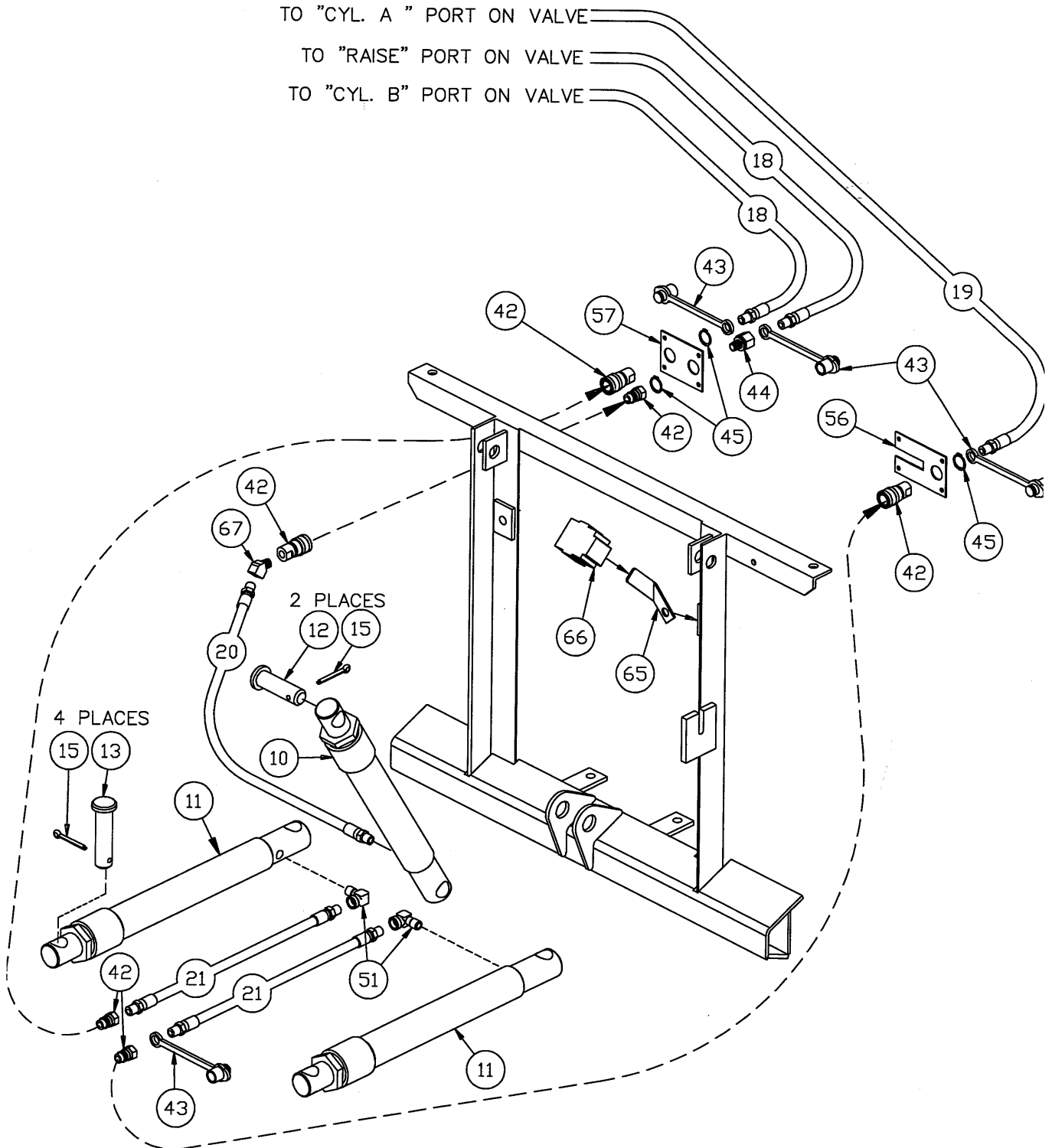
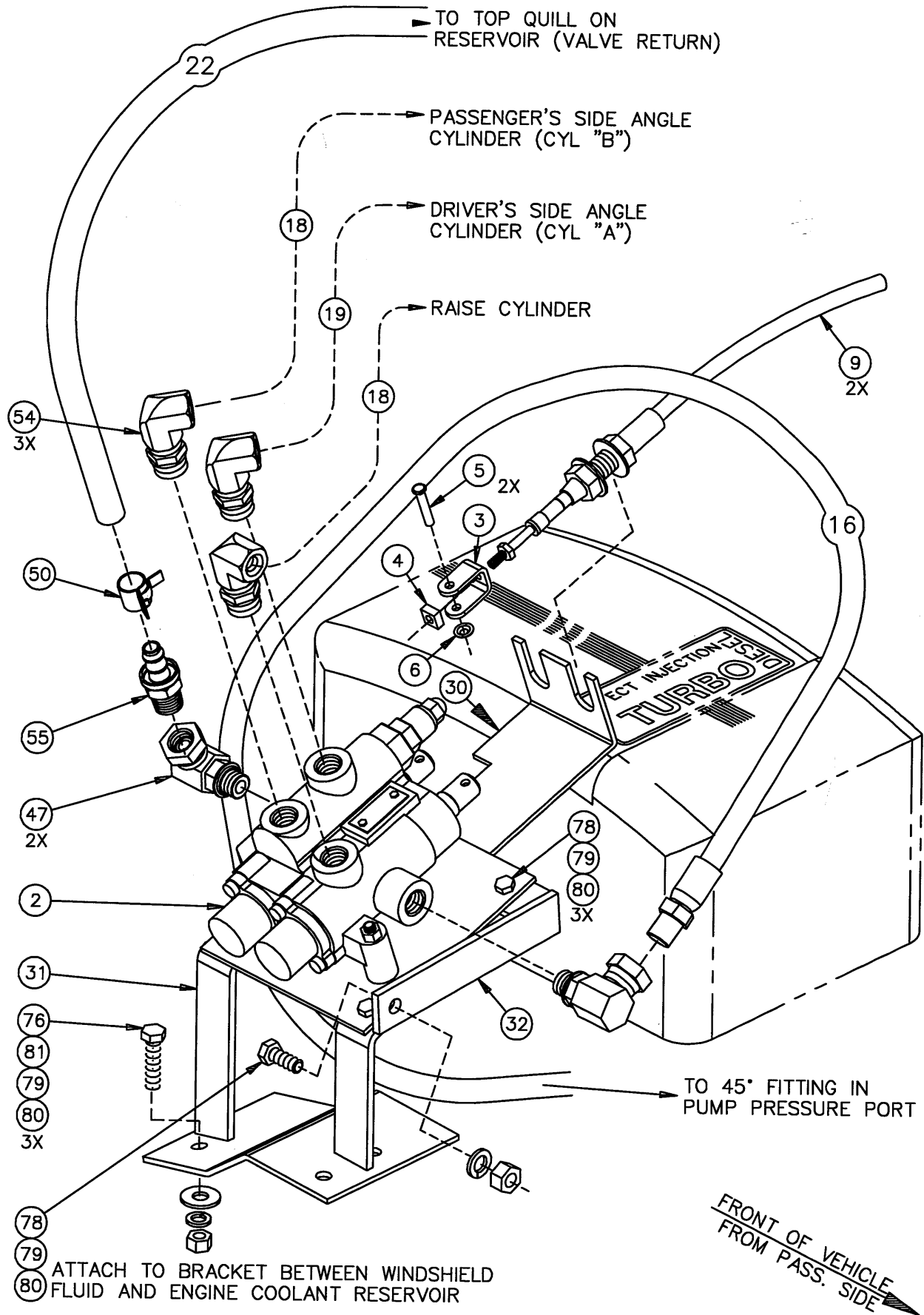





TO "CYL. A " PORT ON VALVE
 TO "RAISE" PORT ON VALVE
 TO "CYL. B" PORT ON VALVE





Ref #	Qty		Part #	Description
	8500 -40	7542B		
1	1		8356	Pump assembly
2	1		A4466-40	Control Valve Assembly
3	2		4483	Clevis
4	2		4494	10-32 Square Nut - VM
5	2		4491	Clevis Pin - 3/16 x 1"
6	2		4493	3/16" Push Nut Zp
7	1		8389	Oil Reservoir
8		1	4419	SLC Head - Belt Drive (not shown)
9		2	A4489	84" SLC Cable
10	1		20116	1-1/2" x 10" Cyl Assy - XL
11	2		20117	1-1/2" x 12" Cyl Assy - XL
12	2		6814	Clevis Pin - 1 x 3-5/16
13	4		6816	Anchor Pin - 1 x 4
14	1		8764	Filter Kit
15	6		90601	1/4" x 1-1/2" Cotter Pin
16		1	5652	28" HP Hose 1/4P - 3/8P
17		1	1663	3/8" Hose - 54" Lp
18		2	375	42" Hose 1/4P-1/4P
19		1	5192	60" Hose Hp 1/4P - 1/4P
20		1	3074	22" Hose Hp 1/4P - 1/4P
21		2	4424	36" Hose Hp 1/4P - 1/4P
22		1	20203	3/8" Hose 64" HI-Temp Lp
23		1	20202	1/2 Hose 54" Lp
24		1	20486	3VX-630 Ind Gr. Belt (not shown)
25		1	20196	Drive Sheave
26		1	3696	Pump Sheave
27		1	20197	Pump Bracket
28		1	8380	Pump Plate
29		1	20207	Oil Reservoir Bracket
30		1	5594	Valve Plate
31		1	20205	Valve Plate Bracket
32		1	20206	Valve Plate Brace
33		1	2115	Universal Brace Tab
34		1	*20209	Fan Adapter-Right hand thread
42	3		21096	Disconnect Assembly
43	2	2	*1588	Dust Plug
44		1	* 4486	Adapter - Bulkhead 1/4" Npt
45		3	* 4485	7/8" Snap Ring
46	1		319	1/4 Npt x 90° Swivel Adapt
47	2		2315	9/16-18 w/o-Ring x 3/8 F Pi SW SWV
50		1	*8765	Hose Clamp - 12 MM spring bd
51	2		2780	1/4 Npt x 90° Street Elbow
53		1	*3979	3/8 Npt x 90° Street Elbow
54		3	*20316	9/16 O-Ring to 1/4 Npt 90° Elbow
55	2		1658	Quill - 3/8 Nptm to 3/8 ID Hose
56		1	*8599	QD/Electric Grille Plate (Long)
57		1	*8600	2 QD Grille Plate (Long)
59		1	*8391	Quill - 3/8" NPTM to 1/2" ID Hose
60		1	*8127	1/4" x 45 deg. Swivel
61		8	*8324	Hose Tie - 3/16" x 14" (not shown)
65		1	*8741	Bracket - Cable Boot

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

Ref #	Qty		Part #	Description
	8500 -40	7542B		
66		1	*8284	Cable Boot
67		1	*8476	1/4 X 45 deg Street Elbow
71		1	*6595	Split Hose Grommet (3/4 x 2-1/2)
73	2		3042	Grommet-Rubber--Split (not shown)
74	1	3	*4477	Split Hose Grommet (3/8 x 6)
75	3	12	*3666	Hose Tie, nylon 3/16 x 8
76		3	*90048	5/16 x 1-1/4 (NC) Gr. 5 Cap screw
77	1		90054	5/16 x 1-1/2 (NC) Gr. 5 Cap screw
78	4	2	*90042	5/16 x 1 (NC) Gr. 5 Cap screw
79	6	3	* 90360	5/16 Sp Lk Washer
80	7	2	*90332	5/16 (NC) Nut
81	4		90313	5/16 Plain Washer
84	1		90614	1/4 x 1-1/4 (NC) Gr. 5 Cap screw
85	1		90330	1/4" (NC) Nut
86	1		90359	1/4 " Lock Washer
87		1	*90352	3/8" Lock Nut
88		2	*90106	3/8" x 1-1/4" (NC) Gr. 5 cap screw
89		3	*90638	3/8"x 5/8" (NC) Nyl Gr. 5 cap screw
90		6	*90315	3/8" Plain Washer
91		2	*90361	3/8 Sp Lk Washer
92		3	*91029	M10x1.5x50 Gr.10.9 Cap screw
93		1	*91028	M10x1.5x110 Gr.10.9 Cap Screw
94		2	*90391	M10x1.5x30 Gr. 8.8 Cap Screw
95		6	*90429	M10 Lock Washer
96		1	*90639	3/8" x 1" (NC) nyl Gr. 5 cap screw
8500-40 uses bolt bag 5425 * Part of 20195 Bolt Bag				

Installation Instructions

1. Cylinder and Cylinder Hose Assembly

- A. Attach the female half of the disconnect (42) and 1/4" x 45 degree street ell (67) to the 22" Hp hose (20). Using a bench vise to hold the lift cylinder (10), remove the closure from the port and screw the other end of the hose directly into this port. Place the lift cylinder with the hose pointing to the passenger side into the ears on the lift arm and the upper gear. Secure with the clevis pins (12) and cotter pins (15).
- B. Attach the male half of the quick disconnect (42) to one end of a 36" Hp hose (21), and attach a male disconnect half (42) and a dust plug (43) to one end of another 36" HP hose (21).
- C. Using a bench vise to hold the angle cylinders (11), remove the closures from the ports and screw brass forged street ells (51) into the ports. Point them forward toward the live end of the cylinder and slightly upward as they will be installed on the A-frame. The driver-side cylinder uses the 36" Hp hose with the dust plug and male disconnect half. The passenger-side cylinder uses the 36" hose with the male disconnect half and no dust cover. This male half will be plugged into the raise cylinder female half for plow storage. Install the cylinders to their respective sides so that the brass ells are between the cylinders and the A-frame. Secure the cylinders with the anchor pins (13) and cotter pins (15) at both ends.

2. Control Head and Control Cables

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

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

3. Drive Sheave Installation

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

- A. Remove the fan belt and fan/clutch assembly from the water pump (**Note: These are right hand threads**). Attach fan adapter (34) to water pump and reinstall fan/clutch assembly. Tighten.
- B. Place drive sheave (25) with pilot into center bore of harmonic balancer. Line up the three holes in the sheave with the threaded holes on the balancer. Apply "Lock-tite" to threads and attach drive sheave with three M10 x 1.5 x 50 grade 10.9 cap screws (92) and lock washers (95). Torque these fasteners to 51 ft-lbs.

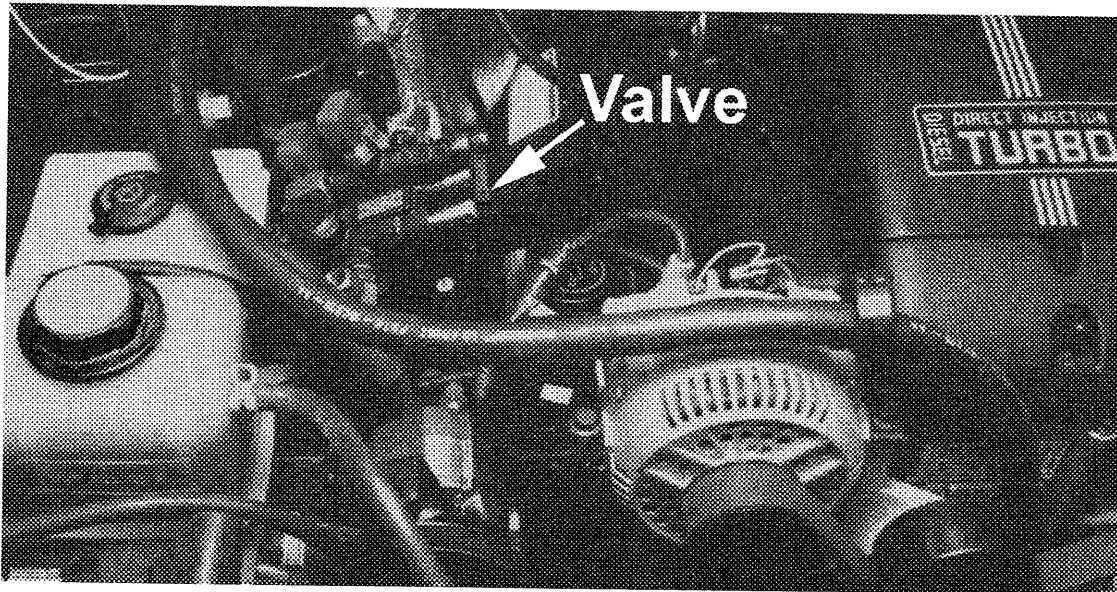
4. Pump Bracket and Pump Assembly

- A. Remove the clip holding the positive battery cable clamp. Rotate clamp counter clock wise as far as possible and tighten. Relocate clip and cable to the bolt that fastens the bracket holding the radiator coolant overflow container to the battery box. This is needed to allow more room for mounting of the pump.
- B. Remove and discard the bolt just above the idler pulley below alternator. Remove and save the two top and outer bolts from the alternator. Place pump bracket (27) on the front of engine over the two alternator bolt holes. Reinstall the two alternator bolts through the top of pump bracket. Install a M10 x 1.5 x 110 grade 10.9 cap screw (93) with lock washer (95) through front of pump bracket in hole of previously removed fastener. Install two M10 x 1.5 x 30 grade 8.8 cap screws (94) with lock washers (95) to the two remaining holes in the front of the pump bracket. Tighten all pump bracket fasteners and reinstall vehicle fan belt.
- C. Cut a 6" split hose grommet (74) in half and place one half on the edge of the pump bracket where the heater hose passes by. Place the pump (1) in a vise with the relief quill pointing down. While looking at the rear of the pump with the relief quill pointing down, install a 3/8" NPT x 90 degree street elbow (53) to the rear of the pump and tighten to around 2 o'clock. Install a 1/2" quill (59) into the elbow and install a 1/4" x 45 degree swivel (60) into the remaining port on the back of the pump. Tighten this fitting to an eight o'clock position. Attach the pump plate (28) to the pump so that the plate is 90 degrees from the relief quill with three 3/8 x 5/8" (NC) nylon patched Gr. 5 cap screws (89) with flat washers (90) and one 3/8 x 1" (NC) Nylon patched Gr. 5 cap screw (96) with flat washer (90) as shown. Install the pump sheave (26) onto the pump shaft using the locknut and key supplied with the pump.

- D. Attach the pump plate (28) to the previously installed pump bracket (27) with two 3/8 x 1-1/4" (NC) Gr. 5 cap screws (88), lock washers (91), and flat washers (90). **Do not fully tighten at this time.** Install a 63" V-belt (24) over the drive and pump sheaves and tighten the belt upwards and away from the drive sheave so that the belt is clear of all hardware. Tighten the pump plate fasteners.

5. Valve and Valve Plate

- A. Using a bench vise to hold the control valve assembly (2), remove the closures from the valve ports. Screw the 90 degree swivel adapter unions (47) into the "in" and "out" ports. Screw a quill (55) into the installed adapter in the "out" port.
- B. Install three 9/16" O-rings to 1/4" NPT 90° elbows (54) in the lift and angle ports. Tighten so that the angle fittings will be at 8 o'clock and the raise fitting will be at 9 o'clock from the open spool end of valve. This will allow for adjustments when installing the hoses.
- C. Mount the valve plate (30) to the valve plate bracket (31), according to the illustration on page 3, using 5/16 x 1" cap screws (78), lock washers (79), and nuts (80). Attach the valve plate brace (32) to the front, right hole in the valve plate according to the illustration. Position the valve plate assembly on the passenger-side fender so that the valve plate points toward the engine and fasten the valve plate brace (32) to the vehicle bracket between the windshield wash tank and the coolant tank; use the top hole, if available, or the stud that holds the windshield wash tank. Using the holes in the valve plate bracket (31) as a guide, mark and drill the fender using an 11/32" drill. All three holes in the valve plate bracket may not be used. If there is a large gap, 1/4" or more, between the valve plate bracket and the fender do not use the inner most hole. Mount the valve plate assembly to the fender using 5/16" x 1-1/4" cap screws (78), flat washers (81), lock washers (79), and nuts (80). Reinstall the valve plate brace on the vehicle bracket between the two tanks and tighten all fasteners.



General valve placement. Completed installation may look different.

Note: There should be approximately 3-1/2" between the valve plate and the oil fill cap on the engine's valve cover.

- D. Mount the valve to the valve plate using two 1/4 x 1-1/4" cap screws, lock washers and nuts from the valve bag. Install the cap screws from the bottom of the valve plate with the lock washers and nuts on the top of the valve.

CAUTION: The valve spools must be free and self centering when the cables and the control head are attached. Failure to center the spools will restrict the fluid flow through the 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.

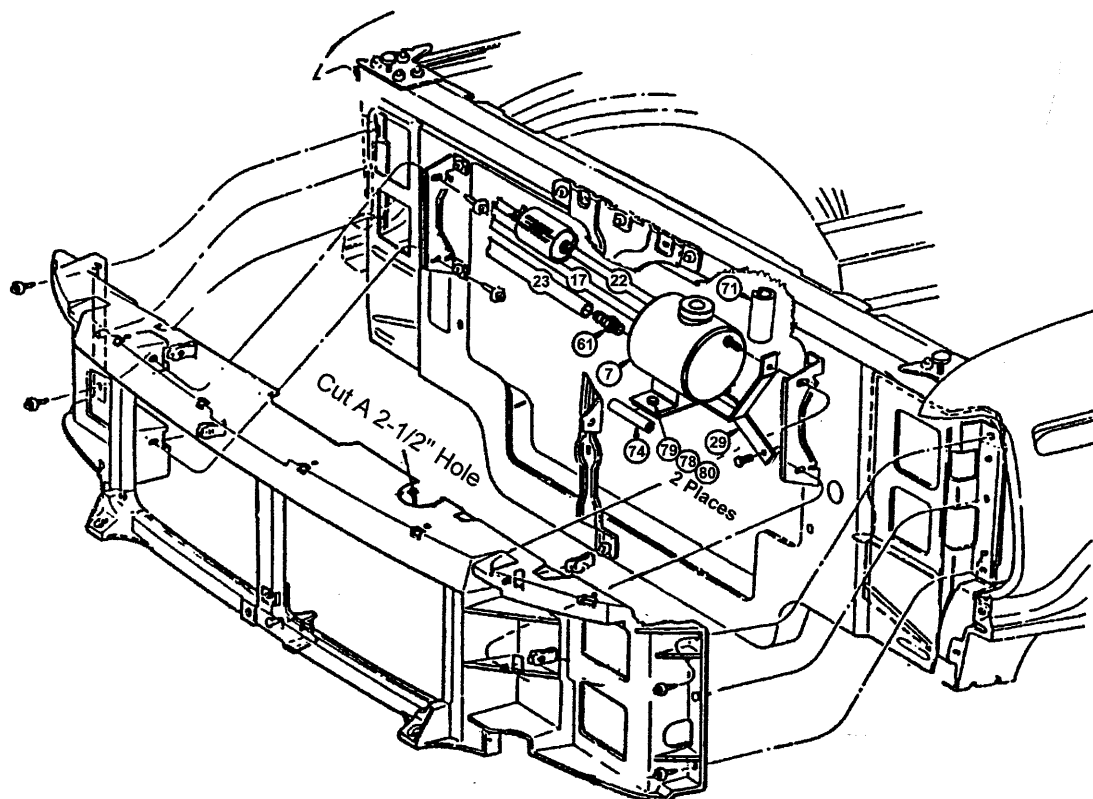
- E. Install the control cables to the valve plate by reinstalling the jam nuts and washers on the cables. Place the control cables in respective slots of the valve plate bulkhead with one nut and one washer on each side of the bulkhead. Center the cables in the slots so that they are exactly in line with the valve spool centers. Attach the cable clevis (3) to the cables using the square nuts (4). Slip the cable clevises over the spools. Install the clevis pin (5) through the clevis and spools and secure with a push nut (6). Adjust the cables so that the control lever is centered between both the angle and the raise/lower positions. If the cable clevis does not allow enough adjustment, reposition the cable at the valve plate bulkhead. After checking to see that the valve spools are in the centered position, tighten cable clevis nuts. Use three nylon ties (75) to run cables along air intake hoses.

6. Oil Reservoir Installation

Caution: Reservoir tank fill must be vertical to engine.

- A. Remove the five screws holding the vehicle grille and set the grille aside. Install a 1/2" quill (59) into the oil reservoir (7). Mount the oil reservoir to the reservoir bracket (29), with the quills pointed away from the bracket mounting holes, using two 5/16 x 1" cap screws (78), lock washers (79) and nuts (80).

If the vehicle is equipped with air conditioning: Attach a 3/4 x 2-1/2" split hose grommet (71) around the driver-side end of the AC condenser. Slide the grommet up as far as possible on the condenser.



- B. Mount the reservoir/bracket assembly on the driver-side of the radiator using two of the four existing bolts holding the galvanized grille brace according to the illustration; making sure that the split rubber hose grommet is between the reservoir and the condenser. Cut a 2-1/2" diameter hole directly above the reservoir filler cap in the plastic cowling and molding to gain access to the cap. Install a 3" piece of the split hose grommet (74) over the front leg of the reservoir to inhibit any grille interference.

Note: The reservoir leg on older style reservoirs may interfere with the vehicle grille on some vehicles. New reservoirs have narrower legs to prevent this problem. If the reservoir leg interferes with reinstalling the grill (Step 7), remove material from the leg as needed.

7. Hydraulic Hose Installation

- A. Attach the 3/8 x 54" gray LP hose (17) to the relief quill on the pump. Push the hose all the way onto the quill. **Do not shorten this hose. Bends in all hoses must have sufficient radius to prevent crimping.** Route the hose between the windshield fluid holder brace, the wheel well, and then through the bottom opening between the radiator and the body. Attach this hose all the way onto the bottom 3/8" quill of the reservoir. Attach the 1/2 x 54" black LP hose (23) all the way onto the quill on the back of the pump. Route the hose over the top of the pump and through the top opening between the radiator and the body. Attach this hose onto the 1/2" quill of the reservoir. Attach the 3/8 x 54" blue HI-Temp LP hose (22) all the way onto the quill in the "out" port of the valve securing it with a hose clamp (50). Route this hose along the same path as the 1/2" LP hose and attach it all the way onto the top 3/8" quill on the reservoir. Attach the 28" - 1/4" to 3/8" HP hose (16) to the 45 degree swivel adapter on the back of the pump and route this hose under the valve plate and to the "in" port of the valve. Install in-line oil filter (*according to the filter kit (14) instructions in the common hydraulics box*) in the 3/8 x 64" blue LP hose at a convenient location where hose passes in front of the radiator. Reinstall vehicle grille with previously removed fasteners.
- B. Attach the universal brace tab (33) to the top bolt holding pump to pump plate ("*L*" facing away from radiator) with one 3/8" lock nut (87). Attach hoses passing through opening between radiator and body to hole in brace with a nylon tie-wrap (75).
- C. Install the 60" HP hose (19) to the elbow in the angle port closest to the cables on the valve (Cyl. A). Pass the hose over the universal brace tab (33) above pump, down to top of radiator core, through hole and across behind grille. Pass hose out through grille, low and about 14" off center towards the driver-side. Attach a female quick disconnect half (42) to the QD/Electric grille plate (56) with a snap ring (45). Pass the 54" hose through a rubber dust plug (43) and attach it to the female disconnect half (42). Route the head lamp connector (with dust cover) from previously installed light kit harness to the QD/Electric grille plate. Slide it into the slot provided. Attach the grille plate to the vehicle grille with 4 long hose ties (61).
- D. Attach a 42" HP hose (18) to the "raise" port elbow on the valve and another 42" HP hose (18) to the angle port elbow, farthest from the cables (Cyl. B) on valve. Pass these hoses over the top of the pump and tie all three hoses together and to hole on universal brace tab. Pass hoses down through hole at bottom of radiator and out through lower most part of grille about 14" off center towards the passenger's side of grille. Attach a bulkhead adapter (44) to one hole of the two QD grille plate (57) with a snap ring (45). Attach a male quick disconnect half (42) to this adapter. Secure a female quick disconnect half (42) to the other hole in the grille plate with a snap ring (45). Slide a rubber dust plug (43) over the end of the raise hose and attach to the male disconnect half on the inboard side of the grille plate. Slide a dust plug (43) over the angle hose and attach it to the female disconnect half on the outboard side of the grille plate. Slide the grille plate back to the vehicle grille and attach it with four long hose ties (61). Using the smaller hose ties (75), tie the hoses together and keep the hoses away from battery cables. Use split hose grommets (74) in 3" lengths on cables to isolate noise. Use hose ties (75) on all hoses to keep from chaffing on vehicle components.
- E. Install the cable boot bracket (65) on the driver-side headgear brace, between the brace and fasteners. Insert the cable boot (66) on over the bracket.

8. Operations

- A. Check all fittings and fasteners for tightness. Secure hoses with nylon tie wraps (75).
- B. Fill the 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 hoses.*** 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 hose 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 control to all four plowing positions and return the control to lower. You may then remove or install the plow.