

Keep With Operator's Manual

## VALVE & PLUMBING KIT INSTRUCTIONS RHINO 2409 LOADER NEW HOLLAND T1530 TRACTOR

### TRACTOR AND VALVE KIT GENERAL INFORMATION

Valve and plumbing kit can be installed on tractor using tools ordinarily available. Valve control linkage has been factory preassembled for ease of installation.



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

- Do not use your hands to check for leaks. Use a piece of cardboard or paper. Always wear eye protection when searching for leaks.
- Place control lever in float position and stop tractor engine to relieve hydraulic 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.*

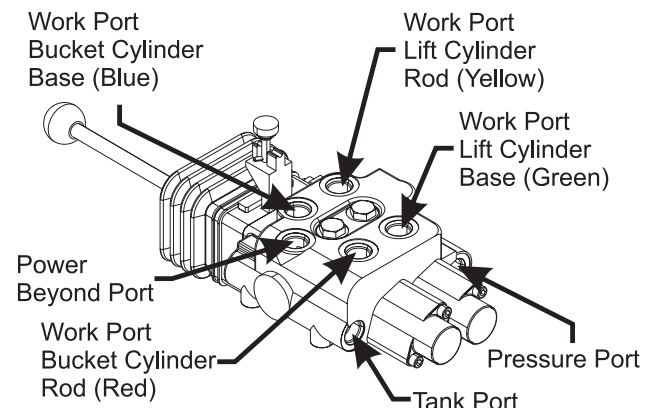
Shut off tractor engine, remove key, engage tractor brakes, and completely lower three-point hitch during installation.

### ASSEMBLING HOSES AND FITTINGS ONTO VALVE AND ASSEMBLING ONTO MOUNTING TUBE (Figures 1, 2 & 3)

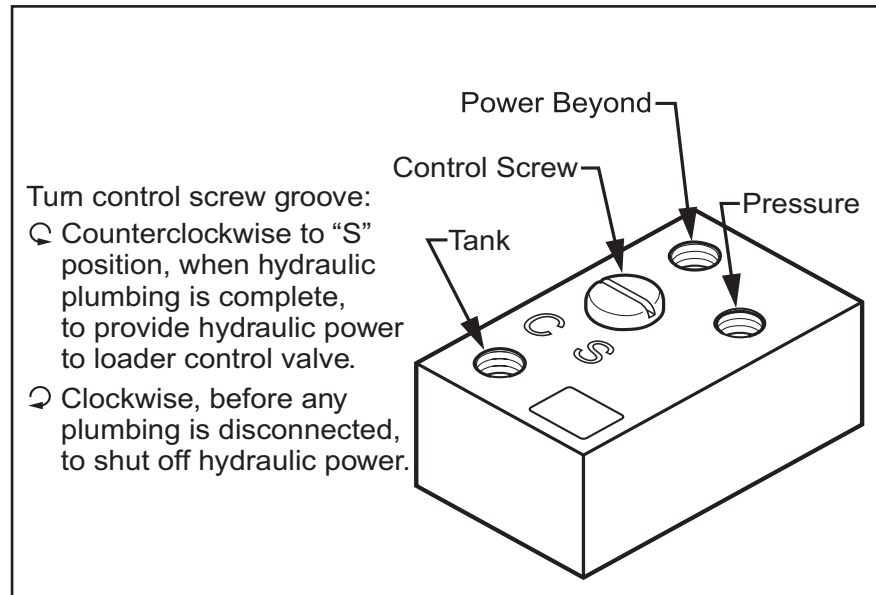
1. Unpack all parts and check to see that nothing is missing.
2. Install 3/8" x 56" hose (2) to tank port of control valve (1). Slide 56" nylon sleeve (8) over 3/8" x 56" hose (2) and secure it to fitting at valve end with plastic tie strap (31). Install 3/8" x 56" hose (2) to pressure port of control valve (1). Slide 56" nylon sleeve (8) over 3/8" x 56" hose (2) and secure it to fitting at valve end with plastic tie strap (31). Tighten hoses (2) to ports in valve.

3. Attach valve mounting tube (6) to right mount bracket using 1/2" x 2-1/2" cap screws (20), 1/2" flat washers (21), and 1/2" lock nuts (22).
4. Fasten valve mounting plate (5) to valve mounting tube (6) using 3/8" x 2-1/4" cap screws (17), 3/8" flatwashers (19) and 3/8" lock nuts (18).
5. Fasten valve (1) to valve mounting plate (5) using 5/16-18 X 3/4" cap screws (23), and 5/16" lock washers (24).
6. Install 3/8" x 58" hose (3) to power beyond port on control valve (1). Slide 58" nylon sleeve (7) over 3/8" x 58" hose (3) and secure it to fitting at valve end with plastic tie strap (31). Tighten hose (3) to control valve (1).
7. Install long straight 3/4" O-ring x 9/16" JIC adapters (10), 90° elbows (11), dust plugs (25), and female couplers (12) onto upper work ports (blue and yellow as shown in Figure 1). Install blue and yellow identification bands (27 & 29) on the coupler on the corresponding work port.
8. Install short straight 3/4" O-ring x 9/16" JIC adapters (14), 90° elbows (11), dust plugs (25), and female couplers (12) onto lower work ports (red and green as shown in Figure 1). Install red and green identification bands (28 & 30) on the coupler on the corresponding work port.

**Figure 1 - Identifying Valve Ports**



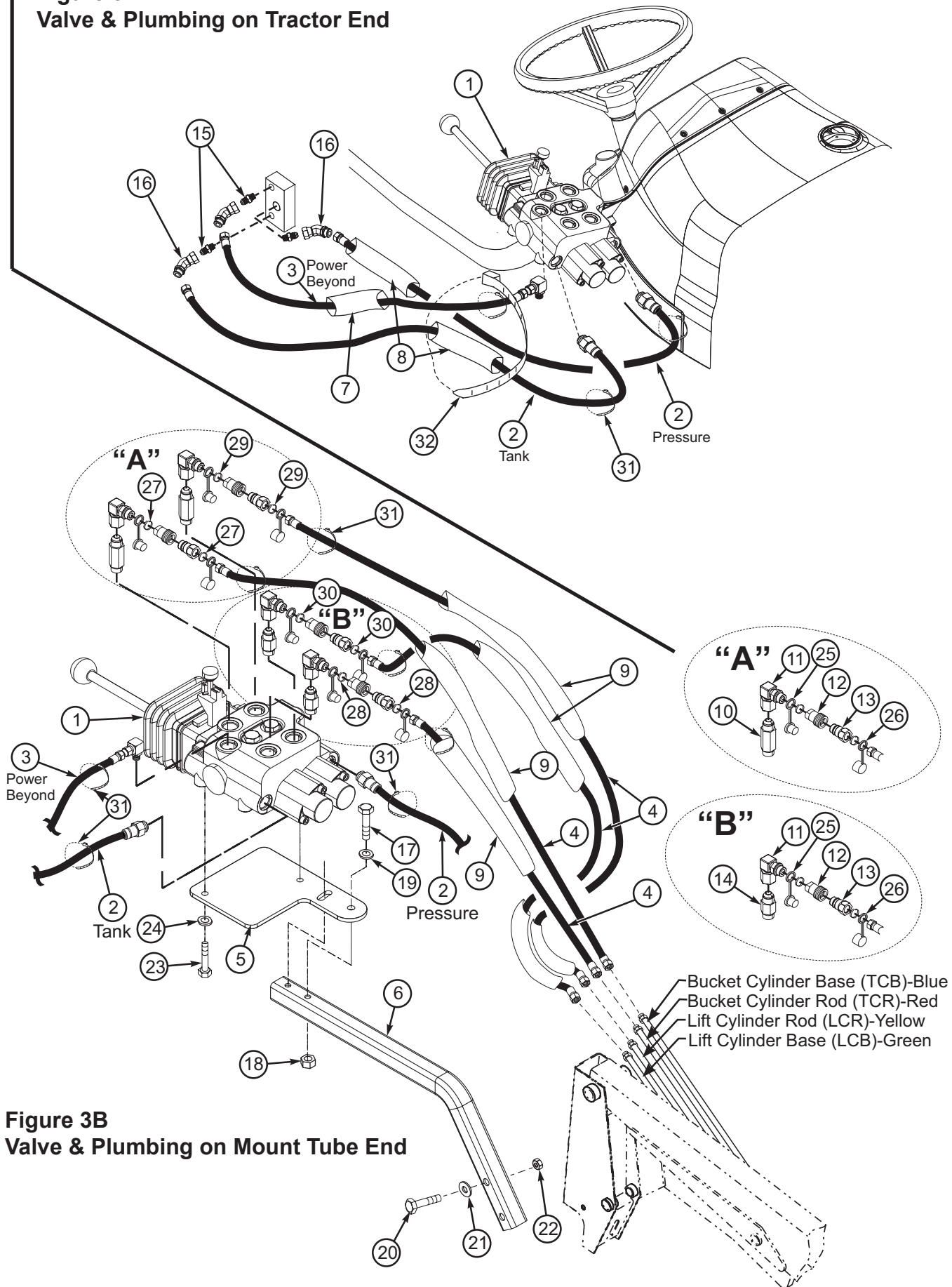
**Figure 2**  
**Tractor Hydraulic Block Detail**



**PARTS LIST - VALVE & PLUMBING KIT**

Item	Part No.	Description	Qty.
1	54881	VALVE, PRINCE	1
2	43454-15	HOSE 0.375ID X 56" (PRESSURE & TANK)	2
3	47969-1	HOSE 0.375ID X 58" (POWER BEYOND)	1
4	38576-17	HOSE #6-6MB-8FJX - 48" (LOADER LINES)	4
5	54879	PLATE, Valve Mounting	1
6	56036	TUBE, Valve Mounting	1
7	34853-65	SLEEVE, Hose, Nylon, 1-1/4" ID x 58" Long	1
8	34853-93	SLEEVE, Hose, Nylon, 1-1/4" ID x 56" Long	2
9	34853-80	SLEEVE, Hose, Nylon, 1-1/4" ID x 48" Long	4
10	54684-1	ADAPTER, 8MB-6MJ LONG	2
11	44277-2	FITTING, 9/16 O-RING X 9/16 JIC SWIVEL90°	4
12	6147-11	COUPLER, 3/8 FEMALE	4
13	6137-11	COUPLER, 3/8 MALE	4
14	32844-5	ADAPTER, 9/16 JIC X 3/4 O-RING	2
15	31221-4	ADAPTER, 9/16 JIC X 3/8 NPTF	3
16	38226-1	FITTING, 9/16 MJIC X 9/16 FJIC 45°	3
17	41838-19	SCREW, Cap, 3/8-16 x 2-1/4, Grade 5	2
18	41840-3	NUT, Lock, 3/8-16, Type N	2
19	42502-8	WASHER, Flat, 3/8" SAE	2
20	41838-25	SCREW, Cap, 1/2-13x2-1/2"	2
21	42502-10	WASHER, Flat, 1/2" SAE	2
22	41840-5	NUT, Lock, 1/2-13, Type-N	2
23	41838-26	SCREW, Cap, 5/16-18 x .75, Grade 5	2
24	41837-2	LOCK WASHER, 5/16	2
25	4838-17	DUST PLUG, .38	4
26	4838-18	DUST CAP, .38	4
27	36240-5	BAND, Plastic Identification, Blue, 5/8"	2
28	36240-6	BAND, Plastic Identification, Red, 5/8"	2
29	36240-7	BAND, Plastic Identification, Yellow, 5/8"	2
30	36240-8	BAND, Plastic Identification, Green, 5/8"	2
31	8137-1	STRAP, Plastic Tie, 3/16x11"	7
32	8137-3	STRAP, Plastic Tie, 1/2 x 20"	2

**Figure 3A**  
**Valve & Plumbing on Tractor End**



**Figure 3B**  
**Valve & Plumbing on Mount Tube End**

### PLUMBING CONTROL VALVE TO TRACTOR HYDRAULICS (Figure 3)

1. Remove plugs from pressure, tank, and power beyond ports of tractor hydraulic block and install 3/8" x 9/16" straight adapter fittings (15) into all three ports. Install 9/16" x 9/16" x 45° fittings (16) onto 3/8" x 9/16" straight fittings (15).
2. Connect power beyond hose (3) to 45° fitting (16) in power beyond port of tractor hydraulic block, connect tank hose (2) to 45° fitting (16) in tank port of tractor hydraulic block, and connect pressure hose (2) to 45° fitting in pressure port of tractor hydraulic block (See Figure 3). Use plastic tie straps (32) to secure hoses and sleeves away from moving parts.
3. After all plumbing has been completed, turn control screw on tractor hydraulic block counterclockwise to provide hydraulic power to loader control valve (1).

**NOTE:** If valve kit is removed from tractor, turn control screw on tractor hydraulic block clockwise to shut off hydraulic power to ports.

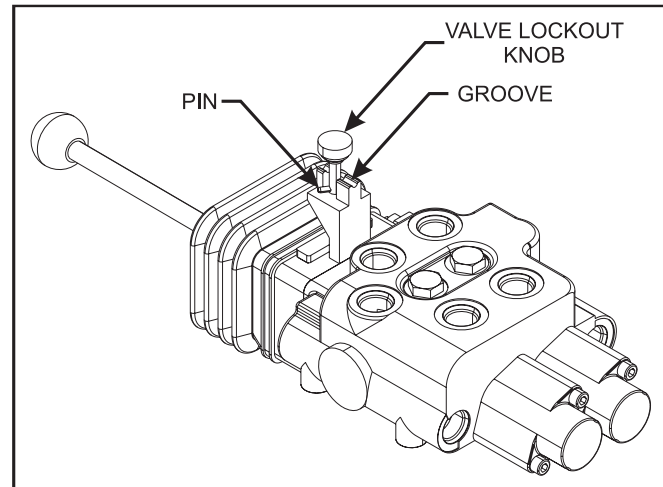
### PLUMBING LOADER TO CONTROL VALVE

1. Attach dust caps (26) and male couplers (13) to 48" hoses (4). Slide 48" hose sleeves (9) on 48" hoses and secure at each end with a plastic tie strap (31).
2. Install 3/8" x 48" hoses (4) onto boom oil line tubes. Install and tighten hose fittings one at a time from the bottom up. Loosening the closest oil line clamp will ease installation. Place color identification bands (27-30) on the hoses as shown in Figure 3B to correspond with the correct work ports/colors placed on the valve shown in Figure 1.
3. Connect hoses (4) from loader to control valve taking care to match colors on ends of the hoses to the corresponding color on the valve.
4. 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 tractor engine. Replenish tractor hydraulic system, if necessary, as specified in tractor operator's manual.

**Note:** When cycling loader, if direction of control lever is wrong, or loader will not lower, recheck connections shown.

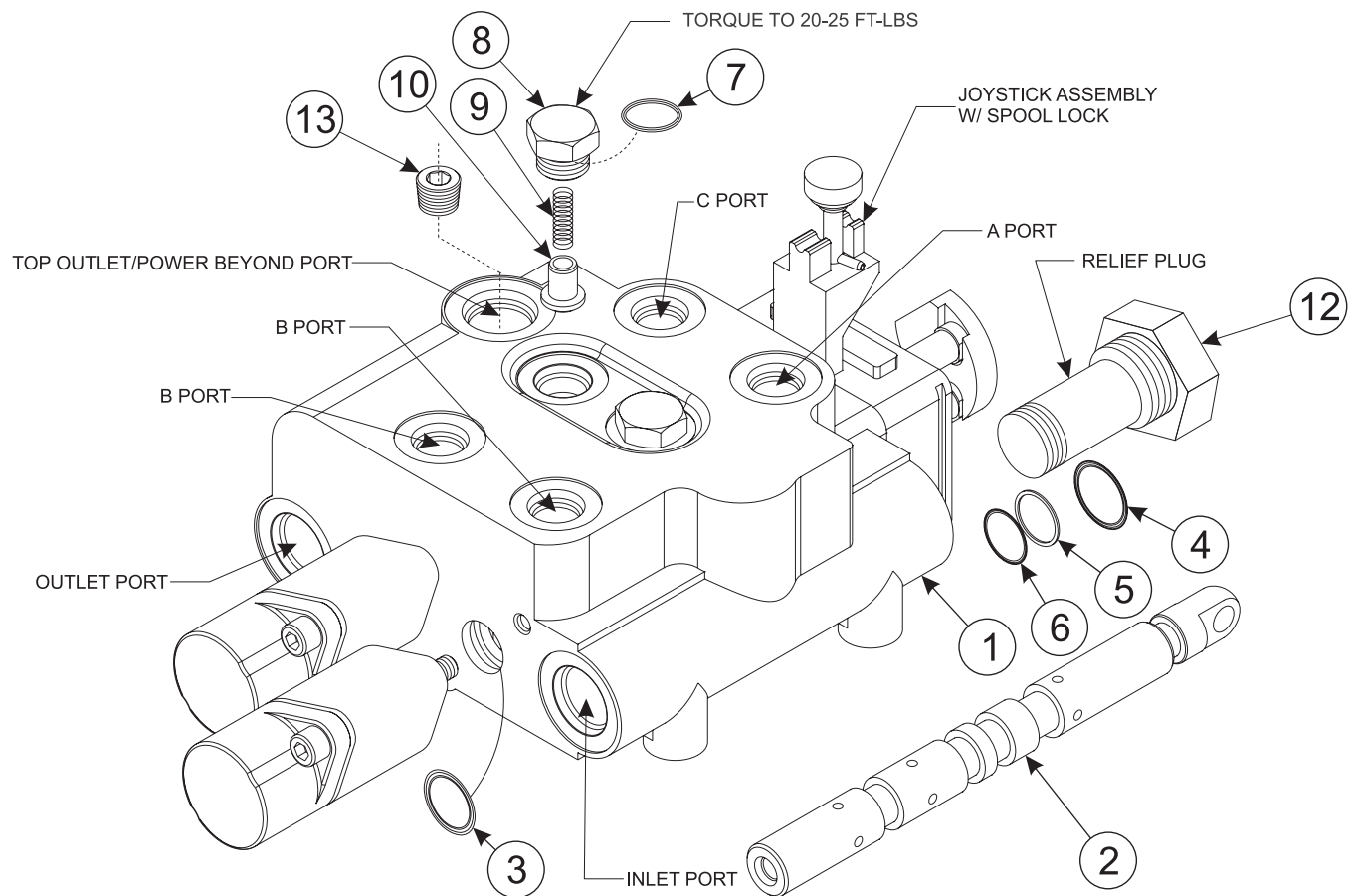
**Note:** The valve lock mechanically locks the spools in the neutral position. To disengage lock, lift knob then rotate and place pin in groove. To engage lock, lift and turn knob then lower until lock is engaged. The lock mechanism is spring loaded to the engaged position.

**Figure 4**  
**Valve Lock Operation**



**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.

**Figure 5**  
**Spool Mono-Block Valve Assembly**



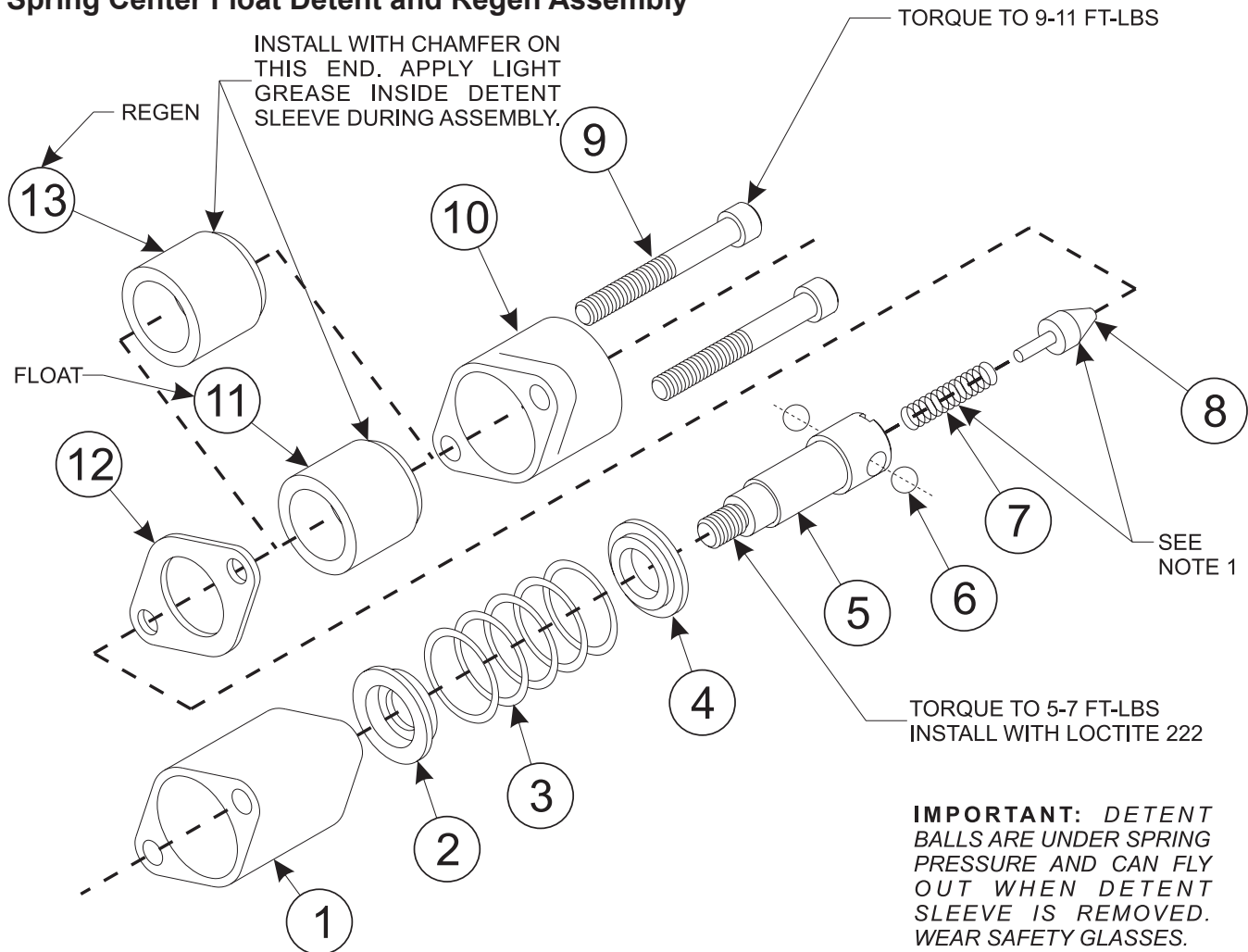
**PARTS LIST- SPOOL MONO-BLOCK VALVE**

Item	Part No.	Description	Qty.
1	N/A	BODY, 2 Spool Valve (See Note 1 Below)	1
2	N/A	SPOOL (See Note 1 Below)	2
3	*	114 O-RING (See Note 2 Below)	4
4	*	908 O-RING	1
5	*	014 BACK-UP	1
6	*	014 O-RING	1
7	*	906 O-RING	2
8	55764	PLUG, Load Check	2
9	55813	SPRING, Load Check	2
10	55814	POPPET, Load Check	2
11	55815	KIT, Seal, Includes * Items	1
12	55816	PLUG, Relief	1
13	55817	PLUG, 1/4-NPTF Pipe	1

**NOTE:** 1. These are matched parts and not sold as service parts.

2. Spool Seal Installation Procedure: Install O-ring in the groove on attachment end of valve. Push spool through from handle end just far enough to expose O-ring groove. Install O-ring and push spool back. Lubricate seals before installation.

**Figure 6**  
**Spring Center Float Detent and Regen Assembly**



**IMPORTANT:** DETENT BALLS ARE UNDER SPRING PRESSURE AND CAN FLY OUT WHEN DETENT SLEEVE IS REMOVED. WEAR SAFETY GLASSES.

**PARTS LIST- SPRING CENTER FLOAT DETENT AND REGEN**

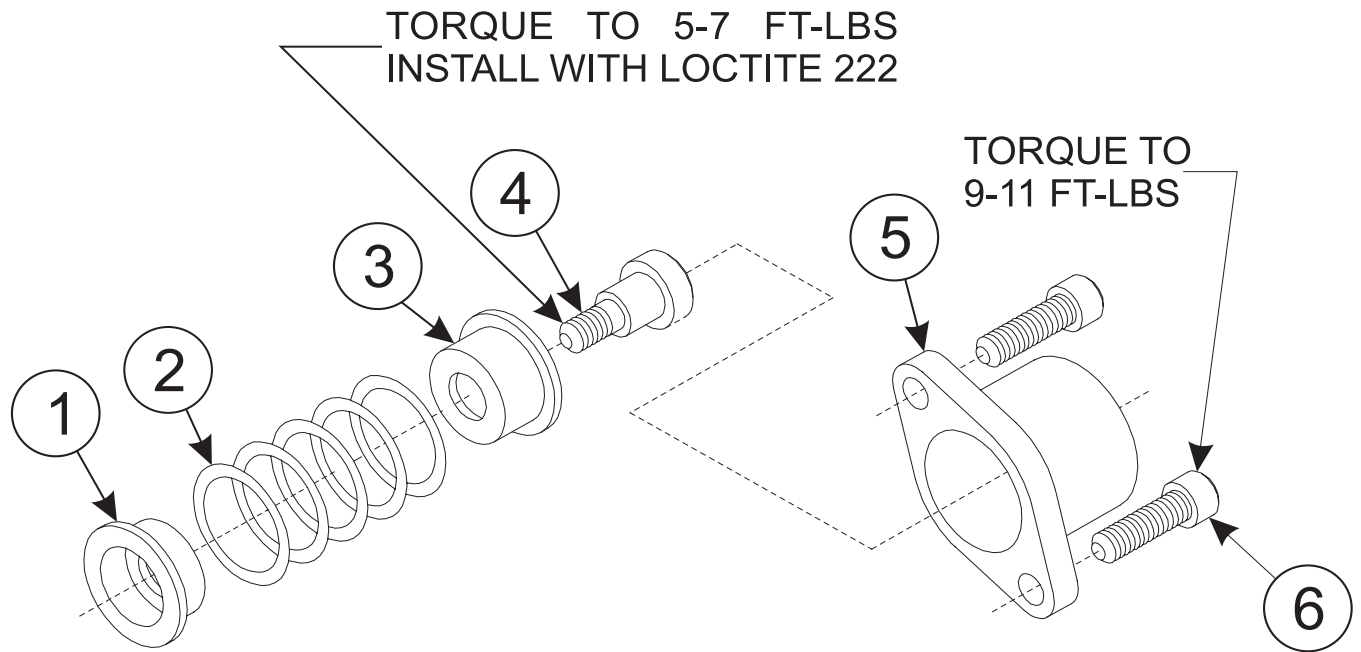
Item	Part No.	Description	Qty.
1	*	SPACER	1
2	*	CUP, Stop	1
3	*	SPRING	1
4	*	WASHER	1
5	*	RETAINER, Detent	1
6	*	BALL, Steel	2
7	*	SPRING	1
8	*	POPPET	1
9	*	SCREW, Cap	2
10	*	CAP, End	1
11	*	SLEEVE, Float Detent (A-B Spool)	1
12	*	RETAINER	1
13	*	SLEEVE, Regen (C-D Spool)	1
14	55818	KIT, Spring Center With Float Detent, Includes All Items Except 13	1
15	55819	KIT, Spring Center With Regen, Includes All Items Except 11	1

**NOTES:** 1. Install Items 7 & 8 into item 5 and compress spring. Install steel balls, item 6, and slide detent sleeve, item 11 or 13, over retainer, item 5.

2. Float detent sleeve has a detent groove on the inside. The regen sleeve does not.



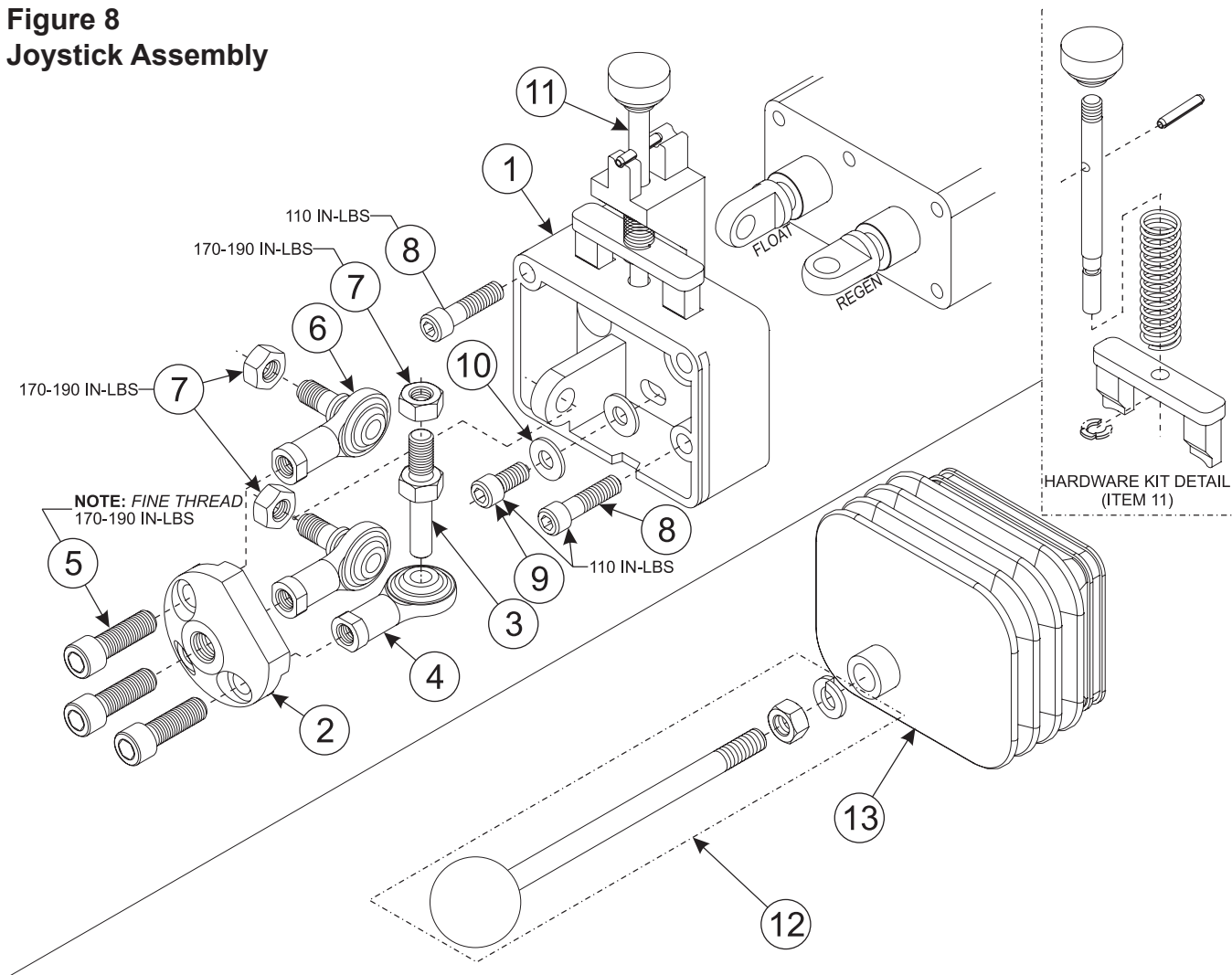
**Figure 7**  
**Spring Center Assembly**



**PARTS LIST- SPRING CENTER**

Item	Part No.	Description	Qty.
1	*	CUP, Stop	1
2	*	SPRING	1
3	*	CUP, Stop	1
4	*	ADAPTER, Spool	1
5	*	CAP, End	1
6	*	SCREW, Cap	2
7	55820	KIT, Spring Center, Includes * Items	1

**Figure 8**  
**Joystick Assembly**



**PARTS LIST- JOYSTICK SUB-ASSY WITH DUAL SPOOL LOCK**

Item	Part No.	Description	Qty.
1	*	CLEVIS, Spool Lock	1
2	*	PLATE, Adapter	1
3	55821	STUD, Spool	1
4	55822	END, Rod	1
5	*	SCREW, Cap	3
6	55823	ASSY, Rod End	2
7	*	NUT, Hex	3
8	*	SCREW, Cap	2
9	*	SCREW, Cap	1
10	*	WASHER, Flat	1
11	55824	KIT, Spool Lock Hardware	1
12	55825	KIT, Handle	1
13	55826	KIT, Boot/Cable Tie	1
14	55827	KIT, Sub-Assy, Includes Items 1-11	1

**NOTE:** *Installation Procedure: Pre-assemble rod ends. Align spool tangs with bracket tang. Loosely insert rod end studs into tangs. Rotate 2nd spool tang 90° Insert spool stud into rod end and rotate assembly such that the spool stud thread can be inserted into 2nd spool tang. Apply loctite and torque all fasteners as indicated.*

**NOTE:** *Clean all threaded parts with alcohol, dry and install with loctite 680, 277, or 281.*



## 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><b>NOTE:</b> 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·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