

Keep With Operator's Manual

CABLE CONTROLLED VALVE & PLUMBING KIT 2410 LOADER

CNH TN55, TN60A, TN65, TN70, TN70A, TN75, TN75A NON-CAB TRACTORS

Valve and plumbing kit can be installed using tools ordinarily available. Valve control handle has been factory pre-assembled 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 tape 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 of flare adapter threads.



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

- DO NOT use your hand 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 treatment immediately or gangrene may result.

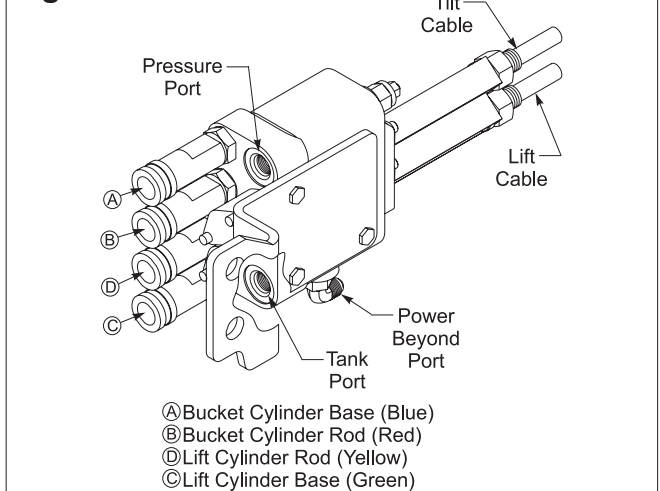
CABLE HARNESS ASSEMBLY (Figure 2 & 3)

1. Loosely fasten cables (16) to cable straps (20) using 3/4 jam nuts (17), 3/4 internal tooth lock washer (18), and 3/4 knurled nut (19). Attach spool clevis (24) to cable ends (16) using 5/16 jam nuts (21); one on each side. Remove protective caps on opposite end of cable (16) and attach cable adapter (15). Figure 2.
2. Fasten cable assemblies (26) to valve using 1/4-20 x 3/8 socket head cap screws (25). Note which cable is "lift" and which is "tilt". Attach spool clevis (24) to lift and tilt spool of valve using 5/16 x 1 clevis pins (23) and cotter pins (22). Figure 2.

CABLE CONTROL VALVE ASSEMBLY (Figure 1 & 4)

1. Install 90° elbow fitting (8) to power beyond port of

Figure 1



valve (1). Install straight adapter fittings (19), female couplers (14), and dust plugs (15, 16, 17, 18) to pressure and tank ports of valve (1).

NOTE: Be sure to attach color coded dust plugs in sequence shown.

2. Attach 3/8 x 60" hose (11) to 90° elbow fitting (8) on power beyond port on valve (1). Slide 60" protective sleeve (20) over hose (11).
3. Attach male end of 3/8 x 84" hose (9) to tank port on valve (1). Slide 88" long protective sleeve (21) over hose (9).
4. Attach male end of 3/8 x 90" hose (10) to pressure port on valve (1). Slide 90" protective sleeve (22) over hose (10).

ATTACHING VALVE TO TRACTOR (Figure 4)

1. Attach valve (1) to valve mount plate (4) using three 5/16 x 3/4" cap screws (6) and 5/16 lock washers (7).

NOTE: Valve mount plate (4) must be attached to working port side of valve and bent offset in valve mount plate points away from valve.

2. On right side, remove two 20mm bolts securing tractor platform support plate to tractor casting. Fasten valve mount plate (4) to tractor platform support plate and tractor casting using two 20mm x 65mm cap screws (12) and 20mm lock washers (13).

PARTS LIST – JOYSTICK AND CABLE HARNESS - Figure 2 & 3

Item	Part No.	Description	Qty.
1	51814	HANDLE, Plastic, Joystick	1
2	G11506909	SCREW, Set, 6mm-1.00 x 8mm Long	1
3	51805	BOOT, Handle Linkage, Cable-Control Joystick	1
4	*	HANDLE, Cable Control Joystick	1
5	*	RETAINING RING, External 15/16"	3
6	*	ROD END, Single	1
7	*	ROD END, Double	1
8	51894	BOLT, Pan Head Slotted, 6mm-1.00 x 22mm Long	1
9	*	CLEVIS, Cable Control Handle	1
10	**	NUT, Lock, Nylon Insert, 6mm-1.00	1
11	54740	BASE, Cable Control, with Lock Mechanism	1
12	41837-1	WASHER, Lock, 1/4"	1
13	51812-1	SCREW, Socket Head, 6mm-1.00 x 30mm	1
14		CABLE TIE, 3/16" (not available as separate repair part*)	1
15	52242	CABLE ADAPTER	2
16		CABLE (not available as individual service part, see Item 26)	1
17	48948-18	NUT, Jam, 3/4-16	1
18	51798-1	WASHER, Lock, Internal Tooth, 3/4"	1
19	51799-1	NUT, Knurled, 3/4-16	1
20	51800	STRAP, Valve Adapter	1
21	48948-2	NUT, Jam, 5/16-18	2
22	41903-15	PIN, Cotter, 3/32 x 3/4	1
23	41902-20	PIN, Clevis, 5/16 x 1	1
24	51804	CLEVIS, Spool, for Cable Control	1
25	44743-1	SCREW, Cap, Socket Head, 1/4-20 x 3/8	4
26	51758-2	CABLE ASSEMBLY, 80" (Includes Items 16, 17, 18, 19, 20, 21, 22, 23 & 24)	1
27	**	PIN, 1/4"	2
28	**	RETAINING RING, External, 1/4"	2
29	**	SCREW, Socket Head, 6mm-1.00 x 75mm	1
30	55578	* KIT, HANDLE ASSY REPAIR (Includes items 4-7 & 9)	1
31	55579	** KIT, PIN/CABLE RETAINER (Includes items 10 & 27-29)	1
	51757	JOYSTICK ASSEMBLY (Includes Items 1-14 & 27-29)	1

ATTACHING VALVE TO TRACTOR (Cont.)

3. On rear remotes of tractor, remove tractor steel oil line which is attached between pressure port and power beyond port of tractor. Remove plug from tank port of tractor as shown.
4. Install the 18mm male O-ring end of straight adapter fitting (26) into power beyond port of tractor. Install female end of 90° elbow (25) onto straight adapter fitting (26), making sure elbow is pointing downward. Route 3/8 x 60" hose (11), which is attached to power beyond port of valve (1), over rear tractor axle and under upper 3 point hitch lift arm, attach to male end of 90° elbow (25).
5. Loop 3/8 x 90" hose (10), which is attached to pressure port of valve (1), toward rear of tractor. Route hose over rear tractor axle and under upper 3 point hitch lift arm, attach to tractor pressure port elbow.
6. Install 3/4 BSPP male O-ring end of straight adapter fitting (23) into tank port of tractor. Install female end of 90° elbow (24) onto straight adapter fitting (23), making sure elbow is pointing toward right side of tractor. Loop 3/8 x 84" hose (9), which is attached to tank port of valve (1), toward rear of tractor. Route hose over rear tractor axle and under upper 3 point hitch lift arm, attach to 90° elbow (24) on tank port of tractor.
7. Attach joystick mounting bracket (5) to right tractor fender, using holes provided in fender, secure with three 5/16 x 1" cap screws (31), 5/16 flat washers (30) and 5/16 lock nuts (32).

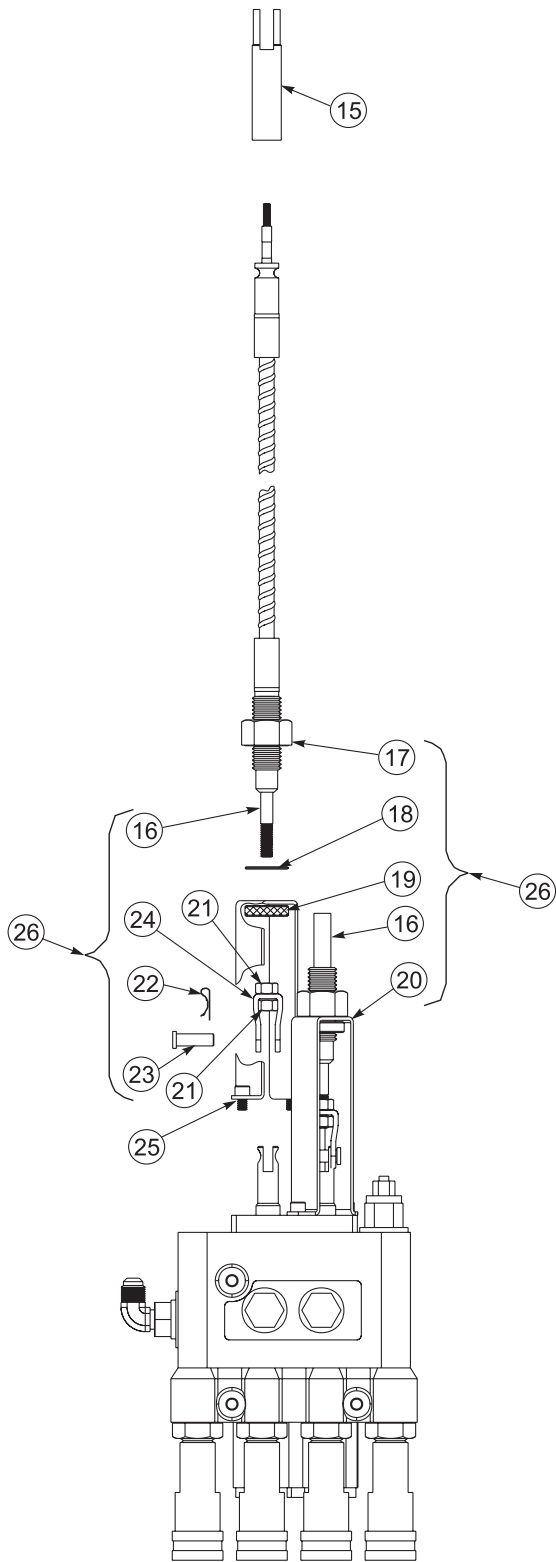


Figure 2

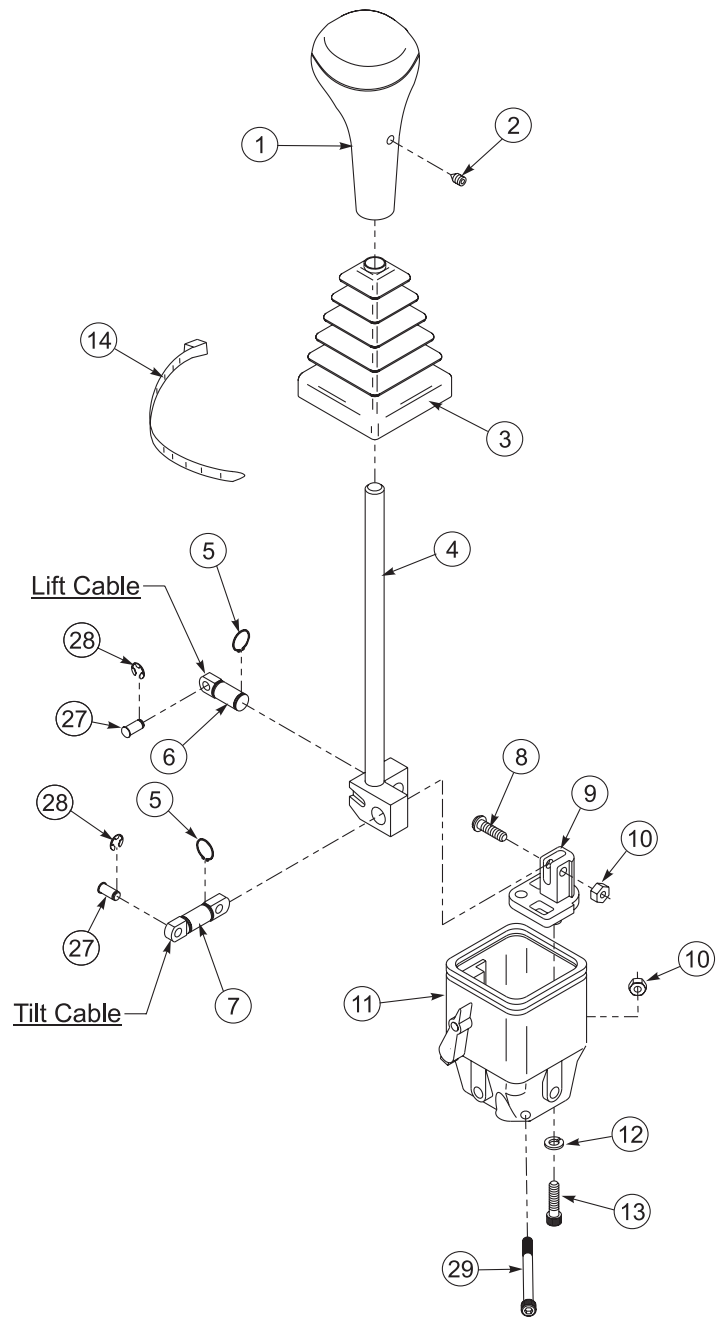


Figure 3

MOUNTING AND ASSEMBLING JOYSTICK ON TRACTOR (Figure 4)

1. Attach joystick mounting bracket (5) to right tractor fender, using holes provided in fender, secure with three 5/16 x 1" cap screws (31), 5/16 flat washers (30) and 5/16 lock nuts (32).
2. Attach joystick assembly (3) to mounting bracket (5) using two 5/16 x 3-1/4" cap screws (29), 5/16 flat washers (30) and 5/16 lock nuts (32).

NOTE: Joystick assembly must be installed with lockout knob on joystick toward outside of tractor.

JOYSTICK ASSEMBLY AND MOUNTING ON TRACTOR - (Figures 3 & 4)

1. Remove rubber plug from right rear corner of tractor platform. Push cable ends (2) through tractor platform, making sure cables are not twisted. (Figure 4).
2. Disassemble handle (1) and boot (3) from joystick assembly by loosening set screw (2) in handle (1) and lifting handle (1) and boot (3) from joystick lever.
3. Remove socket head screw (29) and locknut (10) from lower side hole of base (11).
4. Slide "lift cable" (16) and cable adapter (15) through rear hole on bottom of base (11). Attach cable adapter (15) to rod end (6) with pin (27) and retaining ring (28).
5. Slide "tilt cable" (16) and cable adapter (15) through front hole on bottom of base (11). Attach cable adapter (15) to rod end (7) with pin (27) and retaining ring (28).
6. Lock lift cable and tilt cable into place by reinstalling socket head screw (29) and locknut (10) through lower side hole of base (11).
7. Slide boot (3) onto joystick handle assembly and reinstall handle (1).
8. Adjust cables at valve to get desired performance from joystick.
9. Make sure cables and hose are not binding or coming into contact with any moving part.

PLUMBING LOADER TO MID-MOUNTED VALVE (Figure 4)

1. Install male couplers (35) and color coded dust caps (36-39) to male end of four 3/8 x 64" hoses (33).
2. Slide a nylon sleeve (34) over each of the four 3/8 x 64" hoses (33). Install hoses (33) to steel oil lines on loader in sequence shown in Figure 4. Hoses with blue coding attaches to bucket cylinder base. Hose with red coding attaches to bucket cylinder rod. Hose with yellow coding attaches to lift cylinder rod. Hose with green coding attaches to lift cylinder base.
3. Attach loader hoses (33) with male couplers and dust caps (36-39) to female couplers (14) with dust plugs (15-18) on valve (1). It is important to make sure color coding corresponds between dust plugs and dust caps on each hose.
4. Using 1/2 x 20" straps (27) and tarp strap (28), bundle hoses with sleeves together to avoid interference with moving parts.
5. After all plumbing has been completed, slowly cycle lift and bucket cylinders several times to purge air from hydraulic system. Retract cylinders and shut off engine. Replenish tractor hydraulic system.

NOTE: When cycling loader, operate loader according to operation decal located on joystick knob. If directional control lever is wrong or loader will not lower, recheck connections shown.



WARNING: Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin causing serious personal injury. If injured by escaping hydraulic fluid, obtain medical treatment immediately.

PRINCE LVR VALVE SERVICE

Following is an outline procedure for disassembling and reassembling valve.



WARNING: Valve has a valve relief setting preset at the factory. Tampering with this setting can cause serious injury to operator and damage to tractor or loader. Unauthorized adjustments or service to valve relief will VOID Warranty of both loader and tractor. If adjustments or service to valve relief are required during warranty period, an authorized service department must be consulted for authorization.

VALVE DISASSEMBLY (Figure 5)

NOTE: *It is advisable to mark or tag all parts so they will be reinstalled in their proper position.*

1. Remove hex head cap screws (13) and detent end caps (14) from both spools. Remove detent sleeve (12) from regen spool. Remove steel balls (20), poppet (21), and poppet spring (19) from detent retainer (24). Remove retaining flat (15) and detent spacer (16) from regen spool.
2. Secure handle end of regen spool. Using a rod through retainer ball holes, remove detent retainer (24) from regen spool.

NOTE: *Detent retainers (18 & 24) are installed on spools using Loctite 222 or equivalent. If spool adapter comes loose instead of detent retainer, pull spool completely out of valve and secure spool using locking pliers (vise grips, for example) on land section of spool not machined for valve bore.*

3. Remove washer (17), centering spring (26), and stop cup (23) from regen spool.
4. Holding in on float detent sleeve (22), push in on float spool from handle end and remove steel balls (20) from float detent retainer (18). Remove float detent sleeve (22), poppet (21), poppet spring (19), retaining flat (15) and spacer (16) from float spool.
5. Secure handle end of float spool. Using a rod through retainer ball holes, remove detent retainer (18) from float spool.

NOTE: *Detent retainers (18 & 24) are installed on spools using Loctite 222 or equivalent. If spool adapter comes loose instead of detent retainer, pull spool completely out of valve and secure spool using locking pliers on land section of spool not machined for valve bore.*

Remove washer (17), centering spring (26), and stop cup (23) from float spool.

6. Push spools in from cable end until rear spool seals (1) are exposed. Using wire hook and screwdriver, remove rear spool seals. Push spools in from the rear until front spool seals (1) are exposed. Using wire hook and screwdriver, remove front spool seals.
7. Clean all parts, including valve body, in suitable cleaning solvent. After cleaning parts with solvent, use air pressure to blow any dirt or excess solvent from all parts, including inside of valve body.

VALVE REASSEMBLY (Figure 5)

1. Examine all parts for wear and damage and replace if necessary.
2. Lubricate all O-rings and spools with oil to prevent damage when assembling.
3. Lubricate all detent and spring centering parts with a light coat of grease before disassembling.
4. Reassemble all parts in reverse order of disassembly.

NOTE: *Use Loctite 222 or equivalent when installing detent retainers (18 & 24).*

RELIEF VALVE, LOAD CHECK PLUGS, AND POWER BEYOND SLEEVE

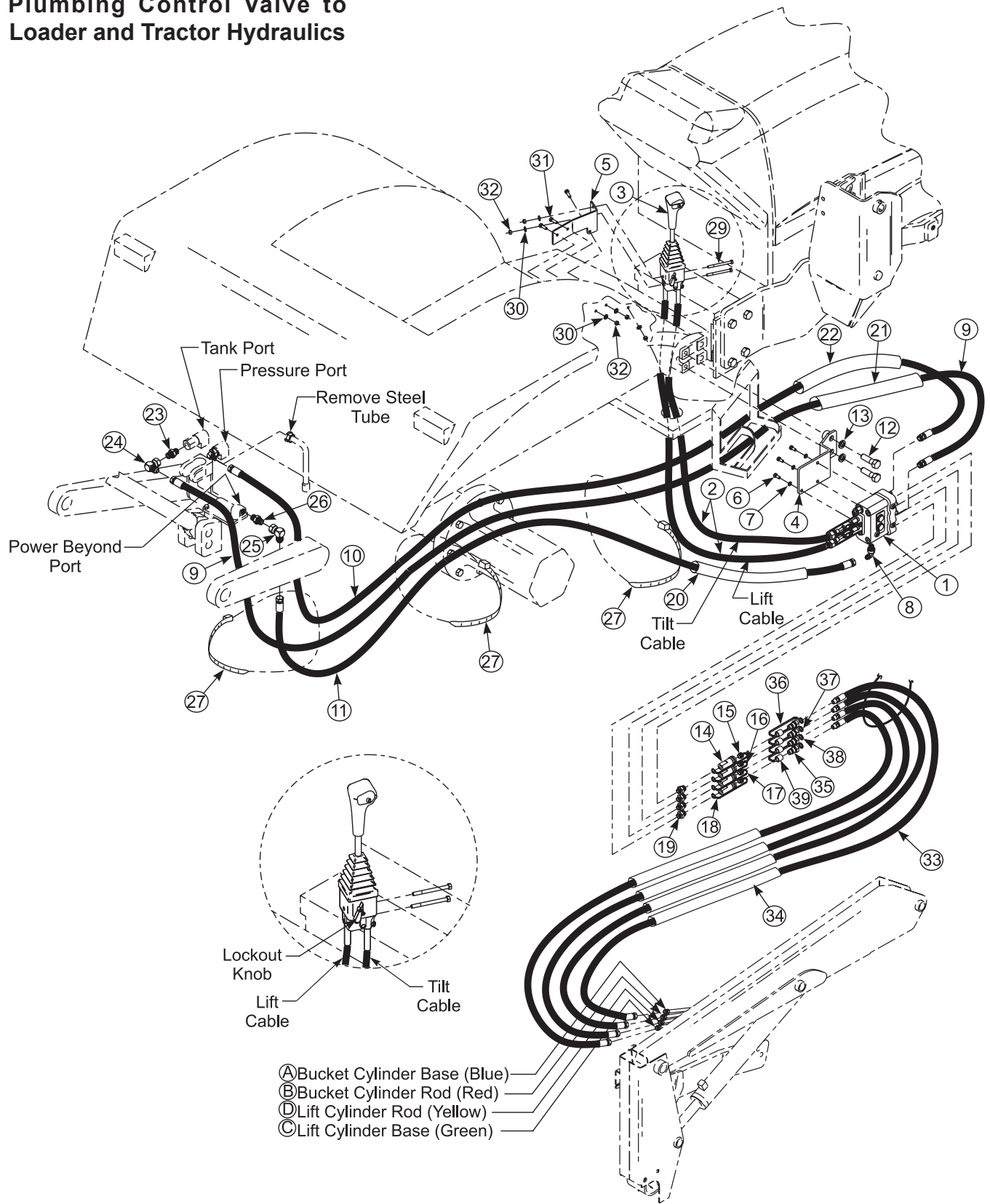
NOTE: *Relief valve (3), load check plugs (27), and power beyond sleeve (2) may be removed separately to clean, inspect, or replace parts without removing valve spools.*

NOTE: *If repairing or replacing relief valve (3), torque larger hex nut (relief body) to 20-25 ft.·lbs.*

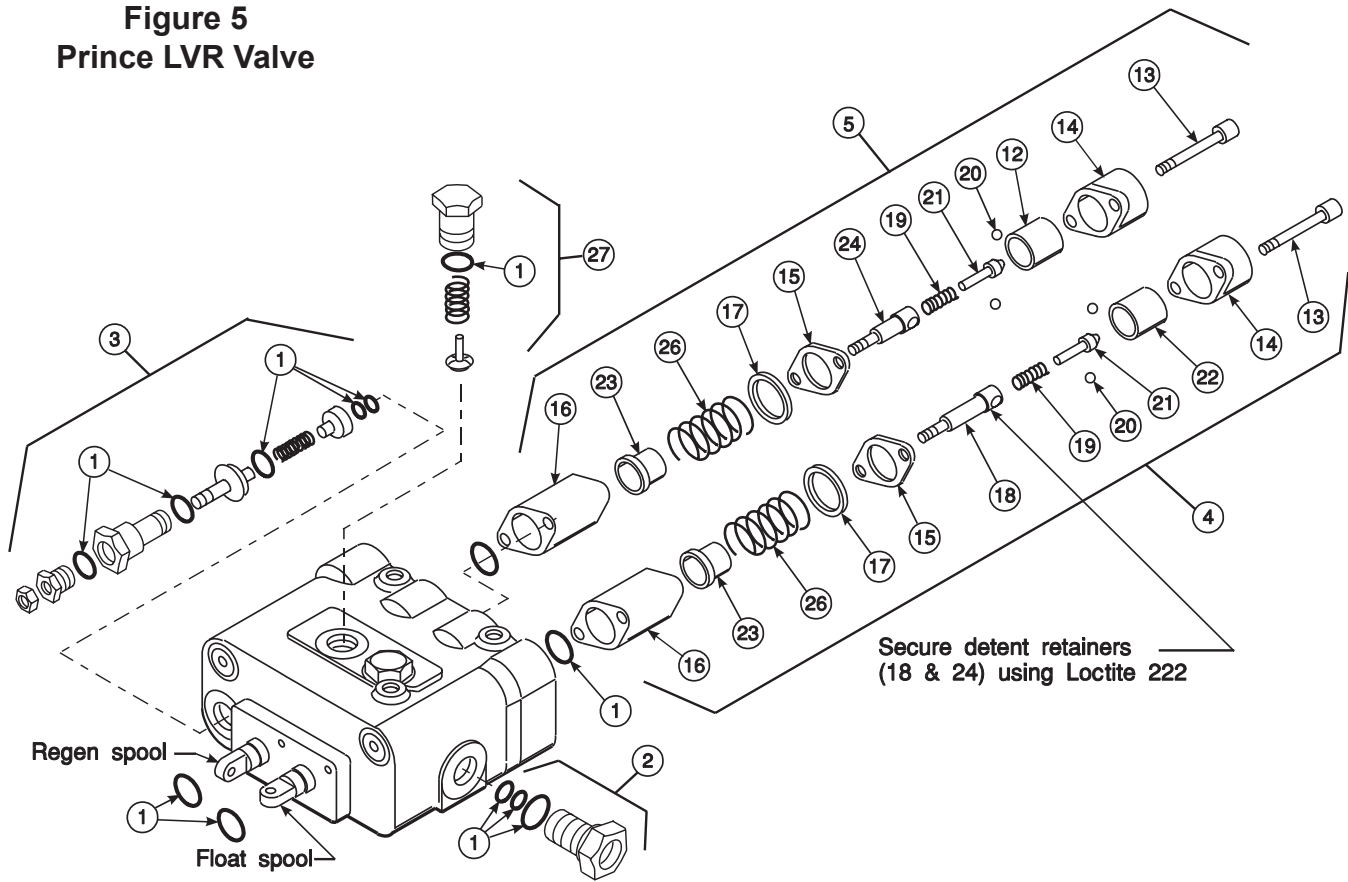
PARTS LIST – VALVE & PLUMBING KIT Figure 4

Item	Part No.	Description	Qty.
1	51813	VALVE, Prince LVR (3000 psi)	1
2	51758-2	CABLE ASSEMBLY	2
3	51757	JOYSTICK ASSEMBLY, INDEMAR	1
4	51888	MOUNT PLATE, Valve	1
5	52243	BRACKET, Joystick Mounting	1
6	41838-26	SCREW, Cap, 5/16-18 x 3/4 YDP	3
7	41837-2	WASHER, Lock, 5/16 YDP	3
8	32845-2	FITTING, Elbow, 3/4-16 JIC x 3/4-16 O-ring, 90°	1
9	50439-3	HOSE, 3/8 x 84" Tank	1
10	50439-4	HOSE, 3/8 x 90" Pressure	1
11	36844-8	HOSE, 3/8 x 60" Power Beyond	1
12	6090-130	SCREW, Cap, 20MM-2.50MM x 65MM	2
13	48093-2	WASHER, Lock, 20mm	2
14	6147-10	COUPLER, Quick, Female, 3/4-16 O-ring YDP	4
15	4838-12	DUST PLUG, Blue	1
16	4838-4	DUST PLUG, Red	1
17	4838-13	DUST PLUG, Yellow	1
18	4838-14	DUST PLUG, Green	1
19	48670-1	FITTING, Straight, 3/4-16 O-ring x 3/4-16 O-ring	4
20	34853-42	SLEEVE, Nylon, 1-1/4 x 60" 1	
21	34853-53	SLEEVE, Nylon, 1-1/4 x 88" 1	
22	34853-62	SLEEVE, Nylon, 1-1/4 x 90" 1	
23	36249-2	FITTING, Straight, 3/4 BSPP x 7/8-14 JIC	1
24	34128-1	FITTING, Elbow, 7/8-14 JIC x 7/8-14 JIC	1
25	34128-2	FITTING, Elbow, 3/4-16 JIC x 3/4-16 JIC	1
26	41173-2	FITTING, Straight, 18mm-1.5 x 3/4-16 JIC	1
27	8137-3	STRAP, Adjustable .50 x 20" 6	
28	7438-1	STRAP, Tarp 1	
29	41838-80	SCREW, Cap, 5/16-18 x 3-1/4	2
30	42502-7	WASHER, Flat, 5/16	5
31	41838-60	SCREW, Cap, Hex Head, 5/16-18 x 1"	3
32	41840-2	NUT, Lock, 5/16-18	5
33	46487-1	HOSE, 3/8 x 64"	4
34	34853-73	SLEEVE, Nylon, 1-1/4 x 64"	4
35	6137-6	COUPLER, Quick, Male	4
36	4838-8	DUST CAP, Blue	1
37	4838-3	DUST CAP, Red	1
38	4838-9	DUST CAP, Yellow	1
39	4838-10	DUST CAP, Green	1

Figure 4
Plumbing Control Valve to
Loader and Tractor Hydraulics



**Figure 5
Prince LVR Valve**



PARTS LIST – PRINCE LVR VALVE Figure 5

Item	Part No.	Description	Qty.
1	43633	SEAL KIT, Valve, Prince LVR (3000 psi)	1
2	43636	POWER BEYOND SLEEVE	1
3	51813	RELIEF Valve (3000 psi)	1
4	43638	FLOAT KIT (Includes items 13,14, 15, 16, 17, 18, 19, 20, 21, 22, 23 & 26)	1
5	43639	REGEN KIT (Includes items 12, 13, 14, 15, 16, 17, 19, 20, 21, 24, & 26)	1
14	44476-6	END CAP (MFR's PN, HC-V-AA23, stamped on end cap with valve & relief setting)	2

NOTE: Individual items not listed in repair parts listing are not available separately.

NOTES

GENERAL TORQUE SPECIFICATIONS

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Standard American and Metric Cap Screws

AMERICAN STANDARD CAP SCREWS										METRIC CAP SCREWS								
SAE Grade	5				8				Metric Class	8.8				10.9				
Typ. Head Markings									Typ. Head Markings									
Cap Screw	TORQUE				TORQUE				Cap Screw	TORQUE				TORQUE				
Size	FT·LBS		N·m		FT·LBS		N·m		Size	FT·LBS		N·m		FT·LBS		N·m		
Inches	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	Millimeters	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13	M6 x 1.00	6	8	8	11	9	11	12	15	
1/4 - 28	8	9	11	12	10.5	12	14	16	M8 x 1.25	16	20	21.5	27	23	27	31	36.5	
5/16 - 18	14	15	19	20	18.5	20	25	27	M10 x 1.50	29	35	39	47	42	52	57	70	
5/16 - 24	17.5	19	23	26	23	25	31	34	M12 x 1.75	52	62	70	84	75	91	102	123	
3/8 - 16	26	28	35	38	35	37	47.5	50	M14 x 2.00	85	103	115	139	120	146	163	198	
3/8 - 24	31	34	42	46	41	45	55.5	61	M16 x 2.50	130	158	176	214	176	216	238	293	
7/16 - 14	41	45	55.5	61	55	60	74.5	81	M18 x 2.50	172	210	233	284	240	294	325	398	
7/16 - 20	51	55	69	74.5	68	75	92	102	M20 x 2.50	247	301	335	408	343	426	465	577	
1/2 - 13	65	72	88	97.5	86	96	116	130	M22 x 2.50	332	404	450	547	472	576	639	780	
1/2 - 20	76	84	103	114	102	112	138	152	M24 x 3.00	423	517	573	700	599	732	812	992	
9/16 - 12	95	105	129	142	127	140	172	190	M27 x 3.00	637	779	863	1055	898	1098	1217	1488	
9/16 - 18	111	123	150	167	148	164	200	222	M30 x 3.00	872	1066	1181	1444	1224	1496	1658	2027	
5/8 - 11	126	139	171	188	168	185	228	251	<p>NOTE: These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphite or moly sulphide greases or other extreme lubricants are used.</p>									
5/8 - 18	152	168	206	228	203	224	275	304										
3/4 - 10	238	262	322	355	318	350	431	474										
3/4 - 16	274	305	371	409	365	402	495	544										
7/8 - 9	350	386	474	523	466	515	631	698										
7/8 - 14	407	448	551	607	543	597	736	809										
1 - 8	537	592	728	802	716	790	970	1070										
1 - 14	670	740	908	1003	894	987	1211	1337										

37° JIC Fittings

Size	Thread Size	Assembly Torque		Tube Connection F. F. F. T.	Swivel Nut or Hose Connection F. F. F. T.
		in.·lb.	ft.·lb.		
-4	7/16 - 20	140 ± 10	12 ± 1	2	2
-5	1/2 - 20	180 ± 15	15 ± 1	2	2
-6	9/16 - 18	250 ± 15	21 ± 1	1 1/2	1 1/4
-8	3/4 - 16	550 ± 25	45 ± 5	1 1/2	1
-12	1 1/16 - 12	1000 ± 50	85 ± 5	1 1/4	1
-16	1 5/16 - 12	1450 ± 50	120 ± 5	1	1
-20	1 5/8 - 12	2000 ± 100	170 ± 10	1	1
-24	1 7/8 - 12	2400 ± 150	200 ± 15	1	1
-32	2 1/2 - 12	3200 ± 200	270 ± 20	1	1

O-Ring Face Seal Tube/ Hose Swivel Nut

Metric Tube O.D. (mm)	Dash Size	Thread Size (in.)	Swivel Nut Hex Size (in.)	Swivel Nut Torque	
				N·m	lb _f ·ft
5	-3	--	--	--	--
6	-4	9/16 - 18	11/16	16	12
8	-5	--	--	--	--
10	-6	11/16 - 16	13/16	24	18
12	-8	13/16 - 16	15/16	50	37
16	-10	1 - 14	1-1/8	69	51
20	-12	1-3/16 - 12	1-3/8	102	75
22	-14	1-3/16 - 12	--	102	75
25	-16	1-7/16 - 12	1-5/8	142	105
32	-20	1-11/16 - 12	1-7/8	190	140
38	-24	2 - 12	2-1/4	217	160
50.8	-32	--	--	--	--

SAE O-Ring Fittings

Size	Swivel Nut or Hose	Assembly Torque		F. F. F. T.
		in.·lb.	ft.·lb.	
2	5/16 - 24	90 ± 5	7.5 ± 0.5	1 ± .25
3	3/8 - 24	170 ± 10	14 ± 1	1 ± .25
4	7/16 - 20	220 ± 15	18 ± 1	1 ± .25
5	1/2 - 20	260 ± 15	22 ± 1	1 ± .25
6	9/16 - 18	320 ± 20	27 ± 2	1.5 ± .25
8	3/4 - 16	570 ± 25	48 ± 2	1.5 ± .25
10	7/8 - 14	1060 ± 50	90 ± 5	1.5 ± .25
12	1 1/16 - 12	1300 ± 50	110 ± 5	1.5 ± .25
14	1 3/16 - 12	1750 ± 75	145 ± 6	1.5 ± .25
16	1 5/16 - 12	1920 ± 125	160 ± 6	1.5 ± .25
20	1 5/8 - 12	2700 ± 150	225 ± 12	1.5 ± .25
24	1 7/8 - 12	3000 ± 150	250 ± 12	1.5 ± .25
32	2 1/2 - 12	3900 ± 200	325 ± 15	1.5 ± .25

INSTALLATION INSTRUCTIONS