

SECTION 4 - FUEL SYSTEM

MERCURY
SNOWMOBILES

PART C - FUEL TANK, LINES and PRIMER



INDEX

	Page
Fuel Flow Problems	4C-1
Fuel Cap Assembly	4C-1
Model 220 Fuel Tank Pickup	4C-1
Draining Fuel Tank	4C-1
Fuel Lines	4C-1
Fuel Tank	4C-2
200-220-250, Rocket and Lightning Models	4C-2
Removal	4C-2
Installation	4C-2
Hurricane, Mark I, Mark II, 340 S/R, 440 S/R, 440 M/X and 440 MAX (Chassis Serial No. 3709838 and Above)	4C-3
Removal	4C-3
Installation	4C-3
440 MAX (Chassis Serial No. 3447382 and Below)	4C-4
Removal	4C-4
Installation	4C-4
340 S/T, 400 S/T, 440 S/T, 340 T/T and 440 T/T	4C-5
Removal	4C-5
Installation	4C-5
Fuel Primer	4C-5
General	4C-5
Troubleshooting	4C-5
Primer Lines	4C-6

FUEL FLOW PROBLEMS

FUEL CAP ASSEMBLY

Poor vehicle performance may result from fuel flow obstruction between fuel tank and carburetor that restricts RPM, encourages engine overheating and causes a general decline in vehicle performance.

To remedy, check for possible air vent restriction in fuel cap assembly by simply loosening or removing the fuel cap during normal operation at the time that the symptoms are present. If vehicle performance improves when fuel cap is loosened/opened, modify the cap by drilling an additional 1/16" vent hole thru the plastic lens.

NOTE: The fuel cap assembly with fuel gauge can be used on models not so equipped.

Change in temperature may build up pressure in the fuel tank, particularly when moving snowmobile inside a warm building after the machine has been outside in the cold for a period of time. A check valve in the fuel cap permits air to enter tank but does not permit pressure to escape. Excess pressure causes carburetor inlet needle to unseat, thus allowing fuel to drain out thru carburetor. This usually occurs when vehicle is parked on a trailer in the nose-down position. It is suggested, therefore, that the fuel cap be loosened when moving the snowmobile indoors.

MODEL 220 FUEL TANK PICKUP

If a fuel restriction problem is encountered on a 220 Snowmobile, it is possible that the fuel tank outlet valve assembly is not opening fully in either "MAIN" or "AUX" positions. A new Fuel Tank Pickup Kit (D-20-54908A1), which ensures adequate fuel flow to the engine, was installed on all 220 Model vehicles above VEHICLE Serial No.

2548054. The kit consists of a new fuel pickup (with filter screen) and fuel shut-off valve, but it does not include an auxiliary (reserve) feature.

If above conditions exists, install new Fuel Tank Pickup Kit on earlier vehicles.

DRAINING FUEL TANK

The absence of a gas tank drain plug makes it necessary to siphon fuel from tank when draining is needed. The following procedure is recommended.

1. Obtain approximately 5 feet of 3/8" ID hose and cut a flap-type slit 18" from one end. Make this cut in the direction of fuel flow. (Figure 1)
2. Insert a small pipe nipple (slightly larger OD than hose ID) into opposite end of hose.
3. Insert nipple end of siphon hose into fuel tank filler neck with natural curl of hose pointed down. Insert hose until it strikes bottom of tank.
4. With opposite end of hose in a suitable container, insert a compressed air hose nozzle in downward direction in flap-type slit and apply air pressure to start fuel flow.

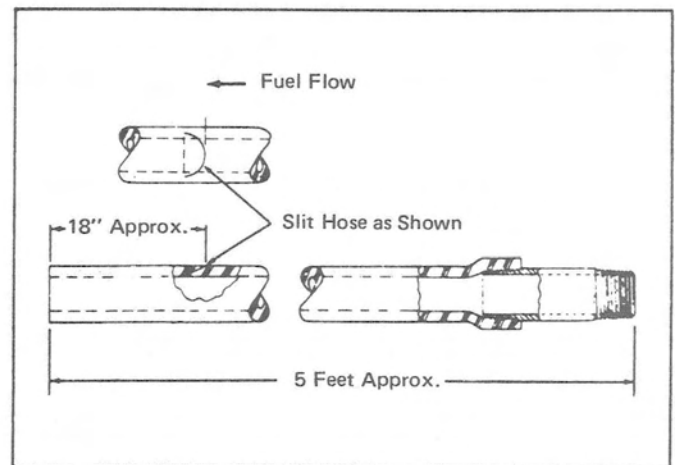


Figure 1. Siphon Construction

FUEL LINES

Replacement fuel lines are sold as preformed assemblies. Use caution during installation to prevent chaffing or pinching of fuel and fuel return lines during operation, which could cause leakage or carburetor fuel starvation.

Inspect fuel lines and fuel return lines for cracks, breaks and restrictions.

CAUTION: When replacing fuel or fuel return lines, DO NOT substitute other than standard equipment ID size line. Failure to adhere to this caution may result in loss of snowmobile performance.

FUEL TANK - 200-220-250, ROCKET and LIGHTNING

REMOVAL

1. Remove rear seat cushion by loosening snaps.
2. Remove taillight lens and 6 attaching nuts from taillight plate. Move taillight assembly aside.
3. Close fuel shut-off and disconnect fuel line.
4. Remove 3 attaching nuts which secure front retaining plate for tank to chassis.
5. Move tank forward and lift from chassis.

INSTALLATION (Figure 2)

1. Check tank for cracks, leaks or internal corrosion.
2. Position rubber insulators between tank and chassis tubing.

CAUTION: Do not pinch taillight harness between chassis and tank during installation, or severe electrical damage could result. Do not overtighten fuel tank mounting bolts, or leakage can occur.

- Position tank on chassis and secure with taillight plate and attaching nuts. Install taillight lens.
3. Push bottom half of front retaining plate for tank up thru chassis and position top half with rubber strip on studs of bottom half. Secure with attaching nuts.
 4. Connect fuel line and open fuel shut-off valve.
 5. Install rear seat cushion.

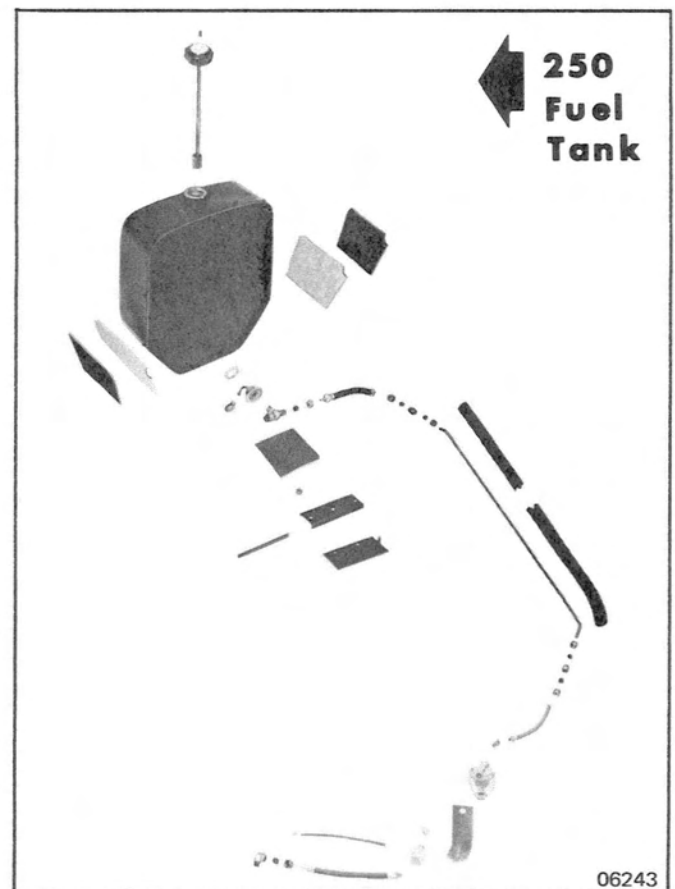
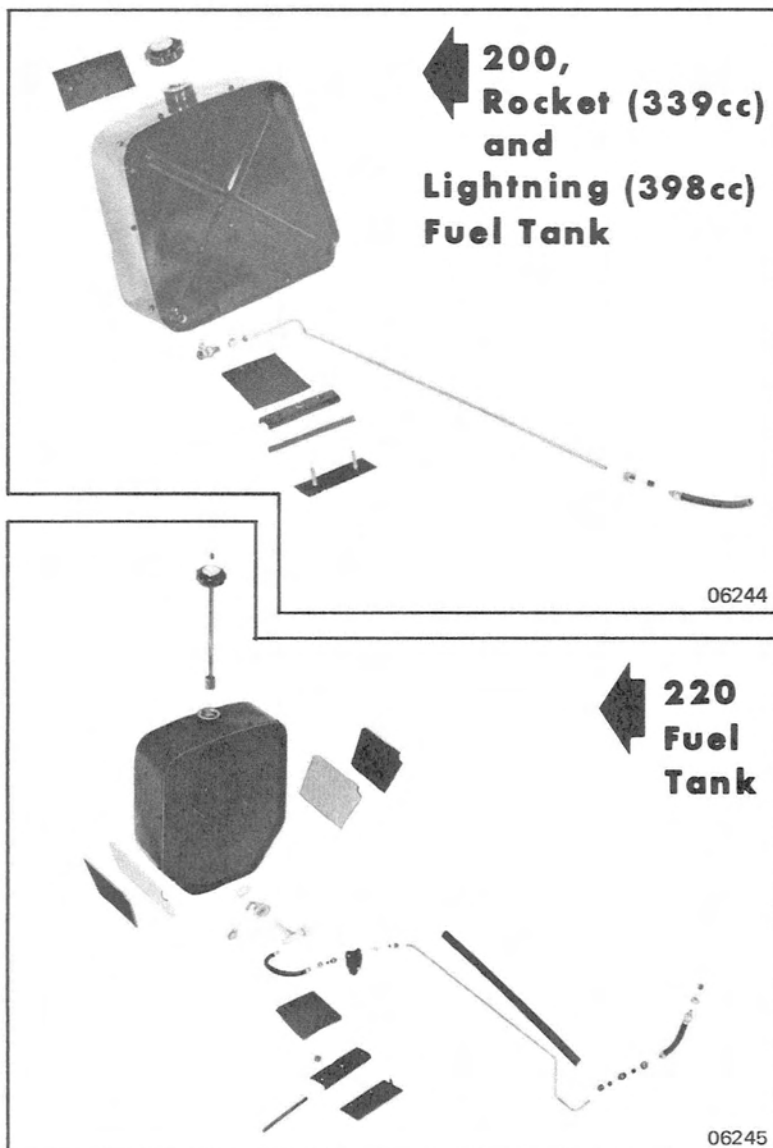
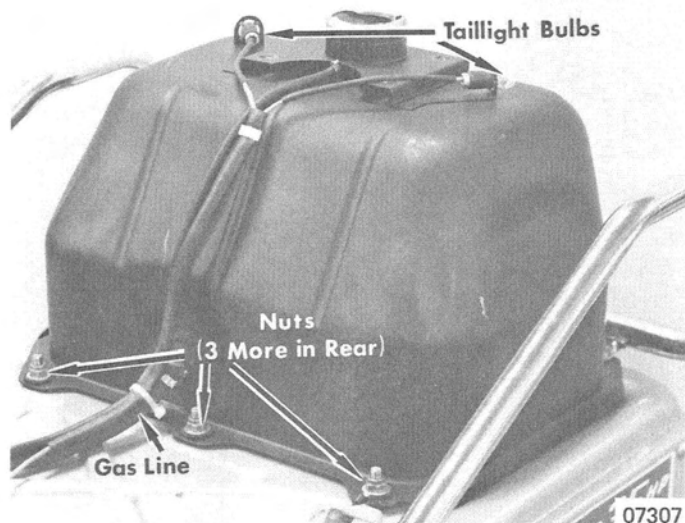


Figure 2. Fuel Tank Components

FUEL TANK

HURRICANE, MARK I, MARK II, 340 S/R, 440 S/R, 440 M/X and 440 MAX (Chassis Serial No. 3709838 and Above) REMOVAL



1. On Mark I and Mark II (Chassis Serial No. 3591478 and Below) models, remove dash assembly. (Refer to Section 2, "Chassis and Cowl", Part F.)
2. Remove main seat cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)
3. Remove 2 taillights (and 2 stoplights, if so equipped) from top of fuel tank. (Figure 3)
4. Remove fuel hose and fuel return hose from fuel tank.
5. Remove 6 nuts from fuel tank and remove tank. (Figure 3)

Figure 3. Fuel Tank

INSTALLATION (Figure 4)

1. Check tank for cracks, leaks and internal corrosion.
NOTE: On 340 S/R, 440 S/R, 440 M/X and 440 MAX (Chassis Serial No. 3709838 and Above) models, a spacer is positioned on each mounting stud between fuel tank and chassis.
2. Position rubber insulators between tank and chassis.
3. Position tank on chassis and secure with 6 nuts and washers.
4. Connect fuel hose and fuel return hose to fuel tank. (Figure 4)
5. Install taillight (and 2 stoplights, if so equipped) bulbs into holders on fuel tank.
6. Install main seat cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)
7. If removed, install dash assembly. (Refer to Section 2, "Chassis and Cowl", Part F.)

CAUTION: When installing dash assembly, DO NOT pinch fuel or fuel return lines between dash and chassis.

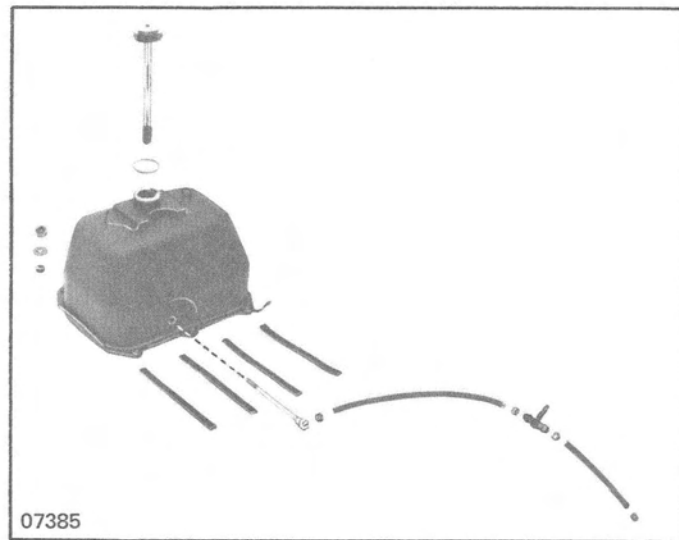


Figure 4. Fuel Hose Connections

FUEL TANK

440 MAX (Chassis Serial No. 3447382 and Below)

REMOVAL

1. Remove rear cushion and main seat cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)
2. Remove main fuel line and fuel return line from fuel tank.
3. Disconnect taillight harness from engine harness at connector, located below intake manifold.
4. Remove 4 screws and remove taillight lens. (Figure 5)

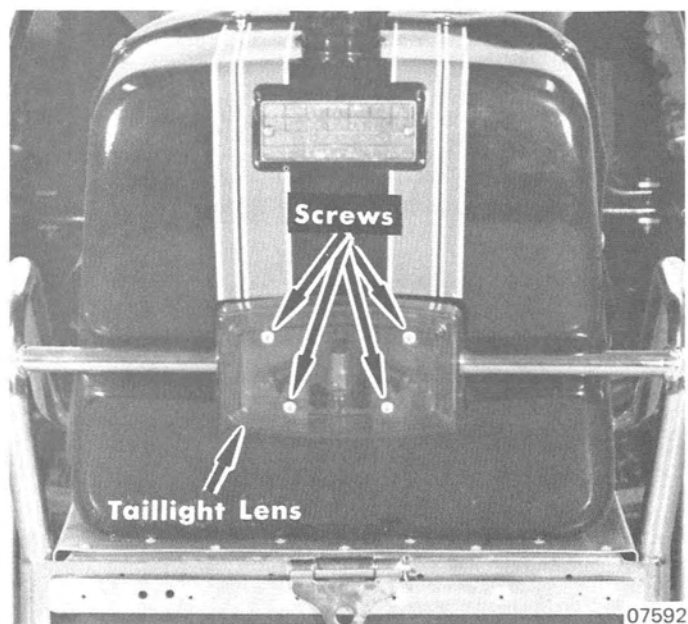


Figure 5. Taillight Lens

5. Remove 4 nuts and pull taillight plate assembly away from fuel tank. (Figure 6)

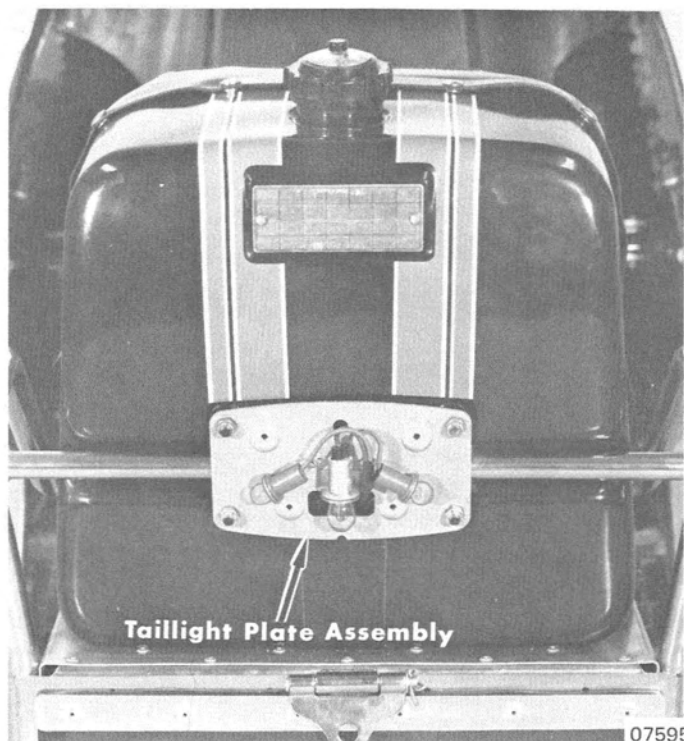


Figure 6. Taillight Plate Assembly

6. Remove 2 attaching nuts which secure front of fuel tank to chassis.
7. Pull taillight harness from beneath insulating pad and dash and thru fuel tank.
8. Move fuel tank forward and lift from chassis.

INSTALLATION (Figure 7)

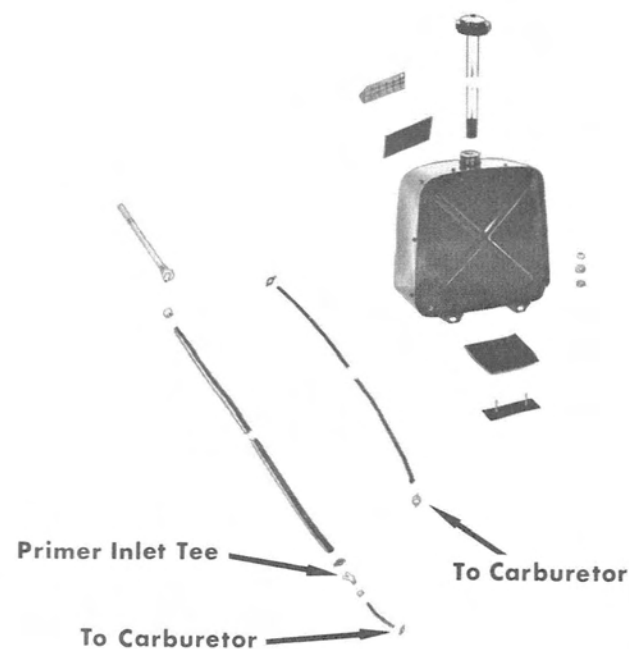


Figure 7. Fuel Tank Components

1. Check fuel tank for cracks, leaks and internal corrosion.
2. Place fuel tank in position on chassis.
3. Route taillight harness thru channel in fuel tank, beneath fuel tank, under dash and under insulating pad. Connect taillight harness to engine harness.
4. Secure fuel tank to chassis with washers and attaching nuts. Be sure that rubber grommets are properly installed on fuel tank and ground strap is installed on tank mounting stud.

CAUTION: DO NOT pinch taillight harness between chassis and tank during installation, or severe electrical damage could result. Do not overtighten fuel tank mounting nuts.

5. Secure taillight plate assembly to fuel tank. (Figure 6)
6. Install taillight lens. (Figure 5)
7. Connect main fuel line and fuel return line to fuel tank.
8. Install main seat cushion and rear cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)

CAUTION: When installing main seat cushion, DO NOT pinch fuel or fuel return lines between seat cushion and chassis.

FUEL TANK

340 S/T, 400 S/T, 440 S/T, 340 T/T and 440 T/T

REMOVAL

1. Remove main seat cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)
2. Remove fuel shut-off valve and fuel pick-up hose assembly from fuel tank.
3. Remove fuel tank mounting bracket by drilling out rivets and removing bracket from chassis.
4. Pull fuel tank out of dash support opening and remove from chassis.
5. Remove fuel tank cap from fuel tank.

INSTALLATION

1. Check fuel tank for cracks, leaks and foreign contaminants.
2. Install fuel tank cap on fuel tank.
3. Place fuel tank in position on chassis.
4. Route taillight harness thru channel in fuel tank and to side of fuel tank mounting bracket.
5. Install fuel tank mounting bracket and secure with rivets.
6. Install fuel pick-up hose and fuel shut-off valve assembly in fuel tank.
7. Install main seat cushion. (Refer to Section 2, "Chassis and Cowl", Part F.)

CAUTION: DO NOT pinch taillight harness between chassis and fuel tank during installation, or severe electrical damage could result.

FUEL PRIMER

GENERAL

A fuel primer improves the starting ability of most Mercury Snowmobiles in extremely cold weather. It injects fuel directly into the crankcase on 200, 220, 250, Hurricane, Mark I and Mark II Models. On Rocket, Lightning, 440 MAX, 440 M/X and 440 S/R Models, the fuel primer injects fuel into

carburetor(s) behind throttle shutter. Primer system consists of a primer pump, check valve, hoses and necessary fittings.

NOTE: On 440 S/R, 440 M/X, 440 MAX (Chassis Serial No. 3709838 and Above) and Mark II Models, check valve is incorporated within primer pump.

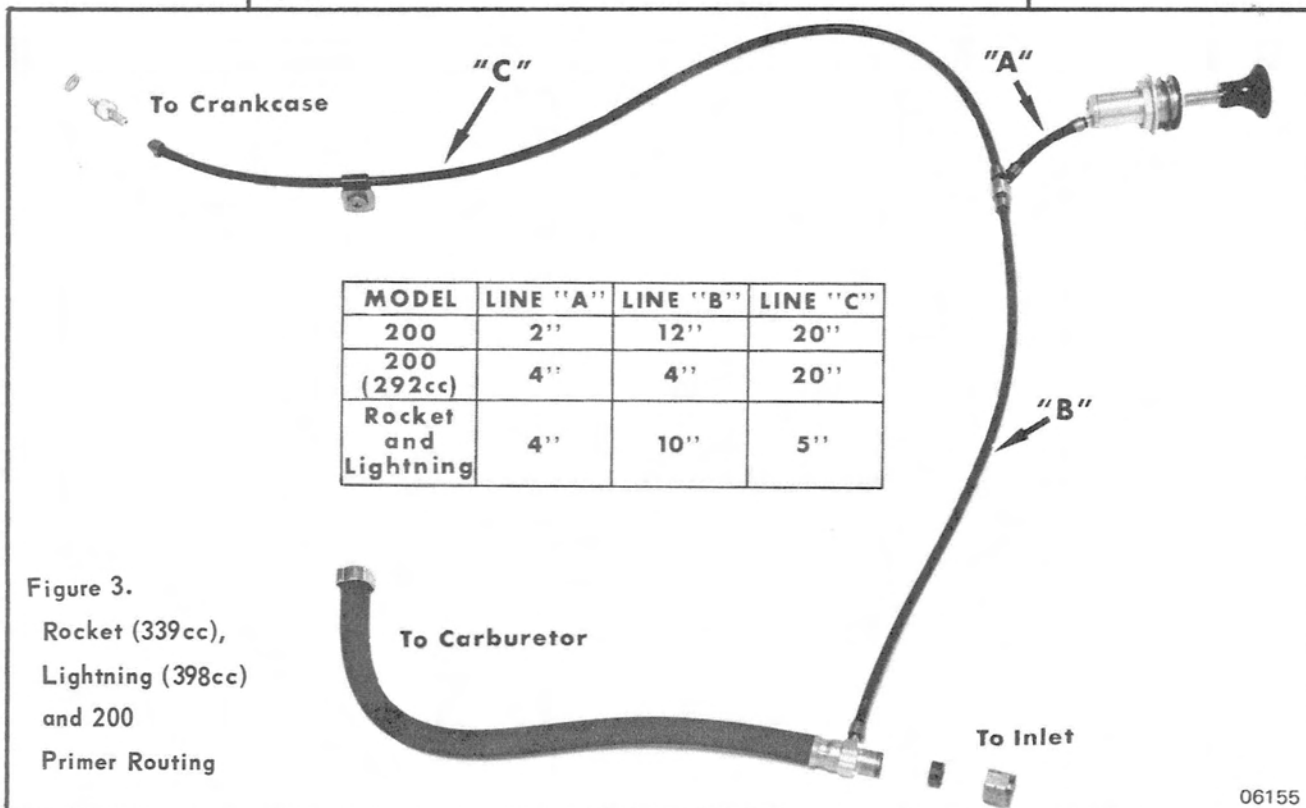
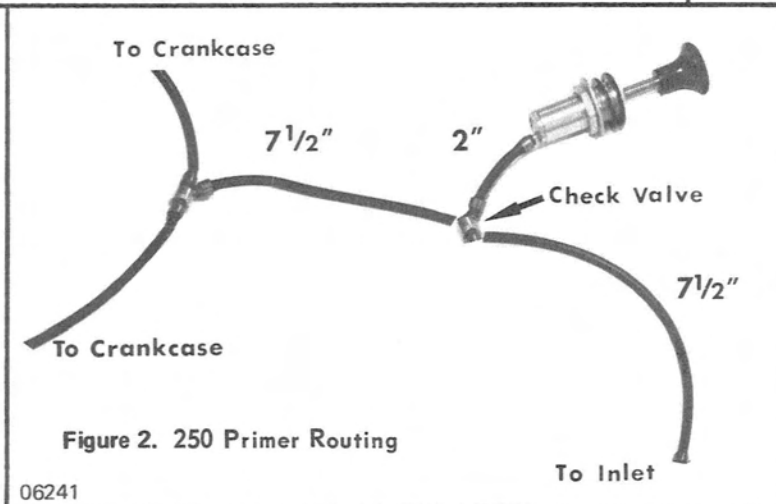
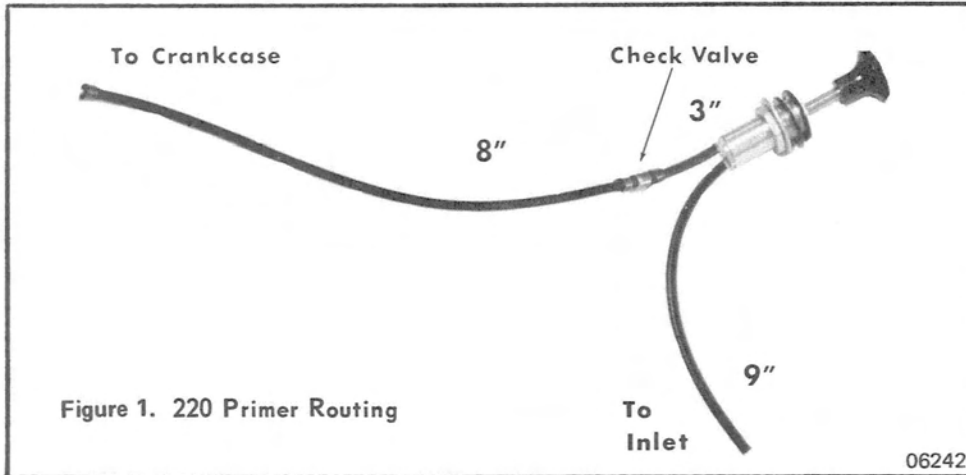
TROUBLESHOOTING

Some problems, which surround malfunction of the primer fuel system and corresponding measures to correct these problems, are listed below:

PROBLEM	REMEDY
1. (250ER Only) - Interference with reverse starter motor causes primer hose between pump and check valve to break.	1. Check position of barbed outlet fitting on bottom of primer pump. If fitting is located directly in center of pump, replace with complete primer pump (D-57858). New primer pump has an offset outlet fitting at a 15° angle which provides necessary clearance between pump and reverse starter.
2. The check ball in primer check valve sticks and causes a vacuum on pump plunger when actuated, thus returning plunger immediately to rest (down) position.	2. Remove check valve and apply compressed air to fuel inlet fitting (single barbed fitting on END of check valve) to unseat check ball or install new check valve.
3. Primer knob pulls off from pump shaft.	3. Primer knobs are a press-fit on pump shaft. To reinstall, use a cement or epoxy to adhere knob to shaft or drill and pin knob on shaft.
4. (Hurricane Only) - Loss of fuel from fuel tank.	4. Install new hose clamps at fuel primer check valve.
5. Excessive fuel consumption, rough idling, and/or sluggish acceleration.	5. Check operation of check valve by pinching primer hose on inlet side of primer pump. Check low speed mixture adjustment to determine effect. If problem is remedied, replace check valve.

PRIMER LINES

Fuel primer lines are routed as shown below.



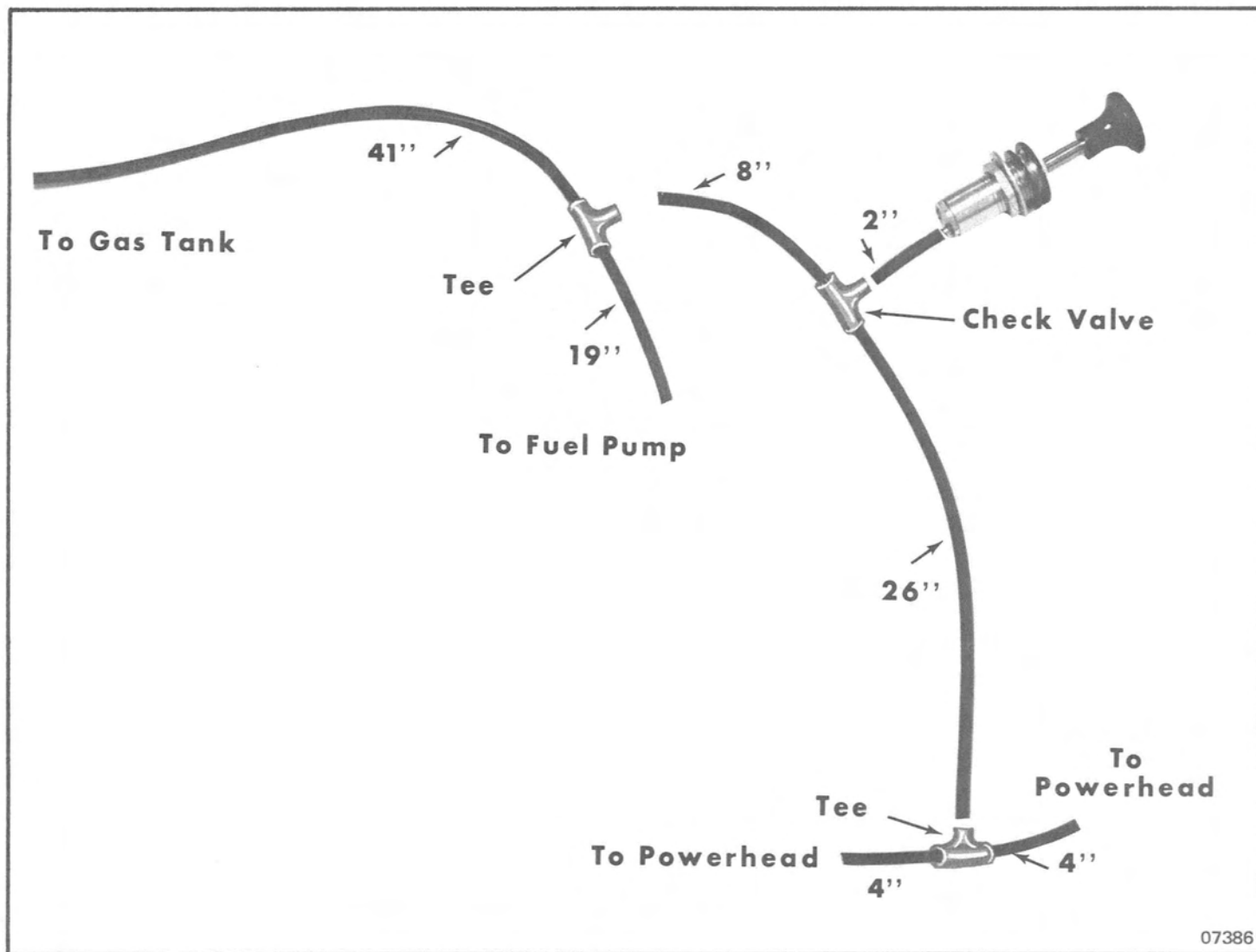


Figure 4. Hurricane (644cc) and Mark I (644cc) Primer Routing

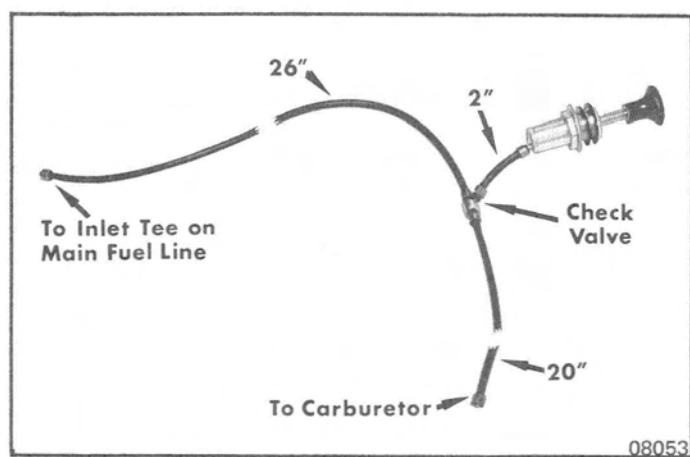


Figure 5. 440 MAX (Chassis Serial No. 3447382 and Below) Primer Routing

NOTE: On 440 S/R, 440 MAX (Chassis Serial No. 3709838 and Above) and Mark II Models, check valve is incorporated within primer pump.

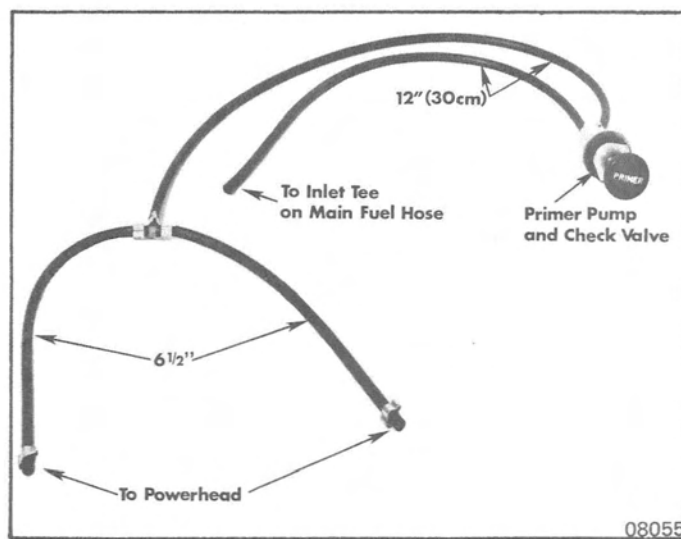
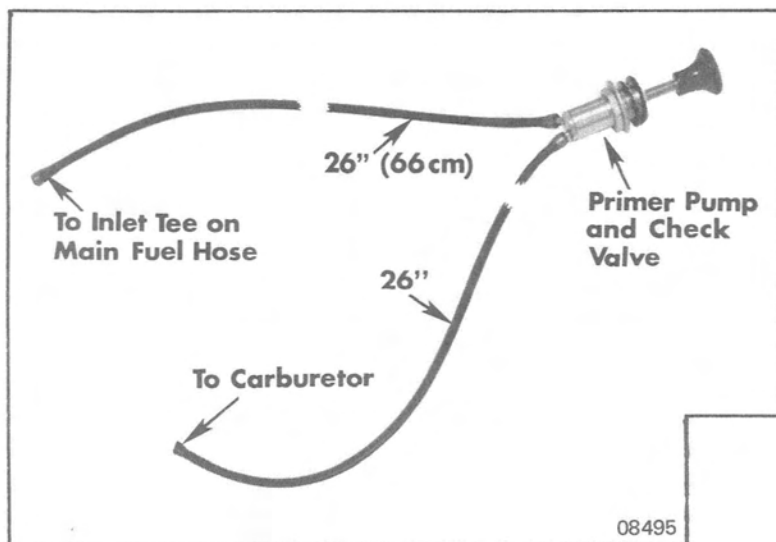
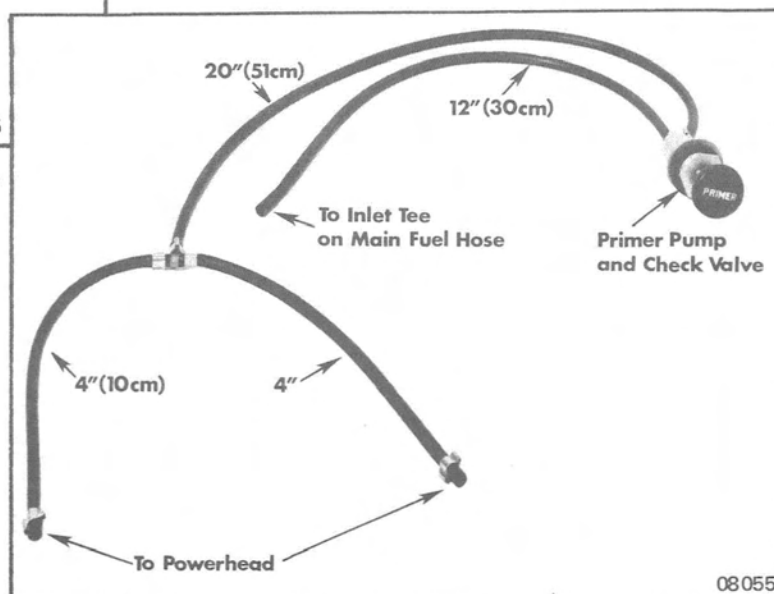


Figure 6. Mark II (Chassis Serial No. 3591478 and Below) Primer Routing



08495

Figure 7. 440 S/R, 440 M/X and 440 MAX (Chassis Serial No. 3709838 and Above) Primer Routing



08055

Figure 8. Mark II (Chassis Serial No. 3787640 and Above) Primer Routing