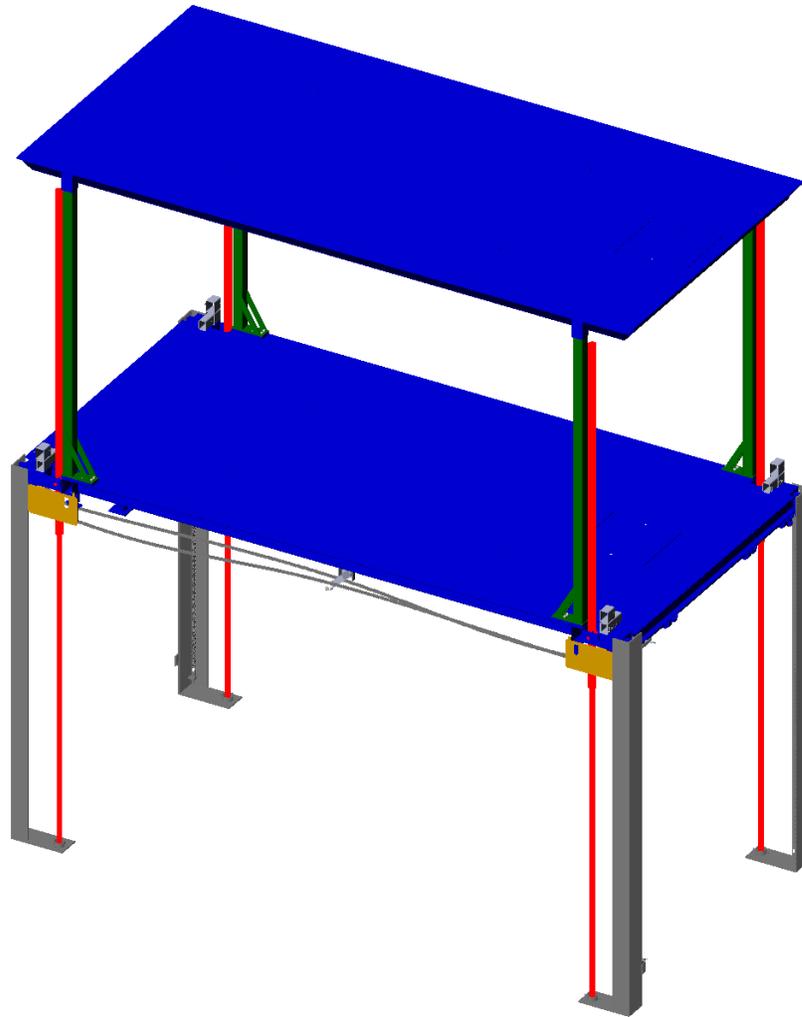


# VASARI INSTALLATION, OPERATION AND SERVICE MANUAL

## Model – VL4



# Autoquip

Innovative Lift Solutions

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# I. INTRODUCTION

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## WARNING



Please read and understand this manual prior to installation or operation of this lift. Failure to do so could lead to property damage and/or serious personal injury.

## I.1 Contact Information

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If you have any questions, contact a local representative, or use the Autoquip contact information below.



Autoquip Corporation  
1058 West Industrial Road  
Guthrie, OK 73044-1058



[aqservices@autoquip.com](mailto:aqservices@autoquip.com)  
[sales@autoquip.com](mailto:sales@autoquip.com)



888.811.9876  
405.282.5200



[\(Vasari documentation\)](#)



## I.2 Code Requirements/Compliance

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Parking lifts are ***NOT*** elevators and do not meet the requirements of ASME A17.1 – Safety Code for Elevators and Escalators. Parking lifts are designed for the sole purpose of transporting vehicles and/or personnel between floor elevations.

Parking lifts are ***NOT*** vehicle maintenance lifts and do not meet the requirements of ANSI/ALI ALCTV – Safety Requirements for Automotive Lifts.

Some state or local codes require special components and have specific guidelines regarding how the equipment must be installed, inspected, and tested. The customer is ultimately responsible for understanding these requirements for the specific job location, and Autoquip will incorporate any special requirements into the order as requested and approved by the customer.

Note: Contact Autoquip ([see 1.1 Contact Information](#)) with any questions you may have concerning Parking lift code requirements.

## I.3 Important

---

OPERATORS - Please read and understand this manual prior to operation of this lift. Failure to do so could lead to property damage and/or serious personal injury.

Situations may arise which are not covered in this manual. If you have questions, please contact Autoquip Customer Service ([see 1.1 Contact Information](#)).

## **WARNING**

This lift is designed to accommodate personal vehicles with typical axle loads and weight distributions. Parking lifts are not designed for weight distribution that exceeds more than a 60/40 difference in total vehicle weight from front to back.

## **NOTICE**

Unless otherwise stated, mechanical installation does not include unloading, permits, seismic calculations, or extensive acceptance testing. The requirements of each contract should be carefully reviewed for possible conflicts of interpretation.

## **1.4 Identification**

---

When ordering parts or requesting information or service on this lift, PLEASE REFER TO THE SERIAL NUMBER. This information is on a nameplate attached to the controller. Replacement parts are available from a local representative or Autoquip ([see 1.1 Contact Information](#)).

Please record the following information and refer to it when contacting your representative or Autoquip.

Model Number: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Installation Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

## **1.5 Inspection**

---

### **NOTICE**

The "Bill of Lading" will state the number of pieces shipped. TWO ITEMS MAY BE BANDED TOGETHER AND COUNT AS ONE PIECE.

Upon receipt of the shipment, check for exposed damage or shortages and make note of it on the trucking company Bill of Lading or the Shipping Papers. Reports of concealed damage to items contained in crates must be reported within 48 hours. DO NOT destroy the crating while opening it to inspect the contents. If damage is suspected or found, report it directly to the carrier. DO NOT contact Autoquip Corporation!! **All shipments are FOB from the Autoquip plant. Any claims for damage must be filed with the carrier. Any parts shipped from Autoquip that are intended to replace damaged or lost items will be invoiced to the ordering party.**

Assuming no damage has occurred to the crate(s), check the components against the packing list. This will provide assurance that every item shipped has been received, report any shortages to Autoquip Corporation within 10 days. (Autoquip is not responsible for parts lost, stolen or damaged during transportation, storage, installation, or during any other circumstances that are beyond corporate control.)

## **1.6 Modifications**

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### **WARNING**

Do not modify lift. Autoquip cannot foresee and is not responsible for injury or damage which results from unauthorized modifications or misuse of lift.

## 2. RESPONSIBILITY OF OWNERS/USERS

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### 2.1 Inspection & Maintenance

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The lift shall be inspected and maintained in accordance with this manual and with other applicable safe operating practices.

### 2.2 Removal from Service

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Any lift not in safe operating condition such as, but not limited to, excessive leakage, missing parts or fasteners, any bent or cracked structural members, cut or frayed electric, hydraulic, or pneumatic lines, damaged or malfunctioning controls or safety devices, etc. shall be removed from service until it is repaired to the original manufacturer's standards.

### 2.3 Repairs

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All repairs must be made by a qualified technician in conformance with Autoquip's instructions. A qualified person is defined as follows:

**Qualified person** - a person who, by possession of a recognized degree or certificate of professional standing or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work.

### 2.4 Operators

---

Only authorized personnel shall be permitted to operate lift.

**Authorized personnel** - a trained or qualified person approved or assigned to perform a specific duty or duties.

**Trained personnel** - personnel who have been trained by a qualified person and have demonstrated the ability to perform a particular function on or around a lift.

### 2.5 Before Operation

---

Before using lift, operator shall:

- Read and/or had explained, and understood, manufacturer's operating instructions and safety rules.
- Inspect lift for proper operation and condition. Any suspect item must be carefully examined, and a determination made by a qualified person as to whether it constitutes a hazard. All items not in conformance with Autoquip's specification must be corrected before operating lift.
- Verify all safety labels are in place and legible ([see 3.3 Safety Labels](#)).

### 2.6 During Operation

---

Use lift in accordance with this manual.

- Do not overload lift.
- Do not allow any portion of the load to overhang the perimeter of the platform.
- Verify all safety devices are operational and in place.

### 2.7 Modifications or Alterations

---

Modifications or alterations to this equipment may be made only with written permission of Autoquip. Unauthorized modification or alteration will void warranty.

# 3. SAFETY

## 3.1 Safety Signal Words

Before installing, operating, or servicing lift, you must read, understand, and follow the instructions and safety warnings in this manual. Your lift may not be equipped with some optional equipment shown in this manual.

The safety information in this manual is denoted by the safety alert symbol:   
The level of risk is indicated by the following signal words.

### DANGER

**DANGER** – Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

### WARNING

**WARNING** – Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

### CAUTION

**CAUTION** – Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

### NOTICE

**NOTICE** – Indicates a situation that could result in damage to the lift or other property.

The following alerts will be identified in this manual.

### DANGER



- All procedures described in this section should only be performed by qualified service personnel.



- Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).



- Failure to properly adhere to lift blocking procedures risks the sudden and uncontrolled descent of the lift during maintenance or inspection. A falling lift can cause severe injury or death.
- Never operate unit when parts are broken or damaged! Do not operate this equipment when non-factory approved or damaged parts are in use! Contact local representative to rectify all such situations or contact Autoquip ([see 1.1 Contact Information](#)).



- DO NOT walk out onto the platform or attempt to physically free the jam until load is removed and mechanism is securely blocked with maintenance devices ([see 5 Blocking Instructions](#)).



- Turn off the power and lock out the power at the primary power disconnect switch before service or maintenance.



## ⚠ WARNING



- Please read and understand this manual prior to installation or operation of this lift. Failure to do so could lead to property damage and/or serious personal injury.
- This lift is designed to accommodate personal vehicles with typical axle loads and weight distributions. Parking lifts are not designed for weight distribution that exceeds more than a 60/40 difference in total vehicle weight from front to back.
- Do not modify lift. Autoquip cannot foresee and is not responsible for injury or damage which results from unauthorized modifications or misuse of lift.
- Never operate with the gates or doors open! Do not operate with the interlocks “defeated” (bypassed)!
- To protect against death or serious injury, all labels must be on lift and must be legible.
- If any of these labels are missing or cannot be read, contact Autoquip for replacement labels ([see 1.1 Contact Information](#)).
- This label must be located adjacent to the pushbutton station at each level.
- This label must be clearly visible when operating the lift.
- The flow control fuses (FC) must be properly installed! If the FC is installed improperly, it will not control the descent in the event of a hydraulic line break!
- Never operate the lift by “manual-ing” the electrical controls (using the contactors located inside the control panel). All safety devices are by-passed in this mode of operation and lift damage or severe personal injury could occur.
- GUARDS, INTERLOCKS, SAFETY DEVICES and ELECTRICAL CIRCUIT must be restored to correct operation when installing parts, making adjustments or repairs.
- Before operating lift, all personnel interacting with lift must read, understand, and follow instructions and safety warnings in this manual.
- Close all gates when not in use. Never leave the lift unattended with gates left open.

## ⚠ CAUTION

- Guide angles must NEVER be cut/shortened in the field!! If the guide angles appear to be long, double check the overall depth of the pit – then call the factory for assistance.
- Guides must be plumb and parallel within 1/8” before proceeding.
- The cylinder rod must be retained during this process. With the rod end facing down, the cylinder rod can extend under gravity and may cause personal injury or equipment damage.
- Rod may lower under its own power once cylinder retaining clip is removed.
- Too much paste sealant can contribute to system contamination.
- Be sure that the arrow stamped on the side of the flow control is pointing away from the cylinder.
- Do not operate the lift until the platform is level and the guide beams are plumbed and secure.
- The platform must not travel more than 1” above the upper/garage floor level or the sprockets connected to the platform will travel high enough to interfere with, and damage, the chain tensioning blocks.
- Do not operate motor at relief pressure! The motor should not be operated for more than a few seconds when the unit is operating at relief pressure. Longer running times could result in damage to the pump.
- Please consult the factory before adjusting the relief valve.
- Do not operate the lift until all sensing switches have been confirmed to be installed and adjusted correctly.
- Do not use Teflon tape. Tape fragments can cause malfunctioning of the hydraulic system. Loctite PST #567 pipe thread sealant or equivalent is recommended.

## NOTICE

- Unless otherwise stated, mechanical installation does not include unloading, permits, seismic calculations, or extensive acceptance testing. The requirements of each contract should be carefully reviewed for possible conflicts of interpretation.
- The "Bill of Lading" will state the number of pieces shipped. **TWO ITEMS MAY BE BANDED TOGETHER AND COUNT AS ONE PIECE.**
- All illustrations contained in this manual are for reference purposes only. Specific applications and site conditions may require different anchoring and bracing procedures. The ultimate responsibility for the anchoring and bracing rests with the installation crew.
- Please refer to the record drawing that has been shipped with the lift. This drawing has notes and measurements that **MUST** be checked before installation of the lift. The drawing will show how the lift should be arranged and how it should be installed specifically for this application. The installation may begin only after all measurements have been checked and verified (floor-to-floor distance, pit width/length/depth, floor opening, overhead clearance, etc.).
- Guide angles have two part numbers. Ensure they are in the correct orientation. Matching guide angles will be in opposite corners.
- It is also permissible to weld the tops of the guide angles to the curb angle of the floor opening in lieu of anchoring.
- The sprockets will hit the chain tension block if they are not loosened and moved.
- This method will require a step ladder to reach the corners under the platform.
- If this is a vault application with no access to the pit, installation blocking provisions should already be in place.
- The sprockets will hit the chain tension block if the platform is lowered directly into the pit. This method requires approximately a ten-degree (10°) angle during installation.
- Make sure the cylinder port is facing away from the canopy post.
- The sprockets should be aligned prior to installing the chains.
- Each set of tensioner blocks (upper on one end and lower on the other end) lines up with either the inner or outer sprocket. Please plan accordingly.
- Do not hammer bushing directly. Place a piece of wood or other shock absorbent material between hammer and bushing.
- The use of Anti-Seize lubricant on tapered cone surfaces, or on bolt threads, may result in damage to sprockets and is grounds for voiding all warranties.
- To determine the correct length of chain for all 4 chain sets, one chain set must be installed, and length confirmed as links are removed to achieve the correct tension. Then the other 3 chain sets can have the same number of links removed so that all 4 chains sets are of equal length.
- Inspect all fittings and ports to ensure threads and sealing surfaces are free of burrs, nicks and scratches, or any foreign material.
- Do not use Teflon tape at connections.
- The number of threads engaged should be between 3-1/2 and 6. Anything outside of this range may indicate under or over tightening, or out of tolerance threads. If under tightened, tighten it but no more than one full turn. If it is over tightened, check both threads, and replace the part which has out-of-tolerance threads.
- There may be an additional connection hose between the cable carrier and power unit.
- A job-specific schematic has been shipped separately in a packet of information which includes this installation manual for reference by the electrical contractor or service provider. Refer to this schematic and follow all applicable NEC requirements throughout the electrical installation process.
- There should be no reason to adjust the relief valve. If, however, the lift will not raise the load, the relief valve is one item to check.
- The maintenance locks should be fully inserted from the platform side to ensure engagement with the floor.
- In order for the lift to operate:
  - All gates/doors guarding the lift must be closed.
  - Loads cannot hang over the edge or sides of the platform.
  - The load must be within the specified load capacity of the lift.
  - All electrical safeties, sensors, and switches must be in their "normal" condition.
- Always find out why the MOR has tripped, and be sure to correct the problem (malfunction, interference, etc.) before making the lift operational again.
- Always find out why the E-Stop button may have been pressed, and be sure to correct the problem (malfunction, interference, etc.) before making the lift operational again.

## 3.2 Safety Features

---

There are several active safety features and devices to help protect personnel, property, and equipment.

### **Safety Release Bypass Valve (SRBV)**

The SRBV is a part of the hydraulic system. Should the system pressure exceed the predetermined pressure setting, the SRBV will bypass the pump output back to the oil reservoir. The SRBV is factory set to the proper pressure, which will prevent damage to the mechanical, hydraulic, and electrical systems due to overloading, obstruction, or other circumstances. This setting should be tested once installation is complete (see Installation section).

### **Power Supply Secondary Circuit Breaker**

This circuit breaker is down stream of the power supply and protects the 24-volt DC control circuit from damage should a fault occur, which would result in excessive electric current flow. Should the circuit breaker trip it will prevent operation and the interlock circuit will not operate. These circuit breakers are in the control enclosure.

### **Motor Overload Relays (MOR)**

These are current sensing devices that are in line with the two legs of the electric motor primary power circuit (208 or 230 volt). They protect the motor from excessive current draw and overheating if it becomes overloaded or has a short circuit. Should an over-current situation be detected on any leg the MOR will trip and open the path to ground for the contactor coil via an auxiliary contact.

### **Beveled Toe Guards (BTG)**

Fixed mechanical toe guards are welded around the perimeter of the canopy at an angle of approximately 30 degrees from vertical to protect toes during operation as it descends past the edge of the garage floor into home position.

### **Hydraulic Flow Controls**

Each lifting cylinder is equipped with a hydraulic flow control. In the event of a sudden rupture in the hydraulic circuit, the flow control automatically meters the flow of oil coming from the cylinder, thereby regulating the lowering of the lift.

### **Refuge Space**

A feature unique to the 4-Post style lift is a crawl space beneath the entire platform for personnel safety during operation and maintenance. Standard clearance is 18 inches, with a minimum of 12 inches.

### **Platform Movement Alarm**

An audible and/or visual signaling device which will activate any time the "UP" or "DOWN" push button is pressed to notify anyone in the area that the lift is being operated. The alarm will continue if the platform is left in any position other than the fully raised or fully lowered positions for more than five seconds.

### **Motion Detection**

Sensors are mounted above and just outside each unprotected edge of the lift platform to detect motion in the lift operating zone outside the line of site of the operator. If any motion is detected, an electrical contact opens in the control circuit and the operator will not be able to operate the lift until the timer resets after 2 minutes.

### **Remote Cameras**

Digital cameras are mounted at the opposite level of the command center to give the operator a complete view of the lift operating zone which is outside the line of sight. One (1) monitor is located at the operator station to be able to watch all zones during lift operation.

### **Command Center Console**

Standard operator console with a flush mounted, stainless-steel enclosure that contains an LCD video monitor and the following security/safety devices pre-mounted at the factory:

### **Key Lock-out Station**

Electrical device which requires a key to turn the control system “On”. This station is wired in the control voltage circuit to prevent unauthorized operation of the lift.

### **E-Stop Station**

Emergency Stop “panic” button which, when pushed, removes electrical power from the control circuit and immediately stops lift movement. E-Stop stations can be located at upper or lower-level and must be manually reset to continue operation.

### **Digital Keypad Security Station**

A keypad security station which requires a code to turn the control system “On”. This station is wired in the control voltage circuit to prevent unauthorized operation of the lift. Authorized code times out after 5 minutes and must be re-entered.

### **Swing/Overhead Door Status Switch Kits (optional)**

Kits which retrofit into most single-swing door and/or overhead doors and include an electrical proximity switch which senses the “status” of the door – whether it is open or closed. If the door is any position other than fully closed, the lift will not operate.

### **Swing/Overhead Door Interlock Kits (optional)**

Electrical Interlock kits retrofit into most single-swing door and/or overhead doors and include a locking mechanism and a status switch. The switch senses if a door is left open and, if so, prevents the lift from operating. The lock automatically engages whenever the lift is in motion to prevent a closed door from being opened.

### **WARNING**

**Never operate with the gates or doors open! Do not operate with the interlocks “defeated” (bypassed)!**

### **Vehicle Present Sensors (optional)**

Sensor is mounted underneath the canopy and senses when a vehicle is on the canopy. If a vehicle is sensed, the sensor opens a contact in the control circuit and the operator will not be able to activate the “UP” button to raise the lift.

### **Adjustable Wheel Stops (optional)**

These mechanical devices can be adjusted to help ensure that a vehicle being parked on the platform for storage is located completely within the perimeter of the deck to prevent damage to the vehicle or the lift as the vehicle is lowered from the upper level to the lower level.

### **Ultrasonic Vehicle Position Indicator (optional)**

This simple, electronic device mounts to a wall in front of the lift and can be adjusted to ensure that a vehicle being parked on the platform for storage is located completely within the perimeter of the deck to prevent damage to the vehicle or the lift as the vehicle is lowered from the upper level to the lower level.

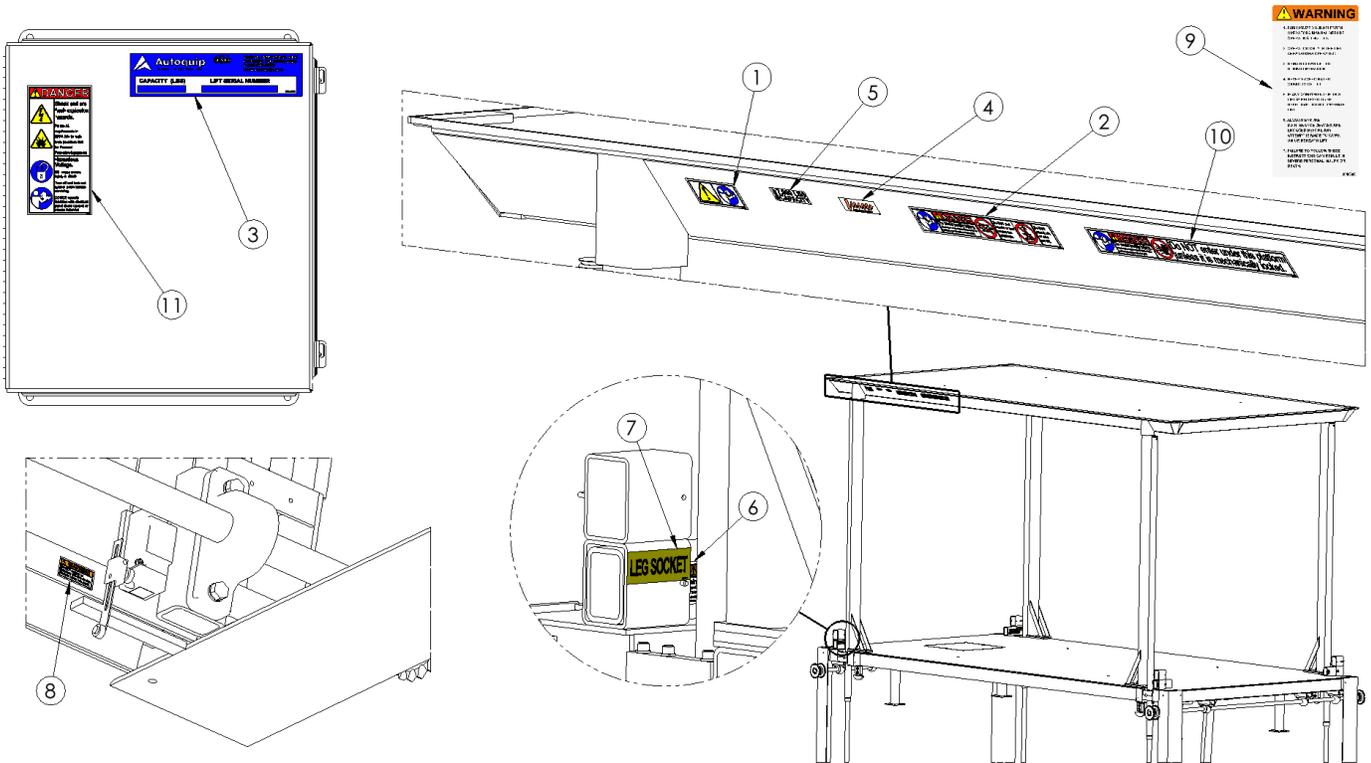
### 3.3 Safety Labels

#### **⚠ WARNING**

To protect against death or serious injury, all labels must be on lift and must be legible.

If any of these labels are missing or cannot be read, contact Autoquip for replacement labels ([see 1.1 Contact Information](#)).

#### Vasari



VL4 labels			
Item #	Qty.	Description	Part No.
1	4	Caution! Familiarize Yourself with Operator's Manual	36401488
2	4	Danger – Do Not Put Hands or Feet...	36430050
3	1	<i>Autoquip</i> Serial Number Name plate	36401570
4	4	VASARI LOGO, 1X3, 2 COLOR	36420260
5	4	VASARI, 7K LIFTING CAP, 1X3, 2 COLOR	36420270
6	4	Maintenance Device	36400257
7	4	Maintenance Device Socket	36400265
8	1	WARNING! Do Not Tamper	36405695
9	2	Operator Warning Placard (shipped loose)	36403993
10	4	Danger – Do Not enter under platform...	36433670
11	1	Danger – Arc flash, shock	36430303



1 – 36401488



2 – 36430050



3 – 36401570



4 – 36420260



5 – 36420270



6 – 36400257

# LEG SOCKET

36400265

7 – 36400265

**WARNING**  
Do NOT tamper or interfere with this device. Serious injury can result.

8 – 36405695

**WARNING**

1. FAMILIARIZE YOURSELF WITH OPERATORS MANUAL BEFORE OPERATING THIS LIFT.
2. OPERATOR ONLY IN THE LIFT AREA DURING OPERATION.
3. REMAIN CLEAR OF LIFT DURING OPERATION.
4. NEVER EXCEED RATED CAPACITY OF LIFT.
5. IF ANY COMPONENT OF THIS LIFT IS BELIEVED TO BE DEFECTIVE - DO NOT OPERATE LIFT.
6. ALWAYS ENSURE MAINTENANCE DEVICES ARE ENGAGED BEFORE ANY ATTEMPT IS MADE TO WORK ON OR BENEATH LIFT.
7. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SEVERE PERSONAL INJURY OR DEATH.

36403993

9 – 36403993

**WARNING**

This label must be located adjacent to the pushbutton station at each level.

This label must be clearly visible when operating the lift.

**DANGER**

**Shock and arc flash explosion hazards.**  
Follow ALL requirements in NFPA 70E for safe work practices and for Personal Protective Equipment.

**Hazardous Voltage.**  
Will cause severe injury or death.  
Turn off and lock out system power before servicing.

DO NOT operate machine with electrical panel doors opened or covers removed.

11 – 36433670

**DANGER**  
To avoid bodily injury, read and understand all instructions before operating or servicing lift.

**Do NOT enter under this platform unless it is mechanically locked.**

10 – 36433670

## 4. INSTALLATION

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### DANGER



All procedures described in this section should only be performed by qualified service personnel.

Proper installation of Vasari lifts is vital to the safety of the operators, the efficiency of the unit, and the ultimate satisfaction of the end user.

### 4.1 Pre-installation Activity

---

1. Whenever possible, make a pre-installation visit or contact someone at the site. Installers must be familiar with everything relative to proper installation of this equipment. It is the installer's responsibility to check the site for problems and work out solutions with the appropriate people – preferably before installation begins.
2. Check floor-to-floor and floor-to-ceiling dimensions on the record drawing to make sure that they match on-site conditions. Vasari lifts are designed and built to individual applications and specific customer requirements. It is difficult and expensive to modify the lift after it arrives for installation.
3. Each state, county, or municipality may have unique codes governing the installation and acceptance of these lifts. Acquaint yourself with the permitting and/or licensing requirements (and expenses) of the local regulatory agencies.

**Note: Some agencies may require inspection or testing before and/or after lift start-up. Contact Autoquip ([see 1.1 Contact Information](#)) with any questions.**

4. Make sure there is adequate ingress/egress to the installation site. Verify that the equipment can get through the existing doorways, halls, and shaft openings. Think through how the lift will be unloaded, carted/moved, raised into position, and accessed for installation, operation & maintenance.

### 4.2 Shipment and Initial Inspection

---

1. Upon receipt of the shipment, check for exposed damage or shortages and make note of it on receiving paperwork from the trucking company. Any claims for damage must be filed with the carrier. Unless otherwise stated, the manufacturer is not responsible for parts lost, stolen or damaged during transportation, storage, or installation.
2. Assuming no damage has occurred to the crate, check all components against the packing list. This will help ensure that every item shipped has been received.
3. Make sure you have a copy of the latest version of the record and electrical drawings before beginning installation, changes could have been made since original purchase order submittal and order entry.
4. Read and understand this manual thoroughly prior to starting the installation.

## 4.3 Equipment Layout

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1. Make sure pit and/or lift are properly squared and vertically aligned with upper landings to ensure that the platform will clear the upper landings by the required distance.
2. Be sure to take into consideration any other obstructions (pipes, ductwork, ceiling joists/beams, etc.) that may be located around the lift.
3. Inspect the installation for any overhanging floor landing or other obstruction (pipes, ductwork, ceiling joists/beams, etc.) which could potentially jam a load that is slightly overhanging the platform as it raises to the next floor level. Any potential jam point should have some type of slanted or beveled guarding placed beneath the obstruction to push the overhanging load back onto the platform.

## 4.4 Structural Installation

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1. Follow the bracing recommendations shown on the record drawing and in this manual ([see 4.9.1 Mounting the Corner Guide Angles](#)). Site conditions may also require customization to standard anchoring and bracing. The installers are ultimately responsible for the proper and safe anchoring and bracing of the equipment and should consult the manufacturer if there is any doubt as to the structural integrity of the installation.
2. Do not modify any component of the lift without expressed written consent from the manufacturer.

## 4.5 Personnel & Equipment Safeties

---

1. Autoquip requires that all parking lift installations be completely guarded to prevent injury from inadvertent contact with the lift or its load. It is the responsibility of the installer to ensure that the installation meets these requirements, regardless of who (manufacturer, customer, architect, general contractor, etc.) provides the safety equipment. Consult Autoquip whenever there is a question as to whether the gate & enclosure installation meets requirements.
2. Travel limit switches must be installed and working properly.

## 4.6 Testing

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1. Test up and down speeds.
2. Test all electrical switches and sensors, gate interlocks, gate status switches, and any other safety features or devices as described in this manual. Also consult any manuals which may have been shipped separately for the gate installation & operation.

## 4.7 Clean-up & Hand-off

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1. Conduct a final inspection of the lift installation ([see 4.18 Installation Checklist](#)) Correct any deficiencies before clean-up & hand-off.
2. **Apply proper signage to the installation per the guidelines ([see 3.3 Safety Labels](#)), and per any instructions shipped separately with the gate interlock kits. Contact Autoquip ([see 1.1 Contact Information](#)) if labels appear to be missing or damaged.**

Train operators on the operation of the system and all safety features and procedures by referencing the corresponding sections in this manual.

## 4.8 Tools Required

Listed below are some of the tools needed to install the VRC in a professional and prompt manner. Individual site situations and a basic variation in the types of units may dictate the need for additional items.

Welding machine and equipment	Pinch bar
Cutting torch with full tanks	Disk grinder
Fire extinguisher	Ratchet strap
Forklift or small crane	Torque wrench
Chain fall	Open or box end wrench
Come-a-long	Sledgehammer
Cables or hook chains with 1,000# Cap.	Drift punch
Hack saw, reciprocating saw, or portable band saw	Carpenter's square
"C" clamps (18" opening)	Chalk line
Socket set (1/2" drive, sockets to 1-1/8")	Plumb bobs
Hammer drill & bits for 1/4", 3/8" and 1/2" anchors	Laser level
Nylon slings	25' measuring tape
Saw horses or jack stands	Broom

The following supplies will also be needed:

- Concrete anchors (20 minimum) sized for the required minimum pullout of the mast foot plates and upper-level bracing. Refer to the approval drawing since the size of the anchors can vary for each installation.
- Shim stock for the guide angle floor and wall mounting.
- Paint (standard colors available in spray can, 1, or 5 gallons)
- Hydraulic oil ([see 7.4.1 Oil Recommendations](#)).

ALSO - BEFORE YOU BEGIN:

- Platform and canopy are too heavy to lift manually and require lifting equipment. Check the availability of overhead provisions before you start.
- Before installation is complete, the unit must be operated. Power to the motor is required. Arrange for power before starting installation.

### NOTICE

**All illustrations contained in this manual are for reference purposes only. Specific applications and site conditions may require different anchoring and bracing procedures. The ultimate responsibility for the anchoring and bracing rests with the installation crew.**

See [9.1 General Assembly](#) for part identification and nomenclature.

## 4.9 Structural Installation Details

### NOTICE

Please refer to the record drawing that has been shipped with the lift. This drawing has notes and measurements that **MUST** be checked before installation of the lift. The drawing will show how the lift should be arranged and how it should be installed specifically for this application. The installation may begin only after all measurements have been checked and verified (floor-to-floor distance, pit width/length/depth, floor opening, overhead clearance, etc.).

### ⚠ DANGER



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).

1. Never work under the lift platform unless it is blocked in place ([see 5 Blocking Instructions](#)).
2. Use only the hardware supplied by the manufacturer to assemble the lift. This hardware is often high grade, some hardware is metric.
3. Use only the platform synchronization chains and attachment hardware supplied by the manufacturer.

### 4.9.1 Mounting the Corner Guide Angles

Items needed for this step:

- 4 - corner guide weldments
1. Mount each corner guide weldment in its appropriate corner and at the appropriate distances apart as shown in the GA Drawing. These guide angles should **NEVER** protrude above the garage/upper floor level. In the cases where the garage floor may slope down from front to back, always install the back (lower elevation) guide angles so that the top of the angle is flush with the top of floor, and then set the front (higher elevation) angles to match the elevation of the back angles.

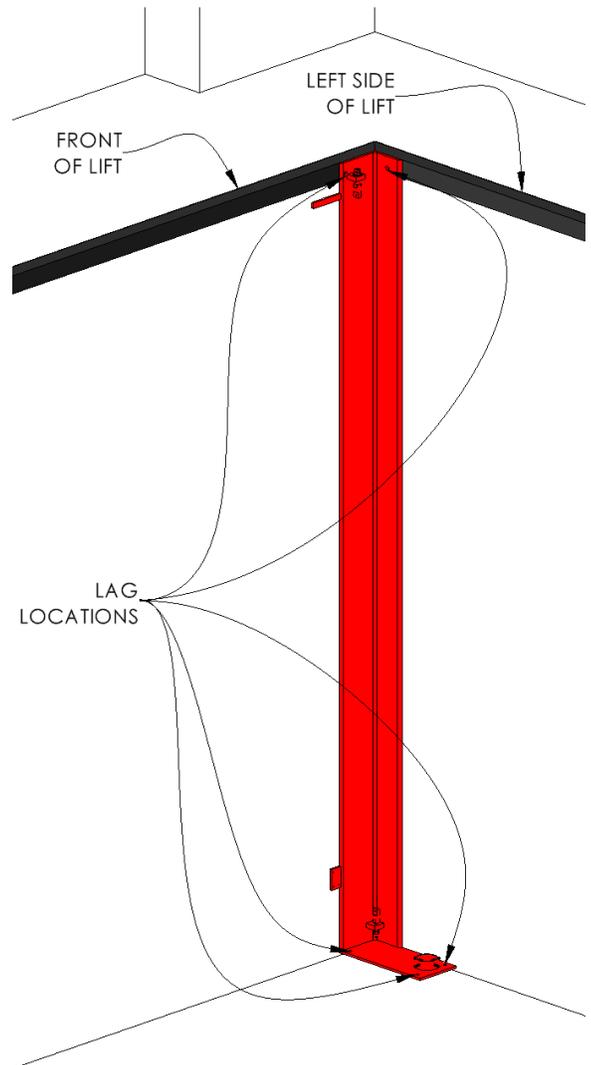
### NOTICE

Guide angles have two part numbers. Ensure they are in the correct orientation. Matching guide angles will be in opposite corners.

### ⚠ CAUTION

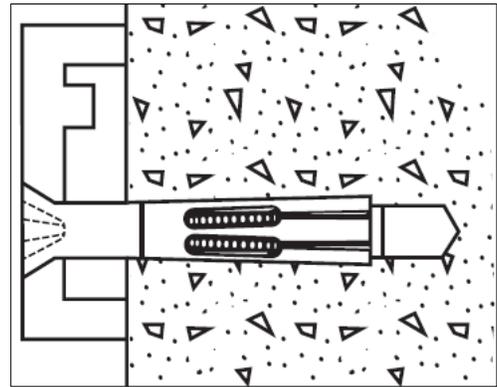
Guide angles must **NEVER** be cut/shortened in the field!! If the guide angles appear to be long, double check the overall depth of the pit – then call the factory for assistance.

Guides must be plumb and parallel within 1/8" before proceeding.



2. Double-check all clearances (side-to-side & end-to-end) between the guide angle surfaces, then attach each guide into the wall and floor using the required number of lag bolts for each – sized to withstand the pull-out force specified on the GA drawing. Hand snug these anchor bolts only, do not tighten yet.
3. Recheck the position of the guides and ensure that they are also plumb, parallel, square, and level (guides must be checked closely for level because pit floors and walls may not be poured level). To maintain proper positioning of the guides throughout lift travel – shim under each foot plate as required to fill any gaps between the foot plate and the floor or the wall plate and the wall which may have been created during the plumb-square-level process.
4. Tighten all concrete anchors to anchor manufacturer’s specs.

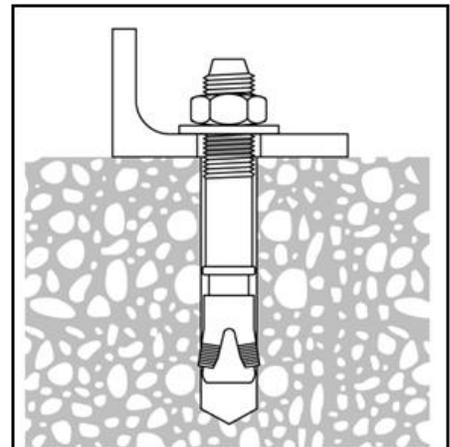
**NOTE: Recommended concrete anchor bolts for the vertical guide angle surfaces are: Simpson Sleeve-All or Red Head Dynabolt Flat Head Sleeve Anchor, or similar.**



**NOTICE**

It is also permissible to weld the tops of the guide angles to the curb angle of the floor opening in lieu of anchoring.

**NOTE: Recommended concrete anchor bolts for the horizontal floor plates are: HILTI “Kwik-Bolt TZ2”, Simpson “Strong-Bolt 2”, or equivalent wedge anchors.**



## 4.9.2 Placing the Platform into Position

Items needed for this step:

- (1) lower platform assembly
- (1) carry deck crane or telehandler (lull)
- (4) hoist rings ( $\frac{3}{4}$ -10 thread)
- chain or straps for rated capacity

**⚠ DANGER**



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).

***There are several ways to install the platform. Shown are two of the common approved methods.***

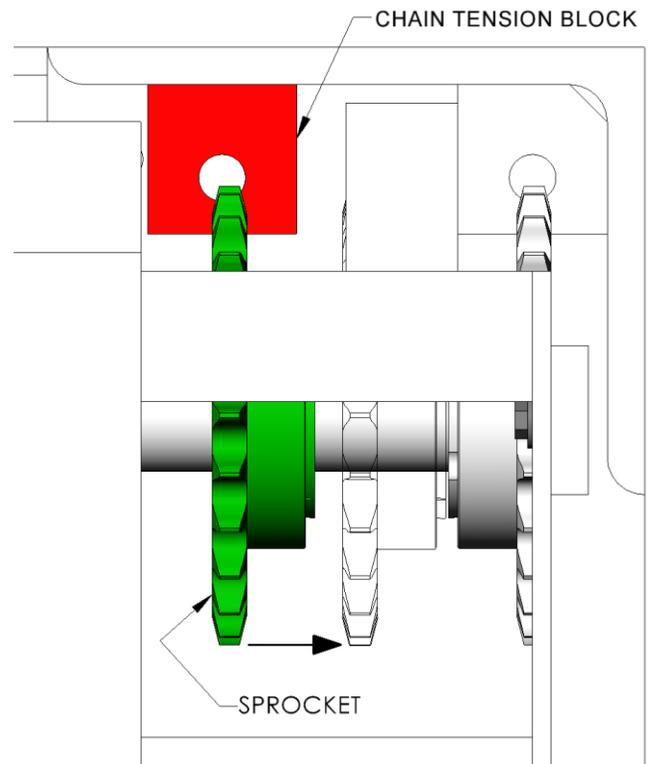
### 4.9.2.1. Lowering Straight Down

1. Place the maintenance locks in the engaged position ([see 5 Blocking Instructions](#)).
2. Use the lifting eye provisions in the deck to lower the platform slowly into the four corner guides as shown.

#### **NOTICE**

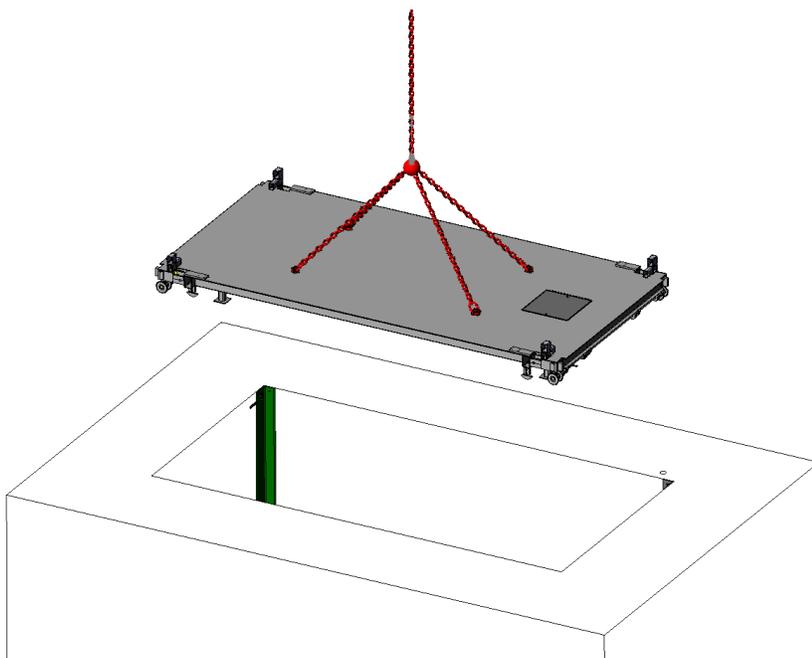
**The sprockets will hit the chain tension block if they are not loosened and moved.**

3. The inner sprocket on the right side must slide toward the outer sprocket. The outer sprocket on the left side must slide toward the inner sprocket. Alignment will be done later. ([see 4.10.1 Adjustment of Sprocket Locations](#)).



#### **NOTICE**

**This method will require a step ladder to reach the corners under the platform.**



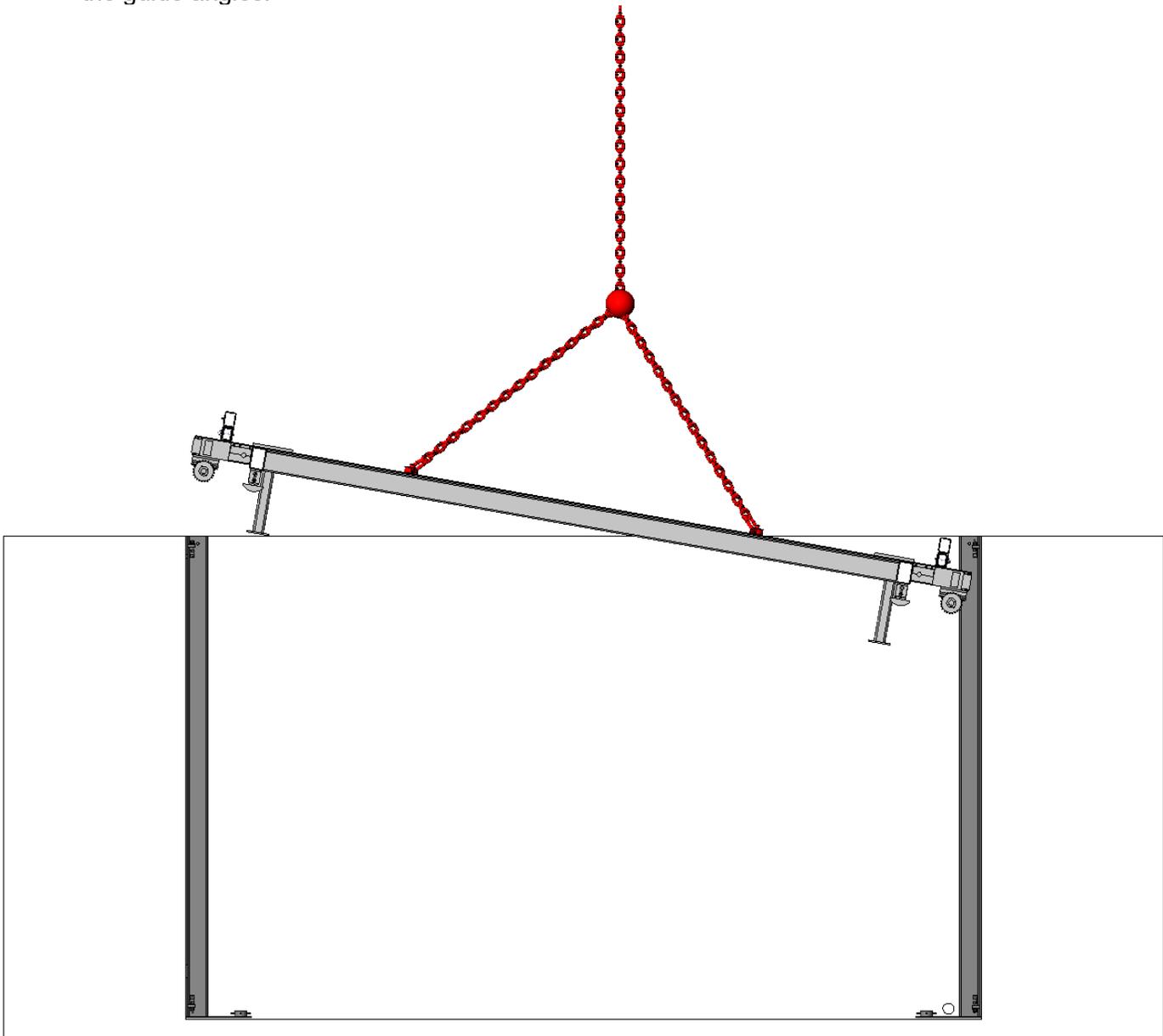
#### 4.9.2.2. Lowering at an Angle

### NOTICE

If this is a vault application with no access to the pit, installation blocking provisions should already be in place.

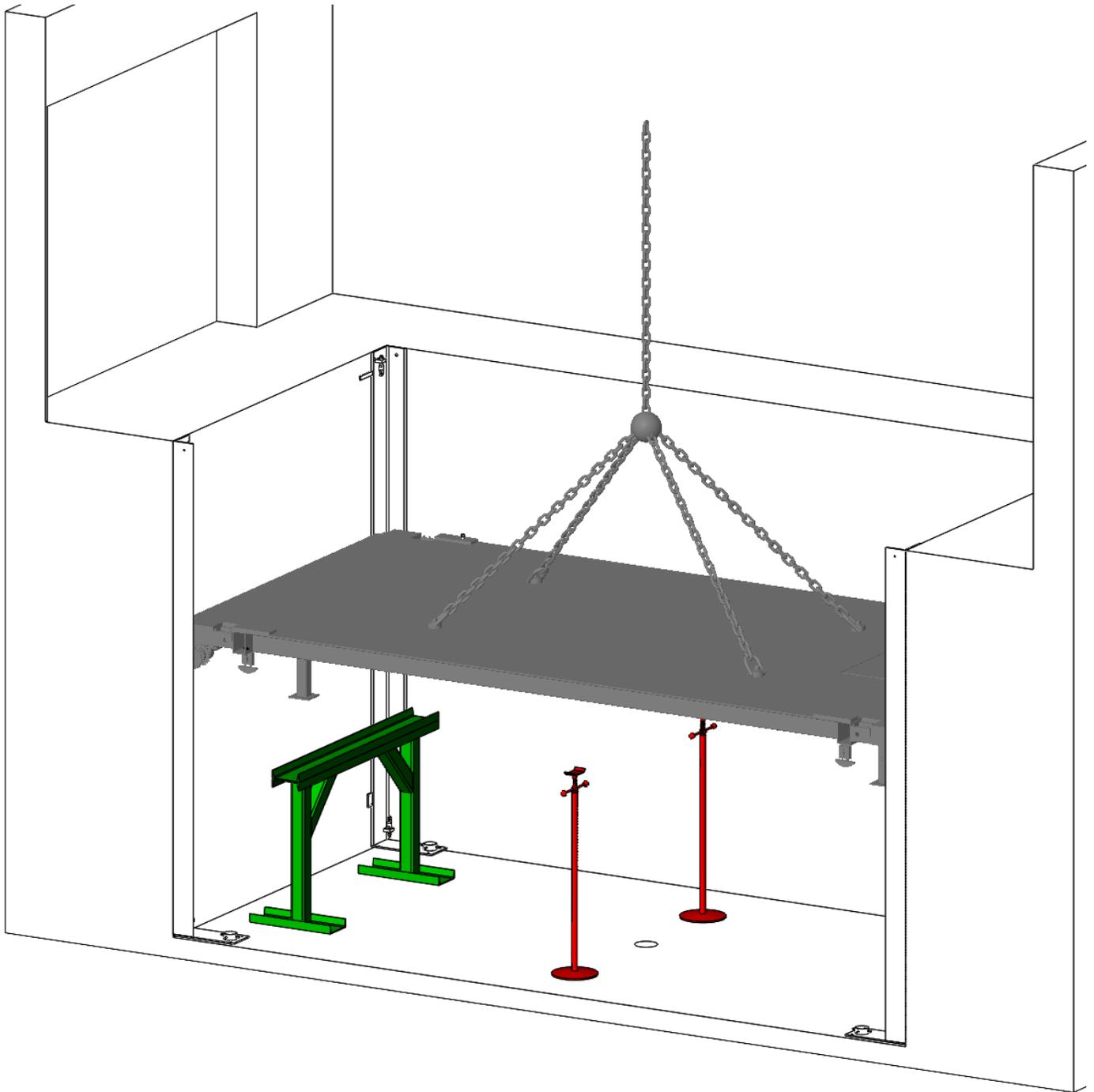
The sprockets will hit the chain tension block if the platform is lowered directly into the pit. This method requires approximately a ten-degree ( $10^{\circ}$ ) angle during installation.

1. Use the lifting eye provisions in the deck to lower the platform slowly into the four corner guides as shown.
2. Tilt the platform from front to back. That will allow the sprockets to clear the chain tension blocks on the guide angles.



3. Once both ends clear the upper lugs, ensure that all supports are stable, and that the platform is centered and level within the floor opening.

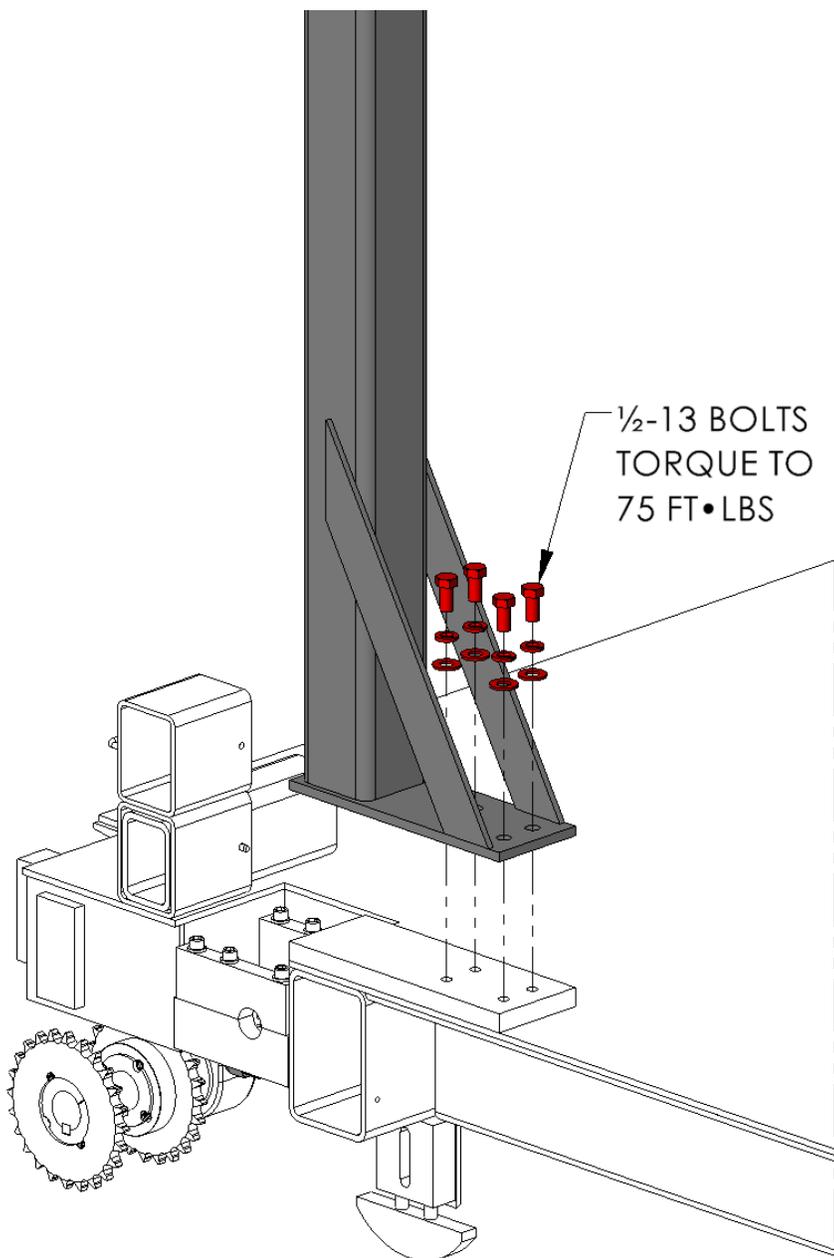
4. While held by the hoist, place additional blocking below the platform ([see 5 Blocking Instructions](#)).
5. Sawhorses or jack stand that will hold the load should be placed under the landing legs or structure of the platform.



### 4.9.3 Attaching the Canopy Posts

Items needed for this step:

- (4) canopy posts with maintenance locks
- (16) ½-13x1 hex head bolts, grade 5
- (16) ½ in flat washers
- (16) ½ in lock washers



1. Bolt the four (4) posts into place as shown with the hardware provided. Torque bolts as shown.

## 4.9.4 Mounting the Cylinders

Items needed for this step:

- (4) ram cylinders with trunnion mounts
- (8) trunnion clamp plates
- (24) 3/8-24 x 3inch socket head cap screws
- (24) 3/8 lock washers

### **⚠ CAUTION**

The cylinder rod must be retained during this process. With the rod end facing down, the cylinder rod can extend under gravity and may cause personal injury or equipment damage.

1. Mount each cylinder by lowering into place from above (with the cylinder rod pointing downward) with the cylinder trunnions in line with the trunnion cut-outs in the platform clevises.

### **NOTICE**

Make sure the cylinder port is facing away from the canopy post.

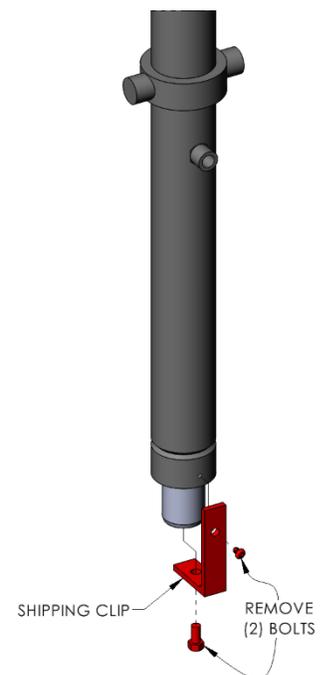
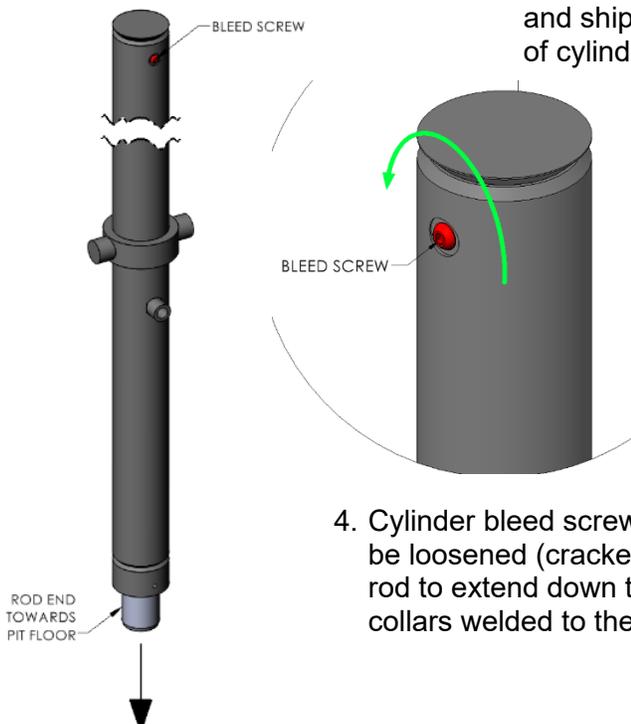
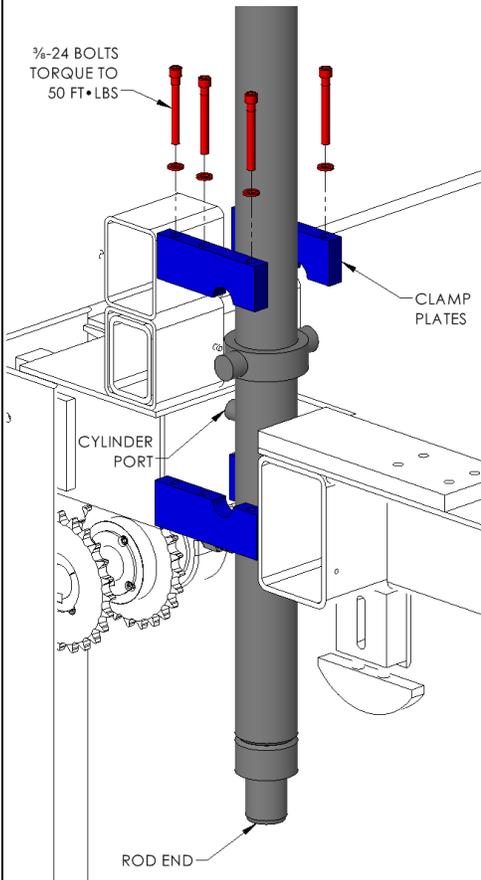
2. Once the cylinder trunnions are resting in the platform clevises, trunnions are clamped into place using the cylinder clamps and hardware provided. Torque clamp bolts as shown.

### **⚠ CAUTION**

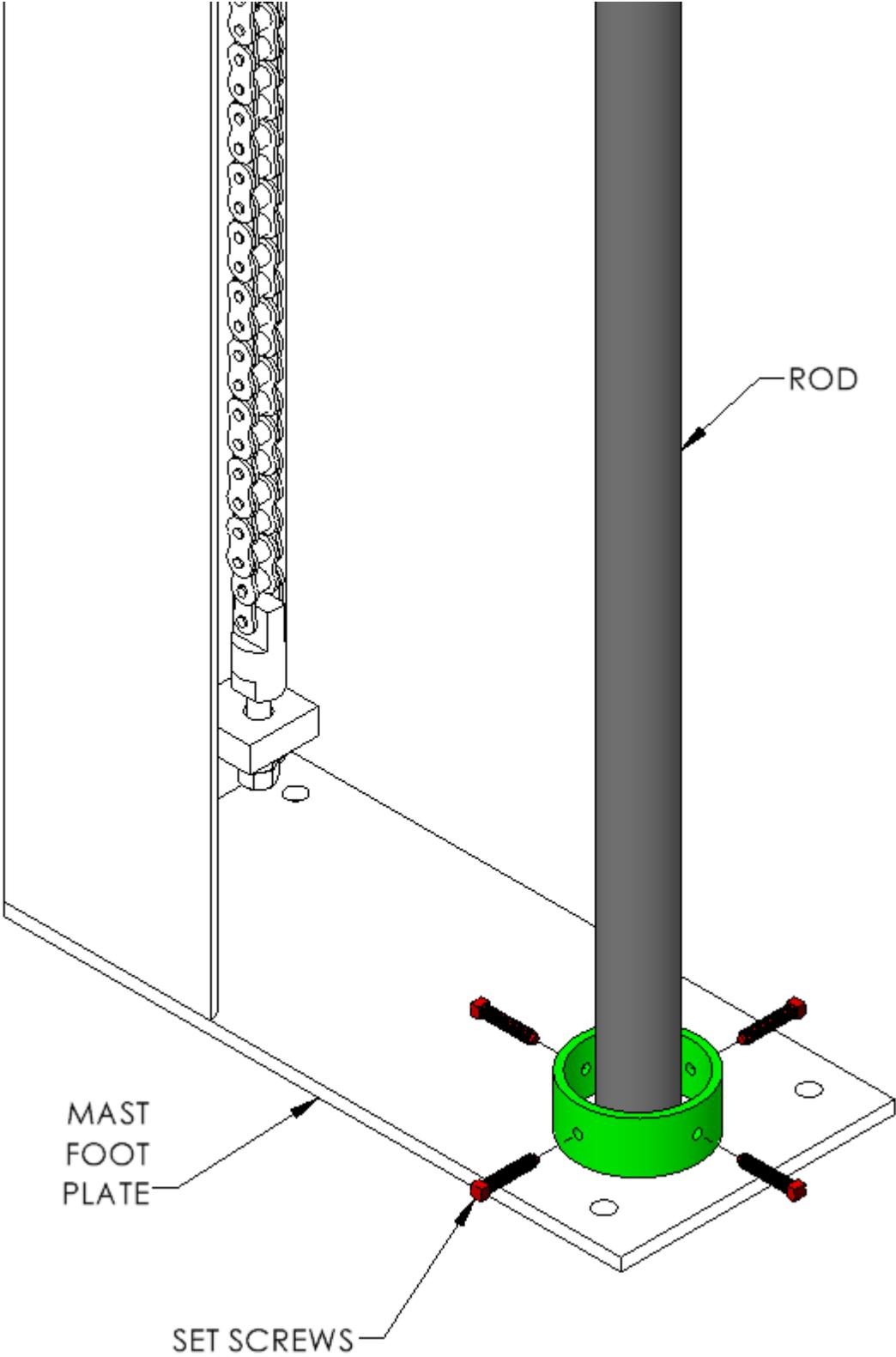
Rod may lower under its own power once cylinder retaining clip is removed.

3. Remove cylinder retaining clip after cylinder is secured into clevis. After Removing bolt from body of cylinder and shipping clip, replace bolt into body of cylinder.

4. Cylinder bleed screw near top of cylinder casing can be loosened (cracked) – but not removed – to allow rod to extend down to basement level and into the collars welded to the corner guide base plates.



5. To ensure the rod is plumb, adjust the set screws in the mast foot.



## 4.10 Mechanical Installation Details

Items needed for this step:

- boxes of roller chain
- master link assemblies
- (8) chain tensioning blocks
- (8) ½ flat washers
- (16) ½-13 hex nuts

1. Make sure the platform is level before beginning. If platform is resting on and/or flush with garage floor, shim to level.

### NOTICE

The sprockets should be aligned prior to installing the chains.

Each set of tensioner blocks (upper on one end and lower on the other end) lines up with either the inner or outer sprocket. Please plan accordingly.

### 4.10.1 Adjustment of Sprocket Locations

TO LOOSEN

1. Loosen and remove both set screws.
2. Take one of the removed screws and thread it into the push screw threaded location.
3. Loosen bushing by tightening the set screw down into the push screw threads.

TO ADJUST

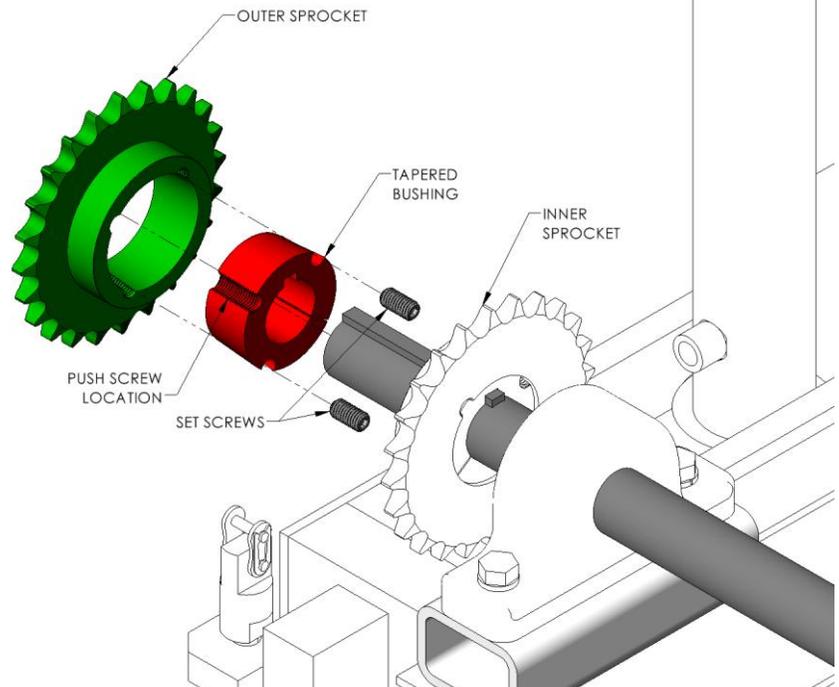
1. Move/gently tap bushing & sprocket along keyway to desired location.

### NOTICE

Do not hammer bushing directly. Place a piece of wood or other shock absorbent material between hammer and bushing.

TO TIGHTEN

1. Thread both set screws back into the two set screw holes that are 180° apart from one another.
2. Alternately torque the set screws to 280 in•lbs.
3. Tap or hammer large end of bushing.
4. Repeat steps 2 and 3 until torque wrench reading, after hammering, is the same as before hammering.
5. Fill push screw hole with grease to prevent rusting of threads.



### NOTICE

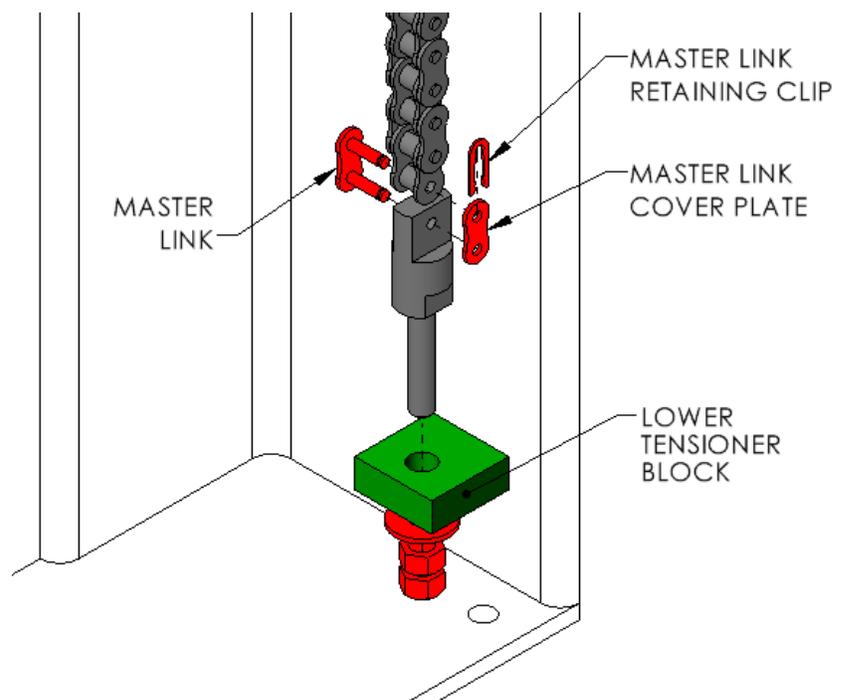
The use of Anti-Seize lubricant on tapered cone surfaces, or on bolt threads, may result in damage to sprockets and is grounds for voiding all warranties.

## 4.10.2 Installing Chain

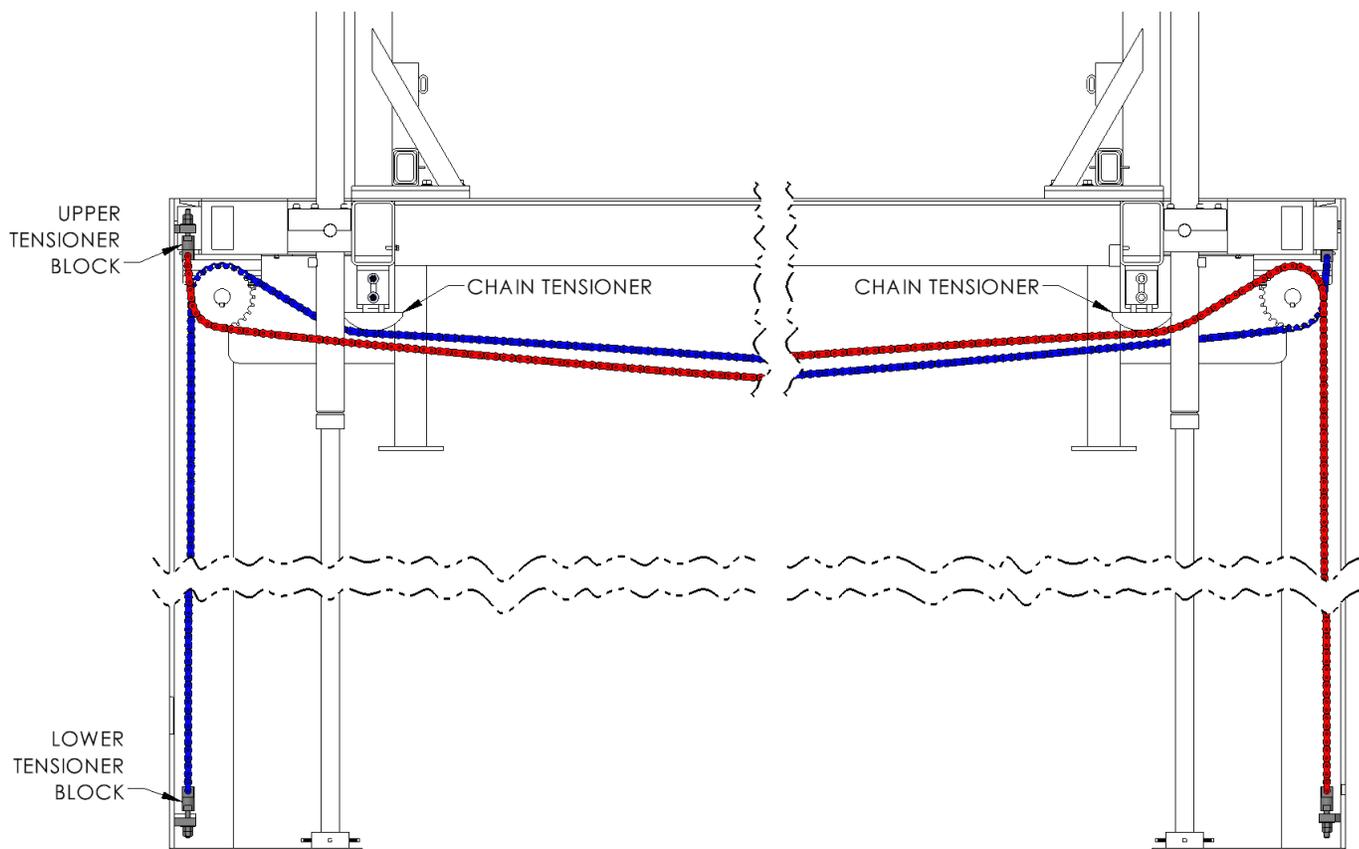
### NOTICE

**To determine the correct length of chain for all 4 chain sets, one chain set must be installed, and length confirmed as links are removed to achieve the correct tension. Then the other 3 chain sets can have the same number of links removed so that all 4 chains sets are of equal length.**

1. The chain comes in 10-foot lengths. Split the boxes into four equal groups so that the 10-foot lengths can be connected to create the lifting chain for each mast. Each box will include a master link. Typically, there are four short sections (<10 feet) of chain included. Attach one short section to each lifting chain.
2. Take one of the four chain groups and split into two halves for splicing when attaching to the lift. Do this by removing and saving the master link assembly nearest the center of the chain group.
3. Using the hardware provided, attach a chain tensioning block to one end of each half-chain as shown.
4. Connect one half-chain to a lower tensioner block. The other half-chain that goes with this one will be attached to the upper tensioner block on the opposite end.
5. From the lower tensioner block, chain must be routed up over the sprocket mounted beneath the platform. Slack must be minimized in this run of chain.
6. From the upper tensioner block, chain must be routed down around the sprocket mounted beneath the platform. Slack must be minimized in this run of chain.
7. It is recommended that each of the spring-loaded chain tensioners mounted beneath the platform be held in a fully retracted position during the following chain routing procedure (18" C-clamps, etc.).



- Route the chains beneath the chain tensioners as shown while bringing the ends of the two sections of the first synchronization chain together near the center of the chain path and attaching a ratchet strap hook to each chain, approximately 12 inches from each end as shown.



- Remove as many links as possible with a chain breaker to maximize tension in the chain and to keep total chain sag below 6 inches when measured at the center of the total chain span.

- Use a ratchet strap to bring and hold the two chain halves together while connecting them with chain master links.



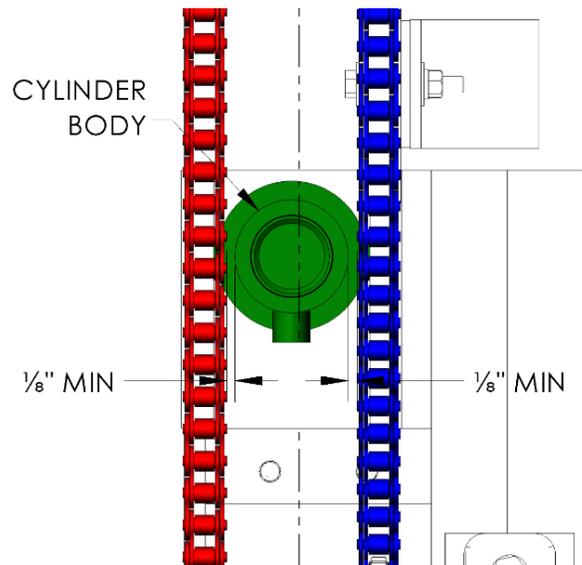
- Remove restraints from the spring tensioners and allow them to extend against the chain.



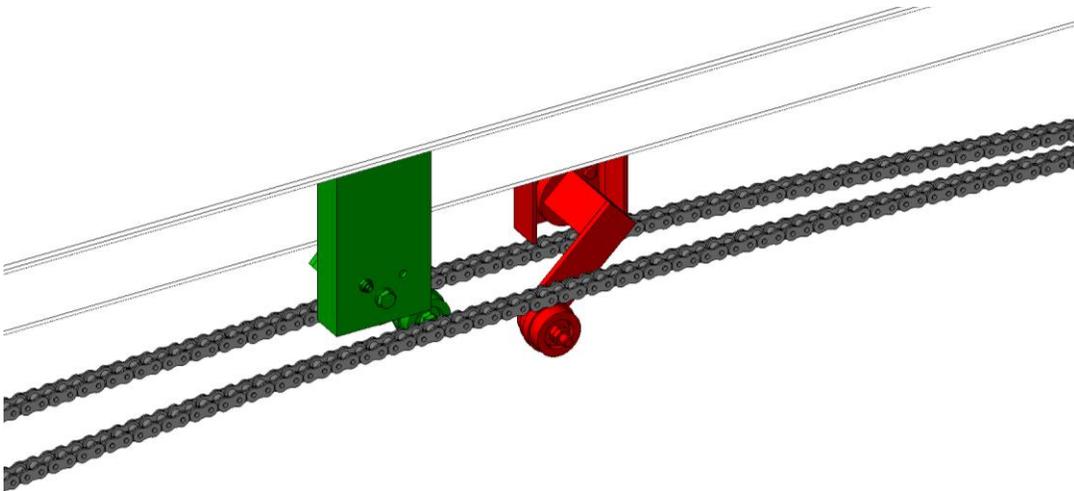
- Repeat this step for the other (3) chains.



13. Make sure there is at least  $\frac{1}{8}$  inch running space between the cylinder casings and the synchronization chains that run on either side of the cylinders.



14. If the platform has midspan tensioning arms for added chain support, they can now be released.



15. To adjust proximity of the chains with relation to the cylinder, the sprockets must be moved along the shaft ([see 4.10.1 Adjustment of Sprocket Locations](#)).

## 4.11 Hydraulic Installation Details

### **⚠ DANGER**



All procedures described in this section should only be performed by qualified service personnel.

### **⚠ WARNING**

The flow control fuses (FC) must be properly installed! If the FC is installed improperly, it will not control the decent in the event of a hydraulic line break!

### **NOTICE**

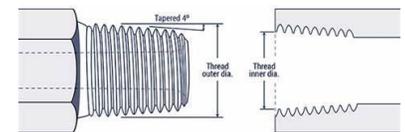
Inspect all fittings and ports to ensure threads and sealing surfaces are free of burrs, nicks and scratches, or any foreign material.

Do not use Teflon tape at connections.

### 4.11.1 Fitting Tightening Instructions

#### 4.11.1.1. NPT Fittings

American National standard Pipe Thread (NPT) is a tapered thread that typically requires pipe dope to help with sealing. Turns from finger tight (T.F.F.T.) is the correct method for tightening these fittings.



1. Apply sealant paste to male pipe threads if not pre-applied. With any sealant, the first one to two threads should be left uncovered to avoid system contamination.

### **⚠ CAUTION**

**Too much paste sealant can contribute to system contamination.**

2. Screw the connector into the port to the finger tight position.
3. Wrench tighten the connector to the appropriate T.F.F.T. values shown, making sure that the tube end of a shaped connector is aligned to receive the incoming tube or hose assembly. Never back off (loosen) pipe threaded connectors to achieve alignment.
4. If leakage persists after following the above steps, check for damaged threads and total number of threads engaged. If threads on the fitting are badly nicked or galled, replace the fitting. If port threads are damaged, re-tap, if possible, or replace the component. If the port is cracked, replace the component.

NPTF	T.F.F.T.
1/8-27	2 - 3
1/4-18	2 - 3
3/8-18	2 - 3
1/2-14	2 - 3
3/4-14	2 - 3
1-11 1/2	1.5 - 2.5
1 1/4-11 1/2	1.5 - 2.5
1 1/2-11 1/2	1.5 - 2.5
2-11 1/2	1.5 - 2.5

### **NOTICE**

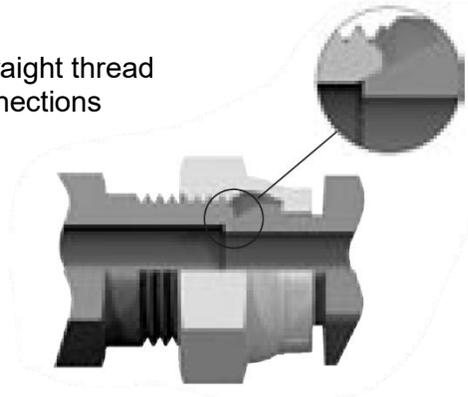
The number of threads engaged should be between 3-1/2 and 6. Anything outside of this range may indicate under or over tightening, or out of tolerance threads. If under tightened, tighten it but no more than one full turn. If it is over tightened, check both threads, and replace the part which has out-of-tolerance threads.

5. Generally, pipe fittings with tapered threads should not be assembled to a specific torque because the torque required for a reliable joint varies with thread quality, port and fitting materials, sealant used, and other factors.

#### 4.11.1.2. NPSM Swivel Fittings

American National standard Pipe Straight Mechanical (NPSM) is a straight thread that has the same thread angle, shape, and pitch as NPT. These connections do **NOT** require pipe dope to help with sealing.

Unlike traditional pipe thread, these connections seal on the nose of the swivel end. The nose has a 60° inclusive angle that mates against a chamfer of the same angle on the male pipe thread end (also known as a 30° chamfer). Therefore, torque is the correct method for tightening these fittings.



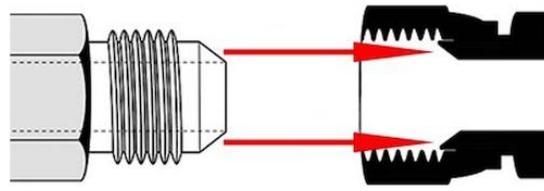
NPSM Size in.	Steel Assembly		
	TORQUE (+10% - 0%)		F.F.F.T.
	in.-lb.	ft.-lb.	
1/8	106	9	1.0 - 1.5
1/4	156	13	1.0 - 1.5
3/8	192	16	1.0 - 1.5
1/2	396	33	1.0 - 1.5
3/4	580	48	2.0 - 2.5
1	1140	95	2.0 - 2.5
1 1/4	1420	118	2.0 - 2.5
1 1/2	2840	237	2.0 - 2.5
2	3720	310	2.0 - 2.5

1. Screw the connector into the port to the finger tight position.
2. Wrench tighten the connector to the appropriate torque values, or flats from finger tight (F.F.F.T).

#### 4.11.1.3. JIC (37° Flare) Fittings

The Joint Industry Council (JIC) is a straight thread that seals on a 37° flare and is metal to metal.

1. Screw the connector into the port to the finger tight position.
2. Assembly Torque: Torque values are for unlubricated carbon steel components and properly lubricated stainless steel components.
3. FFWR: The Flats From Wrench Resistance or “Flats” method is recommended for steel, stainless steel and brass components.

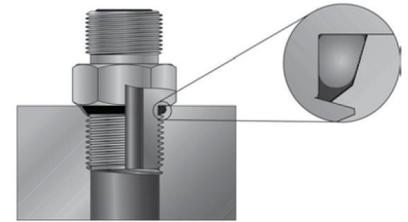


SAE Dash Size	Thread Size	Assembly Torque* (+10% -0)		Tube Connection FFWR	Swivel Nut or Hose Connection FFWR
		in. lb.	ft. lb.		
-2	5/16-24	35	2	—	—
-3	3/8-24	65	5	—	—
-4	7/16-20	130	11	2 1/2	2
-5	1/2-20	165	14	2 1/2	2
-6	9/16-18	235	20	2 1/2	2
-8	3/4-16	525	43	2 1/2	2
-10	7/8-14	650	55	1 1/2	1 1/2
-12	1 1/16-12	950	80	1 1/2	1 1/2
-14	1 3/16-12	1200	100	1 1/2	1 1/2
-16	1 5/16-12	1400	115	1	1 1/2
-20	1 5/8-12	1900	160	1	1
-24	1 7/8-12	2250	185	1	1
-32	2 1/2-12	3000	250	1	1
-40	3-12	—	—	1	1

4. Torques and FFWR shown in the chart are for use with the tube materials, wall thickness, etc. recommended by Parker Hannifin Tube Fittings Division for use with Parker Triple-Lok fittings.

#### 4.11.1.4. SAE (O-ring) Fittings

These fittings have straight threads and seal on the elastomer (O-ring). There are two categories: adjustable and non-adjustable.

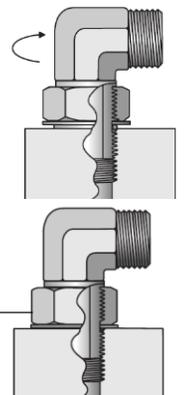
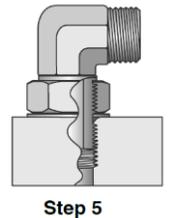
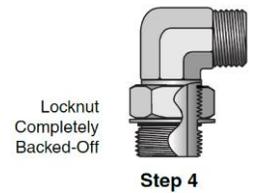
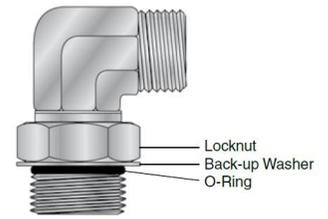


##### 4.11.1.4.A. NON-ADJUSTABLE PORT END ASSEMBLY

1. Inspect components to ensure that male and female port threads and sealing surfaces are free of burrs, nicks, and scratches, or any foreign material.
2. If the O-ring is not pre-installed to fitting male port end, install proper size O-ring or seal, taking care not to damage it.
3. Lubricate the O-ring with system fluid (or compatible) to help the O-ring slide smoothly into the port and avoid damage.
4. Screw fitting into port and tighten to proper torque from the chart below.

##### 4.11.1.4.B. ADJUSTABLE PORT END ASSEMBLY

1. Inspect components to ensure that male and female port threads and sealing surfaces are free of burrs, nicks and scratches, or any foreign material.
2. If O-ring is not pre-installed to fitting male port end, install proper size O-ring or seal, taking care not to damage it.
3. Lubricate the O-ring with system fluid (or compatible) to help the O-ring slide smoothly into the port and avoid damage.
4. Back off lock nut as far as possible. Make sure the back-up washer is not loose and is pushed up as far as possible.
5. Screw fitting into port until the back-up washer or the retaining ring contacts face of the port. Light wrenching may be necessary.
6. To align the tube end of the fitting to accept incoming tube or hose assembly, unscrew the fitting by the required mount, but not more than one full turn.
7. Using two wrenches, hold fitting in desired position and tighten locknut to the proper torque value from the table below.
8. Inspect to ensure that O-ring is not pinched, and that washer is seated flat on face of port.

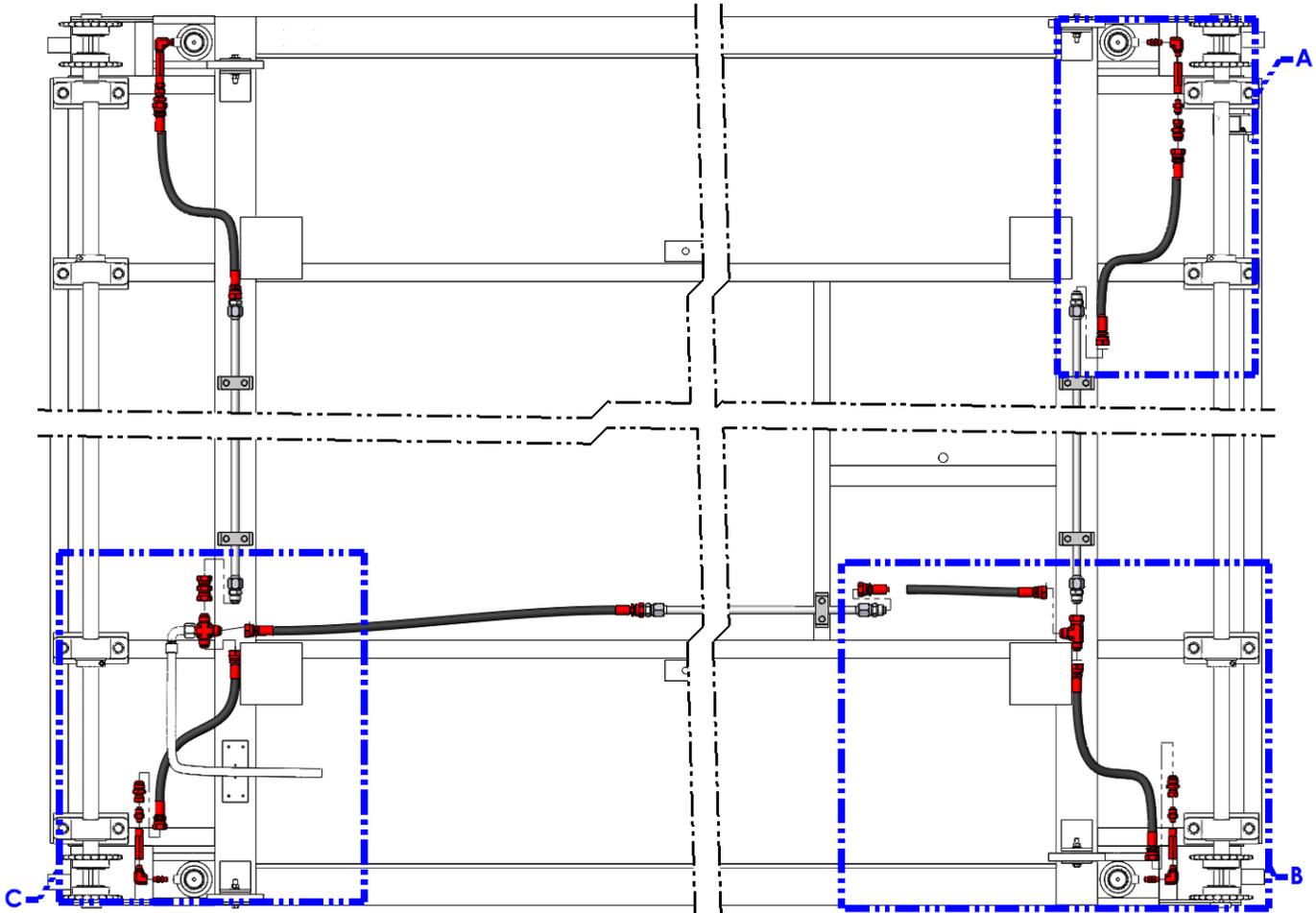


SAE Dash Size	Thread Size UN/UNF	Assembly Torque (+10% -0)											
		Non-Adjustables				Adjustables				Plugs			
		Seal-Lok (Heavy Duty SAE J1926-2)		Triple-Lok Ferulok Adapters (Light Duty SAE J1926-3)		Seal-Lok (Heavy Duty SAE J1926-2)		Triple-Lok Ferulok Adapters (Light Duty SAE J1926-3)		Hollow Hex		Hex Head	
		ft.lbs. (in. lbs)	N-m	ft.lbs. (in. lbs)	N-m	ft.lbs. (in. lbs)	N-m	ft.lbs. (in. lbs)	N-m	ft.lbs. (in. lbs)	N-m	ft.lbs. (in. lbs)	N-m
2	5/16-24	—	—	(85)	10	—	—	(60)	7	(60)	7	(85)	10
3	3/8-24	—	—	(155)	18	—	—	(100)	11	(100)	11	(155)	18
4	7/16-20	(310)	35	(260)	29	(180)	20	(180)	20	(180)	20	(260)	29
5	1/2-20	(360)	41	(280)	32	(360)	41	(250)	28	(250)	28	(280)	32
6	9/16-18	(420)	47	(350)	40	(420)	47	(350)	40	(350)	40	(350)	40
8	3/4-16	(720)	81	(620)	70	(720)	81	(620)	70	(620)	70	(620)	70
10	7/8-14	100	136	85	115	100	136	85	115	85	115	85	115
12	1 1/16-12	135	183	135	183	135	183	135	183	135	183	135	183
14	1 3/16-12	175	237	175	237	175	237	175	237	175	237	175	237
16	1 5/16-12	200	271	200	271	200	271	200	271	200	271	200	271
20	1 5/8-12	250	339	250	339	250	339	250	339	250	339	250	339
24	1 7/8-12	305	414	305	414	305	414	305	414	305	414	305	414
32	2 1/2-12	375	508	375	508	375	508	375	508	375	508	375	508

## 4.11.2 Fitting and Hose Connections

Items needed for this step:

- (4) 26005390 - EL,90,6 MSAE X 6 FSAE, 6 AOEG5-S
- (4) 41503520 - FCVLV,3.0GPM, FSAE-6
- (4) 29005045 - STRAIGHT,6MSAE X 8MJIC, 8-6 F5OX
- (4) 29005361 - STRAIGHT, 12 MJIC X 8 FJIC, 2-8 XHX6-S
- (4) 26005150 - NIPPLE,6MSAE X 6MSAE ADJ, 6 F5OHAO-S
- (5) HOSE,1/2X24, 12FJIC X 12FJIC, SAE100R16
- (1) HOSE,1/2X40, 12FJIC X 12FJIC, SAE100R16
- (1) 29002050 - CROSS,12MJIC, 12 KTX
- (1) 29002195 - TEE, RUN,12 MJIC X 12 MJIC X 12 FJIC, 12 R6X-S
- (1) 29006540 - UNION, SWVL,12FJIC, 12HX6-S



## TO PLUMB 2 CORNERS **DETAIL A:**

### 1. SAE fittings

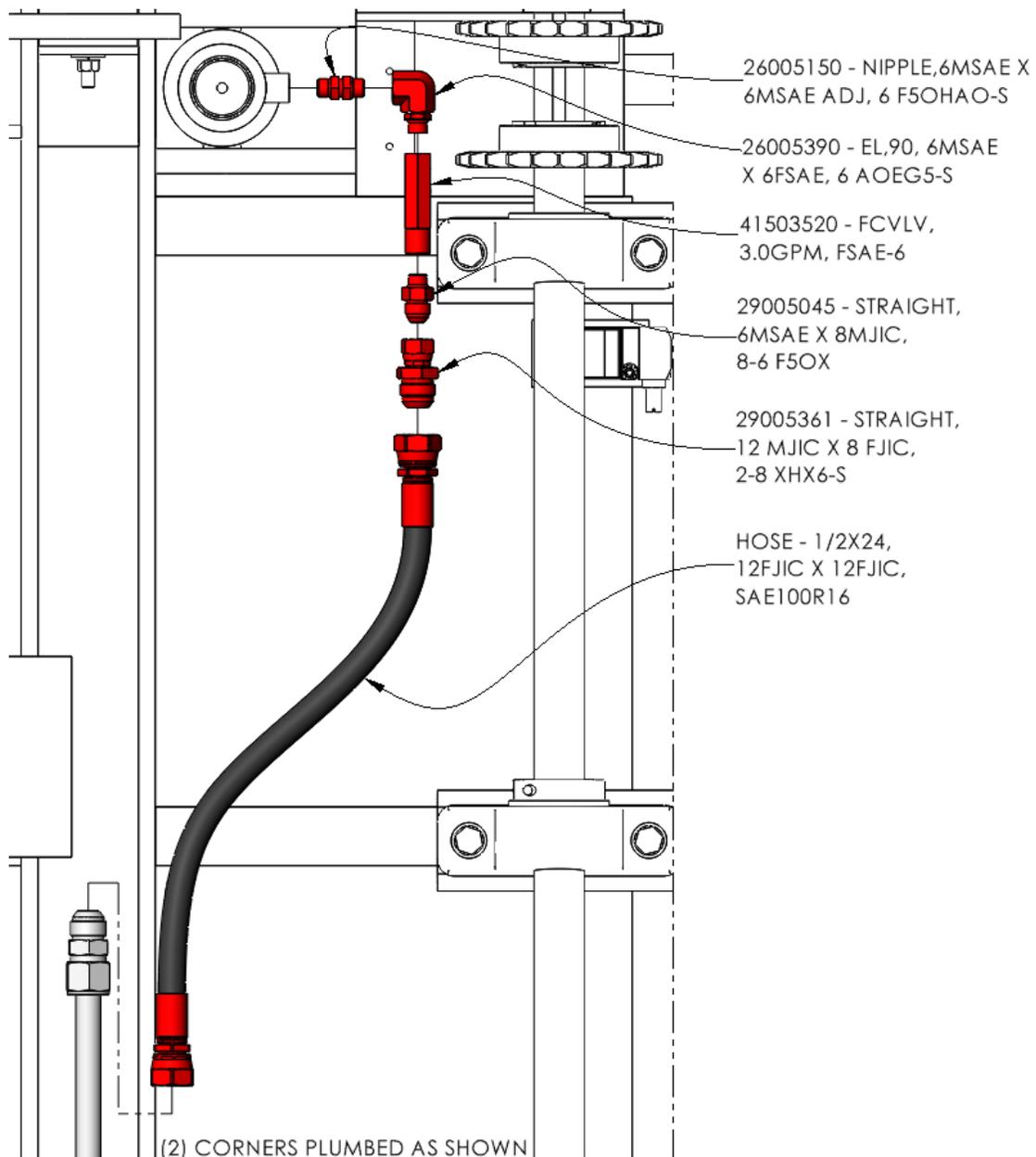
- Install the nipple (6MSAE) into the cylinder port by first lubricating the o-ring with a light coat of system fluid or a compatible lubricant to help the O-ring slide smoothly into the port and avoid damage.
- Follow the above step for the elbow(6MSAE X 6FSAE), FC(FSAE-6), and straight(6MSAE X 8MJIC).

## **CAUTION**

**Be sure that the arrow stamped on the side of the flow control is pointing away from the cylinder.**

### 2. JIC fittings

- Install the second straight(12MJIC X 8FJIC), and hose(12FJIC X 24inches) by tightening fittings lightly with a wrench (approximately 30in•lbs).
- Make a reference mark on both fittings.
- Tighten fittings by turning two flats (or 1/3 turn).
- Check reference marks to ensure fitting has been turned two flats (or 1/3 turn).



TO PLUMB 1 CORNER **DETAIL B:**

3. SAE fittings

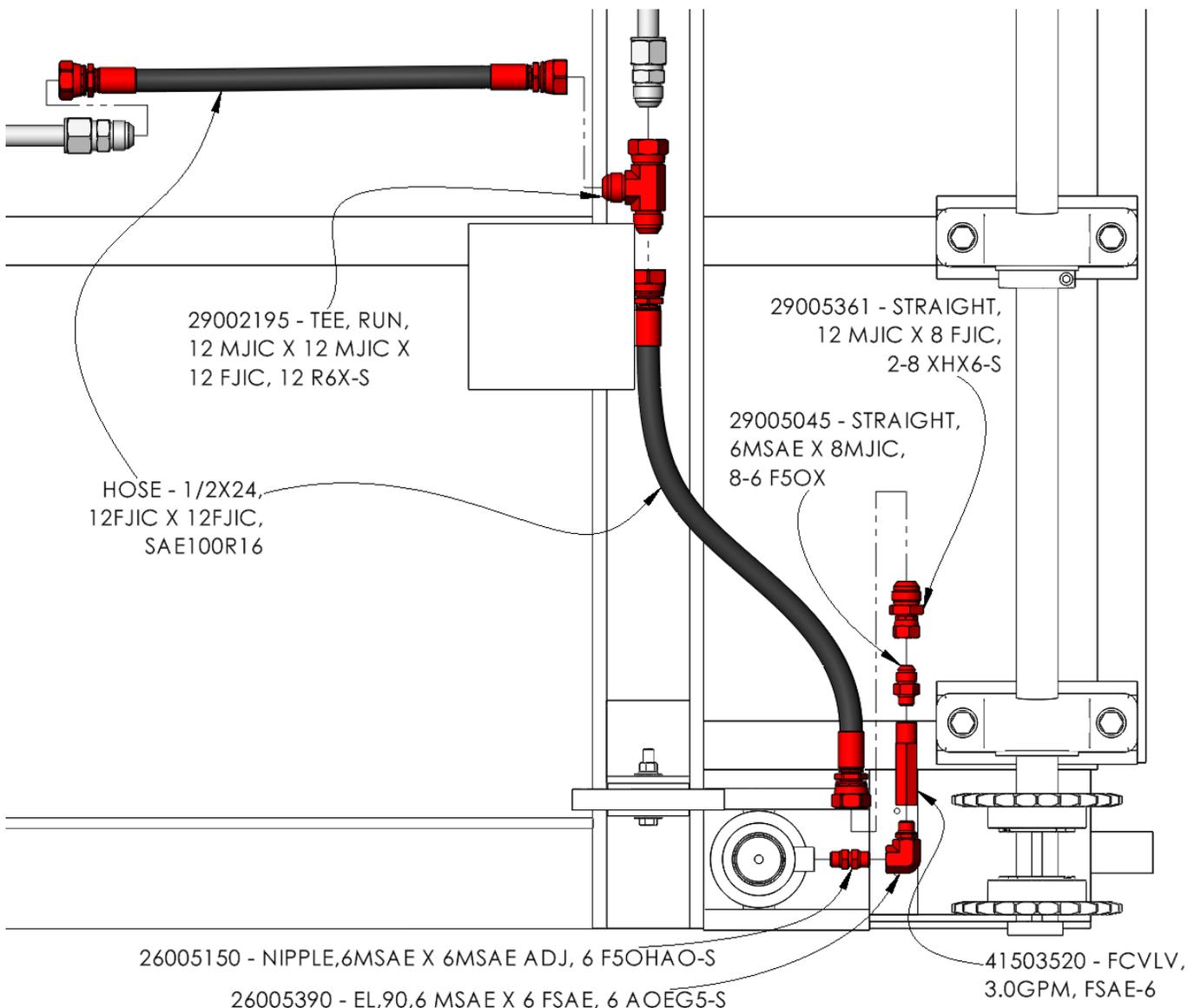
- a. Install the nipple (6MSAE) into the cylinder port by first lubricating the o-ring with a light coat of system fluid or a compatible lubricant to help the O-ring slide smoothly into the port and avoid damage.
- b. Follow the above step for the elbow(6MSAE X 6FSAE), FC(FSAE-6), and straight(6MSAE X 8MJIC).

**⚠ CAUTION**

**Be sure that the arrow stamped on the side of the flow control is pointing away from the cylinder.**

4. JIC fittings

- a. Install the second straight(12MJIC X 8FJIC), tee(12MJIC X 12MJIC X 12FJIC), and hose(12FJIC X 24inches) by tightening fittings lightly with a wrench (approximately 30in•lbs).
- b. Make a reference mark on both fittings.
- c. Tighten fittings by turning two flats (or 1/3 turn).
- d. Check reference marks to ensure fitting has been turned two flats (or 1/3 turn).



(1) CORNER PLUMBED AS SHOWN

## TO PLUMB 1 CORNER **DETAIL C:**

### 1. SAE fittings

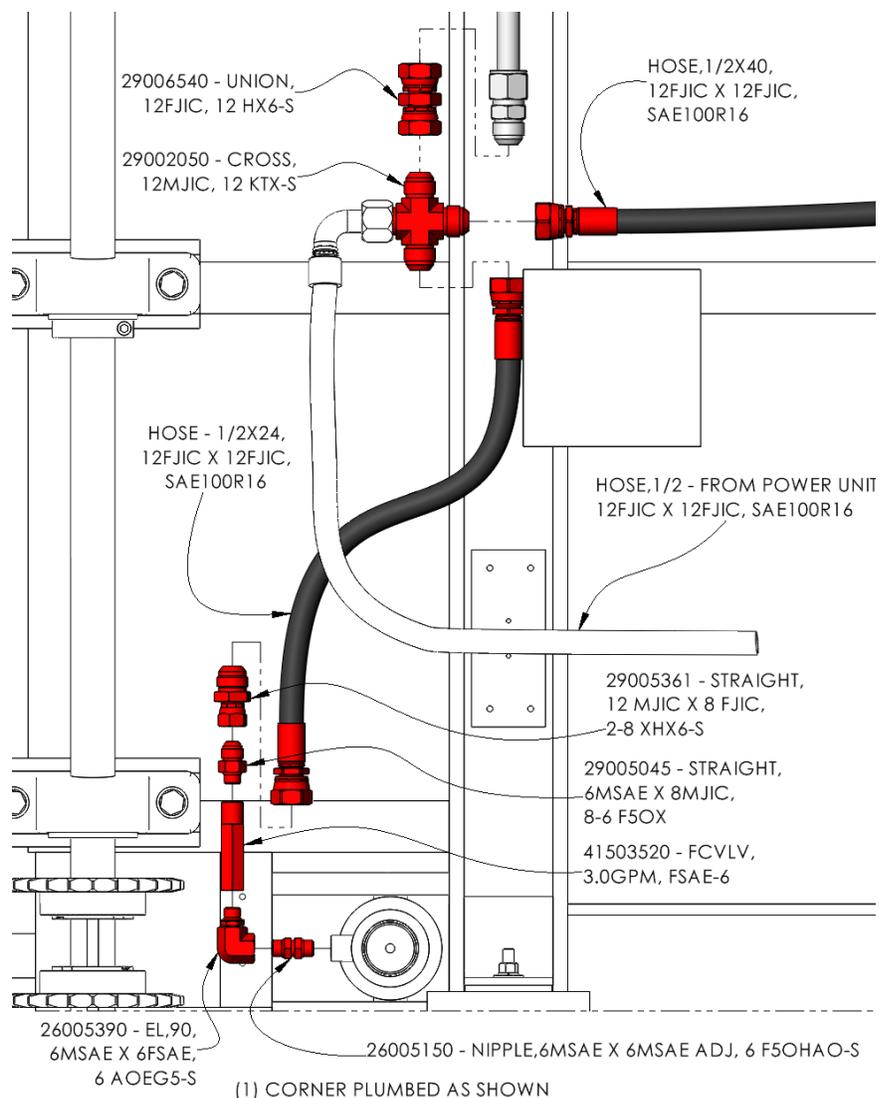
- Install the nipple (6MSAE) into the cylinder port by first lubricating the o-ring with a light coat of system fluid or a compatible lubricant to help the O-ring slide smoothly into the port and avoid damage.
- Follow the above step for the elbow(6 MSAE X 6 FSAE), FC(FSAE-6), and straight(6MSAE X 8MJIC).

### 2. JIC fittings

- Install the second straight(12MJIC X 8FJIC), tees(12MJIC X 12MJIC X 12FJIC), and hoses(12FJIC) by tightening fittings lightly with a wrench (approximately 30in•lbs).
- Make a reference mark on both fittings.
- Tighten fittings by turning two flats (or 1/3 turn).
- Check reference marks to ensure fitting has been turned two flats (or 1/3 turn).

## **CAUTION**

Be sure that the arrow stamped on the side of the flow control is pointing away from the cylinder.



**Note:** This view includes the hose coming up from the power unit in the cable carrier (see next section for power unit hose installation).

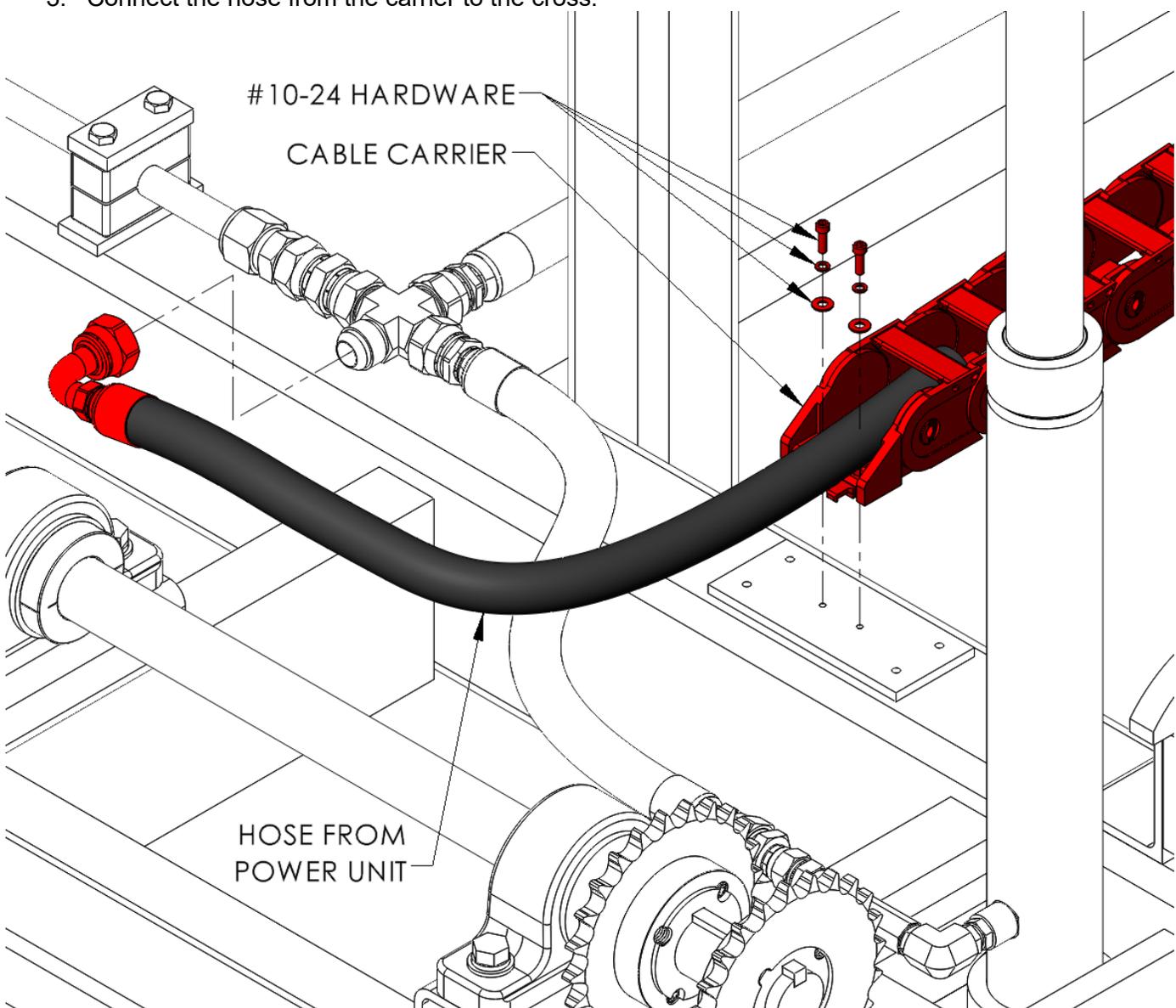
### 4.1.1.3 Hose Carrier Installation

Items needed for this step:

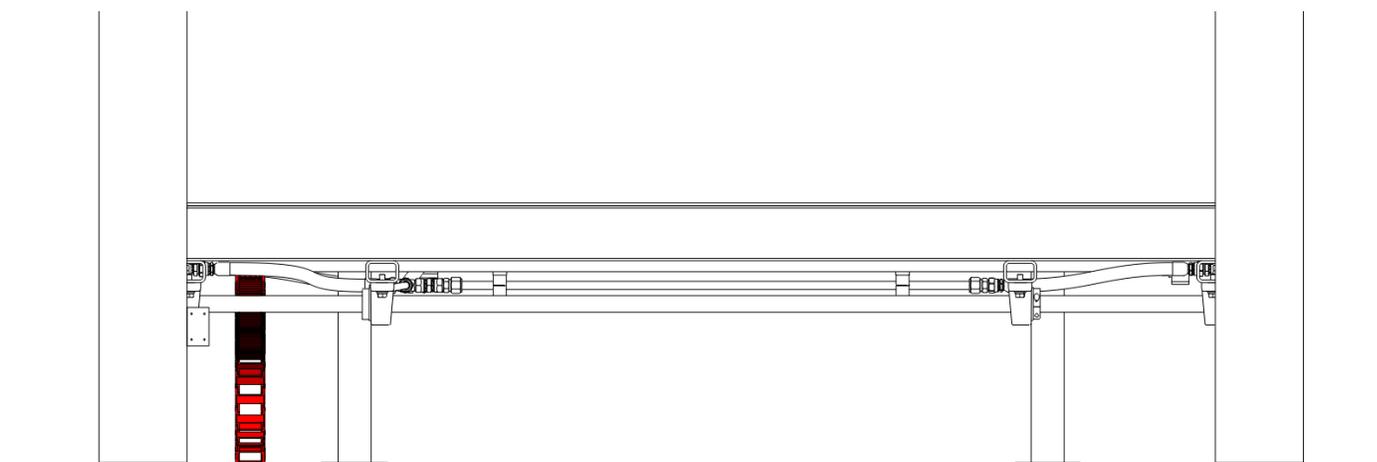
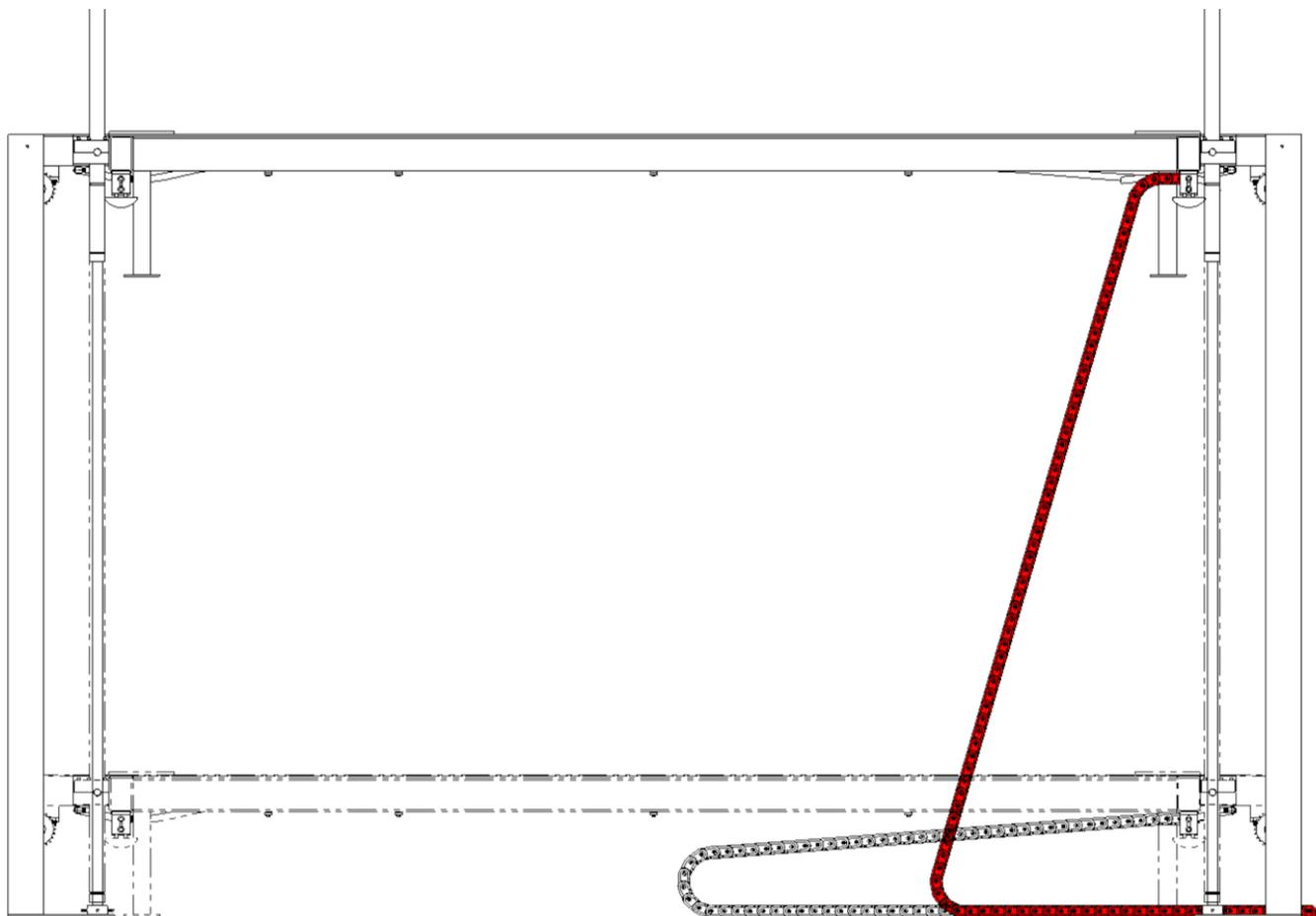
- (1) 28008590 - CARRIER, CABLE, 89 LINKS + FA/MA
- (2) 22030279 - SHCS, 10-24 X 5/8
- (2) 24050106 - FWASH, #10, ZPL
- (2) 24070104 - LWASH, #10, ZPL

The hose carrier attaches to the underside of the platform in the unique hydraulic corner. There is a mounting plate.

1. Load the hose into the carrier. The wire for the platform limit switch will also need to run through the carrier.
2. Attach the carrier to the mounting bracket using the (2) supplied #10-24 SHCS and hardware as shown.
3. Connect the hose from the carrier to the cross.



4. Finally, locate the carrier and bolt to the floor in the location & orientation shown with the inlet connection facing the hydraulic supply line. This location is critical as it provides the necessary clearance with all structural members beneath the platform and allows hosing to be connected without crushing or kinking during lift operation.

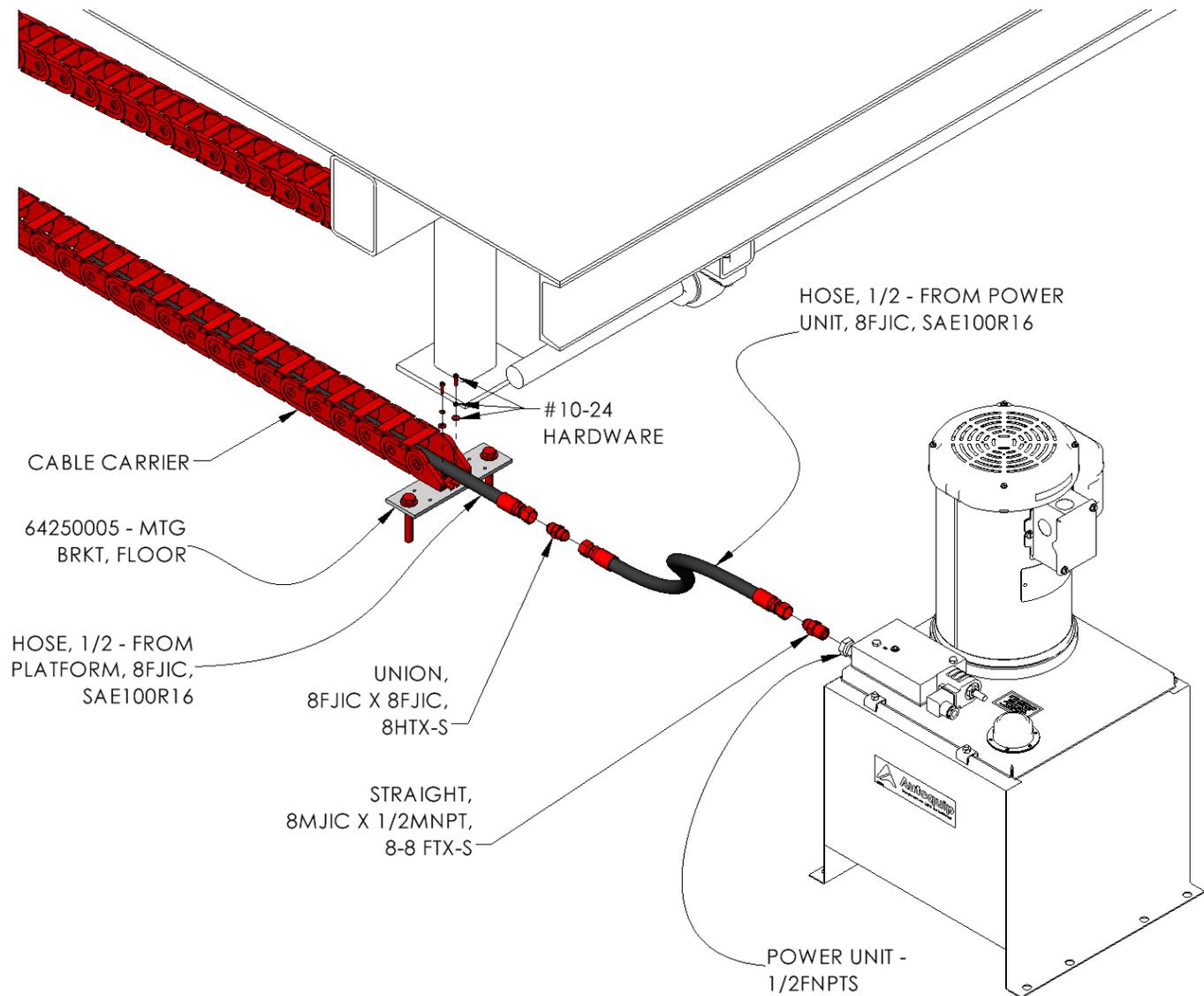


#### 4.1.1.4 Mounting Power Unit and Connecting Hose

Items needed for this step:

- (1) Hydraulic power unit
- (2) 22030279 - SHCS, 10-24 X 5/8
- (2) 24050106 - FWASH, #10, ZPL
- (2) 24070104 - LWASH, #10, ZPL
- (1) 26400044 - STRAIGHT, 8 MJIC X 1/2 MNPT, 8-8 FTX-S
- (1) 46162160 - HOSE, 1/2X216, 8FJIC X 8FJIC, SAE100R16
- (1) 29003050 - UNION, 8 MJIC X 8 MJIC, 8HTX-S
- (1) 46162160 - HOSE, 1/2X216, 8FJIC X 8FJIC, SAE100R16

1. Locate the power unit as close to the lift as possible (while meeting all local building codes) and fill with oil. Do not over-fill! The oil level should be approximately 1-1/2 inches from the top of the tank ([see 7.4.1 Oil Recommendations](#)).
2. Install the hose from the pressure outlet on the power unit to the carrier on the lower-level floor. Use the fittings to transition from the power unit to the carrier hose.
3. Attach the carrier to the mounting bracket using the (2) supplied #10-24 SHCS and hardware as shown.



## 4.12 Electrical Installation Details

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### DANGER



All procedures described in this section should only be performed by qualified personnel.



Turn off the power and lock out the power at the primary power disconnect switch before service or maintenance.



### WARNING

Never operate the lift by “manual-ing” the electrical controls (using the contactors located inside the control panel). All safety devices are by-passed in this mode of operation and lift damage or severe personal injury could occur.

### CAUTION

Do not operate the lift until the platform is level and the guide beams are plumbed and secure.

### NOTICE

A job-specific schematic has been shipped separately in a packet of information which includes this installation manual for reference by the electrical contractor or service provider. Refer to this schematic and follow all applicable NEC requirements throughout the electrical installation process.

#### 4.12.1 General

1. All electrical work must meet the requirements of the National Electrical Code (NEC) as well as all state and local codes.
2. Autoquip typically provides all the electrical control and signal devices. All required wire, conduit, and main disconnect for field wiring is supplied by others. Unless specifically included in the contract, the mounting and wiring of control and signal devices is the user’s responsibility.
3. Ensure that the supplied voltage matches the motor supplied.

#### 4.12.2 Main Disconnect (By Others)

1. This item is required by the National Electric Code (NEC). It should be a time delay fuse or inverse time circuit breaker type disconnect, able to be physically locked.
2. To be located within 20 feet of the motor control panel per NFPA79.
3. See schematic for max fuse or circuit breaker size.

### 4.12.3 Motor Control Panel

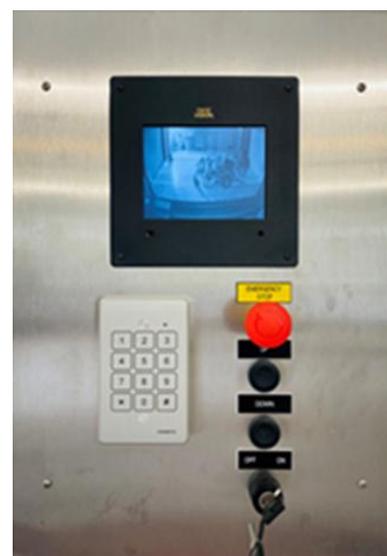
1. Supplied and shipped loose by Autoquip, all lift control components will be tied into this panel.
2. To be mounted adjacent to the remote power unit.

### 4.12.4 Wiring the Motor

1. Ensure that the supplied voltage at the disconnect matches the motor voltage requirement shown on the motor nameplate.
2. Bump/jog the motor to check the motor rotation (correct rotation should send oil to the cylinders).
3. If the motor is turning in the wrong direction, re-wire the electrical leads within the motor's junction box as required (whether single-phase or three-phase power).

### 4.12.5 Command Center Console

1. All units with camera / LCD monitor systems, 110V power is required at the command center.
2. Supplied and shipped loose by Autoquip, contains all standard operator interface securities and safeties – which are field-wired to the motor control panel per the job-specific electrical schematic.
3. Must be installed within direct line of sight of the lift that it is controlling.
4. Designed to mount between wall studs on 16-inch centers.



#### 4.12.5.1. **Emergency Stop (“Panic Button”) Station**



Pre-mounted to the command center console, this device to be field wired to the motor control panel to remove electrical power from the entire control circuit when pressed/closed. Must be manually reset to continue operation.

#### 4.12.5.2. **Digital Security Keypad**

Pre-mounted to the command center console, this keyless security device requires a code to turn the control system “On” and is wired into the control voltage circuit in the motor control panel. lift will not operate unless push buttons are pushed within 5 minutes of entering the correct authorization code. Designed to work in series with the security key switch.



#### 4.12.5.3. **Security Key Switch**



Pre-mounted to the command center console, this security device is wired in the control voltage circuit in the motor control panel to prevent lift operation unless the key is in place and turned to the “On” position. Designed to work in series with the digital security keypad.

#### 4.12.5.4. **Operator Pushbutton Stations**

Pre-mounted to the command center console, these are press and hold (constant pressure) UP and DOWN pushbuttons/contacts that are wired to the control panel per the schematic.

#### 4.12.6 Lift In Motion Alarm

Supplied and shipped loose by Autoquip. Alarm begins sounding when either operator push button is pressed, lift motion begins 2 seconds after alarm begins to sound, it will continue to signal alarm if the platform is left in any position other than the fully raised or fully lowered positions for more than five seconds. It is recommended that this device be mounted inside the motor control panel and volume adjusted to the lowest setting (see alarm manual).



#### 4.12.7 Motion Detectors

A minimum of one (1) detector is provided by Autoquip. These PIR sensors have adjustable ranges and are mounted to the ceiling above and around the lift footprint in areas outside the operator's direct line of sight. Infrared technology is used to send a signal to stop lift movement if motion is detected during operation. Autoquip recommends setting the sensor for a 2-minute re-set period, factory default is 18 minutes. Refer to device manual for timing adjustments.

#### 4.12.8 Security Camera

One (1) camera is supplied and shipped loose by Autoquip for field location and wiring supplied (100' cables for signal and power) to the command center console's LCD monitor. Installed in the lift operating zone which is outside the line of sight of the operator, refer to this device's manual for specifics on mounting and wiring.

## 4.13 Adjusting Level/Status Limit Switches

**⚠ DANGER**



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).

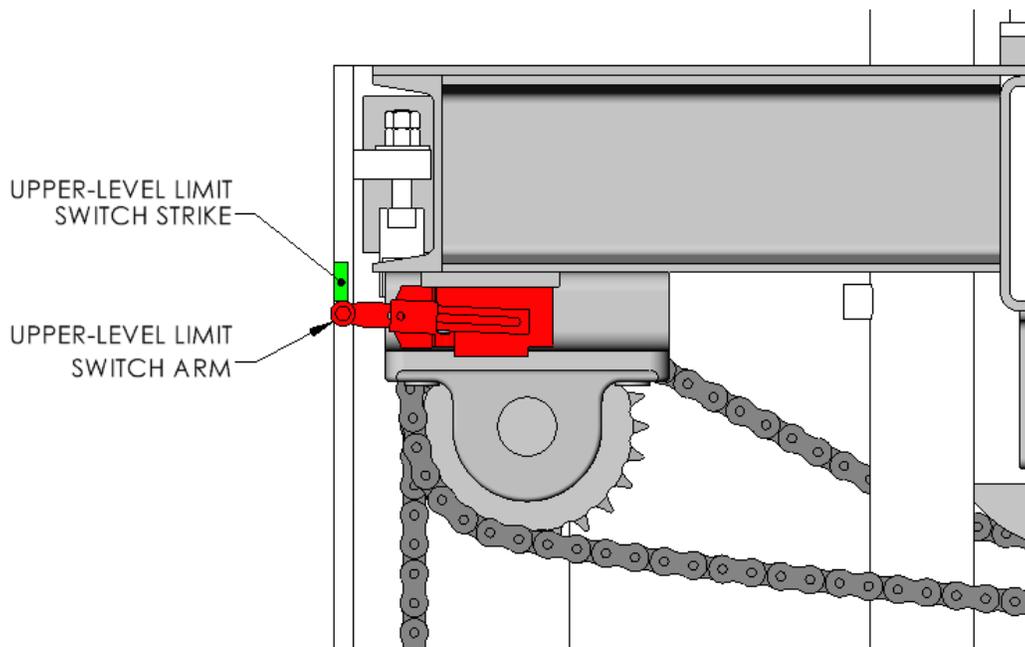
Items needed for this step:

- (2) Limit switch kits - (1) pre-mounted beneath the platform and (1) shipped loose.

### 4.13.1 Upper-level limit switch (standard on all units)

There is always some over-travel allowance in the lifting cylinders, therefore, the upper-level switch stops the upward movement of the platform at the floor level. This limit switch is positioned to strike a bar on the left front (LF) or right rear (RR) corner guide.

1. Adjust the limit switch arm to contact the pre-welded strike bar on either the left front (LF) or right rear (RR) corner guide weldments, as shown, to stop lift movement when the platform reaches the upper level.
2. Consider that the motor continues to spin as it shuts down and some amount of oil will continue to flow to the cylinders.
3. Run the lift against this limit switch multiple times until a satisfactory and repeatable transition from floor surface to platform surface has been attained.

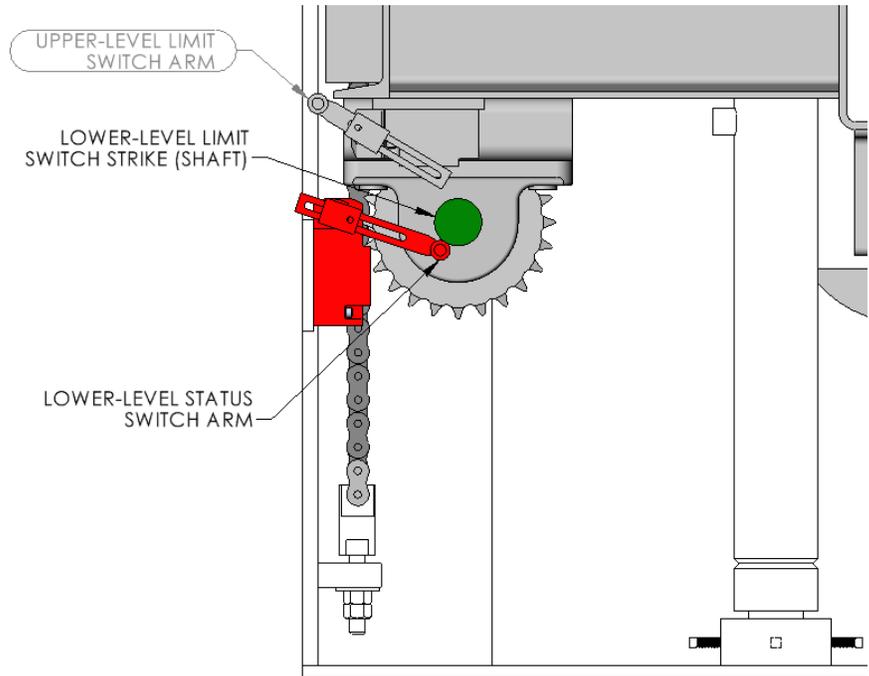


### **UPPER LEVEL LIMIT SWITCH**

### 4.13.2 Lower-level status switch (standard on all units)

The lower-level switch senses when the lift is in the fully lowered position. It does not stop the lift; it only senses the platform's presence at the lower level. This limit switch is positioned to strike against the equalization shaft when the platform has landed on the bottom floor.

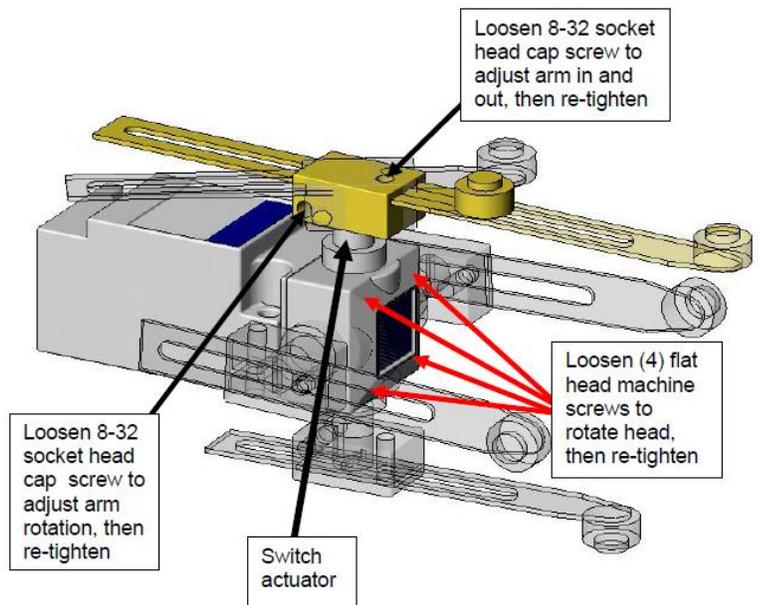
1. Mount this switch to the tapped mounting plate that has been pre-welded near the bottom of either (preferred) corner guide weldment.
2. Adjust the limit switch arm to contact the shaft beneath the platform, as shown, to signal the platform has reached the lower level.
3. Consider that the motor continues to spin as it shuts down and some amount of oil will continue to flow to the cylinders.
4. Run the lift against this limit switch multiple times to ensure the signal is being sent each time the platform lands.



### **LOWER LEVEL STATUS SWITCH**

### 4.13.3 ADJUSTMENT

1. The limit switch "targets" are permanent, so all the adjustment must be made with the switches' lever arm.
2. Using the set screw on the switch, the arm can be rotated to contact the striking target at the desired lift elevation.
3. To change the actuation direction of the limit switch, remove the switch head. Change the actuating control knob/mechanism to the desired actuation direction.



## 4.14 Start-Up (Empty) & Leveling Platform

### DANGER



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).

1. Check that all chains are adequately and equally tensioned and properly seated on the sprockets.
2. Check that all cylinder rams are fully seated and plumb.
3. Make sure that there are no obstructions in the path of the lift.
4. Turn on power and press/hold the “UP” button to raise the platform 6-12 inches and check for:
  - a. Correct rotation/direction of the motor.
  - b. Running clearance of the platform in the guides.
  - c. Any unexpected noise, vibration, rubbing, interferences, etc.
  - d. Level platform deck surface.
  - e. Bleed air from cylinders. ([see 7.5.4 Air Bleeding Procedure](#)).
5. If you are satisfied with the alignment and structural integrity of the unit, continue to jog the platform higher and higher while checking the clearance and smoothness of operation, chain tension, and integrity of chain termination points.
6. Ensure that the platform remains level throughout the lift travel and, as you approach the upper level, be sure that 1” clearance is present between the sides of the platform and all building structures and other site constraints (floor openings, doors, building columns/beams, piping, etc.).
7. Raise the platform to the upper level, the limit switch should stop the travel of the lift but be prepared to release the “UP” button if the switch doesn’t stop the platform.

### CAUTION

The platform must not travel more than 1” above the upper/garage floor level or the sprockets connected to the platform will travel high enough to interfere with, and damage, the chain tensioning blocks.

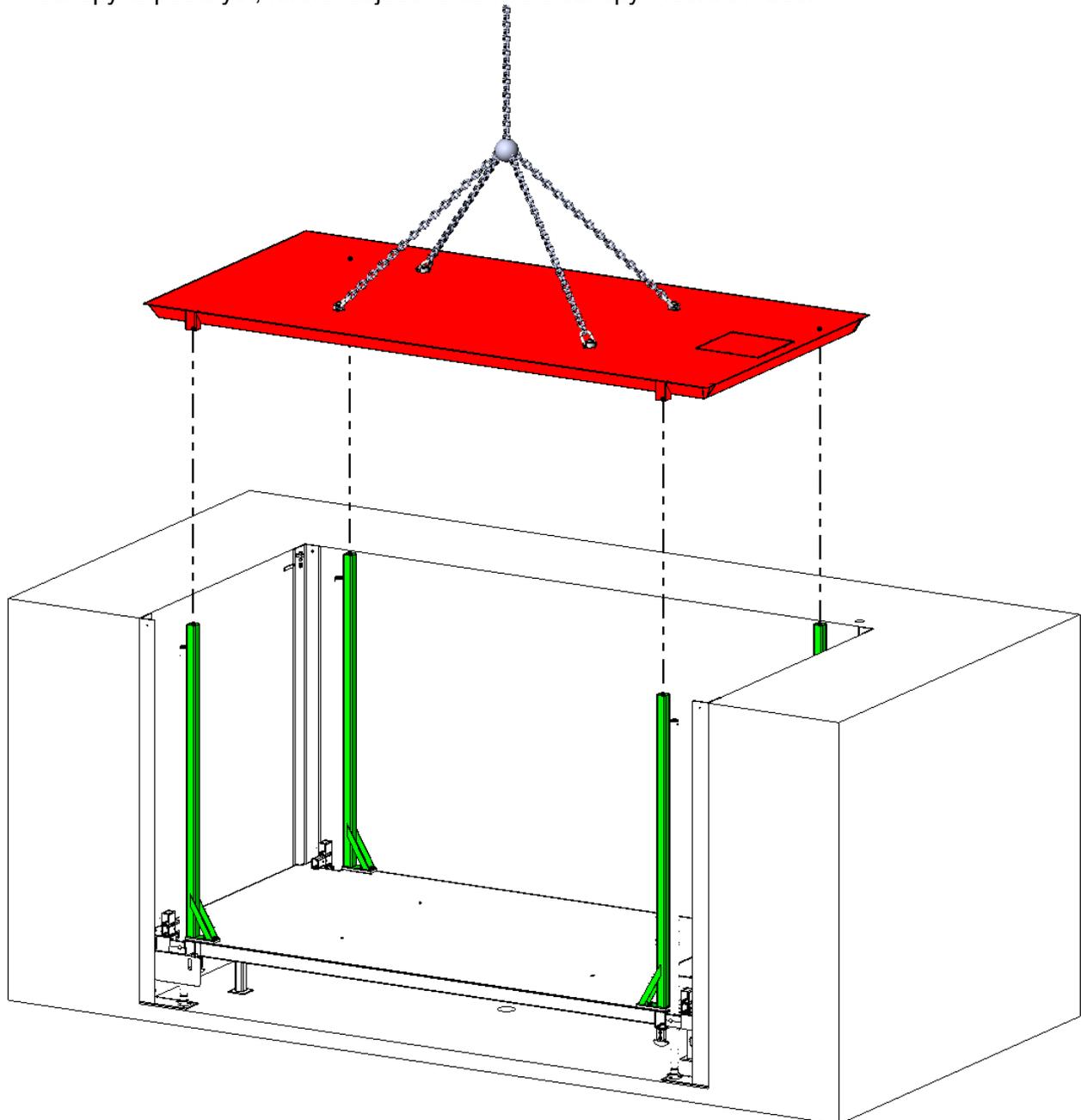
8. Check to make sure it is level and that there are the same number of chain links between the sprockets and the tensioning lugs.
9. If the entry/exit end of the platform is above or below floor grade, adjust the limit switch arm as needed. NOTE - The opposite end may be below grade if the floor is sloped.
10. Remove the temporary supports from beneath the platform.
11. Press the “DOWN” button to lower the lift.
12. While fully landed, make final adjustments to the landing leg locations by shimming, etc. to level the platform – and have the platform align with surrounding floor (if pit-mounted).
13. Ensure the lower-level limit switched is tripped.

## 4.15 Attaching the Canopy

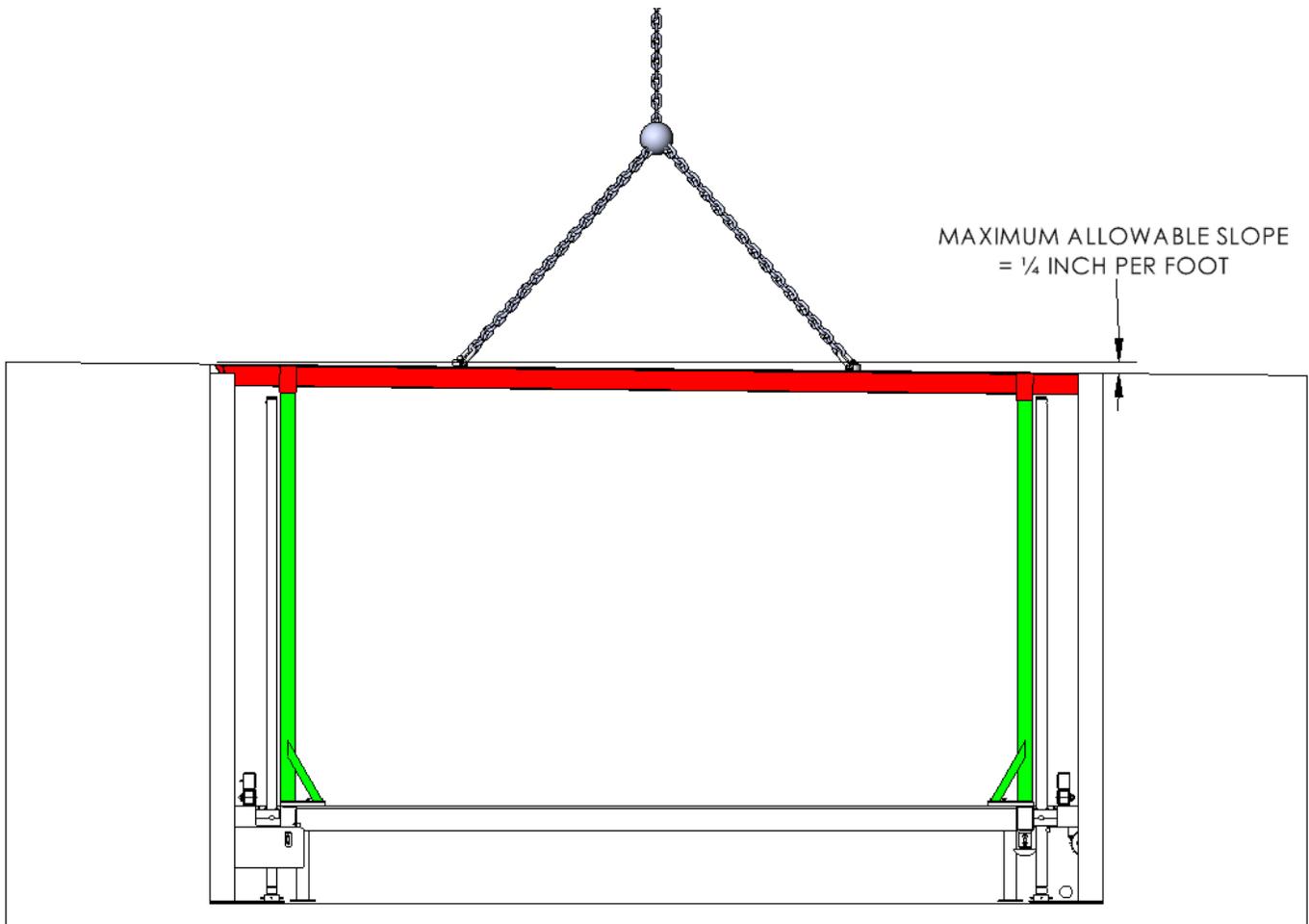
Items needed for this step:

- (1) lower platform assembly
- (1) carry deck crane or telehandler (lull)
- (4) hoist rings ( $\frac{3}{4}$ -10 thread)
- chain or straps for rated capacity

1. Using lifting provisions, raise the upper/canopy over the four (4) canopy posts, sliding the square collars located beneath the deck over and onto the four posts. Make sure that the platform orientation (location of access hatch, etc.) matches the GA Drawing and that all four posts are engaged into the platform collars.
2. Lower the lift to full down position to bring the canopy even with grade/garage floor. Do not weld canopy to posts yet, further adjustments to the canopy must be made.



3. With the platform leveled and in the fully lowered position, use the overhead hoist or crane to lift and adjust the slope of the top canopy to be flush with, and match the grade of, the surrounding garage/parking floor as shown. Autoquip's maximum allowable slope for a standard canopy is 1/4" per foot.



4. Once the canopy surface matches the slope of, and is flush with, the surrounding floor surface, tack weld canopy to posts until final test runs are made.

## 4.16 Test Runs & Final Adjustments

### DANGER



All procedures described in this section should only be performed by qualified service personnel.



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices ([see 5 Blocking Instructions](#)).

### WARNING

**GUARDS, INTERLOCKS, SAFETY DEVICES and ELECTRICAL CIRCUIT must be restored to correct operation when installing parts, making adjustments or repairs.**

### 4.16.1 Test Runs – Lift Empty

1. With complete structural, mechanical, hydraulic, and electrical systems in place, run the lift through its paces multiple times to verify the correct operation of all systems ([see 4.18 Installation Checklist](#)).
2. Ensure that the platform remains level throughout the lift travel.
3. Check that all equalization chains are properly engaged with their respective sprockets and tensioners, and that all chains are of equal length and approximately equal tension.
4. Press the DOWN push button and send the lift to the fully lowered position.
  - Is the platform stopping level and flush with the basement/lower elevation (when pit-mounted)?
  - Are all four landing legs contacting the basement floor? Shim as necessary.
  - Is the canopy nesting flush with the surrounding floor on all four sides at the upper level? Adjust as needed.
  - Did the lower-level lift status limit switch turn off the audible lift-in-motion alarm?
  - Do all open doors leading into lift zone at lower level prevent lift operation (when status switches ordered)?
5. Press the UP button and raise the lift 3-4 feet from the fully lowered position. Is everything okay? Any unusual noises? Are the corner guides stable? Is the platform binding at all in the guides?
6. If you are satisfied with the alignment and structural integrity of the unit, continue to raise the platform in 1 to 2 feet increments towards the upper level.
  - Continue to check smoothness of operation, chain tension, and integrity of chain termination points.
  - Be sure that 1 inch clearance is present between the platform and all building structures and other site constraints (floor openings, doors, building columns/beams, piping, etc.).
7. Run the platform full up against the upper-level lift status limit switch.
  - Is the front of the platform flush with the adjacent floor surface? Adjust limit switch arm as needed.
  - Did the limit switch turn off the audible lift-in-motion alarm?
  - Are all doors leading into lift zone at lower level unable to be opened (when interlocks ordered)?
  - Do all open doors leading into lift zone at upper level prevent lift operation (when status switches ordered)?

8. Test the correct operation of all other electrical securities, controls, safeties and alarms as required by the electrical schematic to ensure their proper effect on lift operation. Make necessary final adjustments to all.

#### 4.16.2 Test Runs – Loaded Lift

1. Place test weights or other appropriate weights on platform and/or canopy (depending on lift model and application).
2. Repeat Steps 1-7 from previous section. ([see 4.18 Installation Checklist](#)).
3. Check for platform drift by sending platform to the lower level, then raising it approximately 24 inches. Note exact distance from lower floor level to top of platform, round off to nearest 1/16 inch. Leave idle for 15 minutes. Check distance again. If any movement is measured, begin checking hydraulic circuit for system leaks or a malfunctioning holding valve.
4. When satisfied with all aspects of lift fit and function, remove weights and make final adjustments.

#### 4.16.3 Relief Valve Adjustments

##### **⚠ CAUTION**

**Do not operate the motor at relief pressure! The motor should not be operated for more than a few seconds when the unit is operating at relief pressure. Longer running times could result in damage to the pump.**

**Please consult the factory before adjusting the relief valve.**

##### **NOTICE**

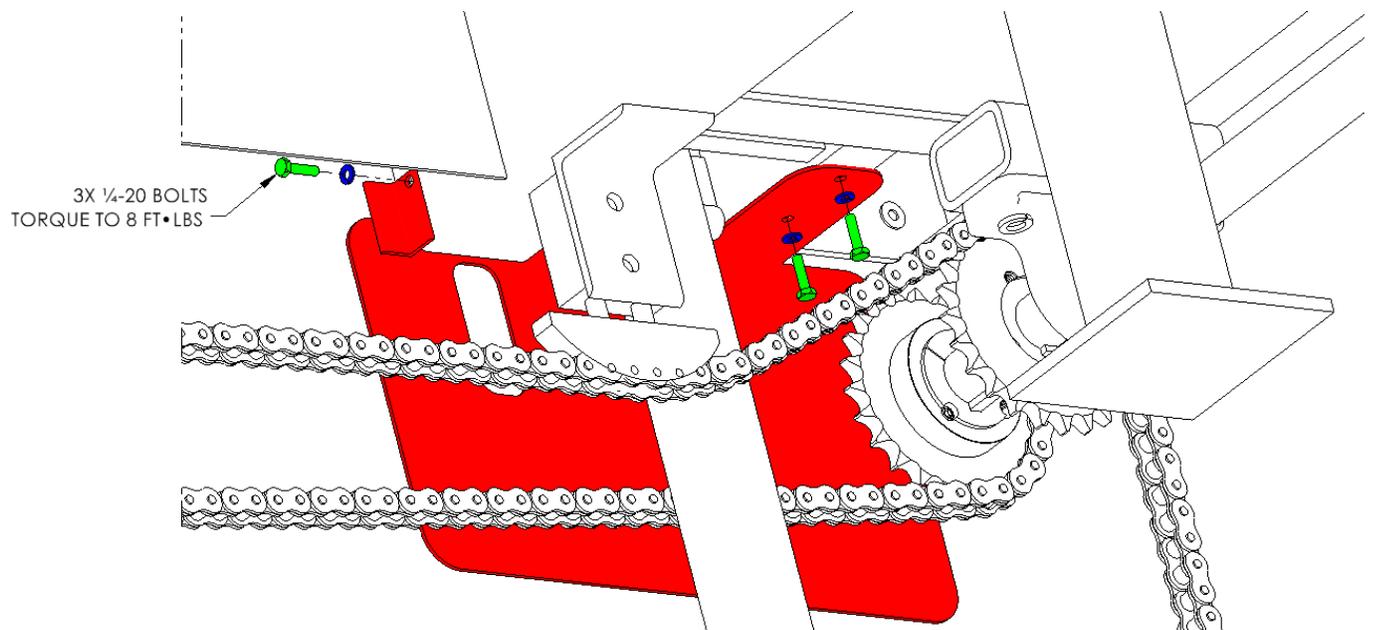
**There should be no reason to adjust the relief valve. If, however, the lift will not raise the load, the relief valve is one item to check.**

## 4.17 Installation Wrap-Up

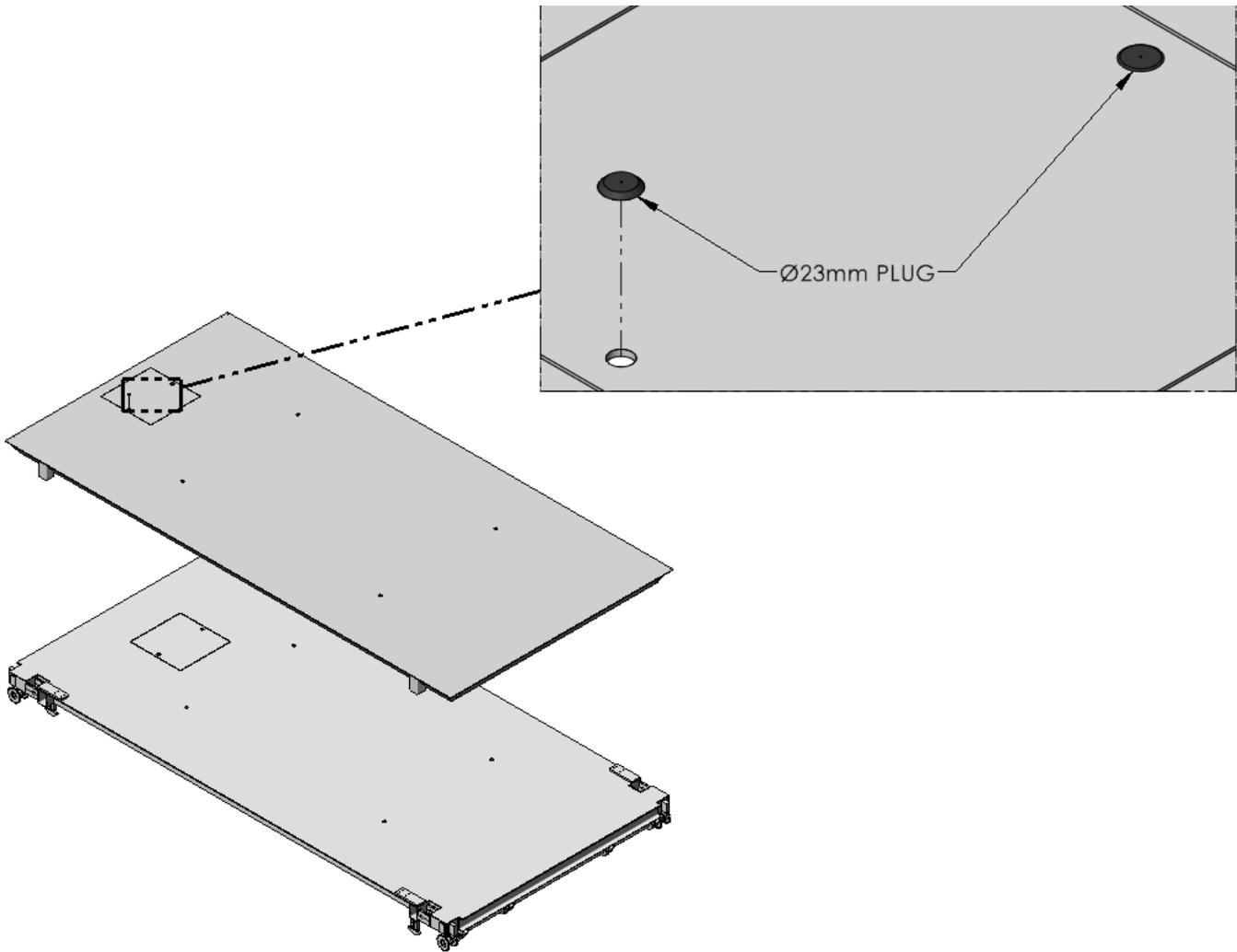
Items needed for this step:

- (4) Chain guards
- (12) ¼-20 x 1 inch bolts
- (12) ¼ lock washers
- (10-12) Ø23mm plastic plugs

1. Perform final welding of canopy to posts per the weld details shown on the GA Drawing.
2. **Ensure that all WARNING SIGNS AND DECALS provided with the unit which may have been shipped loose for field installation (gate panel, etc.) are in place ([see 3.3 Safety Labels](#)).**
3. Clean the area, paint and touch up as needed.
4. Install the chain guards to all 4 corners of the lower platform as shown to prevent the pinching of hands, fingers, clothing, etc. in between the chain and sprockets or chain tensioners.



5. Install the plastic plugs provided in all lifting eye & maintenance hatch holes as shown.



6. Clean up the lift area at both elevations.

7. Conduct Operator training before handing off the lift to the customer. Use this manual as reference for this training & familiarization process ([see 6. Operation](#)).

8. Gather up all the manufacturers manuals which came with the various ship-loose electrical devices (audible alarm, motion detectors, security keypad, remote digital camera, etc) and place them in a see-through plastic bag for the owner to retain for future reference.

9. Ensure that the owner is left with one Owner's Manual per lift (it's a separate manual).

## 4.18 Installation Checklist

This checklist is intended to assist qualified maintenance and inspection personnel to inspect Vasari installations prior to commissioning to address proper installation/maintenance requirements and/or concerns.

1. The lift should be run several times, and platform sent to both landing levels, in unloaded condition for static inspection, and loaded condition during the dynamic inspection. In this way, a wider variety of issues will present themselves as actual operating conditions are duplicated as closely as possible.
2. Inspection personnel should have at their disposal the tools necessary to access and observe all the components mentioned in the checklist and be trained to safely make these observations.
3. If deficiencies are identified, they must be fixed and/or reported to the owner.

<b>GENERAL</b>	Y	N
Is the Lift being used as it was sold to be used? (Load capacity, edge loading, no riders, etc.)		
Do you suspect there have been unauthorized modifications of any kind made to the Lift since installation? Describe -		
Any unusual noises as it is operated? (rubbing, scraping, humming, squealing, popping, etc) Source?		
Is the Lift operating path/pit free of debris & obstructions?		
<b>PERSONAL &amp; EQUIPMENT SAFETY</b>	Y	N
Have all operators been formally trained to use this lift (and do they have a copy of this manual)?		
Are gates/doors and enclosures installed around lift? Are they secure, stable, able to keep out personnel?		
Do all gates/doors function properly? (door must NOT open if platform is moving)		
Are all Safety Labels on the platform? All Safety Labels at each level?		
Lift should not operate with any safety feature bypassed: Will the lift operate with any gates/doors into the lift area open? Will the lift operate when there is movement in the lift area (lower level)? Will the lift operate with security devices in the "Off" position?		
Platform stops at a safe loading/unloading position at both levels?		
Platform does not "drift" from a raised position?		
<b>STRUCTURAL</b>	Y	N
Lift platform undamaged and level?		
Canopy posts undamaged, plumb and secure?		
Lift drive base bent/damaged/modified in any way?		
Corner guide angles secured as recommended? (anchored to resist rated loads, no movement during platform travel)		
Corner guide angles plumb, straight, and parallel as recommended?		
Distance between guide angles is consistent throughout travel?		
Corner guide angles show signs of excessive wear? (look for metal shavings, paint shavings, etc. on ground near foot plate)		
Unauthorized structural members added in field – especially to the guide angles?		
Any broken or cracked bolts or welds otherwise observed?		
Any other wear marks on any component of the lift? Describe.		

<b>MECHANICAL</b>	<b>Y</b>	<b>N</b>
Does the lift platform stop where it should at each level?		
Is the canopy surface flush with the adjacent/surrounding floor surface when fully lowered?		
Synchronization chain system is installed properly:		
All chain master links installed correctly (keepers in place)?		
Threaded tensioning blocks are factory-supplied & undamaged? (look for rounding or extrusion of metal at edge of pin holes)		
All four chains are aligned with, and properly engaging, sprockets? (look for cracked/missing teeth, excessive wear, binding on sprocket)		
All chains are of equal length - and platform hanging level?		
Chains properly engage chain tensioners/tensioning arms?		
Platform corner wear pads in place and attachment bolts adequately countersunk (not protruding)		
Is the motor overheating? (check fluid level and color, as well as voltage at the panel)		
All field-bolting tightened per spec:		
Canopy posts to platform bolts (75 ft•lbs) Cylinder trunnion keeper bolts (50 ft•lbs) Corner guide angles to wall (per anchor mfg specs)		
<b>HYDRAULIC</b>	<b>Y</b>	<b>N</b>
All hydraulic connections tightened per specification and no oil leaking?		
Ram seals preventing excessive oil from dripping down cylinder rod?		
Air has been bled from the hydraulic system per procedure?		
Fixed flow controls installed – with arrow on valve body pointing away from the cylinder?		
<b>ELECTRICAL</b>	<b>Y</b>	<b>N</b>
Operator Command Center console undamaged & functional? (Pushbuttons, E-stop, key switch, digital keypad)		
Command Center console within line of sight of the lift?		
Main disconnect & motor control panels unaltered? (NEC)		
Main disconnect is lockable? (NEC)		
Main disconnect & motor control panel visible from Lift? (NEC)		
Any evidence that safeties are being bypassed inside the panel?		
Any cut/damaged/ frayed electrical conduit or wires?		
Other electrical connections meet NEC?		
Security camera operating correctly with display at Command Center?		
Motion sensors working as intended (stopping the lift when motion detected) ?		
Lift-in-motion alarm(s) operating as intended?		
Check E-Stop(s). Trip upper-level E-Stop and make sure that the lift does not operate when E-Stop is activated. Reset and check the lower level (if purchased).		
Check all other optional safeties/controls that may have been purchased for proper operation:		
Photo-Eye Sensors Door Status Switches Door Interlocks Vehicle Positioning Indicator Interference Detection/Reversing Edges Other: Other:		

## 5. BLOCKING INSTRUCTIONS

### **⚠ DANGER**



Failure to properly adhere to lift blocking procedures risks the sudden and uncontrolled descent of the lift during maintenance or inspection. A falling lift can cause severe injury or death.



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices ([see 5 Blocking Instructions](#)).



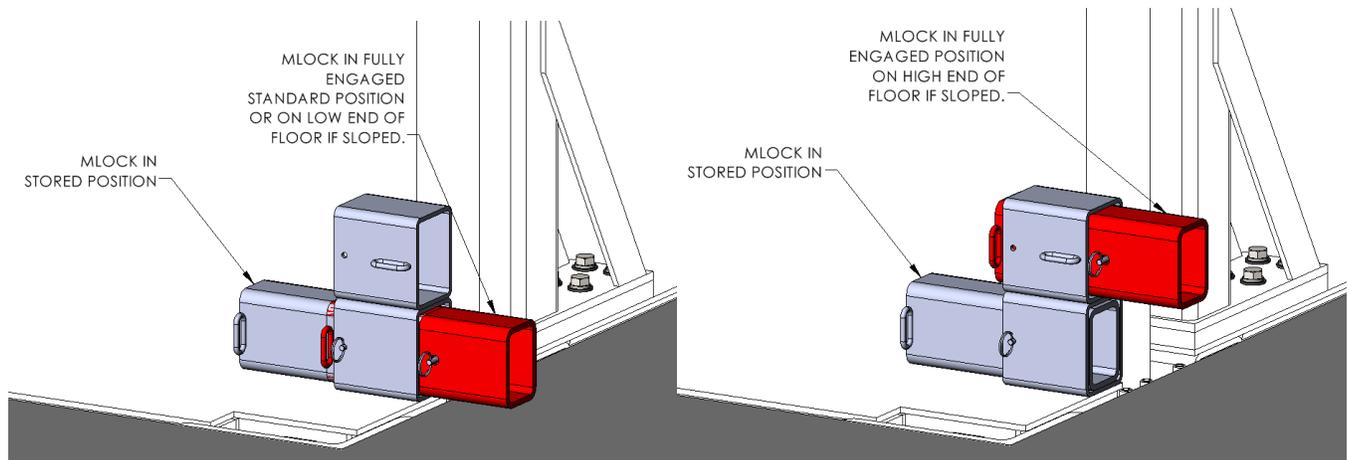
Turn off the power and lock out the power at the primary power disconnect switch before service or maintenance.



This procedure describes the only factory-approved methods of working under a lift. Follow these instructions EVERY time you plan to reach or crawl beneath the lift to perform service or maintenance – no matter how momentary that might be.

### 5.1 Raise the Platform

1. Send the platform to the fully raised position, then remove all four (4) maintenance devices from their stored location and place them in the fully engaged position.

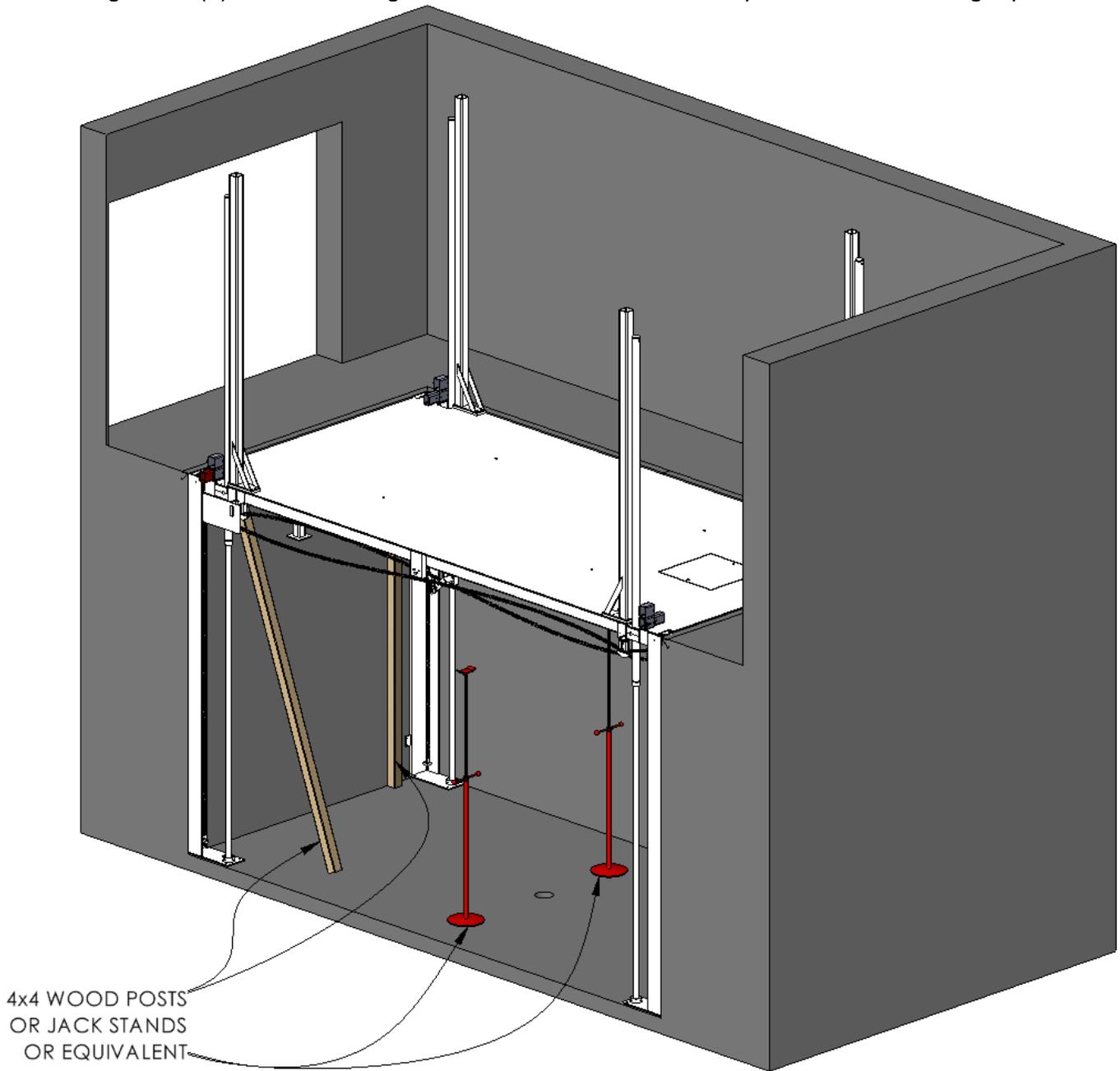


### **NOTICE**

**The maintenance locks should be fully inserted from the platform side to ensure engagement with the floor.**

2. Remove all load from the unit.
3. Lower the empty lift until ALL four (4) maintenance locks contact the surrounding floor.
4. Lock out and tag all electrical and/or other power sources to prevent an unplanned or unexpected actuation of the lift.

5. As an added level of protection, a secondary set of stops should be placed underneath the platform. This could be jack stands, or four (4) 4in x 4in wood posts that are cut to the appropriate length. two (2) on each end against the bottom structure of the platform, or something equivalent.



6. When inspection or repair is complete, remove secondary stops from beneath the lift.
7. Unlock electrical disconnect, raise lift to fully raised position.
8. Return maintenance locks to stored position.

If the platform cannot be lowered by gravity, [see 7.2 If a Platform Hangs Up or Jams.](#)

## 5.2 Platform Partially Raised

Some may have occasion to perform maintenance in a position where the platform is neither in the fully raised or fully lowered position. Follow the procedure below in that scenario.

1. Remove any load from the unit.
2. Raise the platform to the necessary elevation.

**If Operational:** Use the operator pushbuttons to place the platform at the desired elevation.

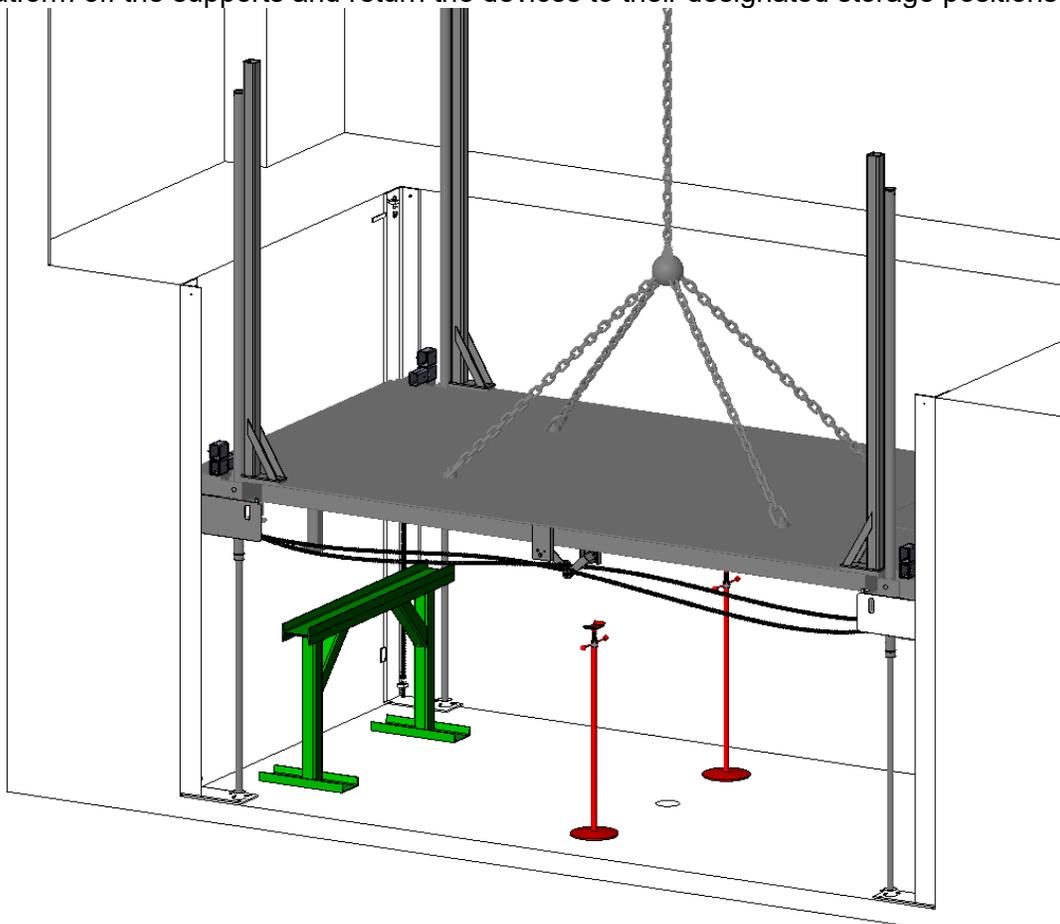
**If Not Operational:** Use an overhead hoist, crane, or other lifting device to raise the platform.

3. Use two sawhorses, or jack stands, or equivalent stable supports beneath the platform. Be sure to land the supports on structure.
4. Lower the platform onto the supports.

**If Operational:** Use the operator pushbuttons to place the platform at the desired elevation.

**If Not Operational:** Use an overhead hoist, crane, or other lifting device to raise the platform.

5. Re-check to ensure that the supports are fully and properly engaged with the underside of the platform. If not fully engaged the lift could fall unexpectedly, resulting in permanent damage to the device or the lift.
6. Lock out and tag all electrical and/or other power sources to prevent an unplanned or unexpected actuation of the lift.
7. Once inspection or work is complete, reverse the performance of the steps above to raise the platform off the supports and return the devices to their designated storage positions.



## 6. OPERATION

### **⚠ DANGER**

Never operate unit when parts are broken or damaged! Do not operate this equipment when non-factory approved or damaged parts are in use! Contact local representative to rectify all such situations or contact Autoquip ([see 1.1 Contact Information](#))

### **⚠ WARNING**

Before operating lift, all personnel interacting with lift must read, understand, and follow instructions and safety warnings in this manual.

Close all gates when not in use. Never leave the lift unattended with gates left open.

Never run the unit with the gates or doors open. Do not operate unit with doors open or with the interlocks “defeated” (bypassed).

### **⚠ CAUTION**

Do not operate the lift until all sensing switches have been confirmed to be installed and adjusted correctly.

### **NOTICE**

In order for the lift to operate:

- All gates/doors guarding the lift must be closed.
- Loads cannot hang over the edge or sides of the platform.
- The load must be within the specified load capacity of the lift.
- All electrical safeties, sensors, and switches must be in their “normal” condition.



### 6.1 Operator Safety Rules

1. Never allow children or adolescents to operate the lift. No one under 18 years of age should be allowed to operate this equipment.
2. To avoid accidents and injury, all operators must first read and understand this manual. It is unsafe for any person, regardless of age or experience, to operate this equipment without first learning the safety rules.
3. Protect children and visitors, their safety is your responsibility. Keep children and unfamiliar persons away from the lift during operation.
4. When not in use, remove the key and store it in a safe place away from the lift and out of the reach of children. Do not share your authorization code for the digital keypad with unauthorized operators.

5. Instruct children of the dangers of unauthorized use. This equipment is powerful and could cause severe injury or death if used by anyone but responsible adults!
6. Keep children away from the garage floor opening. This opening is extremely dangerous for small children, even when adults are present! Children are unaware of the dangers and can step into floor openings. The lift should never be left unattended in any other position other than fully raised or fully lowered – to minimize exposure to an opening in the floor.
7. Absolutely no riders on this equipment! Any person riding the platform is liable to become caught between the lifting platform and the garage floor opening. Riding the platform is extremely dangerous and presents falling, crushing, and amputation hazards.
8. Always stay clear of the lift during operation. Stand well back to avoid falling objects, contacting moving parts, or being crushed. Never stand beneath the platform – whether it is moving or not.
9. Always look to make sure no one is standing near or below the lift before lowering the lift platform. Utilize the surveillance camera provided to observe all areas beneath and around the lift at the lower level which are outside the operator's line of site. Never disconnect or disable the platform-in-motion audible alarm.
10. Never attempt to lift or lower vehicles that are overhanging the lift platform. You must ensure that all parts of the vehicle are within the footprint of the platform in order to avoid vehicle damage and/or causing the vehicle from becoming unstable and falling from the lifting platform onto bystanders below.
11. Never lift or lower objects that are unstable, can tip over, or roll off the lift platform. Ensure that all vehicles transported are in gear (Not "neutral"), have parking brakes engaged, or are otherwise prevented from rolling off the platform during operation.
12. Install adequate lighting in your basement. You can improve basement safety by improving visibility with extra lighting.
13. Do not exceed the load ratings of this lift. This lift is designed to lift and/or support personal vehicles with normal axle loads and weight distributions for such (approximately a 60/40 difference from front to back). To overload the lift is to risk damage to the structure and the instability of load being transported.
14. Do not operate this equipment with damaged, substandard, defective, or missing parts. Contact a local Autoquip service representative if a deficiency is found.
15. Do not operate this parking lift with doors into the lift area open or with the interlocks or other safety devices "defeated" (bypassed).
16. Never raise objects that are on the canopy, unless the lift is designed specifically for canopy loading and all required guarding is in place as well as wheel stops, if applicable.

## 6.2 Key Switch and Keypad Stations

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Use the security key and security code (both required) to turn the control system "On". These stations are mounted to the operator Command Center console. **Factory default authorization code for the digital keypad is 1234# (keypad shows green light when "On").**

## 6.3 Moving Up



1. Verify all personnel are clear of lift.
2. Press and hold the "UP" button to raise lift.
3. When platform reaches the upper level, the level limit switch will halt travel and stop audible alarm.
4. For any obstruction encountered in the path of travel, releasing the UP button will halt travel. If not released quickly, the platform could become jammed and the motor overload relay ([MOR](#)) could trip and halt travel. Lower the platform, if possible, to remove the obstruction.

### NOTICE

**Always find out why the MOR has tripped, and be sure to correct the problem (malfunction, interference, etc.) before making the lift operational again.**

## 6.4 Moving Down



1. Verify all personnel are clear of lift.
2. Press and hold the "DOWN" button to lower lift.
3. The platform will halt travel and audible alarm stop when it lands on the floor or other supports at the lower level.
4. For any obstruction in the path, releasing the DOWN button will halt travel. Raise the platform to remove the obstruction.

## 6.5 Emergency Stop



1. Press the red emergency stop button to stop all travel of the lift at any time.
2. The emergency stop button will interrupt all electrical control functions when it is activated. Movement of the platform will cease, regardless of its direction.
3. The emergency stop button is typically reset by one of two methods:
  - a. Turning clockwise until it pops back out. This is usually indicated by the  symbol.
  - b. Another style just pulls straight back out.
4. After the emergency stop button has been reset, any level button may be pressed to continue travel.

### NOTICE

**Always find out why the E-Stop button may have been pressed, and be sure to correct the problem (malfunction, interference, etc.) before making the lift operational again.**

## 6.6 Storage

When not in use, it is always best to store the unit with the lift platform in the fully lowered position. This removes pressure from the hydraulic system during non-use and will extend the overall life of the components.

# 7. MAINTENANCE

## DANGER



All procedures described in this section should only be performed by qualified service personnel.



Turn off the power and lock out the power at the primary power disconnect switch before service or maintenance.



## 7.1 Planned Maintenance Program

A local Autoquip representative provides a Planned Maintenance Program (PMP) for this equipment using qualified and experienced personnel. Contact a local representative or Autoquip ([see 1.1 Contact Information](#)).

## 7.2 If a Platform Hangs Up or Jams

## DANGER



All procedures described in this section should only be performed by qualified service personnel.

Never operate unit when parts are broken or damaged! Do not operate this equipment when non-factory approved or damaged parts are in use! Contact local representative to rectify all such situations or contact Autoquip ([see 1.1 Contact Information](#))



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices ([see 5 Blocking Instructions](#)).



DO NOT walk out onto the platform or attempt to physically free the jam until load is removed and mechanism is securely blocked with maintenance devices ([see 5 Blocking Instructions](#)).

The following steps should be followed:

1. Remove load from lift.
2. Check for mechanical obstructions, including the maintenance locks, or a binding condition.
3. Inspect all fittings, hoses, and other hydraulic components for leaks or damage.
4. If no leak or damage is noticed, attempt to pressurize cylinder by pressing “UP” button on controller for a few seconds. Once the lift reaches the next level, press “DOWN” button.
5. Once lift is lowered, you should check for air in the system ([see 7.5.4 Air Bleeding Procedure](#)).

If above steps do not correct problem, read the troubleshooting section ([see 8. Troubleshooting](#)) or contact Autoquip ([see 1.1 Contact Information](#)) to aid in discovering the source & acceptable remedy for the platform jam.

Contact an authorized Autoquip dealer or representative to conduct a comprehensive inspection of the lift for structural and component damage before placing it back in service.

## 7.3 Routine Maintenance

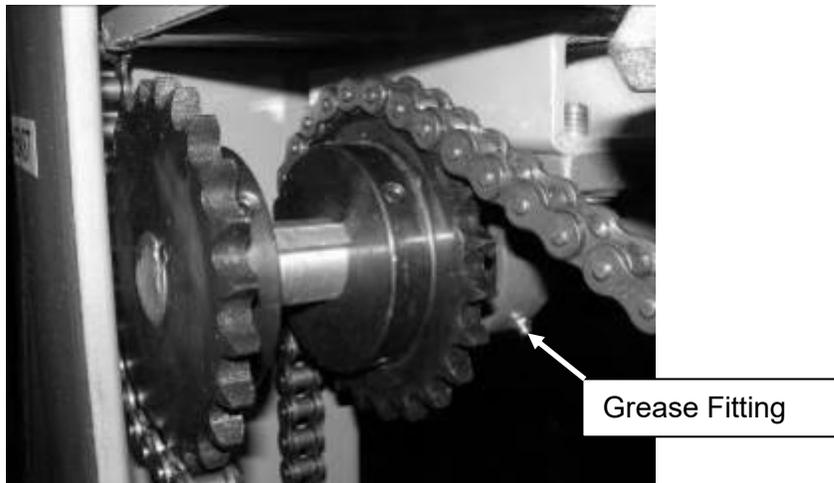
Recommended maintenance interval –

### Every month

- Inspect all gates/doors for wear or damage.
- **Ensure that all SAFETY LABELS are in place and legible ([see 3.3 Safety Labels](#)).** **Contact Autoquip ([see 1.1 Contact Information](#)) if labels appear to be missing or damaged.**
- Check that all sprockets and chains are secure.
- While running, listen for unusual noises. Isolate and check for the cause. Repair if required.
- Check all hydraulic hoses and electrical cords for cracks, abrasions, twisting, etc.
- Check for hydraulic fluid leaks at all hydraulic fittings/connections. Small leaks at connections can be remedied by tightening connections or replacing the faulty component.
- Check hydraulic fluid level. Note: With lift fully lowered, fluid level should be approximately 1-1/2" from top of tank. **DO NOT OVERFILL**
- Check to be sure that all equalization chains beneath the lower platform are properly engaged with their respective drive sprockets. Call a qualified service technician immediately if chains are broken or have come loose from their designated chain path.

### Every 6 months

- Check lift cylinder rods for scoring and leaking. Wipe any foreign material from casings and rods.
- Coat chains with oil; inspect for wear, rust, and bent or binding links.
- Make sure the platform and canopy are lined up at floor level. Adjust the level limit switch, if required.
- Check the plastic wear pads mounted to the outside of each corner of the lower platform. Call a qualified service technician if there is less than 1/4" of pad material remaining.
- Look for any unusual rub marks on the guides, wall, platform, etc., which might indicate misalignment of the components due to overloading, misuse, or something out of tolerance.
- Inspect all gate/door interlocks and status switches for proper operation.
- Inspect all gates/doors for wear or damage.
- Check that all bolts and nuts are secure.
- Check all structural and mechanical components for cracked, or broken welds and any distortion caused by collision, overloading, or other misuse.
- Grease the shaft bearings located beneath the lower vehicle platform at the front and rear of the lift with light grease. The grease fittings are located on each bearing housing (total eight – four per end) as shown.
- Tighten all set screws.



Recommended maintenance interval –

**Every 12 months or 350 hours of operation, whichever comes first.**

- Change hydraulic fluid and clean reservoir. Never return fluid from drip pans, pit, etc. back to reservoir. Dispose of and handle used fluid as a hazardous material.
- Replace all hydraulic (suction) filters.
- Raise platform approximately 24 inches. Note exact distance from floor level to top of platform (round off to nearest 1/16 inch). Leave idle for 15 minutes. Check distance again. If any movement is measured, call a qualified service technician to make repairs as required.
- Correctly tension all equalization chains located beneath the lower platform per instructions in the General Maintenance section.
- Pillow block bearings on the drive shaft should be greased.

## **7.4 General Maintenance**

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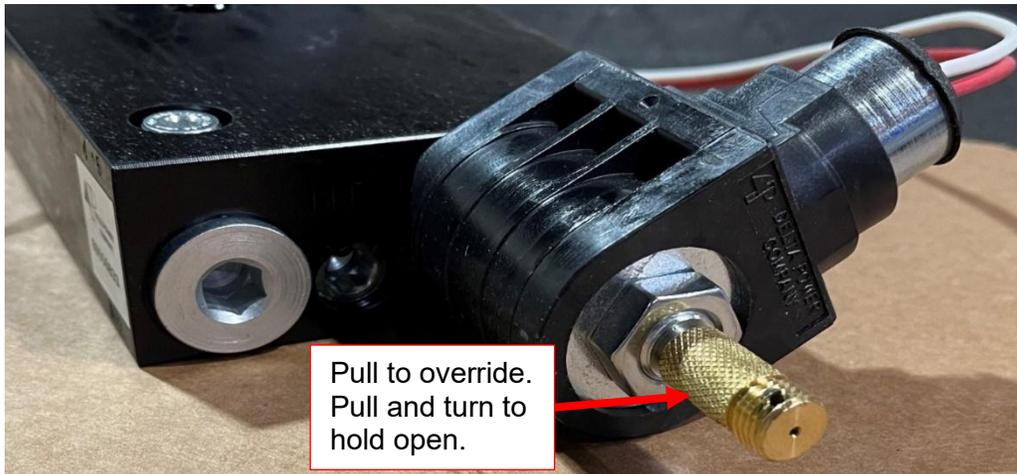
### **7.4.1 Oil Recommendations**

Autoquip recommends 5W-30 for most environments. If the temperature is below 32°F please consult Autoquip for recommendations ([see 1.1 Contact Information](#)). Also available are biodegradable and food grade oils.

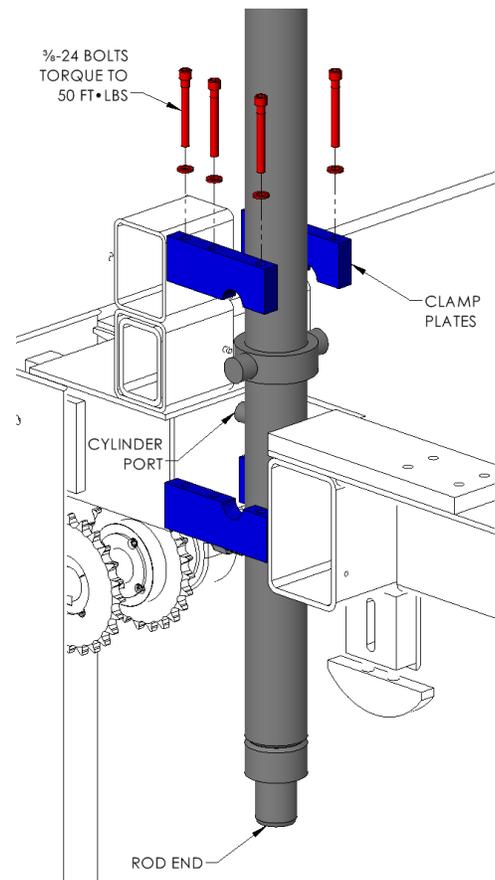
## 7.5 Cylinder and/or Seal Replacement

### 7.5.1 Cylinder Removal

1. Raise the platform to upper level to place the maintenance blocks in all four corners (see “Blocking Instructions” section).
2. Lower the platform onto the maintenance blocks using the manual override on the down valve. Pull and turn the knob to hold the valve open. This will bleed the pressure off the system. It will also allow the ram plunger to be pushed back into the casing in the next step.

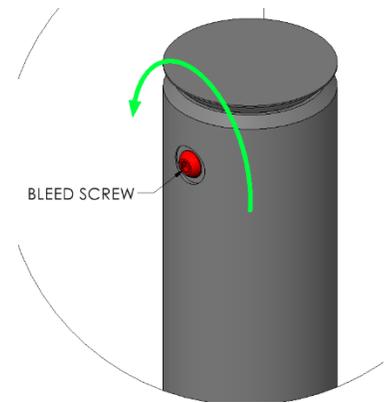


3. Slowly push the ram plunger into the cylinder casing from beneath the platform, displacing as much oil as possible from the cylinder to the power unit reservoir as you do so.
4. Find something to hold the rod in a retracted position as you continue work.
5. Disconnect the elbow/velocity fuse that is connected to the cylinder port.
6. Unbolt and remove the trunnion clamps that hold the cylinder trunnion to the platform.
7. Slowly lift the cylinder off of the trunnion mounts taking care to keep the plunger retracted.



## 7.5.2 Re-Installing the Cylinder

1. Reinstall the cylinder by reversing the steps above.
2. Check the oil level.
3. Cylinder bleed screw near top of cylinder casing can be loosened (cracked) – but not removed – to allow rod to extend down to basement level and into the collars welded to the corner guide base plates.
4. Once the cylinder is bolted into place, plunger extended to the floor at the lower level, and all hydraulic connections are made tight, proceed to bleed air out of the system ([see 7.5.4 Air Bleeding Procedure](#)).
5. Clean the oil fill breather cap.
6. Clean up any debris and/or spilled oil from the area.

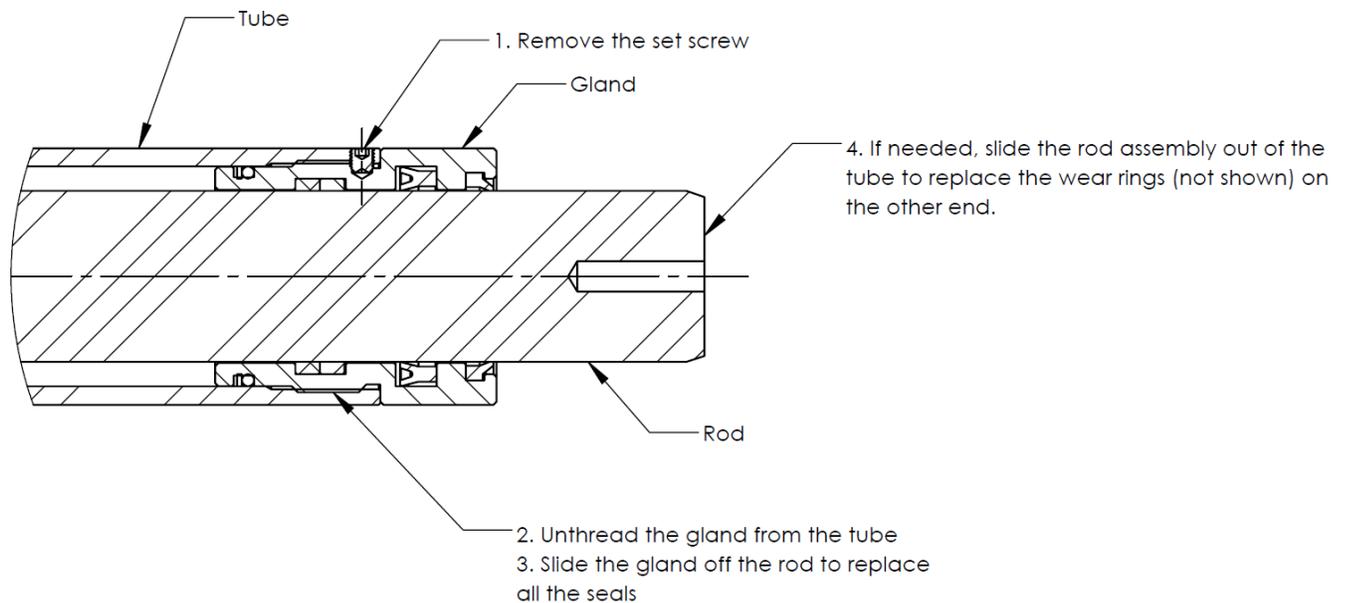


### **⚠ CAUTION**

**Do not use Teflon tape. Tape fragments can cause malfunctioning of the hydraulic system. Loctite PST #567 pipe thread sealant or equivalent is recommended.**

## 7.5.3 Seal Replacement

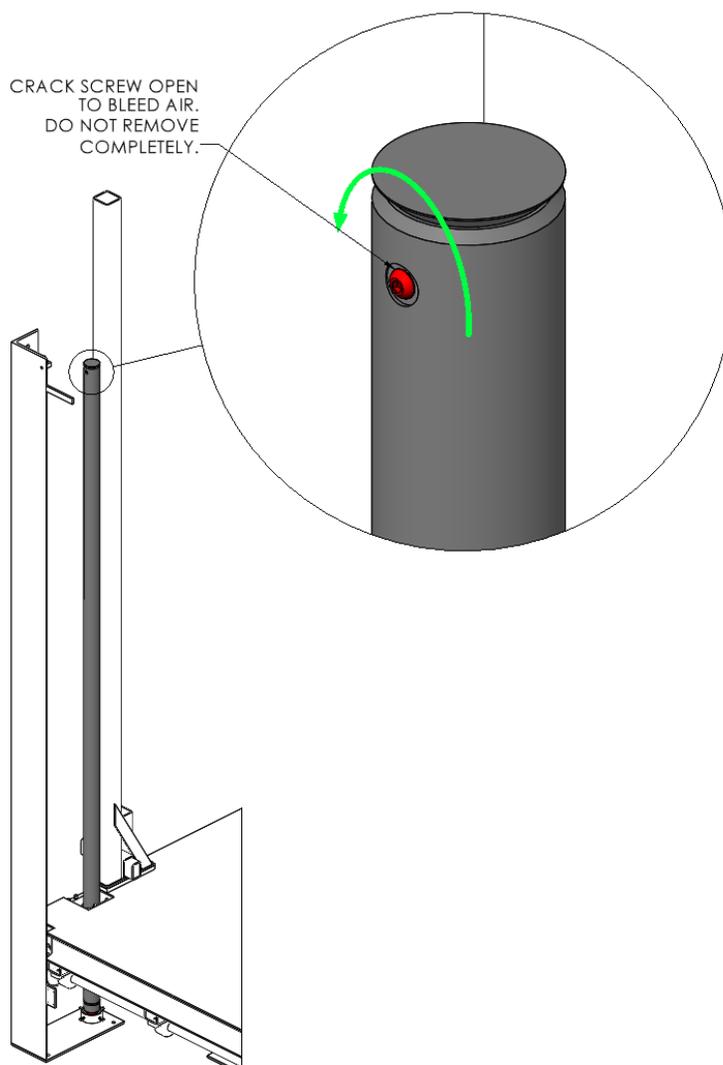
1. Lay the ram assembly on its side.
2. Follow the instructions below.



3. Reassemble the cylinder by reversing the steps above.

## 7.5.4 Air Bleeding Procedure

1. Raise the platform 6-12 inches above the floor.
2. Slowly crack the bleed screw near the top of the cylinder casing until clear oil (no bubbles) comes from the cracked bleed screw. Tighten the screw; make sure no oil comes from the screw when it is tightened.
3. After each of the four cylinders has been bled, raise the lift enough to safely remove any maintenance devices which may have been holding the platform.
4. Ensure nothing is beneath the lift, press the "DOWN" button and lower the lift into the pit. Once the lift lands, continue to press the "DOWN" button for 10 seconds.
5. Wait 45 seconds and raise the lift approximately 3 feet.
6. Repeat Step 2.
7. Repeat steps 2-6 several times to flush any air that may remain in each line back to the power unit.
8. Clean up any spilled oil. Used oil should be discarded (do not re-use) as it may contain flushed contaminants from the line.

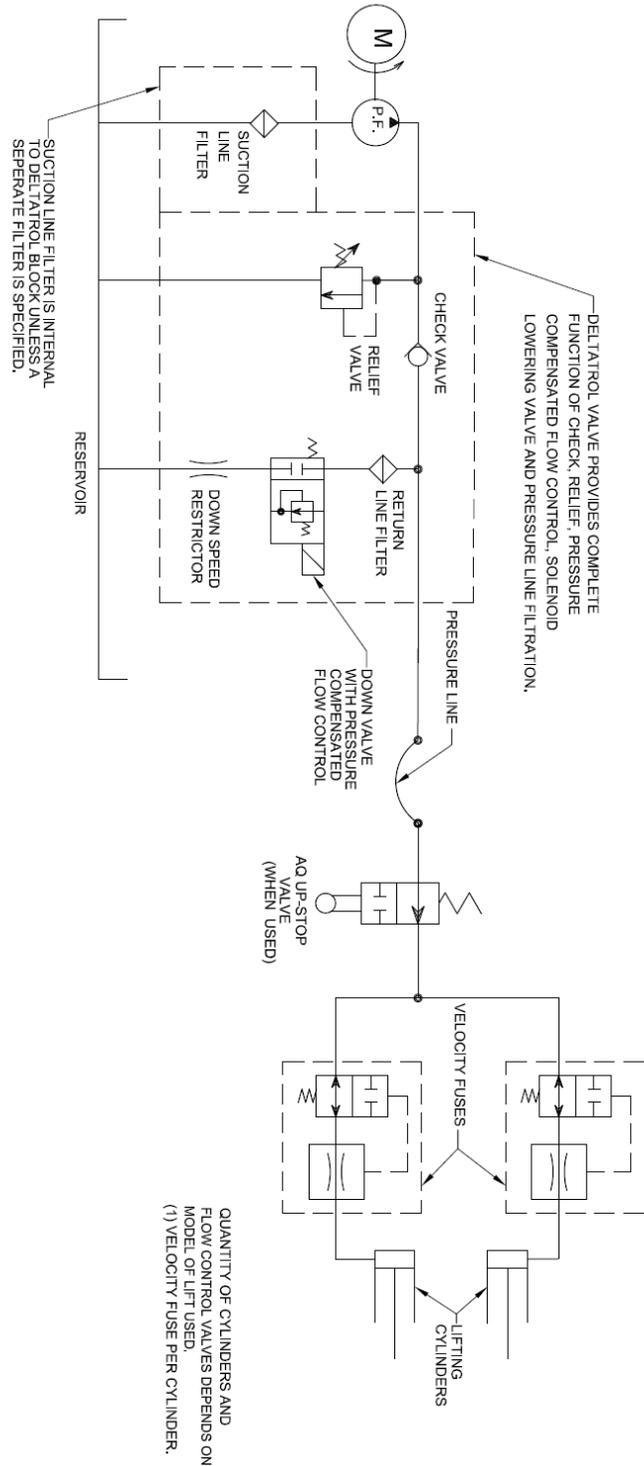


NOTE: A small amount of air may remain in the cylinder, but it will be flushed back to the reservoir after a few operations of the system.

# 7.6 Schematics and Field Wiring Details

PLEASE REFER TO THE JOB SPECIFIC ELECTRICAL SCHEMATIC SUPPLIED WITH ORDER.

65750001



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ALL RIGHTS RESERVED Year of copyright is first year indicated on this document		APPROXIMATE WEIGHT: WJB		DRAWN BY: WJB	
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Hydraulic Schematic

## 8. TROUBLESHOOTING

**⚠ DANGER**



Never go under lift platform until load is removed, and mechanism is securely blocked in raised position with maintenance devices. ([see 5 Blocking Instructions](#)).



All procedures described in this section should only be performed by qualified service personnel.



Turn off the power and lock out the power at the primary power disconnect switch before service or maintenance.



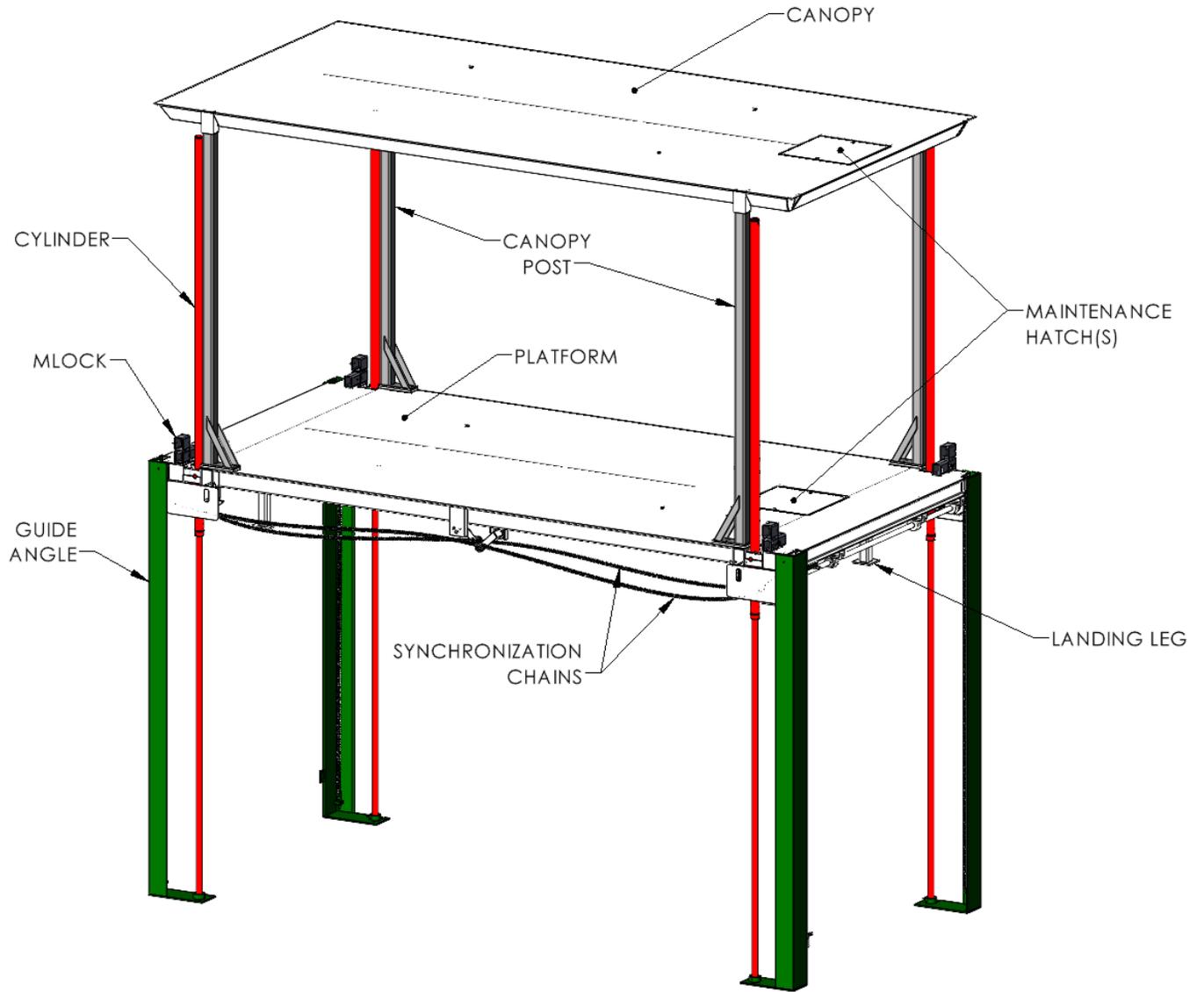
Issue	Possible Cause	Solution
Unit won't lower - Structural and/or Hydraulic causes	Check for mechanical obstructions, including the maintenance locks; or a binding condition.	Remove maintenance locks or other obstruction(s). Check spacing, straightness and plumb on all corner guides.
	Heavy oil and/or cold temperatures can cause a lockup	<a href="#">See 7.4.1 Oil Recommendations</a>
Unit lowers too slowly with a load.	Restricted hydraulics.	Check for a pinched hose or tubing.
	The down valve malfunctioning.	Check and replace control valve.
	The down valve solenoid mounting is loose preventing the valve from opening completely.	Check and repair.
	Heavy oil and/or cold temperatures cause a slowness.	<a href="#">See 7.4.1 Oil Recommendations</a>
	The down valve solenoid may be weak and not pulling in completely (it will usually chatter).	Check and repair or replace. Also, check the control voltage.
	Partially blocked or malfunctioning flow control valve.	Check and repair.
Unit raises, then lowers back slowly.	The "DOWN" solenoid valve may have faulty wiring	Check wiring and circuit; repair as needed.
	Faulty "DOWN" solenoid coil	Remove the solenoid coil and recheck. If the lift holds, replace the coil
	Damaged or dirty down valve cartridge.	Remove the solenoid coil and recheck. If the lift does not hold with the coil removed, remove, inspect, clean or replace the down valve cartridge.
	The oil line, hose, or fitting may be leaking.	Check and repair.
	The hydraulic cylinder rod seal may be leaking.	Check to see if hydraulic oil is running down the outside of the cylinder barrels at the rod end. Repair as necessary.
	<b>NOTE:</b> A small amount of oil at the rod seal is normal and desirable for proper lubrication of the cylinder. A leak would cause oil to flow from the rod seal when the lift is in the raised position.	
Unit does not raise completely to the upper level (had to press "emergency stop" button to stop motor.)	There is some sort of interference with the platform.	<a href="#">See 7.2 If a Platform Hangs Up or Jams</a>
	The load exceeds rated capacity.	Reduce the excess load.
	Low oil.	Check and top off. Determine cause and repair.

Issue	Possible Cause	Solution
Unit will not raise (motor <b>not</b> running or “humming”).	The emergency stop button may be engaged.	Check all push-button stations. Reset as necessary.
	Any of the security devices on may be turned “Off”	Check that security key is turned “On”, and that security keypad (and/or biometric device when ordered) has not timed out and shows a “green light” status
	The gate or door is not closed.	Check and close.
	The main line disconnect switch is open (off).	Check and close (on).
	The gate status switch or door interlock is malfunctioning or is out of tolerance.	Check and repair or adjust as required.
	The main line disconnect fuse is blown.	Check and replace.
	The “UP” push button or circuit is malfunctioning.	Check at the other push button station for “UP” function. Check components and circuit. Repair or replace.
	The motor overload relay ( <a href="#">MOR</a> ) has tripped.	Check and reset. If it trips again, check for cause in the motor circuit.
	A circuit breaker on the secondary voltage has tripped.	Check and reset CB1 or CB2.
	The motor contactor coil has burned out.	Check and replace.
Unit will not raise (motor <b>is</b> running or “humming”).	The load exceeds rated capacity.	Reduce the excess load.
	Low oil.	Check and top off. Determine cause and repair.
	Rotation on the 3-phase motor may be reversed.	Reverse any two motor electrical leads.
	3-Phase motor may be single-phasing (humming).	Check wiring, fuses, etc.
	Breather cap on the reservoir may be clogged.	Remove and clean.
	Suction screen may be clogged. The screen is attached to the suction line in the tank.	Remove and clean. Drain and replace oil.
	Pump may be cavitating due air in the system	Check for loose fittings. Bleed air from the system ( <a href="#">see 7.5.4 Air Bleeding Procedure</a> ).
	The down valve may be energized by faulty wiring or it may be stuck in the open position.	Remove the solenoid and check.
	The voltage at the motor terminals may be too low to run the pump with the existing load.	Check before measuring the voltage at the motor terminals (or as near as possible) while the pump is running under load. Reading the source voltage or pump idling voltage is meaningless. Inadequate or incorrect wiring can starve the motor when the source voltage is ample. Correct as necessary.
	The pump may be seized if the motor is humming or blowing fuses or overloads.	Remove the pump with the platform in the lowered position. The shaft should be able to be turned by hand. Check for cracks in the housing.

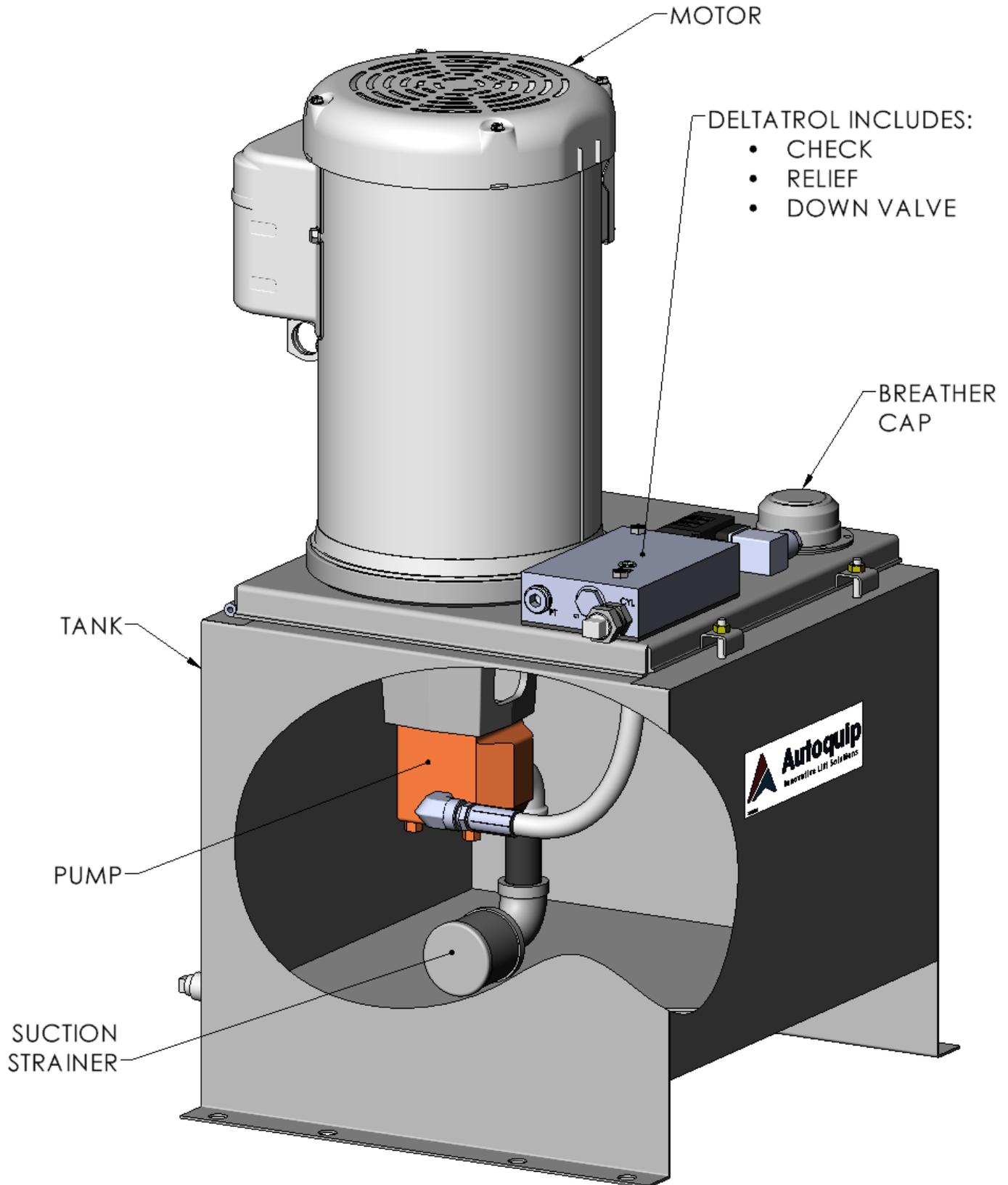
	Possible Cause	Solution
Motor labors or heats excessively.	The voltage at the motor terminals may be too low to run the pump with the existing load.	Check before measuring the voltage at the motor terminals (or as near as possible) while the pump is running under load. Reading the source voltage or pump idling voltage is meaningless. Inadequate or incorrect wiring can starve the motor when the source voltage is ample. Correct as necessary.
	The wiring may be incorrect.	Be sure one leg of the motor line is not connected to the ground prong. This can happen particularly on 3-phase units using twist-lock plugs.
	The pump may be binding from oil starvation. This can cause high internal heat. The pump may have to be replaced.	Suction screen may be clogged. The screen is attached to the suction line in the tank. Check both and clean as required. Drain and replace oil.
Unit operates in a "spongy" or jerky fashion.	Check for oil starvation, the system may have air in it.	Check clogged suction screen or loose fittings. Bleed air from the system ( <a href="#">see 7.5.4 Air Bleeding Procedure</a> ).
	The platform may be binding in the guide ways.	Check and repair.
	The cylinder may be binding internally or externally.	Check and repair.
Motor cycles on and off while lift is in the fully raised position	Lift is drifting down off the upper limit switch.	See section "Unit raises, then lowers back slowly". Probably a leak in the system.
Unit won't lower - Electrical Circuit	The emergency stop button may be engaged.	Check all push-button stations. Reset as necessary.
	Any of the security devices on may be turned "Off"	Check that security key is turned "On", and that security keypad (and/or biometric device when ordered) has not timed out and shows a "green light" status
	The gates or doors may be open.	Close and try again.
	Power supply circuit breaker may be tripped.	Check/Reset CB1 and CB2.
	Down coil is not energizing.	Bleed off the hydraulic pressure with the down valve manual override. If the lift lowers, check the electrical circuit and the down solenoid. The solenoid may be incorrectly wired, burned out, not rated for the voltage, or the line voltage may be excessively low.

# 9. PARTS LISTS

## 9.1 General Assembly



## 9.2 Typical Power Unit



## 10. WARRANTY

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The user is solely responsible for using this equipment in a safe manner and observing all of the safety guidelines provided in the Owner's Manual and on the warning labels provided with the lift. If you are unable to locate either the manual or the warning labels, please contact Autoquip ([see 1.1 Contact Information](#)) for replacement downloads or information.

Autoquip expressly warrants that this product will be free from defects in material and workmanship under normal, intended use for a period of Two (2) years for all electrical, mechanical, and hydraulic components, parts or devices. Ninety (90) days labor warranty extended to One (1) year with a Planned Maintenance Contract in place. Autoquip also warrants the structure of the lift against breakage or failure for a period of Ten (10) years. The warranty period begins from the date of shipment. When making a claim, immediately send your dealer or Autoquip notice of your claim. All claims must be received by Autoquip within the warranty time period. The maximum liability of Autoquip, under this Limited Warranty, is limited to the replacement of the equipment.

This warranty shall not apply to any Autoquip lift or parts of Autoquip lift that have been damaged or broken in transit/shipping, or due directly or indirectly to misuse, abuse, vehicle impact, negligence, faulty installation, fire, floods, acts of God, accidents, or that have been used in a manner contrary to the manufacturer's limitations or recommendations as stated in the manual, or that have been repaired, altered or modified in any manner outside of Autoquip's manufacturing facility or which have not been expressly authorized by Autoquip.

Autoquip makes no warranty or representation with respect to the compliance of any equipment with state or local safety or product standard codes, and any failure to comply with such codes shall not be considered a defect of material or workmanship under this warranty. Autoquip shall not be liable for any direct or consequential damages resulting from such noncompliance.

Autoquip's obligation under this warranty is limited to the replacement or repair of defective components at its factory or another location at Autoquip's discretion at no cost to the owner. This is owner's sole remedy. Replacement parts (with exception of electrical components) will be warranted for a period of ninety (90) days. Except as stated herein, Autoquip will not be liable for any loss, injury, or damage to persons or property, nor for direct, indirect, or consequential damage of any kind, resulting from failure or defective operation of said equipment. All parts used to replace defective material must be genuine Autoquip parts in order to be covered by this Limited Warranty.



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