UpRight

TM 12

SERIES

Work Platforms

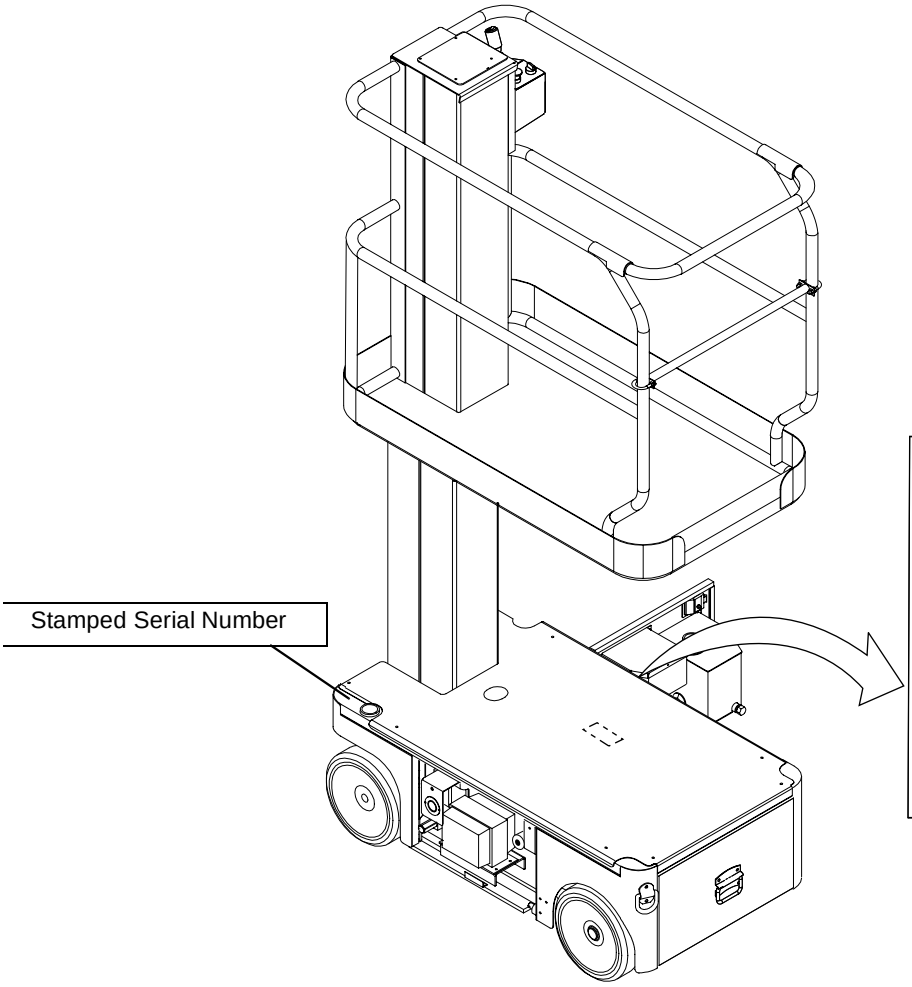
European Specifications

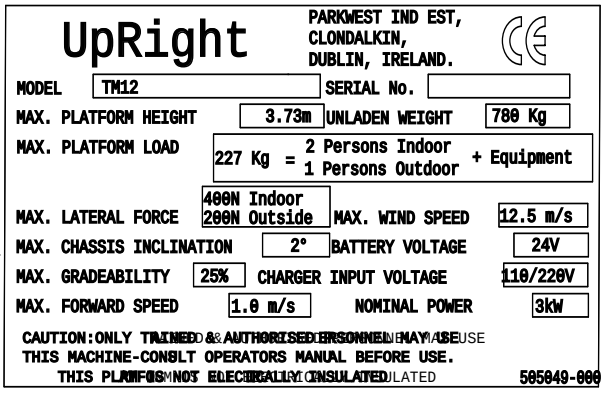
Service & Parts Manual

TM 12

Serial Numbers 50000 – 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 on top of the chassis above the front axle pivot.





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TM12 SEVICE AND PARTS MANUAL
PART NUMBER : 505115-000
SERIAL NO. 50000

FOREWORD

HOW TO USE THIS MANUAL

This manual is divided into six sections.

SECTION 1 INTRODUCTION

General description and machine specifications.

SECTION 2 OPERATION AND SPECIFICATIONS

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 an imminently hazardous situation which, if not avoided, will result in severe injury or death.

⚠ WARNING ⚠

Indicates a potentially hazardous situation which, if not avoided, could result in severe injury or death.

⚠ CAUTION ⚠

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTE: Gives helpful information.

WORKSHOP PROCEDURES

CAUTION

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Note that this manual does contain warnings and cautions against some specific service methods that 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, might be done, or of the possible hazardous consequences of each conceivable way, nor could UpRight investigate all such ways. Anyone using service procedures or tools, whether or not recommended by UpRight must satisfy themselves thoroughly that neither personal safety nor machine safety will be jeopardized. When in doubt, contact your local distributor or UpRight.

Section 1

INTRODUCTION

1.1 INTRODUCTION

PURPOSE

The purpose of this service and parts manual is to provide instructions and illustrations for the operation and maintenance of the TM12 manufactured by UpRight.

SCOPE

The manual includes procedures for proper operation, maintenance, adjustment, and repair of the TM12 as well as recommended maintenance schedules and troubleshooting.

1.2 GENERAL DESCRIPTION

The TM12 consists of the platform, controller, elevating assembly, power module, control module, and chassis.

⚠ WARNING ⚠

DO NOT use the work platform without guardrails properly assembled and in place.

Figure 1-1: TM12 Work Platform

PLATFORM

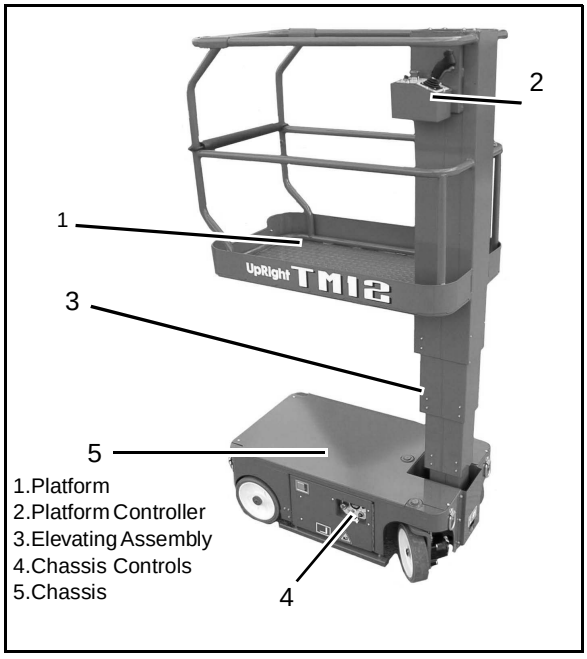
The platform has a reinforced steel floor, 1.11 m (43.75 inch) high guardrails with midrail, 6 inch (152 mm) toeboards, and an entrance gate at the rear of the platform.

PLATFORM CONTROLLER

The platform controller contains the controls to operate the machine. It is located at the front of the platform. A complete explanation of control functions can be found in Section 2.

ELEVATING ASSEMBLY

The platform is raised and lowered by the elevating assembly. The hydraulic pump, driven by an electric motor, powers the cylinder. Solenoid operated valves control raising and lowering.



CHASSIS

The chassis is a structural frame that supports all the components of the TM12 work platform. The platform is raised and lowered using a scissors mechanism. Lift is achieved using a single stage cylinder.

PURPOSE OF EQUIPMENT

The objective of the work platform is to provide a quickly deployable, sel- propelled, variable height work platform to elevate personnel and materials to overhead work areas.

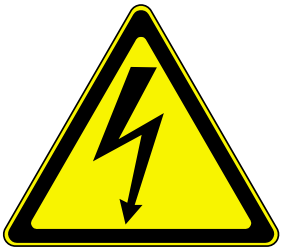
OPERATION MANUAL

WARNING

All personnel shall carefully read, understand and follow all safety rules and operating instructions before operating or performing maintenance on any UpRight aerial work platform.

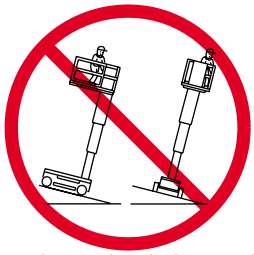
Safety Rules

Electrocution Hazard



THIS MACHINE IS NOT INSULATED!

Tip Over Hazard

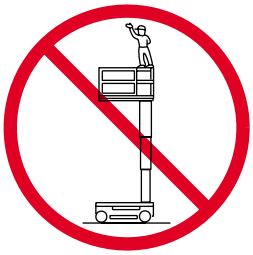


NEVER elevate the platform or drive the machine while elevated unless the machine is on a firm, level surface.

Collision Hazard

NEVER position the platform without first checking for overhead obstructions or other hazards.

Fall Hazard



NEVER climb, stand, or sit on platform guardrails or midrail.

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!

THIS AERIAL WORK PLATFORM IS NOT INSULATED! For this reason it is imperative to keep a safe distance from live parts of electrical equipment!

Exceeding the specified permissible maximum load **is prohibited!** See "Platform Capacity" on page4 for details.

The use and operation of the aerial work platform as a lifting tool or a crane **is prohibited!**

NEVER exceed the manual force allowed for this machine. See "Manual Force" on page 4 for details.

DISTRIBUTE all platform loads evenly on the platform.

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

OPERATE machine only on surfaces capable of supporting wheel loads.

NEVER operate the machine when wind speeds exceed this machine's wind rating. See "Beaufort Scale" on page 4 for details.

IN CASE OF EMERGENCY push EMERGENCY STOP switch to deactivate all powered functions.

IF ALARM SOUNDS while platform is elevated, STOP, carefully lower platform. Move machine to a firm, level surface.

Climbing up the railing of the platform, standing on or stepping from the platform onto buildings, steel or prefab concrete structures, etc., **is prohibited!**

Dismantling the entry gate or other railing components **is prohibited!** Always make certain that the entry gate is closed and securely locked!

It is prohibited to keep the entry gate in an open position when the platform is raised!

To extend the height or the range by placing of ladders, scaffolds or similar devices on the platform **is prohibited!**

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

INSPECT the machine thoroughly for cracked welds, loose or missing hardware, hydraulic leaks, loose wire connections, and damaged cables or hoses before using.

VERIFY that all labels are in place and legible before using.

NEVER use a machine that is damaged, not functioning properly, or has damaged or missing labels.

To bypass any safety equipment **is prohibited** and presents a danger for the persons on the aerial work platform and in its working range.

NEVER charge batteries near sparks or open flame. Charging batteries emit explosive hydrogen gas.

Modifications to the aerial work platform **are prohibited** or permissible only at the approval by UpRight.

AFTER USE, secure the work platform from unauthorized use by turning the keyswitch off and removing key.

CONTENTS

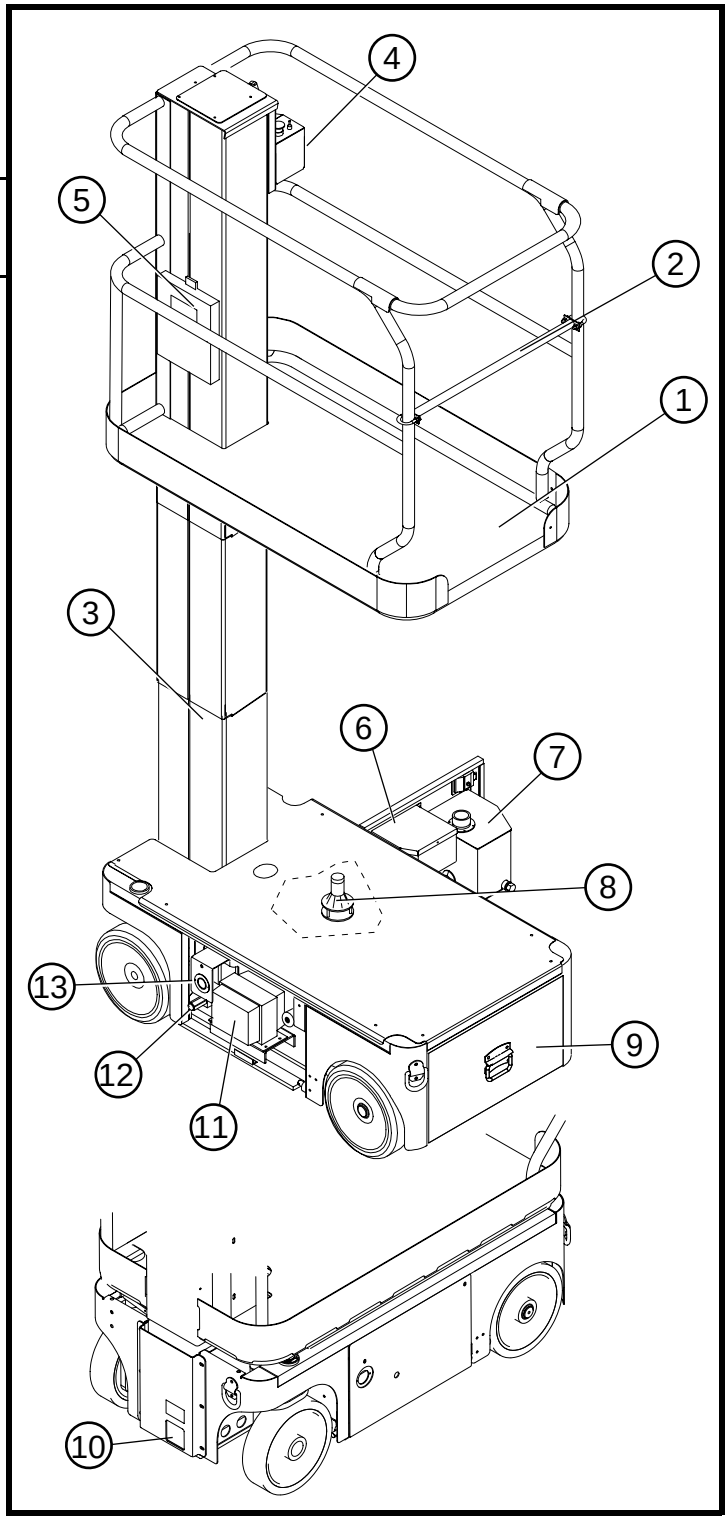
INTRODUCTION

This manual covers all models of the TM12 Aerial Work Platform. This manual must be stored on the machine at all times.

Read, understand and follow all safety rules and operating instructions before attempting to operate the machine.

GENERAL DESCRIPTION

Figure 1: TM12 Series



1. Platform

WARNING

DO NOT *use the maintenance platform without guardrails properly assembled and in place*

2. Entry Bar

3. Elevating Mast

4. Platform Controls

5. Manual Case

6. Electrical Box

7. Hydraulic Reservoir

8. Level Sensor

9. Battery Tray

10. Emergency Lowering Valve

11. Battery Charger

12. Drive Relief Valve

13. Charger Outlet Plug

SPECIAL LIMITATIONS

Travel with the platform raised is limited to creep speed range.

Elevating the platform is limited to firm, level surfaces only.

⚠ DANGER ⚠

The elevating function shall ONLY be used when the work platform is level and on a firm surface.

The work platform is NOT intended to be driven over uneven, rough, or soft terrain.

PLATFORM CAPACITY

The maximum platform capacity for the TM12 is 227 kg (500 lbs). Two people may occupy the platform indoors, while only one may occupy the platform outdoors.

⚠ DANGER ⚠

DO NOT exceed the maximum platform capacity or the platform occupancy limits for this machine.

MANUAL FORCE

Manual force is the force applied by the occupants to objects such as walls or other structures outside the work platform.

The maximum allowable manual force is limited to 200 N (45 lbs.) of force per occupant, with a maximum of 400 N (90 lbs.) for two occupants.

⚠ DANGER ⚠

DO NOT exceed the maximum amount of manual force for this machine.

BEAUFORT SCALE

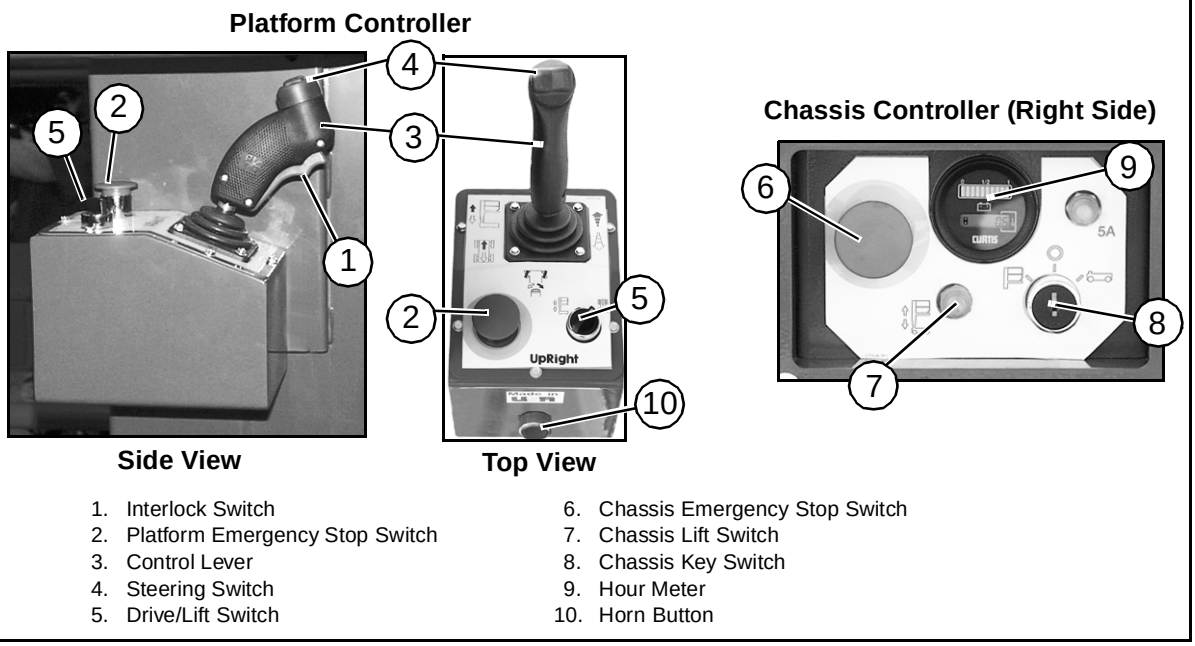
Never operate the machine when wind speeds exceed 25 km/h (15 mph) [Beaufort scale 4].

BEAUFORT RATING	WIND SPEED				GROUND CONDITIONS
	m/s	km/h	ft/s	mph	
3	3,4~5,4	12,25~19,4	11.5~17.75	7.5~12.0	Papers and thin branches move, flags wave.
4	5,4~8,0	19,4~28,8	17.75~26.25	12.0~18	Dust is raised, paper whirls up, and small branches sway.
5	8,0~10,8	28,8~38,9	26.25~35.5	18~24.25	Shrubs with leaves start swaying. Wave crests are apparent in ponds or swamps.
6	10,8~13,9	38,9~50,0	35.5~45.5	24.5~31	Tree branches move. Power lines whistle. It is difficult to open an umbrella.
7	13,9~17,2	50,0~61,9	45.5~56.5	31.~38.5	Whole trees sway. It is difficult to walk against the wind.

CONTROLS AND INDICATORS

The operator shall know the location of each control and indicator and have a thorough knowledge of the function and operation of each before attempting to operate the unit.

Figure 2: Controls and Indicators



1. Interlock Switch
2. Platform Emergency Stop Switch
3. Control Lever
4. Steering Switch
5. Drive/Lift Switch
6. Chassis Emergency Stop Switch
7. Chassis Lift Switch
8. Chassis Key Switch
9. Hour Meter
10. Horn Button

PRE-OPERATION SAFETY INSPECTION

NOTE: Carefully read, understand and follow all safety rules, operating instructions, labels and National Safety Instructions/Requirements. Perform the following steps each day before use.

1. Open the Chassis Door and inspect for damage, fluid leaks or missing parts.
2. Check the level of the hydraulic fluid with the platform fully lowered. Open the Chassis Door and remove the reservoir cap, fluid should be visible on the dipstick. Add recommended hydraulic fluid if necessary. See “Specifications” on page16.
3. Check that the fluid level in the batteries is correct. See “Battery Maintenance” on page 11.
4. Verify that the batteries are charged.
5. Check that the A.C. extension cord has been disconnected from the chassis outlet.
6. Check that all guardrails are in place and all fasteners are properly tightened.
7. Inspect the machine thoroughly for cracked welds and structural damage, loose or missing hardware, hydraulic leaks, damaged control cable and loose wire connections.

SYSTEM FUNCTION INSPECTION

Refer to Figure 1 and Figur e2 for the locations of various controls and indicators.

⚠ WARNING ⚠

***STAND CLEAR** of the work platform while performing the following checks.*

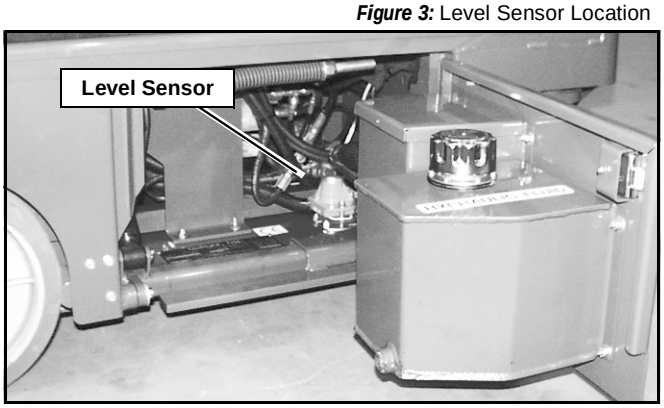
Before operating the machine, survey the work area for surface hazards such as holes, drop-offs, bumps and debris.

*Check in **ALL** directions, including above the work platform, for obstructions and electrical conductors.*

Protect the control console cable from possible damage while performing checks.

1. Move the machine, if necessary, to an unobstructed area to allow for full elevation.
2. Turn the Chassis and Platform Emergency Stop Switches ON by pulling the buttons out.
3. Turn and hold the Chassis Key Switch to CHASSIS.
4. Push the Chassis Lift Switch to the UP position and fully elevate the platform.
5. Visually inspect the mast assembly for damage or erratic operation. Check for missing or loose parts.
6. Verify that the depression mechanism supports have rotated into position under the machine.
7. Check Level Sensor operation:
   a. Open the door.
   b. Push and hold the sensor off of level.
   c. Push the Chassis Lift Switch to the UP position.
      - The alarm should sound, and the platform should not lift.
   d. Close and latch the door.
8. Partially lower the platform by pushing the Chassis Lift Switch to DOWN, and check the operation of the audible lowering alarm.
9. Check the Chassis Emergency Lowering Valve for proper operation (see Figure 4):
   a. Open the valve by pulling the knob out.
   b. Once the platform is fully lowered, close the valve by releasing the knob.
10. Push the Chassis Emergency Stop Switch down to the OFF position. All machine functions should be disabled. Pull out the Chassis Emergency Stop Switch to resume.
11. Turn the Chassis Key Switch to DECK.
12. Check that the route is clear of persons, obstructions, holes and drop-offs, is level and capable of supporting the wheel loads.
13. After mounting platform, lower the bar across the entrance.
14. Position the Drive/Lift Switch to DRIVE.
15. While depressing the Interlock Switch, slowly position the Control Lever to FORWARD then REVERSE to check for speed and directional control. The farther you push or pull the Control Lever from center the faster the machine will travel.
16. Push the Steering Switch RIGHT then LEFT to check for steering control.
17. Push the Platform Emergency Stop Switch down to the OFF position. All machine functions should be disabled. Pull out the Platform Emergency Stop Switch to resume.

Figure 3: Level Sensor Location



OPERATION

Before operating the machine, ensure that the Pre-Operation Safety Inspection has been completed and that any deficiencies have been corrected. **Never operate a damaged or malfunctioning machine.** The operator must be thoroughly trained on this machine.

TRAVEL WITH PLATFORM LOWERED

1. Check that the route is clear of people, obstructions, holes and drop-offs, is level and is capable of supporting wheel loads.
2. Verify that the Chassis Key Switch is turned to DECK and the Chassis Emergency Stop Switch is ON, (pull button out).
3. After mounting the platform, lower the bar across entrance.
4. Check clearances above, below and to the sides of the machine.
5. Pull the Controller Emergency Stop switch up to the ON position.
6. Position the Drive/Lift Switch to DRIVE.
7. While depressing the Interlock Switch, slowly push or pull the Control Lever to FORWARD or REVERSE position to travel in the desired direction. The farther you push or pull the Control Lever from center the faster the machine will travel.

STEERING

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

1. Position the Drive/Lift Switch to DRIVE.
2. While depressing the Interlock Switch, push the Steering Switch to RIGHT or LEFT to turn the wheels in the desired direction. Observe the tires while maneuvering the machine to ensure proper direction.

ELEVATING PLATFORM

1. Position the Drive/Lift Switch to LIFT.
2. While depressing the Interlock Switch, push Control Lever forward to UP, the farther you push the Control Lever the faster the Platform will elevate.
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.

TRAVEL WITH PLATFORM ELEVATED

NOTE: The machine will travel at reduced speed when the platform is elevated.

1. Check that the 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 the platform.
3. Position the Drive/Lift Switch to the DRIVE position.
4. While depressing the Interlock Switch, push Control Lever to 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.

LOWERING PLATFORM

1. Position the Drive/Lift Switch to LIFT.
2. While depressing the Interlock Switch, pull back on the Control Lever.

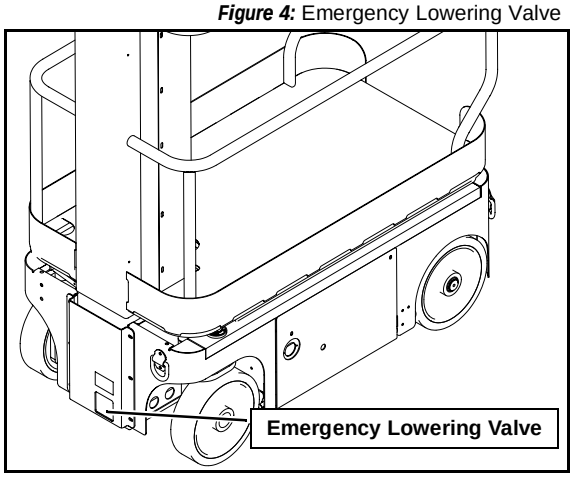
EMERGENCY LOWERING

⚠ WARNING ⚠

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

Stand clear of the elevating assembly while operating the Emergency Lowering Valve Knob.

Figure 4: Emergency Lowering Valve



Ask a person on the ground to open the Emergency Lowering Valve to lower the platform. The Emergency Lowering Valve is located at the front of the chassis.

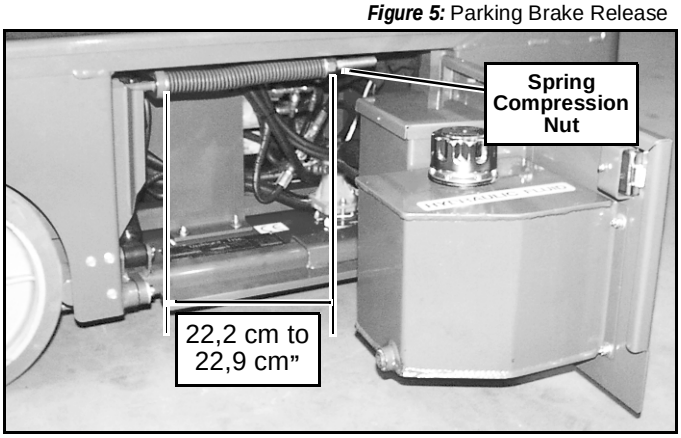
1. Open the Emergency Lowering Valve by pulling the knob out.
2. To close, release the knob.

NOTE: The platform will not elevate if the Emergency Lowering Valve is open.

PARKING BRAKE RELEASE

Perform the following procedure only when the machine will not operate under its own power and it is necessary to move the machine, or when winching onto a trailer to transport.

Figure 5: Parking Brake Release



1. Remove the spring compression nut so the spring is loose and the brake bars are away from the tires.
2. The machine will now roll when pushed or pulled.

After moving the machine and before normal operation:

1. Replace the spring compression nut and tighten until the spring measures 22,2-22,9 cm (**8¾"-9"**) in length, verify that the brake bars have fully engaged the tires before the machine is operated.

⚠ WARNING ⚠

Never tow faster than 0,3 m/sec. (1 ft./sec.).

Never operate the machine with the parking brakes released. Serious injury or damage could result.

AFTER USE EACH DAY

1. Ensure that the platform is fully lowered.
2. Park the machine on a firm level surface, preferably under cover, secure against vandals, children and unauthorized operation.
3. Turn the Chassis Key Switch to OFF and remove the key to prevent unauthorized operation.

TRANSPORTING THE MACHINE

BY CRANE

Secure the straps to chassis lifting/tie down points only.

BY FORKLIFT

⚠ DANGER ⚠

Forklifting is for transport only.

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

Forklift from the side by lifting under the Chassis.

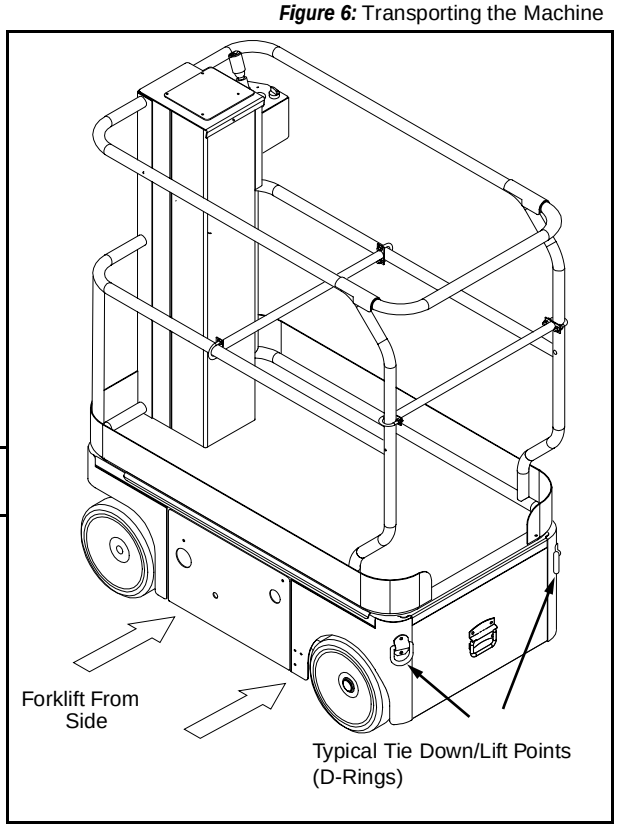
BY TRUCK

1. Maneuver the machine into transport position and chock wheels.
2. Secure the machine to the transport vehicle with chains or straps of adequate load capacity attached to the chassis lifting/tie down points.

CAUTION

Overtightening of the chains or straps attached to the Tie Down lugs may result in damage to the machine

Figure 6: Transporting the Machine



MAINTENANCE

⚠ WARNING ⚠

Never perform service while the platform is elevated without first blocking the elevating assembly.

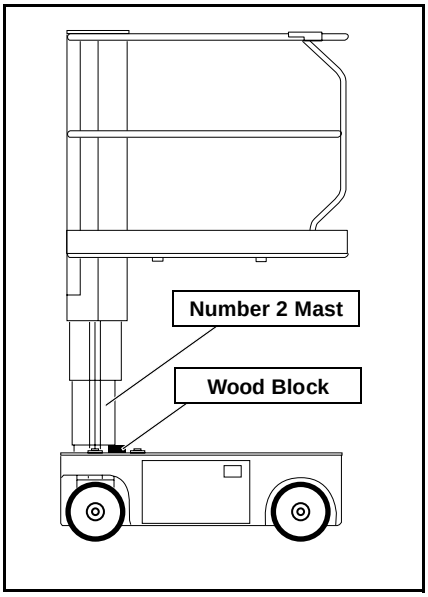
DO NOT stand in the elevating assembly area while deploying or storing the brace.

BLOCKING THE ELEVATING ASSEMBLY

INSTALLATION

1. Park the machine on firm level ground.
2. Verify that both Emergency Stop Switches are ON.
3. Turn and hold the Chassis Key Switch to CHASSIS.
4. Position the Chassis Lift Switch to UP and elevate the platform approximately 1,2 m (**4 ft.**).
5. Place a solid wood block, 51mm x 100mm x 45cm (**2”x 4”x18”**) between the second mast section and Chassis just behind the mast assembly.
6. Push the Chassis Lift Switch to the DOWN position and gradually lower the platform until the second mast section is supported by the block.

Figure 7: Supporting the Elevating Assembly



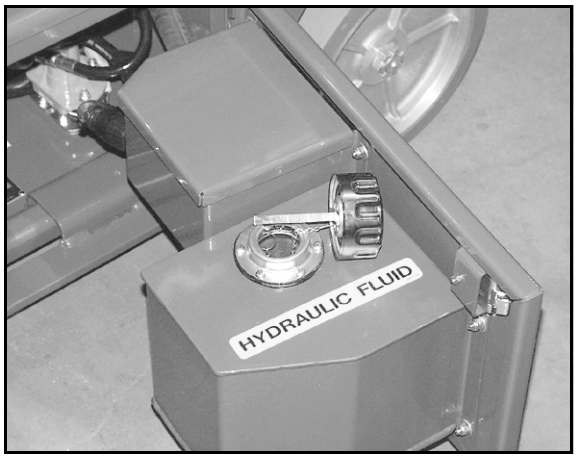
REMOVAL

1. Push the Chassis Lift Switch to the UP position and gradually raise platform until the wood block can be removed.
2. Remove the block.
3. Push the Chassis Lift Switch to the DOWN position and completely lower the platform.

HYDRAULIC FLUID

The hydraulic fluid reservoir is located in the chassis door.

Figure 8: Hydraulic Fluid Reservoir and Dipstick



NOTE: Never add fluid if the platform is elevated.

CHECK HYDRAULIC FLUID

1. Make sure that the platform is fully lowered.
2. Open the chassis door.
3. Remove the filler cap from the hydraulic fluid reservoir.
4. Check the fluid level on the dipstick on the filler cap.
5. Add the appropriate fluid to bring the level to the FULL mark. See “Specifications” on pag e16

BATTERY MAINTENANCE

Figure 9: Access to Batteries

⚠ WARNING ⚠

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

Always wear safety glasses when working near batteries.

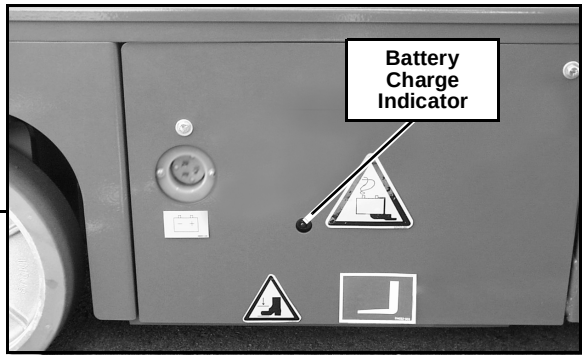
Battery fluid is highly corrosive. Thoroughly rinse away any spilled fluid with clean water.

*Always replace batteries with UpRight batteries or manufacturer approved replacements weighing 26,3 kg (**58 lbs.**) each.*

- Check the battery fluid level daily, especially if the machine is being used in a warm, dry climate.
- If electrolyte level is lower than 10 mm (**$^3/_8$ in.**) above the plates add distilled water only. DO NOT use tap water with high mineral content, as it will shorten battery life.
- Keep the terminals and tops of the batteries clean.
- Refer to the Service Manual to extend battery life and for complete service instructions.

BATTERY CHARGING

Figure 10: Battery Charge Indicator



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

⚠ WARNING ⚠

Charge the batteries in a well ventilated area.

Do not charge the batteries when the machine is near a source of sparks or flames.

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

Never leave the battery charger operating for more than two days.

Never disconnect the cables from the batteries when the charger is operating.

Keep the charger dry.

1. Check the battery fluid level. If the battery fluid level is lower than 10 mm (**$^3/_8$ in.**) above the plates add distilled water only.
2. Connect an appropriate extension cord to charger outlet plug in Left Module Door. Plug the extension cord into a properly grounded outlet of proper voltage and frequency.
3. The charger turns on automatically after a short delay. The LED charge indicator will illuminate. After completion of the charge cycle the LED will blink, indicating that the charger is in a continuing maintenance mode. DO NOT leave the charger plugged in for more than 48 hours, as permanent damage to the batteries may occur.

NOTE: The battery charger circuit must be used with a GFI (Ground Fault Interrupt) outlet.

NOTE: DO NOT operate the machine while the charger is plugged in.

INSPECTION AND MAINTENANCE SCHEDULE

The Complete Inspection consists of periodic visual and operational checks, along with periodic minor adjustments that assure proper performance. Daily inspection will prevent abnormal wear and prolong the life of all systems. The inspection and maintenance schedule should be performed at the specified 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 perform maintenance while the platform is elevated.

The daily preventative maintenance checklist has been designed for machine service and maintenance. Please photocopy the Daily Preventative Maintenance Checklist and use the checklist when inspecting the machine.

DAILY PREVENTATIVE MAINTENANCE CHECKLIST

MAINTENANCE TABLE KEY

Y = Yes/Acceptable

N = No/Not Acceptable

R = Repaired/Acceptable

PREVENTATIVE MAINTENANCE REPORT

Date: _____

Owner:_____

Model No: _____

Serial No:_____

Serviced By: _____

COMPONENT	INSPECTION OR SERVICES	Y	N	R
Battery	Check electrolyte level.			
	Check battery cable condition.			
Chassis	Check hoses for pinch or rubbing points.			
	Check welds for cracks.			
Control Cable	Check the exterior of the cable for pinching, binding or wear.			
Controller	Check switch operation.			
Drive Motors	Check for operation and leaks.			
Elevating Assembly	Inspect for structural cracks.			
Emergency Hydraulic System	Operate the emergency lowering valve and check for serviceability.			

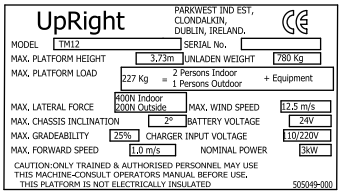
COMPONENT	INSPECTION OR SERVICES	Y	N	R
Entire Unit	Check for and repair collision damage.			
Hydraulic Fluid	Check fluid level.			
Hydraulic Pump	Check for hose fitting leaks.			
Hydraulic System	Check for leaks.			
Labels	Check for peeling, missing, or unreadable labels & replace.			
Platform Deck and Rails	Check welds for cracks.			
Platform Deck and Rails	Check condition of deck.			
Tires	Check for damage.			

LABELS

These labels shall be present and in good condition before operating the machine. Be sure to read, understand and follow these labels when operating the machine.

1 060197-001

2 101210-000



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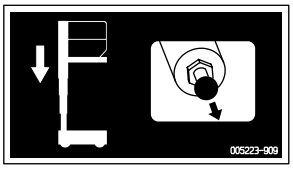

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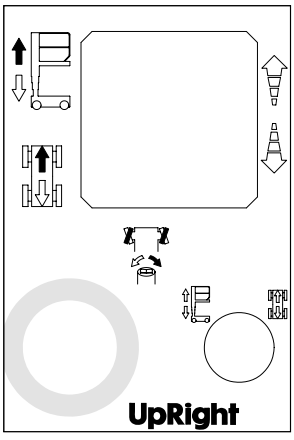

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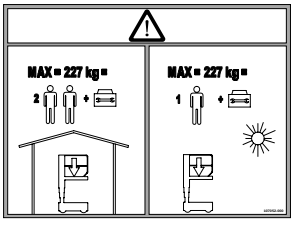

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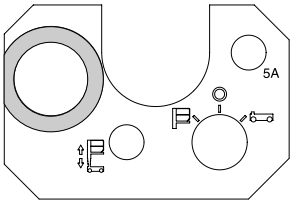

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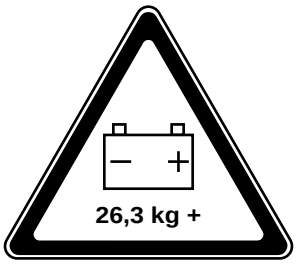

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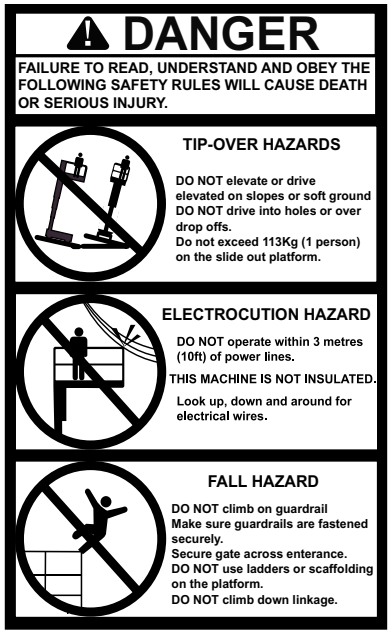

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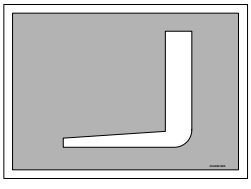

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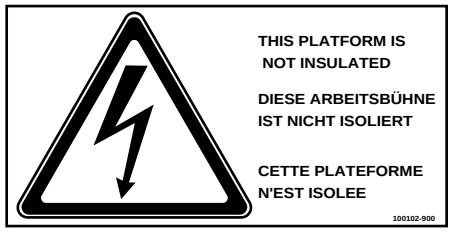

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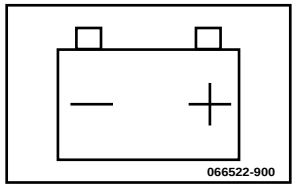

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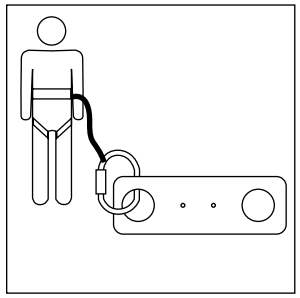

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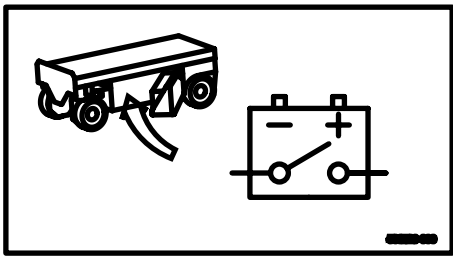

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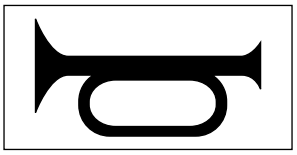
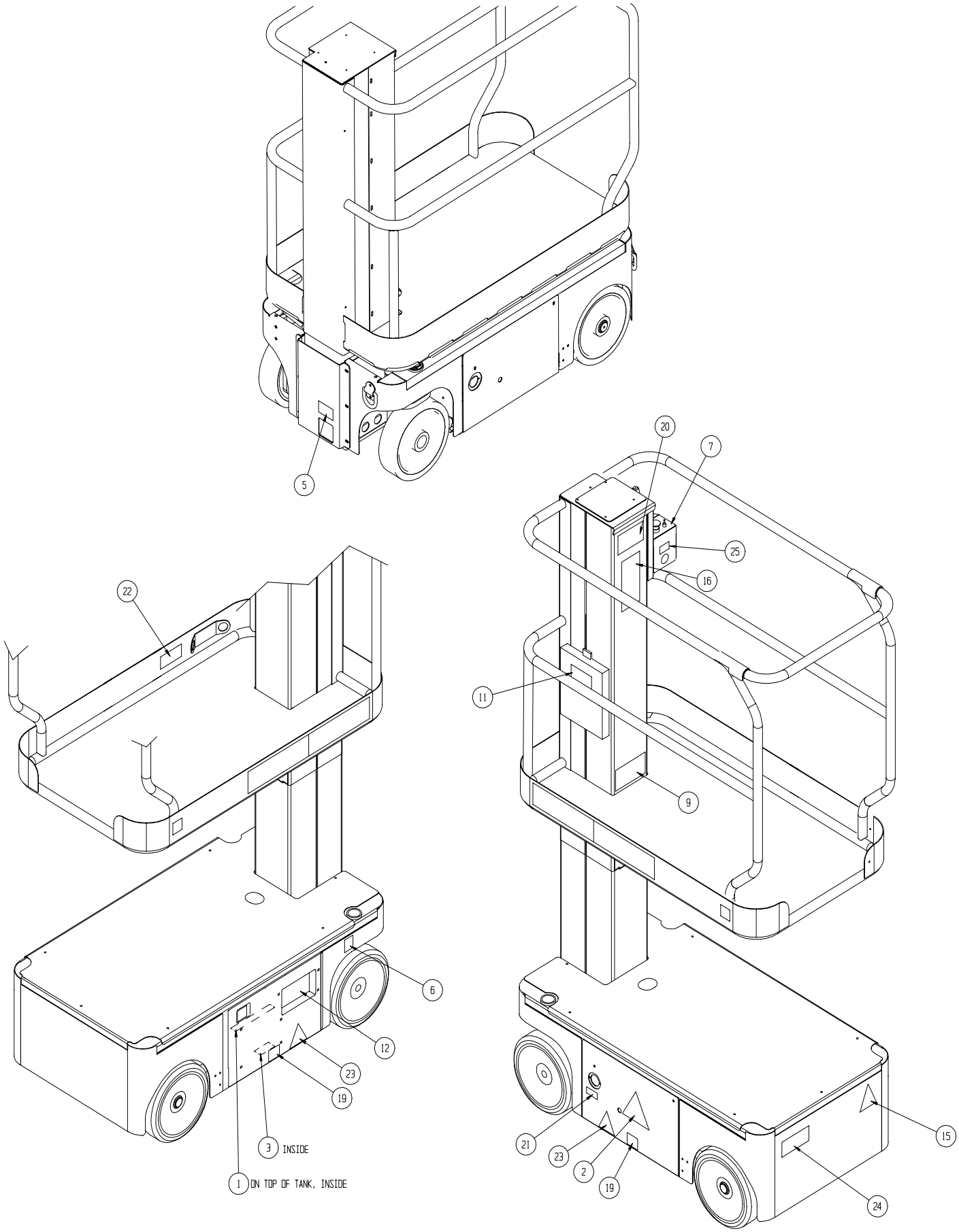


25 107053-000

Figure 11: Safety Labels Locations



SPECIFICATIONS

ITEM	TM12
Platform Size	73,7 cm x 1,04 m (**29 in. x 41 in.**)
Maximum Platform Capacity	227 kg (**500 lbs.**)
Maximum Number of Occupants	2 People indoors/1 person outdoors
Height	
Working Height	5,83 m (**19 ft.**)
Maximum Platform Height	3,83 m (**12.5 ft.**)
Minimum Platform Height	48,3 cm (**19 in.**)
Dimensions	
Weight	776 kg (**1710 lbs.**)
Overall Width	76 cm (**30 in.**)
Overall Height	165 cm (**65 in.**)
Overall Length	1,36 m (**53.5 in.**)
Drive Speed	
Platform Lowered	3,65 km/h (**2.27 mph**)
Platform Raised	0,87 km/h (**0.54 mph**)
Energy Source	24V battery pack Four 220 ampere hour, 6 Volt batteries, min. wt. 26,3 kg (**58 lbs.**) each 4 HP DC electric motor
System Voltage	24 VDC
Battery Charger	20 AMP, 220 V AC 50Hz
Battery Duty Cycle	25% for 8 Hours
Hydraulic Reservoir Capacity	7,2 L (**1.9 gal**)
Maximum Hydraulic System Pressure	165 bar (**2400 psi**)
Hydraulic Fluid	
Normal above 32° F [0° C]	ISO #46
Low Temp. below 32° F [0° C]	ISO #32
below 0° F [-17° C]	ISO #15
Lift System	One Single Stage Lift Cylinder
Drive Control	Proportional
Control System	Proportional Control Handle with Interlock, Selector Switch, Red Mushroom Emergency Stop Switches
Horizontal Drive	Dual Front Wheel
Tyres	30,5 cm (**12 in.**) diameter solid rubber, Non-marking
Parking Brakes	Dual, Spring Applied, Hydraulic Release
Turning Radius	37 cm (**14.5 in.**) Inside
Maximum Gradeability	14º (**25%**)
Wheel Base	97,8 cm (**38.5 in.**)
Guardrails	1,10 m (**43 in.**)
Toeboard	152 mm (**6 in.**)
Noise Level	

*Specifications are subject to change without notice. Hot weather or heavy use may affect performance.

Refer to the Service Manual for complete parts and service information.

This machine meets or exceeds all applicable CE and GS machinery directive requirements.

Section 3

SERVICE AND REPAIR

This section contains instructions for the maintenance of the Work Platform. Refer to the General Information section for information relevant to all UpRight work platforms. Referring to the Operator Manual 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.

⚠ 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.

⚠ 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.

TABLE OF CONTENTS

LIST OF FIGURES

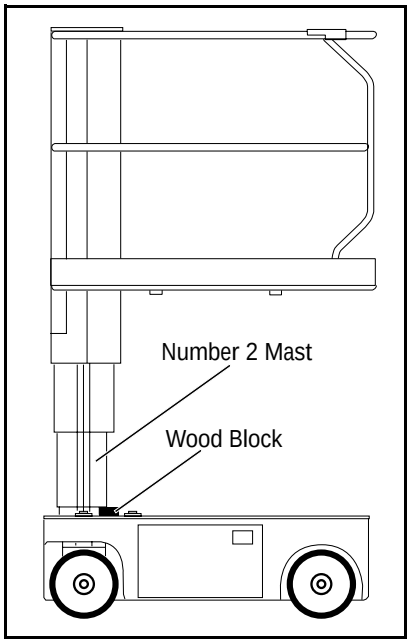
3-1 SUPPORTING ELEVATING ASSEMBLY

⚠ 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.*

Figure 3-1: Supporting Elevating Assembly



INSTALLATION

1. Park the Work Platform on firm level ground.
2. Verify Platform Emergency Stop Switch is **ON**.
3. Turn Chassis Key Switch to **CHASSIS**.
4. Position Chassis Lift/Lower Switch to **UP** and elevate Platform approximately 1.2m (**4 feet**).
5. Place a wood block, 5cm x 10cm x 46cm (**2 in. x 4 in. x 18 in.**) long between the #2 Mast and Chassis just behind the Mast Assembly.
6. Push Chassis Lift Switch to **DOWN** position and gradually lower Platform until the #2 Mast is supported by the block.

REMOVAL

1. Push Chassis Lift Switch to **UP** position and gradually raise Platform until wood block can be removed.
2. Remove block.
3. Push Chassis Lift Switch to **DOWN** position and completely lower Platform

3-2 PREVENTATIVE MAINTENANCE

The complete inspection consists of periodic visual and operational checks, along with periodic minor adjustments to assure proper performance. Daily inspection will prevent abnormal wear and 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 for machine service and maintenance repair. Please photocopy the following page and use the table as a checklist when inspecting the machine for service.

3-3 Preventative Maintenance Check List

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/Acceptable
N=No/Not Acceptable
R=Repaired/Acceptable

Preventative Maintenance Report

Date: _____

Owner:_____

Model No: _____

Serial No: _____

Serviced By: _____

Service Interval: _____

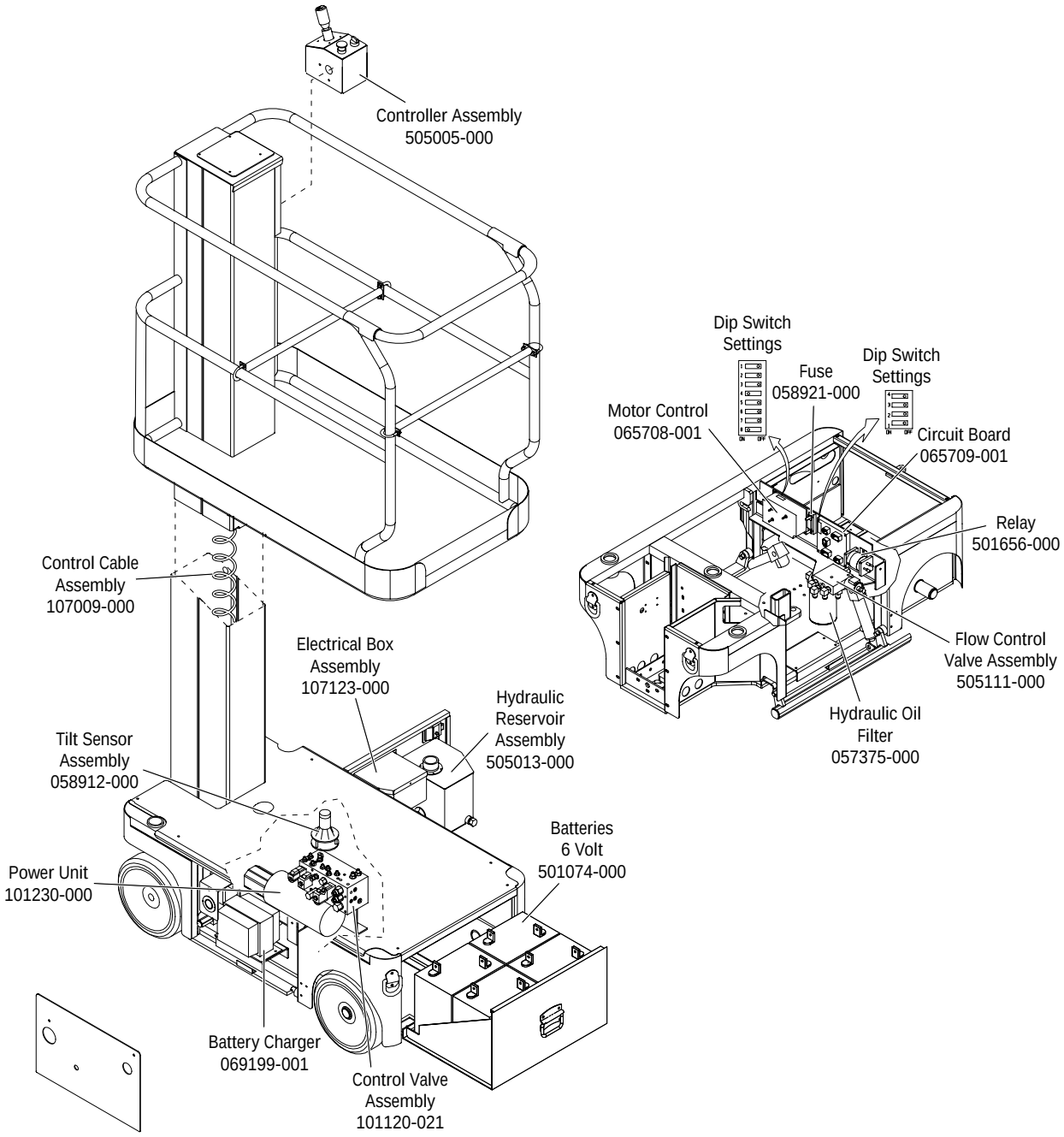
COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Battery System	Check electrolyte level	Daily			
	Check battery cable condition	Daily			
	Charge batteries	Daily			
	Check charger condition & operation	Daily			
	Check specific gravity	6m			
	Clean exterior	6m			
	Clean terminals	6m			
Hydraulic Oil*	Check 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			
Drive Motors	Check for operation and leaks	Daily			
Emergency Down	Check procedure for Emergency Down	Daily			
Hydraulic Pump	Check for fitting leaks	Daily			
	Wipe clean	30d			
	Check for leaks at mating surfaces	30d			
	Check mounting bolts for proper torque	6m			
Controller	Check condition & operation	Daily			
Platform Deck & Rails	Check fasteners for proper torque	Daily			
	Check welds for cracks	Daily			
	Check condition of deck	Daily			
	Check entry way closure	Daily			

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Elevating Assembly	Inspect for external damage, dents, loose rivets or cracks	Daily			
	Check chains and sheaves for wear	6m			
	Lubricate lift chains	6m			
	Check chain tension	1yr			
	Remove and inspect chains	5yr			
Chassis	Check cables for pinch or rubbing points	Daily			
	Check welds for cracks	Daily			
	Check component mounting for proper torque	6m			
Lift Cylinder	Check for leaks	Daily			
	Check for proper torque	6m			
Entire Unit	Perform pre-operation inspection	Daily			
	Check for and repair collision damage	Daily			
	Lubricate	30d			
	Check fasteners for proper torque	6m			
	Check for corrosion; remove and repaint	6m			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			
Wheels	Check for loose components	Daily			
Steering System	Oil pivot pins	30d			
	Oil king pins	30d			
	Check steering cylinder for leaks	30d			
	Check hardware & fittings for proper torque	6m			

*** NOTE: Use ISO #46 during summer and ISO #32 during winter.**

3-4 PARTS LOCATION

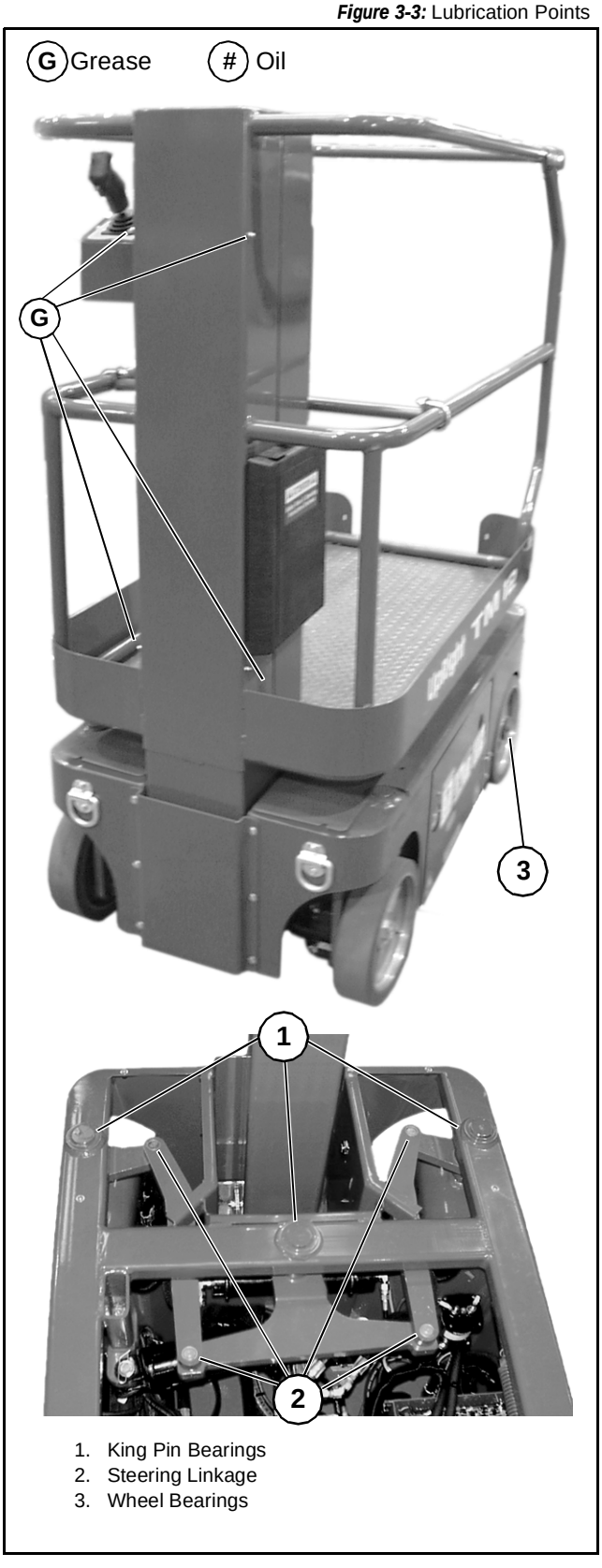
Figure 3-2: Parts Location



3-5 General Lubrication

- Apply grease to each grease fitting.
- Apply one or two drops of motor oil to each bearing.

Figure 3-3: Lubrication Points



1. King Pin Bearings
2. Steering Linkage
3. Wheel Bearings

3-6 BATTERIES

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.

CAUTION

If battery water level is not maintained, batteries will not fully charge, creating a low discharge rate.

⚠ WARNING ⚠

Hazard of explosive gas mixture. Keep sparks, flame and smoking materials away from batteries.

Always wear safety glasses when working with batteries.

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

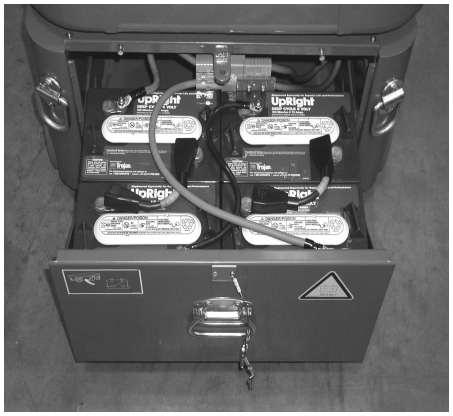
Always replace batteries with UpRight batteries or manufacturer approved replacements.

Before disconnecting the battery negative (-) lead, make sure all switches are OFF. If ON, a spark will occur at the ground terminal which could cause an explosion if hydrogen gas or fuel vapors are present.

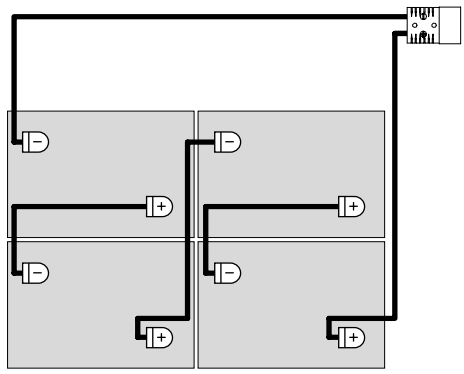
BATTERY REPLACEMENT

The batteries are located in a slide-out tray in the rear of the machine. There are four 6 volt batteries wired in series for 24 volts DC. Battery cables must be installed as shown in the Battery Cable Installation Diagram.

Figure 3-4: Battery Cables



Batteries Installed



Battery Cable Installation Diagram

BATTERY MAINTENANCE

Refer to *Section 1: General Information* for complete battery maintenance instructions.

Refer to the *Operation Manual* included in this Service Manual for specific maintenance and charging instructions.

3-7 HYDRAULICS

HYDRAULIC OIL TANK AND FILTER

FLUID LEVEL

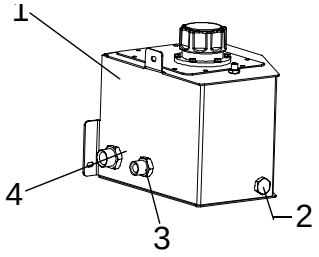
With Platform fully lowered, oil should be visible on the dipstick, if not, fill the tank until oil registers on the dipstick. **DO NOT** fill above the lower line on the dipstick or when the Platform is elevated.

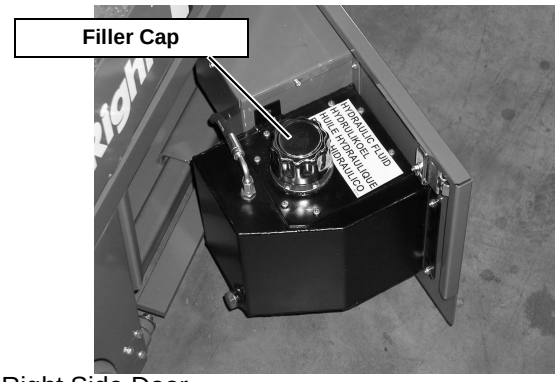
OIL AND FILTER REPLACEMENT

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Provide a suitable container to catch the drained oil. Hydraulic tank has a 7,2 liter (**1.9 US gal.**) capacity.
3. Open module door.
4. Remove the magnetic drain plug and allow all oil to drain.
5. Check the magnetic plug for metal fragments.
6. Clean and re-install the drain plug.
7. Un-thread the suction screen from the tank.
8. Wash the suction screen in cleaning solvent and then blow out with clean compressed air.
9. Apply a thin film of clean hydraulic oil (ISO #46) to the threads and re-install the suction screen.
10. Un-thread the filter from the filter head.
11. Apply a thin film of clean hydraulic oil (ISO #46) to the gasket of the replacement filter.
12. Thread the replacement filter onto the filter head until the gasket makes contact, then rotate the filter ¾ of a turn further.
13. Fill the hydraulic reservoir with hydraulic oil until the oil comes up just past the end of the dipstick. Hydraulic tank has a 7,2 liter (**1.9 US gallon**) capacity.

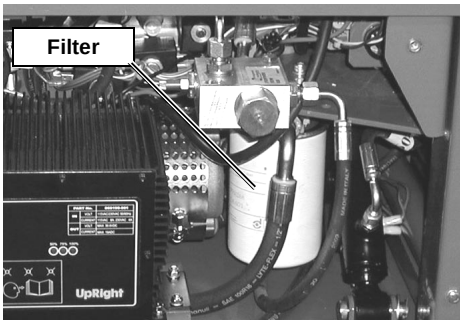
Figure 3-5: Hydraulic Oil Tank and Filter

1. Tank
2. Drain Plug
3. Hose Fitting
4. Suction Screen





Right Side Door



Left Side, Behind Panel

⚠ CAUTION ⚠

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

HYDRAULIC PUMP

The Hydraulic Pump is located in the Power Module, and is mounted on the rear of the motor.

REMOVAL

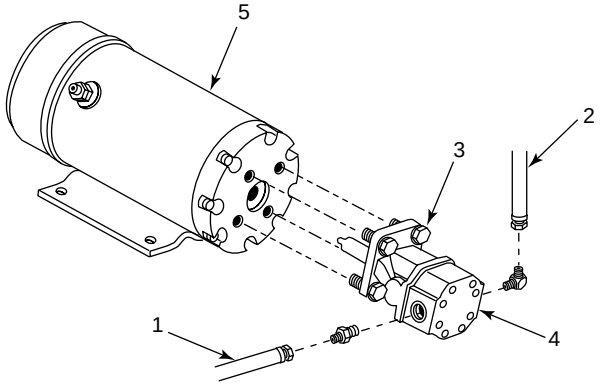
NOTE: If the hydraulic tank has not been drained, suitable means for plugging the hoses should be provided to prevent excessive fluid loss.

1. Mark, disconnect and plug the hose assemblies.
2. Loosen the capscrews and remove the pump assembly from the motor.

INSTALLATION

1. Lubricate the pump shaft with general purpose grease and attach the pump to the motor with the capscrews.
2. Using a crisscross pattern, torque each capscrew a little at a time until all capscrews are torqued to 27N-m (**20 ft-lbs**).
3. Unplug and reconnect the hydraulic hoses.
4. Check the oil level in the hydraulic tank before operating the work platform.

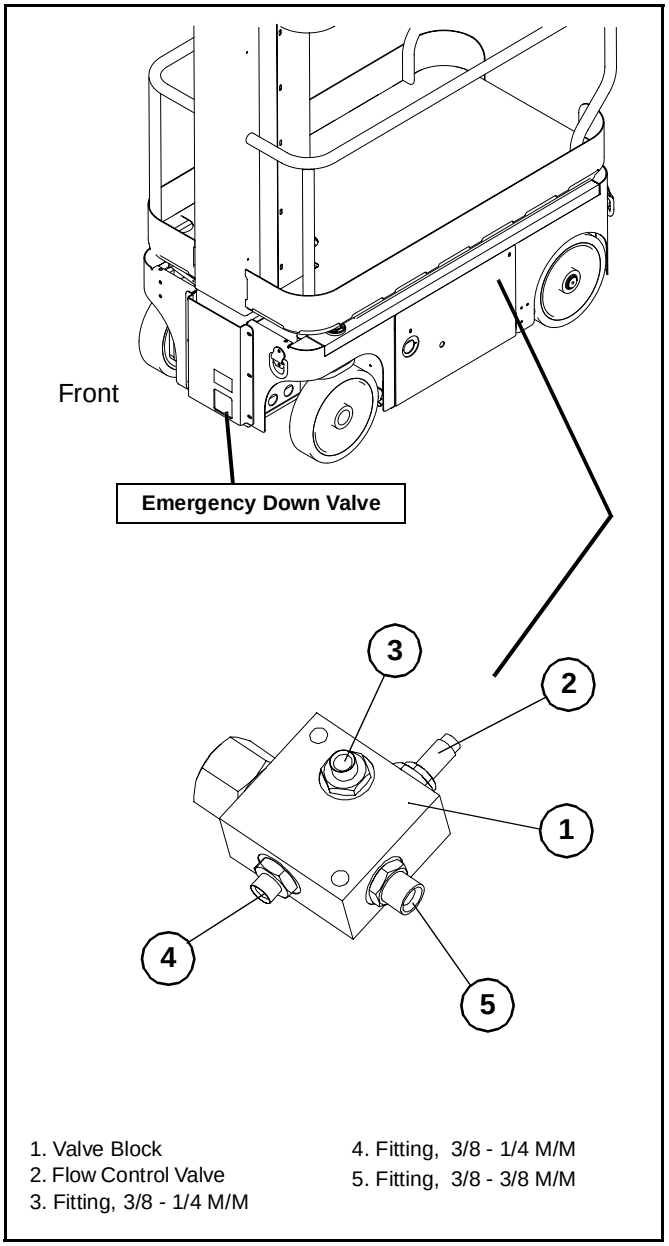
Figure 3-6: Hydraulic Pump



1. Inlet Hose
2. Outlet Hose
3. Capscrew
4. Pump Assembly
5. Electric Motor

CYLINDER VALVE ASSEMBLY

Figure 3-7: Cylinder Valve



1. Valve Block
2. Flow Control Valve
3. Fitting, 3/8 - 1/4 M/M
4. Fitting, 3/8 - 1/4 M/M
5. Fitting, 3/8 - 3/8 M/M

EMERGENCY DOWN VALVE

The Emergency Down Valve located at the front of the machine. The valve is a 24 Volt DC solenoid mounted on the base of the cylinder.

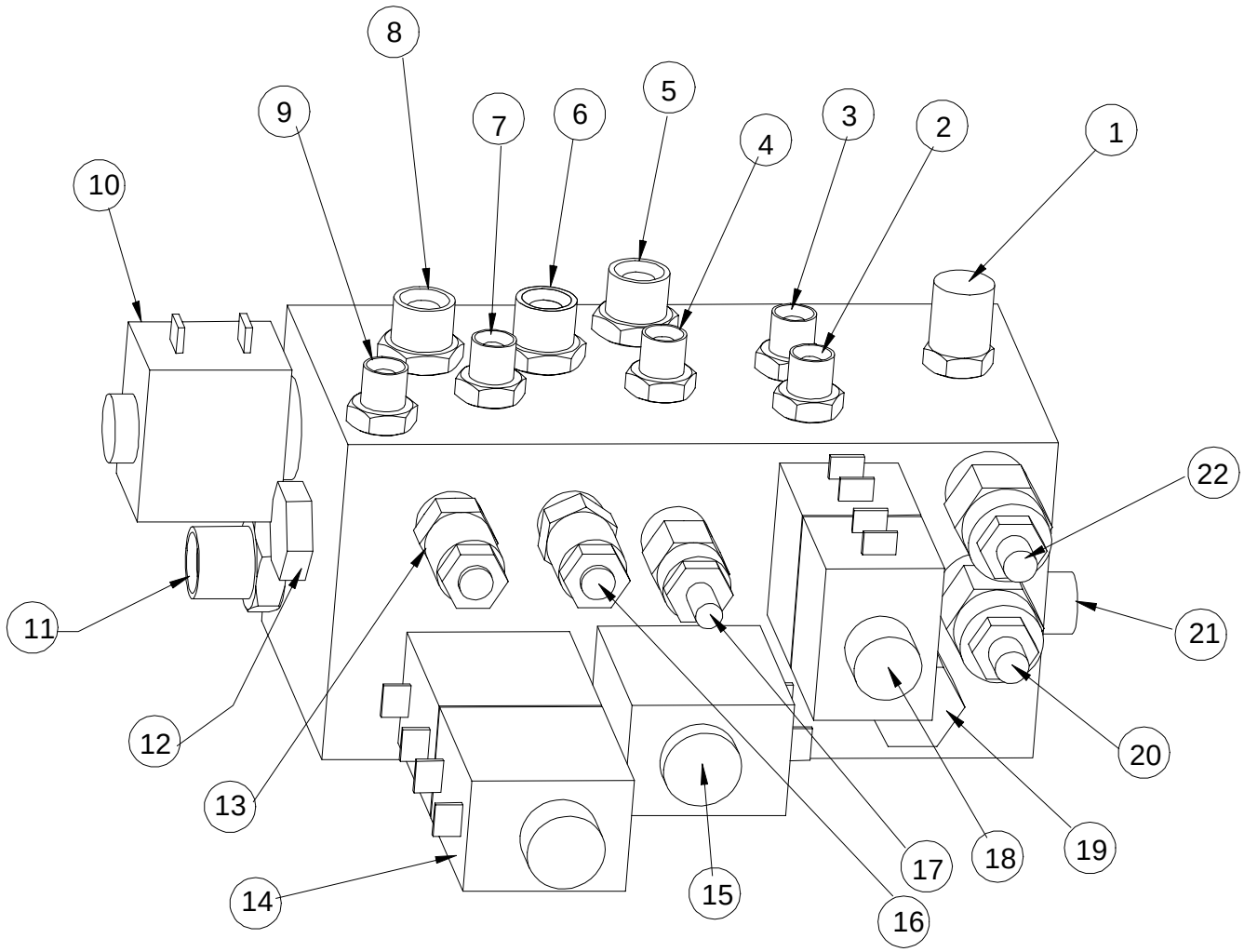
FLOW CONTROL VALVE ASSEMBLY

The Cylinder Valve Block is located behind the panel on the left side of the machine, toward the rear.

MAIN HYDRAULIC MANIFOLD

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

Figure 3-8: Hydraulic Manifold, Exploded View



1. TEST PORT (1/4")
2. FITTING (1/4" - 1/4" MALE/MALE)
3. FITTING (1/4" - 1/4" MALE/MALE)
4. FITTING (1/4" - 1/4" MALE/MALE)
5. FITTING (3/8" - 3/8" MALE/MALE)
6. FITTING (3/8" - 3/8" MALE/MALE)
7. FITTING (1/4" - 1/4" MALE/MALE WITH 1mm OROFICE)
8. FITTING (3/8" - 3/8" MALE/MALE)
9. FITTING (1/4" - 1/4" MALE/MALE)
10. SOLENOID VALVE (POTHOLE)
11. FITTING (1/2" - 1/2" MALE/MALE)
12. CHECK VALVE (POTHOLE)
13. CROSS LINE RELIEF VALVE (DRIVE)
14. SOLENOID VALVE (DRIVE))
15. SOLENOID VALVE (DRIVE/LIFT)
16. CROSS LINE RELIEF VALVE (DRIVE)
17. PRESSURE RELIEF (MAIN LIFT)
18. SOLENOID VALVE (STEERING)
19. FLOW RESTRICTOR (STEERING)
20. RELIEF VALVE (STEERING)
21. FITTING (3/8" - 3/8" MALE/MALE)
22. RELIEF VALVE (MAIN)

SETTING HYDRAULIC MANIFOLD PRESSURES

⚠ WARNING ⚠

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

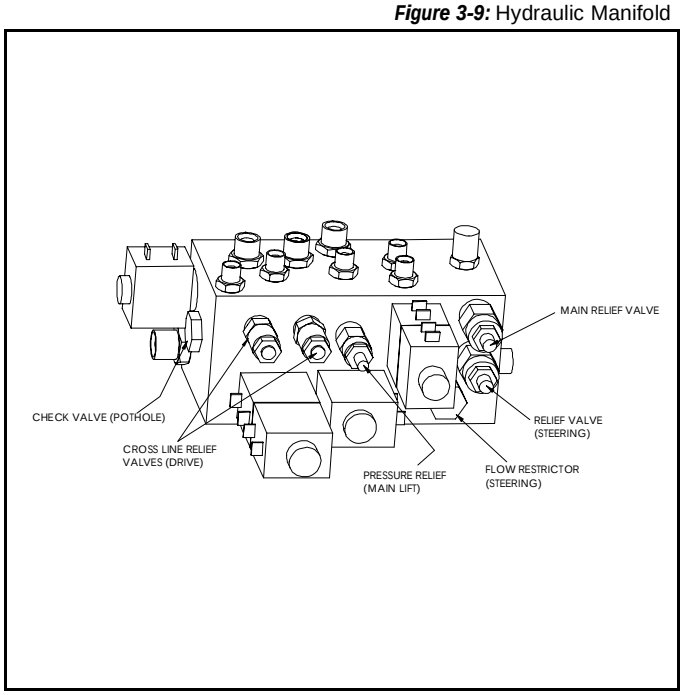
The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. ***Obtain medical assistance immediately if cut by hydraulic oil.***

NOTE: Check the hydraulic pressures whenever the pump, manifold or relief valves have been serviced or replaced

MAIN RELIEF VALVE

1. Operate the hydraulic system 10 to 15 minutes to warm the oil.
2. Remove the cap or loosen the locknut on the Main Relief Valve.
3. Install a 0-207 bar (**0-3000 psi**) pressure gauge to the gauge port.
4. Turn the Chassis Keyswitch to CHASSIS and elevate the machine fully.
5. While holding the Chassis Lift Switch to the UP position, adjust the Main Relief Valve until the pressure gauge reads 165 bar (**2400 psi**).
6. Release the Chassis Lift Switch.
7. Replace the cap, or tighten the locknut on the Lift Relief Valve, and torque to 8N-m (**6 ft-lbs**).
8. Lower the platform.

Figure 3-9: Hydraulic Manifold



COUNTERBALANCE VALVES

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Remove the gauge port cap and install the pressure gauge assembly.
3. Lift work platform and block front wheels off ground.
4. Loosen the locknuts on Counterbalance Valves.
5. 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.
6. Adjust the Forward Counterbalance Valve by turning the adjustment screw until the pressure gauge indicates 83 bar (**1200 psi**).
7. Slowly push the Control Lever to **FORWARD** to drive the wheels.
8. Adjust the Reverse Counterbalance Valve by turning the adjustment screw until the pressure gauge indicates 83 bar (**1200 psi**).
9. Check the settings by slowly moving the Control Lever **FORWARD**, then **REVERSE**, checking the gauge to ensure pressures are properly set. Re-adjust as needed.
10. Tighten locknuts on valves to 8N-m (**6 ft-lbs**). Remove blocks and lower work platform to ground.
11. Reconnect the red Control Cable wire to terminal #9.
12. Remove the gauge from the gauge port and re-install cap.
13. Check for proper operation of the drive system and brake.

STEERING RELIEF VALVES

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Install gauge in the gauge port.
3. Loosen locknut or remove cover on the Steering Relief Valve and turn adjusting screw counter-clockwise two full turns.
4. While one person holds the Steering Switch to steer right or left, slowly turn the Steering Relief Valve adjusting screw clockwise to increase the pressure until the gauge reads 69 bar (**1000 psi**).
5. Tighten locknut or replace Steering Relief Valve cover and torque to 8N-m (**6 ft-lbs**).
6. Remove gauge and replace cap.

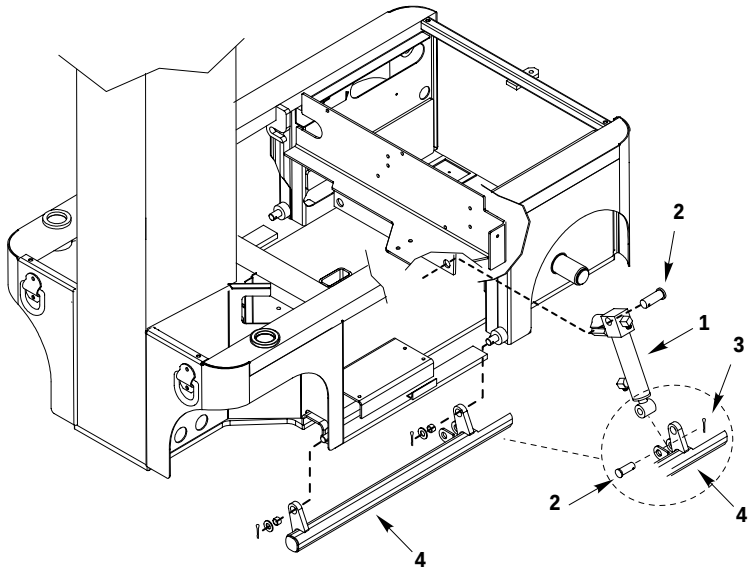
3-8 CYLINDERS

DEPRESSION CYLINDER

REMOVAL

1. Mark and disconnect the hose assemblies from the cylinder fittings and immediately cap the openings to prevent foreign material from entering.
2. Place a support under the depression guard.
3. Remove the cotter pins from the pivot pins.
4. Remove the pivot pins while supporting the cylinder.
5. Remove the cylinder.

Figure 3-10: Depression Cylinder Remove & Replace



1. Depression Cylinder
2. Pivot Pin
3. Cotter Pin
4. Depression Guard

REPAIR

Refer to Cylinder Repair in Section 1 - General Information.

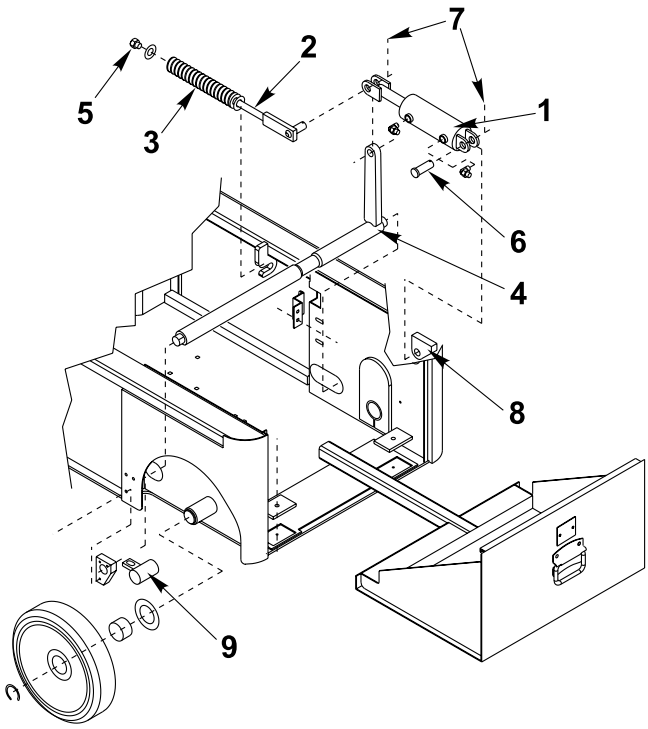
INSTALLATION

Installation is reverse of removal.

BRAKE CYLINDER

The brake cylinder is located inside the right rear chassis wall above the wheel.

Figure 3-11: Brake Cylinder, Remove & Replace



1. Brake Cylinder
2. Tension bar
3. Spring
4. Brake Actuator
5. Spring Compression Nut
6. Rear Cylinder Pivot Pin
7. Cotter Pin
8. Rear Cylinder Mount
9. Left Brake Bar

REMOVAL

1. Block the wheels to prevent the work platform from rolling when the brake is removed.
2. Use a 1000Kg (**one ton**) capacity jack to raise the rear of the machine. Position blocks under the machine to prevent the work platform from falling if the jack fails.
3. Block the front wheels to prevent the machine from rolling.
4. Remove the spring compression nut and flat washer from the tension bar.
5. Remove the retaining ring and right rear wheel.
6. Remove the cotter pin and pivot pin from the rear cylinder mount.
7. Remove the cotter pin from the tension bar pivot allowing the cylinder to be lowered.
8. Disconnect the hose assemblies and cap the openings to prevent foreign material from entering.
9. Remove the cylinder from the chassis.

REPAIR

Refer to Cylinder Repair in Section 1 - General Information.

INSTALLATION

1. Connect the hose assemblies.
2. Install the tension bar pivot through the cylinder clevis and brake actuator and secure with a new cotter pin.
3. Install the pivot pin through the cylinder mounting tabs and rear cylinder mount and secure with a new cotter pin.
4. Install the wheel and retaining ring.
5. Install the flat washer and spring compression nut on the tension bar. Tighten the nut until at least flush with the tension bar shaft or until the brake bar has full engagement with the tire.
6. Lower the machine and operate the drive circuit and check that the brake bars retract and clear the tires when driving and fully engage the tires when stopped. Check for leaks

STEERING CYLINDER

REMOVAL

1. Mark and disconnect the hose assemblies from the cylinder fittings and immediately cap the openings to prevent foreign material from entering.
2. Remove the cotter pins from the pivot pins.
3. Remove the pivot pins while supporting the cylinder. Remove the cylinder.

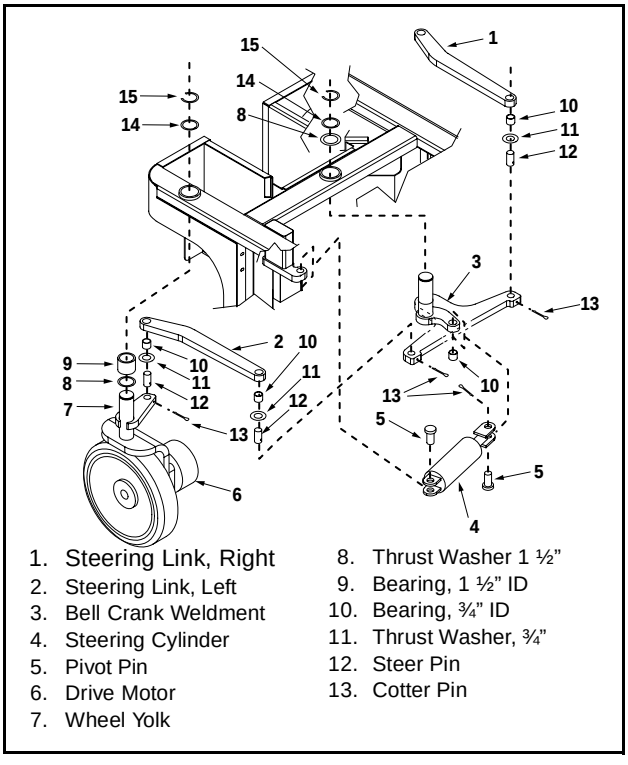
REPAIR

Refer to Cylinder Repair in Section 1 - General Information.

INSTALLATION

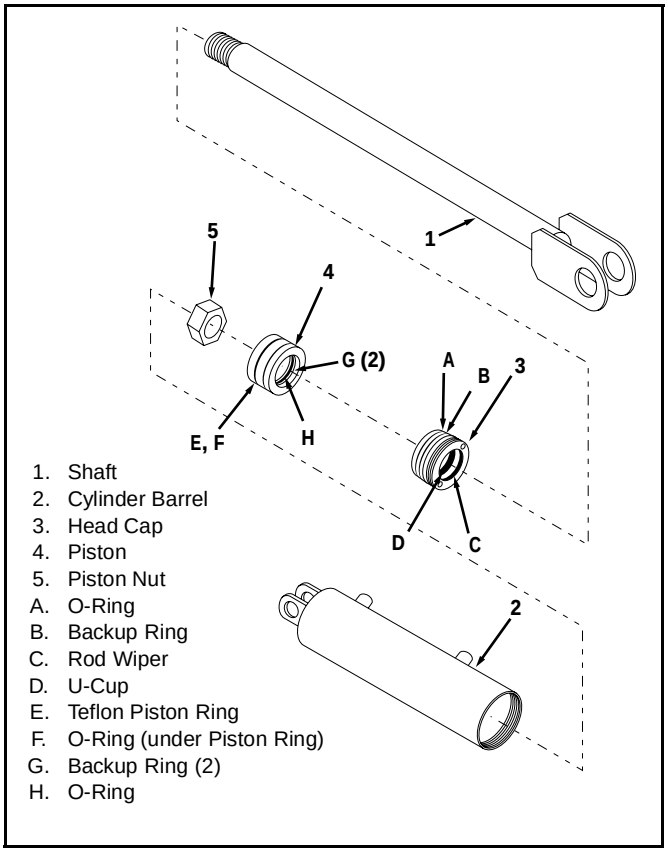
1. Position the cylinder assembly in the chassis and insert pivot pins and secure with new cotter pins.
2. Connect the hose assemblies to the fittings.
3. Operate the steering circuit several times throughout its entire range of travel to expel trapped air and check for leaks.

Figure 3-12: Steering Cylinder Remove & Replace



1. Steering Link, Right
2. Steering Link, Left
3. Bell Crank Weldment
4. Steering Cylinder
5. Pivot Pin
6. Drive Motor
7. Wheel Yolk
8. Thrust Washer 1 ½"
9. Bearing, 1 ½" ID
10. Bearing, ¾" ID
11. Thrust Washer, ¾"
12. Steer Pin
13. Cotter Pin

Figure 3-13: Brake and Steering Cylinder Seal Kit



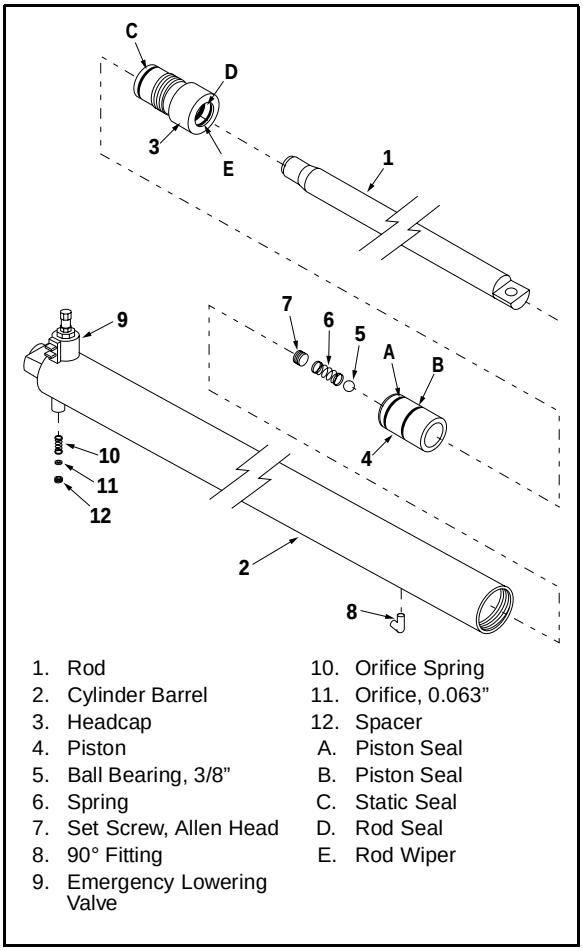
1. Shaft
2. Cylinder Barrel
3. Head Cap
4. Piston
5. Piston Nut
- A. O-Ring
- B. Backup Ring
- C. Rod Wiper
- D. U-Cup
- E. Teflon Piston Ring
- F. O-Ring (under Piston Ring)
- G. Backup Ring (2)
- H. O-Ring

LIFT CYLINDER

REMOVAL

Refer to Figure 0-16: “Elevating Assembly,” on p a g eSection 3-20 for details.

Figure 3-14: Lift Cylinder Seal Kit



1. Rod
2. Cylinder Barrel
3. Headcap
4. Piston
5. Ball Bearing, 3/8”
6. Spring
7. Set Screw, Allen Head
8. 90° Fitting
9. Emergency Lowering Valve
10. Orifice Spring
11. Orifice, 0.063”
12. Spacer
- A. Piston Seal
- B. Piston Seal
- C. Static Seal
- D. Rod Seal
- E. Rod Wiper

1. Fully lower platform.
2. Provide a suitable container to catch the hydraulic fluid, then disconnect the hydraulic hose. Immediately plug hoses to prevent foreign material from entering.
3. Remove the adapter from the base of the cylinder, inside the chassis.
4. Remove the Emergency Lowering Valve Knob from the valve at the base of the cylinder, then remove the Emergency Lowering Valve out the access hole in the bottom of the chassis.
5. Remove the snap ring at the bottom of the cylinder under the chassis.
6. Detach the 6.35mm (**0.25 in.**) vent line tubing from the top of the hydraulic tank, and cut any plastic ties that secure the tubing. Plug the end of the tubing to prevent contamination.
7. Remove the platform mast cover.
8. Remove the capscrew and locknut securing the cylinder rod to the upper cylinder mount.
9. Attach a suitable hoisting device and sling to the cylinder. Carefully lift the cylinder approximately 0.5 m (**18 in.**) until you can see the vent line tubing attached near the top of the cylinder barrel. Detach the tubing by depressing the green ring on the fitting at the same time you pull firmly on the tube. Plug the end of the tube and the fitting to prevent contamination.
10. Raise the cylinder the rest of the way through the top of the mast.

REPAIR

Refer to Cylinder Repair in Section 1 - General Information.

INSTALLATION

1. Attach a suitable hoisting device and sling to the cylinder. Carefully lower the cylinder through the top of the mast until you can reattach the vent line tubing. Simply push the tubing into the fitting until it goes no further. Pull firmly to ensure that it is installed correctly.
2. Lower the cylinder the rest of the way, and secure the cylinder to the chassis with the snap ring.
3. Install capscrew, washers and locknut securing cylinder rod to the upper cylinder mount.
4. Install platform mast cover.
5. Install the Emergency Lowering Valve, Knob and adapter to the base of the lift cylinder.
6. Remove the plug from the hydraulic hose and attach it to the adapter.
7. Attach the vent line to the hydraulic tank.
8. Test with weight at rated Platform load to check system operation. Check for leaks

3-9 DRIVE MOTORS

REMOVAL

1. Use a 1000Kg (**one ton**) capacity jack to raise the front of the machine. Position blocks under the machine to prevent the work platform from falling if the jack fails.
2. Block the rear wheels to prevent the machine from rolling.
3. Remove the cotter pin, nut, and washer.
4. Remove the wheel.

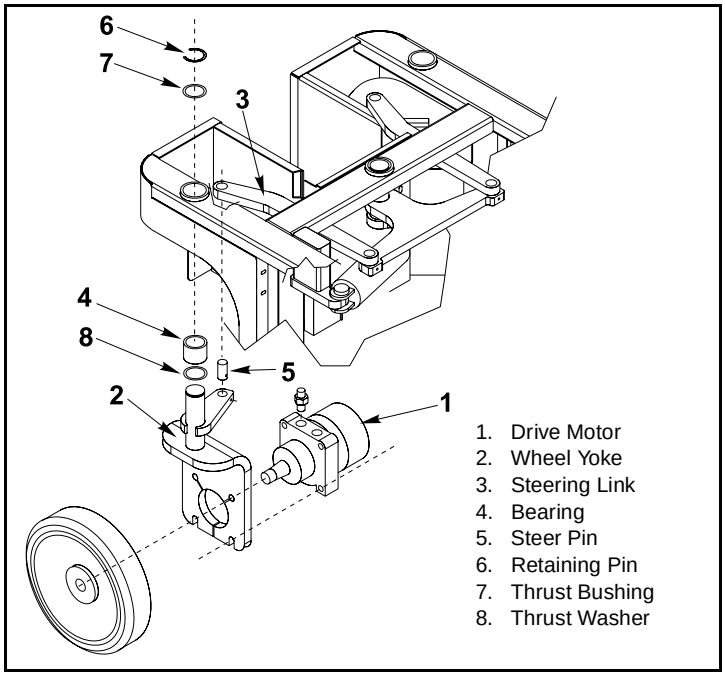
NOTE: Before disconnecting hoses, thoroughly clean off all outside dirt around fittings. (After disconnecting hoses and before removing from vehicle, IMMEDIATELY plug port holes.)

5. Tag, disconnect and plug the hose assemblies to prevent foreign material from entering.
6. Support the drive motor/wheel yoke assembly and remove the retaining ring at the top of the wheel yoke pivot. Remove the drive motor/wheel assembly from the machine.
7. Remove the locknuts, flat washers, capscrews and drive motor from the wheel yoke.

INSTALLATION

1. Position the drive motor in the wheel yoke and secure with capscrews, flat washers and locknuts.
2. Install the drive motor/wheel yoke assembly into the pivot bearing along with the lower thrust washer, thrust bushing, and retaining ring.
3. Align the steer pin with the hole in the steering link.
4. Remove the plugs from the hose assemblies and connect to the drive motor.
5. Install the shaft key, wheel, washer and slotted nut.Torque the locknut to 102 N-m (**75 ft-lbs**). Install a new cotter pin. **DO NOT** back-off the nut to install cotter pin.
6. Remove blocks, lower the jack and remove. Operate the drive system and check for leaks.

Figure 3-15: Drive Motor Assembly



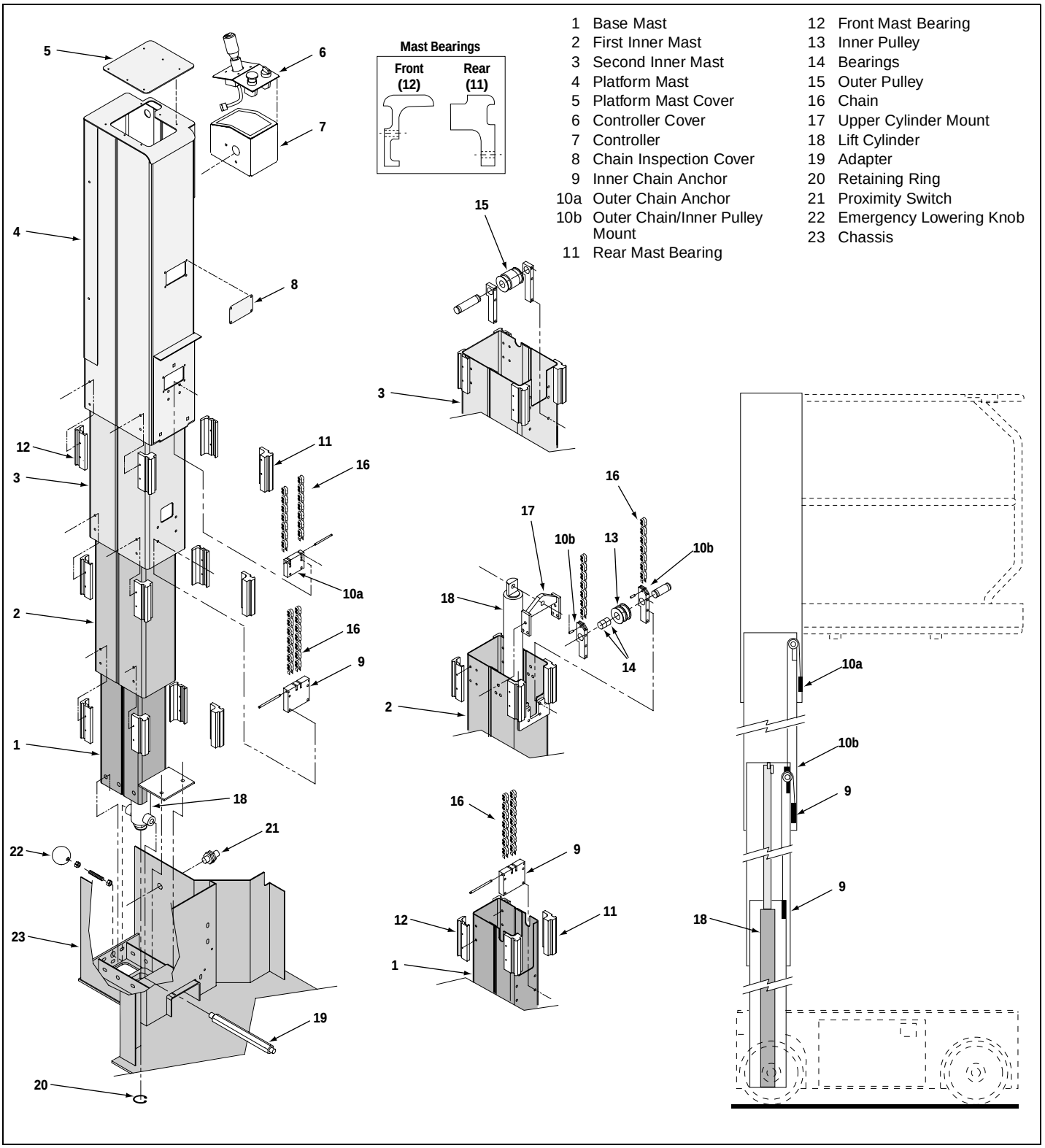
3-10 Elevating Assembly

Maintenance of the elevating assembly consists of four separate tasks and maintenance intervals:

- Chain Lubrication . . . . . 6 months
- Elevating Assembly Wear Inspection . . . . . 6 months
- Chain Tension Inspection . . . . . 1 year
- Chain Elongation Inspection . . . . . 5 years

All of the tasks except the Elongation Inspection can be done without removing the chains from the assembly.

Figure 3-16: Elevating Assembly



LIFT CHAIN LUBRICATION

Refer to Figure 3-16: “Elevating Assembly,” on p a g eSection 3-20.

With platform in the stowed position;

- remove the *platform mast cover* (5).
- apply enough aerosol chain lubricant to the exposed portion of all four chains to allow the lubricant to run down the chains.
- replace the cover.
- remove the chain inspection cover (8).
- raise platform approximately 10cm (**4 in.**), until the inner set of chains are visible through the chain inspection hole.
- apply enough aerosol chain lubricant to the exposed chain to allow the lubricant to run down the chain.
- replace chain inspection cover.

ELEVATING ASSEMBLY WEAR INSPECTION

Refer to Figure 3-16: “Elevating Assembly,” on p a g eSection 3-20.

At the same time as the chain lubrication task, inspect all elevating assembly components for wear.

With the platform in the stowed position;

- inspect the system through the *platform mast cover* (5) to look for worn *pulleys* (13 & 15) or damaged components.
- Inspect the *chain anchors* (10a &10b)) and visible portions of lift chain as you lubricate it.
- Look for cracks in the chain links, kinks in any portion of chain, and excessive corrosion.

From the lower controls, raise the platform and block the elevating assembly (see Figure 3-1: “Supporting Elevating Assembly,” on p a g eSection 3-3).

- Inspect the *inner chain anchors* (9) and the ends of the chains for damage or worn parts. If damage is present, replace the components.

IMPORTANT: There are two pairs of two chains each, for a total of four chains. If only one chain of either pair is damaged, both chains in the pair must be replaced.

CHAIN TENSION INSPECTION

Refer to Figure 3-16: “Elevating Assembly,” on p a g eSection 3-20.

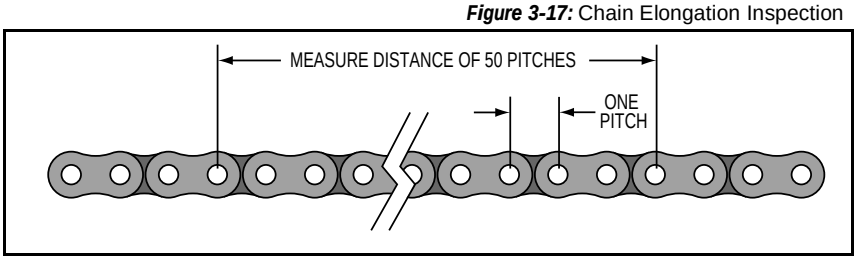
The lifting chains are self-adjusting and should always be close to the same tension. This tension should be checked annually to ensure that there are no problems with this system. To do this task a spring scale will be needed with 20kg (**44 lb.**) capacity.

1. Place 227kg (**500 lbs.**) in the platform including the weight of the person testing the chain tension.
2. Remove the *chain inspection cover* (8) and raise the platform approximately 10cm (**4 in.**) until the outer inspection hole lines up with the inner inspection hole.
3. Attach the spring scale to one of the outer chains and pull until the chain makes contact with the inner surface of the mast section. Note the scale reading.
4. Repeat step 3 on the other outer chain.
5. Compare the scale readings. The readings for each chain in the outer set should be within 20% of each other.
6. Repeat steps 3 - 5 for the inner set of chains. The readings for each chain in the inner set should be within 20% of each other.

IMPORTANT: If the readings are not within 20%, then a problem exists that is causing unequal chain tension. Investigate the problem and repair or replace the worn components.

CHAIN ELONGATION INSPECTION

Figure 3-17: Chain Elongation Inspection



At five-year intervals, the chains should be removed from the mast and the entire length of the chain inspected for excessive wear and elongation. Follow the procedure below to disassemble the elevating assembly. With the lift chains removed, hang them vertically from something capable of holding 100kg (**220 lbs.**). Inspect the chains thoroughly, looking for cracks in the chain links, kinks in any portion of chain, and excessive corrosion. Complete the following elongation test:

1. Attach approximately 25kg (**55 lbs.**) to the lower end of each chain.
2. Measure the distance between 50 pins. This distance should be 63.5cm - 65.5cm (**25 in. - 25¾ in.**).
3. Remove the weight and measure the same on the other three chains.

If the chains have elongated beyond the indicated range, replace the lift chain sets. Before reinstalling the lift chains, take this opportunity to thoroughly clean and lubricate the entire chain. Reassemble the elevating assembly as described below.

REMOVAL OF ELEVATING ASSEMBLY

Refer to Figure 3-16: “Elevating Assembly,” on p a g eSection 3-20.

1. Disconnect the batteries using the battery disconnect in front of the batteries in the battery tray.
2. Remove the *platform mast cover* (5), and the *controller cover plate* (6).
3. Detach the control cable inside the *controller* (7), remove the cable clamp in the top of the *platform mast* (4), and feed the cable into the *second inner mast* section (3).
4. Using a suitable hoisting device, carefully raise the *platform mast* (4) until you can access the *outer chain anchor* (10a).
5. Disconnect the *outer chain anchor* from the *platform mast*, but leave the anchor attached to the chains.
6. Remove the lower mast bearings from the *platform mast*. The front two mast bearings may be removed by drilling out the lower pop rivets that retain the bearings.
7. Raise the *platform mast* straight up and off of the remaining mast sections.
8. Lay the chain that was detached from the *platform mast* over the top of the *upper cylinder mount* (17), and place it down inside the *second inner mast* section.
9. Repeat steps 4 - 7 on the *second inner mast* section (3). The lower mast bearings are removed by unscrewing the two screws on each bearing.
10. The upper chain set may now be removed by detaching the *upper chain/inner pulley mounts* from the *first inner mast* section (2). Carefully set the chain set aside on a clean surface.
11. Remove the single bolt that attaches the *cylinder* to the *upper cylinder mount* (17).
12. Using a suitable hoisting device, carefully raise the *first inner mast* section (2) up several inches.
13. Lay the remaining chain set over the top of the *cylinder*, and place it down inside the inner mast section.
14. Remove the lower mast bearings from the *first inner mast* section.
15. Raise the *first inner mast* section straight up and off of the remaining *base mast* section.
16. The inner chain set may now be removed.
17. If it is necessary to remove the *base mast* section, remove the nine bolts that secure it to the *chassis*. It may be required to remove the *lift cylinder* to provide easier access to the bolts (see “Lift Cylinder” on page Section 3-18).

INSTALLATION OF ELEVATING ASSEMBLY

Refer to Figure 3-16: “Elevating Assembly,” on p a g eSection 3-20.

Installation of the elevating assembly is the reverse of removal.

- Torque the nine bolts that retain the *base mast* section to 68N-m (**50 ft-lbs**).
- For all of the cap screws that attach the chain anchors to the mast sections, apply Locktite #242 to the screw threads and torque to 12N-m (**107 in-lbs**).
- For all of the screws that attach the mast bearings, apply Locktite Retainer #405 to the screw threads. *Do not torque, simply tighten securely*.
- Check elevating assembly for proper operation.

3-11 TILT SENSOR

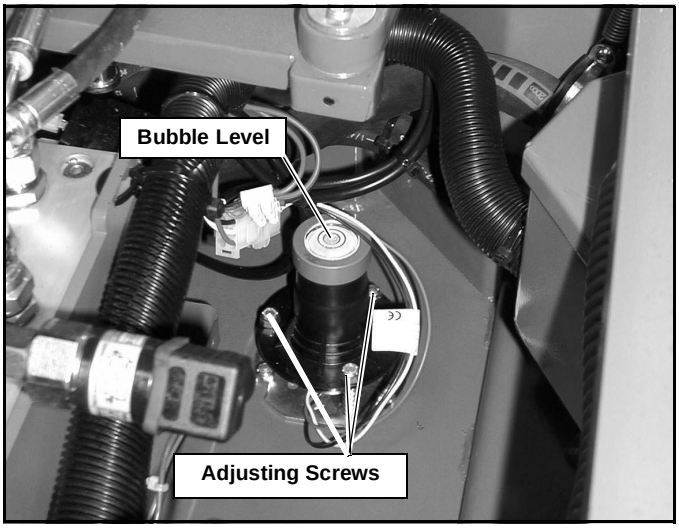
⚠ WARNING ⚠

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.

The Tilt Sensor has three wires; red-power (24v in), black-ground, white-output (24v out).To verify the sensor is working properly, there is one red LED under the sensor. If the LED is on, the sensor is off level.

Figure 3-18: Tilt Sensor



ADJUSTMENT

1. Place machine on firm level surface ±¼°.
2. Use the Inclinometer (p/n 010119-000) to ensure front and rear of Chassis is level ±¼°.
3. Adjust the three leveling screws until the bubble is centered in the circle on the attached bubble level.

TEST

1. Raise the platform approximately 2m (**7 ft.**).
2. Support the elevating assembly (see “Supporting Elevating Assembly” on page Section 3-3).
3. Push the level sensor to the side.

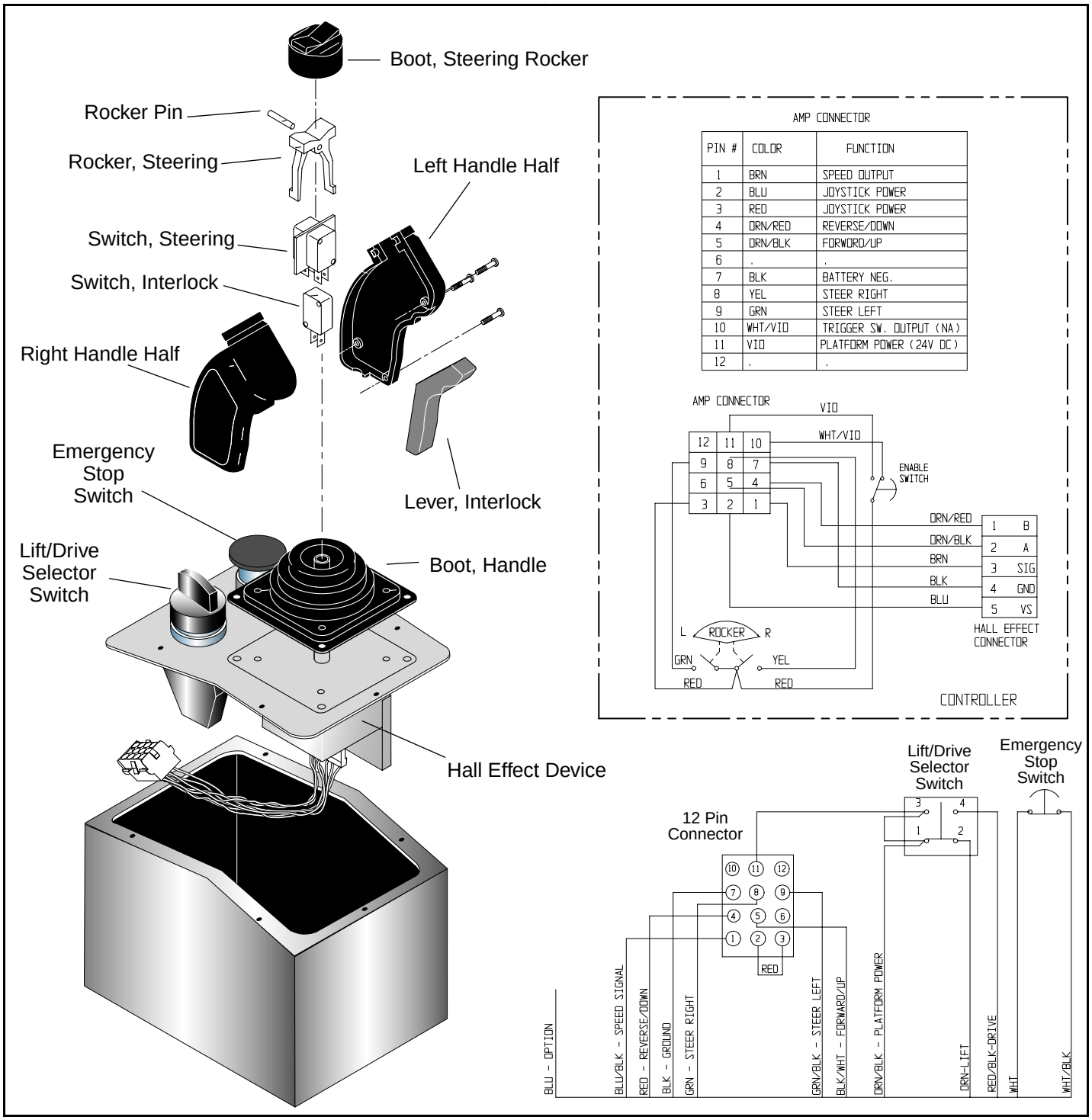
The red LED should turn on, and the tilt alarm should sound.

3-12 CONTROLS

PLATFORM CONTROLS

The Proportional Controller can be disassembled to replace defective switches. See the Parts Manual for replacement part numbers.

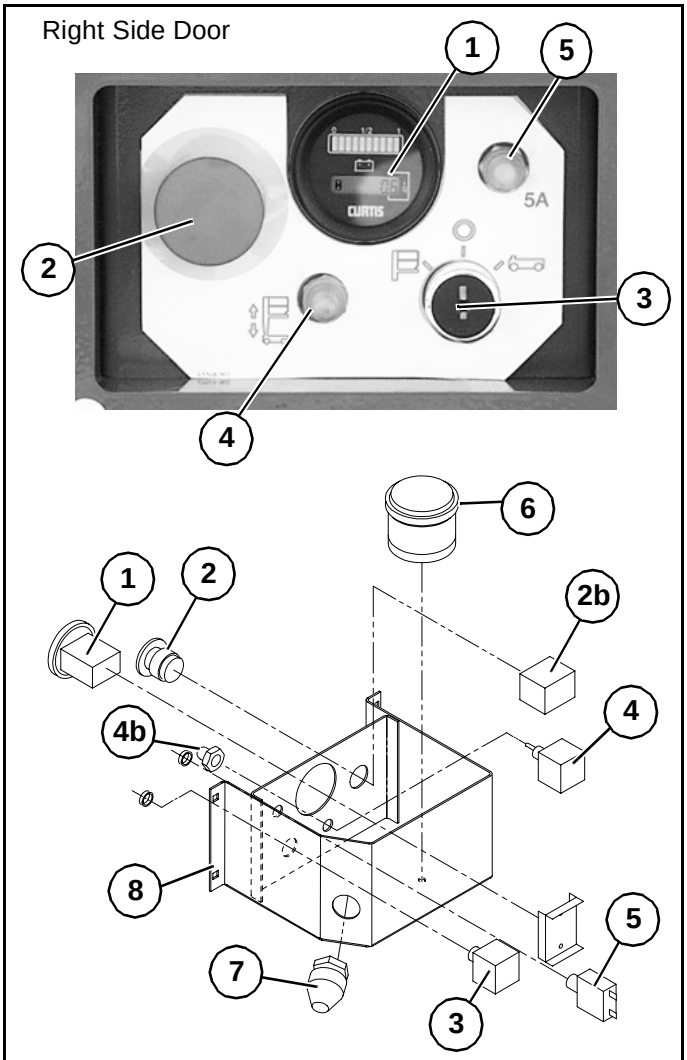
Figure 3-19: Upper Controls



CHASSIS CONTROLS

The chassis control assembly is mounted on the inside of the chassis door, to the left of the Hydraulic tank.

Figure 3-20: Chassis Controls



1. Hour Meter/Voltage Indicator
2. Mushroom Emergency Stop Switch
2b. E-Stop Switch Contact
3. Key Chassis/Platform Selector Switch
4. Up/Down Toggle Switch
4b. Boot Switch Cover
5. Circuit Breaker
6. Alarm, Dual Tone
7. Connector Cable
8. Box Weldment

Section 4

TROUBLESHOOTING

This section contains troubleshooting Truth Tables.

Careful inspection and accurate analysis of the symptoms listed inthe 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 the Operator Manual and the Schematics section 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.

⚠ WARNING ⚠

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

When performing any service which requires the platform to be raised, the Elevating Assembly must be blocked.

Disconnect the battery when replacing or testing the continuity of any electrical component.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

0-1 TECHNICAL SUPPORT

Technical Support is available by telephone of FAX.

UPRIGHT USA Tel: 1-559-891-5200
FAX: 1-559-896-9244

UPRIGHT EUROPE Tel: +31-10-238-0000
FAX: +31-10-238-0001

0-2 GENERAL PROCEDURE

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

Determine whether the problem is mechanical (interference), electrical or hydraulic. Some functions require power at more than one solenoid.

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

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

0-3 TROUBLESHOOTING PROCEDURES

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. To aid in troubleshooting, the letters following the component on the table are the same as the component's designation on the schematics.
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 the platform and chassis controls to verify that all functions are operating correctly and that the machine is performing according to specifications.

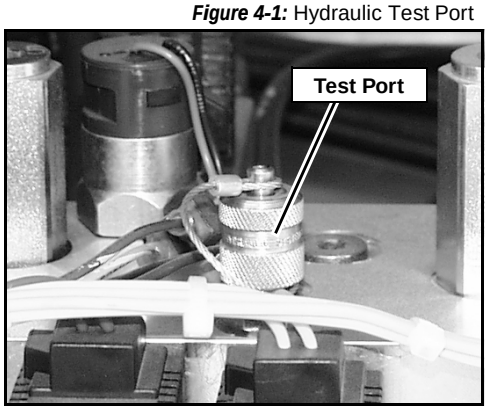
ADJUSTMENT PROCEDURES

Hydraulic settings must be checked whenever a component is repaired or replaced.

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

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

Figure 4-1: Hydraulic Test Port



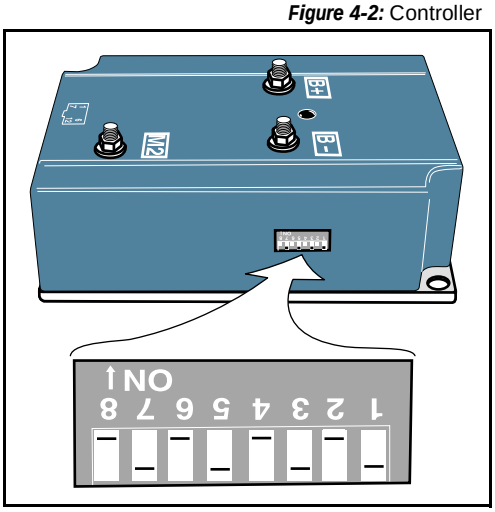
NOTE: Correct pressure settings are listed in the hydraulic schematic.

CHECKING PUMP PRESSURES

Remove hose from pump port and connect pressure tester.

4-4 Motor Controller Dip Switch Settings

Figure 4-2: Controller



Default Dip Switch Settings

The table shows the default dip switch settings on the controller box when the machine leaves the factory.

	1	2	3	4	5	6	7	8
MX15/19	OFF	ON	OFF	ON	OFF	ON	OFF	ON
SL20	ON	OFF	OFF	ON	OFF	ON	OFF	ON
TM12	OFF	OFF	OFF	ON	OFF	ON	OFF	ON
X20N	ON	OFF	OFF	ON	OFF	ON	OFF	ON
X20W	ON	OFF	OFF	ON	OFF	ON	OFF	ON
X26/32	ON	ON	OFF	ON	OFF	OFF	OFF	ON

Adjusted Dip Switch Settings

The following adjustments may be made to the dip switch settings.

Creep Speed

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

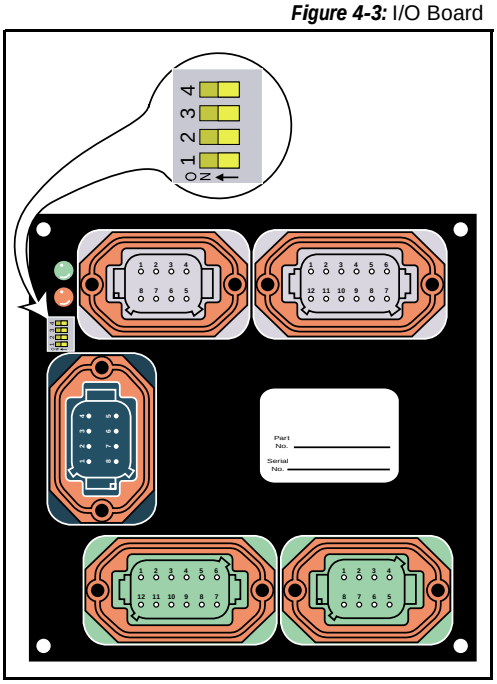
Deceleration Time

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
0.24 sec.	OFF	OFF
1.27 sec.	ON	ON

4-5 I/O Board Dip Switch Settings

Figure 4-3: I/O Board



Default Settings

The table shows the default dip switch settings on the I/O board when the machine leaves the factory.

	1	2	3	4
MX15/19	OFF	OFF	OFF	OFF
SL20	OFF	OFF	OFF	OFF
TM12	OFF	OFF	OFF	OFF
X20N	OFF	OFF	OFF	OFF
X20W	OFF	OFF	OFF	OFF
X26/32	OFF	OFF	OFF	OFF

Optional Settings

Switches 3 & 4 work together to determine the optional alarm settings.

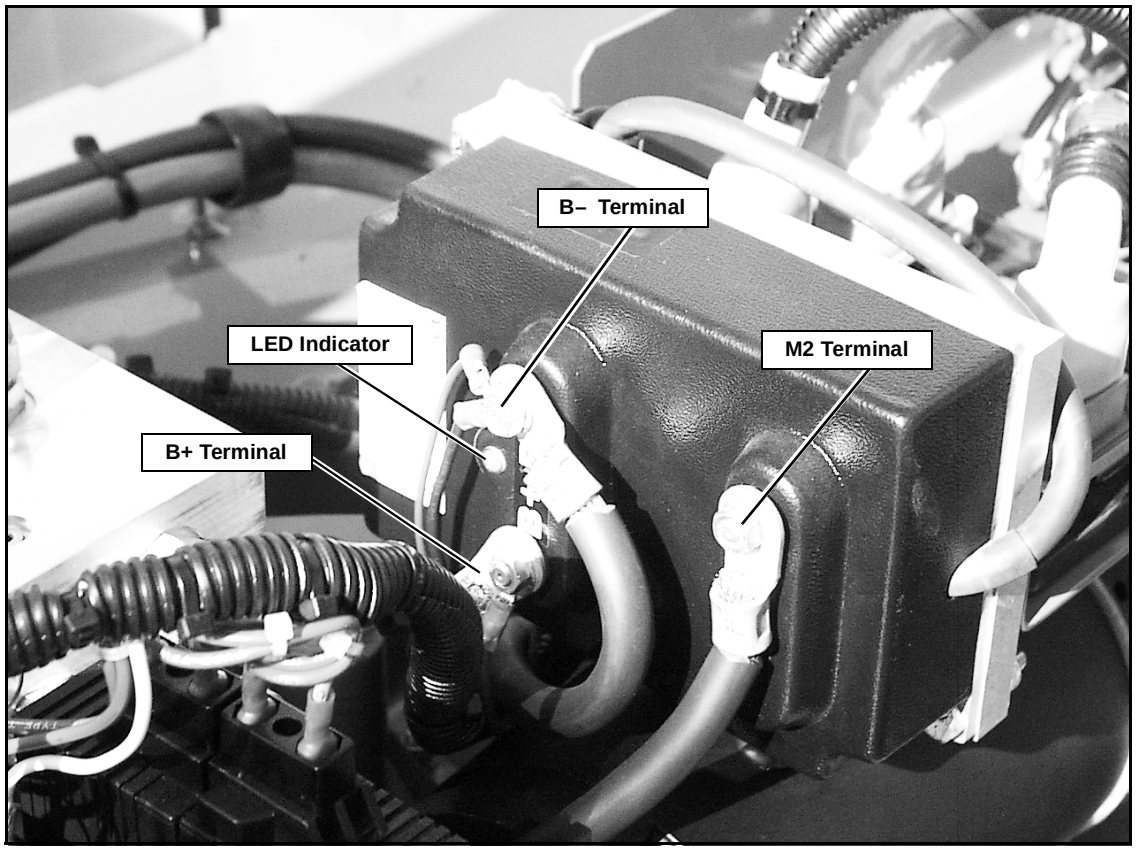
1	2	3	4	RESULT
ON				Two Speed Mode (not used)
OFF				Proportional Control
	ON			not used
	OFF			Depression Mechanism extends when platform is raised
		OFF	OFF	Down alarm only
		ON	OFF	Down and Reverse alarm
		OFF	ON	Drive and Down alarm
		ON	ON	All Motion alarm

4-6 LED Fault Codes

Batteries must be fully charged before troubleshooting.

Check/Repair all connections before replacing any components

Figure 4-4: Motor Controller



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

Table 4-1: LED Fault Codes

Flash Code	Meaning	Status	Corrective Action
LED on	Power to the controller and the controller is operational.	System is functional	None.
LED off	No power to the controller, or internal fault in the controller.	Battery cables not connected properly; Failed controller	Check battery cable connections. Replace the controller.
2 Flash	Procedural fault.	Lift, drive, or steer switch is engaged at start-up; Drive/Lift switch rotated while operating	Cycle the Control Handle through neutral to clear fault.
3 Flash	Controller senses B– at the M2 terminal.	Short circuit at the motor; M2 cable in contact with B– cable; Short circuit within controller	Check cable routing and connections. Test terminals for source of B– . Replace the controller
4 Flash	Controller senses B+ at the M2 terminal before engaging the Motor Start relay.	B+ cable routed incorrectly; M2 cable making contact with B+ cable; Motor Start relay contacts welded closed.	Check cable routing and connections. Test terminals for source of B+. Replace the Motor Start relay.
5 Flash	Controller senses open circuit at M2 after engaging the Motor Start terminal.	Cables loose or not connected; Faulty Motor Start relay	Check the cable routing and connections. Check the signal from Motor Controller to relay. Check/replace the Motor Start relay.
6 Flash	Faulty signal from Control Handle or I/O board.	Faulty Control Handle; Wiring error	If Platform Controls are affected, check/replace the Control Handle. If Chassis Controls are affected, check/replace the I/O board.
7 Flash	Battery voltage below 12V or above 45V.	Dead batteries; Bad cable connections	Check batteries and cable connections.
8 Flash	Thermal cut-off.	Controller is overheated due to overuse or other failure	Allow system to cool. Locate and repair other source of overheat.

4-7 LEDs at I/O Board

Green LED ON

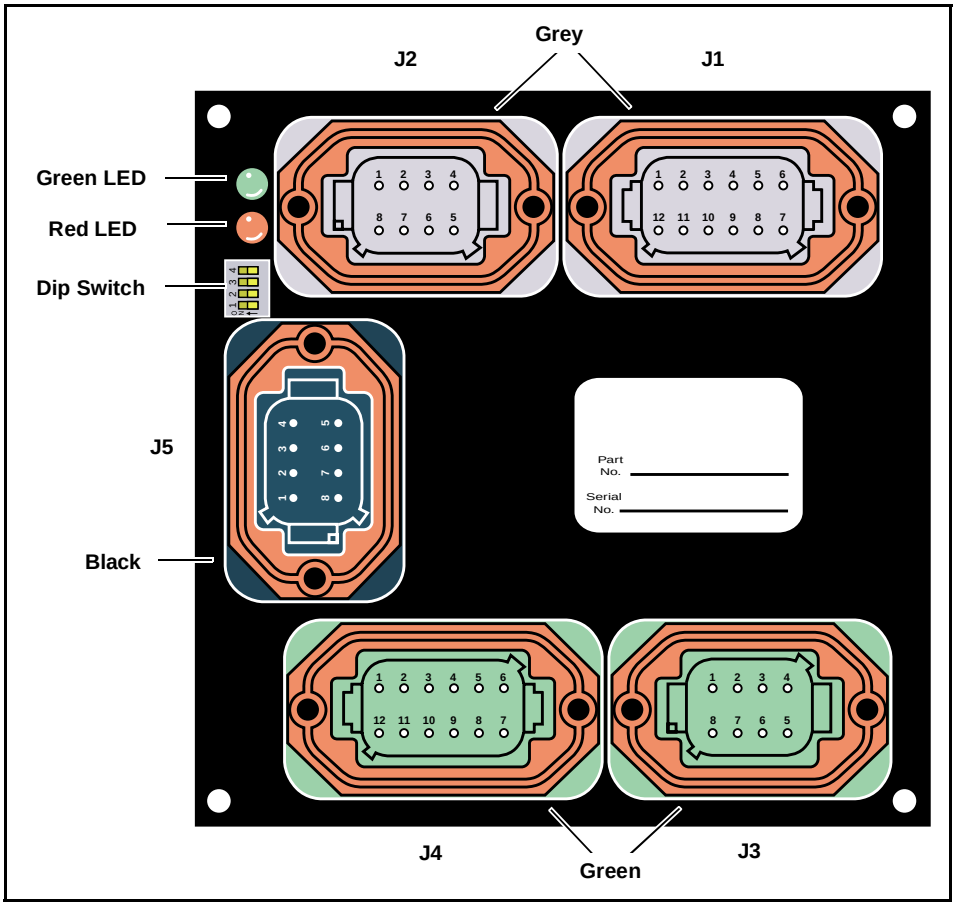
The Green LED indicates that power is present at the board.

Red LED ON

The Red LED indicates a short in the system.To locate the problem;

1. Push both E-Stop switches to the OFF position.
2. Turn the Keyswitch to the OFF position, then to either Platform or Chassis.
3. Pull both E-Stop switches to the ON position.
   - The Green LED should be ON.
   - The Red LED should be OFF.
4. Perform all machine functions until the Red LED is ON. Determine which function activated the Red LED and check all components that are active for that function.

Figure 4-5: I/O Board



4-8 I/O Board Inputs and Outputs

Refer to Figure Figure 4-5: “I/O Board,” on p a g eSection 4-7.

Perform Tests with Fully Charged Batteries

Battery state of charge will affect readings.

BV = Battery Voltage

Readings within a few volts of current battery state of charge will be calledBV.

0V

0V is generally 0 up to 1 volt.

Voltage Readings for Electronics are Rarely Exact

Many factors can affect readings, such as state of charge, voltage drops through switches (mechanical or electrical), and wires.

Be sure that both the Platform and Chassis Emergency Stop Switches are pulled out to the ON position.

All voltages are measured between the component and the B– terminal on the Motor Controller.

NOTE: For the I/O board to be powered up (Green LED illuminated), both E-Stops must be closed and either Platform Controls or Chassis Controls selected by the Keyswitch.

Table 4-2: Connector J1

PIN	PIN DESCRIPTION	CONDITION	VOLTAGE	CONTINUOUS TO PIN
J1-1	Lift input from Lift/Drive selector switch	Lift selected	BV	—
		Lift not selected	0V	
J1-2	Not Used	—	—	—
J1-3	Drive input from Lift/Drive selector switch	Drive selected	BV	—
		Drive not selected	0V	
J1-4	Lower E-Stop activation (output from I/O board when lower E-Stop is closed)	Lower E-Stop closed	BV	J4-9
		Lower E-Stop open	0V	
J1-5	Upper E-Stop activation (output to I/O board when upper E-Stop is closed)	Upper E-Stop closed	BV	J4-2
		Upper E-Stop open	0V	
J1-6	Power to Platform Controls when selected by Keyswitch	Platform Controls selected	BV	J4-10
		Platform Controls not selected	0V	
J1-7	Not Used	—	—	—
J1-8	Controller direction “A” (up/forward)	Control Handle pushed forward	20-22V	—
J1-9	Controller direction “B” (down/reverse)	Control Handle pushed forward	20-22V	—
J1-10	Speed signal from Control Handle	Signal starts high and drops proportionally as Control Handle is moved in either direction	4.3V dropping to 0.2V	—
J1-11	Steer Left input from Steering switch	Steer Left selected	23V	—
		Steer Left not selected	0V	
J1-12	Steer Right input from Steering switch	Steer Right selected	23V	—
		Steer Right not selected	0V	

Table 4-3: Connector J2

PIN	PIN DESCRIPTION	CONDITION	VOLTAGE	CONTINUOUS TO PIN
J2-1	Depression mechanism activation (extend)	Lift Up requested	0V	—
		Lift Up not requested	BV	
J2-2	Not Used	—	—	—
J2-3	24 Volt supply for solenoids	Upper & Lower E-Stops closed	BV	J4-5 & J3-3
		Upper or Lower E-Stop open	0V	
J2-4	Forward solenoid activation	Forward requested	0V	—
		Forward not requested	BV	
J2-5	Reverse solenoid activation	Reverse requested	0V	—
		Reverse not requested	BV	
J2-6	Up solenoid activation	Up requested	0V	—
		Up not requested	BV	
J2-7	Steer Left solenoid activation	Steer Left requested	0V	—
		Steer Left not requested	BV	
J2-8	Steer Right solenoid activation	Steer Right requested	0V	—
		Steer Right not requested	BV	

Table 4-4: Connector J3

PIN	PIN DESCRIPTION	CONDITION	VOLTAGE	CONTINUOUS TO PIN
J3-1	Alarm activation	Alarm sounding (out of level unit lowering, etc.)	†	—
† If the alarm is sounding because the unit is out of level, BV will drop to 0V as long as the alarm is sounding. If the alarm is sounding because the unit is lowering, there will be alternating high and low voltages (the voltages will vary).				
J3-2	Tilt Sensor output signal	Unit within Level Sensor angle	BV	—
		Unit outside Level Sensor angle	0V	
J3-3	24 Volt supply for Alarm, Tilt Sensor and solenoids,	Upper & Lower E-Stops closed	BV	J2-3 & J4-5
		Upper or Lower E-Stop open	0V	
J3-4	Input from platform down Proximity Switch	Above Proximity switch	0V	—
		Below Proximity switch	BV	
J3-5	Down solenoid activation	Down requested	0V	—
		Down not requested	BV	
J3-6	Depression mechanism activation (retract)	Drive requested	0V	—
		Drive not requested	BV	
J3-7	Not Used	—	—	—
J3-8	Battery negative supply for Tilt sensor and Proximity switch	—	B–	J4-11

Table 4-5: Connector J4

PIN	PIN DESCRIPTION	CONDITION	VOLTAGE	CONTINUOUS TO PIN
J4-1	Motor Start relay and Hourmeter activation	Drive, Lift or Steer requested	0V	—
		Drive, Lift or Steer not requested	BV	
J4-2	24 Volt supply to Keyswitch	Upper & Lower E-Stops closed	BV	—
		Upper or Lower E-Stop open	0V	
J4-3	Chassis Controls selected from Keyswitch	Chassis Controls selected	BV	—
		Chassis Controls not selected	0V	
J4-4	24 Volt supply to chassis Up/Down switch	—	‡	—
‡ Keyswitch must be held to Chassis Controls position to measure BV				
J4-5	24 Volt supply to Keyswitch	Upper & Lower E-Stops closed	BV	J2-3 & J3-3
		Upper or Lower E-Stop open	0V	
J4-6	Not Used	—	—	—
J4-7	Up signal from Chassis Controls	Up requested from Chassis Controls	BV	—
		Up not requested from Chassis Controls	0V	
J4-8	Down signal from Chassis Controls	Down requested from Chassis Controls	BV	—
		Down not requested from Chassis Controls	0V	
J4-9	Lower E-Stop activation (input to I/O board when E-Stop is closed)	Lower E-Stop closed	BV	J1-4
		Lower E-Stop open	0V	
J4-10	Power output to Platform Controls	Platform selected at Keyswitch	BV	J1-6
		Platform not selected at Keyswitch	0V	
J4-11	Battery negative supply to I/O Board	—	B–	—
J4-12	24 Volt supply to Hourmeter and Line Contactor coil	Upper & Lower E-Stops closed and Platform Controls or Chassis Controls selected	BV	—

Table 4-6: Connector J5

PIN	PIN DESCRIPTION	CONDITION	VOLTAGE	CONTINUOUS TO PIN
J5-1	24 Volt supply to EMC motor controller	Upper & Lower E-Stops closed and Platform Controls or Chassis Controls selected	BV	—
J5-2	Drive signal to EMC motor controller	Forward/Reverse requested	15V	—
		Forward/Reverse not requested	0V	
J5-3	Steer signal to EMC motor controller	Steer Right/Steer Left requested	15V	—
		Steer Right/Steer Left not requested	0V	
J5-4	Up signal to EMC motor controller	Up requested	15V	—
		Up not requested	0V	
J5-5	Speed Reduction signal to EMC motor controller	Below Proximity switch	15V - 17V	—
		Above Proximity switch	0V	
J5-6	Line Contactor activation signal	Drive, Lift or Steer requested	0V	—
		Drive, Lift or Steer not requested	BV	
J5-7	Direction enable	Forward/Reverse requested	0V	—
		Forward/Reverse not requested	4.0V - 4.3V	
J5-8	Speed signal to EMC motor controller	Signal starts high and drops proportionally as Control Handle is moved in either direction	4.3V dropping to 0.2V	—

4-9 ELECTRIC

Table 4-7: Electrical Troubleshooting Table

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--ALM															
Batteries--BAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Battery Charger--CHG															X
5 AMP Circuit Breaker--F1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
175 AMP Fuse--F2	X	X	X	X	X	X	X	X	X	X	X	X			
Hour Meter/Low Voltage indicator--HM															
I/O Board--I/O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Motor Control--MC	X	X	X	X	X	X	X	X	X	X	X	X			
Motor--MOT			X	X	X	X	X	X	X	X	X	X			
Motor Relay--R1			X	X	X	X	X	X	X	X	X	X			
Chassis Emergency Stop Switch--S1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Chassis Lift Switch--S2						X	X								
Chassis Key Switch--S3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Lift/Drive Selector Switch--S4		X	X	X		X	X								
Platform Down Switch--S5					X										
Platform Emergency Stop Switch--S6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Interlock Switch--S7		X	X	X	X	X	X	X	X						
PQ Control Handle--S8		X	X	X		X	X								
Height Limit Switch--S9						X									
Platform Steering Switch--S10								X	X						
Tilt Sensor--SNSR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Steering Solenoid (right)--SOL1A									X						
Steering Solenoid (left)--SOL1B								X							
Platform Lift Solenoid--SOL2A						X									
Down Solenoid--SOL2B							X								
Depression Mechanism Extension Solenoid--SOL3A										X					
Depression Mechanism Retraction Solenoid--SOL3B											X				
Reverse Solenoid--SOL4A				X											
Forward Solenoid--SOL4B			X												

4-10 HYDRAULIC

Table 4-8: Hydraulic Troubleshooting Table

Component / Function	Lift Platform	Lower Platform	Steer Right	Steer Left	Drive Forward	Drive Reverse	Creep	Depression Mechanism Extend	Depression Mechanism Retract	Brakes
Check Valve--CV								X	X	
Steering Cylinder--CYL2			X	X						
Lift Cylinder--CYL1	X									
Depression Mechanism Cylinder--CYL3								X	X	
Brake Cylinder--CYL5										X
Priority Flow Divider--DVDR	X		X	X	X	X	X	X	X	X
Suction Strainer--FL1	X		X	X	X	X	X	X	X	
Return Filter--FL2	X		X	X	X	X	X	X	X	
Drive Motors (2)--MOT					X	X				
Pump--PMP	X		X	X	X	X	X	X	X	
Main Relief Valve--RV3	X				X	X	X	X	X	X
Steering Relief Valve--RV1			X	X						
Lift Relief Valve--RV2	X									
Orofice--OR	X	X								
Tank--TNK										
Steering Right/Left Valve--V1			X	X						
Lift Valve--V2A	X									
Down/Emergency Lowering Valve--V2B		X								
Depression Mechanism Retract Valve--V3B									X	
Depression Mechanism Extend Valve--V3A								X		
Forward/Reverse Valve--V4					X	X				
Counterbalance Valve--V5					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.

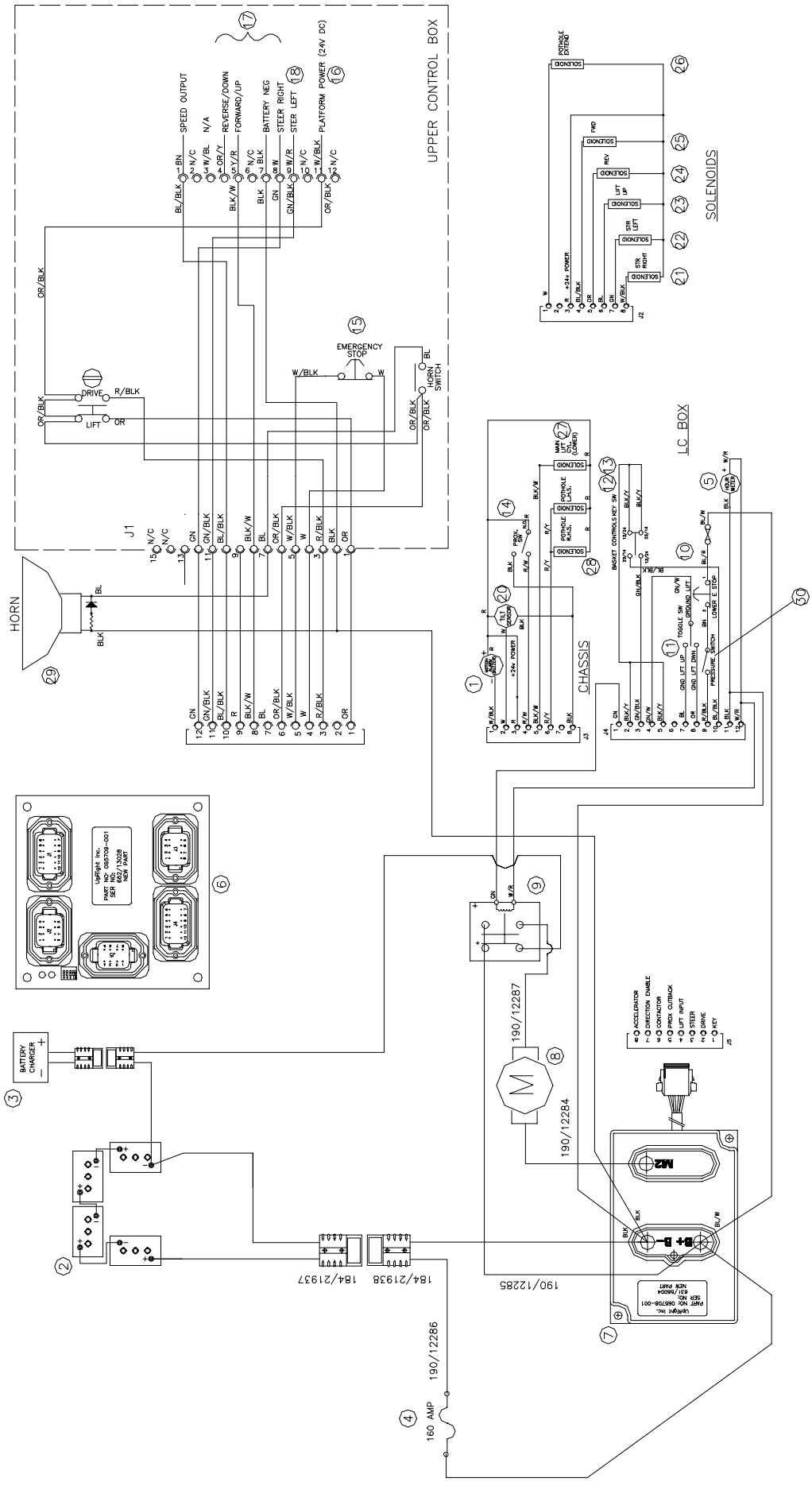
The components that comprise the electrical and hydraulic systems are given a reference designation and are explained as to function and location in the following tables.

CONTENTS

5.2 ELECTRIC - MODEL

Legend: Electrical Schematic, 065616-023

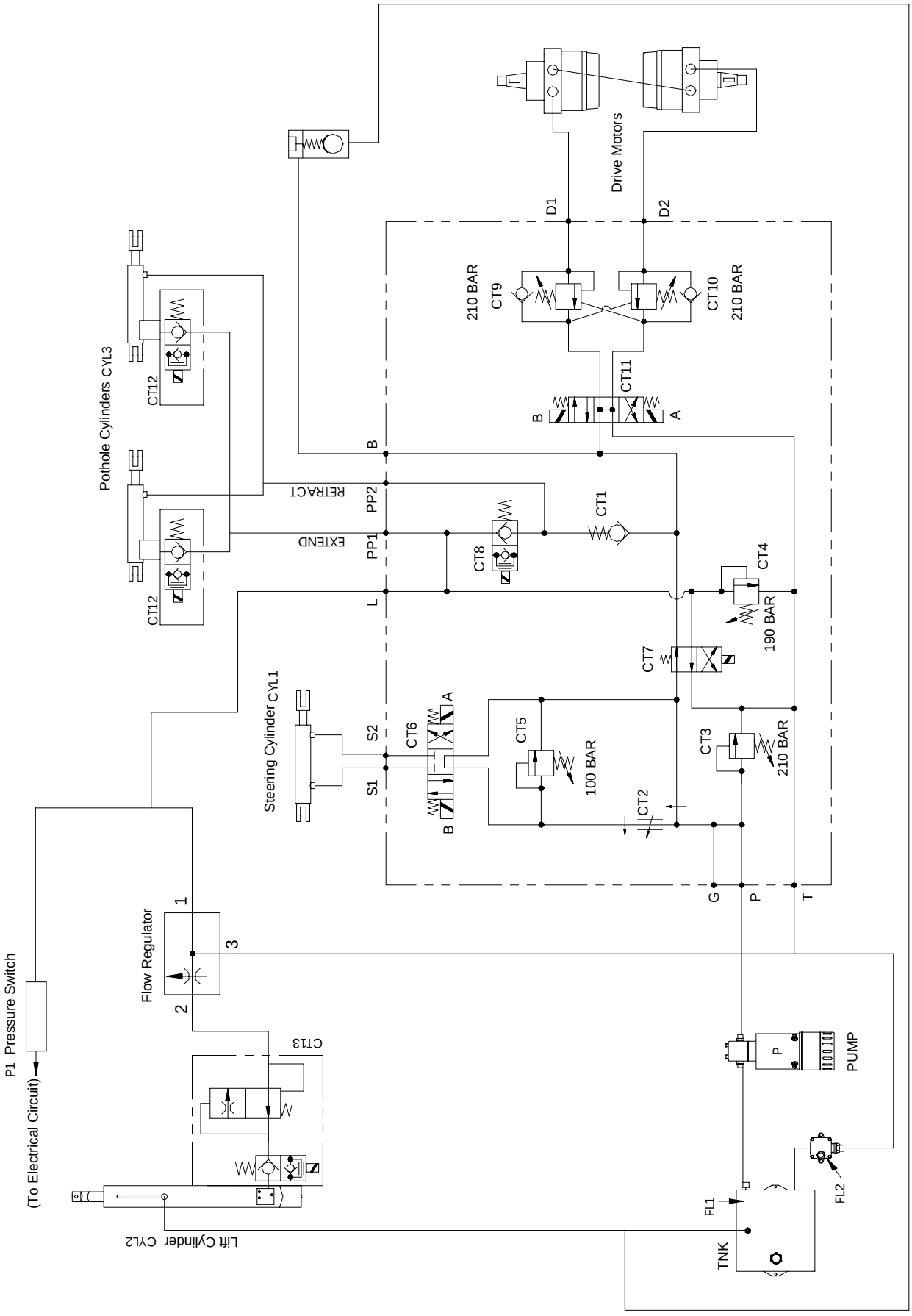
DESIG-NATION	NAME	FUNCTION	LOCATION
1	Alarm	Provides warning sound when slope of machine exceeds 2° side-to-side, or fore and aft and also when deck is lowering.	Control Module
2	Batteries	Provides power to work platform	Power Module
3	Battery Charger	Charges battery	Power Module
4	175 AMP Fuse	Overload protection for electric motor	Chassis Controls
5	Hour Meter/Low Voltage indicator	Shows how many hours the machine has been in use; indicates low battery voltage.	Chassis Controls
6	I/O Board	Connection point for machine function wiring	Control Module
7	Motor Control	Controls the speed of electric motor	Control Module
8	Motor	Provides power to hydraulic pump	Control Module
9	Line Contactor	Controls the speed of the electric motor	Control Module
10	Chassis Emergency Stop Switch	Shuts down all machine functions	Chassis Controls
11	Chassis Lift Switch	Elevates platform	Chassis Controls
12	Chassis Key Switch	Allows some machine functions to be initiated from ground level	Chassis Controls
13	Lift/Drive Selector Switch	Activates lift or drive functions	Platform Controls
14	Proximity Switch	Stops lift assembly at lower limit	Platform Controls
15	Platform Emergency Stop Switch	Shuts down all machine functions	Platform Controls
16	Interlock Switch	Safety mechanism for joystick	Platform Controls
17	Control Handle	Proportionally controls the drive and lift functions	Platform Controls
18	-	-	-
19	Platform Steering Switch (2)	Control left and right steering solenoids	Platform Controls
20	Tilt Sensor	Activates tilt alarm and disables all machine functions exceptplatform lower when the machine is more than 2° out of level	Control Module
21	Steering Solenoid (right)	Shifts steering valve to the left	Hydraulic Manifold
22	Steering Solenoid (left)	Shifts steering valve to the right	Hydraulic Manifold
23	Platform Lift Solenoid	Raises platform	Hydraulic Manifold
24	Reverse Solenoid	Shifts forward/reverse valve to reverse	Hydraulic Manifold
25	Forward Solenoid	Shifts forward/reverse vavle to forward	Hyraulic Manifold
26	Depression Mechanism Extension Solenoid	Extends depression mechanism bars	Hydraulic Manifold
27	Down Solenoid	Lowers platform	Lift Cylinder
28	Depression Mechanism Retraction Solenoid	Retracts depression mechanism bars	Depression Mechanism cylinder
29	HORN	Sounds a warning	Platform Controls
30	Pressure Switch	Prevents a lift greater than the Safe Working Load.	Chassis Controls

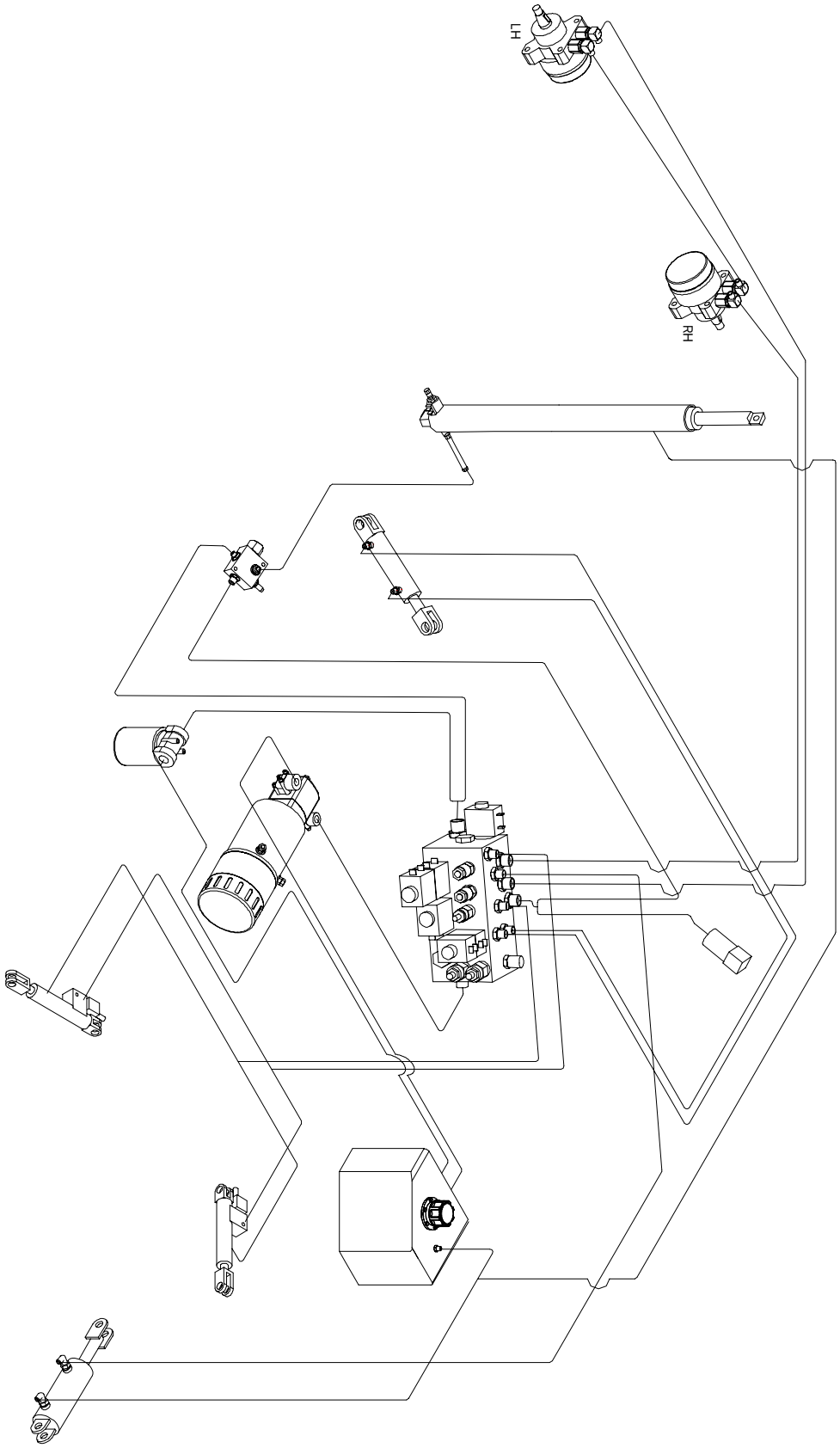

UPPER CONTROL BOX
SPEED OUTPUT
N/A
REVERSE/DOWN
FORWARD/UP
BATTERY NEG
STEER RIGHT
STER LEFT
PLATFORM POWER (24V DC)
EMERGENCY STOP
HORN SWITCH
DRIVE
LIFT
HORN
SOLENOIDS
CHASSIS
LC BOX
BASKET CONTROLS KEY SW
TOGGLE SW GROUND LIFT
PRESSURE SWITCH
PROX SW
TILT SENSOR
BATTERY CHARGER
160 AMP
190/12287
190/12284
190/12285
190/12286
184/21938
184/21937

5.3 HYDRAULIC SCHEMATIC

Legend: Hydraulic Schematic, 101180-020

DESIG-NATION	NAME	FUNCTION	LOCATION
CT1	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
CT2R	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
M	Drive Motors (2)	Provides tractive effort to move platform	Front motor mounts
P	Pump	Provides hydraulic pressure for all functions	On Electric motor at left rear of control module
CT3	Main Relief Valve	Provides pressure protection to pump, limits platform load capacity.	Hydraulic Manifold
CT5	Steering Relief Valve	Provides pressure protection to pump and steering components when steering	Hydraulic Manifold
CT4	Lift Relief Valve	Provides pressure protection to Lift components	Hydraulic Manifold
TNK	Tank	Holds hydraulic oil	Control Module
CT6	Steering Right/Left Valve	Provides directional control for steering	Hydraulic Manifold
CT7	Lift/Drive Valve	Provides oil control for drive or lift functions	Hydraulic Manifold
CT13	Down/Emergency Lowering Valve	Allows oil to return to tank; manually operated for emergency lowering	Lift cylinder
CT8	Pothole mechanism Retract Valve	Provides oil control for DM bar	DM cylinder
CT12	Pothole Mechanism Extend Valve	Provides oil control for DM bar	Hydraulic Manifold
CT11	Forward/Reverse Valve	Provides oil control for drive or lift functions	Hydraulic Manifold
CT9 & CT10	Counterbalance Valve	Prevents machine from running away on slopes; cushions stops	Hydraulic Manifold
B	Brake	Eliminates motion when drive function is disabled.	Rear Chassis
P1	Overload Valve	Prevents machine from lifting with a weight greater than the safe working load.	Chassis
FR	Flow Regulator	Controls hydraulic oil flow to and from the main lift cylinder.	Chassis


Drive Motors
D1
D2
210 BAR
CT9
CT10
210 BAR
CT11
B
A
Pothole Cylinders CYL3
CT12
CT12
RETRACT
EXTEND
PP2
PP1
B
L
CT1
CT8
CT4
190 BAR
CT7
Steering Cylinder CYL1
S2
S1
CT6
A
B
CT5
100 BAR
CT3
210 BAR
CT2
G
P
T
Flow Regulator
1
2
3
P1 Pressure Switch
(To Electrical Circuit)
CT13
Lift Cylinder CYL2
P
PUMP
FL1
FL2
TNK


LH
RH

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.

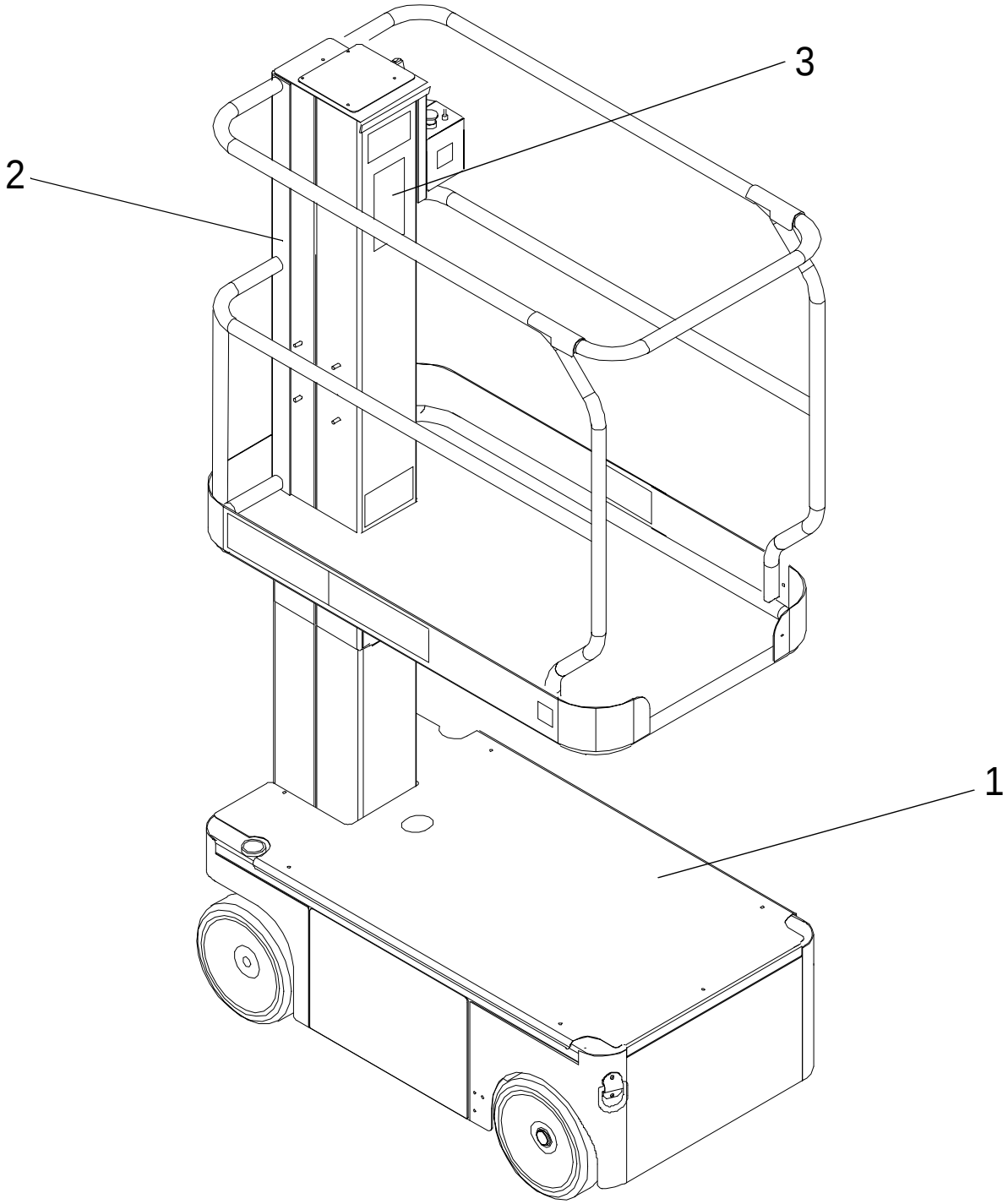
Each parts list contains the component parts for that assembly.

CONTENTS

General Assembly

505000-000

Item	Part	Description	QTY.
1	505001-000	CHASSIS ASSEMBLY	1
2	505002-000	MAST / PLATFORM ASSEMBLY	1
3	505004-000	DECAL ASSEMBLY	1
4	505007-000	HYDRAULIC ASSEMBLY	1
5	505008-000	ELECTRICAL ASSEMBLY	1



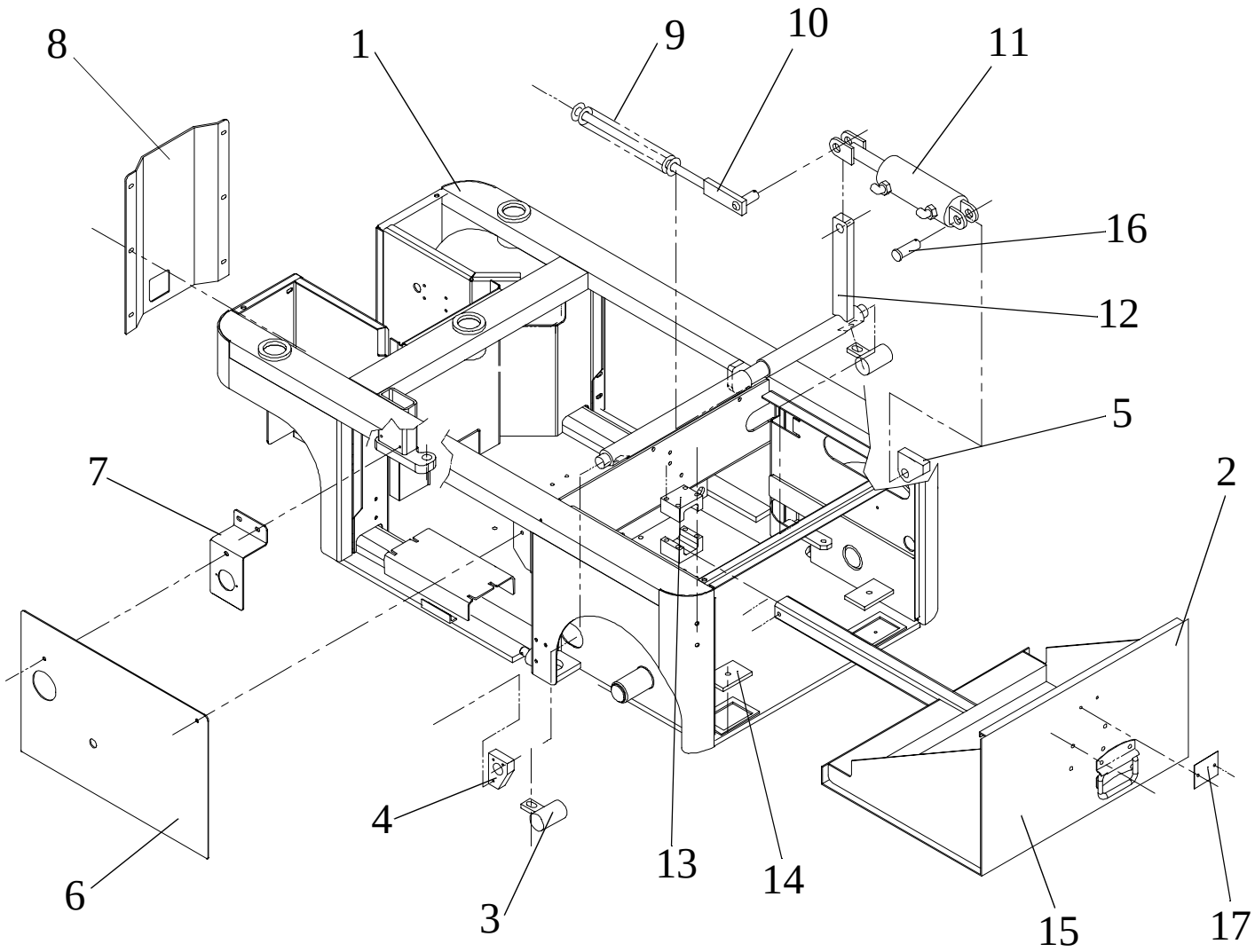
Drawing #

Chassis Assembly 1 of 4

505001-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	107133-000	CHASSIS WELDMENT TM12	1
2	065465-000	BATTERY PAN WELDMENT	1
3	065472-000	SHOE PARK BRAKE	2
4	505031-000	BRAKE BEARING (LH)	2
5	505031-001	BRAKE BEARING (RH)	4
6	107131-002	CHASSIS ACCESS PANEL	1
7	505033-000	BRACKET, SIDE PANEL SUPPORT	1
8	505029-000	FRONT COVER	1
9	505023-000	SPRING COMPRESSION	1
10	065474-000	TENSION BAR WELDMENT	1

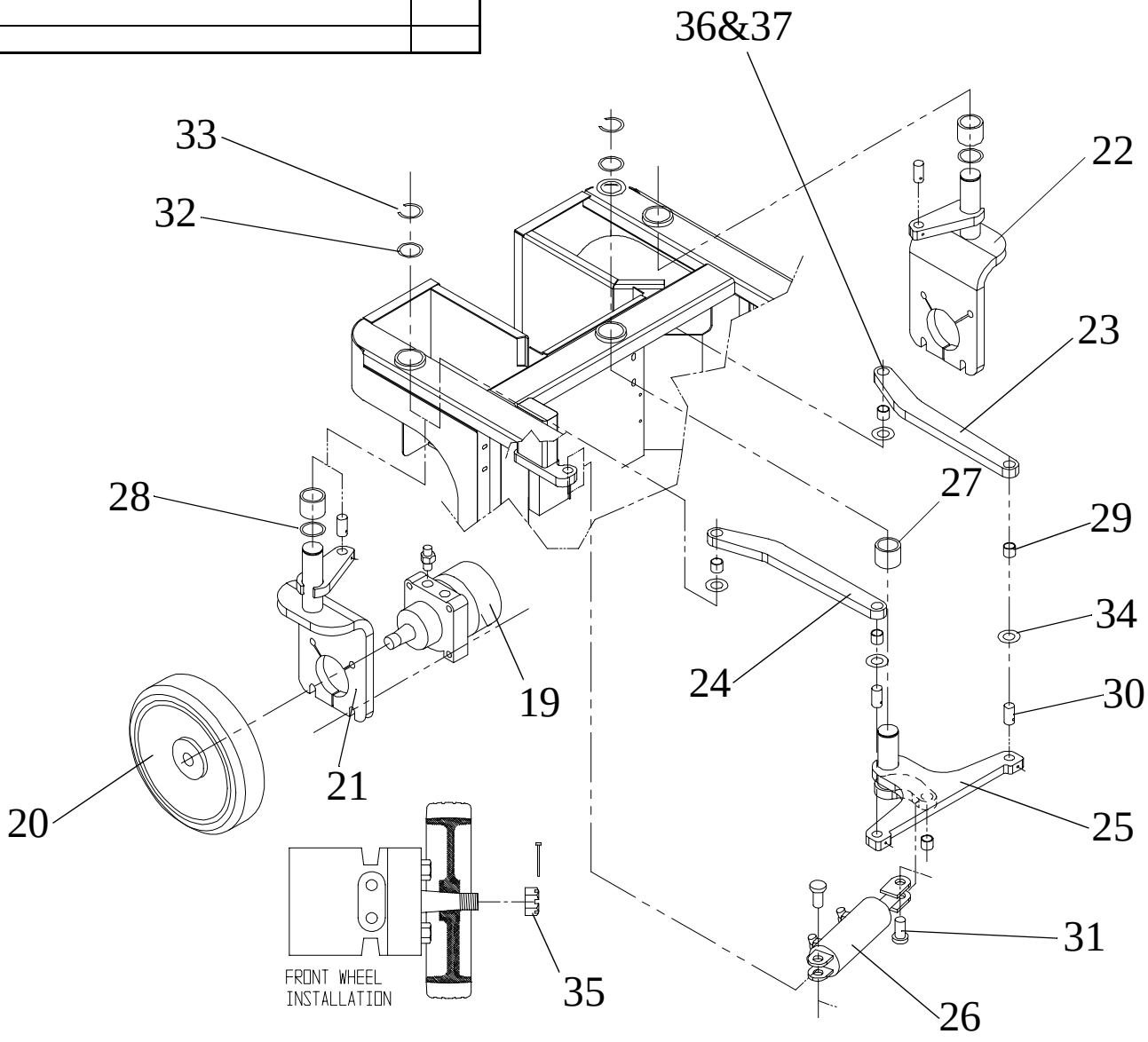
ITEM	PART NUMBER	DESCRIPTION	QTY
11	505035-000	CYLINDER ASSY (BRAKE)	1
-	505035-010	SEAL KIT, CYLINDER	
12	065469-000	BRAKE ACTUATOR WELDMENT	1
13	505032-000	GUIDE PAD	2
14	505030-000	SLIDE PAD	2
15	026541-016	HANDLE	1
16	011848-019	PIVOT PIN, BRAKE CYLINDER	1
17	505028-000	SPACER PLATE, BATTERY TRAY SECURING PIN	1
18			



Chassis Assembly 2 of 4

505001-000

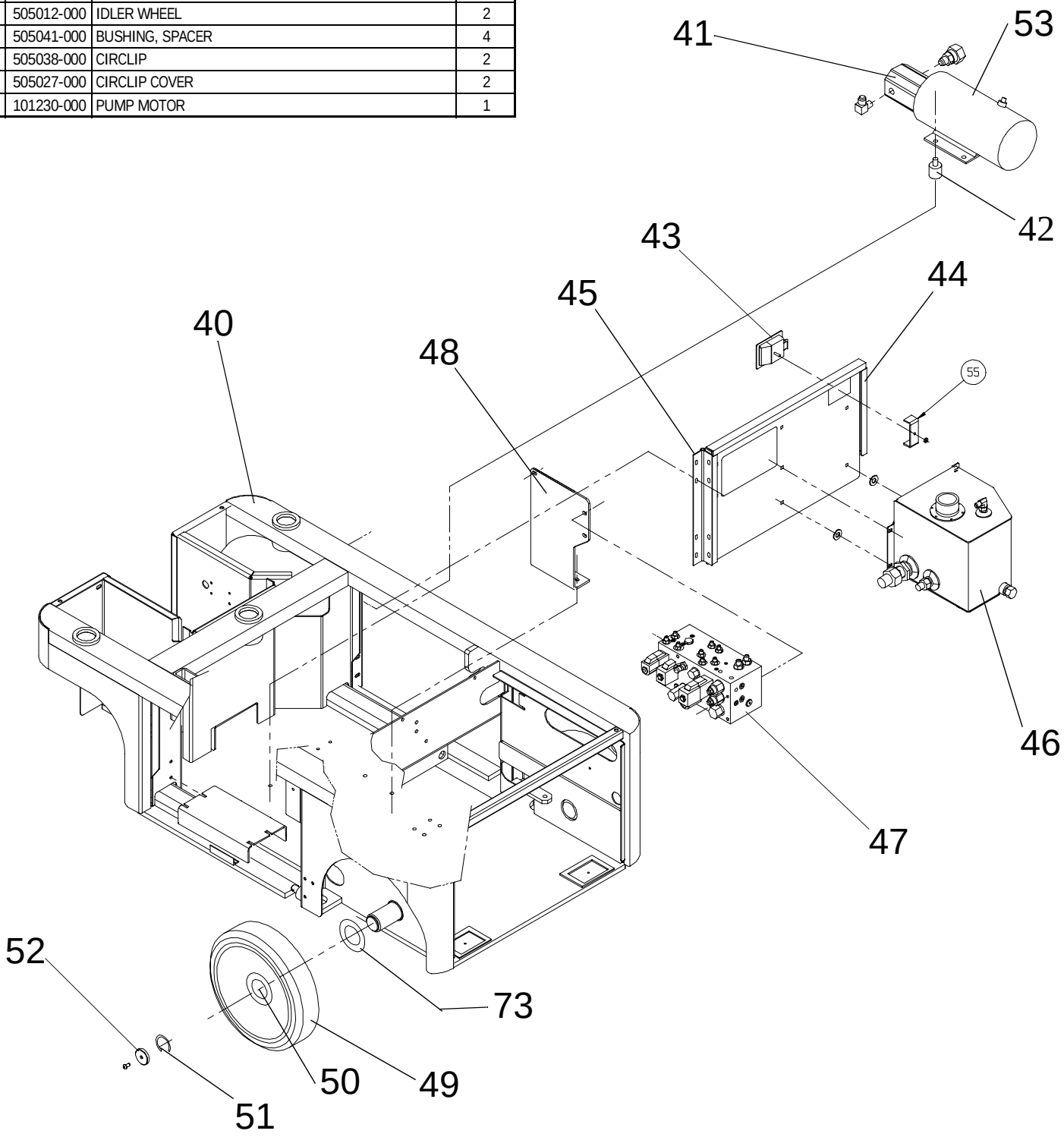
ITEM	PART NUMBER	DESCRIPTION	QTY
19	501999-000	MOTOR HYDRAULIC	2
20	505011-000	WHEEL, DRIVE	2
21	107186-000	WHEEL YOKE, L.H.	1
22	107185-000	WHEEL YOKE, R.H.	1
23	065517-000	STEER LINK RH	1
24	065518-000	STEER LINK LH	1
25	065445-000	BELL CRANK WELDMT	1
26	505035-000	CYLINDER ASSY, BRAKE/STEER	1
-	505035-010	SEAL KIT, BRAKE/STEER CYLINDER	-
27	505043-000	BUSHING, BELL CRANK & STEER YOKE PIVOT	3
28	500924-001	BUSHING (FLAT), BELL CRANK & STEER YOKE PIVOT	3
29	503673-000	BUSHING, STEERING LINK ARMS & BELL CRANK WELD'M	5
30	505034-000	PIVOT PIN, STEERING LINK ARMS	4
31	011848-019	PIVOT PIN, STEERING CYLINDER	2
32	505040-000	RETAINING RING, WHEEL YOKE PIVOT	2
33	505038-000	CIRCLIP	2
34	505045-000	SPACER (STEERING LINK)	4
35	502180-002	CASTLE NUT, (DRIVE WHEELS)	2
36	505116-000	WASHER (STEERING LINKARMS)	4
37	056058-016	M6 X 16 HEX HEAD SCREW	4
38			
39			



Chassis Assembly 3 of 4

505001-000

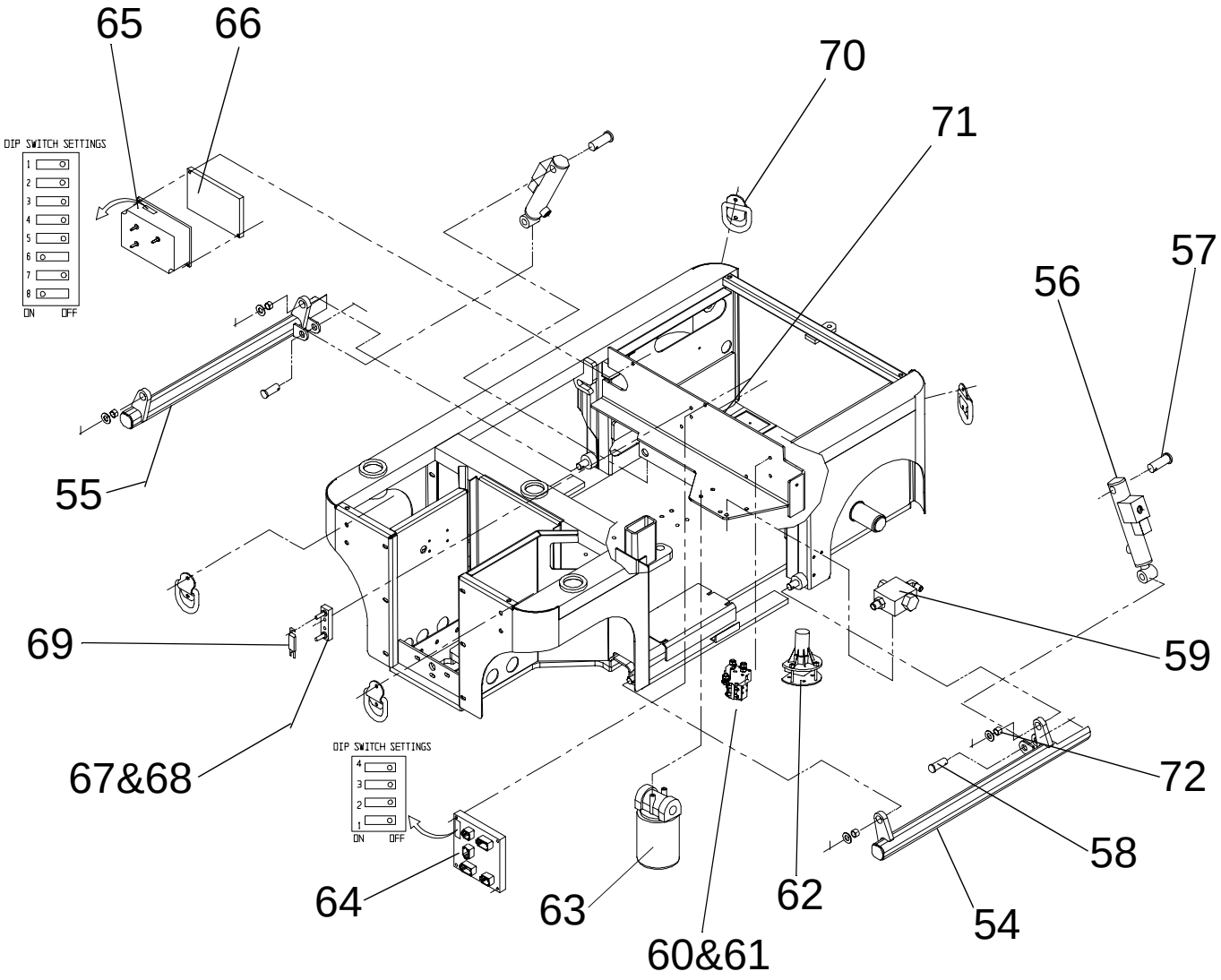
ITEM	PART NUMBER	DESCRIPTION	QTY
40	107133-000	CHASSIS WELDMENT	REF
41	500477-010	PUMP UNIT (PUMP MOTOR)	1
42	066046-007	VIBRATION MOUNT	4
43	505024-000	LATCH (HINGING DOOR)	1
44	505021-000	DOOR (HINGED)	1
45	505025-000	HINGE	1
46	505013-000	TANK, (HYDRAULIC RESERVOIR)	1
47	503800-000	HYDRAULIC MANIFOLD BLOCK	1
48	505022-000	MOUNTING PLATE, HYDRAULIC MANIFOLD	1
49	505012-000	IDLER WHEEL	2
50	505041-000	BUSHING, SPACER	4
51	505038-000	CIRCLIP	2
52	505027-000	CIRCLIP COVER	2
53	101230-000	PUMP MOTOR	1



Chassis Assembly 4 of 4

505001-000

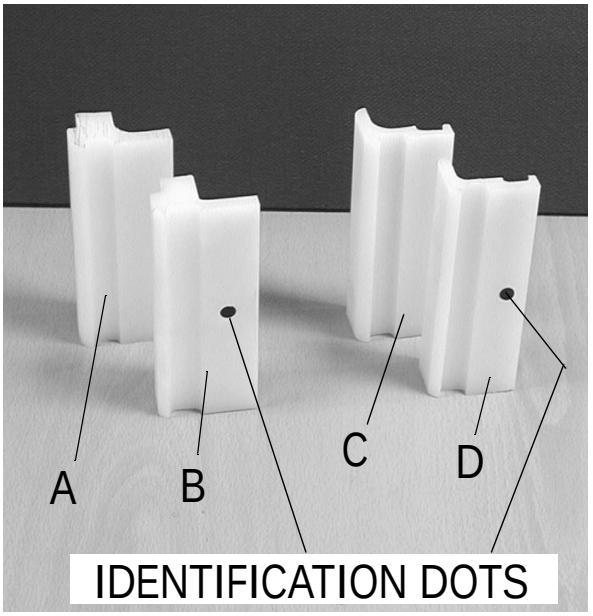
ITEM	PART NUMBER	DESCRIPTION	QTY
54	107179-000	POTHOLE WELDMENT-L.H.	1
55	107180-000	POTHOLE WELDMENT-R.H.	1
56	505036-000	HYDRAULIC CYLINDER, POTHOLE	2
-	505036-010	SEAL KIT, POTHOLE CYLINDER	-
57	011848-019	PIVOT PIN, POTHOLE CYL - CHASSIS	2
58	011848-036	PIVOT PIN, POTHOLE CYL - POTHOLE WELDMENT	2
59	505111-000	HYDRAULIC BLOCK, FLOW REGULATOR	1
60	057485-000	LINE CONTACTOR	1
61	505051-000	BRACKET, LINE CONTACTOR	1
62	058912-000	TILT SENSOR	1
63	057107-000	FILTER, HYDRAULIC	1
64	065709-001	I/O BOARD	1
65	065708-001	MICRO MOS	1
66	502163-000	HEAT SINK PLATE	1
67	503758-000	PLATE, FUSE MOUNT	1
68	502286-000	MOUNTING POST, FUSE	2
69	058921-000	FUSE	1
70	107080-001	TIE DOWN RING (D-RING)	4
71	505091-000	BRACKET, POTHOLE TEE-PIECE MOUNT	1
72	505044-000	BUSHING, POTHOLE WELDMENT - CHASSIS	4
73	500924-000	BUSHING (FLAT) DIA48mm I/D	2



Mast Assembly

505002-000

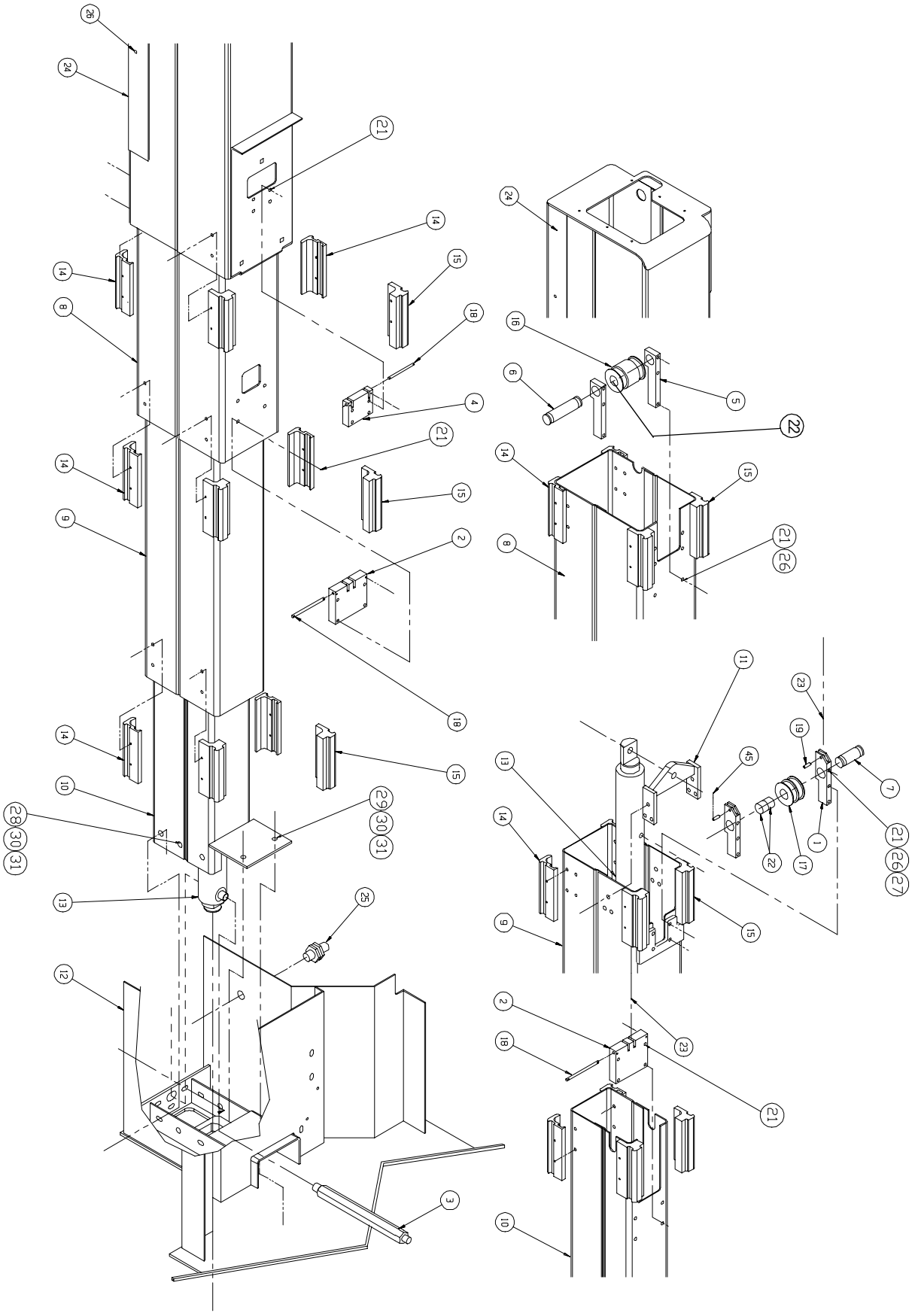
Item	Part	Description	QTY.
1	505066-000	INNER MOUNT	2
2	505065-000	ANCHOR INNER	2
3	505073-000	STANDPIPE ADAPTER	1
4	505064-000	OUTER ANCHOR	1
5	505063-000	OUTER MOUNT	2
6	505057-000	OUTER AXLE	1
7	505056-000	INNER AXLE	1
8	065491-001	SECOND INNER MAST WEDMENT 4M	1
9	065488-001	LOWER INNER MAST WELDMENT	1
10	065485-004	BASE MAST WELDMENT	1
11	065450-001	CYL. BAR & PAD WELDMENT	1
12	505001-000	CHASSIS ASSY	1
13	505037-000	LIFT CYLINDER ASSY	1
*	505037-010	SEAL KIT, LIFT CYLINDER	REF
*	501483-000	EMERGENCY LOWERING VALVE	REF
14	SEE NOTE 2	FRONT PAD	12
15	SEE NOTE 2	REAR PAD	12
16	505060-000	PULLEY OUTER	1
17	505059-000	PULLEY INNER	1
18	505054-000	PIN	3
19	505055-000	ANCHOR PIN	2
20	505084-013	HEX HEAD SELF TAPPER (5.5 X 13)	36
21	501253-020	M6 X 20mm SOCKET HEAD CAP SCREW	18
22	505068-000	BEARING, 2220DU	4
23	505067-000	CHAIN LEAF, BL434 (103 LINKS)	4
24	065580-001	PLATFORM WELDMENT	REF
25	505072-000	SWITCH, PROXIMITY ASSY	1
26	501253-035	M6 X 35 SOCKET HEAD CAP SCREW	4
27	500532-035	M6 X 30 SOCKET HEAD COUNTERSUNK SCREW	2
28	056060-030	M10 X 30 SCREW (GRADE 12.9)	9
29	056060-025	M10 X 25 SCREW (GRADE 12.9)	2
30	056064-000	M10 NYLOCK NUT	11
31	056060-010	M10 WASHER	11



NOTE 1:
ITEMS 21, 26, 27, 28 & 29 MUST
BE GRADE 12.9 BOLTS.

NOTE 2:
WEAR PAD SIZES MAY DIFFER FROM ONE MACHINE TO THE NEXT, WHEN REPLACING FRONT OR REAR MAST WEAR PADS PLEASE INSPECT THE REMOVED PADS IN ORDER TO IDENTIFY WHICH REPLACEMENTS ARE REQUIRED.
(SEE TABLE BELOW AND PICTURE ABOVE RIGHT FOR REFERANCE)

REF	PART NUMBER	DESCRIPTION	TYPE	NOTE
A	505061-000	REAR MAST WEAR PAD	STANDARD	
B	505061-001	REAR MAST WEAR PAD	NARROW	BLACK IDENTIFICATION DOT
C	505062-000	FRONT MASTWEAR PAD	STANDARD	
D	505062-001	FRONT MASTWEAR PAD	NARROW	BLACK IDENTIFICATION DOT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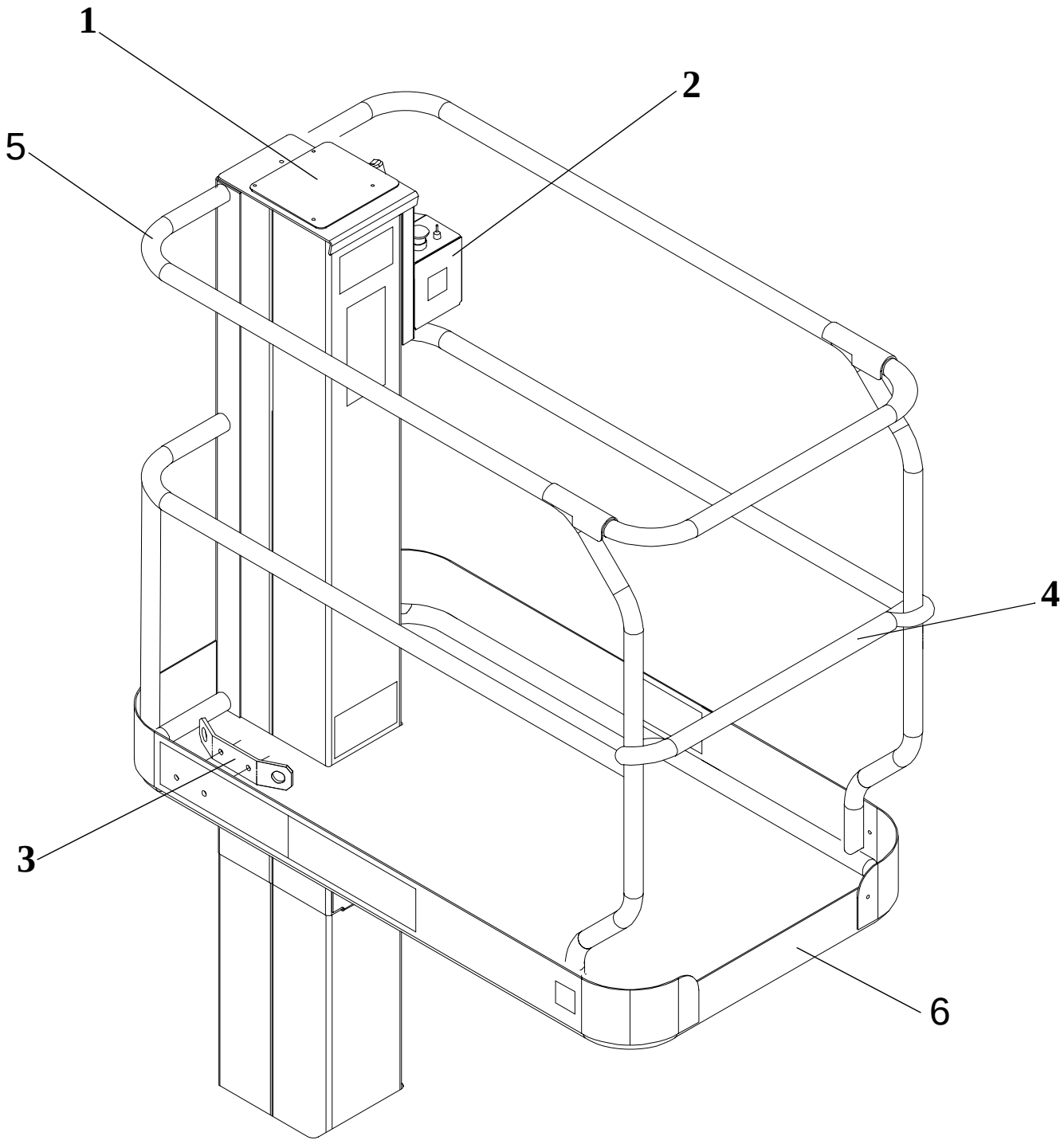
Platform Assembly

505003-000

Item	Part	Description	QTY.
1	505058-000	COVER PLATE (MAST TOP)	1
2	505005-000	UPPER CONTROLS ASSEMBLY	1
3	057094-001	HARDPOINT, SAFETY HARNESS	1
4	505010-000	DROP BAR ASSEMBLY	1
5	065580-001	PLATFORM WELDMENT	1
6	505069-000	TOEBOARD	1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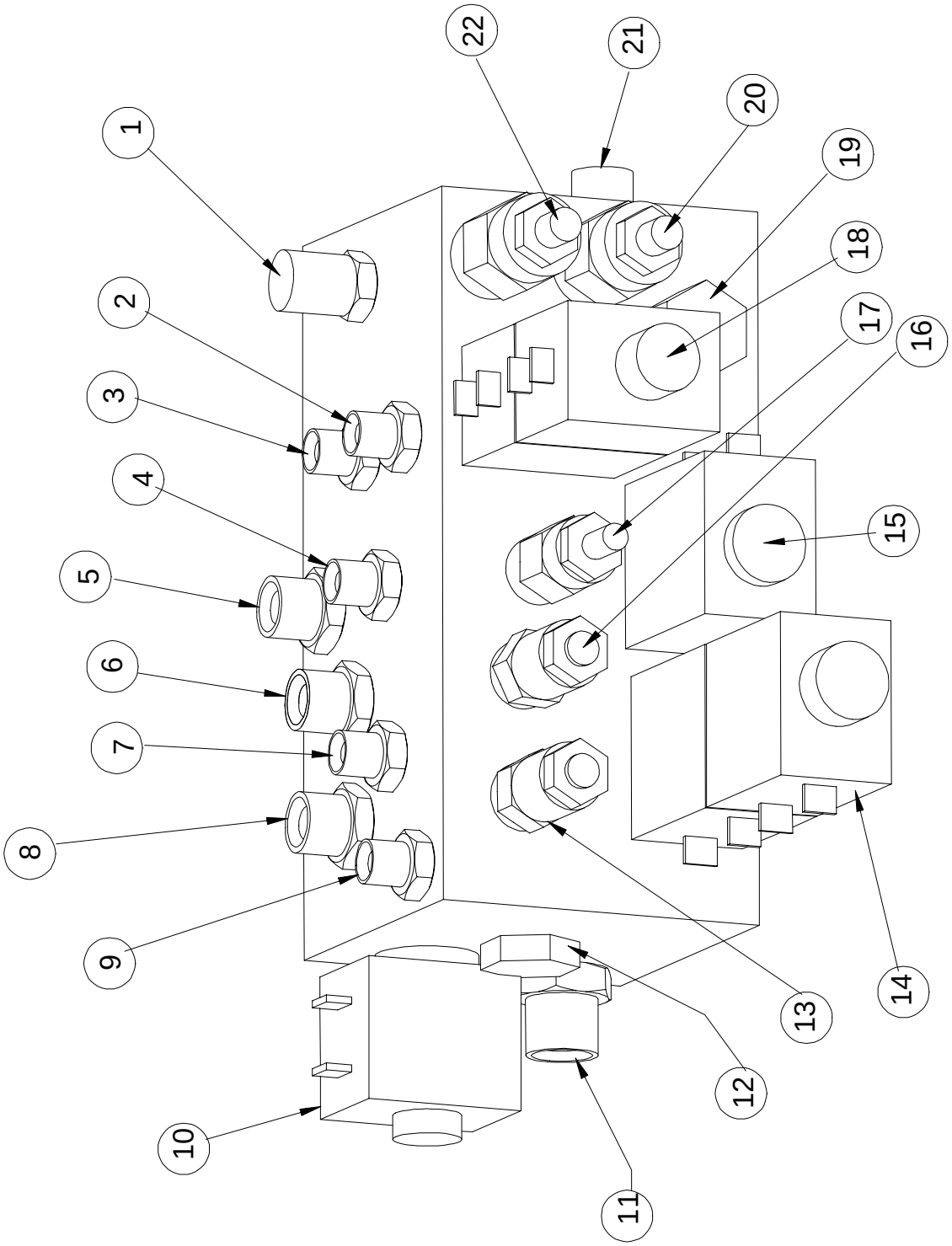
Control Valve Assembly

503800-000

Item	Part	Description	QTY.
1		TEST PORT	1
2	058358-000	FITTING, 1/4” - 1/4” MALE/MALE	1
3	058358-000	FITTING, 1/4” - 1/4” MALE/MALE	1
4	058358-000	FITTING, 1/4” - 1/4” MALE/MALE	1
5	057122-000	FITTING, 3/8” - 3/8” MALE/MALE	1
6	057122-000	FITTING, 3/8” - 3/8” MALE/MALE	1
7	058590-000	FITTING, 1/4 M/M ADAPTOR WITH 1mm OROFICE	1
8	057122-000	FITTING, 3/8” - 3/8” MALE/MALE	1
9	057358-000	FITTING, 1/4” - 1/4” MALE/MALE	1
10	503801-000	VALVE, SOLENOID (POTHOLE)	1
11	057377-000	FITTING, 1/2” - 1/2” (MALE/MALE)	1
12	503802-000	CHECK VALVE, POTHOLE	1
13	503803-000	CROSS LINE RELIEF VALVE (DRIVE)	1
14	503804-000	VALVE, SOLENOID (DRIVE)	1
15	503805-000	VALVE, SOLENOID (DRIVE/LIFT)	1
16	503803-000	CROSS LINE RELIEF VALVE (DRIVE)	1
17	503807-000	PRESSURE RELIEF (MAIN LIFT)	1
18	503808-000	VALVE, SOLENOID (STEERING)	1
19	503809-000	FLOW RESTRICTOR (STEERING)	1
20	503810-000	RELIEF VALVE (STEERING)	1
21	057122-000	FITTING, 3/8” - 3/8” MALE/MALE	1
22	503810-000	RELIEF VALVE (MAIN RELIEF)	1
23	500303-000	COIL 18V	6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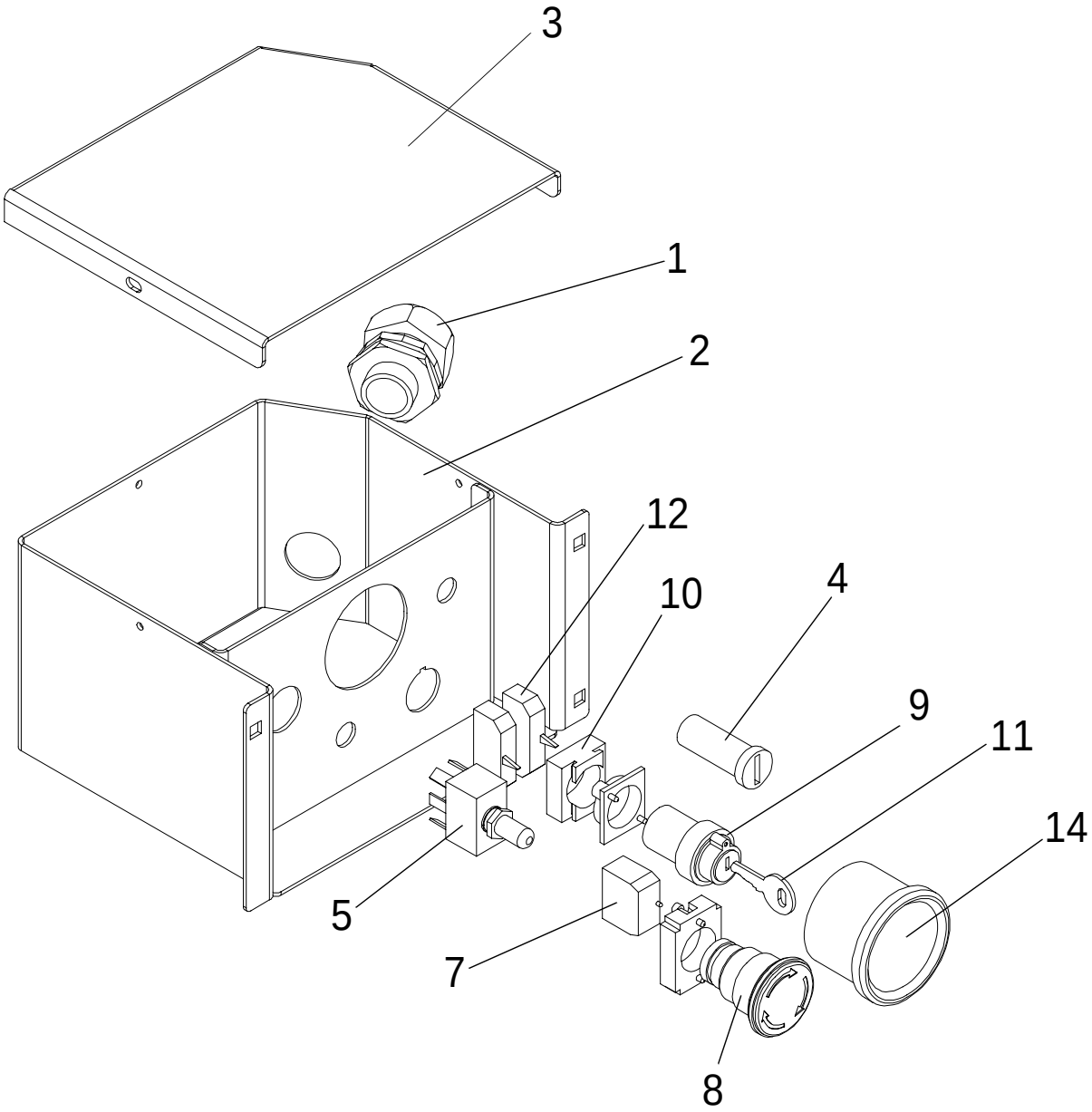
Lower Controls Assembly

505006-000

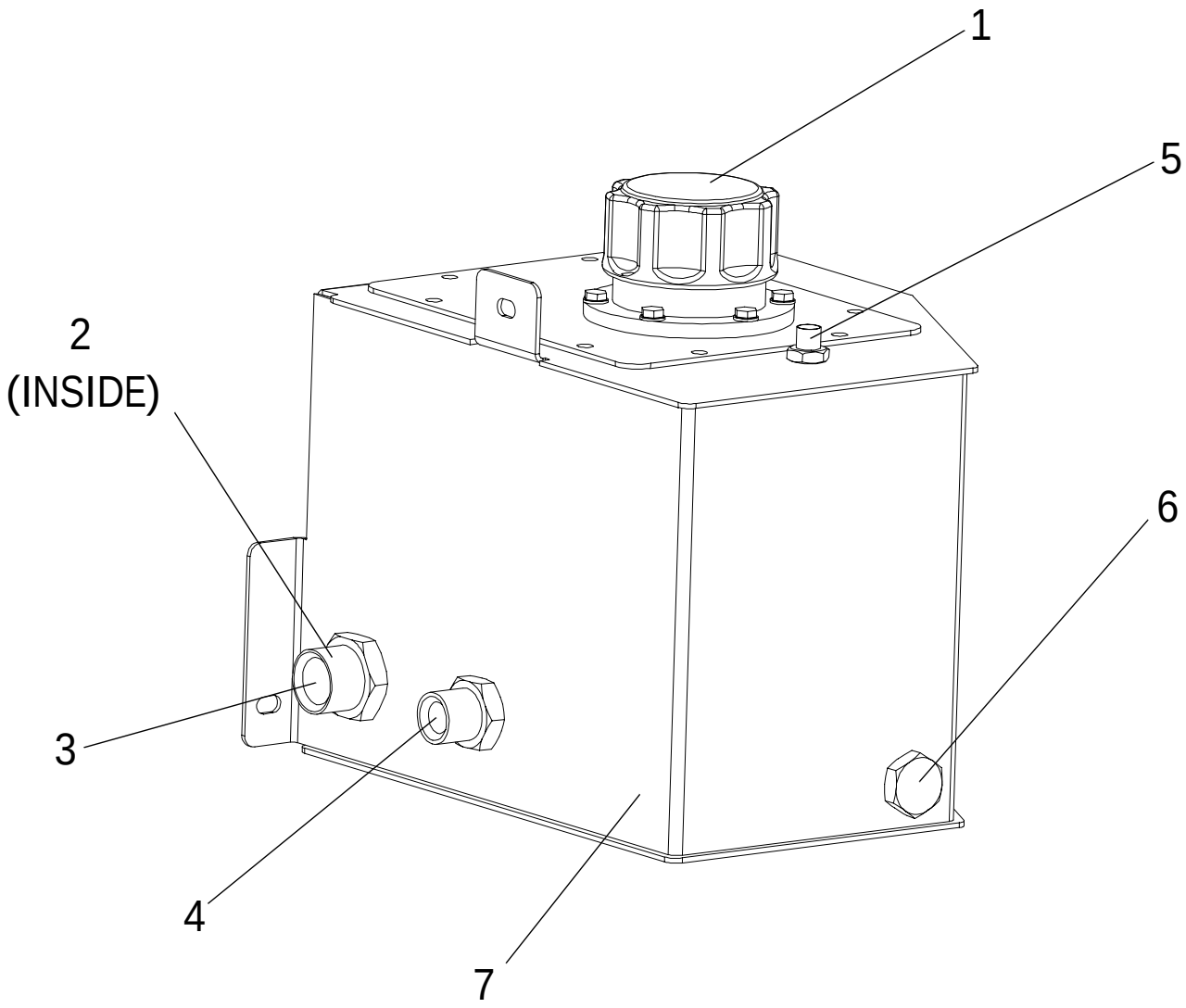
Item	Part	Description	QTY.
1	505139-000	CABLE GLAND	1
2	107123-000	LCB BOX (WELDMENT)	1
3	505026-000	LID, LCB BOX	1
4	502245-000	FUSE CARRIER (7A FUSE)	1
5	502279-000	TOGGLE SWITCH	1
-	-	-	-
7	058947-000	SWITCH BLOCK (N/C)	1
8	057309-000	EMERGENCY STOP BUTTON & MOUNT	1
9	057310-000	KEY SWITCH & MOUNT	1
10	502246-000	MOUNT SWITCH BLOCK	1
11	057238-000	KEY	1
12	058946-000	SWITCH BLOCK (N/O)	2
-	-	-	-
14	501522-000	HOURMETER / BATTERY INDICATOR	1



Hydraulic Tank Assembly

505013-000

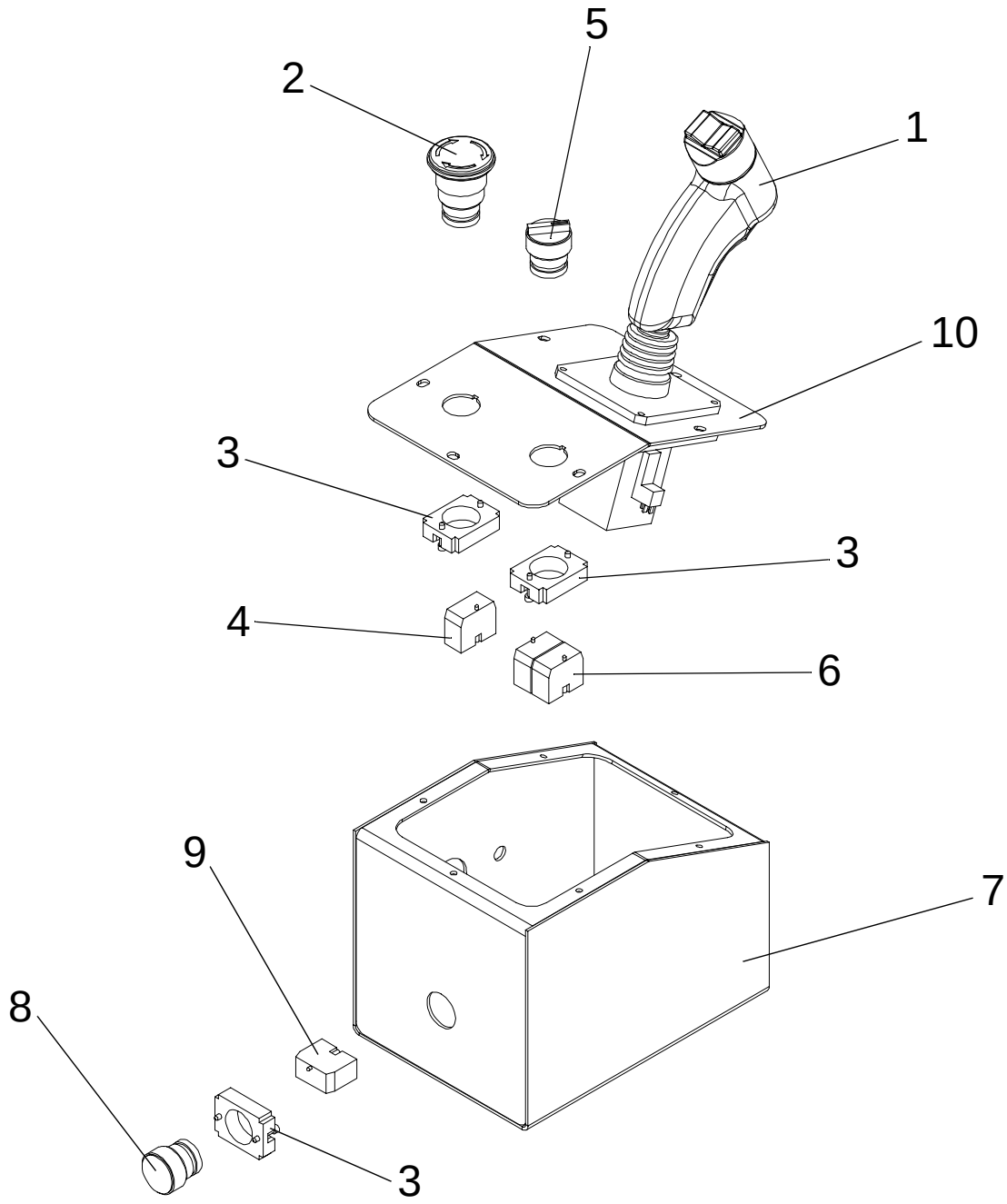
Item	Part	Description	QTY.
1	057109-000	FILLER / BREATHER CAP	1
2	058359-000	SUCTION FILTER	1
3	503788-000	HYDRAULIC FITTING (3/4" M/M BSP)	1
4	503786-000	HYDRAULIC FITTING (1/2" M/M BSP	1
5	503784-000	HYDRAULIC FITTING (1/8" M/M BSP)	1
6	057108-000	DRAIN PLUG (3/8")	1
7	505016-000	TANK WELDMENT	1



Upper Controls Assembly

505005-000

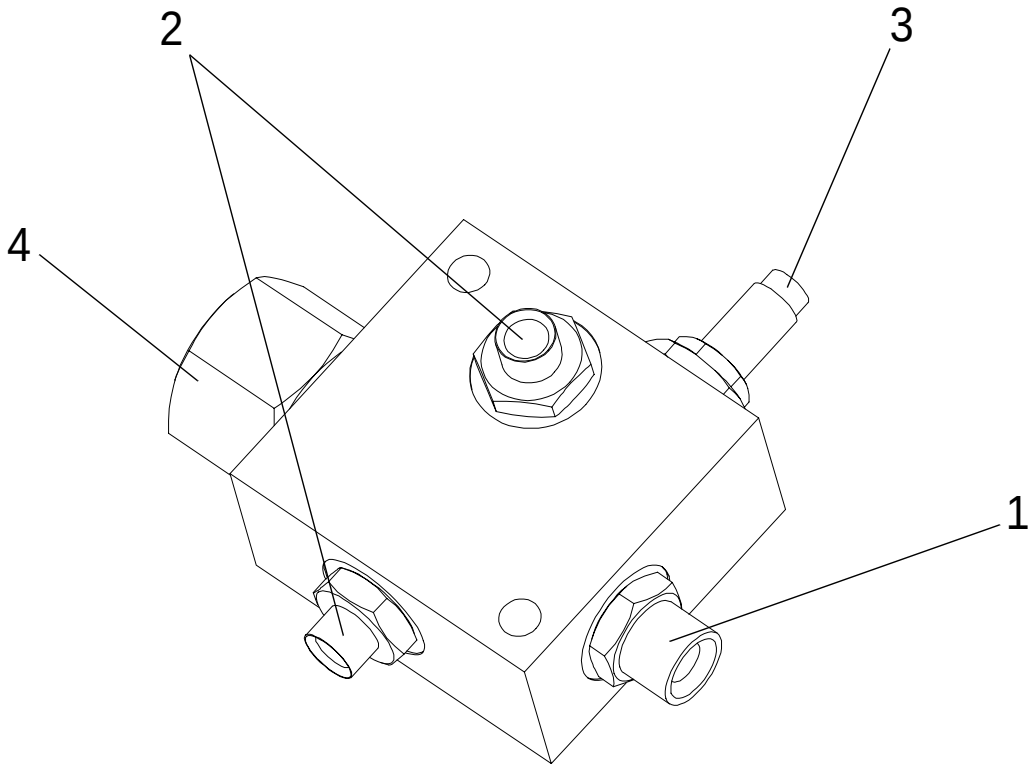
Item	Part	Description	QTY.
1	113070-000	JOYSTICK	1
2	057309-000	EMERGENCY STOP SWITCH & MOUNT	1
-	-	-	-
4	058946-000	SWITCH BLOCK (N/C)	1
5	058807-000	2 POSITION SWITCH & MOUNT	1
6	502243-000	SWICTH BLOCK (2 POSITION SWITCH)	1
7	107159-000	UCB BOX WELDMENT	1
8	502242-000	HORN BUTTON & MOUNT	1
9	058947-000	SWITCH BLOCK (N/O)	1
10	505071-000	TOP PLATE (UCB BOX)	1



Hydraulic Block (Flow Regulator)

505111-000

Item	Part	Description	QTY.
1	057122-000	FITTING, 3/8 - 3/8 (M/M)	1
2	057121-000	FITTING, 3/8 - 1/4 (M/M)	1
3	505126-000	VALVE, ADJUSTER	1
4	505127-000	VALVE (FIXED)	1

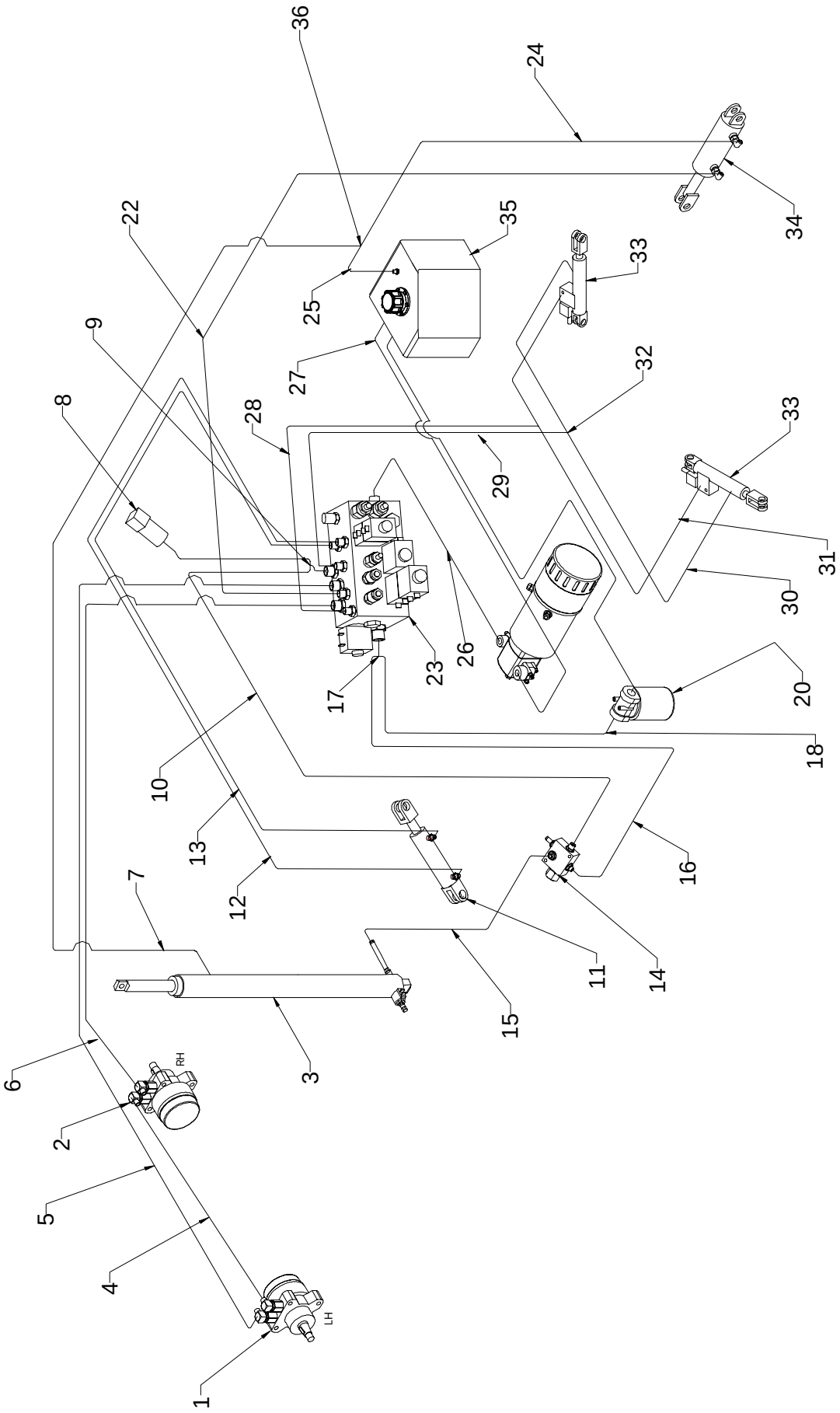


Hydraulic Assembly

505007-000

Item	Part	Description	QTY.
1	501999-000	DRIVE MOTOR	2
2	-	-	-
3	505037-000	HYDRAULIC CYLINER (LIFT)	1
4	505101-000	HYDRAULIC HOSE (MOTOR TO MOTOR)	1
5	505099-000	HYDRAULIC HOSE (BLOCK TO MOTOR, LH) DI - LH	1
6	505100-000	HYDRAULIC HOSE (BLOCK TO MOTOR, RH)D2 - RH	1
7	505108-000	HYDRAULIC HOSE (LIFT CYL DRAIN - TANK)	1
8	502342-000	PRESSURE SWITCH (K65 N/C)	1
9	502341-000	T - PIECE (3/8 - 3/8 - 1/4) M/M/M	
10	505110-000	HYDRAULIC HOSE (T PIECE - FLOW REGULATOR)	1
11	505035-000	HYDRAULIC CYLINDER, STEER / BRAKE	2
12	505118-000	HYDRAULIC HOSE(BLOCK - STEER CYL, FULL B)	1
13	505094-000	HYDRAULIC HOSE(BLOCK - STEER CYL, ANNULAR)	
14	505111-000	HYDRAULIC BLOCK (FLOW DIVIDER/REGULATOR)	1
15	505098-000	HYDRAULIC HOSE (FLOW REG - LIFT CYL)	1
16	505112-000	HYDRAULIC HOSE (RETURN LINE T - FLOW REG)	1
17	505125-000	T PIECE (RETURN LINE)	1
18	505104-000	HYDRAULIC HOSE (RETURN T - FILTER)	1

Item	Part	Description	QTY.
19	-	-	-
20	057107-000	FILTER (HYDRAULIC OIL)	1
21	-	-	-
22	505107-000	HYD HOSE (BLOCK - BRAKE CYL, ANNULAR)	1
23	503800-000	HYDRAULIC MANIFOLD BLOCK	1
24	55106-000	HYDRAULIC HOSE (DRAIN T - BRAKE FULL BORE)	1
25	505109-000	HYDRAULIC HOSE (DRAIN T - TANK)	1
26	505103-000	HYDRAULIC HOSE (PUMP - BLOCK, PRESSURE)	1
27	505102-000	HYDRAULIC HOSE (TANK - PUMP, SUCTION)	1
28	505095-000	HYDRAULIC HOSE (BLOCK - POTHOLE T-PIECE)	2
29	505105-000	HYDRAULIC HOSE (FILTER - TANK, RETURN)	1
30	505096-000	HYDRAULIC HOSE (TEE - POTHOLE CYL)	3
31	505097-000	HYDRAULIC HOSE (TEE - POTHOLE CYL)	1
32	503782-000	TEE PIECE (POTHOLE SYSTEM)	2
33	505036-000	HYDRAULIC CYLINDER (POTHOLE)	2
34	-	-	-
35	505013-000	TANK (HYDRAULIC RESERVOIR)	1
36	503782-000	TEE PIECE (CYL DRAIN)	1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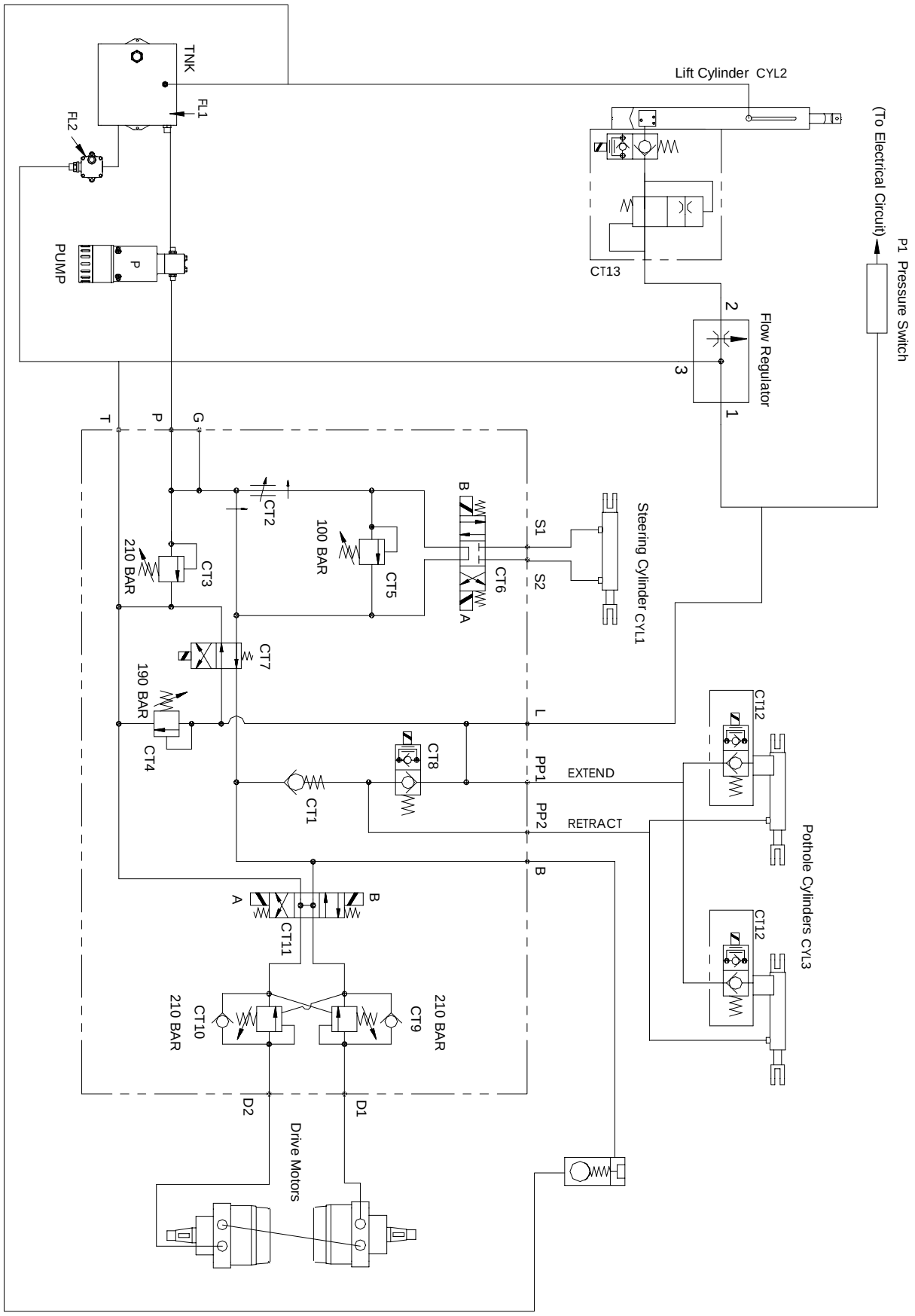
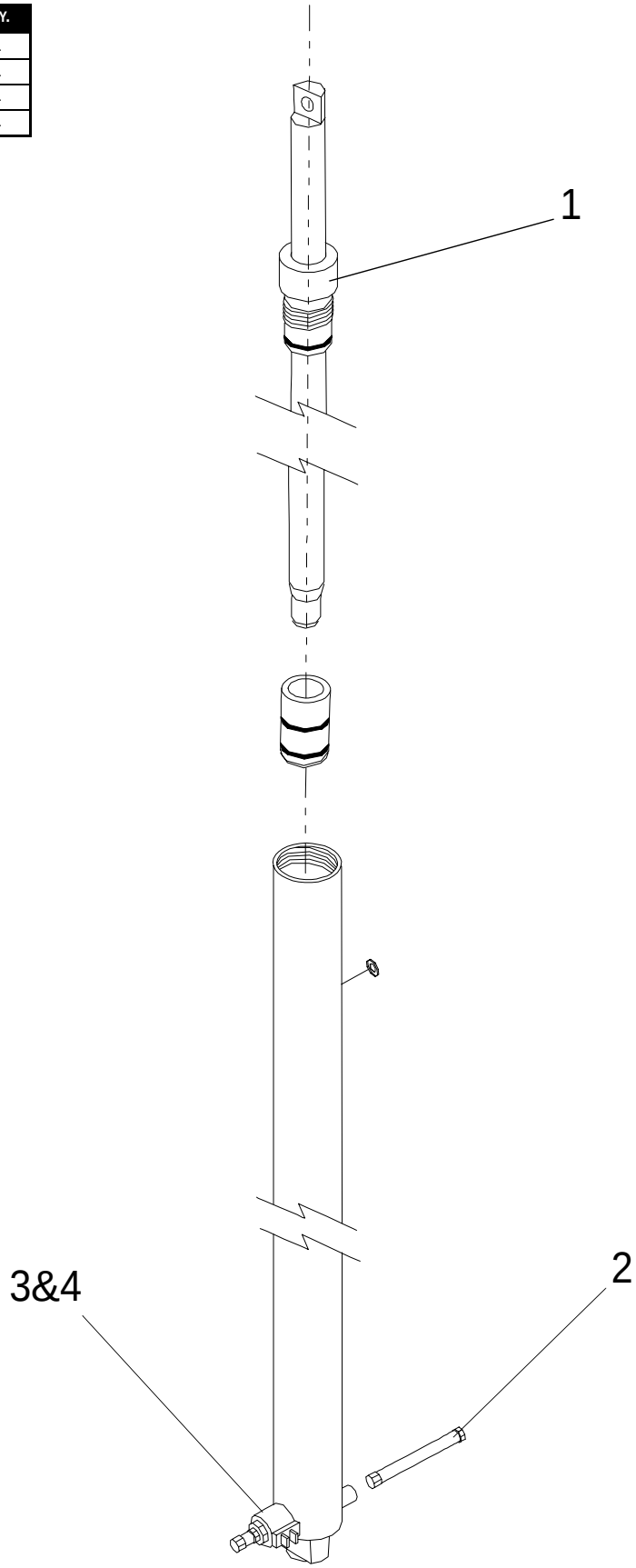
Hydraulic Schematic



Hydraulic Cylinder Assembly (Lift)

505037-000

Item	Part	Description	QTY.
1	505037-010	LIFT CYLINDER SEAL KIT	1
2	505073-000	STANDPIPE ADAPTOR	1
3	501483-000	EMERGENCY DOWN VALVE	1
4	505074-000	ADAPTOR (EMERGENCY DOWN VALVE)	1

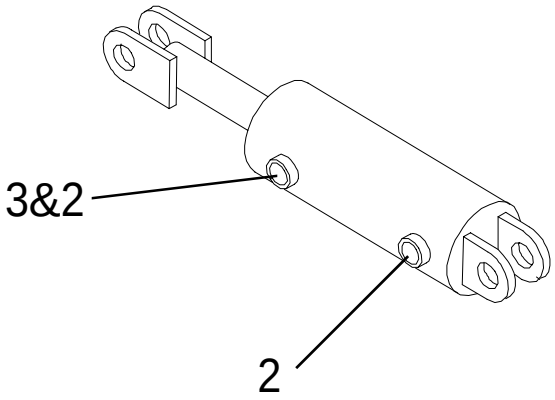


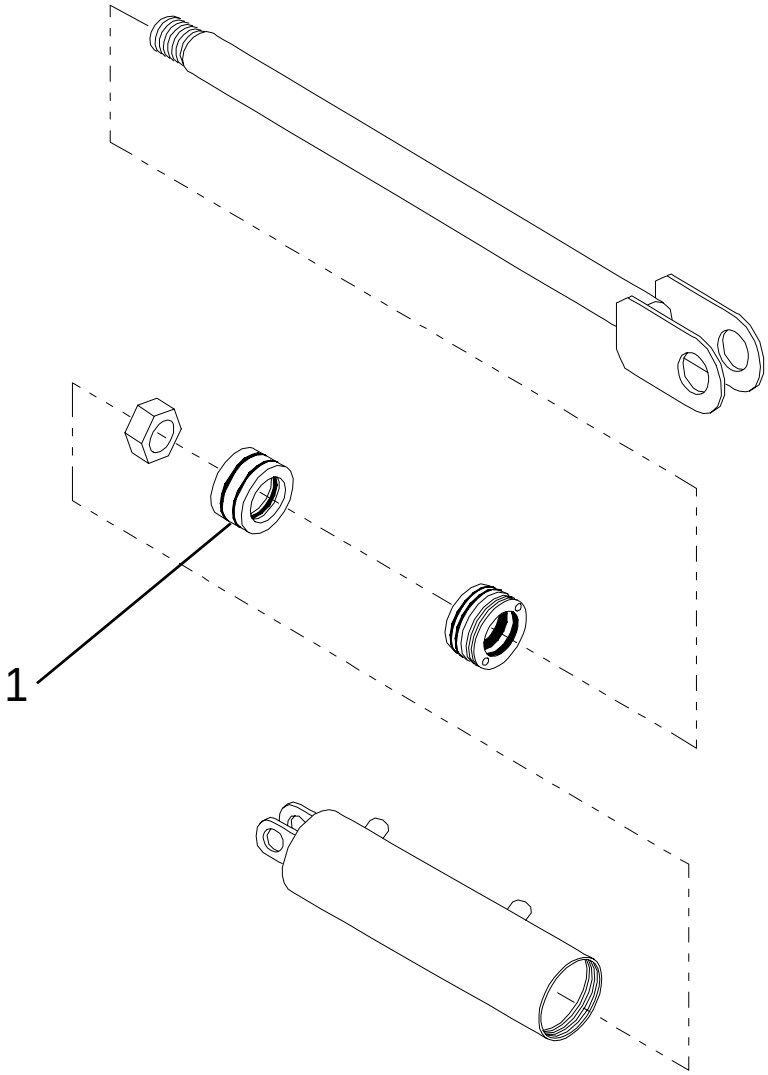
Hydraulic Cylinder Assembly (Steer / Brake)

505035-000

Item	Part	Description	QTY.
1	505035-010	SEAL KIT, BRAKE/STEER CYLINDER	1
2	503784-000	FITTING, 1/8 - 1/8 (M/M)	2
3	503783-000	FITTING, 1/8 M/F BLOCK 90	1

NOTE: FITTINGS SHOWN APPLY TO STEERING CYLINDER, WHEN FITTING HOSES TO THE BRAKE CYLINDER FIT THE 1/8 M/M TO THE FULL BORE END AND THE 1/8 BLOCK 90 WITH 1/8 M/M TO THE ANNULAR END.

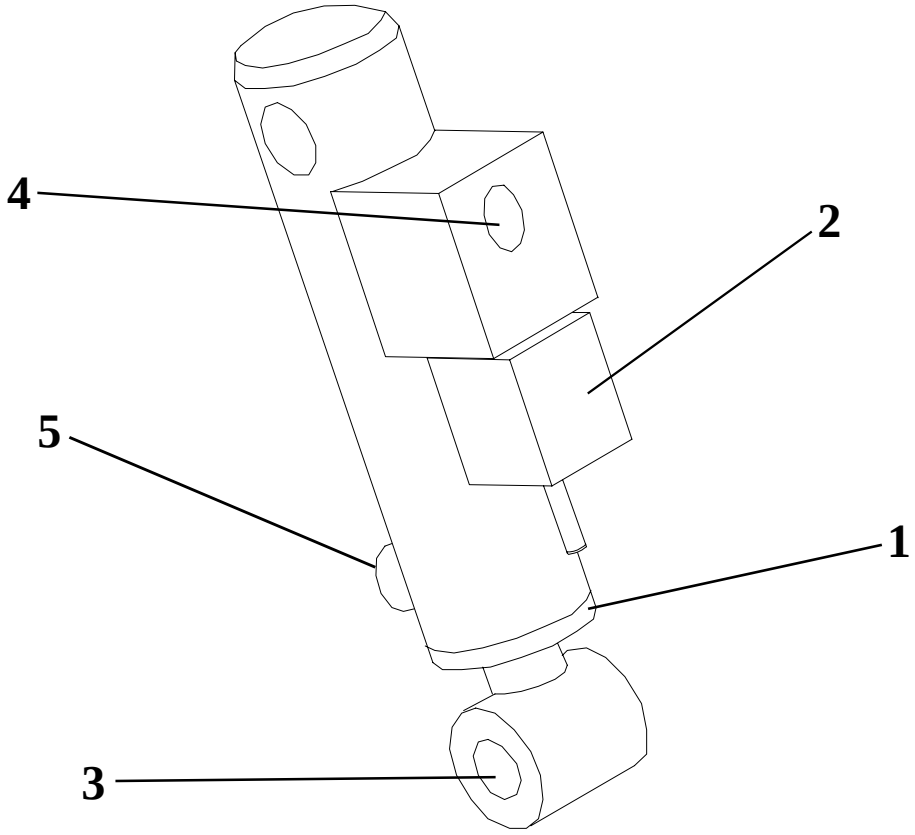




Hydraulic Cylinder Assembly (Pothole)

505036-000

Item	Part	Description	QTY.
1	505036-010	SEAL KIT, POTHOLE CYLINDER	1
2	501483-000	EMERGENCY RELEASE VALVE	1
3	503760-000	BUSHING	2
4	503785-000	FITTING, 1/4 - 1/8 (M/M)	1
5	503784-000	FITTING, 1/8 - 1/8 (M/M)	1

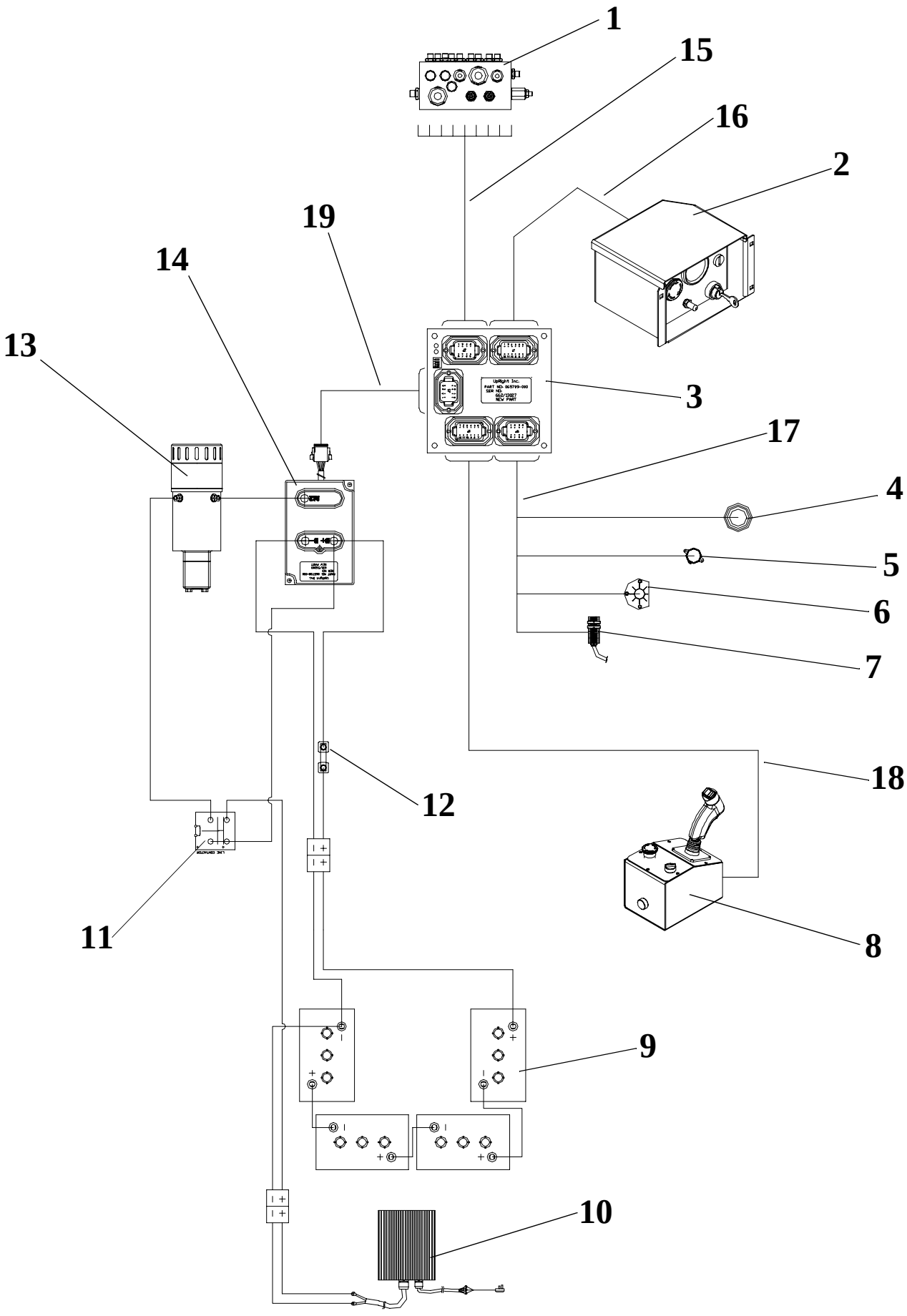


Electrical Assembly

505008-000

Item	Part	Description	QTY.
1	503800-000	HYDRAULIC MANIFOLD BLOCK	1
2	505006-000	LOWER CONTROL BOX	1
3	065709-001	I/O BOARD	1
4	057586-000	HORN	1
5	057328-000	BEEPER	1
6	058912-000	TILT SENSOR	1
7	505072-000	PROXIMITY SWITCH	1
8	505005-000	UPPER CONTROL BOX	1
9	501074-000	BATTERY	4
10	069199-001	BATTERY CHARGER	1

Item	Part	Description	QTY.
11	057485-000	LINE CONTACTOR	1
12	058912-000	MAIN FUSE	1
13	101230-000	PUMP MOTOR	1
14	065708-001	MICRO MOS	1
15	505130-000	ELECTRICAL HARNESS,I/O BOARD- HYD BLOCK	1
16	505131-000	ELECTRICAL HARNESS,I/O BOARD- LCB	1
17	505132-000	ELECTRICAL HARNESS,I/O BOARD- CHASSIS	1
18	505133-000	ELECTRICAL HARNESS,I/O BOARD- UCB	1
19	505134-000	ELECTRICAL HARNESS,I/O BOARD- MICRO MOS	1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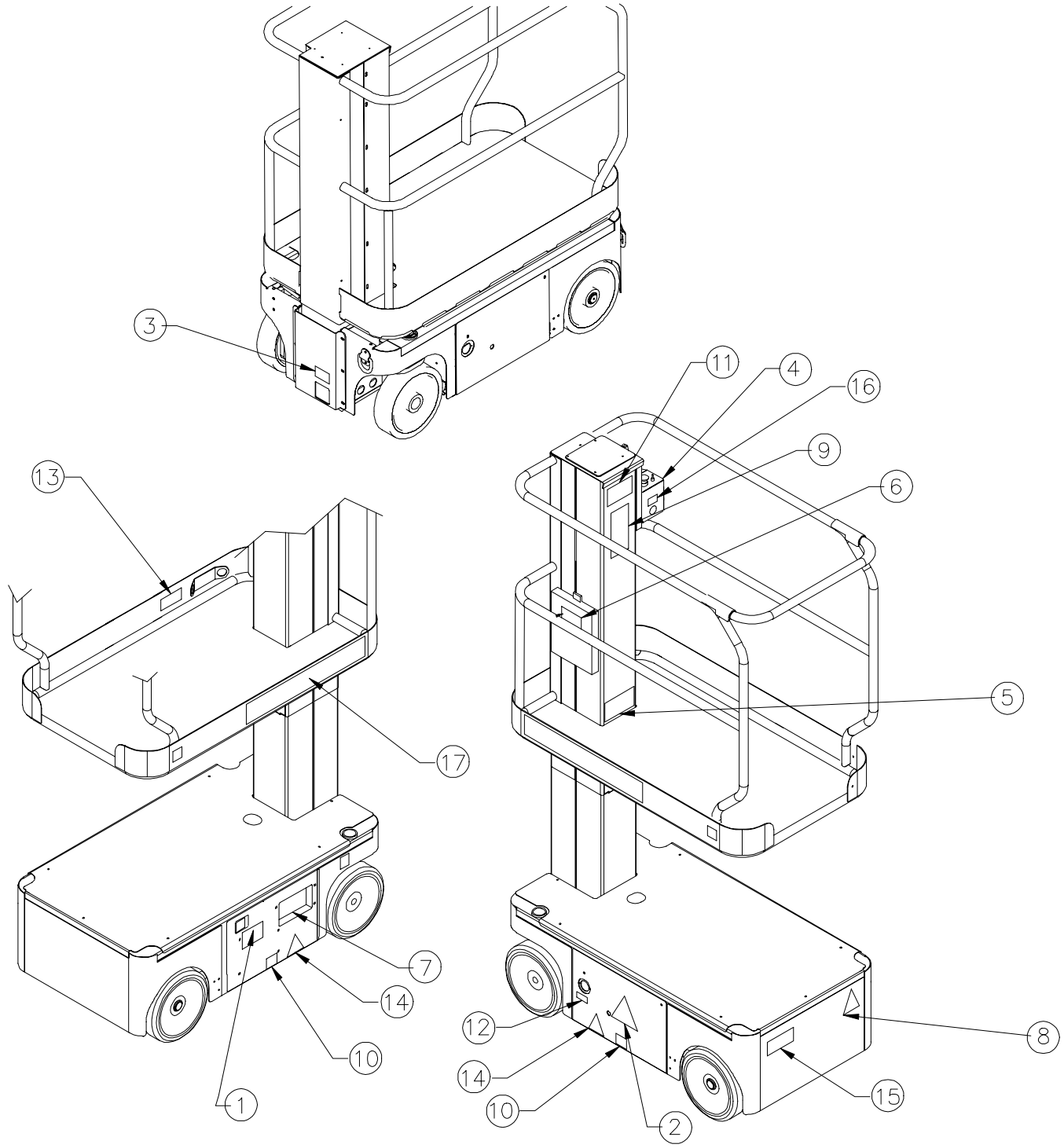
Label Kit, European (English)

505004-000

Item	Part	Description	QTY.
1	060197-001	DECAL,HYDRAULIC FLUID	1
2	101210-000	DECAL,HYDROGEN GAS	1
3	005223-909	DECAL,EMERGENCY DOWN	1
4	505078-000	DECAL,UPPER CONTROLS	1
5	107052-000	DECAL,SAFE WORKING LOAD	1
6	010076-901	DECAL,DOCUMENTS ENCLOSED	1
7	505079-000	DECAL,LOWER CONTROLS	1
8	062562-951	DECAL,BATTERIES ARE BALLAST	1
9	505076-000	DECAL,THREE HAZARDS	1
10	014222-903	DECAL,FORKLIFT POINT	2
11	100102-900	DECAL,NOT INSULATED	1
12	066522-900	DECAL,BATTERY SYMBOL	1
13	068635-001	DECAL,HARNESS HARDPOINT	1
14	501453-000	DECAL,WARNING (FOOT CRUSH)	2
15	503723-000	DECAL,BATTERY DISCONNECT	1
16	107053-000	DECAL,HORN	1
17	505077-000	DECAL,"UpRight TM12"	2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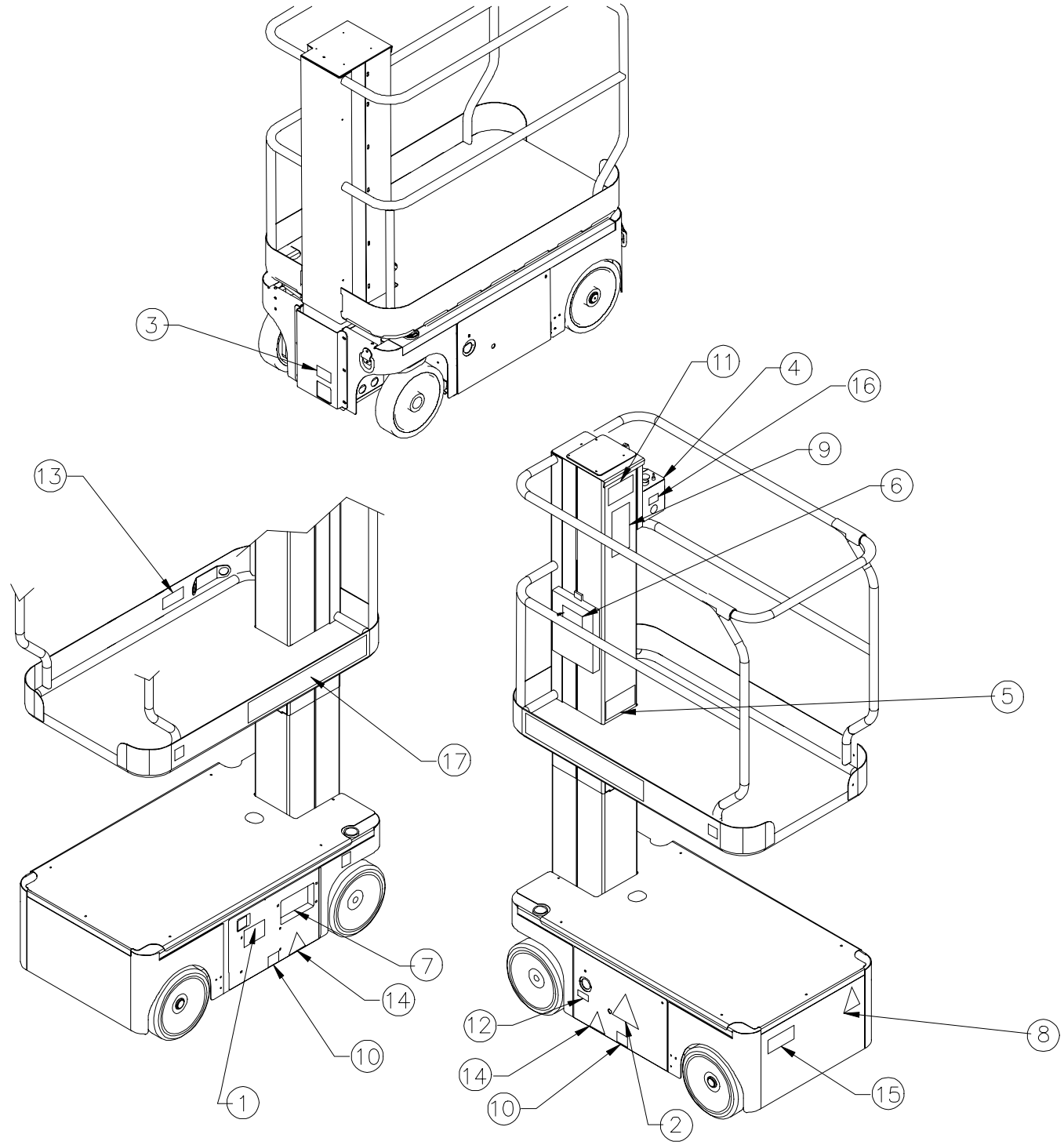
Label Kit, German

505004-200

Item	Part	Description	QTY.
1	060197-001	DECAL,HYDRAULIC FLUID	1
2	101210-000	DECAL,HYDROGEN GAS	1
3	005223-909	DECAL,EMERGENCY DOWN	1
4	505078-000	DECAL,UPPER CONTROLS	1
5	107052-000	DECAL,SAFE WORKING LOAD	1
6	010076-901	DECAL,DOCUMENTS ENCLOSED	1
7	505079-000	DECAL,LOWER CONTROLS	1
8	062562-951	DECAL,BATTERIES ARE BALLAST	1
9	505076-200	DECAL,THREE HAZARDS	1
10	014222-903	DECAL,FORKLIFT POINT	2
11	100102-900	DECAL,NOT INSULATED	1
12	066522-900	DECAL,BATTERY SYMBOL	1
13	068635-001	DECAL,HARNESS HARDPOINT	1
14	501453-000	DECAL,WARNING (FOOT CRUSH)	2
15	503723-000	DECAL,BATTERY DISCONNECT	1
16	107053-000	DECAL,HORN	1
17	505077-000	DECAL,"UpRight TM12"	2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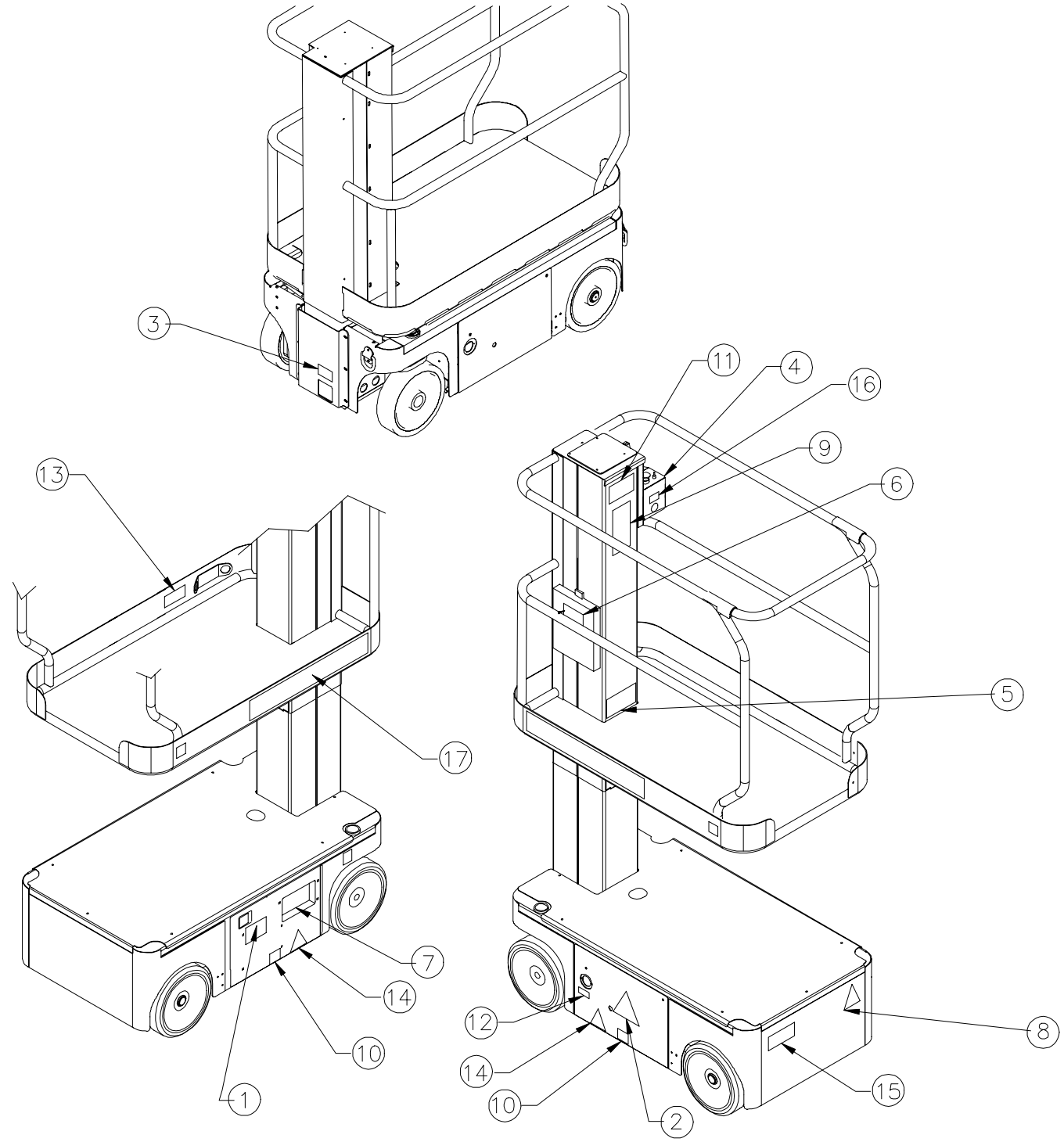
Label Kit, French

505004-300

Item	Part	Description	QTY.
1	060197-001	DECAL,HYDRAULIC FLUID	1
2	101210-000	DECAL,HYDROGEN GAS	1
3	005223-909	DECAL,EMERGENCY DOWN	1
4	505078-000	DECAL,UPPER CONTROLS	1
5	107052-000	DECAL,SAFE WORKING LOAD	1
6	010076-901	DECAL,DOCUMENTS ENCLOSED	1
7	505079-000	DECAL,LOWER CONTROLS	1
8	062562-951	DECAL,BATTERIES ARE BALLAST	1
9	505076-300	DECAL,THREE HAZARDS	1
10	014222-903	DECAL,FORKLIFT POINT	2
11	100102-900	DECAL,NOT INSULATED	1
12	066522-900	DECAL,BATTERY SYMBOL	1
13	068635-001	DECAL,HARNESS HARDPOINT	1
14	501453-000	DECAL,WARNING (FOOT CRUSH)	2
15	503723-000	DECAL,BATTERY DISCONNECT	1
16	107053-000	DECAL,HORN	1
17	505077-000	DECAL,"UpRight TM12"	2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Local Distributor:

Lokaler Vertiebshändler:

Distributeur local:

El Distribuidor local:

Il Distributore locale:

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FAX: +1 (559) 268 2433

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FAX: +44 (0) 195 2299 948

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