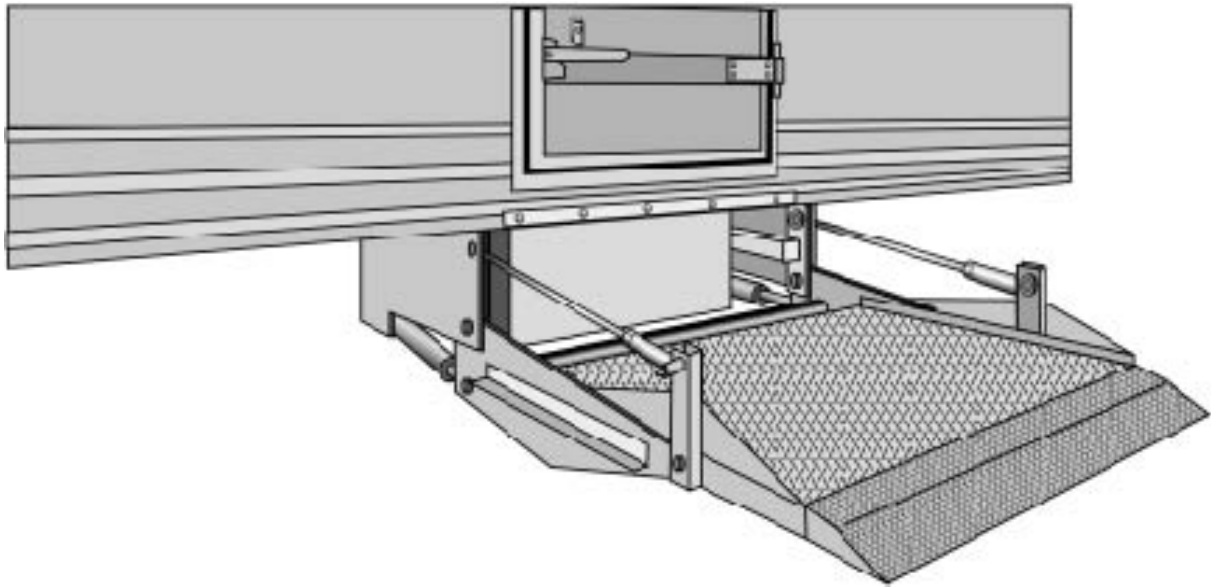




Owner's Manual

TLS3500RL Hide-A-Way®

Trailer Side Gate



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GENERAL SPECIFICATIONS

CUSTOMER: _____
 MODEL: TLS3500RL-_____
 SERIAL #: _____
 CAPACITY: 3500 lbs.
 TYPE: Trailer Side Door Lift Gate
 OPERATION: Power up/Gravity down
 Power in/out
 HYDRAULIC PRESSURE: 2500PSI – Up Function
 800PSI – In/Out Function

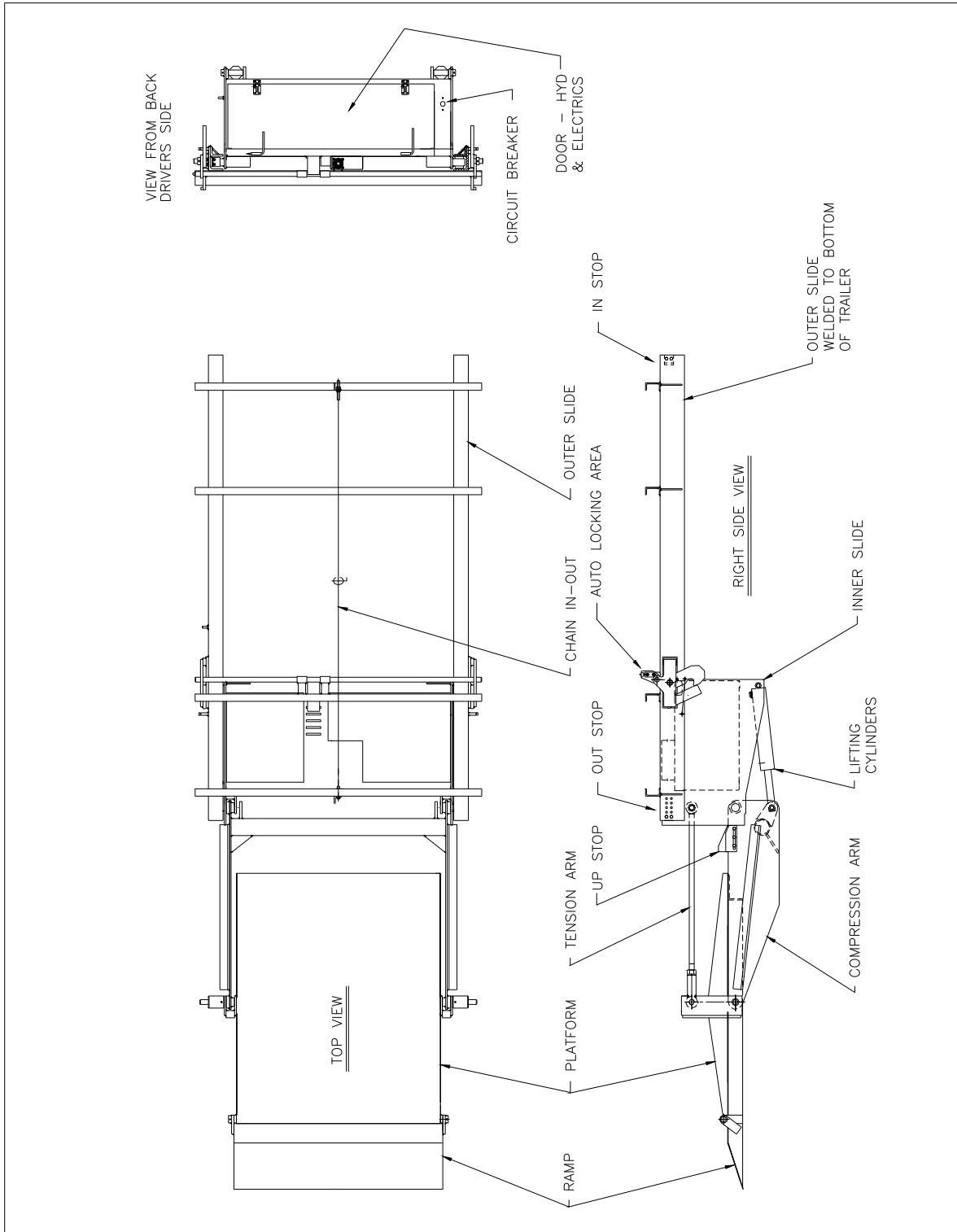
RECOMMENDED HYDRAULIC OILS / LUBRICATION / TECHNICAL SPECIFICATIONS

HYDRAULIC OILS	MANUFACTURER	TYPE	TEMP. RANGE
Level 1 Normal Conditions	Mobil	DTE 11	-15° F to +150° F
	Shell	TELLUS T15	-15° F to +150° F
	Exxon	UNIVIS N15	-15° F to +150° F
Level 2 Cold Conditions	Mobil	AERO-HFA	-50° F to +80° F
	Shell	AERO Fluid #4	-50° F to +80° F
	Exxon	UNIVIS-HV113	-50° F to +80° F
	MIL	H-5606	-50° F to +80° F

HYDRAULIC TANK CAPACITY	
2 ½ gallons	
LUBRICATION - GREASE	
Cam Rollers, Idler Sprockets, Auto-Lock shaft, cylinder pins, if grease fittings provided	Level 1 Normal Conditions NLGI #2 Lithium base grease Level 2 Cold Conditions NLGI #1 Lithium base grease DO NOT USE CHASSIS or 5 th WHEEL GREASE
BATTERIES	
Two (2) 12-Volt DC Group 31 Heavy-Duty Dual Purpose or AGM	
ELECTRICAL COMPONENT CONNECTIONS	
Use Fluid Film Rust & Corrosion Protection by Eureka, except on Start Solenoid. On Start Solenoid, use Color Guard by Loctite, or Liquid Electrical Tape	
AMPERAGE DRAW OF MOTOR	
When raising platform (empty) approximately 115 AMPS @ 13.5 volts. At bypass approximately 235 AMPS @ 13.5 volts	
LIFTING PRESSURE SETTING	
With platform at floor level and pump in bypass 2500 PSI	
IN-OUT PRESSURE SETTING	
When sliding gate in-out and pump in bypass 800 PSI	
MINIMUM VEHICLE FLOOR HEIGHT (LADEN)	
With any size of platform – vehicle floor height 48"	
MAXIMUM VEHICLE FLOOR HEIGHT (UNLADEN)	
With any size of platform – vehicle floor height 58"	
APPROXIMATE RUNNING TIMES EMPTY AT 80° F WITH TWO GROUP 31 BATTERIES	
Time up: 14 – 18 seconds, Time down(gravity down): 12 –16 seconds	

WARNING: The use of a battery charger as the sole power source to operate the lift gate is unauthorized and will prevent the lift gate from working properly. The lift gate must always be operated in conjunction with at least one (1) 12 volt heavy duty lift gate battery. A minimum of 9.5 volts must be maintained in order for the DOWN valve and 10.5 volts for the IN/OUT valves to operate.

GENERAL TERMINOLOGY



OPERATING INSTRUCTIONS

Before operating the lift, read and understand this decal, Urgent Warning decal and Owner's Manual.

Do not stand in front of the lift gate while unfolding or using the platform.

With the gate in the over-the-road / stored position, do the following steps to operate gate:

1. To relieve the tension on the auto lock, push the UP switch (gate will go up), pull handle to release auto lock.
2. Use DOWN switch to lower lift until arms are parallel to the ground.
3. Stand to side of the lift gate. Push the power IN/OUT switch down. Gate will run out. Run the gate out until it stops and locks in its fully extended position.
4. Unfold the ramp.

To lower the platform, use the DOWN switch only.

To raise the platform, use the UP switch only.

To store the gate in the over-the-road position:

1. Raise the platform off ground until the arms are parallel to the ground.
2. Fold ramp over.
3. Raise locking bar handle and push the IN/OUT switch upward. Run the gate all the way under the trailer until lift stops.
4. Run gate up (use the UP switch), auto lock will latch.
5. Lower the gate until resting on the auto lock. (Use DOWN switch).

EMERGENCY HAND PUMP OPERATION

If an emergency hand pump was supplied with this lift gate, its intended use is to restore the gate to the transit position.

CAUTION: Do not try to operate the power unit when using the hand pump.

Steps to secure the gate, so the trailer can be moved:

1. Remove the pump handle from the holder and insert into the hand pump socket.
2. Raise the platform off the ground about 6", pump up/down.
3. To retract the gate, disconnect the in/out chain and manually push the gate under the trailer all the way until it stops.
4. **Pump the gate until fully up and engaged in the Auto Lock hooks.**
5. With the handle, unscrew the valve on the bottom of the hand pump. This will let the gate down into it's over the road position.

PREVENTATIVE MAINTENANCE

1. Lubrication
Most pivot points have greaseless bearings, so no lubrication is required. Grease fittings are located at the Cam Rollers, idler sprockets, Auto-Lock shaft supports, and cylinder pins. See Preventative Maintenance Schedule and recommended greases.
2. Hydraulic
With the platform on the ground, check the oil level. Fill to about 1" from the top of the tank. See recommended hydraulic oils
3. Electrical
Check for corrosion and/or loose connections.

PREVENTATIVE MAINTENANCE SCHEDULE

MAINTENANCE by CYCLES

MODELS TLS3500RL and TLS4500RL

DATE: _____

CUSTOMER		GATE MODEL #	
LOCATION		GATE SERIAL #	
VEHICLE #		SERVICED BY	

√ = OK X = REPAIR A = ADJUSTED N = NOT APPLICABLE

3000	MOTOR / PUMP COMPONENTS	3000	MOTOR / PUMP COMPONENTS
	Check batteries for corroded, loose or broken connections		Check charge line/power line for corroded, loose or broken connections at both ends
	Check batteries for proper voltage level and charging		Check amp draw of motor with fully charged batteries and tight clean connections
	Check all wiring in pump box for corroded, loose or broken connections		Check all ground wires for corroded, loose or broken connections
	Check power unit solenoids for proper operation		Check pressure setting of relief valves
	Check reservoir for proper oil level (gate down on the ground, fluid level should be 1" from top of tank)		Clean all wiring connections in pump and battery box and spray with Fluid Film Corrosion Protection by Eureka Chemical. Use Liquid Electrical Tape on start solenoid.
	Inspect circuit breakers and fuses for proper operation		Check emergency hand pump for proper operation if equipped.
	Check all fittings/hoses in power unit for tightness and leaks		Check hydraulic motor sprockets for worn bushings and proper operation.

3000	STRUCTURAL COMPONENTS	3000	STRUCTURAL COMPONENTS
	Check for correct operation of the gate UP, DOWN, IN, and OUT.		Check IN/OUT chain for proper adjustment (no more than 1/2" play)
	Check wiring harness on side of gate for chaffed, frayed, or broken wires.		Check all pivot points for loose, broken, or missing roll pins
	Check wiring harness on side of gate for loose, broken, or missing clamps.		Check UP stops for proper positioning of the platform and adjust as needed.
	Check the ground cable on side of gate for loose or corroded connections.		Check the IN/OUT stops for loose, broken, or missing bolts
	Check hydraulic cylinders for leaks		Check rollers for proper operation
	Check hydraulic cylinder pins for loose, broken, or missing roll pins.		Check over-all gate for damage or broken welds and repair as needed.
	Check auto lock mechanisms for proper operation and adjust as needed.		Check compression and tension arms for worn bushings
	Check all warning lights for proper operation if equipped		Check adjustment of Side Skid Pads near rollers

3000	LUBRICATION		PERIODICAL CHECK LIST
	Standard Chain – stainless steel chain should not require any lubrication.	12000	Check all pivot point bushings for wear or damage
	Grease Cam Rollers, idler sprockets, Auto Lock shaft supports, and cylinder pins.	12000	Check hydraulic motor sprockets for worn bushings and proper operation.
		15000	Flush hydraulic system and change hydraulic oil
		15000	Clean and repaint as necessary

MAINTENANCE MINDER ² READINGS MENU 2			
Screen 1 # Lifts	Screen 3 Service Faults	Screen 4 Low Voltage Faults	Screen 6 High Temperature Faults

MAINTENANCE MINDER 2[®] OVERVIEW

Power unit is equipped with the Maintenance Minder 2[®] Controller. It will:

- Automatically keep track of maintenance intervals and warn the user when maintenance is due, based on the number of lifts.
- Record low voltage occurrences.
- Record of high temperature faults.
- Record of maximum run time faults, when a single operation exceeded the maximum continuous run time limit.
- Give helpful trouble-shooting information on MENU 4, “Last Lift Info”.

FAULTS CODES

A decal in the power unit enclosure lists the following signal codes for these faults:

1 BEEP	Service Fault (reached the number of lifts when maintenance is due)
2 BEEPS	Low Voltage Fault (check battery condition and power line connections)
3 BEEPS	Max. Time Fault (exceeded the maximum continuous run time allowed)
4 BEEPS	High Temperature Fault (unit will not run until motor cools)

All faults signals will be repeated FOUR times, except the Service Fault signal. Controller will prevent power unit from operating during the time period when a fault signal is sounding (about 5 to 10 sec.) except for the Service Fault signal. The controller is also equipped with an anti-doorbelling feature, which prevents rapid ON/OFF operation of the power unit.

RESETTING after MAINTENANCE IS PERFORMED

To RESET the Maintenance Minder 2[®] after maintenance has been performed:

1. Go to MENU 2, hit “ENTER”, and toggle down to the “Reset All Info” screen.
2. Press and hold the hidden RESET button under Maintenance Minder 2[®] logo at top of faceplate.
3. Follow the instructions on the screen regarding a second button, which must be pressed to complete the reset operation.



MAINTENANCE MINDER 2[®] CONTROLLER MENUS

(Press MENU)

MENU 1 – LIFT GATE INFO

(Press ENTER, then ARROW DOWN for each item)

Model Number, Serial Number, Manufacture Date, Vehicle ID, Hardware Version, Firmware Version, Software Version.



(Press MENU and ARROW DOWN once)

MENU 2 – PERIOD INFO (data for current maintenance period)

(Press ENTER, then ARROW DOWN for each item)

Number of Lifts (gives the number during this maintenance interval and the set number when maintenance is due)

Motor ON (total motor run time in minutes for this maintenance period)

Service Fault (number of times gate was operated PAST the maintenance limit)

Max. Time Faults (times motor exceeded its maximum allowable continuous run time)

High Temperature Faults (times thermal switch in motor tripped, if switch provided)

Low Voltage Faults (times low voltage occurred)

Reset all Info (Reset data after performing maintenance, once maintenance limit is reached – see reset instructions on previous page)



MAINTENANCE MINDER 2[®] CONTROLLER MENUS

(Press MENU and ARROW DOWN twice)

MENU 3 – LIFE TIME INFO (data for the total life time of the gate)

(Press ENTER, then ARROW DOWN for each item)

Same items will appear as under PERIOD INFO, except this is LIFE TIME data.

Reset History (reviews history for each maintenance interval)

Press ENTER, then ARROW DOWN to show history. Most recent period is the highest #. Screen shows Period #, # of Lifts, and Total Run Time in minutes.



(Press MENU and ARROW DOWN three times)

MENU 4 – LAST LIFT INFO (Trouble Shooting Screen – it records data that occurred during the last lift made)

(Press ENTER, then ARROW DOWN for each item)

Supply Voltage (first voltage is the minimum voltage that occurred during the last lift – if below 6 volts gate will stop / second voltage is the supply voltage just before gate operation, must be at least 10 volts).

Motor ON (motor run time in seconds during last lift, gate will stop at 180 seconds).

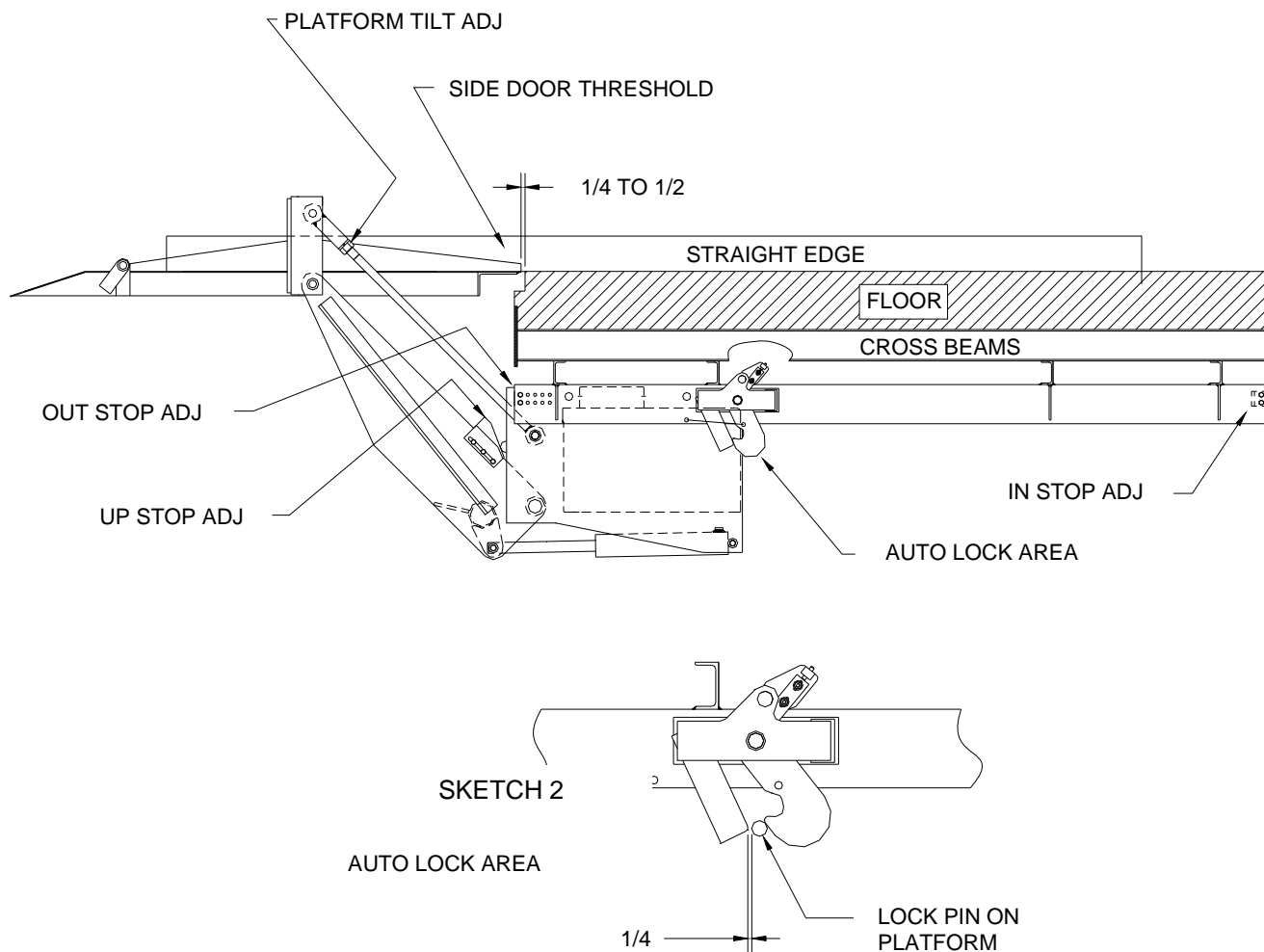
Window Time (time in milliseconds during the last lift that the voltage dropped in between 6 and 8 volts – must not be any longer than 3 seconds or gate will stop).



NOTE:

Controller has an anti-doorbelling feature. Motor will not operate if UP switch is toggled rapidly. This prevents welding of the start solenoid contacts.

INSTALLATION ADJUSTMENTS



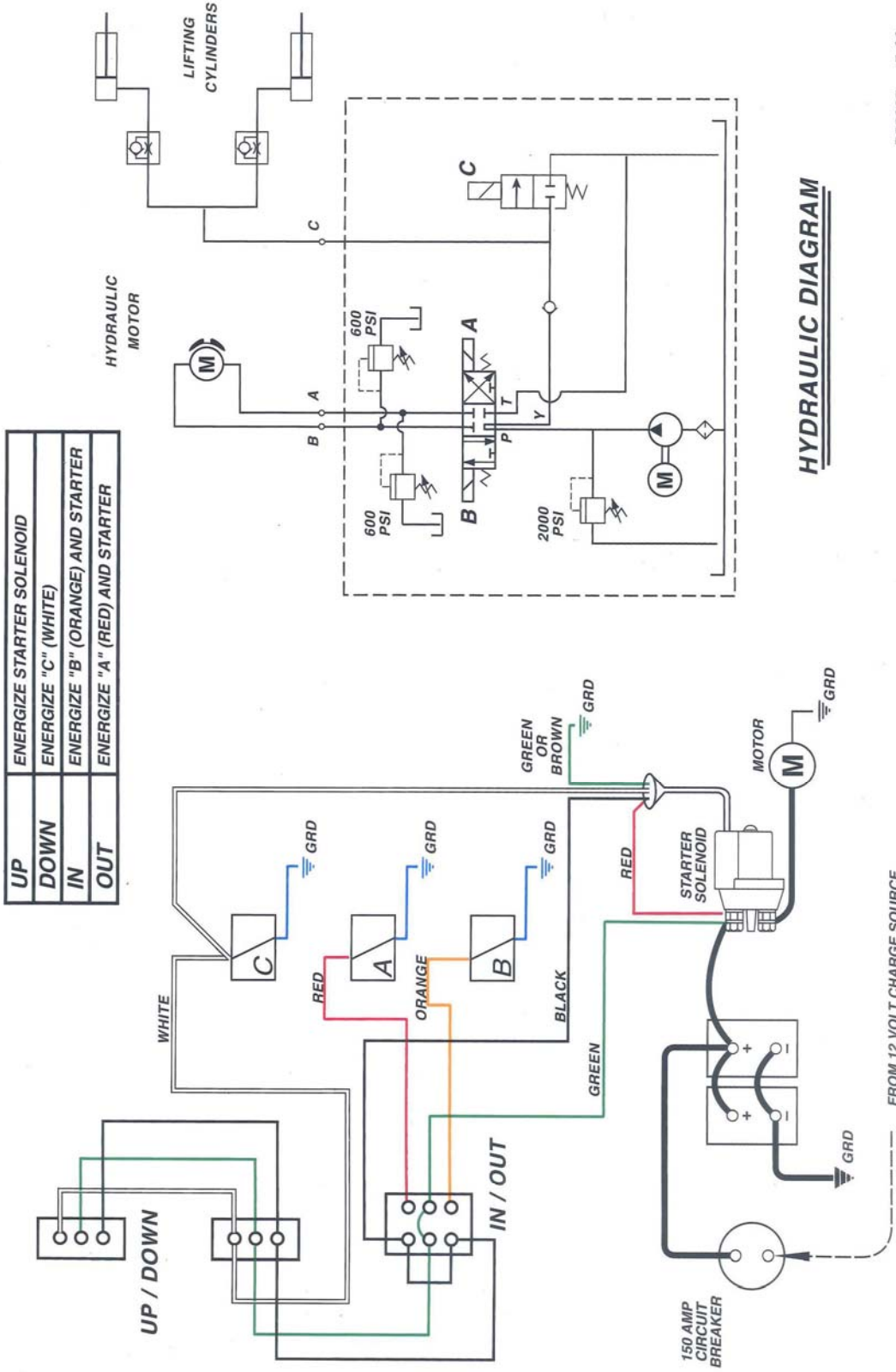
- Step 1: The platform was preset at the factory to be level to the floor of the trailer within $\frac{1}{4}$ ". With a straight edge, check this. If it is okay, proceed to step 2. If not, let the platform down to the ground. Remove the two (2) roll pins and the top Tension Arm pivot pins (one on each side).
NOTE: One full turn moves the tip of the platform $\frac{1}{4}$ " (turn the end in, this moves the tip of the platform up, unscrewing moves the tip of the platform down.)
 Make necessary adjustments. Replace pins, raise the platform up and check. Repeat if necessary. Replace roll pins.
NOTE: Each side must be adjusted the same amount.
CAUTION: If this adjustment has been made, the IN stops must be adjusted to provide the $\frac{1}{4}$ " clearance with the Auto Lock pin (see Sketch 2).
- Step 2: Adjust the UP stops. Platform should be even with the floor of the trailer. After adjusting, tack weld the stops in place.
- Step 3: Adjust the OUT stops. The tip of the platform should be $\frac{1}{4}$ " to $\frac{1}{2}$ " from the edge of the threshold.
- Step 4: Adjust the IN stops. See sketch 2 and adjust for the $\frac{1}{4}$ " dimension.

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
The motor is running, but the platform will not go up or reach the floor of the vehicle.	<ol style="list-style-type: none"> 1. Insufficient oil in power unit tank. 2. Platform is over-loaded. 3. Pressure setting is low. 	<ol style="list-style-type: none"> 1. Fill tank to the appropriate level. 2. Load only to the rated capacity. Remove some product if necessary. 3. Check and adjust the pressure to the proper setting.
The platform will not go up or reach floor level and the motor does not run.	<ol style="list-style-type: none"> 1. Low battery. Check Maintenance Minder 2[®] for Low Voltage faults. 2. Tripped circuit breaker. 3. Power line is loose. 4. Bad motor, starter or switch 	<ol style="list-style-type: none"> 1. Recharge or replace battery. 2. Reset the circuit breaker. 3. Check the connections. If loose, tighten. Check for corrosion and clean if necessary. 4. To test-push the UP switch, if motor does not run, jump the two large terminals on the starter solenoid. The motor should run, if not, the motor is bad. If it does run, the solenoid is bad or is not getting a signal from the switch or the MM2. Use a test light to check.
Platform will not lower.	<ol style="list-style-type: none"> 1. Low battery. Need 9.5 volts to activate the DOWN valve coils. 2. Bad ground or poor electrical connections. 3. Solenoid valve not opening. 4. Mechanical obstruction in gate. 	<ol style="list-style-type: none"> 1. Recharge or replace battery. 2. Check connections, if loose-tighten. Check for corrosion and clean if necessary. 3. Drain valve "C" valve (white wire) must activate when DOWN switch is pushed. Use test light to check. 4. Visually check.
Platform creeps down when DOWN function is NOT activated.	<ol style="list-style-type: none"> 1. Hydraulic leak. 2. Defective piston seal in cylinder. 3. "C" valve (white wire), or check valve not closing. 4. Drain valve at base of optional Hand Pump may be open. 	<ol style="list-style-type: none"> 1. Visually check for leaks. 2. Replace seals or cylinder. 3. Clean and inspect. 4. Check to see if valve on Hand Pump is closed tightly. Use end of Hand Pump handle.
Platform goes down slowly when DOWN function is activated.	<ol style="list-style-type: none"> 1. Check for obstructions or damage to arms. 2. Restricted or pinched hydraulic lines. 3. "C" valve (white wire) not fully opening. 4. Incorrect hydraulic oil for cold weather operation 	<ol style="list-style-type: none"> 1. Visually check. 2. Check for bent or pinched lines. 3. Clean and inspect. 4. Use recommended hydraulic oils for conditions present.
Gate will not go OUT and/or IN.	<ol style="list-style-type: none"> 1. Check for obstructions or binding in rails. 2. Low battery. Check Maintenance Minder 2[®] for Low Voltage faults. Need 10.5 volts to activate the IN/OUT valve coils 3. Tripped circuit breaker. 4. Power line is loose. 5. Bad motor, starter or switch. 	<ol style="list-style-type: none"> 1. Visually check. Check Side Button adjustment 2. Recharge or replace battery. 3. Reset the circuit breaker. 4. Check the connections. If loose, tighten. Check for corrosion and clean if necessary. 5. To test: push OUT switch and motor does not run, jump the two large terminals on the starter solenoid. The motor should run, if it does not run, you have a bad motor. If it does run, the solenoid is bad or it is not getting a signal from the switch. Use test light to check (OUT is "A" valve "red wire", IN is "B" valve "orange wire").

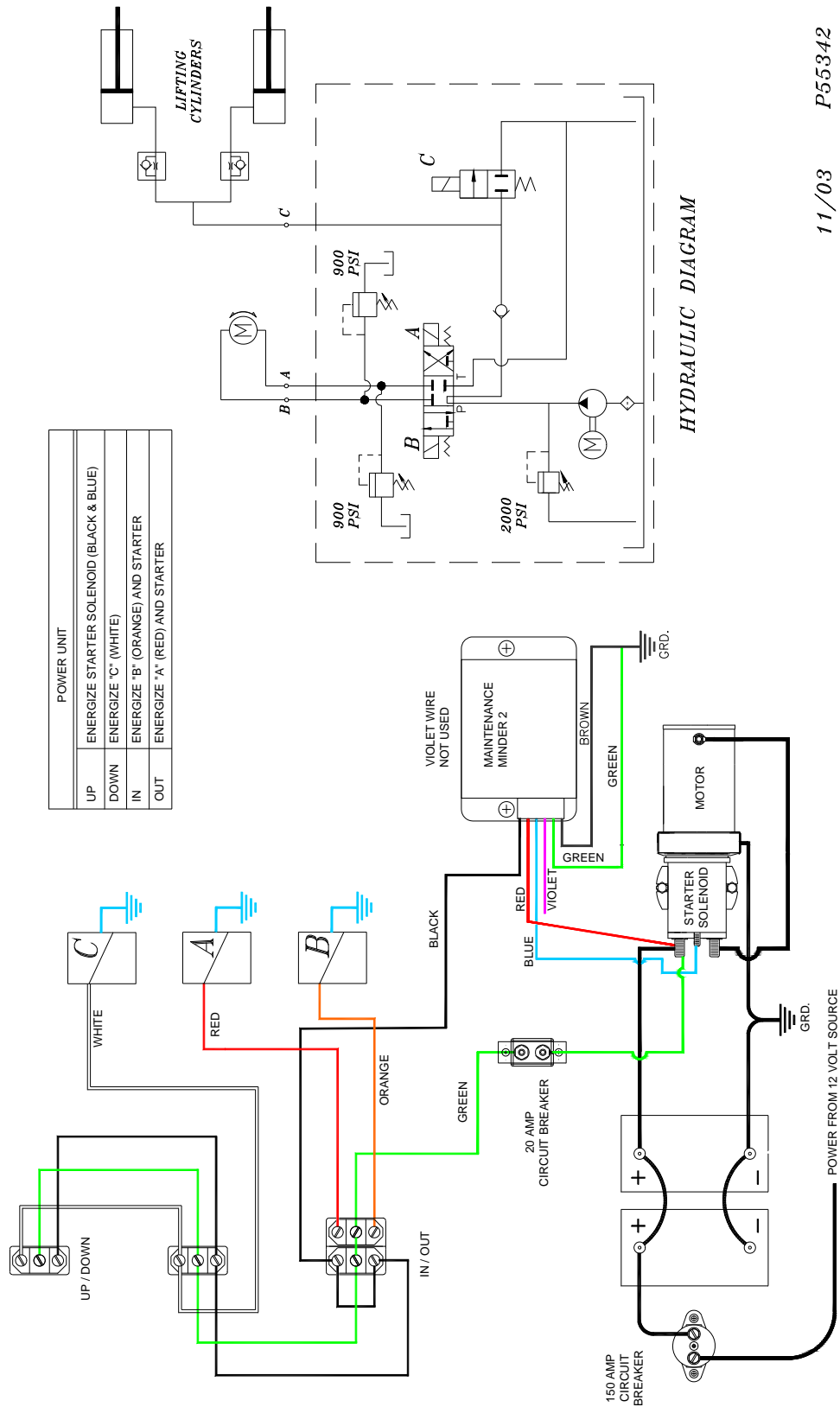
WIRING DIAGRAM - SPX WITH SMART START SOLENOID

GOLD MOTOR AND NO TEMPERATURE SWITCH



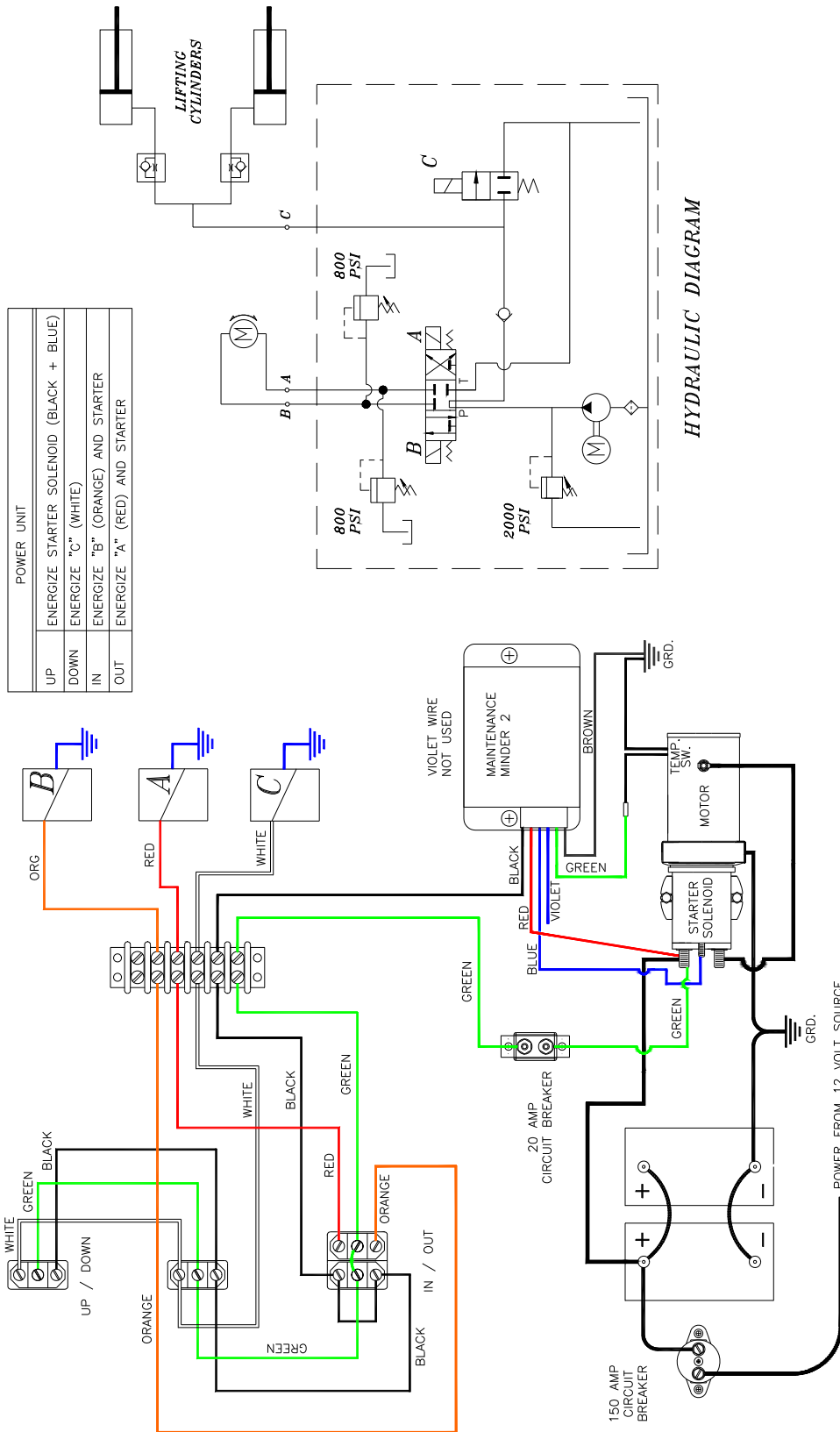
WIRING DIAGRAM - SPX WITH MAINTENANCE MINDER 2

GOLD MOTOR AND NO TEMPERATURE SWITCH



11/03 P55342

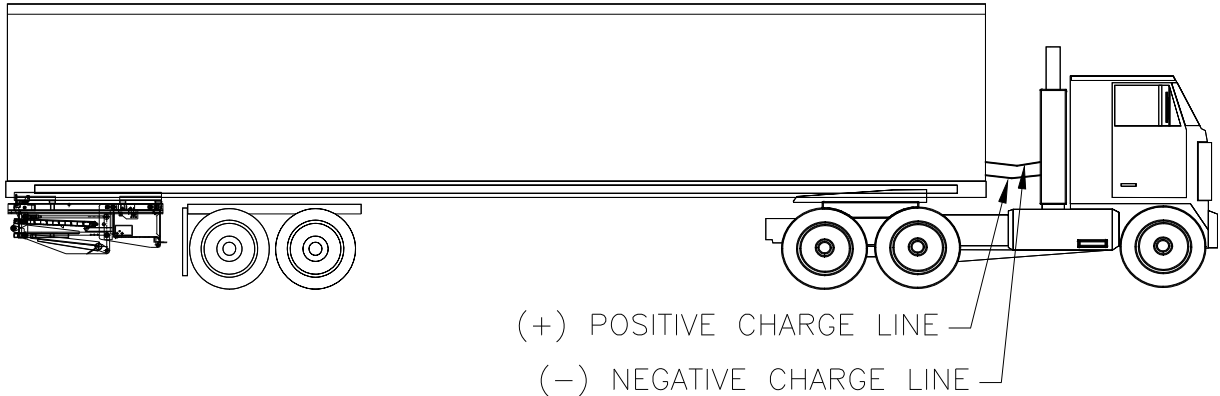
WIRING DIAGRAM - SPX OR MONARCH (MM2 + TEMP SW.)



10/08 P55345

GROUNDING RECOMMENDATIONS

FOR TRACTOR/TRAILER USING MAINTENANCE MINDER 2[®] CONTROLLER



The Maintenance Minder 2[®] Controller requires a minimum of 10 volts to start and 8 volts to continue running the TLS lift gate. Power unit solenoid valves will require 10.5 volts to operate the coils. Utilization of a single positive cable often does not provide a sufficient ground for the charging circuit. Therefore, our recommendation for grounding tractor/trailers with the TLS gate is as follows:

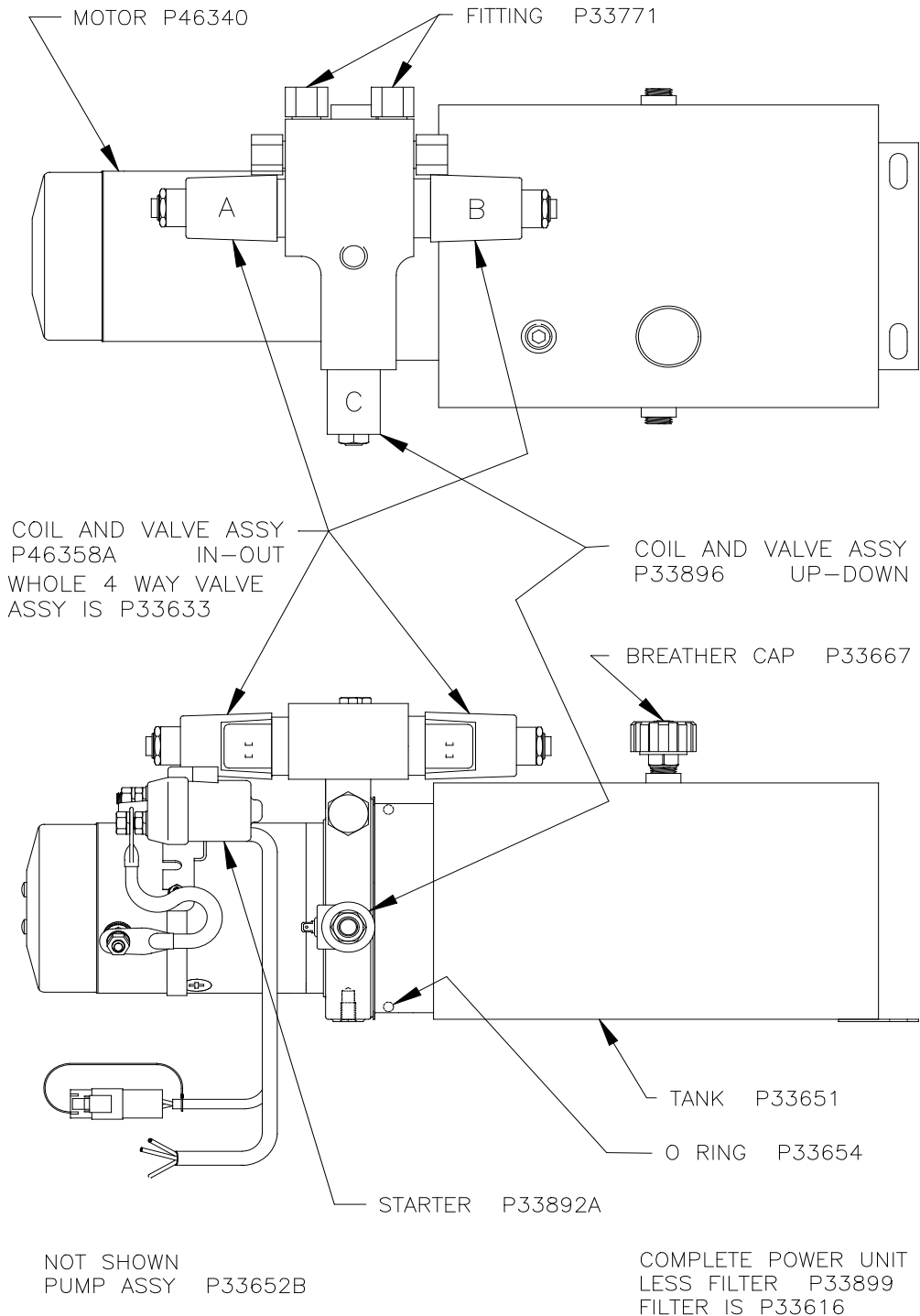
Use two (2) cables, one (1) positive and one (1) negative, both running to the tractor batteries.

NOTE:

The use of a battery charger as the sole power source to operate a TLS is unauthorized and will prevent the TLS from working properly. The lift gate must always be operated in conjunction with at least one (1) 12 volt heavy-duty dual purpose or AGM lift gate battery. A minimum of 10.5 volts must be maintained in order for the valves to operate.

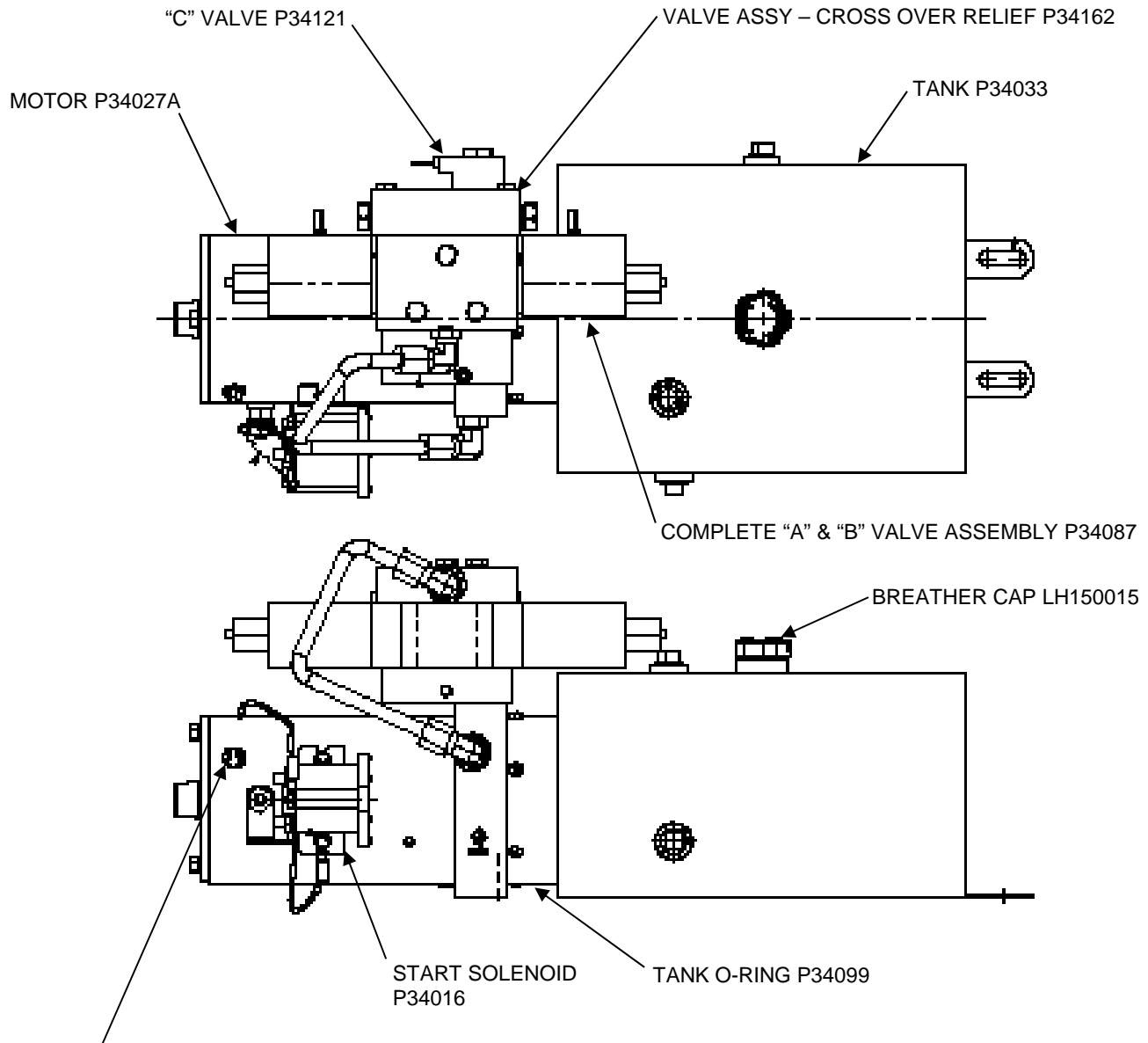
POWER UNIT REPLACEMENT PARTS

FENNER (GOLD MOTOR) AND SMART START SOLENOID



POWER UNIT REPLACEMENT PARTS

MONARCH POWER UNIT (before 11/09)



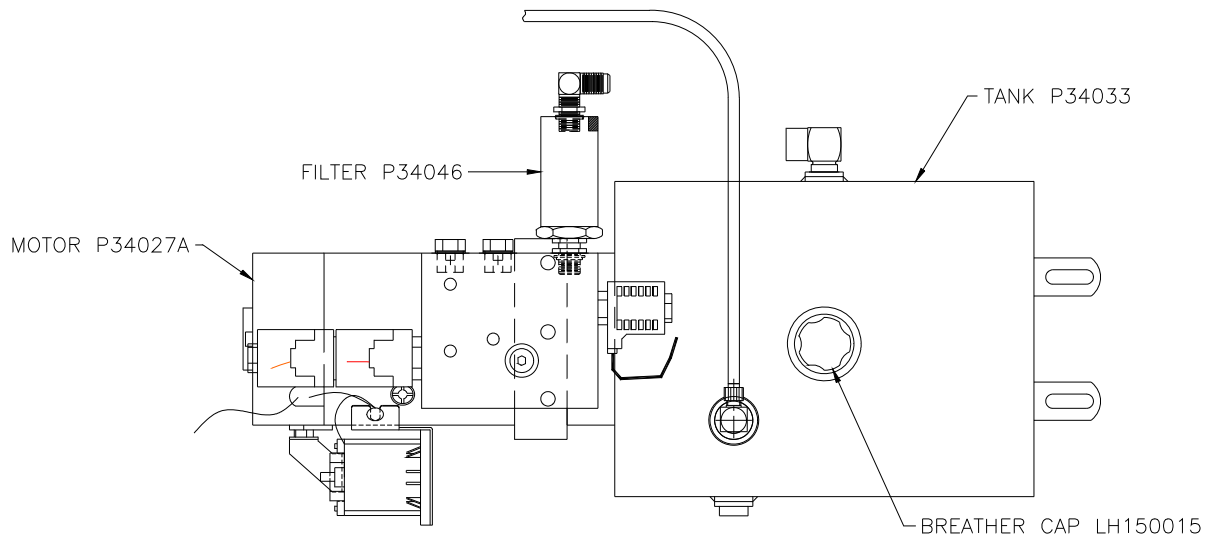
TEMP. SWITCH P34056 THRU 5/07 FOR BOSCH MOTORS.
 TEMP SWITCH NOT AVAILABLE SEPARATELY FOR PRESTOLITE MOTORS

NOT SHOWN:
 PUMP ASSY P34056
 SUCTION STRAINER P34089
 INLINE FILTER – P33616
 MAINTENANCE MINDER 2@
 CONTROLLER – P46608H

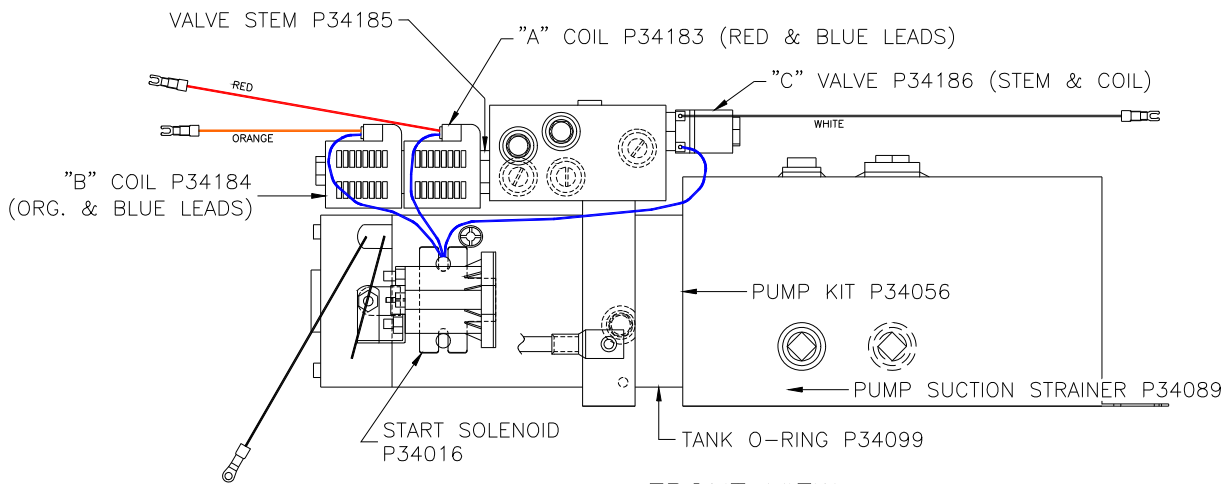
COMPLETE REPLACEMENT POWER UNIT
 ASSEMBLY (including FILTER) - CA-501-446
 Note: Power Unit will be the "AFTER 11/09" version

POWER UNIT REPLACEMENT PARTS

MONARCH POWER UNIT (after 11/09)



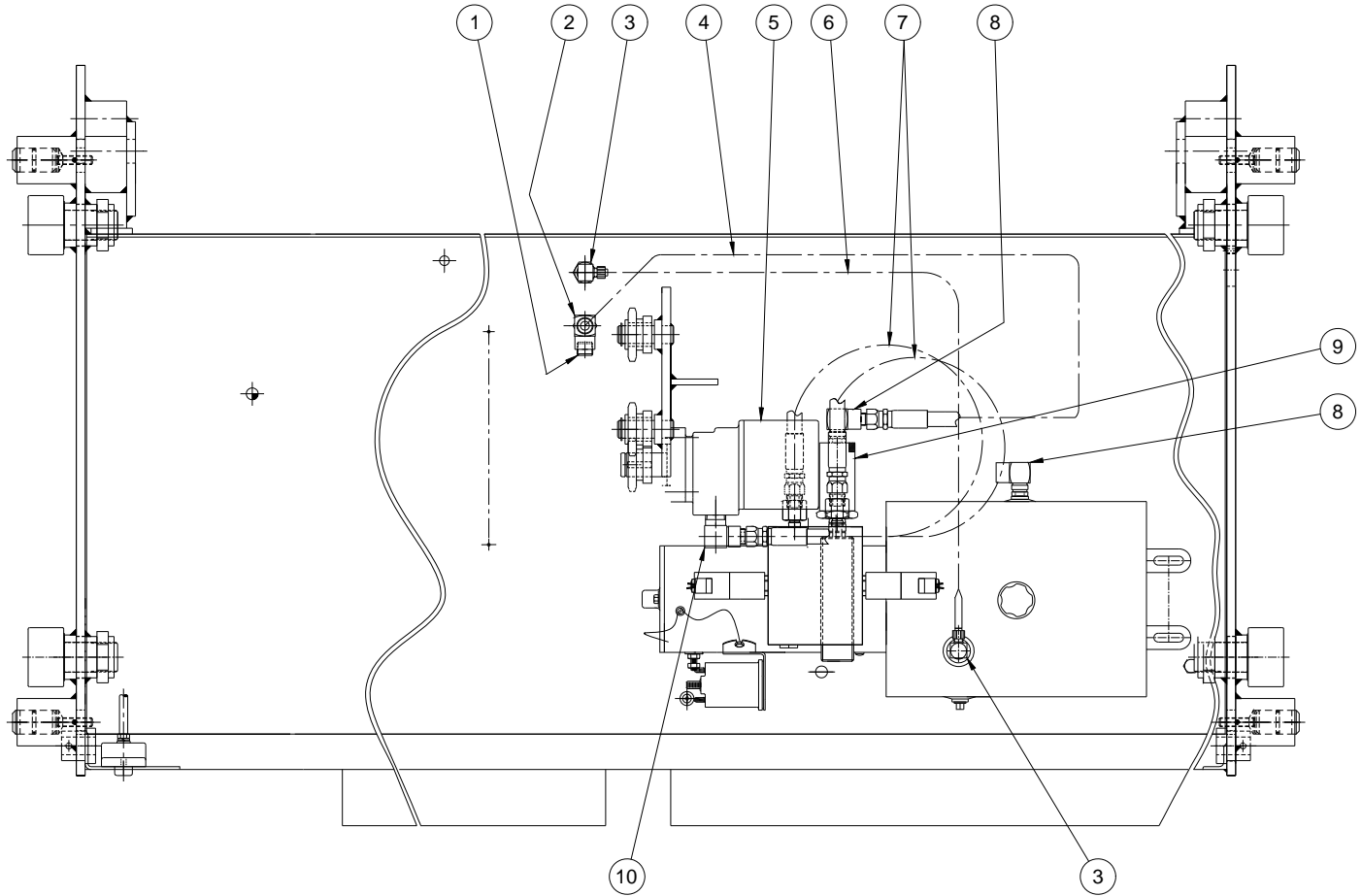
TOP VIEW



FRONT VIEW

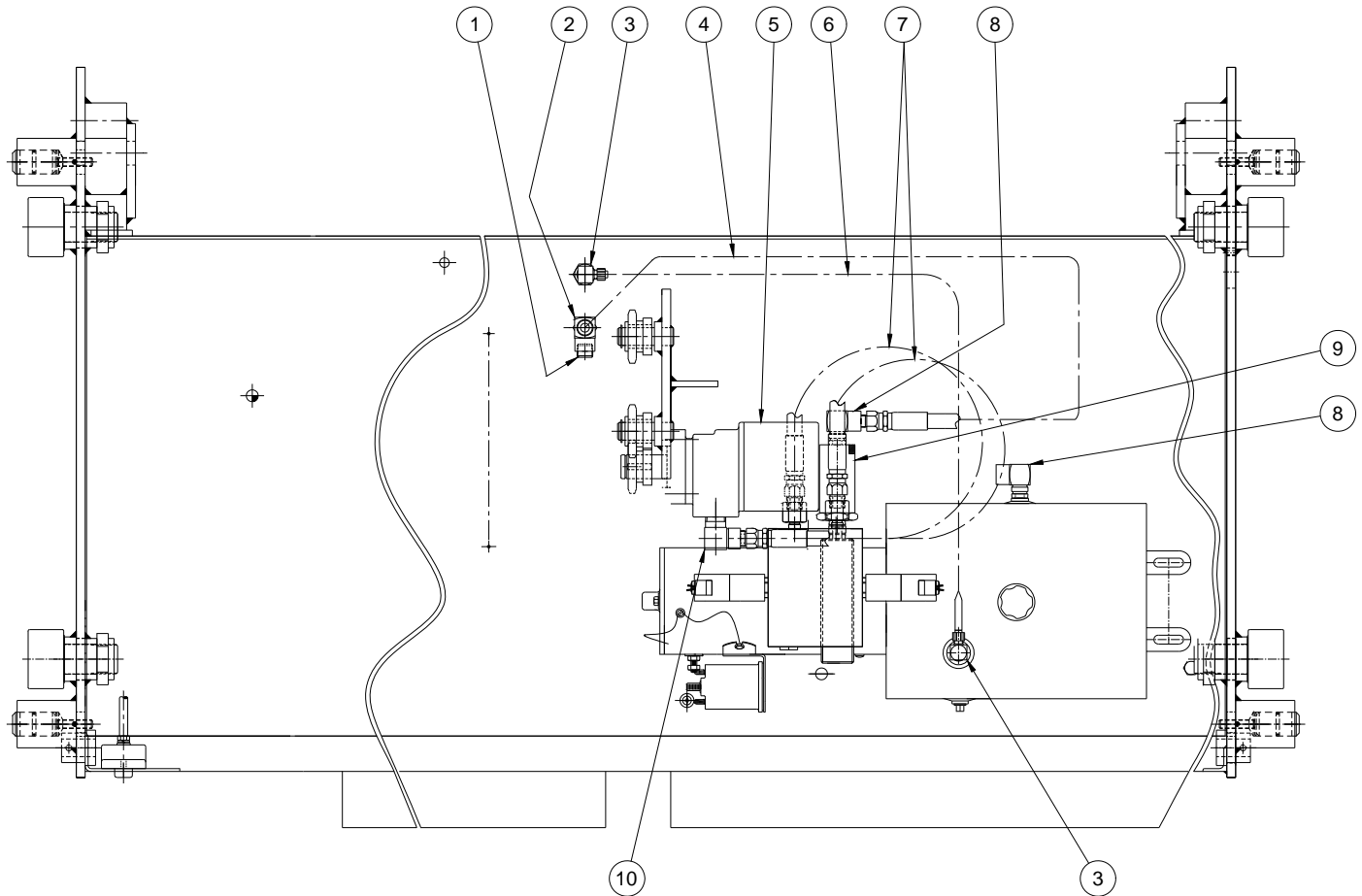
COMPLETE POWER UNIT (LESS FILTER AND FITTINGS) P34171
 MAINTENANCE MINDER 2® CONTROLLER P46608H

HYDRAULICS - INTERIOR PARTS (before 11/09)



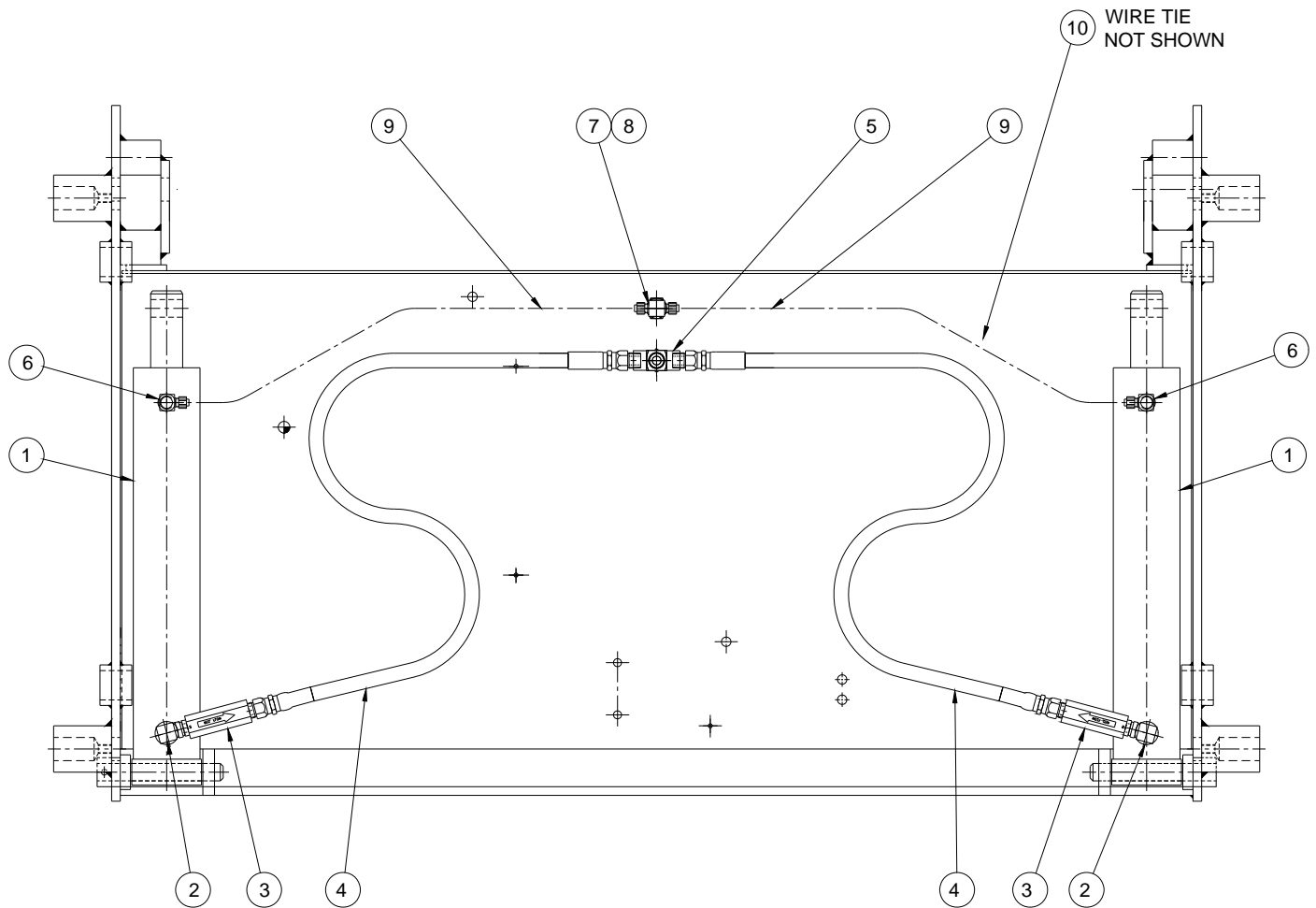
Index No.	Req'd	Part Number	Description	Comments
1	1	P31048	PIPE PLUG	3/8
2	1	P33216	STREET TEE	3/8
3	2	P33932	BRASS MALE ELBOW	3/8NPT TO 1/4" HOSE
4	1	AT-501-100-027	HYDRAULIC HOSE	
5	1	P33625	HYDRAULIC MOTOR	
6	1	P33702-026	1/4" POLY TUBE	
7	2	AT-501-292-020	HYDRAULIC HOSE	
8	2	P33006	STREET ELBOW	3/8
9	1	P33616	INLINE FILTER	
10	2	P33202	STREET ELBOW	1/2M TO 3/8F

HYDRAULICS - INTERIOR PARTS (after 11/09)



Index No.	Req'd	Part Number	Description	Comments
1	1	P34004	CAP NUT	JIC 9/16-18
2	1	P34048	TEE	JIC 9/16-18 M-M-F
3	2	P33932	BRASS MALE ELBOW	3/8NPT TO 1/4" HOSE
4	1	AT-501-354-027	HYDRAULIC HOSE	3/8 w/JIC ENDS
5	1	P33625	HYDRAULIC MOTOR	
6	1	P33702-026	1/4" POLY TUBE	
7	2	AT-501-292-020	HYDRAULIC HOSE	1/4 NPT - 3/8 NPT
8	2	P34020	ELBOW	SAE O-RING - JIC
9	1	P34046	INLINE FILTER	
10	2	P33202	STREET ELBOW	1/2(M) TO 3/8(F)

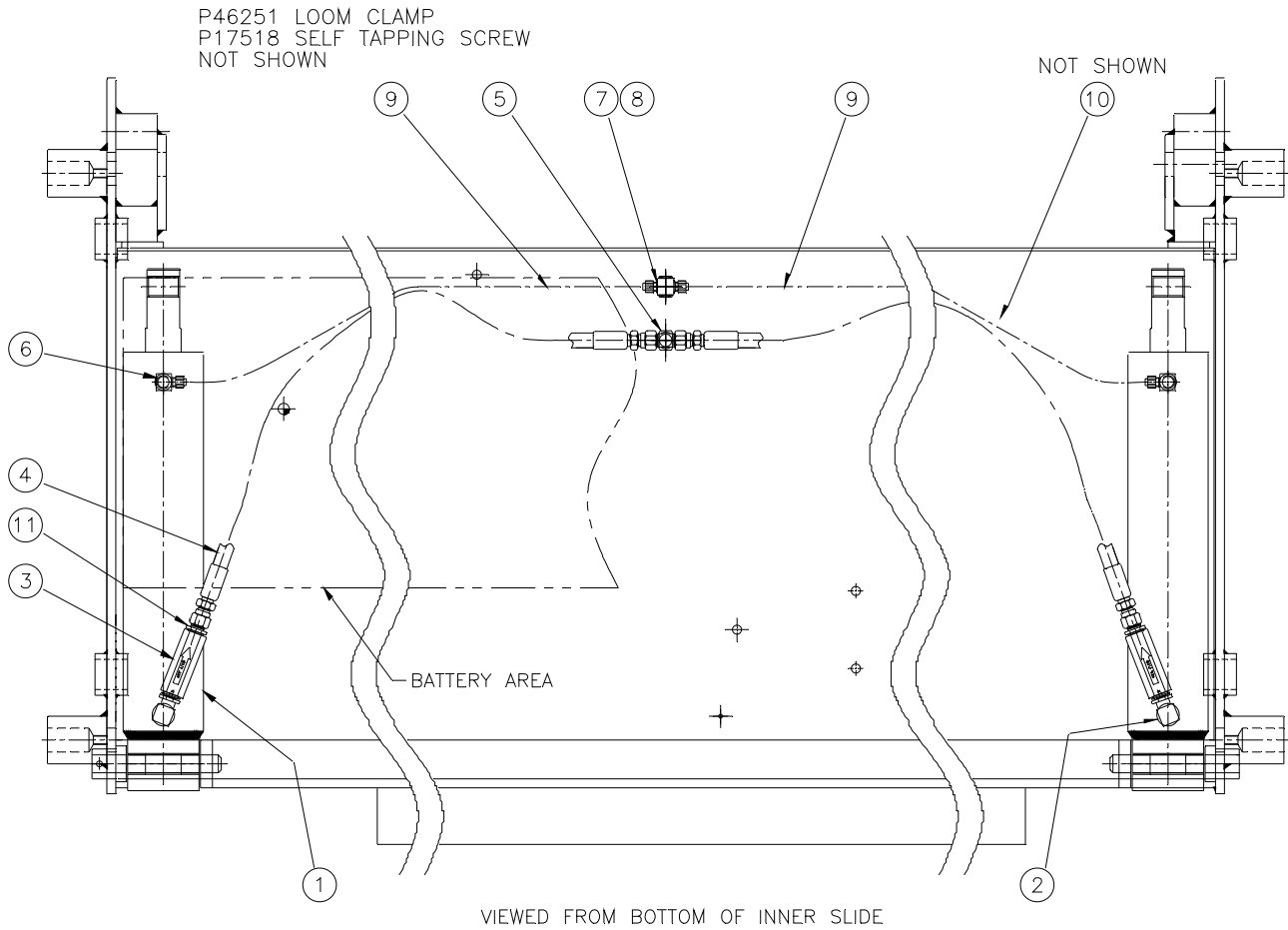
HYDRAULICS BOTTOM-SIDE REPL. PARTS (before 11/09)



Index No.	Req'd	Part No.	Description	Comments
1	2	P33944	HYDRAULIC CYLINDER	Seal kit – P33905
2	2	P33217	MALE ELBOW	
3	2	P33671	FLOW CONTROL	1.5GPM
4	2	SEE CHART	HYDRAULIC LINE	
5	1	P33606	HYDRAULIC TEE	
6	2	P33932	BRASS MALE ELBOW	
7	1	P33699	BRASS TEE	1/4 NPT TO 1/4 HOSE
8	1	P33617	REDUCER	3/8 – 1/4
9	2	SEE CHART	1/4 " POLY TUBE	
10	4	P46335	WIRE TIE	

Gate width	Item 4 Hydraulic line w/ends	Item 9 Poly tube
42	AT-501-100-026	P33702-021
48	AT-501-100-029	P33702-028
60	AT-501-100-035	P33702-034
72	AT-501-100-041	P33702-037

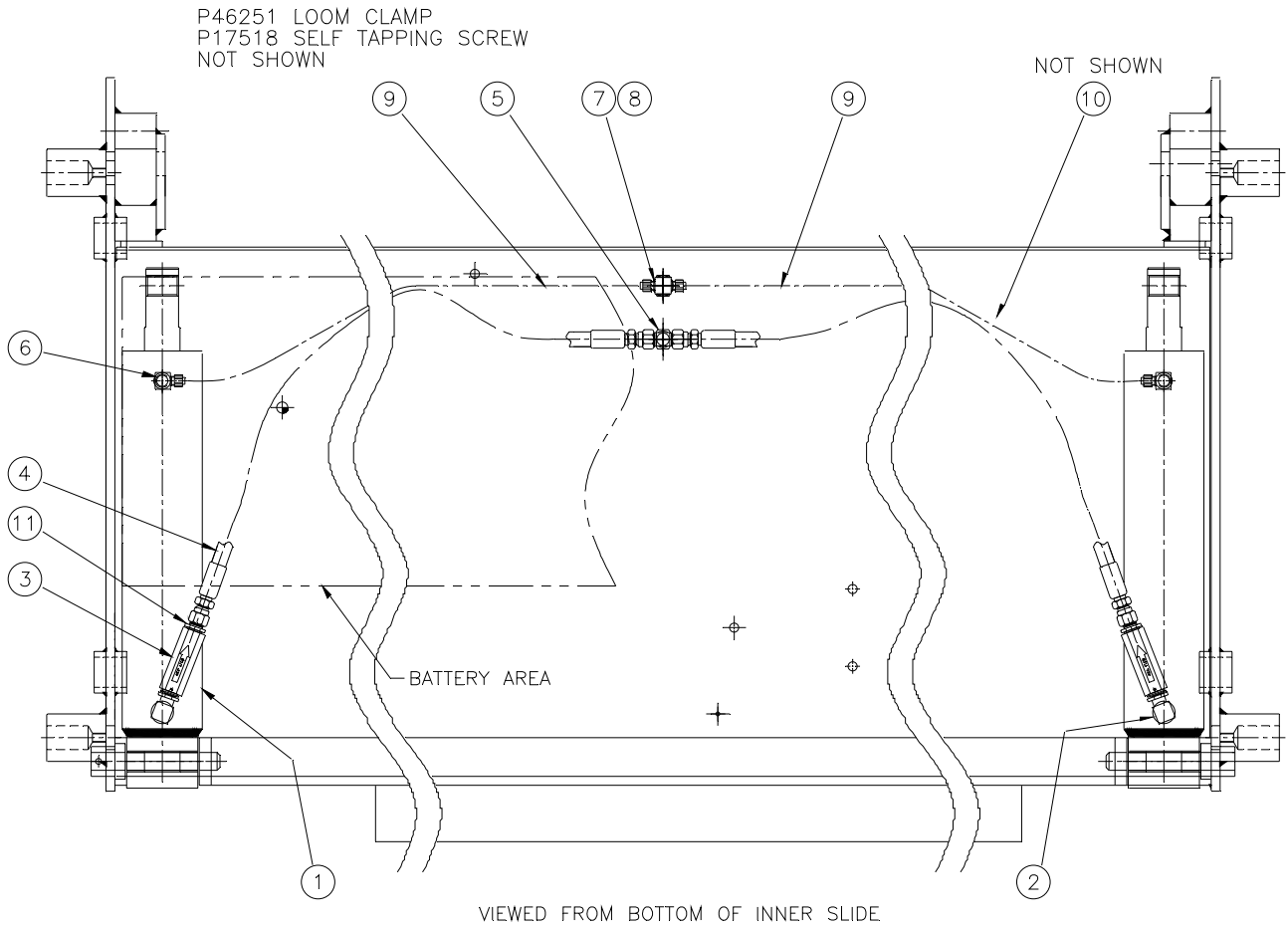
HYDRAULICS BOTTOM-SIDE REPL. PARTS (11/09 THRU 02/16)



Index No.	Req'd	Part No.	Description	Comments
1	2	P33944	HYDRAULIC CYLINDER	Seal kit – P33905
2	2	P33217	MALE ELBOW	
3	2	P33671	FLOW CONTROL	1.5GPM
4	2	SEE CHART	HYDRAULIC LINE	
5	1	P34105	BULKHEAD TEE	
6	2	P33932	BRASS MALE ELBOW	
7	1	P33699	BRASS TEE	1/4 NPT TO 1/4 TUBE
8	1	P33617	REDUCER	3/8 NPT – 1/4 NPT
9	2	SEE CHART	1/4 " POLY TUBE	
10	4	P46335	WIRE TIE	
11	2	P34044	ADAPTER	SAE O-RING (M) - JIC (M)

Gate width	Item 4 Hydraulic line w/ends	Item 9 Poly tube
42	AT-501-354-027	P33702-021
48	AT-501-354-030	P33702-028
60	AT-501-354-035	P33702-034
72	AT-501-354-040	P33702-037

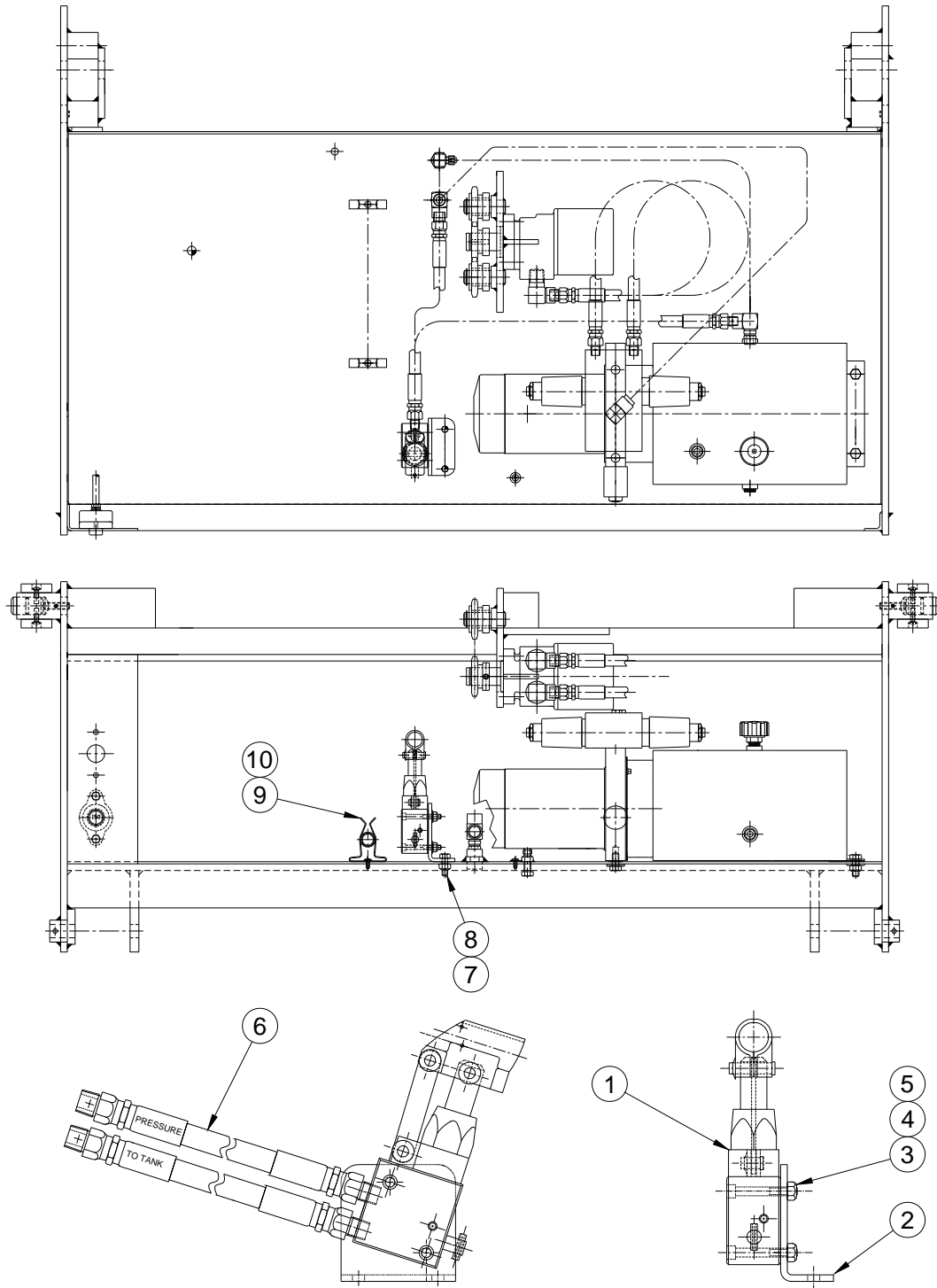
HYDRAULICS BOTTOM-SIDE REPL. PARTS (after 03/01/16)



Index No.	Req'd	Part No.	Description	Comments
1	2	P34182	HYDRAULIC CYLINDER	Seal kit – P34217
2	2	P34041	MALE ELBOW	SAE O-RING (M) – SAE O-RING (M)
3	2	P34161	FLOW CONTROL	2.0 GPM SAE O-RING
4	2	SEE CHART	HYDRAULIC LINE	
5	1	P34105	BULKHEAD TEE	
6	2	P33932	BRASS MALE ELBOW	
7	1	P33699	BRASS TEE	1/4 NPT TO 1/4 TUBE
8	1	P33617	REDUCER	3/8 NPT – 1/4 NPT
9	2	SEE CHART	1/4 " POLY TUBE	
10	4	P46335	WIRE TIE	
11	2	P34044	ADAPTER	SAE O-RING (M) - JIC (M)

Gate width	Item 4 Hydraulic line w/ends	Item 9 Poly tube
42	AT-501-354-027	P33702-021
48	AT-501-354-030	P33702-028
60	AT-501-354-035	P33702-034
72	AT-501-354-040	P33702-037

EMERGENCY HAND PUMP OPTION #184



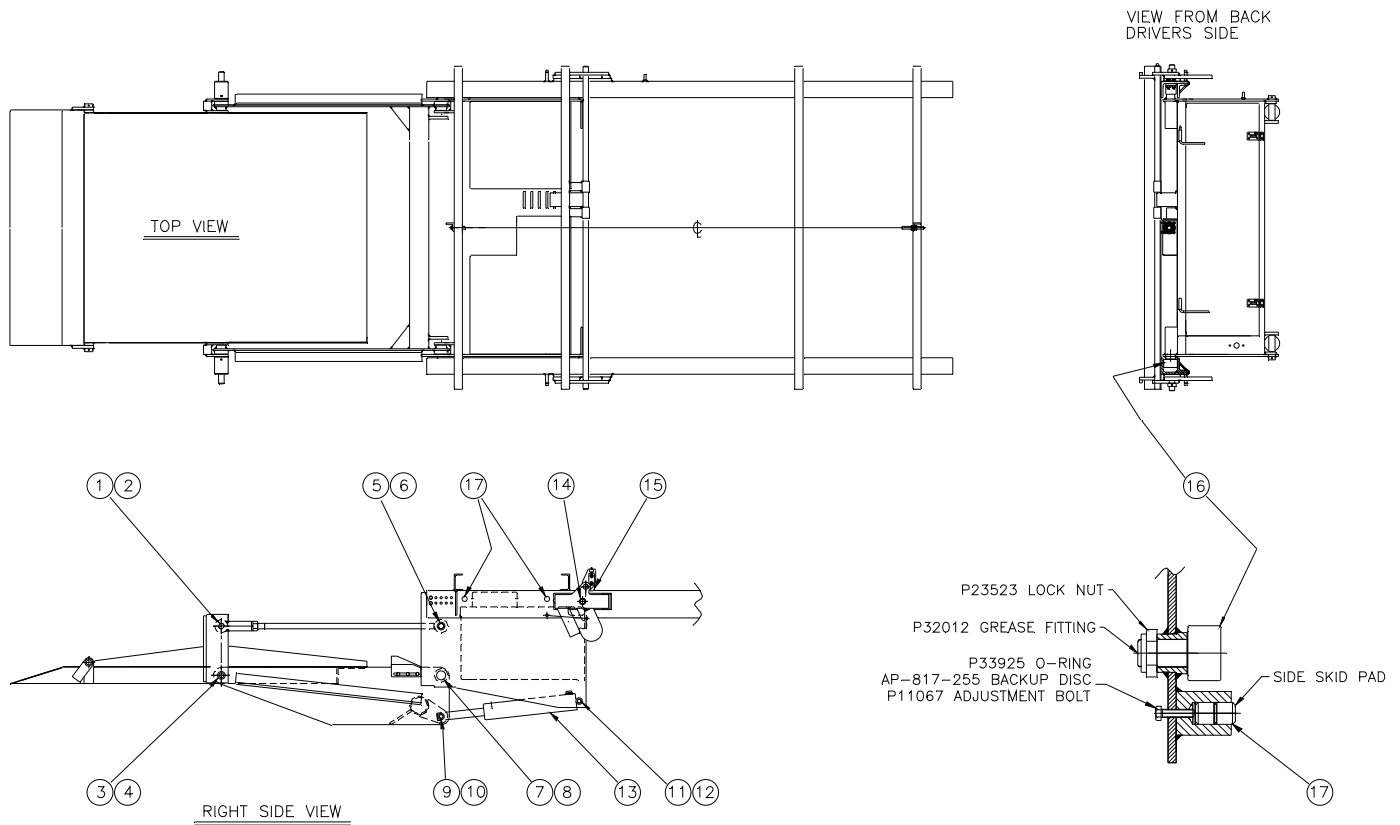
REMOVE TWO PIPE PLUGS
ONE FROM HYD TANK AND
ONE FROM TEE IN FLOOR

EMERGENCY HAND PUMP OPTION #184

REPLACEMENT PARTS

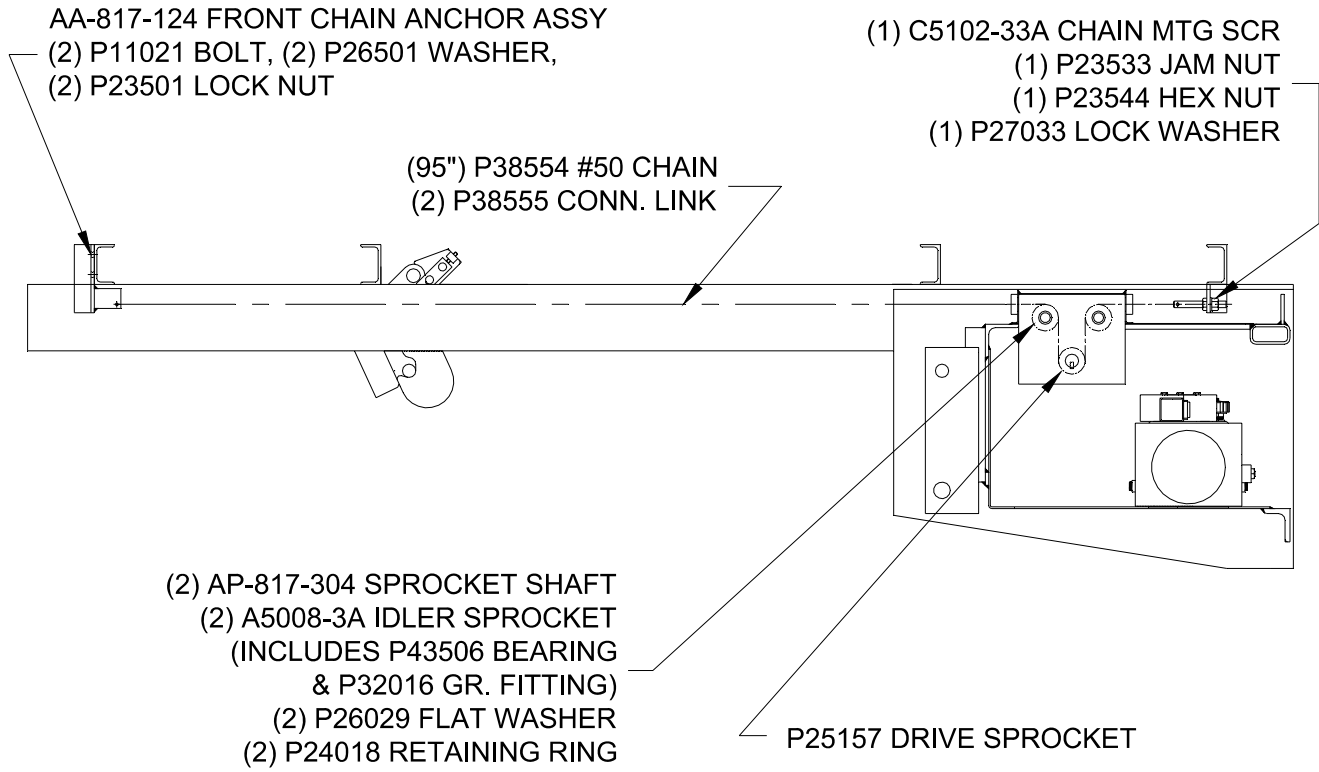
Index No.	Req'd	Part Number	Description	Comments
1	1	P33902	Hand Pump	
2	1	AP-501-267	Mounting Bracket	
3	2	P15541	Soc. Hd Cap Screw	1/4 - 20 x 2
4	2	P26001	Flat Washer	1/4
5	2	P23502	Lock Nut	1/4 - 20
6	2	AT-501-292-020	Hydraulic Line	
7	2	P10040	Hex Hd Cap Screw	5/16 - 18 x 1
8	2	P23510	Lock Nut	5/16
9	2	P46192	Handle Holder	
10	2	P17518	Self Tapping Screw	10 - 32 x 1/2

REPLACEMENT BEARINGS AND PINS



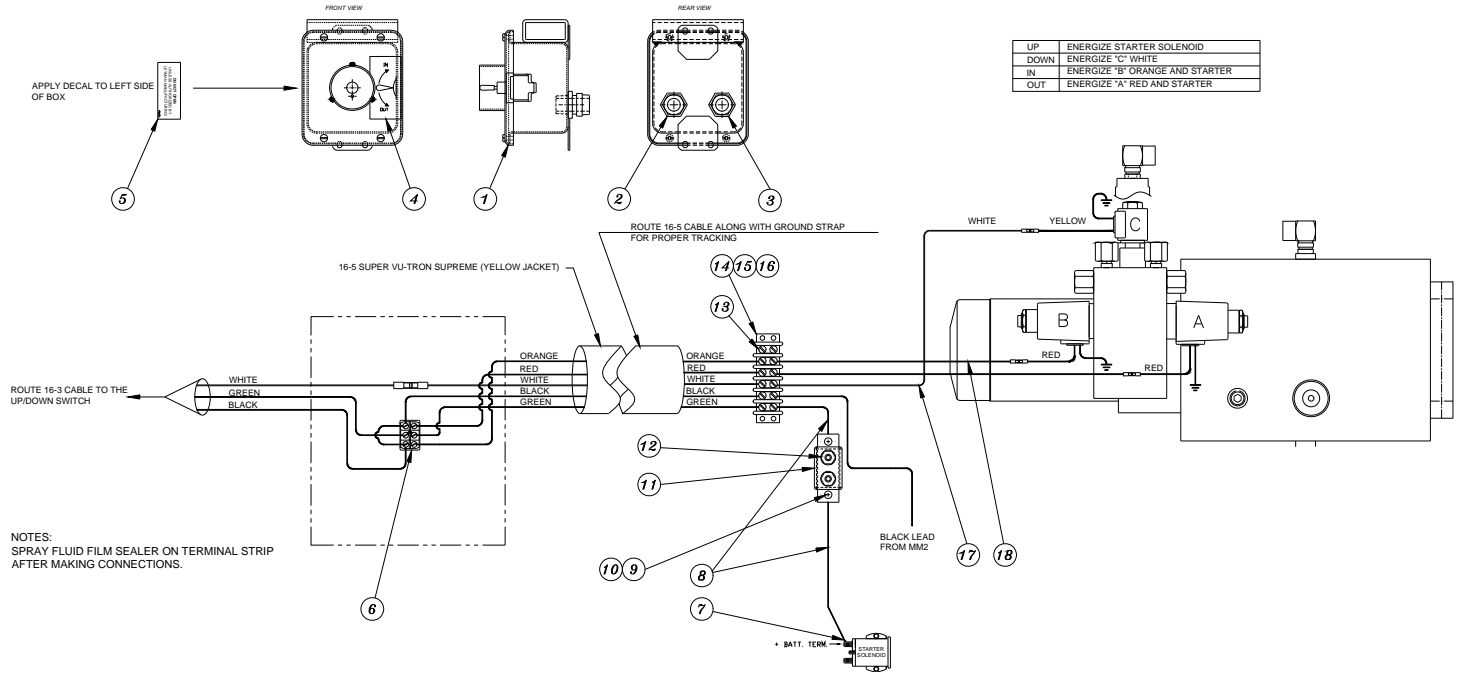
Index #	Req'd	Part #	Part Name	Matl. Size
1	2	P43567	Bearing	1 id. x 1-1/2 lg.
2	2	BA-817-844 / BP-817-472	Pin & Boss / Pin only	1 dia. x 7-5/8 lg.
3	2	P43567	Bearing	1 id. x 1-1/2 lg.
4	2	AP-817-842	Pin (Comp arm to Platform)	1 dia. x 3-5/8 lg.
5	2	P43567	Bearing	1 id. x 1-1/2 lg.
6	2	AP-817-842	Pin (Tension arm to Inner)	1 dia. x 3-5/8 lg.
7	2	P43566	Bearing	1-1/4 id. x 1-1/2 lg.
8	2	AP-817-843	Pin (Comp arm to Inner)	1-1/4 dia. x 3-5/8 lg.
9	4	P43620	Bearing (cyl. rod end)	3/4 id. X 5/8 lg.
10	2	AA-817-737	Pin Kit (Rod end) w/hdw	3/4 dia. x 3-3/4 lg.
11	4	P43573	Bearing (cyl. base end)	3/4 id. x 3/4 lg.
12	2	AA-817-738	Pin Kit (Base end) w/hdw	3/4 dia. x 6-1/8 lg.
13	2	See Pages 22 - 23	Hyd. Cylinder	
14	2	P43570	Bearing	1 id. x 1/2 lg.
15	2	AP-817-233	Skid Pad	Pushes "J" Hook
16	4	P37544	Roller	Ref. P23523Nut & P32012 Gr. Fitting
17	4	AP-817-044	Side Skid Pad	1 od. x 1-13/16 lg.
	8	P11062 and P23502	Bolt and Lock Nut	Use w/items 4, 6, 10, 12
	2	P11063 and P23502	Bolt and Lock Nut	Use w/item 8
	2	P47538	Roll pin	Use w/item 2
	8	P32016	Grease Fitting	Use w/items 2, 4, 6, 8

CHAIN AREA REPLACEMENT PARTS



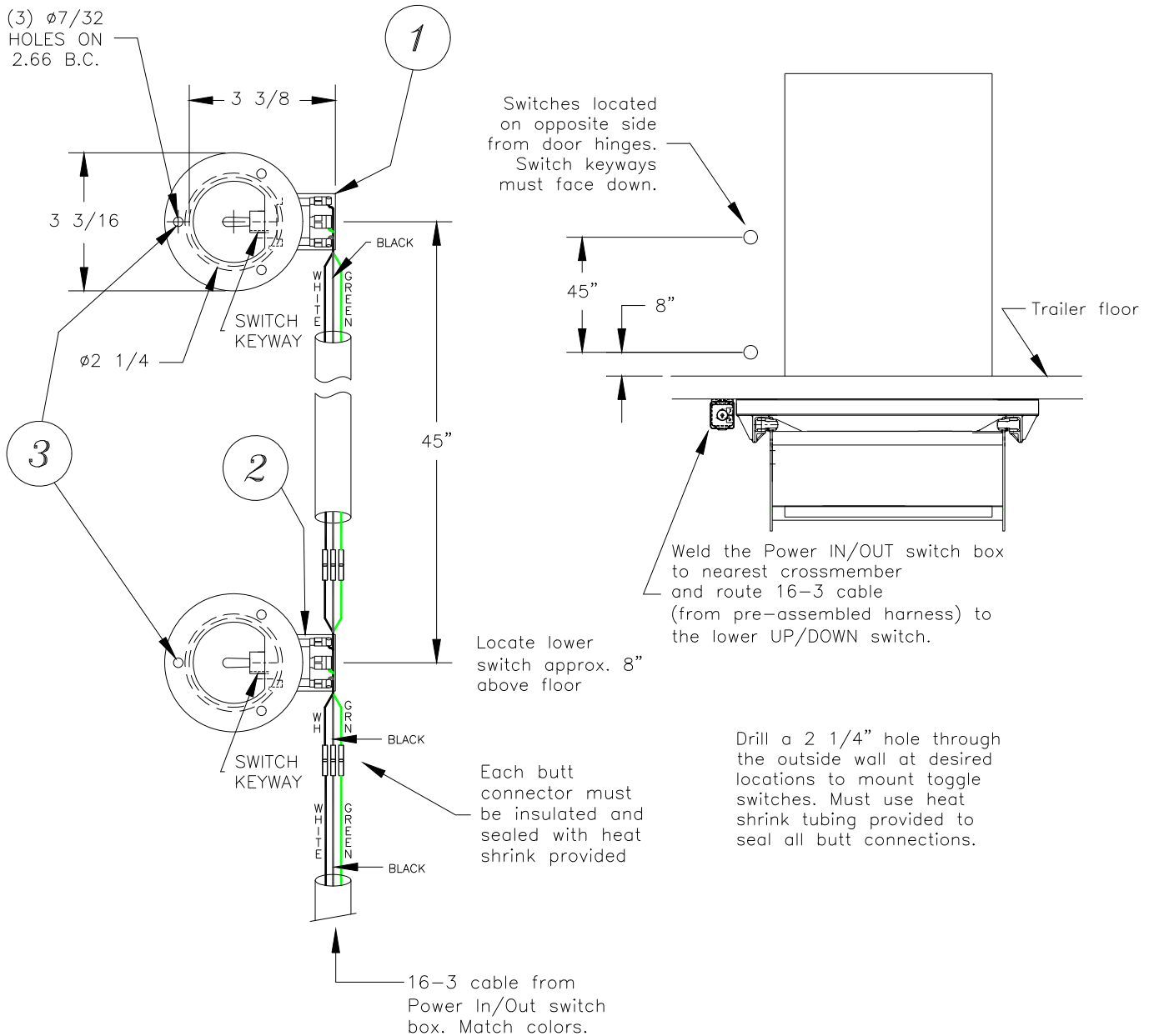
BASIC ELECTRICS – REPLACEMENT PARTS

MONARCH W/POTTED SWITCHES



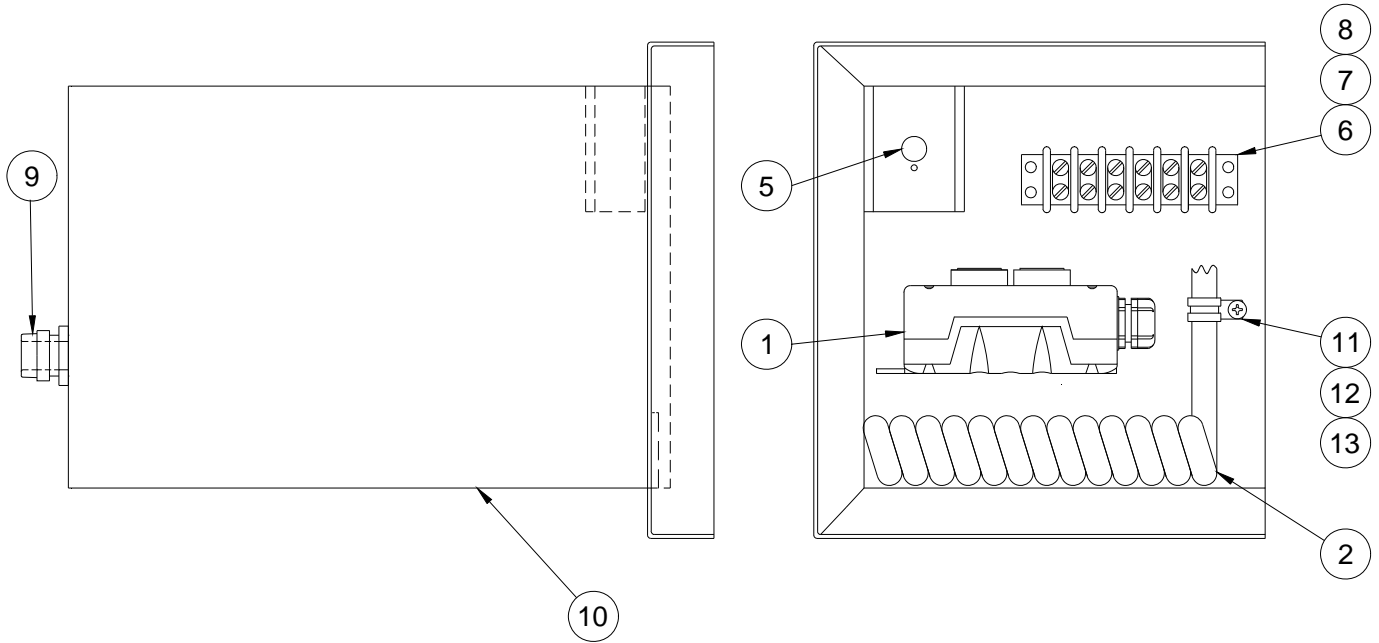
Index No.	Req'd	Part No.	Description	Comments
1	1	BA-551-317	SWITCH BOX ASSEMBLY	
2	1	P46445	CORD GRIP	FOR 16-5 CABLE
3	1	P46517	CORD GRIP	FOR 16-3 CABLE
4	1	P55222	IN/OUT DECAL	
5	1	P55317	"DO NOT OPEN" DECAL	
6	1	AA-551-537	IN/OUT POTTED SWITCH ASSY	
7	1	P46235	LARGE RING TERMINAL	
8	2	P46301	WIRE - GREEN	12" LONG EA.
9	2	P19501	SCREW	10-24 X 1/2
10	2	P23504	NUT	
11	1	P46236	20 AMP CIRCUIT BREAKER	
12	2	P46507	SMALL RING TERMINAL	
13	10	P46319	FORK TERMINAL	
14	1	P46449	TERMINAL BLOCK	
15	2	P19510	SCREW	
16	2	P23535	LOCK NUT	
17	1	P46631	WHITE SHRINK TUBE	18" Use to identify wire lead
18	1	P46632	ORANGE SHRINK TUBE	18" Use to identify wire lead
19	1	P55345	Electrics/Hyd. Diagram	For MM2, +temp switch
	204"	P46748	16-5 Cable (yellow)	High Flex Cable

TOGGLE SWITCH REPLACEMENT PARTS



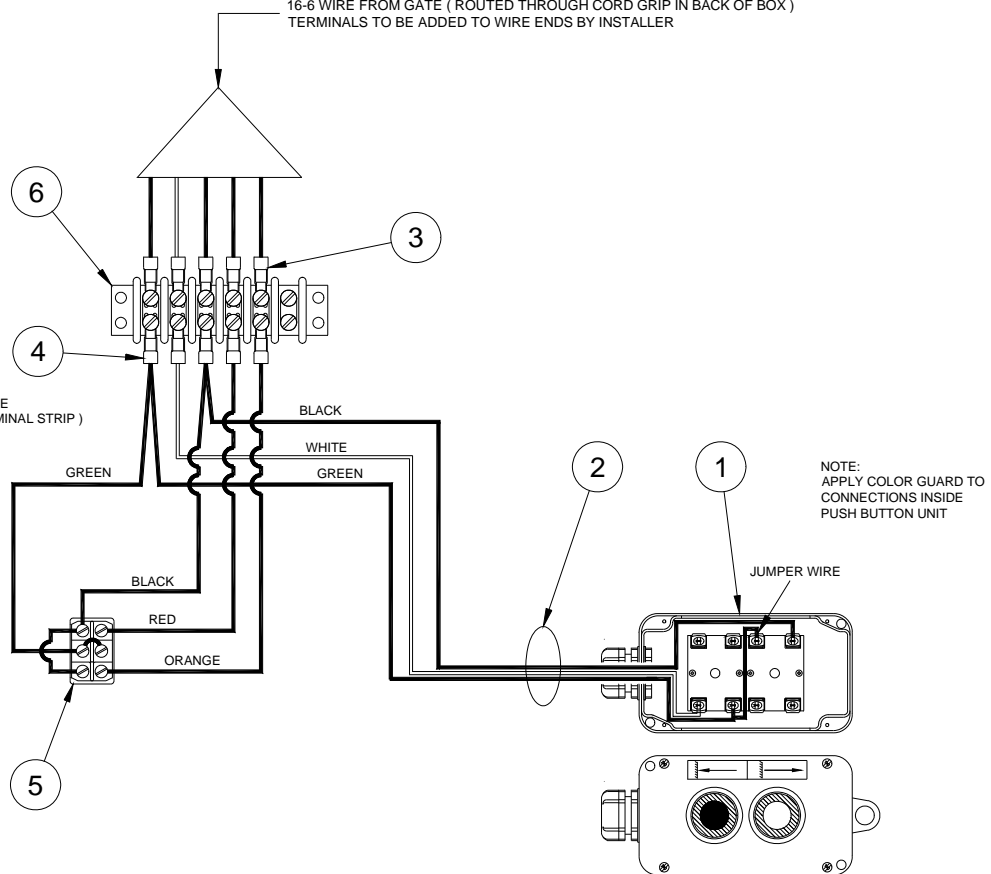
Index No.	Req'd	Part Number	Description	Comments
1	1	AA-551-538	TOP UP/DOWN SWITCH ASSY	Incl. Recess Sw. Plate
2	1	P46729	LOWER UP/DOWN SWITCH	Incl. Recess Sw. Plate
3	6	P17536	SHEET METAL SCREW	
4	4	P46250	LOOM CLAMP	NOT SHOWN
5	4	P17518	SELF TAPPING SCREW	NOT SHOWN
	2	P46292	RECESSED SW. PLATE	Ref. Items 1 & 2
	2	P46291	RUBBER HALF BOOT	Ref. Items 1 & 2

Walk Around Electrics (Option #183)



16-6 WIRE FROM GATE (ROUTED THROUGH CORD GRIP IN BACK OF BOX)
 TERMINALS TO BE ADDED TO WIRE ENDS BY INSTALLER

NOTE: THE WHITE WIRE IN THE 16-5 CABLE
 (FROM THE IN/OUT SWITCH TO THE TERMINAL STRIP)
 IS NOT USED



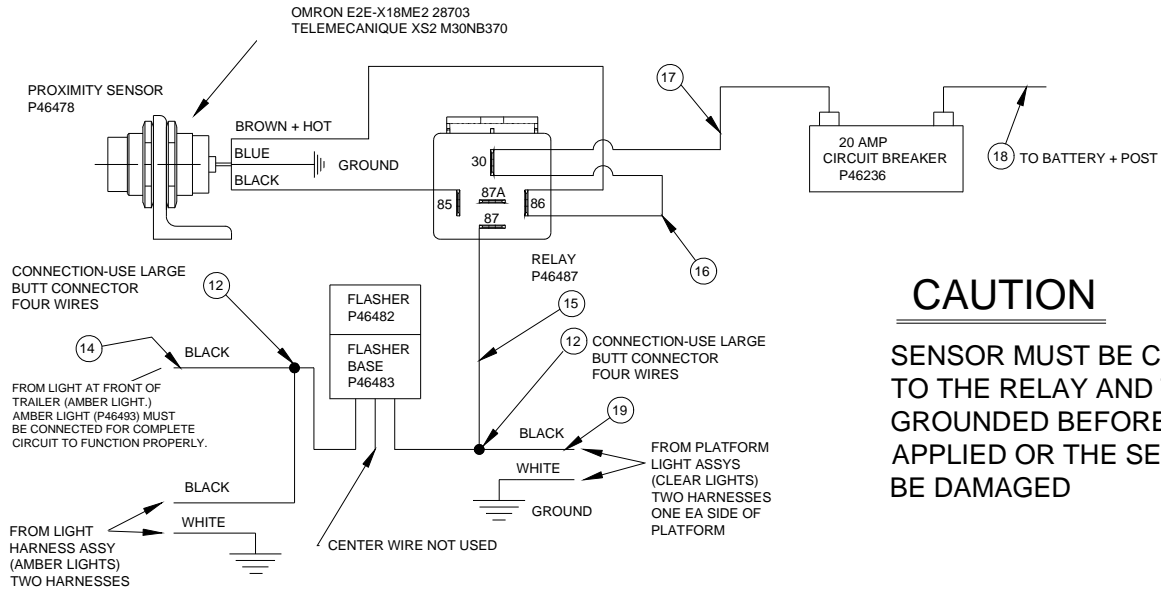
NOTE:
 APPLY COLOR GUARD TO
 CONNECTIONS INSIDE
 PUSH BUTTON UNIT

Walk Around Electrics (Option #183)

Index No.	Req'd	Part Number	Description	Comments
1	1	P46636	2-BUTTON CONTROL	
2	1	AP-551-212	COIL CORD	1/2 LENGTH
3	8	P46319	FORK TERMINAL - SMALL	
4	2	P46444	FORK TERMINAL - LARGE	
5	1	P46745	POTTED TOGGLE SWITCH ASSY	
6	1	P46449	TERMINAL BLOCK	
7	2	P19519	ROUND HEAD SCREW	
8	2	P23535	LOCK NUT	
9	1	P46445	CORD GRIP	
10	1	P46138	PUSH BUTTON BOX	
11	1	P46250	LOOM CLAMP	
12	1	P19501	ROUND HEAD SCREW	
13	1	P23504	LOCK NUT	
14	1	P56554	STEEL PLUG	NOT SHOWN

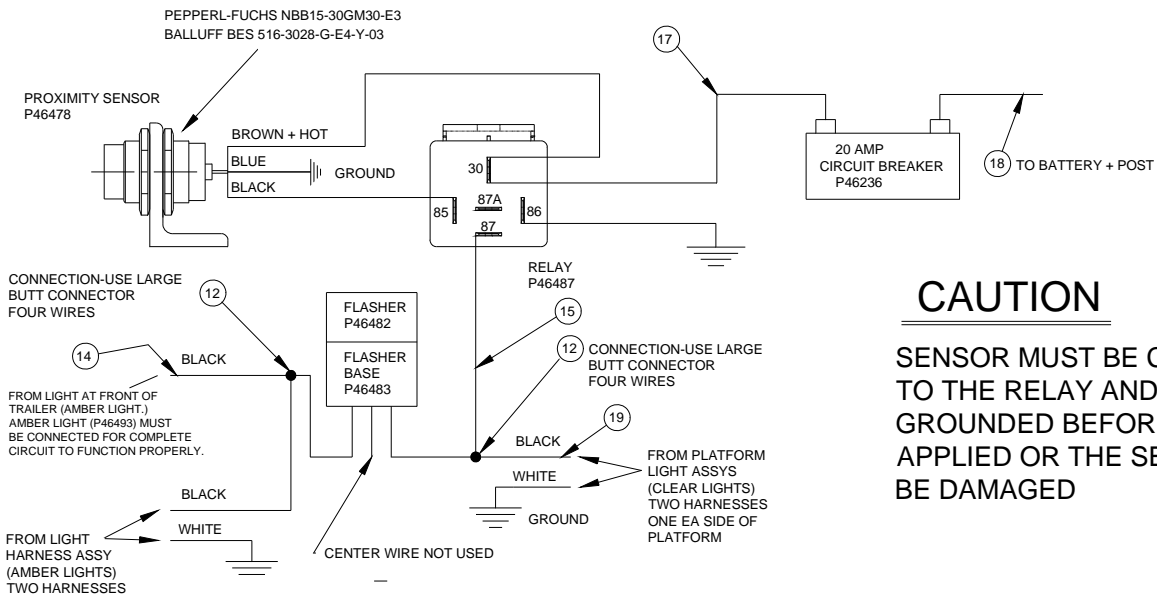
LIGHTS AND SENSORS (Opt. 155)

ELECTRIC CONNECTIONS AND PARTS



CAUTION

SENSOR MUST BE CONNECTED TO THE RELAY AND THE RELAY GROUNDED BEFORE POWER IS APPLIED OR THE SENSOR WILL BE DAMAGED



CAUTION

SENSOR MUST BE CONNECTED TO THE RELAY AND THE RELAY GROUNDED BEFORE POWER IS APPLIED OR THE SENSOR WILL BE DAMAGED

LIGHTS AND SENSORS (Opt. 155)

ELECTRIC CONNECTIONS AND PARTS

Index No.	Req'd	Part Number	Description	Comments
1	1	P46478	Proximity sensor	
2	1	AP-817-139	Sensor mount	Weld to inner slide cover
3	1	S566-006.000	Sensor target	2 x 1-1/2 x 1/8 x 6
4	1	P46487	Relay	
5	1	P46482	Flasher	Blk wire on sol to blk wire
6	1	P46483	Flasher base	Blk wire on sol to blk wire
7	1	P46236	Circuit breaker	20 amp, auto reset
8	4	P17518	Self tapping screw	CirB-2, relay-1, flasher base-1
9	2	P46751	Large ring terminal	To starter lg hot post
10	3	P46318	Female terminal push on	For relay connections
11	5	P46047	Small ring terminal	To circuit breaker & 3 grounds
12	2	P46157	Lg butt connector	
13	1	BA-551-193	Light harness assy	Includes all lights
14	1	P46017	Black wire 16-GA	600" To front of trailer
15	1	P46017	Black wire 16-GA	8" From clear lights to relay
16	1	P46301	Green wire 16-GA	3" From relay 30 to relay 86
17	1	P46301	Green wire 16-GA	8" From relay to circuit breaker
18	1	P46301	Green wire 16-GA	48" From circuit breaker to battery
19	2	P46017	Black wire 16-GA	180" From relay to clear lights
20	1	P46665	Female terminal push on	For double wire connection
21	1	P46739	Cord grip	
22	1	P46740	Black nylon nut	

INSTALLATION OF SAFETY DECALS

Leyman Manufacturing will replace safety stickers at any time **FREE OF CHARGE**.

Locate the following decals on trailer side wall near door –

- P55236** Operating Instructions
- P55157** Urgent Warning – Read Before Operation
- P55294** CAUTION Do Not Stand....
- P55211** 3500 lb. Maximum Capacity

Locate the following decal on trailer side wall under door threshold –

- P55138** Keep Feet from Edge....

Locate the following decals at Toggle Switches –

- P55222** IN / OUT
- P55221** UP / DOWN (Qty. 2)



