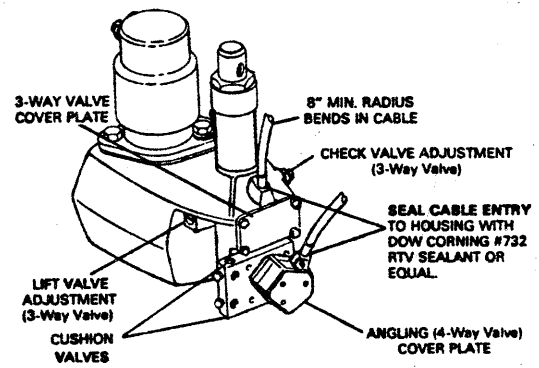
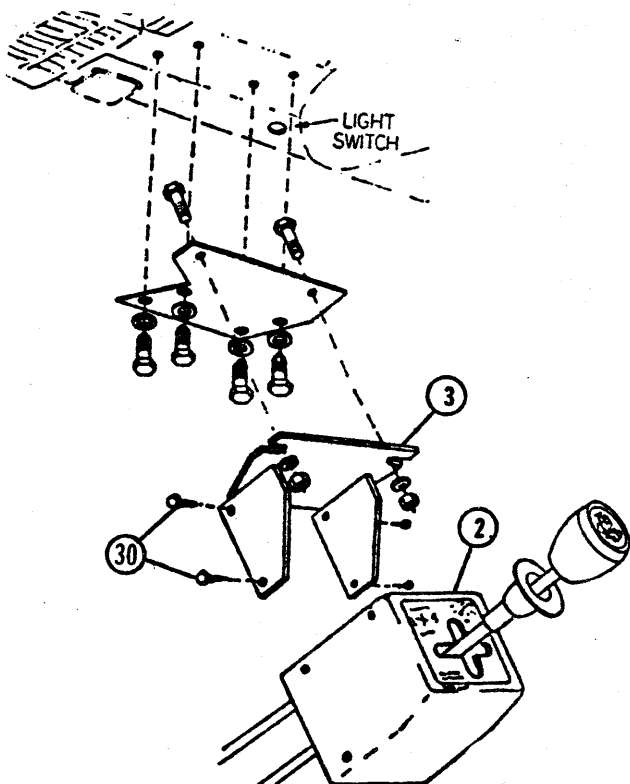
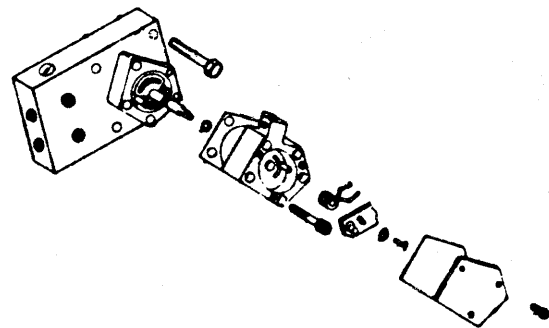


TYPICAL DASH MOUNT

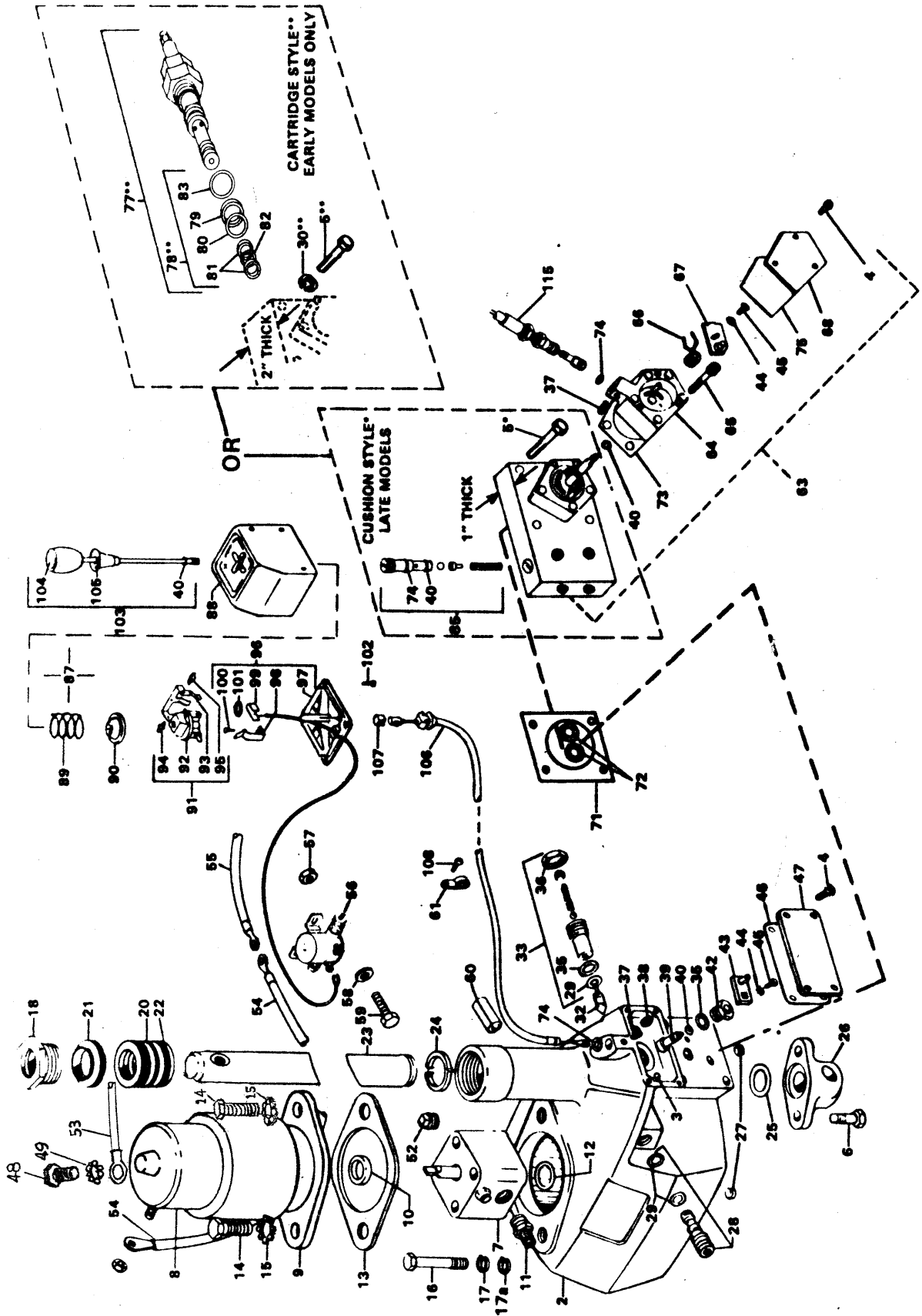
LIFT VALVE & GENERAL



ANGLE VALVE



REF#	QTY	PART#	DESCRIPTION
1	1	6972	FISHER COML ELEC HYD PAK 2500 PSI
2	1	A5795	SINGLE LEVER CONTROL W/CABLES
2A	1	A5843	CABLE W/CLIP & O-RING (108")
2B	1	A5844	CABLE W/CLIP & O-RING (ADJ 108")
3	1	5847	SLC ADAPTER BRACKET
4	2	A5166	2" X 16" ANGLE CYLINDER ASSEMBLY
5	2	5142	ANCHOR PIN (LONG)
6	2	5150	ANCHOR PIN (SHORT)
7	2	90601	1/4 X 1-1/2 COTTER PIN
8	4	90013	1/4 X 2 COTTER PIN
9	2	6990	CLEVIS PIN
10	2	21096	DISCONNECT ASSEMBLY
11	2	1588	DUST PLUG
12	2	5804	1/4" HEX NIPPLE
13	4	765	1/4" BRASS BAR STREET ELL
14	2	2780	1/4" BRASS BAR STREET ELL (FORGED)
15	1	5129	FUSEHOLDER
16	2	2540	#16 RING TERMINAL
17	1	4302	3M 560 INLINE CONNECTOR
18	1	4303	FEMALE COUPLER
19	1	5048	MALE COUPLER
20	1	5794	SOLENOID
21	1	7031	WIRE - #4 AWG X 18'
22	1	5798	60" GROUND CABLE (BLACK)
23	4	4204	#4 RING TERMINAL
25	4	3042	GROMMET
26	1	5802	HOSE GROMMET
27	4	3666	TIE WRAPS
28	2	5801	CABLE CLAMP
29	2	5803	#10 X 1" SELF TAPPING SCREWS
30	4	5800	#8 X 5/8" SELF TAPPING SCREWS
31	2	90016	* 1/4 X 3/4 (NC) CAPSCREW
32	2	90311	* 1/4 FLATWASHER
33	2	90350	* 1/4 (NC) LOCKNUT
34	1	90692	* 5/16 EX TOOTH LOCKWASHER
35	1	90691	* 5/16-18 X 1/2 CAPSCREW
36			
37	1	5703	#16 WIRE, 8' LONG
38	1	5793	#16 BARREL CONNECTOR
39	1	376	HOSE - 32" HP 1/4P - 1/4P
40	1	4424	HOSE - 36" HP 1/4P - 1/4P
41	2	90443	1/4 X 1-1/2 SHEET METAL SCREW



SERVICE PARTS LIST

Item	Part No.	Qty.	Description	Item	Part No.	Qty.	Description
* Notes parts for Crossover Relief with 1" thick block and Cushion Valves (Late Models)							
**Notes parts for Crossover Relief with 2" thick block and Cartridge Valve (Early Models)							
1	A5796	1	Fisher Electric/Hydraulic Pak 6" (2500 PSI) (Not Shown)	57	90350	2	Locknut — 1/4"-20
	A5808	1	Fisher Electric/Hydraulic Pak 10" (4000 PSI) (Not Shown)	58	90311	2	Flat Washer — 1/4" Standard
	6972	1	Fisher Commercial EHP 6" (2500 PSI) (Not Shown)	59	90016	2	Capscrew — 1/4"-20 x 3/4"
Item 1 consists of the Out-Front PAK only, and does not include the Single Lever Control, cables, hoses or cylinders Available with Cushion Style Crossover Reliefs only.							
2		1	Main Housing (6")	60	5802	2	Hose Grommet
		1	Main Housing (10")	61	5801	2	Cable Clamp
		1	Main Housing (6" Commercial)	63	A5838-25	1	Angling Valve Assembly — 6" (2500 PSI)*
3		1	Expansion Plug — 1/4"		A5838-40	1	Angling Valve Assembly — 10" (4000 PSI)*
4	6083	4	Hex Head Tapping Screw — #10-24 x 5/8"	37	6062	1	Half Dog Point Set Screw — #10-24 x 3/8"
5	90035	4	Capscrew — 1/4"-20 x 2-3/4" — Grade 5**	64	6579	1	Cable & Linkage Enclosure
		4	Capscrew Thread Forming — 1/4"-20 x 1-3/4**	66	6576	6	Socket Head Capscrew — 1/4"-20 x 1-1/2"
		2	Capscrew Thread Forming — 5/16"-18 x 1-1/4"	67		1	Torsion Spring
7	A5818	1	Hydraulic Pump Assembly (MTE) (1450-1800 PSI)	44		1	Valve Lever
	7049	1	Hydraulic Pump Assembly (MTE) Die Cast (Includes Items 11, 12, 16, 17, 17a) (1450-1800 PSI)	45		1	Lock Washer #6 — External
	7052	1	Hydraulic Pump Assembly (MTE) (6" Commercial) (2050-2200 PSI)	68	6573	1	Pan Head Machine Screw — #6-32 x 1/4"
8	A5819	1	Motor Assembly — 4"	69	6063	3	Enclosure Cover
9	6577	1	Flange w/Bearing & Seal	4	6063	3	Hex Head Tapping Screw — #10-24 x 5/8"
10	6578	1	Oil Seal Only	70	5839	1	Angling Valve Gasket & O-Ring "KIT" * (Not Shown)
11	5820	1	Suction Filter	71	6506	1	Manifold Gasket
	7053	1	Suction Filter (Die Cast Pump)	72		2	O-Ring — 015
12	5821	1	O-Ring — 115	40	5833	1	O-Ring — 008
13	5822	1	Gasket	73	6580	1	Shim Spacer — .0006" (Silver) Option
14	90177	2	Capscrew — 7/16"-14 x 1-1/2" — Grade 5		6581	1	Shim Spacer — .00035" (Clear) Option
15		3	Lock Washer — 7/16" External	74		1	O-Ring — 010
16		2	Capscrew — 5/16"-18 x 2-3/4"	75	5840	1	Cover Gasket
	90073	2	Capscrew — 5/16"-18 x 2-1/4" — Gr. 5 (Die Cast Pump)	77	A4950-25	1	Crossover Relief Valve — 2500 PSI** w/O-Rings
17	90360	2	Lock Washer — 5/16"		A4950-40	1	Crossover Relief Valve — 4000 PSI** w/O-Rings
	90608	2	Bellville Spring Washers (Die Cast Pump)	78	A5044	1	O-Ring Kit **
17a		2	Flat Washer — 1/4" Standard (Die Cast Pump)	79	3721	1	Back-Up Ring — 015
18	5783	1	Packing Nut — 1-1/2" Ram	80	3714	1	O-Ring — .56 ID x .06 W
	6998	1	Packing Nut — 2" Ram	81	3718	2	Back-Up Ring — 013
20	339	1	Packing Set — 1-1/2" Ram	82	3719	1	O-Ring — .44 ID x .06 W
	3623	1	Packing Set — 2" Ram	83	3712	1	O-Ring — .765 ID x .097 W
21	341	1	Wiper Ring — 1-1/2" Ram	85	6529	1	Cushion Valve Kit — * (Includes 2 Sets) (Pressure determined by adjustment)
	3624	1	Wiper Ring — 2" Ram	40	5833	2	O-Ring — 008
22	338	1	Special Washer — 1-1/2" Ram	74		2	O-Ring — 010
	3621	1	Special Washer — 2" Ram	87	A5929	1	Single Lever Control w/90" Cables
23	5509	1	Plunger — 1-1/2" x 6" Ram w/Retainer Ring		A5795	1	Single Lever Control w/108" Cables
	336	1	Plunger — 1-1/2" x 10" Ram w/Retainer Ring	88		1	Body w/Label
	6994	1	Plunger — 2" Ram w/Retainer Ring	89	6065	1	Centering Spring
24	8332	1	Retainer Ring — 1-1/2" Ram	90		1	Spring Retainer
	6997	1	Retainer Ring — 2" Ram	91	6584	1	Piston Assembly
25	5823	1	O-Ring — 216	92		1	Pivot Platen
26	5824	1	Base Lug	93	6064	1	Contact Strip
	6999	1	Base Lug (6" Commercial)	94		2	Ball Stud
27		2	Socket Head Pipe Plug — 1/4"	95		1	Hex Head Thread Forming Screw — #10 x 3/8" Hi-Lo
28	5826	1	Lift Valve w/O-Rings	96	A5841	1	Bottom Cover Assembly
29	5827	2	O-Ring — 012	97		1	Bottom Cover
30	90359	4	Lock Washer — 1/4**	98		1	Detent Spring
32	5828	1	Shuttle	99		1	Contact Tube Assembly
33	A5829	1	Check Valve Assembly w/O-Rings	100		1	Hex Head Thread Forming Screw — #6 x 3/8" Hi-Lo
29	5827	1	O-Ring — 012	101		1	Retaining Ring — 3/8"
35	5831	1	O-Ring — 112	102	5800	8	Hex Head Thread Forming Screw — #8 x 5/8" Hi-Lo
36		1	Jam Nut — 5/8"-18	103	A5842	1	Knob & Lever Assembly
37	6062	1	Half Dog Point Set Screw — #10-24 x 3/8"	104	6528	1	Lens Label
38		1	Socket Pipe Plug — 1/8"	105	5857	1	Lockpool w/Label
39	5832	1	Camshaft	40	5833	1	O-Ring — 008
40	5833	1	O-Ring — 008	106	5931	1	Cable w/Clip & O-Ring (90")
35	5831	1	O-Ring — 112		5843	1	Cable w/Clip & O-Ring (108")
42	5836	1	Hub Nut	115	5930	1	Cable w/Clip & O-Ring (Adjustable 90")
43		1	Valve Lever		5844	1	Cable w/Clip & O-Ring (Adjustable 108")
44		1	Lock Washer #6 — External	74		1	O-Ring — 010 (Fits All Cables)
45		1	Pan Head Machine Screw — #6-32 x 1/4"	107	4418	1	Ball Stud Retainer Clip (Fits All Cables)
46	5837	1	Cover Gasket	108	5803	2	Tapping Screw — #10 x 1"
47	6572	1	Valve Cover Plate				
48	90691	1	5/16-18 x 1/2" Capscrew				
49	90692	2	5/16" Ex Tooth Lockwasher				
50							
51							
52		1	Pipe Plug — 3/8"				
53	5798	1	Grounding Cable — 60" — 6 Ga. (Black)				
54	5797	1	Battery Cable — 60" — 4 Ga. (Red)				
55	5799	1	Battery Cable — 22" — 4 Ga. (Red)				
58	5794	1	Solenoid Switch				

BEFORE BEGINNING THE HYDRAULICS INSTALLATION, ALL OF THE ATTACHMENTS, INCLUDING THE HEADGEAR AND LIFT ARM, MUST BE INSTALLED ON THE VEHICLE.

1. HYDRAULICS ASSEMBLY

A. USING A BENCH VISE TO HOLD THE 36" H.P. HOSE (40), ATTACH ONE 1/4" BRASS BAR STREET ELL (13) TO HOSE. ATTACH THE MALE HALF OF THE DISCONNECT ASSEMBLY (10) TO THE BRASS ELL. PLACE THE 32" H.P. HOSE (39) IN THE BENCH VISE, INSTALL ANOTHER ELL (13) AND ATTACH THE FEMALE HALF OF THE DISCONNECT ASSEMBLY TO THE ELL.

B. USING A BENCH VISE TO HOLD ANGLE CYLINDERS (4), REMOVE CLOSURES FROM PORTS. SCREW BRASS FORGED STREET ELL (14) INTO PORTS. WHEN TIGHT, ELLS SHOULD BE PARALLEL TO CYLINDER AND POINTING TOWARDS LIVE END. INSTALL 36" H.P. HOSE WITH MALE DISCONNECT HALF TO ELL IN ONE CYLINDER. THIS BECOMES THE PASSENGER'S SIDE CYLINDER. INSTALL THE HOSE WITH THE FEMALE DISCONNECT HALF TO THE REMAINING CYLINDER. THIS WILL BE THE DRIVER'S SIDE CYLINDER. INSTALL CYLINDERS TO A-FRAME AND BLADE ON THEIR RESPECTIVE SIDES SO THAT ELLS ARE ON THE INSIDE OF CYLINDER. SECURE CYLINDERS WITH SHORT ANCHOR PINS (6) AT THE PORT END AND LONGER PINS (5) AT THE RAM END. SECURE ANCHOR PINS WITH COTTER PINS (8).

C. INSTALL THE FISHER ELECTRIC HYDRAULIC PAK (EHP) (1) TO THE VEHICLE BETWEEN THE BASE OF THE HEADGEAR AND THE ATTACHING EARS ON THE BOTTOM SIDE OF THE LIFT ARM. CONNECT TO HEADGEAR AND LIFT ARM WITH CLEVIS PINS (9), AND COTTER PINS (7).

D. REMOVE CLOSURES FROM UPPER AND LOWER ANGLE PORTS ON THE EHP AND INSTALL ONE 1/4" HEX NIPPLE (12) AND DUST PLUG (11) TO EACH PORT. SCREW ONE 1/4" BRASS BAR STREET ELL (13) ONTO EACH NIPPLE. INSTALL FEMALE HALF OF DISCONNECT TO UPPER PORT (PASS. SIDE) AND MALE HALF TO LOWER PORT (DRIVER'S SIDE).

2. SINGLE LEVER CONTROL AND CABLE INSTALLATION

A. DRILL THREE 5/8" HOLES IN FIREWALL FOR CONTROL CABLES AND WIRING HARNESS USING DRILLING GUIDE AS A REFERENCE ONLY. BE SURE THAT BOTH SIDES OF FIREWALL ARE CLEAR OF WIRES OR ANY OTHER OBSTRUCTIONS BEFORE DRILLING. (REFER TO DASH BRACKET KIT FOR DRILLING AND DASH BRACKET MOUNTING INSTRUCTIONS FOR YOUR SPECIFIC VEHICLE).

B. CONNECT CONTROL HEAD ADAPTOR BRACKET (3) TO CONTROL HEAD ASSEMBLY (2) WITH FOUR #8 X 5/8" HEX HEAD SELF TAPPING SCREWS (30). ROUTE THE TWO CONTROL CABLES OUT THROUGH THE 5/8" HOLES IN THE FIREWALL, ALONG THE INNER FENDERWELL, TO THE FRONT OF THE VEHICLE. CONNECT THE ADAPTOR BRACKET WITH CONTROL HEAD TO THE DASH BRACKET. INSTALL RUBBER GROMMETS (25) AROUND CABLES WHERE THEY PASS THROUGH FIREWALL.

C. ROUTE THE CONTROL CABLES OUT BETWEEN THE RADIATOR AND THE RADIATOR WEB THEN OUT THROUGH THE GRILL LEFT OF THE CENTER OF VEHICLE TO THE EHP. IF THIS KIT IS BEING INSTALLED ON A VEHICLE WITH TILT HOOD, BE SURE TO ROUTE THE CABLES SO THAT THE HOOD CAN BE TILTED WITHOUT DISCON-

NECTING OR DAMAGING THE CABLES. IF THERE IS NOT A CONVENIENT SPOT TO ROUTE THE CABLES OUT PAST THE RADIATOR, DRILL TWO 5/8" HOLES THROUGH THE RADIATOR WEB AND INSTALL RUBBER GROMMETS (25) AROUND CABLES WHERE THEY PASS THROUGH WEB. THE CABLES SHOULD RUN IN AS SMOOTH A PATH AS POSSIBLE, ANY EXTRA LENGTH IN THE CABLES SHOULD BE TAKEN UP WITH A LARGE LOOP OR LOOPS IN THE ENGINE COMPARTMENT. SLIP HOSE GROMMET (26) ON OVER CABLES FOR PROTECTION WHERE THEY PASS THROUGH GRILL OR WHERE THEY MAY CHAFF ON ANY OTHER PART OF VEHICLE.

D. TO INSTALL THE LIFT CABLE, REMOVE THE RECTANGULAR VALVE COVER PLATE AND GASKET FROM THE EHP (4 SCREWS). INSERT THE CABLE INTO THE HOLE ABOVE THE RECTANGULAR OPENING UNTIL YOU CAN PLACE THE SPADE END OF THE CABLE OVER THE VALVE LEVER PIN. OFTEN, THIS CAN BE DONE BY ROTATING THE CABLE SO THE SPADE IS PARALLEL TO THE LEVER. INSERT THE CABLE THE REST OF THE WAY INTO ITS HOLE AND SECURE WITH THE SPECIAL DOG POINT SET SCREW.

NOTE: BE SURE THE SET SCREW ENTERS THE TOP GROOVE IN THE CABLE. REPLACE THE RECTANGULAR COVER AND GASKET WITH THE FOUR SCREWS.

E. TO INSTALL THE ANGLE CABLE, REMOVE THE PENTAGON SHAPED COVER (3 SCREWS) FROM THE ANGLE VALVE. CONNECT CABLE AS ABOVE BUT LEAVE THE DOG POINT SET SCREW JUST LOOSE ENOUGH TO ROTATE THE BASE END OF THE CABLE FITTINGS. ACTUATE THE SINGLE LEVER CONTROL TO THE FULL LEFT AND RIGHT POSITIONS THEN RETURN IT TO CENTER AND LOCK IN PLACE. ADJUST CABLE AND FITTING TO ALIGN THE VALVE LEVER PIN TO THE CENTERING SPRING ROLL PIN AND VALVE LEVER ATTACHING SCREW (3 POINT ALIGNMENT). RELEASE LOCK ON CONTROL HEAD. FOR FINAL ADJUSTING PROCEDURE SEE OPERATION PARAGRAPH.

F. APPLY DOW CORNING #732 RTV SEALANT (OR EQUAL) AROUND CABLES WHERE THEY ENTER THE EHP HOUSING.

G. FASTEN CONTROL CABLES TO INNER FENDERWELL MIDWAY BETWEEN FIREWALL AND RADIATOR WEB WITH CABLE CLAMPS (28). (REMEMBER TO LEAVE SLACK IN CABLES IF VEHICLE HAS A TILT HOOD). DRILL A 9/64" HOLE AND FASTEN CABLE CLAMP TO INNER FENDER WITH A #10 X 1" SELF TAPPING SCREW (29).

3. ELECTRICAL CONNECTIONS

A. LOCATE THE EHP SOLENOID (20) AS CLOSE TO THE VEHICLE BATTERY AS POSSIBLE. (ON NON-MOVING PART OF VEHICLE IF TILT HOOD). IF THE SOLENOID HAS A BLACK PLASTIC HOUSING, LOCATE IT ON A HORIZONTAL SURFACE WITH THE TERMINALS IN THE VERTICAL POSITION. IF THE SOLENOID HAS A BRIGHT METAL HOUSING, LOCATE IT ON A VERTICAL SURFACE WITH THE TERMINAL END OF THE UNIT DOWN. IF THE BACK SIDE OF THE MOUNTING SURFACE IS READILY ACCESSIBLE USE THE TWO HOLES IN THE SOLENOID AS GUIDES TO MARK AND DRILL TWO 9/32" HOLES. FASTEN SOLENOID TO VEHICLE WITH TWO 1/4" X 3/4" CAPSCREWS (31), FLATWASHERS (32) AND LOCK NUTS (33). IF THE BACK SIDE OF THE MOUNTING SURFACE IS INACCESSIBLE, DRILL TWO 5/32" PILOT HOLES AND SECURE THE SOLENOID WITH 1/4 X 1-1/2 SELF TAPPING SCREWS (41).

B. STRIP ONE END OF THE 18' #4 RED WIRE (21) AND CRIMP ON ONE #4 RING TERMINAL (23). ATTACH THIS CONNECTOR TO ONE OF THE LARGE TERMINALS ON THE SOLENOID. ROUTE THE CABLE TO THE BATTERY, CUT TO LENGTH, STRIP END

AND CRIMP ON ONE #4 RING TERMINAL AND ATTACH IT TO THE POSITIVE TERMINAL. STRIP ONE END OF THE REMAINING PIECE OF #4 WIRE AND CRIMP ON ANOTHER #4 RING TERMINAL. CONNECT THIS END TO THE REMAINING LARGE TERMINAL ON THE SOLENOID. ROUTE THE CABLE OUT THROUGH THE GRILL TO THE EHP. CUT THE CABLE TO LENGTH, STRIP END, CRIMP ON ANOTHER #4 RING TERMINAL AND CONNECT IT TO THE MOTOR TERMINAL ON THE EHP. CONNECT ONE END OF THE BLACK 60" #6 GROUND CABLE (22) TO THE GROUND CONNECTION (THREADED HOLE) ON THE SIDE OF THE ISARMATIC UNIT WITH A 5/16-18 X 1/2 CAPSCREW (35) AND LOCKWASHER (34). ROUTE THE OTHER END BACK THROUGH THE GRILL ALONG WITH THE MOTOR WIRE TO THE ENGINE COMPARTMENT AND CONNECT IT TO THE ENGINE GROUND TERMINAL OR OTHER CONVENIENT GROUND LOCATION. (AGAIN, IF THE VEHICLE HAS TILT HOOD, LEAVE SLACK IN THE CABLES TO ALLOW TILTING OF HOOD).

C. FISHER ENGINEERING RECOMMENDS THAT THE SOLENOID CIRCUIT (ACTIVATED BY THE SINGLE LEVER CONTROL HEAD SWITCH) BE CONNECTED TO A POWER SOURCE THAT IS ENERGIZED ONLY WHEN THE VEHICLE IGNITION SWITCH IS "ON". SEE VEHICLE OWNERS MANUAL OR SERVICE MANUAL FOR PROPER INSTALLATION POINT OF POWER TAP TO ELECTRICAL SYSTEM. CUT THE SHORT WIRE LOOP ON THE FUSE HOLDER (15) IN HALF AND CONNECT ONE SIDE TO POWER SOURCE WITH APPROPRIATE CONNECTOR (17,18,19) AS MENTIONED ABOVE. INSERT ONE END OF THE #16 WIRE (37) IN THROUGH THE FIREWALL ALONG WITH ONE OF THE CONTROL CABLES. USING A #16 BARREL CONNECTOR (38) ATTACH THIS WIRE TO THE OTHER END OF THE FUSE HOLDER WIRE. LEAVE JUST ENOUGH WIRE INSIDE THE CAB TO POSITION THE FUSE HOLDER OUT OF THE WAY. ROUTE THE CONTROL HEAD WIRE OUT TO THE ENGINE COMPARTMENT ALONG WITH THE OTHER CONTROL CABLE. ROUTE THIS WIRE ALONG WITH THE FUSE HOLDER WIRE TO THE SOLENOID. CUT BOTH WIRES TO LENGTH, STRIP ENDS AND CRIMP ON #16 EYE TERMINALS (16). CONNECT WIRES TO THE TWO SMALL TERMINALS. (EITHER WIRE CAN GO ONTO EITHER TERMINAL.) WHEN FINAL ELECTRICAL CONNECTION IS COMPLETE, RECONNECT BATTERY TERMINALS. CHECK ALL FITTINGS, CAPSCREWS AND NUTS FOR TIGHTNESS. SECURE WIRES WITH NYLON TIE WRAPS (27).

4600 INTERNATIONAL

INSTALLATION OF AN ELECTRIC HYDRAULIC PAK ON THE 1990 SERIES 4600 INTERNATIONAL (PEC ATT KIT 7104) REQUIRES THE SUBSTITUTION OF SECTION 2.D AND 2.E IN ELECTRIC HYDRAULIC PAK 6970 WITH THE FOLLOWING:

- D.** BOTH CABLES ARE ADJUSTABLE AND INSTALL IN THE SAME MANNER. MOVE CONTROL HEAD LEVER LEFT AND RIGHT, UP AND DOWN, AND LOCK IN NEUTRAL POSITION. REMOVE THE RECTANGULAR VALVE COVER PLATE AND GASKET FROM EHP (4 SCREWS). IDENTIFY THE RAISE CABLE AND INSERT INTO THE HOLE ABOVE THE RECTANGULAR OPENING UNTIL YOU CAN PLACE THE SPADE END OF THE CABLE OVER THE VALVE LEVER PIN. OFTEN, THIS CAN BE DONE BY ROTATING THE CABLE SO THE SPADE IS PARALLEL TO THE LEVER. INSERT THE CABLE THE REST OF THE WAY INTO ITS HOLE AND SECURE WITH THE SPECIAL DOG POINT SET SCREW.

NOTE: BE SURE THE SET SCREW ENTERS THE TOP GROOVE IN THE CABLE. REPLACE THE RECTANGULAR COVER AND GASKET WITH FOUR SCREWS.

- E.** REMOVE THE PENTAGON SHAPED COVER (3 SCREWS) FROM THE ANGLE VALVE. CONNECT CABLES ABOVE BUT LEAVE THE DOG POINT SET SCREW JUST LOOSE ENOUGH TO ROTATE THE BASE END OF THE CABLE FITTINGS. ADJUST CABLE FITTING TO ALIGN THE VALVE LEVER PIN TO THE CENTERING SPRING ROLL PIN AND VALVE LEVER ATTACHING SCREW (3 POINT ALIGNMENT). RELEASE LOCK ON CONTROL HEAD. FOR FINAL ADJUSTING PROCEDURE, SEE OPERATION PARAGRAPH. REPLACE COVER AND GASKET.

NOTE: THE 108" CABLES PN 5843 AND 5844 HAVE TO BE REPLACED WITH (2) 144" CABLES PN 7375

INSPECTION AND ROUTINE SERVICE

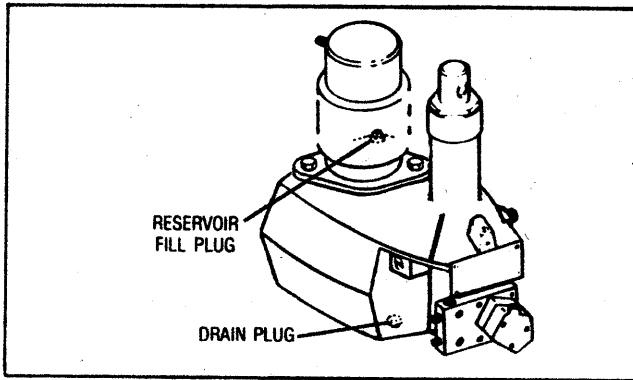
GENERAL

Scratching, denting or marring machined surfaces can make parts unserviceable. Cleanliness is essential when servicing the unit.

The following recommendations are intended as a general guide for regular care and maintenance. Operating under adverse conditions or sustained loads requires more frequent servicing.

CHECKLIST

1. Check oil level with unit on vehicle and ram collapsed. If low, fill to top of reservoir fill hole, located at rear of housing.



NOTE:

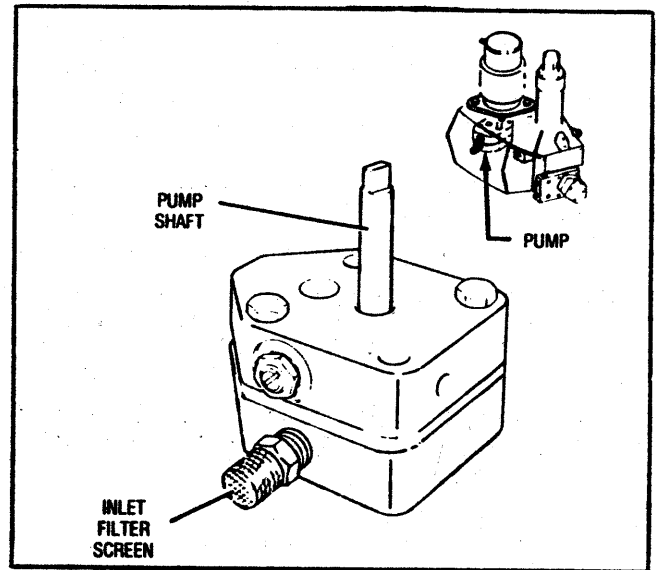
Be sure to fill through reservoir fill hole. Never fill through motor/pump opening if, for instance, motor has been removed for servicing. Filling through motor/pump hole can cause overfilling and damage entire unit.

Use automatic transmission fluid. If that is not available, you may also use SAE 10W nondetergent motor oil (SAE 5W in extreme cold).

Capacity of the system is summarized in the following chart. Note that the system holds less if angling cylinders and hoses have not been drained.

CYLINDER STROKE		CAPACITIES	
LIFT	ANGLE	EHP RESERVOIR ONLY	TOTAL (w/HOSES & CYL)
6"	10"	1½ QT.	2½ QT.
10"	12"	1½ QT.	2¼ QT.
6"	16"	1½ QT.	2¼ QT.

2. Drain and flush the hydraulic reservoir at the end of each plowing season. Use the drain plug located in the bottom front of the reservoir.
3. If rams are leaking excessively, tighten packing nuts. Do not tighten more than 1/4 turn after you feel the nut contact the packings. If leak continues, replace packings and wiper ring in nut. Over-tightening affects cylinder operation and packing life.
4. Check 3-way and 4-way valves for excessive oil leaks. Replace O-rings if they are damaged.
5. Periodically clean and tighten all electrical connections.
6. At beginning of plowing season, inspect and test battery. Recharge or replace, if necessary. Suggested MINIMUM vehicle electrical system: 70 amp hr./550 CCA Battery, 55 amp Alternator.
7. The pump inlet filter screen should be cleaned whenever the pump is removed. If the screen is damaged, replace it.



8. During periods of inactivity, leave the EHP lift ram collapsed. This will prevent damage to the surface of the plunger. Also, coat the exposed surfaces of the angling cylinders with grease to prevent rust or corrosion.

TROUBLESHOOTING AND TUNE-UP GUIDE 6970

Cab Control Position	PROBLEM DESCRIPTION	DEFINE PROBLEM AND FOLLOW STEPS BELOW.						
Angle	Blade will not angle or angles too slow. Time: 1½" dia. cylinders — 4 seconds 2" dia. cylinders — 8 seconds	Check if motor runs, if not, see Electrical Diagnosis B	Check oil level. (Page 7)	Verify 4-way valve lever travel. See C.	Adjust lift valve out. See E1.	Check Quick Couplers & Angling Cylinder Packings	Remove Pump. Clean filter screen.	
Raise	Blade will not raise or raises too slow. Time: 1½" x 6" lift ram — 2 seconds 1½" x 10" lift ram — 3 seconds 2" x 6" lift ram — 4 seconds			Verify 3-way valve lever travel. See C.	Adjust lift valve in. See E1.			Check lift ram packing nut.
Neutral	Blade will not remain angled while plowing.	Adjust cushion valves. See A.					FURTHER TROUBLESHOOTING REQUIRES THE USE OF TEST EQUIPMENT. RETURN UNIT TO FACTORY	
Neutral	Motor continues to run in neutral.	Disconnect cab control wire from solenoid.	If motor runs, solenoid is shorted. Replace solenoid. If motor stops, short is in primary (cab control) circuit. Isolate and repair.					
Angle	Blade raises while angling.	Verify 3-way valve lever travel. See C.	Adjust lift valve (out). See E1.					
Neutral	Blade lowers in neutral.		Adjust check valve (out). See E2.	Remove check valve. Inspect O-ring & seat.				
Lower	Blade lowers too fast.							
Lower	Blade will not lower or lowers too slow.		Adjust check valve (in). See E2.	Check lift ram packing nut.				

GENERAL INFORMATION

Most service can be performed with the hydraulic unit left on the vehicle. This should be done whenever possible because it permits evaluation of the entire system (vehicle electrical system, cables, cab control, etc.) as well as saving time.

Be sure to disconnect the negative battery terminal before removing the motor, solenoid or cab control.

⚠ CAUTION — Do not stand between the vehicle and plow when it is being raised or angled. CLEARANCE BETWEEN VEHICLE AND PLOW IS DECREASED AS PLOW IS RAISED OR ANGLED.

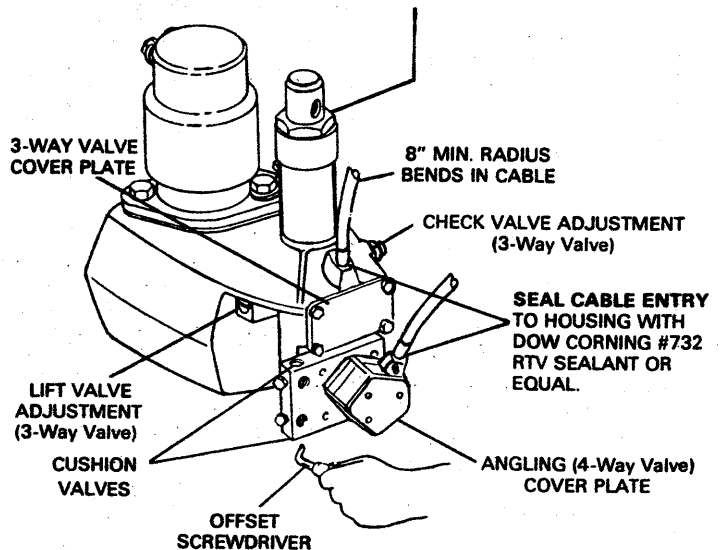
A CUSHION VALVE ADJUSTMENT

(Applies to 1" block cushion style valves. 2" block cartridge style crossover relief valves are serviced by replacement only).

Tighten cushion valve stem as much as possible (until spring is fully compressed). Then, back off valve stem (rotate counterclockwise) the number of turns specified.

CYLINDER STROKE		CROSSOVER RELIEF PRESSURE	NUMBER OF TURNS
LIFT	ANGLE		
6"	10"	2,500	1¼
10"	12"	4,000	1
6"	16"	2,500	1¼

PACKING NUT ADJUSTMENT — EHP or Angling Cylinders. If leaking, tighten packing NOT MORE THAN 1/4 TURN AFTER YOU FEEL PACKING NUT CONTACT PACKINGS. Overtightening affects cylinder operation and packing life.



NOTE: Manufacturer assumes no liability for accidents or damages notwithstanding the fact that suggestions have been followed.

B ELECTRICAL DIAGNOSIS

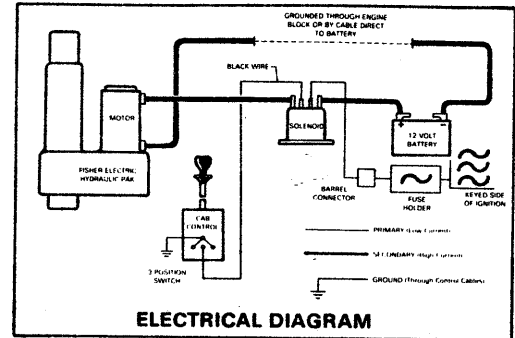
Condition — EHP motor does not run with cab control in "raise" or "angle" positions and ignition key is on. (Battery has sufficient charge to start engine.)

1. Check all electrical cables and connections. Clean and tighten as required.

See **WARNING ON PAGE 2 BEFORE PROCEEDING.**

2. Attach 16 ga. or heavier jumper wire from positive post of battery to solenoid small terminal with wire from fuse. Operate cab control in raise and both angle positions. If motor runs, problem is in power supply to solenoid. Check in-line fuse and wires. If motor does not run. . .
3. Turn Ignition key ON. Use above jumper wire to ground solenoid small terminal with black wire from cab control. If motor runs, problem is in cab control. Check for broken wire, loose connection or bent contact in cab control. Check if cab control is grounded through push-pull cables. If motor does not run. . .

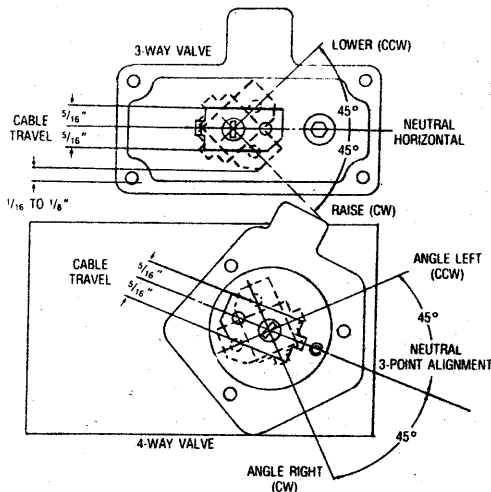
4. Use heavy jumper cable to by-pass the secondary (large) terminals of the solenoid. If motor runs, the solenoid is defective. If motor does not run. . .
5. Disconnect battery ground cable. Remove motor and check pump shaft. If tight, repair/replace pump. If loose, motor is defective.



C

3 WAY/4 WAY VALVE TRAVEL

1. Disconnect angling hoses and lift chain.
2. Remove 3-way (lift valve) or 4-way (angle valve) cover plate. Activate cab control in all directions and observe valve lever travel and positions. Lock the cab control in center position with the locking spool. Both valve levers should be in the neutral position as shown.

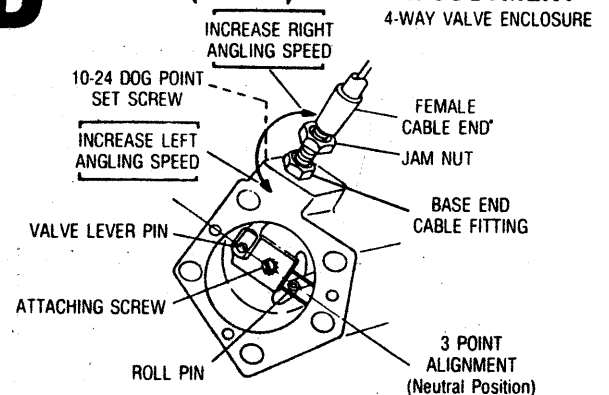


POSSIBLE CAUSE OF INADEQUATE TRAVEL OR INCORRECT VALVE LEVER POSITIONS.

1. Dirt, or ice buildup in enclosure.
2. Cables disconnected in valve enclosure or in cab control.
3. Binding, kinked or broken cable. (8" minimum radius)
4. Set-screw not in groove in cable.
5. Cable out of adjustment or insufficient ring/rotor clearance (4-way valves only).
6. Lift valve too far in (3-way valve only). See E1.

D

4-WAY (ANGLE) VALVE ADJUSTMENT



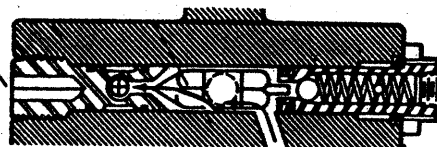
E1

3-WAY (RAISE-LOWER) VALVE ADJUSTMENT (SENSITIVE ADJUSTMENTS - MAX 1/8 TURN AT A TIME)

E2

LIFT VALVE ADJUSTMENT

Disconnect plow before adjusting. If plow will not raise or raises too slowly, turn (CW). If plow raises while angling or angles too slowly, turn out (CCW).



CHECK VALVE ADJUSTMENT

If plow will not lower or lowers too slowly, turn in (CW). If plow lowers too fast, turn out (CCW). Hold check valve while loosening or tightening jam nut. To prevent O-ring from blowing out, loosen jam nut 1/4 turn max.

INITIAL ADJUSTMENT (IF VALVES HAVE BEEN DISTURBED OR REMOVED)

LIFT VALVE

Remove cable from pin and place valve lever in neutral position (see C). Turn lift valve in until it is flush to the casting surface. Rotate lever to the "raise" position. It should stop 1/16 to 1/8" from enclosure bottom. If not, turn valve in or out until this dimension is obtained.

CHECK VALVE

Turn check valve in until three (3) full threads protrude from the jam nut with jam nut bottomed on housing.