

# Model ILU Underslider Liftgate Maintenance and Troubleshooting





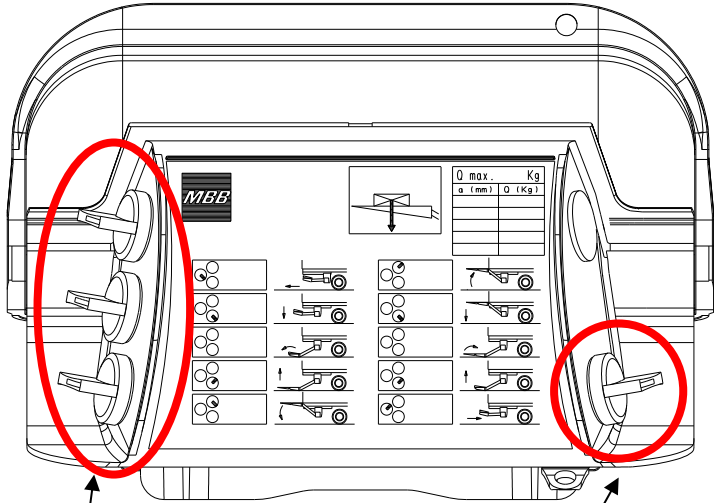
## ALL MODELS OF PALFINGER LIFTGATES

Installation, Operator(Owner) and Parts Manuals, troubleshooting guides, hydraulic and electrical schematics are available for download or viewing on our website at <https://www.palfinger.com/en-US/usa/products/lift-gates>.

Diagrams of decal placement are in the Installation and Operator Manuals. Decals are furnished at no cost to our customers.

**REPLACE MISSING AND/OR DEFACED DECALS!**

All Models of Liftgate Operator Manuals have diagrams of pivot points needing Lubrication in the Preventive Maintenance Section.



Tilt, Lift and Slide Controls

On/Off switch

Folding Platform

Warning Lights

Push-Pull  
Cylinders

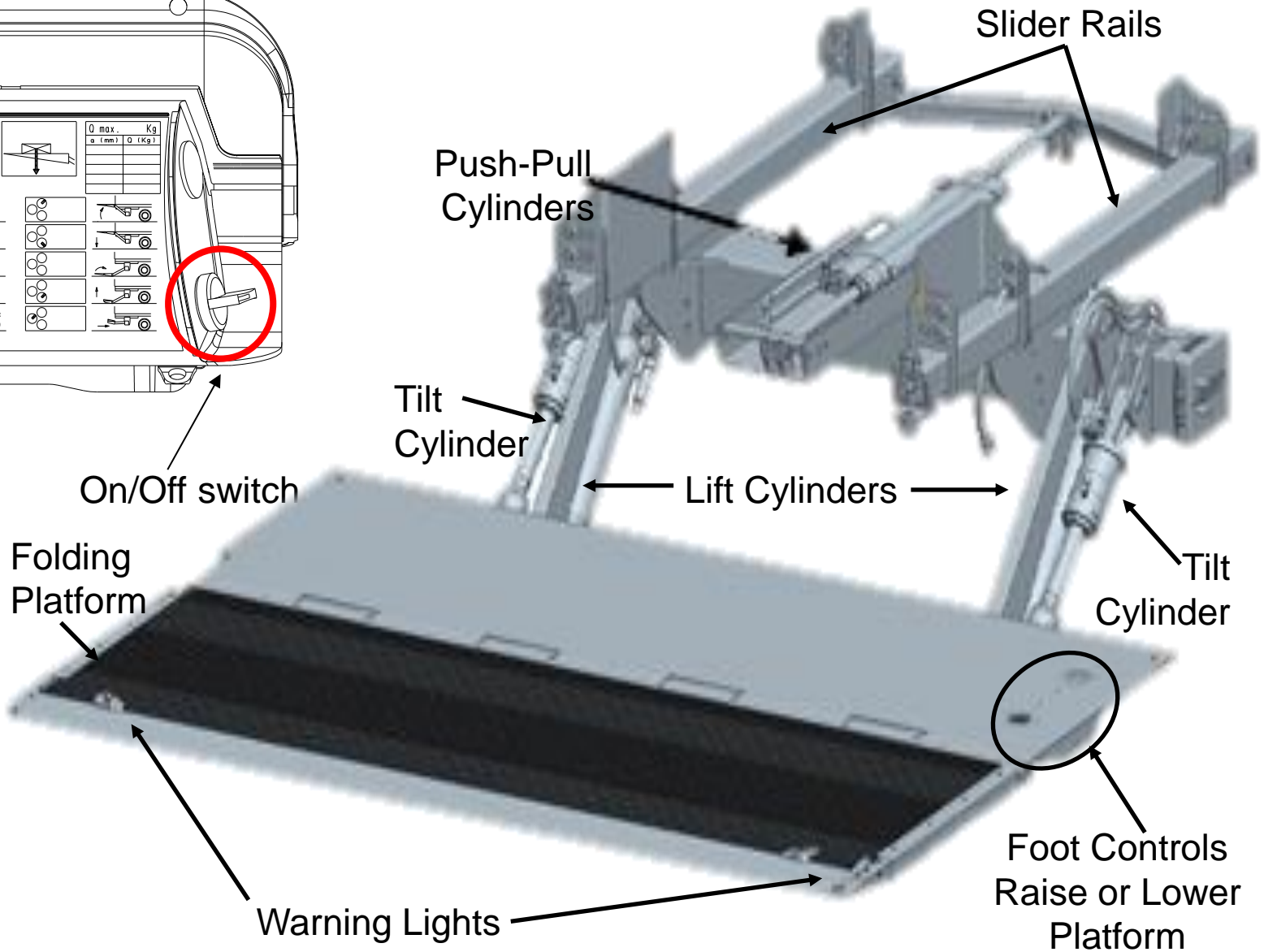
Tilt  
Cylinder

Lift Cylinders

Tilt  
Cylinder

Foot Controls  
Raise or Lower  
Platform

Slider Rails

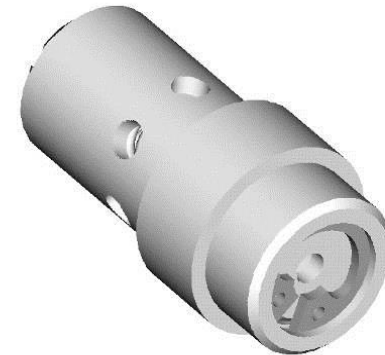


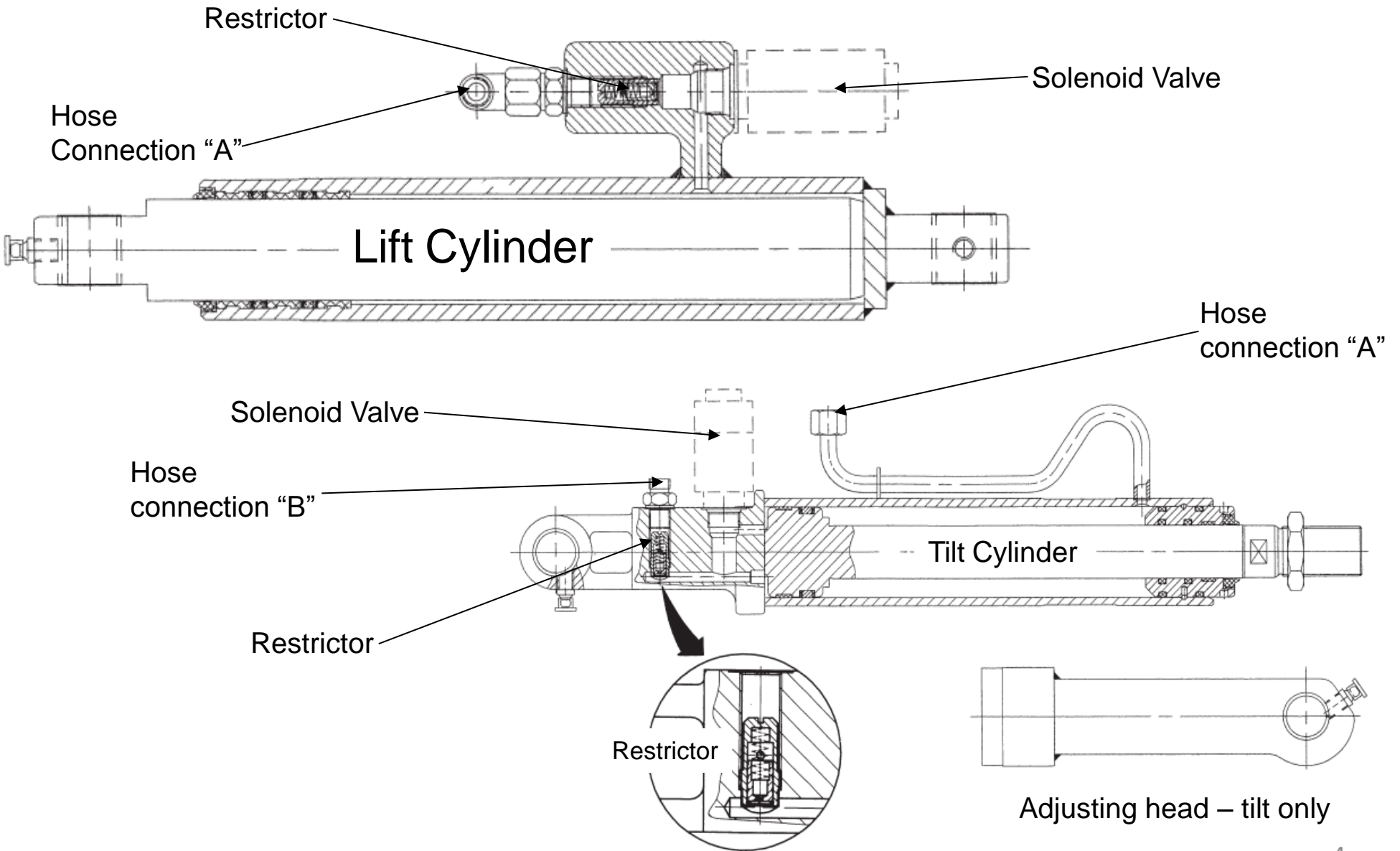
## Pins, Bushings and Restrictor Valves

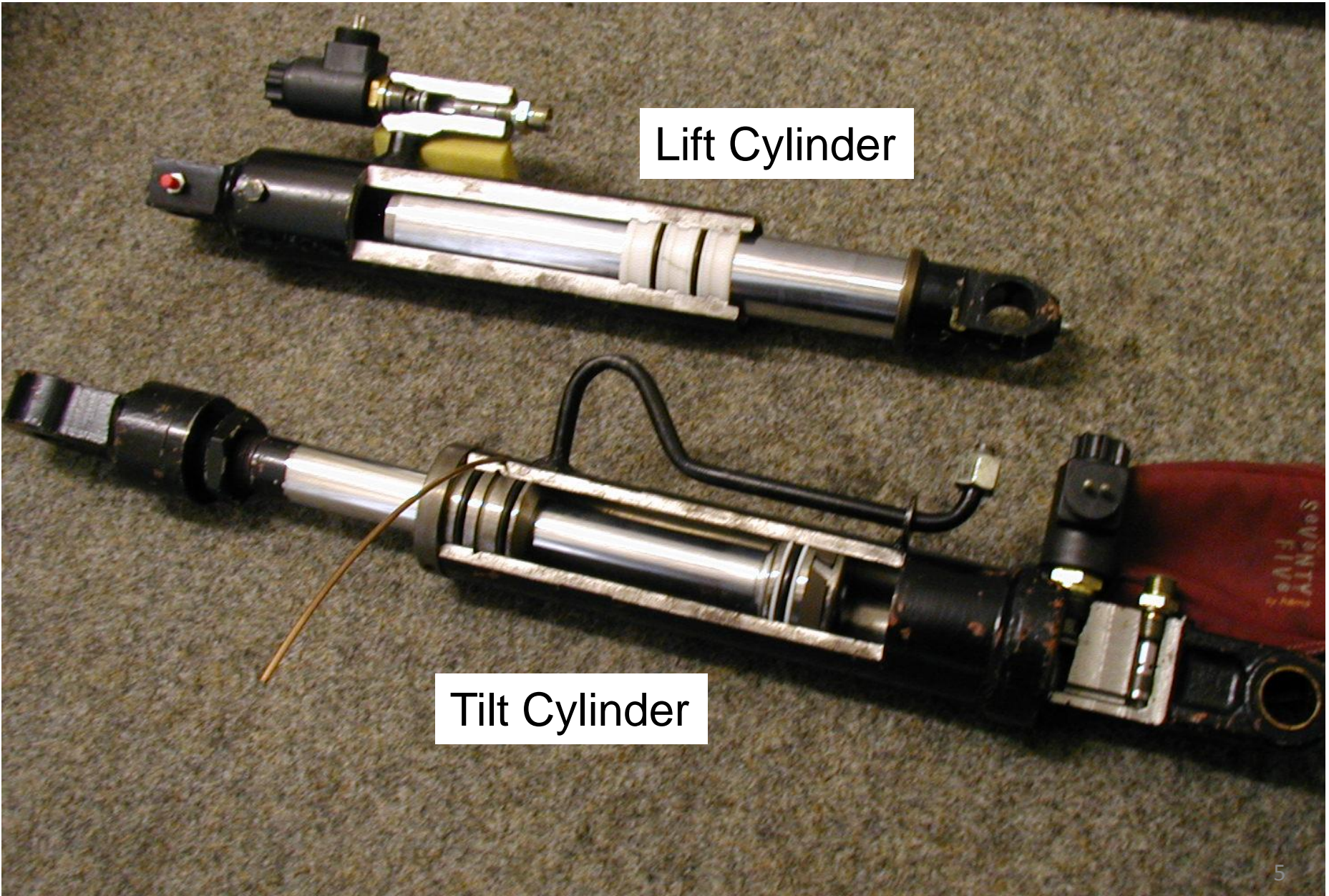


**Pin diameter determines lifting capacity**

**Restrictor Valve**  
Number on valve describes the fluid flow (liters per minute)





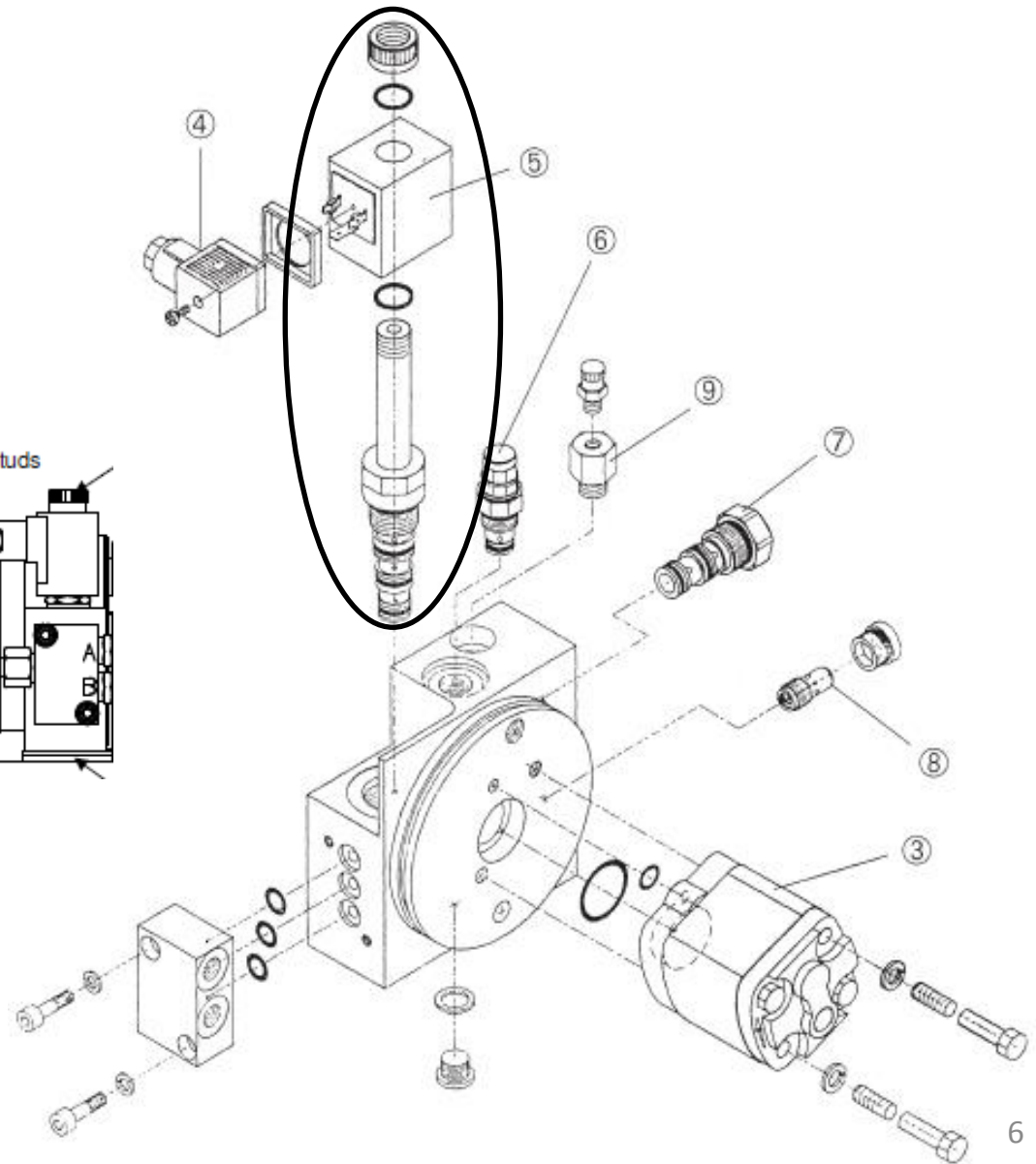
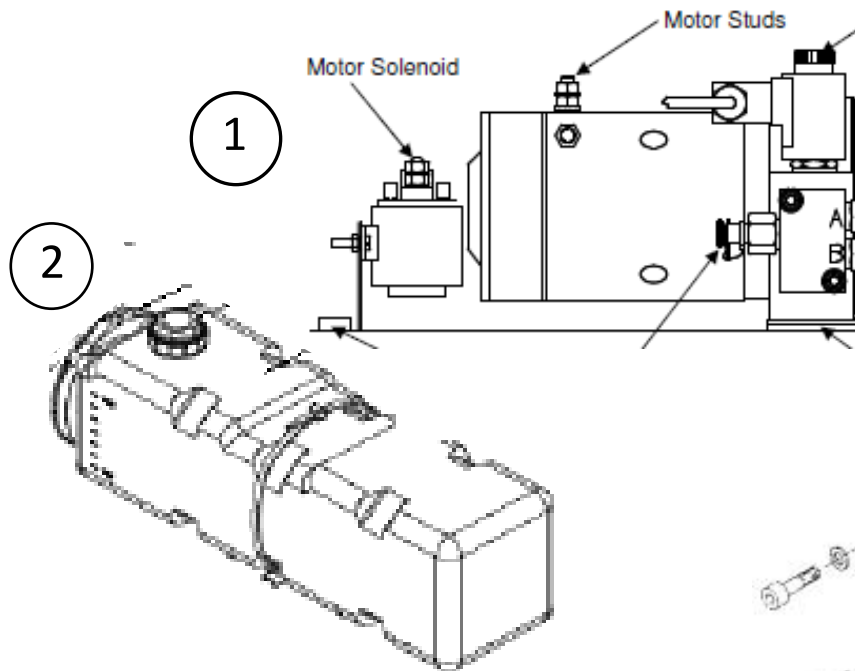


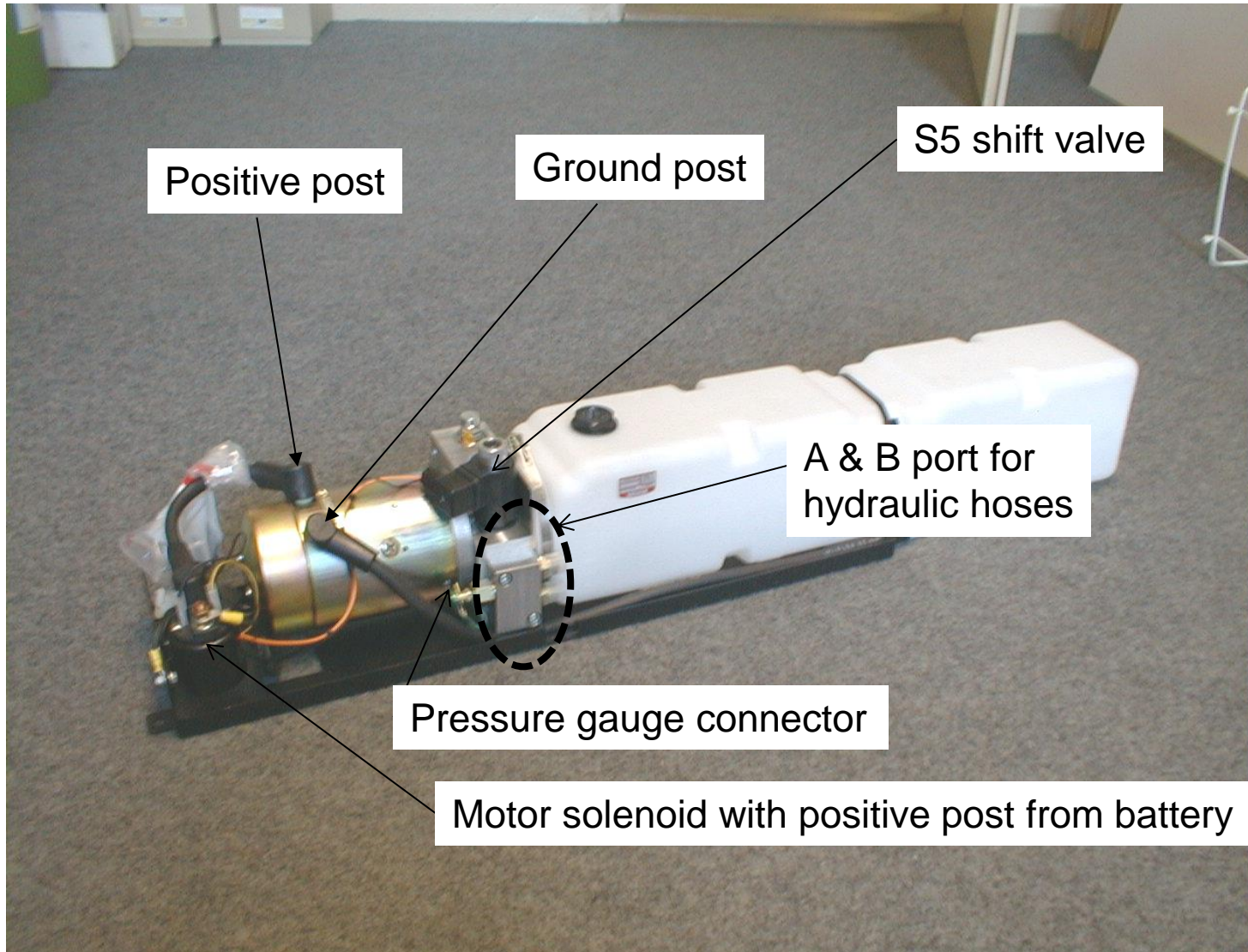
Lift Cylinder

Tilt Cylinder

## Power Pack System Components

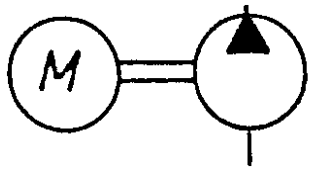
1. Motor 12 V
2. Plastic Tank
3. Hydraulic Pump
4. Valve plug
5. S5 Shift Valve
6. Pressure Relief Valve
7. Shuttle Valve
8. Restrictor Valve R5
9. Pressure Gauge



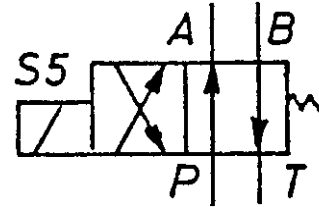




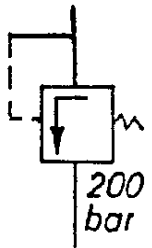
# Hydraulic Symbols in Schematics



Motor with Pump



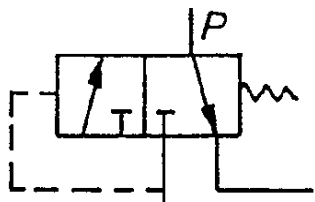
Shift valve S5



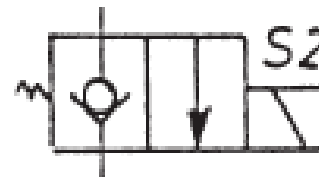
Pressure relief valve



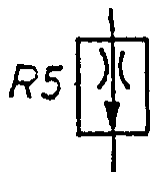
Pressure gauge



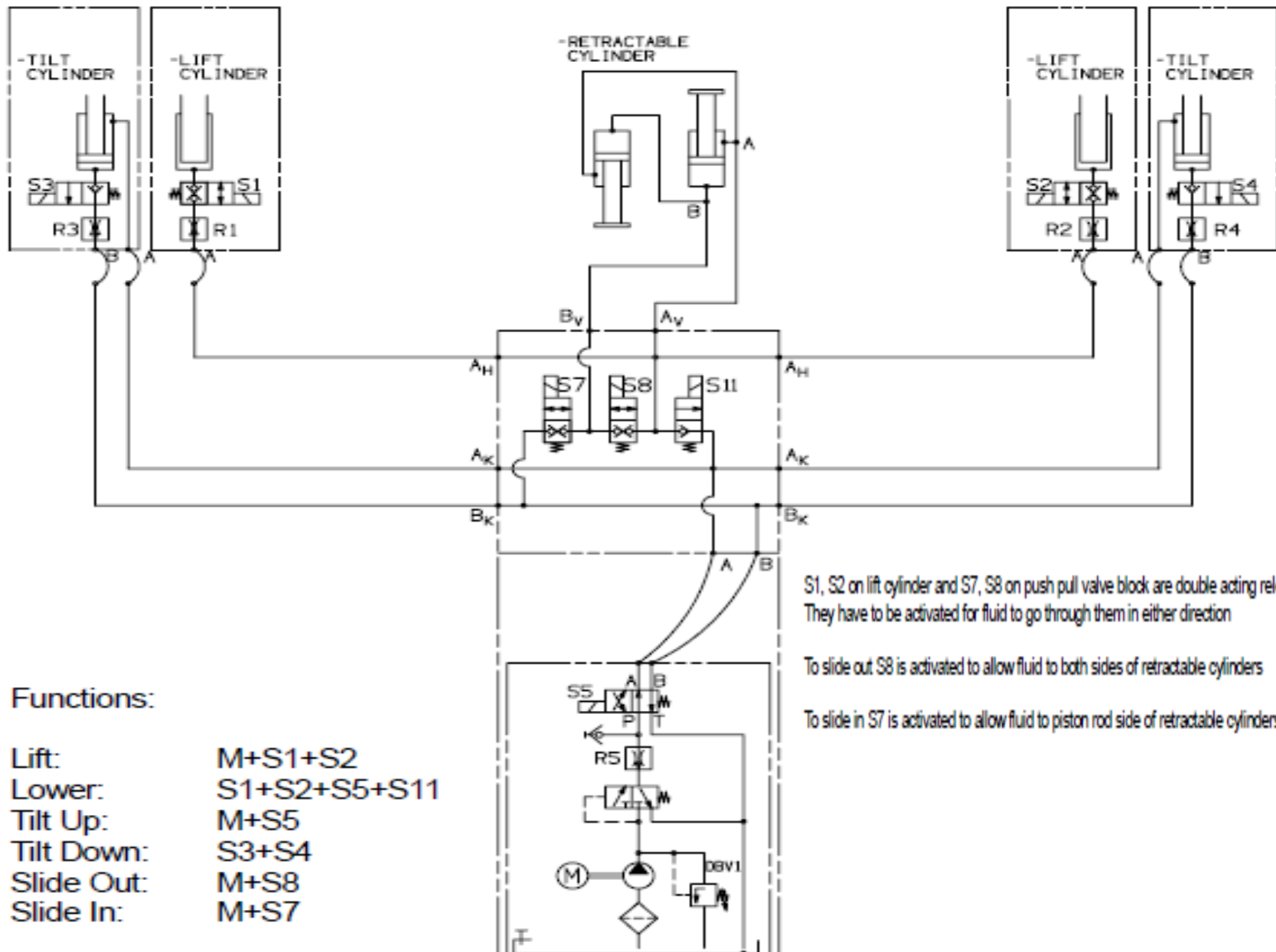
Shuttle valve /  
(Flow divider)



Single locking valve



Restrictor valve



**3-Valve Part Numbers**

S-8 & S-7  
 Double Locking  
 P-1284466

S-11  
 Single Locking  
 P-67282345  
 S-11 Opens When  
 Lowering, Lift  
 Cylinder Return Line

**Hydraulic Ports**

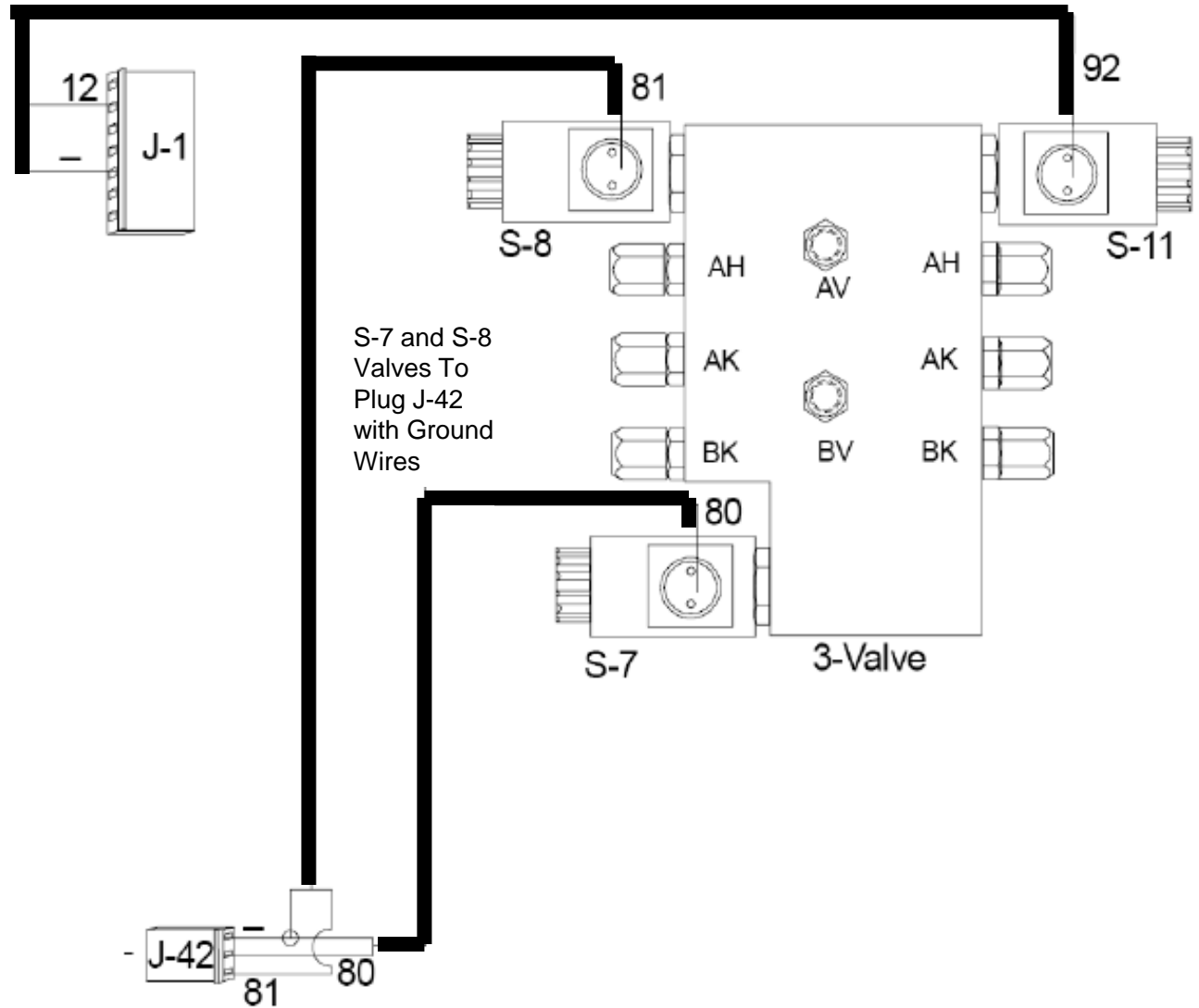
AV-Push/Pull In  
 BV-Push/Pull Out  
 AH-Lift Cylinder  
 AK-Tilt Cylinder Down  
 BK-Tilt Cylinder Up

**Push/Pull Cylinder Out**

S-7 - Closed  
 S-8 - Open

**Push/Pull Cylinder In**

S-7 - Open  
 S-8 - Closed

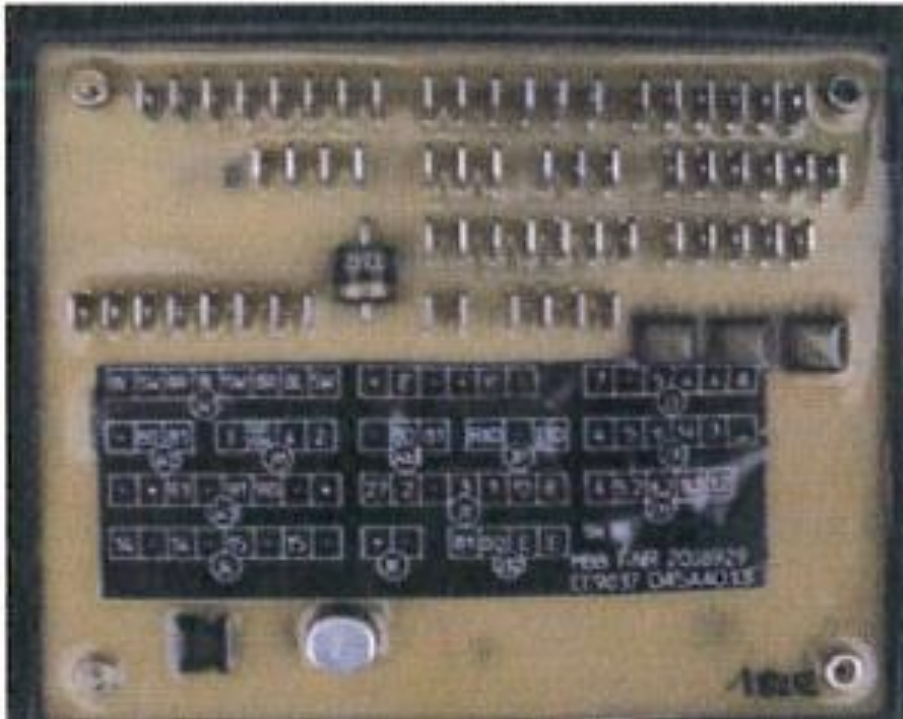


## ILU Electrical Control

Overview of Circuit Board, Connectors and Electrical Schematic

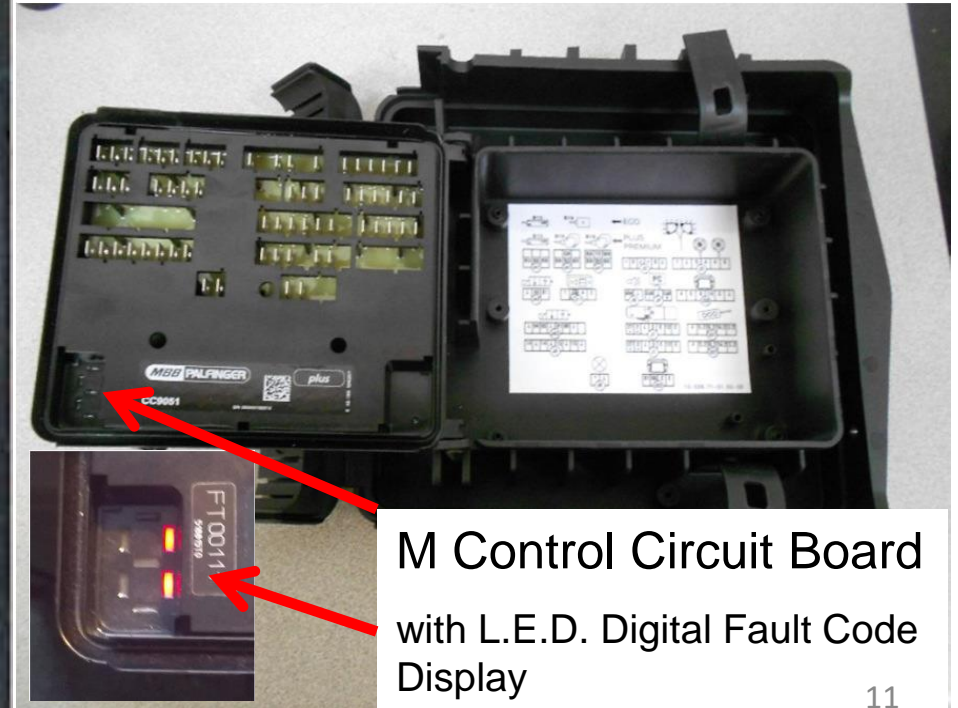
K plus Circuit Board

2005 to August 2013

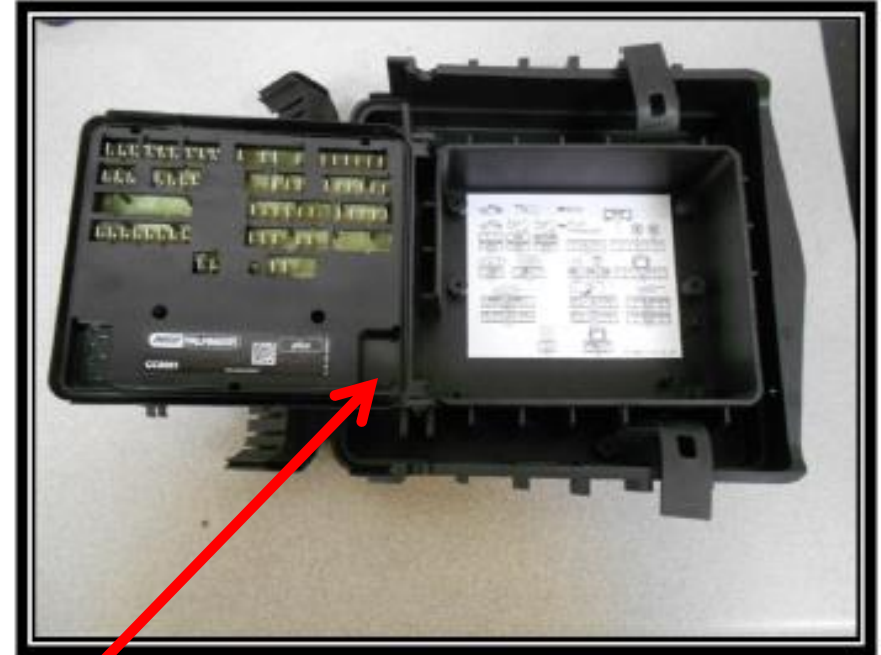
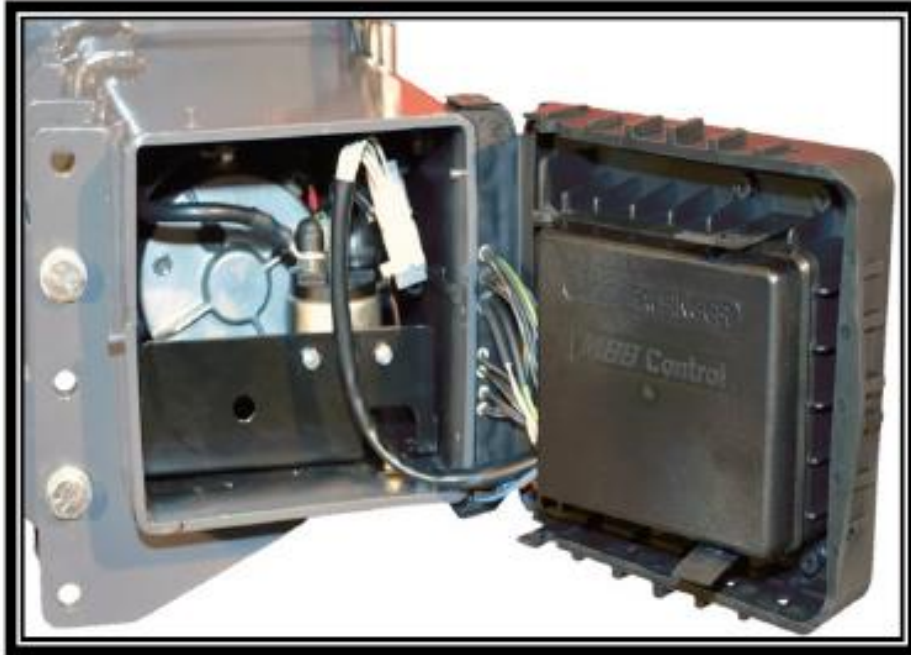


M Control Circuit Board

August 2013 and newer



New Style Circuit Board – M Control



Protective Cover

Slots sized for specific plugs

Prevent plugs from being plugged in wrong

LED flashes green when OK  
LED flashes red when a fault exists

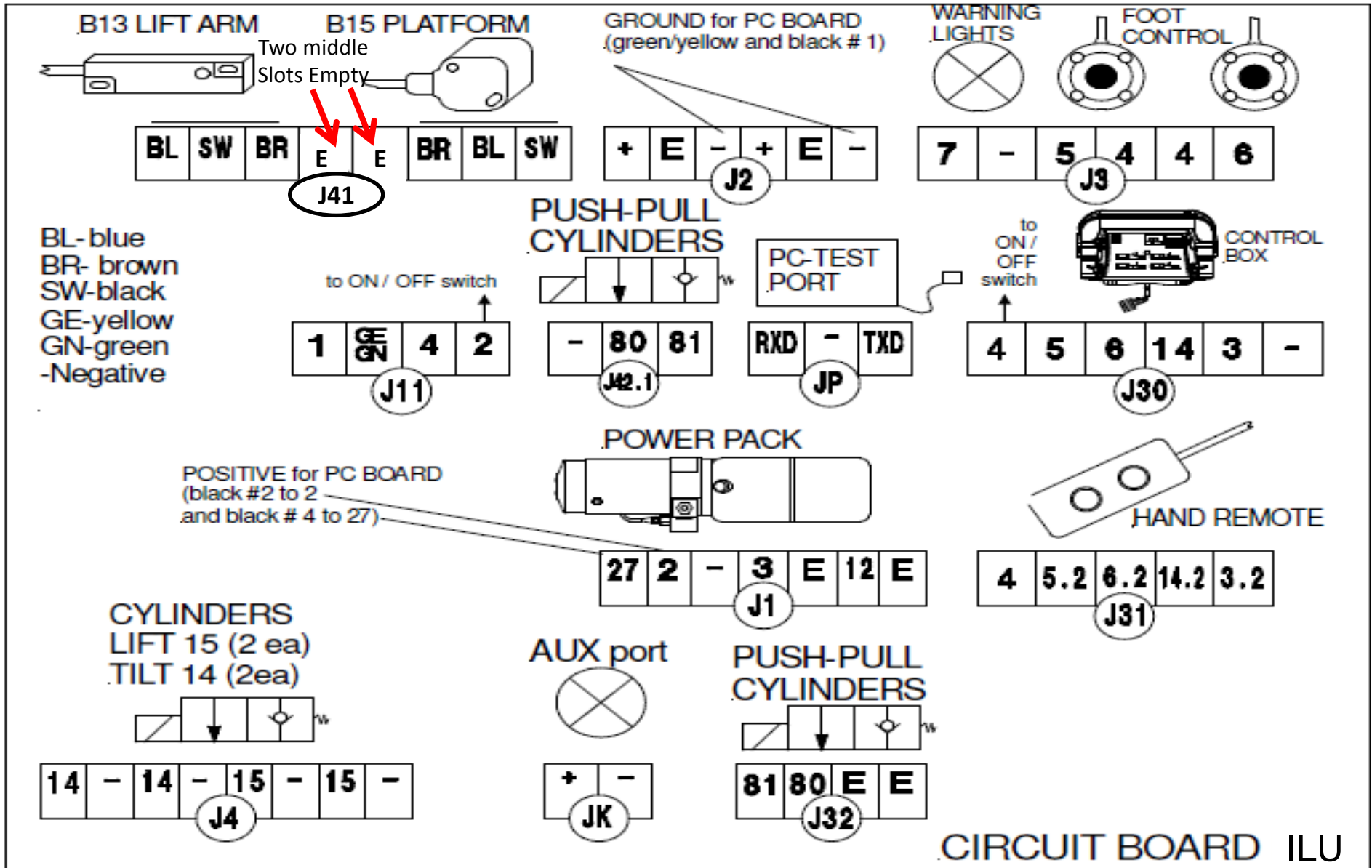
LED in lower left corner shows code for fault

## Circuit Board – M Control Fault Codes

Fault code	Description	Reset
0	System ok / Cab switch off, (or missing bridge J11/2<->4)	
1	System ok / Cab switch on, (or bridge J11/2<->4)	
2	Low voltage – start truck engine, charge battery	Cab switch: off/on (or disconnect bridge J11/2<->4)
3	Defective or missing tilt switch B13 at lift arm	Automatically when the valves are back to normal
4	Defective or missing tilt angle sensor B15 at lift arm	Automatically when the valves are back to normal
5	Defective or missing tilt angle sensor B15 at platform	Automatically when the valves are back to normal
6	Warning lights shorted	Cab switch: off/on (or disconnect bridge J11/2<->4) or close tail lift
7	Short in cab switch / on-off-switch or aux port	Cab switch: off/on (or disconnect bridge J11/2<->4) or close tail lift
8	General short in electric wiring	Cab switch: off/on (or disconnect bridge J11/2<->4) or voltage interruption MBB control
9	Defect at motor solenoid detected during lifting	Automatically when the valves are back to normal
A	Voltage V02 (J1 pin 2) is missing, defective fuse?	Replace the fuse
b	Defect at opening, valve (S3/S4) or motor relay detected during opening	Automatically when the valves are back to normal
c	Defect at motor solenoid or S5 valve detected during closing	Automatically when the valves are back to normal
d	Defect at lowering valve (S1/S2) or S5 valve detected	Automatically when the valves are back to normal
E	Emergency program (all sensors are bypassed). Activation by: Press Open + Lower > 10 seconds	Cab switch: off/on (or disconnect bridge J11/2<->4)
P	Diagnosis mode activated	Removing service connector



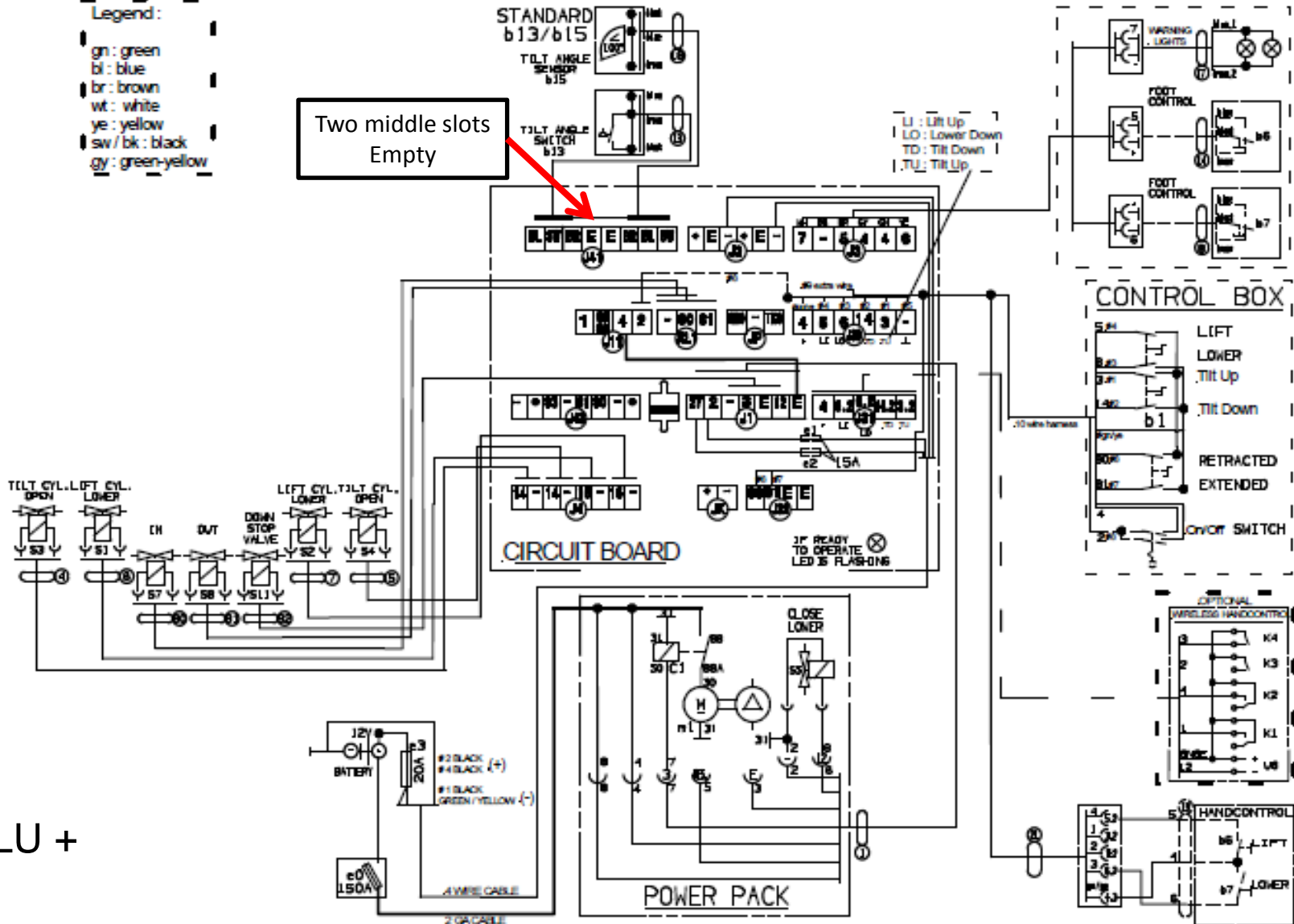
← Digital Fault Code Display located in lower left corner of M Control Circuit Board



## Circuit Board – K-Plus 2005 to August 2013 Schematic

- Legend:
- gn: green
  - bl: blue
  - br: brown
  - wt: white
  - ye: yellow
  - sw/bk: black
  - gy: green-yellow

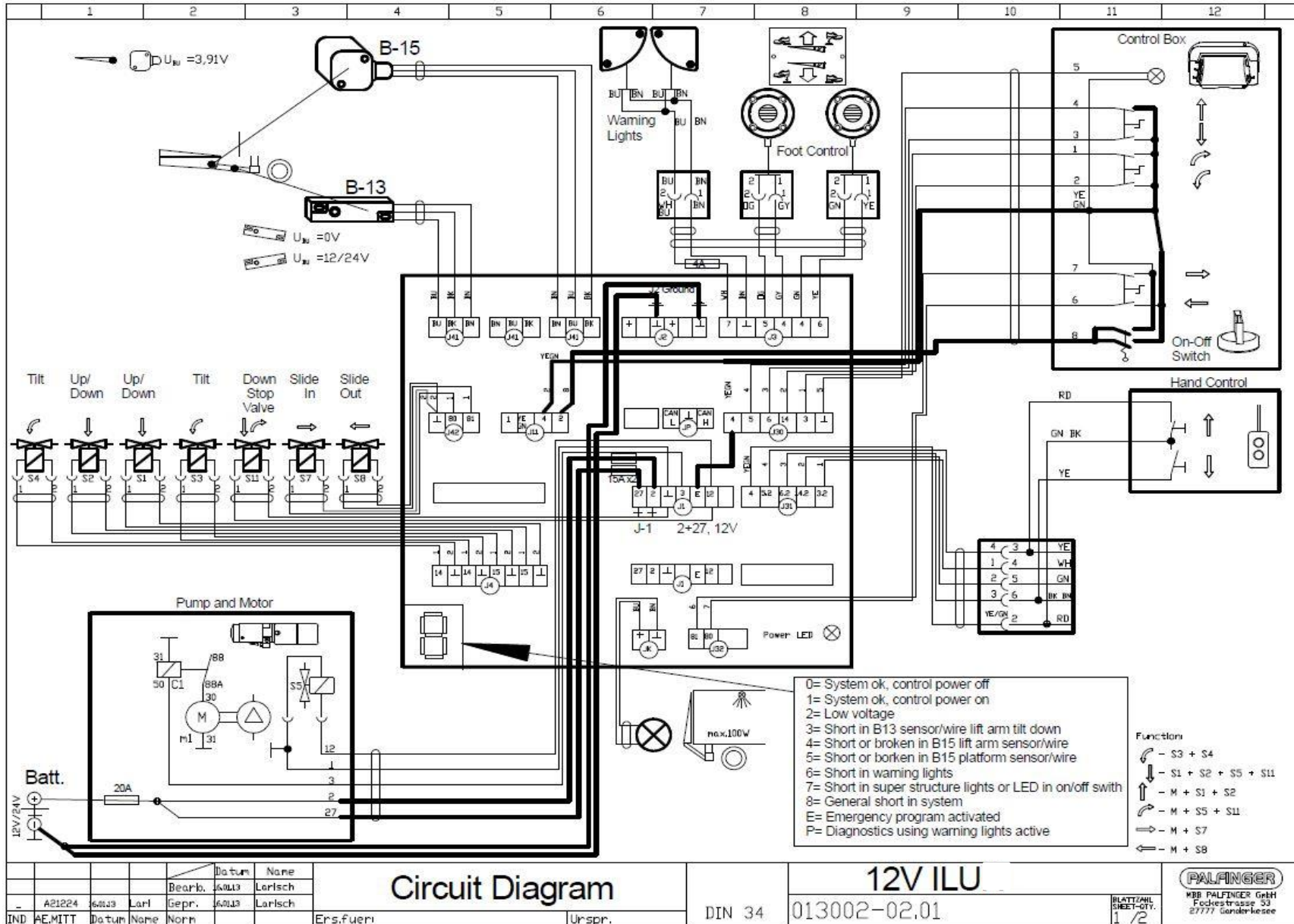
Two middle slots Empty



ILU +



### Circuit Board – M Control Schematic




**Basic Flooded Battery Conditions and Testing**

# State of Charge Vs. Voltage

<u>State of Charge</u>	<u>Open Circuit Voltage</u>
100%	12.70 V
90%	12.60 V
80%	12.50 V
70%	12.35 V
60%	12.25 V
50%	12.10 V
40%	11.95 V
30%	11.85 V
20%	11.70 V
10%	11.55 V

Charge Before Testing



**BEFORE YOU START TROUBLESHOOTING**

**10-10 TEST**  
**CHECK BATTERY VOLTAGE**

Using a multimeter set on DC Voltage:

Place Negative lead on Negative Post on Motor.

Place Positive lead on Positive Post on Motor.

Using the Lift Switch raise the platform to bed level.

Keeping the switch activated. Deadhead the Motor.

Keep switch activated for ten(10) seconds and observe the multimeter readings.

Ten(10) Volts for Ten(10) Seconds is the desired result.

If the reading is less than Eight(8) Volts the batteries are low and need to be charged.

Retest after charging. Replace batteries and check all connections and grounds if you cannot get 10-10.

## FLOODED LEAD ACID BATTERY INFORMATION

- A flooded lead acid battery reading 12.0V is at less than half charged
- Flooded lead acid batteries work best at 90 degrees F. Performance is reduced as temperatures increase or decrease above or below 90 degrees F
- Flooded lead acid batteries should be recharged immediately after discharge
- Flooded lead acid batteries that are drawn down to full discharge will not return to full capacity and will have to be replaced if multiple complete discharges occur
- Flooded lead acid batteries lose approximately 1% per day when not in use
- New flooded lead acid batteries are not fully charged and must be fully charged prior to installation.

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### STATE OF CHARGE-vs-FREEZING TEMPERATURE

<u>IF BATTERY IS</u>	<u>BATTERY WILL FREEZE AT</u>
100% Charged =	-75 degrees F
75% Charged =	-34 degrees F
50% Charged =	+ 5 degrees F
00% Charged =	+27 degrees F

## First Steps Troubleshooting:

**Low Voltage is a common cause of liftgates not functioning properly.** Check all connections making sure they are tight, free of corrosion and properly grounded.

- 1) Check circuit breaker at batteries and fuses on J1 plug at PC board
- 2) Unplug unnecessary equipment to eliminate possible problem
  - J-31 - hand control
  - J-3 - warning light & foot controls
  - J-41 - B-15 and B-13 Sensor
  - **!!! Unplug J-1 after unplugging each plug to reset board !!!**
- 3) Start truck and run engine in fast idle to engage alternator
  - if liftgate starts working → check battery conditions and charging system
- 4) Check voltage supply at J-11 #4 and JK #(-) while deadhead
  - Minimum of 10 V is necessary for proper use of lift gate.

**SEE NEXT PAGE FOR ADDITIONAL FIRST STEPS IN TROUBLESHOOTING**

## First Steps Troubleshooting: Continued

With ILU gates that have broke down on the road, someone went out and stored liftgate, and now gate is in the shop for repair.

Test the gate by jumping large posts on the motor solenoid, gate will dead head and **nothing should move**. That is what should happen.

**If gate tilts up,** one of two issues may exist:

1.) The hoses at Power Pack have been removed and put on backwards.

If hoses on Power Pack are in correct location

2.) Check all lines connecting to cylinders and that they are attached where they should be.

**SEE NEXT PAGE FOR HOSE SET UP**

For further Troubleshooting Information refer to ILU Troubleshooting document included with this presentation or download from Palfinger Liftgate Website

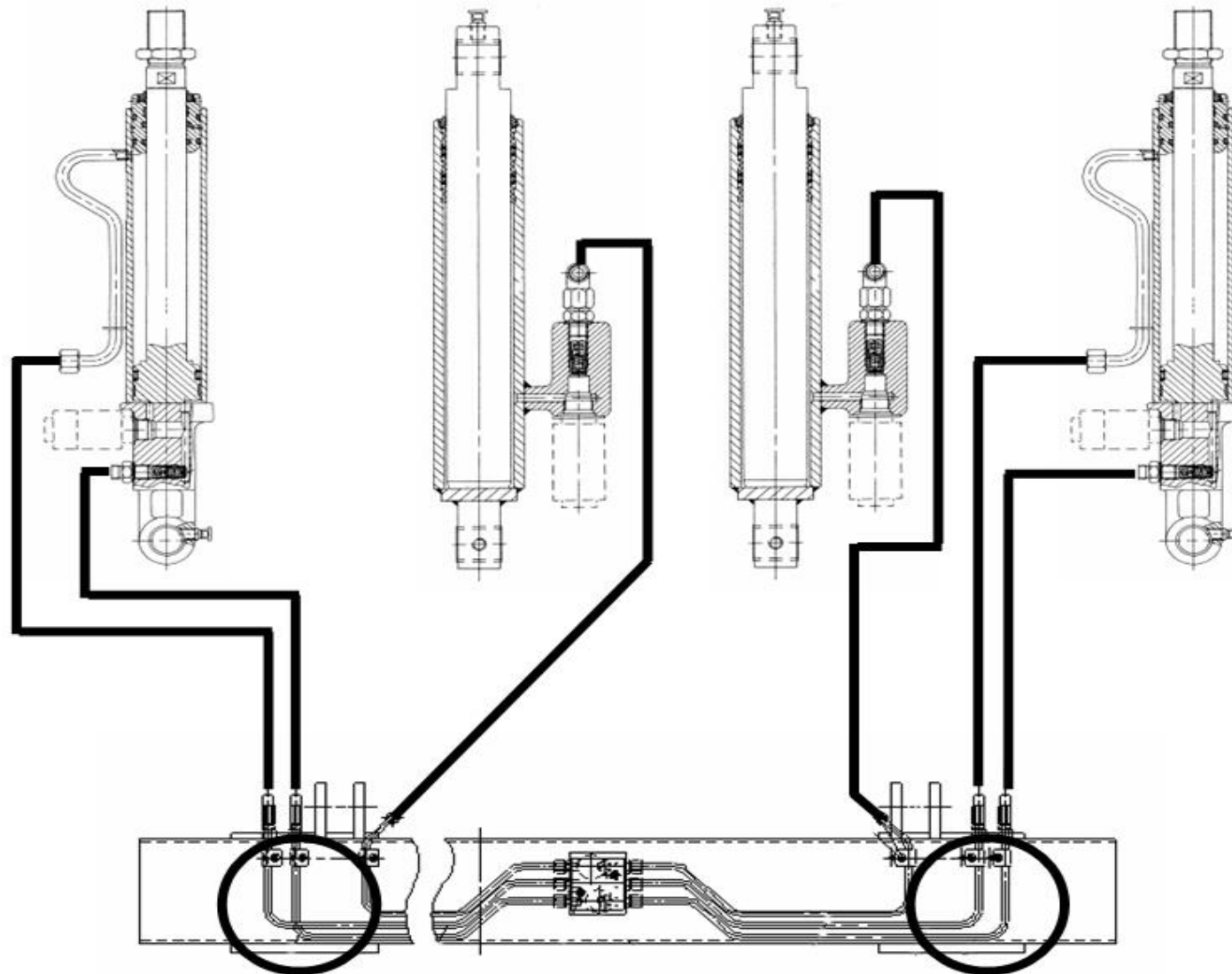
<https://www.palfinger.com/en-US/usa/products/lift-gates>



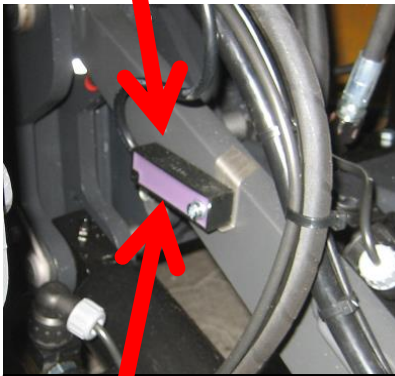
**HYDRAULIC HOSE SET UP**

**CURB SIDE HOSE SET UP**

**ROAD SIDE HOSE SET UP**



**B-13 Sensor** Located on curb side lift arm.



**Purple epoxy** side outwards and wire leads towards the front of the vehicle.

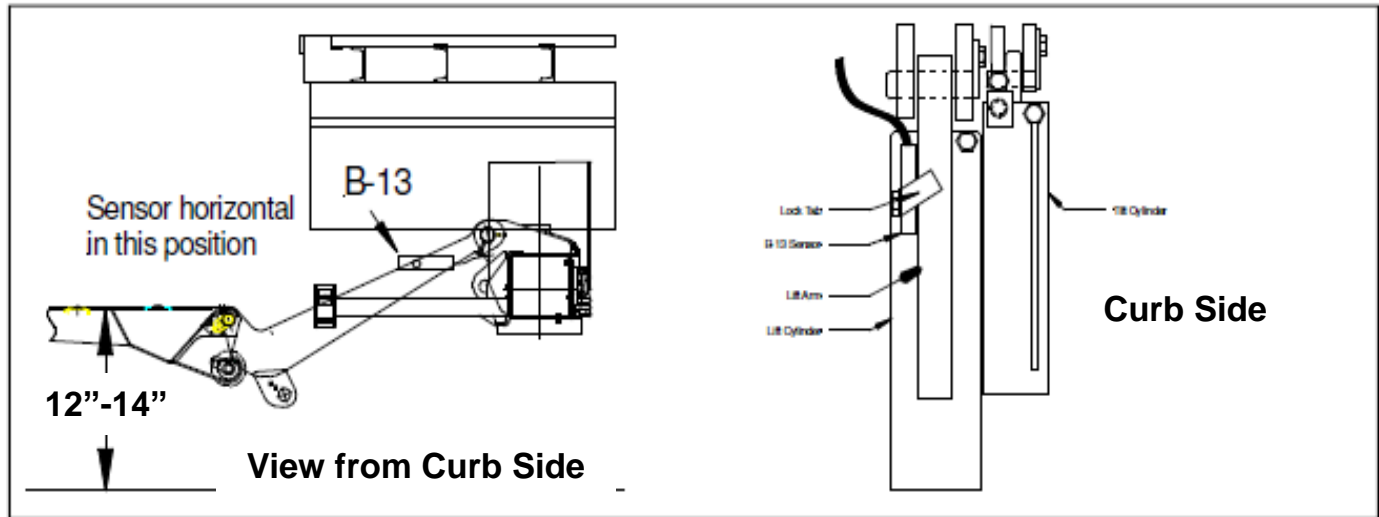
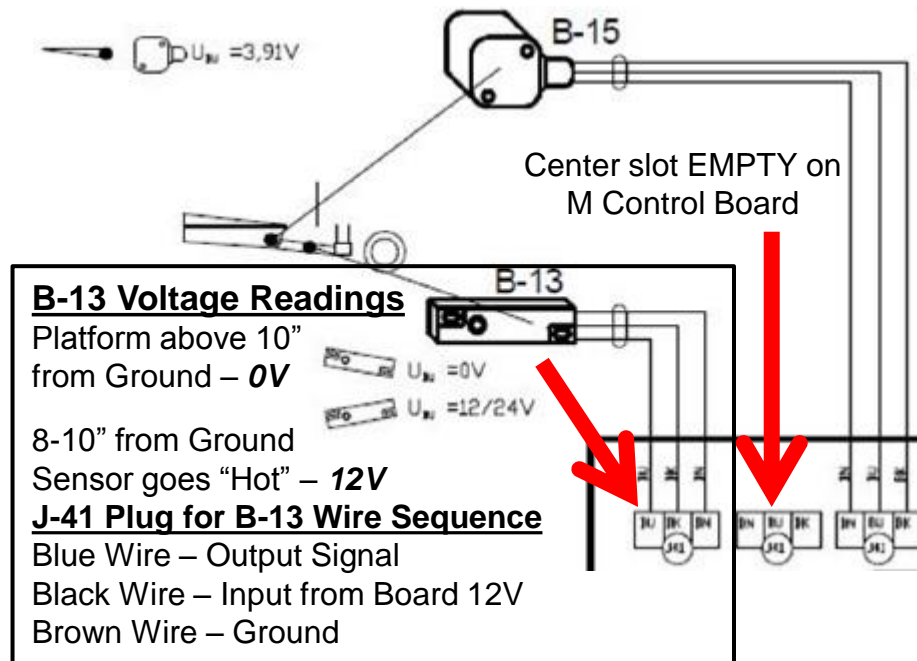


Figure 19 B-13 lift arm adjustment

To set the sensor correctly:

- 1.) Lift unfolded platform up about 12" to 14" above ground.
- 2.) Adjust the B-13 sensor in a way that it is level with the truck or trailer floor like shown in Figure 19 above.
- 3.) Raise gate all the way up after adjusting and lower to the ground. Platform tip will tilt towards ground if operator holds the switch in the "lower" position for about 2-3 seconds after nylon rollers touching ground.
- 4.) Cycle platform several times to check operation after tightening. Fold down Lock Tab tightly onto Lift Arm (see Figure 19).



**B-15 Sensor** Located on underneath platform.

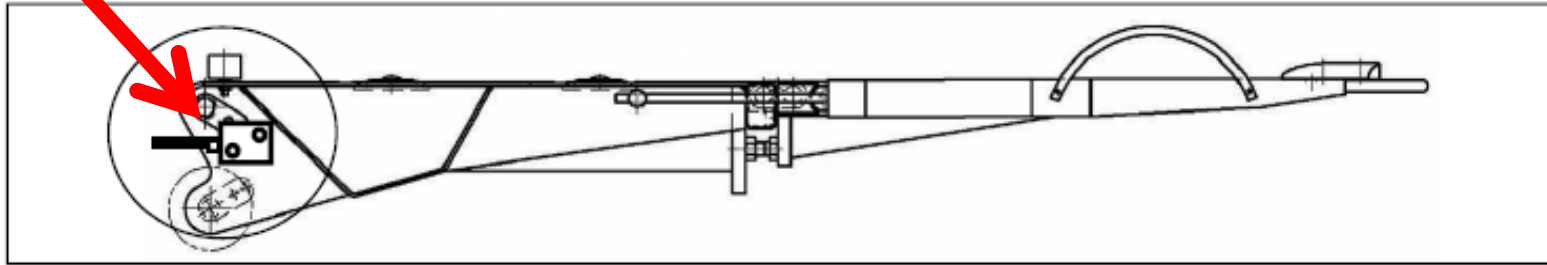


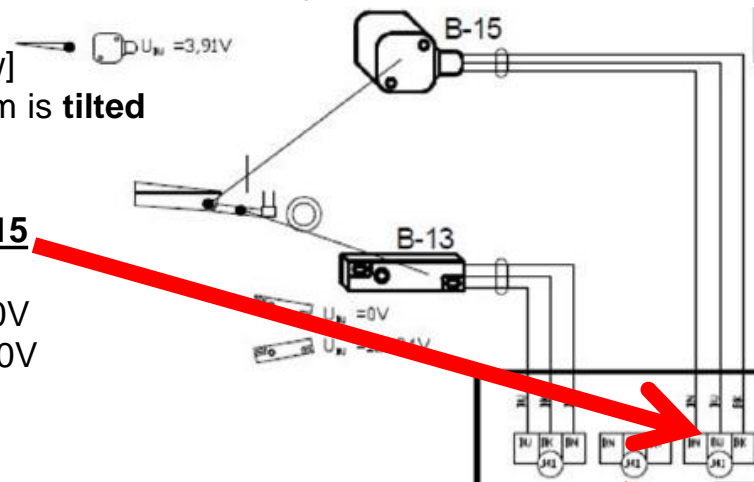
Figure 20 B-15 adjustment on platform

B-15 is set correct, when cable restrainer is parallel with platform surface and platform is horizontal. A reading of 4.0V at the J-41 should be achieved in this position. [ Blue and Brown Wire, see below]

**NOTE:** Voltage reading at Blue wire will increase if platform is **tilted Down**, voltage will **decrease** if platform is tilted **Up**.

**J-41 Plug Wire Sequence for B-15**

- Brown Wire – Ground
- Blue Wire – Signal from Sensor 4.0V
- Black Wire – Input from Board 12.0V



Center slot EMPTY on M Control Board

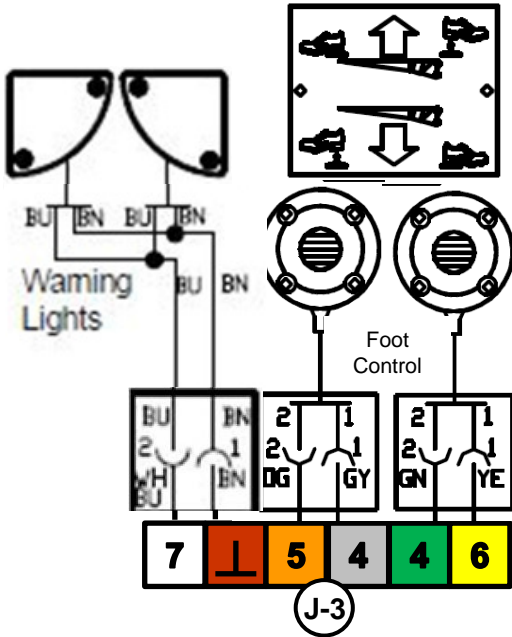
Make sure wire is looped around to give it enough slack in normal operation and route clear of any pinch points.

**B-15 is working correctly if platform finds preset level position while tilting up from ground position.**

If platform is only lifting, without leveling out - battery power supply may be low; check and charge battery. (On trucks, start truck and run in high idle for 5 – 10 minutes.)



# FOOT CONTROLS TROUBLESHOOTING



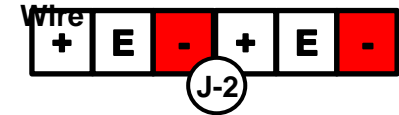
### J-3 Plug Pin Functions

- 5 Pin – UP Orange Wire
- 4 Pin – Hot Grey and Green Wires
- 6 Pin – DOWN Yellow Wire
- 12V+ reading at both 4 Pins
- 7 Pin – Warning Lights White Wire
- Ground Pin – Brown Wire

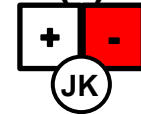
When checking voltage on the circuit board, **ALWAYS** Ground to the circuit board.

### Circuit Board Ground Points

J-2 Plug, K Plus Board  
Green/Yellow or Black #1

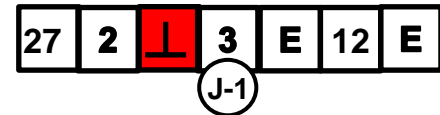


JK (-) Pin



J-1 Plug

M Control Circuit Board  
Green/Yellow and Black #1 in same slot



## Diagnostics and Troubleshooting Foot Controls

**Activate the Foot Controls** in sequence depicted on plate riveted to platform.

If activating UP function, check voltage at the 5 Pin; reading should be 10V or more.

If activating DOWN function, check voltage at the 6 Pin; reading should be 10V or more.

If activating UP or DOWN function by jumping at the J-3 Plug, both 4 and 5 or 6 Pins must have power from the 4 Pin, as an example: To activate UP function, jump from 4 Pin(next to the 5 Pin) to 5 Pin, then within 3 seconds jump to 6 Pin while still having the jumper on the 4 and 5 Pins.

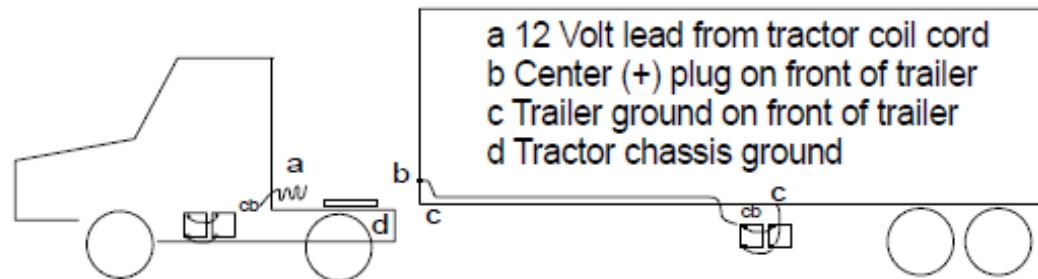
Reverse the process for the DOWN function using the 4 Pin next to the 6 Pin.

Inspect cables for continuity, pinches, insulation compromised and other conditions that could cause a short in the circuit if liftgate won't function.

Replace foot switch(es) if defects found.

Remember, proper voltage is key for correct function of this feature. Other components are also being activated and require proper voltage. Low voltage may cause one function to not properly respond causing the liftgate to not operate as desired.

## CROSS TEST ON ENTIRE CHARGE SYSTEM



Testing of full system using a battery load tester:

### Tractor Test:

1. Ground battery load tester on tractor chassis point (d)  
Hook up positive load tester cable on positive pole of single pole plug at end of tractor coil cord (a)  
Run load test- This will test entire circuit on tractor including ground from batteries to tractor chassis

### Trailer Test:

2. Ground battery load tester on trailer chassis (c)  
Hook up positive cable on positive pole of single pole plug receptacle on trailer (b)  
Run load test - This will test entire circuit on trailer including ground between trailer batteries and trailer chassis.

### Tractor and Trailer charging system Test

3. Ground battery load tester on tractor chassis (d)  
Hook up positive cable on positive pole of single pole plug receptacle on trailer (b)  
Run load test- This will test entire circuit on tractor - trailer including ground between tractor and trailer and circuit breaker on trailer.

A simple low amp voltage test at the front of the trailer or at the tractor will not show insufficient connections or ground problems

Does Fifth Wheel have a ground strap to the tractor chassis?

Make sure King Pin Plate is grounded to side rail.





## MAINTENANCE CHECKLIST

1. Operate the liftgate through entire cycle of operation. Check for noise and damage, such as bent parts or cracked welds.
2. Inspect all welds and fasteners that attach the mount frame to the truck. Inspect pins and bolts that connect the lift arm to the mount frame and to the platform.
3. Visually inspect the hydraulic lines for damage, scratches, bending or leakage.
4. Inspect the cylinders for leakage and that the cylinder pins are secured with lock bolts.
5. Check the oil level when the platform is down at ground level. The level should fall between the markings 5 and 7 on the tank. We recommend replacing oil after the first 1200 cycles, after that on a yearly basis in the fall before winter begins.
6. Check for oil leakage around the power pack and inside mount tube. Tighten or replace components if needed. If you perform work on any hydraulic components bleed the air out of the system by operating all functions several times.
7. Check all electrical connections. Clean and protect battery terminals and check for tightness.
8. Inspect all the terminals on the solenoid-operated valves at the port of the cylinder. Lubricate the terminals for better protection from oxidation if needed. Additionally, check the valve block on the back of the main tube and its connections.
9. Grease all zerks on the lift gate and make sure they take grease. Sometimes it helps to operate the lift gate while you do this. There are 18 zerks.
10. Test all the lift gate functions, if possible with maximum loads placed according to load diagrams.
11. Check the function of the pressure relief valve.
12. When performing daily checks, if you find any kind of damage that can make the use of the liftgate dangerous, it must be repaired before using. All repairs should be made by an authorized technician. Use only original spare parts. If in doubt contact your PALFINGER Liftgates distributor or call PALFINGER Liftgates directly.

**Report immediately all accidents or damage; it can be dangerous for you and your co-workers!**

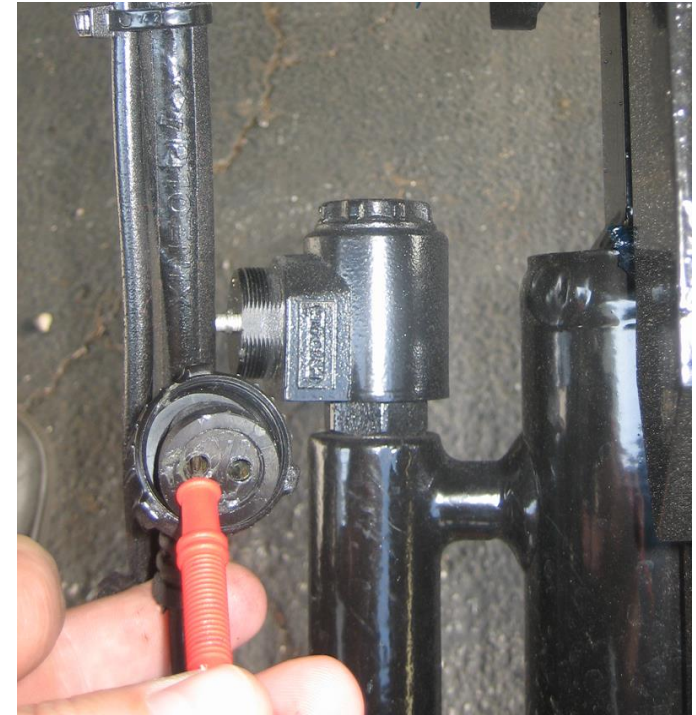
## Power Cable to Solenoid Coil Test

Check for broken power wire in solenoid cable:

- Unplug connector at valve.
- Set multimeter to read DC voltage.
- Put positive lead of multimeter in plug.
- Put negative lead of multimeter in other hole of plug.
- Activate down function on gate.
- Preferred reading should be 10V or higher.

Check for broken wire in solenoid cable:

- Set multimeter to OHM function.
- Place a test lead of the multimeter at each end of the wire.
- If there is resistance in the wire, then the continuity test is positive and will show a value on the multimeter.
- If the amount of resistance shows zero (0), then the wire is broken.



## Solenoid Coil Test

If one or both release valves on lift cylinders are not opening up, low voltage may be the cause. A *minimum* of **9V** is necessary to properly energize each of the solenoid coils.

If the minimum voltage is present at both coils, the coil may not be generating the magnetism needed to open the solenoid valve.

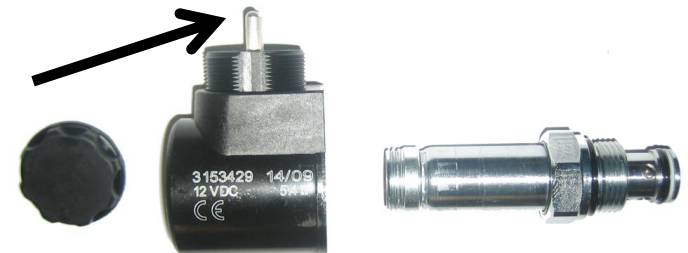
### How to check coils for resistance

Multimeter set OHM function.  
Place test leads on coil nodes.

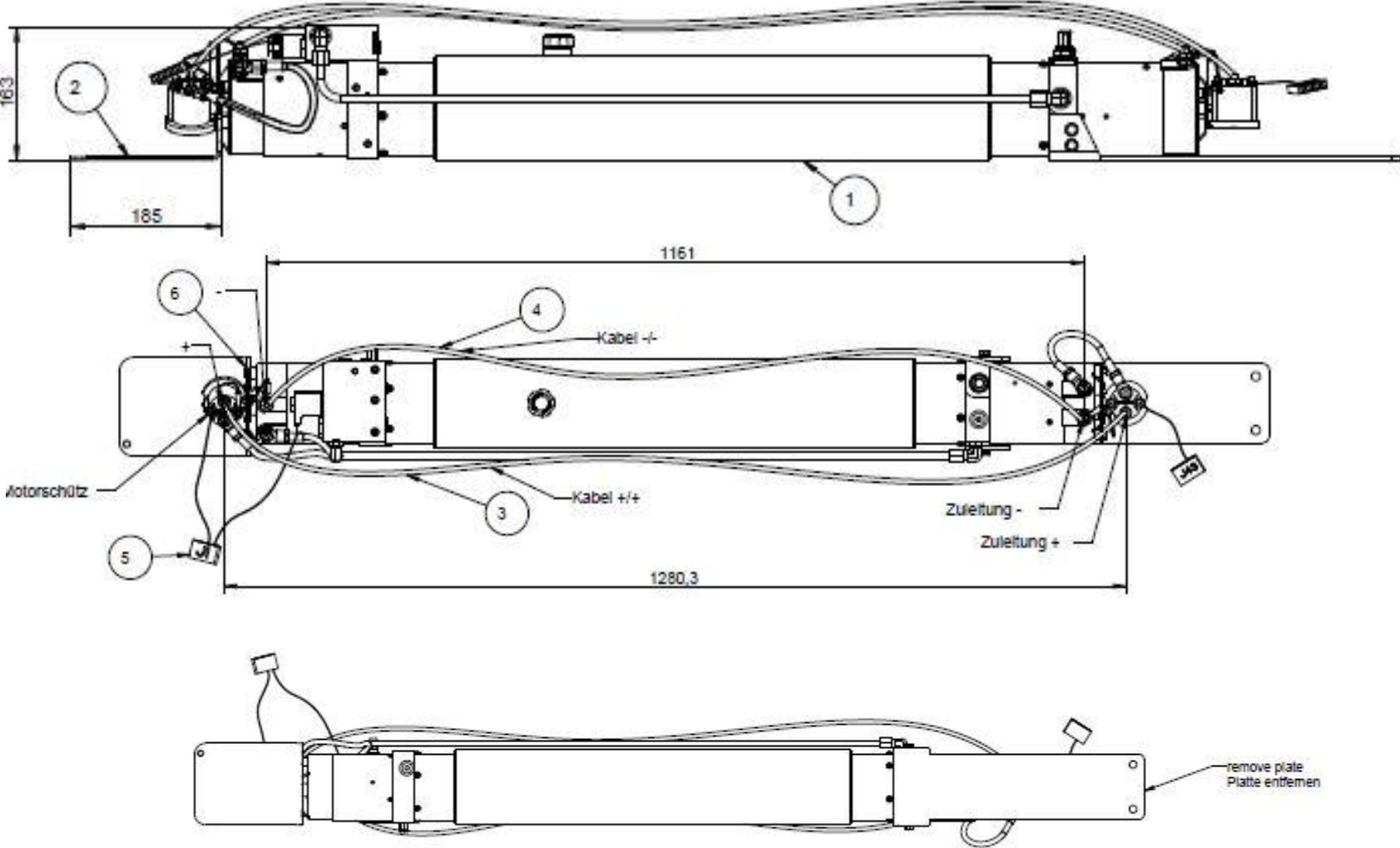
Reading shows 5.5 to 7.0  $\Omega$  → Coil is good

Reading shows 0  $\Omega$  → Coil is shorted out

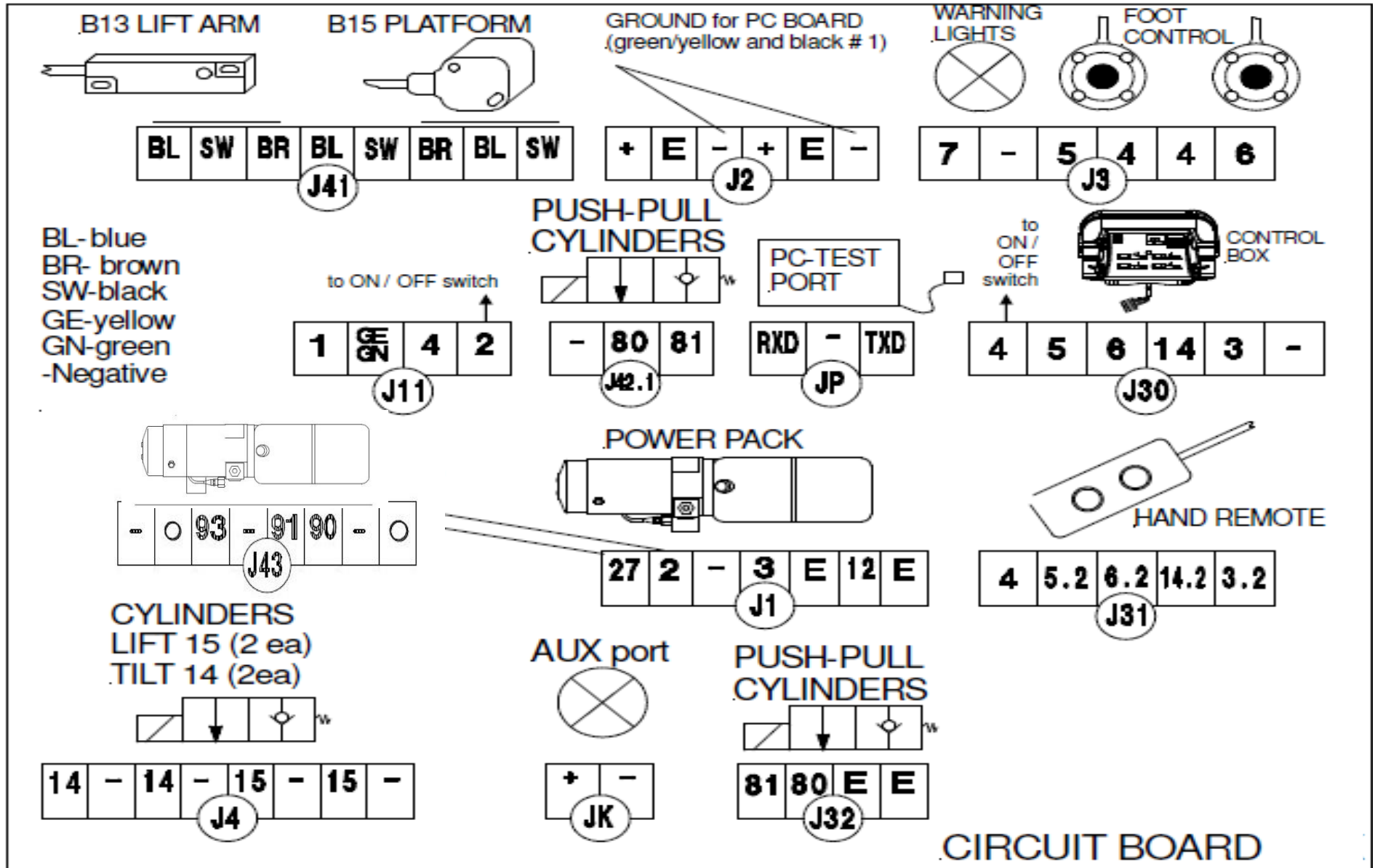
Reading shows Overload → Coil is destroyed by burn or physical damage



# ILU+ with dual motor

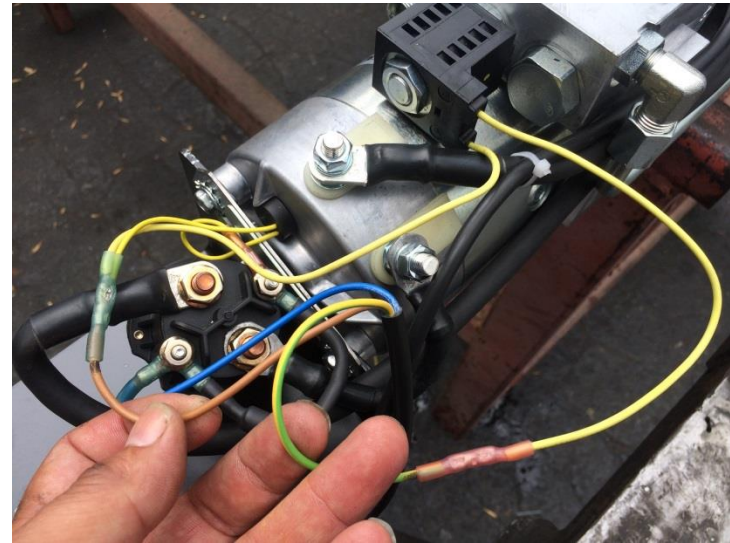
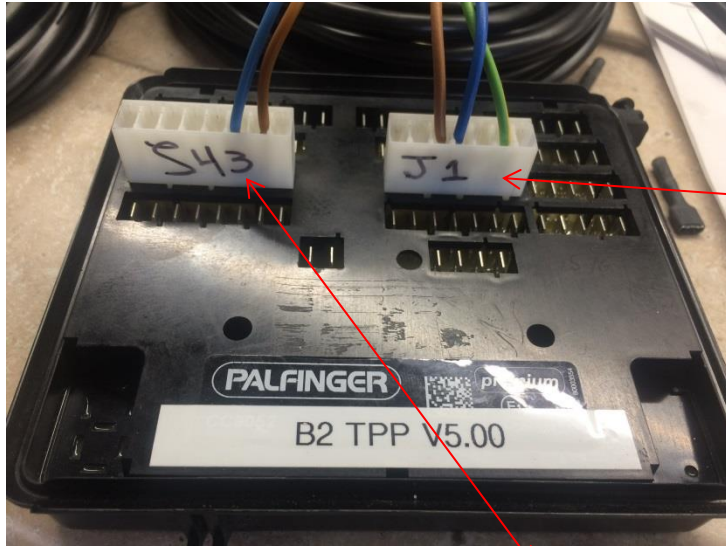


# ILU+ Board connections with dual motor

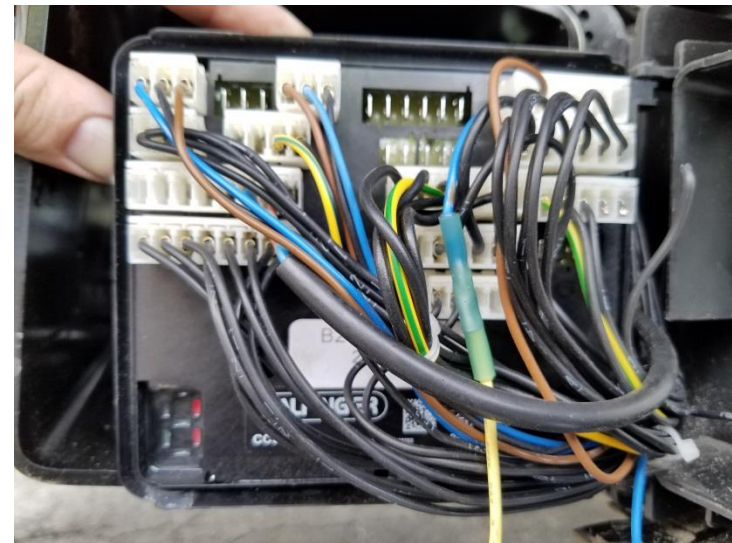


# ILU+ Board connections with dual motor

Curb side motor connects to J1 plug on board



Road side motor connects to J43 plug on board





## 1) GATE IS NOT LOWERING DOWN

ILU+  
Series

## 1.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back, if popped out.
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1)  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Check power on board between J-11 #4 and "Masse" with voltmeter by turning the lift up knob and hold for 10 sec with gate in stored position (DEADHEAD GATE)  
(above 10 Volt is necessary for proper use of lift gate) → less than 10V; → See e)
- Test for charged batteries and a solid working truck/trailer charging system
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

## 1.2) Gate is not lowering but lifting and sliding

- If liftgate has not been used and stored under the trailer and all other functions except for lowering are working the pins and bearings might be frozen. While activating the switches and lowering the gate, pry down the platform or place a load not to exceed the capacity of the gate on the platform.  
→ If the gate is now lowering, your pins are frozen and needs cleaning and lubrication

## 1.3) Check for short in optional equipment

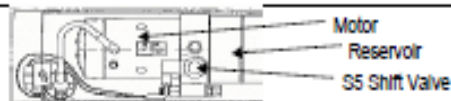
- Unplug J-3 (Lights and f/c), J-41(B-13 and B-15 Sensors, will loose tilt up)  
Keep the connectors unplugged (gate also operates without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back one at a time and check functions of gate after plugging in each

## 1.4) Check voltage supply to release valves on lift cylinder

- Check voltage between Ground JK #(-) and J4 #15 (release valves S1 & S2 at lift cylinders) and J1 #12 (Lock valve S11 and shift valve S5) while turning the lowering knob  
No voltage → check for bad knob or loose wire at control panel
- Listen for clicking of the release valves at the lift cylinders (inner cylinders)  
→ If valves are not clicking → check wire for damaged spots or loose connections

## 1.5) Gate is lowering down very slowly → S5 at pump not engaged

- Check Voltage at J1 #12 and Ground JK #(-) while turning knob to engage the shift valve at the pump and motor inside the main tube
- Override the shift valve by pushing down the center brass pin with small Phillips screwdriver while turning the down knob  
→ Gate will lower down → check the valve and look for damaged wire or loose connections



## 2) GATE DOES NOT SLIDE OUT

ILU+  
Series

## 2.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1),  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

## 2.2) Check for short in optional equipment

- Unplug J-3 (Lights and f/c), J-41(B-13 and B-15 Sensors, will loose tilt up)  
Keep the connectors unplugged (gate will operate without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back, one at a time and check functions of gate after plugging in each

## 2.3) Check voltage supply to release valve for push-pull cylinder

- Check voltage at J-32 #81 and J-42 #81 to Ground JK #(-) while turning the slide out knob for opening up the lock valve S8 for the P-P cylinder. No Voltage → check for bad knob or loose wire in control box
- Listen for clicking of the release valve for the P-P cylinders (at valve block on mount frame)  
- If valve is not clicking → check wire for damaged spots, loose connections or a bad valve

## 2.4) Check motor solenoid power

- Check voltage at J-1 #3 and Ground JK #(-) while turning knob to engage motor solenoid  
No voltage → board might be damaged
- Check voltage at small motor solenoid studs and Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check for voltage across the small motor solenoid studs with test light while turning knob  
See a light → power is reaching solenoid.
- Check for main power at the big solenoid studs, one has voltage; if not check connections to battery or popped tab at circuit breaker
- Check both big solenoid studs for voltage while turning the slide out knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
  - If motor runs → motor solenoid is bad
  - If motor does not run → Bad motor or bad ground (check for loose hanging cable on driver side)
  - Tap on motor → motor starts running – bad brushes

### 3) GATE IS NOT AUTO TILTING AT GROUND LEVEL



ILU+ Series

#### 3.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1),  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

#### 3.2) Check adjustment of auto-tilt sensor B-13

- Check the position of the B-13 Sensor on the inside of the passenger side lift arm  
→ Sensor has to be in a horizontal position when gate is 8"-10" above ground, wire pointing towards front of trailer/truck
- Check if the outer J41 Plug is loose (color sequence = blue, black, brown)

#### 3.3) Check function of control box or hand control

- Check voltage at J30 #4 to Ground JK #(-) for power supply of the control box
- Check voltage at J30 #6(lower) to Ground JK #(-) for lowering signal  
→ Signal on J30 #6 → control box is ok; if no signal check for damaged wire or loose connectors inside control box or damaged turn knob

#### 3.4) Check voltage supply to release valves on tilt cylinder

- Check voltage at J41 #(BLACK)(B-13) to Ground JK #(-) → always 12V
- Check voltage at J41 #(BLUE)(B-13) to Ground JK #(-) while platform is on ground → 12V  
→ No voltage on BLUE → Look for damaged spots or loose connection or B-13 is bad
- Check voltage at J4 #14 to Ground JK #(-) while turning the lowering knob when gate is on ground for opening up the release valves at the tilt cylinders for auto tilt
- Listen for clicking of the release valves at the tilt cylinder (outer cylinders)  
→ If valves are not clicking → check wire for damaged spots or loose connections
- Jump J-11 #2 to J4 #14 for about 8-10 min – if coils on tilt cylinders are cold, look for broken wire

### 4) GATE IS NOT TILTING UP AT GROUND



ILU+ Series

#### 4.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1),  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

#### 4.2) Check function of B-15 Sensor

- Check voltage at J41 #(BLACK)(B-15) to Ground JK #(-) → always 12V
- Check voltage at J41 #(BLUE)(B-15) to Ground JK #(-) while platform is on ground → 4.3V  
→ Less than 4 Volts, check position of B-15 sensor  
→ No voltage on BLUE → Look for damaged spots or loose connection or B-15 is bad  
→ Jump BLUE to BLACK → Gate tilts up at ground level, does not stop automatically

#### 4.3) Check motor solenoid power to run the motor

- Check voltage at J-1 #3 to Ground JK #(-) while turning lift knob to engage motor solenoid
- Check for voltage at one of the small motor solenoid studs and Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check for voltage across the small motor solenoid studs with test light while turning knob  
→ See a light → power is reaching solenoid.
- Check for main power at the big solenoid studs, one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the opening knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
  - If motor runs → motor solenoid is bad
  - If motor does not run → Bad motor or bad ground (check for loose wire, hanging on driver side)
  - Tap on motor → motor starts running – bad brushes

#### 4.4) Check function of shift valve S5 at pump & motor

- Check voltage at J1 #12 and Ground JK #(-) while turning knob to engage the shift valve S5 at the pump and Motor inside the main tube
- While turning the knob to make the motor run, override shift valve by pushing down the center brass pin with small Phillips screwdriver → Gate will tilt up,  
if not → check the valve

## 5) GATE IS NOT LIFTING UP

### 5.1) Check Battery Power



ILU+  
Series

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1),  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

### 5.2) Check function of control box

- Check voltage at J30 #4 to Ground JK #(-) for power supply of the control box
- Check voltage at J30 #5(lift) to Ground JK #(-) for lifting signal  
→ Signal on J30 #5 → control box is ok; if no signal check for damaged wire or loose connectors  
inside control box or damaged turn knob

### 5.3) Check for short in optional equipment

- Unplug J-3(Lights and foot control), J-41(B-13 and B-15 Sensors, loose tilt up) Keep the connectors unplugged (gate also operates without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back one at a time and check functions of gate after plugging in each.

### 5.4) Check motor solenoid power to run the motor

- Check for voltage at J-1 #3 to Ground JK #(-) to engage motor solenoid while turning lift knob
- Check for voltage at one of the small motor solenoid studs to Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check voltage across the small motor solenoid terminals (#3 and -) with test light while turning knob  
See a light → power is reaching solenoid
- Check for main power at the large solenoid studs one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the up knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
  - If motor runs → motor solenoid is bad
  - If motor does not run → Bad motor or bad ground (check for loose wire, hanging on driver side)
  - Tap on motor → motor starts running – bad brushes

### 5.5) Check voltage supply to release valves on lift cylinder

- Check voltage between Ground JK #(-) and J4 #15 (release valves S1 & S2 at lift cylinders) while turning the lifting knob  
No voltage → check for bad knob or loose wire at control panel
- Listen for clicking of the release valves at the lift cylinder (inner cylinders)  
→ If valves are not clicking → check wire for damaged spots or loose connections
- Jump L11 #2 to J4 #15 for about 8-10 min – if coils on lift cylinders are cold, look for broken wire

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## 6) GATE IS NOT SLIDE IN

### 6.1) Check Battery Power



ILU+  
Series

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.
- Check fuse on top of batteries (qty 1)  
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Start truck and run engine in fast idle for charging the battery  
→ if liftgate start working, recharge batteries → test batteries and truck charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter by turning the up-function knob and hold for 10 sec with gate in stored position (DEADHEAD GATE)  
(above 10 Volt is necessary for proper use of liftgate) → less than 10V → See f)
- Test for charged batteries and a solid working truck/trailer charging system

### 6.2) Check for short in optional equipment

- Unplug J-3 (Lights and foot control), J-41(B-13 and B-15 Sensors, loose tilt up)  
Keep the connectors unplugged (gate will operate without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back, one at a time and check functions of gate after plugging in each

### 6.3) Check function of control box

- Check voltage at J-32 #80 and J-42 #80 Ground JK #(-) while turning the slide in knob for opening up the lock valve S7 for the P-P cylinder. No Voltage → check for bad knob or loose wire in control box
- Listen for clicking of the lock valve for the P-P cylinders (at valve block on mount frame)  
- If valve is not clicking → check wire for damaged spots, loose connections or a bad valve

### 6.4) Check motor solenoid power to run the motor

- Check voltage at J-1 #3 and Ground JK #(-) to engage motor solenoid while turning lift knob
- Check voltage at one of the small motor solenoid studs and Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check voltage across the small motor solenoid terminals with test light while turning knob  
See a light → power is reaching solenoid
- Check main power at the large solenoid studs, one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the opening knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
  - If motor runs → motor solenoid is bad
  - If motor does not run → Bad motor or bad ground
  - Tap on motor → motor starts running – bad brushes

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