

**Parts List**  
**8840-40B Electric Clutch Common Hydraulic Kit**

Assy	Comp	Qty	Part #	Description
1		1	21220	Pump-Clutch Assembly
	2	1	21221	Pump Assembly
	3	1	21222	Electric Clutch
	4	1	21219	Pump Plate
	5	1	90461	1/4 x 3/4 (NC) Gr.5 Cap Screw
	6	1	90359	1/4 Lock Washer
	7	2	90048	5/16 x 1-1/4 (NC) Gr.5 Cap Screw
	8	2	90360	5/16 Lock Washer
	9	2	90313	5/16 Plain Washer
	10	2	90332	5/16 Hex Nut (NC)
	11	1	90707	5/32 x 1/2 Spring Pin
12		1	8389	Oil Reservoir
13		1	8843	Valve Assembly--Elec Clutch/Sol
	14	1	7921	Valve Manifold Assy Sol - 4000
	15	1	8851	Valve Bracket
	16	1	8852	Mounting Plate - Valve
	17	2	8849	1/8 Nptm to 1/4 Nptf Swivel Adapter
	18	1	8848	1/8 Nptm to 1/4 Nptf Reducing Adapt
	19	3	90696	1/4 x 3-1/2 (NC) Gr. 5 Cap Screw
	20	3	90359	1/4 Lock Washer
	21	3	90311	1/4 Plain Washer
	22	2	90111	3/8 x 1-1/2 (NC) Gr. 5 Cap Screw
	23	2	90361	3/8 Lock Washer
	24	2	90334	3/8 (NC) Nut
	25	1	3719	O-Ring - 013
	26	2	5827	O-Ring - 012
27		1	7714	Dash Bracket Bag (not shown)
28		1	20116	10" Lift Cylinder Assy - XL
29		2	20117	12" Angle Cylinder Assy - XL
30		1	8764	Filter Kit
31		1	20040	Control Harness--clutch & sol valve
32		1	8292	Solenoid Control
33		1	21295	Bolt Bag for 8840-40B
	34	2	6814	Clevis Pin - 1 OD x 3-5/16
	35	4	6816	Anchor Pin - 1 OD x 4
	36	1	21296	Bolt Bag - Part of 21295
	37	6	90601	1/4 x 1-1/2 Cotter Pin
	38	2	21270	3/4-16 O-ring to 3/8 Npt swivel elbow
	39	1	5804	1/4" Hex Male Pipe Nipple
	40	1	2318	1/4 Npt x 90° Union Elbow
	41	1	8850	Quill - 1/4 Nptf to 3/8 ID Hose
	42	2	8391	Quill - 3/8 Nptm to 1/2 ID Hose
	43	2	2780	1/4 Npt x 90 degree Street Elbow
	44	3	A1587	Hose Disconnect Assembly
	45	4	1588	Dust Plug - Closure/Male
	46	1	3042	Grommet - Rubber, Split (not shown)
	47	1	4477	Grommet - Split Hose (not shown)
	48	1	8329K	Dielectric Grease Tube (not shown)
	49	1	4302	3M 560 in-line Connector
	50	1	4303	Female Connector (not shown)
	51	1	5048	Male Connector (not shown)

**Parts List**  
**7539B Electric Clutch Peculiar Hydraulic Kit**

Ref #	Assy	Comp	Qty	Part #	Description
	59		1	4934	18" HP Hose, 1/4P to 3/8P
	60		2	8632	78" HP Hose, 1/4P To 1/4P
	61		1	5193	54" HP Hose, 1/4P To 1/4P
	62		1	3074	22" HP Hose, 1/4P To 1/4P
	63		2	4424	36" HP Hose, 1/4P To 1/4P
	65		1	8477	1/2" LP Hose - 24"
	66		1	4471	3/8" LP Hose - 26"
	67		1	1683	3/8" LP Hose - 36"
	68		1	6589	Drive Sheave
	69		1	1118	56" V - Belt (not shown)
	70		1	20061	Pump Bracket
	71		1	7203	Rear Pump Bracket
	72		1	8205	Valve Plate Brace
	73		1	8871	Valve Plate
	74		2	7965	Valve Plate Brace
	75		1	20051	Spacer Bar
	77		1	20060	Bolt Bag for 7539
		78	1	765	1/4 Npt x 90 degree Street Elbow
		79	6	319	1/4 Npt x 90 degree Swivel Adapter Union
		80	1	4486	Bulkhead Adapter
		81	3	4485	7/8" Snap Ring
		82	1	8741	Bracket - Cable Boot
		83	1	8284	Cable Boot
		84	1	8688	QD/Electric Plate (short)
		85	1	8686	2 QD Plate (short)
		86	4	8687	Stand off Leg
		87	4	8324	Tie Wrap - 3/16 x 14 (not shown)
		88	8	3666	Tie Wrap - 3/16 x 8 (not shown)
		89	1	8127	1/4 x 45 degree Street Swivel
		90	1	8476	1/4 x 45 degree Street Elbow
		91	1	5529	Shock Mount
		92	8	90687	1/4 x 1/2 (NC) Button Head Socket Cap screw
		93	8	90350	1/4 (NC) Locknut
		94	1	8850	Quill - 1/4 Nptf to 3/8 ID Hose
		96	2	90111	3/8 x 1-1/2 (NC) Gr. 5 Cap screw
		97	1	90580	3/8 x 5-1/2 (NC) Gr. 5 Cap screw
		99	3	90361	3/8 Lock Washer
		100	3	90334	3/8 (NC) Nut
		101	2	90315	3/8 Plain Washer
		102	8	90042	5/16 x 1 (NC) Gr. 5 Cap screw
		103	2	90054	5/16 x 1-1/2 (NC) Gr. 5 Cap screw
		105	12	90360	5/16 Lock Washer
		106	12	90332	5/16 (NC) Nut
		107	5	90313	5/16 Plain Washer
		109	1	6007	1/4" Fan Spacer (for 6.2L Diesel)
		110	1	8244	1/4" Fan Spacer (for 6.5L Turbo Diesel)
		111	4	5939	M8 x 1.25 x 50 Gr. 10.9 Stud
		112	4	90579	M10 x 1.50 x 90 Gr. 10.9 Nyloc Cap screw
		115	5	90429	M10 Lock Washer
		116	1	90631	M10 x 1.50 x 20 Gr.10.9 Cap screw

**Note: The 20850 Fish-Stik™/Clutch Relay Kit is required for installations that will use the 9400 Fish-Stik™ Push Button Hand-Held Control.**




### 1. Cylinder and Cylinder Hose Assembly

- A. Attach female half of disconnect (44) and a 1/4" Npt 45 degree elbow (90) to the 22" HP hose (62). Using bench vise to hold lift cylinder (28), remove closure from port and screw the other end of the hose directly into this port. Place lift cylinder, with the hose pointing towards passenger-side, into ears on lift arm and upper gear. Secure with clevis pins (34) and cotter pins (37).
- B. Attach a male quick disconnect half (44) to one end of a 36" HP hose (63). Place a dust cover (45) on the end of the other 36" HP hose (63) and put another male quick disconnect half (44) on this hose.
- C. Using bench vise to hold angle cylinders (29), remove closures from ports. Screw brass forged street ells (43) 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-side cylinder uses the 36" HP hose with the dust cover and male disconnect half. The passenger-side cylinder uses the 36" HP hose with the male disconnect half and **no dust cover**. Install cylinders to their respective sides so that ells are between the cylinders and A-frame. Secure cylinders with anchor pins (35) and cotter pins (37) at each end.

### 2. 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 (68) over holes in crank pulley and fasten drive sheave and crank pulley to crankshaft using four M10 x 1.5 x 90 grade 10.9 nyloc cap screws (112) and four M10 lock washers (115). Torque these fasteners to 51 foot pounds, while making sure washers seat properly in sheave
- B. Remove and discard the four studs from the water pump shaft flange. Install the four longer 8MM studs (111) to the holes in the water pump shaft flange that the original studs were remove from. Replace water pump sheave onto studs and add a 1/4" fan spacer (109) for 6.2L diesel or 1/4" fan spacer (110) for 6.5L turbo diesel and fan. Fasten with the original nuts torqued to 18 foot pounds. Reinstall fan shroud.

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

### 3. Valve Assembly and Valve Plate

- A. Attach two valve plate braces (74) to one end of the valve plate (73) and a shock mount (91) to the third hole from opposite end with two 5/16 x 1 (NC) cap screws (102), and three lock washers (105), and nuts (106). See illustration on page 1. Position valve plate with braces on the driver-side inner fender well between battery and brake master cylinder lines. The rubber mount should be rearward with the two braces on the slope of the fender. Level valve plate and position it so no vehicle components touch the valve plate or braces. The Rubber mount should be just inside of windshield washer reservoir. Using shock mount and holes in the valve plate braces as guides, mark and drill three 11/32" holes in fender. Fasten braces to fender with two 5/16 x 1 cap screws (102), flat washers (107), lock washers (105), and nuts (106). Attach shock mount to fender with a flat washer (107), lock washer (105), and nut (106). Tighten all fasteners.

- B. Attach valve assembly (13) and spacer bar (75) to holes in middle of valve plate with two 5/16 x 1-1/2 cap screws (103), lock washers (105) and nuts (106). The solenoid cover should be just behind battery. Do not fully tighten at this time. The valve may have to be loosened to attach wiring harness after the hydraulic hoses are installed.
- C. Using illustration as a reference, install two 1/4 x 90 degree swivel adapter unions (79) to "Lift" and "Pressure" ports on the windshield washer reservoir side of valve. Tighten pressure port fitting to 11:00 o'clock and the lift port fitting to 10:00 o'clock. Install a 1/4 Npt x 90 degree street elbow (78) tightened to 11:00 o'clock to "Return" port on valve. Install a 1/4 Nptf to 3/8 ID hose quill (94) to this elbow. Install two 1/4 x 90 degree swivel adapter unions (79) to "angle" ports on the other side of valve. Tighten the front fitting to 3:00 o'clock and the back one to 4:00 o'clock.

#### **4. Pump - Clutch Assembly and Pump Bracket**

- A. Remove idler pulley unit. Remove two nuts from power steering bracket located behind idler pulley and save nuts. Install pump bracket (70) onto studs and fasten with previously removed nuts. Do not fully tighten. Install one M10 x 1.5 x 20 grade 10.9 cap screw (116) with M10 lock washer (115) through lower pump bracket bar into top threaded hole in front of power steering pump. Remove the lower alternator mounting bolt. Remove and save the nut from back of the power steering bracket. Place the rear pump bracket (71) on over the stud on the power steering bracket and reinstall nut. Place a 3/8 x 5-1/2 (NC) cap screw (97) through the alternator and top hole of the pump bracket. Secure with a 3/8 lock washer (99) and nut (100). Attach brace on front bracket to rear bracket with a 5/16 x 1 cap screw (102), lock washer (105), and nut (106). Tighten all fasteners.
- B. Install hydraulic fittings onto pump/clutch assembly (1). Looking down on the pump/clutch assembly with the suction 'in' port up and using the pump shaft as a 12:00 reference, position both the pressure port and suction port 90° swivel fittings (38) to 6:00. Lock the fittings in their proper orientation with the jam nuts. Attach a 1/2" quill (42) into the suction fitting. Install the 1/4" pipe nipple (39) into the relief port on the end plate of the pump. Screw the 1/4" brass elbow (40) onto the nipple and aim it away from the back of the pump.
- C. Place slots in mounting plate portion of pump/clutch assembly (1) up against front face of pump bracket and align with larger holes. The pump will have to be rotated in the mounting plate to position the suction 'in' port down and out towards the frame. Note the amount of rotation needed, place pump in vise and remove the two fasteners holding the plate on the pump. Rotate pump as needed and reinstall fasteners. Attach pump/clutch assembly to front of pump bracket with two 3/8 x 1-1/2 (NC) grade 5 cap screws (96), flat washers (101), lock washers (99), and nuts (100). Do not fully tighten these fasteners at this time. Install 56" v-belt (69) over drive and clutch sheaves. Tighten belt then pump plate fasteners.

#### **5. Oil Reservoir Installation**

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

- A. Position oil reservoir (12) on the driver-side inner fender near the fire wall. Angle quills on reservoir approximately 45 degrees from fender. Attach brace (72) to fire wall side of oil reservoir leg with one 5/16 x 1 cap screw (102), lock washer (105), and nut (106). Position reservoir to avoid contact with vehicle components and level to keep filler cap perpendicular to the ground. Using the holes in the reservoir leg and brace as guides, mark and drill two 11/32" holes through inner fender. Attach reservoir to inner fender with two 5/16 x 1 cap screws (102), flat washers (107), lock washers (105), and nuts (106). Tighten all fasteners.

#### **6. Solenoid Control and Harness Installation**

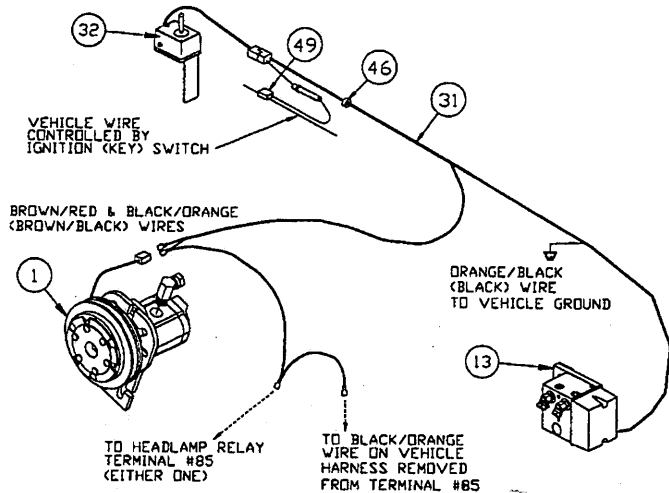
**Note: Use dielectric grease (48) to prevent corrosion on all under hood electrical connections. Fill receptacles and lightly coat ring terminals and blades before assembly.**

- A. Check both sides of fire wall for wires and hot or moving engine parts. Then, on the driver side, drill a 5/8" hole in the fire wall for the control harness (31).

B. Install the solenoid control (32) and dash bracket according to the instructions found in the Dash Bracket Bag (27) located in the common hydraulic bolt bag.

C. Remove negative battery cable from battery. **Warning! Disconnect battery before installing, removing or replacing electrical components.**

D. Insert control harness (31) through hole drilled in fire wall. Attach connector to plug on solenoid control. Connect the red wire from the fuse holder to a circuit which is on only when the ignition key is on. Use in-line connector (49). Route the main portion of harness (white, green, blue and black wires) to the valve. Place a grommet (46) around control harness where it passes through fire wall. Remove plastic cover from valve and install solenoid wires according to instructions inside cover. With the harness strain relief in place inside the cover, install the cover. Attach orange/black (black) wire with ring terminal exiting loom near valve to a good vehicle ground. Route portion of harness with brown/red and black/orange wires with female spade terminals to electric clutch.



**Note: Install the 20850 Fish-Stik™/Clutch Relay Kit at this time, if necessary.**

Attach female spade terminals to clutch plug (brown/red to black with white stripe and black/orange to black). Fasten other black/orange wire with female spade connector to head lamp relay and male spade connector to black/orange ground wire from vehicle harness (see Diagram 1). **Note: The relay & vehicle harness are found in peculiar light kit.**

E. Install plow headlamps according to the light kit instructions. Stretch the rectangular opening of the plug cover strap (from light kit) over grille connector ends of the long battery cable (from hydraulics box) and vehicle harness (from light kit). Place the plug cover over the mold on the harness.

F. Reconnect negative battery cable to terminal.

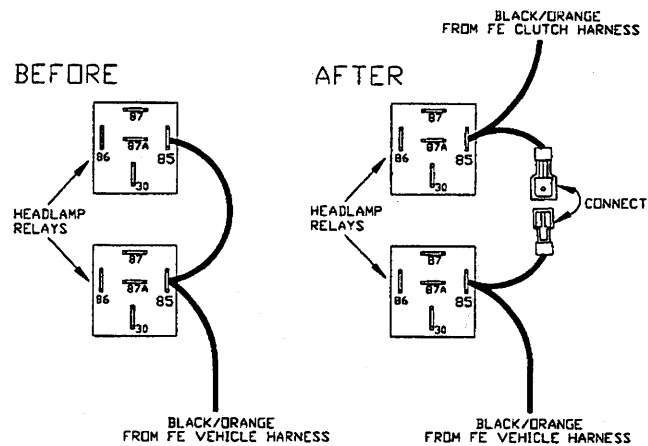


Diagram 1

### 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 a possible engine fire.**

**Note: Do not shorten LP hoses. Bends in all hoses must have sufficient radius to prevent crimping. A crimped hose may cause overheating of the hydraulic system, hose failure, and possible engine fire.**

- A. Remove grille and drill an 1-7/8" hole in the radiator core support below head light and above horn on the driver-side. Install a split hose grommet (47) around the hole.
- B. Install the 26" x 3/8" LP hose (66) over relief quill on pump and route to the bottom quill on oil the reservoir. The hose is long to prevent crimping at the bends. Attach a 1/2" quill (42) to the threaded port on the back of oil the reservoir. Install the 24" x 1/2" LP hose (65) onto this quill and route to the 1/2" quill on the pump. Install the 18"



HP hose (59) to swivel on pump and to pump pressure port on valve. Attach one end of the 36" x 3/8" LP hose (67) to quill on back of valve and other end of hose to remaining quill on oil reservoir. Cut this return line from valve approximately 6" from oil reservoir. Install the in line oil filter according to filter kit instructions (30). The filter kit instructions are located in the common hydraulic kit.

- C. Attach a 78" HP hose (60) to the 90 degree swivel fitting in the "lift" port on valve. Attach a second 78" HP hose (60) to the 90 degree swivel fitting in the passenger-side angle port on valve and a 54" HP hose (61) to the 90 degree swivel fitting in the driver-side angle port on valve. Route the hoses around inside of the battery and out through the hole drilled in the radiator core support.

**Caution: Route and tie hoses with tie wraps (88) so they are not rubbing or touching any moving parts, battery, or battery cables.**

- D. Route the 54" HP hose out through the radiator core support and out through grille low and about 14" from center on driver-side. Attach female half of quick disconnect (44) to the QD/Electric grille plate (84) with a snap ring (81). Put a dust plug (45) on the end of a 45 degree swivel fitting (89) and attach it to quick disconnect. Attach HP hose 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 (87).
- E. Route lift and passenger-side angle hose across the front of the radiator and out through the back of the grille, low and about 14" from center on passenger-side. Attach female half of quick disconnect (44) to one hole of the 2 QD grille plate (85) with a snap ring (81). Install 1/4 x 90 degree swivel (79) with a dust plug (51) to back of disconnect. Attach the bulk head adapter (80) with a snap ring (81) to the other hole in the 2 QD grille plate. Install a male end of quick disconnect (44) to the bulk head adapter. Attach a 1/4 x 90 degree swivel (79) with dust plug (45) to the other end of disconnect. Attach the 78" HP angle hose to the female disconnect and the 78" lift hose to the male 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 (87).

**Note: Some GMC models with fine mesh grille may have to use stand off legs (86) fastened with four 1/4 x 1/2 socket head cap screws (92) and locknuts (93) on each grille plate.**

- F. Trucks using stand off legs will attach grille plates as described in step "D" above except the two 90 degree and one 45 degree swivel fittings will not be used.
- G. Install cable boot bracket (82) on driver-side headgear brace, between brace and fasteners. Insert cable boot (83) on over bracket.

## 8. OPERATIONS

- A. Check all fittings and fasteners for tightness. Secure hoses with nylon tie wraps (88).
- B. Attach hose disconnects, push lift arm all the way down, and fill reservoir with FISHER® High Performance Hydraulic Fluid (recommended for superior cold-weather performance) or Type "A" automatic transmission fluid. Start engine, lift and angle blade several times. **If blade angles opposite from control lever position, reverse the two angle hoses at the valve.** Raise front end of vehicle until plow is clear of ground with lift cylinder fully retracted. Check reservoir oil level. Angle blade (with lift cylinder retracted) to remove air from system. Recheck 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 turn off the engine and then turn the key to the "on" position (the red LED light will be lit). Move the control to the four plowing positions. Activate lower/float before removing or installing the plow.**