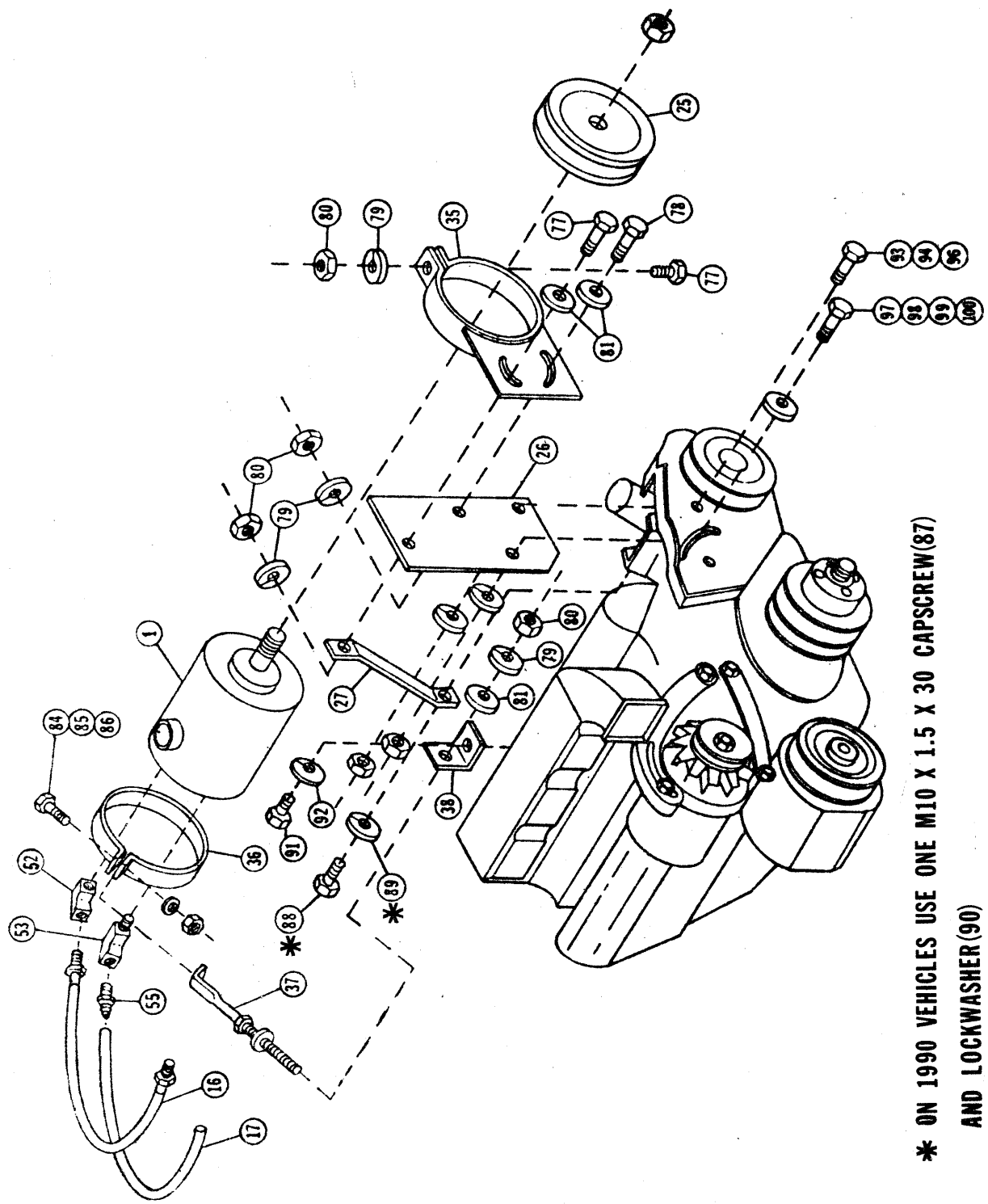


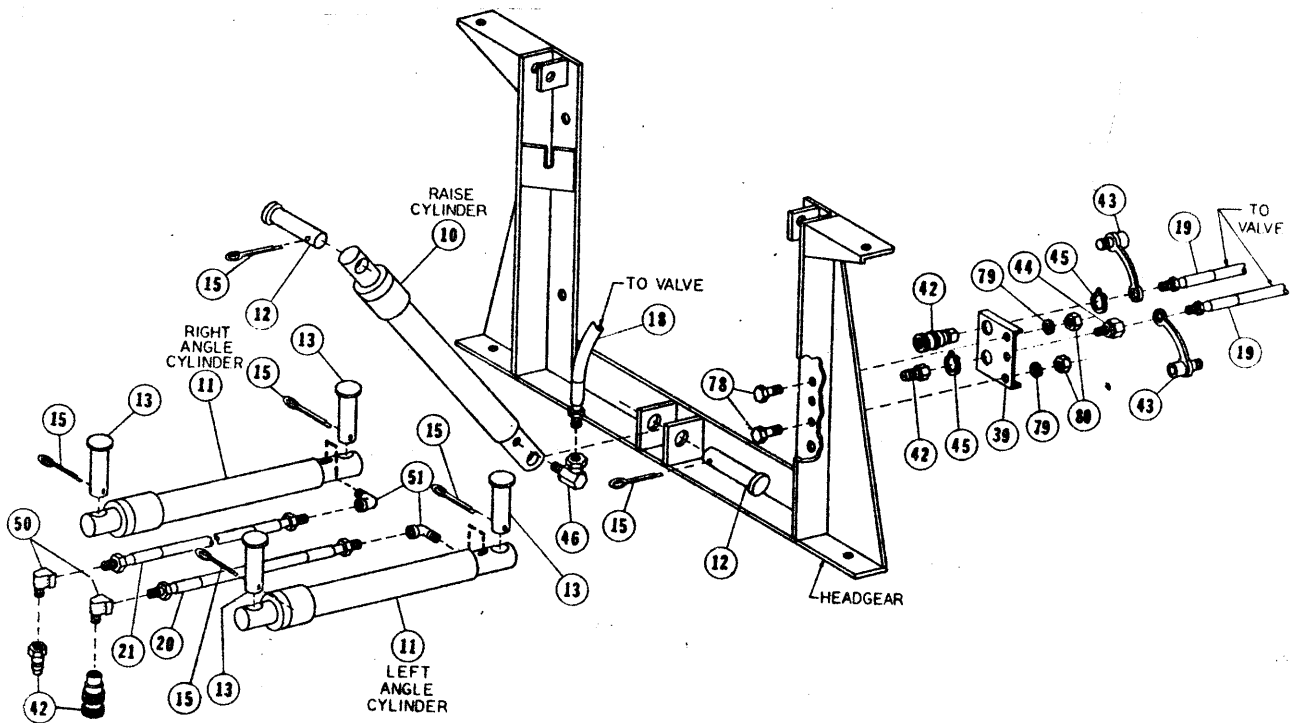
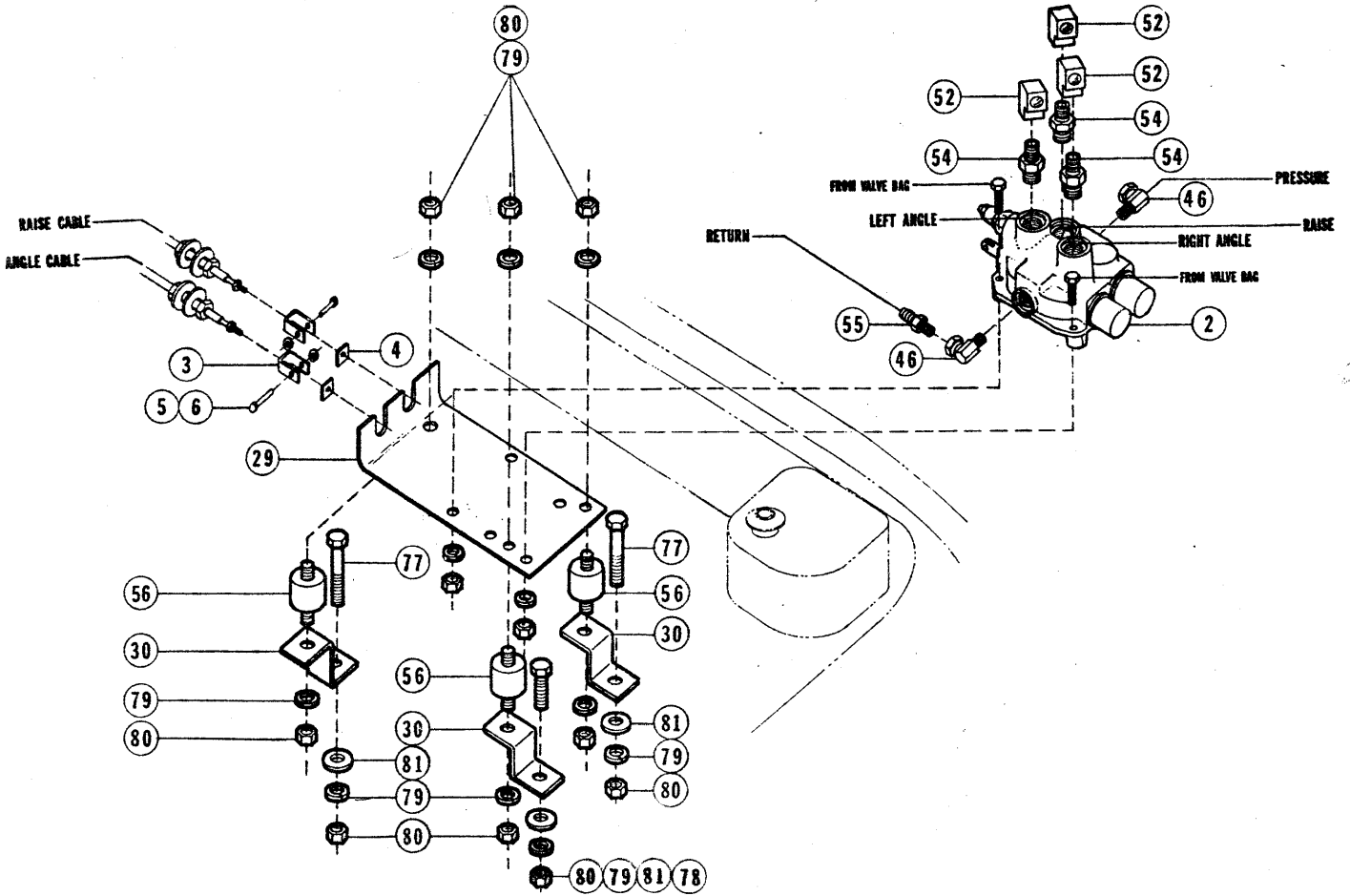
SERIES FORD RANGER, BRONCO II 1986-19__
G V6-2.9 LITER
W/EFI; W/O AC

PECULIAR HYDRAULICS HPS4572
BELT DRIVE, SLC REV C
UNDERHOOD VALVE



* ON 1990 VEHICLES USE ONE M10 X 1.5 X 30 CAPSCREW(87)
AND LOCKWASHER(90)

6301






SERIES
G

HYDRAULIC PARTS LIST

HPS4572 REV C
A5092-25

REF#	QTY IN KIT		PART#	DESCRIPTION
	A5092-25	HPS4572		* PART OF 6922 BOLT BAG
1	1		A2311	PUMP TANK ASSEMBLY
2	1		A4466	CONTROL VALVE ASSEMBLY
3	2		4483	CLEVIS
4	2		4494	10-32 SQUARE NUT
5	2		4491	CLEVIS PIN
6	2		4493	3/16 PUSH NUT
7				
8		1	4419	SINGLE LEVER CONTROL HEAD
9		2	5701	36" CONTROL CABLE, SLC
10	1		A5096	6" LIFT CYLINDER ASSEMBLY
11	2		A318	10" ANGLE CYLINDER ASSEMBLY
12	2		6814	CLEVIS PIN
13	4		6816	ANCHOR PIN
14				
15	6		90601	1/4 X 1-1/2 COTTER PIN
16		1	2707	26" H.P. HOSE, 3/8P TO 1/4P
17		1	4471	26" L.P. HOSE
18		1	5215	48" H.P. HOSE, 1/4P TO 1/4P
19		2	375	42" H.P. HOSE, 1/4P TO 1/4P
20		1	3074	22" H.P. HOSE, 1/4P TO 1/4P
21		1	376	32" H.P. HOSE, 1/4P TO 1/4P
22				
23		1	582	FAN BELT, 44"
24				
25		1	3696	PUMP SHEAVE
26		1	5969	PUMP BRACKET
27		1	5970	PUMP BRACKET BRACE
28				
29		1	5329	VALVE PLATE
30		3	* 6158	BRACE
31				
32				
33				
34				
35		1	5495	SADDLE BRACKET
36	1		2036	REAR TANK STRAP
37	1		2116	UNIVERSAL BRACE ROD
38		1	* 2115	BRACE TAB
39		1	4467	DISCONNECT MOUNTING PLATE
40				
41				
42	2		A1587	DISCONNECT ASSEMBLY
43	2		1588	DUST PLUG
44		1	* 4486	BULKHEAD ADAPTER
45		2	* 4485	7/8" SNAP RING
46	1		319	1/4" X 90 SWIVEL ADAPTER
47	2		2315	9/16 O.R. TO 3/8P X 90 SWL ADPT
48				
49				
50		2	* 765	1/4" BRASS BAR STREET ELL

REF#	QTY IN KIT A4468-40 HPS4500		PART#	DESCRIPTION * PART OF 6910 BOLT BAG
51	2		2780	1/4" BRASS BAR STREET ELL (FORGED)
52		4	* 2318	1/4 BRASS BAR ELL (F/F)
53		1	* 3979	3/8 BRASS BAR STREET ELL (M/F)
54		3	* 3058	ADAPTER (9/16 O-RING TO 1/4P)
55	2		1658	QUILL
56		3	* 5529	RUBBER SHOCK MOUNTS
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72		1	5704	SAFETY DECAL
73	2		3042	GROMMET
74	1		4477	SPLIT HOSE GROMMET
75	3		3666	TIE WRAPS
76				
77	1	3	* 90054	5/16 X 1-1/2 (NC) GR. 5 CAPSCREW
78	3		90042	5/16 X 1 (NC) GR.5 CAPSCREW
79	6	8	* 90360	5/16 LOCKWASHER
80	7	8	* 90332	5/16 (NC) NUT
81	4	3	* 90313	5/16 FLATWASHER
82				
83				
84	1		90614	1/4 X 1-1/4 (NC) GR.5 CAPSCREW
85	1		90359	1/4 LOCKWASHER
86	1		90330	1/4 (NC) NUT
87		1	* 90391	M10 X 1.5 X 30 GR. 8.8 CAPSCREW
88		1	* 90103	3/8 X 1 (NC) GR.5 CAPSCREW
89		1	* 90361	3/8 LOCKWASHER
90		1	* 90429	M10 LOCKWASHER
91		1	* 90377	8M X 20 X 1.25 GR. 8.8 CAPSCREW
92		1	* 90428	8M LOCKWASHER
93		1	* 90575	1/2 X 1-1/4 (NC) GR.5 CAPSCREW
94		1	* 90364	1/2 LOCKWASHER
95				
96		1	* 90337	1/2 (NC) NUT
97		1	* 90174	7/16 X 1-1/4 (NC) GR.5 CAPSCREW
98		1	* 90335	7/16 (NC) NUT
99		1	* 90362	7/16 LOCKWASHER
100		1	* 90317	7/16 FLATWASHER

FASTENER TORQUE (FT-LB)			
DIAMETER- THREADS PER INCH	GRADE DESIGNATION		
	 GRADE 2	 GRADE 5	 GRADE 8
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.** 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 22" H.P. HOSE (20), INSTALL BRASS BAR STREET ELL (50) AND FEMALE HALF OF HOSE DISCONNECT ASSEMBLY (42) ON SAME HOSE END. THEN, HOLDING 32" H.P. HOSE (21), INSTALL BRASS BAR STREET ELL (50) AND MALE HALF OF HOSE DISCONNECT ASSEMBLY (42) ON THE SAME HOSE END.
- C.** USING 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 22" H.P. HOSE WITH FEMALE DISCONNECT HALF TO DRIVER SIDE ANGLE CYLINDER STREET ELL. INSTALL OTHER H.P. HOSE WITH MALE DISCONNECT HALF TO PASSENGER SIDE ANGLE CYLINDER STREET ELL. INSTALL ANGLE CYLINDERS TO "A" FRAME ON THEIR RESPECTIVE SIDES SO THAT ELLS ARE ON TOP SIDE OF CYLINDERS. SECURE CYLINDERS WITH ANCHOR PINS (13) AT PORT END AND RAM END. SECURE ANCHOR PINS WITH COTTER PINS (15).

2. CONTROL HEAD AND CONTROL CABLES

NOTE: DASH BRACKET, HARDWARE, DRILLING GUIDE AND MOUNTING INSTRUCTIONS WILL BE FOUND IN PECULIAR ATTACHING BOX.

- A.** DRILL THREE 5/8" HOLES IN FIREWALL FOR CONTROL CABLES AND WIRING HARNESS USING DRILLING GUIDE AS A REFERENCE ONLY. BE SURE BOTH SIDES OF FIREWALL ARE CLEAR OF OBSTRUCTIONS BEFORE DRILLING.
- B.** INSTALL DASH BRACKET AS PER DASH BRACKET INSTRUCTIONS.
- C.** LOOSEN 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 THE IGNITION COIL AREA. ATTACH CONTROL HEAD TO DASH BRACKET AS PER DASH BRACKET INSTRUCTIONS. INSTALL RUBBER GROMMETS (73) AROUND CABLES WHERE THEY PASS THROUGH FIREWALL.

3. VALVE AND VALVE PLATE

- A.** USING BENCH VISE TO HOLD CONTROL VALVE ASSEMBLY (2) REMOVE CLOSURES FROM VALVE PORTS. SCREW 90 DEGREE SWIVEL ADAPTER UNIONS (47) INTO "IN" AND "OUT" PORTS. SCREW QUILL (55) INTO INSTALLED ADAPTER IN "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. INSTALL (3) 9/16 O-RING TO 1/4" PIPE ADAPTERS (54) IN LIFT AND ANGLE PORTS. INSTALL ONE 1/4" BRASS BAR ELL (52) TO EACH ADAPTER. WHEN TIGHT, ELLS SHOULD POINT AWAY FROM CABLE END OF VALVE.

B. ATTACH THREE RUBBER SHOCK MOUNTS (56) TO THE VALVE PLATE (29) AS SHOWN ON THE ILLUSTRATION AND FASTEN WITH 5/16 LOCKWASHERS (79) AND NUTS (80). INSTALL ONE BRACE (30) (USED AS AN EXTENSION) TO EACH OF THE THREE RUBBER SHOCK MOUNTS AND FASTEN WITH 5/16 LOCKWASHERS (79) AND NUTS (80). LEAVE WHAT WILL BE THE TWO FRONT BRACES TURNED FORWARD AND THE REMAINING REAR BRACE TURNED OUT AWAY FROM THE PLATE.

C. MOUNT VALVE TO VALVE PLATE USING TWO 1/4 X 1-1/4 CAPSCREWS, LOCKWASHERS AND NUTS FROM VALVE BAG. CONNECT CONTROL CABLES TO VALVE PLATE AND VALVE. 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 EITHER 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 PUSHNUT (6) ON PIN. ADJUST CABLES SO THAT CONTROL LEVER IS CENTERED IN CONTROL HEAD.

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.

D. WITH VALVE AND CABLES ATTACHED, POSITION VALVE PLATE ON SHEET METAL FLANGE OF DRIVERS SIDE INNER FENDER, MAINTAINING A MINIMUM 1/2" CLEARANCE TO BRAKE LINES AND KEEPING CLEAR OF ANY OTHER OBSTRUCTIONS. MARK THE LOCATIONS OF THE TWO MOUNTING HOLES ON THE INNER FENDER FLANGE AND ONE ON THE PLASTIC FENDERWELL. DRILL AN 11/32" HOLE AT EACH MARK. NOTE THAT THE PLASTIC FENDERWELL RUNS UNDER THE METAL FLANGE AND THAT IT SHOULD ALSO BE DRILLED. INSERT ONE 5/16 X 1-1/2 (NC) CAPSCREW (77) THROUGH THE TWO MOUNTING LEGS ON THE INNER FENDER FLANGE AND ONE 5/16 X 1 CAPSCREW (78) THROUGH THE LEG ON THE PLASTIC FENDER WELL. FASTEN WITH 5/16 FLATWASHERS (81), LOCKWASHERS (79) AND NUTS (80).

4. PUMP TANK AND PUMP BRACKET

A. POSITION PUMP BRACKET (26) BEHIND POWER STEERING BRACKET. ALIGN 15/32" HOLE IN PUMP BRACKET WITH TOP OF SLOT IN VEHICLE BRACKET AND INSERT A 7/16 X 1-1/4 (NC) CAPSCREW (97) WITH FLATWASHER (100) IN THROUGH BRACKETS. FASTEN WITH A LOCKWASHER (99) AND NUT (98). INSTALL A 1/2 X 1-1/4 (NC) CAPSCREW (93) IN THROUGH LOWER HOLE IN BRACKETS AND FASTEN WITH A LOCKWASHER (94) AND NUT (96).

B. LOCATE THE LOWER TAPPED HOLE ON BACKSIDE OF ALUMINUM POWER STEERING BRACKET.

CAUTION: FOR 1990-19__ VEHICLES ATTACH SHORT END OF PUMP BRACKET BRACE (27) TO THIS HOLE USING A M10 X 1.5 X 30 CAPSCREW (87) AND LOCKWASHER (90). FOR 1986-1989 VEHICLES USE A 3/8 X 1 CAPSCREW (88) AND LOCKWASHER (89).

ALIGN UPPER END OF BRACE WITH TOP HOLE IN PUMP BRACKET. BRACE WILL SHARE FASTENER WITH SADDLE BRACKET, INSTALLED IN LATER STEP.

C. HOLDING PUMP TANK (1) IN BENCH VISE, REMOVE PORT CLOSURES AND INSTALL 3/8" STREET ELL (53) AND QUILL (55) INTO 3/8" FEMALE RETURN PORT AND 1/4" ELL (52) ONTO 1/4" PRESSURE PORT. WHEN LOOKING AT BACK END OF PUMP, ELLS SHOULD POINT TO THE 1 O'CLOCK POSITION WHEN TIGHT. INSTALL PUMP SHEAVE (25) ONTO PUMP SHAFT USING KEY AND NUT SUPPLIED WITH PUMP ASSEMBLY. INSTALL PUMP WITH FITTINGS AND SHEAVE INTO SADDLE BRACKET (35) USING A 5/16 X 1-1/2 GR.5 CAPSCREW (77), LOCKWASHER (79) AND NUT (80).

D. INSTALL SADDLE BRACKET AND PUMP TANK ONTO PUMP BRACKET USING A 5/16 X 1-1/2 CAPSCREW (77) IN UPPER HOLE AND A 5/16 X 1 (NC) CAPSCREW (78) IN LOWER HOLE WITH FLATWASHERS (81), LOCKWASHERS (79) AND NUTS (80). UPPER 5/16" FASTENER ALSO SECURES PUMP BRACKET BRACE TO PUMP BRACKET. ALIGN PUMP SHEAVE WITH VACANT GROOVE IN WATER PUMP PULLY. INSTALL 4L 440 BELT (23) AROUND PULLY AND FISHER PUMP.

E. ADJUST BELT TO PROPER TENSION BY PIVOTING SADDLE AND SUPPORT BRACKETS ON TOP BOLT. INSTALL REAR TANK STRAP (36) ON OVER REAR OF PUMP TANK. POSITION BRACE TAB (38) OVER TAPPED HOLE IN INTAKE MANIFOLD AND FASTEN WITH AN M8 X 20 X 1.25 CAPSCREW (91) AND LOCKWASHER (92). MEASURE OR GAUGE NEEDED LENGTH OF UNIVERSAL BRACE ROD (37) AND CUT TO NEEDED LENGTH AND INSTALL ONE 5/16 NUT (80) AND FLATWASHER (81). INSERT BRACE ROD THROUGH PREVIOUSLY INSTALLED UNIVERSAL BRACE TAB. CONNECT BRACE ROD TO TANK STRAP WITH ONE 1/4 X 1-1/4 CAPSCREW (84), LOCKWASHER (85) AND NUT (86). FASTEN OTHER END OF BRACE ROD TO BRACE TAB WITH A 5/16 FLATWASHER (81), 5/16 LOCKWASHER (79) AND NUT (80). USE BRACE ROD TO ADJUST ALIGNMENT OF DRIVE AND PUMP SHEAVES. CHECK BELT FOR PROPER TENSION.

5. HYDRAULIC HOSE INSTALLATION

A. ATTACH ONE END OF 26" H.P. HOSE (16) TO THE 1/4" BRASS BAR ELL ON PUMP TANK AND PUSH ONE END OF 26" L.P. HOSE (17) ONTO THE QUILL ON PUMP TANK. ROUTE THESE HOSES TO THE CONTROL VALVE.

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.

PUSH L.P. HOSE ONTO QUILL AND SCREW H.P. HOSE INTO 90 DEGREE SWIVEL ADAPTER. INSTALL 48" H.P. HOSE (18) TO BRASS ELL IN LIFT CYLINDER PORT OF VALVE (SPOOL #1). INSTALL TWO 42" H.P. HOSES (19) TO BRASS ELLS IN ANGLE PORTS OF VALVE (SPOOL #2). ROUTE HOSES DOWN UNDER CORNER OF RADIATOR SHROUD AND OUT THROUGH GRILL TO LOCATION OF DISCONNECT BRACKET. ATTACH 48" HOSE TO 90 DEGREE SWIVEL ADAPTER INSTALLED ON LIFT CYLINDER.

6. 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 DRIVERS SIDE HEADGEAR POST WITH TWO 5/16 X 1 CAPSCREWS (78), LOCKWASHERS (79) AND NUTS (80). INSTALL DUST PLUGS (43) OVER ENDS OF HOSES ROUTED TO FRONT OF VEHICLE IN THE PREVIOUS STEP. CONNECT 42" RIGHT ANGLE HOSE (SPOOL #2, CYL. B) TO BACK OF FEMALE DISCONNECT INSTALLED IN TOP HOLE OF DISCONNECT BRACKET. CONNECT 42" LEFT ANGLE HOSE (SPOOL #2, CYL. A) TO BOTTOM (MALE) DISCONNECT. TIGHTEN BY HOLDING HOSES AND ROTATING THE DISCONNECT HALVES IN THE BRACKET.

7. OPERATIONS

A. CHECK ALL FITTINGS AND FASTENERS FOR TIGHTNESS. SECURE HOSES WITH NYLON TIE WRAPS (75). PLACE SAFETY DECAL (72) ON DASH BESIDE CONTROL HEAD.

B. FILL RESERVOIR WITH TYPE "A" AUTOMATIC TRANSMISSION FLUID. START ENGINE, LIFT AND ANGLE BLADE.

NOTE: IF BLADE ANGLES OPPOSITE FROM CONTROL LEVER POSITION, REVERSE THE TWO H.P. HOSE CONNECTIONS ON THE BACK OF THE DISCONNECT BRACKET.

RAISE FRONT END OF VEHICLE UNTIL PLOW IS CLEAR OF GROUND WITH THE LIFT CYLINDER FULLY RETRACTED. CHECK RESERVOIR OIL LEVEL. ANGLE BLADE (WITH LIFT CYLINDER RETRACTED) TO REMOVE AIR FROM SYSTEM. RECHECK RESERVOIR OIL LEVEL.