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Form No. 102611

Parts List and Operating Instructions for:

61253
61253-50-220
61698
61809

MODEL B
ELECTRIC TWO-STAGE HYDRAULIC PUMP

Read and carefully follow these instructions. Most problems with new equipment are caused by improper operation or installation. Warning statements must be carefully observed to help prevent personal injury.

SAFETY PRECAUTIONS

WARNING: To help avoid personal injury,

Hydraulic Hose

- **Before operating the pump, all hose connections must be tightened using the proper tools. Do not overtighten. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure or may cause high pressure fittings to split at pressures lower than their rated capacities.**
- **Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and shift the control valve twice to release all pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury.**
- **Do not subject the hose to potential hazard such as fire, extreme heat or cold, sharp surfaces, or heavy impact. Do not allow the hose to kink, twist, curl or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear because any of these conditions can damage the hose and may result in personal injury.**
- **Do not use the hose to move attached equipment. Stress may damage the hose and cause personal injury.**
- **Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury.**

Pump

- **Do not exceed the PSI hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities may result in personal injury.**
- **Before replenishing the fluid level, retract the system to prevent overfilling the pump reservoir. an overfill may cause personal injury due to excess reservoir pressure created when the cylinders are retracted.**

Cylinder

- **Do not exceed the rated capacities of the cylinders. Excess pressure may result in personal injury.**
- **Do not set poorly-balanced or off-center loads on a cylinder. The load may tip and cause personal injury.**

Issue Date: Rev. 11-20-95

⚠ WARNING cont'd

Power Supply (Electric)

- **Do not use an ungrounded (two-prong) extension cord with this unit.**
- **Avoid any conditions that could create an electrical hazard.**
- **Any electrical work must be done by a qualified electrician.**
- **If the power cord is damaged or wiring is exposed, replace or repair immediately.**
- **Changing the voltage on this motor is a complicated and, if not done correctly, dangerous procedure. Consult the manufacturer for specific information before attempting an rewiring. Rewiring voids CSA approval.**
- **Disconnect the power supply before removing the motor casing cover or performing repairs or maintenance.**
- **All voltages must be wired for CCW rotation when viewed from the lead end (top) of the motor.**
- **The line voltage must be the same as the voltage for which the pump is wired. Ex: 110/115 volt pump plugged into 110/115 volt power source.**
- **Check the total amperage draw for the electrical circuit you will be using. Ex: Do not plug a motor or motors that may draw 25 amps into a 20 amp fused electrical circuit.**
- **Do not attempt to increase the powerline capacity by replacing a fuse with another fuse of higher value. Overheating of the powerline and the possibility of a fire will result.**

OPERATING PROCEDURE

The electric motor is a single phase, 60 cycle motor that has been wired at 115 volts.

Filling the Reservoir

NOTE: This pump has been shipped without hydraulic fluid in the reservoir. A high grade hydraulic fluid has been shipped with the pump, but if additional fluid is required, use only Power Team hydraulic fluid.

1. Clean the area around the filler cap to remove all dust and grit. Any foreign material in the hydraulic fluid may damage the polished surfaces and precision-fit components of this pump.
2. Retract all cylinders to the return position.
3. Remove the filler cap and insert a clean funnel with a filter. Fill the reservoir with hydraulic fluid to within 2" of the cover plate. Replace the filler cap with the breather-hole OPEN.
4. Cycle the pump (with the cylinders attached) several times. Retract the cylinders and check the fluid level in the pump reservoir.

Hydraulic Connections

1. Clean the areas around the hydraulic fluid ports of the pump and cylinder.
2. Inspect all threads and fittings for signs of wear or damage, and replace as needed.
3. Clean all hose ends, couplers, or union ends.
4. Remove the thread protectors from the hydraulic fluid outlets.
5. Connect the hose assembly to the hydraulic fluid outlet, and couple the hose to the cylinder. **NOTE: Seal all external pipe connections with a high-quality, nonhardening thread sealant, such as Power Team HTS6. Teflon tape can be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.**

When operating the pump for the first time:

1. Check all valve and hose fittings to insure proper tightness, check the hydraulic fluid level in the reservoir, and plug in the pump motor.
2. Activate the pump, and advance and retract the cylinder(s).
3. Refer to section titled "Bleeding air from the System."
4. Recheck the fluid level in the reservoir; add fluid if needed. The hydraulic system is now ready for full operation.

PREVENTIVE MAINTENANCE

WARNING:
ALWAYS disconnect the pump from the power supply before attempting any maintenance or repair procedures. Repairs and maintenance are to be performed in a dust-free environment by a qualified technician.

Bleeding Air from the System

After use, air can accumulate in the hydraulic system if the reservoir fluid level is too low. Air causes the cylinder to respond slowly or in an unstable manner. To remove the air:

If the pump is positioned above the cylinders:

1. Remove any load from the cylinders.
2. Position the cylinders on their sides with the couplers pointing upward.
3. Cycle the hydraulic system through several cycles of fully extending and retracting the cylinders.

If the pump is positioned below the cylinders:

1. Loosen the cap screws on top of the cylinders.
2. Start the pump.
3. When fluid replaces the air escaping (bleeding) from the loosened screws, stop the pump and retighten the screws.

Hydraulic Fluid Level

1. Check the fluid level in the reservoir after each 10 hours of use. The fluid should be 2" from the pump cover plate when all cylinders are retracted.
2. Drain, flush, and refill the reservoir after approximately every 300 hours of use with Power Team hydraulic fluid. The frequency of fluid changes depends upon the general working conditions, severity of use, and the overall cleanliness and care given the pump.

Draining and Flushing the Reservoir

1. Clean the pump exterior before the pump interior is removed from the reservoir.
2. Remove the screws that hold the motor and pump assembly to the reservoir. **IMPORTANT: Do not damage the gasket or bump the filter or hydraulic pressure regulating valves when lifting the pump assembly off the reservoir.**
3. After disposing of the used hydraulic fluid, clean the inside of the reservoir with a suitable flushing oil. Rinse the filter clean.
4. Place the pump and motor assembly back onto the reservoir, and secure it with four of the machine screws assembled on opposite corners of the housing.

IMPORTANT: Connect a hose to the advance port on the valve. Place the other end of the hose into the fluid filler plug hole.

5. Run the pump for several minutes. Disconnect the motor and pump assembly, and drain and clean the inside of the reservoir.
6. Fill the reservoir with Power Team hydraulic fluid. Replace the pump and motor assembly (with gasket) on the reservoir, and rethread the machine screws. Tighten screws securely and evenly.

Adding Fluid to the Reservoir

1. The cylinder(s) must be fully retracted, and the power supply must be disconnected when adding fluid to the reservoir.
2. Clean the entire area around the filler plug. Remove the filler plug and insert a clean funnel with a filter.
3. Use only Power Team hydraulic fluid (215 SSU @ 100° F). The fluid level should come to within 2" of the pump cover plate with all cylinders retracted.

TROUBLESHOOTING GUIDE

IMPORTANT: Any repair work or troubleshooting should be performed by qualified personnel familiar with this equipment. Use the proper gauges and equipment when troubleshooting.

NOTE:

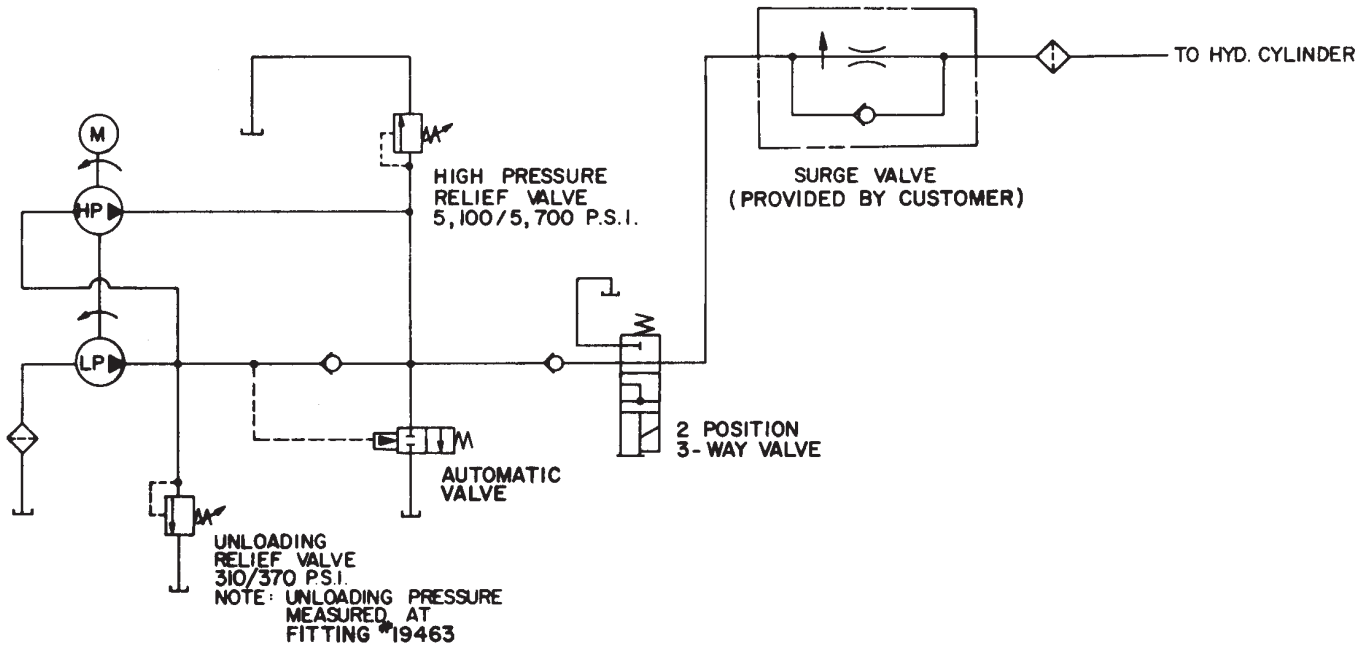
- **Depending on the pump version, it is often best to check for leaks by using a hand pump and applying pressure to the suspect area without the motor running. Watch for leaking fluid and follow it back to its source.**
- **Plug the outlet ports of the pump when checking for leakage to determine if the leakage is in the pump or if it is in the cylinder or tool.**
- **Refer to parts list, hydraulic schematic and electrical schematic when using this troubleshooting guide.**

PROBLEM	CAUSE	SOLUTION
Foaming hydraulic fluid.	1. Fluid level too high	1. Lower fluid level to approx. 2" below top of cover plate.
Electric motor does not run. **⚠ WARNING: Disconnect power supply before removing cover. any electrical work should be performed by a qualified electrician.**	1. Unit is not plugged in. 2. No voltage supply. 3. Broken lead wire or defective power cord plug. 4. Defective switches. 5. Defective remote switch. 6. Circuit breaker tripped because total amperage draw too high for existing circuit. 7. Overheated motor. 8. Faulty thermal protector. 9. Defective motor.	1. Plug in unit. 2. Check line voltage. Check reset button on power panel. 3. Replace defective parts. 4. Check switches. 5. Repair or replace remote switch. 6. Add an additional circuit or use alternate circuit. 7. Wait for motor to cool before restarting. Thermal protector will reset automatically. 8. Replace. 9. Replace or repair motor.
Pump does not build full pressure.	1. Faulty pressure gauge. 2. Check for external leakage. 3. Check the relief valve setting. 4. Check for leaks in the solenoid valve. 5. Inspect the pump for internal leakage. Check high pressure pump inlet or outlet ball checks. 6. Sheared key(s).	1. Calibrate gauge. 2. Seal any faulty pipe fitting with pipe sealant. 3. Lift the pump from the reservoir but keep the filter immersed in oil. Note the pressure reading when the relief valve begins to open up. If functioning normally, it should start to leak off at relief valve pressure. 4. Clean and reseat, or replace parts. 5. Same procedure as above but look for leaks around the entire inner mechanism. If there are no visible leaks, the high pressure pump subassembly may be leaking. Remove all parts. Check the valve head assembly body for any damage to the seat area. Clean and reseat if necessary. Inspect for damage and replace parts if necessary, then reassemble. 6. Replace.

PROBLEM	CAUSE	SOLUTION
Pump is not delivering fluid or delivers only enough fluid to advance cylinder(s) partially or erratically.	1. Fluid level too low.	1. Fill reservoir to within 2" of filler plug with all cylinders retracted
	2. Loose fitting coupler to cylinder.	2. Check quick-disconnect couplings to cylinders. Inspect couplers to insure that they are completely coupled. Occasionally couplers have to be replaced because the ballcheck does not stay open due to wear.
	3. Air in system.	3. Bleed the system.
	4. Dirt in pump or filter plugged.	4. Pump filter should be cleaned and if necessary, pump should be dismantled and all parts inspected and cleaned.
	5. Cold oil or oil is too heavy (Hydraulic fluid is of a higher viscosity than necessary).	5. Change to lighter viscosity fluid.
	6. Relief valve or low pressure unloading valve out of adjustment.	6. Readjust as needed.
	7. Reservoir capacity is too small for the size of the cylinder(s) used.	7. Use smaller cylinder(s) or larger reservoir.
	8. Defective directional valve.	8. Inspect all parts carefully and replace if necessary.
	9. Release poppet not seating in solenoid valve.	9. Actuate UP and DOWN buttons simultaneously on remote to flush foreign material or dismantle, inspect, and clean.
	10. Sheared drive shaft key(s).	10. Replace.
	11. Motor rotating in wrong direction.	11. Refer to electrical schematic on motor.
	12. Vacuum in reservoir.	12. Check for plugged vent in filler plug.
	13. Low pressure pump worn.	13. Repair or replace gerotor pump.
Pump builds pressure but cannot maintain pressure.	1. Check to see if there are any external leaks. If no oil leakage is visible, the problem is internal.	1. Reseal leaking pipe fittings with pipe sealant.
	2. To test for a leaking control valve, lift the pump from the reservoir but keep the filter in the oil. Remove the drain line to see if the oil is leaking from the valve. If the valve is not leaking, the internal check valve could be leaking. Refer to the note concerning checking for oil leaks at the beginning of this Troubleshooting Guide.	2. Clean, reseat or replace flow control valve parts. If the internal check valve is leaking, the check valve must be dismantled and the seat area repaired, poppet replaced, etc.

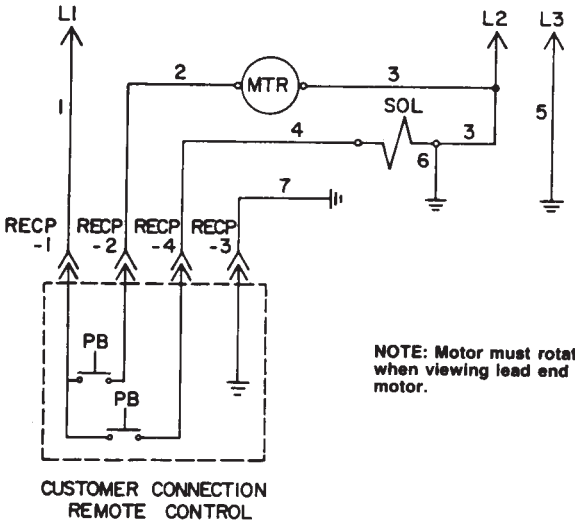
PROBLEM	CAUSE	SOLUTION
Automatic valve does not build full pressure.	1. Pilot pressure is too low. 2. Defective or oversize seat on automatic valve.	1. Increase pilot pressure. 2. Replace ball and seat.
Automatic valve does not release pressure.	1. Sticking piston. 2. High pressure oil is leaking past the lo-to-hi pressure check. This oil leaks back to the piston in the automatic valve keeping the piston closed.	1. Remove, clean and polish. 2. Seat the ball check. Inspect and replace any faulty components.
Cylinder(s) do not retract.	1. Check the system pressure; if the pressure is zero, the solenoid valve is releasing pressure and the problem may be in the cylinder, (mechanical linkage connected to cylinders), or quick-disconnect couplings. 2. Defective Valve	1. Check the cylinders for broken return springs and check couplers to ensure that they are couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because one check does not stay open in the coupled position. 2. Check valve operation and inspect parts. Replace if necessary.
Pump delivers excess fluid pressure.	1. Check pressure gauge. 2. Relief valve not properly set.	1. Calibrate gauge. 2. Reset the relief valve.

HYDRAULIC SCHEMATIC



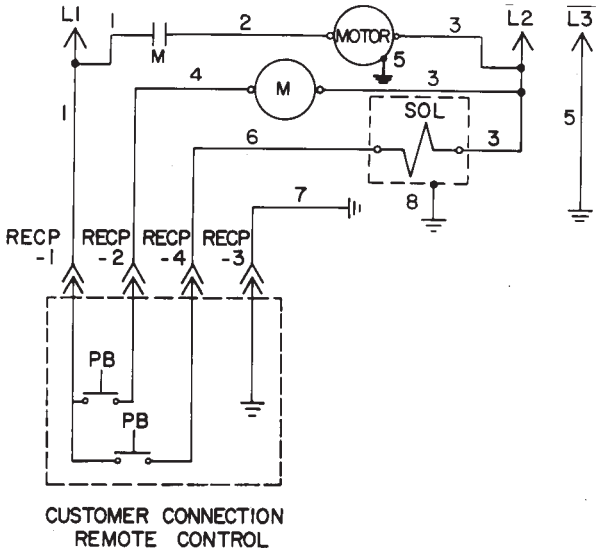
ELECTRICAL SCHEMATIC
115 V., 60 Hz.

For #61253 & #61809

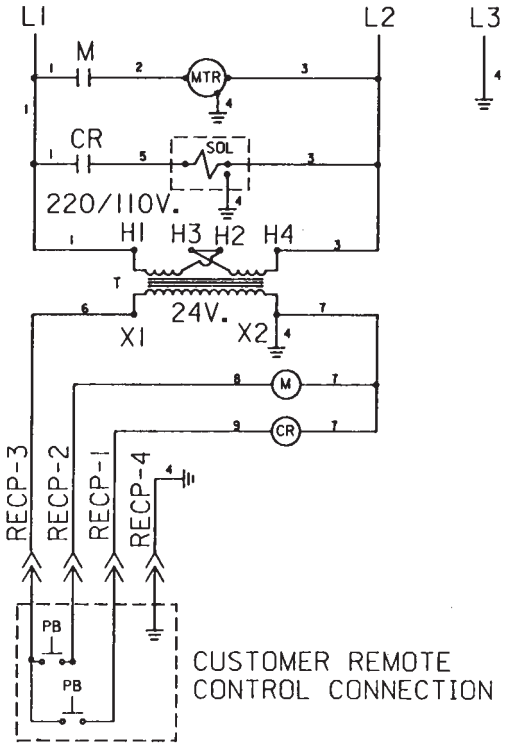


NOTE: Motor must rotate C.C.W. when viewing lead end (top) of motor.

For #61698



ELECTRICAL SCHEMATIC
220 V., 50 Hz.

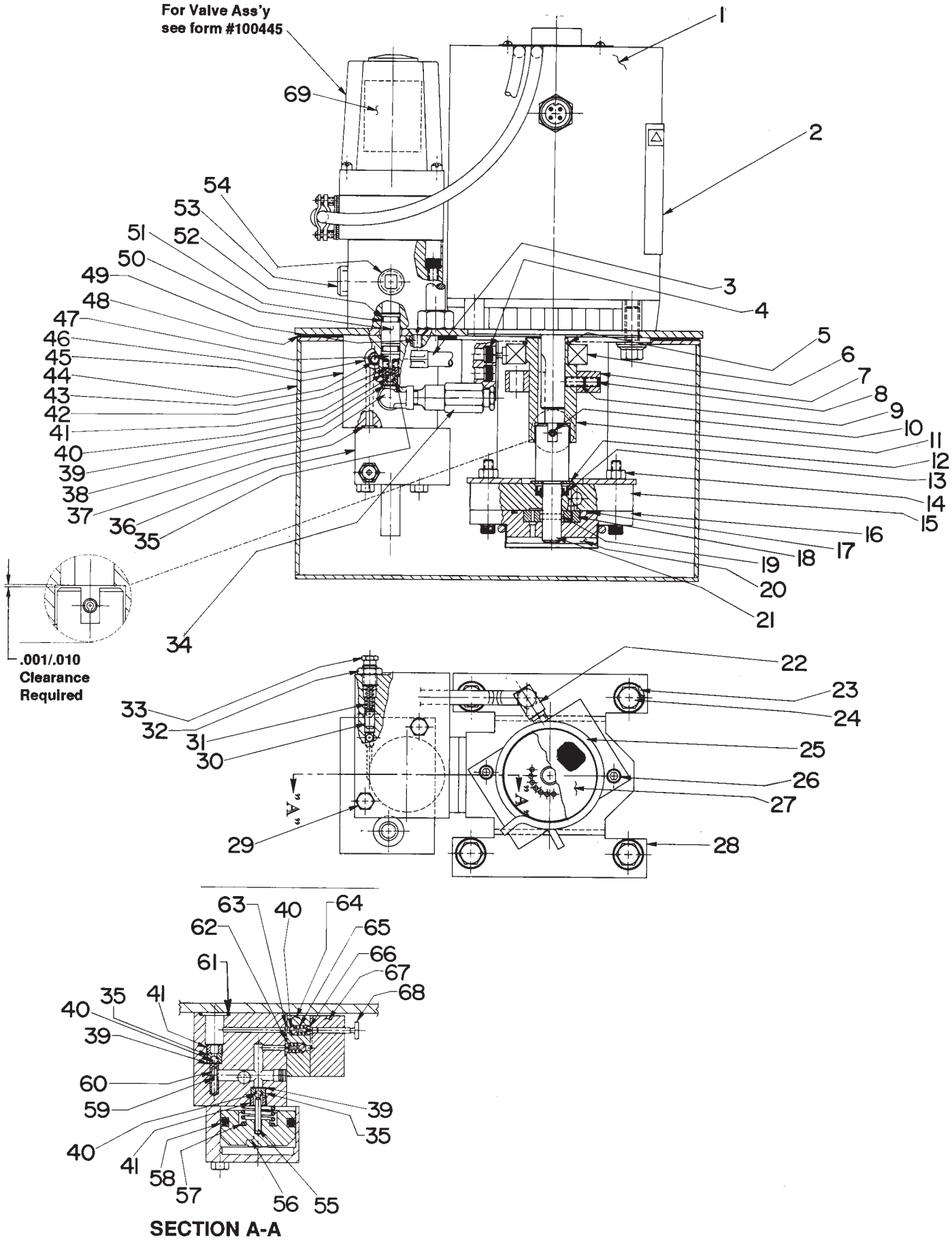


WARNING: To help avoid personal injury, all electrical work must be done by a qualified electrician.

North American & International Color Codes:

Conductors	North American	International
Line	Black	Brown
Neutral.	White	Blue
Ground.	Green.	Green/Yellow

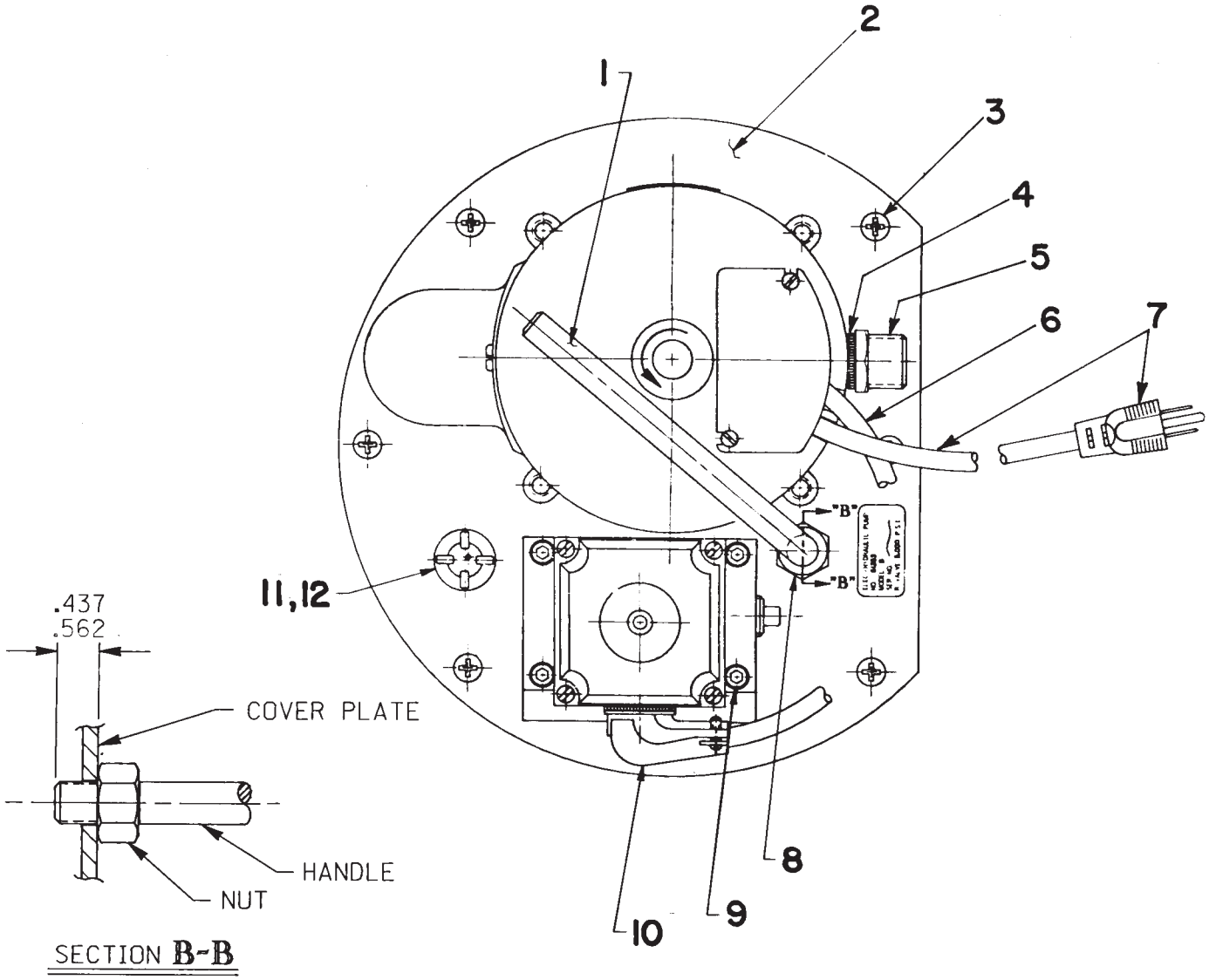
CROSS SECTION VIEW



Item No.	Part No.	No. Req'd	Description
1	**58129**	1	Electric Motor (1/2 HP; For #61253 & #61698)
	47137	1	Electric Motor (1/2 HP; For #61809)
	304920	1	Electric Motor (1/2 HP; For 61253-50-220)
2	**200188**	1	Warning Decal (For 61253, 61698, & 61809)
3	**304819**	1	Hose Assembly
4	**10022**	4	Soc. Hd. Cap Screw (1/4-20 X 1-1/2 Lg.; Torque to 180/200 in. lbs.)
5	**209798**	1	Retaining Ring (30 mm)
6	**209805**	1	Bearing (55 mm X 30 mm X 13 mm Thk.)
7	**304886**	1	Counterweight
8	**10519**	1	Set Screw (1/4-20 X 3/8 Lg.; Torque to 60/80 in. lbs.)
9	**10138**	1	Set Screw (1/4-20 X 1/2 Lg.; Torque to 60/80 in. lbs.)
10	**10973**	1	Slotted Spring Pin (3/16 O.D. X 1-1/4 Lg.)
11	**45596**	1	Eccentric
12	**12595**	1	Brass Washer
13	**304830**	1	Oil Seal (7/8 X 1/2 X 1/4 Thk.)
14	**10190**	2	Hex. Nut (1/4-20)
15	**61170**	1	Upper Gerotor Housing
16	**61169**	1	Lower Gerotor Housing
17	**10922**	1	O-ring (2-1/8 X 1-15/16 X 3/32)
18	**304826**	1	Gerotor Set
19	**209794**	1	Gerotor Drive Pin
20	**21846**	1	Filter Support
21	**304835**	1	Drive Shaft
22	**14440**	1	Elbow Fitting (90°)
23	**10258**	4	Washer (13/16 X 3/8 X 1/16 Thk.)
24	**213663**	4	Flange Head Screw (Torque to 230/250 in. lbs.)
25	**11461**	1	Clamp Ring
26	**10854**	2	Soc. Hd. Cap Screw (1/4-20 X 1-3/4 Lg.; Torque to 60/80 in. lbs.)
27	**21608**	1	Filter
28	**52174**	1	Pump Mounting Bracket
29	**13037**	2	Hex. Hd. Cap Screw (1/4-20 X 2" Lg.; Torque to 40/50 in. lbs.)
30	**211080**	1	Pin
31	**11221**	1	Compression Spring (1/4 O.D. X 1" Lg.)
32	**10386**	1	Hex. Locknut (3/8-24)
33	**29786**	1	Adjusting Screw
34	**21278-50**	1	Relief Valve Assembly
35	**209787**	3	Replaceable Seat
36	**52167**	1	Automatic Valve Block
37	**10266**	1	O-ring (3/8 X 1/4 X 1/16, -010)
38	**13229**	1	Elbow Fitting (90°)
39	**10442**	3	Copper Washer (1/4" bolt)
40	**12223**	5	Ball (3/16 Dia.)
41	**209797**	3	Hollow Lock Screw (7/16-20; Torque to 180/200 in. lbs.)
42	**14282**	1	Compression Spring (3/16 O.D. X 1/2 Lg.)
43	**10427**	1	Pipe Plug (1/8 NPTF)
44	**61949PR3**	1	Reservoir
45	**61946**	1	Check Body
46	**19463**	1	Tee Fitting
47	**209795**	1	Outlet Ball Stop
48	**52093**	2	Reservoir Gasket
49	**11529**	2	Flat Hd. Mach. Screw (1/4-20 X 3/4 Lg.)
50	**202505**	1	Bushing
51	**11863**	2	Backup Ring
52	**10268**	2	O-ring (1/2 X 3/8 X 1/16, -012)
53	**10909**	1	Pipe Plug (3/8 NPTF)
54	**13273**	1	Plug Fitting (3/8 NPTF, Plastic)
55	**211843**	1	Dowel Pin (3/16 O.D. x 1" Lg. - Install with radius end out)
56	**46063**	1	Automatic Valve Piston
57	**16346**	1	Compression Spring (1" O.D. X 15/16 Lg.)
58	**10283**	1	O-ring (2" X 1-5/8 X 3/16, -326)
59	**12149**	1	Dowel Pin (1/8 Dia.. X 3/4 Lg.)
60	**16057**	1	Compression Spring (3/16 O.D. X 1" Lg.)
61	**10273**	1	O-ring (13/16 X 5/8 X 3/32, -114)
62	**14763**	1	O-ring (7/16 X 5/16 X 1/16, -011)
63	**10265**	1	O-ring (5/16 X 3/16 X 1/16, -008)
64	**45559**	1	H. P. Check Block
65	**10445**	2	Compression spring (.166 O.D. X 3/4 Lg.)
66	**24549**	2	Valve Guide
67	**45866**	1	H. P. Piston Block
68	**305526**	1	High Pressure Piston
69	**214721**	1	Warning Decal (For #61809)

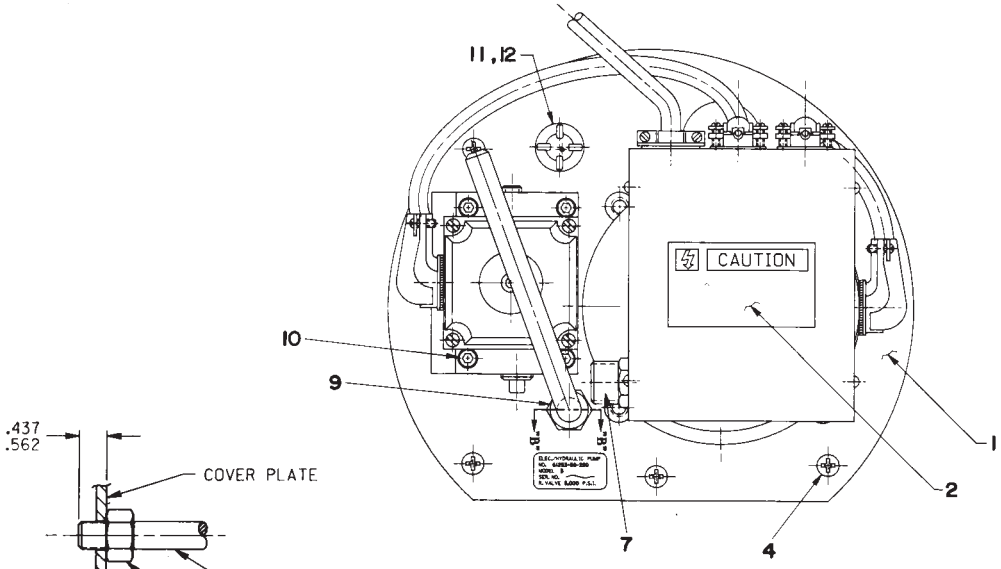
Note: Shaded areas reflect last revision(s) made to this form.

TOP VIEW
of #61253 & #61809

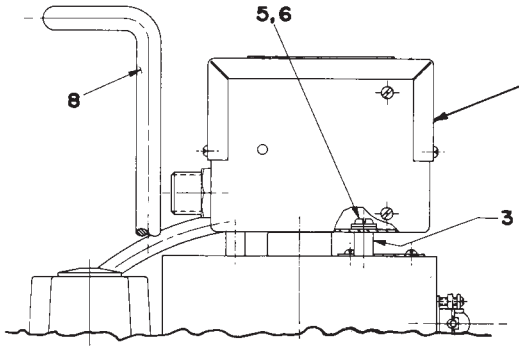


Item No.	Part No.	No. Req'd	Description
1	**304340**	1	Handle
2	**53350PR3**	1	Cover Plate
3	**10177**	6	Rd. Hd. Mach. Screw (1/4-20 X 3/4 Lg.)
4	**11362**	1	Conduit Lock Washer
5	**45040**	1	Wire Harness
6	**12908**	1.4ft.	Electric Cable (18/3 SJTO)
7	**215263**	1	Cord Set (16/3 SJTO)
8	**10208**	1	Hex. Nut (1/2-13 UNC)
9	**12001**	4	Soc. Hd. Cap Screw (1/4-20 X 2-1/4 Lg.)
10	**11144**	1	Electric Strain Relief (90°)
11	**20937**	1	Filler/Vent Plug
12	**200415**	1	O-ring (Square Section)

TOP VIEW
of #61253-50-220



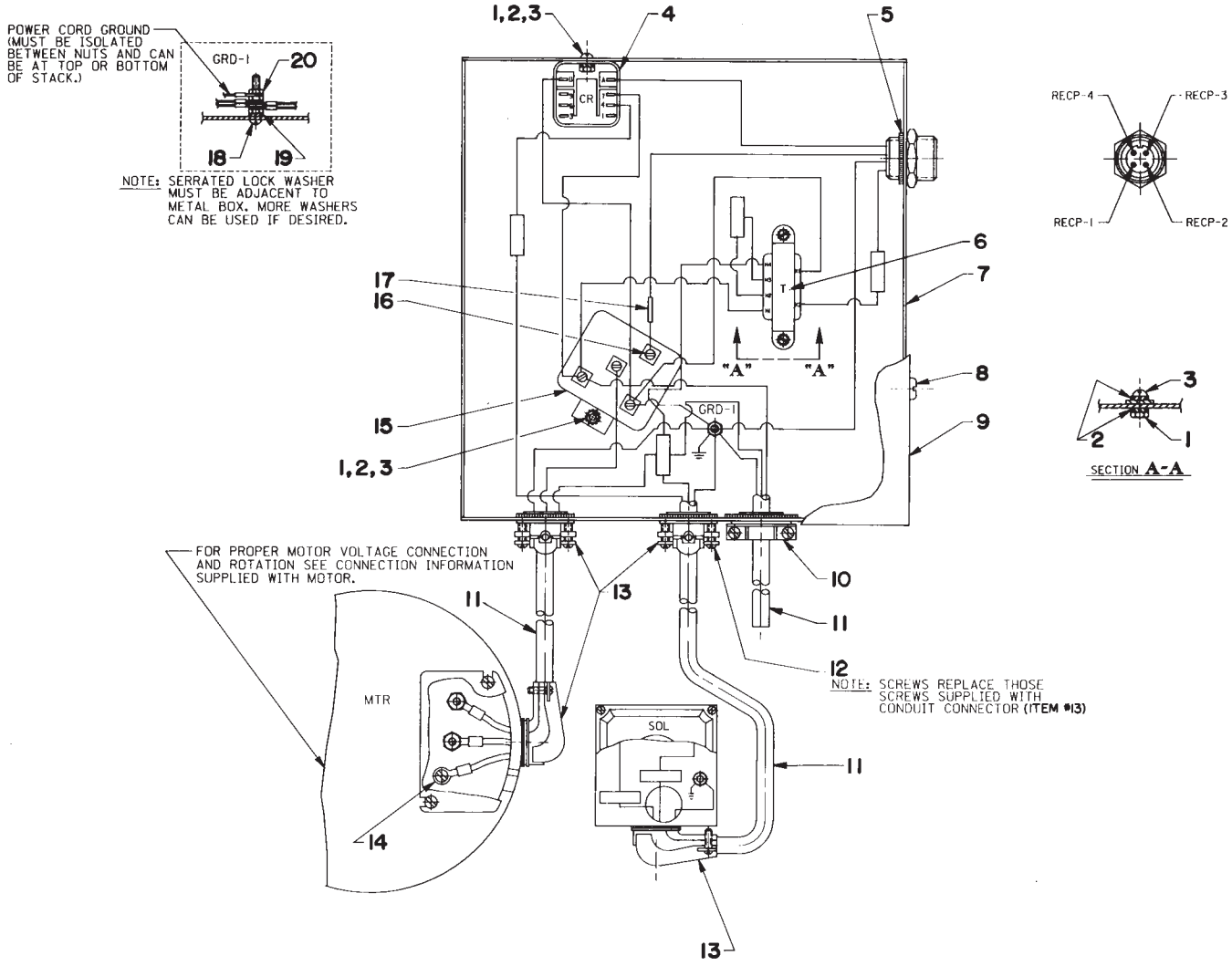
SECTION **B-B**



Control Box Assembly
See back sheet 6 of 7

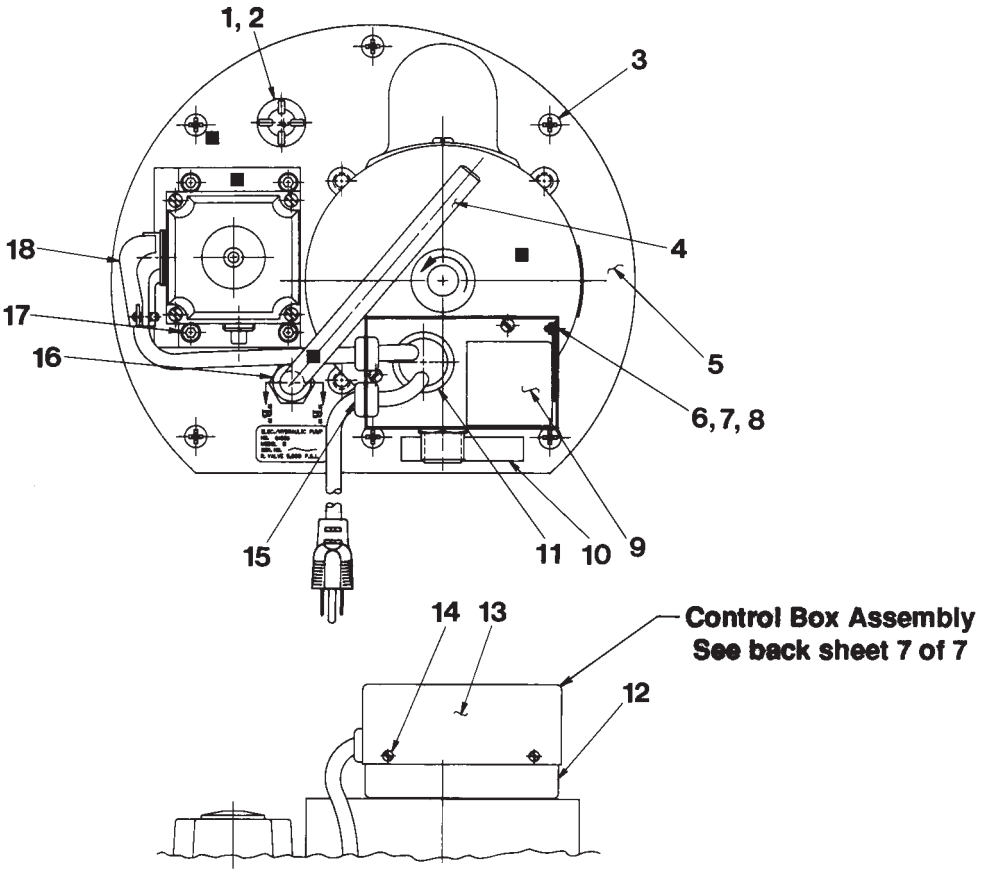
Item No.	Part No.	No. Req'd	Description
1	**53350PR3**	1	Cover Plate
2	**200188**	1	Warning Decal
3	**215121**	2	Spacer
4	**10177**	6	Rd. Hd. Machine Screw (1/4-20 X 3/4 Lg.)
5	**215316**	2	Self-tapping Screw (#10-24 X 1" Lg.)
6	**11089**	4	Washer
7	**45040**	1	Handle
8	**304340**	1	Handle
9	**10208**	1	Hex Nut (1/2-13 UNC)
10	**12001**	4	Soc. Hd. Cap Screw (1/4-20 X 2-1/4 Lg.)
11	**20937**	1	Filler/Vent Plug
12	**200415**	1	O-ring (Square Section)

CONTROL BOX
for #61253-50-220



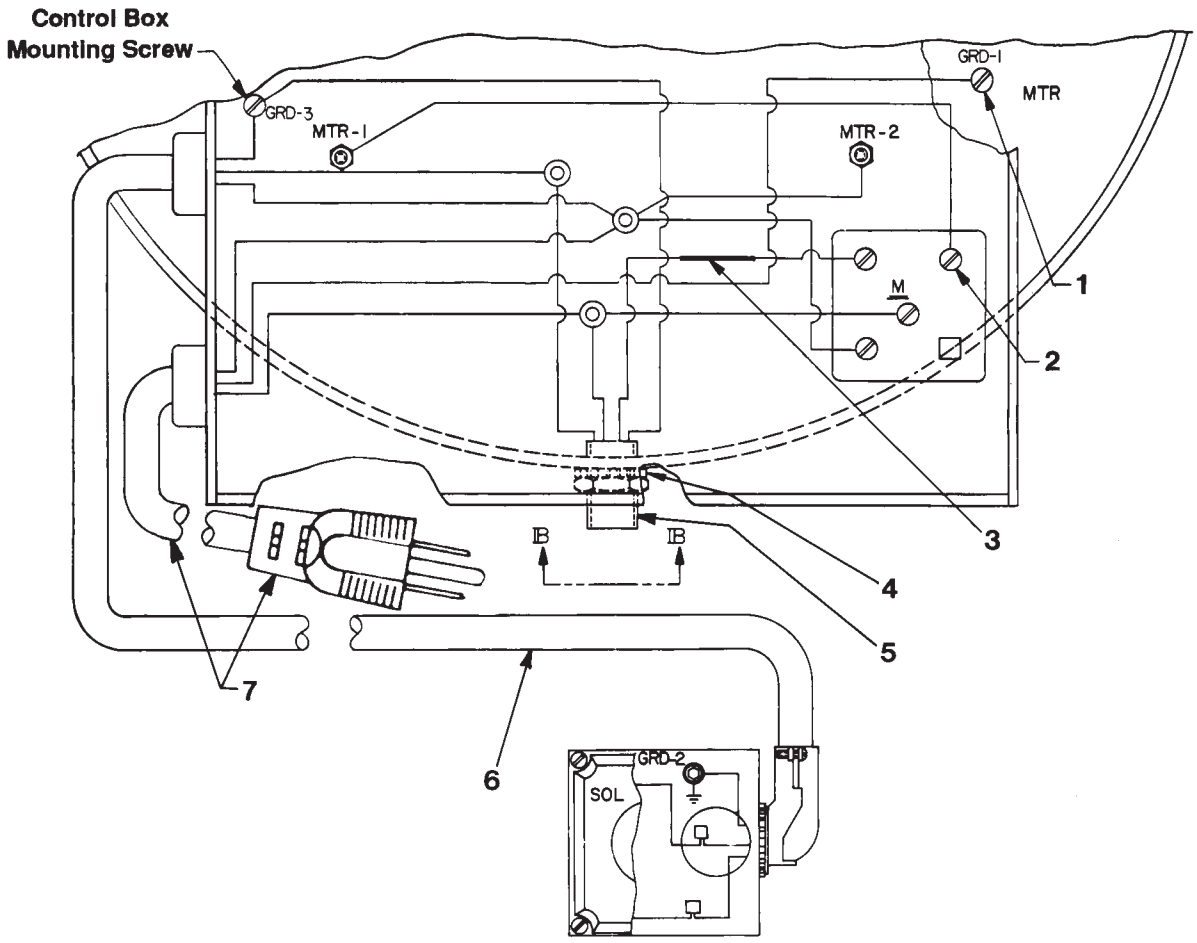
Item No.	Part No.	No. Req'd	Description
1	**10159**	1	Slotted Rd. Hd. Machine Screw (#6-32 X 5/16 Lg.)
2	**15906**	7	Washer (#6 Shakeproof)
3	**10195**	5	Hex Nut (#6-32)
4	**39092**	1	Relay
5	**11362**	1	Conduit Lockwasher
6	**305665**	1	Transformer
7	**45013GY5**	1	Control Box Body
8	**11141**	4	Self-tapping Screw (#6 X 3/8 Lg.)
9	**42576GY5**	1	Control Box Body
10	**211240**	1	Strain Relief
11	**308752**	23.5 ft.	Electrical Cable (14/3 SJTO)
12	**12062**	8	Rd. Hd. Screw (#8-32 X 3/8 Lg.)
13	**11144**	4	Electrical 90° Strain Relief
14	**15468**	1	Thread Cutting Screw (#6-32 X 3/8 Lg.)
15	**14667**	1	Starter Relay
16	**10975**	4	Pan Hd. Screw (#8-32 X 5/32 Lg.)
17	**19837**	.2 ft.	Heat Shrink
18	**10167**	1	Slotted Rd. Hd. Machine Screw (#10-24 X 3/4 Lg.)
19	**11108**	1	Lockwasher (#10)
20	**10197**	2	Hex Nut (#10-24)

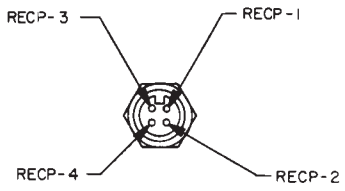
TOP VIEW
of #61698



Item No.	Part No.	No. Req'd	Description
1	**20937**	1	Filler/Vent Plug
2	**200415**	1	O-ring (Square section)
3	**10177**	6	Rd. Hd. Machine Screw (1/4-20 X 3/4 Lg.)
4	**304340**	1	Handle
5	**53350PR3**	1	Cover Plate
6	**17768**	1	Flat Hd. Machine Screw (#6-32 X 3/8 Lg.)
7	**10195**	1	Hex Nut (#6-32)
8	**15906**	1	Lockwasher
9	**214023**	1	Starter Relay
10	**213695**	1	Decal
11	**15497**	1	Grommet
12	**46826GY5**	1	Control Box Body
13	**32083GY5**	1	Control Box Cover
14	**11141**	3	Pan Hd. Screw (#6-20 X 3/8 Lg.)
15	**15993**	2	Strain Relief Bushing
16	**10208**	1	Hex Nut (1/2-13 UNC)
17	**12001**	4	Soc. Hd. Cap Screw (1/4-20 X 2-1/4 Lg.)
18	**11144**	1	Electrical 90° Strain Relief

CONTROL BOX
for #61698





VIEW B-B

Item No.	Part No.	No. Req'd	Description
1	**15468**	1	Tapping Screw (#6; Inside motor cavity)
2	**10975**	4	Pan Hd. Screw (#8-32 X 5/16 Lg.)
3	**19837**	.16ft.	Heat Shrink
4	**11362**	1	Conduit Lockwasher
5	**45040**	1	Wire Harness (16/4 SO)
6	**12908**	1.4 ft.	Electrical Cable (18/3 SJTO)
7	**215263**	1	Cord Set (115 V., 16/3 SJTO)