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SERIES  
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HYDRAULICS PARTS LIST

HPS4504 REV B  
A4468

REF#	QTY IN KIT A4468-40 HPS4504	PART#	DESCRIPTION * PART OF 6939 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	2	4908	BUSHING
8		4419	SINGLE LEVER CONTROL HEAD
9		4488	40" CONTROL CABLE, SLC
10	1	A318	10" LIFT CYLINDER ASSEMBLY
11	2	A3660	12" 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		2707	26" H.P. HOSE, 1/4P TO 3/8P
17		4471	26" L.P. HOSE
18		1664	54" H.P. HOSE, 9/16 O-RING TO 1/4P
19		4472	48" H.P. HOSE, 9/16 O-RING TO 1/4P
20		376	32" H.P. HOSE, 1/4P TO 1/4P
21		4424	36" H.P. HOSE, 1/4P TO 1/4P
22			
23		1714	FAN BELT 4L 570
24		4401	DRIVE SHEAVE
25		3696	PUMP SHEAVE
26		5186	PUMP BRACKET
27			
28			
29		4475	VALVE PLATE
30			
31			
32			
33			
34			
35		4921	SADDLE BRACKET
36	1	2036	REAR TANK STRAP
37	1	2116	UNIVERSAL BRACE ROD
38			
39		4467	DISCONNECT MOUNTING PLATE
40			
41			
42	2	A1587	DISCONNECT ASSEMBLY
43	2	1588	DUST PLUG
44		4486	* BULKHEAD ADAPTER
45		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			

REF#	QTY IN KIT A4468-40 HPS4504		PART#	DESCRIPTION * PART OF 6939 BOLT BAG
50		1	765	* 1/4" BRASS BAR STREET ELL
51	2		2780	1/4" BRASS BAR STREET ELL (FORGED)
52				
53		1	2318	* 1/4" BRASS BAR ELL
54				
55	2		1658	QUILL
56				
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		2	90432	* 5/16 X 1 HEX HEAD SELF TAPPING SC.
77		2	90172	* 7/16 X 1 (NC) GR. 5 CAPSCREW
78		2	90362	* 7/16" LOCKWASHERS
79		1	90278	* 5/8 X 5-1/2 (NF) GR. 5 CAPSCREW
80	4		90042	5/16 X 1 (NC) GR.5 CAPSCREW
81	1		90054	5/16 X 1/2 (NF) GR. 5 CAPSCREW
82	6		90360	5/16 LOCKWASHER
83	7		90332	5/16 (NC) NUT
84	4		90313	5/16 FLATWASHERS
85				
86	1		90614	1/4 X 1-1/4 (NC) GR.5 CAPSCREW
87	1		90359	1/4 LOCKWASHER
88	1		90330	1/4 (NC) NUT
89				
90				
91				
92				
93				
94				
95				

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
9/16 - 12	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 CYL. 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 32" H.P. HOSE (20), INSTALL FEMALE HALF OF HOSE DISCONNECT ASSEMBLY (42) DIRECTLY TO HOSE. THEN, HOLDING 36" 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 32" H.P. HOSE WITH FEMALE DISCONNECT HALF TO DRIVE SIDE ANGLE CYLINDER STREET ELL. INSTALL OTHER H.P. HOSE WITH MALE DISCONNECT HALF TO PASSENGER SIDE ANGLE CYLINDER STREET ELLS. INSTALL ANGLE CYLINDERS TO "A" FRAME ON THEIR RESPECTIVE SIDES SO THAT ELLS ARE BETWEEN CYLINDERS AND "A" FRAME. 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. DRILL 1/2" HOLE IN UNDERSIDE OF DASH AS SHOWN IN DASH ILLUSTRATION.
- 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 TOP OF THE DRIVER SIDE FENDERWELL. 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.

- B.** MOUNT VALVE TO VALVE PLATE (29) USING TWO 1/4 X 1-1/4 CAPSCREWS, LOCKWASHERS AND NUTS FROM VALVE BAG. CONNECT CONTROL CABLES (9) TO VALVE PLATE BEFORE FASTENING VALVE PLATE TO VEHICLE. 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 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 PUSHNUT (6) ON CLEVIS PIN. TEMPORARILY ADJUST CABLES SO THAT CONTROL LEVER IS SOMEWHERE NEAR CENTERED IN CONTROL HEAD.

C. LOOSEN FORWARD TWO 5/16" CAPSCREWS HOLDING JACK MOUNTING BRACKET TO DRIVER'S SIDE INNER FENDERWELL. PRY UP MOUNTING BRACKET AND SLIDE TWO SLOTS IN THE REAR EDGE OF THE VALVE PLATE UNDER THE MOUNTING BRACKET AND ONTO THE TWO LOOSENED CAPSCREWS. USING THE TWO HOLES IN THE FRONT LEG OF THE VALVE PLATE AS A GUIDE DRILL TWO 1/4" HOLES THROUGH THE FENDERWELL. FASTEN USING TWO 5/16" SELF TAPPING SCREWS (76).

D. WITH VALVE PLATE FASTENED TO INNER FENDER, RE-ADJUST CONTROL CABLES SO THAT CONTROL HEAD 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 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 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.

#### 4. DRIVE SHEAVE INSTALLATION

A. REMOVE AND DISCARD 5/8" CAPSCREW FROM CRANKSHAFT DRIVE PULLEY. INSTALL DRIVE SHEAVE (24) INTO CENTER OF CRANKSHAFT PULLEY BEING CERTAIN MACHINED PILOT OF DRIVE SHEAVE SEATS IN CRANKSHAFT PULLEY. FASTEN DRIVE SHEAVE TO CRANKSHAFT USING A 5/8 X 5-1/2 CAPSCREW (79) TORQUED TO 150 FT. LBS.

#### 5. PUMP TANK AND PUMP BRACKET

A. INSTALL PUMP BRACKET (26) TO THE TWO TAPPED HOLES IN DRIVER'S SIDE (FRONT) CYLINDER HEAD USING TWO 7/16X1 CAPSCREWS(77) & LOCKWASHERS(78).

B. HOLDING PUMP TANK (1) IN BENCH VISE, SCREW 1/4" BRASS BAR ELL (53) ONTO PRESSURE PORT OF PUMP AND SCREW QUILL (55) INTO RETURN PORT OF PUMP. INSTALL PUMP SHEAVE (25) ONTO PUMP SHAFT USING LOCKNUT SUPPLIED WITH PUMP. REMOVE PUMP FROM VISE AND INSTALL SADDLE BRACKET (35) ON OVER FRONT OF PUMP. SECURE WITH A 5/16 X 1-1/2 GR. 5 CAPSCREW (81), LOCKWASHER (82) AND NUT (83). ATTACH SADDLE BRACKET AND PUMP TO PUMP BRACKET USING TWO 5/16 X 1 CAPSCREWS (80), FLATWASHER (84), LOCKWASHERS (82) AND NUTS (83).

C. INSTALL 57" V-BELT (23) ON OVER INSTALLED DRIVE AND PUMP SHEAVES. ALIGN SHEAVES AND TIGHTEN 1-1/2" SADDLE BRACKET FASTENER. ADJUST FOR PROPER TENSION BY PIVOTING SADDLE BRACKET ON TOP BOLT. INSTALL REAR TANK STRAP (36) ON OVER REAR OF PUMP TANK. CHECK LENGTH OF UNIVERSAL BRACE ROD(37) AND CUT TO LENGTH AS NEEDED. INSTALL ONE 5/16 NUT(83) AND

FLATWASHER (84) ONTO BRACE ROD AND INSERT BRACE ROD THROUGH TAB ON PUMP BRACKET. INSTALL BRACE ROD TO TANK STRAP WITH ONE 1/4 X 1-1/4 CAPSCREW (86), LOCKWASHER (87) AND NUT (88). FASTEN OTHER END OF BRACE ROD TO PUMP BRACKET TAB WITH A 5/16 FLATWASHER(84), LOCKWASHER(82) & NUT (83). USE BRACE ROD TO ADJUST ALIGNMENT OF DRIVE AND PUMP SHEAVES. CHECK BELT FOR PROPER TENSION. TIGHTEN POWER STEERING AND ALTERNATOR BELTS.

## 6. 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" LP 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 54" H.P. HOSE (19) INTO LIFT CYLINDER PORT OF VALVE (SPOOL #1). INSTALL TWO 48" HOSES (18) INTO ANGLE PORTS OF VALVE (SPOOL #2). DRILL A 1-7/8" HOLE THROUGH MIDDLE OF RADIATOR WEB ON DRIVERS SIDE, APPROXIMATELY 9-1/2" BELOW TOP OF RADIATOR. (SOME VEHICLES MAY NOT REQUIRE DRILLING.) INSTALL SPLIT HOSE GROMMET (74) AROUND HOLE. ROUTE 54" AND 48" HOSES OUT THROUGH THIS HOLE AND THROUGH GRILL NEAR CENTER OF VEHICLE. ATTACH 54" HOSE TO PREVIOUSLY INSTALLED 90 DEGREE SWIVEL ADAPTER ON LIFT CYLINDER.

## 7. 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 (80), LOCKWASHERS (82) AND NUTS (83). INSTALL DUST PLUGS (43) OVER ENDS OF HOSES ROUTED TO FRONT OF VEHICLE IN THE PREVIOUS STEP. CONNECT 48" RIGHT ANGLE HOSE (SPOOL #2, CYL. B) TO BACK OF FEMALE DISCONNECT INSTALLED IN TOP HOLE OF DISCONNECT BRACKET. CONNECT 48" LEFT ANGLE HOSE (SPOOL #2, CYL A) TO BOTTOM (MALE) DISCONNECT. TIGHTEN BY HOLDING HOSES AND ROTATING THE DISCONNECT HALVES IN THE BRACKET.

## 8. OPERATIONS

A. CHECK ALL FITTINGS AND FASTENERS FOR TIGHTNESS. SECURE HOSES WITH NYLON TIE WRAPS(75). PUT 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 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.