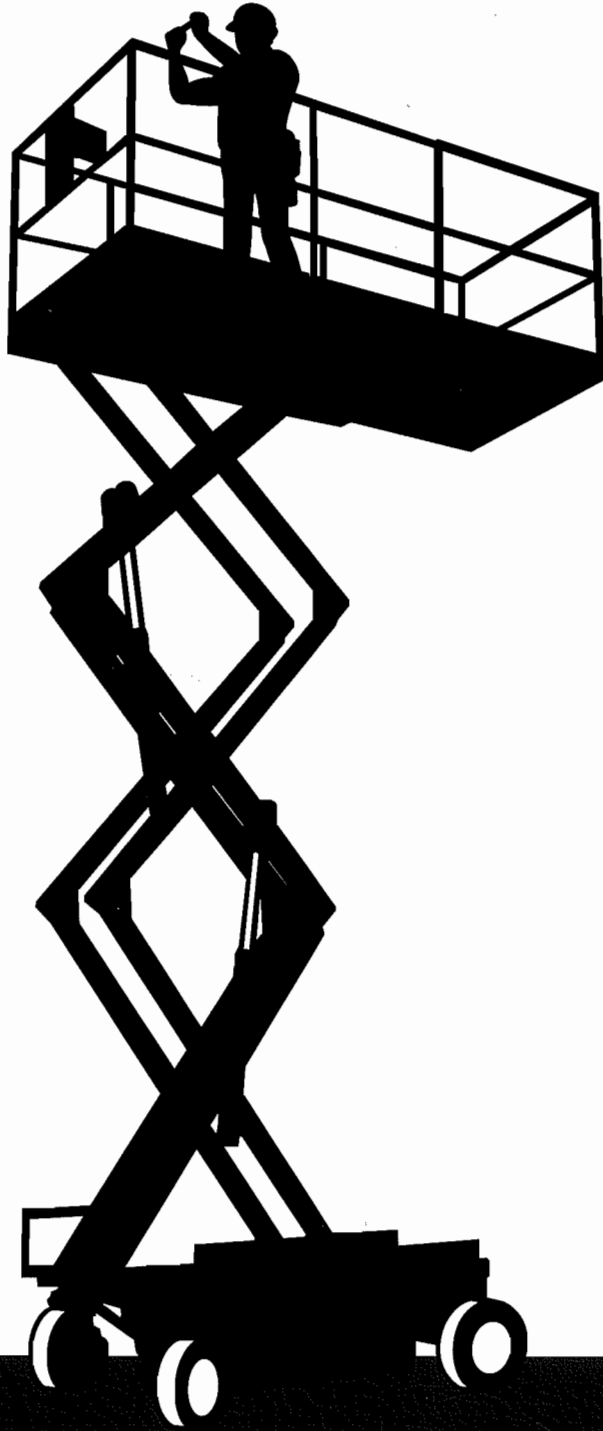


# UpRight

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***XL-D***  
***Series***  
***WORK PLATFORMS***

**Service &  
Parts Manual**



# Forward

## Introduction

### HOW TO USE THIS MANUAL

This manual is divided into 7 sections. The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on the right side of this page. You can quickly find the first page of each section without looking through the table of contents which follows this page. The section number printed at the top corner of each page can also be used as a quick reference guide.

### SPECIAL INFORMATION

**NOTE:** Gives helpful information.



#### DANGER



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



#### WARNING



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



#### CAUTION



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

### WORKSHOP PROCEDURES

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

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.

## Introduction & Specifications

# 1.0

General description and machine specifications.

## Machine Preparation

# 2.0

Information on preparation for use & shipment, forklifting, transporting and storage.

## Operation

# 3.0

Operating instructions and safety rules.

## Maintenance

# 4.0

Preventative maintenance and service information.

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# 6.0

Schematics and valve block diagram with description and location of components.

## Illustrated Parts Breakdown

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Complete parts lists with illustrations.

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## 1.0 Introduction

### PURPOSE

This manual provides illustrations and instructions for the operation and maintenance of the XL-D Series Work Platforms manufactured by Up-Right, Inc. Selma, California. (See Figure 1-1).

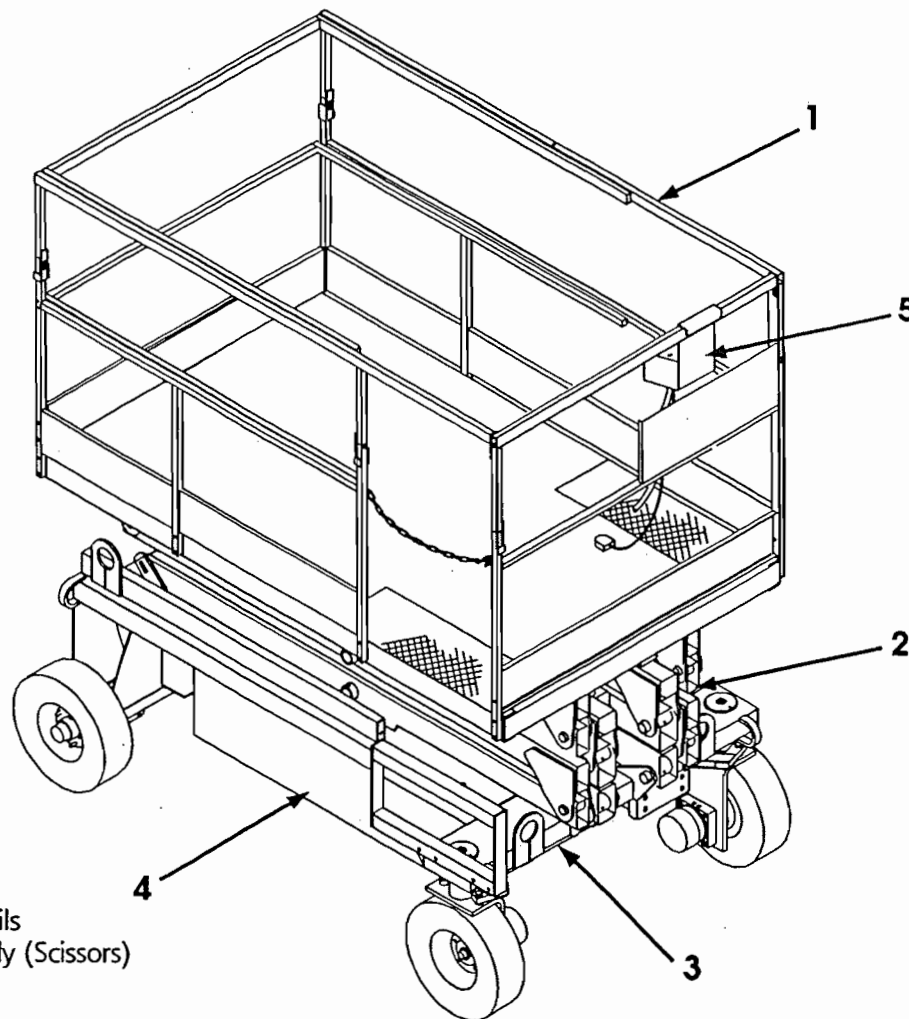
### SCOPE

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

## 1.1 General Information

### DESCRIPTION

All XL-D Series Work Platforms are self-propelled scissor lifts designed to be used as a means of elevating personnel and equipment and to provide a mobile work platform. They are designed to provide mobility with the platform in a raised or lowered position. Travel with the platform elevated is automatically limited to the low speed range.



1. Platform/Guardrails
2. Elevating Assembly (Scissors)
3. Chassis
4. Chassis Module
5. Controller

Figure 1-1: XL-D Series Work Platform

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**PURPOSE AND LIMITATIONS**

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

**1.2 Specifications**

Refer to Table 1-1.

**Table 1-1: Specifications\***

ITEM	XL-19D	XL-19DW	XL-24D	XL-24DW
Platform Size (inside Toeboards) Standard w/Extension	29 in x 85 in (74 cm x 2.16 m)	48 in x 91 in (1.23 m x 2.31 m)		
Maximum Platform Capacities Standard w/Extension	750 lb (340 kg) or 2 people	1000 lb (453 kg) or 3 people	750 lb (340 kg) or 2 people	1000 lb (453 kg) or 3 people
On Extension	250 lb (110 kg) or 1 person	250 lb (110 kg) or 1 person	250 lb (110 kg) or 1 person	250 lb (110 kg) or 1 person
Height				
Working Height	25 ft (7.7 m)		30 ft (9.2 m)	
Max. Platform Height	19 ft (5.85 m)		24 ft (7.38 m)	
Min. Platform Height	44 in (1.13 m)		50 in (1.28 m)	
Weight Standard w/ Extension	3,645 lb (1653 kg)	2,960 lb (1343 kg)	3,570 lb (1619 kg)	3,415 (1549 kg)
Dimensions				
Overall Width	32.5 in (83 cm)	50.75 in (1.3 m)	50.75 in (1.3 m)	57 in (1.45 m)
Overall Height	89 in (2.26 m)	89 in (2.26 m)	95 in (2.41 m)	95 in (2.41 m)
Overall Length	87 in (2.21 m)	92 in (2.34 m)	92 in (2.34 m)	92 in (2.34 m)
Driveable Height	19 ft (5.85 m)		24 ft (7.4 m)	
Surface Speed				
Platform Lowered	0 to 2.3 mph (0 to 3.7 km/h)		0 to 2.3 mph (0 to 3.7 km/h)	
Platform Raised	0 to .6 mph (.97 km/h)		0 to .7 mph (0 to 1.13 km/h)	
Energy Source	24V Battery Pack (4-220 Ampere Hour, 6 Volt Batteries, min. wt. 62 lb ea. [28.12 kg]), 4 HP DC Electric Motor			
Battery Charger	25 AMP, 60 Hz 110 VAC			
Battery Duty Cycle	25% for 8 Hours			
Hydraulic Tank Capacity	4 Gallons [15.2 l]			
Lift System	Two Single Stage Lift Cylinders		Three Single Stage Lift Cylinders	
Drive Control	Proportional			
Control System	Proportional Controller with Toggle Selector Switch, Red Mushroom Emergency Stop and Foot-Operated Interlock Switch			
Horizontal Drive	Dual Front Wheel			
Tires	14 in (41 cm) diameter Solid Rubber			
Parking Brake	Spring Applied, Hydraulic Release Brake Cylinder			
Turning Radius	14 in (36 cm) Inside		24 in (62 cm) Inside	
Gradeability	25% (14°)			
Wheel Base	62.5 in (1.59 m)	63 in (1.6 m)		
Guardrails	43.5 in (1.11 m)			
Toeboard	6 in. (153 mm)			

\* Specifications subject to change without notice.



Read and familiarize yourself with all operating instructions before attempting to operate machine.

## 2.1 Preparation for Use

### **⚠ WARNING ⚠**

STAND CLEAR when cutting the metal banding to avoid being cut when the banding snaps back.

1. Remove the metal banding from the Module covers and Scissor Linkage.
2. Remove the banding from the Controller.
3. Lift the front of the machine and remove banding and blocks from front wheels.
4. Lower machine.
5. Close the Emergency Lowering Valve (Figure 2-1) by pushing in on the knob and turning ¼ turn clockwise until the detent engages.
6. Connect the negative battery lead terminal (Figure 2-1).

## 2.2 Preparation For Shipment

1. Grease all grease fittings per lubrication instructions in *Section 4.0, Maintenance*.
2. Fully lower the platform.
3. Disconnect the battery negative (-) lead from the battery terminal (Figure 2-1).
4. Band the Controller to the front guardrail.
5. Band the scissor linkage to the frame just behind the front wheels and at the rear wheels.

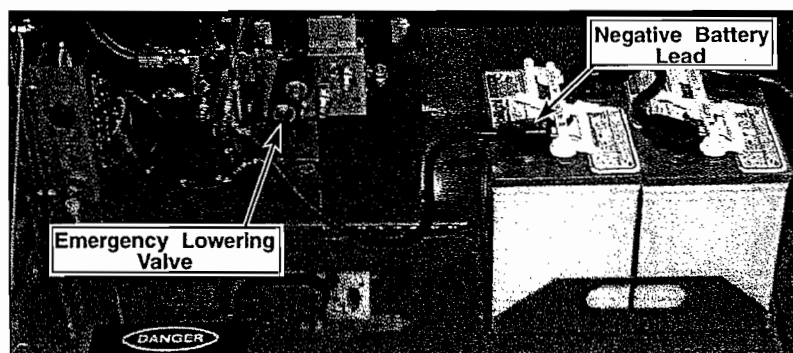


Figure 2-1: Chassis Module, Left Side

## 2.3 Forklifting Of Work Platform

**NOTE:** Forklifting is for transporting only.



### CAUTION

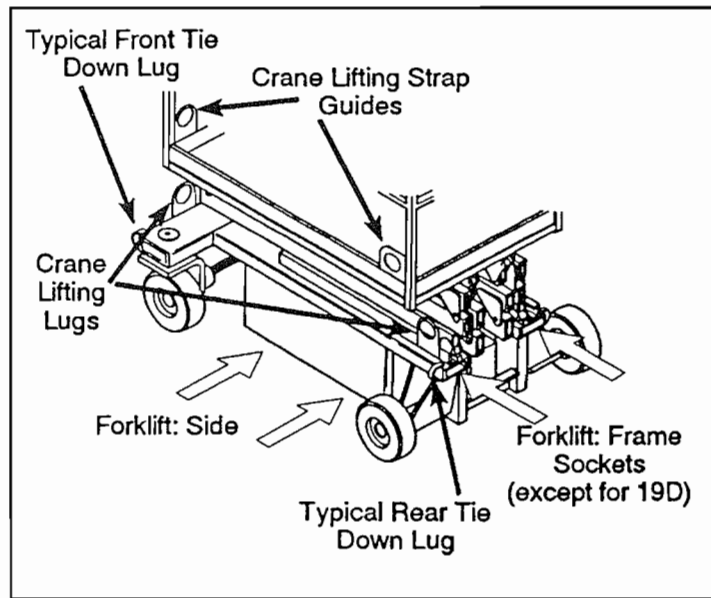


See specifications for weight of work platform and be certain that forklift is of adequate capacity to lift platform.

Forklift from rear of Chassis using frame sockets (except XL19D) or from the side by lifting under the Chassis Module (Figure 2-2).

## 2.4 Lifting Work Platform

1. Install straps through guides on Platform (Figure 2-2).
2. Secure straps to Chassis Lifting Lugs **only** (Figure 2-2).



**Figure 2-2: Forklift Sockets & Tie Down Brackets**

## 2.5 Transport

1. Maneuver the work platform into transport position and chock wheels.
2. Secure the work platform to the transport vehicle with chains or straps of adequate load capacity attached to the chassis tie down lugs (Figure 2-2).



### CAUTION



Tie down lugs are not to be used to lift work platform.

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

3. Open Emergency Lowering Valve by pushing in on the knob and turning ¼ turn counterclockwise.

## 2.6 Storage

No preparation is required for normal storage. Regular maintenance per Table 4-1 should be performed. If the work platform is to be placed in long term storage (dead storage) use the following preservation procedure.

### PRESERVATION

1. Clean painted surfaces. If the paint surface is damaged, repaint.
2. Fill the hydraulic tank to operating level with the Platform fully lowered, fluid should be visible on the dipstick.
3. Coat exposed portions of extended cylinder rods with a preservative such as multi-purpose grease and wrap with barrier material.
4. Coat all exposed unpainted metal surfaces with preservative.

### BATTERIES

1. Disconnect the Battery ground cable terminal and secure to the chassis.
2. Disconnect the remaining battery leads and secure to the chassis.
3. Remove the batteries and place in alternate service.

## 3.0 Introduction

### GENERAL FUNCTIONING

The battery powered electric motor directly drives a two section hydraulic pump. The smaller section supplies oil under pressure to operate steering and joins the larger section flow to provide oil to the other work platform functions. The oil flow is directed to the different functions by electrically activated solenoid valves.

### DRIVING

**Refer to the Hydraulic and Electrical Schematics, Section 6.**

With the Chassis Key Switch turned to **DECK**, both Chassis and Controller Emergency Stop Switches ON, the Drive/Lift Switch on **DRIVE**, and the Foot Switch depressed the machine will drive forward or reverse at a speed proportional to the angle the Control Lever is pushed or pulled.

### Driving with the Platform Lowered

Moving the Control Lever to **FORWARD** with the Platform fully lowered will energize the Motor Start Relay, the Forward Coil, and the Proportional Coil to allow oil to flow into the Parking Brake and serially through the Hydraulic Motors. Moving the Control Lever to **REVERSE** is the same as **FORWARD** except the Reverse Coil is energized causing the Motors to turn in the opposite direction. The Proportional Valve closes or opens in proportion to the movement of the Control Lever from center. As the Proportional Valve closes more oil is allowed to flow to the Forward or Reverse Valves increasing drive speed.

### Driving with the Platform Elevated

Raising the Platform (see RAISING THE PLATFORM, below) opens the High Speed Platform Down Limit Switch and closes the Tilt Down Limit Switch providing power to the Tilt Alarm Relay contacts and to the Tilt Sensor. The Tilt Sensor now provides power to the Tilt Alarm Relay coil, holding the contacts open, as long as the machine is level. Should the machine become un-level while elevated the Tilt Sensor opens the circuit to the Tilt Alarm Relay and the contacts close, providing power to the Tilt Alarm. The High Speed Down Limit Switch limits the output from the Proportional Controller keeping the Proportional Coil from closing fully thus limiting drive speed. When raised the platform will be limited to the low speed range.

### Steering

At the top of the Control Lever is a momentary rocker switch for steering the machine left and right. With power to the Controller and the Foot Switch depressed, pressing the right or left side of the rocker switch will energize the Right or Left Steering Coil and allow oil to flow through the Steering Valve to the Steering Cylinder. Releasing the rocker switch de-energizes the Steering Coils and holds the Steering Cylinder in position. **The Steering Cylinder will not automatically return to center, the Steering Switch must be activated to change the wheels direction.**

### RAISING AND LOWERING PLATFORM

With the Chassis Key Switch turned to **DECK**, both Chassis and Controller Emergency Stop Switches ON, the Drive/Lift Switch on **LIFT**, and the Foot Switch depressed the machine will elevate at a speed proportional to the angle the Control Lever is pushed forward.

Pushing forward on the Control Lever energizes the Proportional Coil, Motor Start Relay, and Up Coil (through the Platform Height Limit Switch). The greater the angle from center of the Control Lever the more the Proportional Valve closes. As the Proportional Valve closes more oil is allowed to flow through the Lift Valve to the Lift Cylinder increasing lift speed. The Platform Height Limit Switch opens the lift circuit when the Platform is fully elevated.

Lowering the platform electrically energizes the 60 Hz Down Alarm and the Down Coil through the Cushion Down Limit Switch. When the Down Coil is energized the oil is allowed to flow out of the Lift Cylinder through the Down Orifice, which controls the rate of descent, then back to the tank. During the last 6-12 inches (153-305mm) of Platform lowering the Cushion Down Limit Switch switches from the Down Coil to the Cushion Down Coil to slow the Platform even further (Cushion Speed) by diverting oil through a smaller orifice. Lowering the Platform manually with the Emergency Lowering Valve allows the oil to flow out of the Lift Cylinders in the same manner but there is no Down Alarm or Cushion Down.

### SAFETY DESIGN

The XL-D Series Work Platforms have the following features to ensure safe operation:

- The drive speed is limited to Creep Speed when operating the work platform while the platform is elevated.
- The platform descent rate is controlled by an orifice (Fixed Speed). In the last 6-12 inches (153-305mm) of platform lowering, the Cushion Valve is energized to slow the platform even further (Cushion Speed) by diverting oil through a smaller orifice. The lift cylinders are equipped with velocity fuses to prevent descent should a hose rupture.
- Parking brake is automatically engaged when the Drive Switch is released and the machine comes to a full stop or if power is lost.
- The Chassis Controls and Controller are equipped with an Emergency Stop Switch for stopping all powered functions.
- The Foot Switch must be depressed for the Controller to function.
- The Controller is guarded to prevent inadvertent operation.
- An alarm is provided to signal when the platform is lowering.
- A Lift Switch is located in the Chassis Module on the left side of the Chassis for lifting and lowering platform from ground level.

- The Tilt Alarm (600 Hz) is activated on slopes of 2 degrees side to side and fore and aft when the machine is elevated.
- An Emergency Lowering Valve is provided in the Chassis Module to lower the platform in the event electrical power is lost.
- A grate(s) is provided at the front of the platform to allow viewing of the front wheels by the operator to aid steering.

### 3.1 Safety Rules and Precautions

**Before using the XLD Series Work Platform:**

**NEVER** operate the machine within ten feet of power lines. **THIS MACHINE IS NOT INSULATED.**

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

**NEVER** sit, stand or climb on guardrail or midrail.

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

**NEVER** operate the machine unless all guardrails are properly in place and secured with all fasteners in place.

**SECURE** chain across entrance after mounting platform.

**NEVER** use ladders or scaffolding on the platform.

**NEVER** attach overhanging loads or increase platform size.

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

**DISTRIBUTE** all loads evenly on the platform. See Table 1-1 for maximum platform load.

**NEVER** use damaged equipment. (Contact UpRight, Inc. for instructions.)

**NEVER** change or modify operating or safety systems.

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

**NEVER** climb down elevating assembly with platform elevated.

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

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

**SECURE** the work platform against unauthorized use by turning key switch off and removing key from key switch.

**NEVER** replace any component or part with anything other than original replacement parts without manufacturers written consent.

### 3.2 Controls and Indicators

The controls and indicators for operation of the XLD Series Work Platforms are shown in Figure 3-1. The name and function of each control and indicator are listed in Table 3-1. The index numbers in the figure correspond to the index numbers in the table. **The operator should know the location of each control and indicator and have a thorough knowledge of the function and operation of each before attempting to operate the unit.**

Table 3-1: Controls and Indicators

#### Platform/Controller

INDEX NO.	NAME	FUNCTION
1	FOOT SWITCH	Provides power to the Controller powered functions only when depressed, preventing accidental activation of the Controller.
2	EMERGENCY STOP SWITCH	Push red button to cut off power to all functions (OFF). Pull out to provide power (ON).
3	CONTROL LEVER	Move joy stick forward or backwards to proportionally control Drive Valves and Lift Valve or open Down Valve depending on position of Drive/ Lift Switch.
4	STEERING SWITCH	Moving the momentary rocker switch Right or Left steers the work platform in that direction. Although the Steering Switch is self centering the steering system is not. <b>The wheels must be steered back to straight.</b>
5	DRIVE/LIFT SWITCH	Selecting <b>DRIVE</b> allows the work platform to move forward or reverse. Selecting <b>LIFT</b> allows the work platform to raise or lower.

Table 3-1: Controls and Indicators (cont'd.)

## Chassis

INDEX NO.	NAME	FUNCTION
6	EMERGENCY STOP SWITCH	Push red button to cut off power to all functions (OFF). Pull out to provide power (ON).
7	CHASSIS LIFT SWITCH	Toggle switch to <b>UP</b> to lift the work platform and toggle switch to <b>DOWN</b> to lower the work platform.
8	KEY SWITCH	Turn Key clockwise to <b>DECK</b> to provide power to Controller and counterclockwise to <b>CHASSIS</b> to provide power to Chassis Controls.
9	EMERGENCY LOWERING VALVE	Push in and turn knob counterclockwise to lower the Platform. To close, push in and turn knob ¼ turn clockwise until detent engages. <b>The platform cannot be raised until this valve is closed.</b>

INDEX NO.	NAME	FUNCTION
10	DOWN ALARM (60 Hz)	Sounds an audible signal when the platform is lowering during normal operation. If the Emergency Lowering Valve is used the alarm <b>does not</b> sound.
11	TILT ALARM (600 Hz)	Sounds an audible signal when the platform is elevated and on a slope of 2° side to side or fore and aft.

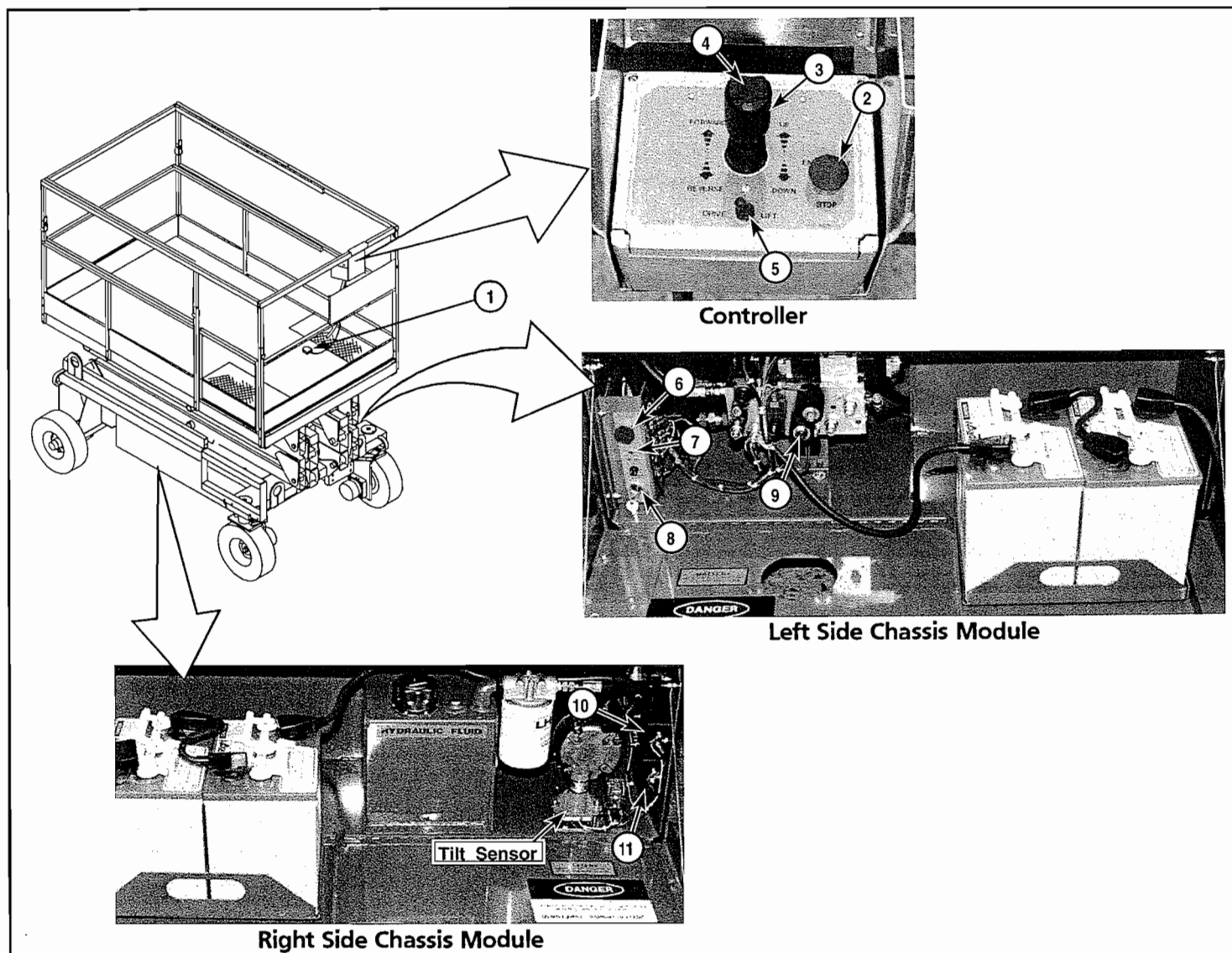


Figure 3-1: Controls and Indicators

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### 3.3 Pre-Operation Inspection

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



#### WARNING



**DO NOT** perform service on or in elevating assembly with the platform elevated unless the elevating assembly is properly blocked.

1. Open module covers and inspect for damage, oil leaks or missing parts.
2. Check the level of the hydraulic oil with the platform fully lowered. Oil should be visible on the dipstick (Section 4.4). Add ISO #46 hydraulic oil if necessary.
3. Check that fluid level in the batteries is correct (See *Battery Maintenance*, Section 4.3).
4. Verify batteries are charged.
5. Check that A.C. extension cord has been disconnected from charger.
6. Check that all guardrails are in place, the Slideout Deck Extension is secured with the pins and all fasteners are properly tightened.
7. Carefully inspect the entire work platform for damage such as cracked welds or structural members, loose or missing parts, oil leaks, damaged cables or hoses, loose connections and tire damage.
8. Move machine, if necessary, to unobstructed area to allow for full elevation.
9. Turn Chassis and Platform Emergency Stop Switches ON (Figure 3-1) by pulling the button out.
10. Turn the Chassis Key Switch (Figure 3-1) to **CHASSIS**.
11. Push Chassis Lift Switch (Figure 3-1) to **UP** position and fully elevate platform.
12. Visually inspect the elevating assembly, lift cylinders, cables and hoses for damage or erratic operation. Check for missing or loose parts.
13. Check Level Sensor (Figure 3-1) operation by pushing the sensor off of level, the alarm should sound.
14. Partially lower the platform by pushing Chassis Lift Switch to **DOWN**, and check operation of the audible lowering alarm.
15. Open the Chassis Emergency Lowering Valve (Figure 3-1) to check for proper operation by pushing in on the knob and turning ¼ turn counterclockwise. Once the platform is fully lowered, close the valve by pushing in on the knob and turning ¼ turn clockwise until the detent engages.

16. Turn the Chassis Key Switch to **DECK**.
17. Close and secure module covers.
18. Check that route is clear of persons, obstructions, holes and drop-offs, is level and capable of supporting the wheel loads.
19. Unhook Controller from guardrail. Firmly grasp Controller hanger and Foot Switch together, in such a manner that the Foot Switch can be depressed, while performing the following checks from the ground.



#### WARNING



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

Protect control console cable from possible damage while performing checks.

20. Position Drive/Lift Switch to **DRIVE**.
21. While depressing Foot Switch, slowly position the Control Lever to **FORWARD** then **REVERSE** to check for speed and directional control. The farther you push or pull the Control Lever from center the faster the machine will travel.
22. Push Steering Switch RIGHT then LEFT to check for steering control.
23. Push the Emergency Stop Switch Button.
24. Rehook Controller on front guardrail and place Foot Switch on deck.

## 3.4 Operation

**NOTE:** Understand the functions of all the controls before operating the machine **AND** ensure that the Pre-Operation Inspection (Section 3.3) has been completed and any deficiencies corrected.

### TRAVEL WITH PLATFORM LOWERED

1. Check that route is clear of people, obstructions, holes and drop-offs, is level and is capable of supporting wheel loads.
2. Verify Chassis Key Switch is turned to **DECK** and Chassis Emergency Stop Switch is **ON**, pull button out.
3. After mounting platform secure chain across entrance. Check that guardrails are properly assembled and in position with the Slideout Deck Extension secured with the pins. Hang Controller on front guardrail.
4. Check clearances above, below and to the sides of platform.
5. Pull Controller Emergency Stop Button out to ON position. When the button is pushed down Emergency Stop Switch will automatically go to OFF position.
6. Position Drive/Lift Switch to **DRIVE**.
7. While depressing Foot Switch, slowly push or pull the Control Lever to **FORWARD** or **REVERSE** position to travel in the desired direction. The farther you push or pull the Control Lever from center the faster the machine will travel.

### STEERING

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

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

### ELEVATING PLATFORM



#### **WARNING**



**LOOK** up and around for obstructions before performing the lift function.

**DO NOT** elevate the platform unless the work platform is on a firm and level surface.

**DO NOT** operate the work platform within 10 feet of any electrical lines.

**THIS WORK PLATFORM IS NOT INSULATED.**

**NEVER** enter the Elevating Assembly while the platform is elevated.

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

### TRAVEL WITH PLATFORM ELEVATED



#### **WARNING**



Travel with platform elevated **ONLY** on firm and level surfaces.

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

1. Check that route is clear of people, obstructions, holes and drop-offs, is level and capable of supporting the wheel loads.
2. Check clearances above, below and to the sides of platform.
3. Position Drive/Lift Switch to **DRIVE**.
4. While depressing Foot Switch, slowly push or pull the Control Lever to **FORWARD** or **REVERSE** position to travel in the desired direction.

### LOWERING PLATFORM

1. Position Drive/Lift Switch to **LIFT**.
2. While depressing Foot Switch, pull Control Lever to **DOWN**.



## EMERGENCY LOWERING

The Emergency Lowering Valve is located on the front of the Manifold Assembly on the left side of the Chassis Module (see Figure 3-1), it can be accessed through the cutout in the Control Module Door.

1. Open the Emergency Lowering Valve by pushing in on the knob and turning ¼ turn counterclockwise.

**Note: the Down Alarm will not sound when using the Emergency Lowering Valve.**

2. Once the platform is fully lowered, be certain that the Emergency Lowering Valve is closed again. The platform will not elevate if the Emergency Lowering Valve has not been closed.
3. To close the Emergency Lowering Valve, push in on the knob and turn ¼ turn clockwise until the detent engages.

## AFTER USE EACH DAY

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

## BRAKE RELEASE PUMP (OPTIONAL) (FIGURE 3-2)

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

1. Close the needle valve by turning the knob clockwise.
2. Pump the Brake Release Pump until the Parking Brake Cylinder Rod clears the wheel rotor.
3. The machine will now roll when pushed or pulled.
4. Be sure to open the needle valve and verify that the cylinder rod has extended before the machine is operated.



### WARNING



Never operate work platform with the Parking Brake released. Serious injury or damage could result.

Never tow faster than 1 ft./sec. (.3m/sec.) or long distances.

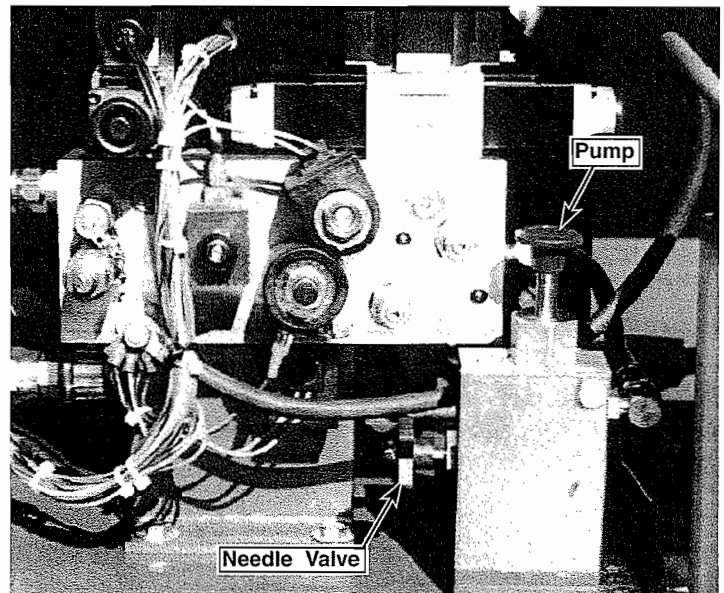


Figure 3-2: Optional Brake Release Pump



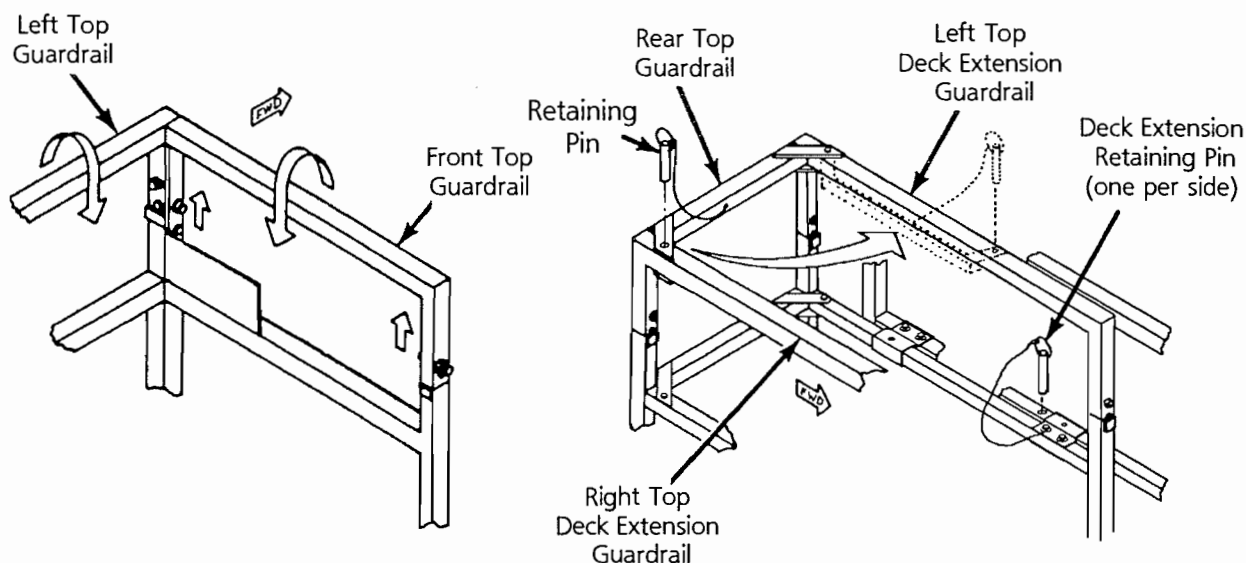


Figure 3-2: Fold Down Guardrails

## FOLD DOWN GUARDRAILS (Figure 3-3)

This procedure is only for the purpose of passing through doorways. **Guardrails must be returned to proper position before using the work platform.**

### Fold Down Procedure

1. Remove Controller from front guardrail and lay it on the platform deck.
2. Secure Deck Extension with pins.
3. Remove retaining pin at right side of rear top guardrail and rotate guardrail into position along left top guardrail and pin in place.
4. Lift up on right top deck extension guardrail until slots disengage from pins and fold guardrail in. Repeat for outer right guardrail.
5. Lift up on front top guardrail until slots disengage from pins. Fold guardrail back.
6. Lift up on left top deck extension guardrail until slots disengage from pins and fold guardrail in. Repeat for outer left guardrail.

### Erection Procedure

1. Raise the left top guardrail and push down to engage pins with slots. Repeat for deck extension guardrail.
2. Raise front top guardrail and push down to engage the pins with the slots.
3. Raise the right top guardrail and push down to engage pins with slots. Repeat for deck extension guardrail.
4. Remove retaining pin securing rear top guardrail to left top guardrail and swing rear top guardrail into place across rear of work platform and pin to right top guardrail.
5. Rehook Controller over top front guardrail.

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## 4.0

### *Introduction*

This section contains instructions for the maintenance of the XL-D Series Work Platforms. Procedures for the operational checkout adjustment, scheduled maintenance, and repair/removal are included.

Referring to *Section 3.0* will aid in understanding the operation and function of the various components and systems of the XL-D Series Work Platforms and help in diagnosing and repair of the machine.

### **SPECIAL TOOLS**

The following is a list of special tools that are required to perform certain maintenance procedures. These tools may be purchased from your dealer.

<b>Description</b>	<b>Part Number</b>
Tilt Sensor Adjusting Tool	30622-000-00
Inclinometer	10119-000-00
Gauge, 0-600 psi	14124-006-00
Fitting, Quick Disconnect	63965-002-00

## 4.1 Preventative Maintenance (Table 4-1)

The complete inspection consists of periodic visual and operational checks, together with all necessary minor adjustments to assure proper performance. Complete descriptions of the procedures are in the text following the table.



### WARNING



Before performing preventative maintenance familiarize yourself with the operation of the machine and use Scissors brace whenever it is necessary to enter the scissors when the platform is elevated.

Table 4-1: Preventative Maintenance

PAGE NO.	COMPONENT	INSPECTION OR SERVICES	INTERVAL			
			EA. SHIFT	50 HRS. OR 30 DAYS	250 HRS. OR 6 MOS.	1000 HRS. OR 2 YRS.
4-2	Battery System	Check electrolyte level Check specific gravity Clean exterior Check battery cable condition Charge batteries Clean terminals	X  X X	X	X	
4-4	Hydraulic Oil	Check oil level Change filter Drain and replace oil (ISO #46)	X		X	X
	Hydraulic System	Check for leaks Check hose connections Check for exterior wear	X	X X		
	Emergency Hydraulic System	Open the emergency lowering valve and check for serviceability	X			
	Controller	Check switch operation	X			
	Control Cable	Check the exterior of the cable for pinching, binding or wear	X			
	Platform Deck and Rails	Check fasteners for proper torque Check welds for cracks Check condition of deck	X X X			
	Tires	Check for damage	X			
4-10	Hydraulic Pump	Wipe clean Check for leaks at mating surfaces Check for hose fitting leaks Check mounting bolts for proper torque	X	X X X		
4-10	Drive Motors	Check for operation and leaks	X			
4-13	Steering System	Check hardware & fittings for proper torque Oil pivot pins Grease King Pins Check steering cylinder for leaks & mounting bolts for proper torque		X X X	X	
	Elevating Assembly	Inspect for structural cracks Check pivot points for wear Check pivot pin mounting bolts for proper torque Check scissor arms for bending Grease pivot pins	X	X X	X	
4-4	Chassis	Check hoses for pinch or rubbing points Check component mounting for proper torque Check welds for cracks	X  X		X	
4-14	Lift Cylinder(s)	Check the cylinder rod for wear Check pivot pin mounting bolts for proper torque Check seals for leaks Inspect pivot points for wear Check fittings for proper torque		X X X X X		
4-17	Entire Unit	Check for and repair collision damage Check fasteners for proper torque Check for corrosion-remove and repaint Lubricate	X		X X	
4-4	Labels	Check for peeling or missing labels & replace	X			
4-11	Rear Wheels	Repack wheel bearings				X

## 4.2 Blocking Scissors Assembly (Figure 4-1)



### WARNING



**BEFORE** entering scissors assembly while performing maintenance on work platform, while elevated, ensure that scissors are properly blocked with the Scissors Brace.

**DO NOT** stand in scissors area while installing or removing Scissors Brace.

## INSTALLATION

1. Park the work platform on firm level ground.
2. Verify Platform Emergency Stop Switch is ON.
3. Open the Left Chassis Module cover.
4. Turn Chassis Key Switch to **CHASSIS**.
5. Position Chassis Lift/Lower Switch to **UP** and elevate platform approximately seven feet (2.13m).
6. Rotate Scissors Brace between center pivot assembly of middle scissors arms.
7. Push Chassis Lift Switch to **DOWN** position and gradually lower platform until brace rests on center of scissor arm weldment.

## REMOVAL

1. Push Chassis Lift Switch to **UP** position and gradually raise platform until center of scissors arm weldment clears flange of Scissors Brace.
2. Rotate Scissors Brace forward to rest on cross angle.
3. Push Chassis Lift Switch to **DOWN** position and completely lower platform.

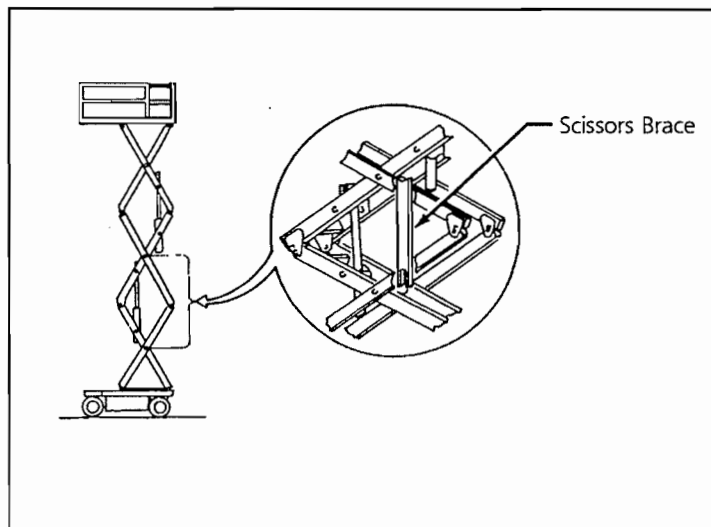


Figure 4-1: Blocking the Scissors

## 4.3 Battery Maintenance

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



### WARNING



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

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Rinse away any spilled fluid thoroughly with clean water.

## BATTERY INSPECTION AND CLEANING

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



### CAUTION



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

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

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

**BATTERY CHARGING (See Figure 4-2)**

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

**CAUTION**

Charge batteries in a well ventilated area.

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

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

Never leave charger operating unattended for more than two days.

Never disconnect cables from batteries when charger is operating.

Keep charger dry.

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

1. Check battery fluid level. If electrolyte level is lower than  $\frac{3}{8}$  in. (10mm) above plates add distilled water only.
2. The plug for the battery charger is located at the rear of the Chassis. Connect plug to properly grounded outlet of proper voltage and frequency.
3. Charger turns on automatically after a short delay, the ammeter will indicate the rate of charge.
4. Charger turns off automatically when batteries are fully charged.

**BATTERY CELL EQUALIZATION**

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

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

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

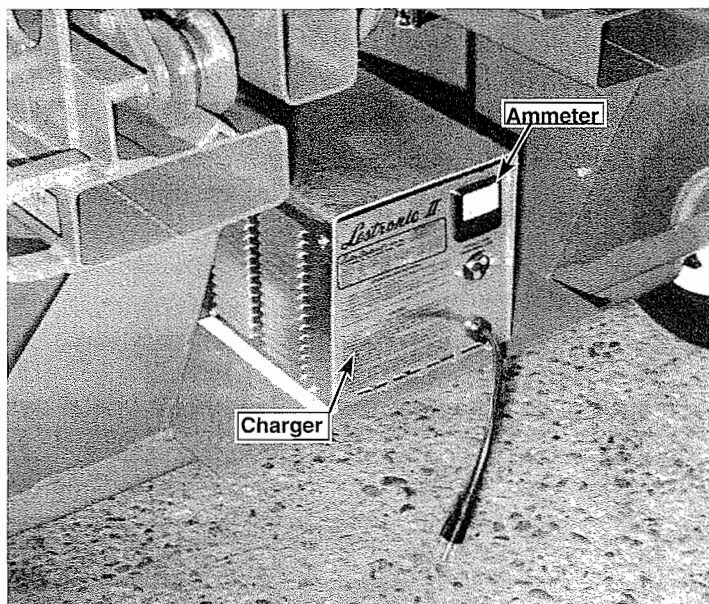


Figure 4-2: Battery Charger

## 4.4 Lubrication

Refer to Figure 4-3 for location of items that require lubrication service. Refer to the appropriate sections for lubrication information on the Hydraulic Oil Tank and Filter and Rear Wheel Bearings.

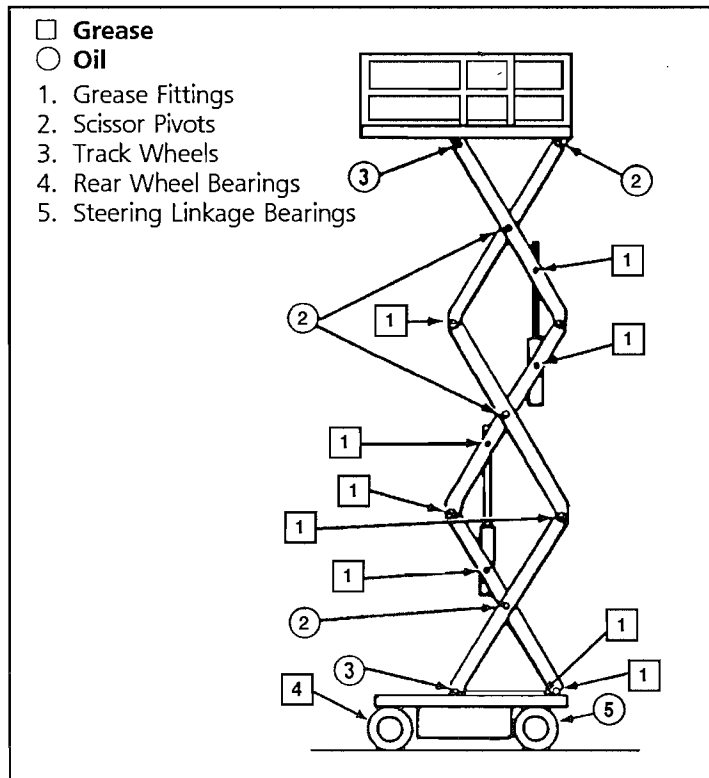


Figure 4-3: Lubrication Points

### GREASE FITTINGS

Wipe each grease fitting before and after greasing. Using multi-purpose grease in a grease gun, pump the grease into the fitting until grease just begins to appear at the edges of the pivot, wipe off any excess grease.

### OILING

Apply one or two drops of motor oil to each pivot point or bearing.

## HYDRAULIC OIL TANK AND FILTER (Figure 4-4)

### Fluid Level

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

### Oil and Filter Replacement

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



### CAUTION



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

2. Provide a suitable container to catch the drained oil. Hydraulic tank has a 4 gallon (15 l) capacity.
3. Remove the drain plug and allow all oil to drain.
4. Reinstall the drain plug.
5. Unthread the filter from the filter head.
6. Apply a thin film of clean hydraulic oil (ISO #46) to the gasket of the replacement filter.
7. Thread the replacement filter onto the filter head until the gasket makes contact then rotate the filter 3/4 of a turn further.
8. Fill the hydraulic reservoir with ISO #46 hydraulic oil. Hydraulic tank has a 4 gallon (15 l) capacity.

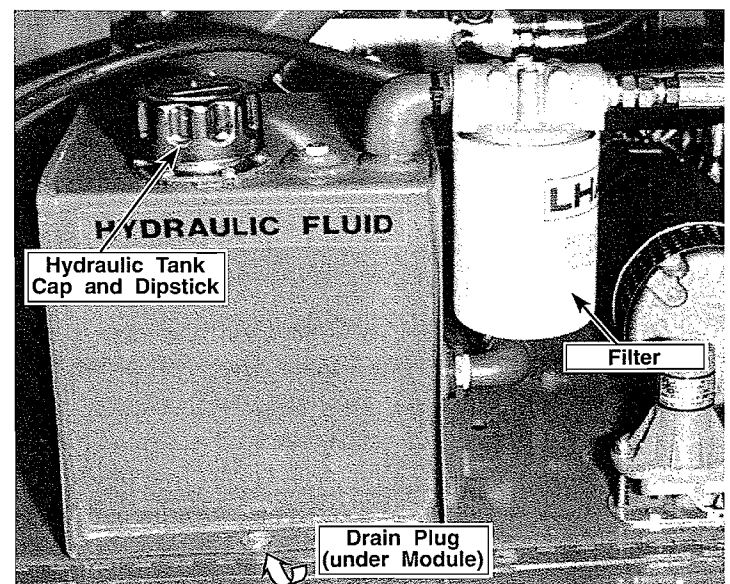


Figure 4-4: Hydraulic Oil Tank and Filter

## 4.5 Setting Hydraulic Pressures (Figure 4-5)

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



### WARNING



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

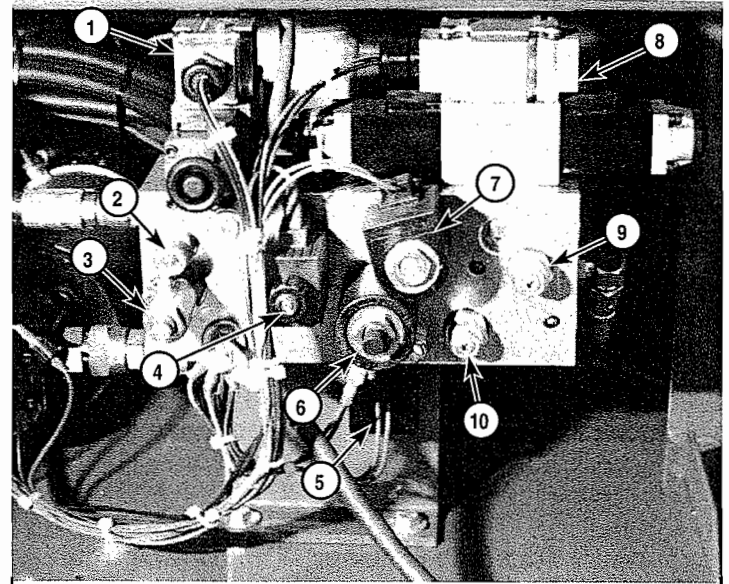
The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. **Obtain medical assistance immediately if cut by hydraulic oil.**

### MAIN RELIEF VALVE (Figure 4-5)

1. Operate the hydraulic system 10-15 minutes to warm the oil.
2. Loosen locknut or remove cover on the Main Relief Valve and turn adjusting screw counterclockwise two full turns.
3. Refer to the maximum platform load in the specifications, *Section 1.2*, for the model being adjusted. Place this load on the platform.
4. Turn the Chassis Key Switch to **CHASSIS**. Position the Chassis Lift Switch to **UP** position and hold it there.
5. Slowly turn the Main Relief Valve adjusting screw clockwise to increase the pressure until the platform just begins to raise.
6. Release the Chassis Lift Switch. Tighten locknut or replace Main Relief Valve cover and torque to 6 Ft/Lbs (8 Nm).

### COUNTERBALANCE VALVES (Figure 4-5)

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Remove Gauge Port Cap and install the 0-600 psi (0-41.4 bar) pressure gauge assembly.
3. Remove the red Control Cable wire from terminal #9.
4. Lift work platform and block front wheels off ground.
5. Loosen the locknuts on Counterbalance Valves.
6. With the Controller Key Switch **ON** and the Drive/Lift Switch in **DRIVE** depress the Foot Switch and slowly pull the Control Lever to **REVERSE** to drive the wheels.



- |                       |                                  |
|-----------------------|----------------------------------|
| 1. Steering Valve     | 6. Down/Emergency Lowering Valve |
| 2. Gauge Port         | 7. Lift Valve                    |
| 3. Main Relief        | 8. Drive Valve                   |
| 4. Proportional Valve | 9. Forward Counterbalance Valve  |
| 5. Cushion Down Valve | 10. Reverse Counterbalance Valve |

**Figure 4-5: Hydraulic Manifold, Front View**

7. Adjust the Forward Counterbalance Valve by turning the adjustment screw clockwise until the pressure gauge indicates 400 psi (27.58 bar), then slowly turn the screw counterclockwise until the gauge indicates:  
300 psi (20.69 bar) for XL-19DW  
350 psi (24.13 bar) for XL-19D, XL-24D & XL-24DW
8. Slowly push the Control Lever to **FORWARD** to drive the wheels.
9. Adjust the Reverse Counterbalance Valve by turning the adjustment screw clockwise until the pressure gauge indicates 400 psi (27.58 bar), then slowly turn the screw counterclockwise until the gauge indicates:  
300 psi (20.69 bar) for XL-19DW  
350 psi (24.13 bar) for XL-19D, XL-24D & XL-24DW
10. Check the settings by slowly moving the Control Lever **FORWARD**, then **REVERSE** checking the gauge to ensure pressures are properly set. Readjust as needed.
11. Tighten locknuts on valves to 6 Ft/Lbs (8 Nm). Remove blocks and lower work platform to ground.
12. Reconnect the red Control Cable wire to terminal #9.
13. Remove the gauge from the gauge port and reinstall plug.
14. Check for proper operation of the drive system and brake.

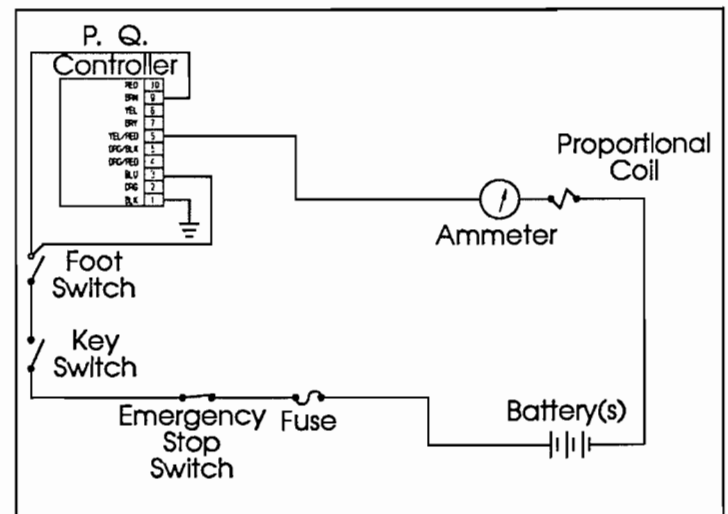


### TILT SENSOR (Figure 4-6)

- 
- HA
- E 15-25
- Adjusting Tool
- Tilt Sensor

## PROPORTIONAL CONTROL ADJUSTMENT (Figure 4-7)

1. Push Control Lever just far enough to illuminate the PWM LED indicator.
2. Set the Lo pot so the motor turns on when the LED lights up but the machine does not move.
3. Place an ammeter in series with the Proportional Coil (See Figure 4-7).
4. Verify platform is fully lowered.
5. Select Drive with Drive/Lift Switch.
6. Push Control Lever fully to Forward or Reverse and check that machine speed is 20 ft. (6.1 m) in 5-6 seconds.
7. Adjust Hi trim pot if required, turning clockwise increases speed.
8. Select Lift with Drive/Lift Switch and elevate platform 12-18 inches (305-457 mm).
9. Push Control Lever fully to **FORWARD** or **REVERSE** and check that machine speed is 20 ft. (6.1 m) in 18-22 seconds.
10. Adjust Midrange trim pot if required.



4-7

## 4.7 Hydraulic Manifold (Figure 4-8)

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

### REMOVAL

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

### DISASSEMBLY

**NOTE:** Mark all components as they are removed so as not to confuse their location during assembly. Refer to Figure 4-8 often to aid in disassembly and assembly.

1. Remove coils from solenoid valves.
2. Remove spool valve covers and spool valves.
3. Remove solenoid valves, Main Relief Valve and Counterbalance Valves.
4. Remove fittings, plugs, springs, balls and orifices.

### CLEANING AND INSPECTION

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

### ASSEMBLY

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

1. Install fittings, plugs, springs, balls and orifices. Use one drop of Loctite #242 on each screw-in orifice.
2. Install Counterbalance Valves, Main Relief Valve, solenoid valves and spool valves, torque each valve to 25 Ft/Lbs (39 Nm).
3. Install coils on solenoid valves, torque nut to 5 Ft/Lbs (6.8 Nm).

### INSTALLATION

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

**Note:** Longer bolt, washers and jam nut go in hole nearest the front of the module. Secure all ground wires with locknut.

2. Connect solenoid leads to terminal strip (as previously tagged).
3. Connect hydraulic hoses. Be certain to tighten hoses to manifold.
4. Operate each hydraulic function and check for proper function and leaks.
5. Adjust all hydraulic pressures according to instructions in Section 4.5.

1. Gage Connector
2. Valve Manifold
3. Cushion Orifice, .030
4. Down Orifice, .062
5. Orifice
6. Main Relief Cartridge
7. Proportional Valve Solenoid
- 8.
9. Orifice
10. Counterbalance Valve
11. Spring
12. Lift Valve Solenoid
13. Steering Valve Solenoid
- 14.
15. Drive Valve Solenoid
- 16.
- 17.
18. Plug, #6
19. Plug, #4
20. Plug, #2
21. Adaptor Fitting
22. Fitting Plug
23. 90° Elbow Fitting
24. Ball,  $\frac{5}{16}$  (8 mm)\*
25. Spring
- 26.
- 27.
28. Down Valve Solenoid & Emergency Lowering Valve
29. Cushion Down Valve Solenoid
30. Spring\*
- 31.
- 32.
33. Adaptor Fitting
34. Cap Screw (8)
35. Drive Plug

\* One each added after machine serial number 8076.

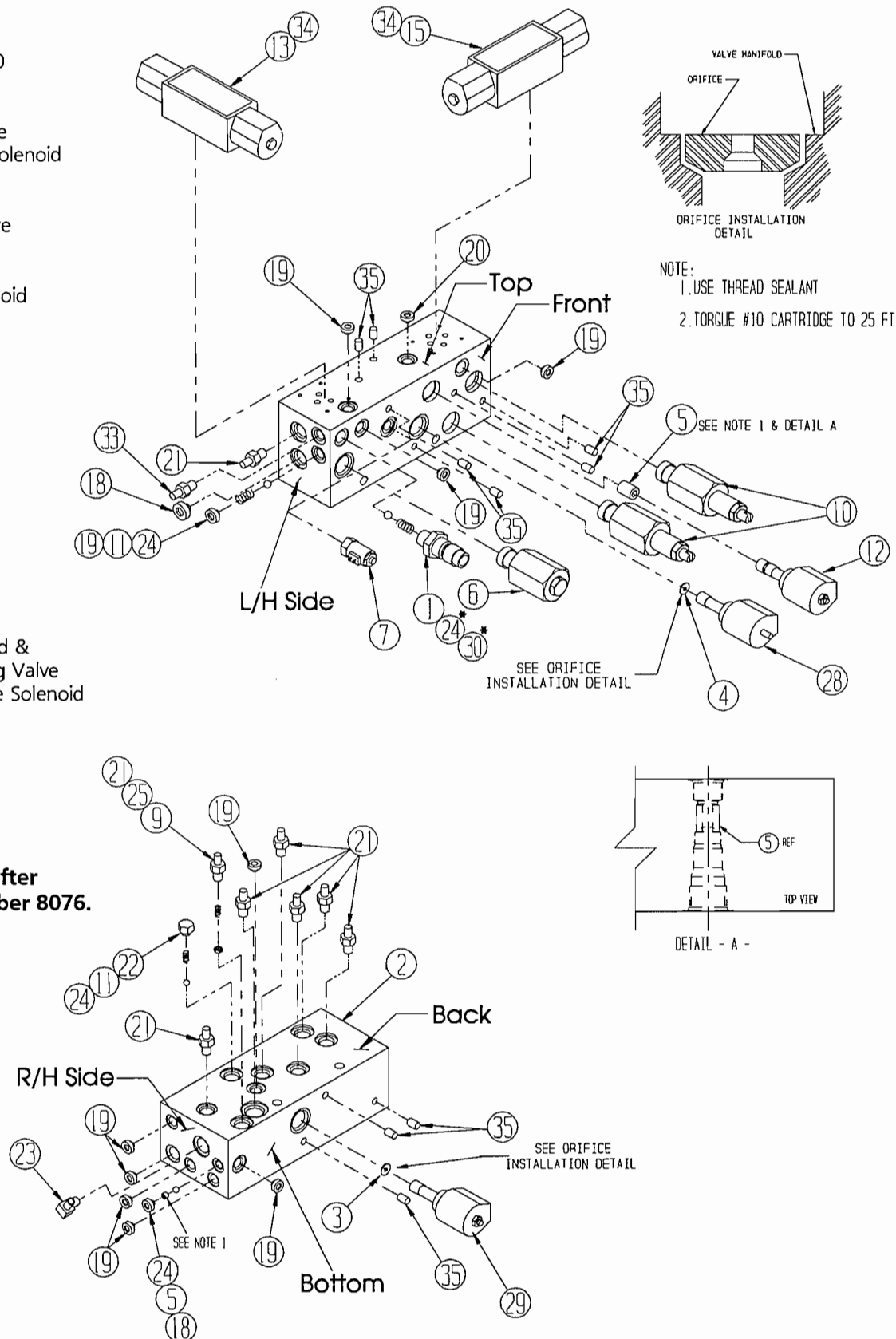


Figure 4-8: Hydraulic Manifold, Exploded View

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## 4.8 Hydraulic Pump (Figure 4-9)

### REMOVAL

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

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

### INSTALLATION

1. Lubricate the pump shaft with general purpose grease and attach the pump to the motor with the capscrews.
2. Using a criss-cross pattern torque each capscrew a little at a time until all capscrews are torqued to 20 Ft/Lbs (27 Nm).
3. Unplug and reconnect the hydraulic hoses.
4. Check the oil level in the hydraulic tank before operating the work platform.

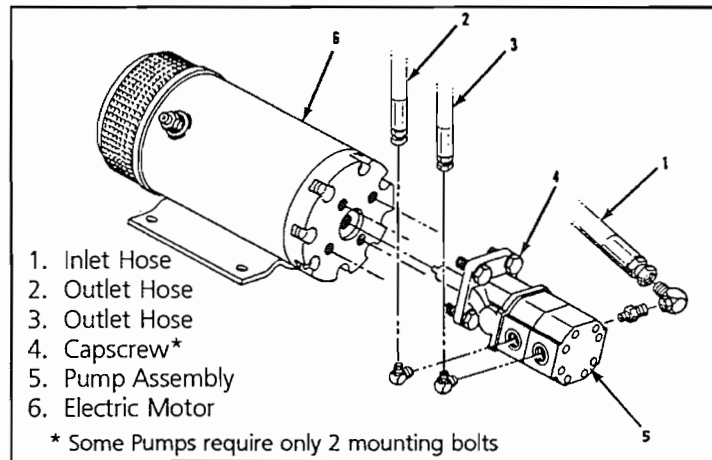


Figure 4-9: Hydraulic Pump

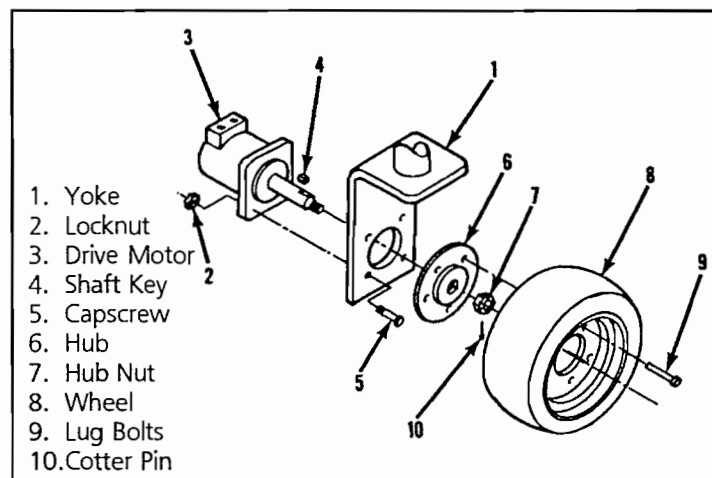


Figure 4-10: Drive Motor Installation

## 4.9 Hydraulic Drive Motors and Hubs (Figure 4-10)

### REMOVAL

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

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

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

### INSTALLATION

1. Referring to Figure 4-10, position the drive motor on the yoke and secure with capscrews and locknuts.
2. Remove the plugs from the hose assemblies and connect to the drive motor.
3. Install the shaft key, hub and slotted nut. Torque the locknut to 140 to 160 Ft/Lbs (190-217 Nm). Install a new cotter pin, **DO NOT** back-off the nut to install the cotter pin.
4. Install the wheel with lug bolts onto the hub. Torque to 80 Ft/Lbs (108 Nm).
5. Remove blocks, lower the jack and remove. Operate the drive system and check for leaks.
6. Drive machine for 20 minutes and retorque wheel lug bolts and check for leaks.

## 4.10 Wheel Bearings (Figure 4-11)

### REMOVAL

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

### INSTALLATION

1. Position the replacement bearing cup over the opening in the hub assembly then position the worn cup over the replacement so that the bearing surfaces face each other. Use the old bearing cone as a drift to work the replacement into position by tapping evenly around the circumference.
2. Apply a liberal coating of multi-purpose grease to the bearing surface of each cup.
3. Pack the inside bearing cone with multi-purpose grease and position it within the rear bearing cup in the hub assembly. Install the new grease seal.
4. Apply a thin coating of multi-purpose grease to the spindle to protect the grease seal then slide the hub assembly onto the spindle.
5. Pack the outside bearing cone with multi-purpose grease and slide it onto the spindle until it seats in the outer bearing cup.
6. Install the washer and hub nut. Tighten the hub nut, while rotating the assembly, until the hub drags then back the nut to the first slot that aligns with the cotter pin hole in the spindle.
7. Install a new cotter pin and bend the end up over the hub nut and the spindle.
8. Install the cap and wheel/tire assembly. Torque the lug nuts to 80 Ft/Lbs (108 Nm).
9. Remove blocks and lower work platform to the ground.
10. Drive machine for 20 minutes and retorque wheel lug nuts and check for leaks.

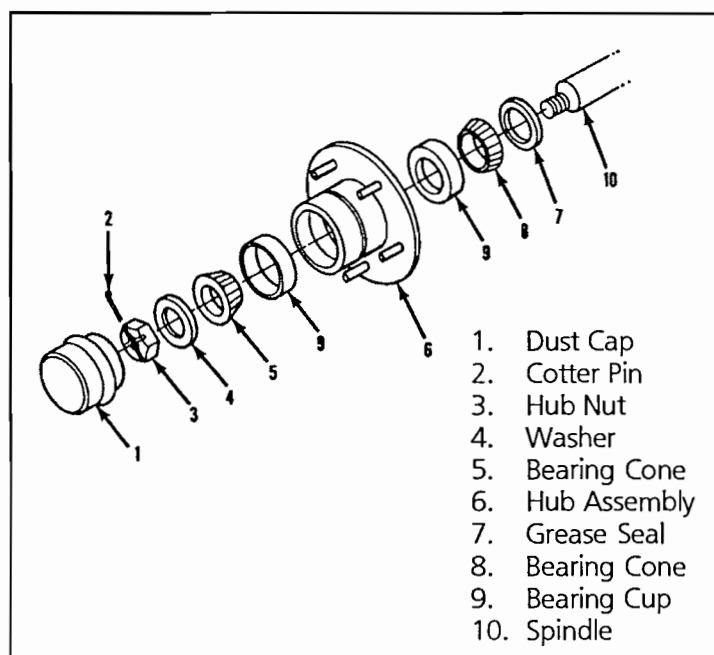


Figure 4-11: Wheel Bearings

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## 4.11 Brake Cylinder (Figure 4-12)

### REMOVAL

1. Block the wheels to prevent the work platform from rolling when the brake is removed.
2. Disconnect the hose assemblies and cap the openings to prevent foreign material from entering.
3. Remove the capscrews and lockwashers that mount the cylinder to the chassis.

### DISASSEMBLY

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

1. Remove fittings from cylinder barrel.
2. Remove the snap ring and withdraw the shaft and all attached components from the cylinder barrel.
3. Remove the head cap from the shaft then remove the wiper, shaft seal and seals from the head cap.
4. Unscrew the piston from the shaft and remove the static seal. Remove the piston seal from the piston.
5. Remove the spring and stop tube from the cylinder barrel.

### CLEANING AND INSPECTION

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

4. Check the spring for cracks.
5. Replace any parts found unserviceable.
6. Discard all seals.

### ASSEMBLY AND INSTALLATION

1. Install the piston seal on the piston then assemble the static seal, shaft and piston.
2. Position the spring and stop tube on the shaft assembly.
3. Lubricate the piston seal with clean hydraulic fluid, then install the shaft assembly in the cylinder barrel.
4. Lubricate the seals with clean hydraulic fluid and install on the head cap.
5. Install the shaft seal and wiper within the head cap.
6. Lubricate entire assembly's seals and the shaft seal and wiper with clean hydraulic fluid then install the head cap onto the shaft and into the cylinder barrel.
7. Secure with snap ring.
8. Position the brake cylinder assembly on the chassis so that the shaft fully engages the brake disc, however the shaft must clear the brake disc once retracted. Secure with capscrews and lockwashers.
9. Connect the hose assemblies.
10. Operate the drive circuit and check that the shaft retracts and clears the brake disc. Check for leaks.

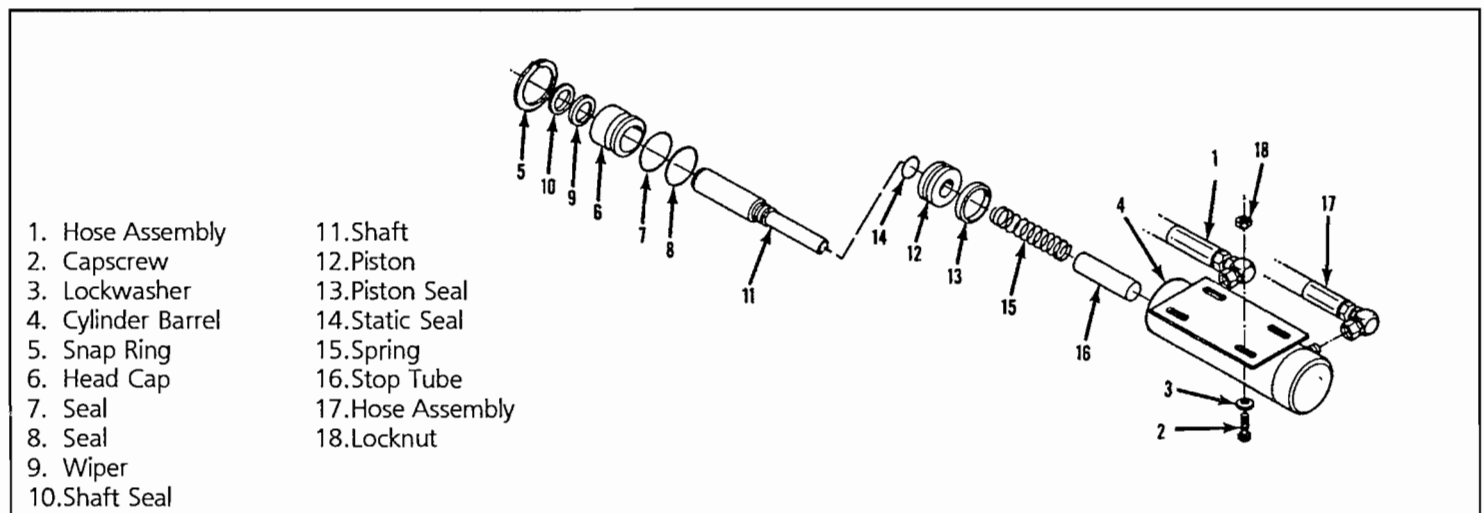


Figure 4-12: Brake Cylinder

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## 4.12 Steering Cylinder (Figure 4-13)

### REMOVAL

1. Mark and disconnect the hose assemblies from the fittings and immediately cap the openings to prevent foreign material from entering.
2. Remove the cotter pins and clevis pins.
3. Remove the locknuts and capscrews that fasten the cylinder assembly to the chassis.

### DISASSEMBLY

1. Remove the tie rod nuts, tie rods and end plates.
2. Remove the headcaps from the barrel tube.
3. Withdraw the entire shaft assembly from either end of the barrel tube.
4. Remove the rod wipers, rod seals and static O-rings from the headcaps.
5. Discard all the seals.
6. Unscrew the No. 1 shaft from the No. 2 shaft and remove the piston.
7. Remove the piston seal and static O-ring from the piston and discard.

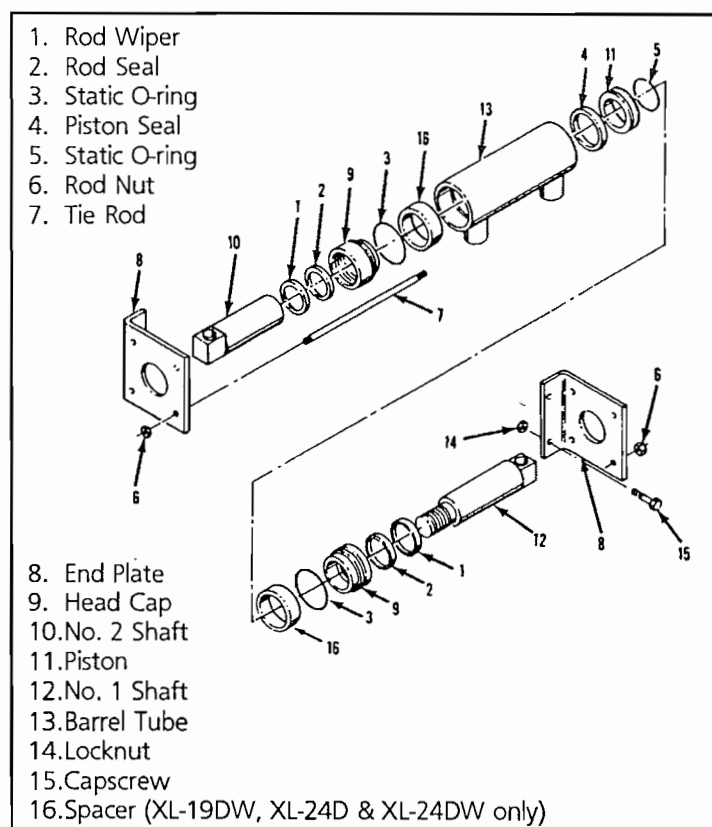


Figure 4-13: Steering Cylinder

### CLEANING AND INSPECTION

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

### ASSEMBLY AND INSTALLATION

1. Install a new piston seal and static O-rings
2. Install the piston on the No. 1 shaft.
3. Thread the No. 2 shaft onto the No. 1 shaft and tighten securely.
4. Lubricate the piston seal with clean hydraulic fluid and install the shaft assembly in the barrel tube.
5. Lubricate and install new rod seals and static O-rings on the headcaps.
6. Lubricate and install new rod wipers in the headcaps.

**NOTE: Spacers required on XL-19DW, XL-24D and XL-24DW only.**

7. Install spacers (if required) and headcaps in the barrel tube.
8. Install the end plates, tie rods and tie rod nuts and tighten to 190 In/Lbs (22 Nm).
9. Position the cylinder assembly on the chassis and secure with capscrews and locknuts.
10. Install the clevis pins and new cotter pins.
11. Connect the hose assemblies to the fittings.
12. Operate the steering circuit several times throughout its entire range of travel to expel trapped air and check for leaks.

## 4.13 Lift Cylinder (Figure 4-14)

### REMOVAL

1. Block scissors linkage (Section 4.2).
2. Remove anti-rotation clamp and angle from top cylinder of XL-24D and XL-24DW.
3. Remove snap rings from cylinder pin.
4. Remove cylinder pin and spacers from cylinder and plates.
5. Provide a suitable container to catch the hydraulic fluid, then disconnect the hydraulic hose and fitting from the base of the cylinder. Immediately plug hose to prevent foreign material from entering.
6. Attach a suitable hoisting device and sling to the top of the cylinder.
7. Lift cylinder from collar.
8. Move cylinder to a prepared work area.

### DISASSEMBLY (FIGURE 4-15)

1. Unscrew the gland nut and withdraw the rod tube from the barrel tube.
2. Remove the stop ring and wear ring from the rod tube.
3. Remove the gland nut from the rod tube.
4. Remove the bleeder screw assembly.
5. Remove the O-ring, wear ring, rod seal and rod wiper from the gland nut and discard.
8. Remove the velocity fuse from the barrel tube.

### REASSEMBLY (Figure 4-15)

1. Lubricate and install the rod seal, wear ring, rod wiper and O-ring in the gland nut.

**NOTE: Multi-purpose lubricant should be used.**

2. Place the gland nut installation rings in the grooves in the rod tube and lubricate.
3. Slide the gland nut onto the rod tube.

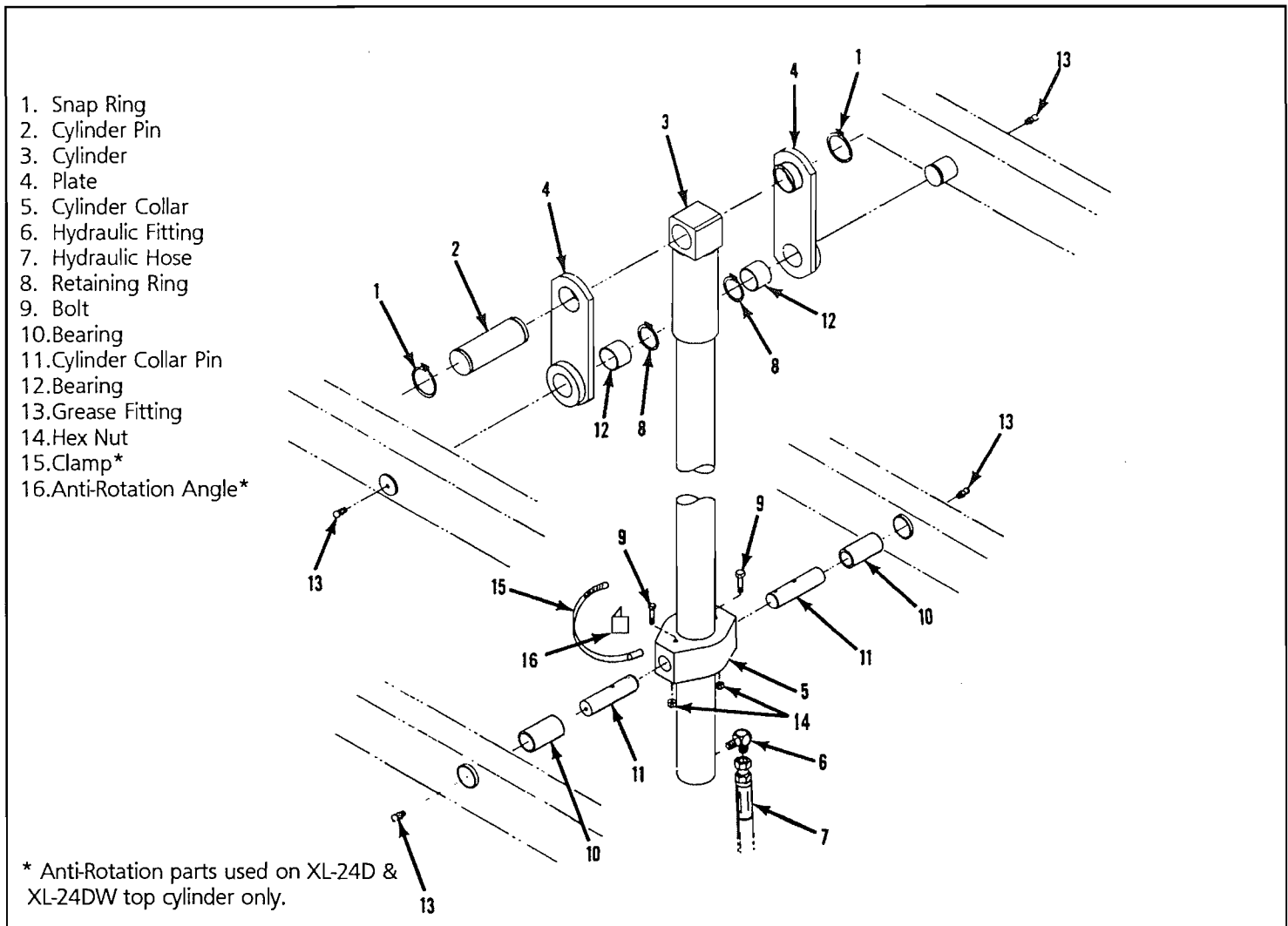


Figure 4-14: Lift Cylinder Installation



4. Remove the gland nut installation rings and install the stop ring and wear ring on the rod tube. The wear ring is to be installed in groove nearest the end of rod tube.
5. Lubricate the rod tube and install in the barrel tube.
6. Thread the gland nut onto the barrel tube and tighten securely.
7. Install the bleeder screw assembly.
8. Install the velocity fuse into the barrel tube port.

## INSTALLATION (Figure 4-14)

1. Slide the lift cylinder into the cylinder collar.
2. Connect the hydraulic fitting and the hydraulic hose.
3. Lubricate the cylinder pin with hydraulic fluid.
4. Raise the plates to align with the cylinder and install the cylinder pin.
5. Install the snap rings to each end of the cylinder pin.
6. Install anti-rotation angle and clamp on XL-24D and XL-24DW.
7. Operate the hydraulic lift circuit with the bleeder screw (Figure 4-15) loose to allow trapped air to escape the lift cylinder. Once hydraulic fluid flows continuously from bleed port, tighten the bleeder screw. Check for leaks.
8. Test with weight at rated platform load to check system operation.

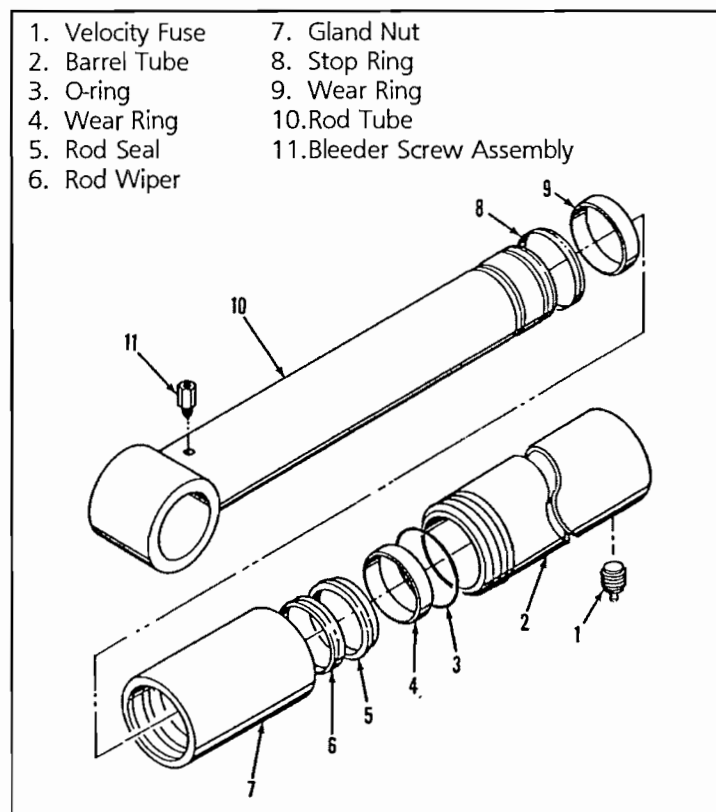


Figure 4-15: Lift Cylinder Assembly

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## 4.14 Electric Motor (Figure 4-16)

### 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 2A.
- 2A. 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 4-16A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions then it can be assumed the original problem is external to the motor.

### DISASSEMBLY

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

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

### 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 and have ample lubrication and be free of corrosion.
2. Armature should be checked for grounds and shorted turns. Refinish commutator surface if pitted or excessively worn.

- 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 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.
- Inspect wire harness and all connections for signs of damage due to overheating.
  - Check stator to see it is securely mounted.

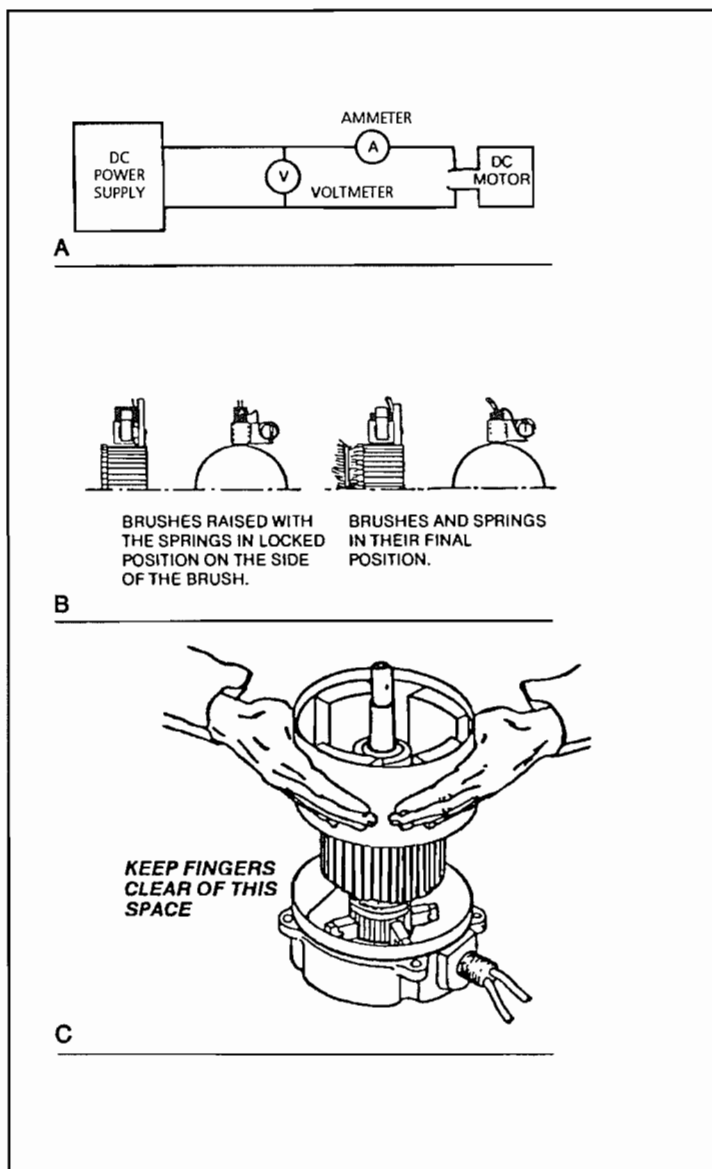


Figure 4-16: Electric Motor Service

061799-002

## REASSEMBLY

- 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 4-16B and step 3 in the Inspection section).
- Place commutator cover on a work bench with brush assembly facing upward.
- Place the bearing spring into the bearing bore.
- 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.**

- Set the brushes to final position as shown in Figure 4-16B.
- Place the complete stator down over the vertical armature, and into position on the commutator cover.
- 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.**
- Assemble the pulley end cover in the proper relationship. Insert mounting bolts and tighten alternately to ensure a good mechanical alignment.
- 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.

## 4.15 Recommended Bolt Torque (Table 4-2)

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

**Table 4-2: Bolt Torque**

THREAD SIZE <small>American National Standard-UNF (fine)</small>	WIDTH ACROSS FLATS	TORQUE VALUE			
		ENGLISH		METRIC	
$\frac{1}{4}$	$\frac{7}{16}$	110	In/Lbs	12	Nm
$\frac{5}{16}$	$\frac{1}{2}$	190	In/Lbs	22	Nm
$\frac{3}{8}$	$\frac{9}{16}$	30	Ft/Lbs	41	Nm
$\frac{7}{16}$	$\frac{5}{8}$	50	Ft/Lbs	68	Nm
$\frac{1}{2}$	$\frac{3}{4}$	75	Ft/Lbs	102	Nm
$\frac{5}{8}$	$\frac{15}{16}$	150	Ft/Lbs	203	Nm
$\frac{3}{4}$	$1 \frac{1}{8}$	250	Ft/Lbs	339	Nm
$\frac{7}{8}$	$1 \frac{5}{16}$	400	Ft/Lbs	542	Nm
1	$1 \frac{1}{2}$	600	Ft/Lbs	813	Nm

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## 5.0 Introduction

Table 5-1 provides a logical sequence of tests that are designed to isolate problems with XL-D Series machines. This table includes a list of probable causes and remedies. Referring to *Section 3.0* will aid in understanding the operation and function of the various components and systems of the XL-D Series Work Platforms and help in diagnosing and repair of the machine.



### **WARNING**



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

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

Disconnect the batteries ground cable when replacing or testing the continuity of any electrical component.

## GENERAL PROCEDURE

Troubleshooting should be carried out in two steps, first by thoroughly looking at the electrical circuits and components that could cause the problem. Loose terminal connections and short circuits are always a potential probable cause when troubleshooting. Secondly, the hydraulic system should be examined, but only after electrical circuits and components have been found fault free. Refer to Tables 6-1 and 6-2 for Reference Designations used in Table 5-1.

Table 5-1: Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
All functions inoperable, Electric Motor does not start.	1. Blown Control Circuit Fuse (FU2).	Check 15 amp Control Circuit Fuse. Replace if blown.
	2. Blown Electric Motor Fuse (FU1).	Check 175 amp Electric Motor Fuse. Replace if blown.
	3. Faulty Battery Charger.	Check the voltage output of the Battery Charger. If less than 24 VDC, repair or replace.
	4. Faulty Battery(ies) (BAT).	After completely charging Batteries, test each Battery. Replace as required.
	5. Faulty Electric Motor (MOT).	While operating the steering function, check voltage across the Electric Motor terminals. If 24 VDC is present, replace the Motor.
	6. Faulty Motor Relay (CR1).	While operating the steering, check voltage across the coil terminals of Motor Relay. If no voltage is present, proceed with step 7. If 20 VDC or more, check continuity across the contact terminals of Motor Relay while still operating the steering function. If there is no continuity, replace the defective Motor Relay.
	7. Emergency Stop Switch (SW1,SW3) failed open.	With the Emergency Stop Switch in the ON position, check continuity across the contacts. If none, replace.
All functions inoperable. Electric motor starts when control is actuated.	1. Hydraulic Reservoir low.	Check hydraulic fluid level, top off as required.
	2. Faulty Hydraulic Pump (PMP1).	Check pressure and delivery of the Hydraulic Pump. Replace if required.
	3. Proportional Valve (V7).	Check operation. Replace if required.
	4. Faulty Controller (CONT).	Check operation. Adjust or replace if required.
Electric Motor continues to run after controls are returned to the OFF position.	Motor Relay (CR1) contacts fused together.	With 0 voltage at the coil terminals of the Motor Relay (CR1) check continuity across the contact terminals. If there is continuity, replace the Motor Relay.
Steering inoperable or functions sluggishly.	1. Faulty Steering Switch.	Test Steering Switch on Proportional Controller (CONT) for continuity. Replace if defective.
	2. Mechanical damage.	Inspect all steering components. Replace damaged parts.
	3. Steering Valve (V1) stuck.	Inspect Steering Valve. If spool is sticking, replace.
	4. Steering Cylinder (CYL1) piston seal leaking.	Check Steering Cylinder for leakage from one port to another. Repair as required.
Steering operates in opposite direction.	Low flow side of Pump (PMP1) defective.	Check pressure and delivery of the Hydraulic Pump. Replace if required.

TROUBLE	PROBABLE CAUSE	REMEDY
Work platform will not steer right.	1. Faulty Steering Switch.	Test Steering Switch on Proportional Controller (CONT) for continuity. Replace if defective.
	2. Faulty diode (DIO1).	Test diode. Replace if defective.
	3. Faulty Steer Right Solenoid (SOL1).	Test Steer Right Solenoid. If the proper voltage is present and the coil is not magnetized, replace.
Work platform will not steer left.	1. Faulty Steering Switch.	Test Steering Switch (CONT) for continuity. Replace if defective.
	2. Faulty diode (DIO2).	Test diode. Replace if defective.
	3. Faulty Steer Left Solenoid (SOL2).	Test Steer Left Solenoid. If the proper voltage is present and the coil is not magnetized, replace.
Work platform will not drive FORWARD or REVERSE. Lift function operable.	1. Faulty Drive/Lift Switch (SW5).	Check continuity of Drive/Lift Switch. Replace if defective.
	2. Faulty Drive Valve (V4).	Check the Drive Valve. If the spool is not shifting, replace the valve.
	3. Shuttle Valve (SV1) not seating.	Check for contaminants and reseal ball to valve block.
	4. Mechanical failure.	Inspect Drive Motor shafts, hubs, and keys.
	5. Worn Drive Motors (MOT1,MOT2).	Check hydraulic pressure being delivered to the Drive Motors. If sufficient, replace Drive Motors.
No high speed drive.	1. Faulty diode.	Test diodes (DIO3, DIO4, DIO5).
	2. Faulty High Speed Down Limit Switch (LSW1b).	Check Switch for continuity. Replace if faulty.
No drive FWD but drives in REV. Lift function operable.	1. Faulty Drive/Lift Switch (SW5).	Test Drive/Lift Switch for continuity. Replace if faulty.
	2. Faulty diode (DIO4).	Test diode. Replace if faulty.
	3. Faulty Forward Coil (SOL3).	Test Forward Coil, if proper voltage is present and coil is not magnetized, replace.
	4. Faulty Drive Valve (V4).	Inspect Drive Valve, if spool is sticking replace.
	5. Faulty Counterbalance Valves (V2,V3).	Check pressure of Counterbalance Valves. Replace or reset valves as required.
	6. Shuttle Valve (SV1).	Check for contaminants and reseal ball in Valve Block.
No drive FWD but drives in REV. No lift function.	1. Faulty UP/FWD Relay (CR3).	Test UP/FWD Relay. Replace if required.
	2. Faulty Proportional Controller (CONT).	Check operation of Proportional Controller. Adjust as necessary. Replace if required.
No drive REV but drives in FWD. Lift function operable.	1. Faulty Drive/Lift Switch (SW5).	Test Drive/Lift Switch for continuity. Replace if faulty.
	2. Faulty diode (DIO5).	Test diode. Replace if faulty.
	3. Faulty REV Coil (SOL4).	Test REV Coil if proper voltage is present and coil is not magnetized, replace.
	4. Faulty Drive Valve (V4).	Inspect Drive Valve, if spool is sticking replace.

Table 5-1: Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
No drive REV but drives in FWD. Lift function operable. (cont'd.)	5. Faulty Counterbalance Valves (V2,V3).	Check pressure of Counterbalance Valves. Replace or reset valves as required.
	6. Shuttle Valve (SV1).	Check for contaminants and reset ball in Valve Block.
No drive REV but drives in FWD. No lift function.	1. Faulty DN/REV Relay (CR4).	Check DN/REV Relay. Replace if faulty.
	2. Faulty Proportional Controller (CONT).	Adjust Proportional Controller. Replace if required.
Platform will not elevate or elevates slowly.	1. Emergency Down Valve (V8) open.	Close Emergency Down Valve.
	2. Platform overloaded.	Observe maximum load rating (See Table 1-1).
	3. Faulty diode (DIO6,DIO7).	Test diodes, replace if faulty.
	4. Faulty Lift Valve Coil (SOL5).	Test Lift Valve Coil. If proper voltage is present and coil is not magnetized, replace.
	5. Height Limit Switch (LSW2) malfunction.	Test Height Limit Switch for continuity. Replace if required.
	6. Faulty Drive/Lift Switch (SW5).	Test Drive/Lift Switch for continuity. Replace if defective.
	7. Main Relief Valve (RV1) out of adjustment or faulty.	Adjust the Main Relief Valve. If not adjustable, replace.
	8. Lift Valve (V6) sticking.	Replace the Lift Valve.
	9. Down Valve (V8) stuck in the open position.	Replace the Down Valve.
	10. Faulty Proportional Valve (V7).	Check Proportional Valve operation, replace if faulty.
	11. Faulty Proportional Controller (CONT).	Check operation of Proportional Controller. Adjust as necessary. Replace if required.
Platform drifts down after being elevated.	1. Emergency Lowering Valve (V8) partly open or faulty.	Ensure that the Emergency Lowering Valves are completely closed.
	2. Check Valve (CV2) leaking.	Check for contamination under ball. Clean and reseal ball in block.
	3. Leaky Down Valve (V8) cartridge.	Repair or replace the Down Valve.
	4. Leaky Cushion Down Valve (V9) cartridge.	Repair or replace the Cushion Down Valve.
Work platform drives while lifting.	Faulty diode (DIO3, DIO4, DIO5).	Test diodes. Replace if faulty.
Work platform lifts while driving.	Faulty diode (DIO6).	Test diode. Replace if faulty.

TROUBLE	PROBABLE CAUSE	REMEDY
Platform will not lower. Drive function operable.	1. Faulty Down Valve Coil (SOL6).	Test Down Valve Coil. If proper voltage is present and coil is not magnetized, replace.
	2. Faulty Drive/Lift Switch (SW5).	With the Drive/Lift Switch in the LIFT position, check continuity. Replace if defective.
	3. Faulty Proportional Controller (CONT).	Adjust Proportional Controller. Replace if required.
	4. Down Valve (V8) stuck.	Replace the Down Valve.
	5. Plugged Down Orifice (ORF2).	Remove and Clean Orifice.
	6. Velocity Fuse Valve (V5) sticking or frozen.	Repeat lifting and lowering platform to warm oil, if possible move machine out of cold environment, replace the Velocity Fuse Valve.
Down Alarm does not sound.	1. Faulty Down Alarm (ALM1).	Check voltage to down Alarm Horn. If proper voltage is present, replace the Alarm.
	2. Faulty diode (DIO8).	Test diode. Replace if faulty.
Brake will not release.	1. Brake Orifice (ORF1) plugged.	Remove and Clean Orifice.
	2. Faulty Brake Cylinder (CYL2).	Check and replace seals in Brake Cylinder.
	3. Brake Cylinder (CYL2) out of adjustment.	Adjust to engage Brake Disc when extended only.
Brake will not lock wheel.	1. Faulty Brake Cylinder (CYL2).	Check and replace seals in Brake Cylinder.
	2. Brake Cylinder (CYL2) out of adjustment.	Adjust to engage Brake Disc when extended.

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6.0 Introduction

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

The diagrams are to be used in conjunction with Table 5-1: Troubleshooting Guide. They allow understanding of the make-up 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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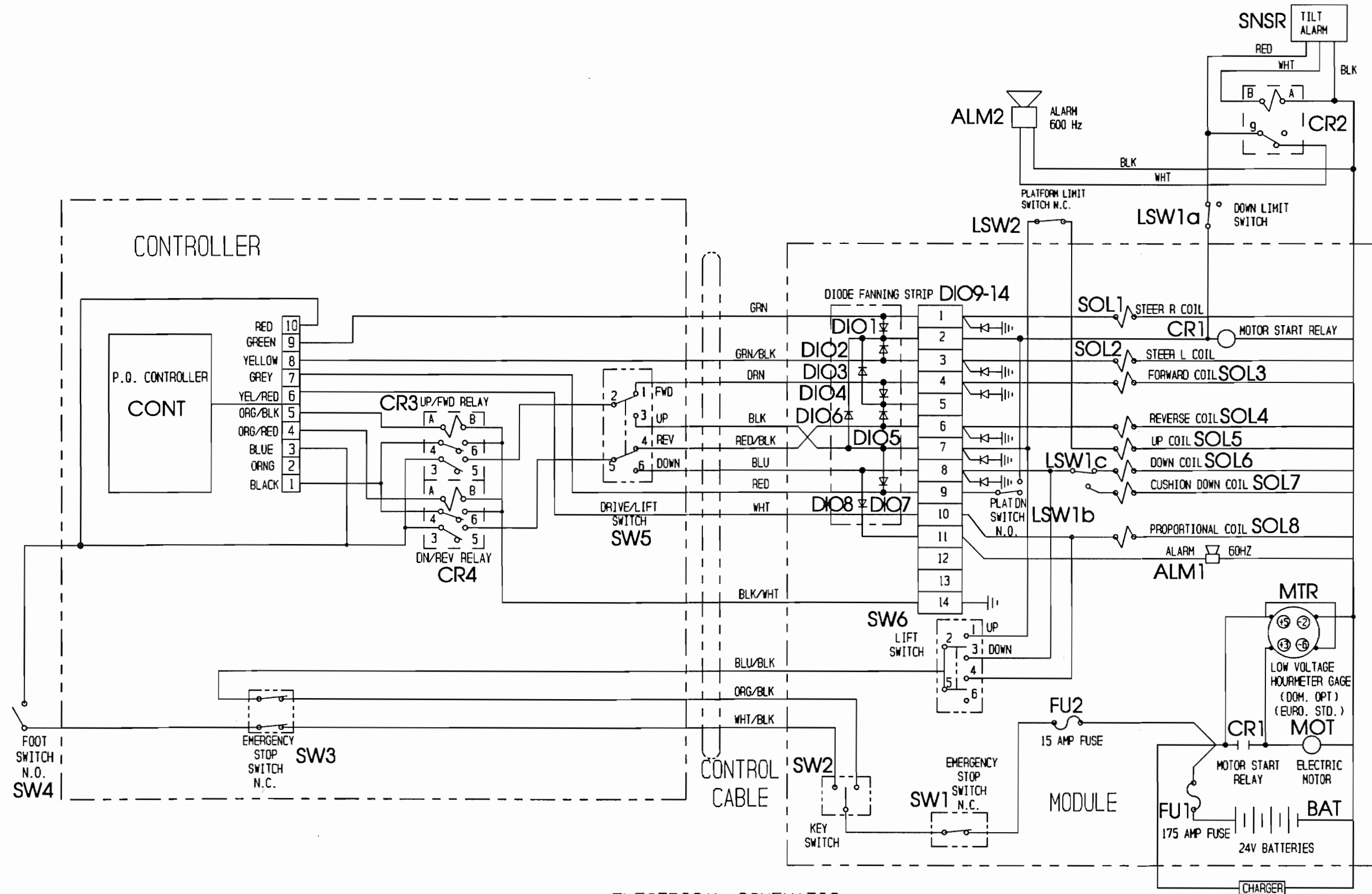
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## 6.1 Electrical Schematic

Table 6-1: Electrical Schematic Legend

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM1	Alarm, Down	Provides warning sound (60Hz) when machine is lowering.	Right front of Module (upper unit).
ALM2	Alarm, Platform Tilt	Provides warning sound (600Hz) when Platform is not level and elevated.	Right front of Module (lower unit).
BAT	Batteries (4) 6 volts	To store energy	Chassis Module, two per side.
CONT	Controller, Proportional & Switch, Steering	Supplies power to Proportional Coil and Up/Forward Relay or Down Reverse Relay. Supplies power to either Right or Left Steer Valve Solenoids.	Platform Controller center. Top of Controller joystick.
CR1	Relay, Motor	Connects Batteries to Motor.	Right front of Chassis Module.
CR2	Relay, Tilt Sensor	Energized by Tilt Sensor, provides power to Tilt Alarm when Platform is elevated.	Right front of Chassis Module next to Tilt Sensor.
CR3	Relay, Up/Forward	Supplies power to Up/Forward contacts in Drive/Lift Switch.	Platform Controller.
CR4	Relay, Down/Reverse	Supplies power to Down/Reverse contacts in Drive/Lift Switch.	Platform Controller.
DIO1	Diode	Supplies power to Motor Relay when Steer Switch is activated <b>RIGHT</b> .	Between T1 and T2 on Fanning Strip.
DIO2	Diode	Supplies power to Motor Relay when Steer Switch is activated <b>LEFT</b> .	Between T3 and T2 on Fanning Strip.
DIO3	Diode	Supplies power to Motor Relay for <b>FORWARD</b> and <b>REVERSE</b> operation.	Between T5 and T2 on Fanning Strip.
DIO4	Diode	Supplies power to Motor Relay through DIO3 for <b>FORWARD</b> operation.	Between T4 and T5 on Fanning Strip.
DIO5	Diode	Supplies power to Motor Relay through DIO3 for <b>REVERSE</b> operation.	Between T6 and T5 on Fanning Strip.
DIO6	Diode	Supplies power to Motor Relay for <b>LIFT</b> operation.	Between T7 and T2 on Fanning Strip.
DIO7	Diode	Supplies power to Controller for High Speed Lift.	Between T7 and T9 on Fanning Strip.
DIO8	Diode	Supplies power to Down Alarm during Lowering.	Between T8 and T11 on Fanning Strip.
DIO9-14	Diodes	Protects Diodes 1-8 from voltage spikes.	On Fanning Strip.
FU1	Fuse, 175 AMP	Overload protection for the electric motor.	Right front of Module, below Motor Start Relay.
FU2	Fuse, 15 AMP	Overload protection for the control circuit.	Left front of Module.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
LSW1 a	Switch, Tilt Sensor Down Limit	Cuts power to Tilt Sensor when Platform is down.	Center of machine on front Module mount. Contacts 5 & 6.
LSW1 b	Switch, High Speed Down Limit	Cuts power to High Speed Drive when Platform is elevated.	Contacts 7 & 8.
LSW1 c	Switch, Cushion Down Limit	Switches power from Down Coil to Cushion Down Coil.	Contacts 1, 2, 3 & 4.
LSW2	Switch, Platform Height Limit	Opens Lift Valve Coil circuit to limit Platform height.	In left side Roller Track at center of work platform.
MOT	Motor, Electric	Provides power to Drive Hydraulic Pump.	Right front of Module.
MTR	Meter, Volt/Hour (opt. on domestic, std. on european)	Shows state of charge of batteries and hours machine has power on.	Left front of module next to Chassis Control Panel.
SNSR	Sensor, Tilt	Provides power to Tilt Sensor Relay, when Platform is not level and elevated, to activate Tilt Alarm.	Right front of module.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to <b>RIGHT</b> turn position.	Farthest end of Spool Valve mounted on left top of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to <b>LEFT</b> turn position.	Closest end of Spool Valve mounted on left top of Manifold Block.
SOL3	Solenoid, Forward (coil)	Shifts Drive Valve to <b>FORWARD</b> position.	Left end of Spool Valve mounted on right top of Manifold Block.
SOL4	Solenoid, Reverse (coil)	Shifts Drive Valve to <b>REVERSE</b> position.	Right end of Spool Valve mounted on right top of Manifold Block.
SOL5	Solenoid, Up (coil)	Opens Lift Valve.	Top right Coil on front of Manifold Block.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Center bottom front of Manifold Block.
SOL7	Solenoid, Down Cushion (coil)	Opens Down Cushion Valve.	Center of bottom of Manifold Block.
SOL8	Solenoid, Proportional (coil)	Opens Proportional Valve.	Upper center left on front of Manifold Block.
SW1	Switch, Chassis Emergency Stop Button	Control Circuit shut off.	Left front of module on Chassis Control Panel.
SW2	Switch, Key	Supplies power to Controller or Chassis Lift Switch.	Left front of module on Chassis Control Panel.
SW3	Switch, Controller Emergency Stop Button	Control Circuit shut off.	Platform Controller bottom left.
SW4	Switch, Foot	Supplies power to Controller.	Platform deck.
SW5	Switch, Drive/Lift	Supplies power to Forward and Reverse or Up and Down Valve coils.	Controller bottom center.
SW6	Switch, Chassis Lift	Provides power to either UP or Down circuits.	Left front of module on Chassis Control Panel.



### Figure 6-1: Electrical Schematic

6.2  
Hydraulic Schematic

Table 6-2: Hydraulic Schematic Legend

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
CV1	Check Valve, Steering	Allows Steering Valve to function at a higher pressure than drive.	Front center of left side of Manifold Block.
CV2	Check Valve, Lift	Prevents oil from flowing back through Lift Valve.	Top center of back of Manifold Block.
CV3*	Check Valve, Steering Equilization	Balances pressure differential across the Steering Cylinder.	Behind Guage Port fitting.
CYL1	Cylinder, Steering	Provides force to turn front wheels.	Center front of Chassis.
CYL2	Cylinder, Brake	Stops machine from moving while parked.	Right rear side of Chassis.
CYL3	Cylinder, Lift	Provides force to lift Platform.	Inside the inner Scissors Frame Weldments.
CYL4	Cylinder, Lift, Upper	Provides force to lift Platform.	Inside the inner Scissors Frame Weldments.
CYL5	Cylinder, Lift, Upper (XL24D/DW only)	Provides force to lift Platform.	Inside the inner Scissors Frame Weldments.
FL1	Filter	Filters oil returning to Tank.	Right side of Hydraulic Tank.
FL2	Suction Screen	Traps particles in Hydraulic Tank.	Inside Hydraulic Tank at outlet.
MOT1	Drive Motor	Provides tractive effort for work platform.	On left front Steering Spindle.
MOT2	Drive Motor	Provides tractive effort for work platform.	On right front Steering Spindle.
ORF1	Orifice, Brake	Delays the engagement of the Brake Cylinder	Bottom right of back of Manifold Block.
ORF2	Orifice, Down	Controls the platform rate of descent.	Center front of Manifold Block.
ORF3	Orifice, Cushion Down	Controls Platform rate of descent in last 6-12" (152-304 mm).	Center bottom of Manifold Block.
PMP	Duplex Pump	Supplies hydraulic oil flow for all functions	On Electric Motor at left front of Module.
RV1	Valve, Main Relief	Provides over pressure protection to Pump.	Left front of Manifold Block.
SV1	Valve, Shuttle	Provides oil to Brake Cylinder when either Drive <b>FORWARD</b> or <b>REVERSE</b> are actuated.	Center bottom of right side of Manifold Block.
V1	Valve, Steering	Provides directional control for Steering Cylinder.	Left top of Manifold Block.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
V2	Valve, Counterbalance <b>FORWARD</b>	Prevents machine from running away on slopes and cushions stops.	Right center front of Manifold Block.
V3	Valve, Counterbalance <b>REVERSE</b>	Prevents machine from running away on slopes and cushions stops.	Right bottom front of Manifold Block.
V4	Valve, Drive	Provides directional control of oil for drive functions.	Right top of Manifold Block.
V5	Valve, Velocity Fuse	Locks Lift Cylinders if lines break.	Inside each Lift Cylinder Port.
V6	Valve, Lift	Provides oil flow to Lift Cylinders.	Top right Coil on front of Manifold Block.
V7	Valve, Proportional	Controls oil flow into Drive and Lift circuits by proportionally dumping oil back to tank.	Top center on front of Manifold Block.
V8	Valve, Down and Emergency Lowering	Allows oil to flow out of Lift Cylinders to Tank, manually operated for Emergency Lowering.	Bottom center on front of Manifold Block.
V9	Valve, Cushion Down	Provides slower rate of descent during last 6-12" (152-304 mm) of Platform travel.	Center rear on bottom of Manifold Block.

\* Added after machine serial number 8076.

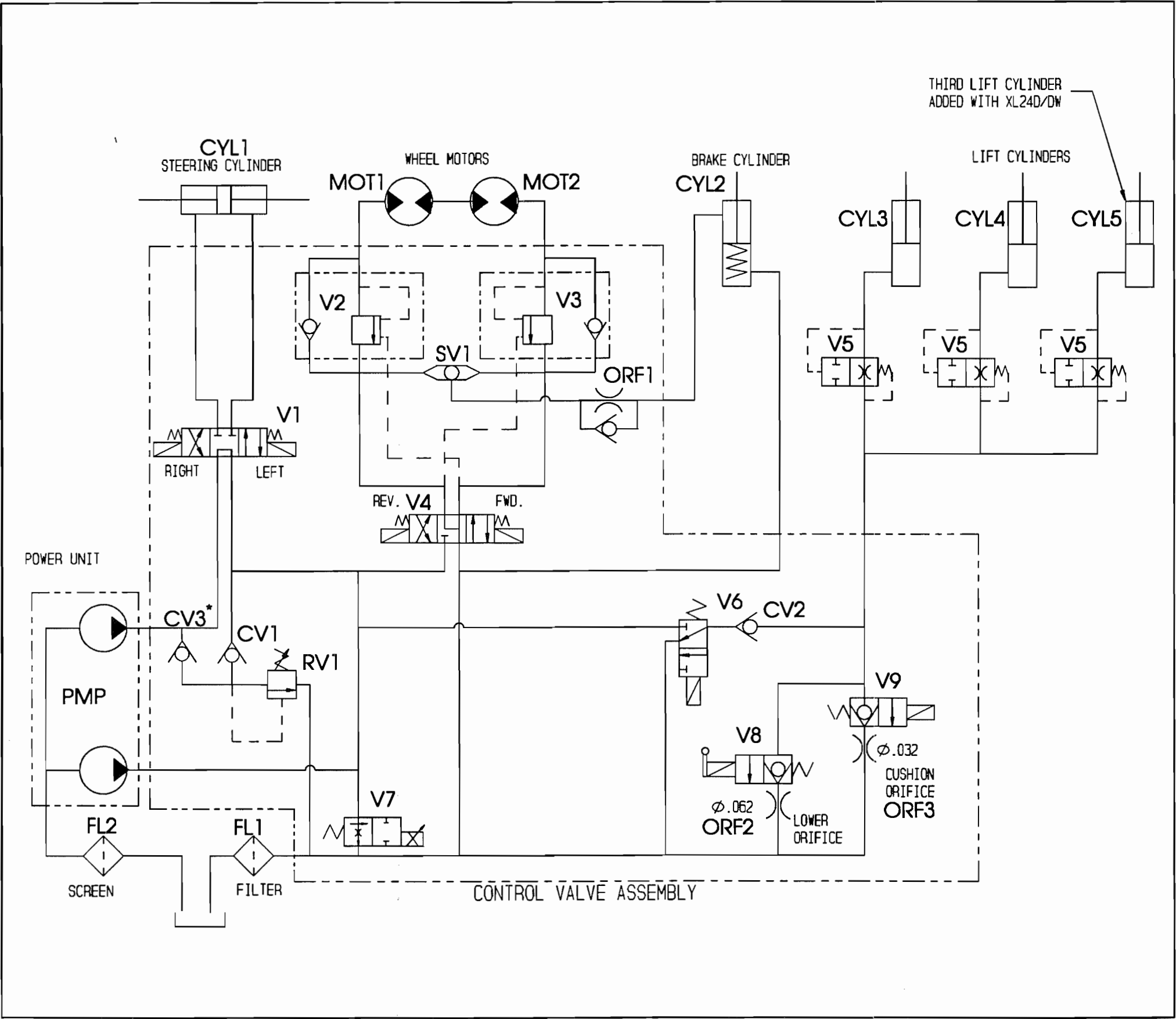


Figure 6-2: Hydraulic Schematic

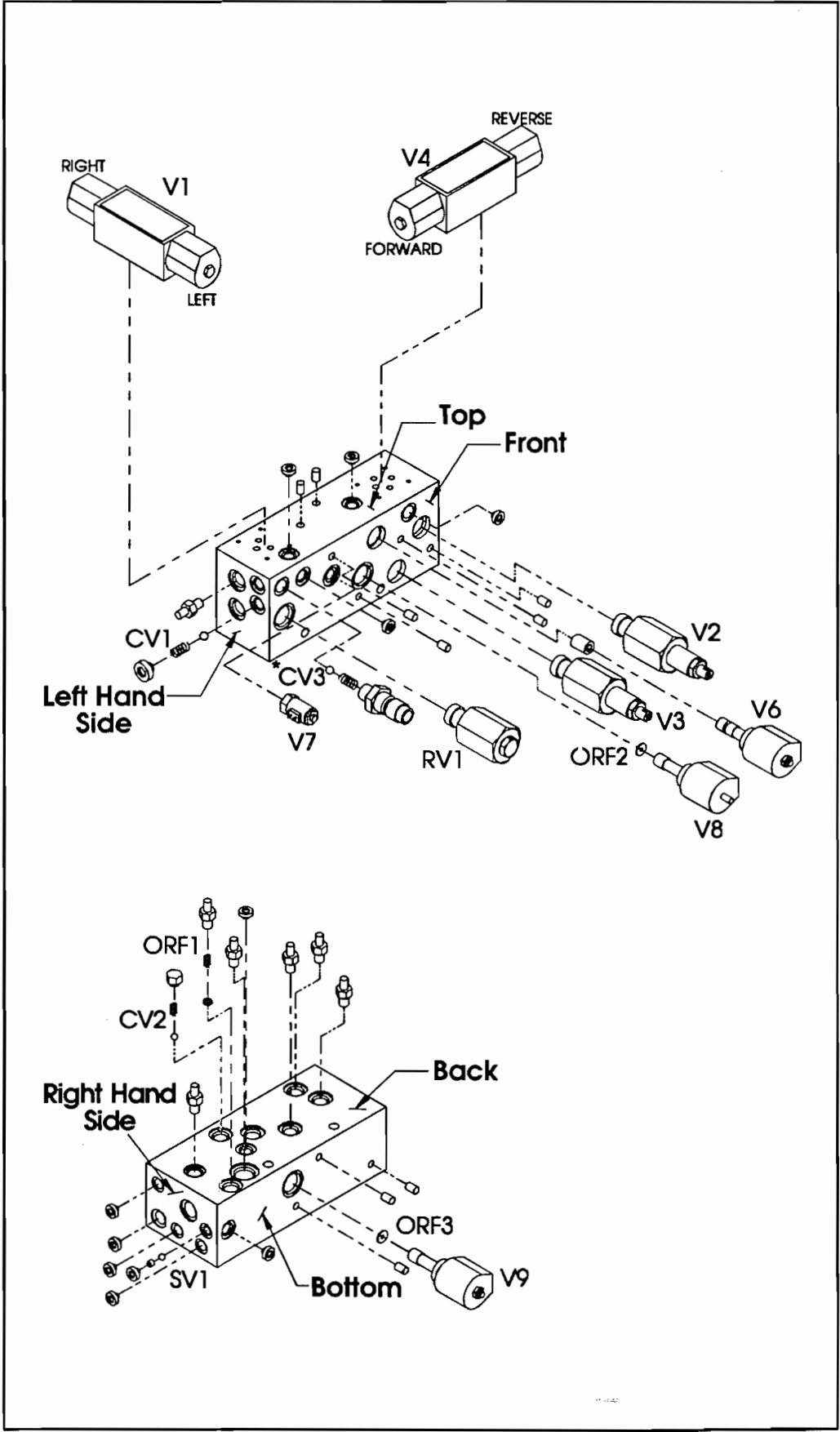


Figure 6-3: Hydraulic Manifold

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## 7.0 Introduction

This section lists and illustrates the replaceable assemblies and parts of the XL-D Series Work Platforms, as manufactured by Upright, Inc.

Each parts list contains the component parts for that assembly indented to show relationship where applicable.

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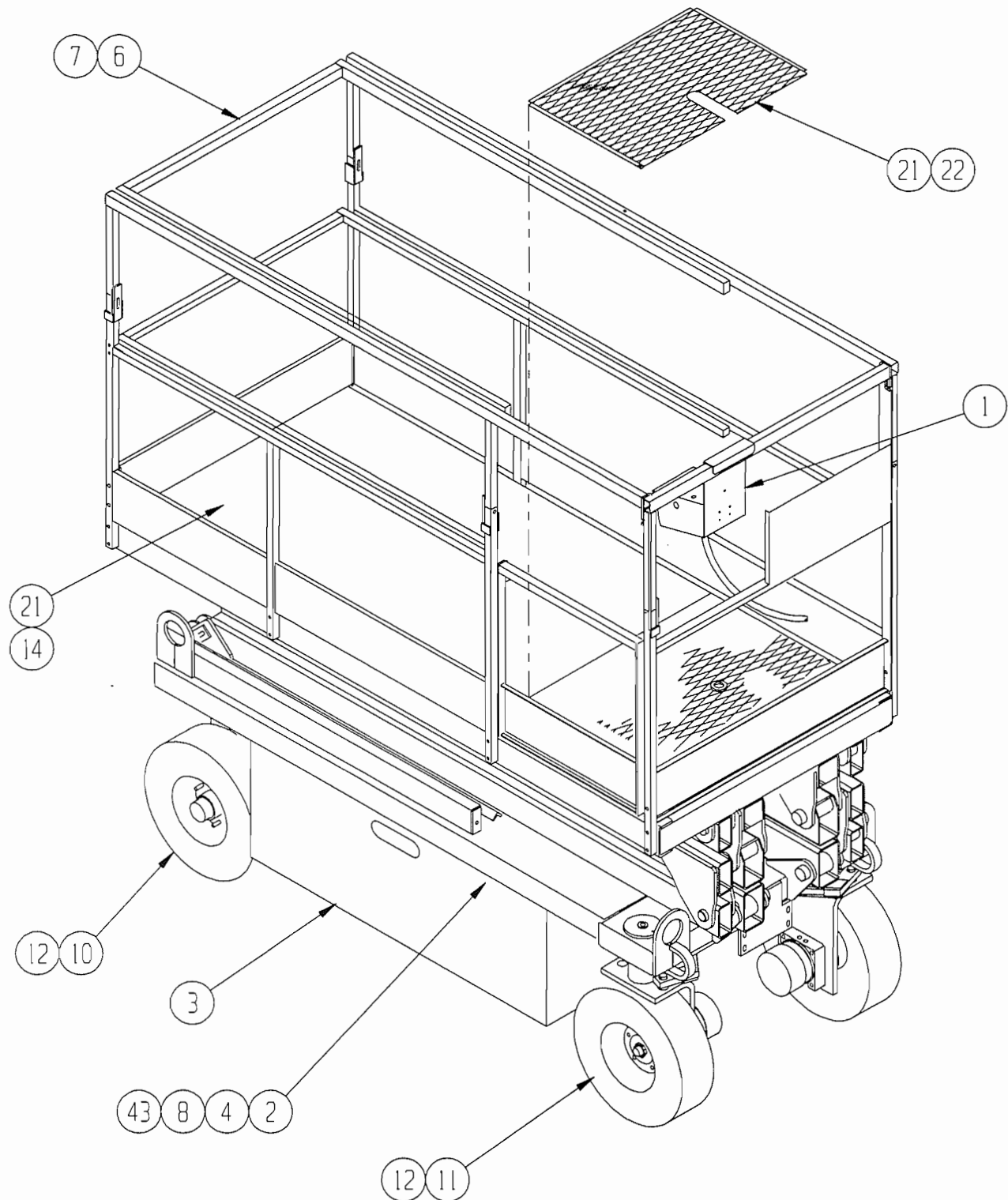
FINAL ASSEMBLY  
XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	63610-000	CONTROLLER	1
2	61681-000	LABEL KIT	1
3	63703-003	MODULE ASSEMBLY	1
4	63767-010	HOSE KIT	1
5	63468-002	CONTROL CABLE ASSY	1
6	63576-002	GUARDRAIL ASSY/INSTR	1
7	63575-002	SLIDEOUT DECK ASSY	1
8	63501-000	BASIC ASSY	1
10	05105-000	WHEEL NUT	10
11	14122-001	WHEEL BOLT	10
12	61826-000	WHEEL ASSEMBLY	4
13	29488-099	WIRE 16 AWG 6 COND	4 FT
14	24611-030	PLYWOOD DECK 1/2 X 23 7/8 X 56 1/8	1
15	11254-020	SCREW 3/8-16 UNC X 2 1/2	2
16	11252-010	SCREW 1/4-20 UNC X 1 1/4	4
17	11248-004	LOCKNUT 1/4-20 UNC	18
18	63568-002	COUNTERWEIGHT	1
19	63568-003	COUNTERWEIGHT	1
20	13919-006	CLAMP, HOSE	27
21	26554-006	RIVET 1/4 DIA POP X .875 GRIP	9
22	65333-000	GRATE WELDMENT	1
23	29925-008	CONNECTOR	1
24	11275-004	SCREW #10-32 X 1/2	1
25	11709-016	SCREW #10-24 X 2	1
26	11240-004	WASHER, FLAT 1/4 DIA	8
27	11240-003	WASHER, #10 FLAT	2
28	11709-008	SCREW RD HD # 10-24 X 1	2
29	11248-003	NUT, #10-24	3
30	05133-000	SPRING	1
31	63780-000	ACTUATOR, LIMIT SWITCH	1
32	63559-001	SHOULDER SCREW	1
33	63972-001	LIMIT SWITCH	1
34	11736-005	ROLL PIN 3/16 X 5/8 LG	1
35	11248-005	NUT 5/16-18 UNC	1
36	65351-000	PAD	1
37	15793-011	LIMIT SWITCH	1
38	15793-013	LEVER	1
39	11254-012	SCREW HHC 3/8-16 X 1 1/2	6
40	11240-006	WASHER 3/8 STD FLAT	10
41	11248-006	LOCKNUT 3/8-16	8
42	29610-002	TERM FORK 14-16	5



# Illustrated Parts Breakdown

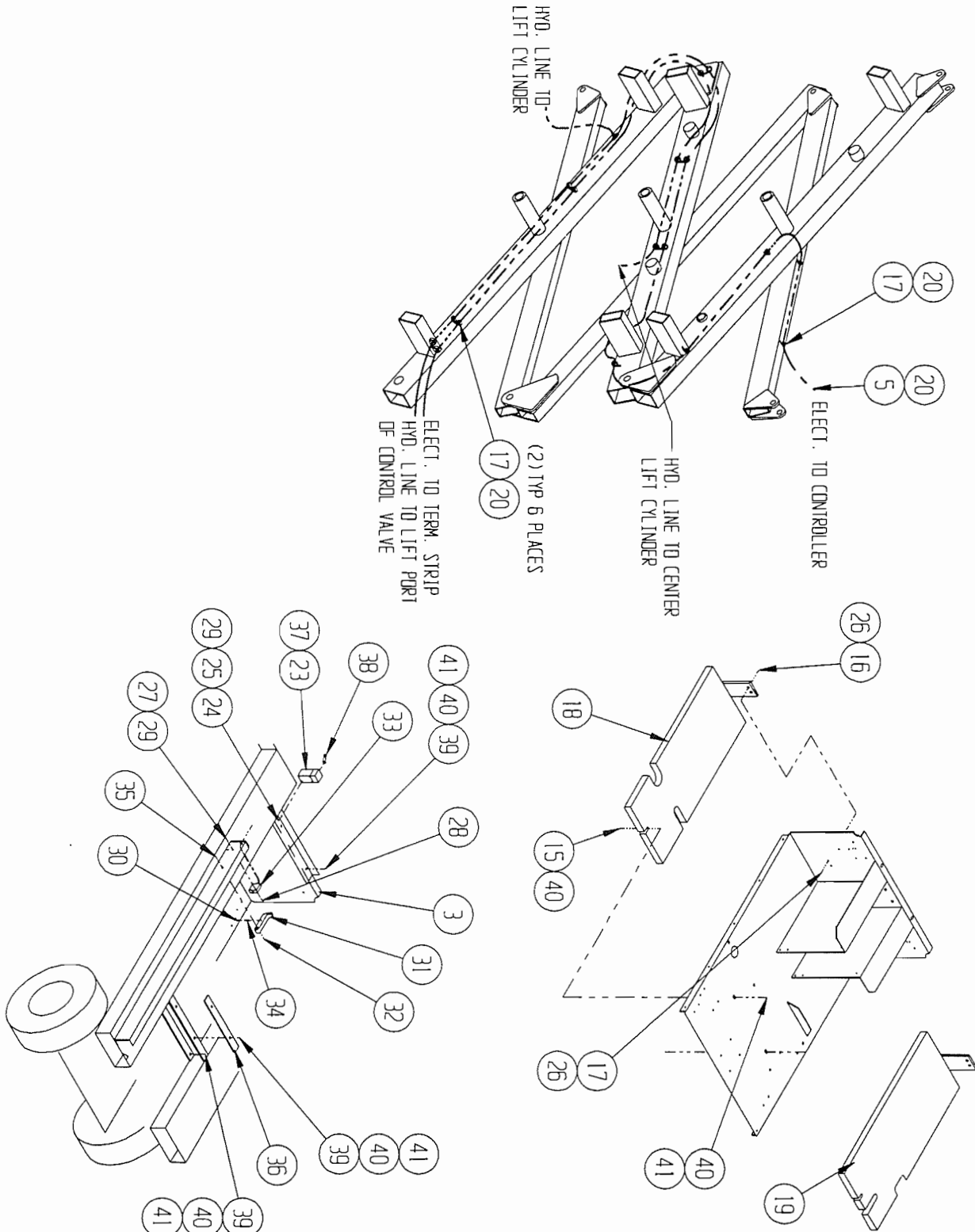
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XL-19D  
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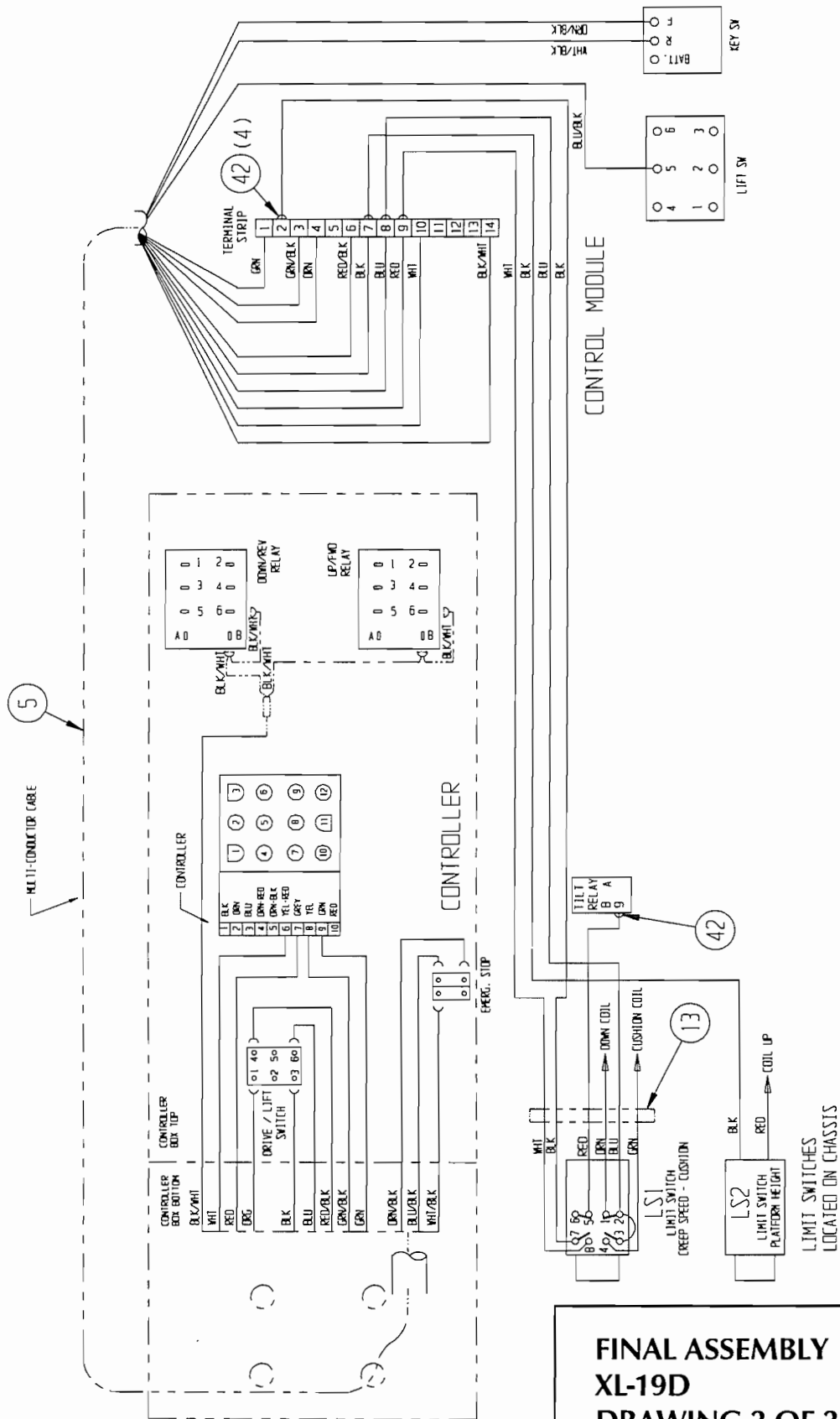
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**FINAL ASSEMBLY  
XL-19D  
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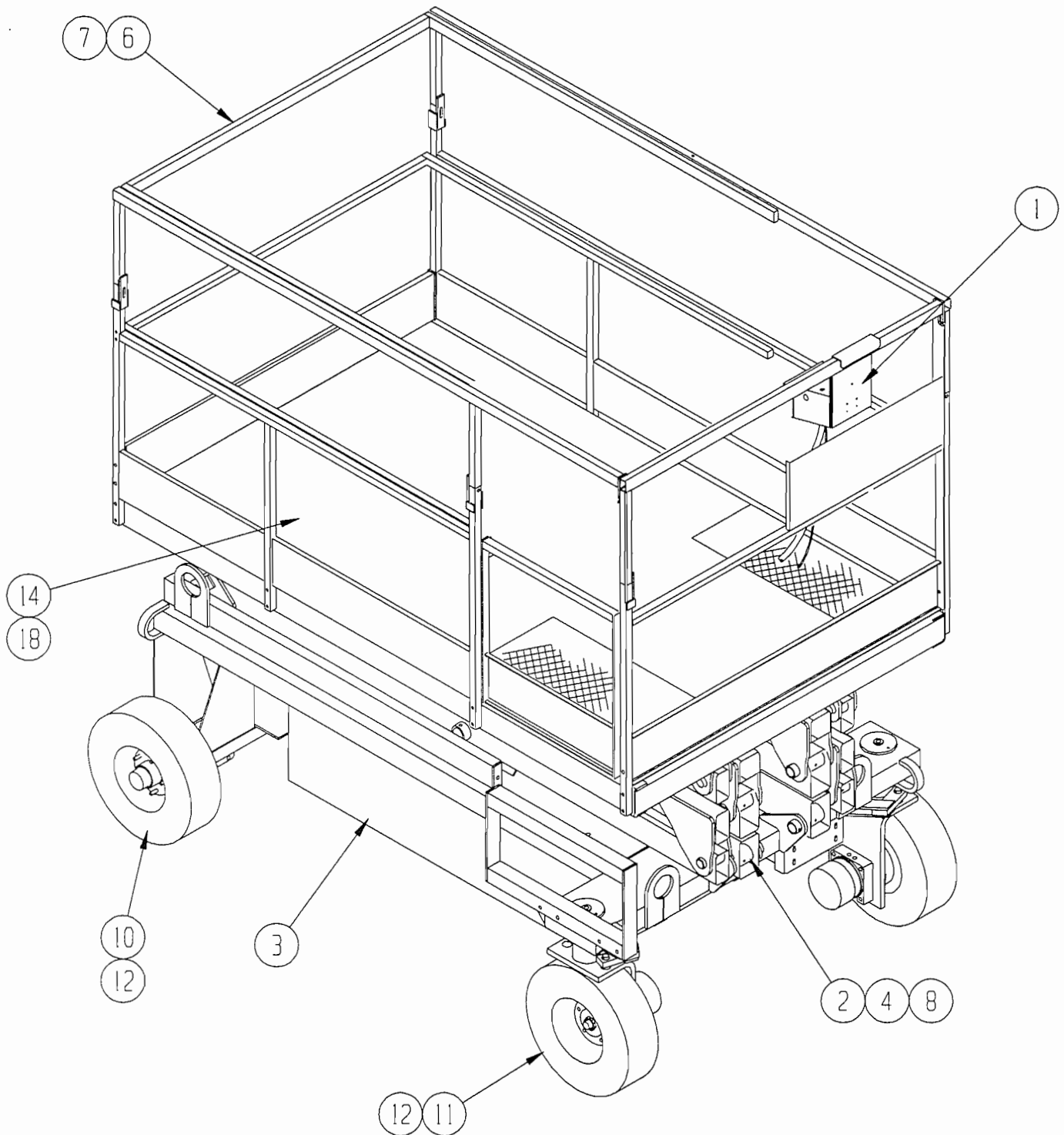
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FINAL ASSEMBLY  
XL-19DW

ITEM	PART	DESCRIPTION	QTY.
1	63610-000	CONTROLLER	1
2	61681-001	LABEL KIT	1
3	63703-003	MODULE ASSEMBLY	1
4	63767-011	HOSE KIT	1
5	63468-002	CONTROL CABLE ASSY	1
6	63775-002	GUARDRAIL ASSY	1
7	63720-001	SLIDE OUT DECK	1
8	63601-000	BASIC ASSEMBLY	1
10	05105-000	WHEEL NUT	10
11	14122-001	WHEEL BOLT	10
12	61826-000	WHEEL ASSY	4
13	29488-099	WIRE 16 AWG 6 COND	4 FT
14	65350-000	PLYWOOD DECK	1
15	29610-002	TERMINAL 16-14 FORK #8	5
16	11248-004	LOCKNUT 1/4-20 UNC	14
17	13919-006	CLAMP HOSE	27
18	26554-006	RIVET 1/4 DIA POP X .875 GRIP	12
19	29925-000	CONNECTOR, CABLE	1
20	11275-004	SCREW #10-32 X 1/2	1
21	11709-016	SCREW #10-24 X 2	1
22	11240-003	WASHER #10 FLAT	2
23	11709-008	SCREW RD HD #10-24 X 1	2
24	11248-003	NUT #10-24	3
25	05133-000	SPRING	1
26	63780-000	ACTUATOR LIMIT SWITCH	1
27	63559-001	SHOULDER SCREW	1
28	63972-001	LIMIT SWITCH	1
29	11736-005	ROLL PIN 3/16 X 5/8 LG	1
30	11248-005	NUT 5/16-18 UNC	1
31	65351-000	PAD	1
32	15793-011	LIMIT SWITCH	1
33	15793-013	LEVER	1
34	11254-012	SCREW HHC 3/8-16 X 1 1/2	6
35	11240-006	WASHER 3/8 STD FLAT	6
36	11248-006	LOCKNUT 3/8-16	6

# Illustrated Parts Breakdown

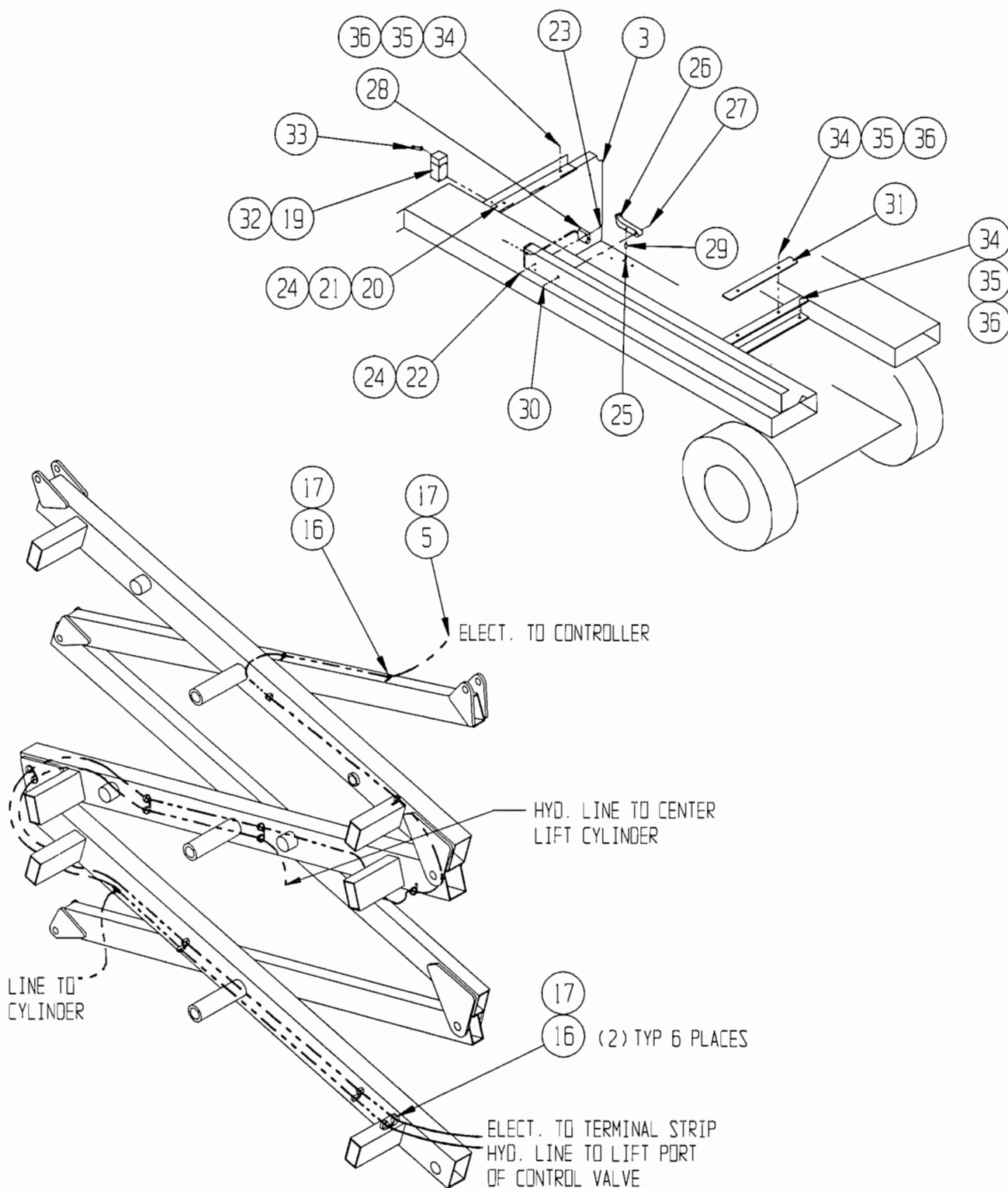
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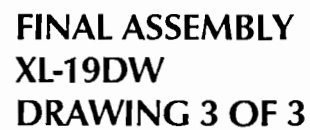
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**FINAL ASSEMBLY  
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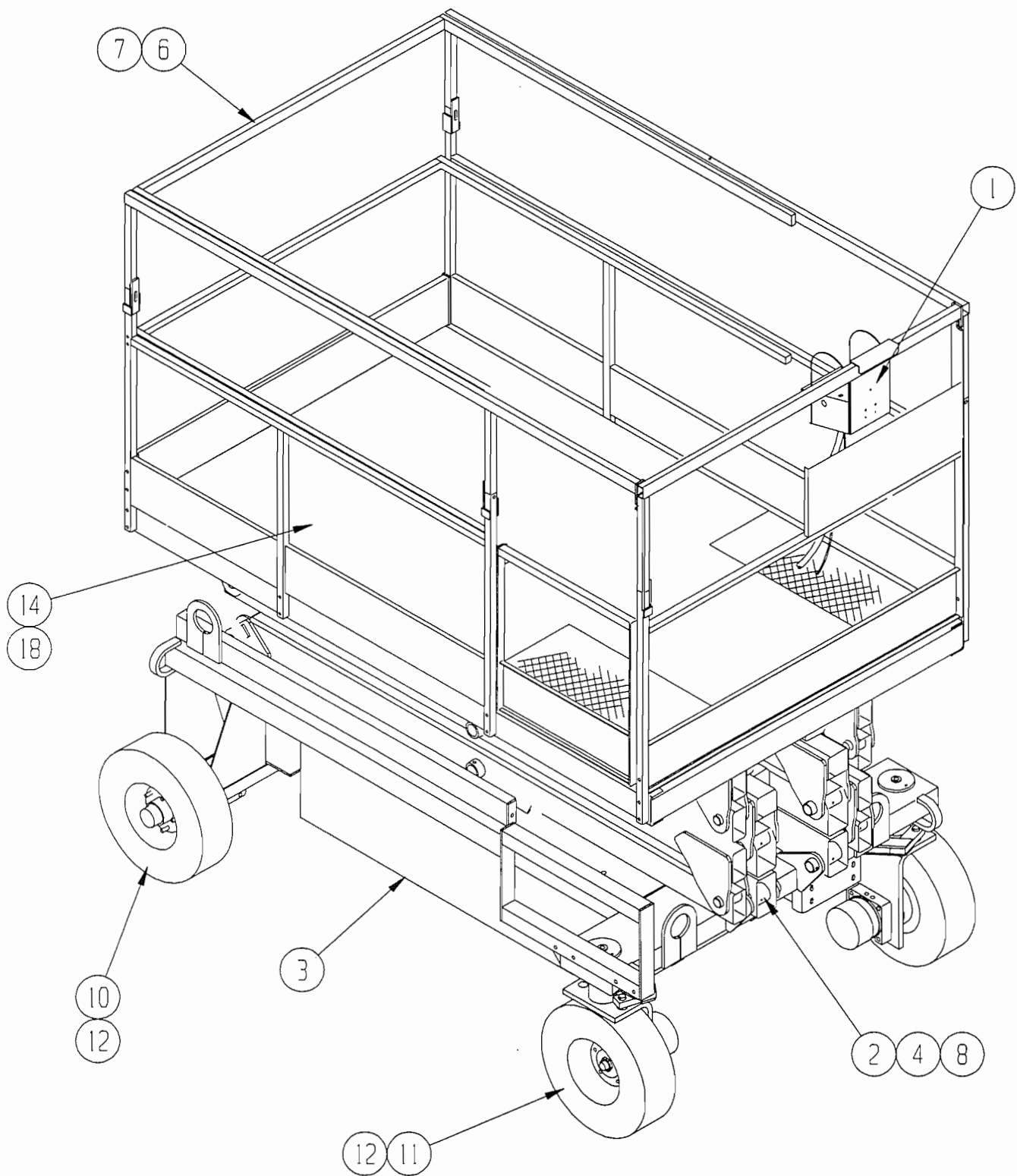
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XL-24D

ITEM	PART	DESCRIPTION	QTY.
1	63610-000	CONTROLLER	1
2	61681-002	LABEL KIT	1
3	63703-003	MODULE ASSEMBLY	1
4	63767-012	HOSE KIT	1
5	63468-003	CONTROL CABLE ASSY	1
6	63775-002	GUARDRAIL ASSY/INSTL	1
7	63720-001	SLIDE OUT DECK	1
8	63701-000	BASIC ASSEMBLY	1
10	05105-000	WHEEL NUT	10
11	14122-001	WHEEL BOLT	10
12	61826-000	WHEEL ASSY	4
13	29488-099	WIRE 16 AWG 6 COND	4 FT
14	65350-000	PLYWOOD DECK	1
15	29610-002	TERMINAL FORK 16-14 #8	5
16	11248-004	LOCKNUT 1/4-20 UNC	14
17	13919-006	CLAMP HOSE	27
18	26554-006	RIVET 1/4 DIA POP X .875 GRIP	12
19	29925-000	CONNECTOR, CABLE	1
20	11275-004	SCREW #10-32 X 1/2	1
21	11709-016	SCREW #10-24 X 2	1
22	11240-003	WASHER #10 FLAT	2
23	11709-008	SCREW RD HD # 10-24 X 1	2
24	11248-003	NUT #10-24	3
25	05133-000	SPRING	1
26	63780-000	ACTUATOR LIMIT SWITCH	1
27	63559-001	SHOULDER SCREW	1
28	63972-001	LIMIT SWITCH	1
29	11736-005	ROLL PIN 3/16 X 5/8 LG	1
30	11248-005	NUT 5/16-18 UNC	1
31	65351-000	PAD	1
32	15793-011	LIMIT SWITCH	1
33	15793-013	LEVER	1
34	11254-012	SCREW HHC 3/8-16 X 1 1/2	6
35	11240-006	WASHER 3/8 STD FLAT	6
36	11248-006	LOCKNUT 3/8-16	6



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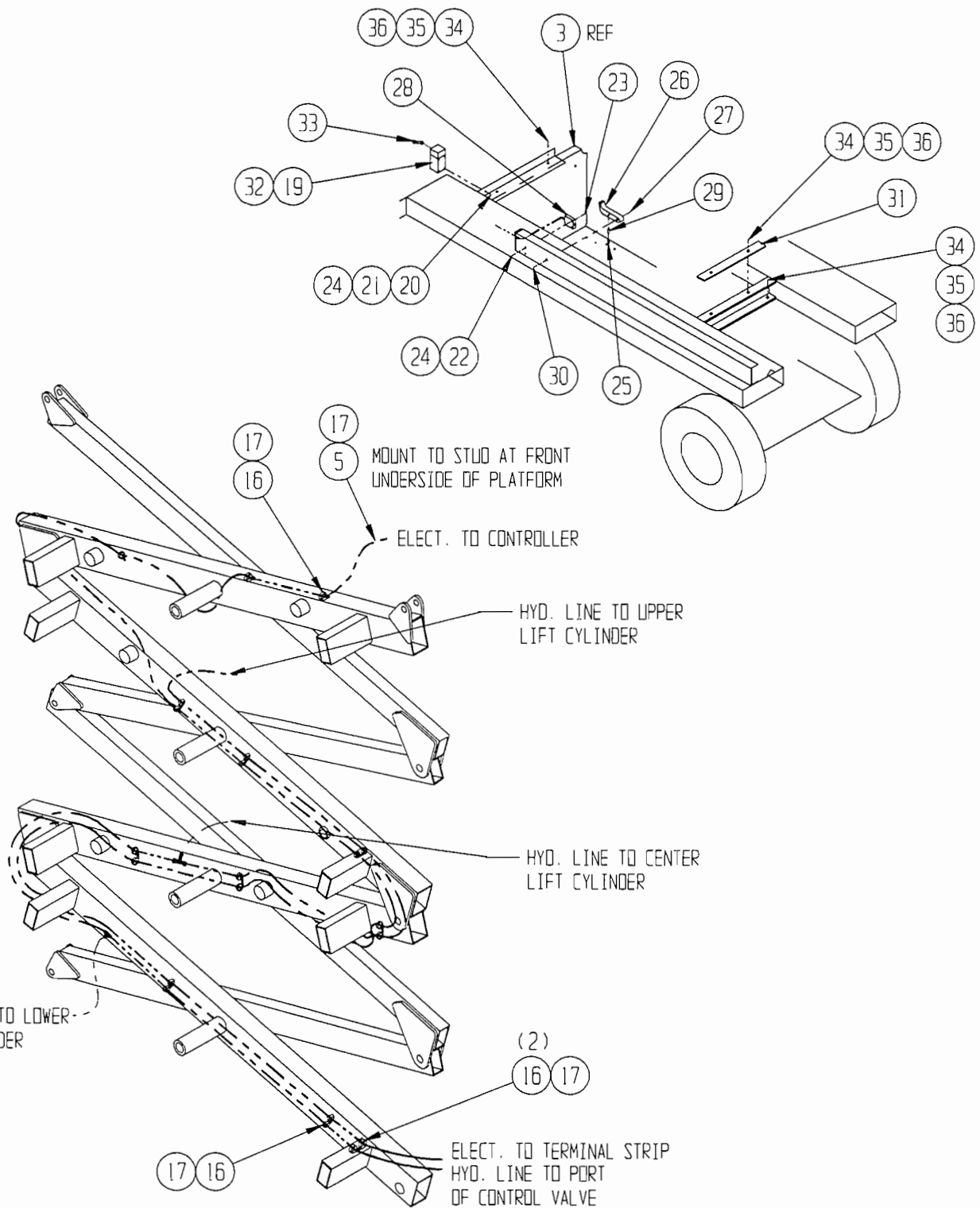
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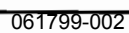
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**FINAL ASSEMBLY  
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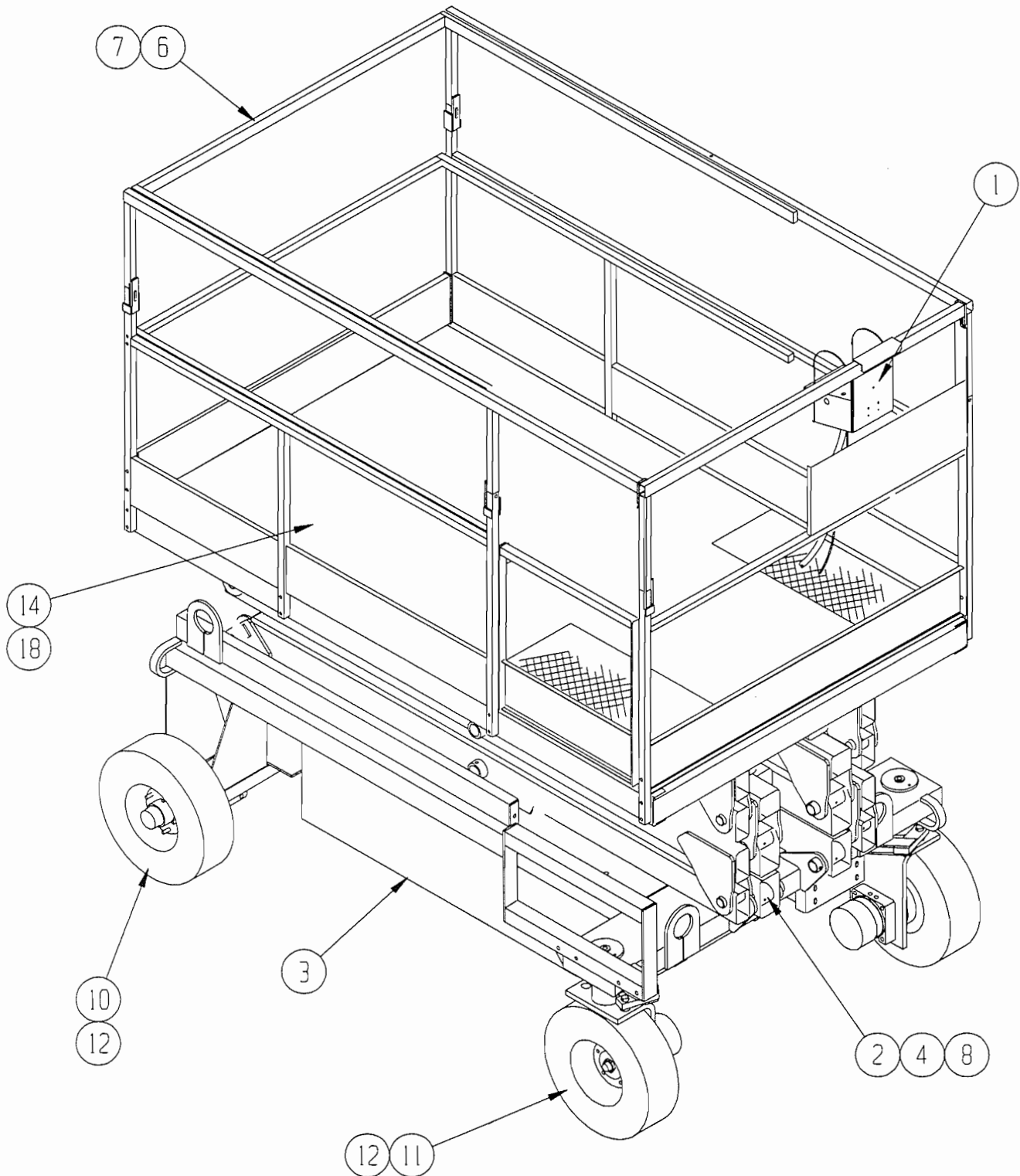
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## FINAL ASSEMBLY XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	63610-000	CONTROLLER	1
2	61681-003	LABEL KIT	1
3	63703-003	MODULE ASSEMBLY	1
4	63767-013	HOSE KIT	1
5	63468-003	CONTROL CABLE ASSY	1
6	63775-002	GUARDRAIL ASSY/INSTL	1
7	63720-001	SLIDEOUT DECK ASSY/INSTL	1
8	63751-000	BASIC ASSEMBLY	1
10	05105-000	WHEEL NUT	10
11	14122-001	WHEEL BOLT	10
12	61826-000	WHEEL ASSY	4
13	29488-099	WIRE 16 AWG 6 COND	4 FT
14	65350-000	PLYWOOD DECK	1
15	29610-002	TERMINAL, FORK 16-14 #8	5
16	11248-004	LOCKNUT 1/4-20 UNC	14
17	13919-006	CLAMP HOSE	27
18	26554-006	RIVET 1/4 DIA POP X .875 GRIP	12
19	29925-000	CONNECTOR CABLE	1
20	11275-004	SCREW #10-32 X 1/2	1
21	11709-016	SCREW #10-24 X 2	1
22	11240-003	WASHER #10 FLAT	2
23	11709-008	SCREW RD HD # 10-24 X 1	2
24	11248-003	NUT #10-24	3
25	05133-000	SPRING	1
26	63780-000	ACTUATOR LIMIT SWITCH	1
27	63559-001	SHOULDER SCREW	1
28	63972-001	LIMIT SWITCH	1
29	11736-005	ROLL PIN 3/16 X 5/8 LG	1
30	11248-005	NUT 5/16-18 UNC	1
31	65351-000	PAD	1
32	15793-011	LIMIT SWITCH	1
33	15793-013	LEVER	1
34	11254-012	SCREW HHC 3/8-16 X 1 1/2	6
35	11240-006	WASHER 3/8 STD FLAT	6
36	11248-006	LOCKNUT 3/8-16	6

# Illustrated Parts Breakdown

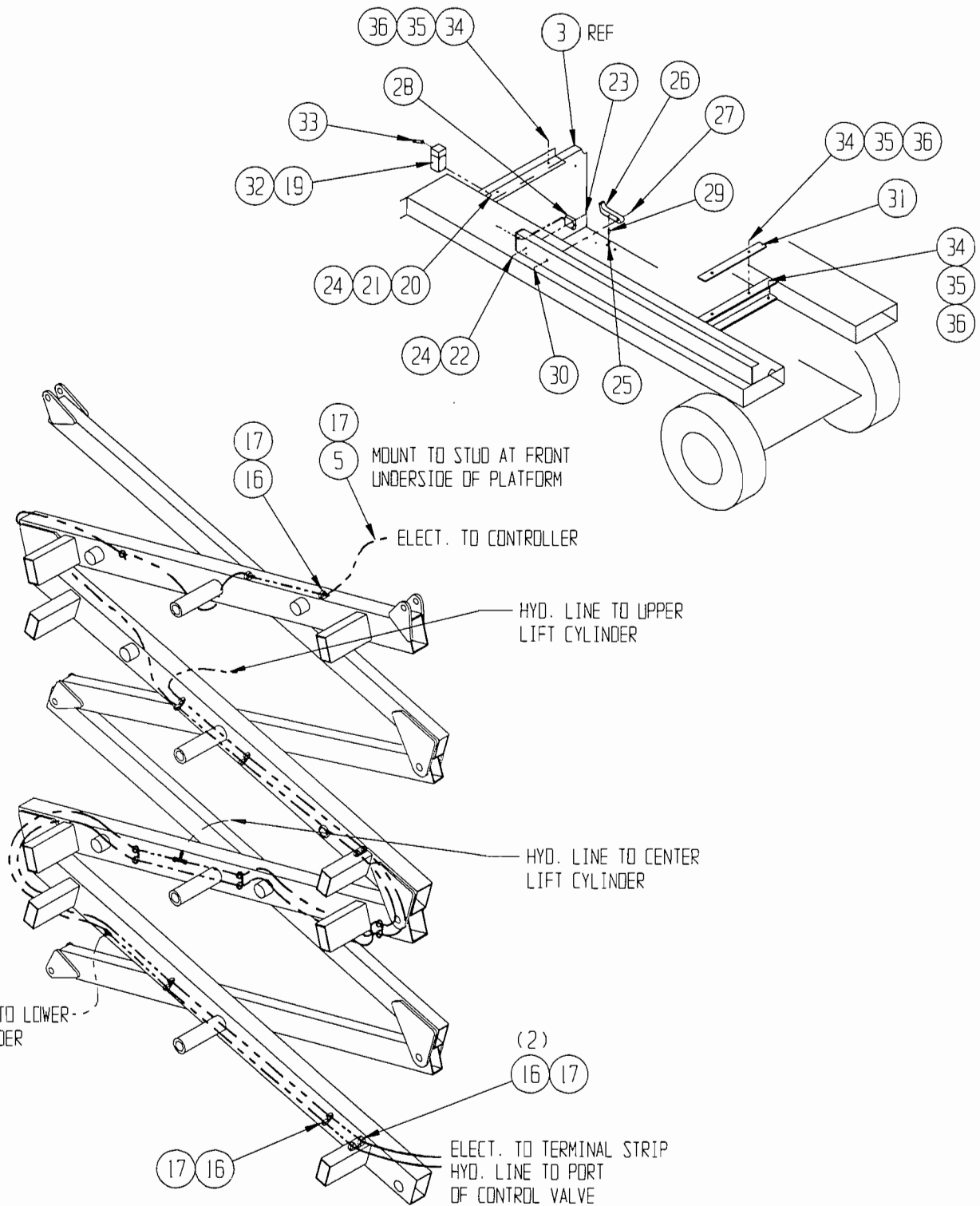
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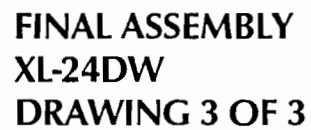
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XL-24DW  
DRAWING 1 OF 3**

061799-002

# Illustrated Parts Breakdown



**FINAL ASSEMBLY  
XL-24DW  
DRAWING 2 OF 3**



# Illustrated Parts Breakdown

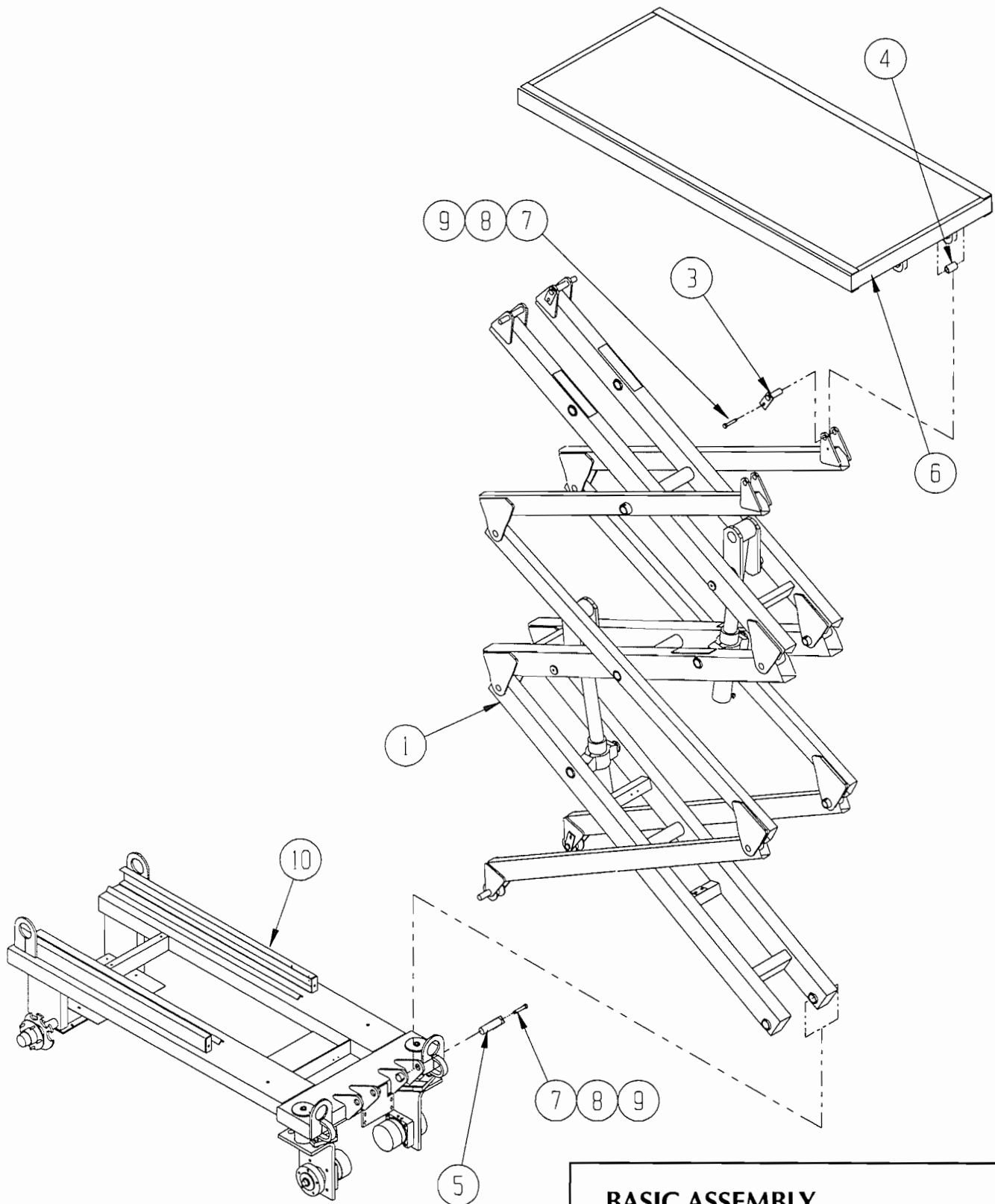
## BASIC ASSEMBLY XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	61852-000	SCISSOR ASSY XL-19D/DW	1
3	61506-000	PIN WELDMENT	2
4	27931-012	BEARING	2
5	61565-000	PIN	2
6	63577-000	DECK WELDMENT XL-19D	1
7	11248-006	LOCKNUT 3/8-16 UNC	4
8	11254-010	SCREW HHC 3/8-16 X 1-1/4	4
9	11240-006	WASHER, FLAT 3/8 DIA	4
10	63502-003	CHASSIS ASSY XL-19D	1



# Illustrated Parts Breakdown

Section  
7.2



**BASIC ASSEMBLY  
XL-19D**

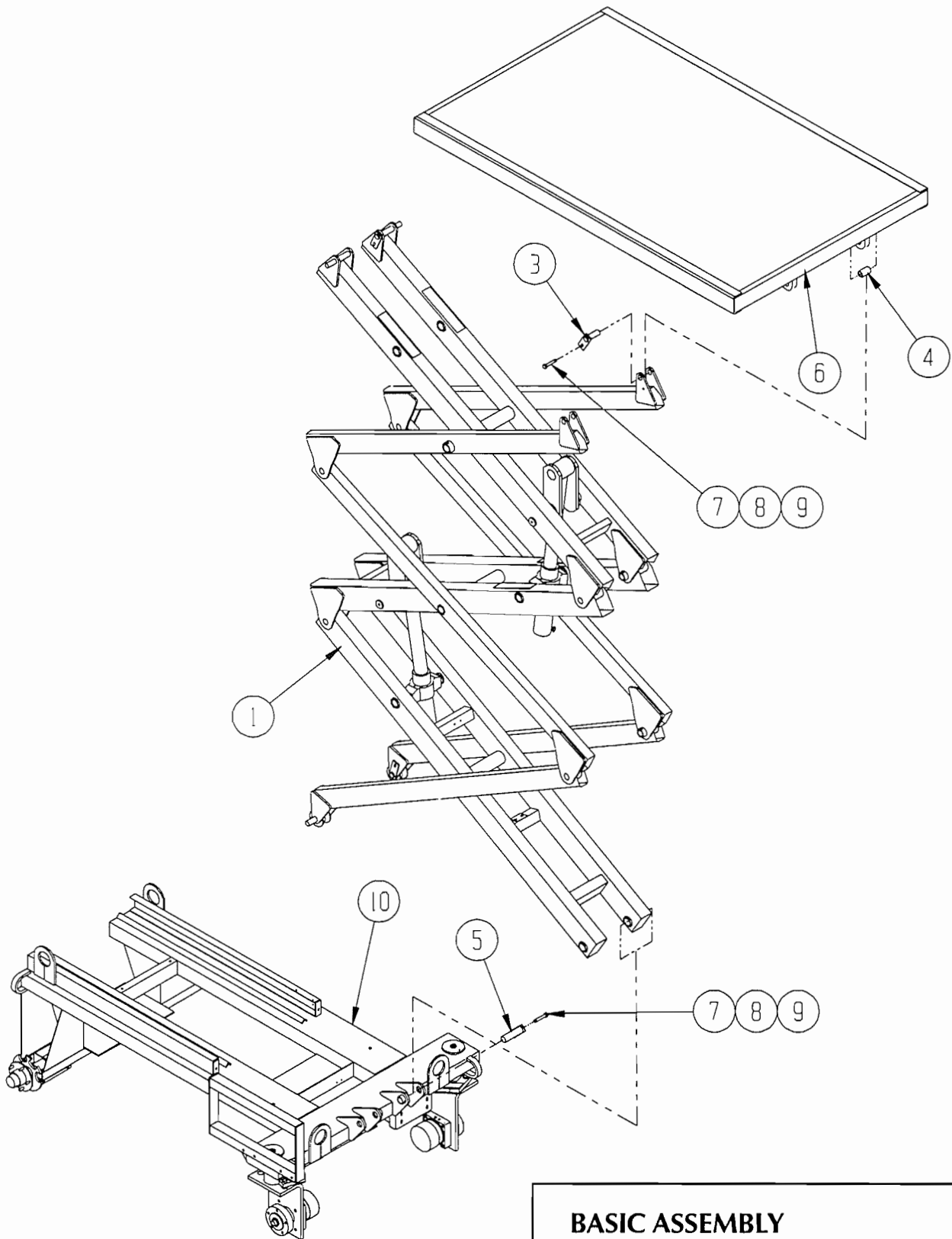
061799-002

## BASIC ASSEMBLY XL-19DW

ITEM	PART	DESCRIPTION	QTY.
1	61852-000	SCISSOR ASSY XL-19D/DW	1
3	61506-000	PIN WELDMENT	2
4	27931-012	BEARING	2
5	61565-000	PIN	2
6	63621-001	DECK WELDMENT	1
7	11248-006	LOCKNUT 3/8-16 UNC	4
8	11254-010	SCREW HHC 3/8-16 X 1-1/4	4
9	11240-006	WASHER, FLAT 3/8 DIA	4
10	63602-003	CHASSIS ASSY XL-19DW	1

# Illustrated Parts Breakdown

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**BASIC ASSEMBLY  
XL-19DW**

061799-002

# Illustrated Parts Breakdown

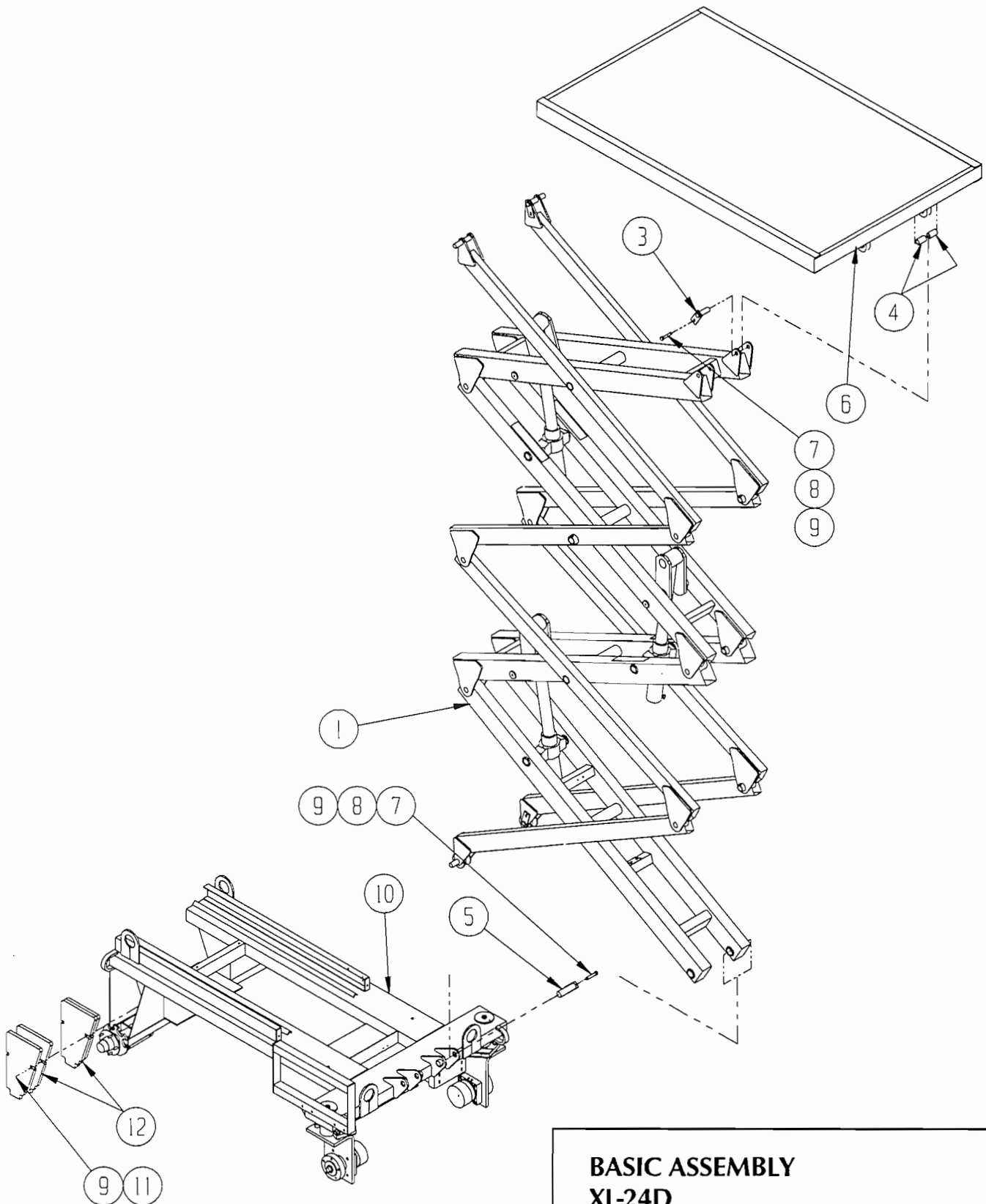
## BASIC ASSEMBLY

### XL-24D

ITEM	PART	DESCRIPTION	QTY.
1	61952-000	SCISSOR ASSY XL-24D/DW	1
3	61946-000	PIN WELDMENT	2
4	11780-014	BEARING	4
5	61565-000	PIN	2
6	63773-001	DECK WELDMENT XL-24D	1
7	11248-006	LOCKNUT 3/8-16 UNC	4
8	11254-010	SCREW HHC 3/8-16 X 1-1/4	4
9	11240-006	WASHER, FLAT 3/8 DIA	8
10	63602-003	CHASSIS ASSY XL-24D	1
11	11254-044	SCREW 3/8-16 HHC X 5 1/2	4
12	61989-000	BALLAST	8

# Illustrated Parts Breakdown

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**BASIC ASSEMBLY  
XL-24D**

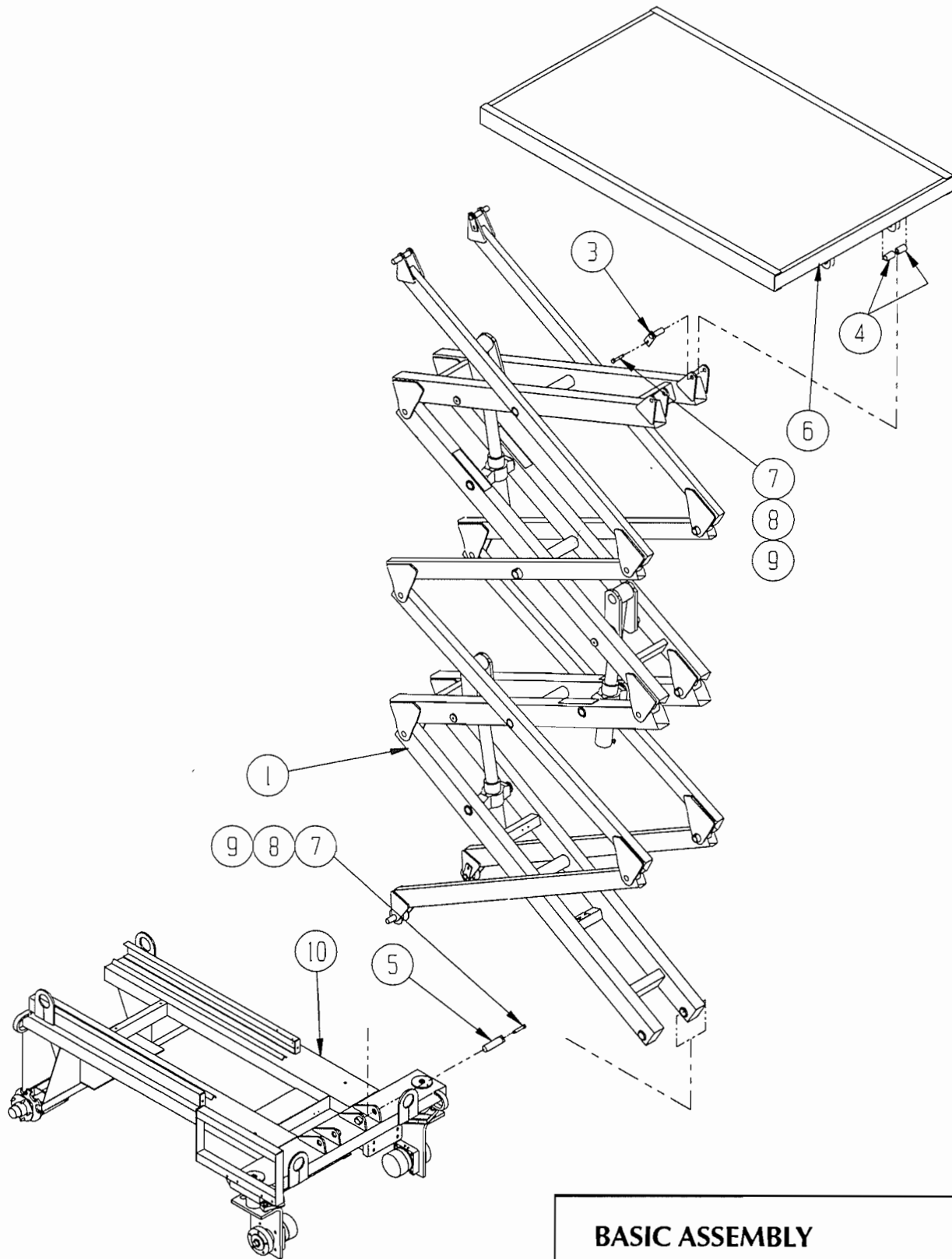
061799-002

## BASIC ASSEMBLY XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	61952-000	SCISSOR ASSY XL-24D/DW	1
3	61946-000	PIN WELDMENT	2
4	11780-014	BEARING	4
5	61565-000	PIN	2
6	63773-001	DECK WELDMENT XL-24DW	1
7	11248-006	LOCKNUT 3/8-16 UNC	4
8	11254-010	SCREW HHC 3/8-16 X 1-1/4	4
9	11240-006	WASHER, FLAT 3/8 DIA	4
10	63752-003	CHASSIS ASSY XL-24DW	1

# Illustrated Parts Breakdown

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**BASIC ASSEMBLY  
XL-24DW**

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# Illustrated Parts Breakdown

## ELEVATING ASSEMBLY XL-19D/XL-19DW

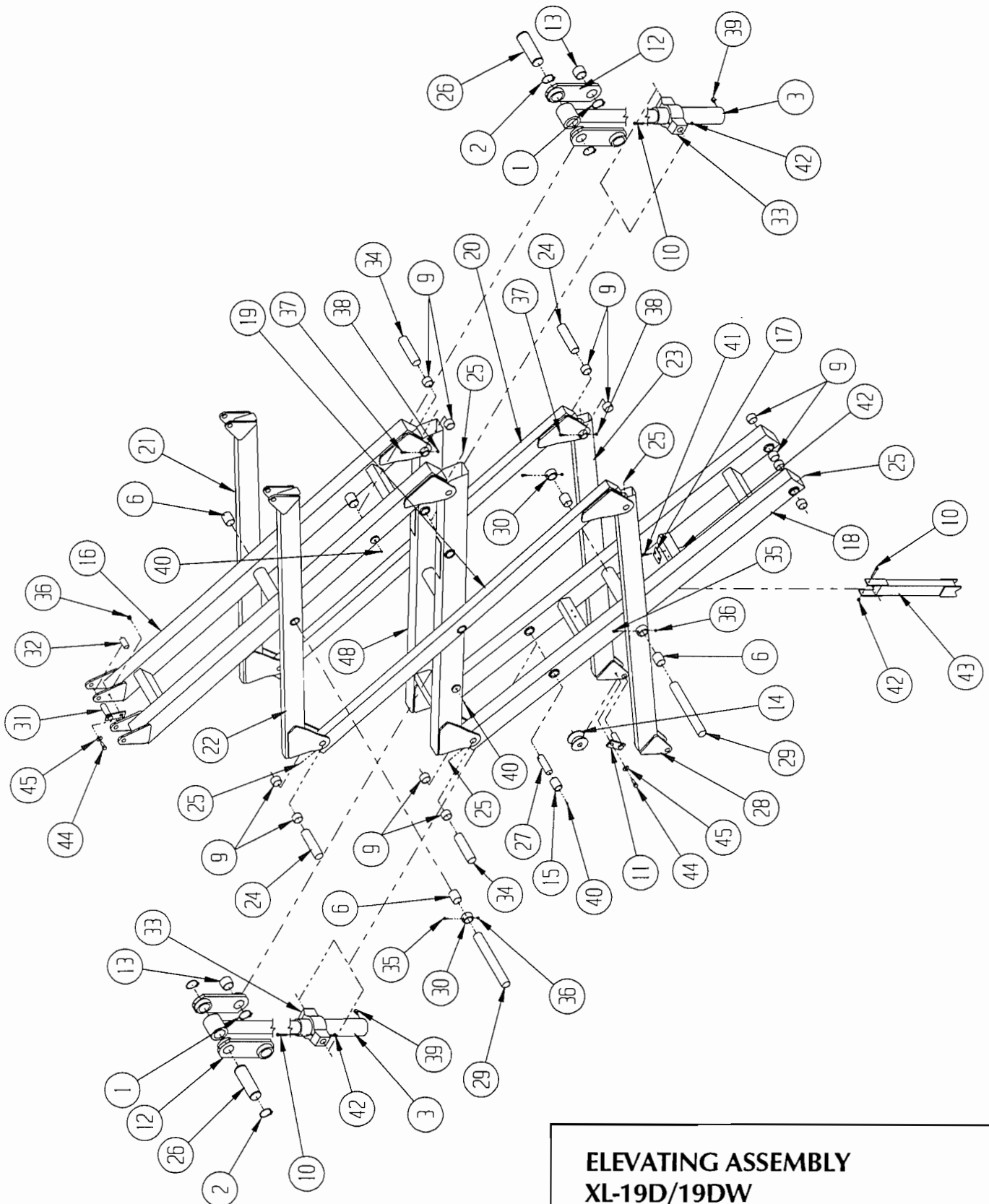
ITEM	PART	DESCRIPTION	QTY.
1	11764-027	RETAINING RING	4
2	11764-034	RETAINING RING	4
3	12794-000	LIFT CYLINDER	2
*	12794-013	SEAL KIT, LIFT CYLINDER	1
6	27931-006	BEARING	6
9	11780-031	BEARING	20
10	12553-028	SCREW 1/4-20 UNC SOC HD. X 3 1/2	5
11	60788-000	PIN WELDMENT	2
12	61944-000	PLATE WELDMENT	4
13	60845-000	BEARING	4
14	61876-001	LOWER WHEEL	2
15	11783-008	BEARING	4
16	61723-000	FRAME WELDMENT	1
17	60644-000	BEARING SLIDE	1
18	61758-000	FRAME WELDMENT	1
19	61754-000	ARM WELDMENT	1
20	61755-000	ARM WELDMENT	1
21	61756-000	ARM WELDMENT	1
22	61757-000	ARM WELDMENT	1
23	61459-000	ARM WELDMENT	1
24	61788-000	PIN	4
25	13336-011	FITTING, GREASE 1/4-20 UNC	14
26	61467-000	PIN, CYLINDER	2
27	61468-000	PIN, CYLINDER COLLAR PIVOT	4
28	61469-000	ARM WELDMENT	1
29	61470-000	PIN, CENTER PIVOT	3
30	61471-000	COLLAR, PIN RETAINER	3
31	61911-000	PIN WELDMENT	2
32	61473-001	ROLLER	2
33	61474-000	COLLAR, CYLINDER	2
34	61565-000	PIN	4
35	11254-022	SCREW 3/8-16 UNC HHC X 2 3/4	6
36	11248-006	LOCKNUT 3/8-16 UNC HEX	10
37	11253-016	SCREW 5/16-18 UNC HHC X 2	8
38	11248-005	LOCKNUT 5/16-18 UNC	8
39	11934-007	FITTING, 90°	2
40	13336-001	FITTING, GREASE 1/8 NPT	4
41	11828-006	SCREW 1/4-20 UNC SOC HD. X 3/4	2
42	11248-004	LOCKNUT 1/4-20 UNC HEX	7
43	63251-000	SCISSORS BRACE WELDMENT	1
44	11254-010	SCREW 3/8-16 UNC X 1 1/4	4
45	11240-006	WASHER 3/8 FLAT	4
48	61722-000	FRAME WELDMENT	1

\*Not Shown



# Illustrated Parts Breakdown

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**ELEVATING ASSEMBLY  
XL-19D/19DW**

061799-002

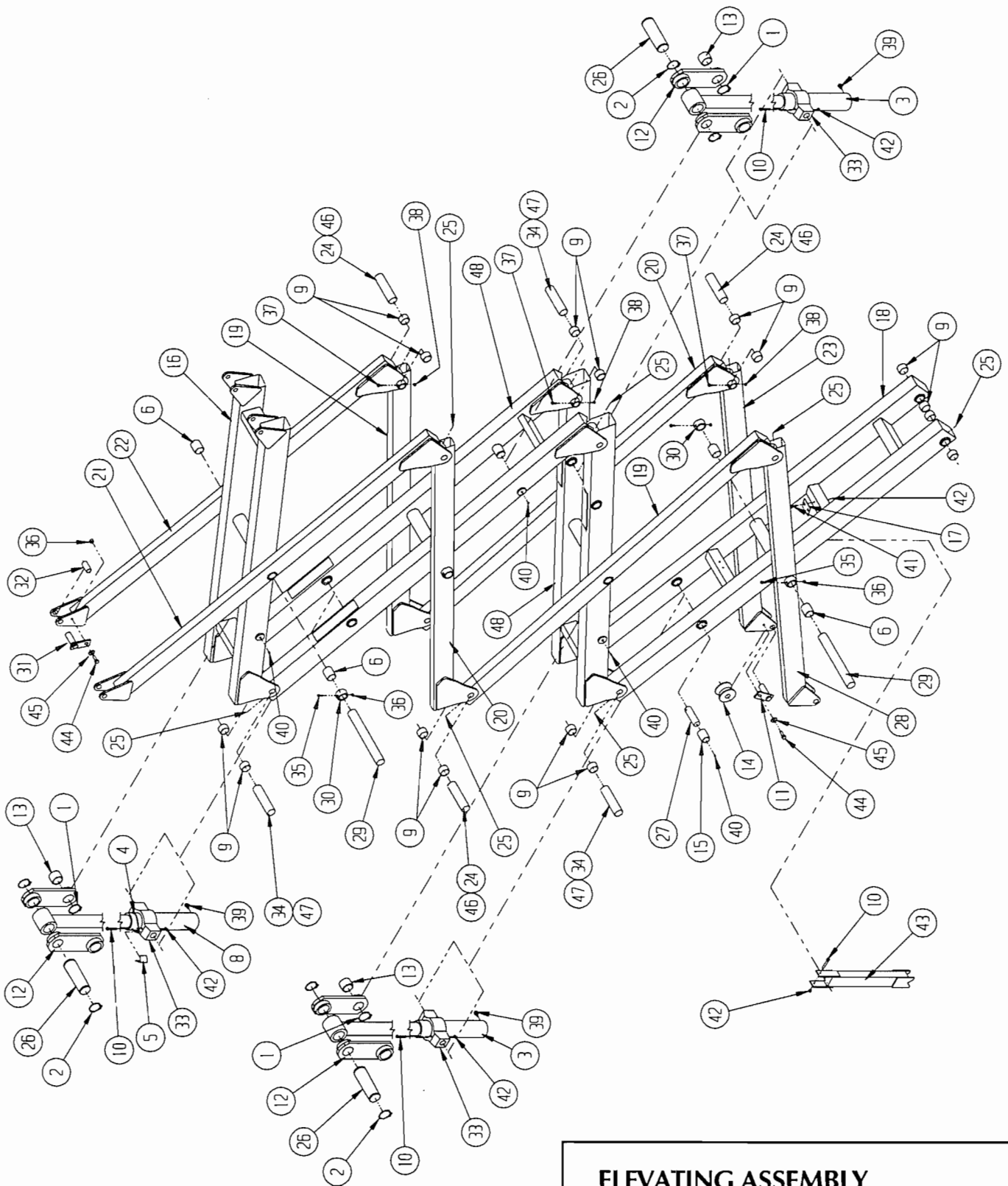
## ELEVATING ASSEMBLY XL-24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	11764-027	RETAINING RING	6
2	11764-034	RETAINING RING	6
3	12794-000	LIFT CYLINDER	2
*	12794-013	SEAL KIT, LIFT CYLINDER	1
4	20541-028	HOSE CLAMP	1
5	63247-000	CYLINDER ANGLE	1
6	27931-006	BEARING	8
8	63249-000	LIFT CYLINDER	1
9	11780-031	BEARING	28
10	12553-028	SCREW 1/4-20 UNC SOC HD. X 3 1/2	7
11	60788-000	PIN WELDMENT	2
12	61944-000	PLATE WELDMENT	6
13	60845-000	BEARING	6
14	61876-001	LOWER WHEEL	2
15	11783-008	BEARING	6
16	61723-000	FRAME WELDMENT	1
17	60644-000	BEARING SLIDE	2
18	61758-000	FRAME WELDMENT	1
19	61754-000	ARM WELDMENT	2
20	61755-000	ARM WELDMENT	2
21	61756-000	ARM WELDMENT	1
22	61757-000	ARM WELDMENT	1
23	61459-000	ARM WELDMENT	1
24	61788-000	PIN	6
25	13336-011	FITTING GREASE	20
26	61467-000	PIN, CYLINDER	3
27	61468-000	PIN, CYLINDER COLLAR PIVOT	6
28	61469-000	ARM WELDMENT	1
29	61470-000	PIN, CENTER PIVOT	4
30	61471-000	COLLAR, PIN RETAINER	4
31	61946-000	PIN WELDMENT	2
32	61947-001	ROLLER	2
33	61474-000	COLLAR, CYLINDER	3
34	61565-000	PIN	6
35	11254-022	SCREW 3/8-16 UNC HHC X 2 3/4	8
36	11248-006	LOCKNUT 3/8-16 UNC HEX	12
37	11253-016	SCREW 5/16-18 UNC HHC X 2	12
38	11248-005	LOCKNUT 5/16-18 UNC	12
39	11934-007	FITTING 90°	3
40	13336-001	FITTING GREASE	6
41	11828-006	SCREW 1/4-20 UNC SOC HD. X 3/4	4
42	11248-004	LOCKNUT 1/4-20 UNC HEX	6
43	63251-000	SCISSORS BRACE WELDMENT	1
44	11254-012	SCREW 3/8-16 UNC X 1 1/2	4
45	11240-006	WASHER 3/8 FLAT	4
46	61670-000	SPACER BEARING	8
47	61671-000	SPACER BEARING	6
48	61722-000	ARM WELDMENT	2

\*Not Shown

# Illustrated Parts Breakdown

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**ELEVATING ASSEMBLY  
XL-24D/24DW**

061799-002

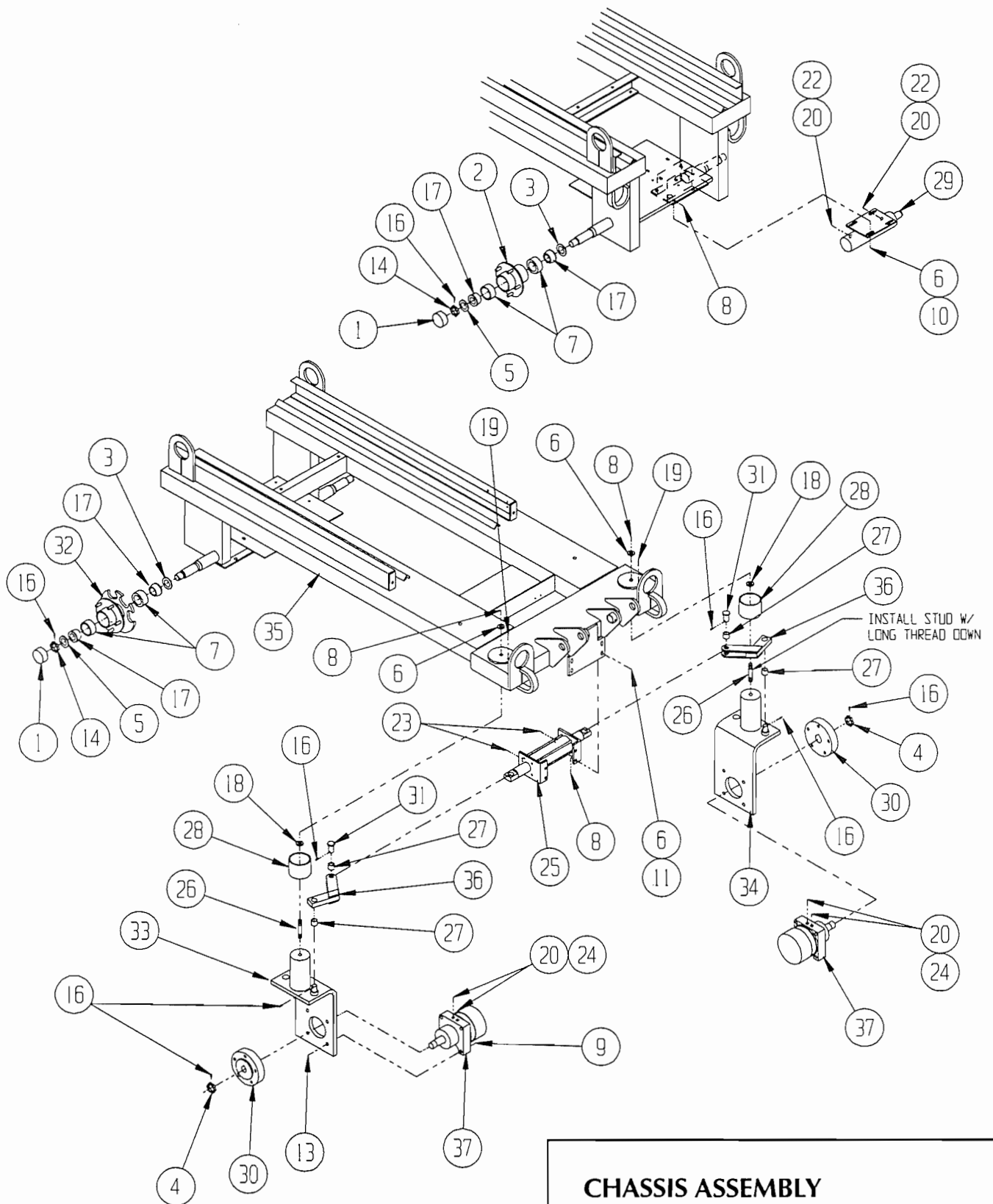
## CHASSIS ASSEMBLY XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	05078-000	CAP DUST	2
2	63102-001	HUB ASSEMBLY	1
3	05104-000	SEAL GREASE	2
4	61817-011	NUT HEX SLOTTED 1-14 UNF	2
5	11239-016	WASHER FLAT ASTM 1 DIA	2
6	11240-006	WASHER FLAT STD 3/8	10
7	11776-004	BEARING RACE	4
8	11248-006	NUT HEX 3/8-16 UNC	10
9	11248-008	NUT HEX 1/2-13 UNC	8
10	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	4
11	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	4
13	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
14	11274-016	NUT HEX SLOTTED 1-14 UNF	2
16	11753-012	COTTER PIN 1/8 X 1 1/2	8
17	11775-011	BEARING CONE	4
18	11782-008	BEARING THRUST	2
19	13336-011	FITTING 1/4-28 GREASE	2
20	11932-003	FITTING 45°	6
22	11939-010	FITTING STR	2
23	11940-006	FITTING 90°	2
24	11941-013	FITTING STR	4
25	12802-000	CYLINDER STEERING	1
*	12802-014	SEAL KIT, STEERING CYLINDER	1
*	12802-008	END PLATE, STEERING CYLINDER	2
26	15795-001	STUD	2
27	27931-029	BEARING	4
28	27931-032	BEARING	2
29	60479-000	CYLINDER BRAKE	1
*	60211-014	SEAL KIT, BRAKE CYLINDER	1
30	60737-000	HUB	2
31	60741-000	PIN PIVOT 3/4	2
32	61840-000	HUB & ROTOR WELDMENT	1
33	61712-000	SPINDLE ASSY RH	1
34	61713-000	SPINDLE ASSY LH	1
35	61715-001	CHASSIS WELDMENT	1
36	61731-000	STEERING LINK WELDMENT	2
37	61817-001	MOTOR HYD	2
*	61817-010	SEAL KIT, MOTOR	1

\*Not Shown

# Illustrated Parts Breakdown

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**CHASSIS ASSEMBLY  
XL-19D**

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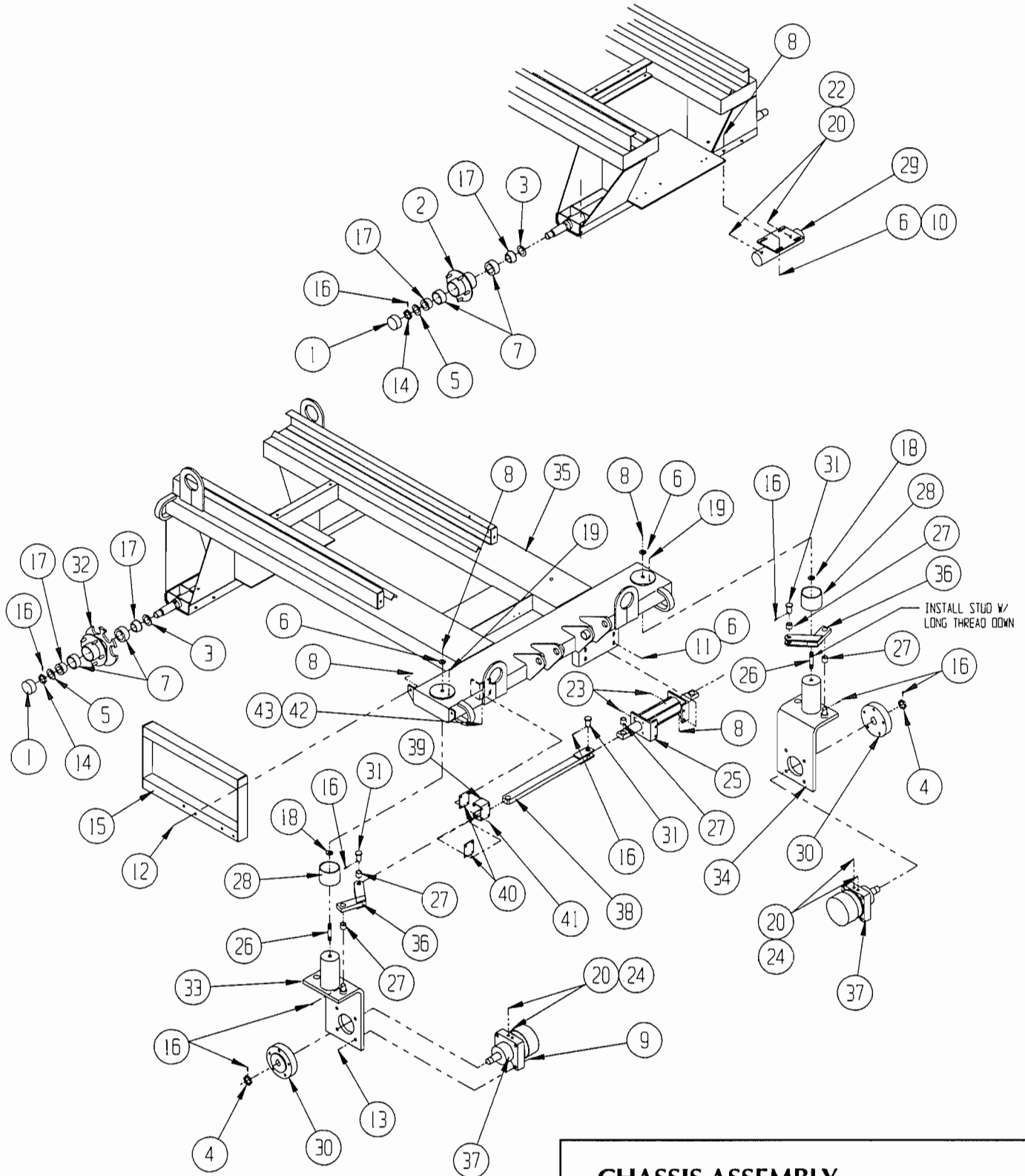
CHASSIS ASSEMBLY  
XL-19DW/24D

ITEM	PART	DESCRIPTION	QTY.
1	05078-000	CAP DUST	2
2	63102-001	HUB ASSEMBLY	1
3	05104-000	SEAL GREASE	2
4	61817-011	NUT HEX SLOTTED 1-14 UNF	2
5	11239-016	WASHER FLAT ASTM 1 DIA	2
6	11240-006	WASHER FLAT STD 3/8	10
7	11776-004	BEARING RACE	4
8	11248-006	NUT HEX 3/8-16 UNC	12
9	11248-008	NUT HEX 1/2-13 UNC	8
10	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	4
11	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	4
12	11254-008	SCREW 3/8-16 UNC HHC X 1	2
13	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
14	11274-016	NUT HEX SLOTTED 1-14 UNF	2
15	63762-000	LADDER WELDMENT	1
16	11753-012	COTTER PIN 1/8 X 1 1/2	9
17	11775-011	BEARING CONE	4
18	11782-008	BEARING THRUST	2
19	13336-011	FITTING 1/4-28 GREASE	2
20	11932-003	FITTING 45°	6
22	11939-010	FITTING STR	2
23	11940-006	FITTING 90°	2
24	11941-013	FITTING STR	4
25	61859-000	CYLINDER STEERING	1
*	12802-008	END PLATE SET, STEERING CYL.	1
*	12802-014	SEAL KIT, STEERING CYLINDER	1
26	15795-001	STUD	2
27	27931-029	BEARING	5
28	27931-032	BEARING	2
29	60479-000	CYLINDER, BRAKE	1
*	60211-014	SEAL KIT, BRAKE CYLINDER	1
30	60737-000	HUB	1
31	60741-000	PIN PIVOT 3/4	3
32	61840-000	HUB & ROTOR WELDMENT	1
33	61712-000	SPINDLE ASSY RH	1
34	61713-000	SPINDLE ASSY LH	1
35	61857-001	CHASSIS WELDMENT	1
36	61731-000	STEERING LINK WELDMENT	2
37	61817-001	MOTOR HYD	2
*	61817-010	SEAL KIT, MOTOR	1
38	61860-000	STEERING LINK	1
39	63353-000	STEERING ARM GUIDE	1
40	63354-000	WEAR PLATE	2
41	11252-022	SCREW HHC 1/4-20 UNC X 2 3/4	4
42	11240-004	WASHER STD FLAT 1/4 DIA	4
43	11248-004	NUT HEX LOCK 1/4-20 UNC	4

\*Not Shown

# Illustrated Parts Breakdown

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## CHASSIS ASSEMBLY XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	05078-000	CAP DUST	2
2	63102-001	HUB ASSY	1
3	05104-000	SEAL, GREASE	2
4	11776-004	BEARING CUP	4
5	11239-016	WASHER FLAT ASTM 1 DIA	2
6	11240-006	WASHER FLAT STD 3/8	10
7	12795-002	NUT HEX SLOTTED 1-14 UNF	2
8	11248-006	NUT HEX 3/8-16 UNC	12
9	11248-008	NUT HEX 1/2-13 UNC	8
10	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	4
11	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	4
13	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
14	11274-016	NUT HEX SLOTTED 1-14 UNF	2
16	11753-012	COTTER PIN 1/8 X 1 1/2	9
17	11775-011	BEARING CONE	4
18	11782-008	BEARING	2
19	13336-011	FITTING 1/4-28 GREASE ZERK	2
20	11932-003	FITTING 45°	6
22	11939-010	FITTING STR	2
23	11940-006	FITTING 90°	2
24	11941-013	FITTING STR	4
25	61859-000	CYLINDER STEERING	1
*	12802-008	END PLATES, STEERING CYLINDER	2
*	12802-014	SEAL KIT, STEERING CYLINDER	1
26	15795-001	STUD	2
27	27931-029	BEARING	5
28	27931-032	BEARING	2
29	60479-000	CYLINDER BRAKE	1
*	60211-014	SEAL KIT, BRAKE CYLINDER	1
30	60737-000	HUB	2
31	60741-000	PIN PIVOT 3/4	3
32	61840-000	HUB & ROTOR WELDMENT	1
33	61712-000	SPINDLE ASSY RH	1
34	61713-000	SPINDLE ASSY LH	1
35	63753-001	CHASSIS WELDMENT	1
36	61731-000	STEERING LINK WELDMENT	2
37	61817-001	MOTOR HYD	2
*	61817-010	SEAL KIT, MOTOR	1
38	63765-000	STEERING LINK WELDMENT	1
39	63353-000	STEERING ARM GUIDE	1
40	63354-000	WEAR PLATE	2
41	11252-022	SCREW HHC 1/4-20 UNC X 2 3/4	4
42	11240-004	WASHER STD FLAT 1/4 DIA	4
43	11248-004	NUT HEX LOCK 1/4-20 UNC	4
44	11254-008	SCREW HHC 3/8-16 UNC X 1	2
45	63762-000	LADDER WELDMENT	1

\*Not Shown



## Section 7.2



**7-35**

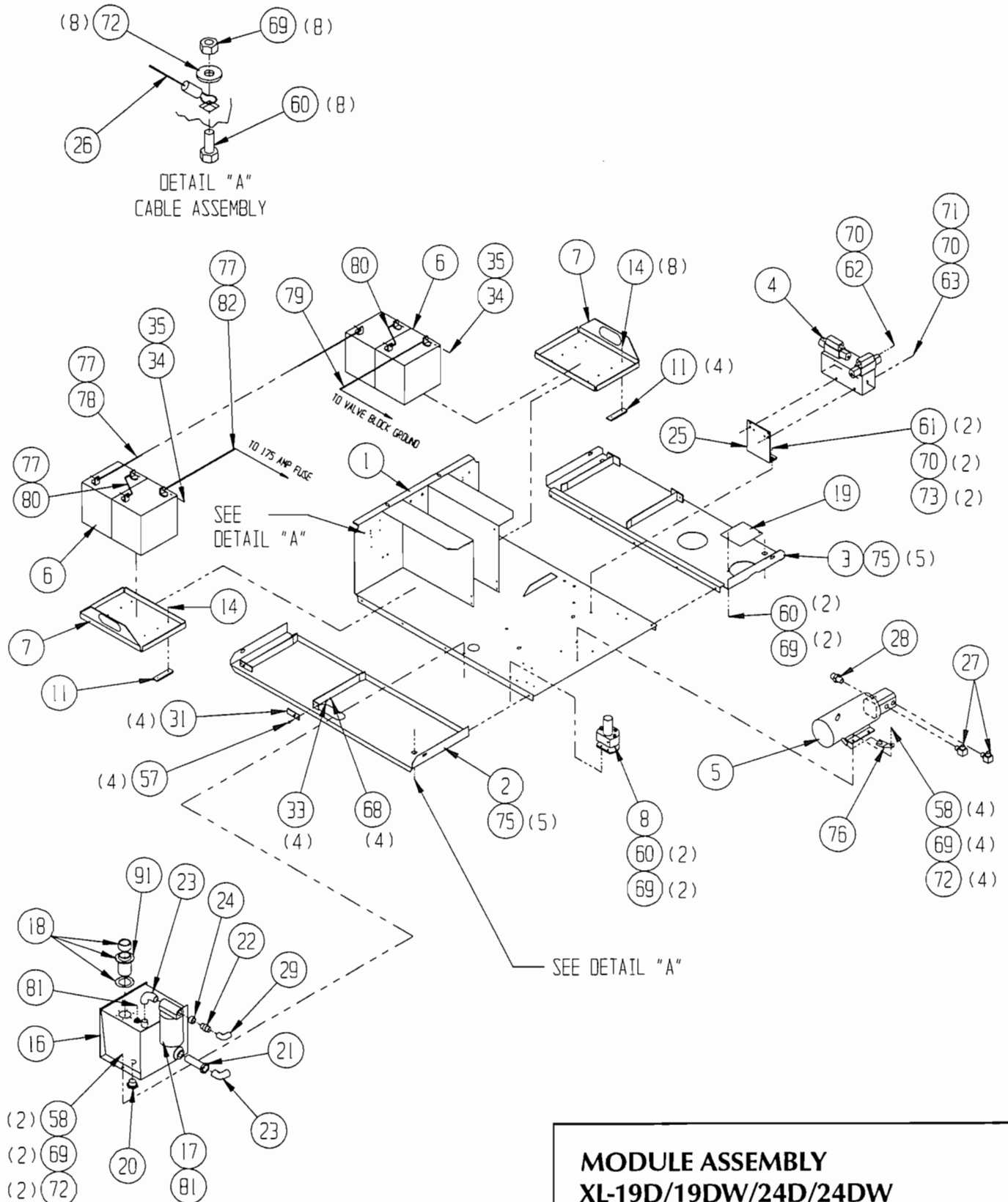
MODULE ASSEMBLY  
XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	63473-001	MODULE TRAY WELDMENT	1
2	65326-000	COVER WELDMENT R/H	1
3	65325-000	COVER WELDMENT L/H	1
4	63217-002	CONTROL VALVE ASSEMBLY	1
*	30576-007	SERVICE BLOCK, CONTROL VALVE D-MODEL	1
5	15797-000	POWER UNIT	1
*	15797-010	PUMP	1
*	15797-011	MOTOR	1
*	10145-001	BRUSH SET, MOTOR	2
6	15796-000	BATTERY 6V 220 AMP	4
7	65322-000	BATTERY TRAY	2
8	29945-000	LEVEL SENSOR	1
9	63779-001	HORN, 600 HZ	1
10	63779-002	HORN, 60 HZ	1
11	63728-001	SLIDE BLOCK	8
12	27962-001	RELAY	1
13	27963-000	SOCKET, RELAY	1
14	26553-002	POP RIVET	17
16	63063-001	HYD TANK WELDMENT	1
17	05154-001	FILTER ASSEMBLY	1
*	05154-002	ELEMENT, FILTER	1
18	05963-001	FILLER/BREATHING W/DIPSTICK	1
19	63572-000	ACCESS COVER	1
20	21305-006	PLUG, MAGNET	1
21	61818-000	SUCTION SCREEN WITH PIPE BUSHING	1
22	11939-010	FITTING CONNECTOR	1
23	63931-012	FITTING 90° STREET EL	2
24	11661-006	REDUCER	1
25	63084-000	BRACKET, CONTROL VALVE	1
26	64466-019	CABLE ASSY	4
27	11934-004	FITTING ELBOW	2
28	11941-012	FITTING ADAPTOR	1
29	11932-003	FITTING 45° ELBOW	1
30	63385-000	DIODE COVER	1
31	65327-000	LATCH	4
32	65242-000	LATCH SPACER	4
33	13987-005	SPRING	4
34	11248-005	LOCKNUT 5/16-18 HEX	8
35	11253-008	SCREW HHC 5/16-18 X 1	8
37	05299-000	LATCH	4
38	12798-001	TOGGLE SWITCH	1
39	29928-004	TERMINAL BLOCK	1
40	63471-002	FANNING STRIP	1
*	29825-002	DIODE	1
41	63434-001	CONTROL BRACKET	1
42	29701-000	FUSE HOLDER	1
43	29704-015	FUSE, AGC 15 AMP	1
44	63667-001	PUSH BUTTON, SWITCH	1
45	63667-002	CONTACT BLOCK	1
46	10155-000	KEY SWITCH	1
*	10155-001	KEY	1
47	10148-001	FUSE, 175 AMP	1
48	10149-000	FUSE BLOCK	1
51	10122-000	SOLENOID 24V	1
56	61796-099	GROMMET	2 FT
57	11709-012	SCREW 10-24 X 1 1/2 MRHD	6
58	11252-010	SCREW HHC 1/4-20 X 1 1/4	6
60	11252-006	SCREW HHC 1/4-20 X 3/4	20

ITEM	PART	DESCRIPTION	QTY.
61	11254-010	SCREW HHC 3/8-16 X 1 1/4	2
62	11254-032	SCREW HHC 3/8-16 X 4	1
63	11254-036	SCREW HHC 3/8-16 X 4 1/2	1
66	11715-006	SCREW RD. HD. 6-32 X 3/4	4
67	11248-047	NUT ESNA 6-32	4
68	11248-003	NUT HEX 10-24	6
69	11248-004	NUT ESNA 1/4-20	26
70	11248-006	NUT ESNA 3/8-16	4
71	11273-006	JAM NUT 3/8-16	1
72	11240-004	WASHER FLAT 1/4 DIA	12
73	11240-006	WASHER FLAT 3/8 DIA	2
74	11708-006	SCREW 8-32 X 3/4	8
75	26554-002	RIVET 1/4 DIA .251-.375 GRIP	10
76	63029-000	BUSS BAR	1
77	10154-000	TERMINAL COVER	8
78	64195-056	BATTERY CABLE X 56"	1
79	64195-026	BATTERY CABLE X 26"	1
80	64195-009	BATTERY CABLE X 9"	2
81	11920-002	FITTING PIPE PLUG	2
82	64195-034	BATTERY CABLE X 34"	1
85	11248-002	LOCKNUT #8-32 HEX	8
87	29620-002	BUTT CONNECTOR	1
88	29601-013	RING TERMINAL 16-14 #10	13
89	29601-039	RING TERMINAL 10-12 X 5/16	2
90	29601-015	RING TERMINAL 16-14 X 3/8	9
91	11811-006	SCREW #10-32 SELF TAP X 1/2	6
92	29610-002	FORK TERMINAL 16-14 X #8	41
93	14914-002	PUSH TERMINAL 12-10 MALE	1
94	29931-003	PUSH TERMINAL 16-14 FEMALE	19
95	14914-001	PUSH TERMINAL 16-14 MALE	3
96	29616-001	PUSH TERMINAL 16-14 FEMALE .187	2
97	29451-099	WIRE 16 GA. WHT	153*
98	29452-099	WIRE 16 GA. BLK	91*
99	29480-099	WIRE 10 GA. RED	60*
100	29496-099	WIRE 16 GA (2 COND.)	40*
101	62125-007	BATTERY CABLE 10"	1
102	64195-010	BATTERY CABLE 10"	1

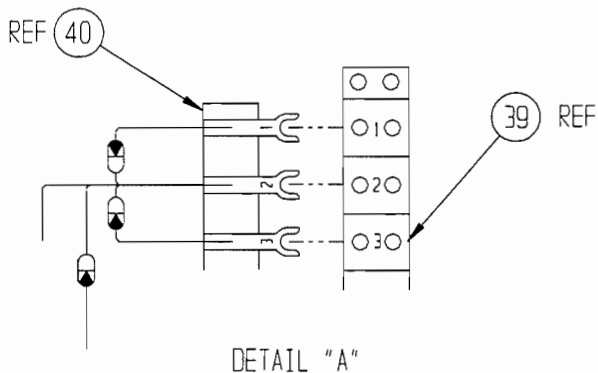
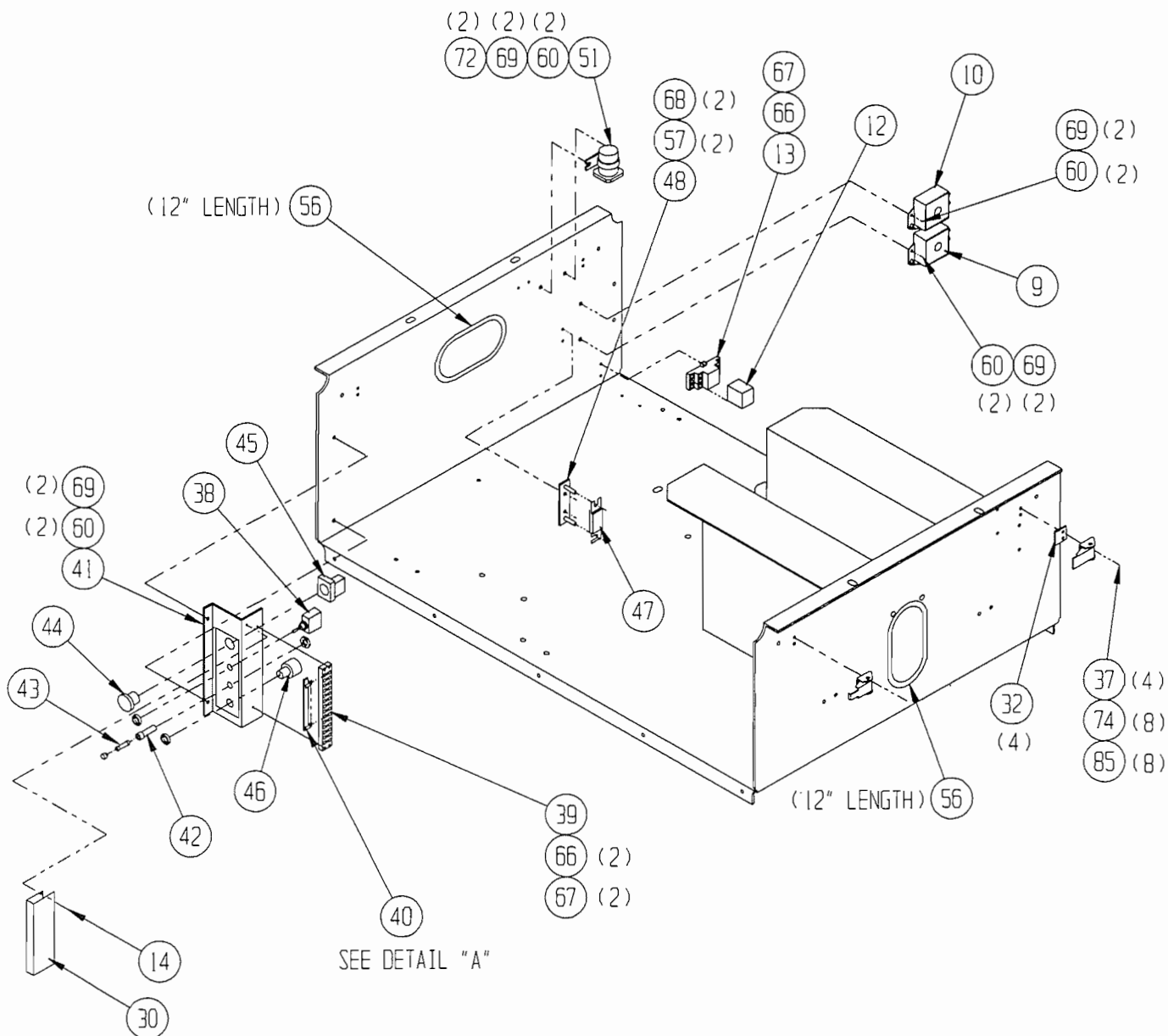
# Illustrated Parts Breakdown

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061799-002

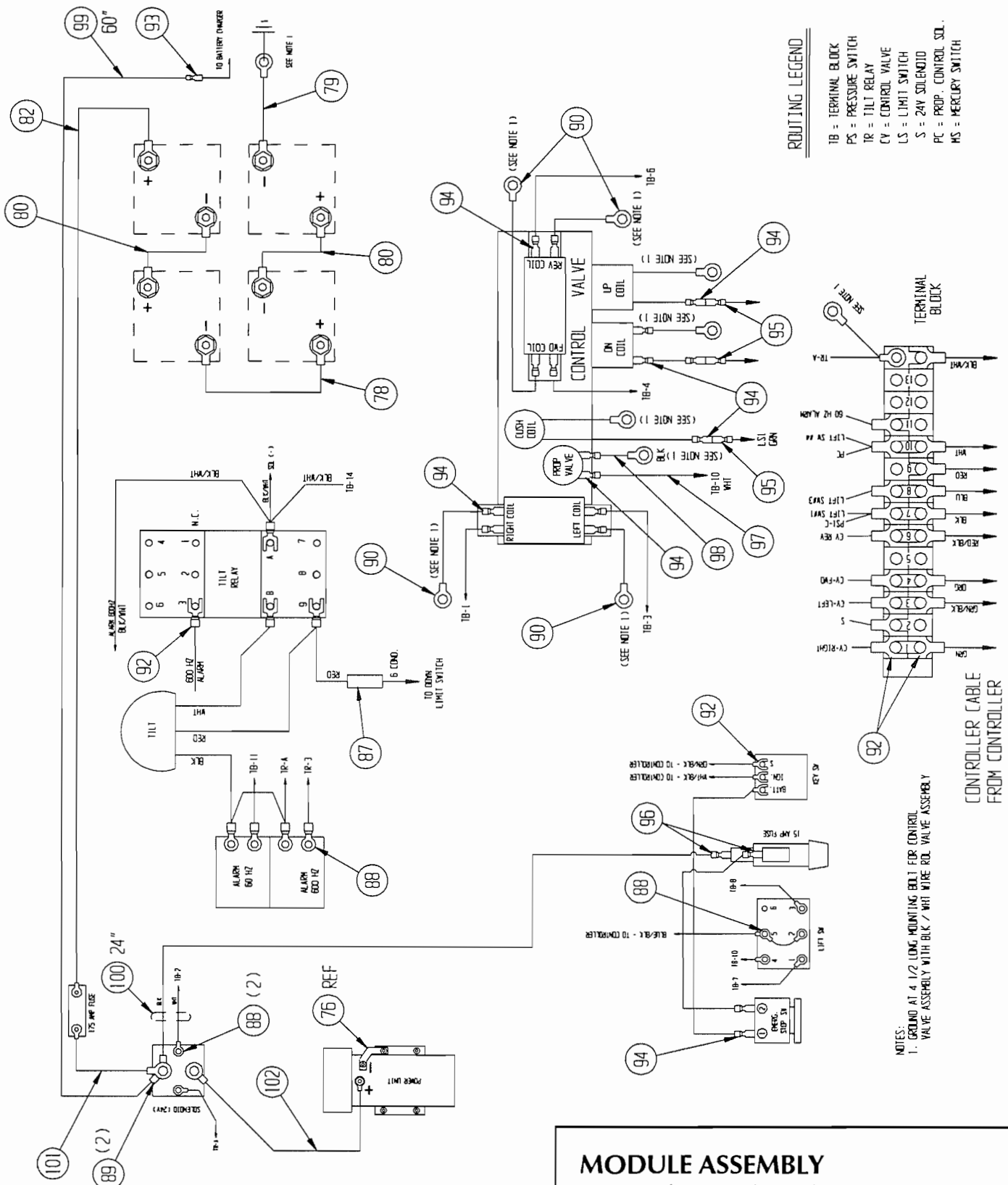
# Illustrated Parts Breakdown



**MODULE ASSEMBLY  
XL-19D/19DW/24D/24DW  
DRAWING 2 OF 3**

# Illustrated Parts Breakdown

Section  
7.2



**MODULE ASSEMBLY  
XL-19D/19DW/24D/24DW  
DRAWING 3 OF 3**

001799-002

## CONTROL VALVE ASSEMBLY XL-19D/19DW/24D/24DW

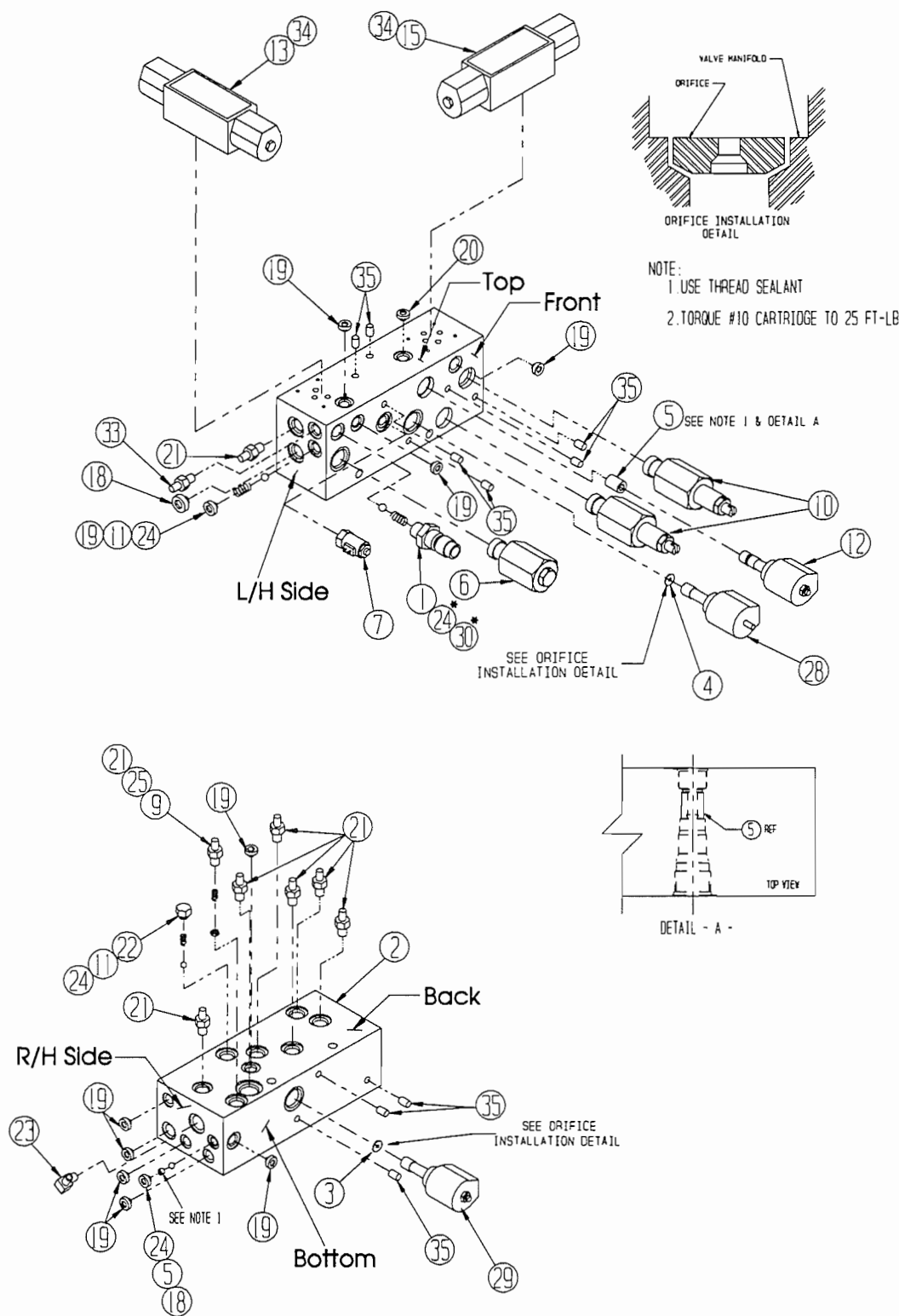
ITEM	PART	DESCRIPTION	QTY.
1	63965-001	CONNECTOR, GAUGE	1
2	63218-001	VALVE MANIFOLD	1
-	30576-007	VALVE MANIFOLD SERVICE BLOCK, D-MODEL	1
3	63664-001	ORIFICE .030	1
4	63664-002	ORIFICE .062	1
5	61728-000	ORIFICE	2
6	60390-000	VALVE, MAIN RELIEF	1
7	63986-002	VALVE, SOLENOID (PROPORTIONAL)	1
9	15919-000	ORIFICE	1
10	15900-000	VALVE, COUNTERBALANCE	2
11	15799-000	SPRING, COMP.	2
12	61797-000	VALVE, SOLENOID (LIFT)	1
13	15763-000	VALVE, SOLENOID (STEERING)	1
**	13888-007	O-RING	4
15	15760-000	VALVE, SOLENOID (DRIVE)	1
**	13888-007	O-RING	4
18	12004-006	FITTING, PLUG, #6	2
19	12004-004	FITTING, PLUG, #4	9
20	12004-002	FITTING, PLUG, #2	1
21	11941-005	FITTING, ADAPTER	8
22	20021-006	FITTING, PLUG, HEX	1
23	11934-004	FITTING, 90°	1
24*	05135-000	BALL 5/16 DIA	4
25	05133-000	SPRING, VALVE	1
28	63925-002	VALVE, SOLENIOD (DOWN & EMER. DOWN)	1
29	15764-000	VALVE, SOLENIOD (CUSHION DOWN)	1
30*	13978-006	SPRING	1
33	11941-002	FITTING, STRAIGHT	1
34	14412-016	SCREW, SOC HD CAP 10-24 X 2	8
35	63977-001	PLUG	9

\* One each added after machine serial number 8076.

\*\* Not Shown

# Illustrated Parts Breakdown

Section  
7.2



**CONTROL VALVE ASSEMBLY**  
**XL-19D/19DW/24D/24DW**

061799-002

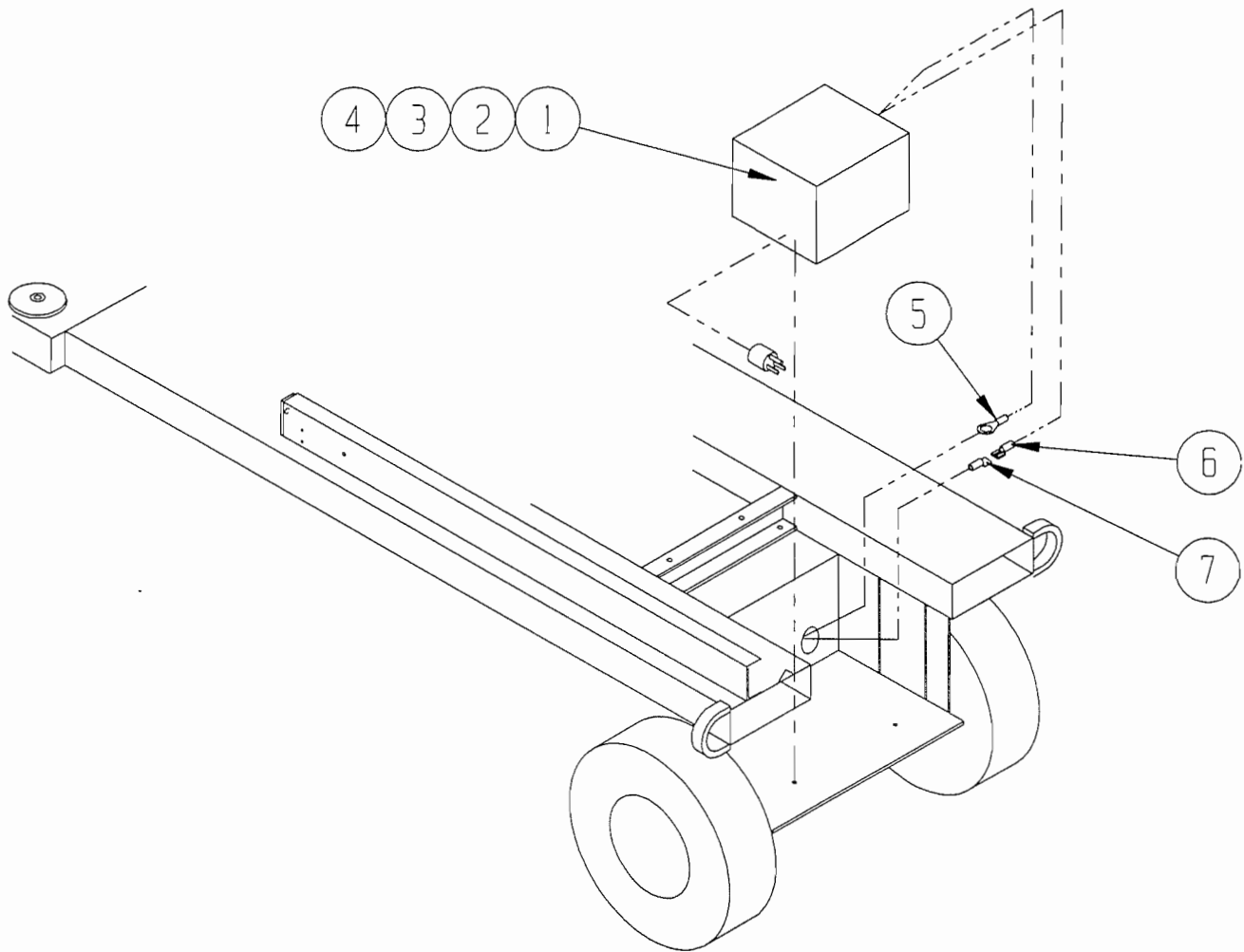
**CHARGER ASSEMBLY**  
**XL-19D/19DW/24D/24DW**

ITEM	PART	DESCRIPTION	QTY.
1	63944-011	CHARGER, BATTERY	1
2	11248-004	LOCKNUT 1/4-20 UNC	2
3	11252-008	SCREW HHC 1/4-20 X 1 LONG	2
4	11240-004	WASHER FLAT 1/4 DIA.	2
5	29601-039	CONN RING TERM	1
6	29931-005	ELEC CONN FEMALE 10-12	1
7	14914-002	ELEC CONN MALE 10-12	1



# Illustrated Parts Breakdown

Section  
**7.2**



**CHARGER ASSEMBLY**  
**XL-19D/19DW/24D/24DW**

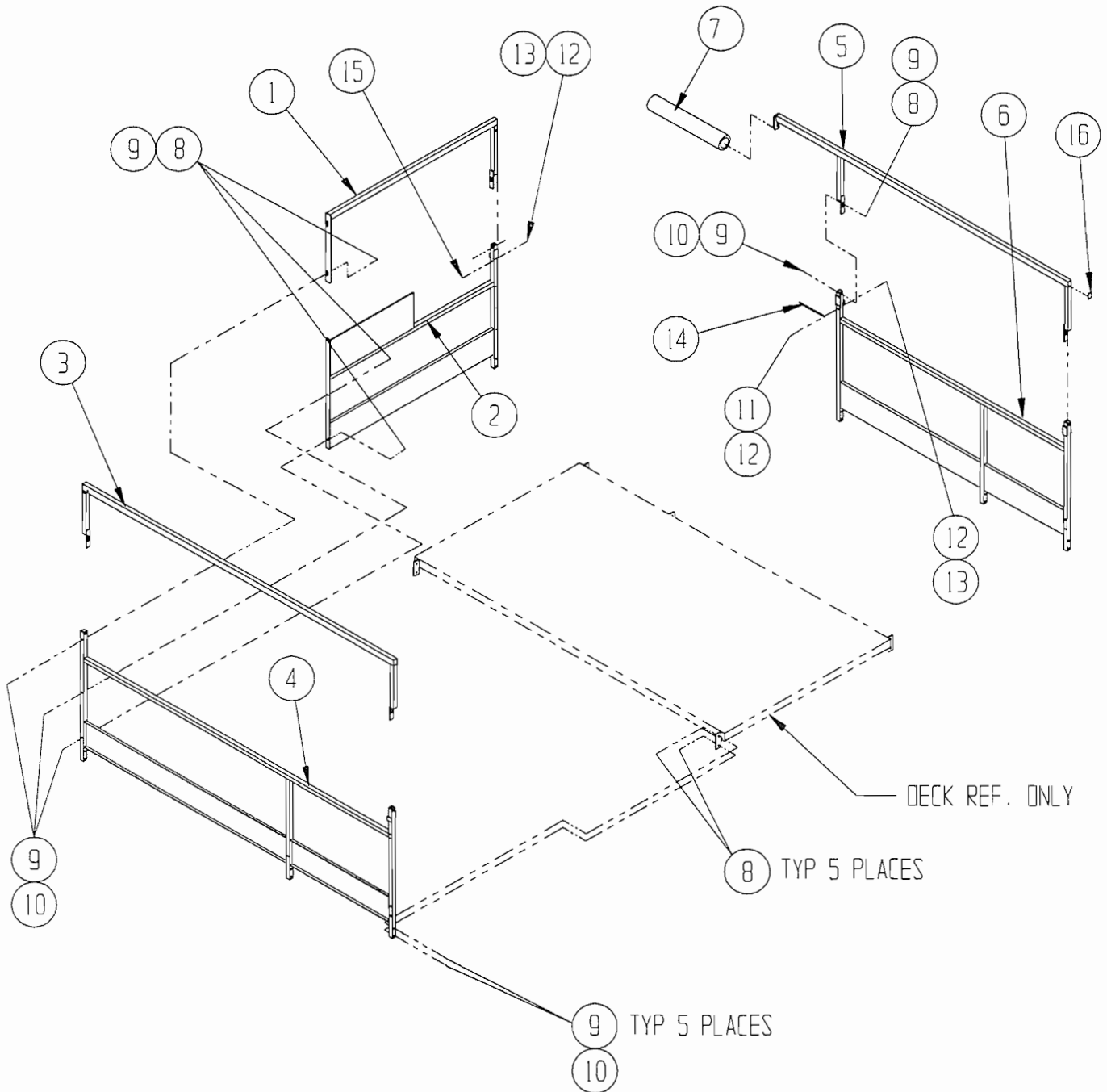
061799-002

## GUARDRAIL ASSEMBLY XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	63583-000	WELDMENT, GUARDRAIL FRONT UPPER	1
2	63584-001	WELDMENT, GUARDRAIL FRONT LOWER	1
3	63582-000	WELDMENT, GUARDRAIL UPPER L / H	1
4	63580-000	WELDMENT, GUARDRAIL LOWER L / H	1
5	63581-000	WELDMENT, GUARDRAIL UPPER R / H	1
6	63579-001	WELDMENT, GUARDRAIL LOWER R / H	1
7	10191-001	BUMPER	1
8	11248-006	NUT ESNA 3/8-16 UNC	22
9	11240-006	WASHER 3/8 STD FLAT	22
10	11254-016	SCREW HHC 3/8-16 UNC X 2	18
11	11253-014	SCREW HHC 5/16-18 UNC X 1-3/4	1
12	11240-005	WASHER 5/16 STD FLAT	3
13	11248-005	NUT ESNA 5/16-18	2
14	61350-001	SAFETY CHAIN ASSY	1
15	14940-005	EYEBOLT 5/16-18	1
16	63926-002	PLUG, RECT TUBE	4

# Illustrated Parts Breakdown

Section  
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**GUARDRAIL ASSEMBLY  
XL-19D**

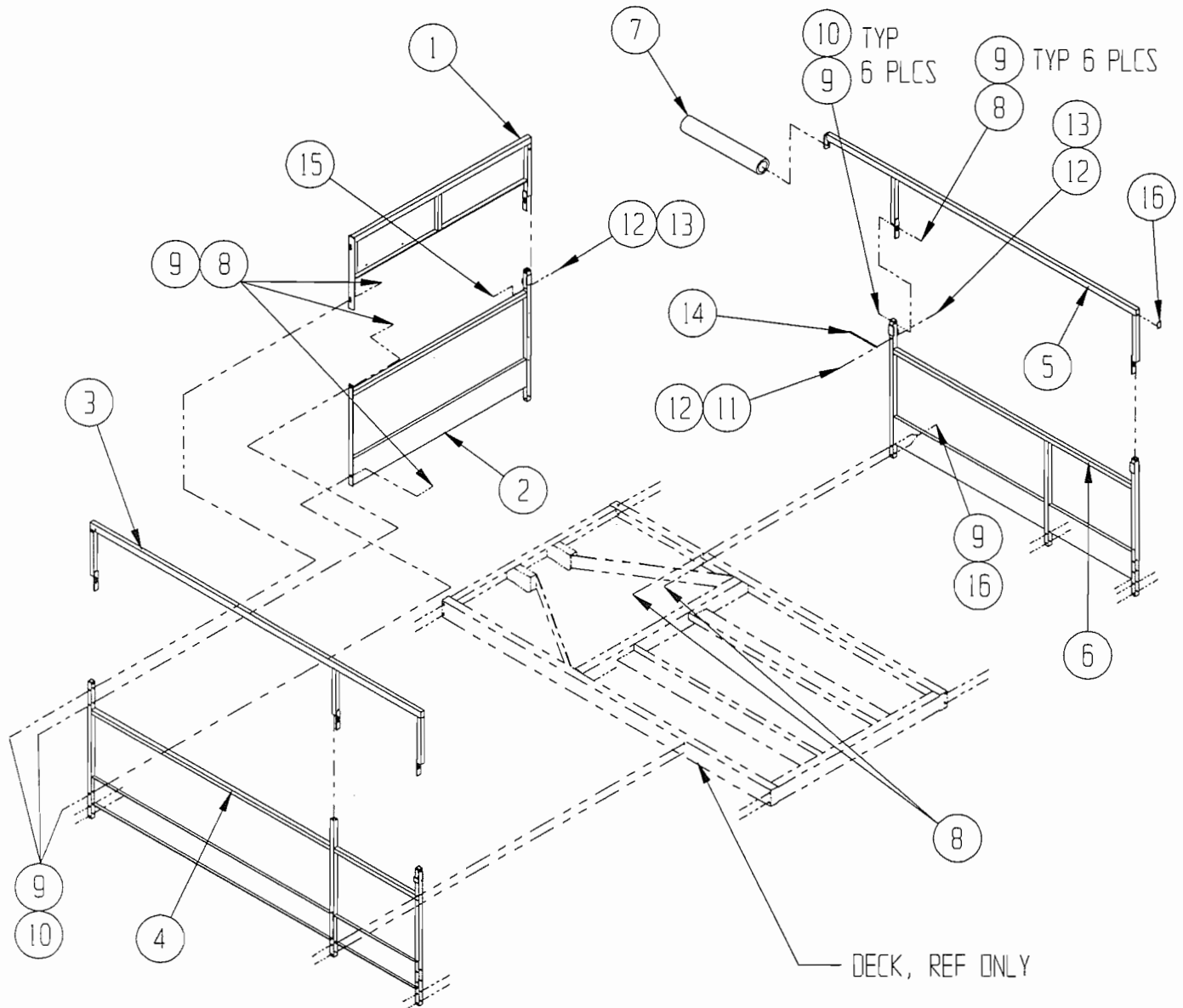
061799-002

## GUARDRAIL ASSEMBLY XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	63244-002	GUARDRAIL, FRONT UPPER WELDMENT	1
2	61971-003	GUARDRAIL, FRONT LOWER WELDMENT	1
3	63737-000	GUARDRAIL, UPPER L/H WELDMENT	1
4	63732-000	GUARDRAIL, LOWER L/H WELDMENT	1
5	63243-002	GUARDRAIL, UPPER R/H WELDMENT	1
6	63738-001	GUARDRAIL, LOWER R/H WELDMENT	1
7	10191-001	BUMPER	1
8	11248-006	NUT ESNA 3/8-16	22
9	11240-006	WASHER 3/8 STD FLAT	34
10	11254-016	SCREW HHC 3/8-16 UNC X 2	23
11	11253-014	SCREW HHC 5/16-18 UNC X 1-3/4	1
12	11240-005	WASHER 5/16 STD FLAT	3
13	11248-005	NUT ESNA 5/16-18	2
14	61350-001	SAFETY CHAIN ASSY	1
15	14940-005	EYEBOLT 5/16-18	1
16	63926-002	PLUG, RECT TUBE	4

# Illustrated Parts Breakdown

Section  
7.2



**GUARDRAIL ASSEMBLY  
XL-19DW/24D/24DW**

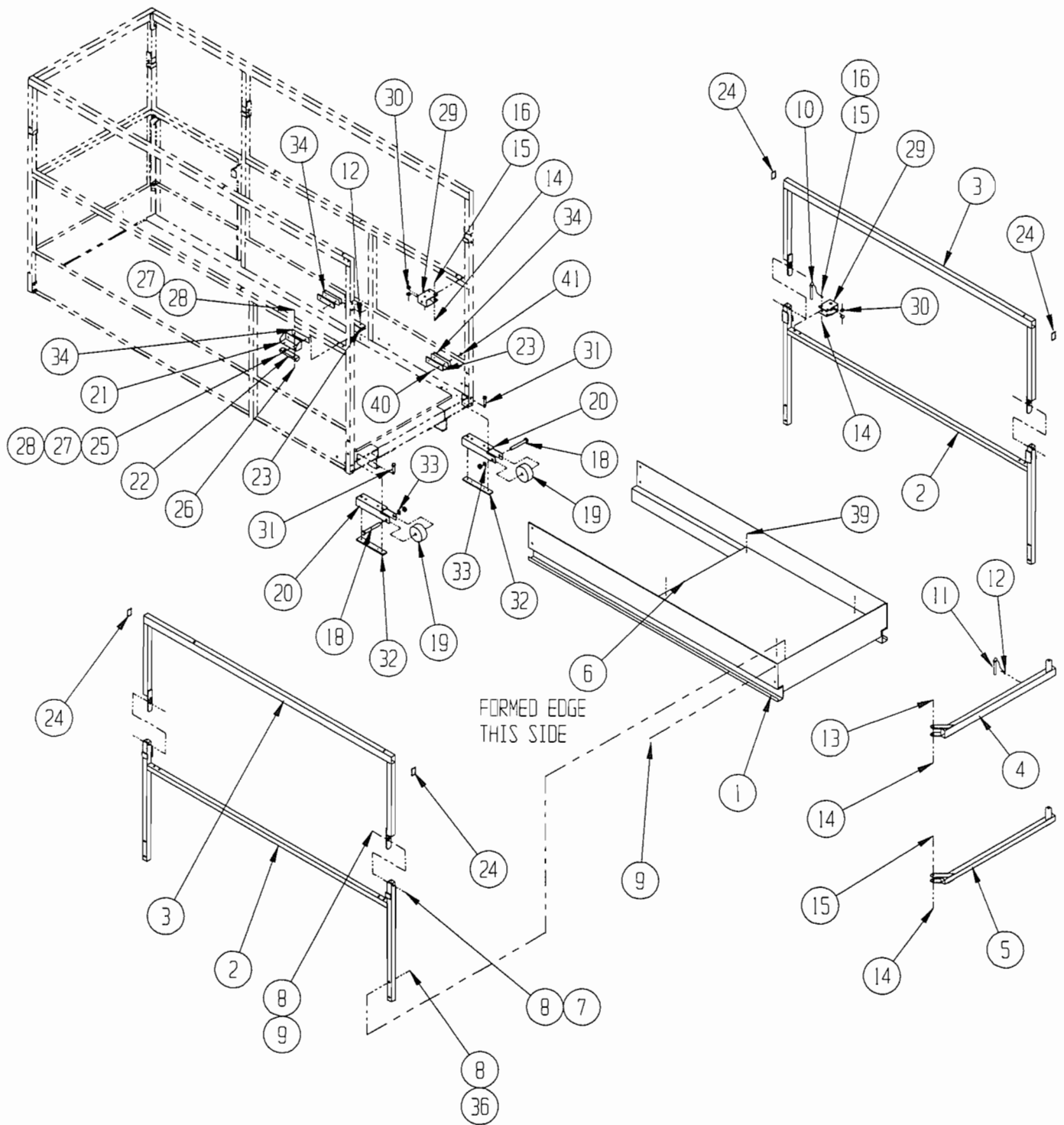
001799-002

SLIDEOUT DECK ASSEMBLY  
XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	63478-000	DECK WELDMENT	1
2	63722-000	RAIL WELDMENT	2
3	63723-000	RAIL WELDMENT	2
4	63482-000	TOP RAIL	1
5	63483-000	MIDRAIL	1
6	63492-000	DIAMOND TREAD FLOOR	1
7	11254-016	SCREW HEX HD CAP 3/8-16 X 2	4
8	11240-006	WASHER FLAT 3/8	16
9	11248-006	ESNA NUT 3/8-16	12
10	61786-000	LOCKING PIN ASSY	2
11	10414-000	LOCKING PIN ASSY	1
12	26553-004	POP RIVET 3/16 X 3/8 GRIP	5
13	11253-022	SCREW HHC 5/16-18 X 2-3/4	1
14	11248-005	ESNA NUT 5/16-18	11
15	11253-016	SCREW HEX HD CAP 5/16-18 X 2	10
16	11240-005	WASHER FLAT 5/16	16
18	63990-001	AXLE	2
19	63989-001	WHEEL	2
20	63490-000	WHEEL MOUNTING BRACKET	2
21	63726-000	SLIDE BRACKET	2
22	63727-000	SLIDE BLOCK	2
23	63728-000	SLIDE BLOCK	8
24	63926-002	PLUG, TUBE	4
25	11252-006	SCREW HEX HD CAP 1/4-20 X 3/4	4
26	12553-008	SCREW SOCKET HD 1/4-20 X 1	4
27	11248-004	ESNA NUT 1/4-20	11
28	11240-004	WASHER FLAT 1/4	8
29	63729-000	GUARDRAIL CLIP	4
30	10080-006	TREE CLIP	12
31	11254-008	SCREW HEX HD CAP 3/8-16 X 1	4
32	63578-000	RETAINING BLOCK	2
33	11240-008	WASHER FLAT 1/2	2
34	63571-000	SPACER	10
36	11254-014	SCREW HHC 3/8-16 X 1 3/4	8
39	26553-007	POP RIVET 3/16 X 1/2 GRIP	4
40	11709-006	SCREW #10-24 UNC X 3/4	8
41	11248-003	LOCKNUT #10-24 UNC HEX	8

# Illustrated Parts Breakdown

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7.2



**SLIDEOUT DECK ASSEMBLY  
XL-19D**

061799-002

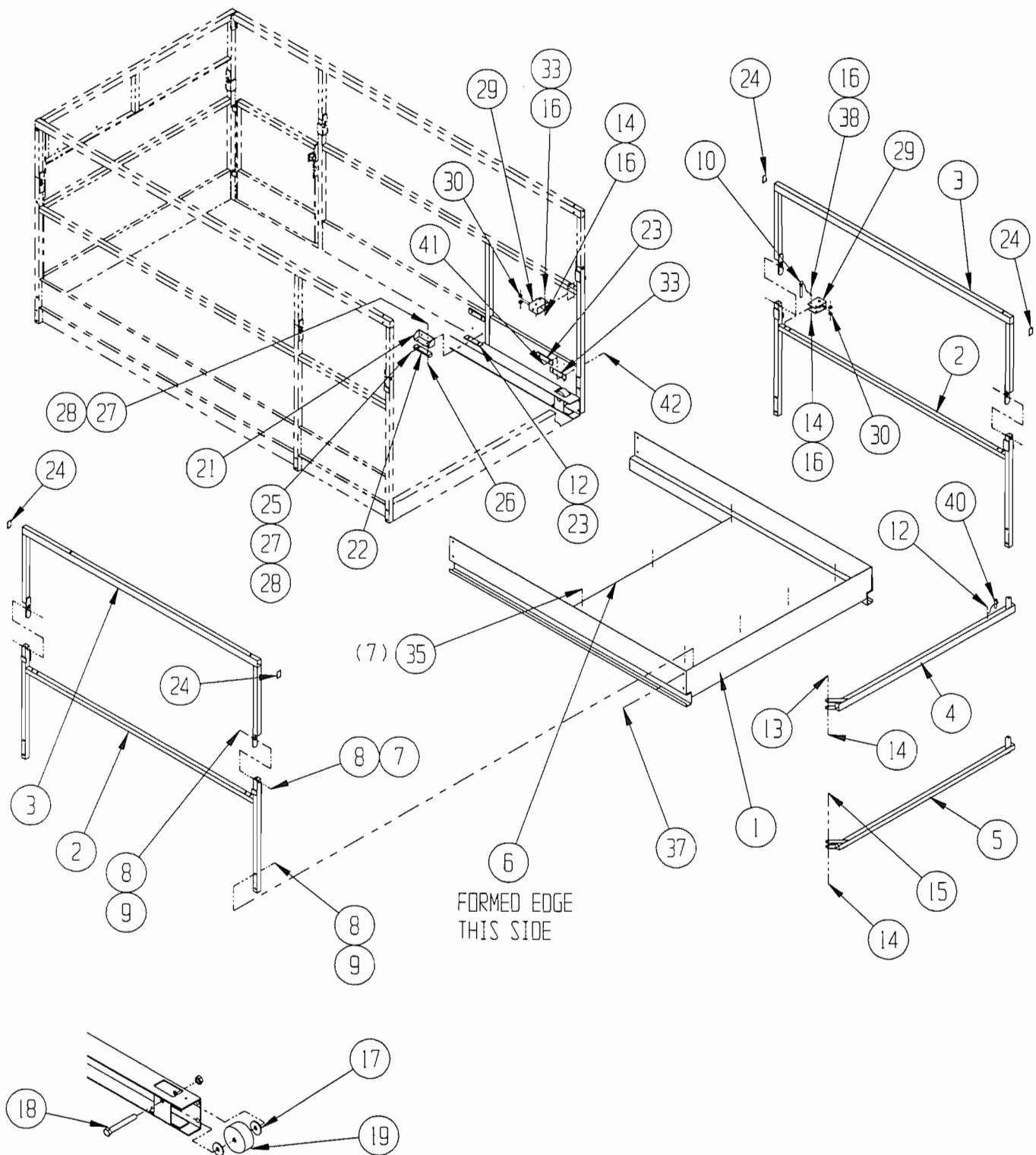
## SLIDEOUT DECK ASSEMBLY XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	63721-000	DECK WELDMENT	1
2	63722-000	RAIL WELDMENT	2
3	63723-000	RAIL WELDMENT	2
4	63724-000	TOP RAIL	1
5	63725-000	MIDRAIL	1
6	63493-000	DIAMOND TREAD FLOOR	1
7	11254-016	SCREW HEX HD CAP 3/8-16 X 2	4
8	11240-006	WASHER FLAT 3/8	16
9	11248-006	ESNA NUT 3/8-16	12
10	61786-000	LOCKING PIN ASSY	2
12	26553-004	POP RIVET 3/16 X 3/8 GRIP	5
13	11253-022	SCREW HEX HD CAP 5/16-18 X 2-3/4	1
14	11248-005	ESNA NUT 5/16-18	11
15	11253-014	SCREW HEX HD CAP 5/16-18 X 1 3/4	2
16	11240-005	WASHER FLAT 5/16	16
17	63991-001	THRUST WASHER	4
18	63990-001	AXLE	2
19	63989-001	WHEEL	2
21	63726-000	SLIDE BRACKET	2
22	63727-000	SLIDE BLOCK	2
23	63728-000	SLIDE BLOCK	6
24	63926-002	PLUG, TUBE	4
25	11252-006	SCREW HEX HD CAP 1/4-20 X 3/4	4
26	12553-008	SCREW SOCKET HD CAP 1/4-20 X 1	4
27	11248-004	ESNA NUT 1/4-20	8
28	11240-004	WASHER FLAT 1/4	8
29	63729-000	GUARDRAIL CLIP	4
30	10080-006	TREE CLIP	12
33	63571-000	SPACER	4
35	26554-003	RIVET 1/4 DIA. POP X 1/2 GRIP	7
37	11254-014	SCREW 3/8-16 UNC HHC X 1 3/4	8
38	11253-016	SCREW 5/16-18 UNC HHC X 2	8
40	10414-000	LOCKING PIN ASSY	1
41	11709-006	SCREW #10-24 X 3/4	8
42	11248-003	LOCKNUT #10-24 HEX	8



# Illustrated Parts Breakdown

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7.2



**SLIDEOUT DECK ASSEMBLY**  
**XL-19DW/24D/24DW**

061799-002

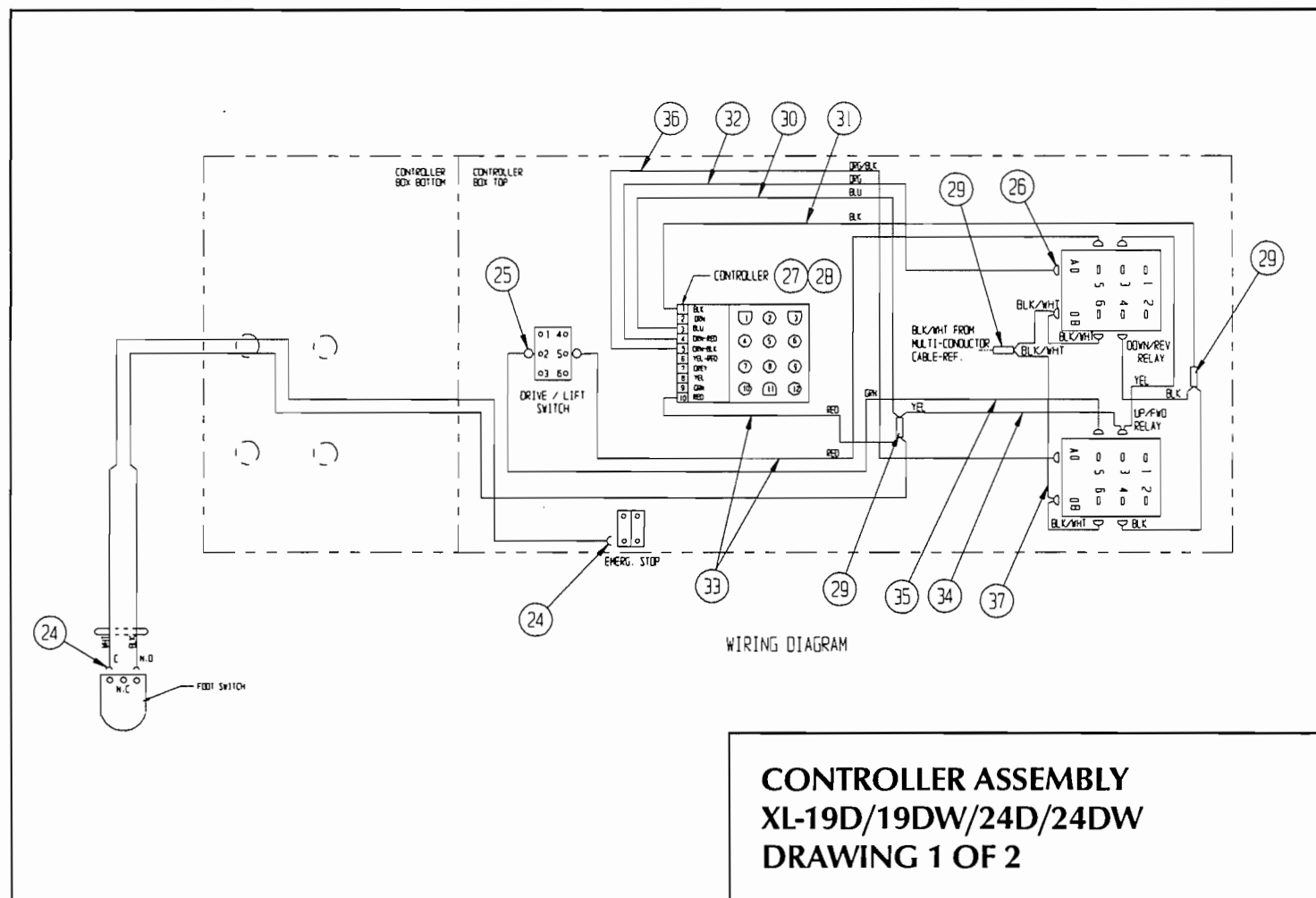
# Illustrated Parts Breakdown

## CONTROLLER ASSEMBLY XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	11248-047	LOCKNUT 6-32 UNC	4
2	11715-004	SCREW 6-32 UNC MACH RD HD X 1/2	4
3	11811-006	SCREW 10-32 SLFTP X 3/4	2
4	11253-004	SCREW 5/16 HH X 1/2	4
5	15941-001	SWITCH	1
6	63368-000	BOX ENCLOSURE	1
7	29872-000	BOOT	1
8	29925-000	CONNECTOR, CABLE	1
9	29939-002	LOCKNUT CONDUIT	1
10	63906-000	SWITCH, FOOT	1
11	63951-002	RELAY	2
12	63975-000	CONTROLLER	1
*	08686-003	SWITCH, STEERING	2
*	63953-001	BOOT, UPPER CONTROLLER	1
*	63953-002	BOOT, LOWER CONTROLLER	1
*	63975-003	CIRCUIT BOARD, CONTROLLER	1
*	63975-004	GEAR/POT ASSY, CONTROLLER	1
13	63667-001	OPERATOR SWITCH E-STOP	1
14	63611-000	CONTROLLER WING	1
15	63612-000	CONTROLLER WING	1
16	63613-000	CONTROLLER HANGER	1
17	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6

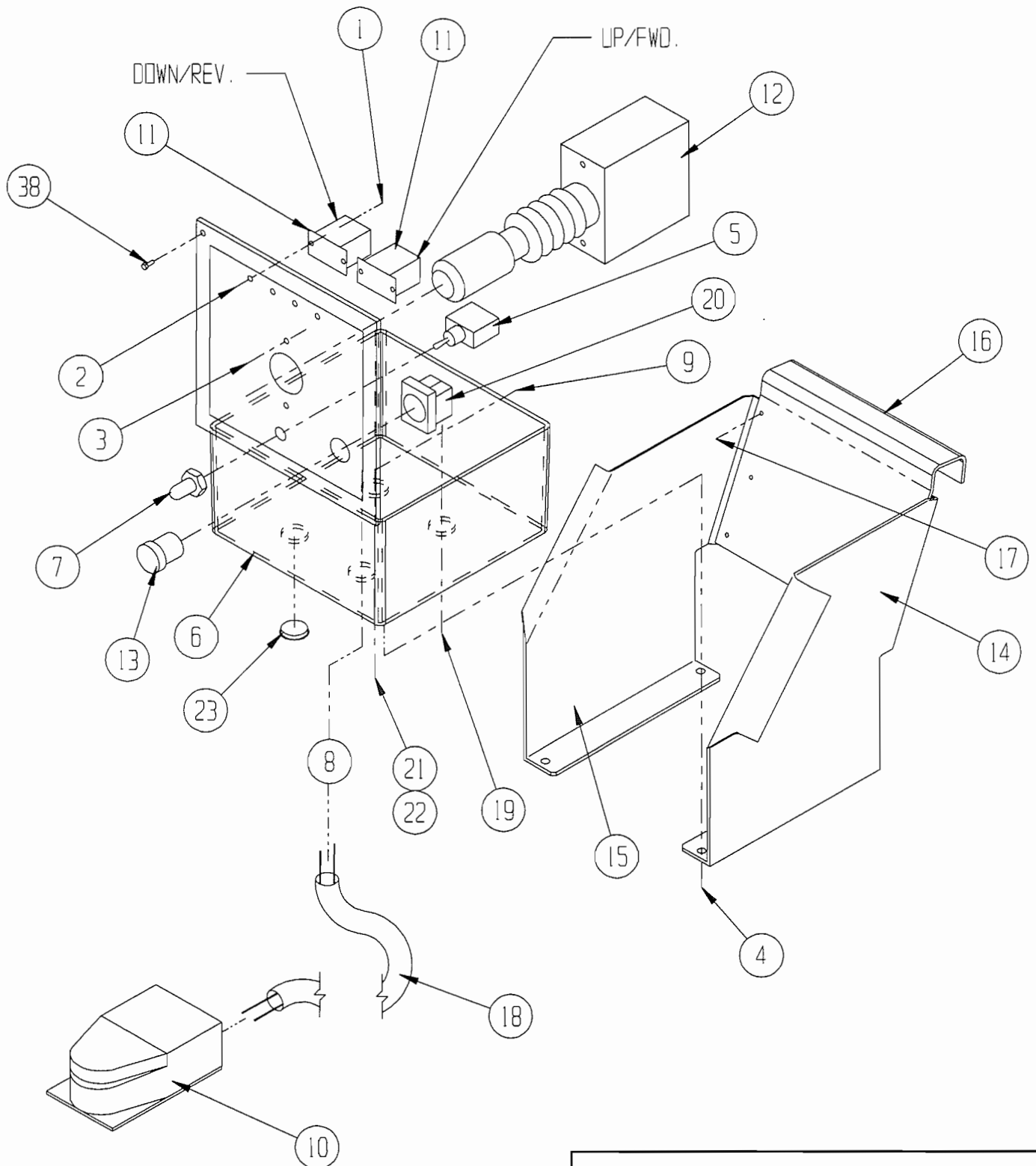
ITEM	PART	DESCRIPTION	QTY.
18	29490-099	WIRE 16 AWG 2 COND	6 FT
19	64462-009	CAPLUGS 1 1/16	1
20	63667-003	CONTACT BLOCK 2 NC	1
21	29925-010	CONNECTOR	1
22	29939-003	3/4 NPT LOCKNUT	1
23	64462-007	CAPLUGS 7/8	1
24	29610-002	CONNECTOR, FORK TERM.	3
25	29601-013	CONNECTOR, RING TERM.	2
26	29616-001	CONNECTOR, SPADE TERM.	12
27	63956-003	PLUG, CONN	1
28	63956-002	PIN, CONN	5
29	29620-003	CONN. BUTT 12-10	3
30	29450-099	WIRE 16 AWG BLU	1 FT
31	29452-099	WIRE 16 AWG BLK	1 FT
32	29453-099	WIRE 16 AWG ORG	1 FT
33	29454-099	WIRE 16 AWG RED	1 FT
34	29456-099	WIRE 16 AWG YEL	1 FT
35	29457-099	WIRE 16 AWG GRN	1 FT
36	29477-099	WIRE 16 AWG ORG/BLK	1 FT
37	63574-099	WIRE 16 AWG BLK/WHT	1 FT
38	11709-008	SCREW RD HD MACH. 10-24 X 1	2

\*Not Shown



# Illustrated Parts Breakdown

Section  
7.2

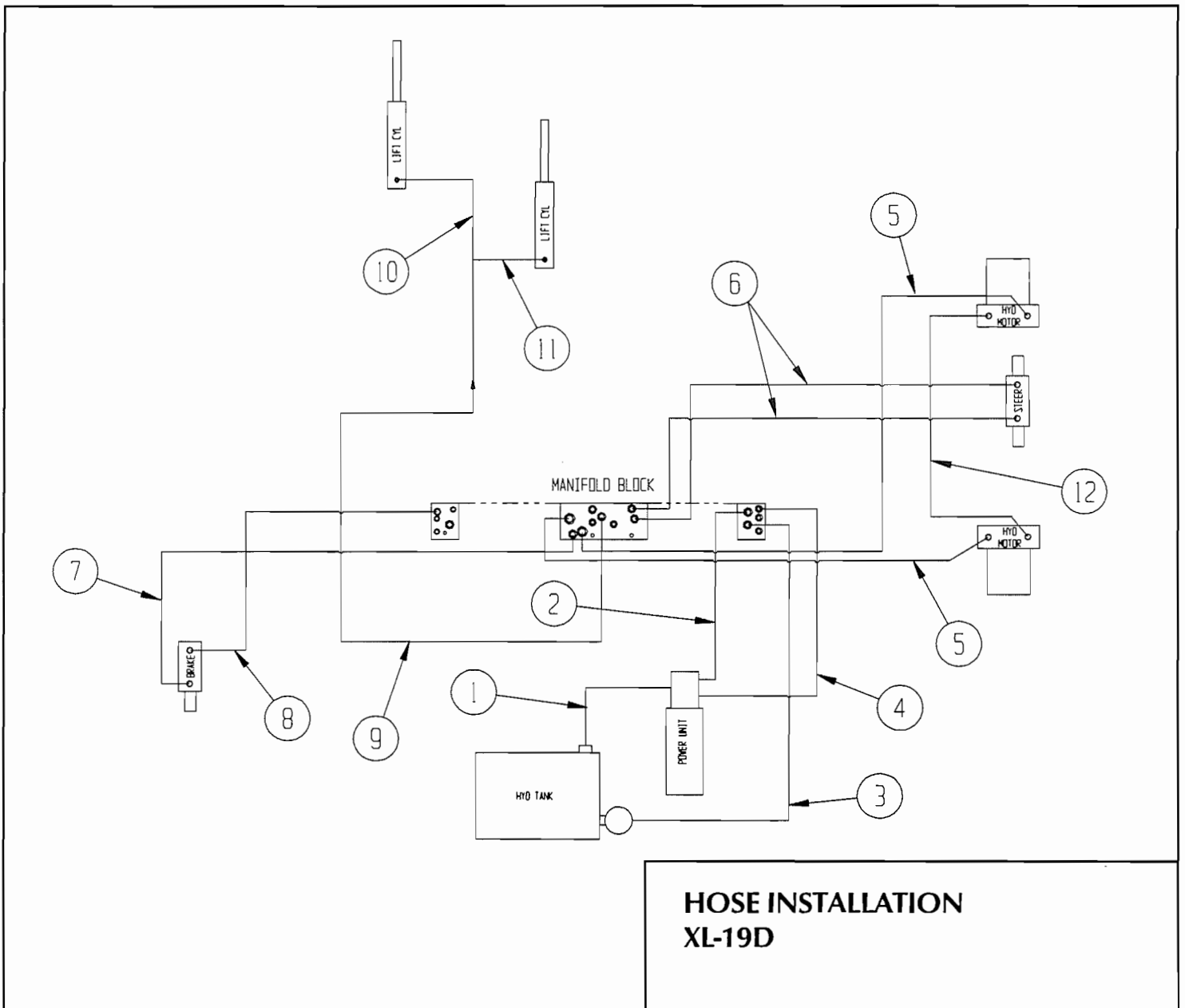


**CONTROLLER ASSEMBLY  
XL-19D/19DW/24D/24DW  
DRAWING 2 OF 2**

061799-002

## HOSE INSTALLATION XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	61789-001	HOSE ASSY 3/4 DIA X 15	1
2	60861-022	HOSE ASSY 3/8 DIA X 14	1
3	60861-049	HOSE ASSY 3/8 DIA X 28	1
4	60861-024	HOSE ASSY 3/8 DIA X 17	1
5	60889-005	HOSE ASSY 3/8 DIA X 50	2
6	60861-049	HOSE ASSY 3/8 DIA X 28	2
7	62192-024	HOSE ASSY 1/4 DIA X 46	1
8	62192-006	HOSE ASSY 1/4 DIA X 39	1
9	60861-017	HOSE ASSY 3/8 DIA X 100	1
10	60861-043	HOSE ASSY 3/8 DIA X 103	1
11	60861-019	HOSE ASSY 3/8 DIA X 22	1
12	60889-006	HOSE ASSY 3/8 DIA X 45	1



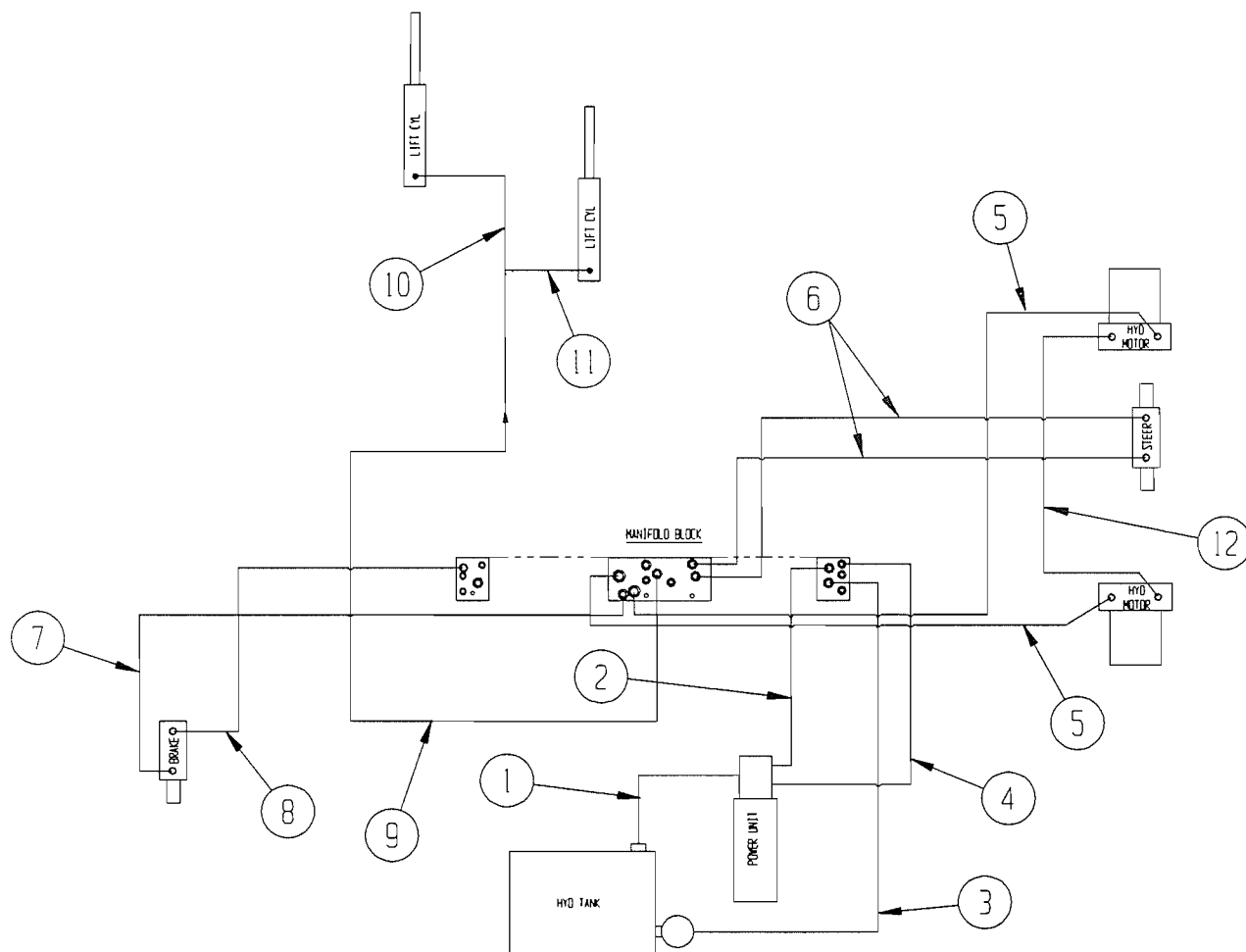
061799-002

# Illustrated Parts Breakdown

Section  
7.2

## HOSE INSTALLATION XL-19DW

ITEM	PART	DESCRIPTION	QTY.
1	61789-001	HOSE ASSY 3/4 DIA X 15	1
2	60861-022	HOSE ASSY 3/8 DIA X 14	1
3	60861-049	HOSE ASSY 3/8 DIA X 28	1
4	60861-024	HOSE ASSY 3/8 DIA X 17	1
5	60889-010	HOSE ASSY 3/8 DIA X 57	2
6	60861-009	HOSE ASSY 3/8 DIA X 37	2
7	62192-015	HOSE ASSY 1/4 DIA X 54	1
8	62192-008	HOSE ASSY 1/4 DIA X 50	1
9	60861-017	HOSE ASSY 3/8 DIA X 100	1
10	60861-043	HOSE ASSY 3/8 DIA X 103	1
11	60861-019	HOSE ASSY 3/8 DIA X 22	1
12	60889-008	HOSE ASSY 3/8 DIA X 64	1



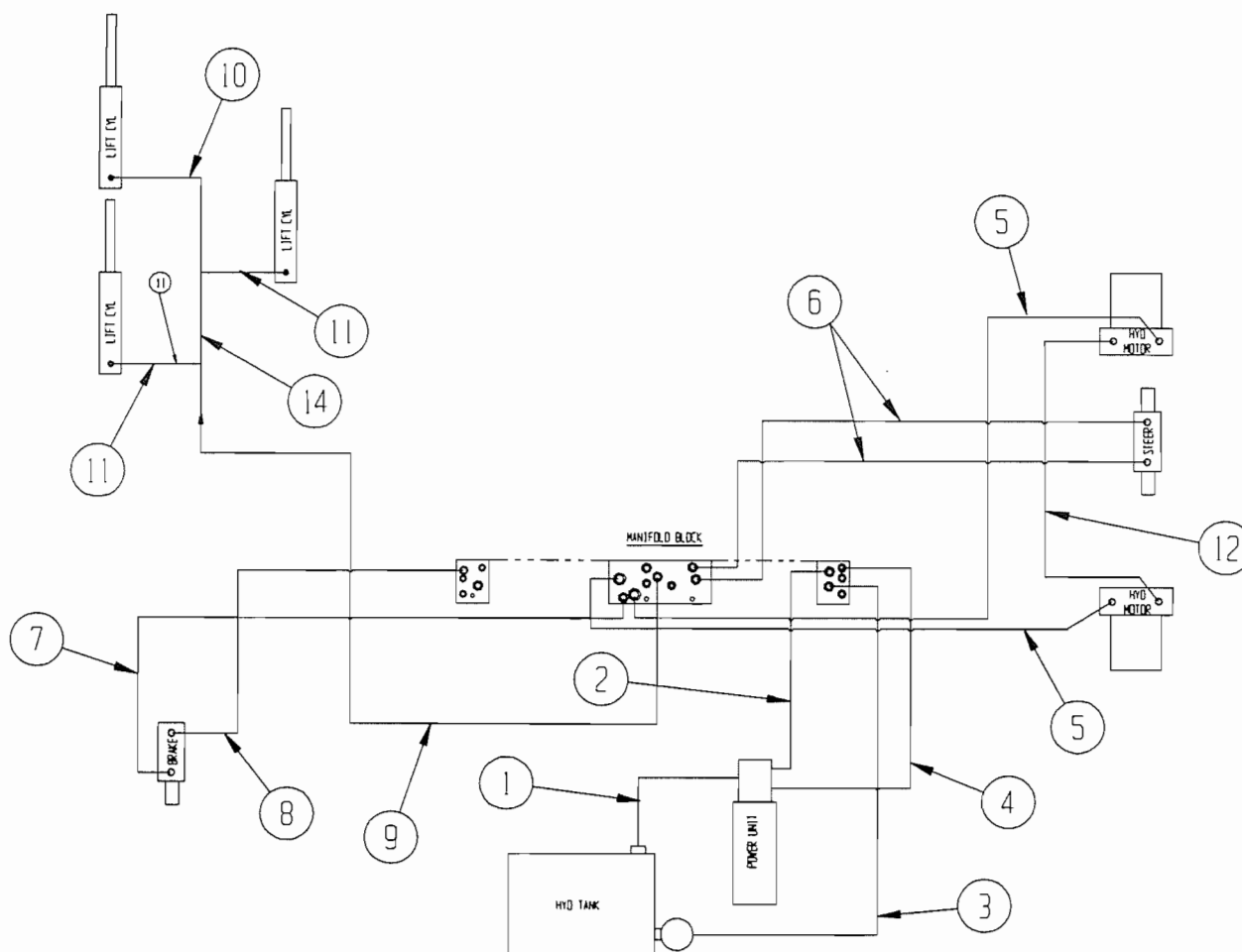
**HOSE INSTALLATION  
XL-19DW**

061799-002

# Illustrated Parts Breakdown

## HOSE INSTALLATION XL-24D

ITEM	PART	DESCRIPTION	QTY.
1	61789-001	HOSE ASSY 3/4 DIA X 15	1
2	60861-022	HOSE ASSY 3/8 DIA X 14	1
3	60861-049	HOSE ASSY 3/8 DIA X 28	1
4	60861-024	HOSE ASSY 3/8 DIA X 17	1
5	60889-010	HOSE ASSY 3/8 DIA X 57	2
6	60861-009	HOSE ASSY 3/8 DIA X 37	2
7	62192-015	HOSE ASSY 1/4 DIA X 54	1
8	62192-008	HOSE ASSY 1/4 DIA X 50	1
9	60861-017	HOSE ASSY 3/8 DIA X 100	1
10	60861-043	HOSE ASSY 3/8 DIA X 103	1
11	60861-019	HOSE ASSY 3/8 DIA X 22	2
12	60889-008	HOSE ASSY 3/8 DIA X 64	1
14	60861-044	HOSE ASSY 3/8 DIA X 79	1



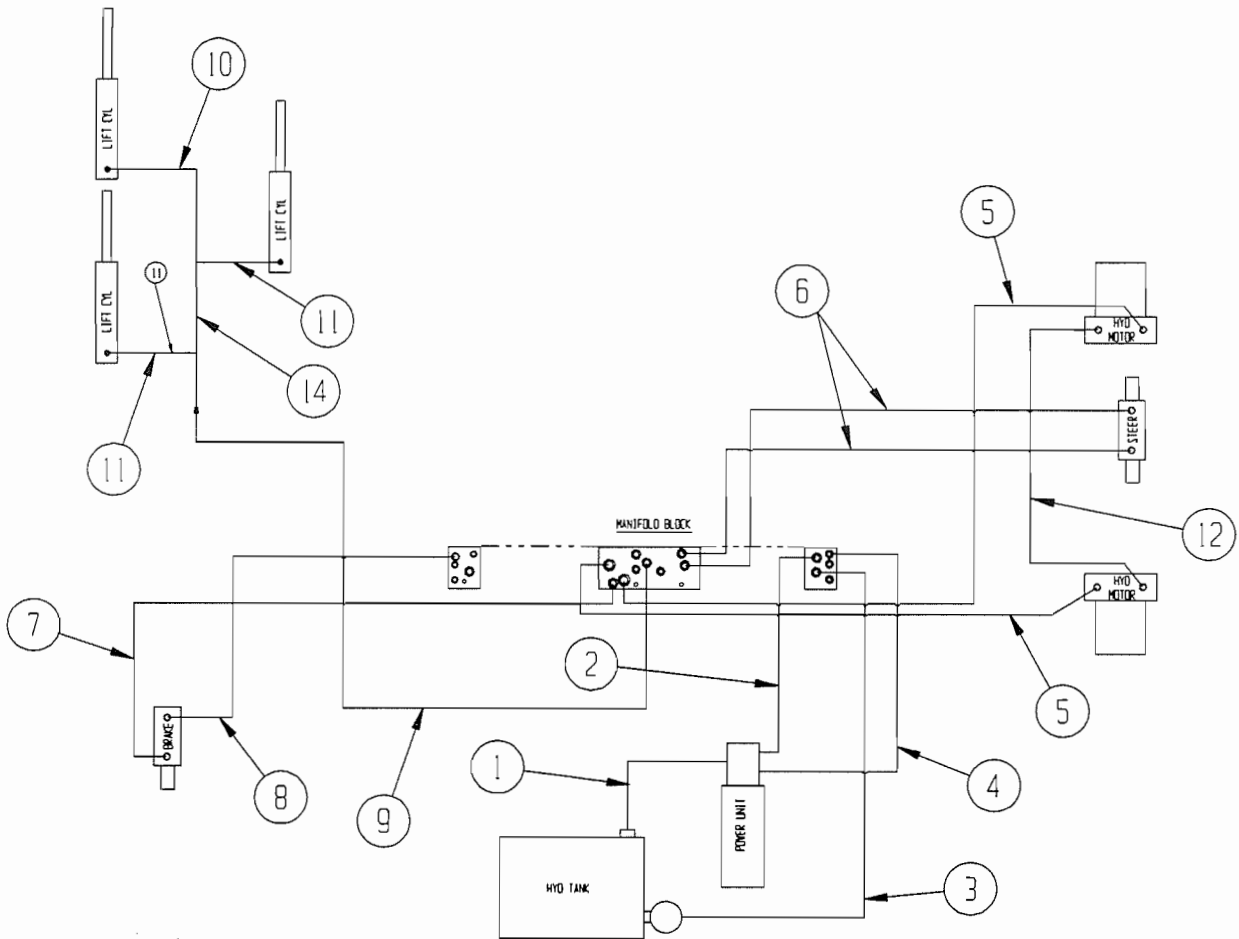
**HOSE INSTALLATION  
XL-24D**

# Illustrated Parts Breakdown

Section  
7.2

## HOSE INSTALLATION XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	61789-001	HOSE ASSY 3/4 DIA X 15	1
2	60861-022	HOSE ASSY 3/8 DIA X 14	1
3	60861-049	HOSE ASSY 3/8 DIA X 28	1
4	60861-024	HOSE ASSY 3/8 DIA X 17	1
5	60889-010	HOSE ASSY 3/8 DIA X 57	2
6	60861-009	HOSE ASSY 3/8 DIA X 37	2
7	62192-018	HOSE ASSY 1/4 DIA X 59	1
8	62192-015	HOSE ASSY 1/4 DIA X 54	1
9	60861-017	HOSE ASSY 3/8 DIA X 100	1
10	60861-043	HOSE ASSY 3/8 DIA X 103	1
11	60861-019	HOSE ASSY 3/8 DIA X 22	2
12	60889-008	HOSE ASSY 3/8 DIA X 64	1
14	60861-044	HOSE ASSY 3/8 DIA X 79	1



**HOSE INSTALLATION  
XL-24DW**

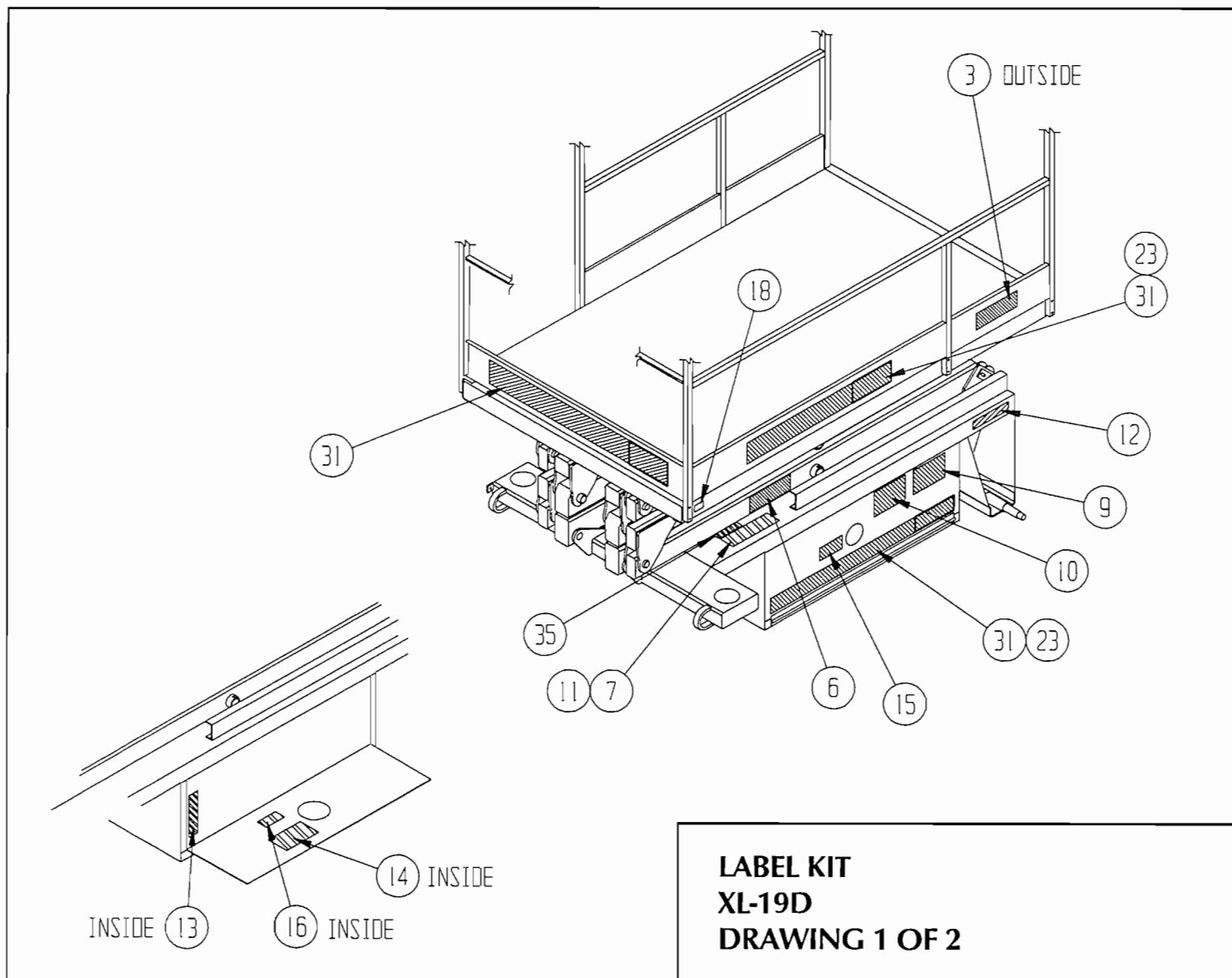
061799-002

# Illustrated Parts Breakdown

## LABEL KIT XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	61750-000	LABEL, DANGER SAFETY RULES	1
2	61999-004	USER MANUAL XLD-SERIES	1
3	08442-006	LABEL, MAX. LOAD 750 LBS	2
5	61787-000	LABEL, DANGER GUARDRAILS	1
6	63255-000	LABEL, SCISSORS BRACE	1
7	61205-000	LABEL, NAME PLATE	1
8	60830-000	SAFETY WALK	2
9	27993-000	LABEL, LOWER PLATFORM	2
10	27992-000	LABEL, CAUTION DO NOT ADJUST	1
11	26551-005	RIVET 1/8 X .188-.250 GRIP POP	4
13	63419-002	LABEL, CONTROLS	1
14	05225-000	LABEL, DANGER HYDROGEN GAS	2
15	62524-001	LABEL, EMERGENCY DOWN VALVE	1
16	05221-000	LABEL, BATTERY FLUID	2
17	10076-000	MANUAL CASE	1

ITEM	PART	DESCRIPTION	QTY.
18	64444-000	LABEL, USA	4
19	05652-000	LABEL, MAX LOAD 250 LBS	1
23	61684-002	LABEL, XL-19D	4
24	60197-000	LABEL, HYDRAULIC FLUID	1
25	10076-001	LABEL, ATTENTION	1
26	11248-004	LOCKNUT 1/4-20 UNC HEX	4
27	11252-006	SCREW 1/4-20 UNC HHC X 3/4	2
28	11252-016	SCREW 1/4-20 UNC HHC X 2	2
29	11240-004	WASHER 1/4 STD FLAT	8
30	11248-004	MANUAL CASE BRACKET	1
31	61683-001	LABEL, UPRIGHT 3-1/2"	6
32	63369-000	LABEL, CONTROLLER	1
33	61831-000	LABEL, BEFORE OPERATING	1
34	60577-000	ANSI MANUAL	1
35	61220-001	LABEL, ANSI REQ.	1

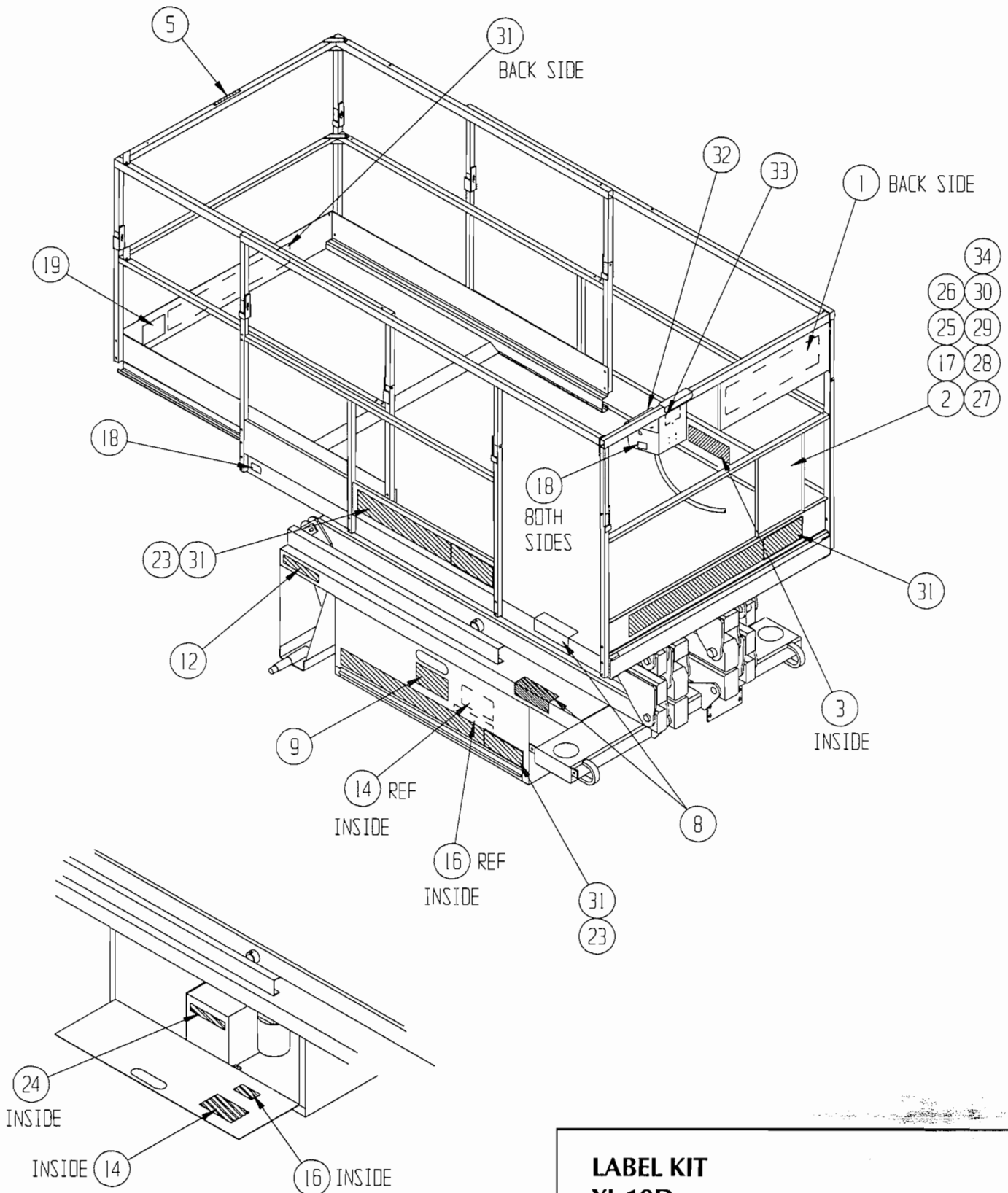


061799-002



# Illustrated Parts Breakdown

Section  
**7.2**

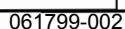


**LABEL KIT**  
**XL-19D**  
**DRAWING 2 OF 2**

061799-002

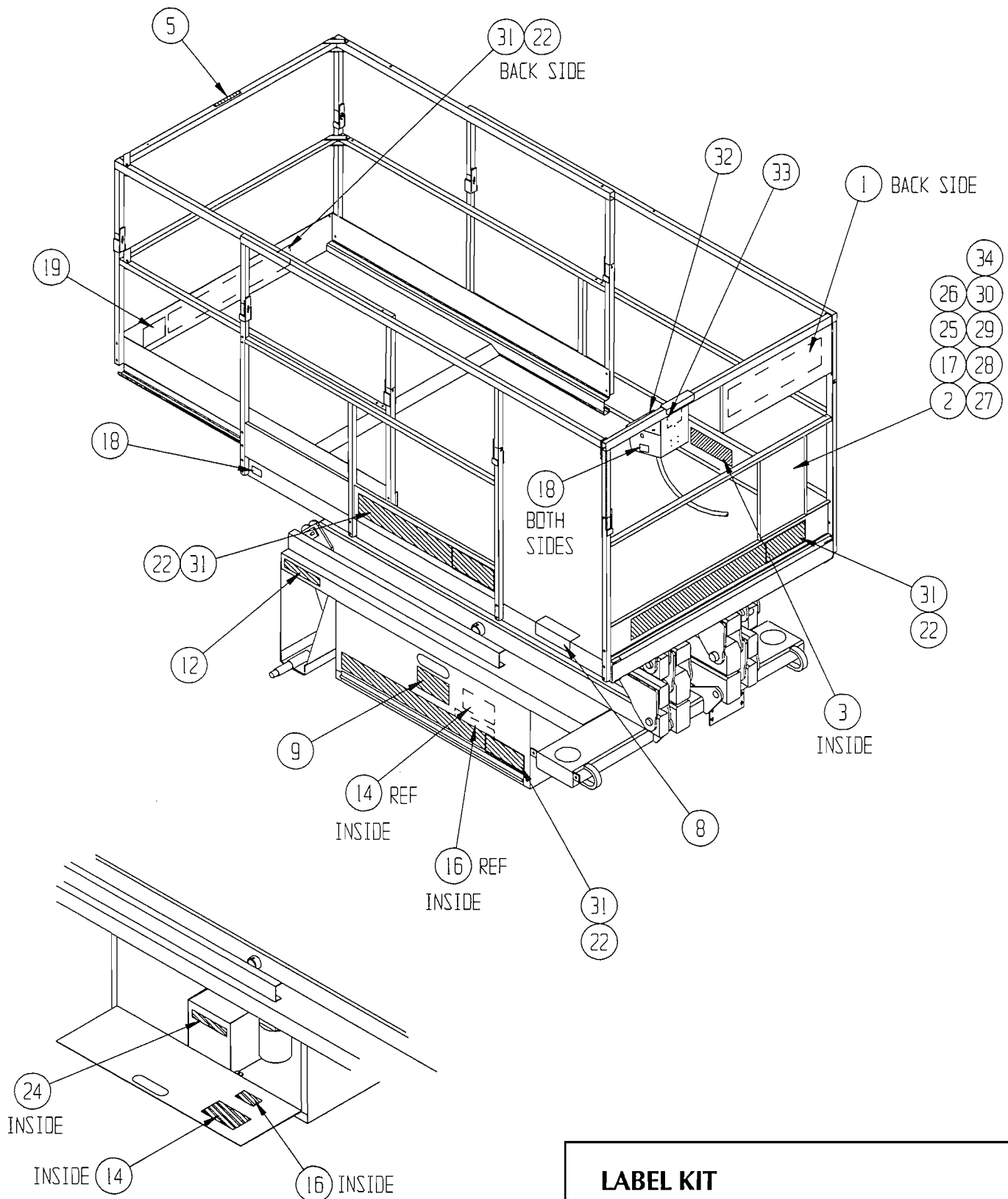
ITEM	PART	DESCRIPTION	QTY.
1	61750-000	LABEL, DANGER SAFETY RULES	1
2	61999-004	USER MANUAL XLD-SERIES	1
3	08442-003	LABEL, MAX. LOAD 1000 LBS	2
5	61787-000	LABEL, DANGER GUARDRAILS	1
6	63255-000	LABEL, SCISSORS BRACE	1
7	61205-000	LABEL, NAME PLATE	1
8	60830-000	SAFETY WALK	1
9	27993-000	LABEL, LOWER PLATFORM	2
10	27992-000	LABEL, CAUTION DO NOT ADJUST	1
11	26551-005	RIVET 1/8 X .188-250 GRIP POP	4
12	14222-003-99	LABEL, FORK LIFT HERE	2
13	63419-002	LABEL, CONTROLS	1
14	05225-000	LABEL, DANGER HYDROGEN GAS	2
15	62524-001	LABEL, EMERGENCY DOWN VALVE	1
16	05221-000	LABEL, BATTERY FLUID	2
17	10076-000	MANUAL CASE	1

ITEM	PART	DESCRIPTION	QTY.
18	64444-000	LABEL, USA	4
19	05652-000	LABEL, MAX LOAD 250 LBS	1
22	61684-003	LABEL, XL-19DW	6
24	60197-000	LABEL, HYDRAULIC FLUID	1
25	10076-001	LABEL, ATTENTION	1
26	11248-004	LOCKNUT 1/4-20 UNC HEX	4
27	11252-006	SCREW 1/4-20 UNC HHC X 3/4	2
28	11252-016	SCREW 1/4-20 UNC HHC X 2	2
29	11240-004	WASHER 1/4 STD FLAT	8
30	11248-004	MANUAL CASE BRACKET	1
31	61683-001	LABEL, UPRIGHT 3-1/2"	6
32	63369-000	LABEL, CONTROLLER	1
33	61831-000	LABEL, BEFORE OPERATING	1
34	60577-000	ANSI MANUAL	1
35	61220-001	LABEL, ANSI REQ.	1



# Illustrated Parts Breakdown

Section  
7.2



**LABEL KIT**  
**XL-19DW**  
**DRAWING 2 OF 2**

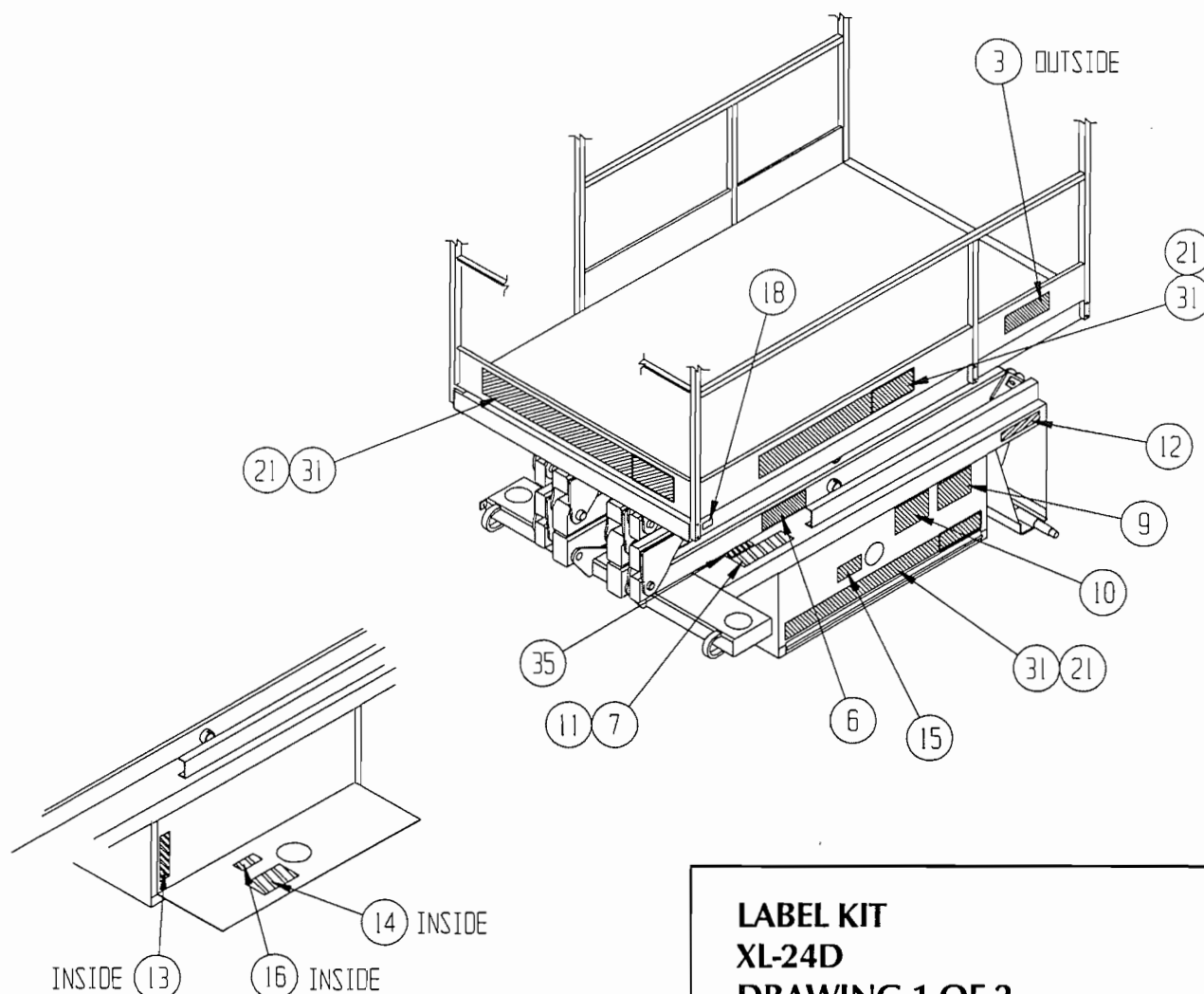
061799-002

# Illustrated Parts Breakdown

## LABEL KIT XL-24D

ITEM	PART	DESCRIPTION	QTY.
1	61750-000	LABEL, DANGER SAFETY RULES	1
2	61999-004	USER MANUAL XLD-SERIES	1
3	08442-006	LABEL, MAX. LOAD 750 LBS	2
5	61787-000	LABEL, DANGER GUARDRAILS	1
6	63255-000	LABEL, SCISSORS BRACE	1
7	61205-000	LABEL, NAME PLATE	1
8	60830-000	SAFETY WALK	1
9	27993-000	LABEL, LOWER PLATFORM	2
10	27992-000	LABEL, CAUTION DO NOT ADJUST	1
11	26551-005	RIVET 1/8 X .188-.250 GRIP POP	4
12	14222-003-99	LABEL, FORK LIFT HERE	2
13	63419-002	LABEL, CONTROLS	1
14	05225-000	LABEL, DANGER HYDROGEN GAS	2
15	62524-001	LABEL, EMERGENCY DOWN VALVE	1
16	05221-000	LABEL, BATTERY FLUID	2
17	10076-000	MANUAL CASE	1

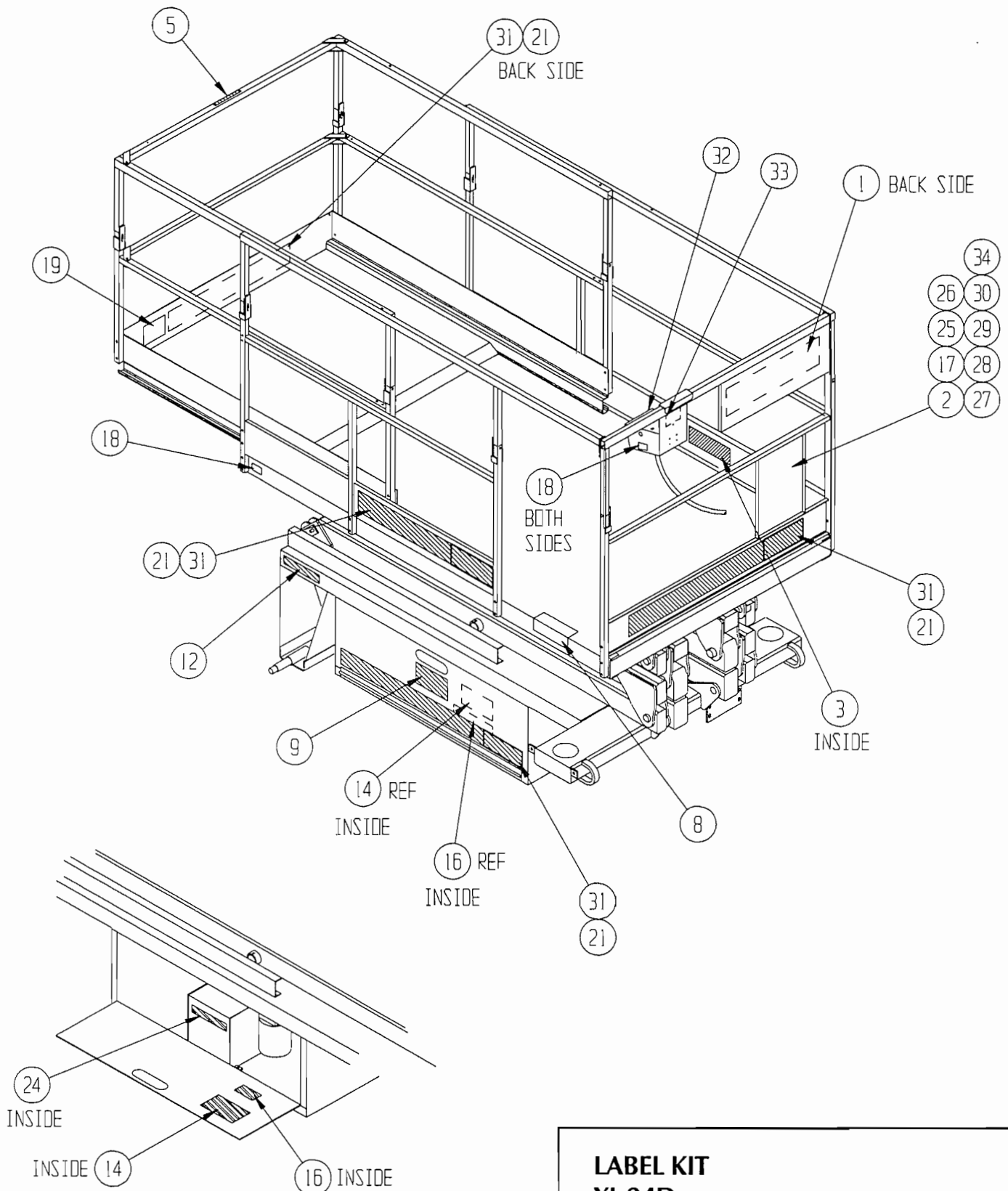
ITEM	PART	DESCRIPTION	QTY.
18	64444-000	LABEL, USA	4
19	05652-000	LABEL, MAX LOAD 250 LBS	1
21	61684-004	LABEL, XL-24D	6
24	60197-000	LABEL, HYDRAULIC FLUID	1
25	10076-001	LABEL, ATTENTION	1
26	11248-004	LOCKNUT 1/4-20 UNC HEX	4
27	11252-006	SCREW 1/4-20 UNC HHC X 3/4	2
28	11252-016	SCREW 1/4-20 UNC HHC X 2	2
29	11240-004	WASHER 1/4 STD FLAT	8
30	11248-004	MANUAL CASE BRACKET	1
31	61683-001	LABEL, UPRIGHT 3-1/2"	6
32	63369-000	LABEL, CONTROLLER	1
33	61831-000	LABEL, BEFORE OPERATING	1
34	60577-000	ANSI MANUAL	1
35	61220-001	LABEL, ANSI REQ.	1



**LABEL KIT  
XL-24D  
DRAWING 1 OF 2**

# Illustrated Parts Breakdown

Section  
7.2



**LABEL KIT**  
**XL-24D**  
**DRAWING 2 OF 2**

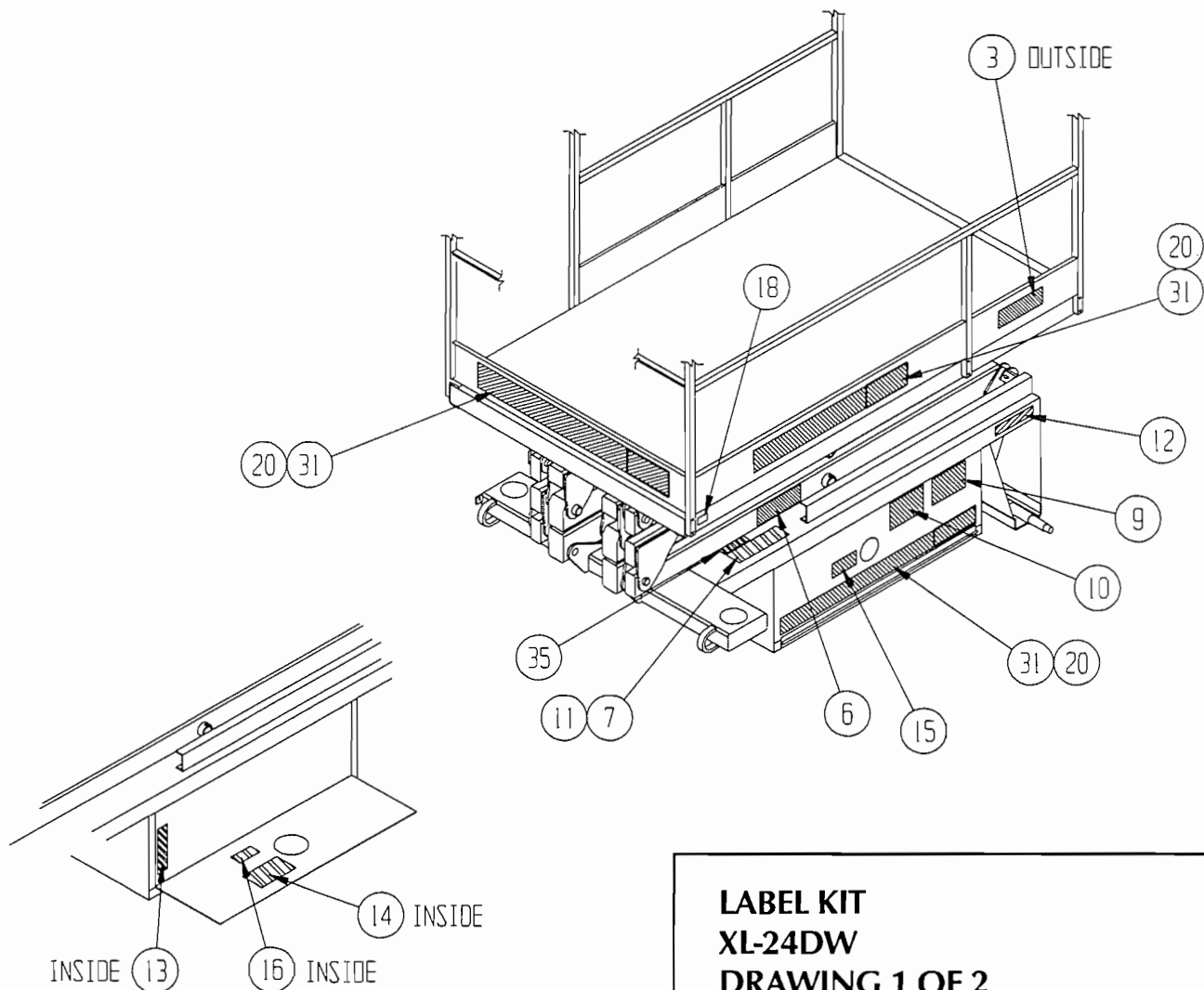
061799-002

# Illustrated Parts Breakdown

## LABEL KIT XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	61750-000	LABEL, DANGER SAFETY RULES	1
2	61999-004	USER MANUAL XLD-SERIES	1
3	08442-003	LABEL, MAX. LOAD 1000 LBS	2
5	61787-000	LABEL, DANGER GUARDRAILS	1
6	63255-000	LABEL, SCISSORS BRACE	1
7	61205-000	LABEL, NAME PLATE	1
8	60830-000	SAFETY WALK	1
9	27993-000	LABEL, LOWER PLATFORM	2
10	27992-000	LABEL, CAUTION DO NOT ADJUST	1
11	26551-005	RIVET 1/8 X .188-.250 GRIP POP	4
12	14222-003-99	LABEL, FORK LIFT HERE	2
13	63419-002	LABEL, CONTROLS	1
14	05225-000	LABEL, DANGER HYDROGEN GAS	2
15	62524-001	LABEL, EMERGENCY DOWN VALVE	1
16	05221-000	LABEL, BATTERY FLUID	2
17	10076-000	MANUAL CASE	1

ITEM	PART	DESCRIPTION	QTY.
18	64444-000	LABEL, USA	4
19	05652-000	LABEL, MAX LOAD 250 LBS	1
20	61684-005	LABEL, XL-24DW	6
24	60197-000	LABEL, HYDRAULIC FLUID	1
25	10076-001	LABEL, ATTENTION	1
26	11248-004	LOCKNUT 1/4-20 UNC HEX	4
27	11252-006	SCREW 1/4-20 UNC HHC X 3/4	2
28	11252-016	SCREW 1/4-20 UNC HHC X 2	2
29	11240-004	WASHER 1/4 STD FLAT	8
30	11248-004	MANUAL CASE BRACKET	1
31	61683-001	LABEL, UPRIGHT 3-1/2"	6
32	63369-000	LABEL, CONTROLLER	1
33	61831-000	LABEL, BEFORE OPERATING	1
34	60577-000	ANSI MANUAL	1
35	61220-001	LABEL, ANSI REQ.	1

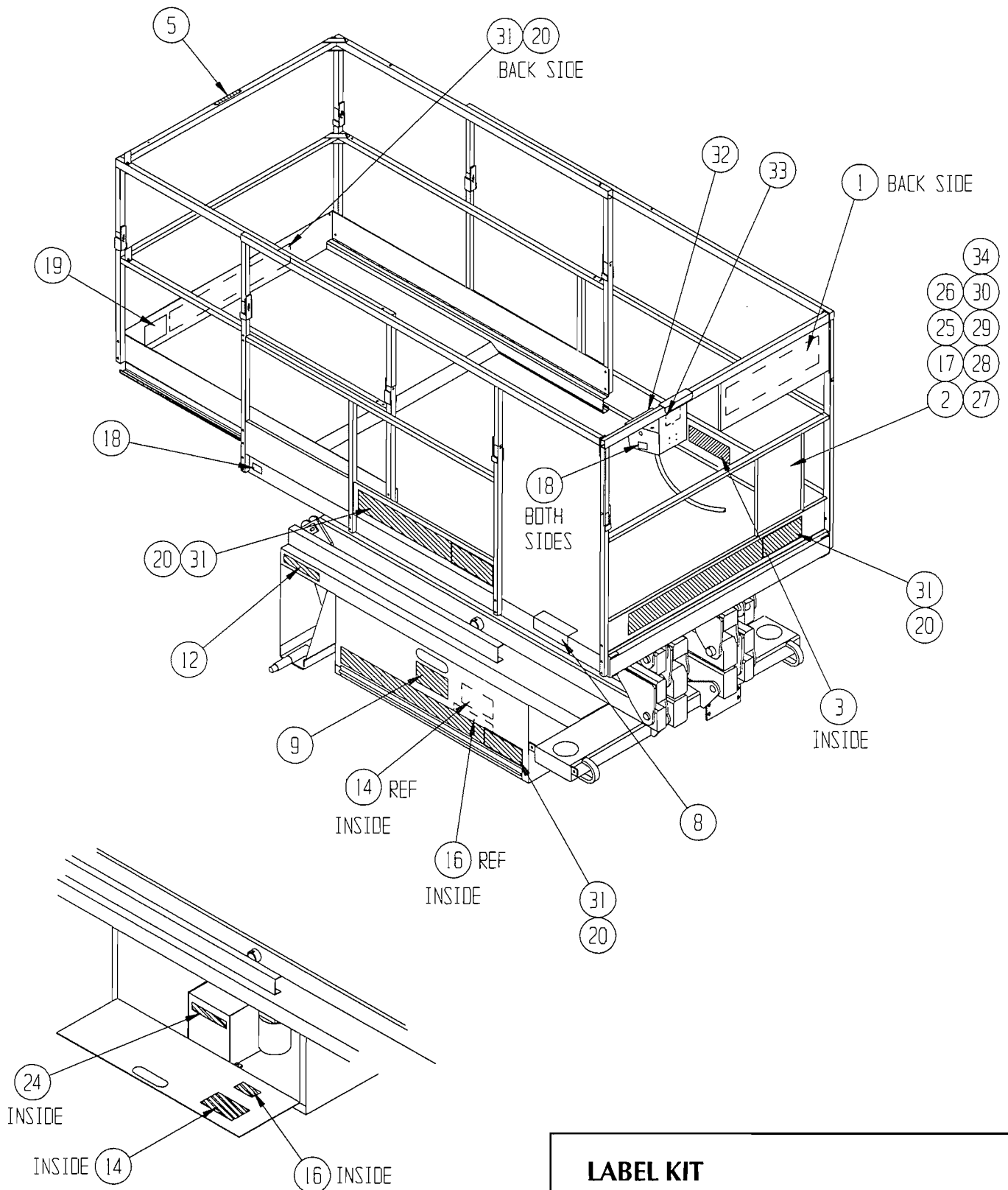


**LABEL KIT  
XL-24DW  
DRAWING 1 OF 2**

061799-002

# Illustrated Parts Breakdown

Section  
7.2



**LABEL KIT**  
**XL-24DW**  
**DRAWING 2 OF 2**

061799-002

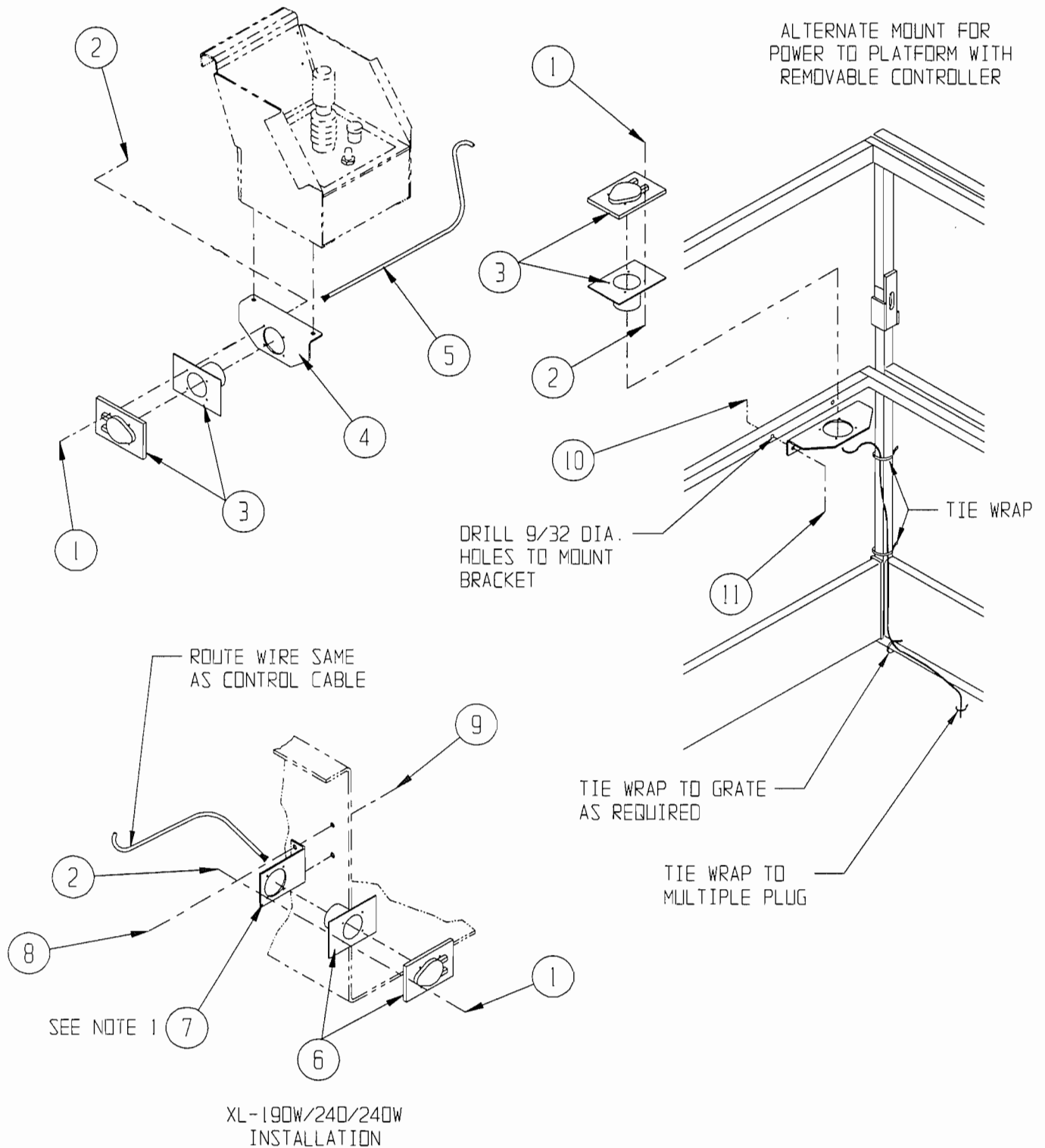
## POWER TO PLATFORM - OPTION XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	11715-004	SCREW RD HD #6-32 X 1/2 LG.	8
2	11248-047	NUT ESNA #6-32	8
3	08942-001	OUTLET	1
4	64520-000	BRACKET	1
5	29495-099	WIRE 14 GA 3 COND.	37'
6	08942-002	OUTLET	1
7	61914-001	BRACKET, BELL BOX MOUNT	1
8	11826-006	SCREW RD HD #10-32 X 3/4 LG.	2
9	11249-003	NUT ESNA #10-32	2
10	11248-004	NUT ESNA 1/4	2
11	11252-012	SCREW HHC 1/4 X 1 1/2 LG.	2



# Illustrated Parts Breakdown

Section  
7.2



NOTE:  
1. MOUNT BRACKET 180° AS SHOWN  
ON XL-190 ASSEMBLY.

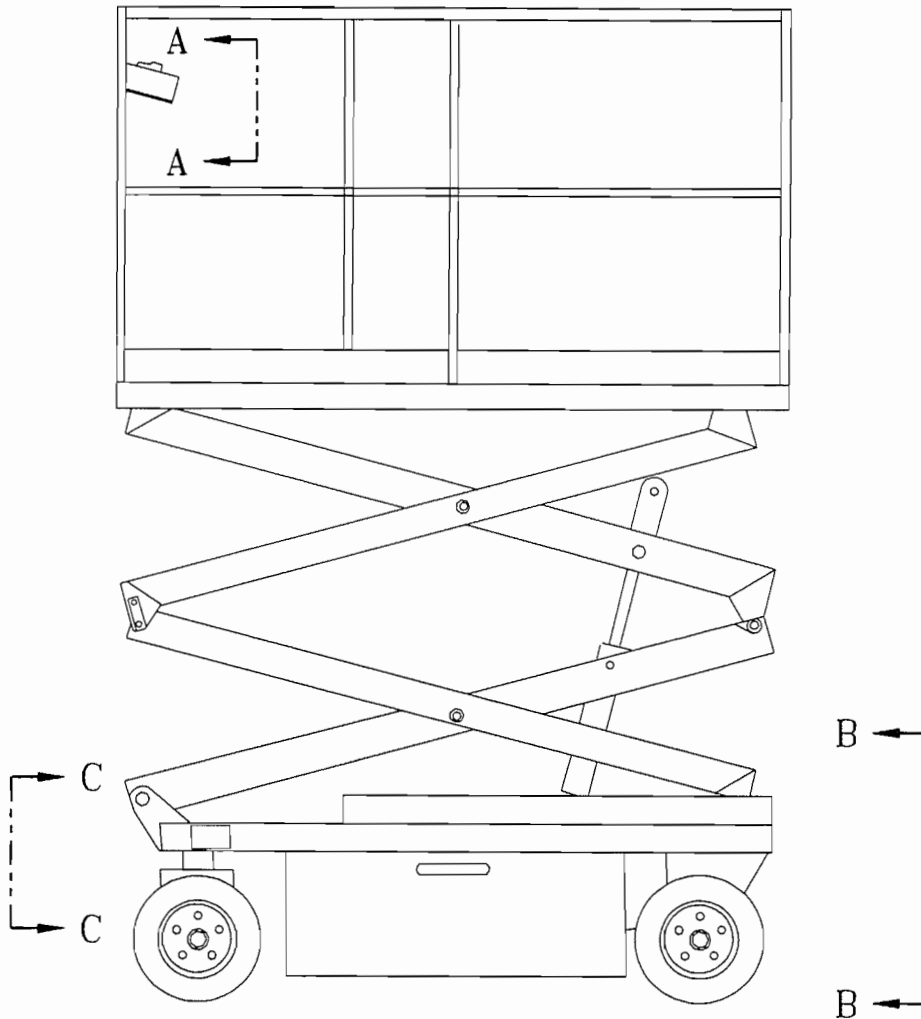
**POWER TO PLATFORM - OPTION  
XL-19D/19DW/24D/24DW**

061799-002

# Illustrated Parts Breakdown

## AIR TO PLATFORM - OPTION XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	11249-003	NUT #10-32 ESNA	2
2	11826-005	SCREW #10-32 RD HD MACH. X 5/8 LONG	2
3	12728-000	COUPLING	1
4	12729-003	COUPLING	1
5	11917-007	FITTING ELBOW 90°	1
6	63594-000	BRACKET, WELDMENT	1
8	15770-099	HOSE 3/8	37 FT
9	64274-002	FITTING HOSE	2
10	63191-000	BRACKET, WELD	1
11	11252-012	SCREW HHCS 1/4 X 1 1/2 LG.	2
12	11248-004	NUT ESNA 1/4	2

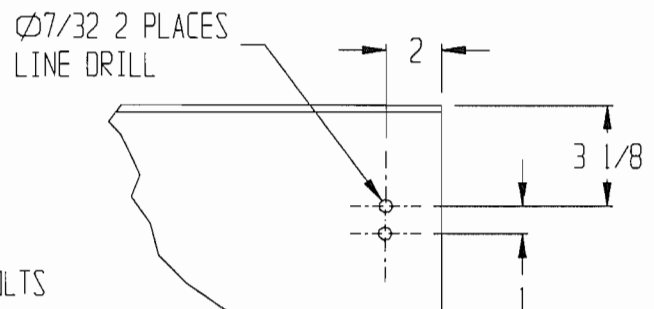
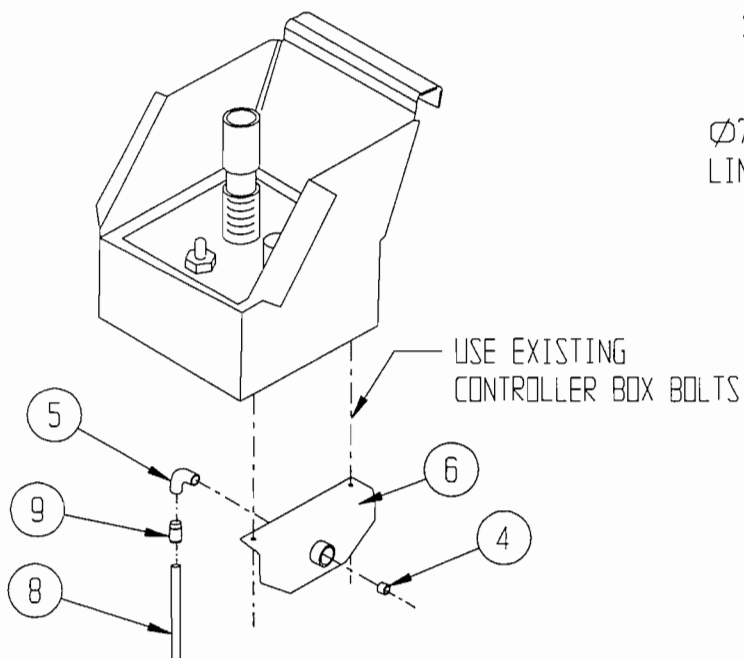
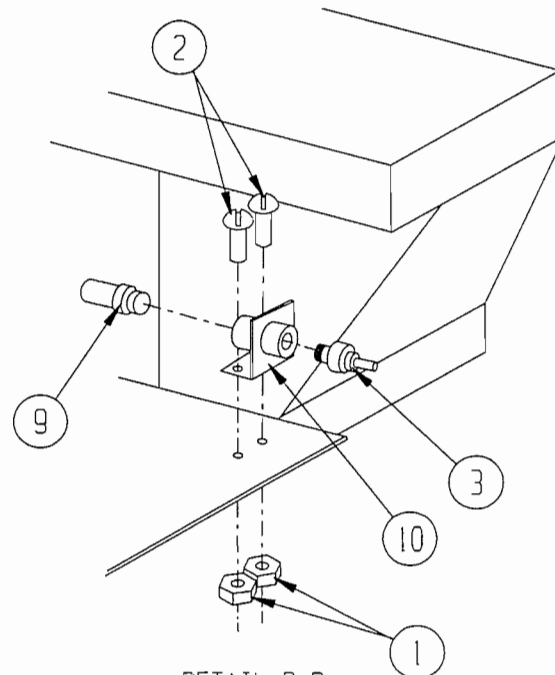
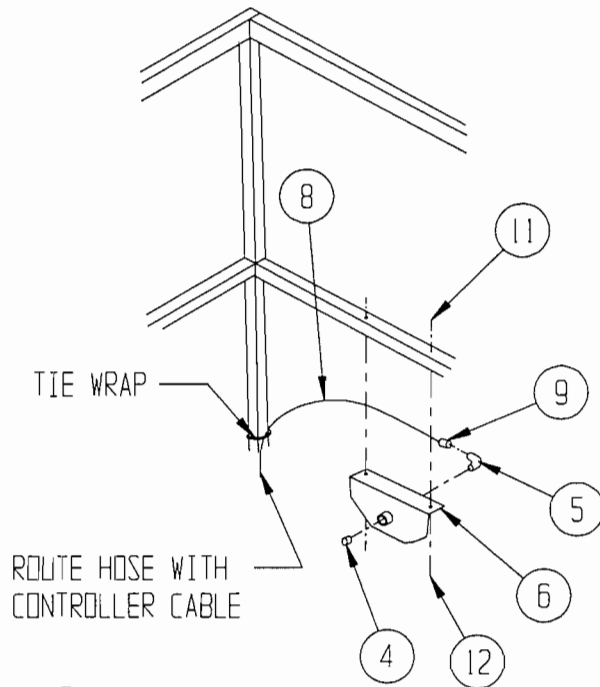


**AIR TO PLATFORM - OPTION  
XL-19D/19DW/24D/24DW  
DRAWING 1 OF 2**

# Illustrated Parts Breakdown

Section  
7.2

NOTE:  
ALIGN HOLES ON L.H. SIDE  
AND TACK WELD IN PLACE WHEN USED  
WITH GENERATOR OPTION ON XL-19D



DETAIL C-C  
RIGHT HAND CORNER  
E.E. MODULE ONLY

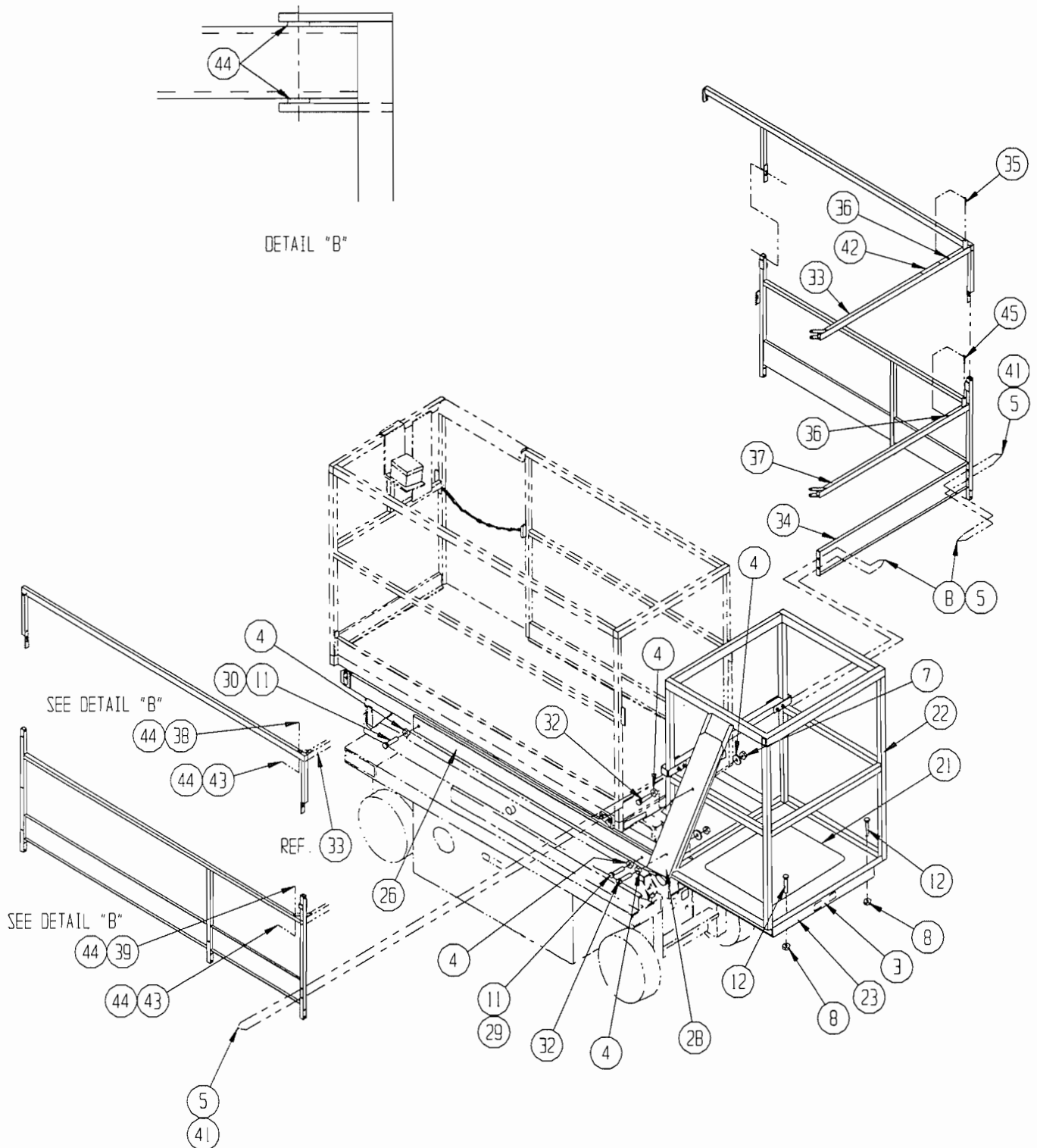
**AIR TO PLATFORM - OPTION  
XL-19D/19DW/24D/24DW  
DRAWING 2 OF 2**

## CANTILEVER CAGE - OPTION XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	05641-015	#35 ROLLER CHAIN X 285 PITCHES	2
2	05641-012	#35 ROLLER CHAIN X 193 PITCHES	1
3	05652-000	DECAL, MAX LOAD 250 LBS.	3
4	11240-004	1/4 DIA. STD. FLAT WASHER	8
5	11240-006	3/8 DIA. STD. FLAT WASHER	16
7	11248-004	1/4-20 UNC LOCKNUT ESNA	10
8	11248-006	3/8-16 UNC LOCKNUT ESNA	16
9	11250-004	1/4-20 UNC HEX NUT	8
10	11252-008	1/4-20 UNC HEX HD CAP SCREW X 1	4
11	11252-030	1/4-20 UNC HEX HD CAP SCREW X 3 3/4	4
12	11254-008	3/8-16 UNC HEX HD CAP SCREW X 1	4
13	11254-010	3/8-16 UNC HEX HD CAP SCREW X 1 1/4	8
14	11741-010	3/8-16 UNC FLT HD SOC. SCR. X 1 1/4	4
15	11884-003	CONN. LINK #35 SNG STRG CLIP TYPE	5
16	17404-002	1/4 SCH 40 BLK STL PIPE X 1 1/4 LG	6
17	27931-010	BEARING	4
19	61322-000	BRACKET WELDMENT	2
20	61318-000	CHAIN ADJUSTMENT SCREW	4
21	61355-000	SAFETY WALK	1
22	61601-001	CAGE ASSEMBLY	1
23	61602-001	ROLLING FRAME ASSEMBLY	1
24	61609-000	BRACKET	2
25	61610-000	RETAINER	2
26	61611-000	GUARD LH	1
27	61612-000	GUARD RH	1
28	61613-000	GUARD	1
29	11246-004	NUT (THIN) 1/4-20 UNC ESNA	4
30	61615-000	PIN WELDMENT	2
31	61617-000	ROLLER	2
32	11252-016	1/4-20 UNC HEX HD CAP SCR X 2	2
33	63223-001	WELDMENT, GUARDRAIL REAR	1
34	61767-000	WELDMENT, REAR TOEBOARD	1
35	10414-000	LOCKING PIN ASSY	1
36	26553-004	POP RIVET, 3/16 X 3/8 GRIP	2
37	63267-000	WELDMENT, MIDRAIL	1
38	11253-024	SCREW, HEX HD CAP 5/16-18UNC X 3	1
39	11253-014	SCREW, HEX HD CAP 5/16-18UNC X 1 3/4	1
41	11254-016	SCREW, HEX HD CAP 3/8-16 X 2	4
42	61787-000	DECAL, DANGER	1
43	11248-005	ESNA NUT 5/16-18	2
44	11240-005	WASHER, FLAT 5/16 DIA.	4
45	61786-000	LOCKING, PIN ASSY	1

# Illustrated Parts Breakdown

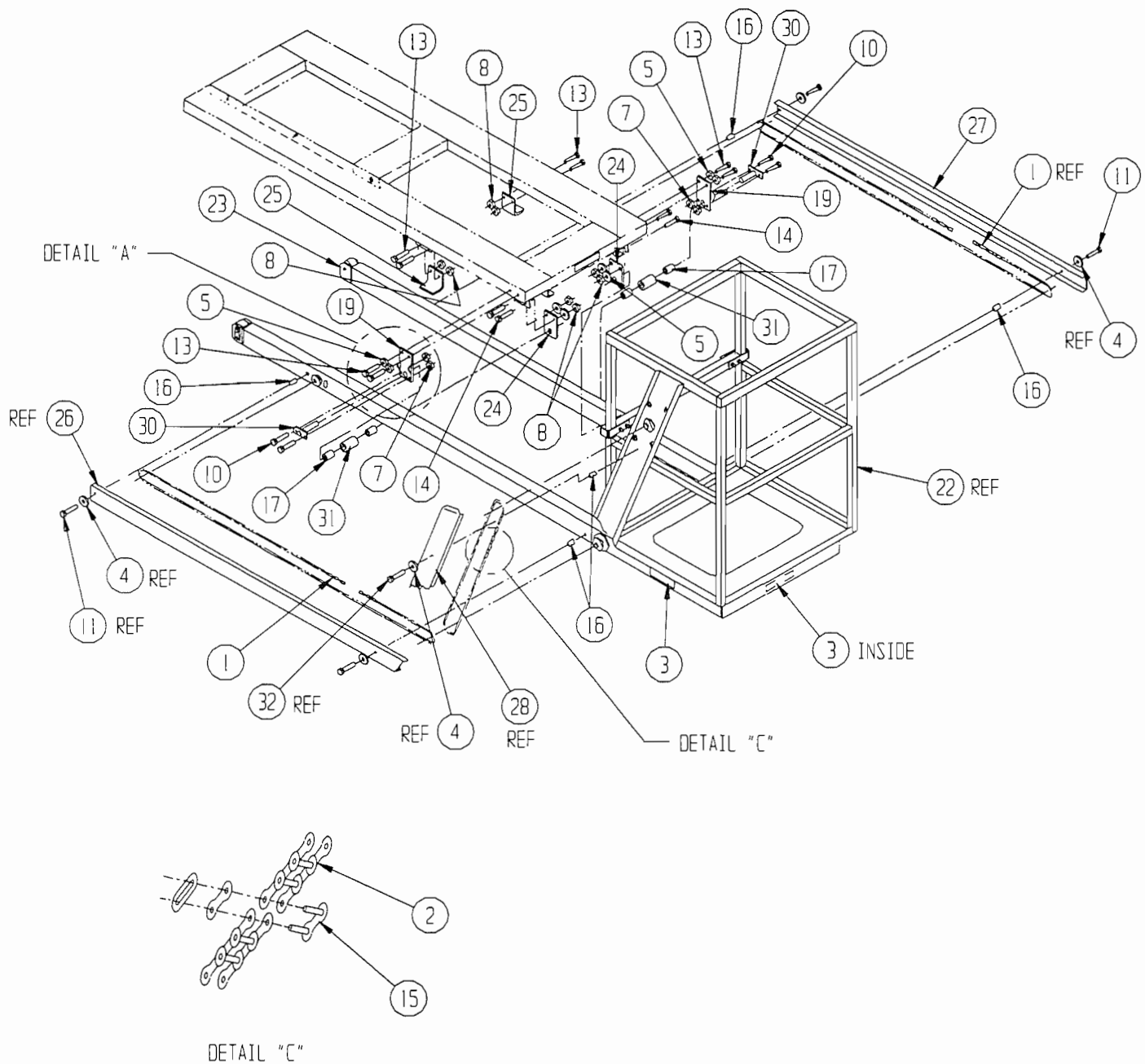
Section  
7.2



**CANTILEVER CAGE - OPTION  
XL-19D  
DRAWING 1 OF 3**

061799-002

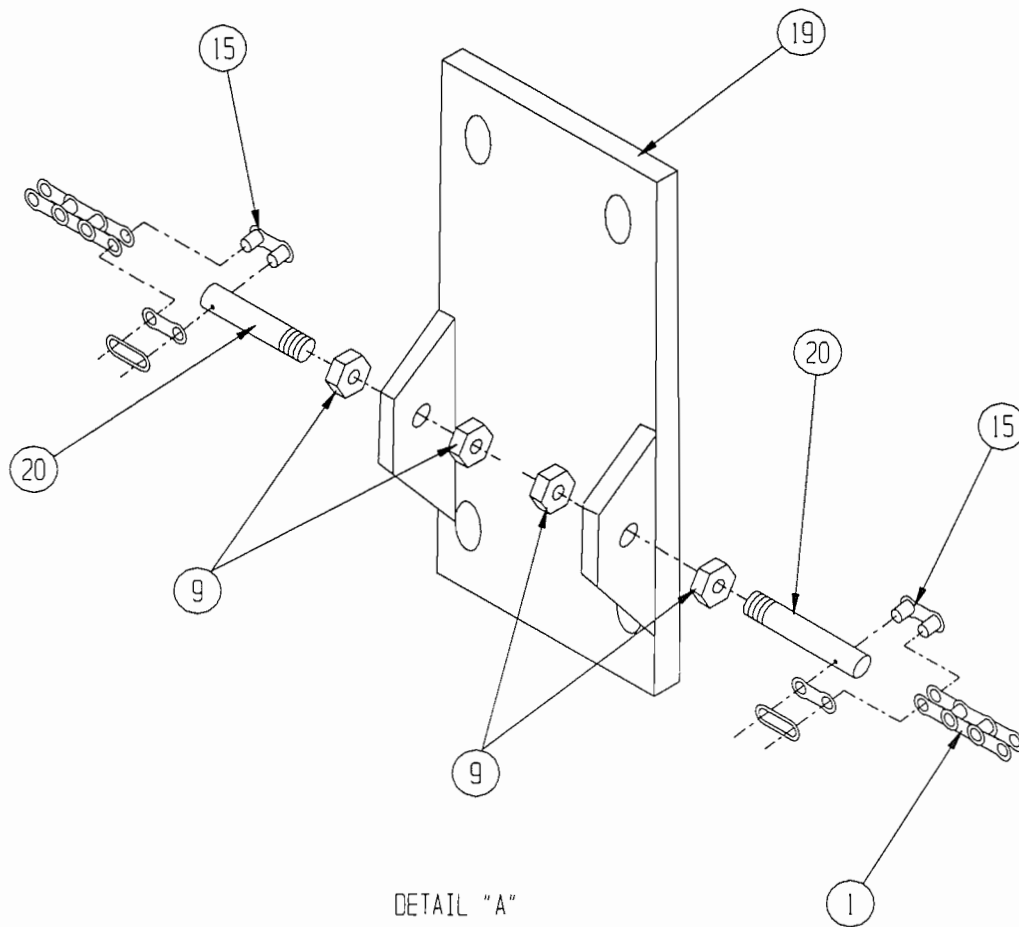
# Illustrated Parts Breakdown



**CANTILEVER CAGE - OPTION  
XL-19D  
DRAWING 2 OF 3**

# Illustrated Parts Breakdown

Section  
**7.2**



**CANTILEVER CAGE - OPTION  
XL-19D  
DRAWING 3 OF 3**

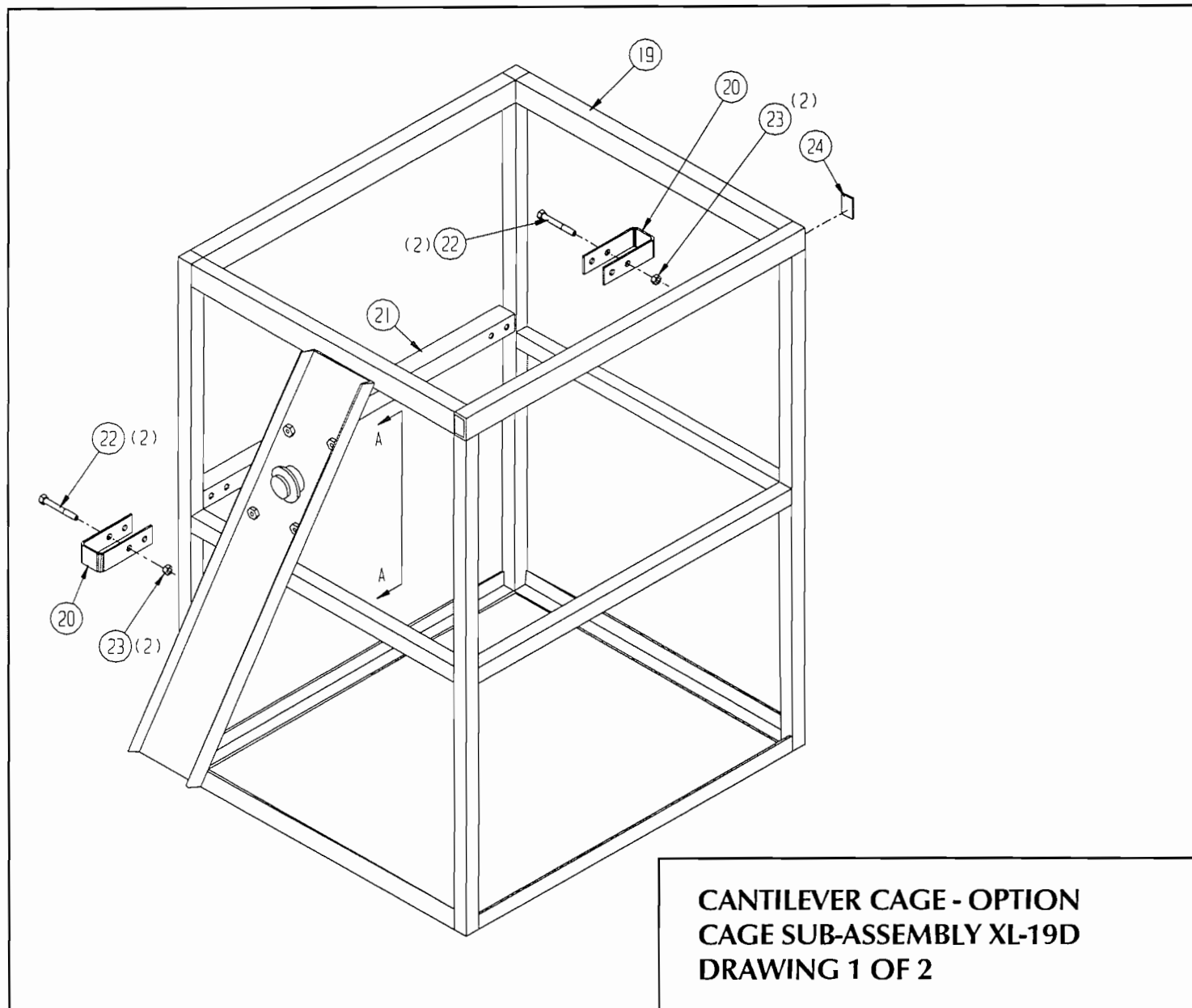
061799-002

# Illustrated Parts Breakdown

## CANTILEVER CAGE - OPTION CAGE SUB-ASSEMBLY XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	03443-001	HOUSING	1
2	05346-000	ARM	1
3	05373-000	RETAINING PIN	1
4	05376-000	SPRING	1
5	06452-000	THRUST BEARING	2
6	11240-004	1/4 DIA. FLAT WASHER	1
7	11240-006	3/8 DIA. FLAT WASHER	4
8	11246-004	1/4-20 UNC HEX LOCKNUT THIN	1
9	11248-005	5/16-18 UNC HEX LOCKNUT	1
10	11248-006	3/8-16 UNC HEX LOCKNUT	4
11	11253-014	5/16-18 UNC HEX HD CAP SCR X 1 3/4	1
12	11254-008	3/8-16 UNC HEX HD CAP SCR X 1	4

ITEM	PART	DESCRIPTION	QTY.
13	11735-020	1/8 DIA. ROLL PIN X 1 1/4 LONG	1
14	27931-018	BEARING	1
15	61307-000	SHAFT WELDMENT	1
16	61316-000	PLATE WELDMENT	1
17	61352-000	LABEL, PULLOUT	1
18	61353-000	HANDLE, ARM ASSEMBLY	1
19	61603-000	CAGE, WELDMENT	1
20	63332-000	MIDRAIL END	2
21	63331-001	MIDRAIL	1
22	11252-016	SCREW HEX HD CAP 1/4-20 UNC X 2	4
23	11248-004	LOCKNUT 1/4-20 UNC	4
24	63926-003	PLUG, TUBE 1 X 1 1/2	4

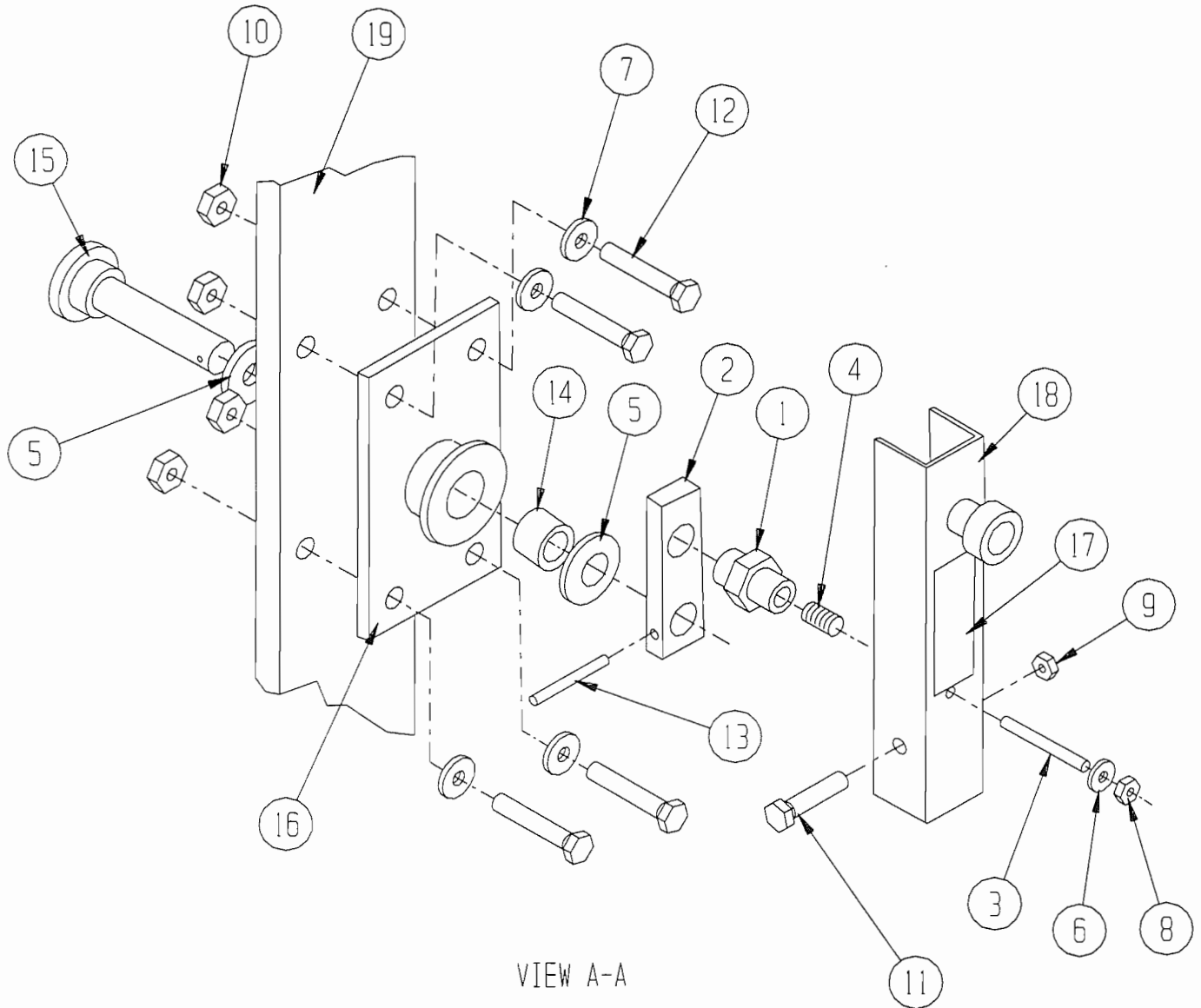


061799-002



# Illustrated Parts Breakdown

Section  
7.2



CANTILEVER CAGE - OPTION  
CAGE SUB-ASSEMBLY XL-19D  
DRAWING 2 OF 2

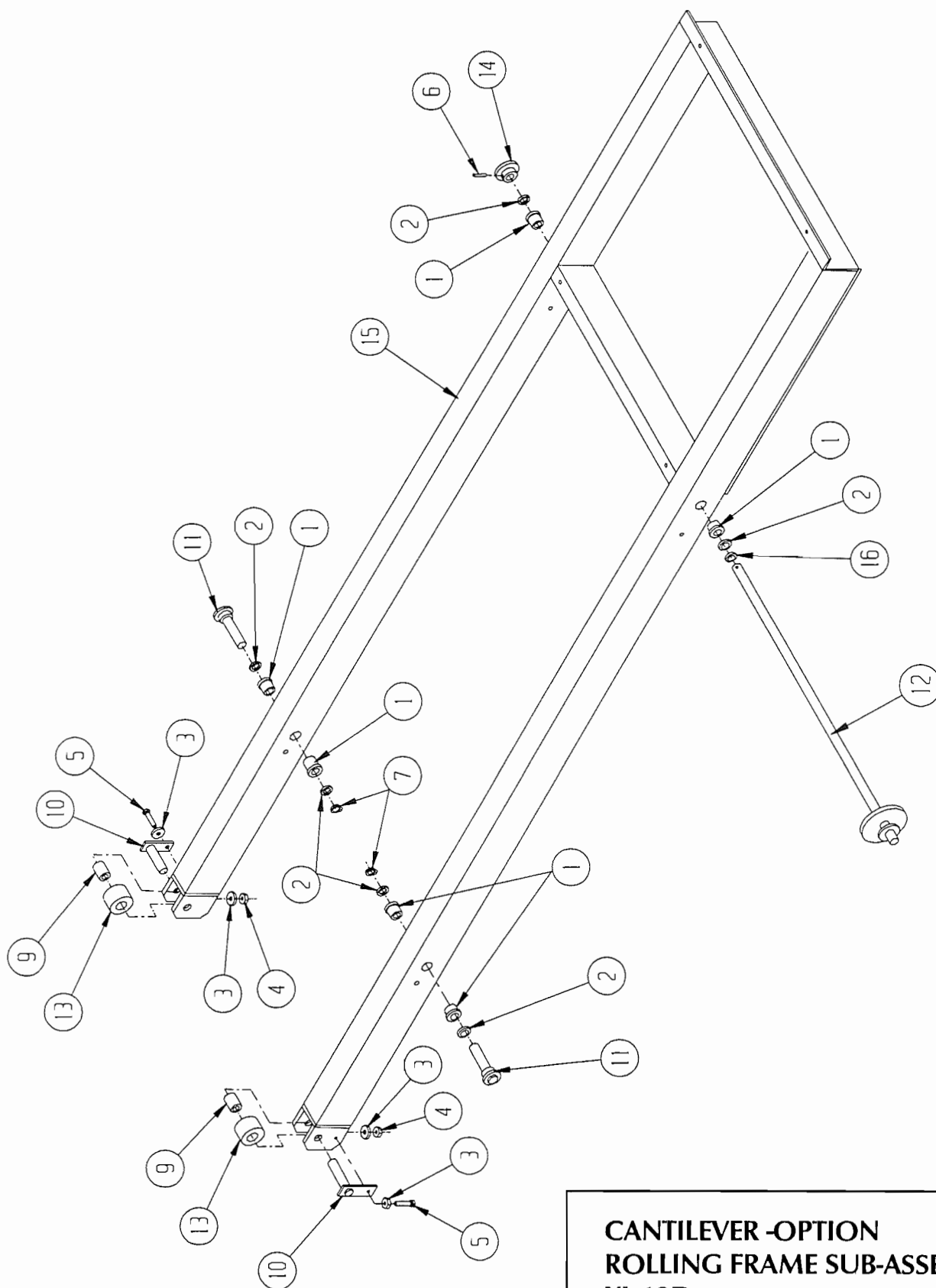
061799-002

## CANTILEVER CAGE - OPTION ROLLING FRAME SUB-ASSEMBLY XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	00173-000	BEARING	6
2	06452-000	THRUST BEARING	6
3	11240-004	1/4 DIA. STD FLAT WASHER	4
4	11248-004	1/4-20 UNC HEX LOCKNUT	2
5	11252-008	1/4-20 UNC HEX HD CAP SCR X 1	2
6	11735-020	1/8 DIA. ROLL PIN X 1 1/4 LONG	1
7	11764-012	RETAINING RING	2
9	27931-010	BEARING	2
10	61304-000	PIN WELDMENT	2
11	61310-000	SHAFT WELDMENT	2
12	61313-000	SHAFT WELDMENT	1
13	61336-000	ROLLER	2
14	61359-000	SPROCKET	1
15	61604-001	ROLLING FRAME WELDMENT	1
16	11239-012	WASHER, 3/4 DIA.	1

# Illustrated Parts Breakdown

Section  
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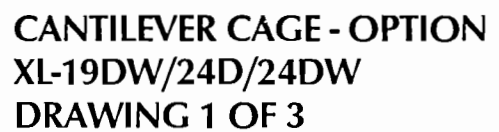
**CANTILEVER -OPTION  
ROLLING FRAME SUB-ASSEMBLY  
XL-19D**

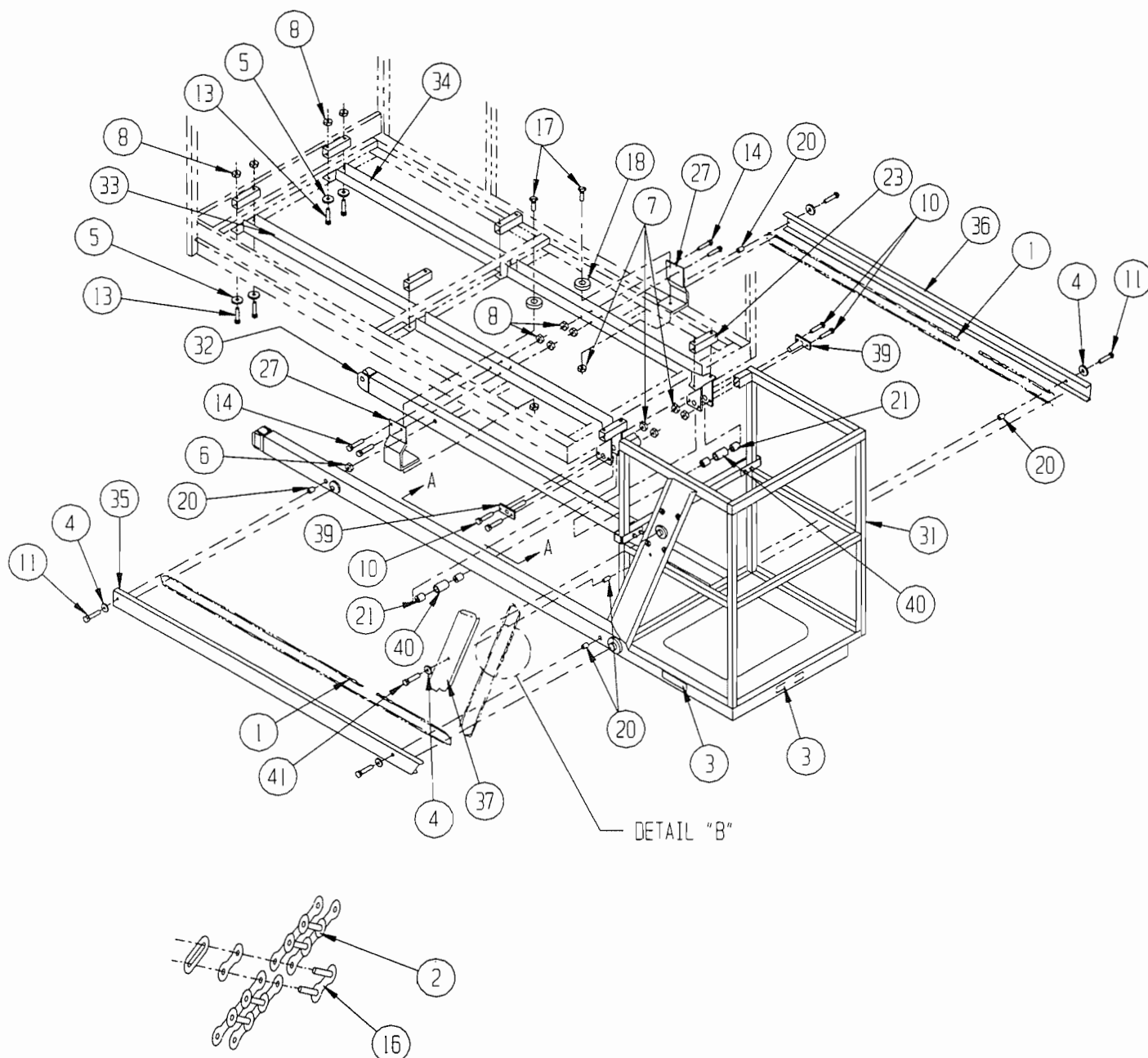
061799-002

## CANTILEVER CAGE - OPTION XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	05641-011	#35 ROLLER CHAIN X 291 PITCHES	2
2	05641-012	#35 ROLLER CHAIN X 193 PITCHES	1
3	05652-000	DECAL, MAX LOAD 250 LBS.	3
4	11240-004	1/4 DIA. STD. FLAT WASHER	10
5	11240-006	3/8 DIA. STD. FLAT WASHER	20
6	11246-004	1/4-20 THIN ESNA	1
7	11248-004	1/4-20 UNC LOCKNUT ESNA	4
8	11248-006	3/8-16 UNC LOCKNUT ESNA	28
9	11250-004	1/4-20 UNC HEX NUT	8
10	11252-008	1/4-20 UNC HEX HD CAP SCREW X 1	4
11	11252-030	1/4-20 UNC HEX HD CAP SCREW X 3 3/4	4
12	11254-008	3/8-16 UNC HEX HD CAP SCREW X 1	4
13	11254-024	3/8-16 UNC HEX HD CAP SCREW X 3	12
14	11254-032	3/8-16 UNC HEX HD CAP SCREW X 4	4
16	11884-003	CONN. LINK #35 SNG STRD CLIP TYPE	5
17	11828-008	SCREW, 1/4-20 X 1 FLAT HD SOC	2
18	60643-001	BEARING, ROUND SLIDE	2
20	17404-002	1/4 SCH 40 BLK STL PIPE X 1 1/4 LG	6
21	27931-010	BEARING	4
23	61566-000	SPACER	6
27	61930-000	GUIDE, CANTILEVER CAGE	2
28	61322-000	CHAIN ADJUSTMENT SCREW	4
29	61355-000	SAFETY WALK	1
31	61921-001	CAGE ASSEMBLY	1
32	61922-000	ROLLING FRAME ASSEMBLY	1
33	61980-000	WELDMENT, TRACK CHANNEL	1
34	61964-000	WELDMENT, TRACK CHANNEL	1
35	61611-000	GUARD LH	1
36	61612-000	GUARD RH	1
37	61613-000	GUARD	1
39	61615-000	PIN WELDMENT	2
40	61617-000	ROLLER	2
41	11252-016	1/4-20UNC HEX HD CAP SCR X 2	2
42	63161-001	GUARDRAIL, REAR WELDMENT	1
43	63157-000	TOEBOARD, REAR WELDMENT	1
44	10414-000	LOCKING PIN ASSY	1
45	26553-004	POP RIVET 3/16 X 3/8 GRIP	2
46	63272-000	WELDMENT, MIDRAIL	1
47	11253-024	SCREW, HEX HD CAP 5/16-18 X 3	1
48	11253-014	SCREW, HEX HD CAP 5/16-18 X 1 3/4	1
50	11254-016	SCREW, HEX HD CAP 3/8-16 X 2	4
51	11248-005	ESNA NUT 5/16-18	2
52	11240-005	WASHER, FLAT 5/16 DIA	4
53	61786-000	LOCKING PIN ASSY	1

## Section 7.2

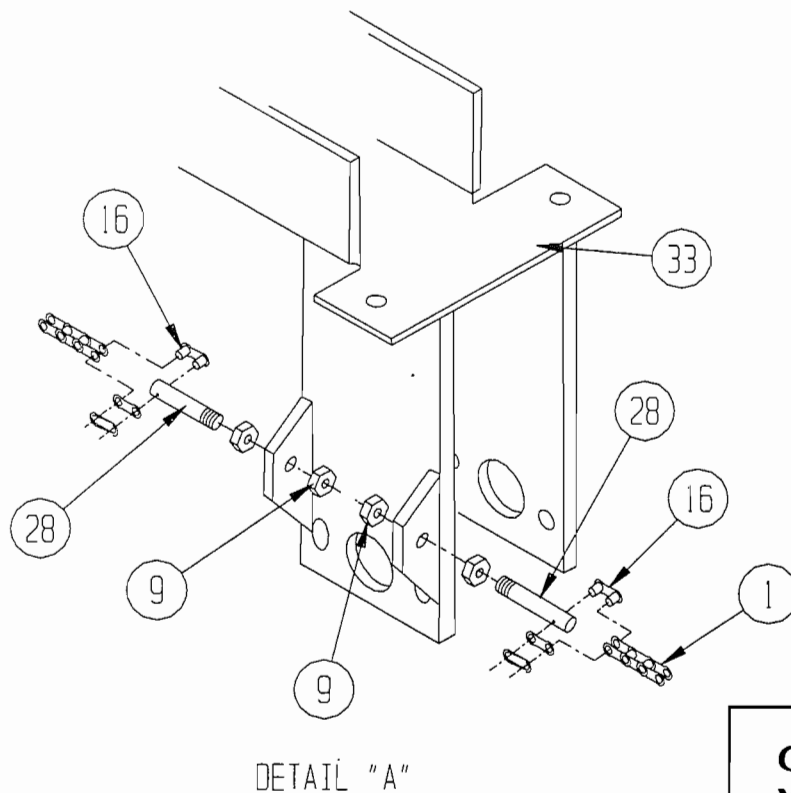
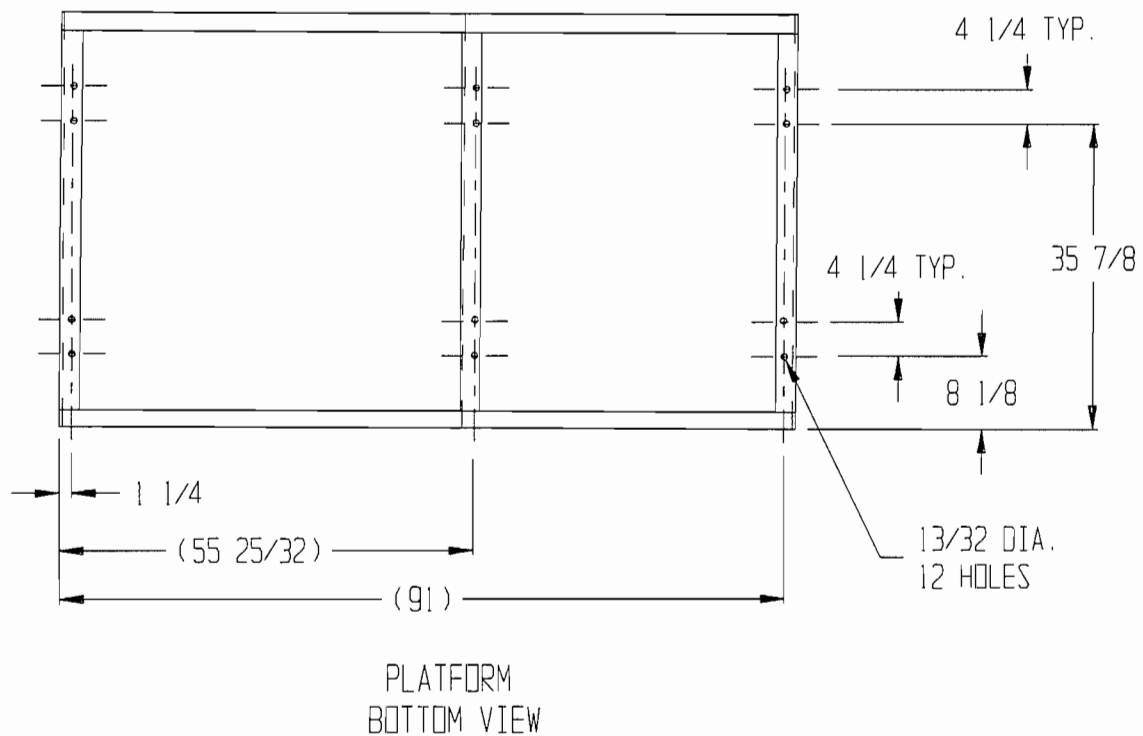




**CANTILEVER CAGE - OPTION  
XL-19DW/24D/24DW  
DRAWING 2 OF 3**

# Illustrated Parts Breakdown

Section  
7.2



**CANTILEVER CAGE - OPTION  
XL-19DW/24D/24DW  
DRAWING 3 OF 3**

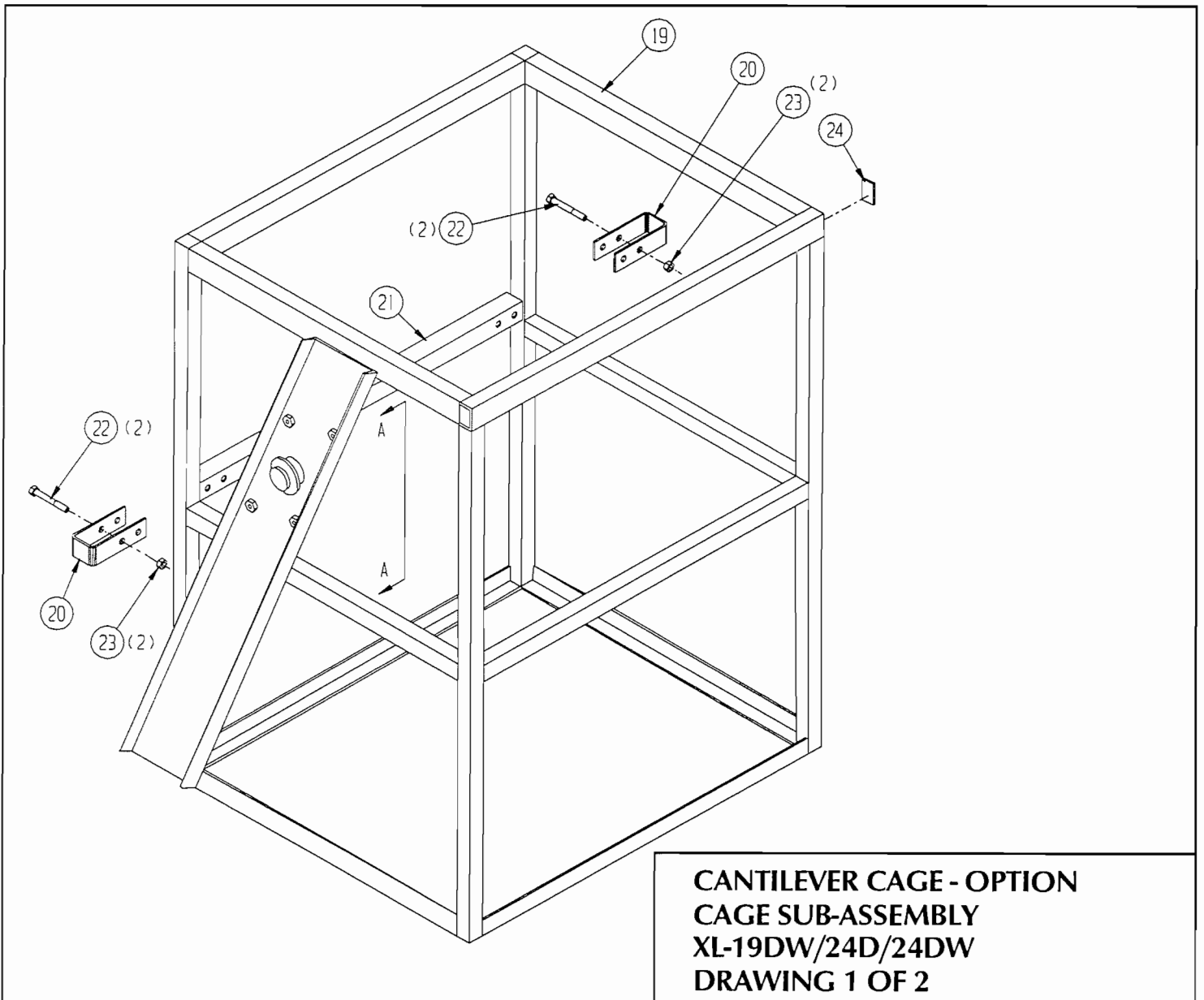
061799-002

# Illustrated Parts Breakdown

## CANTILEVER CAGE - OPTION CAGE SUB-ASSEMBLY XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1 <sup>3</sup>	03443-001	HOUSING	1
2	05346-000	ARM	1
3	05373-000	RETAINING PIN	1
4	05376-000	SPRING	1
5	06452-000	THRUST BEARING	2
6	11240-004	1/4 DIA. FLAT WASHER	1
7	11240-006	3/8 DIA. FLAT WASHER	4
8	11248-004	1/4-20 UNC HEX LOCKNUT THIN	1
9	11248-005	5/16-18 UNC HEX LOCKNUT	1
10	11248-006	3/8-16 UNC HEX LOCKNUT	4
11	11253-012	5/16-18 UNC HEX HD CAP SCR X 1 1/2	1
12	11254-008	3/8-16 UNC HEX HD CAP SCR X 1	4

ITEM	PART	DESCRIPTION	QTY.
13	11735-020	1/8 DIA. ROLL PIN X 1 1/4 LONG	1
14	27931-018	BEARING	1
15	61307-000	SHAFT WELDMENT	1
16	61316-000	PLATE WELDMENT	1
17	61352-000	LABEL, PULLOUT	1
18	61353-000	HANDLE ARM ASSEMBLY	1
19	61923-001	CAGE, WELDMENT	1
20	63332-000	MIDRAIL END	2
21	63331-002	MIDRAIL	1
22	11252-016	SCREW HEX HD CAP 1/4-20 UNC X 2	4
23	11248-004	LOCKNUT 1/4-20 UNC	4
24	63926-003	PLUG, TUBE 1 X 1 1/2	4

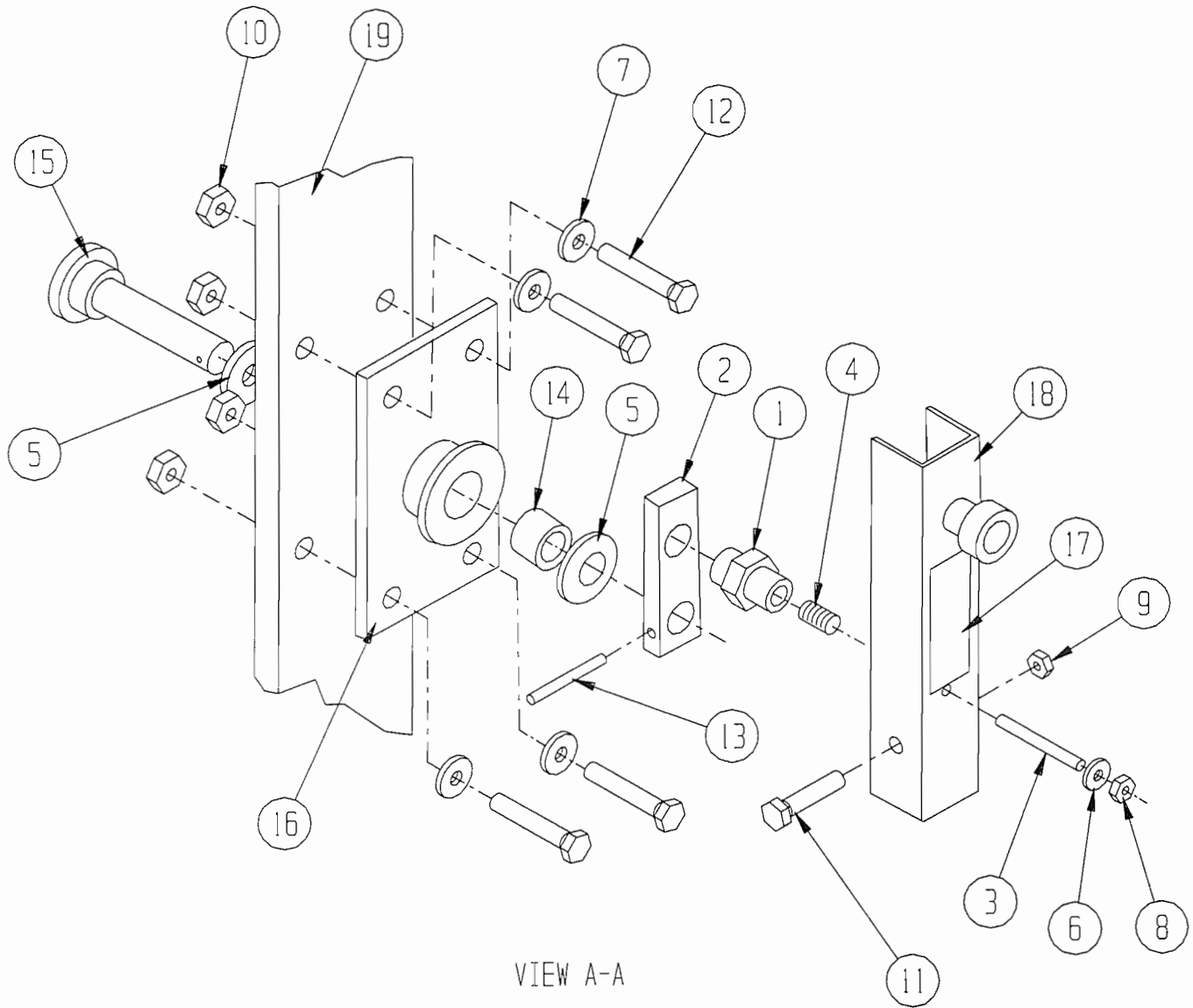


061799-002



# Illustrated Parts Breakdown

Section  
7.2



**CANTILEVER CAGE - OPTION  
CAGE SUB-ASSEMBLY  
XL-19DW/24D/24DW  
DRAWING 2 OF 2**

061799-002

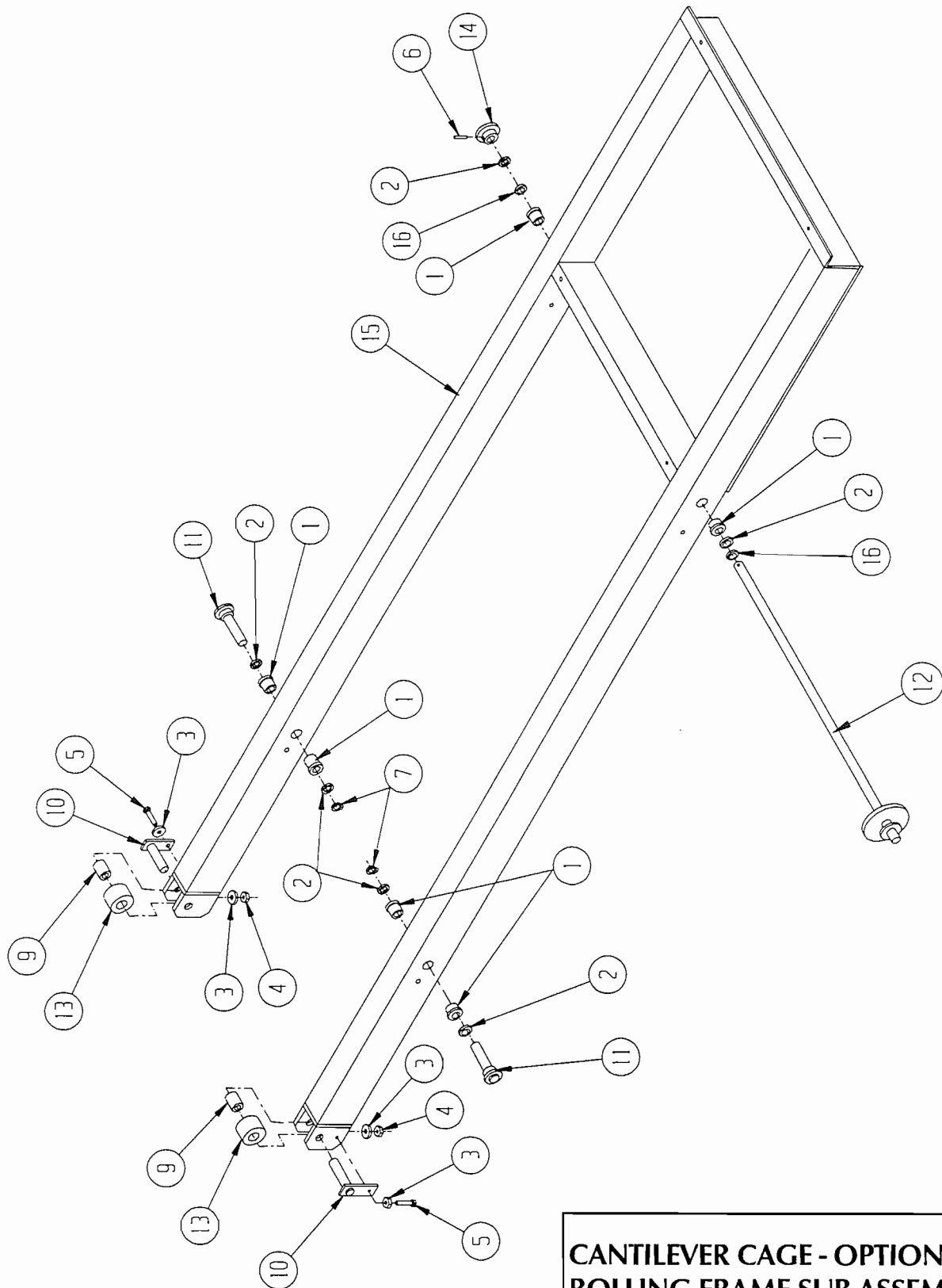
# Illustrated Parts Breakdown

## CANTILEVER CAGE - OPTION ROLLING FRAME SUB-ASSEMBLY XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	00173-000	BEARING	6
2	06452-000	THRUST BEARING	6
3	11240-004	1/4 DIA. STD FLAT WASHER	4
4	11248-004	1/4-20 UNC HEX LOCKNUT	2
5	11252-008	1/4-20 UNC HEX HD CAP SCR X 1	2
6	11735-020	1/8 DIA. ROLL PIN X 1 1/4 LONG	1
7	11764-012	RETAINING RING	2
9	27931-010	BEARING	2
10	61304-000	PIN WELDMENT	2
11	61310-000	SHAFT WELDMENT	2
12	61927-000	SHAFT WELDMENT	1
13	61336-000	ROLLER	2
14	61359-000	SPROCKET	1
15	61924-000	ROLLING FRAME WELDMENT	1
16	11239-012	WASHER 3/4 DIA.	2

# Illustrated Parts Breakdown

Section  
7.2



**CANTILEVER CAGE - OPTION  
ROLLING FRAME SUB-ASSEMBLY  
XL-19DW/24D/24DW**

061799-002

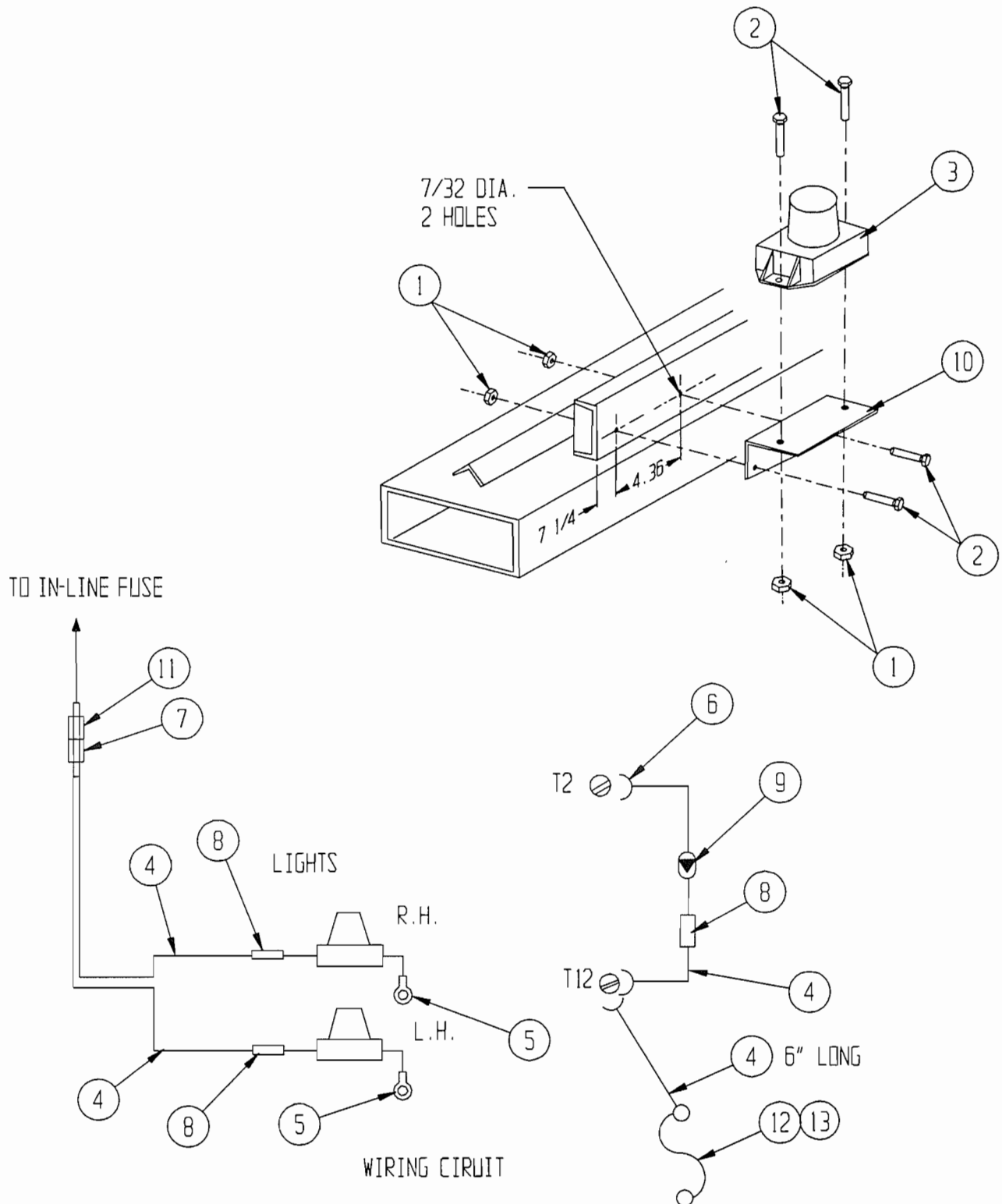
# Illustrated Parts Breakdown

## BEACON ASSEMBLY - OPTION XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	11249-003	NUT #10-32 LOCK	8
2	11826-006	SCREW #10-32 RD. HD. MACH. X 3/4 LG	8
3	12848-004	LIGHT, BEACON	2
4	29451-099	WIRE 16 AWG COPPER WHITE	66'
5	29601-013	CONN. RING TERM	2
6	29610-002	CONN. FORK TERM	3
7	29931-003	CONN PUSH TERM F 16-14 GA	1
8	29620-002	CONN BUTT	3
9	29825-003	DIODE 3 AMP	2
10	63193-000	BRACKET, LIGHT MOUNT	2
11	14914-001	CONN PUSH TERM M 16-14 GA	1
12	29702-000	FUSE HOLDER, IN-LINE	1
13	29702-002	FUSE AGC, 2 AMP	1

# Illustrated Parts Breakdown

Section  
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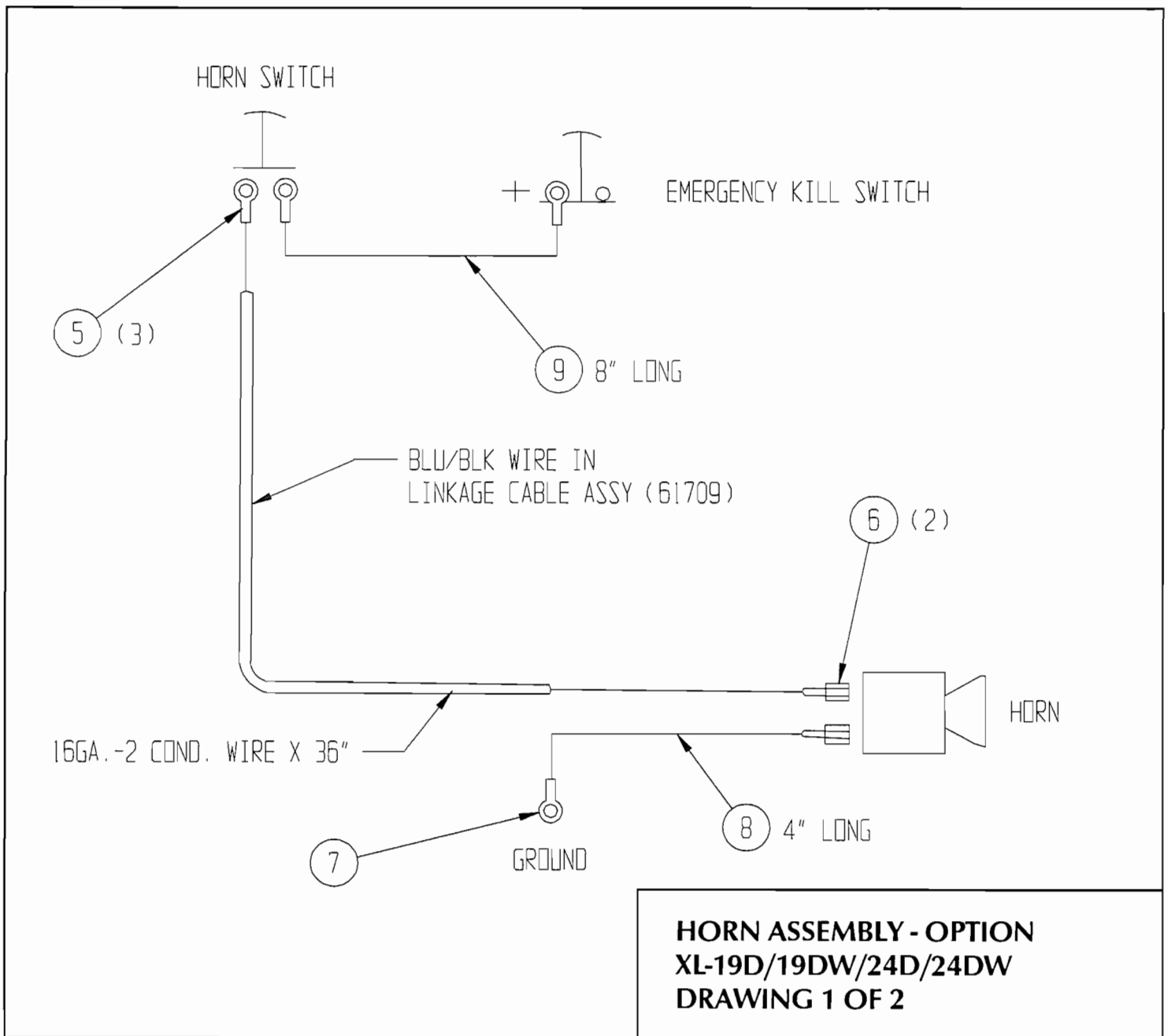


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# Illustrated Parts Breakdown

## HORN ASSEMBLY - OPTION XL-19D/19DW/24D/24DW

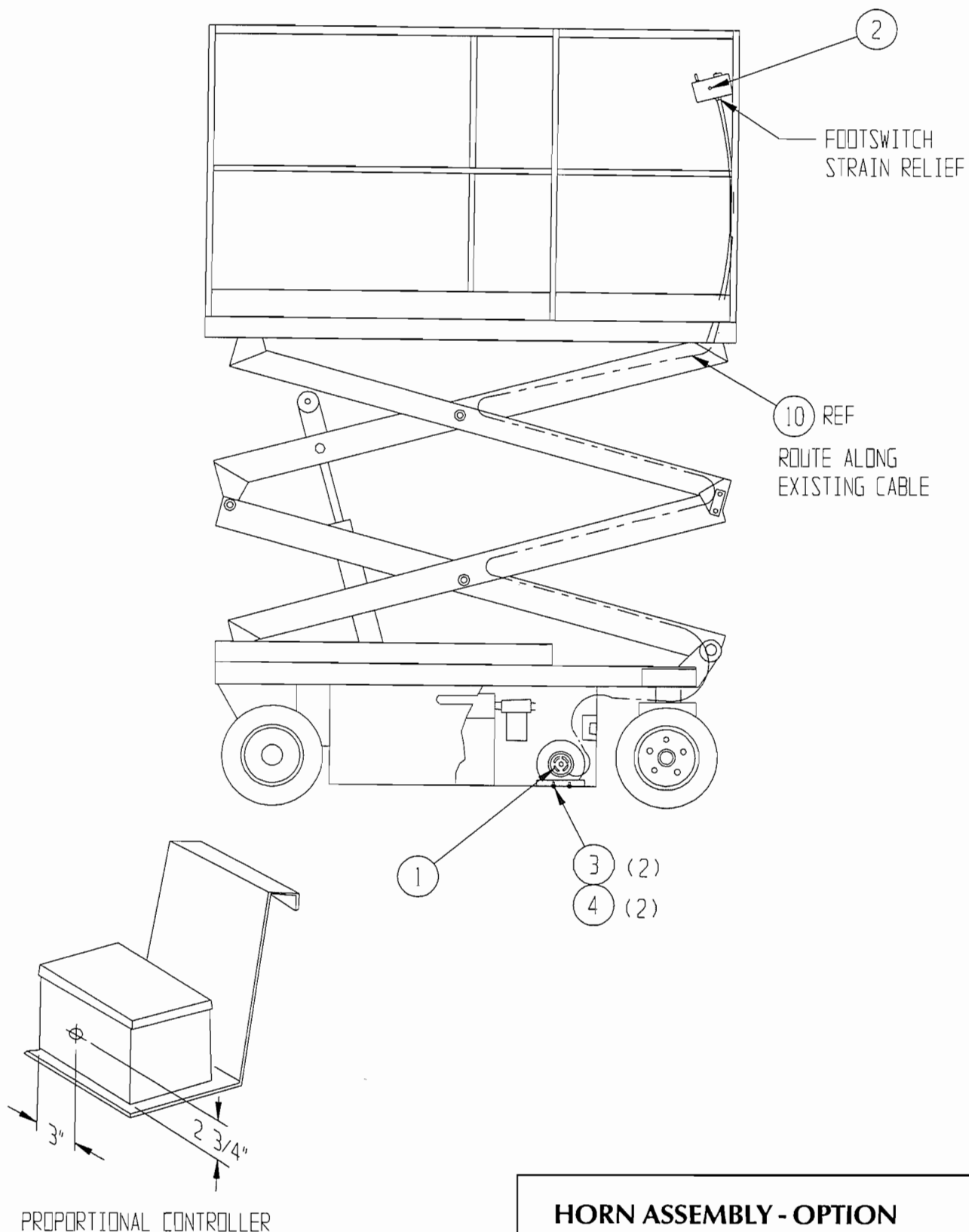
ITEM	PART	DESCRIPTION	QTY.
1	29958-000	HORN	1
2	63917-000	PUSH BUTTON SWITCH	1
3	11248-004	NUT ESNA 1/4-20	2
4	11252-008	SCREW HHC 1/4-20 X 1	2
5	29601-013	CONN RING TERM	3
6	29615-002	CONN PUSH TERM 18-22 GA	2
7	29601-014	CONN RING TERM	1
8	29456-099	WIRE 16 GA YELLOW	4 IN
9	29454-099	WIRE 16 GA RED	8 IN
10	29496-099	WIRE ASSY 16 GA - 2 COND	36 FT



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# Illustrated Parts Breakdown

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**7.2**



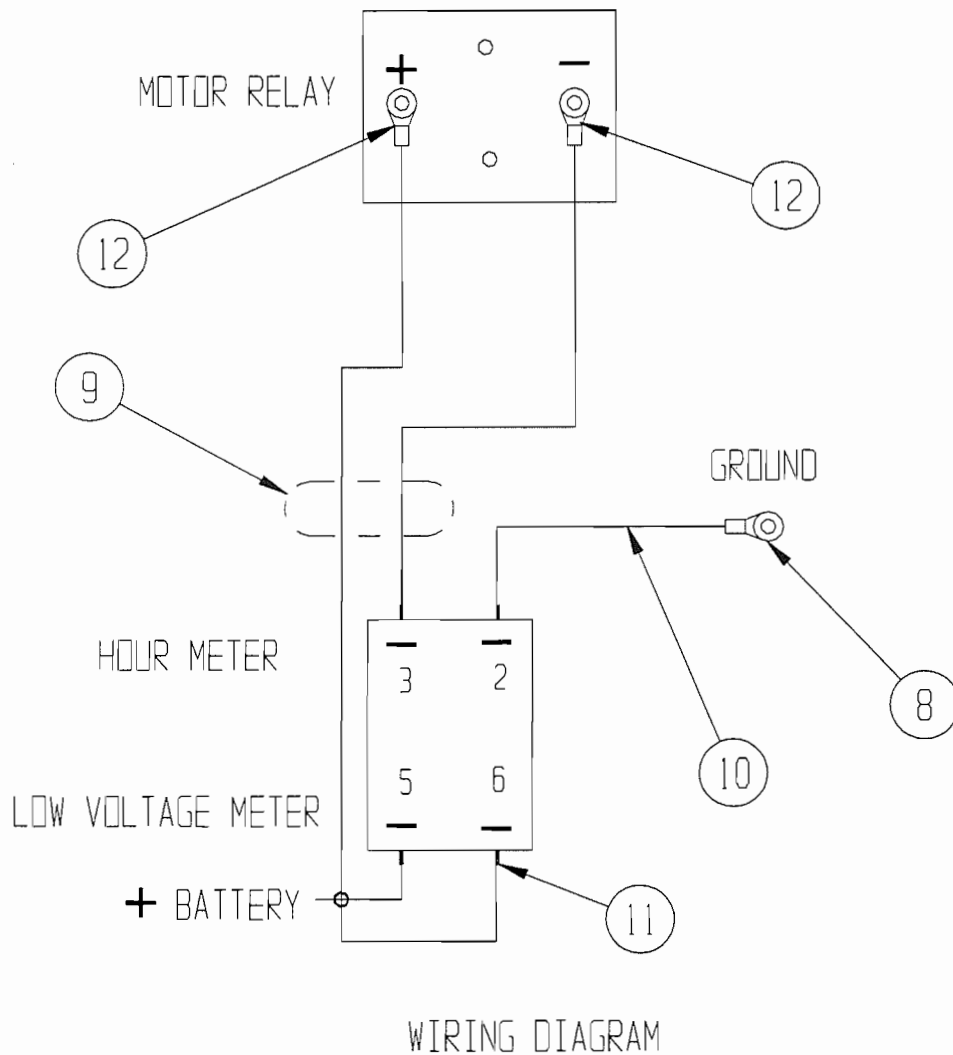
**HORN ASSEMBLY - OPTION  
XL-19D/19DW/24D/24DW  
DRAWING 2 OF 2**

061799-002

# Illustrated Parts Breakdown

## HOUR/LOW VOLTAGE METER - OPTION XL-19D/19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	29959-000	HOUR/LOW VOLTAGE IND.	1
2	61647-000	BRACKET, INDICATOR	1
3	11248-004	NUT ESNA 1/4-20	2
4	11252-008	SCREW HHC 1/4-20 X 1	2
8	29601-014	CONN RING TERM 16-14, 1/4"	1
9	29490-099	WIRE 2 COND.	3 FT
10	29452-099	WIRE 16 GA BLACK	.33 FT
11	29931-003	WIRE CONN PUSH ON	4
12	29601-040	WIRE CONN RING 16-14, 5/16"	2

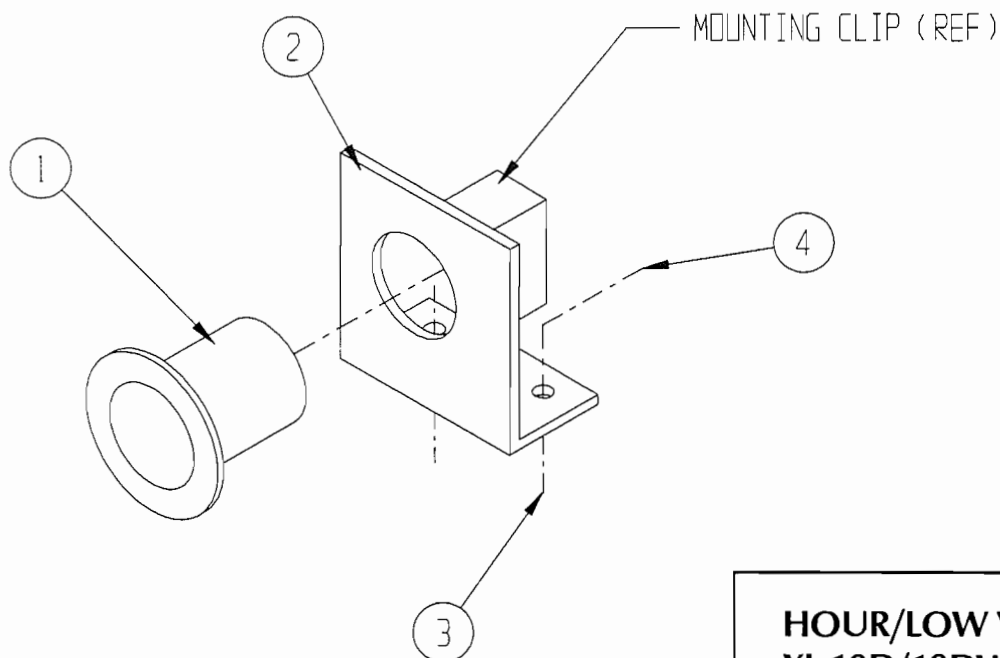
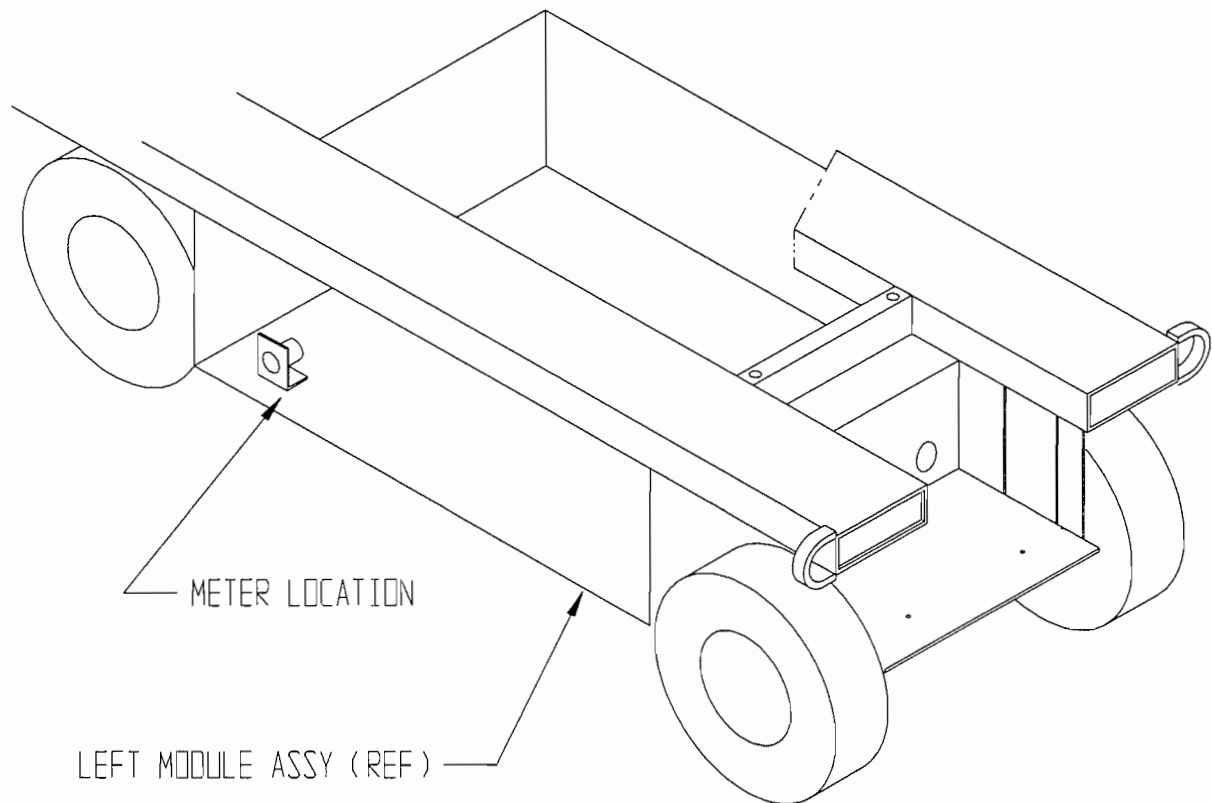


**HOUR/LOW VOLTAGE METER - OPT.  
XL-19D/19DW/24D/24DW  
DRAWING 1 OF 2**



# Illustrated Parts Breakdown

Section  
7.2

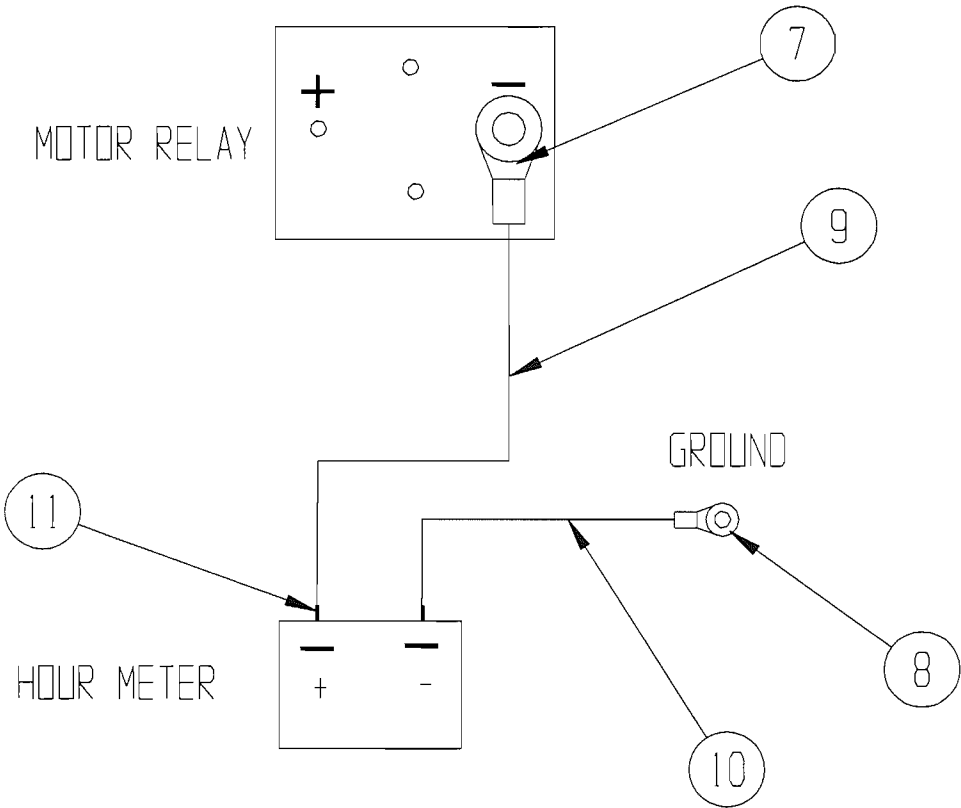


**HOUR/LOW VOLTAGE METER - OPT.**  
**XL-19D/19DW/24D/24DW**  
**DRAWING 2 OF 2**

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HOUR METER - OPTION  
XL-19D/19DW/24D/24DW

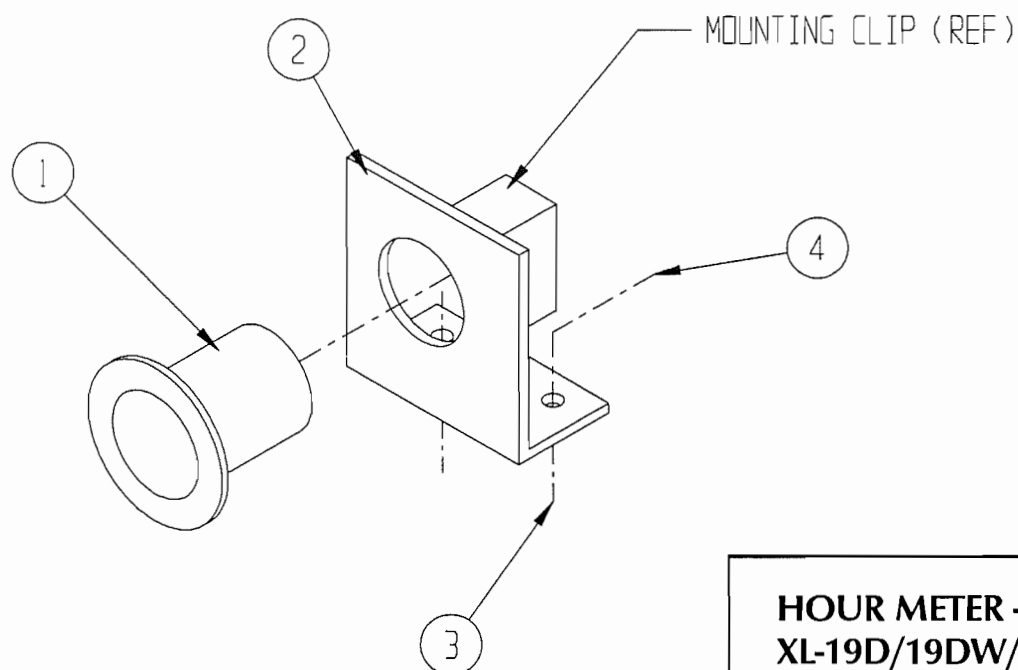
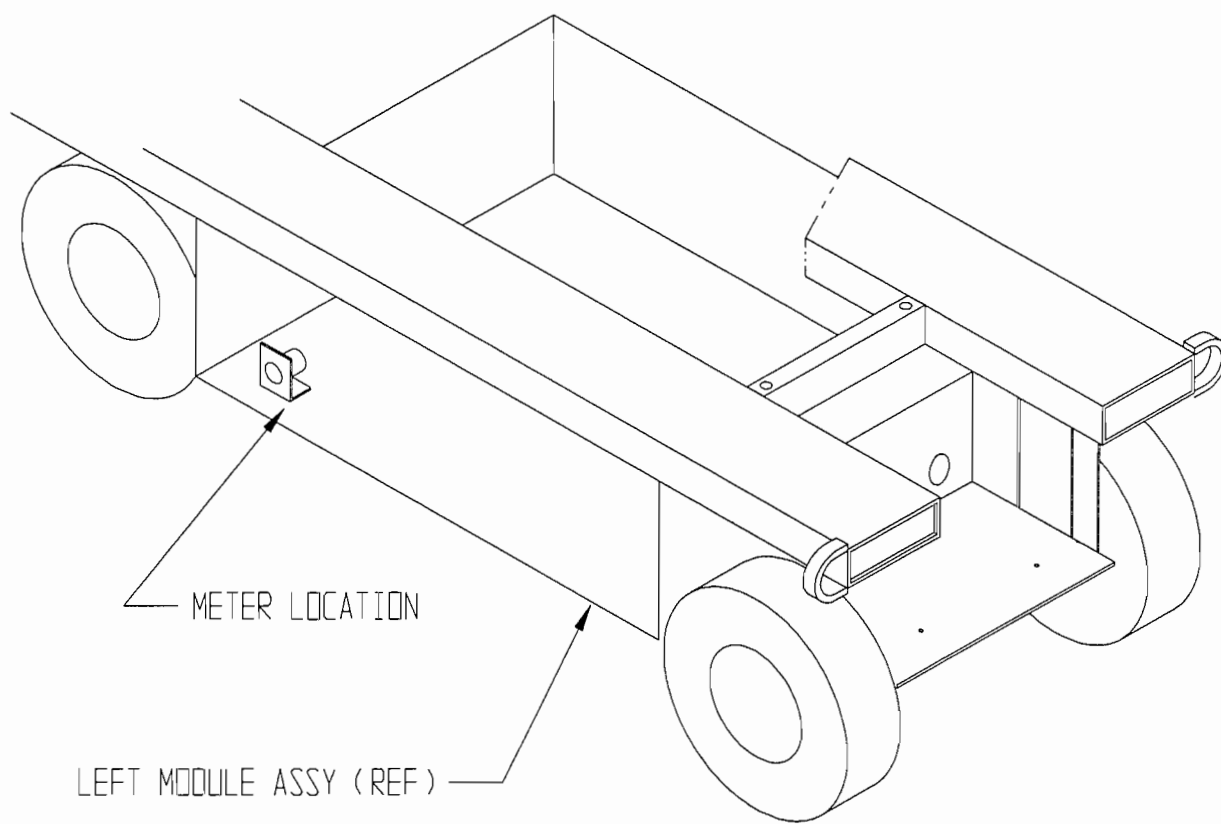
ITEM	PART	DESCRIPTION	QTY.
1	15752-000	HOURMETER	1
2	61647-000	BRACKET, INDICATOR	1
3	11248-004	NUT ESNA 1/4-20	2
4	11252-008	SCREW HHC 1/4-20 X 1	2
7	29601-040	CONN RING TERM	1
8	29601-014	CONN RING TERM	1
9	29454-009	WIRE 16 GA RED	2.5 FT
10	29452-099	WIRE 16 GA, BLACK	.33 FT
11	29931-003	CONN PUSH TERM	2



HOUR METER - OPTION  
XL-19D/19DW/24D/24DW  
DRAWING 1 OF 2

# Illustrated Parts Breakdown

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7.2



**HOUR METER - OPTION  
XL-19D/19DW/24D/24DW  
DRAWING 2 OF 2**

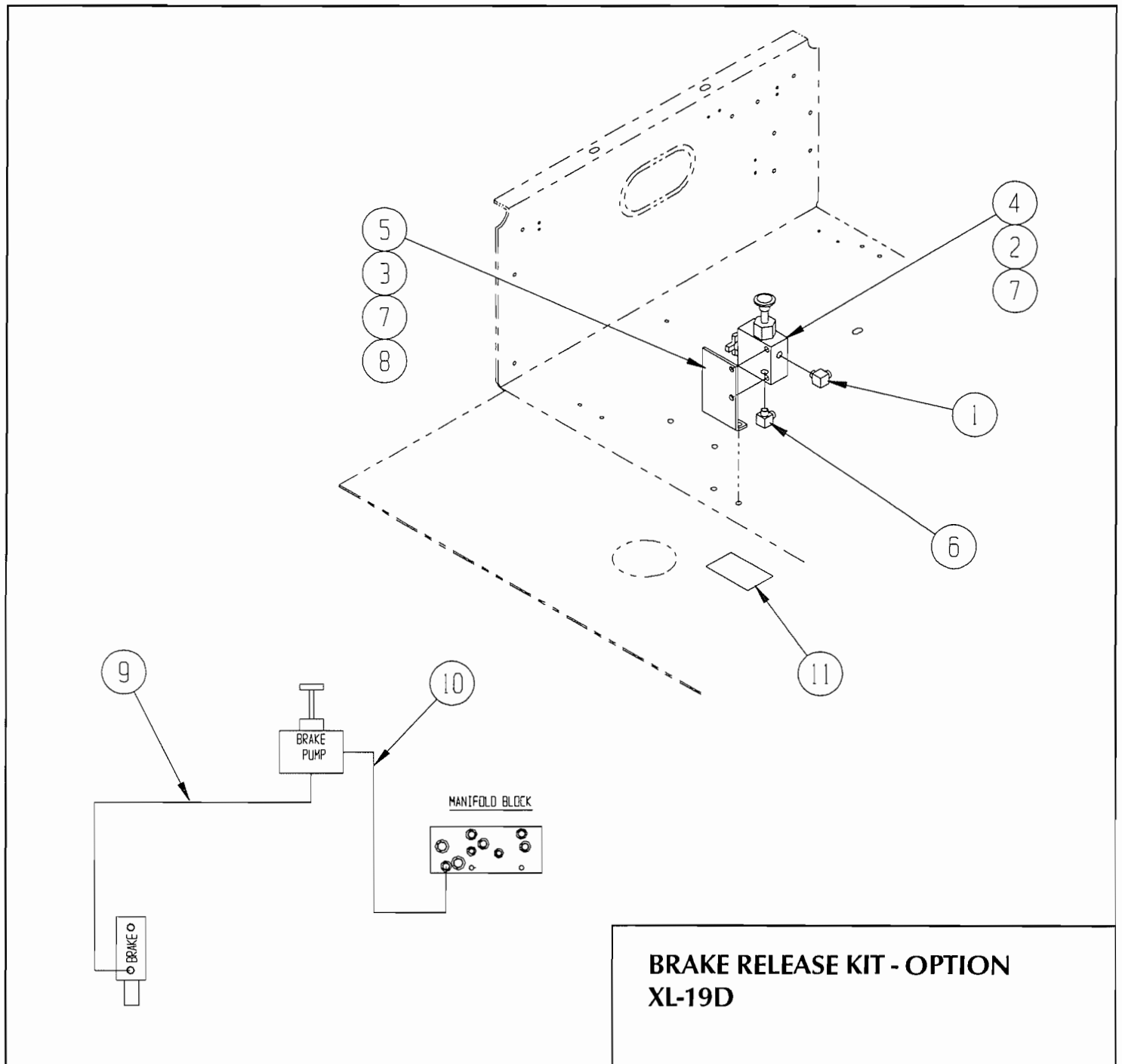
061799-002

# Illustrated Parts Breakdown

## BRAKE RELEASE KIT - OPTION XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	11934-004	FITTING ELBOW	1
2	11254-020	SCREW HHC 3/8-16 X 2 1/2	2
3	11254-006	SCREW HHC 3/8-16 X 3/4	2
4	63978-000	HAND PUMP, BRAKE	1
5	30609-201	PUMP BRACKET	1
6	11934-026	FITTING ELBOW	1

ITEM	PART	DESCRIPTION	QTY.
7	11248-006	NUT ESNA 3/8-16	4
8	11240-006	WASHER FLAT 3/8 DIA.	2
9	62192-012	HOSE ASSY 1/4 DIA. X 43	1
10	62192-020	HOSE ASSY 1/4 DIA. X 17	1
11	63423-000	BRAKE RELEASE LABEL	1



061799-002

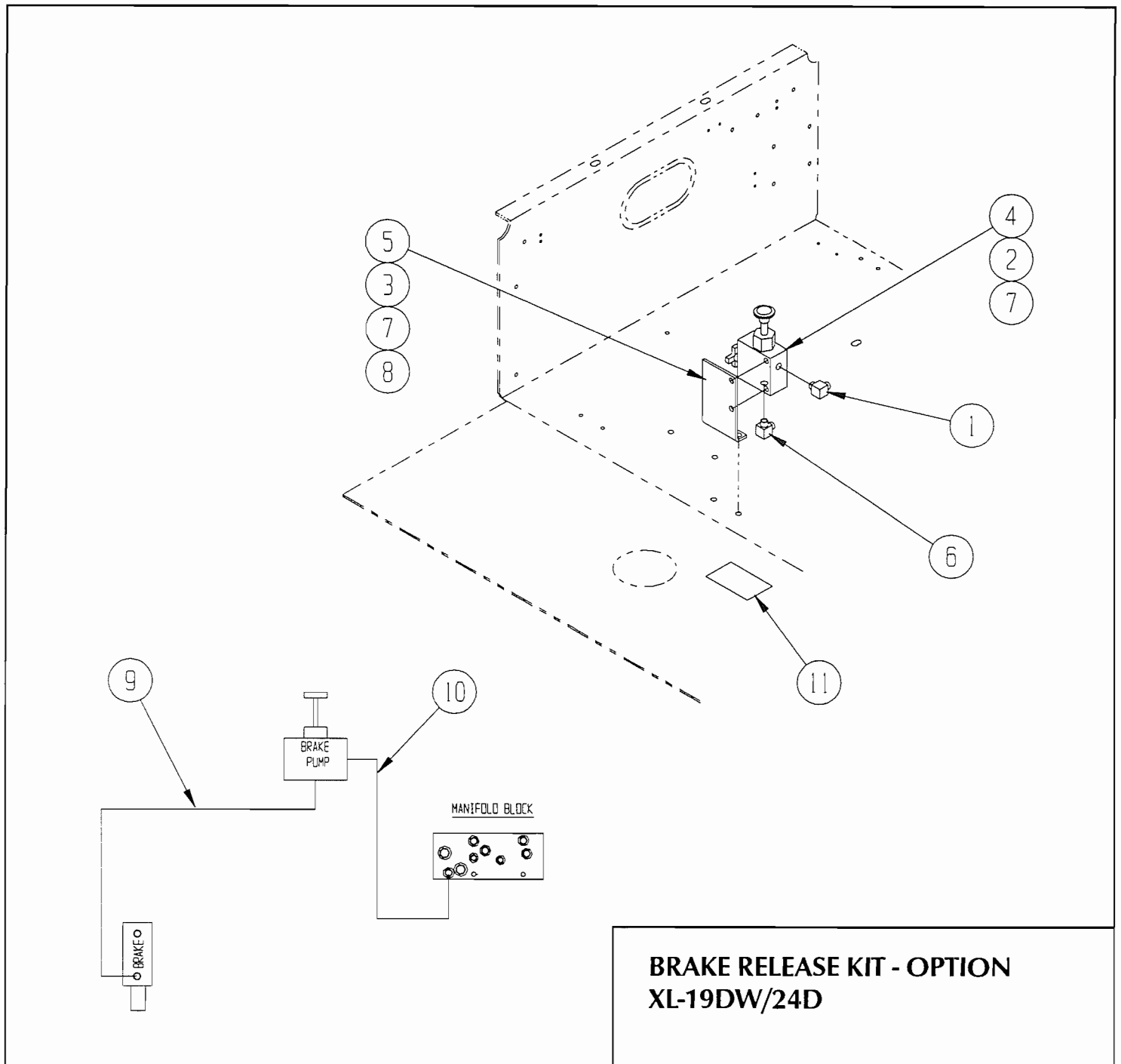
# Illustrated Parts Breakdown

Section  
7.2

## BRAKE RELEASE KIT - OPTION XL-19DW/24D

ITEM	PART	DESCRIPTION	QTY.
1	11934-004	FITTING ELBOW	1
2	11254-020	SCREW HHC 3/8-16 X 2 1/2	2
3	11254-006	SCREW HHC 3/8-16 X 3/4	2
4	63978-000	HAND PUMP, BRAKE	1
5	30609-201	PUMP BRACKET	1
6	11934-026	FITTING ELBOW	1

ITEM	PART	DESCRIPTION	QTY.
7	11248-006	NUT ESNA 3/8-16	4
8	11240-006	WASHER FLAT 3/8 DIA.	2
9	62192-014	HOSE ASSY 1/4 DIA. X 51	1
10	62192-020	HOSE ASSY 1/4 DIA. X 17	1
11	63423-000	BRAKE RELEASE LABEL	1



**BRAKE RELEASE KIT - OPTION  
XL-19DW/24D**

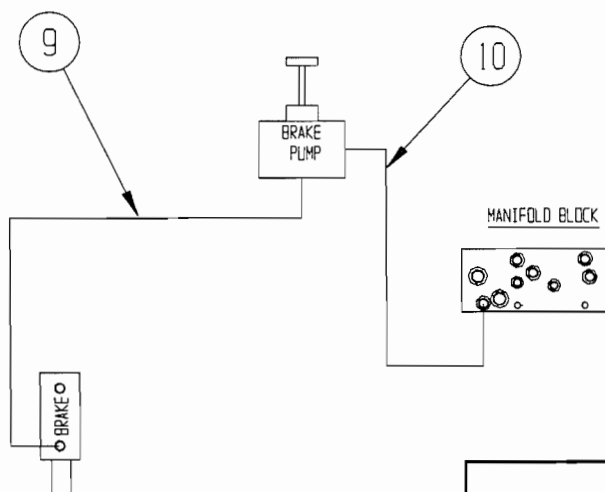
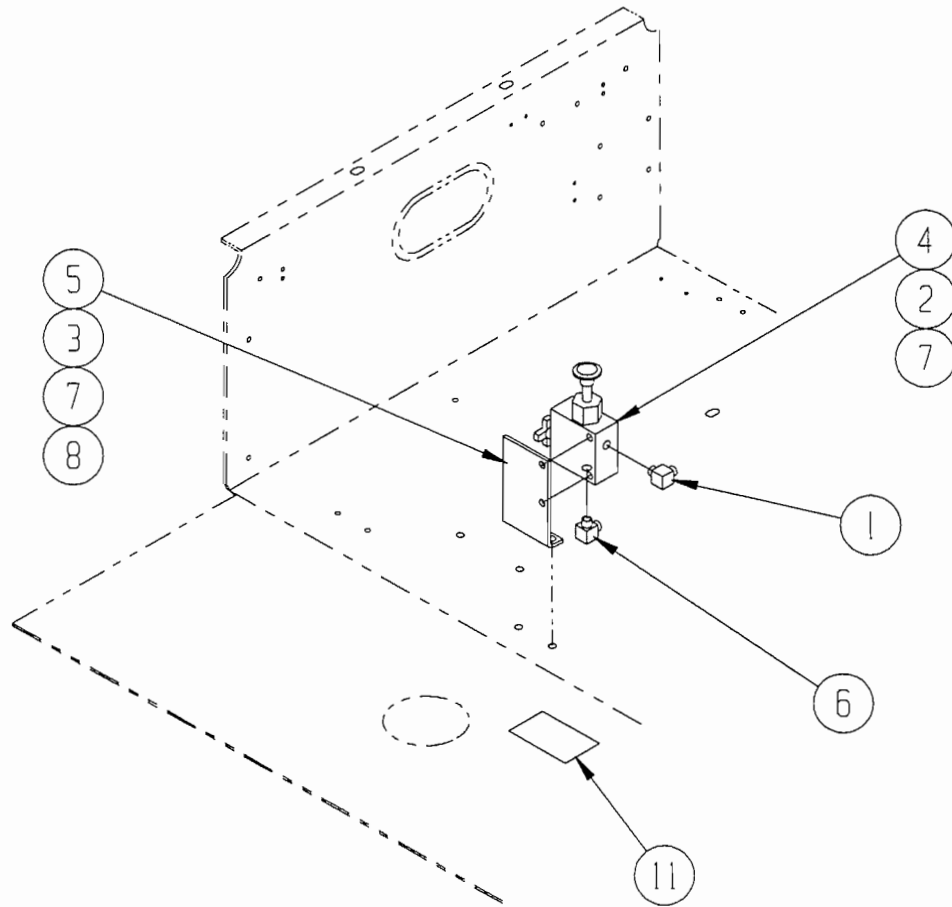
061799-002

## BRAKE RELEASE KIT - OPTION XL-24DW

ITEM	PART	DESCRIPTION	QTY.
1	11934-004	FITTING ELBOW	1
2	11254-020	SCREW HHC 3/8-16 X 2 1/2	2
3	11254-006	SCREW HHC 3/8-16 X 3/4	2
4	63978-000	HAND PUMP, BRAKE	1
5	30609-201	PUMP BRACKET	1
6	11934-026	FITTING ELBOW	1
7	11248-006	NUT ESNA 3/8-16	4
8	11240-006	WASHER FLAT 3/8 DIA.	2
9	62192-015	HOSE ASSY 1/4 DIA. X 54	1
10	62192-020	HOSE ASSY 1/4 DIA. X 17	1
11	63423-000	BRAKE RELEASE LABEL	1

# Illustrated Parts Breakdown

Section  
7.2



**BRAKE RELEASE KIT - OPTION  
XL-24DW**

001799-002

## REMOVABLE CONTROLLER - OPTION XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	61839-000	BRACKET, CABLE CONNECTOR	1
3	11248-004	LOCKNUT 1/4-20 UNC HEX	2
4	28800-003	PLUG CONNECTOR WITH CLAMP	1
5	28800-004	PIN CONTACT	12
6	28800-015	SEALING PLUG	11
7	28800-016	RECEPTACLE CONNECTOR WITH CLAMP	1
8	28800-005	SOCKET CONTACT	12
9	28800-013	NUT, PANEL	1
10	28800-014	LOCKWASHER	1
11	11252-026	SCREW 1/4 -20 UNC HHC X 2 1/2	2

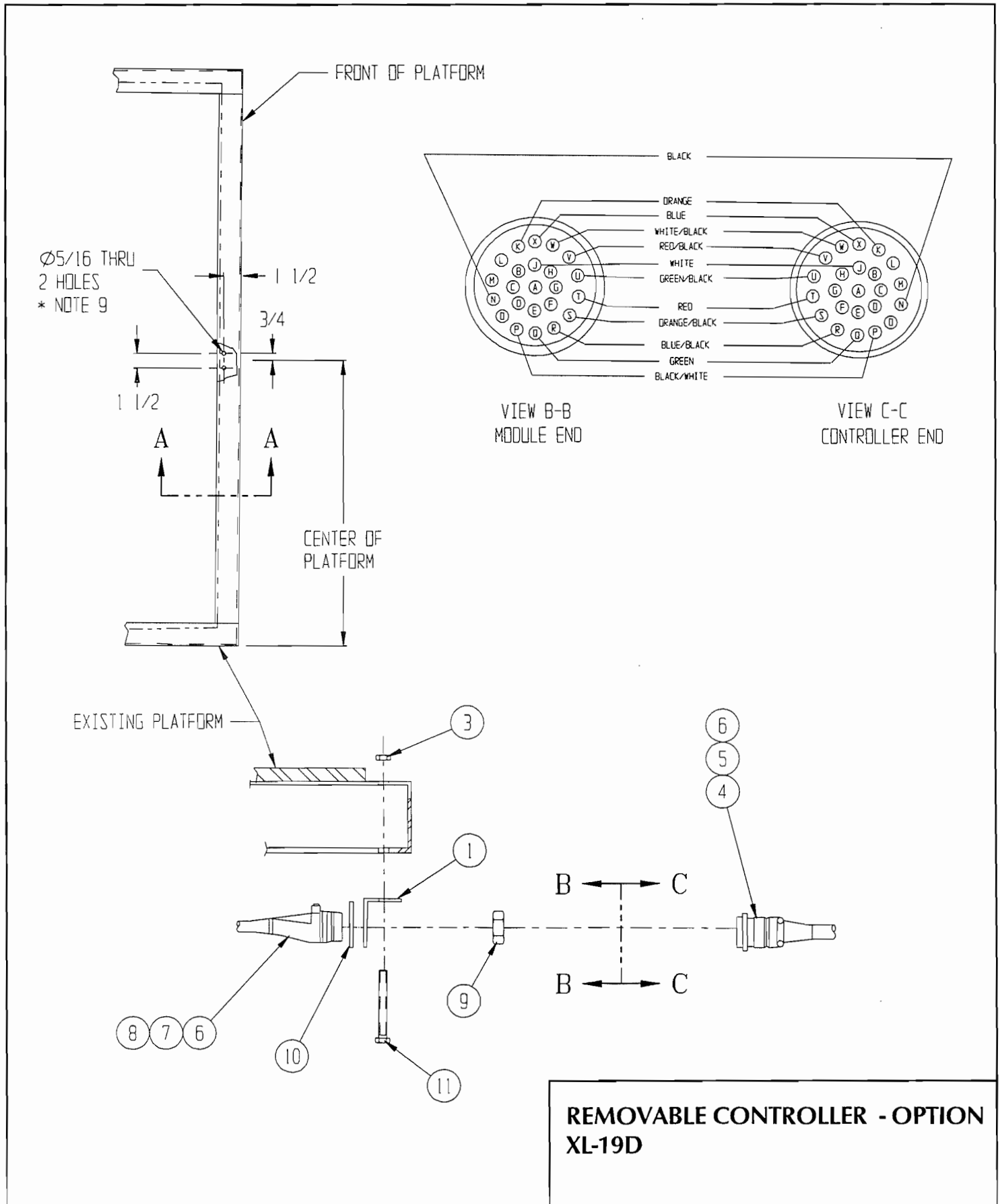
### NOTE:

1. DRILL HOLES IN PLATFORM.
2. MOUNT BRACKET TO PLATFORM.
3. REMOVE CABLES FROM ITS CLAMPS OR HOLDING TABS AT FRONT OF PLATFORM.
4. ROUTE CABLE TO BRACKET AND THEN CUT CABLE AT BRACKET. BEFORE CUTTING CHECK THAT THERE WILL BE ADEQUATE CABLE TO POSITION CONTROLLER IN ITS NORMAL POSITION.
5. CUT OUTER CABLE COVER OF LINKAGE CABLE BACK APPROXIMATELY 1 1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH WIRE END.
6. CRIMP SOCKETS (28800-005) ONTO WIRE ENDS AND INSERT INTO CONNECTOR (28800-016). REFER TO VIEW B-B.
7. ATTACH CONNECTOR TO BRACKET AND INSTALL RELIEF.
8. CUT OUTER CABLE COVER OF CONTROLLER END BACK APPROXIMATELY 1 1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH WIRE.
9. SLIDE BOOT AND CLAMP ONTO CABLE.
10. CRIMP PINS (28800-004) ONTO ENDS OF WIRES AND INSERT INTO CONNECTOR (28800-003). REFER TO VIEW C-C.
11. CLAMP BOOT TO CONNECTOR.
12. CONNECT CONTROLLER AND TEST MACHINE FOR PROPER FUNCTION.



# Illustrated Parts Breakdown

Section  
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061799-002

## REMOVABLE CONTROLLER - OPTION XL-19DW/24D/24DW

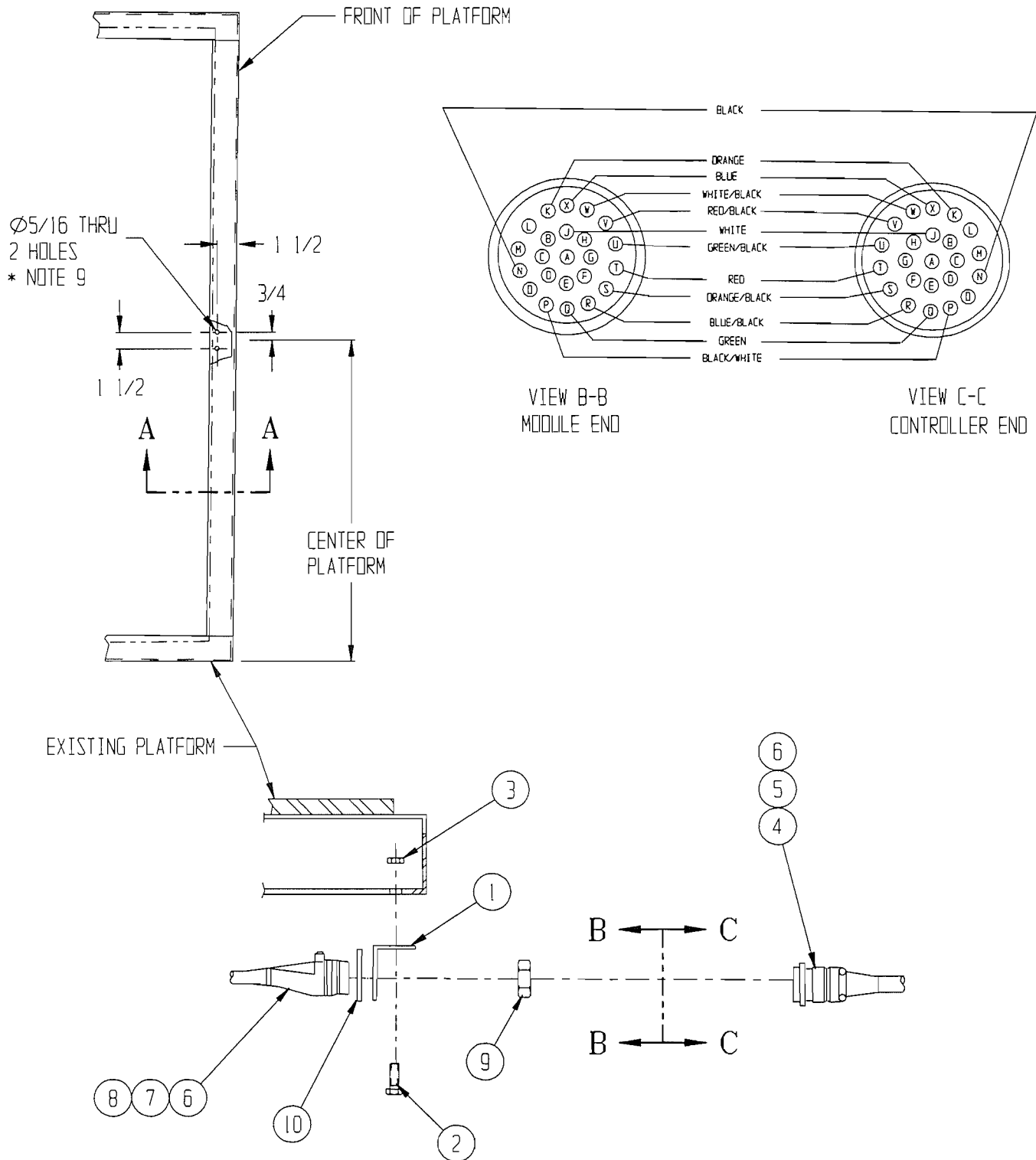
ITEM	PART	DESCRIPTION	QTY.
1	61839-000	BRACKET, CABLE CONNECTOR	1
2	11252-006	SCREW 1/4-20 UNC CAP X 3/4	2
3	11248-004	LOCKNUT 1/4-20 UNC HEX	2
4	28800-003	PLUG CONNECTOR WITH CLAMP	1
5	28800-004	PIN CONTACT	12
6	28800-015	SEALING PLUG	11
7	28800-016	RECEPTACLE CONNECTOR WITH CLAMP	1
8	28800-005	SOCKET CONTACT	12
9	28800-013	NUT, PANEL	1
10	28800-014	LOCKWASHER	1

### NOTE:

1. DRILL HOLES IN PLATFORM.
2. MOUNT BRACKET TO PLATFORM.
3. REMOVE CABLES FROM ITS CLAMPS OR HOLDING TABS AT FRONT OF PLATFORM.
4. ROUTE CABLE TO BRACKET AND THEN CUT CABLE AT BRACKET. BEFORE CUTTING CHECK THAT THERE WILL BE ADEQUATE CABLE TO POSITION CONTROLLER IN ITS NORMAL POSITION.
5. CUT OUTER CABLE COVER OF LINKAGE CABLE BACK APPROXIMATELY 1 1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH WIRE END.
6. CRIMP SOCKETS (28800-005) ONTO WIRE ENDS AND INSERT INTO CONNECTOR (28800-016). REFER TO VIEW B-B.
7. ATTACH CONNECTOR TO BRACKET AND INSTALL RELIEF.
8. CUT OUTER CABLE COVER OF CONTROLLER END BACK APPROXIMATELY 1 1/2 INCH AND STRIP APPROXIMATELY 1/4 INCH OF EACH WIRE.
9. SLIDE BOOT AND CLAMP ONTO CABLE.
10. CRIMP PINS (28800-004) ONTO ENDS OF WIRES AND INSERT INTO CONNECTOR (28800-003). REFER TO VIEW C-C.
11. CLAMP BOOT TO CONNECTOR.
12. CONNECT CONTROLLER AND TEST MACHINE FOR PROPER FUNCTION.

# Illustrated Parts Breakdown

Section  
7.2



**REMOVABLE CONTROLLER - OPTION  
XL-19DW/24D/24DW**

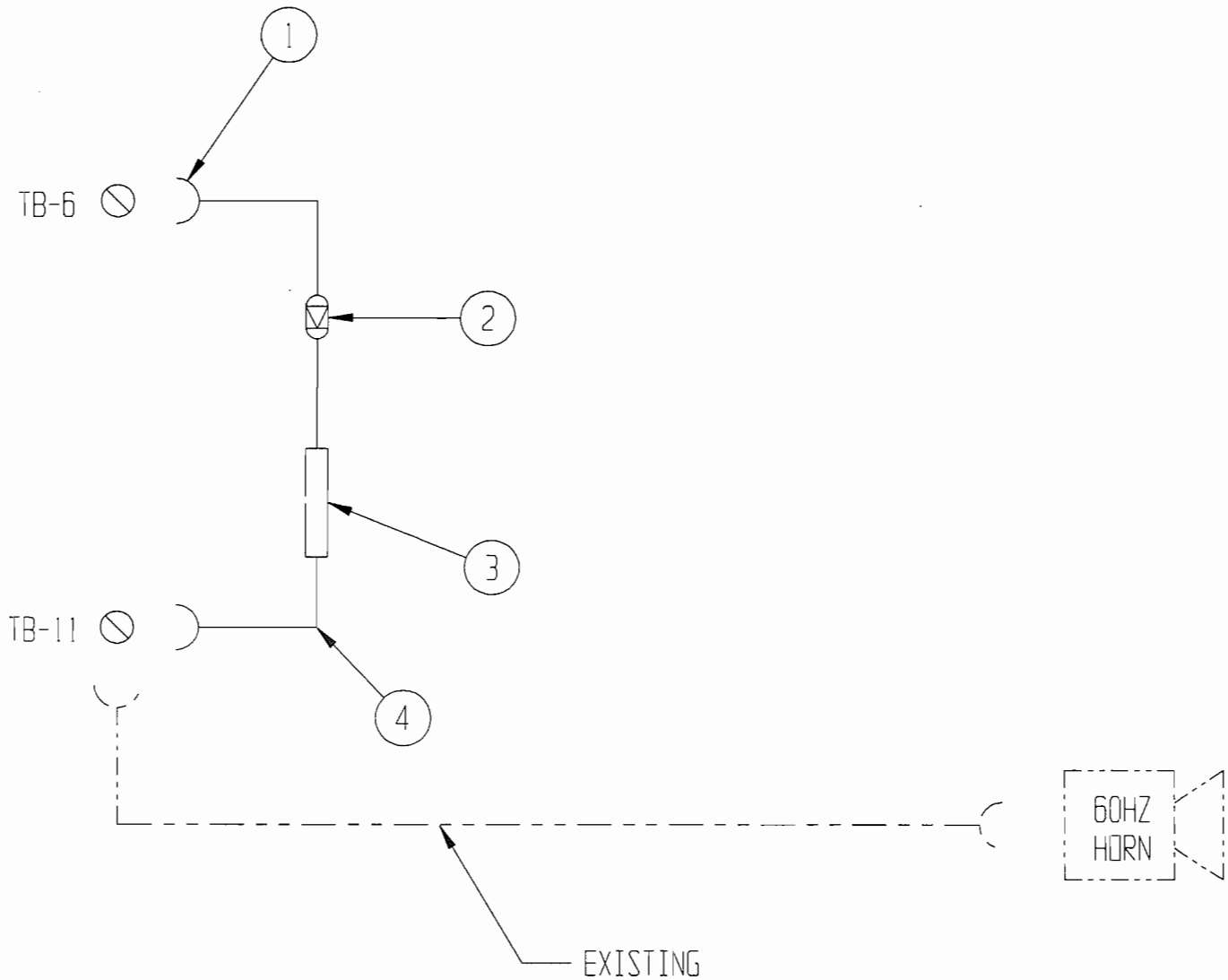
061799-002

**REVERSE ALARM - OPTION**  
**XL-19D/19DW/24D/24DW**

ITEM	PART	DESCRIPTION	QTY.
1	29610-002	FORK CONN.	2
2	29825-002	DIODE, 3 AMP	1
3	29620-002	BUTT CONN	1
4	29457-099	WIRE 16 AWG COPPER - GREEN	1

# Illustrated Parts Breakdown

Section  
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**REVERSE ALARM - OPTION  
XL-19D/19DW/24D/24DW**

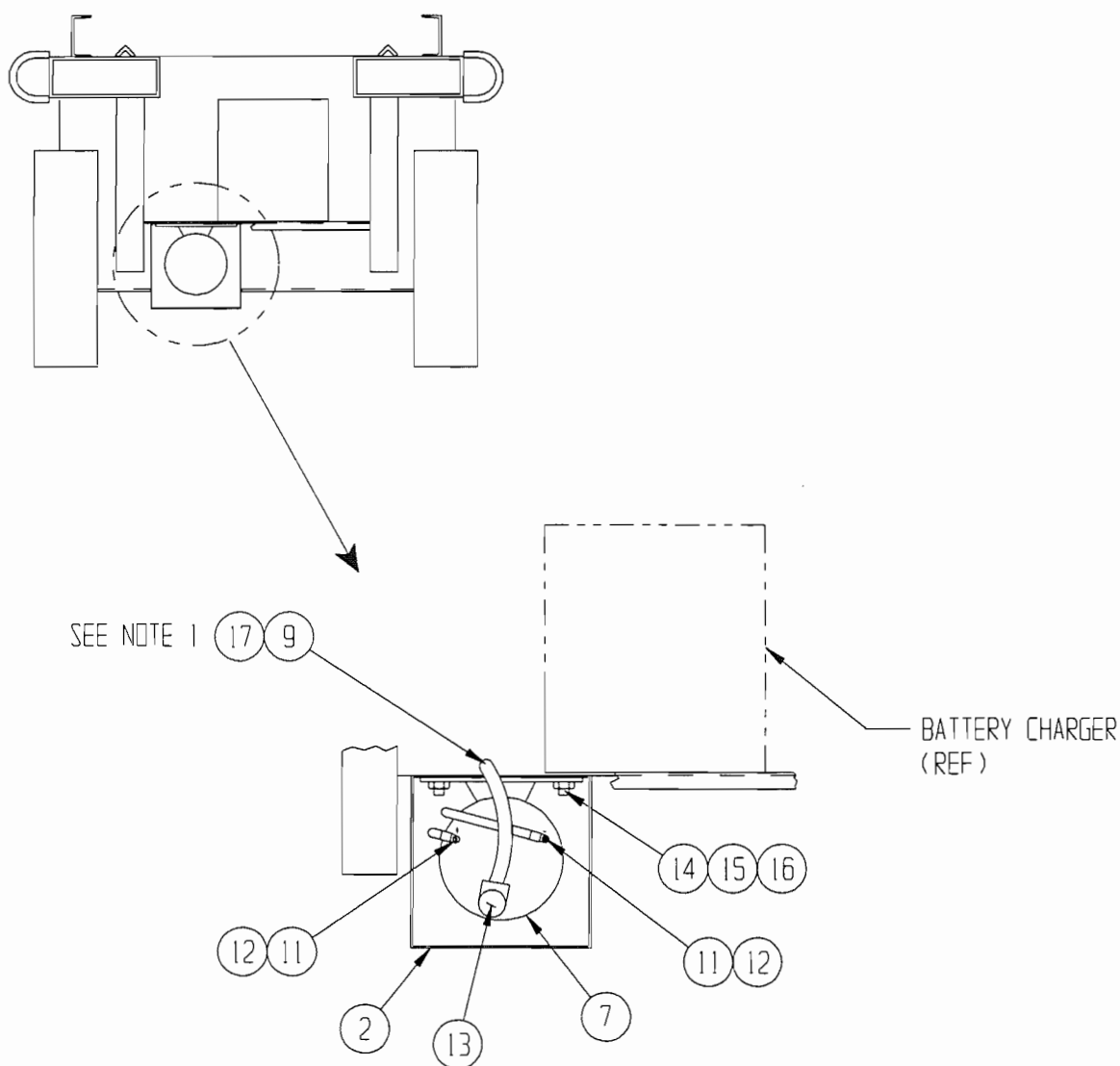
061799-002

# Illustrated Parts Breakdown

## GENERATOR - OPTION XL-19D

ITEM	PART	DESCRIPTION	QTY.
1	08942-000	RECEPTACLE	1
2	63256-000	BRACKET, GENERATOR	1
3	11248-047	LOCKNUT 6-32 HEX	2
4	11715-004	SCREW RD HD 6-32 X 1/2	2
5	12956-010	GROMMET	1
6	15769-000	ELECTRICAL BOX	1
7	26461-000	GENERATOR	1
8	26611-002	COVER, ELECTRICAL BOX	1
9	29495-099	WIRE 14 GA 3 COND.	40 FT

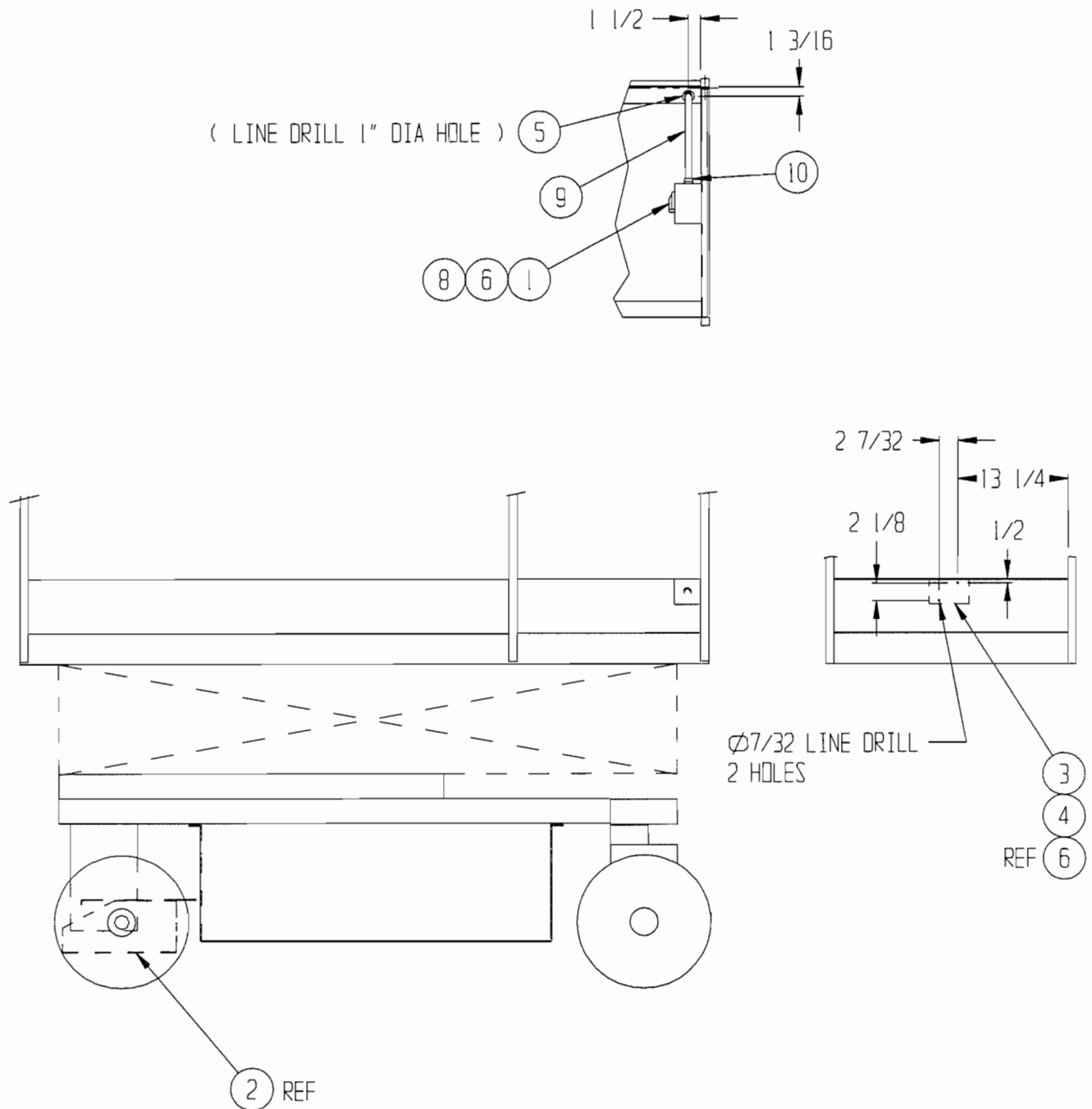
ITEM	PART	DESCRIPTION	QTY.
10	29925-003	CONNECTOR, CABLE	1
11	29431-099	CABLE, #2 GA	5 FT
12	29602-025	RING TERMINAL #2 X 5/16	4
13	29938-000	CORD CAP	1
14	11240-006	WASHER FLAT 3/8 STD	4
15	11248-006	LOCKNUT HEX 3/8 -16	4
16	11254-012	SCREW HHC 3/8-16 X 1 1/2	4
17	26614-000	PLUG, FEMALE	1



**GENERATOR - OPTION  
XL-19D  
DRAWING 1 OF 2**

# Illustrated Parts Breakdown

Section  
7.2



## NOTE:

1. TO USE THIS OPTION WITH 110 VAC POWER TO PLATFORM (RECEPTACLE @ BASE), SHORTEN ITEM #9 TO 4 FEET AND ADD FEMALE PLUG 26614-000 (ITEM-17).

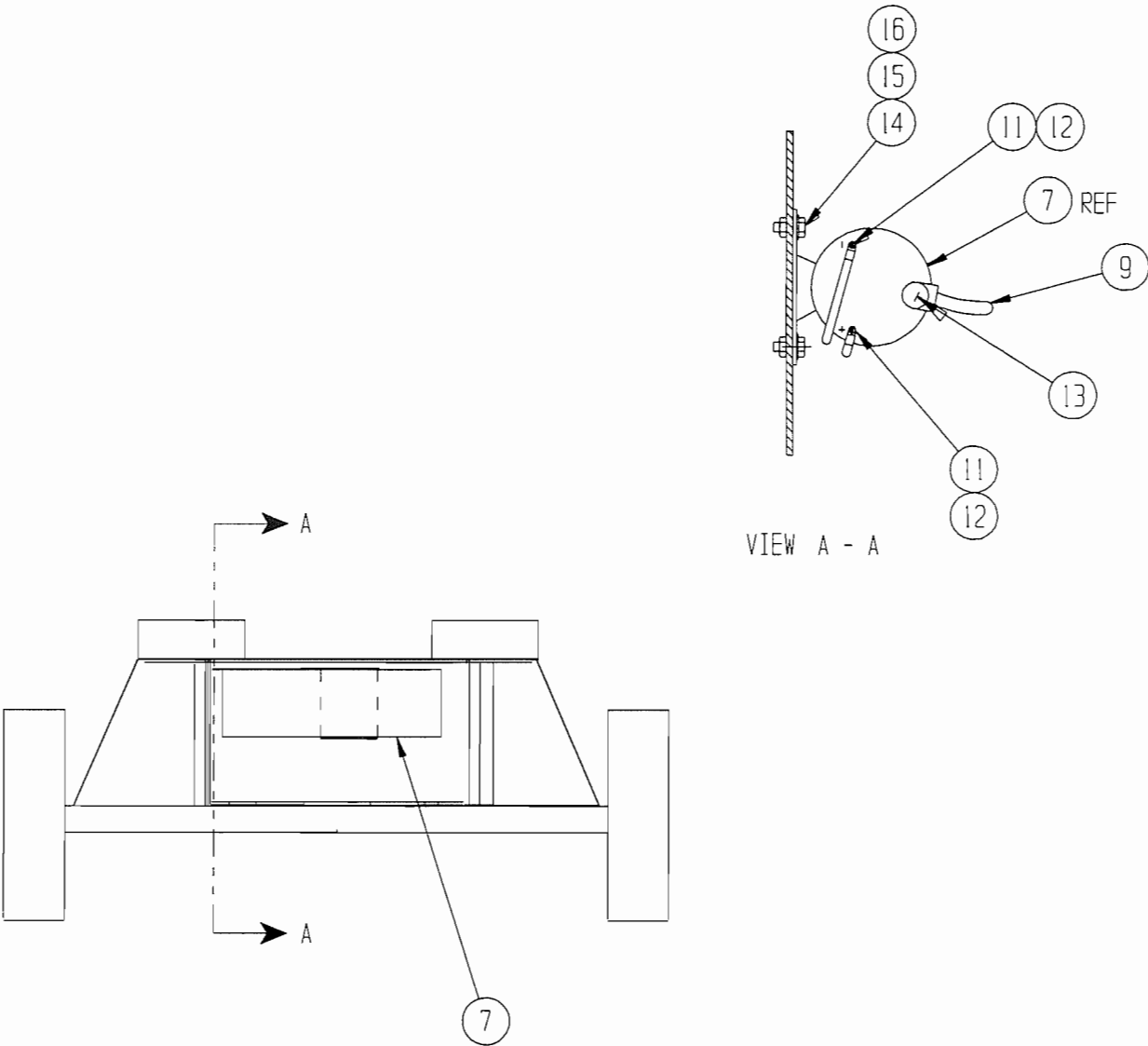
**GENERATOR - OPTION  
XL-19D  
DRAWING 2 OF 2**

061799-002

GENERATOR - OPTION  
XL-19DW/24D/24DW

ITEM	PART	DESCRIPTION	QTY.
1	08942-000	RECEPTACLE	1
3	11248-047	LOCKNUT 6-32 HEX	2
4	11715-004	SCREW RD HD 6-32 X 1/2	2
5	12956-010	GROMMET	1
6	15769-000	ELECTRICAL BOX	1
7	26461-000	GENERATOR	1
8	26611-002	COVER, ELECTRICAL BOX	1
9	29495-099	WIRE 14 GA 3 COND.	40 FT

ITEM	PART	DESCRIPTION	QTY.
10	29925-003	CONNECTOR, CABLE	1
11	29431-099	CABLE, #2 GA	5 FT
12	29602-025	RING TERMINAL #2 X 5/16	4
13	29938-000	CORD CAP	1
14	11240-006	WASHER FLAT 3/8 STD	4
15	11248-006	LOCKNUT HEX 3/8 -16	4
16	11254-012	SCREW HHC 3/8-16 X 1 1/2	4
17	26614-000	PLUG, FEMALE	1

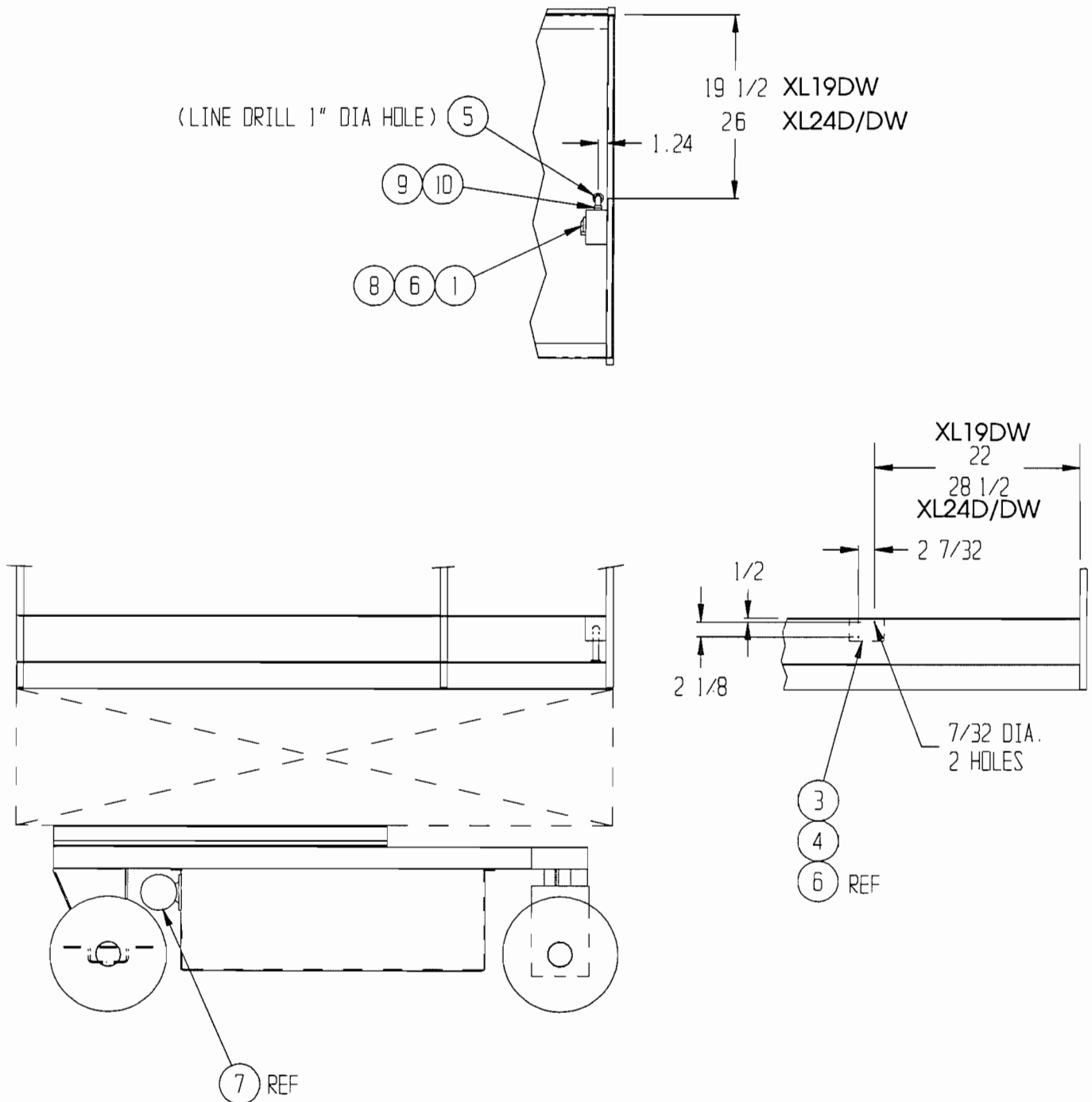


GENERATOR - OPTION  
XL-19DW/24D  
DRAWING 1 OF 2



# Illustrated Parts Breakdown

Section  
7.2



**GENERATOR - OPTION  
XL-19DW/24D/24DW  
DRAWING 2 OF 2**

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# UpRight

Call Toll Free in U.S.A.

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**UpRight, Inc.**  
1775 Park Street  
Selma, California 93662  
TEL: 209/896-5150  
FAX: 209/896-9012  
PARTSFAX: 209/896-9244

**UpRight, Europe**  
(Europe, Africa & Middle East)  
Pottery Road  
Dunloire, Ireland  
TEL: 353/1/285-3333  
FAX: 353/1/284-0015