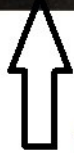


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M673F010-01L27E (new version) Operating Information

(to visually distinguish from old M673F there is PO
Cartridge Valve on the back of new power unit)



M673f - new style



General Information about Power Unit M673F010-01L27E

Warranty Identification

For purposes of warranty consideration, recording the serial number of the power unit is necessary. This serial number is displayed on a reservoir of the power unit.

Maintenance

Under normal operating conditions, the M673F should not require servicing during the plowing season, provided post season maintenance has been carried out. It is recommended that after the every season the hydraulic fluid to be changed. The replacement fluid recommended is **UNIVIS J13 (HVI 13)** hydraulic fluid. Automatic transmission fluid is not recommended for this system and may lead to aeration of the oil in very cold weather conditions. The oil level in the reservoir is to within ½" from the top surface (when lift cylinder is collapsed).

When draining the hydraulic fluid, the hoses at the cylinders should be disconnected and drained. With the hose disconnected, the cylinders should be collapsed to displace the oil out of the cylinder.

Periodically, and during post season maintenance, make sure the electrical connections are tight and free of corrosion. The terminals may be covered with grease for additional protection from corrosion.

Sometimes, in order to **release pressure in angling cylinders** it is necessary to follow this instructions: when blade is angled to the left (driver side), angle blade to the right (curb side) and as blade is going to right side press release button.

Electrical System

Frequently problems develop due to an undersized electrical charging and storage system. Generally, the heavier the usage, the heavier the system should be. For a moderately light duty, the battery should not be less than 70 ampere-hours and the alternator should charge at a rate of not less than 60 amperes. For heavy usage and in the case where a number of other devices are run off the battery simultaneously, heavier ratings are strongly recommended.

Electric Motor

The 8034 electric motor is two pole electromagnetic motor, consisting primarily of an armature/commutator, two field coils, four brushes in a brush holder set, and a tubular steel body with cast endcap. Although the motor is grounded through the body, an additional grounding stud is provided on the motor body. The motor must be grounded to the vehicle battery with a grounding strap from this stud.

The power unit with this motor is equipped with the 03 pump. This combination of

pump and motor offers optimum performance.

The motor should be serviced periodically to insure good performance. Service as follows:

- a) check brush set for wear and replace if necessary,
- b) blow dirt and dust off motor housing and check for shorts, burnt wires or open circuits,
- c) check bearings (bad bearings can cause a motor to make growling noise),
- d) check for excessive “end play” of an armature and add thrust washers as required.

Hydraulic Pump

The hydraulic pump converts mechanical energy transmitted by the prime mover (in this case a 12 volt DC electric motor) into hydraulic energy. The hydraulic energy is due to flow (kinetic energy) and pressure (potential energy). The rate of energy output is expressed in horsepower.

At the inlet, as the gears unmesh, the volume in the cavity increases thereby causing fluid to enter. This fluid is then carried between the gears and the housing to the other side of the gears into the outlet cavity. At this point the gear teeth mesh. The outlet cavity volume decreases, causing fluid to flow into the system. Note that without a load, the pressure at the outlet port is nil.

The pressure at the outlet of the pump is due to external loads placed on the system. These loads can be transmitted through cylinders and linear actuators as well as hydraulic motors and rotary actuators. In practice, system components by virtue of orifice and line sizes, offer some resistance to the flow of fluid. This translates into pressure at the outlet of the pump.

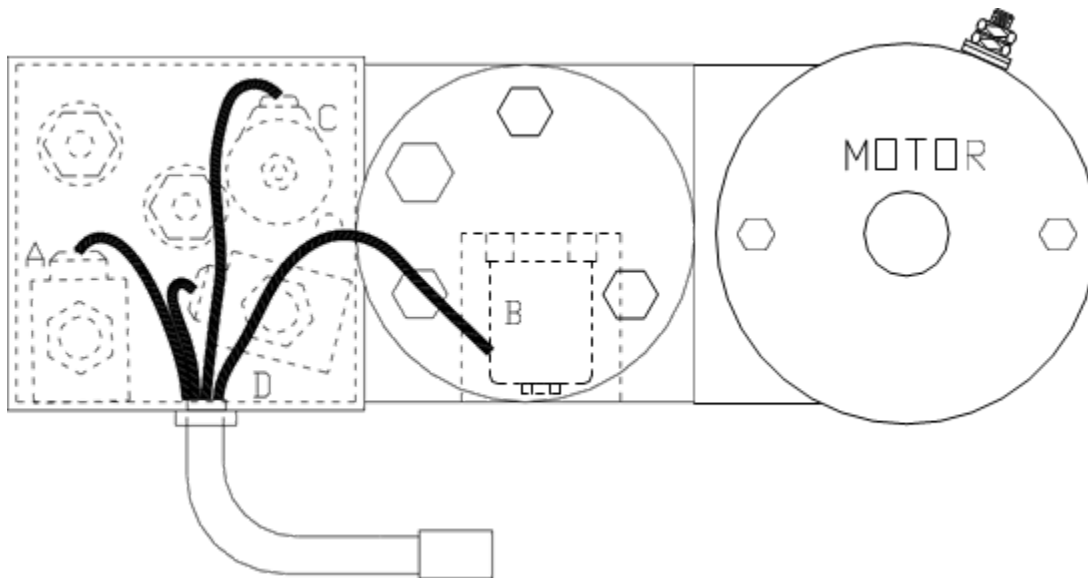
Valve Information

Pressure Relief Valve

The pressure relief valve consists of a ball, a retaining spring and a seat. The ball is exposed to the pressure in the outlet line from the pump. This pressure acting on the exposed area of the ball, causes a force on the retaining spring. When the pressure is such that the force on the ball exceeds the force in the spring (due to a preset amount of precompression) the ball lifts off the seat and the fluid from the outlet of the pump is allowed to flow back to the reservoir. The “standard relief valve setting” for the M673F is 2250 psi.

Directional Valves

The M673F circuit contains 4 directional valves identified as ‘A’, ‘B’, ‘C’ and ‘D’. Valves ‘A’ and ‘D’ are 3 way, 2 position spool valves. Valves ‘C’ and ‘B’ are a 2 way 2 position normally closed poppet valves.



A basic directional valve consists of a valve cartridge and a coil. Inside the cartridge valve, an armature is attached to the valve mechanism. The coil consists of a wire wrapped around a spool. When power is applied to the coil (the coil is energized), the magnetic field created by coil pulls the armature into the coil. The armature shifts the valve mechanism into the energized position. When power is removed from the coil, a spring inside the valve cartridge pushes the armature and valve mechanism to the de-energized position.

Directional Valves 'C' and 'B'

Valve 'B' is a 2 way 2 position normally closed poppet valve which is used for lowering the plow. In the de-energized position, valve B acts as a check valve preventing return flow from the lift cylinder to the reservoir. Energizing valve B opens the valve and allows flow from the lift cylinder to the reservoir thereby lowering the plow. See figure 2.

Valve 'C' is a 2 way 2 position normally closed poppet valve which is used for raising the plow. In the de-energized position, valve C acts as a check valve, it blocks flow from pump to the lift cylinder. In the energized position, flow from the pump to the lift cylinder is permitted.

See figure 1.

Directional Valves 'A' and 'D'

Directional Valves 'A' and 'D' are 3 way, 2 position spool valves. Directional Valves 'A' and 'D' operate the left and right angling cylinders. Valve 'A' operates the angling cylinder on the right side of vehicle on C1 port (See Figure 3). Valve 'D' operates the angling cylinder on the left side of vehicle on C2 port (See Figure 4).

In the de-energized position, the valves block flow from pump to the cylinder but allow return flow from the cylinder to the reservoir. In the energized position, flow from the pump to the cylinder is permitted but flow from the cylinder to the reservoir is not.

Note: When angling the plow, one cylinder is extending and the other is retracting therefore one cylinder is receiving oil from the pump and the other is returning oil to the reservoir. Valves 'A' and 'D' must work together.

Cross over relief valve

The cross over relief valves are provided to protect the valves and manifold from the pressure spikes created when the plow strikes an object. The cross over relief valves are similar in construction to a regular direct acting relief valve. Cross over valves when activated, bleed fluid from C1 to C2 or vice versa. In this manner both the angling cylinders, the plow frame and the truck frame are offered some protection from the normal impact forces associated with plowing. Striking a fixed object while plowing at high speeds will damage the cylinders and perhaps the plow. The cross over relief valves are adjustable and are normally set at about 3,000 psi. See figure 3 and 4.

Pilot Operated (PO) Check Valve

A dual pilot operated check valve (PO Check Valve) is provided on ports C1 and C2 to hold the plow at the desired angle. Without the PO Check valves, leakage through directional valves 'A' and 'D' would allow the plow to drift.

Without pilot pressure, a pilot operated check valve (PO check valve) allows flow in only one direction. In the free flow direction, oil flowing through the valve lifts the poppet of the seat. In the opposite direction, returning oil pushes the poppet against the seat thereby blocking flow. When pressure is applied to the pilot piston, the poppet is lifted off the seat and flow in both directions is permitted. When angling, pilot pressure is provided for the check valve returning oil to the reservoir. For example; when valve 'A' is energized pump flows oil to C1.

Oil is allowed to return oil through the check valve to the reservoir because the pressure on C1 is acting on the pilot piston of the C2 PO Check Valve. See figures 3 & 4.

Control Switch

The M673F uses four different control boxes: control box with rocker switches, touchpad control box, handheld controller and joystick control box. Each control box performs same functions: up, down, angle left and angle right.

M673F010-01L27E RAISE

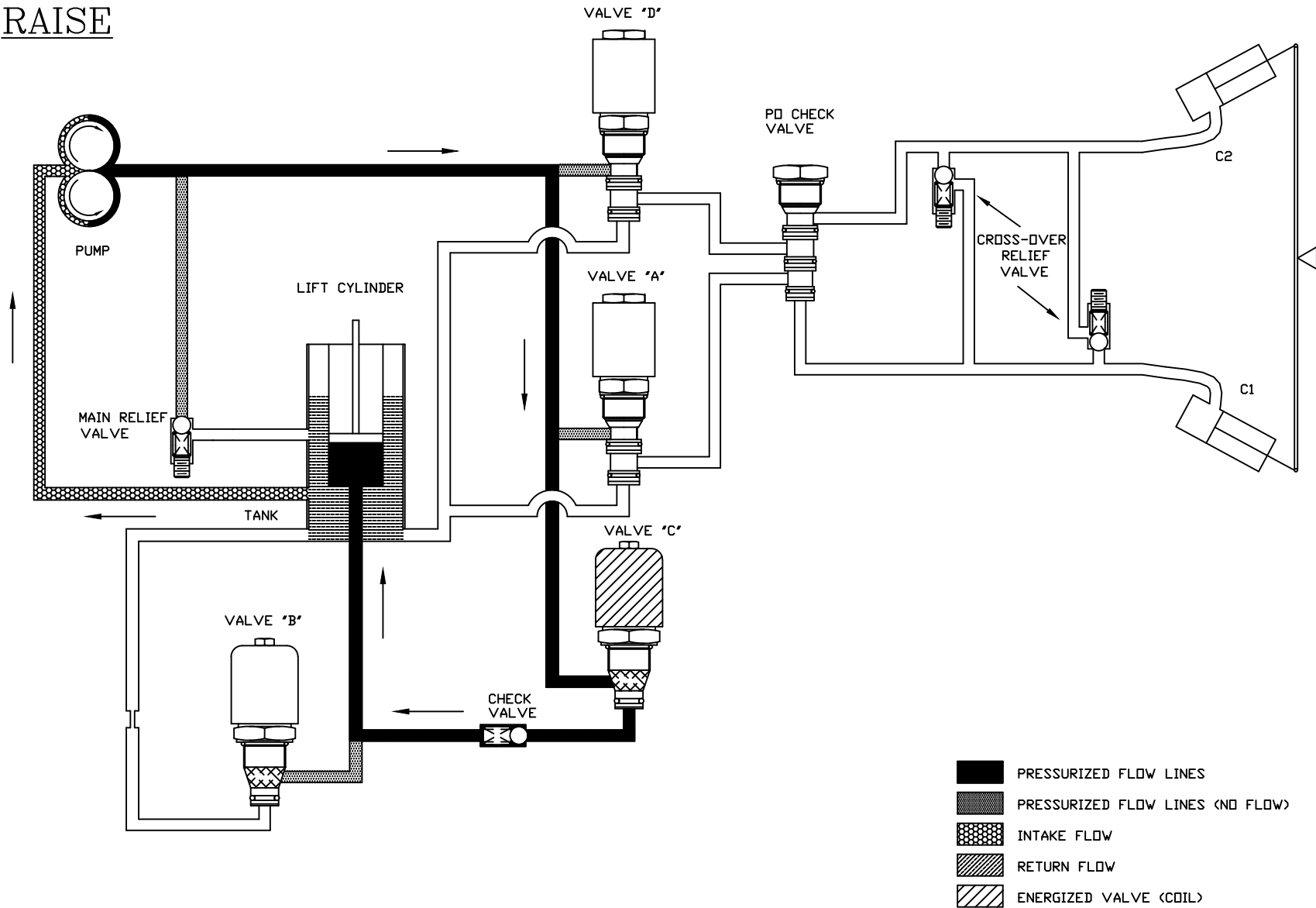


FIGURE 1

M673F010-01L27E PLOW LOWER

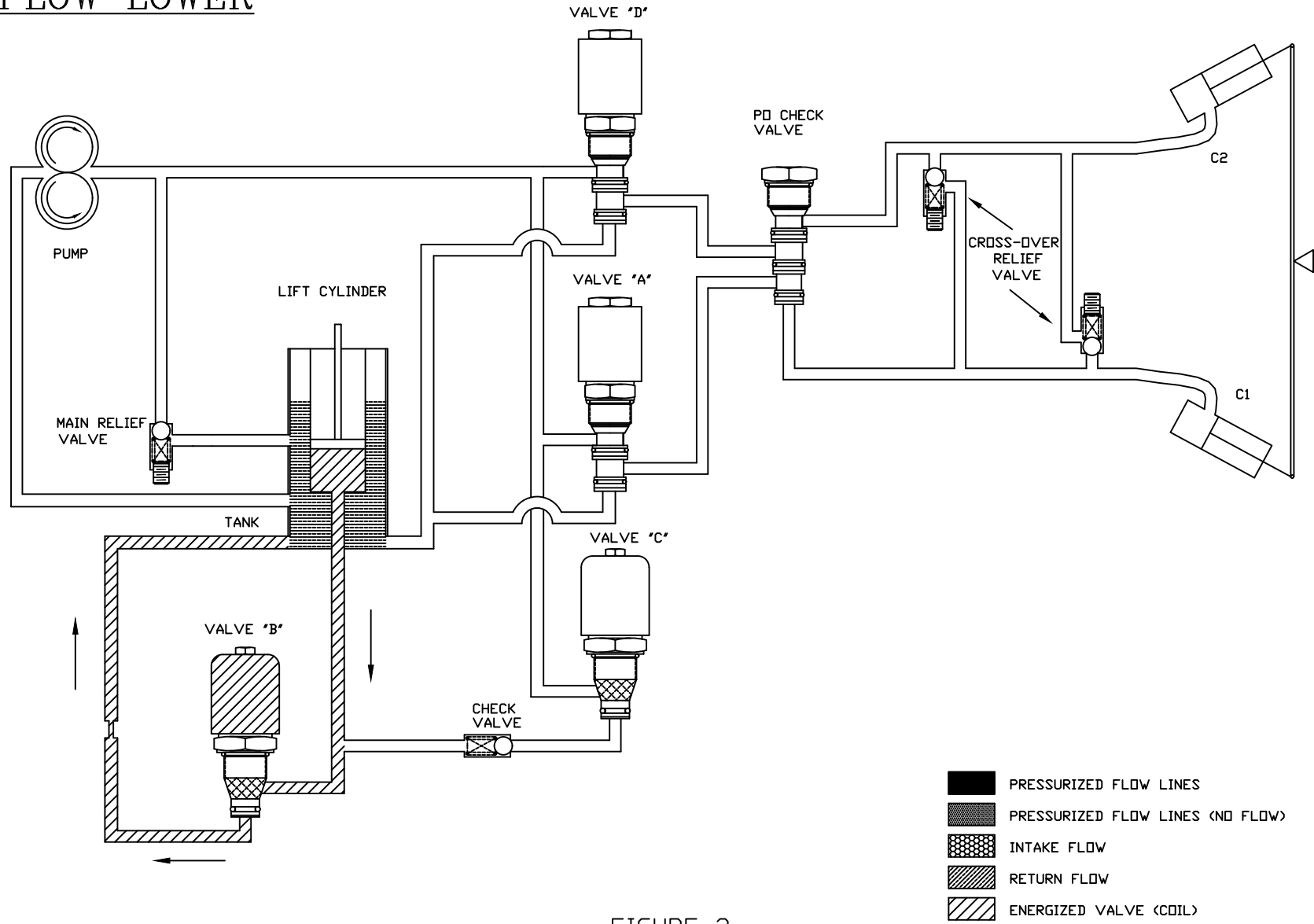


FIGURE 2

M673F010-01L27E EXTEND C2 (ANGLE RIGHT)

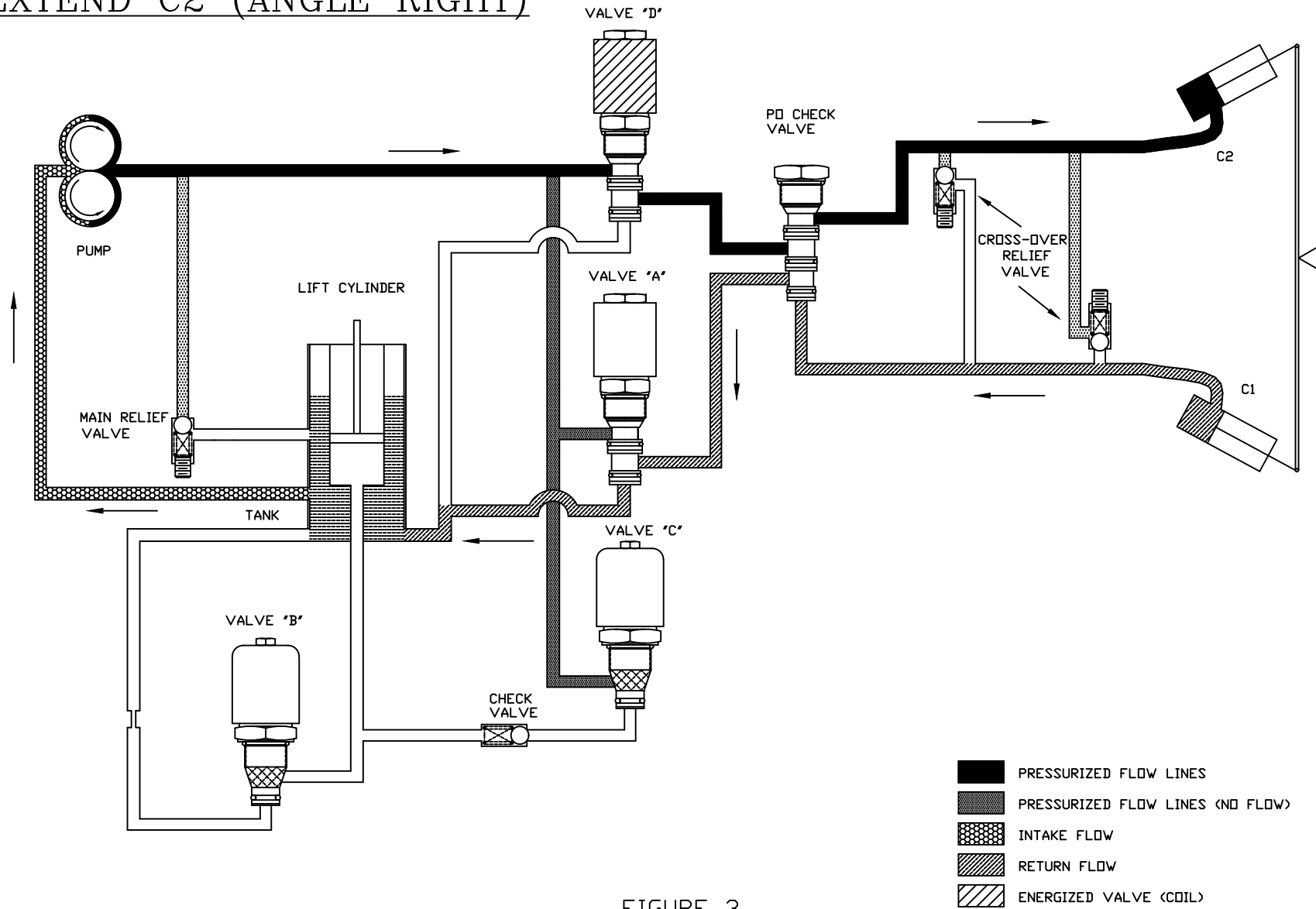


FIGURE 3

M673F010-01L27E EXTEND C1 (ANGLE LEFT)

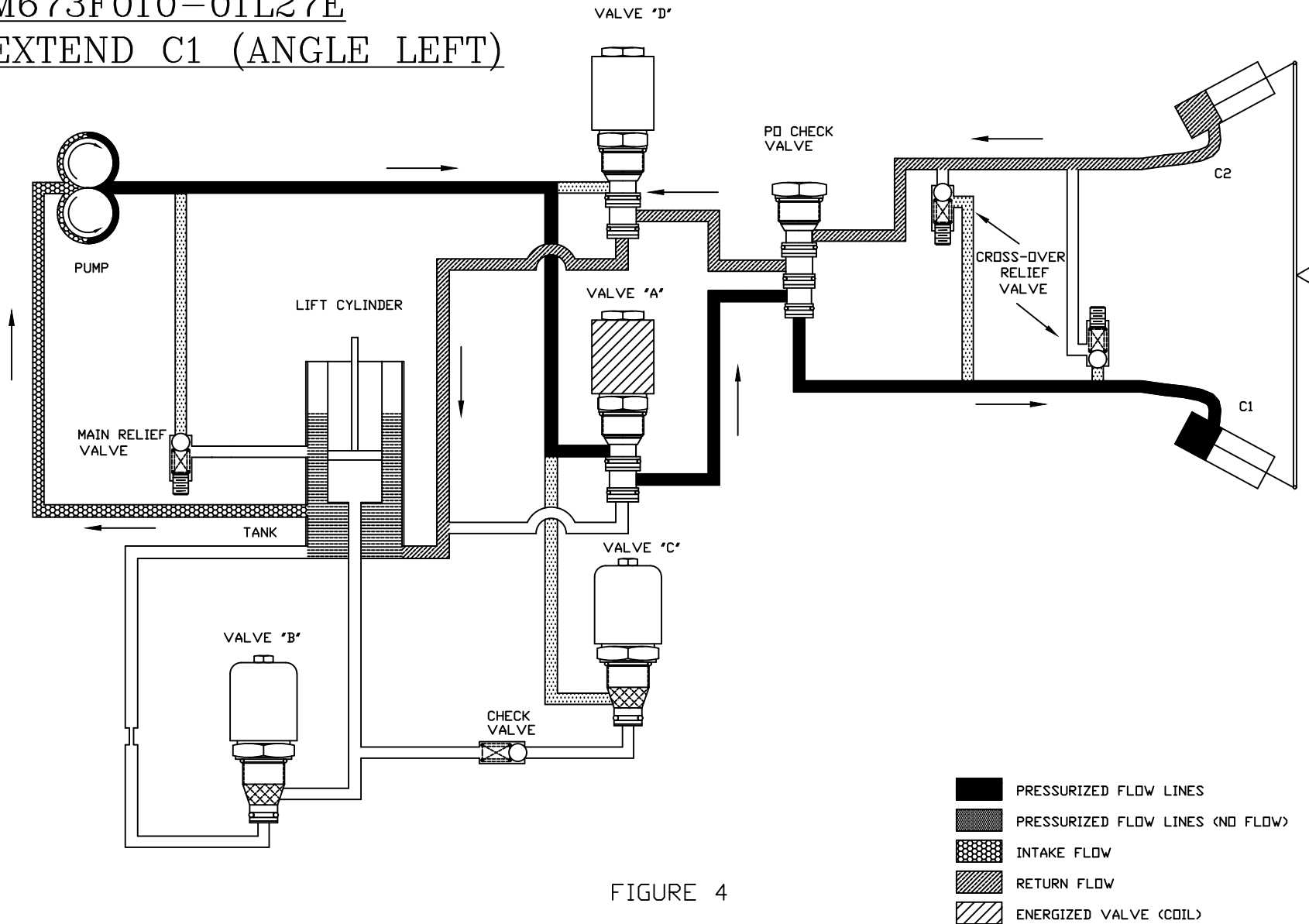
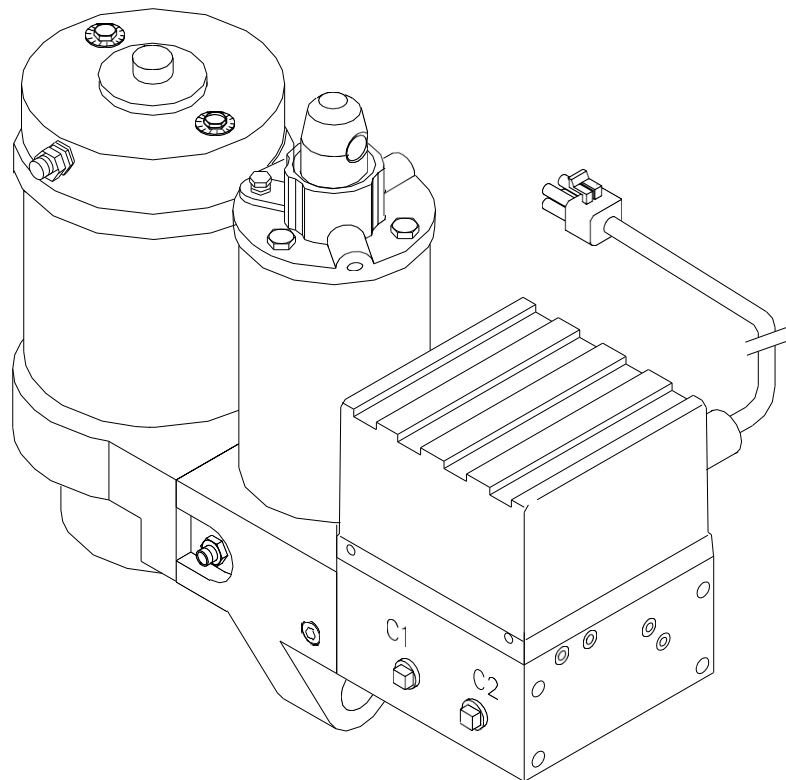


FIGURE 4

M673F installation instructions



M673F installation instructions

Warning:

- Top of battery needs to be protected. If positive side of battery is accidentally grounded person could be burnt or wiring system can be damaged, or battery gasses could explode causing injuries.
- Disconnect cable from negative battery terminal before start installation.
- Always wear eye protection and protective clothing when working around hydraulic systems.
- Remove jewelry and objects that might conduct electricity while working on power units.
- Fluid under pressure can pierce the skin and enter the bloodstream causing death or serious injury.
- Hydraulic hoses and electrical cables (harnesses) must be tied and routed safely to avoid any damage and pinching (away from hot places, sharp objects etc.).

Note: Do **not use** Teflon tape on hydraulic fittings as it can easily jam valves and plug the filters in the system.

- All electrical connection must be greased with **dielectric grease**.
- Use of fluid other than J13 will void warranty

1. Install power unit (1) to lift frame with motor toward curb side of truck.
2. Install colour co-ordinated weather covers on cable and plug assembly (2). Attach red lead to positive motor stud and black lead to the ground motor stud. Liberally coat connections with dielectric grease then slide covers (12)(15) over the eyes on the end of the cables.
3. Mount solenoid (3) to metal surface in engine compartment bending bracket if necessary. Be sure to locate the solenoid so that there is sufficient cable to reach to both the battery cable (5) and the cable and plug assembly (2) on the power unit. NOTE: Solenoid must be well grounded in order to function properly.
4. Slide weather cover (9) over power (5) and ground (6) cables and route through grille of truck leaving sufficient length to attach to the cable and plug assembly (2). Secure the red power cable (5) to the large terminal on the solenoid and the black ground cable (6) to the negative terminal on the battery.
5. Secure power cable (7) from other large terminal on solenoid to positive terminal on battery.
6. Plug intermediate harness (8) into power unit harness and follow battery cable routing toward firewall. Locate a pass through hole in the firewall near the driver's side of the

truck. Route other end of intermediate harness (8) through the hole in firewall and attach control station.

NOTE: A smaller hole in the firewall can be used if the cable is fed into the engine compartment from the cab as the plug at the power unit end is smaller than at the control station end.

7. Attach white wire to ground, black wire to positive side of solenoid and brown wire to small terminal on top of the solenoid.

Note: Apply dielectric grease to all electrical connections. Assure that all electrical connections are attached and secured properly.

8. Neatly secure all excess cables and wires using tie straps. Silicone hole in firewall.

Note: Be sure all cables are properly protected from any sharp edges or hot or moving parts.

9. Install 90 degree swivel end of 29" hose(13) into curb side (CS) angle cylinder. Install 90 degree swivel elbow (10) in port C1 of pump @ 12:00. Route 29" hose from CS angle cylinder and connect loosely to 90 degree swivel elbow in port C1.

10. Install 90 degree swivel elbow (10) into driver's side angle cylinder @ 10:00. Install the 90 degree swivel end of 18" hose (14) in port C2. Route hose from port C2 and connect loosely to the driver's side (DS) angle cylinder .

11. Remove power unit filler plug and fill reservoir with **UNIVIS J13 (HVI 13)** hydraulic oil. Do not use automatic transmission fluid in this system as it may lead to aeration of the oil in very cold weather conditions. Use of fluid other than J13 will void warranty

12. Manually angle the plow to one side before activating the power unit. This can be easily accomplished as the hose connections are loose at the angling cylinders.

13. Remove the bleeder hole plug (31). Jog the lift switch until no air is seen in the fluid passing through the bleeder hole. Reinstall and tighten the bleeder plug.

14. Jog the angle switch in the direction of the retracted cylinder until no air is seen in the fluid passing through the loose connection. Tighten fittings. Fully extend this cylinder.

15. Jog the angling switch in the direction of the other cylinder until no air is seen in the fluid passing through the loosened connection. Tighten fittings.

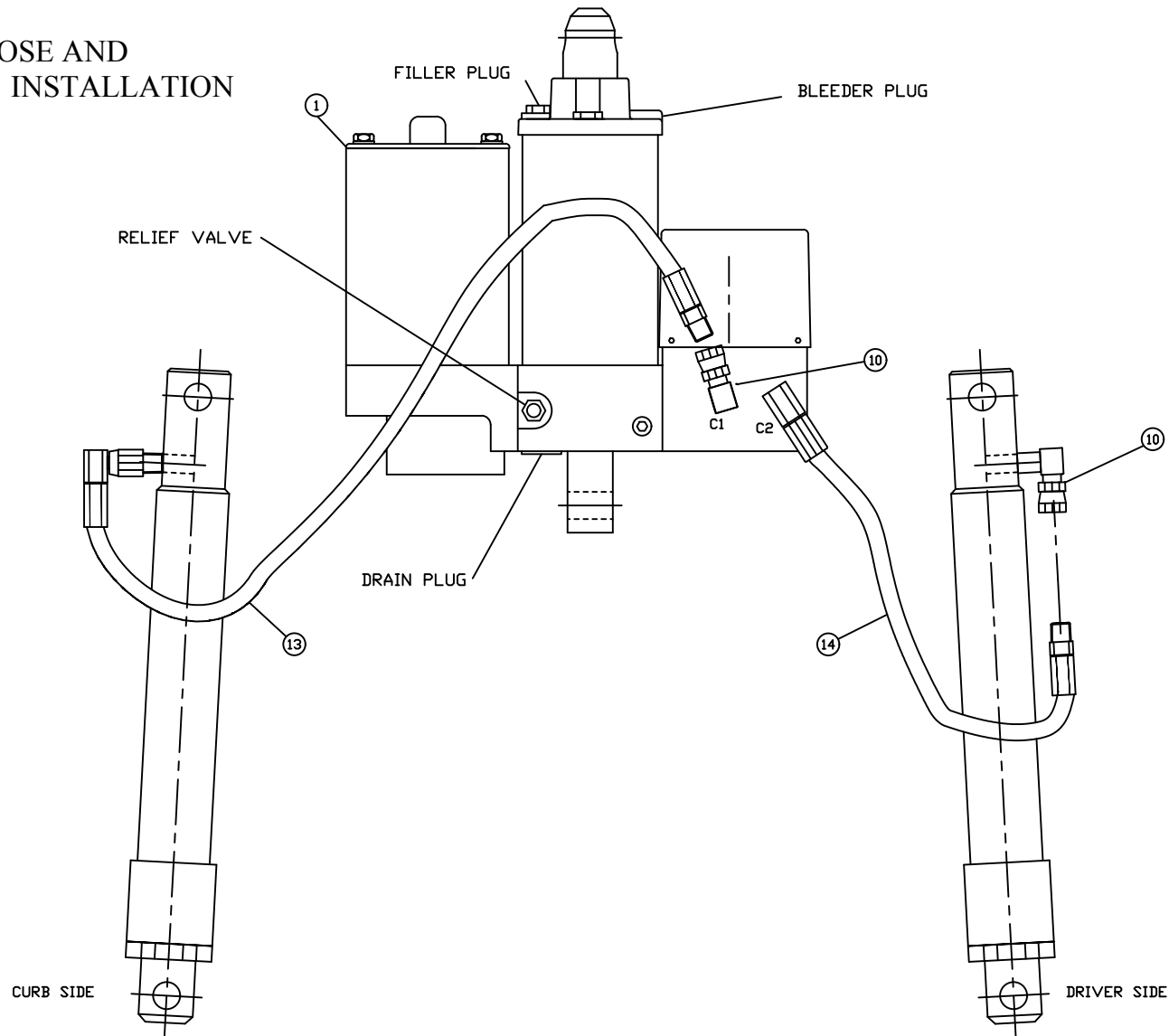
16. Refill power unit so that oil level is $\frac{3}{4}$ " from the top of the reservoir. Clean up any spilled oil and check all functions several times making sure there is not excessive

foaming in the reservoir. Compress the lift cylinder and double check the oil level.
Check for leaks at all fittings and reinstall filler plug.

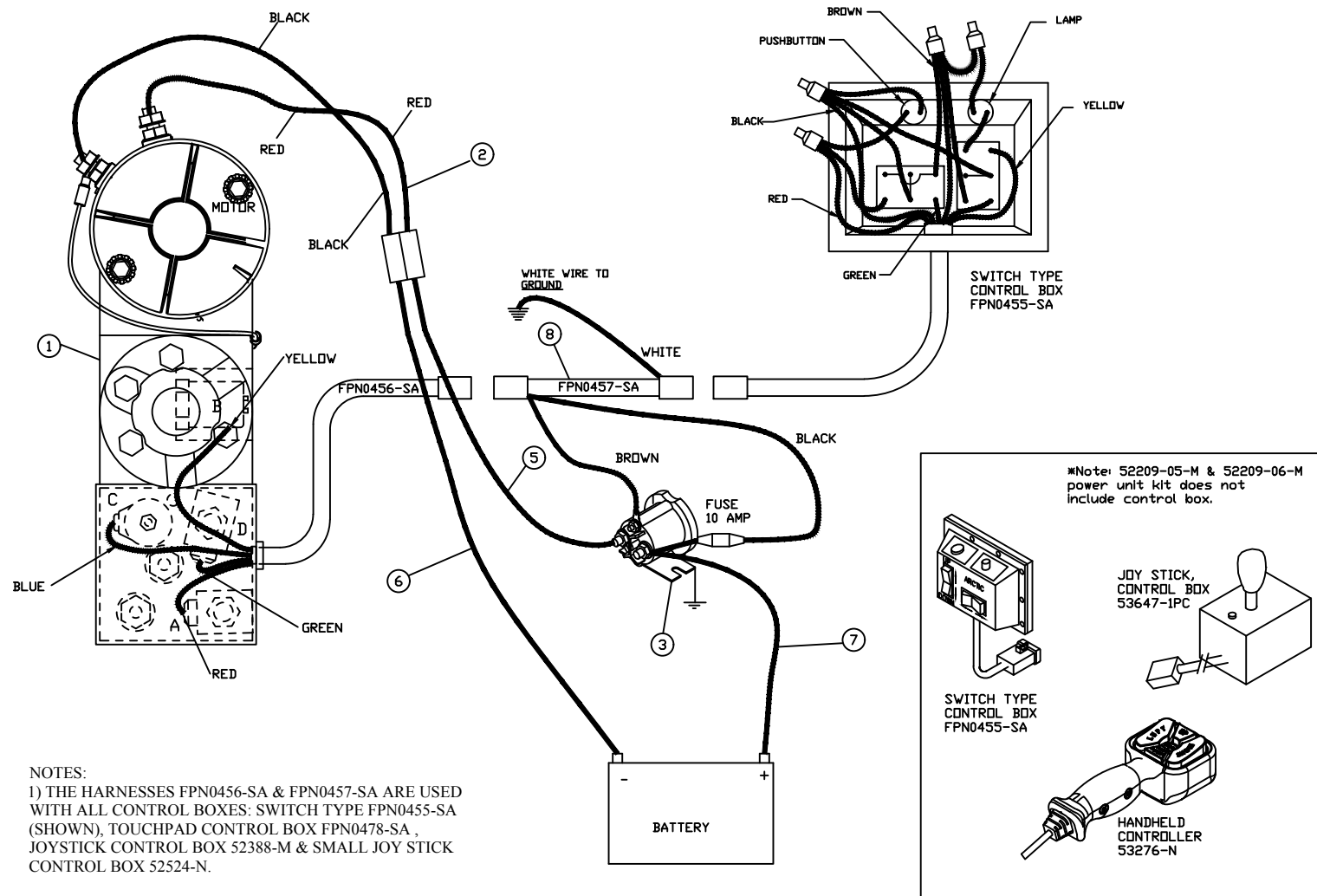
52209-05-M M673F Power Unit Kit for Quik-Link II Mounting Style			
Item	Part Number	Description	Quant.
1	M673F-01	M673F010-01L27E power unit	1
2	3004665	Cable and plug assembly	1
*3	FP17757	Solenoid	1
5	1306120	63" Power Cable	1
6	13061221	54" Ground Cable	1
7	1306340	22" Battery Power Cable	1
8	FPN0457-SA	Intermediate Harness	1
9	0203300	Weather Cover for power and ground cable	1
10	HH-00790-002	1/4" 90 deg swivel Elbow	2
12	52427-N	Red Terminal Protector	1
13	51904-M	29" Hose Assembly	2
14	51002-M	18" Hose Assembly	1
15	52428-N	Black Terminal Protector	1

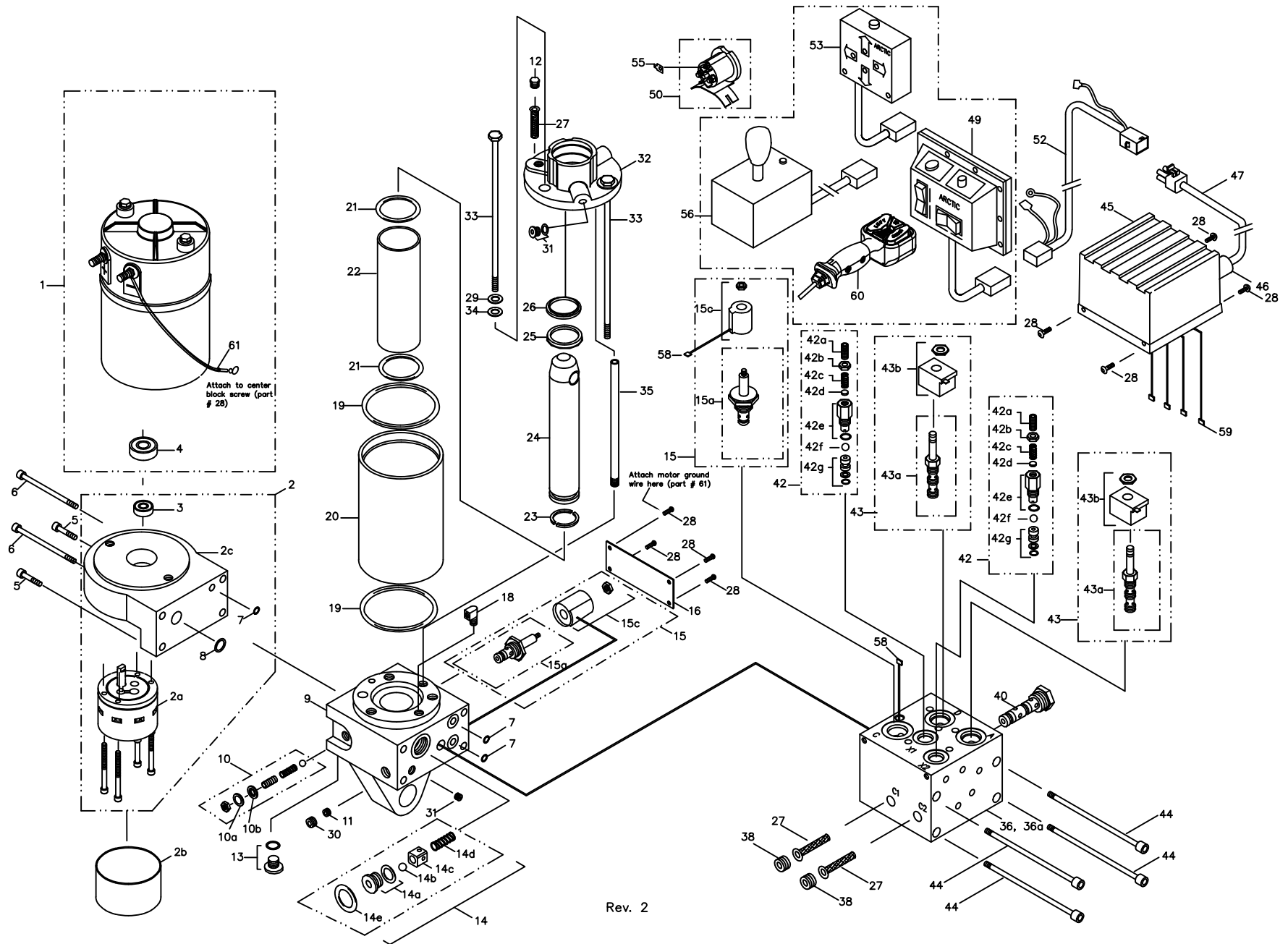
*Item replaces part # FP7518

M673F HOSE AND FITTING INSTALLATION



M673F WIRING INSTALLATION





Parts List for M673F-New				
Rev	Ref #	Qty	Part #	Description
R2	1	1	FP18442	Electric Motor, 12VDC, ISKRA
R3	1a	1	FP8714	Brush kit for ISKRA motor (FP18442)
	1b	1	52589-M	Brush kit for Prestolite motor (FP8034)
	2	1	FPN0733-SA	Pump and base assembly 03 gear
R1	2a	1	FPK12311-250	Pump modular, only
	2b	1	FPN0719	Plastic cap
	2c	1	FPN0856-SA	Base assembly c/w seal
	2d	1	FP7985	Needle Bearing (pump shaft to pump base)
	3	1	FP2159	Seal, pump shaft
	4	1	FP2318	Bearing, motor to pump base
	5	2	FPN0582	Screw, SHCS, 1/4-20UNC * 1.0
	6	2	FPN0364	Screw, SHCS, 1/4-20UNC * 4.5
	7	3	FP0117	'O'-ring, 1/16 * 3/8 ID * 1/2 OD, 2-012, Buna-N,
	8	1	FPN0055	'O'-ring, 3/32 * 7/16 ID * 5/8 OD, 2-111, Buna-N,
	9	1	FPN0553-SA	Center block ass'y (c/w relief valve, check valve, B valve, o-rings)
	10	1	FP7527	Relief valve (c/w flat washer FPN0575 & seal washer FP3874)
	11	1	FP4371	Plug, orifice, 3/64" hole (1/16-27 NPTF)
	12	1	FPN0585	Plug, pipe, hex, 1/4 NPT
	13	1	FP3276	Plug, hollow hex, SAE O-ring, 9/16-18UNF
	14	1	FPN0558-SA	Check valve kit, 5/16 ball
	14a	1	FPN0557	Seat
	14b	1	FP0126	Ball, 5/16
	14c	1	FP2680	Poppet, ball retainer, check, (m300 & m600 series)
	14d	1	FP0130	Spring, light, check valve, (m-series)
	14e	1	FPN0037	'O' ring, 1/8 * 11/16 ID * 15/16 OD, 2-209,
R3	15	2	FP0490-D	Valve Ass'y , #8S, 2 way/2Pos, NC poppet, 12V DC, Single wire
R3	15a	2	FP10907-D	Valve, #8s, 2 way, 2 pos, NC poppet, Cartridge only
R3	15c	2	FP10861-D	Coil, 12VDC
	16	1	FPN0343	Center block valve cover
	18	1	FPN0393	Street elbow, extruded brass, 1/8 NPT
	19	2	FPN0358	'O' ring, 3-1/4 ID * 3-7/16 OD * 3/32, -152, 90 Duro
	20	1	FPN0346	Reservoir tube, 3-3/4 OD x 6-3/8 Lg
	21	2	FPN0306	'O' ring, 2 ID * 2-3/16 OD * 3/32, -136, 90 Duro
	22	1	FPN0304	Cylinder tube, 2" OD x 6-3/8 Lg
	23	2	FP5575	Split ring, stop, 1-1/2 rod CS150
	24	1	FPN0305	Cylinder rod, 1-1/2" OD x 10"Lg
	25	1	FPN0356	Rod seal, 1.5" polypack Type B
	26	1	FPN0355	Rod wiper, U wiper, 1.5"
	27	3	FP1316	Filter, finger screen
	28	8	FPN0546	Screw, plated, #10-24UNC * 3/8"

Parts List for M673F-New				
Rev	Ref #	Qty	Part #	Description
	29	3	FP1970	Washer, plated
	30	1	FP2355	Plug, pipe, flush, 1/8 NPT
R4	31	1	53220-N	Plug, SAE O ring 7/16"
	32	1	FPN0547-SA	Cylinder head ass'y (c/w wiper, seal and O rings)
	33	3	FPN0360	Bolt, hex head, grade 8, 3/8-16UNC * 7.5
	34	3	FPN0359	Seal washer, 3/8
	35	1	FPN0307	Tube, steel, 5/16 * 6.25 Lg, 1/16 NPTF one end
	36	1	FPN0662-SA	Manifold ass'y c/w cross over valves and PO check valve
	36a	1	52794-M	Manifold ass'y c/w all valves
	38	2	FP7624	Screw, spring retainer
	40	1	FP7346	Valve, #8, Dual pilot operated check valve
	42	2	FP13023	Relief valve, cross over
	42a	2	FP7899	Screw, 3/8-16UNC * 1.25
	42b	2	FP0386	Nut, sealing, 3/8-16unc
	42c	2	FP0147	Spring
	42d	2	FP1288	Shim, spacer, adjustable x-over relief valve
	42e	2	FP0379	Housing, adj. relief valve ball type
	42f	2	FP0012	Ball 1/4"
	42g	2	FP0378	Seat, x-over relief, ball type
R3	43	2	FP7249-D	Valve Ass'y, #8. 3 way, 2 pos, spool, 12 V DC, spade connector
R3	43a	2	FP0679-D	Valve, #8, 3 way, 2 pos, spool, cartridge only
R3	43b	2	FP18835-D	Coil, 10 V DC, Spade connector
	44	4	FPN0365	Screw, SHCS, 1/4-20UNC * 4.25
	45	1	FPN0339	Manifold valve cover, front mount plow unit
	46	1	FP1414	Fitting, Plastic strain relief, 1/2" cord
	47	1	FPN0670	Harness, valve section c/w insulated female connectors
	49	1	FPN0455-SA	Control station, rocker switch
R1	50	1	FP17757	Switch, solenoid, 12 VDC, 3 pole, grounded coil
	52	1	FPN0457-SA	Harness, centre section, 96"
	53	1	FPN0478-SA	Control box assembly, touchpad
	55	1	FP3414	Terminal, #10 stud tab
	56	1	52388-M	Joystick control box assembly
	58	2	761656	Spade connector, male 1/4" tab, fully insulated, 20 gauge wire
	59	4	761655	Spade connector, female 1/4" tab, fully insulated, 16 gauge wire
	60	1	53282-M	Hand Held Controller
	61	1	53330-A	Motor to Base Ground Wire

Note:

1. Cap FPN0719 is included with pump modular kit FPK12311-250 & it is not included with pump base assembly FPN0733-SA
 - R1 FP17757 was FP7518
 - R2 FP18442 was FP8034
 - R3
 - FP0490-D was FP0490
 - FP10907-D was FP0307 *note: if Deltrol cartridge with 3/8 stem FP0307 is replaced with Deltrol cartridge with 1/2 stem FP10907-D, coil must also be replaced with FP10861-D
 - FP10861-D was FP0496 *note: If coil FP0496 is replaced with FP10861-D, Deltrol cartridge with 3/8" stem must also be replaced with Deltrol 1/2 stem FP10907-D
 - FP7249-D was FP7249
 - FP0679-D was FP0679 *note: If Parker cartridge FP0679 is replaced with Deltrol cartridge FP0679-D, Parker coil must also be replaced w/ Deltrol coil FP18835-D
 - FP18835-D was FP10977
 - * R4 53220-N was FP7669 Plug, pipe, flush 1/16-27NPTF

Installation of the modular pump kit FPK12311-250 onto M673F pump base

1.) Remove the old pump and pump parts from the pump base (bolts and dowels). Take the shaft seal out from pump base. There are two shaft holes in the base, one goes all the way through (drive shaft) and one does not (idler shaft). Remove all needle bearing rollers from the idler shaft hole (be sure that there are no needle bearing rollers left in the hole - because the pump can fail). Check that all needle bearing rollers are present in the drive shaft hole, there are twenty-four (24) needles.

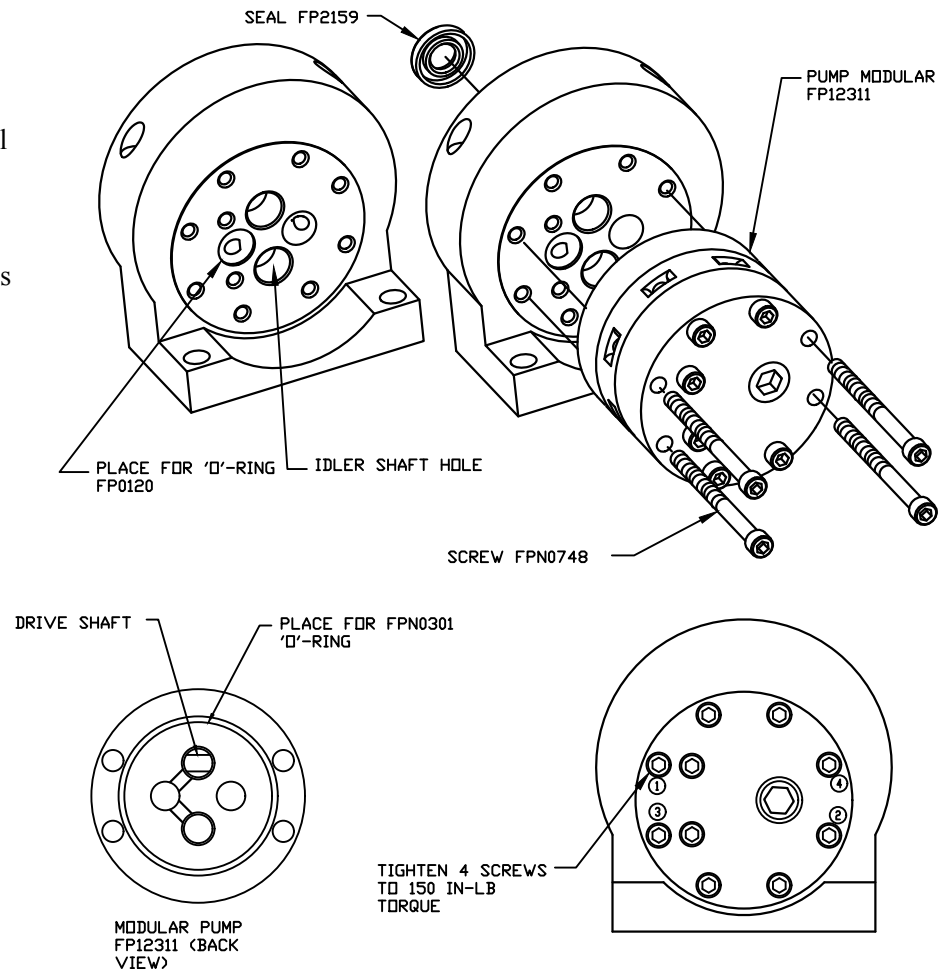
Note: If needle bearing in idler shaft is caged (needles are not loose; they can not be moved out from bearing) needles do not have to be removed.

2.) Assembly of the modular pump FP12311:

- a) place 'O'-ring FP0120 on the pump base,
- b) place 'O' ring FPN0301 in the pump groove,
- c) insert the drive shaft of pump through pump base and orientate pump in correct orientation,
- d) insert 4 screws FPN0748 through pump and torque to approximately 150 in-lbs,
- e) put shaft seal FP2159 on drive shaft with lip facing towards pump base. Press seal into pump base until seal is against the bottom of the seal cavity. The seal should be approximately 0.030" below the top of the seal cavity.

3) When pump is installed slide cap FPN0719 over a pump.

M673F Modular Pump Kit FPK12311-250			
ITEM	QTY	PART#	DESCRIPTION
1	1	FP12311	Pump, Modular
2	4	FPN0748	Screw, Socket Head Cap Screw 1/4" - 20UNC x 3"
3	1	FP0120	'O'-ring, 1/16" x 1/2" x 5/8"
4	1	FPN0301	'O' ring, Metric, 56 x 2
5	1	FPN0719	Cap
6	1	FP2159	Seal



Valves 2 way /2 position (2w/2p) cavity (O-ring) change

1. Power units manufactured prior to 2010

Typically manufactured with "Monarch-style" valve cavity, identifiable by:

- a) Cavity without identification mark (without Greek letter delta (triangle))
(see picture 1)

- b) Black O-ring, with 0.070" cross-section (see picture 3)

2. Units manufactured in 2010 and beyond

Typically manufactured with "Industry standard" valve cavity, identifiable by:

- a) Cavity with identification mark - Greek letter delta (triangle) (see picture 2)

- b) Blue O-ring, with 0.087" cross-section (see picture 3)

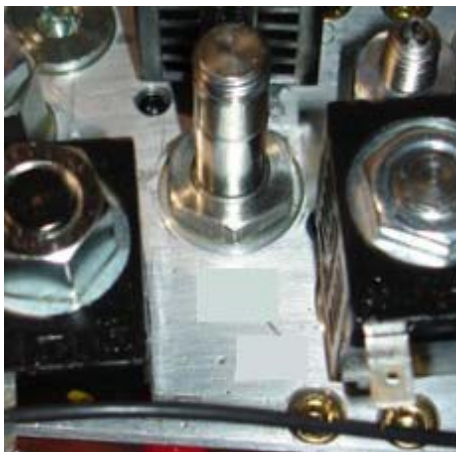


Valve replacement

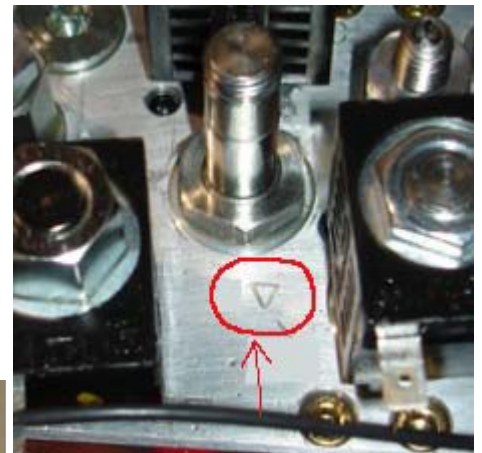
- a) Cavity and O-ring **must be selected correctly** for proper sealing function, the rest of the valve is the same. If necessary, replace O-ring with the proper O-ring to match the valve cavity:

- b) Cavity without identification mark requires black O-ring, with 0.070" cross-section (see picture 3)

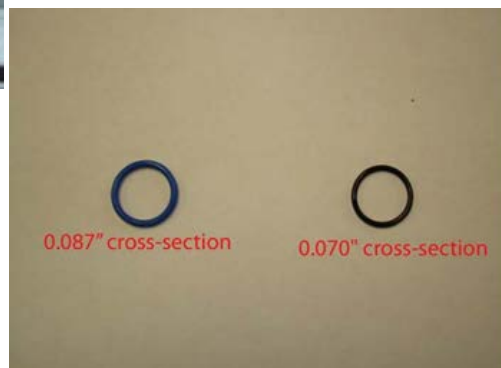
- c) Cavity with identification mark require blue O-ring, with 0.087" cross-section (see picture 3)



Picture 1



Picture 2



Picture 3

Troubleshooting flow chart for power unit M673F (new version)

(to visually distinguish from old M673F there is PO Cartridge Valve on the back of new power unit)

- Motor does not operate.
- Snow plow does not raise.
- Snow plow raises up very slow.
- Snow plow will not lower.
- Snow plow leaks down.
- Snow plow angles before raising up.
- Snow plow does not angle to left.
- Snow plow does not angle to right.
- Snow plow does not hold angle.

Warning:

- Top of battery needs to be protected. If positive side of battery is accidentally grounded person could be burnt or wiring system can be damaged, or battery gasses could explode causing injuries.
- Disconnect cable from negative battery terminal before replacing the motor or solenoid.
- Always wear eye protection and protective clothing when working around hydraulic systems.
- Remove jewelry and objects that might conduct electricity while working on power units.
- Fluid under pressure can pierce the skin and enter the bloodstream causing death or serious injury.
- When adjusting the relief valve be sure to use a pressure gauge. Failure to accurately set the relief valve can cause failure resulting in damage to the equipment or cause bodily harm.

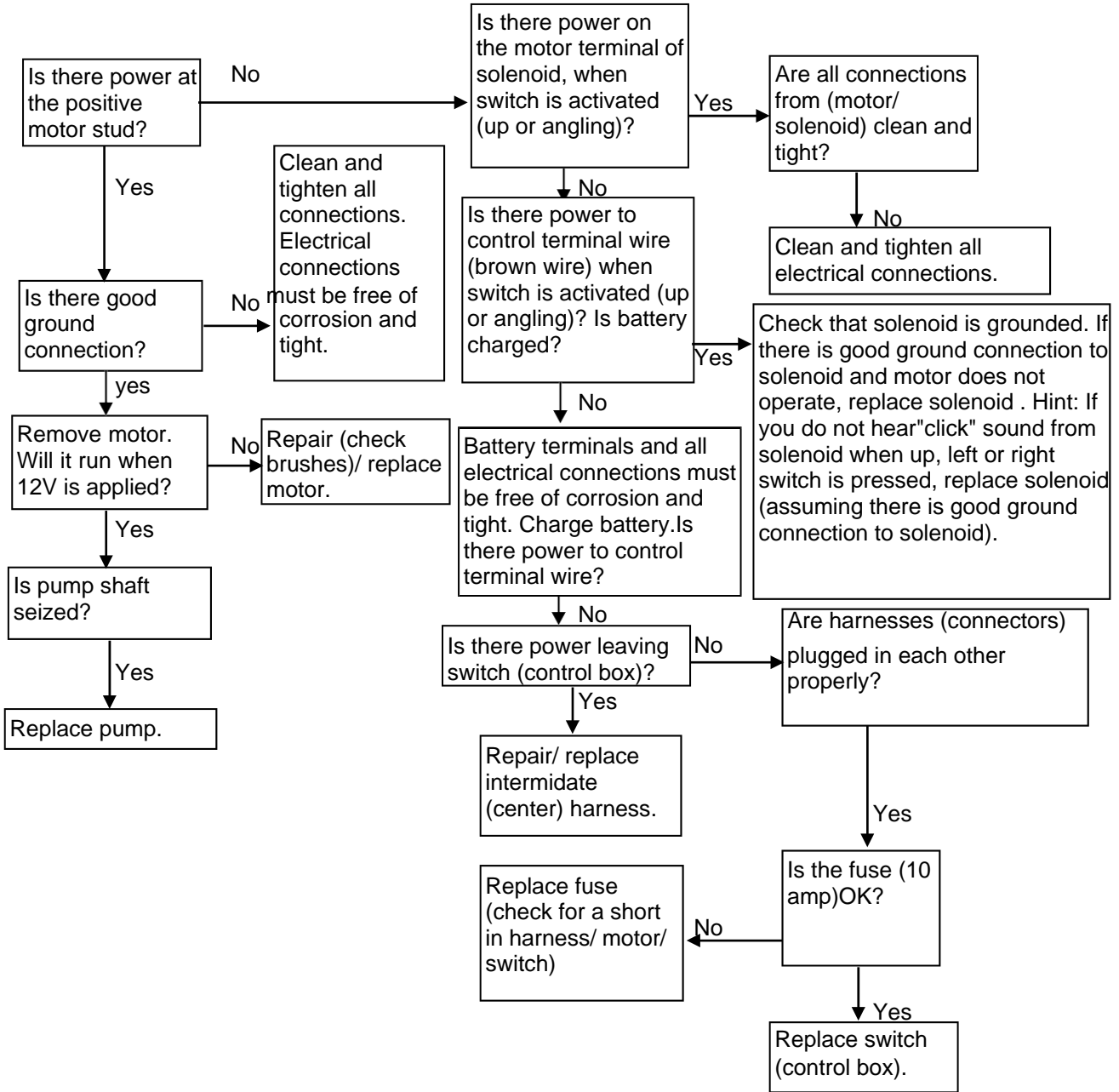
Specification:

- Max Amp Draw 230 AMP (AMP draw of motor should be measured at maximum raise or maximum angle when motor is running at pressure setting at 2250 psi).
- Note: Do not operate motor continuously for more than 30 sec.
- Relief valve setting 2250 psi.
 - X-over relief valve setting 3000 psi.
- Note: Quick couplers are an optional item. If unit is not equipped with quick couplers, disregard troubleshooting steps involving them.

Troubleshooting tips for M673F (new version):

1. Pump shaft can be turned freely (smoothly) using two fingers. If it can't be turned replace pump. Proper pump rotation is clockwise looking from the motor end.
2. Use a screwdriver to check magnetism of solenoid coils. Place screwdriver on the nut securing the coil and have the switch operated. Strong magnetic attraction should be felt.
3. Measure pump pressure at an angle hose (at full angle) it has to be 2250 psi (assuming that cross over relief valve setting is 3000 psi, if cross over relief valve setting is less than relief valve setting pressure gage will read lowest reading). The most accurate reading of system pressure is reading pressure on lift cylinder. When testing or making adjustments on the relief valve the system must be "dead headed" (cylinder at full stroke or in a position where cylinder movement is zero).
4. AMP draw of motor should be measured at maximum raise or maximum angle when motor is running at 2250 psi.
5. Use volt meter or test light to test for power in a harness or continuity in a switch. A test light is simply a light bulb which has one end connected by a wire to an alligator clip and the other end connected to a metal probe. It is used to check the electrical circuit when the battery is connected to the system. The alligator clip is grounded and the light glows when the probe comes in contact with a "live" electrical component.
6. Do not screw cartridge valves into cavity too fast; use a back and forth motion and have O-rings well lubricated.
7. Clean all parts thoroughly before assembly and lubricate with clean oil.
8. Do not use Teflon tape on hydraulic connections as it can easily jam the valves and plug the filters in the system, use pipe sealant. Never apply pipe sealant at the end of fitting, always 2 - 3 threads back.
9. X-over pressure could be set using hand (hydraulic) pump. Example: If you want to set the pressure at x-over X1 insert hand pump hose in the C1 port together with pressure gage. Loosen the jam nut and turn adjusting screw clockwise a turn or two and watch the gauge; if it goes up, continue to turn the screw until the required setting is reached. Retighten the jam nut. To set X-over X2 repeat the same steps as in X1.
10. To adjust relief valve:
 - a. Loosen jam nut counter-clockwise.
 - b. Turn screw clockwise to increase pressure or turn screw counter-clockwise to decrease pressure.
 - c. Tighten jam nut clockwise to 50in.lb. torque.
 - d. Check system pressure after jam nut is tight. Readjust pressure if screw is moved during tightening of jam nut.

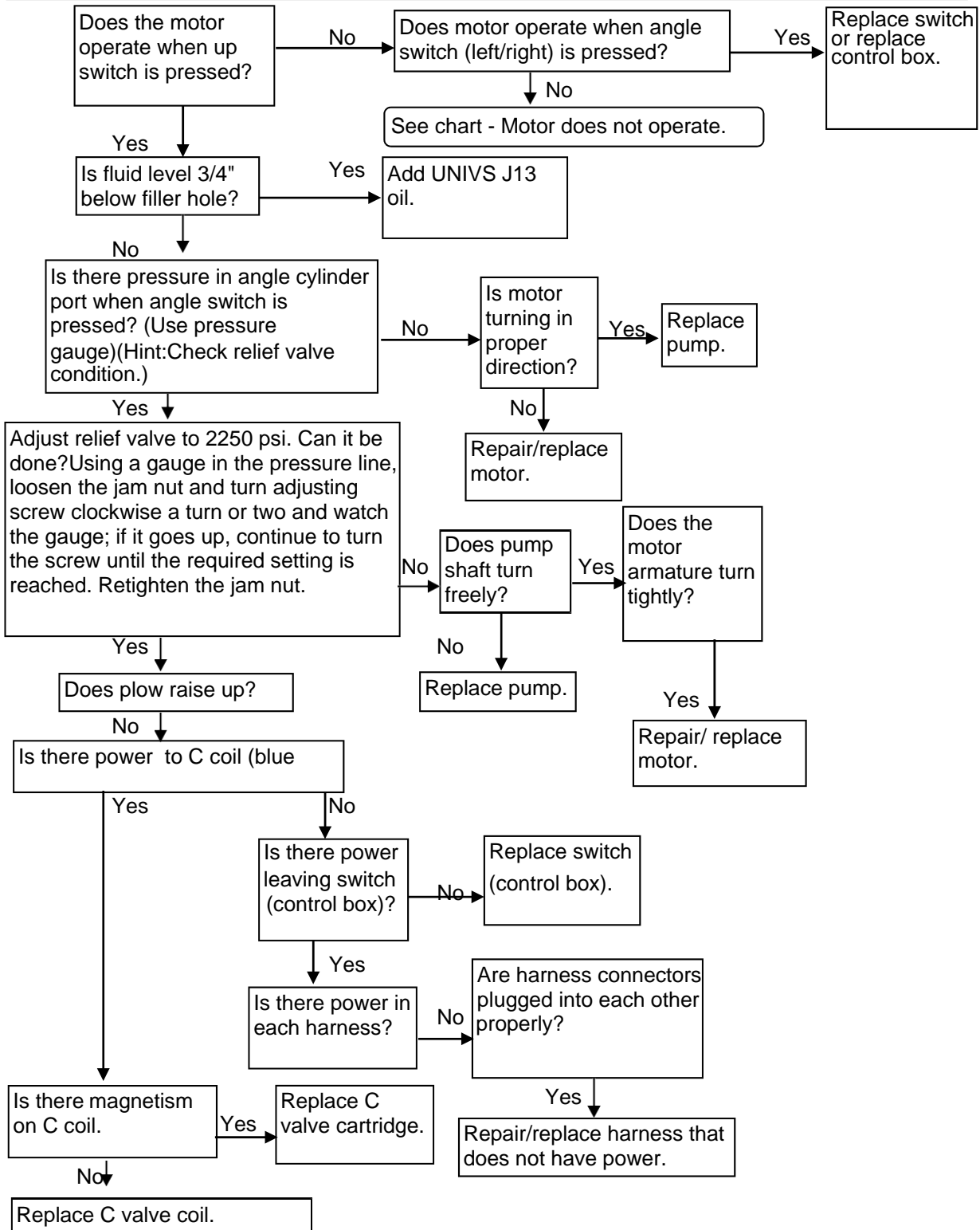
MOTOR DOES NOT OPERATE M673F (new version)



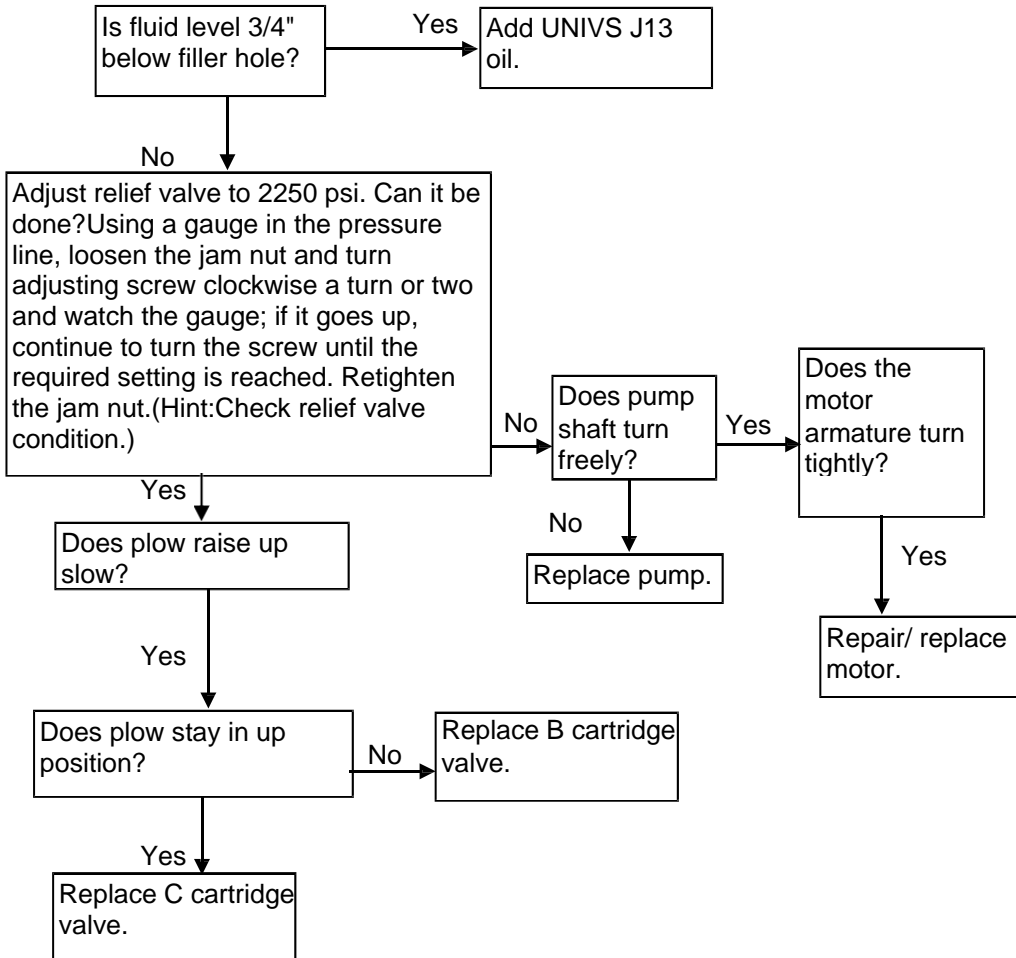
MOTOR OPERATES CONTINUOUSLY M673F (new version)

If motor operates continuously, change solenoid.

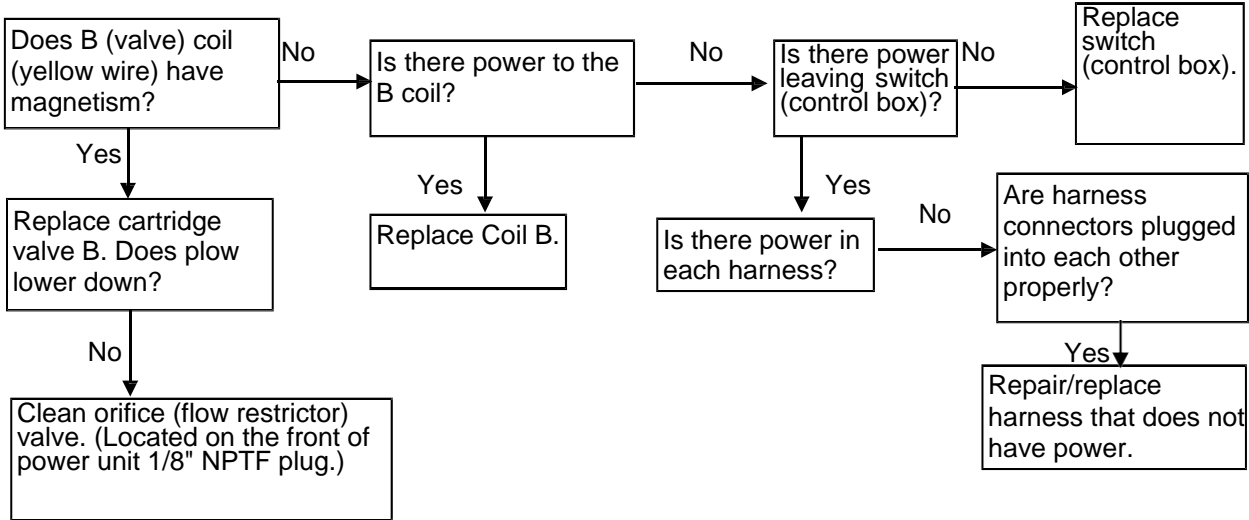
SNOW PLOW DOES NOT RAISE M673F (new version)



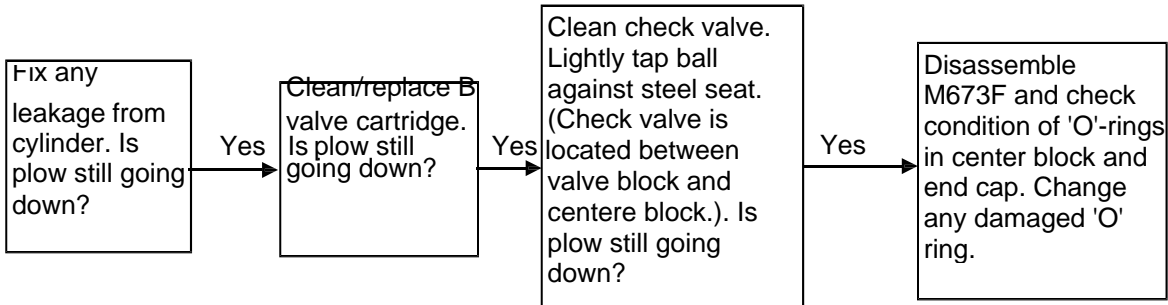
SNOW PLOW RAISE VERY SLOW M673F (new version)



SNOW PLOW WILL NOT LOWER M673F (new version)



SNOW PLOW LEAKS DOWN M673F (new version)



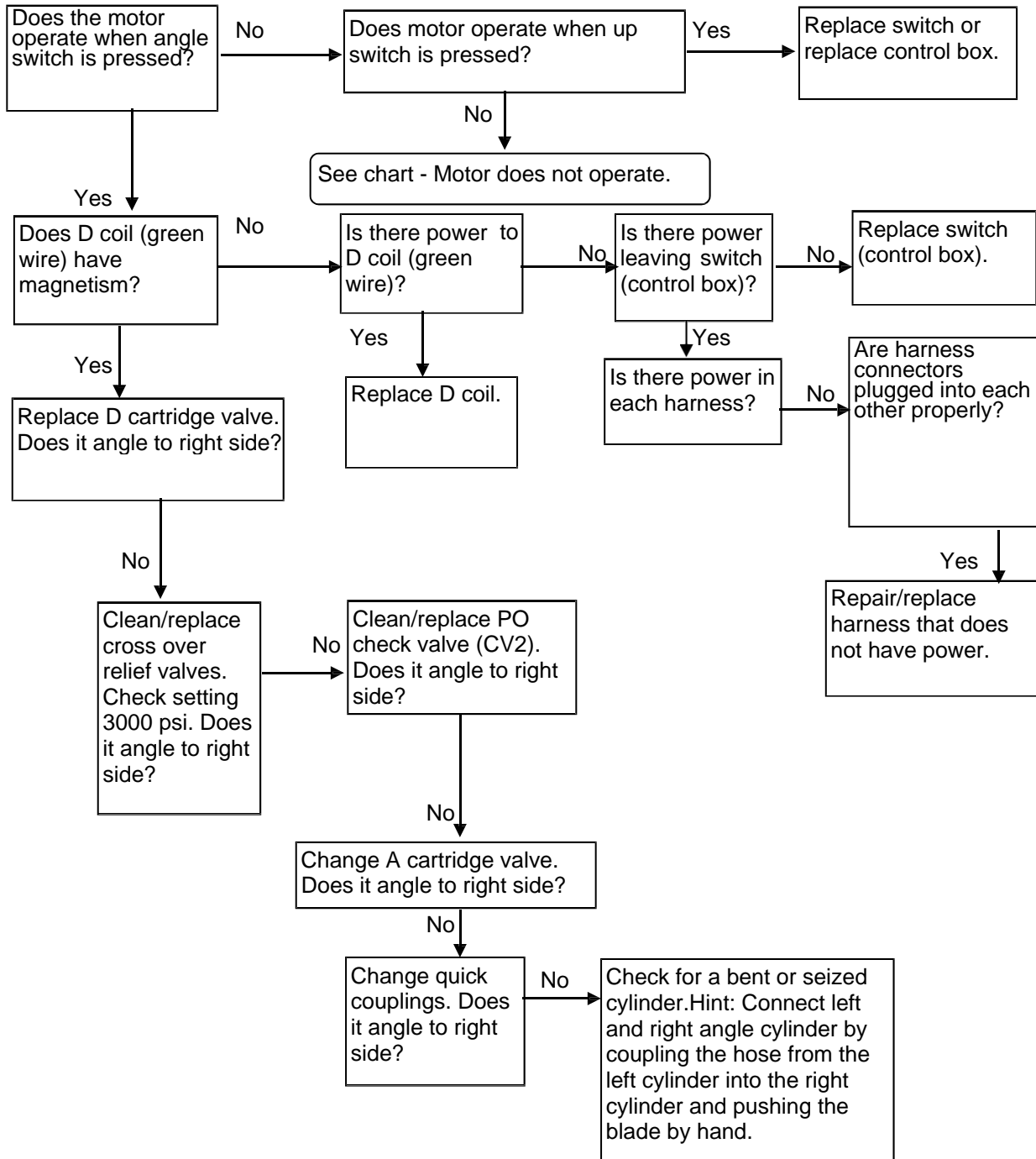
SNOW PLOW ANGLES BEFORE GOING UP WHEN UP

If snow plow angles left before goes up change A cartridge valve and if snow plow angles to right side change D cartridge valve.

SNOW PLOW WHEN IS FULLY ANGLED GOES UP (WHEN ANGLE SWITCH IS PRESSED) M673F (new version)

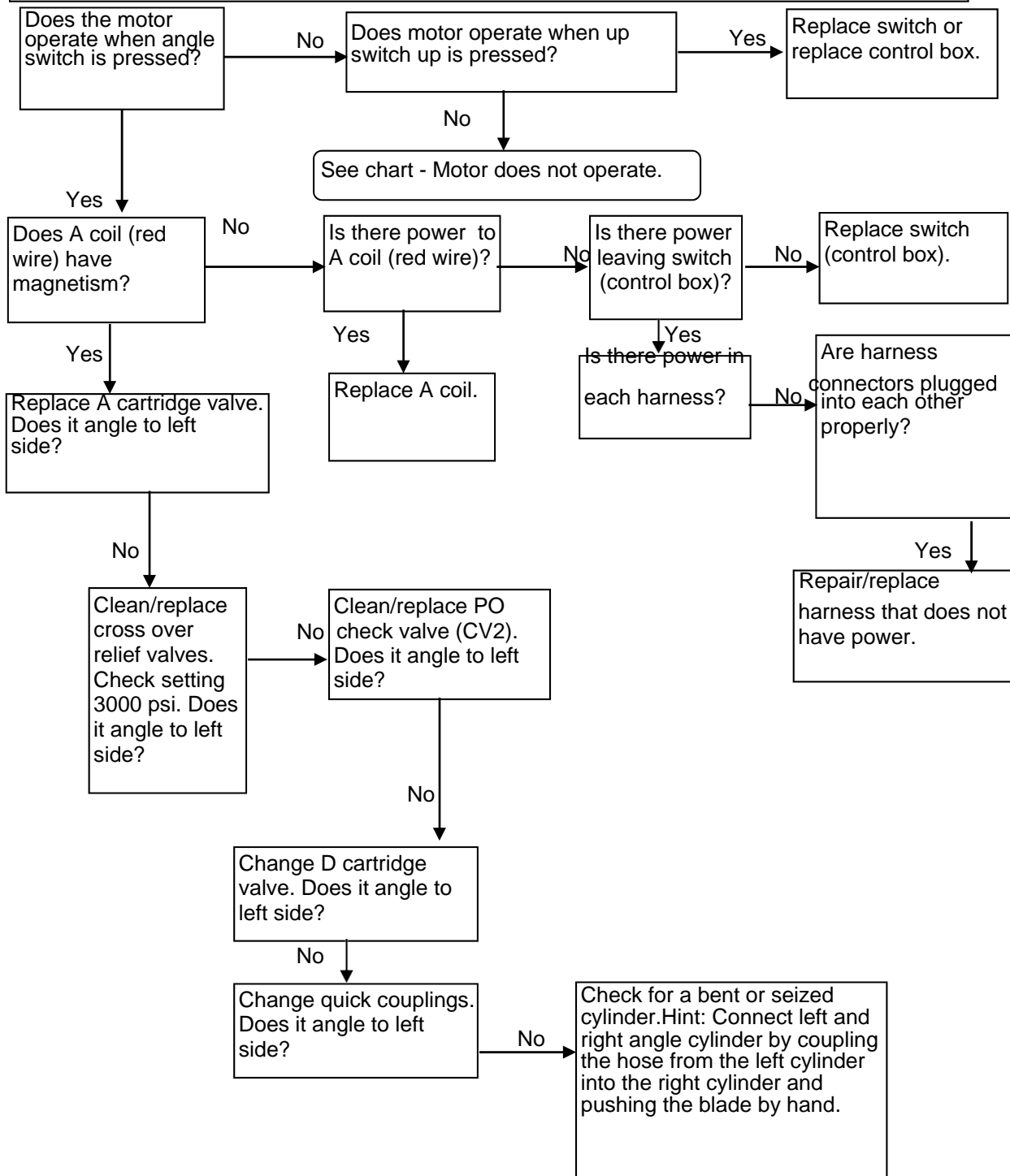
Change C valve cartridge.

SNOW PLOW DOES NOT ANGLE TO RIGHT SIDE M673F



Note: Before start troubleshooting check that plow moves up and down. If plow does not move up and down see "plow does not raise".

SNOW PLOW DOES NOT ANGLE TO LEFT SIDE M673F



Note: Before start troubleshooting check that plow moves up and down. If plow does not move up and down see "plow does not raise".