

Service & Parts Manual

XRT27E & XRT33E

European Model

Serial Numbers 1000 - Current

P/N 066863-020

UpRight

SERVICE & PARTS MANUAL

XRT27E & XRT33E

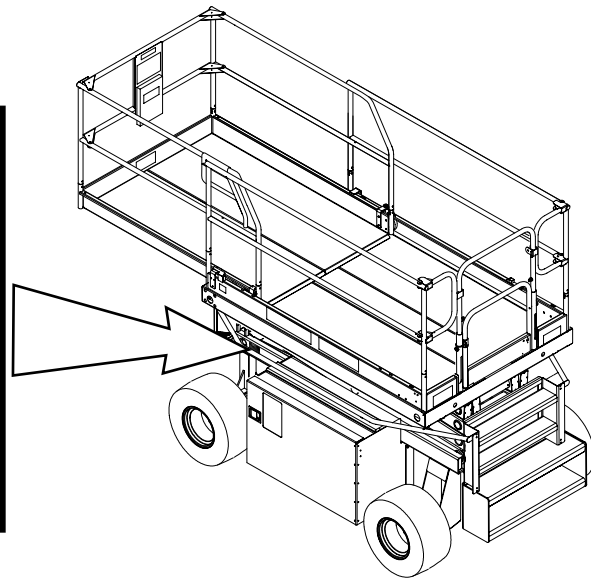
Aerial Work Platform

Serial Numbers 1000 - Current

When contacting UpRight for service or parts information, be sure to include the MODEL and SERIAL NUMBERS from the equipment nameplate. Should the nameplate be missing, the SERIAL NUMBER is also stamped on top of the chassis above the front axle pivot.

• **CE** **UpRight Inc.**
1775 PARK ST. SELMA CALIFORNIA 93662 USA

Model: _____ Serial number: _____
Machine weight _____ kg **Mfg. date:** _____
Maximum wheel load _____ kg
Maximum allowable incline of machine when elevated: _____ deg.
Occupants and equipment must not exceed the rated maximum
load: _____ kg Maximum platform occupants: _____
Maximum allowable side force on platform: _____ N
Maximum platform height: _____ m
Maximum platform reach: _____ m
Maximum allowable wind speed: _____ m/s = Beaufort scale _____
Maximum hydraulic system pressure: _____ bar
Maximum system voltage: _____ V
This machine is manufactured to comply with
Machinery directive 89-392/CEE
• CAUTION: CONSULT OPERATOR'S MANUAL BEFORE USE. •



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FOREWORD

HOW TO USE THIS MANUAL

This manual is divided into 6 sections.

SECTION 1 INTRODUCTION

General description.

SECTION 2 OPERATION AND SPECIFICATIONS

Information on how to operate the work platform, and machine specifications.

SECTION 3 MAINTENANCE

Preventative maintenance and service information.

SECTION 4 TROUBLESHOOTING

Causes and solutions to typical problems.

SECTION 5 SCHEMATICS

Electric and hydraulic schematics

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, Inc., might be done, or of the possible hazardous consequences of each conceivable way, nor could UpRight, Inc. investigate all such ways. Anyone using service procedures or tools, whether or not recommended by UpRight, Inc., must satisfy themselves thoroughly that neither personal safety nor machine safety will be jeopardized.

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INTRODUCTION

1.1 INTRODUCTION

PURPOSE

The purpose of this service and parts manual is to provide instructions and illustrations for the operation and maintenance of the XRT Electric Work Platform manufactured by UpRight, Inc. of Selma, California.

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 XRT Electric Work Platform consists of the platform, controller, elevating assembly, power module, control module, and chassis.

PLATFORM

The platform has a reinforced steel floor, 1.11 m (44 inch) high guardrails with midrail, 152 mm (6 inch) toe-boards, and an entrance gate at the rear of the platform. The guardrails can be folded down for access through doors or for shipment.

W A R N I N G

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

UPPER CONTROLLER

The Upper Controller contains the controls to operate the machine. It should be hung on the front, left, or right guardrail, but may be hand held if necessary. To operate the machine, the interlock lever must be depressed to operate any function. A complete explanation of control functions can be found in Section 2.

ELEVATING ASSEMBLY

The platform is raised and lowered by the elevating assembly:

XRT27E: a four section scissor assembly powered by one (1) single stage lift cylinder

XRT33E: a five section scissor assembly powered by two (2) single stage lift cylinders.

The hydraulic power unit powers the cylinder(s). Solenoid operated valves control raising and lowering.

POWER MODULE

The power module contains:

- Four (4) Batteries.
- Battery Charger.
- Valve Block Assembly.
- Hydraulic Power Unit (including Hydraulic Oil Reservoir).
- Hydraulic Oil Filter.
- 48 Volt Relay.
- Accumulator Valve.

CONTROL MODULE

The control module contains:

- Four (4) Batteries.
- Lower Controller Assembly.
- Level Sensor.
- Relay Panel Assembly (Mos90).
- Alarms.

A complete explanation of the chassis control functions is found in Section 2.

CHASSIS

The chassis is a structural frame that supports all the components of the XRT Electric Work Platform.

PURPOSE OF EQUIPMENT

The objective of the XRT Electric Work Platform is to provide a quickly deployable, self-propelled, variable height work platform to elevate personnel and materials to overhead work areas. This machine can be driven over rough terrain.

SPECIAL LIMITATIONS

Travel with the platform elevated is limited to a creep speed range.

Elevating of the work platform is limited to firm, level surfaces only. Any degree of slope greater than 3° will lock out the elevating circuits and sound a warning alarm.



The elevating function shall ONLY be used when the work platform is level and on a firm surface. The work platform is NOT intended to be driven over uneven, rough or soft terrain when elevated.

OPTIONS

Options available for the XRT Electric Work Platform are:

- Air Line to Platform.
- Flashing Amber Beacon.
- All Motion Alarm.
- Removable Controller.
- 350 Ah Batteries
- Solid Non-marking Tires.
- G78 15 10 ply Poly Filled Street Tires.

Electrocution Hazard**Tip Over Hazard**

NEVER elevate the platform or drive the machine with the platform elevated unless on 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 the platform guardrails or midrail.

OPERATION AND SPECIFICATIONS

WARNING

All personnel shall carefully read, understand and follow all safety rules, operating instructions, and National Safety Instructions/Requirements before operating or performing maintenance on any UpRight Aerial Work Platform.

Safety Rules

USE OF THE AERIAL WORK PLATFORM: This aerial work platform is intended to lift persons and their 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 on the platform **is prohibited!**

XRT27E 567 kg (1,250 lbs.) including four (4) persons

XRT33E 454 kg (1,000 lbs.) including three (3) persons

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 400 N (90 lbs.) of side force.

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 the machine only on surfaces capable of supporting wheel loads.

NEVER operate the machine when wind speeds exceed 45 km/h (28 mph) (12,5 m/sec.= Beaufort scale 6).

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

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

It is prohibited to keep the swing gate 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 the machine while the platform is elevated without supporting the 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.

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

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 of UpRight.

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

2.1 INTRODUCTION

This manual covers the XRT Self-Propelled Electric Work Platforms. This machine operates on a 48 volt battery powered system. **This manual must be stored on the machine at all times.**

2.2 PRE-OPERATION AND SAFETY INSPECTION

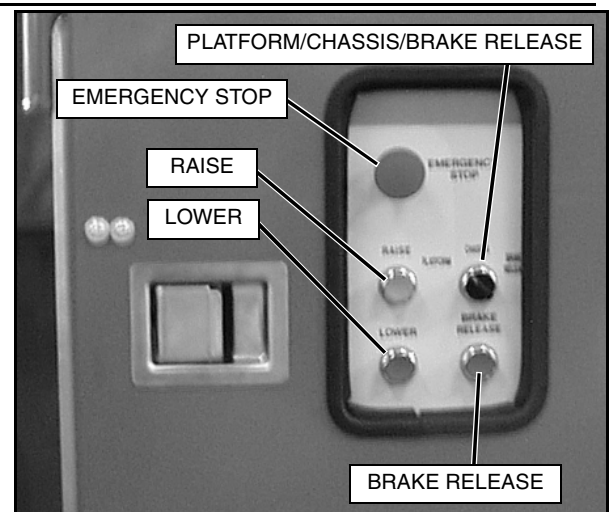
Carefully read, understand and follow all safety rules, operating instructions, labels, and the Scaffold Industry Association's MANUAL OF RESPONSIBILITIES. Perform the following steps each day before use.

1. Open module covers and inspect for damage, oil leaks or missing parts.
2. Check the hydraulic oil level sight gauge on the hydraulic tank with the platform fully lowered. Add hydraulic oil if necessary.
3. Check that fluid level in the batteries is correct (see "Battery Maintenance" on Page 2-12).
4. Check that all guardrails are in place with all fasteners properly tightened.
5. Check that the slide-out deck extension is secured with the pin.
6. Check tires for damage.
7. Inspect the machine thoroughly for cracked welds, loose or missing hardware, hydraulic leaks, damaged control cable, loose wire connections and wheel bolts.
8. Close and secure module covers.
9. Move the machine, if necessary, to an unobstructed area to allow for full elevation.
10. Pull the Chassis Emergency Stop Switch to the ON position.
11. Pull the Platform Emergency Stop Switch to the ON position.

CHASSIS CONTROLS

Figure 2-1: Chassis Controls

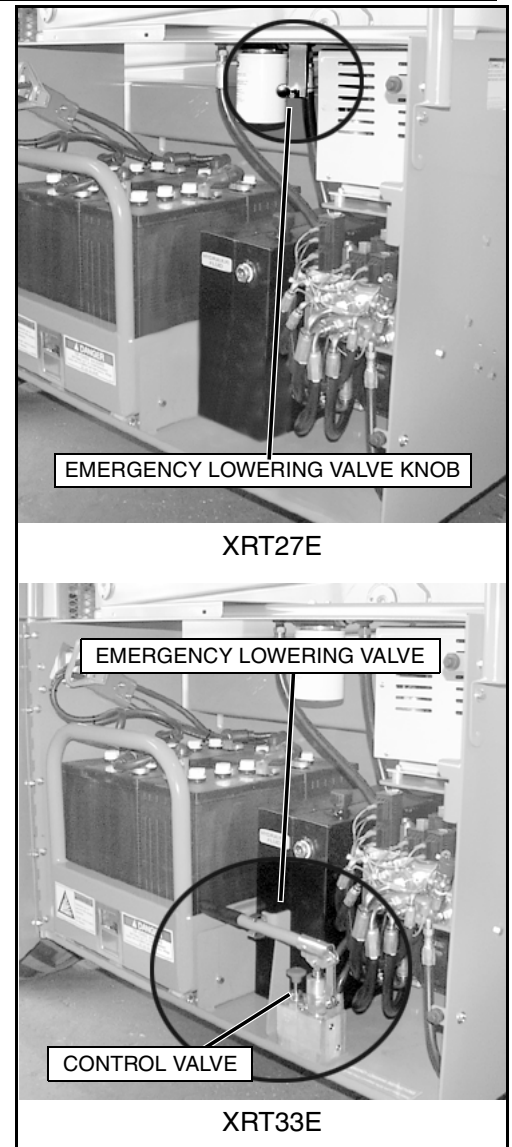
12. Turn the Platform Controls Key Switch clockwise to ON.
13. Turn the Platform/Chassis/Brake Release Switch to CHASSIS.
14. Push the Chassis Controls RAISE button to elevate the platform until the Scissor Brace can be rotated to the vertical position. Block the elevating assembly as described on Page 2-11.
15. Visually inspect the elevating assembly, lift cylinder, cables and hoses for damage or erratic operation. Check for missing or loose parts.
16. Remove the Scissor Brace as described on Page 2-11.
17. Push the Chassis Controls RAISE button to fully elevate the platform.
18. Lower the platform partially by pushing in on the Chassis Controls LOWER button, and check operation of the audible lowering alarm.
19. Push the Chassis Emergency Stop button to check for proper operation. All the machine functions should be disabled. Pull out the Emergency Stop button to resume.



EMERGENCY LOWERING

Figure 2-2: Emergency Lowering

20. Check the Emergency Lowering system for proper operation.
- A. XRT27E – The Emergency Lowering Valve Knob is located in the Power Module, above the hydraulic oil tank.
- Open the Power Module Cover.
 - Open the Emergency Lowering Valve by pulling and holding the knob.
 - Once the platform is completely lowered, release the knob to close the valve. **The platform will not elevate if the Emergency Lowering Valve is open.**
 - Close and secure the Power Module cover.
- B. XRT33E - The Emergency Lowering Valve is located in the Power Module, next to the hydraulic oil tank.
- Open the Power Module cover.
 - Hold the control valve in the closed position, then pump up pressure to release holding valves on the cylinders.
 - Once the platform is fully lowered, release the control valve to close the holding valves. **The platform will not elevate if the Emergency Lowering Valve is open.**
 - Close and secure the Power Module cover.



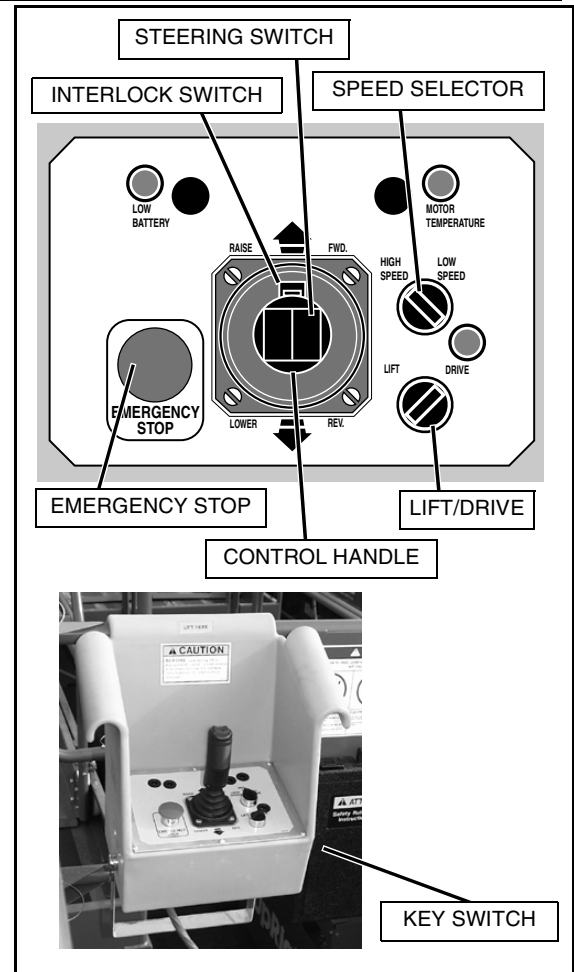
PLATFORM CONTROLS

Figure 2-3: Platform Controls

21. Turn the Platform/Chassis Switch to PLATFORM.
22. Check that the route is clear of obstacles (persons, obstructions, holes, drop-offs, bumps, and debris), is level, and capable of supporting the wheel loads.
23. Mount the platform and properly close the entrance.
24. Turn the Lift/Drive Switch to DRIVE.

NOTE: The Speed Range Selector Switch has two positions: HIGH SPEED and LOW SPEED. Perform Step 25 for each speed.

25. Engage the Interlock Switch and slowly push the Control Handle FORWARD, then REVERSE, to check for proportional speed control.
26. Push the Steering Switch RIGHT, then LEFT, to check for steering control.
27. Turn the Lift/Drive Switch to LIFT.
28. Engage the Interlock Switch and slowly push the Control Handle forward to check the platform lift controls. Raise the platform to full elevation.
29. Pull back on the Control Handle. The platform should descend and the Audible Lowering Alarm should sound.
30. Lower the platform completely.
31. Push the Platform Emergency Stop button to check for proper operation. All the machine functions should be disabled. Pull out the Platform Emergency Stop button to resume.
32. Turn the Platform Controls key switch to OFF.
33. Push the Platform Emergency Stop button to the OFF position.
34. Dismount the platform.
35. Push the Chassis Emergency Stop button to the OFF position.



2.3 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, and must read, fully understand, and follow this Operator Manual and National Safety Instructions/Requirements.

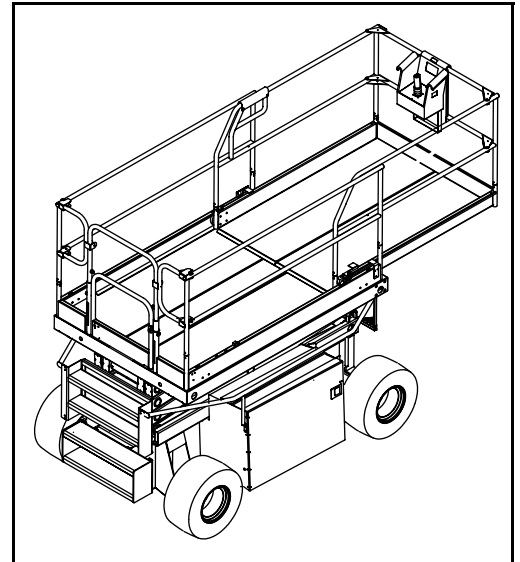
PLATFORM EXTENSION

Figure 2-4: Platform Extension

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

TRAVEL WITH PLATFORM LOWERED

1. Check that the route is clear of obstacles (persons, obstructions, holes, drop-offs, bumps, and debris), is level, and capable of supporting the wheel loads.
2. Turn the Platform/Chassis/Brake Release Switch to PLATFORM.
3. Pull the Chassis Emergency Stop Switch to the ON position.
4. Mount the platform and properly close the entrance.
5. Check clearances above, below and to the sides of the platform.
6. Pull the Platform Emergency Stop Switch to the ON position.
7. Turn the Platform Controls key switch to the ON position.
8. Turn the Lift/Drive Switch to DRIVE.
9. Set the Speed Range Selector Switch to the HIGH SPEED position.
10. Engage the Interlock Switch and move the Control Handle to FORWARD or REVERSE to travel in the desired direction. The speed of the machine will vary depending on how far from center the Control Handle is moved.
11. Turn the Speed Range Selector Switch to HIGH SPEED for travel on level surfaces.
12. Turn the Speed Range Selector Switch to LOW SPEED for climbing grades or traveling in confined areas.



STEERING

1. Turn the Lift/Drive switch to DRIVE.
2. Engage the Interlock Switch, push the Steering Switch RIGHT or LEFT to turn the wheels in the desired direction. Observe the tires while operating the machine to ensure proper direction.

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

ELEVATING THE PLATFORM

1. Select a firm, level surface.
2. Turn the Lift/Drive Switch to LIFT.
3. Engage the Interlock Switch and push the Control Handle forward.
4. If the machine is not level, the tilt alarm will sound and the machine will not lift or drive. **If the tilt alarm, sounds the platform must be lowered and the machine moved to a firm, level surface before attempting to re-elevate the platform.**

TRAVEL WITH WORK PLATFORM ELEVATED

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

1. Check that the route is clear of obstacles (persons, obstructions, holes, drop-offs, bumps, and debris), is level, and capable of supporting the wheel loads.
2. Check clearances above, below, and to the sides of the platform.
3. Turn the Lift/Drive Switch to DRIVE.
4. Set the Speed Range Selector Switch to the HIGH SPEED position.
5. Engage the Interlock Switch and move the Control Handle to FORWARD or REVERSE to travel in the desired direction. The speed of the machine will vary depending on how far from center the Control Handle is moved.
6. If the machine is not level, the tilt alarm will sound and the machine will not lift or drive. **If the tilt alarm sounds, the platform must be lowered and the machine moved to a firm, level surface before attempting to re-elevate the platform.**

LOWERING THE PLATFORM

1. Turn the Lift/Drive Switch to LIFT.
2. Engage the Interlock Switch and pull back on the Control Handle to lower the platform.

EMERGENCY LOWERING

! WARNING !

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

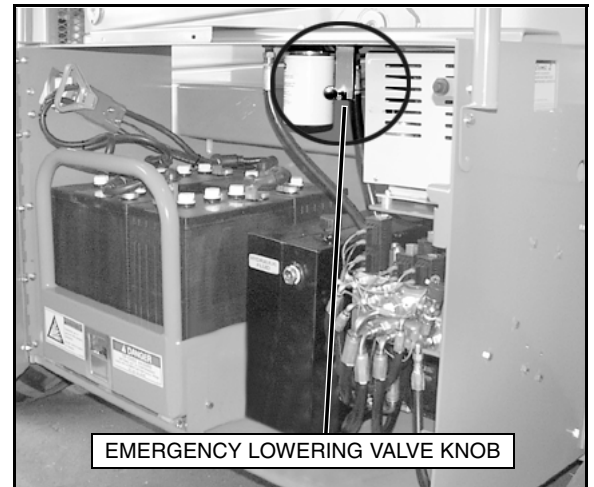
XRT27E

Figure 2-5: Emergency Lowering Valve Knob, XRT27E

The Emergency Lowering Valve Knob is located in the Power Module, above the hydraulic oil tank.

1. Open the Power Module Cover.
2. Open the Emergency Lowering Valve by pulling and holding the knob.
3. Once the platform is completely lowered, release the knob to close the valve. **The platform will not elevate if the Emergency Lowering Valve is open.**
4. Close and secure the Power Module cover.

NOTE: The alarm will not sound when the platform is being lowered with the emergency lowering valve.



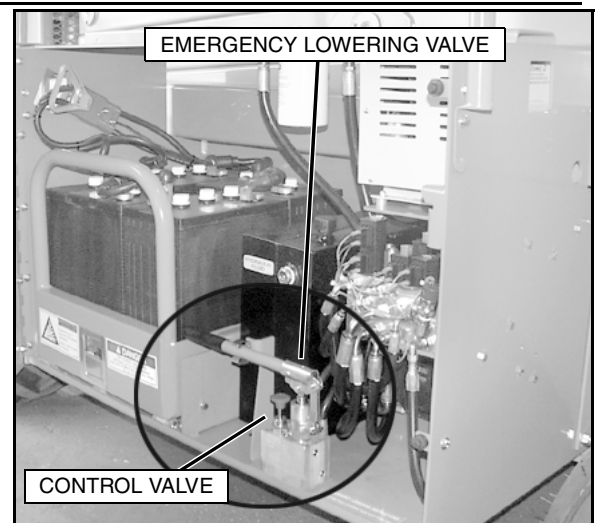
XRT33E

Figure 2-6: Emergency Lowering Valve Knob, XRT33E

The Emergency Lowering Valve is located in the Power Module, next to the hydraulic oil tank.

1. Open the Power Module cover.
2. Hold the Control Valve in the closed position, then pump up pressure to release holding valves on the cylinders.
3. Once the platform is fully lowered, release the control valve to close the holding valves. **The platform will not elevate if the Emergency Lowering Valve is open.**
4. Close and secure the Power Module cover.

NOTE: The alarm will not sound when the platform is being lowered with the emergency lowering valve.



FOLD DOWN GUARDRAILS

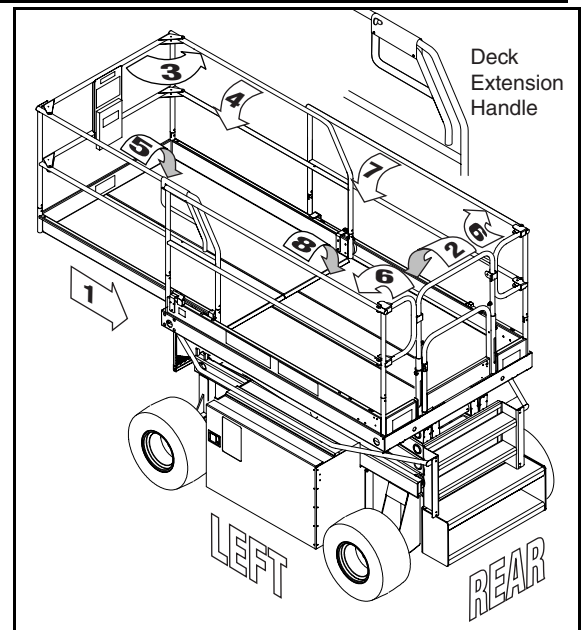
NOTE: When performing the following procedures, retain all fasteners.

This procedure is only for passing through doorways. Guardrails must be returned to proper position before using the machine.

Figure 2-7: Fold Down Guardrails

FOLD DOWN PROCEDURE

1. Ensure that the slide-out deck extension is fully retracted and deck pin is locked. Place the Platform Controls on the platform.
2. Pull the pins on the two end gate arms. Lower the rear gate to the floor. Replace the pins.
3. Pull the two pins on the left side of the front rail and swing the front rail back against the right handrail. Insert pins into the right handrail.
4. Lift the right handrail up, then lower it to the extension deck floor.
5. Push the deck extension handle into locked position. Lift the left handrail up, then lower it on top of the right handrail.
6. Rotate the arms in against the handrails.
7. Lift the right main handrail and lower it to the floor.
8. Lift the left main handrail and lower it on top of the right main hand rail.



ERECTION PROCEDURE

1. Reverse the fold down procedure.
2. Hang the Platform Controls from front guardrail.
3. Before operating the work platform, check that all fasteners are in place and securely fastened.

! WARNING !

Before operating the machine, guardrails must be securely fastened in their proper position.

- Rear bar may be raised to load material. Material may not be longer than the platform.
- Be sure gate is closed and bar is lowered before operating the machine.

AFTER USE EACH DAY

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

Electrocution Hazard



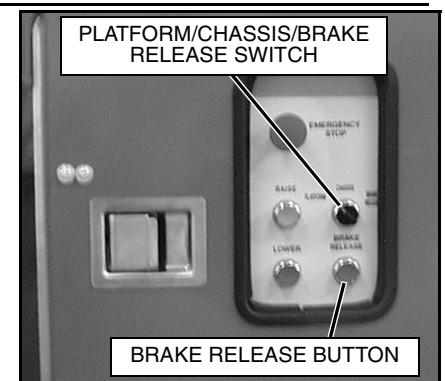
This machine is not insulated. Follow your national safety standards and maintain the required safety distance when working near energized equipment.

PARKING BRAKE RELEASE AND TOWING

Perform the following only when the machine will not operate under its own power and it is necessary to move the machine or when winching onto a trailer to transport. **Never release brakes if machine is on a slope. Hook machine to towing vehicle before releasing brakes.**

Figure 2-8: Brake Release

1. Turn the Platform/Chassis/Brake Release switch to BRAKE RELEASE. Alarm will sound.
2. Momentarily push BRAKE RELEASE button.
3. The machine will now roll when pushed or pulled.
4. Turn the Platform/Chassis/Brake Release switch to PLATFORM or CHASSIS for normal parking brake function.



! WARNING !

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

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

2.4 TRANSPORTING THE WORK PLATFORM

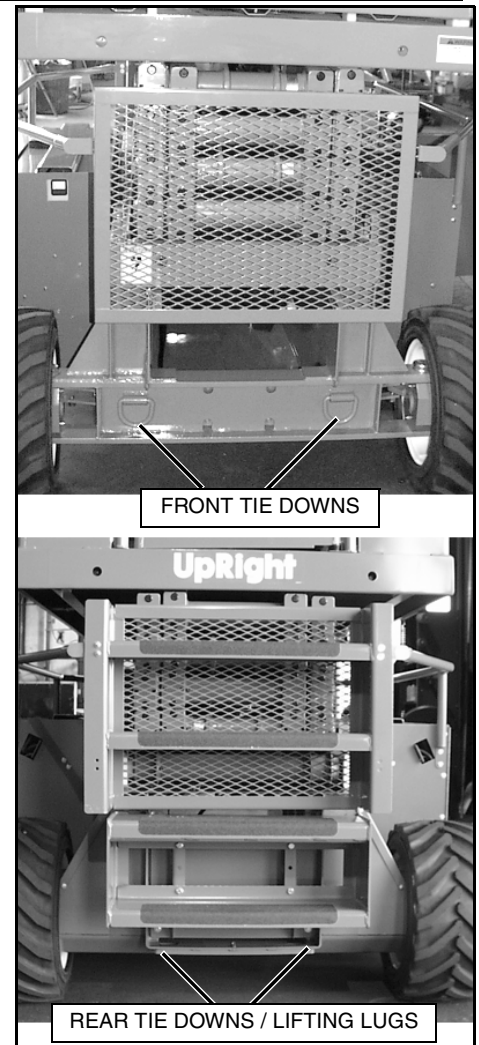
Figure 2-9: Transporting the Work Platform

BY CRANE

1. Secure straps to chassis Tie Downs/Lifting Lugs only.

BY TRUCK

1. Maneuver the work platform into transport position and chock the wheels. The platform must be in the fully lowered position for transport.
2. Secure the work platform to the transport vehicle with chains or straps of adequate load capacity attached to the front and rear Lift/Tie Down points on both sides of the chassis.



⚠ CAUTION ⚠

Overtightening of chains or straps through Tie Down lugs may result in damage to the work platform.

2.5 MAINTENANCE

! WARNING !

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

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

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

Figure 2-10: Supporting the Elevating Assembly

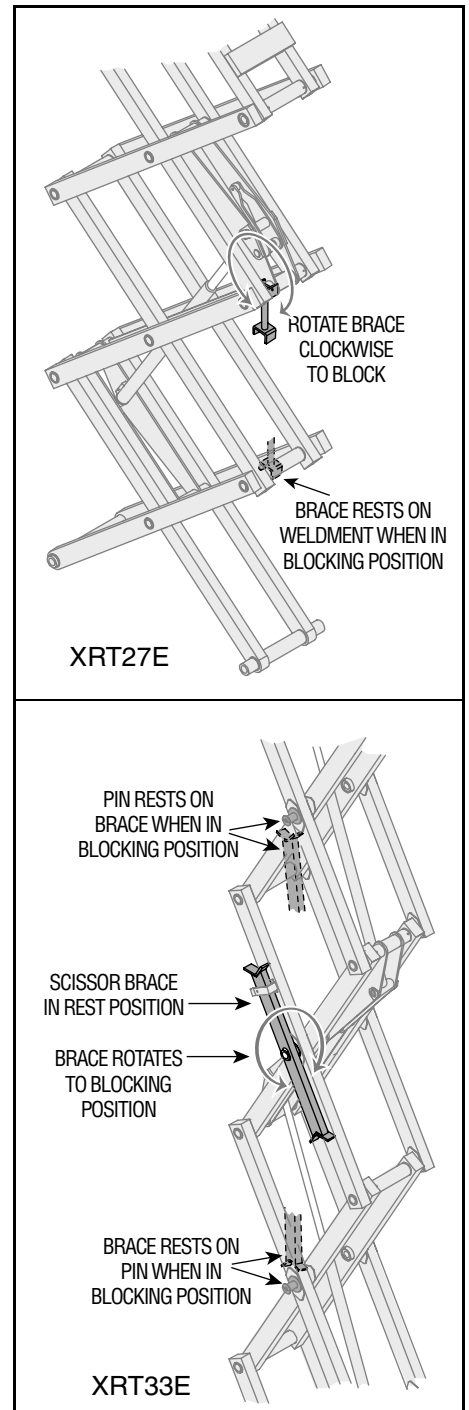
SUPPORTING THE ELEVATING ASSEMBLY

INSTALLATION

1. Park the work platform on a firm, level surface.
2. Pull the Chassis Emergency Stop Switch to the ON position.
3. Pull the Platform Emergency Stop Switch to the ON position.
4. Turn the Platform Controls Key Switch to ON.
5. Turn the Platform/Chassis switch to CHASSIS.
6. Push the RAISE button to elevate the platform until the Scissor Brace can be rotated to the vertical position.
7. XRT27E – From the rear of the machine, lift the Scissor Brace from its stowed position. Rotate upward and outward, then down until it is hanging vertically below its attachment point.
8. XRT33E – From the left side of the machine, pull the locking pin securing the brace. Rotate the Scissor Brace counterclockwise until it is in the vertical position.
9. Lower the platform by pushing the Chassis Controls LOWER button and gradually lower the platform until the Scissor Brace is supporting the platform.

REMOVAL

1. Using the Chassis Controls, gradually raise the platform until the Scissor Brace is clear.
2. XRT27E – Rotate the Scissor Brace outward and upward over its mounting point until it rests in the stowed position.
3. XRT33E – Rotate the Scissor Brace clockwise until the locking pin engages.
4. Lower the platform by pushing the Chassis Controls LOWER button to completely lower the platform.



BATTERY MAINTENANCE

! WARNING !

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

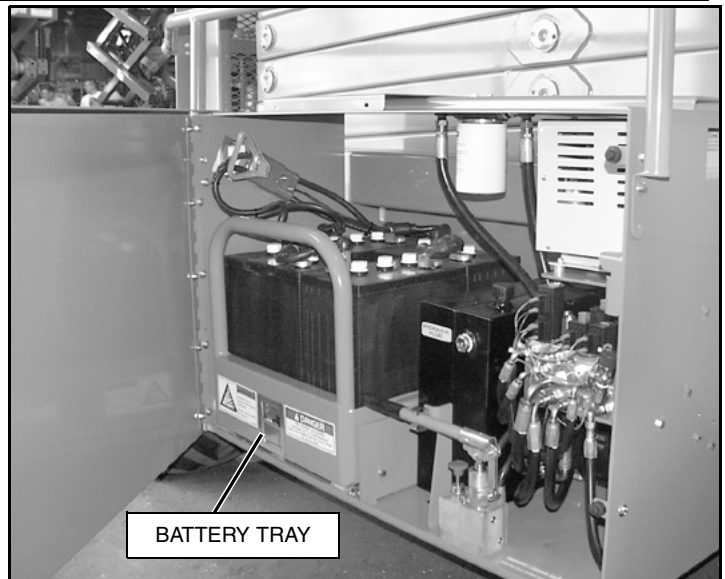
Always wear safety glasses when working with batteries.

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

Always replace batteries with UpRight batteries or manufacturer approved replacements.

Figure 2-11: Access to Batteries

- There are eight (8) batteries, four (4) in each side module. Open either module door to gain access to a slide-out battery tray containing four batteries.
- Check 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 plates, add distilled water only. DO NOT use tap water with high mineral content. It will shorten battery life.
- Keep terminals and tops of batteries clean.



NOTES:

2.6 PREVENTATIVE MAINTENANCE

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

W A R N I N G

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

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

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

DATE CODE IDENTIFICATION ON HOSES

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

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

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

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

DAYCO stamps month, day and year on each hose.

2.7 PREVENTATIVE MAINTENANCE CHECKLIST

PREVENTATIVE MAINTENANCE KEY

INTERVAL

Daily=each shift or every day

50h/30d=every 50 hours or 30 days

250h/6m=every 250 hours or 6 months

1000h/2y=every 1000 hours or 2 years

Y=Yes/Acceptable

N=No/Not Acceptable

R=Repaired/Acceptable

PREVENTATIVE MAINTENANCE REPORT

Date: _____

Owner: _____

Model No: _____

Serial No: _____

Serviced By: _____

Service Interval: _____

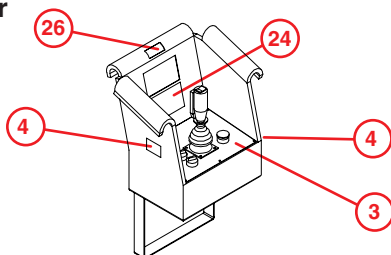
COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Batteries	Check electrolyte level	Daily			
	Check specific gravity	6m			
	Clean exterior	6m			
	Check battery cable condition	Daily			
	Clean terminals	6m			
Hydraulic Oil	Check oil level	Daily			
	Change filter	6m			
	Drain and replace oil	2y			
Hydraulic System	Check for leaks	Daily			
	Check hose connections	30d			
	Check hoses for exterior wear	30d			
Emergency Hydraulic System	Operate the emergency lowering valve and check for serviceability	Daily			
Chassis Controls	Check switch operation	Daily			
Platform Controls	Check switch operation	Daily			
Control Cable	Check the exterior of the cable for pinching, binding or wear	6m			
Platform Deck and Rails	Check fasteners for proper torque	Daily			
	Check welds for cracks	Daily			
	Check condition of deck	Daily			
Tires	Check for damage	Daily			
	Check lug nuts (torque to 90 ft. lbs.)	30d			
Hydraulic Pump	Wipe clean	30d			
	Check for leaks at mating surfaces	30d			
	Check for hose fitting leaks	Daily			
	Check mounting bolts for proper torque	6m			
Drive Motors	Check for operation	Daily			
Steering System	Check hardware & fittings for proper torque	6m			
	Grease pivot pins	30d			
	Check steering cylinder for leaks	30d			

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

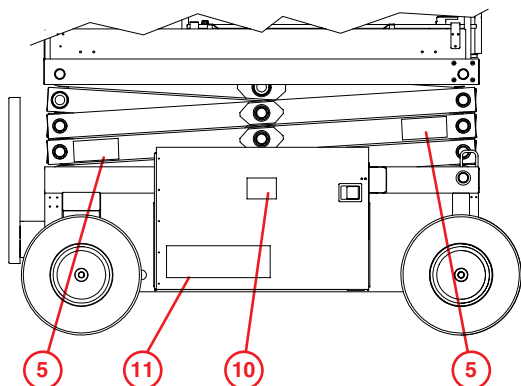
2.8 WARNING LABELS

ENGLISH			FRANÇAIS		DEUTSCH		ESPAÑOL	
	Upper Controller		Commandes de la plate-forme		Obere Steuerung		Controlador superior	
	Power Module Side		Côté module d'entraînement		Seitliches Energieversorgung		Lateral módulo de alimentación	
	Control Module Side		Côté module de commande		Seitliches Steuermodul		Lateral módulo de control	
	Front		Avant		Vorn		Delantero	
	Rear		Arrière		Hinten		Posterior	
	Inside		Intérieur		Innen		Interior	
PART NUMBER		LABEL	NÚMERO DE RÉFÉRENCE	AUTOCOLLANT	TEILNUMMER	SCHILDER	NÚMERO DE PIEZA	ETIQUETAS
1	010076-001	OPERATING INSTRUCTIONS	010076-301	INSTRUCTIONS D'UTILISATION	064913-000	BEDIENUNGSANWEISUNGEN	010076-401	INSTRUCCIONES DE FUNCIONAMIENTO
2	066555-000	DO NOT ADJUST	066555-300	NE PAS RÉGLER	066555-200 NE	NICHT EINSTELLEN	066555-400	NO AJUSTAR
3	067642-008	CONTROLLER	067642-308	COMMANDES	067642-208	STEUERUNG	067642-408	CONTROLADOR
4	064444-000	USA	064444-000	ÉTATS-UNIS	064444-000	USA	064444-000	EE.UU.
5	066568-000	WARNING CRUSHING HAZARD	066568-300	ATTENTION RISQUE D'ÉCRASEMENT	064915-000	WARNUNG QUETSCHGEFAHR	066568-400	ADVERTENCIA PELIGRO DE APLASTAMIENTO
6	062562-001	BATTERY WEIGHT	062562-301	POIDS DE LA BATTERIE	064923-000	BATTERIEGEWICHT	062562-401	PESO DE LA BATERÍA
7	061683-013	UPRIGHT	061683-013	UPRIGHT	061683-013	UPRIGHT	061683-013	UPRIGHT
8	066552-000	WARNING BATTERY	066552-300	AVERTISSEMENT, BATTERIE	064930-000 NE	WARNUNG BATTERIE	066552-400	BATERÍA DE ADVERTENCIA
XRT27-9	066557-019	MAX LOAD PLATFORM	066557-319	CHARGE MAX. DE LA PLATE-FORME	064910-010	MAX. LAST AUF DER ARBEITSBÜHNE	066557-419	PLATAFORMA DE CARGA MÁXIMA
XRT33-9	066557-018	MAX LOAD PLATFORM	066557-318	CHARGE MAX. DE LA PLATE-FORME	064910-008	MAX. LAST AUF DER ARBEITSBÜHNE	066557-418	PLATAFORMA DE CARGA MÁXIMA
10	061684-016	X SERIES	061684-016	SÉRIE X	061684-016	SERIE X	061684-016	SERIE X
11	061683-006	UPRIGHT	061683-006	UPRIGHT	061683-006	UPRIGHT	061683-006	UPRIGHT
12	060197-000	HYDRAULIC FLUID	060197-300	HUILE HYDRAULIQUE	064917-000	HYDRAULIKFLÜSSIGKEIT	060197-400	FLUIDO HIDRÁULICO
13	068641-003	PARKING RELEASE	068641-303	DESSERRAGE DU FREIN DE STATIONNEMENT	068641-201	FESTSTELLBREMSE LÖSEN	068641-401	LIBERACIÓN DEL FRENO DE ESTACIONAMIENTO
XRT27 -14	066957-004	XRT 27E	066957-004	XRT 27E	066957-004	XRT 27E	066957-004	XRT 27E
XRT33 -14	066957-005	XRT 33E	066957-005	XRT 33E	066957-005	XRT 33E	066957-005	XRT 33E
15	061683-005	UPRIGHT	061683-005	UPRIGHT	061683-005	UPRIGHT	061683-005	UPRIGHT
16	061205-003	NAME PLATE	061205-303	PLAQUE SIGNALÉTIQUE	061205-203	TYPENSCHILD	061205-405	PLACA IDENTIFICATIVA
XRT27 -17	066561-000	SAFETY STAND	066561-300	CHANDELLE DE SÉCURITÉ	066561-200	SICHERHEITSSTAND	066561-400	PLATAFORMA DE SEGURIDAD
XRT33 -17	066561-002	SAFETY STAND	066561-303	CHANDELLE DE SÉCURITÉ	066561-203	SICHERHEITSSTAND	066561-403	PLATAFORMA DE SEGURIDAD
18	066640-000	BRAKE RELEASE INSTRUCTIONS	066640-300	INSTRUCTIONS DE DESSERRAGE DE FREIN	066640-200	HINWEISE ZUR BREMSENFREIGABE	066640-400	INSTRUCCIONES PARA LA LIBERACIÓN DEL FRENO
19	066551-002	CAUTION TIPPING	066551-302	ATTENTION, BASCULEMENT	066551-202	VORSICHT KIPPEN	066551-402	ATENCIÓN DE VUELCO
20	066561-003	CAUTION STRUCTURAL DAMAGE	066561-303	ATTENTION, DOMMAGES STRUCTURELS	066561-203	VORSICHT BESCHÄDIGUNG DER MASCHINE	066561-403	ATENCIÓN DAÑO ESTRUCTURAL
21	066551-010	MAX LOAD DECK	066551-310	CHARGE MAX DE LA PLATE-FORME	066551-200	MAX. LAST DER ARBEITSBÜHNE	066551-400	CUBIERTA DE CARGA MÁXIMA
22	067195-000	CAUTION	067195-300	ATTENTION	067195-200	VORSICHT	067195-400	ATENCIÓN
23	067195-001	EURO INSTRUCTIONS	067195-301	INSTRUCTIONS EUROPÉENNES	067195-201	HINWEISE FÜR EUROPA	067195-401	INSTRUCCIONES EUROPEAS
24	066554-000	CAUTION READ INSTRUCTIONS	066554-300	ATTENTION, LIRE LES INSTRUCTIONS	066554-200 NE	VORSICHT ANWEISUNGEN BEACHTEN	066554-400	ATENCIÓN LEER INSTRUCCIONES
25	066556-000	CAUTION DESCENDING PLATFORM	066556-300	ATTENTION, ABAISSEMENT DE LA PLATE-FORME	066556-200	VORSICHT ARBEITSBÜHNE SENKT SICH	066556-400	CUIDADO AL BAJAR LA PLATAFORMA
26	061515-000	LIFT HERE	061515-300	SOULEVER ICI	064937-000	HIER ANHEBEN	061515-400	ELEVAR POR QUÍ
27	067639-001	LOWER CONTROL	067639-301	COMMANDES AU SOL	067639-201	ABSENKSTEUERUNG	067639-401	CONTROL DE DESCENSO
28	067196-000	EMERGENCY LOWERING	067196-300	ABAISSEMENT D'URGENCE	067196-200	ABSENKEN IM NOTFALL	067196-400	DESCENSO DE EMERGENCIA
XRT27 -29	066558-001	EMERGENCY LOWERING	066558-301	ABAISSEMENT D'URGENCE	066558-201	ABSENKEN IM NOTFALL	066558-401	DESCENSO DE EMERGENCIA
XRT33 -29	067197-001	EMERGENCY LOWERING	067197-301	ABAISSEMENT D'URGENCE	067197-201	ABSENKEN IM NOTFALL	067197-401	DESCENSO DE EMERGENCIA
					NE= Nicht erforderlich			

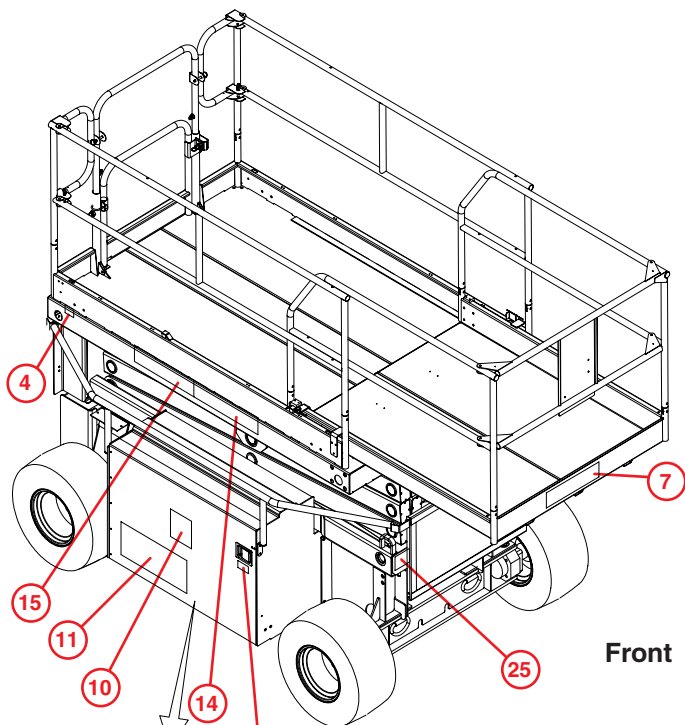
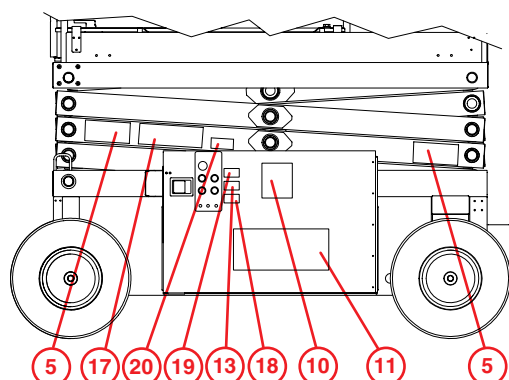
Upper Controller



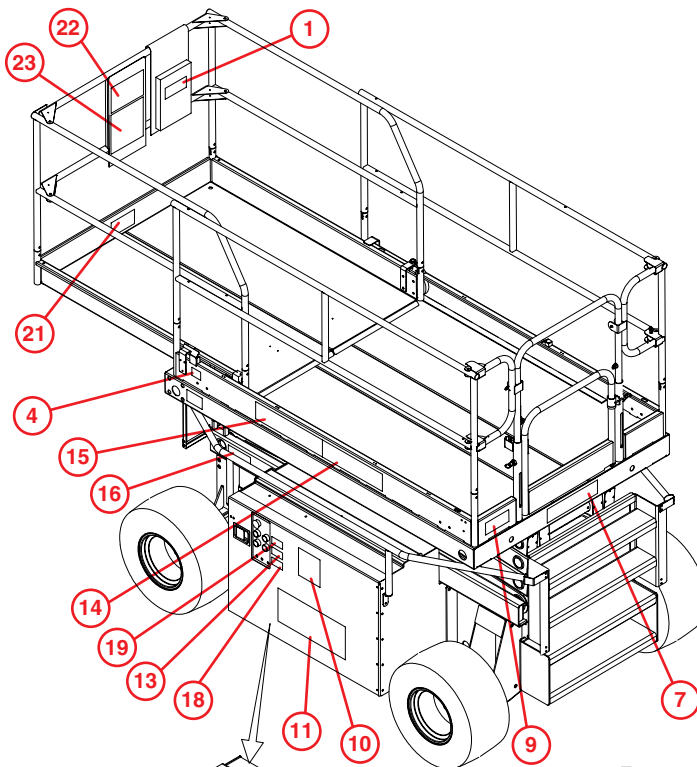
Power Module Side



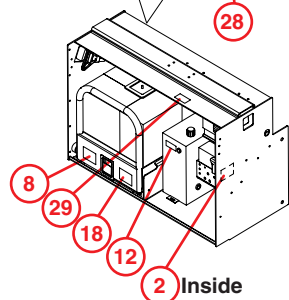
Control Module Side



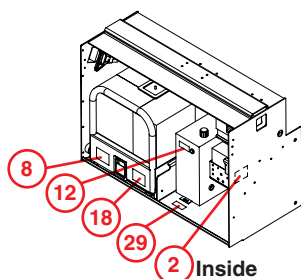
Front



Rear



XRT27



XRT33

2.9 SPECIFICATIONS

ITEM	XRT27E	XRT33E
Platform Size (Outside)		
Standard	1,48 m x 2,34 m [58 in. x 92 in.]	1,48 m x 2,34 m [58 in. x 92 in.]
Slide Out Deck Extended	1,48 m x 3,33 m [58 in. x 131 in.]	1,48 m x 3,33 m [58 in. x 131 in.]
Max. Platform Capacity		
Standard	567 kg [1250 lbs.]	454 kg [1000 lbs.]
on Extension	113 kg [250 lbs.]	113 kg [250 lbs.]
Max. No. of occupants		
Total	4 people	3 people
on Extension	1 person	1 person
Height		
Working Height	10,2 m [33 ft.]	12,1 m [39 ft.]
Max. Platform Height	8,2 m [27 ft.]	10,1 m [33 ft.]
Max. Drive Height	8,2 m [27 ft.]	10,1 m [33 ft.]
Dimensions		
Weight, Standard	3440 kg [7585 lbs.]	3939 kg [8685 lbs.]
Overall Width	1,77 m [69,5 in.]	1,77 m [69,5 in.]
Overall Height (Rails Up)	2,54 m [100 in.]	2,67 m [105 in.]
Overall Height (Rails Folded)	1,83 m [72 in.]	1,96 m [77 in.]
Overall Length, Standard	2,69 m [106 in.]	2,69 m [106 in.]
Drive Speed		
Platform Lowered	0 to 5,1 km/h [0 to 3,2 m.p.h.]	0 to 5,1 km/h [0 to 3,2 m.p.h.]
Platform Raised	0 to 0,8 km/h [0 to 0,5 m.p.h.]	0 to 0,8 km/h [0 to 0,5 m.p.h.]
Hydraulic Tank Capacity	23 l [6 US Gallons]	23 l [6 US Gallons]
Maximum Hydraulic System Pressure	172 bar [2500 psi]	172 bar [2500 psi]
Hydraulic Fluid		
Normal use: Above 0° C [32° F]	ISO #46	ISO #46
Low Temp. use: Below 0° C [32° F]	ISO #32	ISO #32
Below -17° C [0° F]	ISO #15	ISO #15
Lift System	One Single Stage Lift Cylinder	Two Single Stage Lift Cylinders
Lift Speed	Raise, 40 sec./Lower, 34 sec.	Raise, 39 sec./Lower, 31 sec.
System Voltage	48 Volt DC	48 Volt DC
Power Source	Eight 6 volt 220 A Batteries (350 A option available)	Eight 6 volt 220 A Batteries (350 A option available)
Drive Control	One Hand Proportional – Sevcon MOS90	One Hand Proportional – Sevcon MOS90
Drive Motors	48 Volt DC Series Wound	48 Volt DC Series Wound
Tires		
Standard Rough Terrain	26-12-390 Poly Filled Lug	26-12-390 Poly Filled Lug
Optional Street Tire	G78-15 10 Ply Poly Filled	G78-15 10 Ply Poly Filled
Optional Solid Non-Marking	17,8 cm X 30,5 cm [7 in. X 12 in.]	17,8 cm X 30,5 cm [7 in. X 12 in.]
Parking Brakes	Dual, Spring Applied Hydraulic Release, Multiple Disc	Dual, Spring Applied Hydraulic Release, Multiple Disc
Turning Radius (measured in low speed)	INSIDE: 2,29 m [90 in.] OUTSIDE: 4,57 m [180 in.]	INSIDE: 2,29 m [90 in.] OUTSIDE: 4,57 m [180 in.]
Maximum Gradeability	22° [40%]	19° [35%]
Ground Clearance	178 mm [7 in.]	178 mm [7 in.]
Wheel Base	2 m [78,38 in.]	2 m [78,38 in.]
Guardrails	1,1 m [44 in.] high, Fold Down with gate.	1,1 m [44 in.] high, Fold Down with gate.
Toeboard	152 mm [6 in.] High	152 mm [6 in.] High
Sound Level	76 dB	76 dB

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

Meets or exceeds all applicable CE and GS Machinery Directive Requirements.

MAINTENANCE

3.1 INTRODUCTION

This section contains instructions for the maintenance of the work platform. 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.

W A R N I N G

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.

W A R N I N G

Never perform service on the work platform in the elevating assembly area while the platform is elevated without first blocking the elevating assembly. DO NOT stand in elevating assembly area while deploying or storing brace. Refer to Section 2 - Operation and Specifications for elevating assembly blocking instructions.

3.2 DATE CODE IDENTIFICATION ON HOSES

GATES uses a five digit code: Year, Month, Day.
i.e.: 6 11 29 - means 1996, month 11 (November), day 29.

PARKER uses a ten digit code: Plant, Year, Month, Day.
i.e.: XXXX 6 11 29 - means Plant XXXX, 1996, month 11 (November), day 29.

DAYCO stamps month, day and year on each hose.

3.3 SPECIAL TOOLS

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

- 0-69 bar (0-1000 psi) 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
- Small UpRight Connector Field Kit (UpRight P/N 030899-000)
- Large UpRight Connector Field Kit (UpRight P/N 030898-000)
- Inclinator (UpRight P/N 010199-000-00)
- MOS90 Calibrator (UpRight P/N 057128-000)

3.4 UPRIGHT CONNECTORS

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

Figure 3-1: UpRight Connector Kits

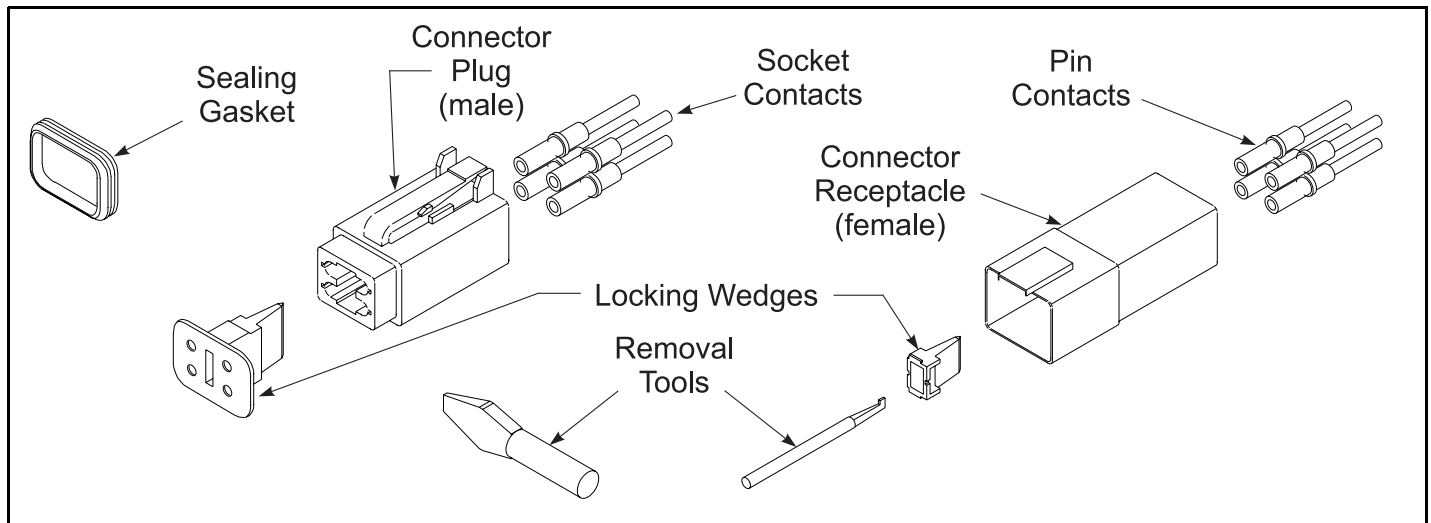


Small Kit



Large Kit

Figure 3-2: Plugs and Receptacles, UpRight Connectors



MALE CONNECTOR (PLUG)

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

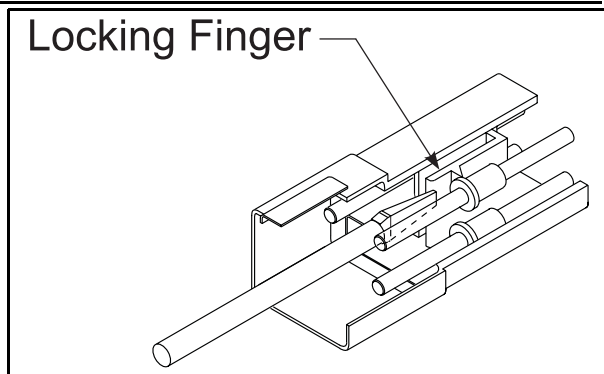
FEMALE CONNECTOR (RECEPTACLE)

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

RELEASING LOCKING FINGERS

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

Figure 3-3: Locking Finger, UpRight Connector



CRIMPING

1. Strip 6 mm ($\frac{1}{4}$ ") from the wire.

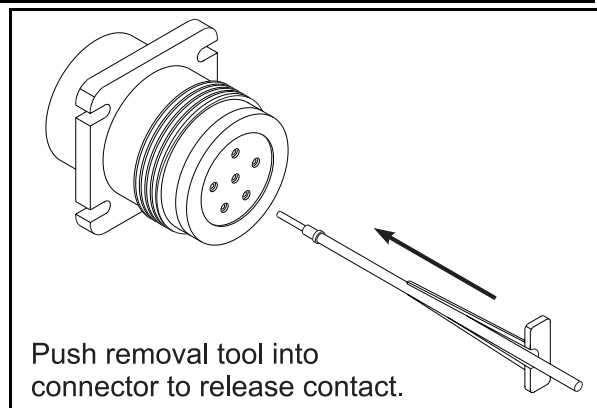
NOTE: Complete crimping instructions are included in each Field Kit.

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

REMOVING CONTACT FROM HEAVY DUTY PLUG

Figure 3-4: Heavy Duty UpRight Connector

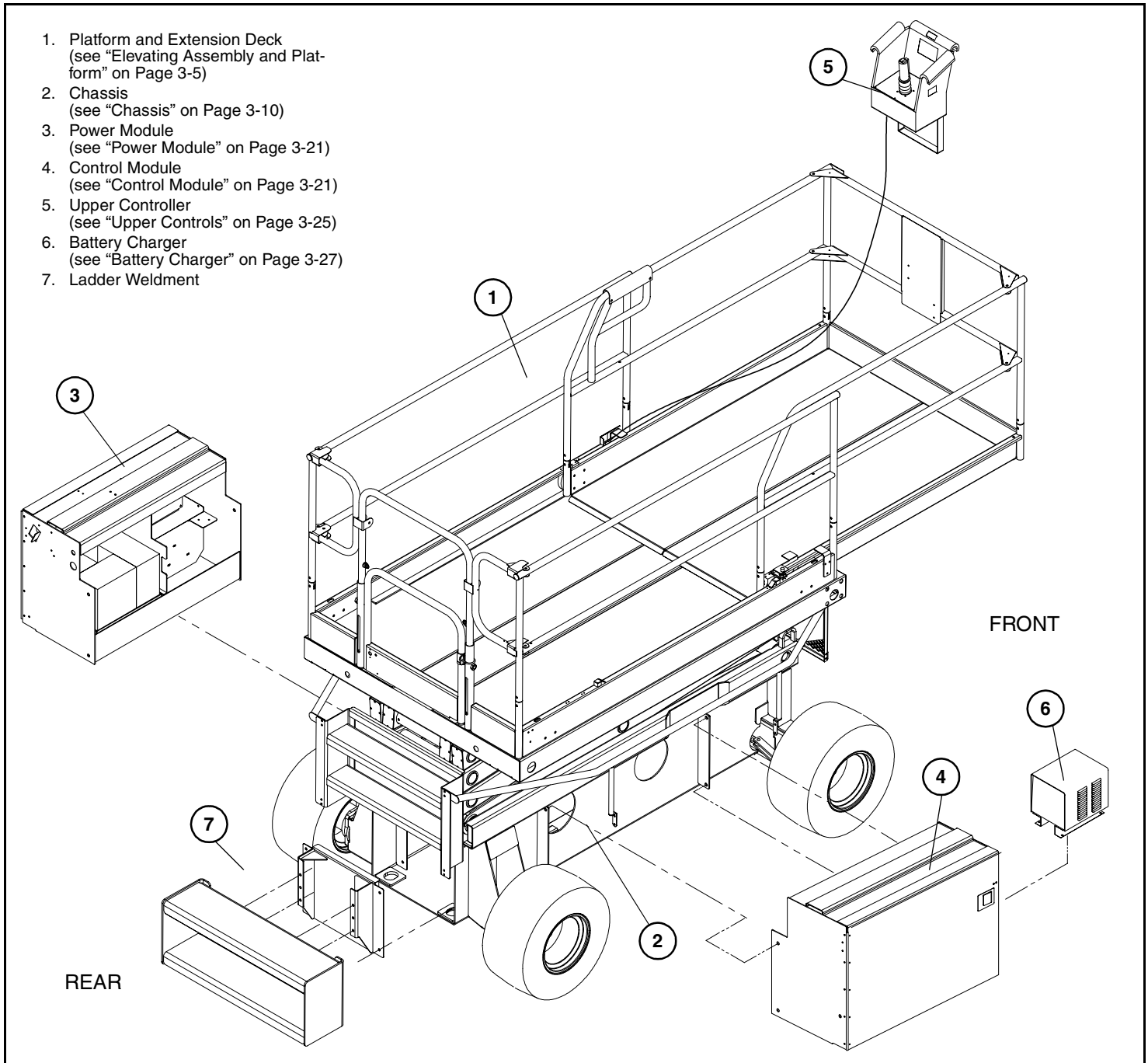
1. Slip the removal tool along the wire to be replaced.
2. Push the removal tool into the connector until the contact is released.
3. Pull the wire and contact out of the plug.



3.5 FINAL ASSEMBLY COMPONENTS

The XRT Electric is available in two (2) models: the XRT27E and the XRT33E. The final assembly of both machines is illustrated in Figure 3-5. Individual components are described in detail later.

Figure 3-5: Final Assembly



3.6 ELEVATING ASSEMBLY AND PLATFORM

Refer to "Lift Cylinders" on Page 3-39 for cylinder repair instructions.

Figure 3-6: Elevating Assembly and Platform Installation

The XRT27E is equipped with a four section scissor assembly and one Lift Cylinder.

The XRT33E is equipped with a five section scissor assembly and two Lift Cylinders.

Do not attempt to remove the platform and/or elevating assembly without a proper overhead lifting device. **Do not use a forklift!**

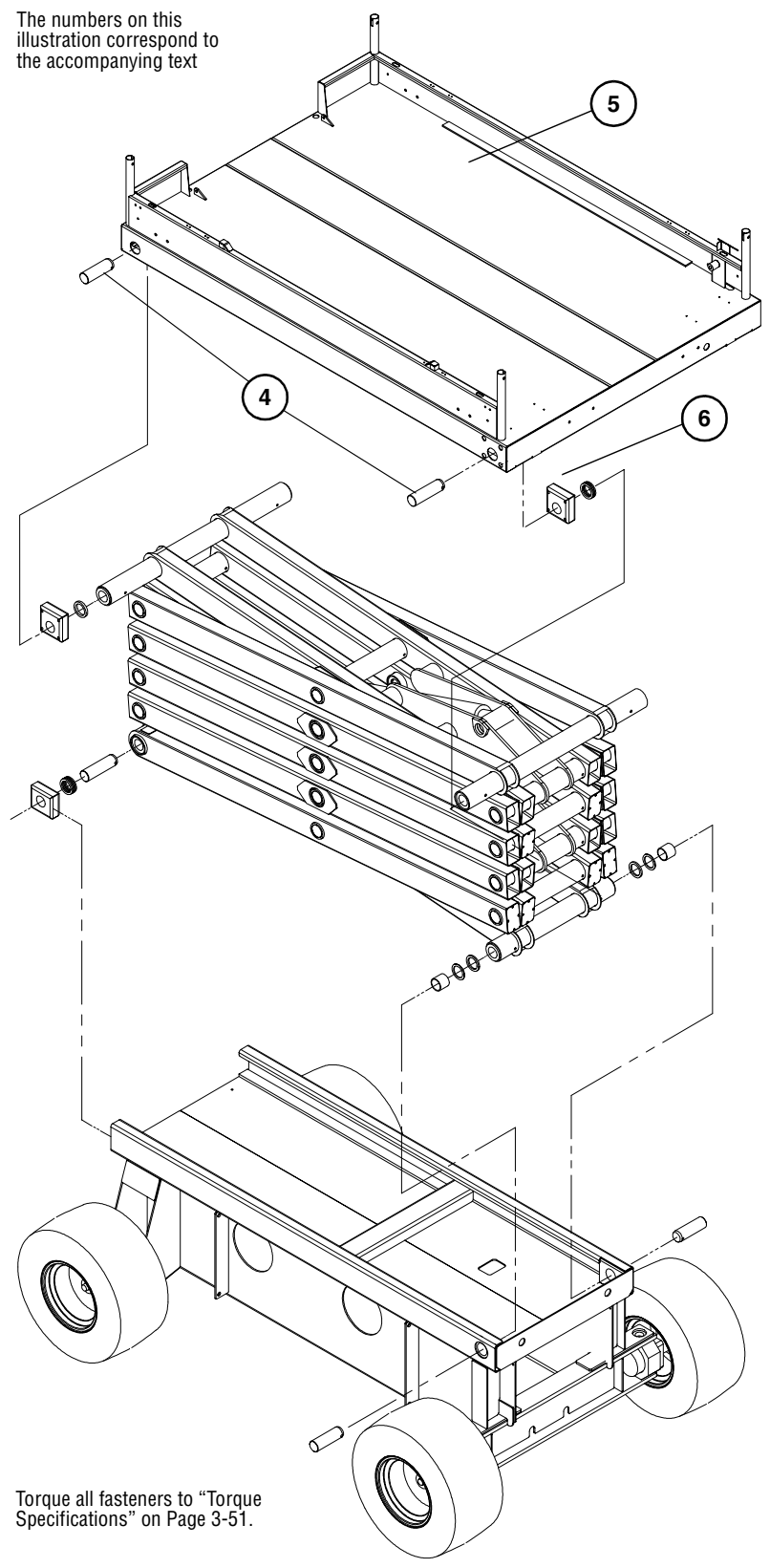
If it is necessary to remove or dismantle the elevating assembly, contact UpRight for special instructions.

REMOVE AND REPLACE PLATFORM

1. Remove the guardrails.
2. Elevate the platform and block the elevating assembly (refer to Operator Manual).
3. Attach a sling to the platform.
4. Remove the mounting pins.
5. Lift the platform from the elevating assembly.
6. Before replacing, inspect the wear pads and slide blocks. Replace if necessary. Refer to the Parts Manual for a complete parts list.

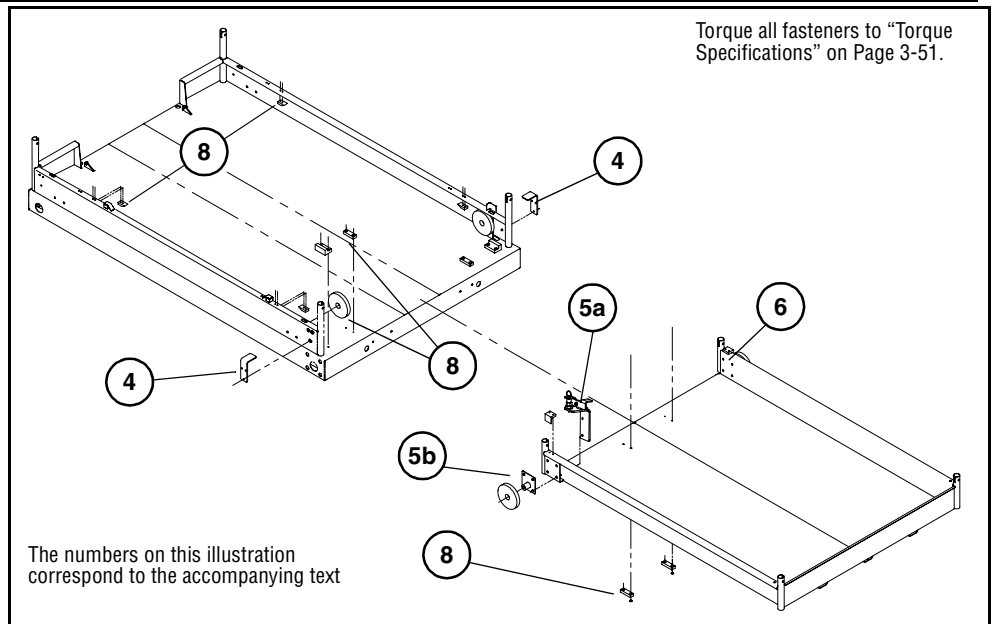
Installation is reverse of removal.

The numbers on this illustration correspond to the accompanying text



DECK EXTENSION**REMOVE AND REPLACE****Figure 3-7:** Deck Extension

1. Remove the guard-rails.
2. Extend the deck.
3. Attach a sling to the deck.
4. Remove the brackets from the platform.
5. On the left side, the deck lock assembly and the platform roller mount share two (2) long cap screws.
 - a. Remove the two (2) long cap screws and remove the deck lock assembly.
 - b. Remove the two (2) remaining cap screws from the platform roller mount.
6. Remove the four (4) cap screws from the right side platform roller mount.
7. Lift the extension deck from the platform.
8. Examine all wear pads and rollers for wear before reassembly.



Installation is reverse of removal.

GUARDRAILS

REMOVE AND REPLACE

Figure 3-8: Guardrail Installation

REAR SWING TUBES

1. Remove the locking pin assemblies.
2. Remove the cap screws.
3. Separate the swing tubes from the side guardrails.

SIDE RAILS

4. Remove the screw and nut from the tube where the guardrail connects to the platform. (Two [2] connections per guardrail.)
5. Lift the guardrail from the platform.

ENTRY GATE

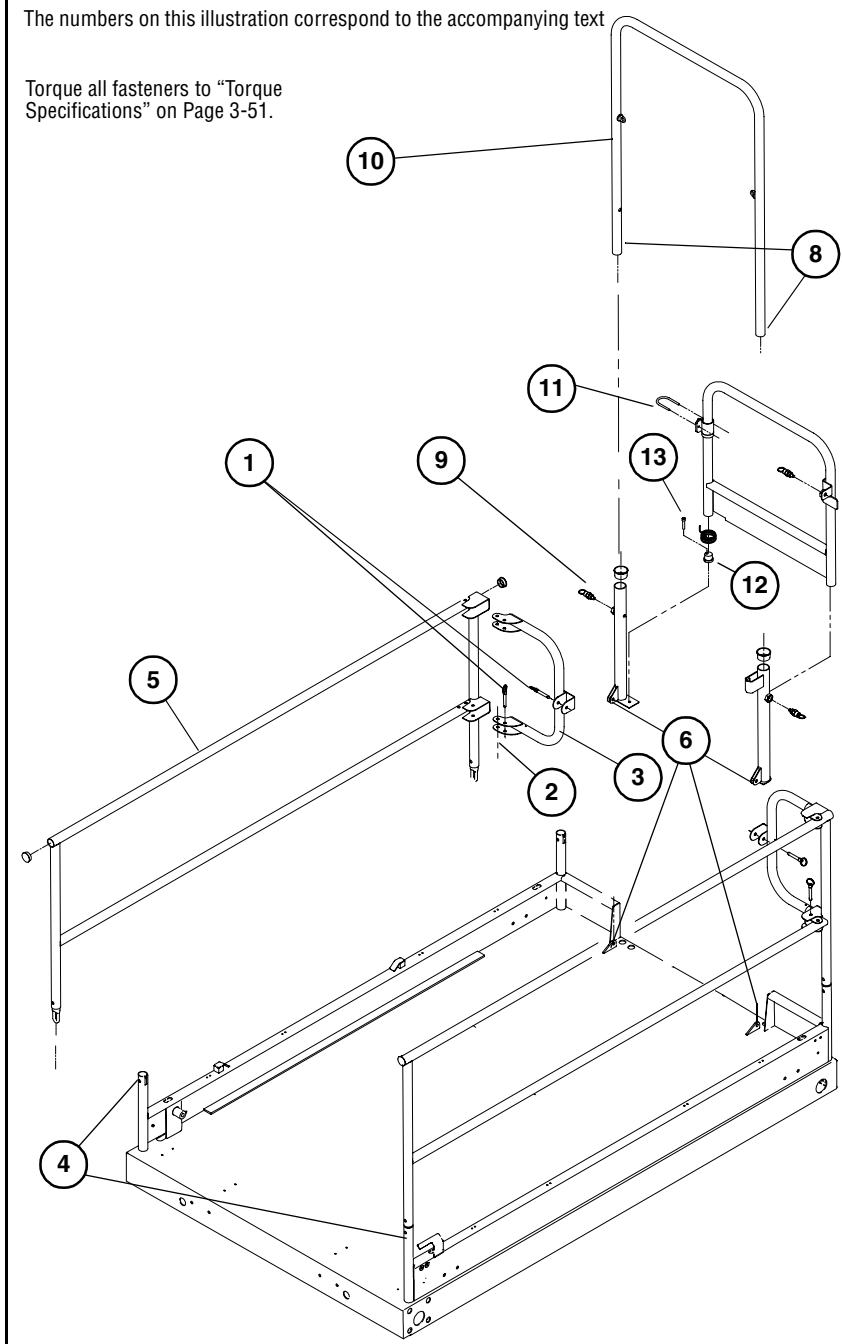
6. Remove the screw and nut from the base of each slide tube.
7. Lift the entire entry gate assembly from the platform.

GATE DISASSEMBLY

8. Remove the two (2) stop screws from the base of the upper slide tube.
9. Pull the retaining pin on each lower slide tube.
10. Slide the upper slide tube out of the lower tubes.
11. Remove the nuts and u-bolt that secures the swing gate to the right side lower slide tube.
12. Lift the swing gate from the gate pivot and spring.
13. Remove the bolt and nut from the gate pivot. When installing the swing gate, this nut aligns with a hole in the platform.

The numbers on this illustration correspond to the accompanying text

Torque all fasteners to "Torque Specifications" on Page 3-51.



Installation is reverse of removal.

EXTENSION DECK GUARDRAILS

REMOVE AND REPLACE

Figure 3-9: Extension Deck Guardrail Installation

FRONT GATE

1. Remove the two (2) retaining pins.
2. Remove the two (2) screws and nuts from the opposite side.
3. Separate the front gate from the side guardrails.

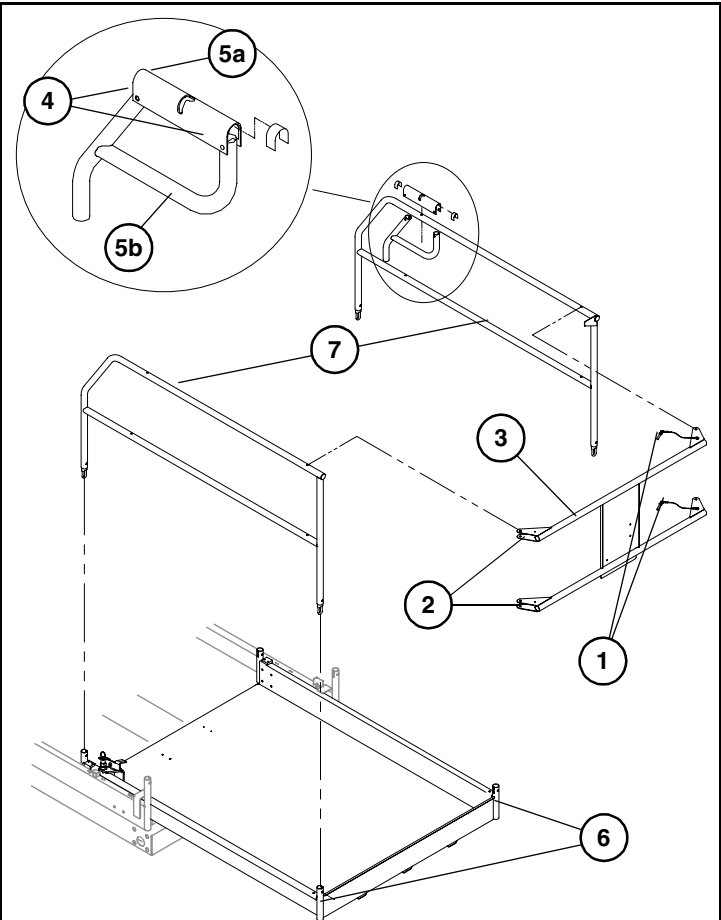
DECK EXTENSION HANDLE

4. Remove the screw and nut from each end of the handle and remove the handle.
5. The handle will separate into two (2) pieces:
 - a. the upper "Pivot"
 - b. the lower "Handle."

SIDE RAILS

6. Remove the screw and nut from the tube where the guardrail connects to the platform. There are two (2) connections per guardrail.
7. Lift the guardrail from the platform.

Installation is reverse of removal.



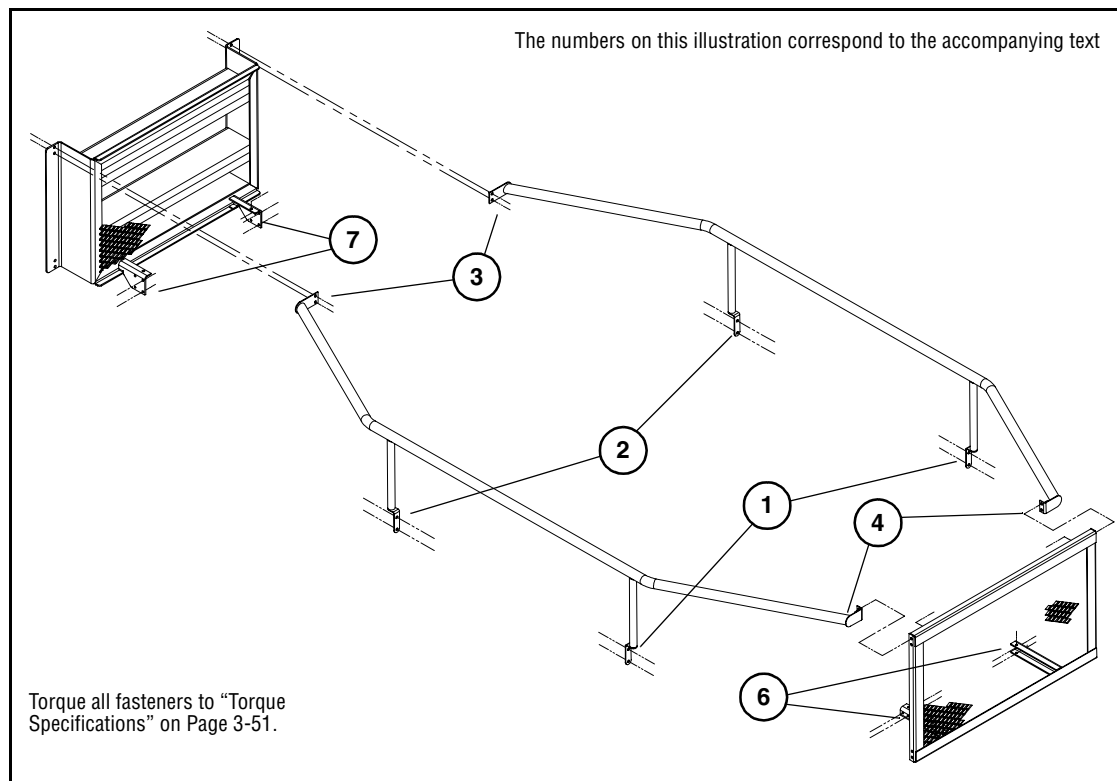
The numbers on this illustration correspond to the accompanying text

Torque all fasteners to "Torque Specifications" on Page 3-51.

SCISSOR GUARD

REMOVE AND REPLACE

Figure 3-10: Scissor Guard



SIDE GUARDS

1. Remove the two (2) screws and nuts where the guard attaches to the front of the module.
2. Remove the two (2) screws and nuts where the guard attaches to the rear of the module.
3. Remove the two (2) screws where the guard attaches to the ladder.
4. Remove the two (2) screws where the guard attaches to the front guard.
5. Repeat for the opposite side.

FRONT GUARD

6. Remove the six (6) screws and nuts that secure the front guard to the chassis, and remove the front guard.

REAR GUARD

7. Remove the ten (10) screws and nuts that attach the rear guard/ladder to the chassis, and remove the rear guard/ladder.

Installation is reverse of removal.

3.7 CHASSIS

Chassis repair procedures may require the removal of one or more wheels.

REMOVE WHEELS

1. Park the work platform on a firm, level surface and block the wheels to prevent the work platform from rolling.
2. Loosen the wheel lug bolts on the wheel to be removed.
3. Raise the work platform, using a 2-ton jack.
4. Position two (2) 1-ton jack stands under the axle.
5. Remove the wheel lug nuts and wheel.

Installation is reverse of removal.

FRONT AXLE

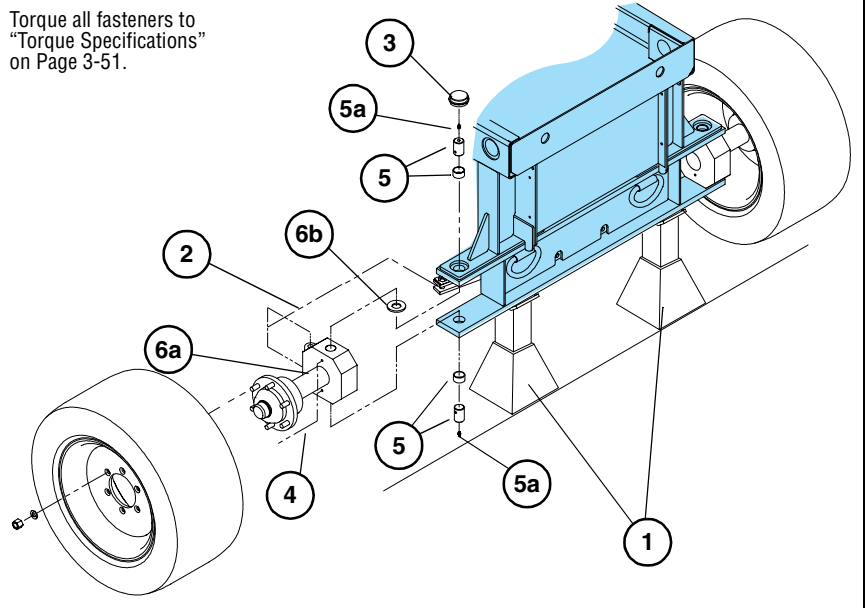
Figure 3-11: Front Axle

REMOVE STEERING MOUNT

1. Support the platform on two (2) 1-ton jack stands and remove the wheel as described above.
2. Remove the screw and nut that connects the steering links to the steering mount.
3. Remove the dust cap.
4. Remove the two (2) screws that secure the pivot pins from the steering mount.
5. Remove the pivot pins and bearings from the steering mount. Grease liberally before reinstalling.
 - a. Each pivot pin has a grease zerk that can be replaced if necessary.
6. Remove the following items from the axle:
 - a. steering mount
 - b. thrust washer.

The numbers on this illustration correspond to the accompanying text

Torque all fasteners to "Torque Specifications" on Page 3-51.



Installation is reverse of removal.

FRONT HUB

Figure 3-12: Front Hub Assembly

REMOVE HUB

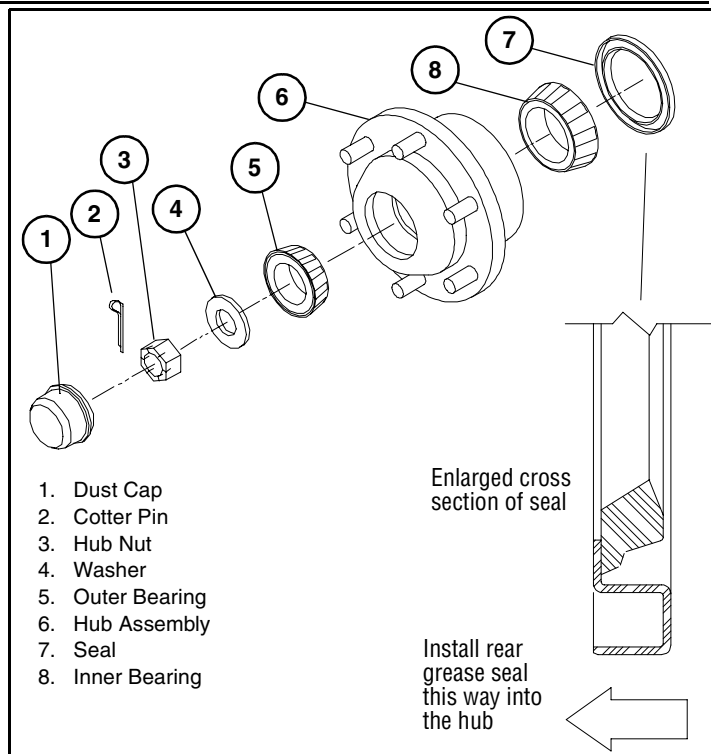
1. Remove the dust cap
2. Remove cotter pin.
3. Remove hub nut.
4. Remove washer.
5. Remove outer bearing.
6. Remove hub assembly.
7. Remove seal.
8. Remove inner bearing.
9. Clean all parts, using a suitable solvent.
10. Inspect bearings, cones and cups for wear and replace if necessary.

NOTE: Cups do not need to be replaced if they are not damaged.

INSTALLATION

NOTE: Torque all hardware to torques listed in "Torque Specifications" on Page 3-51.

1. Apply a liberal coating of grease to each cup.
2. Pack the inside bearing with a liberal amount of multi-purpose grease and position it in the hub. Install new grease seal.
3. Apply a thin coating of grease to the spindle and slide the hub onto the spindle.
4. Pack the outside bearing cone with multi-purpose grease and slide it onto the spindle until it seats in the outer bearing cup.
5. Install the washer and hub nut. While rotating the hub, tighten the hub nut until the hub drags; then back the nut off until a slot lines up with the hole in the spindle.
6. Install a new cotter pin and bend the end up over the nut.
7. Install the dust cap and wheel.



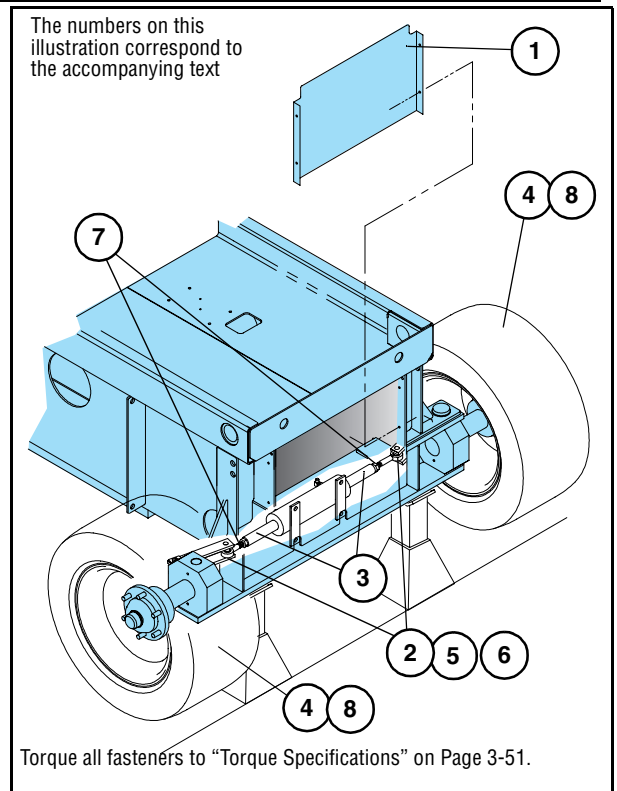
STEERING

For steering cylinder removal and repair, refer to "Steering Cylinder" on Page 3-38.

Figure 3-13: Steering Components

STEERING ADJUSTMENT

1. Remove the cover plate to gain access to the steering cylinder.
2. Disconnect the cylinder rod ends.
3. Operate steering so that both ends of the cylinder rod are equal in length.
4. Position both tires so they are parallel with the frame and with each other.
5. Adjust the rod ends until they align with the holes on the steering linkage bars.
6. Reinstall the bolts through the steering linkage bars and rod ends.
7. Tighten the jam nuts on the rod ends and all hardware.
8. When properly adjusted, the wheels must turn the same amount in each direction.



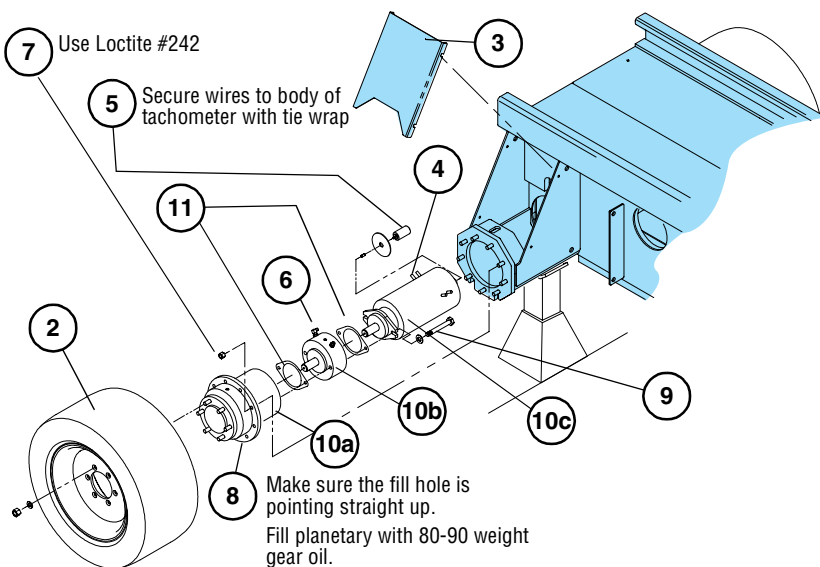
REAR AXLE

Figure 3-14: Rear Axle

DISASSEMBLY

1. Disconnect the battery connector (see "Battery Tray" on Page 3-22).
2. Remove the wheel.
3. Remove the cover plate.
4. Tag and disconnect the wire leads from the electric motor.
5. Disconnect the tach assembly.
6. Disconnect and plug the hydraulic hose from the brake assembly.
7. Remove the eight nuts that secure the planetary drive to the rear axle housing. When installing, use Loctite #242 on threads.
8. Pull the planetary drive, brake, and electric motor (assembled as a unit) out of the rear axle housing. When installing, make sure that the fill hole on the planetary drive is pointing straight up.
9. Remove the two (2) screws that secure the electric motor and brake to the planetary drive.
10. Separate the assembly into its base units:
 - a. Planetary Drive
 - b. Brake
 - c. Electric Drive Motor
11. When assembling, install new gaskets.

The numbers on this illustration correspond to the accompanying text



Torque all fasteners to "Torque Specifications" on Page 3-51.

Assembly is reverse of disassembly.

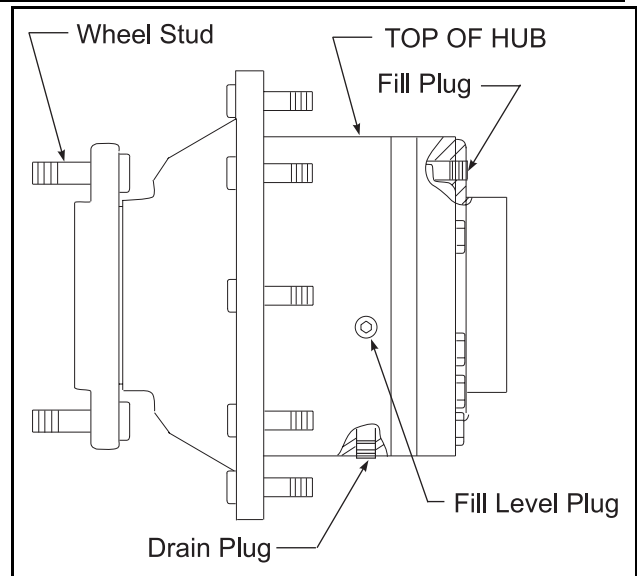
PLANETARY DRIVE

LUBRICATION

Figure 3-15: Planetary Drive Unit

NOTE: Change oil in torque hubs after the first 50 hours of operation. Change every 2000 hours thereafter.

1. Remove the Torque Hub from the drive assembly (refer to "Rear Axle" on Page 3-13).
2. Remove the drain plug from the underside of the Torque Hub.
3. Drain the oil from the unit.
4. Replace the drain plug.
5. Remove the fill plug from the top side of the torque hub.
6. Remove the fill level plug from the side of the hub.
7. Fill the unit with SAE 90 gear oil until oil comes out of the fill level plug opening (1/2 full).
8. Replace the fill level plug.
9. Replace the fill plug.



ROLL AND LEAK TESTING

IMPORTANT: Always perform a roll and leak test before disassembly and after assembly to make sure gears and sealants are working properly.

ROLL TEST

The gears should be able to rotate by applying a constant force to the axle. Some gear packages roll with more difficulty than others.

Do not be concerned if the gears seem to roll hard as long as they roll with consistency. If you feel more drag only at certain points, the gears are not rolling freely and should be checked for improper installation or defects.

LEAK TEST

The purpose of a leak test is to make sure the unit is air-tight. Pressurize the hub to 0,34 bar (5 psi). The torque hub has a leak if the air pressure starts to fall after the hub has been pressurized.

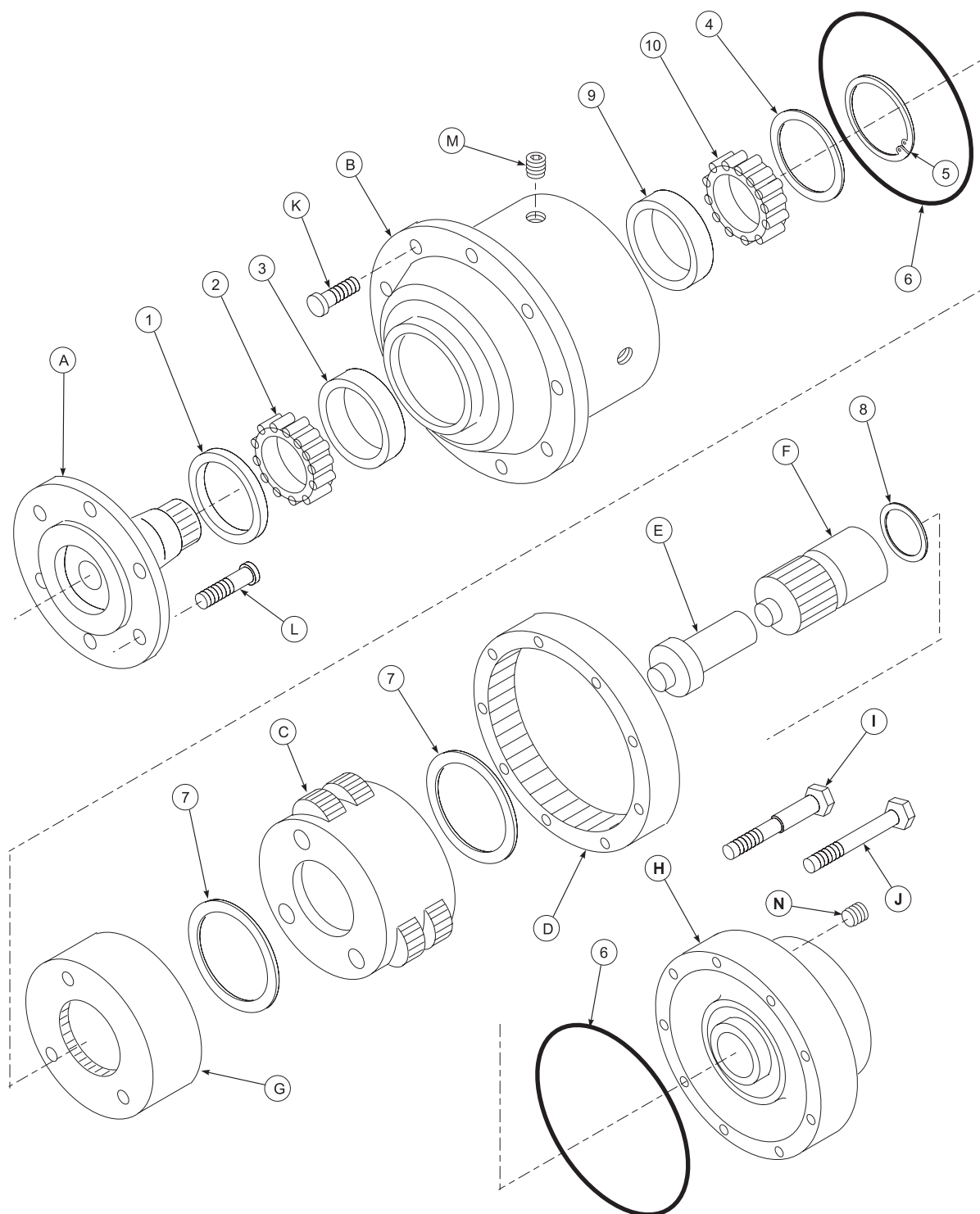
Use soap and water on the hub to detect location of leaks. If a leak is detected, the seal or O-ring must be replaced.

PRESSING TOOLS

Use pressing tools to remove the seal, cup and cone.

PLANETARY DRIVE SEAL REPLACEMENT

Figure 3-16: Planetary Drive Unit



- | | |
|---------------------|------------------|
| A. Spindle | H. Cover |
| B. Housing | I. Shoulder Bolt |
| C. Carrier Assembly | J. Bolt |
| D. Gear ring | K. Stud |
| E. Spaces, Input | L. Stud |
| F. Sun Gear | M. Pipe Plug |
| G. Gear, Internal | N. Pipe Plug |

Repair Kit (068570-010) contains:

1. Lip Seal
2. Bearing, Cone
3. Bearing, Cup
4. Thrust Washer
5. Retaining Ring
6. O-ring (2)
7. Washer (2)
8. Thrust Washer - SK91 (068570-011)
9. Bearing, Cup
10. Bearing, Cone

REPAIR

Refer to Figure 3-16, Page 3-15.



Safety glasses should be used during disassembly of hub.

1. Remove the two (2) pipe plugs in cover and drain the oil from the unit.
2. Loosen and remove the shoulder bolts and cap screws from the cover. Remove the cover from the hub.
3. Remove the O-ring.
4. Remove the thrust washer from counterbore in cover.
5. Remove the input gear from the planet gears.
6. Using a punch, remove the retaining ring from the groove around the inside of the input gear.
7. Lift the carrier sub-assembly from the hub.
8. Lift the ring gear from the hub.
9. Remove the O-ring from the counterbore in the hub.
10. Remove the pipe plugs from the side of the hub body.
11. Apply a preload to the output shaft to remove the retaining ring. Follow Step a and Step b.
 - a. Place the bearing cone pressing tool on the retaining ring.
 - b. Apply pressure to the fixture using a hydraulic ram or by striking the fixture with a soft face hammer. Pressure should be applied until the hub rotates with difficulty.
12. Using retaining ring pliers, remove the retaining ring.
13. Remove the spacer from the output shaft.
14. Place the spacer under the hub so the output shaft will fall through the bottom when pressed out.
15. Press the output shaft out of the hub. The output shaft may come out with the bearing cone and seal attached. Remove the seal and discard. Use a punch and hammer to remove the bearing cone. Be careful not to strike the shaft with the punch.
16. If the seal and cone remain in the hub, press them out using a pressing tool.
17. Lift the bearing cone out of the hub.
18. Stand the hub on its small end. Using a punch and hammer, remove the bearing cup from the counterbore of the hub. Be careful not to strike the counterbore with the punch.
19. Turn the hub over on the larger end. Using a punch and hammer, remove the bearing cup from the counterbore of the hub. Be careful not to strike the counterbore with the punch.

NOTE: The carrier sub-assembly does not need to be disassembled to replace seals.

HUB ASSEMBLY

Refer to Figure 3-16, Page 3-15.

NOTE: Unless otherwise specified, torque all fittings according to “Torque Specifications” on Page 3-51.

1. Oil the output shaft and bearing cone. Using a cone press, press the bearing cone onto the end of the output shaft with the retaining ring groove.
2. Stand the hub on its small end. Using a bearing cup pressing tool, press the bearing cup down into the hub.

NOTE: Make sure the cup sits square with the counterbore.

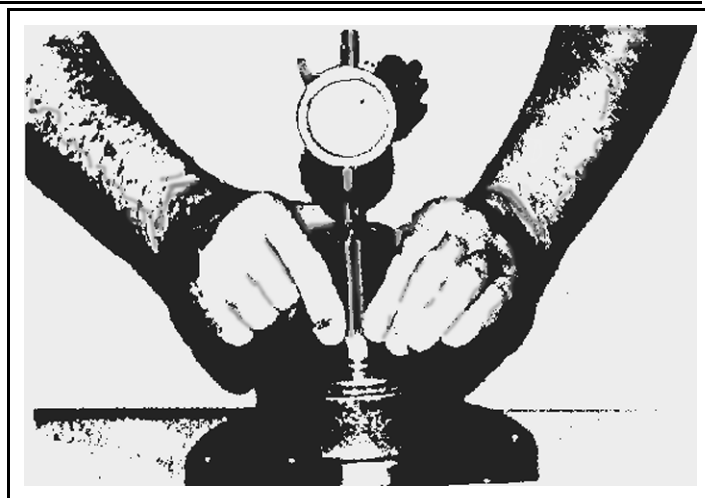
3. Turn the hub over so it sits on its large end. Using a bearing cup pressing tool, press the bearing cup into the small end of the hub.

NOTE: Make sure the cup sits square with the counterbore.

4. Place the output shaft into the hub so the end of the shaft with the retaining ring groove points down.
5. Oil the output shaft. Using a seal pressing tool, press the seal into the counterbore in the small end of the hub. The closed face of the seal should be up.
6. Turn the hub over so the small end points down. Using a bearing cone pressing tool, press the bearing cone onto the output shaft. Rotate the hub while pressing the bearing. Stop pressing when the hub starts to resist rotating.
7. Place the spacer onto the output shaft so it rests on top of the bearing cone. Using retaining ring pliers, place the retaining ring to make sure it is seated.
8. Hit the end of the output shaft once or twice with a soft face hammer. Turn the shaft in both clockwise and counterclockwise directions while hitting. This will seat the bearing cone against the spacer and retaining ring, allowing necessary endplay in the hub-shaft sub-assembly.
9. Turn the hub over so it rests on its large end. Measure the endplay in the hub-shaft sub-assembly. Follow Step a through Step c. Refer to Figure 3-17.

Figure 3-17: Measuring Hub Endplay

- a. Mount a dial indicator on the hub. Locate the dial rod on top of the output shaft.
- b. Lift up on the output shaft until the needle on the dial stops moving.
- c. Read the dial. The reading should be no greater than 0,203 mm (.008 in.).
 - If the dial reads less than 0,203 mm (.008 in.), continue on to step 10.
 - If the dial reads more than 0,203 mm (.008 in.), repeat steps 11-19 of “Repair” on Page 3-16.
- d. Remove the spacer and replace it with thicker spacer (SK91 068570-011).
- e. Repeat Step 6 through Step 9 and remeasure end play.
10. Apply a light coat of “Never Seize” to the pipe plugs, and install into the pipe plug holes in the hub.



NOTE: Leave the hole for the 90° fitting open.

MAIN ASSEMBLY

Refer to Figure 3-16, Page 3-15.

1. Position the hub on its output shaft so that the hub's small diameter end points down.
2. Using a marker, mark the four shoulder bolt holes in the hub.
3. Grease the O-ring and place it in the counterbore in the hub.

NOTE: O-rings may be stretched or squeezed together in order to fit exactly in the counterbore.

4. Oil all exposed surfaces inside the hub. Oil the carrier sub-assembly.
5. Place the carrier sub-assembly, with spline connections down, into mesh with the output shaft.
6. Place the ring gear, with squared shoulder down, into mesh with the planet gears of the carrier sub-assembly. Make sure that the marked shoulder bolt hole on ring gear aligns with any of the marked shoulder bolt holes on the hub. The "X" mark should be on the cover side of the ring gear.
7. Start one half of the retaining ring into the groove inside the input gear. Use a soft punch to press the remaining half of the retaining ring into the groove.
8. Insert the input gear, with large diameter end down, into mesh with the planet gears.
9. Place the large thrust washer over the input gear so it rests on the carrier housing. Oil all exposed surfaces inside the hub.
10. Grease the O-ring and place it into the counterbore of the cover.

NOTE: O-rings may be stretched or squeezed together in order to fit exactly in the counterbore.

11. Place the cover on top of the ring gear so the fill hole will be at the top of the hub when it is installed.
12. Install the four (4) shoulder bolts into the shoulder bolt holes and tighten.
13. Install the eight (8) cap screws in the remaining holes and tighten.
14. Apply 31-37 N-m (23-27 ft.-lbs.) of torque to all bolts.
15. Apply a light coat of "Never Seize" to both pipe plugs and install them into the two (2) holes in the cover.
16. Roll test the unit in both clockwise and counterclockwise directions. Turn the hub nine (9) full revolutions in each direction.
17. Leak test the hub at 0,34 bar (5 psi) for two to three (3) minutes.

BRAKE

REMOVE

Remove as described in "Rear Axle" on Page 3-13.

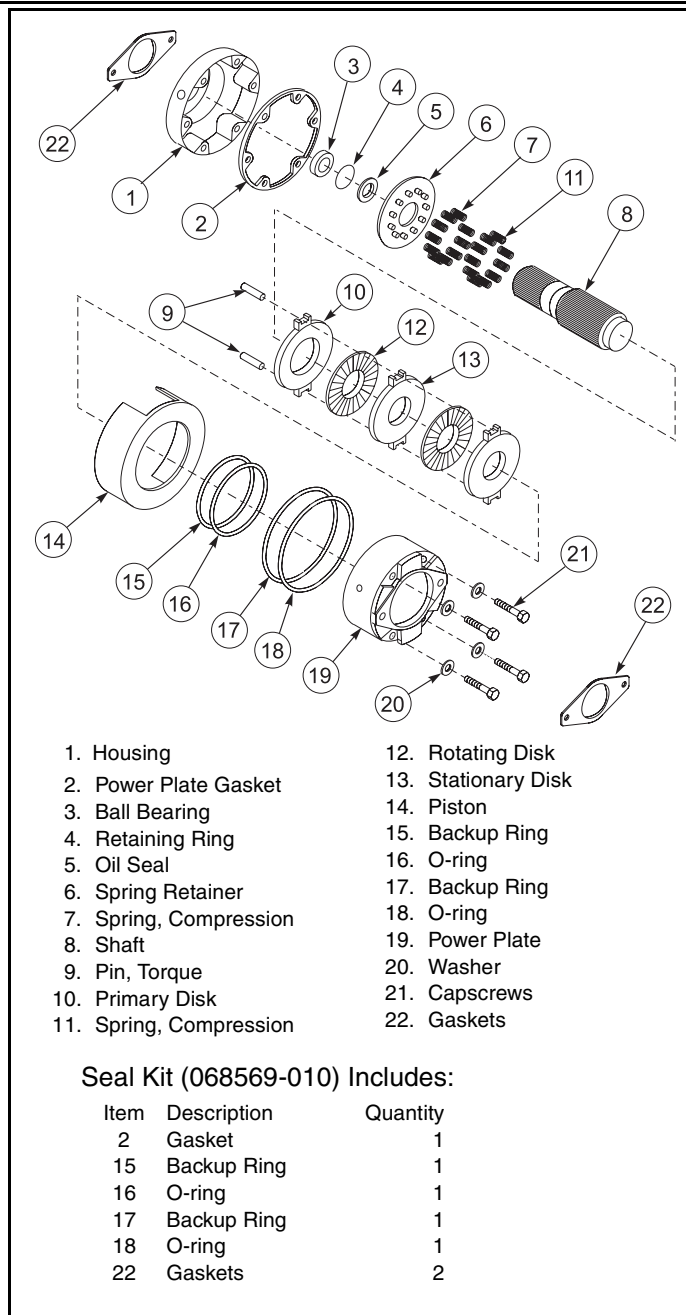
Figure 3-18: Brake Assembly

BRAKE SEAL REPLACEMENT

1. With the shaft protrusion downward, remove the capscrews and washers from the brake assembly.
2. Remove the power plate from the housing. Remove the power plate gasket.
3. Remove the piston from the power plate by introducing low pressure air (15 psi) into the hydraulic inlet. Make sure that the piston is not pointed at anyone.
4. Remove the O-rings and backup rings from the inner and outer diameter grooves of the piston.
5. Clean the piston and power plate assemblies with solvent. Inspect the sealing surfaces of the piston and power plate. Inspect the seal grooves in the piston. If they are damaged or scratched deeply, replace the brake assembly.
6. Lubricate the piston, power plate, and O-rings with clean hydraulic oil prior to assembly.
7. Install the backup O-rings and O-rings into the seal grooves in the piston.
8. Install the piston into the power plate, using a shop press. Be careful not to damage the seals during assembly. Center the cutouts in the piston with the torque pin holes in the power plate. Press the piston to a depth no less than flush, but not exceeding 3.05 mm (0.120 in.) below the surface of the power plate at the cutouts in the piston. This depth is critical. The brake will not hold if it is exceeded.
9. Install the power plate gasket.
10. Install the power plate/piston assembly to the housing, using the capscrews and washers. Tighten sequentially, one turn at a time, to press the two assemblies together.
11. Torque capscrews 70-80 N-m (50-60 ft.-lbs.).

INSTALLATION

1. Coat the output shafts of the brake and drive motor with high pressure molybdenum grease, and install the gasket and brake onto the torque hub.
2. Install the gasket and drive motor. Align the holes, and install the two cap screws and lock washers.
3. Reinstall the cables to the drive motor and the hoses to the brake.
4. Install the wheel. Torque the wheel nuts to 122 N-m (90 ft.-lbs.).
5. Remove the jack stands, and lower chassis to the ground.
6. Position chassis switch to parking brake release position. Alarm will sound.
7. Depress the electric motor start switch to energize brake hydraulic system.
8. Check for leaks and bleed air out of brake hydraulic system, using bleed valve located on brake housing.



DRIVE MOTOR

XRT Electric Work Platforms are equipped with two (2) 48 volt DC electric drive motors in the rear.

1. Remove as described in "Rear Axle" on Page 3-13.
2. Repair as described in "Electric Motors" on Page 3-46.

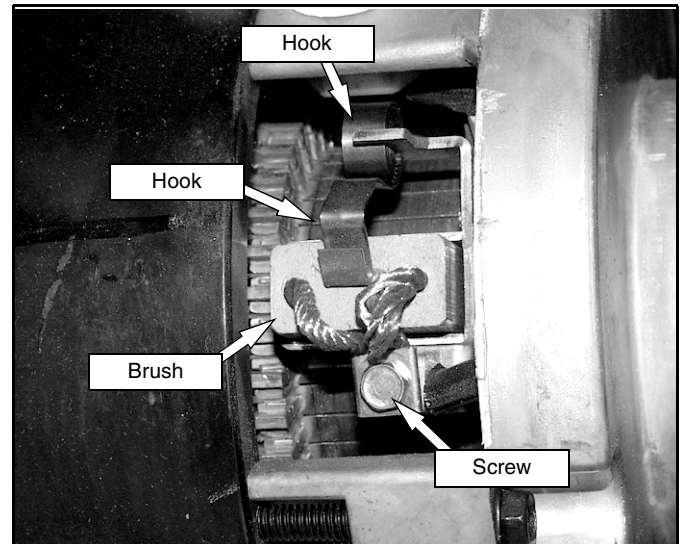
Figure 3-19: Replace Electric Drive Motor Brushes

DRIVE MOTOR BRUSHES

1. Disconnect the battery connector (see "Battery Tray" on Page 3-22).
2. If necessary, remove electric motor.
3. Release latch and remove headband.
4. Pull back brush spring and latch on hook.
5. Remove screw and set aside.

IMPORTANT: *Be sure screw does not fall inside motor.*

6. Remove old brush and replace with new brush.
7. Replace screw, unhook brush spring, and return to original position.
8. Install and relatch headband.



3.8 MODULES

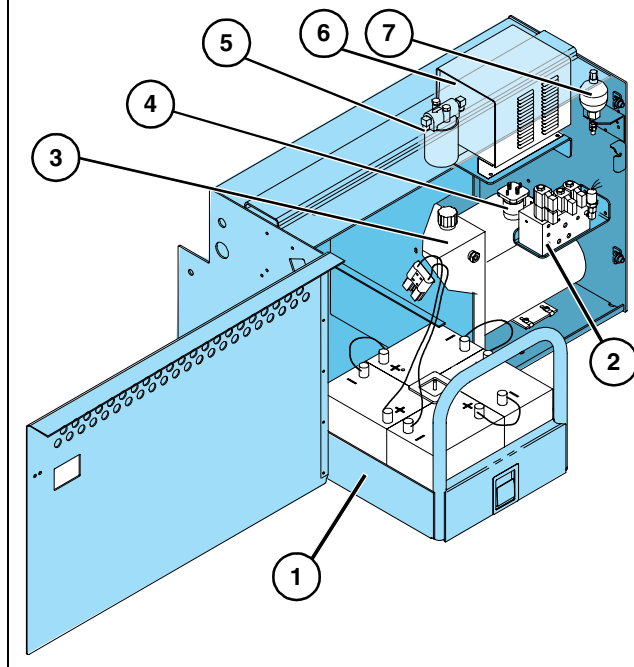
POWER MODULE

Figure 3-20: Power Module

The Power Module is located on the right side of the machine and contains the following:

1. Battery Tray
(see "Battery Tray" on Page 3-22).
2. Main Valve Block
(see "Main Valve Block" on Page 3-34).
3. Hydraulic Power Unit: includes two (2) electric motor/pump assemblies. Drive, steer, brake and lower controls lift functions are powered by a single motor/pump assembly. Upper controls lift functions require both motor/pump assemblies.
(see "Hydraulic Power Unit Assembly" on Page 3-32).
4. Relay, 48 Volt: activates the second electric motor/pump assembly on the Hydraulic Power Unit for lift functions.
5. Hydraulic Oil Filter
(see "Hydraulic Oil and Filter Replacement" on Page 3-31).
6. Battery Charger
(see "Battery Charger" on Page 3-27).
7. The Accumulator maintains hydraulic pressure in the brake circuit.
8. Emergency Lowering (not shown)
(see "Emergency Lowering Valve" on Page 3-42).

The numbers on this illustration correspond to the accompanying text



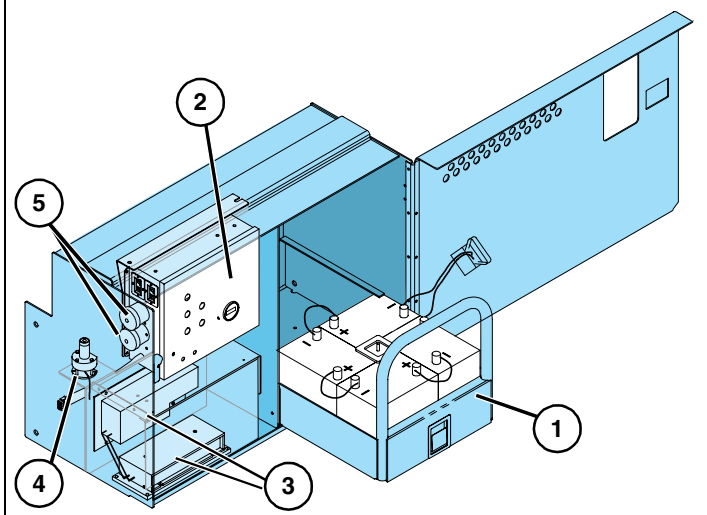
CONTROL MODULE

Figure 3-21: Control Module

The Control module is located on the left side of the machine and contains the following:

1. Battery Tray
(see "Battery Tray" on Page 3-22)
2. Lower Controller
(see "Lower Controls" on Page 3-23)
3. Relay Panel Assembly
(see "MOS90 Relay Panel Assembly" on Page 3-28)
4. Level Sensor
(see "Switch Adjustments" on Page 3-43)
5. Alarm

The numbers on this illustration correspond to the accompanying text



BATTERY TRAY

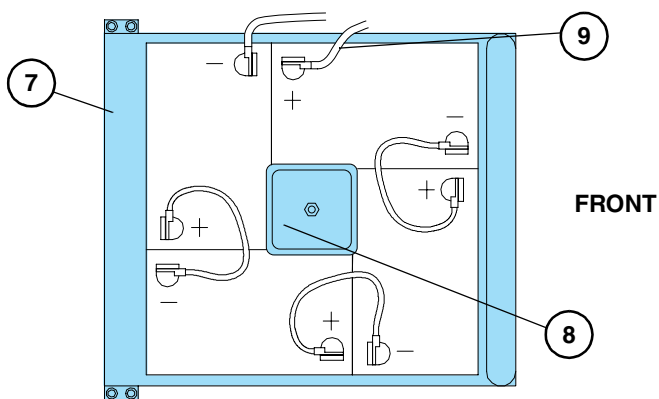
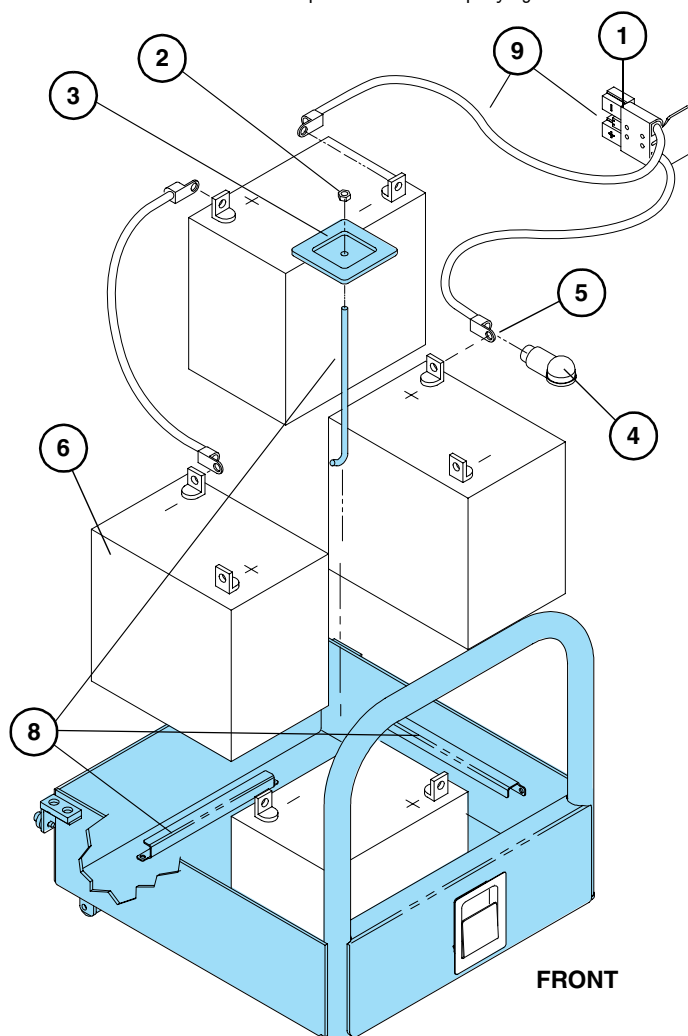
Figure 3-22: Battery Tray

There is a slide-out Battery Tray in both modules.

REMOVE AND REPLACE BATTERIES

1. Disconnect the Disconnect Cable assembly.
 2. Remove the hex nut and washer from the Battery Hold Down assembly.
 3. Remove the Battery Hold Down assembly.
 4. Lift the battery terminal cover to gain access to the nut and bolt securing the cable to the terminal.
 5. Remove the nut and bolt to disconnect the cable from the terminal. Repeat for each cable.
 6. Lift the batteries out of the tray.
 7. When replacing batteries, arrange them in the order illustrated.
 8. Batteries are held in place by the battery stops and the Battery Hold Down assembly.
- NOTE:** The optional 350Ah batteries are larger than the standard 220 Ah batteries. The optional Battery Tray has different hold-down hardware and cables, and does not have battery stops.
9. Install the Disconnect Cable assembly on the right side for the Power Module, and on the left side for the Control Module.

The numbers on this illustration correspond to the accompanying text



3.9 CONTROLS

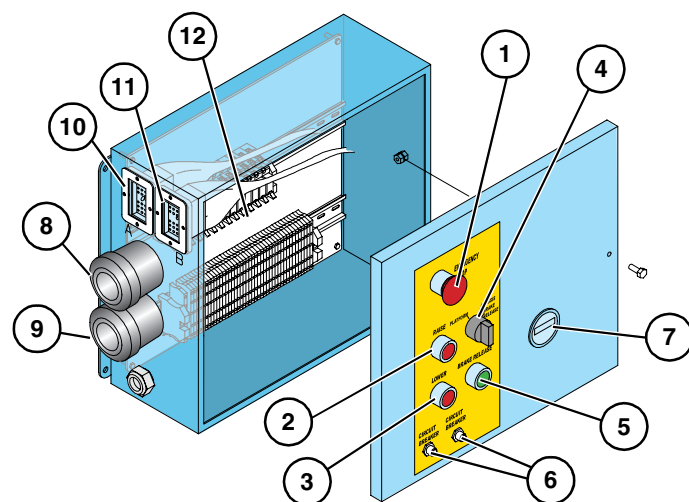
LOWER CONTROLS

Figure 3-23: Lower Control Assembly

Refer to the Lower Controller Assembly Wire Hookup in Section 5.

1. The Emergency Stop switch is a mushroom style push button, connected to a normally closed contact block.
 2. The Raise button is a green momentary push button connected to a normally open contact block.
 3. The Lower button is a red momentary push button connected to a normally closed contact block.
 4. The Platform/Chassis/Brake Release switch is a three (3) position selector switch connected to two (2) double contact blocks.
 - a. The normally closed double contact block supplies power to the Brake Release button when activated.
 - b. The normally closed/normally open double contact block supplies power to either the upper controls, or the lower controls.
 5. The Brake Release button is a red momentary push button connected to a normally closed contact block.
 6. There are two (2) 10 amp circuit breakers to protect the system.
 7. Hour Meter/Charge Indicator.
 8. The Down Alarm is activated when the platform is descending.
- NOTE:** The alarm will not sound when the platform is being lowered with the Emergency Lowering Valve.
9. The Tilt Alarm is activated when the level sensor is activated.
 10. Connector for the Main Control harness.
 11. Connector for the Main Valve Block harness.
 12. The Relay and Terminal Block assembly contains the relays and terminal blocks. Refer to "Relay/Terminal Block Panel Assembly" on Page 3-24 for relay and terminal block placement and jumper placement.

The numbers on this illustration correspond to the accompanying text

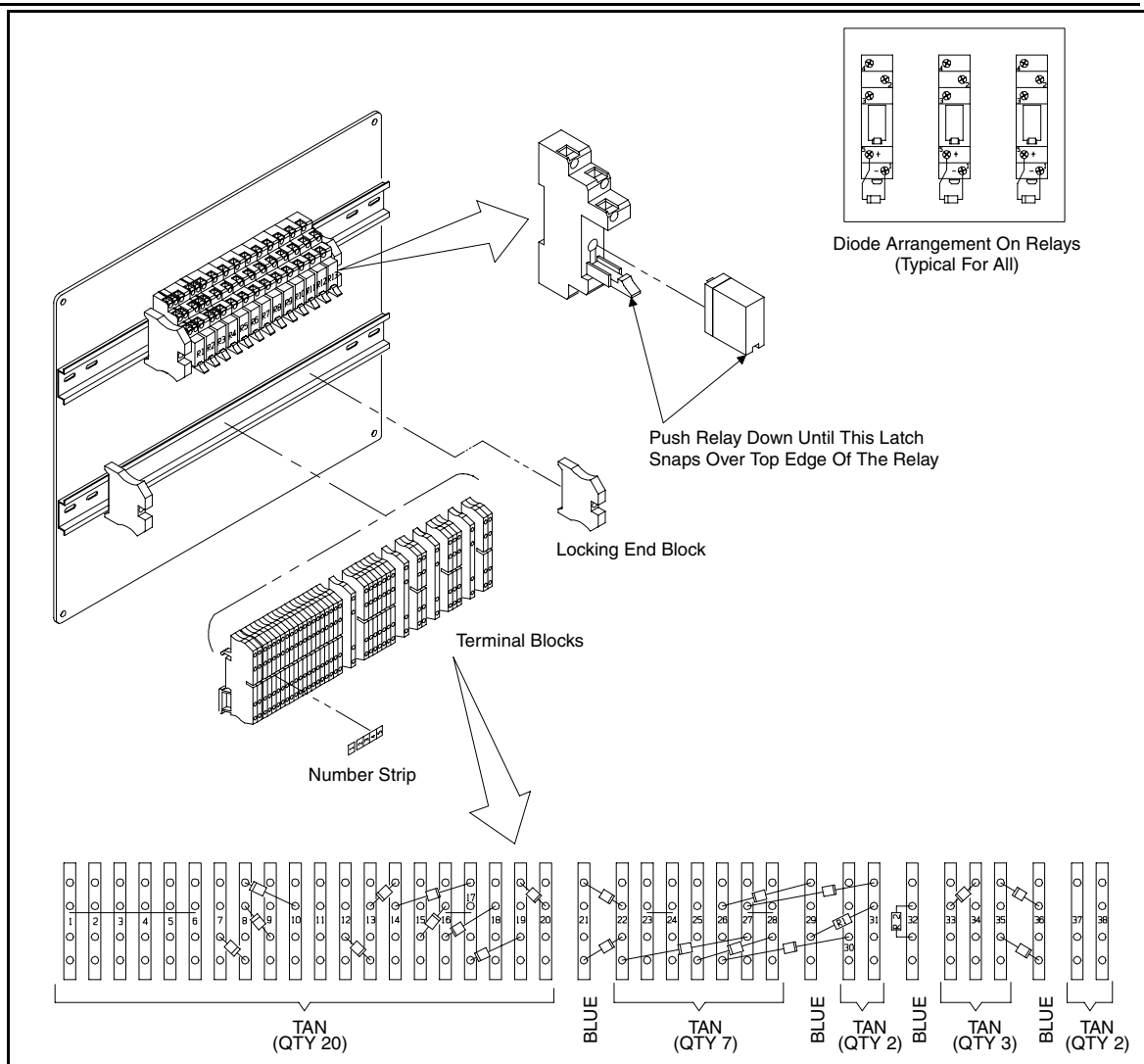


NOTE: The bottom of the cover is hinged.

RELAY/TERMINAL BLOCK PANEL ASSEMBLY

The Relay Panel Assembly is located inside the Lower Control Assembly.

Figure 3-24: Relay Panel Assembly



RELAYS

There are 13 relays, numbered from left (R1) to right (R13). Each relay socket includes a diode (3 Amp, 400 Volt).

TERMINAL BLOCKS

Refer to Figure 3-24.

The diode/jumper bar contains 34 tan terminal blocks and four (4) blue terminal blocks.

There are 20 diodes (5 Amp, 400 Volt) installed on the terminal blocks. Install diodes in the proper direction, as indicated by the stripe on the body of the diode.

There are two (2) resistors (100 ohm) and four (4) jumpers installed on the terminal blocks. Their locations are shown in Figure 3-24.

WIRING

Refer to the Lower Controller Assembly Wire Hookup in Section 5.

UPPER CONTROLS

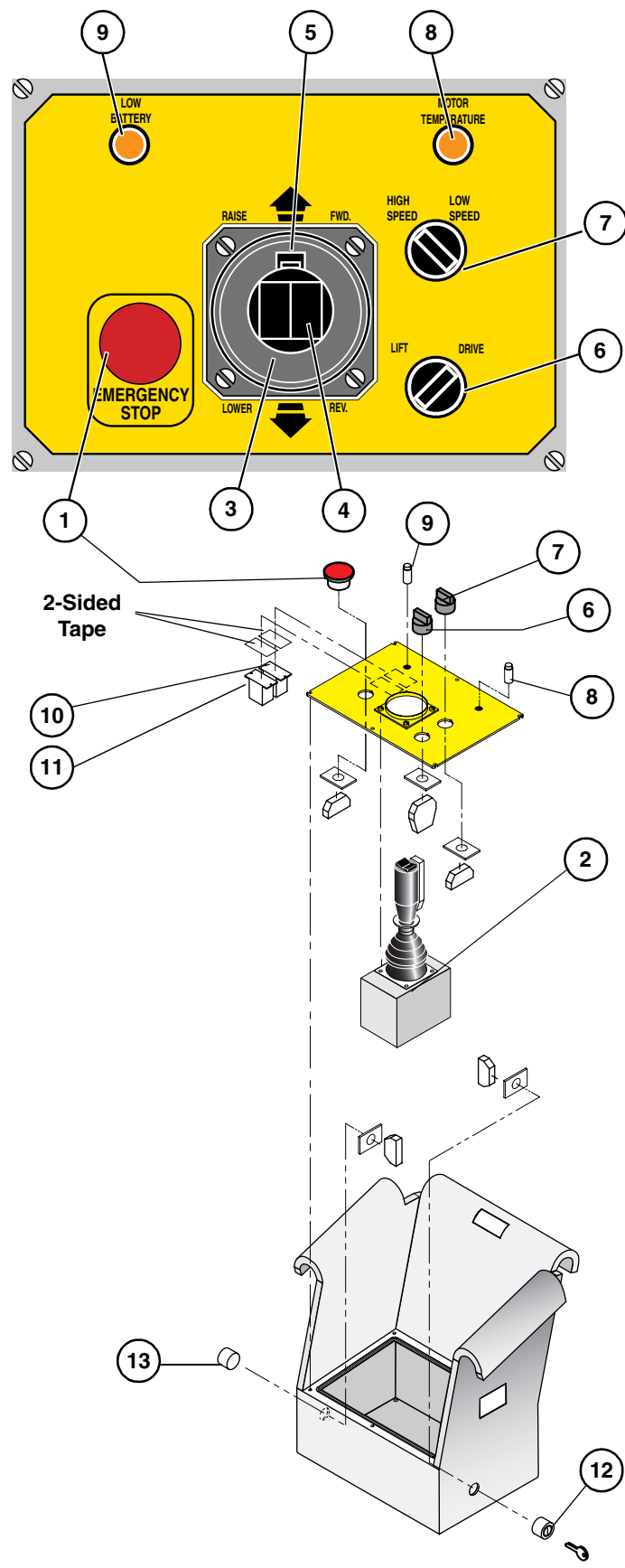
Figure 3-25: Upper Controller Assembly

The control panel is secured to the control box with four (4) screws. Remove the screws to remove the control panel.

Refer to Section 5 for a wiring diagram for the Upper Controller Assembly.

1. The Emergency Stop Button is a normally closed single contact block,
2. The 48 Volt Controller is secured to the control panel with four (4) screws. Do not disassemble the controller. If necessary, replace the entire unit.
3. The Proportional Control Handle is a component of the 48 Volt Controller.
4. The Steering Rocker Switch is a component of the 48 Volt Controller.
5. The Interlock Trigger Switch is a component of the 48 Volt Controller.
6. The Lift/Drive Selector Switch is a double contact block.
7. The High Speed/Low Speed Selector Switch is a normally closed single contact block.
8. The Motor Temperature Indicator Light is activated by the temperature indicator relay (R13).
9. The Low Battery Indicator Light is activated by a switch in the hour meter.
10. The Platform Power Relay plugs into a receptacle in the bottom of the control box. It provides power to the platform controls.
11. The Prevent Pump Start-up Relay plugs into a receptacle in the bottom of the control box.
12. The Key Switch is a normally closed contact block. It supplies power to the Platform Power Relay.
13. The Horn Button supplies power to the horn.

The numbers on this illustration correspond to the accompanying text



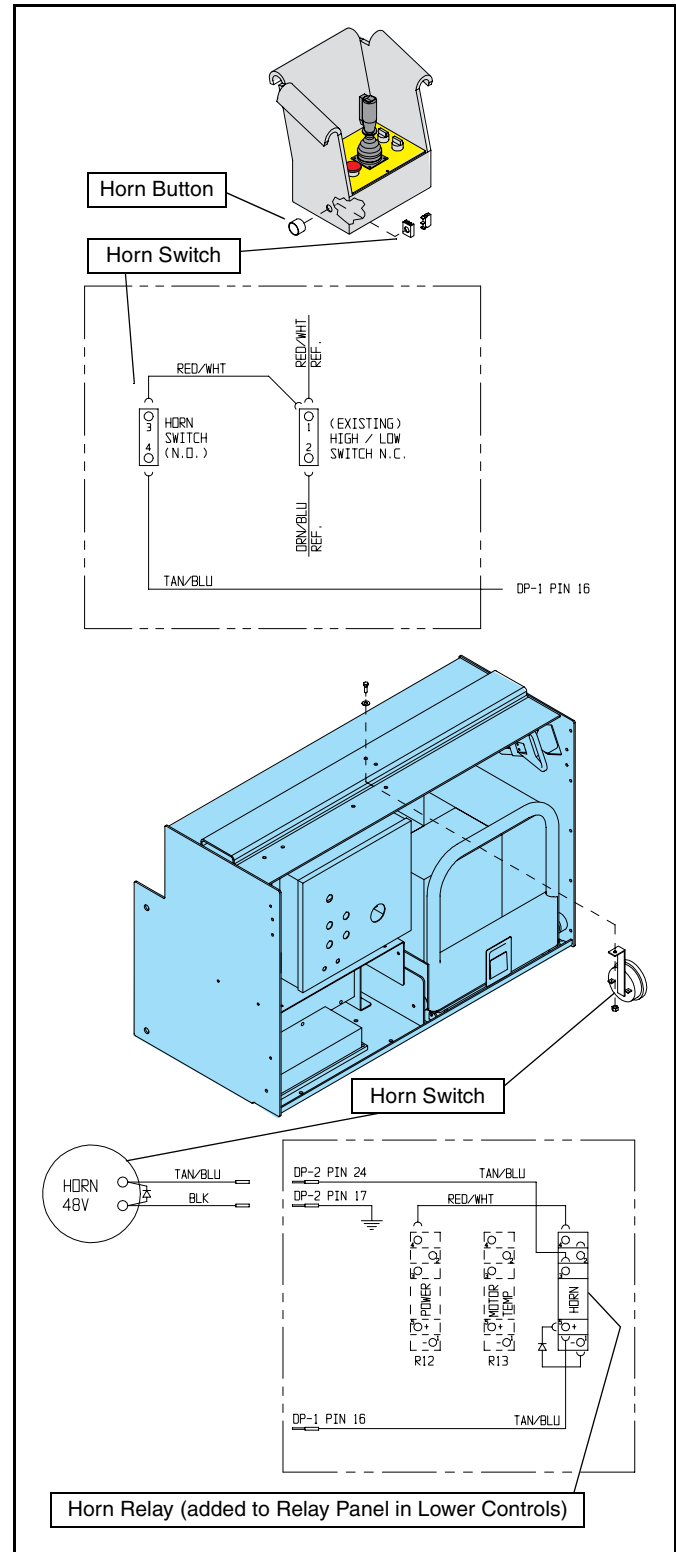
HORN

Figure 3-26: Horn Assembly

The 48 Volt horn is mounted inside the control module. There are two wires on the horn:

- tan/blue = power
- black = ground.

The horn option is wired into the upper controller and the control module, as illustrated in Figure 3-26.



3.10 POWER

The XRT Electric Work Platform is powered by eight (8) 6 Volt DC batteries. There are four (4) batteries in the Control Module, and four (4) batteries in the Power Module. The battery system supplies 48 Volt DC current to the drive system and the hydraulic system.

BATTERY MAINTENANCE

Refer to Section 2 for battery maintenance and battery charging instructions.

Refer to "Battery Tray" on Page 3-22 for replacement instructions.

BATTERY CHARGER

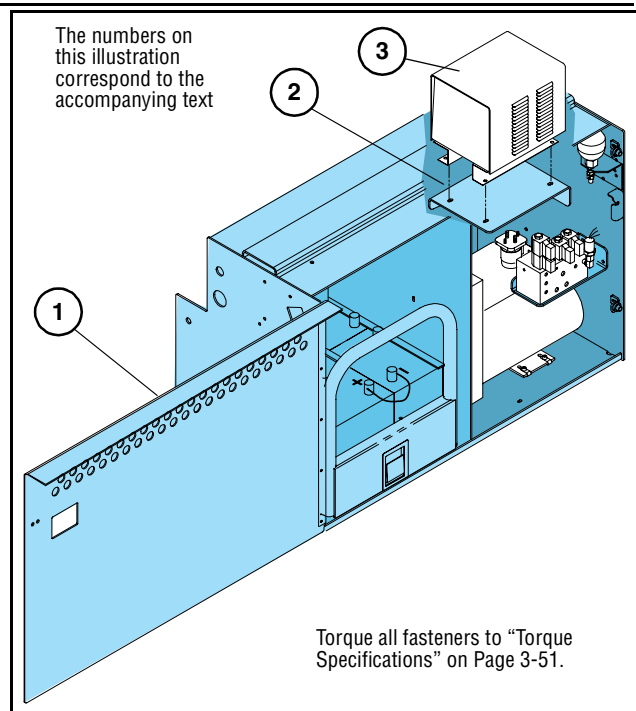
Figure 3-27: Battery Charger

REMOVE AND REPLACE

Refer to Section 6 for a complete parts list.

1. Open the Power Module door.
2. Remove the four (4) screws, flat washers and nuts from the bottom of the battery charger.
3. Remove the battery charger from the Power Module.

Installation is reverse of removal.



3.11 MOS90 RELAY PANEL ASSEMBLY

BASICS

Refer to Section 4 for fault finding flow charts.

Figure 3-28: MOS90 Relay Panel Assembly

Important basics applicable to the motor control unit.

- The MOS90 has a green diagnostics LED in the front panel.
- The green LED will turn on and shine continuously when the MOS90 is powered up and working correctly.
- The green LED will be off if no power is supplied to the MOS90.
- The green LED will flash a sequence of flashes if the MOS90 is damaged or is receiving an improper signal. An explanation of the flash sequence's "flash faults" is shown in Section 4.
- The MOS90 is high temperature protected by "thermal cutback." The cutback operates between 80°C (176°F) and 90°C (194°F). Powered functions will gradually operate slower and slower until 90°C (194°F). The MOS90 will shut down at 90°C (194°F). Continued operation at high temperature will damage the MOS90.
- The MOS90 is low voltage protected by "low voltage cutout." The MOS90 shuts down at 14.0 VDC. Powered functions suddenly stop. When input voltage goes above 14.0 VDC, the MOS90 turns back on.
- Calibration of the MOS90 is accomplished with the calibrator tool (UpRight P/N 057128-000).

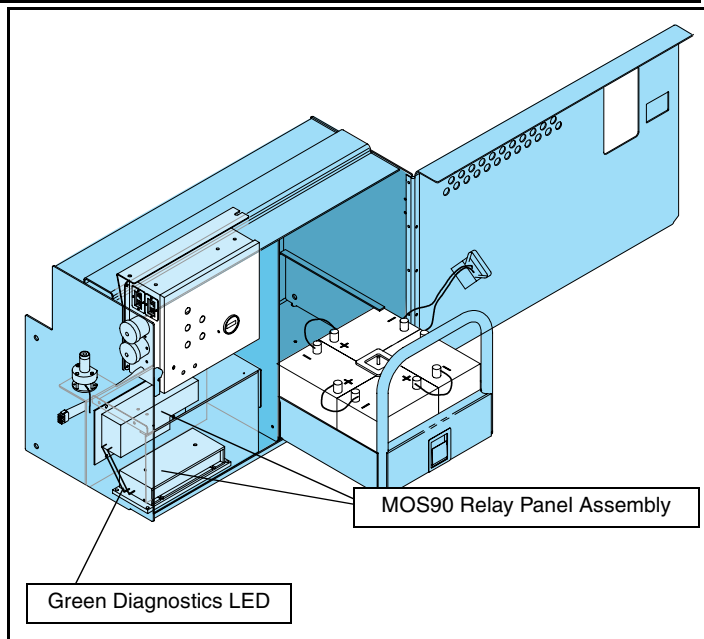


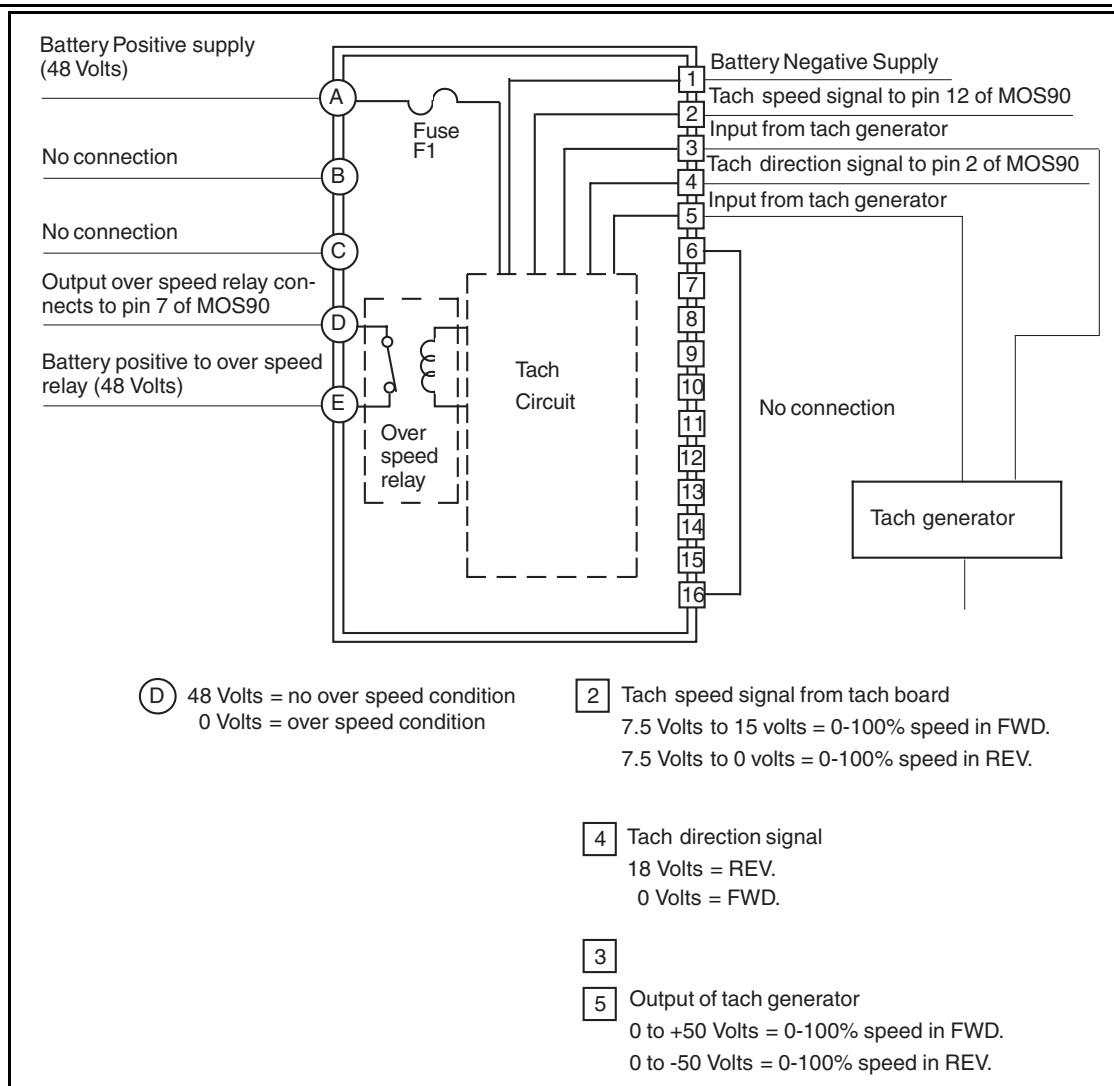
Figure 3-29: MOS90 17-Way Connector Pin-out Designation

Pump/Traction	1	Black	MOS90
Tachometer direction input from tach board (18 Volts = rev. & 0 Volts = FWD.	2	Brown	
No connection	3	Red (spare)	
Height Limit	4	Orange	
Battery + side of direction & brake contactors for coil suppression (48 Volts)	5	Yellow	
+ 48 Volt supply to power up controller	6	Green	
Tilt	7	Blue	
48 Volts when forward is selected & 0 Volts in neutral	8	Purple	
No connection	9	Grey (spare)	
No connection	10	White (spare)	
48 Volts when reverse is selected & 0 Volts in neutral	11	Pink	
Tach signal from tach gen. (7.5 Volts to 15 Volts = FWD. 0-100% ; and 7.5 Volts to 0 Volts = REV. 0-100%)	12	White/Purple	
High/Low Speed	13	White/Red	
Traction accelerator signal (3.5 Volts to 0 Volts = min. to max. speed)	14	White/Black	
Forward contactor driver - goes to battery negative to energize contactor	15	White/Yellow	
Brake applied input (48 Volts = brake on; and 0 Volts = brake off)	16	White/Blue	
Reverse contactor driver - goes to battery negative to energise contactor	17	White/Green	

TACHOMETER BOARD

The Tachometer Board is mounted on the MOS90 Relay Panel Assembly. Figure 3-30 shows how the Tachometer Board is wired to the relay panel assembly. Figure 3-31 shows its location on the relay panel assembly.

Figure 3-30: Upright Tachometer Board



MOS90 CALIBRATOR TOOL

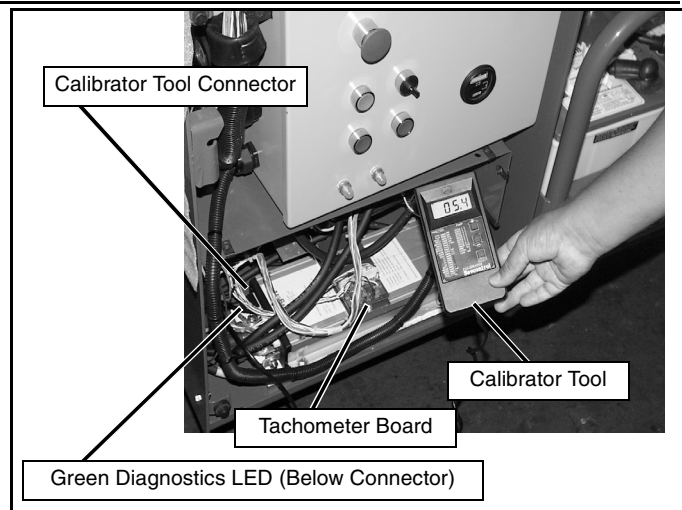
Figure 3-31: MOS90 Diagnostics LED and Calibrator Connections

Refer to Section 4 for fault finding flow charts relating to the green diagnostics LED. Refer to Figure 3-31 for green diagnostics LED location.

Refer to "Using the MOS90 Calibrator Tool" on Page 3-30 for instructions on the use of the calibrator tool.

Refer to Figure 3-31 for the location of the calibrator tool connector on the MOS90 Relay Assembly front panel.

Refer to Figure 3-29 for pin-out designations for the MOS90 calibrator tool connector.



USING THE MOS90 CALIBRATOR TOOL

Refer to Section 4 for fault finding flow charts.

Figure 3-32: MOS90 Calibrator LED Segments

Connect the calibrator to the front panel of the MOS90 Relay Panel Assembly (refer to Figure 3-31). The calibrator has 20 LED segments marked as shown.

The values which should be expected when checking the machine are shown in Table 3-1 and Table 3-2.

There are three buttons on the calibrator:

- increment, marked +
- decrement, marked -
- select

When select is pressed, each LED will light in sequence until the select button is released. Each setting can be incremented or decremented using the + or - buttons when the adjacent LED is lit.

When "Test" LED is lit, the state of the MOS90 inputs is displayed. The first input displayed is the accelerator which can vary from 0-100%.

When the + button is pressed once, the switch Input 1 is displayed. This will be seen as "1.OP" until the switch Input voltage changes. "1.CL" will then be displayed. This is repeated for all the switch inputs.

When BATTV, MOTORV, MOTORA and TEMPC are selected, the controller shows their values.

When BATTV is selected and the "+" button is held in, the highest voltage that the MOS90 has recorded will be displayed.

When TEMPC is selected and the "+" button is held in, the highest temperature that the MOS90 has recorded will be displayed. The "-" button will display the lowest values.

When the MOS90 is first powered up, the recorded minutes of run time is displayed. The "+" button displays thousands of hours and the "-" button displays hundreds of hours.

When the MOS90 is pulsing (being used), run time is being incremented and stored. The "dot" in the time display is blinking when MOS90 is being used, steady when idle.

TRACTION

IMAX		AMP
PLUG		AMP
ACCEL		SEC
CREEP		%VB
BYPASS		AMP
SPEED		%MAX
SPEED1		%
SPEED2		%
F.WEAK		AMP
TIMER		SEC
SEAT		SEC
X2		
X3		
X4		
X5		
BATT		V
MOTOR		V
MOTOR		AMP
TEMP		C
TEST		

Table 3-1: Calibrator Settings

LED	Function	Unit	Setting	Comments
1	MOS90 Maximum Amp. Capacity	Amps	600	Adjustable from 50 amps to 600 amps
2	Acceleration Delay	Seconds	1.0	Adjustable from 1.0 sec to 3.0 sec.
3	Deceleration Delay	Seconds	0.5	Adjustable from 0.5 sec. to 3.0 sec.
4	Traction Creep	%	0	Adjustable from 0% to 10%
5	Max. allowed Speed	%	80	Adjustable from 5% to 100%
6	Cutback Speed 1	%	13	Adjustable from 5% to 25%
7	Cutback Speed 2	%	75	Adjustable from 20% to 75%
8	Pump Current limit	Amps	270	Adjustable from 50 amps to 600 amps
9	Cutback1 Plug Current	Amps	400	Adjustable from 180 amps to 750 amps
10	CSC Proportional Gain	1	32	Adjustable from 1 to 100
11	CSC Integral Gain	1	23	Adjustable from 1 to 100
12	Low Voltage Cutout	Volts	32	Adjustable from 25 Volts to 40 Volts
13	Pump Acceleration Delay	Seconds	2.0	Adjustable from 1.0 to 3.0
14	Pump Creep	%	0%	Adjustable from 0% to 30%

Table 3-2: Calibrator Display

Sequence No.	Test	Display	Input #
-	Acc. Input	0-100%	14
1	Forward	CL/OP	8
2	Reverse	CL/OP	11
3	Tach Input	0-100%	12
4	Elev. Pos.	CL=Collapsed. OP=Lifted	4
5	Tilt Switch	CL=Level OP=Tilt	7
6	Pump Switch	CL= Pump OP=Trac.	16
7	Act. Direction	OP=FWD	2
8	Tacho Output	CL=REV	
9	High/Low Speed	CL=High OP=Low	13
9	Direction Flag	OP=No Dr. CL=Drv actv.	-
10	First Error Latch	Value= Flash Code	0-255

NOTE: CL = Switch Closed
OP = Switch Open

3.12 HYDRAULIC SYSTEM

HYDRAULIC OIL AND FILTER REPLACEMENT

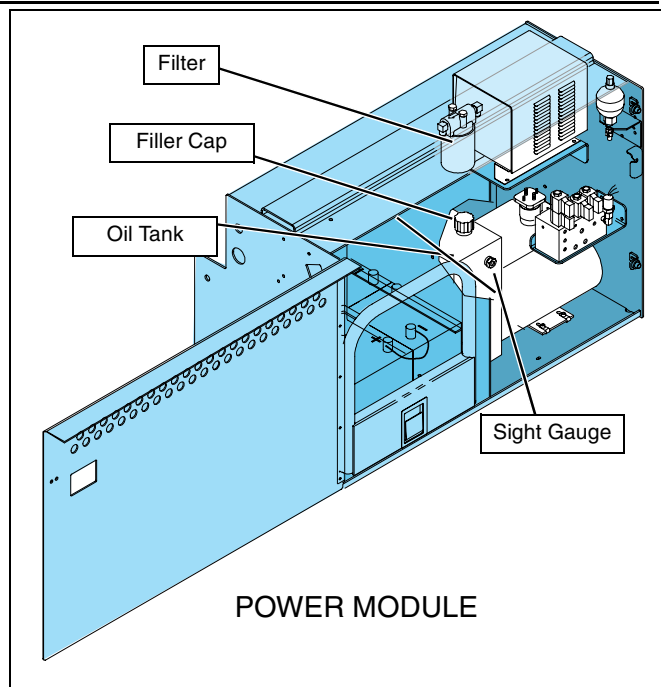
! CAUTION !

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

Figure 3-33: Hydraulic Oil Filter Replacement

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Lower the platform completely.
3. Provide a suitable container to catch the drained oil. The hydraulic tank has a capacity of 23 liters (6 U.S. gal.).
4. Open the module door.
5. Remove the magnetic drain plug and allow all oil to drain into the container; be sure to dispose of oil properly. The drain plug is accessible through an opening in the bottom of the power module.
6. Clean and reinstall the drain plug.
7. Unscrew the filter from the filter assembly.
8. Apply a thin film of clean hydraulic oil to the gasket of the replacement filter.
9. Screw the replacement filter onto the filter head until the gasket makes contact, then rotate the filter $\frac{3}{4}$ of a turn further.
10. Fill the hydraulic reservoir with the appropriate hydraulic oil until the oil is visible through the sight gauge.

NOTE: The platform must be fully lowered when filling the reservoir.



HYDRAULIC POWER UNIT ASSEMBLY

Figure 3-34: Hydraulic Power Unit Assembly

The Hydraulic Power Unit Assembly is located in the Power Module. The hydraulic oil capacity is 23 liters (6 U.S. gal.).

REMOVAL

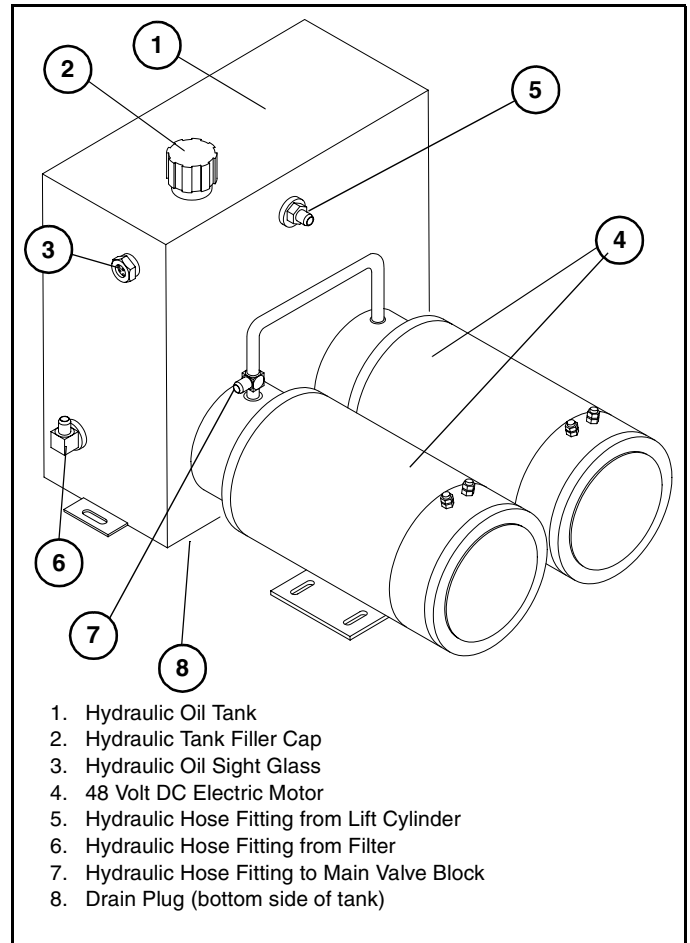
NOTE: If the hydraulic tank has not been drained, suitable means for plugging the hoses should be provided to prevent excessive fluid loss.

1. Disconnect the battery power supply (refer to "Battery Tray" on Page 3-22).
2. Mark, disconnect, and plug the hose assemblies.
3. Mark and disconnect the electrical connections from each motor.
4. Remove the mounting bolts from the base of the assembly.
5. Remove the assembly from the Power Module.

INSTALLATION

1. Replace the Power Unit Assembly into the Power Module, and install all mounting bolts.
2. Unplug and reconnect the hydraulic hoses.
3. Fill the tank completely with clean hydraulic oil.
4. Connect the electrical connections to the motors.
5. Connect the battery power supply.

NOTE: Hydraulic pump pressure is factory set. Adjusting pump pressure may cause damage to hydraulic components.



HYDRAULIC PUMPS

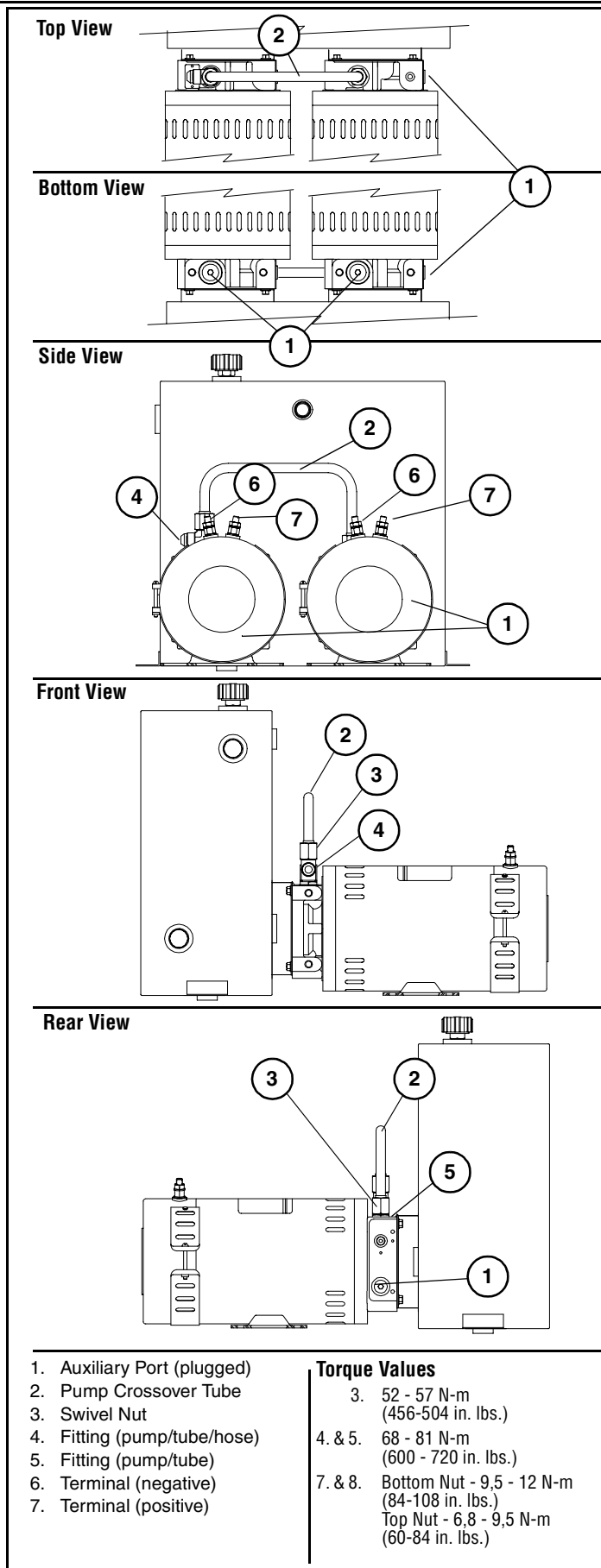
Each pump and motor delivers 9.46 liters/minute (2.5 U.S.gallons/minute) minimum at 90 amps maximum.

REMOVE AND REPLACE

1. Remove the Power Unit Assembly from the Power Module (see "Hydraulic Power Unit Assembly" on Page 3-32).
2. Loosen the swivel nuts, and remove the cross-over tube from the top of the pumps. When re-installing, torque to 52 - 57 N-m (456 - 504 in.-lbs.).
3. For each pump/motor, remove the four (4) cap screws and separate the unit from the tank.

Installation is reverse of removal.

Figure 3-35: Hydraulic Power Unit Remove and Replace



MAIN VALVE BLOCK

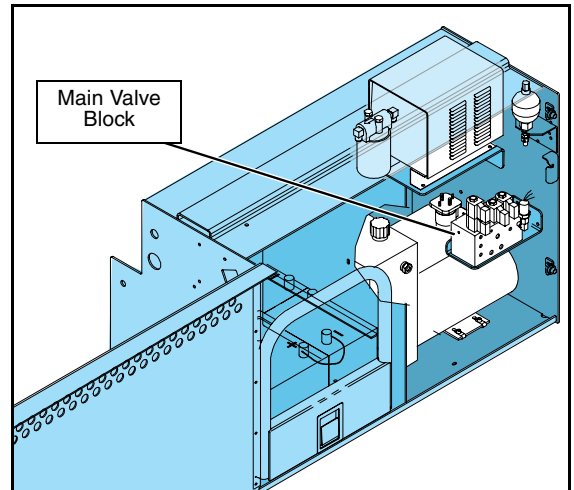
Figure 3-36: Main Valve Block Location

Refer to "Main Valve Block Components" on Page 3-35.

The Main Valve Block is located in the Power Module. Though it is not necessary to remove the valve block to perform all maintenance procedures, a determination should be made prior to beginning as to whether or not the valve block should be removed before maintenance procedures begin.

REMOVAL

1. Disconnect the battery ground cable.
2. Unplug the Main Valve Block wiring harness.
3. Tag, disconnect, and plug the hydraulic hoses.
4. Remove the bolts that hold the valve block to the mounting bracket.
5. Remove the valve block.



DISASSEMBLY

Refer to Figure 3-37.

NOTE: Mark all components as they are removed so as not to confuse their location during assembly.

1. Remove coils from solenoid valves.
2. Remove spool valve cover and spool valve.
3. Remove solenoid valves, lift relief valve, counterbalance valves, and divider combiner valve.
4. Remove fittings, plugs, springs, balls and orifices.

CLEANING AND INSPECTION

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

ASSEMBLY

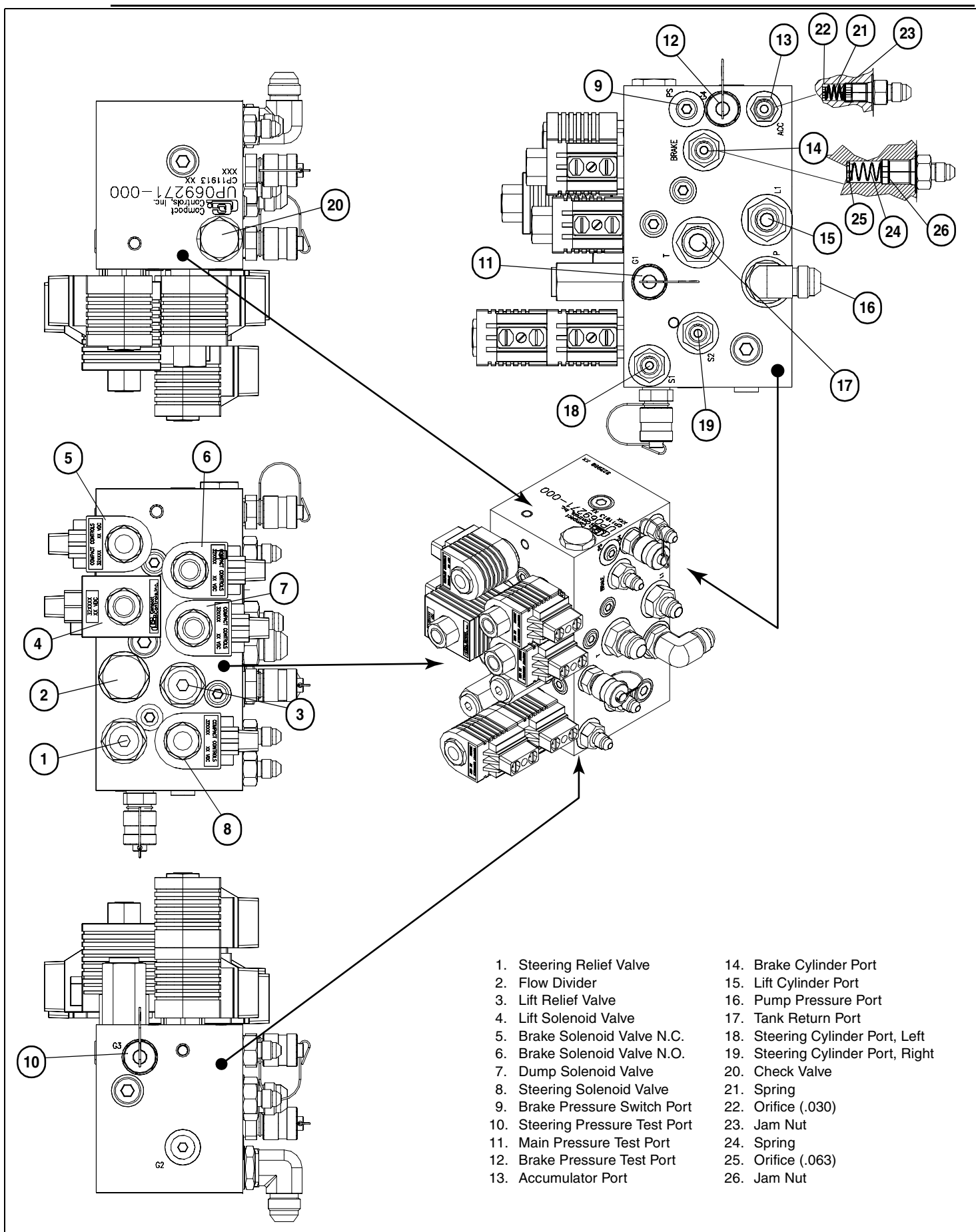
NOTE: Lubricate all O-rings before installation to prevent damage to O-rings. Seat all balls in the valve block by lightly tapping on the ball with a brass drift punch.

1. Install fittings, plugs, springs, balls and orifices. Use one drop of Loctite #242 on each screw-in orifice.
2. Install solenoid valves, lift relief valve, counterbalance valves, divider combiner valve, and spool valve.
3. Install coils on solenoid valves.

INSTALLATION

1. Attach valve block assembly to the mounting bracket.
2. Plug in the Main Valve Block wiring harness.
3. Operate each hydraulic function, and check for proper operation and leaks.

Figure 3-37: Main Valve Block Components



SETTING HYDRAULIC PRESSURES

Figure 3-38: Flow Meter Setup

NOTE: Follow Pump Setup procedure whenever Pump has been replaced, or when testing performance to isolate possible failure. Refer to Figure 3-38 for Flow Meter Setup.

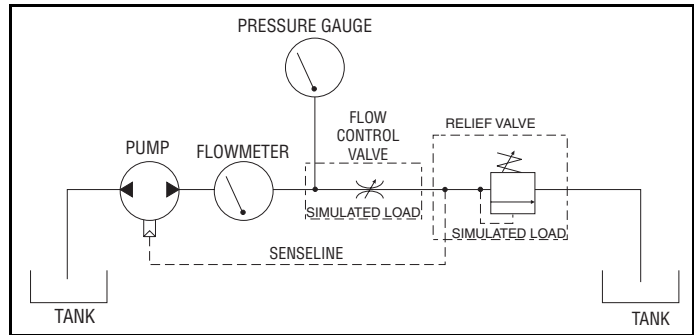
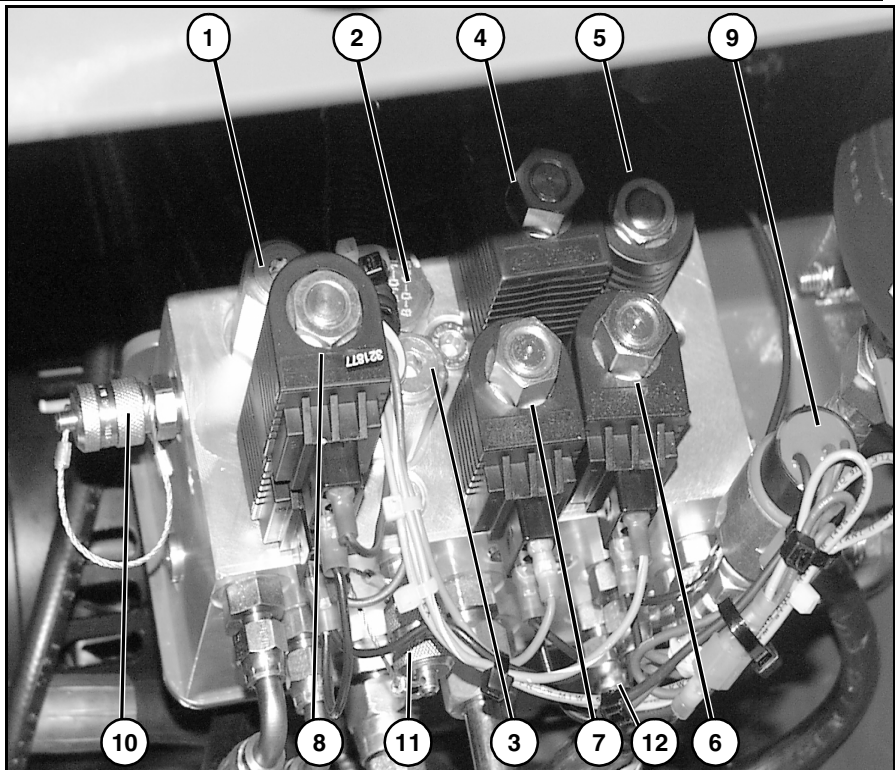


Figure 3-39: Main Valve Block

LIFT RELIEF VALVE

1. Operate the hydraulic system 10 to 15 minutes to warm the oil.
2. Remove the cap or loosen the locknut on the Lift Relief Valve.
3. Turn the Lift Relief Valve adjustment screw counter-clockwise two full turns.
4. Place rated load on the platform (refer to specifications).
5. Push the Raise Button to lift the platform.
6. Slowly turn the Lift Relief Valve adjustment screw clockwise until the platform begins to rise.
7. Replace the cap, or tighten the locknut on the Lift Relief Valve, and remove the load from the platform.



STEERING RELIEF VALVES

1. Operate the hydraulic system 10 to 15 minutes to warm the oil.
2. Install a 207 bar (0-3000 psi) gauge at the Steering Pressure Test Port.
3. Loosen the locknut or remove the cap on the Steer Relief Valve.
4. Turn the adjustment screw two full turns counterclockwise.
5. Press the Steering Switch to the left and hold until the system bypasses.
6. Turn the Steering Relief Valve adjustment screw clockwise until the gauge reads 96,5 bar (1400 psi).
7. Tighten the locknut or replace the cap on the Steering Relief Valve.
8. Press the steering switch to the right and hold to check pressure in that direction.

3.13 CYLINDER REPAIR

W A R N I N G

Cylinders may be very heavy. Support cylinders before removing pins that secure cylinder to machine.

REMOVAL

NOTE: Refer to “Illustrated Parts Section” for location of cylinder and list of parts that secure cylinder.

1. Remove the cylinder from the machine as described for each cylinder on the following pages.
2. Mark and disconnect hoses and IMMEDIATELY cap the openings to prevent contamination.

DISASSEMBLY

1. Remove the head from the cylinder body.
2. Carefully slide the rod assembly out of the cylinder.
3. Remove the seal kit components (wipers, rod seals, O-rings and backup rings) from the head and piston.
4. Inspect parts for scratches, pits or polishing. Check seal grooves and sealing surfaces. Scratches or pits deep enough to catch the fingernail are unacceptable; replace the cylinder. Polishing is a sign of uneven loading. When this occurs, the surface should be checked for roundness. Cylinders not round within 0,18 mm (.007 in.) should be replaced.

ASSEMBLY

NOTE:

- To avoid cutting the seals, do not use sharp edged tools during seal replacement. After installing seals, allow at least one hour for the seals to elastically restore to their original shape before assembling cylinder.
- Torque all hardware to torques according to Table 3-3, “Torque Specifications for Hydraulic Components,” on Page 3-51 unless otherwise specified.

1. Lubricate all components with clean hydraulic fluid.
2. Install new seal kit components.
3. Lubricate the rod wiper and seal with hydraulic fluid, and slide the head onto the rod.
4. Lubricate the seals on the piston and head.
5. Carefully slide the rod assembly into the cylinder.
6. Secure the head into the cylinder.

INSTALLATION

1. Installation is reverse of removal.
2. Carefully remove the elevating assembly support.
3. Slowly cycle the cylinder several times to remove air from the hydraulic system.
4. Check for proper cylinder operation. Check hydraulic connections for leaks.

3.14 CYLINDERS

STEERING CYLINDER

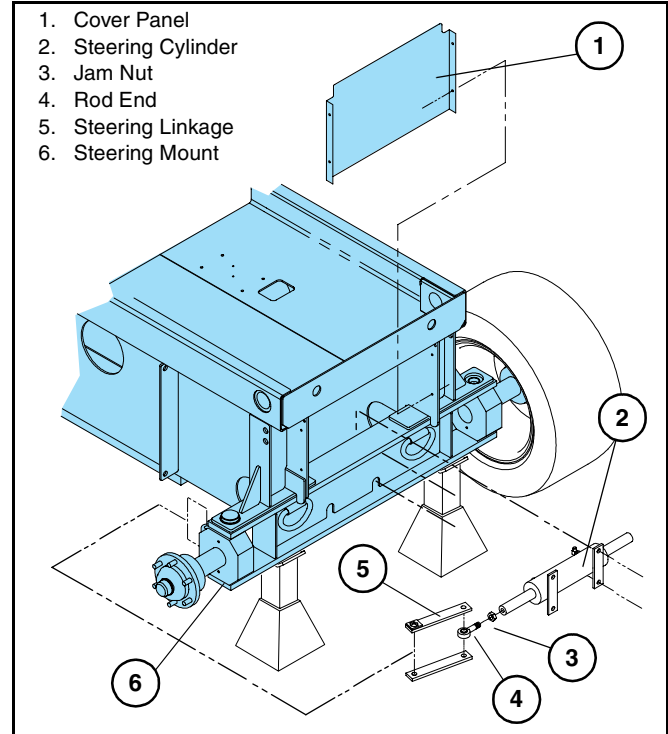
Figure 3-40: Steering Cylinder Removal & Installation

REMOVAL

1. Remove the cover panel to gain access to the Steering Cylinder.
2. Remove the capscrews securing the rod ends to the steering linkage.
3. Remove the capscrews and locknuts that fasten the cylinder assembly to the chassis.
4. Remove the cylinder from the chassis.

INSTALLATION

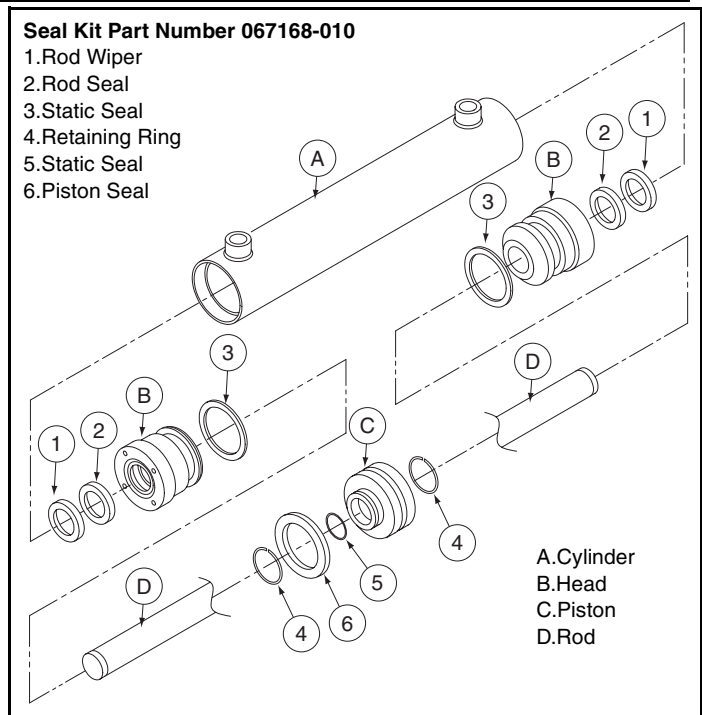
1. Install jam nut on rod end, then thread onto steering cylinder. Do not tighten jam nut.
2. Position the cylinder assembly in the chassis, and install with fasteners and locknuts.
3. Adjust the cylinder rod ends in or out to line up with holes in the steering links. Then tighten jam nut to lock rod end into position.
4. Connect the hose assemblies to the fittings.
5. Operate the steering circuit several times throughout its entire range of travel to expel trapped air and check for leaks.
6. Adjust steering. Refer to "Steering Adjustment" on Page 3-12



REPAIR

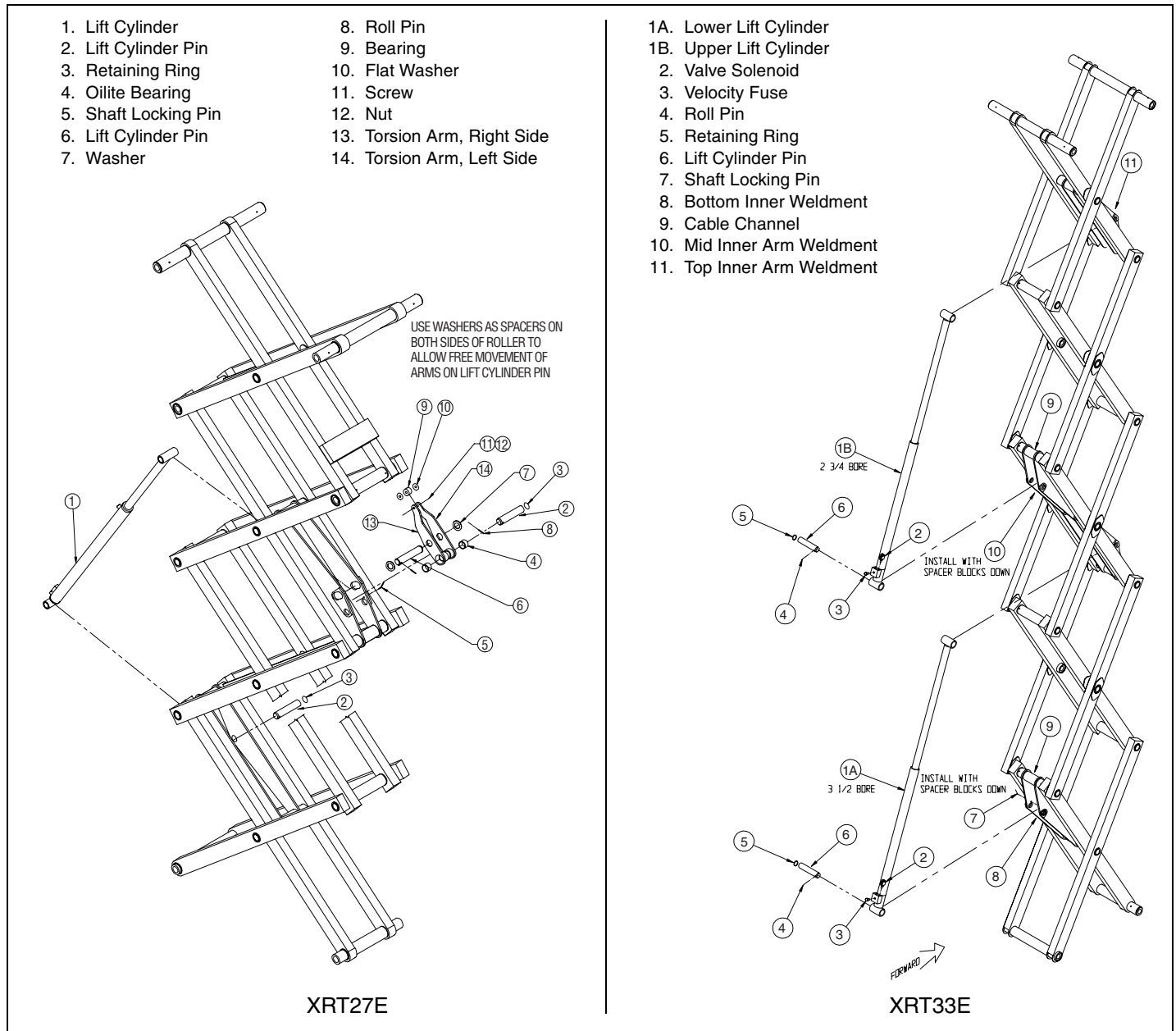
Figure 3-41: Steering Cylinder Seal Kit

Refer to "Cylinder Repair" on Page 3-37.
Refer to Figure 3-41 for seal kit installation.



LIFT CYLINDERS

Figure 3-42: Lift Cylinders, Remove and Replace



Use a suitable maintenance stand to access the upper Lift Cylinder on the XRT33E. DO NOT stand in the elevating assembly

REMOVAL

1. Elevate platform and install brace.
2. Remove Emergency Lowering Valve cable and Emergency Lowering Valve wires from the Emergency Lowering Valve.
3. Remove retaining rings securing Lift Cylinder Pivot Pins. On XRT27E machines, remove the left roll pin in the upper Pivot Pin.
4. Remove lower Pivot Pin by driving pin towards locking pin side. Lower cylinder to rest on chassis.
5. Attach a suitable hoisting device and sling to the cylinder and remove upper Pivot Pin.
6. Carefully remove cylinder.

INSTALLATION

1. Attach a suitable hoisting device and sling to the cylinder. Carefully position cylinder in the elevating assembly and install the upper Pivot Pin.
2. Make sure the Locking Pin fully engages the pivot and pin, and install the retaining ring.
3. Install a new roll pin (if equipped).
4. Carefully lift the cylinder and align the lower mount and install the Pivot Pin. Make sure the Locking Pin is properly installed, then install the retaining ring.
5. Connect the Emergency Lowering Valve cable and Down Valve wires.
6. Unplug hydraulic hoses and attach to the cylinder.
7. Replace hydraulic fluid removed from Lift Cylinder.
8. Test with weight at rated platform load to check system operation. Check for leaks and level of fluid.

REPAIR

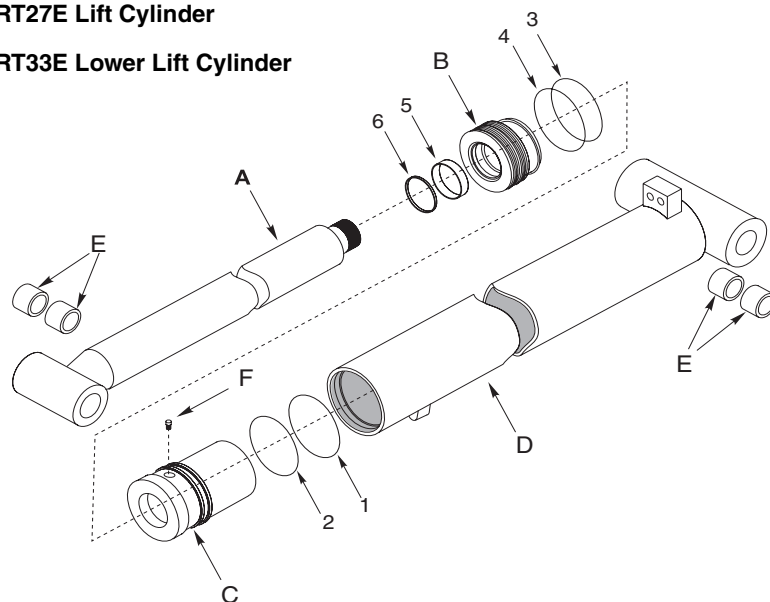
Figure 3-43: Lift Cylinder Seal Kit

Refer to "Cylinder Repair" on Page 3-37.

Refer to Figure 3-43 for seal kit installation.

XRT27E Lift Cylinder

XRT33E Lower Lift Cylinder

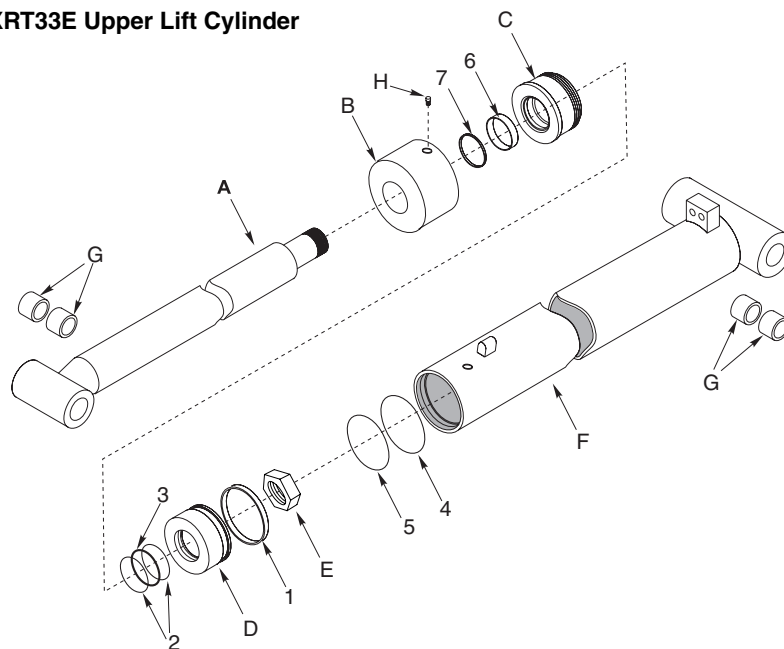


- A. Rod
- B. Thread Cap Head
- C. Piston
- D. Barrel
- E. Bronze Bushings
- F. Set Screw

Seal Kit Part Number 066601-010

- 1. O-Ring
- 2. Back-up Ring
- 3. O-Ring
- 4. Back-up Ring
- 5. Loaded U-Cup
- 6. Rod Wiper

XRT33E Upper Lift Cylinder



- A. Rod
- B. Thread Cap
- C. Thread Cap Head
- D. Piston
- E. Thin Locknut
- F. Barrel
- G. Bronze Bushings
- H. Set Screw

Seal Kit Number 066168-101

- 1. Uniring
- 2. Back-up Ring
- 3. O-Ring
- 4. O-Ring
- 5. Back-up Ring
- 6. Loaded U-Cup
- 7. Rod Wiper

3.15 EMERGENCY LOWERING VALVE

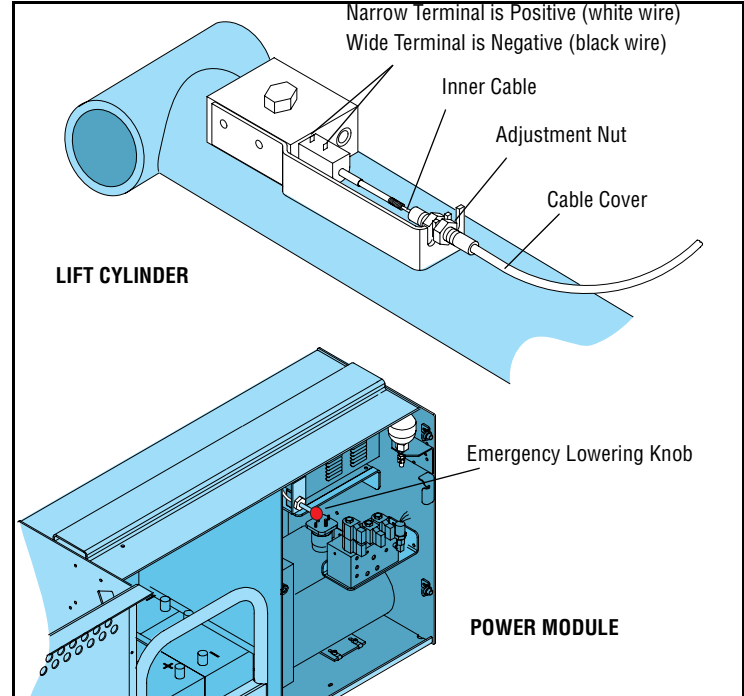
XRT27E

Figure 3-44: Emergency Lowering Valve, XRT27E

The Emergency Lowering Valve is mounted on the lift cylinder and is operated by a pull cable.

Adjust the cable cover to stop the inner cable when the Emergency Lowering Valve is fully open.

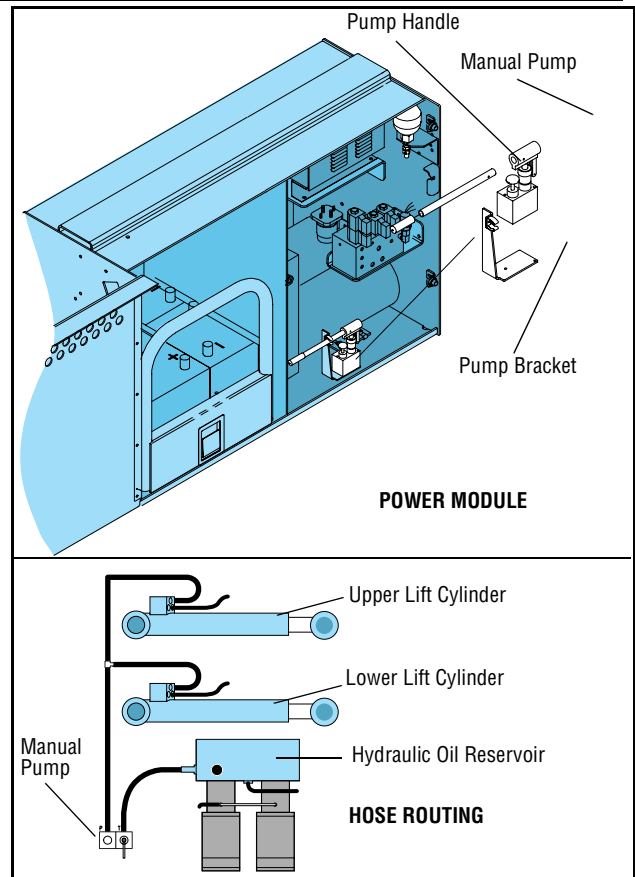
Route the Emergency Lowering cable along the scissor arm and through the cable access hole to the bracket inside the Power Module.



XRT33E

Figure 3-45: Emergency Lowering Valve Pump, XRT33E

The Emergency Lowering Valve is operated by means of hydraulic pressure supplied by a manual pump located in the Power Module.



3.16 SWITCH ADJUSTMENTS

TILT SENSOR

Figure 3-46: Tilt Sensor Adjustment

The Level Sensor has three wires:

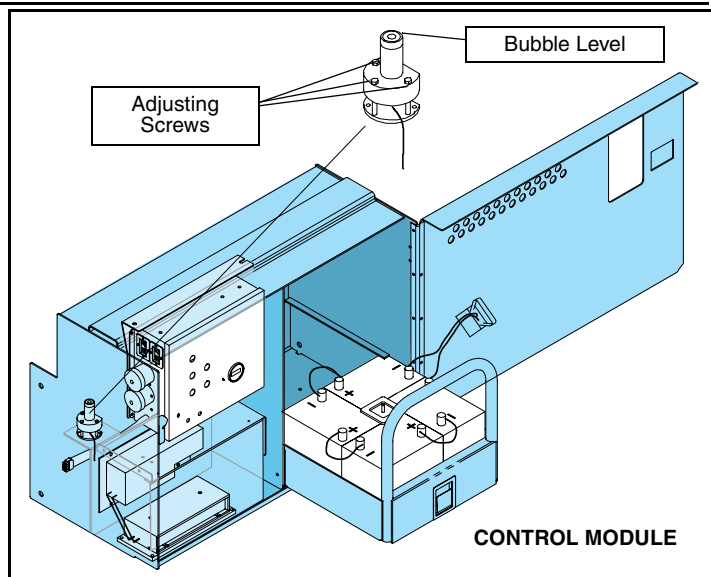
- red - power (48 v in)
- black - ground
- white output (48 v out).

TEST

1. Place the machine on a firm, level surface ± 6 mm ($\frac{1}{4}^\circ$).
2. Use an Inclinator (P/N: 010119-000-00) to ensure that the front and rear of the chassis is level ± 6 mm ($\frac{1}{4}^\circ$).
3. Elevate the platform while pushing the level sensor off level.
 - The platform should stop elevating at approximately two (2) meters (10 ft.), and the alarm should sound.
4. If the platform continues to elevate, and/or there is no alarm, STOP and remove the machine from service until it is repaired.

ADJUST

1. Place the machine on a firm, level surface ± 6 mm ($\frac{1}{4}^\circ$).
2. Use an Inclinator (P/N: 010119-000-00) to ensure that the front and rear of the chassis is level ± 6 mm ($\frac{1}{4}^\circ$).
3. Adjust the three leveling locknuts until the bubble is centered in the circle on the bubble level.



UP-LIMIT SWITCH

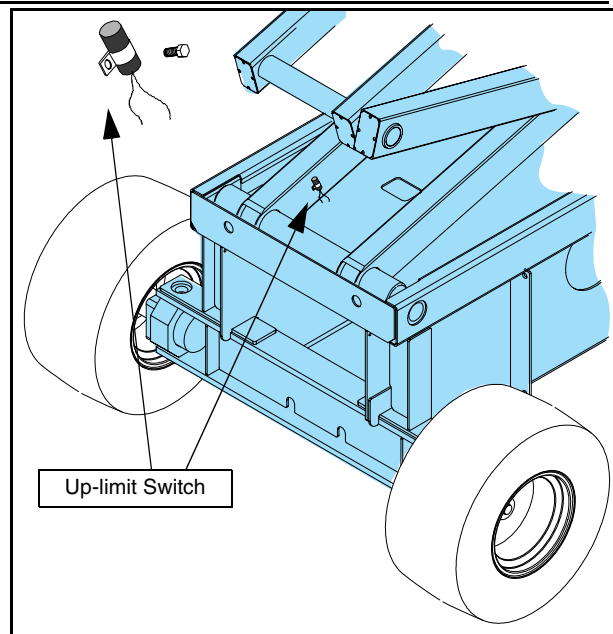
Figure 3-47: Up-limit Switch

The Up-limit Switch is a mercury switch that prevents the cylinders from reaching the end of their stroke.

REMOVE AND REPLACE

1. Elevate the platform and block the elevating assembly (refer to Section 2).
2. Tag and disconnect the two (2) wires.
3. Remove the capscrew from the switch bracket, and remove the switch.

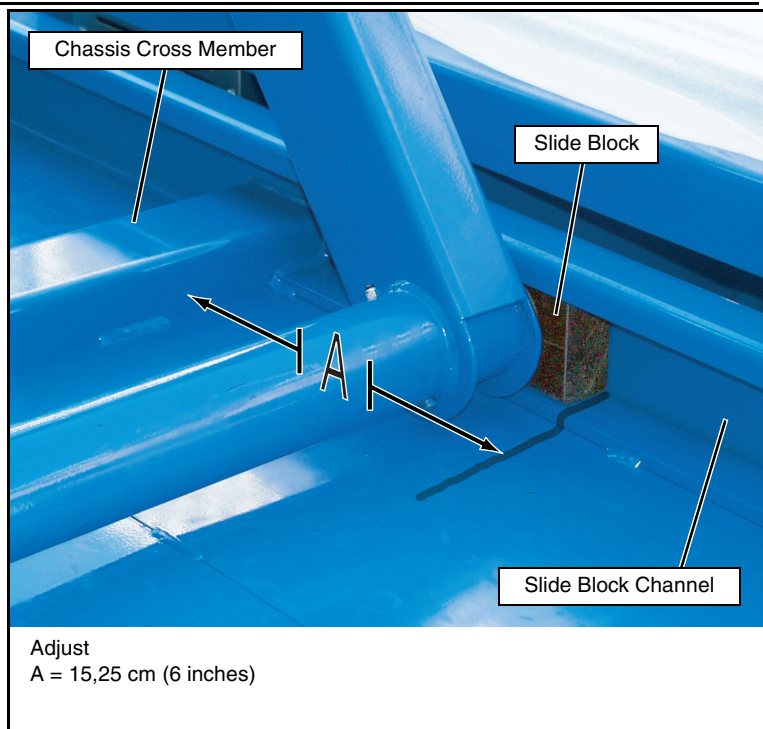
Installation is reverse of removal.



ADJUST

Figure 3-48: Up-Limit Switch Adjustment

1. Elevate the platform and block the elevating assembly (refer to the Operator Manual).
2. Place a mark in the slide block channel 15,25 cm (6 in.) from the chassis cross member (distance "A").
3. Fully elevate the platform.
4. If the slide block stops at the mark, the adjustment is correct. If the slide block does not stop at the mark, proceed.
5. Lower the platform and block the elevating assembly.
6. Place a reference mark alongside the switch.
7. Loosen the capscrew and adjust as follows:
 - a. If distance "A" was less than 15,5 cm (6 in.), rotate the switch slightly toward the front of the machine, and tighten the capscrew.
 - b. If distance "A" was more than 15,5 cm (6 in.), rotate the switch slightly toward the rear of the machine, and tighten the capscrew.
8. Repeat steps 1 through 4.
9. Lower the platform and block the elevating assembly.



PLATFORM DOWN LIMIT SWITCH

! WARNING !

DO NOT attempt to adjust Limit Switches without first blocking the elevating assembly. Refer to Section 2.

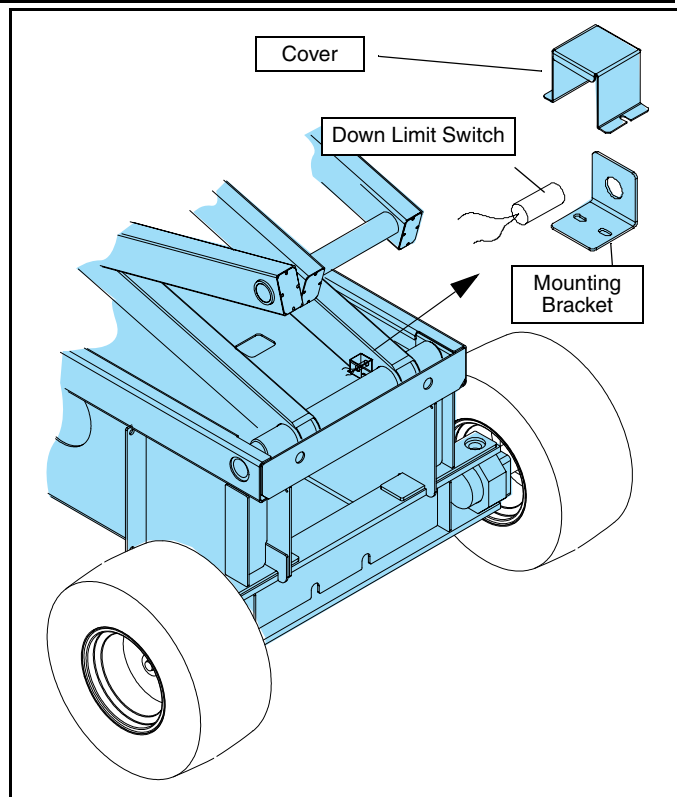
Figure 3-49: Platform Down Limit Switch

The Platform Down Limit Switch (proximity switch) prevents the machine from driving at high speed unless the platform is lowered. When the platform is lowered, the switch closes the circuit to:

- the Cutout Relay, bypassing the Tilt Sensor when the platform is lowered, and to
- the Platform Down Relay, which provides power to the Drive Relay and the Proportional Controller high speed circuit.

TEST AND ADJUST

1. Lower the platform completely.
2. With the Platform/Chassis Switch on Chassis, push the Tilt Sensor base to test the alarm circuit.
3. If the alarm sounds, elevate and block the platform, and adjust the position of the switch mounting bracket as follows:
 - a. remove the cover
 - b. loosen the capscrews and nuts that hold the bracket in place
 - c. move the bracket and tighten the capscrews and nuts.
4. Lower the platform and retest. When the switch is aligned, the alarm will not sound while the platform is lowered.
5. Elevate the platform and block the elevating assembly (refer to Section 2).
6. With platform elevated, repeat Step 2. When the switch is properly adjusted, the alarm will sound.
7. Replace the cover.



3.17 ELECTRIC MOTORS

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 3-50A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions, then it can be assumed the original problem is external to the motor.

DISASSEMBLY

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

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

INSPECTION

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

1. Bearings should spin smoothly and easily, have ample lubrication, and be free of corrosion.
2. Armature should be checked for grounds and shorted turns. Re-finish commutator surface if pitted or excessively worn.
3. Brushes should be checked for wear and to ensure that they are free in the brush holders.

NOTE: Observe how brushes are assembled in brush holders and position of brush lead. New brushes must be installed in the same manner. Brushes should be removed as follows:

- Remove brush spring clip from its mounting on brush assembly.
 - Lift brush assembly from brush holder.
 - Disconnect brush assembly lead.
 - New brush assembly to be installed by reversing above procedure.
4. Inspect wire harness and all connections for signs of damage due to overheating.
 5. Check stator to see if it is securely mounted.

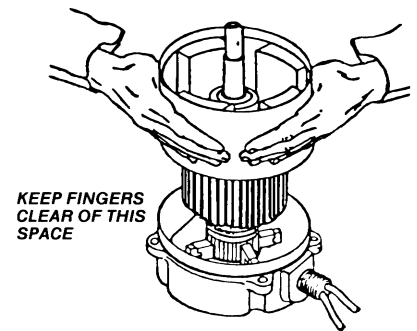
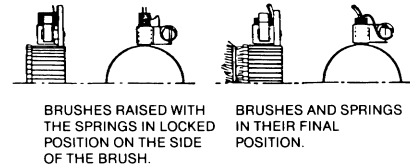
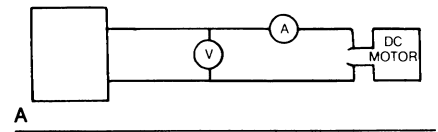
Figure 3-50: Electric Motor Service

REASSEMBLY

1. Install new brushes and be sure they are free in the holder. Install brush with the lead wires positioned as when received. Raise all brushes to the locked position. (See Figure 3-50B and Step 3 in the Inspection section).
2. Place commutator cover on a work bench with brush assembly facing upward.
3. Place the bearing spring into the bearing bore.
4. Take a complete armature assembly, including bearings, and insert commutator end bearing into the bearing bore.

NOTE: Do not re-use bearings which have been removed from armature shaft. Keep assembly in a vertical position. Use extreme care not to damage armature with bearing pullers. New bearings should be installed by pressing inner race of bearing onto proper position on armature shaft.

5. Set the brushes to final position as shown in Figure 3-50B.
6. Place the complete stator down over the vertical armature, and into position on the commutator cover.
7. The stator assembly must be placed in a definite relationship with the commutator covers in order to obtain a neutral brush setting. There is a match-mark on both items. These two marks must line up exactly. Rotate until they do.
8. Assemble the pulley end cover in the proper relationship. Insert mounting bolts and tighten alternately to ensure a good mechanical alignment.
9. Spin the shaft by hand to see if it is free. Be sure motor leads (if used) are not touching together. If the leads are touching, a generator action will give the effect of friction in the motor. A no-load test can now be performed. At rated voltage, observe the no-load current. It should be less than 20% of the nameplate full load current. Anything higher indicates:
 - Brushes are not on neutral setting (check match-marks for exact alignment).
 - Faulty armature.



3.18 OPTIONS

AIR TO PLATFORM

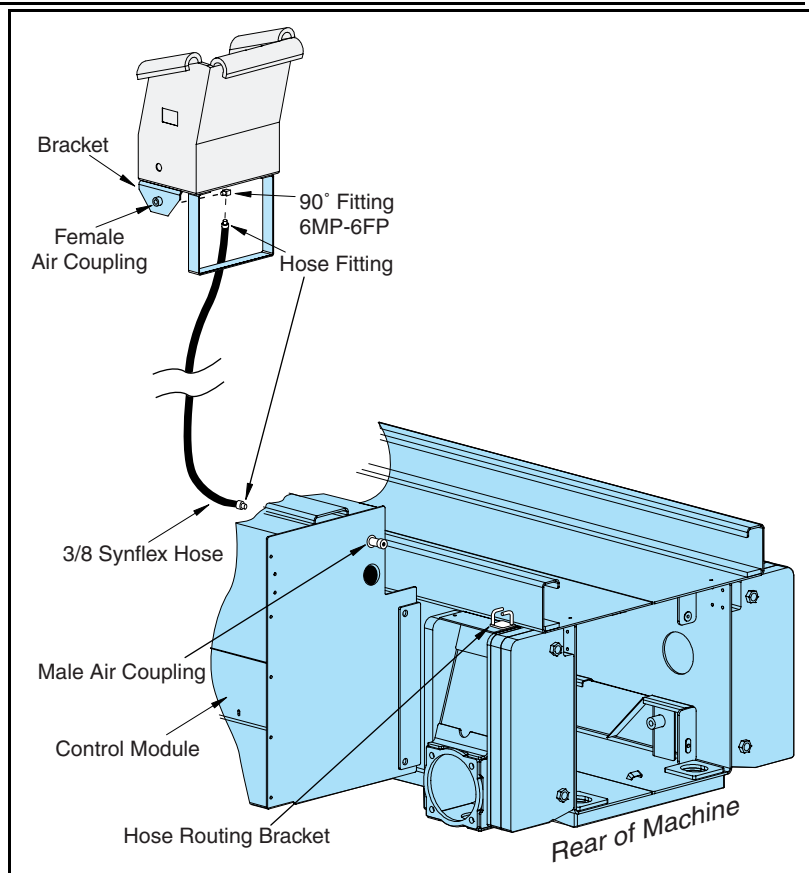
Figure 3-51: Air to Platform Option

NOTE: The Air to Platform option is not compatible with the Removable Controller option.

Route the air line along the control cable line. The air line is attached to a bracket at the bottom of the upper controller.

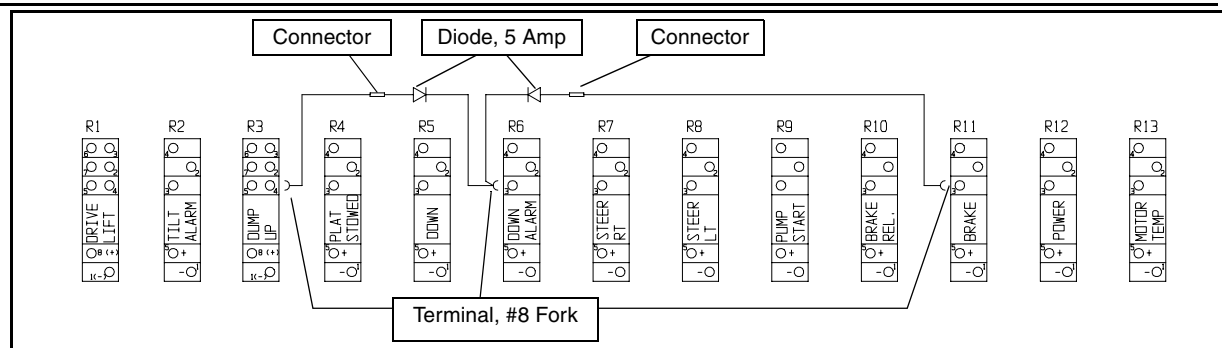
Attach an external air supply hose to the male coupler on the rear of the Control Module. Route the external air supply hose through the Hose Routing Bracket on the chassis.

When facing the controller, there is a female air coupling on the right side of the Upper Controller. Attach an air supply line for air driven power tools there.



ALL MOTION ALARM

Figure 3-52: Motion Alarm



The optional All Motion Alarm sounds whenever the machine moves. Wiring is added to the relays as illustrated in Figure 3-52. The relay panel is located inside the lower controls. Refer to "Lower Controls" on Page 3-23.

FLASHING AMBER BEACON

The Flashing Amber Beacon option consists of two (2) beacons, two (2) mounting brackets, a fuse holder with 2 amp fuse, wire, connectors and mounting hardware.

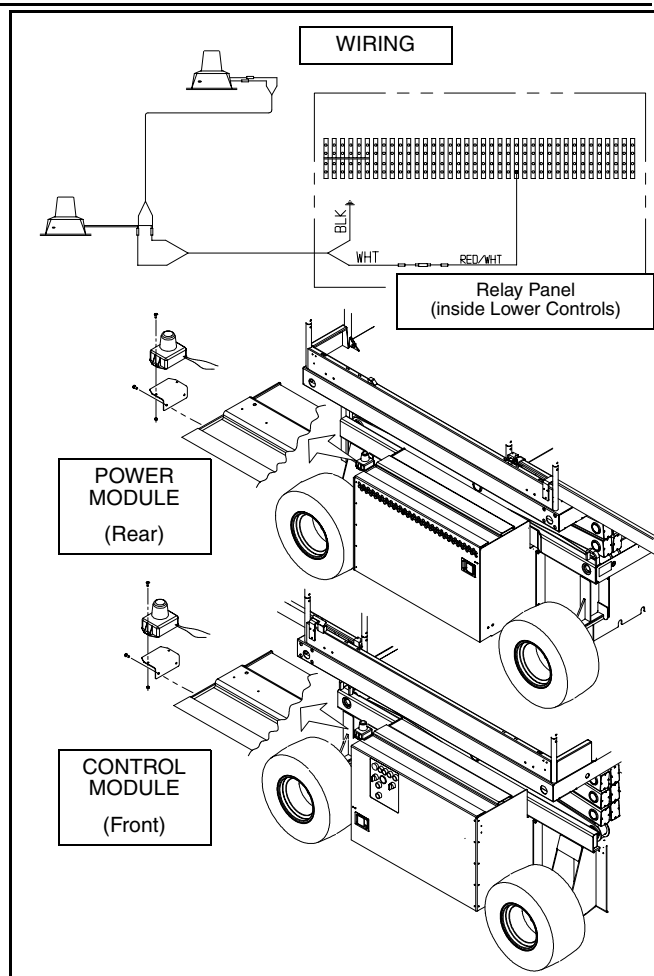
The mounting brackets attach to:

- the front of the Control Module; and
- the rear of the Power Module.

Refer to Figure 3-53 for wiring instructions.

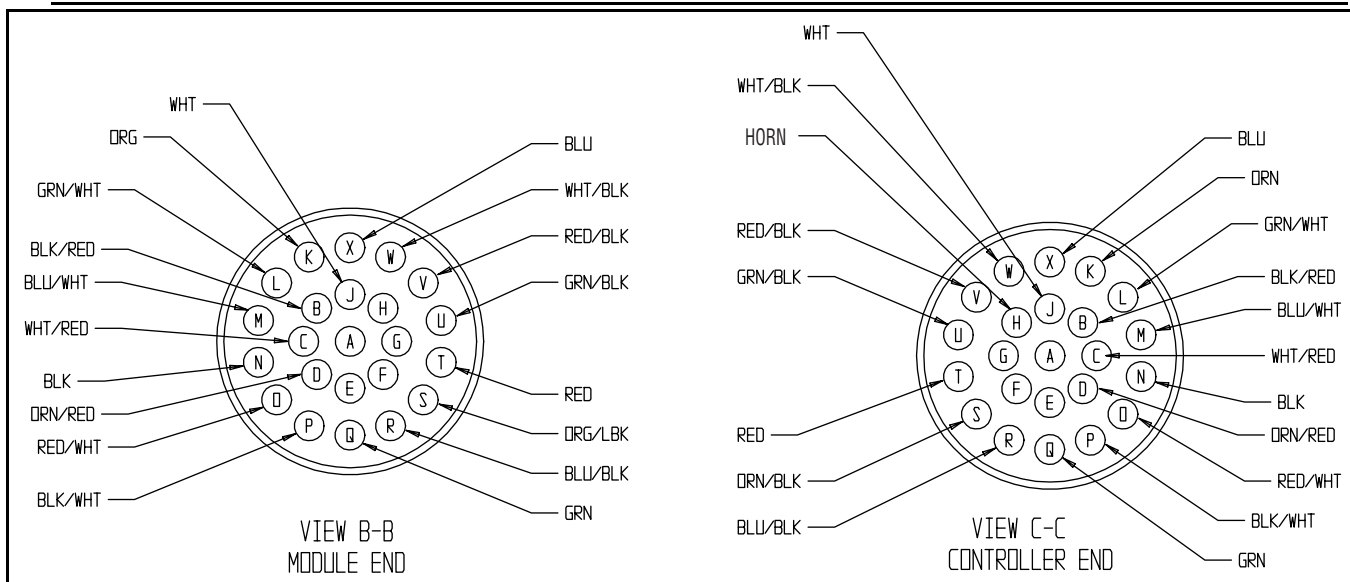
Refer to Section 6 for a complete parts list.

Figure 3-53: Flashing Amber Beacon



REMOVABLE CONTROLLER

Figure 3-54: Removable Controller



The Removable Controller option places a connector in the controller cable, allowing the controller to be removed from the machine. Refer to Figure 3-54 for wiring instructions.

3.19 LONG TERM STORAGE

NOTE: Do not drain the hydraulic system prior to long term storage.

If the work platform is to be placed in long term storage, follow these recommended preservation procedures.

PRESERVATION

1. Clean painted surfaces. If paint is damaged, repaint.
2. Fill the hydraulic tank to operating level. Fluid will be visible at the sight gauge.

IMPORTANT: *Do not fill the hydraulic tank while the platform is elevated.*

3. Coat exposed portions of cylinder rods with a preservative such as multi-purpose grease and wrap with a barrier material.
4. Coat all exposed unpainted metal surfaces with preservative.
5. Service the engine according to the manufacturer's recommendations.
6. Remove the batteries and place them in alternative service.

3.20 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 Aerial Work Platforms.

Table 3-3: Torque Specifications for Hydraulic Components

Type: SAE Part Series	Cartridge Poppet		Fittings		Hoses	
	ft.-lbs.	N-m	ft.-lbs.	N-m	in.-lbs.	N-m
#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 the 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 3-4: Torque Specifications for SAE Fasteners



		 SAE J429 Grade 5			 SAE J429 Grade 8		
Nominal Thread Size		Clamp Load	Tightening Torque		Clamp Load	Tightening Torque	
			K=.15	K=.20		K=.15	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
Nominal Thread Size		Clamp Load	Tightening Torque		Clamp Load	Tightening Torque	
			K=.15	K=.20		K=.15	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 3-5: Torque Specifications for Metric Fasteners, U.S. Customary Units







Nominal Thread Size	 Grade 8.8			 Grade 10.9			 Grade 12.9		
	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 3-6: Torque Specifications for Metric Fasteners, SI Units

Nominal Thread Size	 Grade 8.8			 Grade 10.9			 Grade 12.9		
	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

TROUBLESHOOTING

4.1 INTRODUCTION

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

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

Referring to Section 2.0 and 5.0 will aid in understanding the operation and function of the various components and systems of the work platform 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 which does not operate properly.

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

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

! WARNING !

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

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

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TROUBLESHOOTING PROCEDURES

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

ADJUSTMENT PROCEDURES

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

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

Correct pressure settings are listed in the hydraulic schematic.

CHECKING PUMP PRESSURES

Remove hose from pump port, and connect pressure tester.

4.2 HYDRAULIC SCHEMATICS

066945-010 - XRT27E

Table 4-1: Hydraulic Truth Table - XRT27E

COMPONENT		FUNCTION	RAISE PLATFORM	LOWER PLATFORM	STEER RIGHT	STEER LEFT	RIGHT BRAKE	LEFT BRAKE
ACC	Accumulator						X	X
CV1	Check Valve, Brake Apply						X	X
CV2	Check Valve, Accumulator						X	X
CV3	Check Valve, Lift Cylinder	X	X					
CV5	Check Valve, Brake Release						X	X
CYL1	Left Brake Cylinder							X
CYL2	Right Brake Cylinder						X	
CYL3	Steering Cylinder			X	X			
CYL4	Lift Cylinder	X						
F1	Return Filter	X	X	X	X	X	X	X
F2	Suction Strainer	X	X	X	X	X	X	X
FD1	Flow Divider			X	X			
ORF1	Orifice, Brake Apply						X	X
ORF2	Orifice, Accumulator						X	X
ORF3	Orifice, Lift Cylinder	X	X					
P1	Hydraulic Pump	X	X	X	X	X	X	X
P2	Hydraulic Pump	X	X	X	X	X	X	X
RV1	Main Relief Valve	X	X	X	X			
RV2	Steering Relief Valve			X	X			
S1	Pressure Switch						X	X
V1	Brake Apply Valve						X	X
V2	Brake Release Valve						X	X
V3	Steering Valve			X	X			
V4	Lift Valve	X						
V5	Dump Valve			X	X			
V6	Down Valve, Lift Cylinder	X	X					

066945-012 - XRT33E

Table 4-2: Hydraulic Truth Table - XRT33E

COMPONENT		FUNCTION	RAISE PLATFORM	LOWER PLATFORM	STEER RIGHT	STEER LEFT	RIGHT BRAKE	LEFT BRAKE
ACC	Accumulator						X	X
CV1	Check Valve, Brake Apply						X	X
CV2	Check Valve, Accumulator						X	X
CV3	Check Valve, Lift Cylinder		X	X				
CV4	Check Valve, Lift Cylinder		X	X				
CV5	Check Valve, Brake Release						X	X
CYL1	Left Brake Cylinder							X
CYL2	Right Brake Cylinder						X	
CYL3	Steering Cylinder				X	X		
CYL4	Lift Cylinder, Lower		X					
CYL5	Lift Cylinder, Upper		X					
F1	Return Filter		X	X	X	X	X	X
F2	Suction Strainer		X	X	X	X	X	X
FD1	Flow Divider				X	X		
ORF1	Orifice, Brake Apply						X	X
ORF2	Orifice, Accumulator (Brake Release)						X	X
ORF3	Orifice, Lower Lift Cylinder		X	X				
ORF4	Orifice, Upper Lift Cylinder		X	X				
P1	Hydraulic Pump		X	X	X	X	X	X
P2	Hydraulic Pump		X	X	X	X	X	X
P3	Manual Lowering Pump		X	X				
RV1	Main Relief Valve		X	X	X	X		
RV2	Steering Relief Valve				X	X		
S1	Pressure Switch						X	X
V1	Brake Apply Valve						X	X
V2	Brake Release Valve						X	X
V3	Steering Valve				X	X		
V4	Lift Valve		X					
V5	Dump Valve				X	X		
V6	Down Valve, Lower Lift Cylinder		X	X				
V7	Down Valve, Upper Lift Cylinder		X	X				
V8	Manual Lower Valve, Lower Lift Cylinder		X	X				
V9	Manual Lower Valve, Upper Lift Cylinder		X	X				
V10	Manual Pump Relief Valve		X	X				

4.3 ELECTRIC SCHEMATIC

066946-001 - XRT27E AND XRT33E

Table 4-3: Electronic Truth Table

	FUNCTION	LOWER CONTROLS	UPPER CONTROLS	DRIVE FORWARD	DRIVE REVERSE	RAISE PLATFORM	LOWER PLATFORM	STEER RIGHT	STEER LEFT	BRAKES	TILT ALARM	DOWN ALARM	HIGH/LOW SPEED	BATTERY CHARGER
ALM1	Lower Alarm											X		
ALM2	Tilt Alarm										X			
ALM3	Horn (Option)													
BAT1	Battery Pack (Control Module)	X	X											X
BAT2	Battery Pack (Power Module)													
C1	Main Power Contactor	X	X	X	X									
C2	Forward Contactor			X										
C3	Reverse Contactor				X									
C4	Pump Override Contactor			X	X	X		X	X					
C5	Pump/Traction Contactor							X	X					
C6	Pump Cutout Contactor													
CB1	Circuit Breaker	X	X											
CB2	Circuit Breaker	X	X											
CHG	Battery Charger													X
CONT	Controller	X	X	X	X	X		X	X		X	X	X	
F1	Main Fuse	X	X											X
F2	Main Fuse	X	X											X
L1	Motor Temperature Light													
MTR	Hour Meter													
MOT1	Power Unit Motor	X	X	X	X	X			X	X				
MOT2	Power Unit Motor	X	X	X	X	X			X	X				
MOT3	Left Traction Motor			X	X				X					
MOT4	Right Traction Motor			X	X			X						
R1	Drive/Lift Relay	X	X	X	X	X								
R2	Tilt Alarm Relay										X			
R3	Up Relay					X								
R4	Lower Relay	X	X				X					X		
R5	Lower Alarm Relay											X		
R6	Steer Right Relay							X						
R7	Steer Left Relay								X					
R8	Pump Start Relay	X	X											
R9	Brake Release Relay, N. O.			X	X					X				
R10	Brake Release Relay, N. C.			X	X					X				
R11	Power Relay	X	X	X	X									
R12	Platform Stowed Relay													
R13	Temperature Indicator Relay													
R14	Horn Relay (option)													
R15	Brake Relay													
R16	Platform Power Relay	X	X	X	X	X								
R17	Prevent Pump Start Relay													
RES	Resistor Pack	X	X	X	X									
S1	Proportional Speed Control													
S2	Reverse Micro Switch				X									
S3	Forward Micro Switch			X										
S4	Interlock Switch		X	X	X			X	X					
S5	Steering Micro Switch							X	X					
S6	Upper Emergency Stop Switch		X	X	X	X		X	X					
S7	Drive/Lift Switch			X	X	X								
S8	High/Low Switch												X	
S9	Ignition Keyswitch S21		X											
S10	Horn (option)													

Table 4-3: Electronic Truth Table (Continued)

	FUNCTION	LOWER CONTROLS	UPPER CONTROLS	DRIVE FORWARD	DRIVE REVERSE	RAISE PLATFORM	LOWER PLATFORM	STEER RIGHT	STEER LEFT	BRAKES	TILT ALARM	DOWN ALARM	HIGH/LOW SPEED	BATTERY CHARGER
S11	Up Limit Switch			X	X	X								
S12	Lower Emergency Stop Switch	X		X	X	X		X	X					
S13	Chassis/Platform Switch	X	X											
S14	Lift Switch					X	X							
S15	Brake Release Switch			X	X					X				
S16	Drive Motor Thermal Switches													
S17	Pump Start Switch	X	X	X	X	X								
S18	Proximity Switch			X	X								X	
SEN	Tilt Sensor	X	X	X	X	X								
SOL1	Up Solenoids					X								
SOL2	Down Solenoid						X							
SOL3	Steer Right Solenoid							X						
SOL4	Steer Left Solenoid								X					
SOL5	Brake Release Solenoid, N. O.			X	X					X				
SOL6	Brake Release Solenoid, N. C.			X	X					X				
SOL7	Dump Solenoid													
TG	Tachometer-Generator													

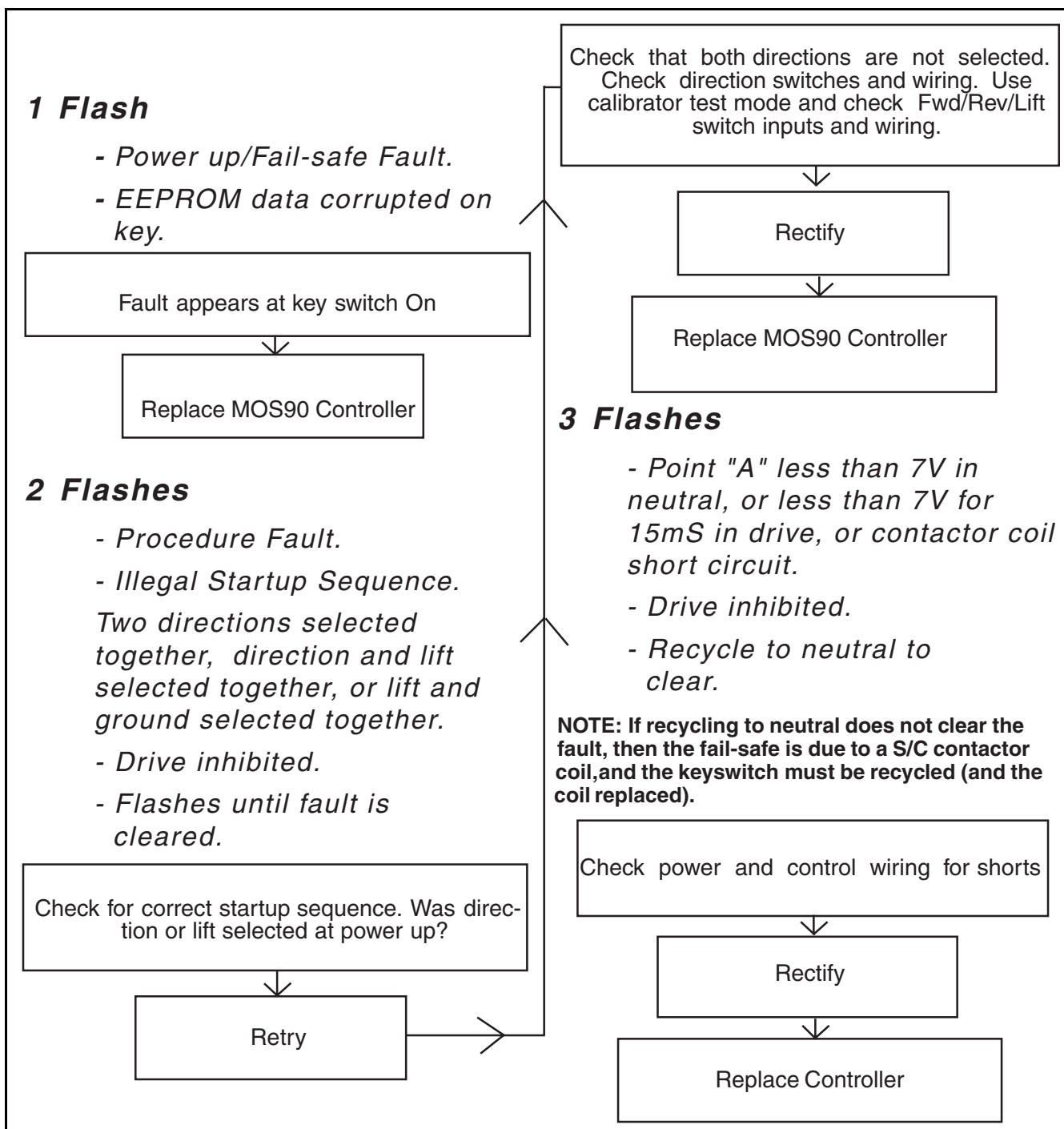
4.4 MOS90 FAULT FINDING

Refer to Section 3, "3.11 MOS90 Relay Panel Assembly," on Page 3-28 for a description of the MOS90 Relay Panel Assembly.

At battery connection, the LED should not illuminate. At key ON, the LED should illuminate steadily. If the LED illuminates and remains steady, but no drive can be selected, the calibrator tool can be used to test the wiring harness. Refer to Section 3, Figure 3-31 "MOS90 Diagnostics LED and Calibrator Connections," on page 3-29.

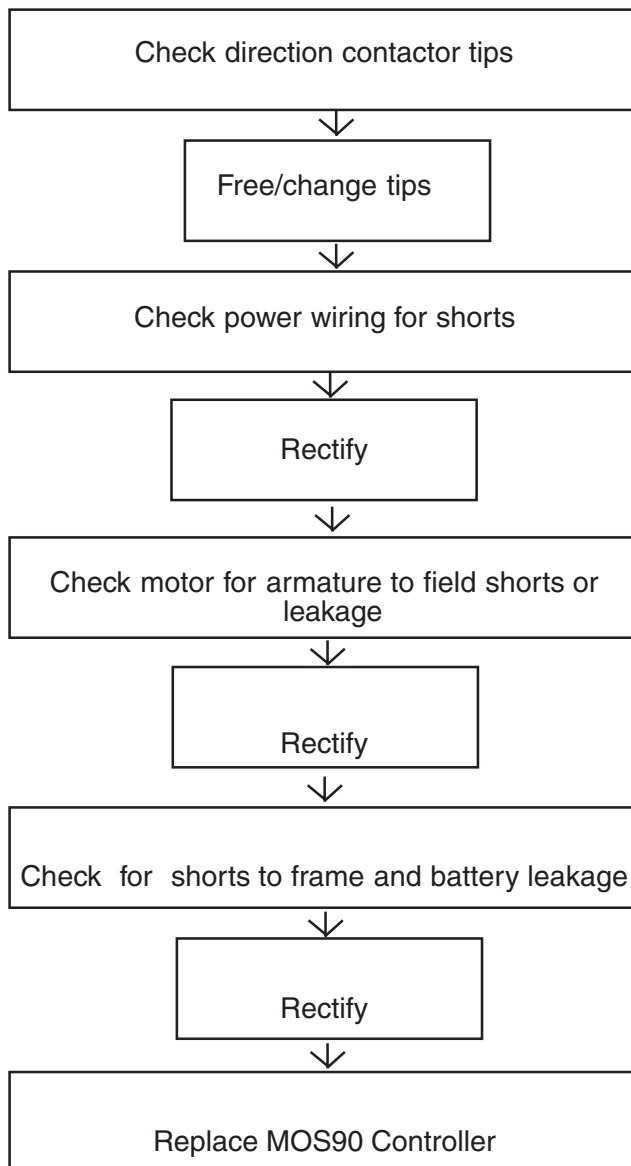
FLOW CHARTS

At key ON, if the LED flashes, use the following charts to identify and rectify the problem.



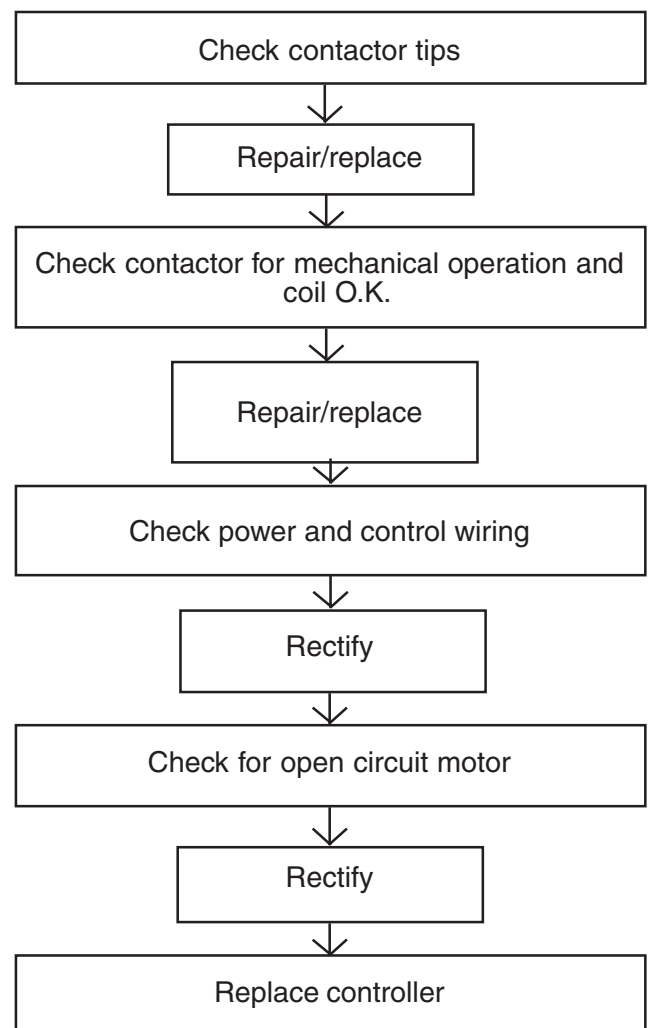
4 Flashes

- Direction contactor welded.
(Point "A" within 6V of B+ve in neutral)
- Leakage between motor armature and field.
- Drive inhibited.
- Flashes in neutral until fault is cleared.



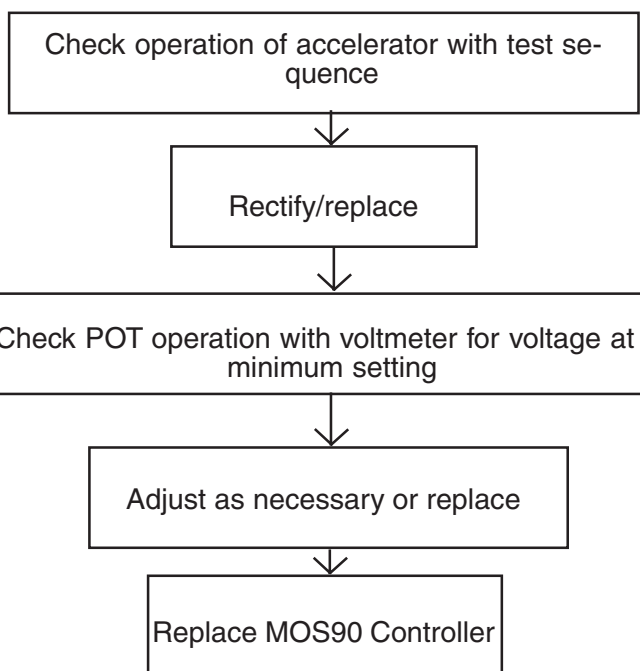
5 Flashes

- Direction contactors (or line contactor) did not close.
- Motor armature or field open circuit.
- Point "A" not within 6V of B+ve within one second of selecting direction.
- Drive inhibited.
- Flashes until fault is cleared, when contactor closes.



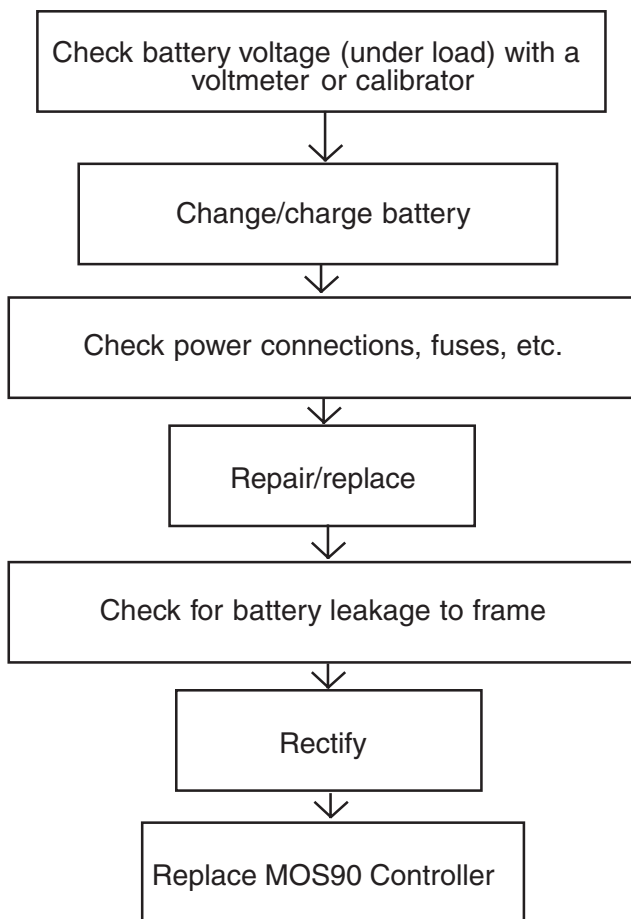
6 Flashes

- Accelerator faults.
- 3.5 Volts to 0 Volts = Min. to Max. Speed on accelerator input (pin 14). Greater than 4.5 volts can mean an open accelerator POT. Less than 2.5 Volts on power up, indicates more than 30% demand.
- Controller pulses at creep setting.
- Flashes until fault cleared.



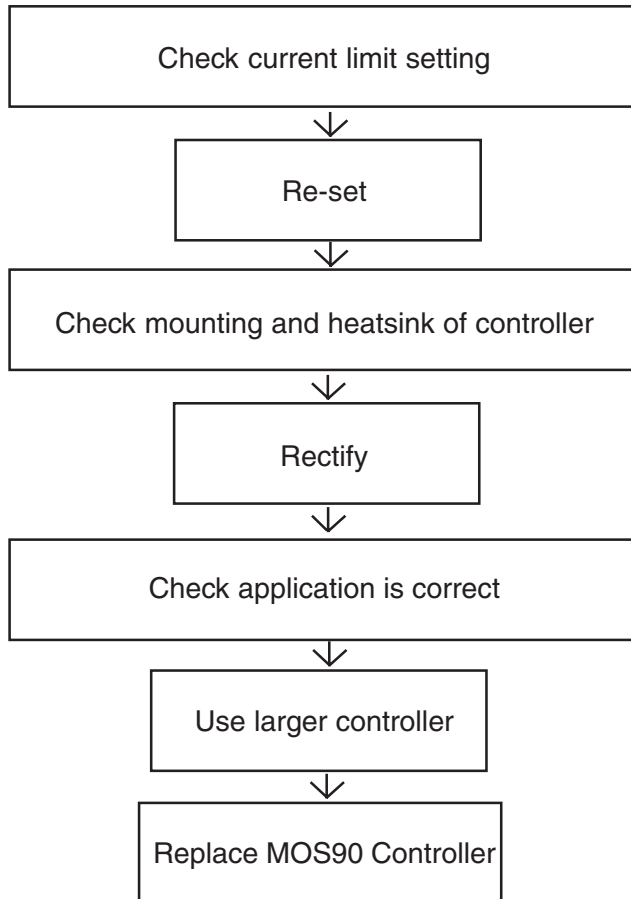
7 Flashes

- Battery voltage dipped below 14 volts.
- Drive inhibited.
- Turn key switch off and on to clear flash.



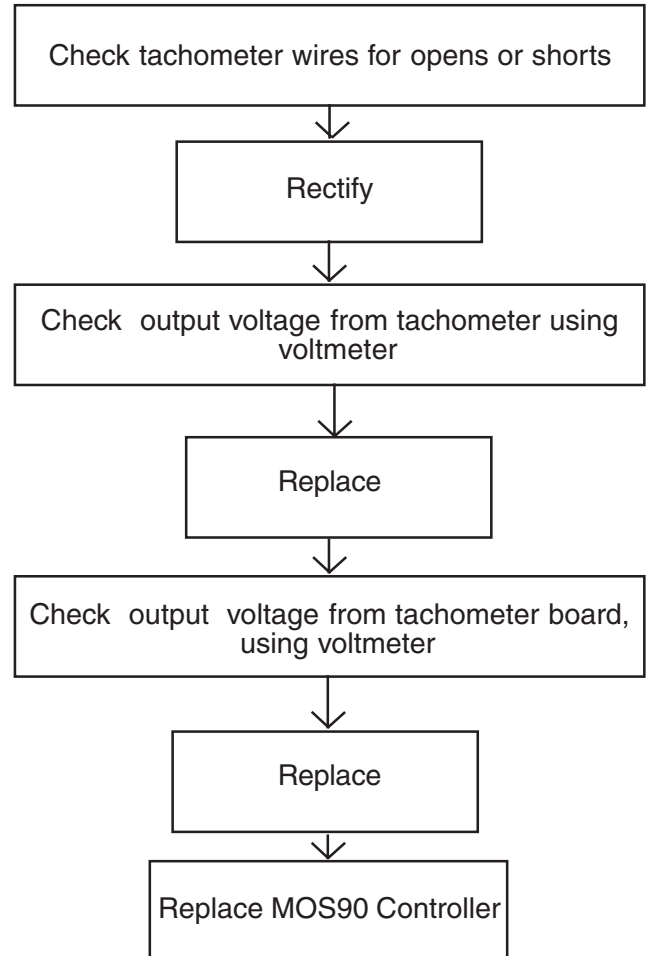
8 Flashes

- Thermal cutback.
- Heatsink temperature less than 80°C (176°F) (Current limit will be zero at 90°C (194°F)).
- Allow unit to cool down, to clear flashing.



10 Flashes

- Tachometer fault.
- Drive inhibited.
- Recycle key to clear fault.



11 Flashes

- Tachometer signal out of range.
- Drive inhibited.
- Flashes until fault cleared.

Check tachometer wires for shorts to frame or a voltage source

Rectify

Check output voltage from tachometer using voltmeter

Replace

Replace MOS90 Controller

12 Flashes

- Severe tilt condition with platform raised above 2 meters.
- Vehicle goes into emergency stop (forced neutral state) and plug brakes to a stop.
- Recycle neutral to clear fault.

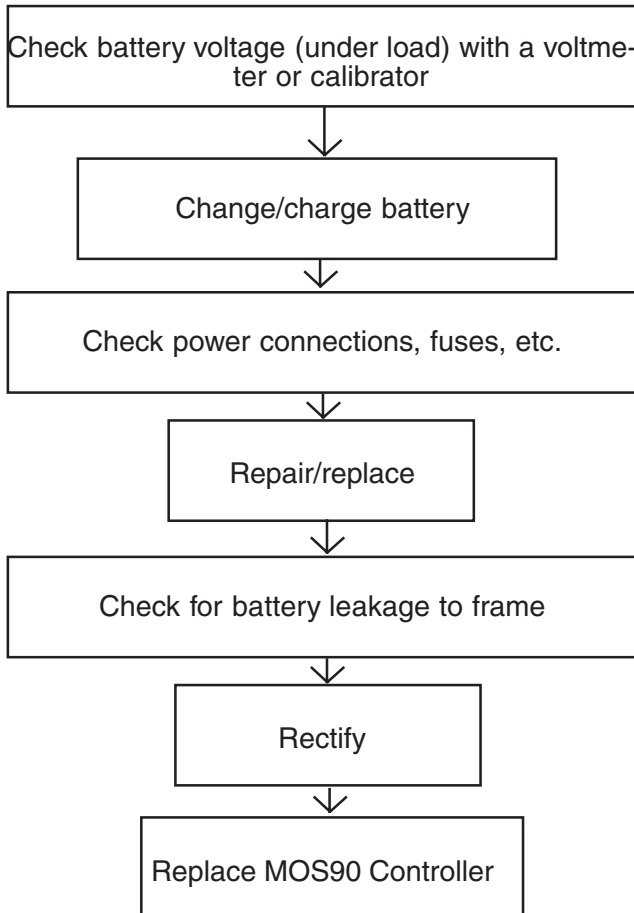
Use calibrator test mode and check platform up switch and severe tilt switch inputs and wiring

Rectify

Replace MOS90 Controller

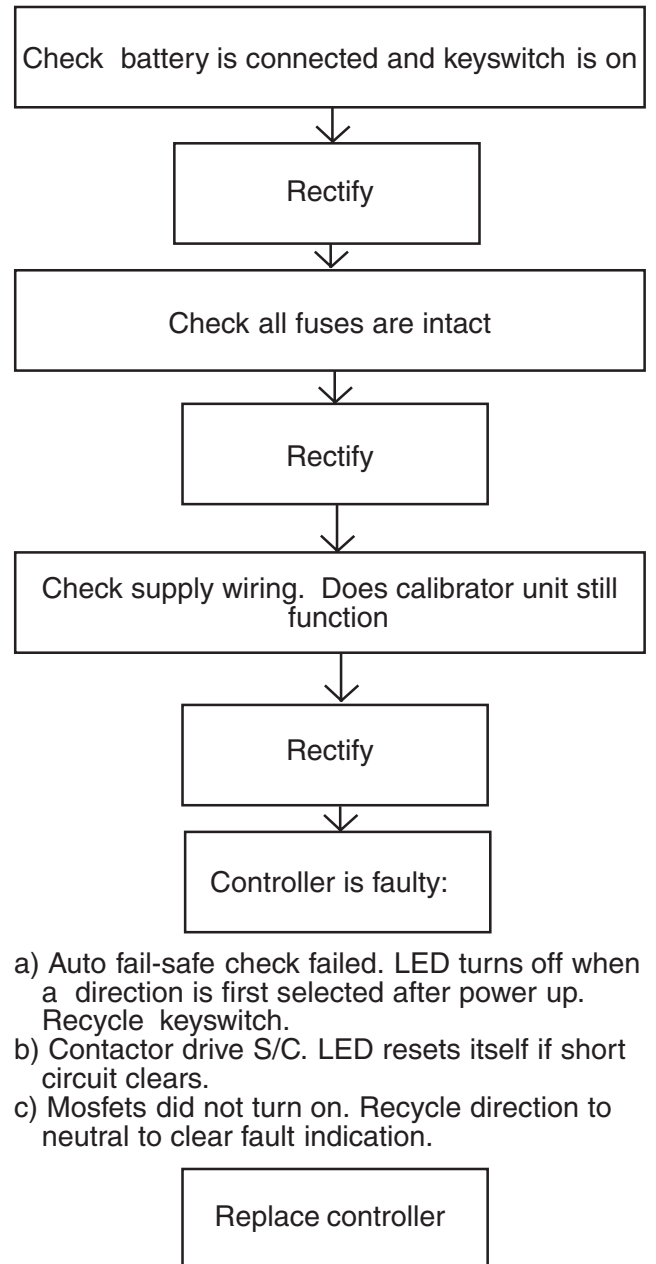
14 Flashes

- Battery voltage has fallen out of range.
- Traction and pump mode will not be allowed.
- Requires key recycle to clear fault.



LED off

- Unit not powered up or controller faulty, or LED faulty



SCHEMATICS

5.1 INTRODUCTION

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

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

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

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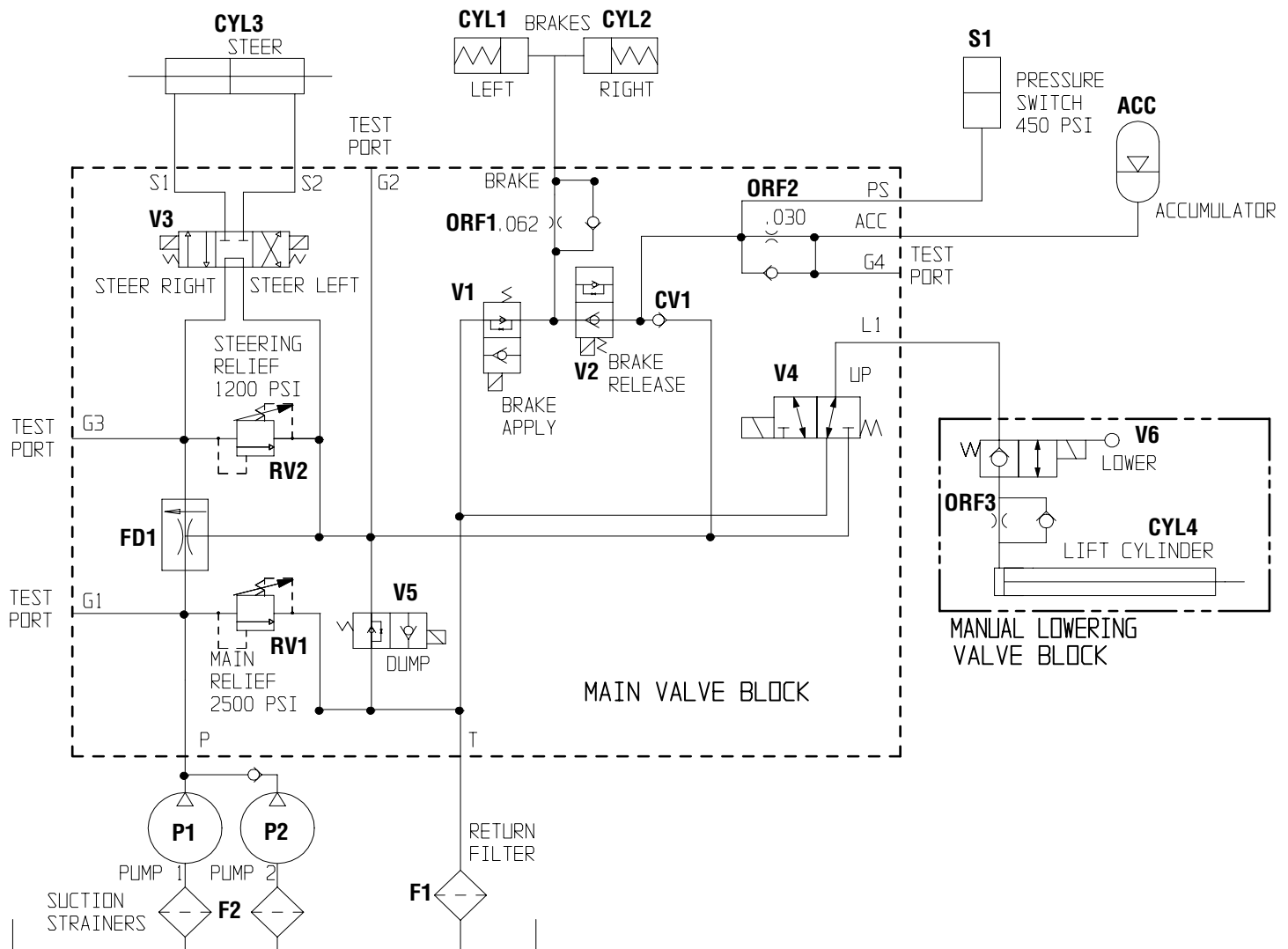
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5.2 066945-010 XRT27E

Legend: Hydraulic Schematic, XRT27E

Reference Designation	Name	Function	Location
ACC	Accumulator	Accumulate Hydraulic Fluid	Power Module
CV1	Check Valve	Prevent Cavitation when Brake Pressure is Applied	Main Valve Block
CV2	Check Valve	Prevent Cavitation from Accumulator	Main Valve Block
CV3	Check Valve	Prevent Cavitation from Lift Cylinder	Lift Cylinder
CV5	Check Valve	Prevent Cavitation when Brake Pressure is Released	Main Valve Block
CYL1	Cylinder, Left Brake	Apply Left Brake Pressure	Left Brake
CYL2	Cylinder, Right Brake	Apply Right Brake Pressure	Right Brake
CYL3	Cylinder, Steering	Actuate Steering Linkage to Steer Front Wheels	Chassis
CYL4	Cylinder, Lift	Actuate Scissor Linkage to Lift Platform	Chassis
F1	Filter, Return	Filter Hydraulic Line	Power Module
F2	Filter, Tank	Filter Contaminants	Tank
FD1	Flow Divider	Limited Slip Drive	Main Valve Block
ORF1	Orifice, Brake	Limit Hydraulic Oil Flow to Brake Cylinders	Main Valve Block
ORF2	Orifice, Accumulator	Allow Brakes to Release Quickly and Apply Slowly	Main Valve Block

Reference Designation	Name	Function	Location
ORF3	Orifice, Lift	Limit Hydraulic Oil Flow to Lift Cylinder	Lift Cylinder
P1 & P2	Hydraulic Pump	Provide Fluid Power for Hydraulic System	Power Module
RV1	Valve, Main Relief	Provide Pressure Protection for the Main Hydraulic Line	Main Valve Block
RV2	Valve, Steering Relief	Provide Pressure Protection for the Steering Components	Main Valve Block
S1	Pressure Switch	Disable Machine	Power Module
V1	Valve, Brake Apply	Direct Hydraulic Oil to the Brake Cylinders	Main Valve Block
V2	Valve, Brake Release	Release Hydraulic Oil Pressure from Brakes	Main Valve Block
V3	Valve, Steering	Control Hydraulic Oil Flow to Steering Cylinder	Main Valve Block
V4	Valve, Lift	Control Hydraulic Oil Flow to Lift Cylinder	Main Valve Block
V5	Valve, Dump	Divert Excess Oil	Main Valve Block
V6	Valve, Down	- Hold Oil in Lift Cylinder when Deck is Elevated - Release Oil from Lift Cylinder to Lower Deck - Has Cable Actuated Manual Override for Emergency Lowering	Lift Cylinder

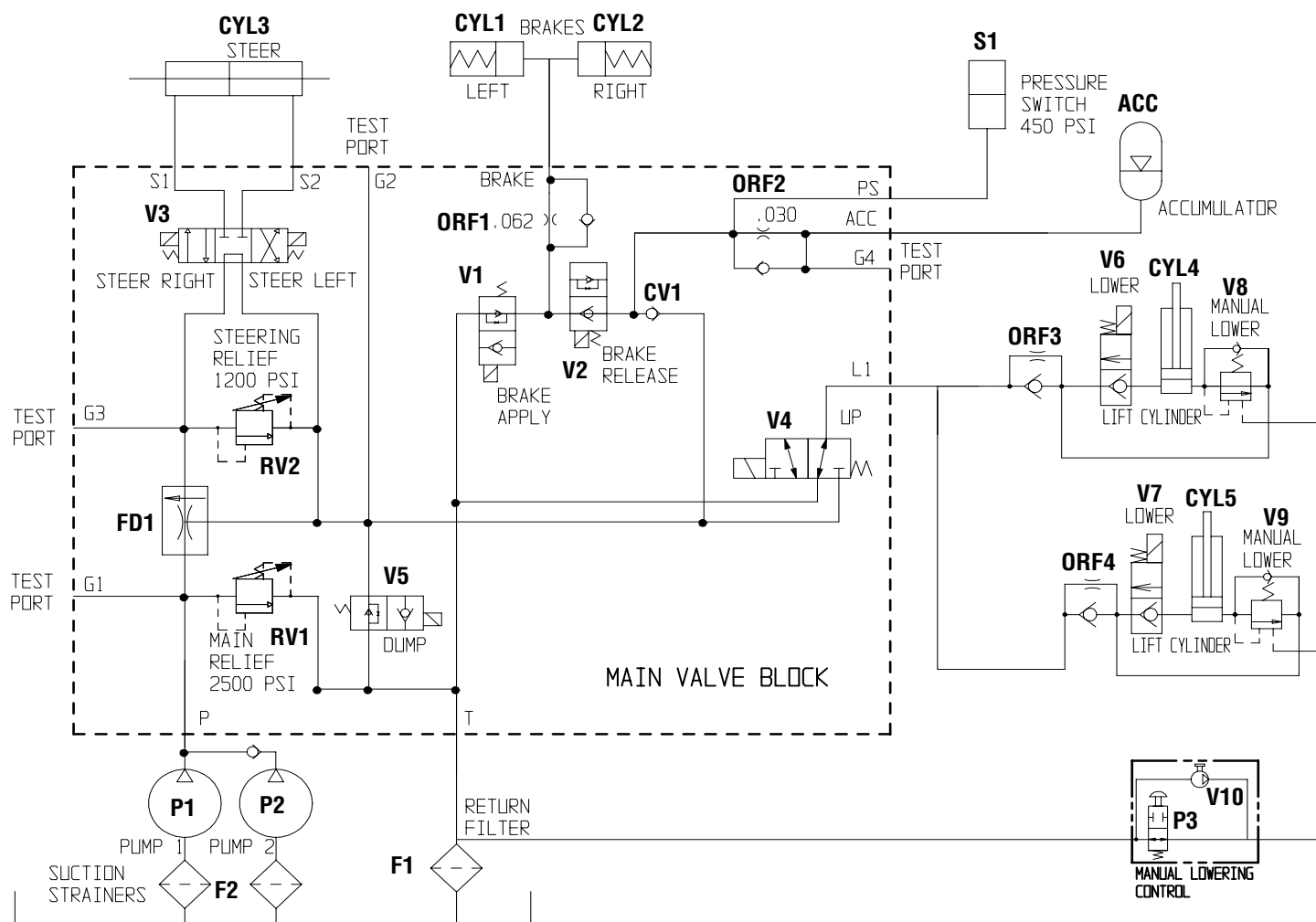


5.3 066945-012 - XRT33E

Legend: Hydraulic Schematic, XRT33E

Reference Designation	Name	Function	Location
ACC	Accumulator	Accumulate Hydraulic Fluid	Power Module
CV1	Check Valve	Prevent Cavitation when Brake Pressure is Applied	Main Valve Block
CV2	Check Valve	Prevent Cavitation from Accumulator	Main Valve Block
CV3 & 4	Check Valve	Prevent Cavitation from Lift Cylinder	Lift Cylinder
CV5	Check Valve	Prevent Cavitation when Brake Pressure is Released	Main Valve Block
CYL1	Cylinder, Left Brake	Apply Left Brake Pressure	Left Brake
CYL2	Cylinder, Right Brake	Apply Right Brake Pressure	Right Brake
CYL3	Cylinder, Steering	Actuate Steering Linkage to Steer Front Wheels	Chassis
CYL4 & 5	Cylinder, Lift	Actuate Scissor Linkage to Lift Platform	Chassis
F1	Filter, Return	Filter Hydraulic Line	Power Module
F2	Filter, Tank	Filter Contaminants	Tank
FD1	Flow Divider	Limited Slip Drive	Main Valve Block
ORF1	Orifice, Brake	Limit Hydraulic Oil Flow to Brake Cylinders	Main Valve Block
ORF2	Orifice, Accumulator	Allow Brakes to Release Quickly and Apply Slowly	Main Valve Block
ORF3 & 4	Orifice, Lift	Limit Hydraulic Oil Flow to Lift Cylinder	Lift Cylinder

Reference Designation	Name	Function	Location
P1 & P2	Hydraulic Pump	Provide Fluid Power for Hydraulic System	Power Module
P3	Manual Lowering Pump	Provide Pressure to Open Manual Lowering Valves	Power Module
RV1	Valve, Main Relief	Provide Pressure Protection for the Main Hydraulic Line	Main Valve Block
RV2	Valve, Steering Relief	Provide Pressure Protection for the Steering Components	Main Valve Block
S1	Pressure Switch	Disable Machine	Power Module
V1	Valve, Brake Apply	Direct Hydraulic Oil to the Brake Cylinders	Main Valve Block
V2	Valve, Brake Release	Release Hydraulic Oil Pressure from Brakes	Main Valve Block
V3	Valve, Steering	Control Hydraulic Oil Flow to Steering Cylinder	Main Valve Block
V4	Valve, Lift	Control Hydraulic Oil Flow to Lift Cylinder	Main Valve Block
V5	Valve, Dump	Divert Excess Oil	Main Valve Block
V6 & 7	Valve, Down	- Hold Oil in Lift Cylinder when Deck is Elevated - Release Oil from Lift Cylinder to Lower Deck	Lift Cylinders
V8 & 9	Valve, Manual Lower	Provide Pressure to Open Lowering Valve	Lift Cylinders
V10	Valve, Manual	Relieve Pressure from Manual Lowering Valves	Manual Lowering Pump



Legend: Wire Routing

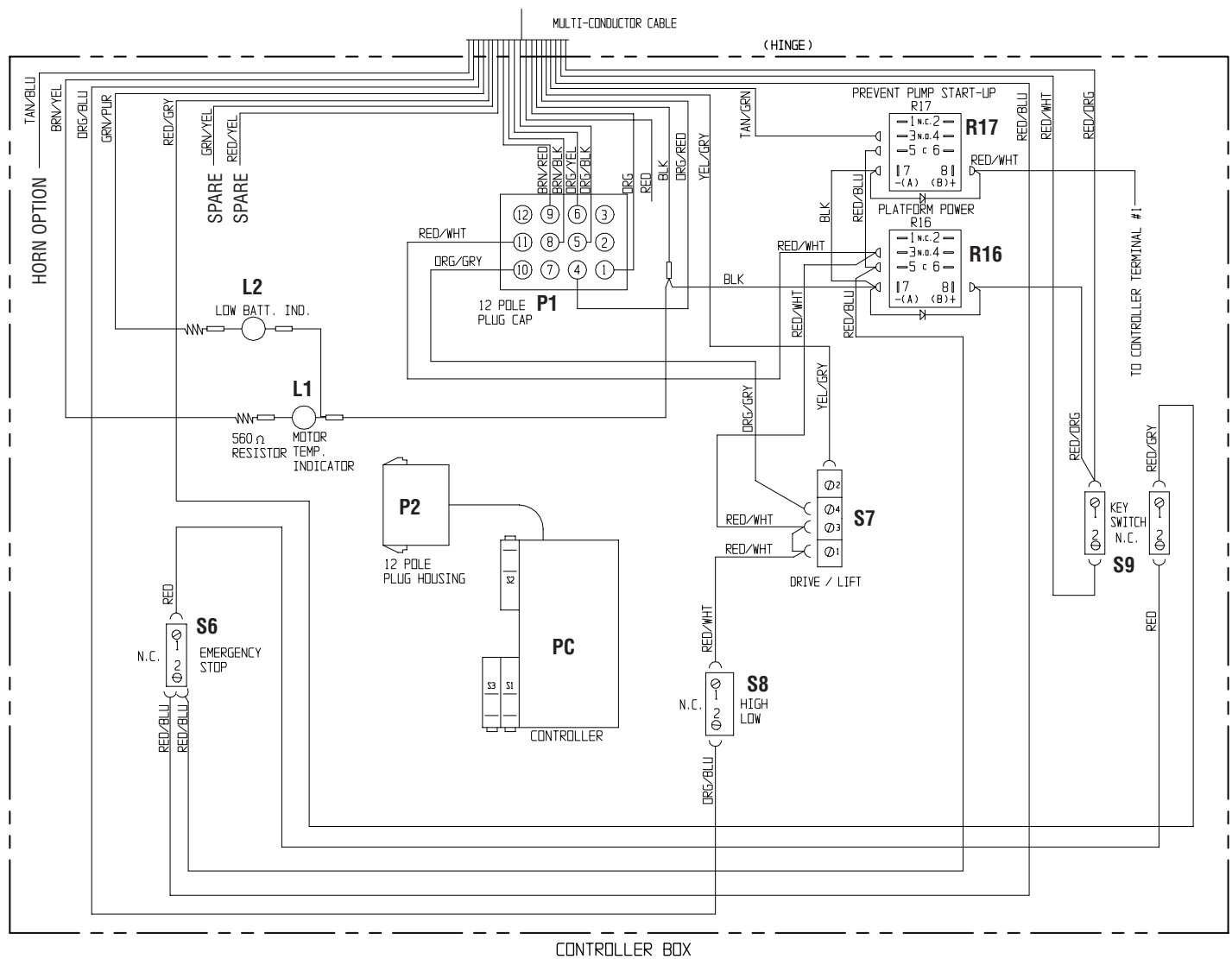
Reference Designation	Name
CBL7	Cable Assembly, Main Control
CBL8	Cable Assembly,
CHG	Battery Charger
CONT	Sevcon Controller
F1 & F2	Fuse
MOT1	Power Unit (all functions)
MOT2	Power Unit (upper controls lift functions)
MOT3	Drive Motor, Left Side
MOT4	Drive Motor, Right Side
S11	Height Limit Switch
S18	Proximity Switch
SEN	Level Sensor
VB1	Main Valve Block



5.5 066942-002#2 UPPER CONTROLS WIRING

Legend: Upper Control Box Schematic

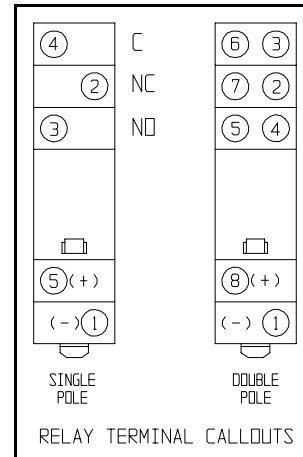
Reference Designation	Name
L1	Light, Motor Temperature Indicator
L2	Light, Low Battery Indicator
P1	Plug, 12 Pole Male
P2	Plug, 12 Pole Female
PC	Proportional Controller
R16	Relay, Platform Power
R17	Relay, Prevent Pump Start
S6	Switch, Emergency Stop
S7	Switch, Drive/Lift
S8	Switch, High/Low
S9	Switch, Key

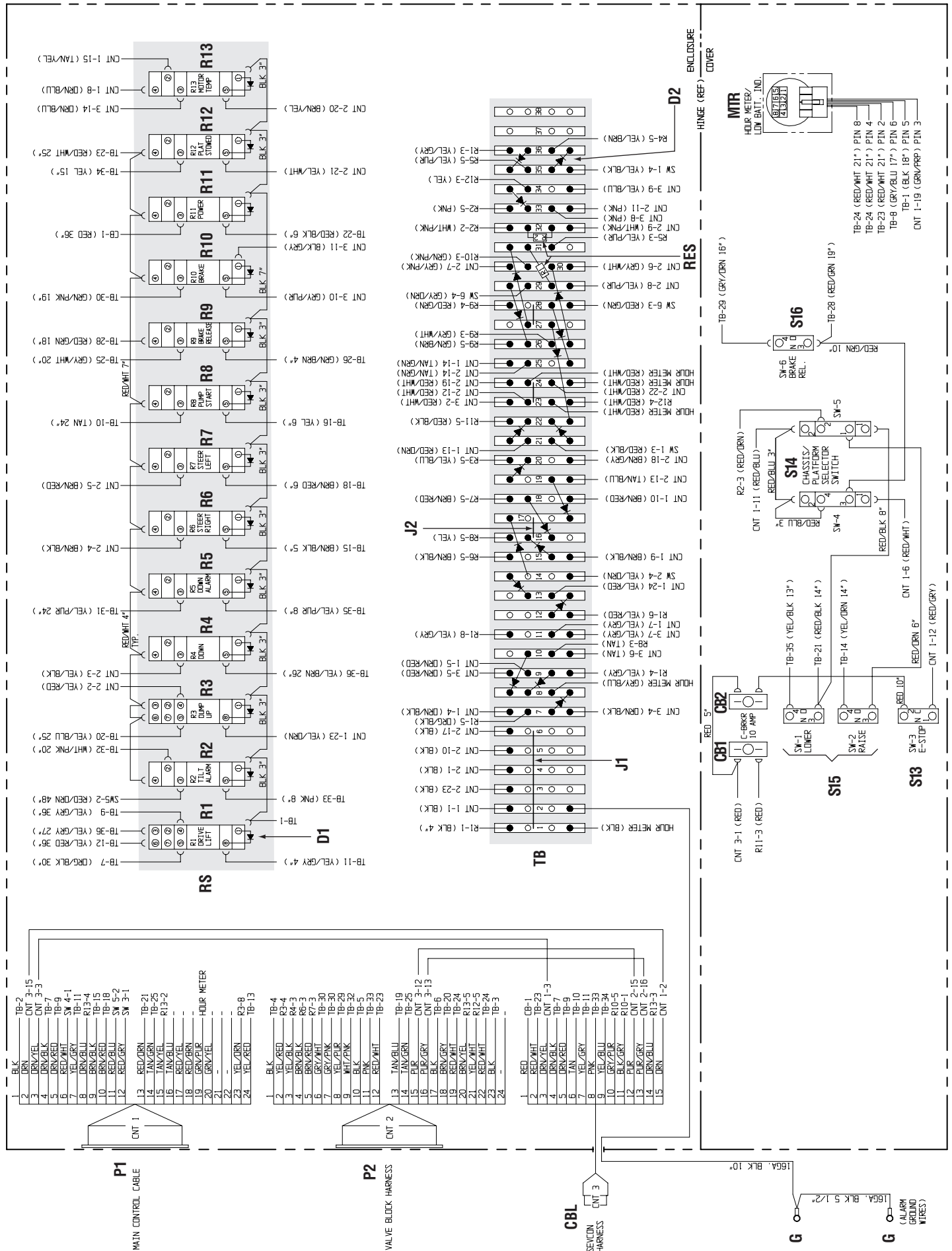


5.6 067491-005#2 LOWER CONTROLS WIRING

Legend: Lower Control Box Schematic

Reference Designation	Name
CB1 & CB2	Circuit Breaker
CBL	Cable, Sevcon 15 Pin
D1	Diode, 3 Amp - 13 Total (one on each Relay Socket)
D2	Diode, 5 Amp - 20 Total (on Terminal Blocks)
G	Ground Wires, Alarm
J1	Jumper, 10 Pin (one used on Terminal Blocks)
J2	Jumper, 2 Pin (three used on Terminal Blocks)
MTR	Hour Meter / Low Battery Indicator
P1	UpRight Plug, Main Cable "A"
P2	UpRight Plug, Valve Block Cable "B"
R1	Relay, Drive/Lift
R2	Relay, Tilt Alarm
R3	Relay, Dump/Up
R4	Relay, Down
R5	Relay, Down Alarm
R6	Relay, Steer Right
R7	Relay, Steer Left
R8	Relay, Pump Start
R9	Relay, Brake Release
R10	Relay, Brake
R11	Relay, Power
R12	Relay, Platform Stowed
R13	Relay, Motor Temperature
RES	Resistor, 100 Ohm (two used on Terminal Blocks)
RS	Relay Sockets
S13	Switch, Emergency Stop
S14	Switch, Chassis/Platform
S15	Switch, Lift/Lower
S16	Switch, Brake Release
TB	Terminal Blocks



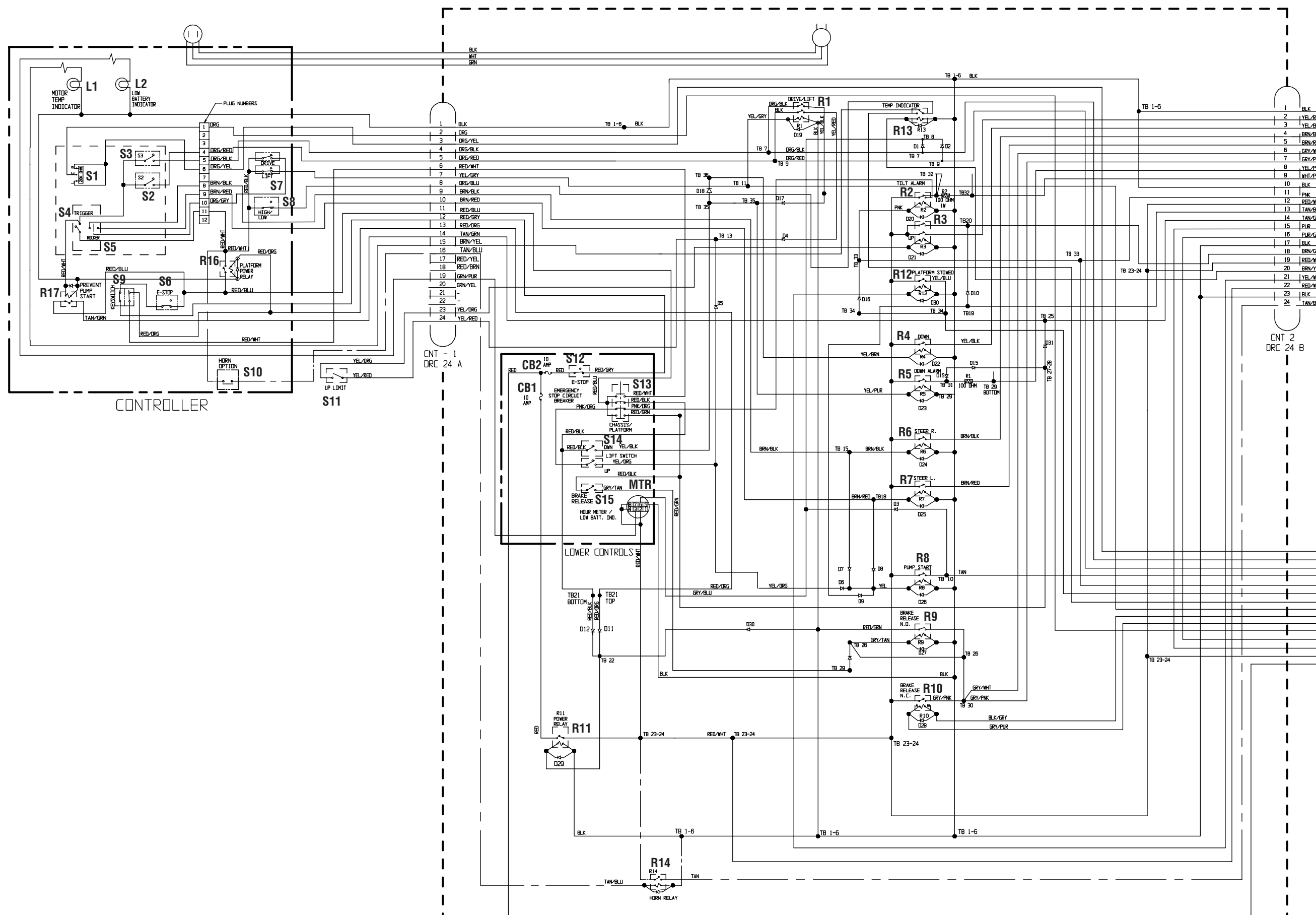


5.7 066946-010 - XRT27E & XRT33E

Legend: Electric Schematic

Reference Designation	Name	Function	Location
ALM1	Alarm, Lower	Warning Sound when Deck is Lowering	Lower Control Box
ALM2	Alarm, Tilt	Warning Sound when Machine is Off-level	Lower Control Box
ALM3	Horn (Option)	Warning Sound when Horn Button is Pushed	Control Module
BAT1	Battery Pack	Electrical Power	Control Module
BAT2	Battery Pack	Electrical Power	Power Module
C1	Main Power Contactor	Switch Power to All Solenoids and Motors	Relay Panel Assembly
C2	Forward Contactor	Switch Drive Motors to Forward	Relay Panel Assembly
C3	Reverse Contactor	Switch Drive Motors to Reverse	Relay Panel Assembly
C4	Pump Override Contactor	Override Pump Motors	Relay Panel Assembly
C5	Pump/Traction Contactor	Switch Power <i>Between</i> Drive Motors and Pump Motors	Relay Panel Assembly
C6	Pump Cutout Contactor	Activate Second Pump Motor when Lifting with Proportional Controls	Relay Panel Assembly
CB1	Circuit Breaker	Protect Emergency Stop Switch	Lower Control Box
CB2	Circuit Breaker	Protect Power Relay	Lower Control Box
CHG	Battery Charger	Charge Batteries	Control Module
CONT	Controller	Control Logic Module	Relay Panel
F1 & F2	Fuse, Main	Protect Circuit Wiring	Relay Panel
L1	Motor Temperature Lamp	Indicate Temperature of Drive Motors	Upper Controls
L2	Low Battery Lamp	Indicate Low Battery Charge	Upper Controls
MTR	Hour Meter	Record Operating Time	Lower Control Box
MOT1 & 2	Electric Motors, Power Unit	Drive Hydraulic Pumps	Power Module
MOT3	Electric Motor	Drive Left Rear Wheel	Chassis
MOT4	Electric Motor	Drive Right Rear Wheel	Chassis
R1	Drive/Lift Relay	Start Hydraulic Pumps	Lower Control Box
R2	Tilt Alarm Relay	Switch Power to Tilt Alarm	Lower Control Box
R3	Up Relay	Switch Power to Lift Solenoids, Dump Solenoids, and Up Limit Switch	Lower Control Box
R4	Lower Relay	Switch Power to Lower Solenoid	Lower Control Box
R5	Lower Alarm Relay	Switch Power to Lower Alarm	Lower Control Box
R6	Steer Right Relay	Switch Power to Steer Right Solenoid	Lower Control Box
R7	Steer Left Relay	Switch Power to Steer Left Solenoid	Lower Control Box
R8	Pump Start Relay	Provide Power to Proportional Control Lever	Lower Control Box
R9	Brake Release Relay	Switch Power to Normally Open Brake Release Solenoid	Lower Control Box
R10	Brake Release Relay	Switch Power to Normally Closed Brake Release Solenoid	Lower Control Box
R11	Power Relay	Switch Power to All Relays	Lower Control Box
R12	Platform Stowed Relay	Control Drive Speed	Lower Control Box

Reference Designation	Name	Function	Location
R13	Temperature Indicator Relay	Switch Power to Temperature Indicator from Drive Motor Thermal Switches	Lower Control Box
R14	Horn Relay	Switch Power to Horn (option)	Lower Control Box
R15	Brake Relay	Provide Power to Normally Closed Brake Release Relay	Lower Control Box
R16	Platform Power Relay	Power to Upper Controls	Upper Controls
R17	Prevent Pump Start Relay	Power to Pump Start Switch	Upper Controls
RES	Resistor Pack	Current Protection	Relay Panel
S1	Proportional Speed Control	Control Speed of Motors for Drive and Lift	Control Handle
S2	Micro Switch	Reverse/Lower	Upper Controls
S3	Micro Switch	Forward/Lift	Upper Controls
S4	Interlock Switch	Enable Upper Control Functions	Front of Control Handle
S5	Steering Rocker Switch	Power to Steering Relays	Top of Control Handle
S6	Upper Emergency Stop Switch	Stop All Functions	Upper Controls
S7	Lift/Drive Switch	Select Lift or Drive Function	Upper Controls
S8	High/Low Switch	Speed Control	Upper Controls
S9	Ignition Switch (keyswitch)	Power to Upper Controls & Motors	Upper Controls
S10	Horn Switch (Option)	Power to Horn (Option)	Upper Controls
S11	Up Limit Switch	Stop Lift Function	Scissor Assembly
S12	Lower Emergency Stop Switch	Stop All Functions	Lower Controls
S13	Chassis/Platform/Brake Release Switch	Power to Either Upper or Lower Controls	Lower Control Box
S14	Lift Switch	Provide Power to Up Relay & Down Relay	Lower Controls
S15	Brake Release Switch	Provide Power to Brake release Relay	Lower Controls
S16	Drive Motor Thermal Switches	Switch to Creep Speed when Motor Temperature Exceeds 165°C	Internal to Motors
S17	Pump Start Pressure Switch	Regulate Pressure in Brake Circuit	Valve Block
S18	Proximity Switch (Platform Stowed)	High Speed Cut-out	Scissor Assembly
SEN	Level Sensor	Stop Drive Function when machine is off level	Control Module
SOL1	Lift Solenoid	Control Lift Valve	Valve Block
SOL2	Lower Solenoid	Control Down Valve	Valve Block
SOL3	Steer Right Solenoid	Control Steer Right Valve	Top of Valve Block
SOL4	Steer Left Solenoid	Control Steer Left Valve	Top of Valve Block
SOL5	Brake Release Solenoid	Control Brake Valve (normally open)	Valve Block
SOL6	Brake Release Solenoid	Control Brake Valve (normally closed)	Valve Block
SOL7	Dump Solenoid	Control Dump Valve	Valve Block
TG	Tachometer - Generator	Monitor Drive Motor Speed	Relay Panel Assembly



Electrical Schematic - Continued on next page

ILLUSTRATED PARTS BREAKDOWN

6.1 INTRODUCTION

This section lists and illustrates the replaceable assemblies and parts of this product, as manufactured by UpRight, Inc. Each parts list contains the component parts for that assembly.

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Final Assembly XRT27E

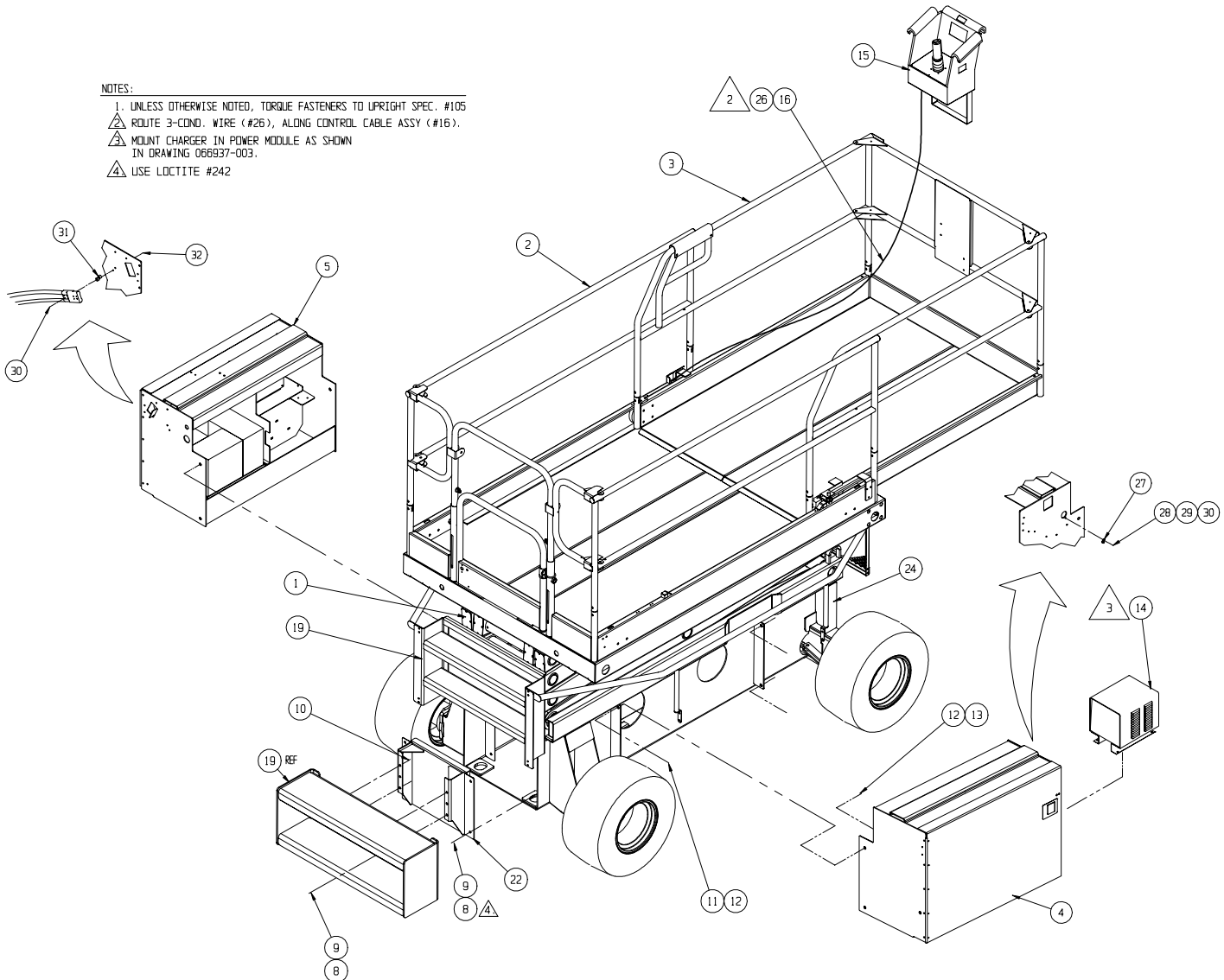
066922-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066927-001	SCISSOR/PLATFORM INSTALLATION, XRT-27E	1
2	066938-001	GUARD RAIL INSTALLATION	1
3	066939-000	EXTENSION PLATFORM INSTALLATION	1
4	066937-003	POWER MODULE	1
5	066935-004	CONTROL MODULE	1
8	011254-010	SCREW HHC 3/8-16 X 1 1/4	8
9	011240-006	WASHER 3/8 FLAT	8
10	011248-006	NUT HEX 3/8-16 UNC ESNA	4
11	011257-014	SCREW HHC5/8-11 x 1 3/4	8
12	110040-003	PRODUCT SPECIFICATIONS	REF
13	011248-010	NUT 5/8-11 HEX ESNA	8
14	069112-000	BATTERY CHARGER (EURO CE)	1
15	066942-002	CONTROLLER ASSEMBLY	1
16	069276-000	CONTROL CABLE ASSEMBLY	1
17	066940-021	LABEL KIT / INSTALLATION	1

ITEM	PART NUMBER	DESCRIPTION	QTY
18	066941-006	HOSE KIT / INSTALLATION	1
19	066949-000	SCISSOR GUARD INSTALLATION XRT27	1
20	066946-010	ELECTRICAL SCHEMATIC	REF
21	066945-010	HYDRAULIC SCHEMATIC	REF
22	067289-001	LADDER MOUNT WELDMENT	1
23	069291-000	FINAL ASSY WIRING, XRT ELECTRIC	1
24	066932-010	CHASSIS ASSY, XRT27E	1
25	069153-000	HORN OPTION	1
26	029435-099	WIRE, 14GA. 3-COND.	50FT
27	013919-016	CABLE CLAMP	1
28	011252-008	SCREW, HHC. 1/4-20 UNC X 1	1
29	011240-004	WASHER, 1/4" FLAT UNC ESNA	2
30	011248-004	LOCKNUT, 1/4-20 UNC ESNA	5
31	018084-003	SPACER	4
32	011252-014	SCREW, 1/4-20 UNC X 1-3/4	4

NOTES:

1. UNLESS OTHERWISE NOTED, TORQUE FASTENERS TO UPRIGHT SPEC. #105
 2. ROUTE 3-COND. WIRE (#26), ALONG CONTROL CABLE ASSY (#16).
 3. MOUNT CHARGER IN POWER MODULE AS SHOWN IN DRAWING 066937-003.
 4. USE LOCTITE #242



Final Assembly, XRT33E

066923-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066929-003	SCISSOR/PLATFORM INST XRT-33 E EURO	1
2	066938-001	GUARD RAIL INSTALLATION	1
3	066939-000	EXTENSION PLATFORM INSTALLATION	1
4	066937-003	POWER MODULE	1
5	066935-004	CONTROL MODULE	1
6	069289-000	HANDLE MOUNT	1
7	026519-000	SPRING CLIP	1
8	011254-010	SCREW HHC 3/8-16 X 1 1/4	8
9	011240-006	WASHER 3/8 FLAT	8
10	011248-006	NUT 3/8-16UNC HEX ESNA	4
11	011257-014	SCREW HHC 5/8-11 x 1-3/4	8
13	011248-010	NUT 5/8-11 HEX ESNA	8
14	069112-000	BATTERY CHARGER,(EURO CE)	1
15	066942-002	CONTROLLER ASSEMBLY	1
16	069276-001	CONTROL CABLE ASSEMBLY	1
17	066940-023	LABEL KIT / INSTALLATION 33 EURO	1
18	066941-008	HOSE KIT / INSTALLATION	1
19	066949-000	SCISSOR GUARD INSTALLATION XRT27	1
20	066946-010	ELECTRICAL SCHEMATIC	REF
21	066945-012	HYDRAULIC SCHEMATIC	REF

ITEM	PART NUMBER	DESCRIPTION	QTY
22	067289-001	LADDER MOUNT WELDMENT	1
23	069291-000	FINAL ASSY WIRING, XRT ELECTRIC	1
24	011709-012	SCREW, RD HD #10-24 UNC X 1 1/2	1
25	011252-032	SCREW, HHC 1/4-20 X 4	2
26	011715-004	SCREW RD. HD #6-32UNC X 1/2	1
27	029435-099	WIRE, 14 GA. 3-COND.	65FT
28	011248-004	NUT, HEX ESNA 1/4-20	7
29	011240-004	WASHER, FLAT STD 1/4"	4
30	062843-001	GRIP	1
31	069098-000	HANDLE (1/2" SCH 40 PIPE X 12" LG.)	1
32	011248-003	LOCKNUT, #10-24 UNC ESNA	1
33	069097-000	VALVE BLOCK ASSY, EMERG. DOWN	1
34	011248-047	LOCKNUT 6-32UNC HEX ESNA	1
35	013919-016	CABLE CLAMP	1
36	020733-003	FITTING, TEE 8FJX-8MJ-8MJ (NOT SHOWN - SEE HOSE KIT)	1
37	066932-011	CHASSIS ASSY XRT33E	1
38	069153-000	HORN OPTION	1
39	018084-003	SPACER	4
40	011252-014	SCREW, HHC, 1/4-20 UNC X 1-3/4	4

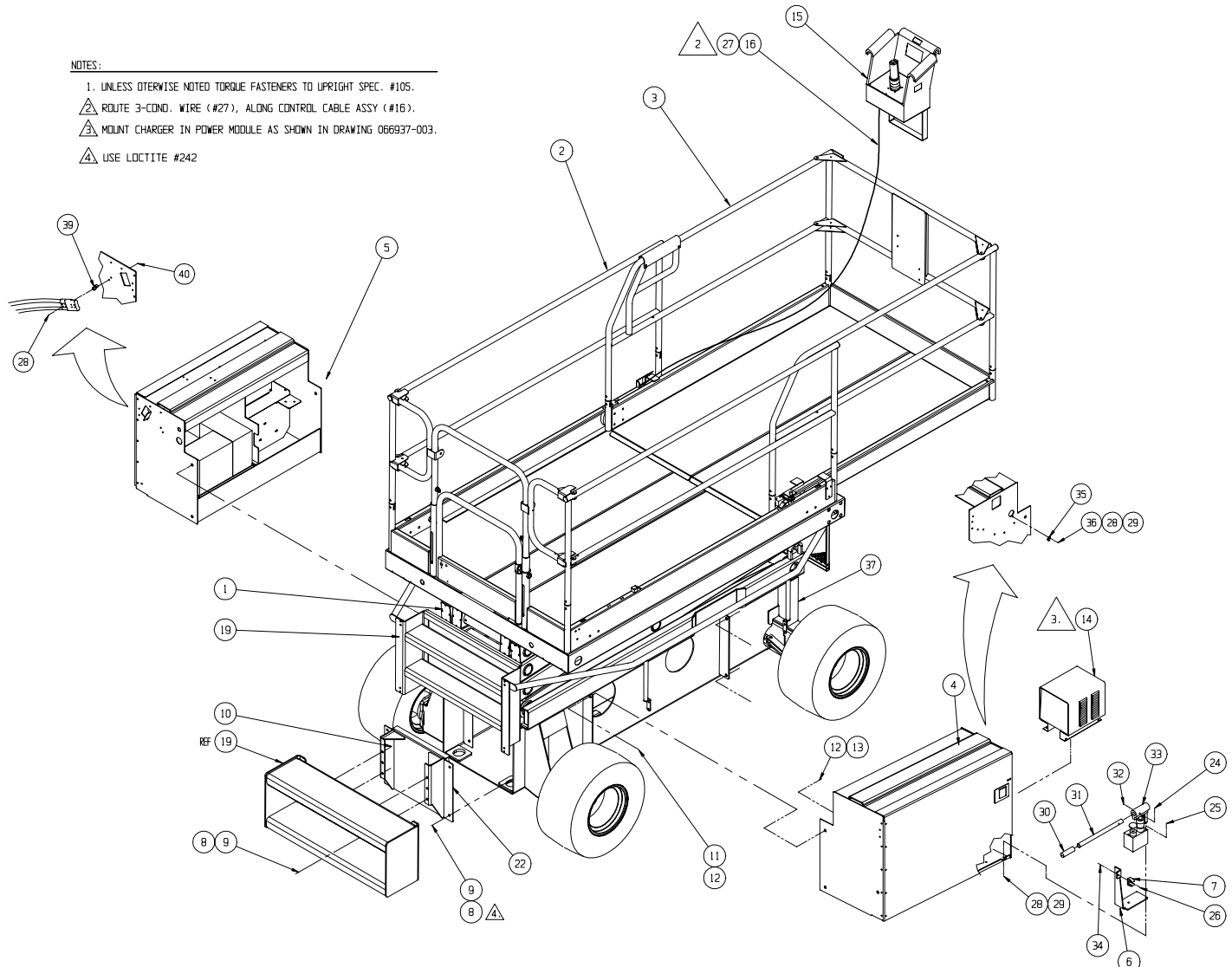
NOTES:

1. UNLESS OTHERWISE NOTED TORQUE FASTENERS TO UPRIGHT SPEC. #105.

△ ROUTE 3-COND. WIRE (#27), ALONG CONTROL CABLE ASSY (#16).

△ MOUNT CHARGER IN POWER MODULE AS SHOWN IN DRAWING 066937-003.

△ USE LOCTITE #242

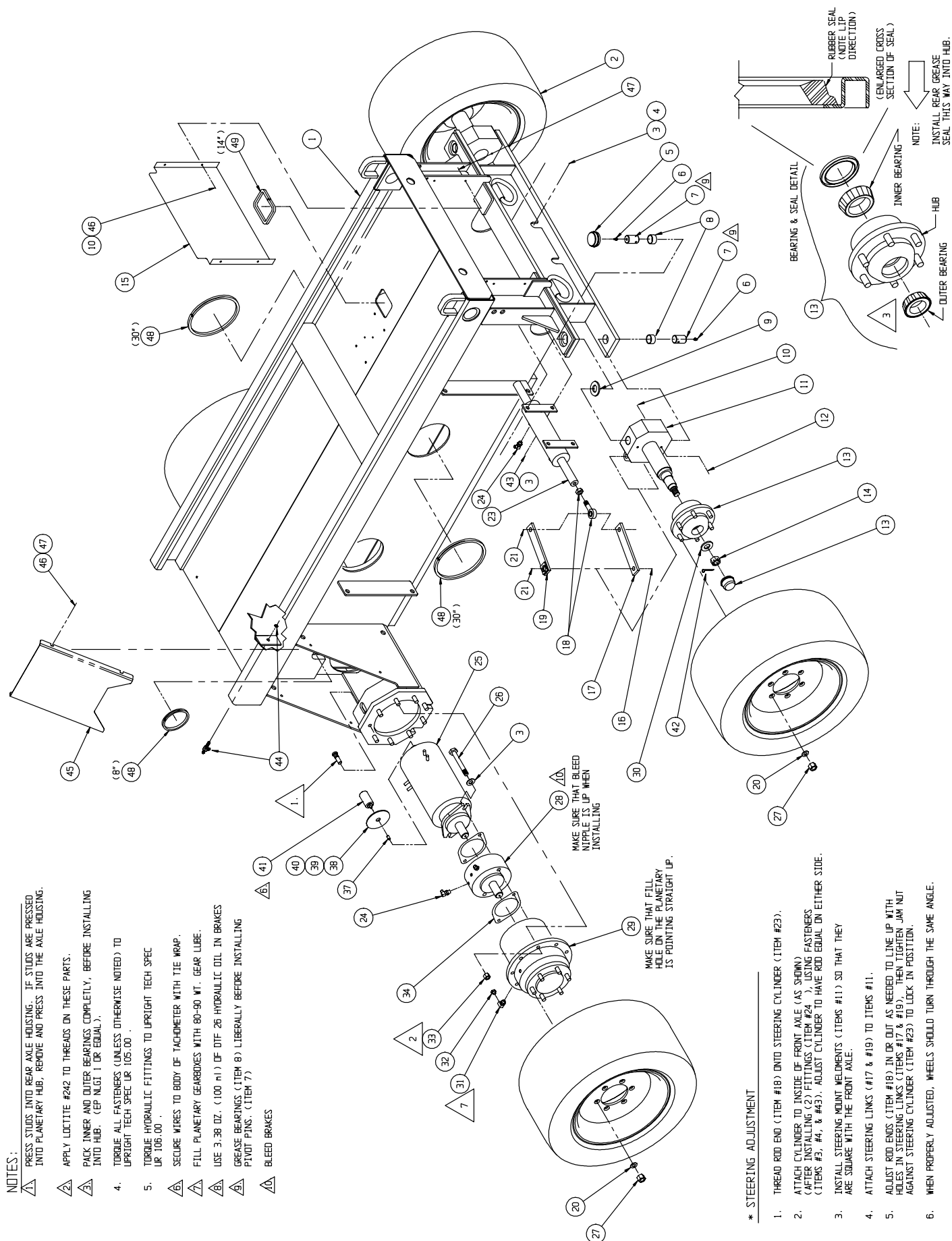


Chassis Assembly, XRT27E

066932-010

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069055-000	CHASSIS WELDMENT X27E ELECTRIC	1
2	069285-000	TIRE/WHEEL ASSY (G78-15)	4
3	011239-008	WASHER, 1/2" ASTM FLAT	12
4	011256-012	SCREW HHC GR5 1/2-13UNC X 1"	4
5	005078-000	CAP, DUST	2
6	013336-001	FITTING, GREASE 1/8" NPT	4
7	064034-002	PIVOT PIN (XE)	4
8	067606-013	BEARING, GARLOCK #020DXR012	4
9	011782-001	BEARING, THRUST WASHER	2
10	011248-004	NUT, HEX ESNA 1/4-20UNC	8
11	064030-002	STEERING MOUNT WELDMENT, ELEC	2
12	011252-026	SCREW, HHC GR5 1/4-20UNC X 3	4
13	068577-000	FRONT HUB ASSY, 6 STUD	2
-	068577-010	Front Hub Repair Kit	-
-	068577-008	Stud Bolts	-
-	011469-005	Wheel Nuts	-
14	011274-014	NUT HEX CASTLE 7/8-14 UNF	2
15	067313-000	COVER, CHASSIS FRONT	1
16	011248-010	NUT, HEX ESNA 5/8-11UNC	4
17	067221-001	STEERING LINK	2
18	063927-001	ROD END 5/8-18UNF W/JAM NUT	2
19	069166-000	STEERING LINK WELDMENT	2
20	103724-009	WASHER, FLAT 9/16" GRADE 8	24
21	011257-024	SCREW HHC GR5 5/8-11UNC X 3	4
23	067168-000	STEERING CYLINDER	1
-	067168-010	SEAL KIT, STEERING CYLINDER	-
24	011934-004	FITTING, 90° 4MB-4MJ	4

ITEM	PART NUMBER	DESCRIPTION	QTY
25	069273-000	ELECTRIC MOTOR	2
-	069273-010	BRUSH KIT	-
26	011256-034	SCREW, HHC GR5 1/2-13 X 4-1/2"	4
27	011261-109	HEX NUT (GR 8) 9/16-18 UNF	24
28	068569-000	BRAKE	2
-	068569-010	SEAL KIT, BRAKE	-
29	068570-000	PLANETARY DRIVE	2
-	068570-010	SEAL KIT, PLANETARY DRIVE	-
-	068570-011	THRUST WASHER, PLANETARY DRIVE	-
30	011240-014	WASHER, 7/8" FLAT STD	2
31	003495-000	FITTING ELBOW STREET 6MB-6FJ	2
32	REF	DRAIN PLUG (PLANETARY DRIVE)	2
33	011261-008	NUT 1/2-20UNF HEX	18
34	REF	GASKET	4
37	REF	COUPLING	1
38	REF	MOUNTING PLATE	1
39	REF	SCREW R.H.#2-56 X 1/4	3
40	REF	WASHER	3
41	068551-002	TACH ASSY KIT (ITEMS 37-40)	1
42	011754-012	COTTER PIN, 15/32 X 1 1/2	2
43	011248-008	NUT HEX ESNA 1/2-13	4
44	069295-001	FITTING, RUN TEE 4MJ-4MJ-4MJ	1
45	069092-000	COVER, REAR MOTOR	2
46	011240-004	WASHER 1/4" FLAT STD	12
47	011252-006	SCREW HHC1/4-20 X 3/4"	12
48	067805-099	GROMMET MAT'L EDGING 1/4"	FT 6.5
49	061692-099	GROMMET MAT'L EDGING 3/16"	FT 6.5

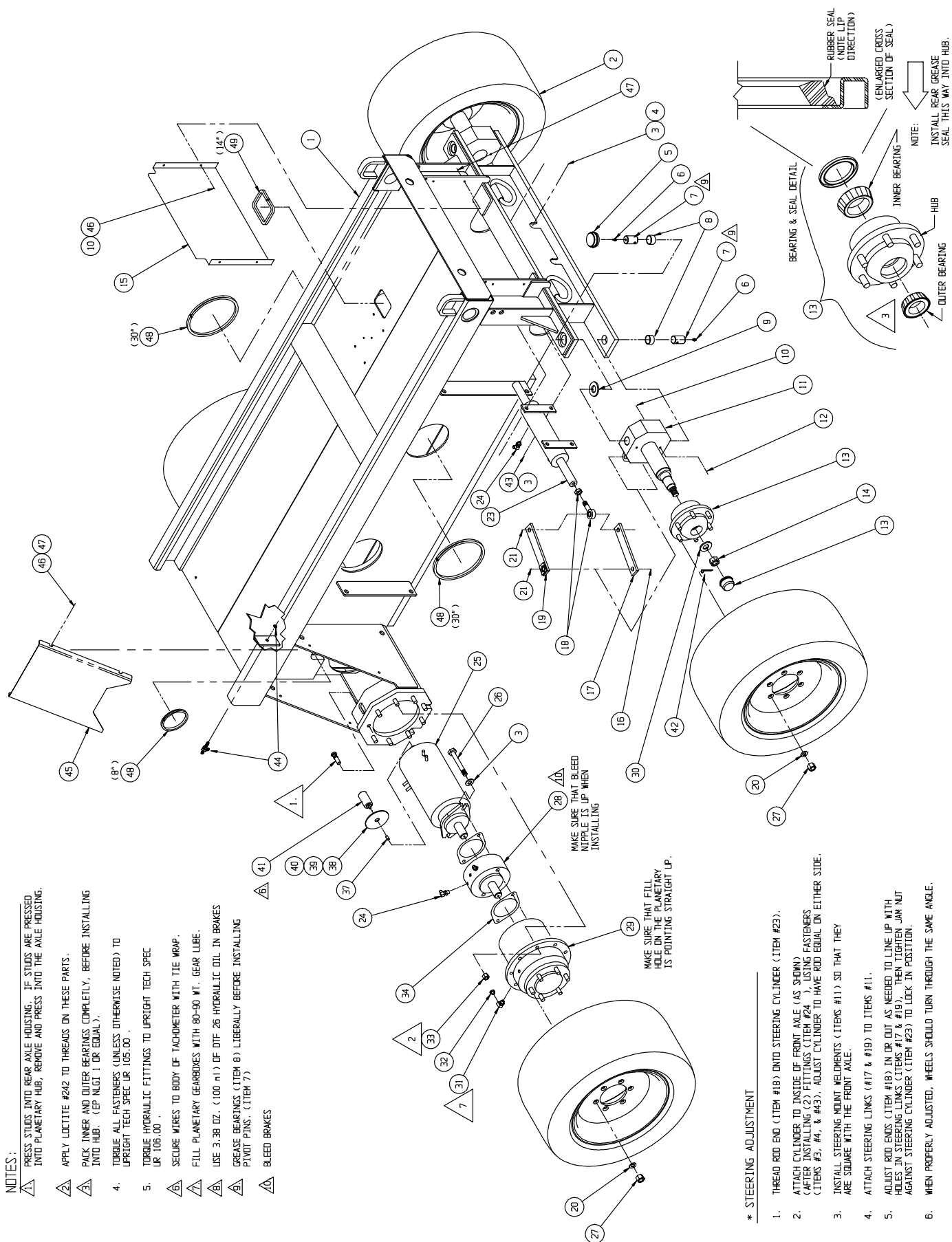


Chassis Assembly, XRT33E

066932-011

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069055-001	CHASSIS WELDMENT X33E ELECTRIC	1
2	069285-000	TIRE/WHEEL ASSY (G78-15)	4
3	011239-008	WASHER, 1/2" ASTM FLAT	12
4	011256-012	SCREW HHC GR5 1/2-13UNC X 1"	4
5	005078-000	CAP, DUST	2
6	013336-001	FITTING, GREASE 1/8" NPT	4
7	064034-002	PIVOT PIN (XE)	4
8	067606-013	BEARING, GARLOCK #020DXR012	4
9	011782-001	BEARING, THRUST WASHER	2
10	011248-004	NUT, HEX ESNA 1/4-20UNC	8
11	064030-002	STEERING MOUNT WELDMENT, ELEC	2
12	011252-026	SCREW, HHC GR5 1/4-20UNC X 3	4
13	068577-000	FRONT HUB ASSY, 6 STUD	2
-	068577-010	Front Hub Repair Kit	-
-	068577-008	Stud Bolts	-
-	011469-005	Wheel Nuts	-
14	011274-014	NUT HEX CASTLE 7/8-14 UNF	2
15	067313-000	COVER, CHASSIS FRONT	1
16	011248-010	NUT, HEX ESNA 5/8-11UNC	4
17	067221-001	STEERING LINK	2
18	063927-001	ROD END 5/8-18UNF W/JAM NUT	2
19	069166-000	STEERING LINK WELDMENT	2
20	103724-009	WASHER, FLAT 9/16" GRADE 8	24
21	011257-024	SCREW HHC GR5 5/8-11UNC X 3	4
23	067168-000	STEERING CYLINDER	1
-	067168-010	SEAL KIT, STEERING CYLINDER	-
24	011934-004	FITTING, 90° 4MB-4MJ	4

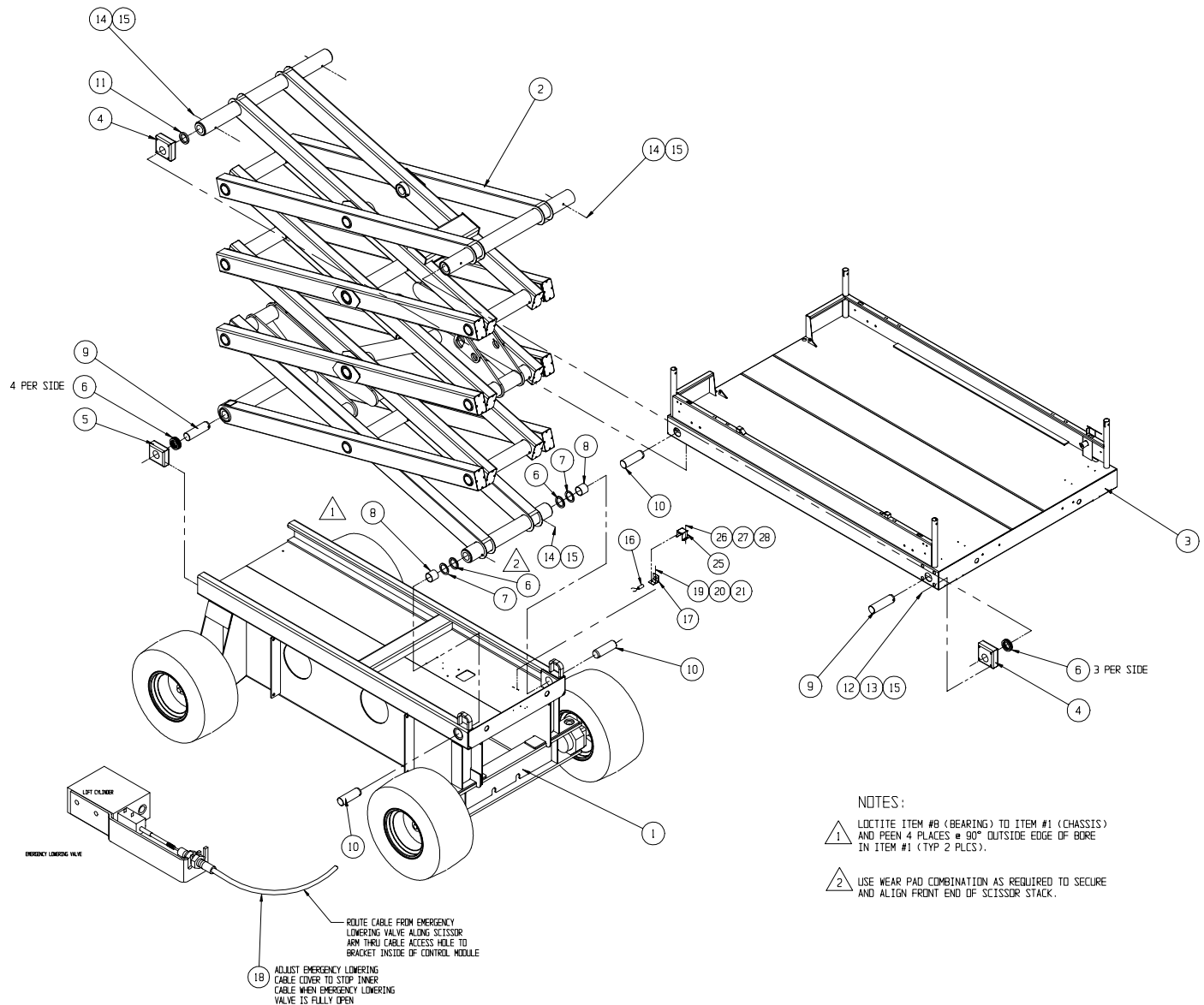
ITEM	PART NUMBER	DESCRIPTION	QTY
25	069273-000	ELECTRIC MOTOR	2
-	069273-010	BRUSH KIT	-
26	011256-034	SCREW, HHC GR5 1/2-13 X 4-1/2"	4
27	011261-109	HEX NUT (GR 8) 9/16-18 UNF	24
28	068569-000	BRAKE	2
-	068569-010	SEAL KIT, BRAKE	-
29	068570-000	PLANETARY DRIVE	2
-	068579-010	SEAL KIT, PLANETARY DRIVE	-
-	068579-011	THRUST WASHER, PLANETARY DRIVE	-
30	011240-014	WASHER, 7/8" FLAT STD	2
31	003495-000	FITTING ELBOW STREET 6MB-6FJ	2
32	REF	DRAIN PLUG (PLANETARY DRIVE)	2
33	011261-008	NUT 1/2-20UNF HEX	18
34	REF	GASKET	4
37	REF	COUPLING	1
38	REF	MOUNTING PLATE	1
39	REF	SCREW R.H.#2-56 X 1/4	3
40	REF	WASHER	3
41	068551-002	TACH ASSY KIT (ITEMS 37-40)	1
42	011754-012	COTTER PIN, 15/32 X 1 1/2	2
43	011248-008	NUT HEX ESNA 1/2-13	4
44	069295-001	FITTING, RUN TEE 4MJ-4MJ-4MJ	1
45	069092-000	COVER, REAR MOTOR	2
46	011240-004	WASHER 1/4" FLAT STD	12
47	011252-006	SCREW HHC1/4-20 X 3/4"	12
48	067805-099	GROMMET MAT'L EDGING 1/4"	FT 6.5
49	061692-099	GROMMET MAT'L EDGING 3/16"	FT 6.5



066927-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066932-010	CHASSIS ASSEMBLY	REF
2	066933-001	SCISSOR ASSEMBLY	1
3	066954-001	PLATFORM WELDMENT	1
4	066191-000	SLIDE BLOCK - BOTTOM	4
5	066191-001	SLIDE BLOCK - BOTTOM	2
6	066189-000	WEAR PAD 1/4	16
7	066189-004	WEAR PAD 1/8	2
8	066183-001	BEARING EAGLE PICHER #323632	2
9	066222-001	MOUNTING PIN	4
10	066222-002	MOUNTING PIN	4
11	066189-001	WEAR PAD 3/8	2
12	011254-032	SCREW HHC 3/8-16 x 4 LG	8
13	011240-006	WASHER 3/8 FLAT	8

ITEM	PART NUMBER	DESCRIPTION	QTY
14	011287-032	SCREW SOC HD CAP 3/8-16 x 4 LG	8
15	011248-006	NUT 3/8-16 UNC ESNA	16
16	067193-001	PROXIMITY SWITCH	1
17	067318-000	SWITCH BRACKET	1
18	065754-001	CABLE ASSEMBLY-EMERGENCY LOWERING	1
19	011253-008	SCREW, HHC 5/16 X 1"	2
20	011240-005	WASHER, 5/16 FLAT	4
21	011248-005	NUT, 5/16-18 UNC ESNA	2
25	069087-000	COVER, SWITCH	1
26	011252-008	SCREW, HHC, 1/4-20 UNC X 1	2
27	011248-004	LOCKNUT, 1/4-20 UNC ESNA	2
28	011240-004	WASHER, 1/4" FLAT	2

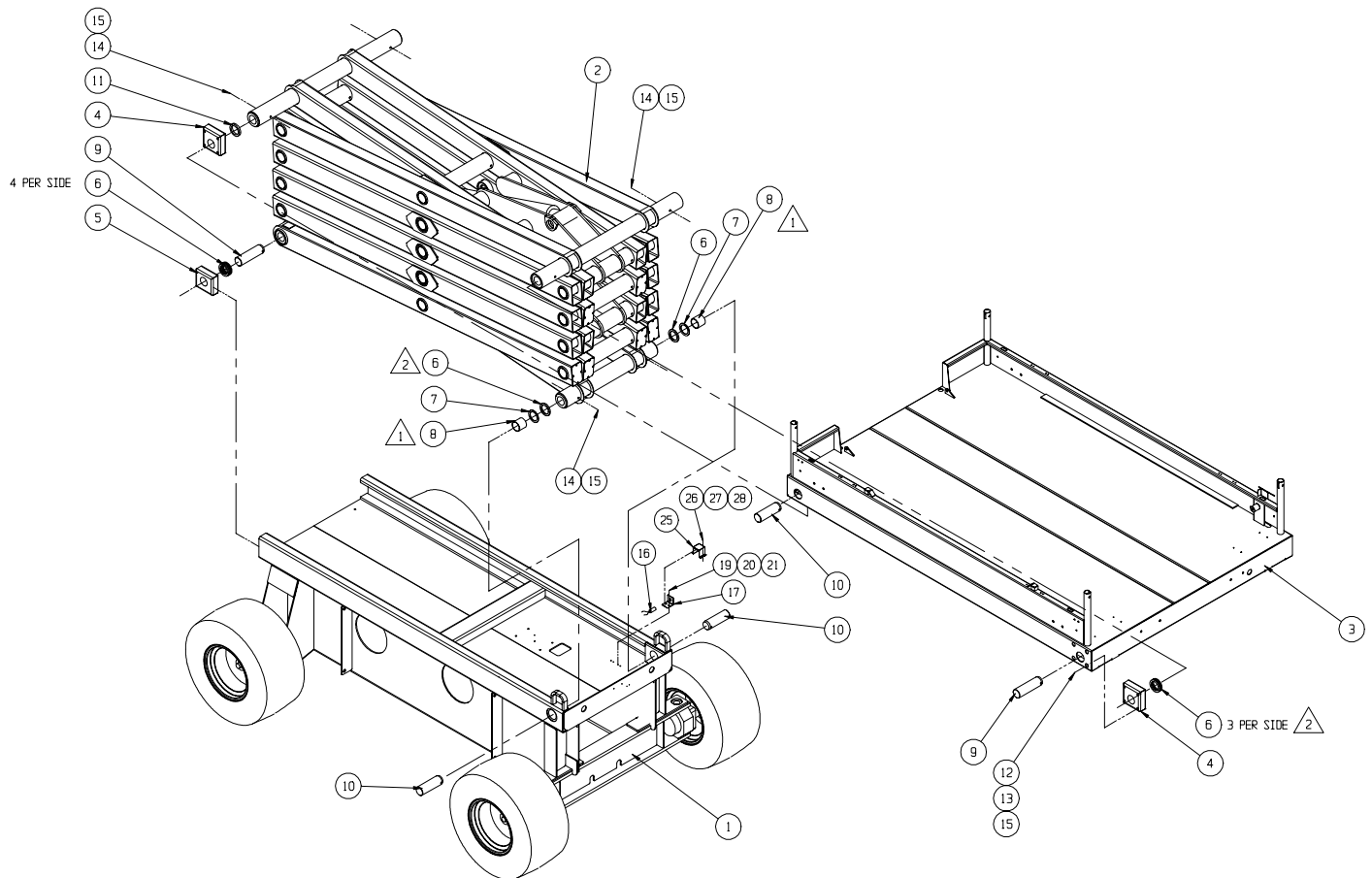


Scissor/Platform Installation, XRT33E

066929-003

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066932-011	CHASSIS ASSEMBLY	REF
2	066934-003	SCISSOR ASSEMBLY	1
3	066954-001	PLATFORM WELDMENT	1
4	066191-000	SLIDE BLOCK	4
5	066191-001	SLIDE BLOCK - BOTTOM	2
6	066189-000	WEAR PAD 1/4	16
7	066189-004	WEAR PAD 1/8	2
8	066183-001	BEARING EAGLE Picher #323632	2
9	066222-001	MOUNTING PIN	4
10	066222-002	MOUNTING PIN	4
11	066189-001	WEAR PAD 3/8	2
12	011254-032	SCREW HHC 3/8-16 x 4 LG	8

ITEM	PART NUMBER	DESCRIPTION	QTY
13	011240-006	WASHER 3/8 FLAT	8
14	011287-032	SCREW SOC HD CAP 3/8-16 x 4 LG	8
15	011248-006	NUT 3/8-16 UNC ESNA	16
16	067193-001	PROXIMITY SWITCH	1
17	067318-000	SWITCH BRACKET	1
19	011253-008	SCREW, HHC 5/16 X 1"-008	2
20	011240-005	WASHER, 5/16 FLAT	4
21	011248-005	NUT, 5/16-18 UNC ESNA	2
25	069087-000	COVER, SWITCH	1
26	011252-008	SCREW, HHC. 1/4-20 UNC X 1	2
27	011248-004	LOCKNUT, 1/4-20 UNC ESNA	2
28	011240-004	WASHER, 1/4" FLAT	2



NOTES:

1 LOCTITE ITEM #8 (BEARING) TO ITEM #1 (CHASSIS) AND PEEN 4 PLACES @ 90° OUTSIDE EDGE OF BORE IN ITEM #1 (TYP 2 PLCS).

2 USE WEAR PAD COMBINATION AS REQUIRED TO SECURE AND ALIGN FRONT END OF SCISSOR STACK.

Guard Rail Assembly

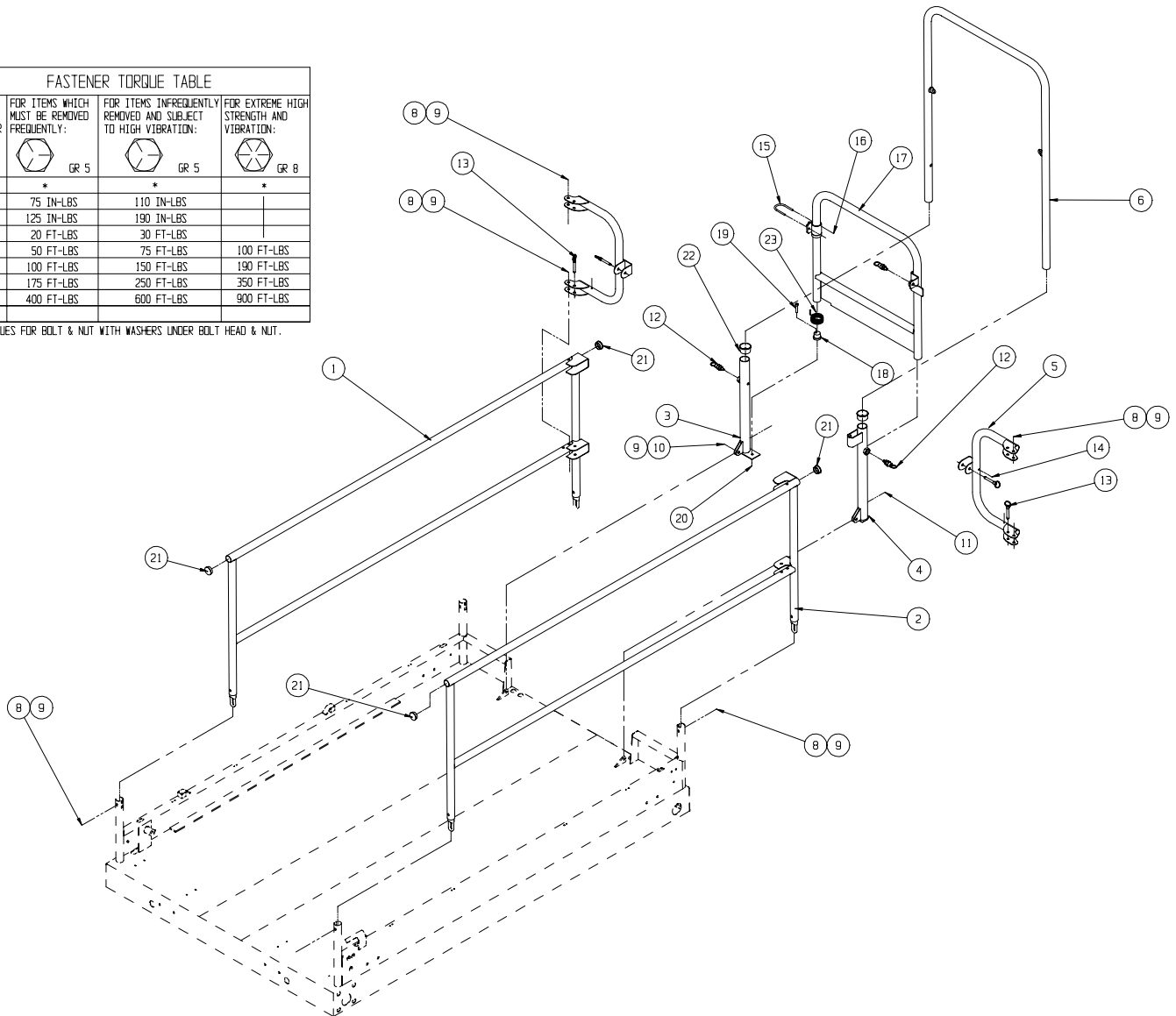
066938-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066967-000	WELDMNT, SIDE RAIL MAIN DECK RH	1
2	066967-001	WELDMNT, SIDE RAIL MAIN DECK LH	1
3	066969-002	WELDMNT, SLIDE TUBE (EUR) RH	1
4	066969-003	WELDMNT, SLIDE TUBE (EUR) LH	1
5	066978-000	WELDMNT, REAR SWING TUBE	2
6	066970-001	WELDMNT, SLIDE TUBE EURO	1
8	011254-014	SCREW HHC 3/8-16 x 1 3/4	8
9	011248-006	NUT 3/8-16 UNC ESNA	10
10	011254-008	SCREW HHC 3/8-16 x 1	2
11	011287-006	SCREW SOC 3/8-16 x 3/4	2
12	003570-000	RETAINING PIN ASSEMBLY	2

ITEM	PART NUMBER	DESCRIPTION	QTY
13	010414-006	LOCKING PIN ASSEMBLY	4
14	026553-004	RIVET 3/16 DIA. x 1/4 GRIP	4
15	027899-000	U-BOLT	1
16	011248-004	NUT 1/4-20 UNC ESNA	2
17	066977-000	WELDMNT, SWING GATE	1
18	066441-002	GATE PIVOT	1
19	014334-020	SCRW SOC HD 5/16-18 UNC x 1-1/2	1
20	011248-005	NUT 5/16-18 UNC ESNA	1
21	066516-001	PLUG-HEXCO	4
22	065987-000	CAPLUG - BEARING	2
23	066256-001	SPRING	1

FASTENER TORQUE TABLE			
FASTENER GRADE	FOR ITEMS WHICH MUST BE REMOVED FREQUENTLY: GR 5	FOR ITEMS INFREQUENTLY REMOVED AND SUBJECT TO HIGH VIBRATION: GR 5	FOR EXTREME HIGH STRENGTH AND VIBRATION: GR 8
SIZE:	*	*	*
1/4	75 IN-LBS	110 IN-LBS	
5/16	125 IN-LBS	190 IN-LBS	
3/8	20 FT-LBS	30 FT-LBS	
1/2	50 FT-LBS	75 FT-LBS	100 FT-LBS
5/8	100 FT-LBS	150 FT-LBS	190 FT-LBS
3/4	175 FT-LBS	250 FT-LBS	350 FT-LBS
1	400 FT-LBS	600 FT-LBS	900 FT-LBS

* VALUES FOR BOLT & NUT WITH WASHERS UNDER BOLT HEAD & NUT.



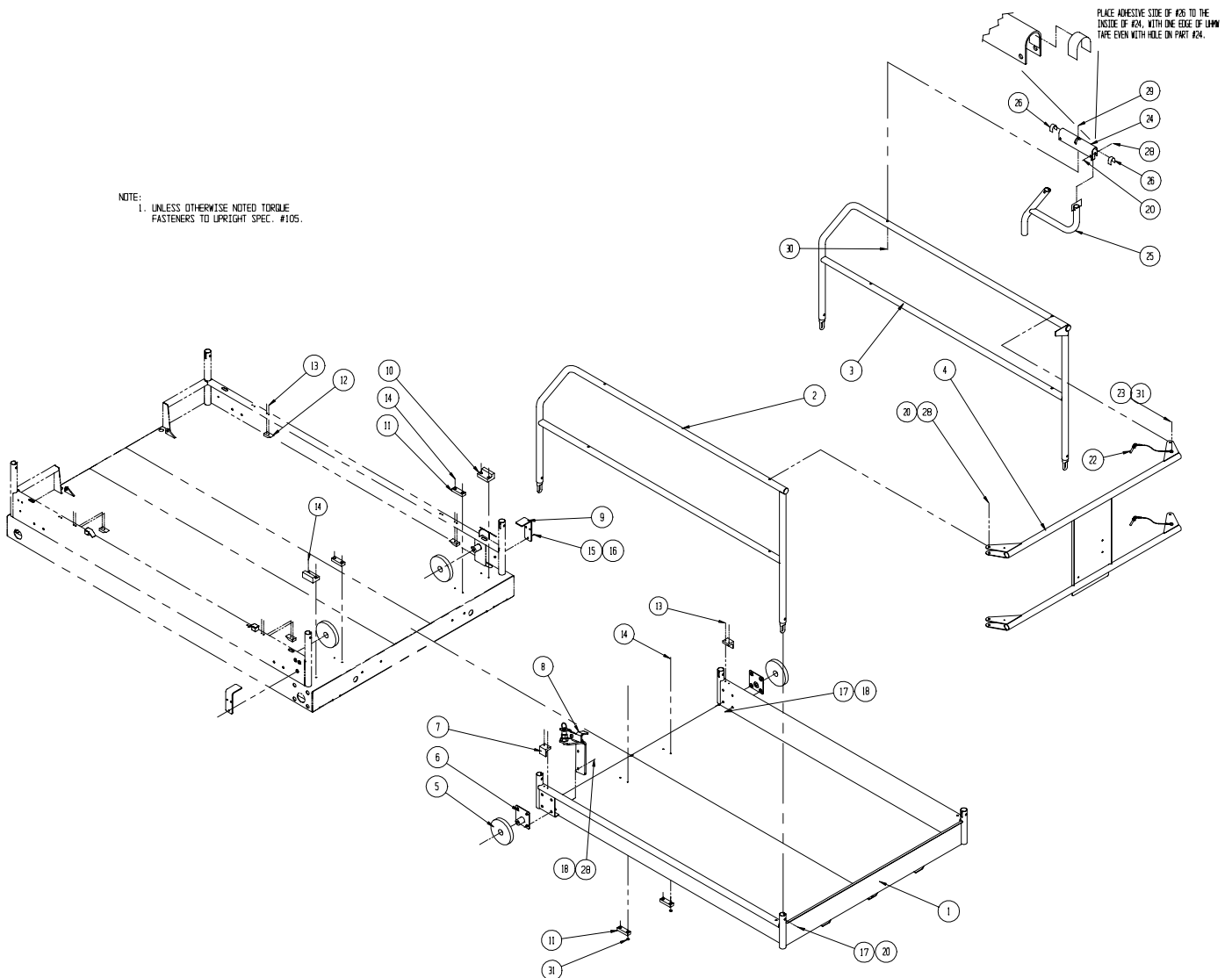
Extension Platform

066939-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066955-000	EXTENSION DECK WELDMENT	1
2	066965-001	WELDMENT, SIDE RAIL - RIGHT	1
3	066965-000	WELDMENT, SIDE RAIL - LEFT	1
4	066966-000	FRONT GATE, SLIDE OUT DECK	1
5	066195-000	PLATFORM ROLLERR MOUNT	4
6	066127-000	WELDMENT, ROLLER MOUNT	2
7	066170-001	WEAR PAD	2
8	067185-000	DECKLOCK, SLIDE OUT ASSY	1
9	066407-011	BRACKET	2
10	066176-002	WEAR PAD - XRT	2
11	066198-002	WEAR PAD - XRT	4
12	066193-000	STOP	4
13	026553-008	RIVET 3/16 DIA. x 1/2 GRIP	12
14	026553-010	RIVET 3/16 DIA. x 5/8 GRIP	12

ITEM	PART NUMBER	DESCRIPTION	QTY
15	011252-006	SCREW HHC 1/4-20 x 3/4	6
16	011240-004	WASHER 1/4 FLAT	6
17	011254-016	SCREW HHC 3/8-16 x 2	10
18	011238-006	WASHER 3/8 LOCK	8
20	011248-006	NUT 3/8-16 UNC ESNA	8
22	010414-006	LOCKING PIN ASSEMBLY	2
23	026553-004	RIVET 3/16 DIA. x 1/4 GRIP	2
24	067761-001	PIVOT, PUSH BAR XRT	1
25	067310-000	WELDMENT, HANDLE DECK EXTENTION	1
26	066520-099	TAPE, UHMW 2" WIDE W/ ADHESIVE	A/R
28	011254-018	SCREW, HHC 3/8 UNC X 2-1/4"	6
29	014339-014	SCREW SOC HD SSTL 5/16-18 X 1-3/4"	1
30	011248-005	NUT, HEX ESNA 5/16-18	1
31	002186-000	WASHER, 3/16" SS FLAT	6

NOTE:
1. UNLESS OTHERWISE NOTED TORQUE
FASTENERS TO UPRIGHT SPEC. #105.

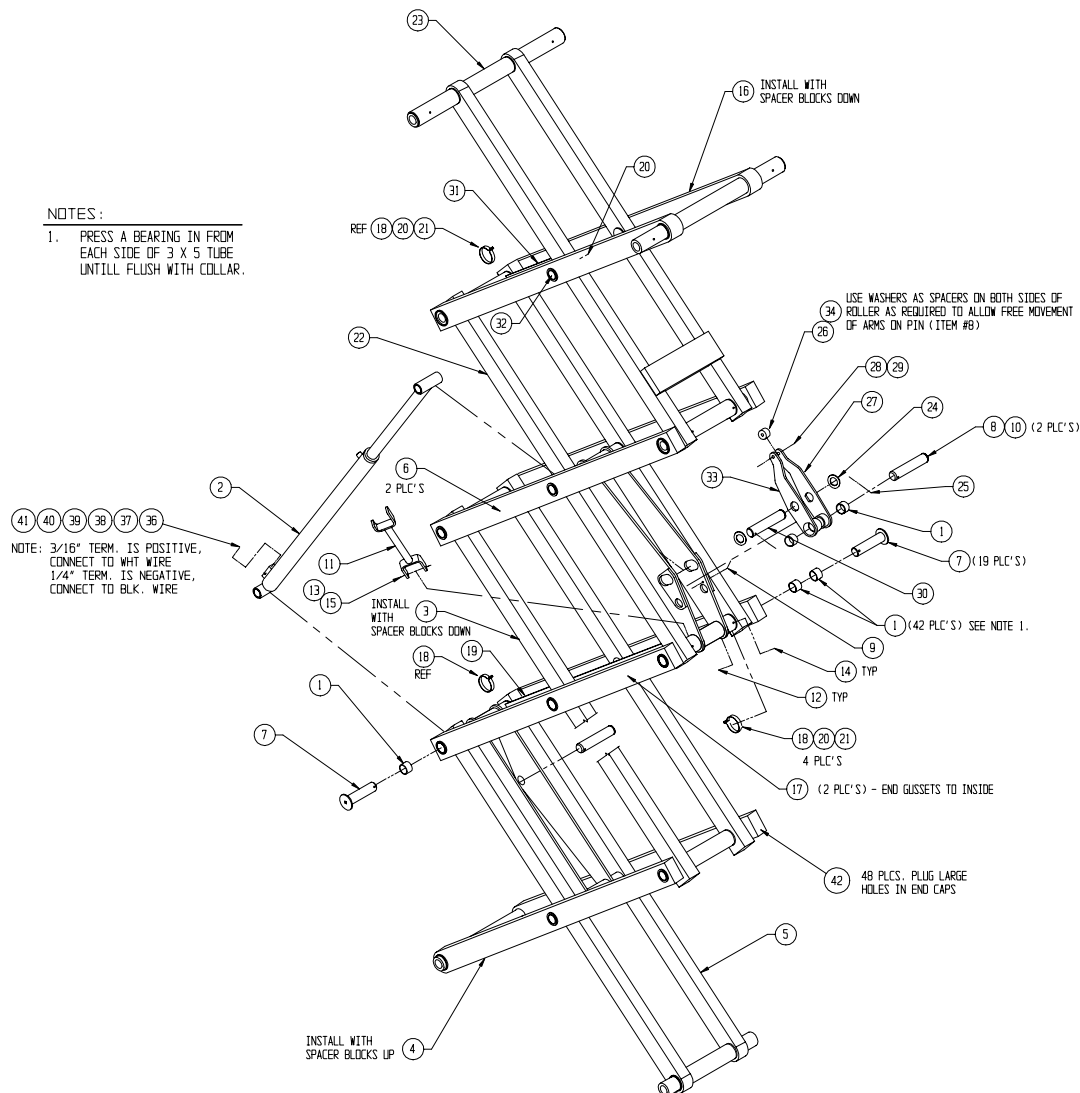


Scissor Assembly, XRT27E

066933-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066183-000	BEARING, OILITE #EP3236-24	42
2	066601-000	LIFT CYLINDER	1
-	066601-010	SEAL KIT, LIFT CYLINDER	-
3	066201-001	WELDMENT, MID INNER TUBE 1/8	1
4	066961-000	WELDMENT, BOTTOM OUTER 3/16	1
5	066962-000	WELDMENT, BOTTOM INNER 3/16	1
6	066211-002	WELDMENT, MID OUTER 1/4	2
7	066210-000	WELDMENT, PIVOT PIN	19
8	066224-000	PIN, LIFT CYLINDER	2
9	066225-000	PIN, SHAFT LOCKING	2
10	011764-032	RET RING TRUARC #5100-200	2
11	066214-000	WELDMENT, SAFETY STAND	1
12	011248-005	NUT HEX 5/16-18	20
13	011248-006	NUT HEX 3/8-16	1
14	015936-023	SCREW SHOULDER 3/8-16 X 3 1/2	20
15	011254-044	SCREW HHC GR5 3/8-16 X 5 1/2	1
16	066240-001	WELDMENT, TOP OUTER 3/16	1
17	066211-001	WELDMENT, MID OUTER ARM 1/8	2
18	066199-000	PIPE RING	4
19	066226-000	CHANNEL, CABLE	1
20	011248-004	NUT HEX 1/4-20	4

ITEM	PART NUMBER	DESCRIPTION	QTY
21	011252-008	SCREW HHC GR5 1/4-20 X 1	3
22	066120-000	WELDMENT, MID INNER ARM 3/16	1
23	066121-000	WELDMENT, TOP INNER ARM 1/8	1
24	011239-032	WASHER 2 DIA ASTM A325	2
25	011740-024	ROLL PIN 1/2 X 3	2
26	065367-001	BEARING TORRINGTON #YCRS32	1
27	066574-001	WELDMENT, TORSION ARM L.H.	1
28	011257-028	SCREW HHC 5/8-11 X 3 1/2	1
29	011246-010	NUT 5/8-11 THIN HEX	1
30	066224-001	PIN, LIFT CYLINDER	1
31	066226-001	CHANNEL, CABLE	1
32	066210-002	WELDMENT, PIVOT PIN	1
33	066574-002	WELDMENT, TORSION ARM R.H.	1
34	011239-010	WASHER, FLAT 5/8 ASTM	4
36	066179-002	VALVE - LIFT 40 VOLT	1
37	066368-000	BRACKET, CABLE	1
38	05832-000	WASHER, LOCK	2
39	011252-008	SCREW, HHC 1/4-20 UNC X 1	2
40	063664-008	ORIFICE	1
41	011941-005	FITTING, ADAPTER 6MB-6MJ	1
42	064462-035	PLUG, 3/4 DIA. CAP-PLUG	48

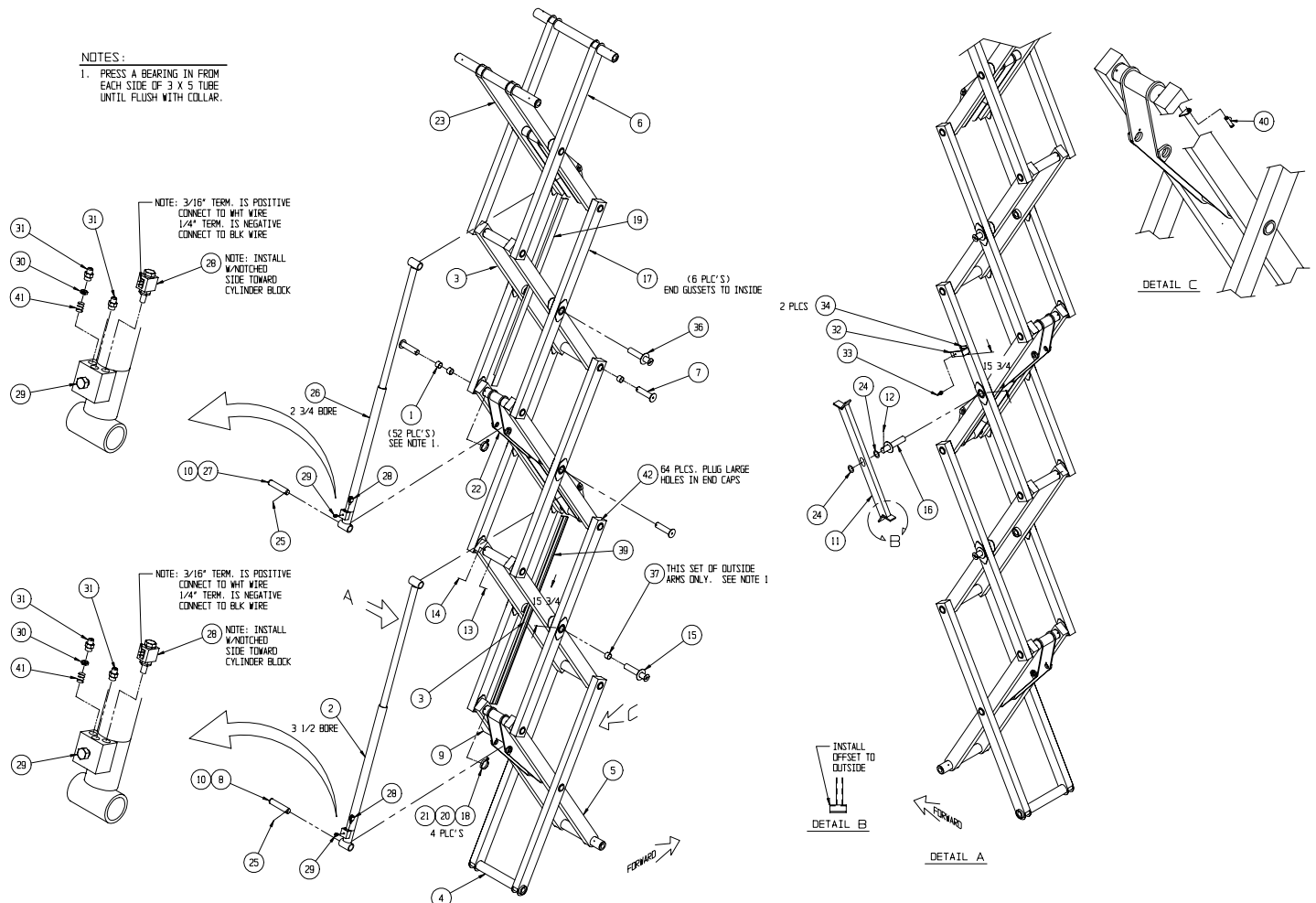


Scissor Assembly, XRT33E

066934-003

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066183-000	BEARING, OILITE #EP3236-24	40
2	066601-001	LIFT CYLINDER 3-1/2" BORE	1
-	066601-010	SEAL KIT, LIFT CYLINDER	-
3	066201-001	WELDMENT, MID INNER TUBE 1/8	2
4	066961-000	WELDMENT, BOTTOM OUTER 3/16	1
5	066962-000	WELDMENT, BOTTOM INNER 3/16	1
6	066240-001	WELDMENT, TOP OUTER 3/16	1
7	066210-000	WELDMENT, PIVOT PIN	23
8	066224-000	PIN, LIFT CYLINDER	2
9	066225-000	PIN, SHAFT LOCKING	4
10	011764-032	RET RING TRUARC #5100-200	4
11	067591-000	WELDMENT, SAFETY STAND	1
12	011757-028	COTTER PIN 3/8 DIA X 3-1/2	1
13	011248-005	NUT HEX 5/16-18	26
14	015936-023	SCREW SHOULDER 3/8 X 3 1/2	26
15	066210-010	WELDMENT, PIVOT PIN	1
16	066210-011	WELDMENT, PIVOT PIN	1
17	066211-001	WELDMENT, MID OUTER ARM 1/8	6
18	066199-000	PIPE RING	4
19	066226-000	CHANNEL, CABLE	1
20	011248-004	NUT HEX 1/4-20	4
21	011252-008	SCREW HHC GR5 1/4-20 X 1	4

ITEM	PART NUMBER	DESCRIPTION	QTY
22	066120-011	WELDMENT, MID INNER ARM 1/4	1
23	066121-010	WELDMENT, TOP INNER ARM 1/8	1
24	011786-017	MACHINERY BUSHING 2" ID X 14GA	2
25	011740-024	ROLL PIN 1/2 X 3	2
26	066168-001	LIFT CYLINDER 2-3/4" BORE	1
-	066168-010	SEAL KIT, LIFT CYLINDER	-
27	066224-010	PIN LIFT CYLINDER	2
28	066179-002	VALVE SOLENOID - 40 VOLT	2
29	067324-000	VALVE, COUNTER BALANCE	2
30	015919-007	ORIFICE	2
31	011941-005	FITTING STR 6MB-6MJ	4
32	066814-000	WELDMENT, SCISSOR BRACE	1
33	03570-001	RETAINING RING	1
34	026554-002	RIVET 1/4 POP	2
35	011937-003	FITTING 6FJX-6MJ 90	2
36	066210-012	WELDMENT, PIVOT PIN	1
37	068899-001	BEARING, GAR MAX 3236-24	12
39	066226-002	HOSE CHANNEL	1
40	066638-000	TEE, BULKHEAD, 6MJ-6MJ-6MJ	1
41	05133-000	SPRING	2
42	064462-035	PLUG, 3/4 DIA. CAP-PLUG	64

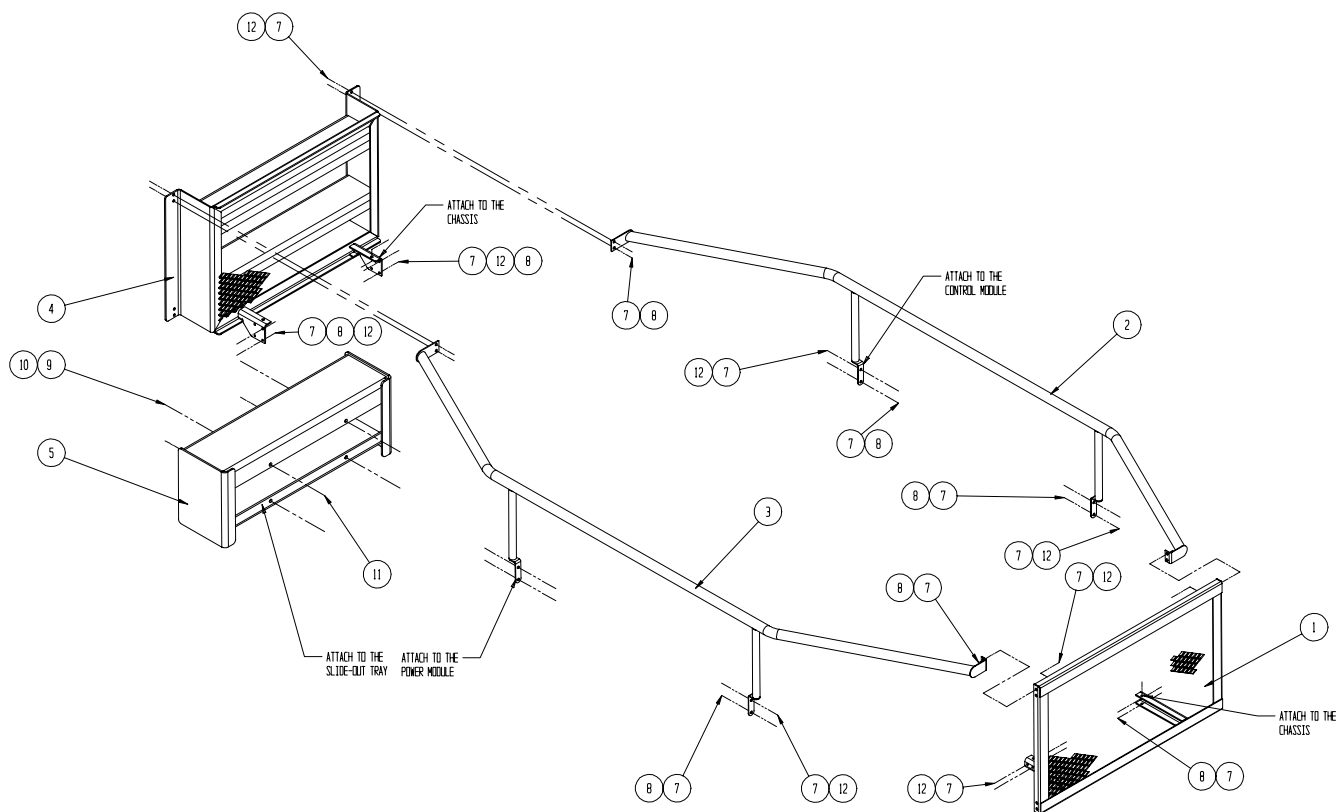


Scissor Guard Assembly, XRT27E

066949-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066980-000	WELDMENT, FRONT GUARD-27	1
2	066985-002	WELDMENT, SIDE GUARD, RIGHT	1
3	066985-003	WELDMENT, SIDE GUARD, LEFT	1
4	066972-000	WELDMENT, REAR GUARD LADDER -27	1
5	066991-000	WELDMENT, LOWER LADDER -27	1
7	011240-004	1/4 FLAT WASHER	48

ITEM	PART NUMBER	DESCRIPTION	QTY
8	011248-004	HEX NUT 1/4-20 ESNA	28
9	011256-010	HHC SREW 1/2-13 x 1 1/2	4
10	011240-008	1/2 FLAT WASHER	4
11	011248-008	HEX NUT 1/2-13 ESNA	4
12	011252-008	SCREW, HHC 1/4-20 UNC X 1	28

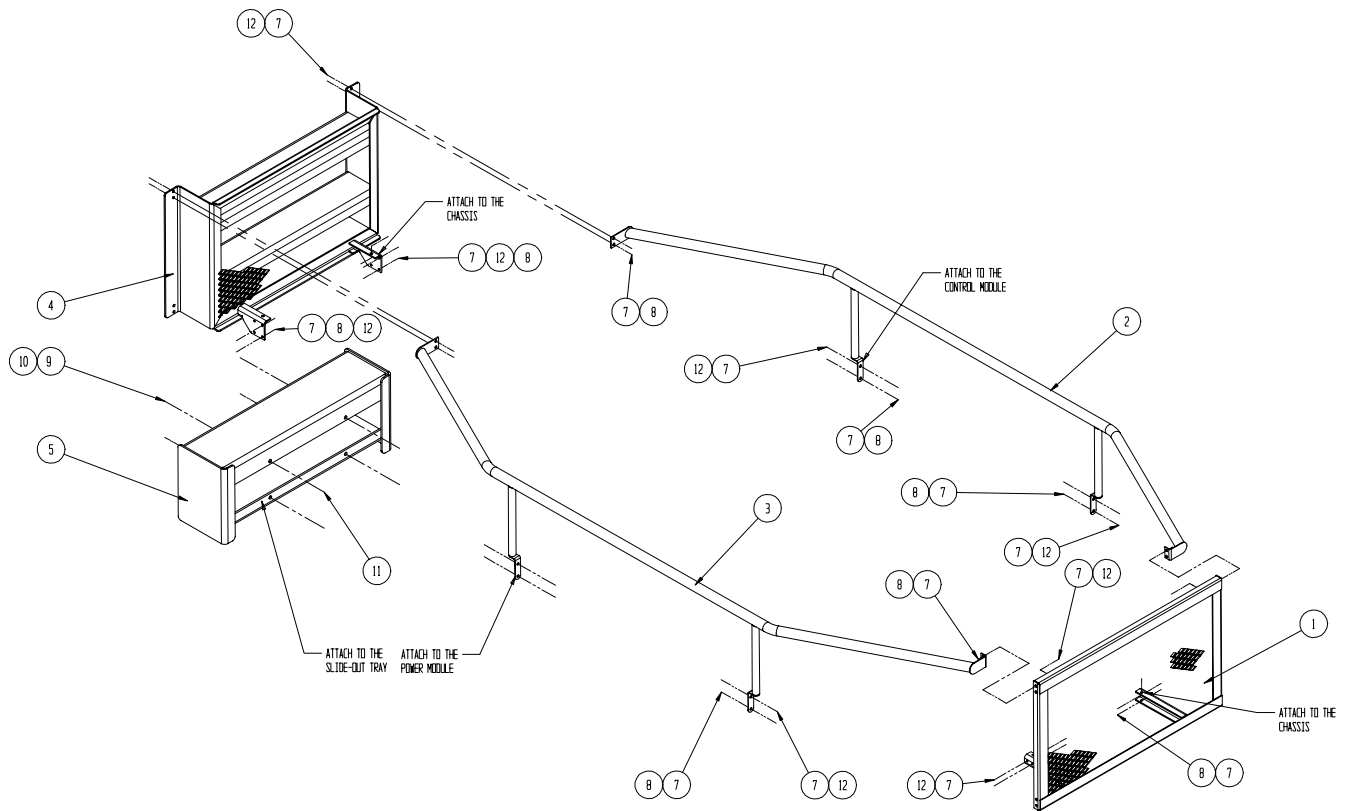


Scissor Guard Assembly, XRT33E

066949-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	066980-001	WELDMENT, FRONT GUARD~33	1
2	066985-002	WELDMENT, SIDE GUARD, RIGHT	1
3	066985-003	WELDMENT, SIDE GUARD, LEFT	1
4	066972-001	WELDMENT, REAR GUARD LADDER -33	1
5	066991-001	WELDMENT, LOWER LADDER -33	1
7	011240-004	1/4 FLAT WASHER	48

ITEM	PART NUMBER	DESCRIPTION	QTY
8	011248-004	HEX NUT 1/4-20 ESNA	28
9	011256-010	HHC SREW 1/2-13 x 1 1/2	4
10	011240-008	1/2 FLAT WASHER	4
11	011248-008	HEX NUT 1/2-13 ESNA	4
12	011252-008	SCREW, HHC 1/4-20 UNC X 1	28



Control Module Assembly

066935-004

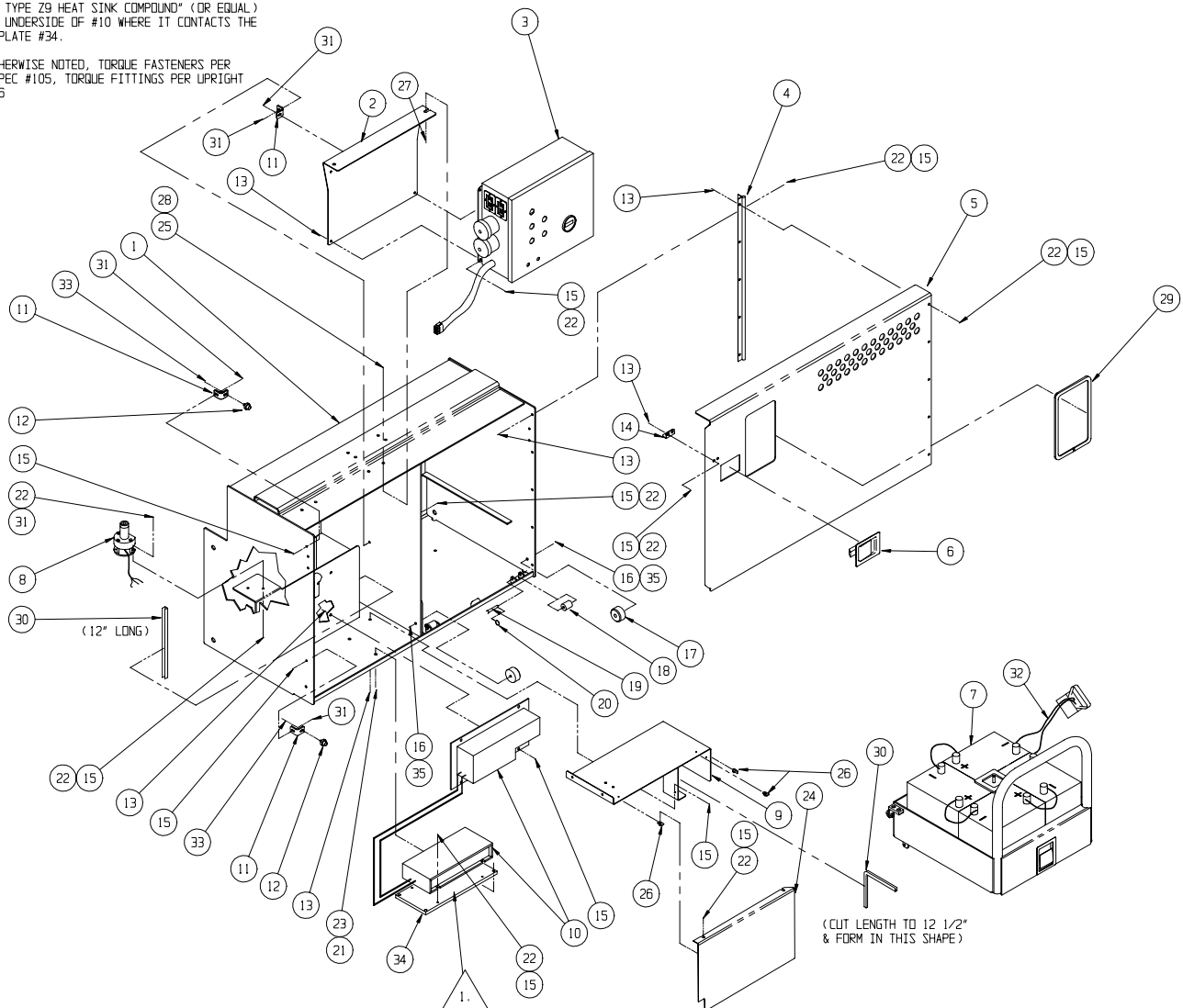
ITEM	PART NUMBER	DESCRIPTION	QTY
1	069058-000	CONTROL MODULE XE	1
2	067283-001	MOUNTING PANEL - CONTROL	1
3	067491-005	CONTROLLER, LOWER XE	1
4	067232-000	HINGE, DOOR/L MODULE	1
5	067233-003	DOOR, CONTROL MODULE	1
6	062791-002	LATCH, DOOR	1
7	069093-000	BATTERY TRAY ASSY (220Ah)	1
8	029945-013	LEVEL SENSOR	1
9	067368-001	RELAY COVER	1
10	067387-001	RELAY PANEL ASSY.	1
11	069246-000	ANGLE, SNUBBER MOUNT	3
12	067469-000	RUBBER BUMPER, 1/4 STUD	2
13	011248-004	NUT HEX 1/4-20 ESNA	27
14	067236-000	SUPPORT, DOOR LATCH END	1
15	011252-006	SCREW, HHC 1/4-20 X 3/4	31
16	011253-010	SCREW, HHC 5/16-18 X 1 1/4	2
17	069075-000	PAD, BATTERY SLIDE	2
18	069073-000	ROLLER, NYLON	2

ITEM	PART NUMBER	DESCRIPTION	QTY
19	011848-020	CLEVIS PIN Ø5/16 X 2	2
20	069269-002	CIRCLE COTTER, 3/4" DIA.	2
21	011254-006	SCREW HHC 3/8-16 X 3/4"	4
22	011240-004	WASHER, 1/4 FLAT STD	24
23	011238-006	WASHER, 3/8 SPLIT LOCK	4
24	067338-002	RELAY COVER	1
25	011253-008	SCREW, HHC 5/16-18 X 1	2
26	069294-002	U-HOLE NUT 1/4-20	3
27	011248-005	NUT, HEX ESNA 5/16-18	2
28	011240-005	WASHER FLAT STD 5/16	2
29	100395-099	GROMMET EDGING 3/4"	FT 2.75
30	061692-099	GROMMET, TRIM STRIP 3/16"	FT 2.5
31	011246-004	NUT, HEX 1/4-20UNC THIN ESNA	6
32	068332-006	CABLE ASSY.	REF
33	069266-000	SPEEDNUT 1/4-20UNC	2
34	068489-001	MOUNTING PLATE, SEVCON	1
35	011238-005	WASHER, SPLIT LOCK 5/16"	2

NOTES:

1. APPLY "GC TYPE Z9 HEAT SINK COMPOUND" (OR EQUAL) TO ENTIRE UNDERSIDE OF #10 WHERE IT CONTACTS THE MOUNTING PLATE #34.

2. UNLESS OTHERWISE NOTED, TORQUE FASTENERS PER UPRIGHT SPEC #105, TORQUE FITTINGS PER UPRIGHT SPEC. #106



Power Module Assembly

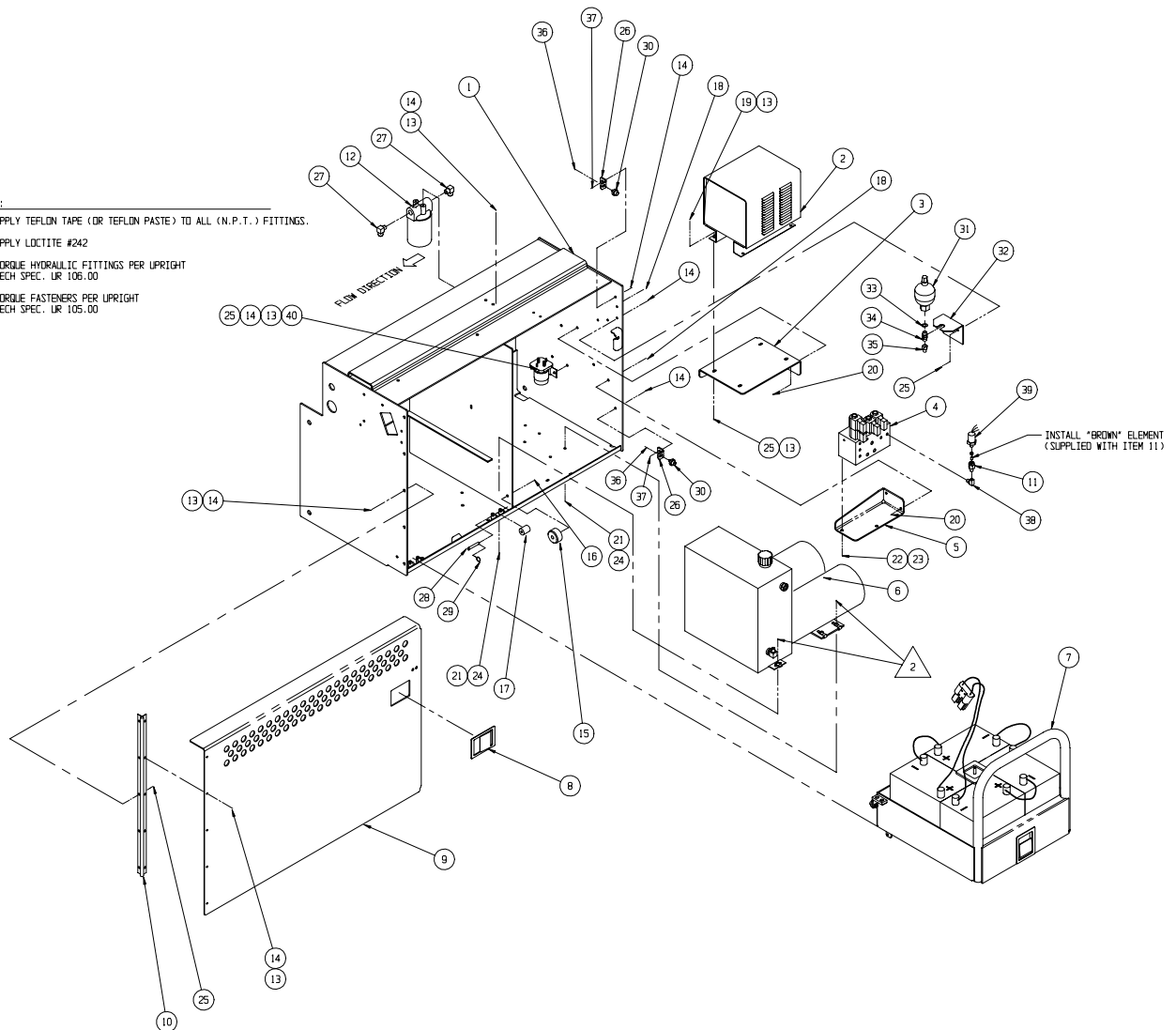
066937-003

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069057-000	WELDMENT, POWER MODULE	1
2	069112-000	CHARGER	1
3	069076-000	BRACKET, CHARGER	1
4	069271-000	VALVE BLOCK ASSEMBLY	1
5	069077-000	BRACKET, VALVE BLOCK	1
6	069270-000	POWER UNIT ASSY	1
7	069093-000	BATTERY TRAY ASSY. (220Ah)	1
8	062791-002	LATCH, DOOR	1
9	067233-000	DOOR, POWER MODULE	1
10	067232-000	HINGE, DOOR	1
11	068783-000	PRESSURE SNUBBER	1
12	005154-001	FILTER, HYDRAULIC OIL	1
13	011240-004	WASHER, 1/4" FLT STD	22
14	011252-006	SCREW, HHC 1/4-20UNC X 3/4"	18
15	069075-000	PAD, BATTERY SLIDE	2
16	011253-010	SCREW, HHC 5/16-18 X 1 1/4	2
17	069073-000	ROLLER, NYLON	2
18	011253-008	SCREW HHC 5/16-18 X 1"	4
19	011252-005	SCREW HHC 1/4-20 X 5/8	4
20	011248-005	NUT, HEX 5/16-18 ESNA	4

ITEM	PART NUMBER	DESCRIPTION	QTY
21	011240-005	WASHER, 5/16 FLAT STD	9
22	011254-008	SCREW, HHC 3/8-16 X 1"	2
23	011238-006	WASHER 3/8 SPLIT LOCK	2
24	011253-006	SCREW, HHC 5/16-18 X 3/4"	9
25	011248-004	NUT, HEX 1/4-20 ESNA	20
26	069246-000	ANGLE, SNUBBER MOUNT	2
27	011939-019	FITTING 12MP-8MJ 90°	2
28	011848-020	CLEVIS PIN Ø 5/16 X 2	2
29	069269-002	CIRCLE COTTER 3/4" DIA	2
30	067469-000	RUBBER BUMPER 1/4 STUD	2
31	068565-000	ACCUMULATOR	1
32	068712-002	BRACKET, (ACCUMULATOR MOUNT)	1
33	011979-008	O-RING	1
34	010150-005	FITTING, BULKHEAD 8MJ-8MJ	1
35	013969-002	FITTING 4MJ-8FJ	1
36	069266-000	SPEED NUT 1/4-20UNC	2
37	011246-004	NUT, HEX 1/4-20 ESNA THIN	2
38	069162-002	FITTING, ADAPTER 4MB-4FP90	1
39	063921-010	PRESSURE SWITCH	1
40	010122-002	RELAY, 48 VOLT	1

NOTES:

1. APPLY TEFLON TAPE (OR TEFLON PASTE) TO ALL (N.P.T.) FITTINGS.
2. APPLY LOCTITE #242
3. TORQUE HYDRAULIC FITTINGS PER UPRIGHT TECH SPEC. UR 106.00
4. TORQUE FASTENERS PER UPRIGHT TECH SPEC. UR 105.00



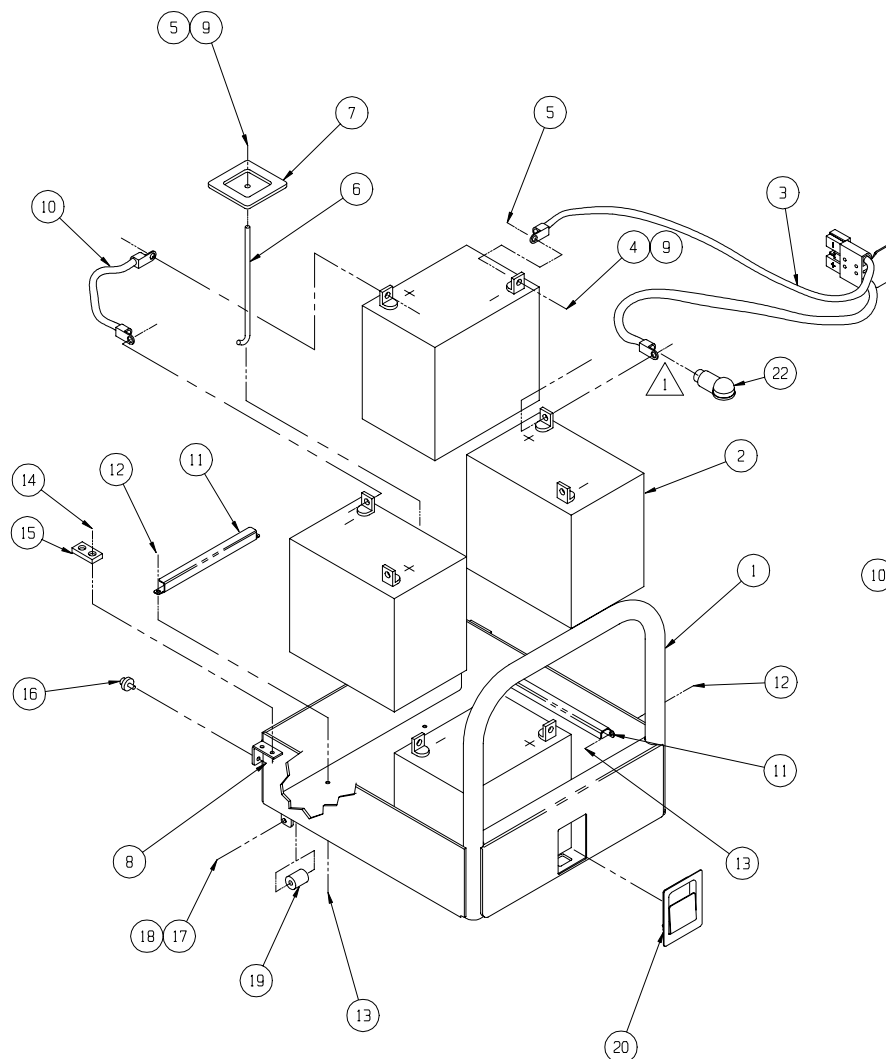
Battery Tray Assembly (220 Ah) [Standard]

069093-000

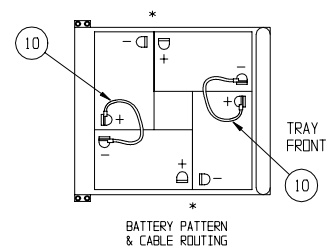
ITEM	PART NUMBER	DESCRIPTION	QTY
1	069059-000	WELDMNT, BATTERY TRAY	1
2	015796-000	BATTERY, 6VDC 220Ah	4
3	068332-006	CABLE ASSY	REF
4	011253-007	SCREW, HHC 5/16-18 X 7/8"	8
5	011250-005	NUT, HEX 5/16-18 UNC	9
6	069078-001	J - HOOK	1
7	069082-001	WELDMNT, BATTERY HOLDDOWN	1
8	069266-000	SPEED NUT, 1/4-20 UNC	2
9	011240-005	WASHER, 5/16 FLAT STD	9
10	064195-009	BATTERY CABLE ASSY 9"	REF
11	069083-000	CHANNEL, BATTERY STOP	3

ITEM	PART NUMBER	DESCRIPTION	QTY
12	011252-006	SCREW, HHC 1/4-20 X 3/4"	6
13	011248-004	NUT, HEX ESNA 1/4-20	10
14	011828-005	SCREW, FLT HD SOCKET 1/4-20 X 5/8"	4
15	100631-000	SLIDE PAD UPPER	2
16	067469-000	RUBBER BUMPER, 1/4 STUD	2
17	011848-020	CLEVIS PIN 5/16 X 2	2
18	069269-002	CIRCLE COTTER 3/4 X .048	2
19	069073-000	ROLLER, NYLON	2
20	062791-002	LATCH, DOOR	1
22	010154-001	COVER, BATTERY TERMINAL	8

1 SPRAY TERMINALS WITH CORROSION RESISTANT SPRAY.



* INSTALL DISCONNECT CABLE ON RIGHT FOR POWER MODULE; ON LEFT FOR CONTROL MODULE (FIT CABLE #10 ON SIDE OPPOSITE)



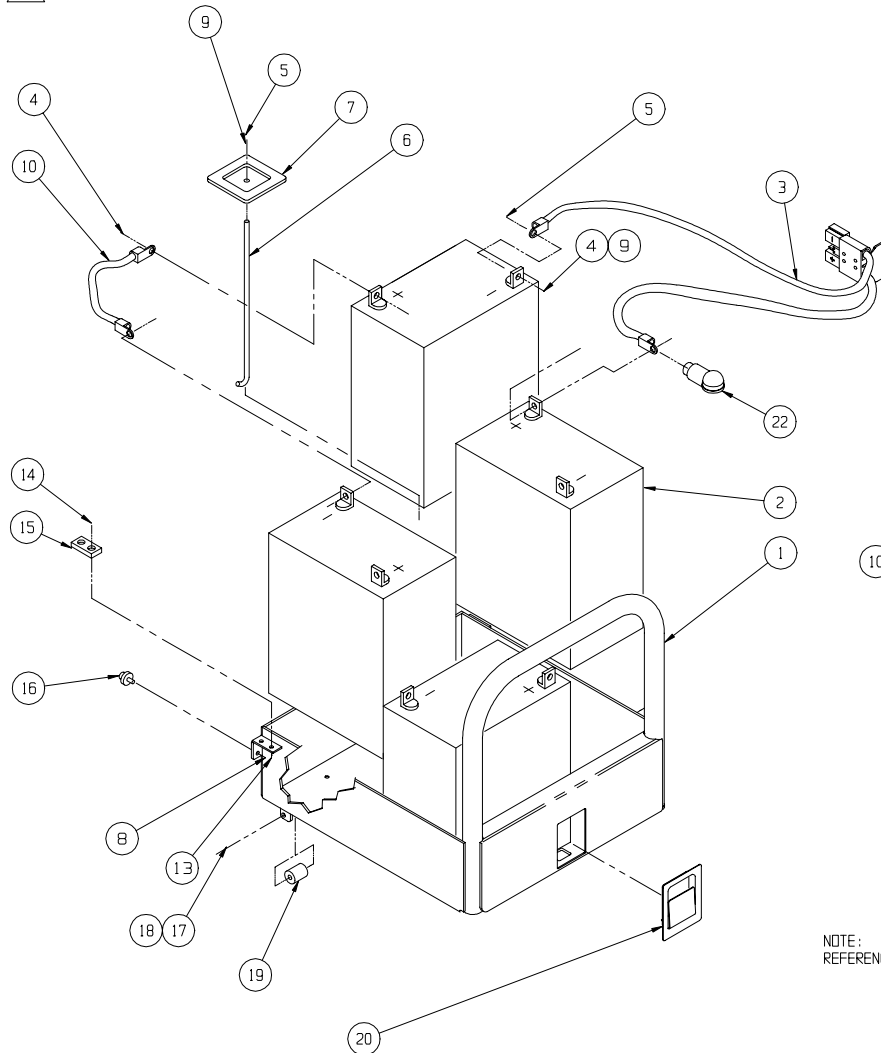
Battery Tray Assembly (350 Ah) [Option]

069093-001

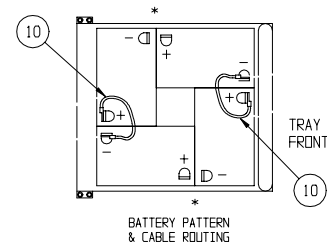
ITEM	PART NUMBER	DESCRIPTION	QTY
1	069059-000	WELDMENT, BATTERY TRAY	REF
2	068568-000	BATTERY, 6VDC 350Ah	4
3	068332-007	CABLE ASSY	REF
4	011253-007	SCREW, HHC 5/16-18 X 7/8"	REF
5	011250-005	NUT, HEX 5/16-18 UNC	REF
6	069078-000	J - HOOK	1
7	069082-000	WELDMENT, BATTERY HOLDDOWN	1
8	069266-000	SPEED NUT, 1/4-20 UNC.	REF
9	011240-005	WASHER, 5/16 FLAT STD	REF
10	064195-009	BATTERY CABLE ASSY 9"	REF

ITEM	PART NUMBER	DESCRIPTION	QTY
13	011248-004	NUT, HEX ESNA 1/4-20	REF
14	011828-005	SCREW, FLT HD SOCKET 1/4-20 X 5/8"	REF
15	100631-000	SLIDE PAD UPPER	REF
16	067469-000	RUBBER BUMPER, 1/4 STUD	REF
17	011848-020	CLEVIS PIN 5/16 X 2	REF
18	069269-002	CIRCLE COTTER 3/4 X .048	REF
19	069073-000	ROLLER, NYLON	REF
20	062791-002	LATCH, DOOR	REF
22	010154-001	COVER, BATTERY TERMINAL	REF

1 SPRAY TERMINALS WITH CORROSION RESISTANT SPRAY.



* INSTALL DISCONNECT CABLE ON RIGHT FOR POWER MODULE; ON LEFT FOR CONTROL MODULE (FIT CABLE #10 ON SIDE OPPOSITE)

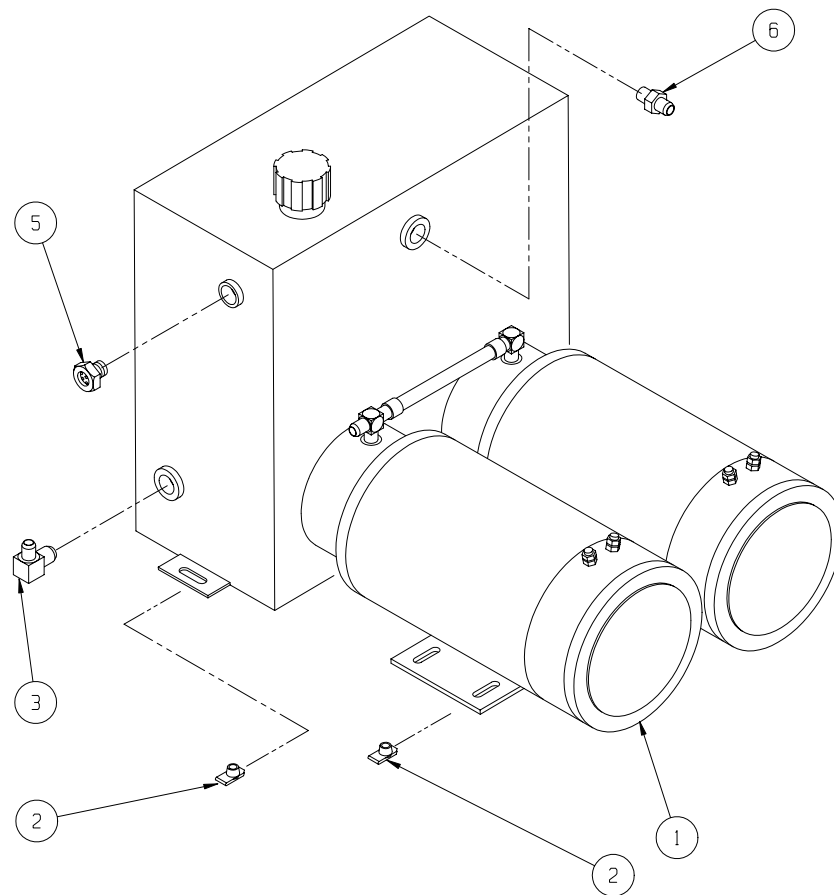


NOTE:
REFERENCE ITEMS ARE CALLED OUT ON P/N 069093-000

Power Unit Assembly

069270-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069053-000	POWER UNIT 48Volt	1
-	069053-010	ELECTRIC MOTOR	2
-	069053-012	BRUSH KIT	2
-	069053-011	HYDRALIC PUMP	2
-	069053-013	TUBE ASSEMBLY	1
2	069294-005	U-TAPPED HOLE NUT 5/16-18 THREAD	9
3	011940-018	FITTING 12MP-8MJ 90°	1
5	063979-006	LUBE GAGE SIGHT GLASS	1
6	011939-014	FITTING 8MP-6MJ	1

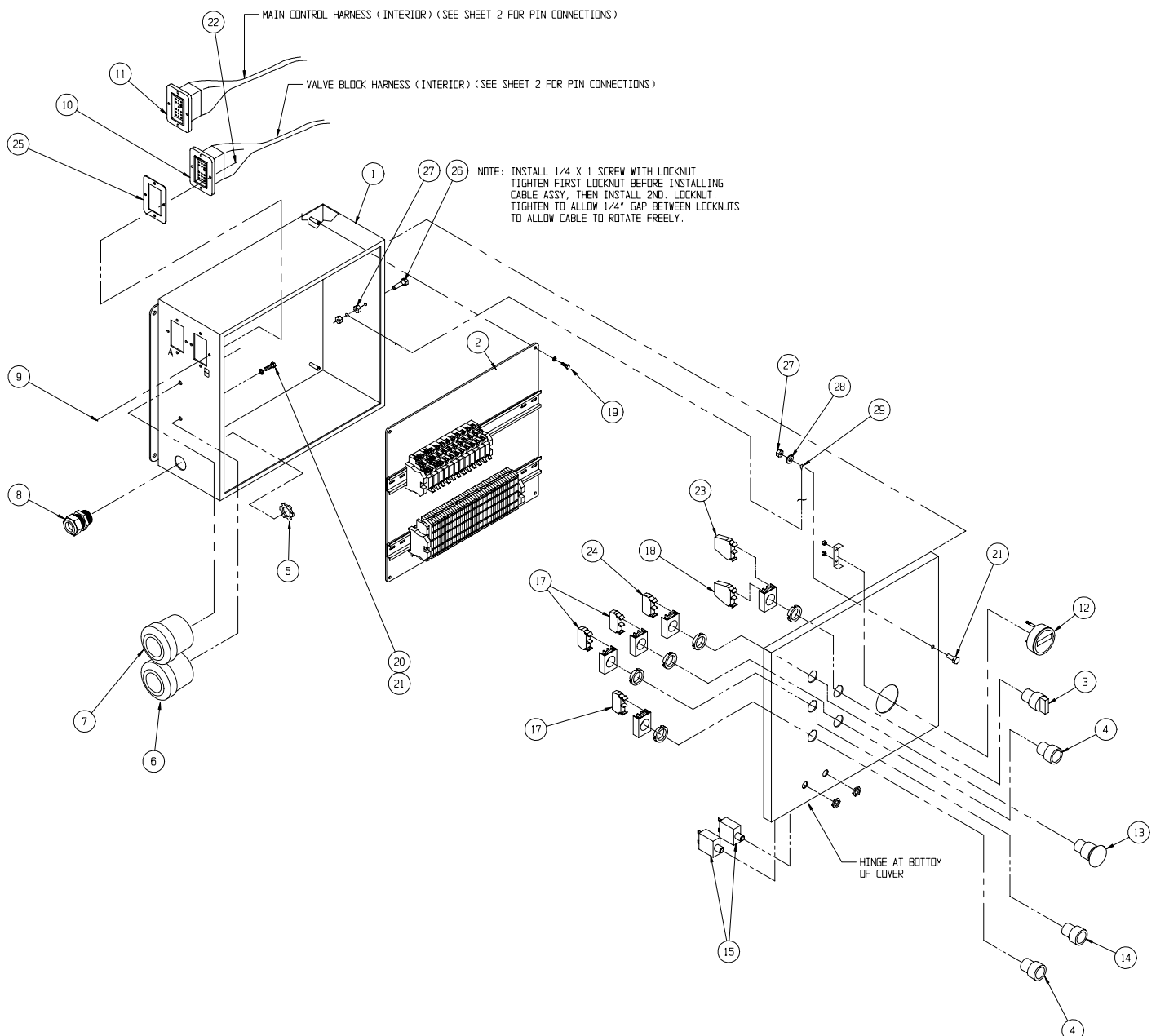


Controller Assembly, Lower

067491-005 #1 of 2

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069085-000	LOWER CONTROL BOX (XRT ELEC)	1
2	069274-000	PANEL ASSY, RELAY /TERMINAL XE	1
3	066805-003	SELECTOR SWITCH 3 POSITION	1
4	066805-009	PUSH BUTTON (RED), MOMENTARY	2
5	029939-003	CONDUIT NUT 3/4"	1
6	066807-001	ALARM	1
7	066807-003	ALARM, DOWN	1
8	029925-010	CABLE CONNECTOR 3/4"	1
9	062734-006	SCREW FLT SLOT HD 6-32 X 3/4	8
10	069277-001	VALVE BLOCK HARNESS (INTERIOR)	1
11	069276-002	MAIN CONTROL HARNESS (INTERIOR)	1
12	015752-000	HOUR METER	1
13	066805-006	BUTTON, EMERGENCY STOP (MUSHROOM)	1
14	066805-016	PUSH BUTTON (GREEN), MOMENTARY	1

ITEM	PART NUMBER	DESCRIPTION	QTY
15	068582-010	CIRCUIT BREAKER, 10 AMP	2
17	066805-010	CONTACT BLOCK GE (N.O.)	3
18	066805-012	CONTACT DOUBLE BLOCK GE	1
19	REF	SCREW & STAR WASHER (W/ENCLOSURE)	4
20	011238-004	WASHER, SPLIT LOCK 1/4"	2
21	011252-006	SCREW, HHC 1/4-20UNC X 3/4"	3
22	011248-047	LOCKNUT, #6-32 UNC ESNA	8
23	068860-001	CONTACT BLOCK DOUBLE (2) N.C.	1
24	066805-011	CONTACT BLOCK N.C.	1
25	069160-000	GASKET, DEUTSCH 24 PIN CONNECTOR	2
26	011252-008	SCREW, HHC 1/4-20 UNC X 1	1
27	011248-004	LOCKNUT, 1/4-20 UNC ESNA	3
28	011240-004	WASHER, 1/4" FLAT	1
29	064466-013	CABLE ASSY.	1

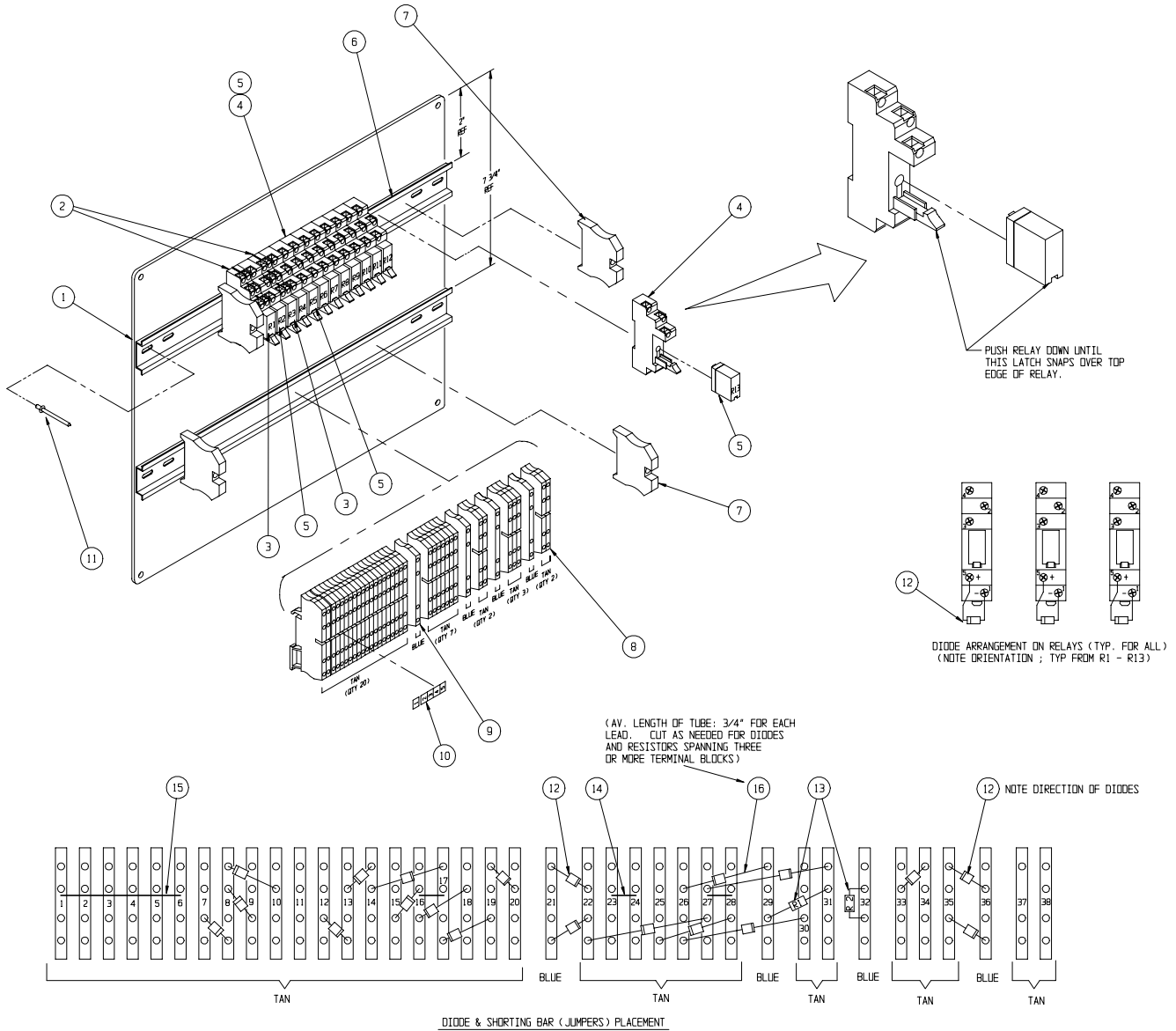


Relay/Terminal Block Panel Assembly

069274-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069086-000	PANEL, LOWER CONTROL BOX	1
2	069298-001	SOCKET, (FOR DP RELAY)	2
3	069297-001	RELAY, DPDT 48V	2
4	069298-000	SOCKET, (FOR SP RELAY)	11
5	069297-000	RELAY, SPDT 48V	11
6	067893-000	DIN RAIL, (13")	2
7	067660-006	END BLOCK, LOCKING	4
8	068698-001	TERMINAL BLOCK, TAN	34

ITEM	PART NUMBER	DESCRIPTION	QTY
9	068698-002	TERMINAL BLOCK, BLUE	4
10	100298-000	NUMBER STRIP, #1-#50	1
11	026551-005	POP RIVET, 1/8" DIA (3/16 - 1/4 GRIP)	4
12	029825-002	DIODE, 5 AMP, 400 VOLT	33
13	029731-012	RESISTOR 100 OHM	2
14	068773-002	JUMPER, 2 PIN	3
15	068773-000	JUMPER, 10 PIN (CUT TO LENGTH FOR SIX)	1
16	066539-099	SHRINK TUBING 1/16" (.016"W)	FT 4.5

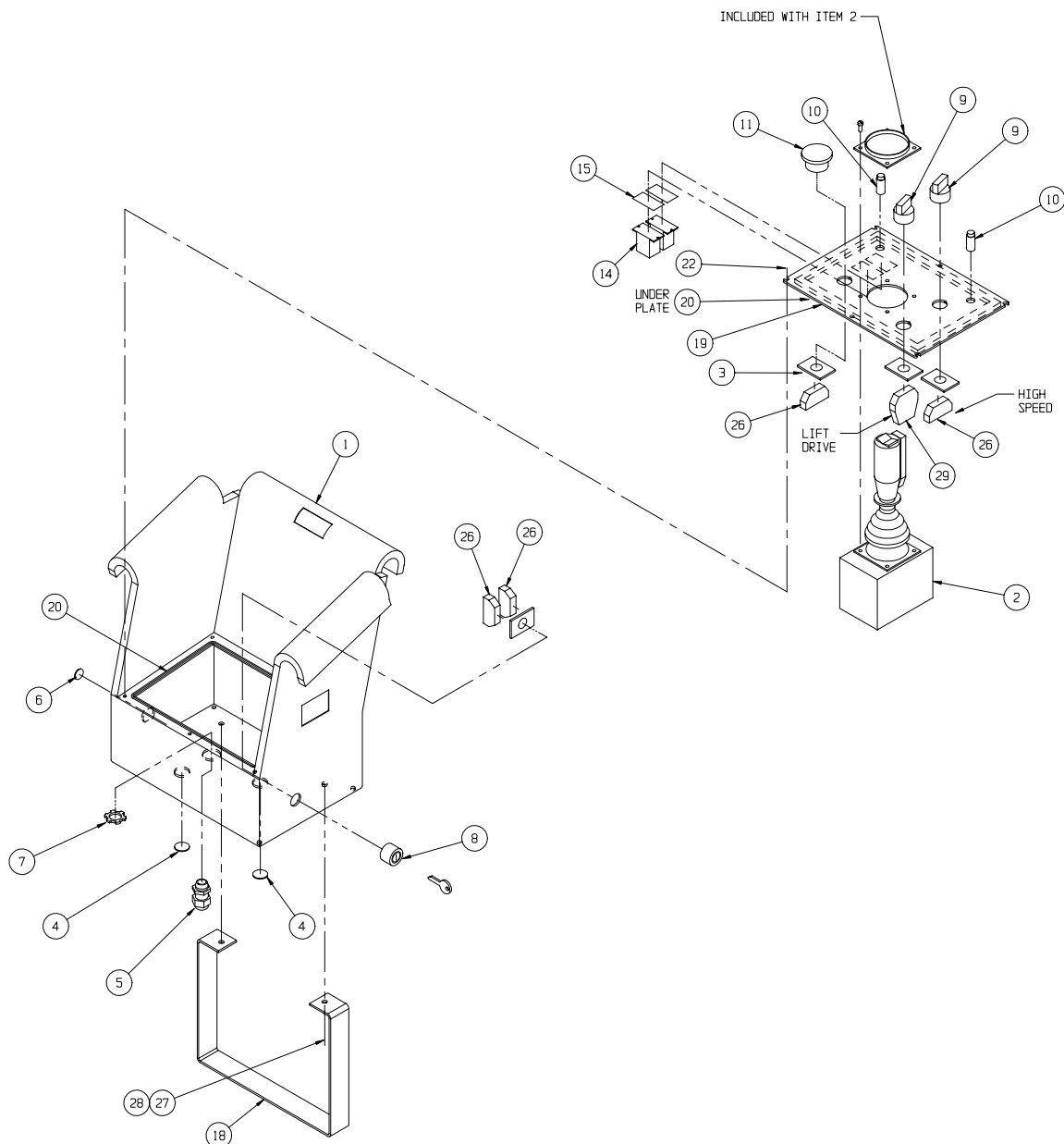


Controller Assembly, Upper

066942-002 #1 of 2

ITEM	PART NUMBER	DESCRIPTION	QTY
1	067487-000	LX CONTROL BOX	1
2	067385-000	CONTROLLER 48V	1
-	015772-001	SWITCH, MICRO	3
-	066544-014	SWITCH, STEERING	2
-	063913-003	BOOT, STEERING SWITCH	1
-	063913-004	ROCKER ASSEMBLY	1
-	066544-010	HANDLE, 2 PIECE	1
-	066544-011	LEVER, INTERLOCK	1
-	066544-012	SWITCH, INTERLOCK	1
-	066544-013	BOOT, JOYSTICK SHAFT	1
-	066544-015	FLANGE, CONTROLLER MOUNTING	1
3	064417-001	MOUNTING LATCH	4
4	064462-007	CAP PLUG 7/8 DIA.	2
5	029925-010	CABLE CONNECTOR, 3/4"NPT	1
6	064462-029	CAP PLUG 15/16" DIA.	1
7	029939-003	CONDUIT NUT, 3/4"	1

ITEM	PART NUMBER	DESCRIPTION	QTY
8	068807-000	KEY OPERATE	1
-	068807-010	KEY	1
9	066805-002	SELECTOR SWITCH	2
10	068133-002	INDICATOR LIGHT AMBER	2
11	066805-006	PUSH BUTTON, MUSHROOM	1
14	063951-003	RELAY	2
15	065929-099	TAPE, DOUBLE SIDE ADHESIVE	.3 FT
18	067483-000	CONTROLLER SUPPORT	1
19	067486-003	COVER PLATE, CONTROLLER BOX	1
20	068889-099	WEATHERSTRIP 1/2 X 3/16 FOAM	3 FT
21	064462-002	CAP PLUG 1/2" DIA (NOT SHOWN)	2
22	011709-004	SCREW, RD HD 10-24UNC X 1/2"	6
26	066805-011	CONTACT BLOCK N.C.	4
27	011252-006	SCREW, 1/4-20 UNC HEX HEAD CAP x 3/4	2
28	011248-004	LOCKNUT, 1/4-20 UNC	2
29	066805-012	CONTACT BLOCK, DOUBLE, N.O. - N.C.	1

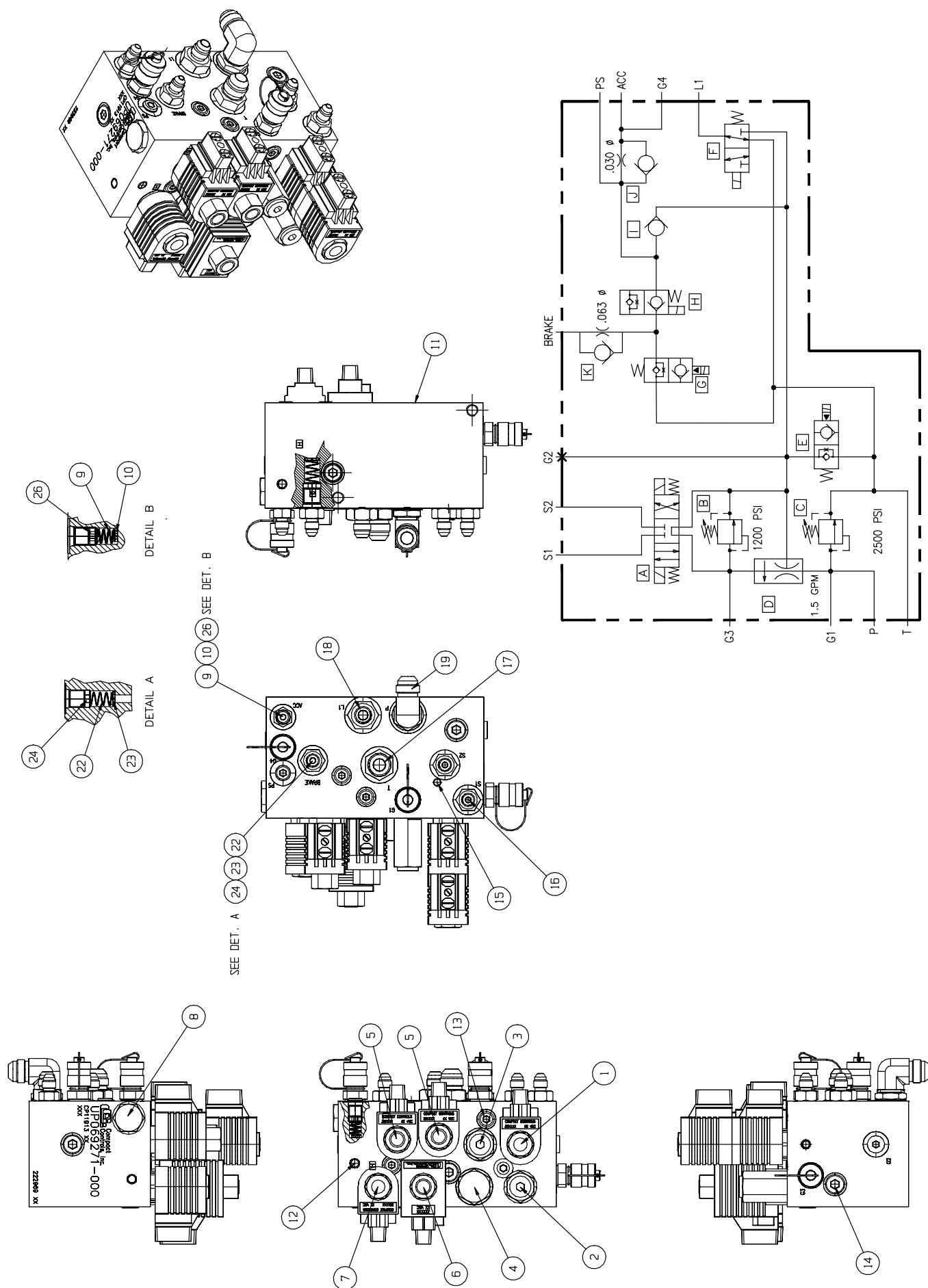


Main Valve Block Assembly

069271-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069271-011	3 POS / 4 WAY SOL. VLV.	1
2	069271-012	RELIEF VALVE	1
3	069271-013	RELIEF VALVE	1
4	069271-014	FLOW REGULATOR	1
5	069271-015	2 WAY N.O. SOL. VLV.	2
6	069271-016	2 POS / 3 WAY SOL. VLV.	1
7	069271-017	3 WAY N.C. SOL. VLV.	1
8	069271-018	CHECK VALVE	1
9	069271-019	SPRING	1
10	069271-020	ORIFICE WASHER (.030)	1
11	069271-021	BODY - VALVE BLOCK	1
12	-	EXPANSION PLUG - 8MM	4
13	069271-023	#4 SAE TAPERED PLUG	12

ITEM	PART NUMBER	DESCRIPTION	QTY
14	069271-024	#6 SAE TAPERED PLUG	5
15	-	EXPANSION PLUG - .250 DIA.	1
16	011941-004	FITTING - 6MB-4MJ	3
17	011941-010	FITTING - 8MB-8MJ	1
18	011941-009	FITTING - 8MB-6MJ	1
19	011934-008	FITTING - 8MB-8MJ90	1
20	069271-030	TEST FITTING	3
21	069271-031	#4 SAE PLUG	1
22	069271-032	SPRING	1
23	069271-033	ORIFICE WASHER (.063)	1
24	069271-034	JAMNUT	1
25	011941-001	FITTING - 4MB-4MJ	1

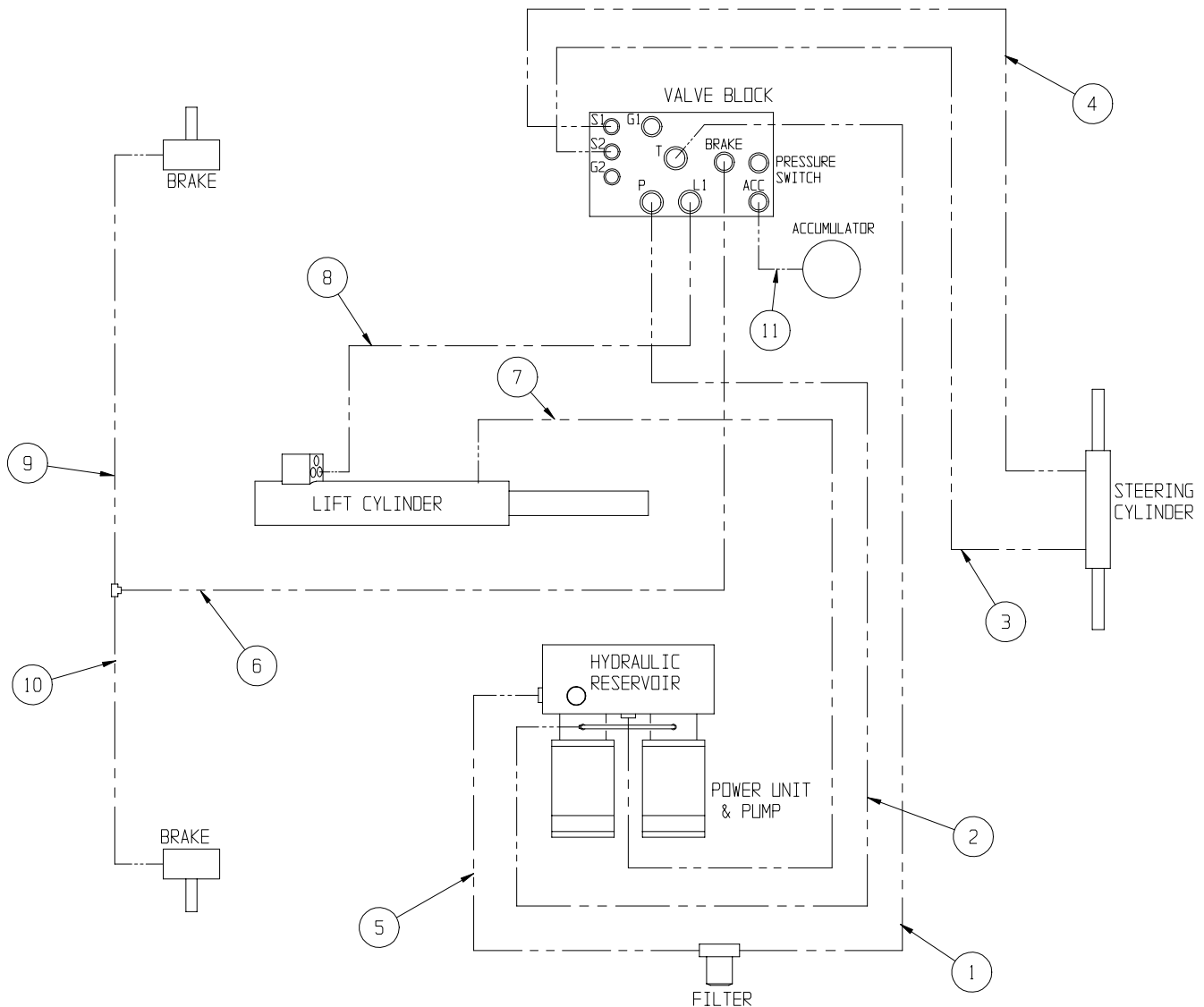


Hose Kit Installation, XRT27E

066941-006

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069287-037	1/2" HOSE ASSY X 37 8FJX - 8FJX90 LG	1
2	067682-019	1/2" HOSE ASSY X 19 8FJX - 8FJX90	1
3	069052-062	1/4" HOSE ASSY X 62 4FJX - 4FJX90	1
4	069052-068	1/4" HOSE ASSY X 68 4FJX - 4FJX90	1
5	068742-023	1/2" HOSE ASSY X 25 1/2 8FJX - 8FJX	1
6	069052-078	1/4" HOSE ASSY X 78 4FJX - 4FJX90	1

ITEM	PART NUMBER	DESCRIPTION	QTY
7	068745-210	3/8" HOSE ASSY X 210 6FJX - 6FJX	1
8	067684-185	3/8" HOSE ASSY X 185 6FJX - 6FJX90	1
9	069052-036	1/4" HOSE ASSY X 36 4FJX - 4FJX90	1
10	068737-020	1/4" HOSE ASSY X 20 4FJX - 4FJX	1
11	107090-017	1/4" HOSE ASSY X 17 4FJX - 4FJX90	1

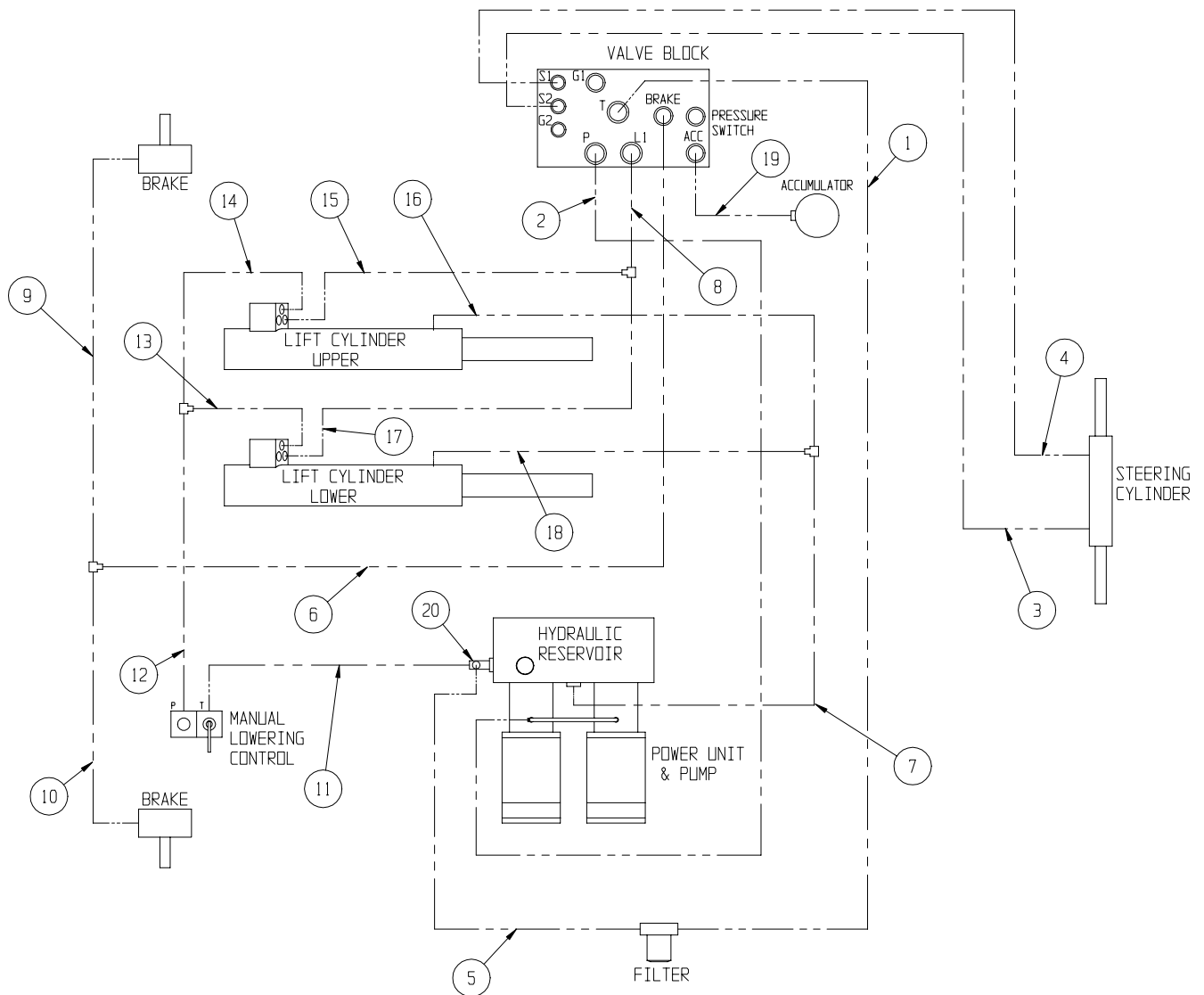


Hose Kit Installation, XRT33E

066941-008

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069287-037	1/2" HOSE ASSY X 37 8FJX - 8FJX90 LG	1
2	067682-019	1/2" HOSE ASSY X 19 8FJX - 8FJX90	1
3	069052-062	1/4" HOSE ASSY X 62 4FJX - 4FJX90	1
4	069052-068	1/4" HOSE ASSY X 68 4FJX - 4FJX90	1
5	067682-023	1/2" HOSE ASSY X 23 1/2 8FJX - 8FJX	1
6	069052-078	1/4" HOSE ASSY X 78 4FJX - 4FJX90	1
7	068745-135	1/4" HOSE ASSY X 135 6FJX - 6FJX	1
8	068745-109	3/8" HOSE ASSY X 109 6FJX - 6FJX90	1
9	069052-036	1/4" HOSE ASSY X 36 4FJX - 4FJX90	1
10	068745-020	1/4" HOSE ASSY X 20 4FJX - 4FJX	1

ITEM	PART NUMBER	DESCRIPTION	QTY
11	069164-012	3/8" HOSE ASSY X 12 8FJX - 6FJX90	1
12	068745-120	1/4" HOSE ASSY X 120 6FJX - 6FJX	1
13	066822-001	1/4" HOSE ASSY X 51 6JFX - 6JFX90	1
14	066825-240	1/4" HOSE ASSY X 240 6FJX - 6FJX	1
15	068745-245	3/8" HOSE ASSY X 245 6FJX - 6FJX	1
16	066825-245	1/4" HOSE ASSY X 245 6FJX - 6FJX	1
17	068965-060	3/8" HOSE ASSY X 60 6JFX - 6JFX90	1
18	066825-007	1/4" HOSE ASSY X 71 6FJX - 6FJX	1
19	107090-017	1/4" HOSE ASSY X 17 4FJX - 4FJX90	1
20	020733-003	FITTING, TEE 8FJX - 8MJ - 8MJ	REF



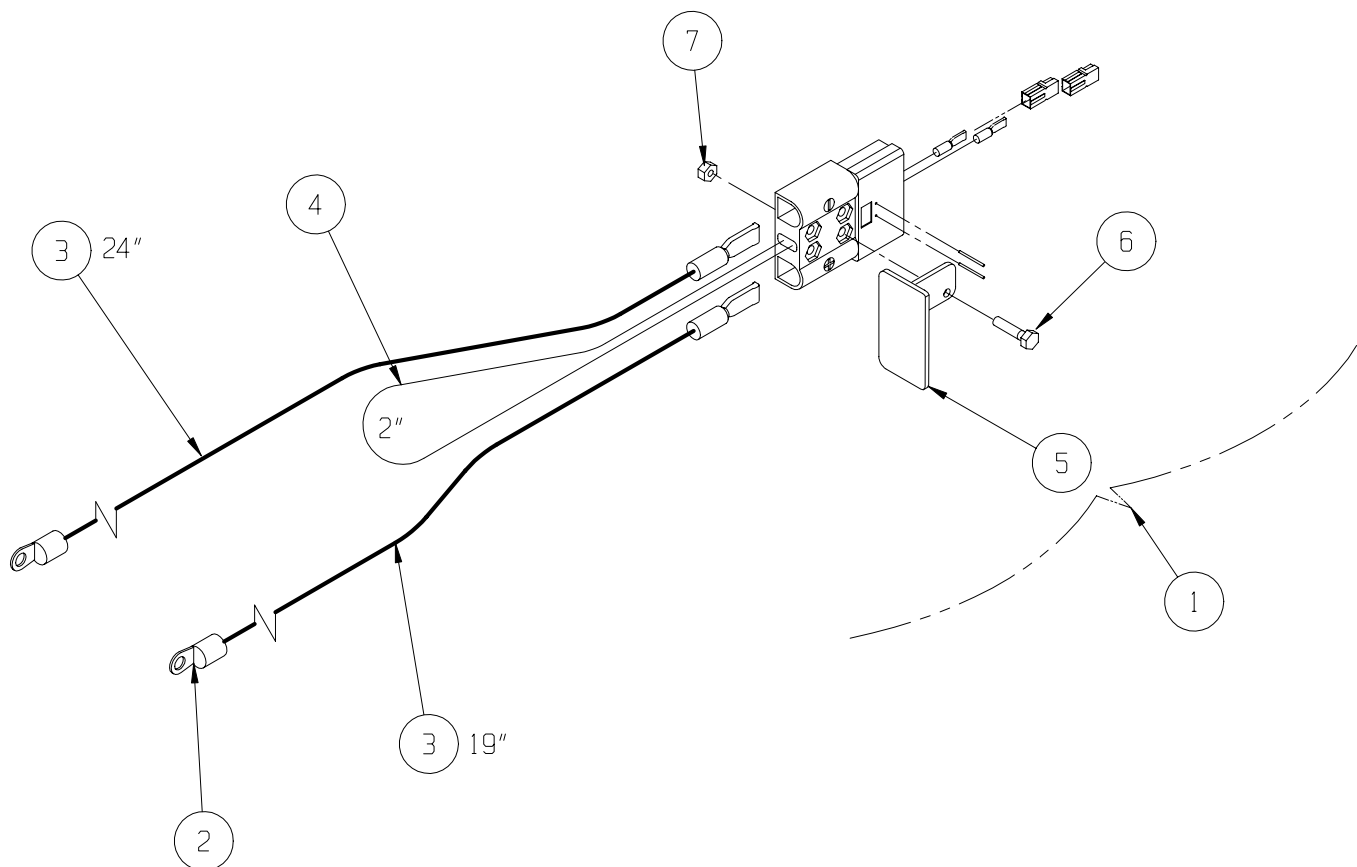
Cable Assembly

068332-006 (Power Module Side)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	029902-003	CONNECTOR, 175 AMP, #2 AWG	1
2	029602-025	CONNECTOR, RING #2 AWG x Ø 5/16	2
3	029431-099	CABLE, #2 A.W.G. WELDING	4 FT.
4	029453-099	WIRE, 16 GA. ORANGE	.2 FT.
5	069275-000	BATTERY DISCONNECT ANGLE	1
6	013965-012	SCREW, HHC #10-24 UNC X 1-1/2	2
7	011248-003	LOCKNUT, #10-24 UNC ESNA	2

068332-007 (Control Module Side)

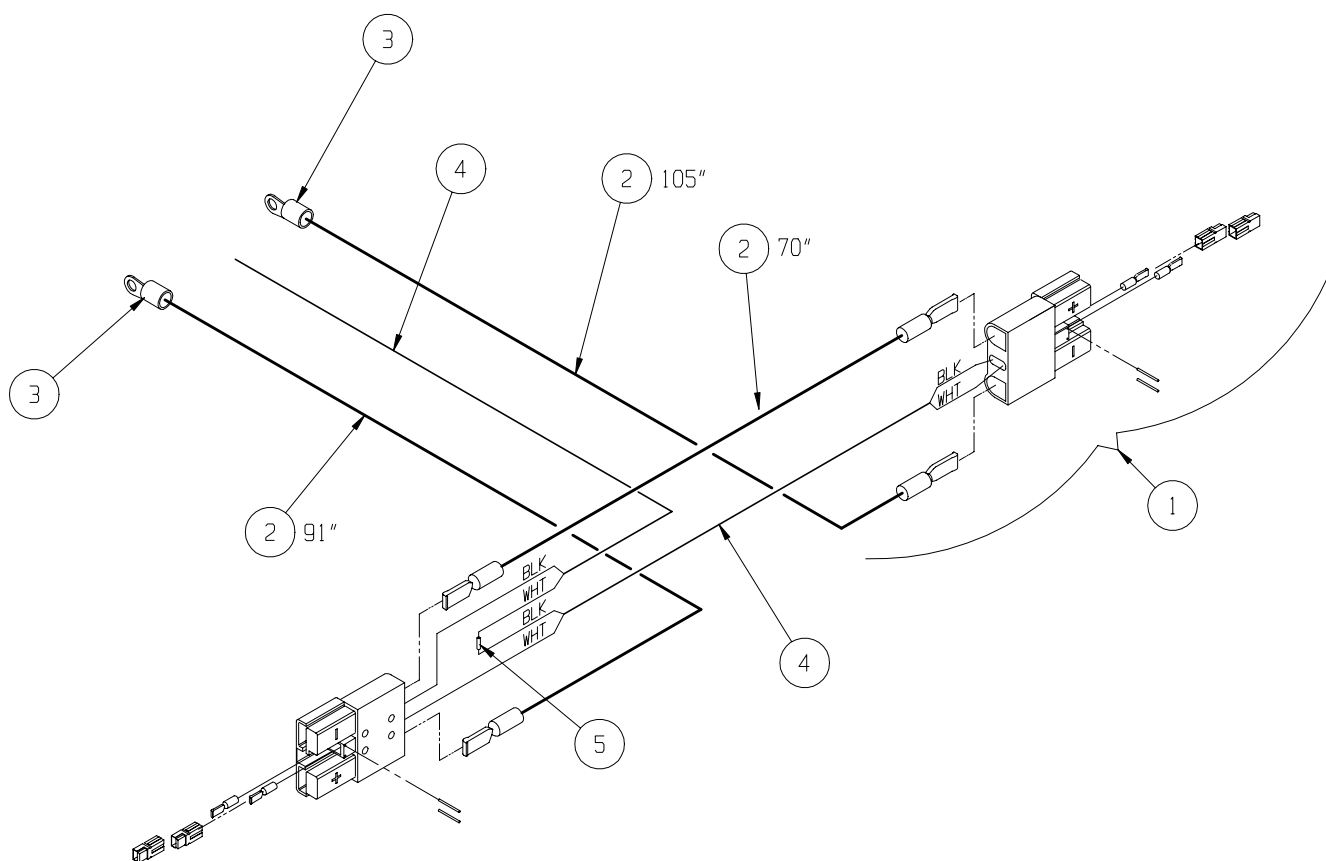
ITEM	PART NUMBER	DESCRIPTION	QTY
1	029902-003	CONNECTOR, 175 AMP, #2 AWG	1
2	029602-025	CONNECTOR, RING #2 AWG x Ø 5/16	2
3	029431-099	CABLE, #2 A.W.G. WELDING	3.6 FT.
4	029453-099	WIRE, 16 GA. ORANGE	.2 FT.
5	069275-000	BATTERY DISCONNECT ANGLE	1
6	013965-012	SCREW, HHC #10-24 UNC X 1-1/2	2
7	011248-003	LOCKNUT, #10-24 UNC ESNA	2



Cable Assembly (Chassis)

068333-001

ITEM	PART NUMBER	DESCRIPTION	QTY
1	029902-003	CONNECTOR, 175 AMP, #2 AWG	2
2	029431-099	CABLE, #2 A.W.G. WELDING	22.5
3	029602-025	CONNECTOR, RING #2 A.W.G. X Ø 5/16	2
4	029496-099	WIRE, 16 GA. 2 COND.	12
5	029620-002	CONNECTOR, BUTT 16-14 GA.	1



Tire/Wheel Assembly [Standard]

069285-000

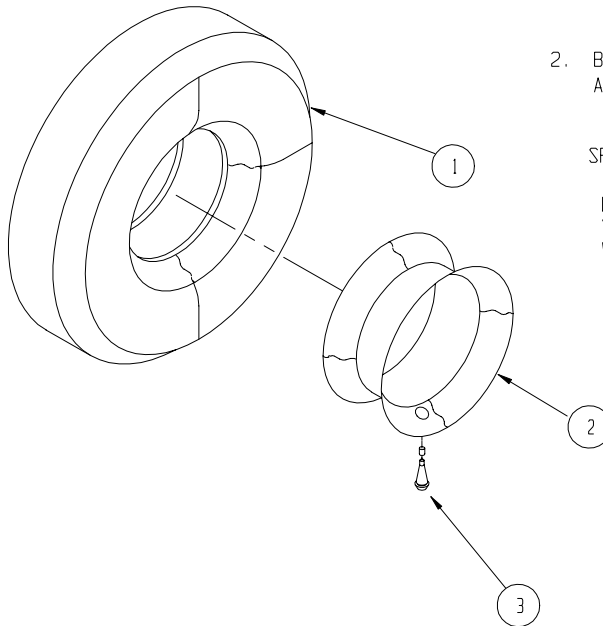
ITEM	PART NUMBER	DESCRIPTION	QTY
1	069285-010	TIRE G78-15	
2	069285-011	WHEEL PER PRINT	1
3	012282-001	VALVE STEM	1

NOTES:

1. FILL TIRE/WHEEL ASSY WITH 83 LBS MIN TO 93 LBS MAX OF POLYFILL OR EQUIVALENT.

2. BRAND BACKSIDE OF TIRE/WHEEL ASSY AS FOLLOWS:

"UPRIGHT 6KP"
 SPACE TIRE SEALANT
 LAST DIGIT OF YEAR WHEN TIRE WAS FILLED LETTER CORRESPONDING TO MONTH:
 JAN=1=A
 FEB=2=B
 ECT.

**Tire/Wheel Assembly, Solid Pneumatic, Non-Marking [Option]**

069155-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069284-000	TIRE/WHEEL ASSY, SOLID PNEUMATIC, NON-MARKING	2

Tire/Wheel Assembly, Polyfill Rough Terrain [Option]

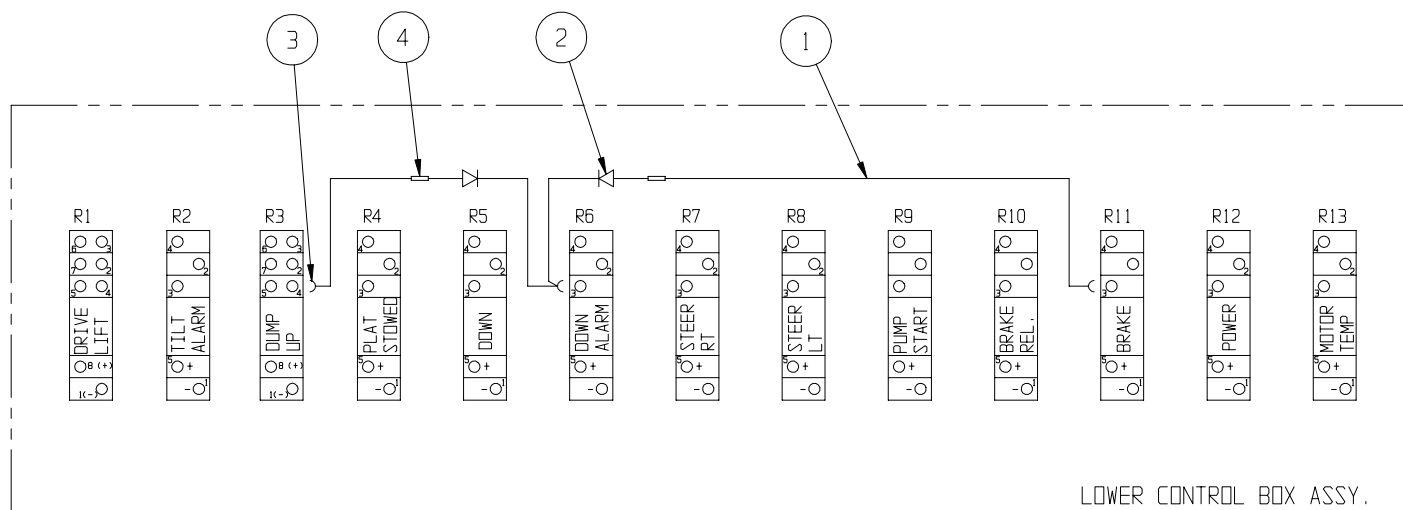
069154-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	069286-000	TIRE/WHEEL ASSY RH - POLY FILL - 26X12-390	2
2	069286-001	TIRE/WHEEL ASSY LH - POLY FILL - 26X12-390	2

All Motion Alarm [Option]

069151-000

ITEM	PART NUMBER	DESCRIPTION	QTY
1	029452-099	WIRE, 16 GA BLK.	2FT.
2	029825-002	DIODE, 5 AMP	2
3	029610-002	TERMINAL, #8 FORK	3
4	069620-002	CONNECTOR, BUTT 16-14 GA.	2

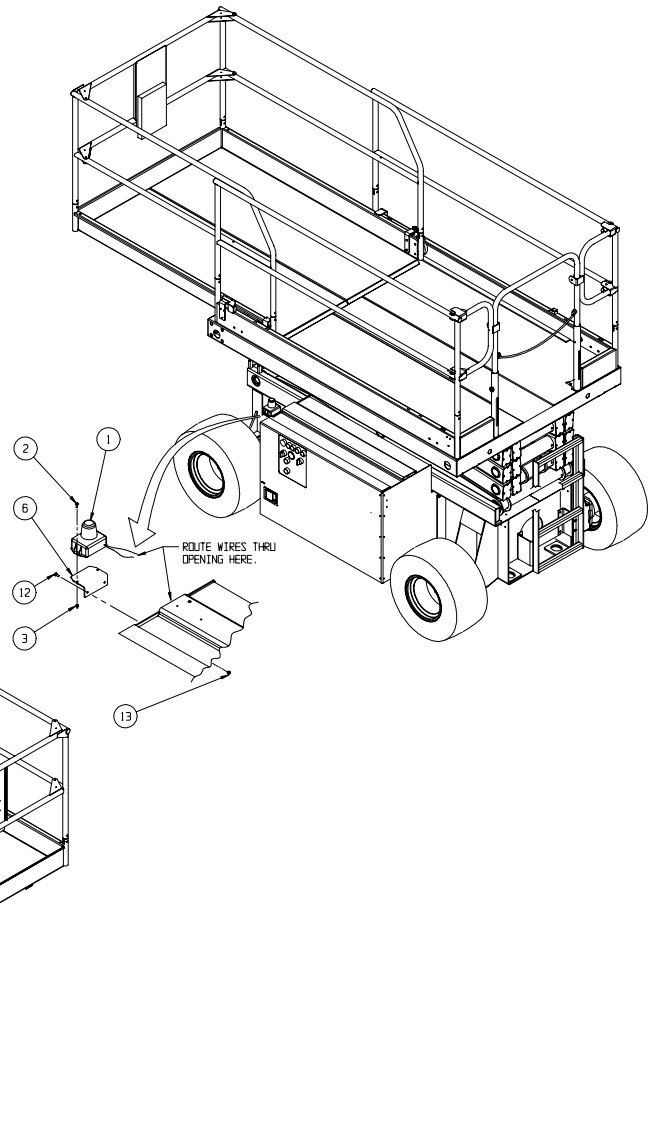
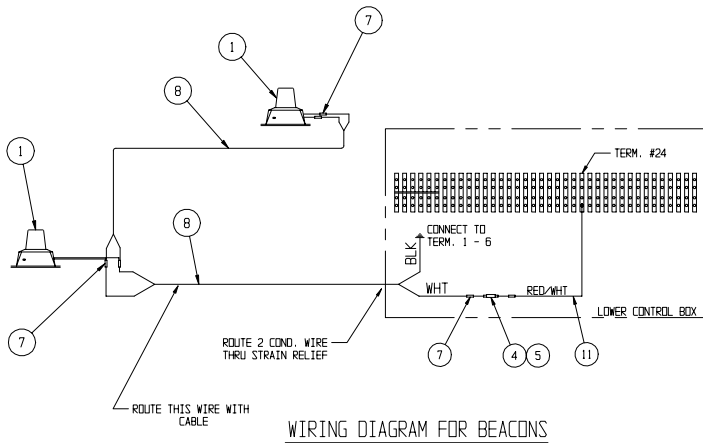


Flashing Amber Beacon Assembly [Option]

069152-000

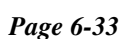
ITEM	PART NUMBER	DESCRIPTION	QTY
1	012848-004	LIGHT, 12VDC AMBER LENS	2
2	011826-006	SCREW, RND HD #10-32 UNF X 3/4	4
3	011249-003	NUT, #10-32 UNF ESNA	4
4	029702-000	FUSE HOLDER	1
5	029704-002	FUSE, 2 AMP	2
6	069161-000	BRACKET, FLASHING BEACON	2

ITEM	PART NUMBER	DESCRIPTION	QTY
7	029620-002	CONN. BUTT 16-14	6
8	029496-099	WIRE, 16 AWG 2 CONDUCTOR	18 FT
11	029352-099	WIRE, 16 AWG RED/WHT	2 FT
12	011252-006	SCREW, HHC 1/4-20UNC X 3/4"	4
13	011248-004	NUT, HEX ESNA 1/4 - 20 UNC	4



069153-000

ITEM	PART NUMBER	DESCRIPTION	QTY
9	029601-014	TERMINAL, RING	2
10	066805-018	OPERATOR, BLACK PUSH BUTTON	1
11	066805-010	CONTACT BLOCK, N.O.	1
12	029352-099	WIRE, 16 GA. RED/WHT	2FT
13	029825-003	DIODE, 3 AMP, 400 VOLT	2
14	029302-099	WIRE, 16 GA. TAN/BLU	2FT
15	029452-099	WIRE, 16 GA BLACK	3FT
16	014996-005	WASHER, 5/16 FLAT	1



Air to Platform [Option]

067298-000 XRT27E

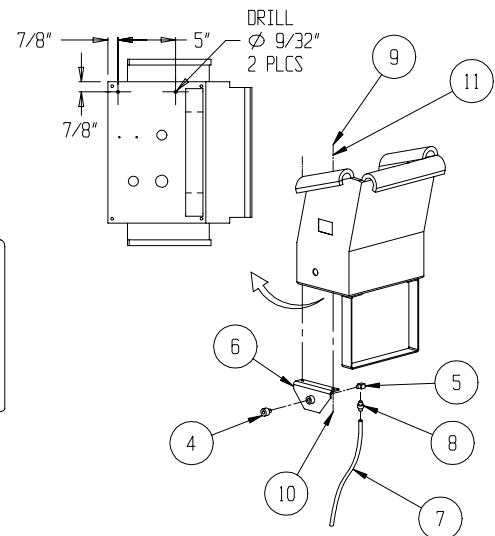
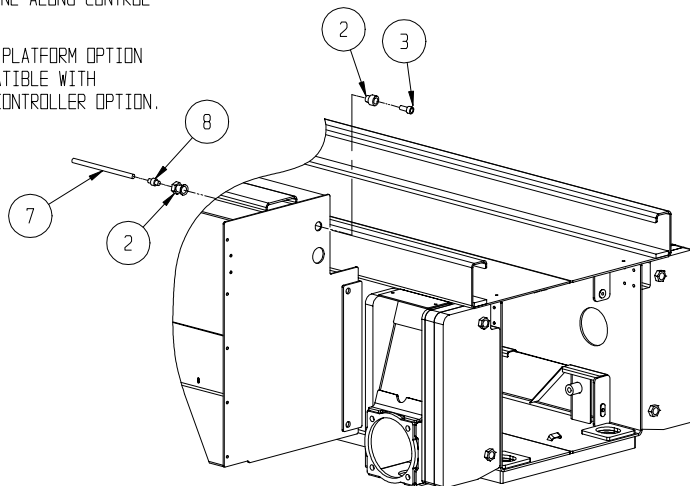
ITEM	PART NUMBER	DESCRIPTION	QTY
2	069245-003	FITTING, BULKHEAD PIPE, 3/8"	1
3	012728-000	COUPLING MALE AIR	1
4	012729-003	COUPLING FEMALE AIR	1
5	011917-007	FITTING 90 6MP-6FP	1
6	063594-002	BRACKET WELDMENT	1
7	015770-099	HOSE 3/8 SYNPLEX 3600-06	54 FT
8	064274-002	FITTING HOSE	2
9	011248-004	NUT HEX ESNA 1/4-20UNC	2
10	011252-006	SCREW, HHC, GR.5 1/4-20UNC X 3/4"	2
11	011240-004	WASHER, 1/4" FLAT STD	2

067298-001 XRT33E

ITEM	PART NUMBER	DESCRIPTION	QTY
2	069245-003	FITTING, BULKHEAD PIPE, 3/8"	1
3	012728-000	COUPLING MALE AIR	1
4	012729-003	COUPLING FEMALE AIR	1
5	011917-007	FITTING 90 6MP-6FP	1
6	063594-002	BRACKET WELDMENT	1
7	015770-099	HOSE 3/8 SYNPLEX 3600-06	65 FT
8	064274-002	FITTING HOSE	2
9	011248-004	NUT HEX ESNA 1/4-20UNC	2
10	011252-006	SCREW, HHC, GR.5 1/4-20UNC X 3/4"	2
11	011240-004	WASHER, 1/4" FLAT STD	2

NOTES:

1. ROUTE AIR LINE ALONG CONTROL CABLE LINE.
2. THIS AIR TO PLATFORM OPTION IS NOT COMPATIBLE WITH REMOVEABLE CONTROLLER OPTION.



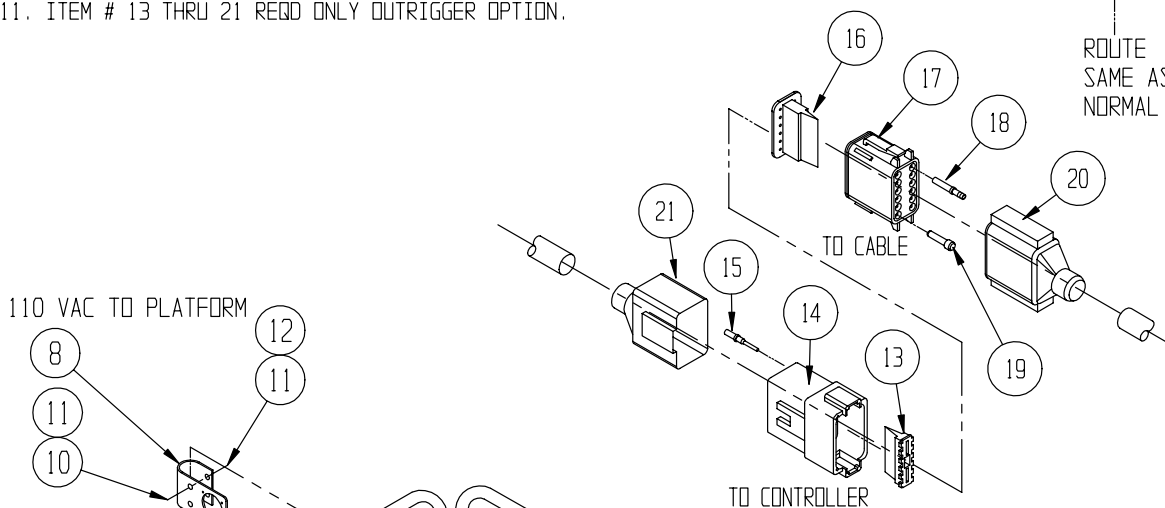
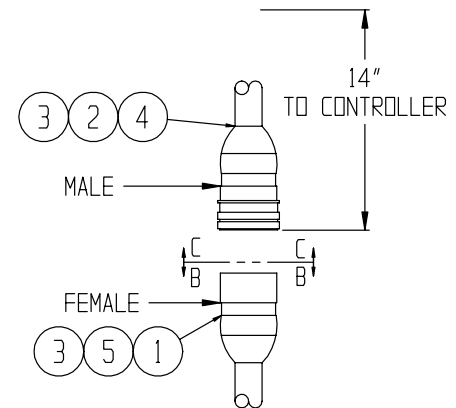
Removable Controller [Option]

061898-002

ITEM	PART	DESCRIPTION	QTY.
1	028800-003	PLUG CONNECTOR (FEMALE)	1
2	028800-004	PIN CONTACT (MALE)	15
3	028800-015	PLUG SEALING	16
4	028800-016	RECEPTACLE CONNCTOR W/CLAMP (MALE)	1
5	028800-005	SOCKET CONTACT (FEMALE)	15
8	030719-001	110 VAC BRACKET	1
10	011254-020	SCREW HHC GRD5 3/8-16UNC X 2 1/2	2
11	011240-006	WASHER 3/8 STD FLAT	4
12	011248-006	NUT HEX ESNA 3/8-16	2

ITEM	PART	DESCRIPTION	QTY.
13	068761-000	LOCKING WEDGE-CONN	1
14	068760-001	CONNECTOR-RECEPTACLE	1
15	068762-000	PIN-CONTACT	9
16	068761-001	LOCKING WEDGE-CONN	1
17	068760-000	PLUG-CONNECTOR	1
18	068762-001	SOCKET-CONTACT	9
19	068764-000	PLUG-CONNECTOR	6
20	068908-000	BOOT ELECT. PLUG	1
21	068908-001	BOOT ELECT. RECEPTACLE	1

1. CUT OFF CONTROL CABLE 14 INCHES BELOW STRAIN RELIEF ON CONTROLLER.
2. CUT OUTER CABEL COVER OF LINKAGE CABEL BACK APPROXIMATELY 1-1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH END.
3. CRIMP SOCKETS (28800-005) ONTO WIRE ENDS AND INSERT INTO CONNECTOR (28800-016). REF. VIEW B-B.
4. CUT OUTER CABEL COVER OF CONTROLLER END BACK APPROXIMATELY 1-1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH END.
5. SLIDE BOOT AND CLAMP ONTO CABLE.
6. CRIMP PINS (28800-004) ONTO WIRE ENDS AND INSERT INTO CONNECTOR (28800-003). REF. VIEW C-C.
7. CLAMP BOOT TO CONNECTOR.
8. CONNECT CONTROLLER AND TEST MACHINE FOR PROPER FUNCTION.
9. USE TERMINAL " H " FOR HORN OPTION OR IF AUX WIRE IS REQUIRED.
10. ITEM #8 THRU 12 REQD ONLY FOR 110 VAC.
11. ITEM # 13 THRU 21 REQD ONLY OUTRIGGER OPTION.



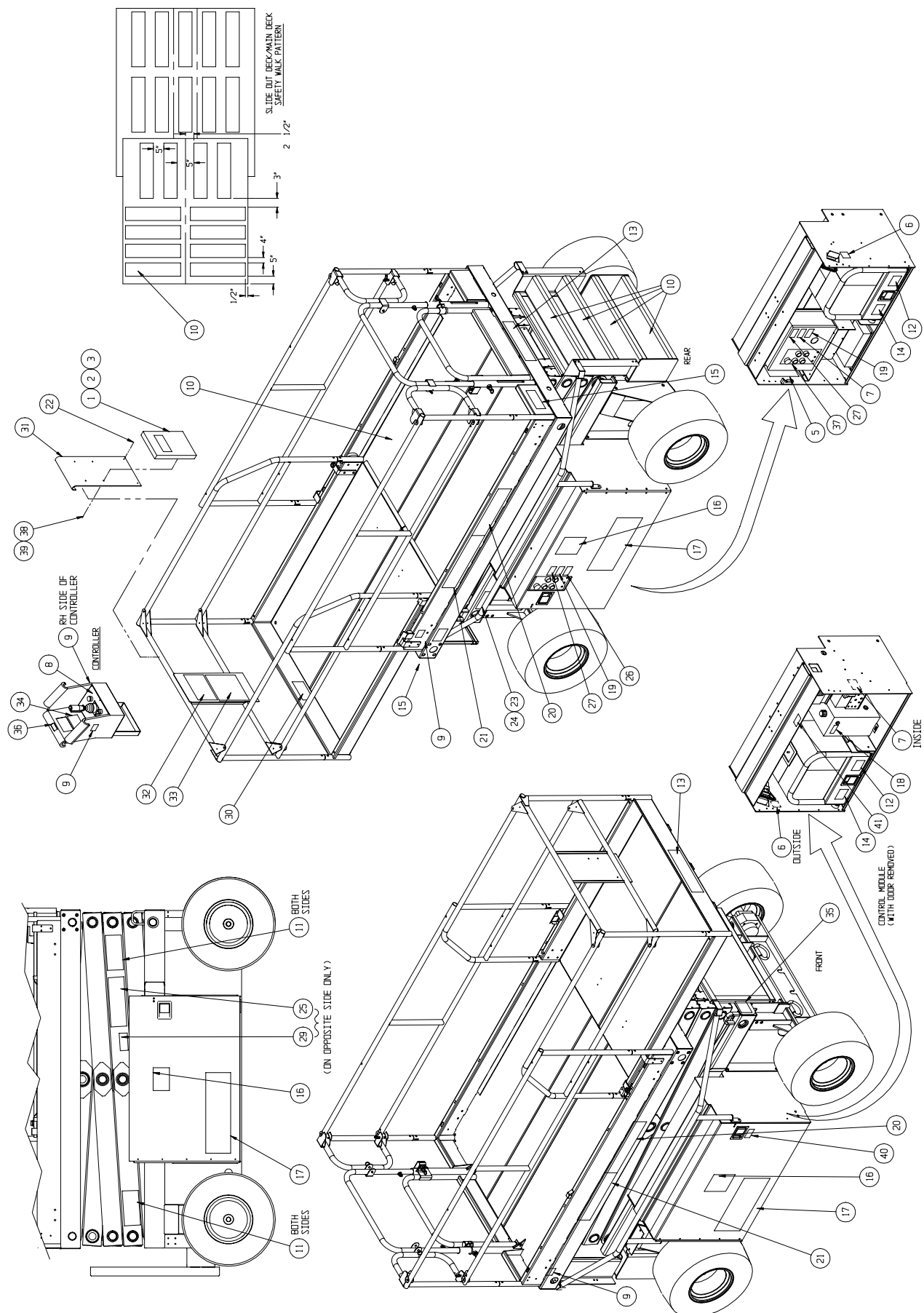
NOTE: USE DEUTSCH #HDT-48-00 HAND CRIMPER FOR WIRE TO PIN/SOCKET, USE #DT-RT1 TOOL TO REMOVE WEDGES IN PLUG & RECEPTACLE.

Label Kit Installation XRT27E, European

066940-021

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	010076-001	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
5	067365-000	LABEL, FLASH CODE DIOGNOSTIC	1
6	068631-000	LABEL, BATTERY DISCONNECT	2
7	066555-000	LABEL - DO NOT ADJUST	2
8	067642-008	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	066568-000	LABEL - WARNING CRUSHING HAZARD	4
12	062562-001	LABEL - BATTERY LBS	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
14	066552-000	LABEL - WARNING BATTERY	2
15	066557-019	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	060197-001	LABEL - HYDRAULIC FLUID	1
19	068641-003	LABEL - BRAKE RELEASE	2
20	066957-004	LABEL - XRT 27E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 - .251 -.375 GRIP	2
23	061205-003	NAME PLATE	1
24	065368-000	TACK	4
25	066561-000	LABEL - SAFETY STAND	1
26	066640-000	LABEL, BRAKE REL. INSTRUCTIONS	1
27	066551-002	LABEL - CAUTION TIPPING	2
29	066561-003	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-010	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-000	LABEL - DANGER/INSTRUCTIONS	1
33	067195-001	LABEL, EURO INSTRUCTIONS	1
34	066554-000	LABEL - CAUTION READ INSTRUCTIONS	1
35	066556-000	LABEL - CAUTION DECENDING PLATFORM	1
36	061515-000	LABEL - LIFT HERE	1
37	067639-001	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4" LG	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-000	LABEL - EMERGENCY LOWERING	1
41	066558-001	LABEL - EMERGENCY LOWERING	1

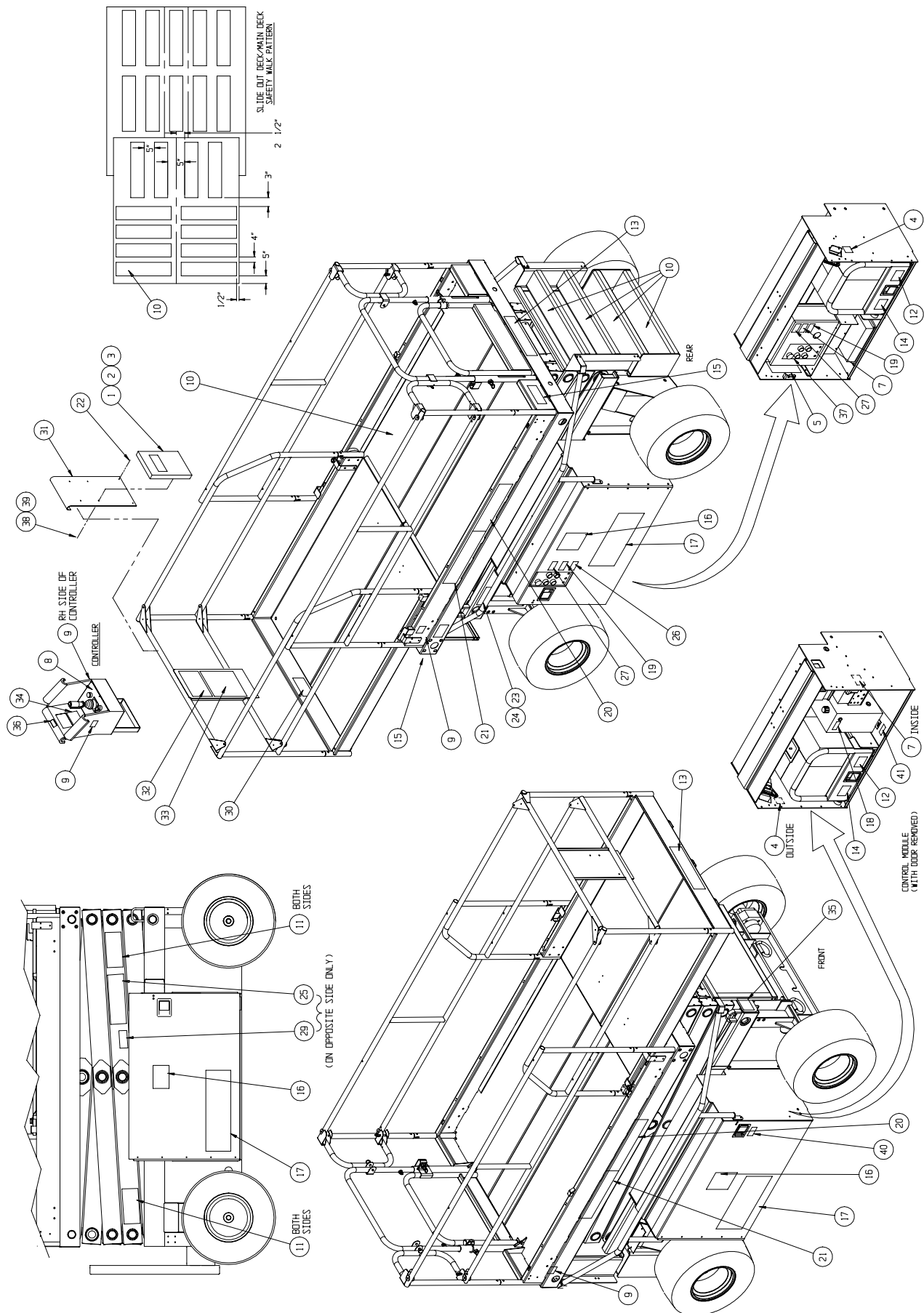


Label Kit Installation XRT33E, European

066940-023

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	010076-001	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
4	068631-000	LABEL - BATTERY DISCONNECT	2
5	067365-000	LABEL - FLASH CODE DIAGNOSTIC	1
7	066555-000	LABEL - DO NOT ADJUST	2
8	067642-008	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	066568-000	LABEL - WARNING CRUSHING HAZARD	4
12	062562-001	LABEL - BATTERY LBS.	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
14	066552-000	LABEL - WARNING BATTERY	2
15	066557-018	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	060197-001	LABEL - HYDRAULIC FLUID	1
19	068641-003	LABEL - PARKING RELEASE	2
20	066957-005	LABEL - XRT 33E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 X .251 -.375 GRIP	2
23	061205-003	NAME PLATE	1
24	065368-000	TACK	4
25	066561-002	LABEL - SAFETY STAND	1
26	066640-000	LABEL, BRAKE RELEASE INSTRUCTIONS	1
27	066551-002	LABEL - CAUTION TIPPING	2
29	066561-003	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-010	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-000	LABEL - CAUTION	1
33	067195-001	LABEL - EURO INSTRUCTIONS	1
34	066554-000	LABEL - CAUTION, READ INSTRUCTIONS	1
35	066556-000	LABEL - CAUTION DESCENDING PLATFORM	1
36	061515-000	LABEL - LIFT HERE	1
37	067639-001	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-000	LABEL - EMERGENCY LOWERING	1
41	067197-001	LABEL - EMERGENCY LOWERING	1

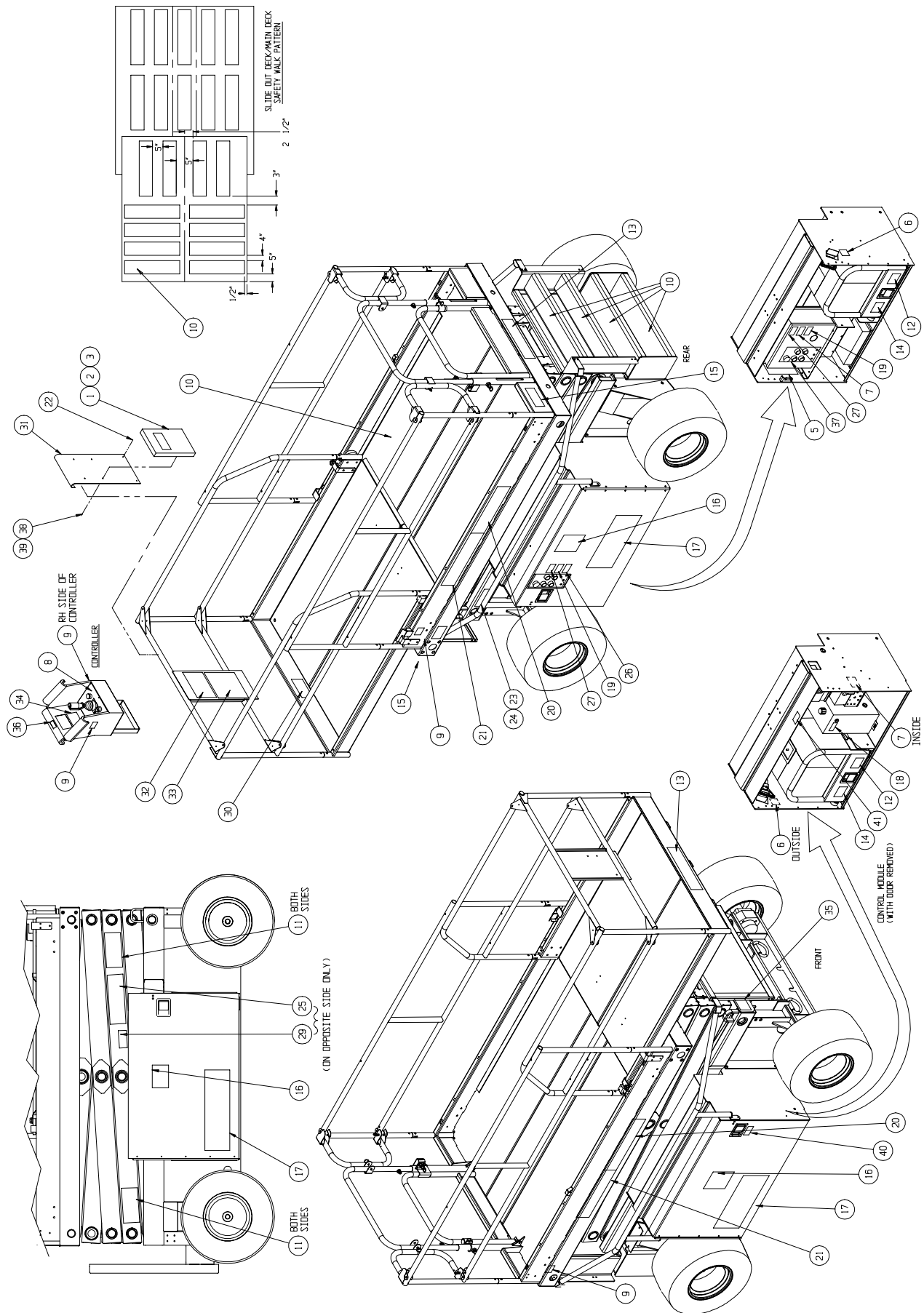


Label Kit Installation XRT27E, French

066940-321

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	010076-301	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
5	067365-000	LABEL, FLASH CODE DIOGNOSTIC	1
6	068631-000	LABEL, BATTERY DISCONNECT	2
7	066555-300	LABEL - DO NOT ADJUST	2
8	067642-308	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	066568-300	LABEL - WARNING CRUSHING HAZARD	4
12	062562-301	LABEL - BATTERY LBS	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
14	066552-300	LABEL - WARNING BATTERY	2
15	066557-319	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	060197-300	LABEL - HYDRAULIC FLUID	1
19	068641-303	LABEL - BRAKE RELEASE	2
20	066957-004	LABEL - XRT 27E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 - .251 -.375 GRIP	2
23	061205-003	NAME PLATE	1
24	065368-000	TACK	4
25	066561-300	LABEL - SAFETY STAND	1
26	066640-300	LABEL, BRAKE REL. INSTRUCTIONS	1
27	066551-302	LABEL - CAUTION TIPPING	2
29	066561-303	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-310	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-300	LABEL - DANGER/INSTRUCTIONS	1
33	067195-301	LABEL, EURO INSTRUCTIONS	1
34	066554-300	LABEL - CAUTION READ INSTRUCTIONS	1
35	066556-300	LABEL - CAUTION DECENDING PLATFORM	1
36	061515-300	LABEL - LIFT HERE	1
37	067639-301	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4" LG	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-300	LABEL - EMERGENCY LOWERING	1
41	066558-301	LABEL - EMERGENCY LOWERING	1

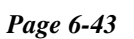


Label Kit Installation XRT33E, French

066940-323

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	010076-301	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
4	068631-300	LABEL - BATTERY DISCONNECT	2
5	067365-000	LABEL - FLASH CODE DIAGNOSTIC	1
7	066555-300	LABEL - DO NOT ADJUST	2
8	067642-308	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	066568-300	LABEL - WARNING CRUSHING HAZARD	4
12	062562-301	LABEL - BATTERY LBS.	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
14	066552-300	LABEL - WARNING BATTERY	2
15	066557-318	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	060197-300	LABEL - HYDRAULIC FLUID	1
19	068641-303	LABEL - PARKING RELEASE	2
20	066957-005	LABEL - XRT 33E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 X .251 -.375 GRIP	2
23	061205-003	NAME PLATE	1
24	065368-000	TACK	4
25	066561-302	LABEL - SAFETY STAND	1
26	066640-300	LABEL, BRAKE RELEASE INSTRUCTIONS	1
27	066551-302	LABEL - CAUTION TIPPING	2
29	066561-303	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-310	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-300	LABEL - CAUTION	1
33	067195-301	LABEL - EURO INSTRUCTIONS	1
34	066554-300	LABEL - CAUTION, READ INSTRUCTIONS	1
35	066556-300	LABEL - CAUTION DESCENDING PLATFORM	1
36	061515-300	LABEL - LIFT HERE	1
37	067639-301	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-300	LABEL - EMERGENCY LOWERING	1
41	067197-301	LABEL - EMERGENCY LOWERING	1

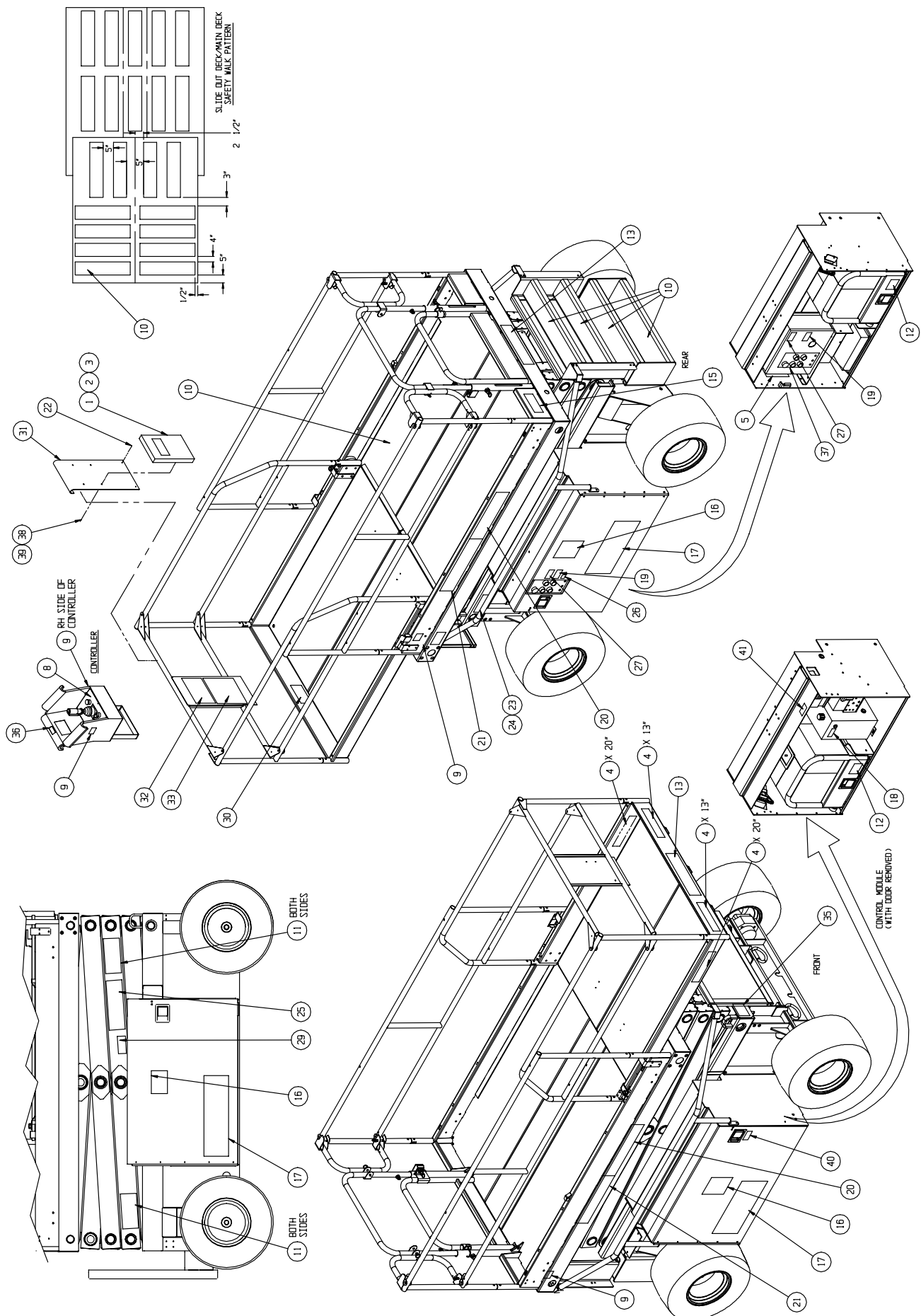


Label Kit Installation XRT27E, German

066940-221

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	064913-000	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
4	100339-099	TAPE, SAFETY YEL/BLK FT	5.5
5	067365-100	LABEL, FLASH CODE DIAG	1
8	067642-208	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	064915-000	LABEL - WARNING CRUSHING HAZARD	4
12	064923-000	LABEL - BATTERY LBS	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
15	064910-010	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	064917-000	LABEL - HYDRAULIC FLUID	1
19	068641-201	LABEL - BRAKE RELEASE	2
20	066957-004	LABEL - XRT 27E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 - .251 -.375 GRIP	2
23	061205-104	NAME PLATE	1
24	065368-000	TACK	4
25	066561-200	LABEL - SAFETY STAND	1
26	066640-200	LABEL - BRAKE REL. INSTR.	1
27	066551-202	LABEL - CAUTION TIPPING	2
29	066561-203	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-200	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-200	LABEL - DANGER/INSTRUCTIONS	1
33	067195-201	LABEL, EURO INSTRUCTIONS	1
35	066556-200	LABEL - CAUTION DECENDING PLATFORM	1
36	064937-000	LABEL - LIFT HERE	1
37	067639-202	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4" LG	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-200	LABEL - EMERGENCY LOWERING	1

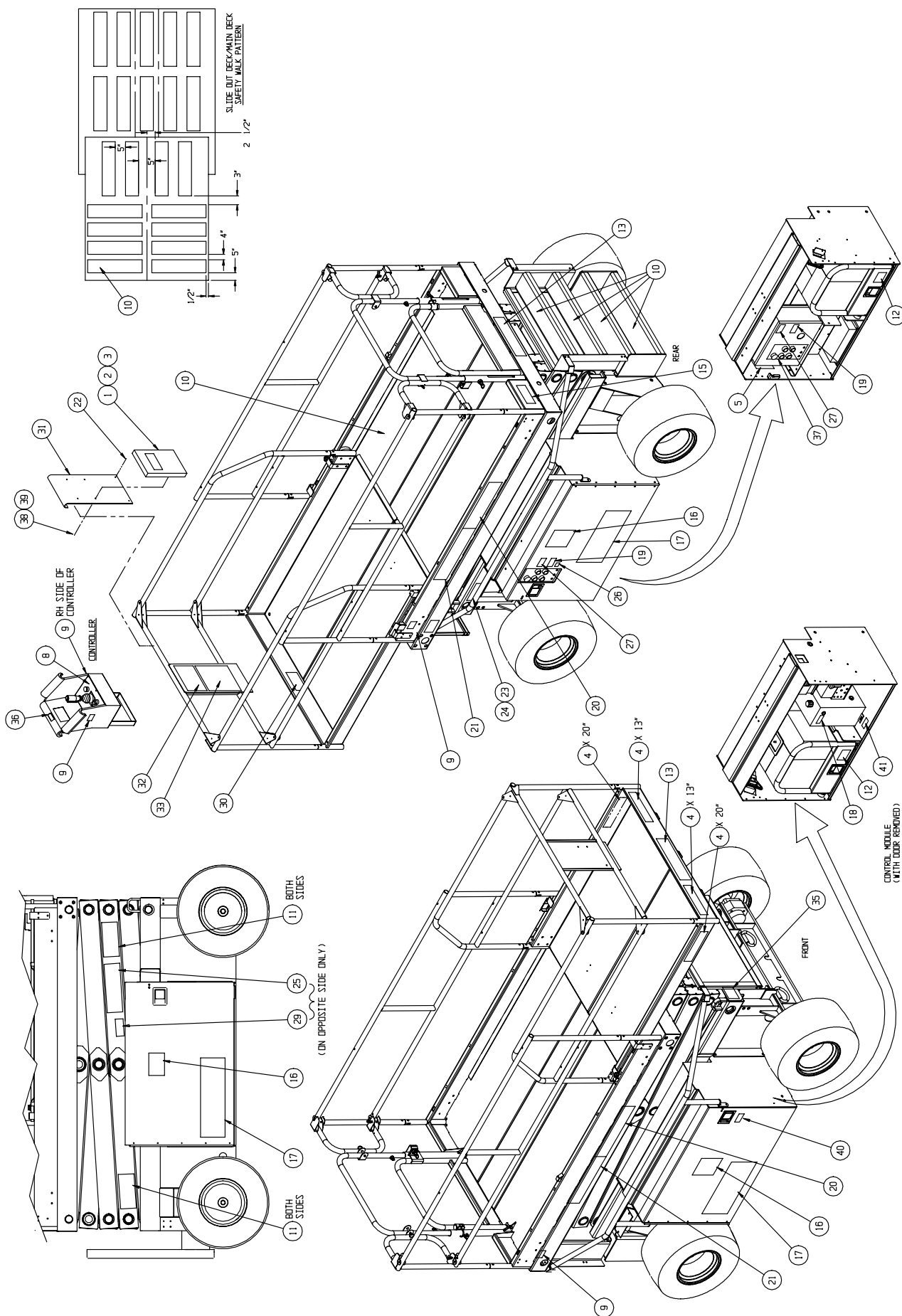


Label Kit Installation XRT33E, German

066940-223

ITEM	PART NUMBER	DESCRIPTION	QTY
1	010076-000	MANUAL CASE	1
2	064913-000	LABEL - ATTENTION	1
3	066897-020	USER MANUAL - XRT ELECT SERIES (EUR)	1
4	100339-099	TAPE, SAFETY YEL/BLK FT.	5.5
5	067365-100	LABEL, FLASH CODE DIAG.	1
8	067642-208	LABEL - CONTROLLER	1
9	064444-000	LABEL - USA	4
10	027966-005	FLEX TREAD	26
11	064915-000	LABEL - WARNING CRUSHING HAZARD	4
12	064923-000	LABEL - BATTERY LBS.	2
13	061683-013	LABEL - UPRIGHT (4 X 17.69)	2
15	064910-008	LABEL - MAX LOAD PLATFORM	2
16	061684-016	LABEL - X SERIES	2
17	061683-006	LABEL - UPRIGHT (32.25" LG)	2
18	064917-000	LABEL - HYDRAULIC FLUID	1
19	068641-201	LABEL - BRAKE RELEASE	2
20	066957-005	LABEL - XRT 33E	2
21	061683-005	LABEL - UPRIGHT (5.5" X 21.63")	2

ITEM	PART NUMBER	DESCRIPTION	QTY
22	026553-005	RIVET, POP 3/16 X .251 -.375 GRIP	2
23	061205-104	NAME PLATE	1
24	065368-000	TACK	4
25	066561-202	LABEL - SAFETY STAND	1
26	066640-200	LABEL - BRAKE REL. INSTR.	1
27	066551-202	LABEL - CAUTION TIPPING	2
29	066561-203	LABEL - CAUTION STRUCTURAL DAMAGE	1
30	066551-200	LABEL - MAX LOAD DECK	1
31	065648-004	DECAL MOUNT - EURO XRT	1
32	067195-200	LABEL - CAUTION	1
33	067195-201	LABEL - EURO INSTRUCTIONS	1
35	066556-200	LABEL - CAUTION DESCENDING PLATFORM	1
36	064937-000	LABEL - LIFT HERE	1
37	067639-202	LABEL LOWER CONTROL	1
38	011252-006	SCREW HHC 1/4-20 X 3/4	4
39	011248-004	NUT HEX ESNA 1/4-20	4
40	067196-200	LABEL - EMERGENCY LOWERING	1



NOTES:

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UpRight

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