





Parts List

Ref #	Qty	In Kit	Part #	Description	Ref #	Qty	In Kit	Part #	Description
				* Part of 20472 Bolt Bag					* Part of 20472 Bolt Bag
1	1		8356	Pump assembly	60	3		*8127	1/4 x 45 Deg Swivel
2	1		A4466-40	Control Valve Assembly	61	8		*90687	1/4" x 1/2 (NC) Button Head
3	2		4483	Clevis - VM	62	8		*90350	1/4 (NC) Lock Nut
4	2		4494	10-32 Square Nut - VM	65	1		*8741	Bracket - Cable Boot
5	2		4491	Clevis Pin - 3/16" x 1	66	1		*8284	Cable Boot
6	2		4493	3/16" Push Nut Zp	67	1		*8992	3" Fitting Protector (not shown)
7	1		8764	Filter Kit	68				
8		1	4419	SLC Head - Belt Drive	69				
9		2	20466	60" SLC Cable	70	2		*6595	Split Hose Grommet (3/4 x 2-1/2)
10	1		20116	1-1/2" x 10" Cylinder Assy - XL	71	1		*5529	Shock Mount
11	2		20117	1-1/2" x 12" Cylinder Assy - XL	72	1		5704	Caution Label - Cab
12	2		6814	Clevis Pin - 1 x 3-5/16	73	2		3042	Grommet - Rubber, Split
13	4		6816	Anchor Pin - 1 x 4	74	1	5	*4477	Split Hose Grommet (3/8 x 6)
14	1		8389	Oil Reservoir	75	3	5	*3666	Hose Tie, nylon 3/16 x 8
15	6		90601	1/4" x 1-1/2" Cotter Pin	76		4	*5939	M8 x 1.25 x 50 STUD Gr. 10.9
16		1	2518	66" Hp Hose, 1/4P - 3/8P	77	1		90054	5/16 x 1-1/2 (NC) Gr. 5 Cap
17		1	1681	24" LP Hose, 3/8"	78	4		90042	5/16 x 1 (NC) Gr. 5 Cap Screw
18		1	6066	66" Hp Hose, 1/4P to 1/4P	79	6		90360	5/16 Sp Lk Washer
19		2	8632	78" Hp Hose, 1/4P to 1/4P	80	7		90332	5/16 (NC) Nut
20		1	3074	22" Hp Hose, 1/4P - 1/4P	81	4		90313	5/16 Flat Washer
21		2	4424	36" Hp Hose, 1/4P - 1/4P	82	2		90032	1/4 x 1-3/4 (NF) Gr. 5 Cap Screw
22		1	20011	78" Lp Hose, 1/2"	83	2		90331	1/4 (NF) Nut
23		1	4439	78" Lp Hose, 3/8"	84	1		90614	1/4 x 1-1/4 (NC) Gr.5 Cap Screw
24		1	361	49" V-Belt (not shown)	85	1	5	*90359	1/4 Sp Lk Washer
25		1	3696	Pump Sheave	86	1	3	*90330	1/4 (NC) Nut
26		1	20455	Pump Bracket	87		1	*90701	M10 x 1.5 x 70 Gr.8.8 Cap Scrw
27		1	20444	Reservoir Bracket	88		2	*91033	1/4-20 x1-3/4 x3/4 x1 Gr 2 U-bolt
28		1	6589	Drive Sheave	89		2	*90106	3/8 x 1-1/4 (NC) Gr.5 Cap Screw
29		1	5329	Valve Plate	90		2	*90378	M8 x 1.25 x 25 Gr.8.8 Cap Scrw
30		1	20448	Valve Plate Bracket	91		2	*90361	3/8 Lock Washer
31		1	20451	Hose Support Brace	92		2	*90334	3/8 (NC) Nut
32		1	20447	Reservoir Brace	93		4	*90429	M10 Lock Washer
33		1	*8244	1/4" Fan Spacer	94		4	*90579	M10 x 1.5 x 90 Gr 10.9 Nyl CS
34		1	8380	Pump Plate	95		2	*90428	M8 Lock Washer
35					96		6	*90315	3/8 Flat Washer
42	3		21096	Hose Disconnect Assembly	97		4	*90638	3/8" x 5/8"(NC) Ny Gr. 5 Cp scrw
43	2	2	*1588	Dust Plug - Closure/Male	98		1	*90420	M10 Flat Washer Zp
44		1	*4486	Adapter - Bulkhead 1/4" Npt					
45		3	*4485	Snap Ring - 7/8" External Bowed					
46	1	1	*319	1/4" x 90 Swivel Adapter					
47	2		2315	9/16-18 w/O-Ring x 3/8 Swivel					
48									
49									
50		2	*8391	Quill - 3/8 NPTM to 1/2 ID Hose					
51	2		2780	1/4 Npt x 90 Deg Street Elbow					
52		3	*20316	9/16 O-ring to 1/4 NPT x 90° Ell					
53		1	*3979	3/8" Brass Bar Street Ell					
54									
55	2		1658	Quill - 3/8 Nptm to 3/8 ID Hose					
56		1	*8688	QD/Electric Plate -Short					
57		1	*8686	2 QD Plate- Short					
58		4	*8687	Standoff Leg					
59		4	*8324	Hose Tie (long)					

NC FASTENER TORQUE (FT-LB)		
DIAMETER-	GRADE	
THREADS PER INCH	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

1. Cylinder and Cylinder Hose Assembly

- A. Attach female half of disconnect (42) and a 1/4" Npt 45 degree swivel (60) 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 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. Screw brass forged street ells (51) into ports. Ells should point forward toward live end of cylinder and slightly upward as they will be installed on the A-frame. The driver's side cylinder uses the 36" HP hose with the dust cover and male disconnect half. The passenger side uses the 36" Hp hose with the male disconnect half and **no dust cover**. This male half will be plugged into raise cylinder female half for plow storage. Install cylinders to their respective sides so that ells are between the cylinders and the A-frame. Secure cylinders with anchor pins (13) at both ends, with cotter pins (15) in each anchor.

2. Control Head and Control Cables

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

- A. Drill two 5/8" holes in the firewall for the control cables 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 firewall.

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 top section of fan shroud, loosen serpentine belt from idler pulley, and remove fan. Save fasteners. Remove and discard cap screws holding vehicle crank pulley to crankshaft. Position drive sheave (28) over holes in crank pulley and fasten drive sheave and crank pulley to crankshaft using four M10 x 1.5 x 90 Gr. 10.9 Nylock cap screws (94) and four 10 MM lock washers (93). Torque these fasteners to 51 ft-lbs while making sure lock washers seat properly on sheave.
- B. Remove and discard the four studs from the water pump shaft flange. Install the four longer 8MM studs (76) to the holes in the water pump shaft flange that the original studs were removed from. Replace water pump sheave onto studs and add 1/4" fan spacer (33) and fan. Fasten with original nuts torqued to 18 ft-lbs.

4. Remote Pump and Pump Bracket

- A. Using four 3/8" x 5/8" nylon patched cap screws (97) and flat washers (96), attach the pump (1) to the pump plate (34) with the plate 180 degrees from the relief fitting. (Refer to the illustration). Install the pump sheave (25) onto the pump shaft using the lock nut and key supplied. Looking at the back (non-shaft) end of the pump with the relief quill at 12 o'clock, install a 3/8" brass bar street ell (53) in the suction port of the pump with the elbow pointing to 12 o'clock. Install a 3/8" quill (50) into ell on suction port. Install a 1/4 NPT x 1/4 swivel 45 degree elbow (60) in the pressure port with the swivel pointing to 10 o'clock.
- B. Remove and save the driver's side air conditioner (AC) compressor mounting bolt. Remove and discard the front exhaust manifold bolt from the passenger's side manifold. Position the pump bracket (26) as illustrated with the tab drilled for the U-bolts over the AC mounting bracket's tubular member and the other two mounting holes in line with the previously removed fasteners.

Reinstall the AC compressor mounting bolt through the pump bracket leg. **Do not tighten any fasteners at this time.** Install a 10MM x 1.5 x 70MM Bolt (87) and flat washer (98) through the pump bracket and into the exhaust manifold hole. Install two 1" U-bolts (88) up through the holes in the pump bracket mounting tab such that they are around the AC compressor bracket's tubular member. Attach with four 1/4 nuts (86) and lock washers (85). Tighten all fasteners.

- C. Install previously assembled pump and pump plate onto the pump bracket with two 3/8" x 1-1/4" NC bolts (89), flat washers (96), lockwashers (91) and nuts (92). Install a 49" V-belt (24) over the drive sheave and pump sheave. Tighten the belt and position it to eliminate any contact with other engine components. Tighten pump mounting bolts.

5. Valve and Valve Plate

- A. Using a bench vise to hold control valve assembly (2), remove the closures from valve ports. Screw the 90 degree swivel adapter unions (47) into the "in" and "out" ports. Screw a quill (55) into the "out" port adapter. Install three 9/16" O-ring to 1/4" NPT elbows (52) in the lift and angle ports. With the valve spools at the 12 o'clock, position the lift port elbow to point to 12 o'clock. Position the angle port elbows to point to 10 o'clock.
- B. Mount the valve to the valve plate (29) using two 1/4" x 1-3/4" cap screws (82), lock washers (85) and nuts (83) located in the valve bag. Route control cables up over fuse box, over ABS module, and down to the valve. Connect them to the valve plate by first reinstalling jam nuts and washers on cables. Then place control cables in respective slots of valve plate bulkhead with nut and washer on each side of bulkhead. Center cables in slots so that they are exactly in line with 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. The valve plate bracket (30) will be mounted vertically on the side of the driver's side battery box using two existing threaded holes. Before mounting valve plate bracket to the battery box, insert two 5/16" x 1" (NC) cap screws (78) into the holes used to mount valve plate (place bolt heads on the battery side of the plate).

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.

Loosely install 5/16" nuts (80) and lock washers (79) onto the bolts to hold them in place. Install the valve plate bracket to the side of the battery box using two 8MM x 1.25 x 25MM cap screws (90) and lock washers (95). Install the valve/valve plate assembly to the valve plate bracket using previously installed 5/16 x 1 cap screws, lock washers and nuts, as per illustration. The valve should be positioned so the valve spools point at about a 10 o'clock position. Tighten all fasteners.

- D. Reinstall serpentine belt and fan shroud at this time.

6. Oil Reservoir

Caution: Reservoir tank fill must be vertical to the engine.

- A. Remove and save the nut holding the wiring harness strap on the driver's side front shock absorber bracket. Position the long leg of the reservoir bracket (27) between the dip stick tube and the engine and over the stud where the previous nut was removed. Reinstall the nut but do not tighten at this time.
- B. Remove and save the rear inboard ABS module mounting bolt. Attach one end of the reservoir brace (32) to the ABS module bracket using the previously removed bolt. Place a rubber shock mount (71) between the other end of the brace and the reservoir mounting bracket and secure with two 5/16 nuts (80) and lock washers (79). Tighten all fasteners.
- C. Install a 3/8" quill (50) in the oil reservoir (14). Mount the reservoir to the mounting bracket, quills pointing forward, with two 5/16" x 1" (NC) cap screws (78), lock washers (79) and nuts (80).
- D. Place split hose grommets (74) on the reservoir bracket at possible contact points to eliminate rubbing and noise. (For reservoir leg, cut grommet as shown).

7. Hydraulic Hose Installation

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

- A. Attach 66" Hp hose (16) to the 1/4" 45 degree elbow on the pump. Attach the other end to the "in" port on the valve. Route hose along the top of the fan shroud. Tighten jam nut on "in" port 90 degree elbow adapter. Attach the 78" x 1/2" Lp hose (22) to the quill on the suction of the pump. Route it along with the Hp hose and attach it to the quill on the remote reservoir. Check for proper length and cut shorter if necessary. Attach the 78" x 3/8" Lp hose (23) to the relief quill on the pump. Route it along with the 1/2" Lp hose and attach the other end to the bottom quill on the reservoir, adjusting length as necessary. Attach the 24" x 3/8" Lp hose (17) to the "out" quill of the valve and route it to the remaining quill on the reservoir. Tighten jam nut on the "out" 90 degree adapter.
- B. Remove and save the outboard alternator mounting bolt. Attach hose support brace (31) to the alternator with the bolt previously removed. Install a split hose grommet (74) over the edge of the brace and tie the Hp and Lp hoses to it with plastic ties (75). Continue to secure the hose with plastic ties (75) so they do not contact any engine parts. Place 3/4" split hose grommets (70) over the hoses where they may rub or hit other components and secure them with plastic ties.
- C. Remove driver's side parking light and drill a 1-7/8" hole in the radiator core support approximately 6" below the headlight (the grill may have to be removed to facilitate drilling operation and hose routing.) Install a split hose grommet (74) around the hole.
- D. Attach the 66" Hp hose (18) to the CYL 'A' port of the valve. Pass it under the ABS module bracket and driver's side battery box and out through the core support and through the grille low and about 14" off center on the driver side. Attach a female half of a QD (42) to the QD/electric grille plate (56) with a snap ring (45). Put a dust plug (43) on the end of a 45 degree swivel fitting (60) and attach it to the QD. Attach the Hp hose (18) to 45 degree swivel. Route the head lamp connector (with dust cover) from previously installed light kit vehicle harness, through radiator core support. Slide connector into the slot provided in the QD/Electric grille plate. The grille plate should be oriented with head lamp connector to the inside of vehicle. Attach grille plate to grille with two long tie wraps (59).
- E. Install split hose grommets (74) on ABS and battery mounting brackets to protect Hp hoses.
- F. Attach one 78" Hp hose (19) to the CYL 'B' port of the valve. Attach the other 78" Hp hose (19) to the raise port of the valve. Route both of these hoses under the ABS module bracket and driver's side battery box and out through the radiator core support and out through grille low and about 14" from center on passenger side. Vehicles with heavy duty cooling and air conditioning will need the 3" fitting protector (67) on hoses rubbing edge of coils between radiator and grille. Place fitting protector around all three hoses and secure with tie wrap (75).

Attach female half of a QD (42) to one hole of the 2 QD grille plate (57) with a snap ring (45). Attach a 1/4 x 90 degree swivel (46) with a dust plug (43) to back of QD. Attach the bulkhead adapter (44) with a snap ring (45) to the other hole in the 2 QD grille plate.

Note: Some GMC models with a fine mesh grille may have to use two standoff legs (58) fastened with four 1/4-20 x 1/2 button head socket screws (61) and lock nuts (62) on each grille plate. Trucks using standoff legs will use grille plate/fitting configuration as described above except that the two 90 degree and one 45 degree swivel fittings will not will be used.

Attach male half of a QD (42) to the front of bulkhead adapter. Attach 1/4 x 90 degree swivel (46) with dust plug (43) to the back of the bulkhead adapter. Attach the 78" HP hose from the raise port of the valve to the male disconnect. Attach the 78" Hp hose from the Cyl "B" port to the female disconnect. Place the 'angle' female disconnect on grille plate towards the outside of vehicle and attach grille plate to grille with two long tie wraps (59).

- G. Install cable boot bracket (65) on driver's side headgear brace, between brace and fasteners. Insert cable boot (66) on over bracket.
- H. Install the in-line oil filter (7) as per instructions located in the common hydraulic kit.

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 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.