UpRight

SL20
SERIES
Work Platforms
European Specifications

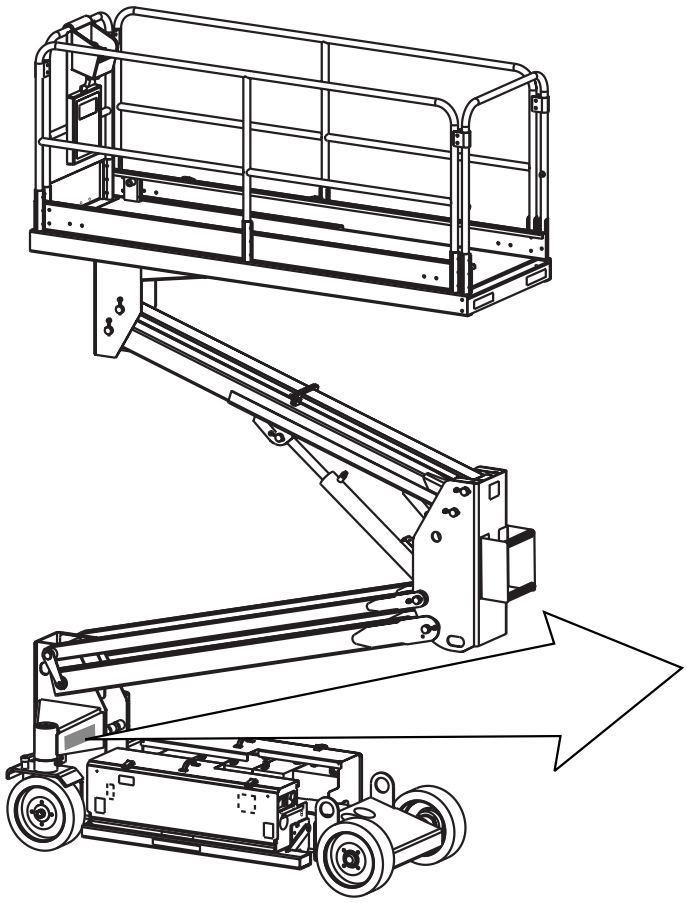
Service & Parts Manual

SERVICE & PARTS MANUAL

SL20 Euro

Aerial Work Platforms

Serial Numbers 9300 to Current



When contacting UpRight for service or parts information, be sure to include the MODEL and SERIAL NUMBERS from the equipment nameplate. Should the nameplate be missing, the SERIAL NUMBER is also stamped at the nameplate location.

CE **UpRight Inc.**

1775 PARK ST. SELMA CALIFORNIA 93662 USA

Model:_____ Serial number:_____
GVW: _____kg Mfg. date:_____
Maximum wheel load_____ kg
Maximum allowable incline of machine when elevated:_____deg.
Occupants and equipment must not exceed the rated maximum load: _____kg Maximum platform occupants: _____
Maximum allowable side force on platform: _____N
Maximum platform height: _____m
Maximum platform reach: _____m
Maximum allowable wind speed: _____m/s = Beaufort scale ____
Maximum hydraulic system pressure: _____bar
Maximum system voltage: _____V
This machine is manufactured to comply with Machinery Directive 89-392/CEE
CAUTION: CONSULT OPERATOR'S MANUAL BEFORE USE.

Serial number stamped beneath nameplate.

UpRight, Inc.
1775 Park Street
Selma, California 93662
TEL: 559/891-5200
FAX: 559/891-9012
PARTS: 1-888-UR-PARTS
PARTS FAX: 559/896-9244

UpRight

Call Toll Free in U.S.A.
1-800-926-LIFT
PARTS: 1-888-UR-PARTS
PARTS FAX: 559/896-9244

Upright Ireland, Ltd.
Pottery Road
Dun Laoire,
Ireland
TEL: 353-1-202-4100
FAX: 353-1-202-4105

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FORWARD

HOW TO USE THIS MANUAL

This manual is divided into 6 sections.

SECTION 1 INTRODUCTION & SPECIFICATIONS

General description and machine specifications.

SECTION 2 MACHINE PREPARATION & OPERATION

Information on how to operate the work platform and how to prepare it for operation.

SECTION 3 MAINTENANCE

Preventative maintenance and service information.

SECTION 4 TROUBLESHOOTING

Causes and solutions to typical problems.

SECTION 5 SCHEMATICS

Schematics and valve block diagram with description and location of components. Large schematic drawings may be located in the back of the manual.

SECTION 6 ILLUSTRATED PARTS BREAKDOWN

Complete parts lists with illustrations. Large parts drawings may be located in the back of the manual.

SPECIAL INFORMATION

⚠ DANGER

*Indicates the hazard or unsafe practice **will** result in **severe injury or death**.*

⚠ WARNING

*Indicates the hazard or unsafe practice **could** result in **severe injury or death**.*

⚠ CAUTION

*Indicates the hazard or unsafe practice **could** result in **minor injury or property damage.***

NOTE: Gives helpful information.

WORKSHOP PROCEDURES

⚠ CAUTION

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause personal injury, or could damage a machine or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by UpRight, Inc., might be done, or of the possible hazardous consequences of each conceivable way, nor could UpRight Inc. investigate all such ways. Anyone using service procedures or tools, whether or not recommended by UpRight Inc., must satisfy themselves thoroughly that neither personal safety nor machine safety will be jeopardized.

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Section 1

INTRODUCTION

1.1 PURPOSE

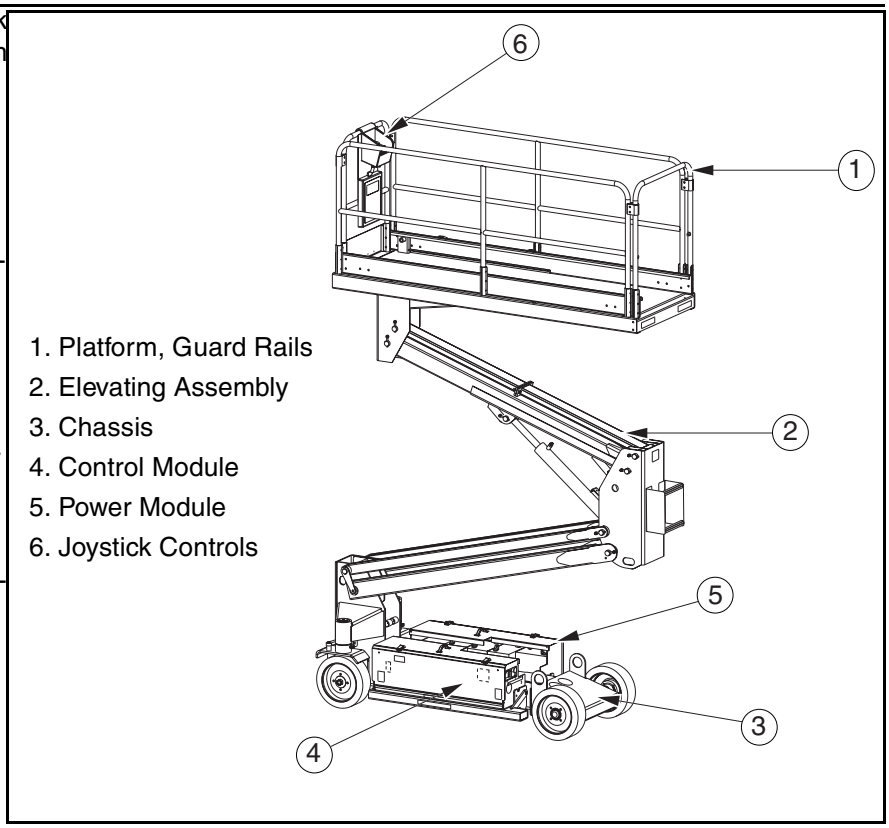
This manual provides illustrations and instructions for the operation and maintenance of the SL20 Series Work Platforms manufactured by UpRight, Inc. Selma, California.

SCOPE

This manual includes both operation and maintenance responsibilities concerning the SL20 Series Work Platform's readiness. The Maintenance Section covers scheduled maintenance, troubleshooting, repair, adjustment and replacement.

1.2 GENERAL DESCRIPTION

Figure 1-1: SL 20 Work Platform



1. Platform, Guard Rails
2. Elevating Assembly
3. Chassis
4. Control Module
5. Power Module
6. Joystick Controls

The SL20 Series Work Platform is a self-propelled aerial work platform designed to be used as a means of elevating personnel and equipment and to provide a mobile work platform. It is designed to provide mobility with the platform in a raised or lowered position. Travel with the platform elevated is automatically limited to creep speed range.

PURPOSE AND LIMITATIONS

The objective of the SL20 Series Work Platforms is to provide a quickly deployable, self-propelled, variable height work platform. The elevating function shall only be used when the work platform is on a firm level work area. The work platform is intended to be self-propelled when in relatively close proximity to the work area.

NOTES:

Electrocution Hazard

Collision Hazard

Never position the platform without checking for overhead obstructions.

Tip Over Hazard

Never elevate or drive elevated on uneven slopes or soft ground or elevate the platform unless the platform is level.

Fall Hazard

Never sit, stand or climb on guardrail or midrail.

OPERATION

2.1 SAFETY RULES

USE OF THE AERIAL WORK PLATFORM: This aerial work platform is intended to lift persons and his tools as well as the material used for the job. It is designed for repair and assembly jobs and assignments at overhead workplaces (ceilings, cranes, roof structures, buildings etc.). All other uses of the aerial work platform are prohibited.

NEVER operate the machine without first surveying the work area for surface hazards such as holes, drop-offs, bumps and debris.

NEVER operate the machine if all guardrails are not properly in place and secured with all fasteners properly torqued. Operating the machine with the door open is prohibited.

CLOSE door after mounting platform. Dismantling guard rails or door is prohibited.

NEVER use ladders or scaffolding on the platform.

NEVER attach overhanging loads or increase platform size. Installation of wind force-increasing parts or altering the machine is prohibited.

LOOK up, down and around for overhead obstructions and electrical conductors.

DO NOT exceed maximum carrying load. Distribute all loads evenly on the platform. See specifications page for maximum platform load.

NEVER operate the machine when wind speeds exceed 45 km/h (28 mph = 12.5 m/sec) beaufort scale 6).

NEVER use damaged equipment. (Contact UpRight for instructions.)

NEVER modify operating or safety systems. Deactivating safety systems is prohibited.

INSPECT the machine thoroughly for cracked welds, loose hardware, hydraulic leaks, damaged control cable, loose wire connections and wheel bolts.

NEVER climb down elevating assembly with the platform elevated.

NEVER perform service on machine while platform is elevated without blocking elevating assembly.

NEVER recharge batteries near sparks or open flame. Batteries that are being charged emit highly explosive hydrogen gas.

AFTER USE secure the work platform against unauthorized use by turning key switch off and removing key.

USING the machine as a crane is prohibited.

INSTALLATION or use of components or parts that are not provided by UpRight Inc. is prohibited.

2.2 INTRODUCTION

This manual covers operation of the SL20 Work Platform.

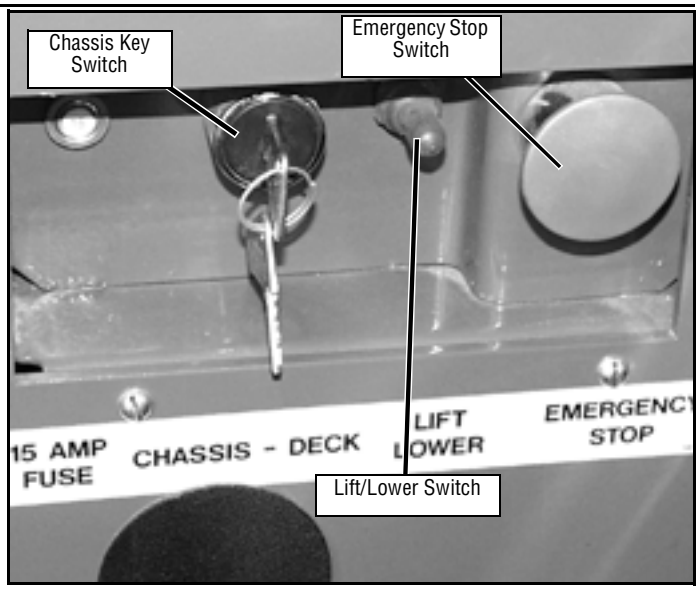
2.3 PRE-OPERATION & SAFETY INSPECTION

(FIGURES 1, 2, AND 3)

NOTE: Carefully read, understand and follow all safety rules and operating instructions. Perform the following steps each day before use.

1. Open module covers and inspect for damage, oil leaks or missing parts.
2. Check the level of the hydraulic oil with the platform fully lowered. Oil should be visible to full line on tank. Add hydraulic fluid if necessary.
3. Check that fluid level in the batteries is correct (See Battery Maintenance).
4. Verify that batteries are charged.
5. Check that AC extension cord has been disconnected from charger.
6. Check that all guardrails are in place with fasteners properly tightened.
7. Carefully inspect the entire work platform for damage such as cracked welds or structural members, loose or missing parts, oil leaks, damaged cables or hoses, loose connections, or tire damage.
8. Move machine, if necessary, to unobstructed area to allow for full elevation.
9. Pull out chassis emergency stop switch ON.
10. Pull out platform emergency stop switch ON

Figure 2-1: Chassis Controls



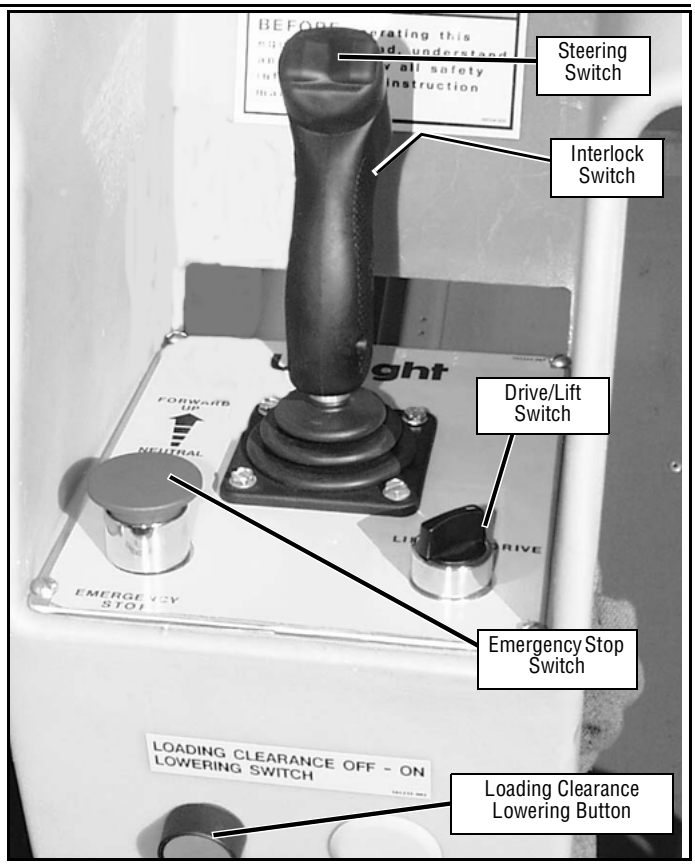
11. Turn and hold the Chassis Key Switch to CHASSIS. Push chassis lift switch to lift position and fully elevate the platform.
12. Visually inspect the elevating assembly, lift cylinder, cables and hoses for damage or erratic operation. Check for missing or loose parts.
13. Verify that depression mechanism supports have rotated into position under each module.
14. Turn and hold the Chassis Key Switch to CHASSIS. Partially lower the platform by pushing chassis lift switch to LOWER, and check operation of the audible lowering alarm.
15. Pull out on the emergency lowering knob to check for proper operation. Once the platform is fully lowered, release the knob.

Figure 2-2: Emergency Lowering Knob

16. Turn the chassis key switch to PLATFORM.
17. Close and secure module covers.
18. Check that route is clear of obstacles (persons, obstructions, holes and drop-offs), is level, and is capable of supporting the wheel loads.
19. Mount the platform and latch the gate across the entrance.
20. PLATFORM CONTROLS. Turn the selector switch to drive. While holding in the interlock switch, move the handle to FORWARD, then REVERSE, to check for speed control.

21. Push steering switch RIGHT, then LEFT, to check for steering control.

Figure 2-3: Platform Controls



22. Turn selector switch to LIFT. Grasp the control handle, depress the Interlock Switch and push it forward to check platform lift controls. Raise the platform to full elevation.
23. Pull back on the Control Handle. Platform should descend and audible lowering alarm should sound.
24. The machine will descend to a Loading Clearance Height and stop. Check around the base of the platform to insure that no one is in contact with the machine.
25. Press the Loading Clearance Lowering Button to lower platform completely.
26. Push the platform emergency stop switch button to check for proper operation. All the machine functions should be disabled. Pull out to resume.

2.4 OPERATION

NOTE: **Before operating the work platform, ensure that the pre-operation and safety inspection has been completed, any deficiencies have been corrected, and the operator has been thoroughly trained on this machine.**

PLATFORM EXTENSION

Figure 2-4: Platform Extension

1. Mount the platform and latch the gate across the entrance.
2. Depress the foot lever at the rear of the platform extension. Push the platform extension toward the front of the machine until the pin engages the front stop.
3. To retract, depress the lever and pull the platform extension toward the rear of the machine until the pin engages the rear stop

TRAVEL WITH PLATFORM LOWERED

1. Check that route is clear of people, obstructions, holes and drop-offs, is level, and is capable of supporting the wheel loads.
2. Verify that chassis key switch is turned to PLATFORM and that chassis emergency stop switch is on (pulled out).

3. After mounting the platform, latch the gate across the entrance.
4. Check clearances above, below, and to the sides of the platform.
5. Pull platform emergency stop button out to the ON position.
6. Position the drive/lift switch to DRIVE.
7. Hold in the interlock switch and move the control handle to FORWARD or REVERSE to travel in the desired direction. The speed of the machine will depend on the position of the handle.

STEERING

1. Turn rotary selector switch to DRIVE.
2. While holding in the interlock switch, push the steering switch to RIGHT or LEFT to turn wheels in the desired direction. Observe the tires while operating the machine to ensure proper direction.

NOTE: Steering is not self-centering. Wheels must be returned to the straight ahead position by operating the steering switch.

ELEVATING PLATFORM

1. Position rotary selector switch to LIFT.
2. While holding in the interlock switch, push the joystick up.
3. If the machine is not level the tilt alarm will sound and the machine will not lift or drive. **If the tilt alarm sounds the platform must be lowered and the machine moved to a level location before attempting to re-elevate the platform.**

NOTE: Depression mechanism supports will deploy automatically when platform elevates and will retract when machine is lowered completely and driven.

LOWERING PLATFORM

1. Position selector switch to LIFT.
2. Grasp the Control Lever so that the Interlock Switch is depressed. Move handle to DOWN position. A warning alarm will sound while lowering. The machine will to descend to loading clearance height, then stop.
3. The operator must look around the base of the platform and be sure that no one is in contact with the machine.
4. Press the Loading Clearance Release Button on the platform control box. Platform will now lower completely.

EMERGENCY LOWERING

(FIGURE 2)

⚠ WARNING

If the platform should fail to lower, NEVER climb down the elevating assembly.

The emergency lowering valve knob is located at the rear of the chassis.

1. Open the emergency lowering valve by pulling and holding the knob.
2. To close, release the knob. NOTE: The platform will not elevate if the emergency lowering valve is open.

TRAVEL WITH PLATFORM ELEVATED

NOTE: Work platform will travel at reduced speed when platform is elevated.

1. Check that route is clear of persons, obstructions, holes and drop-offs, is level, and capable of supporting the wheel loads.
2. Check clearances above, below and to the sides of platform.
3. Turn selector switch to DRIVE position.
4. Push joystick FORWARD or REVERSE for desired direction of travel.
5. If the machine is not level the tilt alarm will sound and the machine will not lift or drive. If the tilt alarm sounds the platform must be lowered and the machine moved to a level location before attempting to re-elevate the platform.

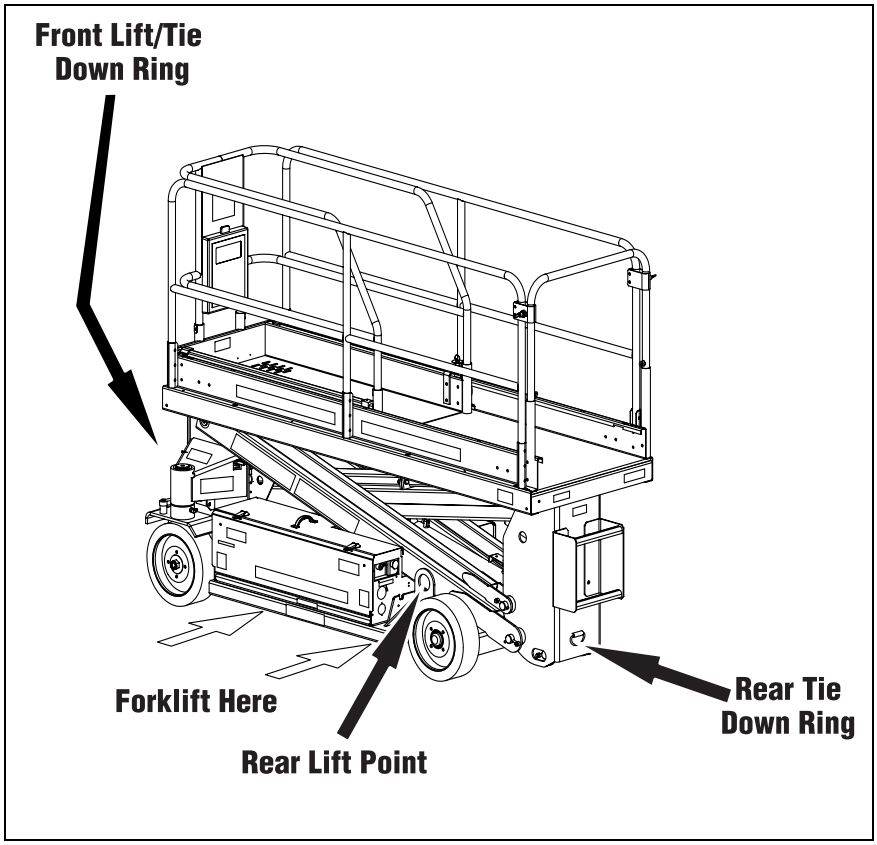
After Use Each Day

1. Ensure that the platform is fully lowered.
2. Park the machine on level ground, preferably under cover, secure against vandals, children, and unauthorized operation.
3. Turn the key switch to **OFF** and remove the key to prevent unauthorized operation.

This machine is not insulated. Follow your national safety standards and maintain the required safety distance when working near energized equipment.

2.5 Transporting Work Platform

Figure 2-5: Transporting the Work Platform



By Forklift

NOTE: Forklifting is for transporting only.

Forklift from the side by lifting under chassis modules.

⚠ CAUTION

See specifications for weight of work platform and be certain that forklift is of adequate capacity to lift work platform.

By Truck

1. Lift platform above eight feet, then lower using the control handle. The platform will stop at the Loading Clearance Height.
2. Maneuver the work platform into transport position. Press the Loading Clearance Height Release Switch to fully lower the platform, then chock the wheels.
3. Secure the work platform to the transport vehicle with chains or straps of adequate load capacity attached to the chassis tie down/lifting lugs.

⚠ CAUTION

Overtightening of chains or straps through tie down lugs may result in damage to work platform.

2.6 Maintenance

⚠ DANGER

Never perform service on the work platform in the elevating assembly area while platform is elevated without first blocking the elevating assembly.

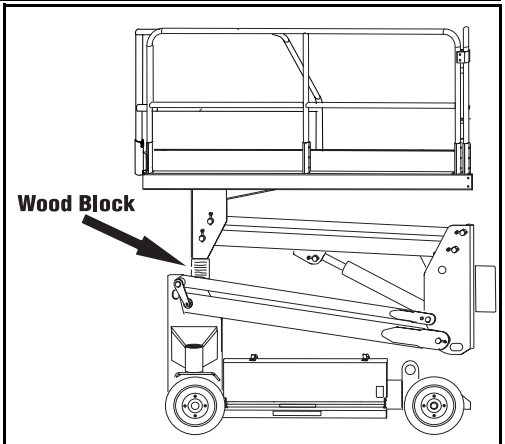
***DO NOT** stand in elevating assembly area while deploying or storing brace.*

***DO NOT** block elevating assembly with a load in the platform.*

Blocking Elevating Assembly

Brace Installation

Figure 2-6: Blocking the Elevating Assembly



1. Wood Block

1. Park the work platform on firm, level ground.
2. Turn and hold Chassis Key Switch to Chassis. Push chassis lift switch to LIFT and elevate platform approximately two feet.
3. Place 10 cm. x 10 cm. (4 in. x 4 in.) wood block as shown in illustration.
4. Turn and hold Chassis Key Switch to Chassis. Push chassis lift switch to LOWER and gradually lower platform until boom is supported by the wood block.

Brace Removal

1. Turn and hold Chassis Key Switch to Chassis. Push chassis lift switch to LIFT and gradually raise platform until wood block can be removed.
2. Remove wood block.
3. Turn and hold Chassis Key Switch to Chassis. Push chassis lift switch to LOWER and completely lower platform.
4. Close control module cover.

BATTERY MAINTENANCE

⚠ WARNING

Hazard of explosive gas mixture. Keep sparks, flame, and smoking material away from battery.

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Thoroughly rinse away any spilled fluid with clean water.

Always replace batteries with UpRight batteries or manufacturer approved replacements weighing 28 kg. (62 lbs.) each.

- Check battery fluid level daily, especially if work platform is being used in a warm, dry climate.
- If electrolyte level is lower than 10 mm (3/8 in.) above plates, add distilled water ONLY. Do not use tap water with high mineral content, as it will shorten battery life.
- The battery and cables should be inspected regularly for signs of cracks in the case, electrolyte leakage and corrosion of the terminals. Inspect cables for worn spots or breaks in the insulation and for broken cable terminals. Keep terminals and tops of batteries clean.
- Refer to the Service Manual to extend battery life and for complete service instructions.

BATTERY CHARGING

Charge batteries at end of each work shift or sooner if batteries have been discharged.

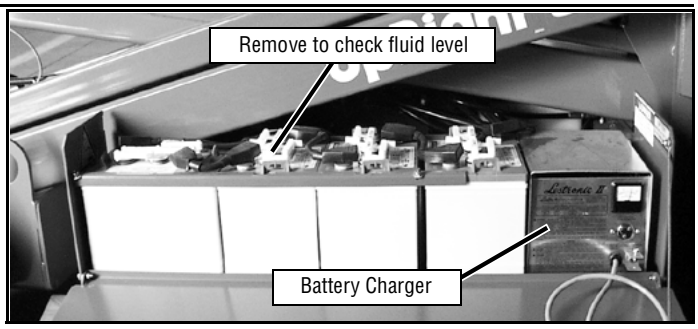


Figure 2-7: Power Module

⚠ WARNING

Charge batteries in a well ventilated area.

Do not charge batteries when the work platform is in an area containing sparks or flames.

Permanent damage to batteries will result if batteries are not immediately recharged after discharging.

Never leave charger operating unattended for more than two days.

Never disconnect cables from batteries when charger is operating.

Keep charger dry.

Never operate machine while batteries are being charged.

1. Check battery fluid level. If electrolyte level is lower than 10 mm (3/8 in.) above plates add distilled water only.
2. Connect extension cord to charger plug at end of left module. Connect extension cord 1.5 mm² (12 gauge)minimum conductor diameter; 15m (50 ft.) maximum length) to properly grounded outlet of correct voltage and frequency.
3. Charger turns on automatically after a short delay.

NOTE: Charger circuit must be used with a GFI (Ground Fault Circuit Interrupt) outlet.

NOTE: Do not operate the machine while the charger is plugged in.

2.7 PREVENTATIVE MAINTENANCE

The complete inspection consists of periodic visual and operational checks, together with all necessary minor adjustments to assure proper performance. Daily inspection will prevent abnormal wear and will prolong the life of all systems. The inspection and maintenance schedule is to be performed at regular intervals. Inspection and maintenance shall be performed by personnel who are trained and familiar with mechanical and electrical procedures.

⚠ WARNING

Before performing preventative maintenance, familiarize yourself with the operation of the machine.

Always block the elevating assembly whenever it is necessary to enter the scissor assembly to perform maintenance while the platform is elevated.

The preventative maintenance table has been designed to be used primarily for machine service and maintenance repair. Please photocopy the following page and use the table as a checklist when inspecting the machine for service.

2.8 Preventative Maintenance Checklist

Preventative Maintenance Key

Interval

Daily=each shift or every day
50h/30d=every 50 hours or 30 days
250h/6m=every 250 hours or 6 months
1000h/2y=every 1000 hours or 2 years
Y=Yes/AcceptableN=No/Not Acceptable
R=Repaired/Acceptable

Preventative Maintenance Report

Date: _____

Owner: _____

Model No: _____

Serial No: _____

Serviced By: _____

Service Interval: _____

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Battery	Check electrolyte level	6m			
	Check specific gravity	6m			
	Clean exterior	6m			
	Check battery cable condition	Daily			
	Clean terminals	6m			
Hydraulic Oil	Check oil level	Daily			
	Change filter	6m			
	Drain and replace oil	2y			
Hydraulic System	Check for leaks	Daily			
	Check hose connections	30d			
	Check hoses for exterior wear	30d			
Emergency Hydraulic System	Operate the emergency lowering valve and check for serviceability	Daily			
Controller	Check switch operation	Daily			
Control Cable	Check the exterior of the cable for pinching, binding or wear	Daily			
Platform Deck and Rails	Check fasteners for proper torque	Daily			
	Check welds for cracks	Daily			
	Check condition of deck	Daily			
Tires	Check for damage	Daily			
	Check lug nuts (torque to 203 Nm [150 ft. lbs])	30d			
Hydraulic Pump	Wipe clean	30d			
	Check for leaks at mating surfaces	30d			
	Check for hose fitting leaks	Daily			
	Check mounting bolts for proper torque	30d			
Drive Motors	Check for operation and leaks	Daily			
Torque Hubs	Check for leaks	Daily			
	Check oil level	250h/6m			
	Change Oil after break-in	50h/30d			
	Change Oil	1000h/2y			

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Steering System	Check hardware & fittings for proper torque	6m			
	Grease pivot pins	30d			
	Oil king pins	30d			
	Check steering cylinder for leaks	30d			
Elevating Assembly	Inspect for structural cracks	Daily			
	Check pivot points for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check elevating arms for bending	6m			
Chassis	Check hoses for pinch or rubbing points	Daily			
	Check component mounting for proper torque	6m			
	Check welds for cracks	Daily			
Lift Cylinder	Check the cylinder rod for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check seals for leaks	30d			
	Inspect pivot points for wear	30d			
	Check fittings for proper torque	30d			
Axle Cylinder	Check the cylinder rod for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check seals for leaks	30d			
	Inspect pivot points for wear	30d			
	Check fittings for proper torque	30d			
Entire Unit	Check for and repair collision damage	Daily			
	Check fasteners for proper torque	3m			
	Check for corrosion-remove and repaint	6m			
	Lubricate	30d			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			

2.9 SPECIFICATIONS

ITEM	Specification
Platform Size (Inside toeboards)	.70 m x 2.51 m [27.75 in. x 99 in.] Inside Toeboards
Max. Platform Capacity	
Standard w/ Extension	340 kg [750 lbs.]
w/o Extension	340 kg [750 lbs.]
on Extension	110 kg [250 lbs.]
Max. No. of occupants	
Standard w/ Extension	2 People
w/o Extension	2 People
on Extension	1 person
Height	
Working Height	7.92 m [26 ft.]
Max. Platform Height	7.92 m [20 ft.]
Drivable Height	6.10 m [20 ft.] Standard
Dimensions	
Weight, Standard	1411 kg [3,100 lbs.]
Overall Width	.84 m [33 in.]
Overall Height	2.00 m [79.0 in.]
Overall Length, Standard	2.58 m [101.50 in.]
Surface Speed	
Platform Lowered	3.70 km/h [2.3 mph]
Platform Raised	1.13 km/h [0.7 mph]
Energy Source	24 Volt Battery Pack (4-220 Amp Hour, 6 Volt Batteries, Min. Wt. 28 kg. [62 lbs. each]), 4 HP DC Electric Motor
System Voltage	24 Volt DC
Battery Charger	25 AMP
Battery Duty Cycle	25% for 8 Hours
Hydraulic Tank Capacity	15.2 l [4 US Gallons]
Maximum Hydraulic System Pressure	251 bar [2750 psi]
Hydraulic Fluid	
Normal: Above 0° C [32° F])	ISO #46
Low Temp: Below 0° C [32° F])	ISO #32
Extreme Temp: Below -17° C [0° F])	ISO #15
Lift System	Single Lift Cylinder
Lift Speed	14 seconds
Control System	Proportional Controller, Rotary Selector Switch, and Red Mushroom Emergency Stop Switch
Horizontal Drive	Dual Front Wheel Hydraulic Motors
Tires	381 mm [15 in.] Diameter Solid Rubber, non-marking
Parking Brakes	Dual - Spring Applied, Hydraulically Released
Turning Radius (inside)	.64 m [25 in.] Inside
Maximum Gradeability:	25% [14º]
Wheel Base	1.78 m [70 in.]
Guardrails	1.1 m [40 in.] European
Toeboard	152 mm [6 in.]

Specifications are subject to change without notice.

Hot weather or heavy use may reduce performance.

Meets or exceeds all applicable CE and GS Machinery Directive.

Section 3

MAINTENANCE

3.1 INTRODUCTION

Reference: • Section 2 for recommended maintenance intervals.

⚠ WARNING

Be sure to read, understand and follow all information in the Operation Section of this manual before attempting to operate or perform service on any Work Platform.

This section contains instructions for the maintenance of the Work Platform. Procedures for the operation inspection, adjustment, scheduled maintenance, and repair/removal are included.

Referring to Section 2 will aid in understanding the operation and function of the various components and systems of the work platform, and help in diagnosing and repair of the machine.

TERMINOLOGY

TERMINAL BLOCKS Located in upper and lower control boxes. Designated by TB##. (##) designates the number of the block which is written on the terminal block. “R” right or “L” may follow the number.

WIRE COLOR Indicated by color/color. First color refers to insulation color and second color indicates stripe. If second color is not given there is no stripe.

GENERAL PROCEDURES

CONTACT BLOCKS Removed by inserting a flat screwdriver into the slot at either end of block and prying outward. Installed by pressing into an empty slot.

SWITCH MOUNT BASE Assembled to back of switch actuator. Removed by rotating the small black lever counterclockwise and lifting off base.

TERMINAL BLOCKS Remove wires by inserting a small flat bladed screwdriver into square beside wire. Install wires by stripping ½” of insulation, inserting screwdriver in square and inserting wire. Be sure no strands are bend backwards. Replace wires with same rating and type.

3.2 DATE CODE IDENTIFICATION ON HOSES

GATES uses a five digit code: Year, Month, Day.

i.e.: 6 11 29 - means 1996, month 11 (November), day 29.

PARKER uses a ten digit code: Plant, Year, Month, Day.

i.e.: XXXX 6 11 29 - means Plant XXXX, 1996, month 11 (November), day 29.

DAYCO stamps month, day and year on each hose.

3.3 SPECIAL TOOLS

The following is a list of special tools which may be required to perform certain maintenance procedures on the work platform.

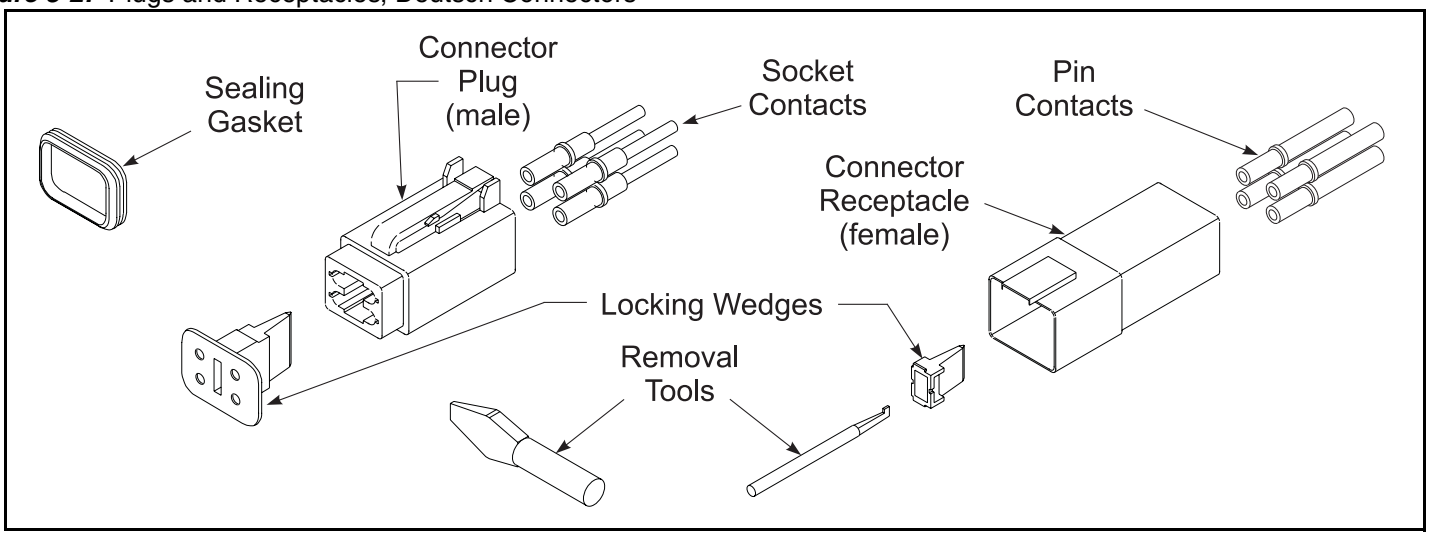
- 0-69 bar (0-1000 psi) (0-69 bar) Hydraulic Pressure Gauge with Adapter Fittings
- 0-207 bar (0-3000 psi) (0-207 bar) Hydraulic Pressure Gauge with Adapter Fittings
- 0-414 bar (0-6000 psi) (0-414 bar) Hydraulic Pressure Gauge with Adapter Fittings
- Small Deutsch Connector Field Kit
  (UpRight P/N 030899-000)
- Large Deutsch Connector Field Kit
  (UpRight P/N 030898-000)
- Inclinometer

3.4 DEUTSCH CONNECTORS

Deutsch connectors are designed so that connector parts, contacts, or electrical cables may be replaced without replacing the entire connector.

Figure 3-1: Deutsch Connector Kit

Figure 3-2: Plugs and Receptacles, Deutsch Connectors



Male Connector (Plug)

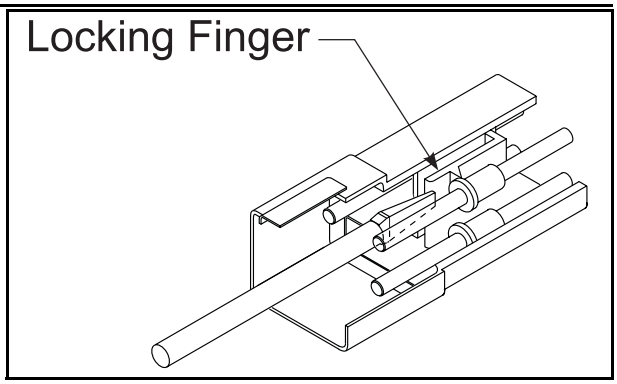
1. Disconnect the male connector (plug) from the female connector (receptacle).
2. Using the flat end of the Removal Tool (or flat blade screwdriver), pry the Locking Wedge from the Male Connector. Care should be taken that the Silicon Gasket is not damaged during this procedure.
3. Check all parts for damage. Replace all parts which are damaged or worn.
4. Replace or recrimp the wires and contacts. Refer to “Crimping” procedure.

Female Connector (Receptacle)

1. Disconnect the male connector (plug) from the female connector (receptacle).
2. Using the notched end of the Removal Tool (or a wire hook), pull the Locking Wedge from the Female Connector.
3. Check all parts for damage. Replace all parts which are damaged or worn.
4. Replace or recrimp the wires and contacts. Refer to “Crimping” procedure.

Releasing Locking Fingers

Figure 3-3: Locking Finger, Deutsch Connector



1. The Locking Fingers can be released following the removal of the Locking Wedge of either the male or female connector.
2. Use the removal tool (or flat bladed screwdriver) to push the Locking Fingers aside. This will release the grip on the contact.
3. Pull the wire and contact out of the connector.

Crimping

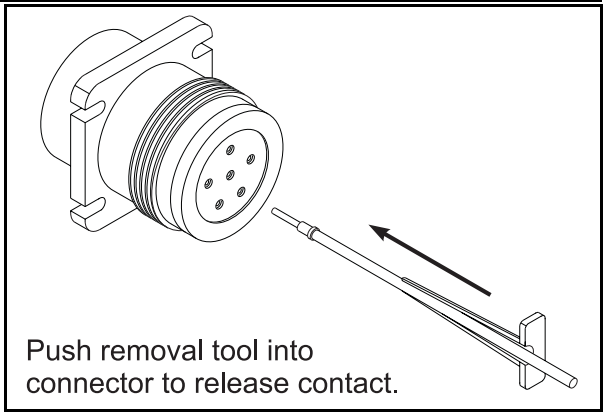
1. Strip 6 mm from the wire.

NOTE: Complete crimping instructions are included in each Field Kit.

2. Insert the contact into the crimping tool.
3. Insert the stripped wire into the contact. Copper strands should be visible in the bleed hole of the contact and no copper strands should be loose (outside) of the contact barrel.
4. Completely close the handles of the crimping tool. Release the handles of the crimping tool and remove the crimped contact.
5. Inspect the crimped contact to ensure that all strands are secure in the crimp barrel.

Removing Contact from Heavy Duty Plug

Figure 3-4: Heavy Duty Deutsch Connector



1. Slip the removal tool along the wire to be replaced.
2. Push the removal tool into the connector until the contact is released.
3. Pull the wire and contact out of the plug.

3.5 Blocking Elevating Assembly

WARNING

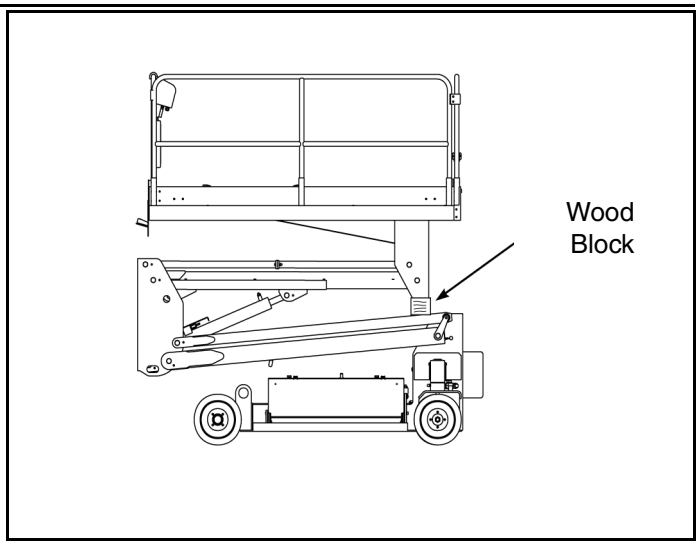
Never perform service on the work platform in the elevating assembly area while platform is elevated without first blocking the elevating assembly.

***DO NOT** stand in elevating assembly area while deploying or storing brace.*

DO NOT block elevating assembly with a load in the platform.

***DO NOT** block elevating assembly with a load in the platform.*

Figure 3-5: **Blocking The Elevating Assembly**



Brace Installation

1. Park the work platform on firm, level ground.
2. Position chassis lift switch to LIFT and elevate platform approximately two feet.
3. Place 10 cm x 10 cm (4 inch x 4 inch) wood block as shown in Figure 3-5.
4. Push chassis lift switch to LOWER position and gradually lower platform until boom is supported by the wood block.

Brace Removal

1. Push chassis lift switch to LIFT position and gradually raise platform until wood block can be removed.
2. Remove wood block.
3. Push chassis lift switch to LOWER position and completely lower platform.
4. Close control module cover

3.6 Battery Maintenance

Electrical energy for the motor is supplied by four 6-volt batteries wired in series for 24 volts DC. Proper care and maintenance of the batteries and motor will ensure maximum performance from the work platform.

WARNING

Hazard of explosive gas mixture. Keep sparks, flame, and smoking material away from battery.

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Thoroughly rinse away any spilled fluid with clean water.

Always replace batteries with UpRight batteries or manufacturer approved replacements weighing 28 kg (62 lbs.) each.

Battery Inspection and Cleaning

Check battery fluid level daily, especially if work platform is being used in a warm, dry climate. If required add distilled water only. Use of tap water with high mineral content will shorten battery life.

⚠ CAUTION

If battery water level is not maintained, batteries will not fully charge, creating a low discharge rate which will damage motor/pump unit and void warranty.

Batteries should be inspected periodically for signs of cracks in the cases, electrolyte leakage and corrosion of the terminals. Inspect cables for worn spots or breaks in the insulation and for broken cable terminals.

Clean any batteries that show signs of corrosion at the terminals or which electrolyte has overflowed onto during charging. Use a baking soda solution to clean the batteries, taking care not to get the solution inside the cells. Rinse thoroughly with clear water. Clean battery and cable contact surfaces to a bright metal finish whenever a cable is removed.

Battery Charging

⚠ CAUTION

Charge the batteries at the end of each work shift or sooner if the batteries have been discharged.

Charge batteries in a well ventilated area.

Do not charge batteries when the work platform is in an area containing sparks or flames.

Permanent damage to batteries will result if batteries are not immediately recharged after discharging.

Never leave charger operating unattended for more than two days.

Never disconnect cables from batteries when charger is operating.

Keep charger dry.

1. Check battery fluid level. If electrolyte level is lower than 3/8 in. [10mm] above plates add distilled water only.
2. The plug for the battery charger is located at the right side of the power module. Connect extension cord (1.5 mm² [12 gauge] conductor minimum and 15 m [50 ft.] in length maximum) to the charger plug. Connect other end of extension cord to properly grounded outlet of proper voltage and frequency.

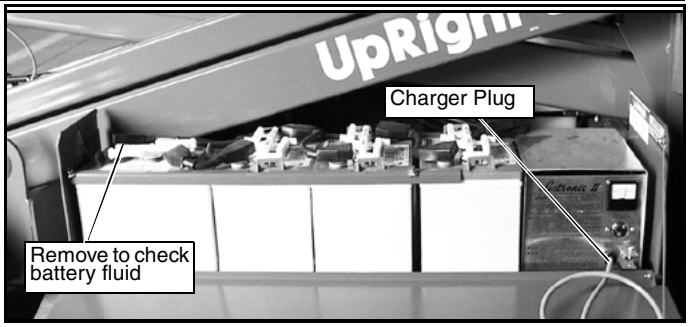
NOTE: Charger circuit must be used with a GFI (Ground Fault Circuit Interrupt) outlet.

3. Charger turns on automatically after a short delay. The ammeter will indicate charging current.

NOTE: Do not operate the machine while it is plugged into the charger

4. Charger turns off automatically when batteries are fully charged.

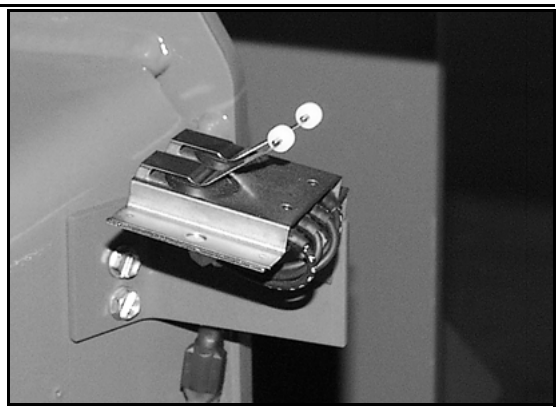
Figure 3-6: **Batteries and Charger**



3.7 SWITCH ADJUSTMENTS

PROXIMITY

Figure 3-7: **Proximity Switch**



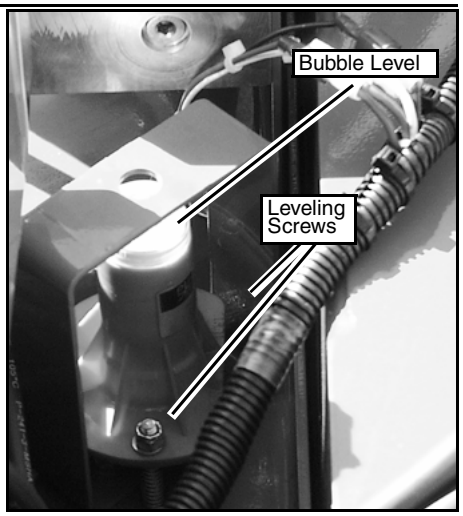
The proximity switch is located on the left side of the chassis above the drive wheel. When the machine is lowered and the tabs are depressed, high speed drive is available. When the machine is raised, the tabs deactivate, and the machine will drive in creep speed.

ADJUSTMENT

1. Adjust proximity switch so machine operates at creep speed when platform is raised above 1.6 m [6 ft.]).]

TILT SENSOR

Figure 3-8: Tilt Sensor



INTRODUCTION

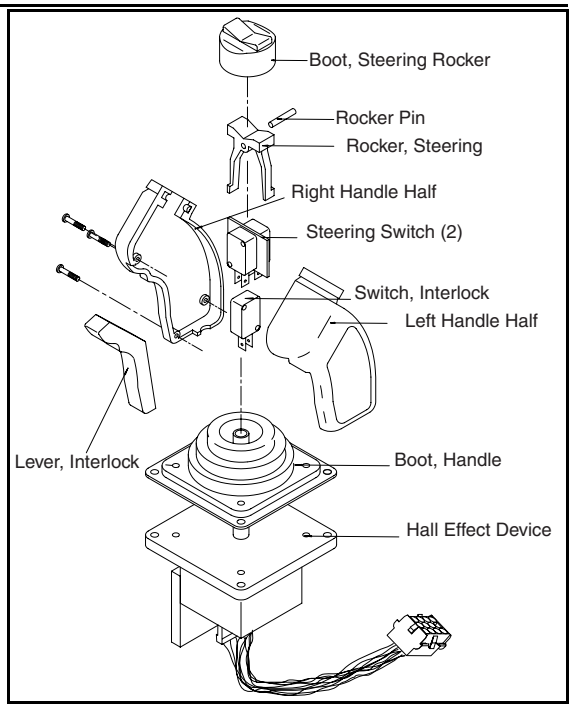
The tilt sensor has three wires; red-power (24 v in), black-ground, white-output (24 v out). To verify the sensor is working properly there is a red LED under the sensor that lights up when the sensor is not level.

ADJUSTMENT

1. Place machine on firm level surface ± ¼°.
2. Use the Inclinometer (P/N: 10119-000-00) to ensure front and rear of chassis is level ± ¼°.
3. Adjust the three leveling screws until the bubble is centered in the inner circle.

PQ CONTROL HANDLE

Figure 3-9: PQ Control Handle



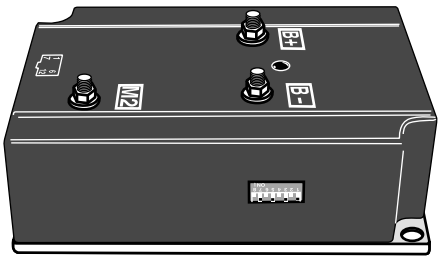
1. Remove Handle if necessary from Platform Control box.
2. Remove and replace defective parts. Refer to Section 6 for repair parts numbers.

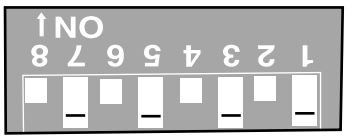
3.8 Motor Controller and I/O Board Dip Switch Settings

NOTE: Before dip switch settings will take effect, power must be disconnected or Emergency Stop switches must be depressed.

Controller

Figure 3-10: Controller





	1	2	3	4	5	6	7	8
TM12	off	off	off	on	off	on	off	on
MX15/ 19	off	on	off	on	off	on	off	on
X/20N	on	off	off	on	off	on	off	on
X20W	on	off	off	on	off	on	off	on
X26/31	on	on	off	on	off	off	off	on
SL20	on	off	off	on	off	on	off	on

The above table shows the default dip switch settings on the controller box when the machine leaves the factory. The following adjustments may be made to these settings:

Switches 3 & 4 determine the elevated “creep” speed. If the machine does not operate at the specified speed at the default settings, use the following table to adjust the dip switch settings.

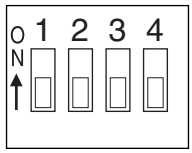
	3	4
1(slowest)	off	off
2	on	off
3 (default)	off	on
4 (fastest)	on	on

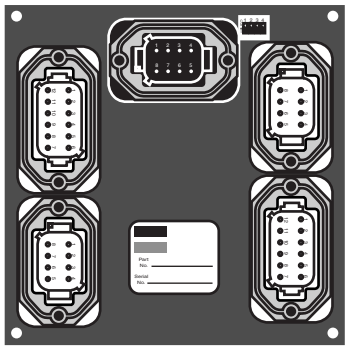
Switches 5 & 6 determine the deceleration time. Switch 5 is for the deceleration rate while the platform is lowered. Switch 6 is for the elevated rate.

Decel	5	6
.24 sec.	off	off
1.27 sec.	on	on

I/O Board

Figure 3-11: I/O Board





	1	2	3	4
TM12	off	off	off	off
MX15/19	off	off	off	off
X/20N	off	off	off	off
X20W	off	off	off	off
X26/31	off	off	off	off
SL20	off	off	off	off

The above table shows the default dip switch settings on the I/O board when the machine leaves the factory. Switches three and four work together to determine the optional alarm settings.

1	2	3	4	Result
on				Two Speed Mode (not used)
off				Proportional Control
	on			not used
	off			Depression Mechanism extends when platform is raised
		off	off	Down alarm only
		on	off	Down and Reverse alarm
		off	on	Drive and Down alarm
		on	on	All Motion alarm

3.9 Lubrication

The SL20 is designed with maintenance free bearings. Only the wheel bearings require lubrication. Refer to section 3.14 for wheel bearing maintenance.

3.10 Hydraulic Oil Tank and Filter

Fluid Level

The fluid level is visible through the label on the plastic tank. With platform fully lowered, oil should level should be at MAX. DO NOT fill above the upper line or when the platform is elevated.

Oil and Filter Replacement

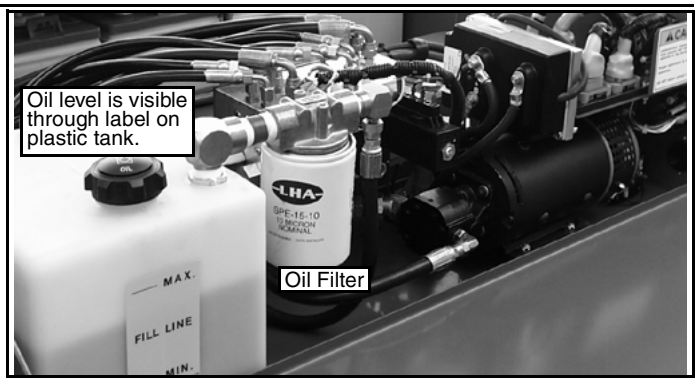
1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature

⚠ CAUTION

The hydraulic oil may be of sufficient temperature to cause burns. Wear safety gloves and safety glasses when handling hot oil

2. Provide a suitable container to catch the drained oil. Hydraulic tank has a 15 L (4 U.S. gal) capacity.
3. Remove the drain plug under the tank and allow all oil to drain.
4. Clean the magnetic drain plug and reinstall.
5. Fill the hydraulic reservoir.
6. Unthread the filter.
7. Apply a thin film of clean hydraulic oil to the gasket of the replacement filter.
8. Thread the replacement filter until the gasket makes contact, then rotate the filter 3/4 of a turn further.

Figure 3-12: **Hydraulic Oil Tank and Filter**



3.11 Setting Hydraulic Pressures

See “Hydraulic Manifold” on page 12 for the location of the relief and overcenter valves on the hydraulic manifold.

Check the hydraulic pressures whenever the pump, manifold or relief valve have been serviced or replaced.

⚠ WARNING

The hydraulic oil may be of sufficient temperature to cause burns. Wear safety gloves and safety glasses when handling hot oil.

The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. Obtain medical assistance immediately if cut by hydraulic oil.

Figure 3-13: Hydraulic Manifold

Main Relief Valve

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Remove the control module cover and install a gauge in pressure gauge port.
3. Loosen locknut or remove cover on the main relief valve and turn adjusting screw counter-clockwise two full turns.
4. Remove the platform controller so that the machine may be operated from the ground. With the platform empty, attempt to drive the machine up a 25% (14°) grade. Adjust the main relief valve screw until the machine is just able to climb the slope. The pressure gauge should read approximately 207 bar (3000 psi).
5. Tighten locknut or replace steering relief valve cover and torque to 8 Nm (6 Ft/Lbs).
6. Remove gauge and replace cap.

Steering Relief Valve

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Install gauge in pressure gauge port.
3. Loosen locknut or remove cover on the steering relief valve and turn adjusting screw counterclockwise two full turns.
4. While one person holds the steering switch to steer the wheels fully to the left, slowly turn the steering relief valve adjusting screw clockwise to increase the pressure until the gauge reads 104 bar (1500 psi).
5. Tighten locknut or replace main relief valve cover and torque to 8 Nm (6 Ft/Lbs).
6. Remove gauge and replace cap.

Lift Relief Valve

1. Operate the machine 10-15 minutes to warm the oil.
2. Loosen the locknut or remove the cover on the lift relief valve and turn the adjusting screw counterclockwise two full turns.
3. Place the maximum rated load (see “Specifications”, page 2-10) on the platform.
4. Turn the chassis lift switch to LIFT position and hold it there.
5. Slowly turn the lift relief valve adjusting screw clockwise to increase the pressure until the platform just begins to rise. The pressure should be approximately 138 bar (2000 psi)
6. Release the chassis lift switch. Tighten locknut or replace lift relief valve cover.

Overcenter Valve

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Remove pressure gauge port cap and install the pressure gauge assembly.
3. Disconnect proximity switch.
4. Lift work platform and block front wheels off ground.
5. Loosen the locknut on overcenter valve.
6. With the chassis key switch on DECK and the drive/lift switch in DRIVE, depress the interlock lever and slowly pull the control lever to REVERSE to drive the wheels.
7. Adjust the overcenter valve by turning the adjustment screw until the pressure gauge indicates 55 to 69 bar (800 to 1000 psi).
8. Tighten locknut on valve to 8 Nm (6 Ft/Lbs).
9. Check the setting by slowly moving the control lever FORWARD, then REVERSE checking the gauge to ensure pressures are properly set. Readjust as needed.
10. Remove block and lower work platform to ground.
11. Reconnect the proximity switch.
12. Remove the gauge from the gauge port and reinstall cap.
13. Check for proper operation of the drive system and brake.

NOTES:

3.12 HYDRAULIC MANIFOLD

Though it is not necessary to remove the manifold to perform all maintenance procedures, a determination should be made as to whether or not the manifold should be removed before maintenance procedures begin.

REMOVAL

1. Remove the battery ground cable.
2. Tag and disconnect the solenoid valve leads from the terminal strip.
3. Tag, disconnect, and plug hydraulic hoses.
4. Remove the locknuts, jam nut, and bolts that hold the manifold to the mounting bracket.
5. Remove manifold block.

DISASSEMBLY

NOTE: Mark all components as they are removed so as not to confuse their location during assembly. Refer to Figure 3-14 often to aid in disassembly and assembly.

1. Remove coils from solenoid valves.
2. Remove solenoid valves, relief valves and overcenter valves.
3. Remove fittings, plugs, and springs.

CLEANING AND INSPECTION

1. Wash the manifold in cleaning solvent to remove built up contaminants and then blow out all passages with clean compressed air.
2. Inspect the manifold for cracks, thread damage and scoring where o-rings seal against internal and external surfaces.
3. Wash and dry each component and check for thread damage, torn or cracked o-rings and proper operation.
4. Replace any parts or o-rings found unserviceable.

ASSEMBLY

NOTE: Lubricate all o-rings before installation to prevent damage to o-rings.

1. Install fittings, plugs, and springs.
2. Install overcenter valves, main relief valve, steering relief valve, and solenoid valves.

NOTE: Torque cartridge valves to 34 N-m (25 ft. lbs.).

3. Install coils on solenoid valves.

NOTE: Torque coil retaining nuts to 5.4-6.8 Nm (4-5 ft. lbs) maximum.

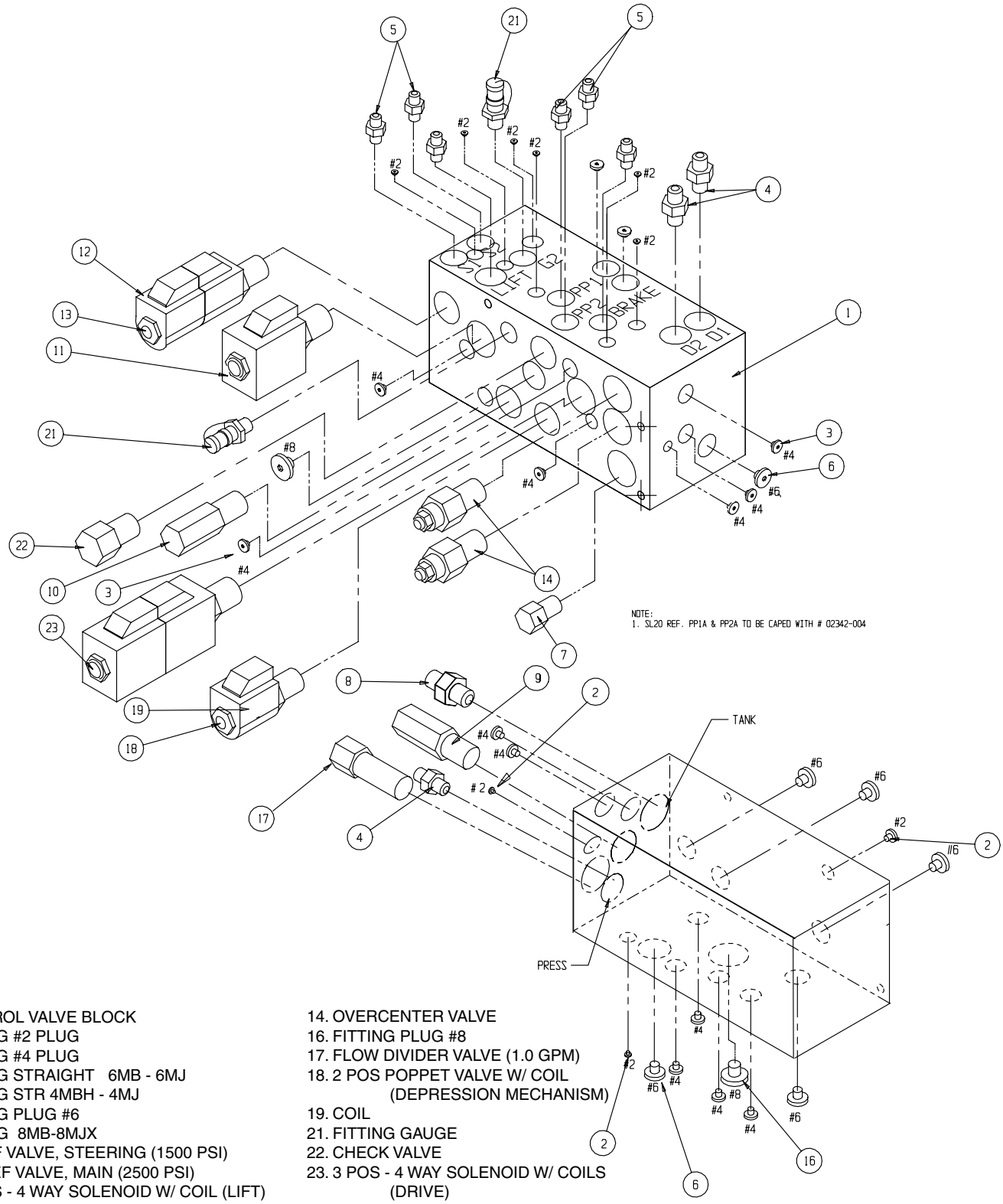
INSTALLATION

1. Attach manifold assembly to mounting plate with bolts, washers, jam nut and locknuts.

NOTE: Bolt at the left end of the valve is installed from the bottom and is secured with the jam nut. Secure all ground wires with locknut to this bolt.

2. Connect solenoid leads to terminal strip (as previously tagged).
3. Connect hydraulic hoses. Be certain to tighten hoses to manifold (see Table 3-2).
4. Operate each hydraulic function and check for proper function and leaks.

Figure 3-14: **Hydraulic Manifold, Exploded View**



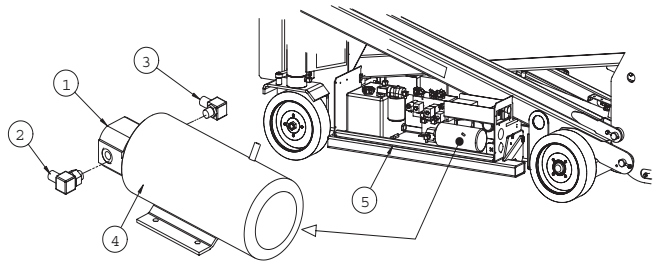
1. CONTROL VALVE BLOCK
2. FITTING #2 PLUG
3. FITTING #4 PLUG
4. FITTING STRAIGHT 6MB - 6MJ
5. FITTING STR 4MBH - 4MJ
6. FITTING PLUG #6
8. FITTING 8MB-8MJX
9. RELIEF VALVE, STEERING (1500 PSI)
10. RELIEF VALVE, MAIN (2500 PSI)
11. 2 POS - 4 WAY SOLENOID W/ COIL (LIFT)
12. COIL
13. 3 POS - 4 WAY SOLENOID W/ COILS (STEERING)
14. OVERCENTER VALVE
16. FITTING PLUG #8
17. FLOW DIVIDER VALVE (1.0 GPM)
18. 2 POS POPPET VALVE W/ COIL (DEPRESSION MECHANISM)
19. COIL
21. FITTING GAUGE
22. CHECK VALVE
23. 3 POS - 4 WAY SOLENOID W/ COILS (DRIVE)
24. PLUG 9MM

3.13 Hydraulic Power Unit

Removal

NOTE: If the hydraulic tank has not been drained, suitable means for plugging the hoses should be provided to prevent excessive fluid loss.

Figure 3-15: **Hydraulic Power Unit**



1. Pump
2. Outlet Hose Fitting
3. Inlet Hose Fitting
4. Electric Motor
5. Control Module

1. Disconnect the negative battery cable.
2. Mark, disconnect, and plug the hose assemblies.
3. Mark and disconnect the motor cables.
4. Loosen the capscrews and remove the power unit from the control module.

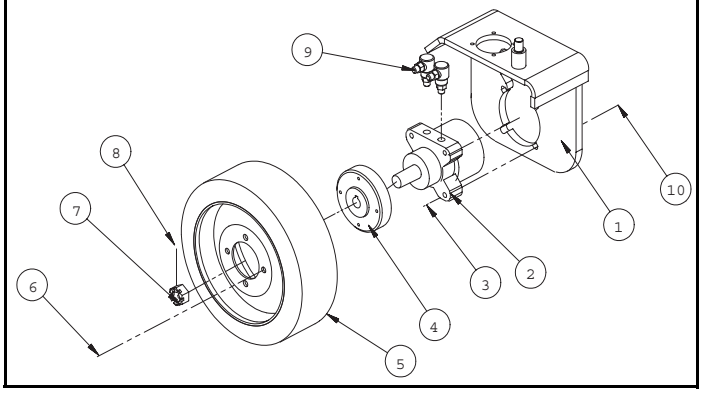
Installation

1. Place the power unit into the control module. Torque the mounting screws to 41 N-m (30 ft.lbs.).
2. Unplug and reconnect the hydraulic hoses. Reconnect the motor cables and negative battery cables.
3. Check the oil level in the hydraulic tank before operating the work platform.

3.14 Hydraulic Drive Motors and Hubs

Figure 3-16: **Hydraulic Drive Motor**

1. Motor Mount
2. Drive Motor
3. Capscrew
4. Hub
5. Wheel
6. Wheel Lug Bolt
7. Slotted Nut
8. Cotter Pin
9. Hose Fitting
10. Lock Nut



Removal

1. Park the work platform on firm level ground then block the wheels to prevent the work platform from rolling.
2. Loosen the wheel lug bolts on the front corner to be raised.
3. Use a 1.3 metric ton (1.5 imperial ton) capacity jack to raise the desired corner. Position blocks under the raised corner to prevent the work platform from falling if the jack fails.
4. Remove the wheel lug bolts and wheel.
5. Remove the cotter pin, slotted nut, and hub. If necessary use a wheel puller to remove the hub.

NOTE: Before disconnecting hoses, thoroughly clean off all outside dirt around fittings. (After disconnecting hoses and before removing from vehicle, IMMEDIATELY plug port holes.)

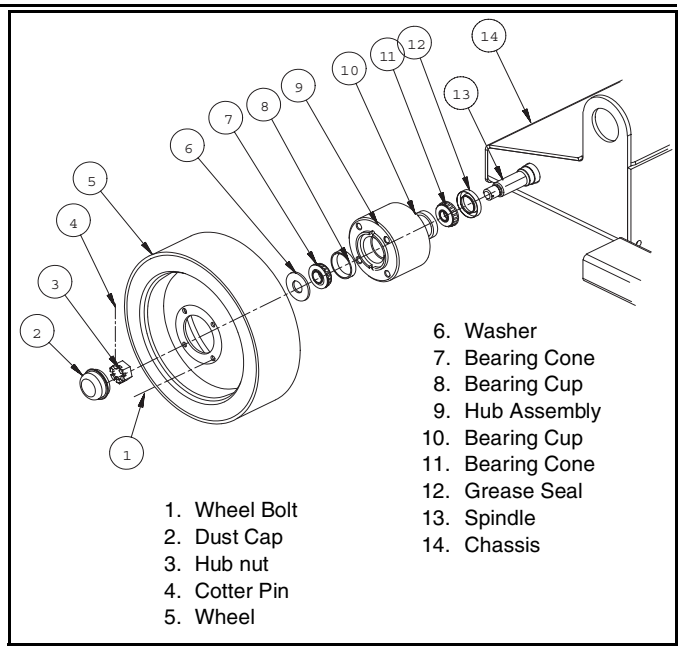
6. Tag, disconnect, and plug the hose assemblies to prevent foreign material from entering.
7. Remove the locknuts, capscrews, and drive motor from the motor mount.

INSTALLATION

1. Referring to Figure 3-16, position the drive motor in the motor mount and secure with capscrews and locknuts. Torque to 102 N-m (75 ft.lbs.).
2. Remove the plugs from the hose assemblies and connect to the drive motor.
3. Install the hub and slotted nut. Torque the locknut to 190-217 N-m (140 to 160 ft. lbs.). Install a new cotter pin. Do not back-off the nut to install the cotter pin.
4. Install the wheel with lug bolts onto the hub. Torque to 108 N-m (80 ft. lbs.).
5. Remove blocks. Lower the jack and remove. Operate the drive system and check for leaks.
6. Drive machine for 20 minutes and retorque wheel lug bolts and check for leaks.

3.15 WHEEL BEARINGS

Figure 3-17: **Wheel Bearings**



REMOVAL

1. Loosen the wheel lug nuts. Using a 1.3 metric ton (1.5 imperial ton) capacity jack, raise the work platform until the wheel being repaired is off the ground.
2. Install support blocks to prevent the work platform from falling if the jack fails.
3. Remove the wheel lug nuts and the wheel.
4. Remove the dust cap.
5. Remove the cotter pin.
6. Remove the hub nut and washer.
7. Slide the entire hub assembly from the spindle and place on clean surface.
8. Remove the outside bearing cone and place on clean surface.
9. Remove the grease seal and the inside bearing cone. Examine the bearing cups. If they are smooth, shiny and free of pits or any surface irregularities, DO NOT remove them.
10. If the cups need replacement, remove them by tapping around the circumference of the inside surface of the cups from the opposite side using a long drift.

INSTALLATION

1. Position the replacement bearing cup over the opening in the hub assembly then position the worn cup over the replacement so that the bearing surfaces face each other. Use the old bearing cone as a drift to work the replacement into position by tapping evenly around the circumference.
2. Apply a liberal coating of multipurpose grease to the bearing surface of each cup.

3. Pack the inside bearing cone with multipurpose grease and position it within the rear bearing cup in the hub assembly. Install the new grease seal.
4. Apply a thin coating of multipurpose grease to the spindle to protect the grease seal then slide the hub assembly onto the spindle.
5. Pack the outside bearing cone with multipurpose grease and slide it onto the spindle until it seats in the outer bearing cup.
6. Install the washer and hub nut. Tighten the hub nut, while rotating the assembly, until the hub drags then back the nut to the first slot that aligns with the cotter pin hole in the spindle.
7. Install a new cotter pin and bend the end up over the hub nut and the spindle.
8. Install the cap and wheel/tire assembly. Torque the lug to 108 N-m (80 ft. lbs.).
9. Remove blocks and lower work platform to the ground.
10. Drive machine for 20 minutes and retorque wheel lug bolts and check for leaks.

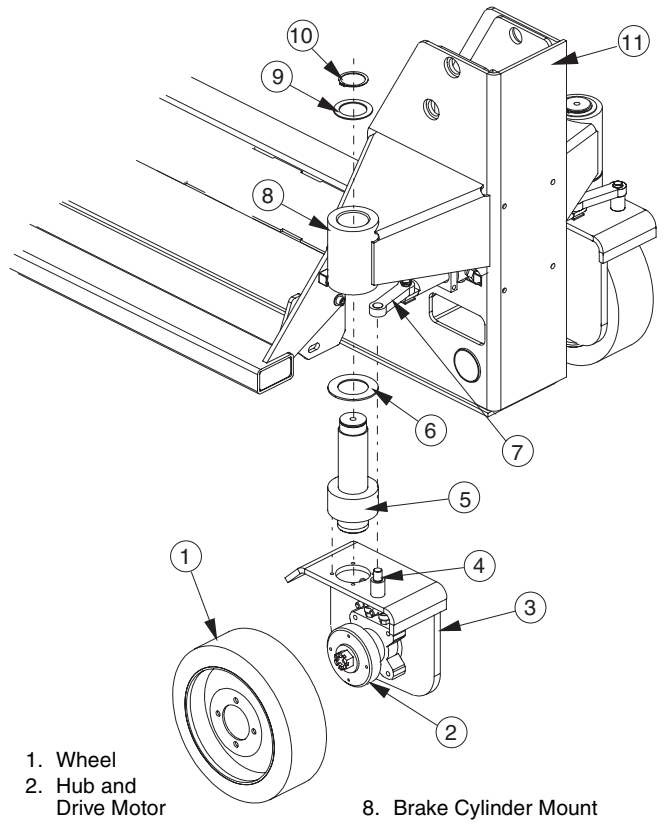
3.16 Brake Cylinder

Removal

1. Block the wheels to prevent the work platform from rolling.
2. Loosen the wheel lug nuts. Use a 1.3 metric ton (1.5 imperial ton) capacity jack to raise the work platform until the wheel being repaired is off the ground.
3. Install support blocks to prevent the work platform from falling if the jack fails.
4. Remove the wheel lug nuts and the wheel.
5. Disconnect the hose assemblies from the drive motor and brake cylinder. Cap the openings to prevent foreign material from entering.

NOTE: The motor mount assembly is heavy. The use of a support device is recommended.

Figure 3-18: Brake Cylinder



1. Wheel
2. Hub and Drive Motor
3. Motor Mount
4. Steering Arm Mount
5. Brake Cylinder
6. Spindle Thrust Washer
7. Steering Linkage
8. Brake Cylinder Mount
9. Brake Retaining Washer
10. Retaining Ring
11. Chassis

Seal Kit 101015-010

6. Remove the retaining ring and brake retaining washer from the top of the brake cylinder.
7. Slowly lower the motor mount assembly and guide the brake cylinder out of the brake cylinder mount. The spindle thrust washer will come off with the brake cylinder.
8. Lay the motor mount assembly on its side to access the brake cylinder mounting screws.
9. Remove the mounting screws and remove the cylinder from the motor mount.

Installation

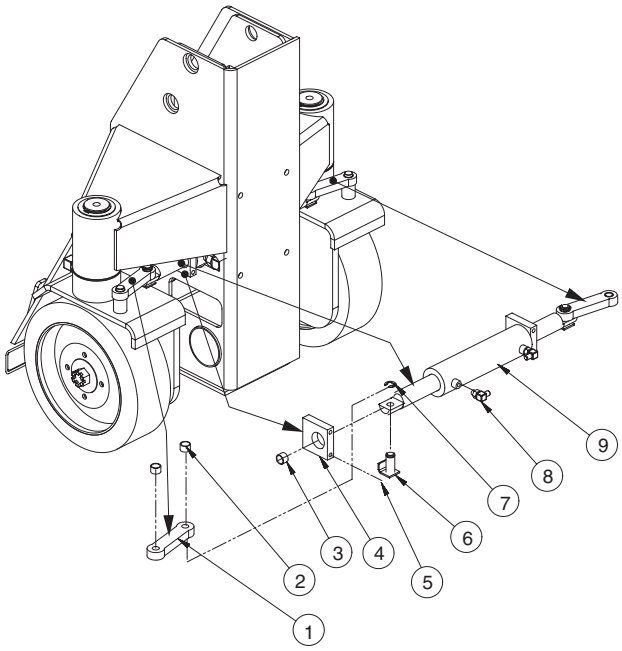
1. Install the brake cylinder assembly onto the motor mount assembly. Apply Loctite 242 and torque the cap screws to 41 N-m (30 ft.lbs.).
2. Place the spindle thrust washer onto the spindle of the brake cylinder assembly.
3. Raise the motor mount and brake cylinder assembly into the brake cylinder mount.
4. When the brake cylinder is almost fully inserted into the brake cylinder mount, align the steering arm with the steering arm spindle.
5. Raise the unit until it is fully inserted into the brake cylinder mount.
6. Install the brake cylinder retaining washer and secure with snap ring.
7. Connect the hose assemblies.
8. Install the wheel with lug bolts onto the hub. Torque to 108 N-m (80 ft. lbs.).
9. Remove blocks, lower the jack, and remove. Operate the brakes and drive system check for leaks.
10. Drive machine for 20 minutes and retorque wheel lug bolts. Check for leaks.
11. Operate the drive circuit and check that the shaft retracts and clears the wheel. Check for leaks.

3.17 STEERING CYLINDER

REMOVAL

1. Mark and disconnect the hose assemblies from the fittings and immediately cap the openings to prevent foreign material from entering.
2. Remove the retaining rings and the steering pins from both ends of the steering cylinder.
3. Remove the steering arms from both ends of the steering cylinder.
4. Remove the locknuts and capscrews from the steering bearing flanges.
5. Slide the steering cylinder out of the chassis.

Figure 3-19: Steering Cylinder



1. Steering Arm
2. Bearing
3. Bearing
4. Steering Bearing Arm
5. Lock Nut and Lock Washer
6. Steering Pin
7. Retaining Ring
8. Hose fitting
9. Steering Cylinder

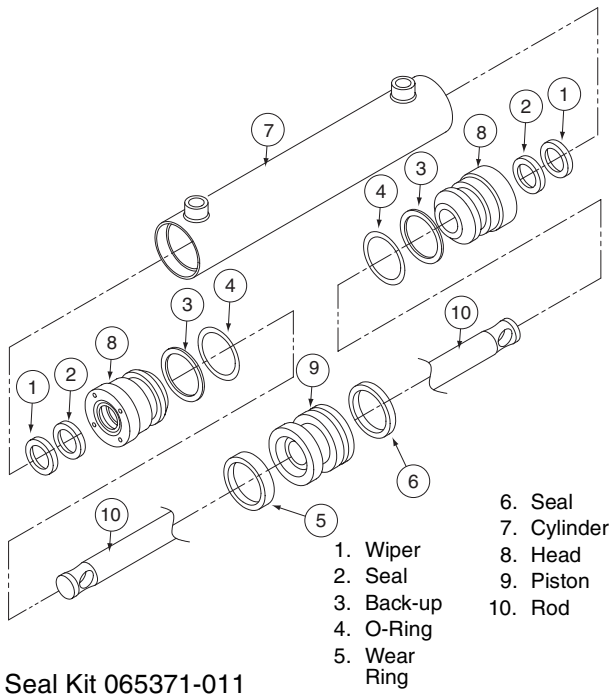
DISASSEMBLY

1. Unscrew the heads from the cylinder.
2. Pull the rod from the cylinder.
3. Remove all seal kit components from the head and piston.

CLEANING AND INSPECTION

1. Wash all the metal parts in cleaning solvent and blow dry with filtered compressed air.
2. Inspect all the threaded components for stripped or damaged threads.
3. Check the inside surface of the cylinder barrel for scoring or excessive wear.
4. Check the piston and headcap for scoring or excessive wear.
5. Inspect the surface of the shaft for scoring or excessive wear.

Figure 3-20: Steering Cylinder Assembly



ASSEMBLY AND INSTALLATION

1. Lubricate and install new rod seal, rod wiper, backup ring and o-ring on the headcaps.
2. Lubricate and install the seal and wear ring in the piston.
3. Lubricate the piston seal with clean hydraulic fluid and install the rod assembly in the cylinder barrel.
4. Screw headcaps into cylinder barrel.

INSTALLATION

1. Installation is reverse of removal.
2. Cycle the steering cylinder several times to remove air from the system.
3. Check the cylinder for proper operation and check all connections for leaks.

3.18 Lift Cylinder

Removal

1. Block Elevating Assembly (Figure 3-5).
2. Provide a suitable container to catch the hydraulic fluid, then disconnect the hydraulic hoses. Immediately plug hoses to prevent foreign material from entering.
3. Remove the set screw from end of cylinder rod.
4. Place a 61 cm (2 ft.) long plank, at least 25 mm ((1 in.) thick, across the top of the modules.
5. Support rod end of cylinder and remove rod end cylinder pin and let cylinder down to rest on the plank.
6. Support the lower tension links.
7. Attach a suitable hoisting device and sling to the cylinder.
8. Support the cylinder so the barrel end cylinder pin can be removed. Remove the pin, then lift the cylinder from the machine with the hoisting device.
9. Move cylinder to a prepared work area.

Disassembly

1. Remove the set screw which secures the cylinder head.
2. Unscrew the head from the cylinder.
3. Pull the rod assembly out of the cylinder.
4. Remove the seal kit components from the head and piston.
5. Check the end bearing for wear. Remove and replace it if necessary.

Cleaning and Inspection

1. Clean all metal parts in solvent and blow dry with filtered compressed air.
2. Check all threaded parts for stripped or damaged threads.
3. Check the bearing surfaces inside of the headcap, the outer edge surface of the piston, inside the cylinder barrel, and the shaft for signs of scoring or excessive wear.
4. Replace any parts found unserviceable.

Reassembly

1. Lubricate and install the wear rings and seal on the piston.
2. Lubricate and install the static seal, rod seal and rod wiper on the head.
3. Carefully slide the rod assembly into the cylinder.
4. Screw the head into cylinder and secure it with the set screw.

Installation

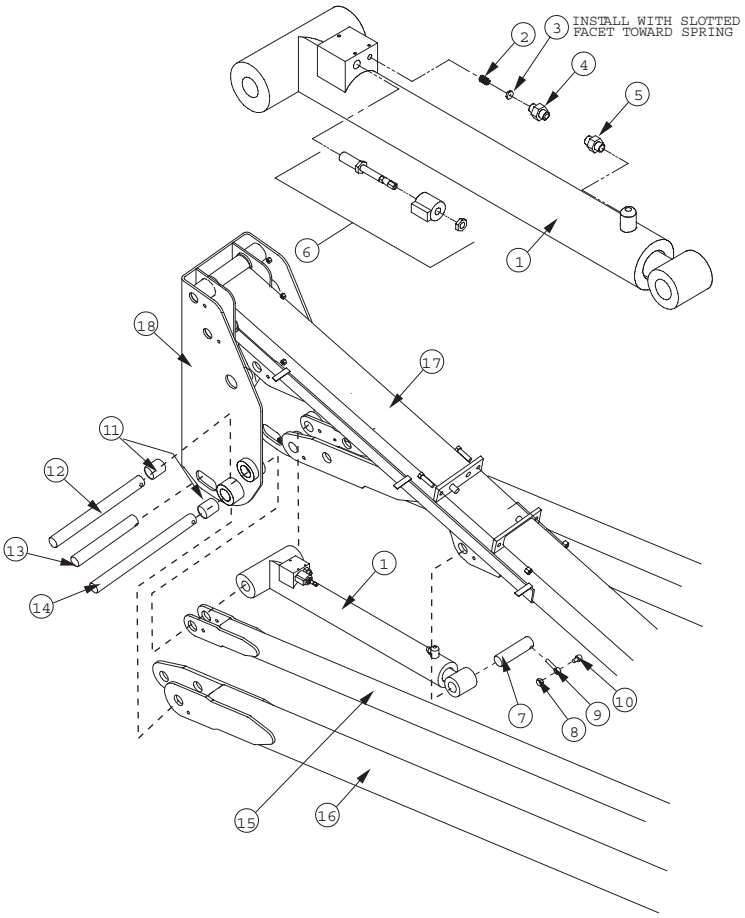
NOTE: Before installing the lift cylinder check the cylinder pins and bearings for wear and replace if necessary.

1. Place two 61 cm (2 ft.) long planks, at least 25 mm (1 in.) thick, across the top of the modules.
2. Place the lift cylinder on the planks.
3. Lift the lower tension links into position.
4. Lift the barrel end of the cylinder into place and push the cylinder pin in until approximately 38 mm (1½ in.) is still exposed.

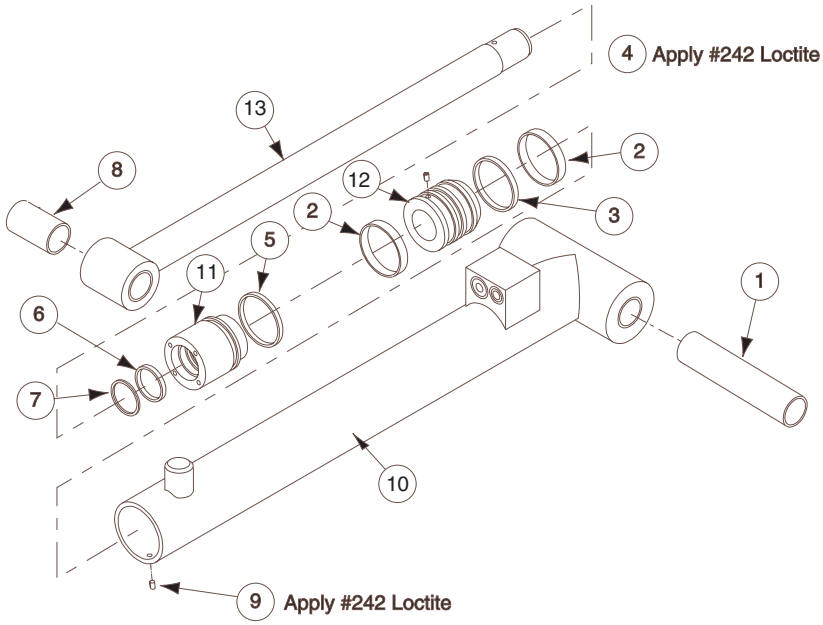
NOTE: Take care in aligning the holes so that the pin can be pushed in by hand. If holes are not properly aligned and the pin is forced in, the bearings will be damaged.

5. Install anti-rotation pin into cylinder pin aligning with the hole in the lower tension link and push the cylinder pin completely in. Secure it with the set screw.
6. Lift the rod end of cylinder into place and insert pin. Install anti-rotation pin into rod-end pin aligning it with the hole in the upper boom and push the cylinder pin in completely. Secure it with the set screw.
7. Cycle lift cylinder several times to remove air from the system and to check for proper operation.
8. Test with weight at rated platform load to check system operation.

Figure 3-21: **Lift Cylinder Installation and Assembly**



1. Lift Cylinder
2. Spring
3. Orifice
4. Hose Fitting
5. Hose Fitting
6. Lowering Valve
7. Pin
8. Lock Nut
9. Rod End
10. Screw
11. Bushing
12. Pin
13. Pin
14. Pin
15. Lowering Tension Hook
16. Lower Boom
17. Upper Boom
18. Riser



1. Blind End Bearing
2. Wear Ring
3. Piston Seal
4. Set Screw
5. Static Seal
6. Rod Seal
7. Rod Wiper
8. Rod End Bearing
9. Set Screw
10. Cylinder
11. Head
12. Piston
13. Rod

Seal Kit 010013-010

3.19 Depression Mechanism Cylinder

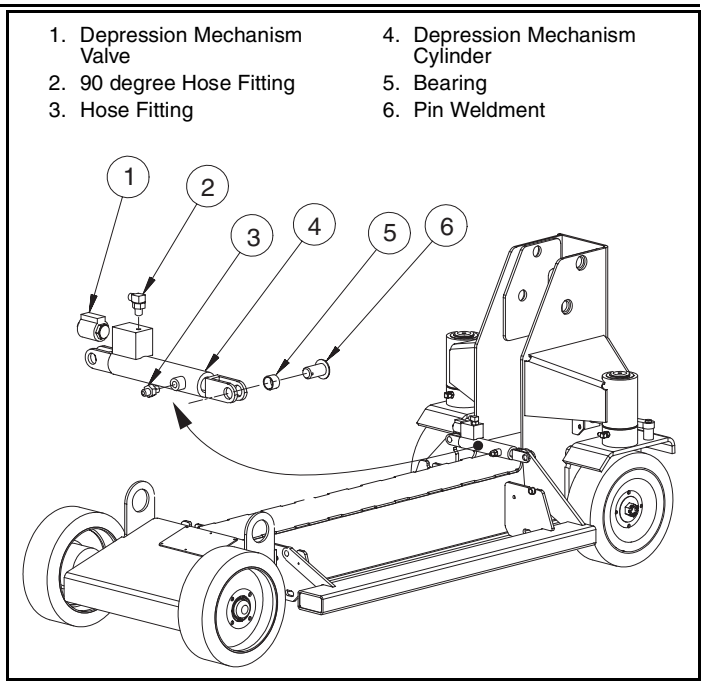


Figure 3-22: Depression Mechanism Cylinder Installation

Removal

1. Mark and disconnect the hose assemblies from the fittings and immediately cap the openings to prevent foreign material from entering.
2. Support the depression mechanism tube weldments on each side with wood blocks.
3. Remove the cotter pin and the pin weldment from each end of the cylinder.
4. Lift the cylinder out of the unit and move to a prepared work area.

Disassembly

1. Unscrew the head from the cylinder.
2. Pull the rod assembly from the cylinder.
3. Remove the seal kit components from the head and piston.

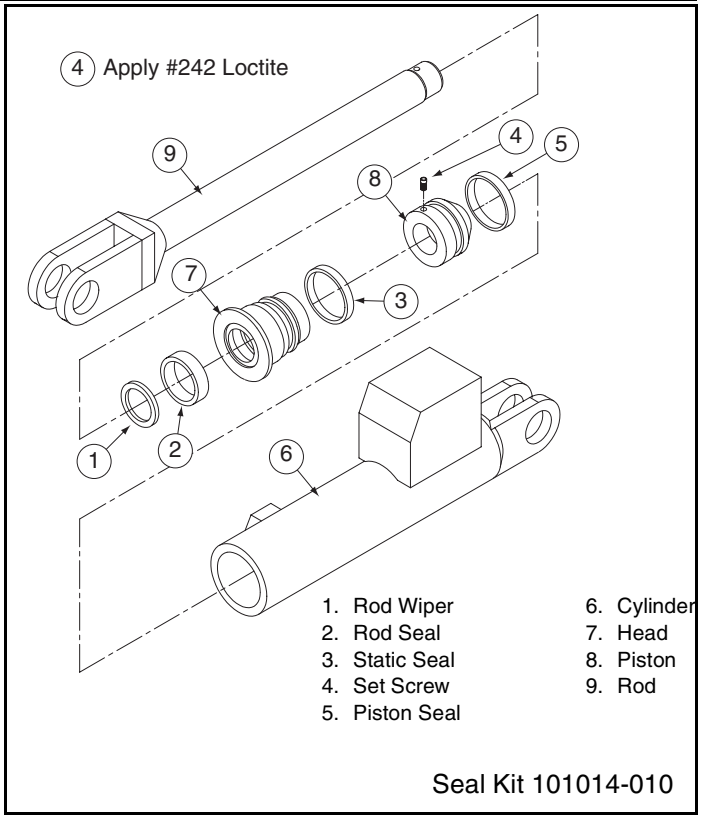


Figure 3-23: Depression Mechanism Assembly

Cleaning and Inspection

1. Wash all the metal parts in cleaning solvent and blow dry with filtered compressed air.
2. Inspect all the threaded components for stripped or damaged threads.
3. Check the inside surface of the cylinder barrel for scoring or excessive wear.
4. Check the piston and headcap for scoring or excessive wear.
5. Inspect the surface of the shaft for scoring or excessive wear.

ASSEMBLY

1. Lubricate and install the seal on the piston.
2. Lubricate and install the rod wiper, rod seal and static seal onto the head.
3. Carefully push the rod assembly into the cylinder.
4. Screw the head into the cylinder.

INSTALLATION

1. Installation is reverse of removal.
2. Cycle the cylinder several times to remove air from system.
3. Check all connections for leaks.

DEPRESSION MECHANISM SYSTEM ADJUSTMENT

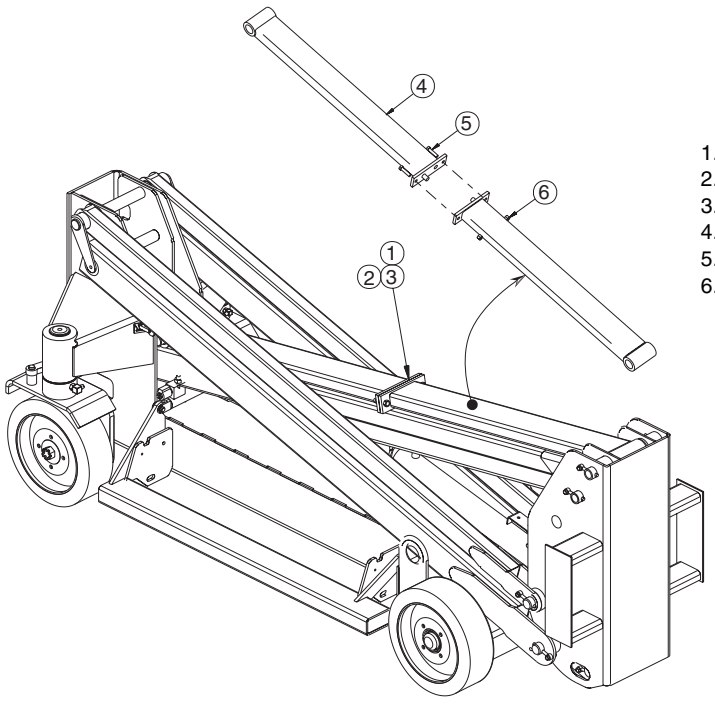
1. Place machine on firm level surface ± ¼°.
2. Raise the machine to access the level sensor.
3. Center level sensor bubble by turning adjustment screws on level sensor (Figure 3-8).
4. Set proximity switch to de-activate at 1.6 m (6 ft.) platform height.
5. Check that pothole protectors are fully deployed before limit switch de-activates when lifting.
6. Check depression mechanism system operation.
   a. Machine should not elevate above 1.6 m (6 ft.) while on a 2° slope.
   b. Machine should have low speed drive when limit switch is de-activated and machine is level.
   c. Machine should have high speed drive when limit switch is activated.
   d. Tilt alarm should sound when platform is elevated above 1.6 m (6 ft.) and machine is off level by 2°.
7. Adjust the stops so that it allows 3/4° (±1/16°) ground clearance.

3.20 ADJUSTABLE COMPRESSION TUBE

Support the platform using an overhead hoist.

Add shims as required to level platform ± .75° (1 1/4”).

Figure 3-24: Compression Tube Assembly



1. Shim, 16 gauge
2. Shim, 18 gauge
3. Shim, 20 gauge
4. Adjustable Compression Tube Weldment
5. Screw, 1/2-13 x 2 1/4 UNC HEX HD CAP
6. Locknut, 1/2-13 UNC HEX

3.21 ELECTRIC MOTOR

TROUBLESHOOTING

1. Read the nameplate to become familiar with the motor, especially the rated voltage.
2. Try to turn the shaft by hand. Keep motor leads separated while doing this. If the shaft turns freely go to step 3. If the shaft won't turn, proceed to step a.
   a. The shaft could be tight for a number of reasons. This check is to determine if the tightness is of a temporary nature only. Obtain power to produce the nameplate voltage. **DO NOT make a permanent connection.** First touch the motor leads quickly to the power supply just long enough to observe whether the shaft runs. If it does turn, then hold the motor leads on the power supply for a longer time. If the motor sounds normal, go to step 3. If the motor sounds noisy, it should be taken apart as described in the disassembly section.
3. If the motor turned freely, connect an ammeter in the circuit as shown in Figure 3-24A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions then it can be assumed the original problem is external to the motor.

DISASSEMBLY

1. Remove thru bolts.
2. Remove pulley end cover.
3. Pull the armature out of the assembly in one swift motion.
4. Remove commutator end cover.

NOTE: Do not place the stator ring in any mechanical holding device during the disassembly or assembly operation. Permanent distortion or other damage will result.

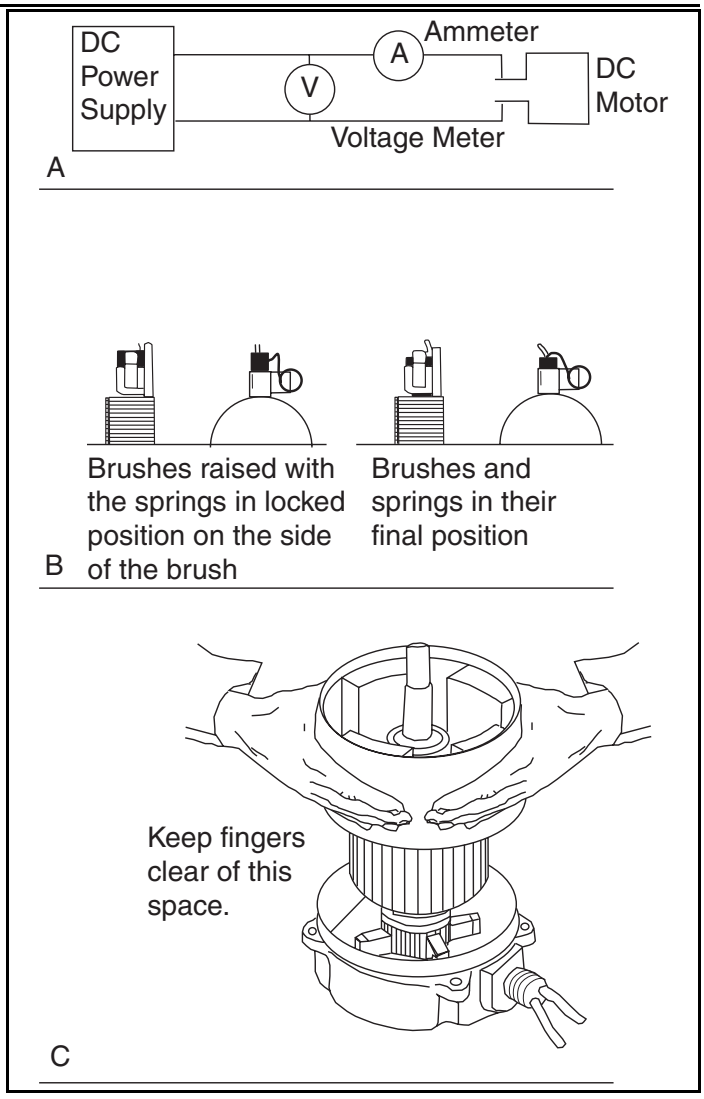


Figure 3-25: Electric Motor Service

INSPECTION

Once the motor has been disassembled, go through the following check list steps to determine where the problem lies.

1. Bearings should spin smoothly and easily, have ample lubrication, and be free of corrosion.
2. Armature should be checked for grounds and shorted turns. Refinish the commutator surface if it is pitted or excessively worn.
3. Brushes should be removed as follows:
   a. Remove the brush spring clip from its mounting on the brush assembly.
   b. Lift the brush assembly from the brush holder.
   c. Disconnect the brush assembly lead.
   d. Install the new brush assembly by reversing the above procedure.
4. Inspect the wire harness and all the connections for signs of damage due to overheating.
5. Check the stator to see it is securely mounted.

NOTE: **Brushes should be checked for wear and to ensure that they are free in the brush holders; observe how the brushes are assembled in the brush holders, and the position of the brush lead. New brushes must be installed in the same manner.**

3.22 TORQUE SPECIFICATIONS

Table 3-1: Fasteners

Use the following values to torque fasteners used on UpRight Work Platforms unless a specific torque value is called out for the part being installed.

AMERICAN STANDARD CAP SCREWS									METRIC CAP SCREWS								
SAE GRADE	5				8				METRIC GRADE	8.8				10.9			
Cap Screw Size (inches)	TORQUE				TORQUE				Cap Screw Size (millimeters)	TORQUE				TORQUE			
	Ft./Lbs		Nm.		Ft./Lbs.		Nm.			Ft./Lbs.		Nm.		Ft./Lbs.		Nm.	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAx		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13	M6 x 1.00	6	8	8	11	9	11	12	15
1/4 - 28	8	9	11	12	10.5	12	14	16	M8 x 1.25	16	20	21.5	27	23	27	31	36.5
5/16 - 18	14	15	19	20	18.5	20	25	27	M10 x 1.50	29	35	39	47	42	52	57	70
5/16 - 24	17.5	19	23	26	23	25	31	34	M12 x 1.75	52	62	70	84	75	91	102	123
3/8 - 16	26	28	35	38	35	37	47.5	50	M14 x 2.00	85	103	115	139	120	146	163	198
3/8 - 24	31	34	42	46	41	45	55.5	61	M16 x 2.50	130	158	176	214	176	216	238	293
7/16 - 14	41	45	55.5	61	55	60	74.5	81	M18 x 2.50	172	210	233	284	240	294	325	398
7/16 - 20	51	55	69	74.5	68	75	92	102	M20 x 2.50	247	301	335	408	343	426	465	577
1/2 - 13	65	72	88	97.5	86	96	116	130	M22 x 2.50	332	404	450	547	472	576	639	780
1/2 - 20	76	84	103	114	102	112	138	152	M24 x 3.00	423	517	573	700	599	732	812	992
9/16 - 12	95	105	129	142	127	140	172	190	M27 x 3.00	637	779	863	1055	898	1098	1217	1488
9/16 - 18	111	123	150	167	148	164	200	222	M30 x 3.00	872	1066	1181	1444	1224	1496	1658	2027
5/8 - 11	126	139	171	188	168	185	228	251									
5/8 - 18	152	168	206	228	203	224	275	304									
3/4 - 10	238	262	322	355	318	350	431	474									
3/4 - 16	274	302	371	409	365	402	495	544									
7/8 - 9	350	386	474	523	466	515	631	698									
7/8 - 14	407	448	551	607	543	597	736	809									
1 - 8	537	592	728	802	716	790	970	1070									
1 - 14	670	740	908	1003	894	987	1211	1337									

NOTE: These values apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used.

Table 3-2: Hydraulic Components

Use the following values to torque hydraulic components used on UpRight Work Platforms.

NOTE: Always lubricate threads with clean hydraulic oil prior to installation

Type: SAE Part Series	Cartridge Poppet		Fittings		Hoses	
	Ft/Lbs	Nm	Ft/Lbs	Nm	Ft/Lbs	Nm
#4	N/A	N/A	N/A	N/A	135-145	15-16
#6	N/A	N/A	10-20	14-27	215-245	24-28
#8	25-30	34-41	25-30	34-41	430-470	49-53
#10	35-40	47-54	35-40	47-54	680-750	77-85
#12	85-90	115-122	85-90	115-122	950-1050	107-119
#16	130-140	176-190	130-140	176-190	1300-1368	147-155

Section 4

TROUBLESHOOTING

4.1 INTRODUCTION

The following section on troubleshooting provides guidelines on the types of problems users may encounter in the field, helps determine the cause of problems, and suggests proper corrective action.

Careful inspection and accurate analysis of the symptoms listed in the Troubleshooting Guide will localize the trouble more quickly than any other method. This manual cannot cover all possible problems that may occur. If a specific problem is not covered in this manual, call our toll free number for service assistance.

Referring to Section 2.0 and 5.0 will aid in understanding the operation and function of the various components and systems of the SL20 and help in diagnosing and repair of the machine.

GENERAL PROCEDURE

Thoroughly study hydraulic and electronic schematics in **Section 5**. Check for loose connections and short circuits. Check/repair/replace each component in the Truth Table which is listed under each machine function which does not operate properly.

Use the charts on the following pages to help determine the cause of a fault in your UpRight SL20.

NOTE: Spike protection diodes at components have been left out of the charts to eliminate confusion..

⚠ WARNING

When troubleshooting, ensure that the work platform is resting on a firm, level surface.

Unplug the machine or disconnect the battery when replacing or testing the continuity of any electrical component.

UPRIGHT USA Tel: 1-559-891-5200
FAX: 1-559-896-8931

UPRIGHT IRELAND Tel: 353-1-202-4100
FAX: 353-1-202-4105

4.2 TROUBLESHOOTING

1. Verify your problem.
   - Do a full function test from both platform controls and chassis controls and note all functions that are not operating correctly.
2. Narrow the possible causes of the malfunction.
   - Use the troubleshooting guide to determine which components are common to all circuits that are not functioning correctly.
3. Identify the problem component.
   - Test components that are common to all circuits that are not functioning correctly. Remember to check wires and terminals between suspect components. Be sure to check connections to battery negative.
4. Repair or replace component found to be faulty.
5. Verify that repair is complete.
   - Do a full function test from both platform and chassis controls to verify that all functions are operating correctly and machine is performing to specified values

SPECIAL TOOLS

Following is a list of tools which may be required to perform certain maintenance procedures on the UpRight SL20.

- Flow Meter with Pressure Gauge
  (UpRight P/N 067040-000)
- 0-1000 PSI Hydraulic Pressure Gauge with Adapter Fittings (UpRight P/N 014124-010)
- 0-3000 PSI Hydraulic Pressure Gauge with Adapter Fittings (UpRight P/N 014124-030)
- Adapter Fitting (UpRight P/N 063965-002)
- Inclinometer (UpRight P/N 010119-000)
- Crimping Tool (UpRight P/N 028800-009)
- Terminal Removal Tool
  (UpRight P/N 028800-006)

ADJUSTMENT PROCEDURES

Hydraulic settings must be checked whenever a component is repaired or replaced. Refer to Section 3 for procedures.

Remove counter balance valves and "bench test" them if they are suspect.

Connect a pressure meter of appropriate range to the test port located on the hydraulic manifold.

Correct pressure settings are listed in the hydraulic schematic.

Checking Pump Pressures

Remove hose from pump port and connect pressure tester.

4.3 UPRIGHT MOTOR CONTROLLER DIAGNOSTICS

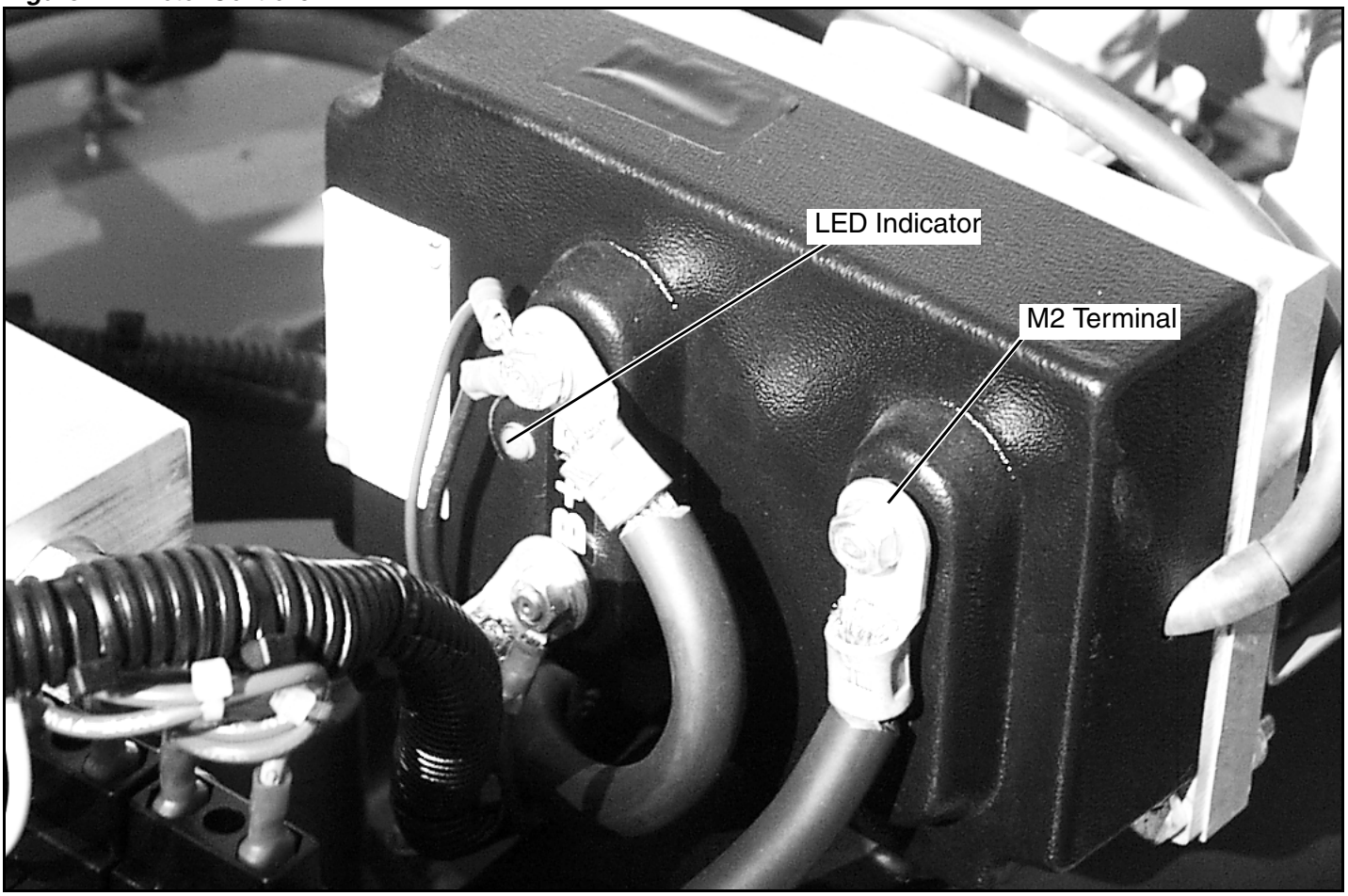
Batteries must be fully chargesd before troubleshooting.

Check/Repair all connections before replacing any components

Table 4-1: LED Fault Codes

Flash Code	Status	Corrective Action
LED on	The controller is operational.	None.
LED off	There is no power to the controller. The fault is internal.	Replace the controller.
2 Flash	Procedural fault. Lift, drive, or steer switch is engaged at startup, or lift and steer are attempted at the same time.	Turn the chassis key switch to off. Make sure that the control handle and steering switch are in neutral. Turn Chassis key switch on.
3 Flash	Permanently low power output from M2 t.erminal	Replace the controller.
4 Flash	Permanently high power output at M2 terminal.	Check/Replace motor contact. Check/Replace motor.
5 Flash	Power output at M2 terminal does not match the position of the control handle (i.e. High output when handle is in neutral, or low output when movement is attempted).	Check/Replace motor contact. Check/Replace controller. Check/Replace motor
6 Flash	Control handle fault.	Check/Replace control handle
7 Flash	Battery voltage fault. Voltage has dropped below 12 volts or exceeded 45 volts	Turn Chassis Key Switch off. Make sure that the control handle and steering switch are in neutrol. Turn Chassis Key Switch on. Drive slowly to charging station.
8 Flash	Thermal fault. Heat sink temperature has exceeded 80 degrees Celsius.	Automatically clears when controller cools.

Figure 4-1: Motor Controller



4.4 MEASURED VOLTAGE AT I/O BOARD

Table 4-2: Circuit Board Connectors

CONNECTOR	PIN NUMBER	DESCRIPTION
J1	1	24 Volts = Lift Mode Active / 0 Volts = Lift Mode inactive
	2	No Connection
	3	24 Volts = Drive Allowed / 0 Volts = Drive Not Allowed
	4	24 Volts from Lower E-Stop / Lower E-Stop Not Depressed
	5	24 Volts from Upper E-Stop / Lower and Upper E-Stops Not Depressed
	6	24 Volts Out to Interlock Lever when Upper Controls Selected & Upper/Lower E-Stops Not Depressed
	7	No Connection
	8	24 Volts = Drive Forward or Lift Up / 0 Volts = Stop Drive Forward or Lift Up
	9	24 Volts = Drive Reverse or Lift Down / 0 Volts = Stop Reverse Drive or Lift Down
	10	Accelerator Input / 20K Pot / 3.5 Volts to 0 Volts, Minimum to Maximum Speed
	11	24 Volts = Steer Left / 0 Volts = Stop Steer Left
	12	24 Volts = Steer Right / 0 Volts = Stop Steer Right.
J2	1	Goes to 0 Volts to Activate Depression Mechanism Extend Solenoid / 24 Volts = Solenoid OFF
	2	No Connection
	3	24 Volt Supply for Solenoids
	4	Goes to 0 Volts to Activate Forward Solenoid / 24 Volts = Solenoid OFF
	5	Goes to 0 Volts to Activate Reverse Solenoid / 24 Volts = Solenoid OFF
	6	Goes to 0 Volts to Activate Lift Up Solenoid / 24 Volts = Solenoid OFF
	7	Goes to 0 Volts to Activate Steer Left Solenoid / 24 Volts = Solenoid OFF
	8	Goes to 0 Volts to Activate Steer Right Solenoid / 24 Volts = Solenoid OFF
J3	1	Goes to 0 Volts to Activate Alarm / 24 Volts = Alarm OFF
	2	24 Volts = Tilt Inactive / 0 Volts = Tilt Active
	3	24 Volt Supply for Alarm, Tilt Sensor, Lift Down and Depression Mechanism Retract Solenoids
	4	24 Volts = Below Height Limit / 0 Volts = Above Height Limit
	5	Goes to 0 Volts to Activate Lift Down Solenoid / 24 Volts = Solenoid OFF
	6	Goes to 0 Volts to Activate Depression Mechanism Solenoid / 24 Volts = Solenoid OFF
	7	24 Volts = High Speed Active / 0 Volts = Low Speed Active
	8	Battery Negative Supply for Tilt Sensor
J4	1	Goes to 0 Volts to Activate Line Contactor / 24 Volts = Line Contactor OFF
	2	Supplies 24 Volts to Upper Control / Lower Control Switch
	3	24 Volts = Lower Control Mode
	4	Supplies 24 Volts to Ground Lift Switch when in Lower Control Mode
	5	24 Volt Supply Output
	6	Goes to 0 Volts to Activate Hour Meter / 24 Volts = Hour Meter Not Activated
	7	24 Volts = Lift Up from Ground Control / 0 Volts = Lift Up OFF
	8	24 Volts = Lift Down from Ground Control / 0 Volts = Lift Down OFF
	9	24 Volt Supply Input from Battery via Lower E-Stop / Lower E-Stop Not Depressed
	10	24 Volts from Upper Control Switch / 24 Volts = Upper Control Mode
	11	Battery Negative Input to I/O Board
	12	24 Volt Supply for Hour Meter and Line Contactor
J5	1	24 Volts power to Pin 1 of SC1000 (Key ON Power)
	2	24 Volts = Command Controller to Drive / 0 Volts = Stop Controller Drive
	3	24 Volts = Command Controller to Steer / 0 Volts = Steer OFF
	4	24 Volts = Command Controller to Lift / 0 Volts = Stop Lift
	5	24 Volts = Command Normal Speed / 0 Volts = Command Speed Cutback
	6	24 Volts = Line Contactor OFF / 0 Volts = Line Contactor ON
	7	24 Volts = No Direction Solenoid Allowed / 0 Volts = Direction Solenoid Allowed to Activate
	8	Accelerator 3.5 Volts to 0 Volts / Minimum to Maximum Speed

4.5 ELECTRICAL TROUBLESHOOTING

Table 4-3: Troubleshooting Guide: Electrical Schematics

Component / Function	Lower Controls	Upper Controls	Drive Forward	Drive Reverse	High Speed/Creep	Raise Platform	Lower Platform	Steer Left	Steer Right	Depression Mechanism Extend	Depression Mechanism Retract	Brakes	Tilt Alarm	Down Alarm	Battery Charge
Alarm															
Batteries	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Battery Charger															X
15 AMP Circuit Breaker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
175 AMP Fuse	X	X	X	X	X	X	X	X	X	X	X	X			
Hour Meter/Low Voltage indicator															
I/O Board	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Motor Control	X	X	X	X	X	X	X	X	X	X	X	X			
Motor	X	X	X	X	X	X	X	X	X	X	X	X			
Motor Relay	X	X	X	X	X	X	X	X	X	X	X	X			
Chassis Emergency Stop Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Chassis Lift Switch						X	X								
Chassis Key Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Lift/Drive Selector Switch		X	X	X		X	X								
Limit Switch					X										
Platform Emergency Stop Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Interlock Switch	X	X	X	X	X	X	X	X	X	X	X				
PQ Control Handle		X	X	X		X	X								
Loading Clearance Lowering Switch							X								
Platform Steering Switch (2)								X	X						
Tilt Sensor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Steering Solenoid (right)									X						
Steering Solenoid (left)								X							
Platform Lift Solenoid						X									
Reverse Solenoid				X											
Forward Solenoid			X												
Depression Mechanism Extension Solenoid										X					
Down Solenoid							X								
Depression Mechanism Retract Solenoid											X				

4.6 HYDRAULIC TROUBLESHOOTING

Table 4-4: Troubleshooting Guide: Hydraulic Schematic

Component / Function	Lift Platform	Lower Platform	Steer Right	Steer Left	Drive Forward	Drive Reverse	Creep	Depression Mechanism Extend	Depression Mechanism Retract	Brakes
Check Valve								X	X	
Steering Cylinder			X	X						
Lift Cylinder	X									
Depression Mechanism Cylinder								X	X	
Break Cylinder										X
Priority Flow Divider	X		X	X	X	X	X	X	X	X
Suction Strainer	X		X	X	X	X	X	X	X	
Return Filter	X		X	X	X	X	X	X	X	
Drive Motors (2)					X	X				
Pump	X		X	X	X	X	X	X	X	
Main Relief Valve	X				X	X	X	X	X	X
Steering Relief			X	X						
Tank										
Steering Right/Left Valve			X	X						
Lift Valve	X									
Down/Emergency Lowering Valve		X								
Depression mechanism Retract Valve									X	
Depression Mechanism Extend Valve								X		
Forward/Reverse Valve					X	X				
Counterbalance Valve					X	X	X			X

Section 5

SCHEMATICS

5.1 INTRODUCTION

This section contains electrical and hydraulic power schematics and associated information for maintenance purposes.

The diagrams are to be used in conjunction with the ***Troubleshooting Truth Tables*** in ***Section 4.*** They allow understanding of the makeup and functions of the systems for checking, tracing, and faultfinding during troubleshooting analysis.

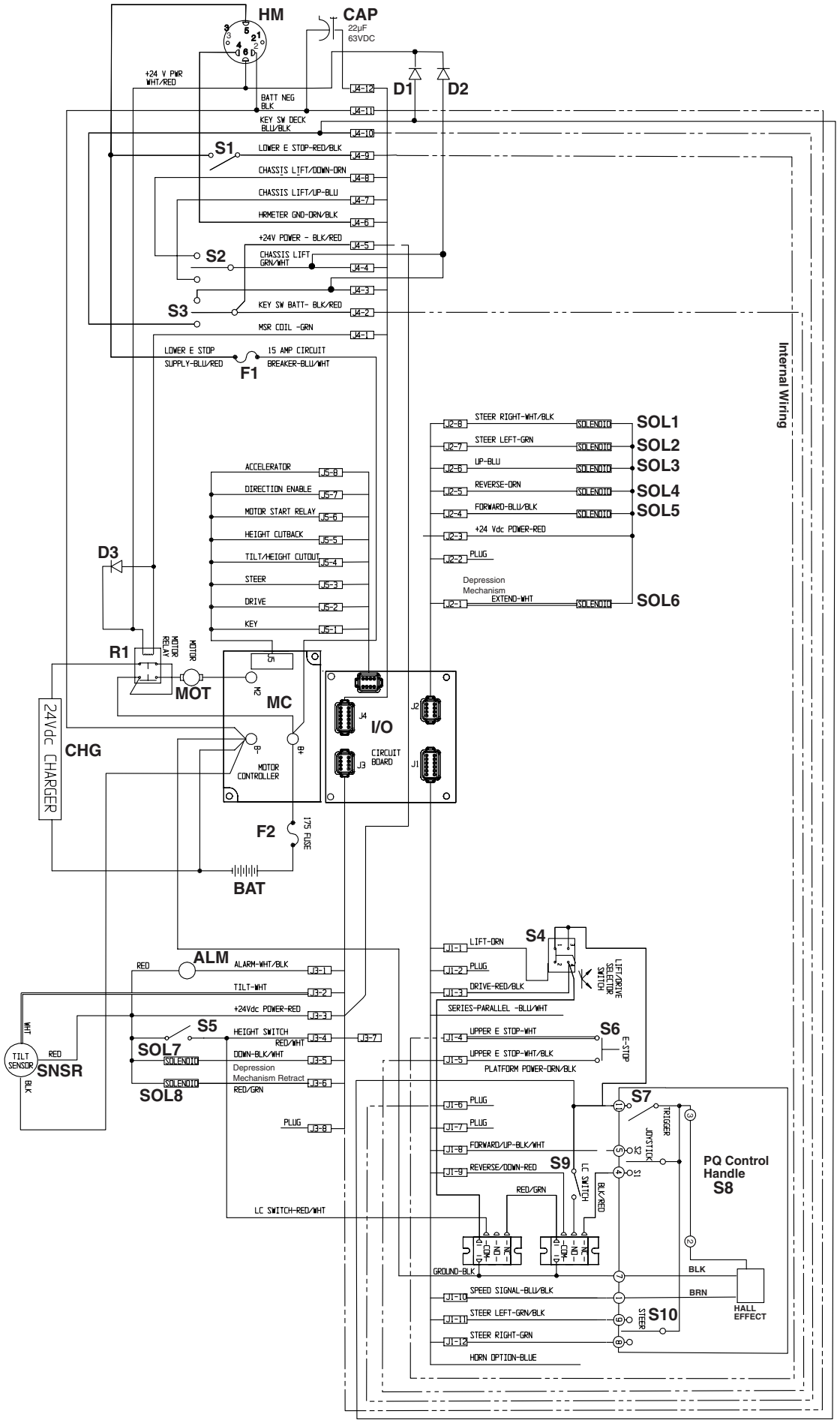
The components that comprise the electrical and hydraulic systems are given a reference designation and are explained as to function and location in the following tables.

CONTENTS

5.2 ELECTRIC - MODEL

Legend: Electrical Schematic, 065616-023

DESIG-NATION	NAME	FUNCTION	LOCATION
ALM	Alarm	Provides warning sound when slope of machine exceeds 2° side-to-side, or fore and aft and also when deck is lowering.	Control Module
BAT	Batteries	Provides power to work platform	Power Module
CAP	Capacitor	Circuit protection	Lower Control Box inside wire loom
CHG	Battery Charger	Charges battery	Power Module
D1	Diode	Circuit protection	Lower Control Box inside wire loom
D2	Diode	Circuit protection	Lower Control Box inside wire loom
D3	Diode	Circuit protection	Lower Control Box
F1	15 AMP Circuit Breaker	Electrical overload protection	Chassis Controls
F2	175 AMP Fuse	Overload protection for electric motor	Chassis Controls
HM	Hour Meter/Low Voltage indicator	Shows how many hours the machine has been in use; indicates low battery voltage.	Chassis Controls
I/O	I/O Board	Connection point for machine function wiring	Control Module
MC	Motor Control	Controls the speed of electric motor	Control Module
MOT	Motor	Provides power to hydraulic pump	Control Module
R1	Motor Relay	Controls the speed of the electric motor	Control Module
S1	Chassis Emergency Stop Switch	Shuts down all machine functions	Chassis Controls
S2	Chassis Lift Switch	Elevates platform	Chassis Controls
S3	Chassis Key Switch	Allows some machine functions to be initiated from ground level	Chassis Controls
S4	Lift/Drive Selector Switch	Activates lift or drive functions	Platform Controls
S5	Limit Switch	Stops lift assembly at lower limit	Platform Controls
S6	Platform Emergency Stop Switch	Shuts down all machine functions	Platform Controls
S7	Interlock Switch	Safety mechanism for joystick	Platform Controls
S8	PQ Control Handle	Proportionally controls the drive and lift functions	Platform Controls
S9	Loading Clearance Lowering Switch	Allows platform to lower completely after stopping at Loading Clearance Height	Platform Controls
S10	Platform Steering Switch (2)	Control left and right steering solenoids	Platform Controls
SNSR	Tilt Sensor	Activates tilt alarm and disables all machine functions exceptplatform lower when the machine is more than 2° out of level	Control Module
SOL1	Steering Solenoid (right)	Shifts steering valve to the left	Hydraulic Manifold
SOL2	Steering Solenoid (left)	Shifts steering valve to the right	Hydraulic Manifold
SOL3	Platform Lift Solenoid	Raises platform	Hydraulic Manifold
SOL4	Reverse Solenoid	Shifts forward/reverse valve to reverse	Hydraulic Manifold
SOL5	Forward Solenoid	Shifts forward/reverse vavle to forward	Hyraulic Manifold
SOL6	Depression Mechanism Extension Solenoid	Extends depression mechanism bars	Hydraulic Manifold
SOL7	Down Solenoid	Lowers platform	Lift Cylinder
SOL8	Depression Mechanism Retraction Solenoid	Retracts depression mechanism bars	Depression Mechanism cylinder


HM
CAP
22µF
63VDC
+24 V PWR
WHT/RED
BATT NEG
BLK
KEY SW DECK
BLU/BLK
D1
D2
S1
LOWER E STOP-RED/BLK
CHASSIS LIFT/DOWN-ORN
CHASSIS LIFT/UP-BLU
HRMETER GND-ORN/BLK
+24V POWER - BLK/RED
S2
CHASSIS LIFT
GRN/WHT
S3
KEY SW BATT- BLK/RED
MSR COIL -GRN
LOWER E STOP
SUPPLY-BLU/RED
15 AMP CIRCUIT
BREAKER-BLU/WHT
F1
Internal Wiring
STEER RIGHT-WHT/BLK
STEER LEFT-GRN
UP-BLU
REVERSE-ORN
FORWARD-BLU/BLK
+24 Vdc POWER-RED
PLUG
Depression
Mechanism
EXTEND-WHT
SOLENOID
SOL1
SOL2
SOL3
SOL4
SOL5
SOL6
ACCELERATOR
DIRECTION ENABLE
MOTOR START RELAY
HEIGHT CUTBACK
TILT/HEIGHT CUTOUT
STEER
DRIVE
KEY
D3
R1
MOTOR RELAY
MOTOR
MOT
MC
MOTOR CONTROLLER
I/O
CIRCUIT BOARD
24Vdc CHARGER
CHG
F2
175 FUSE
BAT
S4
LIFT-ORN
PLUG
DRIVE-RED/BLK
SERIES-PARALLEL -BLU/WHT
LIFT/DRIVE SELECTOR SWITCH
S6
E-STOP
UPPER E STOP-WHT
UPPER E STOP-WHT/BLK
PLATFORM POWER-ORN/BLK
ALM
RED
ALARM-WHT/BLK
TILT-WHT
+24Vdc POWER-RED
S5
HEIGHT SWITCH
RED/WHT
DOWN-BLK/WHT
Depression
Mechanism Retract
RED/GRN
SOL7
SOL8
TILT SENSOR
SNSR
WHT
RED
BLK
PLUG
S7
TRIGGER
JOYSTICK
S2
S1
PQ Control
Handle
S8
S9
LC SWITCH
BLK/RED
RED/GRN
LC SWITCH-RED/WHT
FORWARD/UP-BLK/WHT
REVERSE/DOWN-RED
GROUND-BLK
BLK
BRN
HALL EFFECT
SPEED SIGNAL-BLU/BLK
STEER LEFT-GRN/BLK
STEER RIGHT-GRN
HORN OPTION-BLUE
S10
STEER

5.3 HYDRAULIC SCHEMATIC

Legend: Hydraulic Schematic, 101180-020

DESIG-NATION	NAME	FUNCTION	LOCATION
CV	Check Valve	Allows Depression Mechanism to retract in drive mode	Hydraulic Manifold
CYL1	Steering Cylinder	Provides force to turn front wheels	Front of chassis above drive motors
CYL2	Lift Cylinder	Provides force to lift platform	Mounted under upper boom weldment
CYL3	Depression Mecha-nism Cylinder	Extends or retracts DM bar	Front of hydraulic tank
CYL4	Break Cylinder	Stops machine from moving while parked	Above front tires
DVDR	Priority Flow Divider	Provides priority oil flow to steering	Hydraulic Manifold
FL1	Suction Strainer	Traps particles in hydraulic tank	Inside hydraulic tank at outlet
FL2	Return Filter	Filters oil returning to tank	Back of hydraulic tank
MOT	Drive Motors (2)	Provides tractive effort to move platform	Front motor mounts
PMP	Pump	Provides hydraulic pressure for all functions	On Electric motor at left rear of control module
RV1	Main Relief Valve	Provides pressure protection to pump, limits platform load capacity.	Hydraulic Manifold
RV2	Steering Relief Valve	Provides pressure protection to pump and steering components when steering	Hydraulic Manifold
RV3	Lift Relief Valve	Provides pressure protection to Lift components	Hydraulic Manifold
TNK	Tank	Holds hydraulic oil	Control Module
V1	Steering Right/Left Valve	Provides directional control for steering	Hydraulic Manifold
V2	Lift Valve	Provides oil control for drive or lift functions	Hydraulic Manifold
V3	Down/Emergency Lowering Valve	Allows oil to return to tank; manually operated for emergency lowering	Lift cylinder
V4	Depression mecha-nism Retract Valve	Provides oil control for DM bar	DM cylinder
V5	Depression Mecha-nism Extend Valve	Provides oil control for DM bar	Hydraulic Manifold
V6	Forward/Reverse Valve	Provides oil control for drive or lift functions	Hydraulic Manifold
V7	Counterbalance Valve	Prevents machine from running away on slopes; cushions stops	Hydraulic Manifold

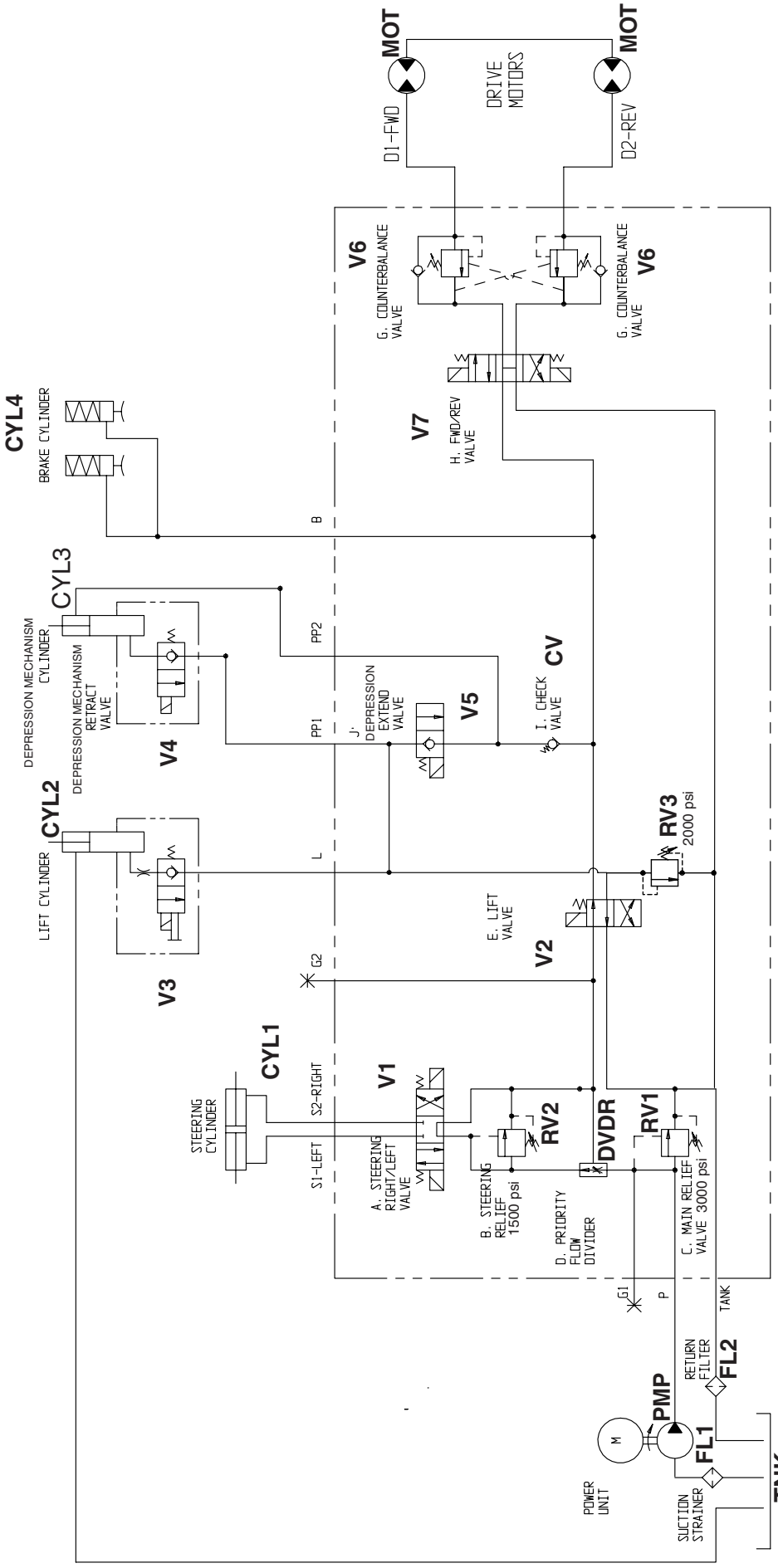

MOT
MOT
D1-FWD
DRIVE MOTORS
D2-REV
V6
G. COUNTERBALANCE VALVE
V6
G. COUNTERBALANCE VALVE
V7
H. FWD/REV VALVE
CYL4
BRAKE CYLINDER
B
CYL3
DEPRESSION MECHANISM CYLINDER
DEPRESSION MECHANISM RETRACT VALVE
V4
PP2
PP1
J. DEPRESSION EXTEND VALVE
V5
I. CHECK VALVE
CV
CYL2
LIFT CYLINDER
L
RV3
2000 psi
E. LIFT VALVE
V2
V3
G2
CYL1
STEERING CYLINDER
S2-RIGHT
S1-LEFT
V1
A. STEERING RIGHT/LEFT VALVE
RV2
B. STEERING RELIEF 1500 psi
DVDR
D. PRIORITY FLOW DIVIDER
RV1
C. MAIN RELIEF VALVE 3000 psi
G1
P
TANK
RETURN FILTER
FL2
PMP
FL1
M
POWER UNIT
SUCTION STRAINER
TNK

Figure 5-1: Hydraulic Block

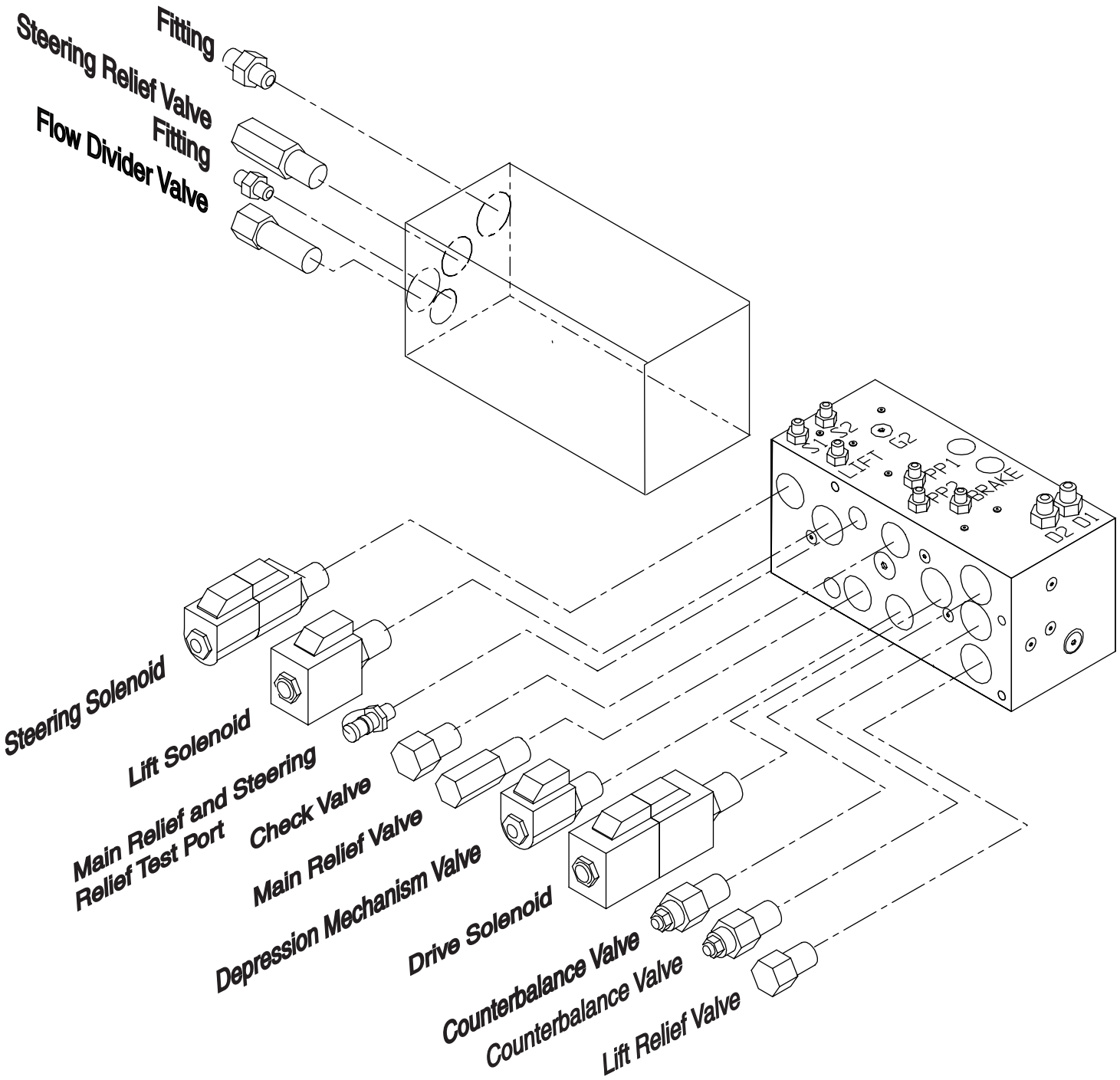
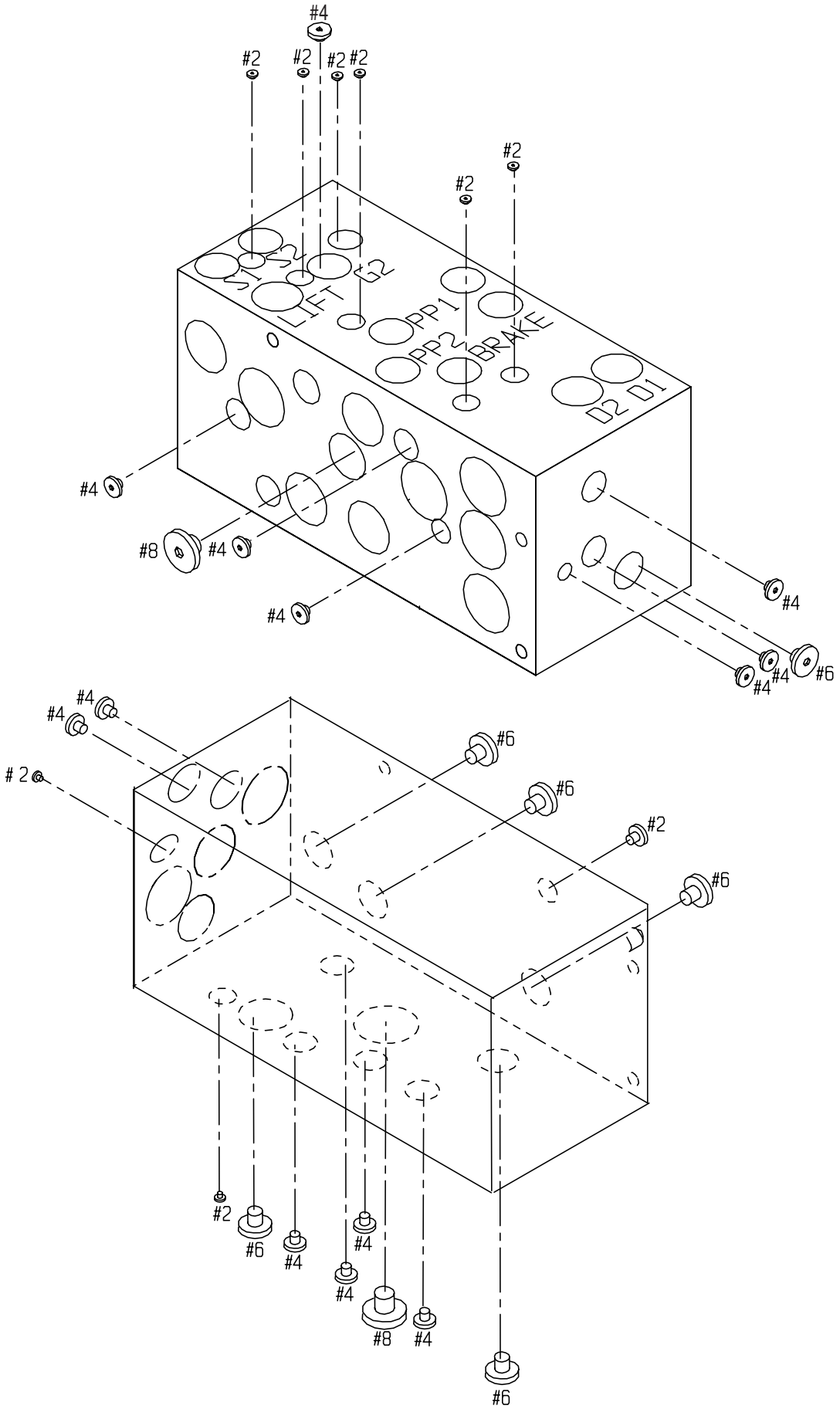


Figure 5-2: Plugs



NOTES:

Section 6

ILLUSTRATED PARTS BREAKDOWN

6.1 INTRODUCTION

This section lists and illustrates the replaceable assemblies and parts of this product, as manufactured by UpRight, Inc.

Each parts list contains the component parts for that assembly.

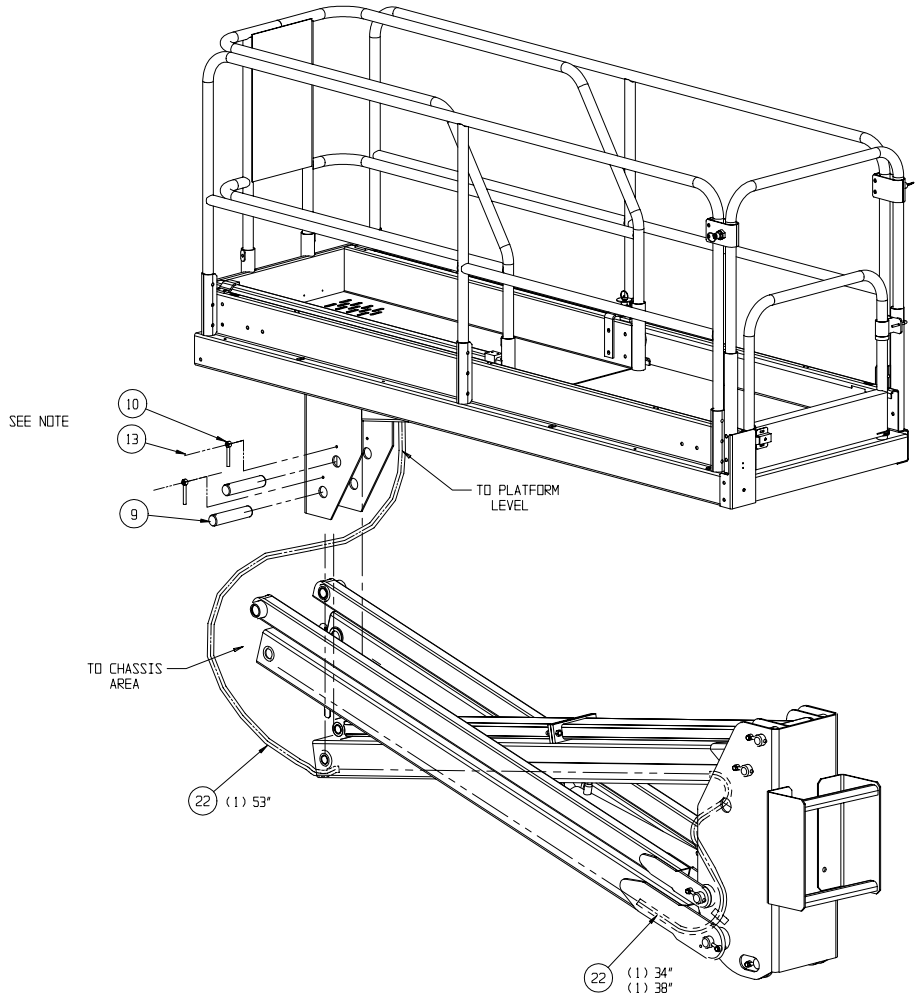
CONTENTS

Final Assembly

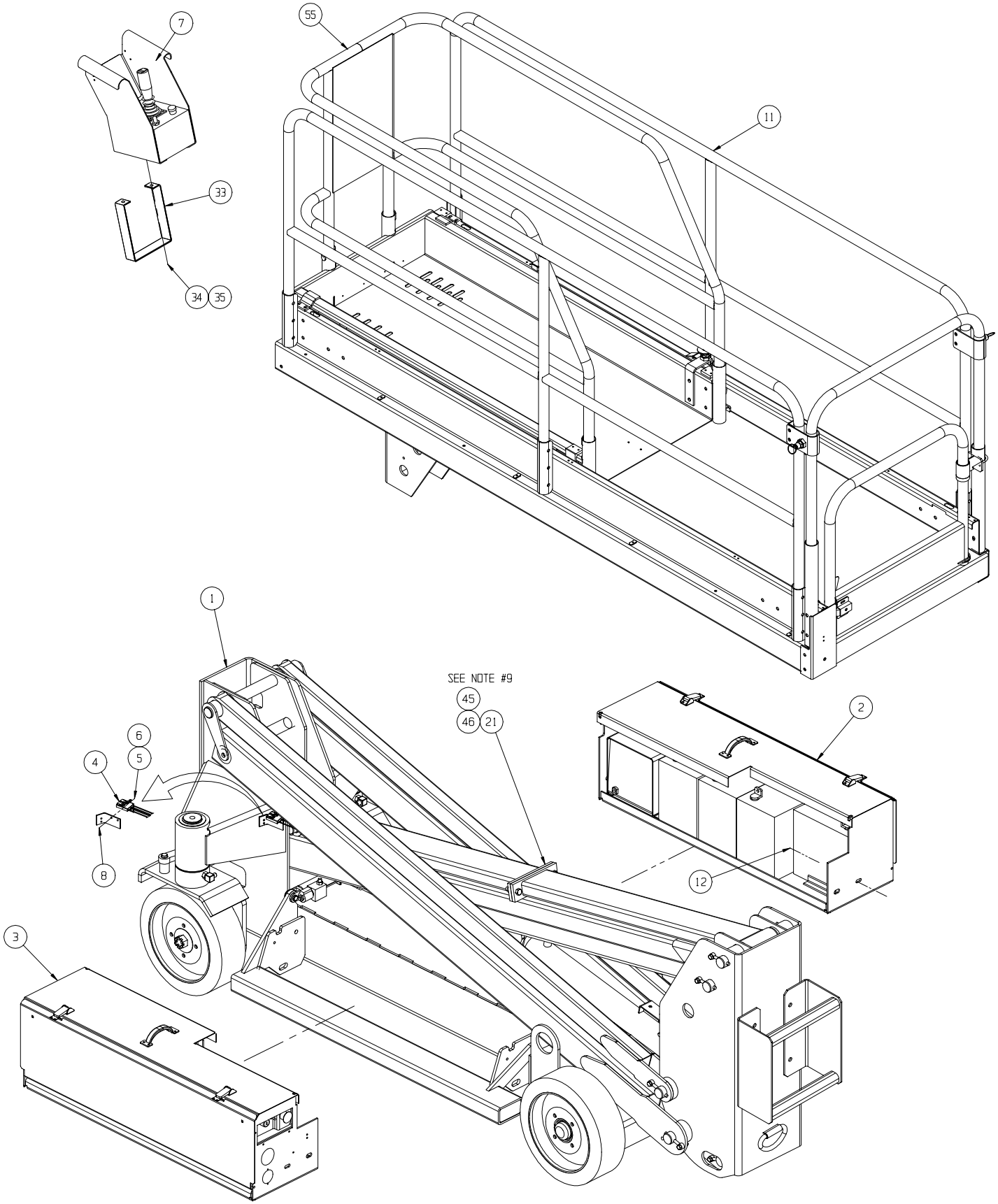
101000-021

Item	Part	Description	QTY.
1	101001-020	BASIC ASSEMBLY	1
2	101003-001	POWER MODULE ASSEMBLY	1
3	101005-021	CONTROL MODULE ASSEMBLY	1
4	066490-021	SWITCH ROLLER DOUBLE	1
5	011248-003	NUT HEX ESNA 10-24	2
6	013949-004	WASHER 1/4 STAR	2
7	065610-021	CONTROLLER ASSEMBLY	1
8	011709-008	SCREW 10-24 UNC X 1	2
9	101010-000	PIN - PLATFORM	2
10	065214-000	ROD END	2
11	101007-021	PLATFORM/GUARDRAIL ASSY	1
12	011254-012	SCREW, HHC GR5 3/8-16 UNC X 1 1/2	4
13	011254-006	SCREW, HHC GR5 3/8-16 UNC X 3/4	2
14	029418-099	WIRE, 12 AWG RED/BLK	5 FT
15	101180-020	HYDRAULIC SCHEMATIC	REF
16	065616-023	ELECTRICAL SCHEMATIC	REF
17	101179-020	HOSE KIT / INSTALLATION	1
18	101009-021	LABEL KIT / INSTALLATION	1
	101009-220	LABEL KIT/ GERMAN	
	101009-320	LABEL KIT/FRENCH	
	101009-420	LABEL KIT/SPANISH	
19	101238-000	CONTROL CABLE ASSEMBLY	1
20	101239-000	WIRE HARNESS ASSY, CHASSIS	1
21	101028-000	SHIM, 16GA	AR
22	065369-099	HOSE GUARD	8 FT

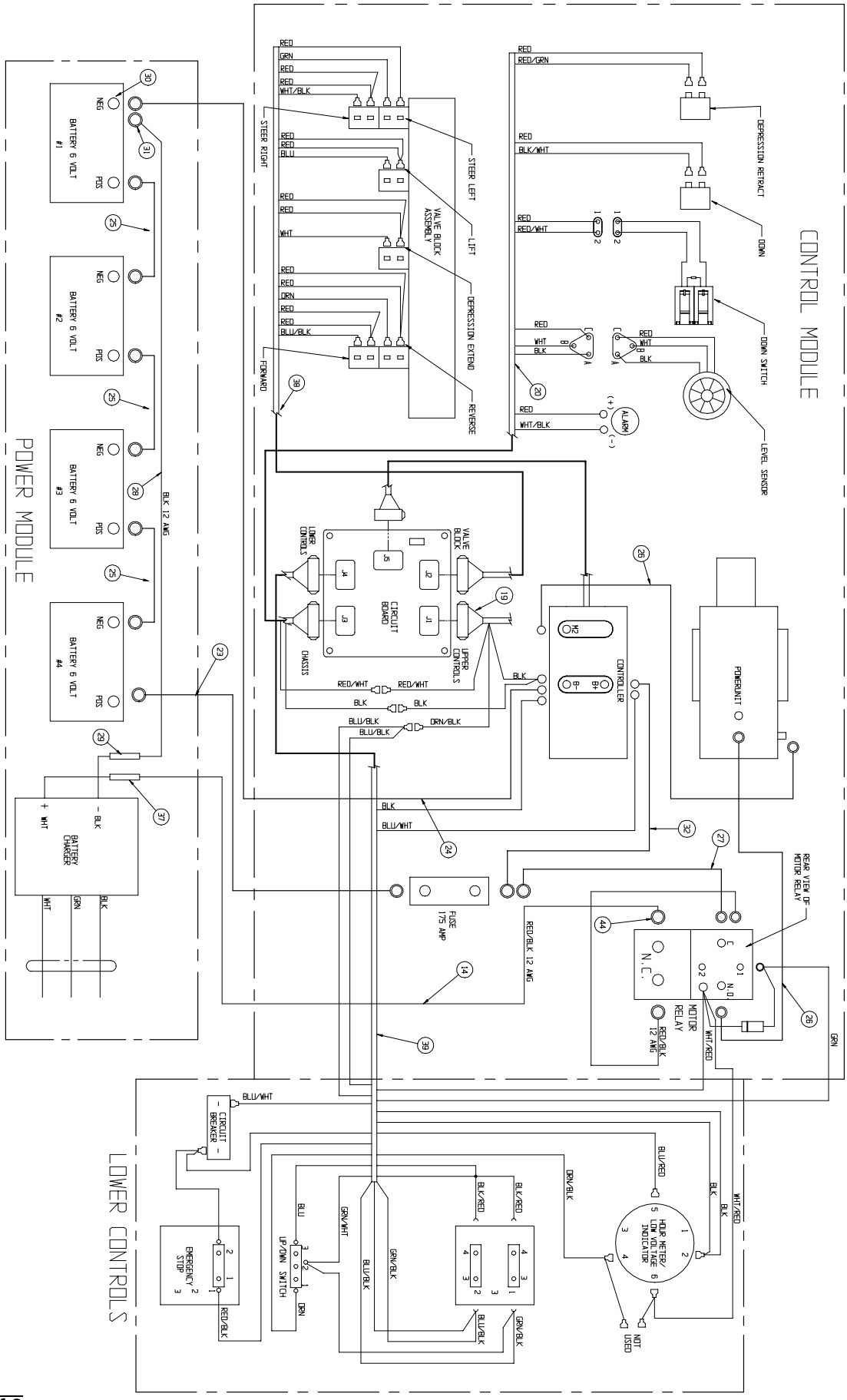
Item	Part	Description	QTY.
23	064195-065	CABLE ASSEMBLY X 65	1
24	064195-044	CABLE ASSEMBLY X 44	1
25	064195-001	CABLE ASSEMBLY X 12	3
26	062125-011	CABLE ASSEMBLY X 9	3
27	064195-004	CABLE ASSEMBLY X 4	1
28	029461-099	WIRE, 14GA BLACK	10 FT
29	029620-002	CONNECTOR, BUTT 16-14GA	1
30	010154-000	COVER BATTERY TERMINAL	8
31	029601-015	CONNECTOR, RING 16-14GA 3/8 DIA.	3
32	064195-022	CABLE ASSEMBLY X 22	1
33	065746-000	CONTROLLER GUIDE	1
34	011252-006	SCREW 1/4-20 X 3/4	2
35	011248-004	NUT 1/4 - 20 ESNA	
37	029620-003	CONNECTOR, BUTT 12-10GA INSL.	1
38	101236-000	VALVE BLOCK CABLE ASSY	1
39	101237-000	LOWER CONTROL CABLE ASSY	1
41	101212-000	CAP, TAMPER-PROOF	
42	063965-001	CONNECTOR, GAGE	1
44	029601-021	CONNECTOR, RING 12-10GA 3/8 DIA.	4
45	101028-001	COMPRESSION SHIM, 18GA	2
46	101028-002	COMPRESSION SHIM, 20GA	3
48	029610-018	CONNECTOR, FORK 12-10GA #8	1
53	029435-099	WIRE 14 AWG 3 COND	
54	029461-099	WIRE, BLK 14 AWG	.5 FT
55	101008-020	DECK EXTENSION	1



Drawing # 1 of 3



Drawing # 2 of 3

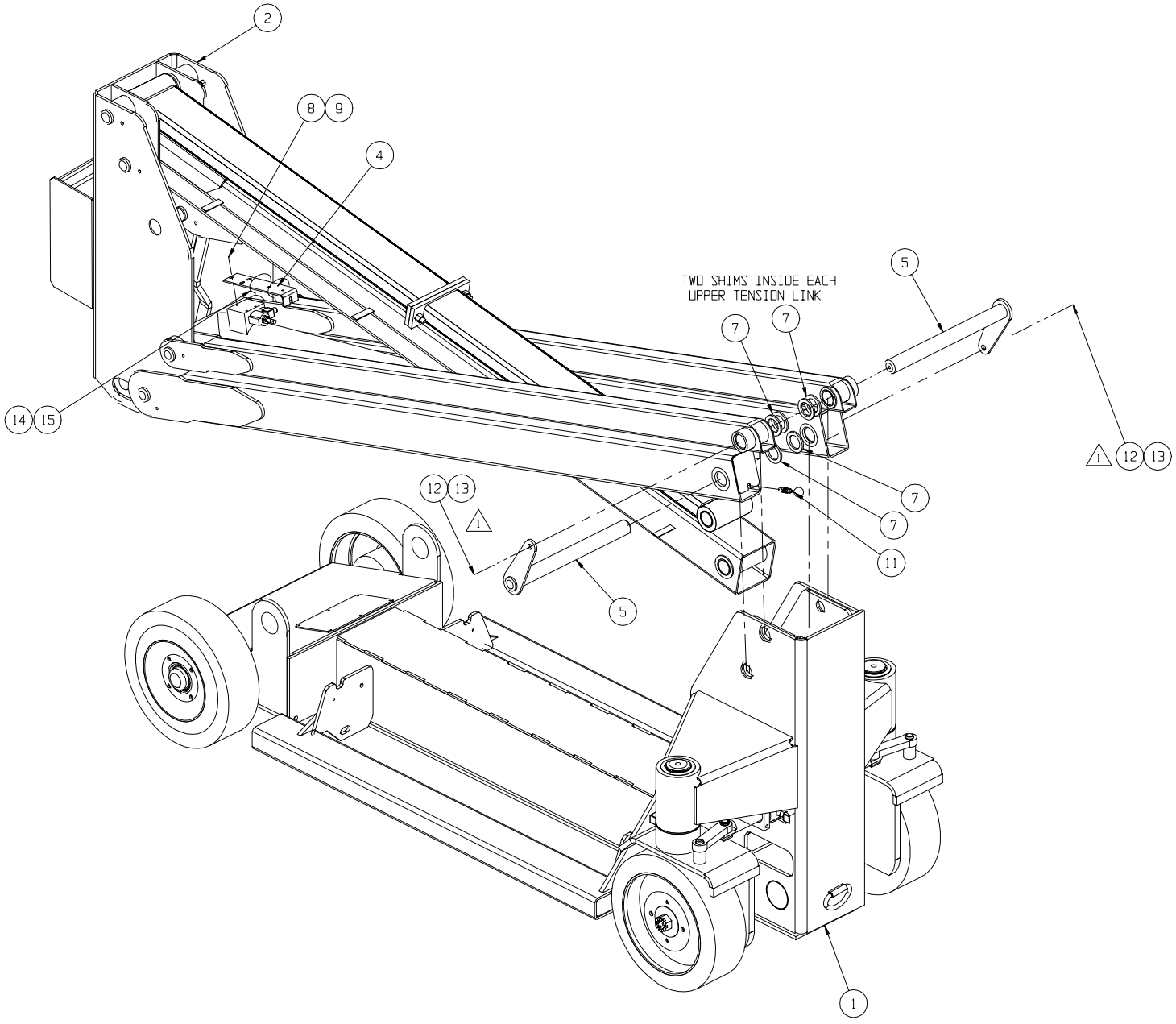


Drawing # 3 of 3

Basic Assembly

101001-020

Item	Part	Description	QTY.
1	101002-020	CHASSIS ASSEMBLY	1
2	101004-020	LINKAGE ASSEMBLY	1
4	065770-000	BRACKET, CABLE	1
5	101042-000	PIN WELDMENT	2
7	101224-000	SHIM	6
8	011252-004	SCREW, 1/4-20 UNC HEX HD CAP X 1/2	3
9	011238-004	LOCKWASHER, 1/4 DIA SPLIT	3
11	065754-005	CABLE, EMERGENCY DOWN X 12'	-
12	011256-008	SCREW, 1/2-13 UNC HEX HD CAP X 1	2
13	011238-008	LOCKWASHER, 1/2 DIA SPLIT	2
14	015963-099	STRAP, EL -TY	2
15	015964-000	STRAP HEAD, EL -TY	

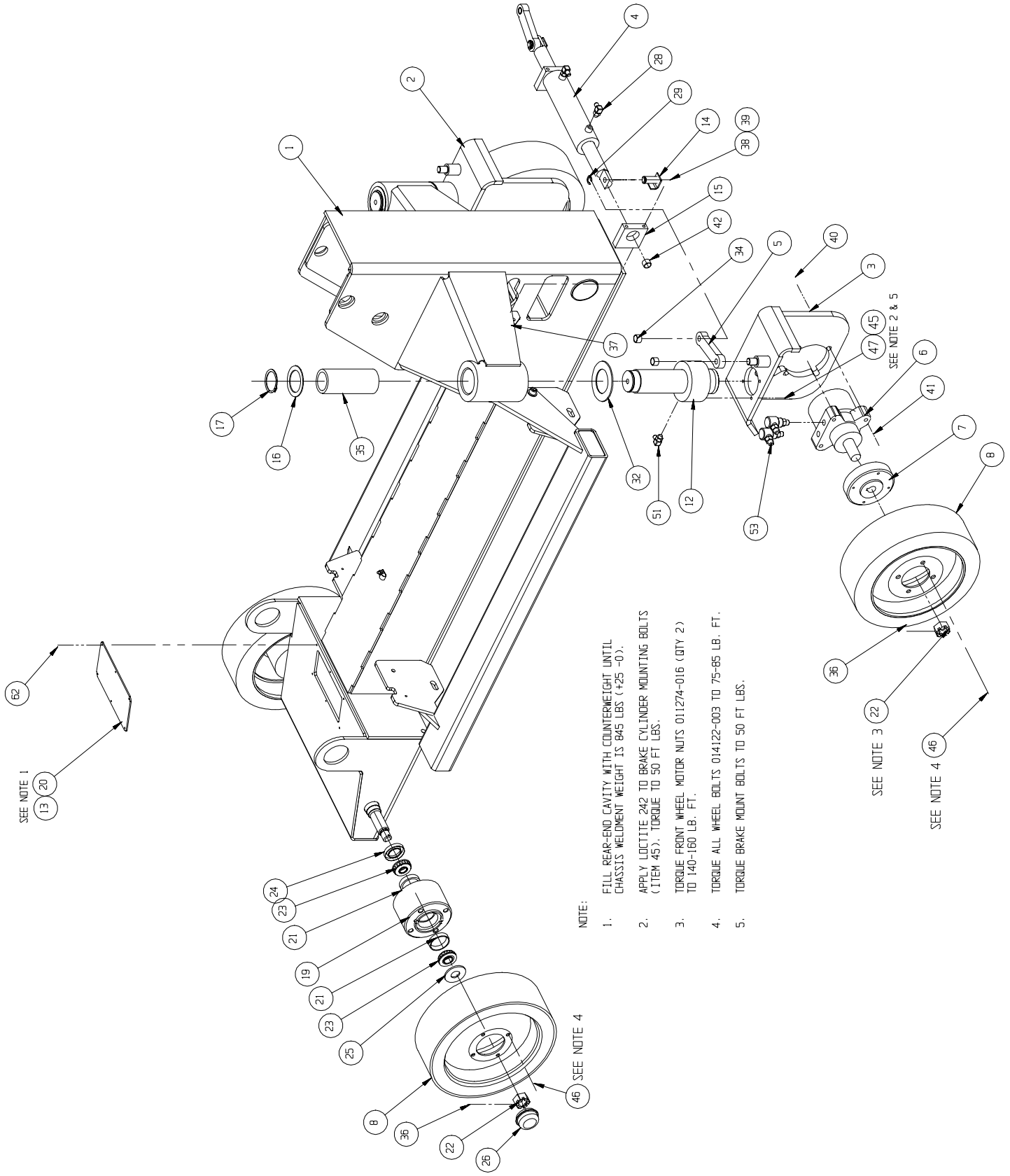


Chassis Assembly

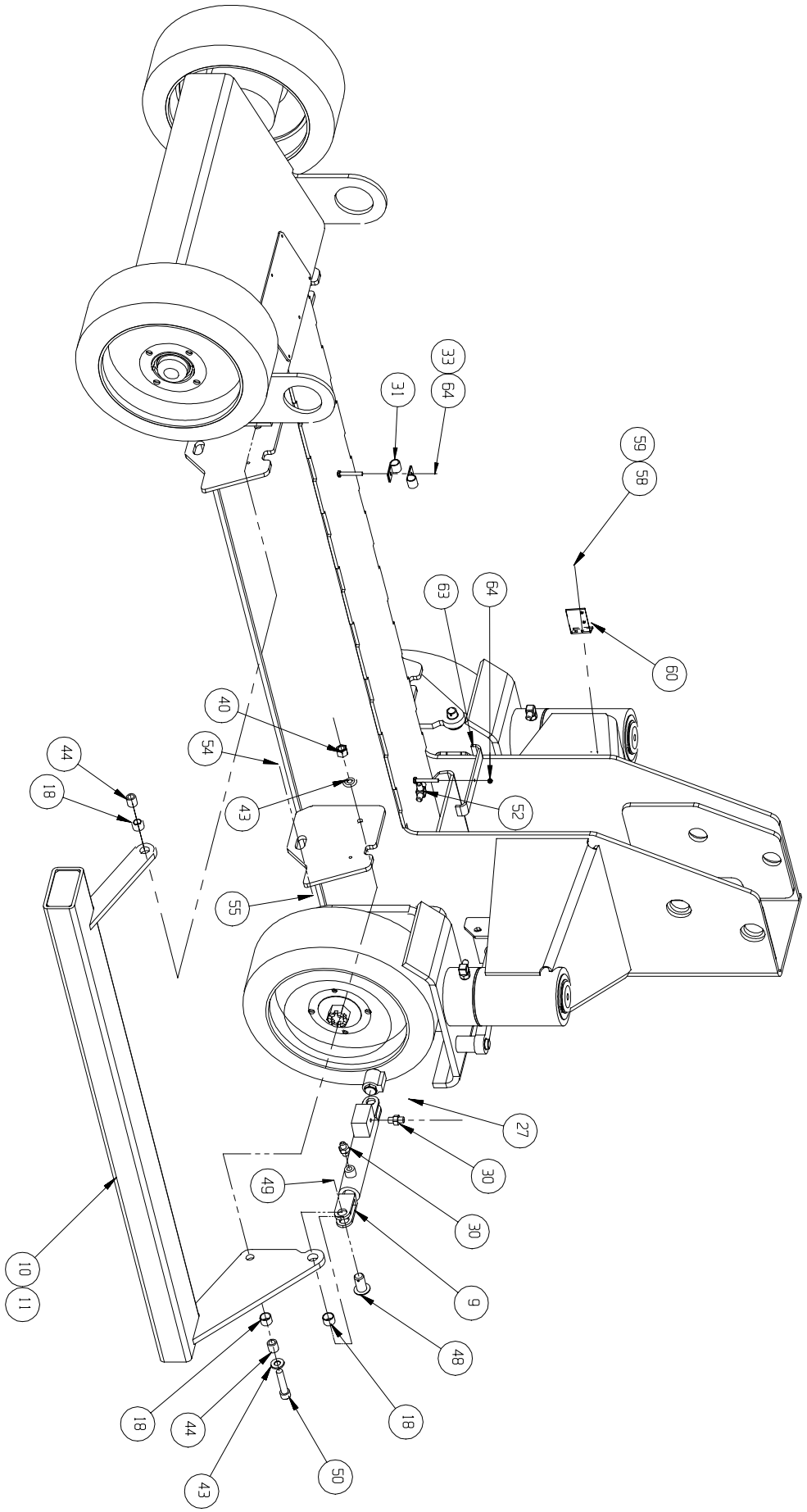
101002-020

Item	Part	Description	QTY.
1	101072-020	CHASSIS WELDMENT	1
2	101065-000	MOTOR MOUNT WELDMENT L.H.	1
3	101066-000	MOTOR MOUNT WELDMENT R.H.	1
4	065371-000	STEERING CYLINDER	1
	065371-011	SEAL KIT	1
5	101089-000	STEERING ARM	2
6	101125-000	DRIVE MOTOR	2
	101125-010	SEAL KIT	1
7	066325-000	HUB, FRONT	2
8	061846-001	RIM ASSEMBLY	4
9	101014-001	DEPRESSION MECHANISM CYLINDER	1
	101014-010	SEAL KIT	1
10	101083-000	DEPRESSION MECHANISM TUBE WELDMENT R.H.	1
11	101084-000	DEPRESSION MECHANISM TUBE WELDMENT L.H.	1
12	101015-000	BRAKE CYLINDER	2
	101015-010	SEAL KIT	1
13	063109-099	COUNTERWEIGHT	280LBS
14	065800-000	STEERING PIN	2
15	065732-000	STEERING BEARING FLANGE	2
16	101157-000	BRAKE RETAINING WASHER	2
17	011764-038	RETAINING RING	2
18	066183-003	BEARING, 3/4 I.D. X 7/8 O.D. X 1/2 LG	6
19	066773-000	HUB ASSEMBLY	2
20	101216-000	COVER, WEIGHT HOLE	1
21	CUP, BEARING	011776-004	4
22	011274-016	NUT, SLOTTED HEX	4
23	011775-011	CONE, BEARING	4
24	005104-000	SEAL, GREASE	2
25	011239-016	WASHER, 1 DIA FLAT ASTM	2
26	005078-000	DUST CAP	2
27	063973-001	DEPRESSION MECHANISM VALVE 20VDC	1
28	011934-001	FITTING, ELBOW	2
29	013315-010	RETAINING RING	2
30	011941-001	FITTING, STRAIGHT	2
31	013919-004	HOSE CLAMP	2

Item	Part	Description	QTY.
32	101128-000	SPINDLE THRUST WASHER	
33	011240-004	WASHER, 1/4-20 STD FLAT	1
34	027931-022	BEARING	4
35	101127-000	SPINDLE BEARING	2
36	011753-012	COTTER PIN, 1/8 X 1 1/2	4
37	011254-032	SCREW, 3/8-16 UNC HEX HD CAP X 4	4
38	011240-006	WASHER, 3/8 DIA STD FLAT	4
39	011248-006	LOCKNUT, 3/8-16 UNC HEX	4
40	011248-008	LOCKNUT, 1/2-13 UNC HEX	16
41	011256-026	SCREW, 1/2-13 UNC HEX HD CAP X 3 1/4	8
42	027931-072	BEARING	2
43	011240-008	WASHER, 1/2 DIA STD FLAT	8
44	018081-012	TUBE,.75 O.D.X.120 W X 3/4	4
45	011412-112	SCREW, 3/8-16 UNC HHC GRD 8 X 1 1/2 (FULL THREAD)	8
46	014122-003	BOLT, WHEEL	16
47	011239-006	WASHER ASTM 3/8 FLAT	8
48	101051-000	PIN WELDMENT, DEPRESSION MECHANISM CYLINDER	2
49	011757-010	RUE PIN Ø3/4	2
50	012030-024	SCREW, 1/2-13 UNC SOC HD ALLOY OR(GR 8)X 3	2
50	012030-024	SCREW, 1/2-13 UNC SOC HD ALLOY OR(GR 8)X 3	4
51	011934-001	FITTING, ELBOW	2
52	020032-001	FITTING, TEE	1
53	068885-001	FITTING, SWIVEL ELBOW	4
54	011258-016	SCREW, 3/4-10 UNC HEX HD CAP X 2	4
55	011248-012	LOCKNUT, 3/4-10 UNC HEX	4
56	011709-008	SCREW, 10-24 UNC RD HD MACH X 1	2
57	011248-003	LOCKNUT, 10-24 UNC HEX	2
58	026554-004	RIVET, POP 1/8	2
59	011240-003	WASHER, #10 STD FLAT	2
60	101201-001	PROXIMITY BRACKET	1
62	026554-003	RIVET, POP 1/4	6
63	068706-000	CLAMP HOSE	1
64	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
65	013949-004	WASHER 1/4 EXT STAR	2



Drawing # 1 of 2

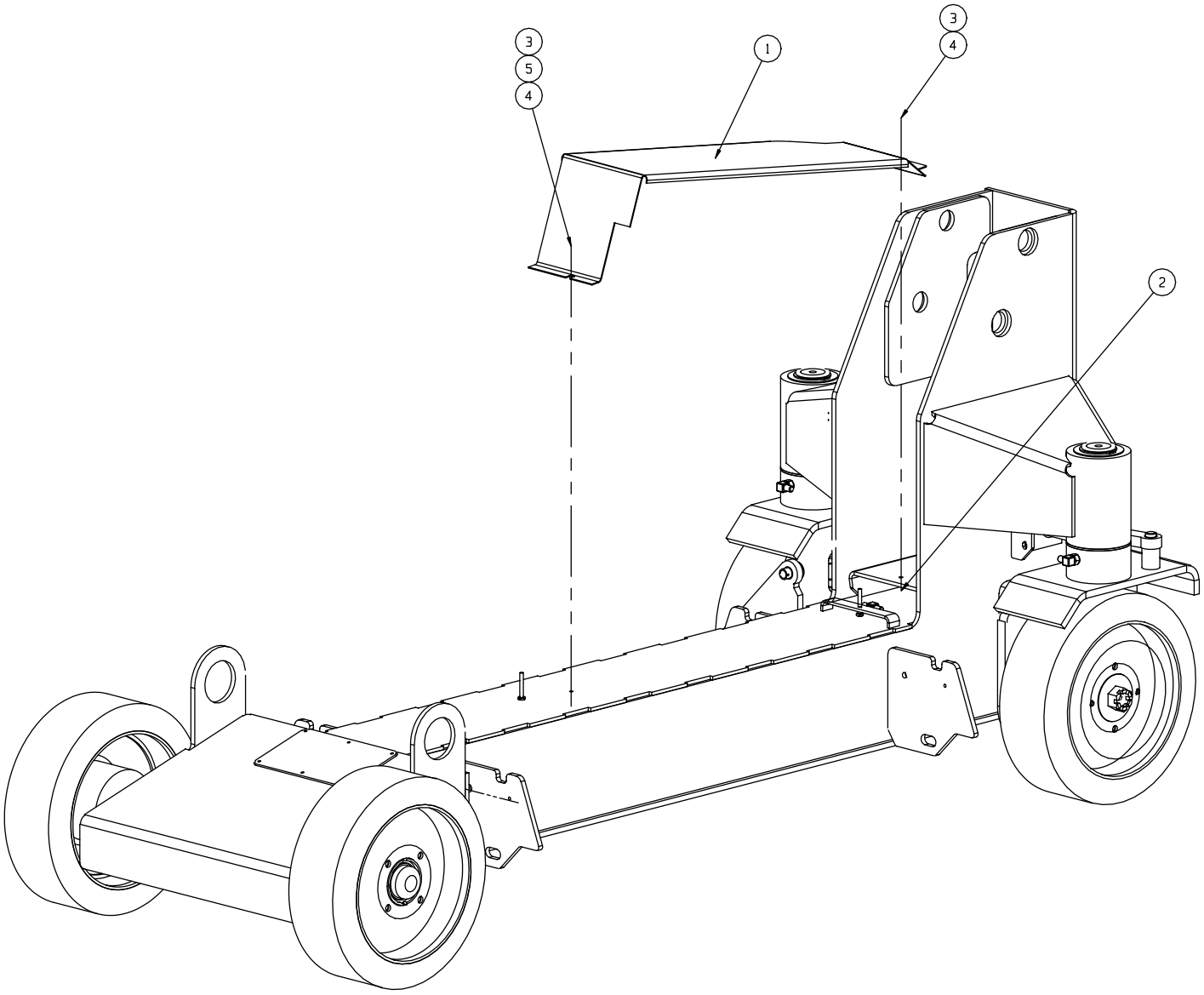


Drawing # 2 of 2

Cover Plate Assembly

030957-000

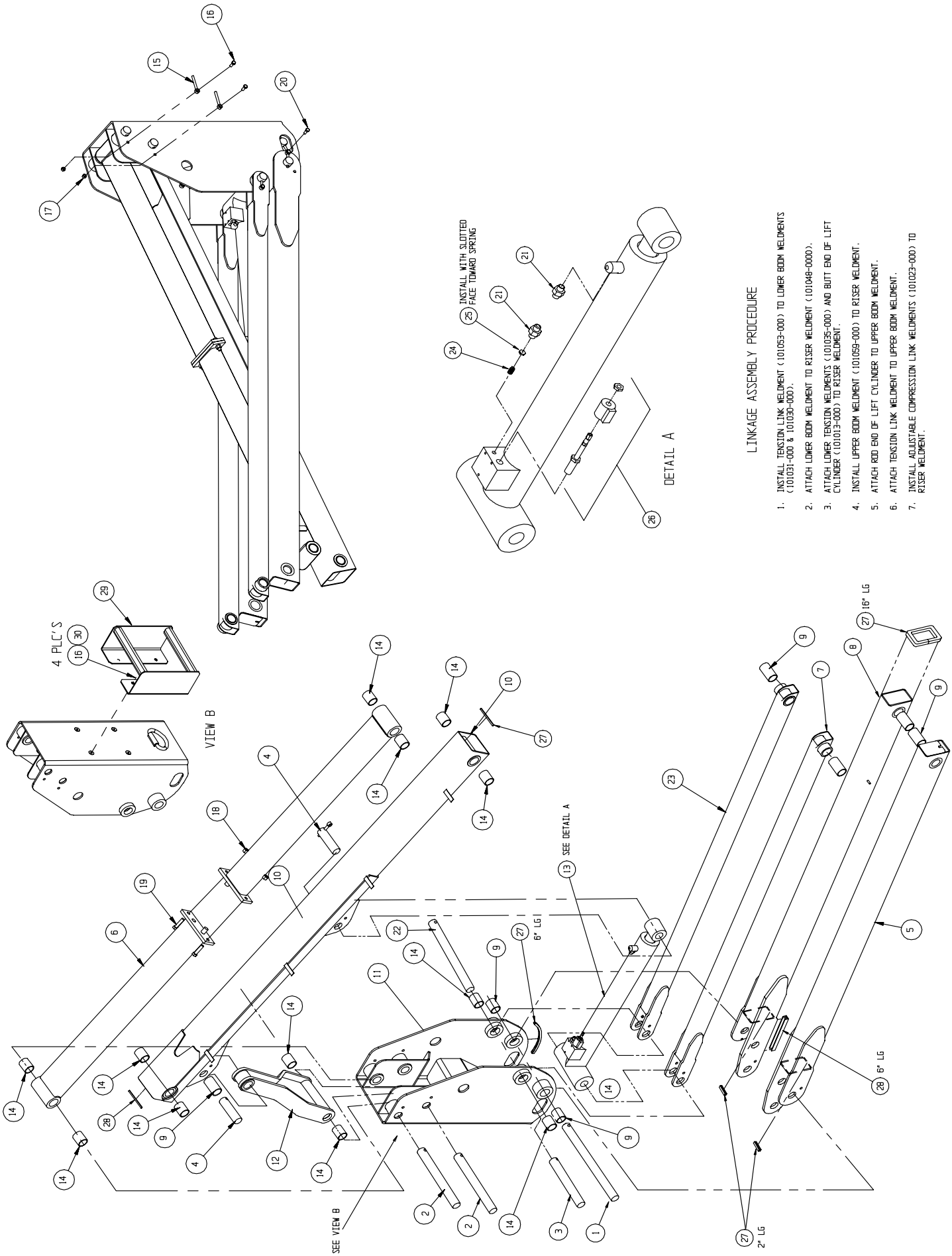
Item	Part	Description	QTY.
1	030957-001	COVER PLATE	1
2	011248-004	NUT HEX ESNA 1/4-20 UNC	1
3	011252-008	SCREW HHC 1/4-20 UNC X 1	2
4	011240-004	WASHER 1/4 STD FLAT	2
5	011238-004	WASHER 1/4 SPLIT LOCK	1



Linkage Assembly

101004-020

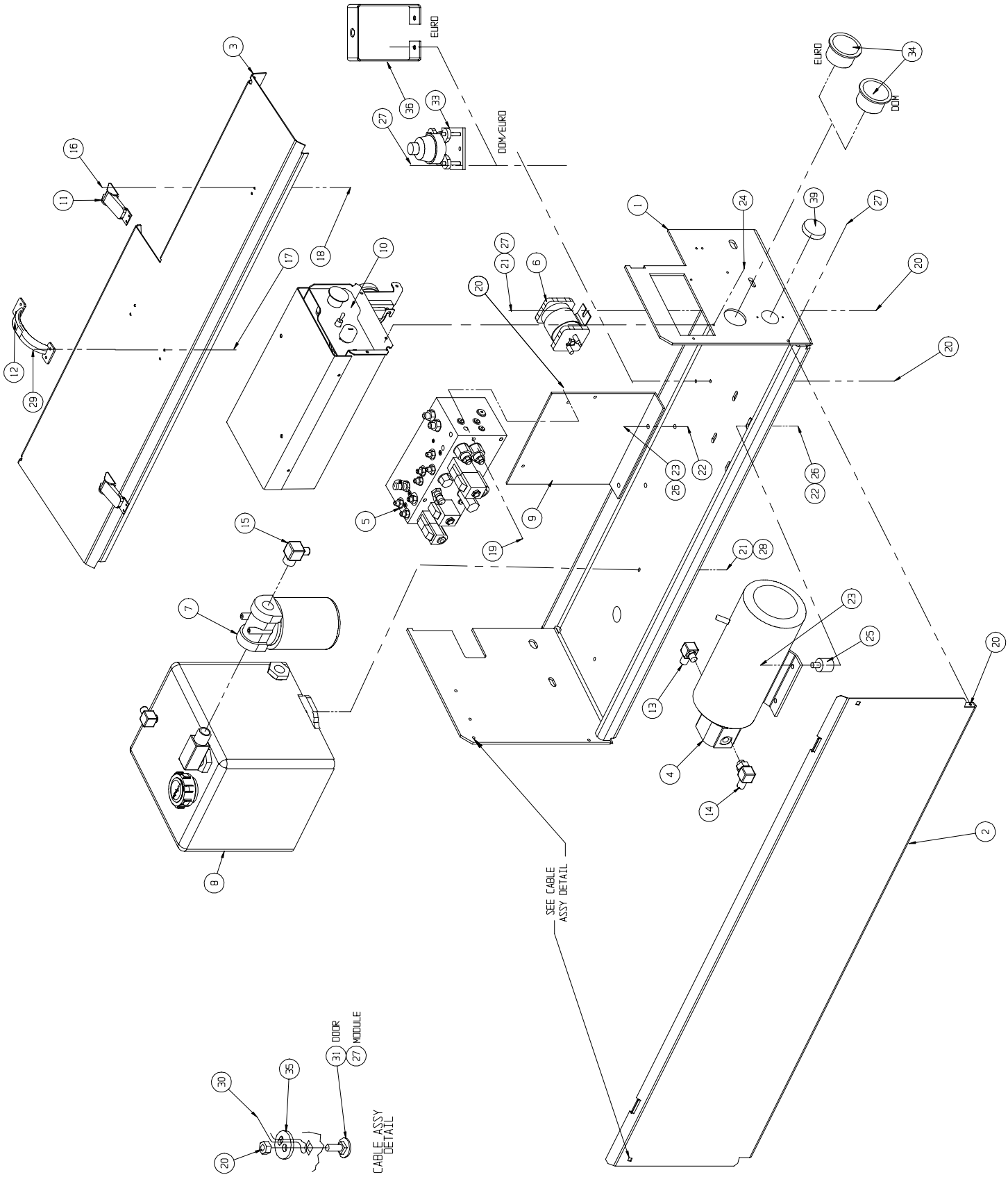
Item	Part	Description	QTY.
1	101036-000	PIN	1
2	101037-000	PIN	2
3	101039-000	PIN	1
4	101040-000	PIN	2
5	101030-000	LOWER BOOM WELDMENT L.H.	1
6	101023-000	ADJUSTABLE COMPRESSION TUBE WELDMENT	2
7	101035-001	LOWER TENSION LINK WELDMENT L.H.	1
8	101031-001	LOWER BOOM WELDMENT R.H.	1
9	101016-001	BUSHING- 3" LG	7
10	101059-000	UPPER BOOM WELDMENT	1
11	101048-000	RISER WELDMENT	1
12	101053-000	TENSION LINK WELDMENT	1
13	101013-000	LIFT CYLINDER	1
	010013-010	SEAL KIT	1
14	101016-000	BUSHING- 2" LG	12
15	065214-000	ROD END	7
16	011254-012	SCREW, 3/8-16 UNC HEX HD CAP X 1 1/2	10
17	011248-006	LOCKNUT, 3/8-16 UNC HEX	7
18	011248-008	LOCKNUT, 1/2-13 UNC HEX	2
19	011256-018	SCREW, 1/2-13 UNC HEX HD CAP X 2 1/4	2
20	011254-014	SCREW, 3/8-16 UNC X 1 3/4	1
21	011941-005	FITTING, STRAIGHT	2
22	101204-000	PIN	1
23	101035-000	LOWER TENSION LINK WELDMENT R.H.	1
24	013987-010	SPRING	1
25	015919-000	ORIFICE (Ø .0465)	1
26	066179-000	VALVE, LOWERING 20 VDC	1
27	061692-099	EDGE TRIM 3/16	1
28	067805-099	EDGE TRIM 1/4-1/2	FT .90
29	101174-001	LADDER WELDMENT	1
30	011240-006	WASHER 3/8 FLAT	4


LINKAGE ASSEMBLY PROCEDURE
1. INSTALL TENSION LINK WELDMENT (101053-000) TO LOWER BOOM WELDMENTS (101031-000 & 101030-000).
2. ATTACH LOWER BOOM WELDMENT TO RISER WELDMENT (101048-0000).
3. ATTACH LOWER TENSION WELDMENTS (101035-000) AND BUTT END OF LIFT CYLINDER (101013-000) TO RISER WELDMENT.
4. INSTALL UPPER BOOM WELDMENT (101059-000) TO RISER WELDMENT.
5. ATTACH ROD END OF LIFT CYLINDER TO UPPER BOOM WELDMENT.
6. ATTACH TENSION LINK WELDMENT TO UPPER BOOM WELDMENT.
7. INSTALL ADJUSTABLE COMPRESSION LINK WELDMENTS (101023-000) TO RISER WELDMENT.
INSTALL WITH SLOTTED FACE TOWARD SPRING
DETAIL A
VIEW B
4 PLC'S
SEE DETAIL A
SEE VIEW B
6" LG
16" LG
2" LG

Control Module Assembly

101005-021

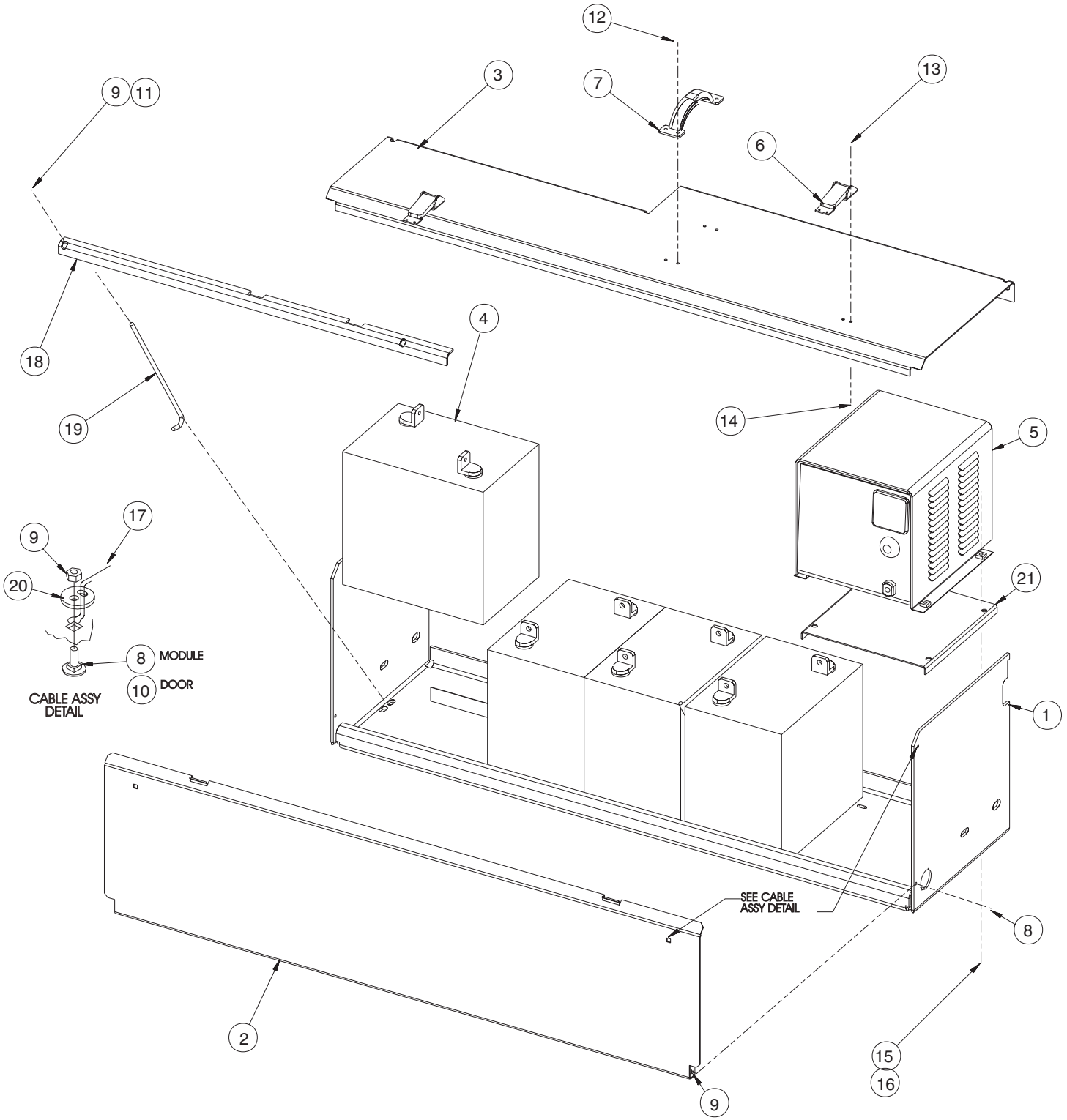
Item	Part	Description	QTY.
1	101146-020	CONTROL MODULE TRAY	1
2	101141-000	MODULE COVER WELDMENT	1
3	101145-000	CONTROL MODULE TOP	1
4	101230-000	POWER UNIT	1
	101230-010	PUMP	1
	101230-011	MOTOR	1
	101230-014	BRUSH SET	1
5	101120-021	CONTROL VALVE ASSY	1
6	010122-001	RELAY, 24 VDC SPDT	1
8	101152-000	HYDRAULIC TANK ASSEMBLY	1
7	005154-001	FILTER	1
9	101153-002	BRACKET, VALVE BLOCK	1
10	101154-002	LOWER CONTROLS ASSEMBLY	1
11	005299-000	LATCH, TOGGLE	2
12	025427-002	HANDLE	1
13	101227-000	FITTING, ELBOW 45° 12MJ-8MB	1
14	011934-004	FITTING, ELBOW 90° 6MP-6MJ	1
15	011940-034	FITTING, ELBOW 90° 12MP-6MJ	1
16	011708-004	SCREW, #8-32 UNC RD HD MACH X 1/2	8
17	011248-003	LOCKNUT, #10-24 UNC HEX	6
18	011248-002	LOCKNUT, #8-32 UNC HEX	8
19	011252-040	SCREW, 1/4-20 UNC HEX HD CAP X 4 1/2	3
20	011248-004	LOCKNUT, 1/4-20 UNC HEX	15
21	011240-004	WASHER, 1/4 STD FLAT	4
22	011254-008	SCREW, 3/8-16 UNC HEX HD CAP X 1	4
23	011248-006	LOCKNUT, 3/8-16 UNC HEX	4
24	011709-006	SCREW, #10-24 UNC RD HD MACH X 3/4	4
26	011240-006	WASHER, 3/8 STD FLAT	2
27	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	6
28	011252-008	SCREW, 1/4-20 UNC HEX HD CAP X 1	2
29	026553-004	RIVET, 1/8 X 1/4-3/8 GRIP	4
30	064466-015	CABLE ASSEMBLY	1
31	011829-006	BOLT, 1/4-20 UNC CARRIAGE X 3/4	1
33	029945-011	TILT SENSOR	1
34	029959-000	VOLTAGE / HOURMETER	1
35	064464-000	CABLE RETAINER	1
36	101220-000	TILT BRACKET	1
39	066516-002	PLUG, 1.75	1


EURO
DDM/EURO
EURO
DDM
SEE CABLE ASSY DETAIL
CABLE ASSY DETAIL
DOOR MODULE

Power Module Assembly

101003-001

Item	Part	Description	QTY.
1	101215-000	POWER MODULE TRAY WELDMENT	1
2	101141-000	MODULE COVER WELDMENT	1
3	101143-000	POWER MODULE TOP	1
4	015796-000	BATTERY	4
	015798-001	BATTERY, DRY	
5	063948-011	CHARGER	1
6	005299-000	LATCH, TOGGLE	2
7	025427-002	HANDLE	1
8	011252-006	SCREW, 1/4-20 UNC HEX HD CAP 3/4	2
9	011248-004	LOCKNUT, 1/4-20 UNC HEX	6
10	011829-006	BOLT, 1/4-20 UNC CARRIAGE X 3/4	1
11	011240-004	WASHER, 1/4 DIA STD FLAT	2
12	026553-004	RIVET, 1/8 1/4-3/8 GRIP	4
13	011708-004	SCREW, #8-32 UNC RD HD MACH X 1/2	8
14	011248-002	LOCK NUT #8-32 UNC HEX	8
15	011238-004	LOCKWASHER, 1/4 DIA SPLIT	4
16	011252-010	SCREW, 1/4-20 UNC HEX HD CAP 1 1/4	4
17	064466-015	CABLE ASSEMBLY	1
18	101214-000	HOLD DOWN, BATTERY	1
19	063082-000	J-BOLT	2
20	064464-000	CABLE RETAINER	1
21	063386-000	CHARGER SPACER	1


12
3
7
13
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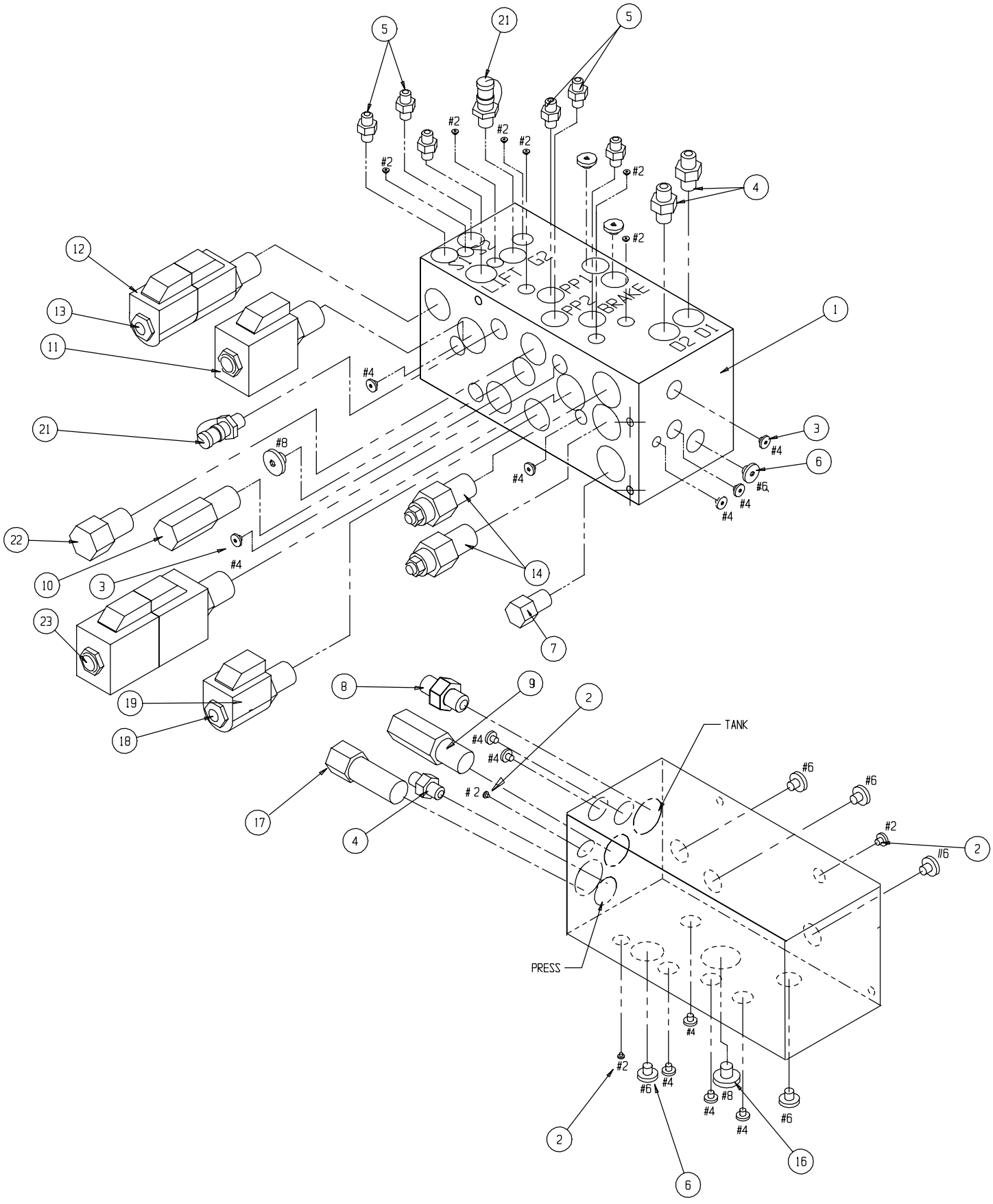
11
6
18
4
19
14
5
17
9
20
21
8
MODULE
10
DOOR
CABLE ASSY
DETAIL
1
SEE CABLE
ASSY DETAIL
8
2
15
16
9

Control Valve Assembly

101120-121

Item	Part	Description	QTY.
1	100020-040	CONTROL VALVE BLOCK	1
2	012004-002	FITTING #2 PLUG	9
3	012004-004	FITTING #4 PLUG	14
4	011941-005	FITTING STRAIGHT 6MB - 6MJ	3
5	011941-001	FITTING STR 4MBH - 4MJ	5
6	012004-006	FITTING PLUG #6	7
7	060390-009	RELIEF VALVA, LIFT (2000 PSI)	
8	011941-010	FITTING 8MB-8MJX	1
9	060390-018	RELIEF VALVE, STEERING (1500 PSI)	1
10	060390-023	RELIEF VALVE, MAIN (3000 PSI)	1
11	063923-006	2 POS - 4 WAY SOLENOID W/ COIL (LIFT)	1
12		COIL	REF
13	064845-000	3 POS - 4 WAY SOLENOID W/ COILS (STEERING)	1
14	101120-034	COUNTERBALANCE VALVE	2
16	020021-008	FITTING PLUG #8	1
17	064843-000	FLOW DIVIDER VALVE (1.0 GPM)	1
18	063973-001	2 POS POPPET VALVE W/ COIL (DEPRESSION MECHANISM)	1
19		COIL	REF
21	063965-001	FITTING GAGE	2
22	064841-000	CHECK VALVE	1
23	063923-021	3 POS - 4 WAY SOLENOID W/ COILS (DRIVE)	1
24	063977-001	PLUG 9MM	6

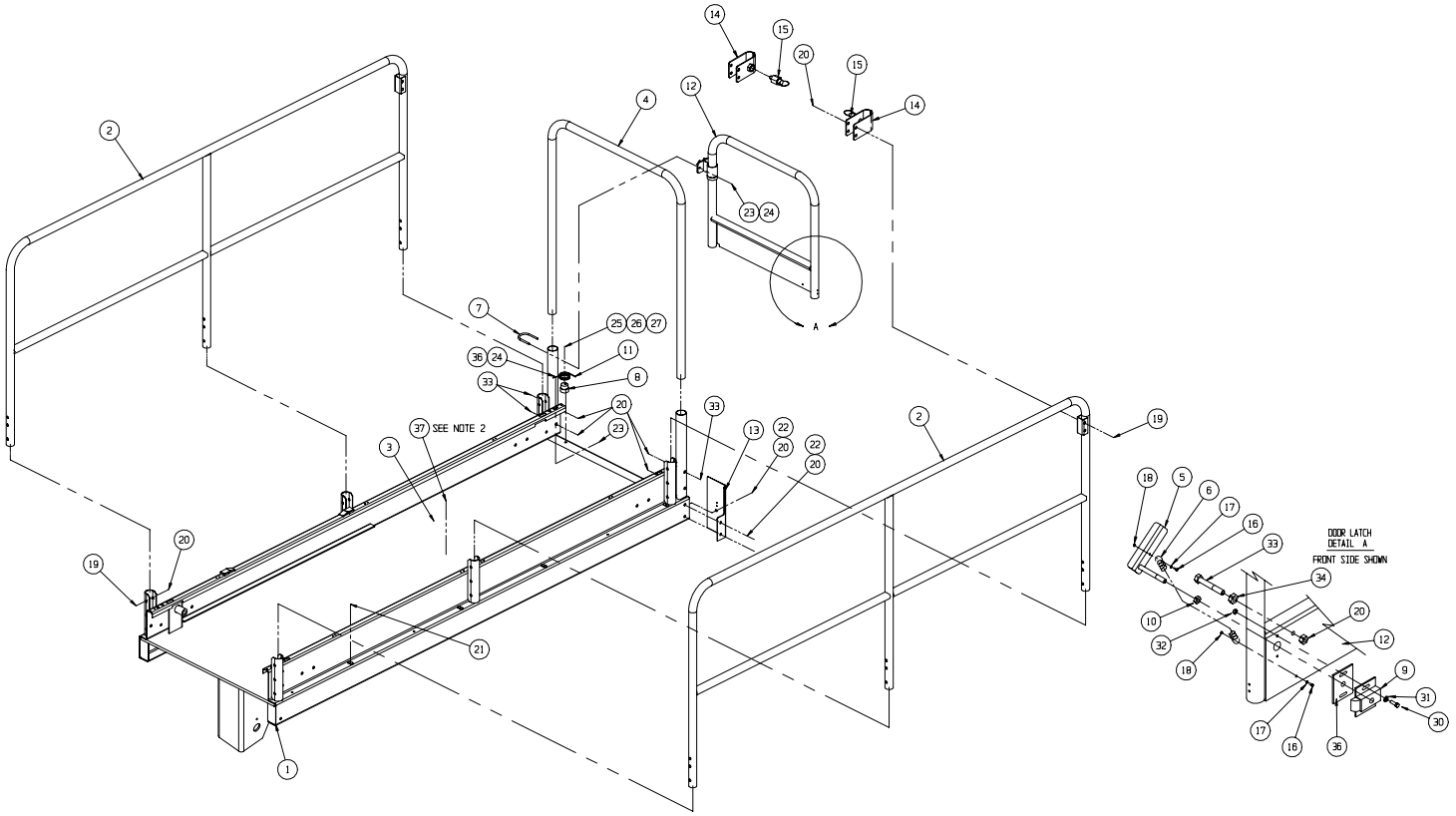

LIFT
PP1
PP2
BRAKE
B2
B1
TANK
PRESS

Platform Assembly

101007-021

Item	Part	Description	QTY.
1	101006-020	PLATFORM WELDMENT	1
2	101101-010	SIDE RAIL WELDMENT	2
3	024611-033	DECK, PLYWOOD	1
4	101164-002	END RAIL - EURO	1
5	030745-002	ACTUATOR WELDMENT	1
6	012097-018	SPRING	1
7	027899-000	U-BOLT	1
8	065784-000	DOOR SLIDE	1
9	062791-000	SLAM LATCH	1
10	063947-008	NUT, M8 X 1.25 HEX	1
11	066526-001	SPRING	1
12	101119-000	GATE WELDMENT	1
13	101124-000	GATE STOP	1
14	101233-000	LATCH WELDMENT	2
15	003570-002	ASSY PULL PIN	2
16	011708-004	SCREW MACH RD HD 8-32 X 1/2	2
17	011240-002	WASHER #8 STD FLAT	2
18	011248-002	NUT HEX ESNA #8-32	2

Item	Part	Description	QTY.
19	011254-018	SCREW, 3/8-16 UNC HEX HD CAP X 2 1/4	16
20	011248-006	LOCKNUT, 3/8-16 UNC HEX	21
21	011252-004	SCREW, 1/4-20 UNC HEX HD CAP X 1/2	8
22	011254-008	SCREW, 3/8-16 UNC HEX HD CAP X 1	3
23	011248-004	LOCKNUT, 1/4-20 UNC HEX	6
24	011240-004	WASHER, 1/4 DIA STD FLAT	3
25	011248-005	LOCKNUT, 5/16-18 UNC HEX	2
26	011240-005	WASHER, 5/16 DIA STD FLAT	2
27	011253-016	SCREW, 5/16-18 UNC HEX HD CAP X 2	1
28	011253-006	SCREW, 5/16-18 UNC HEX HD CAP X 3/4	1
30	011275-004	SCREW, #10-32 UNF HEX HD CAP X 1/2	2
31	011240-003	WASHER, #10 STD FLAT	2
32	011249-003	LOCKNUT. #10 -32 UNF HEX	2
33	011254-020	SCREW HHC 3/8-16 X 2 1/2	1
34	020795-012	NUT HEX JAM 3/8-16	1
36	062791-000	SPACER SLAM LATCH	1
37	026554-004	RIVET 1/4 DIA X 1/2 - 5/8 GRIP	10

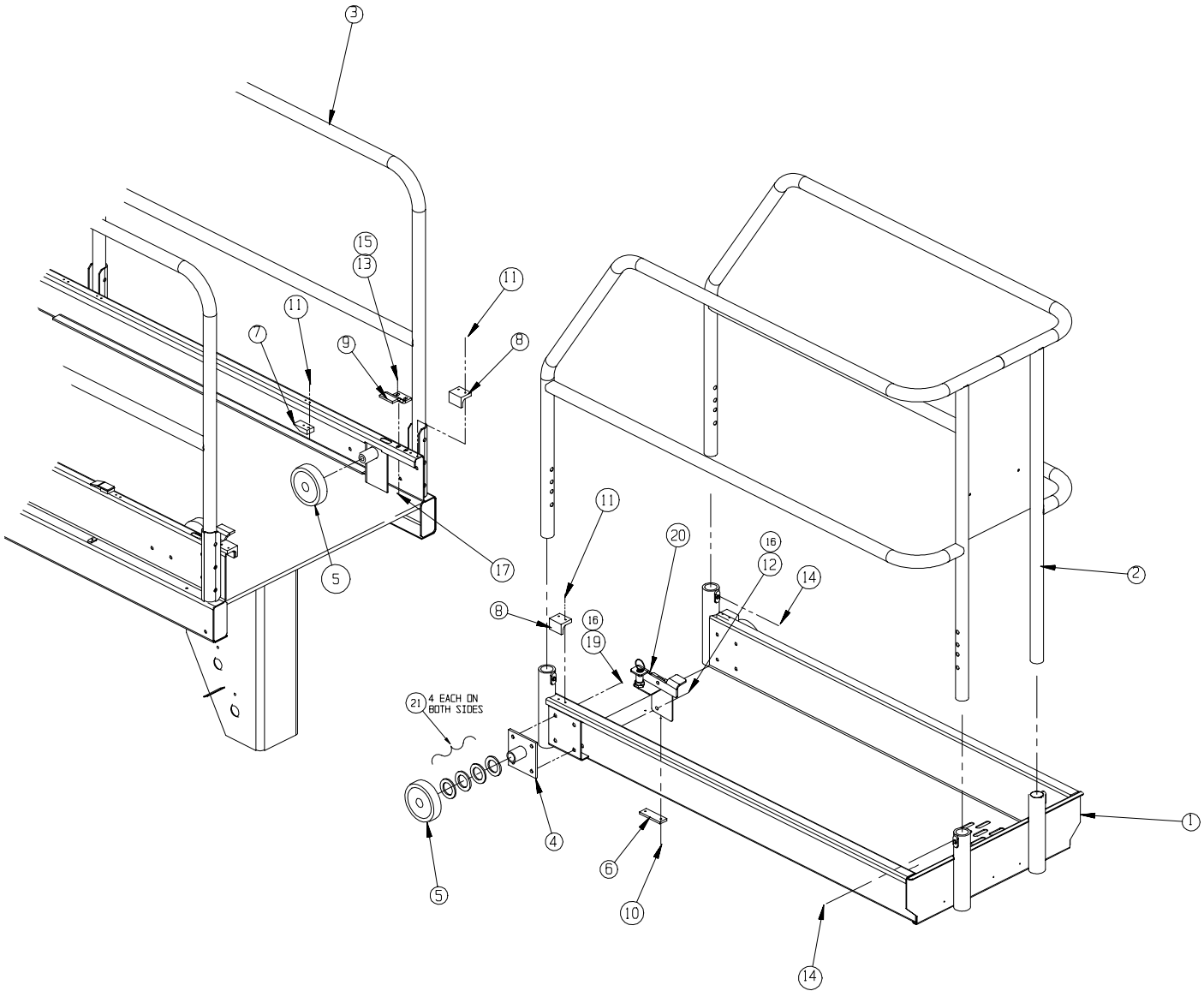


Roll Out Deck Extension

10108-020

Item	Part	Description	QTY.
1	101130-000	DECK EXTENTION WELDMENT	1
2	101132-000	MAIN GUARDRAIL WELDMENT	1
3	101007-000	PLATFROM ASSEMBLY	REF
4	066256-000	ROLLER MOUNT WELDMENT	2
5	101106-000	ROLLER	4
6	066198-000	WEAR PAD	1
7	066193-000	STOP	4
8	066170-000	WEAR PAD	4
9	066407-000	BRACKET	2
10	026553-004	RIVET, 3/16 DIA X 3/8 GRIP	2

Item	Part	Description	QTY.
11	026553-008	RIVET, 3/16 DIA X .50 GRIP	16
12	011254-014	SCREW, 3/8-16 UNC HEX HD CAP X 1 3/4	2
13	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	4
14	066171-003	BOLT, 3/8-16 UNC TAP X 2 1/4	4
15	011240-004	WASHER, 1/4 DIA STD FLAT	4
16	011238-006	WASHER, 3/8 DIA SPLIT LOCK	8
17	011248-004	LOCKNUT, 1/4-20 UNC HEX	4
19	011254-012	SCREW, 3/8-16 UNC HEX HD CAP X 1 1/2	6
20	067185-000	DECK STOP ASSEMBLY	1
21	003570-001	WASHER SAE 1-1/4 ZINC PLATED	1

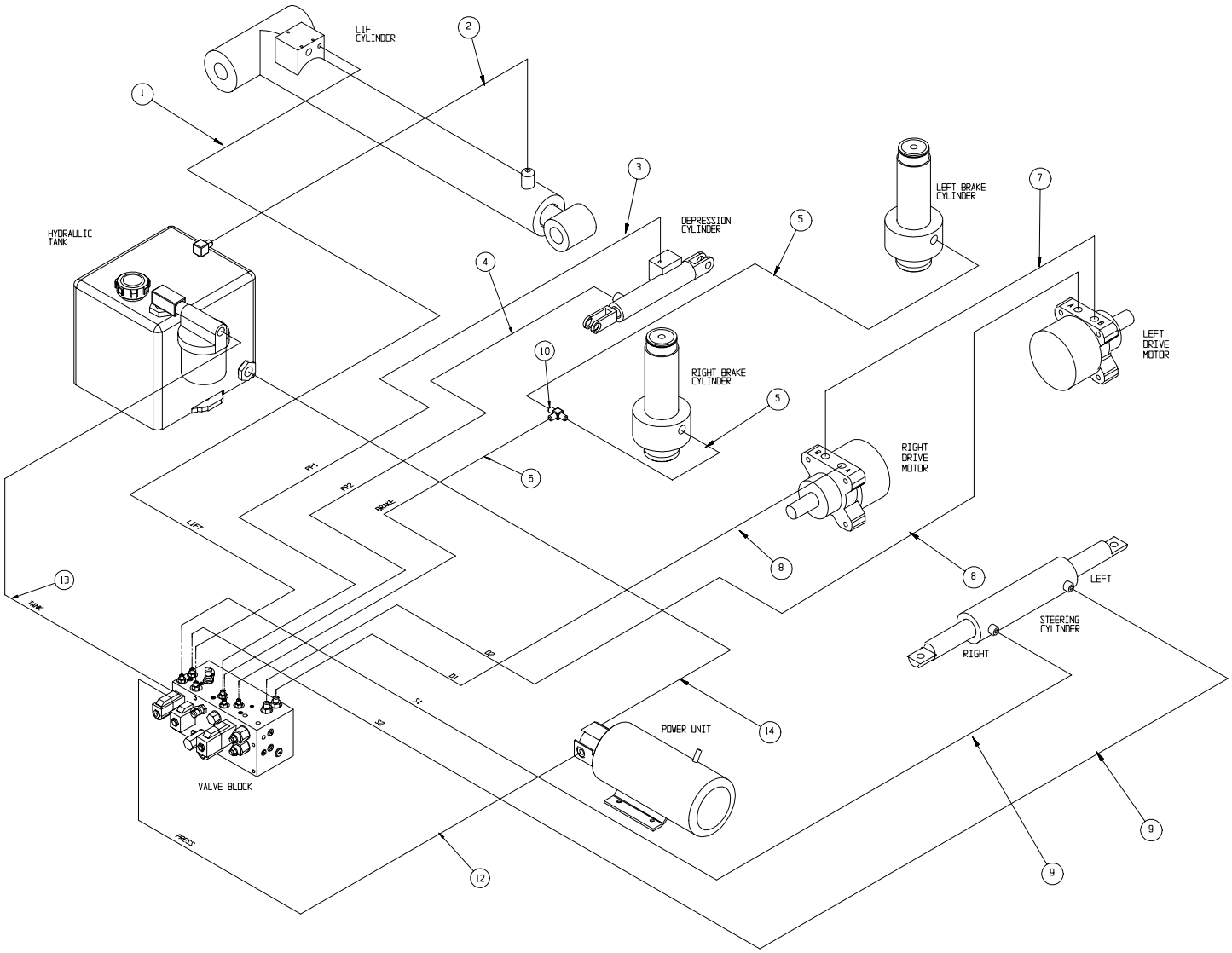


Hose Kit Installation

101179-020

Item	Part	Description	QTY.
1	068965-206	HOSE ASSEMBLY, 3/8 DIA 6FJX-6FJX 90 X 206	1
2	060861-210	HOSE ASSEMBLY, 3/8 DIA 6FJX-6FJX X 210	1
3	069650-024	HOSE ASSEMBLY, 1/4 DIA 4FJX-4FJX 90 X 24	2
5	065234-021	HOSE ASSEMBLY, 1/4 DIA 4FJX-4FJX X 21	2
6	069650-041	HOSE ASSEMBLY, 1/4 DIA 4FJX-4FJX 90 X 41	1
7	060861-049	HOSE ASSEMBLY, 3/8 DIA 6FJX-6FJX X 28	1

Item	Part	Description	QTY.
8	068965-050	HOSE ASSEMBLY, 3/8 DIA 6FJX-6FJX 90 X 50	2
9	069650-046	HOSE ASSEMBLY, 1/4 DIA 4FJX-4FJX 90 X 46	2
10	020032-001	FITTING, TEE 4MJ-4MJ-4MJ	REF
12	068965-015	HOSE ASSEMBLY, 3/8 DIA 6FJX-6FJX 90 X 15	2
14	061789-012	HOSE ASSEMBLY, 3/4 DIA 12FJX-12MP X 13	1

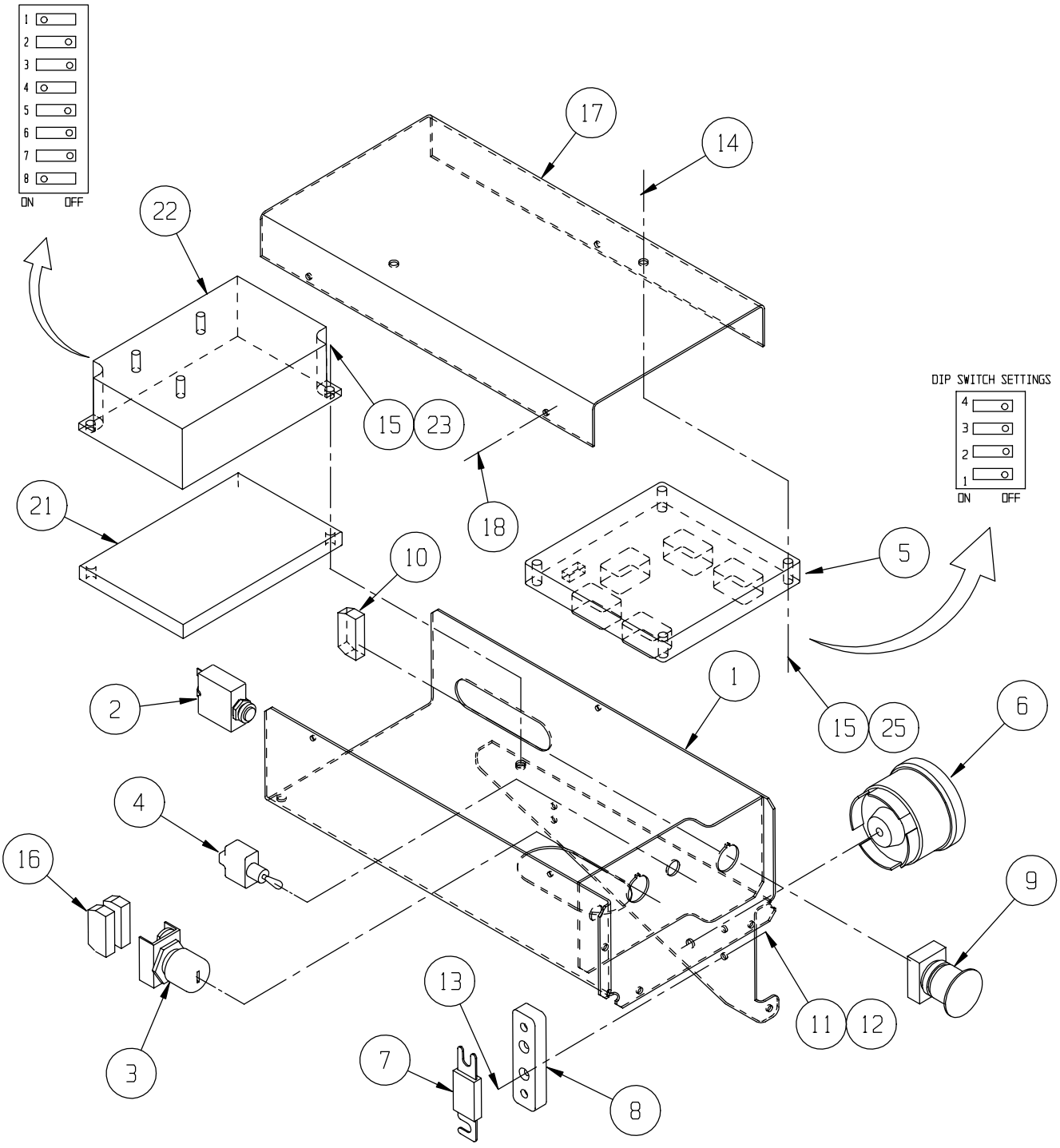


Lower Controls Assembly

101154-002

Item	Part	Description	QTY.
1	101147-001	LOWER CONTROLS WELDMENT	1
2	068582-005	CIRCUIT BREAKER	1
3	066805-004	SWITCH, KEY	1
4	012798-000	SWITCH, TOGGLE	1
5	065709-000	CIRCUIT BOARD	1
6	066807-001	ALARM	1
7	010148-001	FUSE, 175 AMP	1
8	010149-000	FUSE BLOCK	1
9	066805-006	SWITCH, PUSH BUTTON	1
10	066805-011	CONTACT BLOCK, N.C.	1
11	011248-003	NUT HEX ESNA #10-24 UNC	2

Item	Part	Description	QTY.
12	014996-003	WASHER, #10 DIA FLAT SAE	2
13	066695-008	SCREW, #10-24 UNC FLAT HD	2
14	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	2
15	011248-004	NUT HEX ESNA 1/4-20 UNC	6
16	066805-010	CONTACT BLOCK, N.O.	2
17	011241-001	LID	1
18	011826-004	SCREW 10-32 SLFTP X 1/2	3
21	065984-000	HEATSINK PLATE	1
22	065708-000	MOTOR CONTROL	1
23	011252-010	SCREW HHC 1/4-20UNC X 1 1/4	2
25	011240-004	WASHER 1/4 STD FLAT	2

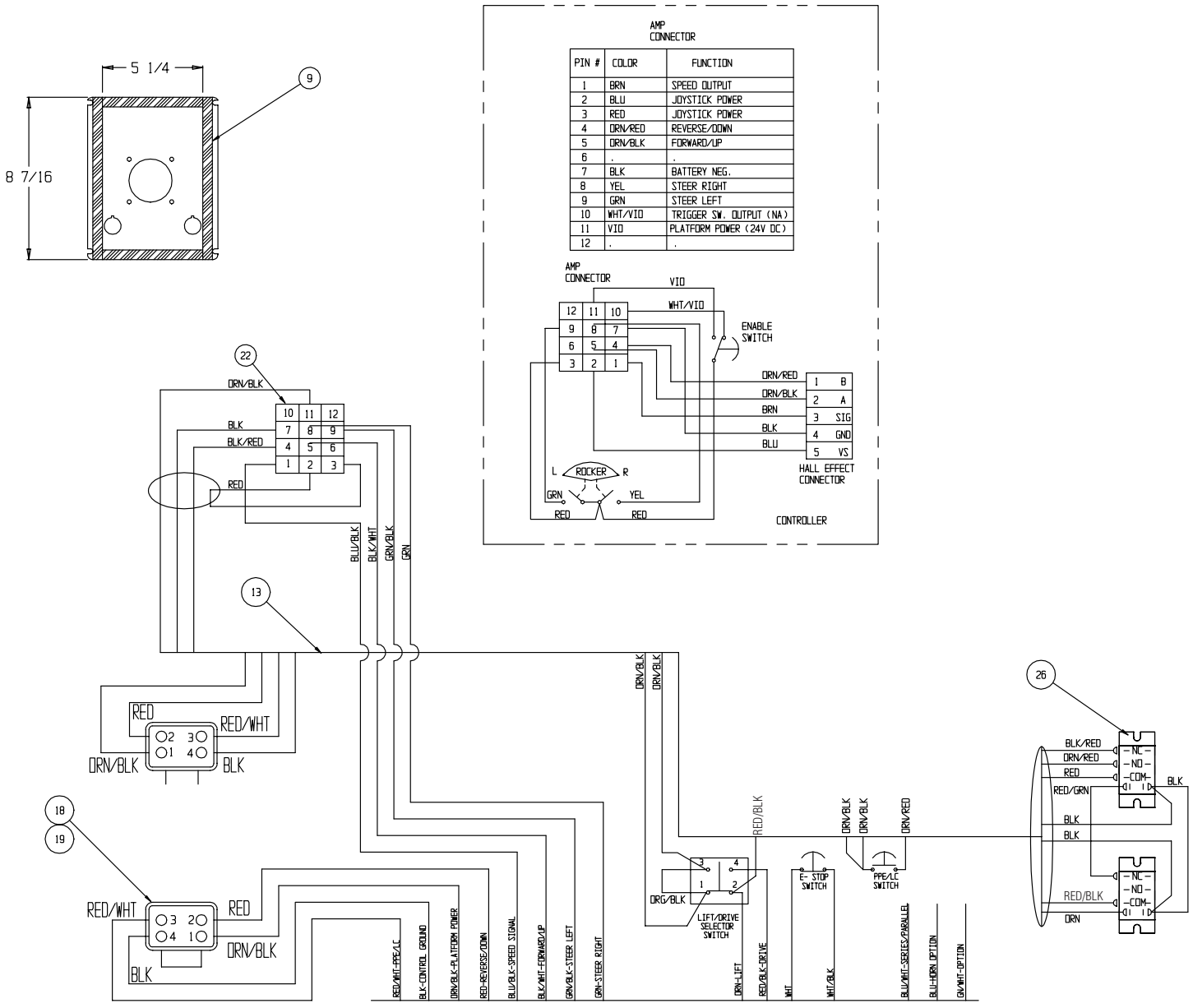


Platform Control Assembly

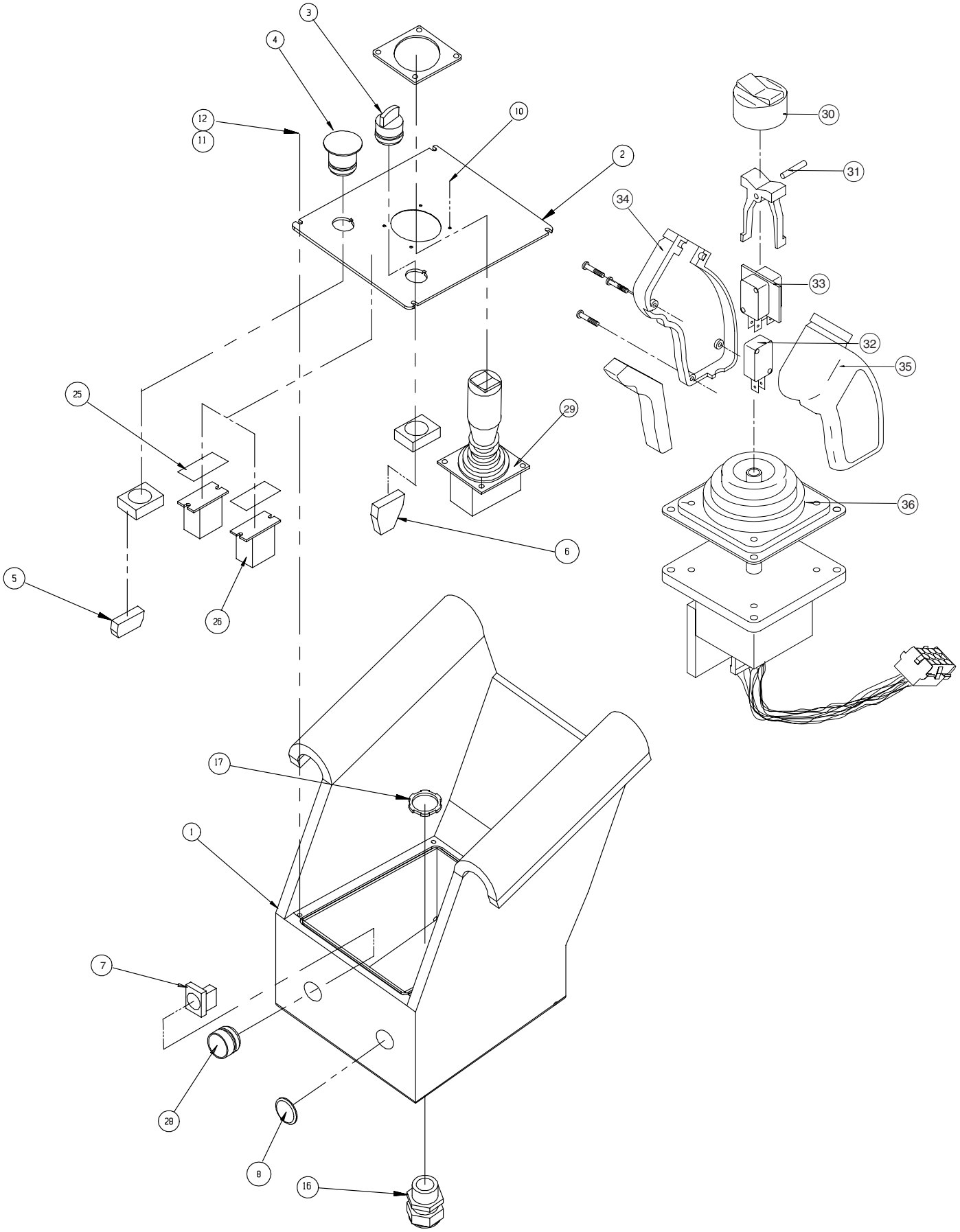
065610-021

Item	Part	Description	QTY.
1	101188-000	BOX CONTROLLER	1
2	101223-002	COVER CONTROLLER	1
3	066805-002	SWITCH SELECTOR-2 POSITION	1
4	066805-006	SWITCH PUSH BUTTON	1
5	066805-011	CONTACT NC	1
6	066805-012	CONTACT NO - NC	1
7	066805-010	CONTACT BLOCK NO	1
8	064462-009	HOLE PLUG	1
9	068889-099	WEATHERSTRIP	FT 2.3
10	011811-006	SCREW SLFTP 10-32 X 3/4	4
11	011709-004	SCREW RD HD MACH 10-24 UNC X 1/2	4
12	011238-002	WASHER LOCK SPLIT #10	4
13	101240-001	CABLE ASSY CONTROLLER	1
14	029620-002	CONN BUTT 16-14	1
16	029925-010	CONN CABLE	1

Item	Part	Description	QTY.
17	029939-003	LOCKNUT 3/4	1
18	067990-020	4 PIN RECEPTACLE	1
19	0067990-023	4 PIN PLUG	1
22	63956-003	CONN 12 PIN	1
25	065929-099	TAPE	FT .16
26	063951-002	RELAY 24V	2
28	067652-000	SWITCH PUSH BUTTON REPLACE W/ GE#9CPNVG	1
29	065512-000	CONTROLLER PQ	1
30		CAP, RUBBER	1
31		ROCKER PIN	1
32		SWITCH, INTERLOCK	1
33		SWITCH, STEERING	1
34		HANDLE HALF, RIGHT	1
35		HANDLE HALF, LEFT	1
36		BOOT, HANDLE	1



Drawing # 1 of 2



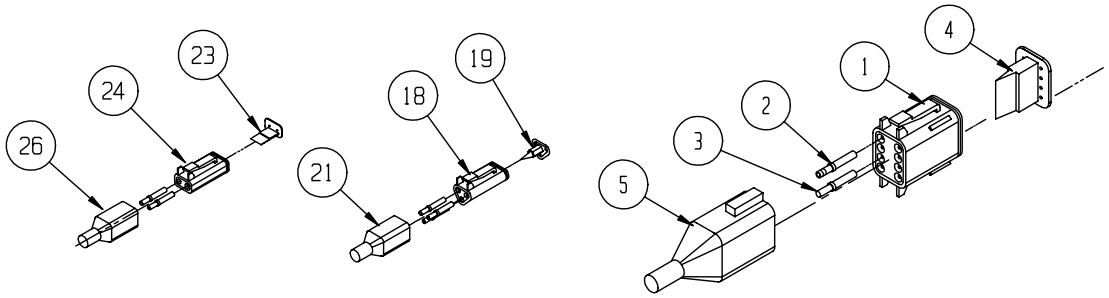
Drawing # 2 of 2

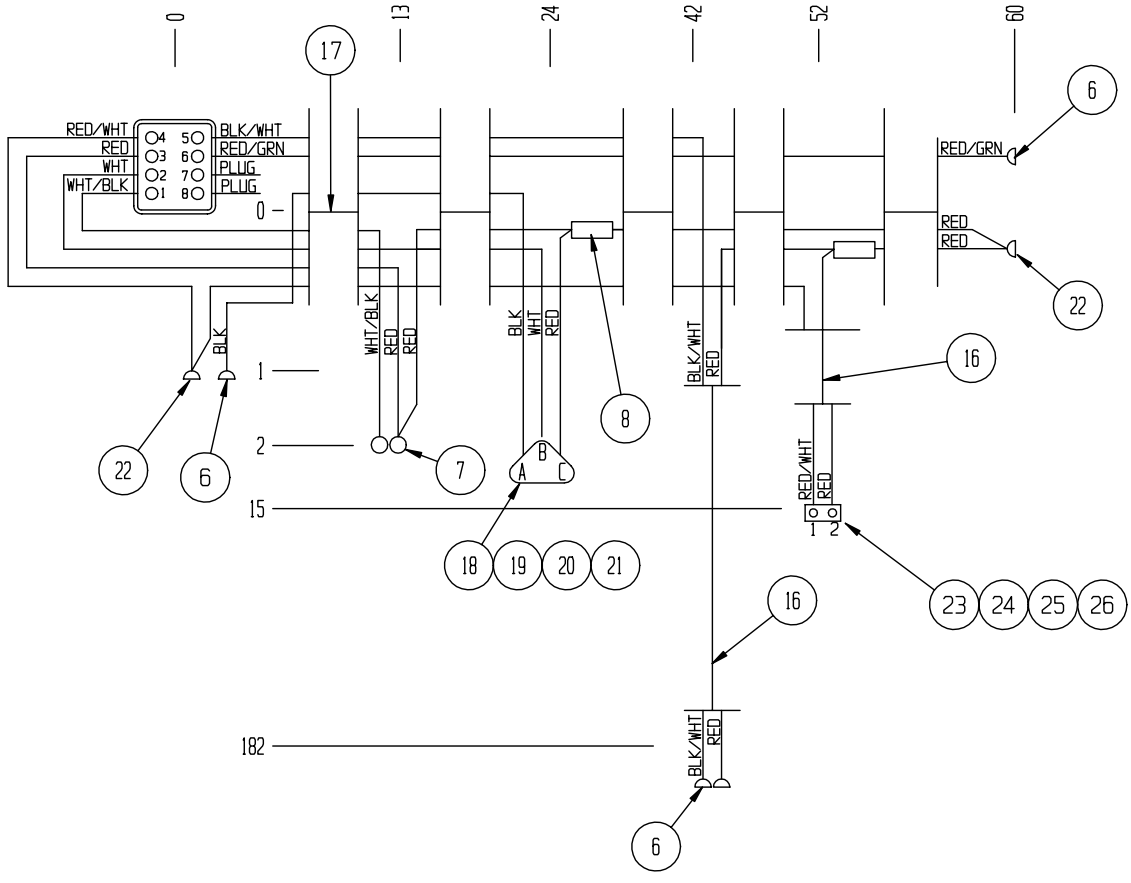
Chassis Control Cable Assembly (J3)

101239-000

Item	Part	Description	QTY.
1	068760-018	PLUG 8 SOCKET, DEUTSCH#DT06-8SC	1
2	068762-001	CONTACT SOCKET, DEUTSCH#0460-209-16141	7
3	068764-000	PLUG SEAL, DEUTSCH#114017	1
4	068761-009	LOCKING WEDGE, DEUTSCH#W8S	1
5	068908-002	BOOT DT , DEUTSCH#DT8S-BT	1
6	029931-003	CONN FM PUSH 1/4 14-16	7
7	029601-011	CONN RING #6 14-16	2
8	029620-002	CONN BUTT 14-16	1
9	029479-099	WIRE 16 AWG WHT/BLK	1.5
10	029452-099	WIRE 16 AWG BLK	2.5
11	029454-099	WIRE 16 AWG RED	25
12	029451-099	WIRE 16 AWG WHT	2.5
13	029351-099	WIRE 16 AWG BLK/WHT	18.5
14	029359-099	WIRE 16 AWG RED/GRN	5.5

Item	Part	Description	QTY.
15	029352-099	WIRE 16 AWG RED/WHT	6
16		LOOM 3/8	16
17	068642-099	LOOM 1/2	4
18	067456-001	RECEPTACLE 3 PIN DT04-3P-E004	1
19	067456-003	WEDGE LOCKING W3P-P012	1
20	068762-000	PIN CONTACT 0460-215-16141	3
21	068908-005	BOOT 3 PIN DT 3P-BT	1
22	029931-005	CONN FM PUSH 1/4 10-12 GA	2
23	067990-013	WEDGE,2 PIN(DEUTSCH # W2P)	1
24	067990-010	RECEPTACLE (DEUTSCH #DT04-2P)	1
25	068762-000	PIN 14-16 AWG DEUTSCH #0460-215-16141	1
26	068908-011	BOOT DT2P-BT	1



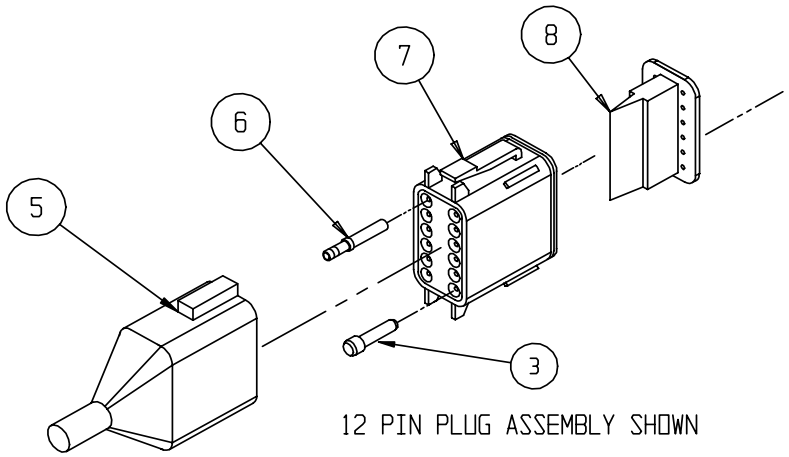


Control Cable Assembly (J1)

101238-000

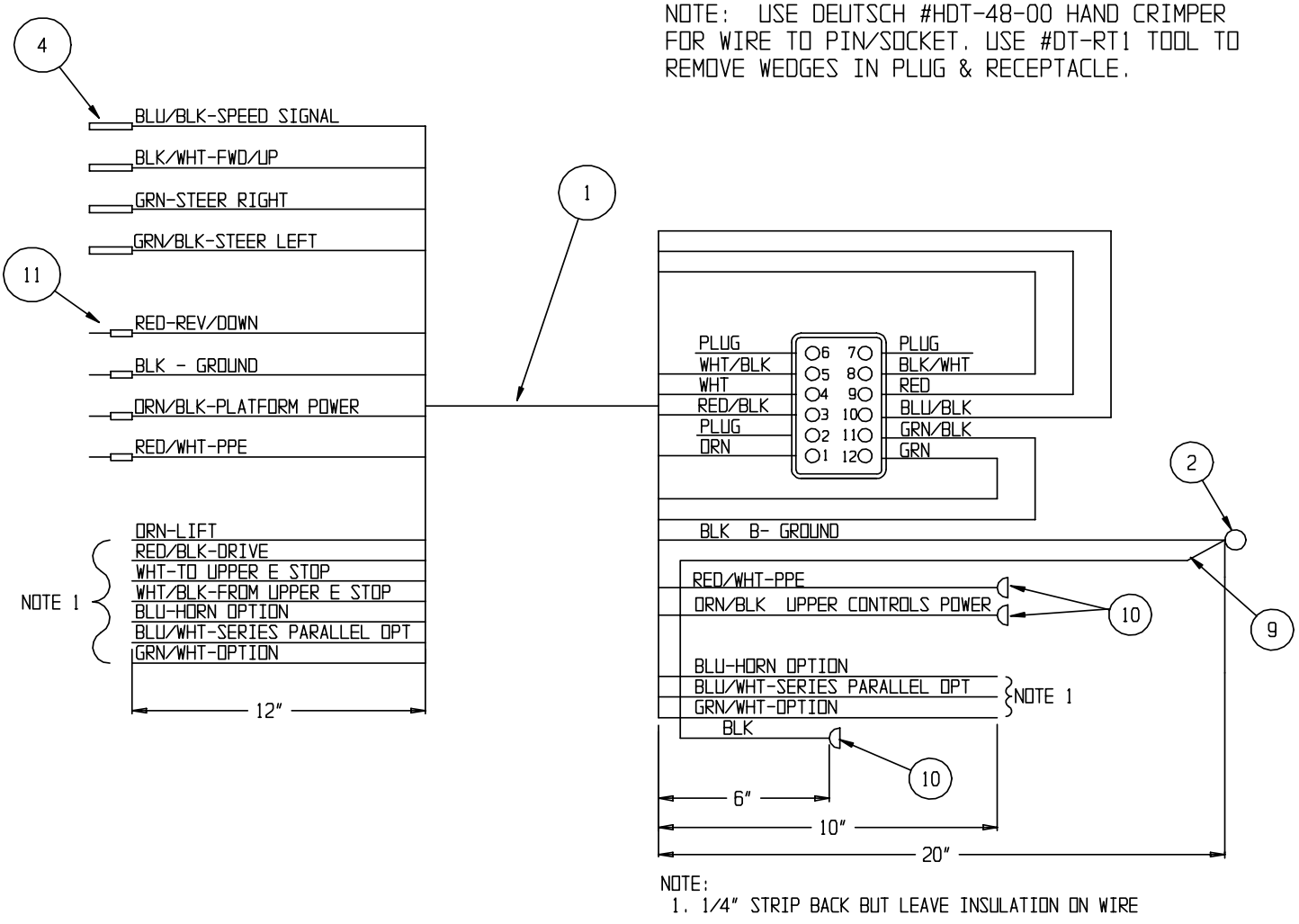
Item	Part	Description	QTY.
1	060214-099	CABLE 16AWG 15 COND	39 FT
2	029601-014	CONN RING 16-14 GA. 1/4 DIA.	1
3	068764-000	SEAL PLUG, DEUTSCH#114017	2
4	063956-010	CONN PIN MALE	7
5	068908-000	PLUG BOOT 12 PIN, DEUTSCH#DT12S-BT	1

Item	Part	Description	QTY.
6	068762-001	SOCKET CONTACT, DEUTSCH#0460-209-16141	10
7	068760-000	PLUG 12 SOCKET, DEUTSCH #DT06-12SA	1
8	068761-001	LOCKING WEDGE 12 PIN, DEUTSCH #W12S	1
10	029617-002	CONN M PUSH 1/4 14-16	1
11	068762-000	PIN CONTACT, DEUTSCH#0460-215-16141	4



12 PIN PLUG ASSEMBLY SHOWN

NOTE: USE DEUTSCH #HDT-48-00 HAND CRIMPER FOR WIRE TO PIN/SOCKET. USE #DT-RT1 TOOL TO REMOVE WEDGES IN PLUG & RECEPTACLE.



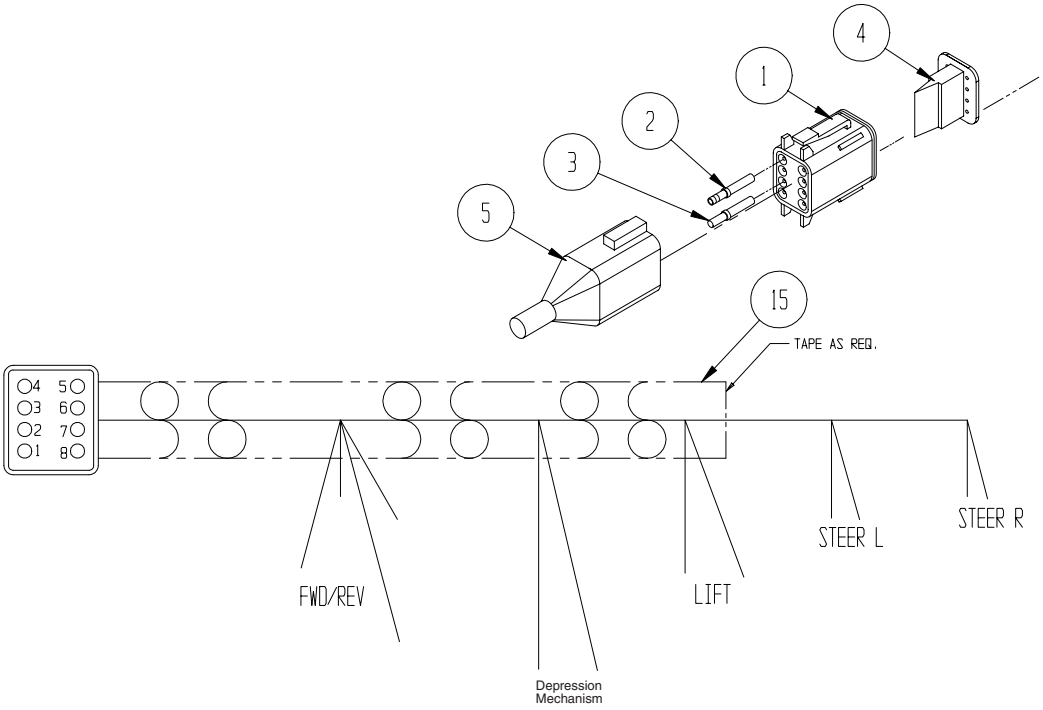
NOTE:
1. 1/4" STRIP BACK BUT LEAVE INSULATION ON WIRE

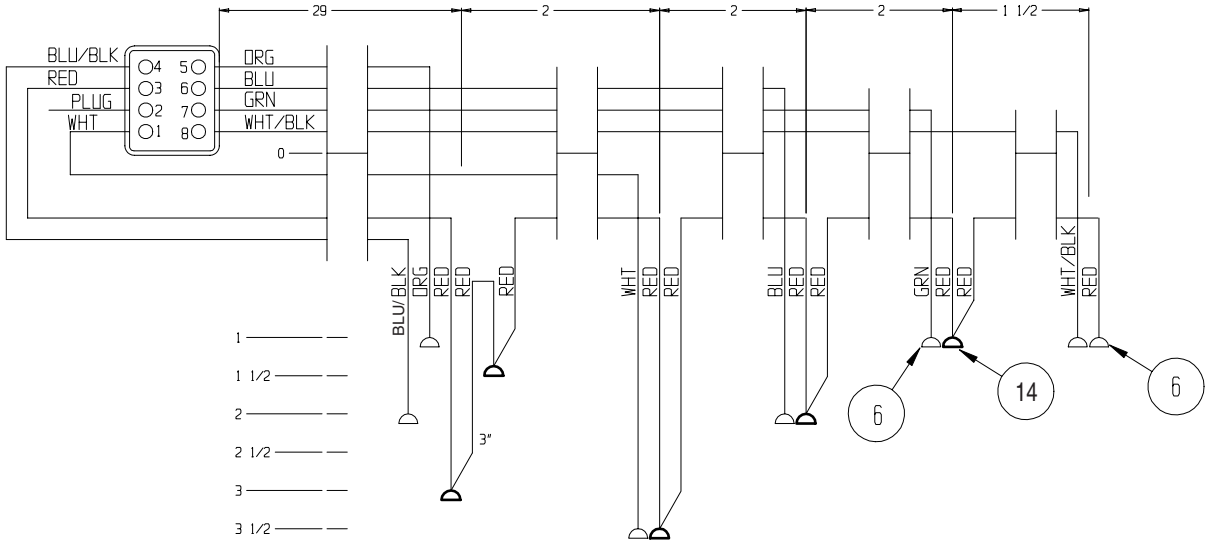
Valve Block Cable Assembly (J2)

101236-000

Item	Part	Description	QTY.
1	068760-008	8 SOCKET PLUG, DEUTSCH#DT06-8SA	1
2	068762-001	CONTACT SOCKET, DEUTSCH#0460-209-16141	7
3	068764-000	SEAL PLUG, DEUTSCH#114017	1
4	068761-009	LOCKING WEDGE, DEUTSCH#W8S	1
5	068908-002	BOOT DT , DEUTSCH#DT8S-BT	1
6	029931-003	CONN FM PUSH 1/4 14-16	12
7	029479-099	WIRE 16 AWG WHT/BLK	3.5
8	029452-099	WIRE 16 AWG BLU/BLK	3

Item	Part	Description	QTY.
9	029450-099	WIRE 16 AWG BLU	3
10	029457-099	WIRE 16 AWG GRN	3.5
11	029453-099	WIRE 16 AWG ORG	2.5
12	029451-099	WIRE 16 AWG WHT	3
13	029454-099	WIRE 16 AWG RED	4
14	029931-005	CONN FM PUSH 1/4 10-12 GA	
15	068642-099	LOOM 1/2	3

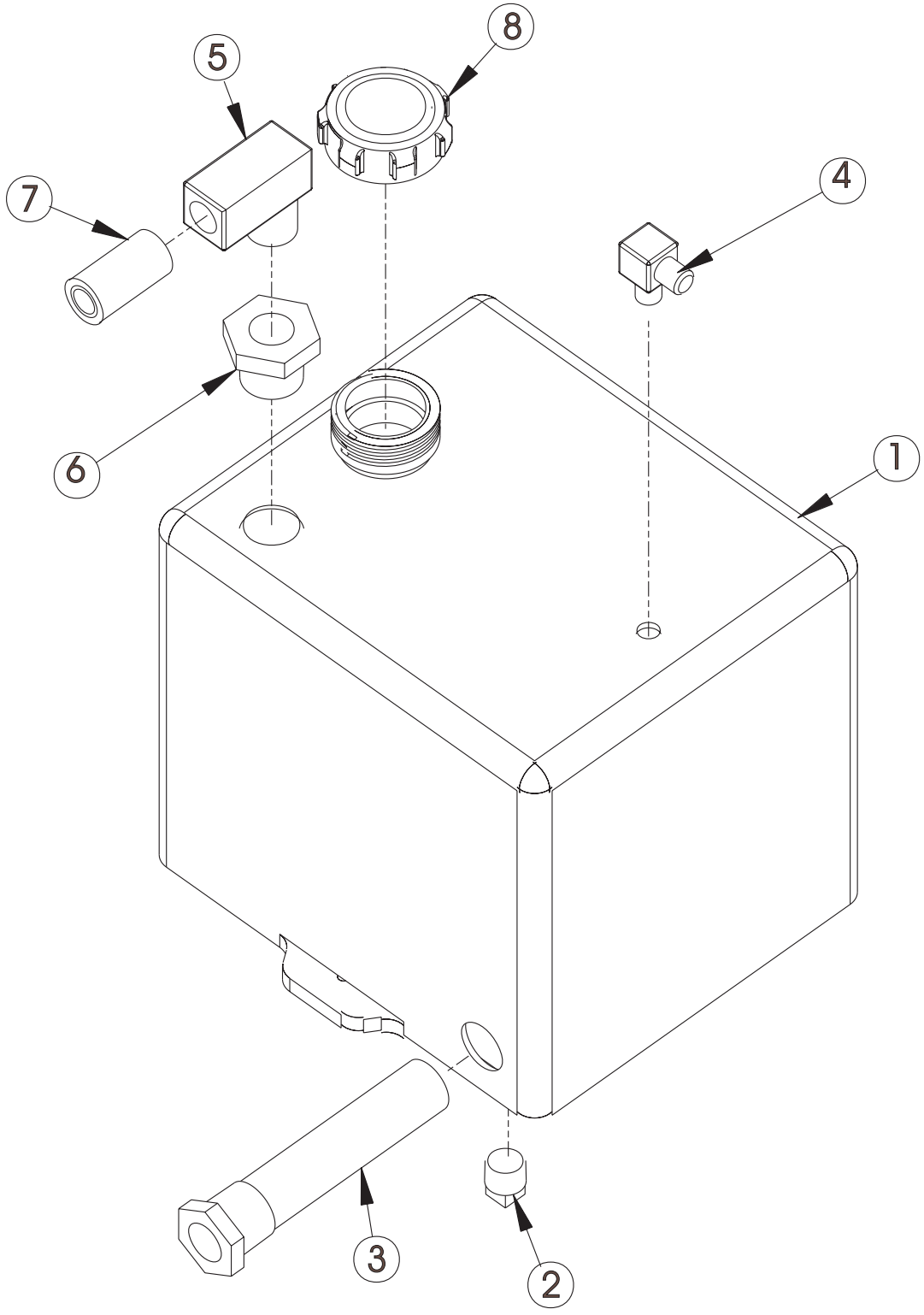




Hydraulic Tank Assembly

101152-000

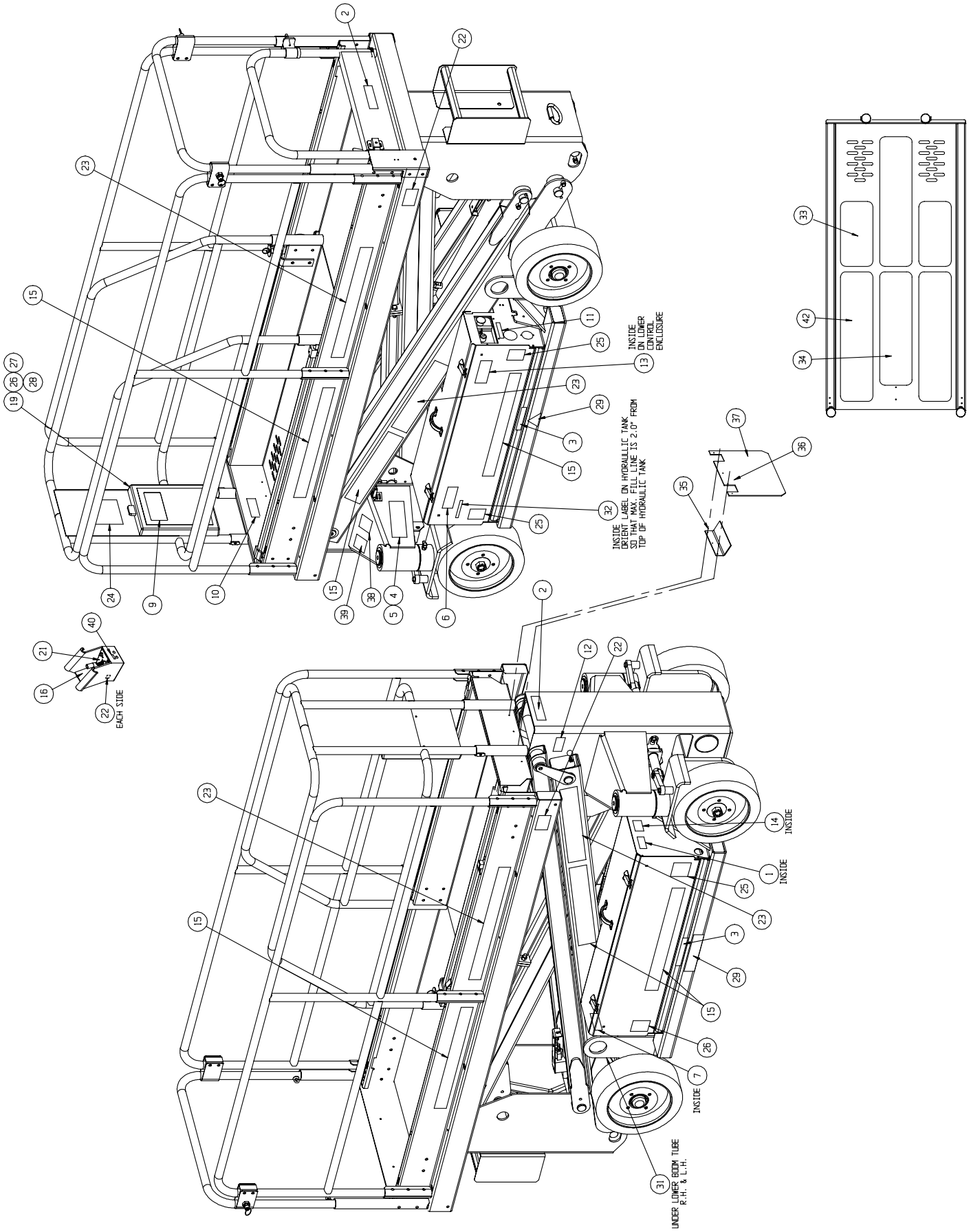
Item	Part	Description	QTY.
1	101056-000	TANK, HYDRAULIC	1
2	021305-006	PLUG, MAGNETIC	1
3	061818-000	STRAINER, SUCTION	1
4	011940-006	FITTING, ELBOW	1
5	011917-012	FITTING, ELBOW	1
6	011923-012	FITTING, REDUCER	1
7	012467-004	NIPPLE 3/4 NPT X 2 LG.	1
8	068982-001	CAP, HYDRAULIC FLUID	1



Label Kit Installation

101009-021

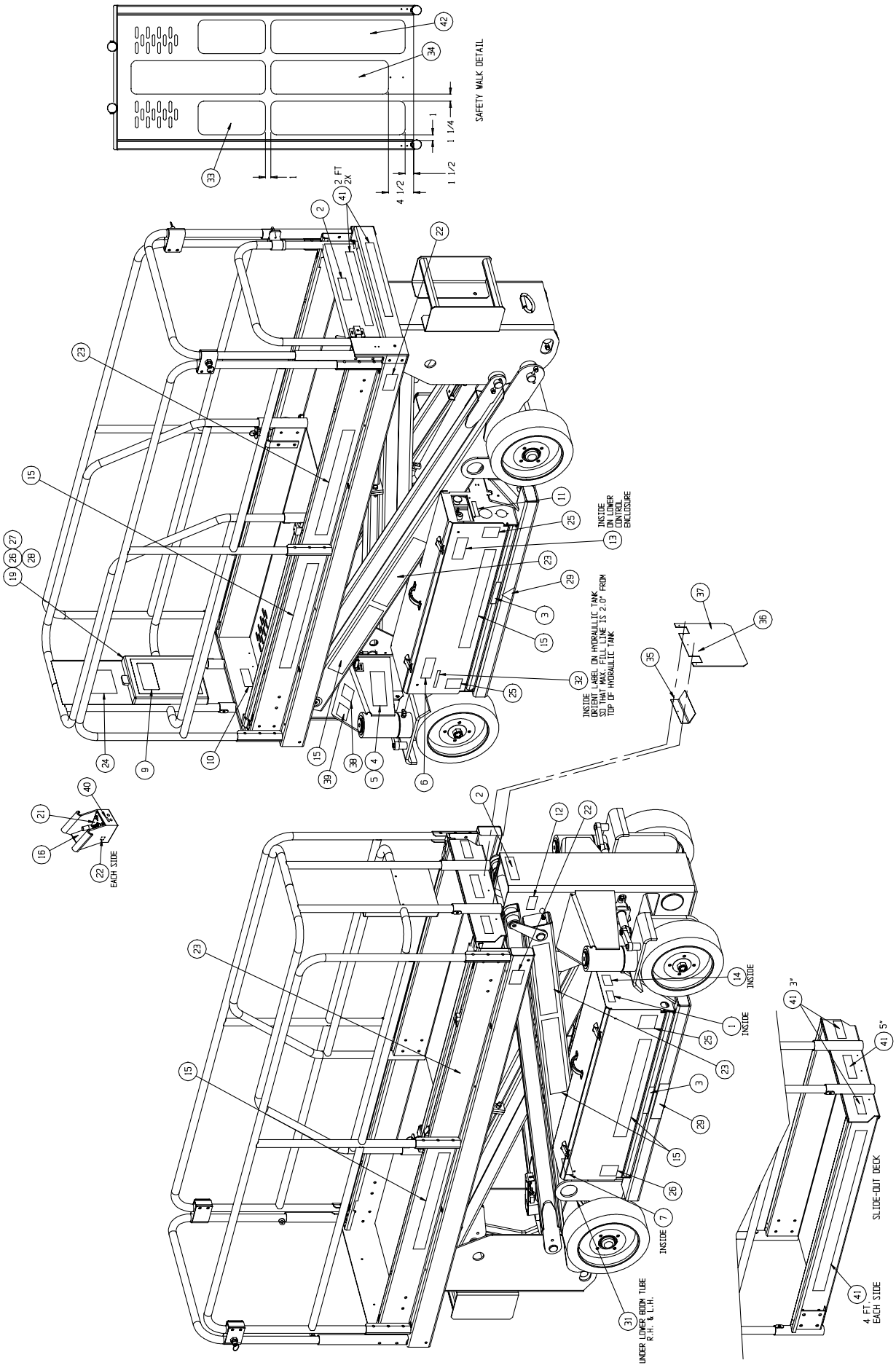
Item	Part	Description	QTY.
1	005221-000	LABEL, BATTERY FLUID	1
2	066557-064	LABEL, MAX LOAD 340 KG	2
3	014222-003-99	LABEL, FORK LIFT HERE	2
4	065368-000	TACK	4
5	061205-003	NAME PLATE	1
6	101206-000	LABEL, LOWER PLATFORM	1
7	101210-000	LABEL, DANGER HYDROGEN GAS	1
9	010076-001	LABEL, ATTENTION	1
10	066557-058	LABEL, MAX LOAD 113 KG	1
11	066559-000	LABEL, CONTROLS	1
12	066558-001	LABEL, EMERGENCY LOWERING	1
13	066555-000	LABEL, CAUTION RELIEF VALVE	1
14	062562-051	LABEL, DANGER BATTERIES	1
15	061683-013	LABEL, UP-RIGHT	6
16	066554-000	LABEL, BEFORE OPERATING	1
19	101198-021	USER MANUAL	1
21	101222-004	LABEL, CONTROLLER	1
22	064444-000	LABEL, USA	4
23	061684-028	LABEL, SL20	4
24	066550-006	LABEL, DANGER	1
25	101209-000	LABEL, WARNING CRUSHING	4
26	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	2
27	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
28	010076-000	MANUAL CASE	1
29	101208-000	LABEL, WARNING PINCH POINT	2
31	066520-099	TAPE, UHMW	2 FT
32	101203-000	LABEL, FILL LINE	1
33	027966-006	SAFETY WALK, 6 X 12	2
34	060830-003	SAFETY WALK, 6 X 21	1
35	101218-000	GATE BRACKET	1
36	026551-005	RIVET 1/8 0188-.25 GRIP	5
37	101140-000	GUARD RUBBER	1
38	030768-002	LABEL GS	1
39	030768-001	LABEL CE	1
40	101235-001	LABEL LOADING/LOWERING SW	1
41	064936-099	TAPE BLK/YEL	FT 6
42	027966-005	SAFETY WALK, 6 X 24	3


INSIDE ON LOWER CONTROL ENCLOSURE
INSIDE ORIENT LABEL ON HYDRAULLIC TANK SO THAT MAX. FILL LINE IS 2.0" FROM TOP OF HYDRAULIC TANK
EACH SIDE
INSIDE
INSIDE
INSIDE
UNDER LOWER BOOM TUBE R.H. & L.H.

Label Kit, German

101009-220

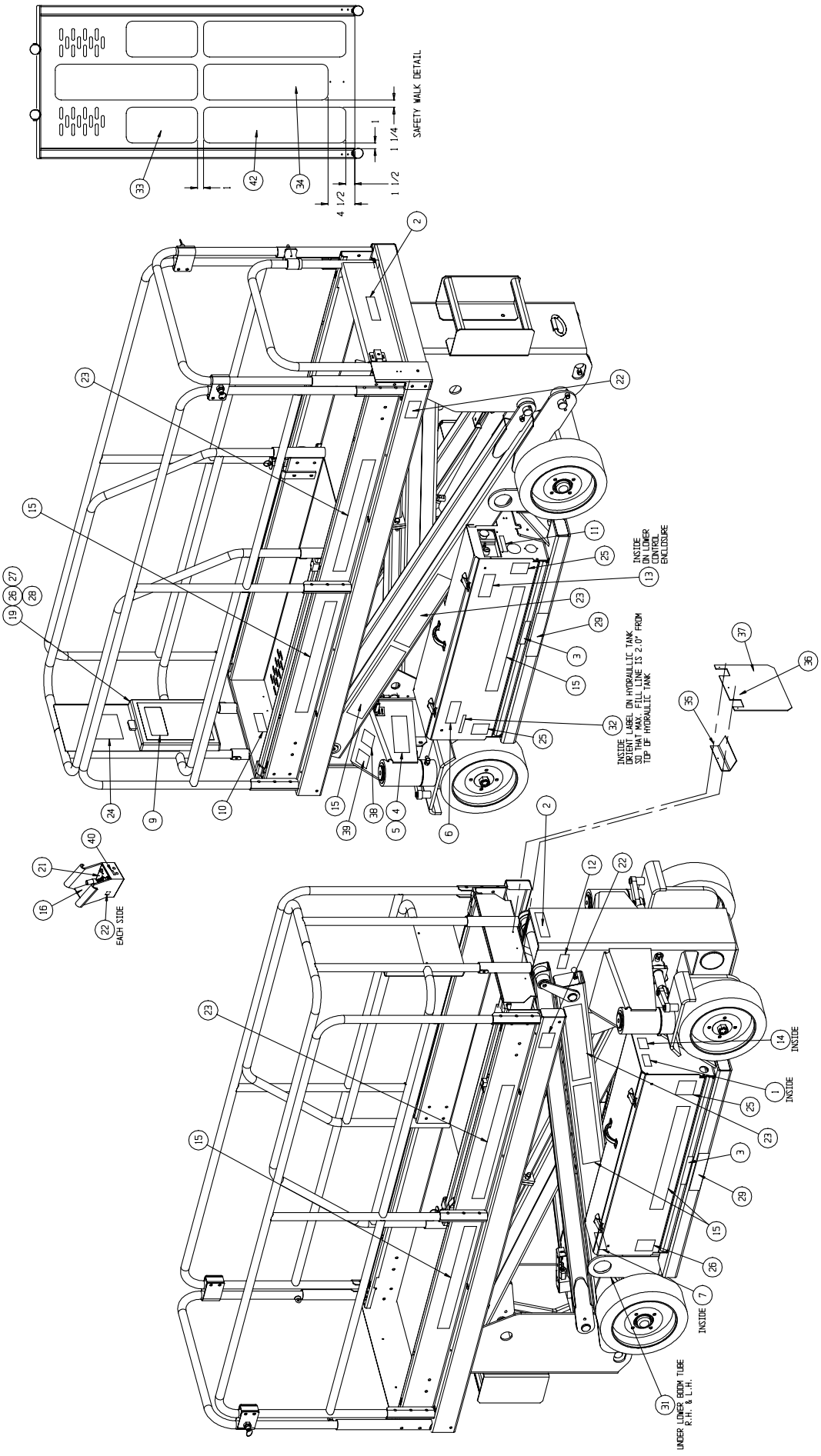
Item	Part	Description	QTY.
1	064911-000	LABEL, BATTERY FLUID	1
2	064910-006	LABEL, MAX LOAD 340 KG	2
3	064948-000	LABEL, FORK LIFT HERE	2
4	065368-000	TACK	4
5	061205-104	NAME PLATE	1
6	064950-000	LABEL, LOWER PLATFORM	1
7	101210-000	LABEL, DANGER HYDROGEN GAS	1
9	064913-000	LABEL, ATTENTION	1
10	066557-208	LABEL, MAX LOAD 113 KG	1
11	064908-001	LABEL, CONTROLS	1
12	064912-002	LABEL, EMERGENCY LOWERING	1
13	066555-200	LABEL, CAUTION RELIEF VALVE	1
14	064923-000	LABEL, DANGER BATTERIES	1
15	061683-013	LABEL, UP-RIGHT	6
19	101198-021	USER MANUAL	1
21	101222-204	LABEL, CONTROLLER	1
22	064444-000	LABEL, USA	4
23	061684-028	LABEL, SL20	4
24	064935-000	LABEL, DANGER	1
25	101209-000	LABEL, WARNING CRUSHING	4
26	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	2
27	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
28	010076-000	MANUAL CASE	1
29	101208-000	LABEL, WARNING PINCH POINT	2
31	066520-099	TAPE, UHMW	2 FT
32	064951-000	LABEL, FILL LINE	1
33	027966-006	SAFETY WALK, 6 X 12	2
34	060830-003	SAFETY WALK, 6 X 21	1
35	101218-000	GATE BRACKET	1
36	026551-005	RIVET 1/8 0188-.25 GRIP	5
37	101140-000	GUARD RUBBER	1
38	030768-002	LABEL GS	1
39	030768-001	LABEL CE	1
40	101235-201	LABEL-LOADING/LOWERING SW	1
41	064936-099	TAPE BLK/YEL	FT 15
42	027966-005	SAFETY WALK, 6 X 24	3


SAFETY WALK DETAIL
1 1/4
1 1/2
4 1/2
2 FT
2X
INSIDE ON LOWER CONTROL ENCLOSURE
INSIDE ORIENT LABEL ON HYDRAULLIC TANK SO THAT MAX. FILL LINE IS 2.0" FROM TOP OF HYDRAULIC TANK
EACH SIDE
INSIDE
UNDER LOWER BOOM TUBE R.H. & L.H.
SLIDE-OUT DECK
3"
5"
4 FT. EACH SIDE

Label Kit, French

101009-320

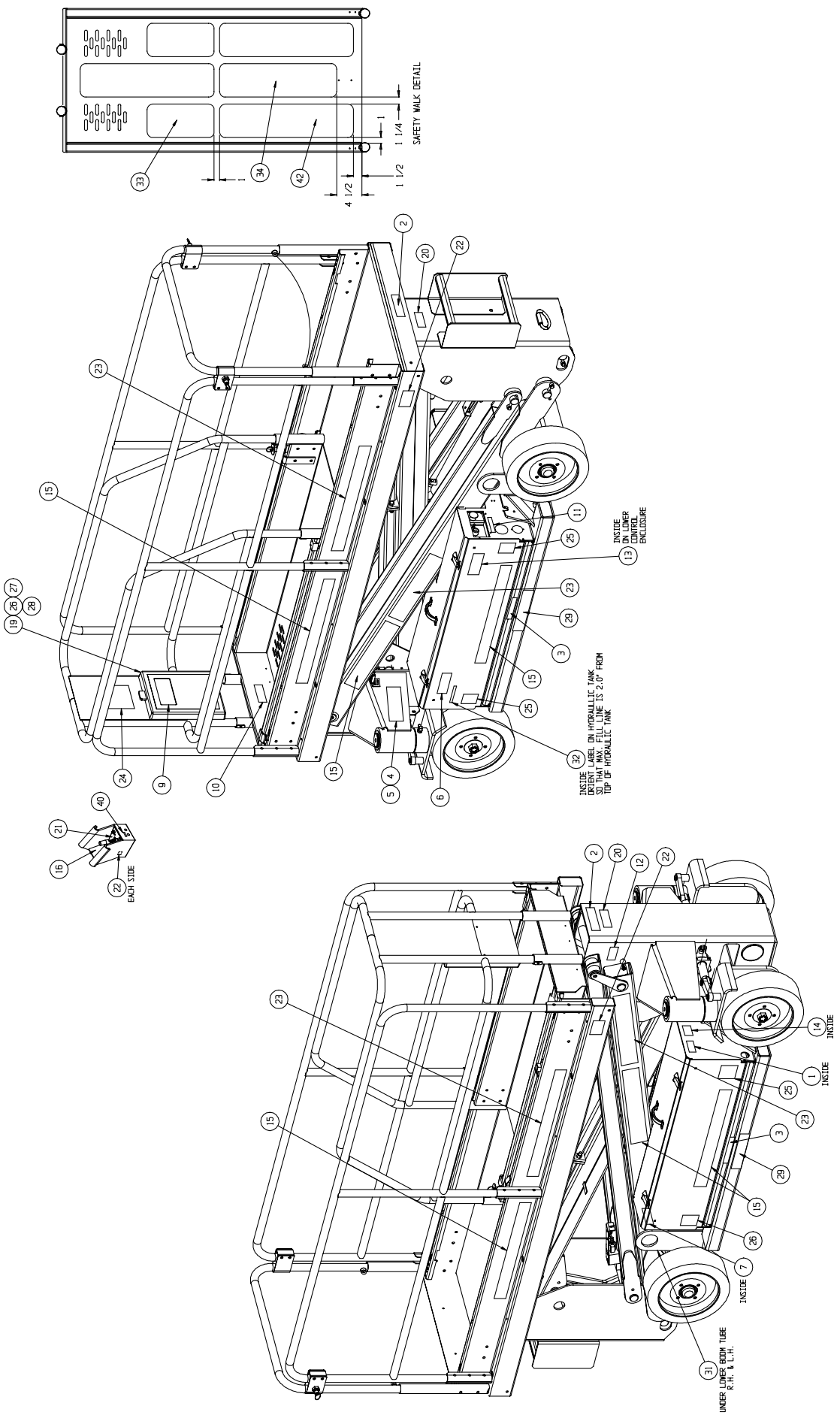
Item	Part	Description	QTY.
1	005221-300	LABEL, BATTERY FLUID	1
2	066557-314	LABEL, MAX LOAD 340 KG	2
3	014222-303	LABEL, FORK LIFT HERE	2
4	065368-000	TACK	4
5	061205-302	NAME PLATE	1
6	066568-300	LABEL, LOWER PLATFORM	1
7	066552-300	LABEL, DANGER HYDROGEN GAS	1
7	066552-300	LABEL, DANGER HYDROGEN GAS	1
9	010076-301	LABEL, ATTENTION	1
10	066557-308	LABEL, MAX LOAD 113 KG	1
11	066559-300	LABEL, CONTROLS	1
12	066558-300	LABEL, EMERGENCY LOWERING	1
13	066555-300	LABEL, CAUTION RELIEF VALVE	1
14	062562-301	LABEL, DANGER BATTERIES	1
15	061683-013	LABEL, UP-RIGHT	6
16	066554-300	LABEL, BEFORE OPERATING	1
19	101198-021	USER MANUAL	1
21	101222-304	LABEL, CONTROLLER	1
22	064444-000	LABEL, USA	4
23	061684-028	LABEL, SL20	4
24	066550-306	LABEL, DANGER	1
25	066556-301	LABEL, WARNING CRUSHING	4
26	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	2
27	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
28	010076-000	MANUAL CASE	1
29	066553-301	LABEL, WARNING PINCH POINT	2
30	065929-099	TAPE, DOUBLE SIDED	2 FT
31	066520-099	TAPE, UHMW	2 FT
32	101203-300	LABEL, FILL LINE	1
33	027966-006	SAFETY WALK, 6 X 12	2
34	060830-003	SAFETY WALK, 6 X 21	1
35	101218-000	GATE BRACKET	1
36	026551-005	RIVET 1/8 0188-.25 GRIP	5
37	101140-000	GUARD RUBBER	1
38	030768-002	LABEL GS	1
39	030768-001	LABEL CE	1
40	101235-301	LABEL -LOADING/LOWERING SW	1
42	027966-005	SAFETY WALK, 6 X 24	3


SAFETY WALK DETAIL
1 1/4
1
1 1/2
4 1/2
INSIDE ON LOWER CONTROL ENCLOSURE
INSIDE ON HYDRAULIC TANK ORIENT LABEL SO THAT MAX. FILL LINE IS 2.0" FROM TOP OF HYDRAULIC TANK
EACH SIDE
INSIDE
INSIDE
INSIDE
UNDER LOWER BOOM TUBE R.H. & L.H.

Label Kit, Spanish

101009-420

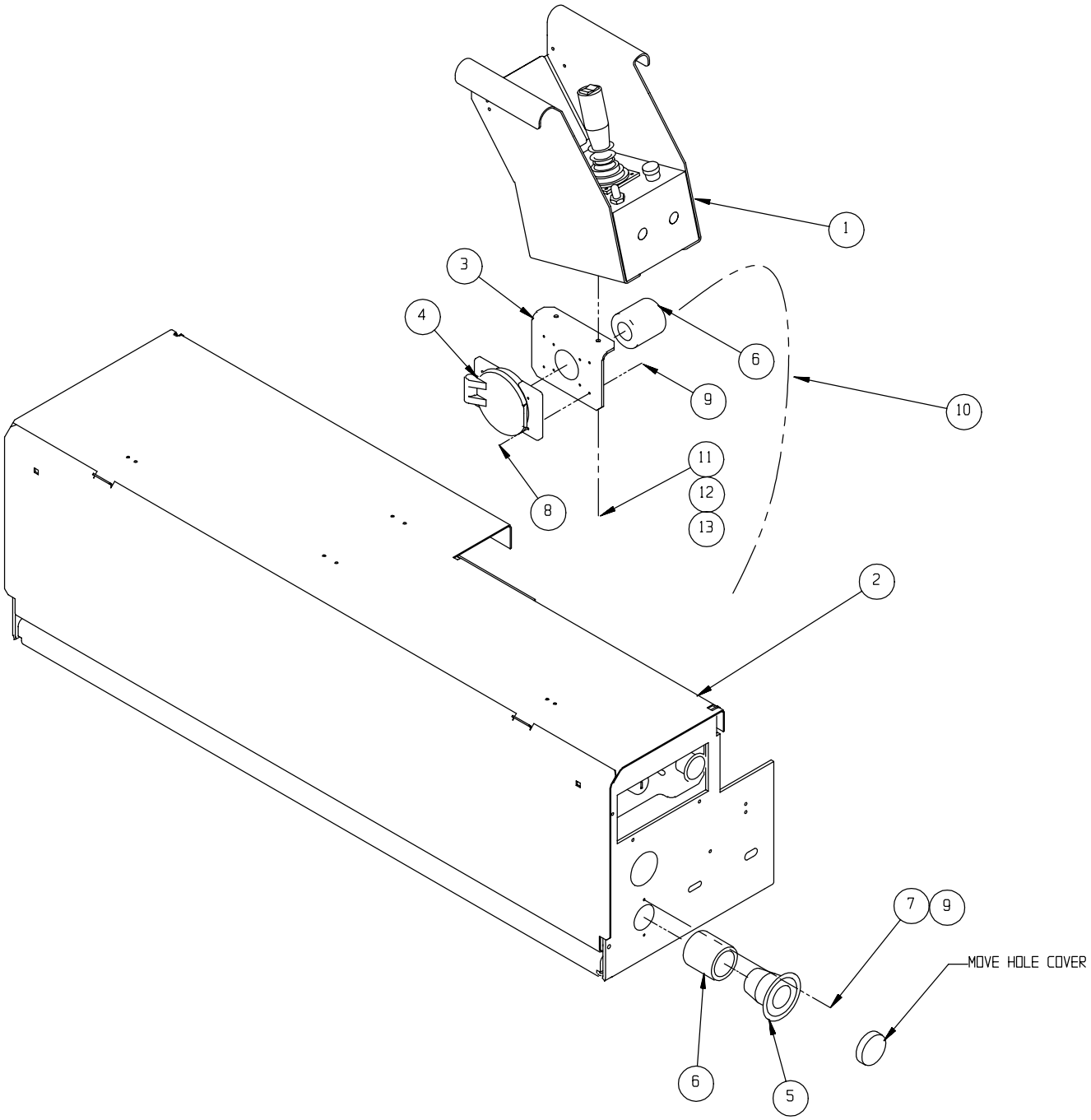
Item	Part	Description	QTY.
1	005221-400	LABEL, BATTERY FLUID	1
2	066557-414	LABEL, MAX LOAD 340 KG	2
3	014222-403	LABEL, FORK LIFT HERE	2
4	065368-000	TACK	4
5	061205-405	NAME PLATE	1
6	066568-400	LABEL, LOWER PLATFORM	1
7	066552-400	LABEL, DANGER HYDROGEN GAS	1
9	010076-401	LABEL, ATTENTION	1
10	066557-408	LABEL, MAX LOAD 113 KG	1
11	066559-400	LABEL, CONTROLS	1
12	066558-400	LABEL, EMERGENCY LOWERING	1
13	066555-400	LABEL, CAUTION RELIEF VALVE	1
14	062562-401	LABEL, DANGER BATTERIES	1
15	061683-013	LABEL, UP-RIGHT	6
16	066554-400	LABEL, BEFORE OPERATING	1
19	101198-021	USER MANUAL	1
20	066553-404	LABEL, WARNING PINCH POINT	2
21	101222-404	LABEL, CONTROLLER	1
22	064444-000	LABEL, USA	4
23	061684-028	LABEL, SL20	4
24	066550-406	LABEL, DANGER	1
25	066556-401	LABEL, WARNING CRUSHING	4
26	011252-006	SCREW, 1/4-20 UNC HEX HD CAP X 3/4	2
27	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
28	010076-000	MANUAL CASE	1
29	066553-401	LABEL, WARNING PINCH POINT	2
31	066520-099	TAPE, UHMW	2 FT
32	101203-400	LABEL, FILL LINE	1
33	027966-006	SAFETY WALK, 6 X 12	2
34	060830-003	SAFETY WALK, 6 X 21	1
35	101218-000	GATE BRACKET	1
36	026551-005	RIVET 1/8 0188-.25 GRIP	5
37	101140-000	GUARD RUBBER	1
38	030768-002	LABEL GS	1
39	030768-001	LABEL CE	1
40	101235-401	LABEL-LOADING/LOWERING SW.	1
42	027966-005	SAFETY WALK, 6 X 24	3


SAFETY WALK DETAIL
1 1/4
1
1 1/2
4 1/2
33
34
42
INSIDE ON LOWER CONTROL ENCLOSURE
INSIDE ORIENT LABEL ON HYDRAULIC TANK SO THAT MAX. FILL LINE IS 2.0" FROM TOP OF HYDRAULIC TANK
EACH SIDE
INSIDE
UNDER LOWER BOOM TUBE R.H. & L.H.

Power To Platform Option

101196-020

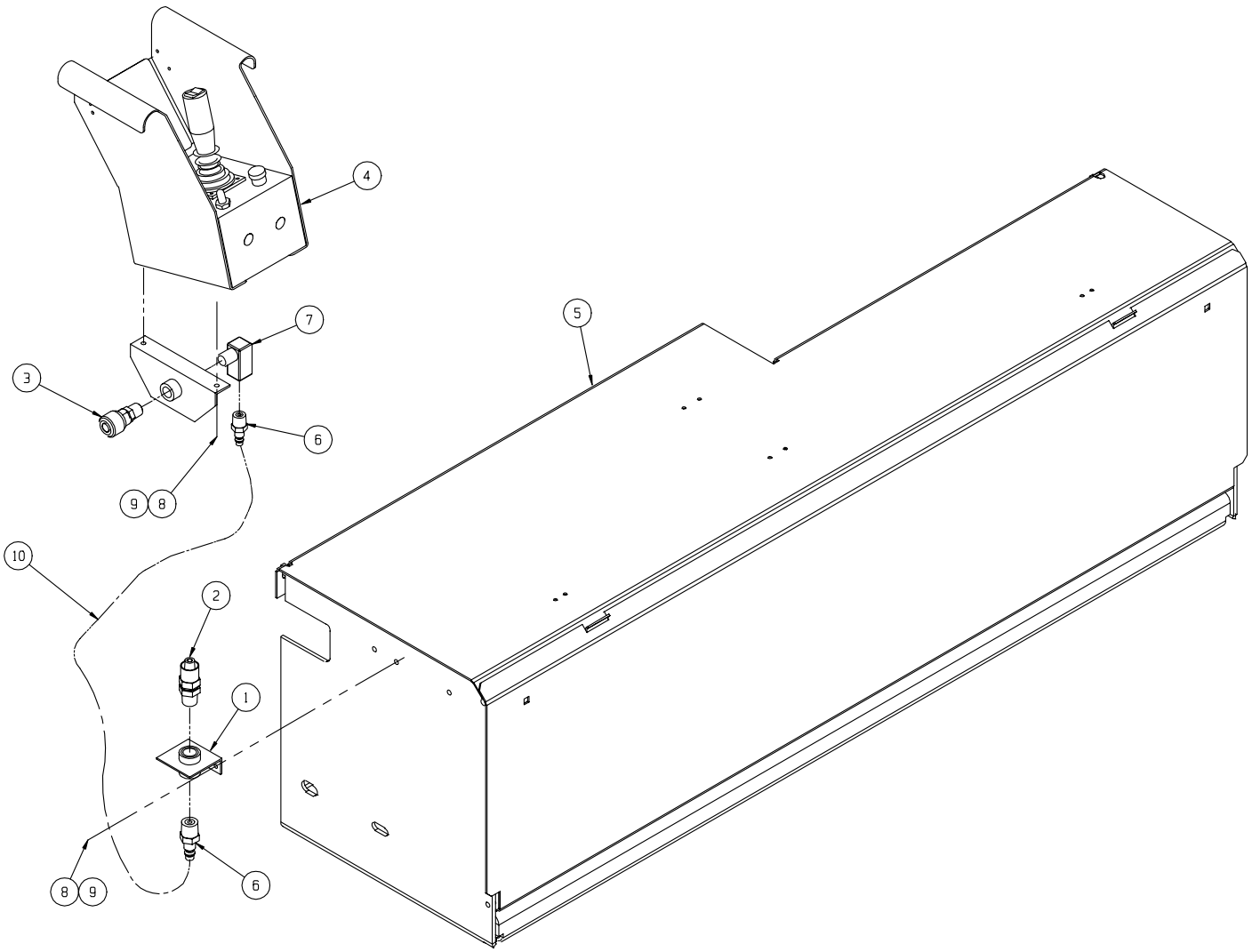
Item	Part	Description	QTY.
1	065610-021	CONTROLLER ASSEMBLY	REF
2	101005--020	CONTROL MODULE ASSEMBLY	REF
3	101185-000	BRACKET, POWER TO PLATFORM	1
4	008942-001	OUTLET, AC	1
5	029961-002	OUTLET, MALE	1
6	029961-001	BOOT	2
7	011715-004	SCREW, #6-32 UNC RD HD MACH X 1/2	2
8	011715-006	SCREW, #6-32 UNC RD HD MACH X 3/4	2
9	011248-047	LOCKNUT, #6-23 UNC HEX	4
10	029495-099	WIRE, 14 GA 3 COND	37’
11	011252-008	SCREW, 1/4-20 UNC HEX HD CAP X 1	2
12	011248-004	LOCKNUT, 1/4-20 UNC HEX	2
13	011240-004	WASHER, 1/4 DIA STD FLAT	4



Air To Platform Option

101197-020

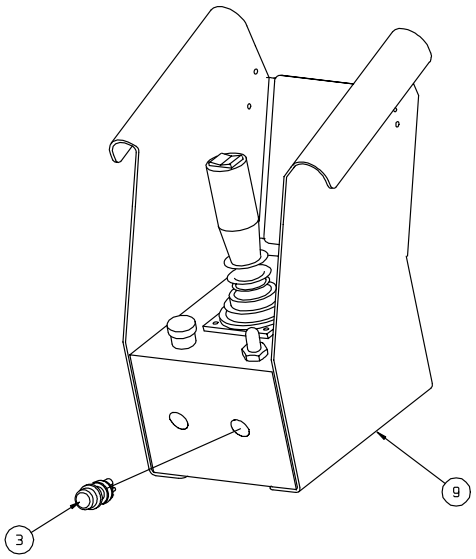
Item	Part	Description	QTY.
1	063191-000	BRACKET WELDMENT	2
2	012728-000	COUPLING	1
3	012729-003	COUPLING	1
4	065610-021	CONTROLLER ASSEMBLY	REF
5	101005-020	CONTROL MODULE ASSEMBLY	REF
6	064274-002	HOSE FITTING	2
7	011917-007	FITTING, ELBOW	1
8	011249-003	LOCKNUT, #10-32 UNF HEX	4
9	011826-008	SCREW, #10-32 UNF RND HD MACH X 1	4
10	015770-099	HOSE, 3/8 AIR	50 FT

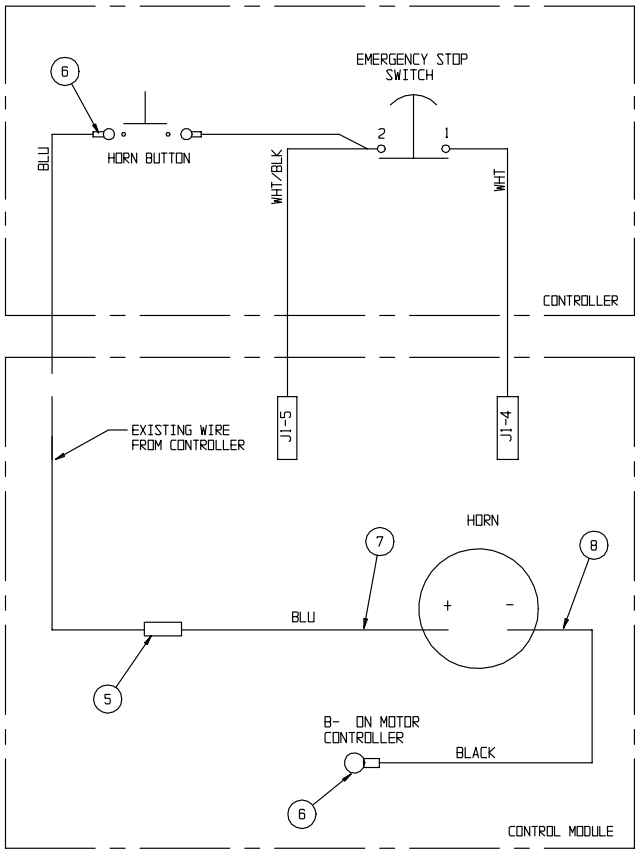


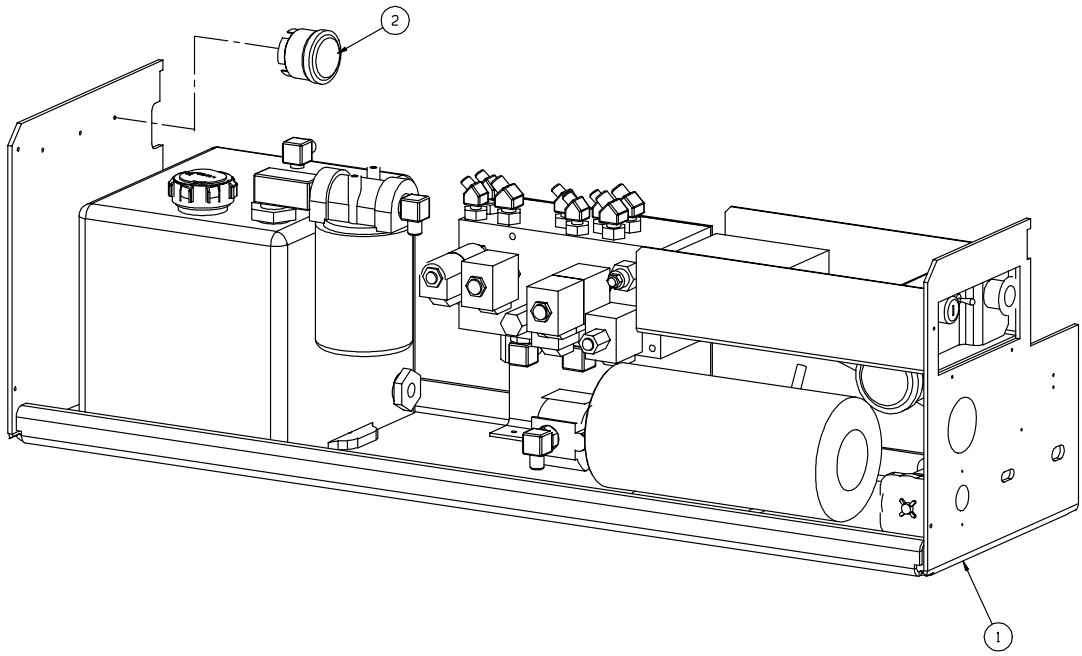
Horn Option

101190-020

Item	Part	Description	QTY.
2	066807-002	HORN, 24 VDC	1
3	063917-000	SWITCH, PUSH BUTTON	1
5	029620-002	CONNECTOR, BUTT 16-14 GA	1
6	029601-013	CONNECTOR, RING TERMINAL	4
7	029453-099	WIRE, 16 AWG BLUE	4 FT
8	029452-099	WIRE, 16 AWG BLACK	4 FT
9	065610-021	CONTROLLER ASSY	REF



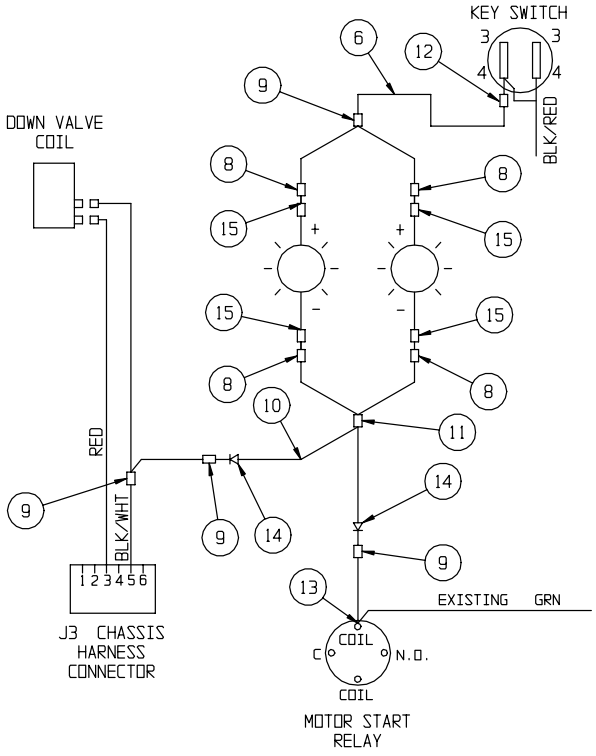




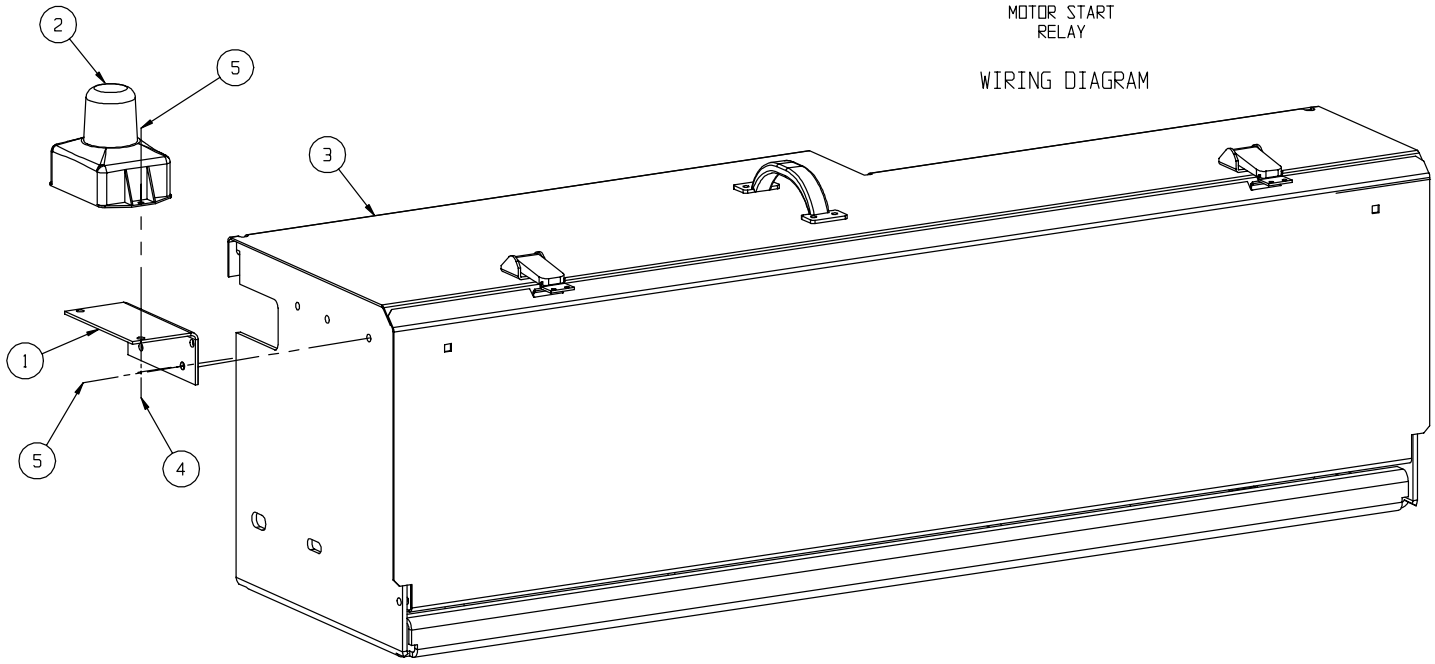
Beacon Assembly

101192-020

Item	Part	Description	QTY.
1	063193-000	BRACKET, LIGHT MOUNT	2
2	012848-004	BEACON	2
4	011249-003	NUT, #10-32 UNF LOCK	8
5	011826-008	SCREW, #10-32 UNF RD MACHINE X 1 LG	8
6	029400-099	WIRE, 16 AWG, COPPER RED	12 FT
8	029931-003	CONNECTORS, PUSH TERMINAL	4
9	029620-002	CONNECTOR, BUTT 16-14 GA, (BLUE)	4
10	029452-099	WIRE, 16 AWG COPPER BLACK	12 FT
11	029620-003	CONNECTOR, BUTT 12-10 GA, (YELLOW)	1
12	029610-006	CONNECTOR, FORK #6 16-14	1
13	029601-013	CONNECTOR, RING #10 16-14	1
14	029825-002	DIODE 5 AMP	2
15	014914-001	CONNECTOR, MALE PUSH	4



WIRING DIAGRAM



NOTES:

UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

UpRight, Inc.
1775 Park Street
Selma, California 93662
TEL: 559/891-5200
FAX: 559/891-9012
PARTS: 1-888-UR-PARTS
PARTS FAX: 559/896-9244

Upright Ireland, Ltd.
Pottery Road
Dun Laoire,
Ireland
TEL: 353-1-202-4100
FAX: 353-1-202-4105

101199-022
01/00 K