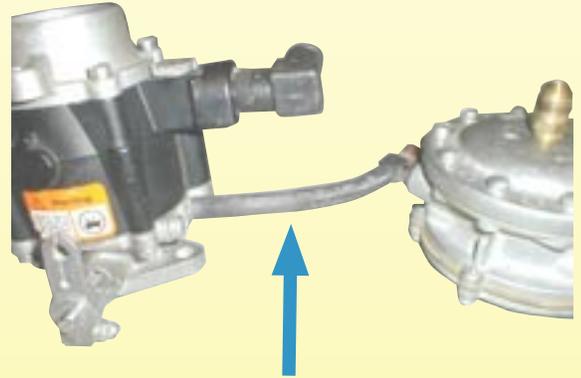


7

-STEP METHOD OF INSPECTING AND REPAIRING AN IMPCO SYSTEM FOR HIGH CARBON MONOXIDE LEVELS

STEP 1 PINCH HOSE

Squeeze off the vacuum hose on the VFF-30 lockoff with a pair of needle-nose pliers and listen for an RPM change. If the engine speeds up or slows down, the O-ring seal in the VFF-30 is defective, and the lockoff must be rebuilt or replaced. If you have access to an exhaust analyzer, a difference in CO readings will also provide the same information. If the vacuum hose is disconnected and the engine does NOT die, the lockoff is not sealing and MUST be rebuilt or replaced.



Pinch this hose to test

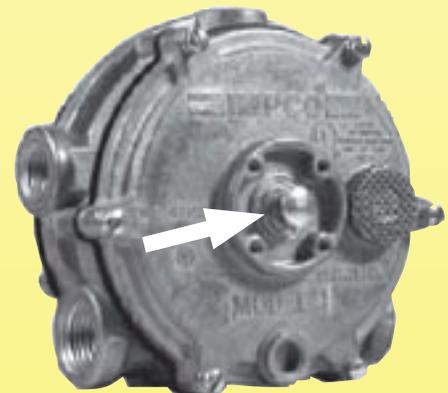


Exploded diagram of the Impco VFF-30

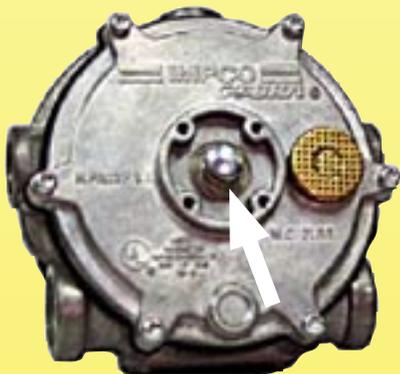
NOTE: An electric lockoff cannot have this problem. If the lift truck is equipped with an electric lockoff, it must also have an oil pressure or vacuum safety switch in the circuit. Many of these have been disconnected, which is against regulations and is outlined in NFPA pamphlet 58.

STEP 2 PUSH PRIMER BUTTON

With the engine running, depress the primer button on the Model J or K vaporizer-regulator. The engine RPM should drop and the engine almost stall or quit running. If you then release the plunger, the engine should return to a smooth idle. If this occurs, the vaporizer is functioning normally and service is not needed. If depressing the plunger causes the engine RPM to smooth out or increase, the mixer air-fuel mixture is too lean and should be adjusted.



Impco Model "J" primer button



Impco "Cobra" primer button

If questionable, run a pressure test. Primary pressure should be 1.5 to 3.5 psig. Secondary pressure should read -1.5 to -5.0" H₂O (a vacuum) with the engine running.

STEP 3 ADJUST AIR-FUEL RATIO AT IDLE

The idle mixture screw is located on the mixer. Rotate the screw counterclockwise for a lean mixture. Turn the screw out as far as possible to see if it reduces emissions to an acceptable reading. If turning the screw out does not decrease CO levels, go to Step 4 before servicing or replacing the mixer.



Impco CA-55 idle mixture screw location



Impco 100 idle mixture screw location

STEP 4 INSPECT AIR FILTER

Check the condition of the air filter. Remove the air filter and run the engine. If there is a change in the emissions, replace the filter. If there is no change, proceed to the next step.

STEP 5 REPLACE MIXER IF NECESSARY

With the Impco Model 50 carburetor/mixer:

After performing Steps 1-4 and finding no problems, if the emissions are still high and the forklift is equipped with a model 50 carburetor/mixer, it must be replaced. If at all possible, replace with an Impco Model 100 or 125. This replacement usually requires minimal adaptation. If it is not adaptable, replace with a Model 55.

STEP 6 SERVICE AIR VALVE

Shimming the Model 100/125 mixer:

Remove the four screws holding the cover in place and inspect the air valve assembly. The part number should be AV1-14-4. If it is not, replace the existing air valve with this model. If the mixer has this air valve, clean the interior of the metering cone. If there are indications of the air valve hanging up on one of the guides, lightly sand the guide or replace the air valve. If the fuel mixture is still too rich, install a lean air valve shim on the lip of the metering cone and re-check the emissions. If an improvement results, it may be necessary to install a second shim.

NOTE: When the air valve is disassembled, it is recommended that it be cleaned in a solvent solution. Do NOT wash the diaphragm in any solvent. Do NOT use an abrasive cleaner. Also, inspect the gas valve cone to verify that it has not loosened in the air valve body.

STEP 7 SET POWER MIXTURE

Set the power mixture after confirming that emissions are acceptable at idle and no-load cruise. Load the mast by tilting it either full back or full forward at maximum governed engine RPM. Gently turn the gate valve (also called the "power valve") towards the "L" position if the exhaust analyzer indicates a rich condition.

DESIRED EMISSION READINGS ARE:

Idle:	0.06%
Cruise, high speed no load:	0.20%
Full power, full load, full stall:	0.30%

NOTE: Do NOT shave the inside of the gas tube to enrich a lean fuel mixture. This imprecise method of allowing more fuel will disrupt the fuel delivery rate and cause erratic fuel mixtures at varying engine loads and RPMs. It will also invalidate any warranty.

Shaved fuel port—
Do not do this.



Acknowledgments: The seven-step troubleshooting procedure was developed by Dick Riley of Suburban Propane. Photographs, graphic design and printing by the Texas Railroad Commission, Alternative Fuels Research and Education Division (AFRED), for the Propane Education and Research Council's forklift mechanics' training program.