




Hydraulics Parts List

Ref. #	Qty	In Kit	Part #	Description * Part of 8639 Bolt Bag	Ref. #	Qty	In Kit	Part #	Description * Part of 8639 Bolt Bag
1	1		A2311	Pump tank assembly	50	1	*	765	1/4 Npt x 90 Deg Street Elbow
2	1		A4466	Control Valve Assembly	51	2		2780	1/4 Npt x 90 Deg Street Elbow Frgd
3	2		4483	Clevis - VM	52				
4	2		4494	10-32 Square Nut - VM	53	1	*	1659	Adapter union 1/4 Npt both ends
5	2		4491	Clevis Pin - 3/16" x 1	54				
6	2		4493	3/16" Push Nut Zp	55	2		1658	Quill - 3/8 Nptm to 3/8 ID Hose
7	1		8764	Filter Kit	56				
8		1	4419	SLC Head - Belt Drive	57				
9		2	A4949	30" Control Cable, SLC	71				
10	1		A318	1-1/2" x 10" Cylinder Assembly	72	1		5704	Caution Label - Cab
11	2		A3660	1-1/2" x 12" Cylinder Assembly	73	2		3042	Grommet - Rubber, Split
12	2		6814	Clevis Pin - 1 x 3-5/16	74	1		4477	Grommet - Split Hose
13	4		6816	Anchor Pin - 1 x 4	75	3		3666	Hose Tie, nylon 3/16 x 8
14					76	1	*	90066	5/16" x 3-1/2" (NC) Gr. 5 Cap Screw
15	6		90601	1/4" x 1-1/2" Cotter Pin	77	1		90054	5/16 x 1-1/2 (NC) Gr. 5 Cap Screw
16		1	2516	72" HP Hose - 1/4P - 3/8P	78	4	8	*90042	5/16 x 1 (NC) Gr. 5 Cap Screw
17		1	2515	72" LP Hose	79	6	13	*90360	5/16 Sp Lk Washer
18		1	1665	60" HP Hose, 9/16 O-ring to 1/4P	80	7	10	*90332	5/16 (NC) Nut
19		2	1664	60" HP Hose, 9/16 O-ring to 1/4P	81	4	4	*90313	5/16 Plain Washer
20		1	376	32" HP Hose, 1/4P to 1/4P	82				
21		2	4424	36" HP Hose, 1/4P to 1/4P	83	1		*90067	5/16 x 2 (NC) Gr. 5 Cap Screw
22		1	*5588	Fan Spacer, 3/16"	84	1		90614	1/4 x 1-1/4 (NC) Gr. 5 Cap Screw
23		1	691	60" Fan Belt	85	1		90359	1/4 Sp Lk Washer
24		1	8040	Drive Sheave	86	1		90330	1/4 (NC) Nut
25		1	3696	Pump Sheave	87				
26		1	9050	Pump Bracket	88	4	*	90361	3/8 SP LK Washer
27		1	8638	Pump Bracket Brace	89				
28					90				
29		1	5329	Valve Plate	91	2	*	90534	3/4 x 4-1/2 (NF) Gr. 5 Cap Screw
30		2	8552	Valve Plate Brace	92				
31		2	8054	Valve Plate Brace	93	3	*	90570	3/8" x 5 (NC) Gr. 5 Cap Screw
32					94				
33					95	1	*	90103	3/8" x 1" (NC) Gr. 5 Cap Screw
34					96	1	*	90334	3/8" (NC) Nut
35		1	5530	Saddle Bracket	97	2	*	90048	5/16 x 1-1/4 (NC) Gr. 5 Cap Screw
36	1		2036	Rear Tank Strap					
37	1		2116	Universal Brace Rod					
38		1	*2115	Universal Brace Tab					
39		1	4467	Disconnect Mounting Plate					
40									
41									
42	2		A1587	Hose Disconnect Assembly					
43	2		1588	Dust Plug - Closure/Male					
44		1	*4486	Adapter - Bulkhead 1/4" Npt					
45		2	*4485	Snap Ring - 7/8" External Bowed					
46	1		319	1/4" x 90 Swivel Adapter					
47	2		2315	9/16-18 w/O-Ring x 3/8 F Pi Swivel					
48		2	*8011	Nylon Mounting Tie Wrap w/Hole					
49		2	*90659	#12 x 3/4 Phil pan head SM Screw					

FASTENER TORQUE (FT-LB)			
DIAMETER - THREADS PER INCH	GRADE		
			
	G2	G5	G8
1/4 - 20	6	9	13
5/16 - 18	11	18	28
3/8 - 16	19	31	46
7/16 - 14	30	50	75
1/2 - 13	45	75	115
9/16 - 12	66	110	165
5/8 - 11	93	150	225
9/16 - 12	150	250	370
7/8 - 9	150	378	591
1 - 8	220	583	893

1. Cylinder & Cylinder Hose Assembly

- A. Using bench vise to hold lift cylinder (10), remove closure from port. Screw 90 degree swivel adapter (46) into port. Place lift cylinder with installed adapter between ears on underside of lift arm and lower headgear ears. Attach cylinder to ears using clevis pins (12) and cotter pins (15).
- B. Using bench vise to hold 32" HP hose (20), install female half of hose disconnect assembly (42) directly to hose. Then, holding 36" HP hose (21), install brass bar street ell (50) and male half of hose disconnect assembly (42) on the same hose end.
- C. Using a bench vise to hold angle cylinders (11), remove closures from ports and screw brass forged street ells (51) into ports so that ells are parallel with cylinder and point toward live end. Install 32" HP hose with female disconnect half to driver's side angle cylinder street ell. Install other HP hose with male disconnect half to passenger side angle cylinder street ells. Install angle cylinders to "A" frame on their respective sides so that ells are between cylinders and "A" frame. Secure cylinders with anchor pins (13) at port end and ram end. Secure anchor pins with cotter pins (15).

2. Control Head & Control Cables

Note: Dash bracket, hardware, drilling guide and mounting instructions will be found in peculiar attachments box.

- A. Drill three 5/8" holes in the firewall for the control cables and wiring harness using drilling guide as a reference only. **Be sure both sides of the firewall are clear of obstructions before drilling.** Drill 1/2" hole in underside of dash as shown in dash illustration.
- B. Install the dash bracket as per dash bracket instructions.
- C. Loosen the "jam nuts" on control head end of cables (9) and install into slots in control head (8). (Raise cable centers in beginning of lower slot.) Snap cable ends onto ball studs and tighten jam nuts to secure cables to control head. Remove the nuts and washers from the valve end of the cables. Route the cables out through the firewall up to top of the driver side fender well. Attach control head to dash bracket as per dash bracket instructions. Install rubber grommets (73) around cables where they pass through the fire wall.

3. Valve & Valve Plate

- A. Using a bench vise to hold control valve assembly (2), remove closures from valve ports. Screw the 90 degree swivel adapter unions (47) into the "in" and "out" ports. Screw quill (55) into installed adapter in the "out" port.

Note: Valve fittings are installed as described to insure proper installation. First indication of incorrect installation is failure of plow to lift although plow will angle.

- B. Attach the valve plate braces (30 & 31) to valve plate (29) as shown on illustration with 5/16 x 1 cap screw (78), lock washer (79), and nut (80). Mount valve to valve plate using two 1/4 x 1-1/4 cap screws, lock washers and nuts from valve bag. Connect control cables to valve plate before fastening valve plate to vehicle. Begin by reinstalling jam nuts and washers on cables. Place control cables in respective slots of valve plate bulkhead with one nut and one washer on each side of bulkhead. Center cables in slots so that they are exactly in line with valve spool centers. Attach cable clevis (3) to cables using square nuts (4). Slip cable clevises over spools. Install clevis pin (5) through clevis and spool, and secure with push nut (6) on clevis pin. Temporarily adjust cables so that control lever is somewhere near centered in control head.
- C. Locate valve plate with cables attached, on top of fender well straddling wiring and connector. Be sure that valve is straight and level, and cables run as straight as possible with no sharp kinks. Make sure braces do not rub against any wiring. Using holes in braces as a guide, drill four 11/32" holes in fender well. Attach braces with four 5/16 x 1 cap screws Gr. 5 (NC) (78), flat washers (81), lock washers (79) and nuts (NC) (80). Tighten.
- D. With valve plate fastened to inner fender, re-adjust control cables so that control head lever is centered between both angle and raise/lower positions. If cable clevis does not allow enough adjustment, re-position cable at valve plate bulkhead. After checking to see that the valve spools are in the centered position, tighten cable clevis nuts.

Caution: Valve spools must be free and self centering when cables and control head are attached. Failure to center spools will restrict fluid flow through valve. This may cause hydraulic fluid to overheat resulting in pump damage and/or hydraulic hose failure. Hose failures can cause engine fires. When adjusted, the control lever must be in the neutral position to allow enough spool travel each way for proper valve actuation.

4. Drive Sheave Installation

- A. Remove fan from water pump and install 3/16" fan spacer (22) and reinstall fan.
- B. Remove and discard 3/4" cap screw and washer from center of crankshaft pulley. Remove and discard every other 5/16" cap screw from inside of crankshaft pulley. (Total of three 5/16" cap screws.)
- C. Apply "loctite" on all cap screws before installing drive sheave.
- D. Install drive sheave (24) with one 3/4 x 4-1/2 (NF) Gr. 5 cap screw (91) through center hole onto center of crankshaft pulley. Install three 5/16 x 3-1/2 (NC) Gr. 5 cap screws (76) with 5/16 lock washers (79) through remaining holes in drive sheave and crankshaft pulley. Snug-up the 3/4 x 4-1/2 cap screw first and then snug-up the three 5/16 x 3-1/2 cap screws and torque them to 18 ft-lbs. **Last, torque the 3/4 x 4-1/2 cap screw to 100 ft-lbs on V8 engines.**

5. Pump and Pump Bracket

Caution: Pump tank fill must be vertical to engine.

- A. Loosen serpentine belt from engine. Remove the two water pump bolts between the idler tensioner pulley and fan. Save one fastener. Remove bolt beside lower alternator bolt. (Discard). Place pump bracket (26) behind serpentine belt and install three 3/8 x 5 cap screws (NC) Gr. 5 (93) with lock washers, and loctite on threads (Do not tighten fasteners at this time). Remove lower alternator bolt, save nut. Install bolt previously removed from water pump. On back of alternator install pump bracket brace (27) and universal brace tab (38). Reinstall previously removed nut. Install a 3/8 x 1 cap screw (NC) Gr. 5 (95) with lock washer (88) and nut (96) through pump bracket and brace. Reinstall serpentine belt and tighten all fasteners.
- B. Holding pump tank (1) in bench vise, screw straight swivel adapter (53) onto pressure port of pump and quill (55) into return port of pump. Install pump sheave (25) onto pump shaft using lock nut and key supplied with pump. Remove pump from vise and install saddle bracket (35) on over front of pump. Secure with a 5/16 x 2 Gr. 5 cap screw (83), lock washer (79) and nut (80). Place slots on saddle bracket in front of holes on pump bracket. Place two 5/16 x 1-1/4 cap screws (97) with flat washers (81) and fasten with lock washers (79) and nuts (NC) (86).
- C. Install 60" V-belt (23) on over drive sheave and pump sheave. Using the top fastener as a pivot, align sheaves and tighten fasteners. Adjust for proper tension. Install rear tank strap (36) on over rear of pump tank. Align universal brace rod (37) to universal brace tab. Cut brace rod shorter if required. Install one 5/16 nut (80) and flat washer (81) onto universal brace rod and insert brace rod through universal brace tab. Connect brace rod to tank strap with one 1/4 x 1-1/4 cap screw (84) lock washer (85) and nut (86). Secure other end of brace rod with one 5/16 flat washer (81) lock washer (79) and nut (80). Use brace rod to adjust alignment of drive and pump sheaves. Check belt for proper tension.

6. Hydraulic Hose Installation

- A. Attach 1/4 end of the 72" HP hose (16) to 1/4" swivel adapter on the pump tank and push one end of 72" LP hose (17) onto the quill on pump tank. Route these hoses to the control valve via firewall.

Caution: Keep hoses away from hot or moving engine components. Failure to do so may cause hose to burst resulting in a possible fire.

Push LP hose onto quill and attach 3/8 HP hose to 90 degree swivel adapter. Remove sheet metal screw above windshield wiper motor and one above heater on firewall. Install with two nylon mounting tie wraps (48) and screws (49). Tie hoses up with ties. Install 60" HP hose (18) to lift cylinder port of valve (Spool #1). Install two 54" hoses (19) to angle ports of valve (Spool #2). Route the 60" and 54" hoses out through grill near center of vehicle. Attach 60" hose to previously installed 90 degree swivel adapter on lift cylinder.

- B. Install the in-line oil filter (7) as per instructions located in the common hydraulics kit.

7. Disconnect Assembly

- A. With disconnect mounting plate (39) held in bench vise, install disconnect halves as shown in illustration. Bulkhead adapter (44) and male disconnect half (42) go in bottom hole. Female disconnect half (42) goes in top hole. Secure both with 7/8" snap rings (45). Attach mounting plate to back of driver's side headgear post with two 5/16 x 1 cap screws (78), lock washers (79) and nuts (80). Install dust plugs (43) over ends of hoses routed to front of vehicle in the previous step. Connect 54" right angle hose (spool #2, Cyl. B) to back of female disconnect installed in top hole of disconnect bracket. Connect 54" left angle hose (Spool #2, Cyl. A) to bottom (male) disconnect. Tighten by holding hoses and rotating the disconnect halves in the bracket.

8. Operations

- A. Check all fittings and fasteners for tightness. Secure hoses with nylon tie wraps (75). Place caution label (72) on the dash beside the control head.
- B. Fill reservoir with type "A" automatic transmission fluid. Start the engine, lift and angle the blade. **If the blade angles opposite from the control lever position, reverse the two Hp hose connections on the back of the disconnect bracket.** Raise the front end of the vehicle until the plow is clear of the ground with the lift cylinder fully retracted. Check the reservoir oil level. Angle the blade (with the lift cylinder retracted) to remove air from the system. Recheck the reservoir oil level.

Note: The installer must inform the end user of the proper procedure for removing any residual hydraulic pressure that may be trapped in the raise or angle hoses. The plow will be much easier to install or remove if the proper procedures are followed. Before coupling or uncoupling the hydraulic disconnects you must first turn off the ignition. Move the control to all four plowing positions and return the control to lower. You may then remove or install the plow.