

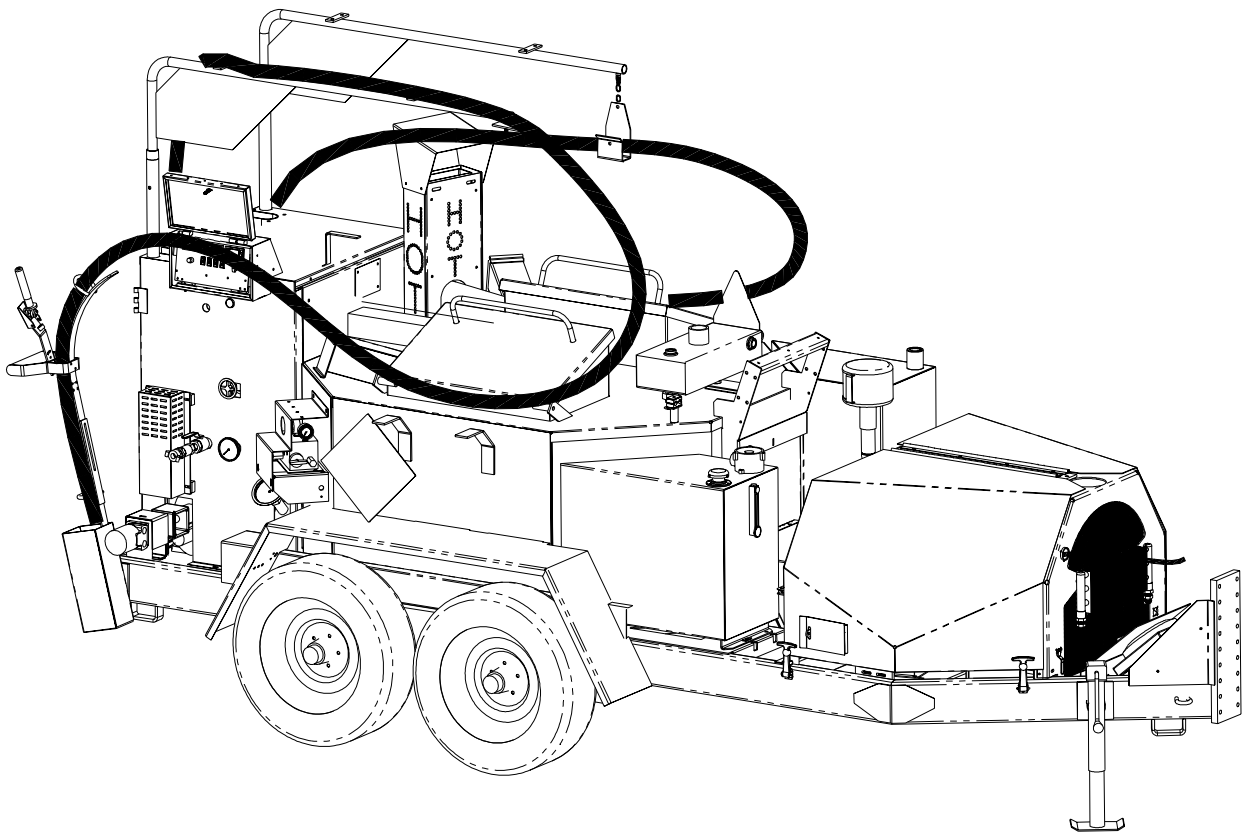


**Melter Applicator**



## **Model 110/230/410 Melter Applicator Owner / Operator Manual**

*(Includes Safety and Service Information)*



2601 Niagara Lane · Plymouth, MN 55447 · (763) 557-1982 · (800) 328-3874 · Fax (763) 557-1971

Part#161024

Revised 5/15/06

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## ***Shipping Papers and Information***

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A packet containing IMPORTANT INFORMATION has been enclosed with your Melter. This packet contains:

- 1) Operation Instructions
- 2) Parts List
- 3) Warranty Information
- 4) Manufacturer's Documents
  - a) Engine
  - b) Material Pump
  - c) Burner (Diesel only)
  - d) Parts/ Wiring Manual

**IMPORTANT:** This manual contains the basic information required to operate, maintain and repair the CIMLINE Melter you have purchased. The use of this manual insures accurate adjustments, operation and proper lubrication of your equipment. Please keep it handy.

Any parts orders or service problems relating to CIMLINE equipment should be directed to the CIMLINE Parts Department at either (763) 557-1982 or (800) 328-3874. When ordering parts, please have the following information available.

Serial Number: \_\_\_\_\_

Model Number: \_\_\_\_\_

Engine Model (H.P.): \_\_\_\_\_

Engine Manufacturer: \_\_\_\_\_

Pump Number: \_\_\_\_\_

Replacement Part Number(s): \_\_\_\_\_

# Safety Notes

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**PLEASE READ AND UNDERSTAND ENTIRE OPERATORS MANUAL BEFORE PROCEEDING**

**WARNING: Protective clothing must be worn. Refer to ANSI Regulations:**



- 1) Wear gloves with wristlets.
- 2) Wear long sleeve shirt with sleeves rolled down and cuffs buttoned.
- 3) Wear a face shield.
- 4) Load Melter from ground level.
- 5) Keep material door closed at all times except when adding material.
- 6) Never stand on any part of the machine.
- 7) Do not pull, twist, stretch or kink the material hose.
- 8) Do not operate without safety cover on hose.
- 9) Do not touch exhaust stacks or mufflers.
- 10) Wear heavy leather boots or shoes.
- 11) Wear long pants with no cuffs.

**WARNING: Do not over fill the melting tank. For best results, add only as much material as required for the job or a maximum of 75% of tank capacity. (Model 110 - 78 gallons, Model 230 - 168 gallons & Model 410 - 308 gallons).**



**WARNING: On a new Melter applicator or a unit that has been idle for some time, slowly raise the oil temperature to 250° F and hold there for approximately 20 to 30 minutes. This will help get rid of any condensation that may be in the oil chamber.**



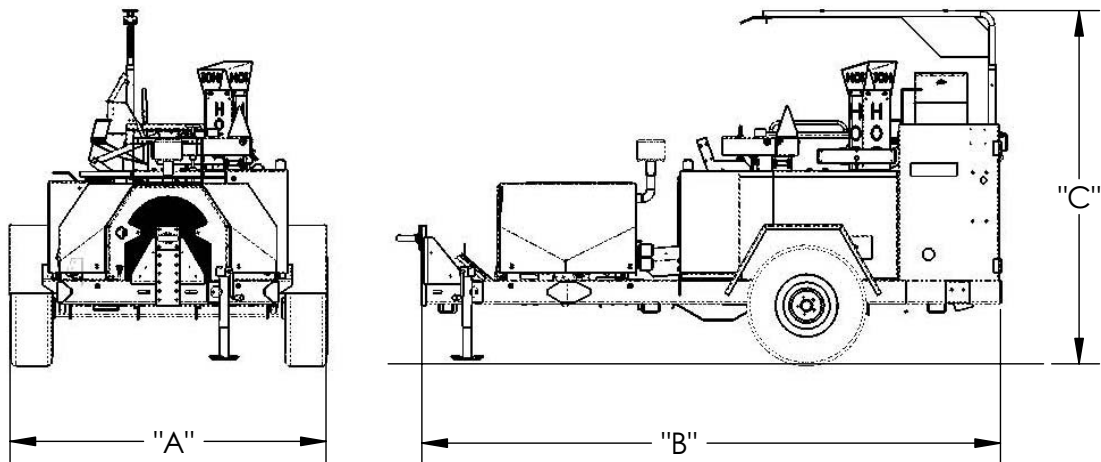
**WARNING: Never leave machine unattended while it is running.**



## Dimensions and Weights

Model Number	"A" in/cm	"B" in/cm	"C" in/cm	Weight lbs/kg (empty)
110	83.5/212.1	150/381	89.5/227.3	3900/1770
230	80.5/204.5	170/431.8	87.5/222.3	4500/2041
410	90/228.6	183/464.8	90/228.6	5800/2631

Model 110 Shown



# ***Operating Sequence***

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## ***Diesel Units***

**NOTE: This step by step procedure is only an outline. Refer to the page(s) indicated for complete instructions.**

<b>PROCEDURE:</b>	<b>PAGE</b>
1) Start engine per engine operating instructions.	11
3) Set temperature controller(s).	13
4) Make sure tank outlet, sealing hose, and air cleanout valves are closed.	8-9
5) Open Thermal Regulating Gate if cabinet heating is required.	14
6) Ignite burner.	13
7) Allow oil temperature to reach approximately 250° F ( 121° C).	
8) Regulate cabinet temperature.	14
9) Start agitation.	15
10) Add material, typically 2-3 biscuits if tank is empty.	15
11) Allow for sufficient melting.	16
12) Start material pump.	16
13) Close Thermal Regulating Gate.	14
14) Attach sealing wand extension and adjust flow.	16-17
15) Begin sealing procedure.	16-17
16) 10-15 minutes before the end of the work day, return temperature control knobs to zero.	20
17) Clean out Melter.	20

## Operating Sequence

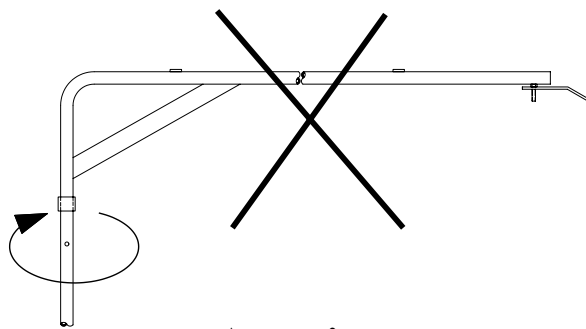
**NOTE:** When leaving reheatable material in tank, allow the agitator to run until the oil and material temperatures are the same.

PROCEDURE:	PAGE
18) Turn the temperature control box off and shut off engine.	12
19) Coil sealing hose and place in cabinet along with wand (Non-heated hose models only).	14
20) Lock hose boom in tow position.	
21) Always secure sealing wand, sealing hose and hose boom before towing the Melter.	

### Attention!

Do not turn on heated hose controller until material has pumped through the hose!! (This pertains to first start up of a new hose).

On electric hose option only.



**Attention**  
**Do not rotate the boom until the melter and electric hose are up to temperature!**  
**(The swivel must be free to rotate or hose failure may occur.)**

## Controls and Their Functions

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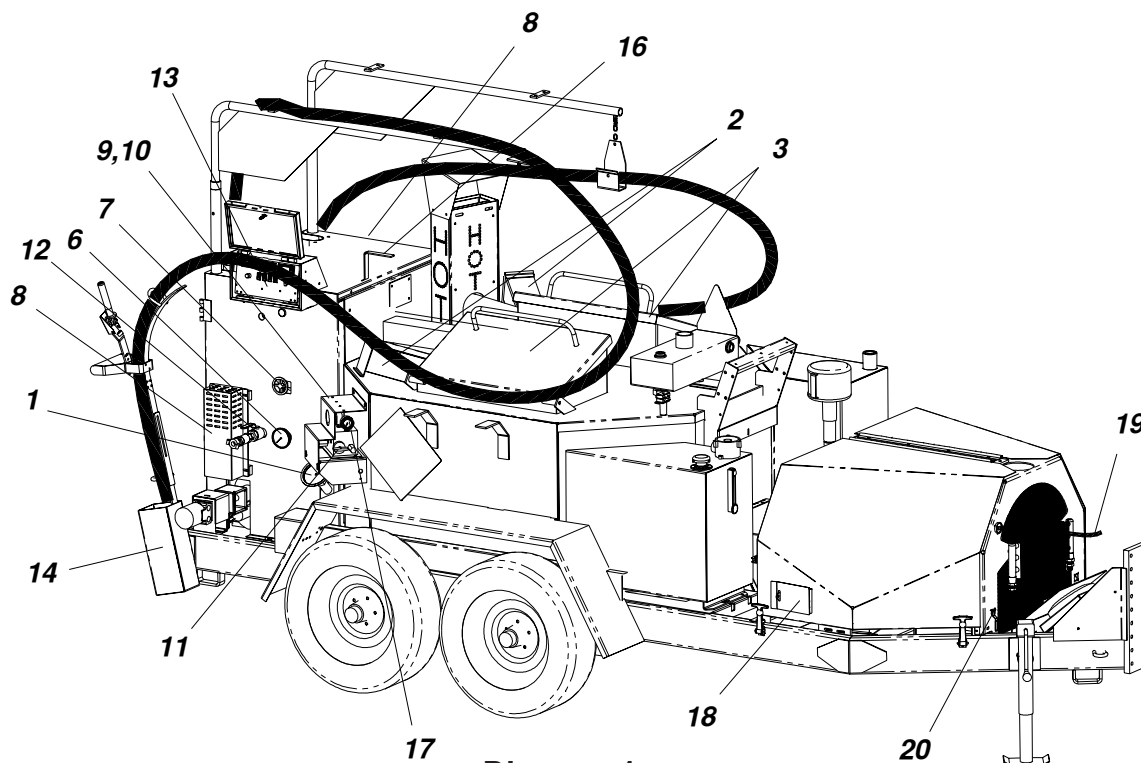
**NOTE:** This general outline will only familiarize you with the machine. Read through the entire manual before putting this machine into operation. (Refer to Diagram 1 on page 9)

- 1) **Tank Outlet Valve:** Allows melted material from the tank to flow into the pumping system.
- 2) **Access Port:** The sealing wand is placed in here when not in use. This allows operator to continue circulating material through the hose to prevent material from cooling and freezing up.
- 3) **Loading Door (2 on Model 230 & 410):** Place the material on safety door to load the melting tank.
- 4) **Oil Temperature Gauge:** Monitors the heat transfer oil temperature.
- 5) **Material Temperature Gauge (optional):** This gauge shows the temperature of material inside the melting tank. This gauge is for reference before pumping starts. Once pumping begins, gauge (6) will be an exact reading of material passing through the system. (Not shown)
- 6) **Material Temperature Gauge:** Reads material temperature as it pumps through plumbing system.
- 7) **Pressure Valve:** This valve controls the flow rate of the material being pumped to the hose and sealing wand by changing the pressure setting. (Turning the valve clockwise will increase the pressure which in turn will increase the flow). During sealing operations, this valve alone can be used to regulate flow.
- 8) **Sealing Hose Valve:** Opening this valve will allow the material being pumped to flow through the hose and sealing wand. The valve should be in the full "on" position during operation to prevent flow restriction.
- 9) **Agitation Drive Control Knob:** Rotate knob counterclockwise to start agitation. Rotate knob clockwise to reverse agitation, which is useful for dislodging material. Center position is neutral.
- 10) **Pressure Gauge:** This gauge measures the pressure required to turn the agitator. By observing this gauge, the operator can tell if the agitator is rotating.
- 11) **Pump Drive Control Knob:** Rotate knob counterclockwise to start material pump for sealing operation. Rotate the knob clockwise to reverse the material flow. Reverse flow is used for system cleanout. Center position is neutral.



## Controls and Their Functions

- 12) **Air Cleanout Valve (optional):** Connect air line or solvent line to this connector to flush out system. This valve should remain closed at all times other than cleanout.
- 13) **Temperature Control Box:** This control allows the operator to set the desired oil and material temperatures. The setting will be maintained automatically.
- 14) **Wand Holder:** On models with the electrically heated hose, the wand is placed into this holder.
- 15) **Cabinet Temperature Gauge:** Indicates the temperature inside the cabinet. Do not exceed 320° F (160° C). If conditions permit exceeding this temperature, open cabinet door.
- 16) **Thermal Regulating Gate:** Lift lever to open gate which will direct hot air to cabinet to heat pump and plumbing.
- 17) **PSI Gauge:** This gauge will tell you the amount of pressure in the hydraulic system.
- 18) **Ignition Access Door:** On Diesel models, lift this door for access to ignition key.
- 19) **Air Hose (Optional):** This hose is on a reel and can be pulled out to a total of 50'.
- 20) **Air Valve (Optional):** Turns the air on and off.



# Starting the Engine

**NOTE: Read the engine instruction manual before starting.**

**Engine RPM is factory set and fixed at 2200 RPM.**

## **Diesel Engine:**

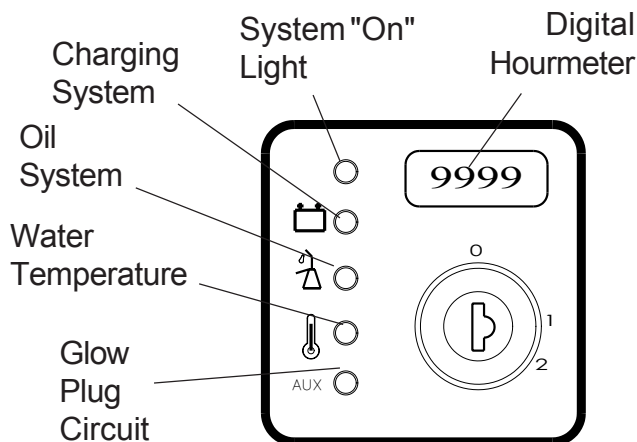
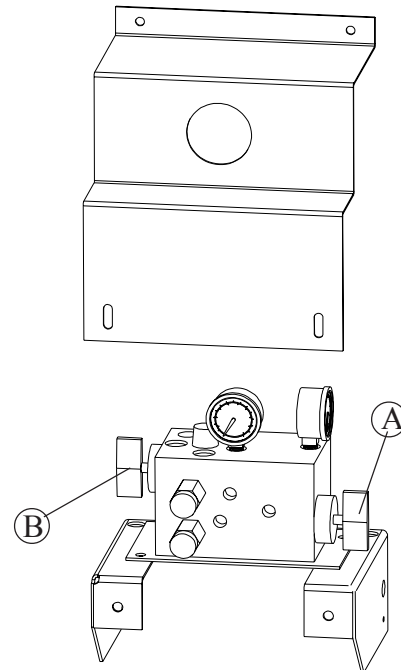
Your Isuzu Diesel Powered Melter is equipped with an electronic shutdown system (see page 10). If the system detects excessive water temperature, low alternator output, or low oil pressure, the engine will automatically shut down. The indicator light that remains on indicates the malfunction. An integral digital hourmeter records engine run time,

The engine must be running before igniting the burner. The burner will only operate if the ignition key is turned on. **DO NOT** turn on burner without engine running. To start engine:

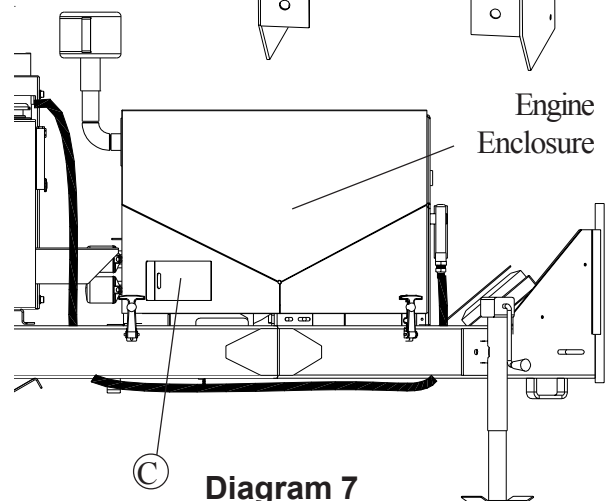
- 1) Place the pump drive (A) and agitation control knobs (B) in the neutral (center detent) position (Diagram 6).
- 2) Open the ignition access door (Diagram 7(C)).
- 3) Rotate the key to position #1 (Diagram 8).
- 4) Wait for system "on" light to finish flashing (about 10 seconds). This is the glow plug heating cycle.\*\*\* (Diagram 8)
- 5) Rotate the Key to the #2 position until the engine starts (Diagram 8).
- 6) If the engine does not start within 6-7 seconds, repeat glow plug cycle.

\*\*\*Glow plug cycle use not required on warm engines.

**Diagram 6**



**Diagram 8**



**Diagram 7**

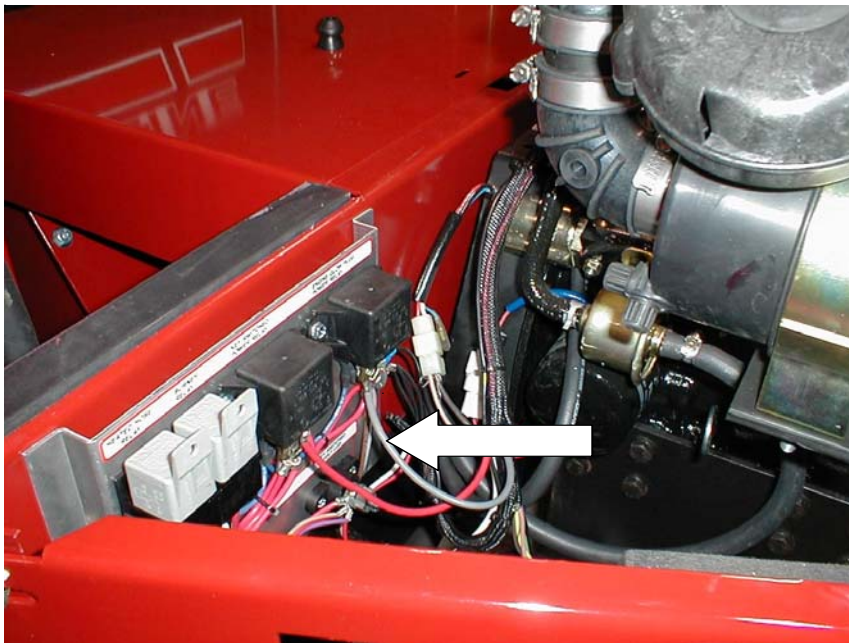
## ***Lofa Shutdown System***

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The Lofa Shut Down System activates the glow plugs for approximately 30 seconds each time the switch is turned to the on position. The glow plugs are rated to handle the current from 45 to 60 seconds. If you cycle the switch repeatedly (for demonstration, testing, or repairing) the plugs may overheat.

If you need to turn the key on and off repeatedly, disconnect the glow plug (heavy grey wire) lead as shown in the diagram. Make sure it does not contact any steel as it will still send current each time the switch is turned on.

When you complete your repair, reconnect the wire.



# Automatic Temperature Control Setting

**NOTE:** On diesel units, the engine must be running before activating temperature control. The automatic temperature control system monitors the heat transfer oil temperature and material temperature (Refer to diagram 11).

- 1) Set the oil controller (A) to 550° F (288° C) (See Setting Temperature Controllers, pg. 17)
- 2) Set the material controller (B) to the recommended material working temperature which is typically listed on the material container.
- 3) On units with heated hose, set the hose controller (C) to the pour temperature.
- 4) Turn rocker switch (D) on. The switch will light up to indicate that the control system is activated. The oil control indicator (F) will light also. The material control light (G) will be on only when burner is running. Lights (D,F and G) should light during a cold start up.
- 5) Turn switch (H) on to activate the heated hose (if equipped). The switch will light up to indicate power is on.
- 6) Hose indicator light (J) will light only when hose is being heated.
- 7) Switch (E) is used to activate remote control sealing wand valve (if equipped).
- 8) Switch (I) is used to activate any optional accessories.

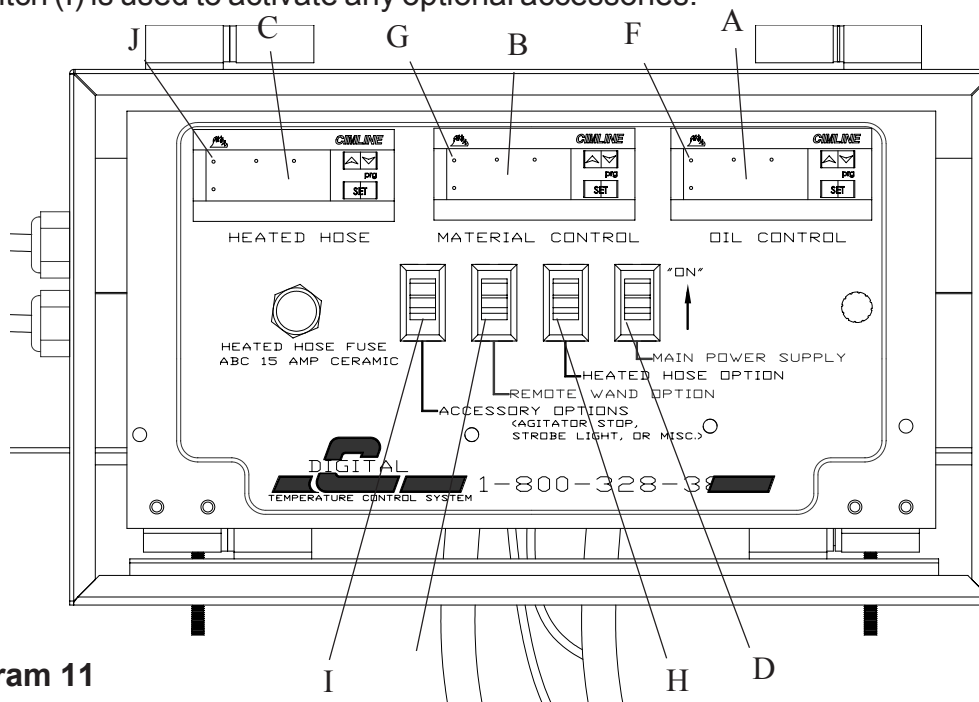
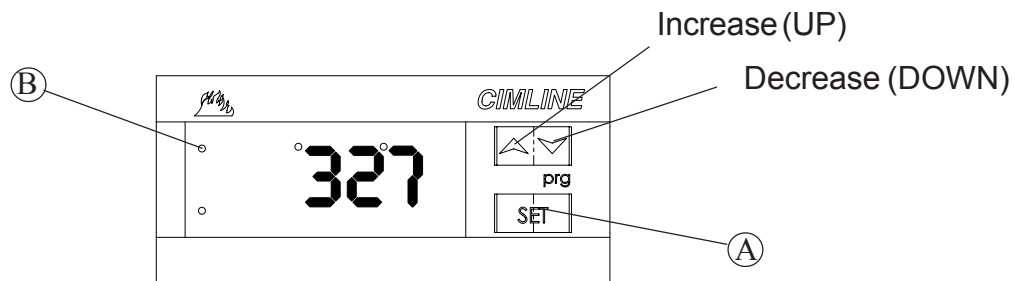


Diagram 11

## Setting Temperature Controllers

- 1) Press and hold set button (A) for 5 sec. Light (B) will turn on while in the setting mode.
- 2) Press "UP" or "DOWN" button until desired temp is shown.
- 3) Press set button (A) , light (B) will turn off and the readout will display actual temperature.
- 4) Indicator light (B) will remain on anytime the burner is running.



**NOTE: Press set button (A) at anytime to display the setpoint temperature.**

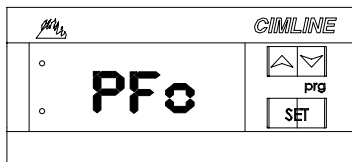
For safety, the high limit settings are locked in at the factory to prevent overheating. The settings are:

Oil Controller- 550° F (288° C)

Material Controller- 450° F (232° C)

Heated Hose Controller- 425° F (218° C)

These settings can be field adjusted for specific applications.  
Consult the factory for instructions.



"PFo" indicates broken or absent probe.

"PFc" indicates short circuited probe.

## Cabinet Pre-Heating

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**WARNING:** Always wear gloves when adjusting the damper.

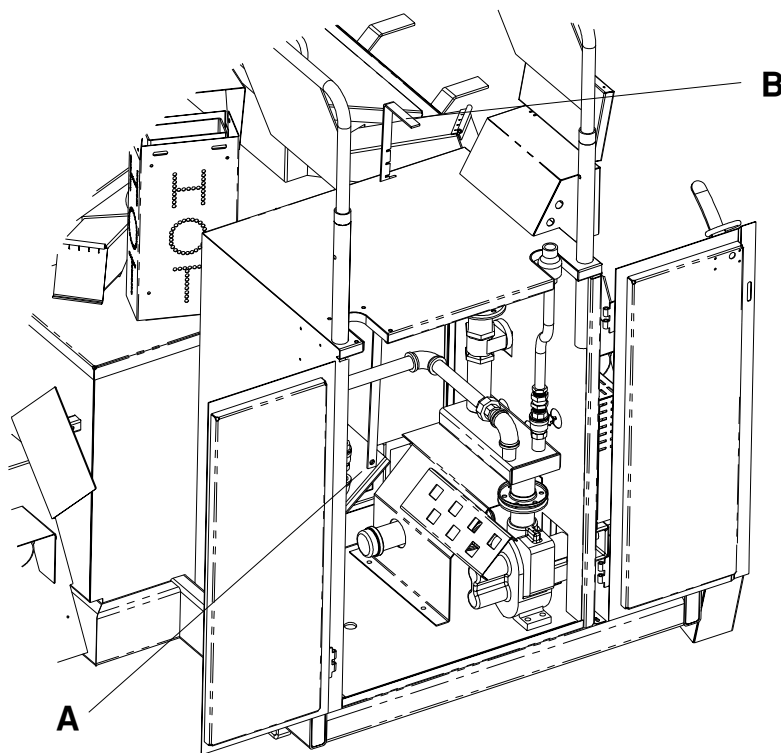


The burner exhaust is equipped with an adjustable Thermal Regulating Gate (A) to help regulate the amount of heat diverted to the cabinet for hose, wand and plumbing preheating. At the end of each day after cleaning out the system, the hose should be coiled and placed in the cabinet. The wand may remain attached as it will fit in the cabinet.

**NOTE:** On units equipped with a heated hose, the hose and wand must remain outside the cabinet.

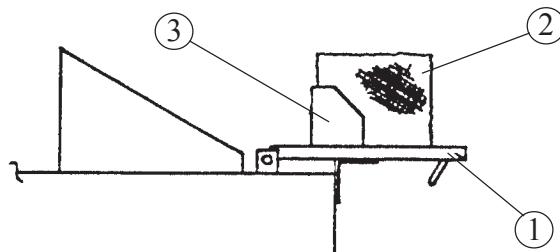
### COLD START-UP

- 1) Open the gate, using the gate lever (B), to the full position. This will force hot air into the cabinet. The temperature gauge installed in the side of the cabinet will measure actual temperature. **Never** allow cabinet temperature to exceed 320° F (160° C). Open the door partially if necessary. Adjust gate or close completely to keep temperature below 320° F (160° C).
- 2) Once the material in tank has started melting and is circulating through the plumbing system, close the gate. This will prevent excessive cabinet temperatures and will divert the heat around the oil for more efficient heating.



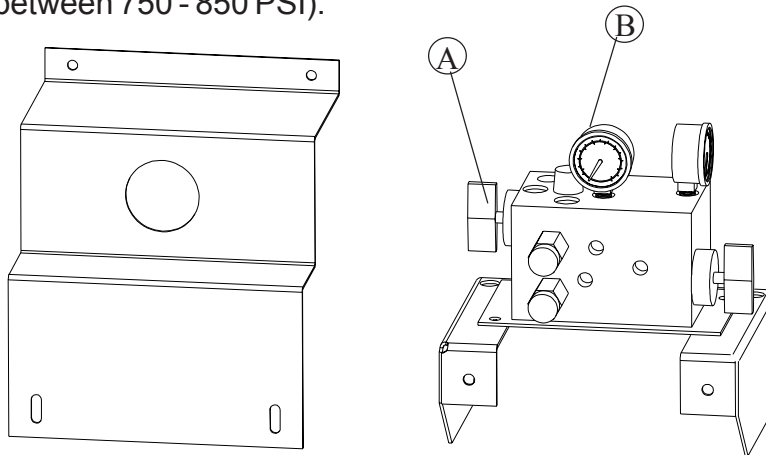
### Loading Empty Tank

- 1) Start agitation by rotating knob (A) counterclockwise.
- 2) Tank outlet valve must be in the "off" position.
- 3) All material must be clean. Keep all foreign matter out of melting tank.
- 4) Open the material door (1) and place slab or biscuit (2) on the open door against the holder (3).
- 5) Push door to the closed position. **DO NOT DROP MATERIAL INTO THE MELTER WITH DOOR OPEN.**



### Material Left in Tank

- 1) When oil reaches 250° F (121° C), rotate knob (A) counterclockwise and observe pressure gauge (B). If the gauge jumps to 1000-1200 psi and remains there with no fluctuation, the agitator is not turning. The oil is going over the relief valve setting. Place knob into neutral position and wait until sufficient melting occurs. (On Model 230 and 410, gauge will vary between 750 - 850 PSI).



# ***Circulation and Pumping Procedure***

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***Refer to Diagram 12 on page 17***

When sufficient material has melted (approximately 4-6 inches liquid on tank bottom) or gone through the heating cycle required for liquid type sealants, begin circulation procedure.

- 1) \*Close air cleanout valve (if equipped) and sealing hose valve (A).
- 2) Turn pressure valve (B) counterclockwise to the full "decrease" position.
- 3) Rotate the material pump drive knob (C) counterclockwise to the normal flow position. If the pump will not rotate, return knob to neutral and continue heating until pump will rotate.
- 4) Open tank outlet valve (D).
- 5) When the material is flowing evenly through the bypass and is at the recommended pouring temperature, stop the material pump drive by returning knob to the neutral position.
- 6) Close thermal regulating gate if still open, and on propane units open stack diverter.
- 7) \*Remove sealing tip, open wand valve (F). Place the wand into the access port.
- 8) Restart the material pump and allow the material to circulate. Turn pressure valve clockwise, "increase" until the engine begins to lug.
- 9) \*Open sealing hose valve to the full "open" position.
- 10) When the material is flowing freely through the sealing hose and wand, place material pump drive knob to the neutral position to stop pump.
- 11) Turn wand valve "off".
- 12) Remove the wand from the access port and quickly install the appropriate sealing tip. Immediately return the wand to the access port.
- 13) \*Open wand valve and start material pump drive by rotating knob counterclockwise.

## **Sealing Procedure**

During the circulation and sealing operations, it is important to monitor the material temperature gauge as the material circulates through the plumbing system. The material should not exceed the manufacturer's recommended pouring temperature.

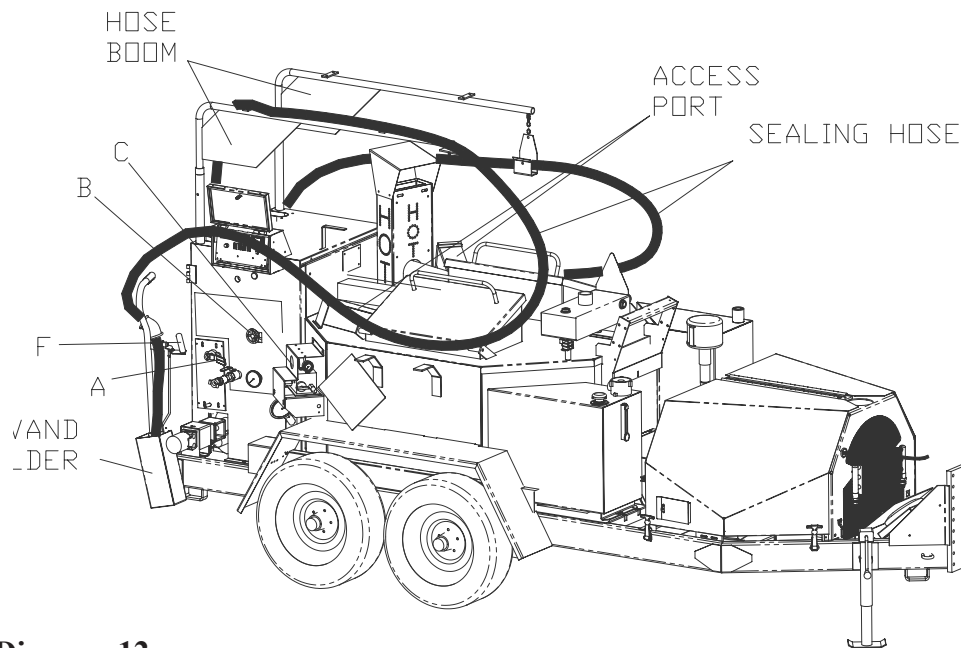


## Sealing Procedure

- 1) \*Turn wand valve (A) "off" and remove the wand from the access port until you can see the sealing tip.
- 2) Open wand valve to the full "on" position and observe the material as it flows into the tank through the access port.
- 3) Adjust the pressure valve (B) until the flow rate appears to be correct for the size crack or joint to be filled.
- 4) Turn the wand valve "off" and proceed to the crack or joint to be filled.
- 5) Place the sealing tip into the joint, open the wand valve to the full "on" position and begin sealing by dragging tip through the joint.
- 6) If the flow rate is incorrect, repeat steps 1 through 3 until the desired flow is achieved.
- 7) As you approach the end of the joint, turn the wand valve "off" to avoid excess spillage.
- 8) To avoid material freezing in the hose, always return the wand to the access port and open the wand valve to allow material to circulate through the hose.

**NOTE: On units equipped with the electrically heated hose option, the wand can be placed in the wand holder instead of the access port.**

\*Does not apply to remote wand model.

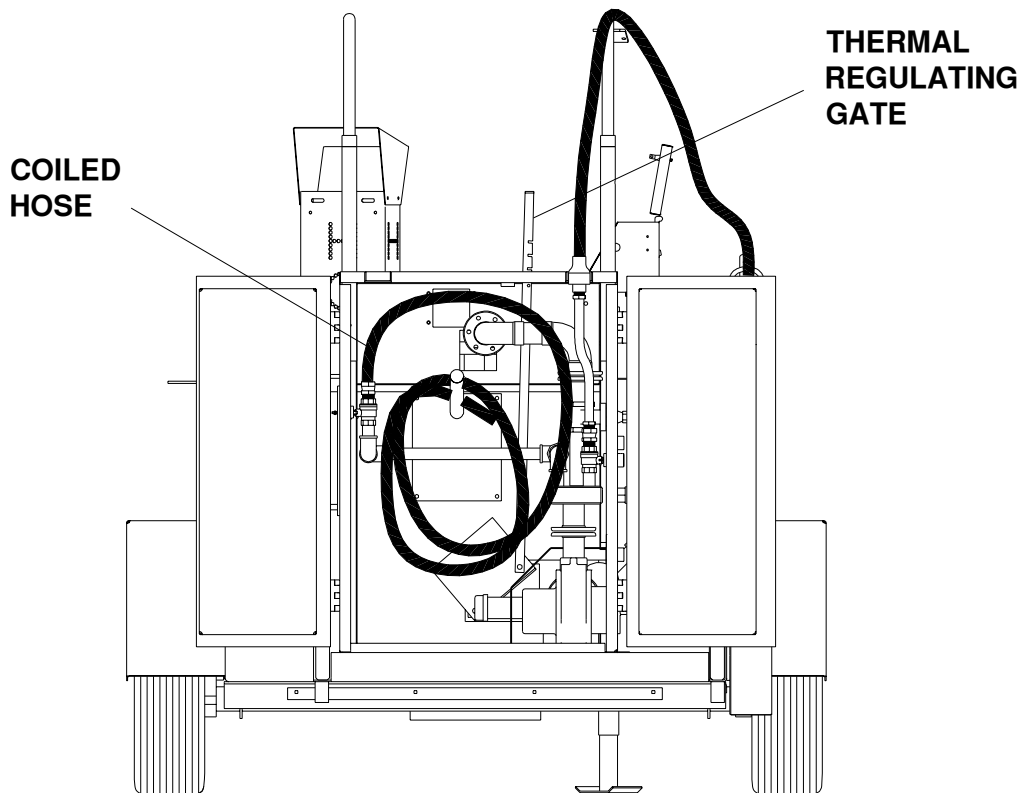


**Diagram 12**

## ***Unplugging a Clogged Hose (Non-Heated Hose Models)***

Regardless of how you store your hose, the residue tends to settle at the bottom of the coils overnight. Each day when the unit is started, the hose must be coiled up and placed in the cabinet during the preheating process, as shown in the picture below. Unless the hose was cleaned with compressed air, you will probably have enough material remaining in the hose to require this procedure.

**NOTE:** Once the Melter is up to operating temperature, the burner typically does not cycle often enough to get the cabinet to the required temperature to unplug the hose.



On cold and windy days, it is very important to maintain material flow through the hose at all times. This requires keeping the material up to temperature and returning the wand to the access port anytime the wand will be shut off for more than 30 seconds to a minute. If the hose plugs during sealing operations, one of the following procedures should be followed:

- 1) **Immediately** remove the sealing tip (if you are using one) and insert the wand into the access port. With the sealing hose valve and the wand valve both wide open, turn the pressure valve clockwise to increase the pressure supplied to the hose. Do this until the engine almost stalls. If this does not work, proceed to another method.

**NOTE:** Immediately coil the hose inside the cabinet.

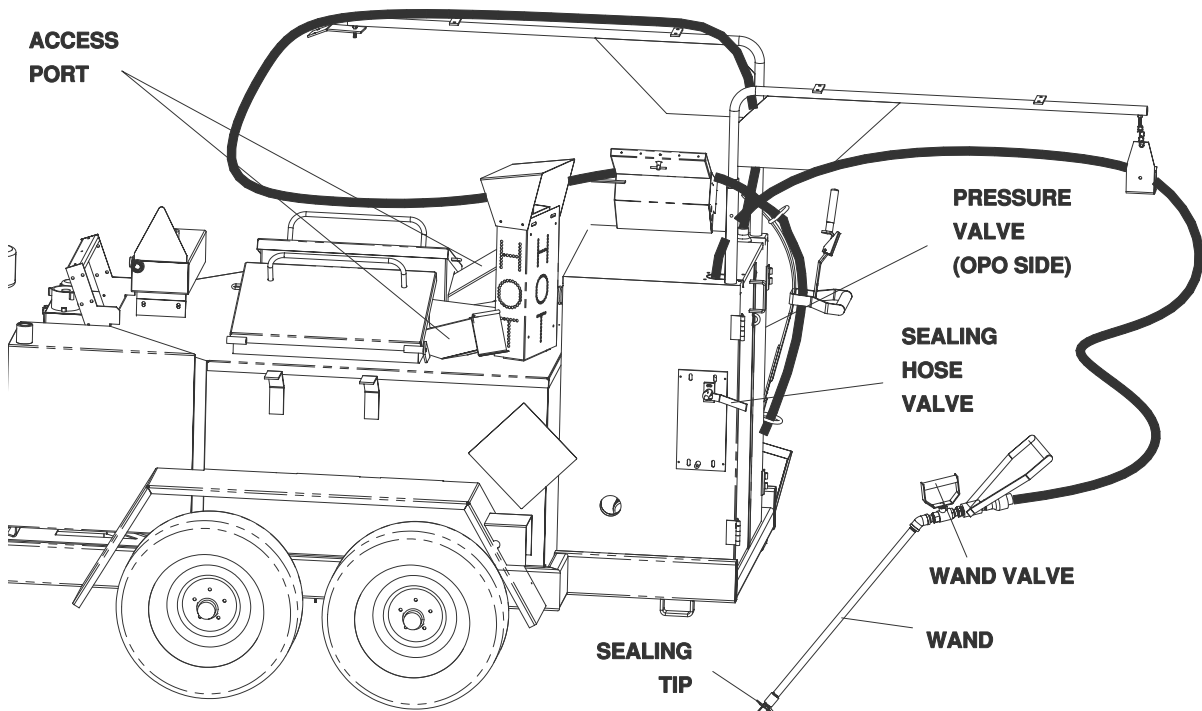
## Unplugging a Clogged Hose

- 2) If the unit is not full of material, add material to lower the tank temperature enough so the control box will fire the burner. Keep adding material until the cabinet temperature is high enough to unplug the hose.

**NOTE: Be sure to open the thermal regulating gate to the full open position. On propane units, be sure the stack diverter is closed.**

- 3) If the unit is full, it may be necessary to open up the loading door and allow the material to cool down. Turn the temperature control setting to 250° F (121°C). Allow the material to cool down enough so that the burner will have to run for a period of time long enough to heat the hose sufficiently. The actual time required will vary depending on how much material and what type of material is left in the hose. Thermal regulating gate must be wide open. On propane units, the stack diverter must be closed.
- 4) If the unit is clogged and the above two procedures are not possible, it may be necessary to use a back up hose. The clogged hose can then be connected and unplugged the next time you start up with a cold material tank.

The above situations illustrate the importance of properly cleaning the hose after use. It also shows the importance of returning the hose to the access port during times between use to keep the material flowing freely through the hose.



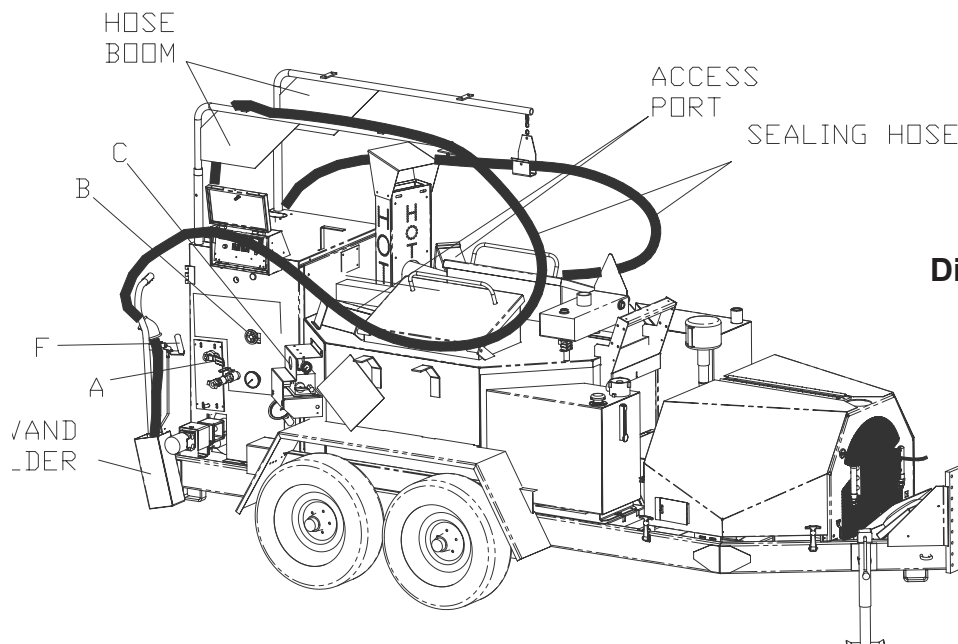
## Material System Cleanout

Approximately 10-15 minutes before the end of the work period, turn the temperature control knob(s) "off". There are three methods of cleaning that can be used; reverse flow, air and solvent flushing.

**NOTE: The material loading doors and wand access port must be closed at all times.**

### REVERSE FLOW CLEANOUT METHOD (Diagram 13)

- 1) To clean out the machine at the end of the day, return the wand to the wand return and open the wand valve (F). Turn the pressure valve (B) clockwise until closed and reverse the material pump by turning the material pump drive knob (C) clockwise. Run the pump in reverse for 2 - 3 minutes.
- 2) With the hose still in the hose holder, elevate the hose over your head and physically walk the length of the hose, shaking it to drain any residual sealant out of the hose.
- 3) Close the sealing hose valve (A) by turning clockwise, and continue with pump in reverse for 2 - 3 minutes.
- 4) Close the tank outlet valve (D) by turning clockwise.
- 5) Turn the pump off and open the pressure valve by turning counterclockwise.
- 6) Coil the hose back into the heating cabinet and shut the machine down (Non-heated hose models only).



**Diagram 13**

# ***Material System Cleanout***

## **AIR CLEANOUT METHOD (OPTIONAL)**

**Refer to Diagram 13 on pg 25**

- 1) Place material pump in neutral.
- 2) Remove sealing tip and return wand to access port..
- 3) Open wand valve (F) and sealing hose valve (A).
- 4) Close tank outlet valve (D).
- 5) Increase (close) pressure valve (B) to maximum.
- 6) Connect air hose and open air cleanout valve.
- 7) Allow air to blow freely through sealing hose. (Turn wand valve (F), open and closed several times during this phase, to aid in cleaning valve. Leave valve open).
- 8) Open tank outlet valve (D) momentarily, then close.
- 9) Decrease (open) pressure valve (B) and leave open.
- 10) Close sealing hose valve (A).
- 11) Shut air hose off at compressor, close air cleanout valve and disconnect hose.
- 12) Proceed with normal machine shut down.

## **FLUSHING NON-REHEATABLE MATERIALS**

- 1) Pump the material tank as low as possible.
- 2) Add 5 to 10 gallons of recommended flushing solvent to tank.
- 3) Place the wand into access port and open wand valve.
- 4) Circulate the solvent approximately 5 to 10 minutes.
- 5) Pump the solvent through the wand into a container and dispose of it according to EPA guidelines.
- 6) Add another 5 to 10 gallons of material and circulate for 5 minutes.
- 7) Pump this 5 to 10 gallons into empty containers and reuse it for the first purge next time the unit is used.

# ***Material System Cleanout***

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## **FLUSHING REHEATABLE MATERIALS (Solvent Tank Option)**

To save material, proceed through the five steps of the Reverse Flow Cleanout Method and then:

- 1) Remove wand from access port and place end into waste container.
- 2) Open sealing hose valve and wand valve.
- 3) Connect solvent tank hose to air cleanout connection and open solvent tank flow valve.
- 4) Open air cleanout valve and allow 4-5 gallons of solvent to flow into the plumbing system.
- 5) As the solvent is filling the system, turn the material pump to the normal flow position by rotating knob counterclockwise.
- 6) The solvent will flush the system and empty into the waste container.
- 7) Turn "off" the solvent tank flow valve and the air cleanout valve. Return the material pump knob to the neutral position.
- 8) Remove the sealing hose from the hose holder and drain as much solvent from the hose as possible (Non-heated hose models only).
- 9) Close sealing hose valve, wand valve and open pressure valve.
- 10) Reuse the solvent if possible or dispose of it according to EPA guidelines.

# Material Pump Adjustment

Operate the pump under normal conditions for a short run-in period. Examine the packing for leakage. If leakage is excessive, tighten the locknuts evenly until there is only slight leakage from the packing rings. This slight leakage is a necessary and normal condition for packing and allows for expansion and proper seating.

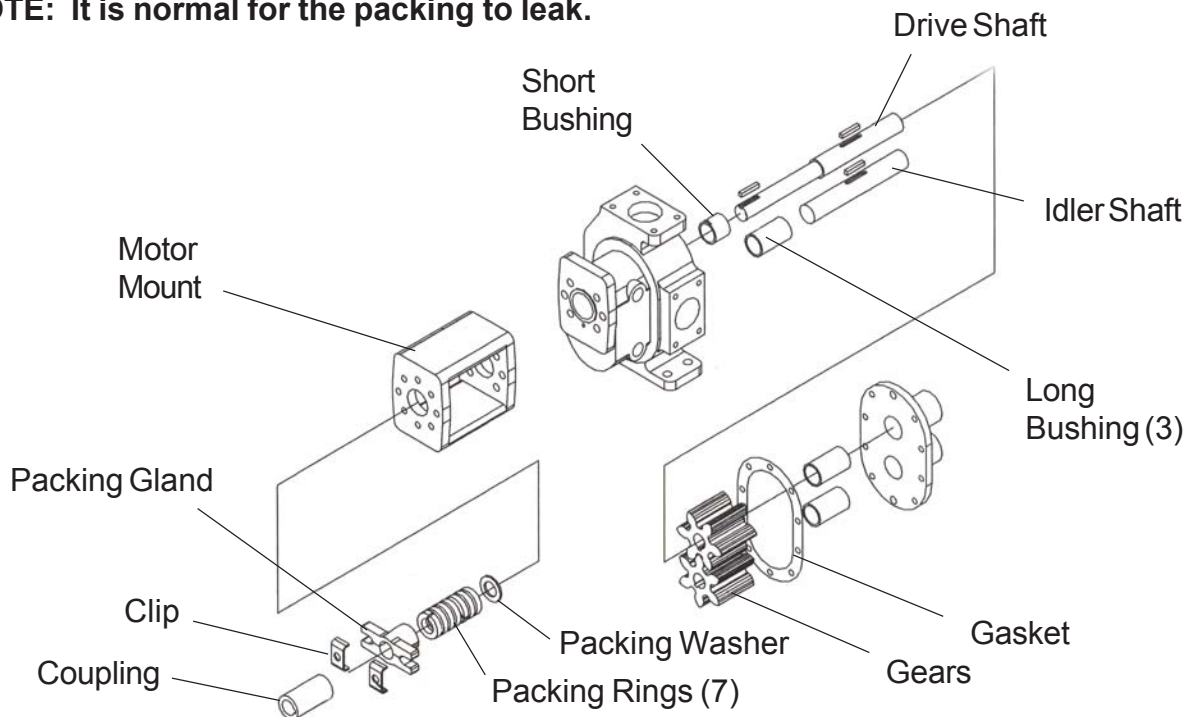
## REPLACING THE PACKING

- 1) Remove the locknuts, packing gland clips, spring clip, square head bolts, packing gland motor mount, and packing rings.
- 2) Clean the shaft and adjacent parts.
- 3) Examine the shaft and replace if excessively worn or scored.
- 4) Reassemble the components.
- 5) Draw up evenly on the packing gland to assure proper seating of the packing and then loosen locknuts about 1/2 turn.

**NOTE: Do not cock the packing gland. This may cause binding or excessive heating of the shaft.**

- 6) Run-in the pump as explained above.

**NOTE: It is normal for the packing to leak.**



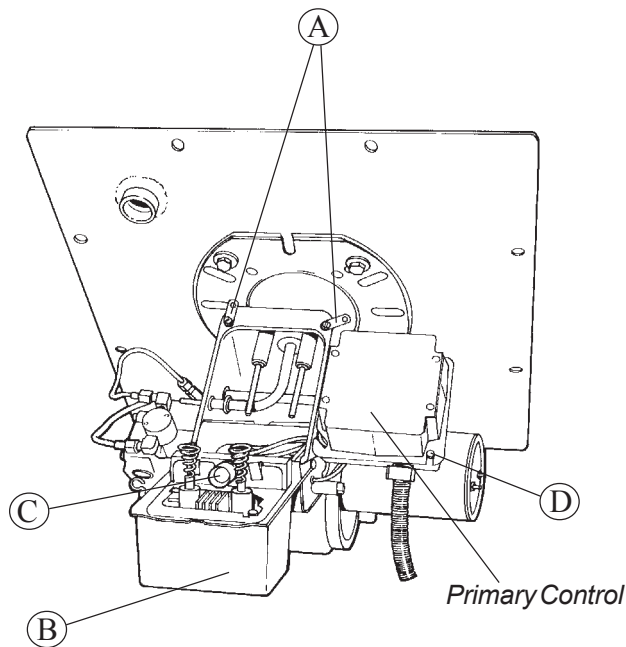
# ***Electric Eye and Fuse Inspection***

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## ***Diesel Burner - Electric Eye Inspection***

The diesel burner is equipped with an electronic eye which detects the presence of a flame. If the eye does not detect a flame after ignition, it will shut down the burner.

Periodically this eye will get covered with soot or dirt from the burner. If your burner lights and then shuts down immediately, you can normally expect the problem to be a dirty electric eye. To clean the eye, simply loosen the two retaining clip screws (A) and rotate the clips which hold the hinged spark box (B) to the burner. Gently wipe the eye (C) with a soft cloth and reattach the spark box.



After cleaning the eye, if the burner will not stay ignited after initial firing, check fuse located inside the primary control box. You can open the box by loosening the two screws (D) and removing the box.

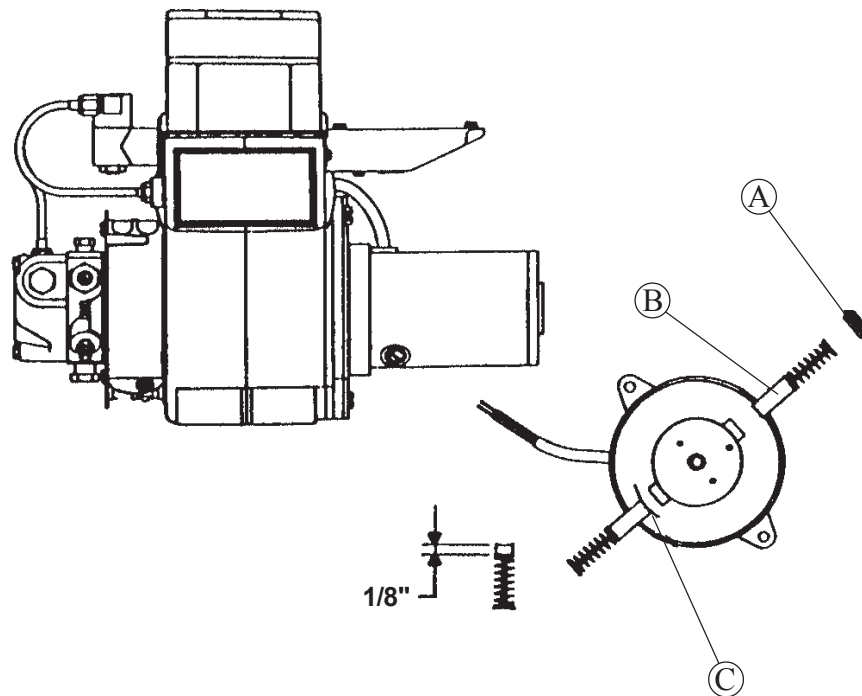


## ***Burner Motor Brush Inspection***

Due to the high current draw of the burner motor, it is advised to inspect the brushes for excessive wear every 100 hours of operation. If the brushes are worn out completely it will stop the motor and typically damage or destroy the ignition transformer assembly.

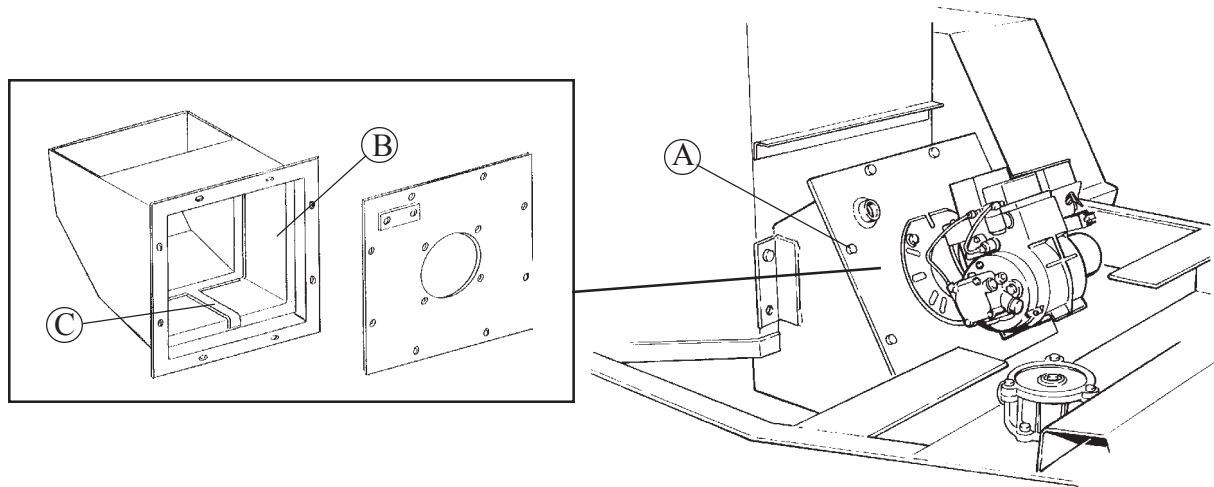
The brushes can be inspected and installed in a matter of minutes as follows:

- 1) Remove the brush caps (A) with a standard straight slot screw driver.
- 2) Remove the brushes (B) and inspect. If there is less than 1/8" of brush remaining, replace it immediately. If not, reinstall existing brush.
- 3) Be sure the radius (C) of the brush follows the curvature of the motor as shown below.
- 4) When the brushes are worn close to 1/8", check frequently to avoid failure.



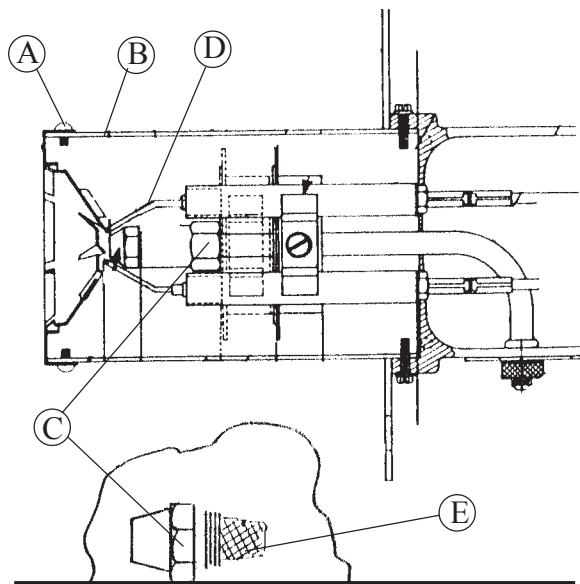
## Chamber Lining Inspection

After each 200 hours of operation, the chamber lining should be inspected. Remove (8) burner mount securing bolts (A) and pull out burner and mount. Inspect lining (B) for excessive cracking. Also check the condition of retainer (C). Lining cracks are acceptable as long as they are not large enough to allow flame to contact the combustion chamber walls.



## Burner Nozzle Replacement

During operation, oil is forced through the burner nozzle at 140 PSI to permit the fuel to be atomized for easy ignition. The nozzle orifice has normal wear due to this high pressure. Due to the high wear, it is recommended that the nozzle be replaced at least once per operating season. To replace the nozzle, remove the burner from chamber. Remove the two screws which secure the burner head (A) to the air tube (B). Carefully insert a 5/8" deep well socket over the nozzle (C) and turn it counterclockwise to remove. Be very careful not to bend the electrodes (D) while performing this task. When installing the new nozzle, **do not** touch the filter portion (E) of the nozzle. The filter is so fine that oil from your skin can clog the filter.



## ***Adjusting Replacement Burner***

---

The excess air adjustments on the Beckett ADC burner are essential to prevent the potential damage to the burner and the burner combustion chamber. Excess air is required to insure that the carbon and hydrogen are supplied with enough oxygen to burn completely.

If there is not enough excess air, the unit will smoke inside the combustion chamber and eventually lead to unburned fuel residue left in the chamber. The function of the combustion chamber is to reflect and retain heat to insure that all the atomized oil is burned.

Even a slight amount of soot can decrease the effectiveness of the chamber. It is estimated that 1/8" of soot is equivalent to approximately a 1" thick fiberglass sheet.

With too little excess air, eventually the unburned fuel accumulates into the lining material. Eventually it will burn even when the burner is turned off. The heat generated by this flame will vent out through the burner and can cause internal damage to the burner. Typically it will damage the plastic coupling which operates the fuel pump and it can also damage the primary control unit. Other common problems include blackening and even distorting the optic eye.

The burner is factory set with the air band (B) at the wide open position and the air shutter (D) adjusted typically between the 8 and 10 setting. Decreasing the excess air settings can lead to the chamber fires as outlined above.

Note that as the nozzle wears, the flame characteristics will change. It is important to check the nozzle periodically and replace it each year as outlined in the owners manual.

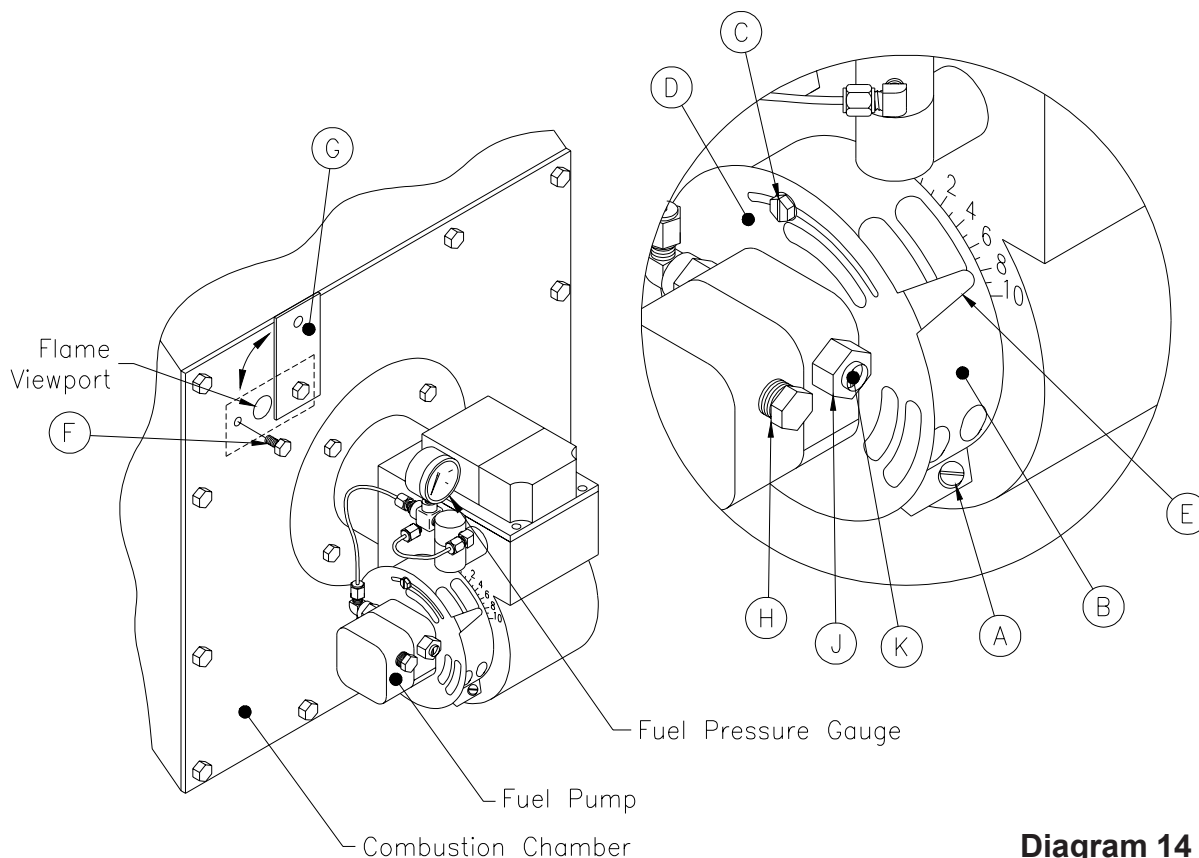
To adjust excess air flow into the burner: (Diagram 14)

- 1) Loosen screw (A) and rotate air band (B) to the wide open position, then tighten screws.
- 2) Loosen 2 screws (C) and rotate the air shutter (D) until the pointer arrow (E) points to the number 8 setting.
- 3) Start the burner and allow it to run for about 10 minutes.
- 4) Loosen the viewport retaining bolt (F) and swing cover (G) out of the way as shown.
- 5) While observing the flame through the view port, decrease the air shutter (D) by rotating it until the flame tip appears slightly smoky, then increase the air until the flame clears up. The arrow (E) should be in the vicinity of 7 - 10. Tighten two screws (C).
- 6) Close and secure viewport.

## Adjusting Fuel Pump Pressure

The fuel pressure is factory set @ 140 PSI. As the pump wears, it may require adjustment as follows:

- 1) If your unit is not already equipped with a fuel pressure gauge, remove plug (H) and insert a 0-200 psi gauge.
- 2) With the pump running, loosen jamnut (J) and turn screw (K) clockwise to increase the pressure, CCW to decrease pressure.
- 3) Hold the screw (K) with a screwdriver while tightening jam nut (J).



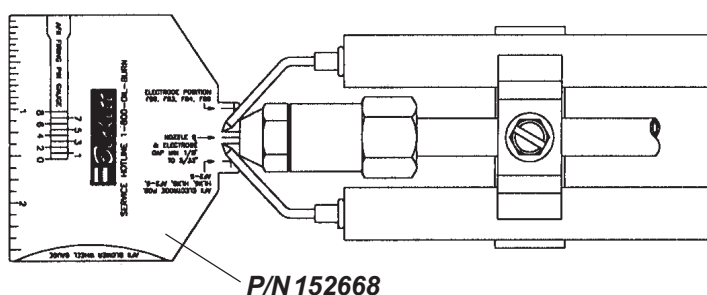
**Diagram 14**

## Adjusting Burner Nozzle, Electrode and Head Position

Your CIMLINE 110, 230 or 410 Melter is equipped with a model ADC burner. Each unit comes with a nozzle, electrode and head position gauge. For optimum performance, the steps below should be performed periodically. The burner must be removed from the combustion chamber.

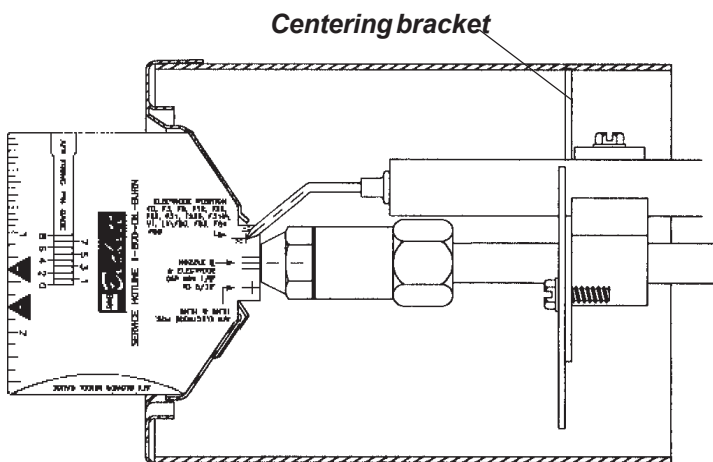
### Step 1: Setting the Electrode Gap

Check electrodes to see if the gap is aligned with the lines on the gauge. The gap should be from 1/8" to 5/32" as shown below. Bend the electrodes slightly if required. If the electrodes are way out of line, you may have to remove the head and realign as described in Step 3.



### Step 2: Inspecting Nozzle Centricity

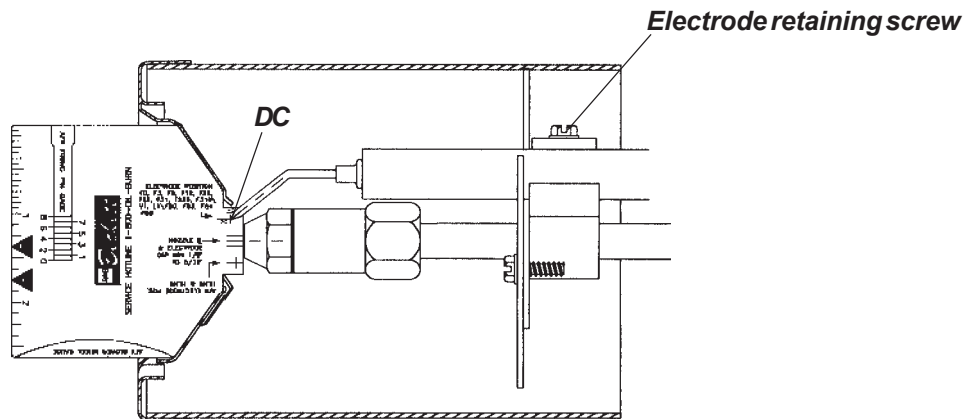
The nozzle should be approximately centered within the head. Insert the gauge as shown. The center of the nozzle should be aligned with the center line. Rotate the gauge and check alignment from several locations. BE CAREFUL NOT TO SCRATCH THE SURFACE. If it is not concentric, you may have to replace or straighten center bracket.



# Adjusting Burner Nozzle, Electrode and Head Position

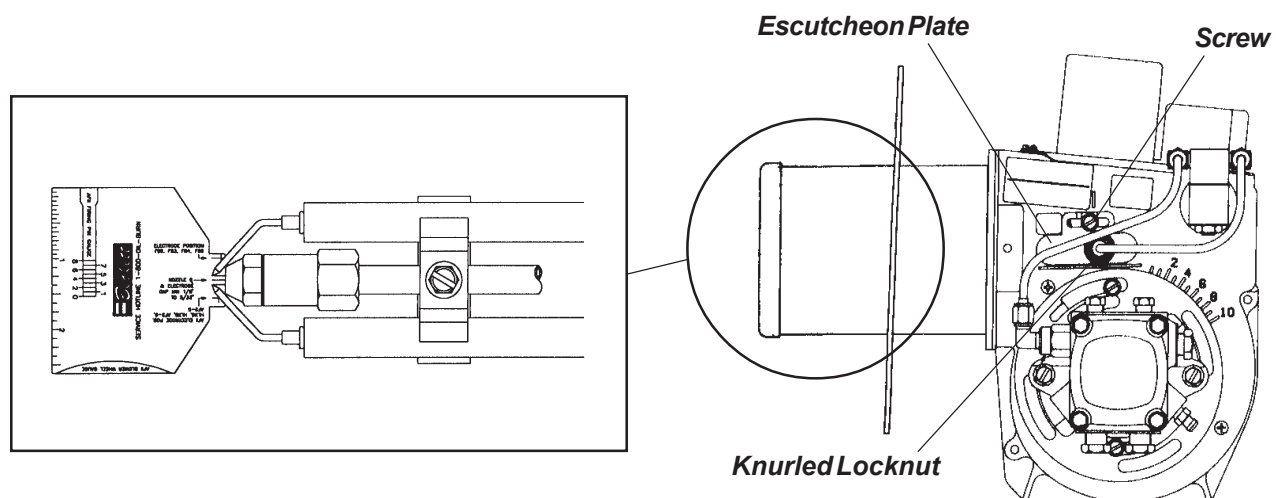
## Step 3: Setting Electrode Position

Insert gauge as shown below. The electrode tip should be in line with the intersection of the cross hairs labeled "DC". If not, you must remove the head, then loosen the electrode retaining screw just enough to allow you to slide the electrodes into the proper location. Tighten the screws and replace the head.



## Step 4: Setting Nozzle Position

Insert the gauge against the head. The end of the gauge should now touch the nozzle. If not, slightly loosen the knurled nut and the screw on the escutcheon plate until the entire nozzle assembly can be moved forward or backward. Adjust accordingly and tighten the knurled nut and screw.



## ***Remote Wand Option***

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**How it Works:** The remote wand operates on a 12-volt DC circuit. When the engine is started, hydraulic pressure from the manifold (A) is sent to the valve-actuating cylinder (B) through lower hose (C). The cylinder will extend fully and *CLOSES* the sealing hose valve to stop material flow to the hose.

When the trigger switch handle (D) is depressed, 12-volts is sent to the manifold cartridge (E). The cartridge opens and sends oil to hose (F) and at the same time, allows oil in the other line to return to tank. This retracts the cylinder and *OPENS* the sealing hose valve so material can flow to the hose. As soon as the switch is released, the 12-volt current is removed and the cylinder extends and closes the sealing hose valve.

12-volt power runs from the remote sealing wand switch (G) to the switch located under handle (D). The wire then runs back to the manifold cartridge (E). When the switch is activated, the two wires connect and send 12-volts to the cartridge.

There is a 10-amp fuse inside the control box to protect this circuit.

**Troubleshooting:** If the hydraulic cylinder does not respond when the trigger is activated, one of the following items may be the cause.

- 1) Bad trigger switch
- 2) Unresponsive solenoid at the hydraulic manifold
- 3) Clogged hydraulic line
- 4) Broken or disconnected wire in the electric hose or at the switch
- 5) Blown fuse or a bad switch in the control box
- 6) Defective cylinder –bad seals or bent rod
- 7) Binding or frozen sealing hose valve or linkage
- 8) Bad ground connection on the cartridge

The best place to start looking for the problem is the power source. Check the 10-amp fuse (orange wire, see decal inside temp control). If it is good, use a power tester to see if you have voltage to and from switch (G). If you do, check to see if you have voltage at one of the terminals at the trigger switch. If you don't, there is a broken or loose wire between the control panel switch and the trigger switch on the wand.

If you have 12-volts to the trigger switch, depress the trigger and you should send 12-volts to the cartridge (E) at the hydraulic manifold, which in turn will activate the cylinder (B). An easy way to check to see if the solenoid is getting current is to put your hand on the solenoid and see if you can feel it click each time you depress the trigger switch. If it does not click and you are sure you have power, it may be defective. You may also “hot wire” the cartridge by running a jumper wire from any 12-volt source directly to the wire coming from the cartridge to see if it is working properly.

## ***Remote Wand Option (Cont.)***

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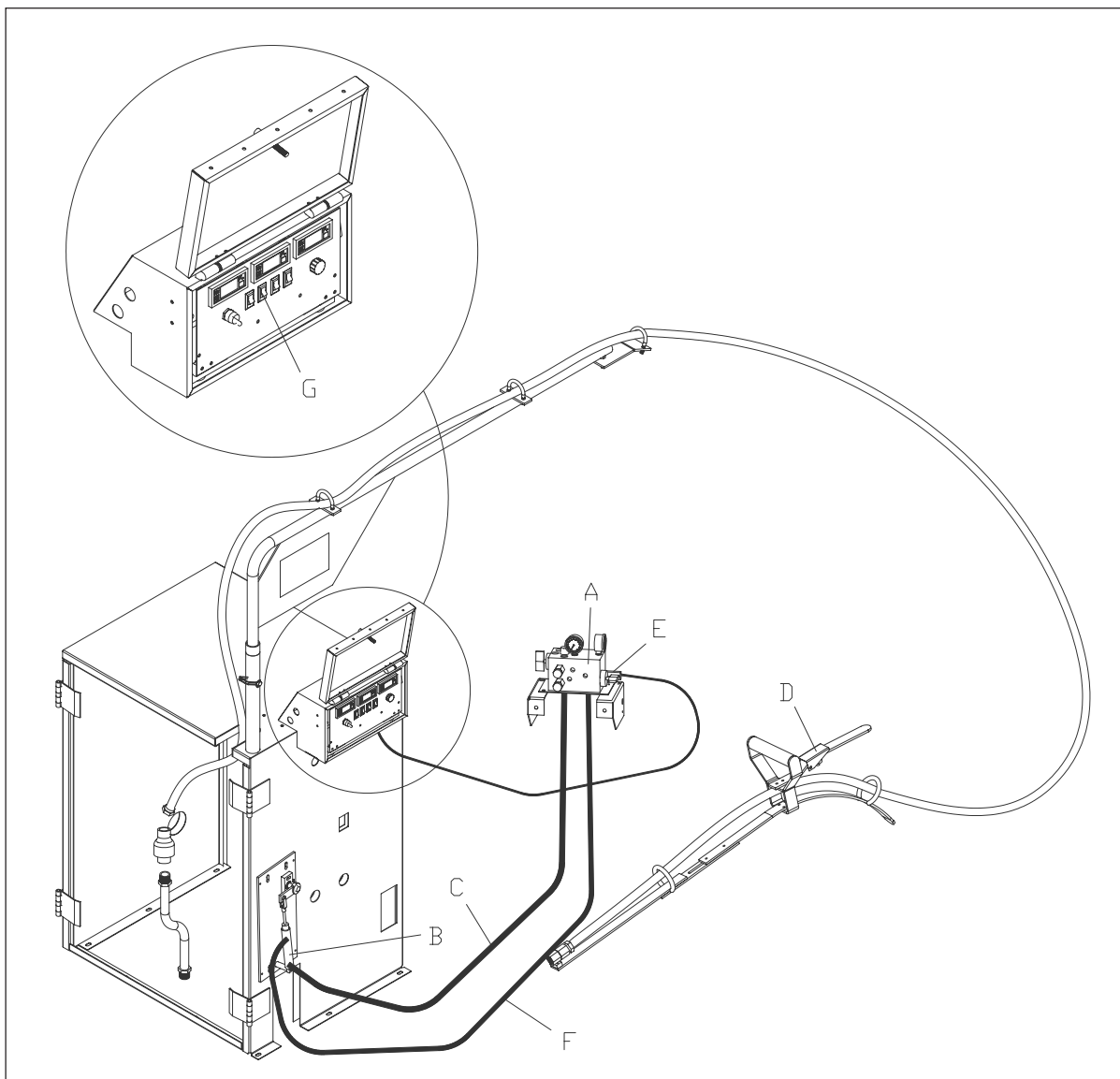
If you have power at the solenoid, turn off engine and disconnect upper hose (F). Hold the end in a container and start the engine. No oil should be flowing from the hose. Depress the trigger switch momentarily. Oil should flow out of the hose each time you press the trigger.

If you determine you have a broken wire inside the hose, the easiest repair is to run new wires on the outside of the hose and secure them in place with plastic ties. You may also run new line under the yellow sleeve. These wires have no impact on the performance of the heated hose. The hose does not have to be replaced.

If you perform the above tests and cannot correct the problem, consult customer service.



## ***Remote Wand Option (Cont.)***



## ***Air Compressor (Optional)***

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Your air compressor is factory set at 110 PSI. To adjust this pressure, locate the regulator valve (A), just under the air compressor. Turn the knob CCW and watch the gauge to make certain this lowers the pressure of the compressor. (Never increase pressure more than 110 PSI).

When attaching pneumatic tools to the air hose on your CIMLINE melter applicator. Turn air valve (H) to the horizontal position. This will shut off air to the hose and will make it much easier to hook up the tool. After the tool is attached, turn handle (H) to the vertical position. This will supply air to the tool.

## ***Air Compressor (Operation)***

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### **Condensation Valve**

It is important to know that all screw compressors create condensation. Condensation occurs most, when the compressor only runs for a short period of time or when its is used in very low temperature or ran on very high humidity days. CIMLINE has a condensation valve (G) that should be drained daily and it is best to do it before the compressor is warm.

1. Make sure engine is off and remove key to prevent accidental start-up.
2. Slowly unscrew oil fill cap (D) to relieve all pressure in compressor.
3. Place a catch container under compressor.
4. Drain the condensate from the compressor by opening valve (G) up and wait until you see oil coming from the valve. (The condensate will be a white milky substance.)
5. Fill compressor full with Palasyn 45 oil, and tighten oil fill cap (D).
6. Dispose of condensation in accordance with regulations.

### **Oil Cooler**

The oil from the compressor goes through an oil cooler (J) in the front of the machine. This cooler must remain clean and get blown clear of dust and debris at least once a day (more in very dusty conditions). To blow this free, position air gun from the top first and blow downward so dust gets blow down onto ground. Then reverse the air flow by positioning the gun up from underneath the machine and blow up.

### **Water Separator**

The air coming out of the compressor will go through a Oil separator (B) first, then it will go through a water separator (I). This separator has a self draining feature on it, but should be checked weekly to make certain that nothing has contaminated the outlet port. For more on the oil separator, see the OEM manual that was supplied with your machine.

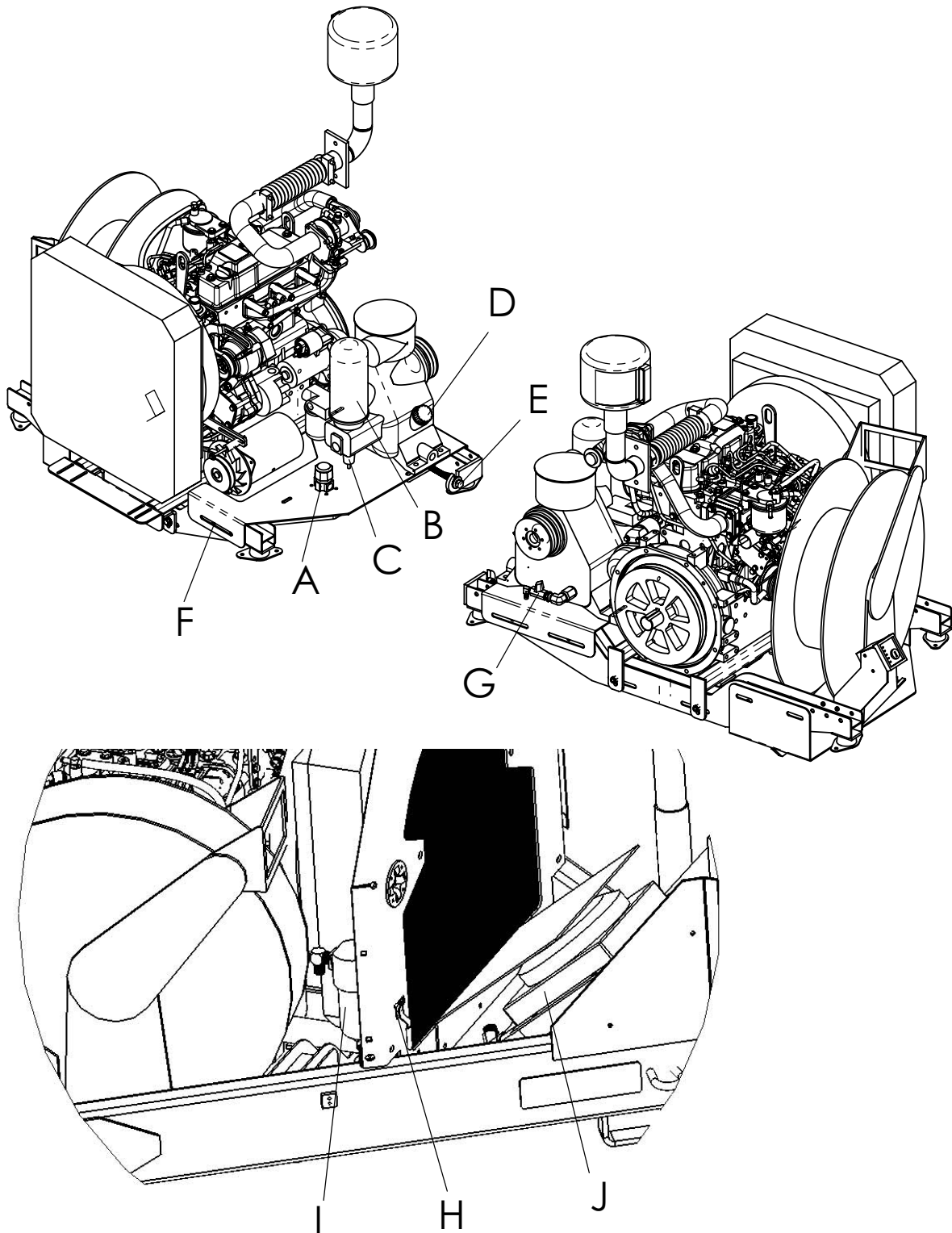
### **Belt Tension**

To tighten the belt on the air compressor.

1. Loosen the 3 bolts (F) on compressor plate.
2. Tighten bolt (E) until desired belt tension is achieved.
3. Tighten the 3 bolts (F) on compressor plate.

## Air Compressor

For a complete list of maintenance recommendations, see the air compressor OEM manual that was supplied with your machine.



## Maintenance

**Engine:** The operation and life of the engine depends on you and your operator. Do not start engine until the engine precheck is complete. The engine precheck consists of checking the oil, the fuel level, the hydraulic oil level and the air filter. The 110/230/410 M/A has the option of (4) different engines. The Kohler Command 20 and 25 H.P. OHC (propane units) and the Isuzu 25.1 H.P. and 38.9 (diesel units). Basic engine maintenance is shown in Table 1 on page 34. For more detailed information please refer to the Engine Operator Maintenance Manual and Warranty provided with your Melter applicator.

**NOTE:** When breaking in a new Melter, we recommend running the engine for one hour with no load prior to actual use on the job.

**Air cleaner:** Due to the dusty conditions that can be created by road work, it is essential to check the engine air cleaner element daily. Remove element and shake out the accumulated dust and dirt. Wipe out dirt from inside cover and from housing. Check engine manual for washing instructions. We recommend stocking replacement filters.

**Lubrication:** The Melter should be greased according to table 1 on page 40 of this manual.

**Diesel Units:** Use of high quality detergent oil of API (American Petroleum Institute) service class CC or CD grade. Select the viscosity based on the air temperature at the time of operation. Check your engine manual for other recommendations.

**Propane Units:** Use of high quality detergent oil of API (American Petroleum Institute) service class SG or SH grade. Select the viscosity based on the air temperature at the time of operation. Check your engine manual for other recommendations.

**Burner:** There are several items that need to be inspected periodically on the burners. These items include the burner motor brushes, the nozzle, electrode and head position, chamber lining and the 4 electric eye. Inspect according to table 1 on page 40. There is a section on how to perform each of these operations in this manual, check the index on pages 2 & 3 to locate the appropriate section.

Maintenance Operation	Daily	25 Hrs	100 Hrs	200 Hrs	1000 Hrs	Yearly
Check fuel level (add if low)	◆					
Check engine and heat transfer oil (add if low)	◆					
Check hydraulic oil (add if low)	◆					
Check engine air cleaner	◆					
Inspect pre-cleaner (clean if dirty)	◆					
Cleanout material system	◆					

## Maintenance

Maintenance Operation	Daily	25 Hrs	100 Hrs	200 Hrs	1000 Hrs	Yearly
Cleanout material system	◆					
Inspect sealing hose and cover	◆					
Inspect sealing hose connections	◆					
Drain conensation from air compressor option	◆					
Blow oil cooler on the air compressor option	◆					
Inspect and clean cooling system (Diesel units only)		◆				
Inspect material pump packing (adjust if leaking is excessive)		◆				
Check oil level on air compressor option		◆				
Change engine oil and oil filter			Propane	Diesel		
Service air cleaner element			◆			
Inspect spark plugs and breaker pts. (Propane units only)			◆			
Inspect burner motor brushes (replace if worn out)			◆			
Inspect burner nozzle, electrode & head pos. (adjust if nec.)			◆			
Grease agitator bearing block (load adapter)				◆		
Inspect fuel filter (replace if dirty)				◆		
Inspect Diesel burner electric eye (clean if dirty)				◆		
Grease wheel bearings				◆		
Change oil on compressor option					◆	
Change air inlet filter on compressor option					◆	
Inspect chamber lining (replace if excessive cracking)						◆
Inspect starting motor						◆
Replace hydraulic oil						◆
Replace hydraulic return filter						◆
Replace hydraulic suction strainer						◆
Replace burner nozzle						◆
Change heat transfer oil						◆
Change Diesel fuel filter						◆
Flush radiator and replace fluid (Diesel units only)						◆
Replace seperator on air compressor						◆

## Fluid and Components Specifications

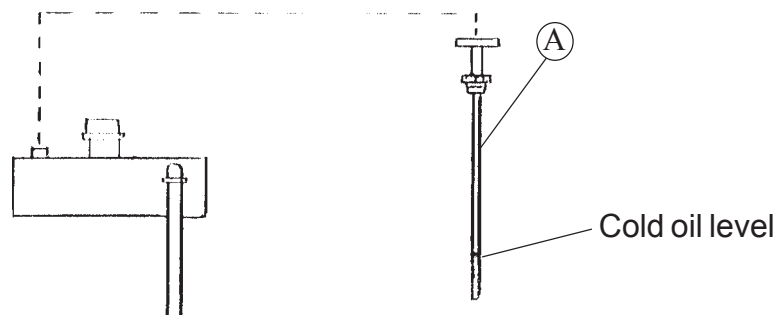
	Model 110	Model 230	Model 410
Hydraulic Reserve Capacity	25 Gallons		
Hydraulic Oil Type*	Conoco MV32 or equiv		
Diesel Fuel Capacity	30 Gallons		
Propane Fuel Capacity	(1) 100 lbs. LP bottle (2) bottles optional	100 lbs. LP bottle (2) bottles optional	N/A
Diesel Fuel Type	ASTM D975 No.2D		
Heat Transfer Oil Capacity	19.5 Gallons	27 Gallons	50 Gallons
Heat Transfer Oil Type	See Specifications on next page		
Agitation Drive Relief Setting	1100 PSI	800 PSI	800 PSI
Material Pump Drive Relief Setting	1500 PSI		
Material Pump Displacement	.11 Gal/Rev.		
Material Pump Maximum Output Pressure	125 PSI		

**WARNING:** Only the oil specified or equal may be used in this system. (Always check your local and state regulations before disposal).



**NOTE:** A dipstick (A) is provided for checking oil level when cold.

\*This is a petroleum based product, it can be mixed with other petroleum based hydraulic oils such as Dextron III or common straight weight oils. We recommend that you do not mix oil brands. Mixing any oils (engine oil, transmission fluid, etc.) adversely affects each manufacturer's formula.



# Heat Transfer Oil Specifications

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## ISO Grade 68 Heat transfer Oil Specification

There are many different types of Heat Transfer Oils on the international marketplace. It is critical that you use the proper oil to prevent poor performance, oil flashing, or auto-ignition. To conform to most government bids and to supply a readily available product, CIMLINE typically uses brands manufactured by Conoco or Phillips 66 that meet the ISO Grade 68 Heat Transfer Oil specifications listed. To insure maximum safety and performance, we recommend you purchase your oil through CIMLINE.

ISO VG#	68
Pour Point - F	10° F (12° C)
Flash Point - F	485° F (252° C)
Lbs/Gallon	7.27
Viscosity CsT @ 40C	62

### IMPORTANT NOTICE!!

The ISO Grade is just a viscosity index (ability to flow/thickness). An ISO Grade 68 oil can be an engine oil, hydraulic oil, etc. The manufacturer uses different additives to make the oil conform to different applications. **YOU MUST CLARIFY** with the supplier that the oil is to be used in a heat transfer system to avoid any potential problems. Oil is also available from CIMLINE in 5 and 30 Gallon containers for ship-out.

**NOTE:** CIMLINE Melter/Applicators include an expansion tank that cools the oil that is exposed to the outside air. When the oil heats up and expands, it flows into the expansion tank. The tank is cooler since it is not oil jacketed and is surrounded by outside airflow. The only exposure the hot oil has to the atmosphere is through a 3/4" vent/overflow pipe. This is done so the oil in the tank can run higher than the flash point. Only the lower temperature oil fumes are exposed to the atmosphere.

**FLASH POINT** - Test in which an open container of oil can be heated until an open flame will flash when passed over the fumes.

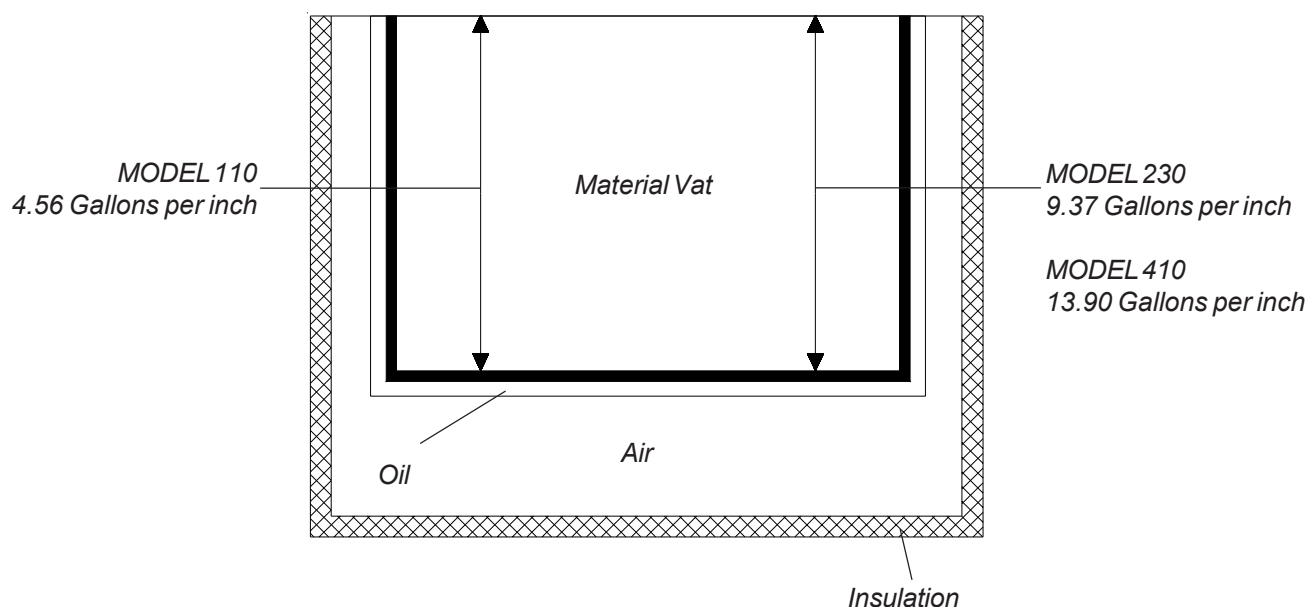
**FIRE POINT** - Same test as the flash point except the oil is heated until the gasses will start a fire.

**AUTO IGNITION POINT** - The point at which fumes will burst into flame when exposed to air.

# Material Tank Capacity

## MATERIAL CAPACITY

(Tank cutaway)



Material Depth	Model 110 1052 Cubic Inches*	Model 230 2165 Cubic Inches*	Model 410 3210 Cubic Inches*
2"	9.11	18.74	27.79
4"	18.23	37.48	55.58
6"	27.34	56.22	83.38
8"	36.46	74.96	111.17
10"	45.58	93.70	138.96
12"	54.70	112.44	166.75
14"	63.81	131.18	194.55
16"	72.93	149.92	222.34
18"	82.04	168.66	250.13
20"	91.16	187.40	277.92
22"	100.28	204.14	305.71
24"	109.39	224.88	333.50
26"	---	---	361.30
28"	---	---	389.09

Gallons of material is found by first dividing the tank volume by 231 (# of cubic inches per gallon of liquid), and then multiplying that number by the number of inches of material in the tank. For example, 1052 divided by 231 = 4.55. 4.55 x 2" of material = 9.11.

\* Volume of tank in cubic inches for each inch of material.



## ***Trouble Shooting Guide***

PROBLEM	CAUSE	SOLUTION
Burner will not ignite.	Fuse burned out.	Check fuse.
	Burner relay inoperative.	Check for 12 VDC at relay.
	Primary control fuse.	Check fuse.
	Thermocouple(s) inoperative.	Replace thermocouple(s).
Agitator will not rotate.	Sealant material not hot enough.	Allow material to heat longer.
	Too many biscuits added at one time.	Continue heat up and reverse agitation to break biscuits free.
	Low hydraulic oil level.	Check oil level.
	Worn agitator motor.	Replace motor.
Material pump will not rotate.	Sealant material not hot enough.	Allow material to heat longer.
	Too much material left in lines.	Heat plumbing and valves to melt material.
	Low hydraulic level.	Check oil level.
	Foreign object lodged in line.	Remove foreign object.
	Pump damaged.	Repair or replace pump.
Material pump rotates but does not pump material.	Pump worn or damaged.	Repair or replace pump.
	Pump rotating in wrong direction.	Check rotation.
	Pump inlet line plugged.	Check material filter and lines.
	Too much material left in lines from previous use.	Heat plumbing and valves.

## ***Trouble Shooting Guide (Cont.)***

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Material recirculates but will not flow through sealing wand.	Sealing hose froze up.	Remove wand and place hose in cabinet to melt material.
	Sealing wand froze up.	Heat wand and melt material.
	Sealing hose valve not completely open.	Open valve to the full "on" position.
Material heat up time slow.	Burner orifice clogged.	Remove orifice and clean.
	Hot oil pump worn.	Replace or rebuild pump.
	Heat transfer oil is worn out.	Check oil level. Replace if necessary.
During sealing operation, material stops flowing.	Wand valve left in "off" position too long before returning to access port for recirculation.	Place hose in cabinet to melt material. Refer to heating a plugged hose on page.
	Too many biscuits added at one time causing cold material to enter pump.	Heat hose and plumbing system. Reverse pump momentarily to force cold material into tank.
	Material temperature too low.	Check control box settings.

# Hydraulic Schematic

