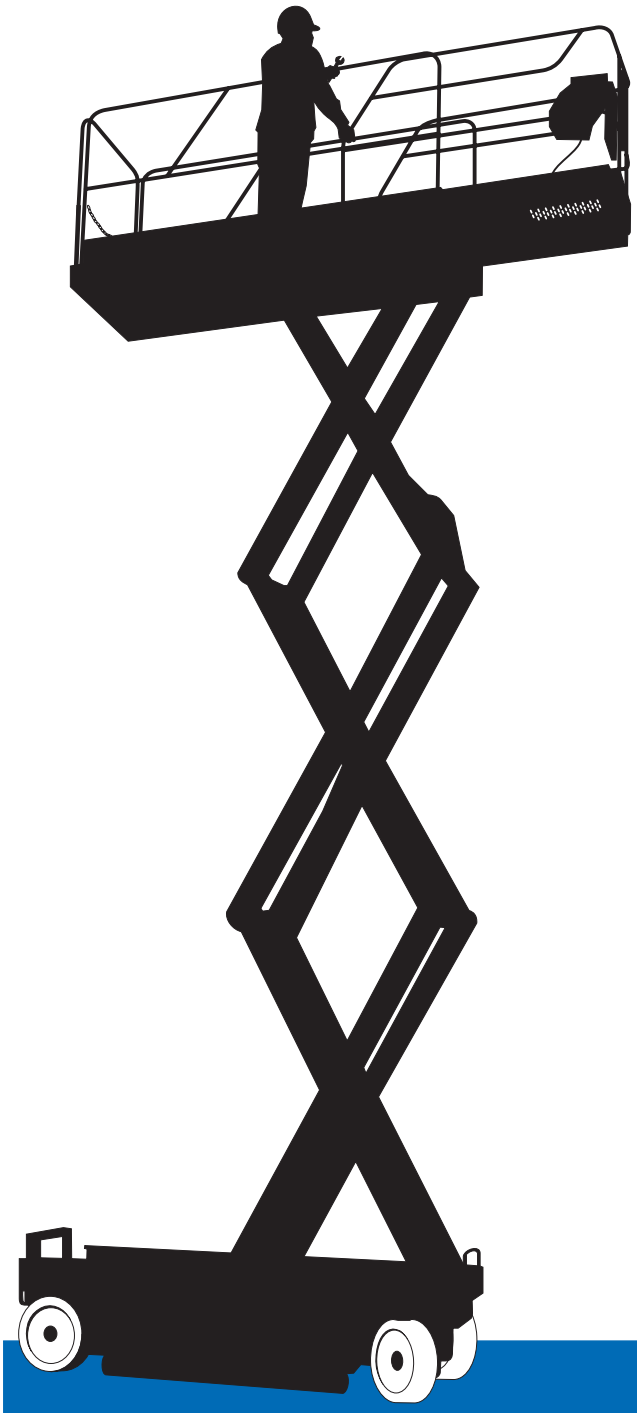
UpRight



X Series

WORK PLATFORM

Service & Parts Manual

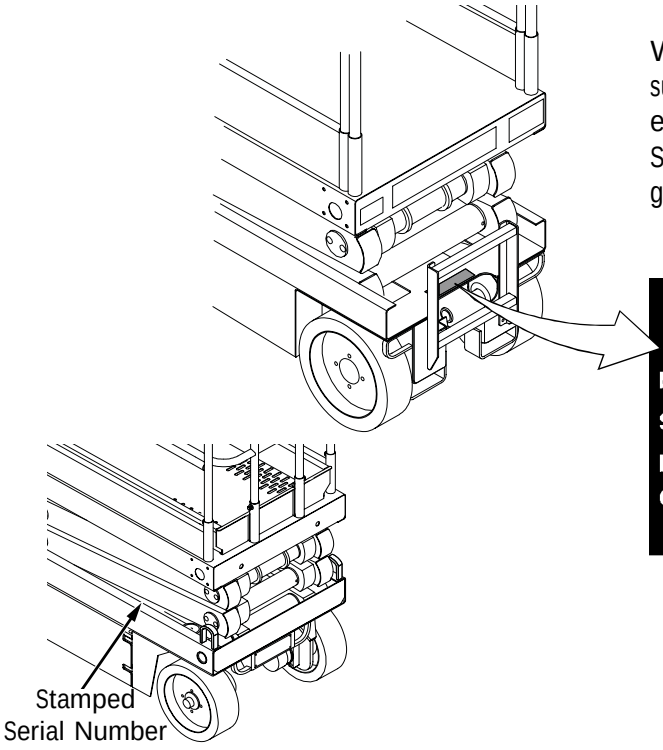
SERVICE & PARTS

MANUAL

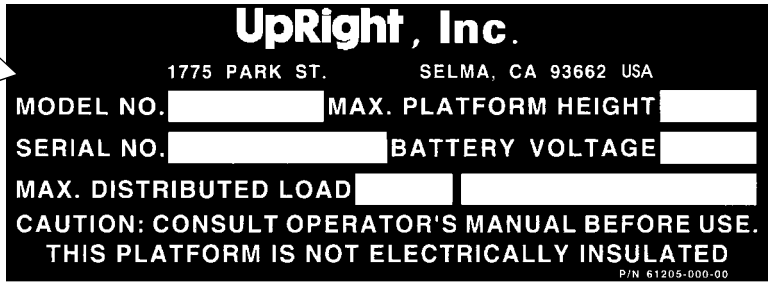
X-Series

Aerial Work Platform

Serial Numbers 6013 to Current



When contacting UpRight for service or parts information, be sure to include the MODEL and SERIAL NUMBERS from the equipment nameplate. Should the nameplate be missing the SERIAL NUMBER is also stamped on the top right side scissor guide channel.



UpRight

Call Toll Free in U.S.A.
1-800-926-LIFT
For Parts:
1-888-UR-PARTS
UpRight, Inc.
1775 Park Street
Selma, California 93662
TEL: 209/891-5200
FAX: 209/896-9012
PARTSFAX: 209/896-9244

P/N 60571-002
060571-002-9708-5-D

Foreword

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

⚠ 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.

A NOTE: Gives helpful information.

WORKSHOP PROCEDURES

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

Foreword

NOTES

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List of Illustrations

List of Tables

1.0 Introduction

PURPOSE

This manual provides illustrations and instructions for the operation and maintenance of the X-Series Work Platform manufactured by UpRight, Inc. Selma, California. (See Figure 1-1).

SCOPE

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

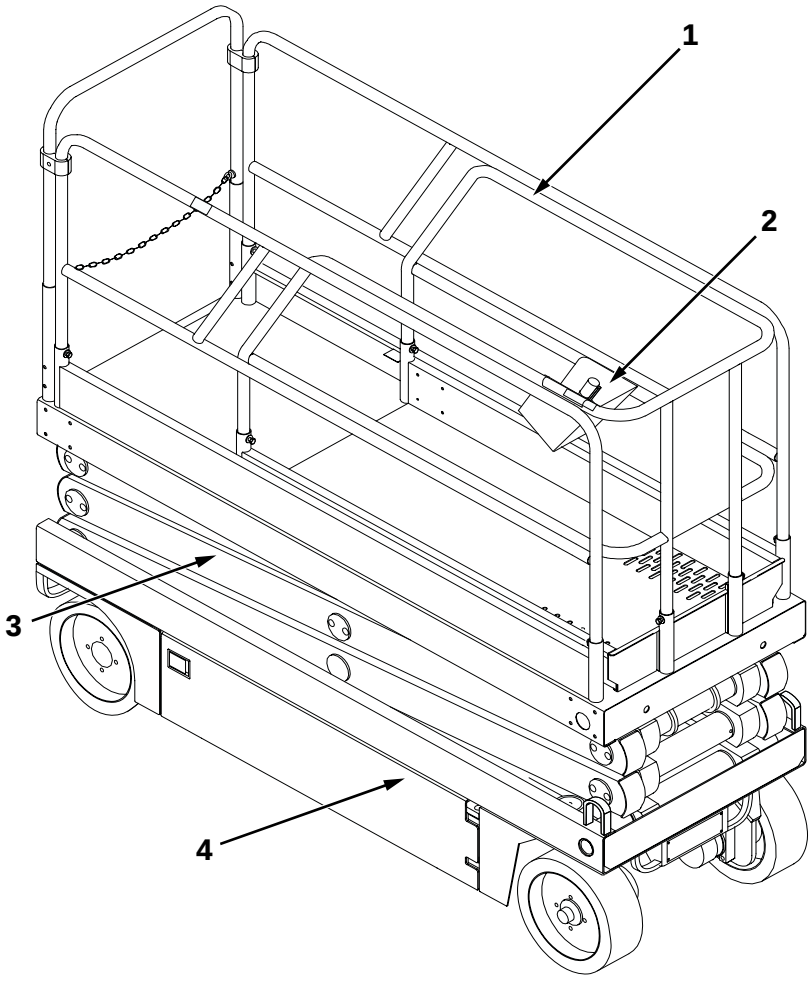
1.1 General Information

DESCRIPTION

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

PURPOSE AND LIMITATIONS

The objective of the X-Series Work Platform 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. Platform/Guardrails
2. Controller
3. Elevating Assembly
4. Chassis

Figure 1-1: X-Series Work Platform

1.2 Specifications*

Table 1-1: Specifications

ITEM	X20N	X20W	X26N	X31N
Platform Size w/ Extension	28 in. x 87 in. [711 mm x 2.21 m] Inside Toeboards	44 in. x 87 in. [1.12 m x 2.21 m] Inside Toeboards	44 in. x 87 in. [1.12 m x 2.21 m] Inside Toeboards	44 in. x 87 in. [1.12 m x 2.21 m] Inside Toeboards
Max. Platform Capacity Standard w/ Extension on Extension	 750 lbs. [340 kg] 250 lbs. [110 kg]	 1000 lbs. [453 kg] 250 lbs. [110 kg]	 1000 lbs. [453 kg] 250 lbs. [110 kg]	 700 lbs. [318 kg] 250 lbs. [110 kg]
Max. No. of occupants Standard on Extension	 3 people 1 person	 4 people 1 person	 4 people 1 person	 3 people 1 person
Height Working Height Max. Platform Height Min. Platform Height	 26 ft. [7.9 m] 20 ft. [6.1 m] 38 in. [.97 m]	 26 ft. [7.9 m] 20 ft. [6.1 m] 39 in. [.99 m]	 32 ft. [9.75 m] 26 ft. [7.92 m] 43 in. [1.09 m]	 37 ft. [11.28 m] 31 ft. [9.44 m] 43 in. [1.09 m]
Dimensions Weight Overall Width Overall Height Overall Length	 3,828 lbs. [1656 kg] 32.5 in. [.83m] 78 in. [1.98m] 92 in. [2.34m]	 4,273 lbs. [1858 kg] 48 in. [1.22 m] 79 in. [2.0 m] 92 in. [2.34 m]	 4,747 lbs. [2072 kg] 48 in. [1.22 m] 83 in. [2.11 m] 92 in. [2.34 m]	 5430 lbs. [2463 kg] 48 in. [1.22 m] 83 in. [2.11 m] 92 in. [2.34 m]
Driveable Height	20 ft. [6.1 m]	20 ft. [6.1 m]	26 ft. [7.93 m]	31 ft. [7.93 m]
Surface Speed Platform Lowered Platform Raised	 0 to 2.3 mph [0 to 3.70 km/h] 0 to .7 mph [0 to 1.13 km/h]	 0 to 2.3 mph [0 to 3.70 km/h] 0 to .7 mph [0 to 1.13 km/h]	 0 to 2.3 mph [0 to 3.70 km/h] 0 to .7 mph [0 to 1.13 km/h]	 0 to 2.3 mph [0 to 3.70 km/h] 0 to .7 mph [0 to 1.13 km/h]
Energy Source	24 Volt Battery Pack (4-220 Amp Hour, 6 Volt Batteries, min. wt. 62 lbs. each [28.12 kg]), 4 HP DC Electric Motor	24 Volt Battery Pack (4-220 Amp Hour, 6 Volt Batteries, min. wt. 62 lbs. each [28.12 kg]), 4 HP DC Electric Motor	24 Volt Battery Pack (4-220 Amp Hour, 6 Volt Batteries, min. wt. 62 lbs. each [28.12 kg]), 4 HP DC Electric Motor	24 Volt Battery Pack (4-220 Amp Hour, 6 Volt Batteries, min. wt. 62 lbs. each [28.12 kg]), 4 HP DC Electric Motor
System Voltage	24 Volt DC	24 Volt DC	24 Volt DC	24 Volt DC
Battery Charger	25 AMP, 60 Hz 110 VAC	25 AMP, 60 Hz 110 VAC	25 AMP, 60 Hz 110 VAC	25 AMP, 60 Hz 110 VAC
Battery Duty Cycle	25% for 8 Hours	25% for 8 Hours	25% for 8 Hours	25% for 8 Hours
Hydraulic Tank Capacity	4 Gallons [15.2 l]	4 Gallons [15.2 l]	4 Gallons [15.2 l]	5 Gallons [19 l]
Maximum Hydraulic System Pressure	2400 psi [165 Bar]	2600 psi [179 Bar]	2600 psi [179 Bar]	2000 psi [138 Bar]
Lift System	Three stage scissor assembly actuated by one Single Stage Lift Cylinder	Three stage scissor assembly actuated by one Single Stage Lift Cylinder	Four stage scissor assembly actuated by one Single Stage Lift Cylinder	Five stage scissor assembly actuated by two Single Stage Lift Cylinders
Control System	Smooth one hand joystick with two speed operation	Smooth one hand joystick with two speed operation	Smooth one hand joystick with two speed operation	Smooth one hand joystick with two speed operation
Drive System	Dual Front Wheel Hydraulic Motors with series operation	Dual Front Wheel Hydraulic Motors with series or parallel operation	Dual Front Wheel Hydraulic Motors with series or parallel operation	Dual Front Wheel Hydraulic Motors with series or parallel operation
Tires	15 in. [381 mm] Diameter Solid Rubber, non-marking	15 in. [381 mm] Diameter Solid Rubber, non-marking	15 in. [381 mm] Diameter Solid Rubber, non-marking	15 in. [381 mm] Diameter Solid Rubber, non-marking
Parking Brake	Spring Applied, Hydraulic Release Brake with Manual Release	Spring Applied, Hydraulic Release Brake with Manual Release	Spring Applied, Hydraulic Release Brake with Manual Release	Spring Applied, Hydraulic Release Brake with Manual Release
Turning Radius	8 in. [254 mm] Inside	8 in. [254 mm] Inside	8 in. [254 mm] Inside	8 in. [254 mm] Inside
Maximum Gradeability	23% [13 degrees]	23% [13 degrees]	22% [12 degrees]	20% [11 degrees]
Wheel Base	74 3/4 in. [1.9 m]	74 3/4 in. [1.9 m]	74 3/4 in. [1.9 m]	74 3/4 in. [1.9 m]
Guardrails	40 in. [1.02 m]	40 in. [1.02 m]	40 in. [1.02 m]	40 in. [1.02 m]
Toeboard	6 in. [152 mm] High	6 in. [152 mm] High	6 in. [152 mm] High	6 in. [152 mm] High

***Specifications subject to change without notice.**

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

2.1 Preparation for Use

! !

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

1. Remove the metal banding from the machine.
2. Lift the front of the machine and remove banding and blocks from front wheels.
3. Lower machine.
4. Connect the negative battery lead terminal (Figure 2-1).

2.2 Preparation For Shipment

1. Fully lower the platform.
2. Disconnect the battery negative (-) lead from the battery terminal (Figure 2-1).
3. Band the Platform Assembly to the Chassis.

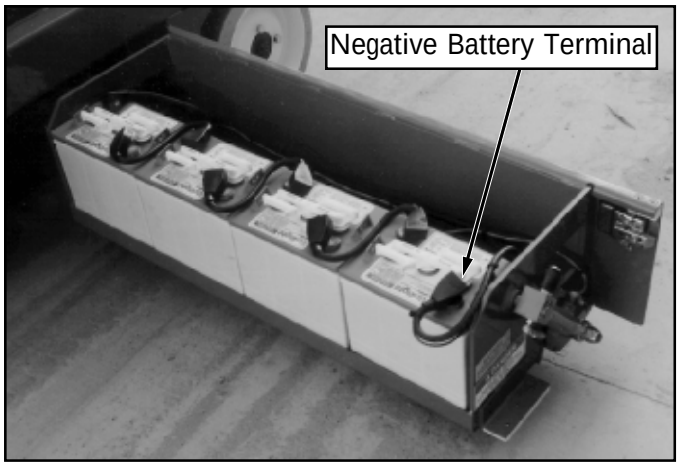


Figure 2-1: Battery Module

2.3 Transporting Work Platform

BY FORKLIFT

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 the rear of the machine using the forklift pockets provided (figure 2-3). If necessary, the machine may be forklifted from the side by lifting under the Chassis Modules.

BY CRANE

1. Secure straps to Chassis Lifting Lugs only (Figure 2-2 & 2-3).

BY TRUCK

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 & 2-3).

> **⚠ CAUTION ⚠**
>
> Front tie down lugs are not to be used to lift work platform.
>
> Overtightening of chains or straps through tie down lugs may result in damage to work platform.

2.4 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. Check the level of the hydraulic oil with the platform fully lowered. Open the Right Module and remove the reservoir cap, oil should be at the lower line on the dipstick. Add ISO #46 hydraulic oil if necessary.
3. 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.

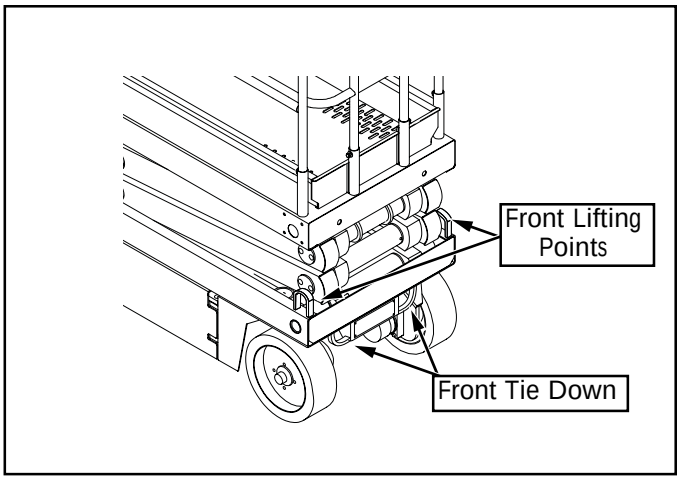


Figure 2-2: Transporting machine

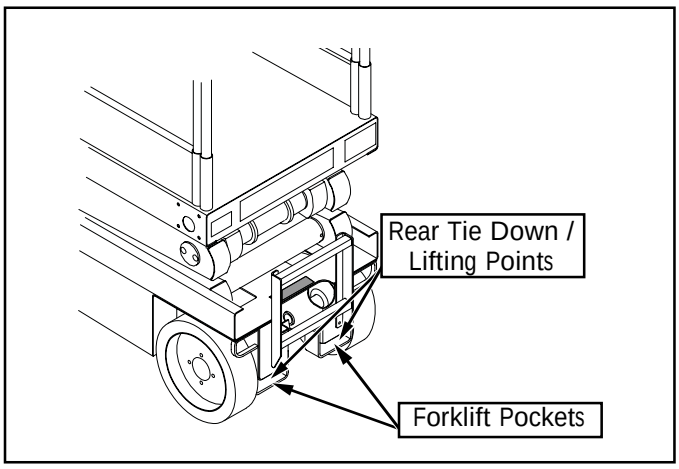


Figure 2-3: Transporting machine

3.0 Introduction

GENERAL FUNCTIONING

The battery powered electric motor directly drives a two section hydraulic pump. The low section supplies oil under pressure to operate steering and low drive/lift, the high section flow provides oil for high drive/lift. The oil flow is directed to the different functions by electrically activated solenoid valves.

DESIGN FEATURES

The X-Series Work Platform has the following features:

- The drive speed is limited to low speed when operating the work platform while the platform is elevated.
- Parking brakes are 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 Interlock Lever must be depressed for the Controller to function.
- An alarm is provided to signal when the platform is lowering.
- A Lift Switch is located in the Chassis Control Panel on the right side of the Chassis for lifting and lowering the Platform from ground level.
- Pothole Protection Supports rotate into position under the machine whenever the platform is raised.
- The Tilt Alarm is activated on slopes of 2 degrees side to side and fore and aft when the machine is elevated, cutting power to Lift and Drive functions.
- An Emergency Lowering Valve is provided to lower the Platform in the event electrical power is lost.

3.1 Safety Rules and Precautions

All personnel shall carefully read, understand and follow all safety rules, operating instructions and the Scaffold Industry Association's MANUAL OF RESPONSIBILITIES before performing maintenance on or operating any UpRight X-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 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.

NEVER operate the machine if all guardrails are not properly in place and secured with all fasteners properly torqued.

SECURE chain across entrance and lower the rear guardrail 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 the back cover for maximum platform load.

NEVER use damaged equipment. (Contact UpRight for instructions. See toll free number inside front cover.)

NEVER change 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 the platform elevated.

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

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

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

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

3.2 Controls and Indicators

The controls and indicators for operation of the X-Series Work Platform 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

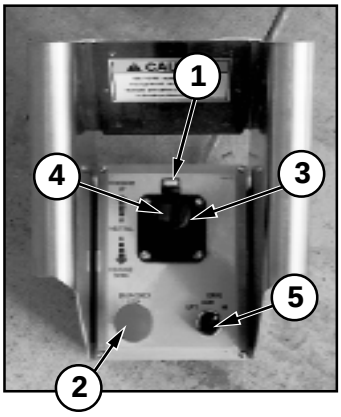
INDEX NO.	NAME	FUNCTION
1	Interlock Lever	Provides power to the Controller only when depressed, preventing inadvertent activation of the Controller.
2	Emergency Stop Switch	Push red button to cut off power to all functions (OFF). Pull up to provide power (ON).
3	Control Lever (Joystick)	Move joystick forward or backward to control Drive Valves or Lift and Down Valves depending on position of Drive/ Lift Switch.
4	(Steering Switch)	Push switch right or left to control steering. **Steering is not self-centering. Wheels must be returned to straight ahead position by operating Steering Switch.**
5	Drive/Lift Switch	Selecting **DRIVE** allows the work platform to move forward or reverse. For 20W, 26, and 31 models: position Function Switch to **HI** for traveling on level ground, **LOW** when extra torque is required for climbing ramps.

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

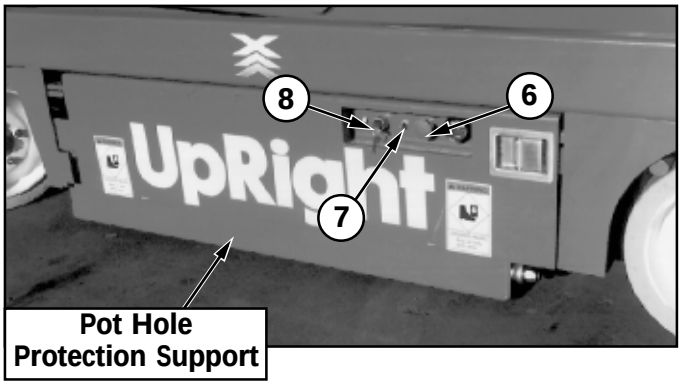
Chassis

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 **UP** to lift the work platform and toggle switch to **DOWN** to lower the work platform.
8	Chassis Key Switch	Turn switch to **PLATFORM** to provide power to Controller, to **CHASSIS** to provide power to Chassis Controls and to **OFF** to prevent unathorized use of the machine.
9	Emergency Lowering Valve	Pull handle out to lower the Platform. To close, release handle.
10	Brake Release	Turn the nut(s) counterclockwise until the brakes disengage from the tires. The machine will roll when pushed or pulled. To reset the brakes, turn the nut(s) clockwise until the brakes have fully engaged the tires. **DO NOT operate the machine with the brakes disengaged.**
11	Battery Charger	Charger turns on automatically after a short delay, the ammeter will indicate DC charging current. Charger turns off automatically when batteries are fully charged.
12*	Down Alarm	Sounds an audible signal anytime the platform is lowering during normal operation. If the Emergency Lowering Valve is used the alarm **does not** sound.
13*	Tilt Alarm	Sounds an audible signal when the platform is elevated and: on a slope of 2° side to side or fore and aft.

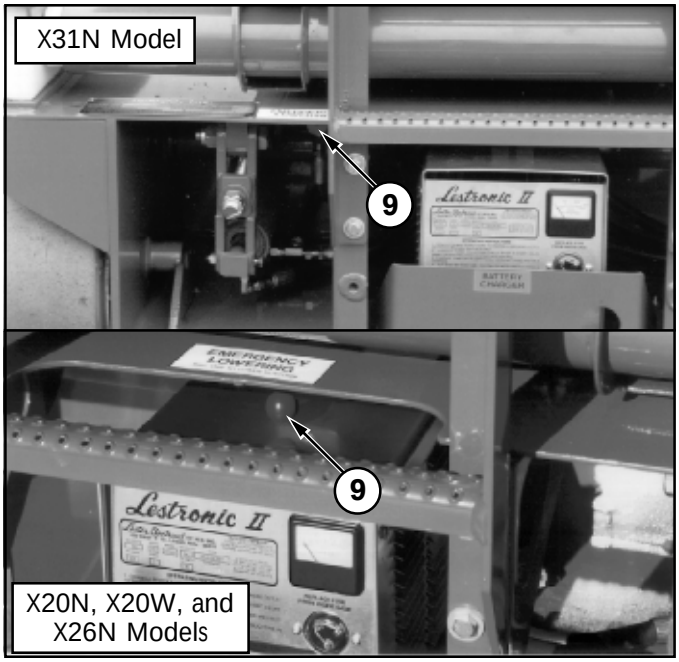
*** Not shown in Figure 3-1.**



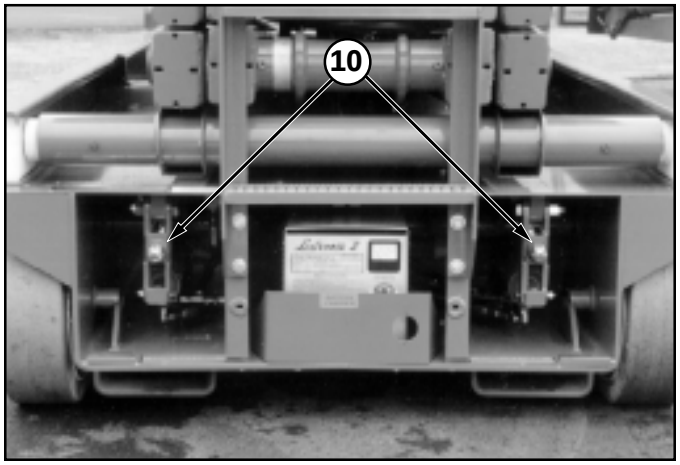
Controller



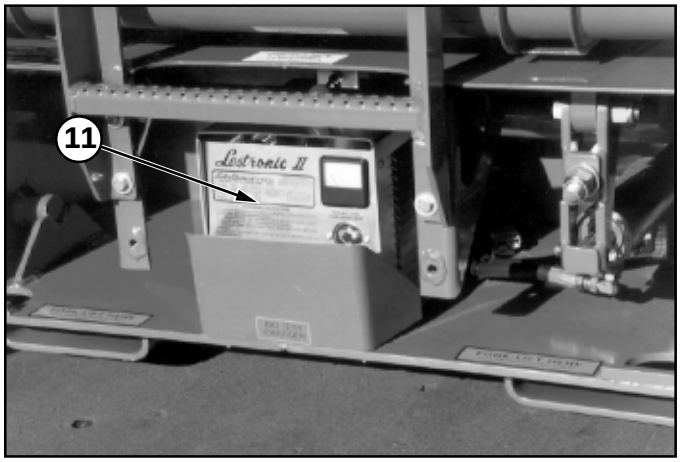
Chassis Module, Left Side



Emergency Lowering Valve Handle



Brake Release (X31N Shown)



Battery Charger

Figure 3-1: Controls and Indicators

3.3 Pre-Operation Inspection

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

⚠ WARNING ⚠

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

1. Open modules and inspect for damage, oil leaks or missing parts.
2. Check the level of the hydraulic oil with the platform fully lowered. Open the Left Module and remove the reservoir cap, oil should be at the lower line on the dipstick. 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 plug.
6. Check that all guardrails are in place, the slide out deck extension is secured with the pin 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 cylinder, cables and hoses for damage or erratic operation. Check for missing or loose parts.
13. Verify that the Pothole Protection Supports have fully rotated into position under each module.
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 pulling and holding the handle out. Once the platform is fully lowered, close the valve by releasing the handle.
16. Turn the Chassis Key Switch to **DECK**.
17. Close and latch the module doors.
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 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. Pull Emergency Stop Button out to the ON position.
21. Position Function Switch to **DRIVE**. For 20W, 26, and 31 models, use both **HI** and **LOW** drive when performing step 22.
22. Grasp the Control Lever so the Interlock Lever is depressed (releasing the Interlock Lever cuts power to Controller), 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.
23. Push Steering Switch RIGHT then LEFT to check for steering control.
24. Push the Emergency Stop Switch Button.
25. Rehook Controller at front guardrail.

3.4 Operation

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

TRAVEL WITH PLATFORM LOWERED

1. Check that route is clear of people, obstructions, holes and drop-offs, is level and 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 lower top rail across entrance and latch the chain. Check that guardrails are properly assembled and in position with the slide out deck extension secured with the pin. Attach Controller to guardrail.
4. Check clearances above, below and to the sides of platform.
5. Pull Controller Emergency Stop Button out to ON position. When button is pushed down Emergency Stop Switch will automatically go to OFF position.
6. Position Function Switch to **DRIVE**. For 20W, 26, and 31 models: position Function Switch to **HI** for traveling on level ground, **LOW** when extra torque is required for climbing ramps.
7. Grasp the Control Lever so the Interlock Lever is depressed (releasing the Interlock Lever cuts power to Controller), 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 holding the Control Lever so that the Interlock Lever is depressed, 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 ten feet of any electrical lines. **THIS WORK PLATFORM IS NOT INSULATED.**

NEVER enter the elevating assembly while the platform is elevated without first blocking the elevating assembly.

1. Position Drive/Lift Switch to **LIFT**.
2. While holding the Control Lever so that the Interlock Lever is depressed, push Control Lever forward to **UP**, the farther you push the Control Lever the faster the platform will elevate.
3. If the machine is not level an Alarm will sound and the machine will not lift or drive. **If an Alarm sounds the platform must be lowered and the machine moved to a level location before attempting to re-elevate the platform.**

TRAVEL WITH PLATFORM ELEVATED

⚠ 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. Grasp the Control Lever so the Interlock Lever is depressed (releasing the Interlock Lever cuts power to Controller), push Control Lever to **FORWARD** or **REVERSE** for desired direction of travel.
5. If the machine is not level an Alarm will sound and the machine will not lift or drive. **If an Alarm sounds the platform must be lowered and the machine moved to a level location before attempting to re-elevate the platform.**

LOWERING PLATFORM

1. Position Drive/Lift Switch to **LIFT**.
2. Grasp the Control Lever so the Interlock Lever is depressed, pull back Control Lever to **DOWN**.

EMERGENCY LOWERING

Ask a person on the ground to open the Emergency Lowering Valve (Figure 3-1) to lower the platform.

This valve is opened with the handle located at the rear of the machine.

1. Open the Emergency Lowering Valve by pulling on the handle.

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

2. To close, release the handle.

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.
4. Plug in Battery Charger and verify charger is operating, see *Battery Charging, Section 4.3*.

PARKING BRAKE RELEASE (Figure 3-1)

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.

Note: X31N models have two identical brake adjustment nuts located on both sides of the ladder.

The Brake Adjustment/Release Nut(s) is (are) located at the rear of the machine to the right (and left) of the ladder.

1. To release the brakes turn the nut(s) counterclockwise until the brakes disengage from the tires.
2. The machine will now roll when pushed or pulled.
3. To reset the brakes, turn the nut(s) clockwise until the brakes have fully engaged the tires. Test the brakes on a 23 % slope before returning the machine to service.

⚠ WARNING ⚠

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

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

FOLD DOWN GUARDRAILS

This procedure applies only to the X31N model for the purpose of passing through a standard double doorway. Guardrails must be returned to proper position before operating the work platform.

Fold Down Procedure

1. Unhook the controller from the side guardrail and place on the platform.
2. Unpin the front and rear upper rails from the side rails and rotate inwards.
3. Starting with the rollout deck rails and then the outer rails, lift up on each guardrail and fold inward.

Erection Procedure

1. Starting with the outer rails and then the rollout deck rails, raise each guardrail and drop it down securing it in the vertical position.
2. Rotate the front and rear upper rails outward and secure them to the opposite side rails using the retaining pins.
3. Hang the controller on the side guardrail.

4.0 Introduction

This section contains instructions for the maintenance of the X-Series Work Platform. 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 X-Series Work Platform 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.

Description	Part Number
Inclinometer	10119-000-00
Gauge, 0-3000 psi	14124-030-00
Gauge, 0-6000 psi	14124-060-00
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. Daily inspection will prevent abnormal wear and prolong the life of all systems. The inspection and maintenance schedule is to be performed at regular intervals. Inspection and maintenance shall be performed by personnel who are trained and familiar with mechanical and electrical procedures. 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.

Always use the elevating assembly brace whenever it is necessary to enter the scissor assembly when the Platform is elevated.

The Preventative Maintenance Table has been designed to be used for machine service and maintenance repair. **Please copy the following page and use this table as a checklist when inspecting a machine for service.**

Preventative Maintenance Table Key

Interval

Daily = each shift or every day
50h/30d = every 50 hours or 30 days
250h/6m = every 250 hours or 6 months
1000h/2y = every 1000 hours or 2 years

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

Preventative Maintenance Report

Date: _____

Owner: _____

Model No: _____ Serial No: _____

Serviced By: _____

Service Interval: _____

Table 4-1: Preventative Maintenance

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Battery System	Check electrolyte level	Daily			
	Check battery cable condition	Daily			
	Charge batteries	Daily			
	Check charger condition & operation	Daily			
	Check specific gravity	50h/30d			
	Clean exterior	250h/6m			
	Clean terminals	250h/6m			
Hydraulic Oil	Check oil level	Daily			
	Change filter	250h/6m			
	Clean Reservoir Breather/Cap	250h/6m			
	Drain and replace oil (ISO #46)	1000h/2y			
Hydraulic System	Check for leaks	Daily			
	Check hose connections	50h/30d			
	Check for exterior wear	50h/30d			
Emergency Hydraulic System	Open the emergency lowering valve and check for serviceability	Daily			
Controller	Check condition & operation	Daily			
Control Cable	Check the exterior of the cable for pinching, binding or wear	Daily			
Platform Deck and Rails	Check fasteners for proper torque	Daily			
	Check welds for cracks	Daily			
	Check condition of deck	Daily			
	Check entry way closure	Daily			
Hydraulic Pump	Check for hose fitting leaks	Daily			
	Wipe clean	50h/30d			
	Check for leaks at mating surfaces	50h/30d			
	Check mounting bolts for proper torque	50h/30d			
Drive Motors	Check for operation and leaks	Daily			
Steering System	Lubricate pivot pins	250h/6m			
	Lubricate king pins	250h/6m			
	Check steering cylinder for leaks	50h/30d			
	Check hardware & fittings for proper torque	250h/6m			
Elevating Assembly	Inspect for structural cracks	Daily			
	Check pivot bearings for wear	50h/30d			
	Check pivot pin mounting bolts for proper torque	50h/30d			
	Check Scissor Arms for bending	250h/6m			
Chassis	Check hoses for pinch or rubbing points	Daily			
	Check welds for cracks	Daily			
	Check tires for damage	Daily			
	Check wheel bolts/nuts for proper torque	Daily			
	Check component mounting for proper torque	250h/6m			
Lift Cylinder	Check cylinder rod for wear	50h/30d			
	Check pivot pin retaining rings	50h/30d			
	Check seals for leaks	50h/30d			
	Check pivot points for wear	50h/30d			
	Check fittings for proper torque	50h/30d			
Entire Unit	Perform pre-operation inspection	Daily			
	Check for and repair collision damage	Daily			
	Lubricate	50h/30d			
	Check fasteners for proper torque	250h/6m			
	Check for corrosion-remove and repaint	250h/6m			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			

4.2 Blocking Elevating Assembly X20N, X20W, X26N (Figure 4-1)

⚠ DANGER ⚠

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

DO NOT stand in Elevating Assembly area while installing or removing brace.

INSTALLATION

1. Park the work platform on firm level ground.
2. Verify Platform Emergency Stop Switch is ON.
3. Turn Chassis Key Switch to **CHASSIS**.
4. Position Chassis Lift Switch to UP and elevate platform approximately 9.5 Ft. (2.9 m).
5. Rotate Scissors Brace towards the front and allow it to hang vertical over the lower scissor pivot tube.
6. Push Chassis Lift Switch to DOWN position and gradually lower platform until brace rests on lower scissor arm pivot tube.

REMOVAL

1. Push Chassis Lift Switch to UP position and gradually raise platform until the lower end of the Scissors Brace will clear the lower scissor arm pivot tube.
2. Rotate Scissors Brace up and over towards the rear so that it rests on the cylinder mount, stowed position.
3. Push Chassis Lift Switch to DOWN position and completely lower platform.
4. Turn Chassis Key Switch to **DECK**.

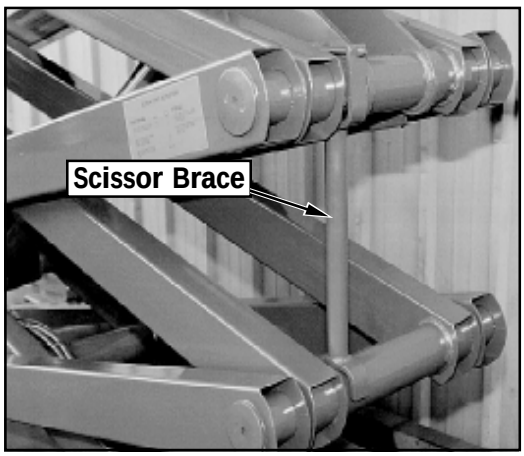


Figure 4-1: Blocking the Elevating Assembly

4.2 Blocking Elevating Assembly X31N (Figure 4-2)

INSTALLATION

1. Park the work platform on firm level ground.
2. Verify both Emergency Stop Switches are ON.
3. Turn Chassis Key Switch to **CHASSIS**.
4. Position Chassis Lift Switch to **UP** and elevate platform approximately nine (9) feet (2.7 m), leaving enough room to freely rotate the Scissors Brace.
5. Pull out on the retaining pin and rotate the Scissors Brace into vertical position.
6. Push Chassis Lift Switch to **DOWN** position and gradually lower platform until the upper and lower pivot pins rest on the Scissors Brace.

REMOVAL

1. Push Chassis Lift Switch to **UP** position and gradually raise platform until the Scissors Brace will clear the pivot pins.
2. Rotate the Scissors Brace counterclockwise until it locks into position parallel with the scissor arm.
3. Push Chassis Lift Switch to **DOWN** position and completely lower platform.

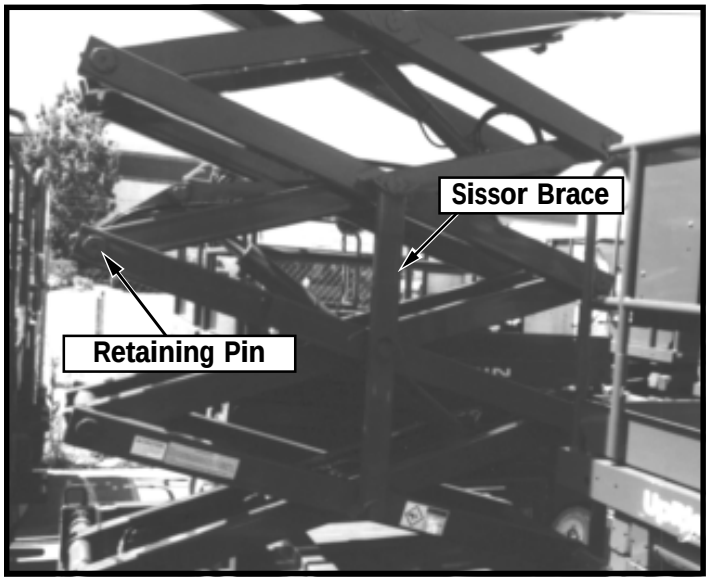


Figure 4-2: Blocking the Elevating Assembly X31N

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 (Figure 4-3)

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 $^3/_8$ in. (10 mm) above plates add distilled water only.
2. Connect extension cord (12 gauge (1.5 mm²) conductor minimum and 50 ft. (15 m) in length maximum) to the charger outlet plug located rear of mack. Connect other end of extension cord to properly grounded outlet of proper voltage and frequency.

Figure 4-3 : Battery Charger

3. Charger turns on automatically after a short delay, the ampmeter will indicate DC charging current.
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 an additional eight hours. During this time, the charging current will be low (four amps) as cells are equalizing.

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

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

Figure 4-4: Batteries

4.4 Lubrication

STEERING LINKAGE

Apply two to three drops of oil to each linkage bearing.

Use a grease gun with multipurpose grease and apply grease to the each zerk fitting at the steering pivots.

HYDRAULIC OIL TANK AND FILTER (Figure 4-3)

Fluid Level

With the platform fully lowered, open the Left Module and remove the reservoir breather/cap, oil should be at the full mark.

Oil and Filter Replacement

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

⚠ CAUTION ⚠

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

2. Provide a suitable container to catch the drained oil. Hydraulic tank has a 7 liter(7.4 quart) capacity.
3. Open Left Module Door.
4. Remove the drain plug and allow all oil to drain. Dispose of hydraulic fluid properly, contact your local oil recycler.
5. Reinstall the drain plug.
6. Unscrew the filter from the Filter Assembly.
7. Apply a thin film of clean hydraulic oil (ISO #46) to the gasket of the replacement filter.
8. Screw the replacement filter onto the filter head until the gasket makes contact then rotate the filter $^{3}/_{4}$ of a turn further.
9. Fill the hydraulic reservoir with ISO #46 hydraulic oil until the oil is up to the full mark on the dipstick.

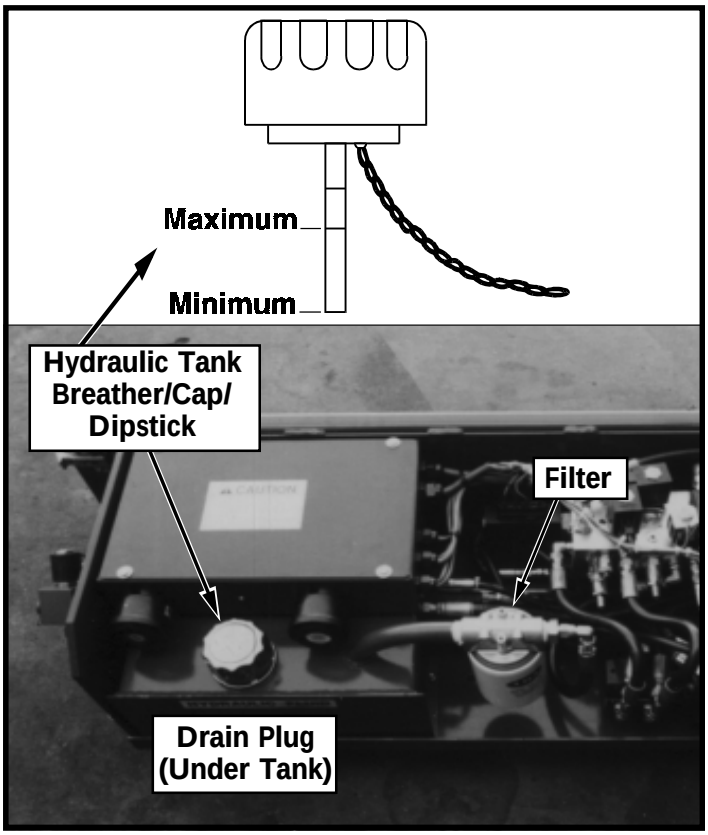


Figure 4-5: Hydraulic Oil Tank and Filter

Reservoir Breather/Cap

Clean breather/cap, when filter is replaced, with cleaning solvent and blow dry with clean dry compressed air.

7. Release the Chassis Lift Switch. Tighten locknut or replace Main Relief Valve cover and torque to 6 Ft/ Lbs (8 Nm.).

4.5 Setting Hydraulic Pressures (Figure 4-5)

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

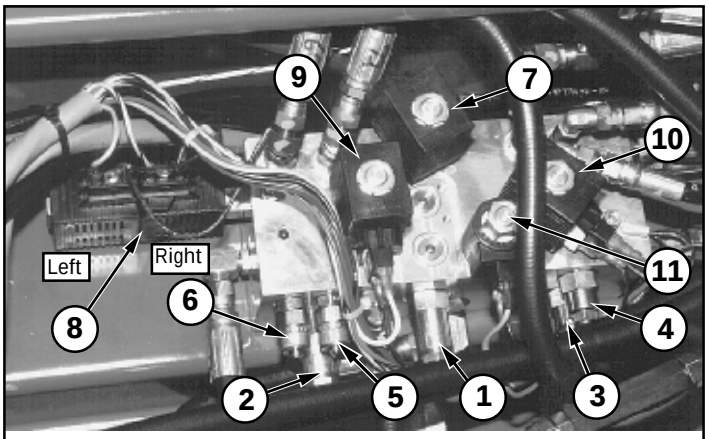
⚠ WARNING ⚠

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

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

MAIN RELIEF VALVE (Figure 4-5)

1. Operate the hydraulic system 10-15 minutes to warm the oil.
2. Remove high pressure gauge port cap and install the pressure gauge assembly.
3. Loosen locknut or remove cover on the Main Relief Valve and turn adjusting screw counterclockwise two full turns.
4. Place the maximum rated load, see *Table 1-1*, on the platform.
5. Turn the Chassis Key Switch to **CHASSIS**. Position the Chassis Lift Switch to **UP** position and hold it there.
6. Slowly turn the Main Relief Valve adjusting screw clockwise to increase the pressure until the platform just begins to raise. Check the gauge and verify the pressure does not exceed 2400 psi (165 bar). If it does readjust the Main Relief Valve to 2400 psi (165 bar) maximum.



1. Main Relief
2. Steering Relief
3. Fwd. C-Balance Valve
4. Rev. C-Balance Valve
5. High Press. Gauge Port
6. Low Press. Gauge Port
7. Drive/Lift Valve
8. Steering Valve
9. High Speed Valve
10. Forward/Reverse Valve
11. Drive Dump Valve

Figure 4-6: Hydraulic Manifold

STEERING RELIEF VALVE

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Install gauge in low pressure gauge port.
3. Loosen locknut or remove cover on the Steering Relief Valve and turn adjusting screw counterclockwise two full turns.
4. While one person holds the Steering Switch to steer right or left, slowly turn the Steering Relief Valve adjusting screw clockwise to increase the pressure until the gauge reads 1500 psi (103 bar).
5. Tighten locknut or replace Steering Relief Valve cover and torque to 6 Ft/Lbs (8 Nm).
6. Remove gauge and replace cap.

COUNTERBALANCE VALVES (Figure 4-6)

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Remove high pressure gauge port cap and install the pressure gauge assembly.
3. Lift work platform and block chassis so front wheels are off the ground.
4. Loosen the locknuts on Counterbalance Valves.
5. With the Chassis Key Switch on **DECK** and the Drive/Lift Switch in **DRIVE** depress the Interlock Lever and slowly pull the Control Lever to **REVERSE** to drive the wheels.
6. Adjust the Forward Counterbalance Valve by turning the adjustment screw until the pressure gauge indicates 325 psi (22.4 bar).
7. Slowly push the Control Lever to **FORWARD** to drive the wheels.
8. Adjust the Reverse Counterbalance Valve by turning the adjustment screw until the pressure gauge indicates 325 psi (22.4 bar).
9. Check the settings by slowly moving the Control Lever **FORWARD**, then **REVERSE** checking the gauge to ensure pressures are properly set. Readjust as needed.
10. Tighten locknuts on valves to 6 Ft/Lbs (8 Nm). Remove blocks and lower work platform to ground.

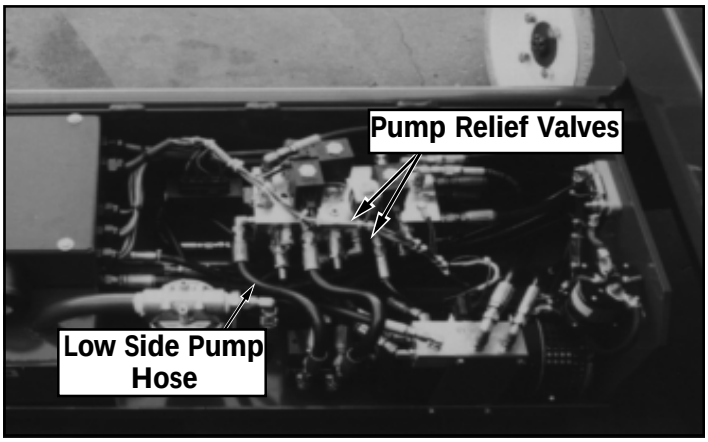


Figure 4-7: Pump Relief Valves

PUMP RELIEF VALVES (Figure 4-7)

1. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
2. Move the machine, if necessary, to a location that will allow the platform to be elevated.
3. Remove the low side pump hose from the valve block and install the 0-6000 pressure gauge assembly on the hose.
4. Turn the adjustment screw, inside the tank side of the valve, counterclockwise two full turns.
5. Use a clean dry container or bucket (one gallon minimum). While pointing the relief valve into the container have another person hold the Chassis Lift Switch to the **UP** position, check the gauge.
6. With the pump off turn the adjusting screw slightly clockwise and repeat step 6 until gauge reads 3400 psi (234 bar) maximum. **Make certain the other person does not push the Chassis Lift Switch while the valve is being adjusted.**

Note: DO NOT continue with this adjustment if more than one gallon (3.8 l) of hydraulic oil has been discharged into the bucket without returning it to the hydraulic reservoir.

7. Remove the low side pump relief valve and exchange it for the high side pump relief valve (the valve that you just adjusted now becomes the high side relief valve).
8. Repeat steps 5, 6, & 7 for this relief valve.
9. Replace the hose and fitting on the relief valve, remove the gauge assembly and reinstall the hose on the valve block and return the hydraulic oil in the container to the hydraulic tank.
10. Operate the machine and verify it is working properly.

4.6 Switch Adjustments

TILT SENSOR (Figure 4-7)

Introduction

The Tilt Sensor has three wires; red-power (24 v in), black-ground, white-output (24 v out). To verify the sensor is working properly there are two LED's under the sensor; green indicates the sensor is on (has power), red indicates the sensor is level and the white wire is 'hot' (24 v out).

Adjustment

1. Place machine on firm level surface ± ¼°.
2. Use the Inclinometer (P/N: 10119-000-00) to ensure front and rear of Chassis is level ± ¼°.
3. Use the Chassis Controls to raise platform to approximately 9.5 feet (2.9 m).
4. Install the Scissors Brace, see page 4-3.
5. Remove Tilt Sensor Electrical Box cover at front of machine.
6. Adjust the three leveling locknuts until the bubble is centered in the circle on the attached bubble level.
7. Replace the Tilt Sensor Electrical Box cover.
8. Store the Scissors Brace and lower the Platform.

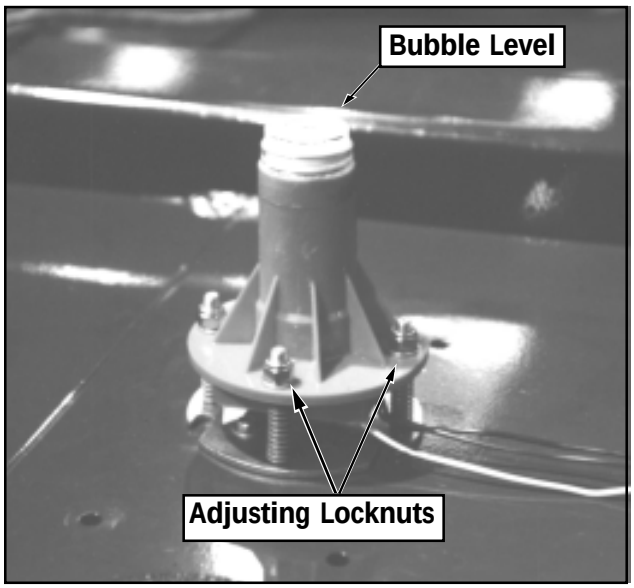


Figure 4-8: Tilt Sensor Adjustment

DOWN LIMIT SWITCH (Figure 4-9)

The Down Limit Switch providess power to the High Speed Circuit when the platform is completely lowered aand enables the Tilt Sensor/Pothole Interlock Cicuit when the Platform is elevated. The Down Limit switch is located on the chassis Frame at the front of the machine near the lowest pivot tube of the Elevating Assembly. The switched adjustment is to be preformed with the platform completley lowered.

⚠ WARNING ⚠

Always use the Elevating Assembly Brace whenever it is necessary to enter the elevating assembly when the Platform is elevated.

1. The switch (mounted to the chassis frame) is activated by a magnet mounted to the elevating assembly pivot tube with a band clamp). Locate these two components.
2. Disconnect the switch wires at the control module by unplugging the slide terminals.
3. Loosen the band clamps securing the magnet to the pivot tube just enough to allow the magnet to rotate. Rotate the magnet down below the switch.
4. Use a multimeter to check continuity in the switch. The switch contacts should be "open". Slowly rotate the magnet upward closer to the switch until the contacts "close" and tighten the band clamp to secure the magnet in place.
5. Connect the switch leads.

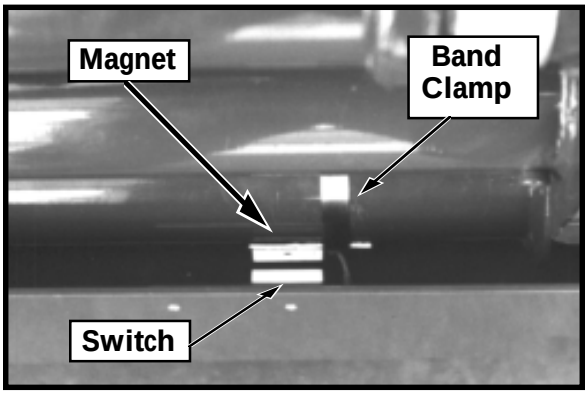


Figure 4-9: Down Limit Switch Adjustment

6. Elevate the platform six inches and verify that the high speed circuit is inoperable. If the high speed circuit is operable, the switch is not properly aadjusted and the above procedure must be repeated.

Optional Proportional Controller (Figure 4-10)

To perform the adjustment the Controller (Control Box) must be opened by removing the screws at the corners of the Controller and rotating the top forward to expose the proportional controller. Remove the potting material from the LO potentiometer adjustment screw if necessary.

Only the LO potentiometer might require adjustment, DO NOT attempt to adjust the other potentiometers as they are preset at the factory.

1. Select Lift with Drive/Lift Switch and elevate platform 6 in. (152 mm). Assure that machine is above Proximity Switch and in low range
2. Select Drive with Drive/Lift Switch.
3. Push Control Lever fully to forward or Reverse and check that machine speed is 20 ft. (6.1 m) in 18-22 seconds.
4. Adjust 'LO' trim pot if required, turning clockwise increases speed.

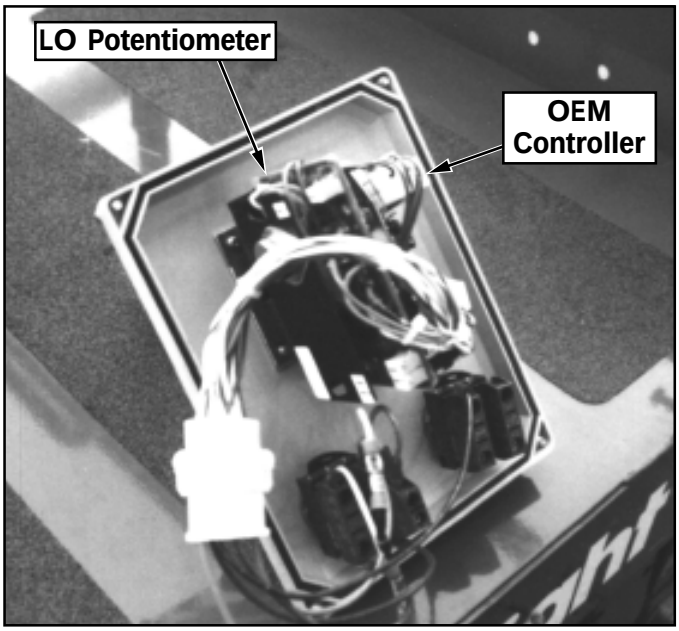


Figure 4-10: Proportional Controller Adjustment

4.7 Hydraulic Manifold (Figure 4-11)

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

DISASSEMBLY

NOTE: Mark all components as they are removed so as not to confuse their location during assembly. Refer to Figure 4-11 often to aid in disassembly and assembly.

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

CLEANING AND INSPECTION

1. Wash the manifold in cleaning solvent to remove built up contaminants 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.

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

Note: Refer to Table 4-2 for the proper torque values when installing any hydraulic component.

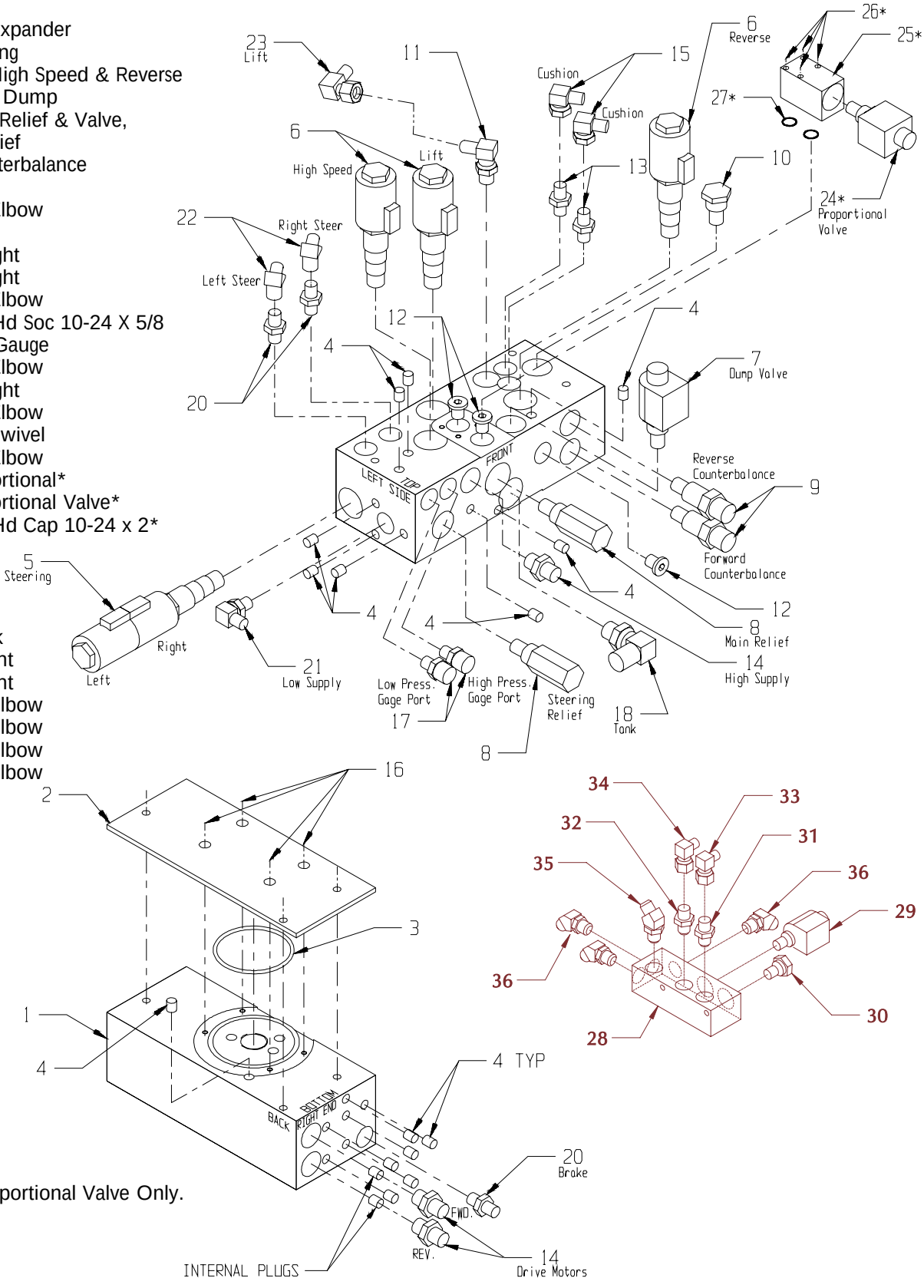
3. Install coils on solenoid valves.

INSTALLATION

Note: Refer to Table 4-2 for hydraulic component torque specifications.

1. Attach manifold assembly to module with bolts, make sure all the ground wires are attached with the front right hand bolt.
2. Connect solenoid leads (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 relief valves mounted on the Hydraulic Manifold according to instructions in *Section 4.5*.

1. Valve Block
2. Bottom Plate
3. O-Ring
4. Plug, 9mm Expander
5. Valve, Steering
6. Valve, Lift, High Speed & Reverse
7. Valve, Drive Dump
8. Valve, Main Relief & Valve, Steering Relief
9. Valve, Counterbalance
10. Plug, Cavity
11. Fitting, 90° Elbow
12. Plug, #4
13. Fitting, Straight
14. Fitting, Straight
15. Fitting, 90° Elbow
16. Screw, Flat Hd Soc 10-24 X 5/8
17. Connector, Gauge
18. Fitting, 90° Elbow
20. Fitting, Straight
21. Fitting, 90° Elbow
22. Fitting, 45° Swivel
23. Fitting, 90° Elbow
24. Valve, Proportional*
25. Block, Proportional Valve*
26. Screw, Soc Hd Cap 10-24 x 2*
27. O-Ring*
28. Pot Hole Valve Block
29. Valve
30. Valve, Check
31. Fitting Straight
32. Fitting Straight
33. Fitting, 90° Elbow
34. Fitting, 90° Elbow
35. Fitting, 90° Elbow
36. Fitting, 45° Elbow



* Optional Proportional Valve Only.

Figure 4-11: Hydraulic Manifold

4.8 Hydraulic Pump (Figure 4-12)

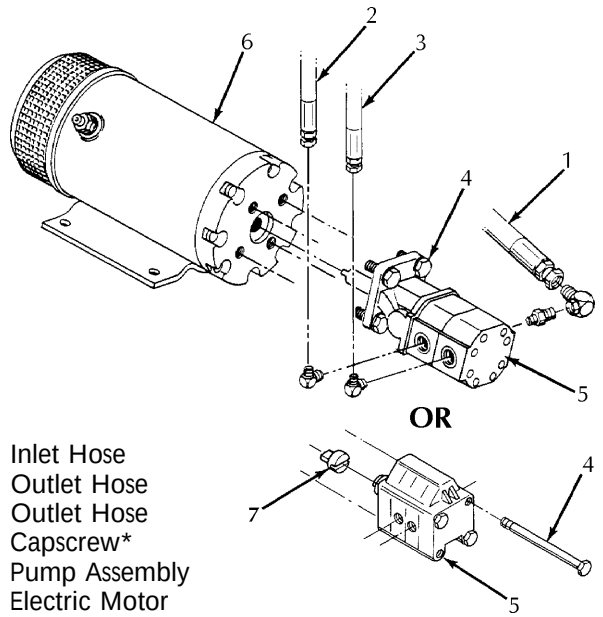
REMOVAL

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

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

INSTALLATION

1. Lubricate the pump shaft with general purpose grease and attach the pump to the motor with the capscrews.
2. Using a crisscross pattern torque each capscrew a little at a time until all capscrews are torqued to 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.



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

* Some Pumps require only 2 mounting bolts

Figure 4-12: Hydraulic Pump

4.9 Hydraulic Drive Motors and Hubs (Figure 4-13)

REMOVAL

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

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

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

INSTALLATION

1. Position the drive motor in the wheel yoke and secure with capscrews and locknuts.
2. Install the shaft key, hub and slotted nut. Torque the slotted nut 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.

1. Drive Motor
2. Wheel Yoke
3. Hub
4. Wheel
5. Cotter Pin
6. Slotted Nut

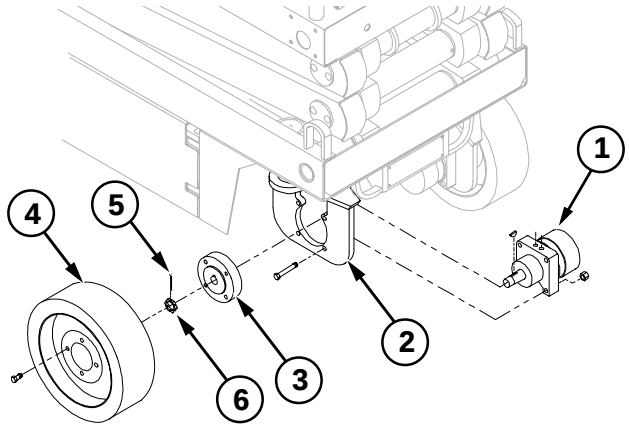


Figure 4-13: Drive Motor Installation

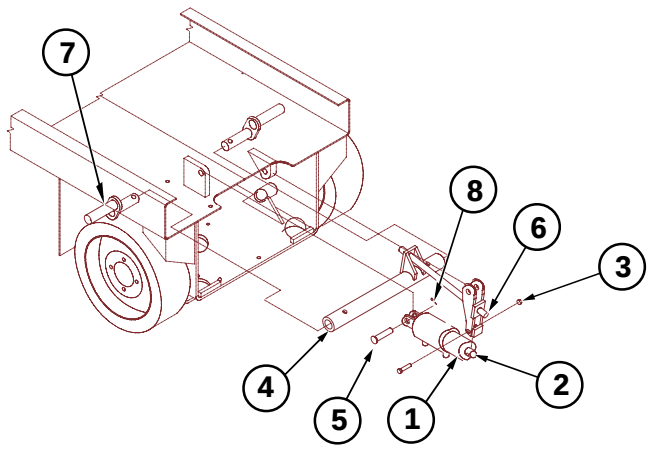
3. Remove the plugs from the hose assemblies and connect to the drive motor.
5. Install the wheel and secure with wheel bolts, torque to 80 Ft/Lbs (108 Nm).
6. Remove blocks, lower the jack and remove. Operate the drive system and check for leaks.

4.10 Brake Cylinder (Figure 4-14)

The brake cylinder is located between the rear wheels at the rear of the chassis.

REMOVAL

1. Block the wheels to prevent the work platform from rolling when the brake is removed.
2. Remove the adjustment locknut and jam nut.
3. Tag and disconnect the hose assemblies and cap the openings to prevent foreign material from entering.
6. Remove the shoulder bolt and locknut that mounts the cylinder rod to the brake tube.
7. Remove the cotter pin and pivot pin from the rear cylinder mount. Remove the cylinder.



1. Brake Cylinder
2. Rod End Shoulder Bolt
3. Locknut
4. Brake Tube (shown removed for clarity **only**)
5. Clevis End Pivot Pin
6. Adjustment Locknut
7. Left Brake Shoe
8. Cotter Pin

Figure 4-14: Brake Cylinder Installation

DISASSEMBLY

1. Remove the set screw from the outside barrel assembly and unscrew the cylinder.
2. Completely disassemble the cylinder including removing the piston nut and piston.
3. Remove all the seals and o-rings noting their location to aid in reassembly.

CLEANING AND INSPECTION

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

ASSEMBLY

1. Lubricate and install new seals and o-rings.
2. Install the headcap onto the shaft.
3. Install the new internal backup rings and o-rings on the piston.
4. Install the piston on the shaft and secure with the piston nut, torque to 250 Ft/Lbs (339 Nm).
5. Lubricate the piston seal with clean hydraulic fluid and install the shaft assembly in the inner cylinder barrel.
6. Install the spring and screw the cylinder barrels together until tight and the ports are in-line.
7. Install the set screw.

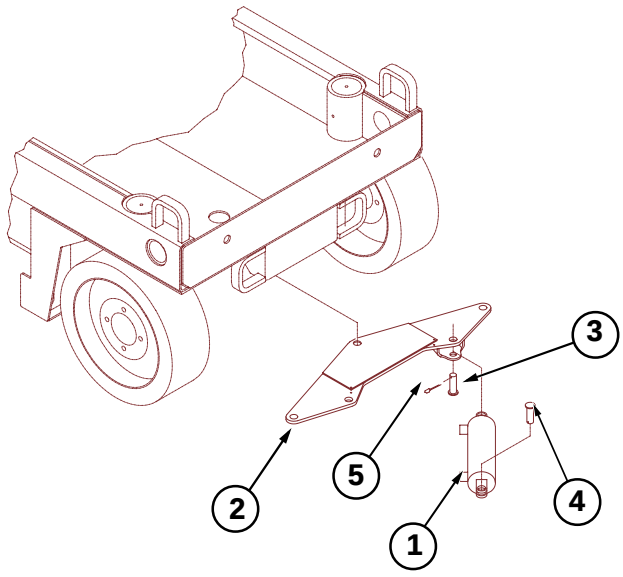
INSTALLATION

1. Install the clevis end pivot pin through the cylinder clevis and cylinder link and secure with a new cotter pin.
2. Install the rod end shoulder bolt through the cylinder rod and brake tube mounting tabs and secure with the locknut.
3. Install the hydraulic hoses.
4. Install the adjustment locknut. Tighten the bolt until the brake shoes fully engage the tires, secure with the locknut.
5. Lower the machine and operate the drive circuit and check that the brake shoes retract and clear the tires when driving and fully engage the tires when stopped. Check for leaks.

4.11 Steering Cylinder (Figure 4-15)

REMOVAL

1. Turn the wheels to the straight position.
2. Elevate the platform and block the elevating assembly with the brace (see page 4-3).
3. Tag and disconnect the hose assemblies from the cylinder fittings and immediately cap the openings to prevent foreign material from entering.
4. Remove the cotter pins from the pivot pins.
5. Remove the pivot pins, straight up through the Chassis, while supporting the cylinder. Remove the cylinder.



1. Steering Cylinder
2. Bell Crank
3. Rod End Pivot Pin
4. Clevis End Pivot Pin
5. Cotter Pins

Figure 4-15: Steering Cylinder Installation

DISASSEMBLY

1. Remove the set screw that secures the thread cap on the cylinder barrel.
2. Unscrew the thread cap from the barrel.
2. Withdraw the head cap, piston and shaft assembly from the barrel tube.
3. Remove the piston nut, piston and head cap.
4. Remove the rod wiper, u-cup, o-ring and backup ring from the headcap and discard the seals.
5. Remove the internal backup rings, o-ring, and cast iron piston seals from the piston and discard.

CLEANING AND INSPECTION

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

ASSEMBLY

1. Lubricate and install new rod wiper, u-cup, o-ring and backup ring on the headcap.
2. Install the headcap onto the shaft.
3. Install the new internal backup rings, o-ring and piston seal on the piston.
4. Install the piston on the shaft and secure with the piston nut, torque to 75 Ft/Lbs (102 Nm).
5. Lubricate the piston seal with clean hydraulic fluid and install the shaft assembly in the cylinder barrel.
6. Screw head cap into cylinder barrel until tight and secure with set screw.

INSTALLATION

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

4.12 Lift Cylinder (Figure 4-16)

The X20N, X20W aand X26N are all equiped with one Lift Cylinder. The X31N has two Lift Cylinders (Figure 4-17). The procedure for removing the lift cylinder(s) is the same for all models.

⚠ DANGER ⚠

Use a suitable maintence stand to access the upper Lift Cylinder on the X31N. DO NOT stand on the Elevating Assembly

REMOVAL

1. Elevate platform and install brace (see page 4-3).
2. Provide a suitable container to catch the hydraulic fluid, then disconnect the hydraulic hoses from the cylinder. Immediately plug hoses and fittings to prevent foreign material from entering.
3. Remove Emergency Lowering Valve Cable and Down Valve wires from the Emergency Lowering/ Down Valve.
4. Remove retaining rings securing Lift Cylinder Pivot Pins. On X26N machines remove the left roll pin in the Upper Pivot Pin.
5. Remove lower Pivot Pin by driving pin towards Locking Pin side. Lower cylinder to rest on chassis.
6. Attach a suitable hoisting device and sling to the cylinder and remove upper Pivot Pin.
7. Carefully remove cylinder.

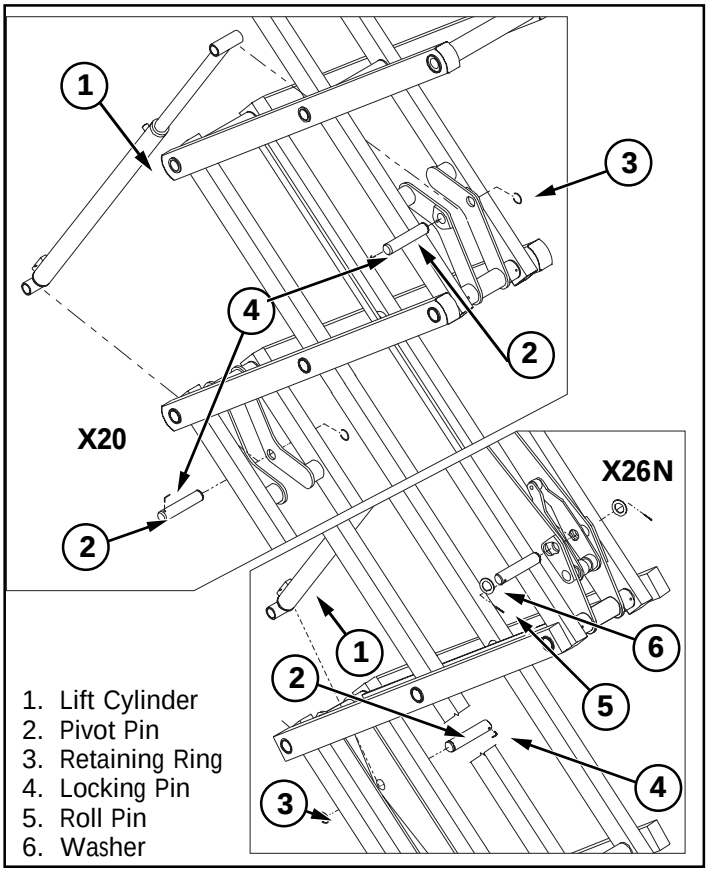


Figure 4-16: Lift Cylinder Installation

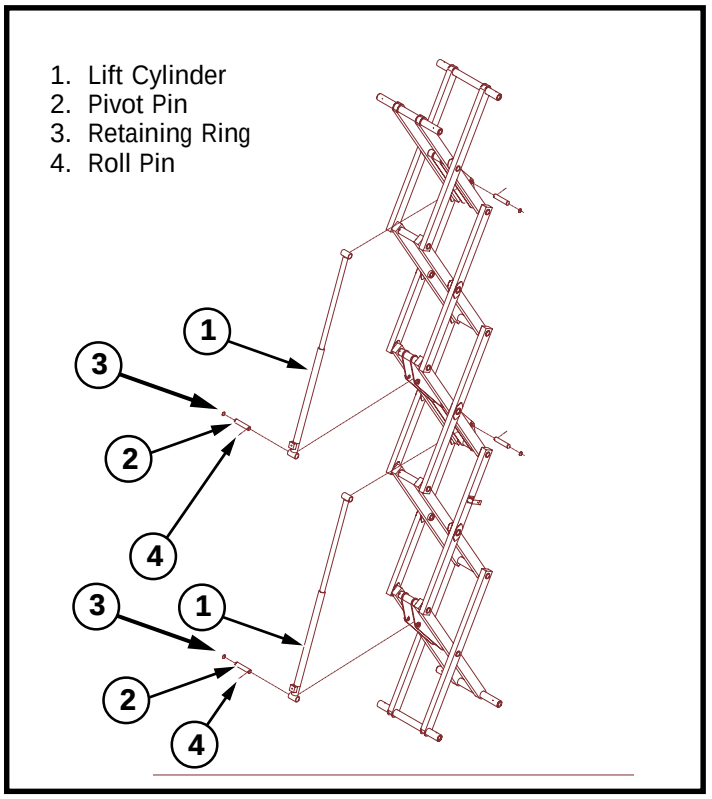


Figure 4-17: X31N Lift Cylinders

DISASSEMBLY

1. Remove the fittings and Down Valve from the cylinder assembly.
2. Unscrew the headcap and withdraw the rod and piston assembly from the barrel tube.
3. Unscrew the piston from the rod and then remove the head cap from the cylinder rod.
4. Remove all o-rings, seals and wipers from the head cap, piston and rod.

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, inside of the cylinder barrel and the rod for signs of scoring or excessive wear.
4. Replace all seals and o-rings.

REASSEMBLY

1. Lubricate and install new o-rings, seals and wipers on the head cap and piston.

NOTE: Multipurpose lubricant should be used.

2. Install the headcap on the cylinder rod from the piston end.
3. Apply Locktite #262 to the threads on the piston and screw the piston on the rod.
4. Lubricate the piston and install the piston and rod assembly in the barrel tube.
6. Thread the head cap into the barrel tube and hand tighten, then turn ¼ turn further.
7. Install the Down Valve and fittings.

INSTALLATION

1. Attach a suitable hoisting device and sling to the cylinder. Carefully position cylinder in the Elevating Assembly and install the upper Pivot Pin.
2. On X20 machines make sure the Locking Pin fully engages the pivot and pin and install the retaining ring.
   On X26N machines install a new roll pin.
3. Carefully lift the cylinder and align the lower mount and install the Pivot Pin. Make sure Locking Pin is properly installed then install the retaining ring.
4. Connect the Emergency Lowering Valve Cable and Down Valve wires.
5. Unplug hydraulic hoses and attach to the cylinder.
6. Replace hydraulic fluid removed from Lift Cylinder.
7. Test with weight at rated platform load to check system operation. Check for leaks and level of fluid.

4.13 Electric Motor (Figure 4-18)

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 4-18A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the name-plate 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.
3. Brushes should be checked for wear and to ensure that they are free in the brush holders.

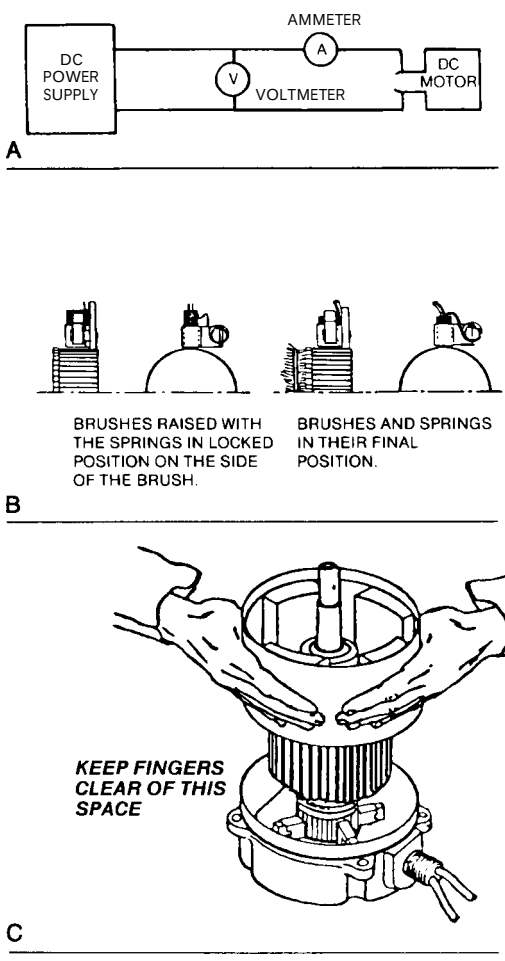


Figure 4-18: Electric Motor Service

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.

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

REASSEMBLY

1. Install new brushes and be sure they are free in the holder. Install brush with the lead wires positioned as when received. Raise all brushes to the locked position. (See Figure 4-18B and step 3 in the Inspection section).
2. Place commutator cover on a work bench with brush assembly facing upward.
3. Place the bearing spring into the bearing bore.
4. Take a complete armature assembly, including bearings, and insert commutator end bearing into the bearing bore.

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

5. Set the brushes to final position as shown in Figure 4-18B.
6. Place the complete stator down over the vertical armature, and into position on the commutator cover.
7. The stator assembly must be placed in a definite relationship with the commutator covers in order to obtain a neutral brush setting. There is a match-mark on both items. **These two marks must line up exactly. Rotate until they do.**
8. Assemble the pulley end cover in the proper relationship. Insert mounting bolts and tighten alternately to ensure a good mechanical alignment.
9. Spin the shaft by hand to see if it is free. Be sure motor leads (if used) are not touching together. If the leads are touching, a generator action will give the effect of friction in the motor. A no-load test can now be performed. At rated voltage, observe the no-load current. It should be less than 20% of the nameplate full load current. Anything higher indicates:
   - Brushes are not on neutral setting (check match-marks for exact alignment).
   - Faulty armature.

4.14 Torque Specifications

HYDRAULIC COMPONENTS

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

Note: Always lubricate threads with clean hydraulic oil prior to installation.

Table 4-2: Hydraulic Component Torque

TYPE: SAE PART SERIES	CARTRIDGE POPPET (Ft/Lbs)	CARTRIDGE POPPET (Nm)	FITTINGS (Ft/Lbs)	FITTINGS (Nm)	HOSES (In/Lbs)	HOSES (Nm)
#4	N/A	N/A	N/A	N/A	135-145	15-16
#6	N/A	N/A	10-20	14-27	215-245	24-28
#8	25-30	34-41	25-30	34-41	430-470	49-53
#10	35-40	47-54	35-40	47-54	680-750	77-85
#12	85-90	115-122	85-90	115-122	950-1050	107-131
#16	130-140	176-190	130-140	176-190	1300-1368	147-155

Coil nuts: 30 IN/Lbs (3 Nm)

FASTENERS

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

Table 4-3: Bolt Torque

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

5.0 Introduction

Table 5-1 provides a logical sequence of tests that are designed to isolate problems with X-Series machines. This table includes a list of probable causes and remedies.

⚠ WARNING ⚠

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

When performing any service on or in the Elevating Assembly area which requires the platform to be raised, the Elevating Assembly 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 thoroughly study both hydraulic and electric schematics to determine possible causes. Loose terminal connections and short circuits are always a potential cause when troubleshooting. Secondly, check suspect components electrically, hydraulically and mechanically to determine if they are at fault. 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. Open control circuit Circuit Breaker (CB).	Check control circuit Circuit Breaker. Reset if open (button out).
	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 (R1).	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 faulty Motor Relay.
	7. Emergency Stop Switch failed open.	With the Emergency Stop Switch in the ON position, check continuity across the contacts. If none, replace.
	8. Faulty Down Limit Switch (LS1).	Check continuity of switch, replace if faulty.
	9. Faulty Tilt Alarm Relay (R3).	Test relay, replace if faulty.
	10. Faulty Interlock Switch.	Check continuity of switch, replace if faulty.
	11. Faulty Controller.	Check operation, adjust if necessary.
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 (PMP).	Check pressure and delivery of the Hydraulic Pump. Replace if required.
	3. Faulty Controller (CONT).**	Check operation, adjust if necessary. Replace if required.
	4. Proportional Valve (V9,SOL8).**	Check operation, replace if required.
Electric Motor continues to run after controls are returned to the **OFF** position.	Motor Relay (R1) contacts fused together.	Check operation. Adjust or replace if required. With 0 voltage at the coil terminals of the Motor Relay (R1) 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 for continuity. Replace if faulty.
	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.
	5. Steering Relief (RV2).	Adjust the relief valve, if not adjustable replace.
Work platform will not steer right.	1. Faulty Steering Switch.	Test Steering Switch for continuity. Replace if faulty.
	2. Faulty Diode (D1).	Test Diode. Replace if faulty.
	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 for continuity. Replace if faulty.
	2. Faulty Diode (D2).	Test Diode. Replace if faulty.
	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 Selector Switch (S5).	Check continuity of Drive/Lift Switch. Replace if faulty.
	2. Faulty Drive/Lift Relay (R2).	Test Relay (R2). Replace if faulty.
	3. Mechanical failure.	Inspect Drive Motor shafts, hubs, and keys.
	4 . Worn Drive Motors (MOT1, MOT2).	Check hydraulic pressure being delivered to the Drive Motors. If sufficient, replace Drive Motors.
Work Platform will not drive while elevated.	1. Level Sensor (SNSR) out of adjustment or faulty.	Adjust and test the Level Sensor, replace if faulty.
	2. Faulty Relay.	Check Relay, replace if faulty.
	3. Low Segment of pump faulty.	Check Pump, replace if faulty.
	4. Controller Adjustment**	Adjust and test Controller.
No high speed drive.	1. Faulty Drive/Lift Switch.	Check continuity of Drive/Lift Switch. Replace if faulty.
	2. Faulty Down Limit Switch (LS1).	Check continuity of Down Limit Switch. Replace if faulty.
	3. Faulty High Speed Coil/Valve (SOL7/V6).*	Test coil and valve. If faulty, replace.
	4. Faulty Controller Switch (S4).*	Check continuity of switch, replace if faulty.
	5. Faulty Controller (CONT).**	Check operation, adjust if necessary. Replace if required.
	6. Proportional Valve (V9,SOL8).**	Check operation, replace if required.
No drive **FWD** but drives in **REV**. Lift function operable.	1. Faulty Drive/Lift Relay contacts (R2).	Test Relay (R2). Replace if faulty.
	2. Faulty Forward/ Reverse Valve (V5).	Check the Drive/Lift Valve. If the spool is not shifting, replace the valve.
	3. Faulty Counterbal- ance Valves (V2, V3).	Check pressure of Counterbalance Valves. Replace or reset valves as required.
No drive **FWD** but drives in **REV**. No lift function.	1. Faulty Drive/Lift Relay contacts (R2)	Test Relay (R2) Replace if faulty.
	2. Faulty Up/Forward Controller Switch (S9).	Check operation of Controller switch. Replace if required.
No drive **REV** but drives in **FWD**. Lift function operable.	1. Faulty Drive/Lift Relay contacts (R2).	Test Relay (R2). Replace if faulty.
	2. Faulty Forward/ Reverse Solenoid/ Valve (SOL3/V5).	Check the Drive/Lift Valve. If proper voltage is present and coil is not magnetized replace the coil, if the spool is not shifting, replace the valve.
	3. Faulty diode (D3).	Test diode, replace if faulty.
	4. Faulty Counterbalance Valves (V2, V3).	Check pressure of Counterbalance Valves. Replace or reset valves as required.
No drive **REV** but drives in **FWD**. No down function.	1. Faulty Drive/Lift Relay contacts (R2).	Test Relay (R2). Replace if faulty.
	2. Faulty Down/Reverse Controller Switch (S2).	Check operation of Controller switch. Replace if required.

Table 5-1: Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
Platform will not elevate or elevates slowly.	1. Emergency Down Valve (V7) open.	Close Emergency Down Valve, push in on knob. Check adjustment of Cable.
	2. Platform overloaded.	Observe maximum load rating (See *Table 1-1*).
	3. Faulty Down/Reverse Controller Switch (S2).*	Check operation of Controller switch. Replace if required.
	4. Faulty High Speed Controller Switch (S4).*	Check operation of Controller switch. Replace if required.
	5. Faulty Controller (CONT).**	Check operation, adjust if necessary. Replace if required.
	6. Proportional Valve (V9,SOL8).**	Check operation, replace if required.
	7. Faulty Drive/Lift Valve/Coil (V4/SOL5).	Check the Drive/Lift Valve. If proper voltage is present and coil is not magnetized replace the coil, if the spool is not shifting, replace the valve.
	8. Faulty Drive/Lift Selector Switch.	Test Drive/Lift Switch for continuity. Replace if faulty.
	9. Main Relief Valve (RV1) out of adjustment or faulty.	Adjust the Main Relief Valve. If not adjustable, replace.
	10. Faulty Down Limit Switch (LS1).	Test Down Limit Switch for continuity. replace if faulty.
	11. Faulty Drive/Lift Relay (R2).	Test relay, replace if faulty.
	12. Faulty Lift Cylinder (CYL3).	Check and replace seals in Lift Cylinder.
Platform drifts down after being elevated.	1. Emergency Lowering/ Down Valve (V7) partly open or faulty.	Ensure that the Emergency Lowering Valve is completely closed, push knob in. Replace the valve.
	2. #2 Piston Seal is leaking	Check Piston Seal and replace if faulty.
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. Down Valve (V7) stuck.	Replace the Down Valve.
	3. Plugged Down Orifice (ORF2).	Remove and clean Orifice.
	4. Faulty CR2	Check CR2 and replace if faulty.
Motion Alarm does not sound.	Faulty Down Alarm (ALM1).	Check voltage to Down Alarm . If proper voltage is present, replace the Alarm.
Brakes will not release.	1. Faulty Brake Cylinder (CYL2).	Check and replace seals in Brake Cylinder.
	2. Brakes out of adjustment.	Adjust brakes to disengage tires when driving **only**.
Brake will not lock wheel.	1. Brake Orifice (ORF1) plugged.	Remove and clean Orifice.
	2. Faulty Brake Cylinder (CYL2).	Check and replace seals and spring in Brake Cylinder.
	3. Brake out of adjustment.	Adjust brakes to engage tires when not driving .

*** On machines with standard two speed controller.**

**** On machines with optional proportional controller.**

NOTES

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 makeup and functions of the systems for checking, tracing, and faultfinding during troubleshooting analysis.

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

INDEX

Figure **Page**

6.1 Electrical Schematic

Table 6-1: Electrical Schematic Legend, X20N, X20W, X26N

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM1	Alarm, Down	Provides warning sound (60 Hz) when the Platform Down function is activated.	In front of electrical box inside left Chassis Module. Red wire for 60 Hz.
ALM2	Alarm, Platform Tilt/Pothole Protection	Provides warning sound (600 Hz) when Platform is on slopes of 2° side to side and 2° fore and aft, or when the Pothole Protection Supports do not deploy properly.	In front of electrical box inside left Chassis Module. White wire for 600 Hz.
BAT	Batteries (4) 6 volts	To store energy.	Inside right Chassis Module.
CB	Circuit Breaker	Overload protection for the control circuit.	Chassis Control Panel.
D1	Diode	Allows power to R1 through R3 to power motor when steer is selected.	Left Chassis module between A2 and Chassis Lift Switch.
D2	Diode	Allows power to R1 through R3 to power motor when steer is selected.	Left Chassis module between A3 and Chassis Lift Switch.
D3	Diode	Provides power to Motor Start circuit through Controller Power On Switch from Drive/Lift Switch when in **DRIVE**.	In Controller between Drive/ Lift Selector Switch and S1 and S2.
D4	Diode	Prevents feedback into the Chassis Lift Circuit from the Key Switch.	Connected between terminal A12 and the Chassis Lift Switch.
D5	Diode	Prevents feedback into the Controller Circuit from the Chassis Lift Circuit.	Connected between terminal A12 and the Key Switch.
D6	Diode	Provides power to Drive Dump Coil from Reverse Circuit.	On Chassis Terminal Strip between A3 and A4.
D7	Diode	Dampers spike & improves life of Solenoid.	Connected between A7 & ground stud on R1.
D8	Diode	Dampers spike & improves life of Solenoid.	Connected between A7 & ground stud on R1.
FU1	Fuse, 175 AMP	Overload protection for the electric motor.	Inside left Chassis Module on right bulkhead.
LS1	Switch, Down Limit (Tilt/Pothole Interlock Circuit) (High Speed Drive Circuit)	Provides power to Tilt Alarm Relay when Platform is down. Cuts power to High Speed Coil when Platform is elevated.	Left rear corner of Tilt Sensor electrical box: Contacts 1,2,3&4; Contacts 6,7&8.
MOT	Motor, Electric	Provides power to Drive Hydraulic Pump.	Left Chassis Module.
MTR	Meter, Low Voltage/Hour (Optional)	Shows state of Battery charge and hours machine has been operated.	Chassis Control Panel.
R1	Relay, Motor Start	Connects Batteries to Motor.	Inside Left Chassis Module. Mounted on right bulkhead.
R2	Relay, Drive/Lift	Energized when Drive/Lift Switch is in **DRIVE,** provides power to Forward or Reverse Coils from Controller or to Up or Down Coils from Controller when not energized.	Right hand relay in Electrical Box, closest to side where cables enter box.
R3	Relay, Tilt Alarm	Energized by Tilt Sensor when level, or Down Limit Switch when Platform is down, provides power to Motor Start Relay or Tilt Alarm when not energized.	Left hand relay in Electrical Box, farthest from side where cables enter box.
R4	Relay, Pothole Protection	Energized in Drive, allows Pothole Protection coils to energize when High Speed Drive is activated.	Inside left Chassis Module, mounted on right bulkhead.
R5	Relay, High Speed Drive	Energized when machine is fully lowered. Allows High Speed Drive & disables Tilt Sensor.	Inside left Chassis Module, mounted on right bulkhead.
S1	Switch, Joystick Power	Supplies power to Motor Start circuit.	Left rear switch when top of Controller is held in assembled position.
S2	Switch, Joystick Down/Reverse	Supplies power to Motor Start circuit or Down/Reverse circuits.	Left front switch when top of Controller is held in assembled position.
S3	Switch, Joystick Up/Forward	Supplies power to Up/Forward circuits.	Right rear switch when top of Controller is held in assembled position.
S4	Switch, Joystick High Speed	Supplies power to High Speed circuit.	Right front switch when top of Controller is held in assembled position.
S5	Switch, Chassis Emergency Stop	Control circuit shut off.	Chassis Control Panel.
S6	Switch, Chassis Selector Key	Provides power to either the Chassis Controls or the Controller.	Chassis Control Panel.
S7	Switch, Controller Emergency Stop Button.	Control circuit shut off.	Platform Controller bottom left.

Table 6-1: (cont'd.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S8	Switch, Interlock	Supplies power to Controller.	Front of joystick.
S9	Switch, Drive/Lift Selector	Supplies power to High Speed circuit, and Drive/Lift Relay and Motor Start circuit when in **DRIVE** Position.	Controller bottom right.
S10 & S11	Switches, Steering	Supplies power to either Right or Left Steer Valve Solenoids.	Rocker actuator on top of Controller Joystick, switch bodies inside Joystick handle.
S12	Switch, Chassis Lift	Provides power to either UP or Down circuits.	Chassis Control Panel.
SNSR	Sensor, Tilt	Cuts power to Tilt Alarm Relay when Platform is on slopes of 2° side to side and 2° fore and aft to activate Tilt Alarm.	Inside Tilt Sensor Electrical Box.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to **RIGHT** turn position.	Coil closest to block on left side of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to **LEFT** turn position.	Coil farthest from block on left side of Manifold Block.
SOL3	Solenoid, Reverse (coil)	Shifts Forward/ Reverse Valve to reverse position.	Top of Manifold Block towards right side.
SOL4	Solenoid, Drive Dump (coil)	Closes Drive Dump Valve.	Top center of Manifold Block towards front.
SOL5	Solenoid, Lift (coil)	Shifts Drive/Lift Valve to Lift position.	Top center rear of Manifold Block.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Base of Lift Cylinder.
SOL7	Solenoid, High Speed (coil)	Shifts High Speed Valve to High Speed position.	Top center left of Manifold Block.
SOL8	Solenoid, PHP Down	Extends Pothole Cylinders	Aux. Manifold block in Control Module.
SOL9 & SOL10	Solenoid, PHP Up	Retracts Pothole Cylinders	On Pothole Protection cylinders.

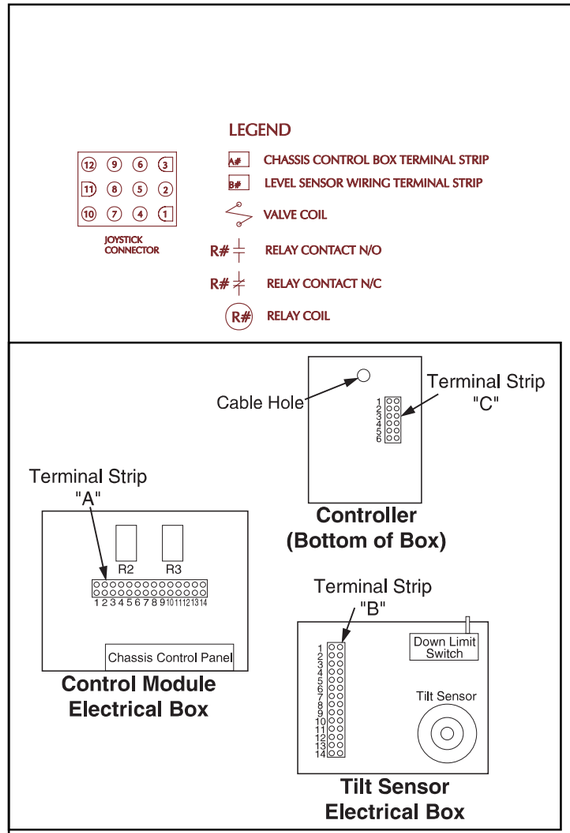
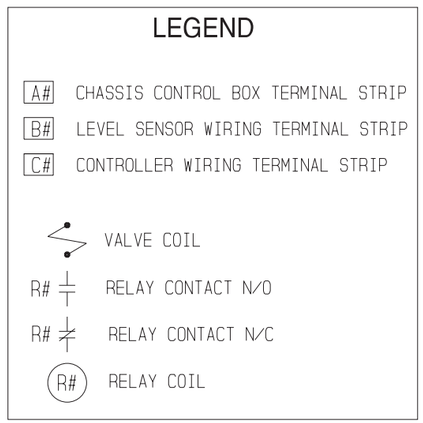


Figure 6-1: Terminal Strip Identification



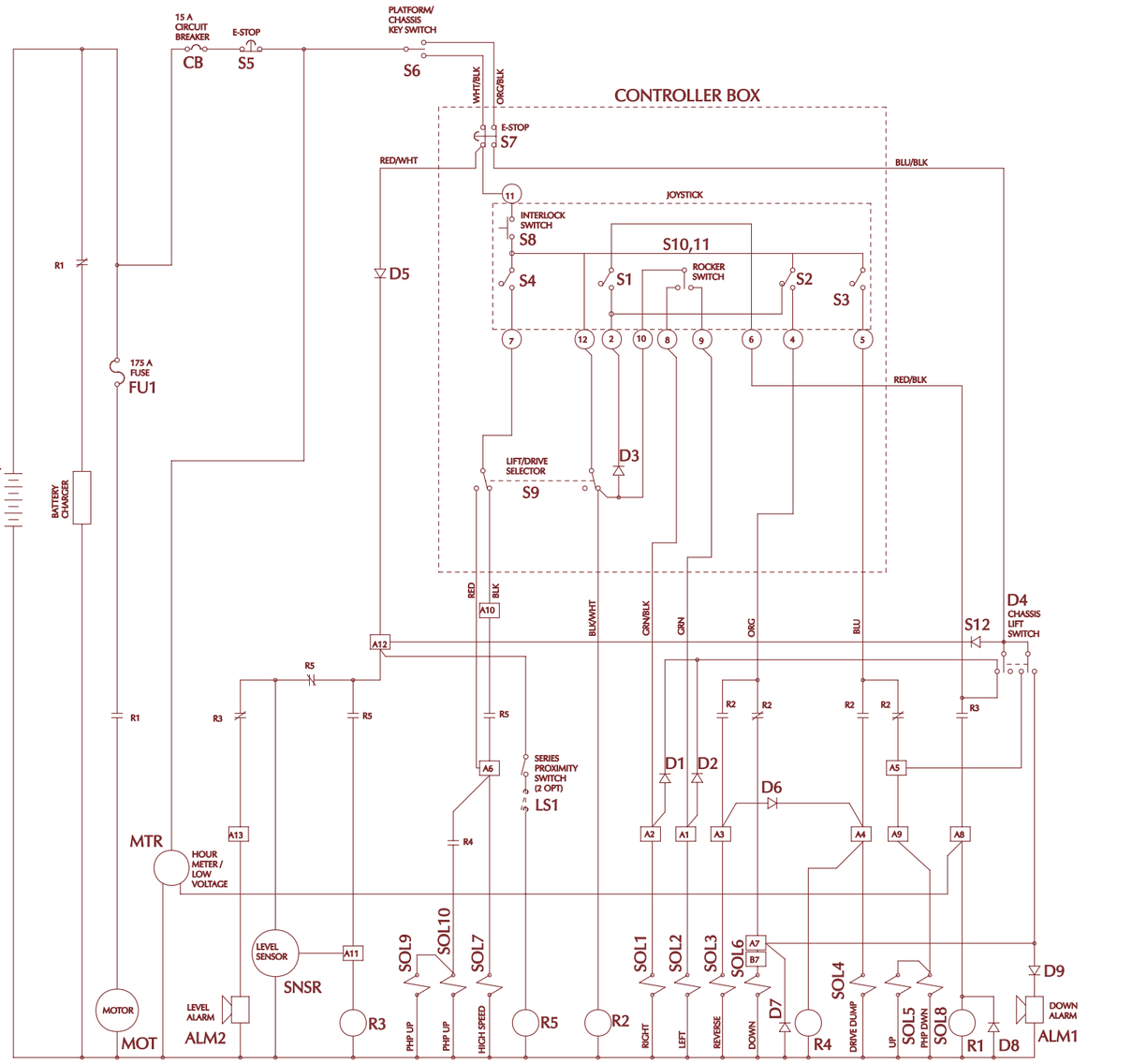


Figure 6-2: Electrical Schematic, X20N, X20W, X26N

6.2 Electrical Schematic

Table 6-2: Electrical Schematic Legend, X31N

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM1	Alarm, Down	Provides warning sound (60 Hz) when the Platform Down function is activated.	In front of electrical box inside left Chassis Module. Red wire for 60 Hz.
ALM2	Alarm, Platform Tilt/Pothole Protection	Provides warning sound (600 Hz) when Platform is on slopes of 2° side to side and 2° fore and aft, or when the Pothole Protection Supports do not deploy properly.	In front of electrical box inside left Chassis Module. White wire for 600 Hz.
BAT	Batteries (4) 6 volts	To store energy.	Inside right Chassis Module.
CB	Circuit Breaker	Overload protection for the control circuit.	Chassis Control Panel.
D1	Diode	Allows power to R1 through R3 to power motor when steer is selected.	Left Chassis module between A2 and Chassis Lift Switch.
D2	Diode	Allows power to R1 through R3 to power motor when steer is selected.	Left Chassis module between A3 and Chassis Lift Switch.
D3	Diode	Provides power to Motor Start circuit through Controller Power On Switch from Drive/Lift Switch when in **DRIVE**.	In Controller between Drive/ Lift Selector Switch and S1 and S2.
D4	Diode	Prevents feedback into the Chassis Lift Circuit from the Key Switch.	Connected between terminal A12 and the Chassis Lift Switch.
D5	Diode	Prevents feedback into the Controller Circuit from the Chassis Lift Circuit.	Connected between terminal A12 and the Key Switch.
D6	Diode	Provides power to Drive Dump Coil from Reverse Circuit.	On Chassis Terminal Strip between A3 and A4.
D7	Diode	Dampers spike & improves life of Solenoid.	Connected between A7 & ground stud on R1.
D8	Diode	Dampers spike & improves life of Solenoid.	Connected between A7 & ground stud on R1.
FU1	Fuse, 175 AMP	Overload protection for the electric motor.	Inside left Chassis Module on right bulkhead.
LS1	Switch, Down Limit (Tilt/Pothole Interlock Circuit) (High Speed Drive Circuit)	Provides power to Tilt Alarm Relay when Platform is down. Cuts power to High Speed Coil when Platform is elevated.	Left rear corner of Tilt Sensor electrical box: Contacts 1,2,3&4; Contacts 6,7&8.
MOT	Motor, Electric	Provides power to Drive Hydraulic Pump.	Left Chassis Module.
Meter, Low	Shows state of Battery Voltage/Hour (Optional)	charge and hours machine has been operated.	Chassis Control Panel.
R1	Relay, Motor Start	Connects Batteries to Motor.	Inside Left Chassis Module. Mounted on right bulkhead.
R2	Relay, Drive/Lift	Energized when Drive/Lift Switch is in **DRIVE,** provides power to Forward or Reverse Coils from Controller or to Up or Down Coils from Controller when not energized.	Right hand relay in Electrical Box, closest to side where cables enter box.
R3	Relay, Tilt Alarm	Energized by Tilt Sensor when level, or Down Limit Switch when Platform is down, provides power to Motor Start Relay or Tilt Alarm when not energized.	Left hand relay in Electrical Box, farthest from side where cables enter box.
R4	Relay, Pothole Protection	Energized in Drive, allows Pothole Protection coils to energize when High Speed Drive is activated.	Inside left Chassis Module, mounted on right bulkhead.
R5	Relay, High Speed Drive	Energized when machine is fully lowered. Allows High Speed Drive & disables Tilt Sensor.	Inside left Chassis Module, mounted on right bulkhead.
S1	Switch, Joystick Power	Supplies power to Motor Start circuit.	Left rear switch when top of Controller is held in assembled position.
S2	Switch, Joystick Down/Reverse	Supplies power to Motor Start circuit or Down/Reverse circuits.	Left front switch when top of Controller is held in assembled position.
S3	Switch, Joystick Up/Forward	Supplies power to Up/Forward circuits.	Right rear switch when top of Controller is held in assembled position.
S4	Switch, Joystick High Speed	Supplies power to High Speed circuit.	Right front switch when top of Controller is held in assembled position.
S5	Switch, Chassis Emergency Stop	Control circuit shut off.	Chassis Control Panel.
S6	Switch, Chassis Selector Key	Provides power to either the Chassis Controls or the Controller.	Chassis Control Panel.
S7	Switch, Controller Emergency Stop Button.	Control circuit shut off.	Platform Controller bottom left.

Table 6-2: (cont'd.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S8	Switch, Interlock	Supplies power to Controller.	Front of joystick.
S9	Switch, Drive/Lift Selector	Supplies power to High Speed circuit, and Drive/Lift Relay and Motor Start circuit when in **DRIVE** Position.	Controller bottom right.
S10,11	Switches, Steering	Supplies power to either Right or Left Steer Valve Solenoids.	Rocker actuator on top of Controller Joystick, switch bodies inside Joystick handle.
S12	Switch, Chassis Lift	Provides power to either UP or Down circuits.	Chassis Control Panel.
SNSR	Sensor, Tilt	Cuts power to Tilt Alarm Relay when Platform is on slopes of 2° side to side and 2° fore and aft to activate Tilt Alarm.	Inside Tilt Sensor Electrical Box.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to **RIGHT** turn position.	Coil closest to block on left side of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to **LEFT** turn position.	Coil farthest from block on left side of Manifold Block.
SOL3	Solenoid, Reverse (coil)	Shifts Forward/ Reverse Valve to reverse position.	Top of Manifold Block towards right side.
SOL4	Solenoid, Drive Dump (coil)	Closes Drive Dump Valve.	Top center of Manifold Block towards front.
SOL5	Solenoid, Lift (coil)	Shifts Drive/Lift Valve to Lift position.	Top center rear of Manifold Block.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Base of Lift Cylinder.
SOL7	Solenoid, High Speed (coil)	Shifts High Speed Valve to High Speed position.	Top center left of Manifold Block.
SOL8	Solenoid, PHP Down	Extends Pothole Cylinders	Aux. Manifold block in Control Module.
SOL9 & SOL10	Solenoid, PHP Up	Retracts Pothole Cylinders	On Pothole Protection cylinders.
SOL8	Solenoid, PHP Down	Extends Pothole Cylinders	Aux. Manifold block in Control Module.
SOL9 & SOL10	Solenoid, PHP Up	Retracts Pothole Cylinders	On Pothole Protection cylinders.
SOL11 & SOL12	Solenoid, Series Drive	Shifts Series/Parallel Valve from Hi torque Parallel to Hi speed Series.	Center of Chassis between modules.

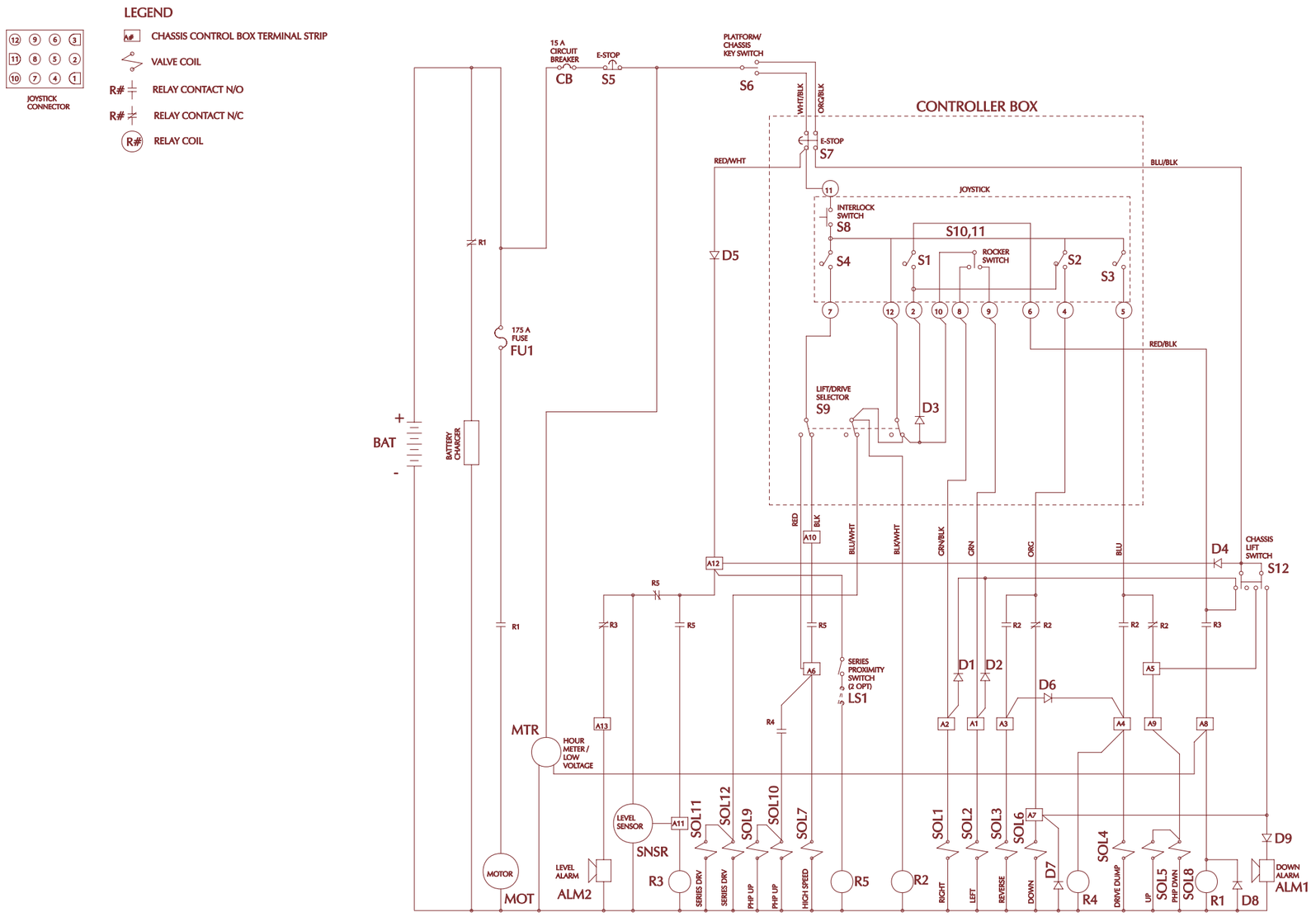


Figure 6-3: Electrical Schematic, X31N

6.3 Hydraulic Schematic

Table 6-4: Hydraulic Schematic Legend, X20N, X20W, X26N

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
CYL1	Cylinder, Steering	Provides force to turn front wheels.	Under Chassis at front of machine.
CYL2	Cylinder, Brake	Stops machine from moving while parked.	Rear of machine between wheels.
CYL3	Cylinder, Lift	Provides force to lift Platform.	Inside the Elevating Assembly.
CYL4	Cylinder, Cushion	Provides smooth starting and stopping when driving.	Mounted to right side of Hydraulic Tank.
CYL5 & CYL6	Cylinder,Pot Hole protection	Provides power to extend & retract Pothole protection tubes.	On one side of Power & Control Modules.
FL1	Filter	Filters oil returning to Tank.	Mounted to 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.	Under rod end fitting of Brake Cylinder.
ORF2	Orifice, Down	Controls the platform rate of descent.	Under fitting on base of Lift Cylinder.
ORF3,4	Orifice, Cushion Cylinder	Controls drive cushion rate.	Inside each end of Drive Cushion Cylinder.
PMP	Duplex Pump	Supplies hydraulic oil flow for all functions.	Inside left Chassis Module, right front.
RV1	Valve, Main Relief	Provides over pressure protection to Pump and limits Platform lifting capacity.	Center front of Manifold Block.
RV2	Valve, Steering Relief	Provides over pressure protection to steering components when steering.	Lower left front of Manifold Block.
RV3	Valve, Lift	Provides over pressure protection to high side of Pump and.	In-line valve mounted on hoses between Pump and tank.
RV4	Valve, Lift	Provides over pressure protection to low side of Pump and.	In-line valve mounted on hoses between Pump and tank.
V1	Valve, Steering	Provides directional control for Steering Cylinder.	Left side of Manifold Block.
V2	Valve, Reverse Counterbalance	Prevents machine from running away on slopes and cushions stops.	Right front of Manifold Block, lower unit.
V3	Valve, Forward Counterbalance	Prevents machine from running away on slopes and cushions stops.	Right front of Manifold Block, upper unit.
V4	Valve, Drive/Lift	Provides control of oil for Drive or Lift functions.	Top center rear of Manifold Block.
V5	Valve, Forward/ Reverse	Provides control of oil for Forward or Reverse drive.	Top of Manifold Block, towards right side.
V6	Valve, High Speed	Controls oil flow into Drive and Lift circuits by dumping oil back to tank.	Top left center of Manifold Block.
V7	Valve, Down and Emergency Lowering	Allows oil to flow out of Lift Cylinder to Tank, manually operated for Emergency Lowering.	Mounted on base of Lift Cylinder.
V8	Valve, Drive Dump	Allows oil to flow to Forward/Reverse Valve for Drive operation. During Lift, drive circuit oil is returned to tank.	Top right center of Manifold Block towards front.
V9	Valve, Pothole Protection	Allows oil pressure to retract Pothole protection cylinders when energized.	Inside Control Module.

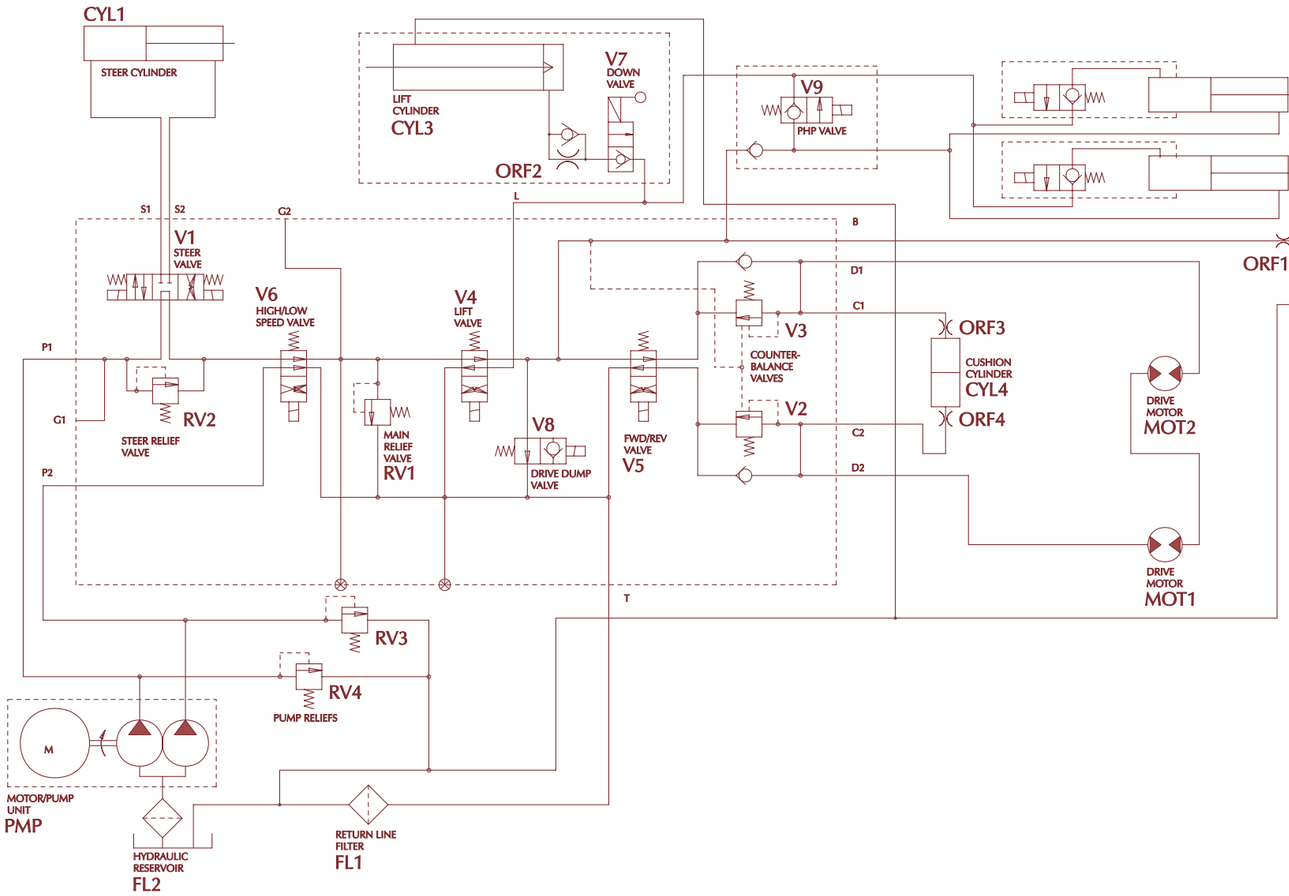


Figure 6-4: Hydraulic Schematic, X20N, X20W, X26N

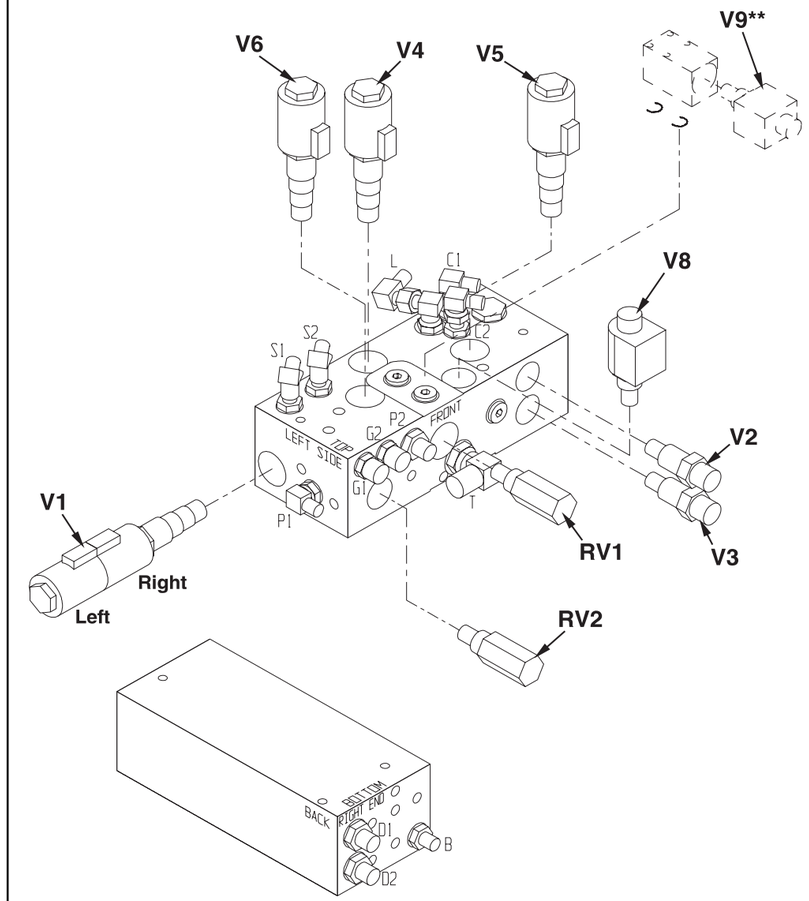


Figure 6-5: Hydraulic Manifold, X20N, X20W, X26N

6.4 Hydraulic Schematic

Table 6-4 : Hydraulic Schematic Legend, X31N

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
CYL1	Cylinder, Steering	Provides force to turn front wheels.	Under Chassis at front of machine.
CYL2 & CYL3	Cylinder, Brake	Stops machine from moving while parked.	Rear of machine between wheels.
CYL4 & CYL5	Cylinder, Lift	Provides force to lift Platform.	Inside the Elevating Assembly.
CYL6	Cylinder, Cushion	Provides smooth starting and stopping when driving.	Mounted to right side of Hydraulic Tank.
CYL7 & CYL8	Cylinder,Pothole protection	Provides power to extend & retract Pothole protection tubes.	On one side of Power & Control Modules.
FL1	Filter	Filters oil returning to Tank.	Mounted to Hydraulic Tank.
FL2	Suction Screen	Traps particles in Hydraulic Tank.	Inside Hydraulic Tank at outlet.
FD	Flow Diverter		
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.	Under rod end fitting of Brake Cylinder.
ORF2	Orifice, Down	Controls the platform rate of descent.	Under fitting on base of Lift Cylinder.
ORF3,4	Orifice, Cushion Cylinder	Controls drive cushion rate.	Inside each end of Drive Cushion Cylinder.
PMP	Duplex Pump	Supplies hydraulic oil flow for all functions.	Inside left Chassis Module, right front.
VF1 & VF2	Velocity Fuse	Close to prevent hydraulic fluid flow.	Lift Cylinder Port
RV1	Valve, Main Relief	Provides over pressure protection to Pump and limits Platform lifting capacity.	Center front of Manifold Block.
RV2	Valve, Steering Relief	Provides over pressure protection to steering components when steering.	Lower left front of Manifold Block.
RV3	Valve, Lift	Provides over pressure protection to high side of Pump and.	In-line valve mounted on hoses between Pump and tank.
RV4	Valve, Lift	Provides over pressure protection to low side of Pump and.	In-line valve mounted on hoses between Pump and tank.
V1	Valve, Steering	Provides directional control for Steering Cylinder.	Left side of Manifold Block.
V2	Valve, Reverse Counterbalance	Prevents machine from running away on slopes and cushions stops.	Right front of Manifold Block, lower unit.
V3	Valve, Forward Counterbalance	Prevents machine from running away on slopes and cushions stops.	Right front of Manifold Block, upper unit.
V4	Valve, Drive/Lift	Provides control of oil for Drive or Lift functions.	Top center rear of Manifold Block.
V5	Valve, Forward/ Reverse	Provides control of oil for Forward or Reverse drive.	Top of Manifold Block, towards right side.
V6	Valve, High Speed	Controls oil flow into Drive and Lift circuits by dumping oil back to tank.	Top left center of Manifold Block.
V7	Valve, Down and Emergency Lowering	Allows oil to flow out of Lift Cylinder to Tank, manually operated for Emergency Lowering.	Mounted on base of Lift Cylinder.
V8	Valve, Drive Dump	Allows oil to flow to Forward/Reverse Valve for Drive operation. During Lift, drive circuit oil is returned to tank.	Top right center of Manifold Block towards front.
V9	Valve, Pothole Protection	Allows oil pressure to retract Pothole protection cylinders when energized.	Inside Control Module.
V10	Valve, Down	Allows oil to flow out of Lift Cylinders causing Platform to lower.	Base of Lift Cylinder.
V11 & V12	Valve, Series/ Parallel	Allows oil to run in Series or Parallel configuration to drive motors.	Inside center section of Chassis between Modules.
V13	Valve, Shut-off	Emergency Down	Rear of machine left side of ladder bracket.

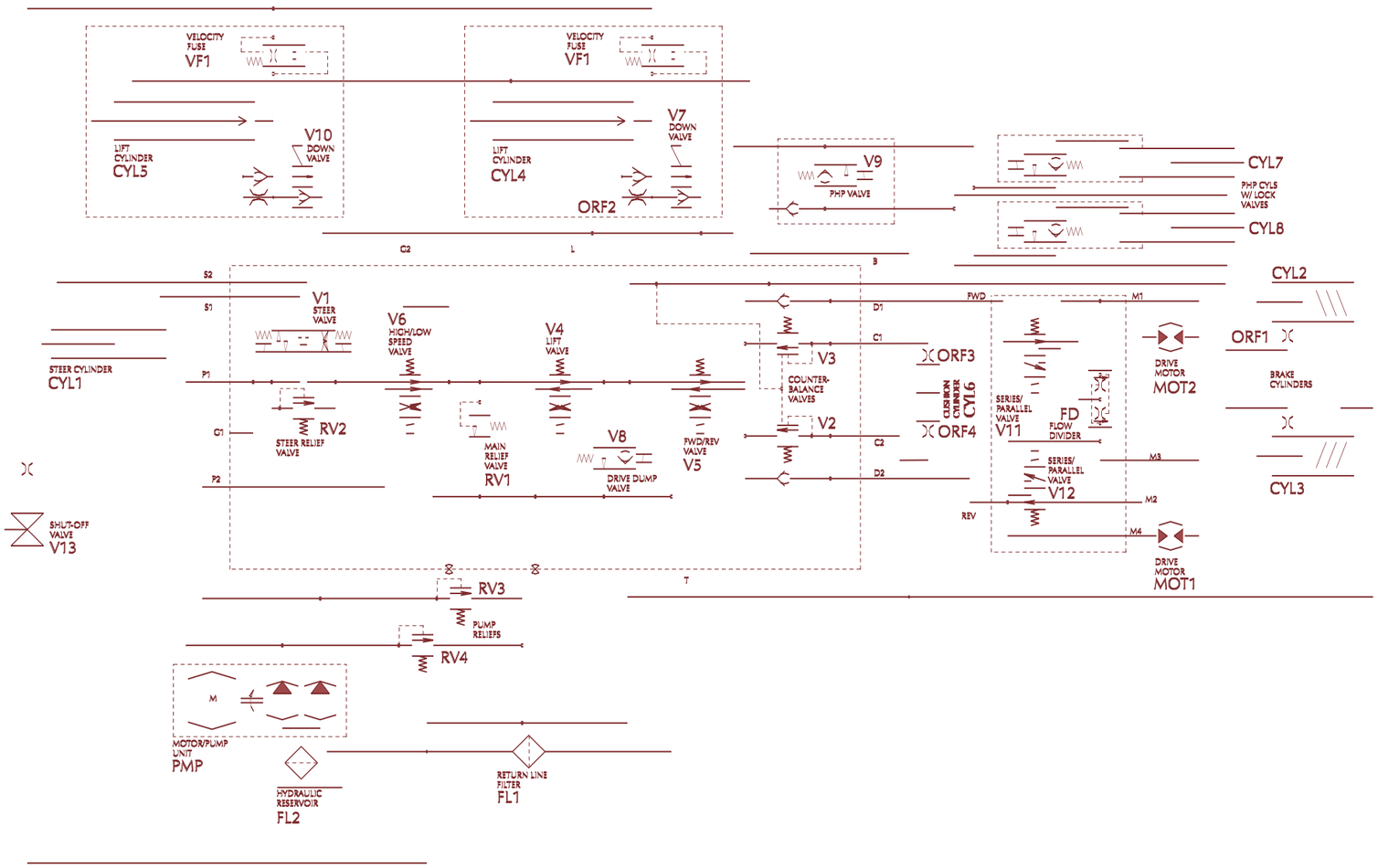


Figure 6-6: Hydraulic Schematic, X31N

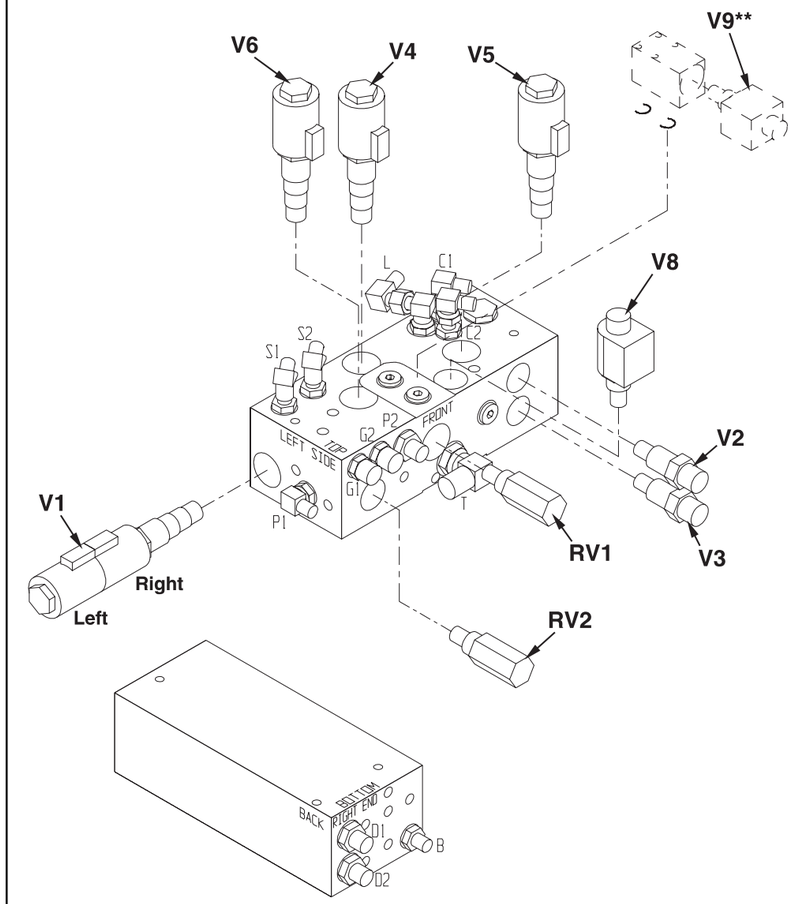


Figure 6-7: Hydraulic Manifold, X31N

NOTES

7.0 Introduction

This section lists and illustrates the replaceable assemblies and parts of the X20N/X20W/X26N/X31N Work Platforms, as manufactured by UpRight, Inc. Each parts list contains the component parts for that assembly indented to show relationship where applicable.

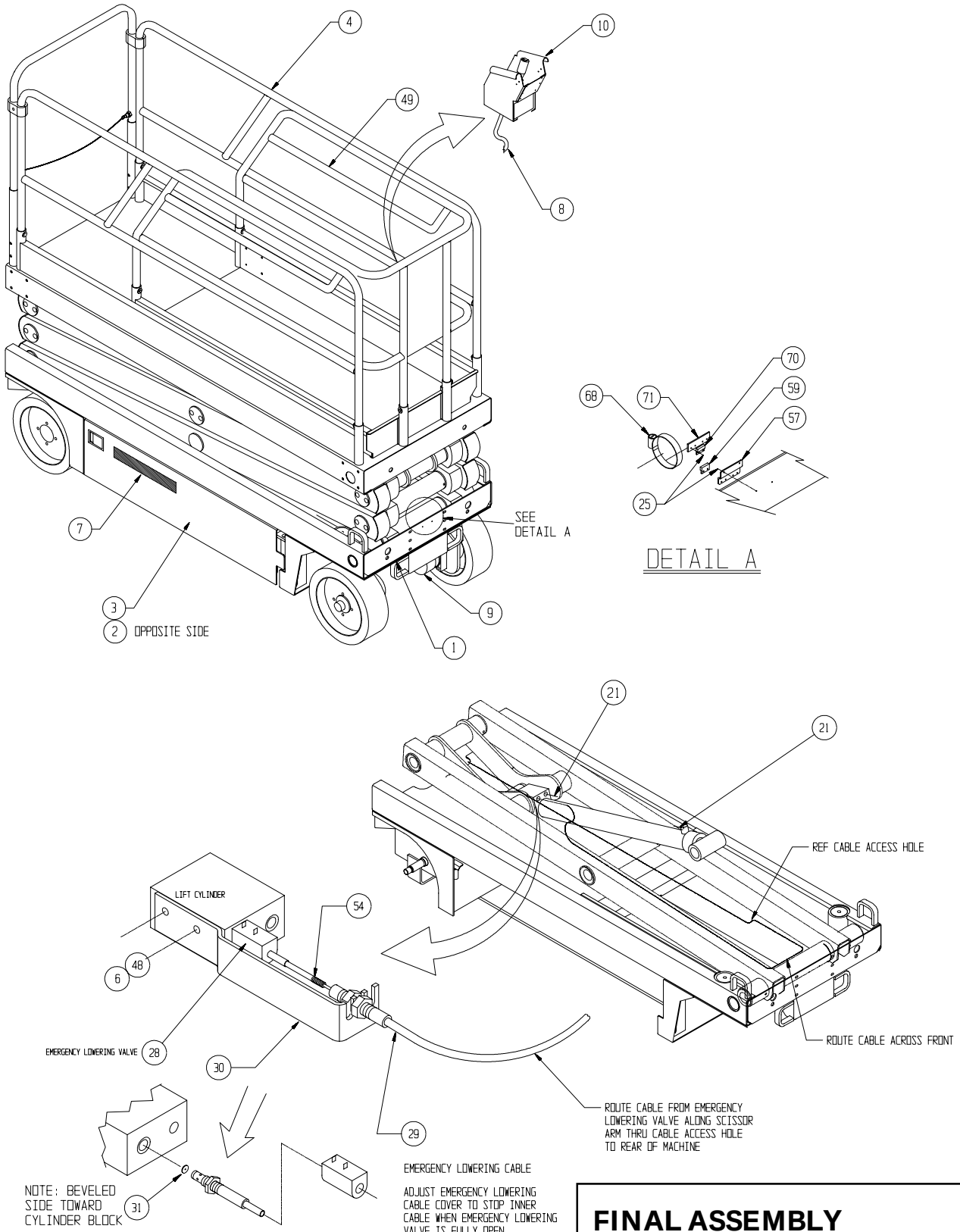
7.1 Index

FINAL ASSEMBLY
X20N
66000-010

ITEM	PART	DESCRIPTION	QTY.
1	66001-001	BASIC ASSEMBLY	1
2	66008-010	CONTROL MODULE	1
3	66009-010	POWER MODULE	1
4	66005-010	GUARDRAIL INSTALLATION	1
*	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
6	05832-000	WASHER LOCK 1/4	2
7	66010-010	DECAL KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
*	66011-011	HOSE KIT INSTALLATION	1
10	66013-010	CONTROLLER ASSEMBLY	1
11	15796-000	BATTERY 6V 220AMP (WET)	4
*	15796-001	BATTERY 6V 220AMP (DRY)	4
12	63944-011	CHARGER	1
13	11253-006	SCREW HHC 5/16-18UNC X 3/4	8
14	11248-005	NUT 5/16-18 HEX	8
15	64195-001	CABLE ASS'Y X 12	3
16	64195-056	CABLE ASS'Y X 56 LG	1
17	64195-104	CABLE ASS'Y X 104 LG	1
18	66714-010	ELECTRICAL BOX ASSEMBLY	1
*	11728-004	SCREW SOC HD #10-32 X 1/2	2
20	66017-010	CONTROL VALVE ASSEMBLY	1
21	11941-005	FITTING STRAIGHT 6MB- 6 MJ	5
*	65369-099	HOSE GUARD, NYLON	1.5FT
23	66713-001	HINGE	4
24	11240-012	WASHER	4
25	26551-005	RIVET. POP	10
26	11252-032	SCREW HHC GR5 1/4-20 X 4	3
27	11240-004	WASHER FLAT 1/4 DIA	3
28	66179-000	VALVE	1
29	65754-001	CABLE	1
30	66368-000	BRACKET	1
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
32	11252-006	SCREW HHC 1/4-20 X 3/4	4
33	11248-004	NUT 1/4-20 HEX	6
34	61796-099	GROMMET	.25FT
35	29945-013	LEVEL SENSOR 3°	1

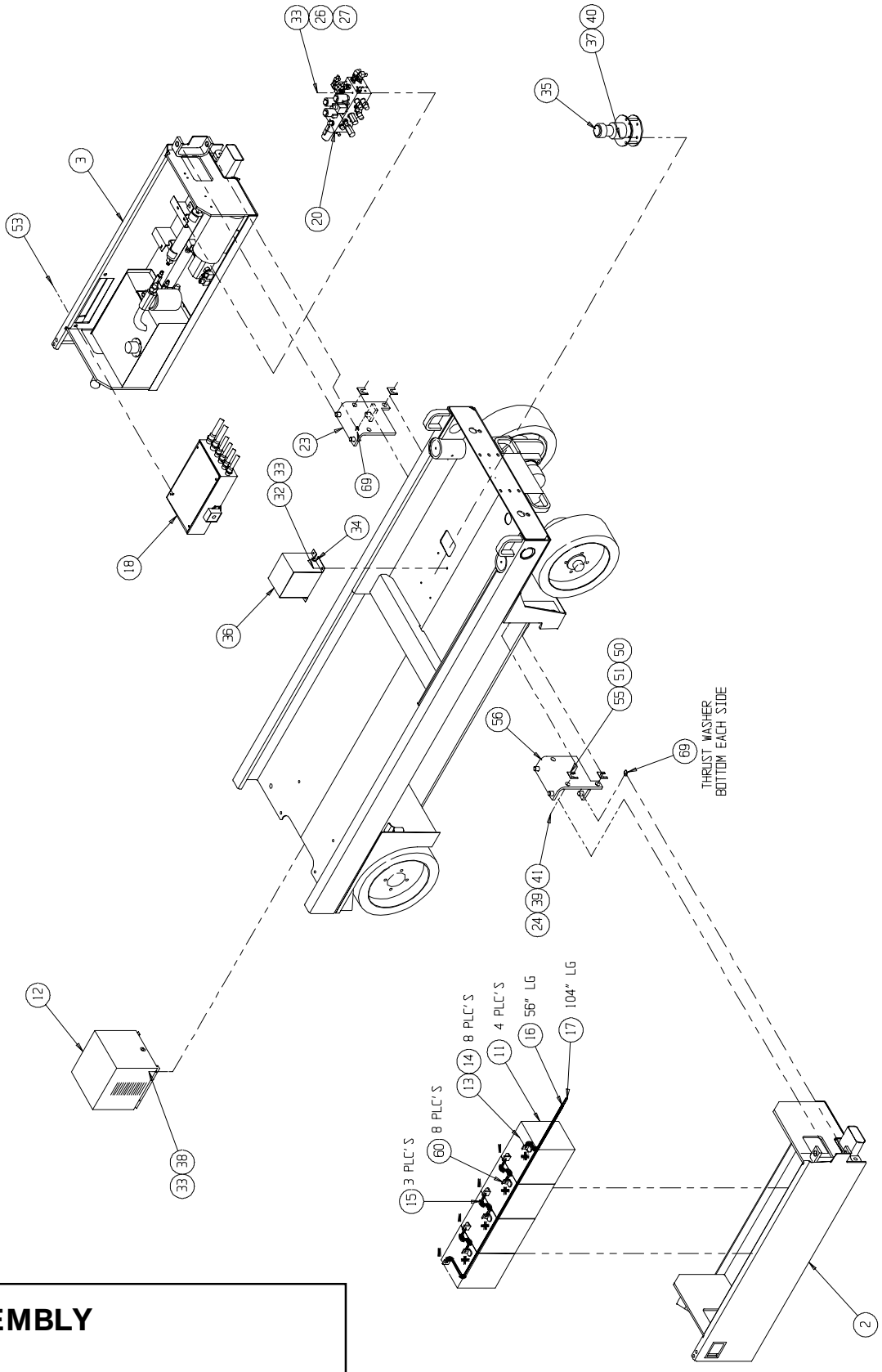
ITEM	PART	DESCRIPTION	QTY.
36	66768-000	WELDMENT, TILT ALARM COVER	1
37	11275-003	SCREW #10-32 X 3/8	6
38	11821-006	SCREW BUTTON HD 1/4-20 X 3/4	2
39	14099-018	SCREW HHC GR5 PLTD 3/4-10 X 2 1/4	4
40	11238-002	WASHER #10 LOCK	8
41	11250-012	NUT 3/4 - 10 HEX	4
42	29620-002	CONN. BUTT 14-16 GA	2
43	29601-015	CONN. RING 14-16 GA 3/8	4
44	29601-013	CONN. RING 14-16 GA #10	4
45	29931-003	CONN. PUSH 14-16 GA .25	8
46	29610-002	CONN. FORK 14-16 GA #8	31
47	29616-005	CONN. PUSH 10-12 GA .25	1
48	11252-008	SCREW HHC GR5 1/4-20 UNC X 1	2
49	66006-010	DECK EXTENSION INSTALLATION	1
50	66764-000	SHIM 12GA	A/R
51	66763-000	SHIM 16GA	A/R
*	29615-002	CONN. F PUSH 14-16GA .187	7
53	11254-008	SCREW HHC 3/8-16 X 1	2
54	11240-005	WASHER 5/16 FLAT	2
55	66762-000	SHIM 20GA	A/R
56	66713-000	DOOR HINGE	2
57	66043-000	SWITCH MOUNT	1
58	29461-099	WIRE 14 GA BLACK	15FT
59	65373-006	SWITCH	2
60	10154-000	TERM COVER	8
*	66769-000	ELECT SCH.	REF
*	66781-000	HYD SCH	REF
63	64195-004	CABLE ASSY X 4 LG	1
64	64195-009	CABLE ASSY X 9 LG	1
65	29601-040	CONN. RING 16-14 5/16	3
*	29452-099	WIRE 16 AWG BLK	3FT
67	29496-099	WIRE 16 AWG 2 COND	50FT
68	20541-025	CLAMP	1
69	11154-020	THRUST WASHER	2
70	65373-005	SWITCH MAGNET	2
71	66042-000	MOUNT MAGNET	1

*** Not shown**

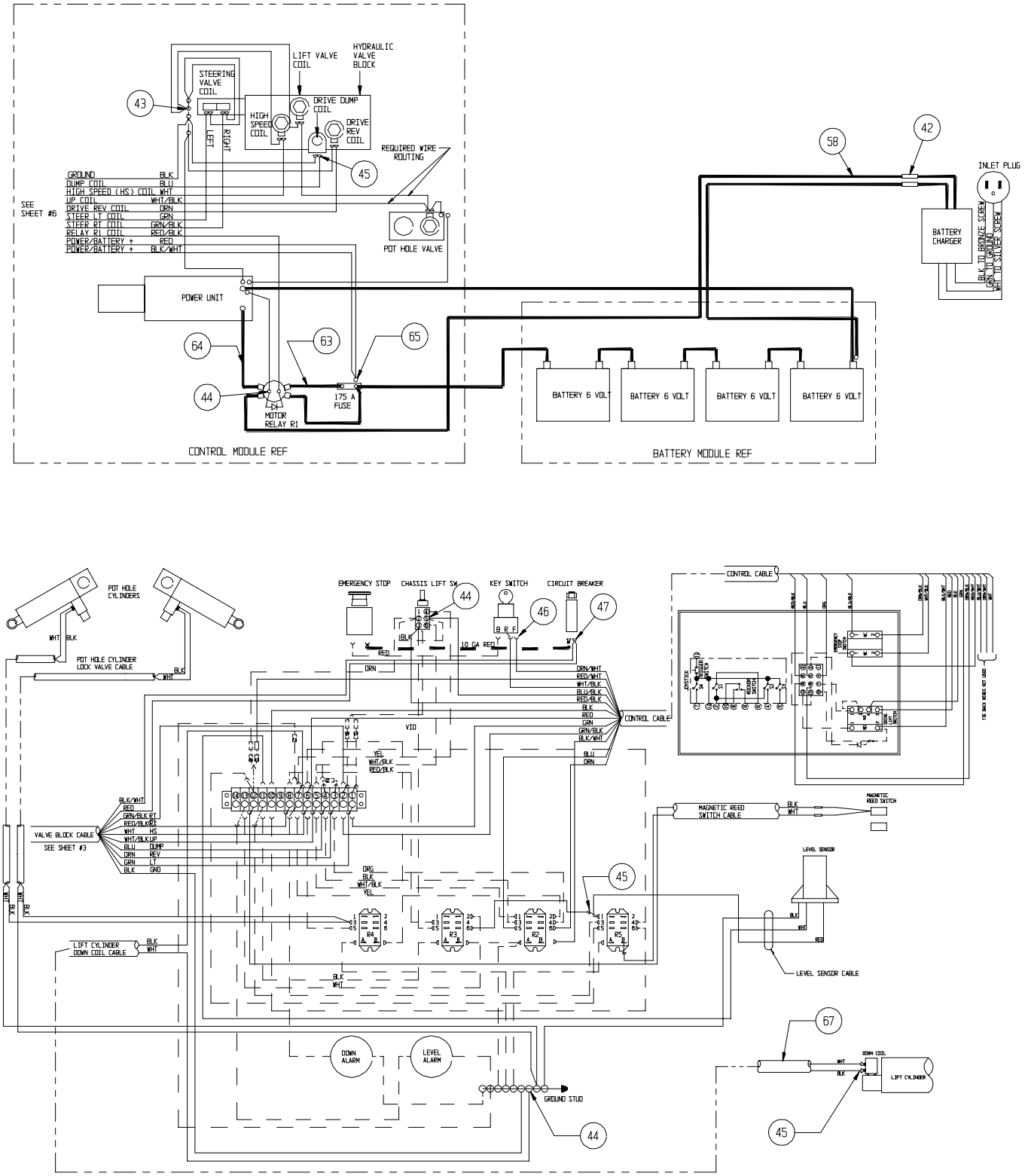


FINAL ASSEMBLY
X20N
DRAWING 1 OF 3

Illustrated Parts Breakdown



FINAL ASSEMBLY
X20N
DRAWING 2 OF 3



FINAL ASSEMBLY
X20N
DRAWING 3 OF 3

FINAL ASSEMBLY
X20W
66050-010

ITEM	PART	DESCRIPTION	QTY.
1	66051-001	BASIC ASSEMBLY	1
2	66008-010	CONTROL MODULE	1
3	66009-010	POWER MODULE	1
4	66055-010	GUARDRAIL INSTALLATION	1
*	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
6	05832-000	WASHER LOCK 1/4	2
7	66060-010	DECAL KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
*	66061-010	HOSE KIT INSTALLATION	1
10	66013-012	CONTROLLER ASSEMBLY	1
11	15796-000	BATTERY 6V 220AMP (WET)	4
*	15796-001	BATTERY 6V 220AMP (DRY)	4
12	63944-011	CHARGER	1
13	11253-006	SCREW HHC 5/16-18UNC X 3/4	8
14	11248-005	NUT 5/16-18 HEX	8
15	64195-001	CABLE ASS'Y X 12	3
16	64195-063	CABLE ASS'Y X 63 LG	1
17	64195-128	CABLE ASS'Y X 128 LG	1
18	66014-010	ELECTRICAL BOX ASSEMBLY	1
19	20541-025	CLAMP	1
20	66017-010	CONTROL VALVE ASSEMBLY	1
21	11941-005	FITTING STRAIGHT 6MB- 6 MJ	5
*	65369-099	HOSE GUARD, NYLON	1.5FT
23	66713-001	DOOR HINGE	1
24	11240-012	WASHER 3/4 FLAT	4
25	26551-005	RIVET. POP	10
26	11252-032	SCREW HHC GR5 1/4-20 X 4	3
27	11240-004	WASHER FLAT 1/4 DIA	3
28	66179-000	VALVE	1
29	65754-001	CABLE	1
30	66368-000	BRACKET	1
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
32	11252-006	SCREW HHC 1/4-20 X 3/4	4
33	11248-004	NUT 1/4-20 HEX	6
34	61796-099	GROMMET	.25FT
35	29945-011	LEVEL SENSOR	1
36	66786-000	WELDMENT, TILT ALARM COVER	1

ITEM	PART	DESCRIPTION	QTY.
37	11275-003	SCREW #10-32 X 3/8	6
38	11821-006	SCREW BUTTON HD 1/4-20 X 3/4	2
39	14099-018	SCREW HHC GR5 PLTD 3/4-10 X 2 1/4	4
40	11238-002	WASHER #10 LOCK	8
41	11250-012	NUT 3/4-10 HEX	4
42	29620-002	CONN. BUTT 14-16 GA	2
43	29601-015	CONN. RING 14-16 GA 3/8	4
44	29601-013	CONN. RING 14-16 GA #10	4
45	29931-003	CONN. F PUSH 14-16 GA .25	13
46	29610-002	CONN. FORK 14-16 GA #8	31
47	29616-005	CONN. PUSH 10-12 GA .25	1
48	11252-008	SCREW HHC GR5 1/4-20 UNC X 1	2
49	66056-010	DECK EXTENSION INSTALLATION	1
50	66764-000	SHIM 12GA	A/R
51	11254-008	SCREW HHC 3/8-16 X 1	2
52	29615-002	CONN. F PUSH 14-16GA .187	7
53	29617-002	CONN. M PUSH 14-16 GA .25	3
54	11240-005	WASHER 5/16 FLAT	2
55	66763-000	SHIM 16GA	A/R
56	66762-000	SHIM 20GA	A/R
57	66713-000	DOOR HINGE	2
58	29461-099	WIRE 14 GA BLACK	15FT
59	66043-000	SWITCH MOUNT	1
60	10154-000	TERM COVER	8
*	66769-000	ELECT SCH.	REF
*	66781-000	HYD SCH	REF
63	64195-004	CABLE ASSY X 4 LG	1
64	64195-009	CABLE ASSY X 9 LG	1
65	29601-040	CONN. RING 16-14 5/16	3
*	29452-099	WIRE 16 AWG BLK	3FT
67	29496-099	WIRE 16 AWG 2 COND	50FT
68	65373-006	SWITCH	1
69	11154-020	THRUST WASHER	2
70	65373-005	SWITCH MAGNET	1
71	66042-000	MOUNT MAGNET	1

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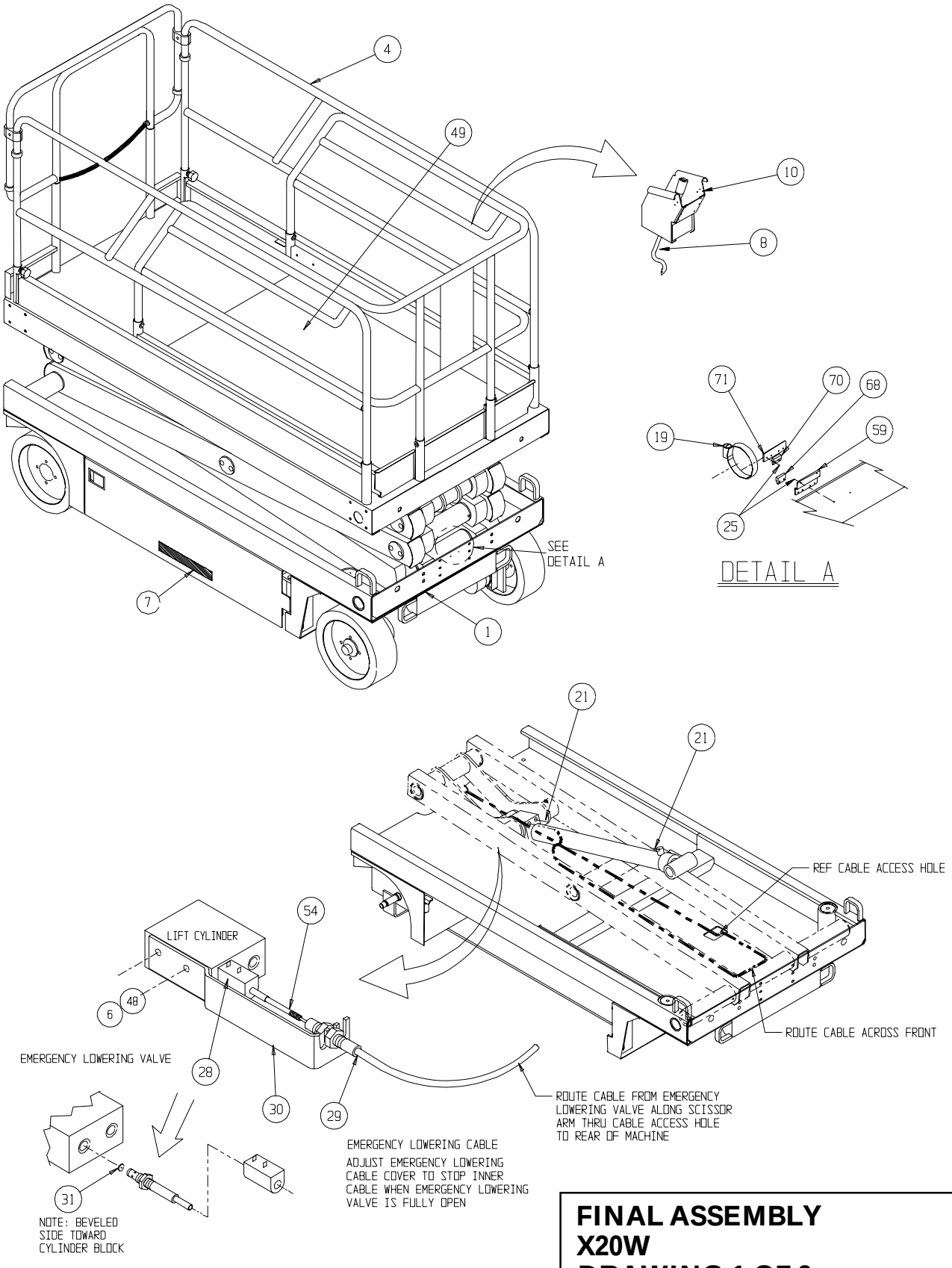
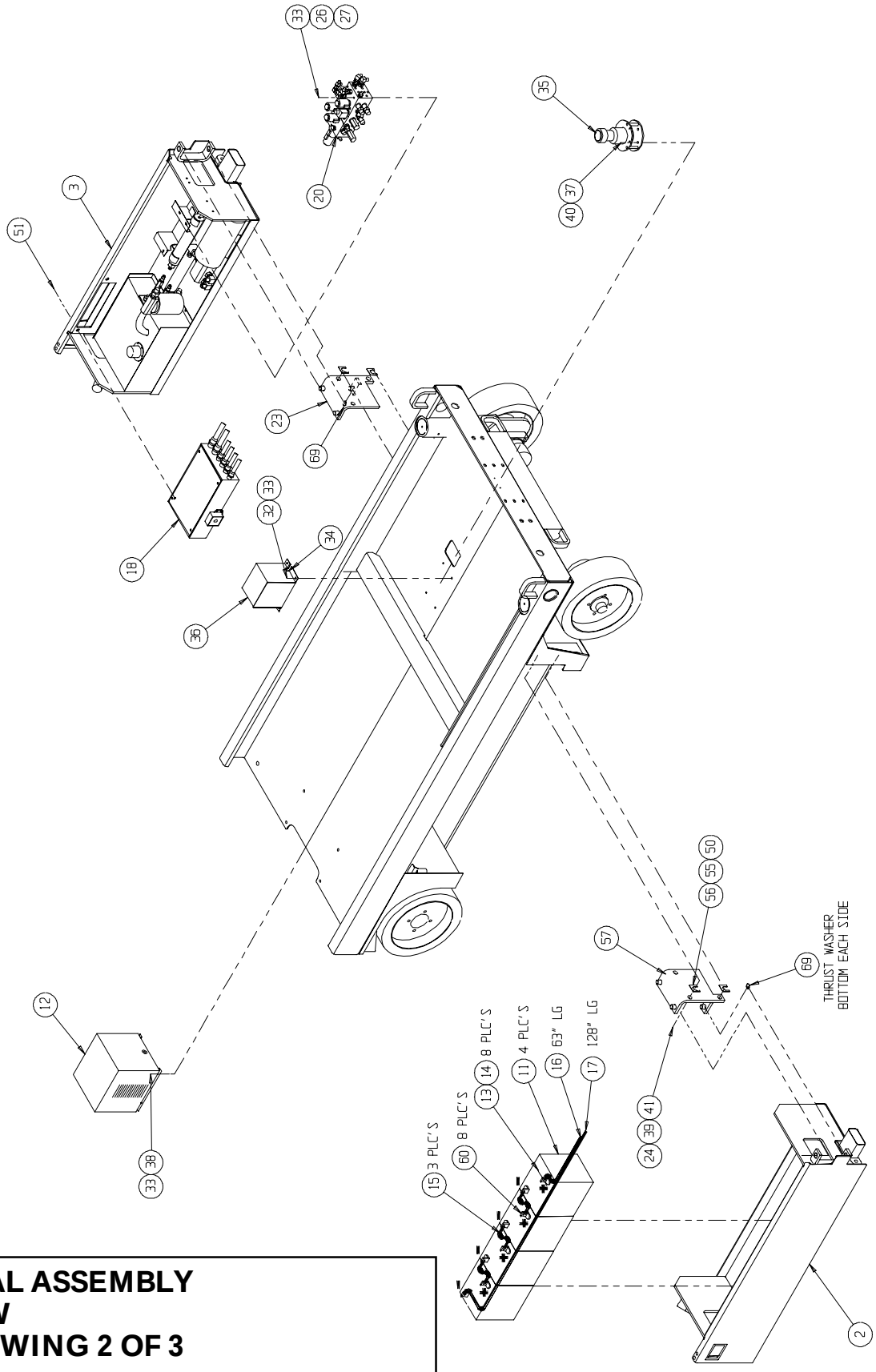
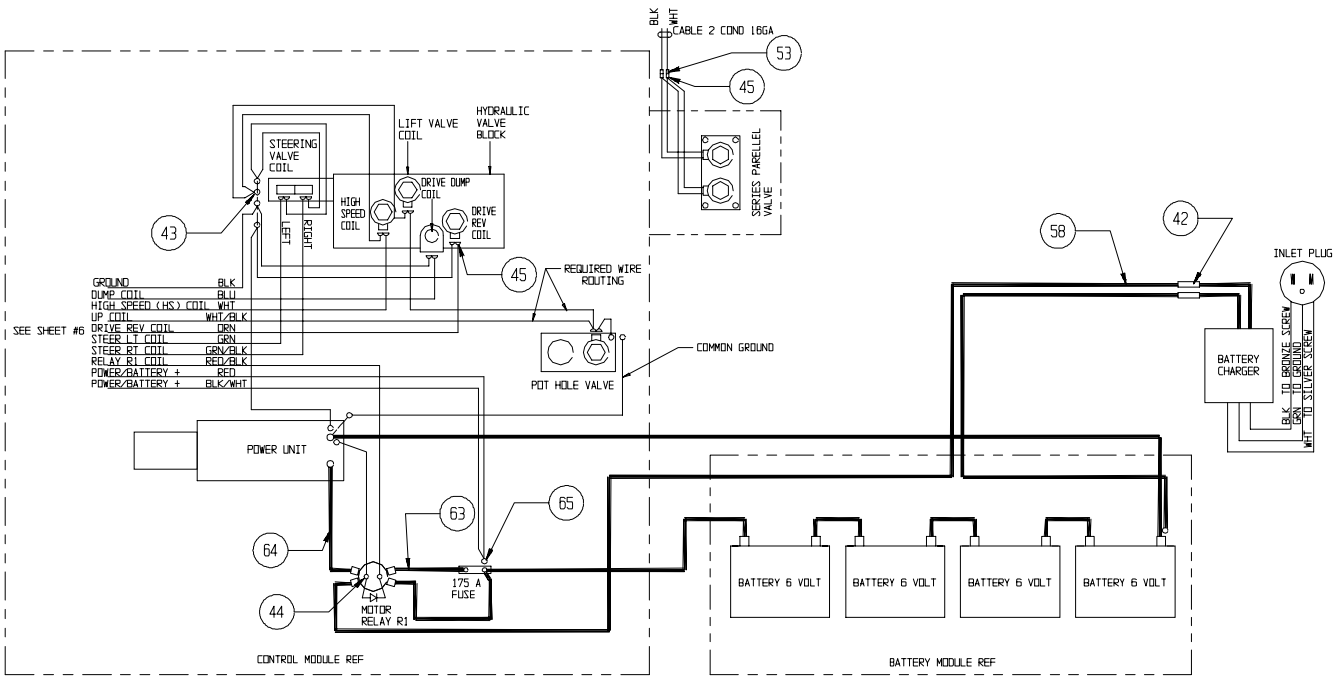


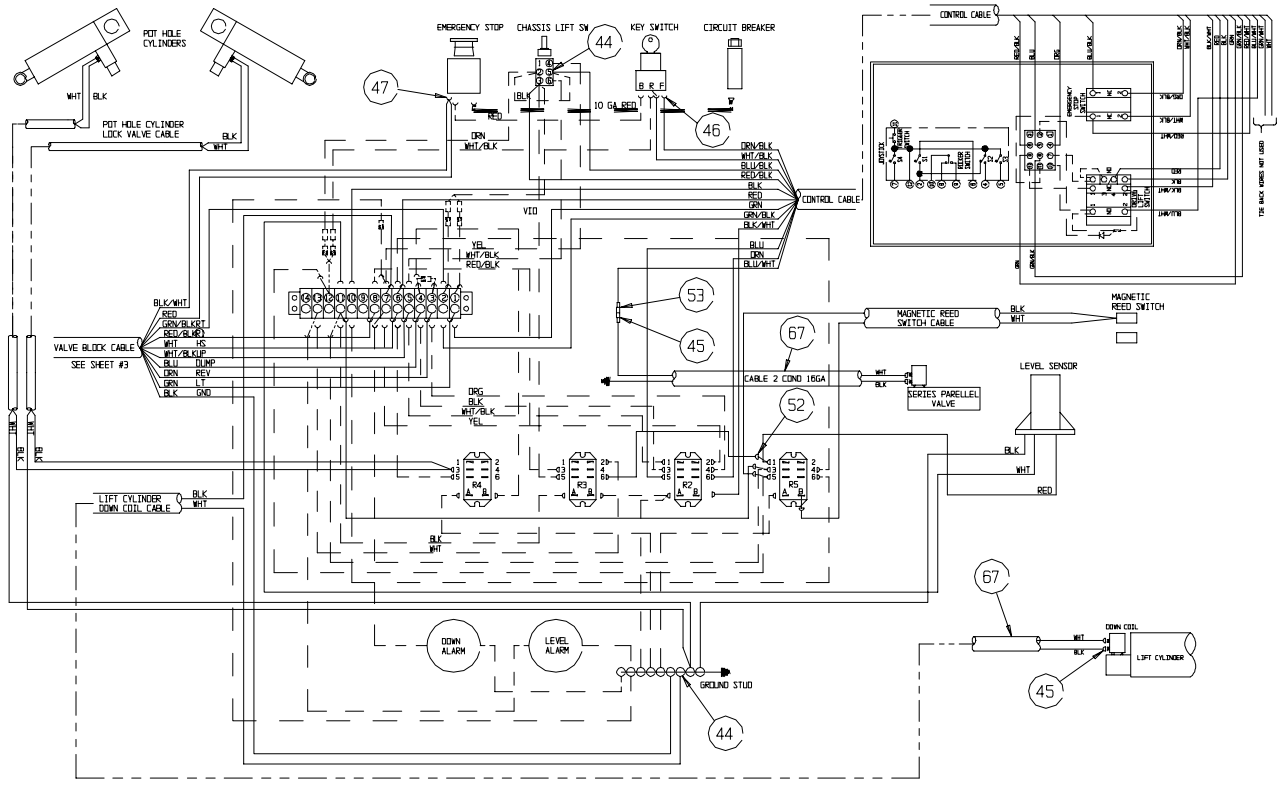
FINAL ASSEMBLY
X20W
DRAWING 1 OF 3

Illustrated Parts Breakdown



FINAL ASSEMBLY
X20W
DRAWING 2 OF 3





FINAL ASSEMBLY
X20W
DRAWING 3 OF 3

FINAL ASSEMBLY
X26N
66100-010

ITEM	PART	DESCRIPTION	QTY.
1	66101-001	BASIC ASSEMBLY	1
2	66008-010	CONTROL MODULE	1
3	66009-010	POWER MODULE	1
4	66055-000	GUARDRAIL INSTALLATION	1
*	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
6	05832-000	WASHER LOCK 1/4	2
7	66110-010	DECAL KIT INSTALLATION	1
8	66012-001	CONTROL CABLE ASSY	1
*	66061-010	HOSE KIT INSTALLATION	1
10	66013-012	CONTROLLER ASSEMBLY	1
11	15796-000	BATTERY 6V 220AMP (WET)	4
*	15796-001	BATTERY 6V 220AMP (DRY)	4
12	63944-011	CHARGER	1
13	11253-006	SCREW HHC 5/16-18UNC X 3/4	8
14	11248-005	NUT 5/16-18 HEX	8
15	64195-001	CABLE ASS'Y X 12	3
16	64195-063	CABLE ASS'Y X 63 LG	1
17	64195-128	CABLE ASS'Y X 128 LG	1
18	66014-010	ELECTRICAL BOX ASSEMBLY	1
*	11728-004	SCREW SOC HD #10-32 X 1/2	2
20	66017-010	CONTROL VALVE ASSEMBLY	1
21	11941-005	FITTING STRAIGHT 6MB- 6 MJ	5
*	65369-099	HOSE GUARD, NYLON	1.5FT
23	66713-001	DOOR HINGE	1
24	11240-012	WASHER 3/4 FLAT	4
25	26551-005	RIVET. POP	10
26	11252-032	SCREW HHC GR5 1/4-20 X 4	3
27	11240-004	WASHER FLAT 1/4 DIA	3
28	66179-000	VALVE	1
29	65754-003	CABLE	1
30	66368-000	BRACKET	1
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
32	11252-006	SCREW HHC 1/4-20 X 3/4	4
33	11248-004	NUT 1/4-20 HEX	6
34	61796-099	GROMMET	.12FT
35	29945-011	LEVEL SENSOR	1
36	66768-000	WELDMENT, TILT ALARM COVER	1

ITEM	PART	DESCRIPTION	QTY.
37	11275-003	SCREW #10-32 X 3/8	6
38	11821-006	SCREW BUTTON HD 1/4-20 X 3/4	2
39	14099-018	SCREW HHC GR5 PLTD 3/4-10 X 2 1/4	4
40	11238-002	WASHER #10 LOCK	8
41	11250-012	NUT 3/4-10 HEX	4
42	29620-002	CONN. BUTT 14-16 GA	2
43	29601-015	CONN. RING 14-16 GA 3/8	4
44	29601-013	CONN. RING 14-16 GA #10	4
45	29931-003	CONN. PUSH 14-16 GA .25	13
46	29610-002	CONN. FORK 14-16 GA #8	31
47	29616-005	CONN. PUSH 10-12 GA .25	1
48	11252-008	SCREW HHC GR5 1/4-20 UNC X 1	2
49	66056-010	DECK EXTENSION INSTALLATION	1
50	66764-000	SHIM 12GA	A/R
51	11254-008	SCREW HHC 3/8-16 X 1	2
52	29615-002	CONN. F PUSH 14-16GA .187	7
53	29617-002	CONN. M PUSH 14-16 GA .25	3
54	11240-005	WASHER 5/16 FLAT	2
55	66763-000	SHIM 16GA	A/R
56	66762-000	SHIM 20GA	A/R
57	66713-000	DOOR HINGE	2
58	29461-099	WIRE 14 GA BLACK	15FT
59	66043-000	SWITCH MOUNT	1
60	10154-000	TERM COVER	8
*	66769-000	ELECT SCH.	REF
*	66781-000	HYD SCH	REF
63	64195-005	CABLE ASSY X 5 LG	1
64	64195-011	CABLE ASSY X 11 LG	1
65	29601-040	CONN. RING 16-14 5/16	3
*	29452-099	WIRE 16 AWG BLK	3FT
67	29496-099	WIRE 16 AWG 2 COND	50FT
68	65373-006	SWITCH	1
69	11154-020	THRUST WASHER	2
70	65373-005	SWITCH MAGNET	1
71	66042-000	MOUNT MAGNET	1
72	20541-025	CLAMP	1

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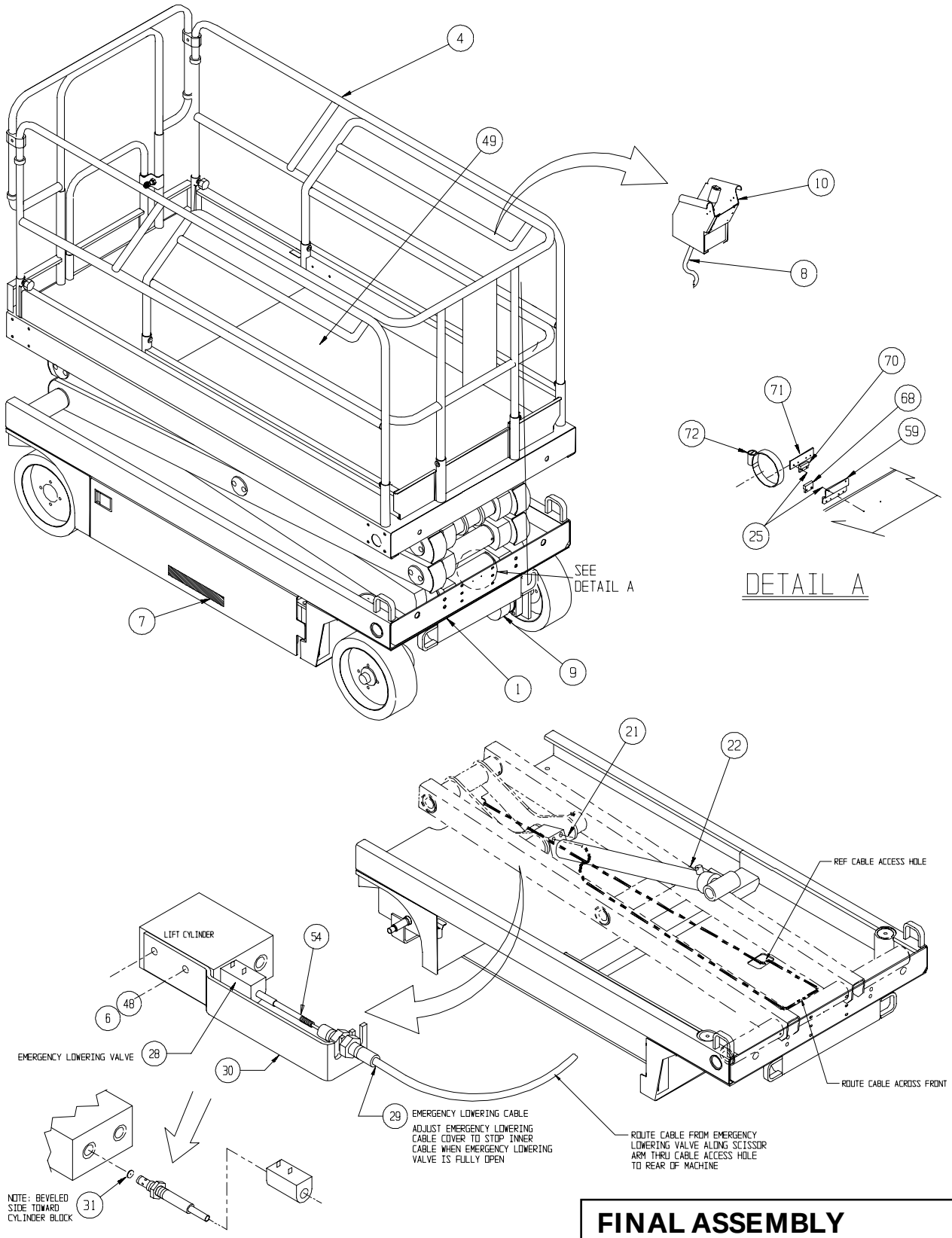
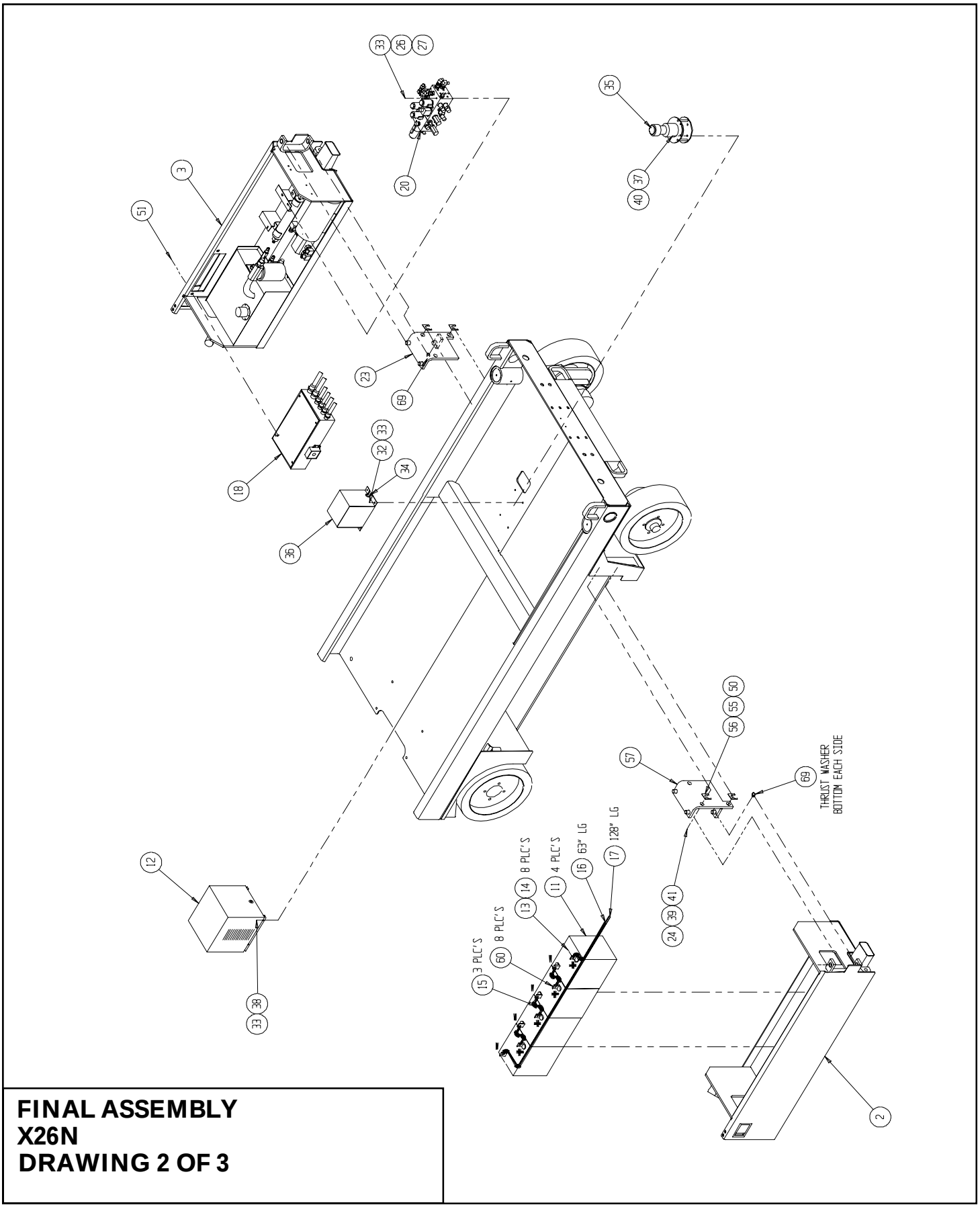
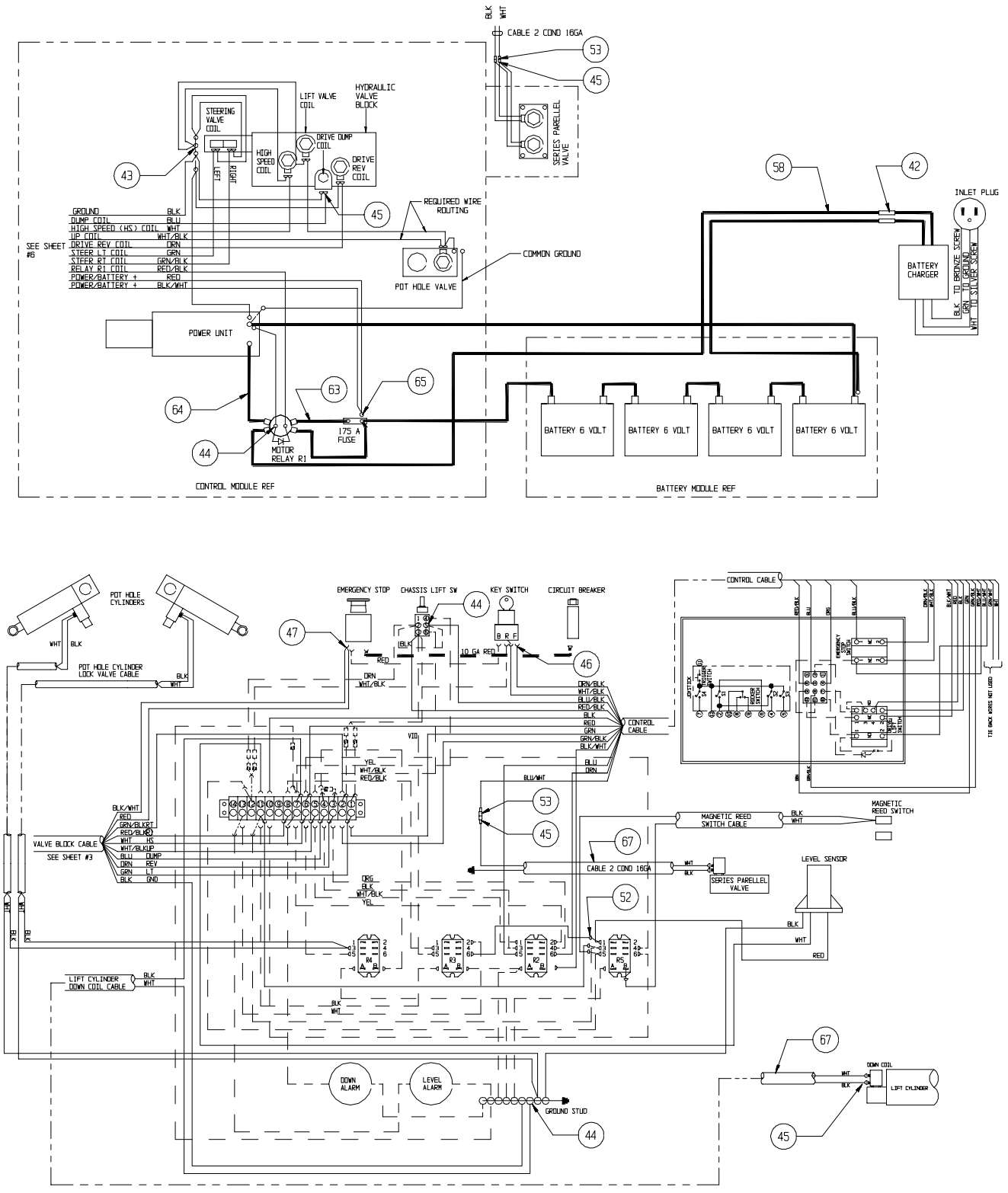


FINAL ASSEMBLY
X26N
DRAWING 1 OF 3

Illustrated Parts Breakdown



FINAL ASSEMBLY
X26N
DRAWING 2 OF 3



FINAL ASSEMBLY
X26N
DRAWING 3 OF 3

FINAL ASSEMBLY
X31N
66850-010

ITEM	PART	DESCRIPTION	QTY.
1	66851-000	BASIC ASSEMBLY	1
2	66008-012	CONTROL MODULE	1
3	66009-010	POWER MODULE	1
4	66855-000	GUARDRAIL INSTALLATION	1
*	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
*	05832-000	WASHER LOCK 1/4	2
7	66860-000	DECAL KIT INSTALLATION	1
8	66012-002	CONTROL CABLE ASSY	1
*	66861-000	HOSE KIT INSTALLATION	1
10	66013-012	CONTROLLER ASSEMBLY	1
11	15796-000	BATTERY 6V 220AMP (WET)	4
*	15796-001	BATTERY 6V 220AMP (DRY)	4
12	63944-011	CHARGER	1
13	11253-006	SCREW HHC 5/16-18UNC X 3/4	8
14	11248-005	NUT 5/16-18 HEX	8
15	64195-001	CABLE ASS'Y X 12	3
16	64195-063	CABLE ASS'Y X 63 LG	1
17	64195-128	CABLE ASS'Y X 128 LG	1
18	66014-010	ELECTRICAL BOX ASSEMBLY	1
*	11728-004	SCREW SOC HD #10-32 X 1/2	2
20	66017-010	CONTROL VALVE ASSEMBLY	1
21	66713-001	DOOR HINGE	1
*	65369-099	HOSE GUARD, NYLON	1.5FT
23	11240-012	WASHER 3/4 FLAT	4
24	14099-018	SCREW HHC GR5 PLTD 3/4-10 X 2 1/4	4
25	26551-005	RIVET. POP	10
26	11252-032	SCREW HHC GR5 1/4-20 X 4	3
27	11240-004	WASHER FLAT 1/4 DIA	3
28	14418-005	WELD STUD 1/4-20 X	1
29	63497-001	MERCURY SWITCH	1
*	13919-013	CLAMP	1
31	11250-012	NUT 3/4-10 HEX	4
32	11252-006	SCREW HHC 1/4-20 X 3/4	4
33	11248-004	NUT 1/4-20 HEX	6
34	61796-099	GROMMET	.25FT
35	29945-011	LEVEL SENSOR	1

ITEM	PART	DESCRIPTION	QTY.
36	66768-000	WELDMENT, TILT ALARM COVER	1
37	11275-003	SCREW #10-32 X 3/8	6
38	11821-006	SCREW BUTTON HD 1/4-20 X 3/4	2
39	66764-000	SHIM 12GA	A/R
40	11238-002	WASHER #10 LOCK	8
41	66763-000	SHIM 16GA	A/R
42	29620-002	CONN. BUTT 14-16 GA	4
43	29601-015	CONN. RING 14-16 GA 3/8	4
44	29601-013	CONN. RING 14-16 GA #10	4
45	29931-003	CONN. F PUSH 14-16 GA .25	1
46	29610-002	CONN. FORK 14-16 GA #8	31
47	29616-005	CONN. PUSH 10-12 GA .25	1
*	11252-008	SCREW HHC GR5 1/4-20 UNC X 1	2
49	66856-000	DECK EXTENSION INSTALLATION	1
50	66762-000	SHIM 20GA	A/R
51	11254-008	SCREW HHC 3/8-16 X 1	2
52	29615-002	CONN. F PUSH 14-16GA .187	7
53	29617-002	CONN. M PUSH 14-16 GA .25	3
*	11240-005	WASHER 5/16 FLAT	2
55	66819-028	SCREW CARRIAGE 3/4 - 10 X 3-1/2	3
56	11248-012	NUT 3/4 - 10 HEX	3
57	66818-000	COUNTERWEIGHT	3
58	29461-099	WIRE 14 GA BLACK	15FT
59	66713-002	DOOR HINGE	1
60	10154-000	TERM COVER	8
*	66018-008	ELECT SCH.	REF
*	66781-008	HYD SCH	REF
63	64195-004	CABLE ASSY X 4 LG	1
64	64195-009	CABLE ASSY X 9 LG	1
65	29601-040	CONN. RING 16-14 5/16	3
66	29452-099	WIRE 16 AWG BLK	3 FT
67	29496-099	WIRE 16 AWG 2 COND	6 FT
68	11154-020	THRUST WASHER	2
69	65373-005	SWITCH MAGNET	1
70	66042-001	MOUNT MAGNET	1
71	20541-025	CLAMP	1
72	65373-006	SWITCH	1
73	66043-000	SWITCH MOUNT	1

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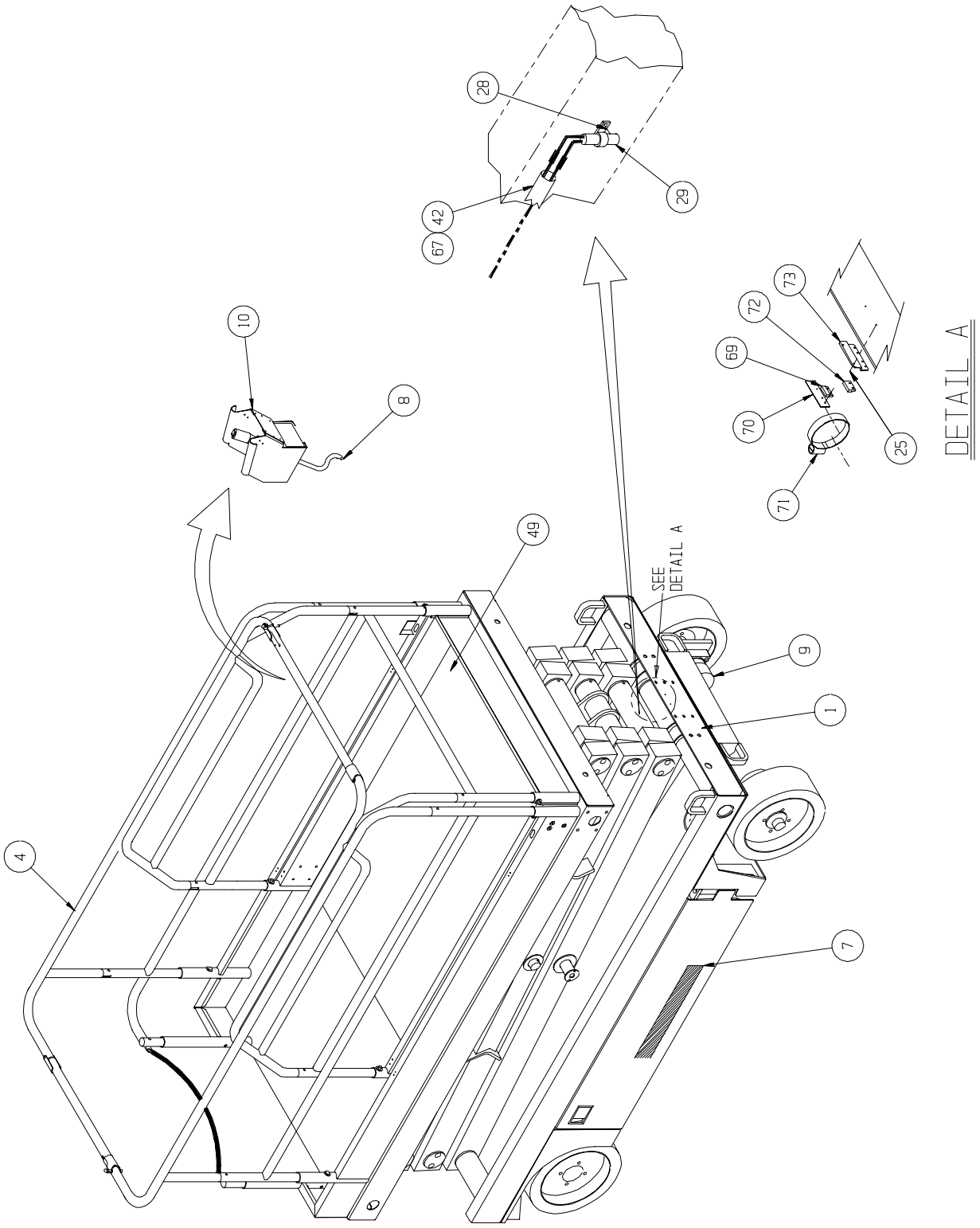
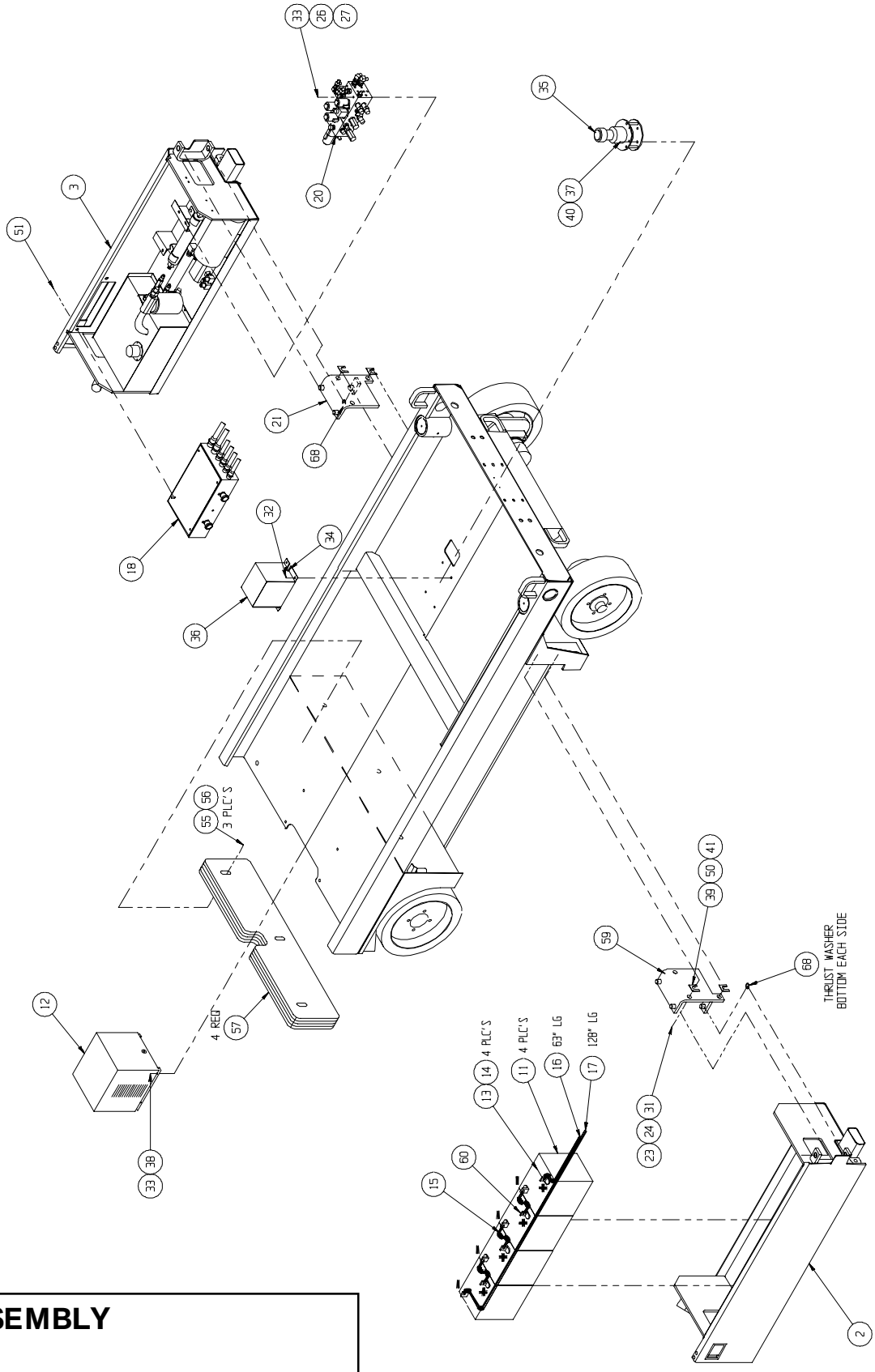
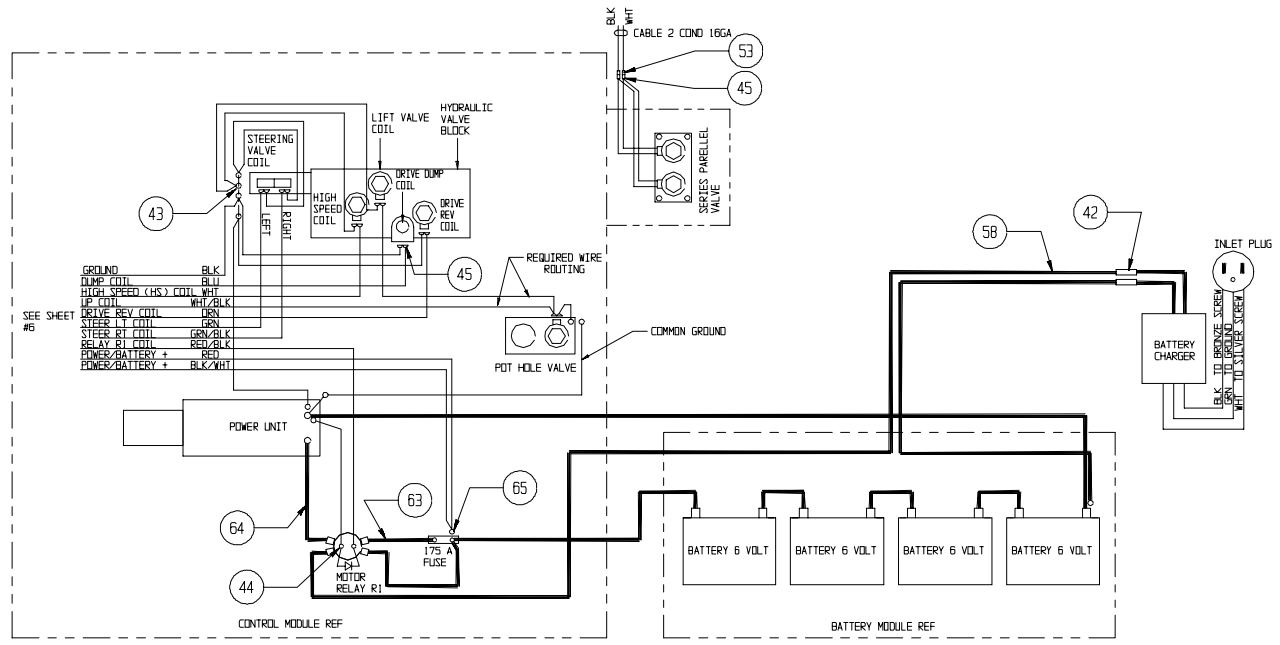
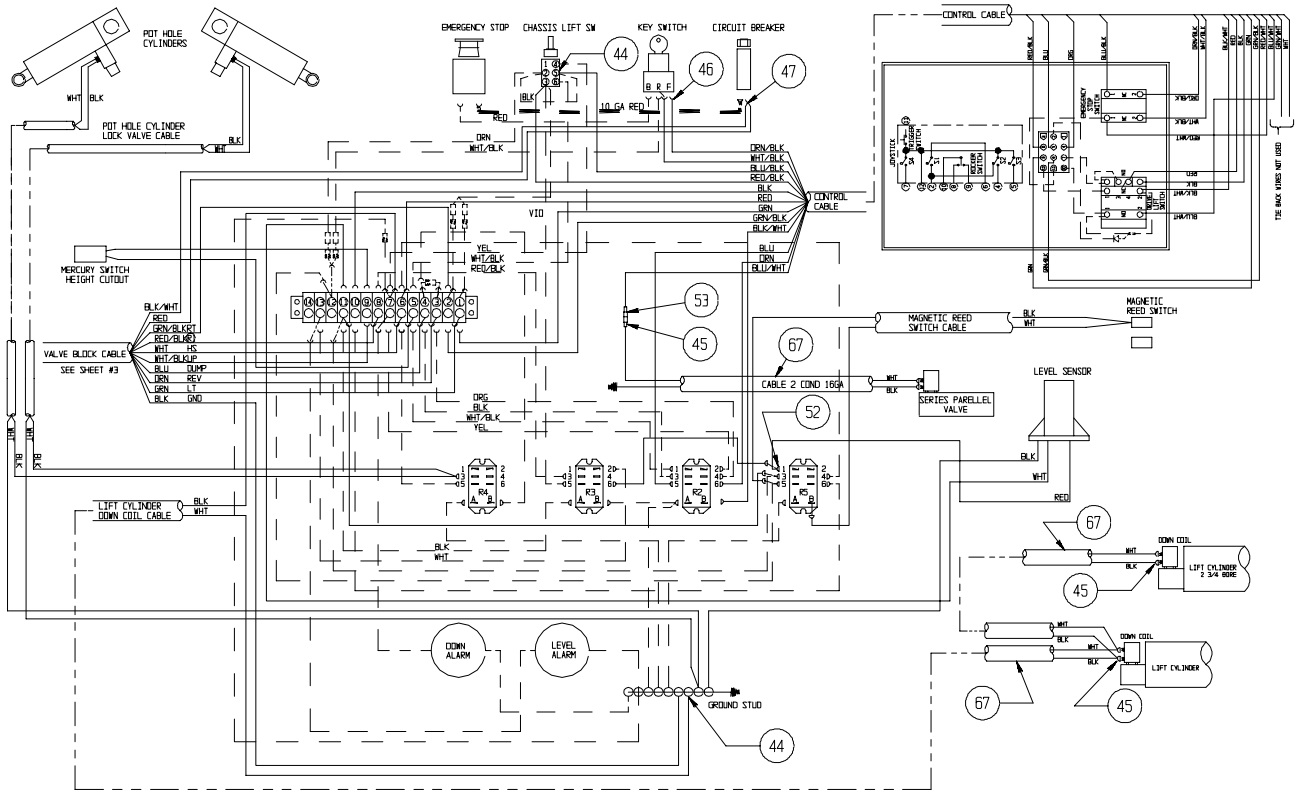


FINAL ASSEMBLY
X31N
DRAWING 1 OF 3



FINAL ASSEMBLY
X31N
DRAWING 2 OF 3

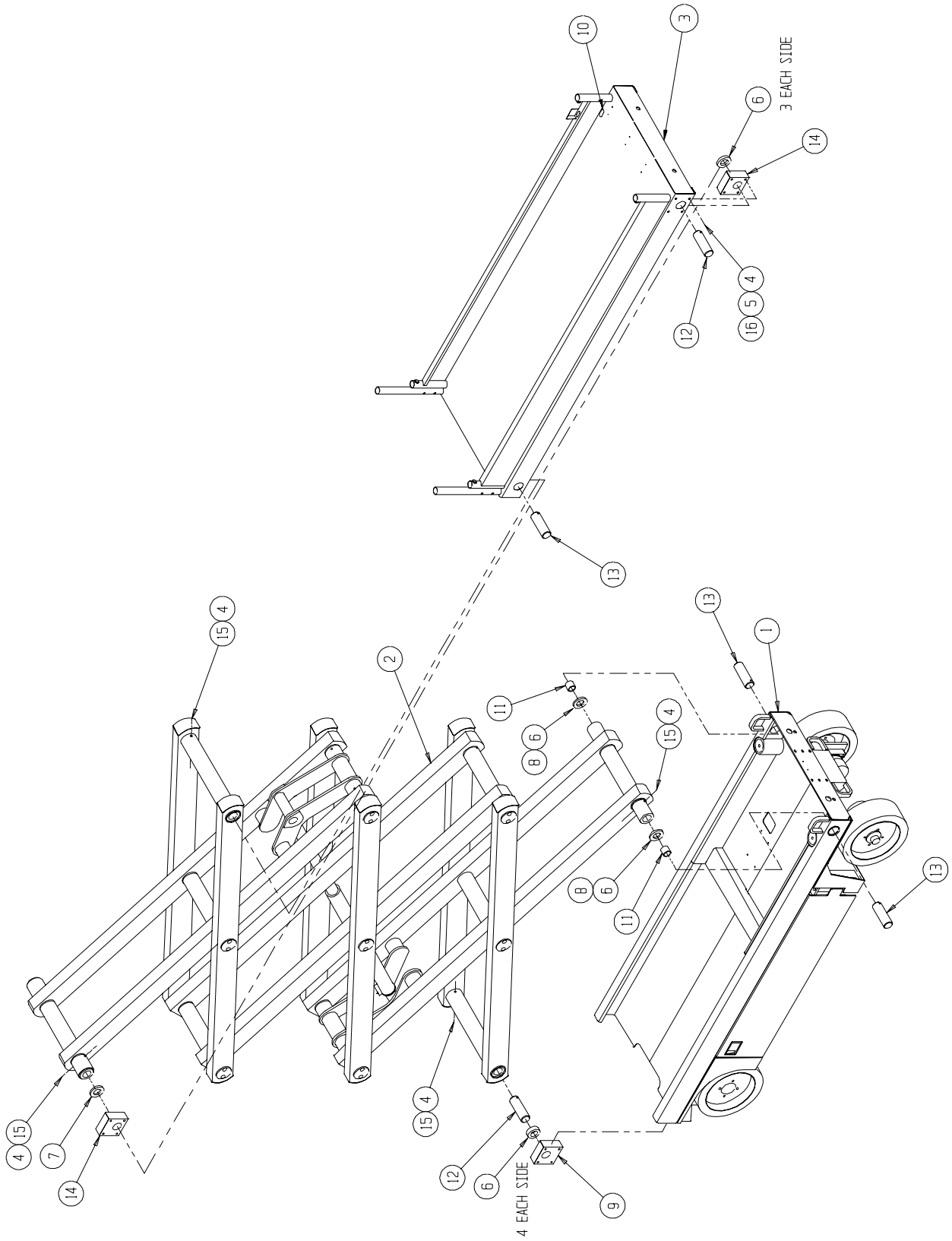




FINAL ASSEMBLY
X31N
DRAWING 3 OF 3

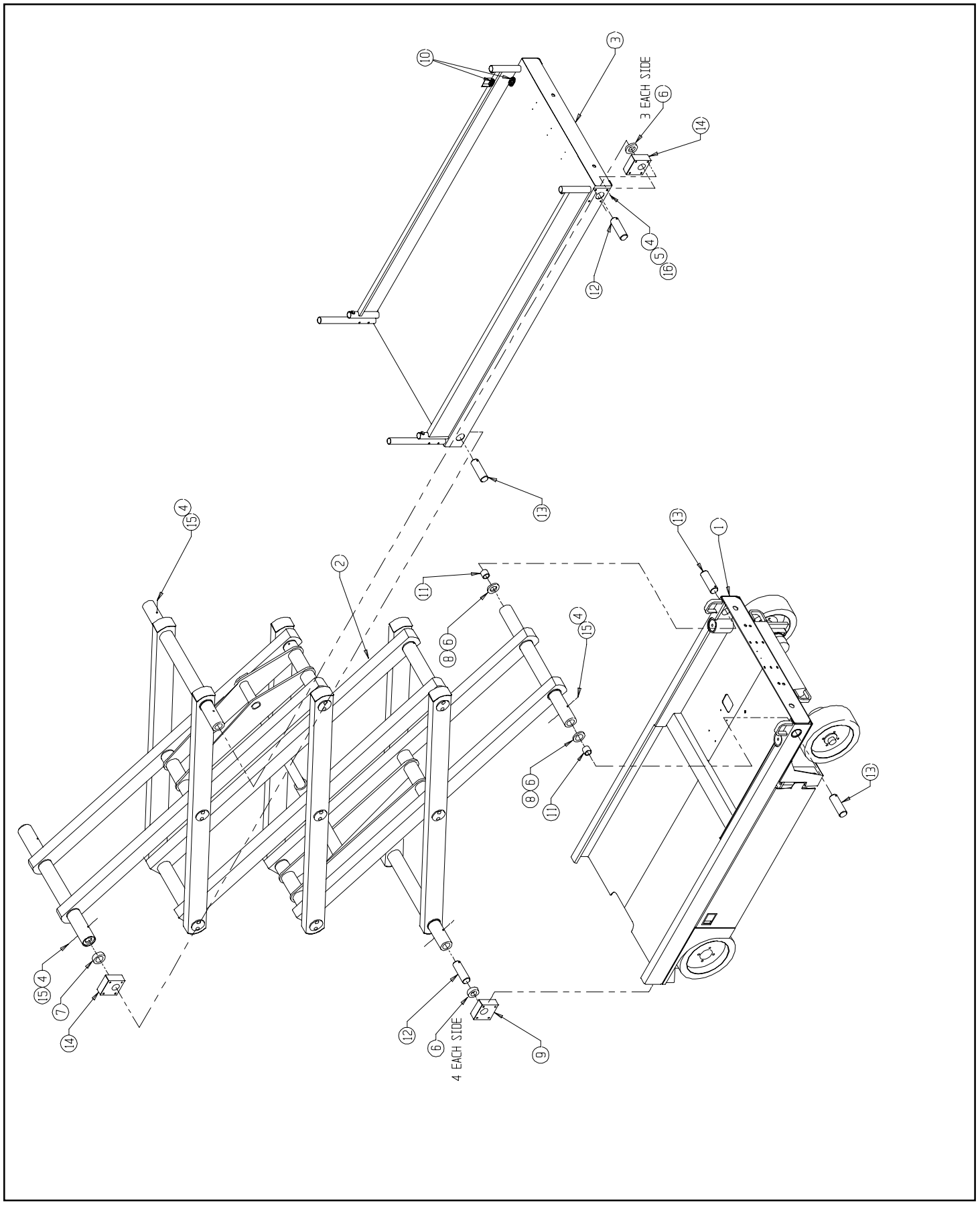
BASIC ASSEMBLY
X20N
66001-001

ITEM	PART	DESCRIPTION	QTY.
1	66002-010	CHASSIS ASSEMBLY	1
2	66003-000	SCISSOR ASSEMBLY	1
3	66250-010	PLATFORM WELDMENT	1
4	11248-006	NUT 3/8-16	16
5	11240-006	WASHER 3/8 FLAT	8
6	66189-000	WEAR PAD 1/4	16
7	66189-001	WEAR PAD 3/8	2
8	66189-004	WEAR PAD 1/8	2
9	66191-001	SLIDE BLOCK (BOTTOM)	2
10	61796-099	GROMMET	.63FT
11	66183-001	BEARING	2
12	66222-001	MOUNTING PIN	4
13	66222-002	MOUNTING PIN	4
14	66191-000	SLIDE BLOCK	4
15	11287-032	SCREW SOC HD 3/8-16 X 4 LG	8
16	11254-024	SCREW HHC 3/8-16 X 3 LG	8


3 EACH SIDE
4 EACH SIDE

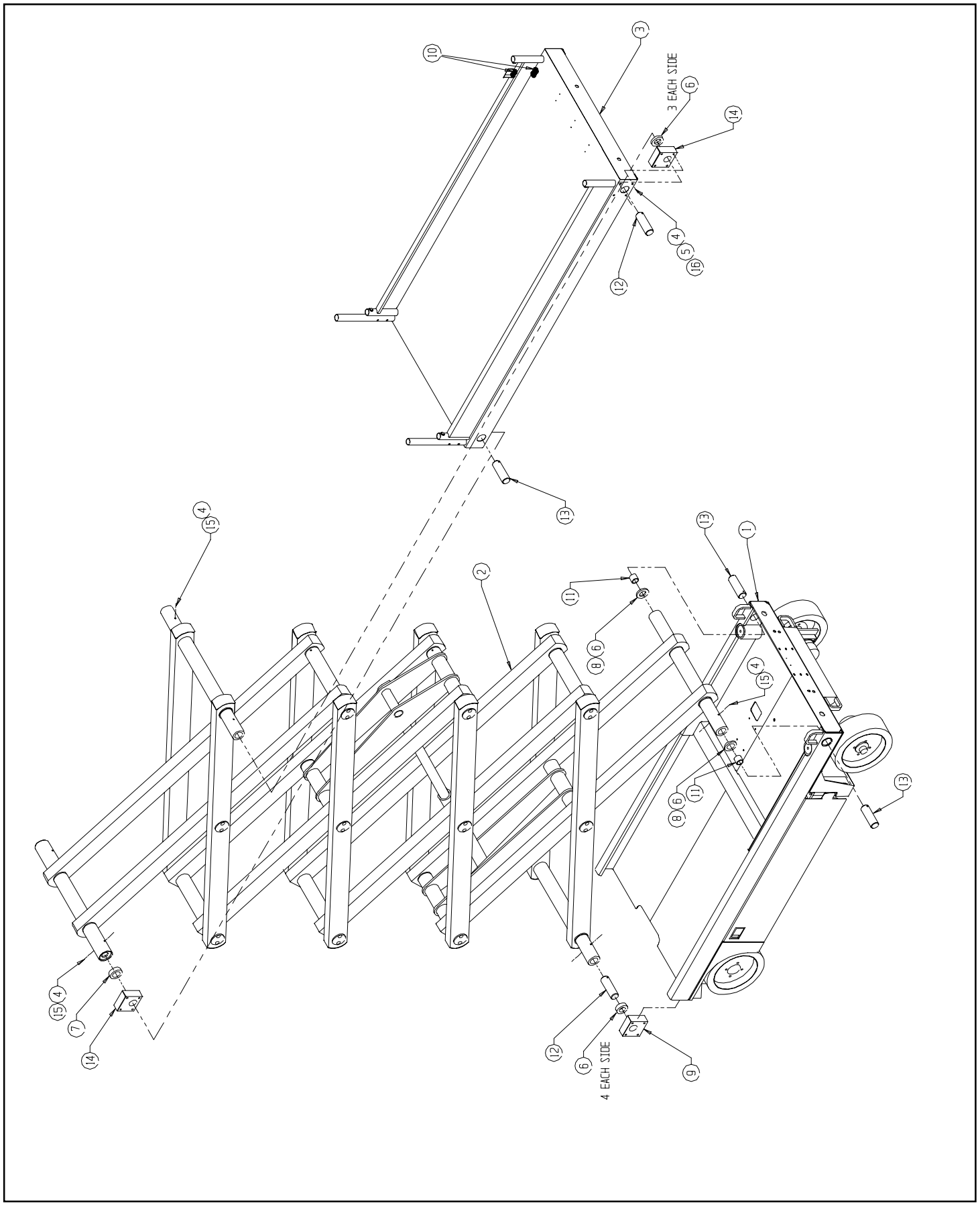
BASIC ASSEMBLY
X20W
66051-001

ITEM	PART	DESCRIPTION	QTY.
1	66052-001	CHASSIS ASSEMBLY	1
2	66053-000	SCISSOR ASSEMBLY	1
3	66292-000	PLATFORM WELDMENT	1
4	11248-006	NUT 3/8-16	16
5	11240-006	WASHER 3/8 FLAT	8
6	66189-000	WEAR PAD 1/4	16
7	66189-001	WEAR PAD 3/8	2
8	66189-004	WEAR PAD 1/8	2
9	66191-001	SLIDE BLOCK (BOTTOM)	2
10	61796-099	GROMMET	.63FT
11	66183-001	BEARING	2
12	66222-001	MOUNTING PIN	4
13	66222-002	MOUNTING PIN	4
14	66191-000	SLIDE BLOCK	4
15	11287-032	SCREW SOC HD CAP 3/8-16 X 4 LG	8
16	11254-032	SCREW HHC 3/8-16 X 4 LG	8W


3 EACH SIDE
4 EACH SIDE

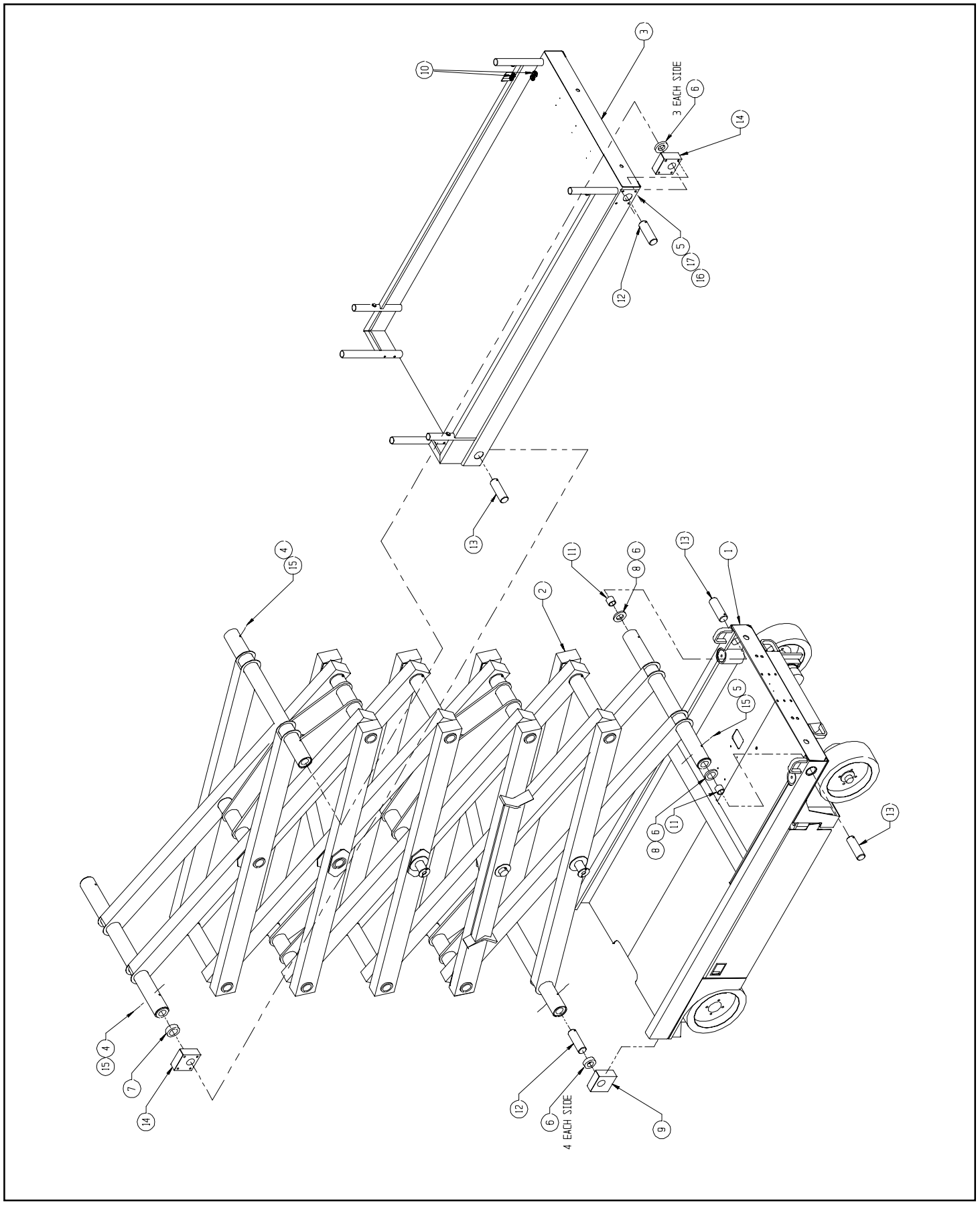
BASIC ASSEMBLY
X26N
66101-001

ITEM	PART	DESCRIPTION	QTY.
1	66052-001	CHASSIS ASSEMBLY	1
2	66103-000	SCISSOR ASSEMBLY	1
3	66292-000	PLATFORM WELDMENT	1
4	11248-006	NUT 3/8-16	16
5	11240-006	WASHER 3/8 FLAT	8
6	66189-000	WEAR PAD 1/4	16
7	66189-001	WEAR PAD 3/8	2
8	66189-004	WEAR PAD 1/8	2
9	66191-001	SLIDE BLOCK (BOTTOM)	2
10	61796-099	GROMMET	.63FT
11	66183-001	BEARING	2
12	66222-001	MOUNTING PIN	4
13	66222-002	MOUNTING PIN	4
14	66191-000	SLIDE BLOCK	4
15	11287-032	SCREW SOC HD CAP 3/8-16 X 4 LG	8
16	11254-032	SCREW HHC 3/8-16 X 4 LG	8


3 EACH SIDE
4 EACH SIDE

BASIC ASSEMBLY
X31N
66851-000

ITEM	PART	DESCRIPTION	QTY.
1	66852-000	CHASSIS ASSEMBLY	1
2	66853-000	SCISSOR ASSEMBLY	1
3	66292-001	PLATFORM WELDMENT	1
4	11248-005	NUT 5/16-18	18
5	11248-006	NUT 3/8-16	16
6	66189-000	WEAR PAD 1/4	16
7	66189-001	WEAR PAD 3/8	2
8	66189-004	WEAR PAD 1/8	2
9	66191-001	SLIDE BLOCK (BOTTOM)	2
10	61796-099	GROMMET	.63FT
11	66183-001	BEARING	2
12	66222-001	MOUNTING PIN	4
13	66222-002	MOUNTING PIN	4
14	66191-000	SLIDE BLOCK	4
15	15936-023	SCREW SHOULDER 3/8 X 3 1/	8
16	11254-032	SCREW HHC 3/8-16 X 4 LG	8
17	11240-006	WASHER 3/8 FLAT	8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3 EACH SIDE
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6
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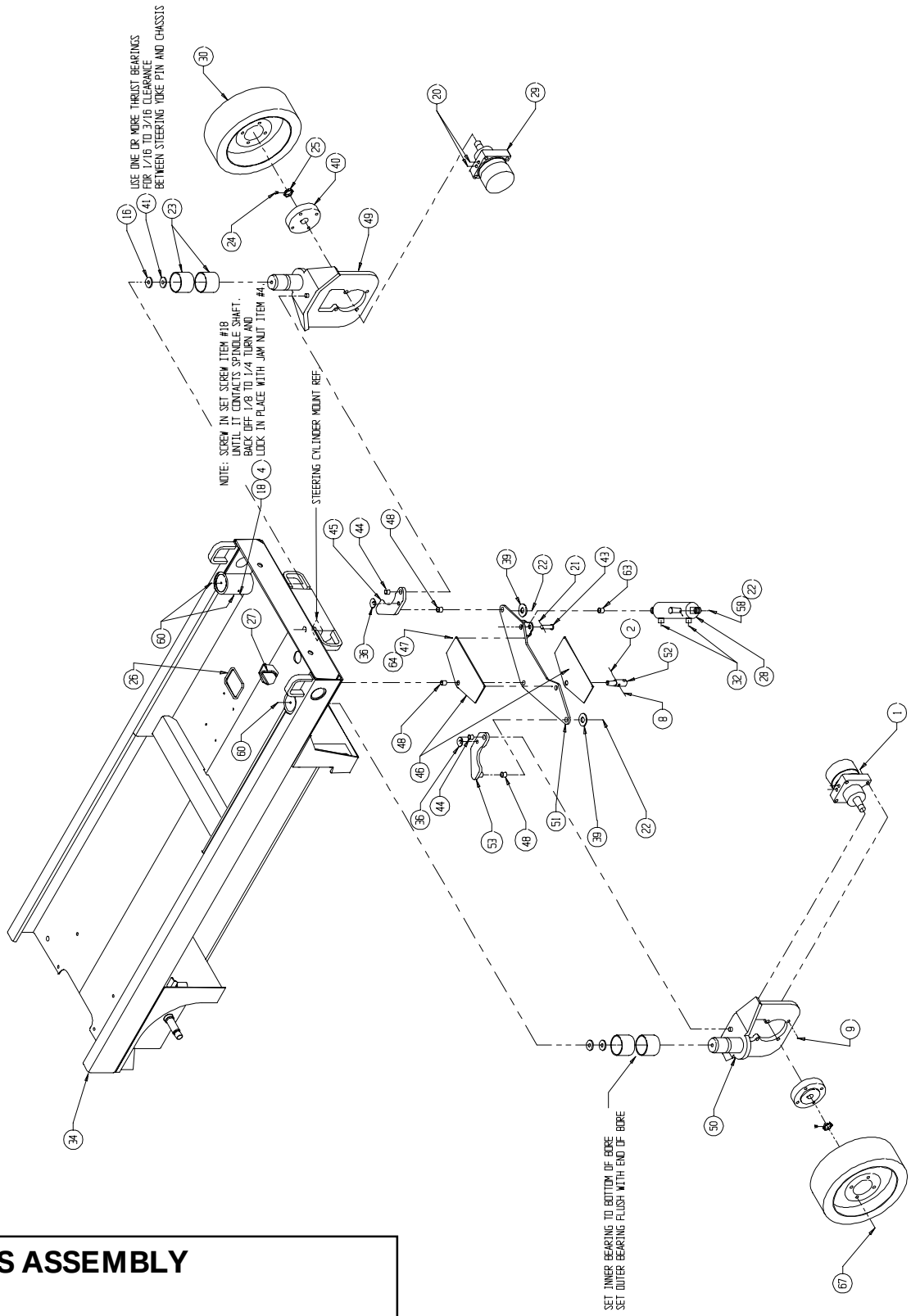
15
7
14
12
6
4 EACH SIDE
9

CHASSIS ASSEMBLY
X20N
66002-010

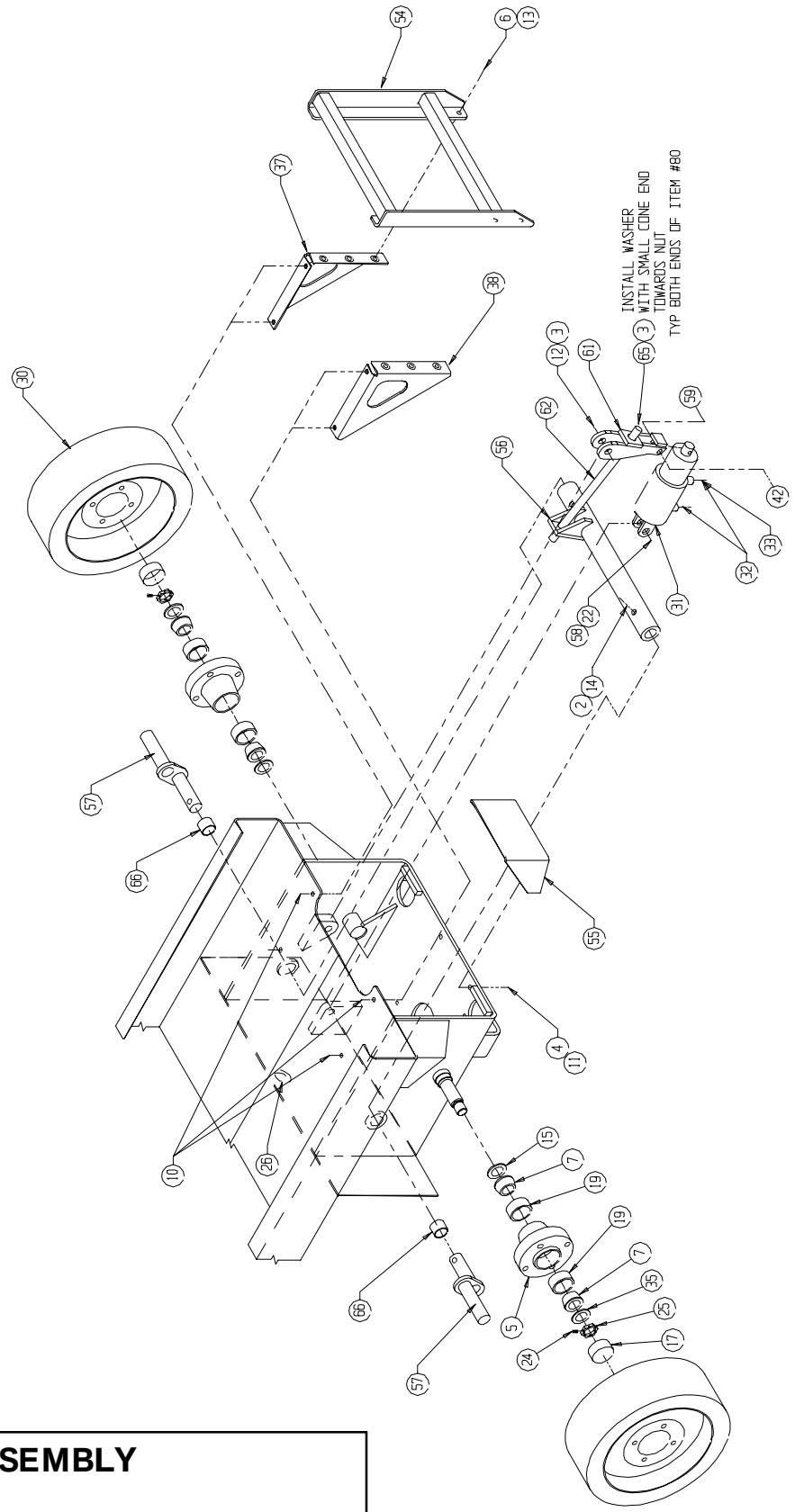
ITEM	PART	DESCRIPTION	QTY.
1	11248-008	NUT HEX 1/2-13 UNC	8
2	11248-006	NUT HEX 3/8-16 UNC	5
3	11248-012	NUT HEX 3/4-10 UNC	3
4	11273-006	NUT JAM 3/8-16	2
5	66773-000	HUB ASSY	2
6	11254-008	SCREW HHC GR5 3/8-16 UNC X 1	4
7	11775-011	CONE BEARING	4
8	11254-016	SCREW HHC GR5 3/8-16 UNC X 2	1
9	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
10	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	4
11	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	2
12	11258-024	SCREW HHC GR5 3/4-10 UNC X 3	1
13	11240-006	WASHER 3/8 FLAT	4
14	11287-022	SCREW SOCKET HD 3/8-16 X 2 3/4	2
15	05104-000	SEAL GREASE	2
16	11782-008	BEARING (STEER)	2
17	05078-000	CAP DUST	2
18	11705-016	SCREW SET 3/8-16 X 1	2
19	11776-004	CUP BEARING	4
20	11934-024	FITTING	4
21	11757-007	PIN COTTER 5/8	1
22	11757-010	PIN COTTER 3/4	4
23	27931-074	BEARING (STEERING)	4
24	11753-012	PIN COTTER 1/8 X 1 1/2	4
25	11274-016	NUT 1-14UNF SLOTTED HEX	4
26	61796-099	GROMMET	1.25FT
27	61692-099	GROMMET	1.38FT
28	66602-000	CYLINDER STEERING	1
*	66602-010	SEAL KIT, STEERING CYLINDER	1
29	61817-001	MOTOR HYDRAULIC	2
*	61817-010	SEAL KIT, HYDRAULIC MOTOR	1
30	61846-001	WHEEL & TIRE	4
31	66604-000	BRAKE CYLINDER	1
*	66604-010	SEAL KIT, BRAKE CYLINDER	1
32	11934-003	FITTING 90 O RING BOSS 6MB 4MJ	4
33	63664-007	ORIFICE	1

ITEM	PART	DESCRIPTION	QTY.
34	66717-000	WELDMENT - CHASSIS	1
35	11239-016	WASHER 1 DIA FLAT ASTM	2
36	66702-000	SLIDE PAD, STEERING LINK	2
37	66774-000	WELDMENT - LADDER BRACKET	1
38	66774-001	WELDMENT - LADDER BRACKET	1
39	14996-012	WASHER SAE 3/4 DIA	2
40	66325-000	HUB - FRONT	2
41	11782-009	BUSHING	2
42	63559-006	BOLT SHOULDER 3/8 X 2	1
43	11848-009	CLEVIS PIN 5/8 X 2	1
44	62642-006	BUSHING	2
45	66159-001	STEERING LINK WELDMENT L.H.	1
46	66190-000	BEARING - STRIP	2
47	26553-012	RIVET 3/16 DIA X 1 1/8 GRIP	2
48	62642-008	BUSHING	3
49	66311-001	WELDMENT - STEERING ANGLE LH	1
50	66312-001	WELDMENT - STEERING ANGLE RH	1
51	66313-001	WELDMENT - BELL CRANK	1
52	66737-000	PIN, BELL CRANK	1
53	66158-001	STEERING LINK WELDMENT R.H.	1
54	66307-000	WELDMENT - LADDER	1
55	66796-000	WELDMENT, CHARGER GUARD	1
56	66304-001	WELDMENT - BRAKE TUBE	1
57	66305-001	WELDMENT - BRAKE	2
58	11848-041	CLEVIS PIN 3/4 X 2	2
59	11246-005	NUT HEX ESNA 5/16-18	1
60	13336-011	FITTING GREASE	4
61	66728-000	WELDMENT, BRAKE ADJUSTMENT	1
62	16759-015	ROD, BRAKE RELEASE	1
63	62642-001	BEARING	1
64	02186-000	WASHER 3/16 FLAT	2
65	66792-001	WASHER 3/4 BELLVILLE	2
66	27931-071	BEARING (BRAKE)	2
67	14122-003	WHEEL BOLT 1/2-20 X 1	16

*** Not shown**



CHASSIS ASSEMBLY
X20N
DRAWING 1 OF 2



CHASSIS ASSEMBLY
X20N
DRAWING 2 OF 2

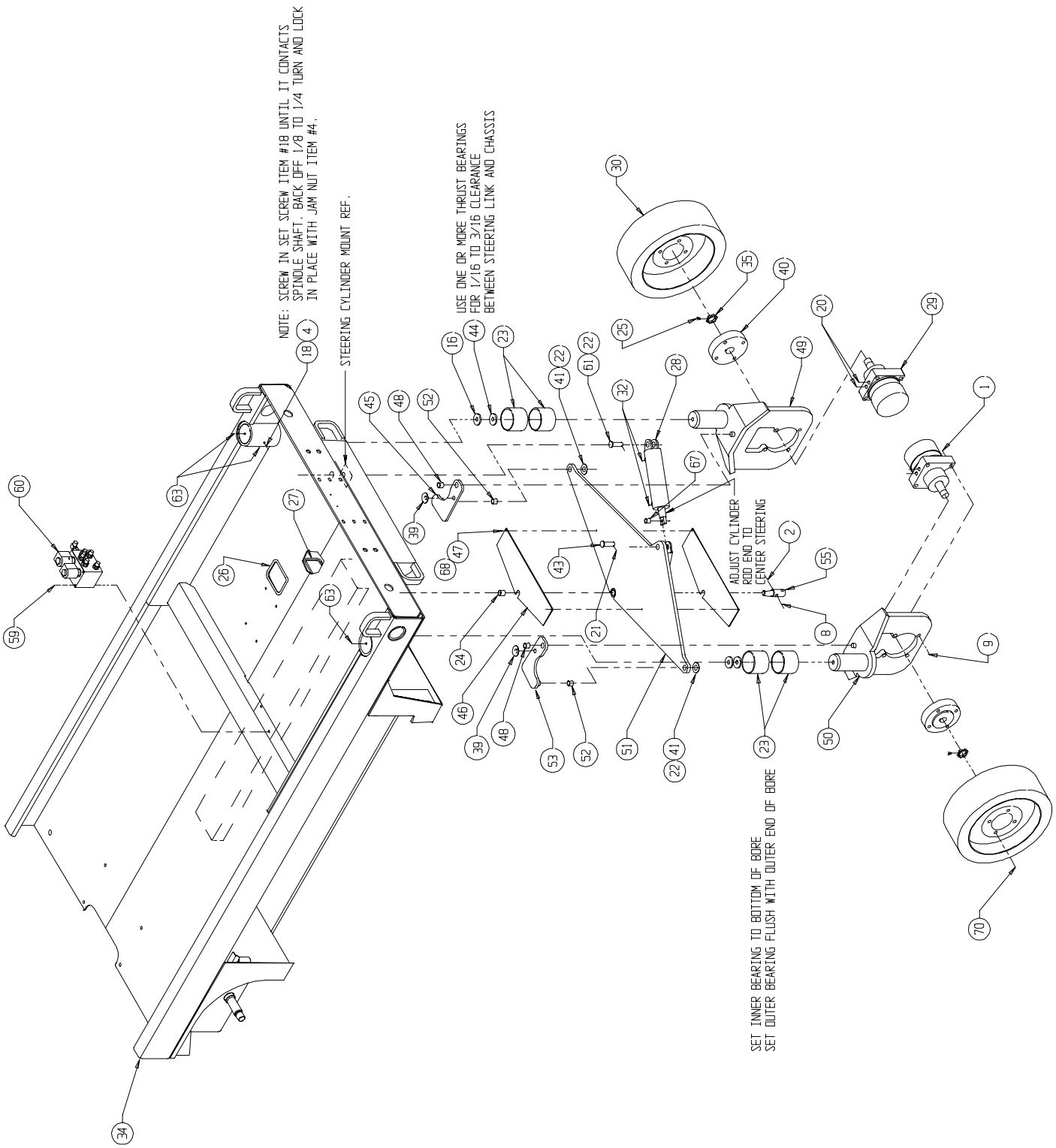
NOTES

CHASSIS ASSEMBLY
X20W/X26N
66052-001

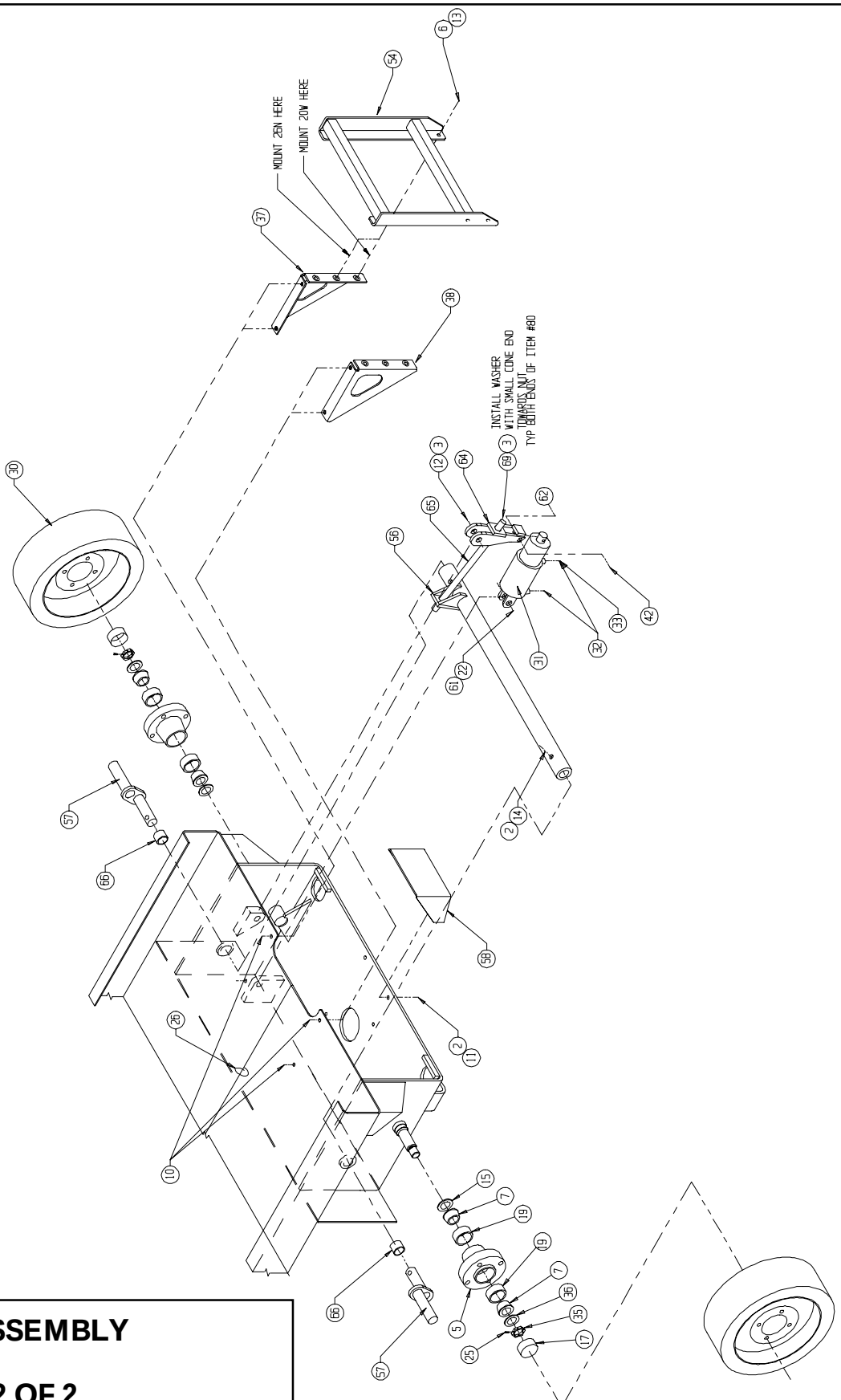
ITEM	PART	DESCRIPTION	QTY.
1	11248-008	NUT HEX 1/2-13 UNC	8
2	11248-006	NUT HEX 3/8-16 UNC	5
3	11248-012	NUT HEX 3/4-10 UNC	3
4	11273-006	NUT JAM 3/8-16	2
5	66773-000	HUB ASSY	2
6	11254-008	SCREW HHC GR5 3/8-16 UNC X 1	4
7	11775-011	CONE BEARING	4
8	11254-016	SCREW HHC GR5 3/8-16 UNC X 2	1
9	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
10	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	4
11	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	2
12	11258-024	SCREW HHC GR5 3/4-10 UNC X 3	1
13	11240-006	WASHER 3/8 FLAT	4
14	11287-022	SCREW SOCKET HD 3/8-16 X 2 3/4	2
15	05104-000	SEAL GREASE	2
16	11782-008	BEARING (STEER)	2
17	05078-000	CAP DUST	2
18	11705-016	SCREW SET 3/8-16 X 1	2
19	11776-004	CUP BEARING	4
20	11934-024	FITTING	4
21	11757-007	PIN COTTER 5/8	1
22	11757-010	PIN COTTER 3/4	4
23	27931-074	BEARING (STEERING)	4
24	62642-012	BEARING	1
25	11753-012	PIN COTTER 1/8 X 1 1/2	4
26	61796-099	GROMMET	1.25FT
27	61692-099	GROMMET	1.38FT
28	66793-000	STEERING CYLINDER	1
*	66793-010	SEAL KIT, STEERING CYLINDER	1
29	61817-001	MOTOR HYD	2
*	61817-010	SEAL KIT, HYDRAULIC MOTOR	1
30	61846-001	WHEEL & TIRE	4
31	66604-000	BRAKE CYLINDER	1
*	66604-010	SEAL KIT	1
32	11934-003	FITTING 90 O RING BOSS 6MB 4MJ	4

*** Not shown**

ITEM	PART	DESCRIPTION	QTY.
33	63664-007	ORIFICE	1
34	66750-000	WELDMENT - WIDE CHASSIS	1
35	11274-016	NUT 1-14UIF SLOTTED HEX	4
36	11239-016	WASHER 1 DIA FLAT ASTM	2
37	66774-010	WELDMENT - LADDER BRACKET	1
38	66774-011	WELDMENT - LADDER BRACKET	1
39	66702-000	SLIDE PAD, STEERING LINK	2
40	66325-000	HUB - FRONT	2
41	14996-012	WASHER SAE 3/4 DIA	2
42	63559-006	BOLT SHOULDER 3/8 X 2	1
43	11848-009	CLEVIS PIN 5/8 X 2	1
44	11782-009	BUSHING	2
45	66152-001	STEERING LINK WELDMENT L.H.	1
46	26553-012	BEARING - STRIP	2
47	26553-012	RIVET 3/16 DIA X 1 1/8 GRIP	2
48	62642-006	BUSHING	2
49	66311-001	WELDMENT - STEERING ANGLE LH	1
50	66312-001	WELDMENT - STEERING ANGLE RH	1
51	66069-002	WELDMENT - BELL CRANK	1
52	62642-008	BUSHING	2
53	66151-001	STEERING LINK WELDMENT R.H.	1
54	66307-000	WELDMENT - LADDER	1
55	66737-000	PIN, WHEEL CRANK	1
56	66073-001	WELDMENT - BRAKE TUBE	1
57	66305-001	WELDMENT - BRAKE	2
58	66796-000	WELDMENT, CHARGER GUARD	1
59	11252-028	SCREW HHC 1/4-20 X 3 1/2	2
60	66808-000	VALVE ASSY SERIES PARALLEL	1
61	11848-041	CLEVIS PIN 3/4 X 2	2
62	11246-005	NUT HEX ESNA 5/16-18	1
63	13336-011	FITTING GREASE	4
64	66728-000	WELDMENT, BRAKE ADJUSTMENT	1
65	66734-000	ROD, BRAKE RELEASE	1
66	27931-071	BEARING (BRAKE)	2
67	62642-001	BEARING	1
68	02186-000	WASHER 3/16 FLAT	2
69	66792-001	WASHER 3/4 BELLVILLE	2
70	14122-003	WHEEL BOLT 1/2-20 X 1	16



CHASSIS ASSEMBLY
X20W/X26N
DRAWING 1 OF 2



CHASSIS ASSEMBLY
X20W/X26N
DRAWING 2 OF 2

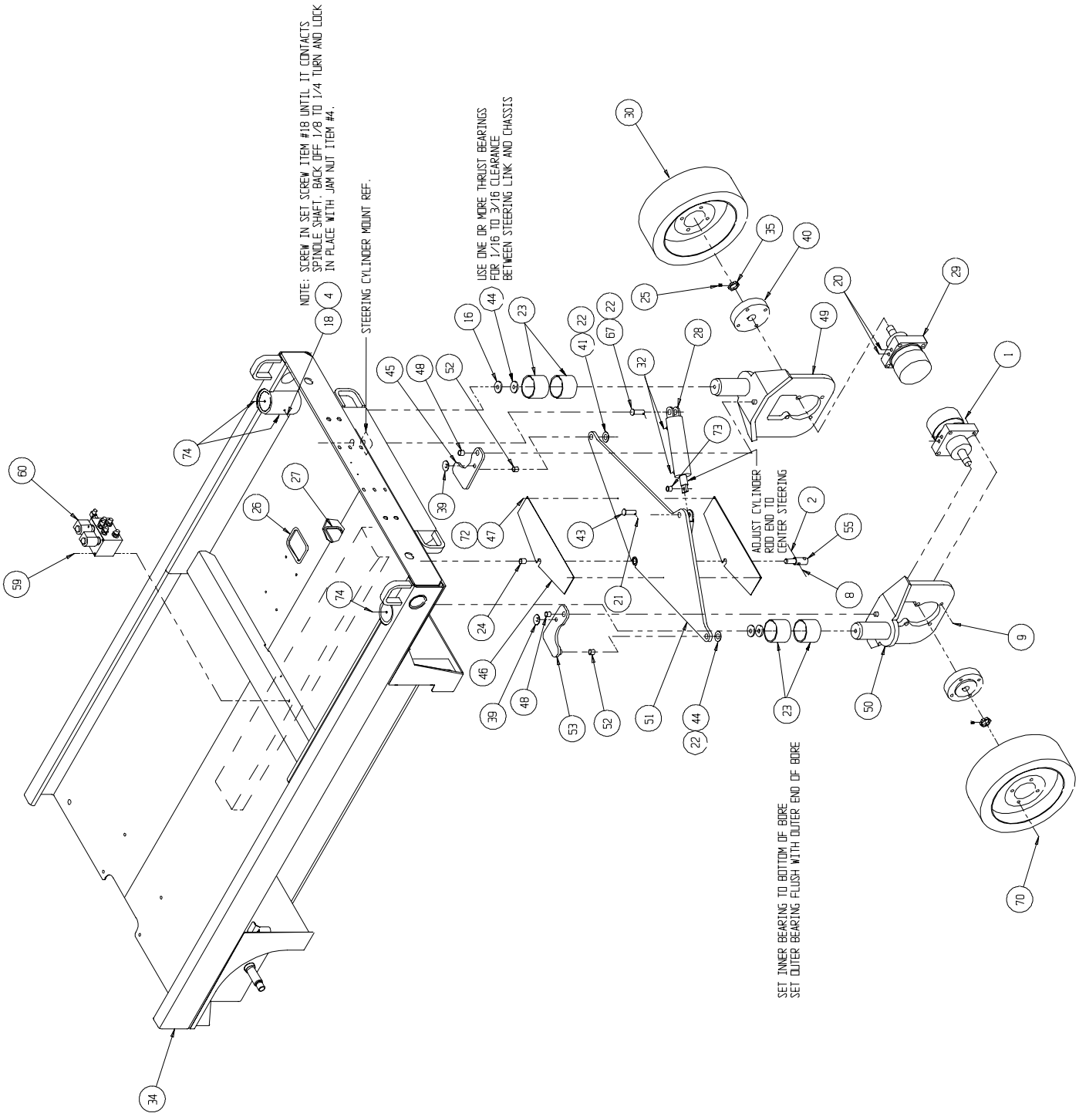
NOTES

CHASSIS ASSEMBLY
X31N
66852-000

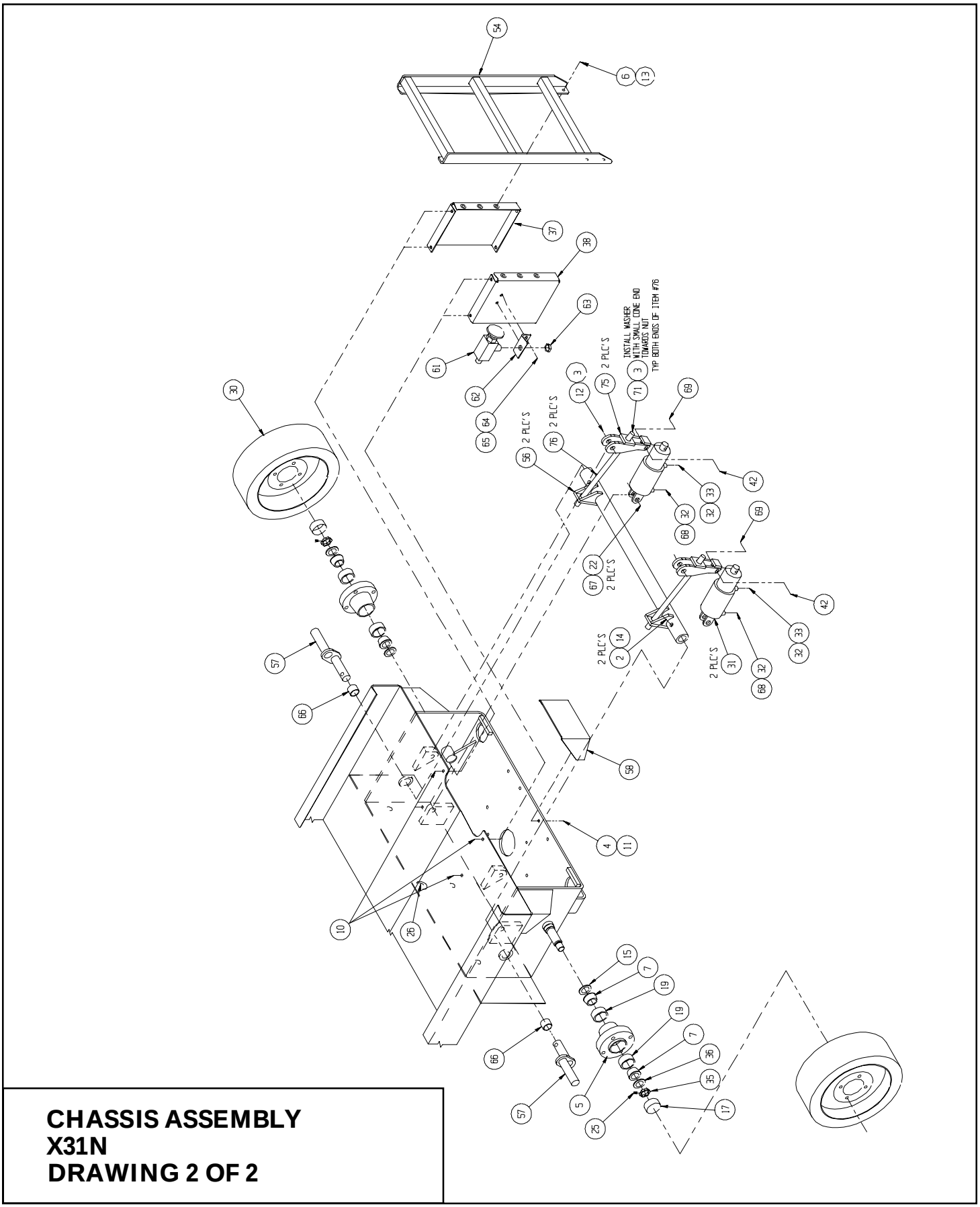
ITEM	PART	DESCRIPTION	QTY:
1	11248-008	NUT HEX 1/2-13 UNC	8
2	11248-006	NUT HEX 3/8-16 UNC	7
3	11248-012	NUT HEX 3/4-10 UNC	6
4	11273-006	NUT JAM 3/8-16	2
5	66773-000	HUB ASSY	2
6	11254-008	SCREW HHC GR5 3/8-16 UNC X 1	4
7	11775-011	CONE BEARING	4
8	11254-016	SCREW HHC GR5 3/8-16 UNC X 2	1
9	11256-024	SCREW HHC GR5 1/2-13 UNC X 3	8
10	11254-012	SCREW HHC GR5 3/8-16 UNC X 1 1/2	8
11	11254-010	SCREW HHC GR5 3/8-16 UNC X 1 1/4	2
12	11258-024	SCREW HHC GR5 3/4-10 UNC X 3	2
13	11240-006	WASHER 3/8 FLAT	4
14	11287-022	SCREW SOCKET HD 3/8-16 X 2 3/4	4
15	05104-000	SEAL GREASE	2
16	11782-008	BEARING (STEER)	2
17	05078-000	CAP DUST	2
18	11705-016	SCREW SET 3/8-16 X 1	2
19	11776-004	CUP BEARING	4
20	11934-024	FITTING	4
21	11757-007	PIN COTTER 5/8	1
22	11757-010	PIN COTTER 3/4	6
23	27931-074	BEARING	4
24	62642-012	BEARING GARLOCK 12DU12	1
25	11753-012	PIN COTTER 1/8 X 1 1/2	4
26	61796-099	GROMMET	1.25FT
27	61692-099	GROMMET	1.38FT
28	66793-000	STEERING CYLINDER	1
*	66793-010	SEAL KIT, STEERING CYLINDER	1
29	61817-001	MOTOR HYD	2
*	61817-010	SEAL KIT, MOTOR	1
30	61846-001	WHEEL & TIRE	4
31	66604-000	BRAKE CYLINDER	2
*	66604-010	BRAKE CYLINDER KIT	1
32	11934-003	FITTING 90 O RING BOSS 6MB 4MJ	5
33	63664-007	ORIFICE	2
34	66750-001	WELDMENT - WIDE CHASSIS X31N	1
35	11274-016	NUT 1-14 UNF SLOTTED HEX	4
36	11239-016	WASHER 1 DIA FLAT ASTM	2

ITEM	PART	DESCRIPTION	QTY:
37	66774-010	WELDMENT - LADDER BRACKET	1
38	66774-011	WELDMENT - LADDER BRACKET	1
39	66702-000	SLIDE PAD, STEERING LINK	2
40	66325-000	HUB - FRONT	2
41	14996-012	WASHER SAE 3/4 DIA	2
42	63559-006	BOLT SHOULDER 3/8 X 2	2
43	11848-009	CLEVIS PIN 5/8 X 2	1
44	11782-009	BUSHING TT 2301-4	2
45	66152-001	STEERING LINK WELDMENT L.H.	1
46	26553-012	BEARING - STRIP	2
47	26553-012	RIVET 3/16 DIA X 1 1/8 GRIP	2
48	62642-006	BUSHING 12 DU 06	2
49	66311-001	WELDMENT - STEERING ANGLE LH	1
50	66312-001	WELDMENT - STEERING ANGLE RH	1
51	66069-002	WELDMENT - BELL CRANK	1
52	62642-008	BUSHING GARLOCK 12DU08	2
53	66151-001	STEERING LINK WELDMENT R.H.	1
54	66307-010	WELDMENT - LADDER	1
55	66737-000	PIN, BELL CRANK	1
56	66073-002	WELDMENT - BRAKE TUBE	1
57	66305-001	WELDMENT - BRAKE	2
58	66796-000	WELDMENT, CHARGER GUARD	1
59	11252-028	SCREW HHC 1/4-20 X 3 1/2	2
60	66808-000	VALVE ASSY SERIES PARALLEL	1
61	67961-000	DOWN VALVE	1
62	66817-000	MOUNT, DOWN VALVE	1
63	10147-003	FITTING NUT # 6	1
64	11252-006	SCREW HHC 1/4-20 X 3/	2
65	11248-004	NUT 1/4-20 HEX	2
66	27931-071	BEARING (BRAKE)	2
67	11848-041	CLEVIS PIN 3/4 X 2	4
68	20733-002	FITTING TEE 6FJX-6MJ-6M	2
69	11246-005	NUT HEX ESNA 5/16-18	2
70	14122-003	WHEEL BOLT 1/2-20 X 1	16
71	66792-001	WASHER 3/4 BELLVILLE	4
72	02186-000	WASHER 3/16 FLAT	1
73	62642-001	BEARING	1
74	13336-011	FITTING GREASE	4
75	66728-000	WELDMENT, BRAKE ADJUSTMENT	2
76	66734-000	ROD, BRAKE RELEASE	1

*** Not shown**



CHASSIS ASSEMBLY
X31N
DRAWING 1 OF 2



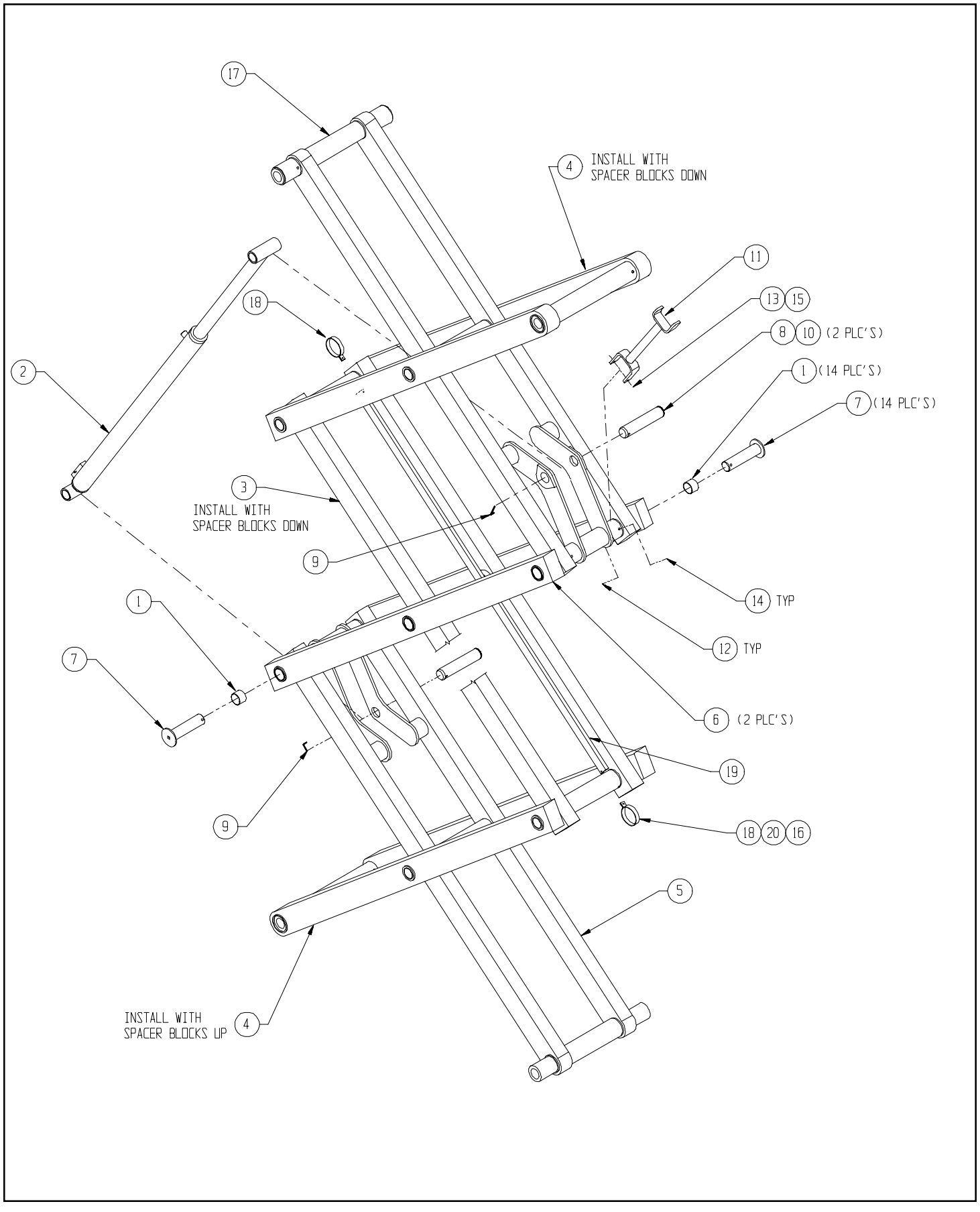
CHASSIS ASSEMBLY
X31N
DRAWING 2 OF 2

NOTES

SCISSOR ASSEMBLY
X20N
66003-000

ITEM	PART	DESCRIPTION	QTY.
1	66183-000	BEARING	14
2	66168-000	LIFT CYLINDER	1
*	66168-010	SEAL KIT	1
3	66201-000	WELDMENT, MID INNER TUBE	1
4	66202-000	WELDMENT, TOP & BOTTOM OUTER	2
5	66200-000	WELDMENT, BOTTOM INNER 1/4	1
6	66211-000	WELDMENT, MID OUTER	2
7	66210-000	WELDMENT, PIVOT PIN	14
8	66224-000	PIN, LIFT CYLINDER	2
9	66225-000	PIN, SHAFT LOCKING	2
10	11764-032	RETAINING RING	2
11	66214-000	WELDMENT, SAFETY STAND	1
12	11248-005	NUT HEX 5/16-1	14
13	11248-006	NUT HEX 3/8-16	1
14	15936-023	SCREW SHOULDER 3/8-16 X 3 1/	14
15	11254-044	SCREW HHC GR5 3/8-16 X 5 1/2	1
16	11252-006	SCREW HHC GR5 1/4-20 X 3/4	2
17	66203-000	WELDMENT, TOP INNER 3/16	1
18	66199-000	PIPE RING	2
19	66226-000	CHANNEL, CABLE	1
20	11248-004	NUT HEX 1/4-20	2

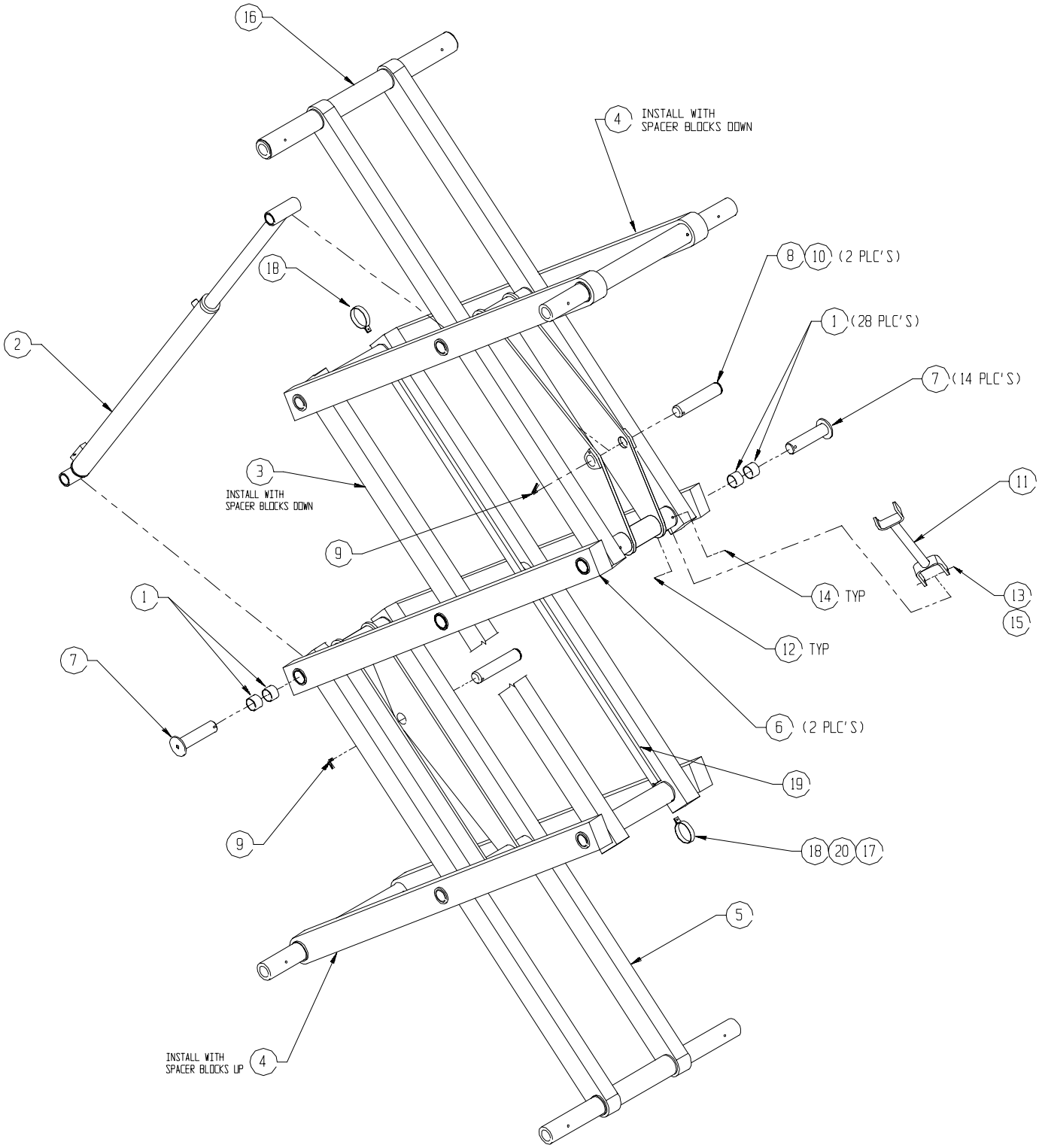
*** Not shown**


17
4
INSTALL WITH
SPACER BLOCKS DOWN
11
13
15
18
8
10
(2 PLC'S)
2
1
(14 PLC'S)
7
(14 PLC'S)
3
INSTALL WITH
SPACER BLOCKS DOWN
9
14
TYP
1
12
TYP
7
6
(2 PLC'S)
19
9
18
20
16
5
INSTALL WITH
SPACER BLOCKS UP
4

SCISSOR ASSEMBLY
X20W
66053-000

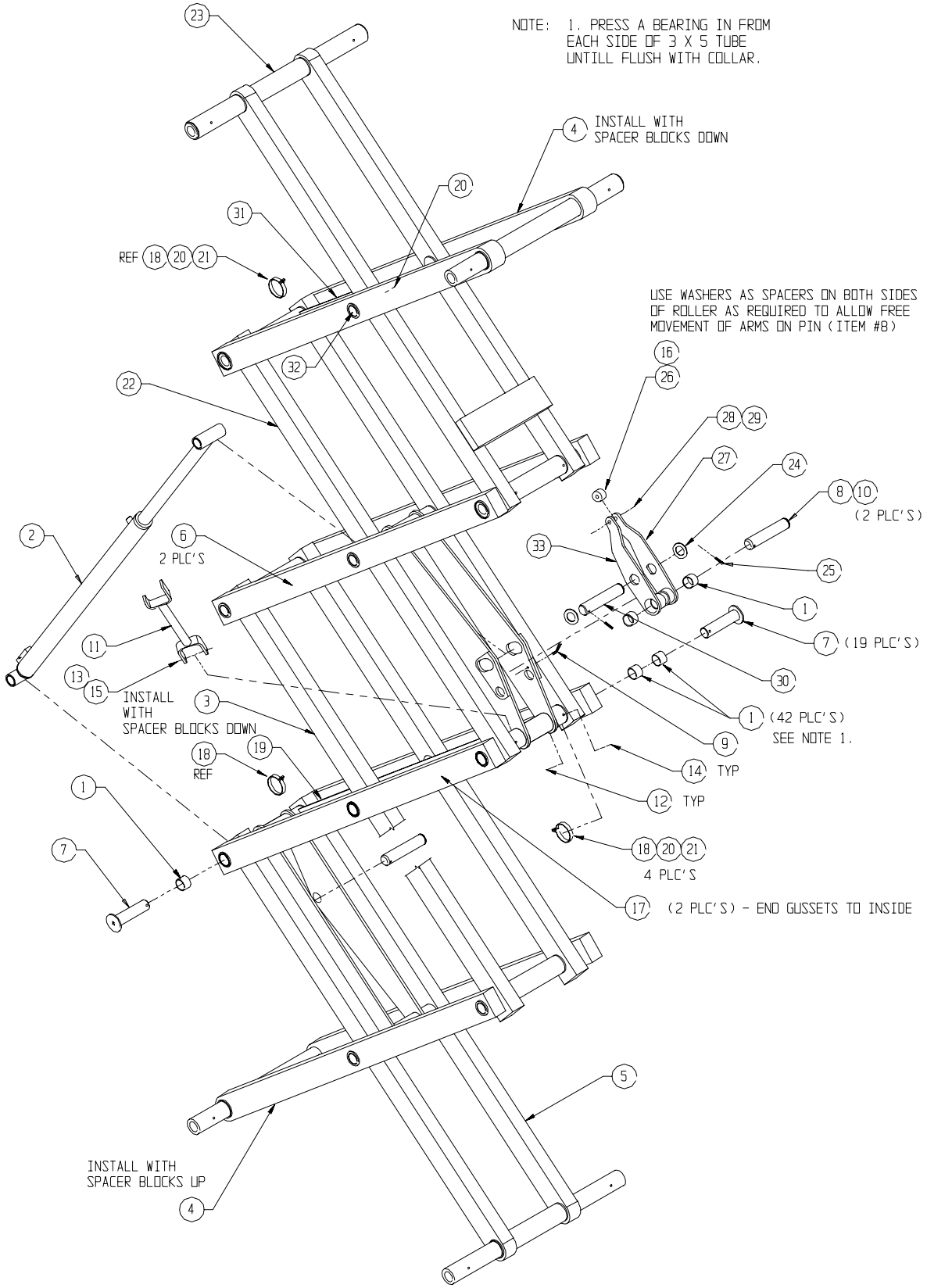
ITEM	PART	DESCRIPTION	QTY.
1	66183-000	BEARING	28
2	66601-000	LIFT CYLINDER	1
*	66601-010	SEAL KIT	1
3	66201-000	WELDMENT, MID INNER TUBE 1/8	1
4	66240-000	WELDMENT, TOP & BOTTOM OUTER 1/8	2
5	66238-000	WELDMENT, BOTTOM INNER 3/16	1
6	66211-003	WELDMENT, MID OUTER 1/8	2
7	66210-000	WELDMENT, PIVOT PIN	14
8	66224-000	PIN, LIFT CYLINDER	2
9	66225-000	PIN, SHAFT LOCKING	2
10	11764-032	RETAINING RING	2
11	66214-000	WELDMENT, SAFETY STAND	1
12	11248-005	NUT HEX 5/16-1	14
13	11248-006	NUT HEX 3/8-16	1
14	15936-023	SCREW SHOULDER 3/8-16 X 3 1/	14
15	11254-044	SCREW HHC GR5 3/8-16 X 5-1/2	1
16	66238-003	WELDMENT, TOP ARM	1
17	11252-006	SCREW HHC GR5 1/4-20 X 3/4	2
18	66199-000	PIPE RING	2
19	66226-000	CHANNEL, CABLE	1
20	11248-004	NUT HEX 1/4-20	2

*** Not shown**


16
4
INSTALL WITH
SPACER BLOCKS DOWN
18
8
10
(2 PLC'S)
1
(28 PLC'S)
2
7
(14 PLC'S)
3
INSTALL WITH
SPACER BLOCKS DOWN
11
9
14
TYP
13
15
1
12
TYP
7
6
(2 PLC'S)
19
9
18
20
17
5
INSTALL WITH
SPACER BLOCKS UP
4

SCISSOR ASSEMBLY
X26N
66103-000

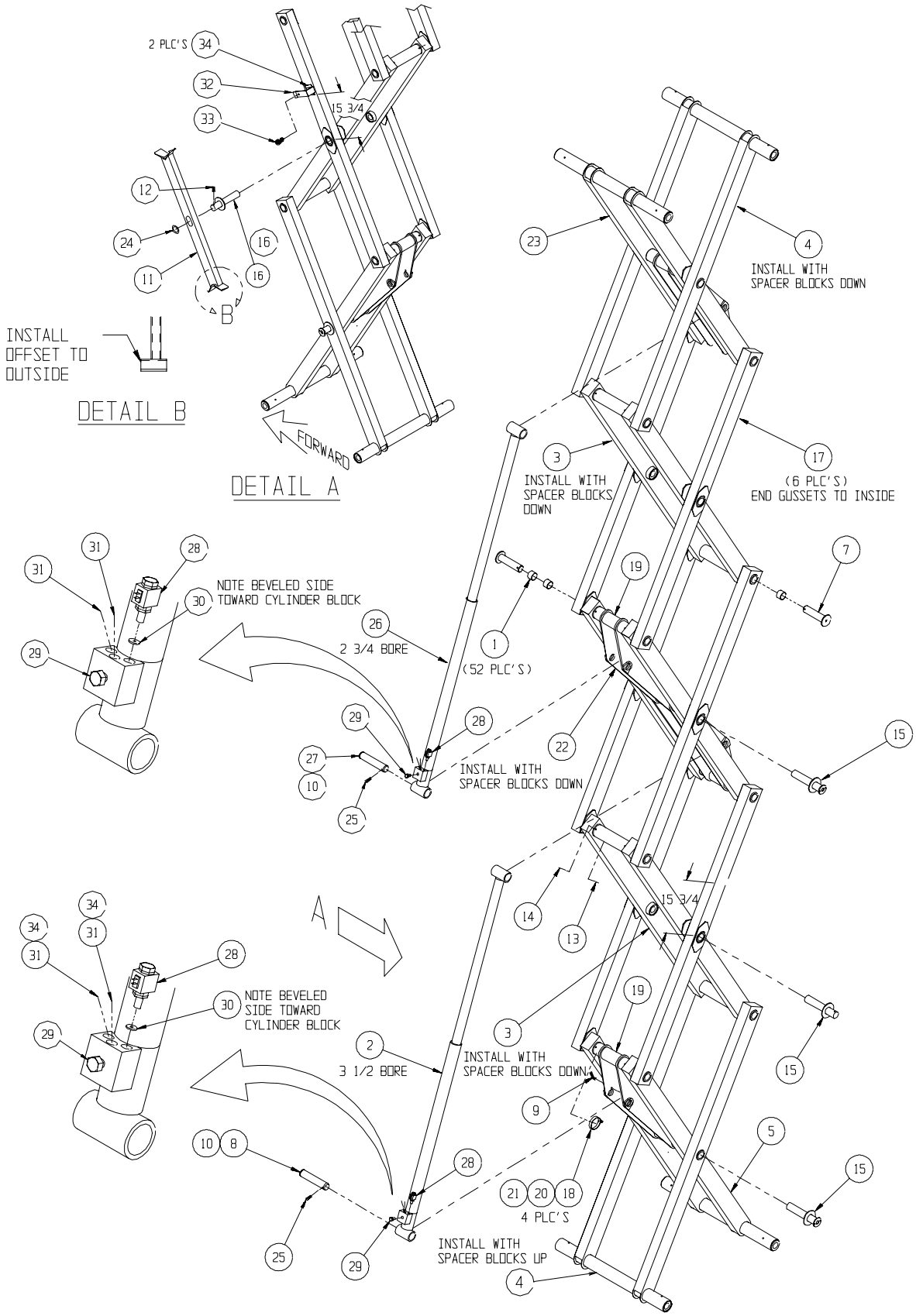
ITEM	PART	DESCRIPTION	QTY.
1	66183-000	BEARING	42
2	66601-000	LIFT CYLINDER	1
*	66601-010	SEAL KIT, LIFT CYLINDER	1
3	66201-001	WELDMENT, MID INNER TUBE 1/8	1
4	66240-000	WELDMENT, TOP & BOTTOM OUTER 1/8	2
5	66238-000	WELDMENT, BOTTOM INNER 3/16	1
6	66211-002	WELDMENT, MID OUTER 1/4	2
7	66210-000	WELDMENT, PIVOT PIN	19
8	66224-000	PIN, LIFT CYLINDER	2
9	66225-000	PIN, SHAFT LOCKING	2
10	11764-032	RETAINING RING	2
11	66214-000	WELDMENT, SAFETY STAND	1
12	11248-005	NUT HEX 5/16-1	20
13	11248-006	NUT HEX 3/8-16	1
14	15936-023	SCREW SHOULDER 3/8-16 X 3 1/2	20
15	11254-044	SCREW HHC GR5 3/8-16 X 5 1/2	1
16	11239-010	WASHER, FLAT 5/8 ASTM	4
17	66211-001	WELDMENT, MID OUTER ARM 1/8	2
18	66199-000	PIPE RING	4
19	66226-000	CHANNEL, CABLE	1
20	11248-004	NUT HEX 1/4-20	4
21	11252-008	SCREW HHC GR5 1/4-20 X 1	3
22	66120-000	WELDMENT, MID INNER ARM 3/16	1
23	66121-000	WELDMENT, TOP INNER ARM 1/8	1
24	11239-002	WASHER 2 DIA ASTM	2
25	11740-024	ROLL PIN 1/2 X 3	2
26	65367-001	BEARING	1
27	66574-001	WELDMENT, TORSION ARM L.H.	1
28	11257-028	SCREW HHC 5/8-11 X 3 1/2	1
29	11246-010	NUT 5/8-11 THIN HEX	1
30	66224-001	PIN, LIFT CYLINDER	1
31	66226-001	CHANNEL, CABLE	1
32	66210-002	WELDMENT, PIVOT PIN	1
33	66574-002	WELDMENT, TORSION ARM R.H.	1


NOTE: 1. PRESS A BEARING IN FROM EACH SIDE OF 3 X 5 TUBE UNTILL FLUSH WITH COLLAR.
23
4 INSTALL WITH SPACER BLOCKS DOWN
20
31
REF 18 20 21
32
22
USE WASHERS AS SPACERS ON BOTH SIDES OF ROLLER AS REQUIRED TO ALLOW FREE MOVEMENT OF ARMS ON PIN (ITEM #8)
16
26
28 29
27
24
8 10
(2 PLC'S)
2
6
2 PLC'S
33
25
1
11
7 (19 PLC'S)
13
15
INSTALL WITH SPACER BLOCKS DOWN
3
30
1 (42 PLC'S)
SEE NOTE 1.
9
18
REF
19
14 TYP
1
12 TYP
7
18 20 21
4 PLC'S
17 (2 PLC'S) - END GUSSETS TO INSIDE
5
INSTALL WITH SPACER BLOCKS UP
4

SCISSOR ASSEMBLY
X31N
66853-000

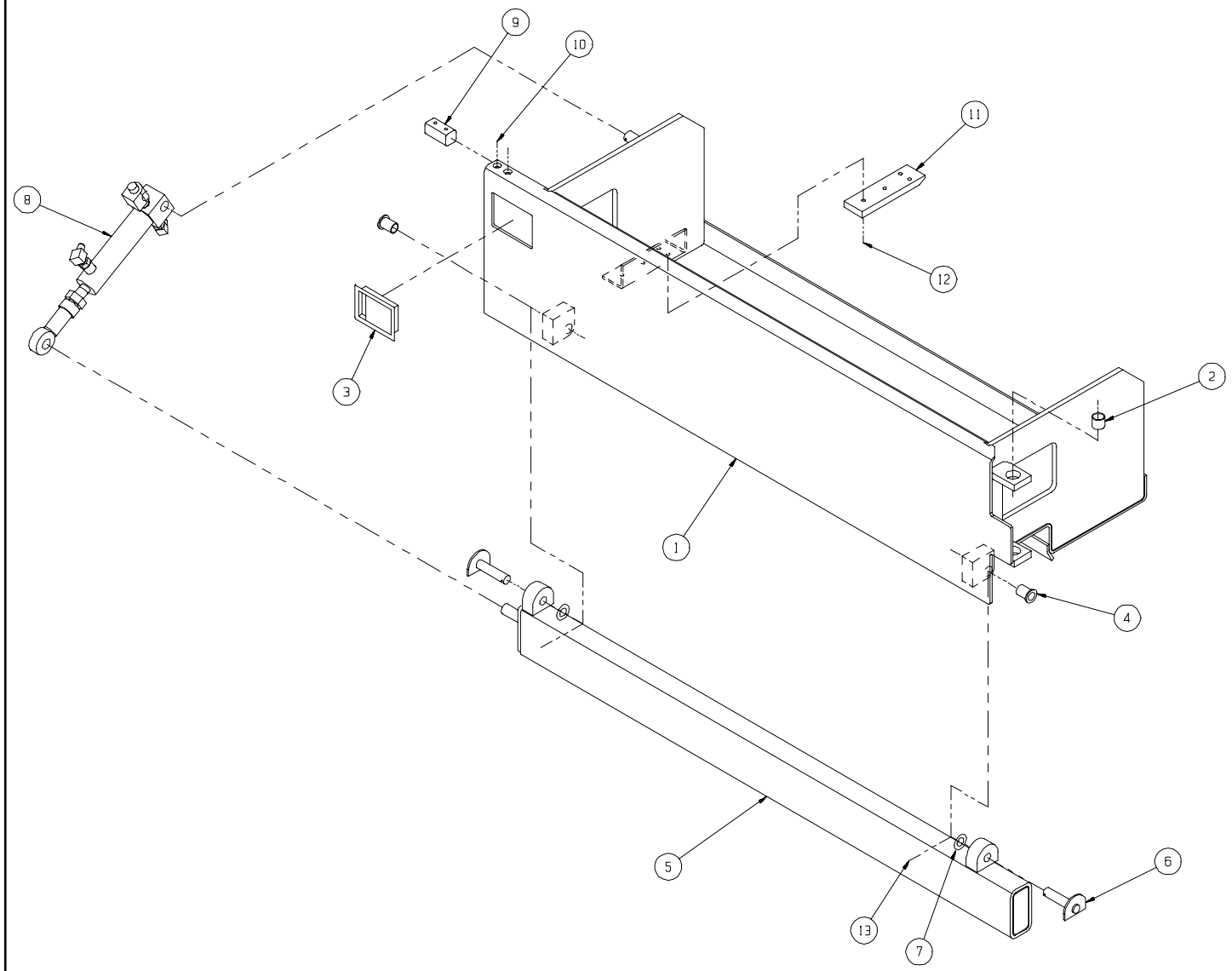
ITEM	PART	DESCRIPTION	QTY.
1	66183-000	BEARING	52
2	66601-000	LIFT CYLINDER	1
*	66601-010	SEAL KIT	1
3	66201-001	WELDMENT, MID INNER TUBE 1/8	2
4	66240-000	WELDMENT, TOP & BOTTOM OUTER 1/8	2
5	66238-013	WELDMENT, BOTTOM INNER 3/16	1
6	26554-002	RIVET 1/4 POP	2
7	66210-000	WELDMENT, PIVOT PIN	23
8	66224-000	PIN, LIFT CYLINDER	2
9	66225-000	PIN, SHAFT LOCKING	4
10	11764-032	RETAINING RING	4
11	67591-000	WELDMENT, SAFETY STAND	1
12	11734-024	ROLL PIN 3/8 X 3 LG	1
13	11248-005	NUT HEX 5/16-1/2	26
14	15936-023	SCREW SHOULDER 3/8 X 3 1/2	26
15	66210-010	WELDMENT, PIVOT PIN	2
16	66210-011	WELDMENT, PIVOT PIN	1
17	66211-001	WELDMENT, MID OUTER ARM 1/8	6
18	66199-000	PIPE RING	4
19	66226-000	CHANNEL, CABLE	2
20	11248-004	NUT HEX 1/4-20	4
21	11252-008	SCREW HHC GR5 1/4-20 X 1	4
22	66120-010	WELDMENT, MID INNER ARM 3/16	1
23	66121-010	WELDMENT, TOP INNER ARM 1/8	1
24	11786-017	MACHINERY BUSHING 2" ID X 14GA	1
25	11740-024	ROLL PIN 1/2 X 3	2
26	66168-000	LIFT CYLINDER	1
27	66224-010	PIN LIFT CYLINDER	2
28	63973-001	VALVE SOLENOID	2
29	66811-000	FITTING, VELOCITY FUSE	2
30	63664-008	ORIFICE, HYDROFORCE #7051070	2
31	11941-005	FITTING STR 6MB-6MJ	4
32	66814-000	WELDMENT, SCISSOR BRACE	1
33	03570-000	RETAINING RING	1
34	11937-003	FITTING 6F JX-6MJ 90	2

*** Not shown**


2 PLC'S
34
32
33
15 3/4
12
24
16
11
16
B
INSTALL OFFSET TO OUTSIDE
DETAIL B
FORWARD
DETAIL A
23
4
INSTALL WITH SPACER BLOCKS DOWN
3
INSTALL WITH SPACER BLOCKS DOWN
17
(6 PLC'S) END GUSSETS TO INSIDE
7
19
31
31
28
30
NOTE BEVELED SIDE TOWARD CYLINDER BLOCK
29
26
2 3/4 BORE
1
(52 PLC'S)
29
28
27
10
25
INSTALL WITH SPACER BLOCKS DOWN
22
15
14
13
15 3/4
A
34
34
31
31
28
30
NOTE BEVELED SIDE TOWARD CYLINDER BLOCK
29
2
3 1/2 BORE
3
INSTALL WITH SPACER BLOCKS DOWN
19
15
9
10
8
28
5
15
21
20
18
4 PLC'S
25
29
INSTALL WITH SPACER BLOCKS UP
4

POWER MODULE ASSEMBLY
X20N/X20W/X26N/X31N
66009-010

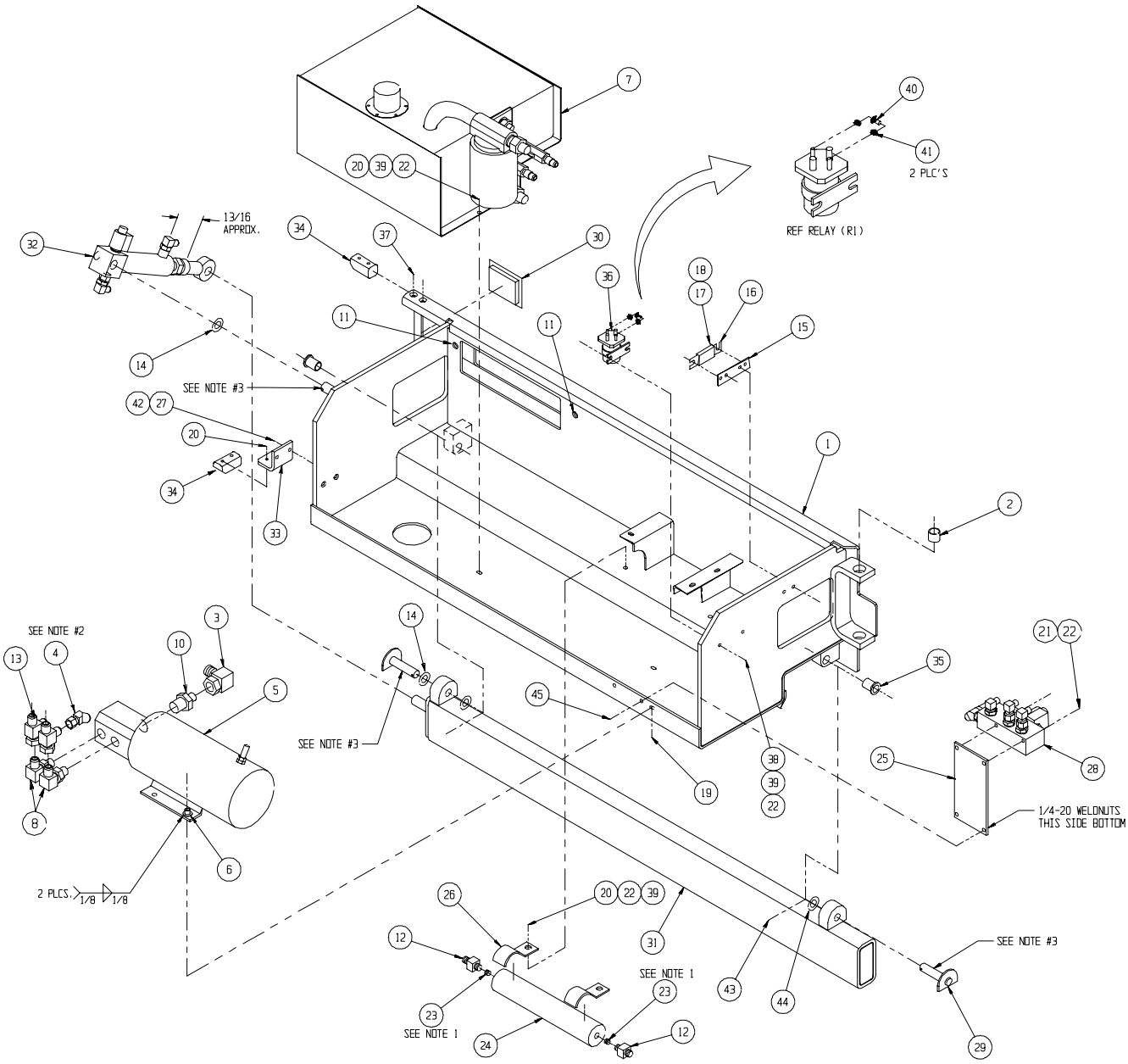
ITEM	PART	DESCRIPTION	QTY.
1	66310-010	POWER MODULE WELDMENT	1
2	27931-016	BUSHING	2
3	62791-002	LATCH COVER	1
4	11781-011	BUSHING	2
5	66735-000	WELDMENT, POT HOLE TUBE	1
6	66753-000	WELDMENT, PIVOT PIN	2
7	64350-010	SHIM 5/8ID X 1 OD X .031 STL	2
8	66803-000	POT HOLE CYLINDER	1
9	66192-000	BLOCK, COVER	1
10	11828-008	SCREW FLAT HD SOC 1/4-20 X 1	2
11	66800-000	SLIDE BLOCK	1
12	26553-008	RIVET 3/16 DIA 3/16-1/2 GRIP	4
13	11757-007	PIN COTTER	2


9
10
11
8
12
3
2
1
4
5
6
13
7

CONTROL MODULE ASSEMBLY
X20N/X20W/X26N
66008-010

ITEM	PART	DESCRIPTION	QTY.
1	66309-010	CONTROL MODULE WELDMENT	1
2	27931-016	BUSHING	2
3	11937-007	90° 12FJX-12MJ	1
4	11932-003	FITTING 45° 6FJX-6MJ	1
5	15797-000	POWER UNIT	1
*	15797-010	PUMP	1
*	15797-011	MOTOR	1
*	10145-001	BRUSHE SET (2) REQ	1
*	15797-014	SEAL KIT, PUMP	1
6	66184-004	WELD NUT 5/16-18	2
7	66780-000	HYDRAULIC RESERVOIR ASSY	1
8	11934-004	FITTING ELBOW 6MBH-6MJ	2
9	20733-002	FITTING TEE 6FJX-6MJ	2
10	11941-012	FITTING STR 8MB-12MJ	1
11	14252-006	NUTSERT 3/8-16	2
12	11941-004	FITTING STR 6MB-4MJ	2
13	11937-003	FITTING 90° 6FJX-6MJ	1
14	14996-012	WASHER 3/4	2
15	10149-000	FUSE BLOCK	1
16	10148-001	FUSE 175 AMP	1
17	13965-010	SCREW HEX HD #10-24 X 1 1/4	2
18	11248-003	NUT HEX #10-24	2
19	11253-008	SCREW HHC GR5 5/16-18 X 1	2
20	11252-008	SCREW HHC GR5 1/4-20 X 1	7
21	11252-022	SCREW HHC GR5 1/4-20 X 2 3/	2
22	11248-004	NUT, 1/4-20 ESNA	7
23	65556-001	ORIFICE .046	2
24	65396-000	CUSHION CYLINDER	1
25	66806-000	WELDMENT, VALVE MOUNT	1
26	13521-012	CLAMP 1 1/2 CONDUIT	2
27	11248-006	NUT ESNA 3/8-16	2
28	66802-000	VALVE ASSEMBLY	1
29	66735-000	WELDMENT, POT HOLE TUBE	1
30	62791-002	LATCH COVER	1
31	66753-000	WELDMENT, PIVOT PIN	2
32	66803-000	CYLINDER ASSEMBLY	1
33	66342-000	ANGLE	1
34	66192-000	BLOCK, COVER	1
35	11781-011	BUSHING	2
36	10122-001	SOLENOID 24V SPDT	1
37	11828-008	SCREW FLAT HD SOC 1/4-20 X 1	2
38	11252-010	SCREW HHC 1/4-20 X 1 1/4	2
39	11240-004	WASHER 1/4 FLAT	7
40	15747-002	DIODE 1 TO 1 1/2 AMP	1
41	29610-002	TERM FORK 14 16 AWG #8	2
42	11240-006	WASHER 3/8 STD FLAT	2
43	11757-007	PIN COTTER	2
44	64350-010	SHIM 5/8 ID X 1 OD X .031 STL	2
45	11252-006	SCREW HHC 1/4-20 X 3/4	2

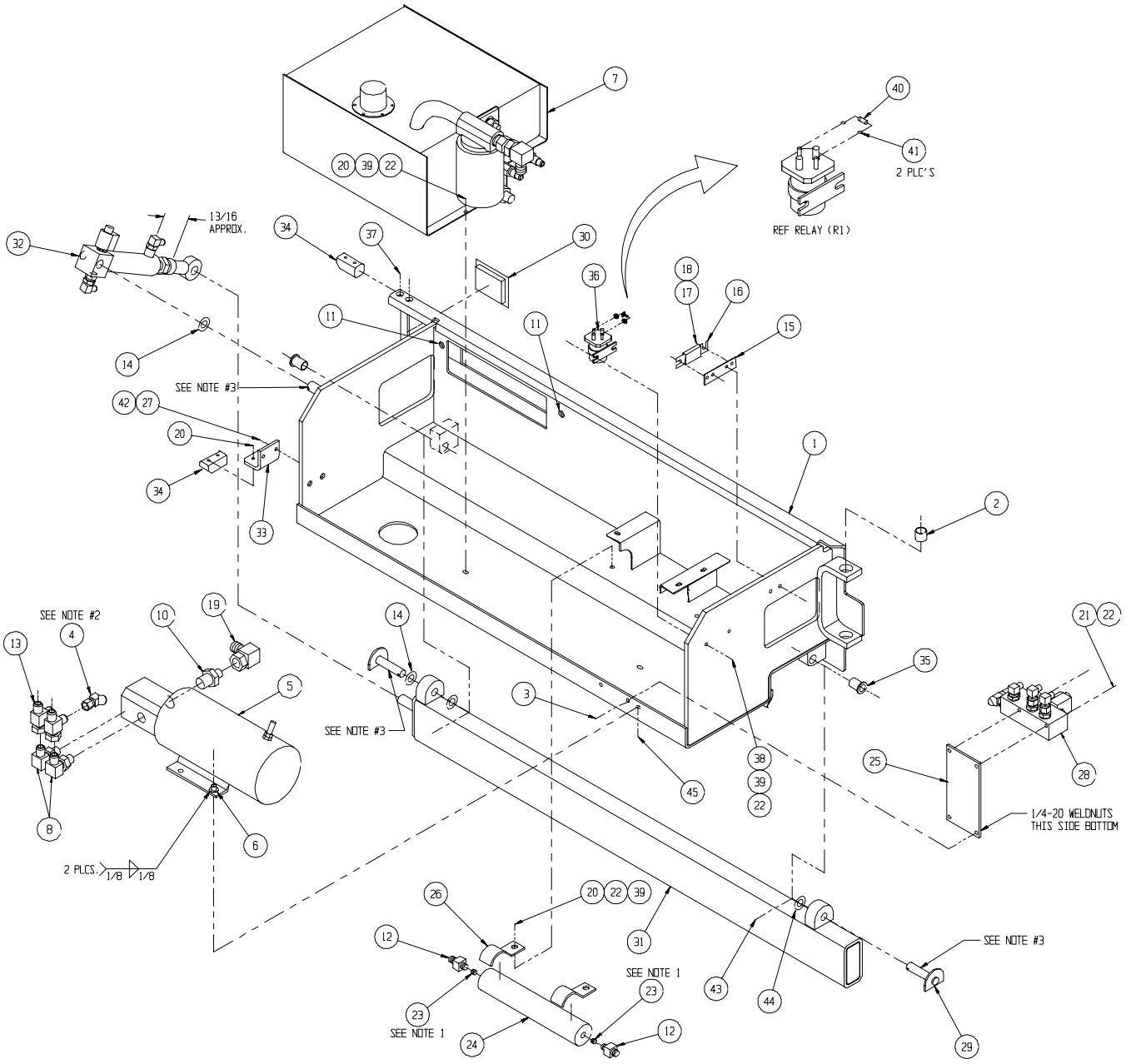
*** Not shown**


13/16 APPROX.
SEE NOTE #3
SEE NOTE #2
SEE NOTE #3
2 PLCS.
1/8
1/8
REF RELAY (R1)
2 PLC'S
SEE NOTE 1
SEE NOTE 1
SEE NOTE #3
1/4-20 WELDNUTS THIS SIDE BOTTOM

CONTROL MODULE ASSEMBLY
X31N
66008-012

ITEM	PART	DESCRIPTION	QTY.
1	66309-010	CONTROL MODULE WELDMENT	1
2	27931-016	BUSHING OILITE #AA-1049-14	2
3	64350-010	SHIM 5/8ID X 1 OD X .031 STL	2
4	11932-003	FITTING 45° 6FJX-6MJ	1
5	15797-000	POWER UNIT	1
*	15797-010	PUMP	1
*	15797-011	MOTOR	1
*	10145-001	BRUSH SET (2) REQ	1
*	15797-014	SEAL KIT, PUMP	1
6	66184-004	WELD NUT 5/16-18	2
7	66780-010	HYDRAULIC RESERVOIR ASSY X32N	1
8	11934-004	FITTING ELBOW 6MBH-6MJ	2
*	20733-002	FITTING TEE 6FJX-6MJ	2
10	11941-012	FITTING STR 8MB-12MJ	1
11	14252-006	NUTSERT 3/8-16	2
12	11941-004	FITTING STR 6MB-4MJ	2
13	11937-003	FITTING 90° 6FJX-6MJ	1
14	14996-012	WASHER 3/4	2
15	10149-000	FUSE BLOCK	1
16	10148-001	FUSE 175 AMP	1
17	13965-010	SCREW HEX HD #10-24 X 1 1/4	2
18	11248-003	NUT HEX #10-24	2
19	11937-007	90° 12FJX-12MJ	1
20	11252-008	SCREW HHC GR5 1/4-20 X 1	7
21	11252-022	SCREW HHC GR5 1/4-20 X 2 3/	2
22	11248-004	NUT, 1/4-20 ESNA	7
23	65556-001	ORIFICE .046	2
24	65396-000	CUSHION CYLINDER	1
25	66806-000	WELDMENT, VALVE MOUNT	1
26	13521-012	CLAMP 1 1/2 CONDUIT	2
27	66800-000	SLIDE BLOCK	1
28	66802-000	VALVE ASSEMBLY	1
29	66735-000	WELDMENT, POT HOLE TUBE	1
30	62791-002	LATCH COVER	1
31	66753-000	WELDMENT, PIVOT PIN	2
32	66803-000	CYLINDER ASSEMBLY	1
33	26553-008	RIVET, 3/16 DIA 3/16-1/2 GRIP	4
34	66192-000	BLOCK, COVER	1
35	11781-011	BUSHING OILITE #FF-703-1	2
36	10122-001	SOLENOID 24V SPDT	1
37	11828-008	SCREW FLAT HD SOC 1/4-20 X 1	2
38	11252-010	SCREW HHC 1/4-20 X 1 1/4	2
39	11240-004	WASHER 1/4 FLAT	7
40	15747-002	DIODE 1 TO 1 1/2 AMP	1
41	29610-002	TERM FORK 14 16 AWG #8	2
42	11757-007	PIN COTTER #REU 30	2

*** Not shown**


13/16 APPROX.
SEE NOTE #3
SEE NOTE #2
SEE NOTE #3
2 PLCS.
1/8
1/8
REF RELAY (R1)
2 PLC'S
SEE NOTE 1
SEE NOTE 1
SEE NOTE #3
1/4-20 WELDNUTS THIS SIDE BOTTOM

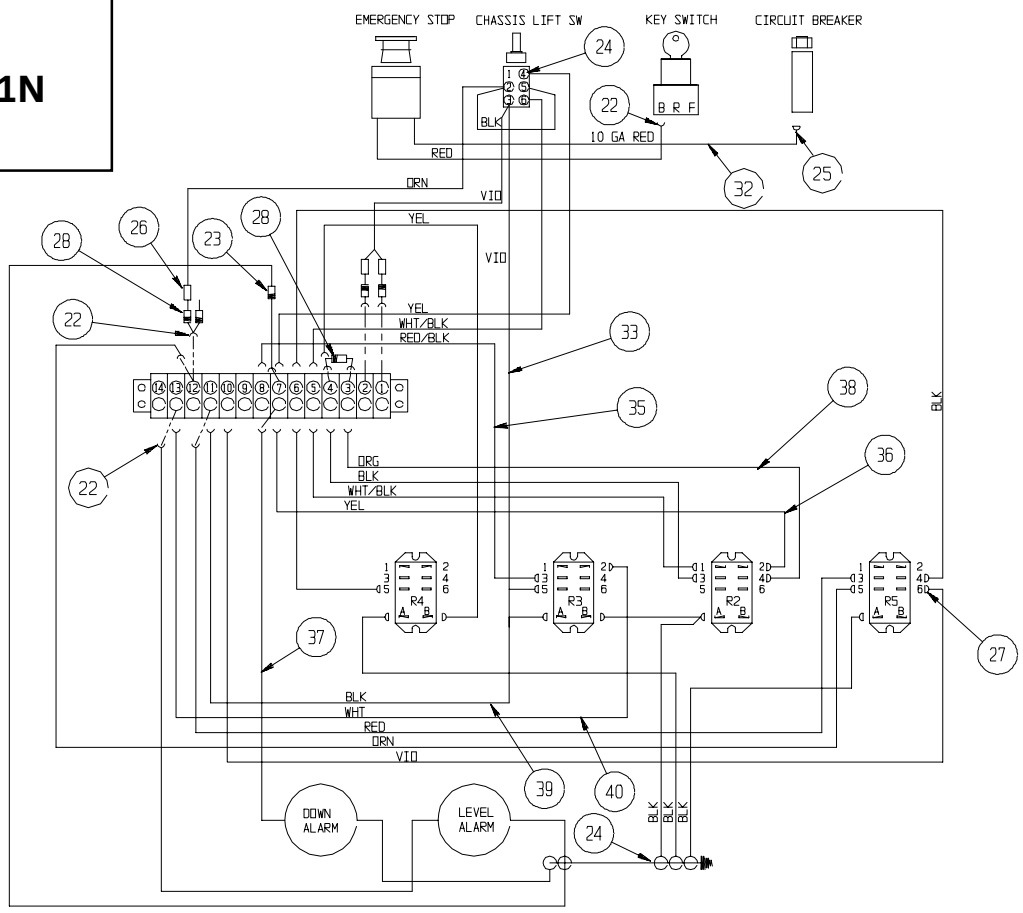
LOWER CONTROL BOX ASSEMBLY
X20N/X20W/X26N/X31N
66014-010

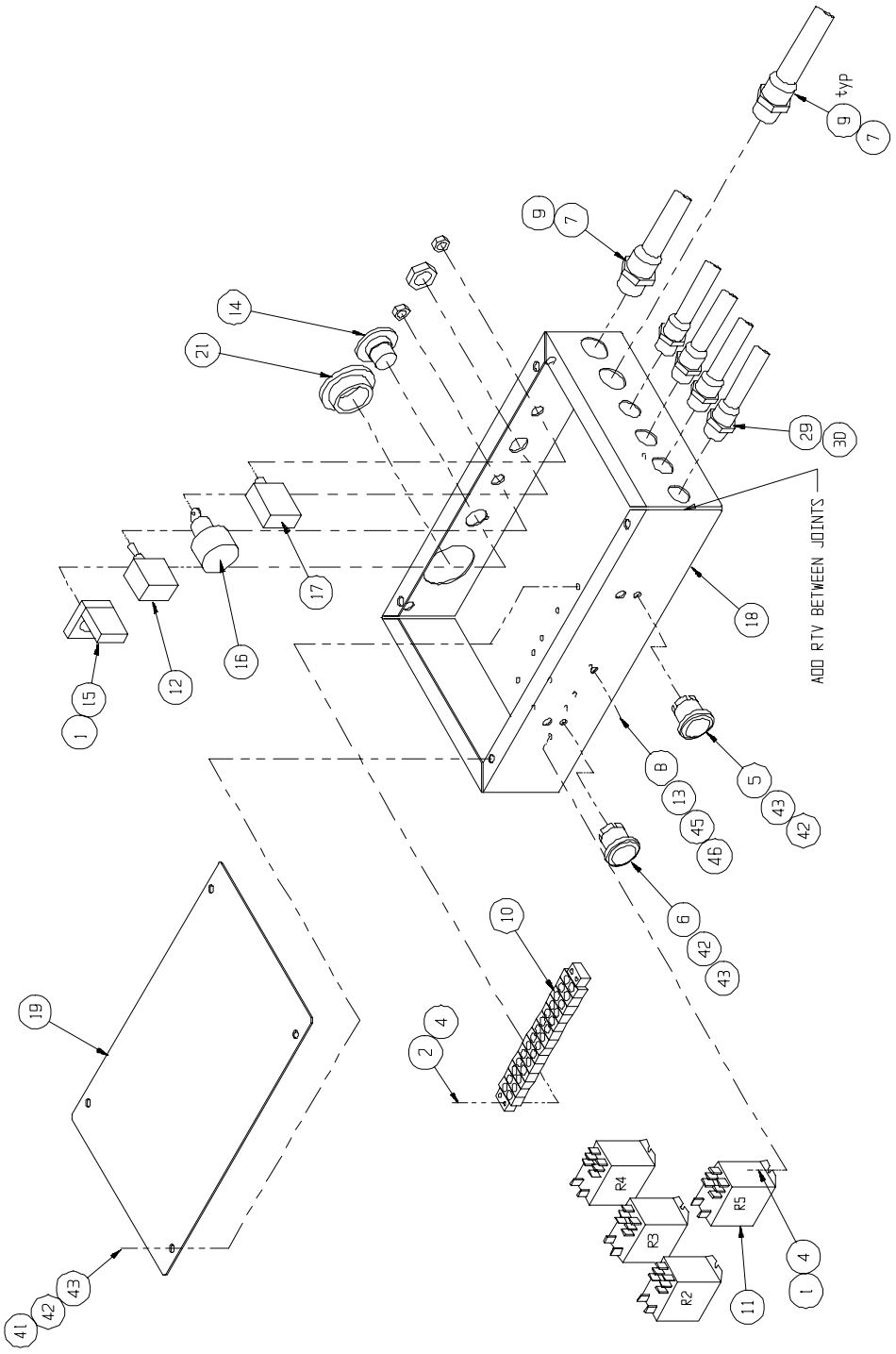
ITEM	PART	DESCRIPTION	QTY.
1	11715-004	SCREW 6-32 UNC MACH RD HD X 1/2	4
2	11715-006	SCREW 6-32 UNC MACH RD HD X 3/4	2
3	11826-004	SCREW 10-32 UNC MACH RD HD X 1/2	REF
4	14258-000	NUTSERT 6-32 UNC	10
5	66807-001	HORN / TWO TONE	1
6	66807-003	HORN / MOTION ALARM	1
7	29939-003	LOCK NUT	2
8	13965-012	SCREW MACH #10-24 X 1 1/2	1
9	29925-010	CONN. CABLE	2
10	29928-004	TERMINAL BLOCK	1
11	63951-002	RELAY 24 VDC	4
12	12798-001	TOGGLE SWITCH	1
13	13949-003	WASHER #10 STAR	1
14	66805-006	SWITCH PUSH BUTTON	1
15	66805-011	CONTACT BLOCK N.C.	1
16	10155-001	KEY	1
17	29868-007	CIRCUIT BREAKER	1
18	66755-000	WELDMENT, LOWER CONTROL BOX	1
19	66756-000	PANEL, COVER	1
*	66419-000	PANEL, MOUNTING	1
21	66516-000	PLUG CAP	1
22	29610-002	CONN. FORK 14-16 GA #8	15
23	15747-002	DIODE 1 TO 1 1/2 AMP	1

ITEM	PART	DESCRIPTION	QTY.
24	29601-013	CONN. RING 14-16 GA #10	9
25	29931-005	CONN. FM PUSH 12-10 .25	1
26	29620-002	CONN. BUTT 16-14	3
27	29615-002	CONN. PUSH 14-16 GA .187	18
28	29825-002	DIODE	6
29	29925-000	CONN. CABLE	4
30	29939-002	LOCK NUT	4
*	29620-003	CONN. BUTT 12-10	2
32	29480-099	CONN. BUTT 12-10	1 FT
32	29480-099	WIRE 10 AWG RED	1 FT
33	05487-099	WIRE 16 AWG VIO	1 FT
*	29479-099	WIRE 16 AWG WHT/BLK	1 FT
35	29478-099	WIRE 16 AWG RED/BLK	.5 FT
36	29456-099	WIRE 16 AWG YEL	1 FT
37	29454-099	WIRE 16 AWG RED	1 FT
38	29453-099	WIRE 16 AWG ORG	1 FT
39	29452-099	WIRE 16 AWG BLK	1.5FT
40	29451-099	WIRE 16 AWG WHT	.5 FT
41	14252-004	NUTSERT 1/4-20	4
42	11252-004	SCREW HHC 1/4-20 X 1/2 LG	6
43	11240-004	WASHER 1/4 FLAT	6
*	11240-003	WASHER #1O FLAT	4
45	11250-003	NUT #10-24 UNC HEX	1
46	11248-003	NUT #10-24 UNC ESNA	1

*** Not shown**

LOWER CONTROL BOX ASSEMBLY X20N/X20W/X26N/X31N DRAWING 1 OF 2





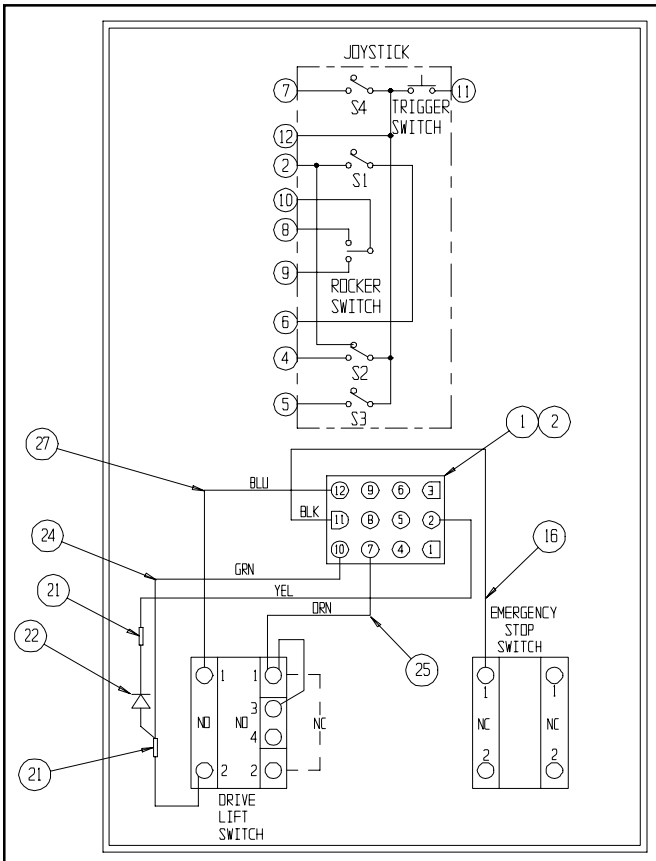
LOWER CONTROL BOX ASSEMBLY X20N/X20W/X26N/X31N DRAWING 2 OF 2

CONTROLLER ASSEMBLY
X20N
66013-010

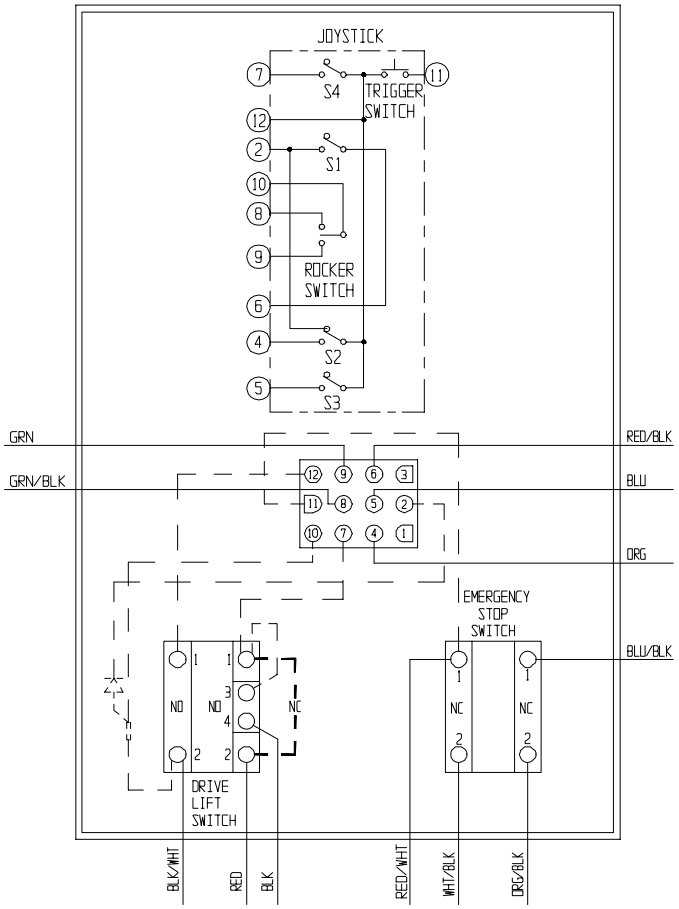
ITEM	PART	DESCRIPTION	QTY.
1	63956-003	CONN. 12 PIN	1
2	63956-010	CONN. PIN MALE	10
3	11252-004	SCREW 1/4-20 UNC HHC X 1/2	4
4	11238-004	WASHER 1/4 LOCK	4
5	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6
6	29939-003	LOCKNUT 3/4 NPT	1
7	66805-002	SWITCH 2 POSITION SELECTOR	1
8	29925-000	CONN. CABLE	1
9	66805-010	CONTACT BLOCK N.O.	1
10	66175-010	BOX ENCLOSURE COVER & BASE	1
11	66092-000	PANEL, CONTROLLER	1
12	66785-000	CONTROLLER	1
*	15772001	SWITCH	4
*	66544-014	SWITCH, STEERING	2
*	63913-003	BOOT, STEARTNG SWITCH	1
*	63913-004	ROCKER ASSEMBLY	1
*	66544-010	HANDLE, 2 PIECE	1
*	66544-011	LEVER, INTERLOCK	1

ITEM	PART	DESCRIPTION	QTY.
*	66544-012	SWITCH, INTERLOCK	1
*	66544-013	BOOT, JOYSTICK SHAFT	1
13	66805-006	PUSH BUTTON	1
14	66094-010	PANEL, CONTROLLER L.H.	1
15	66095-010	PANEL, CONTROLLER R.H.	1
16	29452-099	WIRE 16 GA. THHN COP BLACK	5FT
*	29610-002	CONN. FORK 14-16 GA #8	19
*	29615-002	CONN. PUSH 14-16 GA #8	7
19	66805-011	CONTACT BLOCK N.C.	2
20	66805-012	CONTACT BLOCK N.O./N.C.	1
21	29620-002	BUTT. CONN. 14-16 GA.	2
22	29825-002	DIODE	1
*	29454-099	WIRE 16 GA.THHN COP RED	2.5FT
24	29457-099	WIRE 16 GA. THHN COP GREEN	3.5FT
25	29453-099	WIRE 16 GA. THHN COP ORANGE	1FT
*	29451-099	WIRE 16 GA. THHN COP WHITE	1FT
27	29450-099	WIRE 16 GA. THHN COP BLUE	2FT

*** Not shown**

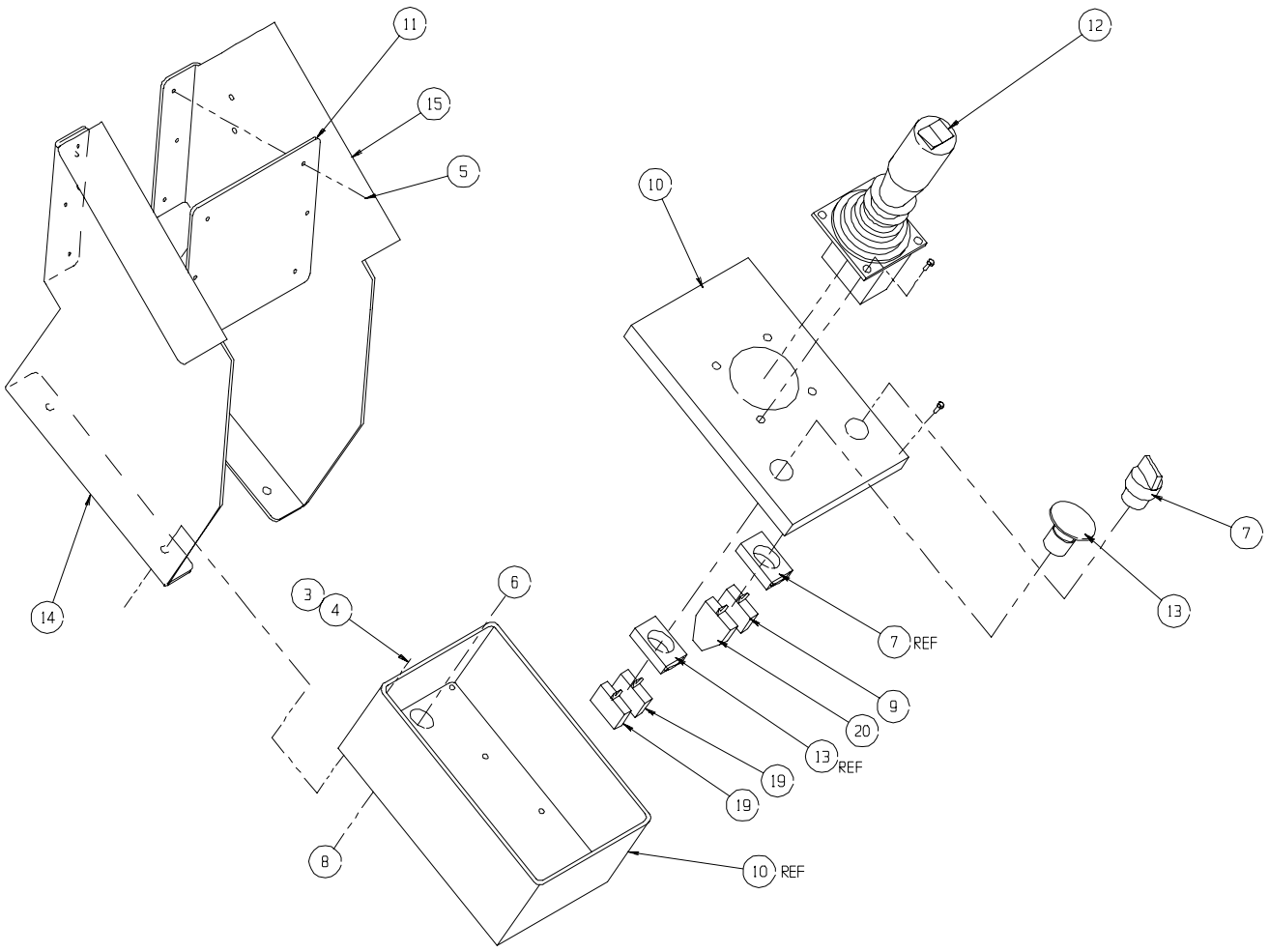


STANDARD BOX WIRING



CABLE CONNECTIONS (REF)

CONTROLLER ASSEMBLY
X20N
DRAWING 1 OF 2



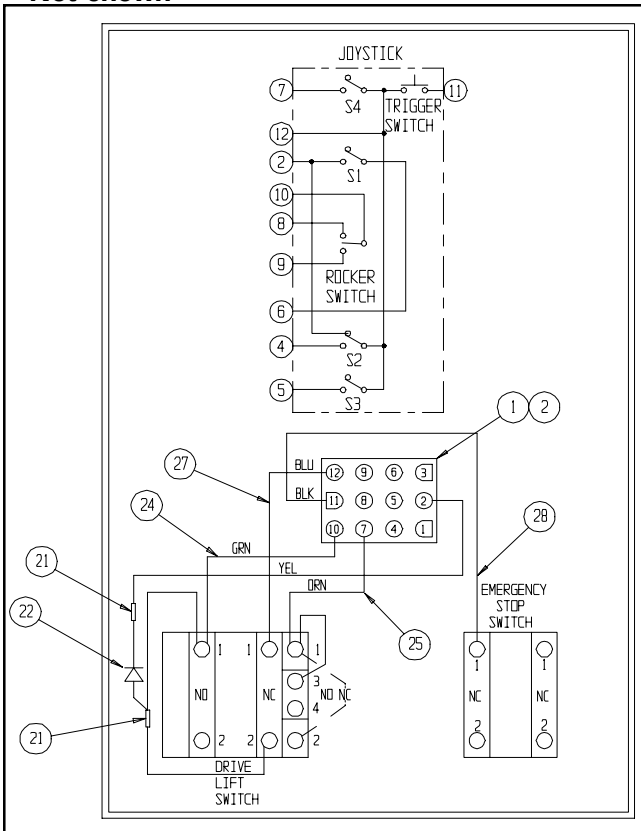
CONTROLLER ASSEMBLY
X20N
DRAWING 2 OF 2

CONTROLLER ASSEMBLY
X20W/X26N/X31N
66013-012

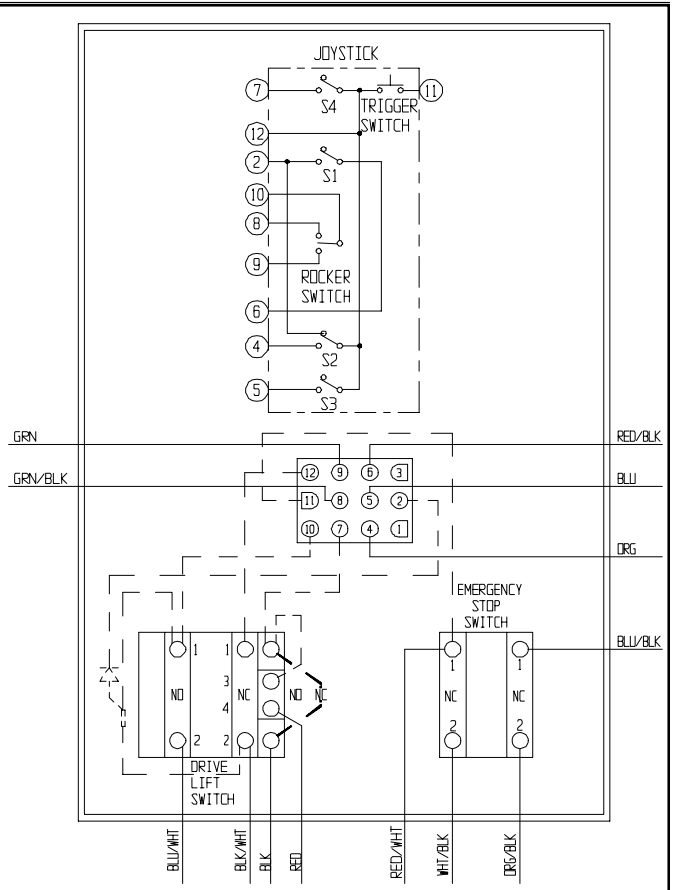
ITEM	PART	DESCRIPTION	QTY.
1	63956-003	CONN. 12 PIN	1
2	63956-010	CONN. PIN MALE	10
3	11252-004	SCREW 1/4-20 UNC HHC X 1/2	4
4	11238-004	WASHER 1/4 LOCK	4
5	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6
6	68585-000	BLOCK 5 FLANGE	1
7	66805-003	SWITCH 3 POSITION SELECTOR	1
8	29925-000	CONN. CABLE	1
9	66805-010	CONTACT BLOCK N.O.	1
10	66175-010	BOX ENCLOSURE COVER & BASE	1
11	66092-000	PANEL, CONTROLLER	1
12	66785-000	CONTROLLER	1
*	15772001	SWITCH	4
*	66544-014	SWITCH, STEERING	2
*	63913-003	BOOT, STEARTNG SWITCH	1
*	63913-004	ROCKER ASSEMBLY	1
*	66544-010	HANDLE, 2 PIECE	1
*	66544-011	LEVER, INTERLOCK	1

ITEM	PART	DESCRIPTION	QTY.
*	66544-012	SWITCH, INTERLOCK	1
*	66544-013	BOOT, JOYSTICK SHAFT	1
13	66805-006	PUSH BUTTON	1
14	66094-010	PANEL, CONTROLLER L.H.	1
15	66095-010	PANEL, CONTROLLER R.H.	1
16	29939-003	LOCKNUT 3/4 NPT	1
*	29610-002	CONN. FORK 14-16 GA #8	19
*	29615-002	CONN. PUSH 14-16 GA #8	7
19	66805-011	CONTACT BLOCK N.C.	3
20	66805-012	CONTACT BLOCK N.O./N.C.	1
21	29620-002	BUTT. CONN. 14-16 GA.	2
22	29825-002	DIODE	1
*	29454-099	WIRE 16 GA.THHN COP RED	2.5FT
24	29457-099	WIRE 16 GA. THHN COP GREEN	3.5FT
25	29453-099	WIRE 16 GA. THHN COP ORANGE	1FT
*	29451-099	WIRE 16 GA. THHN COP WHITE	1FT
27	29450-099	WIRE 16 GA. THHN COP BLUE	2FT
28	29452-099	WIRE 16 GA. THHN COP BLACK	5FT

*** Not shown**

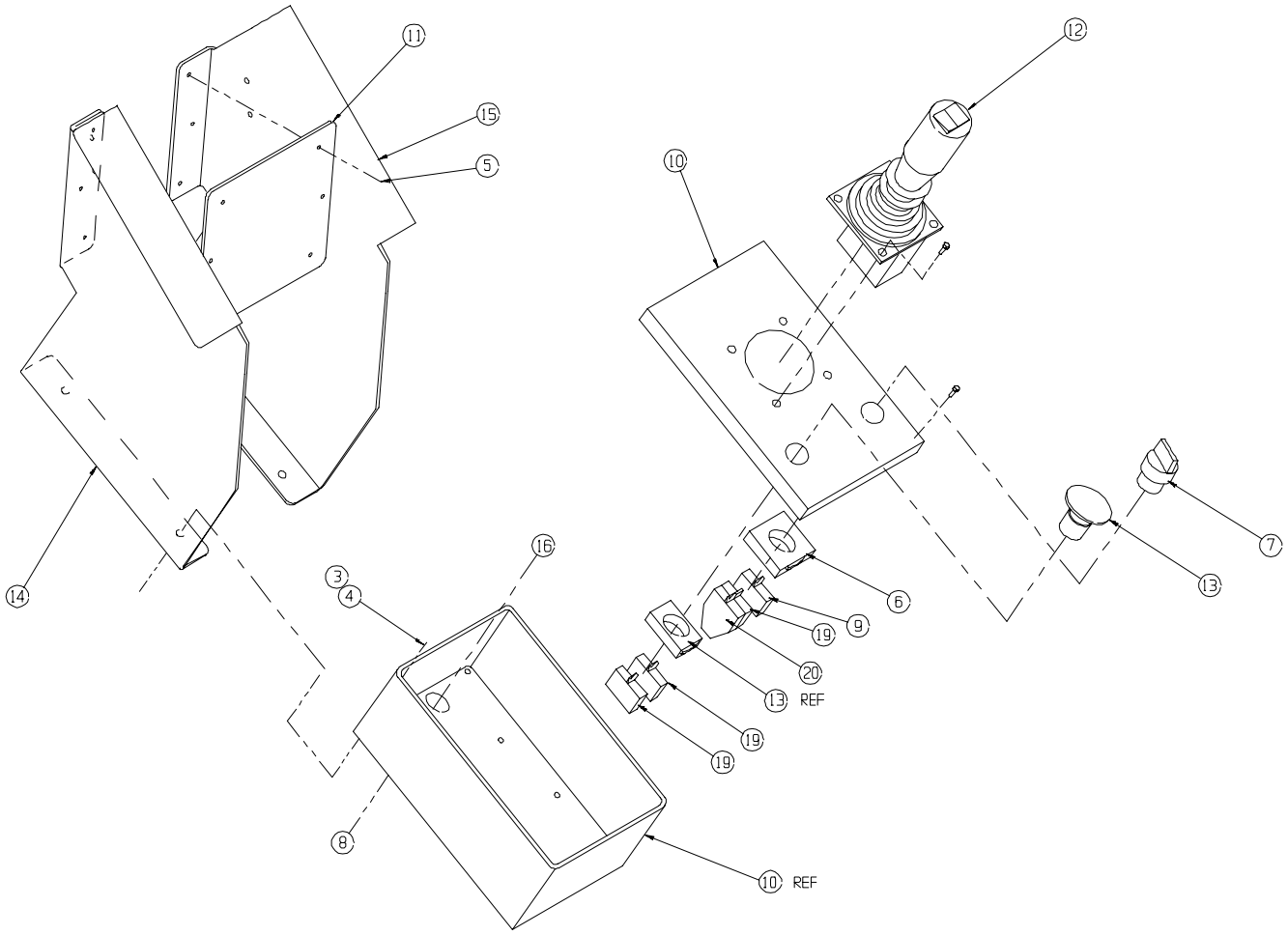


STANDARD BOX WIRING



CABLE CONNECTIONS (REF)

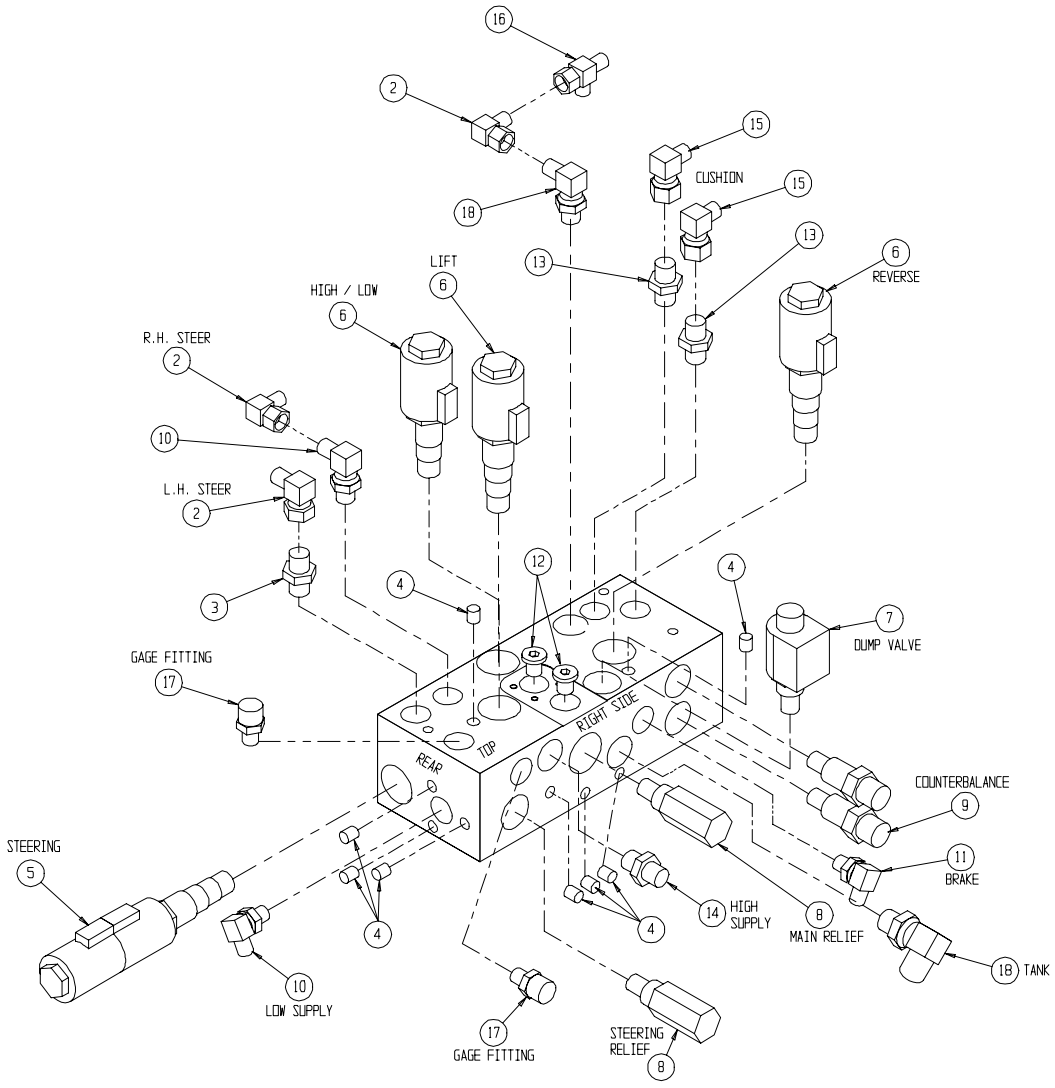
CONTROLLER ASSEMBLY
X20W/X26N/X31N
DRAWING 1 OF 2



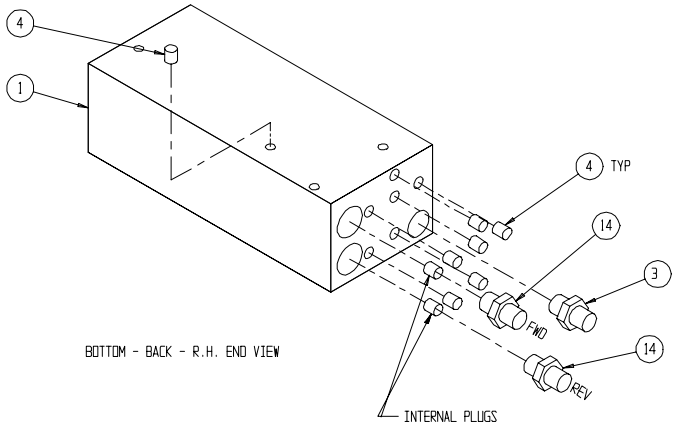
CONTROLLER ASSEMBLY
X20W/X26N/X31N
DRAWING 2 OF 2

VALVE MANIFOLD ASSEMBLY
X20N/X20W/X26N/X31N
66017-010

ITEM	PART	DESCRIPTION	QTY.
1	66099-001	VALVE BLOCK	1
2	11937-003	ADAPTER 90° 6FJX-6MJ	3
3	11941-002	ADAPTER STR 4MB-6MJ	2
4	63977-001	9MM EXPANDER PLUG	17
5	63923-007	CARTRIDGE VALVE 4 WAY 3 POS. TANDEM	1
6	63923-006	CARTRIDGE VALVE 4 WAY 2 POS REV.	3
7	63923-005	CARTRIDGE VALVE 2 WAY	1
8	12877-007	RELIEF VALVE DIRECT ACTING ADJSTBL.	2
9	15900-000	COUNTERBALANCE VALVE	2
10	19934-026	ELBOW 90° 4MB-6MJ	2
11	11934-001	ELBOW 90° 4MB-4MJ	1
12	12004-004	PLUG SAE-4	2
13	11941-001	ADAPTER STR 4MB-4MJ	2
14	11941-005	ADAPTER STR. 6MB-6MJ	2
15	11937-001	ADAPTER 90° 4FJX-4MJ	2
16	20733-002	ADAPTER TEE 6FJX-6MJ-6MJ	1
17	63965-001	TEST FITTINGS ISO	2
18	11934-004	ADAPTER 90° 6MB-6MJ	2



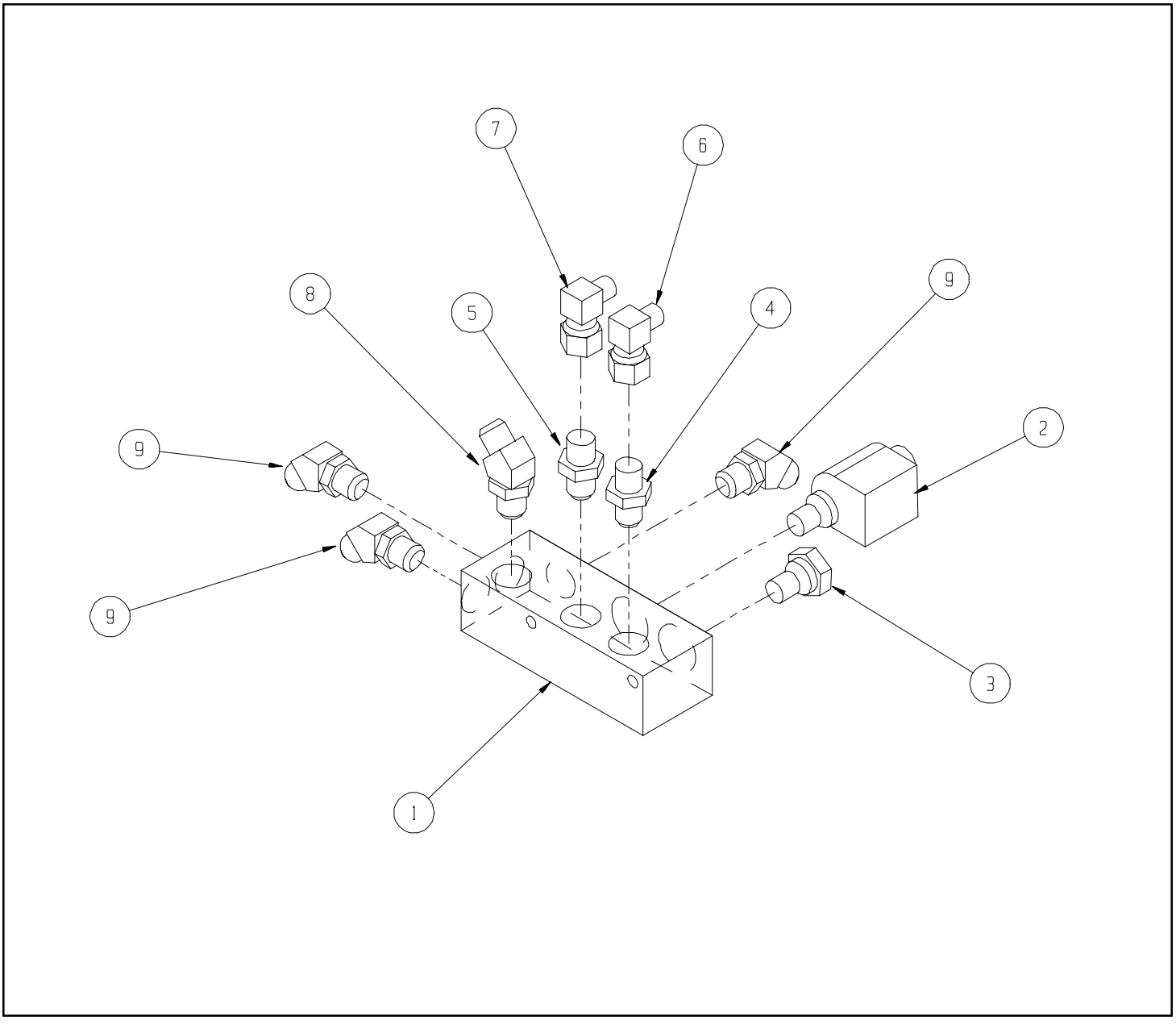
TOP - FRONT - L.H. END VIEW



BOTTOM - BACK - R.H. END VIEW

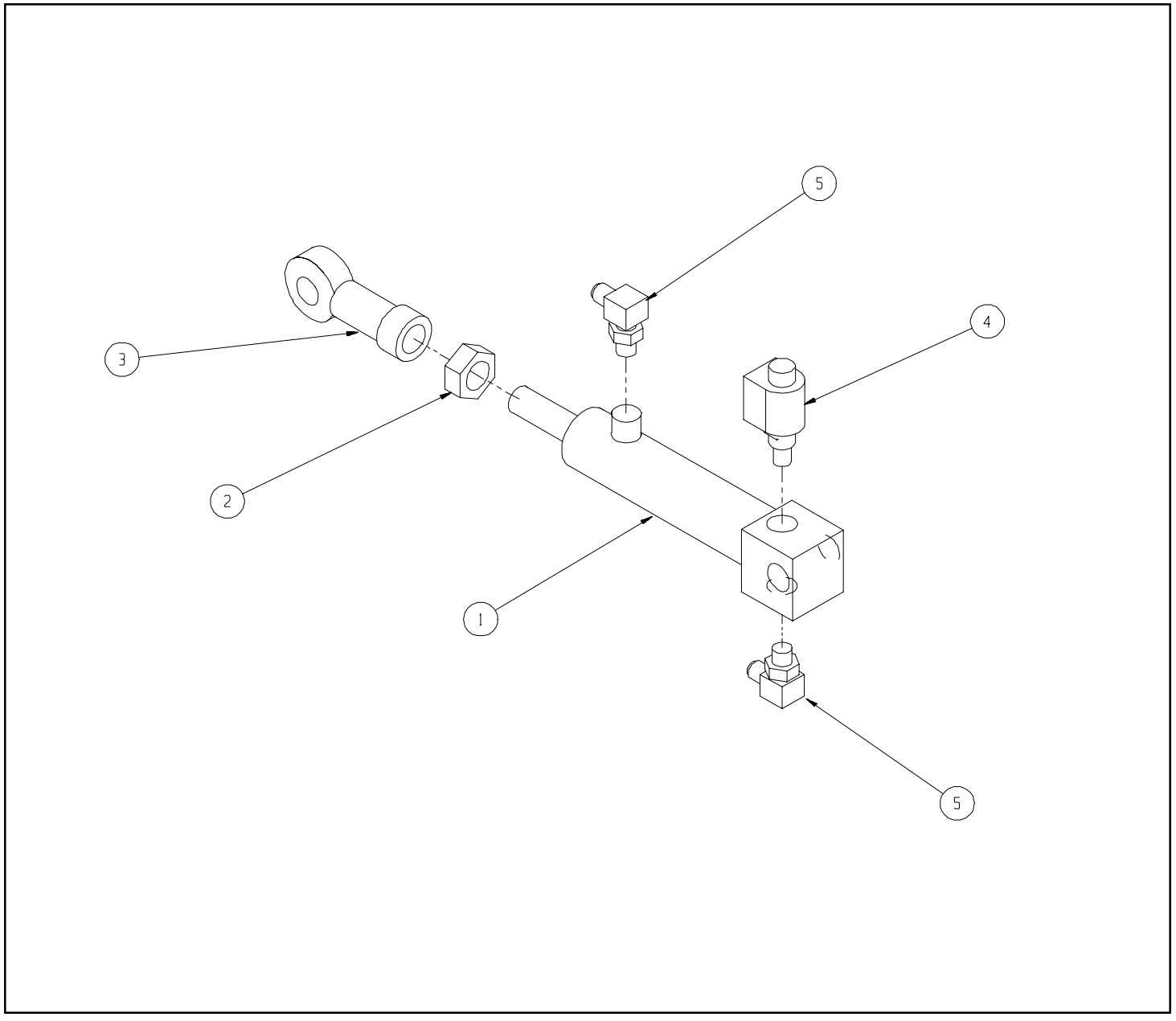
POTHOLE VALVE ASSEMBLY
X20N/X20W/X26N/X31N
66802-000

ITEM	PART	DESCRIPTION	QTY.
1	66704-001	VALVE BLOCK	1
2	63973-001	VALVE, N.C.	1
3	12822-017	VALVE, CHECK	1
4	11941-001	FITTING, STR 4MB-4MJ	1
5	11941-002	FITTING, STR 4MB-6MJ	1
6	11937-001	FITTING, 90 4FJX-4MJ	1
7	11937-003	FITTING, 90 6FJX-6MJ	1
8	11934-001	FITTING, 90 4MB-4MJ	1
9	11935-001	FITTING, 45 4MB-4MJ	3



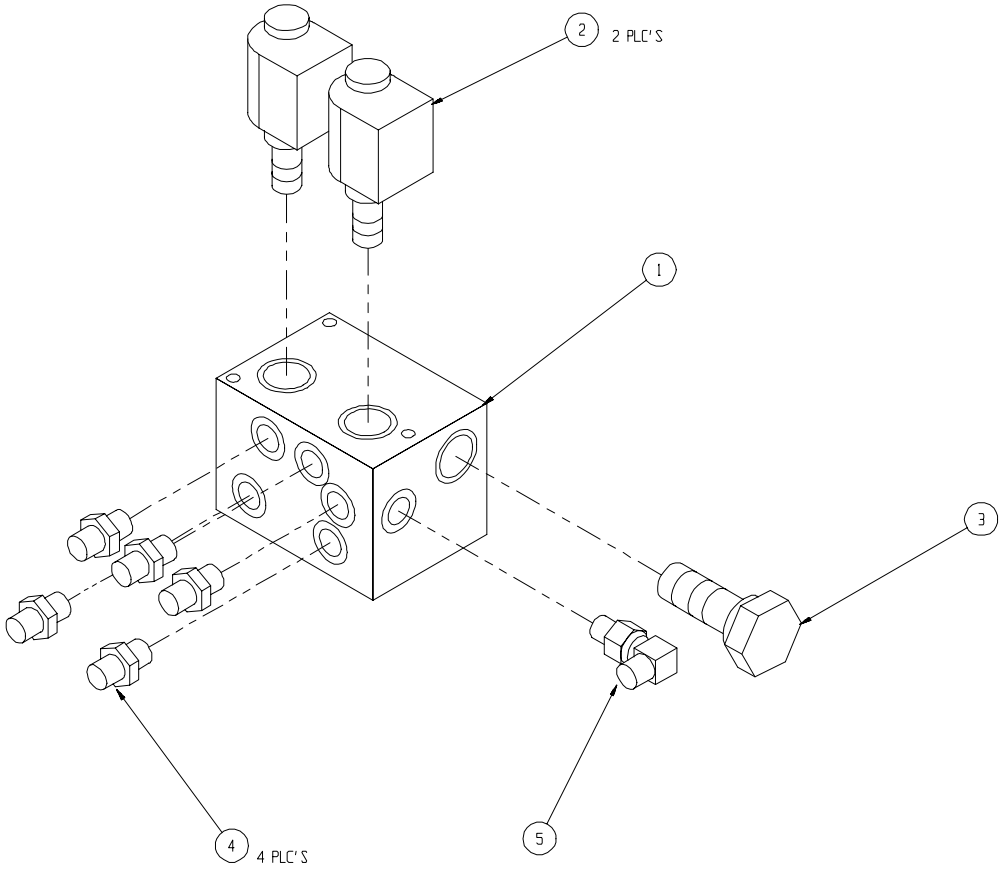
POTHOLE CYLINDER ASSEMBLY
X20N/X20W/X26N/X31N
66803-000

ITEM	PART	DESCRIPTION	QTY.
1	66700-001	CYLINDER	1
2	20495-012	NUT, JAM 3/4-16	1
3	66701-000	BEARING, ROD END	1
4	63973-001	VALVE N.C.	1
5	11934-001	FITTING 90° 4MB-4MJ	2



SER./ PAR. VALVE ASSEMBLY
X20W/X26N/X31N
66808-000

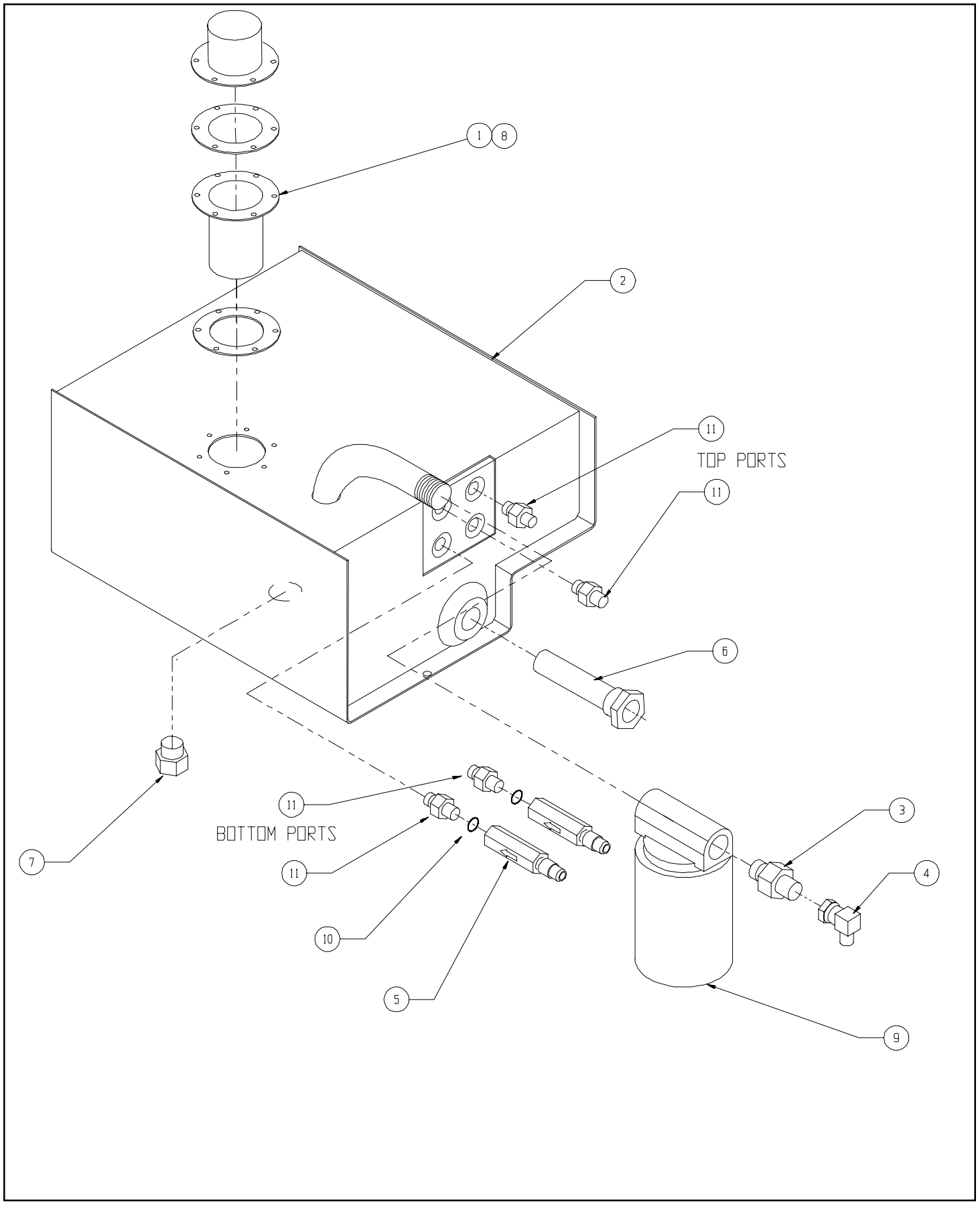
ITEM	PART	DESCRIPTION	QTY.
1	66703-001	VALVE BLOCK - SERIES PARALLEL	1
2	61797-000	VALVE, 3 WAY 2 POSITION	2
3	63924-007	VALVE, FLOW DIVIDER	1
4	11941-005	FITTING, STR 6MB-6MJ	5
5	11934-004	FITTING, 90° 6MB-6MJ	1



NOTES

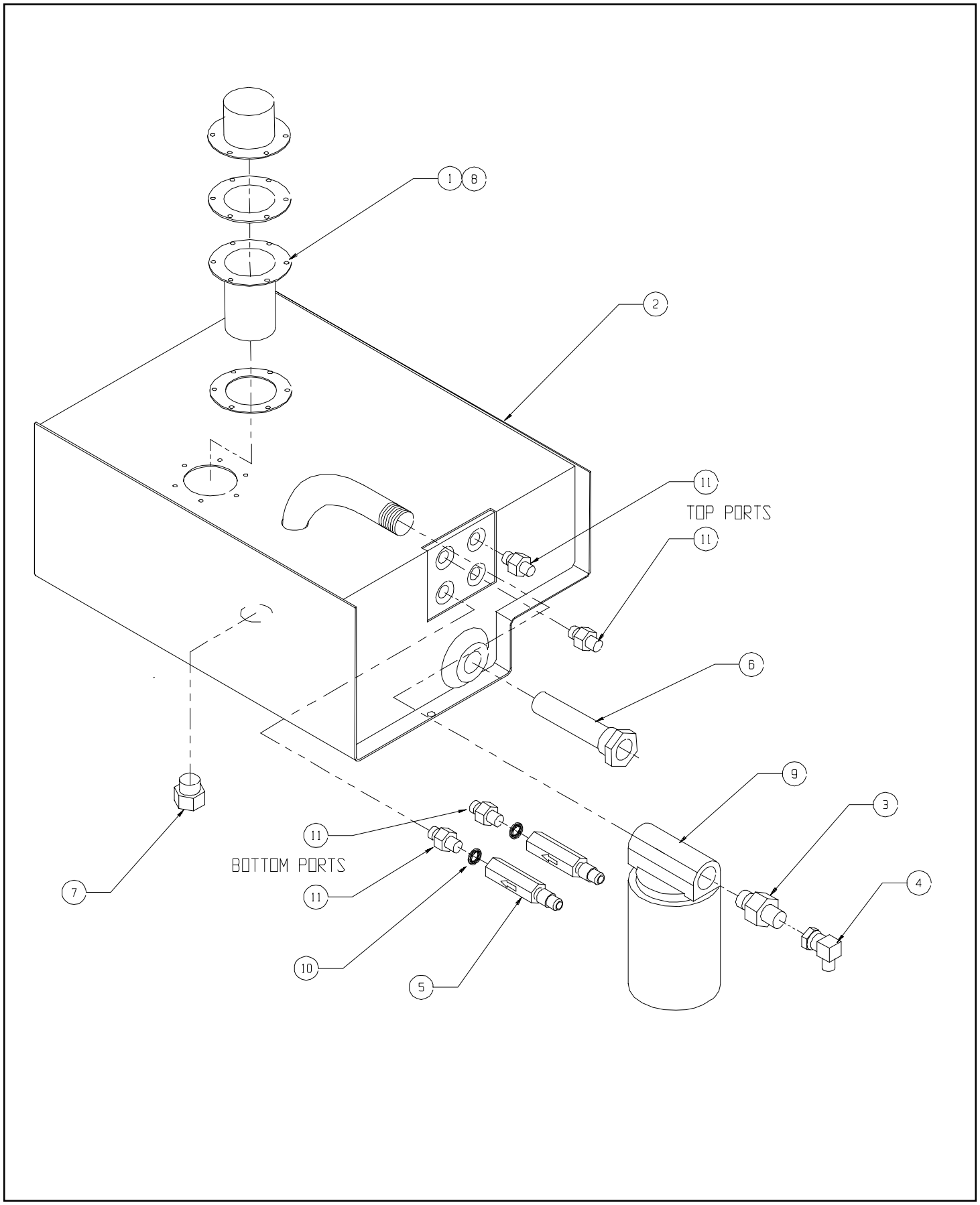
HYDRAULIC RESERVOIR ASSEMBLY
X20N/X20W/X26N
66780-000

ITEM	PART	DESCRIPTION	QTY.
1	05963-001	FILLER BREATHER	1
2	66779-000	WELDMENT RESERVOIR	1
3	11939-018	FITTING STR 12MP-6MJ	1
4	11937-003	FITTING 90° 6FJX-6MJ	1
5	66165-004	RELIEF VALVE	2
6	61818-000	FITTING SUCTION SCREEN	1
7	21305-006	FITTING PLUG MAGNETIC	1
8	11811-006	SCREW SELF TAP 10-32 X 1/2	6
9	05154-001	FILTER	1
10	11979-006	O-RING #6	2
11	11941-005	FITTING STR 6MB-6MJ	4


1
8
2
11
TOP PORTS
11
6
7
11
BOTTOM PORTS
11
10
5
3
4
9

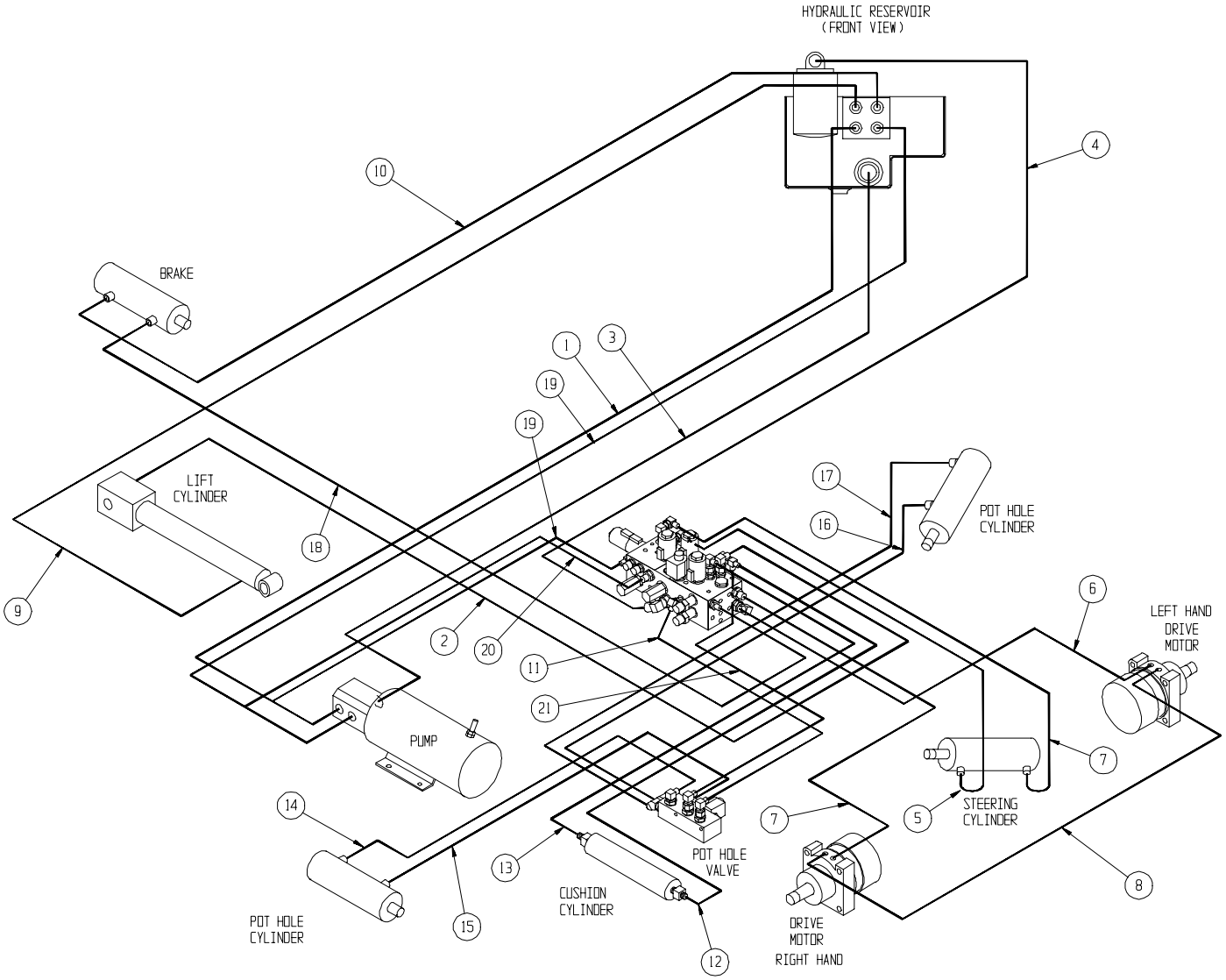
HYDRAULIC RESERVOIR ASSEMBLY
X31N
66780-010

ITEM	PART	DESCRIPTION	QTY.
1	05963-001	FILLER BREATHER	1
2	66779-001	WELDMENT RESERVOIR X32N	1
3	11939-018	FITTING STR 12MP-6MJ	1
4	11937-003	FITTING 90° 6FJX-6MJ	1
5	66165-004	RELIEF VALVE	2
6	61818-000	FITTING SUCTION SCREEN	1
7	21305-006	FITTING PLUG MAGNETIC	1
8	11811-006	SCREW SELF TAP 10-32 X 1/2	6
9	05154-001	FILTER	1
10	11979-006	O-RING #6	2
11	11941-005	FITTING STR 6MB-6MJ	4


1
8
2
11
TOP PORTS
11
6
9
3
4
11
BOTTOM PORTS
11
7
10
5

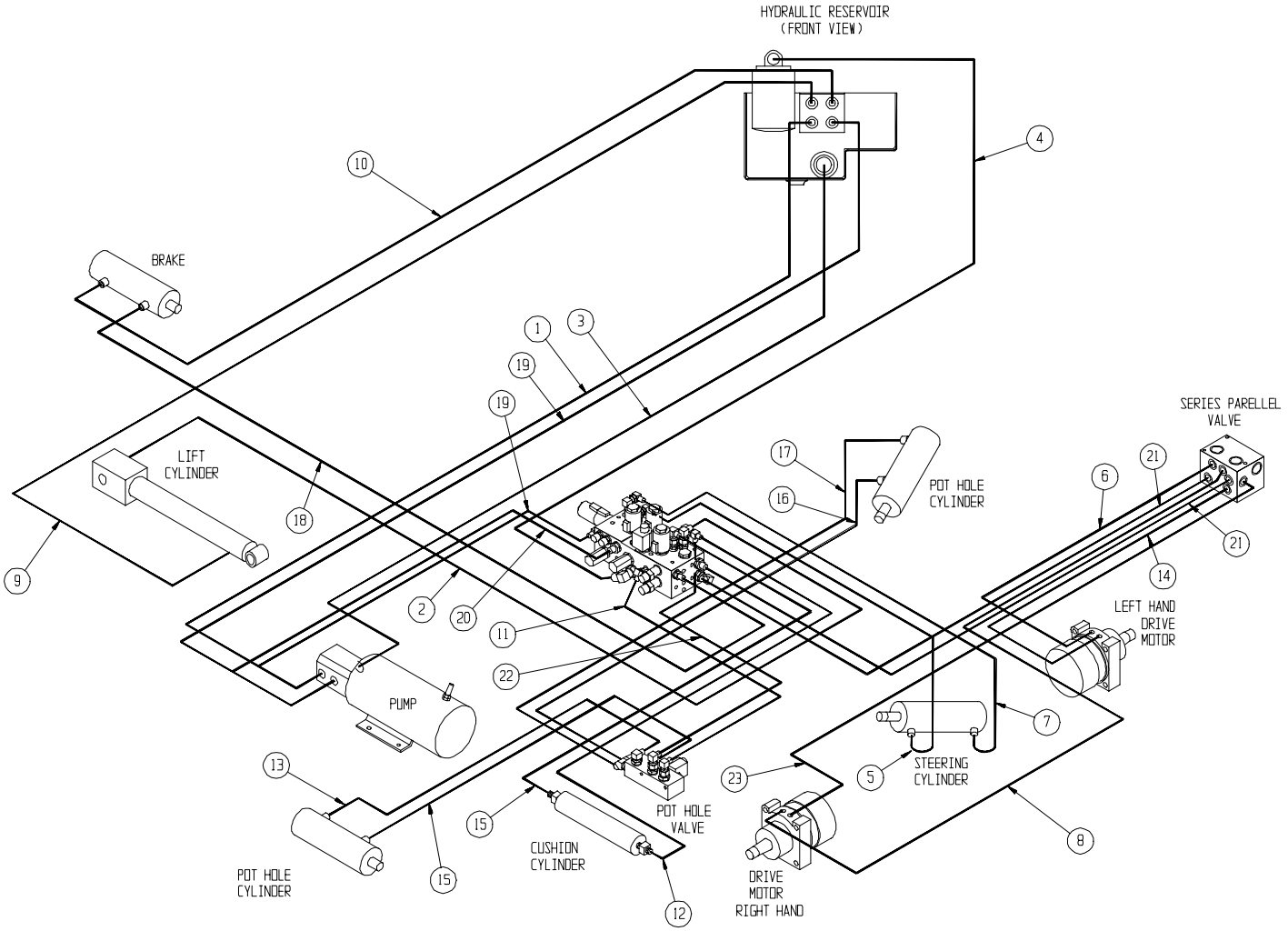
HOSE ASSEMBLY
X20N
66011-010

ITEM	PART	DESCRIPTION	QTY.
1	60861-021	HOSE ASSEMBLY X 12	1
2	60861-097	HOSE ASSEMBLY X 150	1
3	61789-011	HOSE ASSEMBLY X 11	1
4	60861-018	HOSE ASSEMBLY X 18	1
5	60861-011	HOSE ASSEMBLY X 46	1
6	60861-082	HOSE ASSEMBLY X 56	1
7	60861-047	HOSE ASSEMBLY X 54 1/2	2
8	60861-005	HOSE ASSEMBLY X 45	1
9	60861-012	HOSE ASSEMBLY X 191	1
10	60861-046	HOSE ASSEMBLY X 114	1
11	23259-028	HOSE ASSEMBLY X 16	1
12	23259-013	HOSE ASSEMBLY X 17 1/2	1
13	23259-008	HOSE ASSEMBLY X 33	1
14	66804-004	HOSE ASSEMBLY X 45	1
15	66804-005	HOSE ASSEMBLY X 53	1
16	66804-010	HOSE ASSEMBLY X 105	1
17	66804-011	HOSE ASSEMBLY X 111	1
18	60861-069	HOSE ASSEMBLY X 87	1
19	60861-022	HOSE ASSEMBLY X 14	2
20	60861-105	HOSE ASSEMBLY X 11	1
21	60861-019	HOSE ASSEMBLY X 22	1


HYDRAULIC RESERVOIR
(FRONT VIEW)
BRAKE
LIFT CYLINDER
PUMP
POT HOLE CYLINDER
POT HOLE VALVE
CUSHION CYLINDER
POT HOLE CYLINDER
DRIVE MOTOR RIGHT HAND
LEFT HAND DRIVE MOTOR
STEERING CYLINDER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

HOSE ASSEMBLY
X20W/X26N
66061-010

ITEM	PART	DESCRIPTION	QTY.
1	60861-051	HOSE ASSEMBLY X 13	1
2	60861-097	HOSE ASSEMBLY X 150	1
3	61789-011	HOSE ASSEMBLY X 11	1
4	60861-018	HOSE ASSEMBLY X 18	2
5	60861-070	HOSE ASSEMBLY X 62	1
6	60861-076	HOSE ASSEMBLY X 80 1/2	1
7	60861-074	HOSE ASSEMBLY X 58 1/2	1
8	60861-035	HOSE ASSEMBLY X 82	2
9	60861-092	HOSE ASSEMBLY X 201	1
10	60861-101	HOSE ASSEMBLY X 127	1
11	23259-028	HOSE ASSEMBLY X 16	1
12	23259-013	HOSE ASSEMBLY X 17 1/2	1
13	66804-004	HOSE ASSEMBLY X 45	1
14	60861-040	HOSE ASSEMBLY X 11 1/2	1
15	66804-003	HOSE ASSEMBLY X 33	2
16	66804-012	HOSE ASSEMBLY X 120	1
17	66804-013	HOSE ASSEMBLY X 122	1
18	60861-106	HOSE ASSEMBLY X 106	1
19	60861-022	HOSE ASSEMBLY X 14	2
20	23255-033	HOSE ASSEMBLY X 13	1
21	60861-099	HOSE ASSEMBLY X 48	2
22	60861-019	HOSE ASSEMBLY X 22	1
23	60861-100	HOSE ASSEMBLY X 84	1


HYDRAULIC RESERVOIR
(FRONT VIEW)
BRAKE
LIFT CYLINDER
PUMP
POT HOLE CYLINDER
SERIES PARELLEL VALVE
LEFT HAND DRIVE MOTOR
STEERING CYLINDER
POT HOLE VALVE
CUSHION CYLINDER
DRIVE MOTOR RIGHT HAND
POT HOLE CYLINDER
1
2
3
4
5
6
7
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9
10
11
12
13
14
15
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19
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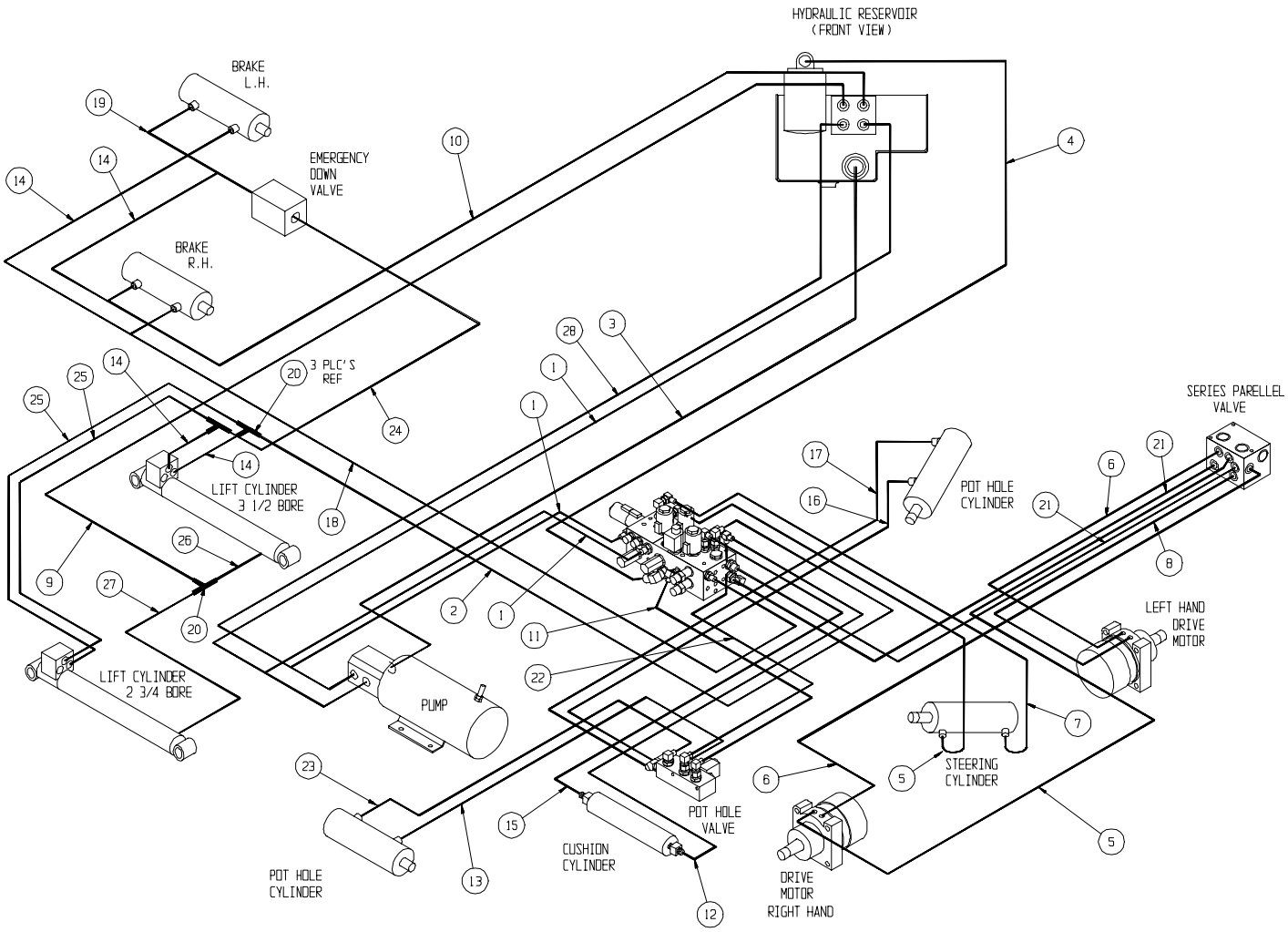
21
22
23

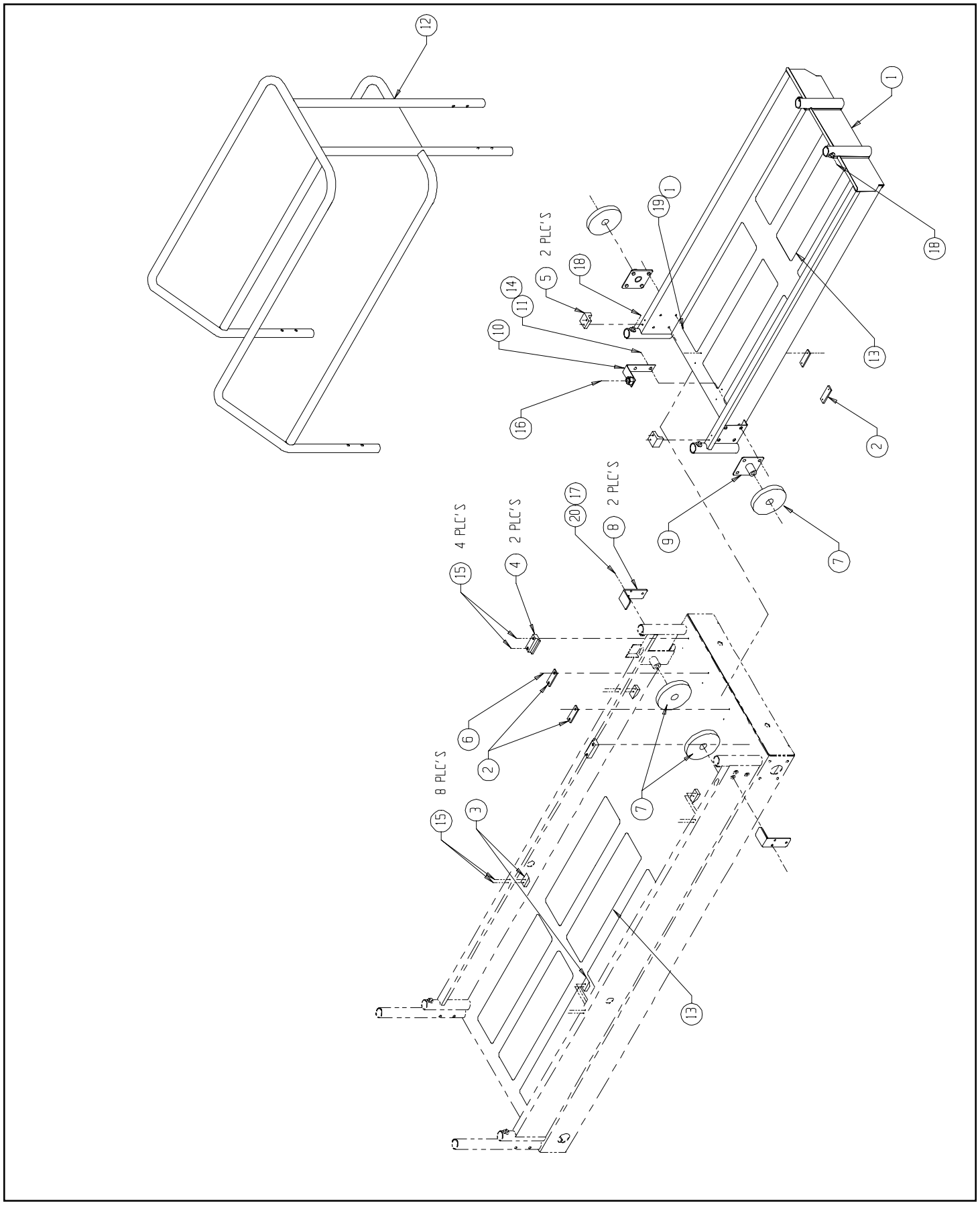
HOSE ASSEMBLY
X31N
66861-000

ITEM	PART	DESCRIPTION	QTY.
1	60861-051	HOSE ASSEMBLY X 13	3
2	60861-108	HOSE ASSEMBLY X 129	1
3	61789-008	HOSE ASSEMBLY X 8 3/4	1
4	60861-018	HOSE ASSEMBLY X 18	2
5	60861-070	HOSE ASSEMBLY X 62	2
6	60861-056	HOSE ASSEMBLY X 64	2
7	60861-074	HOSE ASSEMBLY X 58 1/2	1
8	60861-066	HOSE ASSEMBLY X 66	1
9	62192-037	HOSE ASSEMBLY X 172	1
10	60861-101	HOSE ASSEMBLY X 127	1
11	60460-016	HOSE ASSEMBLY X 16	1
12	60460-017	HOSE ASSEMBLY X 18	1
13	66804-004	HOSE ASSEMBLY X 45	1
14	60861-109	HOSE ASSEMBLY X 32	4
15	60460-018	HOSE ASSEMBLY X 33	1
16	66804-015	HOSE ASSEMBLY X 123	1
17	66804-014	HOSE ASSEMBLY X 138	1
18	60861-106	HOSE ASSEMBLY X 106	1
19	60861-022	HOSE ASSEMBLY X 14	1
20	20032-003	TEE 6MJ-6MJ-6MJ	REF
21	60861-082	HOSE ASSEMBLY X 56	2
22	60861-019	HOSE ASSEMBLY X 22	1
23	66804-005	HOSE ASSEMBLY X 57 1/2	1
24	60861-097	HOSE ASSEMBLY X 150	1
25	60861-107	HOSE ASSEMBLY X 206	2
26	62192-029	HOSE ASSEMBLY X 71	1
27	62192-038	HOSE ASSEMBLY X 243	1
28	60861-104	HOSE ASSEMBLY X 9 1/2	1


HYDRAULIC RESERVOIR
(FRONT VIEW)
BRAKE
L.H.
BRAKE
R.H.
EMERGENCY
DOWN
VALVE
3 PLC'S
REF
LIFT CYLINDER
3 1/2 BORE
LIFT CYLINDER
2 3/4 BORE
PUMP
POT HOLE
CYLINDER
SERIES PARELLEL
VALVE
POT HOLE
CYLINDER
LEFT HAND
DRIVE
MOTOR
STEERING
CYLINDER
POT HOLE
VALVE
CUSHION
CYLINDER
POT HOLE
CYLINDER
DRIVE
MOTOR
RIGHT HAND

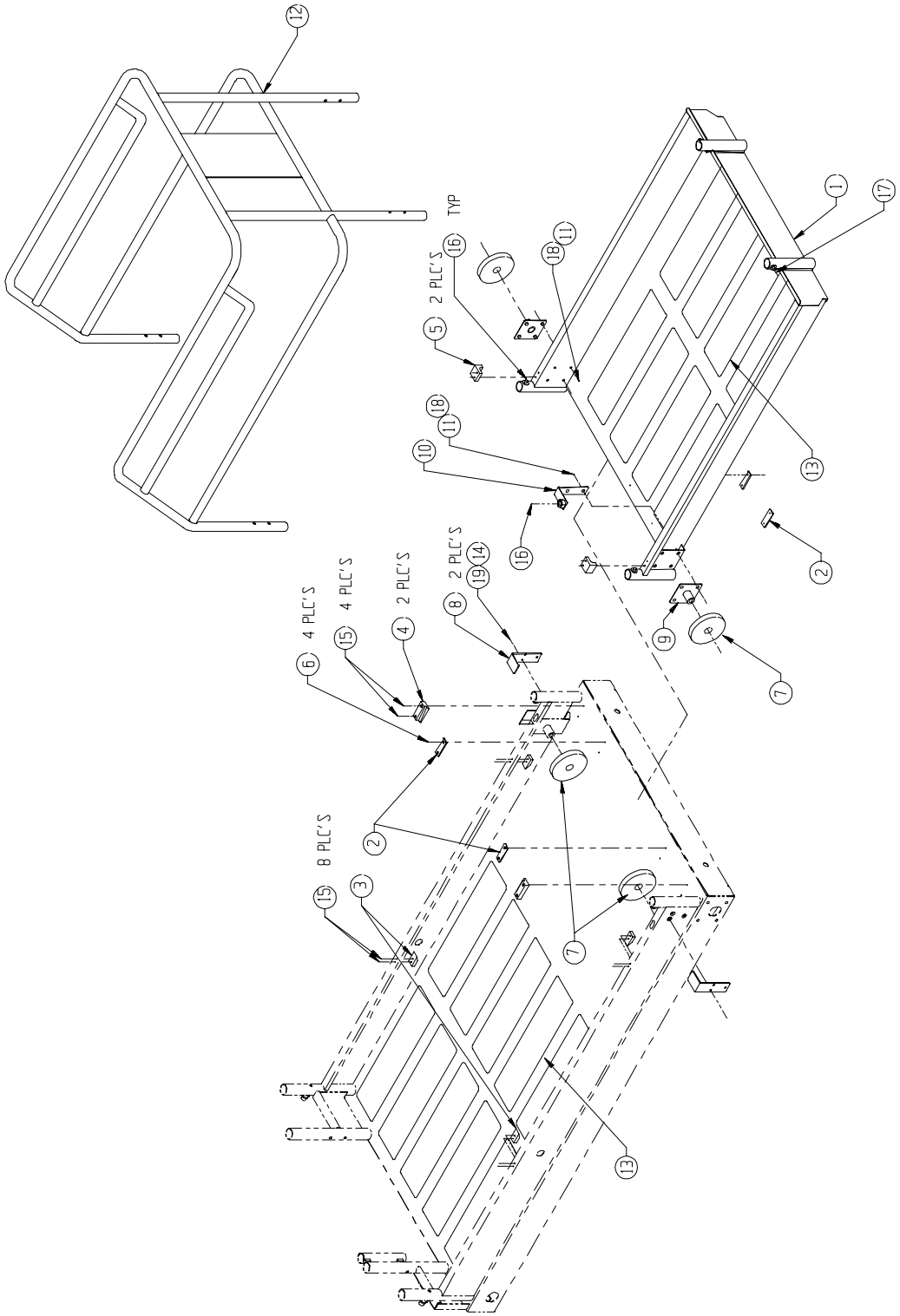
DECK EXTENSION ASSEMBLY
X20N
66006-010

ITEM	PART	DESCRIPTION	QTY.
1	66251-010	WELDMENT DECK EXT.	1
2	66198-000	WEAR PAD	4
3	66193-000	STOP	4
4	66176-000	WEAR PAD	2
5	66170-000	WEAR PAD	2
6	26553-002	RIVET 3/16 DIA X .126-.250 GRIP	8
7	66195-000	PLATFORM ROLLER	4
8	66407-010	BRACKET	2
9	66256-000	WELDMENT ROLLER MOUNT	2
10	66410-000	WELDMENT DECK STOP	1
11	11238-006	WASHER 3/8 LOCK	8
12	66260-000	WELDMENT EXT. RAIL	1
13	27966-005	SAFETY WALK 6 X 24	12
14	11254-016	SCREW HHC 3/8-16 X 2	2
15	26553-008	RIVET 3/16 DIA X 1/2 GRIP	16
16	03570-000	RETAINING PIN ASSY	1
17	11240-004	WASHER 1/4 FLAT	6
18	66171-003	SCREW HHC 3/8-16 X 2 1/2	4
19	11254-014	SCREW HHC 3/8-16 X 1 3/4	6
20	11252-006	SCREW HHC 1/4-20 X 3/4	6


12
1
19
1
18
2 PLC'S
5
18
14
11
10
16
13
2
20
17
2 PLC'S
8
9
7
4 PLC'S
15
2 PLC'S
4
6
2
8 PLC'S
15
3
7
13

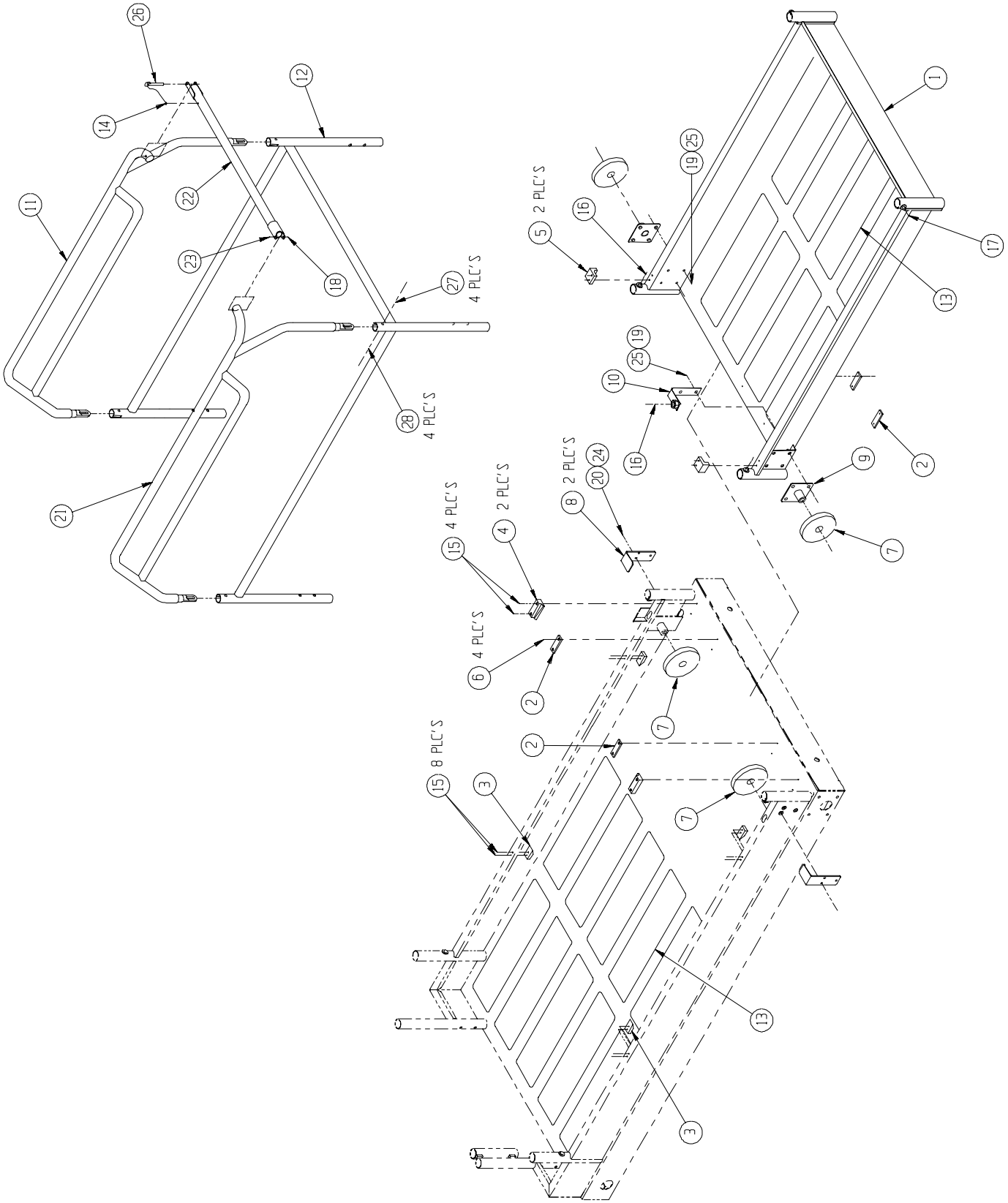
DECK EXTENSION ASSEMBLY
X20W/X26N
66056-010

ITEM	PART	DESCRIPTION	QTY.
1	66294-001	WELDMENT DECK EXT.	1
2	66198-001	WEAR PAD	4
3	66193-000	STOP	4
4	66176-001	WEAR PAD	2
5	66170-001	WEAR PAD	2
6	26553-010	RIVET 3/16 DIA X 5/8 GRIP	4
7	66195-000	PLATFORM ROLLER	4
8	66407-011	BRACKET	2
9	66256-000	WELDMENT ROLLER MOUNT	2
10	66410-000	WELDMENT DECK STOP	1
11	11238-006	WASHER 3/8 LOCK	8
12	66130-000	WELDMENT EXT. RAIL	1
13	27966-005	SAFETY WALK 6 X 24	18
14	11240-004	WASHER 1/4 FLAT	6
15	26553-008	RIVET 3/16 DIA X 1/2 GRIP	12
16	03570-000	RETAINING PIN ASSY	5
17	11254-008	SCREW HHC 3/8-16 X 1	4
18	11254-012	SCREW HHC 3/8-16 X 1 1/2	8
19	11252-006	SCREW HHC 1/4-20 X 3/4	6


12
1
17
16 TYP
2 PLC'S
18
11
5
18
11
10
13
16
2
14
2 PLC'S
19
8
9
4
7
4 PLC'S
15
2 PLC'S
4
6
2
8 PLC'S
15
3
7
13

DECK EXTENSION ASSEMBLY
X31N
66856-000

ITEM	PART	DESCRIPTION	QTY.
1	66294-002	WELDMENT DECK EXT.	1
2	66198-001	WEAR PAD	4
3	66193-000	STOP	4
4	66176-001	WEAR PAD	2
5	66170-001	WEAR PAD	2
6	26553-010	RIVET 3/16 DIA X 5/8 GRIP	4
7	66195-000	PLATFORM ROLLER	4
8	66407-011	BRACKET	2
9	66256-000	WELDMENT ROLLER MOUNT	2
10	66410-000	WELDMENT DECK STOP	1
11	65804-002	WELDMENT, SIDE EXT L.H.	1
12	65802-002	WELDMENT EXT. RAIL	1
13	27966-005	SAFETY WALK 6 X 24	18
14	26553-004	RIVET 3/16 DIA X 3/8 GRIP	1
15	26553-008	RIVET 3/16 DIA X 1/2 GRIP	12
16	03570-000	RETAINING PIN ASSY	5
17	11254-008	SCREW HHC 3/8-16 X 1	4
18	11254-018	SCREW HHC 3/8-16 X 2 1/4	2
19	11254-012	SCREW HHC 3/8-16 X 1 1/2	8
20	11252-006	SCREW HHC 1/4-20 X 3/4	6
21	65803-002	WELDMENT, SIDE EXT R.H.	1
22	65805-002	WELDMENT, SWING RAIL	1
23	11248-006	NUT 3/8-16 ESNA	2
24	11240-004	WASHER 1/4 FLAT	6
25	11238-006	WASHER 3/8 LOCK	8
26	10414-003	LOCKING PIN ASS'Y	1
27	11253-014	SCREW HHC 5/16-18 X 1 3/4	2
28	11248-005	NUT 5/16-18 ESNA	4


26
12
14
22
11
23
18
27
4 PLC'S
28
4 PLC'S
21
1
25
19
5
2 PLC'S
16
17
13
25
19
10
16
24
20
8
2 PLC'S
9
2
7
15
4 PLC'S
4
2 PLC'S
6
4 PLC'S
2
7
2
15
8 PLC'S
3
7
13
3

GUARDRAIL ASSEMBLY X20N W/ DECK EXTENSION

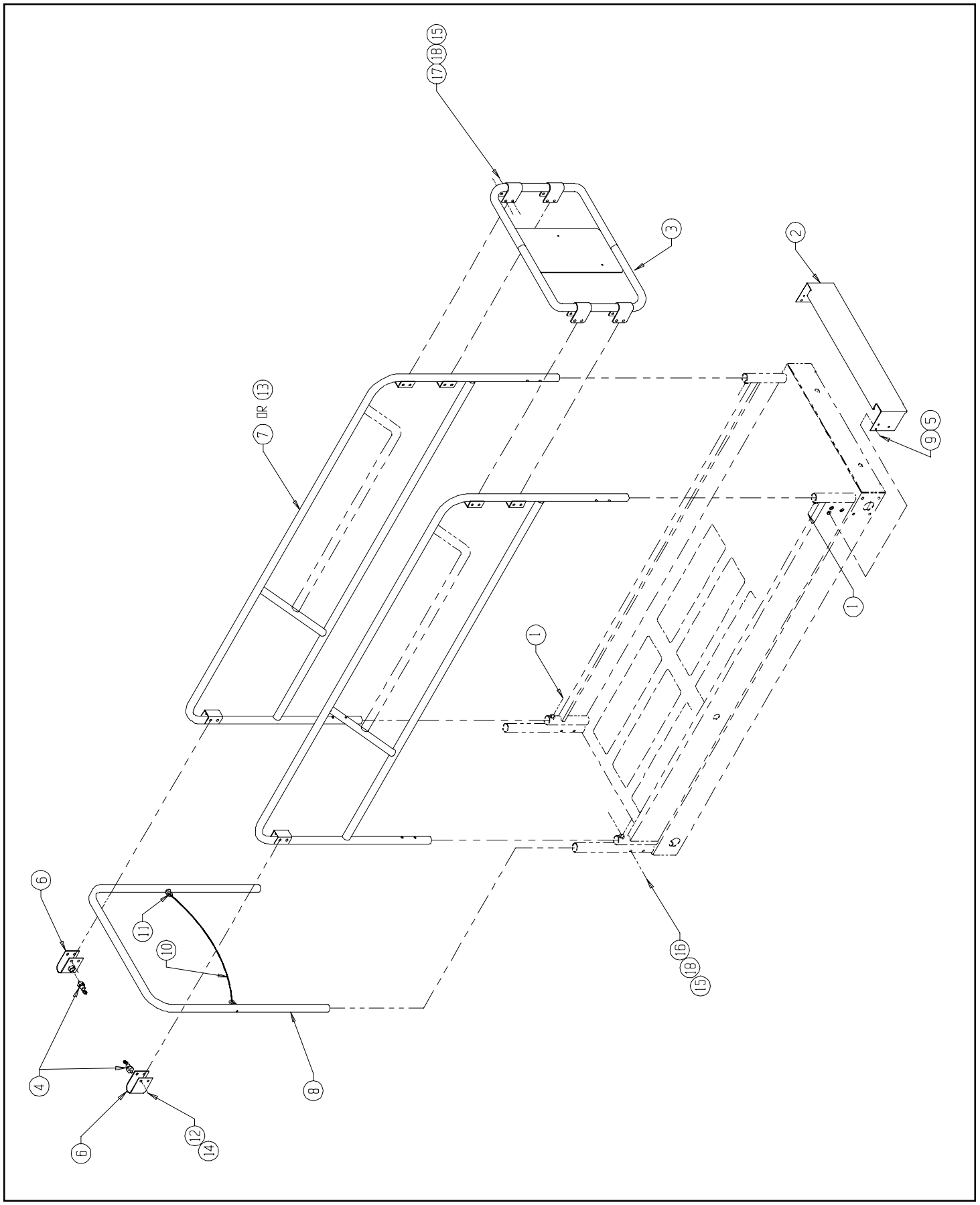
66005-010

ITEM	PART	DESCRIPTION	QTY.
1	66171-003	CAP SCREW 3/8-16 X 2 1/2 (FULL THREAD)	4
2	66518-010	KICKRAIL	A/R
3	66525-000	FRONT GUARDRAIL WELDMENT	A/R
4	03570-000	RETAINING PIN ASSY	2
5	11248-004	WASHER 1/4 FLAT	A/R
6	66498-000	WELDMENT, GATE LATCH	2
7	66257-000	WELDMENT SIDE RAIL	2
8	66261-000	WELDMENT, END RAIL	1
9	11252-006	SCREW HHC 1/4-20 X 3/4	A/R
10	63133-000	CHAIN ASS'Y	1
11	15748-002	REPAIR LAPLINK	1
12	11248-005	NUT 5/16-18	4
13	66257-013	WELDMENT SIDE RAIL	A/R
14	11253-016	SCREW 5/16-18 HHC X 2	4
15	11248-006	NUT 3/8-16 HEX	6
16	11254-020	SCREW 3/8-16 HHC X 2 1/2	2
17	11254-008	SCREW 3/8-16 HHC X 1	A/R
18	11240-006	WASHER 3/8 FLAT	6

GUARDRAIL ASSEMBLY X20N W/O DECK EXTENSION

66005-014

ITEM	PART	DESCRIPTION	QTY.
1	66171-003	CAP SCREW 3/8-16 X 2 1/2 (FULL THREAD)	4
2	66518-010	KICKRAIL	1
3	66525-000	FRONT GUARDRAIL WELDMENT	1
4	03570-000	RETAINING PIN ASSY	2
5	11248-004	WASHER 1/4 FLAT	6
6	66498-000	WELDMENT, GATE LATCH	2
7	66257-000	WELDMENT SIDE RAIL	A/R
8	66261-000	WELDMENT, END RAIL	1
9	11252-006	SCREW HHC 1/4-20 X 3/4	6
10	63133-000	CHAIN ASS'Y	1
11	15748-002	REPAIR LAPLINK	1
12	11248-005	NUT 5/16-18	4
13	66257-013	WELDMENT SIDE RAIL	2
14	11253-016	SCREW 5/16-18 HHC X 2	4
15	11248-006	NUT 3/8-16 HEX	14
16	11254-020	SCREW 3/8-16 HHC X 2 1/2	2
17	11254-008	SCREW 3/8-16 HHC X 1	12
18	11240-006	WASHER 3/8 FLAT	14


17
18
15
3
2
7
OR
13
9
5
1
1
6
11
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16
18
15
4
8
6
12
14

GUARDRAIL ASSEMBLY X20W/X26N W/ DECK EXTENSION

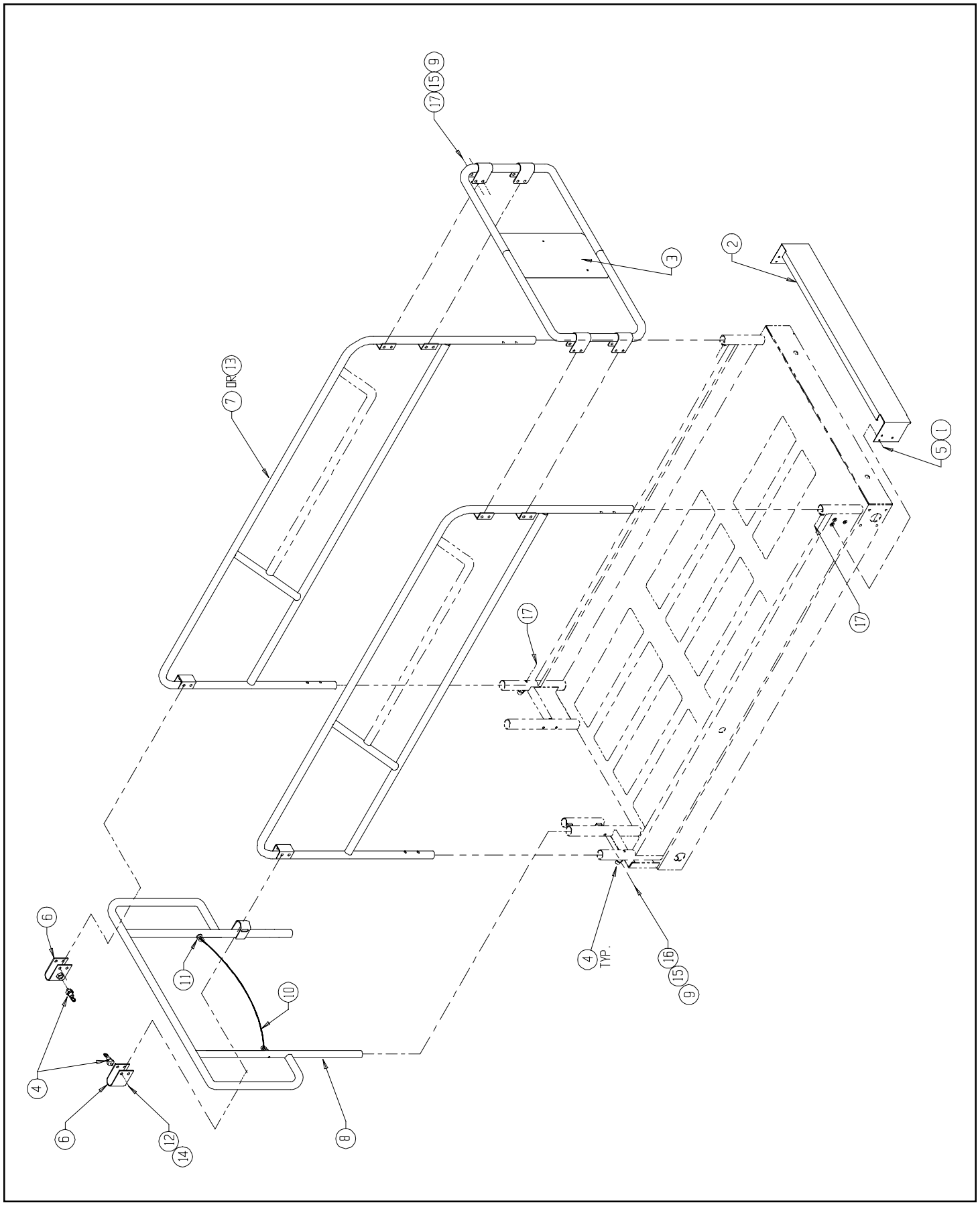
66055-010

ITEM	PART	DESCRIPTION	QTY.
1	11248-004	WASHER 1/4 FLAT	A/R
2	66518-011	KICKRAIL	A/R
3	66525-001	FRONT GUARDRAIL WELDMENT	A/R
4	03570-000	RETAINING PIN ASSY	6
5	11252-006	SCREW HHC 1/4-20 X 3/4	A/R
6	66498-000	WELDMENT, GATE LATCH	2
7	66126-000	WELDMENT SIDE RAIL	2
8	66125-000	WELDMENT, END RAIL	1
9	11248-006	NUT 3/8-16 HEX	6
10	63133-000	CHAIN ASS'Y	1
11	15748-002	REPAIR LAPLINK	1
12	11248-005	NUT 5/16-18	4
13	66126-001	WELDMENT SIDE RAIL	A/R
14	11253-016	SCREW 5/16-18 HHC X 2	4
15	11240-006	WASHER 3/8 FLAT	6
16	11254-020	SCREW 3/8-16 HHC X 2 1/2	2
17	11254-008	SCREW 3/8-16 HHC X 1	4

GUARDRAIL ASSEMBLY X20W/X26N W/O DECK EXTENSION

66055-014

ITEM	PART	DESCRIPTION	QTY.
1	11248-004	WASHER 1/4 FLAT	6
2	66518-011	KICKRAIL	1
3	66525-001	FRONT GUARDRAIL WELDMENT	1
4	03570-000	RETAINING PIN ASSY	6
5	11252-006	SCREW HHC 1/4-20 X 3/4	6
6	66498-000	WELDMENT, GATE LATCH	2
7	66126-000	WELDMENT SIDE RAIL	A/R
8	66125-000	WELDMENT, END RAIL	1
9	11248-006	NUT 3/8-16 HEX	14
10	63133-000	CHAIN ASS'Y	1
11	15748-002	REPAIR LAPLINK	1
12	11248-005	NUT 5/16-18	4
13	66126-001	WELDMENT SIDE RAIL	2
14	11253-016	SCREW 5/16-18 HHC X 2	4
15	11240-006	WASHER 3/8 FLAT	14
16	11254-020	SCREW 3/8-16 HHC X 2 1/2	2
17	11254-008	SCREW 3/8-16 HHC X 1	12


9
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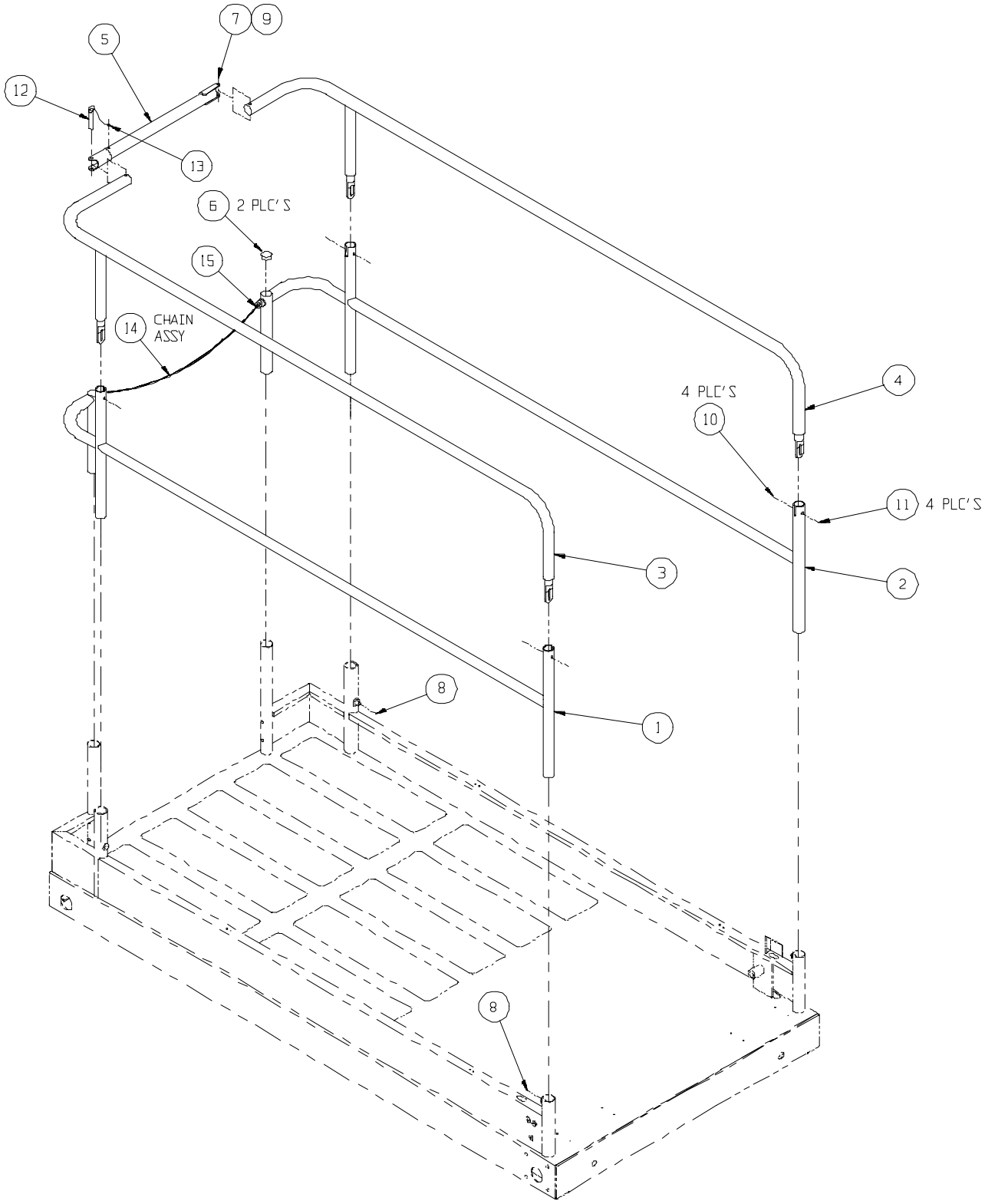
GUARDRAIL ASSEMBLY
X31N
66855-000

ITEM	PART	DESCRIPTION	QTY.
1	65814-003	WELDMENT, LOWER GUARDRAIL R.H.	1
2	65814-002	WELDMENT, LOWER GUARDRAIL L.H.	1
3	65815-002	WELDMENT, UPPER GUARDRAIL R.H.	1
4	65816-002	WELDMENT, UPPER GUARDRAIL L.H.	1
5	65805-003	WELDMENT, TOP SWING ARM	1
6	66516-001	PLUG 1 3/16 DIA	2
7	11248-006	NUT HEX ESNA 3/8-16UNC	1
8	66171-003	SCRW HHC 3/8-16UNC X 2 1/2 FULL THRDS	4
9	11254-018	SCREW HHC 3/8-16UNC X 2 1/4	1
10	11248-005	NUT HEX ESNA 5/16-18UNC	4
11	11253-014	SCREW HHC 5/16-18UNC X 1 3/4	4
12	10414-003	LOCKING PIN ASSY 10 LG	1
13	26553-004	RIVET 3/16 DIA	1
14	63133-000	ASSEMBLY CHAIN GATE	1
15	15748-002	REPAIR LINK	1


7
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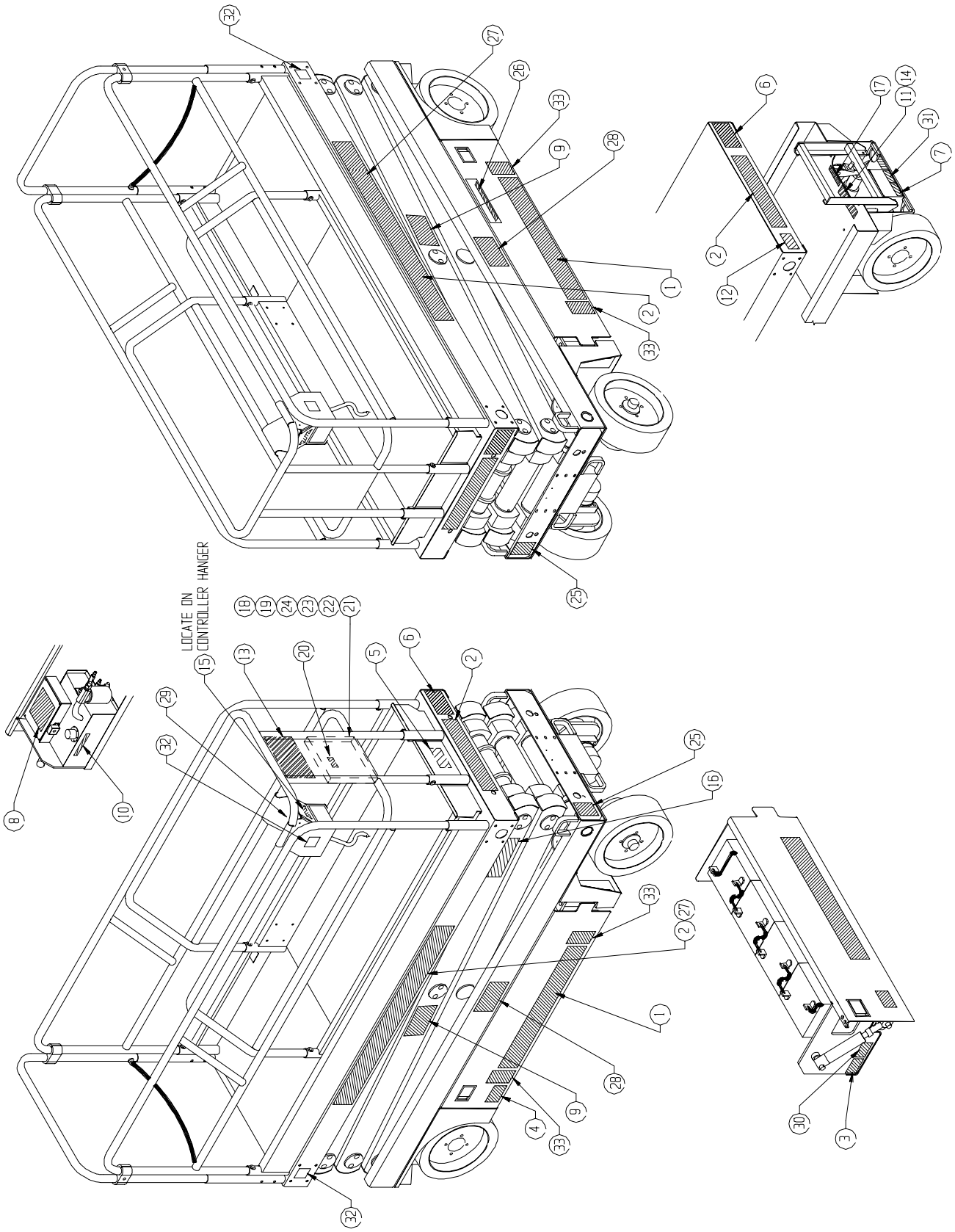
12
13
6
2 PLC'S
15
14
CHAIN
ASSY
4
4 PLC'S
10
11
4 PLC'S
3
2
8
1
8

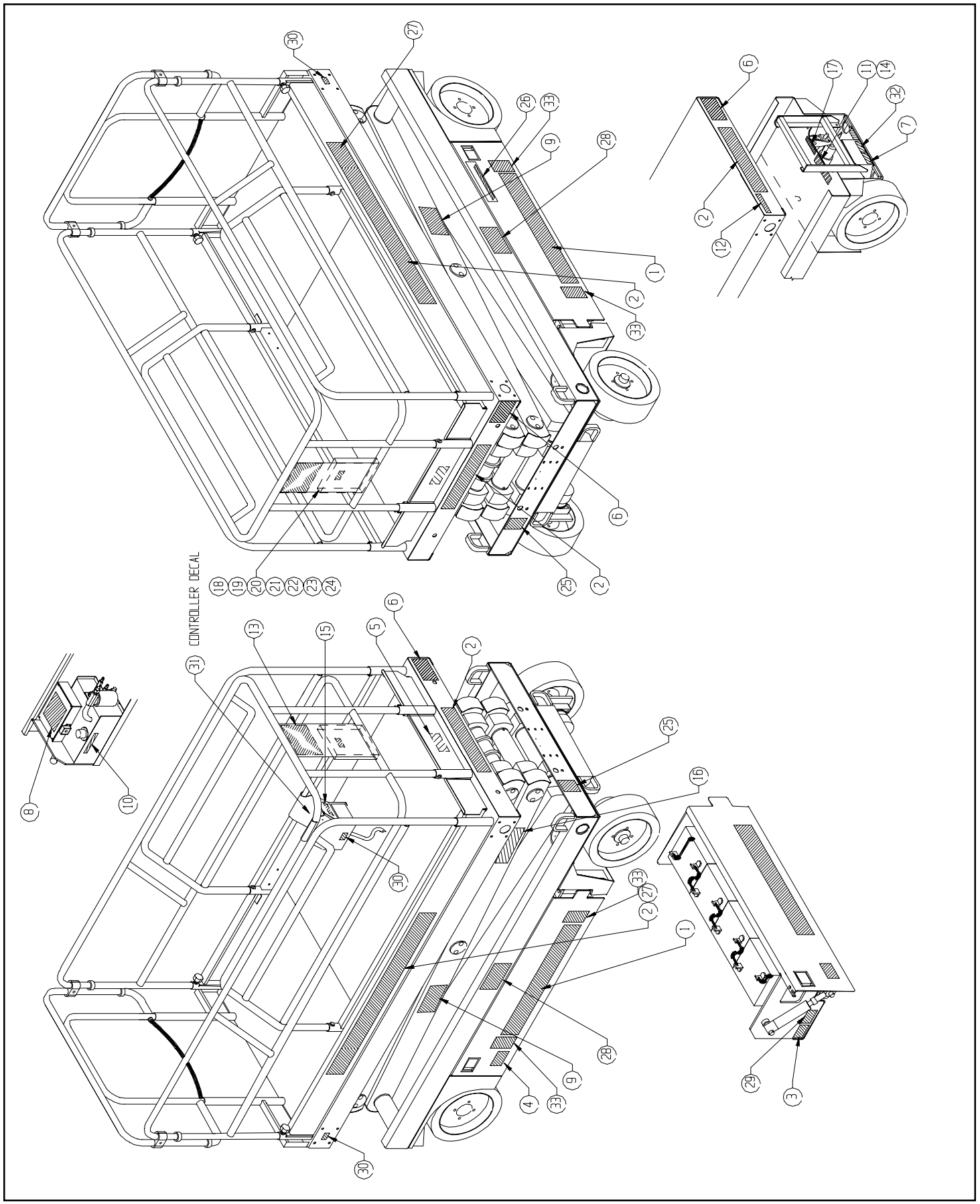
LABEL ASSEMBLY
X20N
66010-010

ITEM	PART	DESCRIPTION	QTY.
1	61683-006	LABEL UPRIGHT	2
2	61683-004	LABEL UPRIGHT	4
3	05221-000	LABEL MAINTAIN BATTERY	1
4	66552-000	LABEL HYDR GAS	1
5	66551-000	LABEL MAX LOAD 250 LBS	1
6	66557-000	LABEL MAX LOAD 750 LBS	2
7	14222-003-99	LABEL FORK LIFT HERE	2
8	66555-000	LABEL LIMIT SWITCHES	1
9	66553-000	LABEL WARNING	2
10	60197-000	LABEL HYDRAULIC FLUID	1
11	61205-000	LABEL NAME PLATE	1
12	61220-001	LABEL ANSI	1
13	66550-000	LABEL DANGER	1
14	65368-000	TACK	4
15	66554-000	LABEL READ INSTRUCTIONS	1
16	66561-000	LABEL SAFETY STAND	1
17	66558-000	LABEL EMER LOWER PULL HANDLE	1
18	60572-000	USER MANUAL	1
19	60577-000	ANSI MANUAL	1
20	10076-001	LABEL INSTRUCTIONS	1
21	10076-000	MANUAL CASE	1
22	11252-006	SCREW HHC 1/4-20 X 3/4 LG	2
23	11248-004	NUT 1/4-20 HEX	2
24	11240-004	WASHER 1/4 FLAT	2
25	66556-000	LABEL WARNING (COLLISION)	1
26	66559-000	LABEL LOWER CONTROLS	1
27	61684-018	LABEL X 20 N	2
28	61684-016	LABEL X	2
29	66560-011	LABEL CONTROLLER	1
30	62562-001	LABEL - BATTERIES	1
31	66522-000	LABEL - BATTERY CHARGER	1
32	64444-000	LABEL - USA	4
33	66556-001	LABEL - WARNING	4


LOCATE ON CONTROLLER HANGER

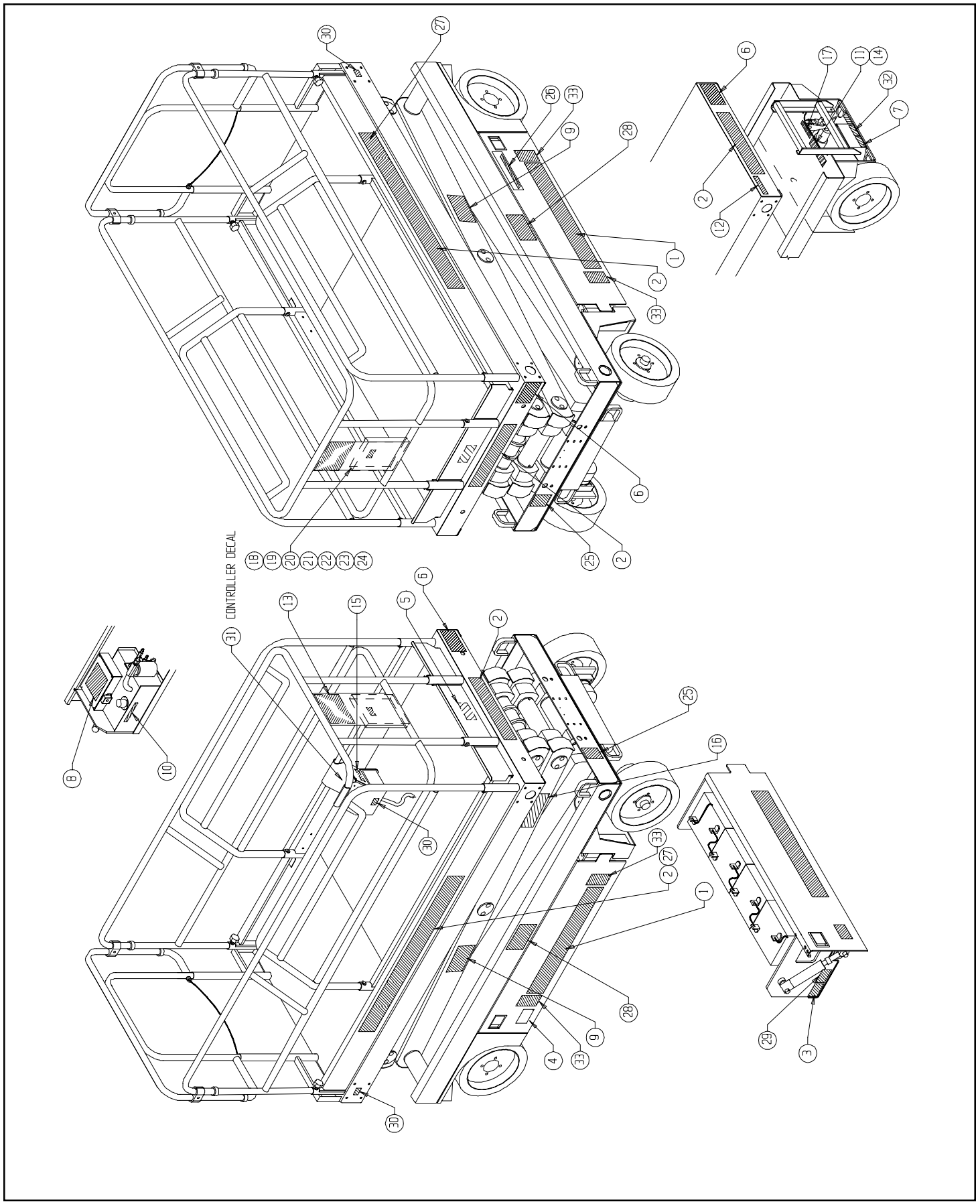
LABEL ASSEMBLY
X20W
66060-010

ITEM	PART	DESCRIPTION	QTY.
1	61683-006	LABEL UPRIGHT	2
2	61683-004	LABEL UPRIGHT	4
3	05221-000	LABEL MAINTAIN BATTERY	1
4	66552-000	LABEL HYDR GAS	1
5	66551-000	LABEL MAX LOAD 250 LBS	1
6	66566-000	LABEL MAX LOAD 1000 LBS	2
7	14222-003-99	LABEL FORK LIFT HERE	2
8	66555-000	LABEL LIMIT SWITCHES	1
9	66553-000	LABEL WARNING	2
10	60197-000	LABEL HYDRAULIC FLUID	1
11	61205-000	LABEL NAME PLATE	1
12	61220-001	LABEL ANSI	1
13	66550-000	LABEL DANGER	1
14	65368-000	TACK	4
15	66554-000	LABEL READ INSTRUCTIONS	1
16	66561-000	LABEL SAFETY STAND	1
17	66558-000	LABEL EMER LOWER PULL HANDLE	1
18	60572-000	USER MANUAL	1
19	60577-000	ANSI MANUAL	1
20	10076-001	LABEL INSTRUCTIONS	1
21	10076-000	MANUAL CASE	1
22	11252-006	SCREW HHC 1/4-20 X 3/4 LG	2
23	11248-004	NUT 1/4-20 HEX	2
24	11240-004	WASHER 1/4 FLAT	2
25	66556-000	LABEL WARNING (COLLISION)	1
26	66559-000	LABEL LOWER CONTROLS	1
27	61684-019	LABEL X 20 W	2
28	61684-016	LABEL X	2
29	62562-001	LABEL DANGER	1
30	64444-000	LABEL USA	4
31	66560-010	LABEL CONTROLLER	1
32	66522-000	LABEL BATTERY CHARGER	1
33	66556-001	LABEL - WARNING	4


CONTROLLER DECAL

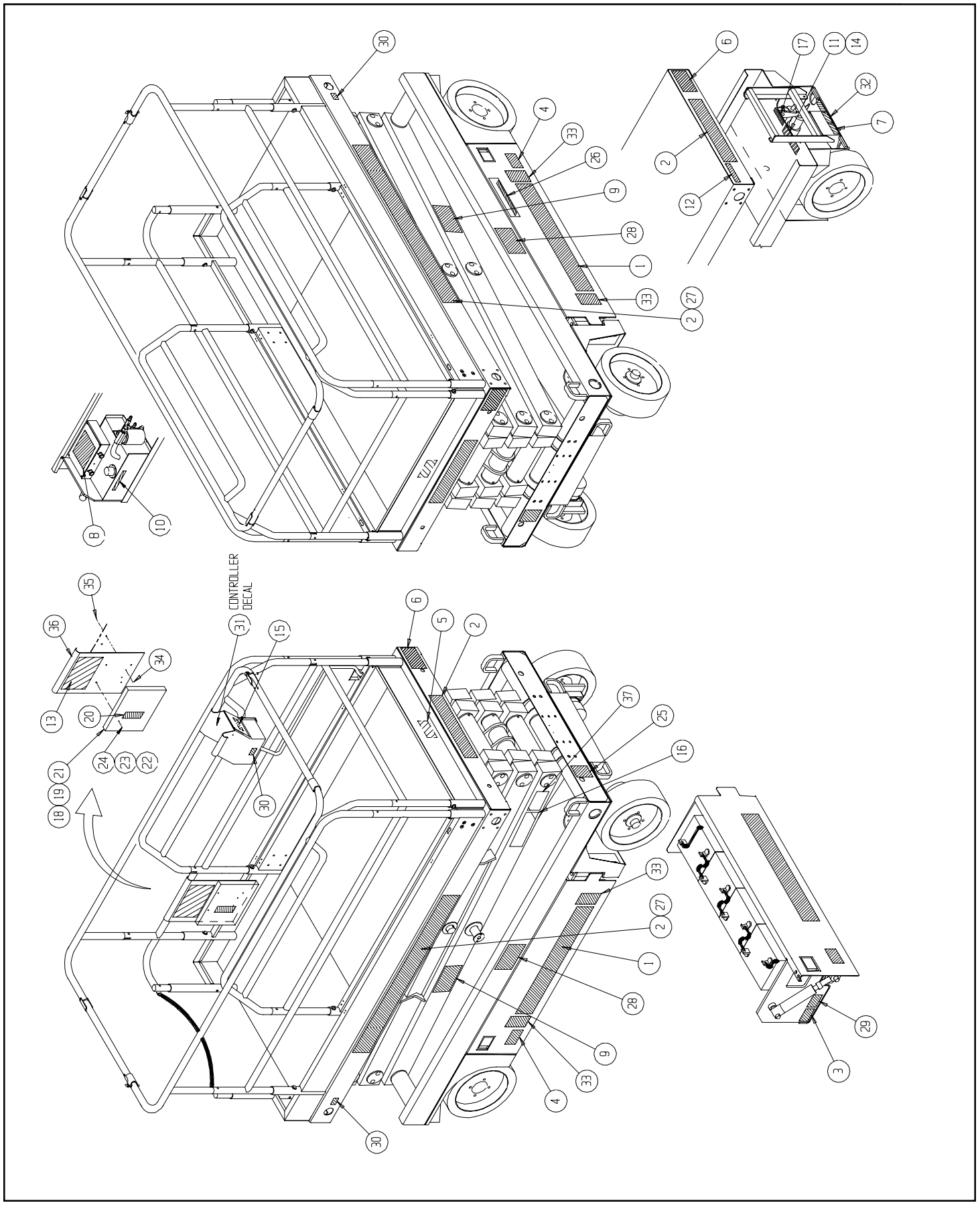
LABEL ASSEMBLY
X26N
66110-010

ITEM	PART	DESCRIPTION	QTY.
1	61683-006	LABEL UPRIGHT	2
2	61683-004	LABEL UPRIGHT	4
3	05221-000	LABEL MAINTAIN BATTERY	1
4	66552-000	LABEL EXPLOSIVE GAS WARNING	1
5	66551-000	LABEL MAX LOAD 250 LBS	1
6	66566-000	LABEL MAX LOAD 1000 LBS	2
7	14222-003-99	LABEL FORK LIFT HERE	2
8	66555-000	LABEL LIMIT SWITCHES	1
9	66553-000	LABEL WARNING	2
10	60197-000	LABEL HYDRAULIC FLUID	1
11	61205-000	LABEL NAME PLATE	1
12	61220-001	LABEL ANSI	1
13	66550-000	LABEL DANGER	1
14	65368-000	TACK FASTENER	4
15	66554-000	LABEL READ INSTRUCTIONS	1
16	66561-000	LABEL SAFETY STAND	1
17	66558-000	LABEL EMER LOWER PULL HANDLE	1
18	60572-000	USER MANUAL	1
19	60577-000	ANSI MANUAL	1
20	10076-001	LABEL INSTRUCTIONS	1
21	10076-000	MANUAL CASE	1
22	11252-006	SCREW HHC 1/4-20 X 3/4 LG	2
23	11248-004	NUT 1/4-20 HEX	2
24	11240-004	WASHER 1/4 FLAT	2
25	66556-000	LABEL WARNING (COLLISION)	1
26	66559-000	LABEL LOWER CONTROLS	1
27	61684-020	LABEL X 26 N	2
28	61684-016	LABEL X	2
29	62562-001	LABEL DANGER	1
30	64444-000	LABEL USA	4
31	66560-010	LABEL CONTROLLER	1
32	66522-000	LABEL BATTERY CHARGER	1
33	66556-001	LABEL - WARNING	4


CONTROLLER DECAL

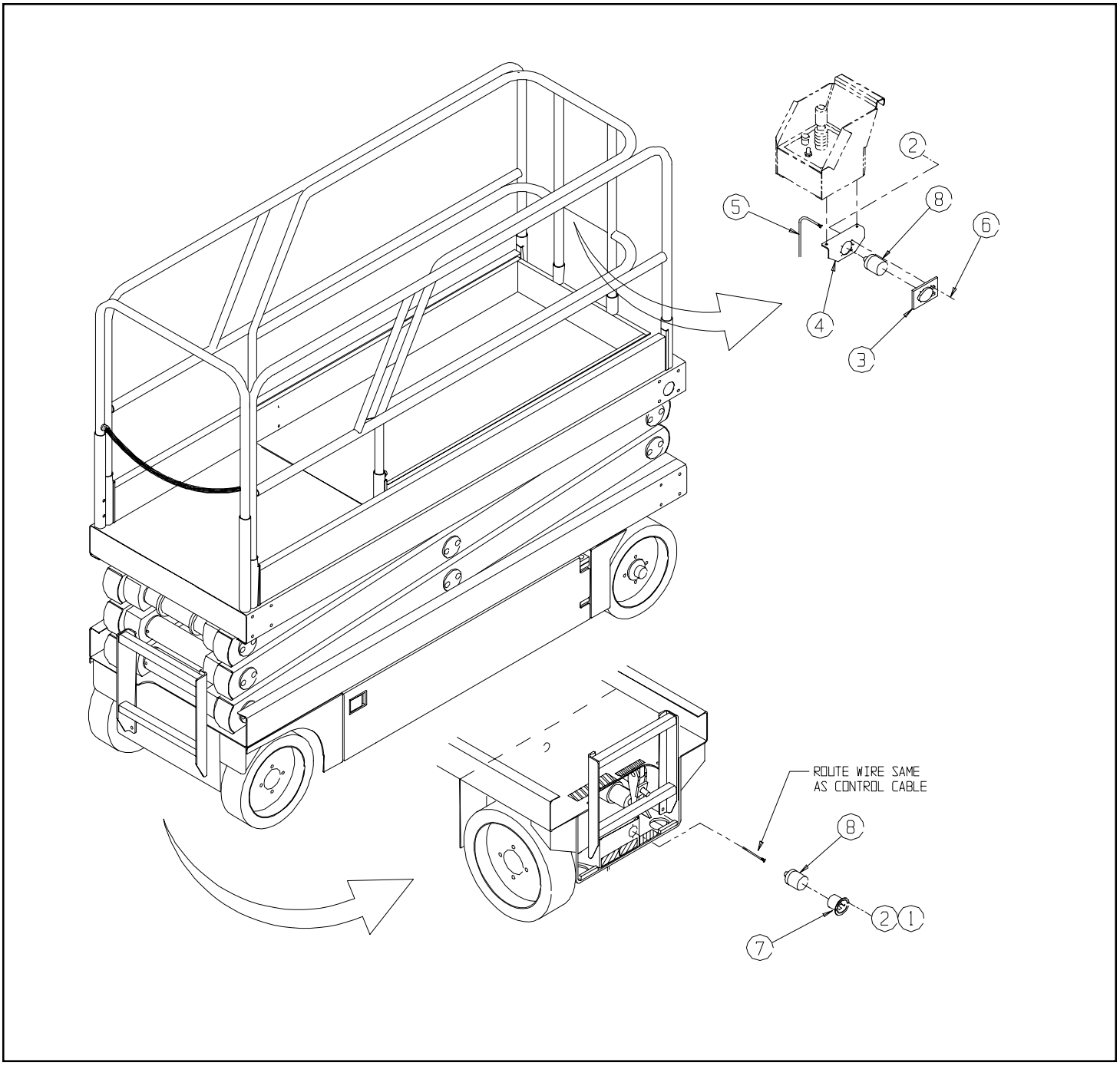
LABEL ASSEMBLY
X31N
66860-000

ITEM	PART	DESCRIPTION	QTY.
1	61683-006	LABEL UPRIGHT	2
2	61683-004	LABEL UPRIGHT	4
3	05221-000	LABEL MAINTAIN BATTERY	1
4	66552-000	LABEL EXPLOSIVE GAS WARNING	1
5	66551-000	LABEL MAX LOAD 250 LBS	1
6	66557-001	LABEL MAX LOAD 700 LBS	2
7	14222-003-99	LABEL FORK LIFT HERE	2
8	66555-000	LABEL LIMIT SWITCHES	1
9	66553-000	LABEL WARNING	2
10	60197-000	LABEL HYDRAULIC FLUID	1
11	61205-000	LABEL NAME PLATE	1
12	61220-001	LABEL ANSI	1
13	66550-000	LABEL DANGER	1
14	65368-000	TACK	4
15	66554-000	LABEL READ INSTRUCTIONS	1
16	66561-000	LABEL SAFETY STAND	1
17	05223-000	LABEL EMER LOWER	1
18	60572-001	USER MANUAL	1
19	60577-000	ANSI MANUAL	1
20	10076-001	LABEL INSTRUCTIONS	1
21	10076-000	MANUAL CASE	1
22	11252-006	SCREW HHC 1/4-20 X 3/4 LG	2
23	11248-004	NUT 1/4-20 HEX	2
24	11240-004	WASHER 1/4 FLAT	2
25	66556-000	LABEL WARNING (COLLISION)	1
26	66559-000	LABEL LOWER CONTROLS	1
27	61684-002	LABEL X 31 N	2
28	61684-016	LABEL X	2
29	62562-001	LABEL DANGER	1
30	64444-000	LABEL USA	4
31	66560-010	LABEL CONTROLLER	1
32	66522-000	LABEL BATTERY CHARGER	1
33	66556-001	LABEL - WARNING	4
34	66097-004	SCREW FLAT HD #10-24UNC X 1/2	2
35	11250-003	NUT #10-24 UNC	2
36	65648-001	MOUNT, LABEL	1
37	66561-000	LABEL CAUTION	1


CONTROLLER DECAL

POWER TO PLATFORM,OPTION
X20/X26
66610-010

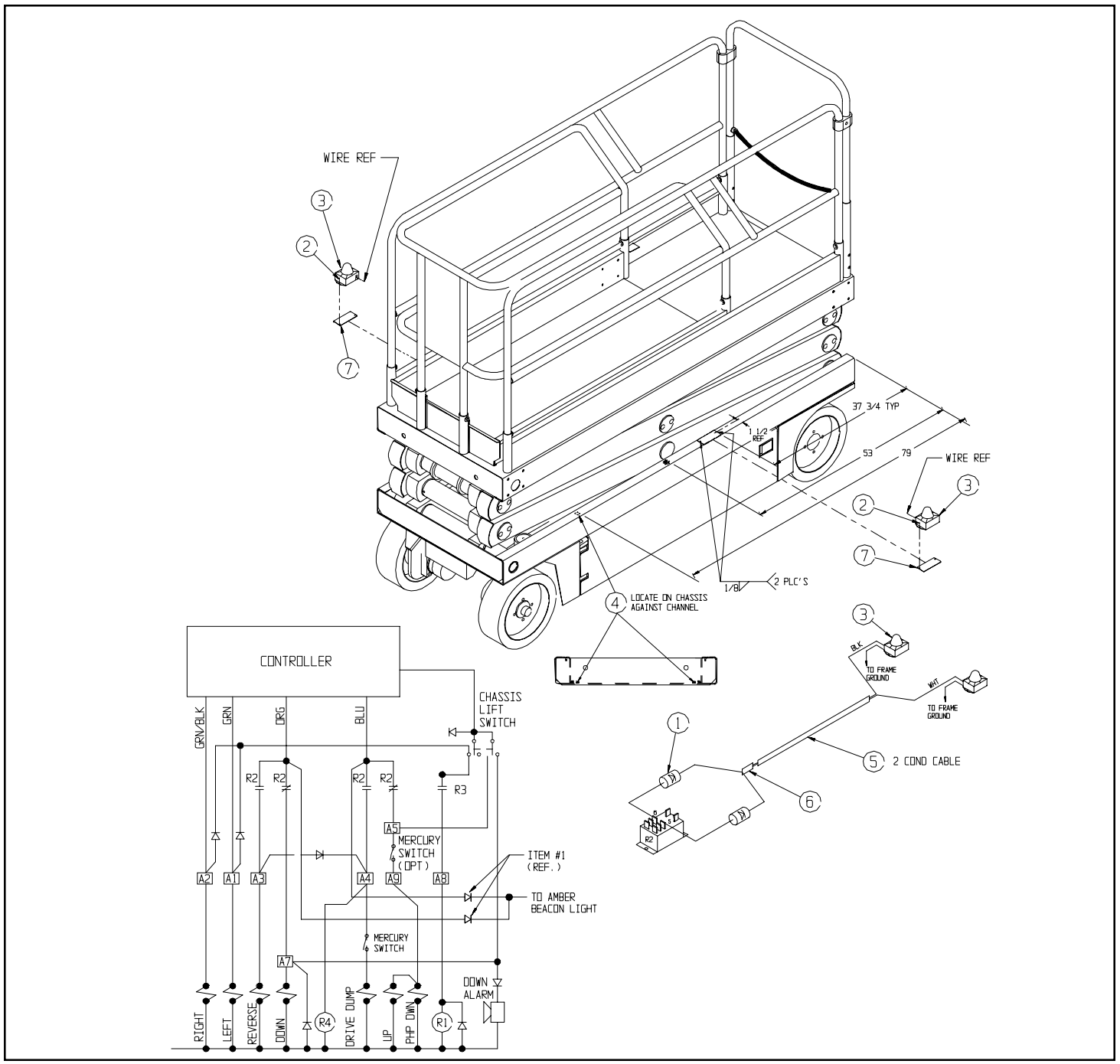
ITEM	PART	DESCRIPTION	QTY.
1	11715-004	SCREW, RD. HD 6-32 X 1/2	2
2	11248-047	NUT, ESNA #6-32	6
3	08942-001	OUTLET, HUBBELL #61CM65	1
4	66505-000	BRACKET	1
5	29495-099	WIRE, 14GA 3 COND.	50FT
6	11715-006	SCREW TR HD 6-32 X 3/4	4
7	129961-000	INLET PLUG, HUBBELL #5278C	1
8	29961-001	SEAL, INLET PLUG	2



FLASHING AMBER LIGHT, OPTION X20/X26

66611-010

ITEM	PART	DESCRIPTION	QTY.
1	29825-002	DOIODE	2
2	11826-004	SCREW, MACH RD HD 10-32 UNF X 1/2	4
3	12848-004	LIGHT - FLASHING	2
4	13283-002	CABLE TIE	2
5	29496-099	WIRE, 16 GA. 2 COND CABLE	9 FT
6	29620-003	CONN BUTT 12 - 10	1
7	66506-000	BRACKET - LIGHT MOUNT	2

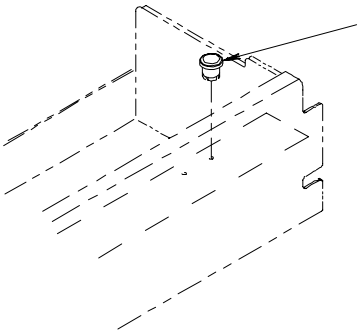


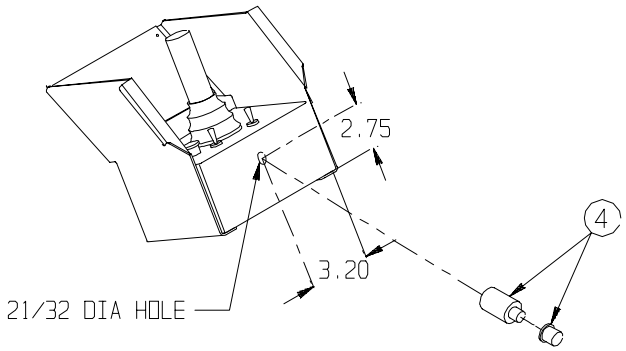
HORN, OPTION
X20N/X20W/X26N/X31N

66614-010

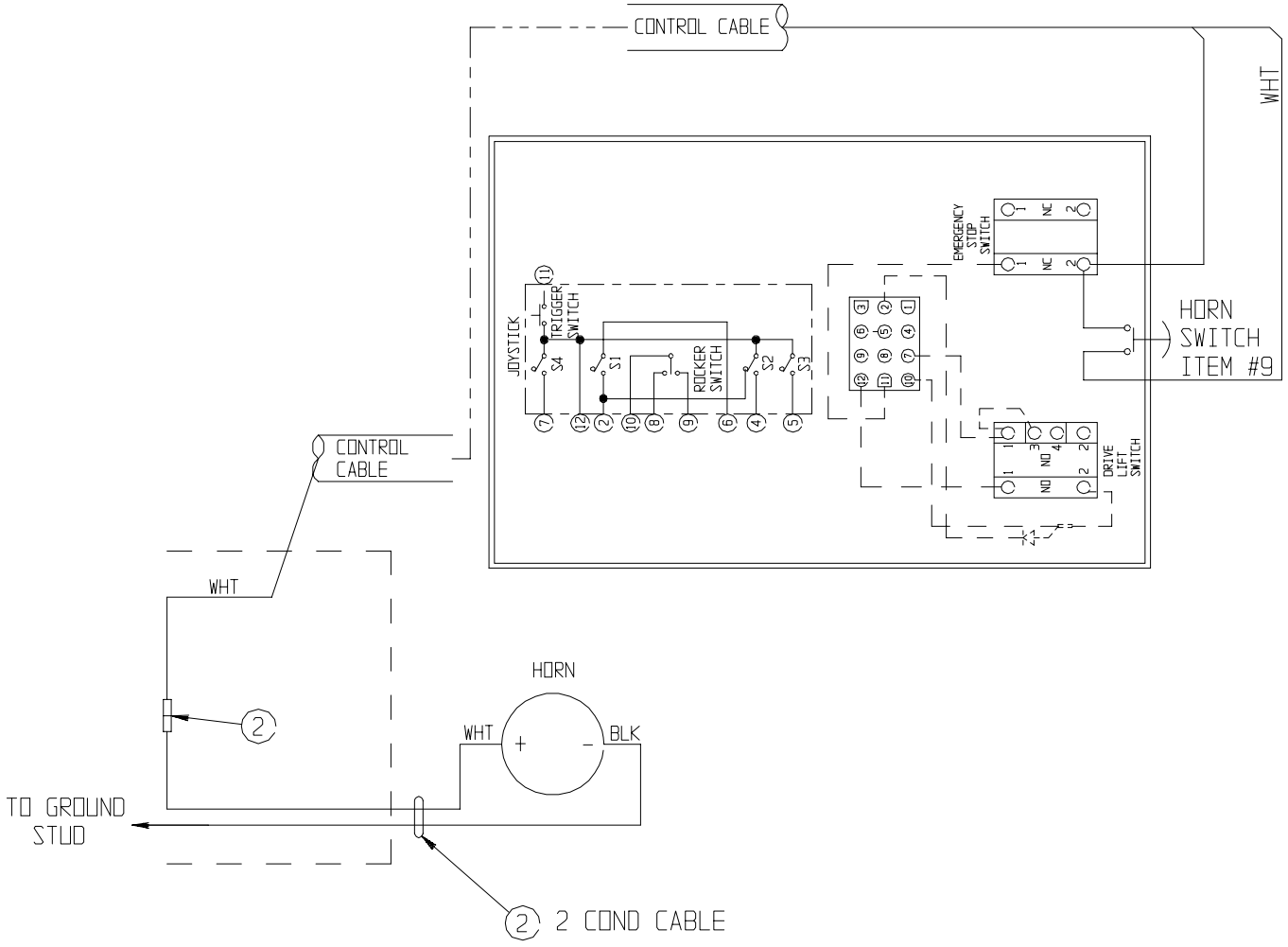
ITEM	PART	DESCRIPTION	QTY.
1	29496-099	WIRE, 2 COND CABLE	5 FT
2	29615-002	CONNECTOR PUSH	2
3	66807-002	HORN	1
4	63917-000	SWITCH PUSHBUTTON	1

MOUNT HORN IN GENERATOR OPTION MOUNTING HOLE





CONTROLLER MODIFICATION



PROPORTIONAL CONTROL, OPTION X20W,X26N,X32

66628-012

ITEM	PART	DESCRIPTION	QTY.
1	65374-000	PROPORTIONAL VALVE BLOCK	1
2	63986-002	PROPORTIONAL VALVE	1
3	11979-008	O-RING	2
4	14412-016	SCREW #10-24 X 2 SOC HD	4
5	66020-012	PROPORTIONAL CONTROLLER	1
6	29825-002	DIODE	2
7	29620-002	CONN. BUTT 16-14 GA.	3
8	29601-011	CONN. #6 RING 16-14 GA.	2
9	29610-001	CONN. FORK 16-14 GA.	5
10	29615-002	CONN. PUSH ON	2
11	63955-003	PORT PLUG	1
12	20021-006	FITTING PLUG O-RING	2
13	29601-015	CONN. RING 16-14 GA.	1
14	29452-099	WIRE 16 GA. BLACK	3FT

PROPORTIONAL CONTROL, OPTION X20N

66628-010

ITEM	PART	DESCRIPTION	QTY.
1	65374-000	PROPORTIONAL VALVE BLOCK	1
2	63986-002	PROPORTIONAL VALVE	1
3	11979-008	O-RING	2
4	14412-016	SCREW #10-24 X 2 SOC HD	4
5	66020-010	PROPORTIONAL CONTROLLER	1
*	15772-001	SWITCH	4
*	63913-002	SWITCH, STEERING	2
*	63913-003	BOOT, STEERING SWITCH	1
*	63913-004	ROCKER ASSEMBLY	1
*	66544-010	HANDLE, 2 PIECE	1
*	66544-011	LEVER, INTERLOCK	1
*	66544-012	SWITCH, INTERLOCK	1
*	66544-013	BOOT, JOYSTICK SHAFT	1
6	29825-002	DIODE	2
7	29620-002	CONN. BUTT 16-14 GA.	3
8	29601-011	CONN. #6 RING 16-14 GA.	2
9	29610-001	CONN. FORK 16-14 GA.	5
10	29615-002	CONN. PUSH ON	2
11	63955-003	PORT PLUG	1
12	20021-006	FITTING PLUG O-RING	2
13	29601-015	CONN. RING 16-14 GA.	1
14	29452-099	WIRE 16 GA. BLACK	3FT

NOTES: INSTALLATION PROPORTIONAL CONTROLS

1. REMOVE EXISTING CONTROLLER AND REPLACE WITH PROPORTIONAL CONTROLLER ITEM #5.

2. REMOVE PLUGS FROM VALVE BLOCK, INSERT "O" RINGS ITEM #3 AND INSTALL PROPORTIONAL VALVE ITEM #1 USING #10-24 X 2 MOUNTING SCREWS ITEM #4.

3. LOWER CONTROL BOX WIRING

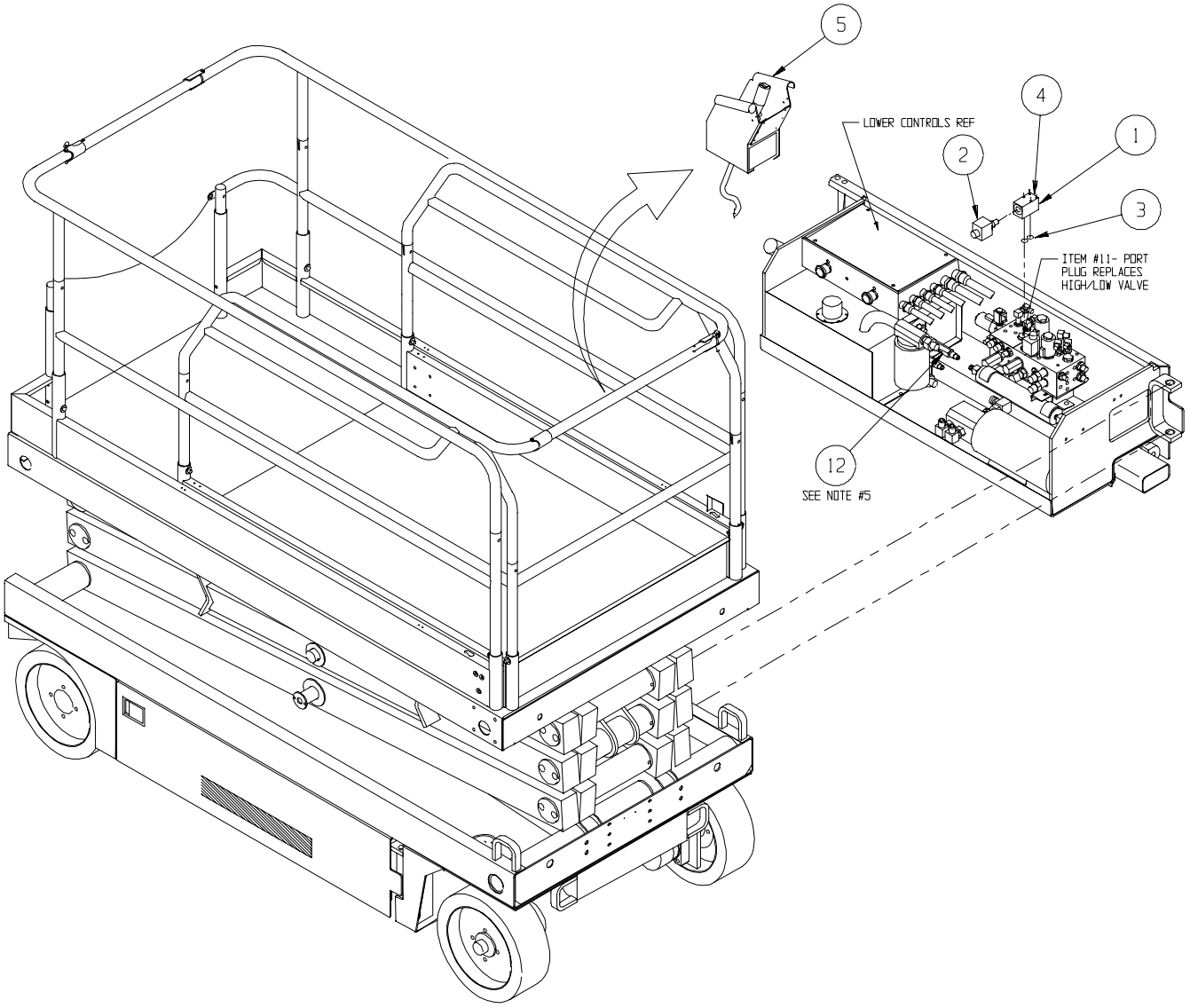
A. MOVE THE (HIGH SPEED) WHITE WIRE IN THE EXISTING VALVE BLOCK CABLE FROM TERMINAL #6 TO TERMINAL #14.

B. ADD DIODES ITEM #6 FROM CHASSIS LIFT SWITCH TERMINAL #6 TO TERMINAL BLOCK A - #5 & #14.

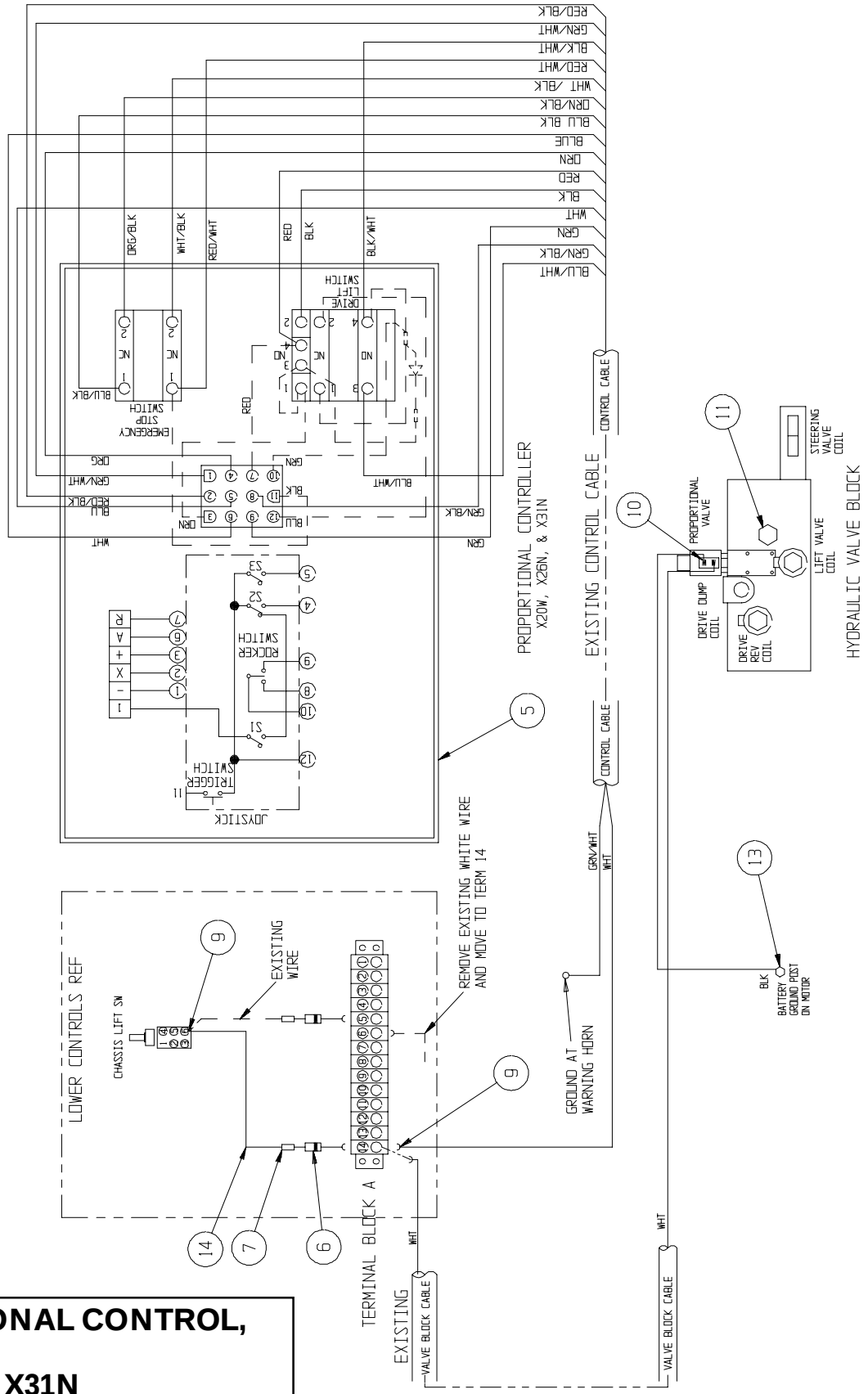
C. WIRE FROM CONTROL CABLE THROUGH WIRING BOX TO PROPORTIONAL VALVE AS SHOWN ON SHEET 2 OF 2.

4. REMOVE HIGH SPEED VALVE AND RETURN TO STOCK INSTALL PLUG ITEM #11 IN ITS PLACE.

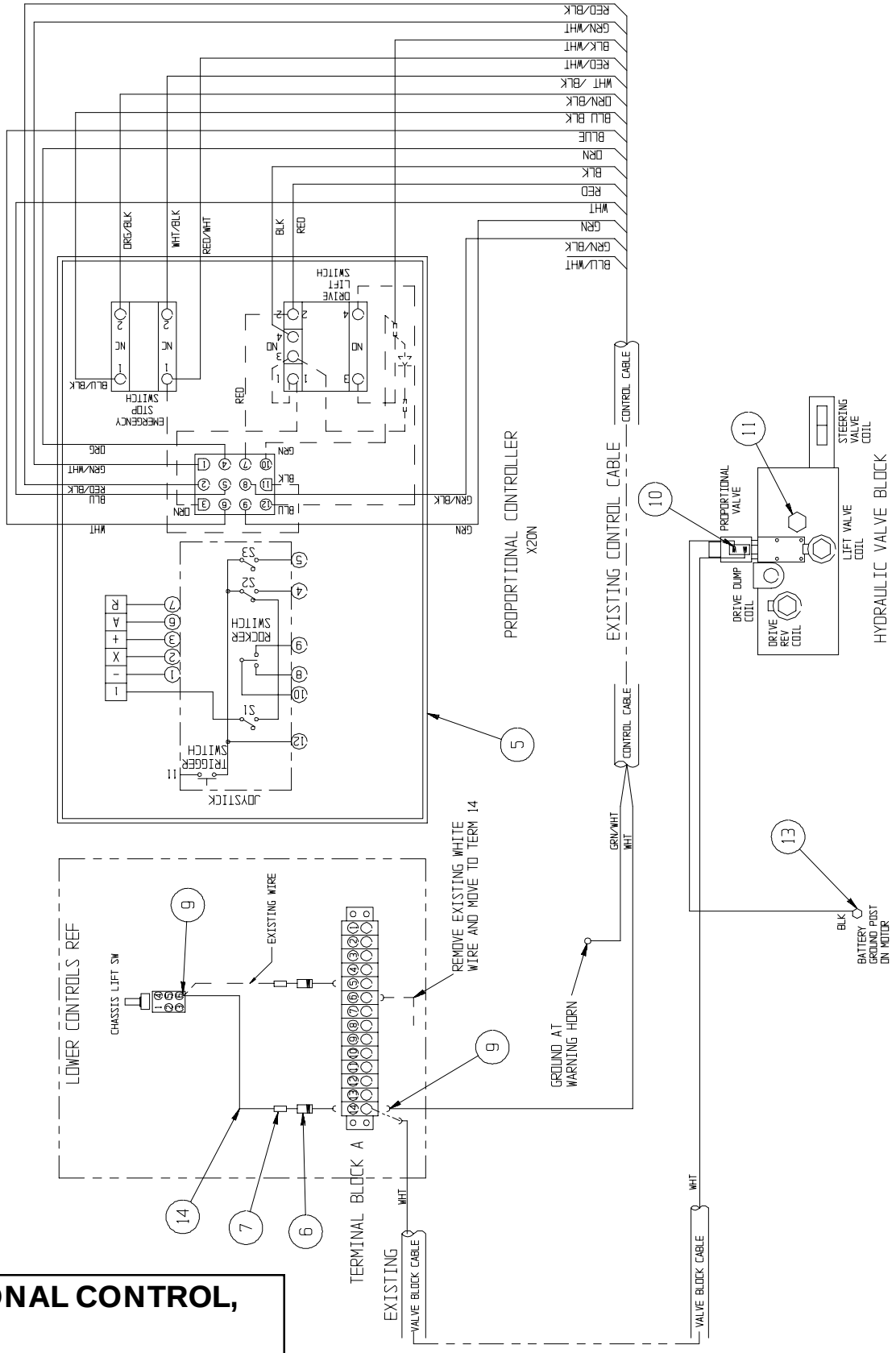
5. REMOVE RELIEF VALVES ON OIL TANK AND RETURN TO STOCK. INSTALL PLUGS ITEM #16 IN THEIR PLACE.



PROPORTIONAL CONTROL, OPTION X20/X20W/X26N DRAWING 1 OF 3



PROPORTIONAL CONTROL, OPTION X20W/X26N\X31N DRAWING 2 OF 3



PROPORTIONAL CONTROL, OPTION X20N DRAWING 3 OF 3

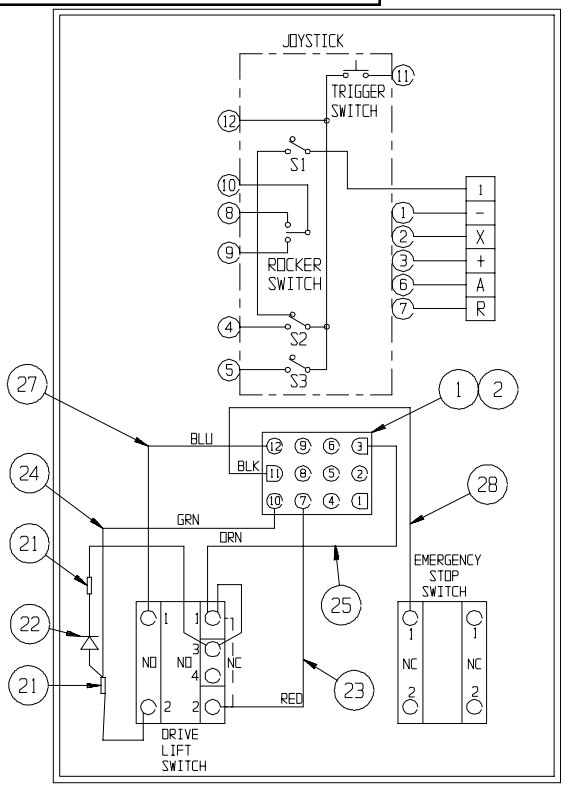
PROPORTIONAL CONTROLLER, OPTION X20N
66020-010

ITEM	PART	DESCRIPTION	QTY.
1	63956-003	CONN. 12 PIN	1
2	63956-010	CONN. PIN MALE	10
3	11252-004	SCREW 1/4-20 UNC HHC X 1/2	4
4	11238-004	WASHER 1/4 LOCK	4
5	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6
6	29939-003	LOCKNUT 3/4 NPT	1
7	66805-002	SWITCH 2 POSITION SELECTOR	1
8	29915-000	CONN. CABLE	1
9	66805-010	CONTACT BLOCK N.O.	1
10	66175-014	ENCLOSURE BOX COVER	1
11	66092-000	PANEL, CONTROLLER	1
12	66786-000	CONTROLLER HANDLE W/12 PIN PIGTAIL	1
*	15772-001	SWITCH	4
*	63913-002	SWITCH, STEERING	2
*	63913-003	BOOT, STEERING SWITCH	1
*	63913-004	ROCKER ASSEMBLY	1
*	66544-010	HANDLE, 2 PIECE	1
*	66544-011	LEVER, INTERLOCK	1
*	66544-012	SWITCH, INTERLOCK	1

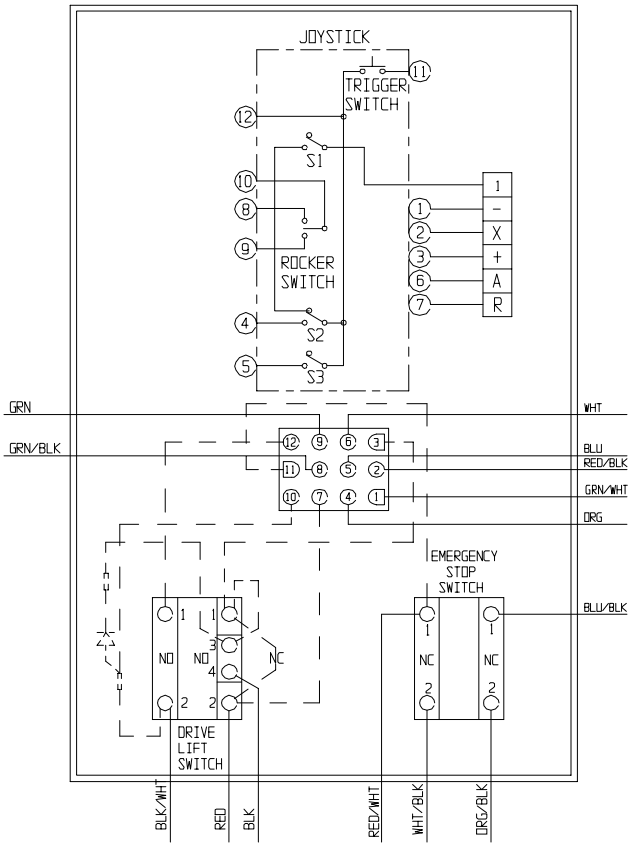
ITEM	PART	DESCRIPTION	QTY.
-	66544-013	BOOT, JOYSTICK SHAFT	1
13	66805-006	PUSH BUTTON	1
14	66094-010	PANEL, CONTROLLER L.H.	1
15	66095-010	PANEL, CONTROLLER R.H.	1
16	66175-013	ENCLOSURE BOX BODY	3
17	29610-002	CONN. FORK 14-16 GA. #8	19
18	29615-002	CONN. PUSH 14-16 GA. #8	7
19	66805-011	CONTACT BLOCK N.C.	2
20	66805-012	CONTACT BLOCK N.O./N.C.	1
21	29620-002	CONN. BUTT. 14-16 GA.	2
22	29825-002	DIODE	1
23	29454-099	WIRE 16 GA. THHN COP RED	2.5FT
24	29457-099	WIRE 16 GA. THHN COP GREEN	3.5FT
25	29453-099	WIRE 16 GA. THHN COP ORANGE	1FT
26	29451-099	WIRE 16 GA. THHN COP WHITE	1FT
27	29450-099	WIRE 16 GA. THHN COP BLUE	2FT
28	29452-099	WIRE 16 GA. THHN COP BLACK	5FT

*** Not shown**

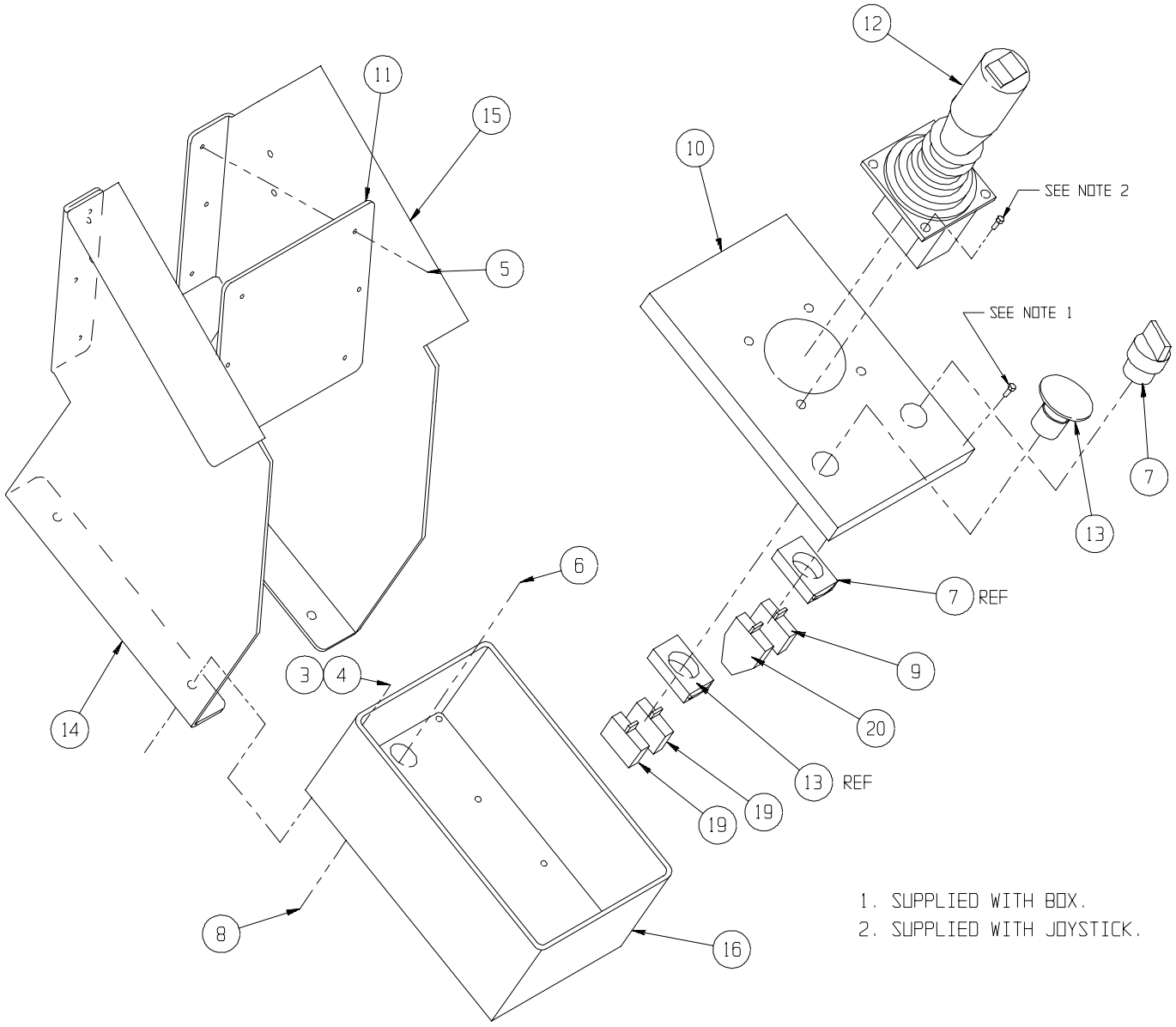
PROPORTIONAL CONTROLLER,OPTION X20N DRAWING 1 OF 2



STANDARD BOX WIRING



CABLE CONNECTIONS (REF)



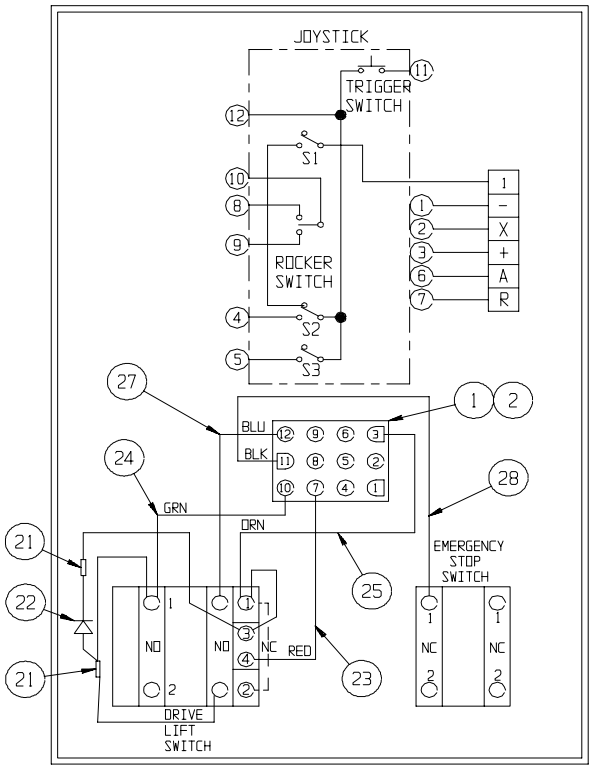
PROPORTIONAL CONTROLLER,OPTION X20N DRAWING 2 OF 2

PROPORTIONAL CONTROLLER, OPTION X20W\X26N
66020-012

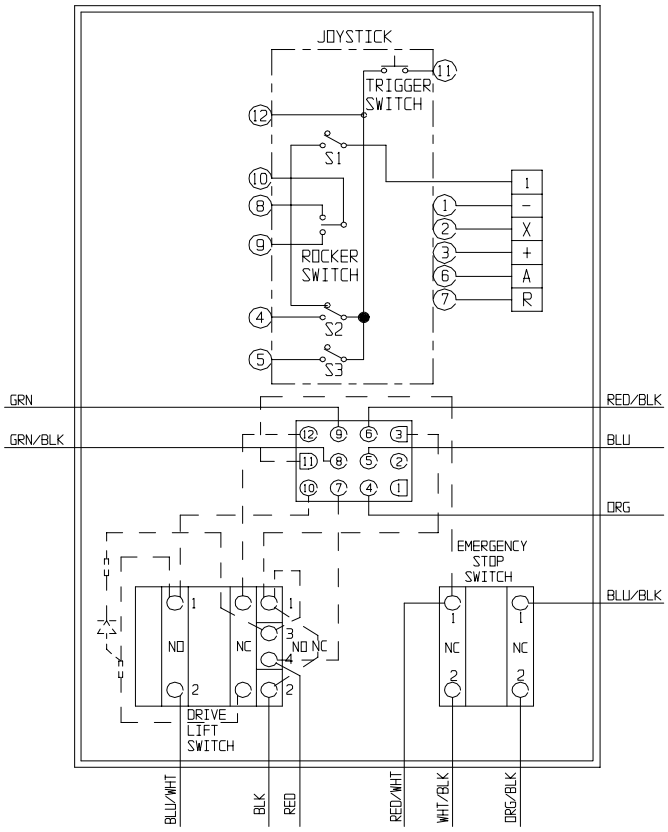
ITEM	PART	DESCRIPTION	QTY.
1	63956-003	CONN. 12 PIN	1
2	63956-010	CONN. PIN MALE	10
3	11252-004	SCREW 1/4-20 UNC HHC X 1/2	4
4	11238-004	WASHER 1/4 LOCK	4
5	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6
6	68585-000	BLOCK 5 FLANGE	1
7	66805-003	SWITCH 3 POSITION SELECTOR	1
8	29925-000	CONN. CABLE	1
9	66805-010	CONTACT BLOCK N.O.	1
10	66175-014	ENCLOSURE BOX COVER	1
11	66092-000	PANEL, CONTROLLER	1
12	66786-000	CONTROLLER HANDLE W/12 PIN PIGTAIL	1
*	15772-001	SWITCH	4
*	63913-002	SWITCH, STEERING	2
*	63913-003	BOOT, STEERING SWITCH	1
*	63913-004	ROCKER ASSEMBLY	1
*	66544-010	HANDLE, 2 PIECE	1
*	66544-011	LEVER, INTERLOCK	1

ITEM	PART	DESCRIPTION	QTY.
*	66544-012	SWITCH, INTERLOCK	1
*	66544-013	BOOT, JOYSTICK SHAFT	1
13	66805-006	PUSH BUTTON	1
14	66094-010	PANEL, CONTROLLER L.H.	1
15	66095-010	PANEL, CONTROLLER R.H.	1
16	29939-003	LOCKNUT 3/4 NPT	3
17	29610-002	CONN. FORK 14-16 GA. #8	19
18	29615-002	CONN. PUSH 14-16 GA. #8	7
19	66805-011	CONTACT BLOCK N.C.	2
20	66805-012	CONTACT BLOCK N.O./N.C.	1
21	29620-002	CONN. BUTT. 14-16 GA.	2
22	29825-002	DIODE	1
23	29454-099	WIRE 16 GA. THHN COP RED	2.5FT
24	29457-099	WIRE 16 GA. THHN COP GREEN	3.5FT
25	29453-099	WIRE 16 GA. THHN COP ORANGE	1FT
26	29451-099	WIRE 16 GA. THHN COP WHITE	1FT
27	29450-099	WIRE 16 GA. THHN COP BLUE	2FT
28	29452-099	WIRE 16 GA. THHN COP BLACK	5FT
29	66175-013	ENCLOSURE BOX BODY	1

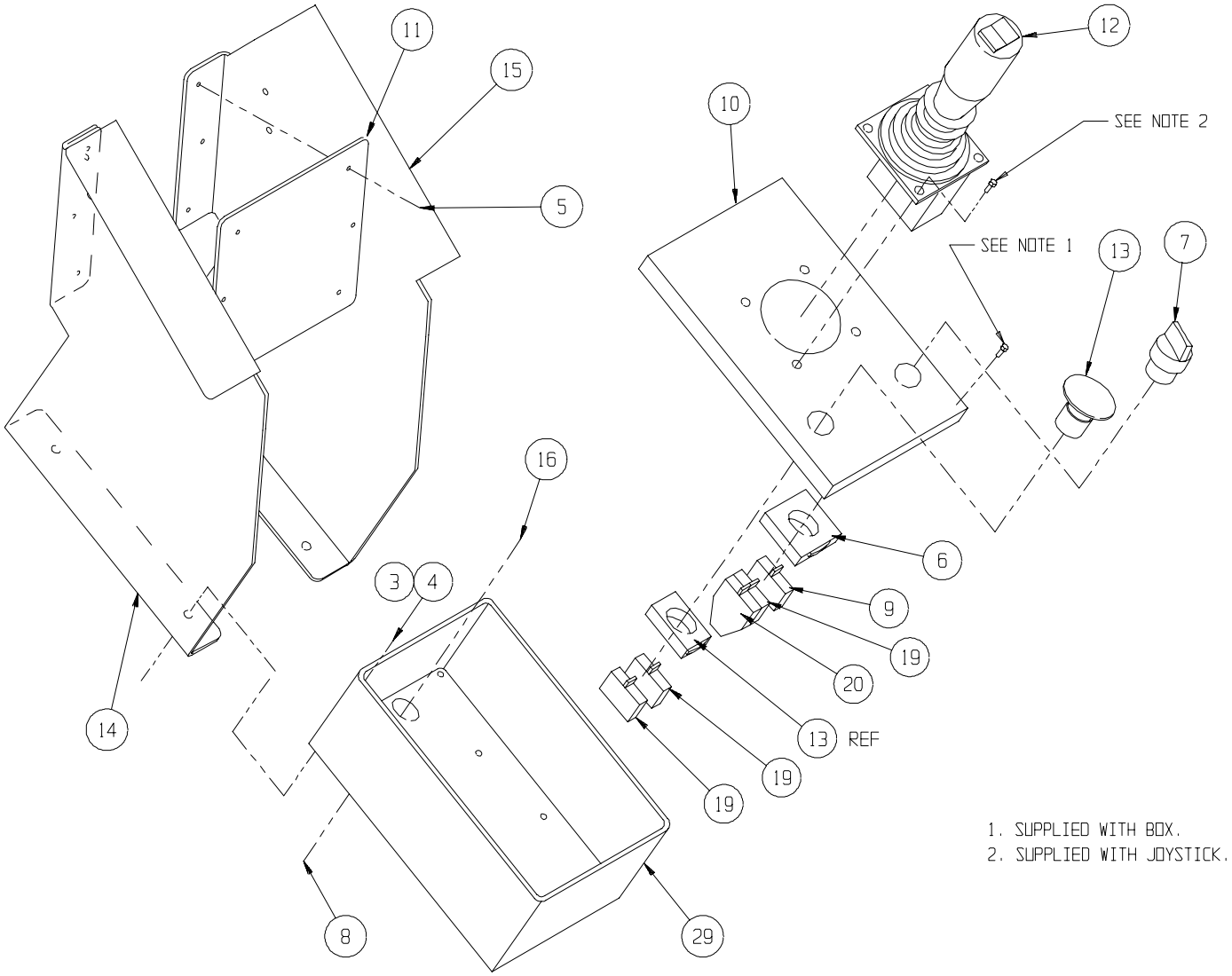
PROPORTIONAL CONTROLLER,OPTION X20N\X26 DRAWING 1 OF 2



STANDARD BOX WIRING



CABLE CONNECTIONS (REF)

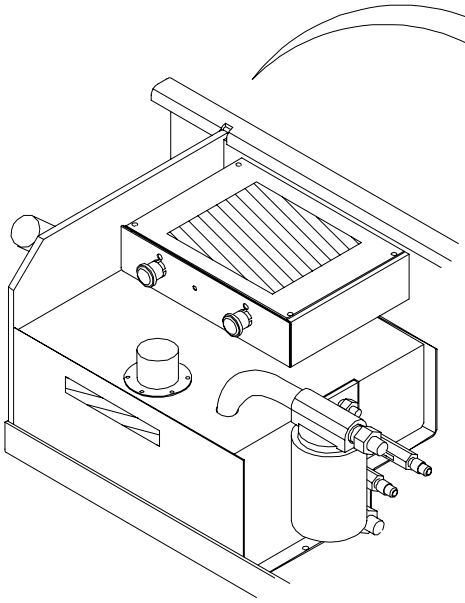


PROPORTIONAL CONTROLLER,OPTION X20W\X26N DRAWING 2 OF 2

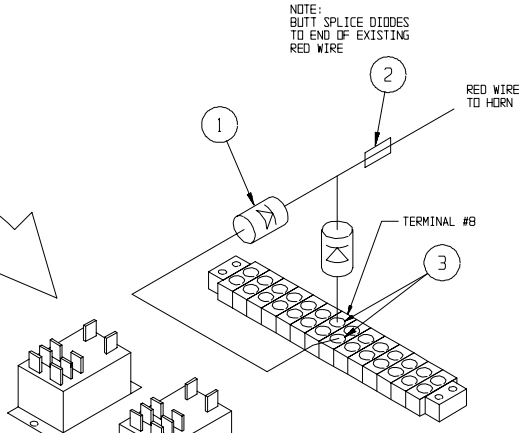
ALL MOTION ALARM, OPTION X20N/X20W/X26N/X31N

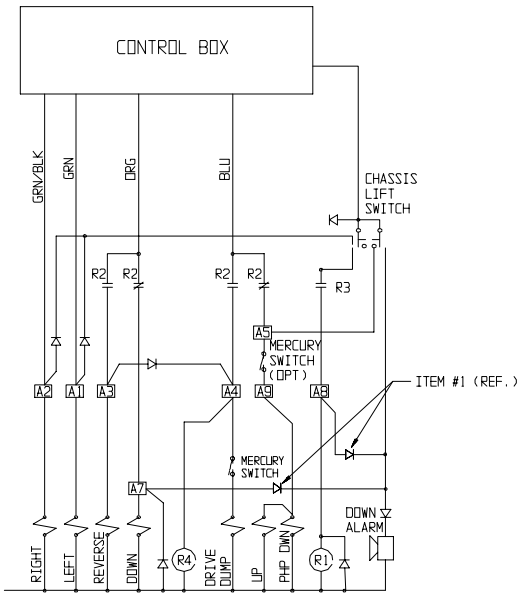
66616-010

ITEM	PART	DESCRIPTION	QTY.
1	29825-002	DIODE	2
2	29620-003	CONN. BUTT 12-10	1
3	29610-018	CONN. FORK 12-10	2



CONTROL MODULE

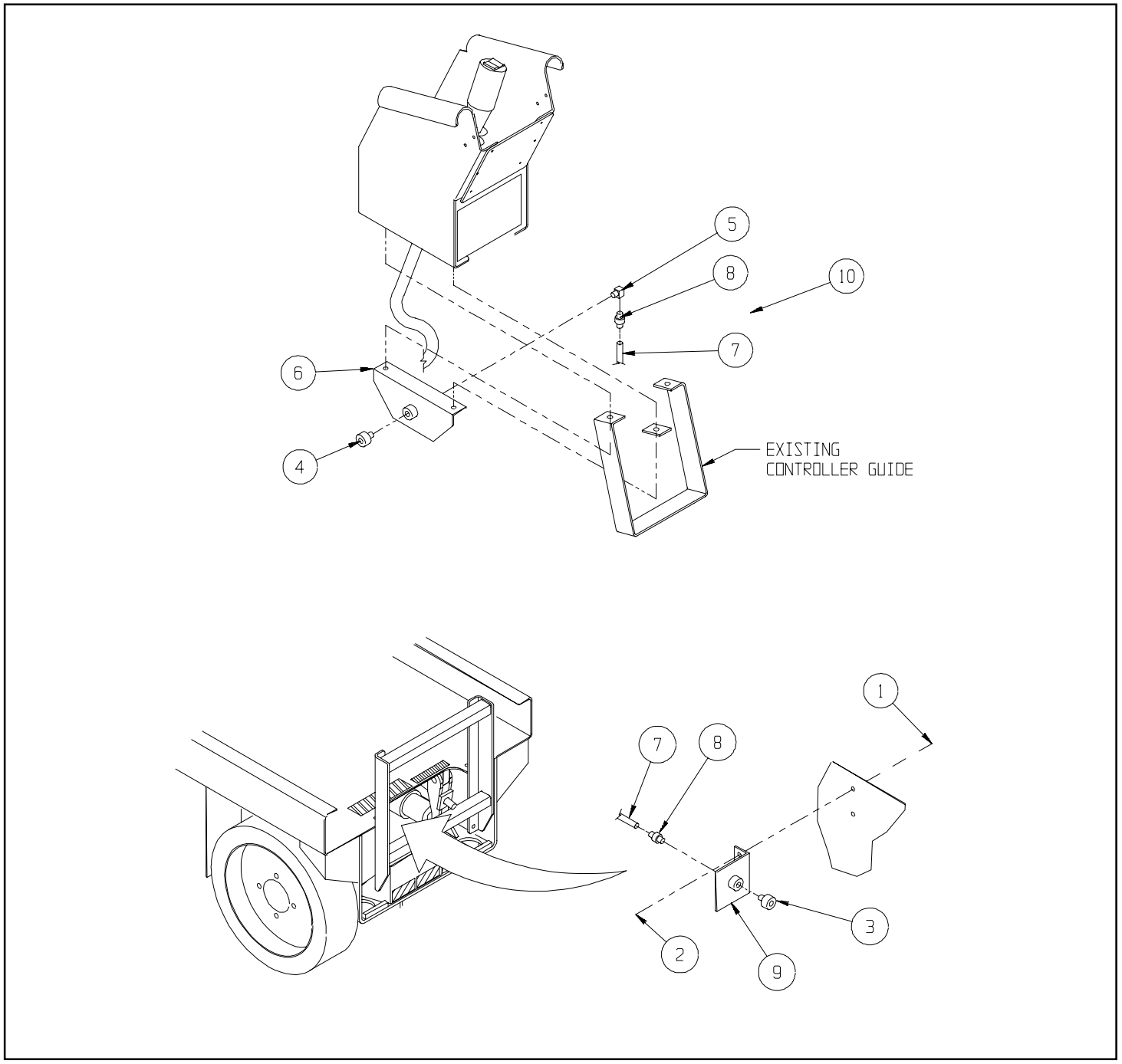




AIR TO PLATFORM, OPTION
X20N/X20W/X26N/X31N
66629-001

ITEM	PART	DESCRIPTION	QTY.
1	11249-003	LOCK NUT ESNA HEX #10-32	2
2	11826-008	SCREW RD. HD. MACH #10-32	2
3	12728-000	COUPLING M AIR	1
4	12729-003	COUPLING M AIR	1
5	11917-007	FITTING 90 6MP-6FP	1

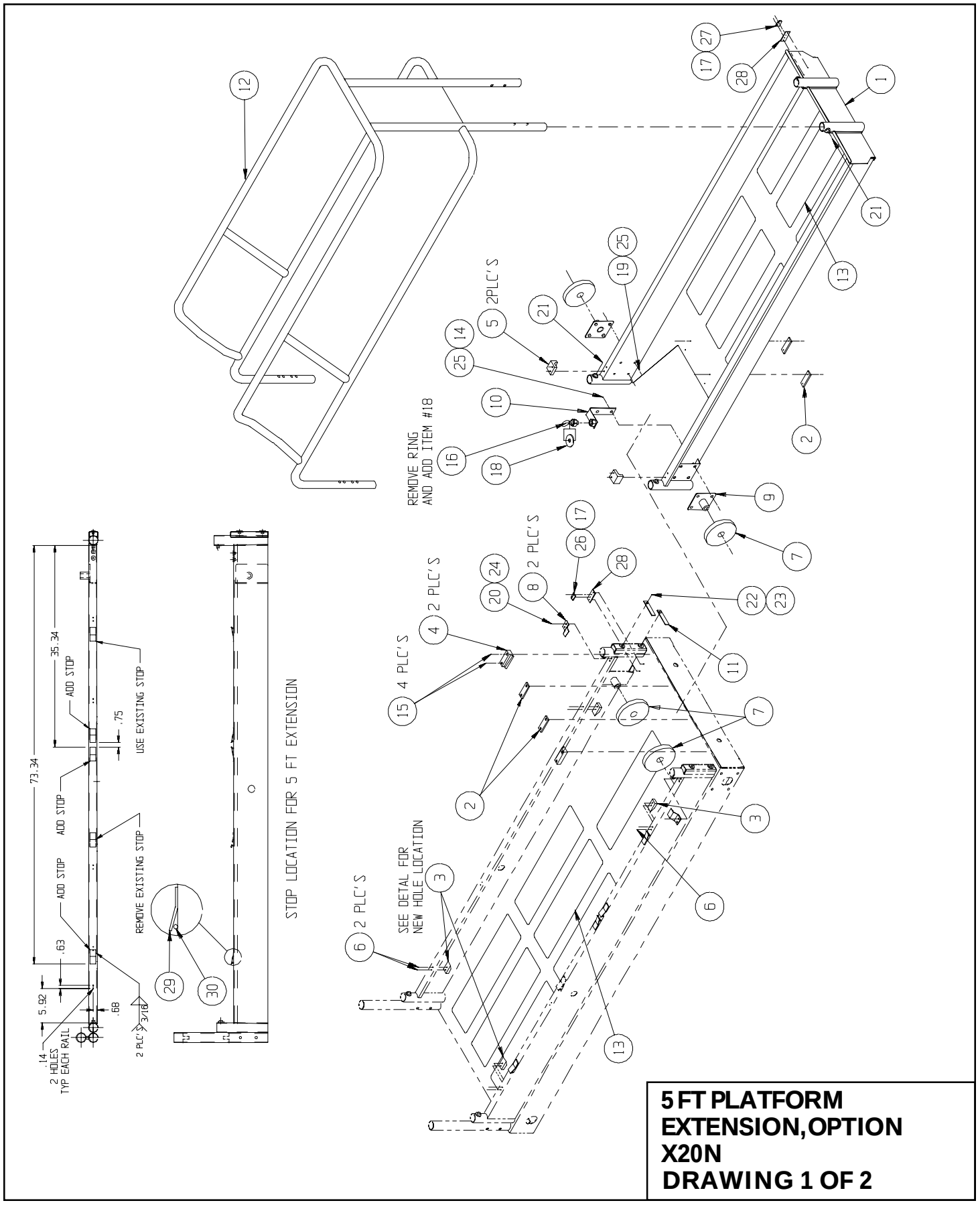
ITEM	PART	DESCRIPTION	QTY.
6	63594-001	BRACKET	1
7	15770-099	HOSE 3/8 SYNFLEX 3600-06	50 FT
8	64274-002	FITTING HOSE	2
9	63191-000	BRACKET	1
10	65682-000	SPACER	1



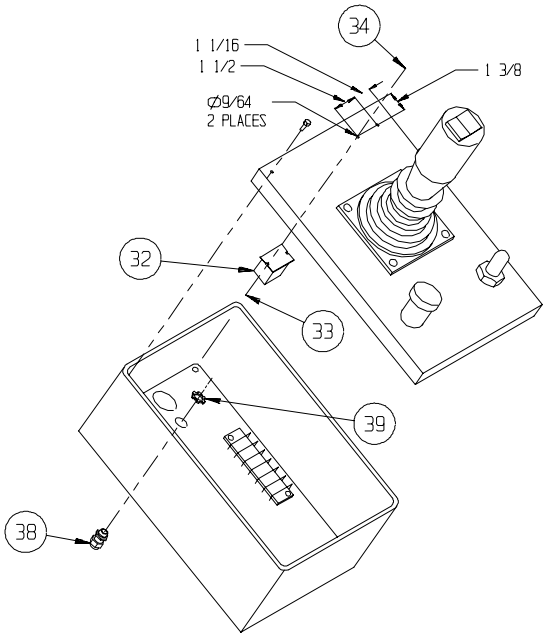
5 FT. PLATFORM EXTENSION, OPTION X20N

66041-000

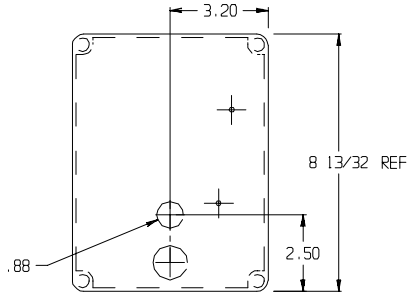
ITEM	PART	DESCRIPTION	QTY.
1	66040-000	WELDMENT PLATFORM 5 FT. EXT.	1
2	66198-000	WEAR PAD	4
3	66193-000	STOP	4
4	66176-000	WEAR PAD	2
5	66170-000	WEAR PAD	2
6	26553-012	RIVET 3/16 DIA X 3/4 GRIP	8
7	66195-000	PLATFORM ROLLER	4
8	66407-000	BRACKET	2
9	66256-000	WELDMENT ROLLER MOUNT	2
10	66410-000	WELDMENT DECK STOP	1
11	66068-000	RETAINING STRAP	2
12	66039-000	WELDMENT 5 FT. EXT. RAIL	1
13	27966-005	SAFETY WALK 6 X 24	13
14	11254-018	SCREW HHC 3/8-16 X 2 1/4	2
15	26553-008	RIVET 3/16 DIA X 1/2 GRIP	10
16	03570-000	RETAINING PIN ASSY	1
17	26551-009	RIVET 1/8 DIA X 1/2 GRIP	8
18	15924-020	WASHER 2" FENDER	1
19	11254-016	SCREW HHC 3/8-16 X 2	6
20	11252-006	SCREW HHC 1/4-20 X 3/4	4
21	66171-003	SCREW HHC 3/8-16 X 2 1/2	4
22	11240-006	WASHER 3/8 FLAT	2
23	11254-006	SCREW HHC 3/8-16 X 3/4	2
24	11240-004	WASHER 1/4 FLAT	4
25	11238-006	WASHER 3/8 LOCK	8
26	65373-005	SWITCH SENSOR	1
27	65373-006	SWITCH ACTUATOR	1
28	66030-000	SWITCH MOUNT	2
29	66408-000	BRACKET STOP	3
30	19501-001	BAR 1/4 DIA HRS X 1	3
31	14914-003	CONN. M PUSH 22-18 .25	2
32	63951-002	RELAY	1
33	11248-047	NUT HEX ESNA 6-32 UNC	2
34	11715-004	SCREW 6-32 UNC MACH RD HD X 1/2	2
35	29931-001	CONN. FM PUSH 22-18 .25	4
36	29931-003	CONN. FM PUSH 14-16 GA. .25	2
37	29610-002	CONN. FORK 14-16 #8	2
38	29925-000	CONN. CABLE	1
39	29939-002	LOCKNUT 1/2 NPT	1
40	29496-099	WIRE 2 COND 16 AWG	FT 16



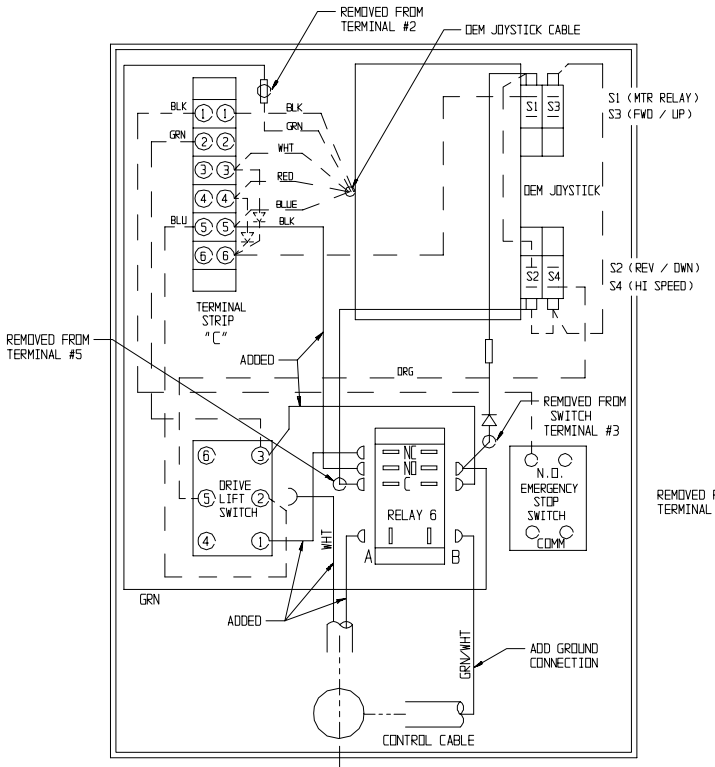
5 FT PLATFORM EXTENSION, OPTION X20N DRAWING 1 OF 2

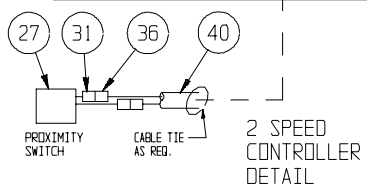


NOTE: CONNECT CONTROL CABLE GRN/WHT WIRE TO GROUND IN CONTROL MODULE.
NO - NORMALLY OPEN CONTACT TERMINAL
C - COMMON TERMINAL
NC - NORMALLY CLOSED CONTACT TERMINAL

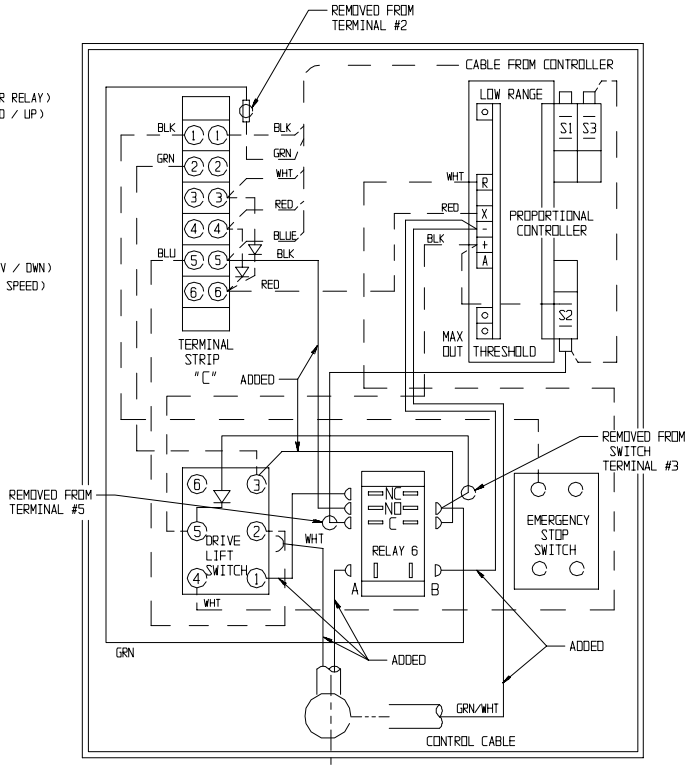


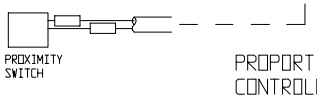
(OUTSIDE BOTTOM VIEW)





2 SPEED CONTROLLER DETAIL





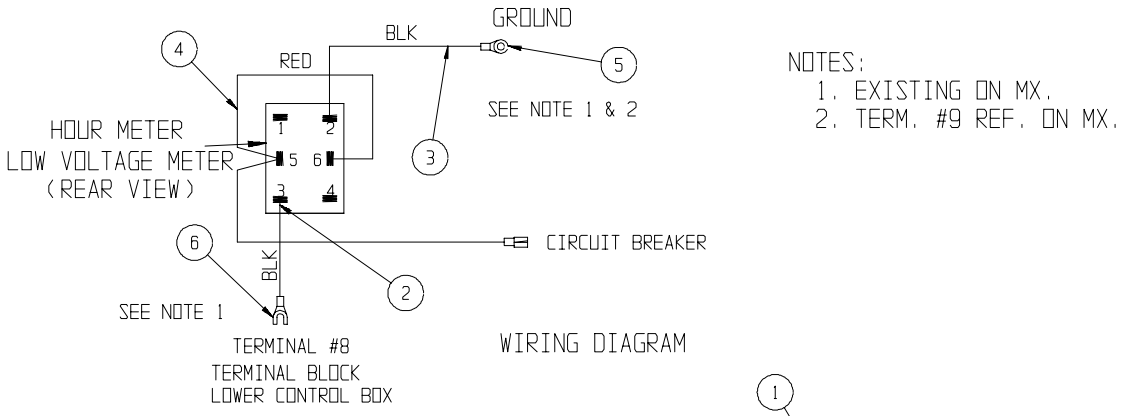
PROPORTIONAL CONTROLLER DETAIL

5 FT PLATFORM EXTENSION, OPTION X20N
DRAWING 2 OF 2

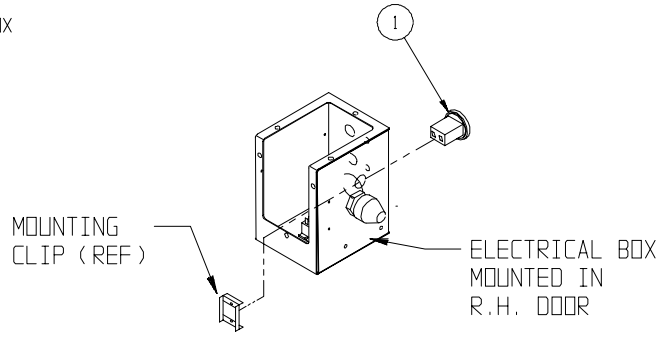
HOUR/LOW VOLTAGE INDICATOR, OPTION X20N/X20W/X26N/X31N

66613-000

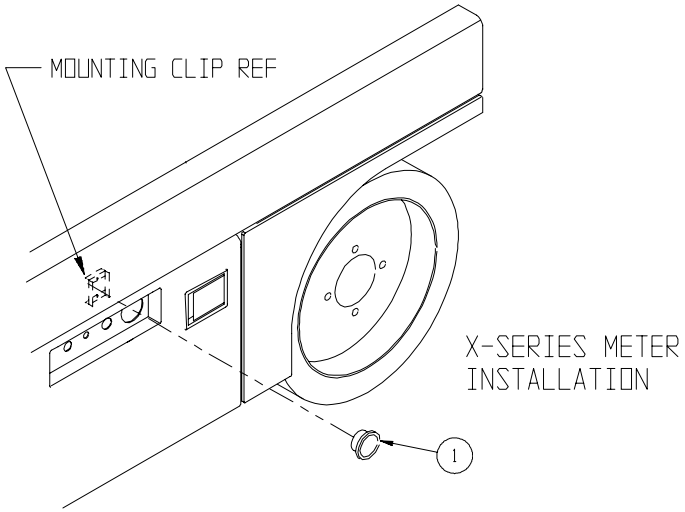
ITEM	PART	DESCRIPTION	QTY.
1	29959-000	HR/LOW VOLTAGE IND.	1
2	29931-003	CONN. PUSH TERM	4
3	29456-099	WIRE 16 GA. YEL X 15"	1.33FT
4	29454-099	WIRE 16 GA. RED X 12"	1 FT
5	29601-013	CONN. RING TERM	1
6	29610-002	CONN. FORK TERM	1



WIRING DIAGRAM



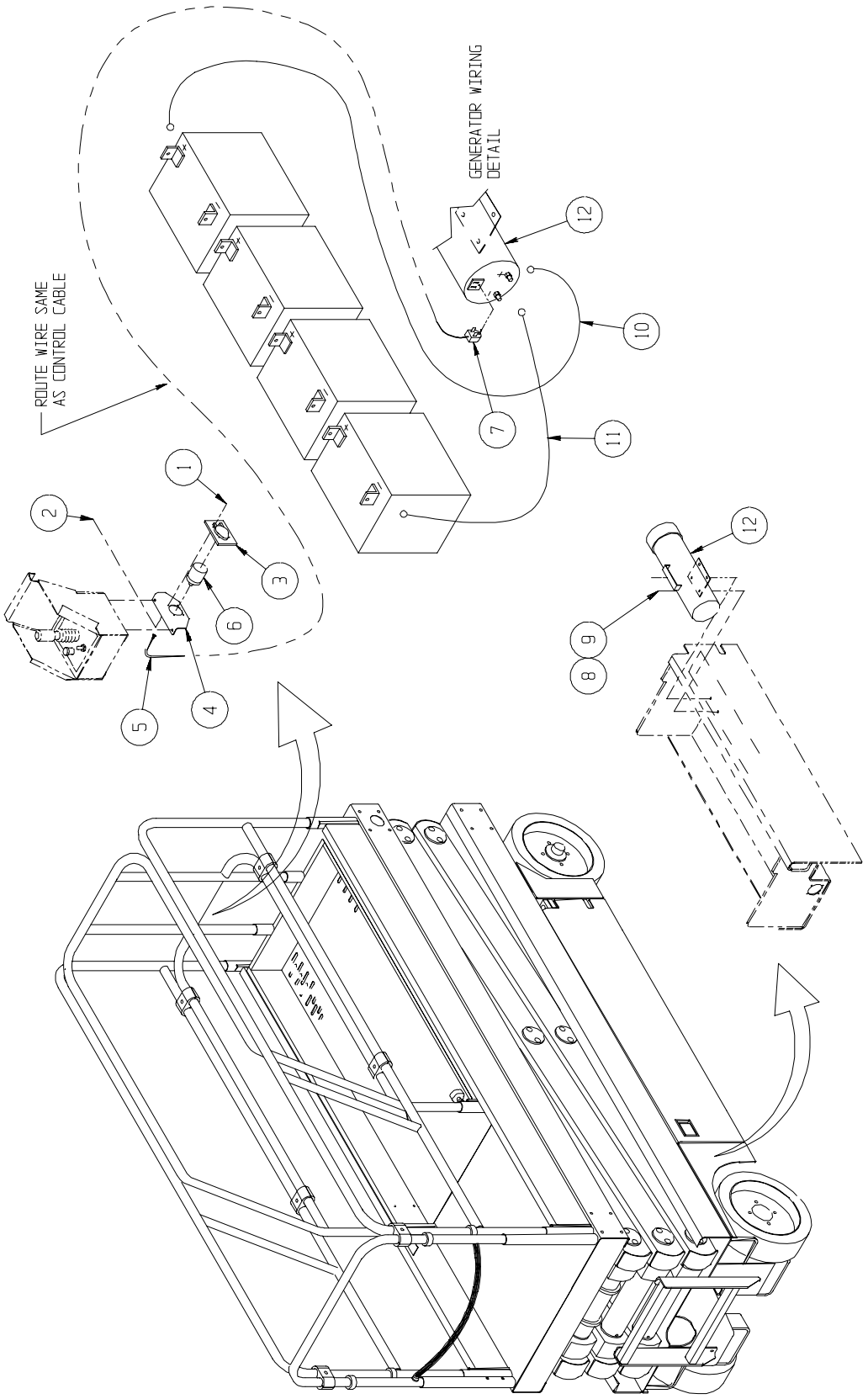
MX SERIES METER
INSTALLLATION



X-SERIES METER
INSTALLATION

GENERATOR, OPTION
X20N/X26N
66615-000

ITEM	PART	DESCRIPTION	QTY.
1	11715-006	SCREW RD. HD. 6-32 X 3/4 LG.	4
2	11248-047	NUT ESNA 6-32	4
3	08942-001	OUTLET	1
4	66505-000	BRACKET	1
5	29495-099	WIRE 14 GA. 3 COND	50 FT
6	29961-001	SEAL, INLET PLUG	1
7	29938-000	THREE PRONG PLUG - 90°	1
8	11248-004	NUT 1/4-20 UNC	2
9	11252-008	SCREW HHC 1/4-20 X 1	2
10	64195-024	CABLE ASSY (POS) 24"	1
11	64195-044	CABLE ASSY (NEG) 44"	1
12	26461-000	GENERATOR HONEYWELL #DA24A 24V	1


GENERATOR WIRING DETAIL
ROUTE WIRE SAME AS CONTROL CABLE
1
2
3
4
5
6
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8
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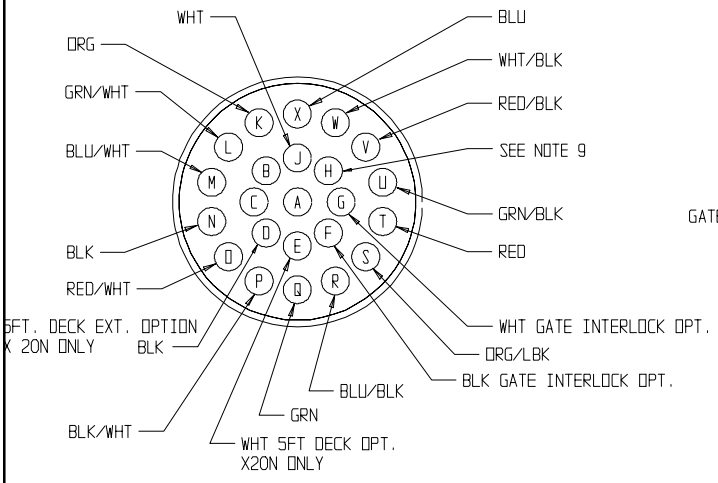
11
12
12

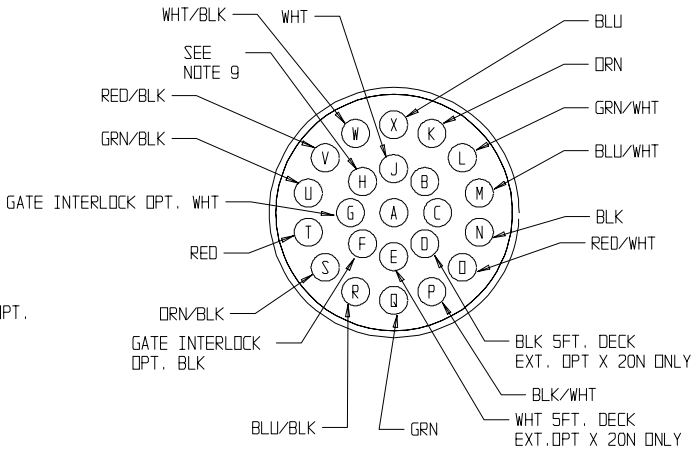
REMOVABLE CONTROLLER OPTION X20N/X20W/X26N/X31N

61898-001

ITEM	PART	DESCRIPTION	QTY.
1	28800-003	PLUG CONNECTOR (FEMALE)	1
2	28800-004	PIN CONTACT (MALE)	15
3	28800-015	PLUG SEALING	16
4	28800-016	RECEPTACLE CONNECTOR W/CLMP (MALE)	1
5	28800-005	SOCKET CONTACT (FEMALE)	15
6	11248-006	NUT HEX ESNA 3/8-16	2
7	11240-006	WASHER 3/8 STD FLAT	4
8	30719-001	110 VAC BRACKET	1
9	30719-002	AIR BRACKET WELDMENT	1
10	11254-016	SCREW HHC GRDS 3/8-16UNC X 2	4



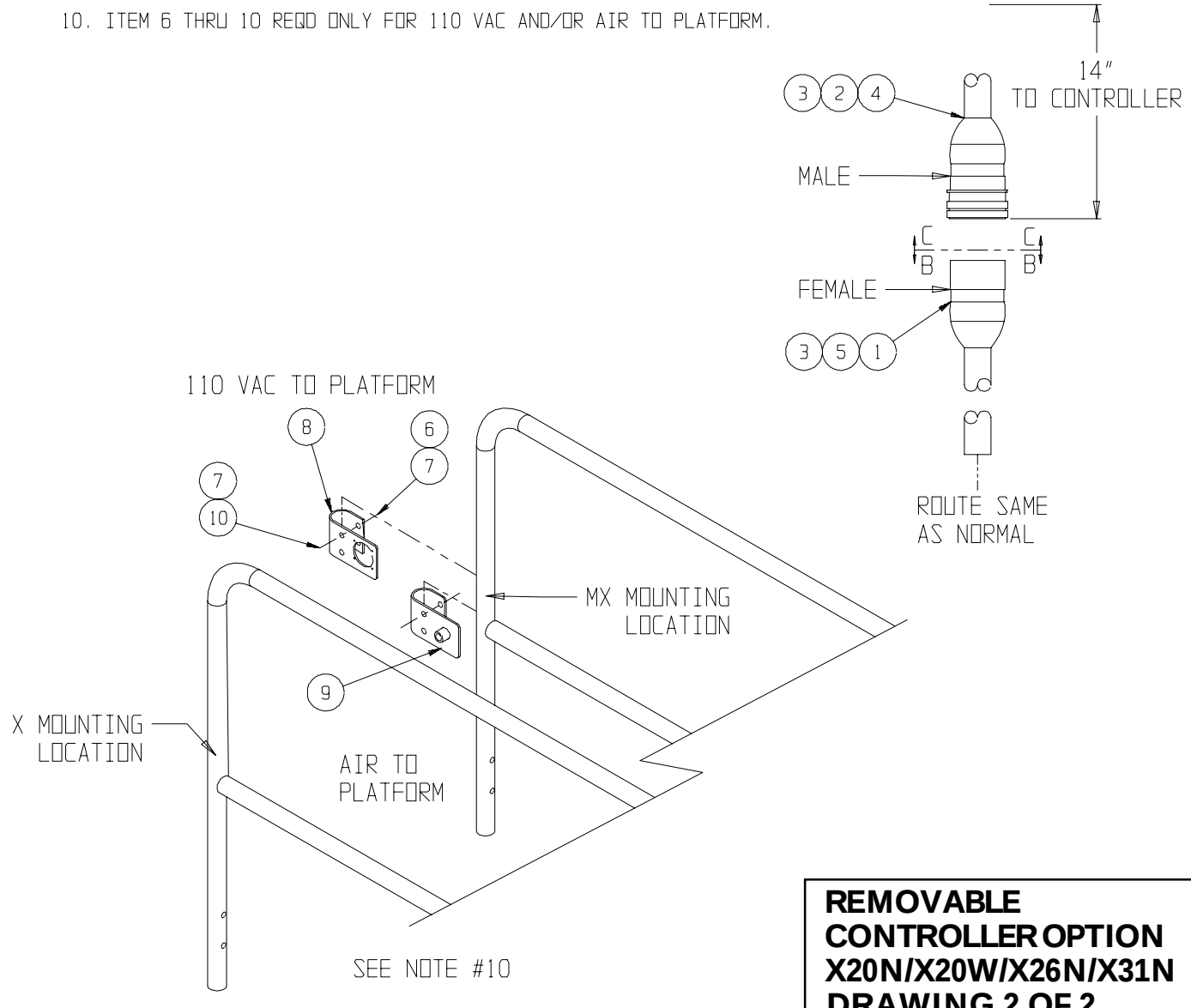
VIEW B-B
MODULE END



VIEW C-C
CONTROLLER END

REMOVABLE CONTROLLER OPTION X20N/X20W/X26N/X31N DRAWING 1 OF 2

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



REMOVABLE CONTROLLER OPTION X20N/X20W/X26N/X31N DRAWING 2 OF 2

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