Form No. 3358–210 Rev A

High Flow Hydraulic Kit

Workman® Utility Vehicle

Model No. 07228

Installation Instructions

Note: This kit can only be installed on Workman vehicles with serial numbers 220000001 & Up.

1. Position the vehicle on a level surface, stop the engine, engage the parking brake and remove the key from the ignition switch.
2. Remove the bed, if so equipped. Refer to the Operator's Manual for removal instructions.
3. Remove the (2) bolts, washers and spacers securing the auxiliary power unit (APU) drive shaft coupling to the engine crankshaft pulley (Fig. 1).
4. Remove the (2) bolts, washers, spacers and nuts securing the forward drive shaft coupling to the jack shaft assembly (Fig. 1).
5. Remove the (2) bolts, spacers and nuts securing each coupling to the drive shaft (Fig. 1). Note the position of the spacers and the washers before removal. Discard the drive shaft but retain the couplings, spacers and fasteners.

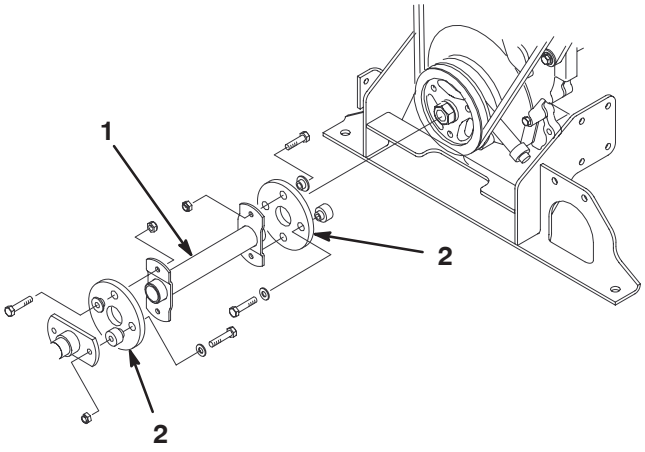

Figure 1

1. APU drive shaft
2. Couplings

6. Mount the new pulley to the existing engine pulley with (2) M8–1.25 x 30mm capscrews (Fig. 2).
7. Install the belt onto the pulley.
8. Mount the couplings to the new drive shaft with the bolts, spacers and nuts previously removed (Fig. 2).
9. Mount the rear coupling to the engine pulley with (2) new M8–1.25 x 50 mm bolts, new 3/8" washers and new .344 ID x .875 x OD x .179 thick spacers. Position the components as shown in figure 2.
10. Mount the forward coupling to the jack shaft assembly with the (2) bolts, washers, spacers and nuts previously removed (Fig. 2).

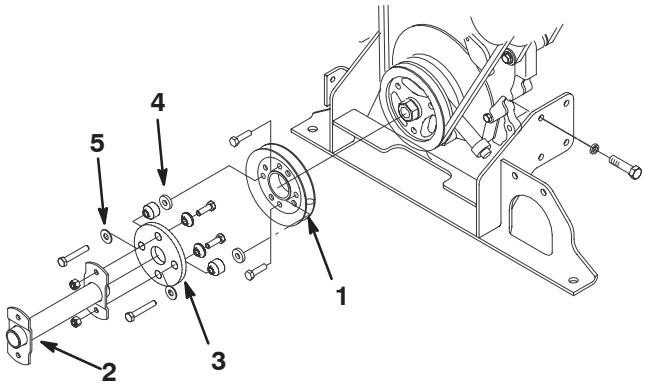

Figure 2

1. Pulley
2. Drive shaft
3. Coupling
4. Spacer
5. Washer

11. Remove the (4) bolts and washers securing the engine mount to the side of the engine (Fig. 3).

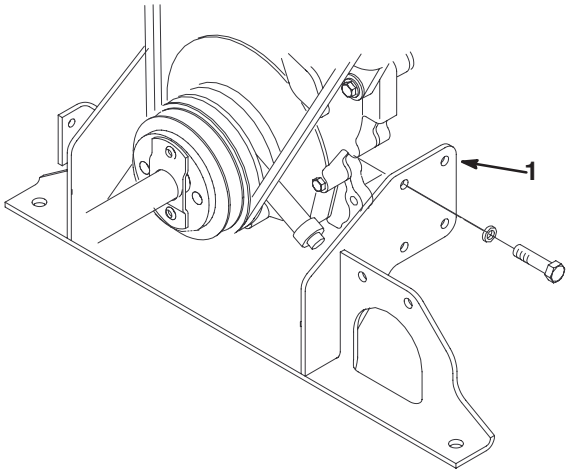

Figure 3

1. Engine mount

8111 Lyndale Avenue South
Bloomington, MN 55420-1196

12. Loosely secure the pump bracket and gusset to the engine mount with (2) 5/16–18 x 7/8” bolts and nuts (Fig. 4).

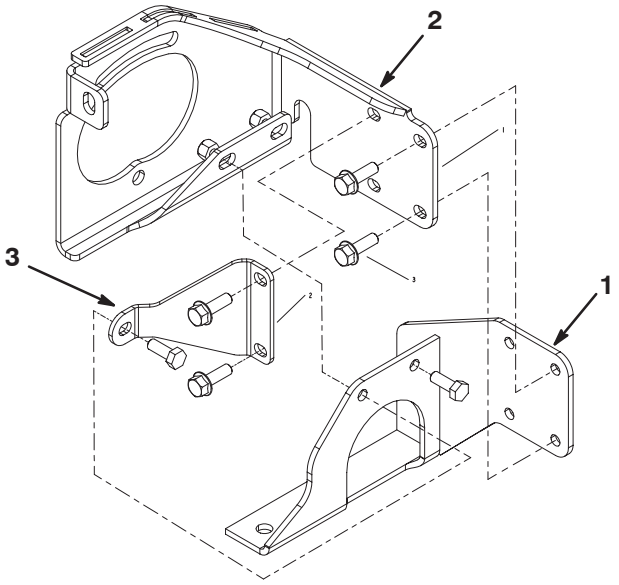

Figure 4

1. Engine mount
2. Pump bracket
3. Gusset

13. Secure the pump bracket to the engine mount with (4) new M8 x 30 flange bolts (Fig. 4). Torque the bolts to 15 ft–lb. (20 N.m).

14. Loosely secure the lower flange of the pump to the pump bracket with a 3/8–16 x 1–1/4” bolt, flat washer and nut (Fig. 5).

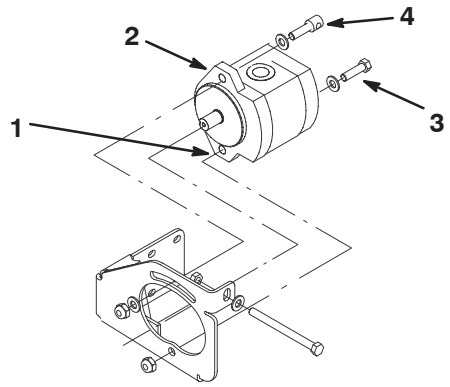

Figure 5

1. Lower pump flange
2. Upper pump flange
3. Bolt
4. Pump guide

15. Install the straight fittings into the hydraulic pump as shown in figure 6. Make sure the O–rings are lubricated and in place.

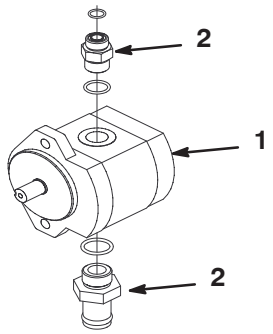

Figure 6

1. Pump
2. Straight fitting

16. Loosely secure the upper flange of the pump to the pump bracket with a pump guide, flat washer and nut (Fig. 5 & 7).

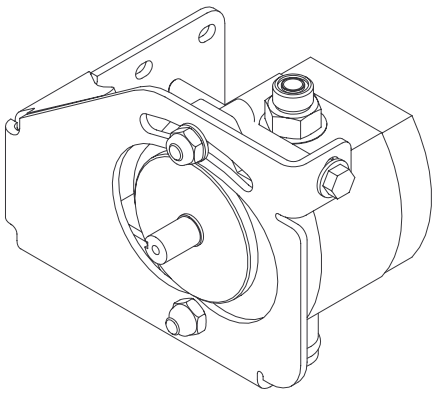

Figure 7

17. Loosely mount the pump guide to the flange on the pump bracket with a 3/8–16 x 4–1/2” bolt, jam nut and washer as shown in figures 5 & 7.

18. Mount the fan hub to the pulley with (2) 1/4–20 x 3/4” screws and nuts (Fig. 8).

19. Mount the fan to the fan hub with (3) 1/4–20 x 3/4” screws and flat washers (Fig. 8). Make sure the deep side of the fan is facing the fan hub.

20. Mount the pulley to the pump with a 1/4–20 x 3/4” flange bolt (Fig. 8).

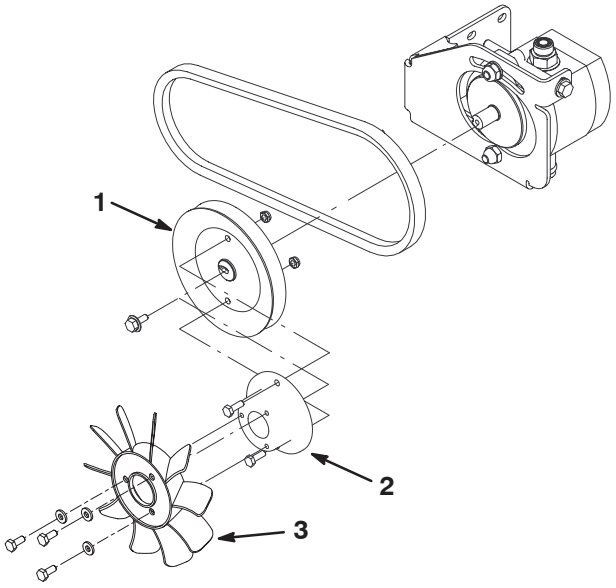

Figure 8

1. Pulley
2. Fan hub
3. Fan

21. Install the belt onto the pulley.

22. The proper belt tension will allow .16” deflection when a force of 10 lb. is applied to the belt midway between the pulleys. To adjust the tension, loosen the nut on the pump guide and the jam nut on the adjusting bolt. Tighten or loosen the adjusting bolt until the proper tension is achieved, then tighten the nuts.

Note: When re–tensioning the belt after operation, the proper belt tension will allow .16” deflection when a force of 7 lb. is applied to the belt midway between the pulleys.

23. Tighten the upper and lower pump mounting bolts to 30 ft–lb. (40 N.m).

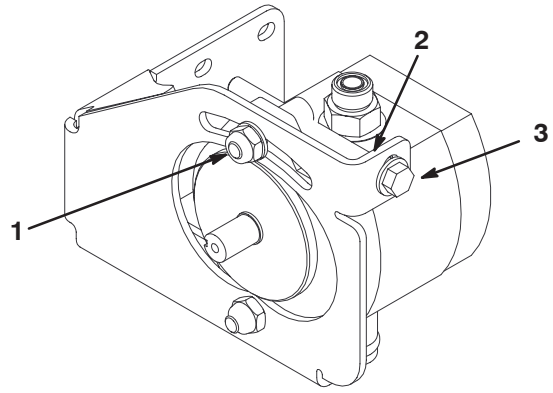

Figure 9

1. Pump guide nut
2. Jam nut
3. Adjusting bolt

24. Install the tee fittings to the hydraulic manifold. Position the fittings as shown in figure 10. Make sure the O–rings are lubricated and in place.

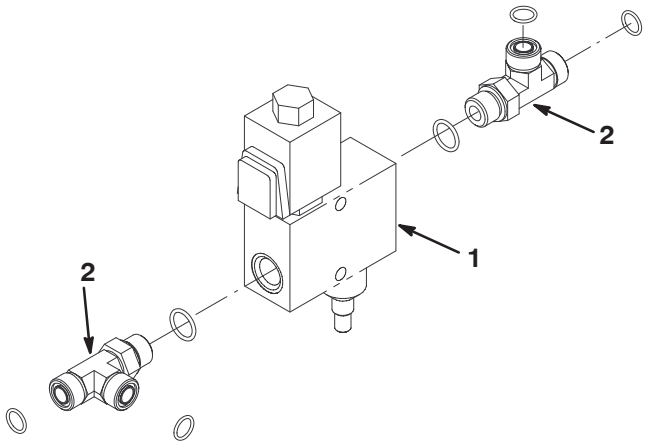

Figure 10

1. Hydraulic manifold
2. Tee fitting

25. Mount the hydraulic manifold w/fittings to the left hand cooler bracket with (2) 5/16–18 x 2” bolts and lock nuts (Fig. 11).

26. Loosely mount the L.H. bracket to the left side of the frame cross member with (2) 5/16–18 x 7/8” bolts and lock nuts (Fig. 11).

27. Loosely mount the R.H. bracket to the center of the frame cross member with (2) 5/16–18 x 7/8” bolts and lock nuts (Fig. 11).

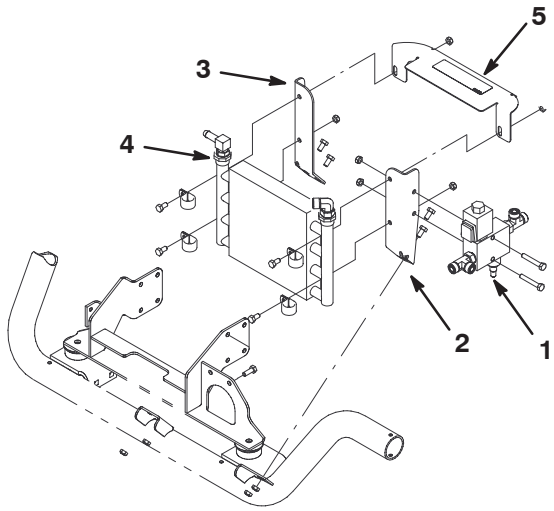

Figure 11

1. Hydraulic manifold
2. Bracket –L.H.
3. Bracket –R.H.
4. Cooler
5. Shroud

28. Loosely mount the 90° fittings to the cooler. Position the fittings as shown in figure 12. Make sure the O–rings are lubricated and in place.

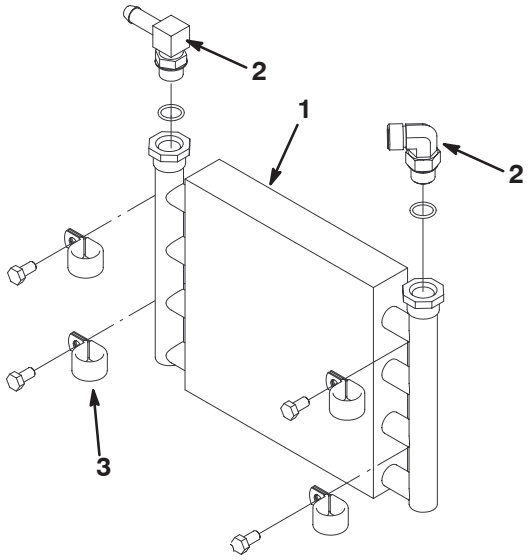

Figure 12

1. Cooler
2. 90° Fitting
3. R–clamp

29. Insert (4) R–clamps onto the cooler tubes positioning as shown in figure 12.

30. Loosely mount the cooler R–clamps and the shroud to the left and right brackets with (4) 5/16–18 x 7/8" bolts and lock nuts (Fig. 11). Do not tighten as this time.

31. Mount the hard hydraulic line to the fitting on the left side of the cooler and to the fitting on the front of the valve (Fig. 13).

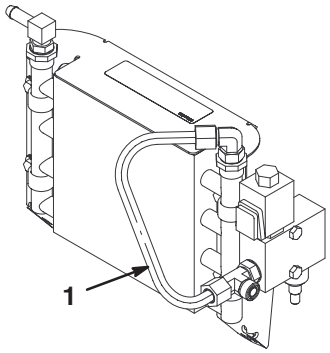

Figure 13

1. Hard hydraulic line
2.

32. Tighten the bolts and the lock nuts securing the R–clamps, left and right brackets and the shroud (Fig. 11).

33. Locate the short wire harness and the connector from the main wire harness on the left side of the vehicle frame near the manifold valve. Plug the harness connector, from the manifold valve, into the wire harness connector.

34. Mount the coupler bracket to the rear left frame bracket with (2) 1/4–20 x 3/4" bolts and lock nuts as shown in figure 14.

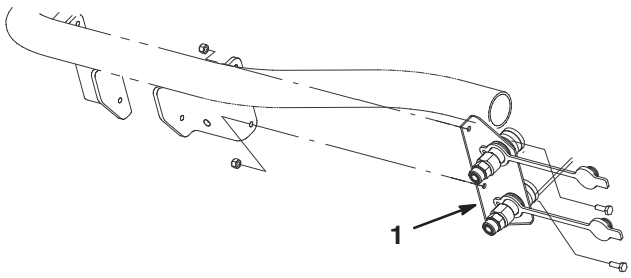

Figure 14

1. Coupler bracket

Note: The male couplers, Toro Part No. 105–4170 and the dust caps, Toro part No. 105–7963 are not included in the kit. Parts may be purchased from your local Toro Distributor.

35. Jack up the vehicle so the right rear tire is off the ground. Refer to the Operator's Manual for jacking procedure.

36. Remove the right rear tire from the vehicle.

Note: On vehicles with serial number prior to 239999999, also remove the right rear fender.

37. Remove the fasteners securing the hydraulic filter mounting bracket to the frame (Fig. 15). Retain the fasteners.

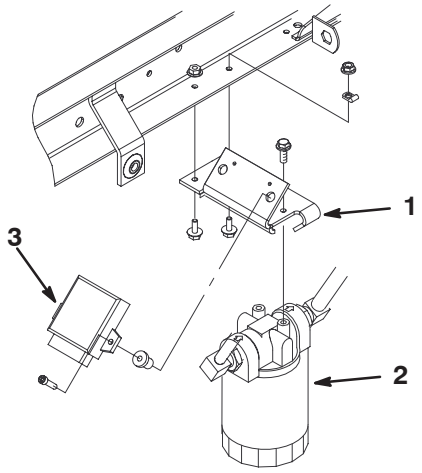

Figure 15

1. Hydraulic filter bracket
2. Filter assembly
3. Electronic controller

38. Remove the old filter assembly from the bracket and remount it to the rear of the new bracket (Fig. 15 & 18).

39. Disconnect and remove either the electronic controller (gas vehicles) or the glow plug relay (diesel vehicles) from the old bracket (Fig. 15). Mount it to the front of the new mounting bracket and connect it to the harness (Fig. 18).

Steps 40 thru 42 pertain only to vehicles with serial numbers prior to 239999999.

40. Align the rear hydraulic tank bracket holes with the holes in the frame channel (Fig. 16). The front hole in the bracket aligns with the fender mounting hole and the rear (chamfered) hole aligns with the hole to the rear of the fender hole.

41. Mount the rear bracket to the frame channel with the 3/8–16 tapered head screw and 3/8 lock nut (Fig. 16).

Note: Insert a bolt or similar object into the front hole while tightening the bolt to keep the bracket from rotating. Remove object after the screw is tight.

42. Remount the fender to the frame with the fender fasteners previously removed. The front hole of the rear bracket will also be secured at this time.

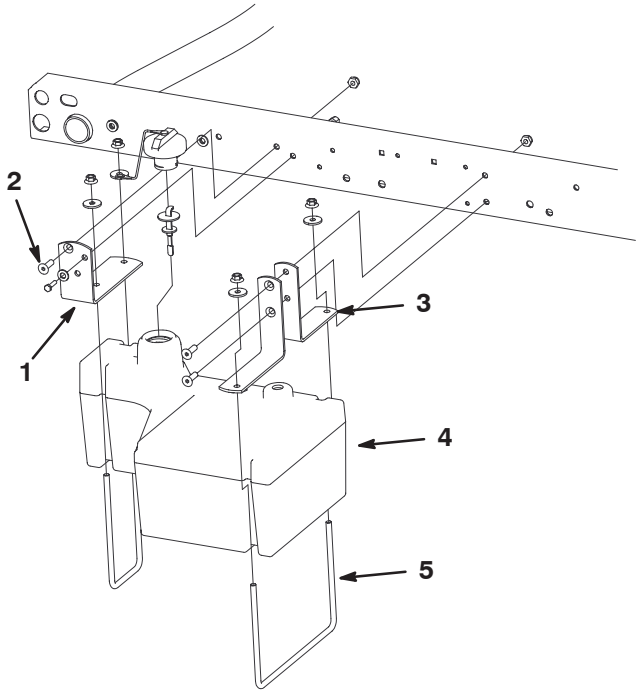

Figure 16

1. Rear bracket
2. Tapered head screw
3. Front brackets
4. Hydraulic tank
5. U–bolts

Steps 43 thru 46 pertain only to vehicles with serial numbers 240000001 & Up

43. Remove the forward–most bolt in the right rear fender.

44. Align the bottom hole in the rear hydraulic tank bracket with the vehicle frame hole, where the bolt for the right rear fender was removed (Fig. 16).

45. Reinstall the bolt, securing the hydraulic tank bracket and fender to the vehicle frame. The fender will be sandwiched between the bracket and the frame.

Note: Make sure that the hydraulic tank bracket is aligned with the vehicle frame.

46. Using the upper rear (chamfered) hole in the hydraulic tank bracket, secure it to the vehicle frame with a 3/8–16 tapered head screw and 3/8 lock nut.

Note: If there is no hole in the fender that aligns with the upper rear (chamfered) hole in the rear tank bracket, drill a 3/8” hole thru the fender. The vehicle frame has a pre–drilled hole.

Steps 47 thru 58 pertain to all vehicle serial numbers.

47. Loosely mount the front tank brackets to the frame channel with (2) 3/8–16 tapered head screws and 3/8 lock nuts(Fig. 16).

48. Mount the tank to the brackets with (2) U–bolts, (4) rubber washers and (4) flange nuts (Fig. 16).

Note: When installing the rear U–bolt, secure the oil cap lanyard to the inside of the U–bolt (Fig. 16).

49. Mount the 90° fittings to the new filter assembly. Position the fittings as shown in figure 18. Make sure the O–rings are lubricated and in place.

50. Mount the new filter assembly and the new mounting bracket to the front of the filter bracket with (2) flange head screws (Fig. 18). Make sure to align the arrows on the bracket and the filter head for correct installation.

51. Connect the hose (Part No. 92–2406) to the fitting on the top of the pump and to the tee fitting on the rear of the valve (Fig. 17).

52. Mount the hose (Part No. 105–4192) from the rear of the valve tee fitting to the bottom coupler (Fig. 17).

53. Mount the hose (Part No. 105–4193) from the valve tee fitting on front of the valve to the top coupler (Fig. 17).

54. Connect the hose (Part No. 105–7950) to the cooler and the filter with hose clamps (Fig. 17).

55. Connect the hose (Part No. 105–7951) to the filter and the tank with hose clamps (Fig. 17).

56. Install the suction hose (Part No. 105–7955) to the tank and pump with hose clamps (Fig. 17).

57. Secure the suction hose, to the hole in the bracket on the bottom of the bell housing, with a cable tie.

58. Tighten all the fasteners.

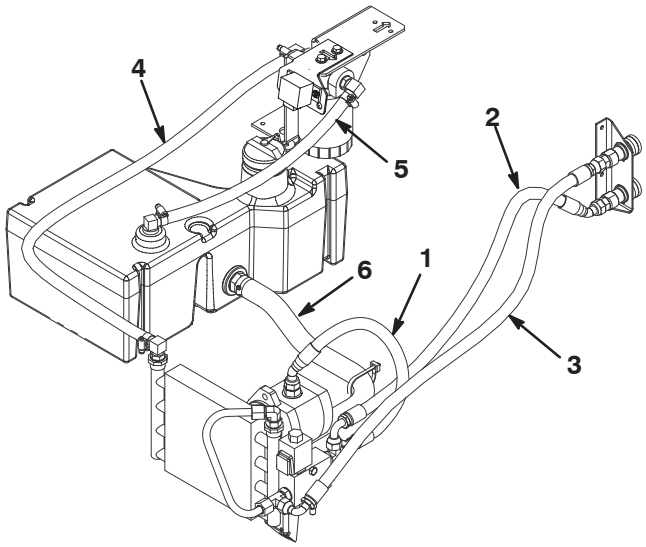

Figure 17

1. Hose part no. 92–2406
2. Hose part no. 105–4192
3. Hose part no. 105–4193
4. Hose part no. 105–7950
5. Hose part no. 105–7951
6. Hose part no. 105–7955

59. Mount the new filter bracket to the frame with the fasteners previously mounting the old bracket (Fig. 18).

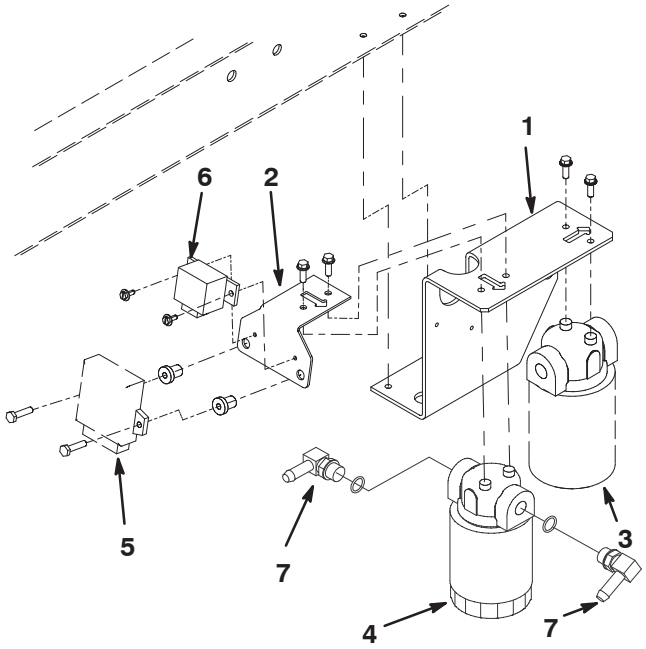

Figure 18

1. Filter bracket
2. Mounting bracket
3. Old filter assembly
4. New filter assembly
5. Electronic controller
6. Glow plug relay
7. 90° Fitting

Steps 59 thru 63 pertain only to vehicles with serial numbers prior to 239999999

60. Remove the (2) bolts and nuts securing the center of the dash panel to the support channel (Fig. 19).

61. Mount the switch bracket to the dash and the support channel with the (2) bolts and nuts previously removed (Fig. 19).

62. Insert the switch into the bracket (Fig. 19).

63. Locate the wire harness, with the loop back connector, under the dash.

64. Unplug the loop back connector and plug the switch connector into the harness connector. Proceed to Hydraulic Oil, page 7.

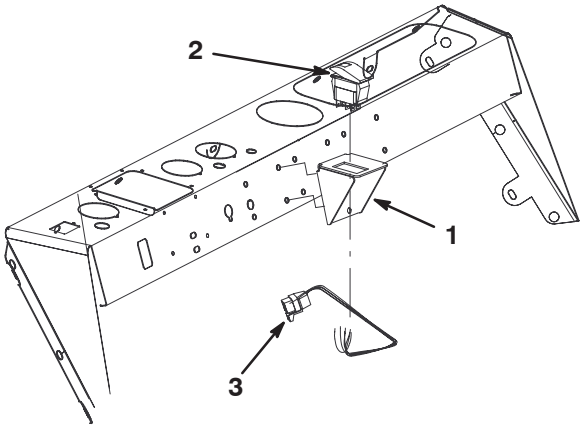

Figure 19

1. Switch bracket
2. Switch
3. Connector

Steps 64 thru 68 pertain only to vehicles with serial numbers 240000001 & Up

65. Remove a plug from one of the unused holes in dash panel (Fig. 20).

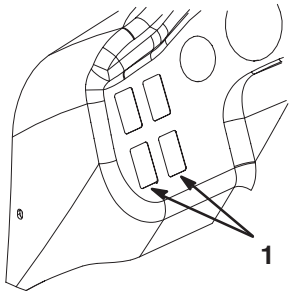

Figure 20

1. Dash hole plugs

66. Insert the switch into the dash panel hole (Fig. 21).

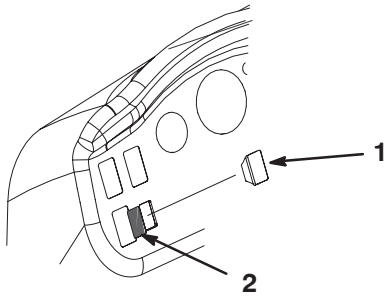

Figure 21

1. Switch 2. Decal

67. Affix the decal to the dash panel, next to the switch (Fig. 21).

68. Locate the wire harness, with the loop back connector, under the dash. The harness will be labeled **high flow hydraulic**.

69. Unplug the loop back connector and plug the switch connector into the harness connector.

Hydraulic Oil (all vehicles)

Fill Hydraulic Reservoir

The machines reservoir must be filled with approximately 4.5 gallons of high quality hydraulic fluid. **Check the level of hydraulic fluid before the engine is first started and daily thereafter. Appropriate hydraulic oils are listed below.**

The following list is not assumed to be all–inclusive. Hydraulic fluids produced by other manufacturers may be used if they can cross reference to find an equivalent to the products listed. Toro will not assume responsibility for damage caused by improper substitutions, so use only products from reputable manufacturers who will stand behind their recommendation.

Multigrade Hydraulic Fluid – ISO VG 46

Normal Climate: 0 (–18°C) to 110°F (43°C)

Mobil	DTE 15M
Amoco	Rykon Premium ISO 46
Chevron	Rykon Premium Oil ISO 46
Conoco	Hydroclear AW MV46
Exxon	Univis N46
Pennzoil	AWX MV46
Shell	Tellus T 46
Texaco	Rando HDZ 46

Important The ISO VG 46 Multigrade fluid has been found to offer optimal performance in a wide range of temperature conditions. For operation in consistently high ambient temperatures, 65°F (18°C) to 120°F (49°C), ISO VG 68 hydraulic fluid may offer improved performance.

Note: Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic system oil is available in 2/3 oz. (20 ml) bottles. One bottle is sufficient for 4–6 gal (15–22 1) of hydraulic oil. Order part no. 44–2500 from your authorized Toro distributor. Not recommended for biodegradable fluid (use food coloring).

1. Clean the area around the filler neck and the cap of the hydraulic tank (Fig. 22). Remove the cap from the filler neck.

2. Remove the dipstick from the filler neck and wipe it with a clean rag. Insert the dipstick into the filler neck; then remove it and check the fluid level. The fluid level should be between the two marks on the dipstick.

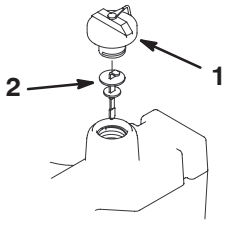

Figure 22

1. Cap 2. Dipstick

3. If the level is low, add the appropriate fluid to raise the level to the upper mark.

4. Install the dipstick and cap onto the filler neck.

5. Start the engine and turn on the kit. Let them run for about two minutes to purge air from the system. Stop the engine and kit and check for leaks.

Important Vehicle must be running before starting kit.

Warning

Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

- **Make sure all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Seek immediate medical attention if fluid is injected into skin.**

Service Interval/Specification

Change the hydraulic oil after every 800 operating hours.

If the oil becomes contaminated, contact your local Toro distributor because the system must be flushed. Contaminated oil may look milky or black when compared to clean oil. Service interval may need to be increased if using multiple attachments as oil may become contaminated quicker with the mixing of different hydraulic oils.

Change the filter:

- After the first 10 operating hours
- After every 800 operating hours

Changing the Hydraulic Oil and Filter

1. Clean the area around the new filter mounting area (Fig. 18). Place a drain pan under the filter and remove the filter.

Note: If the oil is not going to be drained, disconnect and plug the hydraulic line going to the filter.

2. Fill the replacement filter with the appropriate hydraulic fluid, lubricate the sealing gasket, and hand turn it until the gasket contacts the filter head. Then tighten 3/4 turn further. The filter should now be sealed.
3. Fill the hydraulic reservoir with approximately 4.5 gallons of hydraulic oil; refer to Fill Hydraulic Reservoir, page 7.
4. Start the machine and run it at idle for 3 to 5 minutes to circulate the fluid and remove any air trapped in the system. Stop the machine and recheck the fluid level.
5. Verify oil level.
6. Dispose of the oil properly.

Hydraulic Schematic