

VALVE AND PLUMBING KIT INSTRUCTIONS NEW HOLLAND TRACTORS WITH TANDEM GEAR PUMP HYDRAULIC SYSTEM

MODEL	2WD	4WD	LESS CAB	WITH CAB
TS90, TS1000, TS110	X	X		X

Valve and plumbing kit can be installed using tools ordinarily available. Valve control handle has been factory preassembled for ease of installation. Shut off engine and engage brakes during installation.

NOTE: Apply sealant only to all tapered threads unless coupled with swivel adapters. When using teflon tape, wrap tape clockwise (as viewed from end) and wrap only twice. Keep sealant away from first two threads of tapered end to prevent contamination of hydraulic fluid. Do not use sealant on o-ring or flare adapter threads.

INSTALLING VALVE MOUNTING BRACKET (Figure 2, Page 5)

1. Temporarily remove right steps and right step mounting bracket. If necessary, temporarily remove batteries.
2. Install valve mounting bracket (2) and step mounting bracket to underside of cab using 10MM x 45MM cap screws (23) and original lock washers. Mounting bracket (2) bolt holes are slotted to provide adjustment for control cable (28) and quick coupler (18 & 31) clearance.

NOTE: If tractor is so equipped, route optional grounding cable through slot in bracket (2) and reinstall optional ground stud.



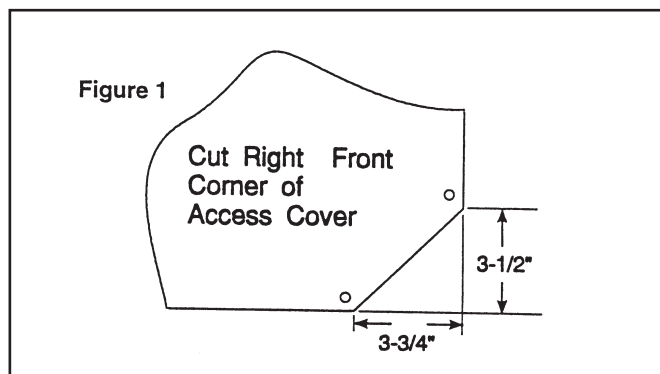
WARNING: Make sure positive battery cable from jump start stud do not rub valve or mounting bracket after installation.

ATTACHING VALVE TO VALVE MOUNTING BRACKET (Figure 2)

1. Install 7/8 O-ring x 1/2 NPT adapter fittings (33), female couplers (18) and one of each color, colored rings (32) to working ports of valve (1).
2. Install 9/16 O-ring x 7/16 JIC adapter (21) to load sense port of valve. Install 1-1/16 O-ring x 7/8 JIC adapter fitting (10) to tank port of valve. Install 1-1/16-12 JIC x 1-1/16-12 O-ring Tee (36) to pressure port of valve.
3. Install valve (1) to valve mounting bracket (2) using 8MM x 20MM cap screws (8) and 5/16 lock washers (12).

INSTALLING REMOTE HANDLE AND CONTROL CABLES (Figure 2, Page 5)

1. Remove rubber floor mat from cab.
2. Install remote handle mounting stand (4) to inside of cab by removing 3/4 cap screw and 3/4 lock nut from cab ISO mount. Position remote handle stand (4) over cab ISO mount and replace hardware. Torque 3/4 cap screw and 3/4 lock nut to 262 ft lbs.
3. Remove transmission access cover from floor of cab. Cut right front corner of access cover as shown (Figure 1).



4. Install control cables (28) to remote handle (29). Refer to instruction sheet provided with remote handle for proper cable installation procedure (see Figure 1A, Page 3).

IMPORTANT: Cable activated when handle is moved forward or backward is connected to float spool of valve (spool with longer end cover, see Figure 2, Page 5).

5. Install remote handle (29) and decal mounting bracket (15) to stand (4) using 5/16 x 4 cap screws (22), 5/16 flat washers (26) and 5/16 lock nuts (35).
6. Route control cables through floor of cab. Loop cables 180° to attach to rear of valve.
7. Install control cables (28) to rear of valve using connector kits (30). Refer to instructions provided with connector kits for proper assembly and adjustment.

INSTALLING REMOTE HANDLE AND CONTROL CABLES (Figure 2, Page 5) (Continued)

NOTE: To ease installation of control cables to valve, do not connect pressure and return hoses to valve until after control cables have been installed and adjusted.

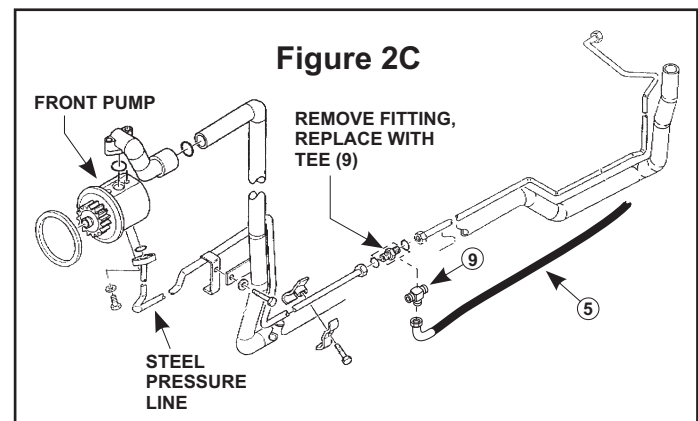
8. Replace access cover on floor of cab. Cut rubber mat as needed to fit around mounting stand and replace rubber mat.
9. Install tie strap (24) around control cables (28) and handle mounting stand (4) to keep control cables away from accelerator pedal.

INSTALLING LOAD SENSING LINES (Figures 2 - 5)

1. Disconnect small load sense line from front of right tractor remote valve (this location is common to all tractors with two or four rear remote valves). If this small load sense line is short (less than 16 inches), disconnect other end of this line and discard. If this line is more than 16 inches long, slightly bend aside for now.
2. Remove o-ring adapter fitting from front of tractor remote valve where small load sense line was connected. Screw shuttle valve (17) directly into port vacated. Make sure male tip with o-ring goes into tractor valve. Leave shuttle valve (17) loose at this time until best position is determined.
3. Screw 7/16 x 9/16 x 90 elbow (11) into female port of shuttle valve. Position this elbow so:
 - A. If short load sense line is removed, 1/4 x 16 hose (20)(Figures 4 & 5) can be connected from 7/16 x 9/16 x 90 elbow (11) to fitting where other end of load sense line was removed. Connect 1/4 x 16 hose (20) and tighten all fittings and shuttle valve.
 - OR
 - B. If steel load sense line is longer than 16 inches, it can be rerouted to screw directly into 7/16 x 9/16 x 90 elbow (11). Connect this load sense line to 7/16 x 9/16 x 90 elbow (11) and tighten fittings and shuttle valve. Discard 1/4 x 16 hose (20) since it will not be used.
4. Connect 1/4 x 48 hose (16) from load sense port of auxiliary control valve (1) to male 7/16-20 flare end of shuttle valve. This completes the load sense circuit.

PLUMBING VALVE TO TRACTOR HYDRAULICS (Figure 2, Page 5)

1. Remove flow bolt at base of transmission filler tube at rear of tractor and replace it with 3/4 BSPP x 7/8 JIC adapter fitting (7). Install 7/8 x 7/8 x 90° elbow (34) onto adapter fitting(7). Connect 1/2 x 65 hose (6) from tank port (outlet) of auxiliary control valve (1) to elbow fitting (34).
2. Use 3/16 x 11 plastic tie straps (19)(not shown) to hold inlet, outlet and load sensing hoses from rubbing against rotating 3-point lift arms, brake levers, shift levers, etc., on tractor to avoid hose wear.
3. Remove fitting from tractor pressure line on left underside of the tractor, and replace with 13/16-16 O-ring tee (9), (see figure 2C). Attach 1/2 x 80 pressure hose (5) to 13/16-16 O-ring tee (9) and route rearward and over rear axle transmission in front of rock shaft casting to right side of tractor, and connect 1/2 x 80 pressure hose (5) to fitting, 1-1/16-12 JIC swivel, male 90 (37) and tee, 1-1/16-12 JIC x 1-1/16-12 JIC (36). Install swivel 1-1/16-12 O-ring x 1-1/16-12 JIC (14) into valve (1) and connect tee, 1-1/16-12 JIC x 1-1/16-12 JIC (36) to swivel 1-1/16-12 O-ring x 1-1/16-12 JIC (14).
4. Remove rearmost elbow on top of right remote tractor valve and replace with 1-14 O-ring swivel tee (39). This is the pressure port. Connect existing tractor steel oil line to stem of swivel tee (39) and connect 1/2 x 54 pressure hose (38) to branch of swivel tee (39). Route pressure hose (38) forward along right side of casting. Be sure hoses do not interfere with draft control or foot pedal linkages. Attach 1/2 x 54 pressure hose (38) to tee, 1-1/16-12 JIC x 1-1/16 O-ring, male (36).
5. Use 3/16 x 11 plastic tie straps (not shown) to hold pressure hoses (38)(5) tight to tractor.
6. Reinstall tractor batteries and step. Tighten fittings as required. The auxiliary valve installation is now



PLUMBING LOADER TO CONTROL VALVE

NOTE: For a simplified view of Plumbing Loader to Control Valve and Self Leveling Valve see (Figures 6 & 7). Refer to Figure 7 for location of rubber straps (3) on a typical loader installation.

1. Install 1/2 x 120 hoses (27) onto boom oil line tubes. Install and tighten hose fittings one at a time from bottom up. Loosening closest oil line clamp will ease installation.
2. Install male quick couplers (31), and colored rings (32) onto free ends of hoses. Do not overtighten male couplers.
3. Connect hoses as shown in Figures 2 and 2A.
4. After all plumbing has been completed and all parts have been tightened, start engine and slowly cycle lift and bucket cylinders several times to purge air out of system, then retract cylinders and shut off tractor engine. Add additional tractor hydraulic fluid as

specified in tractor owners manual to bring level of hydraulic fluid up to full.

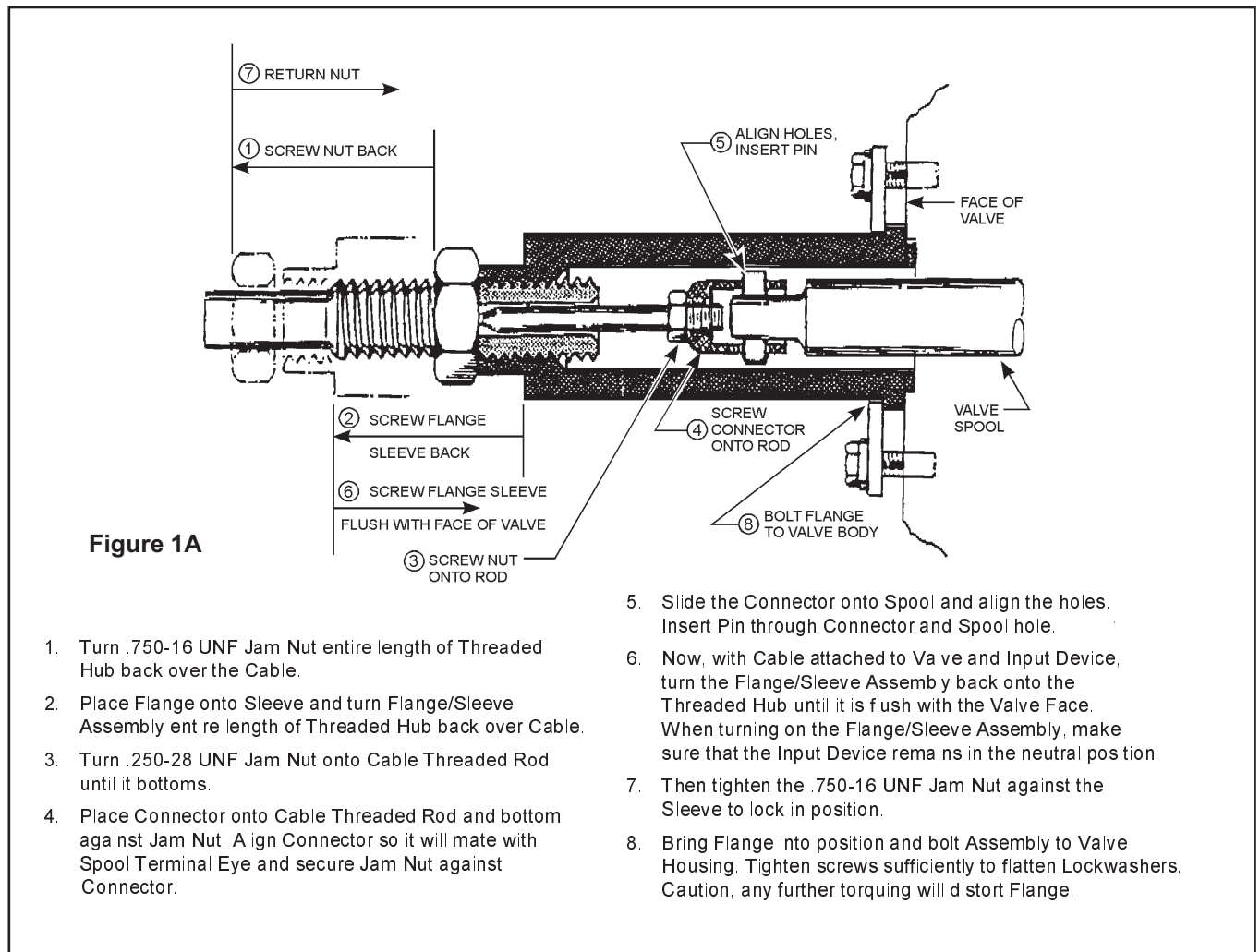


NOTE: When cycling loader, operate loader according to operation decal (25). If direction of control lever is wrong, or loader will not lower, recheck connections shown.

WARNING: Escaping hydraulic fluid under pressure can penetrate skin causing serious injury.

- DO NOT use your hands to check for leaks. Use a piece of cardboard or paper to search for leaks.
- Stop engine and relieve pressure before connecting or disconnecting lines.
- Tighten all connections before starting engine or pressurizing lines.

If any fluid is injected into skin, obtain medical attention immediately or gangrene may result.



ITEM	SMC NO.	NH NO.	DESCRIPTION	QTY.
1	46605	SML46605	VALVE, Walvoil	1
2	45040	SML45040	BRACKET, Valve Mounting	1
3	7438-1	SML74381	STRAP, Tarp	2
4	44750	SML44750	STAND, Remote, Handle	1
5	46333-1	SML463331	HOSE, 1/2 x 80" (Pressure)	1
6	36698-14	SML3669814	HOSE, 1/2 x 65" (Tank)	1
7	36249-2	SML362492	ADAPTER, 3/4-14 BSPP x 7/8-14 JIC	1
8	6090-30	00120104	SCREW, Cap, 8MM-1.25 x 20MM	4
9	46317-1	SML463171	TEE, 13/16-16, O-ring Face Male	1
10	32844-9	86507102	FITTING, 1-1/16-12 O-Ring x 7/8-14 JIC	1
11	40654-1	00984054	FITTING, Elbow, 9/16-18 O-ring Face Seal x 7/16-20 SAE O-ring	1
12	G 120214	00080681	WASHER, Lock, 5/16	4
13	44274-1	SML442741	PLUG, Square, Plastic	1
14	42062-5	SML420625	ADAPTER, Swivel 1-1/16-12 O-ring x 1-1/16-12 JIC	1
15	44287	SML44287	BRACKET, Decal Mounting	1
16	40656-1	SML406561	HOSE, 1/4 x 48" (Load Sense)	1
17	40777	SML40777	SHUTTLE VALVE	1
18	6147-8	SML61478	COUPLER, Female	4
19	8137-1	SML81371	STRAP, Adjustable Tie, 3/16 x 11	2
20	40776-1	SML407761	HOSE, 1/4 x 16"	1
21	32844-12	00139398	FITTING, Adapter, 9/16-18 O-ring x 7/16-20 JIC	1
22	G 189298	00088964	SCREW, Cap, 5/16-18 x 4	3
23	6090-9	00325829	SCREW, Cap, 10MM-1.5MM x 45MM	4
24	8137-3	SML81373	STRAP, Adjustable, Tie, 1/2-x 20	2
25	38929	SML38929	DECAL, Loader Operation	1
26	G 120393	0087362	WASHER, Flat, 5/16	3
27	36845-5	SML368455	HOSE, 1/2 x 120"	4
28	44795-2	SML447952	CABLE, Control (70")	2
29	44471	SML44471	HANDLE, Remote	1
30	44762	SML44762	CONNECTOR KIT, Cable	2
31	6137-6	SML61376	COUPLER, Male	4
32	36240-9	SML362409	RING, 1", Blue	2
	36240-10	SML3624010	RING, 1", Red	2
	36240-11	SML3624011	RING, 1", Yellow	2
	36240-12	SML3624012	RING, 1", Green	2
33	39280-10	SML3928010	FITTING, Adapter, 7/8-14 O-ring x 1/2 NPT	4
34	34128-1	00182977	FITTING, Elbow, 7/8-14 JIC Swivel x 7/8-14 JIC, 90°	1
35	G9413447	00087382	NUT, Lock, 5/16-18	3
36	36665-4	SML366654	TEE, 1-1/16-12 JIC x 1-1/16-12 JIC	1
37	34128-8	SML341288	FITTING, 1-1/16-12 JIC Swivel x 7/8-14 JIC, Male 90°	1
38	40653-1	SML406531	HOSE, 1/2 x 54 (Pressure)	1
39	40655-1	SML406551	TEE, 1-14 O-ring Face Male x 1-14 O-ring Swivel, Female	1

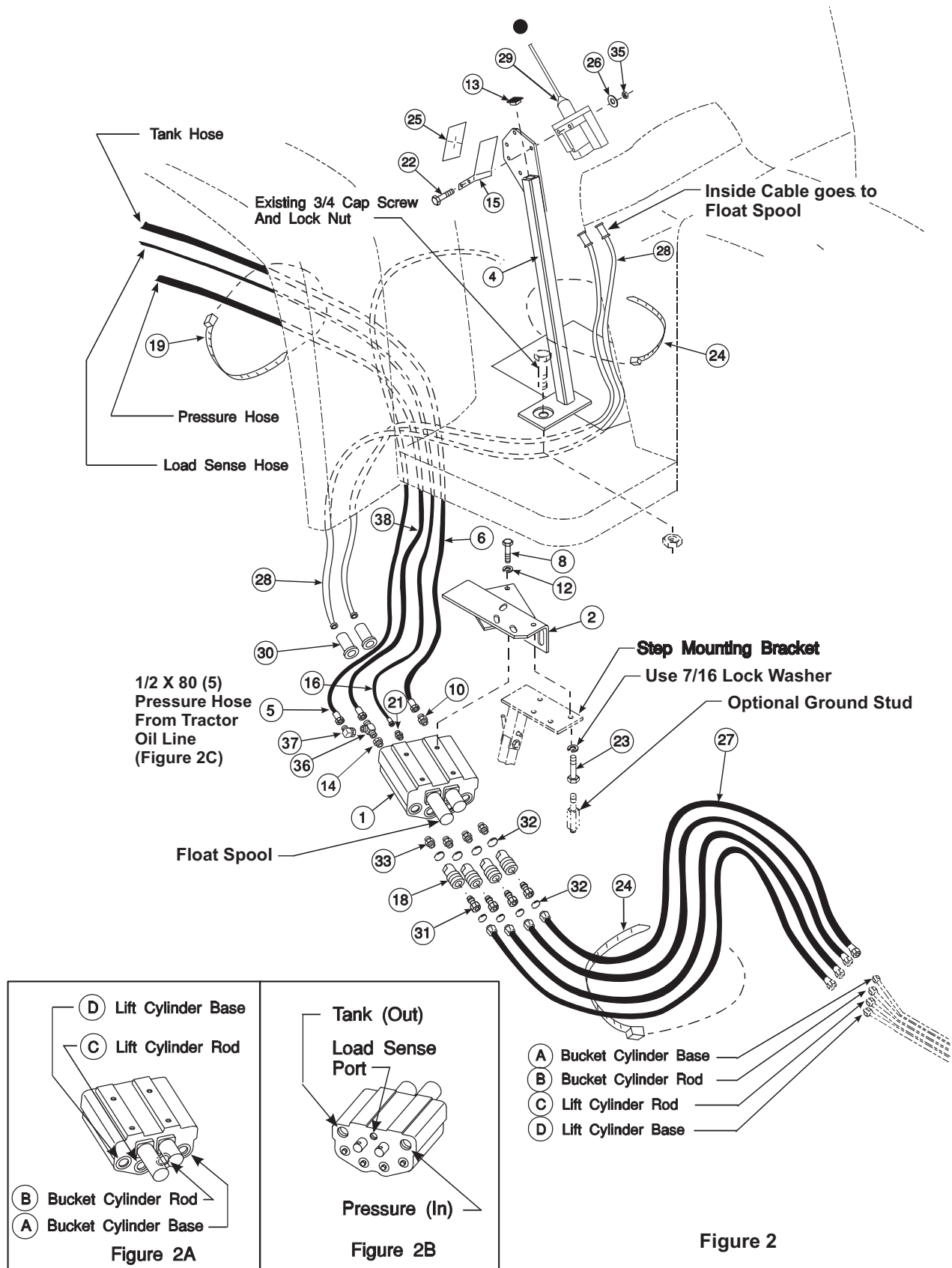


Figure 3
Plumbing Control Valve
to Single Set of Rear
Remotes

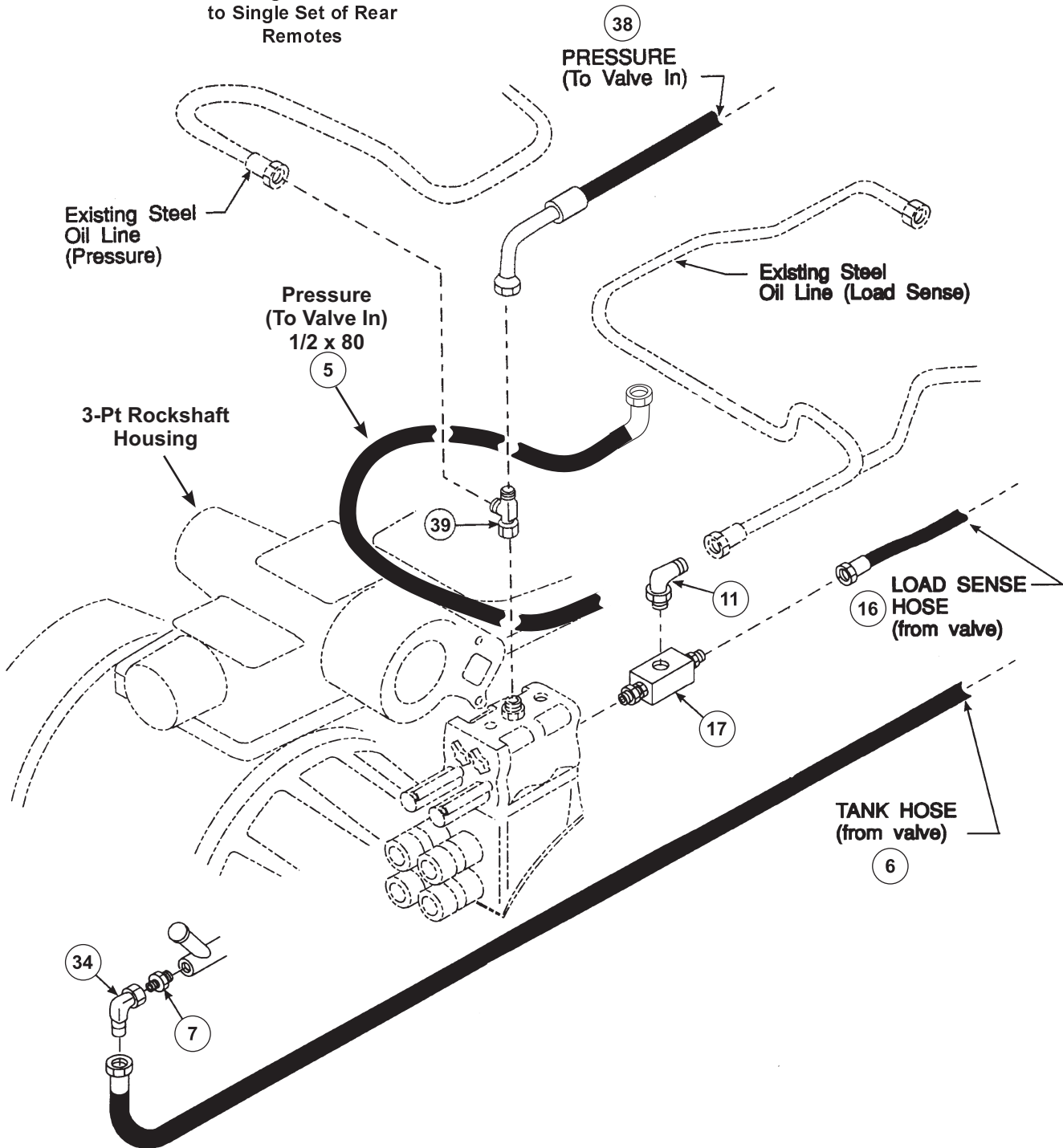


Figure 4
Alternate
Plumbing Control Valve
to Single Set of Rear
Remotes

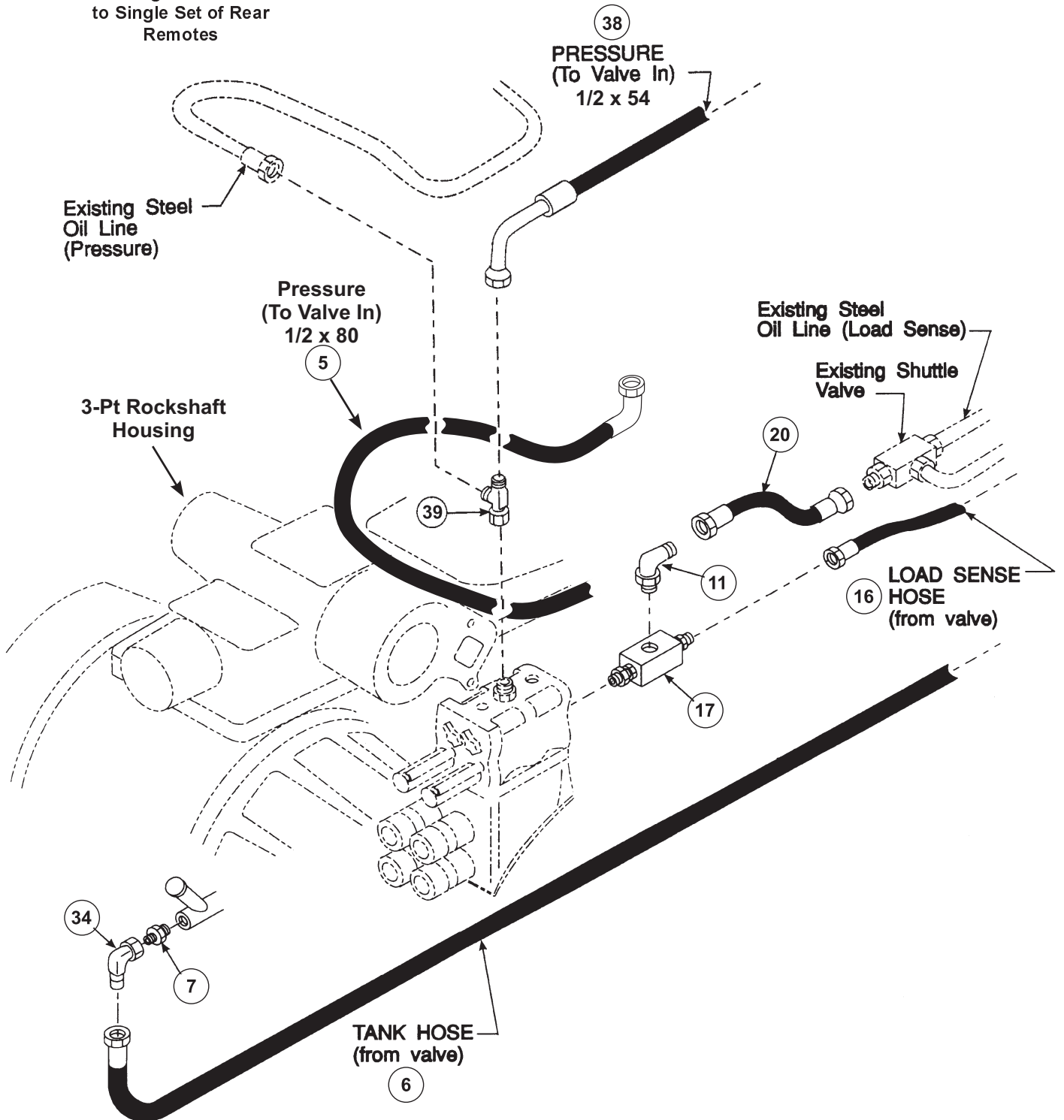
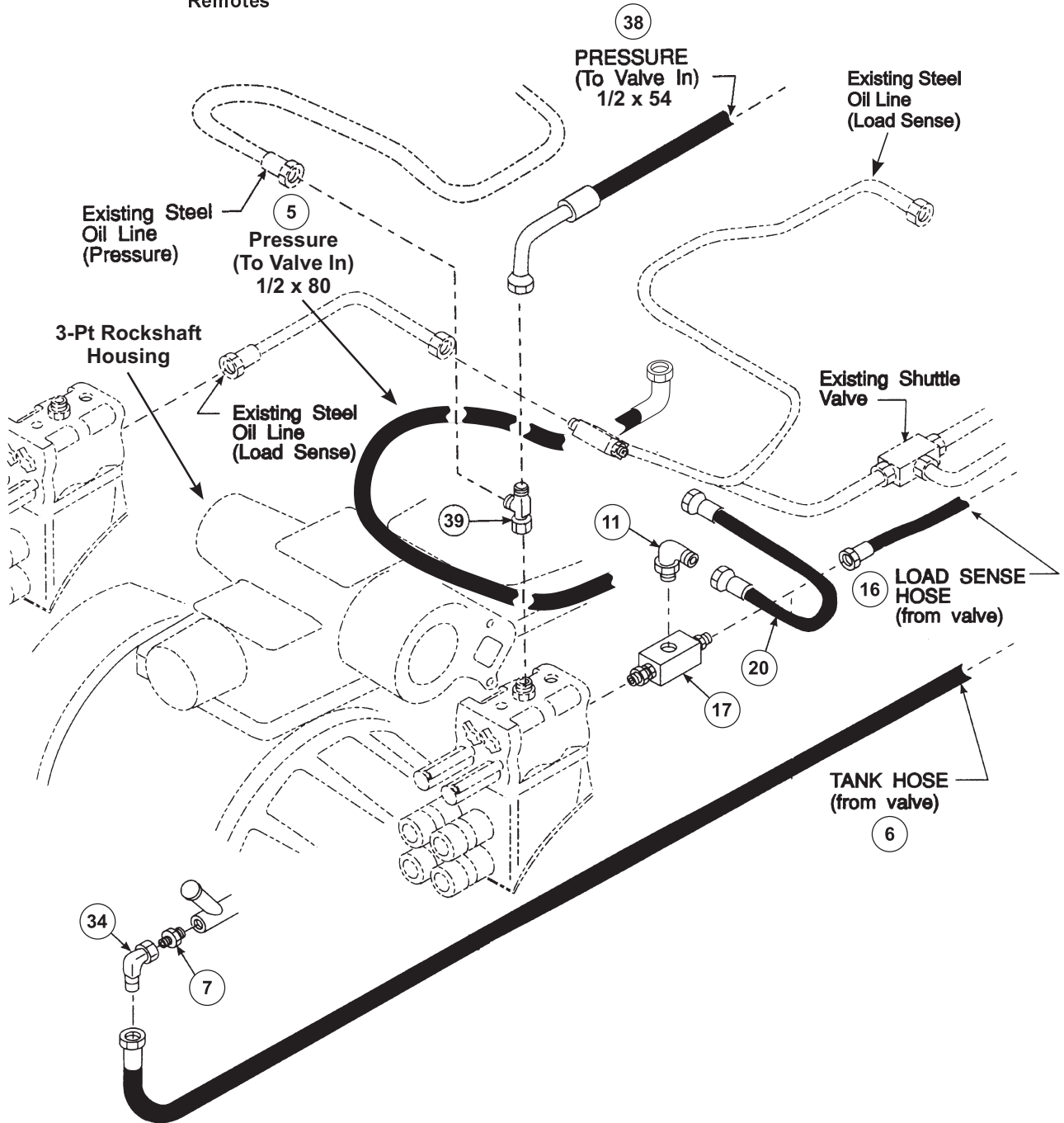
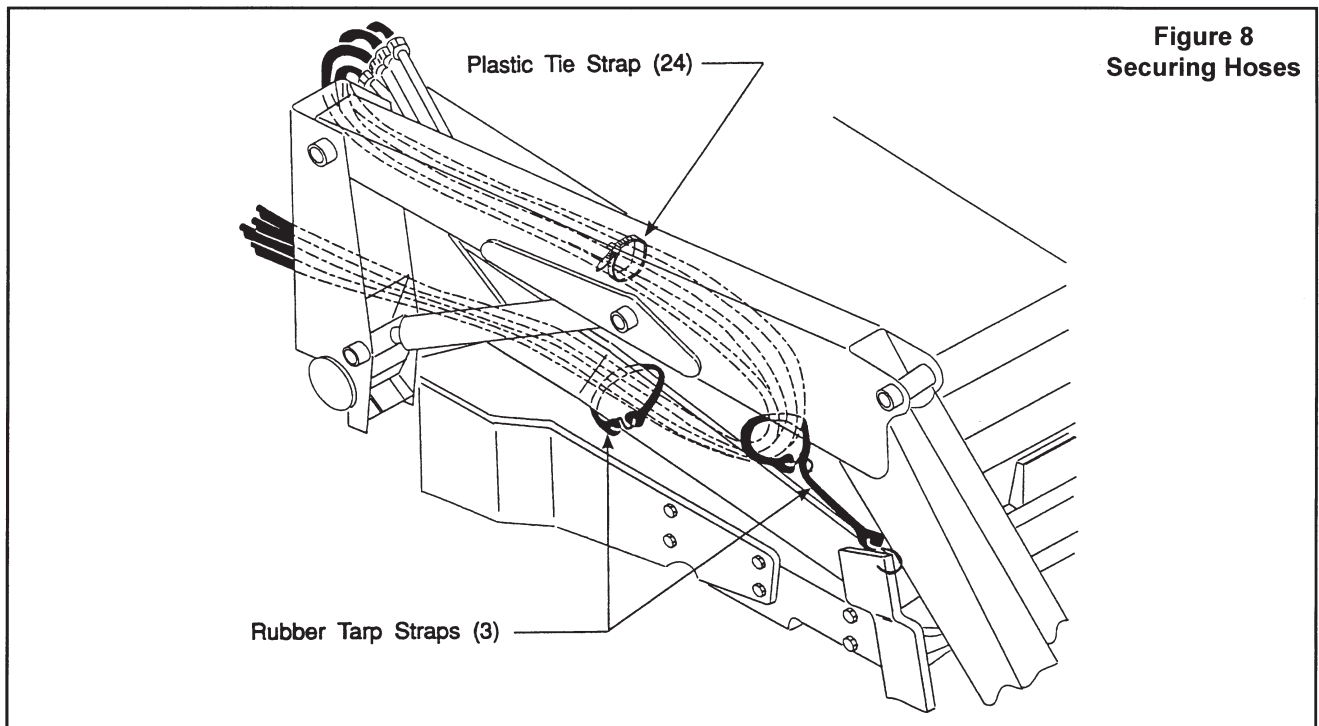
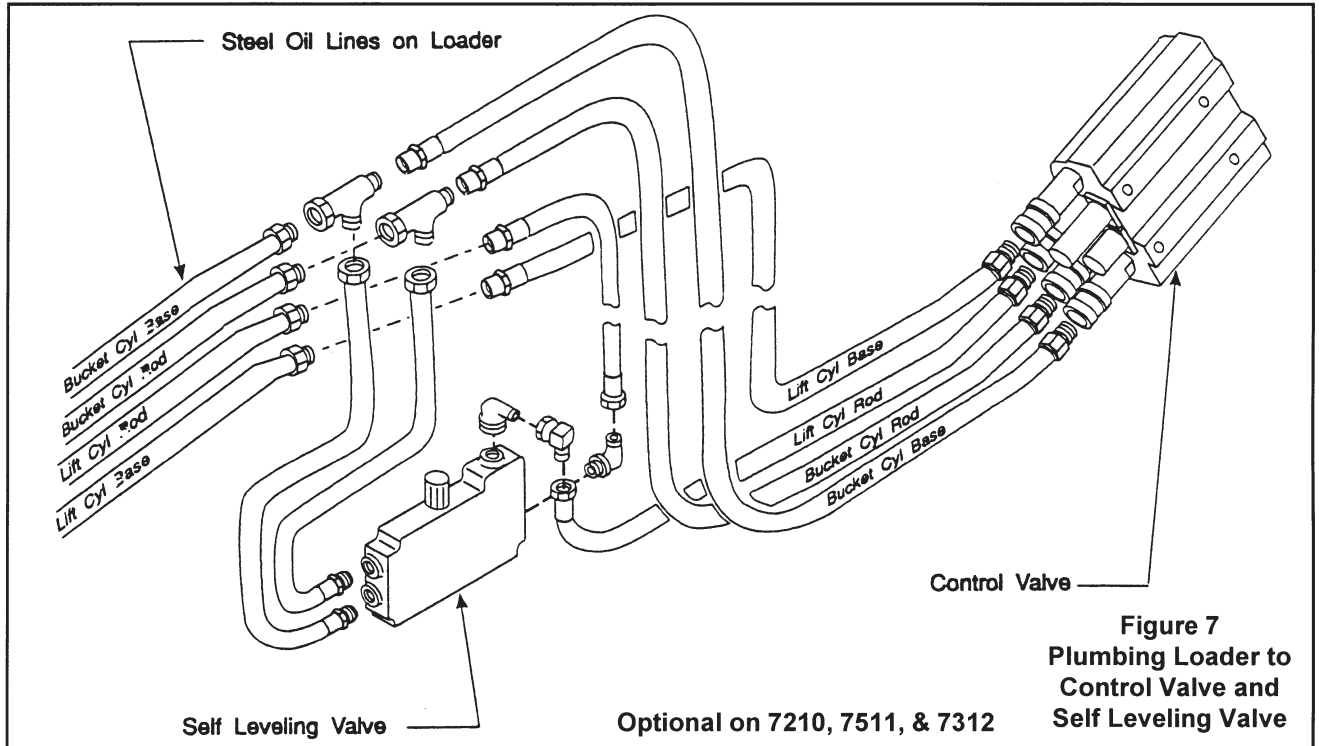


Figure 5
Plumbing Control Valve
to Duel Set of Rear
Remotes



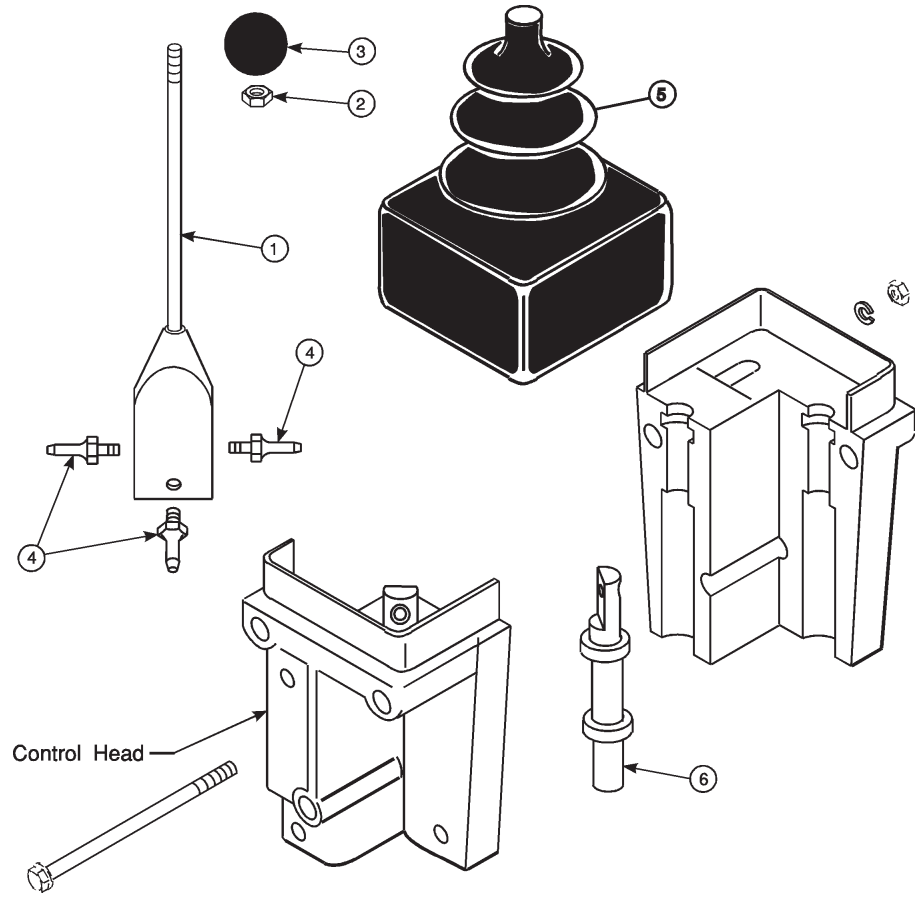


SECURING HOSES USING RUBBER TARP STRAPS
(Figure 8)

Install loader onto tractor according to instructions included with mounting kit. Use larger plastic tie strap (24)

x 120 hoses together. Loop one rubber strap (3) around hoses onto itself, and secure other end near front mounting. Wrap remaining rubber strap (3) around bundled hoses and loader side frame. Make sure rubber straps secure hoses away from tractor axle, wheel or moving loader parts.

Figure 9
Control Handle



PARTS LIST - CONTROL HANDLE REPAIR PARTS

ITEM	SMC NO.	NH NO.	DESCRIPTION	QTY.
1	44336	SML44336	LEVER ASSEMBLY	1
2	G124925	00087307	NUT, Jamb, 3/8-24	1
3	44279	SML44279	KNOB	1
4	44337	SML44337	BALL STUD	3
5	44335	SML44335	BOOT	1
6	45287	SML45287	PLUNGER, Assembly	2

Parts shown can be replaced if necessary.

REPLACE HANDLE OR BALL STUDS

1. Remove control handle from mounting stand.
2. Slide boot (5) up on shaft of lever assembly.
3. Split halves of control head by removing screws which hold them together. Lever assembly can now be removed from head.
4. Replace lever assembly (1) or ball studs (4) as needed.
5. Insert ball studs (4) into pivot points while joining halves of control head. Secure halves using screws previously removed.

6. Grease ball studs at pivot points. Slide boot (5) down to cover top of control head.

7. Replace control head onto mounting stand.

NOTE: Individual parts inside control heads are not available as repair parts.

REPLACE PLUNGER ASSEMBLY

1. Slide boot (5) up on handle. Remove cap screws and separate halves of control head.
2. Replace plunger assembly (6).
3. Grease replacement plunger assembly (6), reassemble control head and reinstall to mounting stand.

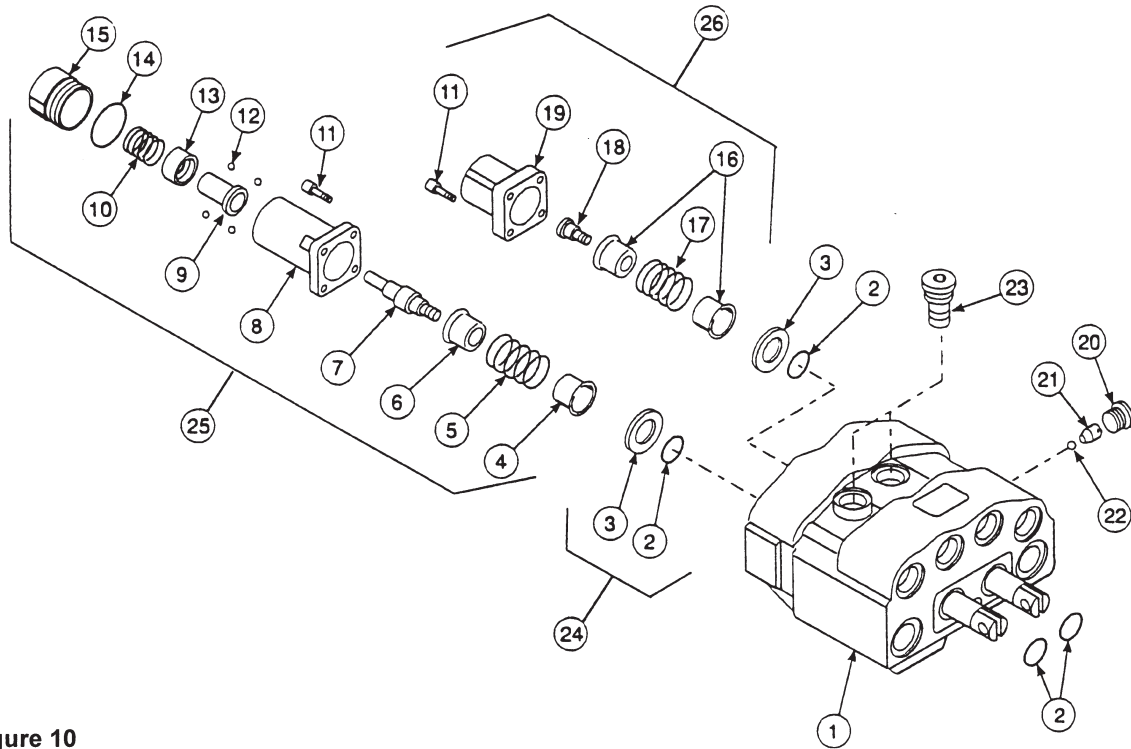


Figure 10

PARTS LIST - WALVOIL VALVE - 44753

ITEM	SMC NO.	NH NO.	DESCRIPTION	QTY.
1	*		VALVE BODY (Includes spools)	1
2	*		SEAL, O-Ring	4
3	*		WASHER, 18MM x 34MM x 4MM	2
4	45024	SML45024	BUSHING	1
5	45025	SML45025	SPRING	1
6	45026	SML45026	BUSHING	1
7	45027	SML45027	PIN, Spool Anchor	1
8	*		COVER	1
9	45029	SML45029	BUSHING, Carrier	1
10	45030	SML45030	SPRING	1
11	45028	SML45028	SCREW, Cap, Socket Head, 5MM x 16MM	8
12	45032	SML45032	BALL BEARING	4
13	45033	SML45033	RING, Thrust	1
14	45031	SML45031	O-Ring	1
15	*		END CAP	1
16	45034	SML45034	BUSHING	2
17	45035	SML45035	SPRING	1
18	45036	SML45036	SCREW, Spool Control	1
19	*		ENDCAP	1
20	45041	SML45041	PLUG,	1
21	45042	SML45042	PLUG, with seat	1
22	45043	SML45043	BALL BEARING	1
23	45023	SML45023	LOAD CHECK PLUG, VR10	2
24	45020	SML45020	SEAL KIT, Body [item #2 (Qty. 4) and item #3 (Qty. 2)]	1
25	45021	SML45021	REPAIR KIT [items 4, 5, 6, 7, 9, 10, 11 (Qty. 4), 12 (Qty. 4), 13, 14 & 15]	1
26	45022	SML45022	REPAIR KIT [items 11 (Qty. 4), 16 (Qty. 2), 17, 18 & 19]	1

* Not available as repair part. Order appropriate repair kit or complete valve (44753).

2-6536
2-6982

715844006
715844016

INSTALLATION INSTRUCTIONS