Service Information System

Previous Screen

Welcome: b270djw

Product: NO EQUIPMENT SELECTED
Model: NO EQUIPMENT SELECTED
Configuration: NO EQUIPMENT SELECTED

Special Instruction
OBSERVING FUEL FLOW TO CHECK FOR EXCESSIVE AIR IN FUEL SYSTEMS{0651, 1250}

Media Number -SMHS9208-00 Publication Date -1990/03/01 Date Updated -2007/08/30

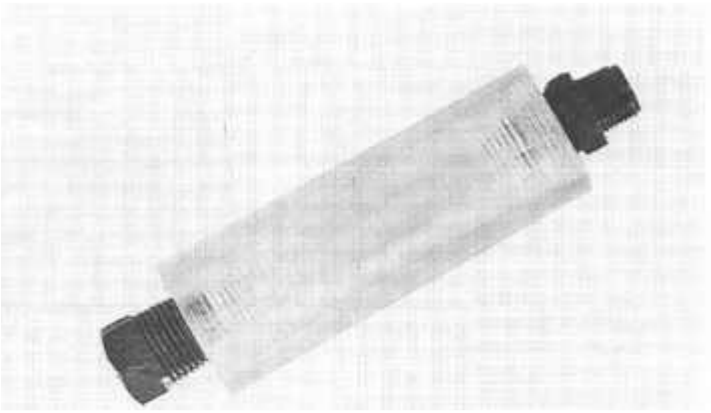
SMHS92080001

# OBSERVING FUEL FLOW TO CHECK FOR EXCESSIVE AIR IN FUEL SYSTEMS{0651, 1250}

**SMCS -** 0651; 1250

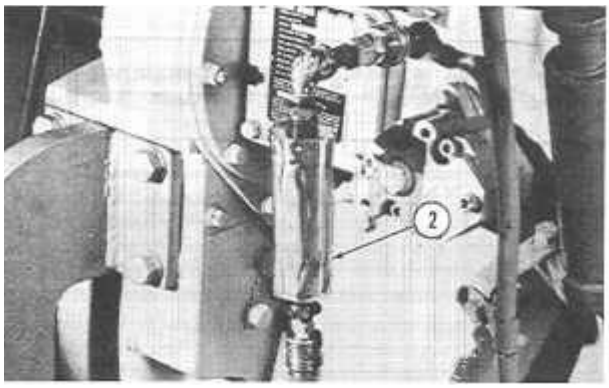
**All Diesel Engines**

## Using the 2P-8278 FUEL FLOW TUBE



Normally, No. 2 Diesel Fuel contains about 10% air in solution, although the air is not visible. When the amount of dissolved air exceeds 10%, fuel rate and power output are reduced.

This instruction describes the use of the 2P-8278 Fuel Flow Tube to observe the fuel flow and determine engine power loss due to excessive air in the fuel.

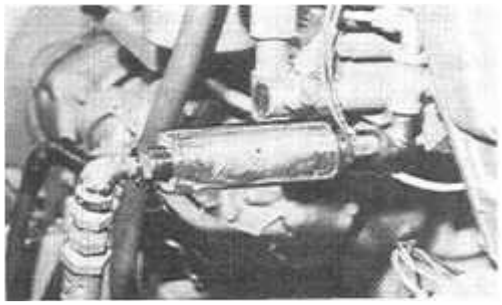



**1.** Install the 2P-8278 Fuel Flow Tube 2 in the fuel transfer pump inlet line. Start and warm up the engine. Bleed the fuel system at the filter housing.

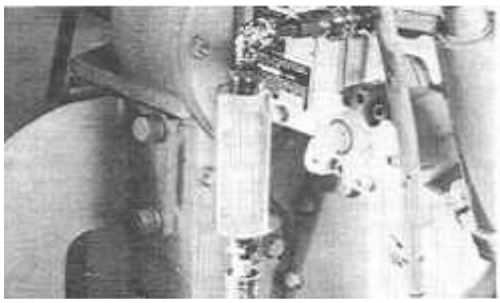
**NOTE:** The bleed valve permits air to purge itself out of the filter housing; however, the observer should remember that the bleed valve can create a venturi effect through the threads in the valve and pass some air out the bleed line. Thus, there appears to be excessive air in the system when air is merely being drawn through the bleed valve.

Observe the fuel flow when the engine is idled and accelerated under load. Normally, the fuel is clear as indicated above, and all air is in solution. If the engine has a priming pump and it is suspected to be leaking air into the fuel system, install a fuel flow tube in the bypass line also.

**2.** When the fuel is very slightly effervescent, there is no detrimental effect to the performance of the engine. Often this condition is normal. The fuel line pressure between the tank and transfer pump is slightly below atmospheric pressure, so some of the dissolved air comes out of solution. Transfer pump pressure will force the air into solution before the injection pumps are filled, or the bypass line will return it to the tank.



**3.** If the fuel begins to appear white and foamy, excessive air is entering the system and causing agitation. This condition affects engine performance, and power loss up to 3 1/2% can occur.



**4.** If large bubbles appear, a large amount of air is entering the system. With this condition, power losses up to 9% can occur even though the engine runs smoothly.

The Caterpillar fuel system is designed to purge excess air through the bypass line. However, the system has certain limitations, and when they are exceeded, air can pass into the injection pump high pressure lines. Some causes of air entry are loose or broken fittings or a pin hole in the fuel line. Swab a handful of heavy grease against any fitting that is thought to be loose or broken. If the visible air in the tube is reduced, the leak has been temporarily sealed. Repair the line as necessary.

Another potential source of air leakage, which is more difficult to check, is the fuel priming pump. If air is drawn through the priming pump by the transfer pump, the air has a tendency to go into solution when it is pressurized by the transfer pump. Once the air is in solution, it is more difficult to observe. To check for this type of leakage, install a fuel flow tube in the bypass line. If the fuel in the bypass line foams or bubbles excessively, the priming pump is probably the leak source. However, remember that some air will always be present in the bypass line.