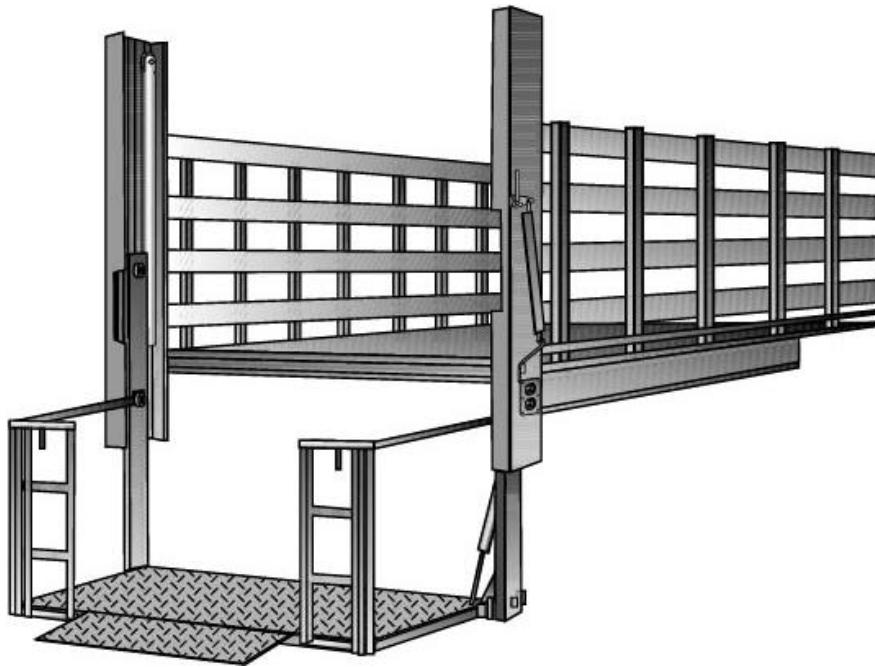




Operation, Maintenance, Trouble-Shooting and Parts Manual **FBGxxRM Fold-A-VadorÔ** **Rail Style**



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INTRODUCTION

This manual contains the operating procedures on the equipment your company is using that was manufactured by Leyman Manufacturing Corporation.

Past experience has indicated that it is most unwise to operate these units without proper instructions which should be instituted by the purchaser.

While these products have certain safety features engineered into their design, they are all operated by human beings. Therein lies the problem of safety and one should always have caution in mind when operating this or any other machine that has parts that weigh several hundred pounds.

Again, let us remind you that there are moving parts on this product that weigh several hundred pounds. These parts, when not under proper control, can cause physical damage to the operator. Because of the weights that are involved; carelessness and neglect of training can make these units dangerous.

Do not overload this product. Maintain it properly. Stand clear of moving parts. Operate as instructed.

This lift gate has a long life expectancy and will take some abuse. Use good judgement when operating this equipment.

PLEASE FILL IN FOR YOUR RECORDS

CUSTOMER:	_____
MODEL:	FBG xxRM
CAPACITY:	lbs.
TYPE:	POWER CLOSE PLATFORM
POWER:	12 VOLT
PLATFORM:	Single Piece
SERIAL #:	_____
OPTIONS:	Power Close Platform

MAXIMUM HEIGHT	60"
HYDRAULIC PRESSURE	LOADED 2,000 PSI AT THE PUMP
AMP DRAW	LOADED 270 UNLOADED 100

**WHEN PLACING A PARTS ORDER, YOU WILL NEED THE
SERIAL # AND MODEL # OF THE LIFT GATE.**

**LEYMAN  LIFT
GATES**

Due to the numerous different types and grades of steels and aluminum used in the production of these lift gates. NO material may be used as a replacement without the expressed written permission of Leyman Manufacturing Corporation.

This manual reflects most changes and updates of material numbers that are common to this type of lift gate.

Some may differ due to individual customer requirements.

This manual has been established to reflect common items.

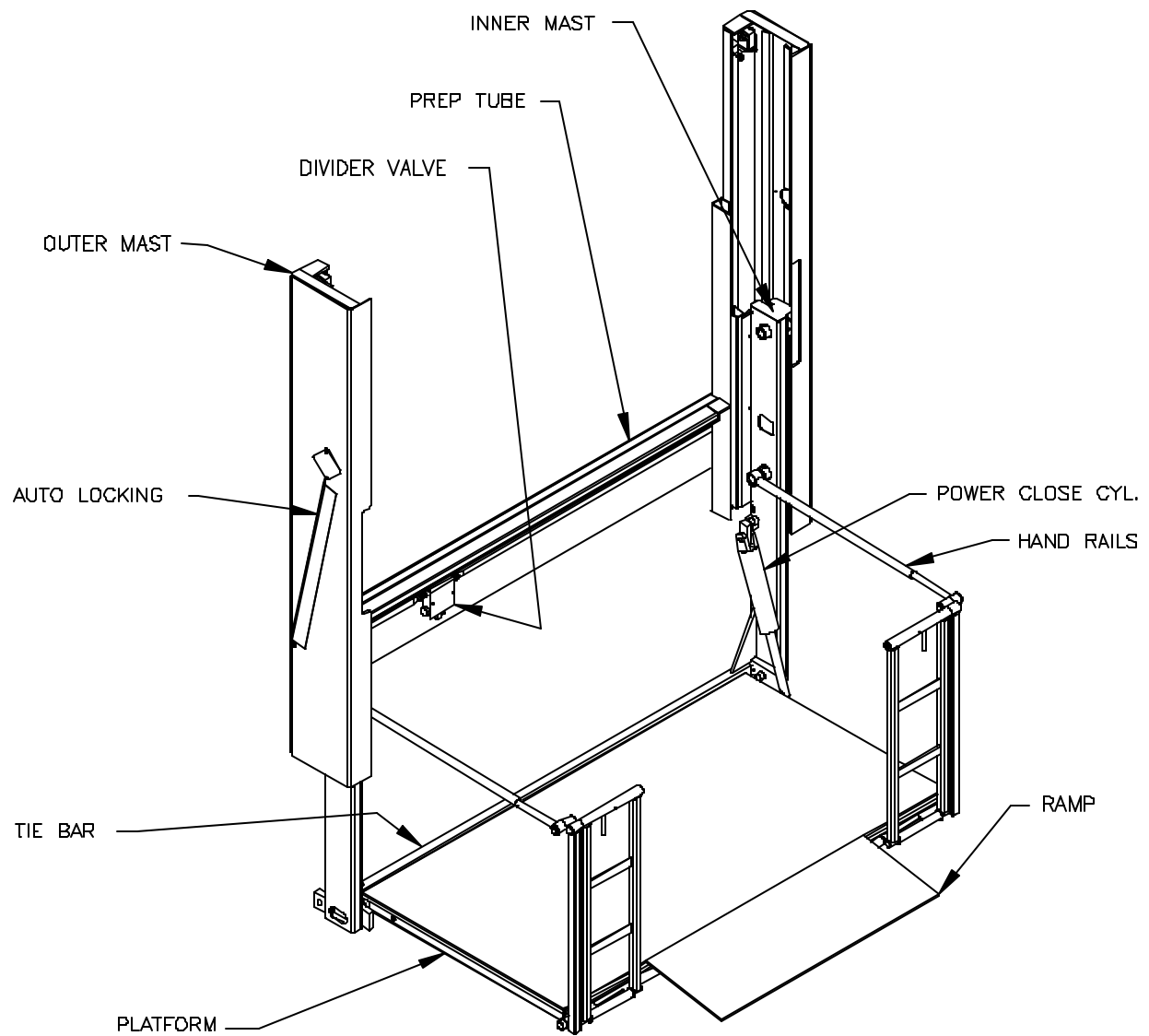
WORDS OF CAUTION

1. Before any maintenance is performed on this unit, carefully read and understand this manual completely.
2. Do not stand on or behind the platform when operating gate in the folding position.
3. Make sure the ground is clear under the platform when lowering.
4. Do not stand in front of the platform when lowering from vertical position or operating in any manner.
5. Never exceed the rated load capacity of this gate.
6. Inspect the tracks for wear every six (6) months.
7. Inspect the hydraulic ram packings for leakage every six (6) months.
8. Inspect the hydraulic lines for cracks or deterioration every six (6) months.
9. Check the level of the hydraulic oil in the power unit tank once a month.
10. Clean the hydraulic power unit strainer and in-line filter every three (3) months.
11. Use only factory authorized parts for replacement. (See section #4)
12. Always disconnect the battery from the power source before servicing the unit.
13. Do not allow persons to operate the unit unless they have been properly trained to do so.
14. Check the area around the unit for persons before operating the lift gate.
15. This lift gate should operate smoothly and the only noise that should be heard is the power unit. Any audible sounds other than the normal power unit operation sound should be thoroughly inspected and the cause of the noise should be pin-pointed and corrected.

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GENERAL TERMINOLOGY



LEYMAN  **LIFT GATES**

OPERATING THE LIFT GATE

OPERATION OF THE LIFT GATE

Before operating the lift, read and understand this decal, urgent warning decal and the owner's manual.

Do not stand behind the lift gate while unfolding or using the platform.

To unfold the platform from the over-the-road position:

1. Momentarily fold the gate. Push the fold and up switches at the same time, as to ensure the gate is fully folded.
2. To relieve tension on the auto lock, push the up switch (gate will go up), pull the handle to release the auto lock.
3. Lower the platform by pushing the down switch so the ears are below the safety plate on the outer mast.
4. Push the unfold switch (gate will unfold).

To dock load:

1. To relieve the tension on the auto lock, push the up switch (gate will go up), pull the handle to release the auto lock.
2. Lower the gate until the ears on the platform rest on the stops of the outer mast.

To lower platform, use the down switch only.

To raise platform, use the up switch only.

Safe loading of platform:

1. The cart stop or retention ramp must be in place whenever lifting or lowering a load. Also, see the urgent warning decal.

To fold platform:

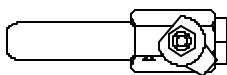
1. Raise the platform off the ground so that the ears are above the safety plate on the outer mast when platform folds.
2. Push the fold and up switch at the same time by using both hands. Platform will fold. Continue to raise the platform to the full up position, auto lock will latch.

HOW TO OPERATE THE HAND PUMP - GRAVITY DOWN

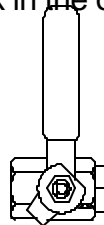
1. Inside the power unit enclosure, turn the ball valve (plastic covered handle) 90° to the full open position. The handle will be inline with the valve body and hose when fully open.
2. Insert the handle into the pump and jack up. When the platform is completely up and against the stops, keep pumping and the platform will fold up. Continue to pump until the platform ears are tight against the outer mast.
3. Close the plastic covered ball valve handle.
4. Using the handle, slowly turn the valve located on the hand pump to let the platform lower until the platform ears go into the notch on the outer mast. Then close the valve.
5. Jack the platform up until the platform is completely up and locked in the over-the-road driving position.

HOW TO OPERATE THE HAND PUMP - POWER DOWN

1. Inside power unit enclosure, open ball valves (plastic covered handles turned in-line with valve body).
2. Insert hand pump handle into the hand pump and jack platform up to the full up position. Continue pumping to fold the platform up until the platform ears are tight against the outer mast.
3. Close the ball valves (plastic covered handles turned 90° to valve body).
4. Use the handle to slowly turn the valve located on the hand pump counterclockwise to lower the platform until the platform ears go into the notch on the outer mast. Close the valve on the hand pump.
5. Open the ball valve located on the reservoir tank only and then jack the platform up until the platform ears engage the auto-lock in the over-the-road driving position.



BALL VALVE OPEN
(HANDLE IN-LINE WITH BODY)



BALL VALVE CLOSED
(HANDLE PERPENDICULAR TO BODY)

LEYMAN  **LIFT GATES**

MAINTAINING THE LIFT GATE

RECOMMENDED HUDRAULIC OILS AND LUBRICATION FOR LEYMAN LIFT GATES

Level 1

Normal Conditions

<u>Manufacturer</u>	<u>Type</u>	<u>Temperature Range</u>
---------------------	-------------	--------------------------

Chevron	RYKON ISO-15	-15°F to +150°F
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

Chevron	AVIATION-A	-50°F to +80°F
Mobil	AERO-HFA	-50°F to +80°F
Shell	AERO FLUID #4	-50°F to +80°F
Exxon	UNIVIS HVI 13	-50°F to +80°F
Mil	H-5606	-50°F to +80°F

LUBERCATION SPECIFICATIONS

<u>Parts to Grease</u>	<u>Use</u>	
------------------------	------------	--

Hinge Barrels & Fittings	B.P. Products/ Wichita KS	Part # 60035-Multi Purpose Grease # 35
Hinge Barrels (center platform)	W.W. Grainger	Part # 6Y834-Needle Nose Adapter for Grease Gun
Battery & Electrical Components	Bowman	Battery Terminal Protector Part # 21948

LEYMAN  LIFT GATES



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SAFETY AND PREVENTATIVE MAINTENANCE INSPECTION

FOLD-A-VADORÔ MODEL FBG-RM

Maintenance by Cycles

CUSTOMER:		
LOCATION:		
VEHICLE#:	LIFT GATE MODEL#:	LIFT GATE SERIAL#:

√ = OK

A = ADJUSTED

N = NOT APPLICABLE

X = WRITE UP REPAIR

2,000	4,000	8,000	MOTOR - PUMP AND COMPONENTS
			Check battery(ies) for water level and corrosion.
			Check battery(ies) for proper charge level PROPER CHARGE LEVEL:
			Check the voltage of battery(ies).
			Check all wiring connections for corrosion and tightness.
			Check solenoids for loose fittings and operation.
			Check reservoir for correct amount of fluid (GRV DN – platform on ground, PWR DN – platform up)
			Inspect fuse links and/or circuit breakers and replace if necessary.
			Check the charge line or power line and the connections.
			Remove and clean all pump solenoid cartridges.
			Replace hydraulic fluid in reservoir.
			Check and adjust the relief valve setting.
			Check brushes and armature in motor. Replace if necessary.
			Check amperage draw of motor (see owners manual for recommended amp draw)
2,000	4,000	8,000	LUBRICATION
			Steam clean the inner and outer rails.
			No lubrication should be required for the rollers or tracks.
2,000	4,000	8,000	LIFT GATE GENERAL/STRUCTURE INSPECTION
			Open and close lift gate. Observe for correct operation
			Raise and lower lift gate. If going up or down operation
			Check inner and outer rails for impact damage. Repair if necessary
			Check opening and closing cylinders for leaks. Repack or replace as necessary
			Check up and down cylinder for leaks. Repack or replace cylinder
			Inspect for broken and/or missing roll pins
			Inspect for worn bushings/bearings in platforms & rollers. Replace as necessary
			Steam clean gate. Repair any structural welds as needed
			Repaint where needed and replace any worn or missing safety decals

SERVICED BY: _____ DATE: _____

TROUBLE-SHOOTING

TROUBLE SHOOTING CHART FOR POWER UNIT

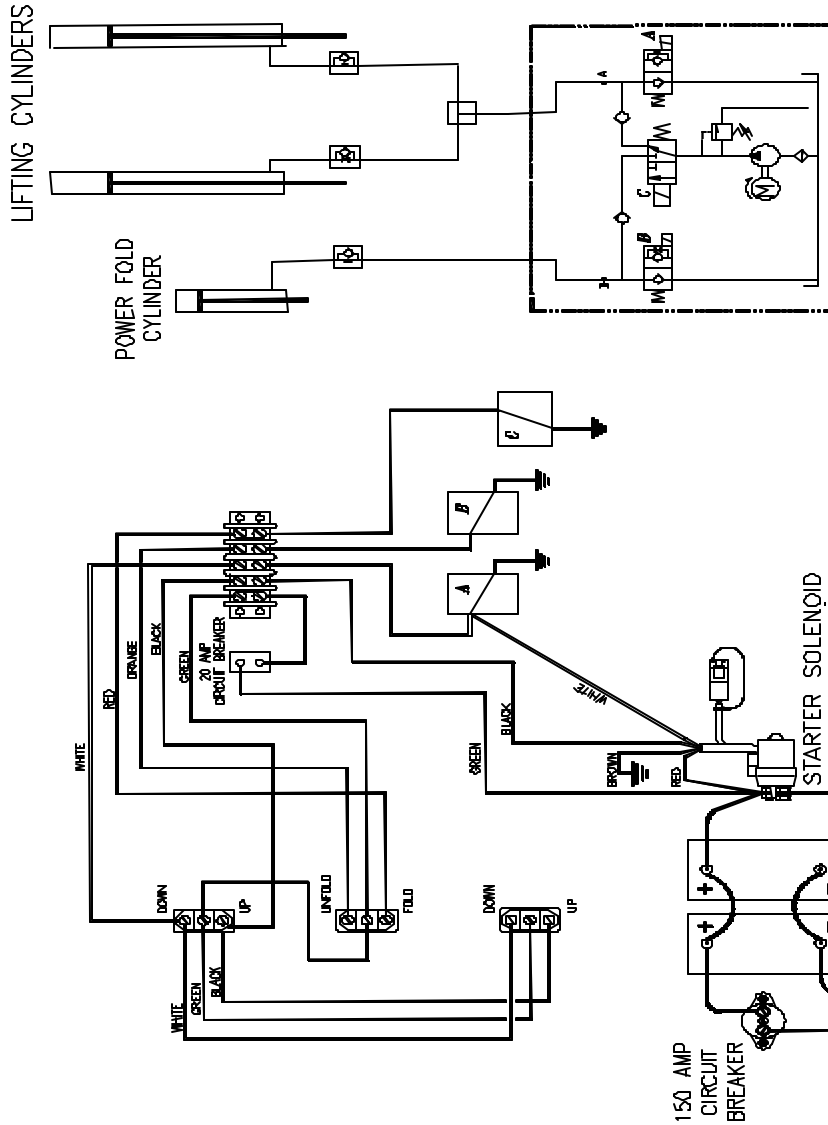
PROBLEM	PROBABLE CAUSE	REMEDY
Platform will not go up or reach the floor of the vehicle.	<ol style="list-style-type: none"> 1. Battery is low. 2. Slave line is disconnected or connections are loose (battery and motor). 3. Insufficient oil in power unit tank. 4. Poor switch connections. 	<ol style="list-style-type: none"> 1. Recharge the battery. 2. Connect the slave line properly. 3. Fill the power unit tank. 4. Clean and check switch connections.
Platform will not lower.	<ol style="list-style-type: none"> 1. Battery is low. 2. Poor switch connections. 	<ol style="list-style-type: none"> 1. Recharge the battery. 2. Clean and check switch connections.
Platform does not go up smoothly.	<ol style="list-style-type: none"> 1. Insufficient oil in power unit tank. 2. Air lock in hydraulic system. 3. Dirt or foreign material in guides. 4. Mechanical wear. 	<ol style="list-style-type: none"> 1. Fill tank. 2. Run platform to stop. Open up bleeders in each ram while power unit is running. Close bleeders and refill the tank. 3. Clean guides with steam and check for excessive wear, obstructions, and burrs. 4. Replace worn parts.
Platform creeps down.	<ol style="list-style-type: none"> 1. Hydraulic leak. 2. Ram seals failing. 3. Dirt under the ball of check valve, the ball is pitted or worn or the spring is weak. 	<ol style="list-style-type: none"> 1. Check all hoses and fittings. 2. Replace ram seals. 3. Clean.
Platform goes down slowly.	<ol style="list-style-type: none"> 1. Excessive wear of mechanical components. 2. Restriction in hydraulic system. 3. Incorrect hydraulic oil in system for cold weather. 	<ol style="list-style-type: none"> 1. Insure free movement of all mechanical parts. 2. Check all hydraulic system components. 3. Use Mobile Aero-HFA in cold weather.
Platform goes up crooked.	<ol style="list-style-type: none"> 1. Equalizer valve is out of adjustment. 2. Air trapped in one of the rams. 3. Tie bar is bent. 	<ol style="list-style-type: none"> 1. Adjust equalizer valve. 2. Bleed air out of the ram. 3. Straighten the tie bar.
Platform comes down crooked.	<ol style="list-style-type: none"> 1. Flow control not adjustable. 2. Dirt in hydraulic line at the bottom of the ram. 3. Mechanical bind on one (1) side of gate. 4. Tie Bar is bent. 	<ol style="list-style-type: none"> 1. Replace flow control. 2. Clean hydraulic line and bleed ram. 3. Clean and inspect inner mast and rollers. Check wear of parts and replace if necessary. 4. Straighten tie bar.

LEYMAN  **LIFT GATES**

Gate will not lift the rated load.	<ol style="list-style-type: none"> 1. Hydraulic pump is worn. 2. Battery is too low. 	<ol style="list-style-type: none"> 1. Change the pump. 2. Recharge the battery to full charge.
Pump will not operate.	<ol style="list-style-type: none"> 1. Battery too low. 2. Electrical hookup to motor not making contact. 3. Control switches are not making good contact. 4. Maintenance Minder™ solenoid has shut down the system due to low voltage condition. 5. Optional Maintenance Minder 2 controller has shut down the system due to low voltage must maintain 8 volts minimum under load. 	<ol style="list-style-type: none"> 1. Recharge battery and check to be sure that the slave line has a good connection. 2. Clean connections and re-tighten. 3. Clean and check the connections. 4. Recharge battery. 9.5 volts must be obtained. 5. Use the "Last Lift Menu" date on screen to read maximum and minimum voltages, recharge battery.

ELECTRICAL DIAGRAM GRAVITY DOWN

SPX/FENNER POWER UNIT (gold motor) w/ smart start solenoid (B/4 4/03)



HYDRAULIC DIAGRAM

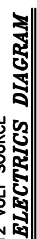
POWER UNIT	
UP	ENERGIZE STARTER SOLENOID (BLACK)
DOWN	ENERGIZE "A" (WHITE)
FOLD	ENERGIZE "C" (RED) AND UP SWITCH
UNFOLD	ENERGIZE "B" (ORANGE)

P55289
7-23-99

ELECTRICS DIAGRAM

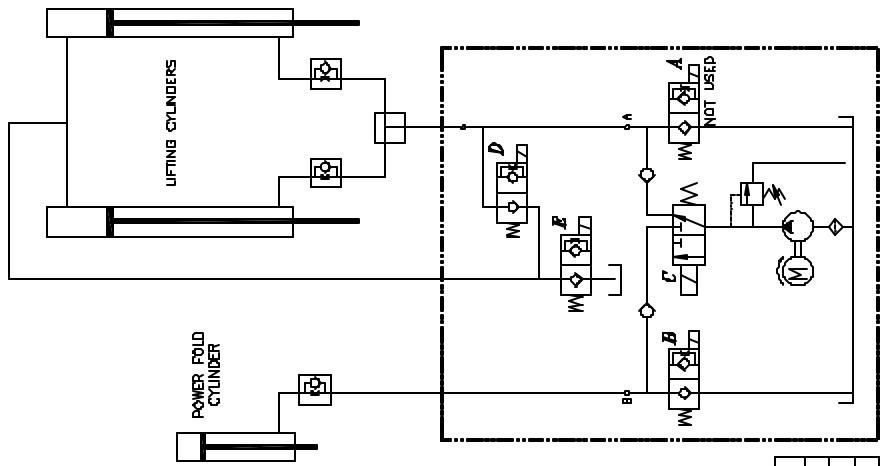
NOTE: IF GREEN LIGHT LOCATED ON STARTER SOLENOID IS NOT ON, THERE IS NOT SUFFICIENT VOLTAGE TO RUN THE POWER UNIT

MONARCH POWER UNIT (black motor) w/ optional
MAINTENANCE MINDER 2 controller (after 4/03)



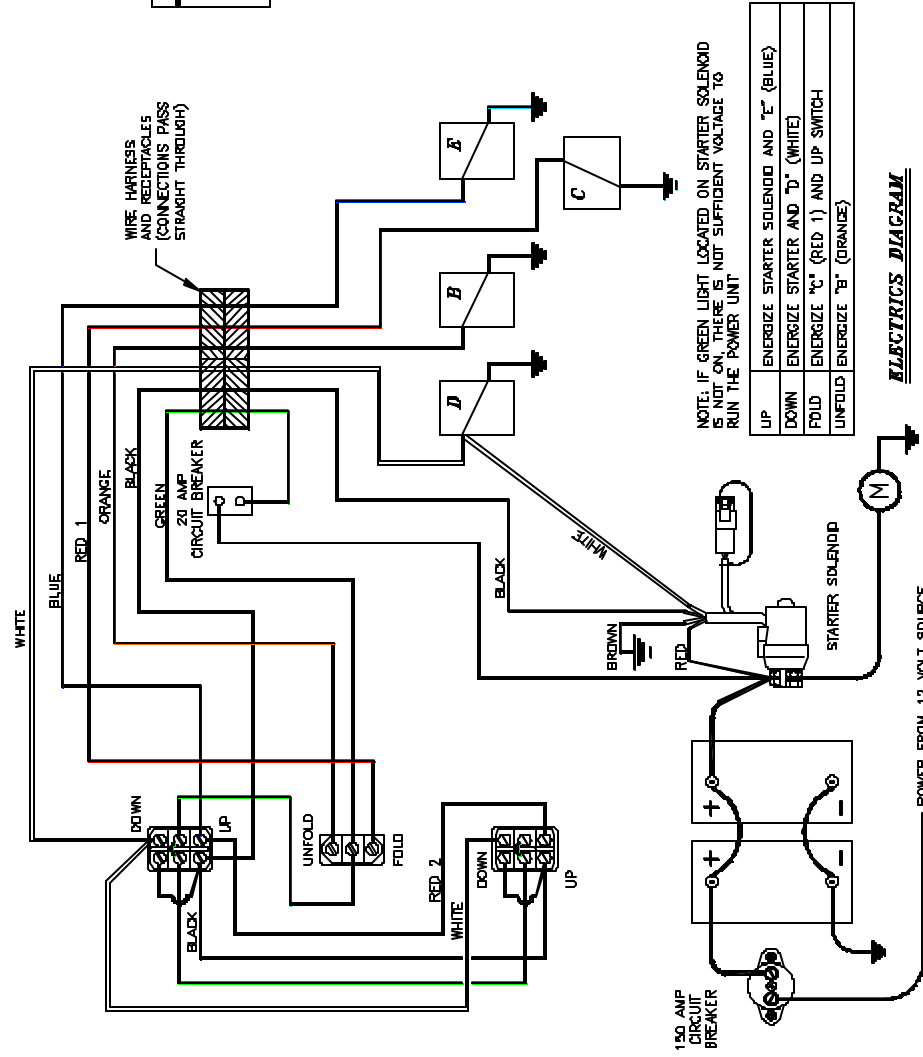
P55395

ELECTRICAL DIAGRAM POWER DOWN



HYDRAULIC DIAGRAM

P55287 7-B-38



ELECTRICS DIAGRAM

MONARCH POWER
UNIT (black motor) w/
optional MAINTENANCE
MINDER 2 controller
(after 4/03)

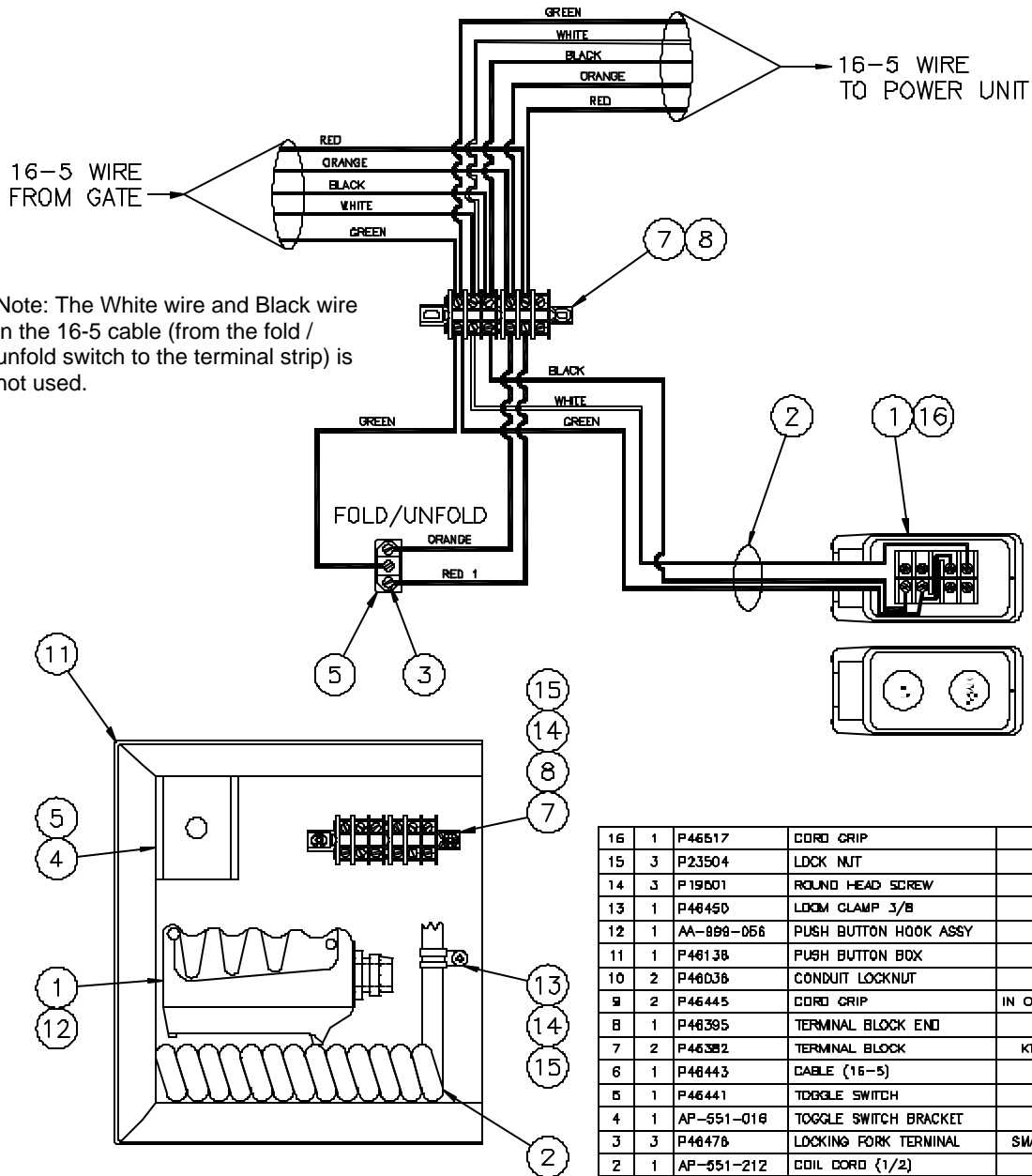
755336



W/OPTIONAL MAINTENANCE MINDER 2

VOLT SOURCE ELECTRIC DIAGRAM

WIRING DIAGRAM **WALK AROUND ELECTRICS** **GRAVITY DOWN**

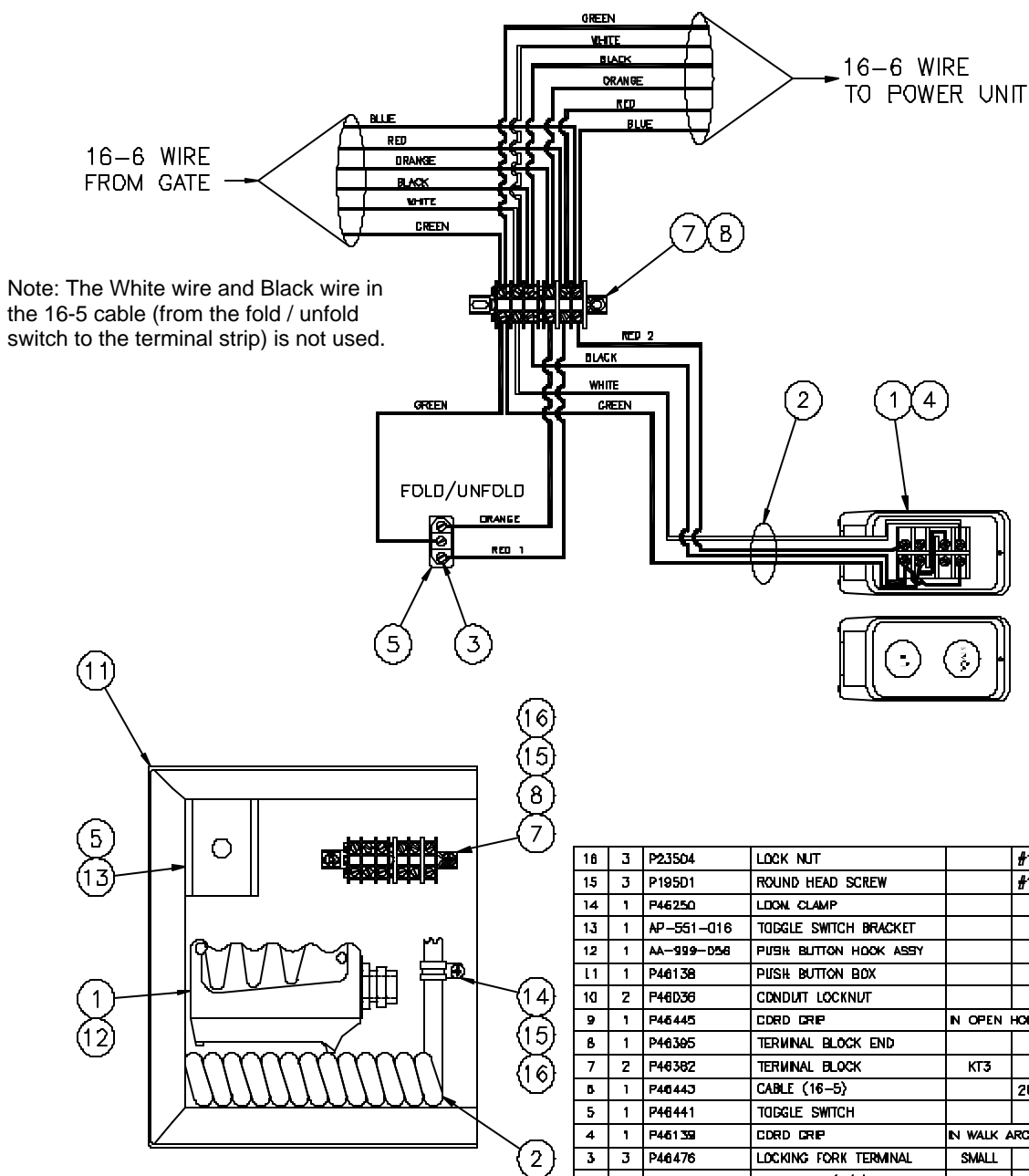


16	1	P46517	CORD GRIP		
15	3	P23504	LOCK NUT		#10-24
14	3	P19501	ROUND HEAD SCREW		#10-24 X 1/2
13	1	P46450	LOCK CLAMP 3/8		
12	1	AA-899-056	PUSH BUTTON HOOK ASSY		
11	1	P46138	PUSH BUTTON BOX		
10	2	P46036	CONDUIT LOCKNUT		
9	2	P46445	CORD GRIP	IN OPEN HOLES IN BACK OF BOX	
8	1	P46395	TERMINAL BLOCK END		
7	2	P46382	TERMINAL BLOCK	KT3	
6	1	P46443	CABLE (16-5)		20'
5	1	P46441	TOGGLE SWITCH		
4	1	AP-551-018	TOGGLE SWITCH BRACKET		
3	3	P46476	LOCKING FORK TERMINAL	SMALL	
2	1	AP-551-212	COIL CORD (1/2)		18-3
1	1	P46454	WALK AROUND PUSH BUTTON		
INDEX	RED	PART NO.	PART NAME	MATL.	MATERIAL SIZE

WIRING DIAGRAM

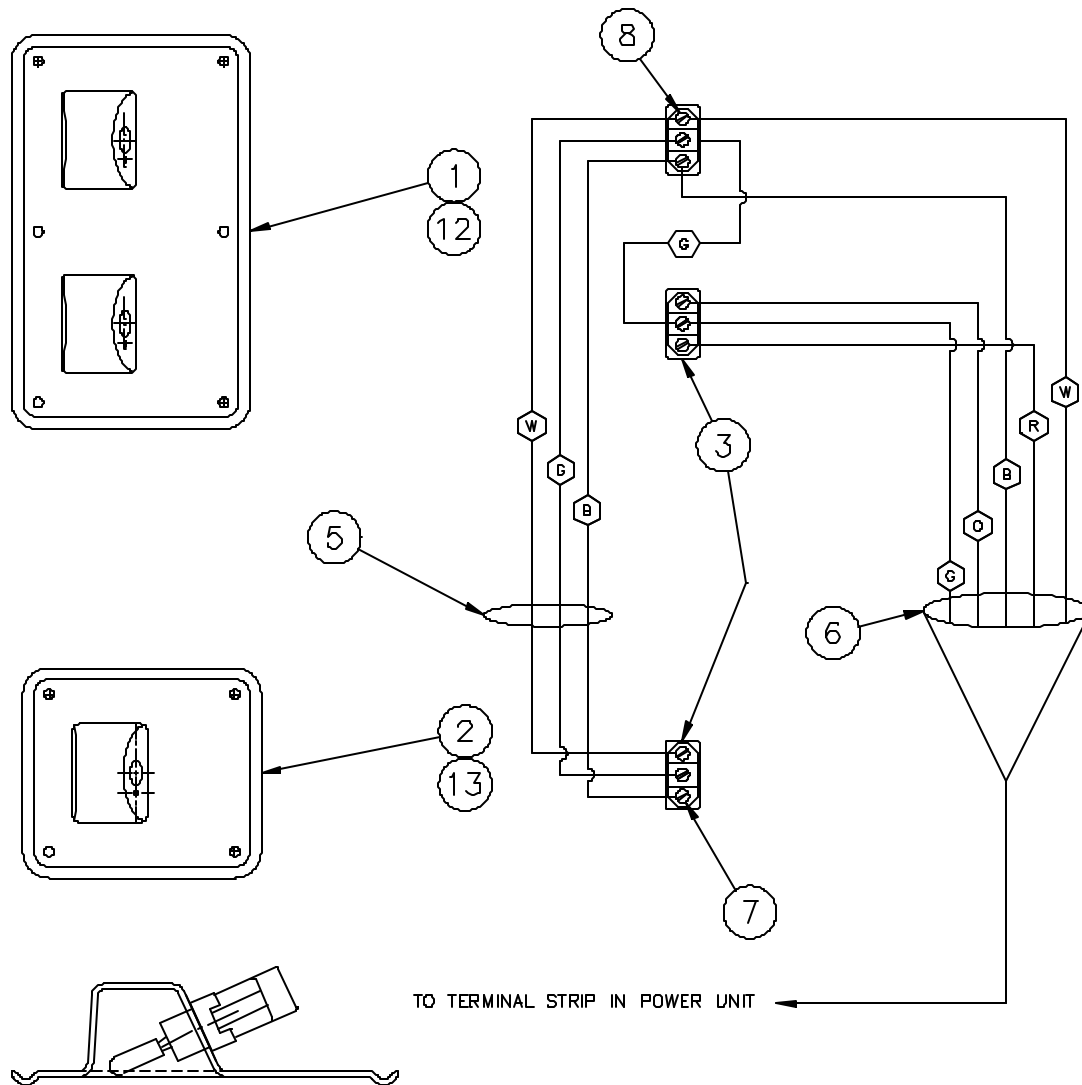
WALK AROUND ELECTRICS

POWER DOWN



16	3	P23504	LOCK NUT		#10-24
15	3	P19501	ROUND HEAD SCREW		#10-24 x 1/2
14	1	P46250	LOOM CLAMP		
13	1	AP-551-016	TOGGLE SWITCH BRACKET		
12	1	AA-999-056	PUSH BUTTON HOOK ASSY		
11	1	P46138	PUSH BUTTON BOX		
10	2	P46036	CONDUIT LOCKNUT		
9	1	P46445	CORD GRIP	IN OPEN HOLES IN BACK OF BOX	
8	1	P46385	TERMINAL BLOCK END		
7	2	P46382	TERMINAL BLOCK	KT3	
6	1	P46443	CABLE (16-5)		20"
5	1	P46441	TOGGLE SWITCH		
4	1	P46139	CORD GRIP	IN WALK AROUND PUSH BUTTONS	
3	3	P46476	LOCKING FORK TERMINAL	SMALL	
2	1	AP-551-211	CDL CORD (1/2)		16-4
1	1	P46454	WALK AROUND PUSH BUTTON		
INDEX NO.	REQD	PART NO.	PART NAME	NATL.	REMARKS

SWITCH WIRING GRAVITY DOWN

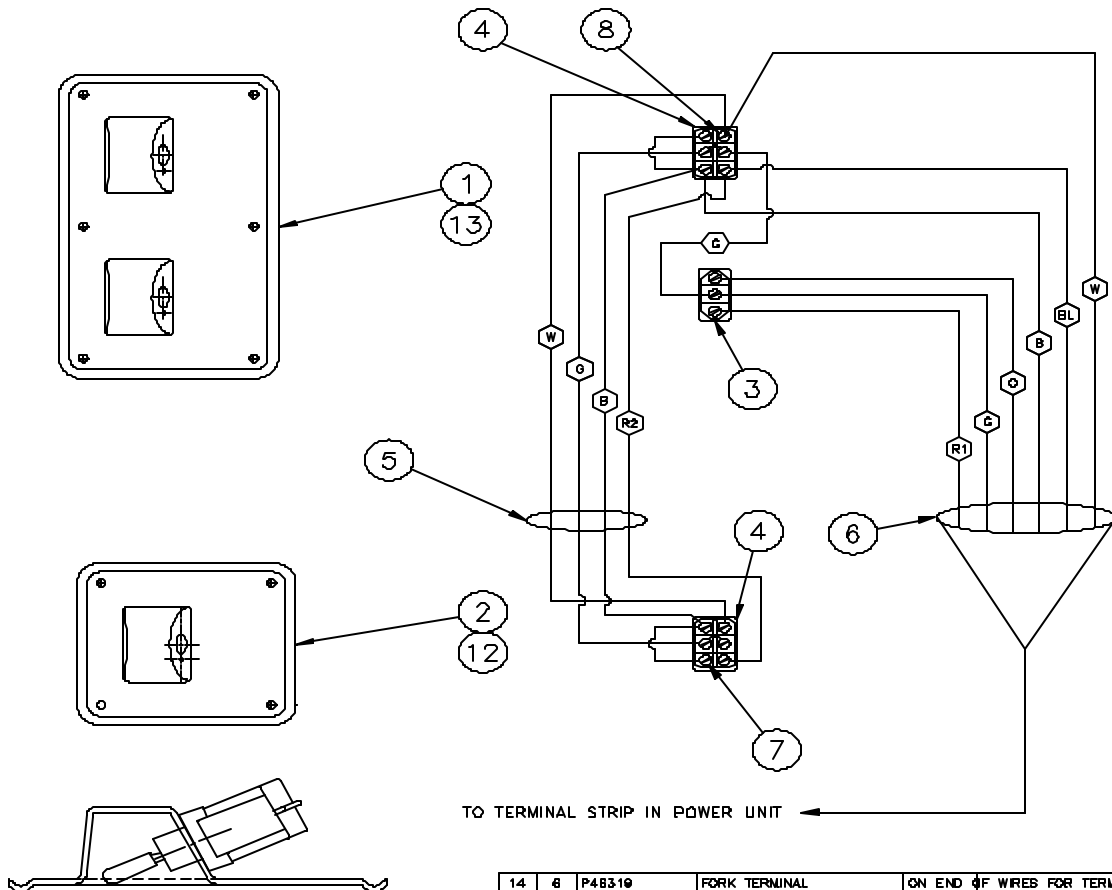


LEGEND	
G	- GREEN
W	- WHITE
B	- BLACK
O	- ORANGE
R	- RED

13	1	BP-805-286	SINGLE SWITCH PLATE GASKET		
12	1	BP-805-287	DOUBLE SWITCH PLATE GASKET		
11	1	P46139	CORD GRIP 1/2"		IN INNER MAST
10	1	P46445	CORD GRIP		IN OUTER MAST
9	10	P1751B	SELF TAPPING SCREW		
8	4	P46444	LOCKING FORK TERMINAL	YELLOW	
7	5	P46318	LOCKING FORK TERMINAL	BLUE	
6	1	P46443	JACKETED WIRE	16-5	40 FT. (480")
5	1	P46186	JACKETED WIRE	16-3	13 FT. (156")
4	1	BP-805-286	SWITCHPLATE GASKET		
3	3	P46441	TOGGLE SWITCH		SINGLE POLE
2	1	BP-805-258	RECESSED SINGLE SWITCH PLATE		
1	1	BP-805-256	RECESSED SWITCH PLATE		
INDEX	REQD.	PART NO.	PART NAME	MATL.	REMARKS

LEYMAN  **LIFT GATES**

SWITCH WIRING POWER DOWN



LEGEND

G - GREEN
W - WHITE
B - BLACK
O - ORANGE
R - RED
BL - BLUE

14	8	P48319	FORK TERMINAL	ON END OF WIRES FOR TERM. STRIP	
13	1	BP-805-287	DOUBLE SWITCH PLATE GASKET		
12	1	BP-805-288	SINGLE SWITCH PLATE GASKET		
11	1	P48139	CORD GRIP 1/2"		IN INNER MAST
10	1	P48445	CORD GRIP		IN OUTER MAST
9	10	P17518	SELF TAPPING SCREW		
8	8	P48444	LOCKING FORK TERMINAL	YELLOW	
7	7	P48476	LOCKING FORK TERMINAL	BLUE	
6	1	P48475	JACKETED WIRE	16-8	40 FT. (480")
5	1	P48314	JACKETED WIRE	16-4	13 FT. (156")
4	2	P48442	TOGGLE SWITCH		DOUBLE POLE
3	1	P48441	TOGGLE SWITCH		SINGLE POLE
2	1	BP-805-258	RECESSED SINGLE SWITCH PLATE		
1	1	BP-805-256	RECESSED SWITCH PLATE		
REV	1	PART NO.	PART NAME	MATL.	REMARKS

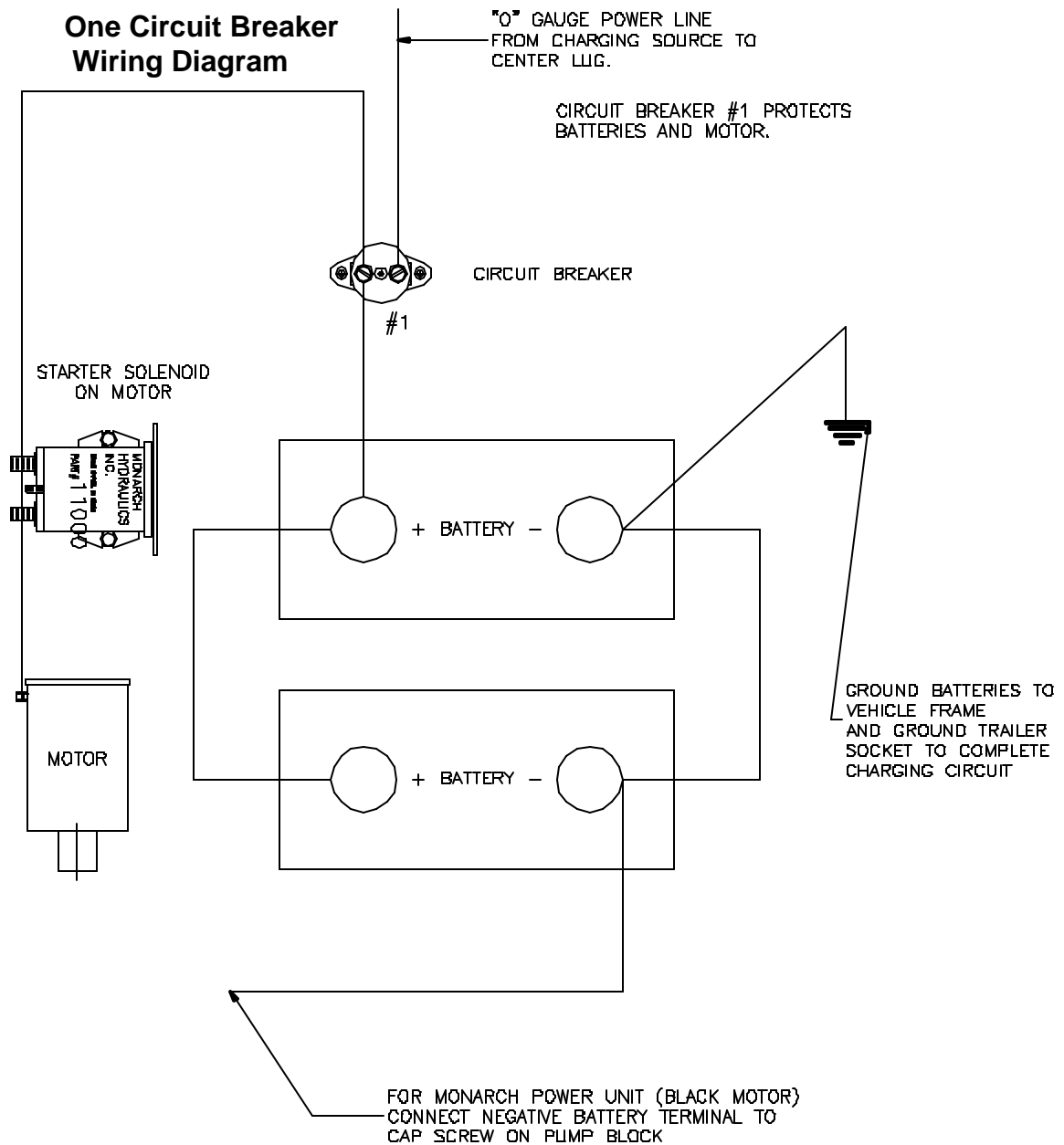
LEYMAN LIFT GATES

BATTERY HOOK UP

We recommend batteries with the following specifications:

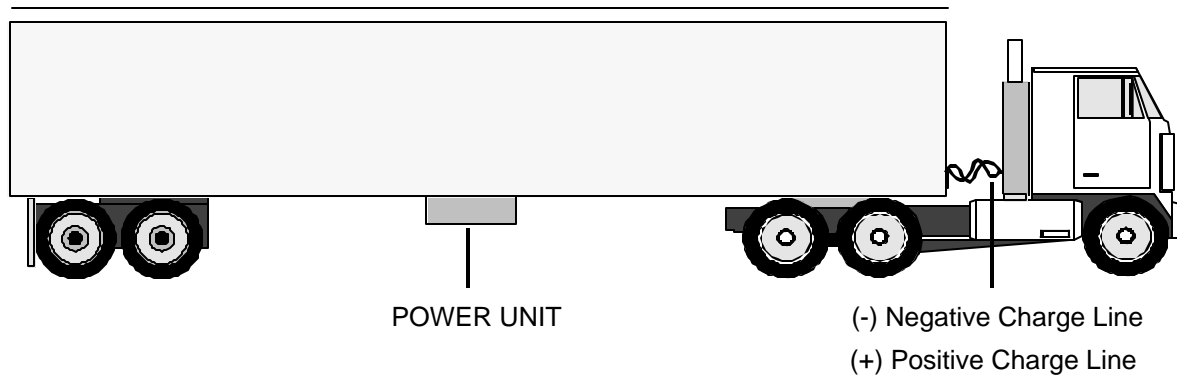
- 12 Volt Deep Cycle
- B.C.I. Group - Size 31
- Terminal Type - TS
- Cold Cranking Amps - 580

One Circuit Breaker Wiring Diagram



FAILURE TO USE CORRECT BATTERIES WILL VOID WARRANTY

GROUNDING RECOMMENDATIONS FOR TRACTOR/TRAILER USING THE MAINTENANCE MINDER SOLENOID OR MAINTENANCE MINDER 2 CONTROLLER



The Maintenance Minder™ solenoid requires a minimum of 9.5 volts in order for the FBG™ to operate. Utilization of a single positive cable does not provide sufficient ground. Therefore, our recommendation for grounding tractor trailers with a FBG™ gate are as follows:

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

The MAINTENANCE MINDER 2 controller (optional) requires that a minimum of 8 volts be maintained under load in order for the FBG to operate.

NOTE

The use of a battery charger as the sole power source to operate a FBG™ is unauthorized and will prevent the FBG™ 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 valves to operate.

MAINTENANCE MINDER START SWITCH

TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTION
LED on start switch does not glow.	Poor ground	Check for proper ground, remove any paint or corrosion that may be inhibiting a good ground between the lug or the brown wire and the grounded surface.
	Poor ground connection	Check for a loose connection at (Red Wire) the red wire.
	Battery voltage below 9 volts	Charge the battery.
	Voltage at the start switch is below 9 volts	Check the supply cable between the battery and the switch for loose connections and/or corrosion.
	Faulty switch	Replace the start switch.
LED on start switch glows then goes off when attempting to operate the lift gate.	Poor ground	Check the battery ground and the switch ground (brown wire) for good connections.
	Battery voltage below 9 volts	Charge the battery.
	Excessive voltage drop	Increase the battery cable size between along the battery cable and the Maintenance Minder or connect the red wire directly to the battery.

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 high temperature faults
- Record 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”

FAULT 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 fault signals will be repeated **THREE** times. Controller will prevent power unit from operating during the time period when a fault signal is sounding (about 5 to 10 sec.). The controller is also equipped with an anti-doorbellling 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 the hidden RESET button under the 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 the 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 Faults (number of times gate was operated while PAST the maintenance limit)

High Pressure Faults (not being used, no sensor available)

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 – instructions will flash on screen after limit reached)

(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

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 Time (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.

GENERAL TIPS

LIFT GATE

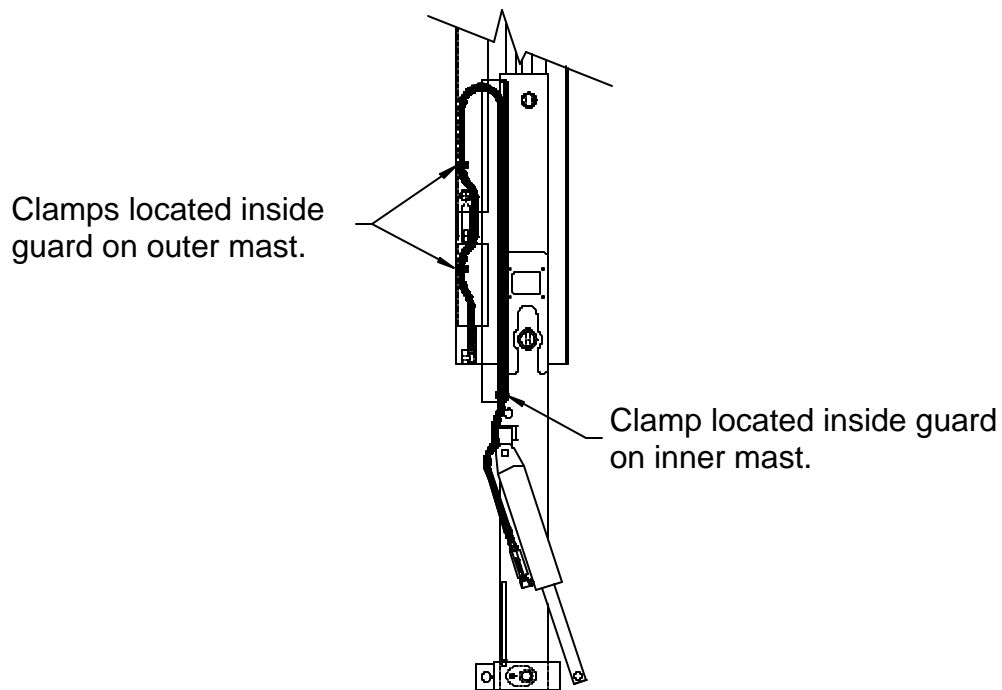
1. This gate can run up or down uneven from the vehicle floor by 1" to 1-1/2" without damaging the mechanical workings on the gate.
2. The equalizer valve is only for adjusting the up stroke (while the gate is loaded).
3. The flow controls valves are for controlling the down stroke only. They should be cleaned and/or changed in sets.
4. Determining if the tie bar is bent:
Raise the platform to it's full up position (level to the vehicle floor). Push the down switch. If the tie bar is bent, one side will always drop quicker than the other. If you have a bent tie bar, it is best to straighten it. See the maintenance manual for information on how to straighten the tie bar.
Before adjusting or attempting to fix any of the four items above, check the following first:
 - A. Check the cylinder rods for lubrication. Dry rods or packings that are too tight may cause sticking or slow down the movement of the gate.
 - B. Check for bent inner mast.
 - C. Check to see if the back edge of the platform is hitting the floor level tube.
 - D. Check to see if the inner mast is rubbing on the outer mast. Some hitting is normal, but if it hinders the up/down operation, it must be lubricated.
5. Premature motor failure is almost always caused by low batteries.
6. Inadequate grounding is also a major reason for motor failure.

POWER UNIT

1. If the motor runs and the gate doesn't rise, you may have one of two problems:
 1. The Emergency Hand Pump Valve is open (or partially open).
 2. You have a bad pump.
2. To get the gate down, energize the two-way valve (white wire) and energize the four-way valve (red wire). *The motor will not run in this operation.*
3. To get the gate up, push one of the switches up. No valves must be shifted. *The motor will run.*
4. To unfold the platform, energize the two-way valve (orange wire). *The motor will not run in this operation.*
5. To fold the platform, energize the four-way valve (red wire). *The motor will run.* You must push the fold switch *and* the up switch.
6. If the unit has an emergency hand pump and the gate goes up, hits the up stops and the platform starts to fold, the ball valve is open (or partially open). To correct this, close the ball valve.
7. The pressure setting for this gate is 2,000 PSI.

TO BLEED THE POWER FOLD CYLINDER

1. Unfold and lower the platform down to the ground.
2. Loosen the hose at the cylinder but do not remove completely.
3. Activate the pump (just long enough to produce an air free stream of oil from the hose).
4. Re-tighten the hose and check the oil level in the reservoir tank. Note: hold line while tightening to ensure it does not twist.
5. Fold and unfold the platform several times. The platform should now fold and unfold smoothly.



The electric line is routed along the hydraulic line to match the loop.

CHECK OIL LEVEL AFTER BLEEDING THE CYLINDER.

GRAVITY DOWN GATES- check with platform unfolded and on ground.

POWER DOWN GATES- check with platform unfolded and up at bed height.

BLEEDING THE LIFTING CYLINDER

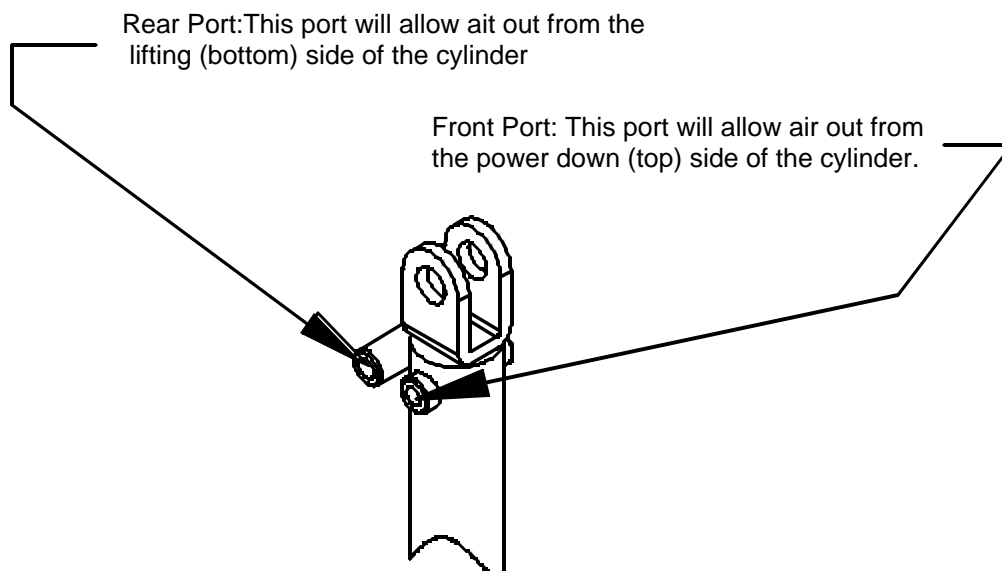
The FDC™ is shipped with the cylinders pre-filled with hydraulic fluid from the factory. If the procedures during the installation have been followed, it should not be necessary to bleed the cylinders. However, if the gate does not operate smoothly, the cylinders should be bled before making any other adjustments.

To Bleed the Lifting Cylinder:

1. Unfold and lower the platform to the full down position.
2. Loosen the plugs in the back ports (ports closest to the vehicle body) but do not remove completely.
3. Activate the pump just long enough to produce an air free stream of oil from the ports.
4. Re-tighten the plugs, lower the platform to the full down position if it has raised and check the oil level in the reservoir tank. The oil level should be approximately 1" from the top of the tank. Add oil if necessary.
5. Loosen the plugs in the front ports (ports furthest from the vehicle body) but do not remove completely.
6. Activate the pump just long enough to produce an air free stream of oil from the ports.
7. Re-tighten the plugs, lower the platform to the full down position if it has raised and check the oil level in the reservoir tank. The oil level should be approximately 1" from the top of the tank. Add oil if necessary.

GRAVITY DOWN GATES- check with platform unfolded and on ground.

POWER DOWN GATES- check with platform unfolded and up at bed height.



ADJUSTMENT OF THE EQUALIZER VALVE

gNOTEg

Before making any adjustments, read the general tips page to be sure this is the problem.

Remember, adjusting the equalizer valve will control the *up* stroke only.

Locate the equalizer valve. Stand on the unfolded platform, look at the back of the truck/trailer. The equalizer valve is about 4 inches below the floor line and in the center of the vehicle, or slightly to the left of center.

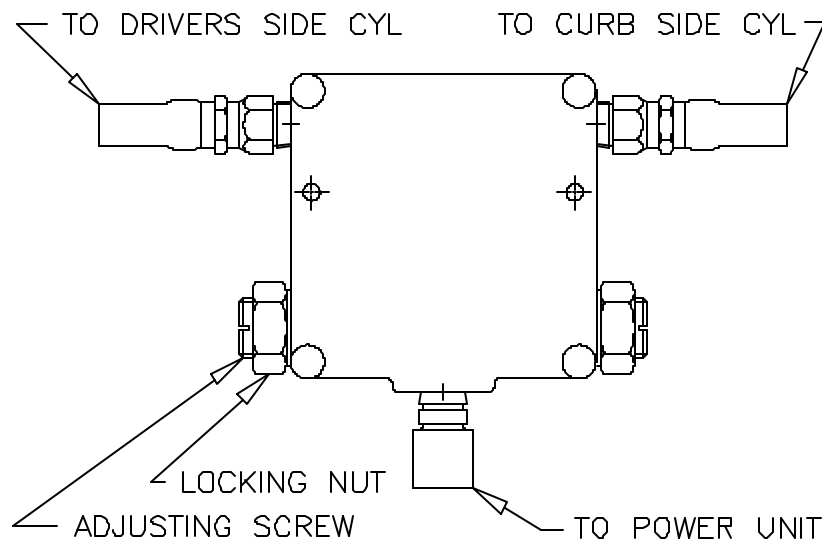
Back off the lock nut on the side that is running slow (lagging) turn the adjusting screw out 1/4 turn, lock nut and try. Repeat if necessary.

Although this can be done with no load on the platform, it normally helps to have a light load on the platform.

gNOTEg

Turn the adjusting screw in = decreases the flow of oil

Turn the adjusting screw out = increases the flow of oil



STRAIGHTENING THE TIE BAR

gNOTEg

Before bending the tie bar, read the general tips page to be sure this is the problem.

To check that you have a bent tie bar, raise the platform to the full "Up" position (level to the floor). Push the down switch, one side will always drop quicker than the other side. If one side is lower by more than one inch (1"), adjust the tie bar.

The tie bar is at the back edge of the platform. It is 1-1/2" wide, and holds the two inner masts together.

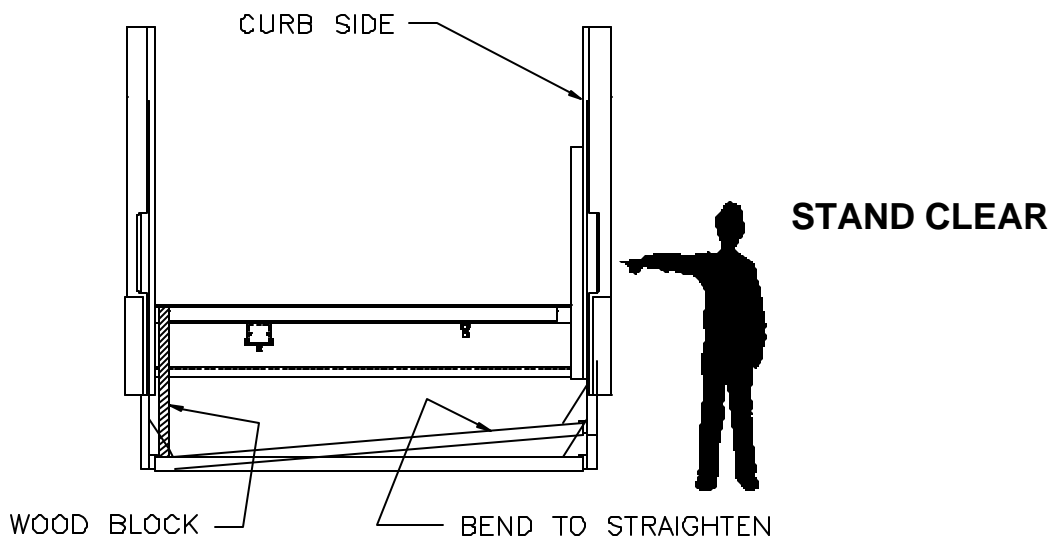
Acquire a piece of wood 4" X 4" X 2' long and place the wood between the tie bar and the up stop area near the floor line area. Caution! Check for cracked welds before preceding. Stand clear while performing this procedure.

gNOTEg

If the curb side is dropping first, place the wood on the driver's side. Run the gate up until the wood is secure, keep running the gate up another 6 to 8 inches. Let the gate down, remove the wood, cycle the lift gate to see if this has fixed the problem. If not, re-bend, except go up another inch or two. Keep repeating until corrected.

Sometimes, the power from the gate is not enough to correct this problem. If you have a hand pump, use it to take it up further. If you do not have a hand pump, use a floor jack and continue jacking the gate in an upward cycle.

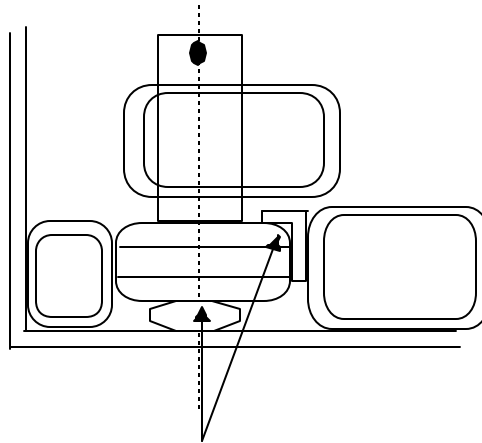
PICTURE SHOWS HOW TO STRAIGHTEN
A BENT TIE BAR ON CURB SIDE
(CURB SIDE DROPS QUICKER)



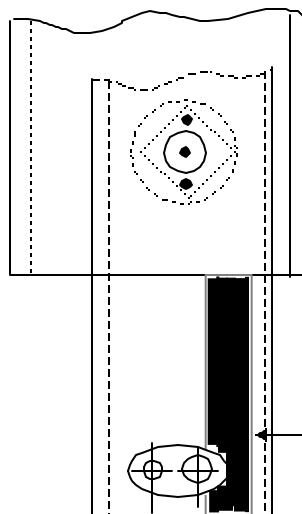
LEYMAN  LIFT
GATES

LUBRICATING THE ROLLER TRACKS

Lubrication of the roller tracks should not be necessary and is not desired for the rollers.



Do not grease between roller and Outer Mast or roller and retaining angle.

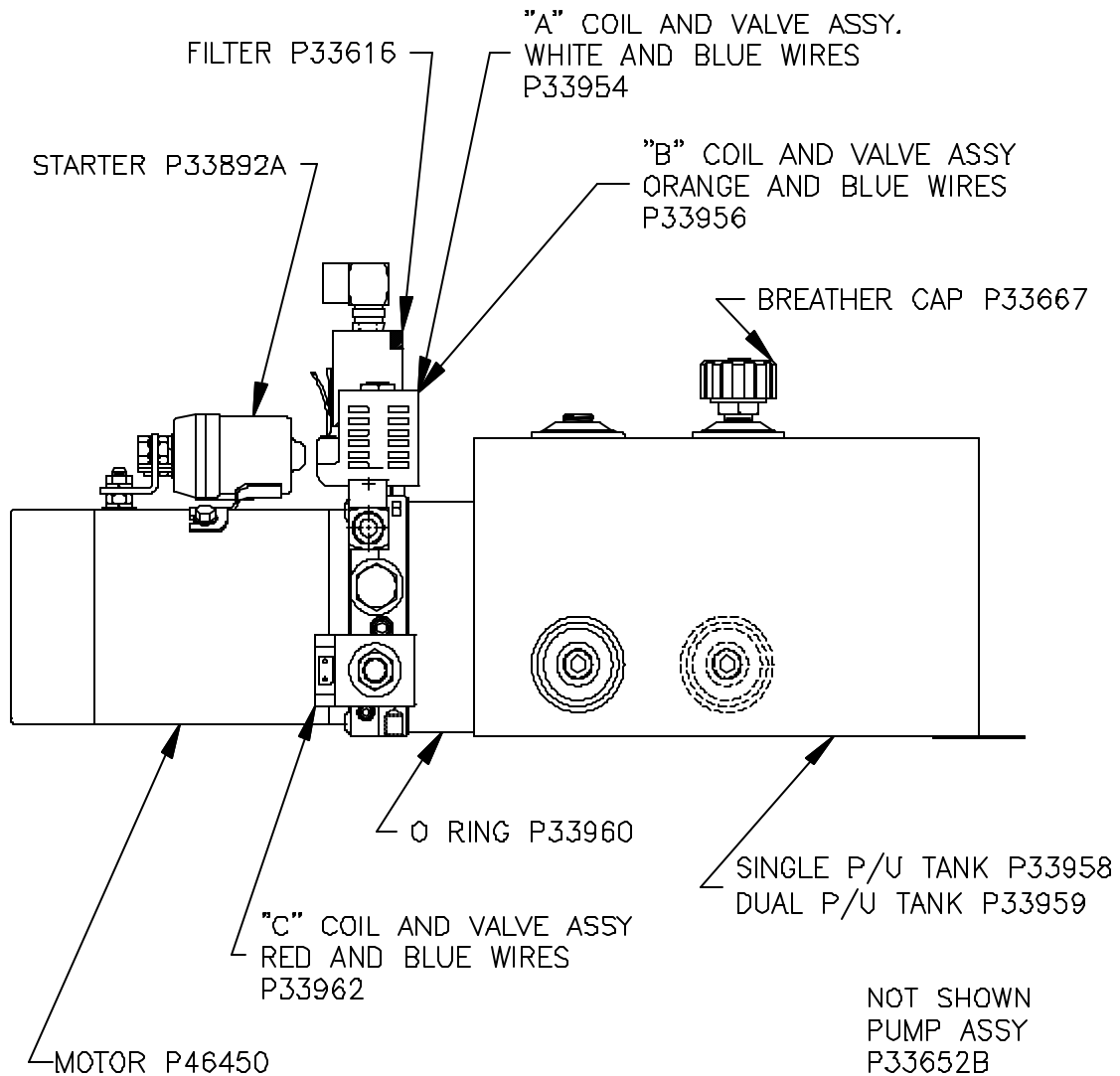


Lightly grease inner mast along wear area if signs of rubbing are present.

PARTS REPLACEMENT

POWER UNIT PARTS

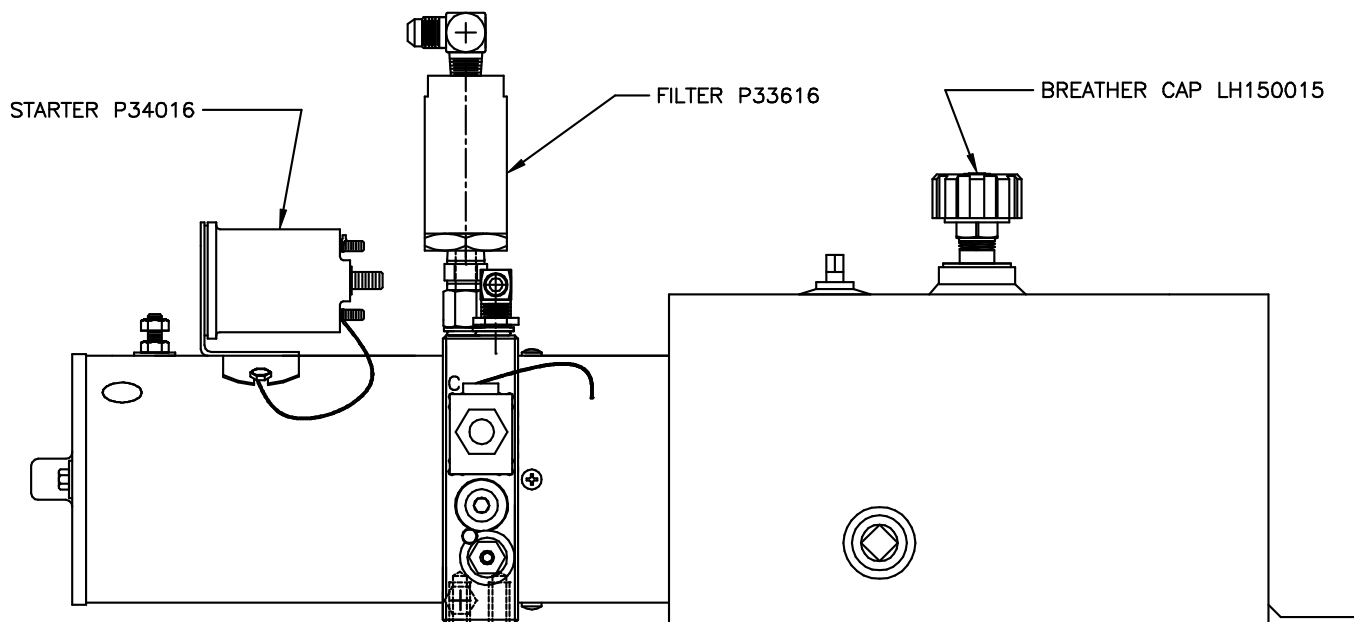
SPX/ FENNER POWER UNIT (GOLD MOTOR)



COMPLETE SINGLE POWER UNIT LESS FILTER P33952
COMPLETE DUAL POWER UNIT LESS FILTERS P33953

NOTE: THE POWER UNITS, BLUE WIRES ARE GROUND WIRES.
REVERSING THESE WIRES WILL CAUSE PERMANENT DAMAGE
TO THE COILS.

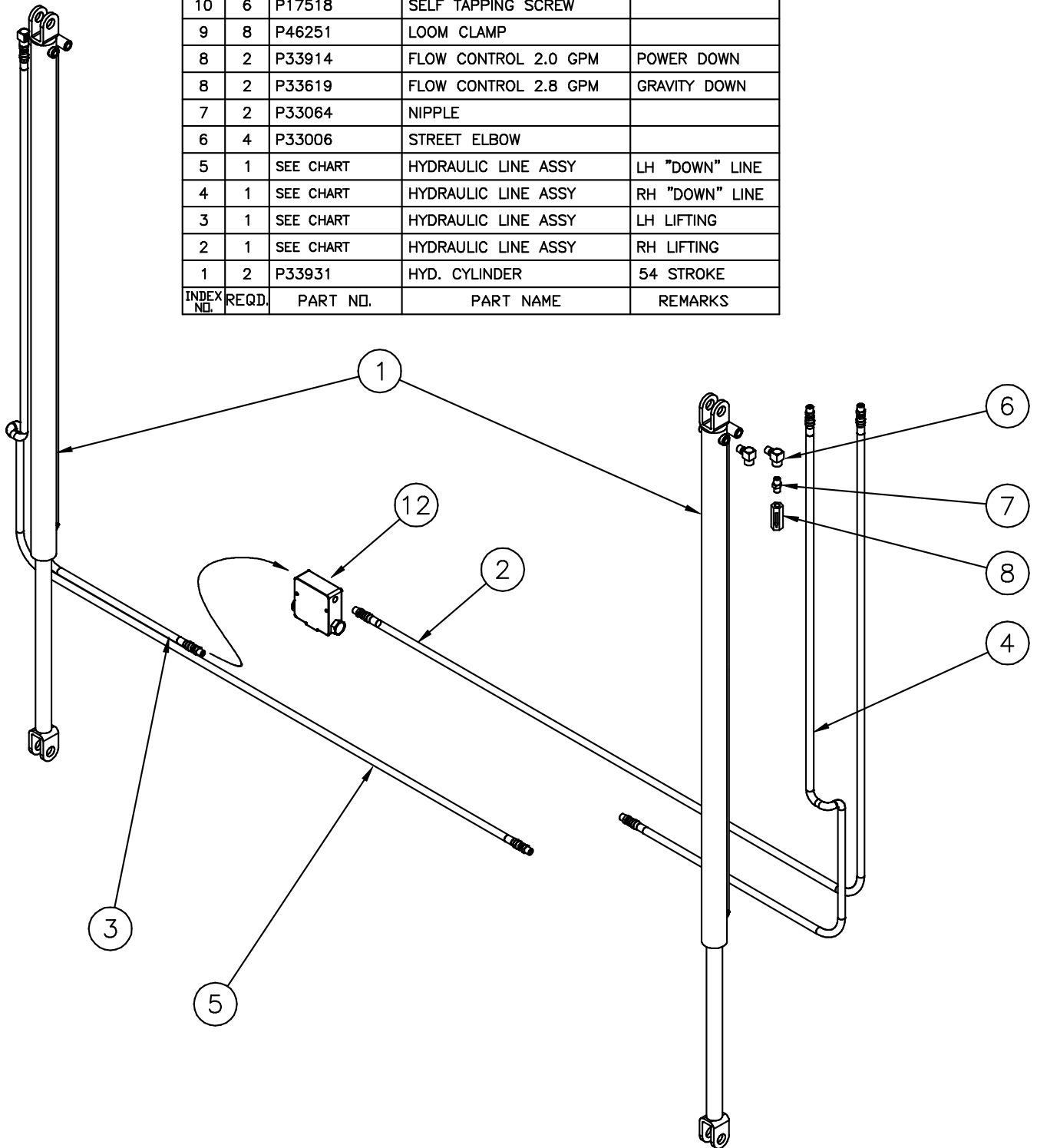
POWER UNIT PARTS MONARCH POWER UNIT (BLACK MOTOR)



COMPLETE SINGLE POWER UNIT LESS FILTER P33994
COMPLETE DUAL POWER UNIT LESS FILTERS P34012

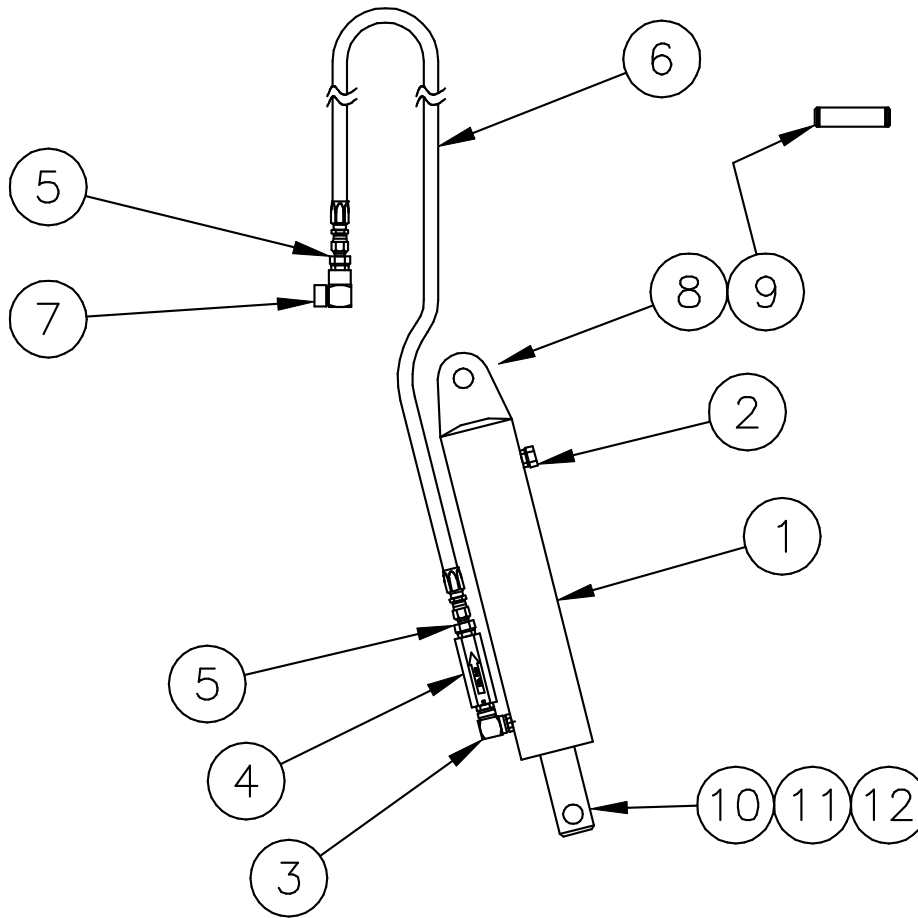
HYDRAULIC ASSY

12	1	P33547	EQUALIZER VALVE	
11	4	P46497	3/4" SPLIT LOOM	24" LG EA
10	6	P17518	SELF TAPPING SCREW	
9	8	P46251	LOOM CLAMP	
8	2	P33914	FLOW CONTROL 2.0 GPM	POWER DOWN
8	2	P33619	FLOW CONTROL 2.8 GPM	GRAVITY DOWN
7	2	P33064	NIPPLE	
6	4	P33006	STREET ELBOW	
5	1	SEE CHART	HYDRAULIC LINE ASSY	LH "DOWN" LINE
4	1	SEE CHART	HYDRAULIC LINE ASSY	RH "DOWN" LINE
3	1	SEE CHART	HYDRAULIC LINE ASSY	LH LIFTING
2	1	SEE CHART	HYDRAULIC LINE ASSY	RH LIFTING
1	2	P33931	HYD. CYLINDER	54 STROKE
INDEX NO.	REQ'D	PART NO.	PART NAME	REMARKS



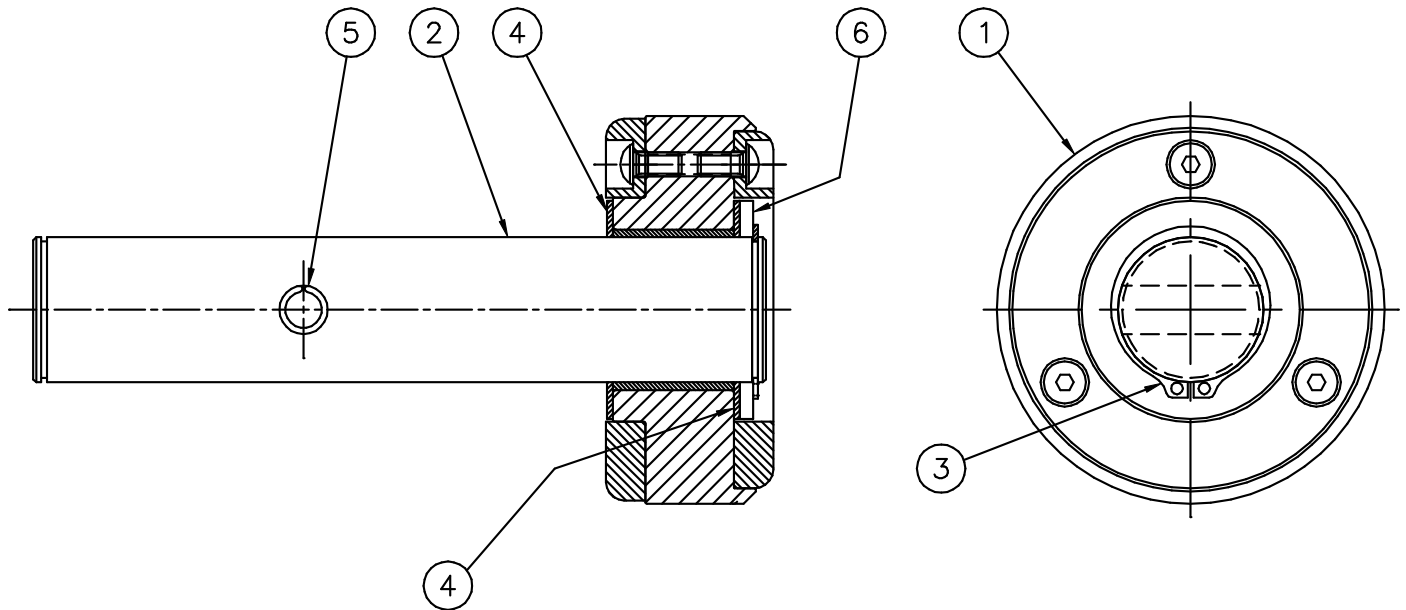
CA-811-447	102"	1 EA	AT-501-100-127	AT-501-100-083	AT-501-100-090	AT-501-100-130
CA-811-436	96"	1 EA	AT-501-100-121	AT-501-100-083	AT-501-100-091	AT-501-100-123
DRAWING NO.	GATE WIDTH	QTY REQ'D	RH LIFTING ITEM 2	LH LIFTING ITEM 3	RH "DOWN" LINE ITEM 4	LH "DOWN" LINE ITEM 5
HYDRAULIC LINE ASSY						

POWER FOLD ASSEMBLY



12	4	P26020	WASHER
11	1	P47500	ROLL PIN
10	1	S754-003.500	BOTTOM RAM MTG PIN
9	2	P24019	RETAINING RING
8	1	AP-811-200	TOP RAM MTG SHAFT
7	1	P33209	FEMALE ELBOW
6	1	AT-501-284-081	HOSE ASSEMBLY
5	2	P33750	ADAPTER
4	1	P33671	FLOW CONTROL
3	1	P33064	STR. ADPT. (FOR BEST CYL.)
3	1	P33217	MALE ELB(FOR PRINCE CYL.)
2	1	P33646	BREATHER
1	1	P33877	CYLINDER
INDEX NO.	REQD.	PART NO.	PART NAME

4" REPLACEMENT LOWER ROLLER PARTS GREASELESS ROLLERS WITH SIDE PADS



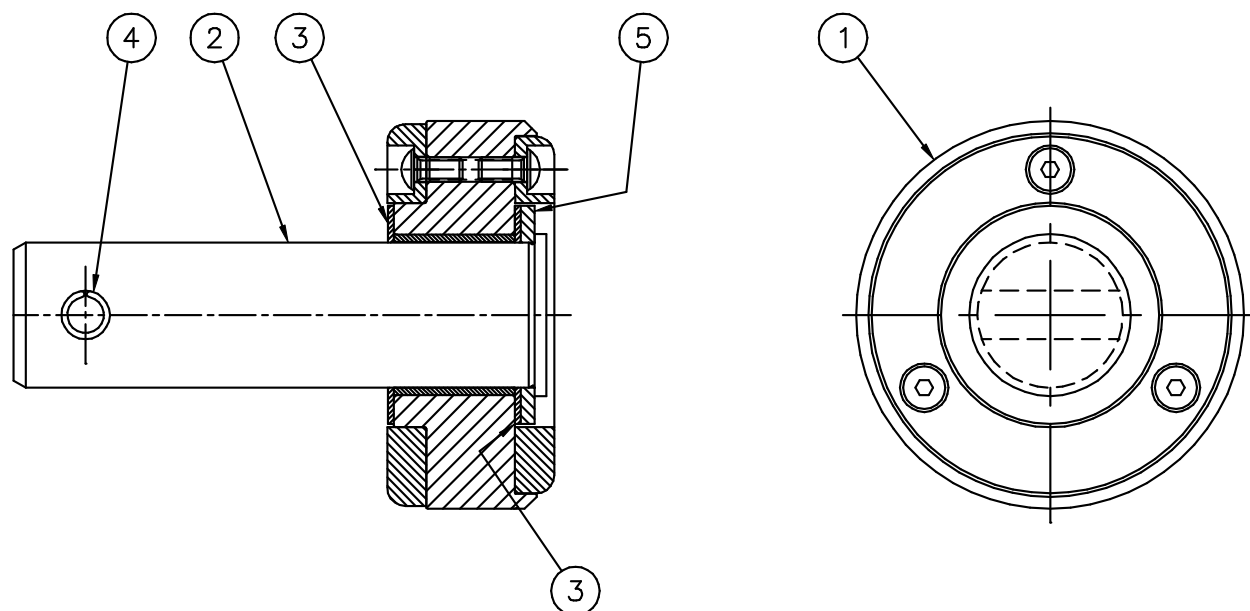
Roller can be ordered complete under part no. BA-819-142
or individually by component numbers listed below.

6	1	P26517	FLAT WASHER
5	1	P47507	ROLL PIN
4	2	P43565	THRUST BEARING
3	1	P24021	RETAINING RING
2	1	BP-819-096	ROLLER SHAFT
1	1	BA-818-196	ROLLER SUB ASSEMBLY
INDEX NO.	REQD.	PART NO.	PART NAME

4" REPLACEMENT ROLLER PARTS

GREASELESS ROLLERS

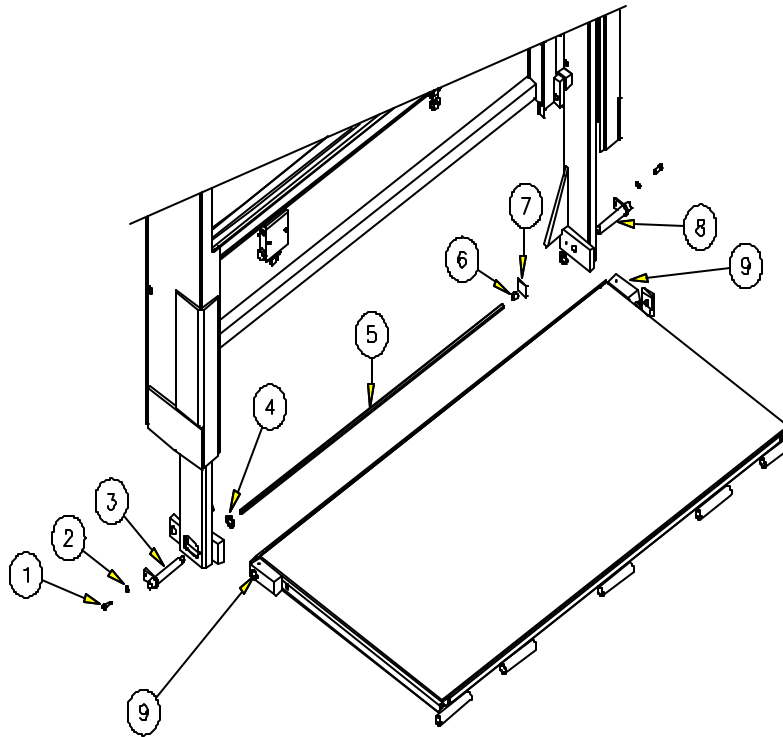
WITH SIDE PADS



ROLLER ASSEMBLY CAN BE ORDERED COMPLETE
UNDER PART NO. BA-818-199 OR BY
INDIVIDUAL COMPONENTS LISTED BELOW

5	1	P26517	FLAT WASHER
4	1	P47507	ROLL PIN
3	2	P43565	THRUST BEARING
2	1	BA-805-297-1	ROLLER SHAFT
1	1	BA-818-196	ROLLER SUB ASSEMBLY
INDEX NO.	REQD.	PART NO.	PART NAME

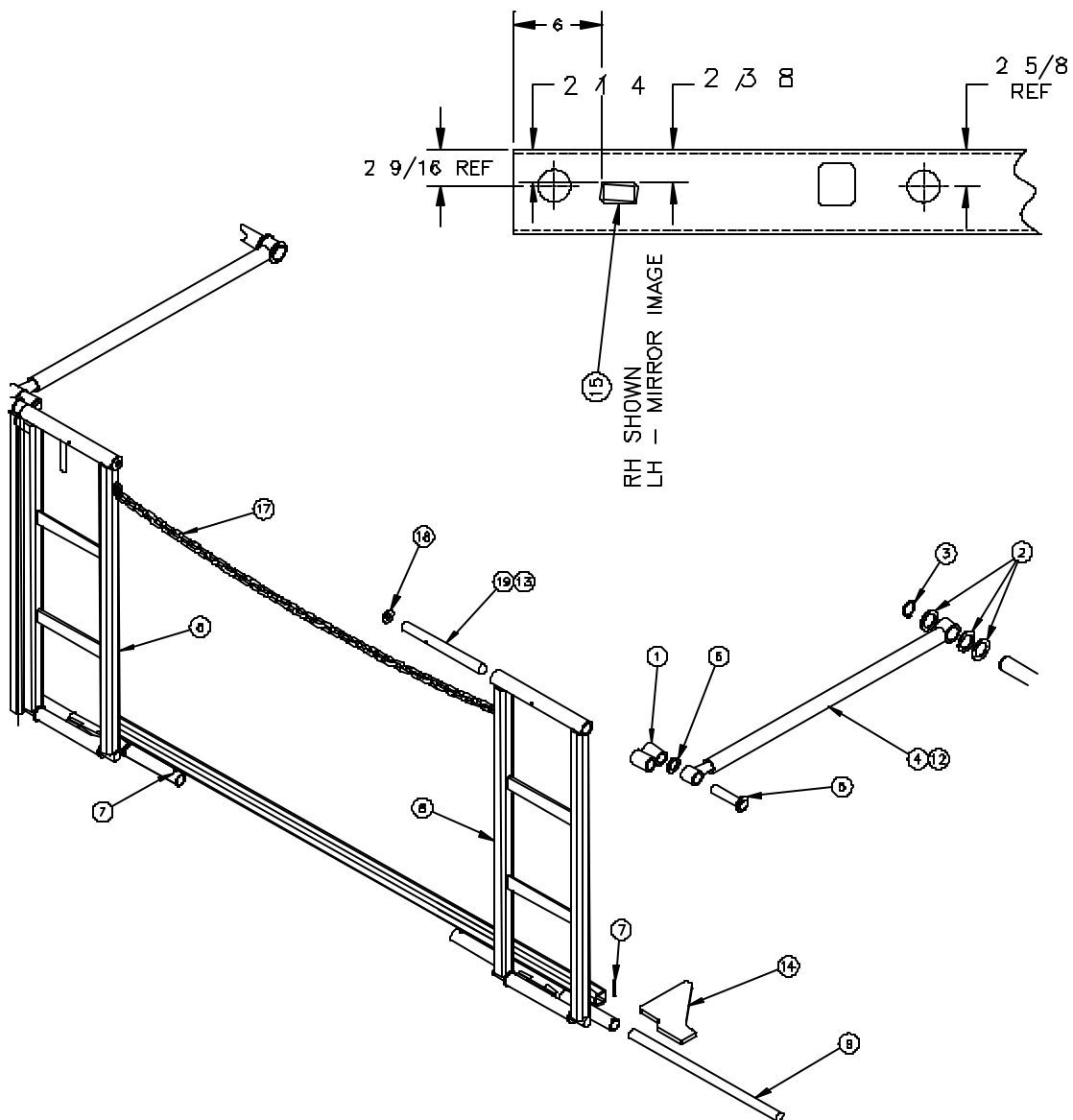
PLATFORM PINS AND BUSHINGS



PLATFORM BEARINGS
(1 REQ'D EACH SIDE)

9	2	P43567	PLATFORM BEARING	GREASELESS
8	1	BA-818-206	PIN SUB ASSY (CURB SIDE)	
7	1	S055-002.000	MTG. PLATE	
6	1	AP-808-108	HEX SLEEVE	
5	1	S790-060.000	TORSION BAR	60" LG
4	2	P26020	PLATFORM SPACER	
3	1	BA-818-205	PIN SUB ASSY	
2	2	P26017	WASHER	
1	2	P11048	BOLT	3/8-16 X 1-1/4 GR. 8
INDEX NO.	REQD.	PART NO.	PART NAME	MATERIAL SIZE / NOTES

STANDARD HAND RAILS

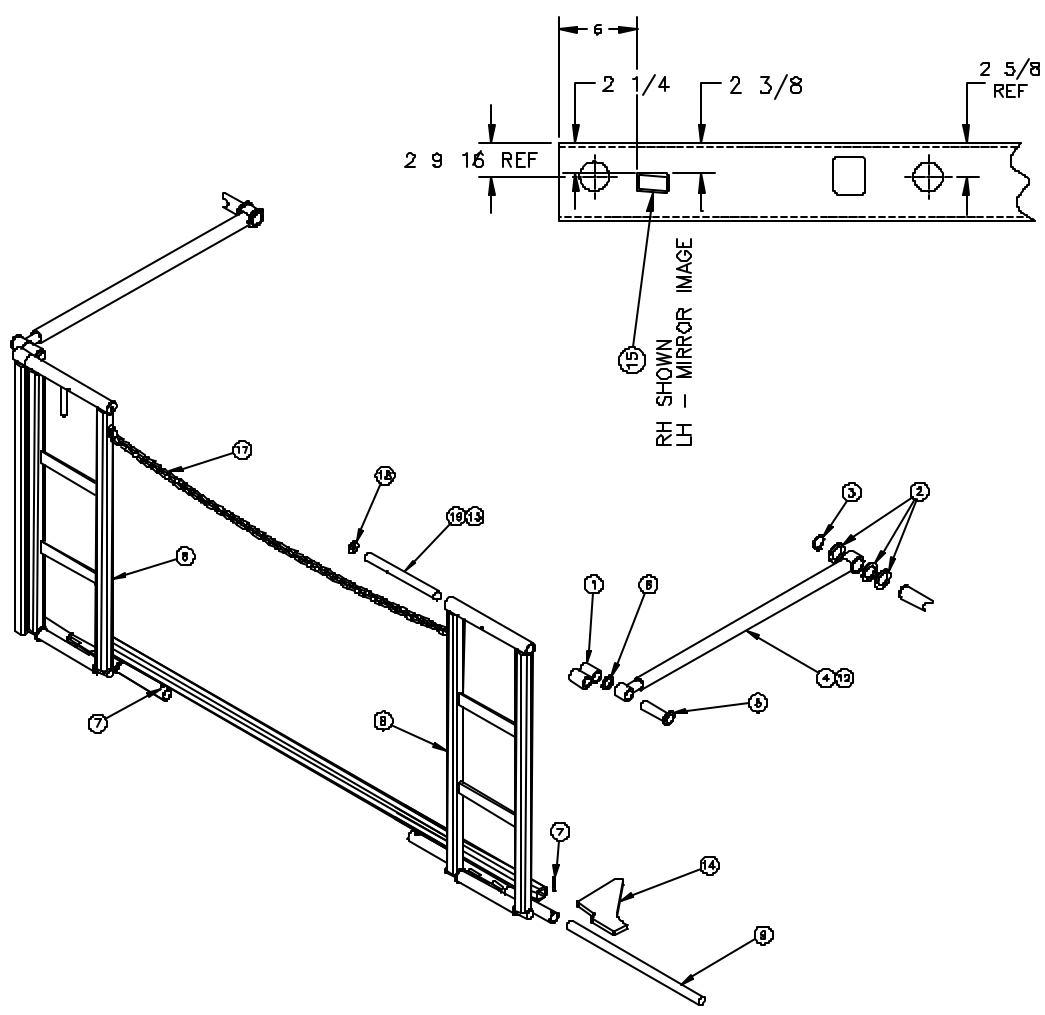


DA-819-055

STANDARD HAND RAILS PARTS LISTING

24					
23					
22					
21					
20					
19	2	AP-811-459	PIN		
18	2	P26004	WASHER		
17	1	AA-999-012	CHAIN ASSY		
16	1	BP-999-045	SIGN PLATE		
15	2	S498-002.500	RAIL STOP		
14	2	BP-811-385	PLATFORM EAR FBG		
13	2	P47531	ROLL PIN		
12	2	BA-811-362	SIDE RAIL BACK		
11	2	S403-000.250	SPACER		
10	1	S057-007.000	RH EAR SPACER		
9	2	S758-020.250	SHAFT		
8	2	CA-811-371	FRONT RAIL ASSEMBLY		INCLUDES ITEM 18
7	4	P47514	ROLL PIN	1/4 X 1-1/2	
6	2	P26020	NARROW RIM WASHER		
5	2	AA-811-383	PIVOT PIN FOR FBG		
4	2	BA-811-363	SIDE RAIL FRONT		
3	2	P24021	RETAINING RING		
2	6	P26517	MACHINERY BUSHING NO. 20		
1	2	AA-811-384	SPACER - DOUBLE BARREL		
INDEX NO.	REQD.	PART NO.	PART NAME	MATERIAL SIZE	REMARKS
LEYMAN MANUFACTURING CORPORATION					
TOLERANCE FRACTIONS $\pm 1/64$ DECIMAL $\pm .005$ DR. HOLE $\pm .003-.000$ ANGLE $\pm 1/2^\circ$ UNLESS OTHERWISE NOTED		DRAWN	PART NAME HAND RAIL ASSY STANDARD		MODEL
		CHECK			ASSY.
		APPR.			DA-819-055
			TOTAL WEIGHT	SCALE	SH. OF

COLLAPSIBLE HAND RAILS



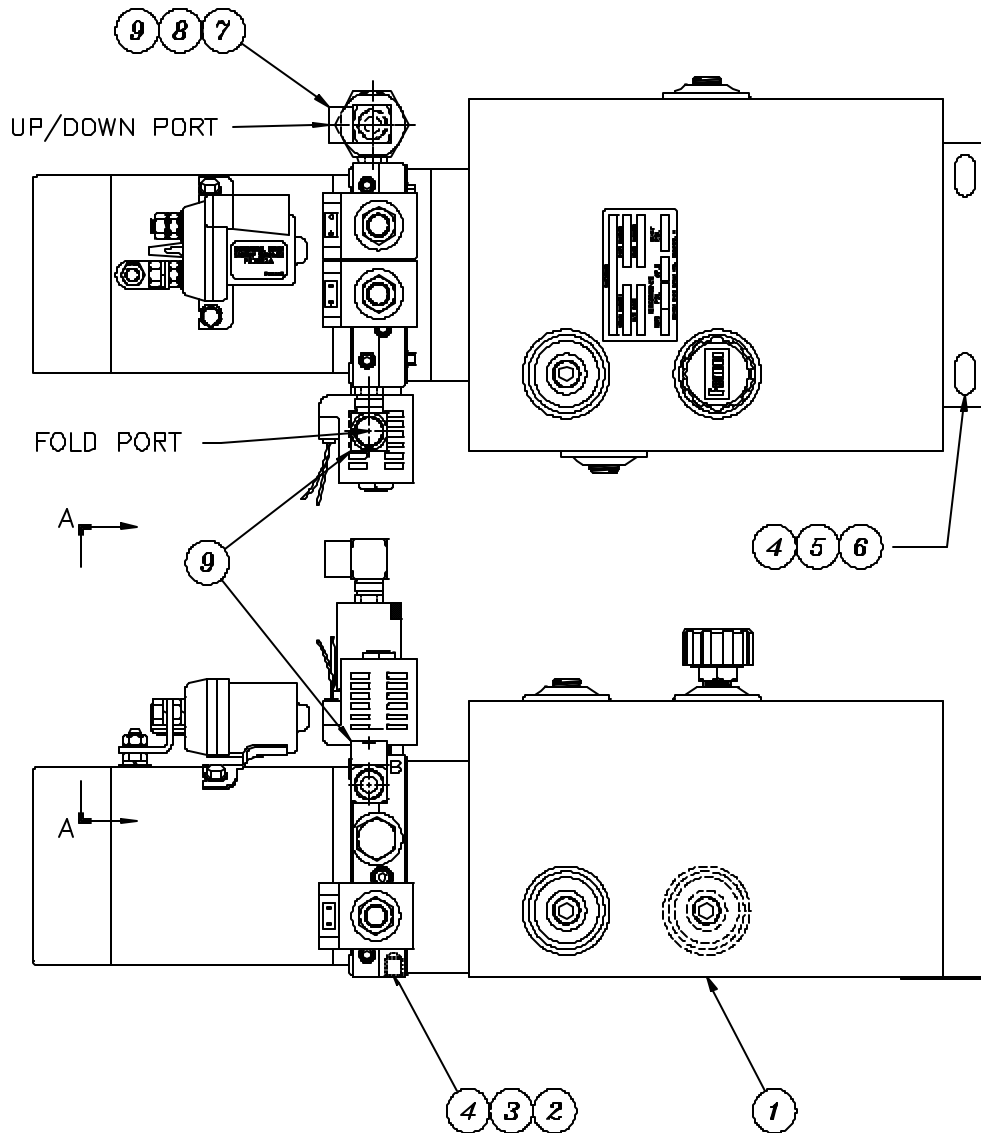
DA-819-055



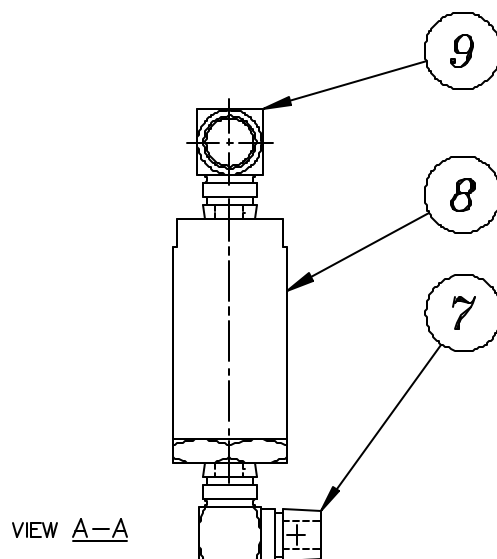
COLLAPSIBLE HAND RAILS PARTS LISTING

24	2	P47521	ROLL PIN			
23	2	S777-000.875	SPRING SPACER			
22	2	P25201	SPRING			
21	2	BA-811-369	PIN & HANDLE ASSEMBLY			
20	2	P26004	WASHER			
19	2	P29020	HAIR COTTER PIN			
18	2	P56577	LANYARD ASSY			
17	1	AA-999-012	CHAIN ASSY			
16	1	BP-999-045	SIGN PLATE			
15	2	S498-002.500	RAIL STOP			
14	2	BP-811-385	PLATFORM EAR FBG			
13	2	AP-811-377	BOSS			
12	2	BA-811-364	FRONT SIDE RAIL ASSY			
11	2	S403-000.250	SPACER			
10	1	S057-007.000	RH EAR SPACER			
9	2	S758-020.250	SHAFT			
8	2	CA-811-373	FRONT RAIL ASSEMBLY			INCLUDES 20-24
7	4	P47514	ROLL PIN		1/4 X 1-1/2	
6	2	P26020	NARROW RIM WASHER			
5	2	AA-811-383	PIVOT PIN FOR FBG			
4	2	BA-811-363	SIDE RAIL FRONT			
3	2	P24021	RETAINING RING			
2	6	P26517	MACHINERY BUSHING NO. 20			
1	2	BA-811-362	SIDE RAIL BACK			
INDEX NO.	REQD.	PART NO.	PART NAME	MATL.	MATERIAL SIZE	REMARKS
LEYMAN MANUFACTURING CORPORATION						
TOLERANCE FRACTIONS ± 1/64 DECIMAL ± .005 DR. HOLE + .003-.000 ANGLE ± 1/8" UNLESS OTHERWISE NOTED		DRAWN	PART NAME HAND RAIL ASSY COLLAPSIBLE		MODEL	
		CHECK			ASSY.	
		APPR.			DA-819-054	
			TOTAL WEIGHT	SCALE	SH.	OF

POWER UNIT ASSEMBLY **GRAVITY DOWN** **SPX/ FENNER (GOLD** **MOTOR)**

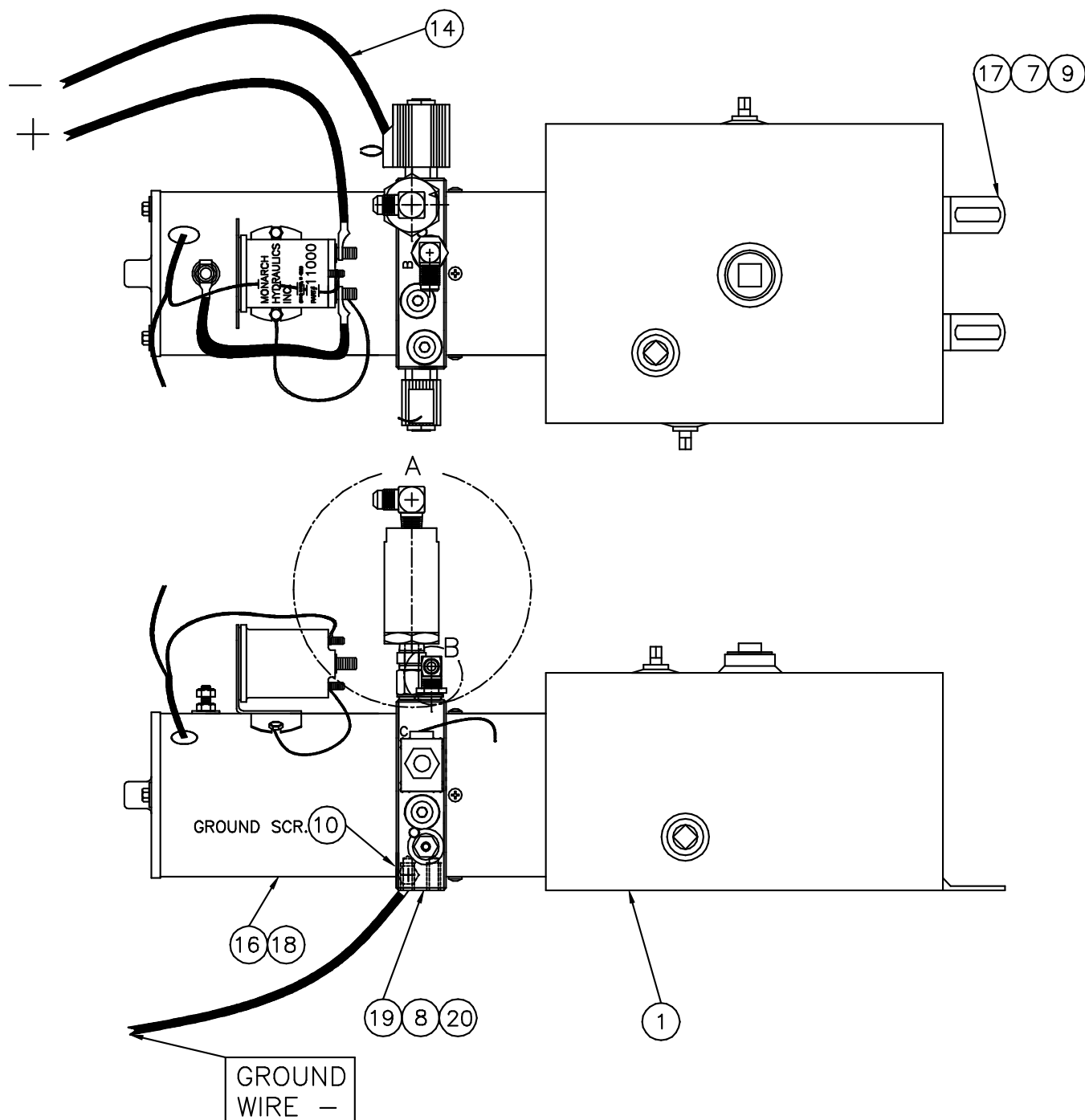


POWER UNIT ASSEMBLY **GRAVITY DOWN** **SPX/ FENNER (GOLD** **MOTOR)**



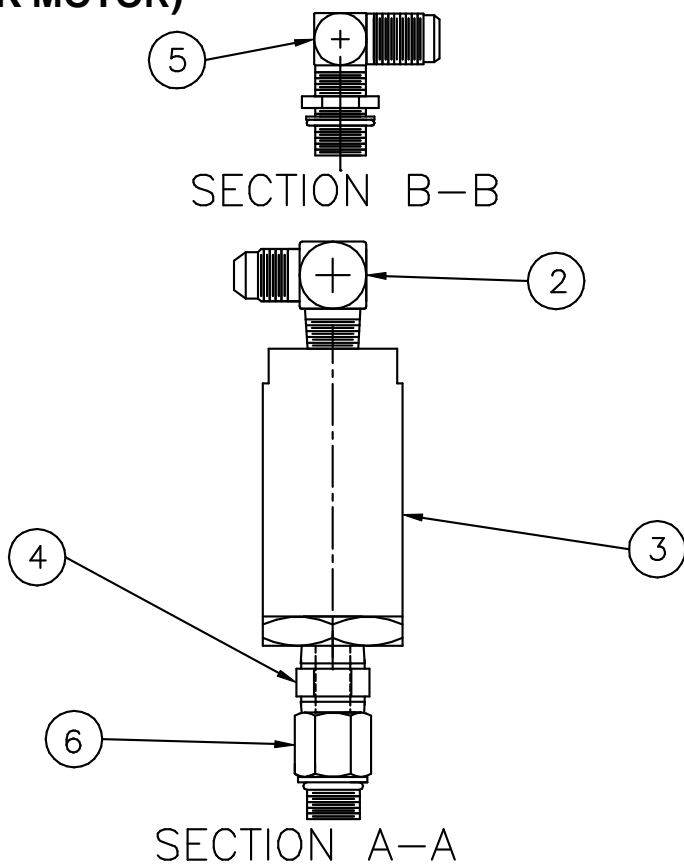
17	1	P27029	STAR WASHER (SMALL)	
16	1	P17550	SELF TAPPING SCREW	
15	2	P46403	BATTERY TERMINAL	
14	1	P46127	BATTERY CABLE	4 GA. X 30" LG
13	2	P23504	NUT	
12	2	P18519	SCREW	
11	1	P46405	CIRCUIT BREAKER	
10	1	P46507	RING TERMINAL	
9	2	P33006	STREET ELBOW	
8	1	P33616	INLINE FILTER	
7	1	P33217	MALE ELBOW	
6	2	P23501	LOCK NUT	
5	2	P11048	HEX HD BOLT	3/8-16 X 1-1/4
4	8	P26504	FLAT WASHER	
3	2	P27030	STAR LOCK WASHER	
2	2	P10526	HEX HD BOLT	3/8-16 X 3/4
1	1	P33952	POWER UNIT	
INDEX NO.	REQD.	PART NO.	PART NAME	REMARKS

**POWER UNIT ASSEMBLY
GRAVITY DOWN
MONARCH (BLACK MOTOR)**



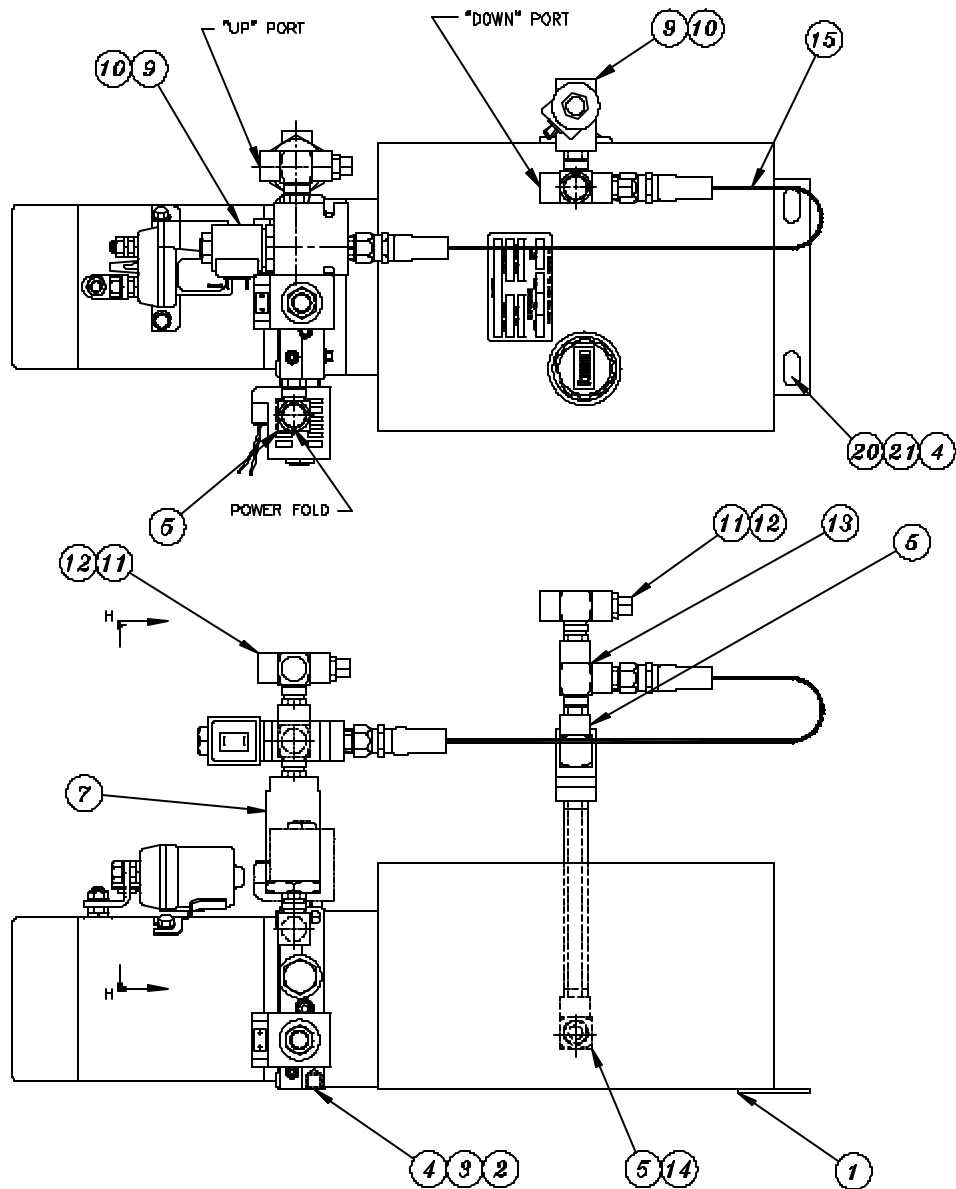
POWER UNIT ASSEMBLY

MONARCH (BLACK MOTOR) GRAVITY DOWN

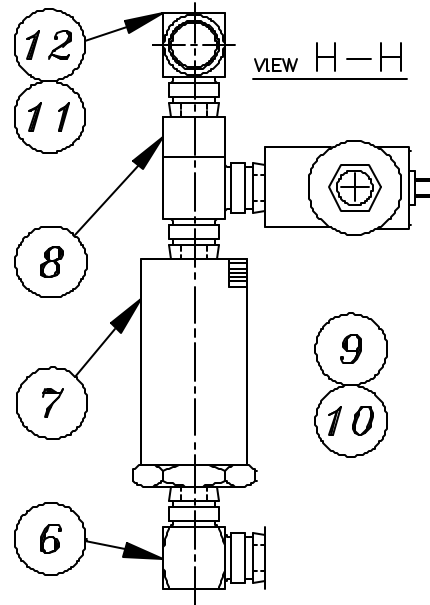


20	4	P26501	FLAT WASHER		3/8	
19	2	P10526	HEX BOLT		3/8-16 X 3/4	
18	1	P23538	HEX NUT		3/8-16	
17	2	P23510	LOCK NUT		5/16-18	
16	1	P11048	HEX BOLT		3/8-16 X 1-1/4	
15	4	P46403	BATTERY TERMINAL			
14	2	P46127	BATTERY CABLE 4 GA.		1 PC 30" - 1 PC 20"	
13	2	P23504	10-24 LOCK NUT		NOT SHOWN	
12	2	P18519	10-24 X 1 SCREW		NOT SHOWN	
11	1	P46405	CIRCUIT BREAKER		NOT SHOWN	
10	1	P10572	HH CAP SCREW		5/16-18 X 1/2 LG.	
9	4	P26506	FLAT WASHER		5/16	
8	2	P26017	SPLIT LOCK WASHER		3/8	
7	2	P10040	HEX HD BOLT		5/16-18 X 1	
6	1	P33771	ADAPTER		9/16-18 SAE ORS - 3/8 NPT	
5	1	P34020	ELB O-RING BOSS 37°FLARE		9/16-18 O-RING(M) - 9/16-18-37°	
4	1	P33064	STRAIGHT NIPPLE		3/8 NPT(M) - 3/8 NPT(M)	
3	1	P33616	FILTER			
2	1	P34005	90° ELBOW		3/8 NPT(M) - 9/16-18-37°(M)	
1	1	P33994	MONARCH M-3553 PWR UNIT			
INDEX	REQD.	PART NO.	PART NAME	MATL.	MATERIAL SIZE	REMARKS WGT.
LEYMAN MANUFACTURING CORPORATION						
TOLERANCE		WDL	PART NAME		MODEL FDC/DBG	
FRACTIONS ± 1/32		02/06/03	MONARCH POWER UNIT		ASSY.	
DECIMAL ± .005					CA-501-358	
DR. HOLE ± .003-.000						
ANGLE ± 1/2°			TOTAL WEIGHT		SCALE 1/2	SH. OF
UNLESS OTHERWISE NOTED						
ORIGINAL USE ONLY						

POWER UNIT ASSEMBLY **POWER DOWN** **SPX/ FENNER (GOLD MOTOR)**

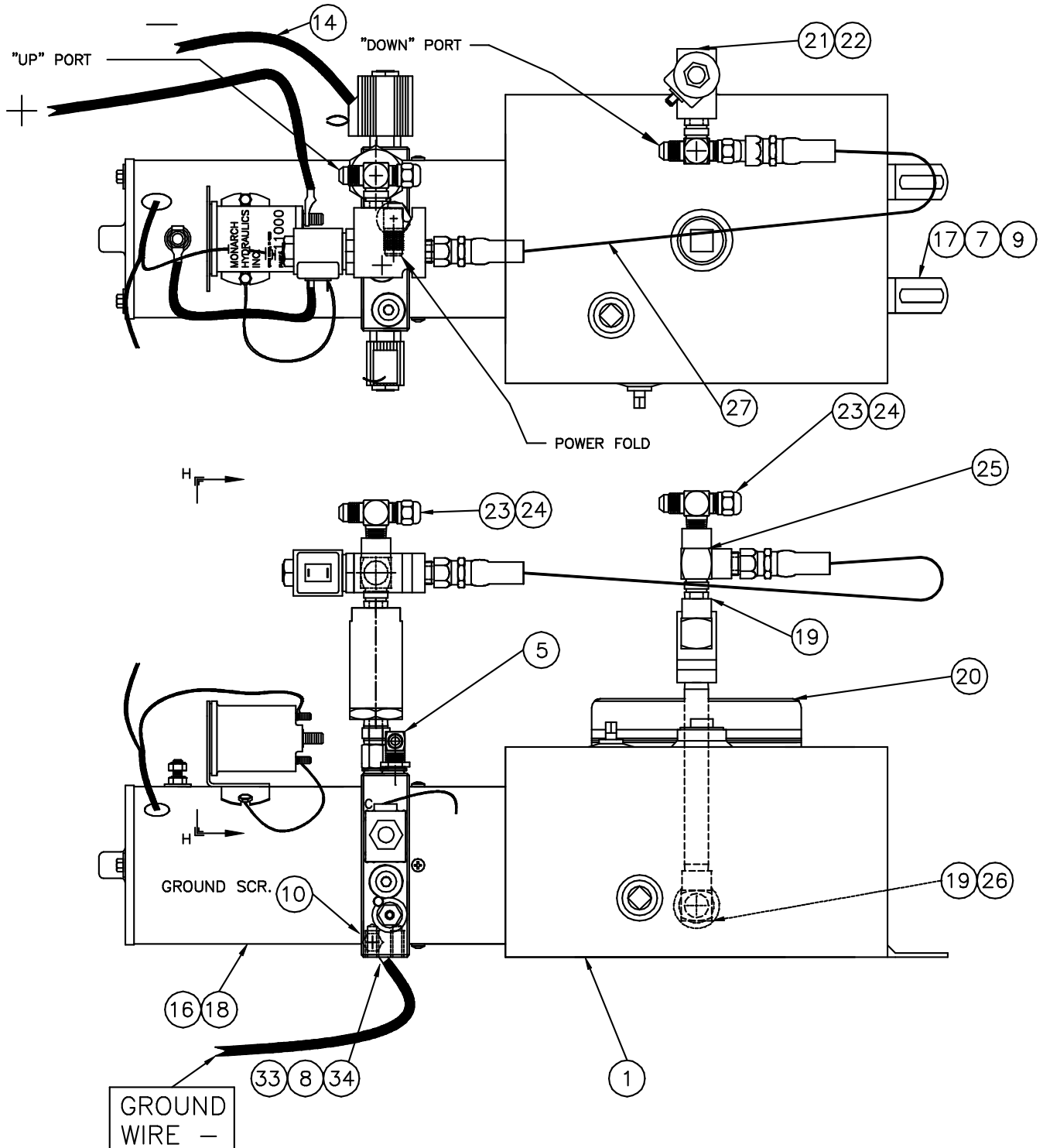


POWER UNIT ASSEMBLY POWER DOWN SPX/ FENNER (GOLD MOTOR)



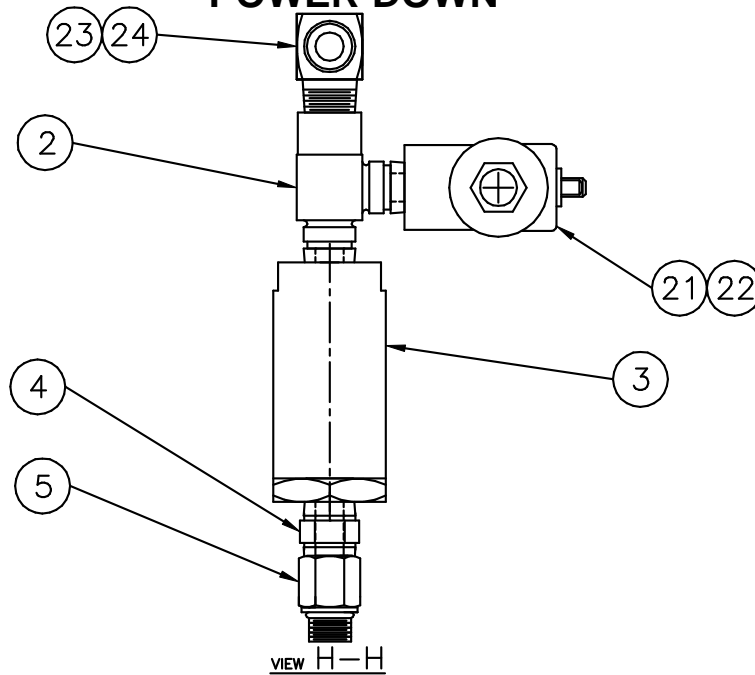
21	2	P23501	LOCK NUT	
20	2	P11048	BOLT	
19	1	P17550	SCREW	
18	1	P46507	RING TERM.	
17	2	P46471	BLUE GROUND WIRE	4 PCS. 8" LG. EACH
16	2	P46318	FEMALE CONNECT TERMINAL	
15	1	AT-501-100-020	HYD. LINE ASSY	
14	1	P33007	NIPPLE	
13	1	P33216	TEE	
12	2	P31050	PIPE PLUG STL	
11	2	P33606	MALE BRANCH TEE	
10	2	P33896	VALVE & COIL ASSY	
9	2	P33871	VALVE BLOCK	
8	1	P33199	MALE STREET TEE	
7	1	P33616	INLINE FILTER	
6	1	P33217	MALE ELBOW	
5	3	P33006	STREET ELBOW	
4	8	P26501	FLAT WASHER	
3	2	P27030	STAR WASHER	FOR 3/8 BOLT
2	2	P10526	HEX HD BOLT	3/8 X 3/4 LG
1	1	P33952	POWER UNIT	
INDEX NO.	REQD.	PART NO.	PART NAME	REMARKS

POWER UNIT ASSEMBLY POWER DOWN



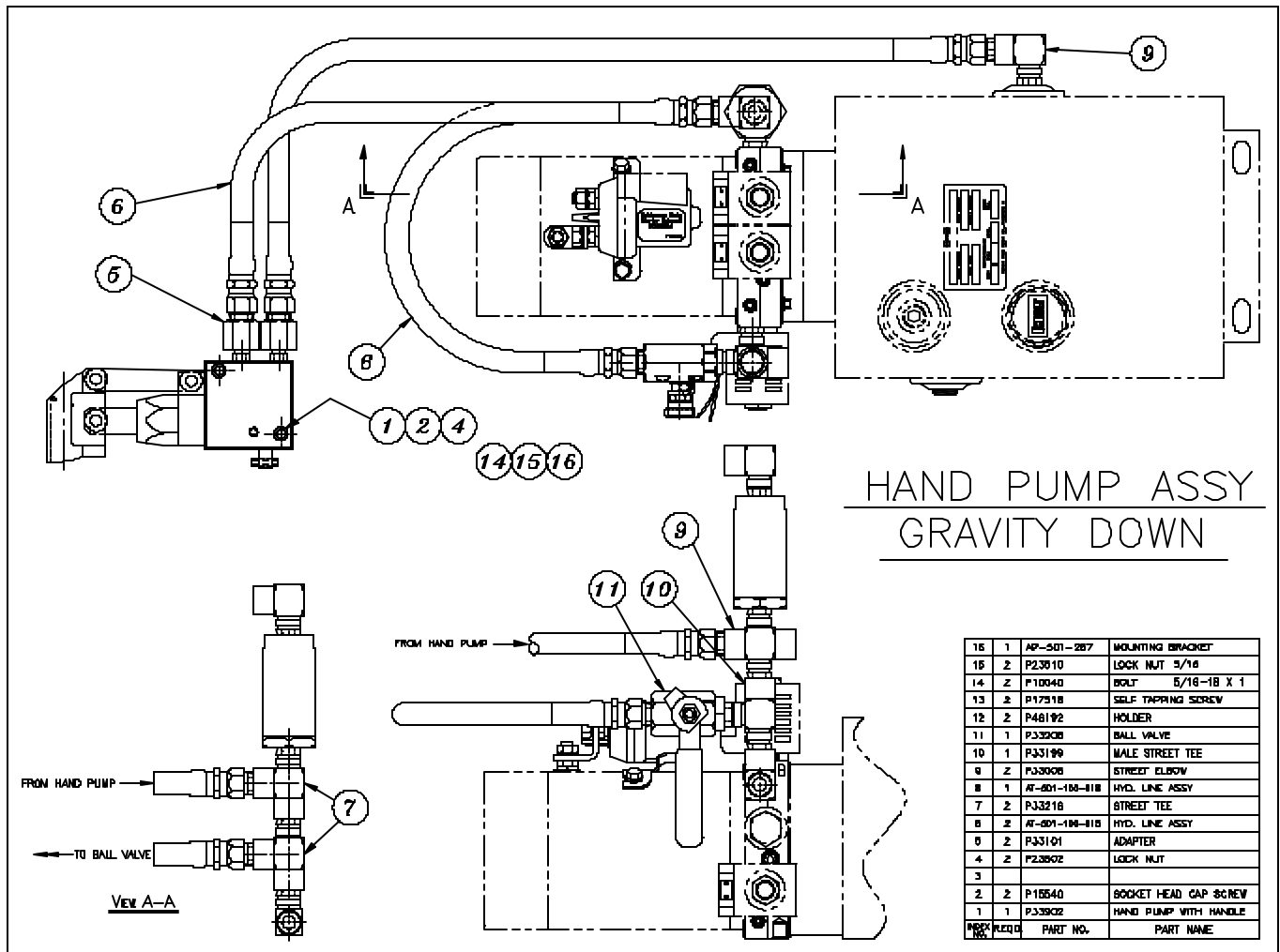
LEYMAN  LIFT GATES

POWER UNIT ASSEMBLY POWER DOWN

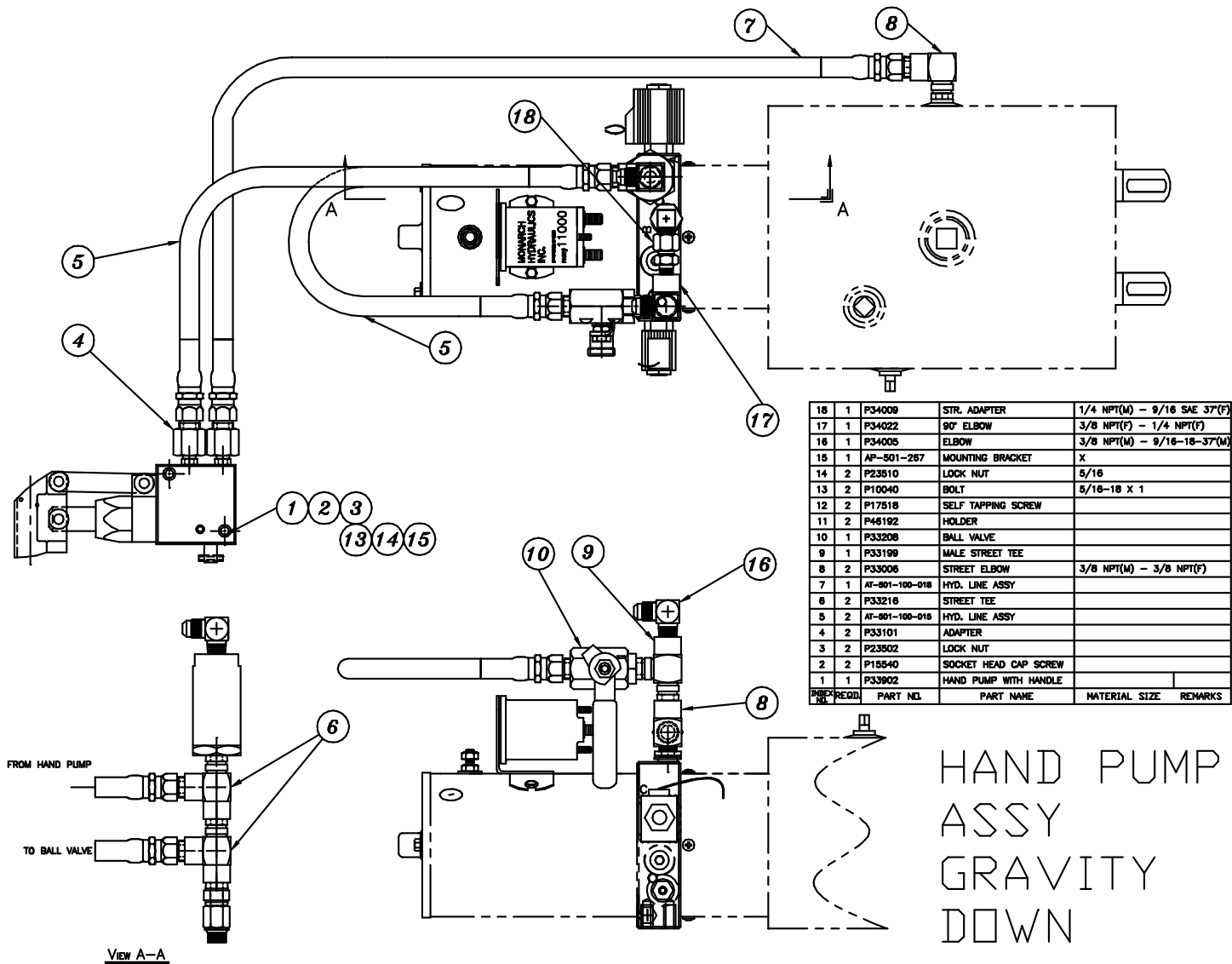


34	4	P26501	FLAT WASHER		3/8	
33	2	P10526	HEX BOLT		3/8-16 X 3/4	
32	2	P46507	RING TERM.		NOT SHOWN	
31	2	P46471	BLUE GROUND WIRE		2PCS. 16"LG. 32"TOTAL (NOT SHOWN)	
30	2	P46318	FEMALE CONNECT TERMINAL		NOT SHOWN	
29	1	P46156	BUTT CONN. INSULATED		NOT SHOWN	
28	1	P46017	#16 BLACK WIRE (12" LG.)		NOT SHOWN	
27	1	AT-501-100-020	HYD. LINE ASSY			
26	1	P33007	NIPPLE 6" LG			
25	1	P33216	TEE			
24	2	P34004	CAP NUT		9/16 SAE 37"	
23	2	P34002	MALE BRANCH TEE		3/8NPT(M)BOTT.-9/16SAE 37(M)SIDES	
22	2	P33896	VALVE & COIL ASSY			
21	2	P33871	VALVE BLOCK			
20	1	BA-501-340	VALVE SUPPT. BRACKET KIT			
19	2	P33006	STREET ELBOW			
18	1	P23538	HEX NUT		3/8-16	
17	2	P23510	LOCK NUT		5/16-18	
16	1	P11048	HEX BOLT		3/8-16 X 1-1/4	
15	4	P46403	BATTERY TERMINAL			
14	2	P46127	BATTERY CABLE 4 GA.		1 PC 30" - 1 PC 20"	
13	2	P23504	10-24 LOCK NUT		NOT SHOWN	
12	2	P18519	10-24 X 1 SCREW		NOT SHOWN	
11	1	P46405	CIRCUIT BREAKER		NOT SHOWN	
10	1	P10572	HH CAP SCREW		5/16-18 X 1/2 LG.	
9	4	P26506	FLAT WASHER		5/16	
8	2	P26017	SPLIT LOCK WASHER		3/8	
7	2	10040	HEX HD BOLT		5/16-18 X 1	
6	1	P33771	ADAPTER		9/16-18 SAE ORS - 3/8 NPT	
5	1	P34020	ELB O-RING BOSS 37"FLARE		9/16-18 O-RING(M) - 9/16-18-37"	
4	1	P33064	STRAIGHT NIPPLE		3/8 NPT(M) - 3/8 NPT(M)	
3	1	P33616	FILTER			
2	1	P33199	MALE STREET TEE			
1	1	P33994	MONARCH M-3553 PWR UNIT			
INDEX	REQD.	PART NO.	PART NAME	MATL.	MATERIAL SIZE	REMARKS WGT.
LEYMAN MANUFACTURING CORPORATION						

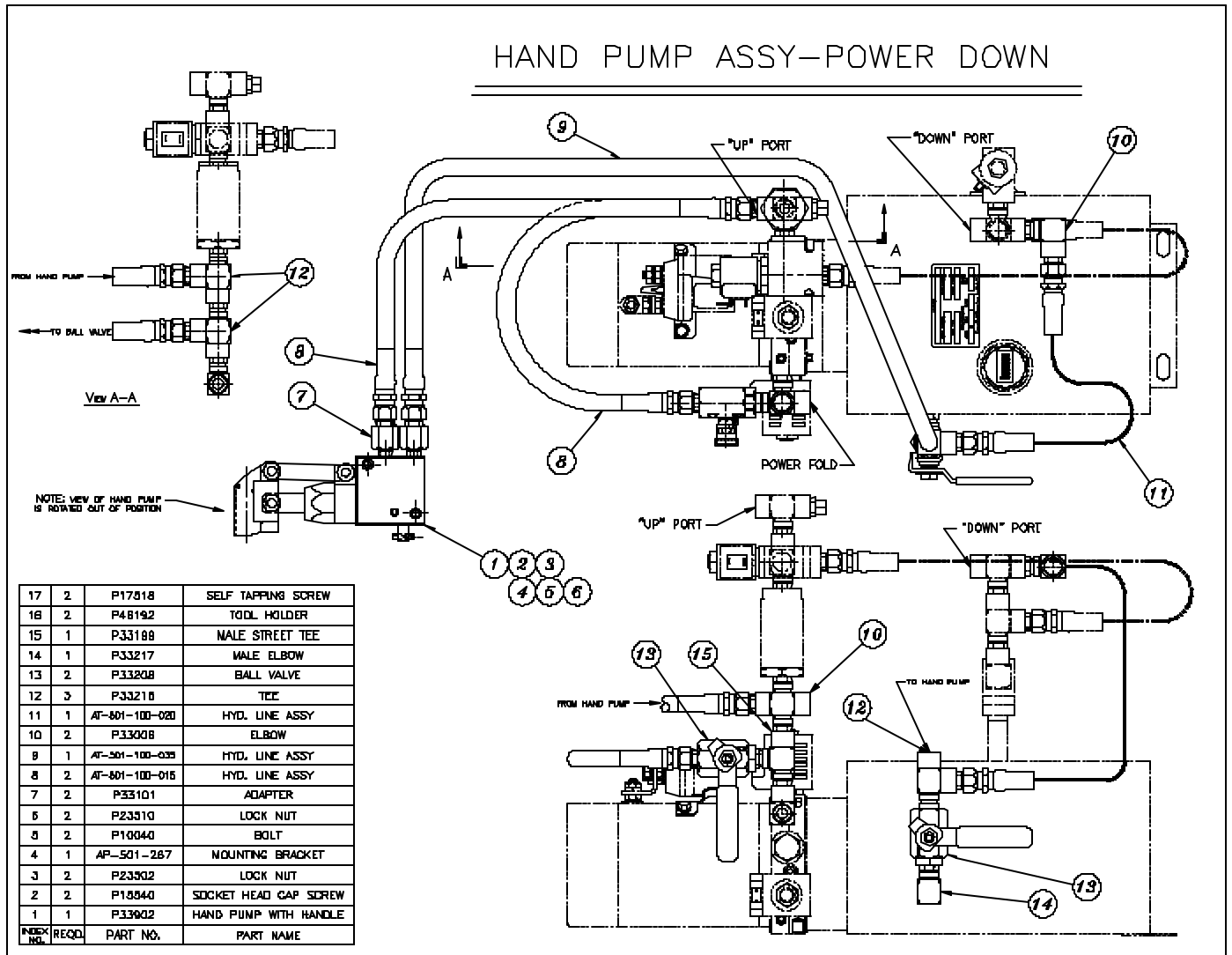
HAND PUMP ASSEMBLY GRAVITY DOWN SPX/ FENNER (GOLD MOTOR)



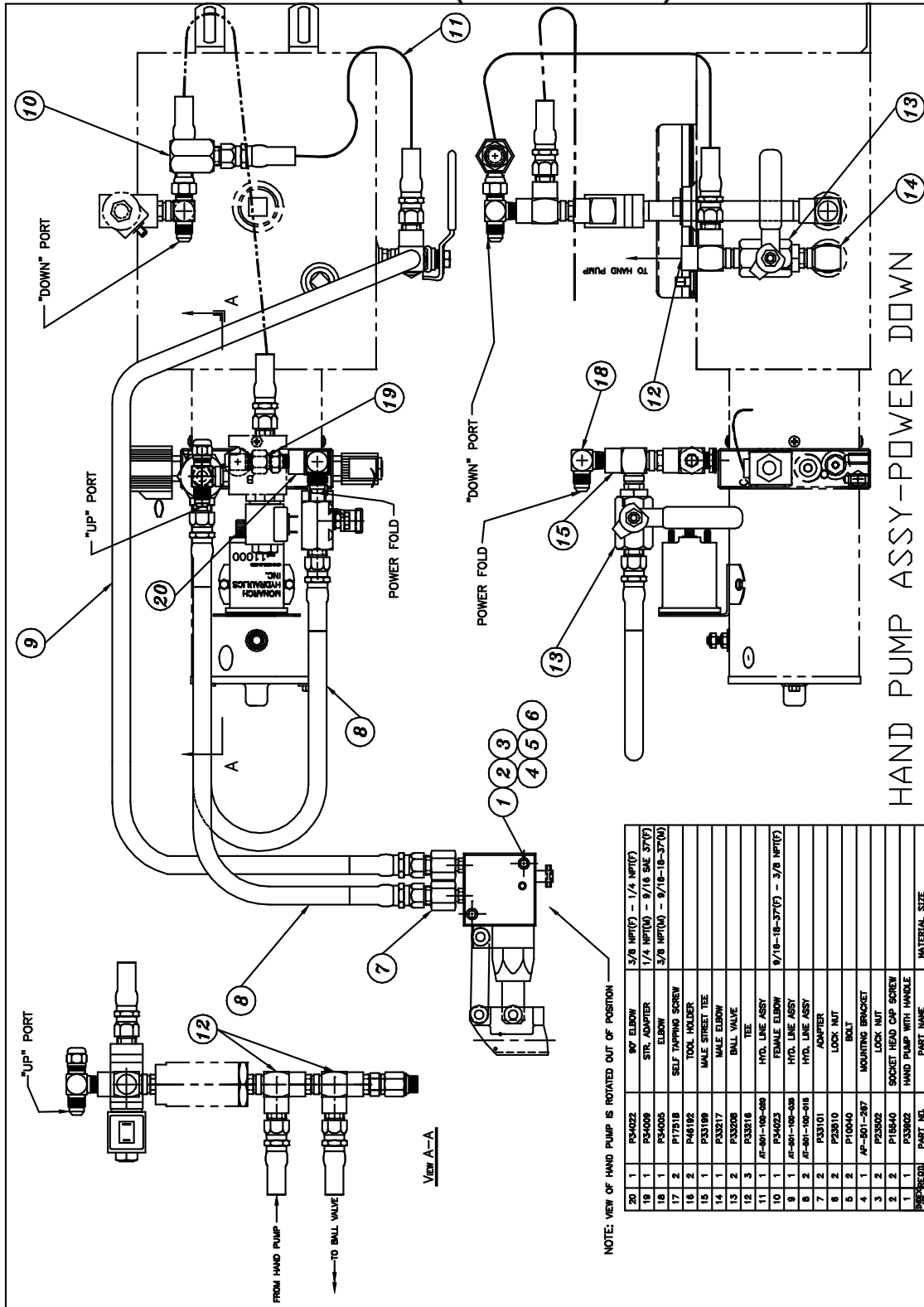
HAND PUMP ASSEMBLY GRAVITY DOWN MONARCH (BLACK MOTOR)



HAND PUMP ASEMBLY POWER DOWN SPX/ FENNER (GOLD MOTOR)



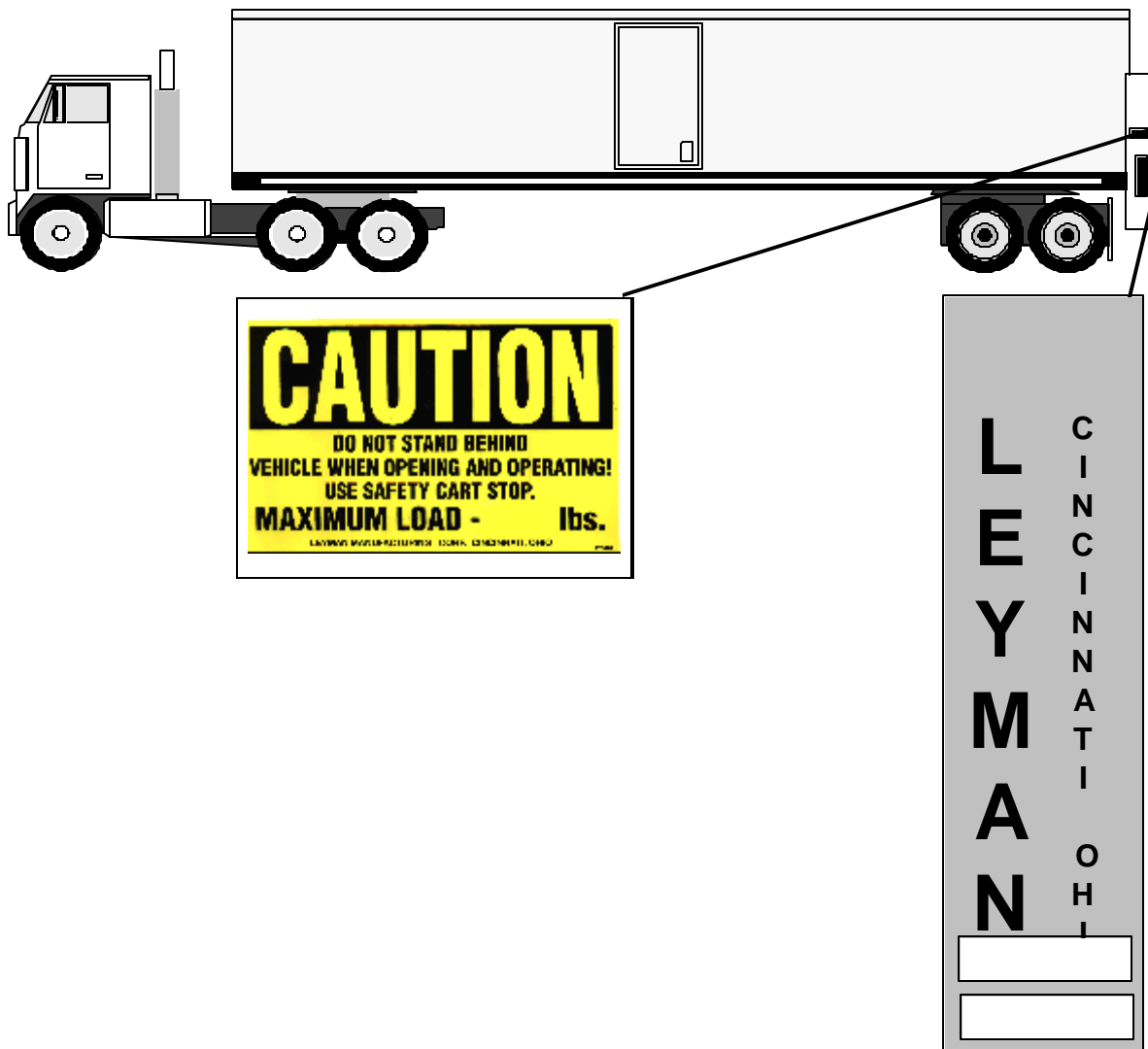
HAND PUMP ASSEMBLY POWER DOWN MONARCH (BLACK MOTOR)



INSTALLATION OF THE WARNING SIGNS AND DECALS

STREET SIDE DECALS

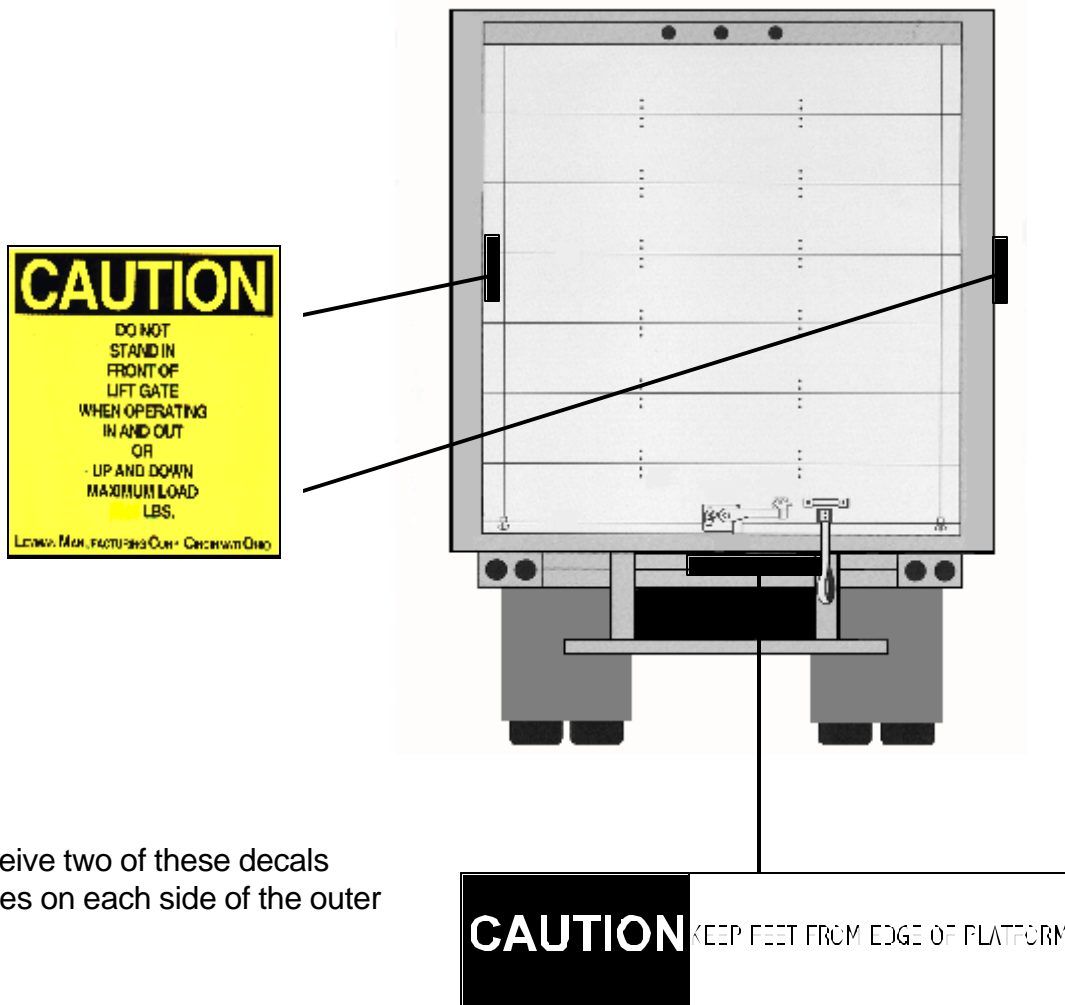
Warning Signs and Decals will be replaced at any time
FREE OF CHARGE



INSTALLATION OF THE WARNING SIGNS AND DECALS

REAR OF VEHICLE DECALS

Warning Signs and Decals will be replaced at any time
FREE OF CHARGE



LEYMAN  **LIFT
GATES**

NOTES