

## Plant Service Bulletin

### Mechanical Oil Lighters

#### Purpose

To advise customers of potential problems, identify probable causes, and provide solutions for resolving problems associated with mechanical oil lighters.

#### Problem

Mechanical oil lighters operate in a harsh and hostile environment and can experience problems. The most common problems are: plugging atomizer tips, lighters not inserting properly, electrode not positioned

properly, and burner tip coking. The table below lists specific problems, causes and recommended solutions.

#### Problem 1 - Plugging atomizer tips

Cause	Solution
A. Contaminated oil.	Minimize through the use of adequate filters/strainers installed in the supply piping or at the lighter package.
B. Rust, scale or other foreign material in the oil piping.	Clean contaminated piping system by using established cleaning guidelines such as those used for initial start-up of new boilers. These include air blowing, steam blowing and/or chemical cleaning the lines.
C. Poor gasket installation.	1. Replace gasket. 2. Replace alignment pin. See Figure 2.
D. Pluggage from Teflon tape or too much thread lubricant.	Do not use tape. Lightly coat threads with a high temperature anti-seize.

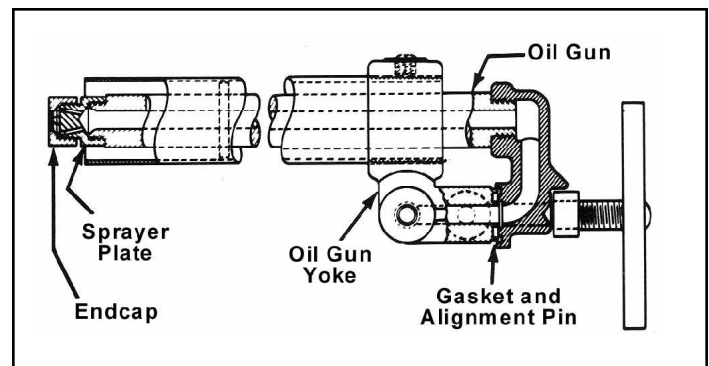
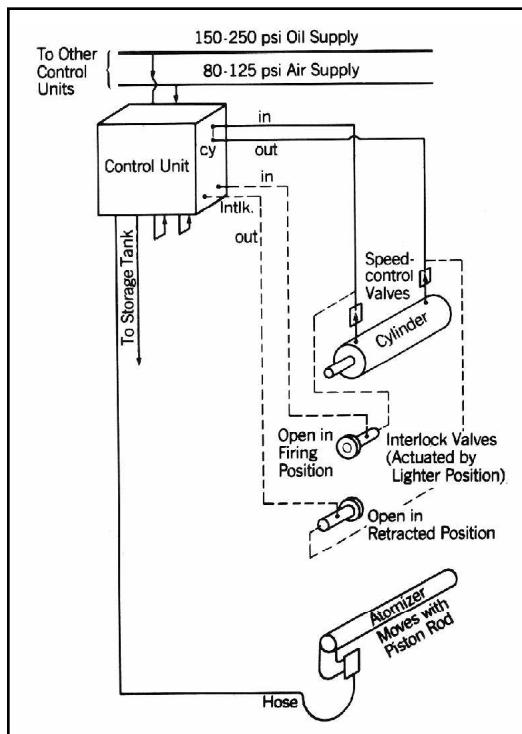


Figure 2 Mechanical oil atomizer

Figure 1 Typical schematic for lighter with control package

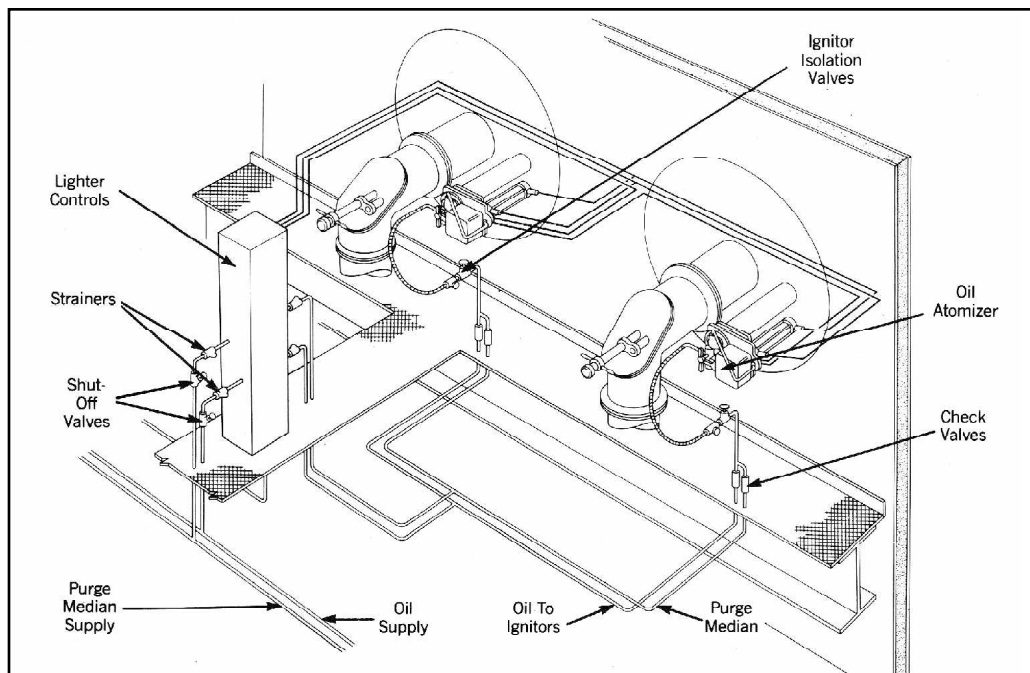


Figure 3 Typical lighter installation

### Problem 2 - Coking of the atomizer

Cause	Solution
A. Improper assembly of the atomizer.	Refer to the operating instructions and reassemble the atomizer properly.
B. Oil remaining in the atomizer after purge period.	<ol style="list-style-type: none"> <li>1. Minimize the length of piping to be purged. One effective way of doing this is by introducing the purge median at the inlet to the flexible oil hose nearest the lighter oil atomizer, rather than at the lighter package. See Figure 3.</li> <li>2. Lengthen the lighter purge period to three minutes maximum.</li> <li>3. Install check valves in the atomizer oil piping at each atomizer. This prevents oil from being forced into other oil atomizers during the atomizer purge period, and improves the line purging efficiency. See Figure 3.</li> <li>4. Check purge median pressure and set at 100 psig.</li> </ol>
C. Leaking oil valves.	Replace or rebuild lighter oil valves.
D. Oil piping above the lighter, allowing oil to drain into the atomizer after purging.	Move lighter piping below the atomizer. See Figure 3.

### Problem 3 - Atomizer overheating

Cause	Solution
Atomizers in certain high radiant heat areas can become damaged due to overheating.	<p>Supply a continuous quantity of purging median during out-of-service periods. This serves two purposes:</p> <ol style="list-style-type: none"> <li>1. Keep the atomizer cooler.</li> <li>2. Prevent accumulation of residual oil at the sprayer plate.</li> </ol>

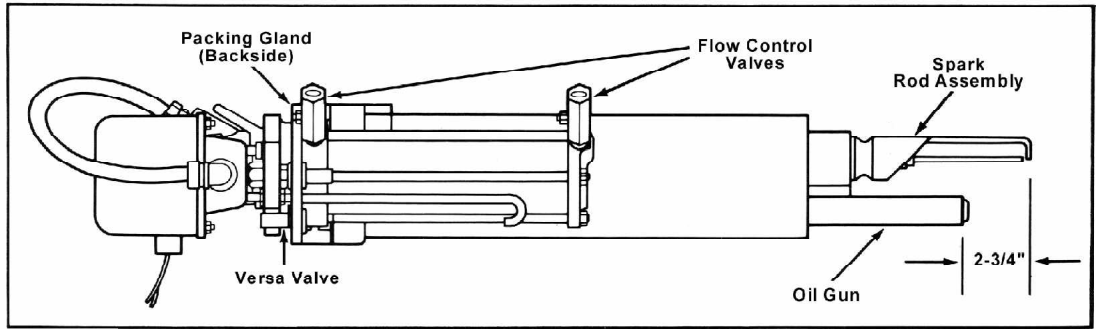


Figure 4 Oil fired lighter

**Problem 4 - Oil lighter does not insert/retract**

Cause	Solution
A. Sliding sleeve may be corroded or the air cylinder packing gland is too tight.	Make sure the sliding sleeve is clean and loosen packing gland bolts or replace packing if badly worn.
B. Check for the following: 1. Insufficient air pressure to air cylinder. 2. Mechanical binding of oil lighter. 3. Broken or worn actuating cylinder cups, seals or rings. 4. Malfunctioning lighter controls. 5. Flow control valves throttled excessively.	1. Adjust air pressure to 100 psig. 2. Identify location and correct. 3. Replace actuating cylinder cups, seals or rings. 4. Locate problem and correct. 5. Adjust flow control valves. See Figure 4.

**Problem 5 - Oil lighter spark rods fail to ignite fuel**

Cause	Solution
A. Electrode spark gap too large or carbonized.	Reset gap to 1/8". See Figure 5.
B. Improper spark tip to sprayer plate dimension.	Adjust gun to approximately 2 3/4" behind the lighter electrode. See Figure 4.
C. Dirty insulators or grounded electrode.	Clean or replace insulator or electrodes.
D. Shield is burned or missing.	Replace with new design shield having a baffle plate. See Figure 6.

**Problem 6 - Oil lighter fires are smokey**

Cause	Solution
A. Poor atomization, sprayer plates may be worn or damaged.	Replace sprayer plates.
B. Oil pressure is too low or high.	Check oil pressure and adjust to 150 to 250 psig.
C. Furnace is cold causing higher opacity.	Reduce lighter oil input to reduce opacity during cold start-ups. Should this condition occur frequently, it is advisable to change the oil lighters and lighter controls to air atomized oil lighters. The performance of air atomized lighters is superior to mechanical atomization.

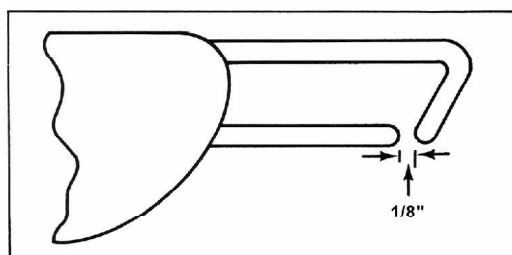


Figure 5 Lighter tip

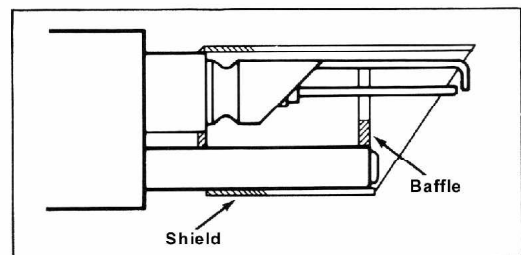


Figure 6 Oil lighter shield

### Problem 7 - Air cylinders have excessive air leakage

Cause	Solution
The cups and seals are worn or have been overheated.	<ol style="list-style-type: none"> <li>1. Disassemble, clean the bore and replace the cast iron rings.</li> <li>2. Assure that the drive air cylinder is properly insulated from the windbox surface heat.</li> </ol>

### Problem 8 - Lighter atomizer packing has asbestos\*

Cause	Solution
Remove asbestos* packing. *Use recommended precautions for removal.	Replace packing with Synthepac style 8909.

### Problem 9 - Versa valves do not function

Cause	Solution
The valves may be worn or the actuating rod may be improperly set.	<ol style="list-style-type: none"> <li>1. Replace worn valves. Properly set actuating rod.</li> <li>2. Proximity switches have proven to have a higher reliability record than the versa valves. Replace the versa valves with proximity switches (an engineering review is recommended when replacement is considered). See Figure 7.</li> </ol>

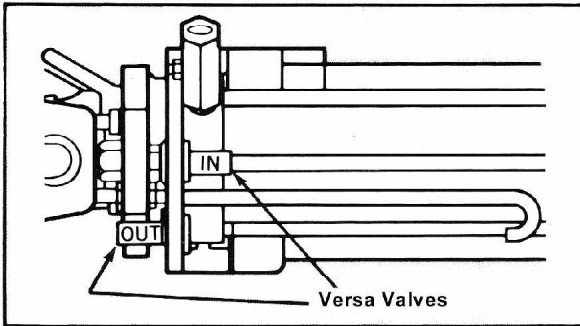


Figure 7 Versa Valves

### Support

This bulletin has described many common problems experienced with mechanical oil lighters and solutions for overcoming the problems. If you need assistance for improving lighter operation or have any additional questions, please contact your local Babcock & Wilcox Field Engineering Service office.

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