FORM NO. 3319–680

TORO®

VALVE KIT

for MID-SIZE HYDRO TRACTION UNITS

PART NO. 98–3253

INSTALLATION INSTRUCTIONS

Loose Parts

Note: Use the chart below to identify parts used for assembly.

DESCRIPTION	QTY.	USE
Poppet Check Valve	4	Install valves in hydro pumps
Kallevig By–pass Valve	2	Install valves in hydro pumps
Decal	1	

Remove Existing Check Valves

1. Shut off engine and wait for all moving parts to stop. Remove spark plug wire(s).

⚠ CAUTION

POTENTIAL HAZARD
- **If you leave the wire on the spark plug, someone could start the engine.**

WHAT CAN HAPPEN
- **Accidental starting of engine could seriously injure you or other bystanders.**

HOW TO AVOID THE HAZARD
- **Pull wire off spark plug before you do any maintenance. Also push wire aside so it does not accidentally contact spark plug.**

2. Disengage drive belt idler pulley under hydraulic pumps and remove drive belt from both hydraulic pump pulleys.

3. Remove linkage rod from hydraulic pump arm (Fig. 1).

IMPORTANT: Do not change linkage rod setting.

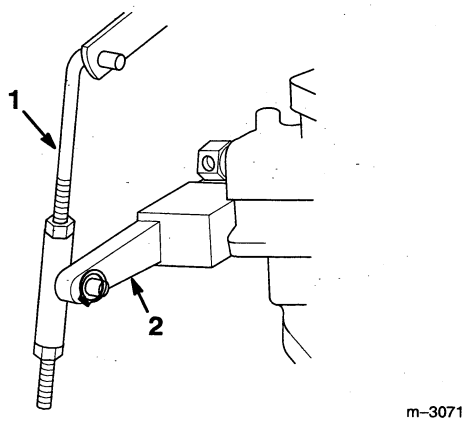

Figure 1

1. Linkage Rod
2. Hydraulic Pump Arm

Note: Determine left and right sides of the unit by standing in the operator's position behind the handles.

4. Remove rear bolt securing right hydraulic pump.

Note: The left hydraulic pump does not need to be moved to access the valves.

5. Loosen front bolt securing right hydraulic pump so that you can turn pump enough to easily access the ball check valves.

IMPORTANT: Do not loosen or disconnect the hydraulic lines attached to the hydraulic pumps.

6. Clean area of both hydraulic pumps around existing ball check valves (Fig. 2).

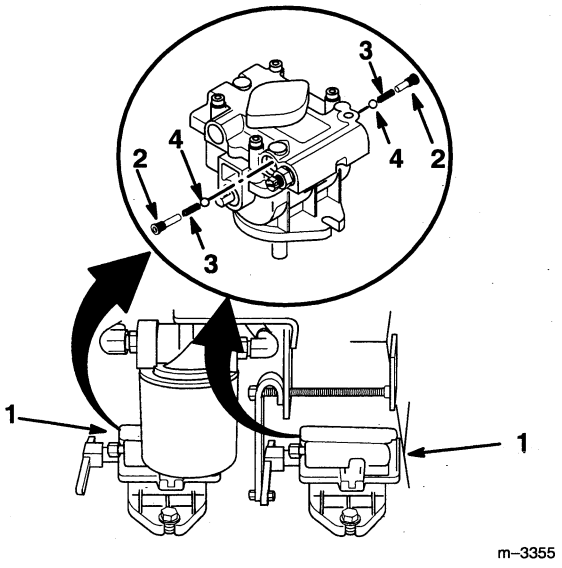

Figure 2

1. Hydraulic pump
2. Plug
3. Spring
4. Ball

7. Unscrew existing check valves from both pumps and remove and discard the plugs and springs (Fig. 2).

Note: Place a rag under valve area. A small amount a hydraulic fluid may run out of the opening.

8. Using a pencil magnet, remove the valve balls (Fig. 2). Discard the balls.

IMPORTANT: Do not allow the balls to fall into any openings or passages in the pumps.

Install New Check Valves

1. Assemble new poppet check valves (Fig. 3).

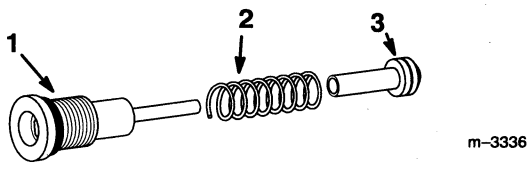

Figure 3

1. Plug
2. Spring
3. Poppet

2. Thread new poppet check valves into hydraulic pumps (Fig. 4).

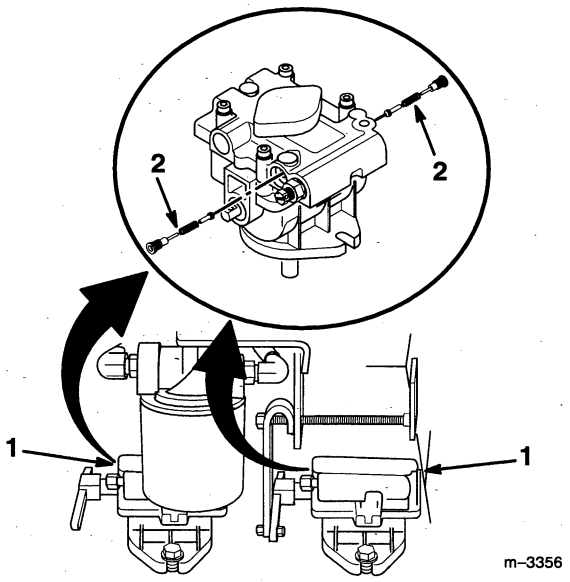

Figure 4

1. Hydraulic pump
2. New poppet check valve

3. Torque each valve to 15–20 ft. lb.

4. Re–align right hydraulic pump.

5. Replace back bolt on the right pump, and torque both front and back bolts to 45–55 ft. lb.

6. Replace tension belt on pulleys under pumps.

7. Re–attach the linkage rod to the right pump arm.

Remove Existing By-pass Valves

1. Clean area of hydraulic pumps around existing by-pass valves (Fig. 5).

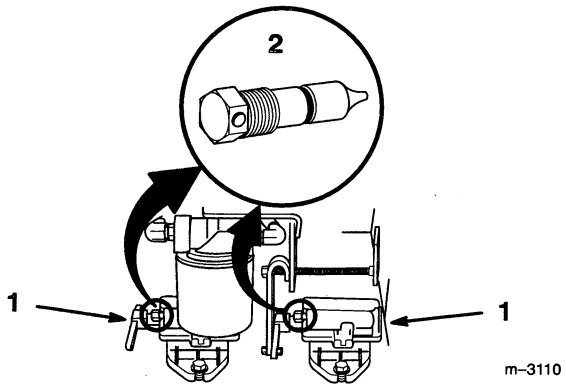

Figure 5

1. Hydraulic pump
2. Existing by-pass valve

2. Unscrew existing by-pass valves (Fig. 5). Discard valves.

   Note: Place a rag under valve area. A small amount a hydraulic fluid may run out of the opening.

Install New By-Pass Valve

1. Assemble new Kallevig by-pass valves, if necessary, gently rotate and push spring tip into body and thread jam nut onto body with shoulder toward tip as shown (Fig. 6).

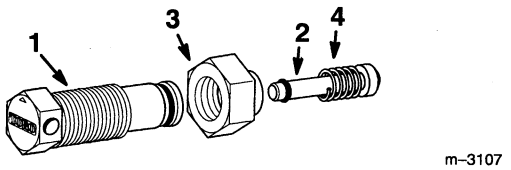

Figure 6

1. Body
2. Tip
3. Jam nut
4. Spring

2. Thread new Kallevig by-pass valves into hydraulic pumps (Fig.7).

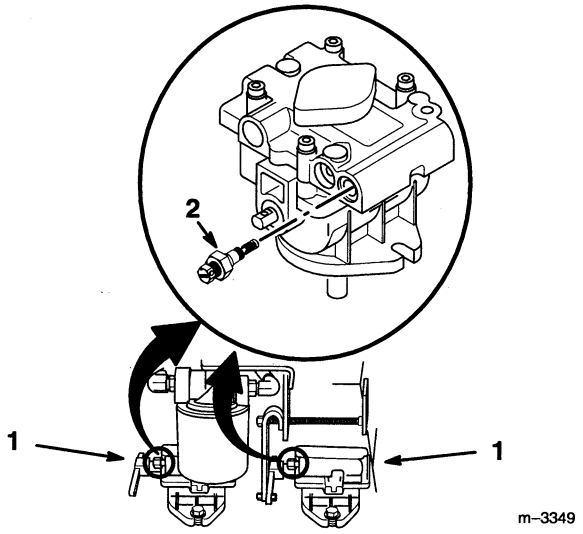

Figure 7

1. Hydraulic pump
2. Kallevig by–pass valve

3. Gently torque each valve to a maximum of 60 in. lb.

Bleeding Hydraulic System

The traction system is self bleeding, however, it may be necessary to bleed the system after changing the valve

1. Raise the rear of machine until wheels are off the floor and support with jack stands.
2. Start the engine and run at idle speed. Engage traction on one side and spin the wheel by hand.
3. When the wheel begins to spin on its own, keep it engaged until wheel drives smoothly. (minimum 2 minutes)
4. Check hydraulic fluid level as it drops and add as required to maintain level.
5. Repeat procedure on opposite wheel.

⚠ WARNING

POTENTIAL HAZARD
- **Hydraulic fluid escaping under pressure can penetrate skin and cause injury.**

WHAT CAN HAPPEN
- **Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.**

HOW TO AVOID THE HAZARD
- **Keep body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks.**

Adjusting By-pass Valve

The Kallevig by–pass valve is adjustable to ensure easy operation with a variety of deck sizes. If the front of the deck lifts off the ground when the upper control bar is quickly pushed forward or the machine is unable to drive up hills, an adjustment may be needed.

Test Procedure

1. Start engine and run for 5 minutes at 3/4 throttle, to warm hydraulic fluid.
2. Drive the machine to a clear and level open area such as a driveway.

   IMPORTANT: There should be at least 10 feet of clear area in front of the machine.
3. Loosen the quick release levers and push the reference bar forward to the "FAST" position. Lock the quick release levers to secure the reference bar.
4. Move throttle control to 3/4 throttle.
5. Quickly push the upper control bar against the reference bar. The front caster wheels should almost lift off the ground. If front caster wheels lift the off the ground , the machine is too aggressive and adjustment is required.
6. Move the engine throttle to the "FAST" position.
7. Quickly push the upper control bar against the reference bar. The front caster wheels should lift 1 to 3 inches off the ground. If front caster wheels lift the off the ground more than 3 inches, the machine is too aggressive. Adjustment is required.
8. If the machine accelerates slowly, and the front caster wheels do not lift off the ground, the machine is too un–responsive. Adjustment is required.

Adjustment Procedure

The Kallevig by–pass valve should be adjusted to deliver best performance for the size (weight) mower you have. The Kallevig by–pass valve factory setting is 1/2 turn out.

The following values can be used as initial settings for different size mowers:
62" 1/6 turn out
52" 1/2 turn out
44" 1 turn out
36" 1 turn out

9. Loosen large jam nut several turns (Fig. 8).
10. Gently close Kallevig by–pass valve (Fig. 8).

    IMPORTANT: Do not over–tighten valve or needle and seat may be damaged. Do not exceed 50 inch pounds to close valve.
11. Open Kallevig by–pass valve 1/2 turn (Fig. 8).
12. Tighten jam nut to lock the adjustment (Fig. 8).
13. Repeat "Test Procedure" to check for proper operation.

IMPORTANT: Kallevig by–pass valve adjustment is very sensitive, do not adjust more than 1/6 turn (one flat) at a time.

14. If the machine is too aggressive, the valve needs to be open further.

15. If the machine is un–responsive, the valve needs to be closed further.

16. Repeat "Test Procedure" to check for proper operation. Re-adjust the Kallevig by–pass valves until proper performance is achieved.

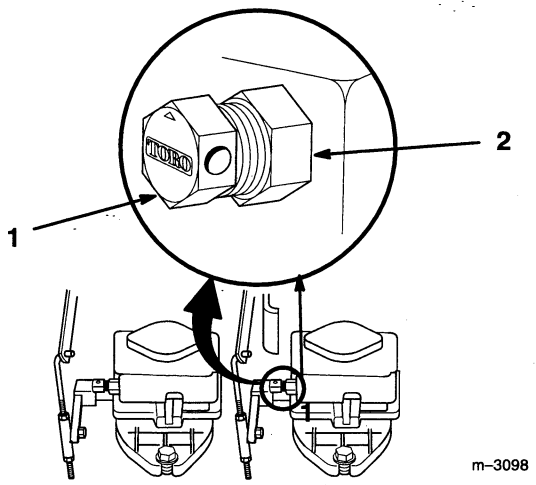

Figure 8

1. By-pass valve
2. Jam nut

Install Decal

1. Install decal for by-pass valve adjustment to rear frame (Fig. 9).

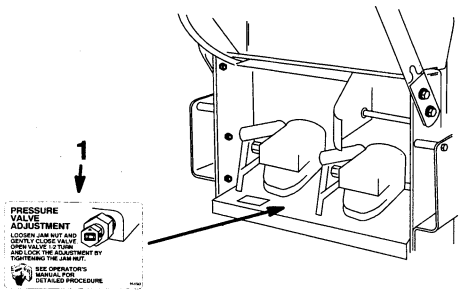

Figure 9

1. Decal


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