

INTERLIFT

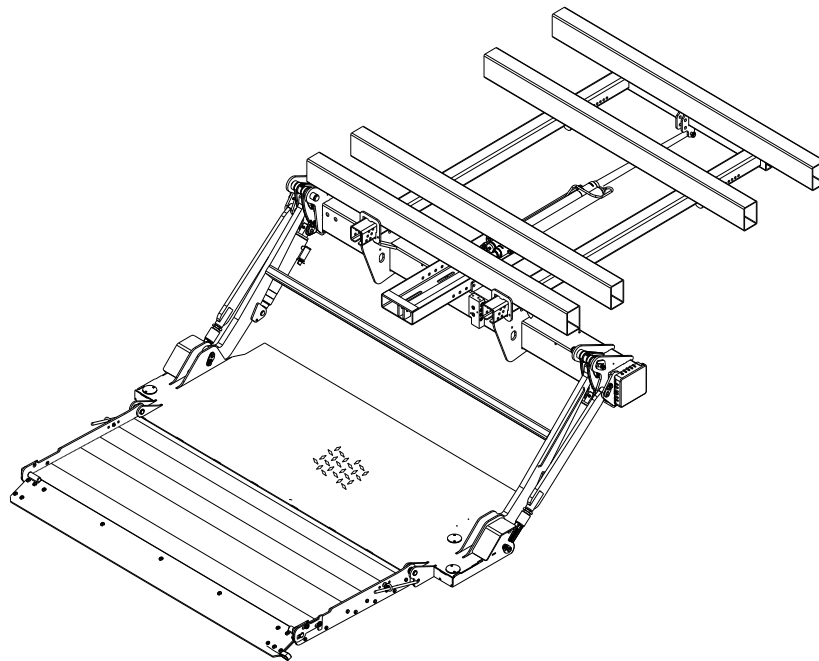


BY PALFINGER

INSTALLATION MANUAL & CHECK OFF SHEET

ILSL 30, 3000 lbs. Capacity

ILSL 40, 4000 lbs. Capacity



ILSL 30/40 Installation Manual
Document Part Number: 90-1614-001; 14-686_90-00_00-01
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If you received this product with damaged or missing parts,
contact INTERLIFT Liftgates at (888)-774-5844

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Company Information:

Company Name: _____

Advisor Name: _____

Trailer Year Make & Model: _____

Liftgate Information:

Liftgate Serial Number: _____

Liftgate Model Number: _____

Date of Purchase: _____

Date of Installation: _____

Manual Updates

Revision	Description
v1.4	<ul style="list-style-type: none">• Changed logos, from Palfinger to Interlift
V1.5	<ul style="list-style-type: none">• Added QR code decal.• Changed hole diameter, Section 7.7

1 Safety Information

This manual follows the Guidelines set forth in “ANSI Z535.4-2007” for alerting you to possible hazards and their potential severity.

DANGER

! DANGER indicates an imminently hazardous situation which, if not avoided, **will result** in death or serious injury.

WARNING

! WARNING indicates potentially hazardous situation which, if not avoided, **could result** in death or serious injury.

CAUTION

! CAUTION indicates a potentially hazardous situation which, if not avoided, **may result** in minor or moderate injury.

CAUTION

CAUTION without the safety alert symbol is used to address practices not related to personal injury.

(In this manual it is used to alert the user to potentially hazardous situation which, if not avoided, may result in property damage.)

NOTICE

NOTICE without the safety alert symbol is used to address practices not related to personal injury. *(In this manual it is to alert you to special instructions, steps, or procedures.)*

2 Important Information

Before Getting Started

“READ FIRST”

NOTICE

The ILSL liftgate is a heavy duty industrial hydraulic lifting device. Performance and reliability are closely related to proper installation, battery cable connections, and grounding. All grounding surfaces **MUST** be cleaned, prepped, and sealed per this manual. “Cut to size” cables **MUST** be properly crimped and sealed as factory supplied. All connections **MUST** be dressed with dielectric grease or equivalent sealer.

- Review lift gate invoice, packing slip, and installation drawing to assure delivery of correct gate and complete delivery of accessories and optional equipment.
- Read and understand the “Installation Manual” and “Owner’s Manual” in their entirety before starting your Installation.
- This manual is for installing an ILSL gate on a trailer with steel cross-members.
- Refer to your truck manufacturer’s instructions before adding any auxiliary equipment. Installer is responsible for compliance with this manual, OEM and FMVSS requirements.
- All welding should be performed by qualified personnel per AWS standards.
- Always Ground closest to your welding point to prevent arcing through moving parts or electrical parts.
- Contact INTERLIFT Liftgates for Special Installations not covered in this Installation Manual.
- Do not paint cylinder shafts or nylon bearings (Use non-chlorinated brake cleaner to remove over spray)
- Final Check-Off-Sheet at rear of this manual MUST be filled out and kept in your records for future reference.
- Refer to owner’s manual for Operation and Maintenance information.
- Check the battery voltage before installation. Flooded lead acid batteries should measure 12.6V and AGM batteries should measure 12.8V. If batteries are not at these voltages, fully charge before installation

⚠ WARNING

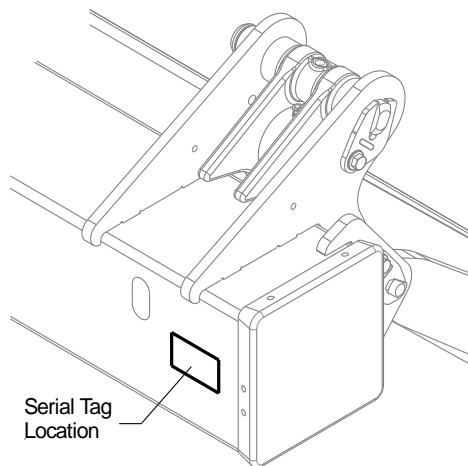
Improper operation of this liftgate may result in severe personal injury or death. **DO NOT** operate unless you have been properly instructed, have read and are familiar with the procedures in this manual. This manual has been designed to illustrate the steps needed for the basic installation of the ILSL liftgate. It also provides safety information and simple preventive maintenance tips.

This manual is not intended for use as a repair or troubleshooting guide. Repairs should be performed by a INTERLIFT Liftgates Authorized Service Center.

NOTICE

This manual has been designed for use in conjunction with the ILSL series liftgates only which is designed for different capacities. There are four options to determine the model and serial number of the installed liftgate:

- 1) Refer to the serial number tag on the liftgate (Top of Mount Frame).



Left Side of Mount Frame

PALFINGER		<input type="checkbox"/>
ILSL ML686-VL-A 0123456789		

OR

PALFINGER		
(888) 774-5844		Cerritos, CA. Trenton, N.J.
Model	Serial No.	Date
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 2) Ask your employer or lessor;
- 3) Call your INTERLIFT Liftgates Authorized Service Center for assistance.
- 4) Call INTERLIFT Liftgates for assistance in the USA at 888-774-5844. You can also contact INTERLIFT Liftgates by fax (562) 924-8318 or on the internet at www.palfinger.com

For technical support, contact INTERLIFT Liftgates or an authorized INTERLIFT service center. www.palfinger.com

NOTICE

2.1 Important Dimensions

Minimum Bed Height dimensions are ALWAYS MAXIMUM LOADED TRUCK.

Maximum Bed Height dimensions are ALWAYS DRY UNLOADED TRUCK.

- Installing a gate at or close to minimum bed height normally results in a gate that will NOT open and close from stored position if the minimum floor height is exceeded when truck is loaded.
- Ensure trailer body does not interfere with installation or operation of the ILSL liftgate series.
- It is not recommended to cut, torch, or remove support materials from trailer. Removing gussets, stiffeners, light rings, or other such support structures may VOID your trailer warranty.
- Call technical support before starting the installation if any questions or concerns arise on mounting dimensions or procedures.

2.2 Mounting Notes:



Read and clearly understand manual BEFORE beginning ANY work.

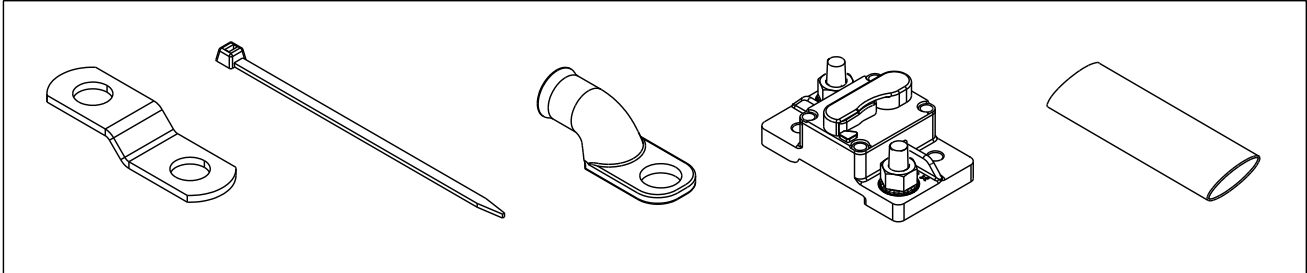
The basic rule of INTERLIFT Liftgates's ILSL installation is to lift the mount frame to achieve MAXIMUM ground clearance WITHOUT exceeding Min "F" dimension.

2.3 Recommended Tools for Installation

Metric Wrench Set	Basic Screwdrivers	Pliers	Wire Crimp Pliers
Digital Multimeter	Snap Ring Pliers	Hammer	Metric Allen Set 1.5mm-10mm
½" Impact & Sockets	Sm. Metric Socket Set	Assorted Drill Bits	Floor Jack or Equiv.
Sm. To Med. Bottle Jack	Forklift or O/H Crane	Hand Held Grinder	Paint Gun
Pry Bar	3/8 Drill Motor	Grease Gun	Heat Gun or Equiv.
Min. 250 Amp Welder	Cutting Torch or Equiv.	Measuring Tape	

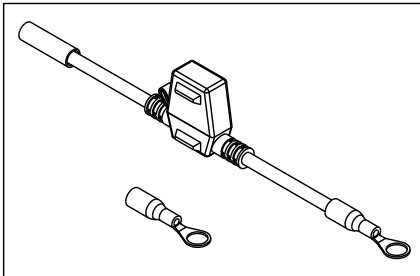
2.4 Components for Installation

Installation for each item can be found throughout this installation manual.



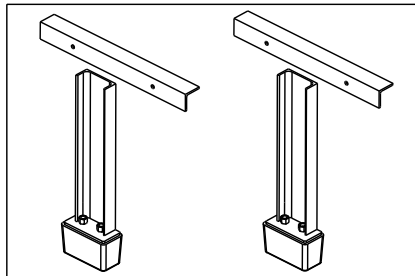
Circuit Breaker Kit: 70-8015-016

KET06537A; Bus Bar, Offset, 1 pc
 EZ7105; Zip Tie, 8" L, 15 pcs
 EEA12286; Lug, Compression, 2GA, 3/8", 1 pc
 70-8115-002; Circuit Breaker, 150A, 1 pc
 70-8113-501, Heat Shrink, ø5/8"x2.50", 1 pc



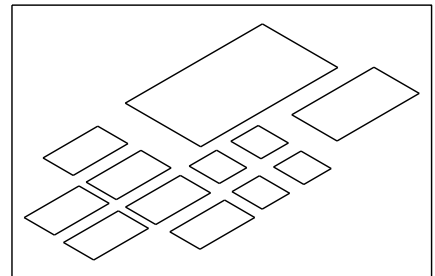
In-Line Fuse, 20A

P-1359348; Fuse Holder, w/20A Fuse; 1 pc
 EEA15618; Ring Terminal, 3/8"; 1 pc



Platform Upstop Kit: 60-1211-400

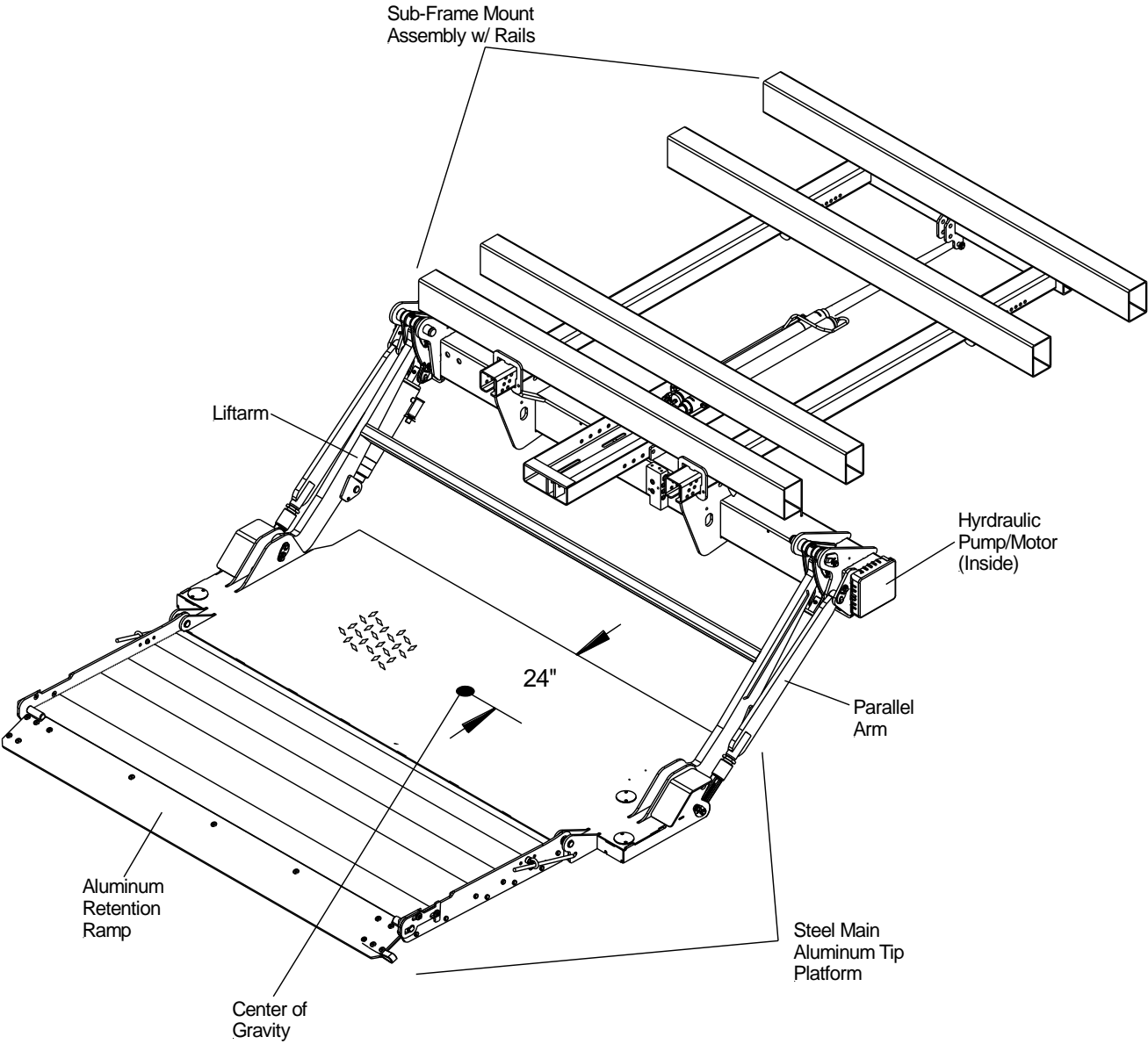
Upstop Assy Kit; 2 Kits



Decal Base Kit: 85-8815-005

Decal Base Kit; 12 pcs

2.5 Overview of ILSL Liftgate



3 Chassis Dimension Sheet

PALFINGER

Trailer Chassis Dimension Sheet - Side Loader

Customer Information

Quote#/SO#: _____ Name & Phone: _____

Company: _____ Email: _____

Trailer Information

Trailer Specifications:	Type of Body (check applicable) <input checked="" type="checkbox"/>	Type of Rear Door (check applicable) <input checked="" type="checkbox"/>
Manufacturer: (ex. Utility)	Van	Flip-Up
GVWR: (ex. 68,000 lbs)	Flatbed	Roll-Up
Length: (ex. 53ft)	Reefer	Swing
Width: (96", 102")	Other (specify) _____	Other (specify) _____

Trailer Dimensions

A = Bedheight: Top of trailer floor to level ground (with airbags up): _____

B = Top of floor to bottom of trailer crossmember: _____ Crossmember Mat'l = Steel or Alum.?

C = Clearance area required (90" Minimum): _____

D = Door to battery box (if equipped): _____

E = Door to gas tank (if equipped): _____

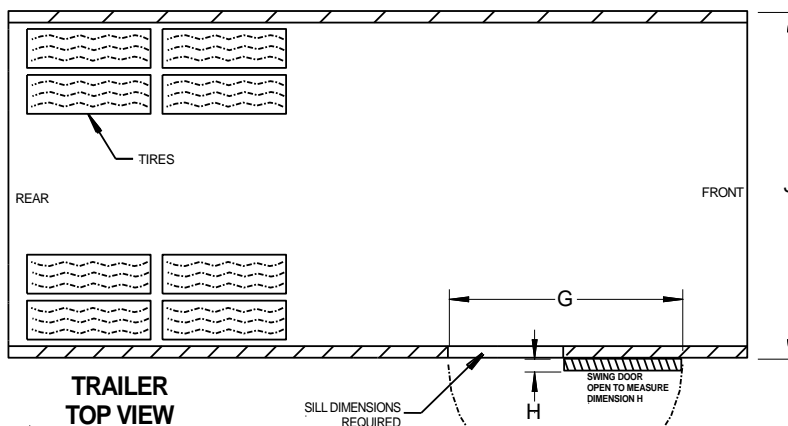
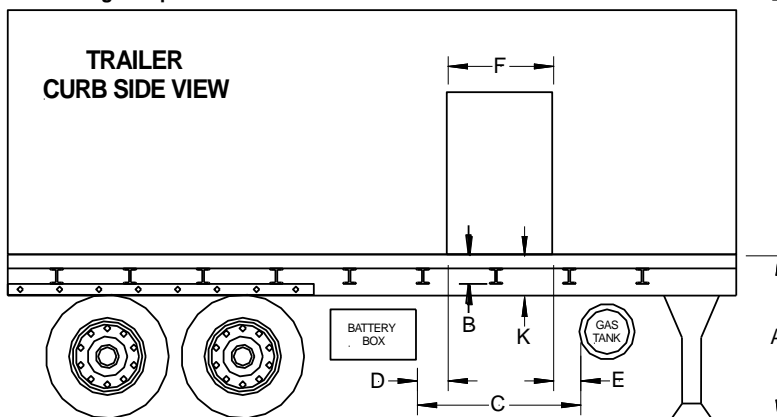
F = Door opening width: _____ Door Location = Driver Side or Curb Side?

G = Door opening to end of open door: _____

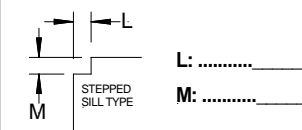
H = Door thickness measure from outside of trailer body: _____

J = Trailer width: _____

K = Side rail height: Top of trailer floor to bottom of side rail: _____

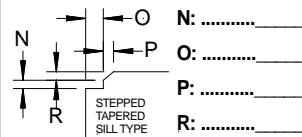


Sill Dimensions:



L: _____

M: _____



N: _____

O: _____

P: _____

R: _____

If the above sill types do not apply to the vehicle, sketch sill profile and dimensions in notes section below.

NOTES:

If trailer is equipped with additional equipment, between the front of the trailer and the tires, other than what is shown here, provide a description and dimension between each component.

90-9813-005_C

4 Minimum Requirement Dimensions

NOTICE

**Minimum Bed Height dimensions are ALWAYS MAXIMUM LOADED TRUCK/TRAILER.
Maximum Bed Height dimensions are ALWAYS DRY UNLOADED TRUCK/TRAILER.**

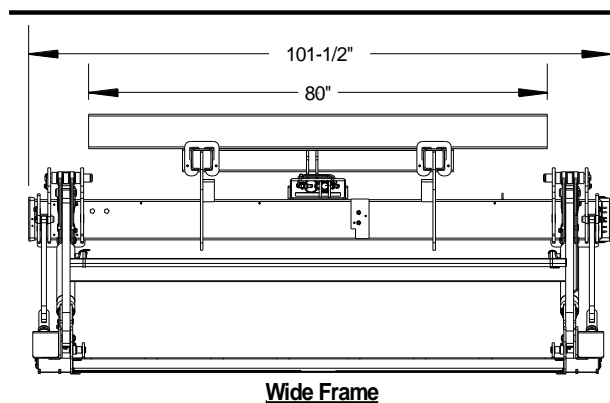
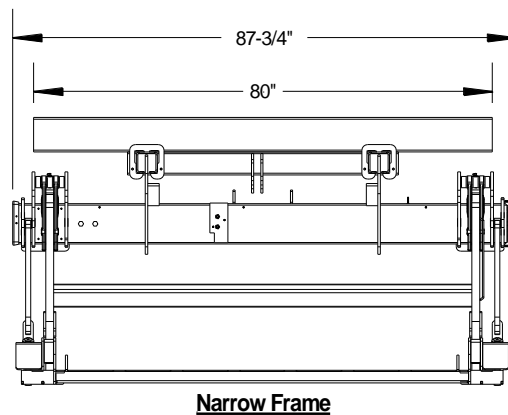
Ensure vehicle body does not interfere with installation or operation of the ILSL liftgate series.

It is not recommended to cut, torch, or remove support materials from trailer. Removing gussets, stiffeners, light rings, or other such support structures may VOID your trailer warranty.

Minimum clearance required for a ILSL liftgate to install on a vehicle depends on liftgate model and platform size. Gas tanks, boxes, air tanks, etc. must provide enough clear space centered to the sides of the door. **It is highly recommended to have additional clearances on both sides for maintenance purposes.**

Minimum Width Clearance Requirements

Model	Liftarm	56"x49"+5 Platform	36"x72"+5 Platform	70"x72"+7 Platform	Vehicle Bedheight
ILSL 30 (Wide Frame)	1000mm	105"	105"	105"	48" - 56"
ILSL 40 (Wide Frame)	1000mm	105"	105"	105"	48" - 56"
ILSL 30 (Narrow Frame)	1000mm	90"	90"	90"	48" - 56"
ILSL 40 (Narrow Frame)	1000mm	90"	90"	90"	48" - 56"



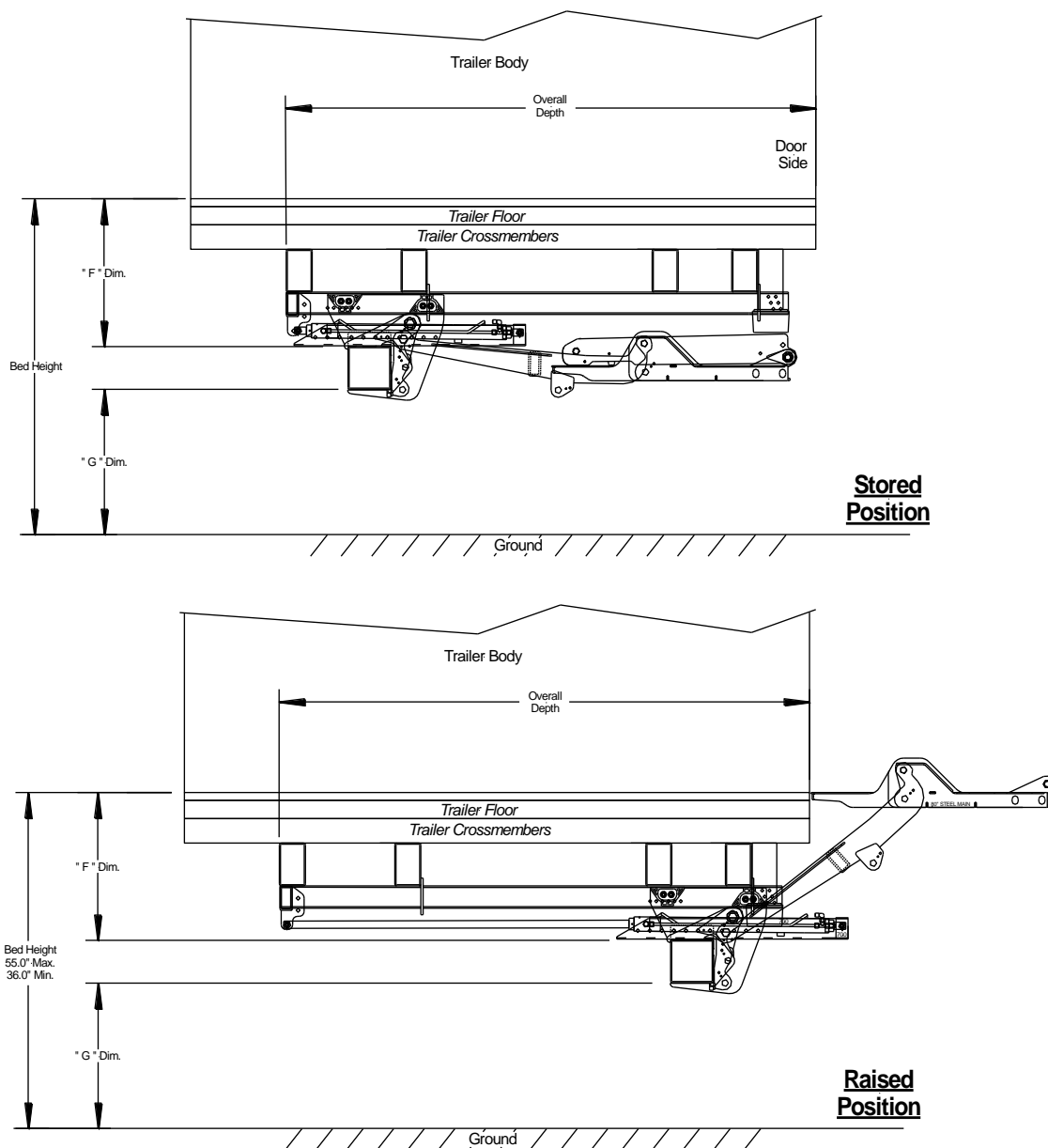
5 Reference Documentation

5.1 Installation Drawing

Installation Dimension sheets are provided with each ILSL liftgate, as there are too many different setup combinations for a generic installation drawing. When ordering a liftgate, INTERLIFT Liftgates provides an installation drawing based upon the trailer dimension sheet provided by the installation company.

IMPORTANT:

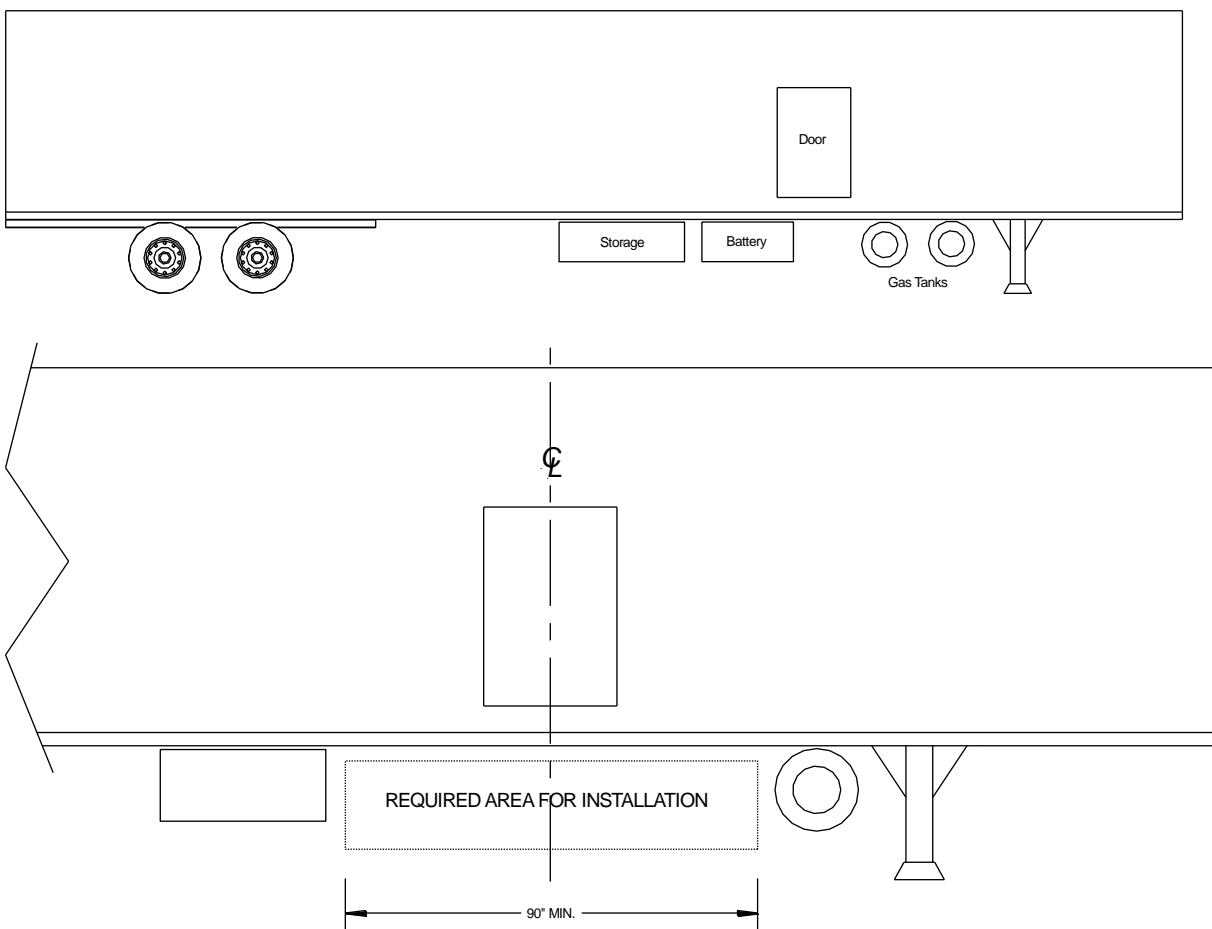
Prior to beginning the installation, review the installation drawing provided with your liftgate. Verify that the subject chassis matches all dimensions shown on the installation drawing prior to installing the liftgate. If the liftgate and/or trailer do not match the dimensions on the installation drawing notify INTERLIFT Liftgates before attempting to install the gate.



5.2 Trailer and Body Preparation

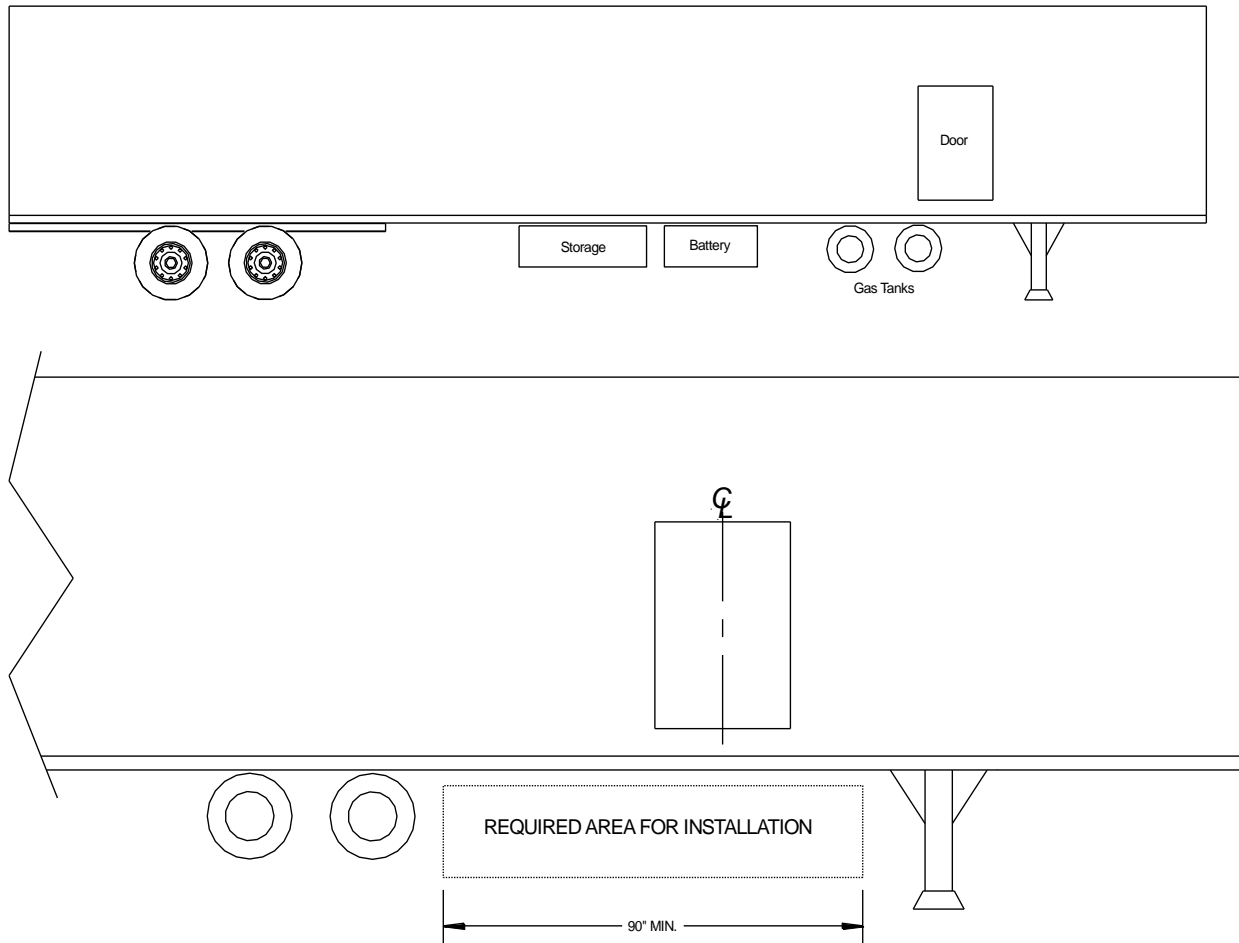
In order to install the ILSL liftgate a minimum space is required to be clear of any interference with the trailers OEM equipment. Most of this equipment can be relocated to a different area of the trailer. In some cases equipment is fixed and cannot be relocated due to regulatory requirements. When instances of fixed equipment arise, the installation will vary in terms of positioning of the liftgates platform and minor adjustments to the platform could be required.

1. The ILSL liftgate is designed to be installed in a position centered to the door opening. Prepare the trailer chassis for installation by clearing a minimum of 90" (7.5 ft.) centered to the door opening. If the trailer is equipped with gas tanks, battery boxes, storage boxes, etc., make sure to relocate any interfering equipment to a different area on the trailer. Modifications must be in accordance with the chassis manufactures recommendations.



Standard Installation Setup

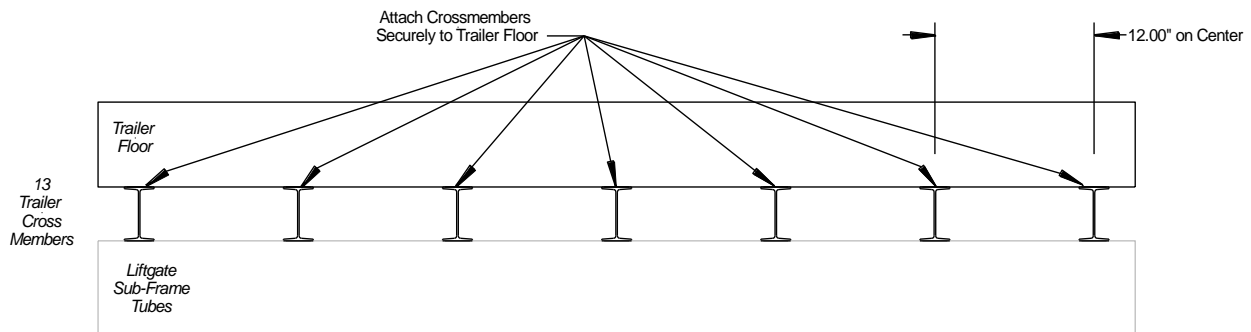
2. When the trailer is equipped with equipment that cannot be relocated, the required area for installation can no longer be centered to the door and will need to be “shifted” to one side of the door as shown below. Minor adjustments to the platform could be required in this case.



Reminder:

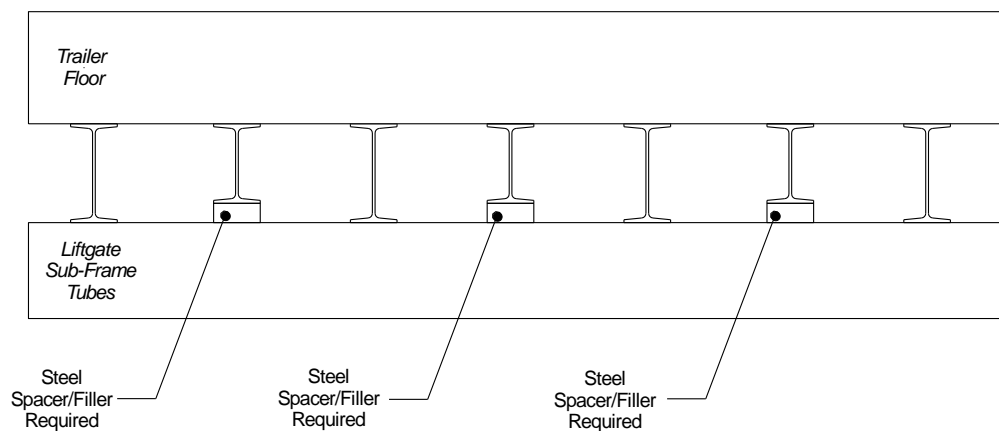
It is not recommended to cut, torch, or remove support materials from trailer. Removing gussets, stiffeners, light rings, or other such support structures may VOID your trailer warranty.

3. Recommended trailer construction is 12", on center, steel cross members secured to the trailer floor and side rails. This allows the liftgates sub-frame to intersect a minimum of seven (7) cross members for welding



Side View of Trailer

Some trailer designs have cross members which are not equal in height. Steel spacers/fillers will be required to be added to have a surface for the liftgates sub-frame tubes to weld on.



Side View of Trailer

4. Proceed to the Gate Installation (Section 6, pg 18.) after the trailer has been prepared for the liftgate installation.

6 Gate Installation

6.1 Installation

IMPORTANT!!!

- A proper preparation of the trailer is essential for a safe, effective and efficient installation process and assures proper function of the liftgate without damage to the trailer or liftgate.

WARNING

Never work under mount frame or platform without safety supports.

NOTICE

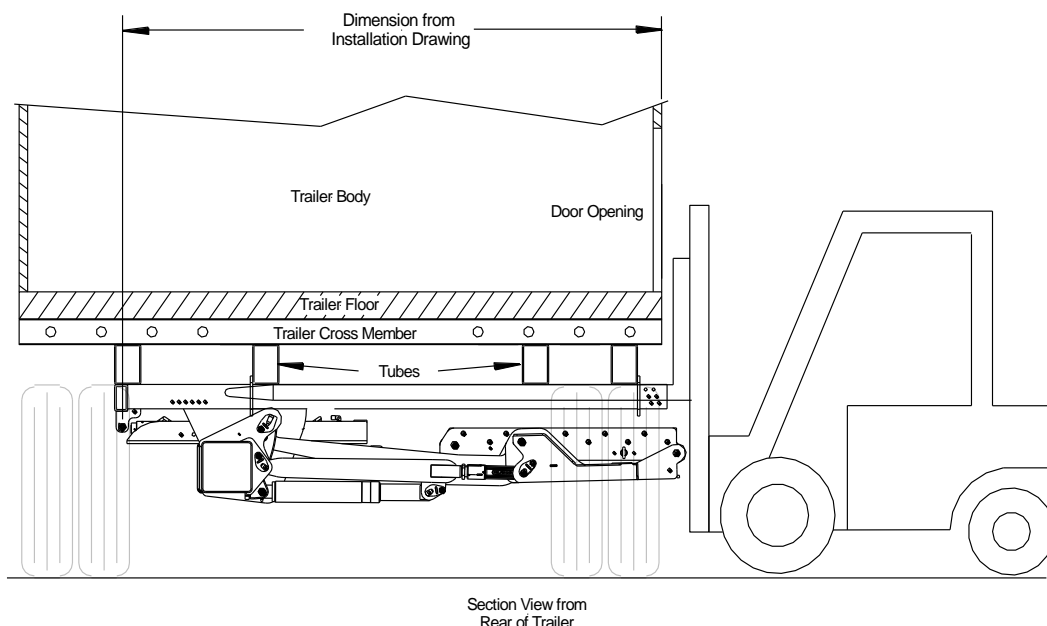
It is recommended to park the trailer on a flat leveled ground prior to beginning installation.

CAUTION

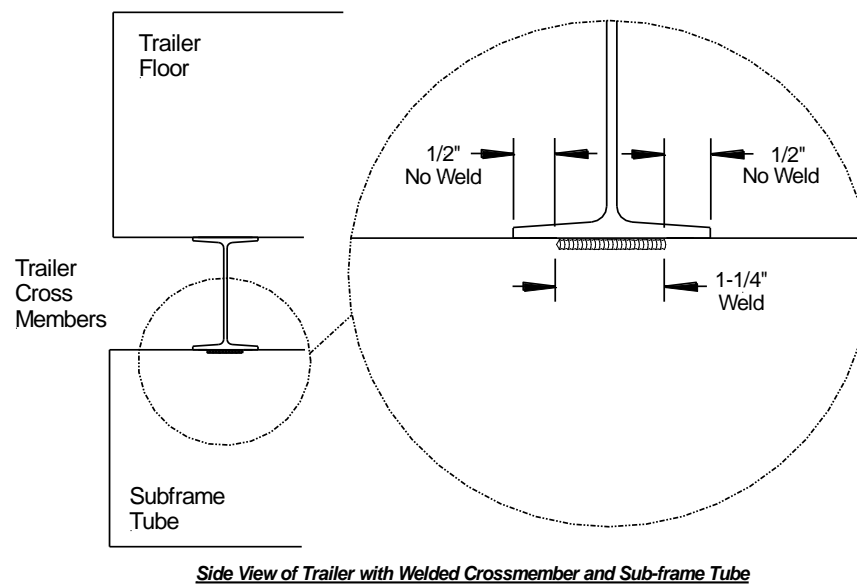
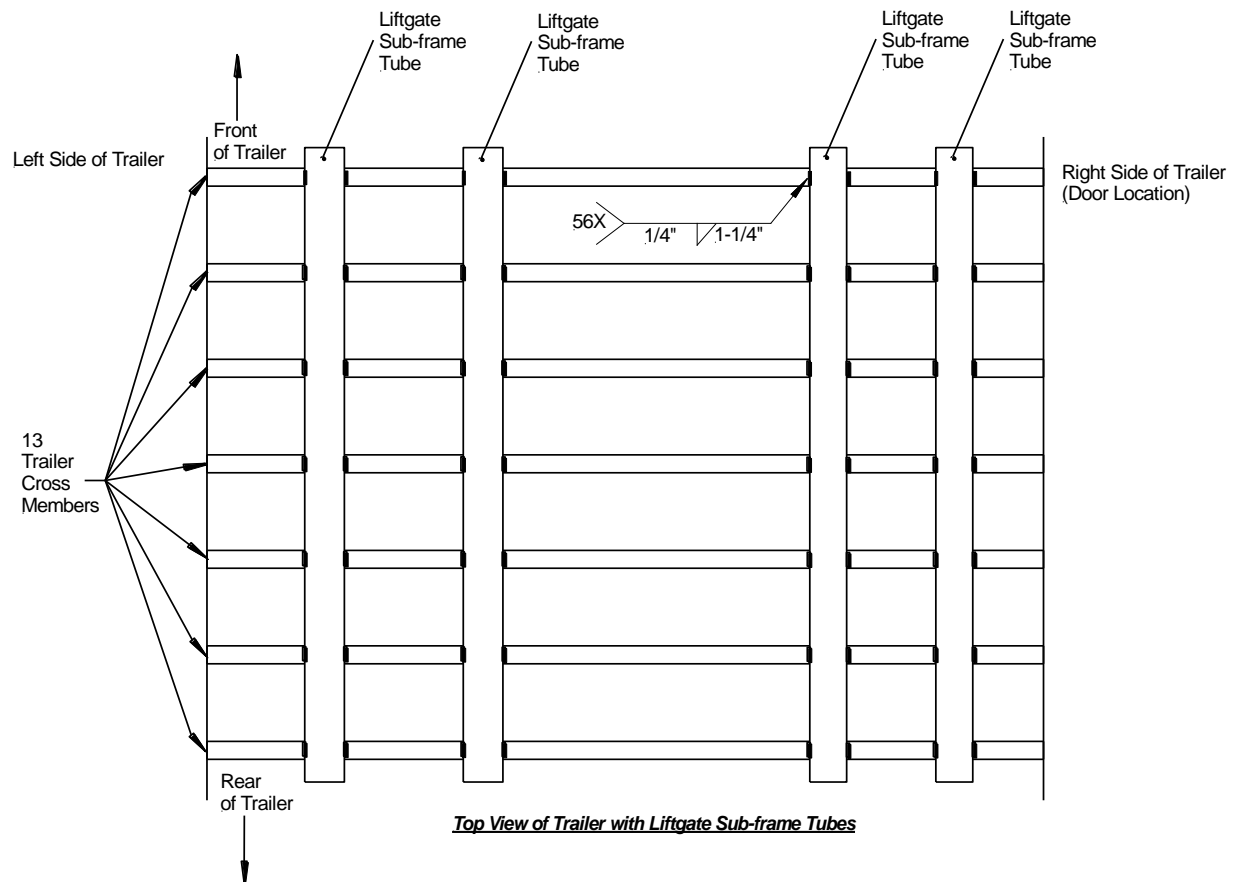
While lifting the gate into the mounting position make sure it does not contact chassis components such as frame cross members, wiring, fluid or air lines. Chassis component such as cross members may have to be modified or removed to accommodate the push-pull cylinders and bracket. Any modifications must be done in accordance with chassis manufacturer's recommendations.

1. Using the Installation Drawing provided by INTERLIFT Liftgates, refer to the drawing for critical dimensions. Use the dimensions from the Installation Drawing to position the gate.
NOTE: All dimensions shall be taken from the door side of the trailer.

2. After confirming dimensions, use a forklift or similar equipment to position the liftgate assembly underneath the trailer. Raise the forklift arms carefully until the sub-frame tubes of the liftgate meet the trailer cross members. Make sure no hoses or cables are wedged between the sub-frame tubes and cross members.

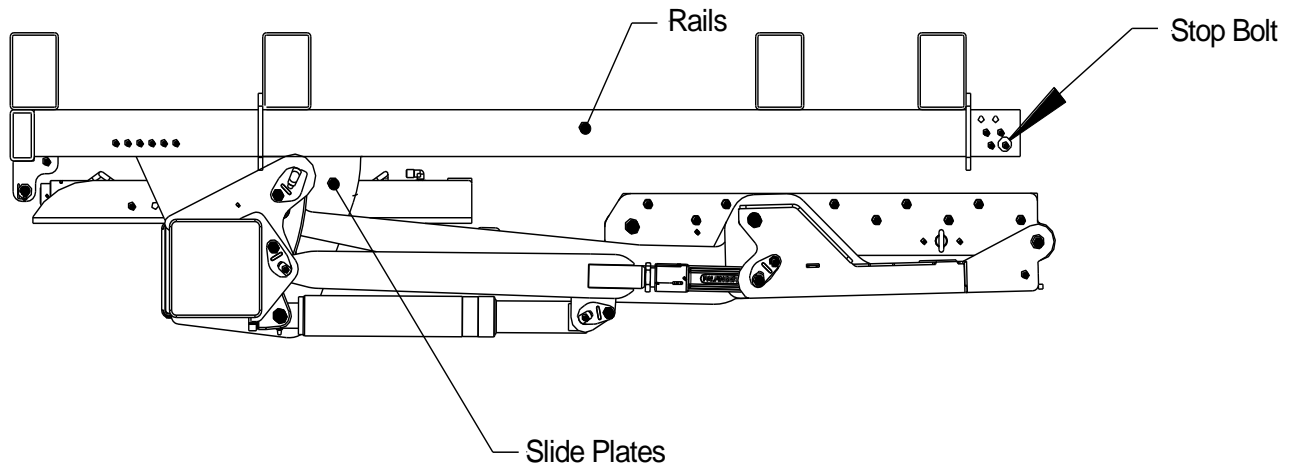


3. The four cross tubes on the liftgates sub-frame will be the welding points to weld the liftgates sub-frame to the trailers cross members. A minimum of 56 welds are required with 1-1/2" welds as shown below.

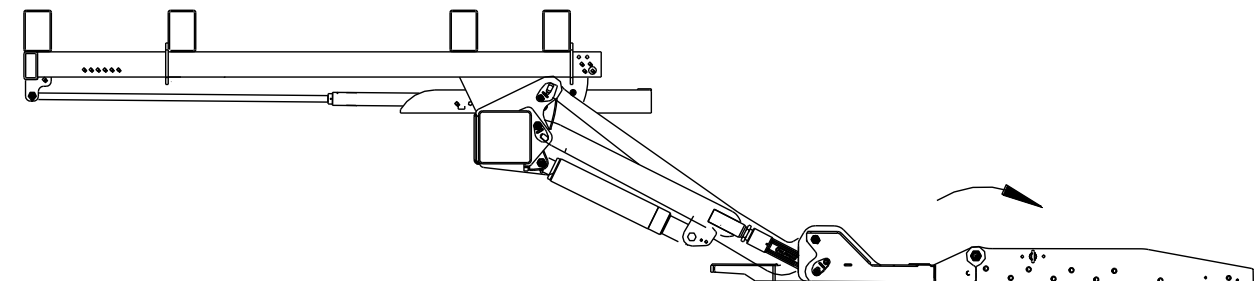
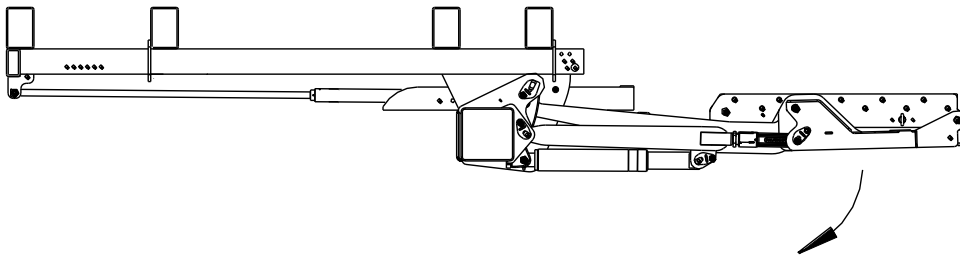


4. Continue to installing the Electrical Section of this installation manual. See Section 7, pg. 26.

5. After all electrical requirements have been installed, continue with the installation.
6. From stored position use the Slide Out switch on the control box. A stop bolt has been positioned in the front of the rail as a safety precaution to prevent the sliding plates from exiting the rails. The stop bolt will be adjusted later in the installation.

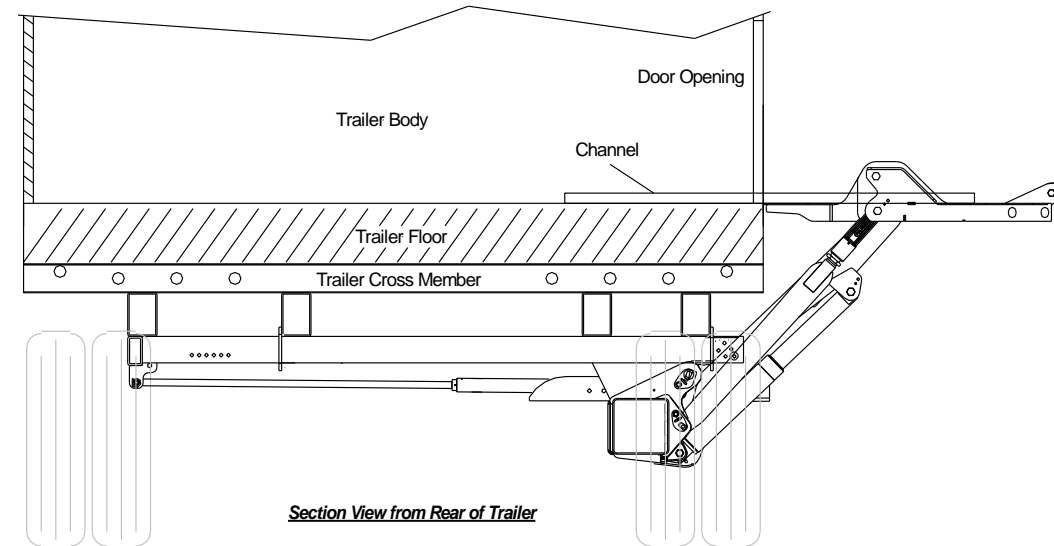


7. Slide out the entire gate until the sliding plates meet the stop bolt. Use the Lift Down turn knob on the control box to lower the platform to the ground. Unfold the platform tip manually. **Do not apply a load to the platform during installation.**

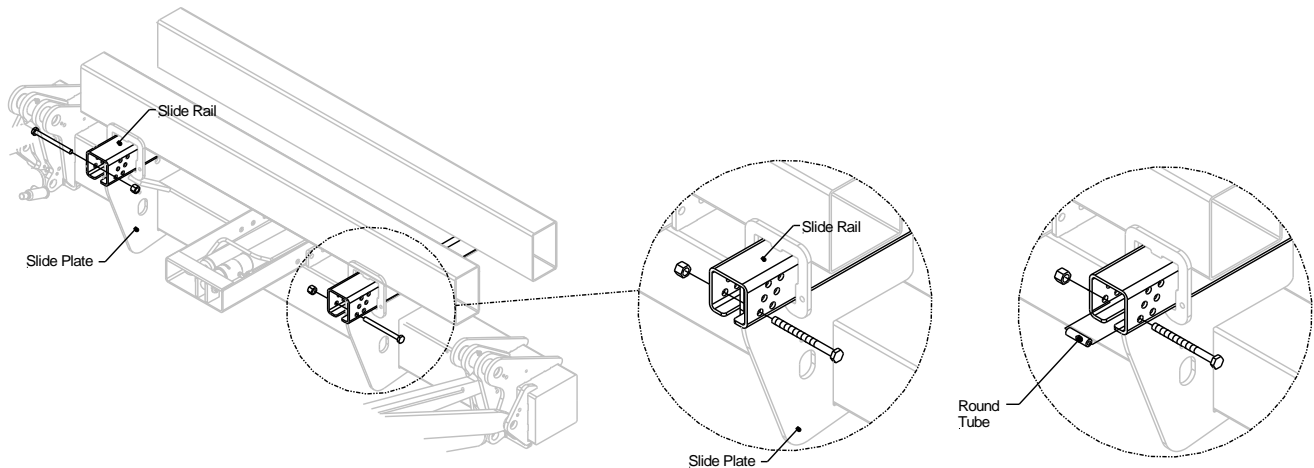


8. Place a piece of channel flush on the floor that extends out the door flush to the platform. Use the Lift Up turn switch on the control box until the platform meets the side of the trailers door opening. If initially, the platform does not align with the floor, use the Slide turn knob to slide the mount tube back slowly until the platform is flush with the vehicles floor. Make sure there is no interference with the vehicle body, doors, hoses, cables, liftarm, or other vehicle or liftgate components.

Never use the slide knob on a loaded platform.



9. With liftgate in the raised position and the platform flushed with the channel, remove the stop bolt and choose the hole that is closest to the sliding mount plate inside the slider rail. Install the bolt into one of the six holes and tie down. Both rails shall have the bolt in the same hole so the sliding plates stop at the same point. NOTE: If finer tuning is required, add a piece of round tube inside the rail to tighten the distance between the screw and slide plate.



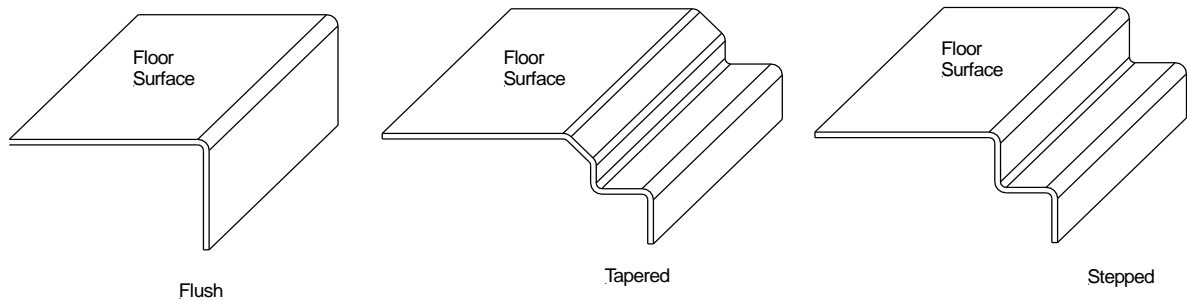
10. Cycle the gate a few times from storage to lift position and verifying the gate is operating without any issues or interference.

11. Finally, verify all bolts are fastened and all welds are 100%.

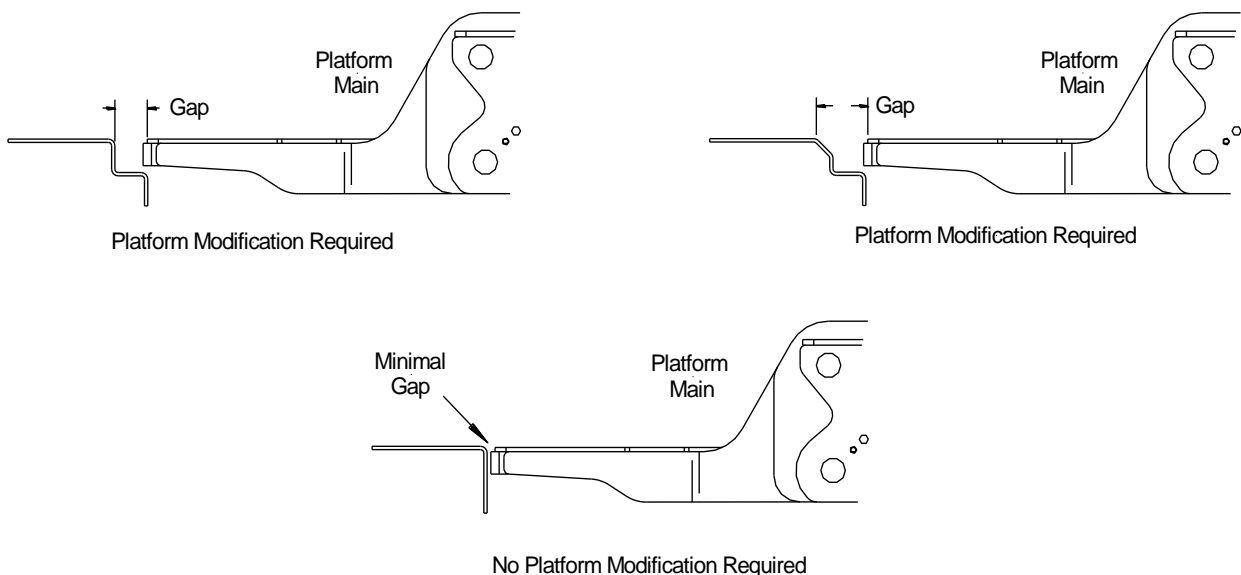
6.2 Installation (Custom)

A custom installation is when the liftgate needs to be “customized” to fit the design of the trailer. A few different factors contribute to a custom ILSL installation. OEM equipment, sill design, and door design are some of the main factors that contribute to a custom installation. Dimensions of these factors are to be recorded on the *Side Loader Dimension Sheet* seen in page 9 in this manual and provided to INTERLIFT Liftgates for better understanding of the trailer design. In return, INTERLIFT Liftgates utilizes this information to develop an installation drawing based on the recorded dimensions. The drawing shall be reviewed carefully and understood prior to beginning installation. Any issues or concerns should be addressed with INTERLIFT’s Technical Support Team.

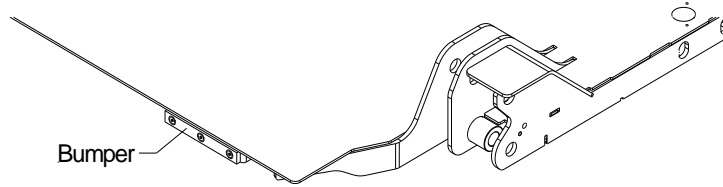
1. Verify the sill design. The sill design will be based on the type of trailer. Vans, reefers, and flatbeds will all have different sill designs. A ‘stepped’, ‘tapered’ and ‘flat’ are some of the more common sills in the industry, but other sill designs exist.



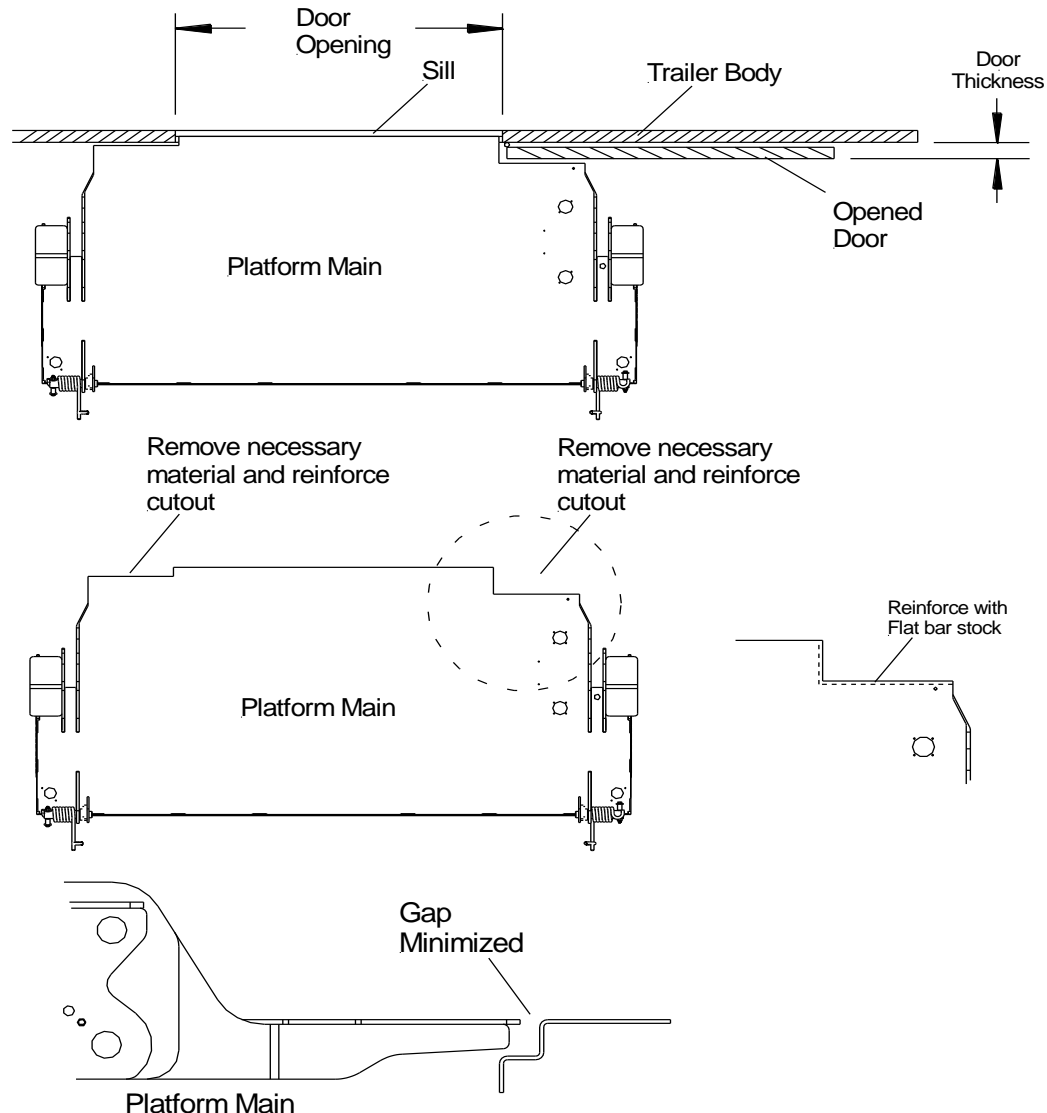
2. The liftgates platform is intended to provide a smooth ‘bridge’ between the sill (floor) and platform main without any large gaps that may cause rolling equipment to stop in the transition. Stepped and tapered sills tend to leave a gap between the standard platform and floor. In many occasions the gap can be completely closed if not minimized.



3. Uninstall the bumpers if necessary to make adjustments to the platform main.



4. To achieve gap minimization, either trimming or adding of material to the main section of the platform will be required. The sill and door designs will also dictate how much material will be trimmed in order to close the gap between the sill and the platform main. Measure the door thickness from the outside of the trailer to the outside of the open door, this amount measured must be trimmed off the platform in order to have the platform minimize the gap between the sill and platform. The opposite side (opposite to the door side) may also require to be trimmed. Each trim must be reinforced for strength.

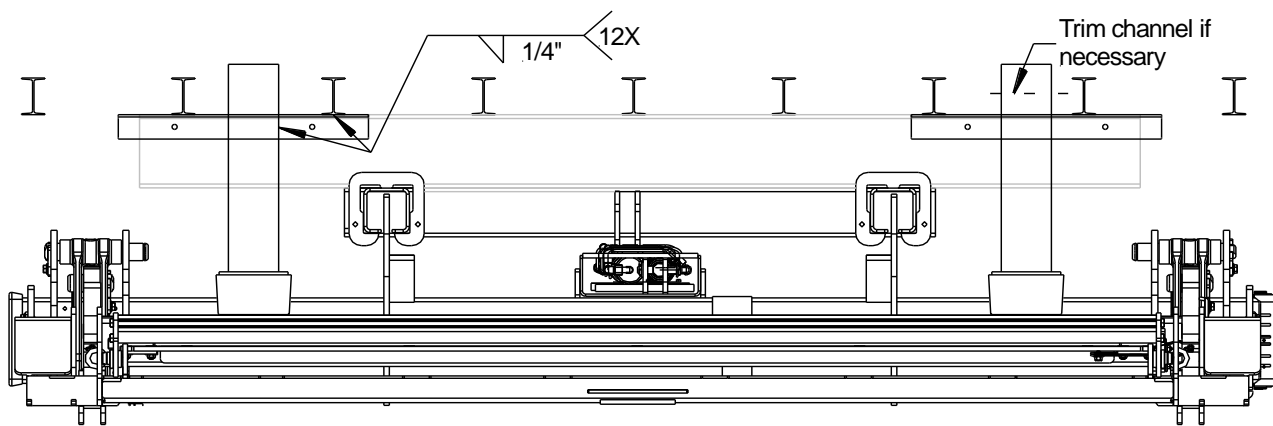


Top View of Platform Main with Cutouts

6.3 Platform Storage Up-Stops

NOTICE

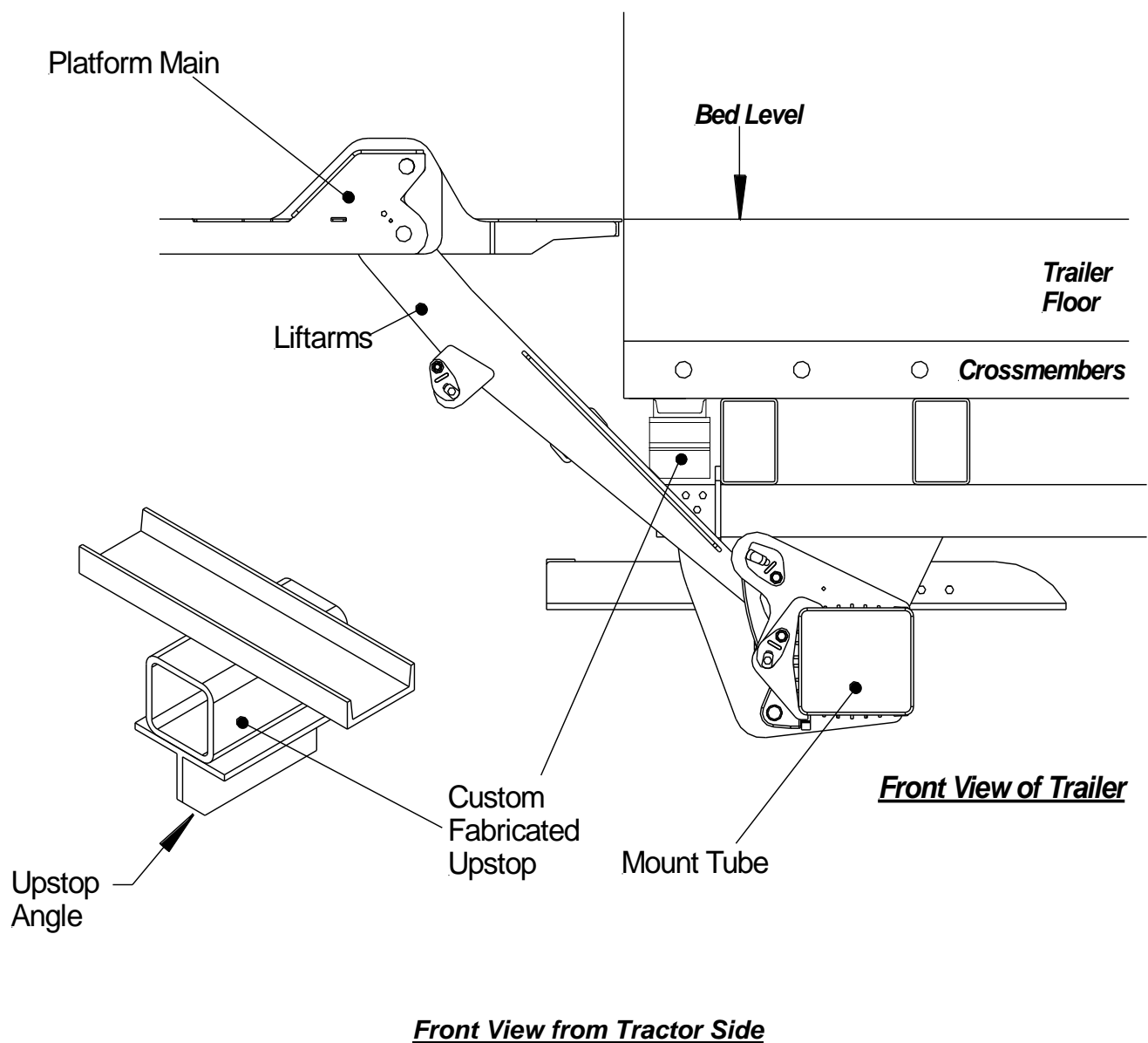
- Platform Storage Up-Stops **MUST** be installed to avoid damage to the platform when the vehicle is traveling.
- The up-stops must be mounted high enough and welded to the trailer cross members so that they do not interfere with the mainframe tube when sliding in and out.
- The up-stops must not be causing any inference with any parts of the liftgates.
- Trim the upstop channel if necessary to prevent interference with the floor.



6.4 Liftarm Up-Stops (Required)

NOTICE

- Liftarm up-stops are required on each liftarm to prevent damage to the vehicles body over time.
- The up stops must be mounted high enough so that they do not make contact with the mainframe tube but must stop the liftarms at the point where the platform will meet bed level.
- Due to a large variation between each liftgate installation, the up stop design will vary but are required to be fabricated by the installer. Below is an example of a custom fabricated up stop with a piece of square tube and two pieces of flat bar with a C-channel. The C-Channel must be welded to a minimum of three trailer cross members for best support.



7 Electrical Installation

⚠ WARNING

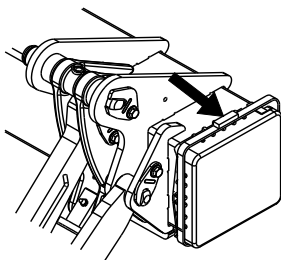
Any deviation from INTERLIFT's recommended power setup will void warranty and product liability unless you have a written confirmation by INTERLIFT that allows you to do specific changes.



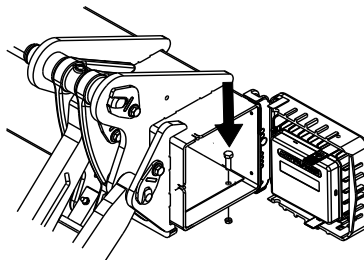
Inspect and test all electrical connections, wiring and the different functions to make sure that the electrical installation is complete.

NOTICE

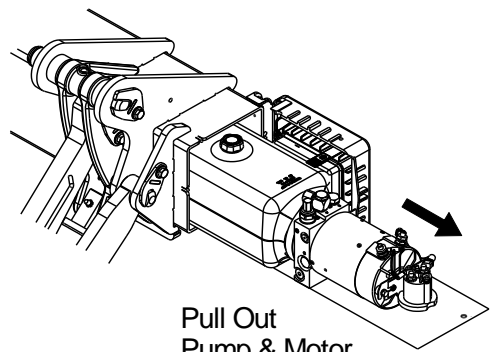
- It is the liftgate installer or incomplete vehicle builder responsibility to be certain all chassis ground systems are adequate for the job. Liftgates with single motor can pull 250 amps at full load, and liftgates with dual motors will pull 500 amps at full load. These requirements include liftgate charging systems and OEM chassis battery grounding. Failure to adequately ground the whole system can lead to burned electrical harness, metal braided hoses, and other vehicle components.
- Never exceed rating of existing fuses located at the battery, control board and/or the pump and motor which may result in serious damage to the equipment.
- Never jump the 150 Amp circuit breaker at the batteries unless otherwise instructed by the INTERLIFT Liftgates technical support group.
- Assure all connections are tight and securely sealed.
- Heat shrink all cable connection.
- Never secure a cable in a way where it can make contact with other wiring, brake, fuel, or air lines etc. or get pinched against other objects.
- 2 gauge cable, minimum, is required throughout the motor circuit.
- Insure that all wiring is secured and away from heat sources, sharp corners/edges, and abrasion from moving components during the operation of the liftgate and vehicle.
- Prior to starting electrical installation insure that the liftgate batteries are fully charged. 12.6V for Flooded Acid Batteries, and 12.8V for AGM Batteries. Charge batteries if necessary.
- Never exceed rating of existing fuses located at the battery, control board and/or the pump and motor which may result in serious damage to the equipment.



Metal Brace



Remove
Hardware

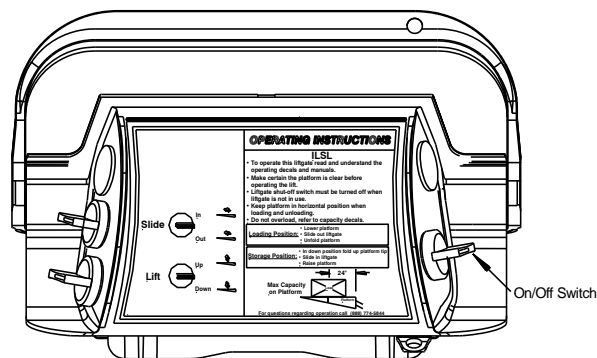
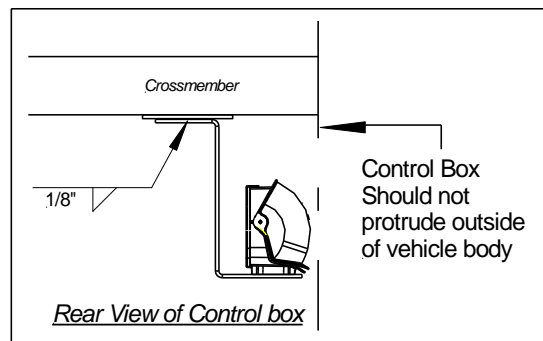
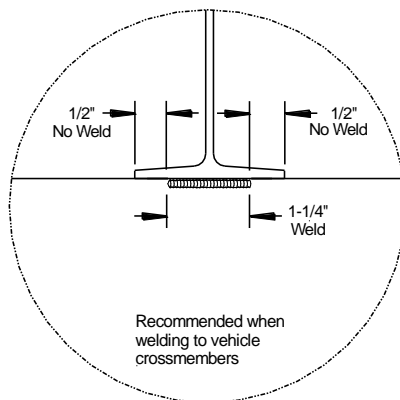
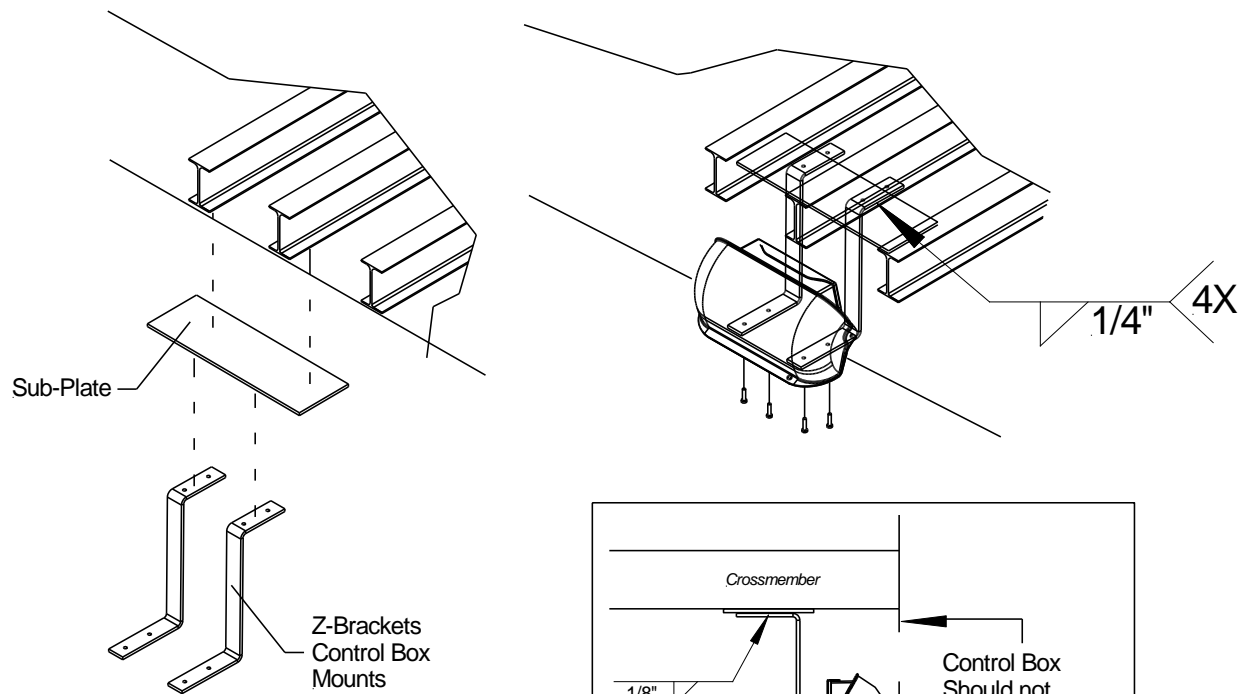


Pull Out
Pump & Motor

Pump and Motor Located Inside Mount Frame on the Right Side.

7.1 Control Box – ON/OFF Switch

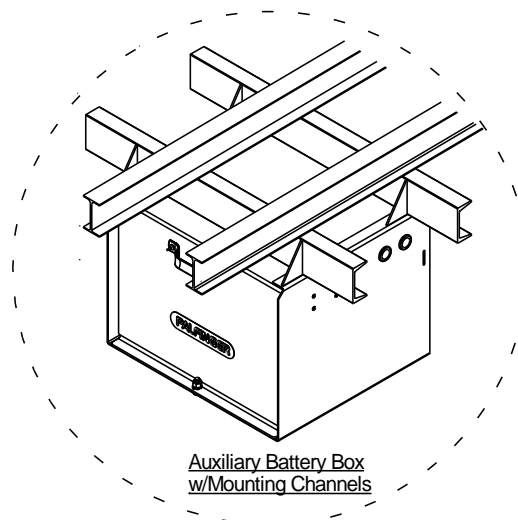
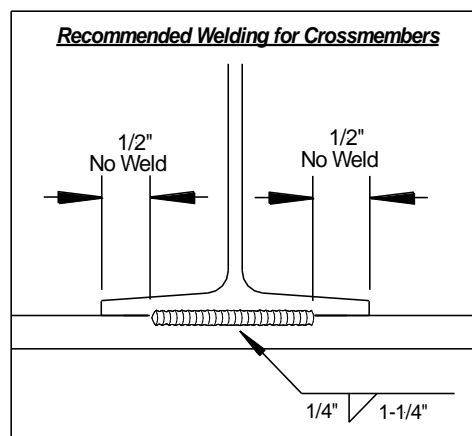
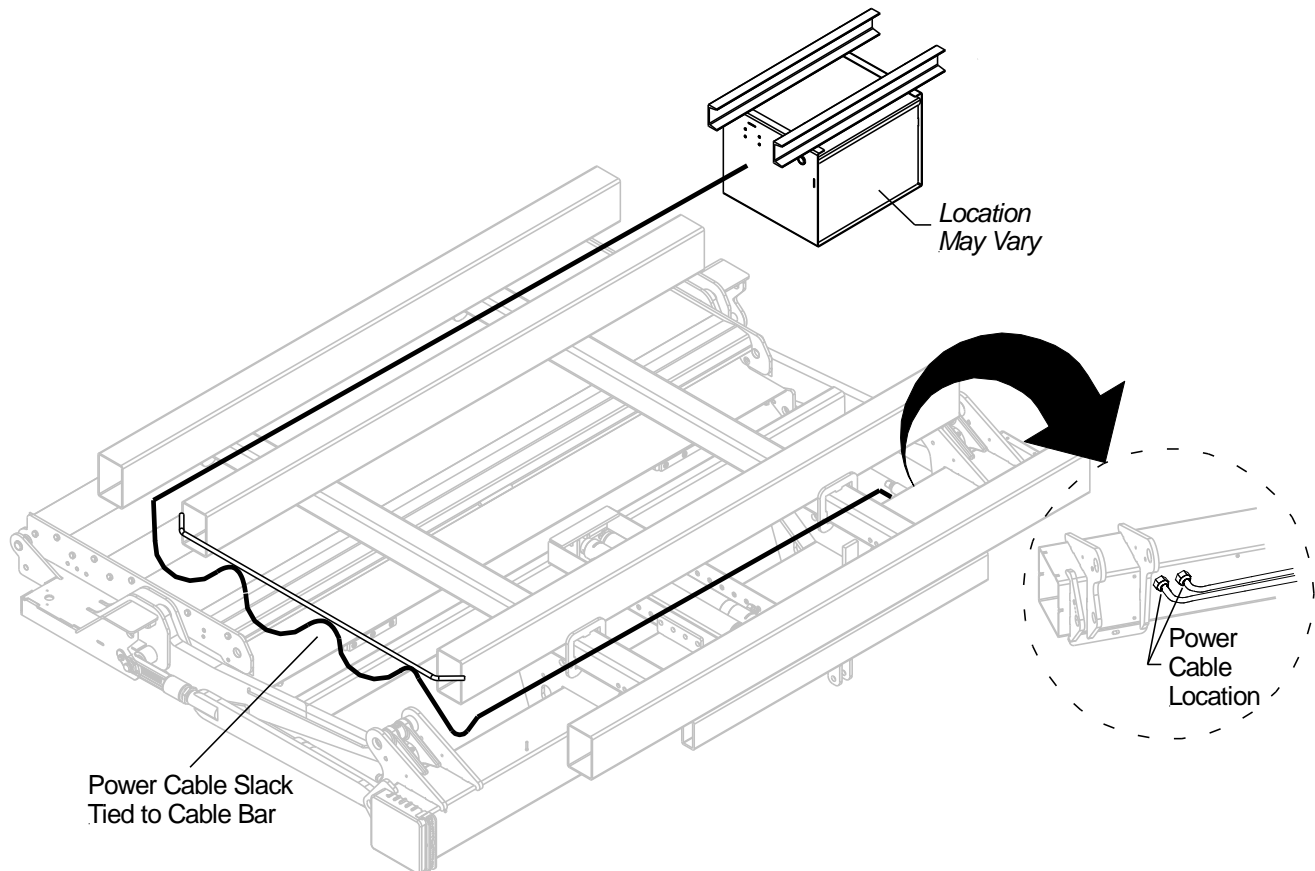
- Install the control box approximately 24" to 36" away from the platform when permissible.
- Use a steel sub-plate to weld under the crossmembers when the Z-Brackets are not mountable because of the distance between crossmembers.
- The control box should never be installed or protrude outside the vehicle body to prevent any damage to the box.
- The on/off switch can be located on the right side of the control box as shown.



ON/OFF Switch Location

7.2 Battery Box

Battery box installation location will depend on the construction of the vehicle. The location of gas tanks, auxiliary boxes, and vehicle equipment can be a few factors that will determine the location. It is always recommended to maintain the battery box as close as possible to the liftgate, keeping in mind that the power cables for the liftgate will need to provide some slack when the liftgate is sliding out for operation and sliding in for storage. **Note: Power cables are 40ft in length.**



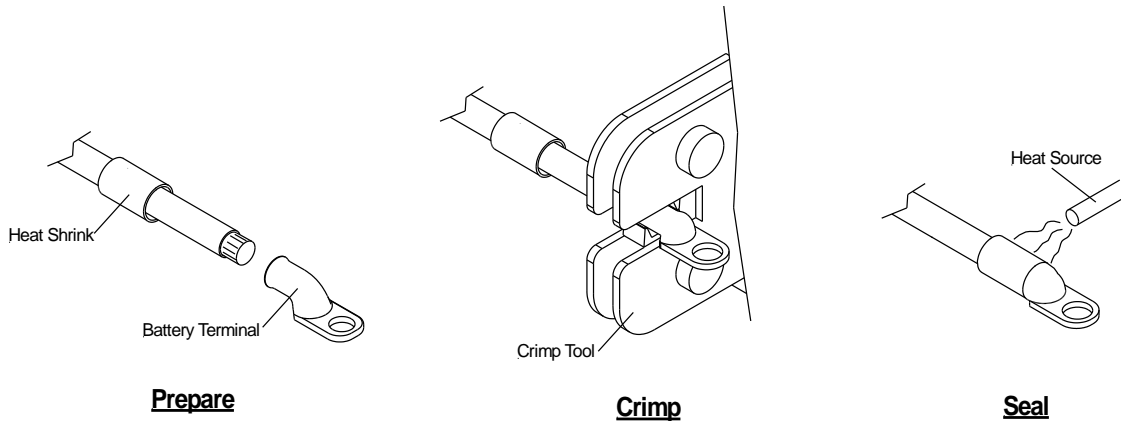
7.3 Wire Crimping



All grounding surfaces **MUST** be cleaned, prepped, and sealed per this manual. “Cut to size” cables **MUST** be properly crimped and sealed as factory supplied. All connections **MUST** be dressed with dielectric grease or equivalent sealer.

Battery Cable Crimping:

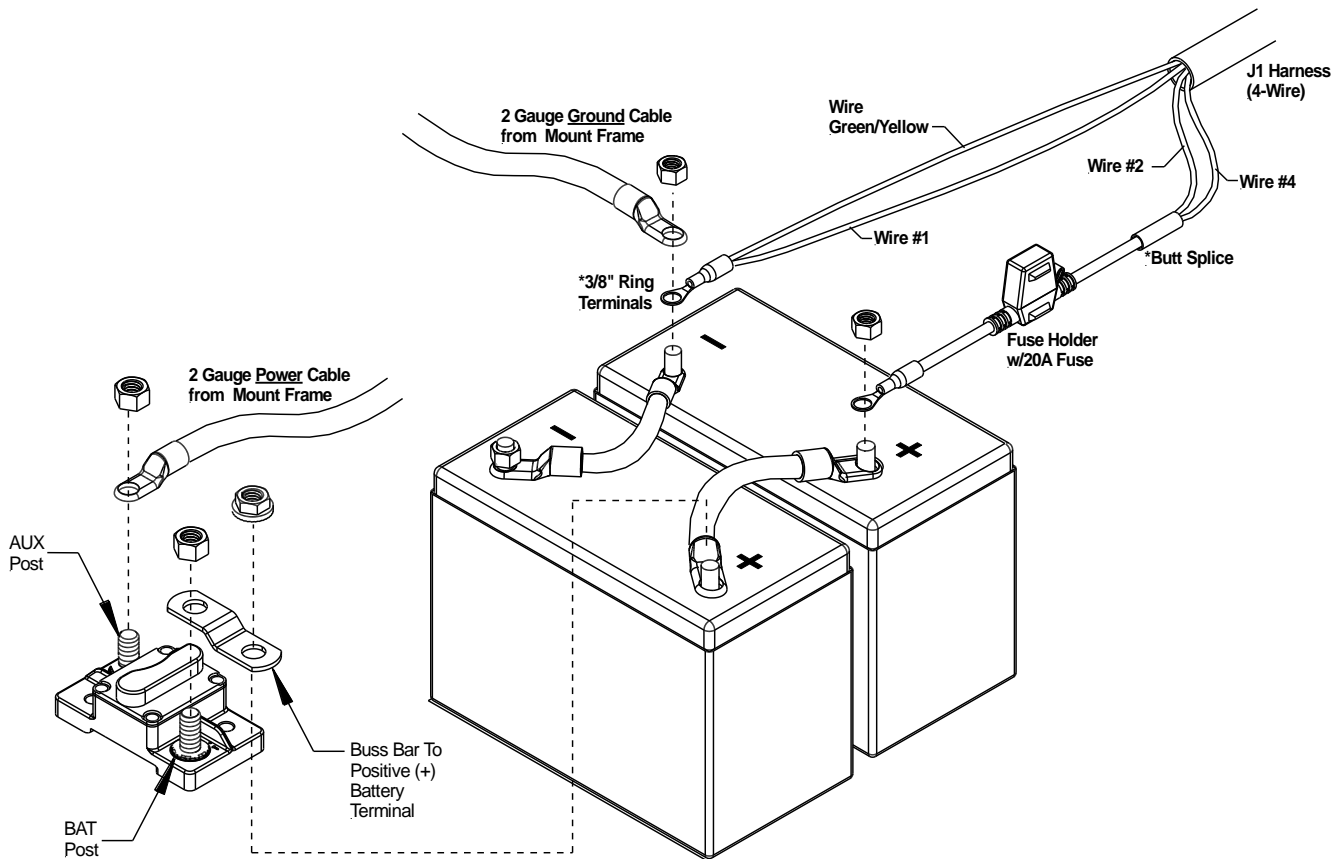
1. Prepare the wire to be crimped. Straighten out the exposed copper wire and insert into the battery terminal. Slide the provided heat shrink over the battery cable.
2. Use a crimping tool designed for crimping battery terminals for best results. The use of other tools to crimp terminals could possibly damage the battery terminal and make poor connections between the wire and terminals.
3. Slide the provided heat shrink over the battery terminal and cable to seal the connection.



7.4 Circuit Breaker Installation

1. Attach the bus bar to the circuit breaker on the BAT post. Mount the circuit breaker securely on the positive terminal post of battery.
2. Connect the liftgates 2 gauge power cable to the AUX post on the circuit breaker. Connect the liftgates 2 gauge ground cable to the negative (+) post on battery.
3. Crimp the ring terminal wire to **Wire 1** and **Wire Green/Yellow** and install to negative (-) terminal on battery. Crimp **Wire 2** and **Wire 4** to the fuse holder and install on positive (+) terminal of battery.

Note: 150 amp minimum circuit breaker required.



Battery Mount or Battery Box Mount

*Items require crimping

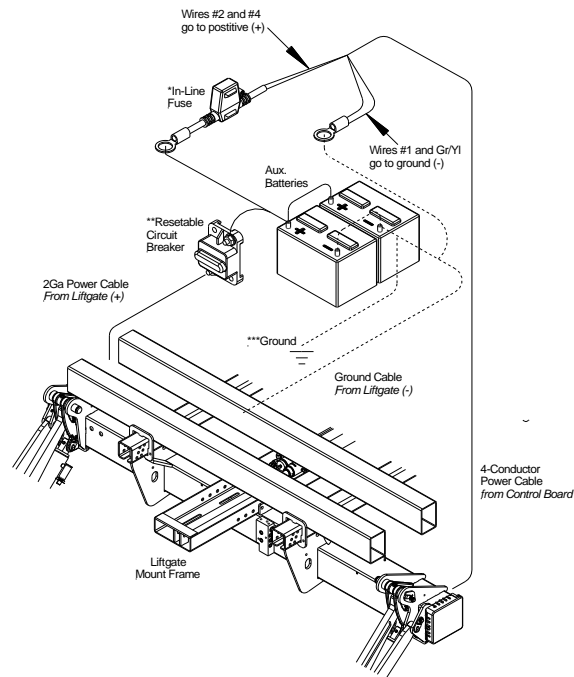
7.5 Wiring Diagram for Main Auxiliary Battery Power

*Resettable Circuit Breaker: 150 Amp Min. **Replace with same amperage breaker when necessary.**

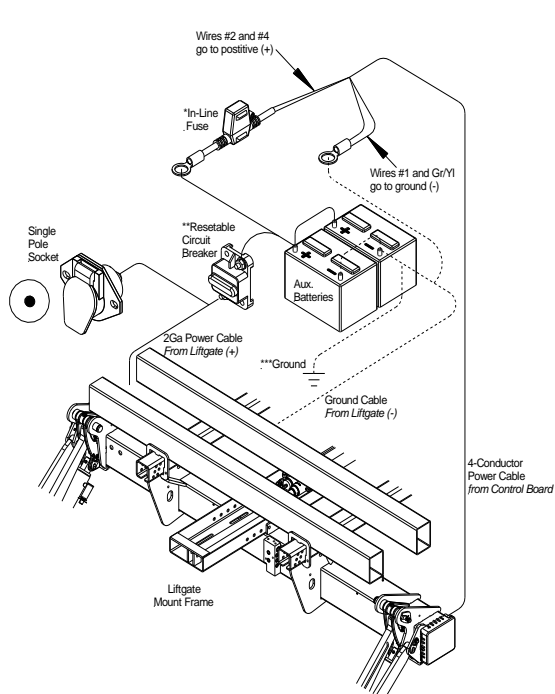
Ground: For optimal grounding, ground all batteries and power units to the body side rails of the vehicle.

NOTICE: DO NOT attempt to jump in-line fuses with other objects other than the specified fuse.

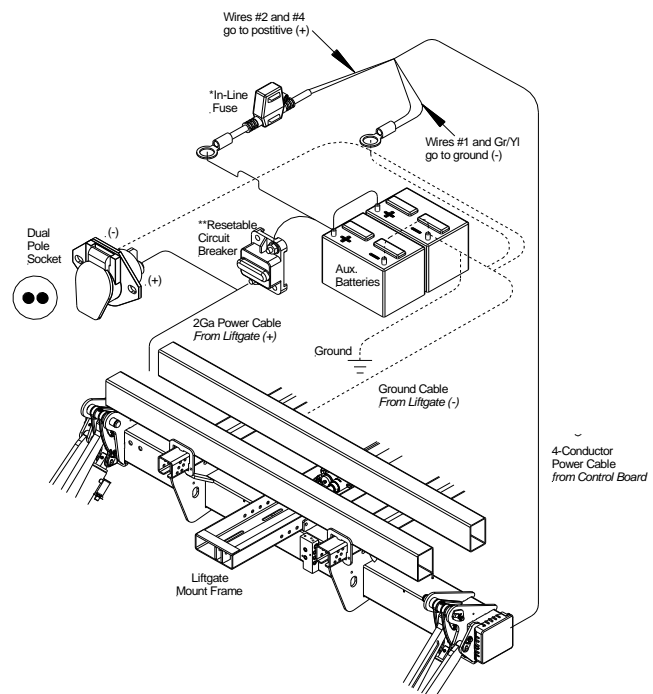
Do not increase the amperage rating of fuse. Serious harm to the liftgate will result when standard practices are not followed.



Truck Setup



Tractor Setup – Single Pole Charging System



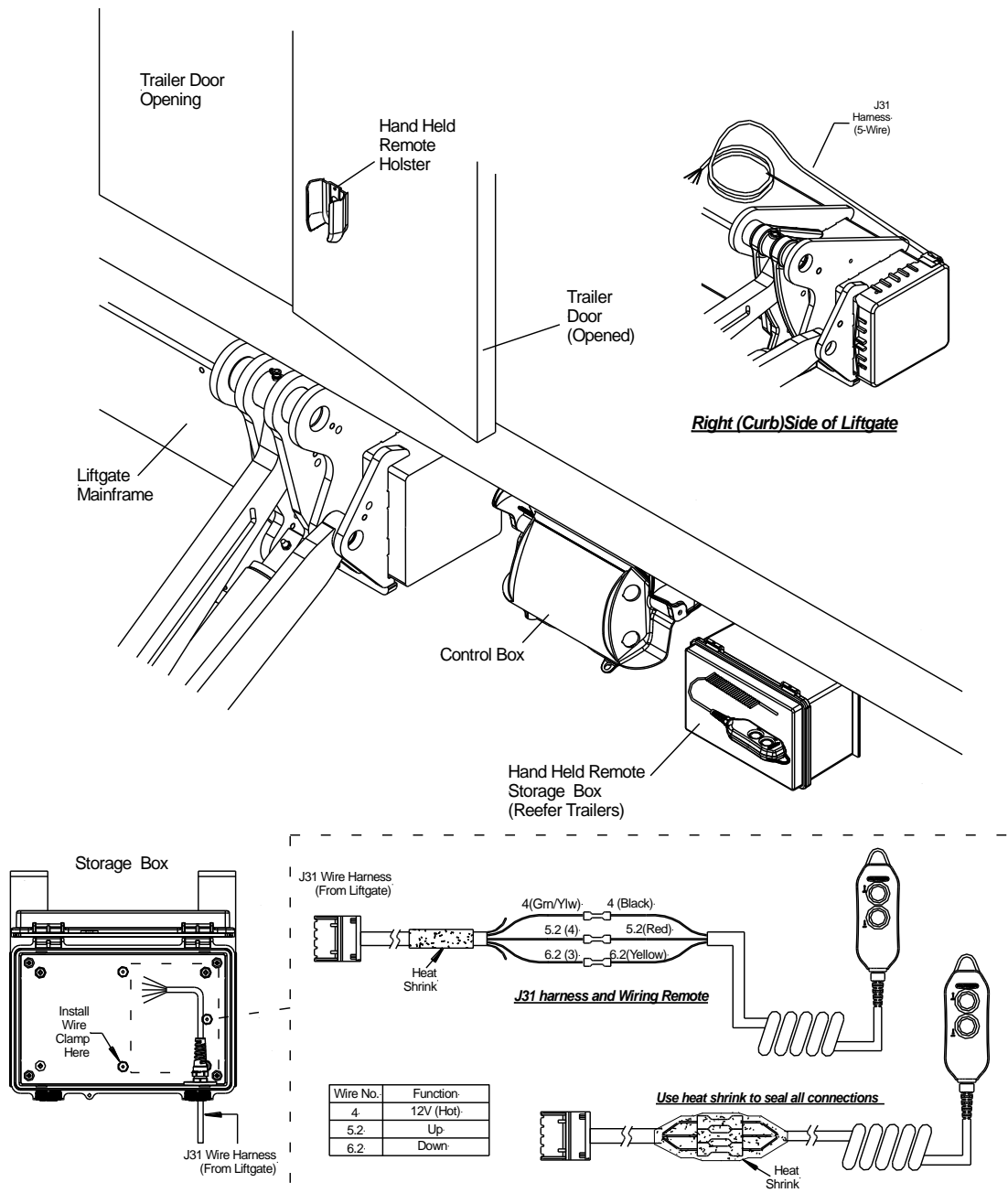
Tractor Setup – Dual Pole Charging System

7.6 Hand-Held Remote Control (Optional)

Location of the hand held remote storage box may differ from installation to installation but it should be in the vicinity of the operations control box.

NOTE: Do not store the hand held remote inside refrigerated vehicles.

1. Route the J31 harness from the mount frame to the storage box.
2. Wire the remote as shown. Mount the remote holster on the door. Reminder, the coil cord on the remote can stretch up to 15 ft.
3. The 2-button remote can only raise and lower the platform. No other liftgate functions are operational with this remote.

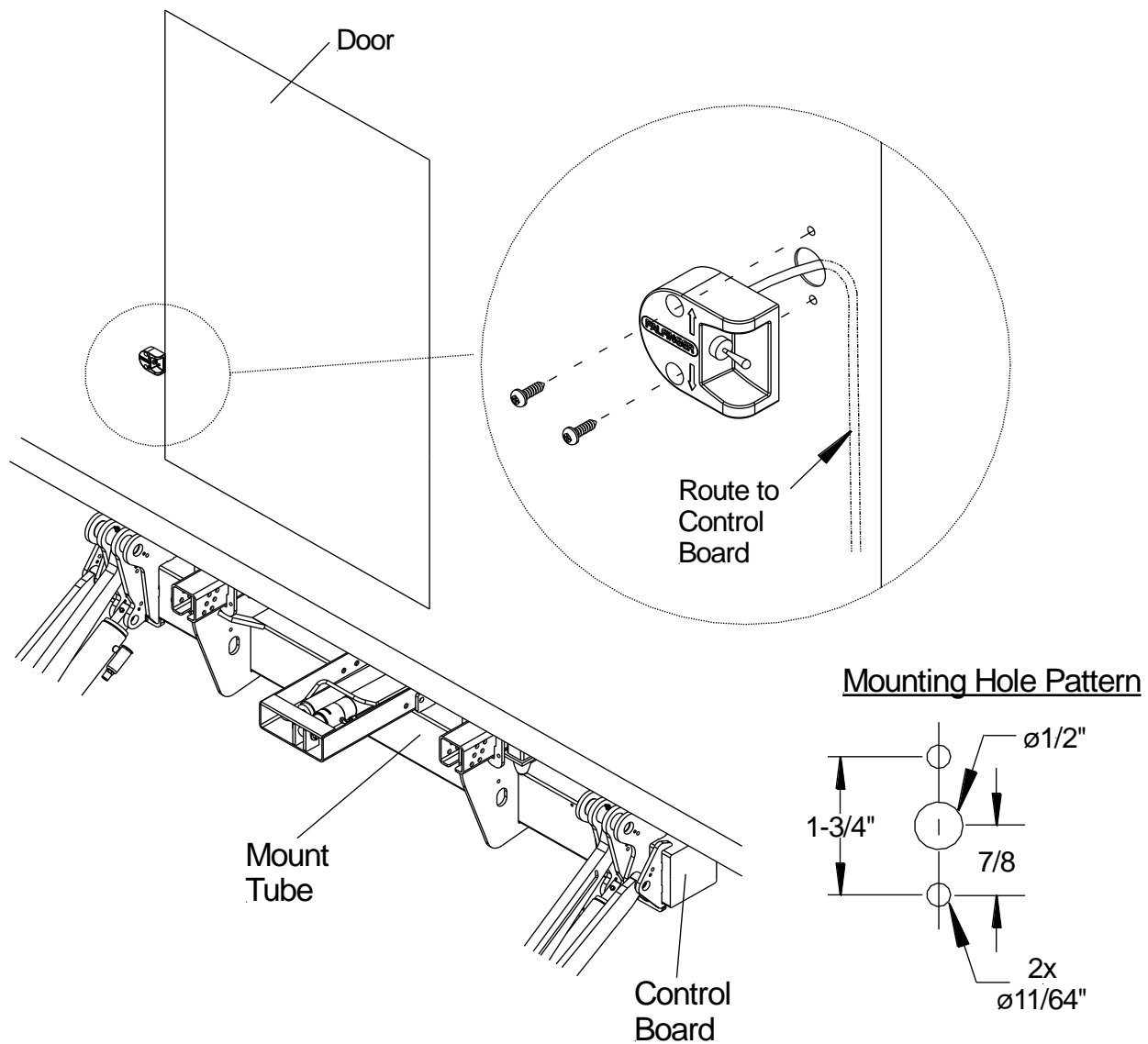


7.7 Toggle Switch (Optional)

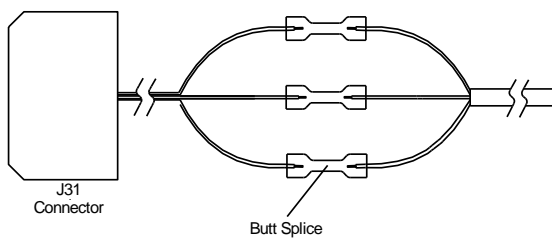
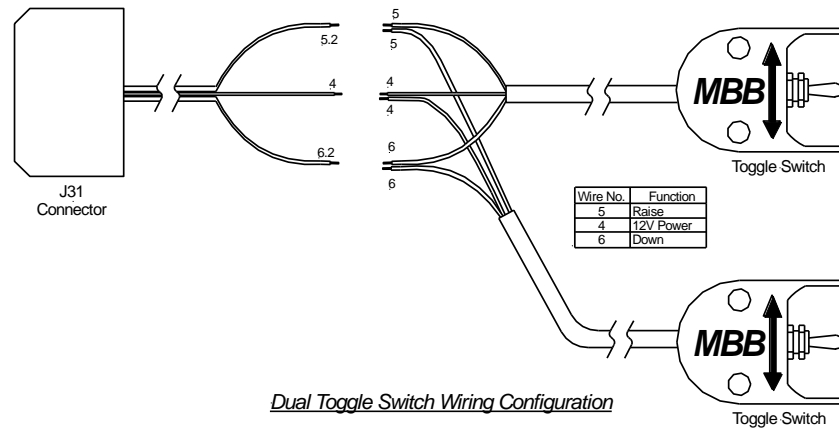
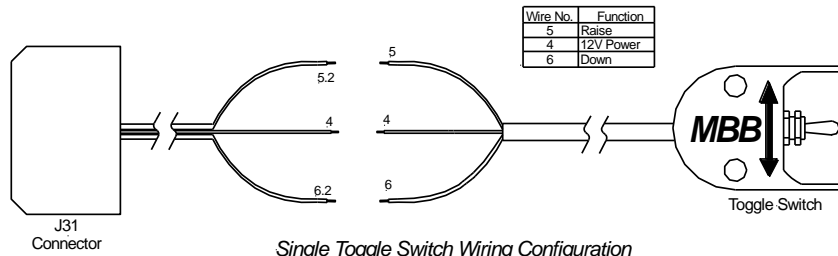
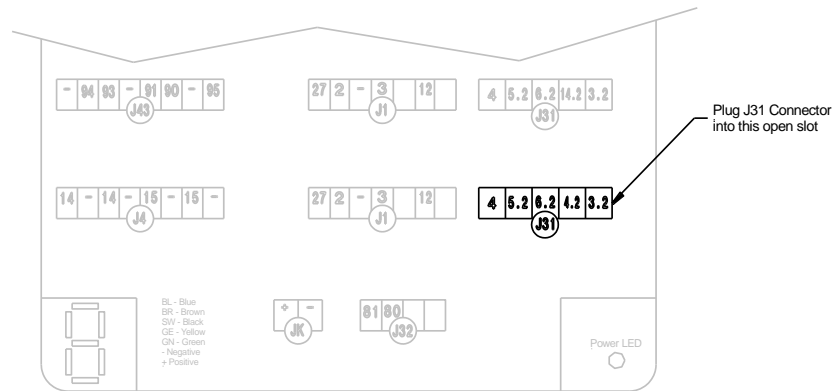
NOTICE

Reminder: The toggle switch only raises and lowers the gates platform.

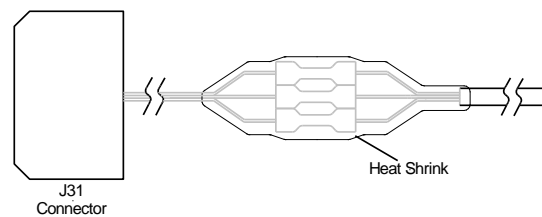
1. Determine the location of the toggle switch. The switch shall be installed on a location that is easily accessible to the operator, and should not interfere with the door.
2. Pre-drill two mounting holes and a third hole to route the cable
3. Feed the cable thru the hole and route to the control box located at the end of the mount tube.
4. Secure the switch to the surface using two sheet metals screw and route the toggle switch cable down to the control board.



5. To wire the toggle switch/switches follow the wiring diagram below. Use heat shrink on all wire splices.



Join wires with butt splice

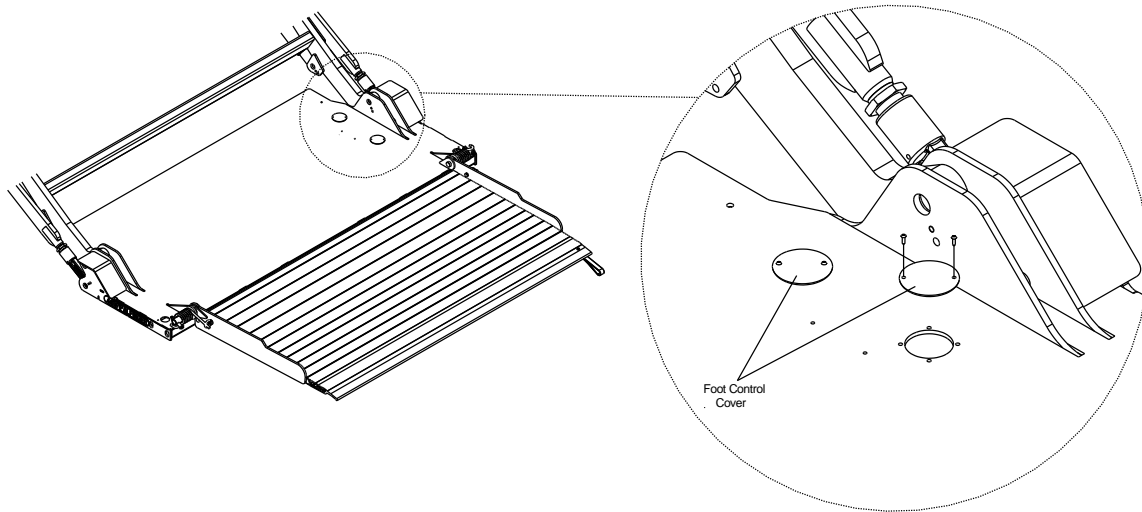


Use heat shrink to seal splice

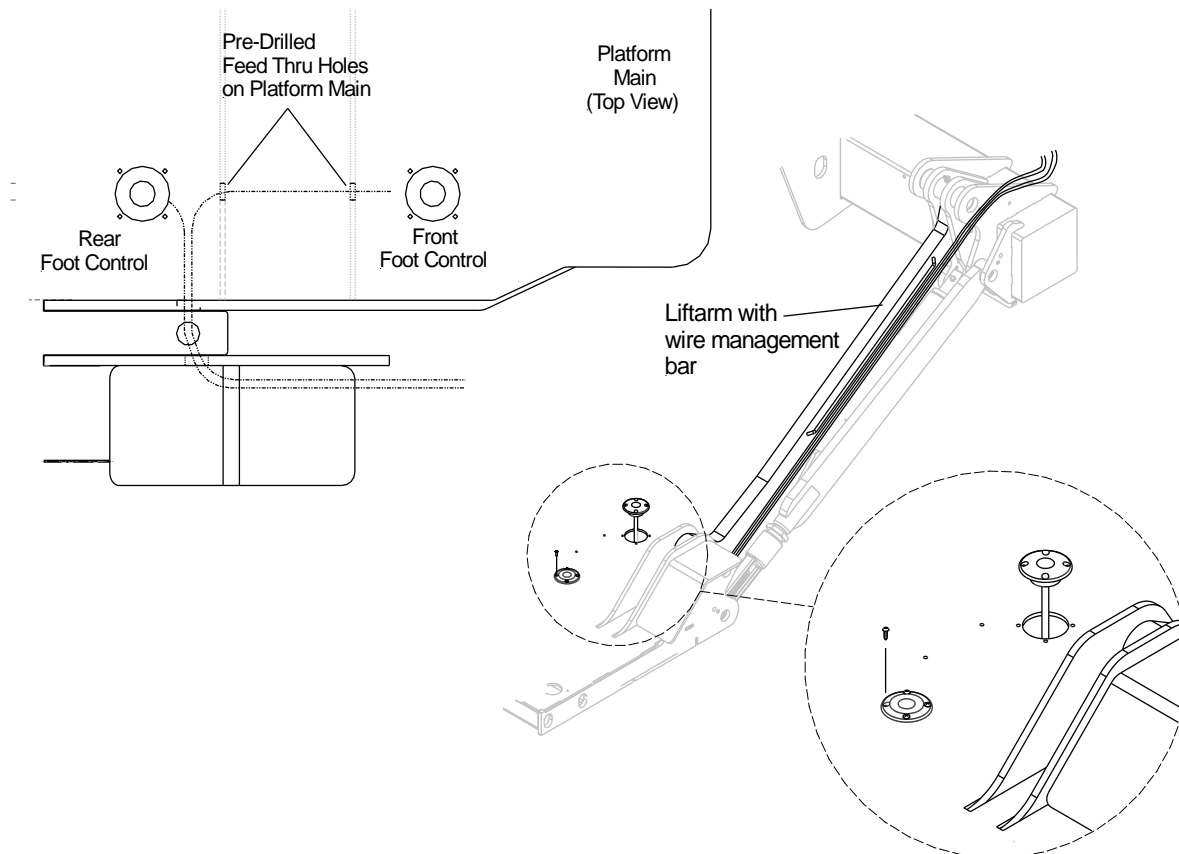
6. If a second switch is required, repeat steps 1 thru 5.

7.8 Foot Controls (Optional)

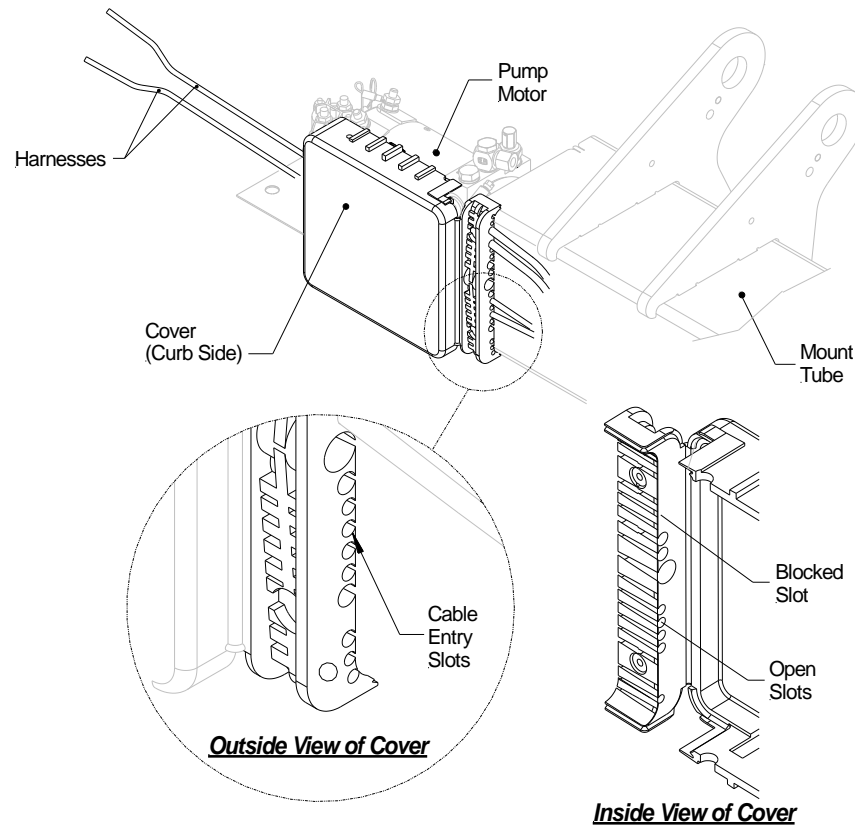
1. Unscrew the covers to expose the slots for each foot control module.



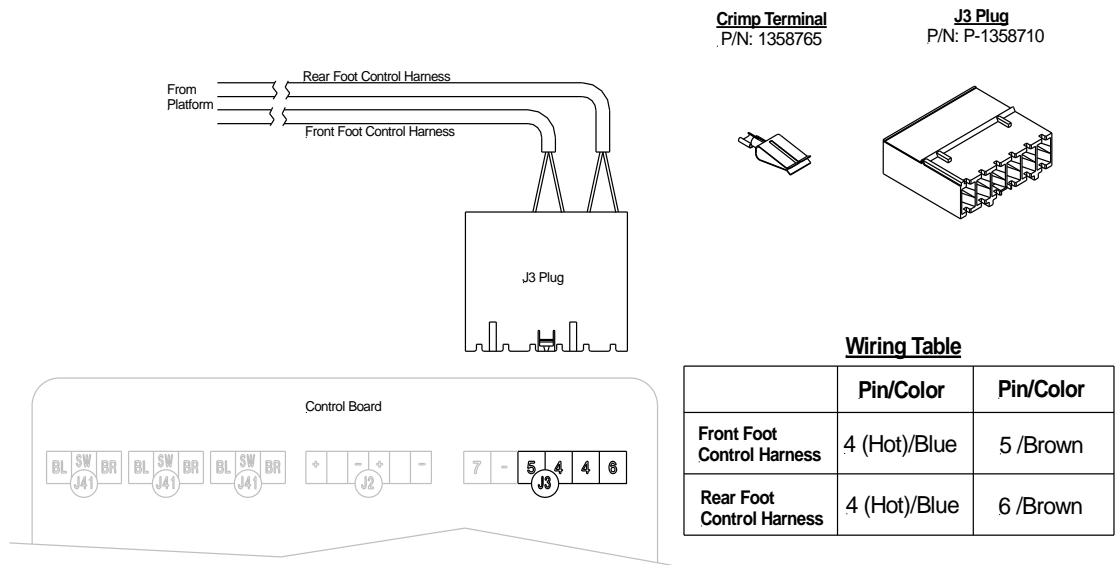
2. Mark or label each foot control harness to avoid confusion after the harnesses have been routed. The platform main is designed with pre-drilled holes underneath for routing each harness. Feed each cable harness through each foot control slot on the main section of the platform and route each harness as shown below. Once the cable is out of the platform, the lift arm is equipped with a bar that serves as a guide for the harnesses to be routed along and secured to. Next, secure each foot control module with the provided screws on the platform



3. Feed the harnesses through the cable entry slots of the cover. Slots are of different diameters and some slots are blocked on the inside part of the cover. The blocked slots will require the removal of the blockage to properly sit the harnesses. Use a small blade to remove the blockage if necessary. Leave approximately 16" of harnesses slack from the point of entry to the end of the harnesses.



4. Connect the Front Foot Control Harness to pins 5, 4 on J3. Connect Rear Foot Control Harness to pins 4, 6 on J3.



5. Test functionality of each foot control. Follow the steps below:

DOWN

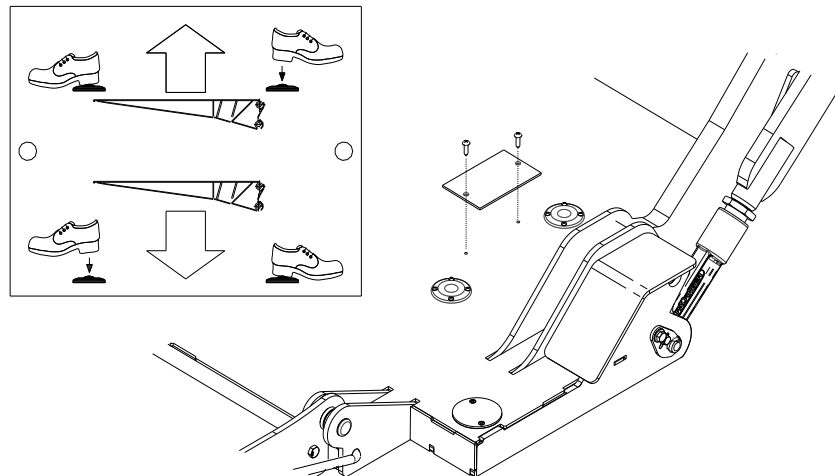
Step on the front foot control and hold – wait between one and three seconds before you step on the rear foot control.

UP:

Step on the rear foot control and hold – wait between one and three seconds before you step on the front foot control.

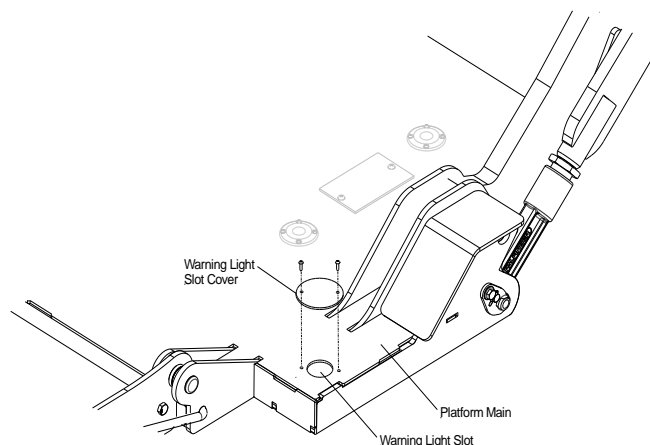
IF BOTH SWITCHES ARE NOT ACTIVATED BETWEEN ONE TO THREE SECONDS, START OVER.

6. Once operation has been verified, check all connections and verify that all screws are properly fastened. Finally, install the operation plate and make sure the arrows on the plate match the foot control operations.

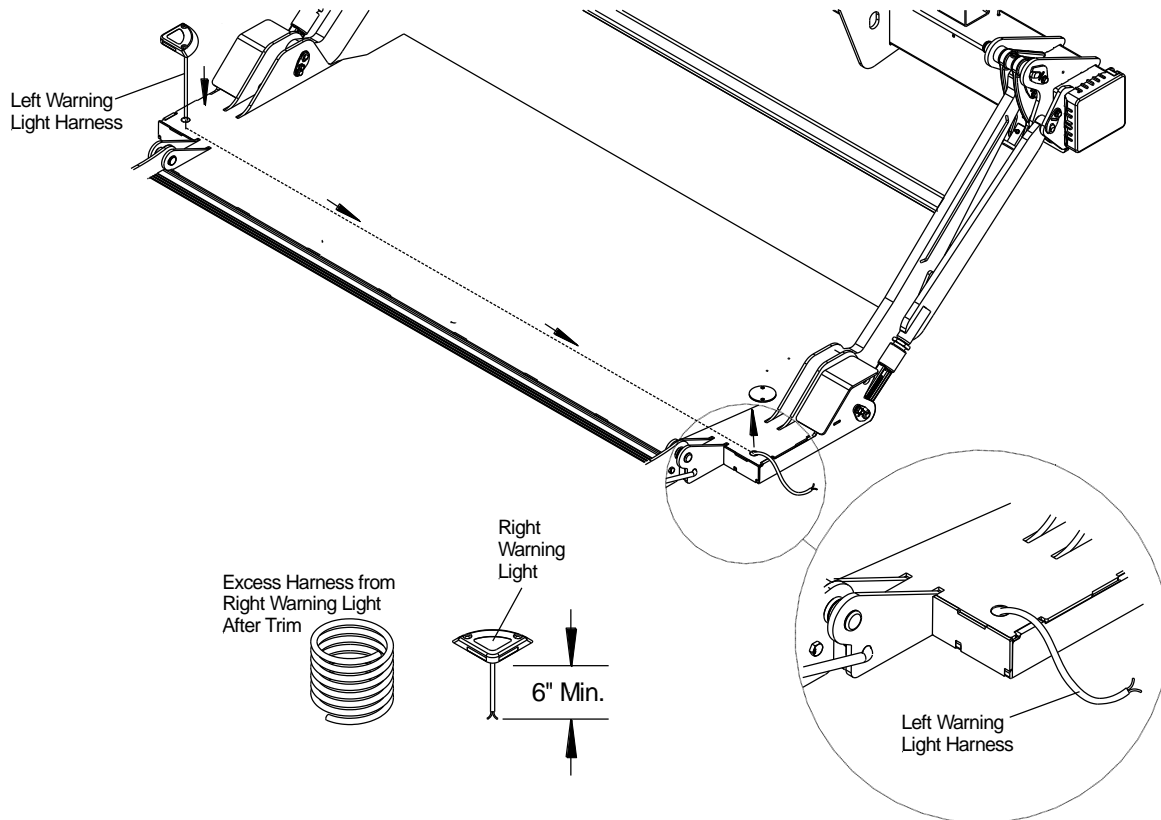


7.8.1 Warning Lights (Optional)

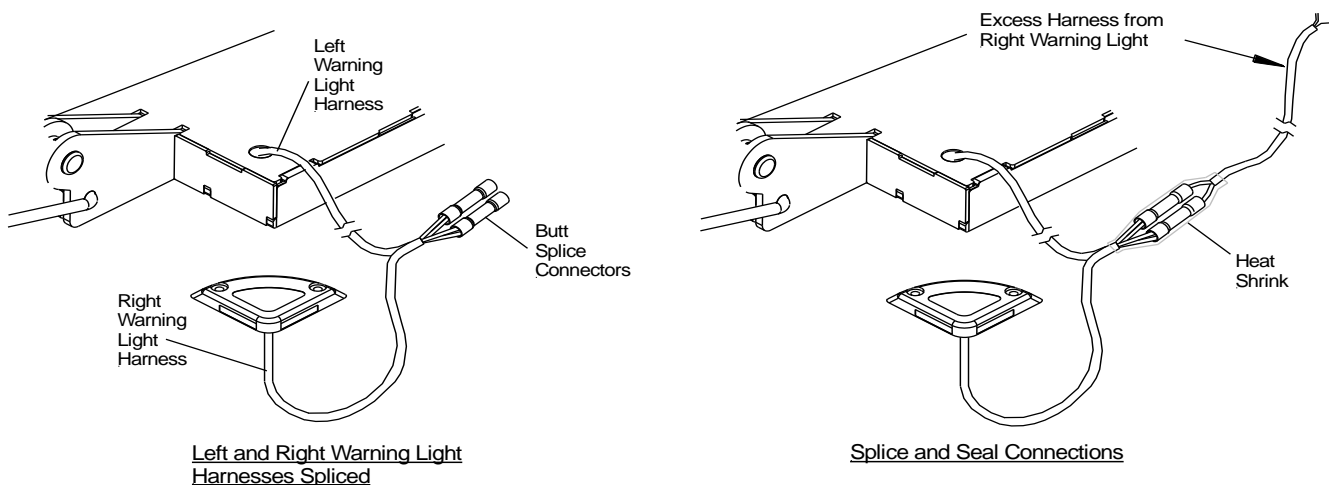
1. The warning light slots are located on the corners of the platform main and have covers over them. Unscrew the covers to expose the slots for each warning light on the platform main.



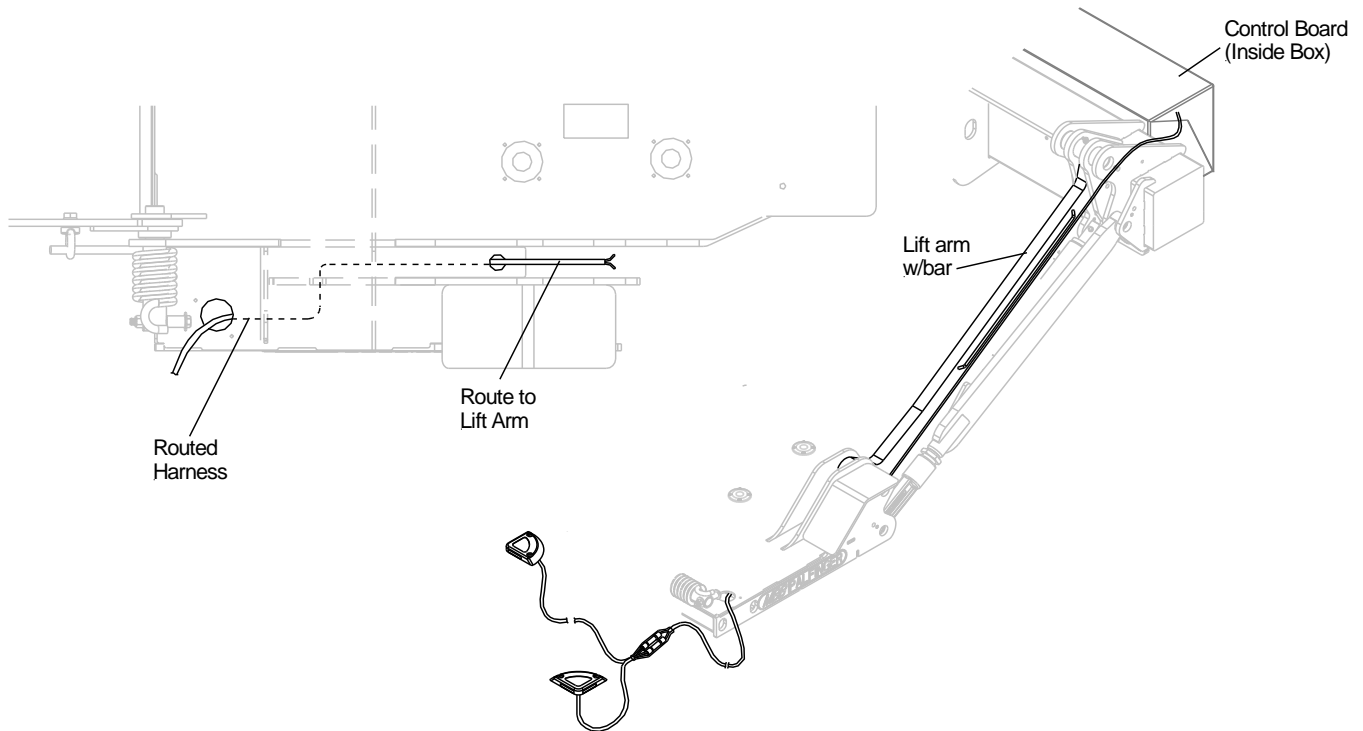
2. Feed the left warning light harness into the slot and route the harness through the inside of the platform and out on the right side. For the right warning light, trim and leave a minimum of 6" or harness attached to the right warning light. Do not discard the excess harness from the right warning light, it will be required to finish the installation.



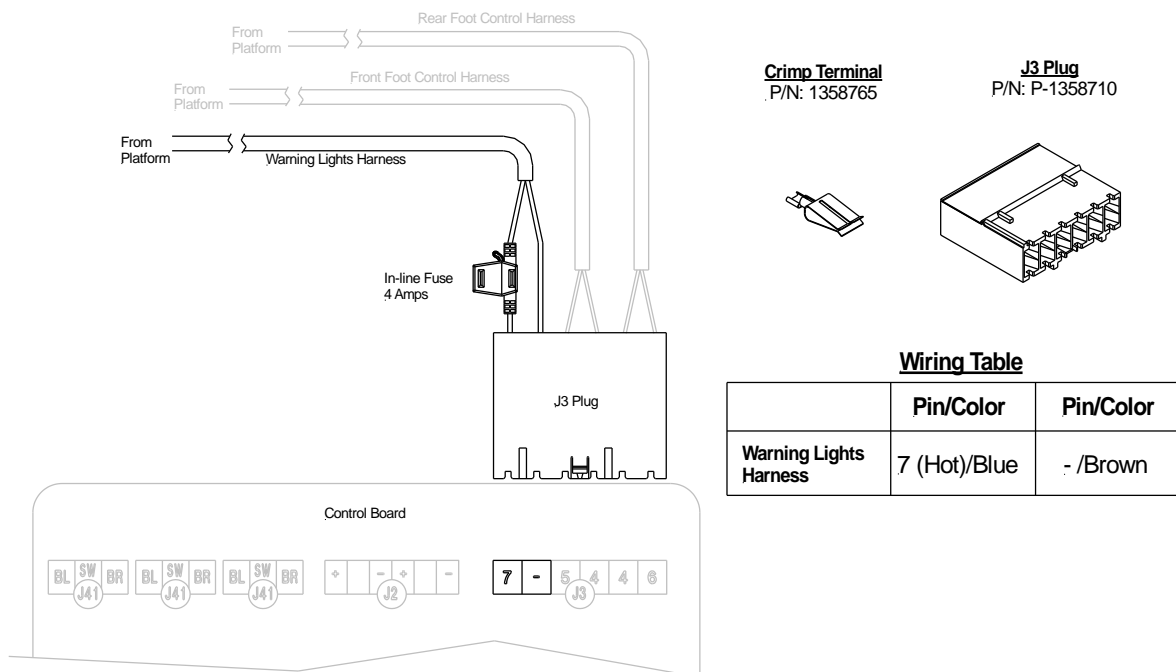
3. Next, use butt splice connectors to join the left and the right wires together, make sure the same color wires are joined together from each harness and crimp the butt splice. On the other end of the butt splice connector, slide a piece of heat shrink over the excess harness prior to feeding the wires into the open end of the butt splice. Crimp butt splice connector and seal.



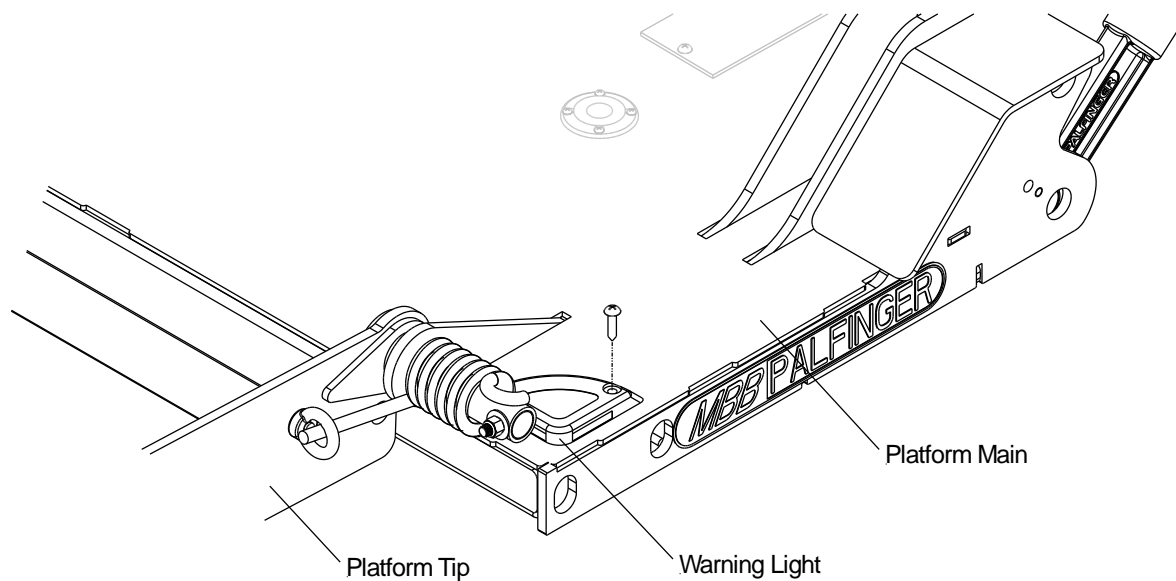
4. Route the other end of the excess harness through the inside of the main platform and up the lift arm to the control board in the pump and motor box.



5. Use crimp terminals on each wire. Insert the crimped terminals into the corresponding ports on the J3 plug; make sure the orientation of the plug matches the control board. Add a 4 amp fuse in line with pin 7. Connect the harness to pins 7 and (-) on the Control Board. *NOTE: If Foot Control Switches have been pre-installed, use the two remaining slots on the J3 plug to connect the Warning Lights.*

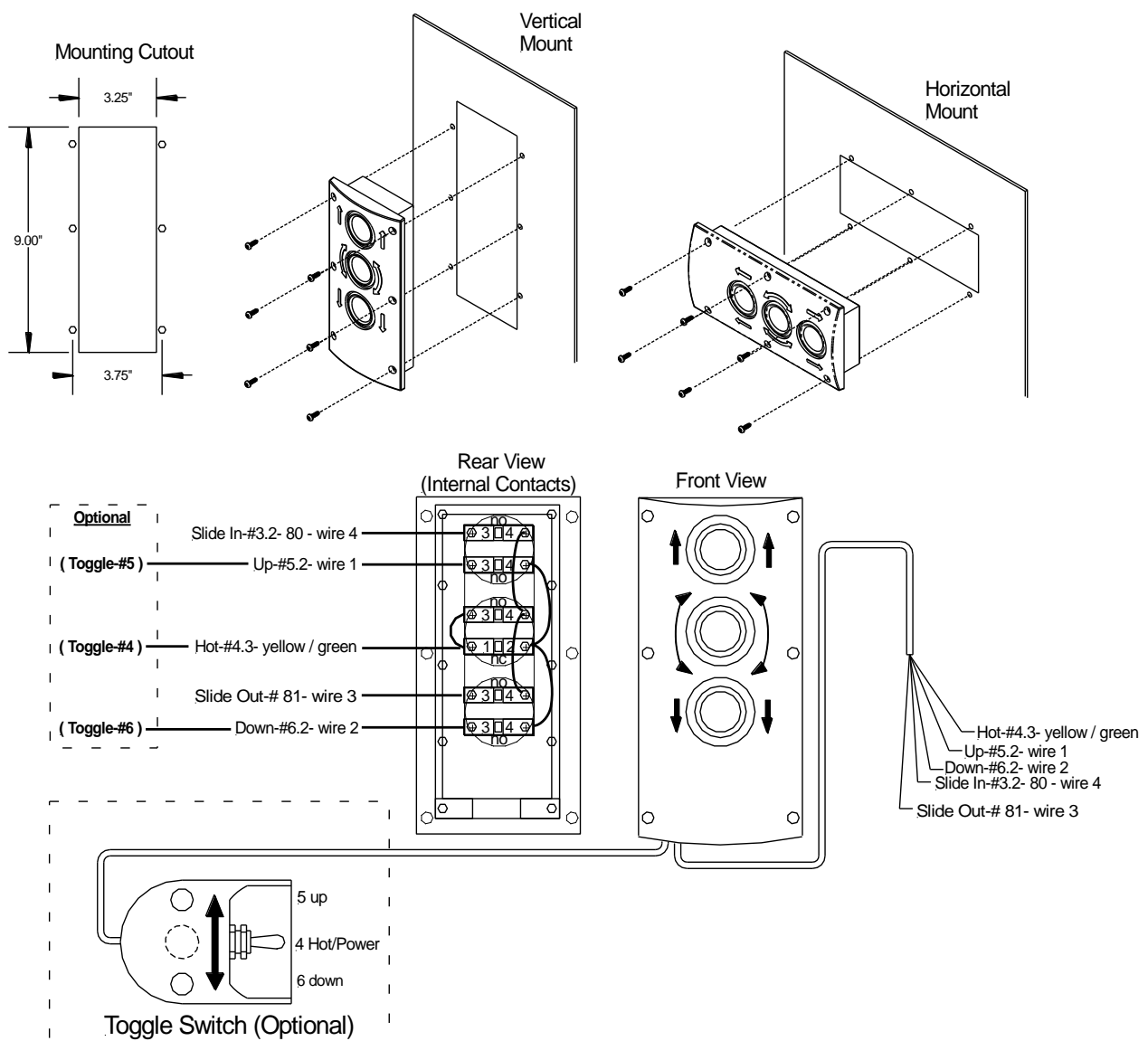


6. Verify both lights are operating as intended. Check all connections and fit all wires inside the platform main. Fasten both warning lights to the platform.

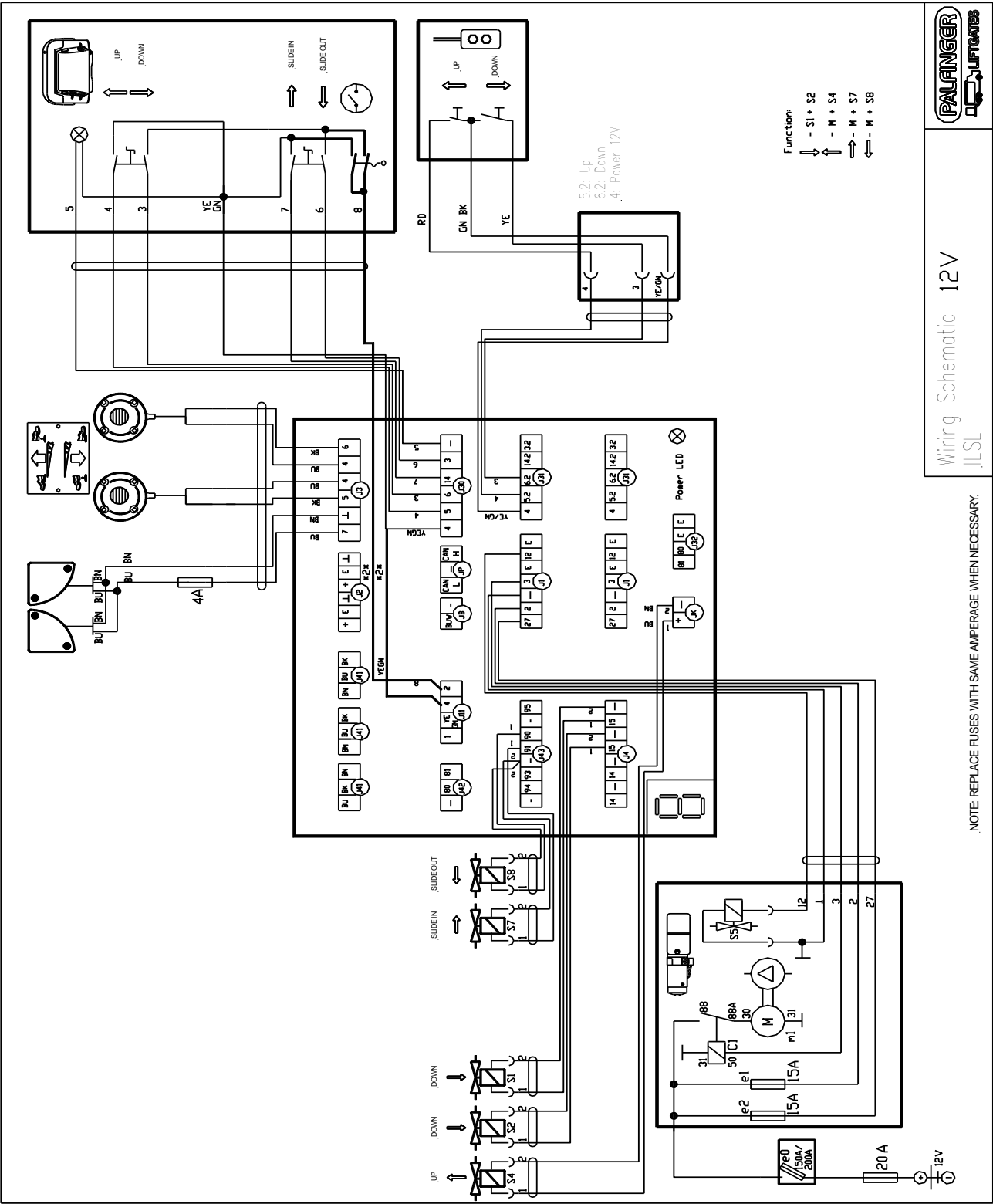


7.9 3-Button Flush Mount Control (Optional)

1. Determine the location for the control. Make sure the control is placed in a location that's easily accessible to the operator.
2. Make a rectangular cut out (vertically or horizontally) of 3.25"W x 9.00"H on the surface. Fit the control into the cutout and use the remote as a template to mark the mounting holes on the surface. Drill pilot holes.
3. Route the cable back to the control board and secure the remote to the surface with the provided screws.
4. Wire the flush mount control as indicated below. The control can 'piggy back' the toggle switch as an option. Make wires connections as shown below if adding a toggle switch to the system also. Assure all jumpers inside the control are set and cables are tight at the contact blocks.

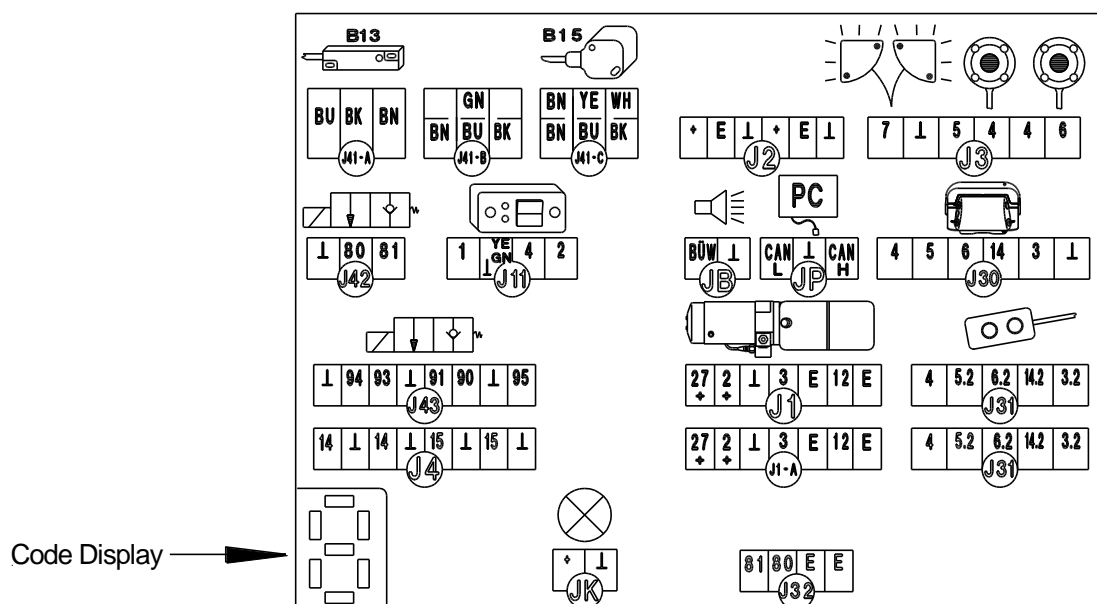


7.10 Control Board Wiring and Connector Schematic



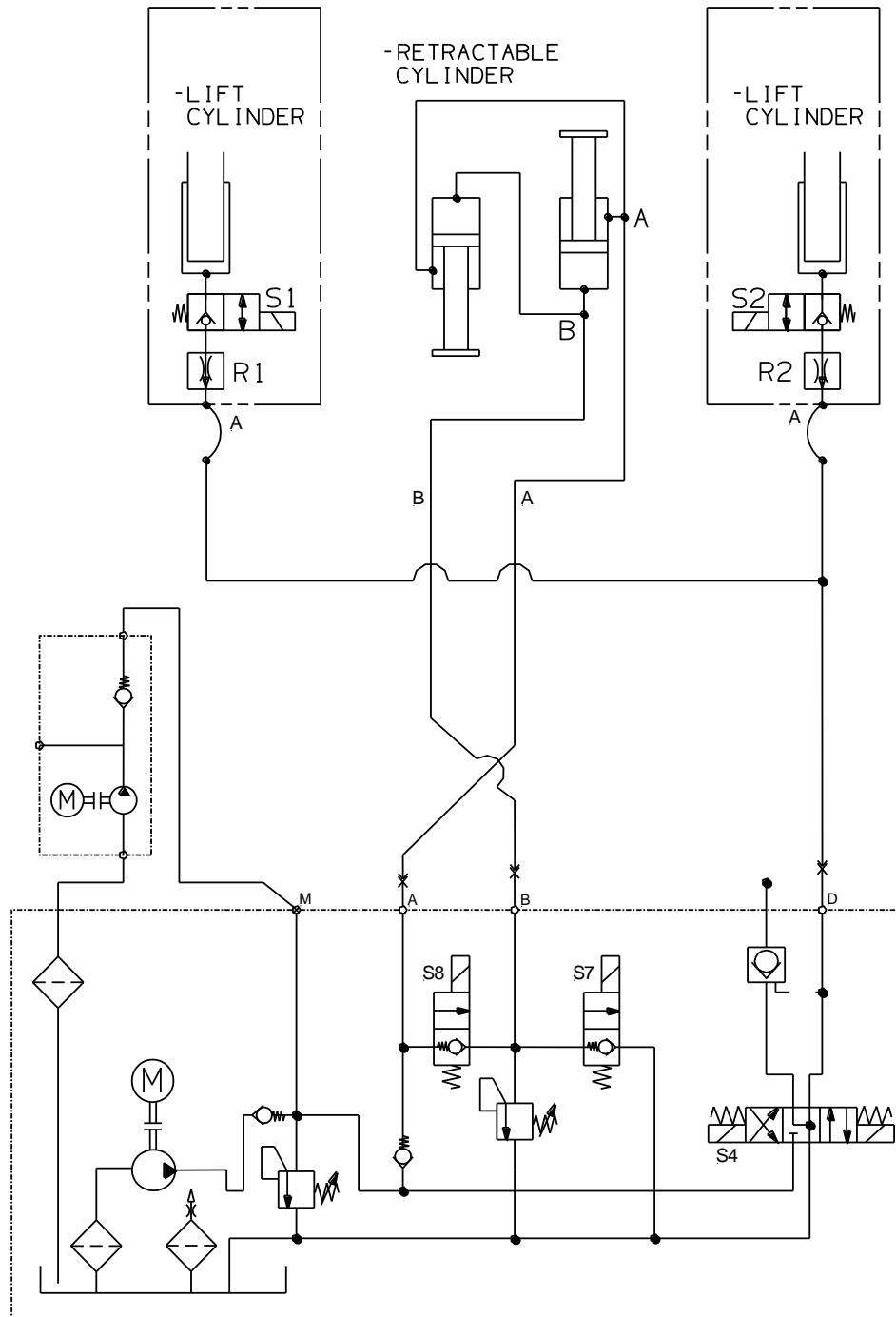
8 Electrical System Codes

Code:	Description:	Reason:	Solution 1:	Solution 2:	Solution 3:	Solution 4:
0	System OK / Control System: OFF	System OK / Control System: OFF	System OK / Control System: OFF	--	--	--
1	System OK / Control System: ON	System OK / Control System: ON	System OK / Control System: ON	--	--	--
2	Low Voltage	Voltage J1 Pin 2 too low	Check J-1 & J-2 power cable at PC board and battery for tight connection, oxidation and damage.	Check the battery condition / battery charged	Motor could have worn carbon brushes / motor could be bad	--
5	Platform sensor (B-15): Broken wire, short	J41-C shorted; J41 pin BLUE: wire getting more than 5 Volts (right upper location J41)	Check adjustment B-15 platform	Unplugged, plugged in wrong location	Change B-15 platform sensor	To temporary by-pass, jump Black to Blue
6	Short on warning lights	Power consumption J3 Pin 7 to high	Check J-1 & J-2 power cable at PC board and battery for tight connection, oxidation and damage.	Check warning light cables for damage	--	--
7	Short in cab Switch, control system	Power consumption J11 Pin 1 to high	Check J-1 & J-2 power cable at PC board and battery for tight connection, oxidation and damage.	Check cab cut off/ warning light cable for damage	--	--
8	General Short in electric wiring	General power consumption to high	Check J-1 & J-2 power cable at PC board and battery for tight connection, oxidation and damage.	Unplug wires one by one, check for correct plug location	Repair cables, connections, check for burnt or crushed wires	--
9	Defect in motor solenoid during lifting	Power consumption J1 Pin 3 to high	Check J-1 & J-2 power cable at PC board and battery for tight connection, oxidation and damage.	Check the battery condition / battery charged	Possible short in diode jumper wire on Motor Solenoid: Remove Jumper	Possible short in Thermo Switch inside motor Bypass and test, replace Thermo Switch
A	Fuse 15A damaged on power pack (J1, Pin 2)	Defective fuse J1 Pin 2	Check fuses at power pack	Check fuse holder Replace fuse with same amp fuse	--	--
P	Error diagnostic mode active	Attached service plug	--	--	--	--



NOTES

9 Hydraulic Schematic



Functions:

Lift:	S4 + Motor
Lower:	S1 + S2
Slide Out:	S8 + Motor
Slide In:	S7 + Motor

Functional Description of Hydraulics Schematic

Slide Out Function

- As soon as the Motor starts to run, valve S8 is energized.
- Oil pressure exits pump and motor under pressure to A + B ports on push pull cylinder.
- The surface at the end of the piston rod on input “B” is larger than on the shaft at input “A”.
- This creates a stronger force at the piston rod (“B”) than at the shaft (“A”).
- This factor forces the cylinder to extend.
- The lift gate will slide out to the end of the rails.

Lower Down

- The solenoid release valves S1 and S2 at the cylinders get energized.
- The gate is designed to lower down by gravity. It will push the hydraulic oil out of the lift cylinder into the reservoir. The oil passes the solenoid release valves S1 and S2.

Lift Up Function

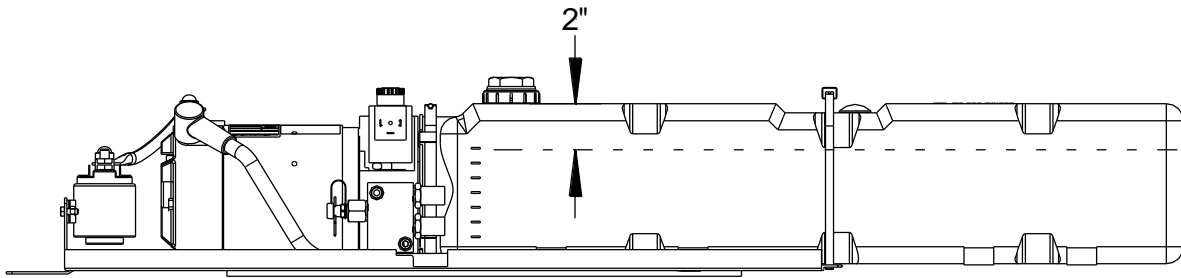
- Motor starts running oil pressure exits pump and motor to the release valves S1 and S2 are forces the fluid to push the lift cylinders to extend. The platform raises up.

Slide In Function

- Motor starts running and S7 valve is energized.
- The Oil pressure exits pump and motor under pressure to input “A” at the cylinder.
- The energized valve S7 is allowing the oil at the bottom of the piston rod to get back through the S5 into the reservoir.
- The pressure on the end of the shaft will force the piston rod to retract. The liftgate will slide in under the body.

9.1 Hydraulic Fluid

From the manufacturer, the ILSL liftgates include Hydrex MV Arctic 15 hydraulic fluid. The hydraulic reservoir will be filled to maximum level by the manufacturer (2" from the top of the reservoir).

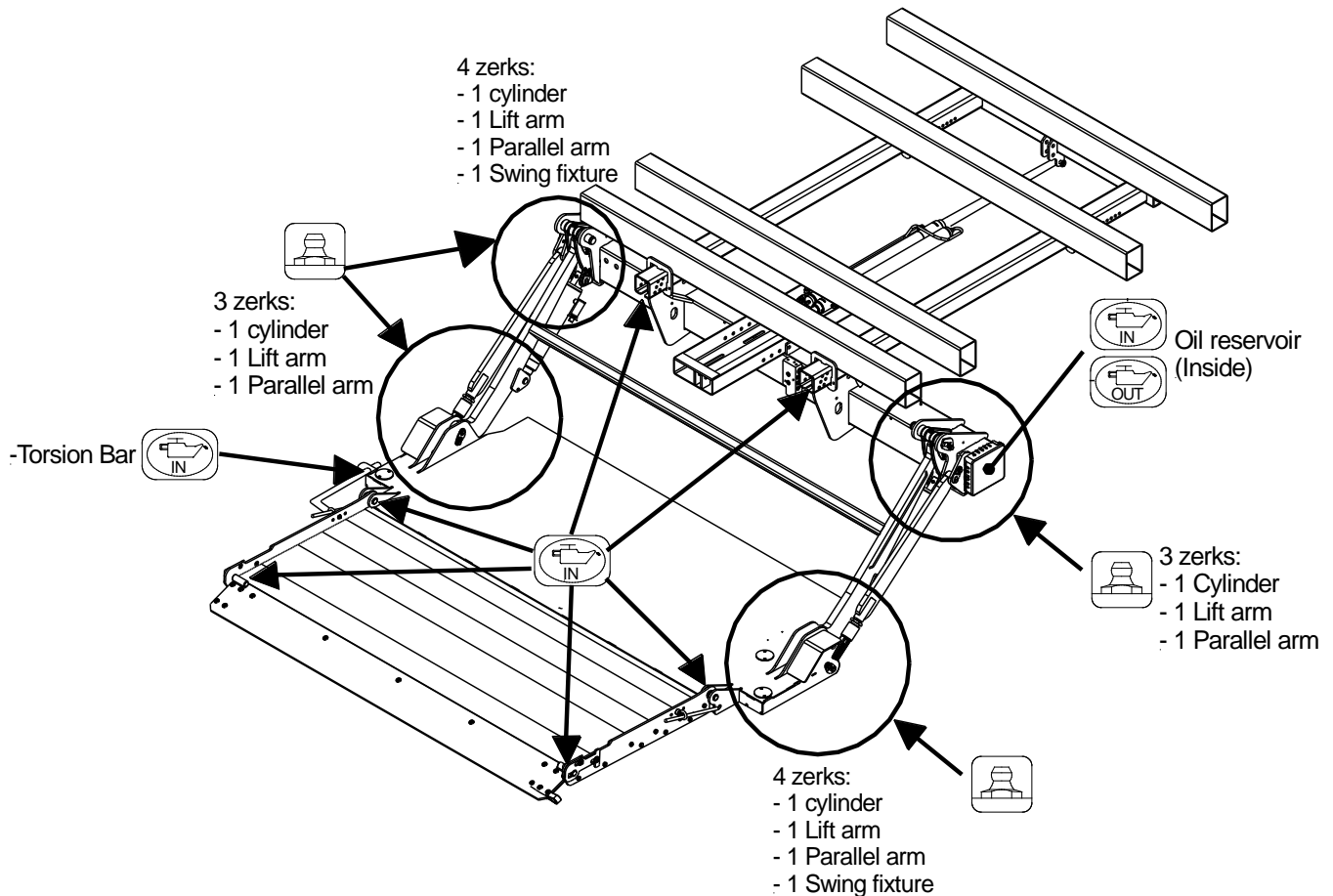


When changing or adding fluids, it is highly recommended to use alternatives fluid brands and types listed below:

Alternative Fluids	
Temperature Range	Fluid Brand
30° to 150° F	EXXON UNIVIS J26
	MOBIL DTE 13M
	CHEVRON AW MV32
	ROSEMEAD MV 150 (32)
-50° to 150° F	PETRO CANADA HYDREX MV ARCTIC 15
	MOBILE DTE 11
	SHELL AERO FLUID 4/41
	SHELL TELLUS 15
Extreme Cold Temperature	MIL H5606 (Military Spec.)

9.2 Lubrication

1. Lower the platform to the ground.
2. Remove red protector caps from each component. Lubricate, grease, and oil per diagram below.
3. Cycle platform up and down several times. Lubricate and grease all points again.
4. Wipe any excess grease and replace all red protector caps on zerks.



Grease: Location of Grease Zerks (7 on each side, 14 total)



Oil: Oil level in the power pack tank (see marking inside of power pack reservoir)

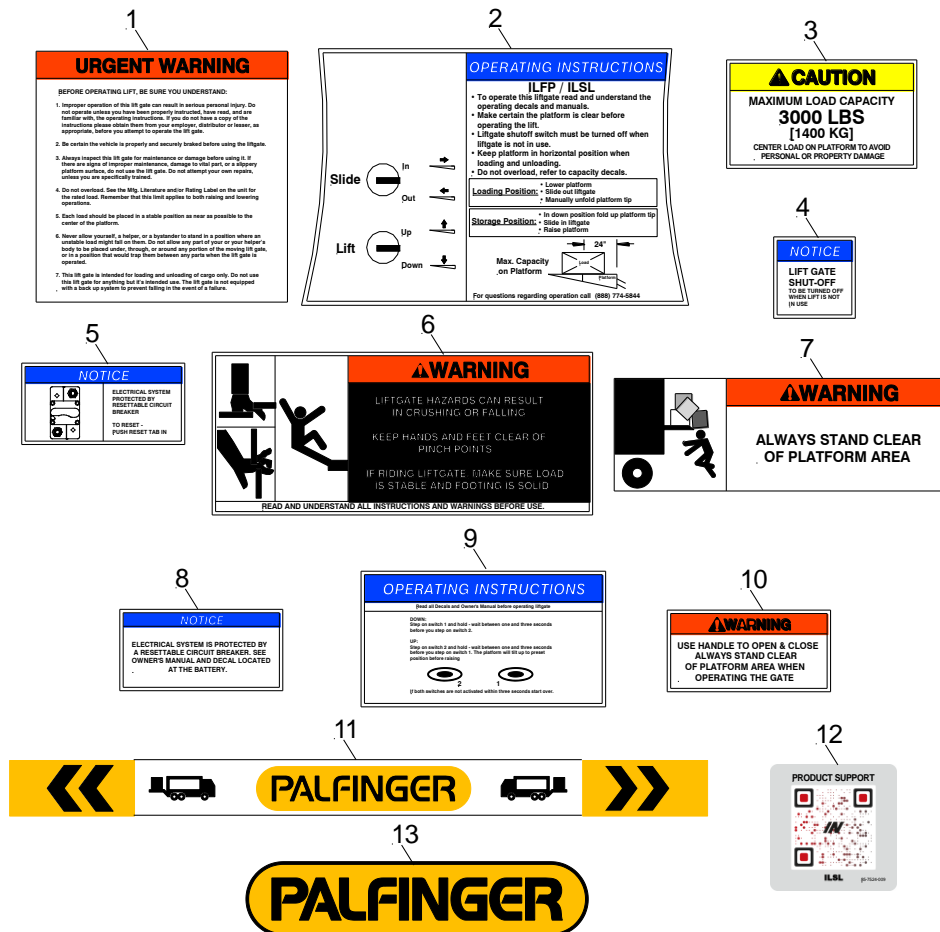


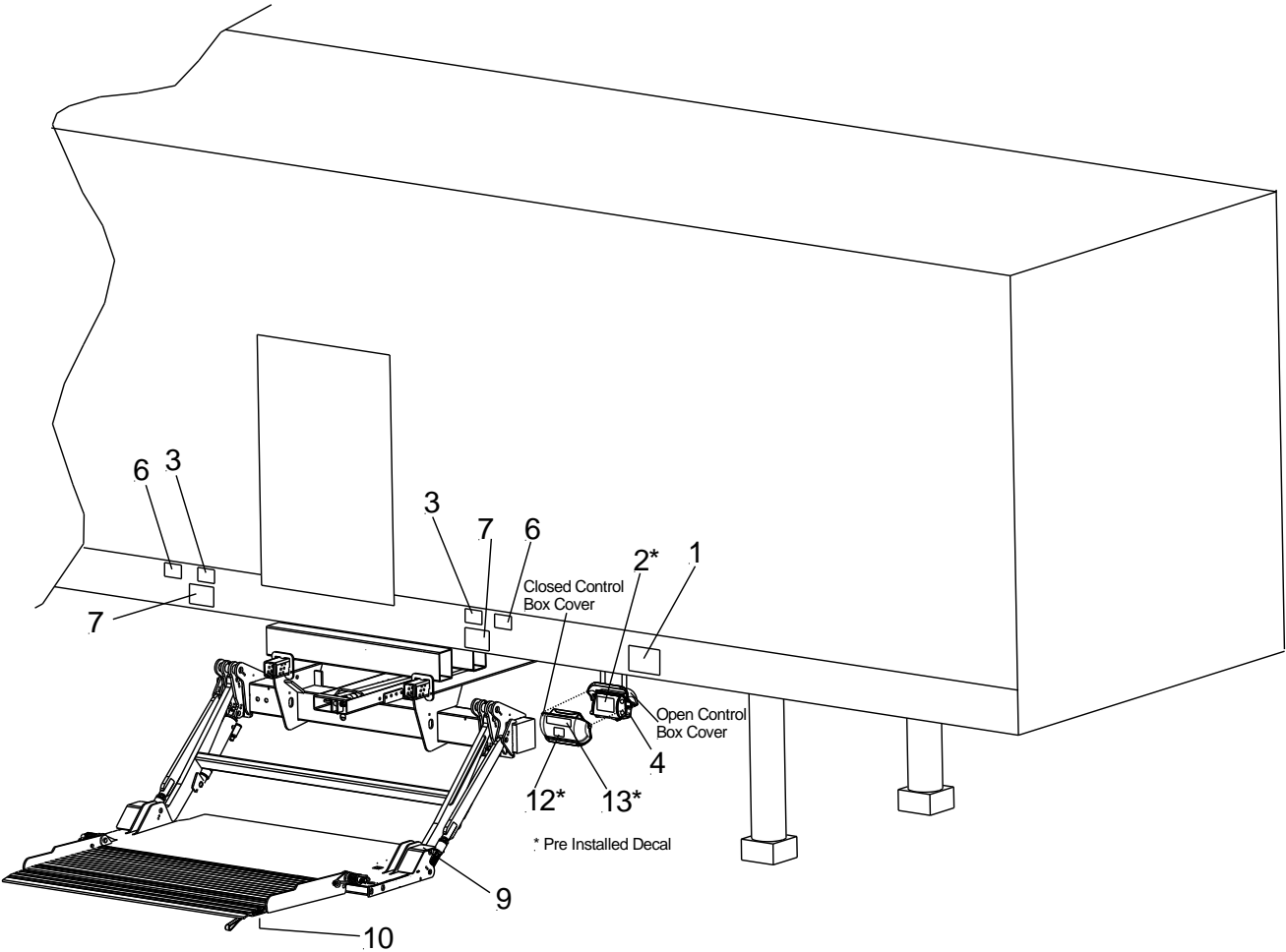
Lubricate: Platform hinges, Slide Rails and optional Cart Stops (use WD-40 spray for lubrication)

9.3 Decal Placement and Inspection

For operator's safety, all decals appearing in "Decal Kit" must be in a conspicuous place on control side of liftgate to be read by operator. This is typically a combination of decals on the liftgate and truck body. Please make sure to place the maximum capacity decal on both sides of the door.

Decal Kit			
Decal	Qty.	Part No.	Description
1	1	ATG-URGWA	Urgent Warning: Elevating gate instructions
2	1	85-1614-000	Operating Instructions (Control Box)
3	2	ATG-XXXX	Capacity (please check the serial number plate to find out your specific capacity)
4	1	ATG-CAB	Liftgate Shut-Off (located next to shut-off switch)
5	1	ATG-BKR	Max. Circuit Breaker Reset (must be located at the circuit breaker)
6	2	ATG-WLH	Warning: Liftgate can crush
7	2	ATG-CTN	Caution: Always stand clear of platform area
8	1	ATG-RESET	Circuit Breaker Protection
9	1	ATG-FT	Notice for Foot Control (if applicable)
10	1	ATG-WNG	Warning: Use handle to open
11	1	P-2032626	Palfinger Logo
12	1	85-7524-009	QR Scan Code Decal, ILSL
13	1	ML2038837	Palfinger Logo (Yellow)





Technical Data

9.4 Torque Specifications

Imperial Fasteners

Fastener Size	Grade 2 Torque (ft-lbs)		Grade 5 Torque (ft-lbs)		Grade 8 Torque (ft-lbs)	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	4	4.7	6.3	7.3	9	10
5/16"	8	9	13	14	18	20
3/8"	15	17	23	26	33	37
7/16"	24	27	37	41	52	58
1/2"	37	41	57	64	80	90
9/16"	53	59	82	91	115	129
5/8"	73	83	112	128	159	180
3/4"	125	138	200	223	282	315
7/8"	129	144	322	355	454	501
1"	188	210	483	541	682	764

Metric Fasteners

Fastener Size	Class 8.8 Torque (Nm)		Class 10.9 Torque (Nm)		Class 12.9 Torque (Nm)	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
M5	5.75	-	8.1	-	9.7	-
M6	9.9	-	14	-	16.5	-
M7	16.5	-	23	-	27	-
M8	24	-	34	-	40	-
M8x1	-	25	-	35	-	42
M10	48	-	67	-	81	-
M10x1.25	-	49	-	68	-	82
M12	83	-	117	-	140	-
M12x1.25	-	88	-	125	-	150
M14	132	-	185	-	220	-
M14x1.5	-	140	-	195	-	235
M16	200	-	285	-	340	-
M16 x1.5	-	210	-	295	-	350
M18	275	-	390	-	470	-
M18 x1.5	-	305	-	425	-	510
M20	390	-	550	-	660	-
M20x1.5	-	425	-	600	-	720
M22	530	-	745	-	890	-
M22 x1.5	-	570	-	800	-	960
M24	675	-	960	-	1140	-
M24x2	-	720	-	1000	-	1200

10 Final Inspection Check List

WARNING

Liftgate failure or malfunction could result in property damage, personal injury or death if you fail to check each of the following items listed. **DO NOT USE** the liftgate if any of the following points are NOT verified and checked.

NOTICE

Installation is **NOT** complete and all **WARRANTIES** are **VOID** if you have not checked and verified all items listed on this inspection sheet. Inspection sheet is to be filed at the facility where liftgate was installed.

Structural Inspection

- ☐ All welds are 100% complete per this manual.
- ☐ All nuts, bolts, mounting hardware, pins, chain anchors are tight.
- ☐ All mounting dimensions are correct and liftgate is square and parallel per this manual.
- ☐ Capped cutout with flat bar or angle.

Hydraulic Inspection

- ☐ Pump reservoir is filled to 1.5" from top when cylinders are completely compressed (platform is resting on the ground).
- ☐ Hydraulic components and connections do not leak.
(Should be checked after unit is hydraulically locked for five (5) minutes.)
- ☐ All hydraulic lines are secured with cable ties, hoses clamps, or other fasteners. No hoses or components rub on the frame, platform, or any other components while unit is in operation or in storage. No hoses are kinked or bent.

Electrical Inspection

- ☐ Battery cable(s) attached are clamped tight and dielectric grease is used to seal all connections.
- ☐ All electrical lines are secured with cable ties, hoses clamps, or other fasteners and are properly protected.
- ☐ Circuit Breakers installed and wired per instructions.
- ☐ Battery voltages: Flooded Batteries = 12.6V; AGM Batteries = 12.8V
- ☐ Lights wired properly and operate per DOT, State, and Federal requirements.

Operational Inspection

- ☐ All decals are in place and legible per instructions.
- ☐ All pivot points are lubricated per instructions, and Zerk fittings have been capped.
- ☐ Up stops are in place. Wheel is set for proper opening when lowering. Coil springs at platform are adjusted. Platform torsion rod is adjusted. Snubber pads are tight against platform.
- ☐ Platform travels up and down smoothly and freely, without any hesitation or unusual noises.
- ☐ Platform is flush with the sill/floor when raised completely.
- ☐ Platform rests on the ground evenly when lowered completely.
- ☐ Platform raises and lowers properly and at correct speed. (2 to 4 inches per second)
- ☐ Gate is painted, body is clean around gate. Cylinders are clean and rubber & plastic caps are in place.
- ☐ The liftgate serial number and model number are documented on the inside of the front cover of the Owner's Manual, as well as the installation manual in the space provided.
- ☐ Owner's Manual is in the vehicle's glove box.
- ☐ Supervisor has demonstrated the instructions in the Owner's Manual to the customer/driver upon delivery.

Inspection Information:

Name (please print): _____

Completed by (signature): _____

Title: _____ Date: _____

