Service Advisory

MTD-121

Walk Behind Mowers

Models Affected: **11A-54M7001; 11A-54M7031; 12A-18M7010; 12A-98M7009**

Serial Number Range Affected:
11A-54M7001 - 1L149K77151 through 1L159K76205
11A-54M7031 - 1L089K77459 through 1L149K76949
12A-18M7010 - 1L219K36709 through 1L229K36204 and 1A130K30998 through 1A140K30584
12A-98M7009 - 1L169Z76030 through 1L189ZG6108 and 1A040ZG0001 through 1A060ZG0165

Date: September 03, 2010

Subject: Production Engine Substitution
Model 5P70ML Engine dies after running for 15-30 minutes of use.
Mis-diagnosis of fuel starvation cause.

ACTION REQUIRED: This advisory is for **INFORMATIONAL PURPOSES ONLY**

PURPOSE: This INFORMATIONAL Service Advisory is to inform the service dealer network of an engine model substitution for the models listed in **Models Affected.** The models listed were manufactured with the 5P70ML engine. The engine IPL in the Operator's Manual reflects the 5P70M0 engine and not the actual engine used, the 5P70ML.

The primary difference between the 5P70M0 and the 5P70ML engine is that the **5P70M0 engines use a vented fuel cap and no carbon canister (no EVAP System)** while the **5P70ML engines use a non-vented fuel cap and a carbon canister (EVAP System).** Venting (breathing) of the fuel tank is performed through the carbon canister in the 5P70ML engine and not through the fuel cap.

Therefore, fuel starvation issues as described in the **Subject:** above, may be the result of carbon canister issues (contamination, clogging, etc.) and not the venting of the fuel cap.

EVAP System troubleshooting guidelines are presented in the **DISCUSSION:** section below.

Fuel Tank Components: Charcoal Canister - P/N 751-10443; Roll Over Valve - P/N 751-10869; In-Tank Fuel Filter - P/N 751-10358; Fuel Line Kit (Hose, Clamp and Filter) - P/N 751-10364; Fuel Tank - P/N 751-10438; Fuel Cap (Non-Vented) - P/N 751-10440

DISCUSSION:

1. Figure 1 shows the EVAP system used on the 5P70ML engine.

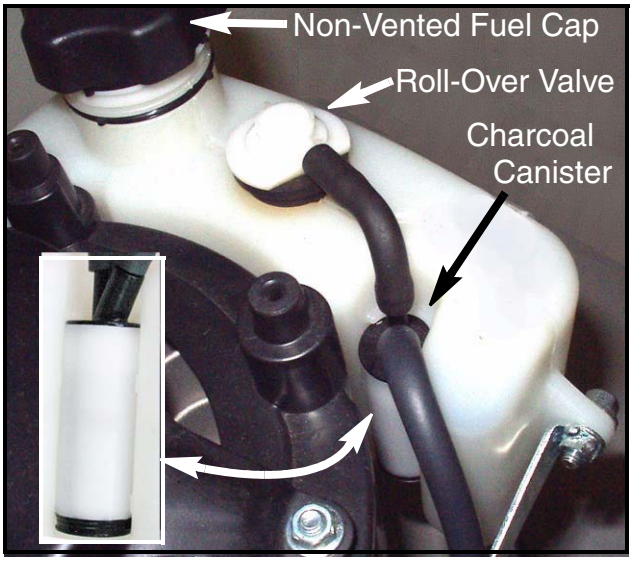

FIGURE 1

2. EVAP System Operation:

2.1 Gasoline in the fuel tank evaporates giving off hydrocarbon vapors.

2.2 The vapors exit the fuel tank through the roll over valve vent.

2.3 The vapors are routed into the charcoal canister. There the hydrocarbons are absorbed by the activated charcoal and the air is allowed to pass through the bottom vent of the canister and out to atmosphere.

2.4 When the engine is running, the vacuum inside the carburetor insulator draws the vapors (hydrocarbons) out of the activated charcoal to be used in the combustion cycle.

Troubleshooting Guidelines:

Symptom: Engine runs for 15-30 minutes then dies.

3. Run the engine with a spark tester in-line between the spark plug wire and the spark plug or use an oscilloscope and see if the spark goes away at the same time the engine dies.

4. Check choke operation.

5. Black smoke?

6. Wet plug?

7. Test for invisible damage to the air filter by starting the engine with the air filter removed.

8. Prime test immediately after engine dies. If it restarts; this may indicate a problem with fuel flow to the carburetor.

9. The above inspection and tests indicate that the unit has good fuel flow for a period of time then begins to manifest fuel starvation symptoms.

10. Inspect the following components for debris clogging the fuel flow path and integrity of the fuel and vacuum hoses.:

In-tank fuel filter
Collapsed or pinched fuel hose
Cracked or leaking vacuum hoses /connections

11. If the components listed above are found to be in good working condition, then further diagnosis of the EVAP system on the 5P70ML engine is required.

NOTE: *Complete fuel system troubleshooting for the vertical shaft MTD engines if provided in Chapter 4 of the* ***"Profession Shop Manual - Vertical Shaft Engines - P62/P65/P70 Series", P/N 769-03354A.***

EVAP System Troubleshooting:

NOTE: *In the following troubleshooting steps, the engine and fuel tank must be kept in a level operating position to ensure the roll over valve is not closed.*

12. Ensure the fuel cap is **removed** from the tank. Carefully remove the roll over valve vapor hose from the roll over valve. Refer to Figure 2.

13. Attach a length of tubing from the roll over valve to the hand vacuum pump and see if the roll over valve holds a vacuum, **it should not hold a vacuum.** If it does hold a vacuum, replace the roll over valve.

NOTE: *The valve may indicate good when testing but may have been stuck closed (roll over condition) and broke loose during handling. It may be necessary to test the valve out of the fuel tank in both the roll over position and then the normal position to determine if valve sticks closed.*

14. The charcoal canister is the fuel tank vent. Gently pinch clamp closed or plug the canister's output vapor hose between the charcoal canister and the carburetor.

15. Connect the hand vacuum pump to the roll over valve short hose on the charcoal canister.

16. Try to build a vacuum in the charcoal canister. **It should not hold a vacuum.** If it does hold a vacuum, replace the charcoal canister.

Optional Check: Gently blow into the attached hose - **DO NOT USE COMPRESSED AIR, which will destroy the charcoal canister.** There should be little to no force required to blow through the canister.

17. Disconnect the vapor hose from the charcoal canister going to the carburetor. Remove the pinch clamp from the vapor hose.

18. Attach a hand vacuum pump to the hose and see if the vapor hose holds a vacuum, **it should not hold a vacuum.** If it does hold a vacuum, remove the hose from the carburetor insulator and inspect for a clog in the hose or insulator. Clear clog if necessary.

Fuel Tank and Cap Integrity...EVAP System:

19. Ensure the fuel cap is installed and tight on the fuel tank. Carefully remove the roll over valve vapor hose from the top of the charcoal canister.

20. Attach a hand vacuum pump to the hose and see if the tank and cap holds a vacuum, **it should hold a vacuum.** If it does not hold a vacuum, check the cap for venting (it should not vent) or the tank to roll over valve hose for leaks or the tank for air leaks.

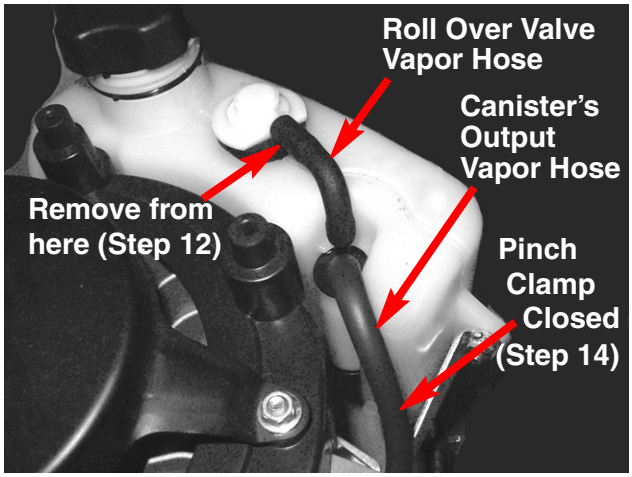

FIGURE 2

This completes the EVAP System Troubleshooting

SERVICE MANAGER	PARTS MANAGER	SALES MANAGER	SERVICE TECH.	SERVICE TECH.

Circulate and Initial