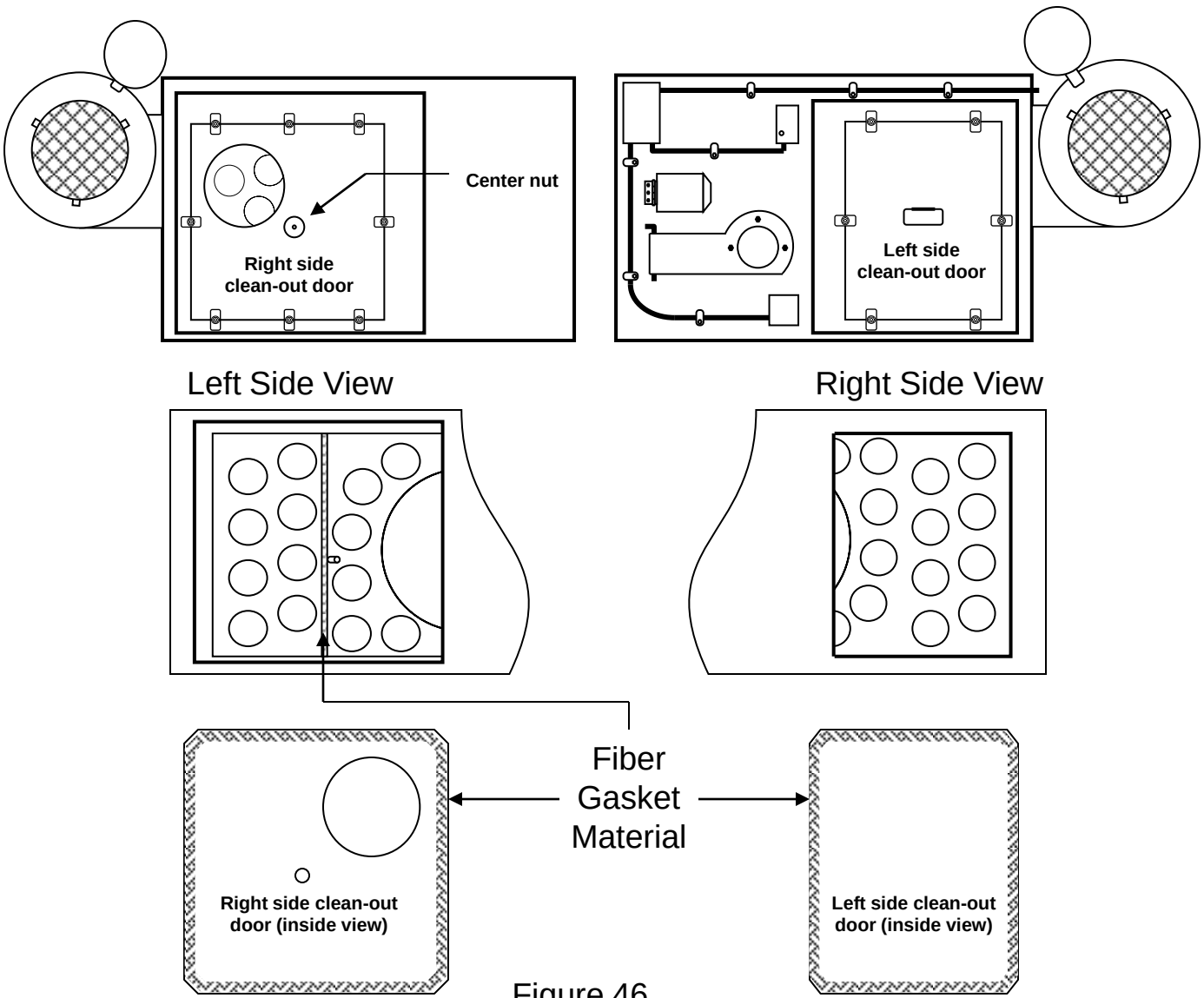


Figure 46

DO NOT OPERATE WITH BELTGUARD REMOVED

CAUTION

HOT

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

WASTE OIL SPECIFICATIONS

CAUTION: Never burn Gasoline, Cleaning Solvents, printing fluid, brake fluid or any flammable hydrocarbons in the burner. Do not attempt to burn crude oil or garbage.

FUEL USE: # 1 & # 2 Fuel Oil, used (ATF) transmission oil and used motor oils up to 50 S.A.E.

FIRING RATE: Never exceed 1.3 GPH on the model HW150, 2.0 GPH on the model 250 and 3.25 GPH on the model HW350

ELECTRICAL: Furnace is wired for 115 Volt, 60 Hz, with a 24 Volt thermostat. Use copper wire. Provide a separate 25 Amp service to the furnace. Meet National Electrical Code NFPA # 70 and all state and local codes.

Figure 47

CAUTION

Minimum clearance to combustible material is 12” from the side walls, 18” from the top. If floor mounted, set on a non-combustible flooring material. Do not block or have anything obstructing the incoming air at the blower.

The minimum circuit amperage is 10 amp.

The maximum rating of circuit protective device is 25 amps. Rev. 1

Use copper conductors only.

Do not obstruct the outlets on the heaters. These are designed for maximum output. For duct connection maintain a lower static pressure in duct than in heater.

START UP PROCEDURE

1. **Turn off electrical supply.**
2. **Fill the fuel supply tank above the fuel supply check valve.**
3. **Check for proper chimney draft. (.02)**
4. **Check the combustion air setting on the burner.**
5. **Turn main electrical service on.**
6. **Push reset button on the primary for three seconds.**
7. **Prime fuel supply.**
8. **Adjust air pressure regulator to 12 PSI or above.**
9. **Set toggle switch to “Pre-heater On” if you are burning waste oil, leave off if you are burning regular fuel oil.**
10. **Wait for “Green Light” plus 10 minutes to preheat the oil to operating temperature.**
11. **Turn up thermostat, burner should fire. (Failure - see troubleshooting)**
12. **Check air pressure.**
13. **Adjust flame length by adjusting oil pressure and air band. Flame should reach ⅔ - ¾ of the way across heat exchanger.**

Figure 48


WARNING
FIRE AND EXPLOSION HAZARDS
CAUTION: Never burn gasoline, cleaning solvents, paint thinner, brake fluid or any flammable hydrocarbons in the burner. Do not attempt to burn crude oil or garbage.
FUEL USE: # 1 & # 2 fuel oil, used automatic transmission fluid (ATF) and used crankcase oils up to 50 S.A.E.


CAUTION
WHEN OPENING INSPECTION DOOR
PORT MAY BE HOT
OPEN DOOR SLOWLY
WEAR SAFETY GLASSES
KEEP FACE AWAY
PROTECT HANDS

Figure 49