




## PARTS LIST

HPS4560 REV B

REF#	QTY	N	KIT	PART#	DESCRIPTION
	A4468-40		HPS4560		* PART OF 6898 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 - 3/16 X 1
6	2			4493	3/16 PUSH NUT
7	1			8764	FILTER KIT (AT END OF INSTRUCT.)
8			1	4419	SINGLE LEVER CONTROL HEAD
9			2	4488	40" CONTROL CABLE, SLC
10	1			A318	10" LIFT CYLINDER ASSEMBLY
11	2			A3660	12" ANGLE CYLINDER ASSEMBLY
12	2			6814	CLEVIS PIN - 1 X 3-5/16
13	4			6816	ANCHOR PIN - 1 X 4
14					
15	6			90601	1/4 X 1-1/2 COTTER PIN
16			1	2707	26" H.P. HOSE, 1/4P TO 3/8P
17			1	4471	26" L.P. HOSE
18			1	1665	60" H.P. HOSE, 9/16 O-RING TO 1/4P
19			2	1664	54" H.P. HOSE, 9/16 O-RING TO 1/4P
20			1	376	32" H.P. HOSE, 1/4P TO 1/4P
21			1	4424	36" H.P. HOSE, 1/4P TO 1/4P
22					
23			1	1118	FAN BELT, 56"
24			1	5742	DRIVE SHEAVE
25			1	7909	PUMP SHEAVE
26			1	5395	PUMP BRACKET
27					
28					
29	1			5780	VALVE PLATE
30	1			5781	VALVE PLATE BRACE
31					
32					
33					
34					
35			1	4921	SADDLE BRACKET
36	1			2036	REAR TANK STRAP
37	1			2116	UNIVERSAL BRACE ROD
38			1	* 2115	UNIVERSAL 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 SWVL ADPTR
48					
49			1	* 1659	ADAPTER UNION, 1/4 F.P.T. BOTH ENDS

REF# QTY IN KIT PART# DESCRIPTION  
 A4468-40 HPS4560 \* PART OF 6898 BOLT BAG

50		1	* 765	1/4" BRASS BAR STREET ELL
51	2		2780	1/4" BRASS BAR STREET ELL (FORGED)
52				
53				
54				
55	2		1658	QUILL
56				
57				
58				
59				
60				
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63				
64				
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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 3/16 X 8
76				
77	1		90054	5/16 X 1-1/2 (NC) GR. 5 CAPSCREW
78	4	3	* 90042	5/16 X 1 (NC) GR.5 CAPSCREW
79	6	3	* 90360	5/16 LOCKWASHER
80	7	3	* 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	* 90111	3/8 X 1-1/2 (NC) GR. 5 CAPSCREW
88		1	* 90457	3/4 X 1-1/2 (NC) GR. 5 CAPSCREW
89		1	* 90367	3/4 LOCKWASHER
90		1	* 90345	3/4 (NC) NUT
91		4	* 5743	5/16 STUD
92				
93				
94				
101		1	* 90319	1/2 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 ADAPTOR (46) INTO PORT. PLACE LIFT CYLINDER WITH INSTALLED ADAPTOR 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 DRIVER 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

**VEHICLES WITH CRUISE CONTROL:** IT MAY BE NECESSARY TO RELOCATE CRUISE CONTROL UNIT TO ALLOW INSTALLATION OF FISHER VALVE PLATE. REMOVE UNIT FROM INNER FENDERWELL. AFTER VALVE, CABLES AND PLATE ARE IN PLACE, REINSTALL CRUISE CONTROL UNIT TO INNER FENDERWELL IN THE MOST CONVENIENT LOCATION.

- A.** USING BENCH VISE TO HOLD CONTROL VALVE ASSEMBLY (2) REMOVE CLOSURES FROM VALVE PORTS. SCREW 90 DEGREE SWIVEL ADAPTOR UNIONS (47) INTO "IN" AND "OUT" PORTS. SCREW QUILL (55) INTO INSTALLED ADAPTOR 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 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.** LOCATE VALVE PLATE, WITH VALVE AND CABLES ATTACHED, ON TOP OF DRIVER'S SIDE INNER FENDERWELL SO THAT VALVE IS NEAR LEVEL AND CABLES RUN IN AS SMOOTH A PATH AS POSSIBLE. USING THE HOLES IN EACH END OF VALVE PLATE AS A GUIDE, DRILL TWO 11/32" HOLES THROUGH THE FENDERWELL. FASTEN THE VALVE PLATE TO THE FENDERWELL WITH TWO 5/16 X 1 CAPSCREWS (78), FLATWASHERS (81), LOCKWASHERS (79) AND NUTS (80). ATTACH 90 DEGREE BENT END OF VALVE PLATE BRACE (30) TO VALVE PLATE AS SHOWN IN ILLUSTRATION WITH A 5/16 X 1 CAPSCREW (78), LOCKWASHER (79) AND NUT (80). USING HOLE IN OTHER END OF BRACE AS A GUIDE, DRILL ANOTHER 11/32" HOLE THROUGH THE FENDERWELL AND FASTEN WITH A 5/16 X 1 CAPSCREW (78), FLATWASHER (81), LOCKWASHER (79) AND NUT (80).

**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 THE 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.** LOOSEN AIR CONDITIONING AND ALTERNATOR BELTS. REMOVE AND SAVE NUTS AND LOCKWASHERS HOLDING FAN TO WATER PUMP FLANGE. REMOVE FAN AND FAN STUDS. SCREW IN NEW STUDS (91) APPROXIMATELY 3/8" OR UNTIL TIGHT AGAINST CENTER PUNCH. REINSTALL FAN PULLEY AND INSTALL DRIVE SHEAVE (24). REINSTALL FAN AND SECURE ALL WITH THE FOUR ORIGINAL LOCKWASHERS AND NUTS. (**CONSULT TORQUE CHART FOR PROPER TORQUE FOR THESE FASTENERS**). TIGHTEN ALTERNATOR BELT.

## **5. PUMP TANK AND PUMP BRACKET**

**A.** REMOVE BELT FROM AIR CONDITIONER COMPRESSOR AND PIVOT COMPRESSOR ALL THE WAY OUT. INSERT A 3/4 X 1-1/2 CAPSCREW (88) UP THROUGH COMPRESSOR BRACKET. HOLDING BOLT UP, SWING COMPRESSOR BACK IN. REMOVE AND DISCARD 3/8 BOLT HOLDING COMPRESSOR BRACKET BRACE TO COMPRESSOR BRACKET. (SAVE LOCKWASHER). INSTALL FISHER PUMP BRACKET (26) OVER 3/4" BOLT AND FASTEN WITH A 3/4" LOCKWASHER (89) AND NUT (90). INSTALL THE 3/8 X 1-1/2 GR. 5 CAPSCREW (87) WITH PREVIOUSLY REMOVED LOCKWASHER AND THE UNIVERSAL BRACE TAB (38) THROUGH COMPRESSOR BRACKET BRACE AND BRACKET. REINSTALL BELT AND TIGHTEN.

**B.** HOLDING PUMP TANK (1) IN BENCH VISE, SCREW 1/4" SWIVEL ADAPTOR UNION (49) ONTO TO PRESSURE PORT AND SCREW QUILL (55) INTO RETURN PORT. INSTALL PUMP SHEAVE (25) ON TO PUMP SHAFT USING LOCKNUT SUPPLIED WITH PUMP. WHEN INSTALLING LOCKNUT MAKE SURE THAT THE LOCKNUT TIGHTENS AGAINST THE PUMP SHEAVE, AND NOT AGAINST THE PUMP SHAFT SHOULDER. AN OPTIONAL 1/2 PLAIN WASHER (101) SHOULD BE INSTALLED ONLY IF THE LOCKNUT TIGHTENS AGAINST THE PUMP SHAFT SHOULDER AND NOT THE SHEAVE.

**CAUTION: TO AVOID DAMAGE TO PUMP SHAFT, MAKE SURE THE 1/2 FLATWASHER FITS ON OVER THE SHAFT SHOULDER BEFORE TIGHTENING THE LOCKNUT.**

REMOVE PUMP FROM VISE & INSTALL SADDLE BRACKET (35) ON OVER FRONT OF PUMP. SECURE WITH A 5/16 X 1-1/2 GR.5 CAPSCREW (77), LOCKWASHER (79) & NUT (80). ATTACH SADDLE BRACKET & PUMP TO PUMP BRACKET USING TWO 5/16 X 1 CAPSCREWS (78), FLATWASHER (81), LOCKWASHERS (79) AND NUTS (80).

**C.** INSTALL 56" V-BELT (23) ON OVER INSTALLED DRIVE & PUMP SHEAVES. ALIGN SHEAVES & 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. INSTALL ONE 5/16 NUT (80) & 5/16 FLATWASHER (81) ONTO UNIVERSAL BRACE ROD (37). INSTALL BENT END OF BRACE ROD BETWEEN EARS OF TANK STRAP WHILE INSERTING OTHER END THROUGH LIFT HOOK ON ENGINE. FASTEN BRACE ROD TO EARS OF TANK STRAP WITH A 1/4 X 1-1/4 CAPSCREW (84), LOCKWASHER (85) & 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.

## **6. HYDRAULIC HOSE INSTALLATION**

**A.** ATTACH 26" H.P. HOSE (16) TO 1/4" SWIVEL ADAPTOR ON PUMP TANK AND PUSH 26" L.P. HOSE (17) ONTO 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 ADAPTOR. INSTALL 9/16 O-RING END OF 60" H.P. HOSE (18) TO LIFT CYLINDER PORT OF VALVE (SPOOL #1). INSTALL 9/16 O-RING END OF TWO 54" HOSES (19) TO 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. (NEWER VEHICLES MAY NOT REQUIRE DRILLING.) INSTALL SPLIT HOSE GROMMET (74) AROUND HOLE. ROUTE 60" AND 54" HOSES

OUT THROUGH THIS HOLE AND THROUGH GRILL NEAR CENTER OF VEHICLE. ATTACH 60" HOSE TO PREVIOUSLY INSTALLED 90 DEGREE SWIVEL ADAPTOR ON LIFT CYLINDER.

**INSTALL INLINE OIL FILTER AS PER FILTER KIT (7) INSTRUCTIONS FOUND AT END OF THIS DOCUMENT.**

## **7. DISCONNECT ASSEMBLY**

**A.** WITH DISCONNECT MOUNTING PLATE (39) HELD IN BENCH VISE, INSTALL DISCONNECT HALVES AS SHOWN IN ILLUSTRATION. BULKHEAD ADAPTOR (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 54" RIGHT ANGLE HOSE (SPOOL #2, CYL. B) TO BACK OF FEMALE DISCONNECT INSTALLED IN TOP HOLE OF DISCONNECT BRACKET. CONNECT 54" 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). 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.