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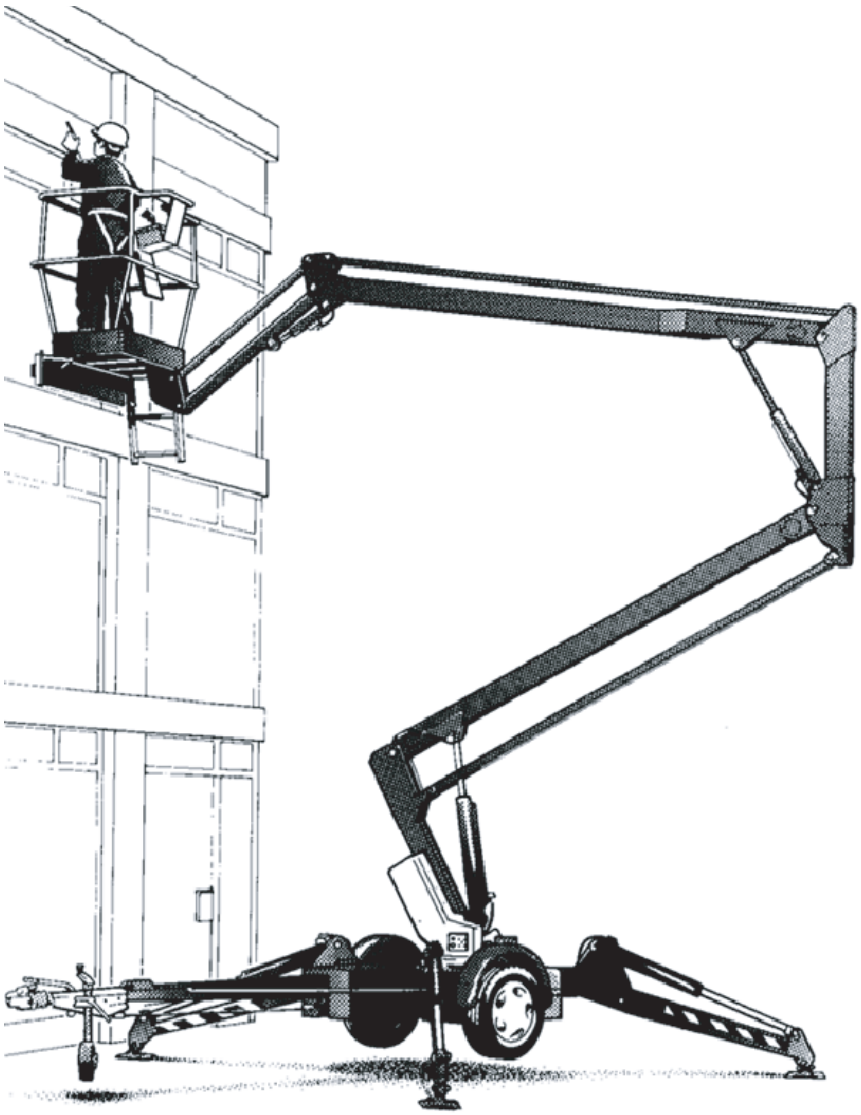


TL38

WORK PLATFORM

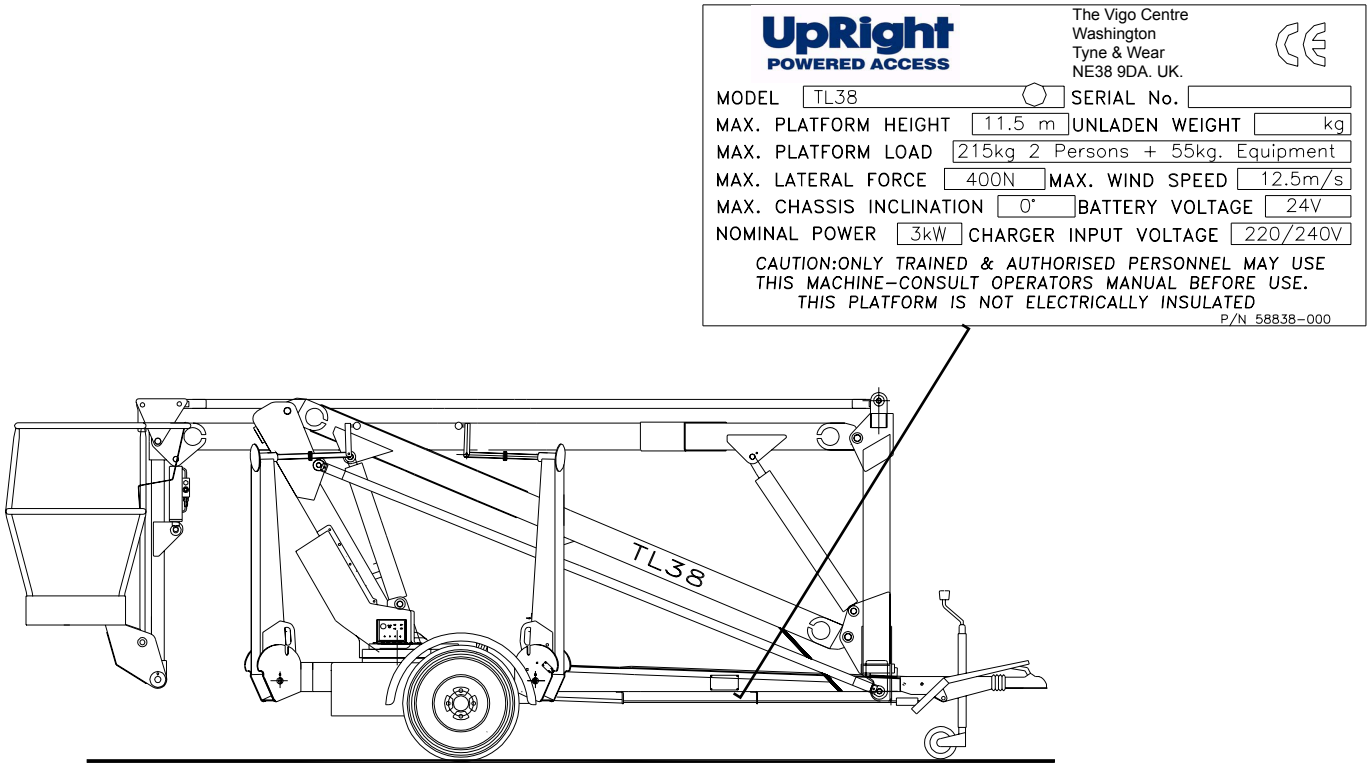
SERVICE & PARTS MANUAL

Service & Parts Manual

TL 38

Serial Numbers 1800 – 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 left hand axle mount.



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PART NUMBER : 500314-002

SERIAL NUMBER : 1800 - current

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 SPECIFICATION

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.

SECTION 6 ILLUSTRATED PARTS BREAKDOWN

Complete parts lists with illustrations.

SPECIAL INFORMATION

⚠ DANGER ⚠

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

⚠ WARNING ⚠

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

⚠ CAUTION ⚠

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

NOTE: **Gives helpful information.**

WORKSHOP PROCEDURES

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

CAUTION

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause personal injury or could damage a machine or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by ***UpRight,*** *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.*

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 this work platform manufactured by ***UpRight***.

SCOPE

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

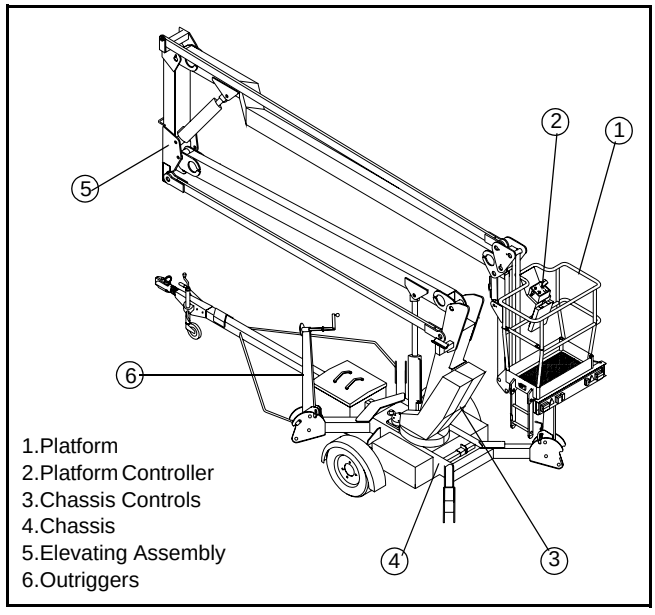
1.2 GENERAL DESCRIPTION

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

⚠ WARNING ⚠

DO NOT use the work platform without gravity drop bar in position.

Figure 1-1: TL38 Work Platform



1.Platform
2.Platform Controller
3.Chassis Controls
4.Chassis
5.Elevating Assembly
6.Outriggers

PLATFORM

The platform has a reinforced steel floor, 1.1m (43.5 inch) high guardrails with midrail, 152 mm (6 inch) toeboards, and an entry gravity drop bar at the side of the platform.

PLATFORM CONTROLLER

The platform controller contains the controls to operate the machine. It is located at the front of the platform cage. 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 batteries powers the cylinders. Solenoid operated valves control raising and lowering.

CHASSIS

The chassis is a structural frame that supports all the components of the TL38 work platform.

PURPOSE OF EQUIPMENT

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

SPECIAL LIMITATIONS

Elevating of the work platform is limited to firm, level surfaces only. Any degree of slope greater than 3° will sound a warning alarm when the machine is elevated.

⚠ 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 used on uneven, rough, or soft terrain when elevated.

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 “Special Limitations” on page 4 for details.

The use and operation of the aerial work platform as a lifting tool or a crane (lifting of loads from below upwards or from up high on down) **is prohibited!**

NEVER exceed the manual force allowed for this machine. See “Special Limitations” 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 stabiliser/outrigger 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 and check all outriggers are secure and the chassis is levelbefore resuming operation.

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 gravity drop bar or other railing components **is prohibited!** Always make certain that the gravity drop bar is closed and securely locked!

It is prohibited to keep the gravity drop bar in an open position (held open with tie-straps) 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 both keyswitches off and removing key.

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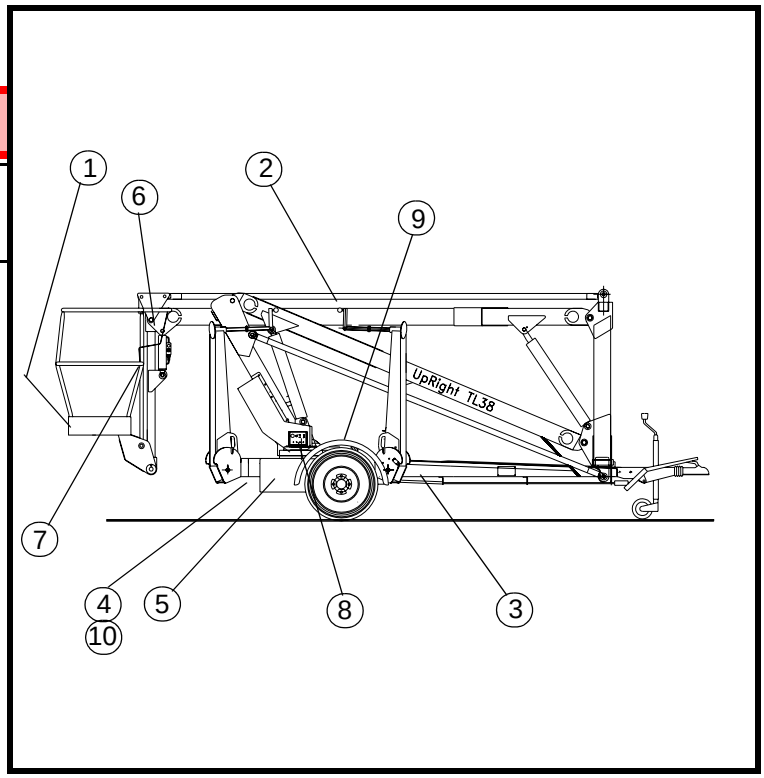
INTRODUCTION

This manual covers operation of the TL50 Work Platforms. **This manual must be stored on the machine at all times.**

GENERAL DESCRIPTION

Figure 1: TL 38



1. Platform

WARNING

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

2. Elevating Assembly

3. Chassis

4. Power Module

5. Control Module

6. Platform Controls

7. Manual Case

8. Chassis Controls

9. Hydraulic Fluid Reservoir

10. Batteries

SPECIAL LIMITATIONS

Elevating the Work 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.

PLATFORM CAPACITY

The maximum capacity for the MACHINE, including occupants is determined by model and options, and is listed in “Specifications” on page 15.

⚠ 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 or more 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.

LIFT OVERLOAD ALARM

The TL38 is fitted with a load sensing system designed to comply with the requirements os BS EN 280 : 2001

If a load equivelent to 90% of safe working load is lifted a fault code “03” will be displayed on the digital display on the platform control box. If a load which is greater than the safe working load is present in the basket all machine functions will cease to operate and an acoustic warning will sound. In order to return to normal operation a load equal to or less than the safe working load must be present in the basket and the power must be re-cycled, power can be re-cycled by pushing the emergency stop button and releasing it again.

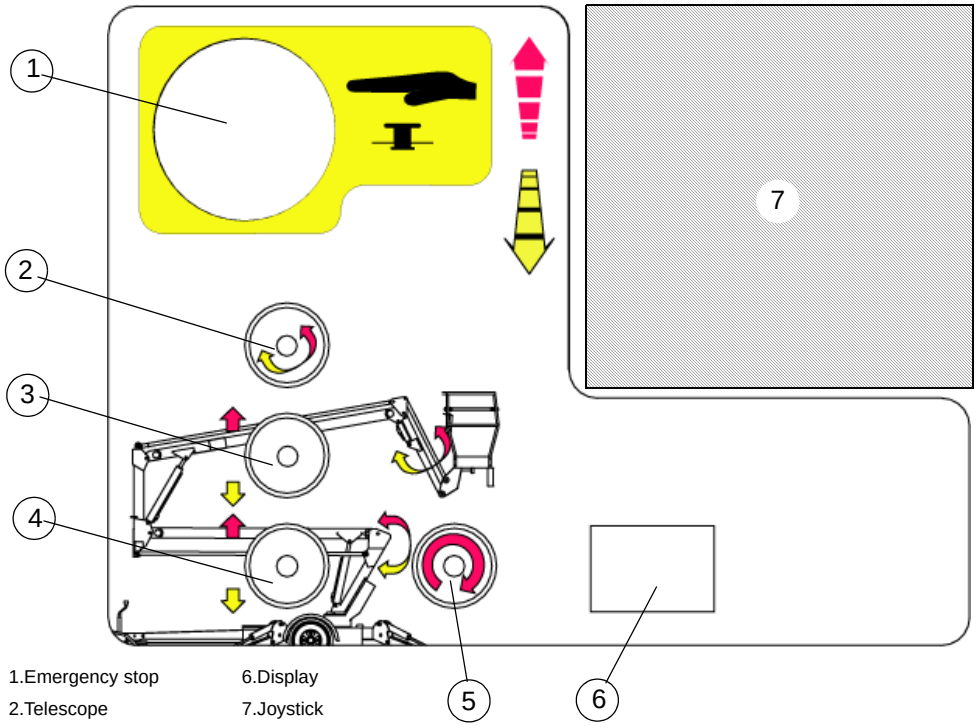
⚠ DANGER ⚠

Never operate the machine with a platform load greater than the rated capacity.

CONTROLS AND INDICATORS

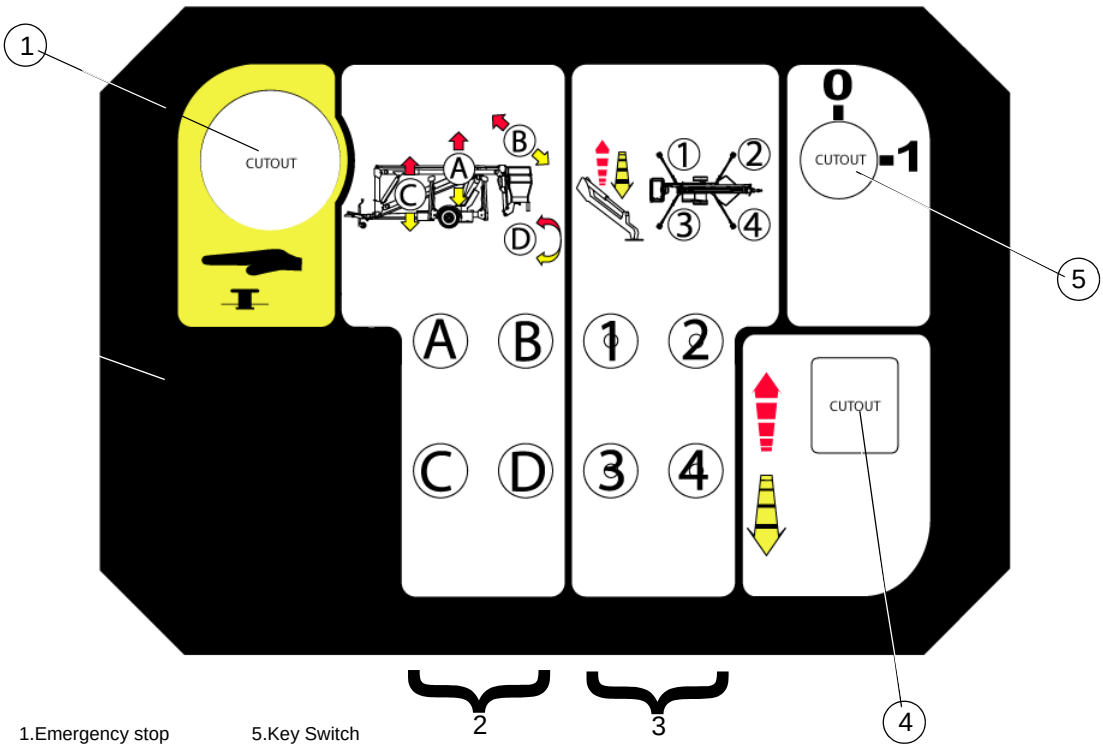
Figure 2: Controls and Indicators

Platform Controls



1.Emergency stop
2.Telescope
3.Upper Boom
4.Lower Boom
5.Rotate
6.Display
7.Joystick

Chassis Controls



1.Emergency stop
2.Machine Controls
3.Outrigger Controls
4.Analog Rocker
5.Key Switch

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 module and inspect for damage, fluid leaks or missing parts.
2. Check the level of the hydraulic fluid with the platform fully lowered. The hydraulic reservoir is located in the Control Module. The fluid level must be between the MIN and MAX lines. Add hydraulic fluid if necessary.
3. Check that fluid level in the batteries is correct.
4. Verify that batteries are charged.
5. Check that A.C. extension cord has been disconnected from the charger plug.
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, loose wire connections and wheel bolts.

System Function Inspection

Refer to Figure 2 for the locations of various controls and indicators.

⚠ WARNING ⚠

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

Before operating the work platform, 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.*

1. Move the machine, if necessary, to an unobstructed area to allow for full elevation.
2. Pull Chassis Emergency Stop Switch to the ON position.
3. Pull Platform Emergency Stop Switch to the ON position.
4. Deploy the Outriggers, this is done from the lower control panel, an audible warning will sound until the outriggers are fully deployed and the machine is level, ensure that all four individual outrigger lights are illuminated. Fine tuning of the chassis inclination can be achieved by holding each individual outrigger button and using the analog rocker. (ref: chassis controls illustration on page 5)
5. Visually inspect the elevating assembly, lift cylinder, cables, and hoses for cracked welds and structural damage, loose hardware, hydraulic leaks, loose wire connections, and erratic operation. Check for missing or loose parts.
6. Test each machine function (Lift, Slew, Jib) from the lower control station by pressing and holding the desired function button then moving the Analog Rocker to the Up or Down position (ref: chassis controls illustration on page 5)
7. Open the Emergency Lowering Valve (see Figure 3) by pulling the knob out to check for proper operation. When the platform is lowered, release the knob.
8. Push the Chassis Emergency Stop Switch to check for proper operation. All machine functions should be disabled. Twist the Chassis Emergency Stop Switch to resume.
9. Climb onto the cage.
10. Check that the route is clear of obstacles (persons, obstructions, debris), is level, and is capable of supporting the outrigger loads.
11. Mount the platform and properly close the drop bar.
12. Test each machine function (Lift, Slew, Jib) from the upper control station by pressing the desired function button then moving the Joystick to the Forward or Back position (ref: platform controls illustration on page 5)
13. Push the Platform Emergency Stop Switch to check for proper operation. All machine functions should be disabled. Pull out the Platform Emergency Stop Switch to resume.

Operation

Before operating the work platform, 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.

Elevating the Platform

1. Ensure the outriggers are deployed and the machine is level.
2. Select either the lower or upper boom lift function button (the button will illuminate to confirm selection).
3. While engaging the Interlock Switch, push the Control Handle forward.
4. If the machine is not level the tilt alarm will sound and the machine will not lift.

Lowering the Platform

1. Ensure the outriggers are deployed and the machine is level.
2. Select either the lower or upper boom lift function button (the button will illuminate to confirm selection).
3. While engaging the Interlock Switch, pull the Control Handle backwards.
4. If the machine is not level the tilt alarm will sound and the machine will not descend.

Rotating the Platform

1. Ensure the outriggers are deployed and the machine is level.
2. Select the rotate function button (the button will illuminate to confirm selection).
3. While engaging the Interlock Switch, move the Control Handle forwards or backwards to achieve clockwise or counterclockwise rotation.
4. If the machine is not level the tilt alarm will sound and the machine will not rotate.

Operating the Jib

1. Ensure the outriggers are deployed and the machine is level.
2. Select jib function button (the button will illuminate to confirm selection).
3. While engaging the Interlock Switch, move the Control Handle forwards or backwards to jib out or jib in.
4. If the machine is not level the tilt alarm will sound and the machine will not telescope.

Emergency Lowering

WARNING

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

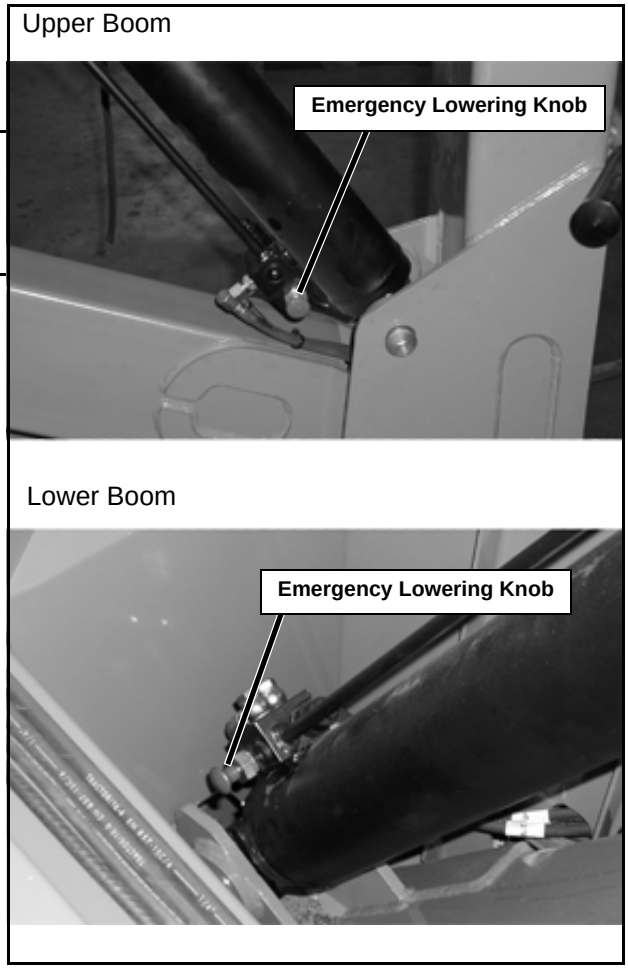
Stand clear of the elevating assembly while operating the Emergency Lowering Valve Knob.

TL38

The Emergency Lowering Valve for the TL38 is located on the valve block of each lift cylinder.

1. Open the Emergency Lowering Valve by pushing and holding the knob.
2. To close, release the knob. The platform will not elevate if the Emergency Lowering Valve is open.

Figure 3: Emergency Lowering Valve



TRANSPORTATION

CAUTION

*The TL38 is not designed to be forklifted, and does not have provision on the Chassis to allow this method of lifting. **Ui** recommends the procedure below for handling the machine.*

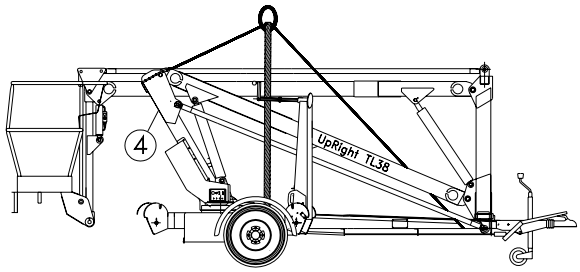
⚠ WARNING ⚠

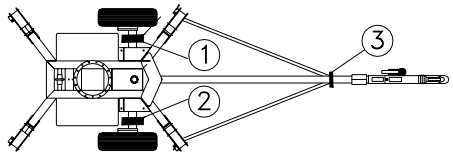
See specifications at rear of manual for the weight of the work platform and be certain that lifting apparatus is of adequate capacity to lift the platform.

BY CRANE

The TL38 may be lifted by an overhead hoist crane in the following manner:

Two lifting straps capable of safely supporting the total weight of the TL38 (1468Kg (3,237lbs)), and at least 220cm long are required. This minimum length is important to ensure the correct lifting angle. The straps should be positioned as shown in.





The two lifting straps (Positions 1 & 2) should be positioned either side of the TL38's axle assembly at the points indicated. Care must be taken to ensure the straps do not interfere with any of the other part of the TL38.

Two securing lines (Positions 3 & 4) should also be used when lifting the TL38 Work Platform. These are used to maintain the balance of the TL38 but are **NOT to be considered as lifting points**. Position 3 shows the securing line around the Tow Bar where the Cycle Guard Frames meet. Position 4 shows the securing line around the First Post. This line should be secured below the Boom Rest, however care should be taken not to damage the Boom Rest Limit Switch or its cable on a TL38 with hydraulic outriggers.

BY ROAD

It is important that before commencing transport to ensure the vehicle used is capable of towing 2000kg.

The TL38 is a road approved vehicle and therefore may be transported behind a motor vehicle of suitable towing capacity. It is recommended that the vehicle used should have a tow bar where the top of the ball is at a height of between 1.42 ft (435 mm) and 1.64 ft (500 mm) above surface level. These dimensions are important for the following reasons;

1. The bottom of the Platform may be in danger of hitting the surface while driving if the tow hitch is above the upper limit.

2. The towing vehicle will support too much weight if the Towhitch is too low.

Care should always be taken while towing the TL38 on an uneven or sloped surface. It is recommended that the set of procedures that follow should be incorporated into a normal working practice for towing the TL38 Work Platform. The Procedures which should be followed when transporting the TL38 are

1.The Platform is to be fully lowered, retracted and slewed in the correct position.

2.The Platform is to be securely stowed by closing the boom lockdown.

3.The Jockey Wheel that is fitted to the Towhitch is to be extended until the Receiver is close to the height of the vehicle's tow bar.

4.The Hand Brake is pulled to engage the brakes (important if the machine is not on a level surface).

5.The Outriggers are to be fully retracted and secured in position.

6.The key is turned to the off position.

7.Move the vehicle as close as possible to the Receiver.

8.Lift the Towhitch on to the tow bar and make sure the Receiver is properly secured.

9.Release the Hand Brake and retract the Jockey Wheel.

It is important that the Jockey Wheel is retracted as fully as possible so that the wheel will not slew (turn) while being transported. Failure to do so could result in damage to the Jockey Wheel.

10.The tailboard harness is connected to the vehicle's braking system by means of a 7 Pin Plug.

11.Attach the Breakaway Safety Cable to the towing vehicle.

The TL38 may then be towed.

If the TL38 is to be transported by other means then it must be securely tied down to the transporting unit at several points.

Recommended securing points are the four outrigger support members on the Chassis and the Tow Barweldment. Further securing points should be used if the terrain on which the unit is travelling is rough or uneven. Care should be taken when using tie downs that sensitive parts of the TL38 (i.e. hosing, cabling etc.) are not affected.

ALWAYS ensure that the Hand Brake is fully applied, that all the booms are FULLY stowed and that the Boom Lock Down Pin is in place.

HOUR METER

To access the hour meter function perform the following steps.

1. Climb into the basket (with the machine powered up)

2. Push the platform emergency stop button.

3. Hold down the following buttons, Jib and Upper Boom Lift.

4. While holding the buttons twist the emergency stop button to return power to the machine.

5. "hr" will now be displayed on the readout, Pressing the right turn button will scroll through the accumulated hours two digits at a time. For example, if pressing the right turn button once displays "20", pressing it a 2nd time displays "58", and pressing it a 3rd time displays "hr", the elapsed time of operation is 2058 hours.

BATTERY MAINTENANCE

⚠ 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 work platform 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

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 work platform 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 this page 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: _____

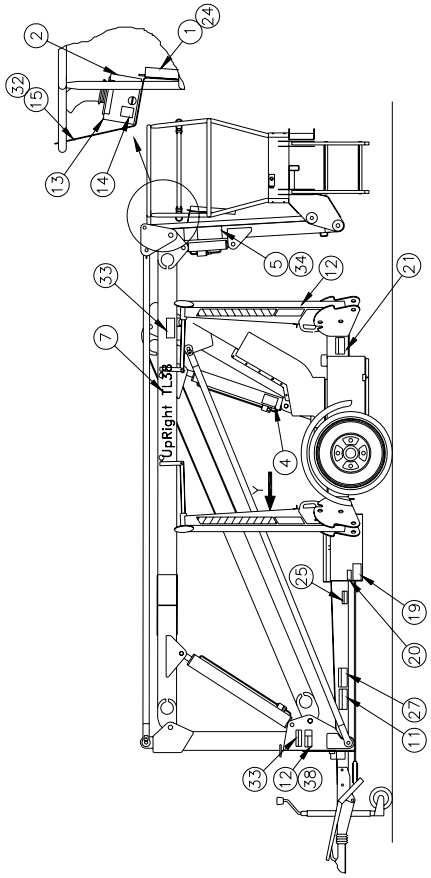
COMPONENT	INSPECTION OR SERVICES	Y	N	R
Battery	Check electrolyte level.			
	Check battery cable condition.			
Chassis	Check hoses for pinch or rubbing points.			
	Check welds for cracks.			
Control Cable	Check the exterior of the cable for pinching, binding or wear.			
Controller	Check switch operation.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

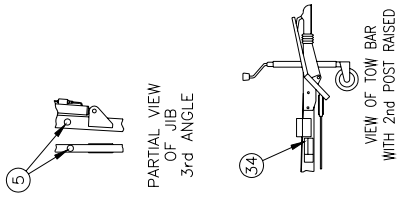
COMPONENT	INSPECTION OR SERVICES	Y	N	R
Hydraulic Fluid	Check fluid level.			
Hydraulic Pump	Check for hose fitting leaks.			
Hydraulic System	Check for leaks.			
Labels	Check for peeling, missing, or unreadable labels & replace.			
Platform Deck and Rails	Check welds for cracks.			
Platform Deck and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

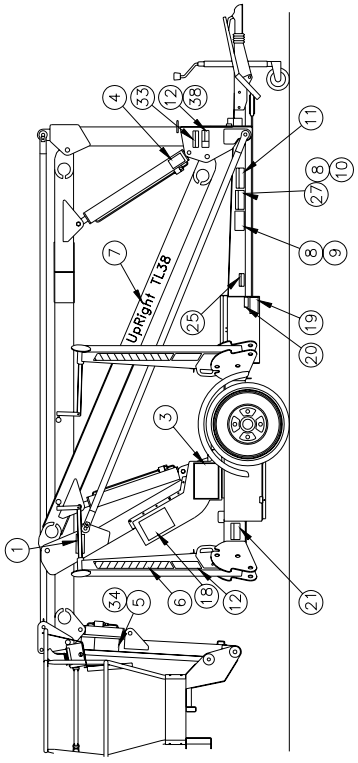
LABELS

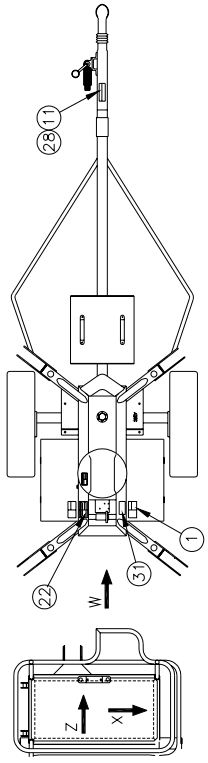
These labels shall be present and in good condition before operating the work platform. Be sure to read, understand and follow these labels when operating the work platform.

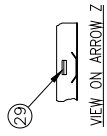
ITEM	PART NO.	DESCRIPTION	QTY.
1	057421-000	DECAL - ELECTROCUTION HAZARD	2
2	057420-000	DECAL - TIP OVER HAZARD	1
3	058608-001	DECAL - LOWER CONTROL BOX	1
4	057382-000	DECAL - EMERGENCY LOWERING	2
5	058860-000	DECAL - HAND HAZARD	3
6	057385-000	HAZARD TAPE (900mm LONG)	8
7	058609-000	DECAL - "UpRight" LOGO	2
8	057339-001	PLASTIC PUSH RIVET	2
9	058838-000	E.U. NAME PLATE	1
10	058836-000	V.I.N. PLATE	1
11	057416-000	DECAL - BEFORE TOWING	1
12	057418-000	DECAL - LOCK OUTRIGGER TOWING	2
13	058607-000	DECAL - UPPER CONTROL BOX	1
14	058186-000	DECAL - ON/OFF UPPER CONTROL	1
15	058016-000	DECAL - MACHINE GENERAL INSTR.	1
16	057392-000	DECAL - S.W.L. LARGE CE	1
17	057387-000	DECAL - UPPER QUADRAPOWER	1
19	057430-000	DECAL - EXPLOSION HAZARD	2
20	057429-000	DECAL - BATTERY FLUID LEVEL	2
21	057417-000	DECAL - TIP OVER HAZARD	4
22	057507-010	DECAL - ARROW	2
23	058992-000	DECAL - BOOM LOCK PIN	1

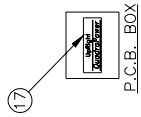


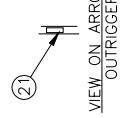


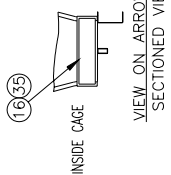


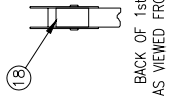


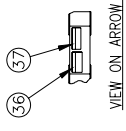








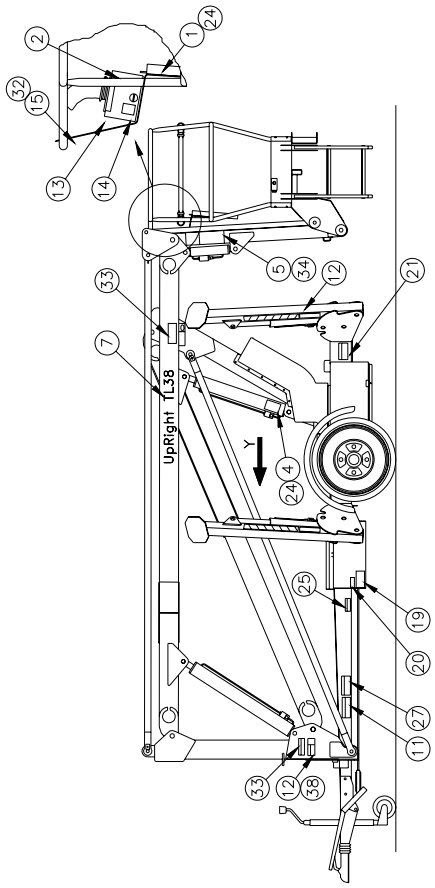


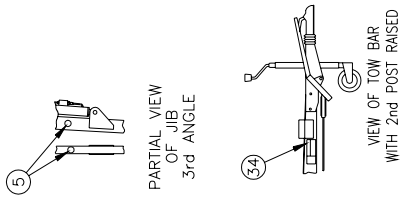


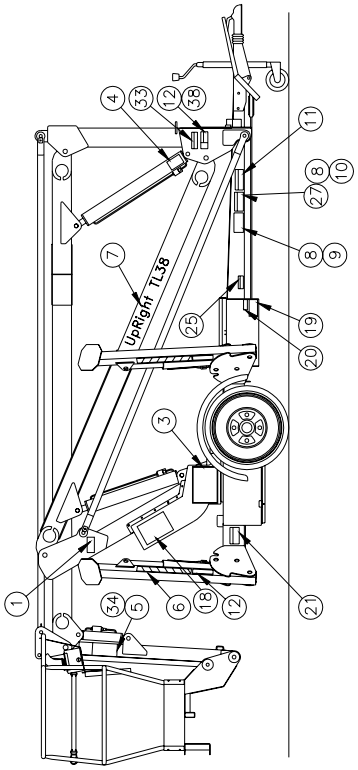
LABELS

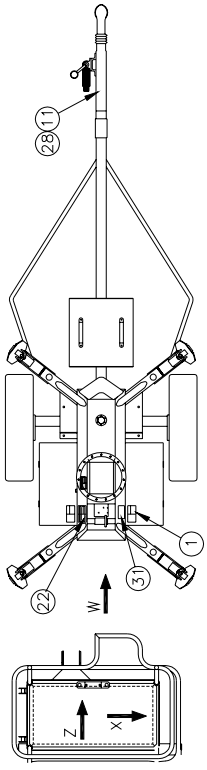
These labels shall be present and in good condition before operating the work platform. Be sure to read, understand and follow these labels when operating the work platform.

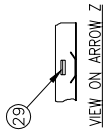
ITEM	PART NO.	DESCRIPTION
1	057421-000	DECAL - ELECTROCUTION HAZARD
2	057420-000	DECAL - TIP OVER HAZARD
3	058608-000	DECAL - LOWER CONTROL BOX
4	057382-000	DECAL - EMERGENCY LOWERING
5	058860-000	DECAL - HAND HAZARD
6	057385-000	HAZARD TAPE (900mm LONG)
7	058609-000	DECAL - "UpRight" LOGO
8	057339-001	PLASTIC PUSH RIVET
9	058838-000	E.U. NAME PLATE
10	058836-000	V.I.N. PLATE
11	057416-000	DECAL - BEFORE TOWING
12	057418-000	DECAL - LOCK OUTRIGGER TOWING
13	058607-000	DECAL - UPPER CONTROL BOX
14	058186-000	DECAL - ON/OFF UPPER CONTROL
15	058016-000	DECAL - MACHINE GENERAL INSTR.
16	057392-000	DECAL - S.W.L. LARGE CE
17	057387-000	DECAL - UPPER QUADRAPOWER
18	-	-
19	057430-000	DECAL - EXPLOSION HAZARD
20	057429-000	DECAL - BATTERY FLUID LEVEL
21	057417-000	DECAL - TIP OVER HAZARD
22	057507-010	DECAL - ARROW
23	058992-000	DECAL - BOOM LOCK PIN

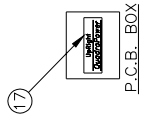


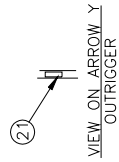


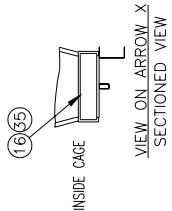


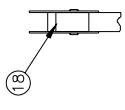


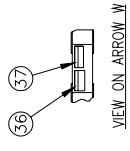












SPECIFICATIONS

ITEM	MANUAL OUTRIGGERS	HYDRAULIC OUTRIGGERS
Duty Cycle	30% of 8 hour cycle	30% of 8 hour cycle
Platform Size	0.7m x 1.3m[2.3ft x 4.3ft] (inside guardrails)	0.7m x 1.3m [2.3ft x 4.3ft] (inside guardrails)
Max. Platform Capacity	215kg [473lbs]	215kg [473lbs]
Max. # of Occupants	2 People	2 People
Height Maximum Working Height Maximum Platform Height Min. Platform Height	 13.45m [44.1ft] 11.45m [38ft] 0.65m [2.1ft]	 13.49m [44.3ft] 11.49m [38ft] 0.65m [2.1ft]
Max. Working Outreach	6m [19.7ft]	6m [19.7ft]
Travelling Dimensions: Length Width Height Outrigger Spread	 6.08m [19.9ft] 1.53m [5.0ft] 2.00m [6.6ft] (front-rear x side-side)	 6.08m [19.9ft] 1.53m [5.0ft] 2.00m [6.6ft] (front-rear x side-side)
Max. Clearance Min. Effective Clearance	3.40m x 3.42m [11.2ft x 11.2ft] 3.25m x 3.27m [10.7ft x 10.7ft]	3.39m x 3.45m [11.1ft x 11.3ft] * 3.46m x 3.56m [11.4ft x 11.7ft]** 3.16m x 3.22m [10.4ft x 10.6ft]* 3.24m x 3.33m [10.6ft x 10.9ft]**
Rotation	370 degrees non-continuous	370 degrees non-continuous
Gross Weight	1468kg [3,237lbs]	1468kg [3,237lbs]
Maximum Towable Speed	83km/h [50mph]***	83km/h [50mph]***
Power Source	24V DC 4HP, 4 X 6V 220Ah Batteries	24V DC 4HP, 4 X 6V 220Ah Batteries
System Voltage	24V DC	24V DC
Battery Charger	24V 25A 220/110VAC 50/60 Hz	24V 25A 220/110VAC 50/60 Hz
Hydraulic TankCapacity	15 Litres [3.9 Gallons US]	15 Litres [3.9 Gallons US]
Max. Hydraulic Pressure	155 Bar [2,250psi]	155 Bar [2,250psi]
Hydraulic Oil	ISO #46	ISO #46
Lift System	2 Double Acting Lift Cylinders With	2 Double Acting Lift Cylinders With
	Lock Valves And Manual Emergency Lowering Facility. 1 Double Acting Lift (Jib) Cylinder	Lock Valves And Manual Emergency Lowering Facility. 1 Double Acting Lift (Jib) Cylinder
Control System Tyres	One handed Proportional Joystick Operating Energy Efficient Motor Control System. 185 R13 6PLY	One handed Proportional Joystick Operating Energy Efficient Motor Control System. 185 R13 6PLY
Brake System	Automatic Reverse & Overrun Brakes Handbrake	Automatic Reverse & Overrun Brakes Handbrake
Maximum Continuous Sound Pressure Level At Operation Stations	74.6 dB(A)	74.6 dB(A

* Outriggers Deployed at full height = Minimum footprint

** Outriggers Deployed at min. height = Maximum footprint

*** Subject to local regulations

*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

MAINTENANCE

3.1 INTRODUCTION

⚠ 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.

NOTE: **For Information on the engine refer to your local engine dealer.**

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

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

TERMINOLOGY

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

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

GENERAL PROCEDURES

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

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

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

3.2 DATE CODE IDENTIFICATION ON HOSES & SPECIAL TOOLS

MANULI uses an eight digit code: Day, Month, Year.

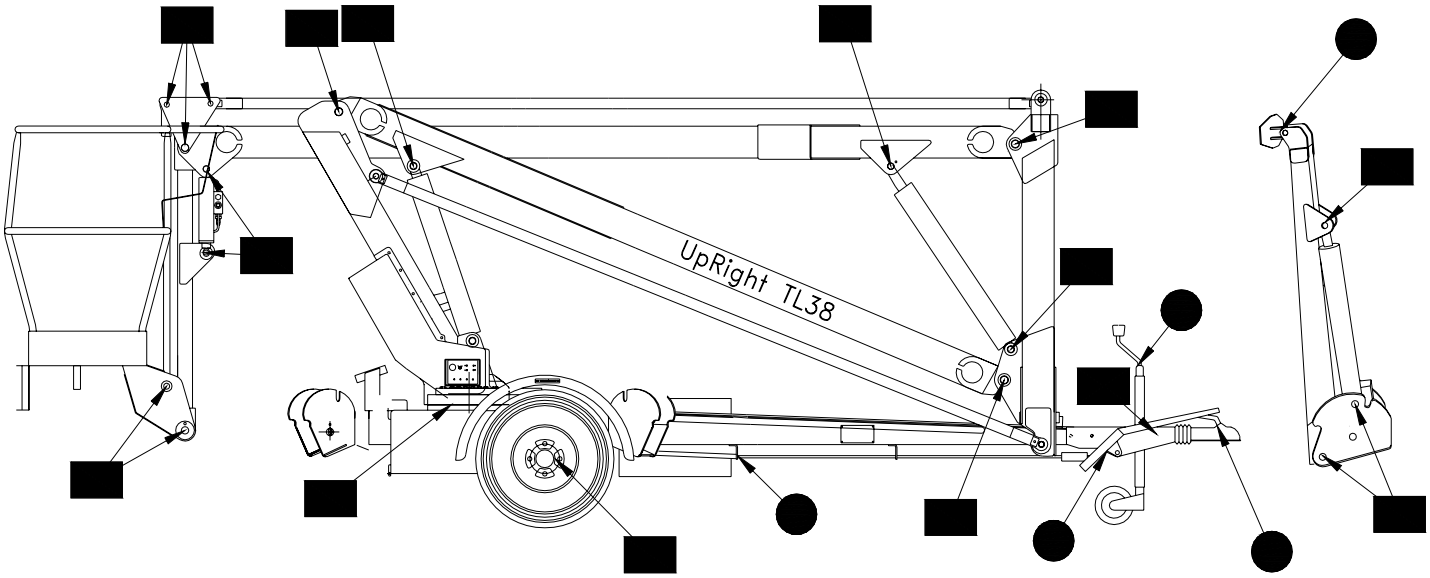
i.e.: 04 03 2004, (4th of March 2004).

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

- 0-69 bar (0-1000 psi) Hydraulic Pressure Gauge with Adapter Fittings
- 0-207 bar (0-3000 psi) Hydraulic Pressure Gauge with Adapter Fittings
- 0-414 bar (0-6000 psi) Hydraulic Pressure Gauge with Adapter Fittings
- Inclinometer

3.3 LUBRICATION

See figure below for lubrication points on the TL38



Grease Nipple (Grease Type - Litium Sulphate, Water Resistant, ISO220 Oil + NLG12 Thickness e.g. Mobil HP222)

Other (Oil Type - ISO 46 e.g. Mobil DT25)

Grease Nipple Locations

2 per Outrigger Cylinder	:8
1 per Outrigger Pivot Boss	:4
2 per Lower Boom Pivot Bosses	:2
1 per Upper Boom Pivot Boss	:1
1 per Jib Boom Pivot Boss	:1
2 per Slew Ring	:2
2 per Jib Cylinder	:2
2 per Lower Lift Cylinder	:2
2 per Upper Lift Cylinder	:2
1 per Towhitch coupling	:2
Total	:26

3.4 Battery Maintenance

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

NOTE: **If system voltage drops below 17 volts (on a 24 volt system), the charger will not recharge the batteries. If this extreme voltage drop occurs, disconnect and recharge each battery separately, using a 6 volt charger to bring the voltage in each up to at least 4 1/2 volts.**

⚠ WARNING ⚠

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

Always wear safety glasses when working with batteries.

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

Battery Inspection and Cleaning

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

⚠ CAUTION ⚠

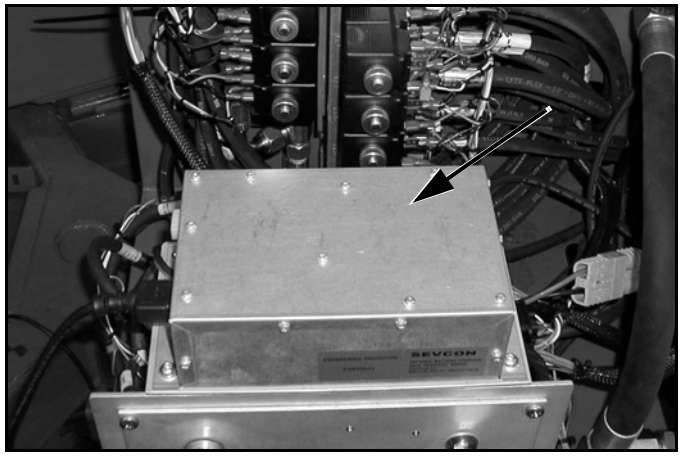
If battery water level is not maintained, batteries will not fully charge, creating a low discharge rate which will damage the motor/pump unit and void the warranty.

The battery should be inspected regularly for signs of cracks in the case, electrolyte leakage, and corrosion of the terminals. Inspect cables for worn spots or breaks in the insulation and for broken cable terminals.

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

Battery Charging

Figure 3-1: Battery Charger



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

When night temperatures fall below 18°C (65°F), batteries charged in unheated areas should be placed on charge as soon as possible after use. Under such conditions, a 4 hour equalize charge once a week in the early afternoon will improve the state of charge and battery life.

CHARGE BATTERY AS FOLLOWS:

1. Check the fluid level. If the electrolyte level is lower than 10mm (3/8 in.) above the plates, add clean, distilled water only.
2. Connect the charger plug to a properly grounded outlet of the proper voltage and frequency.
3. The charger turns on automatically after a short delay. The ammeter will indicate DC charging current.
4. The charger turns off automatically when the batteries are fully charged.

⚠ WARNING ⚠

Charge the battery only in a well-ventilated area.

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

Permanent damage will result if the battery is not immediately recharged after discharging.

Never leave the charger unattended for more than two days.

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

Keep the charger dry.

Never operate the machine while the charger is plugged in.

BATTERY CELL EQUALIZATION

The specific gravity of the electrolyte in the battery cells should be equalized monthly. To do this, charge the batteries as outlined in Battery Charging. After this initial charge, check the electrolyte level in all cells and add distilled water as necessary. Turn the charger on for an additional eight hours. During this time, the charging current will be low (four amps) as cells are equalizing.

After equalization, the specific gravity of all cells should be checked with a hydrometer. The temperature corrected specific gravity in this state should be 1.260. If any corrected readings are below 1.230, the batteries containing such cells should be replaced.

Do not check the specific gravity in a cell to which water has just been added. If there is not enough electrolyte in a fully charged cell to obtain a sample for the hydrometer, add water and continue charging for one to two hours to adequately mix the water and electrolyte.

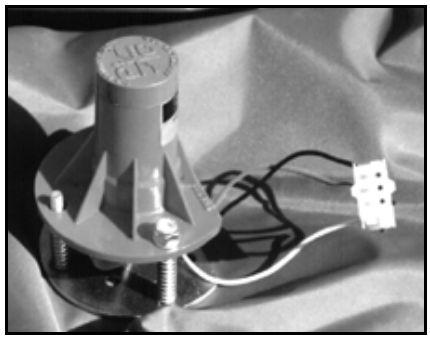
3.5 Switch Adjustments

Tilt Sensor

Introduction

The Tilt Sensor Is located on the right hand side of the chassis above the axle, It has three wires; red-power (24 v in), black-ground, white-output (24 v out). To verify the sensor is working properly there is one LED under the sensor that indicates the sensor is off level.

Figure 3-2: Level Sensor



Adjustment

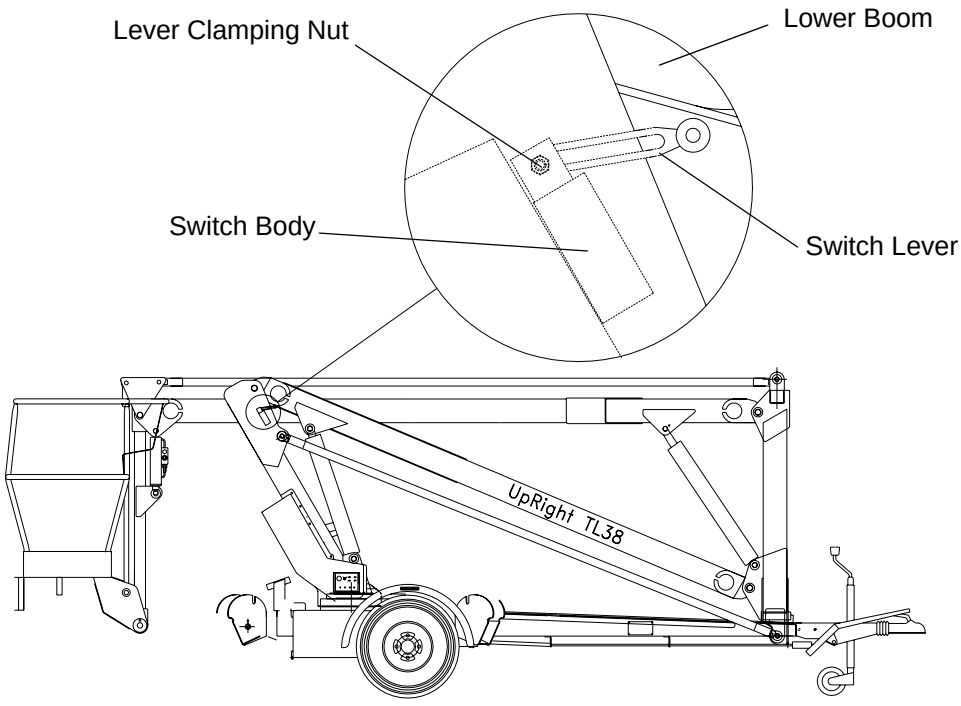
1. Place the machine on a firm, level surface ± 1/4°.
2. Use the Inclinometer (P/N: 10119-000-00) to ensure the front and rear of the Chassis is level ± 1/4°.
3. Adjust the three leveling locknuts until the bubble is centered in the circle on the attached bubble level.

Slew Cut-Out Limit Switch

Function: The purpose of this limit switch is to prevent the operator from slewing while the lower boom and second post are on or near the towbar thus preventing accidental damage to it. It does this by breaking the slew signal from the upper or lower controls while the second post is less than approximately 1 m above the ground.

Location: The switch is located on the first post boom pivot plate.

Adjustment: To adjust the switch loosen the lever clamping nut and rotate the lever. Tighten the lever clamping nut. The lever is actuated by the lower boom. as it descends.The Normally Closed contacts of the switch should open when the lower boom is at an angle such that the bottom of the second post is approx. 1 m above the ground.

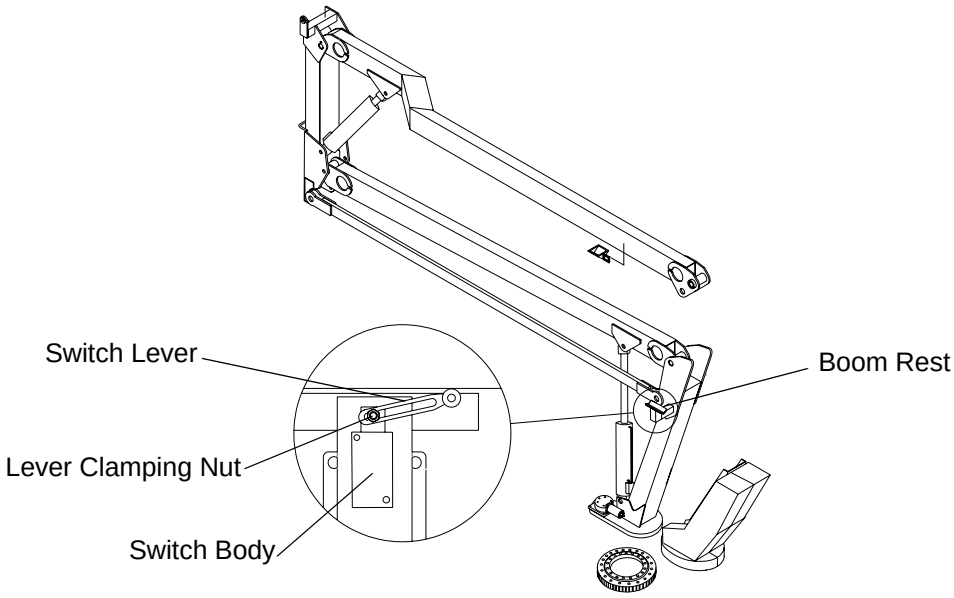


BOOM REST LIMIT SWITCH

Function: This limit switch is activated when the booms are fully stowed and the lower boom is sitting in the boom rest. The outriggers can only be operated when this switch is activated. The limit switch lever is actuated by the lower boom when is sits into the boom rest. When the boom leaves the boom rest the Normally Open contacts of the limit switch open and power is cut to the outrigger function switches.

Location: The switch is located on the chassis assembly.

Adjustment: The switch should be activated when the boom sits in the boom rest. The lever is non-adjustable,but should be checked for freedom of movement and kept clean from dirt and other contaminants that might affect its free movement.



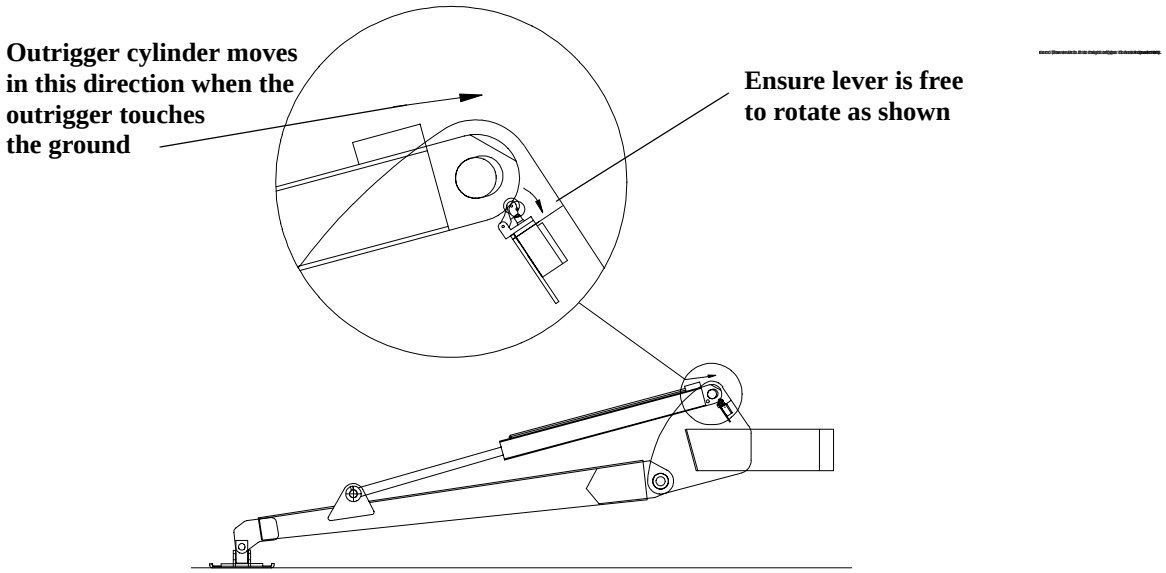
OUTRIGGER LIMIT SWITCHES

Function: These four limit switches are wired in series.

When the four outriggers are deployed these switches are activated and allow the booms functions to be operated.

Location: Between the outrigger pivot plates.

Adjustment: The lever is non-adjustable and should be depressed by the outrigger cylinder head when the outriggers are deployed. It should be checked for freedom of movement and kept clean from dirt or other contaminants.



3.6 ECU OPTIONS & FAULT CODES

ECU OPTIONS

To change ECU options apply power with TELESCOPE/JIB and ROTATE BOOM buttons pressed.

In the option adjust state, the code “AL” is displayed initially. There are several different options that can be set. Pressing the right turn buttons scrolls through options and their settings. For example, if the right turn button is pressed while the code “AL” is displayed, the setting of this option, (motion alarm) is shown “On” for on or “OF” for off will be displayed. If the right turn button is pressed again, the code “Ad” will be displayed. If the right turn button is pressed again, the setting of this option, (descent alarm) is shown “On” or “OF” will be displayed. The right turn button can be used to scroll through all the options and their settings.

When, the value of the option is displayed, pressing joystick enable switch toggles the setting of the option. For example, if the joystick enable button is pressed while the setting value of “On” is displayed, the setting of this option is changed to off and the display reads “OF”. If “OF” is displayed, pressing the joystick enable switch turns on the option and “On” is displayed. The options that can be adjusted (each individually) are:

- AL – Motion alarm option
- Ad – Descent alarm option
- OL – Overload option
- 2H – two handed operation option
- dA – Drive assist option
- LI – Lift type option (“50” or “38” is displayed)
- Cr – Cage Rotate option

ECU FAULT CODES

The following codes will be displayed on the upper control box display if there is a fault with a machine componant or an in-valid command given to the ECU at system startup.

01 – System initialization error

02 – System communication error

03 – Platform Overload

04 – Ground Panel communication error

11 – Drive Assist Joystick Enable Switch ON at power-up

12 – Drive Assist Right Turn Switch ON at power-up

13 – Drive Assist Left Turn Switch ON at power-up

19 – Platform Cage Rotate Switch ON at power-up

21 – Platform Cage Level Switch ON at power-up

22 – Platform Left Turn Switch ON at power-up

23 – Platform Right Turn Switch ON at power-up

24 – Platform Rotate Lift Switch ON at power-up

26 – Platform Telescope Switch ON at power-up

27 – Platform Lower Boom Switch ON at power-up

28 – Platform Upper Boom Switch ON at power-up

29 – Platform Joystick Enable Switch ON at power-up

31 – Platform Joystick not in neutral at power-up

ECU FAULT CODES CONTINUED..

32 – Lower Control Analog Rocker not in neutral at power-up
34 – Lower Control Rotate Lift Switch ON at power-up
36 – Lower Control Telescope Switch ON at power-up
38 – Lower Control Upper Boom Switch ON at power-up
41 – Lower Control Auto-level Outrigger Switch ON at power-up
42 – Lower Control Right Rear Outrigger Switch ON at power-up
43 – Lower Control Left Rear Outrigger Switch ON at power-up
44 – Lower Control Right Front Outrigger Switch ON at power-up
45 – Lower Control Left Front Outrigger Switch ON at power-up

51 – Lower Boom Up Coil fault
52 – Lower Boom Down Coil fault
53 – Upper Boom Up Coil fault
54 – Upper Boom Down Coil fault
55 – Telescope Boom Out Coil fault
56 – Telescope Boom In Coil fault
57 – Slew Lift CW Coil fault
58 – Slew Lift CCW Coil fault
59 – Steer Right Coil fault
61 – Steer Left Coil fault
62 – Level Platform Cage Up Coil fault
63 – Level Platform Cage Down Coil fault
66 – Drive Forward Coil fault
67 – Drive Reverse Coil fault
68 – Low Battery fault
71 – Rotate Platform Cage Left Coil fault
72 – Rotate Platform Cage Right Coil fault
73 – Outrigger Enable Coil fault
74 – Right Rear Outrigger Up Coil fault
75 – Left Rear Outrigger Up Coil fault
76 – Right Front Outrigger Up Coil fault
77 – Left Front Outrigger Up Coil fault
78 – Right Front Outrigger Down Coil fault
79 – Left Front Outrigger Down Coil fault
81 – Left Rear Outrigger Down Coil fault
82 – Right Rear Outrigger Down Coil fault
83 – Drive Head Extend Coil fault
84 – Drive Head Retract Coil fault

3.7 Hydraulic Oil Tank and Filter

Fluid Level

With the platform fully lowered, open the equipment module and remove the reservoir breather/cap. Oil should be at the full mark.

Oil and Filter Replacement

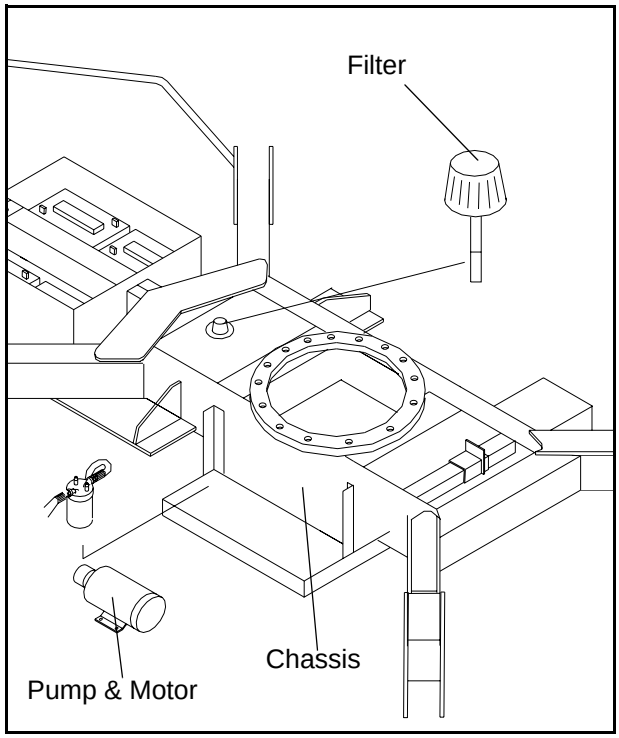
1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.

⚠ CAUTION ⚠

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

Figure 3-3: Oil Filter

2. Provide a suitable container to catch the drained oil. Hydraulic tank has a 19 L (5 gallon) capacity.
3. Open module door.
4. Locate and remove the drain plug and allow all the oil to drain. Dispose of hydraulic fluid properly (contact your local oil recycler).
5. Reinstall the drain plug.
6. Unscrew the filter from the filter assembly.
7. Apply a thin film of clean hydraulic oil (ISO #46) to the gasket of the replacement filter.
8. Screw the replacement filter onto the filter head until the gasket makes contact, then turn the filter 3/4 of a turn further.
9. Fill the hydraulic reservoir with ISO #46 hydraulic oil until the oil is up to the full mark on the dipstick.



Reservoir Breather/Cap

Clean the breather/cap at the same time that the oil filter is replaced. Use cleaning solvent and blow dry with clean, dry compressed air.

3.8 Setting Hydraulic Pressures

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

⚠ WARNING ⚠

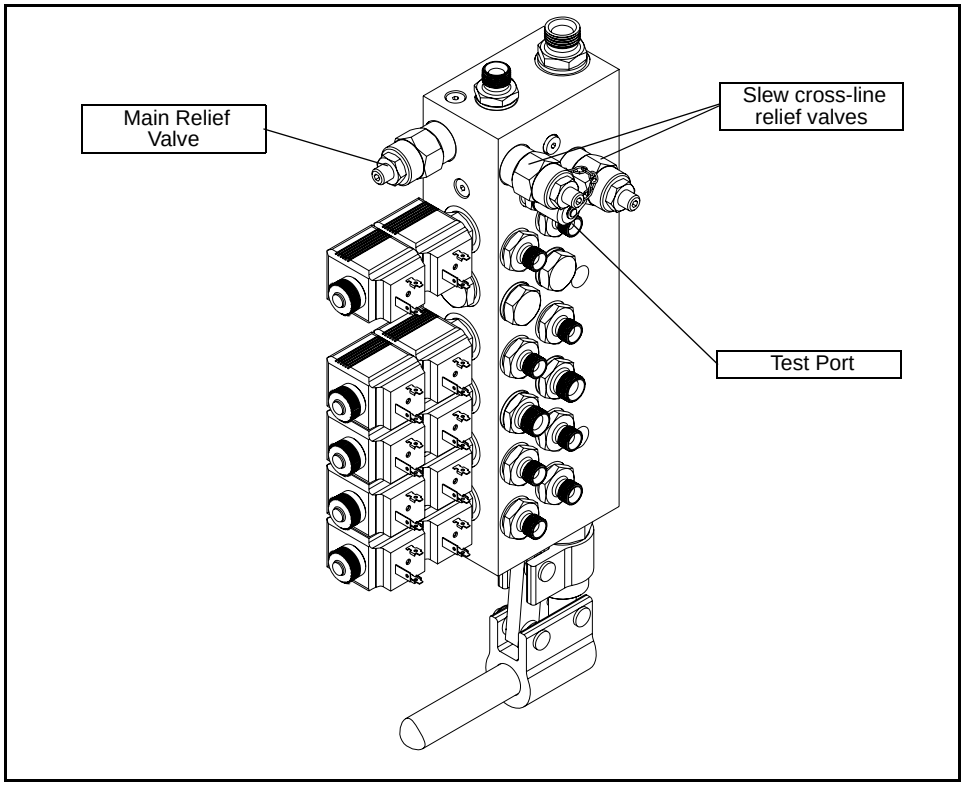
The hydraulic oil may be of sufficient temperature to cause burns. Wear safety gloves and safety glasses when handling hot oil.

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

Main Relief Valve

1. Operate the hydraulic system for 10-15 minutes to warm the oil.
2. Remove the cover from the 1st post.
3. Insert pressure gauge into high pressure gauge port marked ‘PT’ on top of front face of main manifold block.
4. Loosen locknut on main relief valve and turn adjusting screw counter clockwise two full turns.
5. Operate telescope-in function switch at lower controls and keep it activated.
6. Slowly turn the main relief valve adjusting screw clockwise until the pressure gauge reads 155 Bar pressure.
7. Release Telescope-in switch.
8 Tighten locknut on main relief valve while holding the adjusting screw in position.

Figure 3-4: Hydraulic Manifold



SLEW CROSS-LINE RELIEF VALVES

1. Operate the hydraulic system for 10-15 minutes to warm the oil.

2. Remove the cover from the 1st post.

3. Insert pressure gauge into high pressure gauge port marked ‘PT’ on top of front face of main manifold block.

4. Loosen locknuts on both cross-line relief valves and turn adjusting screws counter clockwise two full turns.

5. Operate slew function from lower controls and rotate elevating assembly through approx. 180 degrees until the slew stop prevents further rotation.

6. Slowly turn the cross-line relief valve adjusting screw clockwise until the pressure gauge reads 50 Bar pressure.

7. Now operate the slew function in the opposite direction through approx. 360 degrees until the slew stop prevents further rotation.

8. Slowly turn the remaining cross-line relief valve adjusting screw clockwise until the pressure gauge reads 50 Bar pressure.

9. Tighten the locknuts on both cross-line reief valves while holding the adjusting screws in position.

3.9 HYDRAULIC MANIFOLD

It is not necessary to remove the manifold to perform all maintenance procedures (i.e., replacing a single valve). Determine whether or not the manifold should be removed before maintenance begins.

REMOVAL

1. Tag and disconnect the solenoid valve leads.
2. Tag, disconnect, and plug hydraulic hoses.
3. Remove the bolts that hold the manifold to the module, being careful not to damage the ground wires.
4. Remove the manifold block.

DISASSEMBLY

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

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

CLEANING AND INSPECTION

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

ASSEMBLY

NOTE: **Lubricate all O-rings before installation to prevent damage to the O-rings. Refer to Table 3-1 for the proper torque values when installing any hydraulic component.**

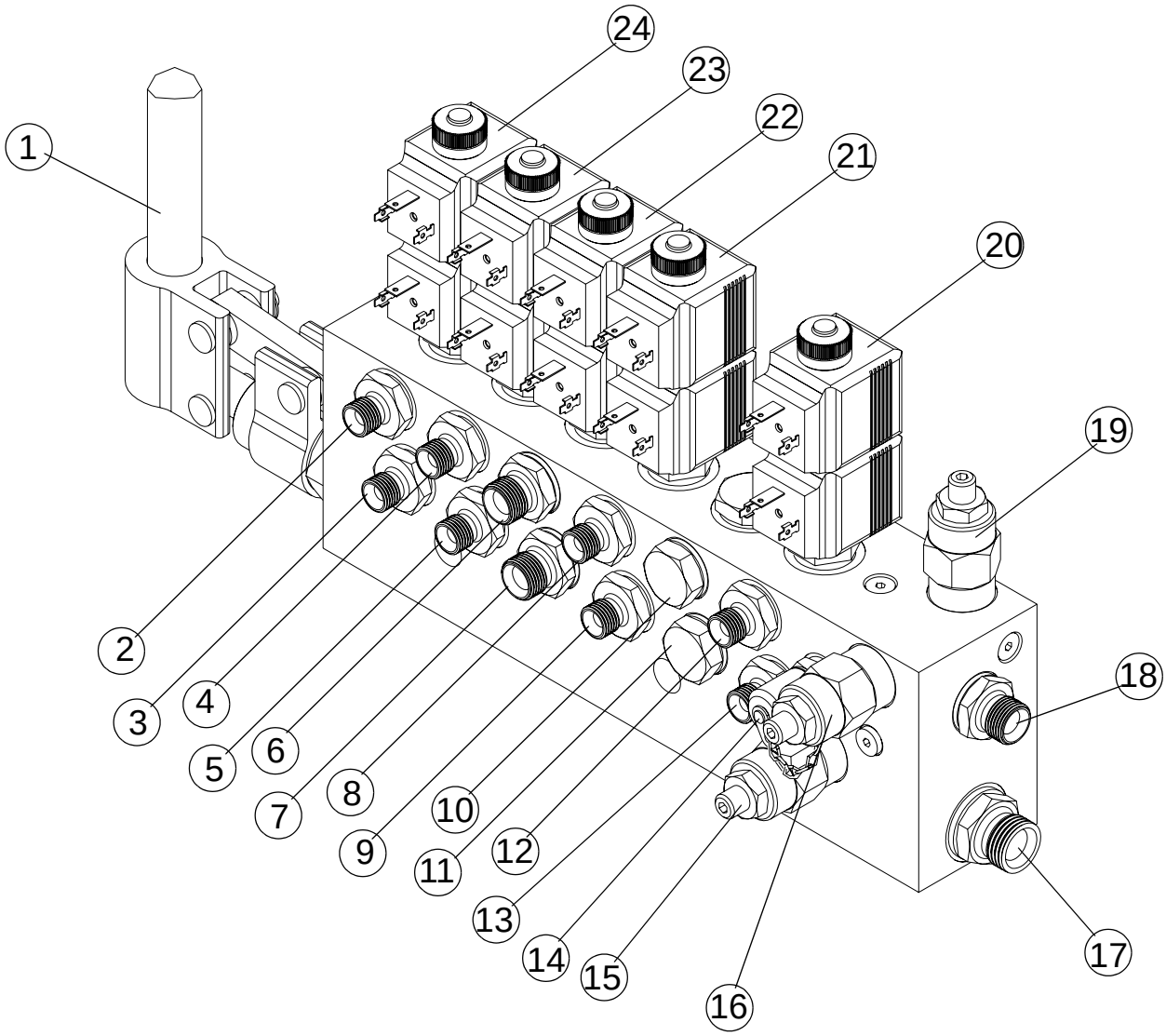
1. Install fittings and plugs.
2. Install counterbalance valves, relief valves and solenoid valves.
3. Install coils on solenoid valves.

INSTALLATION

NOTE: **Refer to Table 3-1 for hydraulic component torque specifications.**

1. Attach the manifold assembly to the module with bolts, making sure all the ground wires are attached with the front right hand bolt.
2. Connect solenoid leads as tagged.
3. Connect hydraulic hoses. Be certain to tighten hoses to manifold.
4. Operate each hydraulic function, and check for proper function and leaks.
5. Check the level in the hydraulic fluid tank.
6. Adjust all relief valves mounted on the Hydraulic Manifold according to instructions.

Figure 3-5: Hydraulic Manifold



1. Hand Pump
2. FITTING (3/8” - 1/4” MALE/MALE)
3. FITTING (3/8” - 1/4” MALE/MALE)
4. FITTING (3/8” - 1/4” MALE/MALE)
5. FITTING (3/8” - 1/4” MALE/MALE)
6. FITTING (3/8” - 3/8” MALE/MALE)
7. FITTING (3/8” - 3/8” MALE/MALE))
8. FITTING (3/8” - 1/4” MALE/MALE)
9. FITTING (3/8” - 1/4” MALE/MALE)
10. Blanking Cap
11. Blanking Cap
12. FITTING (3/8” - 1/4” MALE/MALE)
13. FITTING (3/8” - 1/4” MALE/MALE)
14. Test Port
15. CROSS LINE RELIEF VALVE (SLEW)
16. CROSS LINE RELIEF VALVE (SLEW)
17. FITTING (1/2” - 1/2” MALE/MALE)
18. FITTING (3/8” - 3/8” MALE/MALE))
19. Main Relief Valve
20. Solenoid Valve (Slew)
21. Solenoid Valve (Level)
22. Solenoid Valve (Telescope)
23. Solenoid Valve (Lower Boom)

0.1 HYDRAULIC MANIFOLD (OUTRIGGER)

It is not necessary to remove the manifold to perform all maintenance procedures (i.e., replacing a single valve). Determine whether or not the manifold should be removed before maintenance begins.

REMOVAL

1. Tag and disconnect the solenoid valve leads.
2. Tag, disconnect, and plug hydraulic hoses.
3. Remove the bolts that hold the manifold to the module, being careful not to damage the ground wires.
4. Remove the manifold block.

DISASSEMBLY

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

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

CLEANING AND INSPECTION

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

ASSEMBLY

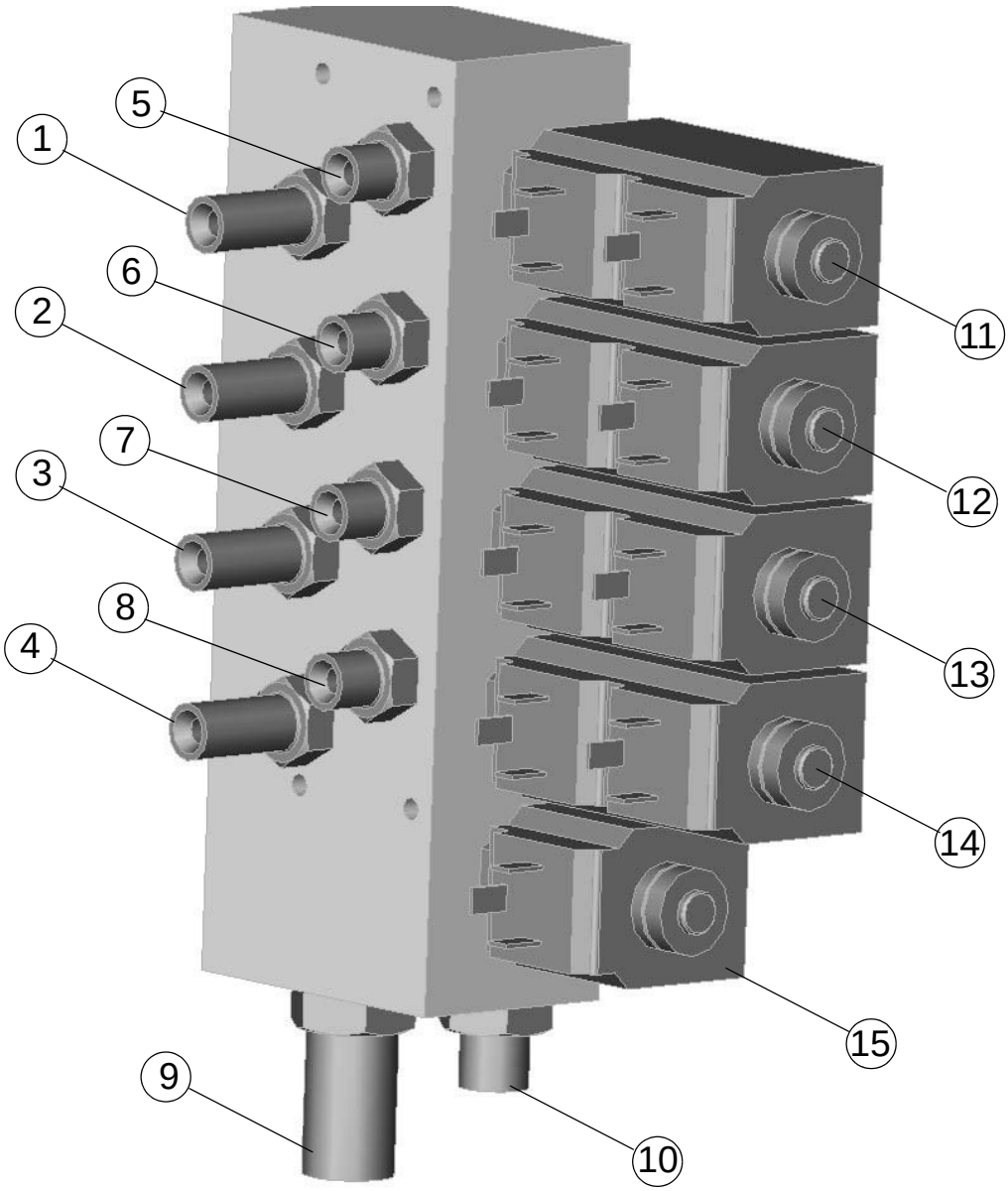
NOTE: **Lubricate all O-rings before installation to prevent damage to the O-rings. Refer to Table 3-1 for the proper torque values when installing any hydraulic component.**

1. Install fittings and plugs.
2. Install counterbalance valves, relief valves and solenoid valves.
3. Install coils on solenoid valves.

INSTALLATION

NOTE: **Refer to Table 3-1 for hydraulic component torque specifications.**

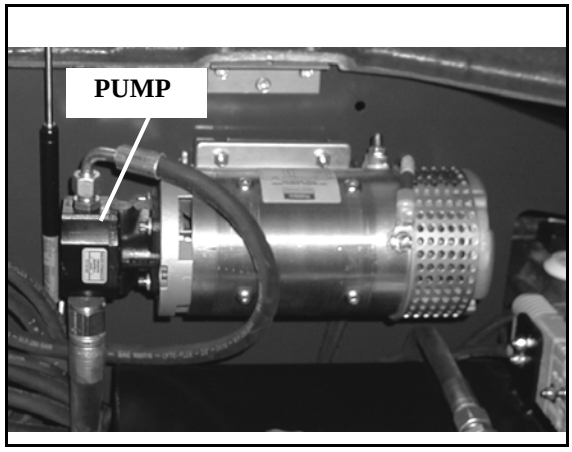
1. Attach the manifold assembly to the module with bolts, making sure all the ground wires are attached with the front right hand bolt.
2. Connect solenoid leads as tagged.
3. Connect hydraulic hoses. Be certain to tighten hoses to manifold.
4. Operate each hydraulic function, and check for proper function and leaks.
5. Check the level in the hydraulic fluid tank.
6. Adjust all relief valves mounted on the Hydraulic Manifold according to instructions.



1. FITTING (1/4” - 1/4” MALE/MALE BULKHEAD)
2. FITTING (1/4” - 1/4” MALE/MALE BULKHEAD)
3. FITTING (1/4” - 1/4” MALE/MALE BULKHEAD)
4. FITTING (1/4” - 1/4” MALE/MALE BULKHEAD)
5. FITTING (1/4”- 1/4” MALE/MALE)
6. FITTING (1/4” - 1/4” MALE/MALE)
7. FITTING (1/4” - 1/4” MALE/MALE)
8. FITTING (1/4” - 1/4” MALE/MALE)
9. FITTING (1/2” - 1/2” MALE/MALE)
10. FITTING (3/8” - 3/8” MALE/MALE)
11. SOLENOID VALVE (REAR RHS O/R)
12. SOLENOID VALVE (REAR LHS O/R)
13. SOLENOID VALVE (FRONT RHS O/R)
14. SOLENOID VALVE (FRONT LHS O/R)
15. SOLENOID VALVE

3.10 HYDRAULIC PUMP

Figure 3-6: Hydraulic Pump



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 criss-cross pattern torque each capscrew a little at a time until all of the capscrews are torqued to 27 Nm (20 Ft/lbs).
3. Unplug and reconnect the hydraulic hoses.
4. Check the oil level in the hydraulic tank before operating the work platform.

3.11 HYDRAULIC CYLINDER (JIB)

Note : Removal of the Jib cylinder requires the cage to be held in position by suitable support slings.

REMOVAL

1. Disconnect both hoses and plug ends to avoid excessive oil spillage. Note which hose goes to which port.

2. Remove lock plate securing bolt and spring washer from both the rod end pin and body end pin.

3. Remove lock plates.

4. Hold cage assembly in position and knock out rod end pin and body end pin.

5. Remove cylinder.

INSTALLATION

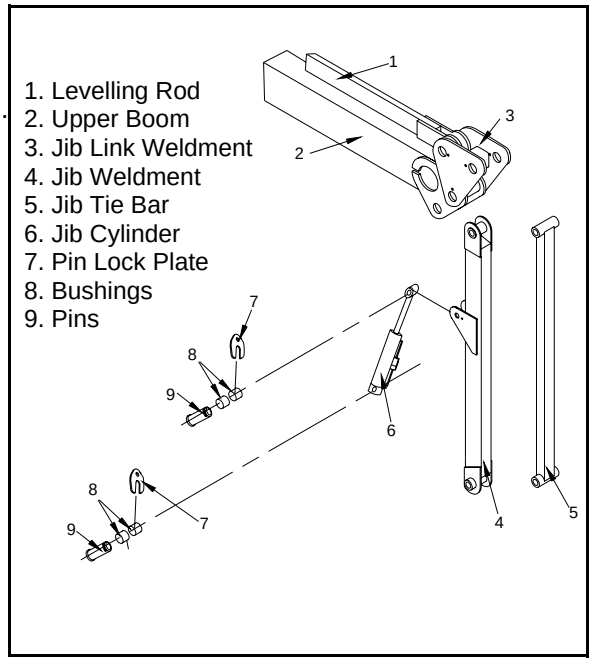
1. Lift the cylinder into place and insert the body end pin in through the cylinder and boom.

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

2. Line the holes up with the cylinder rod hole and insert the rod end pin.

3. Slide both locking plates into the groves on the pins and secure with the bolts and washers.

4. Test with weight at rated platform load to check system operation.



3.12 HYDRAULIC CYLINDER (LOWER BOOM)

REMOVAL

NOTE: Due to the force on the pins caused by the weight of the booms, it is generally necessary to use a sling and overhead crane of suitable capacity to assist in the removal of the cylinder pins.

1. Set the machine up on level ground with all 4 outriggers deployed.

2. Securely attach a sling to the second post and to an overhead crane.

3. Disconnect the two hoses from the cylinder body and plug. Note which hose goes to which port.

4. Remove lock plate securing bolt and spring washer from both the rod end pin and body end pin.

5. Remove the lock plates.

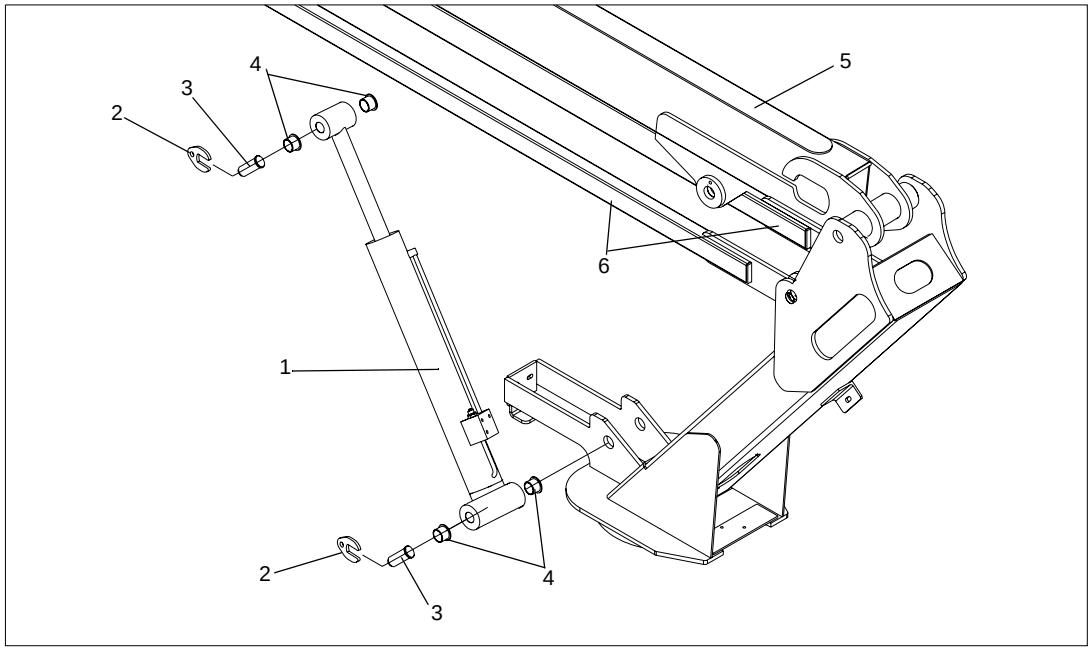
6. Take up the slack on the sling to remove the weight of the booms on the rod end pin.

7. Knock the rod end pin out pin out.

8. Knock the body end pin out.

9. Remove cylinder.

1. Cylinder
2. Lock Plate
3. Pivot Pin
4. Bushing
5. Lower Boom
6. Tie Bars



FOR DISASSEMBLY, CLEANING AND INSPECTION, REASSEMBLY

SEE SECTION 3-17

INSTALLATION

Note: before installing Lower Lift Cylinder check cylinder pins and bearings for wear and replace if necessary.

1. Lift the cylinder into place and insert the body end pin in through the cylinder and First Post Anchors.

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

2. Line the Lower Boom Anchor holes up with the cylinder rod hole and insert the rod end pin. (Note: To align the holes use an overhead crane and sling of suitable capacity firmly secured to the second post. This should be used to raise and lower the Lower Boom)

3. Slide both locking plates into the groves on the pins and secure with the bolts and washers.

4. Reconnect the hoses to their correct ports.

5. Test with weight at rated platform load to check system operation.

3.13 HYDRAULIC CYLINDER (UPPER BOOM)

REMOVAL

NOTE: Due to the force on the pins caused by the weight of the booms, it is generally necessary to use a sling and overhead crane of suitable capacity to assist in the removal of the cylinder pins.

1. Set the machine up on level ground with all 4 outriggers deployed.

2. Securely attach a sling to the Upper Boom (platform end) and to an overhead crane.

3. Disconnect the two hoses from the cylinder body and plug. Note which hose goes to which port.

4. Remove lock plate securing bolt and spring washer from both the rod end pin and body end pin.

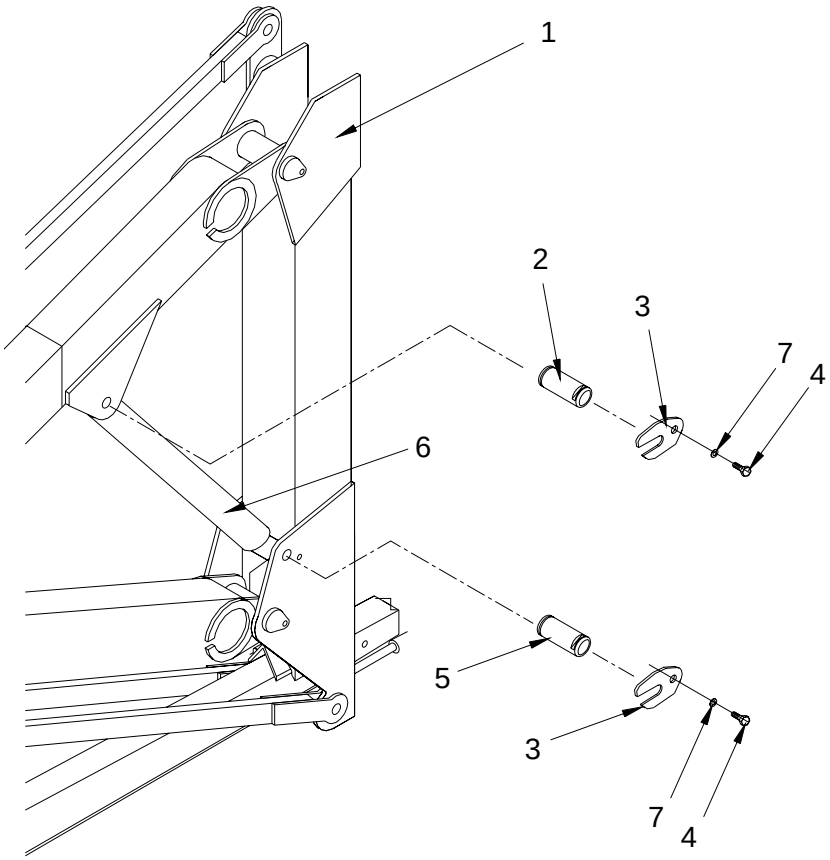
5. Remove the lock plates.

6. Take up the slack on the sling to remove the weight of the booms on the rod end pin.

7. Knock the rod end pin out pin out.

8. Knock the body end pin out.

9. Remove cylinder.



1. Second Post
2. Rod End Pivot Pin
3. Pin Lock Plate
4. Retaining Bolt
5. Barrel End Pivot Pin
6. Upper Lift Cylinder
7. Washer

FOR DISASSEMBLY, CLEANING AND INSPECTION, REASSEMBLY

SEE SECTION 3-17

INSTALLATION

Note: before installing Upper Lift Cylinder check cylinder pins and bearings for wear and replace if necessary.

1. Lift the cylinder into place and insert the body end pin in through the cylinder and Second Post Anchors.

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

2. Line the Upper Boom Anchor holes up with the cylinder rod hole and insert the rod end pin. (Note: To align the holes use an overhead crane and sling of suitable capacity firmly secured to the Upper Boom at the cage end. This should be used to raise and lower the Upper Boom).

3. Slide both locking plates into the groves on the pins and secure with the bolts and washers.

4. Reconnect the hoses to their correct ports.

5. Test with weight at rated platform load to check system operation.

3.14 HYDRAULIC CYLINDER (OUTRIGGER)

REMOVAL

1. With the booms in the stowed position, raise all 4 outriggers.

2. Disconnect the hoses from the cylinder and plug to avoid excessive oil spillage, note which hoses go to which port.

3. Remove the securing bolts and washers from the cylinder lock plates.

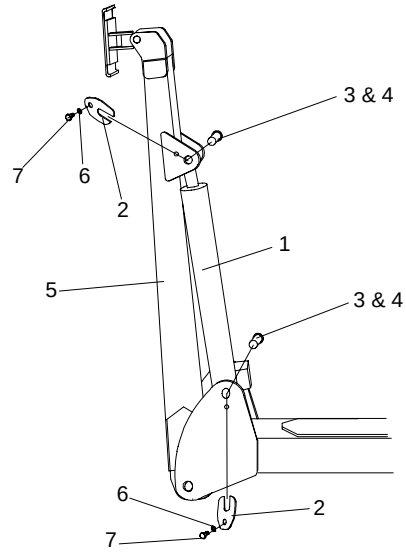
4. Remove the lock plates.

5. Holding the outrigger in position, knock out the body end pin.

6. Lower the outrigger and cylinder to the ground and knock out the rod end pin.

7. Remove the cylinder.

1. Cylinder
2. Lock Plate
3. Pivot Pin
4. Bushing
5. Outrigger
6. Washer
7. Bolt



FOR DISASSEMBLY, CLEANING AND INSPECTION, REASSEMBLY

SEE SECTION 3-17

INSTALLATION

Note: before installing outrigger Cylinder check cylinder pins and bearings for wear and replace if necessary.

1. Installation is the reverse of removal (above)

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

2. Test with weight at rated platform load to check system operation

3.15 DISASSEMBLY, CLEANING, INSPECTION AND ASSEMBLY OF CYLINDERS

Note: The disassembly, cleaning and inspection and assembly for all the cylinders is basically the same.

DISSASSEMBLY OF HYDRAULIC CYLINDERS

Note: Prepare a clean work area on which to service the internal parts.

1. Remove fittings, Pilot operated check valve cartridges and overcentre valve cartridges from the cylinder blocks.

2. Bend up tab on tab washer (if applicable).

3. Unscrew end cap and remove from cylinder body with rod and piston.

4. Unscrew the piston locknut from the rod and remove the piston head and the end cap.

Note: Some piston locknuts are fitted with a roll pin and grub screw which must be removed before unscrewing the locknut.

5. Remove all seals from the end cap (i.e. wiper, shaft seal, O-ring, rod seal, end cap gland and PTFE seal) and disregard.

6. Remove all seals from piston head (i.e. piston O-ring and piston seal) and disregard.

CLEANING AND INSPECTION

1. Clean all metal parts in solvent and blow dry with filtered compressed air.

2. Check all threaded parts for stripped or damaged threads.

3. Check the bearing surfaces inside of the end cap, outer edge surface of the piston, inside the cylinder body and the rod for signs of scoring or excessive wear.

4. Replace any parts found unserviceable.

5. Discard all seals.

6. Examine all cartridge valves for wear on threads and damage to O-rings.

ASSEMBLY

1. Lubricate and install a new complete set of seals on both the end cap and piston.

2. Slide the end cap onto the rod (with the tab washer where applicable) and then the piston head.

3. Screw on the piston locknut (fitting roll pin and grub screw where applicable).

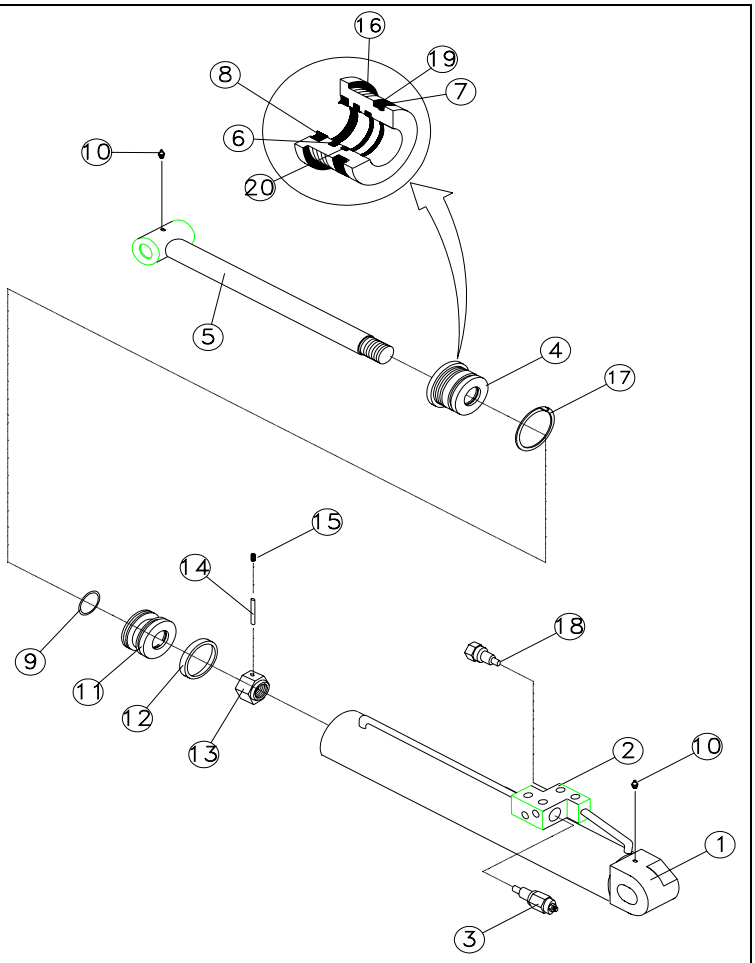
4. Lubricate the entire assembly's seals and slide the piston into the cylinder body.

5. Screw end cap onto end of cylinder body.

6. Bend down tab on tab washer.

7. Insert all cartridge valves and fittings into the cylinder valve block.

1	CYLINDER BODY
2	VALVE BODY
3	CARTRIDGE
4	END CAP
5	ROD AND END PIVOT
6	ROD SEAL
7	O-RING
8	WIPER
9	PISTON O-RING
10	GREASE NIPPLE
11	PISTON HEAD
12	PISTON SEAL
13	PISTON LOCKNUT
14	ROLL PIN
15	GRUB SCREW
16	END CAP GLAND
17	TAB WASHER
18	CARTRIDGE
19	PTFE SEAL
20	ROD SEAL



3.16 ELECTRIC MOTOR

TROUBLESHOOTING

1. Read the nameplate to become familiar with the motor, especially the rated voltage.
2. Try to turn the shaft by hand. Keep motor leads separated while doing this. If the shaft turns freely, go to step 3. If the shaft won't turn, proceed to step A.
   a. The shaft could be tight for a number of reasons, this check is to determine if the tightness is of a temporary nature only. Obtain power to produce the nameplate voltage. **Do not make a permanent connection**. First touch the motor leads quickly to the power supply just long enough to observe if the shaft runs. If it does turn, then hold the motor leads on the power supply for a longer time.If the motor sounds normal, go to step 3. If the motor sounds noisy, it should be taken apart as described in the disassembly section.
3. If the motor turned freely, connect an ammeter in the circuit as shown in Figure 3-7A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions, then it can be assumed the original problem is external to the motor.

Figure 3-7: Electric Motor

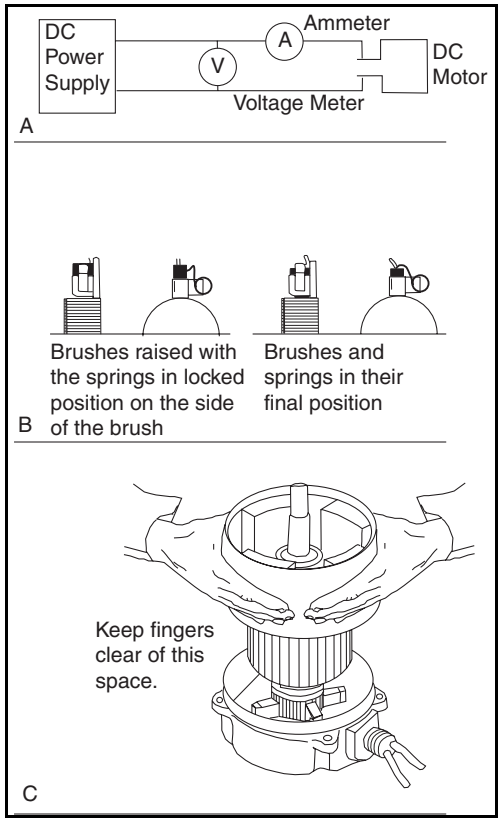
DISASSEMBLY

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

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

INSPECTION

1. Once the motor has been disassembled, go through the following check list steps to determine where the problem lies.
2. Bearings should spin smoothly and easily and have ample lubrication and be free of corrosion.
3. Armature should be checked for grounds and shorted turns. Refinish commutator surface if pitted or excessively worn.
4. Brushes should be checked for wear and to ensure that they are free in the brush holders.



3.17 TORQUE SPECIFICATIONS

HYDRAULIC COMPONENTS

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

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

Table 3-1: Torque Specifications for Hydraulic Components

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

FASTENERS

This standard applies to the preloading of fasteners measured by installation torque.

NOTE: **For other preloading methods or fasteners, consult UpRight Engineering Department.**

This general standard applies to all SAE and Metric fasteners, unless otherwise specified.

THREAD CONDITION

- For lubed or zinc plated fasteners, use K = .15
- For dry unplated fasteners, use K = .20

TORQUE TABLES

Table 3-2: Torque Specifications for SAE Fasteners

		SAE J429 Grade 5			SAE J429 Grade 8		
	Nominal Thread Size	Clamp Load	Tightening Torque K=.15	Tightening Torque K=.20	Clamp Load	Tightening Torque K=.15	Tightening Torque K=.20
		lbs.	in-lbs.	in-lbs.	lbs.	in-lbs.	in-lbs.
Unified Coarse Thread Series	1/4 -20	2,000	75	100	2850	107	143
	5/16 - 18	3,350	157	210	4700	220	305
		lbs.	ft-lbs.	ft-lbs.	lbs.	ft-lbs.	ft-lbs.
	3/8-16	4,950	23	31	6950	32.5	44
	7/16-14	6,800	37	50	9600	53	70
	1/2-13	9,050	57	75	12800	80	107
	9/16-12	11,600	82	109	16400	115	154
	5/8-11	14,500	113	151	20300	159	211
	3/4-10	21,300	200	266	30100	282	376
	7/8-9	29,435	321	430	41550	454	606
	1-8	38,600	483	640	54540	680	900

		SAE J429 Grade 5			SAE J429 Grade 8		
	Nominal Thread Size	Clamp Load	Tightening Torque K=.15	Tightening Torque K=.20	Clamp Load	Tightening Torque K=.15	Tightening Torque K=.20
		lbs.	in-lbs.	in-lbs.	lbs.	in-lbs.	in-lbs.
Unified Fine Thread Series	1/4 -28	2,300	85	115	3250	120	163
	5/16-24	3,700	173	230	5200	245	325
		lbs.	ft-lbs.	ft-lbs.	lbs.	ft-lbs.	ft-lbs.
	3/8-24	5,600	26	35	7900	37	50
	7/16-20	7,550	42	55	10700	59	78
	1/2-20	10,200	64	85	14400	90	120
	9/16-18	13,000	92	122	18300	129	172
	5/8-18	16,300	128	170	23000	180	240
	3/4-16	23,800	223	298	33600	315	420
	7/8-14	32,480	355	473	45855	500	668
	1-12	42,270	528	704	59670	745	995

Table 3-3: Torque Specifications for Metric Fasteners, U.S. Customary Units

	8.8 Grade 8.8			10.9 Grade 10.9			12.9 Grade 12.9		
Nominal Thread Size	Clamp Load	Tightening Torque		Clamp Load	Tightening Torque		Clamp Load	Tightening Torque	
		K = .15	K = .20		K = .15	K = .20		K = .15	K = .20
mm	lbs.	in-lbs.	in-lbs.	lbs.	in-lbs.	in-lbs.	lbs.	in-lbs.	in-lbs.
3	-	-	-	-	-	-	823	14.6	19.5
3.5	-	-	-	-	-	-	1,109	22.9	30.5
4	-	-	-	-	-	-	1,436	33.9	45.2
5	1,389	41.0	19.5	1,987	58.7	19.5	2,322	68.6	91.2
6	1,966	69.7	28.3	2,813	100.0	28.3	3,287	116.8	155.8
7	2,826	116.8	37.2	4,044	167.3	37.2	4,727	195.6	260.2
		ft-lbs.	ft-lbs.		ft-lbs.	ft-lbs.		ft-lbs.	ft-lbs.
8	3,579	14.1	18.8	5,122	20.1	26.9	5,986	23.6	31.4
10	11,742	27.9	37.2	8,117	39.9	53.3	9,486	46.7	62.3
12	8,244	48.7	64.9	11,797	69.7	92.2	13,787	81.1	108.4
14	11,246	77.4	103.3	16,093	110.6	147.5	18,808	129.1	172.6
16	15,883	125.4	166.7	21,971	173.3	230.9	25,677	202.1	269.2
18	19,424	171.9	229.4	26,869	238.2	317.2	31,401	278.1	371.0
20	2,304	243.4	325.3	34,286	337.8	449.9	40,070	394.6	525.9
22	30,653	331.9	442.5	42,403	458.8	612.2	49,556	536.2	715.4
24	35,711	420.4	562.0	49,400	583.4	778.1	57,733	682.2	909.4
27	46,435	617.3	84.8	64,235	853.4	1138.1	75,069	997.2	1329.8
30	56,753	837.9	1117.4	78,509	1159.4	1545.2	91,751	1354.9	1807.0
33	70,208	1140.3	1520.1	97,121	1576.9	2102.8	113,503	1843.9	2457.5
36	82,651	1464.1	1952.3	114,334	2025.3	2700.9	133,620	2367.6	3156.0

Table 3-4: Torque Specifications for Metric Fasteners, SI Units

	8.8 Grade 8.8			10.9 Grade 10.9			12.9 Grade 12.9		
Nominal Thread Size	Clamp Load	Tightening Torque		Clamp Load	Tightening Torque		Clamp Load	Tightening Torque	
		K = .15	K = .20		K = .15	K = .20		K = .15	K = .20
mm	N	N-m	N-m	N	N-m	N-m	N	N-m	N-m
3	-	-	-	-	-	-	3,660	1.65	2.2
3.5	-	-	-	-	-	-	4,932	2.59	3.45
4	-	-	-	-	-	-	6,387	3.83	5.11
5	6,177	4.63	2.2	8,840	6.63	2.2	10,330	7.75	10.3
6	8,743	7.87	3.2	12,512	11.3	3.2	14,623	13.2	17.6
7	12,570	13.2	4.2	17,990	18.9	4.2	21,025	22.1	29.4
8	15,921	19.1	25.5	22,784	27.3	36.5	26,626	32	42.6
10	52,230	37.8	50.5	36,105	54.1	72.2	42,195	63.3	84.4
12	36,670	66	88	52,475	94.5	125	61,328	110	147
14	50,025	105	140	71,587	150	200	83,663	175	234
16	70,650	170	226	97,732	235	313	114,218	274	365
18	86,400	233	311	119,520	323	430	139,680	377	503
20	10,250	330	441	152,513	458	610	178,238	535	713
22	136,350	450	600	188,618	622	830	220,433	727	970
24	158,850	570	762	219,743	791	1055	256,808	925	1233
27	206,550	837	115	285,728	1157	1543	333,923	1352	1803
30	252,450	1136	1515	349,223	1572	2095	408,128	1837	2450
33	312,300	1546	2061	432,015	2138	2851	504,885	2500	3332
36	367,650	1985	2647	508,582	2746	3662	594,368	3210	4279

Maintenance

Preventative Maintenance Table Key

Interval

Daily	=	each shift or every day
50h/30d	=	every 50 hours or 30 days
250h/6m	=	every 250 hours or 6 months
500h/1y	=	every 500 hours or 1 year
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 : _____
V.I.N 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 specific gravity.	50h/30d			
	Clean exterior.	250h/6m			
	Clean terminals.	250h/6m			
Hydraulic Oil	Check oil level.	Daily			
	Drain and replace oil. (ISO No.46)	500h/1y			
Hydraulic Pump	Wipe clean.	50h/30d			
	Check for hose fitting leaks	50h/30d			
	Check for leaks at mating surfaces.	50h/30d			
	Check mounting bolts for proper torque.	50h/30d			
Hydraulic System	Check for leaks.	Daily			
	Check hose connections.	50h/30d			
	Check for exterior wear.	50h/30d			
	Change filter.	250h/6m			
Emer. Hydraulic System	Open the emergency lowering valves and check for proper operation.	Daily			
Control Cable	Check switch operation.	Daily			
	Check the exterior of cable for pinching, binding or cable wear.	Daily			
Tyres / Wheels	Check tyre press. 4.45bar (65psi)	Daily			
	Check for damage.	Daily			
	Check thread depth.	Daily			
	Check/torque nuts 100 Nm-74 ft lbs	Daily			
Platform Deck and Guardrails	Check welds for cracks.	Daily			
	Check condition of floor.	Daily			
	Check that securing bolts are tightened.	Daily			
	Check drop bar on cage entrance.	Daily			
Slew System	Grease slew gear.	50h/30d			
	Check slew motor for leaks and mounting bolts for proper torque.	50h/30d			
	Check hardware and fittings for proper torque.	250h/6m			
Slew System/ First Post	Check torque on all bolts, 15 outer ring and 20 inner ring. Retorque to 120 Nm (88 ft lbs).	50h/30d			
Elevating Assembly	Inspect for structural cracks.	Daily			
	Check hoses for pinch or rubbing points.	Daily			
	Check pivot pins for damage.	50h/30d			
	Check pivot pin retaining rings.	50h/30d			
	Check elevating assembly for bending.	250h/6m			
	Check component mounting for proper torque.	250h/6m			
	Check fasteners for proper torque.	250h/6m			
Lift Cylinders	Check cylinder rod for wear.	50h/30d			
	Check pivot pin retaining rings.	50h/30d			
	Grease all fittings as section 3.4.	50h/30d			
Chassis Assembly	Inspect for structural cracks.	Daily			
	Check hoses for pinch or rubbing points.	Daily			
Entire Unit	Function check Emergency stop switches at control boxes.	Daily			
	Perform pre-operation inspection.	Daily			
	Check for and repair collision damage.	Daily			
	Lubricate.	50h/30d			
	Grease all fittings.	50h/30d			
	Check for corrosion - Remove and repaint.	250h/6m			
Outriggers	Check outrigger cylinders for damage.	Daily			
	Check interlock switch function.	Daily			
	Lubricate.	50h/30d			
	Grease all fittings.	50h/30d			
Tow Hitch	Check coupling for function and wear.	Daily			
	Inspect breakaway cable for proper attachment.	Daily			
	Grease all fittings as section 3.4.	50h/30d			
Road Lights	Check all trailer lights and connecting plug.	Daily			
Brake	Apply handbrake and check function.	Daily			
	Check brake shoes for wear.	50h/30d			
	Test auto reverse function.	50h/30d			
	Adjust brake shoes.	50h/30d			
	Check handbrake and adjust.	250h/6m			
Axle/ Hubs	Repack wheel bearings.	1000h/ 2y			

Signature of Service Engineer

_____

NOTES:

Section 4

TROUBLESHOOTING

4.1 INTRODUCTION

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

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

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

GENERAL PROCEDURE

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

Use the charts on the following pages to help determine the cause of a fault.

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

⚠ WARNING ⚠

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

When performing any service that requires the platform to be raised, ensure that the platform and booms are supported by a crane capable of supporting the load.

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

4.2 TROUBLESHOOTING

1. Verify your problem.

- Do a full function test from both the platform and chassis controls, and note all functions that are not operating correctly.

2. Narrow the possible causes of the malfunction.

- Use the troubleshooting guide to determine which components are common to all circuits that are not functioning correctly.

3. Identify the problem component.

- Test components that are common to all circuits that are not functioning correctly. Remember to check wires and terminals between suspect components. Be sure to check connections to battery negative.

4. Repair or replace any 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 to specified values.

SPECIAL TOOLS

Following is a list of tools which may be required to perform certain maintenance procedures on the TL38 work platforms.

- Flow Meter with Pressure Gauge
- 0-69 bar (0-1000 psi) Hydraulic Pressure Gauge with Adapter Fittings
- 0-207 bar (0-3000 psi) Hydraulic Pressure Gauge with Adapter Fittings
- Adapter Fitting
- Inclinometer
- Crimping Tool
- Terminal Removal Tool

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.

Correct pressure settings are listed in the hydraulic schematic.

CHECKING PUMP PRESSURES

Remove hose from pump port and connect pressure gauge.

TROUBLE	PROBABLE CAUSE	REMEDY
All functions inoperable, electric motor does not start.	1. Blown electric motor fuse	Check 160 amp electric motor fuse. Replace if blown.
	2. Faulty battery charger.	Check the voltage output of the battery charger. If less than 24 VDC,
	3. Faulty battery(ies).	After completely charging batteries, test each battery. Replace as
	4. Loose or broken battery lead.	Check continuity of all battery and motor leads. Replace if necessary.
	5. Emergency Stop switch(es) failed open.	With emergency stop switch in the ON position, check continuity
	6. Blown control fuse	Check 7A circuit control fuse. Replace if blown.
All functions inoperable. Electric motor starts when control is actuated.	1. Oil level in hydraulic reservoir is low.	Check hydraulic fluid level, top off as required.
	2. Faulty hydraulic pump.	Check pressure and delivery of the hydraulic pump. Replace if
Platform will not elevate or elevates slowly.	1. Emergency Lowering valve open.	Close emergency down valve.
	2. Platform overloaded.	Observe maximum load rating. (see Operation section of this manual)
	3. Faulty controller at upper controls.	Check functionality of controller. Replace if faulty.
	4. Blown control fuse	Check 7A circuit contrrol fuse. Replace if blown.
	5. Battery level low. Check for fault code 68	Check Battery Voltage. Charge if necessary.
	6. Outrigger limit switches not activated	Ensure all four outriggers are deployed and the limit switch contacts are closed. Replace switch.
Booms drift down after being elevated	1. Emergency lowering valve open.	Ensure that emergency lowering valve is completely closed. Replace
	2. Leaking piston seals in lift cylinders	Check for leakage at cylinder return line, replace seals if necessary.
Outrigger	Boom rest limit switch is not activated or	Ensure booms are stowed. Check that Normally Open contacts of limit
Machine will not slew when booms	Faulty slew cut-out limit switch	Check that Normally Closed contacts of limit switch are closed when Adjust switch lever arm or Replace switch.
Jib cylinder will not retract or extend.	Shutoff ball valve is open.	Close Shutoff ball valve.

4.4 FAULT CODES INTRODUCTION

The TL38 is equipped with a fault detection system, if you have a faulty component, bad electrical connection or start up error a fault code will be displayed on the read out located on the upper control box.

For fault codes 01 - 45 the following procedure should be followed.

Ensure that no selector buttons are depressed.

Ensure that the deadman switch on the joystick is not held.

Ensure that the joystick is in neutral.

Ensure that the steer rocker is not activated.

Ensure that analog rocker is in neutral.

Then re-cycle power, do this by pushing and releasing the emergency stop button. If the fault code is still displayed you may have a faulty upper or lower control box, consult the error code list to identify the problem component and replace if necessary.

For fault codes 51 - 84 the following procedure should be followed.

1. Check the fault code list to identify the problem component.

2. Ensure that the wiring harness is connected, secure, in good condition and fully intact.

3. Ensure that the problem component is receiving electrical signal, consult the schematics in section 6 of this manual to identify the ECU output and harness test points.

4. If no ECU output is present replace the ECU.

5. If ECU output is present but no signal is reaching the component replace the wiring harness.

6. If signal is reaching the component but the component is not functioning replace the component (refer to section 7 of this manual for part number information).

4.5 FAULT CODES

01 – System initialization error

02 – System communication error

03 – Platform Overload

04 – Ground Panel communication error

11 – Drive Assist Joystick Enable Switch ON at power-up

12 – Drive Assist Right Turn Switch ON at power-up

13 – Drive Assist Left Turn Switch ON at power-up

19 – Platform Cage Rotate Switch ON at power-up

21 – Platform Cage Level Switch ON at power-up

22 – Platform Left Turn Switch ON at power-up

23 – Platform Right Turn Switch ON at power-up

24 – Platform Rotate Lift Switch ON at power-up

26 – Platform Telescope Switch ON at power-up

27 – Platform Lower Boom Switch ON at power-up

28 – Platform Upper Boom Switch ON at power-up

29 – Platform Joystick Enable Switch ON at power-up

31 – Platform Joystick not in neutral at power-up

32 – Lower Control Analog Rocker not in neutral at power-up

34 – Lower Control Rotate Lift Switch ON at power-up

36 – Lower Control Telescope Switch ON at power-up

37 – Lower Control Lower Boom Switch ON at power-up

38 – Lower Control Upper Boom Switch ON at power-up

41 – Lower Control Auto-level Outrigger Switch ON at power-up

42 – Lower Control Right Rear Outrigger Switch ON at power-up

43 – Lower Control Left Rear Outrigger Switch ON at power-up

44 – Lower Control Right Front Outrigger Switch ON at power-up

45 – Lower Control Left Front Outrigger Switch ON at power-up

4.6 FAULT CODES CONTINUED

51 – Lower Boom Up Coil fault

52 – Lower Boom Down Coil fault

53 – Upper Boom Up Coil fault

54 – Upper Boom Down Coil fault

55 – Telescope Boom Out Coil fault

56 – Telescope Boom In Coil fault

57 – Slew Lift CW Coil fault

58 – Slew Lift CCW Coil fault

59 – Steer Right Coil fault

61 – Steer Left Coil fault

62 – Level Platform Cage Up Coil fault

63 – Level Platform Cage Down Coil fault

66 – Drive Forward Coil fault

67 – Drive Reverse Coil fault

68 – Low Battery fault

71 – Rotate Platform Cage Left Coil fault

72 – Rotate Platform Cage Right Coil fault

73 – Outrigger Enable Coil fault

74 – Right Rear Outrigger Up Coil fault

75 – Left Rear Outrigger Up Coil fault

76 – Right Front Outrigger Up Coil fault

77 – Left Front Outrigger Up Coil fault

78 – Right Front Outrigger Down Coil fault

79 – Left Front Outrigger Down Coil fault

81 – Left Rear Outrigger Down Coil fault

82 – Right Rear Outrigger Down Coil fault

83 – Drive Head Extend Coil fault

84 – Drive Head Retract Coil fault

Section 5

SCHEMATICS

5.1 INTRODUCTION

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

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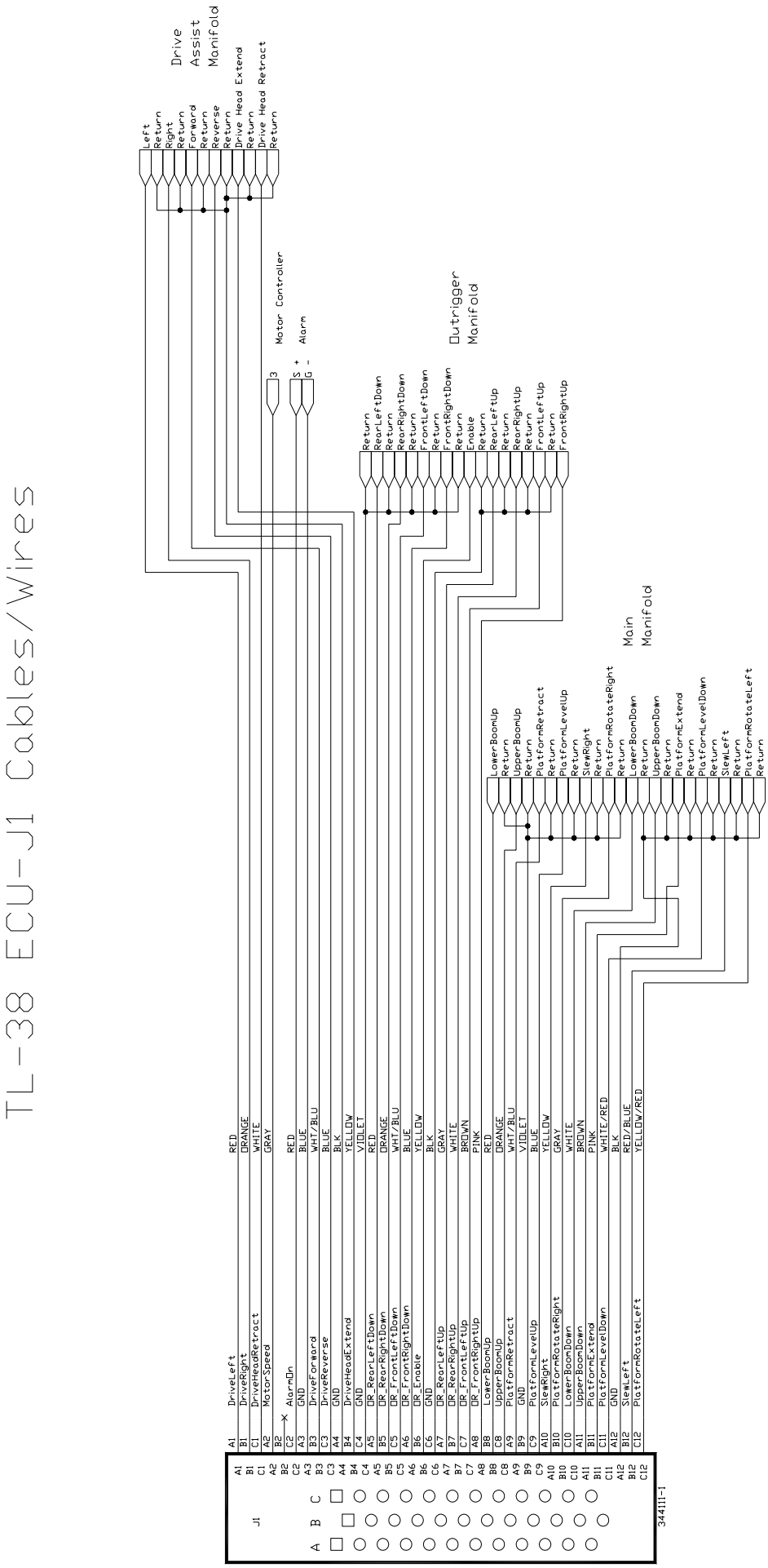
Schematic (J1 Harness).....5-2

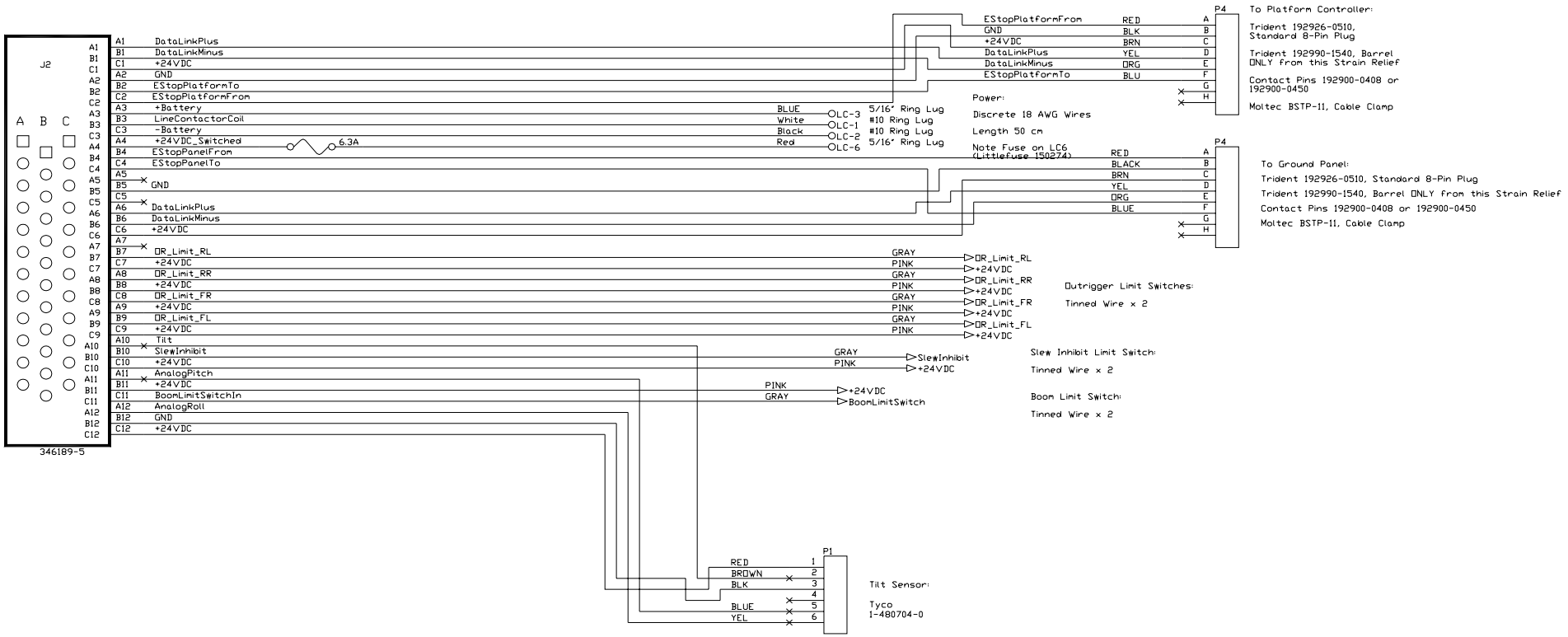
Schematic (J2 Harness).....5-3

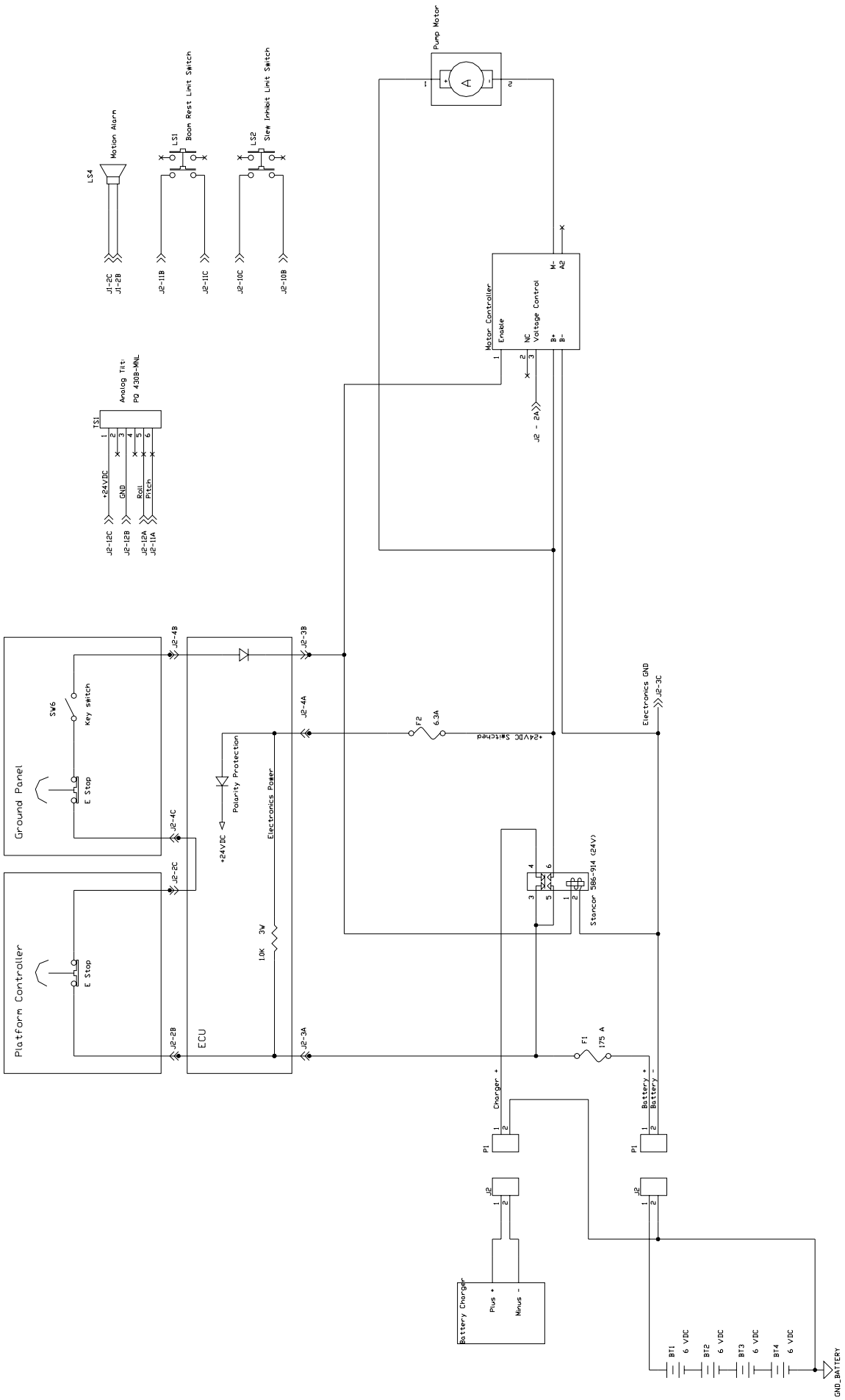
Electrical Assembly.....5-4

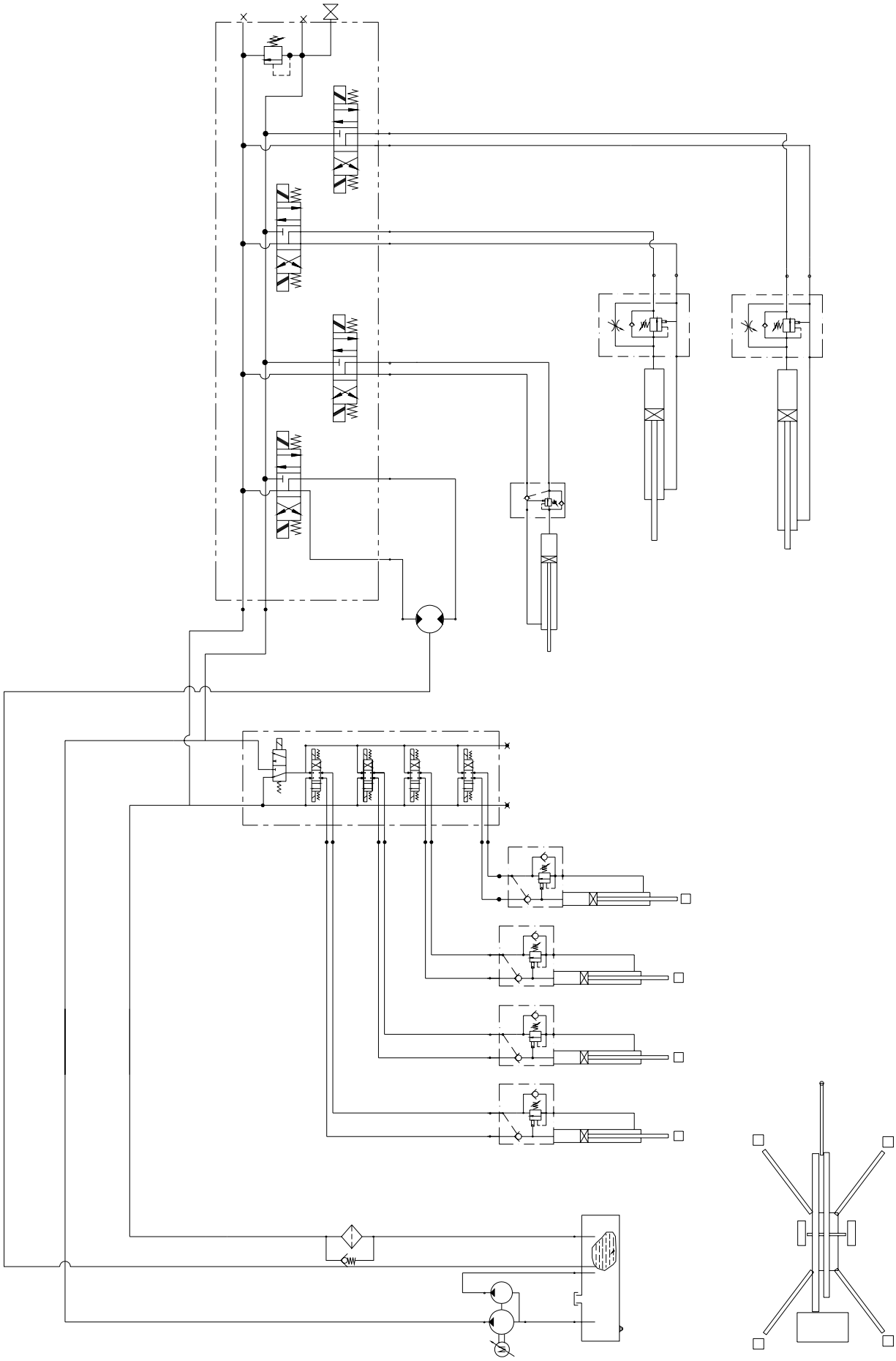
Hydraulic Schematic.....5-5


TL-38 ECU-J1 Cables/Wires
J1
344111-1
A1 DriveLeft RED
B1 DriveRight ORANGE
C1 DriveHeadRetract WHITE
A2 MotorSpeed GRAY
B2 X
C2 AlarmDn RED
A3 GND BLUE
B3 DriveForward WHT/BLU
C3 DriveReverse BLUE
A4 GND BLK
B4 DriveHeadExtend YELLOW
C4 GND VIOLET
A5 DR_RearLeftDown RED
B5 DR_RearRightDown ORANGE
C5 DR_FrontLeftDown WHT/BLU
A6 DR_FrontRightDown BLUE
B6 DR_Enable YELLOW
C6 GND BLK
A7 DR_RearLeftUp GRAY
B7 DR_RearRightUp WHITE
C7 DR_FrontLeftUp BROWN
A8 DR_FrontRightUp PINK
B8 LowerBoomUp RED
C8 UpperBoomUp ORANGE
A9 PlatformRetract WHT/BLU
B9 GND VIOLET
C9 PlatformLevelUp BLUE
A10 SlewRight YELLOW
B10 PlatformRotateRight GRAY
C10 LowerBoomDown WHITE
A11 UpperBoomDown BROWN
B11 PlatformExtend PINK
C11 PlatformLevelDown WHITE/RED
A12 GND BLK
B12 SlewLeft RED/BLUE
C12 PlatformRotateLeft YELLOW/RED
Left Return
Right Return
Forward Return
Reverse Return
Drive Head Extend Return
Drive Head Retract Return
Drive Assist Manifold
3 Motor Controller
S + Alarm
G -
Return RearLeftDown
Return RearRightDown
Return FrontLeftDown
Return FrontRightDown
Return Enable
Outrigger Manifold
Return RearLeftUp
Return RearRightUp
Return FrontLeftUp
Return FrontRightUp
LowerBoomUp Return
UpperBoomUp Return
PlatformRetract Return
PlatformLevelUp Return
SlewRight Return
PlatformRotateRight Return
LowerBoomDown Return
UpperBoomDown Return
PlatformExtend Return
PlatformLevelDown Return
SlewLeft Return
PlatformRotateLeft Return
Main Manifold

TL-38 ECU-J2 Cables/Wires




Pump Motor
Motion Alarm
LS4
LS1
Boom Rest Limit Switch
LS2
Slew Inhibit Limit Switch
J1-2C
J1-2B
J2-11B
J2-11C
J2-10C
J2-10B
Motor Controller
Enable
NC
Voltage Control
B+
B-
M-
A2
J2 - 2A
TS1
Analog Tilt
Pg 430B-MNL
+24VDC
GND
Roll
Pitch
J2-12C
J2-12B
J2-12A
J2-11A
Ground Panel
SW6
Key switch
E Stop
Platform Controller
E Stop
ECU
J2-4B
J2-3B
J2-4A
J2-4C
J2-2C
J2-2B
J2-3A
Polarity Protection
+24VDC
Electronics Power
10K 3W
F2
6.3A
+24VDC Switched
Electronics GND
J2-3C
Stancor 586-914 (24V)
F1
175 A
Charger +
Battery +
Battery -
P1
J2
Battery Charger
Plus +
Minus -
BT1
BT2
BT3
BT4
6 VDC
GND_BATTERY



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.

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Hydraulic Assembly.....6 - 24

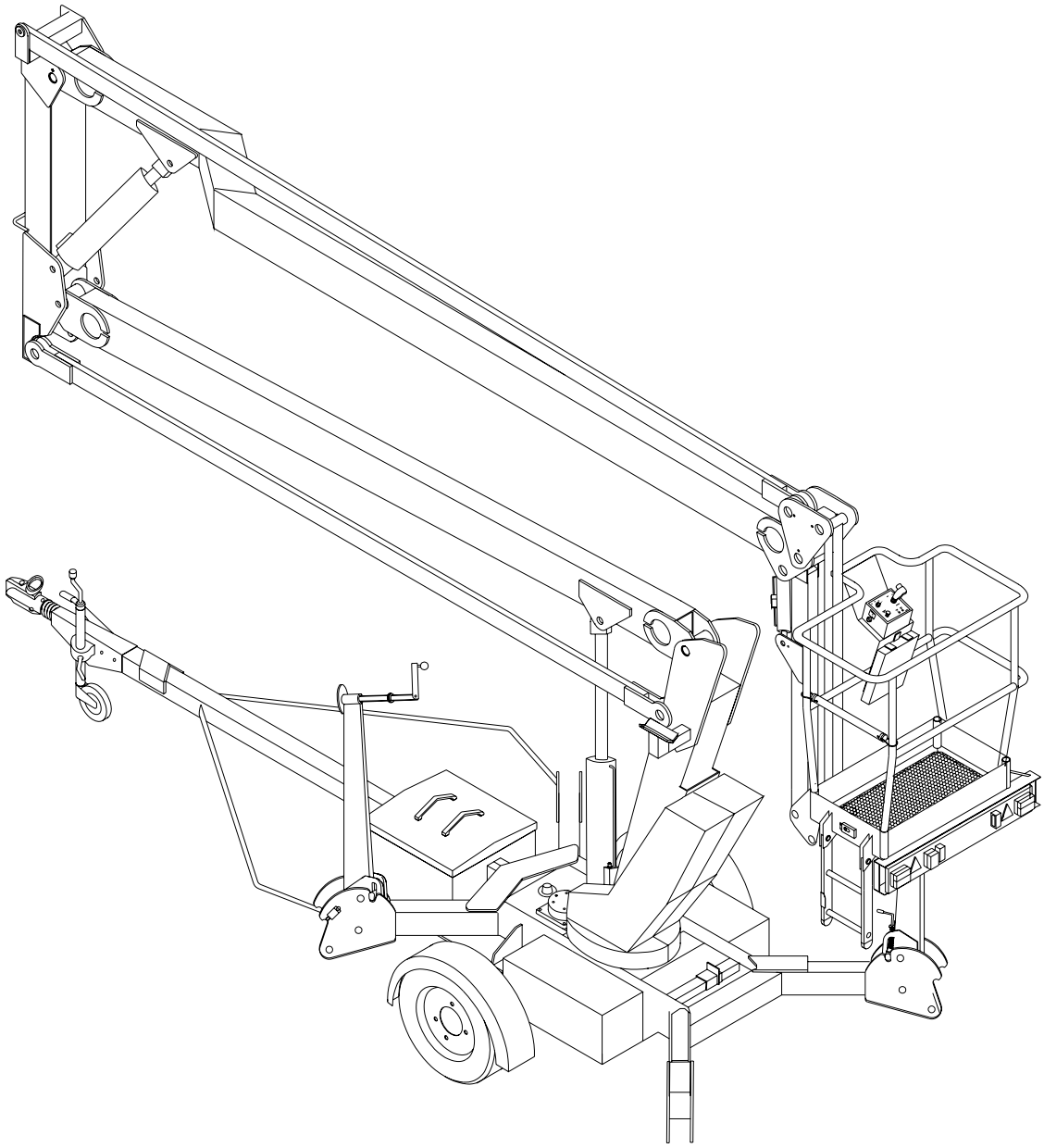
Tail Board Assembly.....6 - 26

Decals Assembly.....6 - 28

General Assembly

058576-000

Item	Part	Description	QTY.
-	500001-001	CHASSIS ASSEMBLY	-
-	500002-000	BOOMS & POSTS ASSEMBLY	-
-	500003-000	CAGE & CRADLE ASSEMBLY	-
-	500050-000	AXLE & BRAKE HUB ASSEMBLY	-
-	500050-001	HUB ASSEMBLY	-
-	500050-003/4	BRAKE ASSEMBLY	-
-	057190-000/1	TAILBOARD ASSEMBLY	-
-	058241-000	TOWHITCH ASSEMBLY	-
-	058266-000	SLEW GEARBOX ASSEMBLY	-
-	500055-000	MAIN MANIFOLD ASSEMBLY	-
-	500058-000	OUTRIGGER MANIFOLD BLOCK ASSEMBLY	-
-	057104-000	LOWER LIFT CYL ASSEMBLY	-
-	500056-000	UPPER LIFT CYL ASSEMBLY	-
-	500059-000	JIB CYLINDER ASSEMBLY	-
-	500058-000	OUTRIGGER CYLINDER ASSEMBLY	-
-	500084-000	MOTOR CONTROL UNIT	-
-	500086-001	LOWER CONTROLS	-
-	500087-000	UPPER CONTROLS	-
-	500085-015	ELECTRICAL COMPONENTS	-
-	500113-000	HYDRAULIC HOSES	-



Chassis Assembly

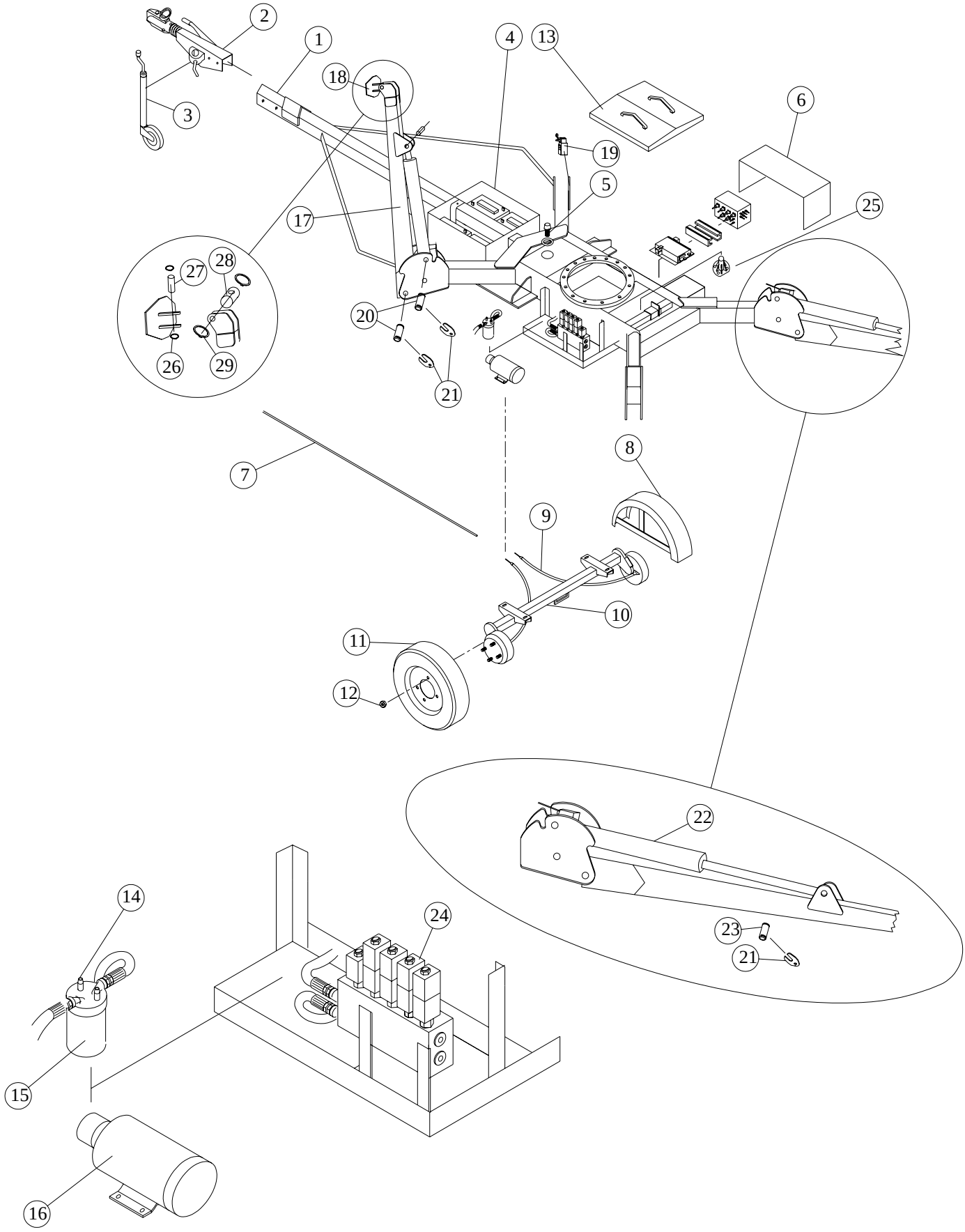
500001-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	500029-000	CHASSIS WELDMENT	1
2	057241-000	TOW HITCH ASSEMBLY	1
3	058242-000	JOCKEY WHEEL ASSEMBLY	1
4	500030-000	BATTERY BOX WELDMENT	1
*	500132-000	BATERY CLAMP	1
*	500052-000	HANDLE	2
*	500081-000	CATCH	2
5	057109-000	FILLER BREATHER ASSY	1
*	057379-000	GASKET (FILLER BREATHER)	1
6	057025-003	COVER, RIGHT SIDE	1
*	057025-002	COVER, LEFT SIDE	1
*	057727-000	COVER, KNOB SCREW	4
7	058116-000	BRAKE ROD	1
8	057099-000	MUDGUARD	2
9	057077-000	BRAKE CABLE ASSY	2
10	5000505-000	AXLE & BRAKE HUB ASSY	1
11	500051-000	WHEEL ASSY	2
*	500312-000	TYRE	2
*	500313-000	WHEEL ONLY	2

ITEM	PART NUMBER	DESCRIPTION	QTY
12	057474-000	WHEEL NUT M12	8
13	500031-000	BATTERY BOX COVER	1
14	057107-000	FILTER ASSY & HOUSING	1
15	057375-000	FILTER	1
16	504536-000	PUMP MOTOR	1
17	500032-000	OUTRIGGER WELDMENT	4
18	500033-000	OUTRIGGER FOOTPAD	4
19	500361-000	LIMIT SWITCH (O/R)	4
20	057199-000	PIVOT PIN (O/R)	8
21	058056-000	PIN LOCK PLATE	8
22	500058-000	OUTRIGGER CYLINDER	4
23	058055-002	PIN, ROD END, OUTRIGGER CYLINDER	4
24	058180-010	VALVE BLOCK ASSY, OUTRIGGER	1
25	058912-000	TILT SENSOR	1
26	057577-000	CIRCLIP 20mm	2
27	500061-000	PIVOT PIN, SMALL, FOOT PAD	1
28	500060-000	PIVOT PIN, LARGE, FOOT PAD	1
29	057032-000	CIRCLIP 35mm	2

Chassis Assembly

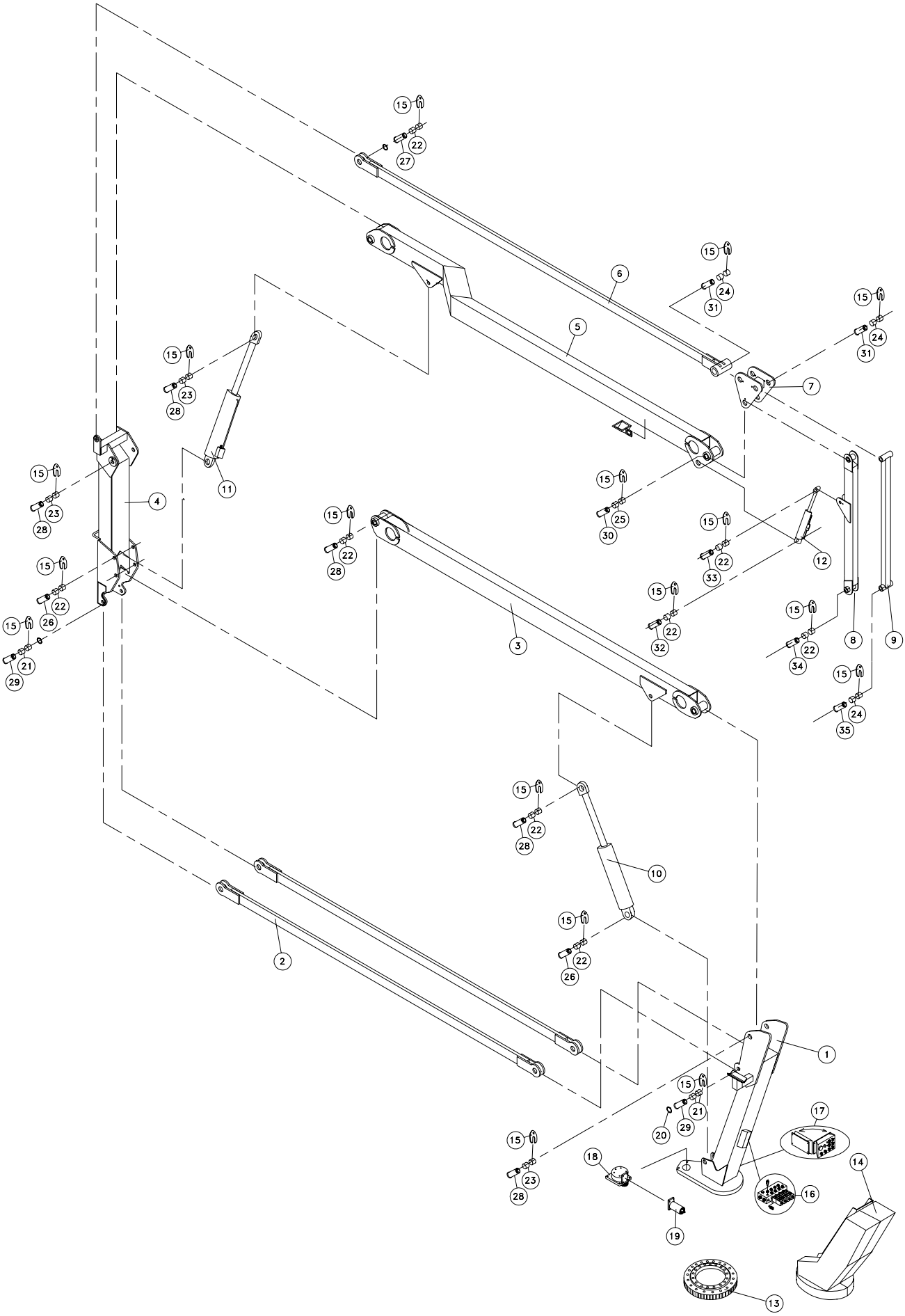
500001-001



Booms & Posts Assembly

500002-000

	Part	Description	QTY.
1	500028-000	FIRST POST WELDMENT	1
2	057039-000	LOWER TENSION BAR	2
3	057037-000	LOWER BOOM	1
4	500027-000	SECOND POST	1
5	500025-000	UPPER BOOM	1
6	500026-000	UPPER TENSION BAR	1
7	500024-000	JIB LINK WELDMENT	1
8	500022-000	JIB WELDMENT	1
9	500023-000	JIB TIE BAR	1
10	057104-000	LOWER LIFT CYLINDER	1
11	500056-000	UPPER LIFT CYLINDER	1
12	500059-000	JIB CYLINDER	1
13	057043-000	SLEW RING BEARING	1
14	500076-000	FIRST POST COVER	1
15	058056-000	PIN LOCK PLATE	19
*	056060-020	BOLT M10 X 20mm	19
*	056021-010	WASHER 10mm	19
16	500055-000	MANIFOLD BLOCK	1
17	500086-000	LOWER CONTROL BOX	1
18	058266-000	SLEW GEAR BOX	1
19	058268-000	SLEW MOTOR	1
20	057034-000	CIRCLIP	5
21	057047-000	BUSHING, PLAIN, 25mm	8
22	057054-000	BUSHING, FLANGED, 30mm	16
23	057046-000	BUSHING, FLANGED, 35mm	6
24	500078-000	BUSHING, FLANGED, 25mm	6
25	500079-000	BUSHING, FLANGED, 35mm X 16mm	2
26	057196-000	PIN	2
27	057197-000	PIN	1
28	057198-000	PIN	5
29	057176-000	PIN	4
30	500074-000	PIN	1
31	500073-000	PIN	2
32	500072-000	PIN	1
33	500071-000	PIN	1
34	500070-000	PIN	1
35	500069-000	PIN	1
*	058486-000	TRANSIT LOCK PIN	1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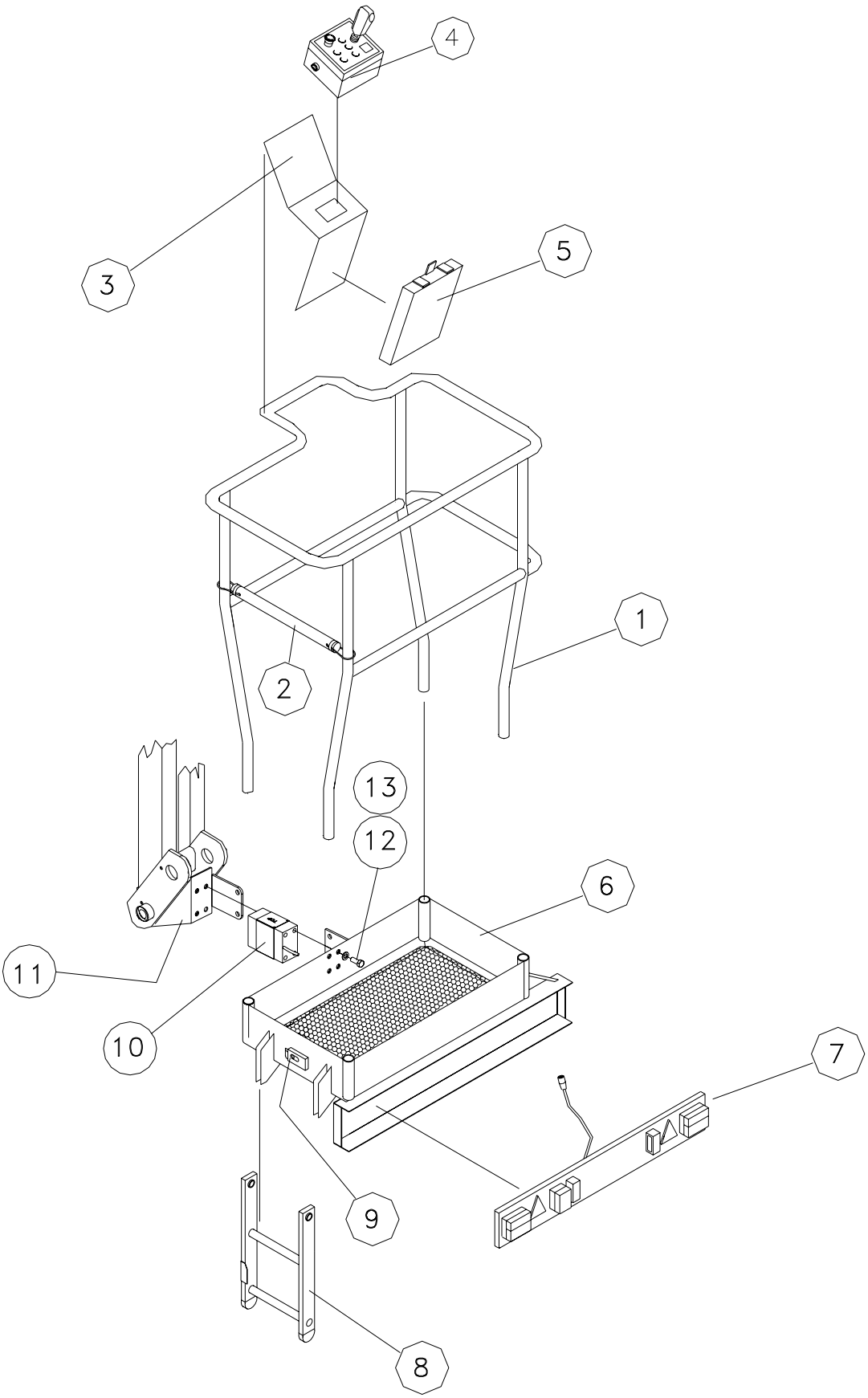
Platform Assembly

500003-000

Item	Part	Description	QTY.
1	500020-000	CAGE RAIL ASSY	1
2	057525-000	DROP BAR ASSEMBLY	1
3	057523-000	MOUNTING BRACKET (CONTROLLER)	1
4	502543-000	PLATFORM CONTROLLER	1
5	010076-000	DOCUMENT BOX	1
6	501950-000	CAGE BASE	1
7	057190-000	TAILBOARD ASSEMBLY (EURO)	1
*	057190-001	TAILBOARD ASSEMBLY (USA)	1
*	057190-002	TAILBOARD ASSEMBLY (UK & IRELAND)	1
8	057347-000	LADDER	1
9	058251-000	LATCH, LADDER	1
10	501886-000	OVERLOAD DEVICE	1
11	056069-016	M16 WASHER	16
12	503101-040	M16 X 40 HEW SCREW	8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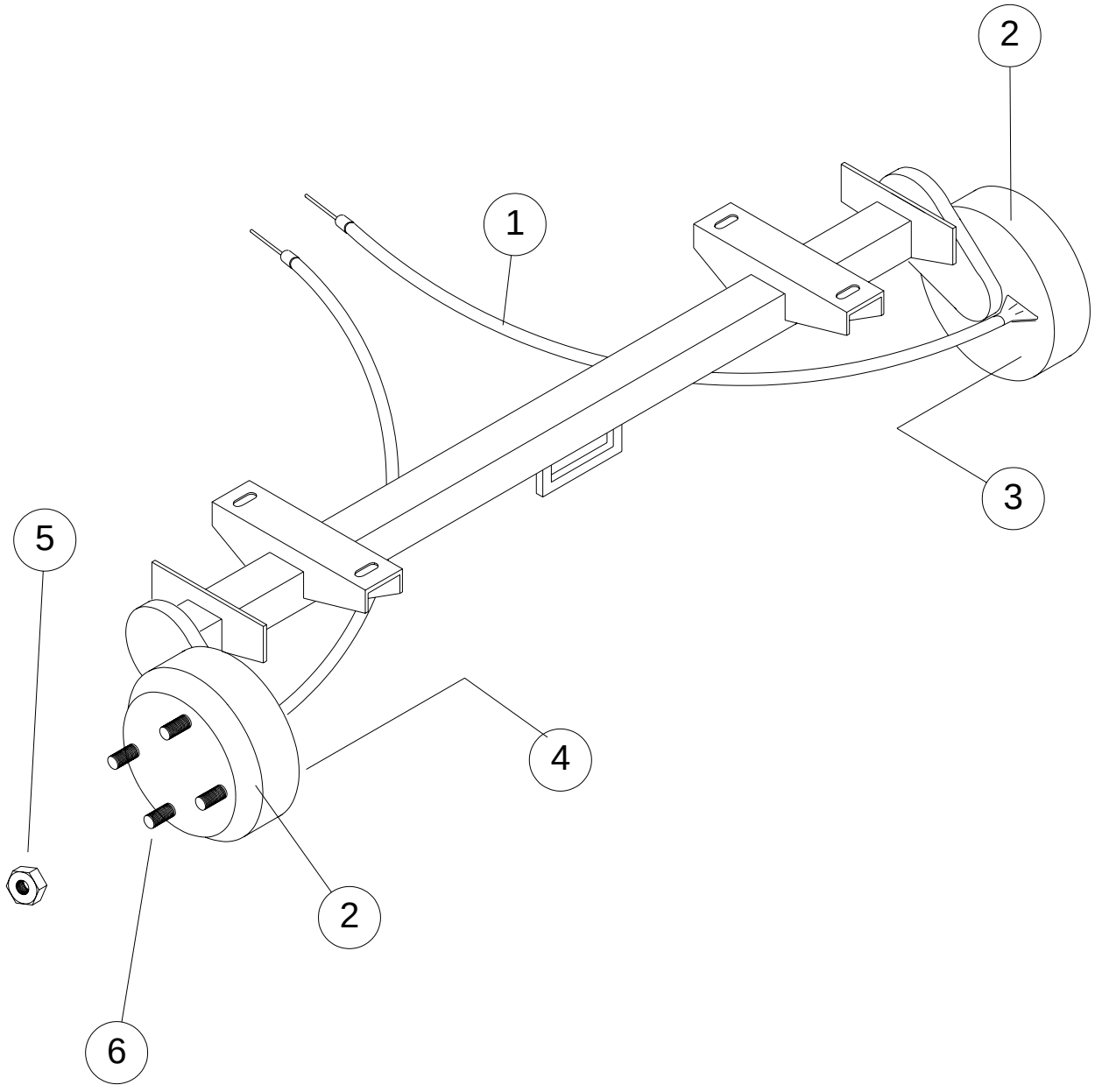
Axle & Brake Hub Assembly

500050-000

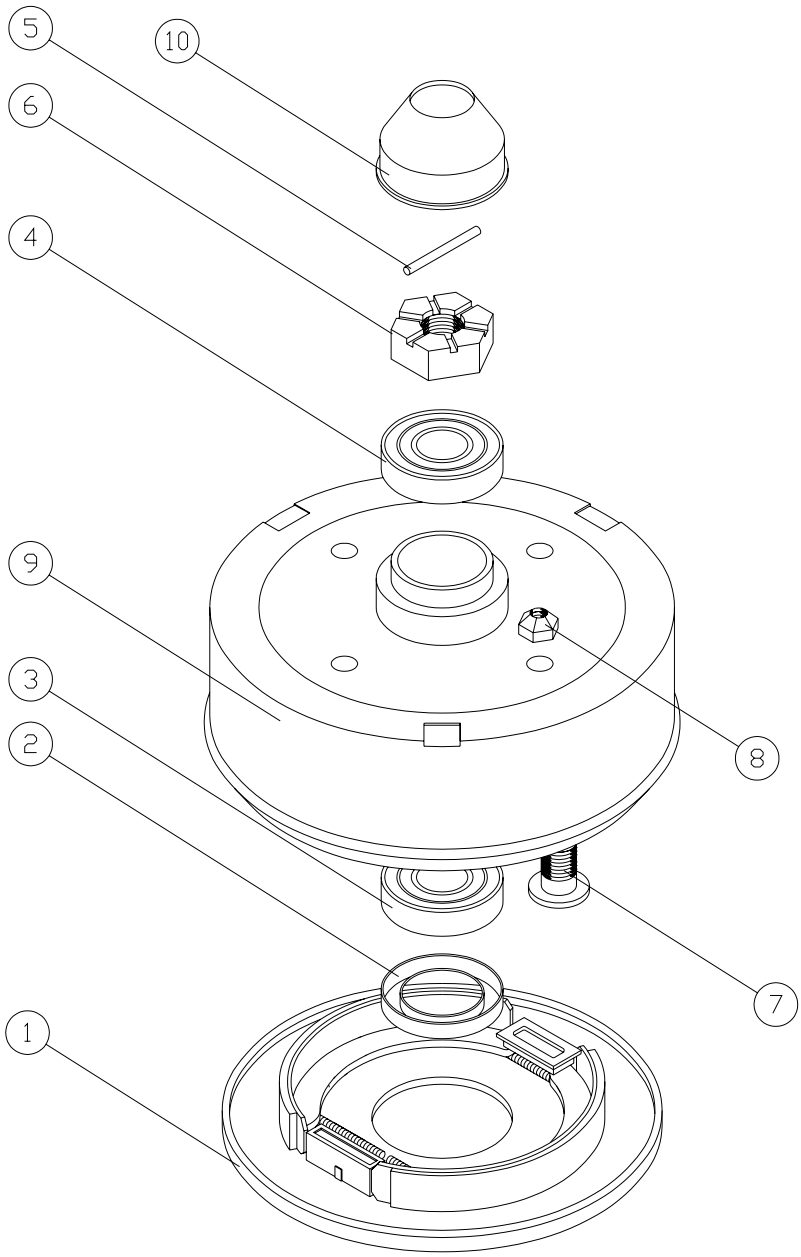
Item	Part	Description	QTY.
1	057077-000	BRAKE CABLE ASSY	2
2	500050-001	WHEEL HUB ASSEMBLY	2
3	500050-004	BRAKE ASSEMBLY, RIGHT HAND	1
4	500050-003	BRAKE ASSEMBLY, LEFT HAND	1
*	500050-006	BRAKE SHOE, STANDARD	1
*	500050-005	BRAKE SHOE, REVERSING	1
5	057474-000	WHEEL NUT M12	8
6	057471-000	WHEEL STUD M12	8



Hub Assembly

500050-001

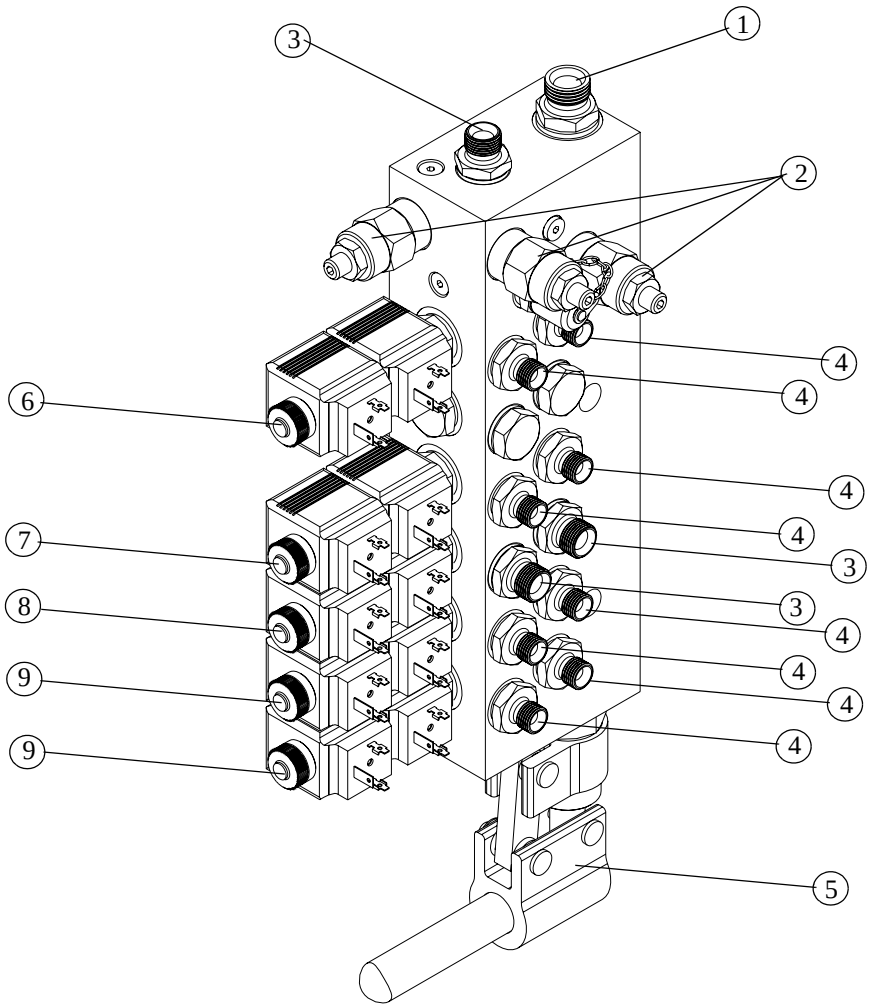
Item	Part	Description	QTY.
1	500050-003	LEFT HAND BRAKE ASSEMBLY	1
*	500050-004	RIGHT HAND BRAKE ASSEMBLY	1
2	058571-000	GREASE SEAL	1
3	057083-000	INNER BEARING	1
4	057084-000	OUTER BEARING	1
5	-	SPLIT PIN	1
6	-	AXLE NUT	1
7	057471-000	WHEEL STUD M12	4
8	057474-000	WHEEL NUT M12	4
9	500050-002	DRUM	1
10	057089-000	HUB CAP	1



Hydraulic Block

500055-000

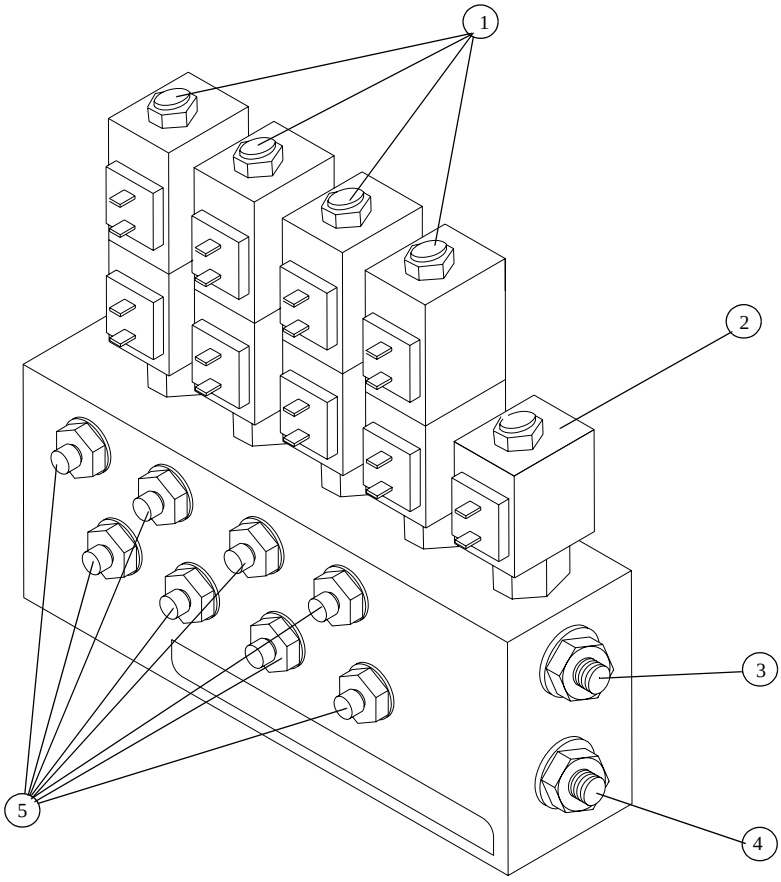
Item	Part	Description	QTY.
1	057377-000	MALE / MALE FITTING 1/2 X 1/2	1
2	058722-000	RELIEF VALVE	3
3	057122-000	MALE / MALE FITTING 3/8 X 3/8	3
4	057121-000	MALE / MALE FITTING 3/8 X 1/4	8
5	500261-002	HANDPUMP	1
6	503351-000	SOLENOID VALVE, SLEW	1
7	503352-000	SOLENOID VALVE, LEVEL	1
8	503535-000	SOLENOID VALVE, TELE	1
9	503354-000	SOLENOID VALVE, LIFT	2



Hydraulic Block (Outrigger)

058180-010

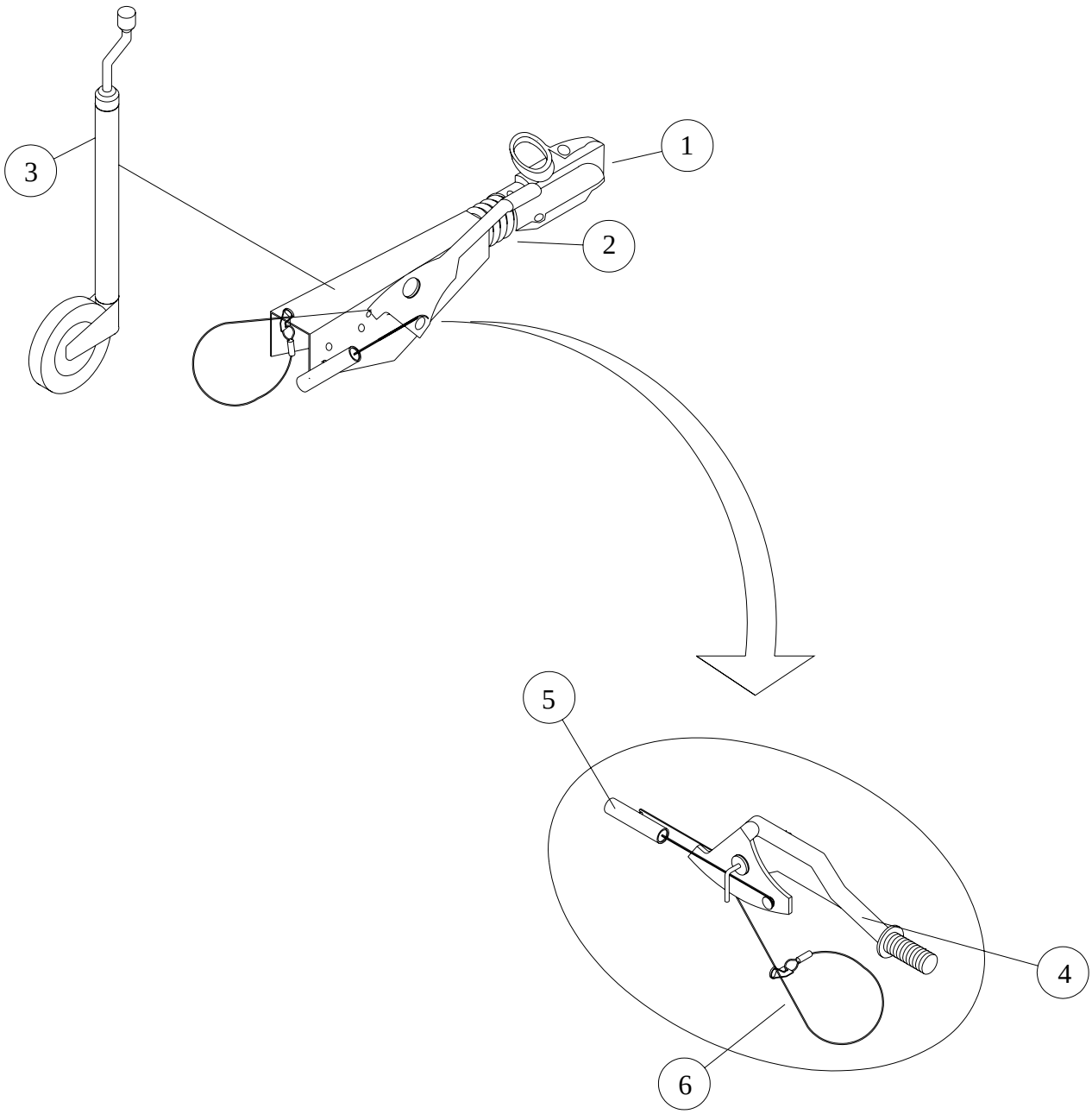
Item	Part	Description	QTY.
1	058723-000	SOLENOID VALVE & COILS	4
2	058180-001	SOLENOID VALVE & COIL	1
3	057123-000	FITTING, MALE MALE (3/8 X 1/2)	1
4	057122-000	FITTING, MALE MALE (3/8 X 3/8)	1
5	057358-000	FITTING, MALE MALE (1/4 X 1/4)	8



Tow Hitch Assembly

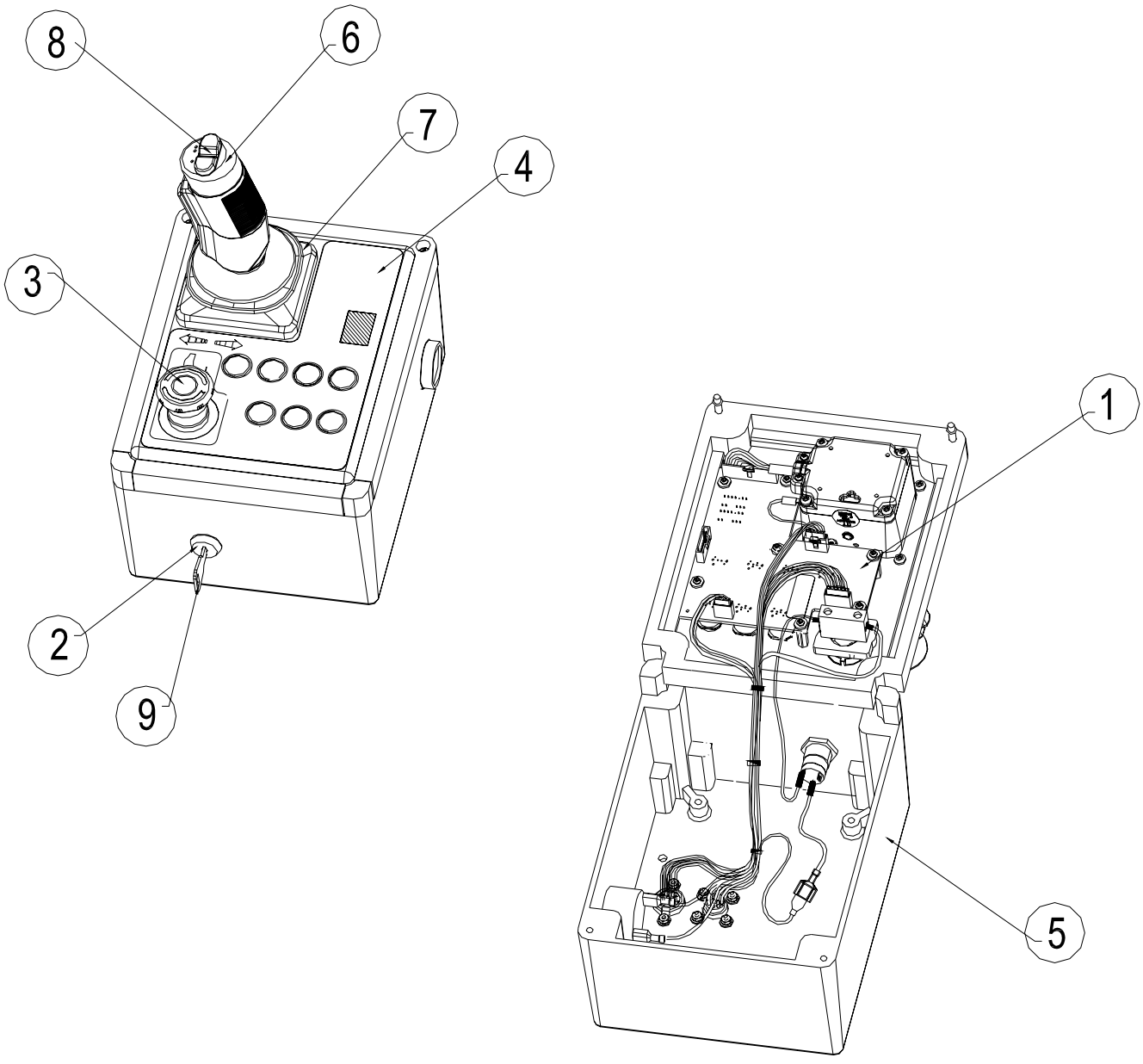
058241-000

Item	Part	Description	QTY.
1	058348-000	COUPLING HEAD, EUROPE	1
*	058349-000	COUPLING HEAD, USA	1
2	058790-000	GAITER	1
3	058242-000	JOCKEY WHEEL (NOT PART OF TOW HITCH ASSEMBLY)	1
4	058787-000	HANDBRAKE ASSEMBLY	1
5	058794-000	SPRING PACK ASSEMBLY	1
6	058746-000	BREAKAWAY SAFETY CABLE	1



Platform Controls Assembly

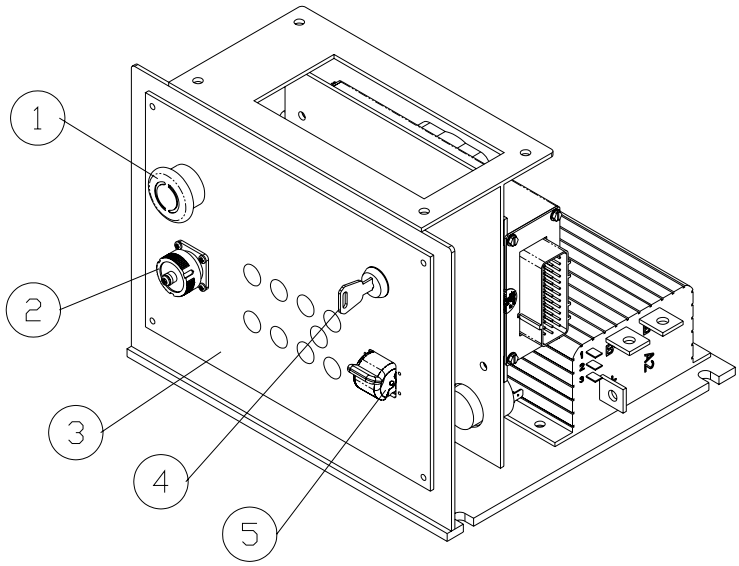
Item	Part	Description	QTY.
1	502453-000	CIRCUIT BOARD	1
2	501866-000	KEY SWITCH	1
3	501867-000	EMERGENCY STOP BUTTON	1
4	-000	DECAL	1
5	501881-000	ENCLOSURE	1
6	501882-000	JOYSTICK	1
7	501882-002	JOYSTICK BOOT	1
8	501882-001	JOYSTICK STEERING BOOT	1
9	501866-001	KEY	1

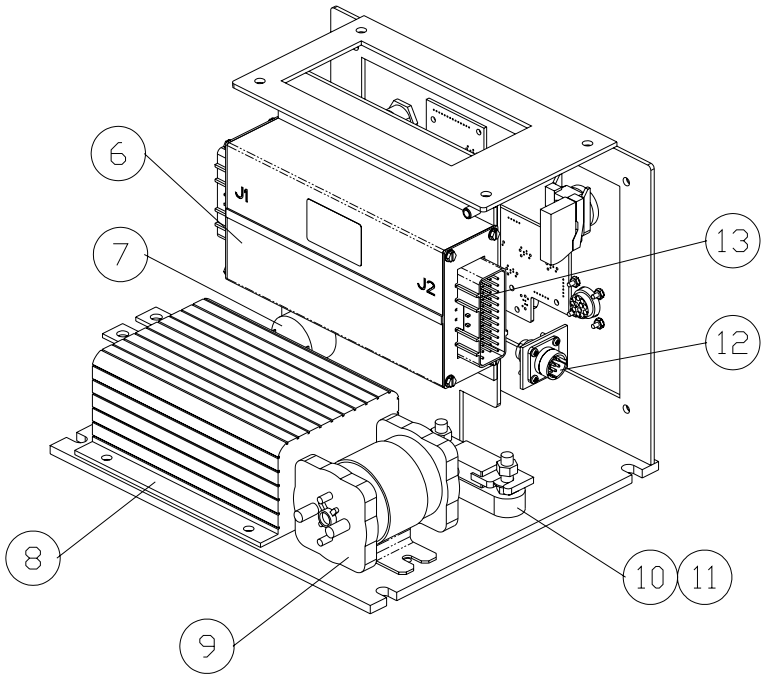


Ground Controls Assembly

502546-000

Item	Part	Description	QTY.
1	057309-000	EMERGENCY STOP BUTTON	1
*	508033-000	CONTACT BLOCK (EM STOP)	1
2	502560-000	SOCKET	1
3	503288-000	DECAL	1
4	501866-000	KEY SWITCH (501866-001 FOR THE KEY ALONE)	1
5	502539-000	ANALOG ROCKER	1
6	502451-000	ECU	1
7	502561-000	ALARM	1
8	502492-000	MOTOR CONTROLLER	1
9	502489-000	LINE CONTACTOR	1
10	501878-000	FUSE	1
11	501877-000	FUSE BLOCK	1
12	502562-000	SOCKET	1
13	502457-000	CIRCUIT BOARD	1

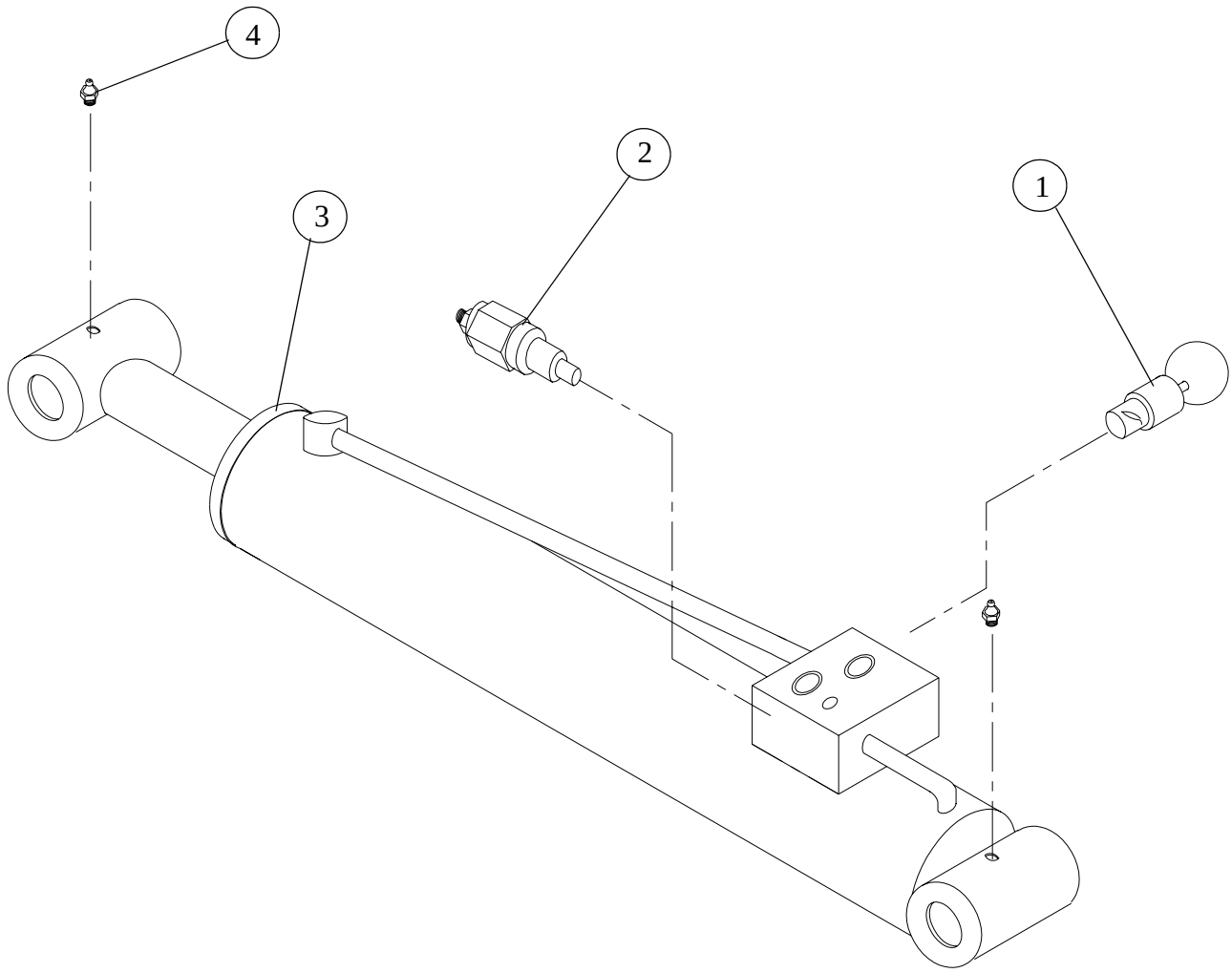




Lower Lift Cylinder Assembly

057104-000

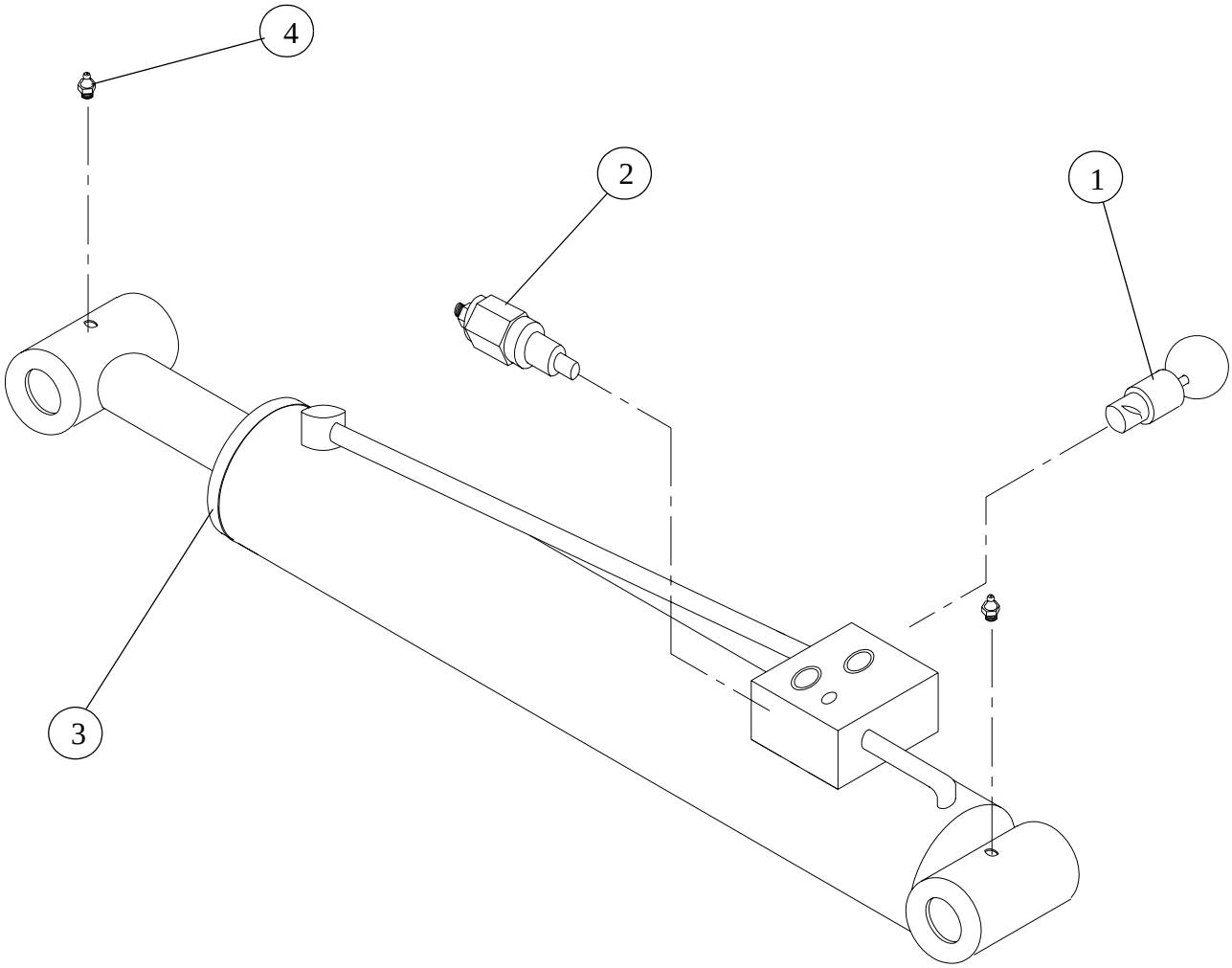
Item	Part	Description	QTY.
1	058887-000	EMERGENCY DOWN VALVE	1
2	058728-000	OVERCENTRE VALVE	1
3	057360-000	SEAL KIT	1
4	058819-000	GREASE NIUPPLE	1



Upper Lift Cylinder Assembly

500056-000

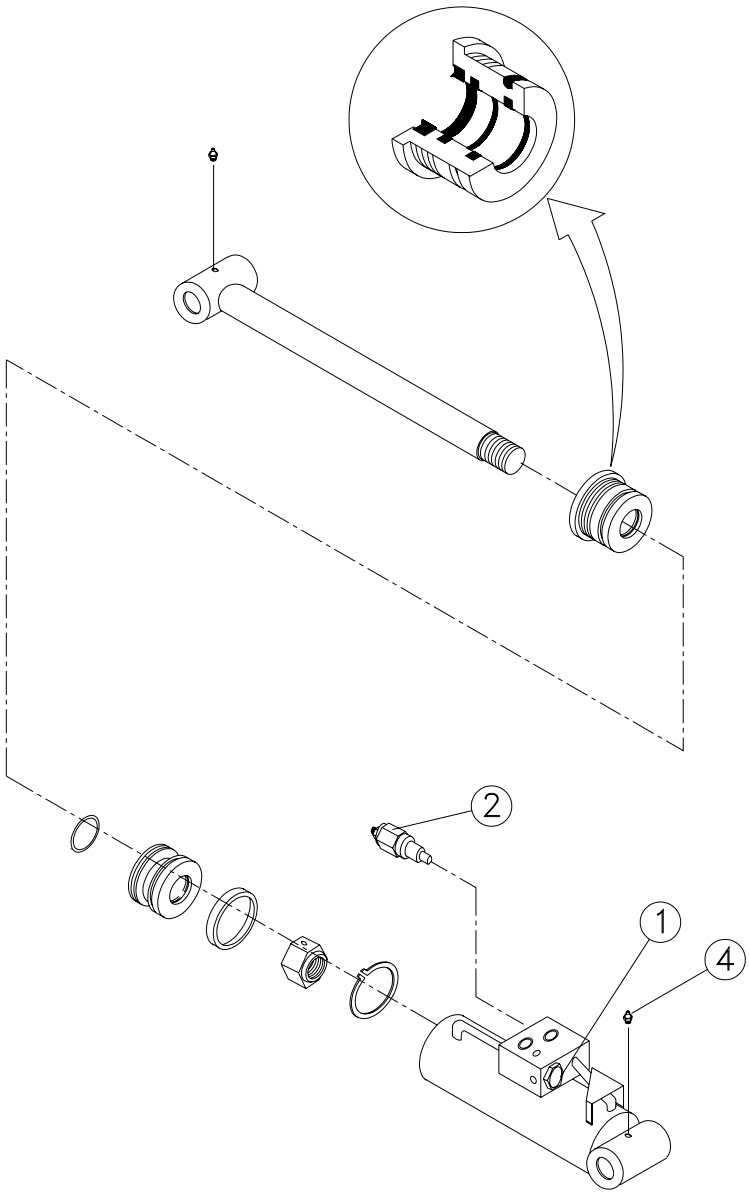
Item	Part	Description	QTY.
1	058887-000	EMERGENCY DOWN VALVE	1
2	058728-000	OVERCENTRE VALVE	1
3	500056-001	SEAL KIT	1
4	058819-000	GREASE NIPPLE	2



Jib Cylinder Assembly

500059-000

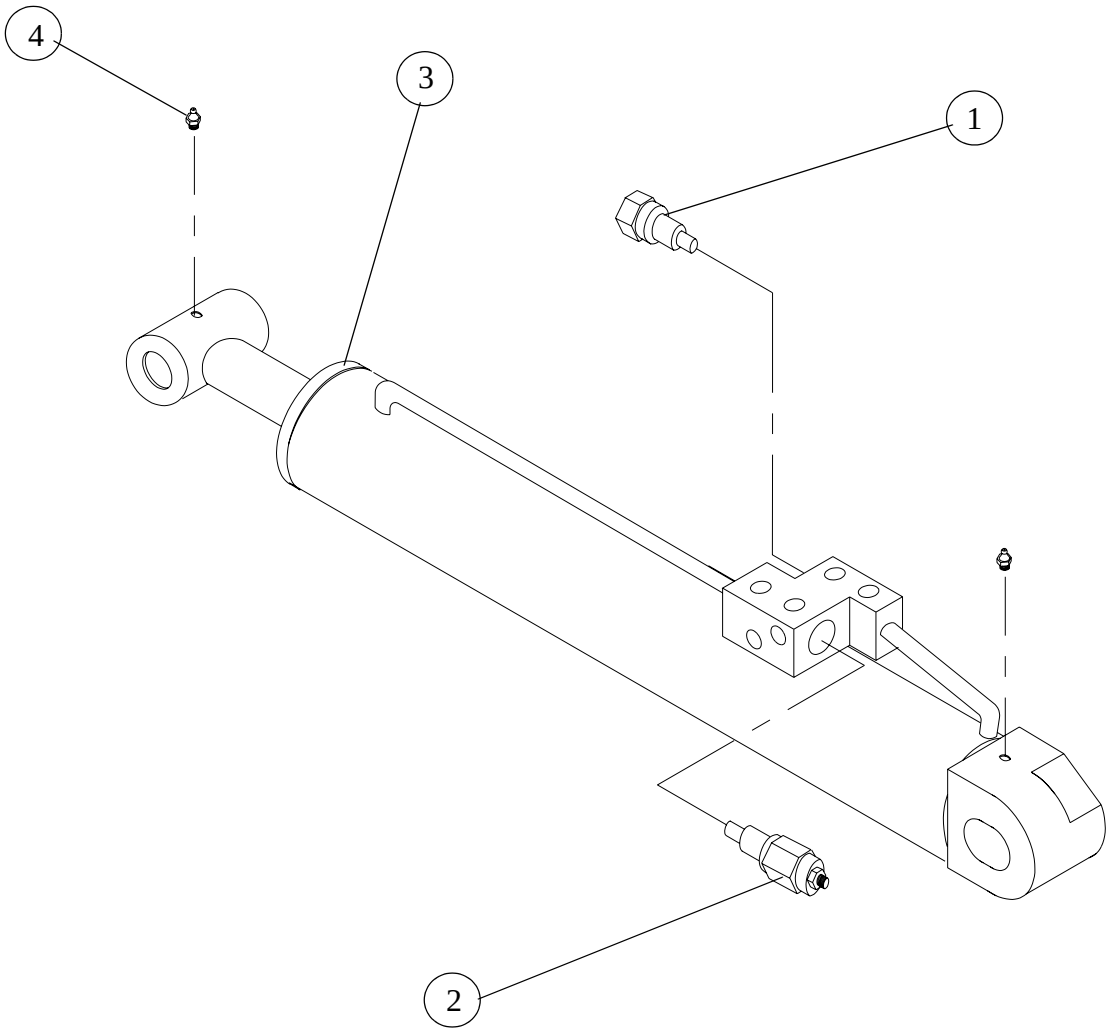
Item	Part	Description	QTY.
1	058925-000	OVERCENTRE VALVE	1
2	058728-000	SINGLE PO CHECK VALVE	1
3	500059-001	SEAL KIT	1
4	058819-000	GREASE NIPPLE	2



Outrigger Cylinder Assembly

500058-000

Item	Part	Description	QTY.
1	058925-000	SINGLE PO CHECK VALVE	1
2	058728-000	OVERCENTRE VALVE	1
	500058-001	SEAL KIT	1
	058819-000	GREASE NIPPLE	2

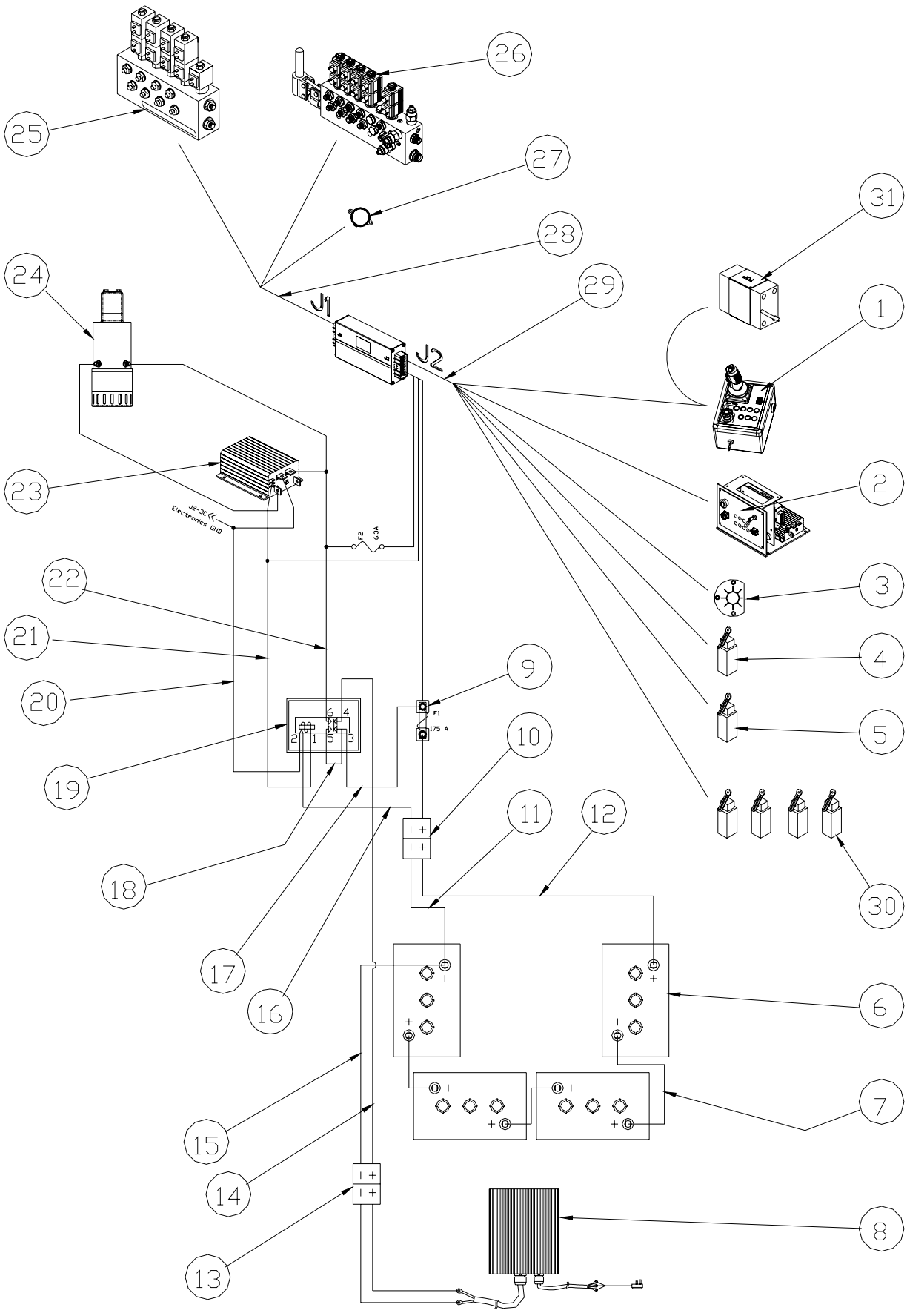


NOTES :

Electrical Assembly

500085-015

Item	Part	Description	QTY.
1	502543-000	UPPER CONTROL BOX	1
2	502546-000	LOWER CONTROL PANEL	1
3	502548-000	TILT SENSOR	1
4	058889-000	LIMIT SWITCH (SLEW INHIBIT)	1
5	058889-000	LIMIT SWITCH (BOOM REST)	1
6	501074-000	BATTERY	4
7	502551-000	HARNESS, BATTERY INTERCONNECT	3
8	503097-000	CHARGER	1
9	501878-000	FUSE	1
10	058937-000	BATTERY DISCONNECT	1
11	502549-000	HARNESS, BATTERY DISCONNECT - BATT (-)	1
12	502550-000	HARNESS, BATTERY DISCONNECT - BATT (+)	1
13	058783-000	CHARGER DISCONNECT	1
14	502552-000	HARNESS, CHARGER DISCONNECT (+) - LINE CON4	1
15	502553-000	HARNESS, CHARGER DISCONNECT (-) - BATT (-)	1
16	502554-000	HARNESS, CHARGER DISCONNECT (-) - LINE CON2	1
17	502555-000	LINE CONTACTOR 3 - FUSE	1
18	502556-000	LINE CONTACTOR 5 - LINE CONTACTOR 3	1
19	502489-000	LINE CONTACTOR	1
20	502557-000	LINE CONTACTOR 2 - MOTOR CONT B-	1
21	502558-000	LINE CONTACTOR 1 - MOTOR CONT ENABLE	1
22	502559-000	LINE CONTACTOR 6 - PUMP MOTOR	1
23	502492-000	MOTOR CONTROLLER	1
24	114071-000	PUMP MOTOR	1
25	058180-010	HYDRAULIC BLOCK (OUTRIGGER)	1
26	503056-001	HYDRAULIC BLOCK (MAIN)	1
27	502547-000	ALARM	1
28	502533-000	HARNESS ASSEMBLY J1	1
29	502534-000	HARNESS ASSEMBLY J2	1
30	500361-000	LIMIT SWITCH (OUTRIGGER)	4
31	501886-000	LOAD CELL	1
*	501883-000	NYE GEL (ANTI CORROSION)	1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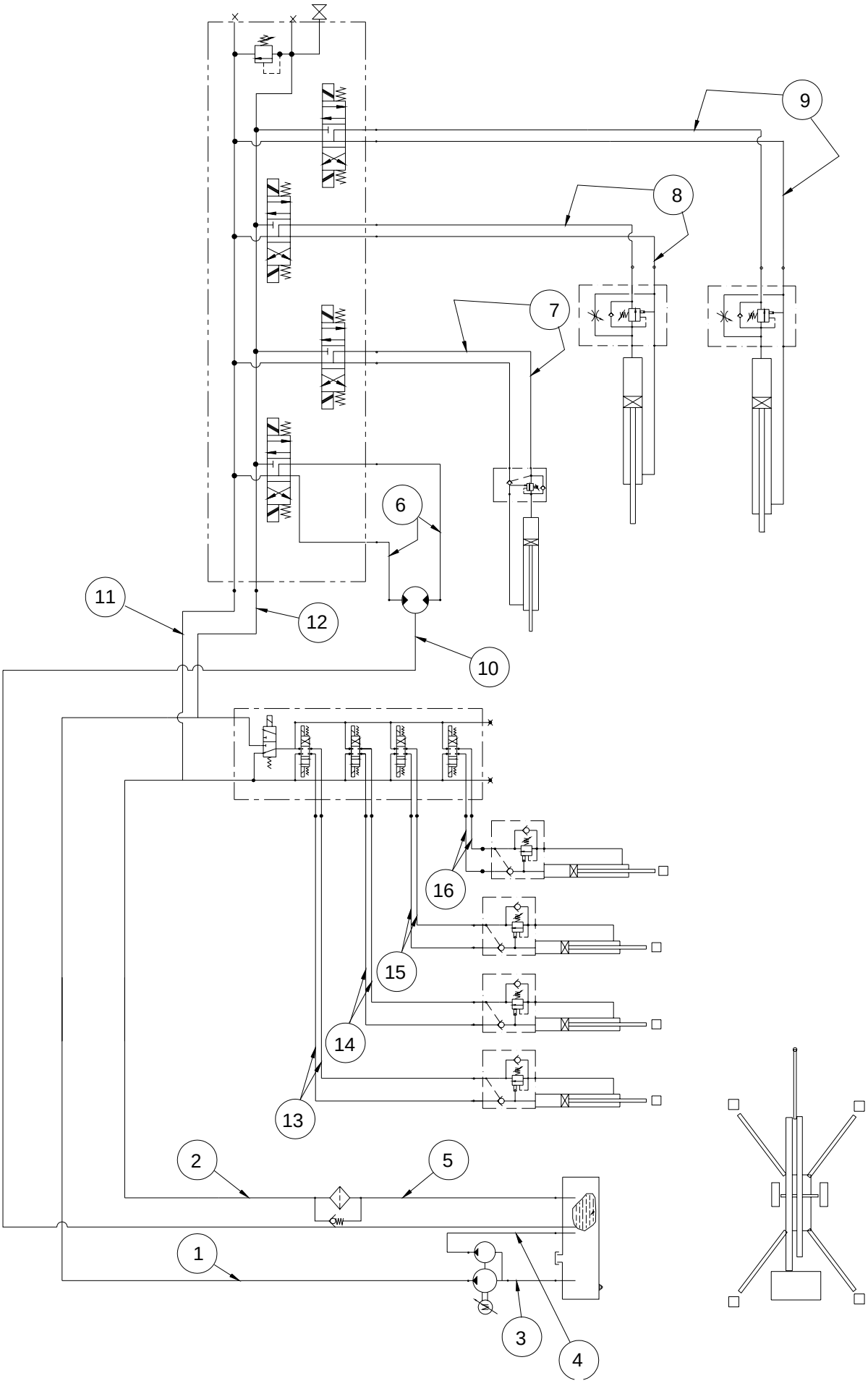
Hydraulic Assembly

500113-000

Item	Part	Description	QTY.
1	500104-000	HOSE ASSY, 3/8” M1T 400mm B90-B90 @ 90º PUMP TO T JUNCTION	1
2	500105-000	HOSE ASSY, 1/2” M1T 85mm B90-B90 @ 180º T JUNCTION TO FILTER	1
3	500106-000	HOSE ASSY, 3/4” M1T 210mm BF-B90 HYDRAULIC TANK TO PUMP	1
4	500107-000	HOSE ASSY, 1/2” M1T 580mm B90-B90 @ 270º RETURN LINE FROM PUMP TO TANK	1
5	500108-000	HOSE ASSY, 1/2”M1T 520mm B90-B90 @ 90º RETURN LINE FROM FILTER TO TANK	1
6	500109-000	HOSE ASSY, 1/4” M1T 750mm B90-BF MAIN MANIFOLD TO SLEW MOTOR	2
7	500110-000	HOSE ASSY, 1/4” M1T 11350mm B90-BANJO MAIN MANIFOLD TO JIB CYLINDER	2
8	500111-000	HOSE ASSY, 1/4” M1T 5350mm B90-B90 MAIN MANIFOLD TO BOOM 2	2
9	500112-000	HOSE ASSY, 1/4” M1T 900mm B90-B90 MAIN MANIFOLD TO BOOM 1	2
10	500121-000	HOSE ASSY, 1/4” M1T 1040mm B90-1/8”BF SLEW MOTOR DRAIN TO TANK	1
11	500114-000	HOSE ASSY, 1/2” M1T 1200mm BF-BF RETURN LINE FROM MAIN MANIFOLD TO T JUNCTION	1
12	500115-000	HOSE ASSY, 3/8” M1T 1100mm BF-BF PUMP-T JUNCTION-MAIN MANIFOLD	1
13	500116-000	HOSE ASSY, 1/4” M1T 2080mm BF- BANJO OUTRIGGER MANIFOLD TO O.R. F.R.	2
14	500117-000	HOSE ASSY, 1/4” M1T 1530mm BF-BANJO OUTRIGGER MANIFOLD TO O.R. F.L.	2
15	500118-000	HOSE ASSY, 1/4” M1T 2080mm BF-BANJO OUTRIGGER MANIFOLD TO O.R. R.R.	2
16	500119-000	HOSE ASSY, 1/4” M1T 1480mm BF-BANJO OUTRIGGER MANIFOLD TO O.R. R.L.	2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Tailboard Assembly

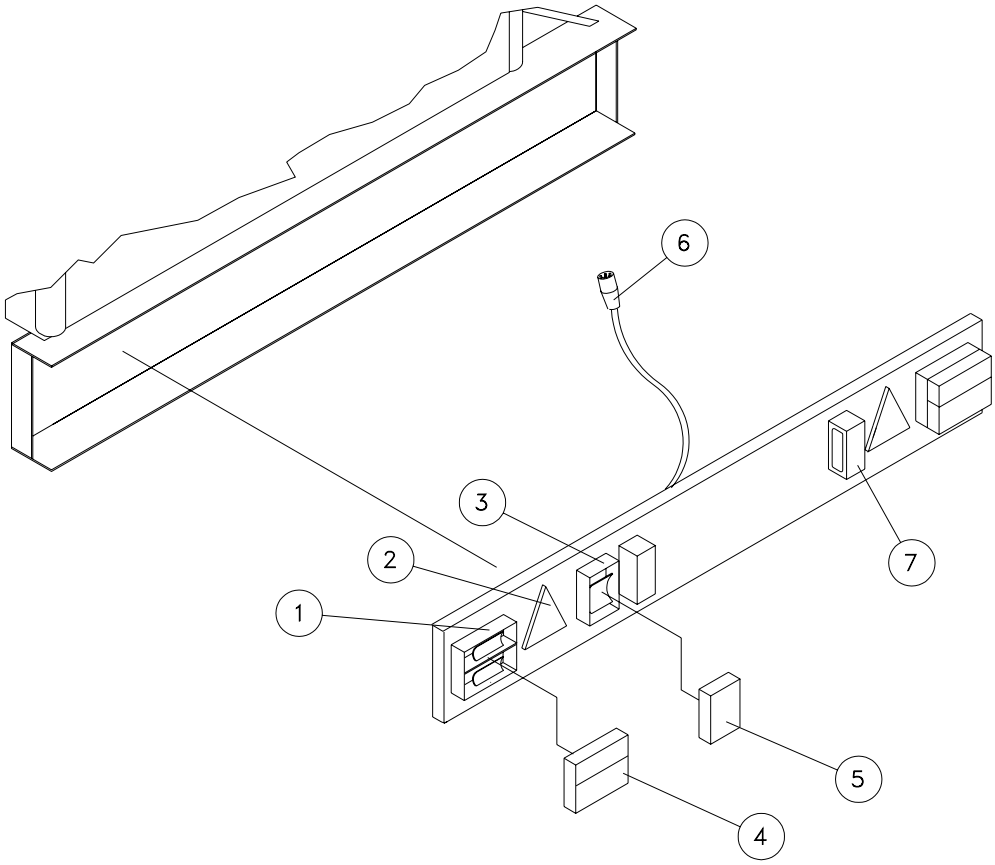
057190-000 (CE Version)

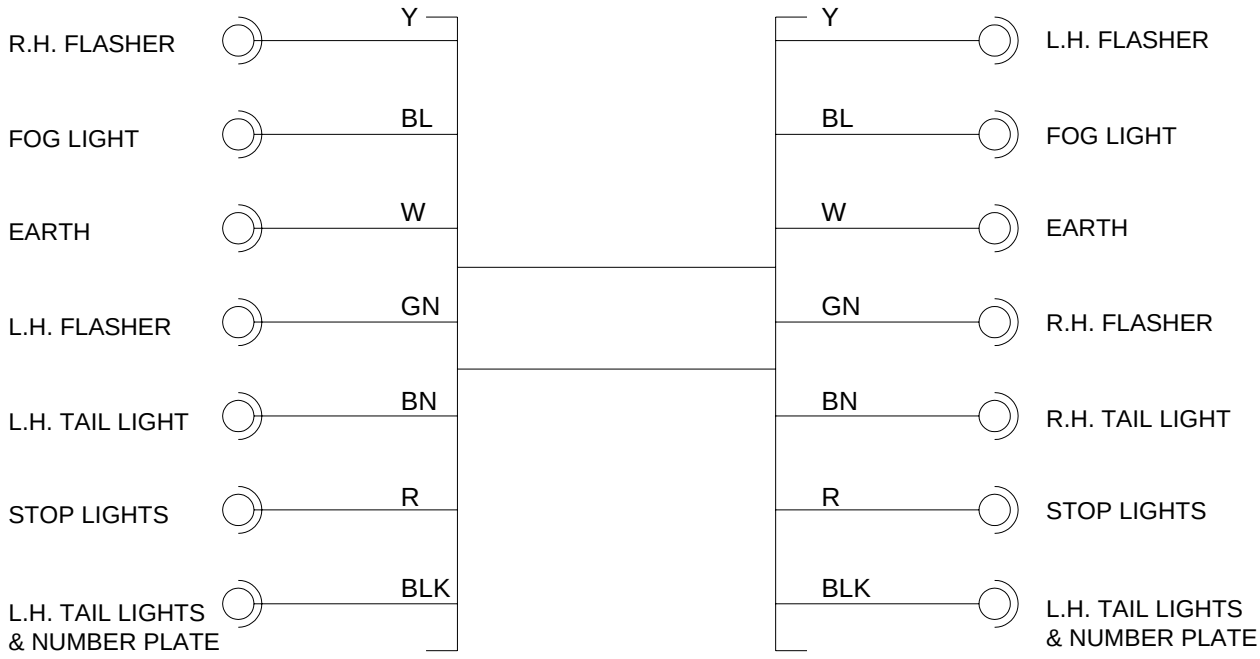
Item	Part	Description	QTY.
1	058260-000	BRAKE INDICATOR ASSY COMPLETE	2
2	058739-000	REFLECTOR	2
3	058738-000	FOG LIGHT ASSY COMPLETE	1
4	058261-000	BRAKE / INDICATOR LENS	2
5	057327-000	FOG LIGHT LENS	1
6	057334-000	7 PIN PLUG	1
*	057335-000	7 PIN SOCKET	1
7	058262-000	NUMBER PLATE LIGHT ASSY	2

Tailboard Assembly

057190-001 (ANSI Version)

Item	Part	Description	QTY.
1	058260-000	BRAKE INDICATOR ASSY COMPLETE	2
2	058739-000	REFLECTOR	2
3	-	-	-
4	058261-000	BRAKE / INDICATOR LENS	-
5	-	-	
6	057334-000	7 PIN PLUG	1
*	057335-000	7 PIN SOCKET	1
7	058262-000	NUMBER PLATE LIGHT ASSY	2


6
3
2
1
7
5
4


R.H. FLASHER
Y
FOG LIGHT
BL
EARTH
W
L.H. FLASHER
GN
L.H. TAIL LIGHT
BN
STOP LIGHTS
R
L.H. TAIL LIGHTS
& NUMBER PLATE
BLK
Y
L.H. FLASHER
BL
FOG LIGHT
W
EARTH
GN
R.H. FLASHER
BN
R.H. TAIL LIGHT
R
STOP LIGHTS
BLK
L.H. TAIL LIGHTS
& NUMBER PLATE

Decal Assembly

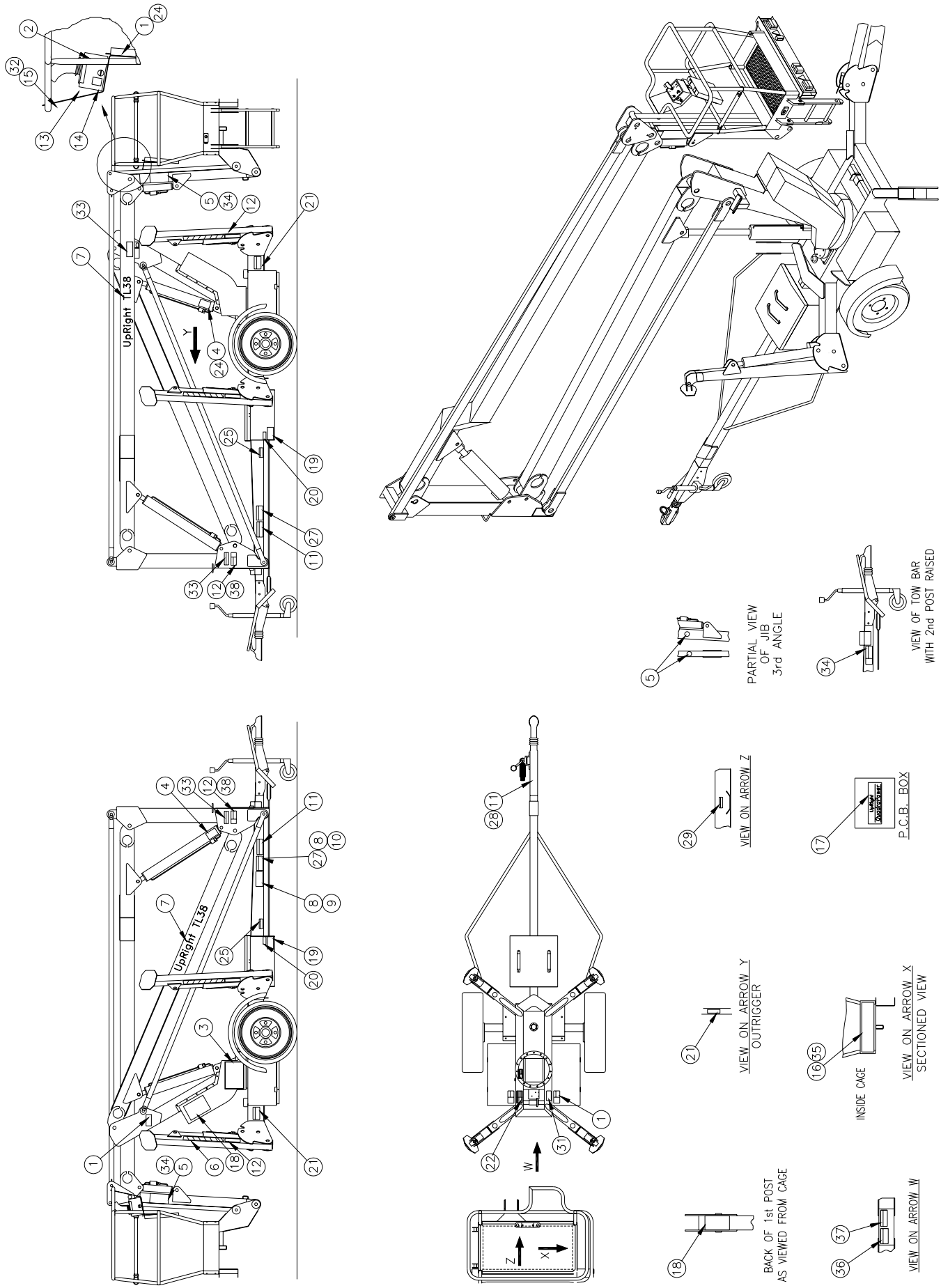
American English ANSI - 500391-000

Item	Part	Description	QTY.
1	057421-000	DECAL - ELECTROCUTION HAZARD	2
2	057420-000	DECAL - TIP OVER HAZARD	1
3	058608-000	DECAL - LOWER CONTROL BOX	1
4	057382-000	DECAL - EMERGENCY LOWERING	2
5	-	-	-
6	057385-000	HAZARD TAPE (900mm LONG)	8
7	058609-000	DECAL - 'UPRIGHT' LOGO	2
8	057339-001	PLASTIC PUSH RIVET	1
9	-	-	-
10	-	-	-
11	057416-000	DECAL - BEFORE TOWING	2
12	057418-000	DECAL - LOCK OUTRIGGER TOWING	4
13	058607-000	DECAL - UPPER CONTROL BOX	1
14	058186-000	DECAL - ON/OFF UPPER CONTROL	1
15	-	-	-
16	-	-	-
17	057387-000	DECAL - UPPER QUADRAPOWER	1
18	058760-000	DECAL - MAIN INSTRUCTIONS	2
19	057430-000	DECAL - EXPLOSION HAZARD	2
20	057429-000	DECAL - BATTERY FLUID LEVEL	2
21	057417-000	DECAL - TIP OVER HAZARD	4
22	057507-010	DECAL - ARROW	2
23	058992-000	DECAL - BOOM LOCK PIN	1
24	057425-001	DECAL - SAFETY INSTR. ENCLOSED	1
25	057433-000	DECAL - FORKLIFT DAMAGE	2
26	057463-000	U.S. NAME PLATE	1
27	057427-000	DECAL - LOSS OF CONTROL	2
28	057431-000	DECAL - PERSONAL INJURY	1
29	057426-000	DECAL - SAFETY HARNESS	1
30	-	-	-
31	057428-000	DECAL - ANSI A92.2-1990	1
32	058538-001	DECAL - U.S. SAFETY HAZARD	1
33	057432-000	DECAL - STRUCTURAL DAMAGE	2
34	057424-000	DECAL - CRUSH HAZARD	4
35	058761-000	DECAL - S.W.L. LARGE ANSI	1
36	057434-000	DECAL - GENUINE REPLACEMENTS	1
37	057435-000	DECAL - FALL HAZARD	1
38	057422-000	DECAL - COLLISION HAZARD-BOOM	2

Decal Assembly

English CE - 500391-003

Item	Part	Description	QTY.
1	057421-000	DECAL - ELECTROCUTION HAZARD	2
2	057420-000	DECAL - TIP OVER HAZARD	1
3	058608-000	DECAL - LOWER CONTROL BOX	1
4	057382-000	DECAL - EMERGENCY LOWERING	2
5	058860-000	DECAL - HAND HAZARD	3
6	057385-000	HAZARD TAPE (900mm LONG)	8
7	058609-000	DECAL - 'UPRIGHT' LOGO	2
8	057339-001	PLASTIC PUSH RIVET	1
9	058838-000	EU NAME PLATE	1
10	058836-000	VIN PLATE	1
11	057416-000	DECAL - BEFORE TOWING	2
12	057418-000	DECAL - LOCK OUTRIGGER TOWING	4
13	058607-000	DECAL - UPPER CONTROL BOX	1
14	058186-000	DECAL - ON/OFF UPPER CONTROL	1
15	058016-000	DECAL - MACHINE GENERAL INSTRUC	
16	057392-000	DECAL - SWL LARGE	
17	057387-000	DECAL - UPPER QUADRAPOWER	1
18	-	-	-
19	057430-000	DECAL - EXPLOSION HAZARD	2
20	057429-000	DECAL - BATTERY FLUID LEVEL	2
21	057417-000	DECAL - TIP OVER HAZARD	4
22	057507-010	DECAL - ARROW	2
23	058992-000	DECAL - BOOM LOCK PIN	1


UpRight TL38
Y
W
Z
X
PARTIAL VIEW OF JIB 3rd ANGLE
VIEW OF TOW BAR WITH 2nd POST RAISED
VIEW ON ARROW Z
P.C.B. BOX
VIEW ON ARROW Y OUTRIGGER
INSIDE CAGE
VIEW ON ARROW X SECTIONED VIEW
BACK OF 1st POST AS VIEWED FROM CAGE
VIEW ON ARROW W

Decal Assembly

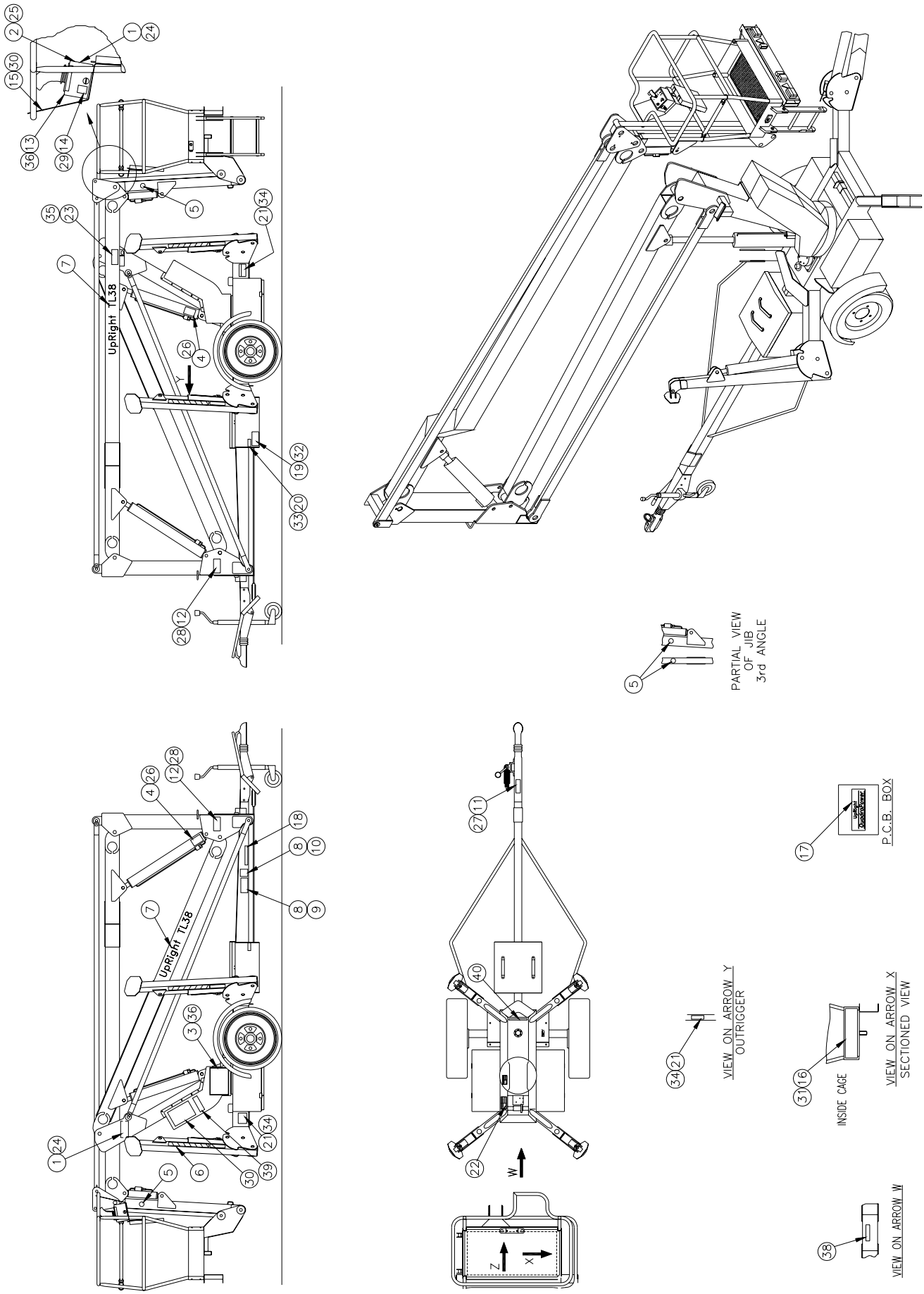
French CE - 500391-001

Item	Part	Description	QTY.
1	057507-016	DECAL - MACHINE NOT INSULATED	2
2	057507-018	DECAL - ACTION ON ALARM	2
3	058608-000	DECAL - LOWER CONTROL BOX	1
4	057382-001	DECAL - EMERGENCY LOWERING	2
5	058860-000	DECAL - HAND HAZARD	3
6	057385-000	HAZARD TAPE (900mm LONG)	8
7	058609-000	DECAL - 'UPRIGHT LOGO'	2
8	057339-001	DECAL - PLASTIC PUSH RIVET	2
9	058838-000	E.U. NAMEPLATE	1
10	058836-000	V.I.N. PLATE	1
11	057507-017	DECAL - BEFORE TOWING	1
12	057507-020	DECAL - LOCK OUTRIGGER	2
13	058607-000	DECAL - UPPER CONTROL BOX	1
14	058186-001	DECAL - ON/OFF UPPER CONTROLS	1
15	058016-001	DECAL - MACHINE GENERAL INSTR.	1
16	057392-001	DECAL - S.W.L. LARGE	1
17	057387-000	DECAL - UPPER QUADRAPOWER	1
18	-	-	-
19	057430-001	DECAL - EXPLOSION HAZARD	2
20	057429-001	DECAL - BATTERY FLUID LEVEL	2
21	058017-001	DECAL - LOWERING OUTRIGGER	4
22	057507-010	DECAL - ARROW	2
23	058992-001	DECAL - BOOM LOCK PIN	1

Decal Assembly

German CE - 500391-0032

Item	Part	Description	QTY.
1	-	-	-
2	-	-	-
3	058608-000	DECAL - LOWER CONTROL BOX	1
4	-	-	-
5	058860-000	DECAL - HAND HAZARD	3
6	057385-000	HAZARD TAPE (900mm LONG)	8
7	058609-000	DECAL - 'UPRIGHT LOGO'	2
8	057339-001	DECAL - PLASTIC PUSH RIVET	2
9	058838-000	E.U. NAMEPLATE	1
10	058836-000	V.I.N. PLATE	1
11	-	-	-
12	-	-	-
13	058607-000	DECAL - UPPER CONTROL BOX	1
14	-	-	-
15	-	-	-
16	-	-	-
17	057387-000	DECAL - UPPER QUADRAPOWER	1
18	057507-005	DECAL - UNIT WEIGHT 1500KG	1
19	-	-	-
20	-	-	-
21	-	-	-
22	057507-010	DECAL - ARROW	2
23	-	-	-
24	057507-027	DECAL - MACHINE NOT INSULATED	2
25	057420-002	DECAL - ACTION ON ALARM	2
26	057507-002	DECAL - EMERGENCY LOWERING	2
27	057416-002	DECAL - BEFORE TOWING	1
28	057418-002	DECAL - STOW OUTRIGGERS	2
29	058186-002	DECAL - ON/OFF UPPER CONTROLS	1
30	057507-025	DECAL - MACHINE GENERAL INSTR	2
31	057507-031	DECAL - S.W.L. LARGE	1
32	057507-026	DECAL - EXPLOSION HAZARD	2
33	057507-024	DECAL - BATTERY FLUID LEVEL	2
34	057417-012	DECAL - OUTRIGGER LOWERED	4
35	058992-002	DECAL - BOOM LOCK PIN	1
36	057507-001	DECAL - EMERGENCY STOP	2
37	057507-007	DECAL - MAX SIDE LOAD	1
38	057507-021	DECAL - BUBBLE LEVEL	1
39	057507-022	DECAL - BEFORE MAINTENANCE	1
40	057507-023	DECAL - HYDRAULIC OIL	1


UpRight TL38
Y
PARTIAL VIEW OF JIB 3rd ANGLE
P.C.B. BOX
VIEW ON ARROW Y OUTRIGGER
INSIDE CAGE
VIEW ON ARROW X SECTIONED VIEW
VIEW ON ARROW W
W
Z
X

NOTES :

Local Distributor:

Lokaler Vertiebshändler:

Distributeur local:

El Distribuidor local:

Il Distributore locale:

USA

TEL: +1 (559) 443 6600
FAX: +1 (559) 268 2433

UpRight
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www.upright.com

Europe

TEL: +44 (0) 845 1550 058
FAX: +44 (0) 195 2299 948

PN - 500314-002