

Oil Lighters (Steam/Air Atomized)

Purpose

To alert customers to potential oil lighter problems, identify their probable cause, and provide solutions for improving operation.

Problem

Oil lighters operate in a very hostile environment and are subject to mechanical and operating performance problems. The problems are aggravated when the oil lighters are not properly maintained. Improvements in design and manufacture in recent years have improved reliability and component life. A survey of oil lighters indicates that the problems listed below are still being experienced. The suggestions presented will allow you to minimize their occurrence at your installation.

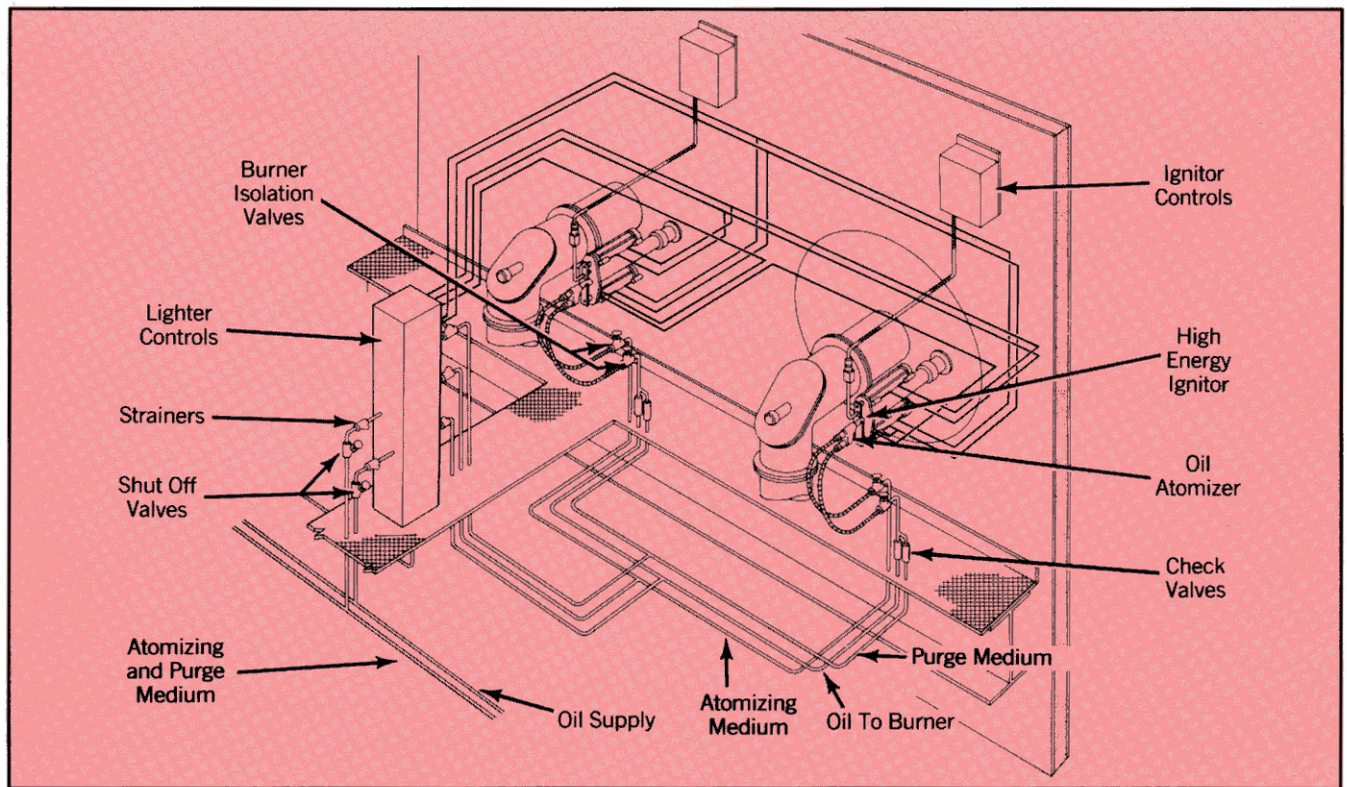


Figure 1 Typical lighter installation.

Symptom

Atomizer tips plug.

Probable Cause

Contaminated oil.

Suggested Action

1. Minimize or eliminate contamination by installing filters or strainers in the supply piping or at the lighter package inlet. (Figure 1 shows strainers installed.)
2. Upgrade existing Y or T jet atomizers to new I jet atomizers. The I jet atomizer (Figure 2) is less prone to pluggage.

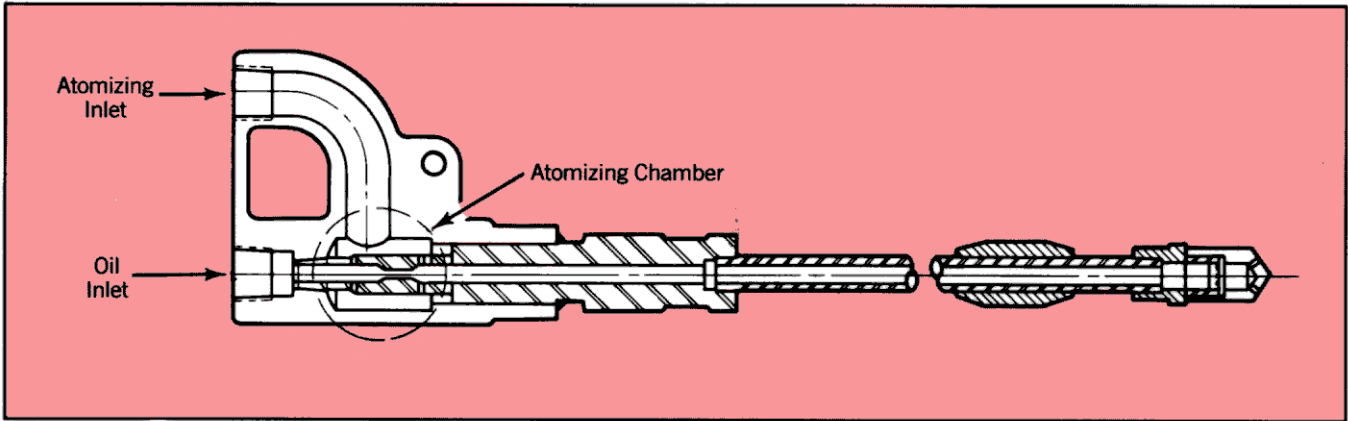


Figure 2 Typical I Jet assembly.

Symptom

Atomizer tips plug
(cont'd).

Probable Cause

Contaminated atomizing
medium (steam/air).

Rust, scale or other foreign
material in steam/air
piping.

Faulty gasket installation.

Pluggage from teflon tape
or excessive thread
lubricant.

Suggested Action

1. Install properly located drains in the lighter steam/air piping. Use dryers in atomizing air system.
2. Upgrade existing Y or T jet atomizers to I jet atomizers (Figure 2).

Clean contaminated piping system. Suggested methods, similar to those used on initial startup, would include chemical cleaning and blowing out of lines.

1. Replace gasket between atomizer body and yoke. Figure 3 shows a Y jet atomizer. Other atomizers are similar.
2. Realign alignment pin.

Do not use tape on pipe joints. Coat threads only lightly with high temperature anti-seize.

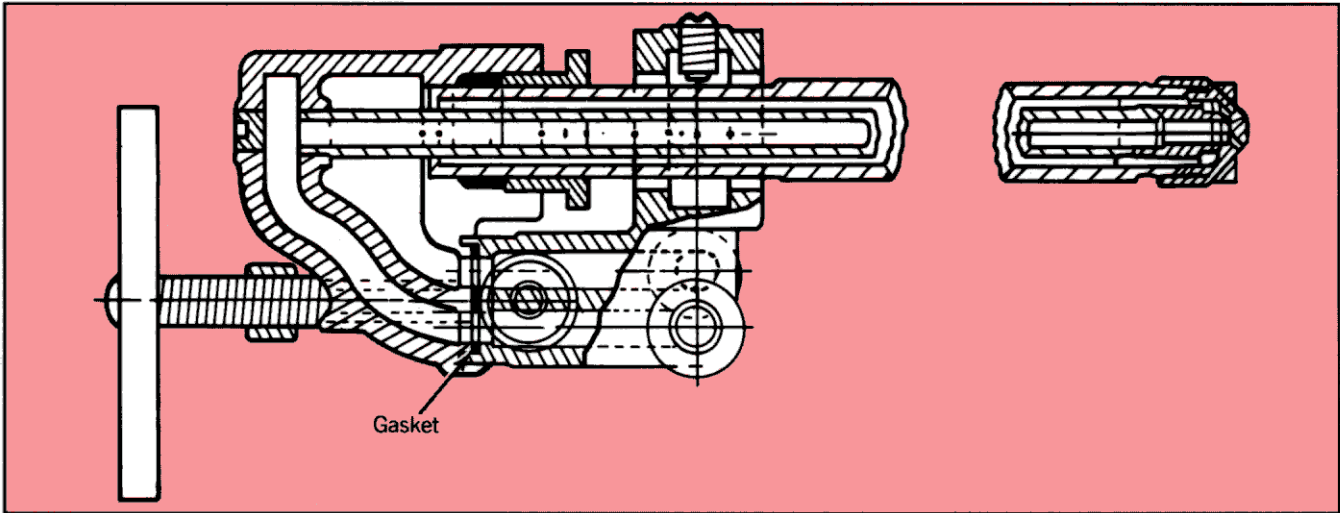


Figure 3 Typical Y Jet atomizer.

Symptom	Probable Cause	Suggested Action
Atomizer cokes.	Atomizer improperly assembled. Residual oil remains in atomizer after purge.	Disassemble atomizer. Refer to operating instructions and reassemble atomizer. 1. Minimize length of oil pipe to be purged by introducing purging medium at inlet to flexible oil hose nearest to the atomizer. 2. Increase purge time (to three minutes maximum). 3. Set purge medium pressure to 120 psig.
	Inadequate purging of atomizer fuel line.	Install check valves in oil piping at each atomizer (Figure 1) to prevent oil being forced into other atomizers during purge.
	Oil piping is above the lighter. Oil drains into atomizer after purge.	Move oil piping below atomizers (Figure 1).
Atomizers overheating.	Leaking oil valve. Location in high radiant heat zone can cause overheating.	Repair or replace oil valve. Continuously supply a small amount of purging medium during out of service periods to 1) cool the atomizer and 2) prevent accumulation of residual oil in atomizer and on atomizer sprayer plate.
Excessive air leakage from air cylinders.	Air cylinder caps and seals are worn or have been overheated.	1. Replace worn or damaged caps and seals with replacements made of Viton. 2. Make sure insulation between oil lighter assembly and windbox casing is adequate. Air cylinder temperature should not exceed 120°F.
Oil lighter assembly does not insert or retract.	Mounting plate is bowed or bent. Packing is too tight.	Make sure that the cylinder rod is parallel to the oil atomizer. Straighten bowed or bent mounting plate. Loosen packing, or replace it.

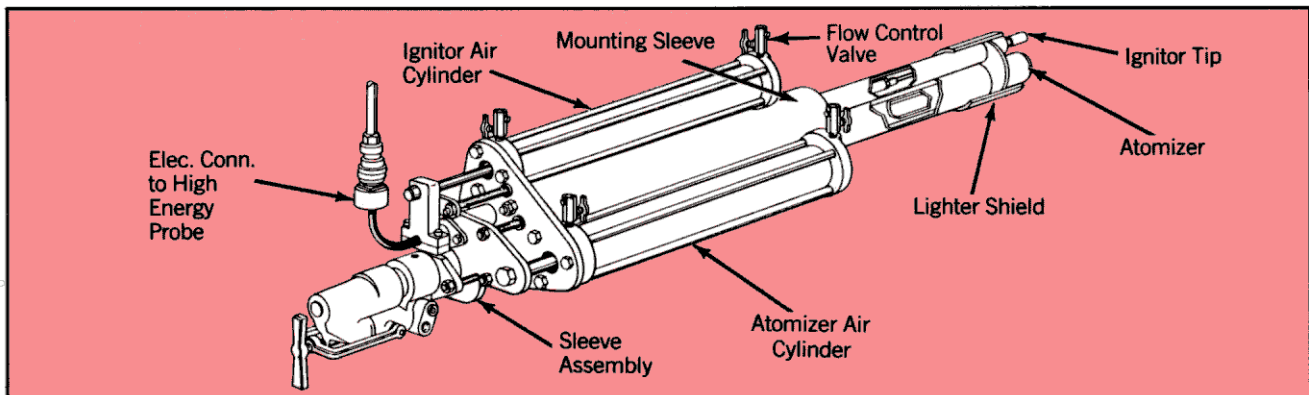


Figure 4 Oil fired lighter.

Symptom

Oil lighter assembly does not insert or retract. (cont'd.)

Probable Cause

Dirty cylinder rods.
Sliding sleeve is corroded.
Insufficient air pressure to air cylinder.
Mechanical binding of oil lighter assembly.
Broken or worn cylinder cups or rings.
Malfunctioning lighter controls.
Flow control valves excessively throttled.

Suggested Action

Clean cylinder rods.
Remove corrosion from sliding sleeve.
Check air pressure. Raise pressure to 100 psig if low.
Identify and correct binding problem.
Replace broken or worn parts.
Locate malfunction and correct it.
Adjust flow control valves (Figure 4).

Lighter spark does not ignite.

Spark rod is not positioned properly. (Rod position has changed over time).

Check operating instructions to ensure proper position of spark rod. On CFA lighter assemblies, upgrade spark rod clamp to new serrated type with locking rings.

Spark tip burned out.
High voltage wires grounded (Simmon's design).

Replace spark tip (see Figure 5).
1. Replace wire and/or rod assembly.
2. Upgrade wire and/or rod assembly to current design.

Oil lighter fire is smokey.

Sprayer plates are worn or dirty.

1. Change or clean sprayer plates.
2. Update to current standard reverse drilled sprayer plates.

Oil pressure is too high.

Check oil pressure. Adjust to 110 psig pressure

Atomizing medium pressure is too low.

1. Adjust atomizing medium pressure to 120 psig.

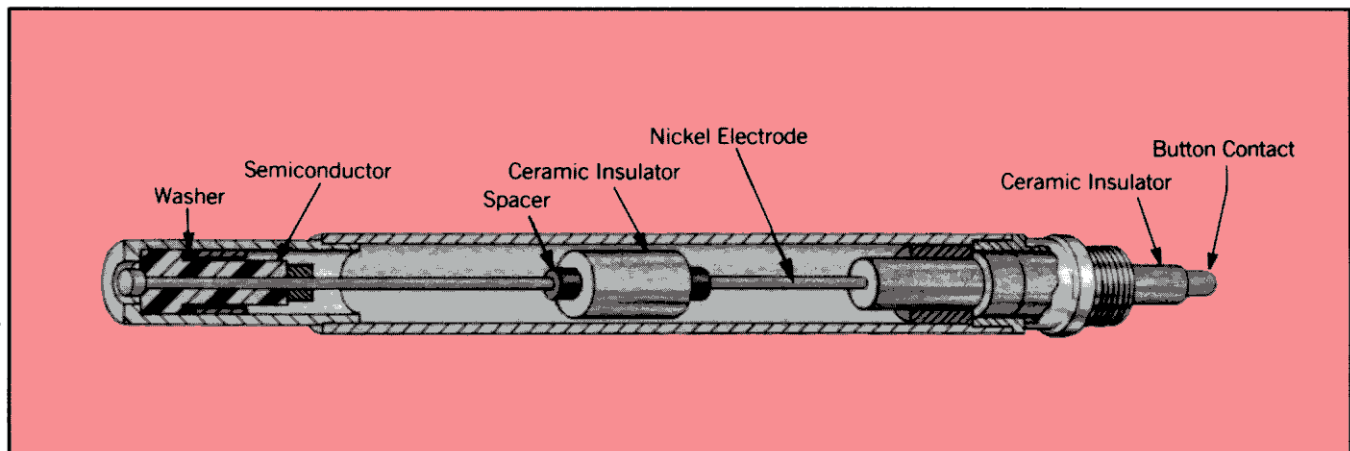


Figure 5 Spark tip.

Symptom

Oil lighter fire is smokey
(cont'd)

Probable Cause

Atomizing medium pressure is too low. (cont'd)
Furnace is cold, causing incomplete combustion.

Suggested Action

2. Clean strainer in the atomizing medium supply line.
1. Reduce the lighter oil input to reduce opacity during cold startups.
2. Update to current standard reverse drilled sprayer plates.
3. Change the oil lighter to the CFS or MPO type to further lower opacity.
4. Upgrade existing Y or T jet atomizers to I jet atomizers (Figure 2).

CFA lighter flame shield oxidizes severely and deteriorates.

Material used for most existing lighter shields is plate, which has experienced excessive overheating problems.

Replace with cast lighter shield to obtain longer service life (Figure 6).

Versa valves do not function.

Valves are worn or actuating rod is improperly set.

1. Relace worn valves or adjust actuating rod to correct position (Figure 7).

2. Replace worn Versa valves with proximity switches.

Steam/air atomizer gun packing has asbestos.

Atomizer gun was installed when asbestos hazard was not recognized.

Replace packing with Synthepack style 8909.

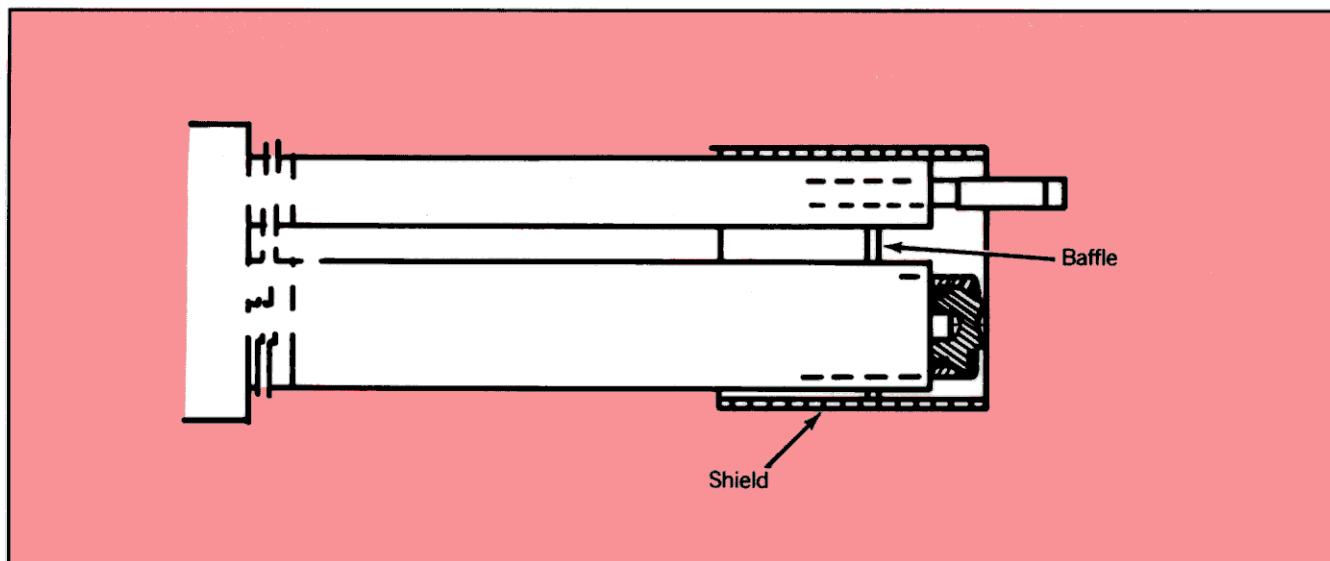


Figure 6 Typical cast CFA lighter shield.

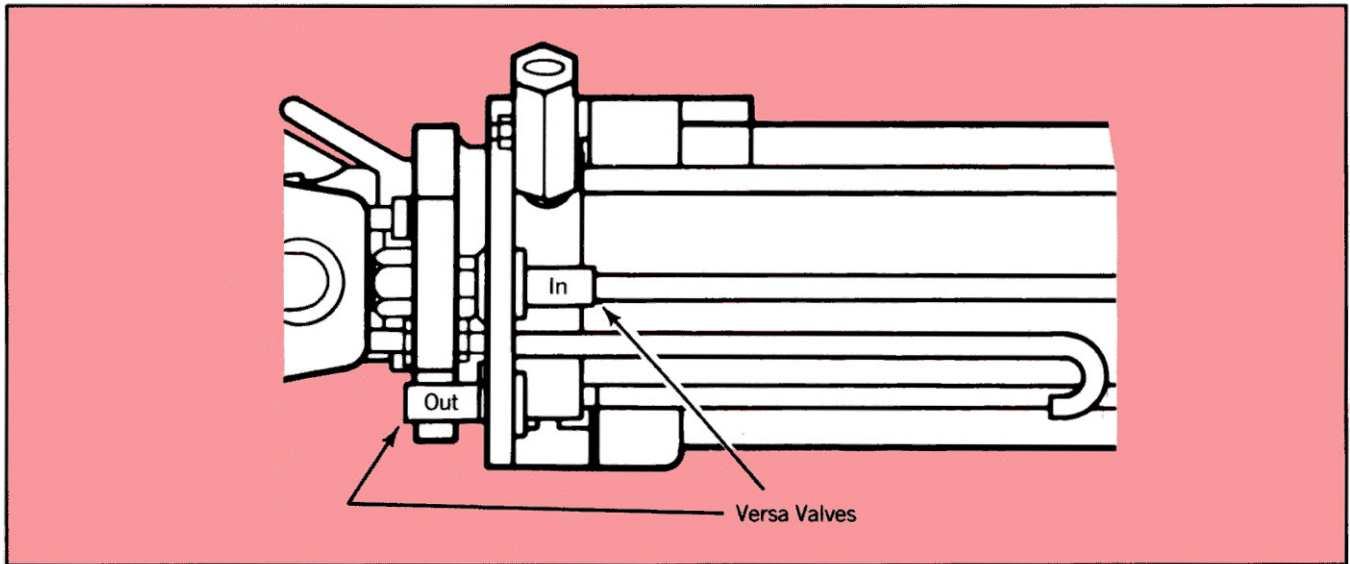


Figure 7 Versa Valves.

WARNING: ASBESTOS HAZARD

Steam/air atomizer gun packing may contain asbestos fibers which may be harmful if released into the air. On lighter assemblies prior to 1983 asbestos may have been used as packing material. There is a high risk of asbestos fiber release if packing is touched or disturbed.

Breathing asbestos dust can cause cancer and other serious diseases.

If packing must be replaced, replace only with an asbestos substitute which has been used exclusively since 1983. Always wear disposable gloves and a respirator which is approved for asbestos use. Follow EPA and OSHA asbestos removal procedures when removing packing.

If exposed to asbestos dust, follow the directions of your health safety officer or consult with your physician.

Support

Various design changes and refinements have been made over the years to overcome these problems. It is also very important to maintain oil lighters or they will continue to be a source of problems. Due to the many types and configurations of lighters in production, it is impractical to list all of the various known fixes and design improvements made to overcome operating problems.

If you have any questions concerning your specific lighters or required further information, please contact Babcock & Wilcox Field Service Engineering.

For more information, contact your nearest B&W sales office or write: Dept. CIC, Power Generation Group, Babcock & Wilcox, Barberton, Ohio 44203, U.S.A.; or, in Canada, Manager, Marketing and Sales, B&W Canada, Cambridge, Ontario, N1R 5V3.

Akron (Copley), Ohio
 Atlanta, Georgia
 Boston (Dedham), Massachusetts
 Calgary, Alberta, Canada
 Cambridge, Ontario, Canada
 Charlotte, North Carolina
 Cherry Hill, New Jersey
 Chicago (Lisle), Illinois

Cincinnati, Ohio
 Dallas, Texas
 Denver (Lakewood), Colorado
 Halifax (Dartmouth), Nova Scotia, Canada
 Houston, Texas
 Kansas City, Missouri
 Minneapolis (St. Paul), Minnesota

Montreal, Quebec, Canada
 Portland, Oregon
 Saint Johns, New Brunswick, Canada
 St. Petersburg, Florida
 San Francisco (Walnut Creek), California
 Vancouver (Richmond), British Columbia, Canada

**For international sales offices and representatives write:
 Manager, Marketing and Sales, Babcock & Wilcox International Division, Cambridge, Ontario, Canada N1R 5V3,
 or Barberton, Ohio U.S.A. 44203.**

The information contained herein is provided for general information purposes only, and is not intended or to be construed as a warranty, an offer, or any representation of contractual or other legal responsibility.