







Parts List

Ref#	Qty		Part #	Description	Ref#	Qty		Part #	Description
	8500 -40	7523C				8500 -40	7523C		
1	1		8356	Pump assembly	53		2	*8476	1/4" Npt x 45° Street Elbow
2	1		A4466-40	Control Valve Assembly	54		3	*20316	9/16" O-Ring to 1/4" Npt 90° Elbow
3	2		4483	Clevis - VM	55	2		1658	Quill - 3/8" Nptm to 3/8" ID Hose
4	2		4494	10-32 Square Nut - VM	56		1	*8599	QD/Electric - Long
5	2		4491	Clevis Pin - 3/16" x 1	57		1	*8600	2 QD - Long
6	2		4493	3/16" Push Nut Zp	59		8	*8324	Hose Tie
7	1		8389	Oil Reservoir	61		2	*8391	Quill - 3/8" Ntpm to 1/2" ID Hose
8		1	4419	SLC Head - Belt Drive	65		1	*8741	Bracket
9		2	A4490	90" SLC Cable	66		1	*8284	Boot
10	1		20116	1-1/2" x 10" Cylinder Assy - XL	72		1	5704	Caution Label - Cab
11	2		20117	1-1/2" x 12" Cylinder Assy - XL	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	6	*3666	Hose Tie, nylon 3/16" x 8"
14	1		8764	Filter Kit	77	1		90054	5/16" x 1-1/2" (NC) Gr. 5 Cap Scrw
15	6		90601	1/4" x 1-1/2" Cotter Pin	78	4	7	*90042	5/16" x 1" (NC) Gr. 5 Cap Scrw
16		1	2504	Hose - 60" Hp 1/4P - 3/8P	79	6	6	*90360	5/16" Sp Lk Washer
17		1	4471	3/8" Hose 26" Lp	80	7	5	*90332	5/16" (NC) Nut
18		1	6066	Hose - 66" Hp 1/4P - 1/4P	81	4	7	*90313	5/16" Plain Washer
19		2	375	Hose - 42" Hp 1/4P - 1/4P	82		3	*4433	1/2" Special Washer
20		1	3074	Hose - 22" Hp 1/4P - 1/4P	84	1		90614	1/4" x 1-1/4" (NC) Gr. 5 Cap Scrw
21		2	4424	Hose - 36" Hp 1/4P - 1/4P	85	1		90359	1/4" Sp Lk Washer
22		1	*5588	Fan Spacer - 3/16"	86	1		90330	1/4" (NC) Nut
23		1	3769	34" V-Belt 4L 340 (not shown)	87		3	*90124	3/8" x 2" (NC) Gr. 5 Cap Scrw
24		1	5589	Drive Sheave	88		3	*90432	5/16"-12 x 1" TS HX HD W SL ZP
25		1	3696	Pump Sheave	89		3	*90436	3/8" x 1-3/4" (NC) Gr. 5 Nylon Insr
26		1	8474	Pump Bracket	90		2	*90648	7/16" x 1-3/4" (NC) Gr. 5 Cap Scrw
27		1	8380	Pump Plate	91		2	*90174	7/16" x 1-1/4" (NC) Gr. 5 Cap Scrw
28		1	8470	Bracket (Pump)	92		2	*90362	7/16" Lock Washer
28B		1	8515	Bracket Brace	94		2	*90334	3/8" (NC) Nut
29		1	5329	Valve Plate	95		4	*90638	3/8" x 5/8" (NC) NY Gr. 5 Cp Scrw
30		1	8468	Splash Guard	96		2	*90361	3/8" SP LK Washer
31		1	8469	Brace - Splash Guard	97		2	*90106	3/8" x 1-1/4" (NC) Gr. 5 Cap Scrw
32		2	7965	Brace	98		6	*90315	3/8" Plain Washer
33		1	8475	Brace (reservoir)	99		2	*90111	3/8" x 1-1/2" (NC) Gr. 5 Cap Scrw
34		2	7966	Brace					
35		1	8472	Tank Plate					
36		1	*8662	Adaptor, Fan					
37		1	20296	Spacer, Drive sheave					
38		1	20284	Spacer, Pump sheave					
40		1	2549	3/8" Hose 48" Lp					
41		1	8477	1/2" Hose 24" Lp					
42	3		21096	Hose Disconnect Assembly					
43	2	2	*1588	Dust Plug - Closure/Male					
44		1	*4486	Adaptor - Bulkhead 1/4" Npt					
45		3	*4485	Snap Ring - 7/8" Extrl Bowed					
47	2		2315	9/16 w/O-Ring x 3/8 F Pi SWV					
51	2		2780	1/4 Npt x 90° Street Elbw Frgd					

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
3/4 - 10	150	250	370
7/8 - 9	150	378	591
1 - 8	220	583	893

8500-40 uses Bolt Bag 5425 \* Part of 8750 Bolt Bag

## 1. Cylinder and Cylinder Hose Assembly

- A. Attach female half of disconnect (42) and a 1/4" Npt 45 degree elbow (53 ) to 22" Hp Hose (20). Using bench vise to hold lift cylinder (10), remove closure from port and screw the other end of the hose directly into this port. Place lift cylinder with hose pointing to passenger side into ears on lift arm and upper gear. Secure with clevis pins (12) and cotter pins (15).
- B. Attach male half of quick disconnect (42) to one other end of a 36" Hp hose (21). Place a dust cover (43) on the end of the other 36" Hp Hose (21) and put another male half of a disconnect (42) on this hose.
- C. Using a bench vise to hold angle cylinders (11), remove closures from ports and screw brass forged street ells (51) into ports. Point forward toward live end of cylinder and slightly upward as they will be installed on the A-Frame. The driver side cylinder uses the 36" Hp hose (21) with the dust cover and male disconnect half. The passenger side uses the 36" Hp hose with the male disconnect end and **no dust cover**. Install cylinders to their respective sides so that ells are between the cylinders and the A-frame. Secure cylinder with anchor pins(13) at both ends, with cotter pins (15) in each anchor.

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

## 2. Control Head and Control Cables

- A. Drill two 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 and 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. Install three 9/16" O-ring to 1/4" NPT 90° elbows (54) in lift and angle ports. When tight, elbows should point at 2 o'clock, with cables referenced at 12 o'clock.
- B. Mount valve (2) to valve plate (29) using two 1/4" x 1-3/4" cap screws, lock washers and nuts located in the valve bag. Install cap screws from bottom of valve plate, with lock washer and nut on top of valve. Attach the two long valve leg braces (32) to the two holes in the cable attaching end of valve plate. (On 1994-19\_\_ vehicles, the firewall brace will be (34)). Attach with two 5/16" x 1" cap screws Gr. 5 (NC) (78), lock washers (79) and nuts (80). Attach rear leg brace (34) to hole in rear of valve plate on "out" port side with one 5/16" x 1" cap screw Gr. 5 (NC) (78), lock washer (79) and nut (80). Attach split hose (74) to "in" port side of valve plate. For vehicles with fan bracket assembly on fender, this bracket has to be relocated as close to heater motor as possible without rubbing motor. Place valve plate and legs over smog control vacuum on passenger side of vehicle. Position valve plate so cable bulkhead of valve plate is facing alternator, and cables can come around the front of the alternator. The vacuum can in front of heater fan will have to be relocated rearward so as not to rub against anything. Making sure valve plate braces are not rubbing or chafing and using holes in braces as guides, mark and drill three 11/32" holes in fender. Attach with three 5/16" x 1" cap screws Gr. 5 (NC) (78), large 1/2" flat washers (82), 5/16" flat washers (81), lock washers (79) and nuts (80).
- C. Install control cables to valve plate 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. Adjust cables so control lever is centered between both angle and raise/lower positions. If cable clevis does not allow enough adjustment, reposition 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 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. Use three nylon ties (75) to run cables along air intake hoses.

#### 4. Drive Sheave Installation

**Note: Apply a *removable* loosening prevention compound (such as "Lock-tite") to all drive sheave fasteners prior to installation.**

- A. Remove vehicle fan by unscrewing right hand threaded hub from end of water pump shaft (it may be necessary to obtain special tools from vehicle manufacturer to remove fan). Place 3/16" spacer (22) on over threaded water pump shaft. Put loctite on threads then replace and tighten fan. Fan adaptor (36) will have to be used without spacer (22) on 11/92 manufactured 1993 and later models with larger threaded water pump hub. **NOTE: On all trucks equipped with super duty cooling systems (S/C cooling systems with 2.2" thick radiator), the fan MUST be spaced back away from the radiator using PN 20400, 'Fan Spacer Kit'. This kit is not included in the peculiar hydraulic kit and must be ordered separately.**
- B. **For 1987 - 1994 models:** Install drive sheave (24) into crankshaft pulley with machined end of pipe spacer against crankshaft pulley and over the three 3/8" tapped holes. Secure the drive sheave with three 3/8" x 1-3/4" (NC) Gr. 5 nylon cap screws (89) torqued to 31 ft.-lbs. **Do not use spacer washer for 1987-94 engines!**  
**For 1995-19\_\_ models:** Place spacer washer (37) inside vehicle sheave and line up holes with the three 3/8" tapped holes. Place drive sheave (24) in line with the spacer holes with machined end of pipe spacers against the spacer washer. Install three 3/8" x 2" cap screws (87) (place a drop of loctite on threads) Torque these fasteners to 31 ft.-lbs.

#### 5. Remote pump and Pump Bracket

- A. Remove two bolts below air conditioner beside oil pan cover (no bolts on vehicles without air conditioner). Remove bottom and forwardmost bolt on air conditioner. Save bolts. (Also do same to bracket frame on vehicle without air conditioner). Attach pump bracket brace (28) to air conditioner. (Use pump bracket brace (28B) on vehicle without air conditioner). Reattach bolt. If bolt on air conditioner or bracket frame is too large, ream out 7/16" hole in brace (28 or 28B) before reinstalling. Fasten pump bracket tab to brace with one 5/16" x 1" (NC) Gr. 5 cap screw (78), one 5/16" flat washer (81), lock washer (79) and nut (80). Place pump bracket (26) up against engine bracket. Use two 7/16" x 1-3/4" cap screws (90) and lock washers (92) to fasten bracket (on 1994 - 19\_\_ vehicles use 7/16" x 1-1/4" cap screws (91)).
- B. Place pump (1) in vise with relief quill up. Install a 3/8" x 26" low pressure hose (17) onto quill. Install a 1/2" quill (61) into 3/8" Npt on rear of pump and attach a 1/2" x 24" low pressure hose (41). Install a 1/4" x 45 degree street elbow (53) into 1/4" Npt hole at rear of pump. Place elbow at 10 o'clock position from relief quill on top of pump and to it attach 60" Hp 1/4" to 3/8" hose (16). Attach pump face plate (27) so that slots on plate are at 9 o'clock to relief quill (see illustration). Use four 3/8" x 5/8" (NC) Gr. 5 nylon patched cap screws (95) with flat washers (98) to attach pump face plate. Install pump sheave (25) onto pump shaft using lock nut and key supplied with pump.
- C. From bottom of engine place 1/2" Lp hose and Hp hose up behind power steering pump and air conditioner. Place 3/8" Lp hose in front of power steering pump and air conditioner. Place 3/8" Lp hose in front of brace on pump bracket and up beside air conditioner. Attach pump plate (27) to front of pump bracket with two 3/8" x 1-1/4" (NC) Gr. 5 cap screws (97), flat washers (98), lock washers (96) and nuts (94). Do not fully tighten at this time. **(1995-19\_\_ models: When attaching pump plate to pump bracket, align pump bracket spacer (38) between pump bracket and pump plate and fasten with two 3/8" x 1-1/2" cap screws (99), flat washers (98), lock washers (96) and nuts (94).)** Install 34" V-belt (23) over drive sheave and pump sheave. Tighten belt and pump plate fasteners. Place split hose grommet (74) around 3/8" low pressure hose and tie wrap (75) around pump bracket brace going to air conditioner. Line up three holes on splash guard (30) to lip on radiator.

Using holes in plate as a guide, drill three 9/32" holes. Install three 5/16" x 1" hex head self tapping screws (88). Tighten. Remove bolt holding tubing in front of engine cross member. Place bent end of splash guard brace (31) behind tubing and reinstall bolt. Attach tab to splash guard with one 5/16" x 1" (NC) Gr. 5 cap screw (78), lock washer (79) and nut (80).

## 6. Oil Reservoir

**Caution: Pump tank fill must be vertical to engine.**

- A. Remove engine mount bolt under steering columns. Install brace (33) and reinstall bolt (see illustration). Place tank plate (35) over brace and fender. Fasten plate to brace with one 5/16" x 1" cap screw (78), lock washer (79) and nut (80). Using plate as a guide, drill two 11/32" holes in fender. Install one 5/16" x 1" (NC) Gr. 5 cap screw (78) through forward hole and fasten with one 5/16" x 1" (NC) flat washer (81), lock washer (79) and nut (80). On rear hole use a 5/16" x 1-1/2" (NC) Gr. 5 cap screw (77), five 5/16" flat washers (81) between plate and fender to level, then fasten cap screw with one 5/16" flat washer (81), lock washer (79) and nut (80). Tighten all fasteners. Relocate oil reservoir as per illustration on front page for vehicles with standard transmission.
- B. Install 1/2" quill (61) into threaded hole on oil reservoir (7). Place reservoir with quills facing the back of the power steering pump. Attach to plate with two 5/16" x 1" (NC) Gr. 5 cap screws (78), lock washers (79) and nuts (80). Attach 3/8" low pressure hose (17) to bottom quill of tank from relief on pump. Attach 1/2" low pressure hose (41) to quill (61) on reservoir. **DO NOT SHORTEN HOSE. BENDS IN ALL HOSES MUST HAVE SUFFICIENT RADIUS TO PREVENT CRIMPING.**

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

- C. Attach 3/8" x 48" low pressure hose (40) to quill on reservoir. Route low pressure hose (40) over top of engine to "out" port on valve. Route high pressure hose (16) from pump. Tie hoses (75) but allow good bends - no crimps - in hoses.

## 7. Hydraulic Hose Installation

- A. Install 66" Hp hose (18) to elbow in angle port labeled Cyl "A". Pass this hose out through the core support near the radiator. Pass the hose out through the grille, low and about 14" off center to the driver's side. Attach a female QD (42) to the long QD/electric grille plate (56) with a snap ring (45). Pass the 66" hose through a rubber dust cover (43) and attach it to the female disconnect half. Slide the head lamp connector (with dust cover) from previously installed light kit vehicle harness, into the slot on the grille plate.
- B. Attach a 42" hose (19) to the lift cylinder port elbow and one 42" hose (19) to the elbow in angle port labeled Cyl "B". Pass these hoses out through the core support by the radiator, low about 14" off center on the passenger side of the grille. Attach a bulkhead adaptor (44) to one hole of the long QD/QD Grille plate (57) with a snap ring (45). Attach a male half of a QD (42) to this adaptor. Secure a female QD half (42) to the other hole in the grille plate with a snap ring (45). Slide a rubber dust cover (43) over the end of the raise hose and attach this to the male disconnect on the in-board side of the grille plate. Slide a dust cover (43) over the angle hose and attach it to the female QD half (42) on the outboard side of the plate. Slide the plate back to the grille and attach it with four long tie wraps (59).
- C. Install cable boot bracket (65) on drivers' side headgear brace, between brace and fasteners. Insert cable boot (66) on over bracket.
- D. Install the in-line oil filter (14) as per instructions located in the common hydraulics kit.

## 8. Operations

- A. Check all fittings and fasteners for tightness. Secure hoses with nylon tie wraps (75). Be sure hoses clear battery post. Place caution label (72) on the dash beside the control head.

- B. Fill reservoir with FISHER® High Performance Hydraulic Fluid (recommended for superior cold-weather performance) or 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 valve.** 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.