



## **SHUR-LOK™ VEHICLE RESTRAINT**

### **Wheel Based Automatic Vehicle Restraint**

### **Installation & Owner's Manual**

This manual applies to model SL-7000 restraints with serial numbers **55125** to **55126**

P/N 56131-OM2

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# Contents

<b>Contents</b> .....	<b>2</b>
<b>Preface</b> .....	<b>3</b>
Problems, Errors and Omissions .....	3
Restraint Identification .....	3
Copyright.....	3
<b>Warranty</b> .....	<b>4</b>
<b>Safety Practices</b> .....	<b>5</b>
Labels .....	6
<b>Locking System</b> .....	<b>7</b>
<b>Operation</b> .....	<b>8</b>
General .....	8
Operating Instruction .....	8
<b>Installation</b> .....	<b>9</b>
Tools Required.....	9
Foundation.....	9
Construction.....	11
Hydraulics .....	13
Electrical .....	13
<b>Initial Start-up</b> .....	<b>14</b>
General .....	14
Finishing .....	14
Checking and adjusting the wheel sensor .....	15
Testing.....	15
<b>Inspection and Maintenance</b> .....	<b>16</b>
Daily.....	16
Monthly .....	16
Annually .....	16
<b>Part Lists</b> .....	<b>17</b>
Chocking Unit Assembly:.....	17
Slide Sensor Assembly.....	18
Overall Assembly: .....	19
Cylinder Assemblies .....	21
<b>Hydraulics</b> .....	<b>22</b>
Schematic.....	22
Hydraulic Power Unit.....	23
Hydraulic Hose Assemblies .....	24
<b>Controls</b> .....	<b>25</b>
Control Panel .....	25
Wiring Diagram .....	26

# Preface

## **PLEASE READ AND UNDERSTAND THIS MANUAL COMPLETELY**

This manual gives detailed information and instruction on how to operate and maintain your equipment correctly. Failure to do so could result in personal injury, and/or equipment damage. Please consider this manual a permanent part of the unit and keep it near the restraint for reference whenever needed.

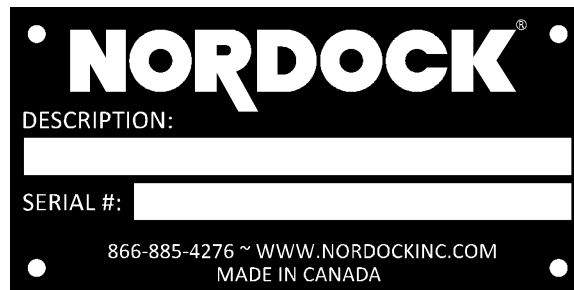
If you have any questions about this manual, the restraint, its components, or our products and services, please call us at 1-866-885-4276 and we will be happy to assist you. With proper care and maintenance, this restraint is designed to work effectively and efficiently for many years to come.

## **Problems, Errors and Omissions**

This manual has been prepared with the utmost care and attention to detail to provide accurate parts and service information should the need arise. Nordock Incorporated believes this manual will provide the operators of this restraint all the necessary information required to operate and maintain it for many years. If you believe there is an error, if you have a problem following the guidelines, or if there is information that you feel is missing from this manual, please contact us at the above number so that we may resolve the issue immediately.

## **Restraint Identification**

It is very important that in order to obtain the best possible service from Nordock Inc., please provide the model and serial number of the restraint whenever you contact us. Below is the same serial number plate that will be found on the chock housing. Please record the information from the plate on the restraint in the area below. This will greatly reduce the possibility of improper parts being shipped to you.



## **Copyright**

This manual is copyright to Nordock Incorporated. All information, text, drawings, and technical data contained herein are for reference only. No part of this manual may be copied, altered, or stored on electronic media, and cannot be revealed to others for the purpose of competition.

# Warranty

Nordock Incorporated expressly warrants that all of its manufactured product shall remain free of defects in material and workmanship under normal use for a period of one-year from the date of delivery to the purchaser. The purchaser must maintain and operate the product in accordance with proper procedures. In the event the product proves defective in material or workmanship, Nordock Inc. will, at its option, either:

1. Replace the product or the defective portion thereof without charge to the purchaser; or,
2. Alter or repair the product on site or elsewhere, as Nordock Inc. may deem advisable, without charge to the purchaser.

The warranty stated herein is that offered by Nordock Inc. and expressly disclaims all implied warranties including those of merchantability and fitness. This warranty does not cover any failure caused by improper installation, misapplication, overloading, abuse, negligence, or failure to maintain and protect the equipment from vehicle impact. Nordock Inc. or its representative assume no responsibility or liability for any incidental or consequential damages of any kind including loss of use of any equipment, damage or failure resulting from the use of unauthorized replacement parts or equipment modification, or damages resulting from the misuse of the equipment.

Nordock Inc. warranties extend only to the product itself. Nordock Inc. disclaims all liability of any kind arising out of the workmanship, methods and materials used by the installer or premature product wear, product failure, property damage or bodily injury arising from improper installation.

These warranties as stated herein are the exclusive remedies for all claims.

# Safety Practices



## WARNING

**READ AND FOLLOW THE OPERATING INSTRUCTIONS CONTAINED IN THIS MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THE SL-7000 RESTRAINT.** If you do not understand the instructions, contact your supervisor for explanation and instruction on the safe operation of this unit. Failure to follow these safety practices may result in bodily injury, property damage or death.

The following guidelines are to be used in conjunction with all laws, governances and codes in effect where the SL-7000 restraint is installed.

1. Use by untrained personnel can cause property damage, serious injury and/or death. Your supervisor should instruct you on the safe and proper way to use the SL-7000 restraint. Read and follow the complete INSTALLATION and OPERATING procedures contained in this manual before use.
2. **DO NOT USE THE RESTRAINT IF IT IS NOT OPERATING CORRECTLY.** Inform your supervisor that it may require repair. Contact Nordock Inc. or an authorized service representative for service.
3. Be certain all people in the driveway stand clear when the restraint is in operation.
4. Do not stand in the driveway between the dock and a backing vehicle.
5. Keep all body parts clear of the restraint Guide Track and other moving parts at all times.
6. Do not install the restraint anchor bolts into concrete of questionable integrity.
7. Do not load or unload any vehicle until you make certain that the restraint has securely engaged one of the vehicle's rear wheels and the brakes are set. If the restraint does not engage one of the vehicle's rear wheels for any reason, **BE CERTAIN TO CHOCK THE TRUCK WHEELS BEFORE PROCEEDING WITH LOADING OR UNLOADING.**
8. Do not use the restraint as a step.
9. All electrical troubleshooting and repair must be done by a qualified technician and must meet all applicable codes. Before doing any electrical work, make certain the power is disconnected and properly tagged and/or locked out.
10. Whenever any maintenance or repair is to be performed on the restraint, barricade the area around the dock floor and driveway and place clear signage on the perimeter that the dock and restraint are not to be operated.
11. If you have any questions, contact your supervisor or your local Nordock Inc. representative.

## **Labels**

The labels and decals on the SL-7000 restraint must be kept in clean, legible condition at all times. The photograph below shows the decals and their placement on the restraint. Please check their condition on a daily basis, and replace them immediately if they become unreadable.



# Locking System

The Shur-Lok™ SL-7000 is a fully hydraulic vehicle locking mechanism with integrated wheel guidance, fitted with hydraulic cylinders for making a longitudinal and lateral movement. During the longitudinal movement, the locking mechanism is positioned in relation to the wheel of the vehicle.

The locking mechanism is used at loading and unloading platforms where vehicles are loaded and unloaded with the back facing the dock. The locking mechanism positions a block in front of the vehicle wheel so that it's 'clamped' between the platform and the block.

The locking device and the hydraulic unit are normally mounted at the driver's side. In the starting position, the longitudinal guide system is in the retracted position. The transverse movement block is in the retracted position so that there are no obstacles in the vehicle's track. The control box is positioned on the driver's side inside the building. The traffic light is also positioned on the driver's side, but outside on the wall of the building. In order to guarantee the correct positioning of the vehicle, an optional wheel guide can be mounted on the non-driver's side.

The locking mechanism is automatically positioned in relation to the first wheel of the vehicle it encounters in the longitudinal direction. A chocking block with a height of approximately 13" (330mm) extends laterally in front of the detected wheel. The longitudinal guide then pushes the block against the wheel. This locks the vehicle and the system must be released to its starting position before the vehicle can depart.

The functions are supported on the control panel by indication lights and pictograms, and from outside by means of a traffic light indicating if the platform is free for docking or departure.

The Shur-Lok™ SL-7000 is fitted with a PLC control system which ensures that:

- the first sensed wheel is automatically located and blocked by means of button operation.
- if required, the pressure on the wheel is monitored and corrected.

The Shur-Lok™ can be used as a stand-alone unit. The use of this requires a certain amount of discipline (do not load when the red indication lamp is on).

A higher level of integration can be achieved by connecting the control to that of a dock leveler.

If combined with a hydraulic dock leveler:

- Electrical interlocking ensures that the leveler cannot be used before the wheel of the vehicle is locked.
- Electrical interlocking ensures that the vehicle cannot be unlocked when the leveler is in operation\*.  
(\*Dock leveler must be equipped with optional leveler stored switch.)

# Operation

## **General**

The Shur-Lok™ restraint should only be used for locking vehicles that are loaded and discharged from the rear end on a loading/unloading platform.

The Shur-Lok™ restraint may only be operated by trained personnel appointed by the company management.

The Shur-Lok™ restraint prevents vehicles from rolling forward. It is possible (in the event of a lightly loaded trailer and/or sufficient drive torque from the vehicle) to drive over the wheel chocking block. Under normal circumstances the driver will find that there is sufficient resistance against the vehicle movement.

Under normal usage conditions the Shur-Lok™ offers sufficient protection against (premature) moving off or gradual rolling away of vehicles.

The device has a preventative function against theft attempts. However, it is not intended as protection against theft.

In the event of a malfunction, or for service operations, the main switch must be put in the OFF position. It is only possible to render the Shur-Lok™ voltage-free by switching off the main power switch.

## **Operating Instruction**

To gain a better understanding of the locking system, read the section on the previous page and the general instructions above. Vehicles should be docked (with open rear doors) on the rear end. It is advisable to use steel-faced bumpers on the dock to minimize bumper wear. According to normal procedure, the parking brake of the vehicle is engaged.

The free space in front of the trailer wheel must be 16" (400mm) in height and 10" (250mm) in length. This space is needed for extending the block in front of the wheel. If this clearance is not present, the transverse movement slide-out block will jam. In this event, a control run-timer will sound an alarm that the Shur-Lok™ sequence has failed.

Operation of the Shur-Lok™ takes place inside the building. Because there is no overview of the vehicle to be locked, a choice has been made for an automatically operating system.

To block the vehicle, the 'LOCK' button is pressed and released. The RED light on the control box will now flash. As soon as the vehicle has been locked (approx. 30 sec.) the GREEN light will come on.

If interlocked, the dock leveler is now active and can be positioned.



# Installation



## WARNING

**IMPROPER INSTALLATION OF THIS VEHICLE RESTRAINT COULD RESULT IN SERIOUS INJURY OR DEATH TO DOCK WORKERS OR OTHER RESTRAINT USERS.**

The following installation materials are included with the restraint:

15 pcs. Ø5/8" x 5" lg. concrete wedge anchors

All other materials required are to be provided by the installer.

### **Tools Required**

- Hammer drill with Ø5/8" diameter masonry bit
- 15/16" wrench
- Mechanical levelling or plane level
- General hand tools
- Touch-up paint (Silver)
- Torque wrench (100 ft-lbs. min.)

### **Foundation**

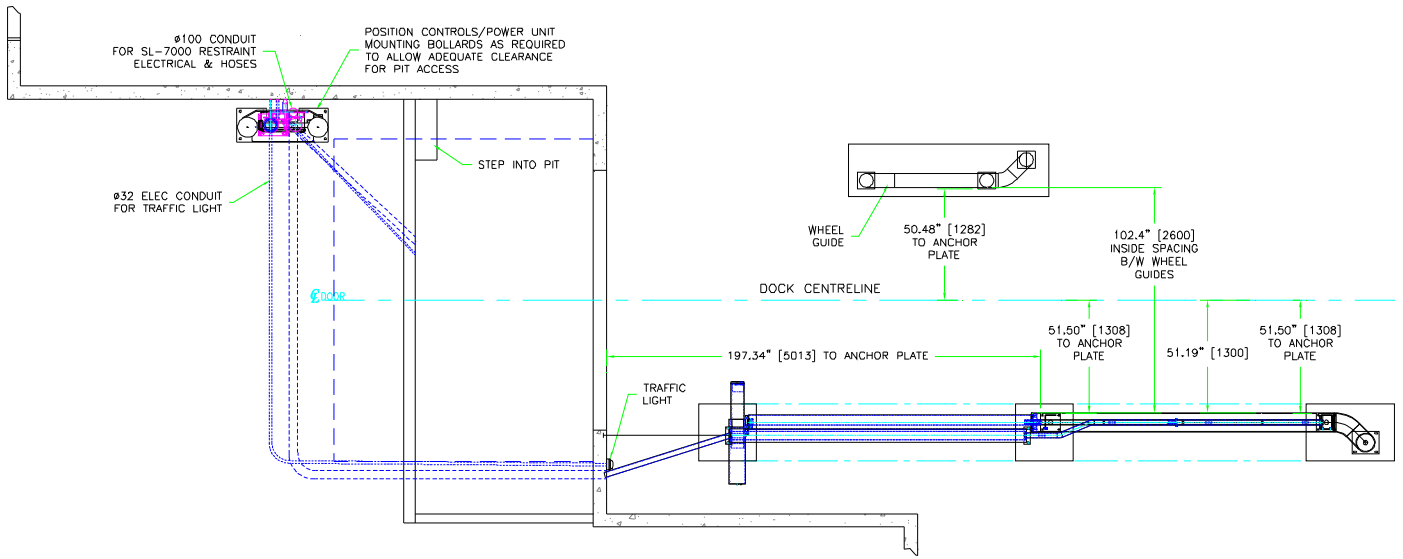
The SL-7000 must be placed on a level foundation of concrete (min. thickness = 8in. or 200mm). In the case of an asphalt surface, a concrete foundation must be established. Please consult factory for details.

The fixed portion of the SL-7000 should be set up according to the guideline. Holes in the base plates are used as a drilling aid.

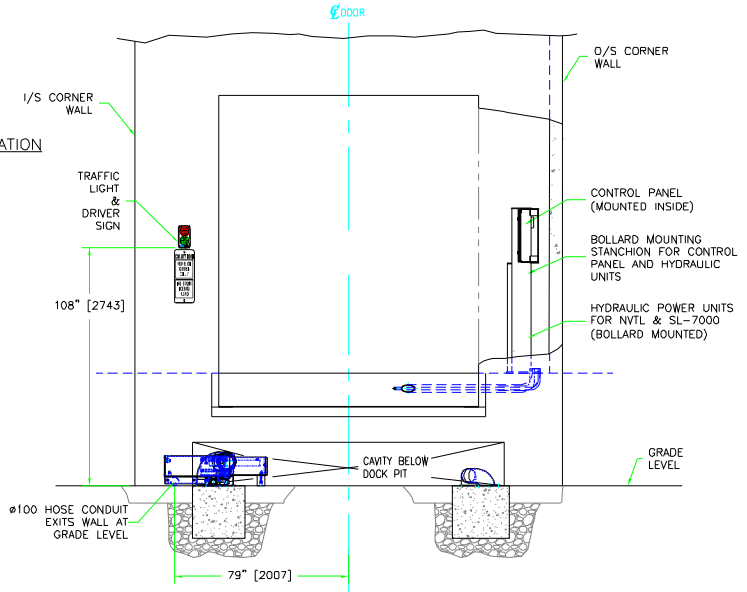
Thickness of concrete foundation	: 8in. (200 mm) floor foundation
Concrete strength	: 4000 psi (B25 – DIN 1045)
Reinforcement	: min. 2 mats 6x6 0/0 (152x152 MW47.6/MW47.6)
Finishing	: mechanical levelling or plane level
Concrete volume strip	: 5.2 yds (4 m <sup>3</sup> )(SL-7000 and wheel guide)

The reinforcement must not inhibit the fitting of the anchors. Both wedge anchors and chemical anchors are suitable for mounting the SL-7000. The anchors must be installed according to the instructions supplied by their manufacturer.

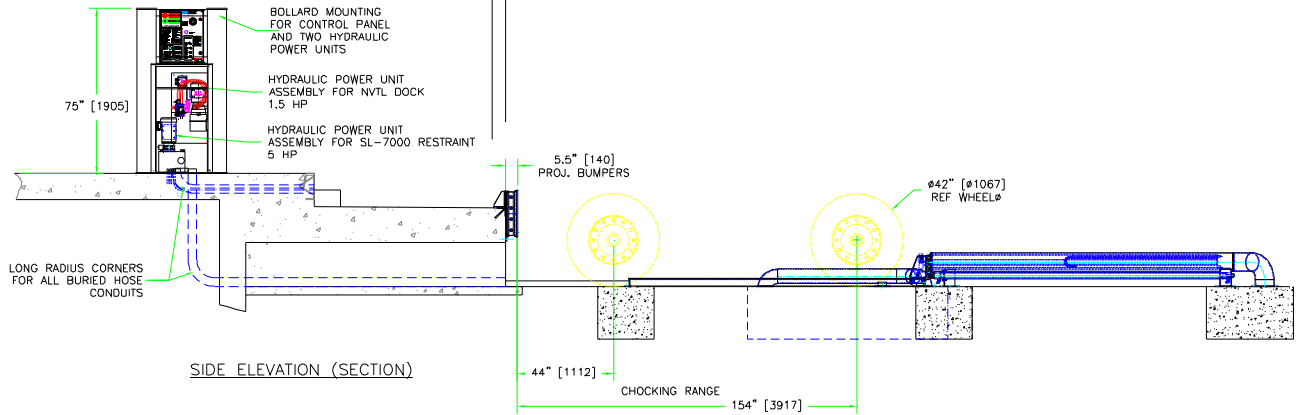
**It is the responsibility of the user to indicate whether the concrete foundation is of adequate quality.**



FRONT ELEVATION



SIDE ELEVATION (SECTION)



**Construction****WARNING****ALWAYS USE DOCK LEVELER SUPPORT WHEN WORKING UNDER A DOCK LEVELER RAMP OR LIP**

1. Place barricades around pit on dock floor and driveway while installing the vehicle restraint.
2. The SL-7000 restraint is supplied pre-assembled and configured according to the specification supplied on the approval drawings.
3. **Do not anchor the Guide Track at this time.** Leave the Guide Track of the SL-7000 until the main unit is positioned in its proper place, the operating system is functional and Finishing section complete.
4. Position the SL-7000 according to the layout diagram on the previous page and use the holes in the guide tube mounting plates as a template for the anchor bolt positions (8 places). Move the equipment as required to drill for the  $\text{Ø}5/8" \times 5"$  anchors (supplied). Note: The Guide Elbow anchor plate holes are slotted to allow its removal for service access. Position these anchors towards the end of the slot away from the main unit.
5. Re-position the SL-7000 for alignment of the Guide Track and conduit tubes. Clean out the holes, install wedge anchors and tighten to manufacturer specification. 80ft-lb typical.
6. Lay the hoses and cable out towards the building under the chock unit.
7. Feed the hoses and cable through the short elbow and conduit coupler and then join the elbow to the conduit beneath the SL-7000 guide tube.
8. With the notch in the Guide Track opening towards the main cylinder, feed the hydraulic hoses and cables through the Guide Track.
9. Position the Guide Track by sliding it into the runners on the bottom of the cross-head chock unit until the end cap is flush with the runners on the opposite side.
10. Feed the hoses and cables through the supplied extension conduit (shorten conduit if required) and into the building conduit for connection to the control panel and hydraulic power unit.
11. The exterior mechanical install is temporarily complete. Guide Track alignment and anchoring will continue in the *Finishing Section* of **INITIAL START-UP**.

**WARNING**

When lifting any part of the restraint during service or assembly, use a lifting device. Lifting by hand may result in injury.

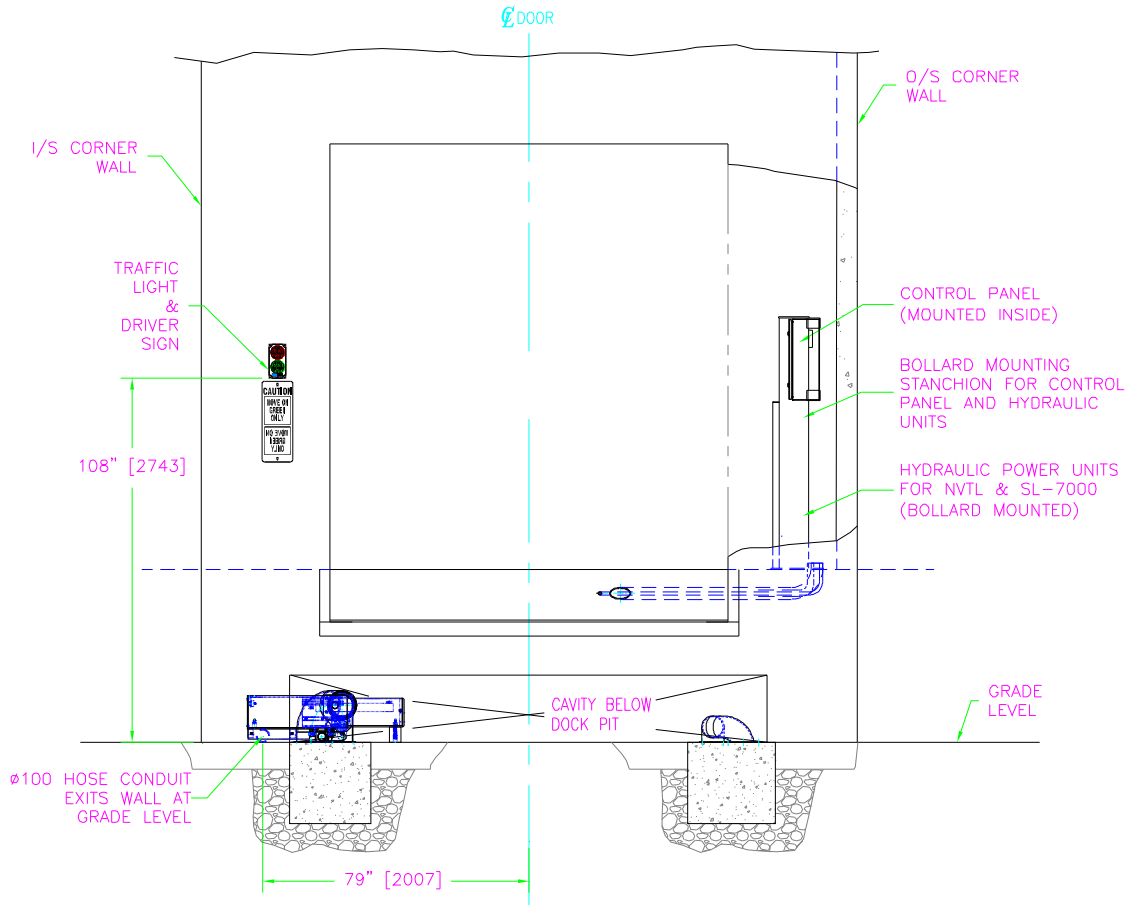
**WARNING**

Before doing any electrical work, the power must be disconnected and properly locked/tagged out. Failure to do so could result in serious injury or death. All electrical work must meet all applicable codes and be carried out by a qualified technician.

**NOTE:**

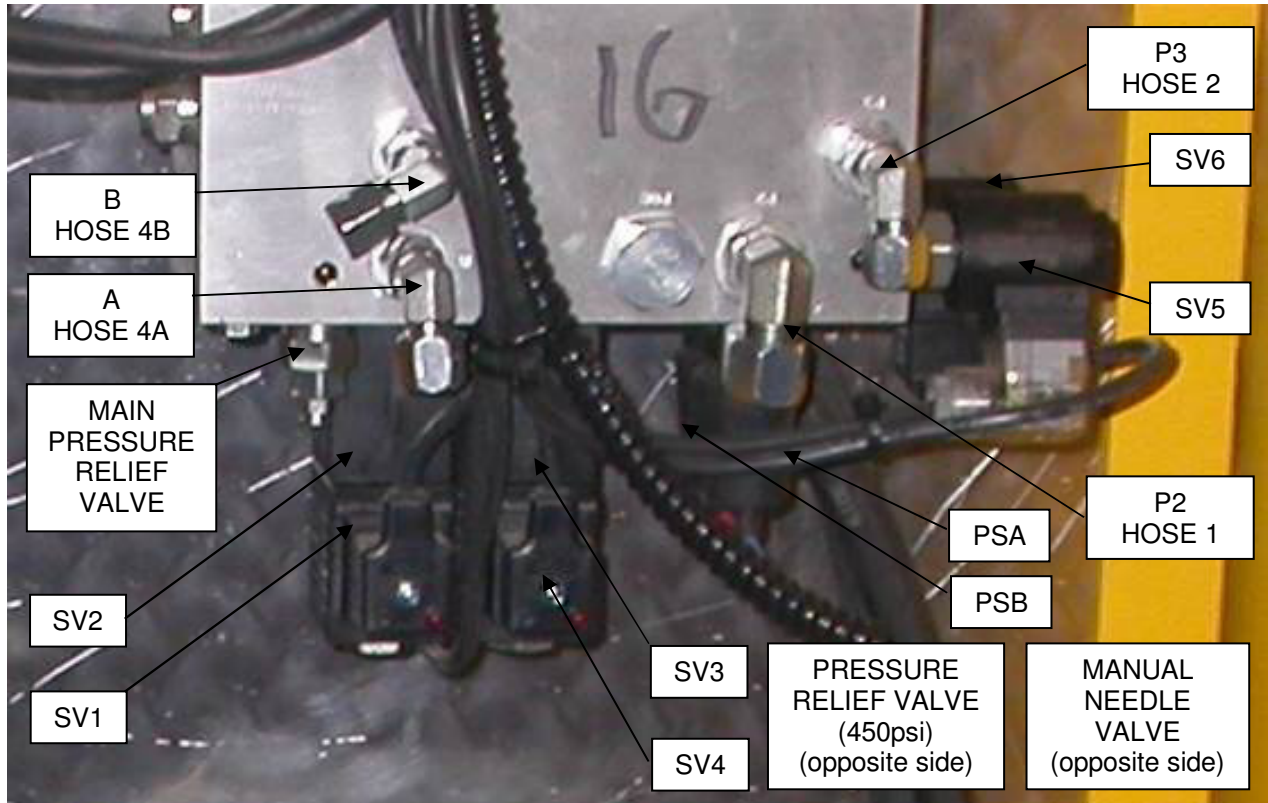
The sensor and light control voltage for this restraint is 24 VDC. All motor power and solenoid wires or other high voltage wires should be run in separate conduit.

12. Mount the control stanchion inside the building according to the corresponding approved conduit layout drawings. See drawing 56131-S1
13. The outside signal light is to be placed approximately 9 ft above the driveway on the driver's side of the door opening as shown in the diagram below. Drill a hole through the wall at the centre of the signal light mounting position.



14. Run a length of 18/3 (18 ga. min.) electrical cable (not supplied) from the control box location through the wall to the centre of the exterior traffic light location. Make connections in panel and signal light assembly as indicated in the wiring diagram located at the end of this manual.
15. Fasten the signal light housing to the wall (fasteners by others).
16. Fasten the "Move On Green Only" sign provided to the exterior wall under the signal light as shown in the previous diagram (fasteners by others).

## **Hydraulics**



1. The hydraulic power unit is mounted within the control stanchion.
2. Connect the hydraulic hoses to the fittings on the valve block of the power unit. Fit the hoses as marked to the connections provided.
  - Hose #1 (1/2")
  - Hose #2 (3/8")
  - Hose #4A (1/4")
  - Hose #4B (1/4")
3. If the hydraulic hoses are still too long, they can be coiled up with the hydraulic power unit.
4. The hand operated manual needle valve must be closed clockwise. Opening this valve, pressure can be released from the system in the event of a power outage to manually release trailer.
5. The red manual override knob on SV5 must be closed clockwise.
6. If required, remove solid plug from the filling opening of the power unit reservoir and replace with the breather cap supplied with the equipment.

## **Electrical**

1. Electrical power for the control box must be supplied from a local fused disconnect (supplied by others).
2. Make connections inside the control box as indicated on the wiring diagram located at the end of this manual.

# Initial Start-up



## WARNING

**Before operating or maintaining this truck restraint, read and follow the safety practices contained in this manual. Failure to follow the guidelines in this manual and those in effect in the workplace can result in serious bodily harm and equipment damage.**

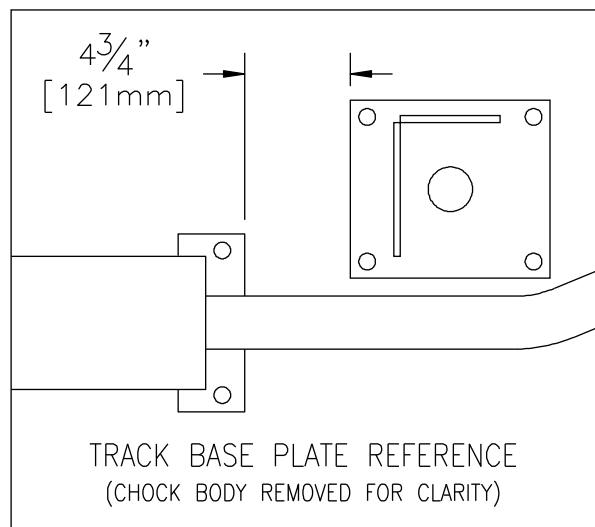
### General

This SL-7000 control is of the Logi-smart<sup>®</sup>, combination control type (ie. Is suitable for the SL-7000 and dock leveler provided) with a PLC (programmable logic controller) and a number of fixed I/O's (Inputs/Outputs). On the outside of the control box there are a number of push buttons and indicator lamps for the automatic execution of the locking program and dock leveler operation. The text next to the buttons indicates which movement is being executed. Dry contact, Overhead Door buttons are provided for connection to the door operator only. Inside the panel on the PLC, there are also a number of LED's for detecting the inputs (the proximity and pressure switches, wheel sensor, etc.) to simplify putting into operation and fault analysis. The cables and their wires are labelled for connection according to the electrical circuit diagram.

Once all electrical connections are made, turn on power to the panel at the local disconnect.

### Finishing

1. **Install a temporary jumper between terminals 6 and 23 to engage Maintenance Mode.** Using the LOCK and RELEASE buttons to run the main cylinder in and out, set the Guide Track position at the beginning, half-way and at the end of stroke. Check the play between the fixed and the movable tube. The play must be the same in all three positions. It may be necessary to shim the Guide Track to achieve aligned travel.
2. Before anchoring, recheck longitudinal positioning of Guide Track so cross-head chock unit wear blocks cannot overrun the ends of the Guide Track. Note: Conduits from under main cylinder and extension to building must be inserted to the Guide Track openings.



3. Mark Guide Track anchor hole locations.

4. Using LOCK and RELEASE buttons, place the cross-head chock unit in the middle of the track. Check anchor positions marks and drill for 5" dia. anchors.
5. If gaps are present between slab and anchor plates, shims may be required here so anchors do not twist track when tightened. Clean out holes and install wedge anchor bolts to manufacturer specifications. 80ft-lb typical.
6. Remove the toe-guard plates from the bottom of the cross-head chocking unit and adjust the guide pads. Adjust the clearance between the guide pads and the rail to approximately 1 to 2 mm (1/32" to 1/16") by means of the slotted holes. Reinstall foot protection plates.
7. Using LOCK and RELEASE buttons, recheck travel alignment and ensure no binding between inner and outer guide tubes throughout travel. Make adjustments to Guide Track shimming if necessary.
8. Anchor extension conduit between track and building to slab with the two clamps provided (anchors by others).
9. Remove the temporary jumper from terminal 6 and 23.

### **Checking and adjusting the wheel sensor**

The range of the wheel sensor, with the chocking block fully retracted, is set to a maximum of 20". When checked, this value should be 16" to 20" maximum.

The switch point can be checked by moving the hand or a subject in front of the sensor view hole in the plastic end block, starting at about 30" and then moving toward the sensor. At the moment the sensor switches, Input LED 0 of module 2 (wheel sensor) starts lighting. The range of the sensor can be adjusted with the adjusting screw on top of the housing. Turning to the left decreases the range, turning to the right will increase the range.

### **Testing**

Position a trailer and test the chock according to the Operating Instructions section of this manual.

Initial conditions:

1. Longitudinal and Lateral cylinders fully retracted.
2. Outside traffic light GREEN.
3. Inside traffic light RED.

Press the LOCK button:

1. The Longitudinal cylinder will extend and the chock will seek the tire.
2. Upon sensing a tire, the Longitudinal cylinder will retract briefly before the Lateral cylinder extends and the Longitudinal cylinder extends to snug the chock against the tire.
3. The outside light will be RED and the inside light will be GREEN.

Press the RELEASE button:

1. The Longitudinal cylinder will retract briefly before the Lateral cylinder fully retracts and the Longitudinal cylinder fully retracts.
2. The outside light will be GREEN.
3. The inside light will be RED.

# Inspection and Maintenance



## WARNING

Before servicing this restraint, read and follow the safety practices contained in this manual. Failure to follow the guidelines in this manual and those in effect in the workplace can result in serious bodily harm and/or equipment damage.

The hydraulic oil must be changed once per 2 years. The recommended oil types are:

Commercial Oil Multi-Vis MV22 (factory fill)  
Mobil AERO HFA (49011)  
Texaco Aircraft Hydraulic Oil 1537BB

All oils used in the hydraulic system must meet minimum ISO grade 22 standard.  
Capacity of the reservoir tank is 4 (US gal.) or 15 Litre.

### **Daily**

Check for visible damage to the equipment.  
Check for oil leakage from the hydraulic unit, hoses and cylinders.

### **Monthly**

Check the oil level in the reservoir. This must be checked with both cylinders in the retracted position. The cylinders can be manually operated only when a temporary maintenance jumper is installed (see wiring diagram).

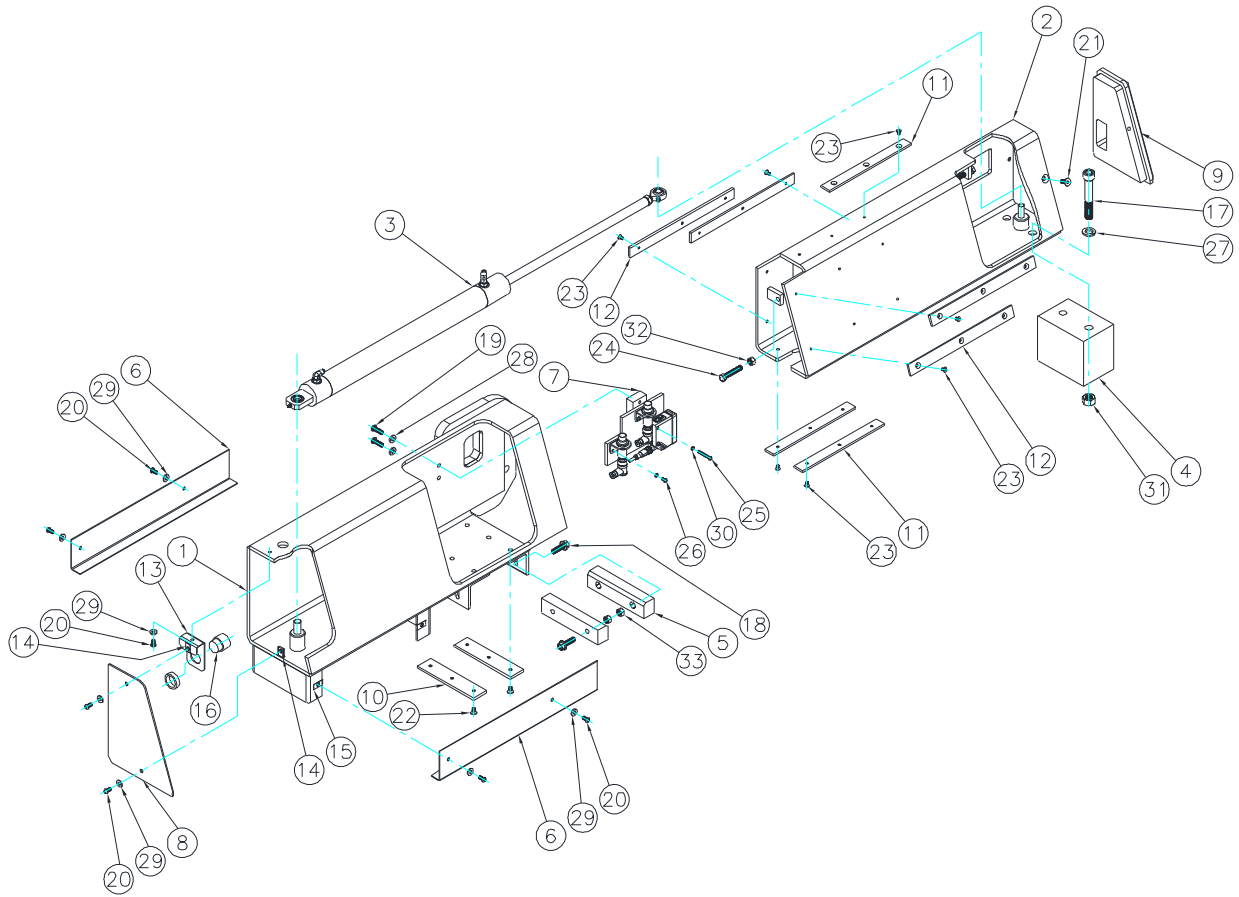
### **Annually**

Check daily and monthly recommendations.  
Check for loose concrete anchors.  
Check the plastic wear pads of the rail guide and the plastic support block for wear or visible damage.  
Visually check the wear of the plastic wear pads of the chocking unit.  
Check the operation and setting of the proximity switches.  
Check the function of the pressure switches.  
Check the operation of the wheel sensor. If necessary, clean the lens of the sensor with a soft cloth.



# Part Lists

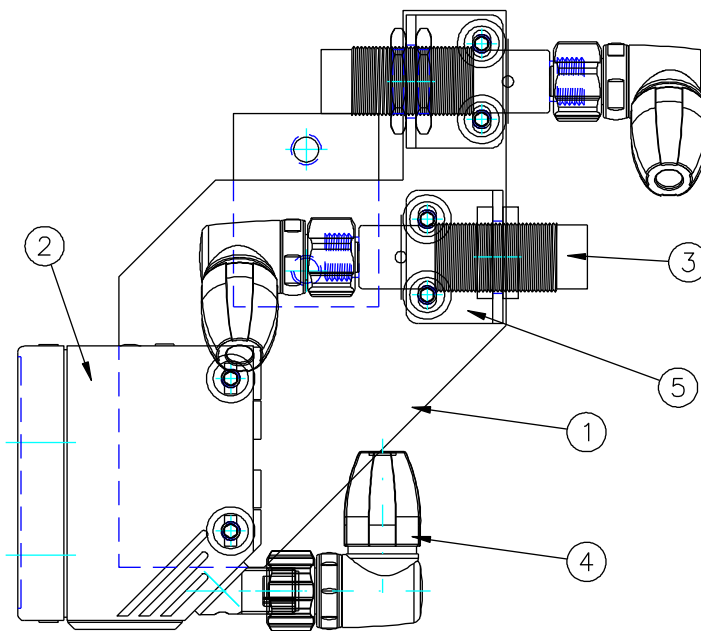
## Chocking Unit Assembly:



Item	Qty.	Description / Model	P/N	Note
1	1	Outside Box Weldment	52-0444	
2	1	Inside Box Weldment	52-0455	
3	1	Cylinder Assembly	C1-0126	
4	1	Slide Support Block	53-0626	
5	2	Guide Track Wear Block	53-0622	
6	2	Toe Guard, 1-L/H, 1-R/H	53-0605	
7	1	Chock Sensor Assembly	52-0448	
8	1	Cover Plate	53-0615	
9	1	End Cap	53-0655	
10	2	Guide Track Wear Pad	53-0623	
11	3	Slide Wear Strip, Short	53-0624	
12	4	Slide Wear Strip, Standard	53-0625	
13	1	Buzzer Mount Bracket	53-0647	
14	2	Clip-on Nut, Retainer, 5/16" Ctr.	13-4421	
15	4	Clip-on Nut, Retainer, 1/2" Ctr.	13-4422	
16	1	Audible Alarm/Buzzer	13-1239	
17	2	Screw, Socket Head Cap, 5/8-11 NC x 4" Lg.	13-5005	
18	4	Bolt, Hex Flanged, 3/8-16 NC x 1-1/4" Lg.	13-5008	
19	2	Screw, Button Head Cap, 5/16-18 NC x 1" Lg.	13-2684	
20	7	Screw, Button Head Cap, 1/4-20 x 3/4" Lg.	13-5009	
21	2	Screw, Flat Head Cap, 5/16-18 x 3/4" Lg.	13-5007	

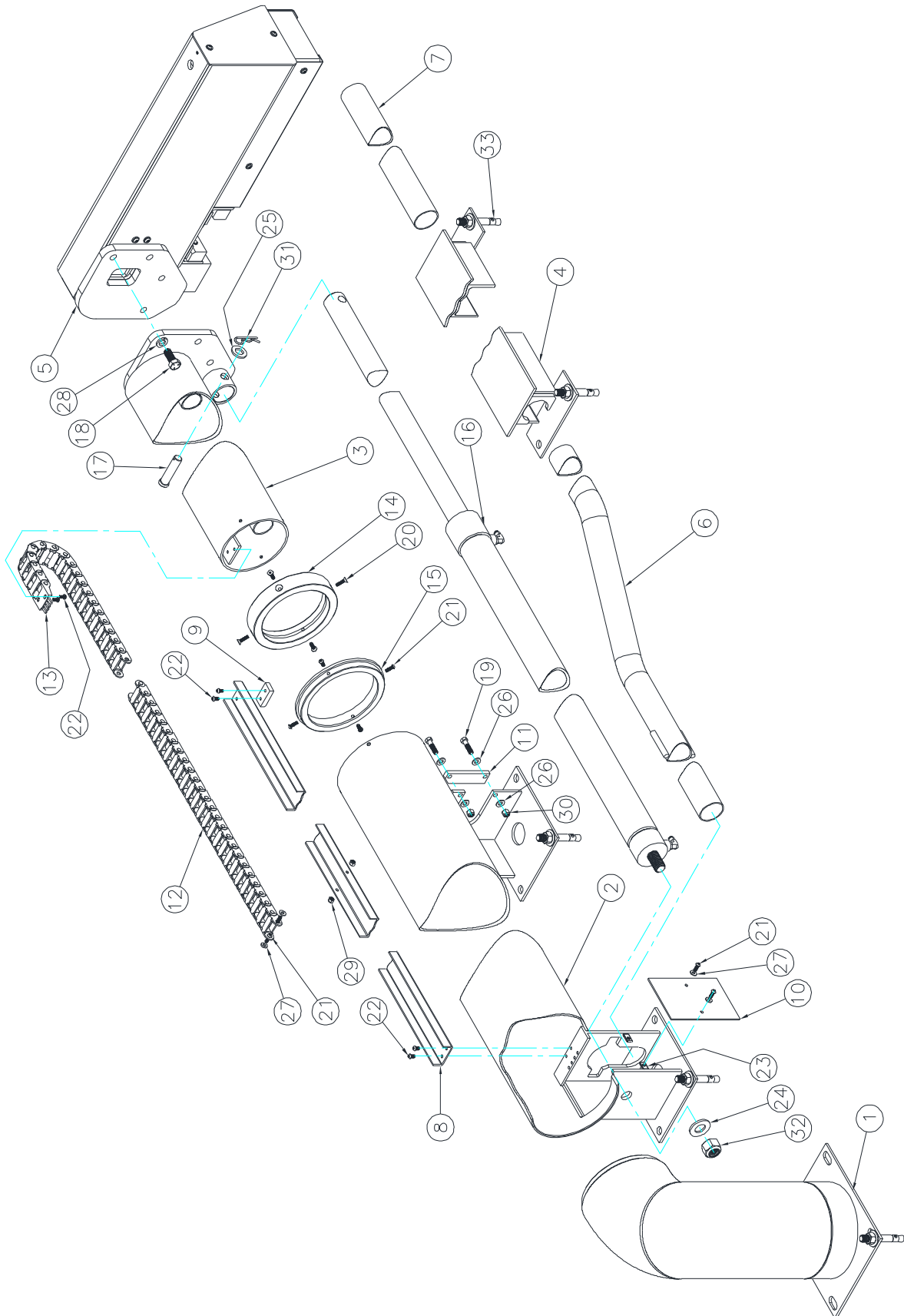
22	6	Screw, Flat Head Cap, 1/4-20 x 1/2" Lg.	13-5006	
23	21	Screw, Flat Head Cap, #10-24 x 3/8" Lg.	13-2674	
24	2	Bolt, Hex Hd., 3/8-16 NC x 2" Lg.	13-5004	
25	2	Screw, Button Head Cap, #10-24 x 1-3/8" Lg.	13-4450	
26	4	Screw, Button Head Cap, #10-24 x 3/8" Lg.	13-4451	
27	2	Washer, Lock, 5/8"	13-0657	
28	2	Washer, Lock, 5/16"	13-0946	
29	7	Washer, Flat, 1/4"	13-4456	
30	6	Washer, Lock, #10	13-0948	
31	2	Nut, Hex, 5/8-11 NC	13-0289	
32	2	Nut, Hex, Jam, 3/8-16 NC	13-1331	
33	4	Nut, Hex, 3/8-16 NC	13-0619	

**Slide Sensor Assembly**



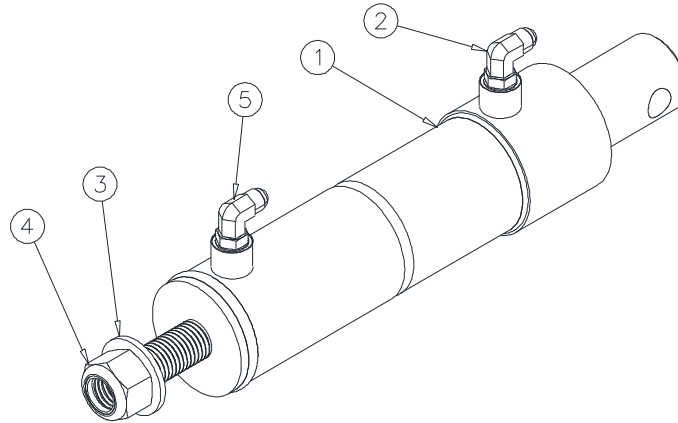
Item	Qty.	Main Cylinder	P/N	Note
1	1	Bracket Weldment	52-0447	
2	1	Sensor, Photoelectric, IFM Efector #04H200	13-4402	
3	2	Sensor, Proximity, IFM Efector #IGS213	13-3191	
4	3	Connecting Cable, 90 degree, IFM Efector #EVC815	13-6726	
5	2	Mounting Bracket, 10mm, IFM Efector #U20302	13-2437	

**Overall Assembly:**

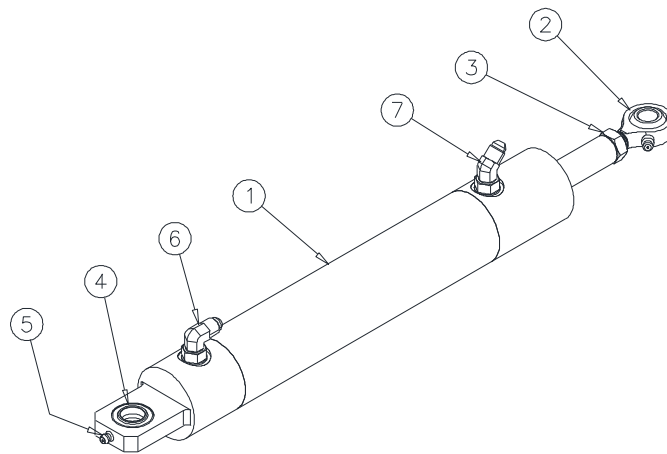


Item	Qty.	Description / Model	P/N	Note
1	1	Guide Elbow Assembly, L/H	52-0430	
2	1	Longitudinal Guide Weldment	52-0432	
3	1	Long Cylinder Guide Assembly	52-0434	
4	1	Guide Track Weldment	52-0405	
5	1	Cross-Head Slide Chock Assembly	52-0437	
6	1	Guide Conduit Assembly	52-0416	
	1	Conduit Coupling (not shown)	13-6630	
	1	Conduit Elbow	53-0656	
7	1	Entry Conduit	53-0644	
8	1	Hose Carrier Channel	53-0645	
9	1	Glider Block	53-0627	
10	1	Mount Stand Cover	53-0636	
11	1	Keeper Bar	53-0635	
12	1	Cable Carrier	13-4425	
13	1	Carrier Mount Bracket	13-4424	
14	1	Guide Wear Ring	53-0621	
15	1	Scraper Ring	53-0648	
16	1	Guide Cylinder Assembly, 3" x 128" Stroke	C1-0125	
17	1	Clevis Pin, 3/4" Dia. x 3" Lg.	13-1985	
18	4	Bolt, Hex, 5/8-11 NC X 1-1/2" Lg., ZP	13-1369	
19	2	Bolt, Hex, 3/8-16 NC x 1-1/2" Lg., ZP	13-0843	
20	4	Screw, Flat Head Cap, 1/4-20 x 1" Lg., ZP	13-4452	
21	8	Screw, Button Head Cap, 1/4-20 x 3/4" Lg., ZP	13-2776	
22	6	Screw, Button Head Cap, 1/4-20 x 1/2" Lg., ZP	13-4454	
23	2	Nut, Clip-on, 1/4-20 NC	13-4421	
24	1	Washer, Flat, 1", SAE, ZP	13-2030	
25	1	Washer, Flat, 3/4", SAE, ZP	13-0649	
26	4	Washer, Flat, 3/8", SAE, ZP	13-0203	
27	4	Washer, Flat, 1/4", SAE, ZP	13-4456	
28	4	Washer, Lock, 5/8", ZP	13-0657	
29	2	Nut, Hex, Nylock, 1/4-20 NC, ZP	13-0270	
30	2	Nut, Hex, Nylock, 3/8-16 NC, ZP	13-0707	
31	1	Cotter Pin for Item #17 (1/8" X 1-1/2" Lg.)	13-0397	
32	1	Nut, Hex, Nylock, 1-8 NC, ZP	13-4407	
33	15	Bolt, Anchor, 5/8-11 NC x 5" Lg.	13-0779	
34	2	Strap, Conduit Anchor (Not shown)	C/F	

## Cylinder Assemblies



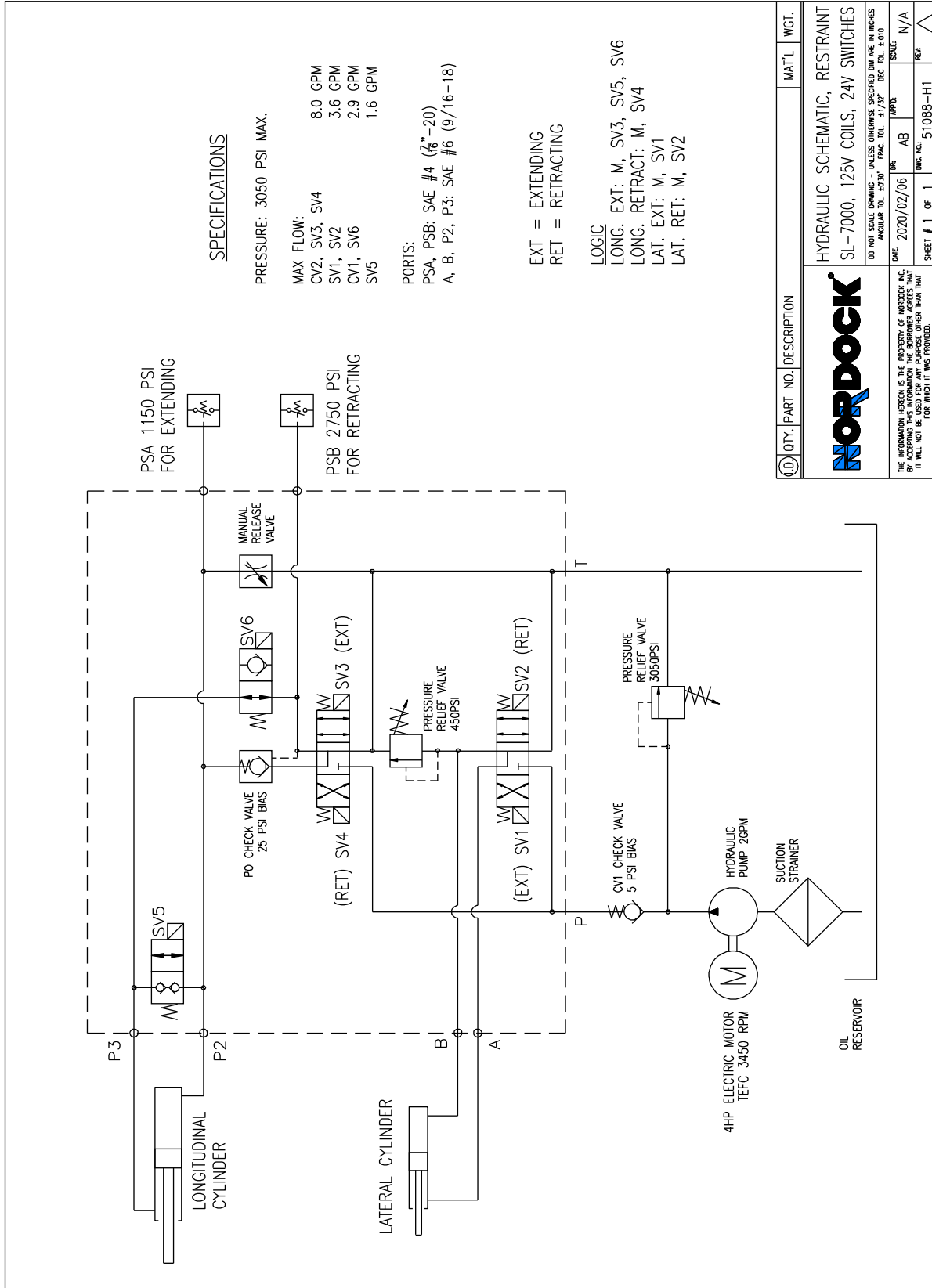
Item	Qty.	Main Cylinder	P/N	Note
1	1	2-1/2" Bore, 2" Rod, 128" Stroke	C1-0125	
2	2	Fitting, 90°, #06 MORB x #06 MJIC	13-0071	
3	1	Washer, Flat, 1" SAE	13-2030	
4	1	Nut, Hex, Nylock, 1"-8 UNC	13-4407	
5	1	Fitting, 90°, #06 MORB x #08 MJIC	13-3319	



Item	Qty.	Chocking Cylinder	P/N	Note
1	1	1-3/4" Bore, 3/4" Rod, 16" Stroke	C1-0126	
2	1	Rod End, 1/2-20 UNF	13-1273	
3	1	Nut, Hex Jam, 1/2-20 UNF	13-2762	
4	1	Spherical Bearing, 5/8"	13-1848	
5	1	Fitting, Grease, 3/16" Drive-in	13-0655	
6	1	Fitting, 90°, #04 MORB x #04 MJIC	13-0905	
7	1	Fitting, 45°, #04 MORB x #04 MJIC	13-4445	

# Hydraulics

## Schematic



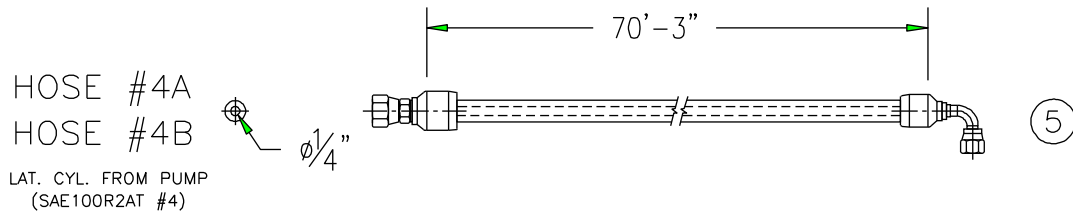
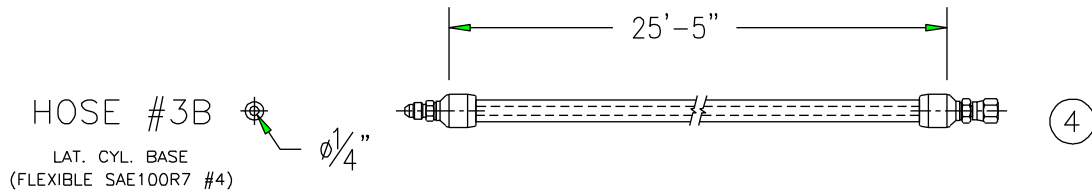
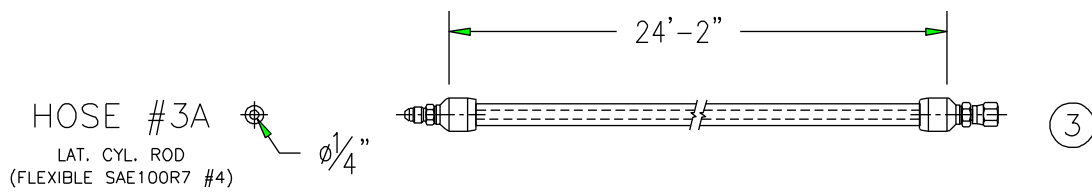
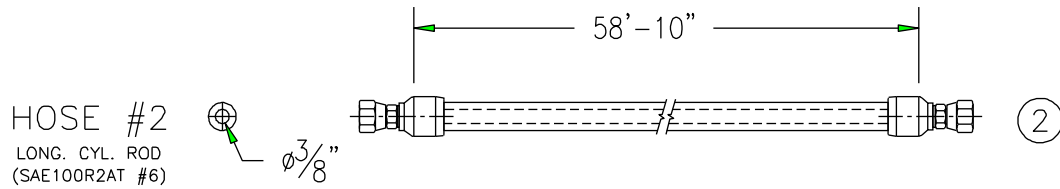
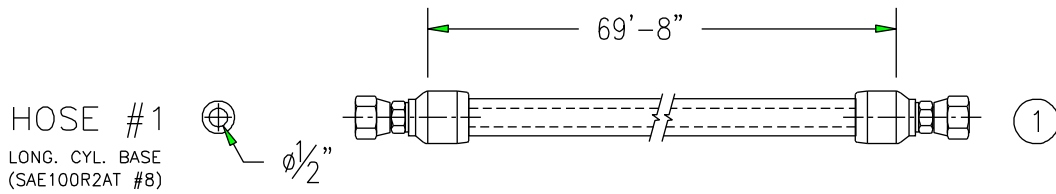
**Hydraulic Power Unit**



Item	Qty.	Description / Model	P/N	Note
1	1	Hydraulic Power Unit, Complete, 4 HP (400/3/50) 15L	13-4480	

Note: Consult Factory to identify individual parts

## Hydraulic Hose Assemblies



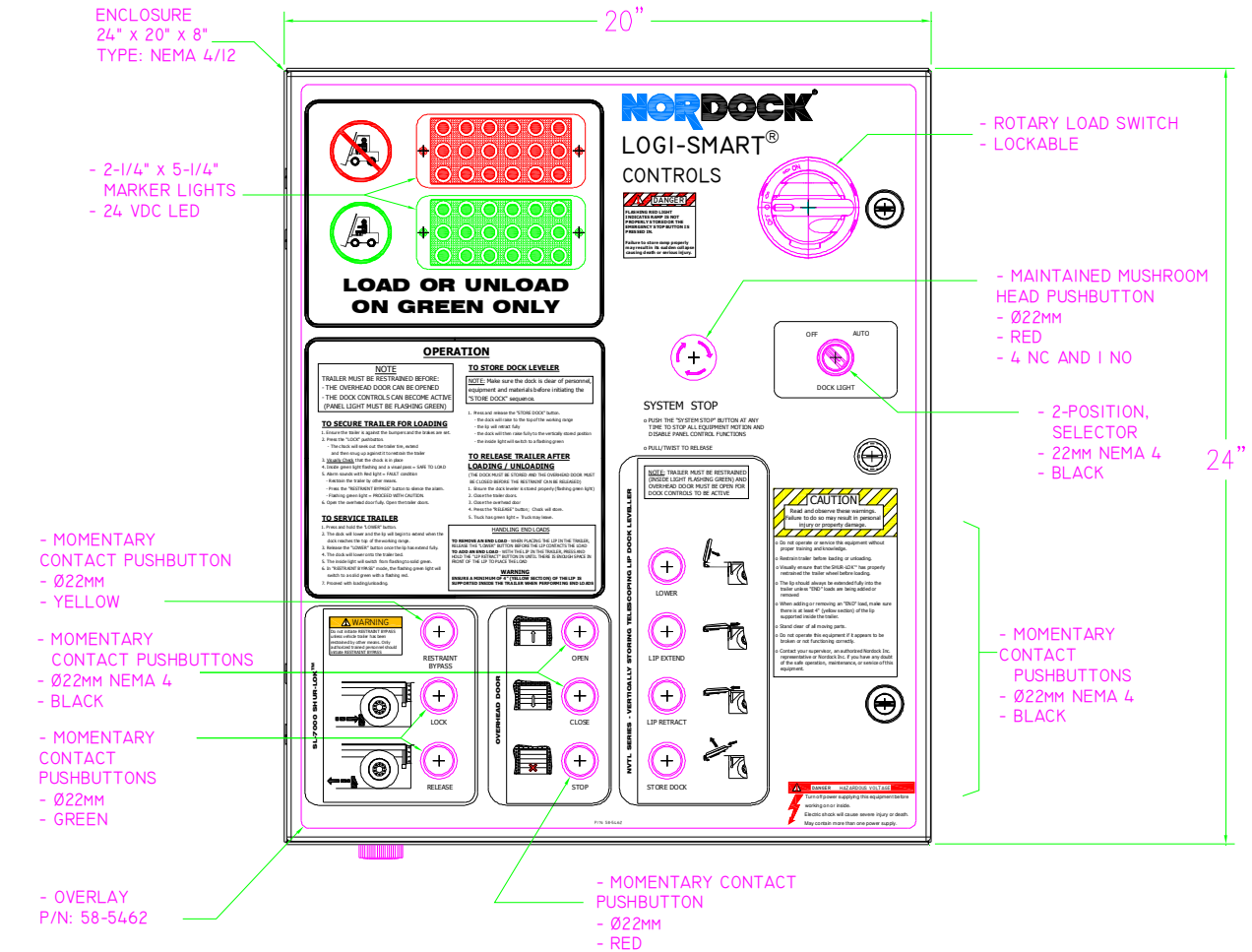
Item	Qty.	Hydraulic Hoses	P/N	Note
1	1	Hose Assembly, 1/2" (08) x 69'-8", SAE 100-R2AT	56131-HS-1	
2	1	Hose Assembly, 3/8" (06) x 58'-10", SAE 100-R2AT	56131-HS-2	
3	1	Hose Assembly, 1/4" (04) x 24'-2", SAE 100-R7	51088-HS1-3A	
4	1	Hose Assembly, 1/4" (04) x 25'-5", SAE 100-R7	51088-HS1-3B	
5	2	Hose Assembly, 1/4" (04) x 70'-3", SAE 100-R2AT	56131-HS-4A 56131-HS-4B	

C/F - Consult Factory



# Controls

## Control Panel



Note: Please consult factory to identify control panel components

# Wiring Diagram

