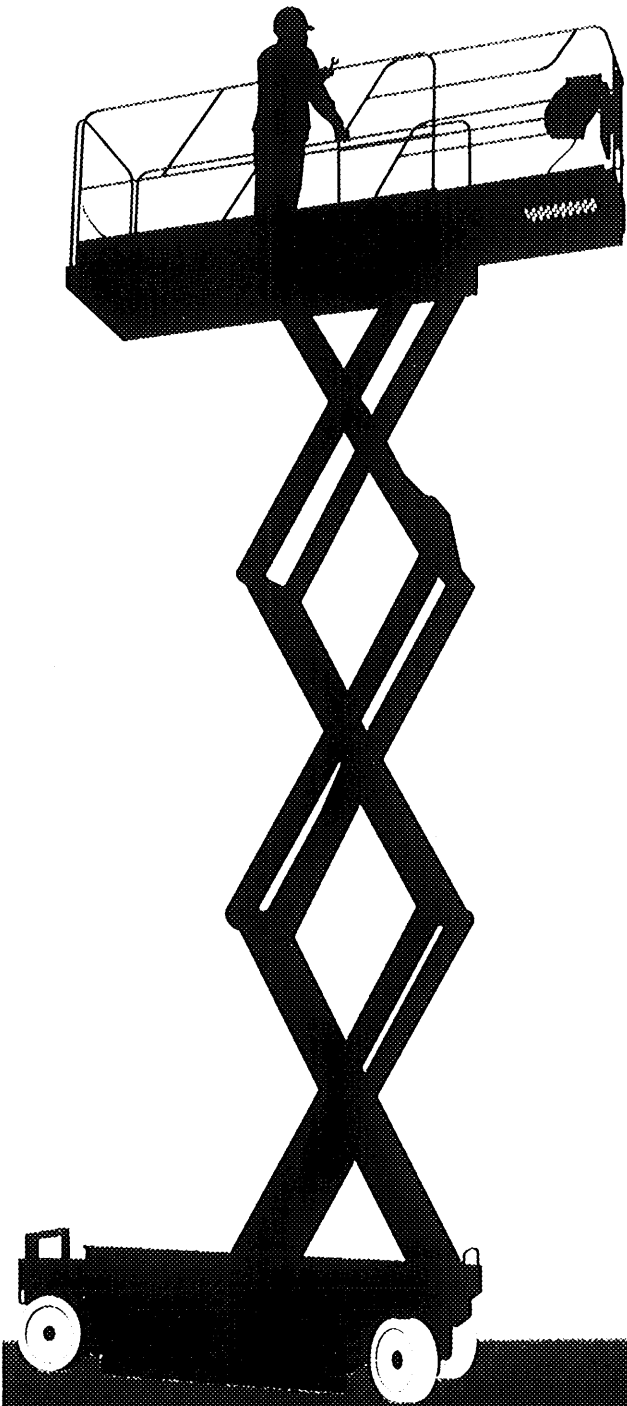


UpRight



X Series

WORK PLATFORM

Service & Parts Manual

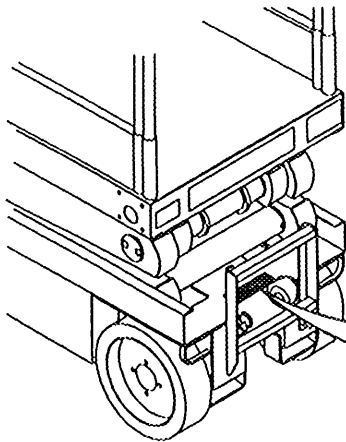
PRELIMINARY

SERVICE & PARTS

MANUAL

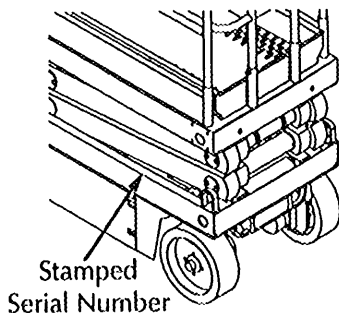
X-Series

Serial Numbers 1017 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, Inc.	
1775 PARK ST. SELMA, CA 93662 USA	
MODEL NO. <input type="text"/>	MAX. PLATFORM HEIGHT <input type="text"/>
SERIAL NO. <input type="text"/>	BATTERY VOLTAGE <input type="text"/>
MAX. DISTRIBUTED LOAD <input type="text"/>	
CAUTION: CONSULT OPERATOR'S MANUAL BEFORE USE.	
THIS PLATFORM IS NOT ELECTRICALLY INSULATED	



UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

UpRight, Inc.
1775 Park Street
Selma, California 93662
TEL: 559/896-5150
FAX: 559/896-9012
PARTSFAX: 559/896-9244

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

P/N 60571-000

3/94 U

Forward

Introduction

HOW TO USE THIS MANUAL

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

SPECIAL INFORMATION



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

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

Introduction & Specifications

General description and machine specifications.

1.0

Machine Preparation

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

2.0

Operation

Operating instructions and safety rules.

3.0

Maintenance

Preventative maintenance and service information.

4.0

Troubleshooting

Causes and solutions to typical problems.

5.0

Schematics

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

6.0

Illustrated Parts Breakdown

Complete parts lists with illustrations.

7.0

Forward

NOTES

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).

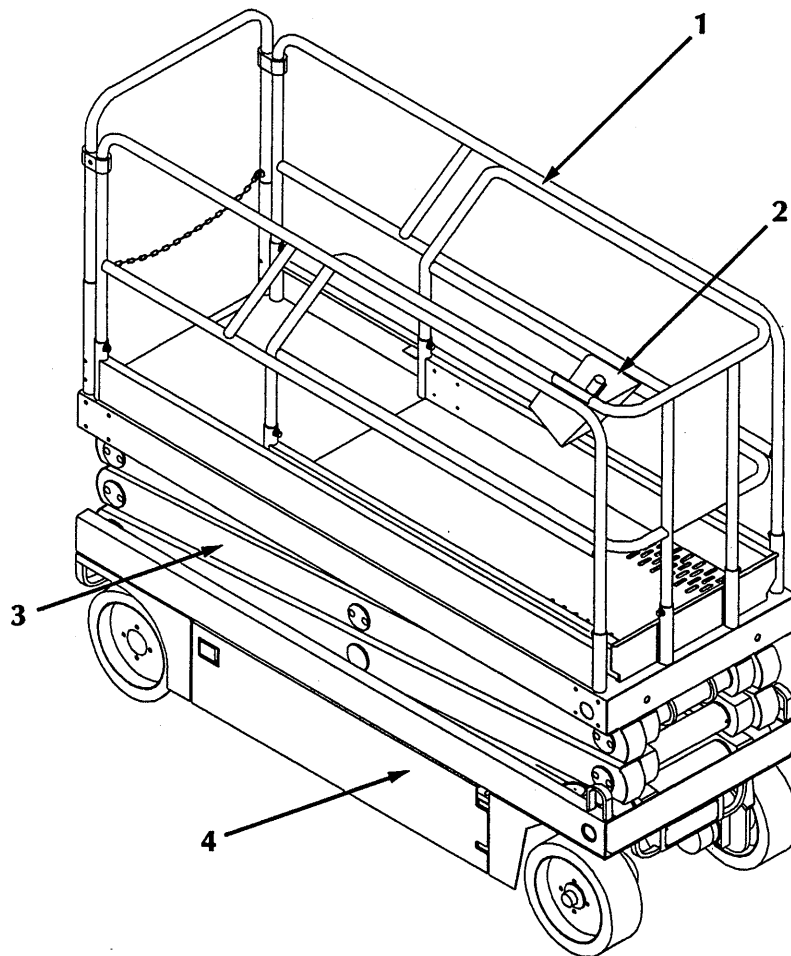
SCOPE

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 automatically limited to the low speed range.



- 1. Platform/Guardrails
- 2. Controller
- 3. Elevating Assembly
- 4. Chassis

Figure 1-1: X-Series Work Platform

Introduction & Specifications

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.

1.2 Specifications*

Refer to Table 1-1.

Table 1-1: Specifications

ITEM	X20N	X-20W	X-26N
Platform Size (inside Toeboards) w/ Deck Extended	28 in. x 87 in. (711 mm x 2.21 m) 28 in. x 124 in. (711 mm x 3.15 m)	44 in. X 87 in. (1.12 m x 2.21 m) 44 in. X 124 in. (1.12 m x 3.15 m)	44 in. X 87 in. (1.12 m x 2.21 m) 44 in. X 124 in. (1.12 m x 3.15 m)
Max. Platform Capacity on Slide Out Deck	750 lbs. (340 kg) 250 lbs. (110 kg)	1000 lbs. (453 kg) 250 lbs. (110 kg)	1000 lbs. (453 kg) 250 lbs. (110 kg)
Max. No. of Occupants on Slide Out Deck	3 people 1 person	4 people 1 person	4 people 1 person
Height			
Working Height	26 ft. 2 in. (7.98 m)	26 ft. 2 in. (7.98 m)	32 ft. 3 in. (9.83 m)
Max. Platform Height	20 ft. 2 in. (6.15 m)	20 ft. 2 in. (6.15 m)	26 ft. 3 in. (8.0 m)
Min. Platform Height	38 in. (.97 m)	39 in. (.99 m)	43 in. (1.09 m)
Weight	3,651 lbs. (1653 kg)	4,096 lbs. (1858 kg)	4,570 lbs. (2073 kg)
Dimensions			
Overall Width	32.5 in. (.83 m)	48 in. (1.22 m)	48 in. (1.22 m)
Overall Height	78 in. (1.98 m)	79 in. (2.0 m)	83 in. (2.11 m)
Overall Length	92.5 in. (2.35 m)	92.5 in. (2.35 m)	92.5 in. (2.35 m)
Driveable Height	20 ft. 2 in. (6.15 m)	20 ft. 2 in. (6.15 m)	26 ft. 3 in. (8.0 m)
Surface Speed			
Platform Lowered	2.3 mph (3.70 km/h)	2.3 mph (3.70 km/h)	2.3 mph (3.70 km/h)
Platform Raised	.7 mph (1.13 km/h)	.7 mph (1.13 km/h)	.7 mph (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
System Voltage	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
Battery Duty Cycle	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)
Maximum Hydraulic System Pressure	2400 psi (165 Bar)	3000 psi (207 Bar)	3000 psi (207 Bar)
Lift System	One Single Stage Lift Cylinder	One Single Stage Lift Cylinder	One Single Stage Lift Cylinder
Drive Control	Two Speed	Two Speed	Two Speed
Control System	Joystick Controller with Interlock Lever, Toggle Selector Switch, Red Mushroom Emergency Stop	Joystick Controller with Interlock Lever, Toggle Selector Switch, Red Mushroom Emergency Stop	Joystick Controller with Interlock Lever, Toggle Selector Switch, Red Mushroom Emergency Stop
Horizontal Drive	Dual Front Wheel Hydraulic Motors	Dual Front Wheel Hydraulic Motors	Dual Front Wheel Hydraulic Motors
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
Parking Brakes	Two, Spring Applied, Hydraulic Release Brake Shoes with Manual Brake Release	Two, Spring Applied, Hydraulic Release Brake Shoes with Manual Brake Release	Two, Spring Applied, Hydraulic Release Brake Shoes with Manual Brake Release
Turning Radius	90 in. (2.29 m) Outside	96 in. (2.44 m) Outside	96 in. (2.44 m) Outside
Gradeability	22 % (12 degrees)	22 % (12 degrees)	22 % (12 degrees)
Wheel Base	74.75 in. (1.9 m)	74.75 in. (1.9 m)	74.75 in. (1.9 m)
Guardrails	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

*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



WARNING



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.

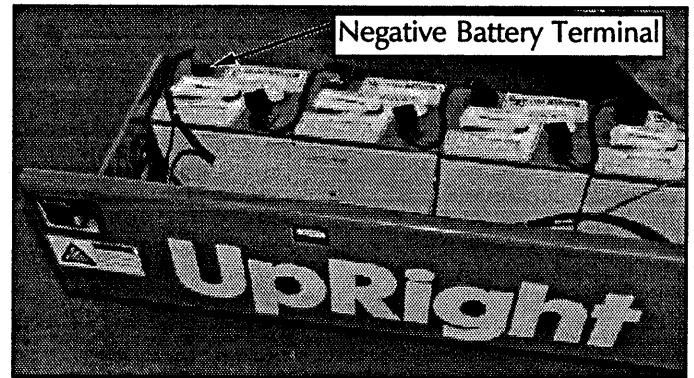


Figure 2-1: Chassis Module, Right Side

2.3 Forklifting Of Work Platform

NOTE: Forklifting is for transporting only.



CAUTION



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

Forklift from the side or rear by lifting under the Chassis (Figure 2-2).

2.4 Lifting Work Platform

Secure straps to chassis tie lift points **only** (Figure 2-2).

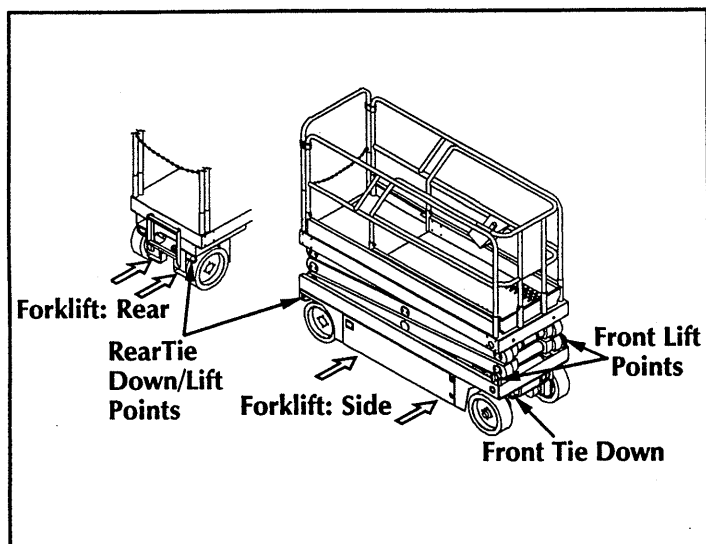


Figure 2-2: Transporting machine

2.5 Transport

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



CAUTION



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

2.6 Storage

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

PRESERVATION

1. Clean painted surfaces. If the paint surface is damaged, repaint.
2. Check the level of the hydraulic oil with the platform fully lowered. Open the Right Module and remove the reservoir cap, oil should be visible in the filler screen. 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.

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 to ensure safe operation:

- The drive speed is limited to low speed when operating the work platform while the platform is elevated.
- The platform descent rate is controlled by an orifice (Fixed Speed). In the last 25 mm of platform lowering the oil flows through the cushion orifice only slowing the platform descent even further (Cushion Speed).
- 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 (60 Hz) 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. An alarm will sound and the Platform will not elevate if the Pothole Protection Supports do not fully deploy.
- The Tilt Alarm (600 Hz) 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 before operating machine.

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

SECURE chain across entrance after mounting platform.

NEVER use ladders or scaffolding on the platform.

NEVER attach overhanging loads or increase platform size.

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

DISTRIBUTE all loads evenly on the platform. See 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

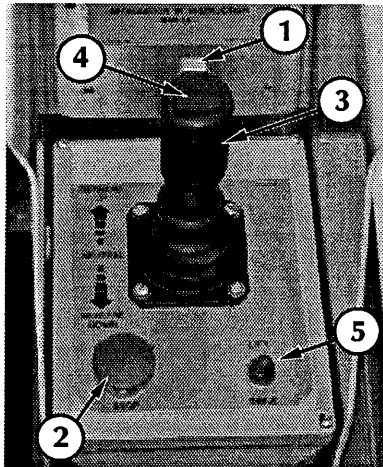
INDEX NO.	NAME	FUNCTION
1	Interlock Lever	Provides power to the Controller only when depressed, preventing inadvertant activation of the Controller.
2	Emergency Stop Switch	Push red button to cut off power to all functions (OFF). Turn clockwise to provide power (ON).
3	Control Lever (Joystick)	Move joystick 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. Selecting LIFT allows the platform to raise or lower.

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

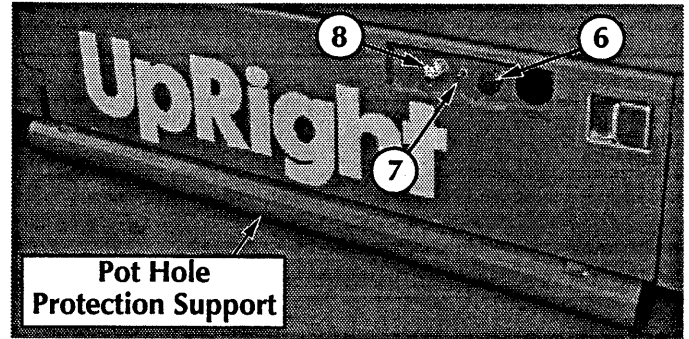
Chassis

INDEX NO.	NAME	FUNCTION
6	Emergency Stop Switch	Push red button to cut off power to all functions (OFF). Pull out to provide power (ON).
7	Chassis Lift Switch	Toggle switch to 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 and to CHASSIS to provide power to Chassis Controls.
9	Emergency Lowering Valve	Pull handle out to lower the Platform. To close, release handle. The platform cannot be raised until this valve is closed.
10	Brake Release	Loosen locknut and turn Brake Release/Adjustment Bolt counterclockwise to release brakes. Turn Brake Release/Adjustment Bolt clockwise until brakes fully engage tires, secure bolt with locknut. 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, the green LED indicator will come on.
12*	Down Alarm (60 Hz)	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/Pothole Protection Alarm (600 Hz)	Sounds an audible signal when the platform is elevated and: on a slope of 2° side to side or fore and aft or; the Pothole Protection Supports do not fully deploy.

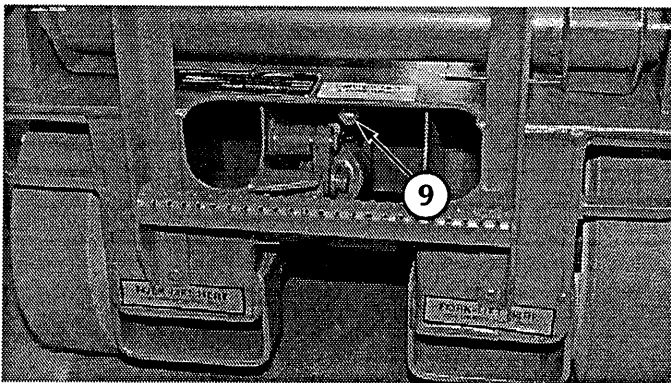
* Not shown in Figure 3-1, Items 12 & 13 are the same unit with two different inputs, mounted on the electrical box inside the left Chassis Door.



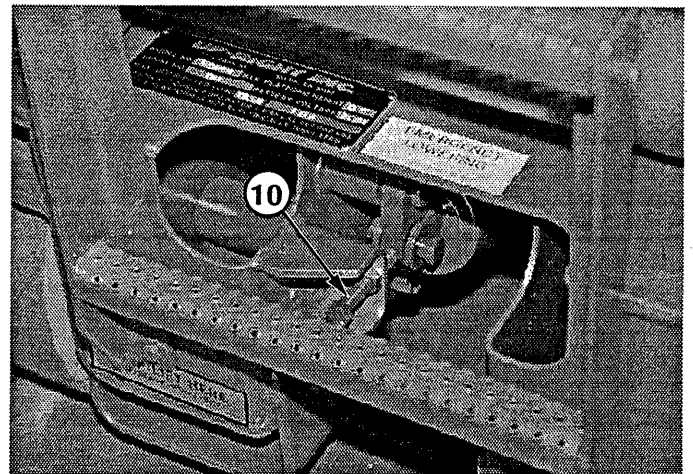
Controller



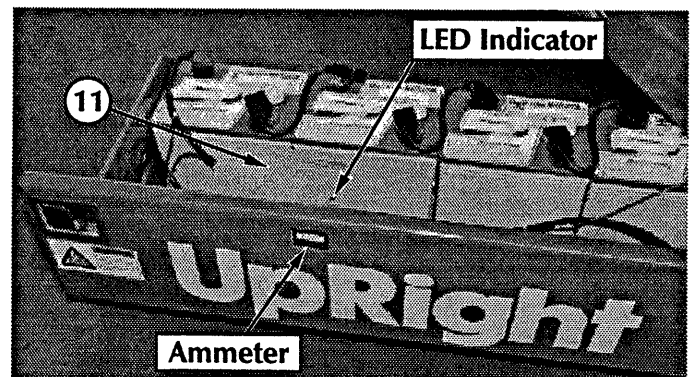
Chassis Module, Left Side



Emergency Lowering Valve Handle



Brake Release



Chassis Module, Right Side

Figure 3-1: Controls and Indicators

3.3 Pre-Operation Inspection

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

WARNING

DO NOT perform service on or in 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 visible in the filler screen. 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 and that the Pothole Protection Support Alarm are operational by pushing in on each support. The alarm should sound and the support should freely rotate back into the deployed position.
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. Verify that the Pothole Protection Supports have rotated into the stowed position.
17. Turn the Chassis Key Switch to **DECK**.
18. Close and latch the module doors.
19. Check that route is clear of persons, obstructions, holes and drop-offs, is level and capable of supporting the wheel loads.
20. 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.

21. Pull Emergency Stop Button out to the ON position.
22. Position Drive/Lift Switch to **DRIVE**.
23. 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.
24. Push Steering Switch RIGHT then LEFT to check for steering control.
25. Push the Emergency Stop Switch Button.
26. 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 Drive/Lift Switch to **DRIVE**.
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 or the Pot Hole Protection Supports do not fully deploy 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 or the Pot Hole Protection Supports must be repaired if they are not properly deploying.**

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 or the Pot Hole Protection Supports do not fully deploy 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 or the Pot Hole Protection Supports must be repaired if they are not properly deploying.**

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.

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

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.

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.

The Brake Adjustment/Release Bolt is located at the rear of the machine between the rear wheels.

1. To release the brakes loosen the locknut and turn the bolt counterclockwise until the brakes disengage from the tires.
2. The machine will now roll when pushed or pulled.
3. To re-engage the brakes tighten the bolt until the brakes have fully engaged the tires, secure the bolt with the locknut. Be sure to verify that the brakes have fully engaged the rear tires before the machine is operated.



WARNING



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

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

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
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			
	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 (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 nine (9) feet (2.7 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**.

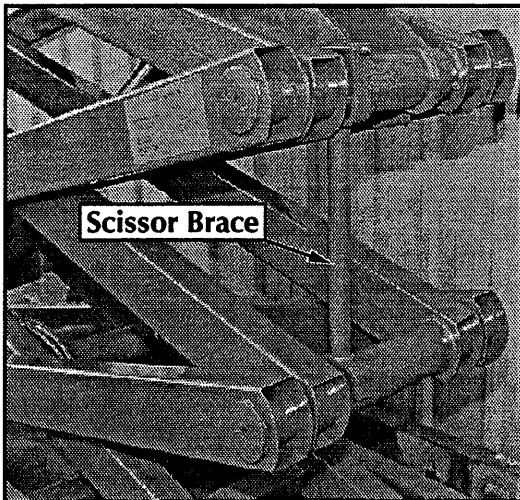


Figure 4-1: Blocking the Elevating Assembly

4.3 Battery Maintenance

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



WARNING



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

Always wear safety glasses when working with batteries.

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

BATTERY INSPECTION AND CLEANING

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



CAUTION



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

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

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

BATTERY CHARGING*(See Figure 4-2)*

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

**CAUTION**

Charge batteries in a well ventilated area.

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

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

Never leave charger operating unattended for more than two days.

Never disconnect cables from batteries when charger is operating.

Keep charger dry.

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

1. Check battery fluid level. If electrolyte level is lower than $\frac{3}{8}$ in. (10 mm) above plates add distilled water only.
2. The battery charger is located inside the right chassis door. Connect extension cord (12 gauge conductor minimum and 50 ft. (15 m) in length maximum) to the charger outlet plug located in the right chassis door. Connect other end of extension cord to properly grounded outlet of proper voltage and frequency.
3. Charger turns on automatically after a short delay, the ammeter will indicate DC charging current.
4. Charger turns off automatically when batteries are fully charged, the green LED indicator will come on.

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.

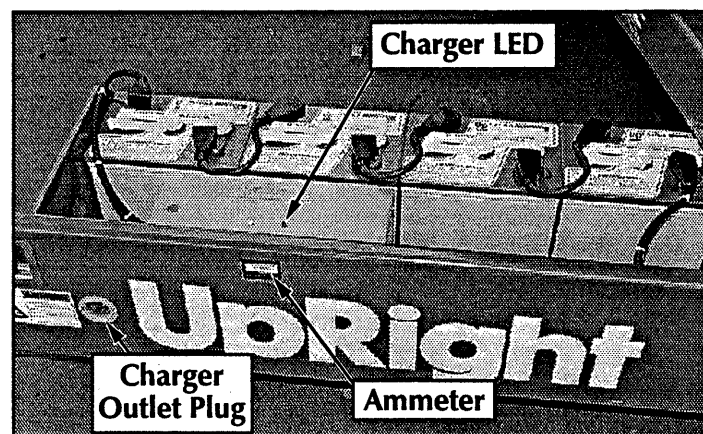


Figure 4-2: Battery Charger

4.4 Lubrication

STEERING LINKAGE

Apply two to three drops of oil to each king pin or linkage bearing.

HYDRAULIC OIL TANK AND FILTER (Figure 4-3)

Fluid Level

With the platform fully lowered, open the Left Module and remove the reservoir cap, oil should be visible on the dipstick.

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 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 $\frac{3}{4}$ of a turn further.
9. Fill the hydraulic reservoir with ISO #46 hydraulic oil until the oil is visible on the dipstick, do not fill above the lower line on the dipstick. Hydraulic tank has a 7 liter capacity.

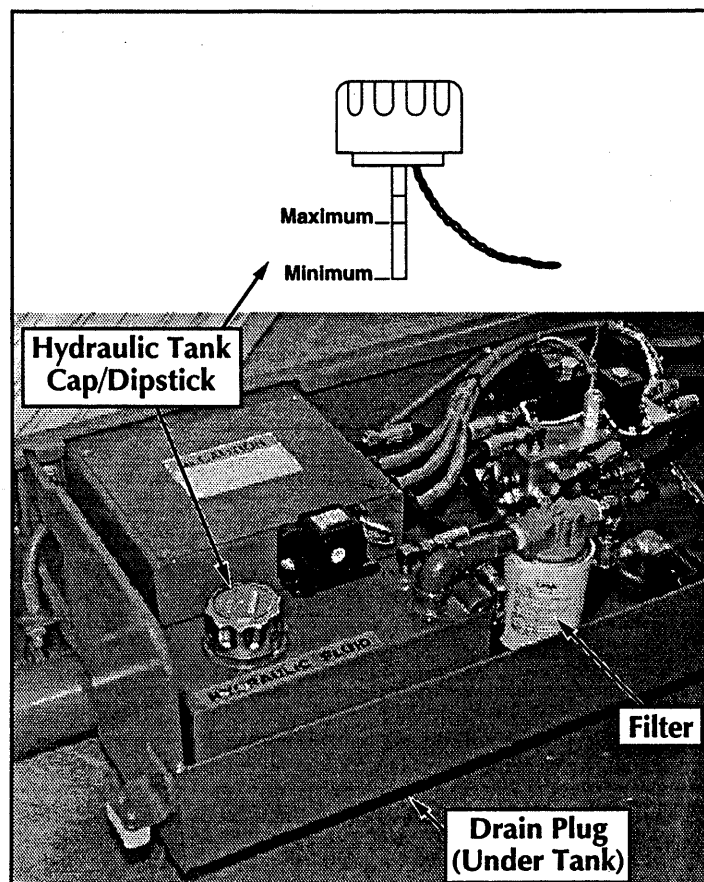


Figure 4-3: Hydraulic Oil Tank and Filter

4.5 Setting Hydraulic Pressures (Figure 4-4)

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.

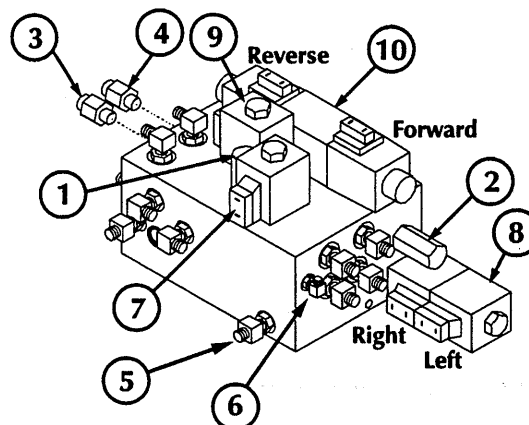
The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. **Obtain medical assistance immediately if cut by hydraulic oil.**

MAIN RELIEF VALVE (Figure 4-4)

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

STEERING RELIEF VALVE

1. Remove the hose (from the low side of the pump) and install a tee fitting and gauge at the P1 port. Reconnect the hose to the tee fitting.
2. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
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 1000 psi (69 bar).



- | | |
|-------------------------|---------------------------|
| 1. Main Relief | 6. G1 Gauge Port |
| 2. Steering Relief | 7. Drive/Lift Valve |
| 3. Fwd. C-Balance Valve | 8. Steering Valve |
| 4. Rev. C-Balance Valve | 9. High Speed Valve |
| 5. P1 Gauge Port | 10. Forward/Reverse Valve |

Figure 4-4: Hydraulic Manifold

5. Tighten locknut or replace Steering Relief Valve cover and torque to 6 Ft/Lbs (8 Nm).
6. Remove tee fitting and gauge and replace hose.

COUNTERBALANCE VALVES (Figure 4-4)

1. Remove G1 port cap and install the pressure gauge assembly.
2. Operate the work platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.
3. Lift work platform and block front wheels off ground.
4. Loosen the locknuts on Counterbalance Valves.
5. With the Chassis Key Switch on **DECK** and the Drive/Lift Switch in **DRIVE** depress the Interlock Lever and slowly pull the Control Lever to **REVERSE** to drive the wheels.
6. Adjust the Forward Counterbalance Valve by turning the adjustment screw until the pressure gauge indicates:
 - 325 psi (22.4 bar) for X20N machines
 - 425 psi (29.3 bar) for X20W & X26N machines.
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) for X20N machines
 - 425 psi (29.3 bar) for X20W & X26N machines.
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.
11. Remove the gauge from port and reinstall cap.
12. Check for proper operation of the drive system and brake.

4.6 Switch Adjustments

TILT SENSOR (Figure 4-5)

1. Place machine on firm level surface $\pm 1/4^\circ$.
2. Use the Inclinator (P/N: 10119-000-00) to ensure front and rear of Chassis is level $\pm 1/4^\circ$.
3. Use the Chassis Controls to raise Platform to approximately 9 feet (2.7 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.

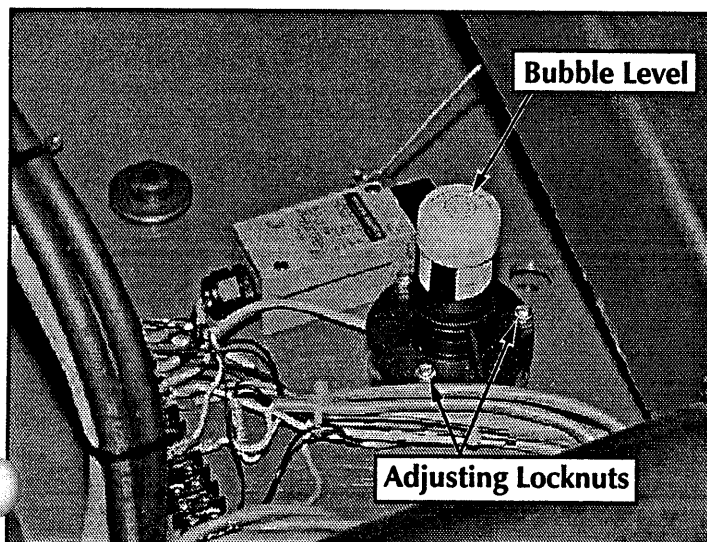


Figure 4-5: Tilt Sensor Adjustment

DOWN LIMIT SWITCH (Figure 4-6)

The Down Limit Switch cuts power to the High Speed Circuit and supplies power to the Tilt Sensor/Pothole Interlock Circuit when the Platform is elevated. The Down Limit Switch is located in the Tilt Sensor Electrical Box at the front of the machine.

Adjust the wand on the Down Limit Switch to just contact the Scissor Weldment at the same time the Pothole Protection Actuator Roller contacts the Scissor Weldment.

⚠ WARNING ⚠

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

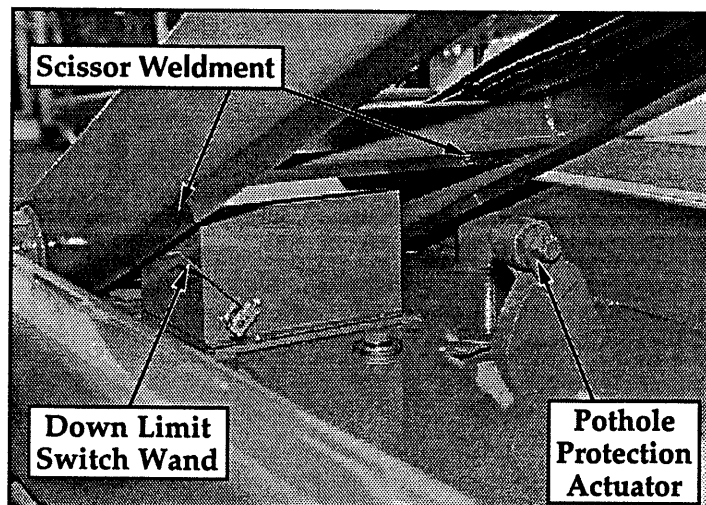


Figure 4-6: Down Limit Switch Adjustment

4.7 Hydraulic Manifold (Figure 4-7)

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 mounting bracket, 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 4-7 often to aid in disassembly and assembly.

1. Remove coils from solenoid valves.
2. Remove spool valve cover and spool valve.
3. Remove solenoid valves, relief valves and counterbalance valves.
4. 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, solenoid valves and spool 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 mounting brackets with bolts, make sure all the ground wires are attached with the left 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 hydraulic pressures according to instructions in Section 4.5.

1. Forward Counterbalance
2. Reverse Counterbalance
3. High Speed Valve
4. Low Speed Check Valve
5. Forward/Reverse Valve
6. Steering Relief Valve
7. Steering Valve
8. Main Relief Valve
9. Low Speed Check Valve
10. Drive/Lift Valve

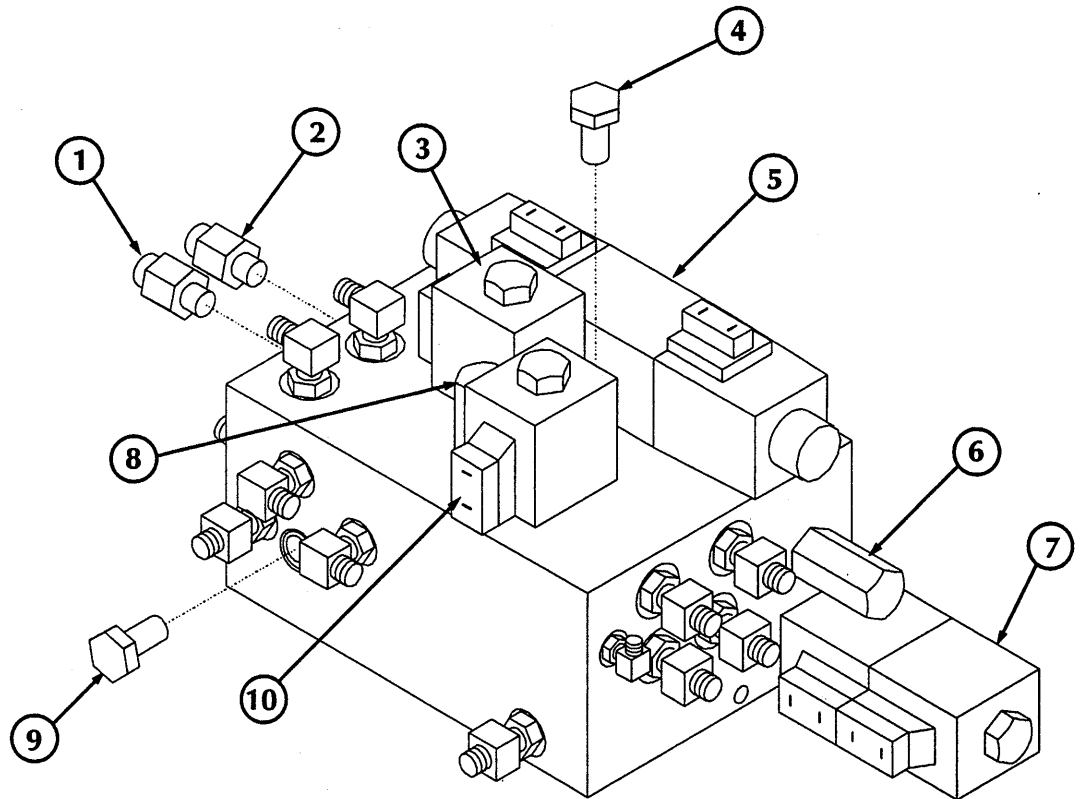


Figure 4-7: Hydraulic Manifold

4.8 Hydraulic Pump (Figure 4-8)

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.

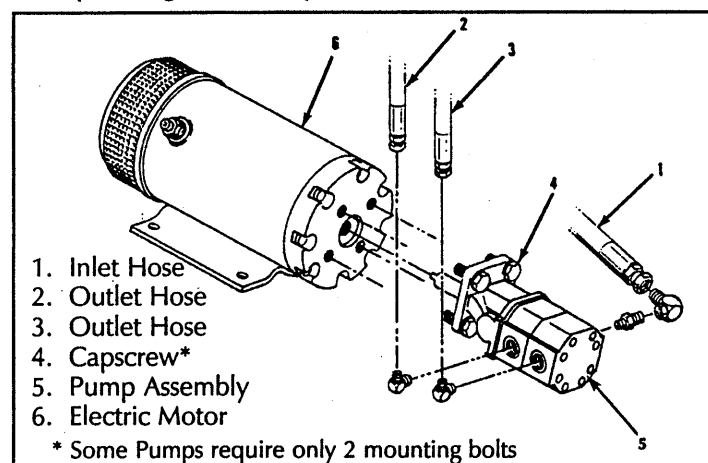


Figure 4-8: Hydraulic Pump

4.9 Hydraulic Drive Motors and Hubs (Figure 4-9)

REMOVAL

1. Use a 1 ton (1000 Kg) capacity jack to raise the front of the machine. Position blocks under the 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.

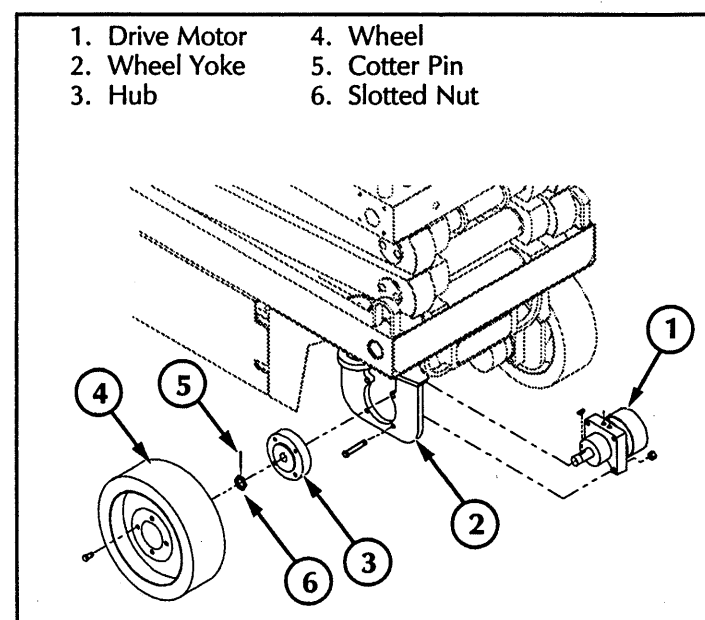


Figure 4-9: Drive Motor Installation

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 4-10)

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 nut and bolt.
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.

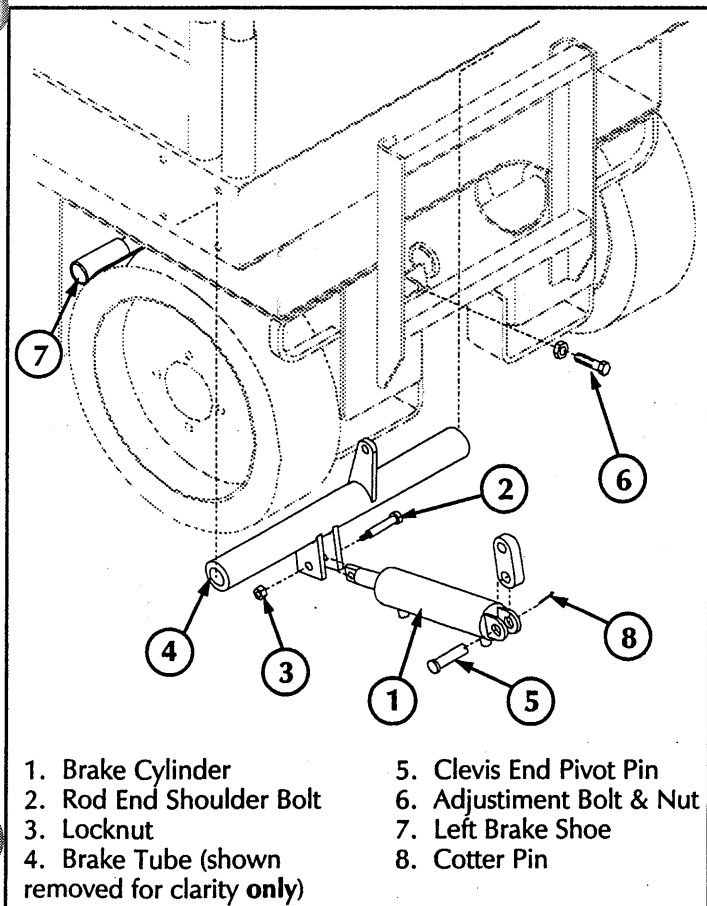


Figure 4-10: Brake Cylinder Installation

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 re-assembly.

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 bolt and 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 4-11)

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.

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.

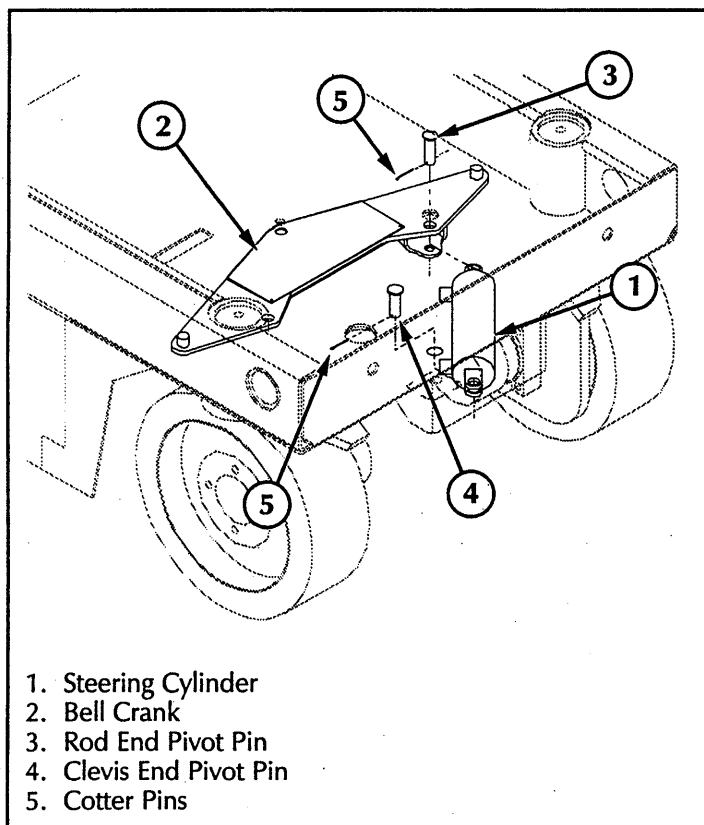


Figure 4-11: Steering Cylinder Installation

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 thead 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 4-12)

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. Immediately plug hoses 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.
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.

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.

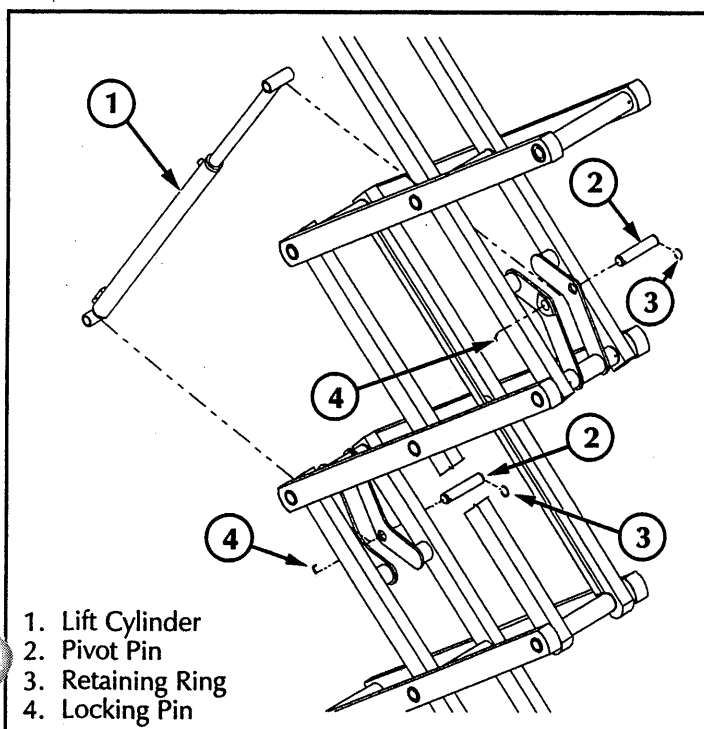


Figure 4-12: Lift Cylinder

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 Lockite #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 $\frac{1}{4}$ 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 making sure the Locking Pin fully engages the pivot and pin.
2. Install the retaining ring.
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 4-13)

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 4-13A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions then it can be assumed the original problem is external to the motor.

DISASSEMBLY

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

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

INSPECTION

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

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

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

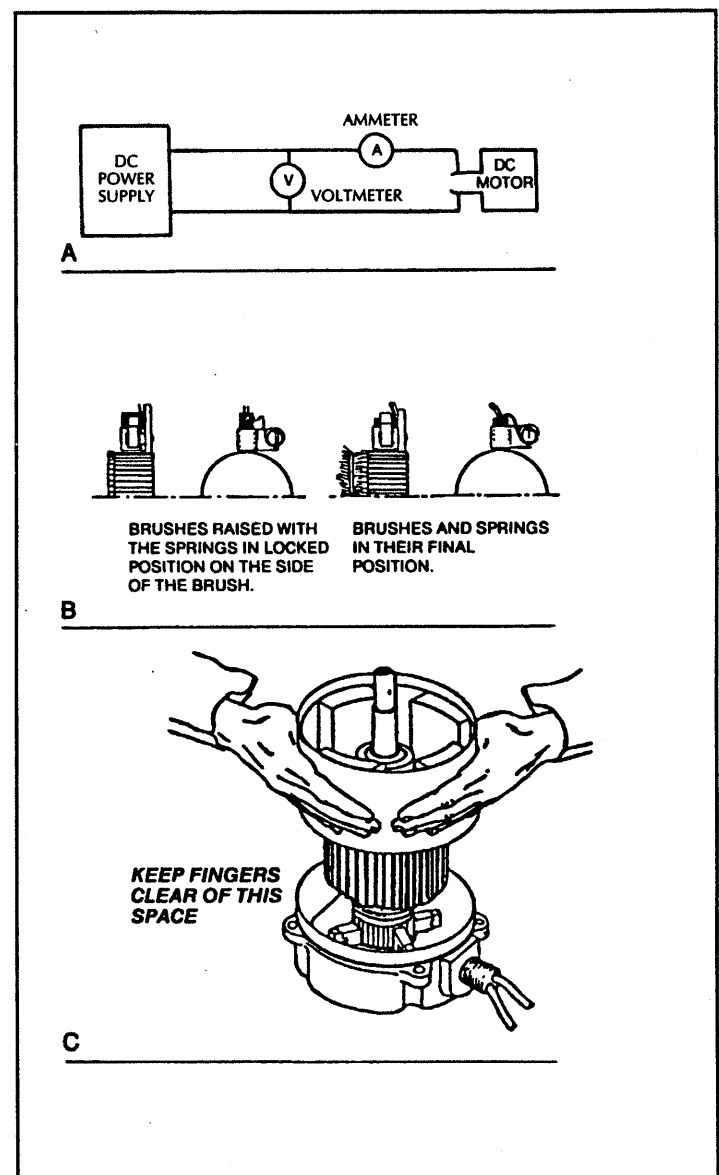


Figure 4-13: Electric Motor Service

- 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 4-13B 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 4-13B.
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 Nm)	FITTINGS (Ft/Lbs Nm)	HOSES (In/Lbs Nm)
#4	N/A N/A	N/A N/A	135-145 15-16
#6	N/A N/A	10-20 14-27	215-245 24-28
#8	25-30 34-41	25-30 34-41	430-470 49-53
#10	35-40 47-54	35-40 47-54	680-750 77-85
#12	85-90 115-122	85-90 115-122	950-1050 107-131
#16	130-140 176-190	130-140 176-190	1300-1368 147-155

Spool Valve and Subplate (DO1 & DO4) fasteners:
50 In/Lbs (7 Nm).

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 <small>American National Standard-UNF (fine)</small>	WIDTH ACROSS FLATS	TORQUE VALUE	
		ENGLISH	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.

Troubleshooting

Table 5-1: Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
All functions inoperable, Electric Motor does not start.	<ol style="list-style-type: none"> 1. Open Control Circuit Circuit Breaker (CB). 2. Blown Electric Motor Fuse (FU). 3. Faulty Battery Charger. 4. Faulty Battery(ies) (BAT). 5. Faulty Electric Motor (MOT). 6. Faulty Motor Relay (CR1). 7. Emergency Stop Switch (SW1, SW3) failed open. 8. Faulty Down Limit Switch (LSW1). 9. Faulty Tilt Alarm Relay (CR3). 	<p>Check Control Circuit Circuit Breaker. Reset if open.</p> <p>Check 175 amp Electric Motor Fuse. Replace if blown.</p> <p>Check the voltage output of the Battery Charger. If less than 24 VDC, repair or replace.</p> <p>After completely charging Batteries, test each Battery. Replace as required.</p> <p>While operating the steering function, check voltage across the Electric Motor terminals. If 24 VDC is present, replace the Motor.</p> <p>While operating the steering, check voltage across the coil terminals of Motor Relay. If no voltage is present, proceed with step 7. If 20 VDC or more, check continuity across the contact terminals of Motor Relay while still operating the steering function. If there is no continuity, replace the defective Motor Relay.</p> <p>With the Emergency Stop Switch in the ON position, check continuity across the contacts. If none, replace.</p> <p>Check continuity of switch, replace if faulty.</p> <p>Test relay, replace if faulty.</p>
All functions inoperable. Electric motor starts when control is actuated.	<ol style="list-style-type: none"> 1. Hydraulic Reservoir low. 2. Faulty Hydraulic Pump (PMP). 	<p>Check hydraulic fluid level, top off as required.</p> <p>Check pressure and delivery of the Hydraulic Pump. Replace if required.</p>
Electric Motor continues to run after controls are returned to the OFF position.	Motor Relay (CR1) contacts fused together.	<p>Check operation. Adjust or replace if required.</p> <p>With 0 voltage at the coil terminals of the Motor Relay (CR1) check continuity across the contact terminals. If there is continuity, replace the Motor Relay.</p>
Steering inoperable or functions sluggishly.	<ol style="list-style-type: none"> 1. Faulty Steering Switch (SW6). 2. Mechanical damage. 3. Steering Valve (V1) stuck. 4. Steering Cylinder (CYL1) piston seal leaking. 5. Steering Relief (RV2). 	<p>Test Steering Switch for continuity. Replace if defective.</p> <p>Inspect all steering components. Replace damaged parts.</p> <p>Inspect Steering Valve. If spool is sticking, replace.</p> <p>Check Steering Cylinder for leakage from one port to another. Repair as required.</p> <p>Adjust the relief valve, if not adjustable replace.</p>
Work platform will not steer right.	<ol style="list-style-type: none"> 1. Faulty Steering Switch (SW6). 2. Faulty Diode (DIO1). 3. Faulty Steer Right Solenoid (SOL1). 	<p>Test Steering Switch for continuity. Replace if defective.</p> <p>Test Diode. Replace if defective.</p> <p>Test Steer Right Solenoid. If the proper voltage is present and the coil is not magnetized, replace.</p>

TROUBLE	PROBABLE CAUSE	REMEDY
Work platform will not steer left.	<ol style="list-style-type: none"> 1. Faulty Steering Switch (SW6). 2. Faulty Diode (DIO2). 3. Faulty Steer Left Solenoid (SOL2). 	<p>Test Steering Switch for continuity. Replace if defective.</p> <p>Test Diode. Replace if defective.</p> <p>Test Steer Left Solenoid. If the proper voltage is present and the coil is not magnetized, replace.</p>
Work platform will not drive FORWARD or REVERSE. Lift function operable.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Selector Switch (SW5). 2. Faulty Drive/Lift Valve (V4, SOL5). 3. Faulty Forward/Reverse Valve (V5). 4. Faulty diode (DIO3). 5. Faulty Drive/Lift Relay (CR2). 6. Mechanical failure. 7. Worn Drive Motors (MOT1, MOT2). 	<p>Check continuity of Drive/Lift Switch. Replace if defective.</p> <p>Check the Drive/Lift Valve. If the spool is not shifting, replace the valve.</p> <p>Check the Forward/Reverse Valve. If spool is not shifting, replace the valve.</p> <p>Test diode, replace if defective.</p> <p>Test Relay (CR2). Replace if faulty.</p> <p>Inspect Drive Motor shafts, hubs, and keys.</p> <p>Check hydraulic pressure being delivered to the Drive Motors. If sufficient, replace Drive Motors.</p>
Work Platform will not drive while elevated.	<ol style="list-style-type: none"> 1. Level Sensor (SNSR) out of adjustment or faulty. 2. Faulty Tilt Alarm Relay (CR3). 	<p>Adjust and test the Level Sensor, replace if defective.</p> <p>Test relay, replace if defective.</p>
No high speed drive.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Switch (SW5). 2. Faulty Down Limit Switch (LSW1). 3. Faulty High Speed Coil/Valve (SOL7/V6). 	<p>Check continuity of Drive/Lift Switch. Replace if defective.</p> <p>Check continuity of Down Limit Switch. Replace if defective.</p> <p>Test coil and valve. If defective, replace.</p>
No drive FWD but drives in REV. Lift function operable.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Relay contacts (CR2). 2. Faulty Forward/Reverse Solenoid/Valve (SOL4/V5). 3. Faulty Counterbalance Valves (V2, V3). 	<p>Test Relay (CR2). Replace if faulty.</p> <p>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.</p> <p>Check pressure of Counterbalance Valves. Replace or reset valves as required.</p>
No drive FWD but drives in REV. No lift function.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Relay contacts (CR2). 2. Faulty Up/Forward Controller Switch (SW9). 	<p>Test Relay (CR2). Replace if faulty.</p> <p>Check operation of Controller switch. Replace if required.</p>
No drive REV but drives in FWD. Lift function operable.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Relay contacts (CR2). 2. Faulty Forward/Reverse Solenoid/Valve (SOL3/V5). 3. Faulty Counterbalance Valves (V2, V3). 	<p>Test Relay (CR2). Replace if faulty.</p> <p>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.</p> <p>Check pressure of Counterbalance Valves. Replace or reset valves as required.</p>
No drive REV but drives in FWD. No down function.	<ol style="list-style-type: none"> 1. Faulty Drive/Lift Relay contacts (CR2). 2. Faulty Down /Reverse Controller Switch (SW8). 	<p>Test Relay (CR2). Replace if faulty.</p> <p>Check operation of Controller switch. Replace if required.</p>

Table 5-1: Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
Platform will not elevate or elevates slowly.	<ol style="list-style-type: none"> 1. Emergency Down Valve (V7) open. 2. Platform overloaded. 3. Faulty Down/Reverse Controller Switch (SW8). 4. Faulty High Speed Controller Switch (SW10). 5. Faulty Drive/Lift Valve/Coil (V4/SOL5). 6. Faulty Drive/Lift Selector Switch (SW5). 7. Main Relief Valve (RV1) out of adjustment or faulty. 8. Faulty Down Limit Switch (LSW1). 9. Faulty Drive/Lift Relay (CR2). 10. Faulty Lift Cylinder (CYL3). 	<p>Close Emergency Down Valve.</p> <p>Observe maximum load rating (See Table 1-1).</p> <p>Check operation of Controller switch. Replace if required.</p> <p>Check operation of Controller switch. Replace if required.</p> <p>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. Test Drive/Lift Switch for continuity. Replace if defective.</p> <p>Adjust the Main Relief Valve. If not adjustable, replace.</p> <p>Test Down Limit Switch for continuity. Replace if defective.</p> <p>Test relay, replace if faulty.</p> <p>Check and replace seals in Lift Cylinder.</p>
Platform drifts down after being elevated.	<ol style="list-style-type: none"> 1. Emergency Lowering/Down Valve (V7) partly open or faulty. 	<p>Ensure that the Emergency Lowering Valve is completely closed. Replace the valve.</p>
Platform will not lower. Drive function operable.	<ol style="list-style-type: none"> 1. Faulty Down Valve Coil (SOL6). 2. Down Valve (V7) stuck. 3. Plugged Down Orifice (ORF2). 	<p>Test Down Valve Coil. If proper voltage is present and coil is not magnetized, replace.</p> <p>Replace the Down Valve.</p> <p>Remove and clean Orifice.</p>
Motion Alarm does not sound.	<ol style="list-style-type: none"> 1. Faulty Down Alarm (ALM1). 	<p>Check voltage to Down Alarm . If proper voltage is present, replace the Alarm.</p>
Brakes will not release.	<ol style="list-style-type: none"> 1. Brake Orifice (ORF1) plugged. 2. Faulty Brake Cylinder (CYL2). 3. Brakes out of adjustment. 	<p>Remove and clean Orifice.</p> <p>Check and replace seals in Brake Cylinder.</p> <p>Adjust brakes to disengage tires when driving only.</p>
Brake will not lock wheel.	<ol style="list-style-type: none"> 1. Brake Orifice (ORF1) plugged. 2. Faulty Brake Cylinder (CYL2). 3. Brake out of adjustment. 	<p>Remove and clean Orifice.</p> <p>Check and replace seals and spring in Brake Cylinder.</p> <p>Adjust brakes to engage tires when not driving .</p>

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 make-up and functions of the systems for checking, tracing, and fault-finding during troubleshooting analysis.

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

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Figure 6-2: Electrical Schematic	6-3
Figure 6-3: Hydraulic Schematic.....	6-5
Figure 6-4: Hydraulic Manifold.....	6-5

6.1 Electrical Schematic

Table 6-1: Electrical Schematic Legend

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM1	Alarm, Motion	Provides warning sound (60 Hz) when any 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.
CR1	Relay, Motor Start	Connects Batteries to Motor.	Inside Left Chassis Module. Mounted on right bulkhead.
CR2	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.
CR3	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.
DIO1	Diode	Supplies power to Motor Start circuit, from Steer Right circuit.	Controller.
DIO2	Diode	Supplies power to Motor Start circuit, from Steer Left circuit.	Controller.
DIO3	Diode	Provides power to Motor Start circuit through Controller Power On Switch from Drive/Lift Switch when in DRIVE .	Controller.
DIO4	Diode	Prevents feedback into the Chassis Lift Circuit from the Key Switch.	Connected between terminal A12 and the Chassis Lift Switch.
DIO5	Diode	Prevents feedback into the Controller Circuit from the Chassis Lift Circuit.	Connected between terminal A12 and the Key Switch.
FU	Fuse, 175 AMP	Overload protection for the electric motor.	Inside left Chassis Module on right bulkhead.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
LSW1	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.
LSW2	Switch, Right Pothole Interlock	In series with Left Pothole Interlock Switch, provides power to Tilt Alarm Relay from Level Sensor when machine is level and the Platform is elevated.	Mounted on front end of Right Module.
LSW3	Switch, Left Pothole Interlock	In series with Right Pothole Interlock Switch, provides power to Tilt Alarm Relay from Level Sensor when machine is level and the Platform is elevated.	Mounted on front end of Left Module.
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.
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 right side of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to LEFT turn position.	Coil farthest from block on right side of Manifold Block.
SOL3	Solenoid, Reverse (coil)	Shifts Forward/Reverse Valve to reverse position.	Left end of spool valve at rear of Manifold Block.
SOL4	Solenoid, Forward (coil)	Shifts Forward/Reverse Valve to forward position.	Right end of spool valve at rear of Manifold Block.
SOL5	Solenoid, Lift (coil)	Shifts Drive/Lift Valve to Lift position.	Top center front 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.
SW1	Switch, Chassis Emergency Stop.	Control circuit shut off.	Chassis Control Panel.
SW2	Switch, Chassis Selector Key	Provides power to either the Chassis Controls or the Controller.	Chassis Control Panel.
SW3	Switch, Controller Emergency Stop Button.	Control circuit shut off.	Platform Controller top right.

Table 6-1: (cont'd.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
SW4	Switch, Interlock	Supplies power to Controller.	Front of joystick.
SW5	Switch, Drive/Lift Selector	Supplies power to High Speed circuit, and Drive/Lift Relay circuit when in DRIVE Position.	Controller top left.
SW6	Switches, Steering	Supplies power to either Right or Left Steer Valve Solenoids.	Rocker actuator on top of Controller joystick, switch bodies inside joystick handle.
SW7	Switch, Controller Power	Supplies power to Motor Start circuit.	Left rear switch when top of Controller is held in assembled position.
SW8	Switch, Controller Down/Reverse	Supplies power to Motor Start circuit or Down/Reverse circuits.	Left front switch when top of Controller is held in assembled position.
SW9	Switch, Controller Up/Forward	Supplies power to Up/Forward circuits.	Right rear switch when top of Controller is held in assembled position.
SW10	Switch, Controller High Speed	Supplies power to High Speed circuit.	Right front switch when top of Controller is held in assembled position.
SW11	Switch, Chassis Lift	Provides power to either Up or Down circuits.	Chassis Control Panel.

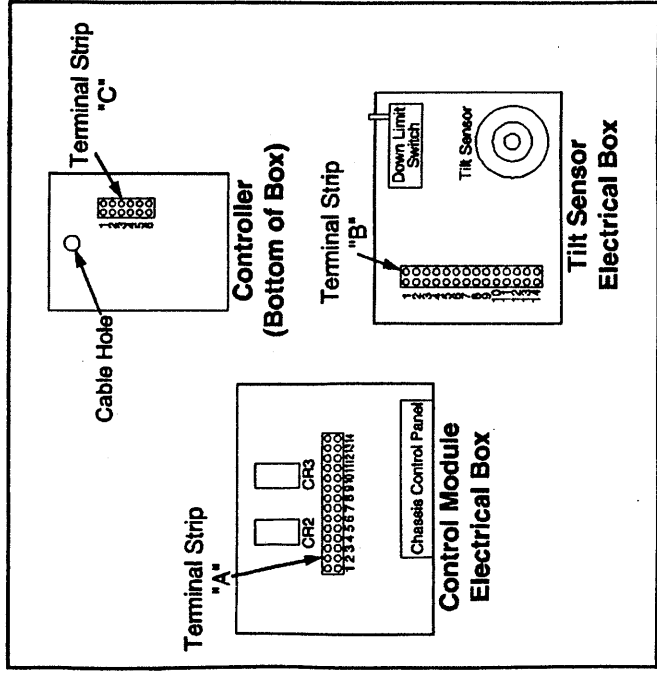


Figure 6-1: Terminal Strip Identification

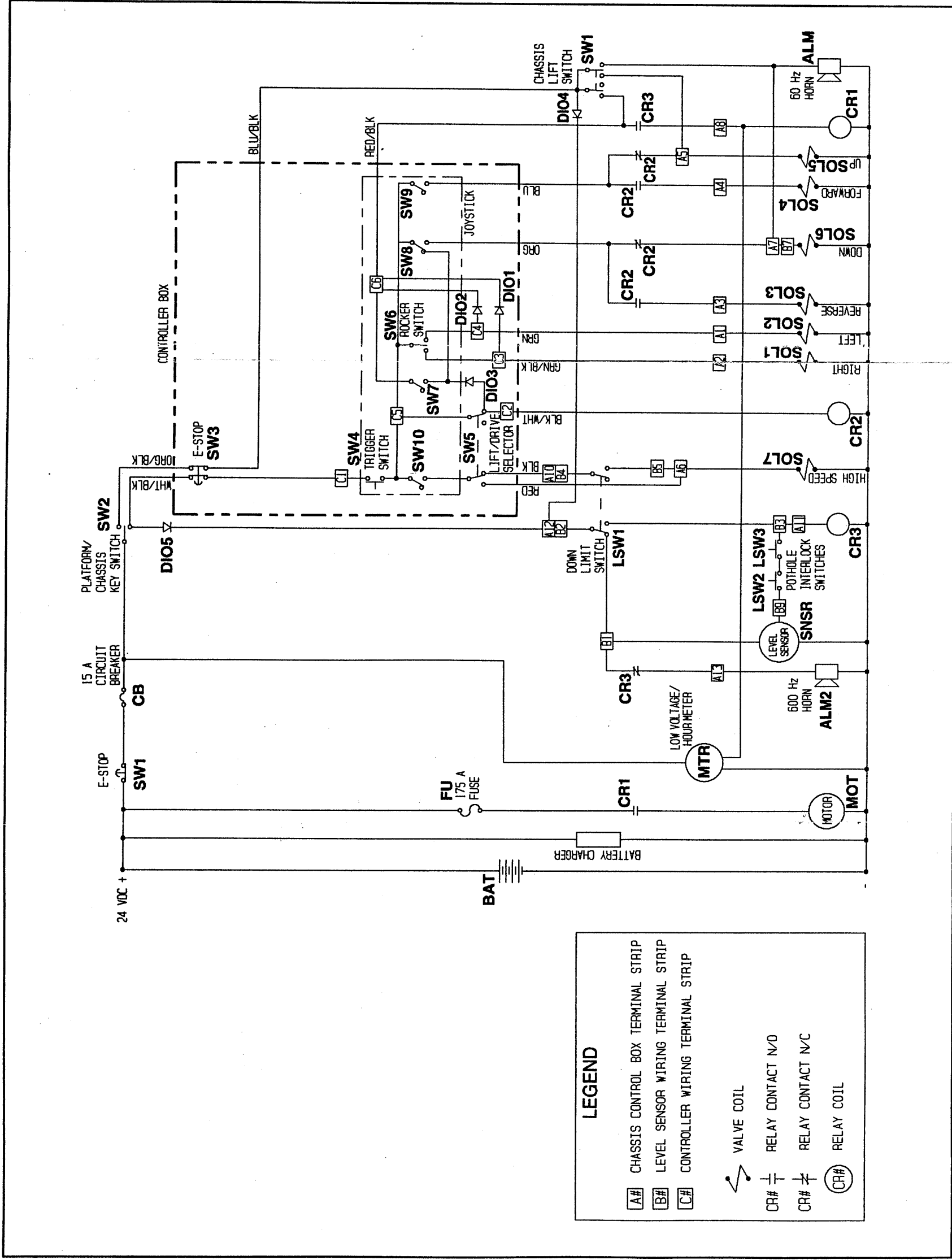


Figure 6-2: Electrical Schematic

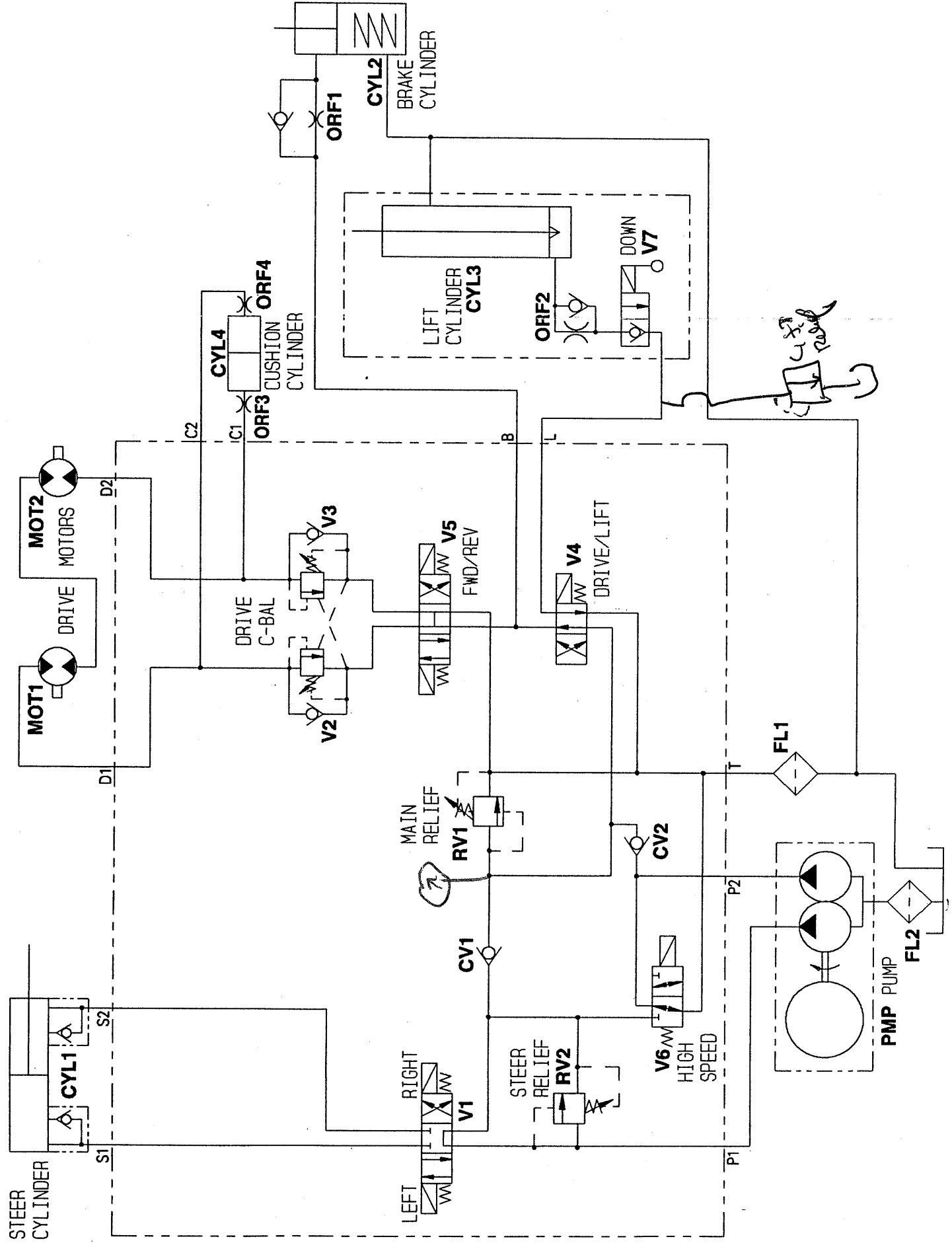


Figure 6-3: Hydraulic Schematic

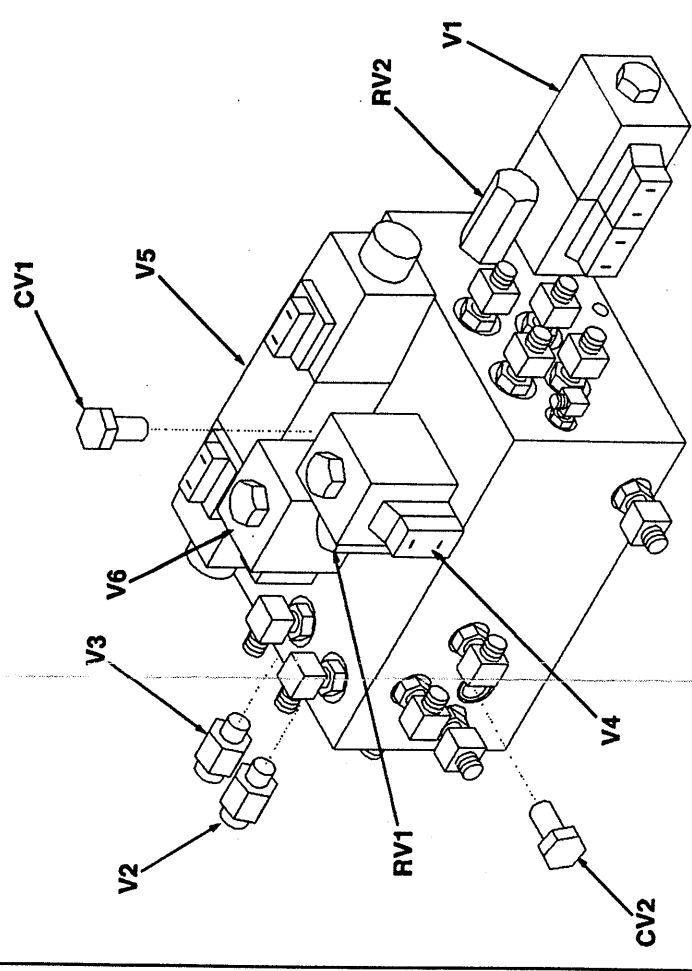


Figure 6-4: Hydraulic Manifold

7.0 Introduction

This section lists and illustrates the replaceable assemblies and parts of the X-Series Work Platform, as manufactured by UpRight, Inc.

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

7.1 Index

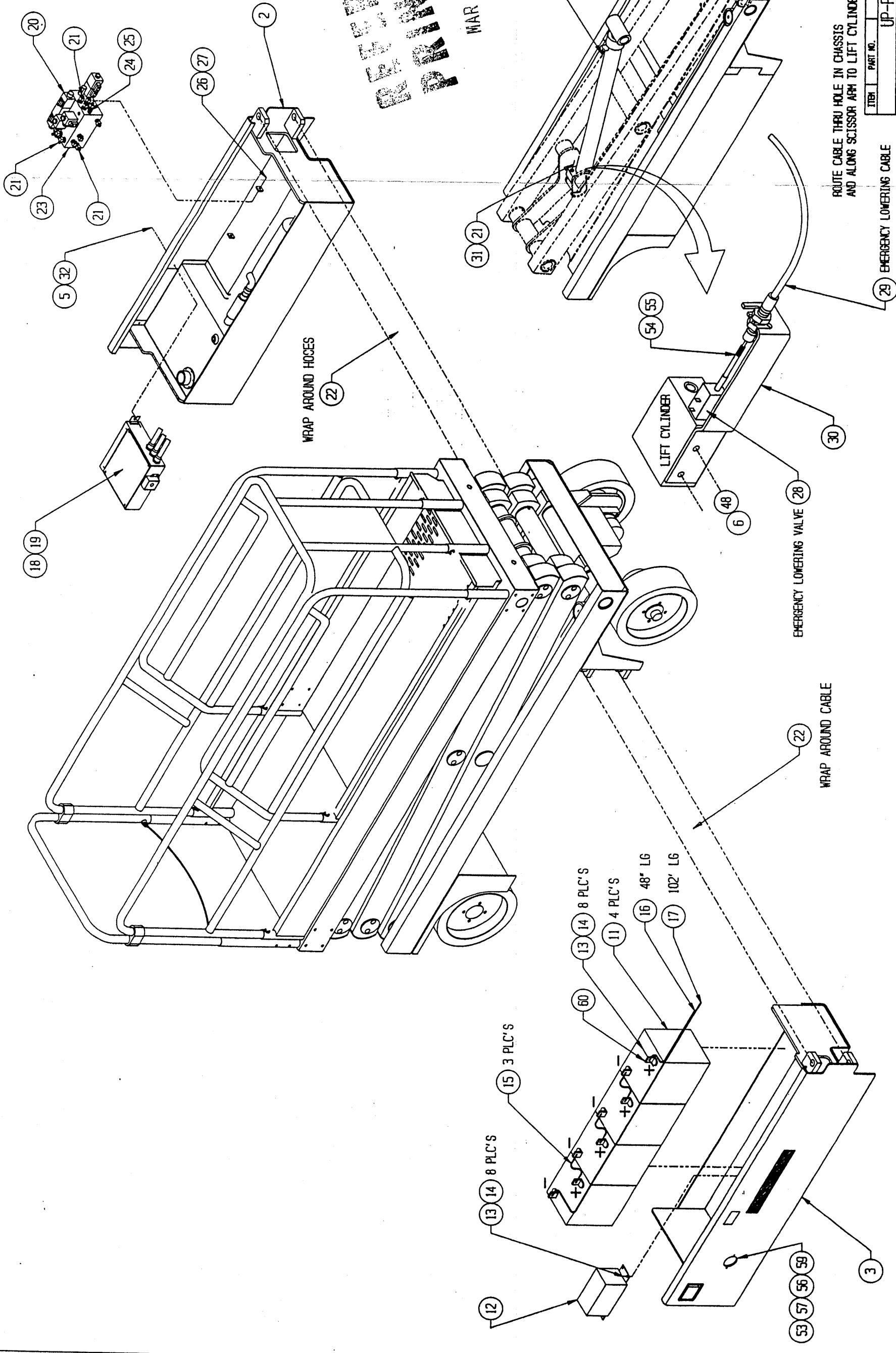
Assembly	Page
Final Assembly	1

7.2 Illustrated Parts

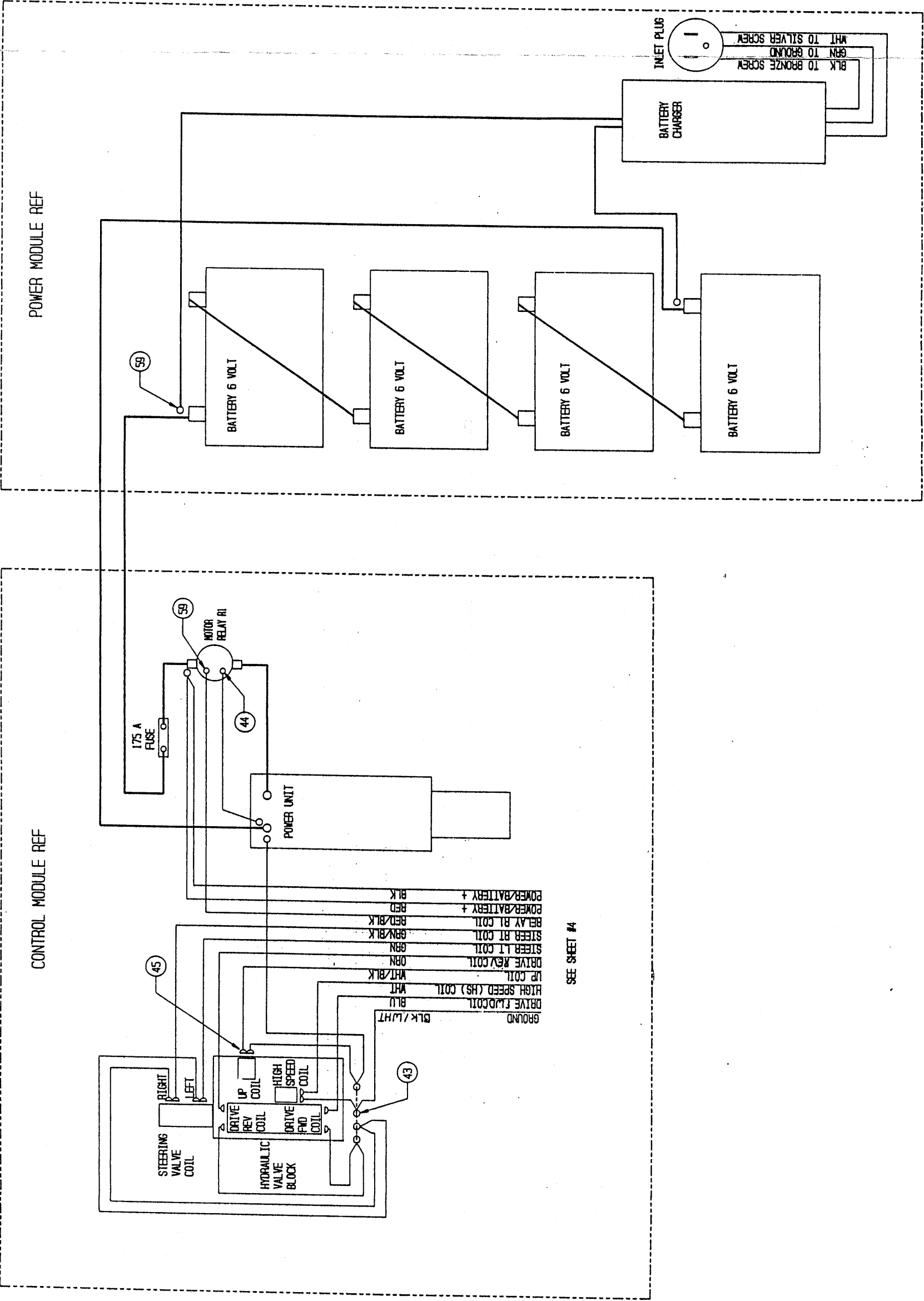
Next Page.

PRINT ONLY

MAR 3 1994



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
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FINAL ASSEMBLY X20N - DOMESTIC			
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SCALE: 1/10	PART NO: 66000-000-00	SHEET 2 OF 4	



SEE SHEET #4

REVIEW ONLY

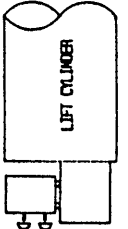
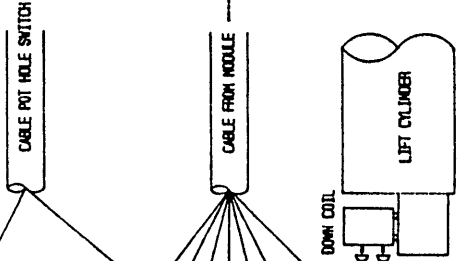
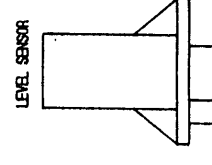
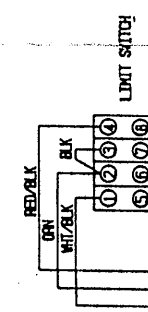
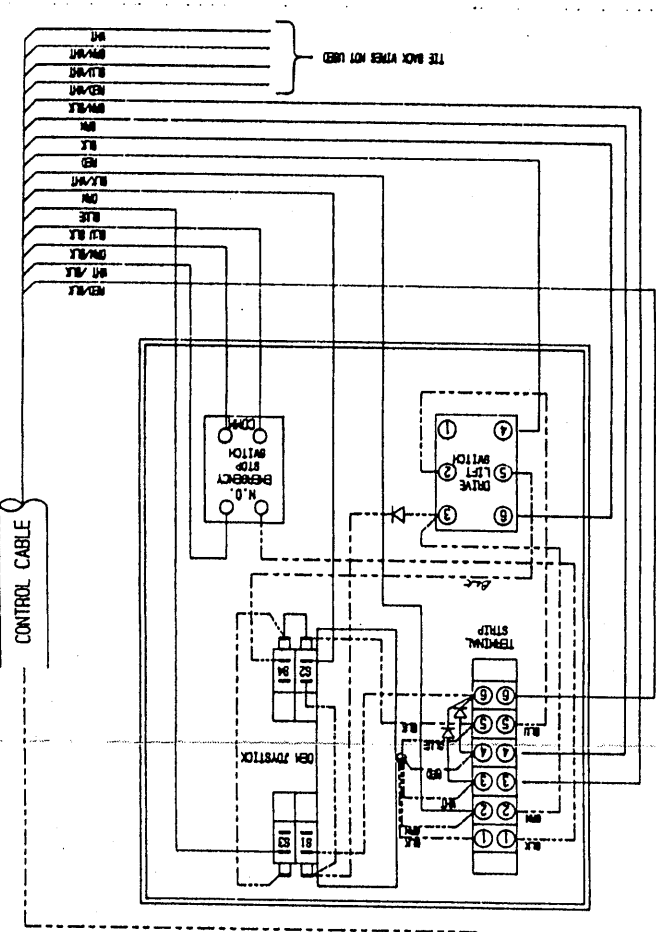
MAR 3 1994

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FINAL ASSEMBLY X20N - DOMESTIC			
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SIZE	0	0	0
SCALE	1/2	PART NO: 66000-000-00	SHEET 3 OF 4

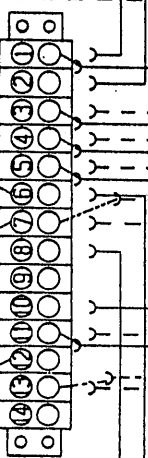
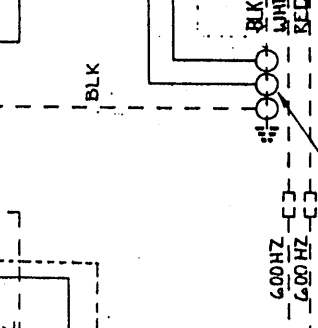
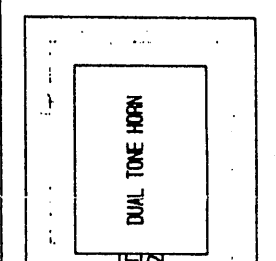
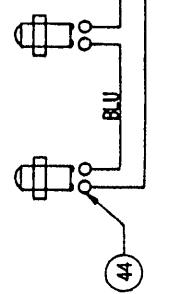
REFERENCE ONLY

MAR 3 1994

LEVEL SENSOR WIRING



POT HOLE SWITCH



SEE SHEET #3

LIMIT SWITCH
LEVEL SENSOR CABLE

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY XZON - DOMESTIC			
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SIZE:	SIZE:	SIZE:	SIZE:
SCALE: 1/2	PART NO:	65000-000-00	SHEET 4 OF 4

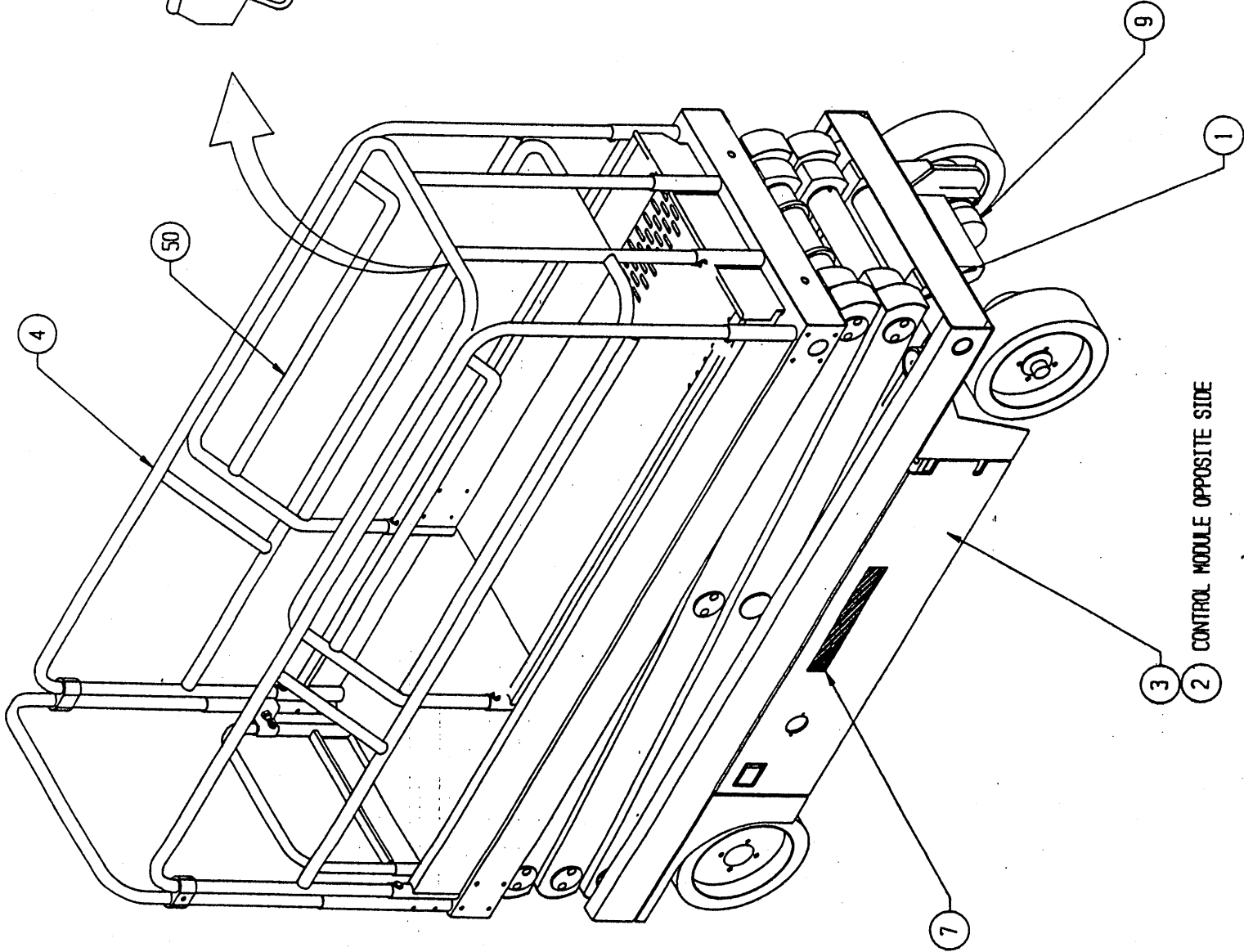
POTHOLE PROTECTION SYSTEM ADJUSTMENT

1. PLACE MACHINE ON LEVEL SURFACE 1/4"
2. RAISE MACHINE FOR ACCESS TO LEVEL SENSOR
3. CENTER LEVEL SENSOR BUBBLE BY TURNING ADJUSTMENT SCREWS ON LEVEL SENSOR
4. SET "DOWN" LIMIT SWITCH TO DE-ACTIVATE WHEN SENSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
5. CHECK THAT POTHOLE TUBES ARE AGAINST STOPS WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
6. DEPRESS WHEN SCISSOR INTERLOCK SWITCHES ARE ACTUATOR ROLLER
7. CHECK POTHOLE PROTECTION SYSTEM OPERATION
 - A. MACHINE SHOULD NOT ELEVATE OFF POTHOLE ACTUATOR ROLLER WHILE ON A 12 DEG SLOPE (TILT ALARM SOUNDS)
 - B. MACHINE SHOULD NOT DRIVE OR LIFT WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER UNLESS POTHOLE TUBES ARE AGAINST STOPS (INTERLOCK SWITCHES DEPRESSED) AND MACHINE IS LEVEL
 - C. MACHINE SHOULD HAVE LOW SPEED DRIVE WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
 - D. MACHINE SHOULD HAVE HIGH SPEED DRIVE WHEN SCISSOR LINKAGE IS ON POTHOLE ACTUATOR ROLLER
 - E. TILT ALARM SHOULD SOUND WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER AND EITHER THE POTHOLE TUBES ARE NOT AGAINST STOPS OR THE MACHINE IS OFF LEVEL BY MORE THAN 2 DEG

NOTES:

1. HYDRAULIC PRESSURE SETTING
 - A. MAIN RELIEF - SET TO LIFT RATED LOAD
 - B. COUNTERBALANCE VALVE - SET TO 125-150 PSI
 - C. STEERING RELIEF - SET TO 1000 PSI
2. DRIVE SPEED
 - A. LOW - 20FT IN 20-22 SEC. MINIMUM
 - B. HIGH - 20FT IN 5-6 SEC. MAXIMUM
3. LIFT SPEED
 - A. UP - 28-30 SEC. MINIMUM
 - B. DOWN - 28-30 SEC. MAXIMUM
4. PROOF LOAD - 1125 LB
5. RATED LOAD - 750 LB
6. GRAVIMETRIC EMPTY - 12 DEG. MINIMUM
7. BRAKE - SET TO HOLD RATED LOAD ON 12 DEG. SLOPE WITH MACHINE FACING UP SLOPE

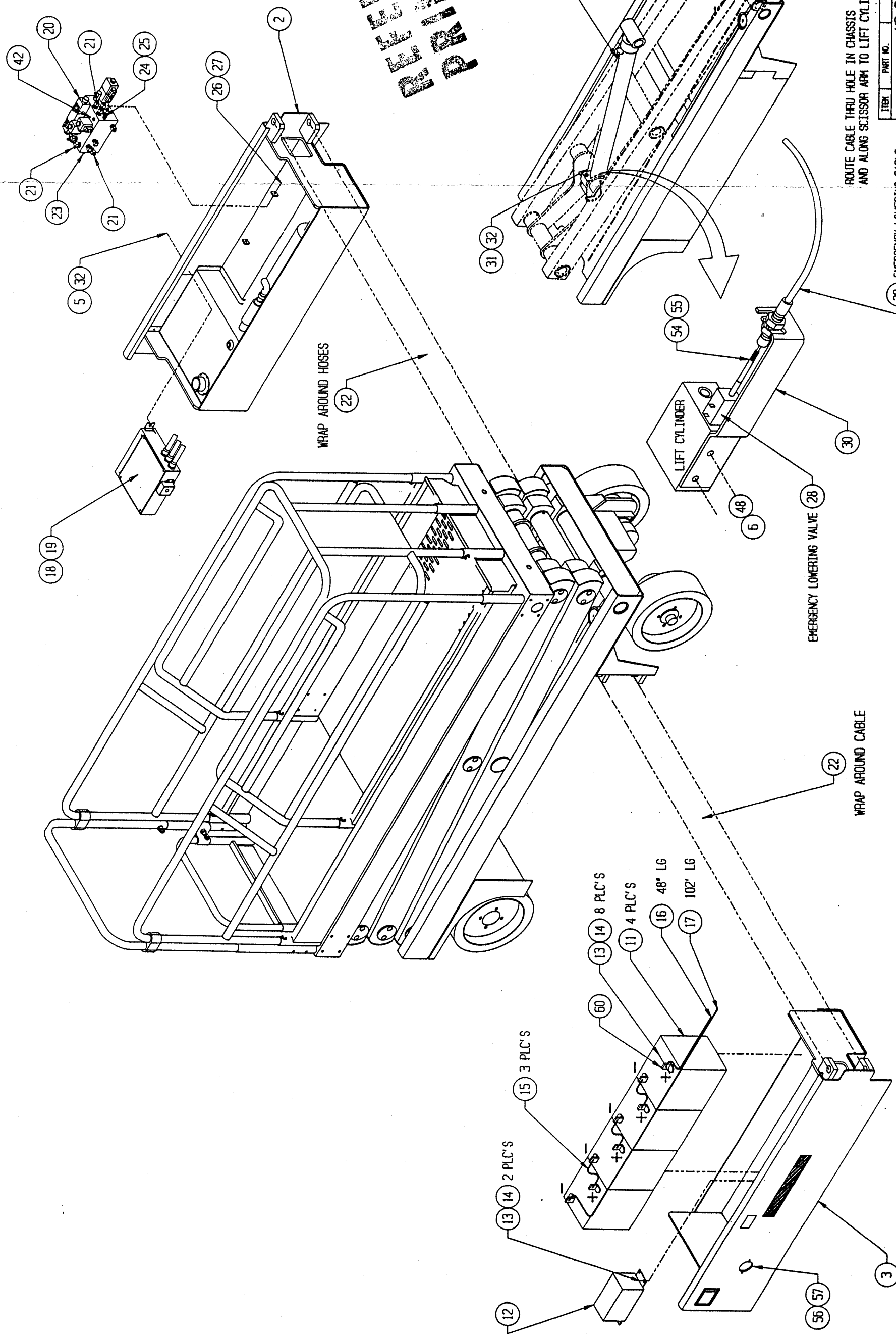
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MAR 3 1994



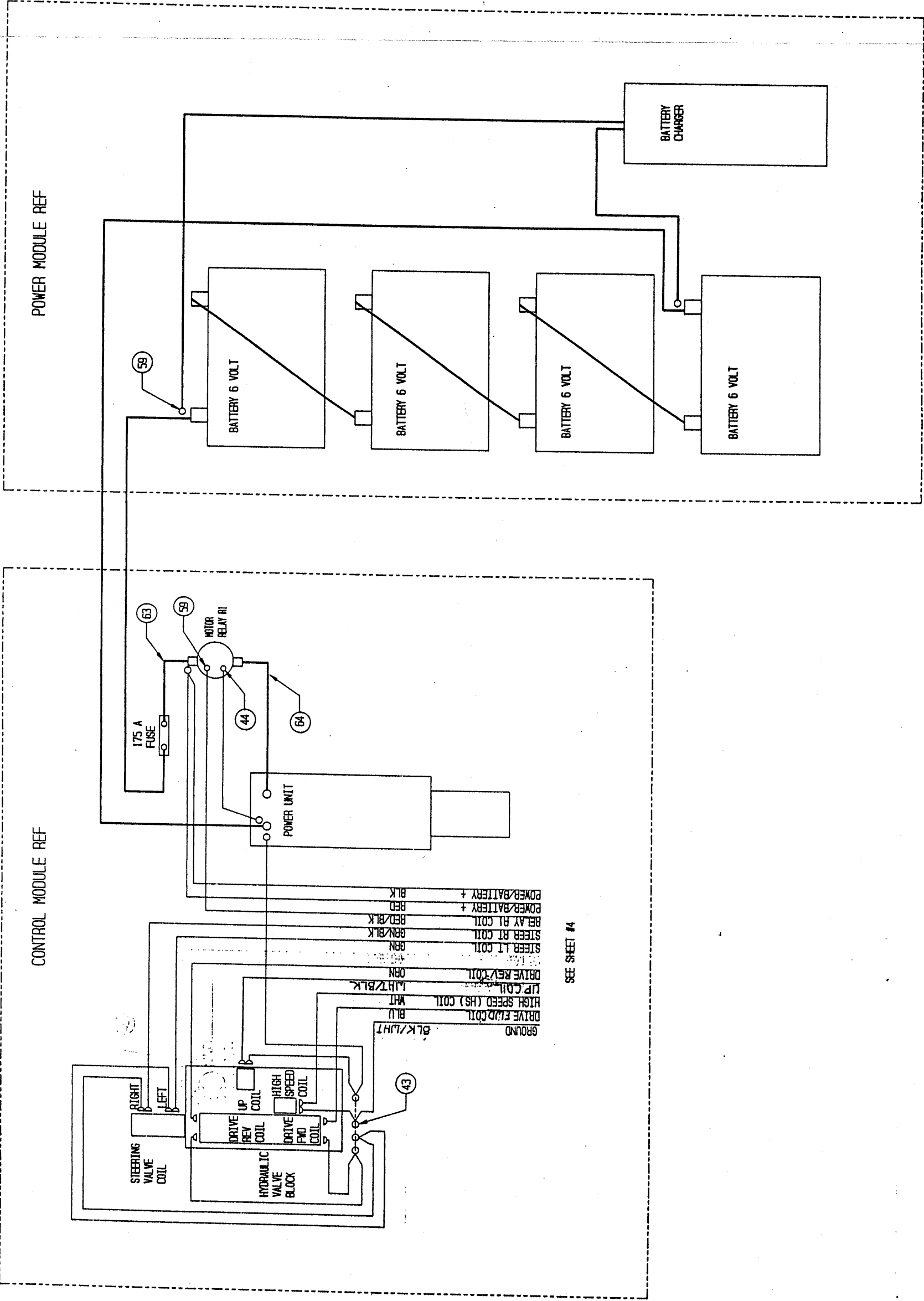
REVISIONS				
REV	DESCRIPTION	DATE	CHG. BY	
1	ADD 66576-000 QTY 1 & 26551-005 QTY 2 ITEM 14 QTY 8 WAS 10 15793-011 WAS 63072-005 20860-000 WAS 15793-003	12/14/93		L.G.
2	REVISED WIRE CALL OUTS			
3	ADD 65369-099	2-1-94		J.M.
4	15793-15 WAS 29840	2-1-94		M.W.
5	DEL % 44185 ADD % 65764-001, 10440-005, 10440-006 2/5/94	2/17-94		J.M.
TERMINAL COVER				
40	10154-000			2
59				
50	10131-099	WIRE 16 AWG 12 CON		FT 15
57	26551-005	RIVET, POP		2
56	66576-000	COVER PLATE		1
55	15915-044	SPRING		1
54	11240-005	WASHER 5/16 FLAT		2
53				
52				
51				
50	66006-000	DECK EXTENSION INSTALLATION		1
49				
48	11252-008	SCREW IHC GR5 1/4-20 UNC X 1		2
47	26616-003	CONN PUSH 10-12 GA .25		1
46	26610-002	CONN FORK 14-16 GA #8		31
45	29931-073	CONN PUSH 14-16 GA .25		8
44	26601-013	CONN RING 14-16 GA #10		4
43	26601-015	CONN RING 14-16 GA 3/8		4
42	63425-001	PRESSURE GALE PORT		1
41	15793-015	LEVER		1
40	11238-002	WASHER #10 LOCK		10
39	11275-012	SCREW #10-32 X 1 3/4		2
38	11275-006	SCREW #10-32 X 3/4		2
37	11275-004	SCREW #10-32 X 1/2		6
36	29928-004	TERMINAL BLOCK		1
35	29945-011	LEVEL SENSOR		1
34	15793-011	LIMIT SWITCH		1
33	66389-000	WELDMENT COVER		1
32	11248-004	NUT 1/4-20 HEX		2
31	63664-008	ORIFICE, HYDRAFORCE #7051070		1
30	66368-000	BRACKET		1
29	65794-001	CABLE		1
28	66179-000	VALVE DELTA		1
27	11240-006	WASHER FLAT 3/8 DIA		2
26	11254-006	SCREW IHC GR5 3/8-16 X 3/4		2
25	20343-004	FITTING CAP GNB		1
24	11934-001	FITTING 90° ELBOW 4HB-4HJ		1
23	11934-007	FITTING 90° ELBOW 8HB-6 HJ		1
22	65369-099	HOSE GUARD, NYLON FT 1.5		1
21	11941-005	FITTING STRAIGHT GNB-6 HJ		8
20	12822-003	CONTROL VALVE ASSEMBLY		1
19	11728-004	SCREW SOC HD #10-32 X 1/2		2
18	66014-001	ELECTRICAL BOX ASSEMBLY		1
17	64195-102	CABLE ASSY X 102		1
16	64195-048	CABLE ASSY X 48		1
15	64195-001	CABLE ASSY X 12		3
14	11248-005	NUT 5/16-18 HEX		8
13	11253-006	SCREW IHC 5/16-18UNC X 3/4		10
12	66180-000	CHARGER		1
11	15796-000	BATTERY 6V 220AMP		4
10	66013-000	CONTROLLER ASSEMBLY		1
9	66011-000	HOSE KIT INSTALLATION		1
8	66012-000	CONTROL CABLE ASSY		1
7	66010-000	DECAL KIT INSTALLATION		1
6	05832-000	WASHER LOCK 1/4		2
5	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC		2
4	66005-001	GUARDRAIL INSTALLATION		1
3	66009-000	POWER MODULE		REF
2	66008-000	CONTROL MODULE		REF
1	66001-000	BASIC ASSEMBLY		1
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY	
UP-RIGHT, INC.				
FINAL ASSEMBLY Y20N (EUROPEAN)				
PART NAME				
DWG. 0	ISS. BY: RDN	DATE: 4/20/93	ISS. BY: DATE:	ISS. BY: DATE:
SIZE:				
SCALE: 1/10	PART NO: 66000-001-00	SHEET 1 OF 4		

**REFERENCE
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MAR 3 1994



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY X20N EUROPEAN			
DATE	REV	DATE	REV
0	0	4/20/93	0
SCALE: 1/10	PART NO: 66000-001-00	SHEET 2 OF 4	



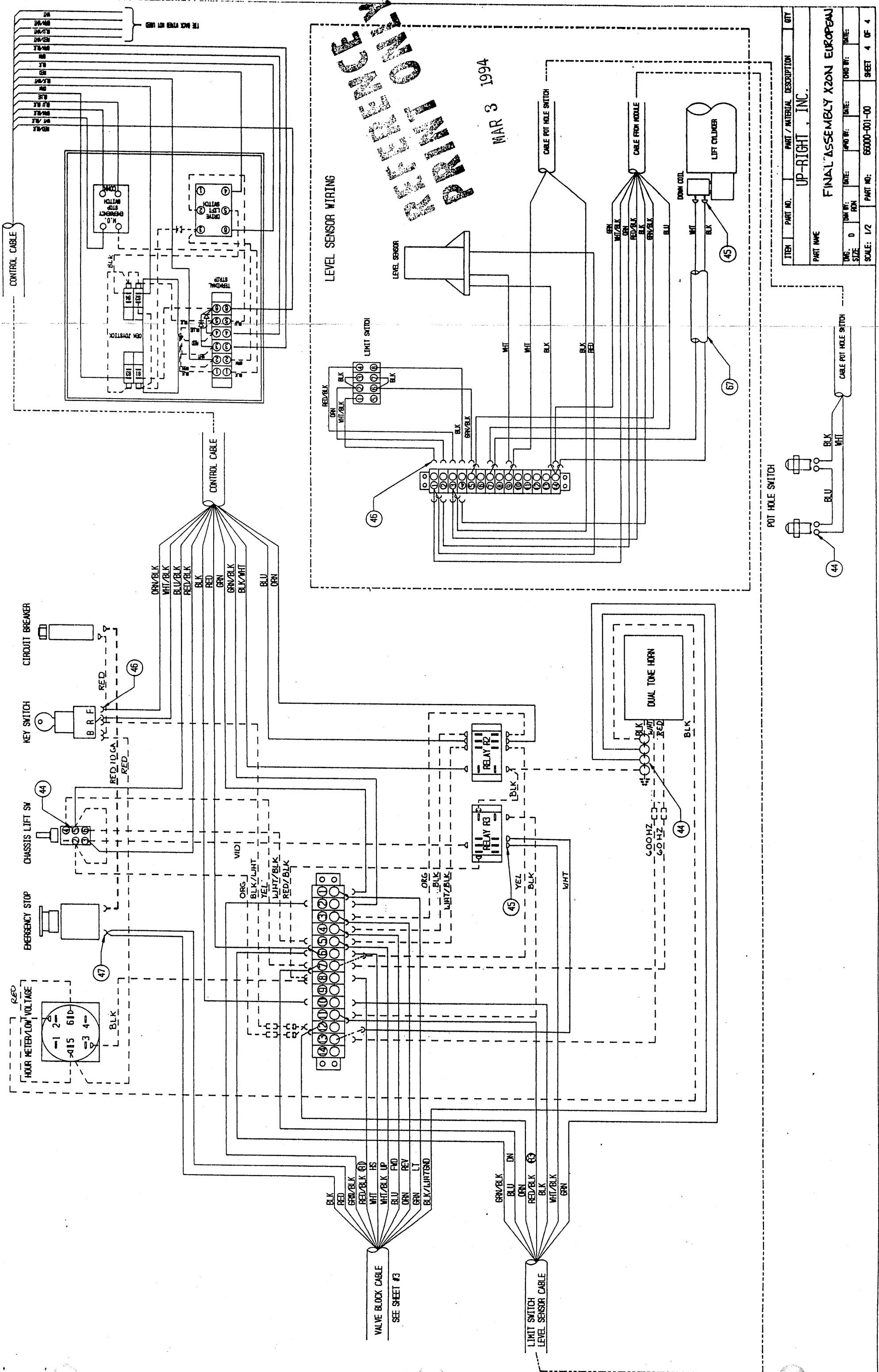
REWORK REQUIRED

MAR 3 1994

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
PART NAME			
UP-RIGHT, INC.			
FINAL ASSEMBLY X20N EUROPEAN			
DATE: 0	DATE: 10/4/93	DATE: 10/4/93	DATE: 10/4/93
SIZE: 0	SIZE: 10/4/93	SIZE: 10/4/93	SIZE: 10/4/93
SCALE: 1/2	PART NO: 66000-001-00	SHEET 3 OF 4	

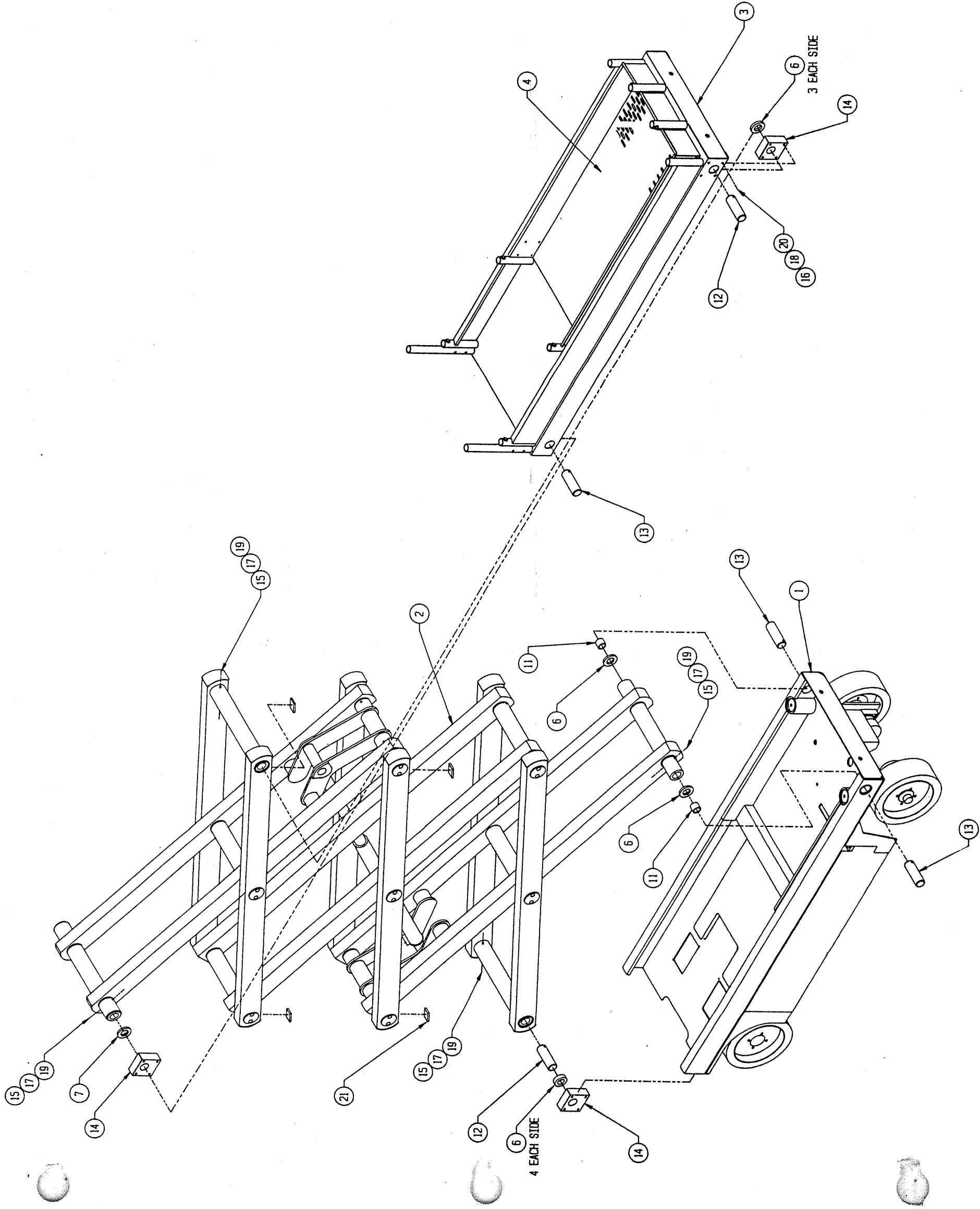
RECEIVED
MAR 3 1994

LEVEL SENSOR WIRING



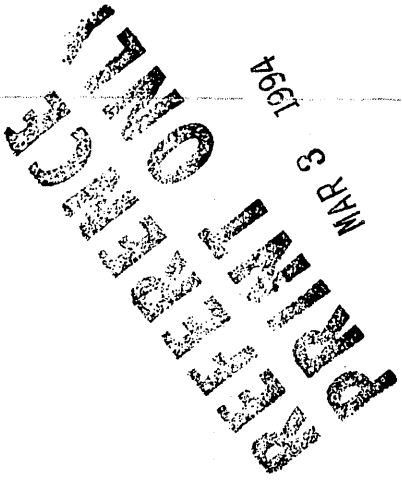
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
FINAL ASSEMBLY X20N EUROPEAN			
DATE:	0	DATE:	0
SIZE:	1/2	DATE:	0
SCALE:	1/2	PART NO:	66000-001-00
			SHEET 4 OF 4

REV	DESCRIPTION	DATE	CHG	BY



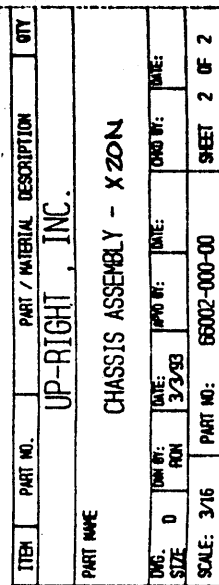
21	66509-000-00	TAPE, PRESSURE SENSITIVE 2 X 2 X .030	1.3
20	11248-006-00	NUT 3/8-16	8
19	11248-005-00	NUT 5/16-18	8
18	11240-006-00	WASHER 3/8 FLAT	8
17	11240-005-00	WASHER 5/16 FLAT	8
16	11254-024-00	SCREW IHC 3/8-16 X 3 LG	8
15	11253-032-00	SCREW IHC 5/16-18 X 4 LG	8
14	66191-000-00	SLIDE BLOCK	6
13	66222-002-00	MOUNTING PIN	4
12	66222-001-00	MOUNTING PIN	4
11	66183-001-00	BEARING EAGLE PITCHER #323632	2
10			
9			
8			
7	66189-001-00	WEAR PAD 3/8	2
6	66189-000-00	WEAR PAD 1/4	16
5			
4	66006-000-00	DECK EXTENSION INSTALLATION	1
3	66250-000-00	PLATFORM WELDMENT	1
2	66003-000-00	SCISSOR ASSEMBLY	1
1	66002-000-00	CHASSIS ASSEMBLY	1
ITEM NO.	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UNLESS OTHERWISE SPECIFIED TOLERANCES + OR -			
FRACTIONAL OVERALL 1/16			
FRACTIONAL HOLE DIA 1/32			
FRACTIONAL HOLE DIA .000			
FRACTIONAL HOLE DIA 1/2X-0			
FRACTIONAL HOLE DIA 1/16-0			
FRACTIONAL HOLE DIA 1/8-0			
FRACTIONAL HOLE DIA 1/4-0			
FRACTIONAL HOLE DIA 3/4-0			
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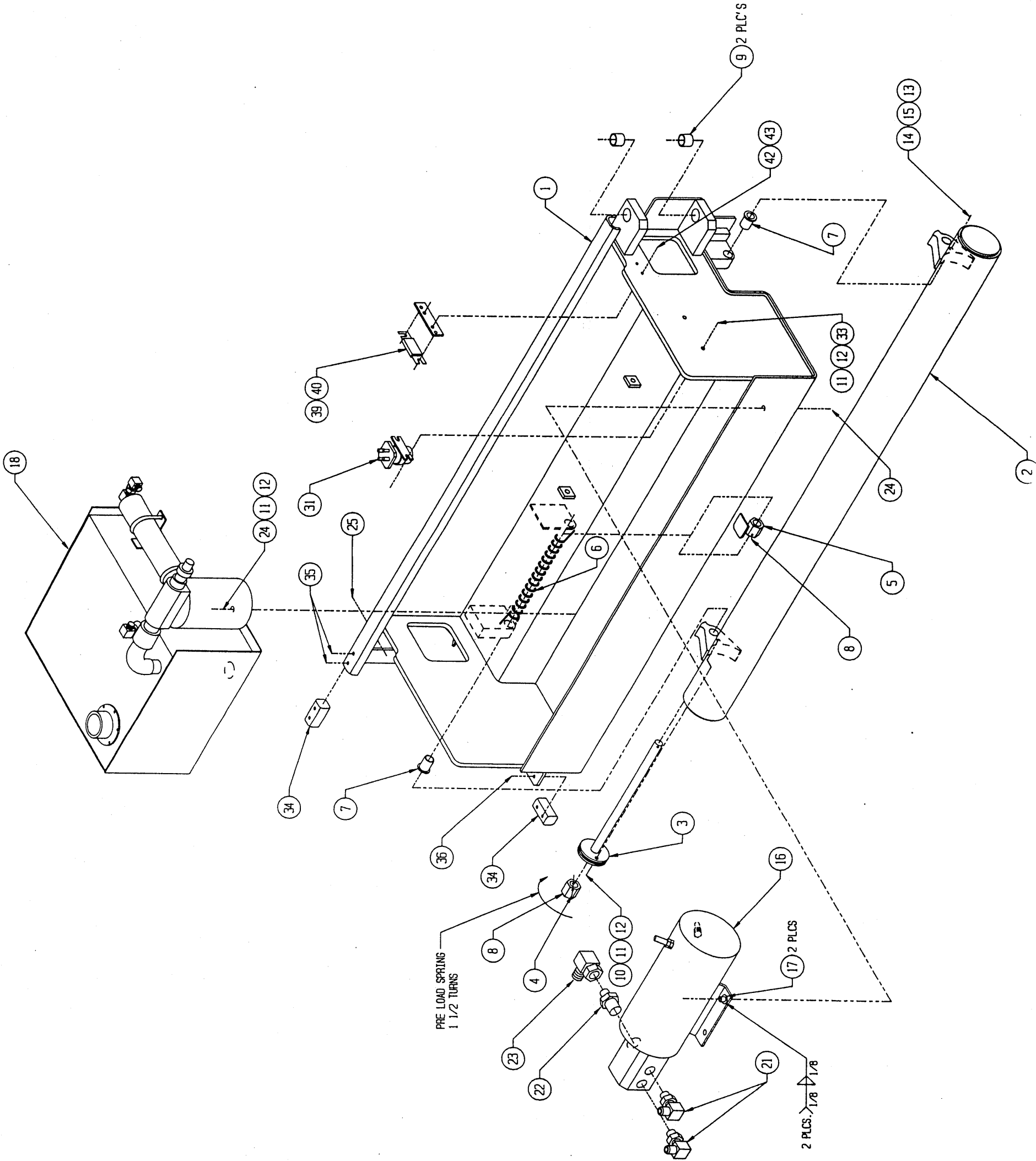
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
85	64350-00-00	SHIM	
84	1333 6-01-00	FITTING GREASE	2
83	1246-006-00	NUT THRU 3/8-16 HEX	1
82	11273-008-00	NUT JAM 1/2-13	1
81	11764-020-00	RETAINING RING	2
80	66044-000-00	CABLE TIE	2
79	11703-001-00	SCREW 1/4-20 SET X 1/4	2
78	64796-079-00	GROMMET	FT 3.5
77	64505-000-90	ROLLER	1
76	26553-000-00	RIVET 3/16 DIA X 1/2 GRIP	4
75	64541-001-00	W/B SPRING RETAINER	1
74	66396-000-00	COVER	2
73	27931-061-00	BEARING 3/400 5/8 ID	1
72	02166-000-00	WASHER 3/16 FLAT	2
71	11240-012-00	WASHER 3/4 FLAT	3
70	14122-003-00	WHEEL BOLT 1/2-20 X 1	16
69	66414-000-00	WELDMENT, BRAKE SHOE	1
68	11246-010-00	LOCKWASH 5/8-11 UNC. HEX	2
67	27931-043-00	BEARING #M-724-3 (ACTUATOR)	1
66	27931-060-00	BEARING #M-1512-15 (BRAKE)	2
65	63559-050-00	SHOULDER BOLT 5/8 X 3 1/2-13 TH	1
64	11254-020-00	SCREW H/C GR5 3/8-16 X 2 1/2	2
63	11831-016-00	CAPBOLT 3/8-16 X 2	1
62	15945-016-00	NUT HEX SLOTTED 1-14 UF THIN	2
61	11240-016-00	WASHER 1 FLAT	1

MAR 3 1994



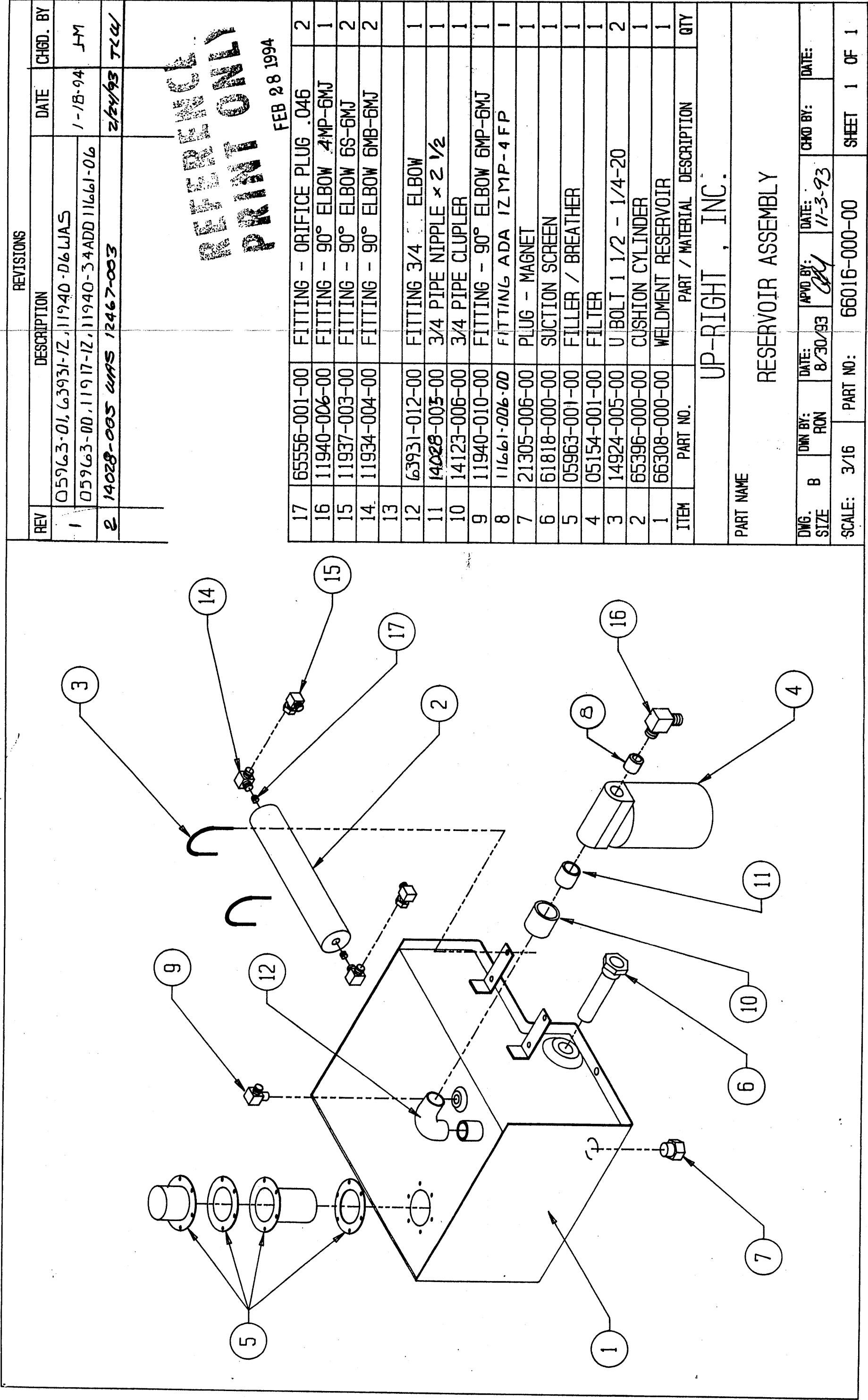
11704-005
SetScreen

REV		DESCRIPTION		DATE		CHG. BY	



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
43	11248-003-00	NUT HEX #10-24	2
42	13955-010-00	SCREW HEX HD #10-24 X 1 1/4	2
41			
40	10148-001-00	FUSE 175 AMF	1
39	10149-000-00	FUSE BLOCK	1
38			
37	14065-008-00	SCREW 1/4-20 X 1 HEX HD	2
36	11828-008-00	SCREW 1/4-20 X 1 FLAT HD SOC	2
35	66192-000-00	BLOCK COVER	1
34	11252-010-00	SCREW HC 65 1/4-20 X 1 1/4	2
33			
32	10122-000-00	SOLENOID 24V	1
31	11273-006-00	JAM NUT 3/8-16	1
30	11248-006-00	NUT ESN# 3/8-16	3
29			
28	11254-036-00	SCREW HC 65 3/8-16 X 4 1/2	1
27	11254-032-00	SCREW HC 65 3/8-16 X 4	1
26	62791-002-00	LATCH COVER	1
25	11253-010-00	SCREW HC 65 5/16-18 X 1 1/4	2
24	11937-007-00	FITTING 90° SWIVEL 12N-12N	1
23	11941-012-00	FITTING ADAPTOR 86-12N	1
22			
21	11934-004-00	FITTING ELBOW 66H-6G	2
20			
19			
18	66016-000-00	HYDRAULIC RESERVOIR ASSY	1
17	66184-004-00	WELD NUT 5/16-18	2
16	15797-000-00	POWER UNIT	1
15	11246-008-00	NUT 1/2-13 HEX THIN	1
14	11240-010-00	SHOULDER BOLT 5/8 DIA X 1 1/4	1
13	65559-002-00	WASHER 5/8 FLAT	1
12	11248-004-00	NUT 1/4-20 HEX	3
11	11240-004-00	WASHER 1/4 FLAT	3
10	11252-016-00	SCREW HC 65 1/4-20 X 2	1
9	27931-058-00	BUSHING OILITE #AA-1025-5	2
8	11753-014-00	COTTER PIN 1/8 X 1 3/4	2
7	11781-011-00	BUSHING FLANGE OILITE #FF-703-1	2
6	66173-000-00	SPRING - TORSION L.H.	1
5	66317-000-00	WELDMENT - BAR	1
4	66365-000-00	BAR - SPRING	1
3	66316-000-00	SHAFT - WELDMENT	1
2	66314-000-00	WELDMENT TUBE	1
1	66309-000-00	CONTROL MODULE WELDMENT	1

PART NAME		UP-RIGHT, INC.	
		CONTROL MODULE ASSEMBLY - 3220	
DATE	0	DATE	11-3-93
SIZE	0	DATE	11-3-93
SCALE	1/4	PART NO.	66005-000-00
		SHEET	1 OF 1



REVISIONS

REV	DESCRIPTION	DATE	CHGD. BY
1	05963-01, 63931-12, 11940-D6LJAS	1-18-94	JM
2	05963-00, 11917-12, 11940-34ADD 11661-06		
2	14028-005 WAS 12467-003	2/24/93	TCL

REFERENCE
PRINT ONLY

FEB 28 1994

17	65556-001-00	FITTING - ORIFICE PLUG .046	2
16	11940-006-00	FITTING - 90° ELBOW 4MP-6MJ	1
15	11937-003-00	FITTING - 90° ELBOW 6S-6MJ	2
14	11934-004-00	FITTING - 90° ELBOW 6MB-6MJ	2
13			
12	63931-012-00	FITTING 3/4 ELBOW	1
11	14028-003-00	3/4 PIPE NIPPLE x 2 1/2	1
10	14123-006-00	3/4 PIPE CLUPLER	1
9	11940-010-00	FITTING - 90° ELBOW 6MP-6MJ	1
8	11661-006-00	FITTING ADA 12MP-4FP	1
7	21305-006-00	PLUG - MAGNET	1
6	61818-000-00	SUCTION SCREEN	1
5	05963-001-00	FILLER / BREATHER	1
4	05154-001-00	FILTER	1
3	14924-005-00	U BOLT 1 1/2 - 1/4-20	2
2	65396-000-00	CUSHION CYLINDER	1
1	66308-000-00	WELDMENT RESERVOIR	1
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY

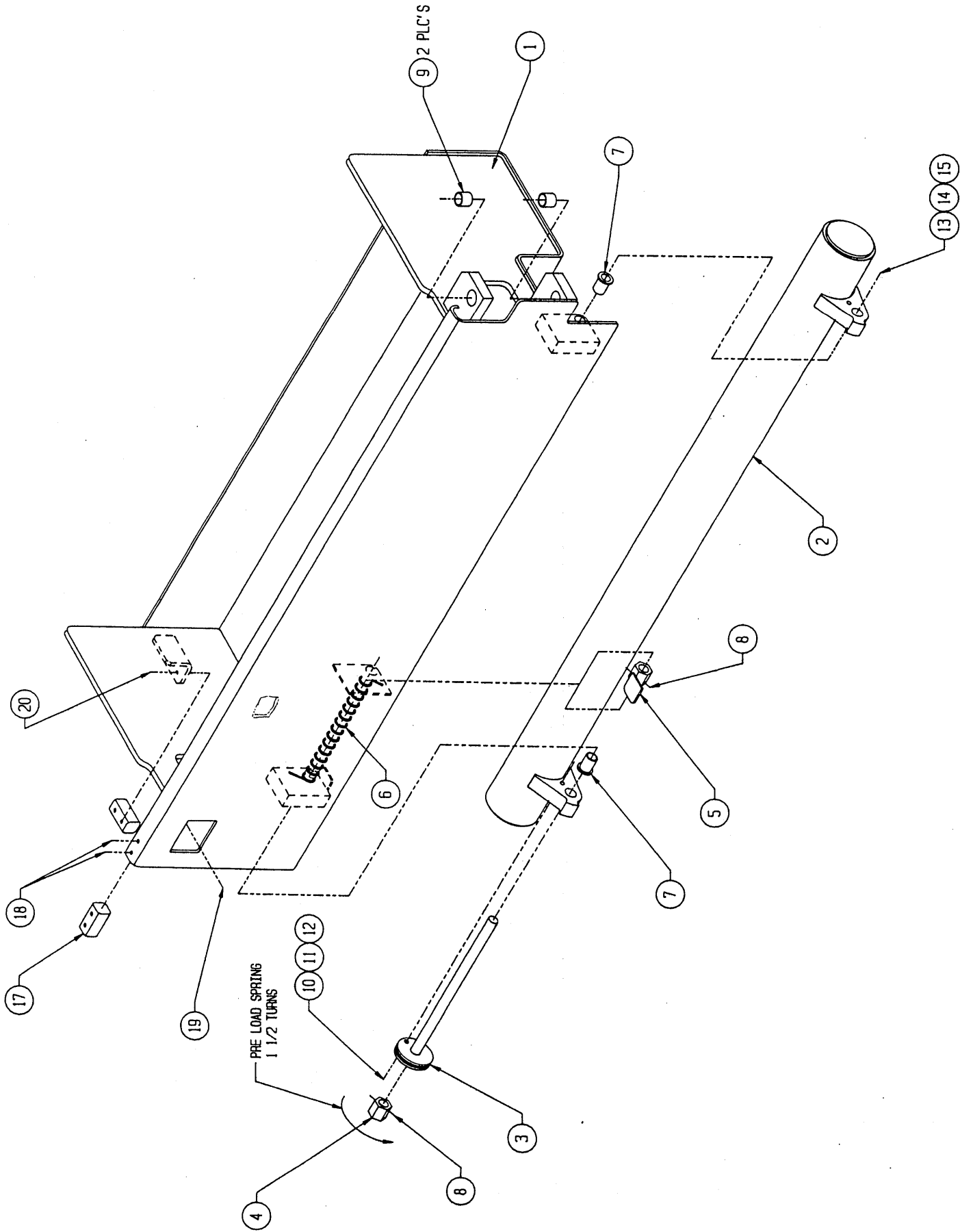
UP-RIGHT, INC.

PART NAME

RESERVOIR ASSEMBLY

DWG. SIZE	B	OWN BY:	RON	DATE:	8/30/93	APVD BY:	[Signature]	DATE:	11-3-93	CHKD BY:		DATE:	
SCALE:	3/16	PART NO:	66016-000-00	SHEET	1	OF	1						

REV	DESCRIPTION	DATE	CHKD. BY

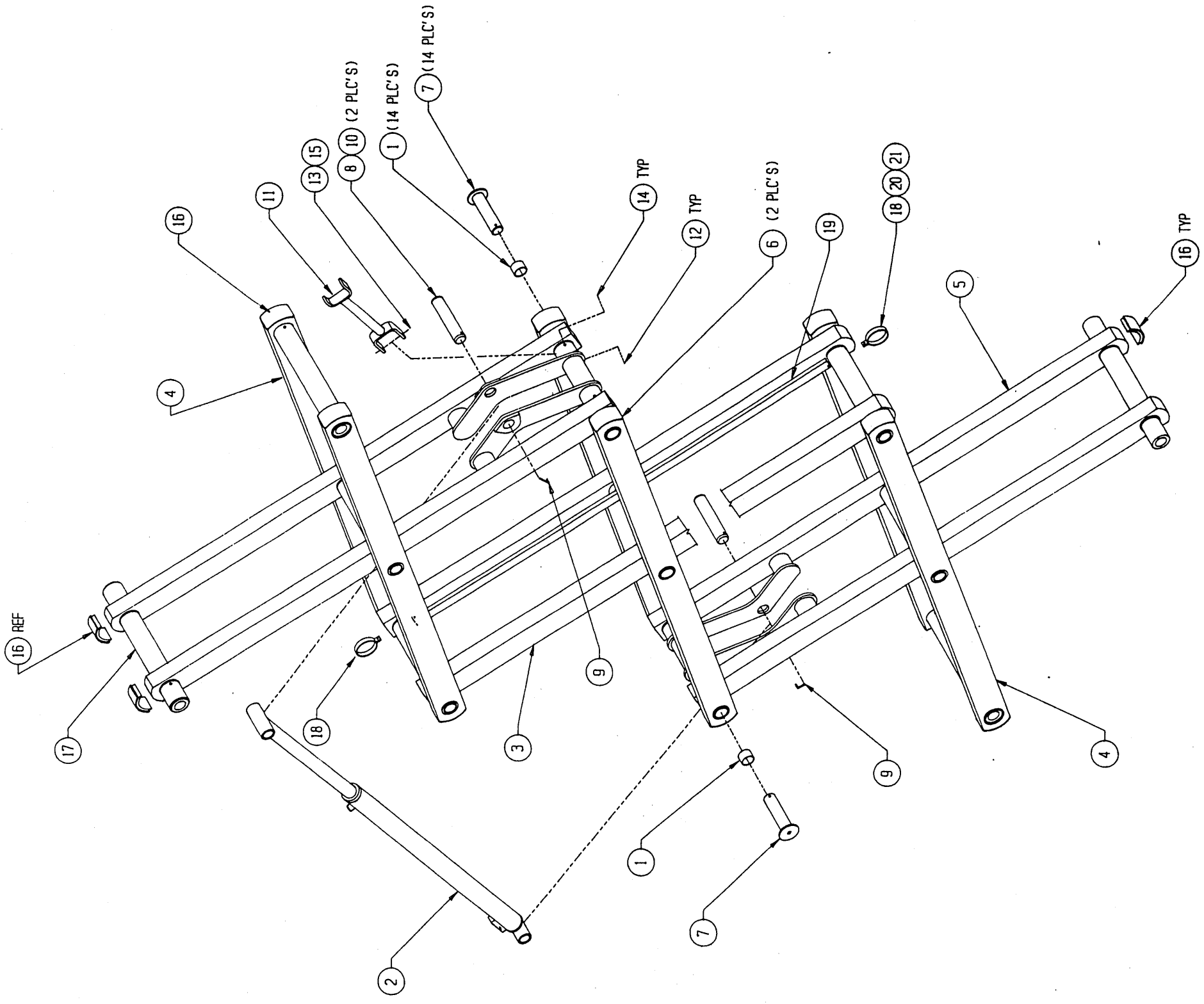


ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
20	14066-008-00	SCREW 1/4-20 X 3/4 HEX HD	2
19	62791-001-00	LATCH COVER	1
18	11828-008-00	SCREW 1/4-20 X 1 FLAT HD SOC	2
17	66192-000-00	BLOCK COVER	1
16			
15	11246-008-00	NUT 1/2-13 HEX THIN	1
14	11240-010-00	WASHER 5/8 FLAT	1
13	63559-002-00	SHOULDER BOLT 5/8 DIA X 1 1/4	1
12	11248-004-00	NUT 1/4-20 HEX	1
11	11240-004-00	WASHER 1/4 DIA FLAT	1
10	11252-016-00	SCREW HC GR5 1/4-20 X 2	1
9	27931-058-00	BUSHING OILITE #M-1005-5	2
8	11753-012-00	COTTER PIN 1/8 X 1 1/2	2
7	11781-011-00	BUSHING FLANGE OILITE #FF-703-1	2
6	66172-000-0	SPRING - TORSION R.H.	1
5	66318-000-00	WELDMENT - BAR	1
4	66365-000-00	BAR - SPRING	1
3	66316-000-00	WELDMENT - SPRING SHAFT	1
2	66314-000-00	WELDMENT - TUBE	1
1	66310-000-00	POWER MODULE WELDMENT	1
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY

UP-RIGHT, INC.			
PART NAME			
POWER MODULE ASSEMBLY - 3220			
DATE	TIME	DATE	TIME
0	PM	2/10/83	11:59:3
SCALE: 1/4	PART NO: 66009-000	SHEET 1 OF 1	

REVISIONS			
REV	DESCRIPTION	DATE	CHG. BY
1	PHOTO P/N WAS 3060-300-00		
1	ITEMS 11, 13, & 15 MOVED FROM LEFT TO RIGHT SIDE.	01/11/94	GRS

66676-032
GR8 belt

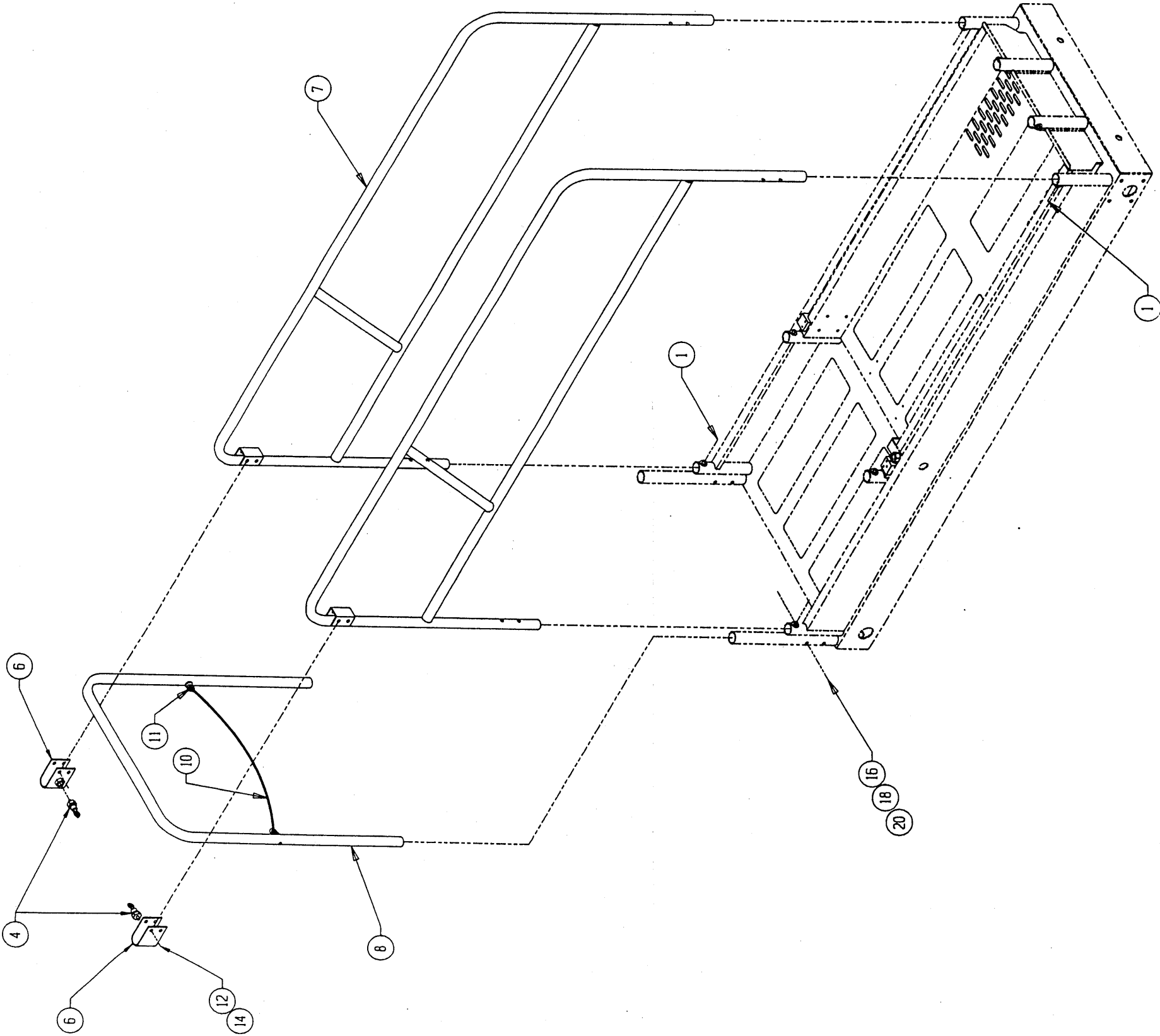


66168 →

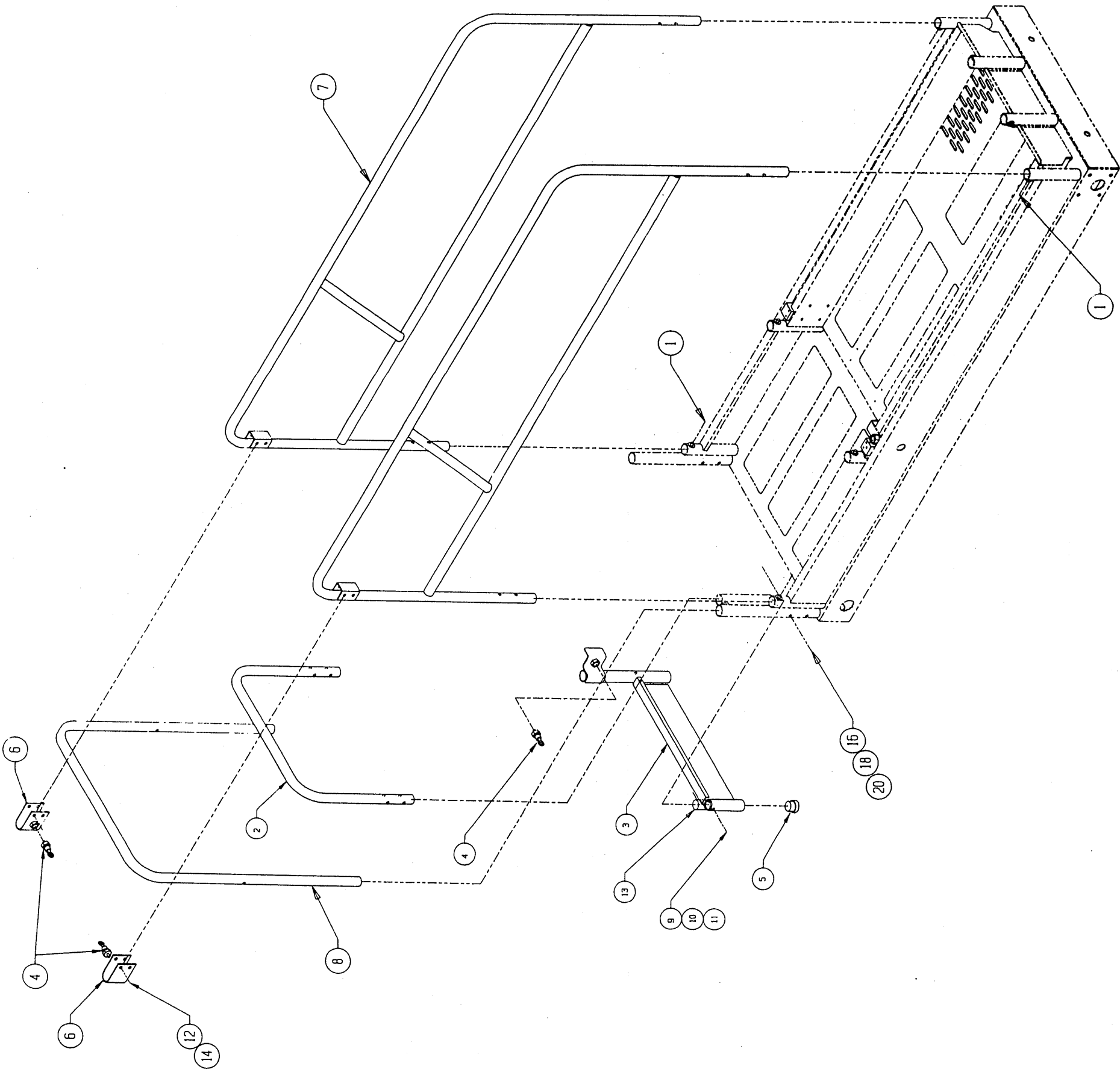
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
21	11252-008-00	SCREW IHC GR5 1/4-20 X 1	2
20	11248-004-00	NUT HEX 1/4-20	2
19	66226-000-00	CHANNEL, CABLE	1
18	66199-000-00	PIPE RING	2
17	66203-000-00	WELDMENT, TOP INNER 3/16	1
16	66177-000-00	SCISSOR END CAP	24
15	11254-040-00	SCREW IHC GR5 3/8-16 X 5	1
14	11253-032-00	SCREW IHC GR5 5/16-18 X 4	14
13	11248-006-00	NUT HEX 3/8-16	1
12	11248-005-00	NUT HEX 5/16-18	14
11	66214-000-00	WELDMENT, SAFETY STAND	1
10	11764-032-00	RET RING TRIARC #5100-200	2
9	66225-000-00	PIN, SHAFT LOCKING	2
8	66224-000-00	PIN, LIFT CYLINDER	2
7	66210-000-00	WELDMENT, PIVOT PIN	14
6	66211-000-00	WELDMENT, MID OUTER	2
5	66200-000-00	WELDMENT, BOTTOM INNER 1/4	1
4	66202-000-00	WELDMENT, TOP & BOTTOM OUTER	2
3	66201-000-00	WELDMENT, MID INNER TUBE	1
2	66604-688-00	LIFT CYLINDER	1
1	66183-000-00	BEARING, OILITE REP 236-24	14

PART NAME			
UP-RIGHT, INC.			
ASSEMBLY, SCISSOR ARM 3220			
DATE	TIME	DATE	TIME
0	0	2/10/93	0
SCALE: 1/10	PART NO: 66003-000-00	SHEET 1 OF 1	

REV		REVISIONS		DATE		CHG. BY	
DESCRIPTION							



20	11248-006-00	NUT 3/8-16 HEX	6
19			
18	11240-006-00	WASHER 3/8 FLAT	6
17			
16	11254-020-00	SCREW 3/8-16 HHC X 2 1/2	2
15			
14	11253-016-00	SCREW 5/16-18 HHC X 2	4
13			
12	11248-005-00	NUT 5/16-18	4
11	15748-002-00	REPAIR LAP LINK	1
10	63133-000-00	CHAIN ASS'Y	1
9			
8	66261-000-00	WELDMENT, END RAIL	1
7	66257-000-00	WELDMENT, SIDE RAIL	2
6	66498-000-00	WELDMENT, GATE LATCH	2
5			
4	03570-000-00	RETAINING PIN ASSY	2
3			
2			
1	66171-003-00	CAP SCREW 3/8-16 X 2 1/2 (FULL THREAD)	
ITEM NO.		PART NO.	QTY
UNLESS OTHERWISE SPECIFIED		PART / MATERIAL DESCRIPTION	
TOLERANCES		UP-RIGHT, INC.	
+ OR -		PART NAME	
FRACTIONAL OVERALL 1/8		GUARDRAIL INSTL	
FRACTIONAL HOLE DIA 1/32			
FRACTIONAL HOLE DIA 1/16			
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ITEM NO.	PART NO.	PART / MATERIAL DESCRIPTION	QTY
20	11248-005-00	NUT 3/8-16 HEX	6
19			
18	11240-005-00	WASHER 3/8 FLAT	6
17			
16	11254-020-00	SCREW 3/8-16 HHC X 2 1/2	2
15			
14	11253-016-00	SCREW 5/16-18 HHC X 2	4
13	66526-000-00	TORSION SPRING	1
12	11248-005-00	NUT 5/16-18	4
11	11248-006-00	NUT 3/8-16	2
10	11240-006-00	WASHER 3/8 FLAT	2
9	11254-016-00	SCREW 3/8-16 HHC X 2	2
8	66261-000-00	WELDMENT, END RAIL	1
7	66257-000-00	WELDMENT, SIDE RAIL	2
6	66498-000-00	WELDMENT, GATE LATCH	2
5	66441-000-00	PIVOT, GATE	1
4	03570-000-00	RETAINING PIN ASSY	3
3	66497-001-00	WELDMENT, GATE KICKRAIL	1
2	66480-000-00	GATE	1
1	66171-003-00	CAP SCREW 3/8-16 X 2 1/2 (FULL THREAD)	4
PART / MATERIAL DESCRIPTION			QTY
PART NO.			
UNLESS OTHERWISE SPECIFIED TOLERANCES + OR -			
FRACTIONAL OVERALL 1/16			
FRACTIONAL HOLE DIA 1/32			
FRACTIONAL HOLE DIA .003			
FRACTIONAL HOLE DIA +1/32-0			
FRACTIONAL HOLE DIA +.010-0			
INCHES			
SCALE: 1/8			
DWG SIZE: 0			
PART NO: 66005-001			
SHEET 1 OF 1			

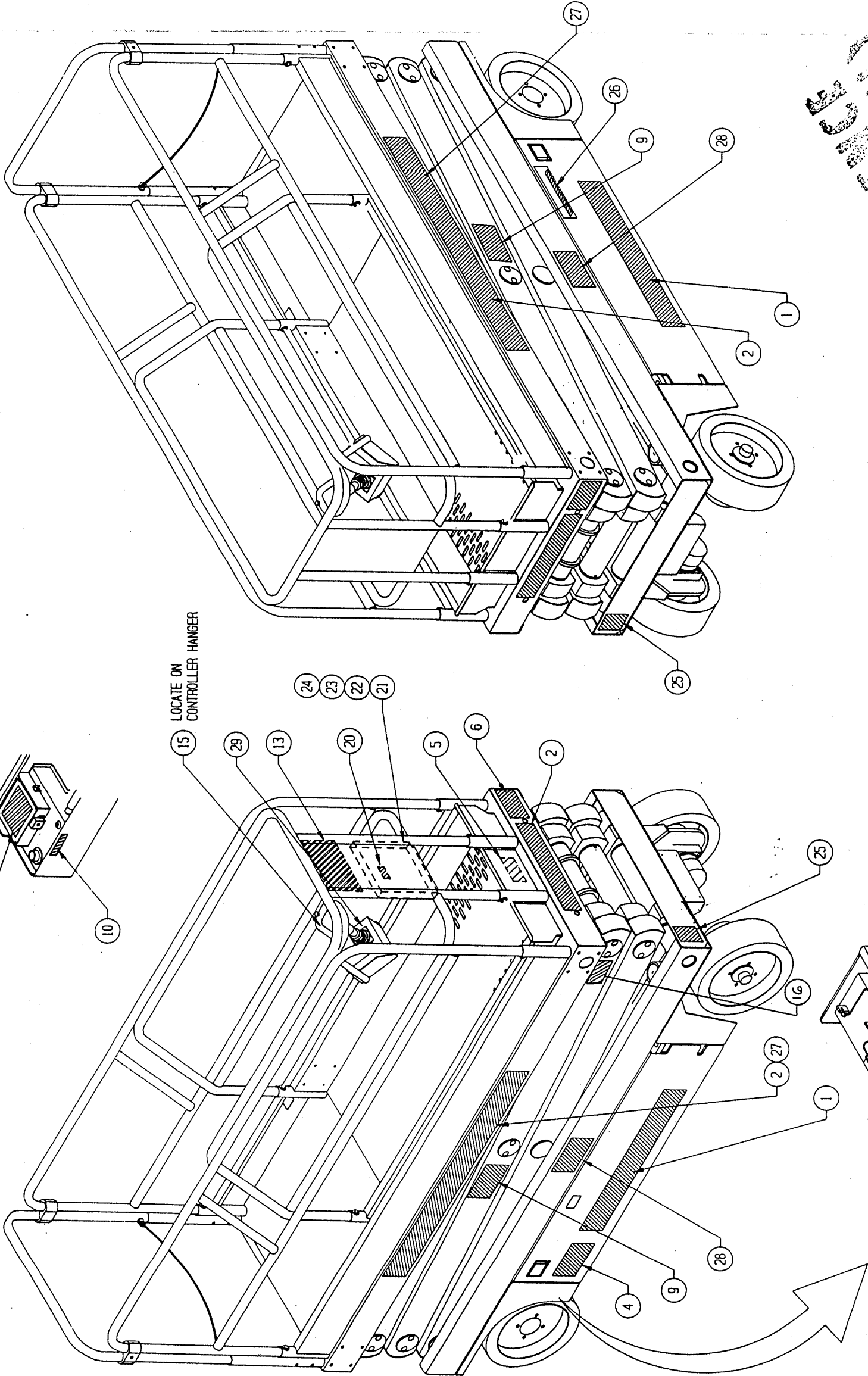
PART NAME
GUARDRAIL INSTL EUROPEAN

DATE: 3/22/93
DWG NO: 184
DATE: 11/2/93
DWG BY: DATE:

UP-RIGHT, INC.

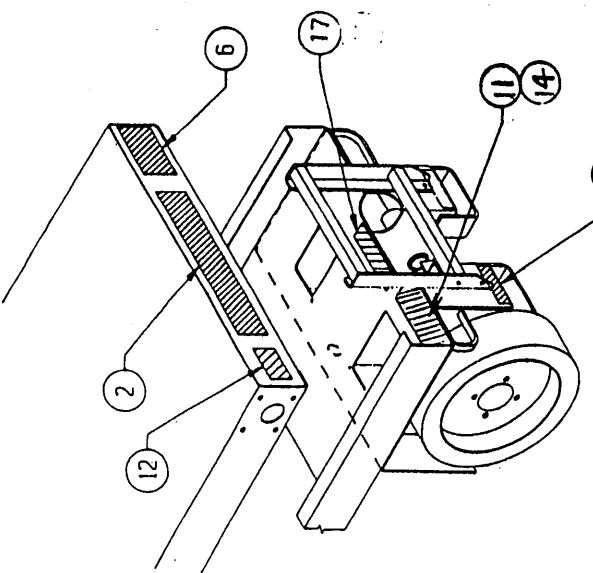
NOTE: 1. EUROPEAN MODEL INSTALL
DECORATIVE DECALS ONLY.

REVISIONS			DATE	DESD. BY
REV	DESCRIPTION			
1	REVISED DECAL LOCATIONS		1/2/94	G.S.
2	REVISED DECAL LOCATIONS		2/24/94	REN



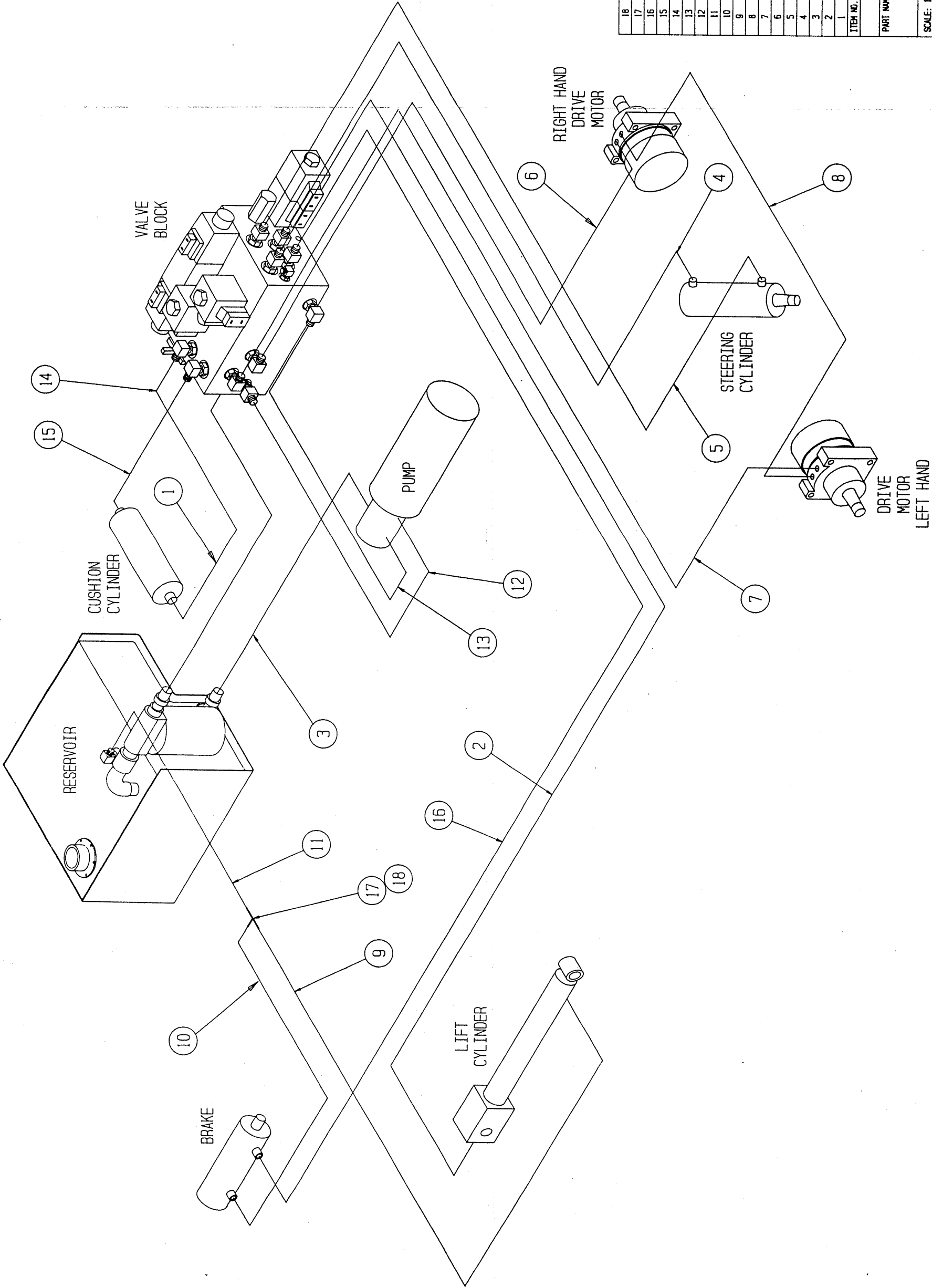
LOCATE ON
CONTROLLER HANGER

FOR INFORMATION
MAR 3 1994



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
29	66560-000-00	DECAL CONTROLLER	1
28	61684-016-00	DECAL X	2
27	61684-018-00	DECAL X 20 N	2
26	66539-000-00	DECAL LOWER CONTROLS	1
25	66535-000-00	DECAL WARNING (COLLISION)	1
24	11240-004-00	WASHER 1/4 FLAT	2
23	11248-004-00	NUT 1/4-20 HEX	2
22	11252-006-00	SCREW HE 1/4-20 X 3/4 LG	2
21	10076-000-00	MANUAL CASE	1
20	10076-001-00	DECAL INSTRUCTIONS	1
19	60577-000-00	ANSI MANUAL	1
18	60572-000-00	USER MANUAL	1
17	66538-000-00	DECAL EVER LOWER PULL HANDLE	1
16	66561-000-00	DECAL SAFETY STAND	1
15	66564-000-00	DECAL READ INSTRUCTIONS	1
14	65368-000-00	TAXI	4
13	66550-000-00	DECAL DANGER	1
12	61220-001-00	DECAL ANSI	1
11	61205-000-00	DECAL NAME PLATE	1
10	60197-000-00	DECAL HYDRAULIC FLUID	1
9	66553-000-00	DECAL WARNING	2
8	66555-000-00	DECAL LIMIT SWITCHES	1
7	14222-003-99	DECAL FORK LIFT HERE	2
6	66557-000-00	DECAL MAX LOAD 750 LBS	2
5	66551-000-00	DECAL MAX LOAD 250 LBS	1
4	66552-000-00	DECAL HYDRAULIC GAS	1
3	05221-000-00	DECAL MAINTAIN BATTERY	1
2	61683-004-00	DECAL UPRIGHT	4
1	61683-005-00	DECAL UPRIGHT	2
PART NAME			
UP-RIGHT, INC.			
DECAL KIT / INSTL X20N DOM			
DATE:	DATE:	DATE:	DATE:
SIZE: 0	DATE: 4/20/93	DATE:	DATE:
SCALE: 1/10	PART NO: 66010-000-00	SHEET 1 OF 1	

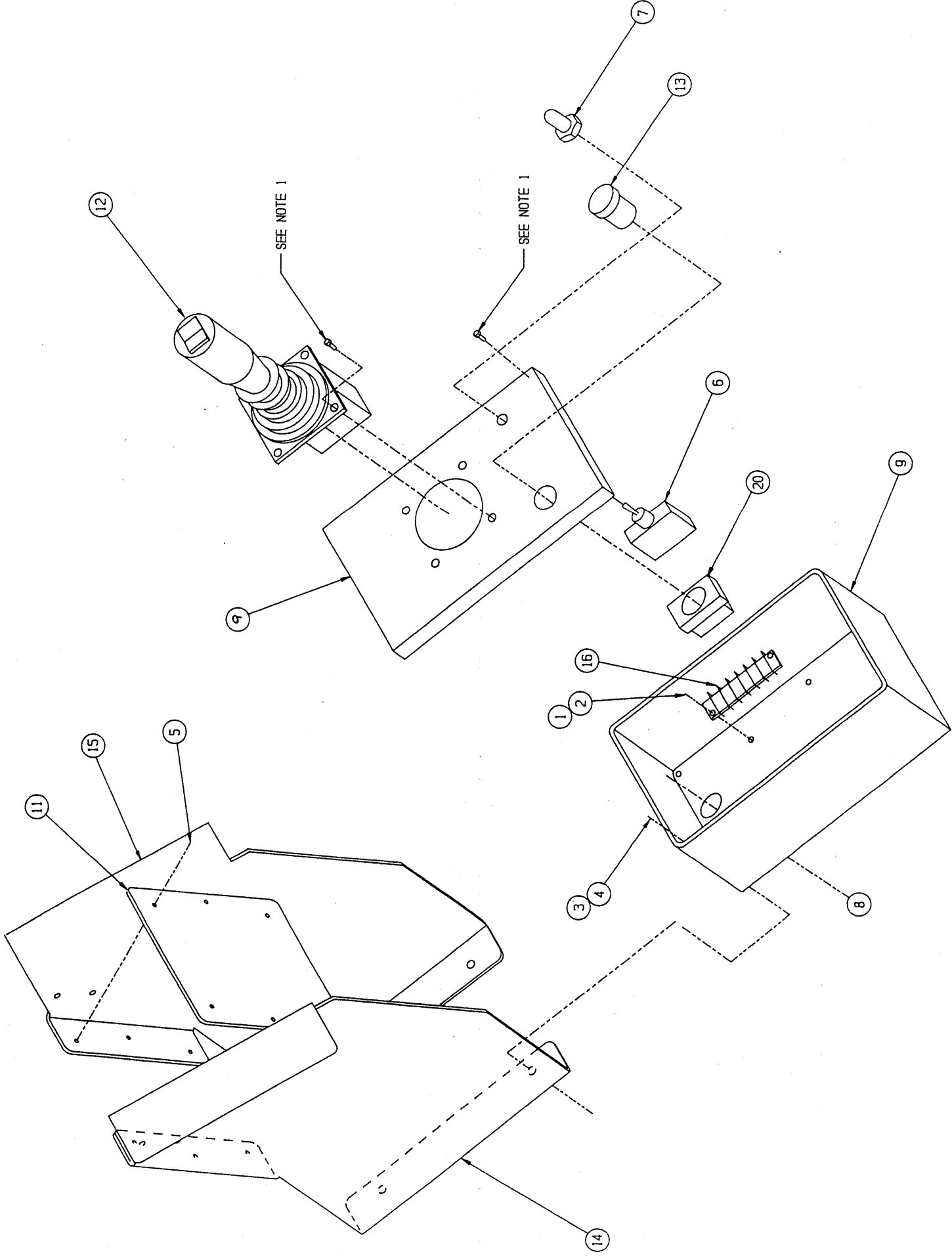
REVISIONS			
REV	DESCRIPTION	DATE	CHKD. BY
1	CORE PLI & CUSHION MOUNTING	2/2/93	JW



18	11937-003-00	FITTING 1/2 SWIVEL 90° EL	1
17	20032-003-00	FITTING 1/2 TEE	1
16	60061-065-00	HOSE ASSEMBLY X 90	1
15	60061-040-00	HOSE ASSEMBLY X 11 1/2	1
14	60061-067-00	HOSE ASSEMBLY X 16	1
13	60061-024-00	HOSE ASSEMBLY X 17	1
12	60061-022-00	HOSE ASSEMBLY X 14	1
11	60061-032-00	HOSE ASSEMBLY X 33	1
10	60061-069-00	HOSE ASSEMBLY X 87	1
9	60061-057-00	HOSE ASSEMBLY X 144	1
8	60061-005-00	HOSE ASSEMBLY X 45	1
7	60061-068-00	HOSE ASSEMBLY X 68	1
6	60061-006-00	HOSE ASSEMBLY X 66	1
5	60061-003-00	HOSE ASSEMBLY X 39 1/2	1
4	60061-064-00	HOSE ASSEMBLY X 43	1
3	61789-012-00	HOSE ASSEMBLY X 13	1
2	60061-063-00	HOSE ASSEMBLY X 144	1
1	60061-021-00	HOSE ASSEMBLY X 12	1
ITEM NO.	PART NO.	PART / MATERIAL DESCRIPTION	QTY

UP-RIGHT, INC.			
PART NAME			
HOSE KIT / INSTL XL20			
SCALE: 1/4"	DATE: 4/9/93	DATE: 11/3/93	DATE:
DWG SIZE: 0	PART NO: 66011-000-00	SHEET 1	OF 1

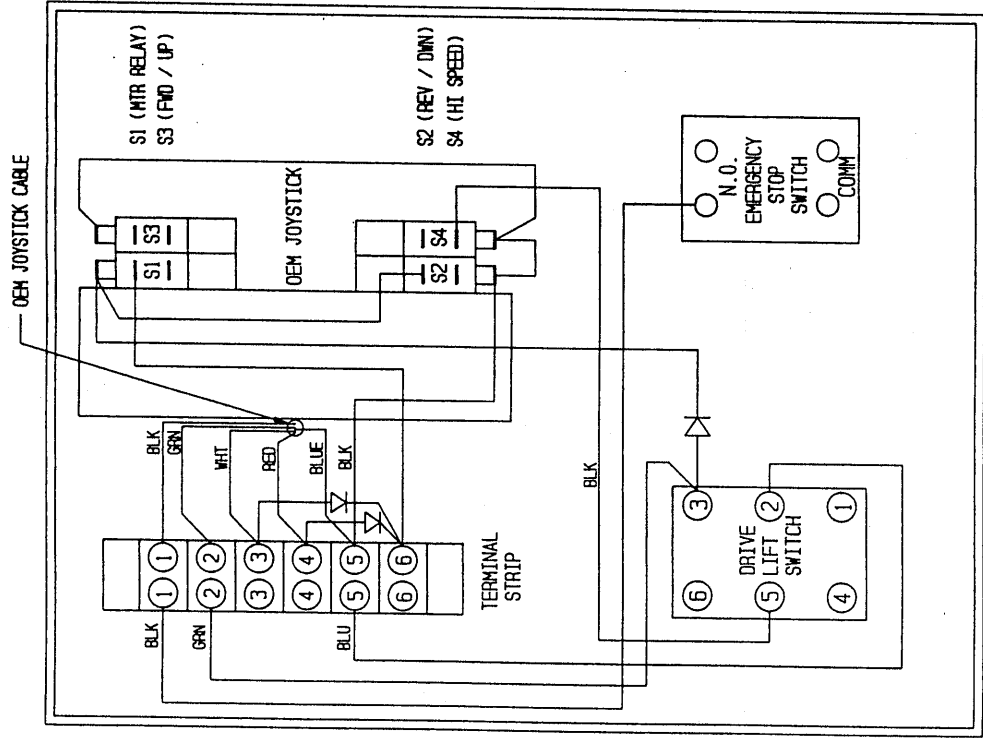
1. SUPPLIED WITH BOX.



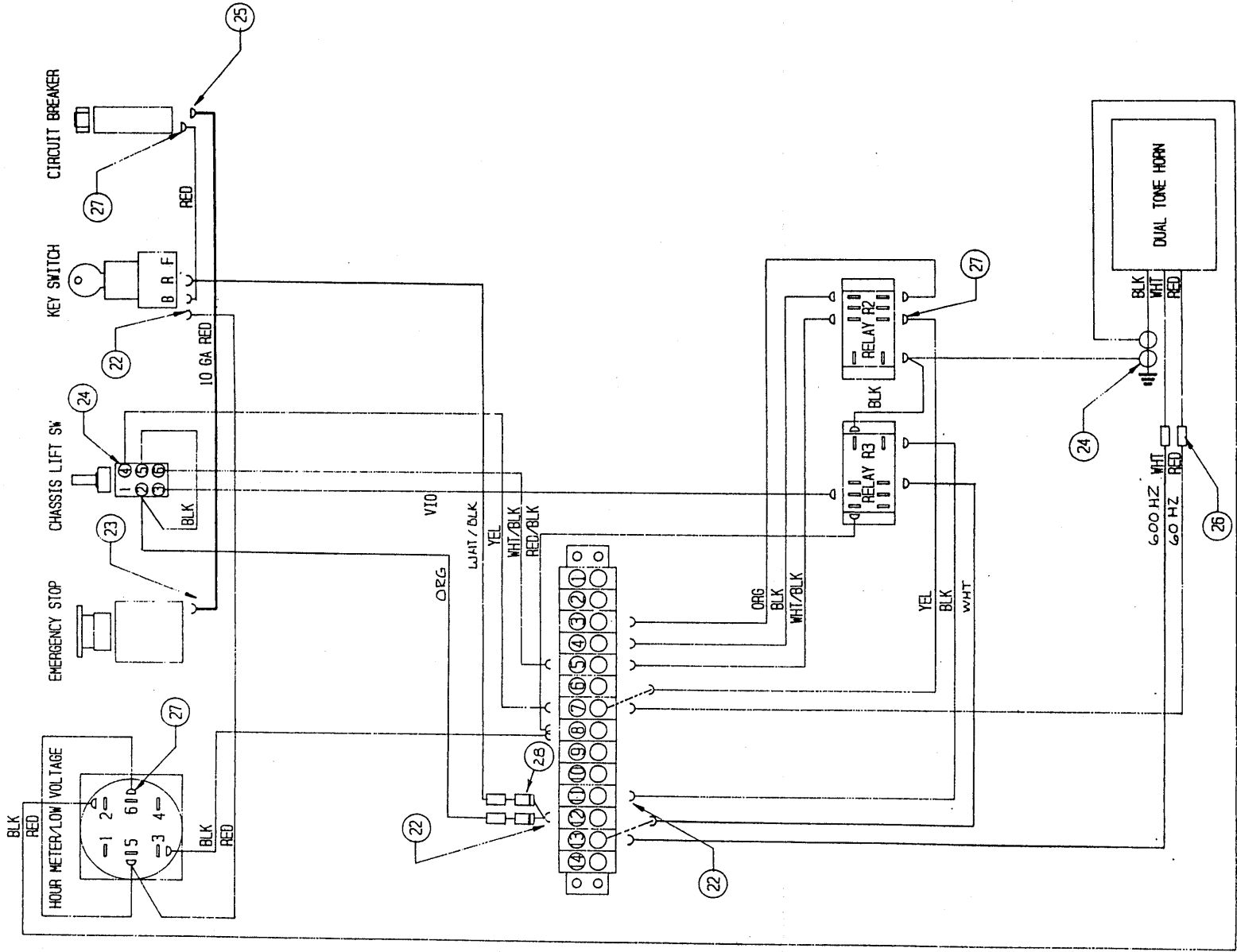
REVISIONS			
REV	DESCRIPTION	DATE	CHKD. BY
1	DEL 66/75-002, REV -001 TO CORRECT BOX 12/14/53	12/14/53	J-44
2	DEL 11248-001, 11248-002 - ADD 11248-003, 11248-004	2/17/54	R-003

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
20	63667-003	CONTACT BLOCK	1
19			
18	23615-002	CONN PUSH 14-16 GA #8	7
17	23610-002	CONN FORK 14-16 GA #8	19
16	29628-003	TERMINAL BLOCK (6 CONTACTS)	1
15	66035-000	PANEL, CONTROLLER R.H.	1
14	66034-000	PANEL, CONTROLLER L.H.	1
13	63667-001	PUSH BUTTON	1
12	66181-000	CONTROLLER HANDLE	1
11	66092-000	PANEL, CONTROLLER	1
10			
9	66175-001	BOX ENCLOSURE - MODIFIED	1
8	23625-000	CONN CABLE	1
7	29872-000	BOOT	1
6	15941-001	SWITCH	1
5	26551-007	RIVET 1/8 DIA X 1/4-5/16 GRIP	6
4	11238-004	WASHER 1/4 LOCK x 1/2	4
3	11252-004	SCREW 1/4-20 UNC HHC x 1/2	4
2	11248-047	HEX NUT 6-32 UNC	2
1	11715-006	SCREW 6-32 UNC MACH RD HD X 3/4	2

UP-RIGHT, INC.			
PART NAME			
CONTROLLER ASSY			
DWG. 0	DATE: 9/23/53	APPROVED: [Signature]	DATE: 11-23-53
SIZE: 1/2	PART NO: 66013-000-001	SHEET: 1 OF 2	



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
CONTROLLER ASSEMBLY			
DATE: 0	DATE: 9/22/93	DATE: 9/22/93	DATE: 9/22/93
SIZE: 1/2	PART NO: 66013-000-00	SHEET 2 OF 2	



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
ELECTRICAL BOX			
DATE: 0	DATE: 0	DATE: 0	DATE: 0
SIZE: 0	SIZE: 0	SIZE: 0	SIZE: 0
SCALE: 1/2	PART NO: 66014-001-00	SHEET 2 OF 2	

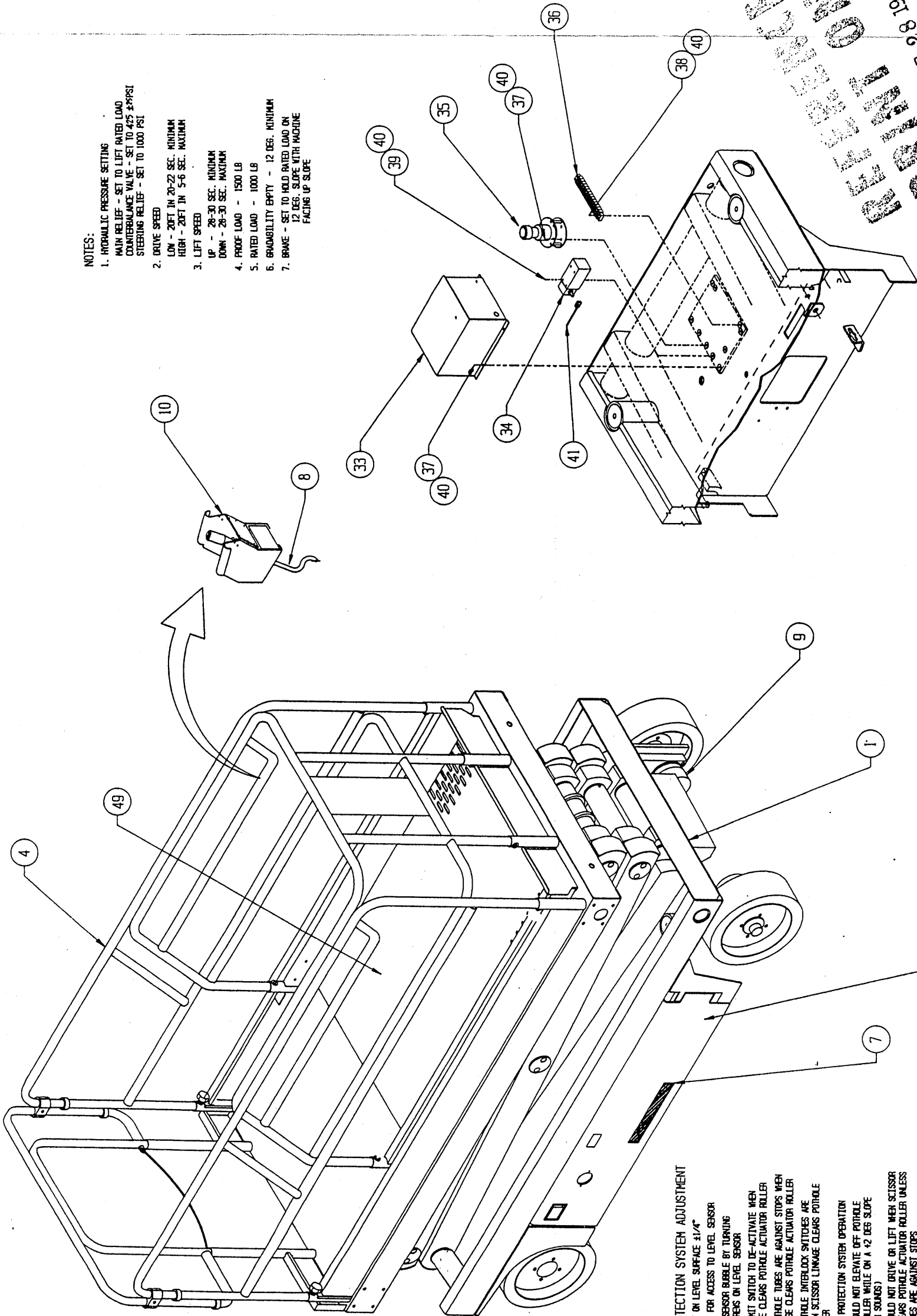
REV		DESCRIPTION	DATE	CHKD. BY
1	15793-15	LIAS Z986Q ADD 65362-29	1-17-74	HM

REVISIONS

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
60	10154-000	COVER BATTERY TERMINAL	8
59	29961-001	SEAL	1
58	10131-099	CABLE, 16 GA 12 COND	15 FT
57	06444-004	SCREW RH #6-32UNC X 1/2	2
56	29961-000	INLET PLUG	1
55			
54			
53	1248-047	NUT #6-32UNC MAX LOCK	2
52			
51			
50			
49	66056-000	DECK EXTENSION INSTALLATION	1
48	11252-008	SCREW HHC 685 1/4-20 UNC X 1	2
47	29616-003	CONN PUSH 10-12 GA .75	1
46	29610-002	CONN FORK 14-16 GA #8	31
45	29931-003	CONN PUSH 14-16 GA .75	16
44	29601-013	CONN RING 14-16 GA #10	6
43	29601-015	CONN RING 14-16 GA 3/8	4
42			
41	15793-015	LEVER	1
40	11238-002	WASHER #10 LOCK	10
39	11275-012	SCREW #10-32 X 1 3/4	2
38	11275-006	SCREW #10-32 X 3/4	2
37	11275-004	SCREW #10-32 X 1/2	6
36	29928-004	TERMINAL BLOCK	1
35	29945-011	LEVEL SENSOR	1
34	15793-011	LIMIT SWITCH	1
33	66399-000	WELDMENT COVER	1
32	11248-004	NUT 1/4-20 HEX	2
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
30	66368-000	BRACKET	1
29	66185-000	CABLE	1
28	66179-000	VALVE DELTA	1
27	11240-006	WASHER FLAT 3/8 DIA	2
26	11254-006	SCREW HHC 685 3/8-16 X 3/4	2
25	20343-004	FITTING CAP 6MB	1
24	11934-001	FITTING 90° ELBOW 4MB-4MJ	1
23	11934-007	FITTING 90° ELBOW 6MB-6 MJ	1
22	65369-019	HOSE GUARD NYLON FT 1.5	1
21	11941-005	FITTING STRAIGHT 6MB-6 MJ	8
20	12822-003	CONTROL VALVE ASSEMBLY	1
19	11728-004	SCREW SOC HD #10-32 X 1/2	2
18	66014-000	ELECTRICAL BOX ASSEMBLY	1
17	64195-128	CABLE ASS'Y X 128	1
16	64195-063	CABLE ASS'Y X 63	1
15	64195-001	CABLE ASS'Y X 12	3
14	11248-005	NUT 5/16-18 HEX	8
13	11253-006	SCREW HHC 5/16-18UNC X 3/4	10
12	66180-000	CHARGER	1
11	15796-000	BATTERY 6V 220AMP	4
10	66013-000	CONTROLLER ASSEMBLY	1
9	66061-000	HOSE KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
7	66060-000	DECAL KIT INSTALLATION	1
6	05832-000	WASHER LOCK 1/4	2
5	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
4	66055-000	GUARDRAIL INSTALLATION	1
3	66059-000	POWER MODULE	REF
2	66058-000	CONTROL MODULE	REF
1	66051-000	BASIC ASSEMBLY	1

NOTES:

1. HYDRAULIC PRESSURE SETTING
MAIN RELIEF - SET TO LIFT RATED LOAD
COUNTERBALANCE VALVE - SET TO 425 PSIG
STEERING RELIEF - SET TO 1000 PSI
2. DRIVE SPEED
LOW - 20FT IN 20-22 SEC. MINIMUM
HIGH - 20FT IN 5-6 SEC. MAXIMUM
3. LIFT SPEED
UP - 26-30 SEC. MINIMUM
DOWN - 26-30 SEC. MAXIMUM
4. PROOF LOAD - 1500 LB
5. RATED LOAD - 1000 LB
6. GRAVITY EMPTY - 12 DEG. MINIMUM
7. BRAKE - SET TO HOLD RATED LOAD ON 12 DEG. SLOPE WITH MACHINE FACING UP SLOPE



POTHOLE PROTECTION SYSTEM ADJUSTMENT

1. PLACE MACHINE ON LEVEL SURFACE 1/4"
2. RAISE MACHINE FOR ACCESS TO LEVEL SENSOR
3. CENTER LEVEL SENSOR BUBBLE BY TURNING ADJUSTMENT SCREWS ON LEVEL SENSOR
4. SET "DOWN" LIMIT SWITCH TO DE-ACTIVATE WHEN SENSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
5. CHECK THAT POTHOLE TUBES ARE AGAINST STOPS WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
6. CHECK THAT POTHOLE INTERLOCK SWITCHES ARE DE-PRESSED WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
7. CHECK POTHOLE PROTECTION SYSTEM OPERATION
 - A. MACHINE SHOULD NOT ELEVATE OFF POTHOLE ACTUATOR ROLLER WHILE ON A 42 DEG SLOPE (TILT ALARM SOUNDS)
 - B. MACHINE SHOULD NOT DRIVE OR LIFT WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER UNLESS POTHOLE TUBES ARE AGAINST STOPS (INTERLOCK SWITCHES DE-PRESSED) AND MACHINE IS LEVEL
 - C. MACHINE SHOULD HAVE LOW SPEED DRIVE WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
 - D. MACHINE SHOULD HAVE HIGH SPEED DRIVE WHEN SCISSOR LINKAGE IS ON POTHOLE ACTUATOR ROLLER
 - E. TILT ALARM SHOULD SOUND WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER AND EITHER THE POTHOLE TUBES ARE NOT AGAINST STOPS OR THE MACHINE IS OFF LEVEL BY MORE THAN 2 DEG

CONTROL MODULE OPPOSITE SIDE

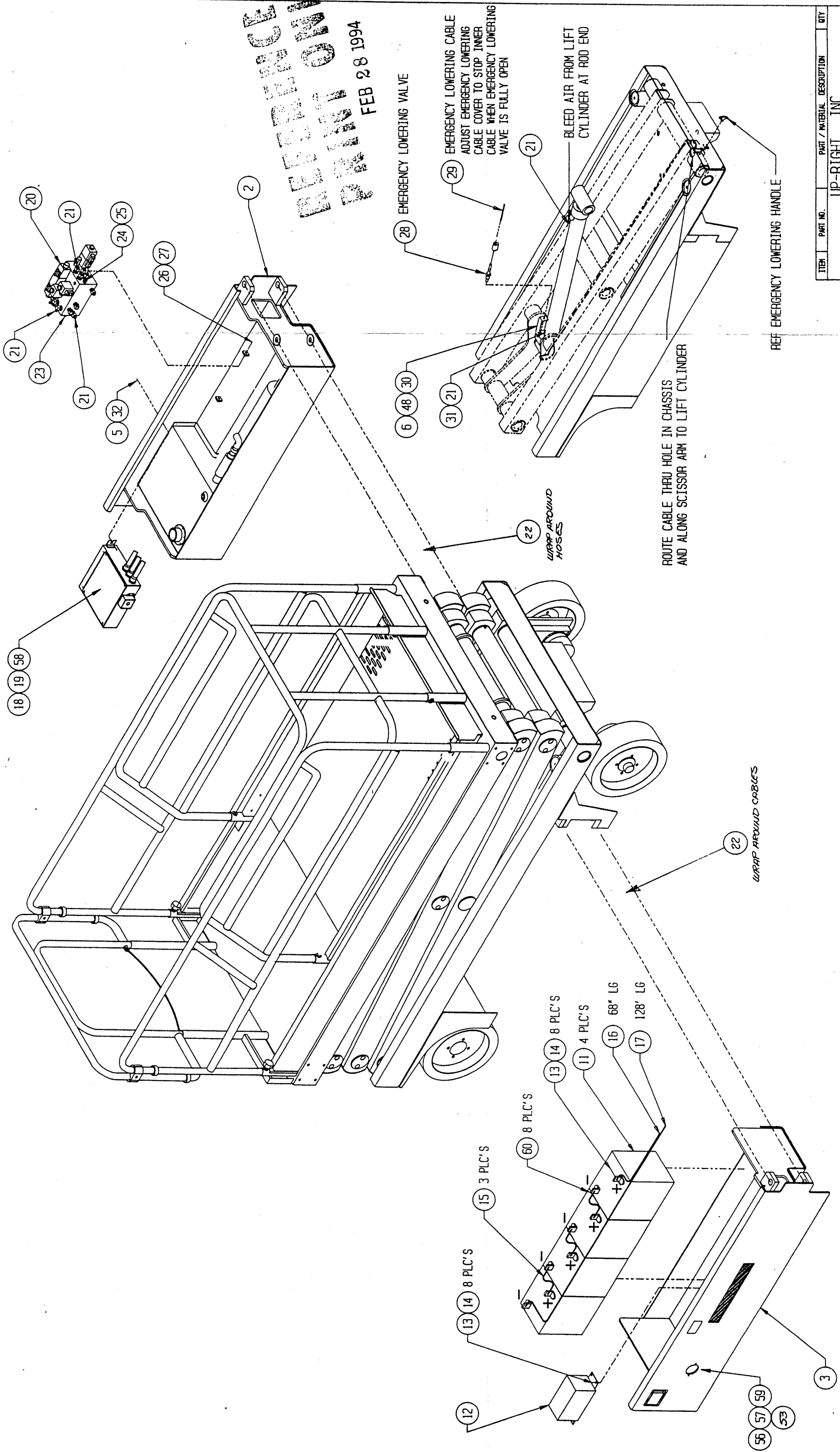
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
67	29926-079	WIRE 16GA 2 COND	FT 10
66	29952-077	WIRE 16GA 6WK	FT 3
65	29601-040	CONN 5/16 RING 16 GA	3
64	64195-011	CABLE ASS'Y	1
63	64195-005	CABLE ASS'Y	1
62	66019-000	HYDRAULIC SCHEMATIC	REF
61	66018-000	ELECTRICAL SCHEMATIC	REF

UP-RIGHT, INC.

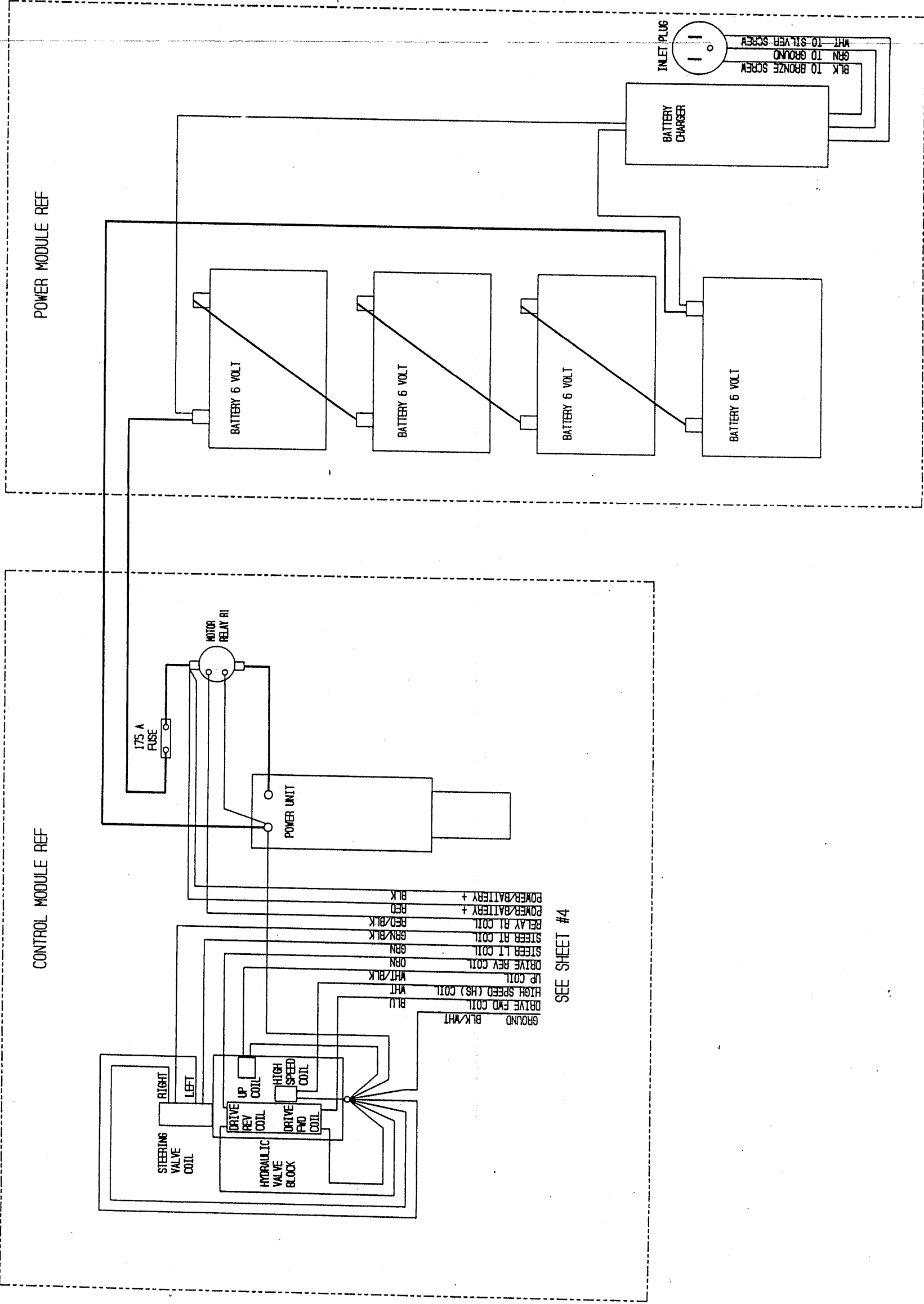
FINAL ASSEMBLY #20W DOM

REV	DATE	CHKD. BY
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65	10/12/93	22/2-94
66	10/12/93	22/2-94
67	10/12/93	22/2-94

**RETRACTOR
PATENT ONLY**
FEB 28 1994



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
FINAL ASSEMBLY X20W/DOM			
DATE:	DATE:	DATE:	DATE:
TIME:	TIME:	TIME:	TIME:
SCALE: 1/10	PART NO: 66050-000-00	SHEET 2 OF 4	



SEE SHEET #4

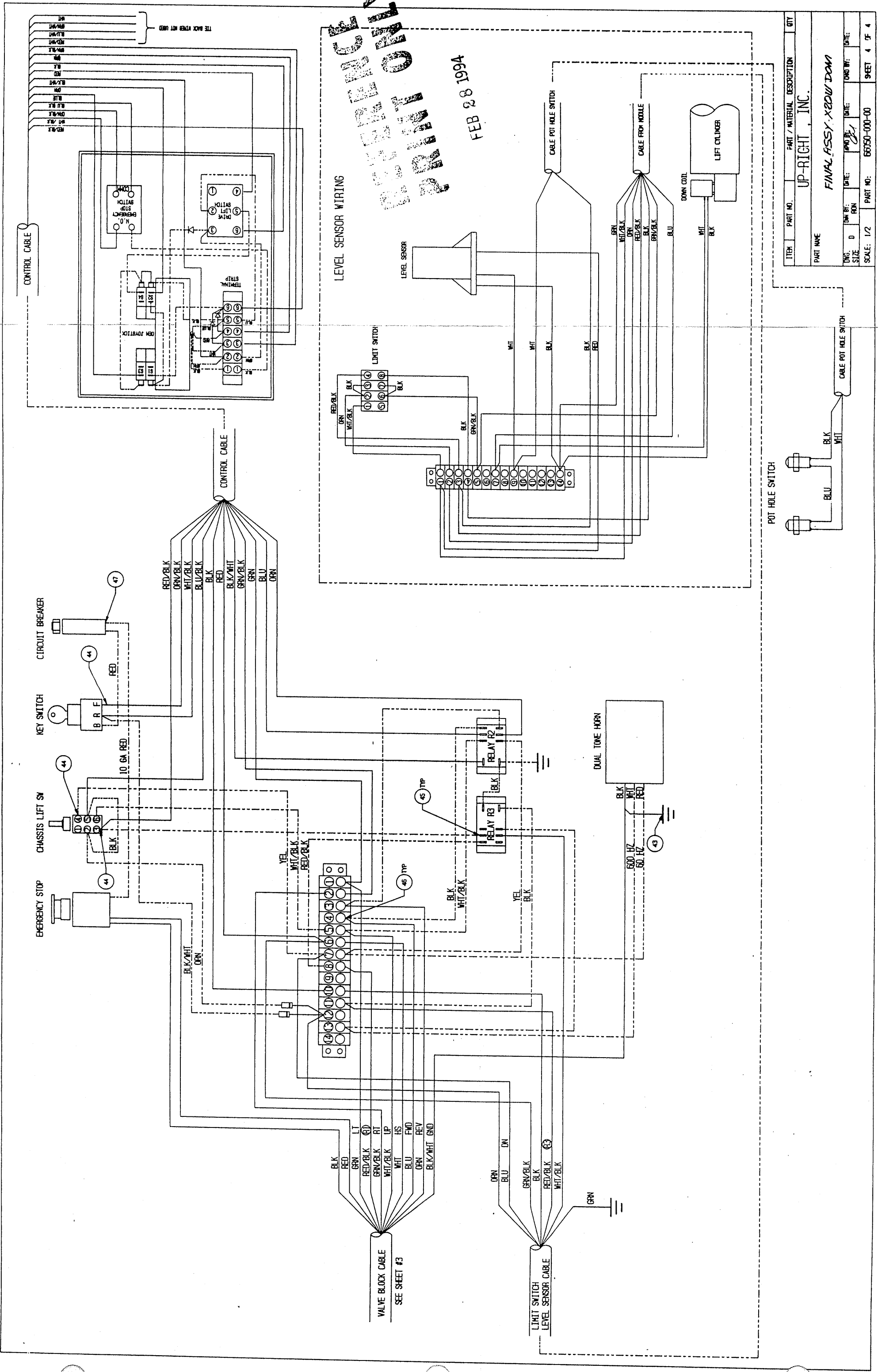
FOR INFORMATION ONLY

FEB 28 1994

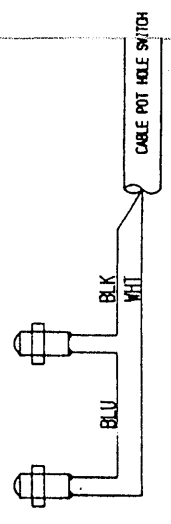
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY X200W DOW...			
DATE	DATE	DATE	DATE
SIZE	SIZE	SIZE	SIZE
SCALE: 1/2	PART NO: 66050-000-00	SHEET 3 OF 4	

RECEIVED
FEB 28 1994

LEVEL SENSOR WIRING



POT HOLE SWITCH

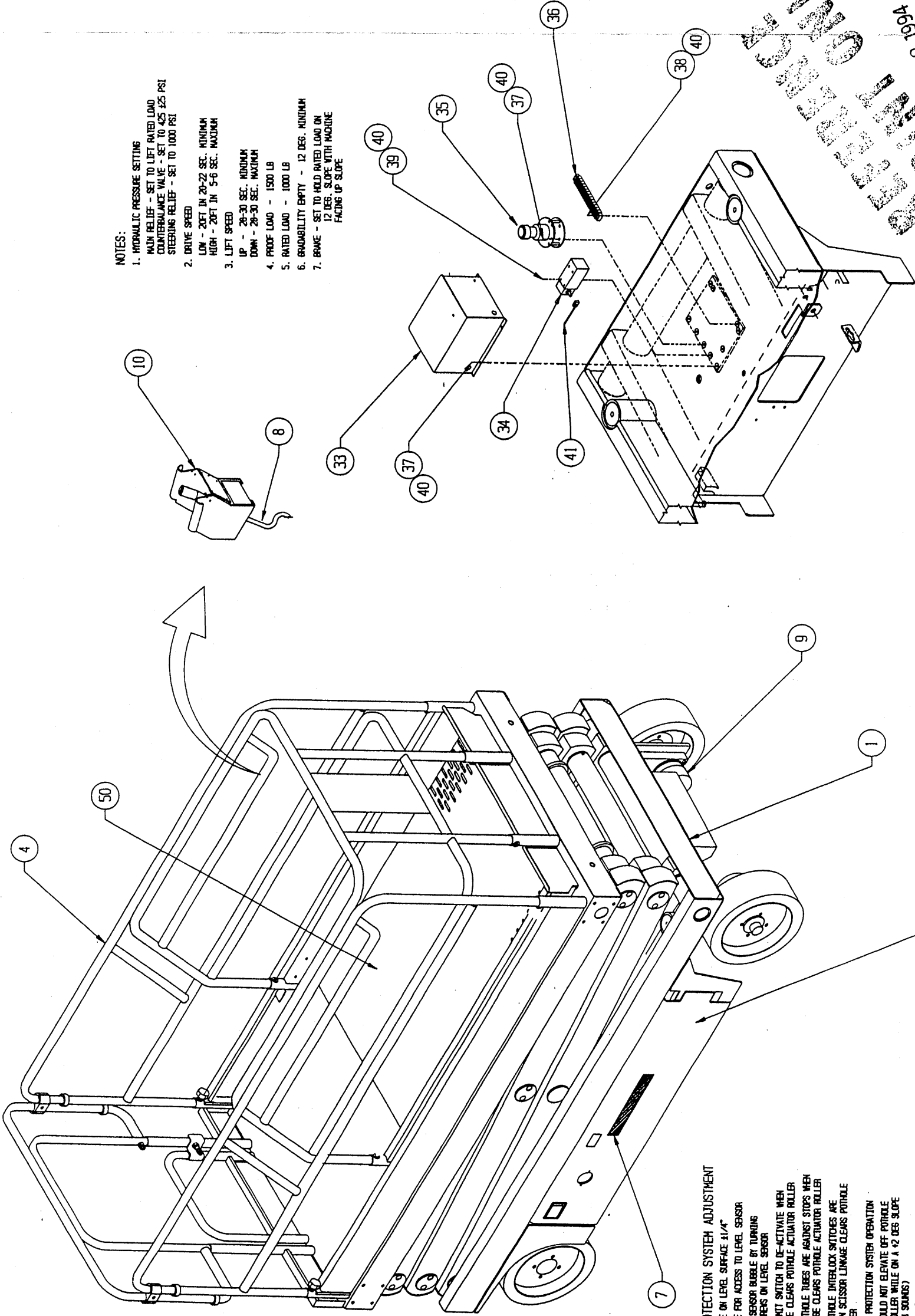


ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSY: X220W DOM			
DATE:	DATE:	DATE:	DATE:
SIZE:	SIZE:	SIZE:	SIZE:
SCALE: 1/2	PART NO:	65750-000-00	SHEET 4 OF 4

REV	DESCRIPTION	DATE	CHKD. BY
1	15793-15 WAS 273060 ADD 65369-99	2-17-94	JFM

REV	DESCRIPTION	DATE	CHKD. BY
1	15793-15 WAS 273060 ADD 65369-99	2-17-94	JFM

- NOTES:
1. HYDRAULIC PRESSURE SETTING
MAIN RELIEF - SET TO LIFT RATED LOAD
COUNTERBALANCE VALVE - SET TO 425 KPSI
STEERING RELIEF - SET TO 1000 PSI
 2. DRIVE SPEED
LOW - 20FT IN 20-22 SEC. MINIMUM
HIGH - 20FT IN 5-6 SEC. MAXIMUM
 3. LIFT SPEED
UP - 28-30 SEC. MINIMUM
DOWN - 28-30 SEC. MAXIMUM
 4. PROOF LOAD - 1500 LB
 5. RATED LOAD - 1000 LB
 6. GRAVABILITY EMPTY - 12 DEG. MINIMUM
 7. BRAKE - SET TO HOLD RATED LOAD ON 12 DEG. SLOPE WITH MACHINE FACING UP SLOPE



POTHOLE PROTECTION SYSTEM ADJUSTMENT

1. PLACE MACHINE ON LEVEL SURFACE 3/4"
2. RAISE MACHINE FOR ACCESS TO LEVEL SENSOR
3. CENTER LEVEL SENSOR BUBBLE BY TURNING ADJUSTMENT SCREWS ON LEVEL SENSOR
4. SET "DOWN" LIMIT SWITCH TO DE-ACTIVATE WHEN SENSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
5. CHECK THAT POTHOLE TUBES ARE AGAINST STOPS WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
6. CHECK THAT POTHOLE INTERLOCK SWITCHES ARE DE-PRESSED WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
7. CHECK POTHOLE PROTECTION SYSTEM OPERATION
 - A. MACHINE SHOULD NOT ELEVATE OFF POTHOLE ACTUATOR ROLLER WHILE ON A 12 DEG SLOPE (TILT ALARM SOUNDS)
 - B. MACHINE SHOULD NOT DRIVE OR LIFT WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER UNLESS POTHOLE TUBES ARE AGAINST STOPS (INTERLOCK SWITCHES DE-PRESSED) AND MACHINE IS LEVEL
 - C. MACHINE SHOULD HAVE LOW SPEED DRIVE WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
 - D. MACHINE SHOULD HAVE HIGH SPEED DRIVE WHEN SCISSOR LINKAGE IS ON POTHOLE ACTUATOR ROLLER
 - E. TILT ALARM SHOULD SOUND WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER AND EITHER THE POTHOLE TUBES ARE NOT AGAINST STOPS OR THE MACHINE IS OFF LEVEL BY MORE THAN 2 DEG

CONTROL MODULE OPPOSITE SIDE

ITEM	PART NO.	DESCRIPTION	QTY
67	29496-099	WIRE 16 GA 2 COND	FT 10
66	29452-099	WIRE 16 GA 2 COND	FT 3
65	29601-099	CABLE 5/16 RING 16 GA	3
64	64195-011	CABLE ASSY X 11	1
63	64195-005	CABLE ASSY X 5	1
62	66019-001	HYDRAULIC SCHEMATIC	REF
61	66018-001	ELECTRICAL SCHEMATIC	REF

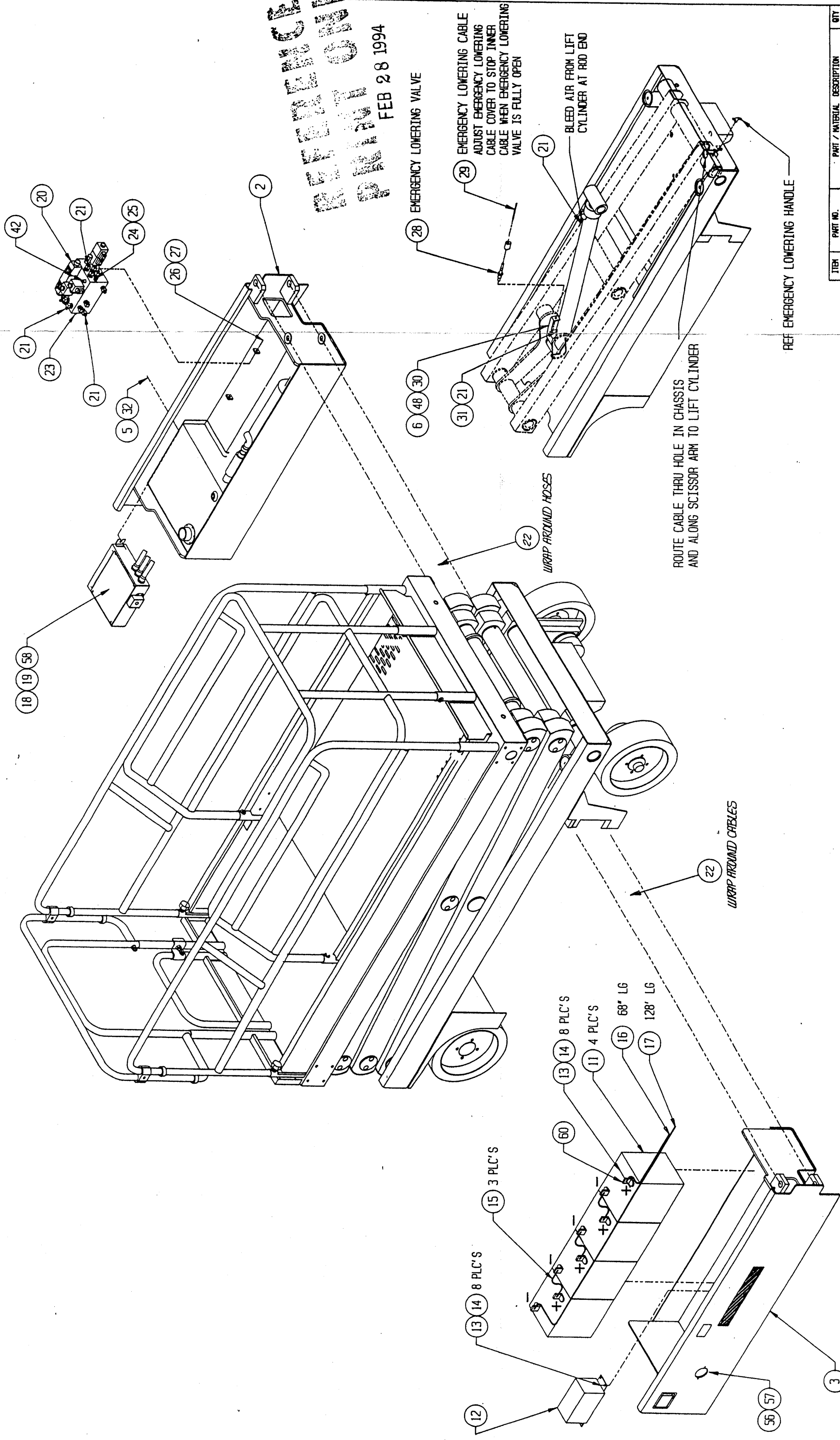
ITEM	PART NO.	DESCRIPTION	QTY
60	10154-000	COVER BATTERY TERMINAL	8
59			
58	10131-099	CABLE 16 GA 12 COND	15 FT
57	26551-005	RIVET. POP	2
56	66576-000	COVER PLATE	1
55			
54			
53			
52			
51	66056-000	DECK EXTENSION INSTALLATION	1
50			
49			
48	11252-008	SCREW IHC GR5 1/4-20 UNC X 1	2
47	29616-003	CONN PUSH 10-12 GA .75	1
46	29610-002	CONN FORK 14-16 GA #8	31
45	29931-003	CONN PUSH 14-16 GA .75	16
44	29601-013	CONN RING 14-16 GA #10	8
43	29601-015	CONN RING 14-16 GA 3/8	4
42	63965-001	PRESSURE GAGE PORT	1
41	15793-015	LEVER	1
40	11238-002	WASHER #10 LOCK	10
39	11275-012	SCREW #10-32 X 1 3/4	2
38	11275-006	SCREW #10-32 X 3/4	2
37	11275-004	SCREW #10-32 X 1/2	6
36	29928-004	TERMINAL BLOCK	1
35	29945-011	LEVEL SENSOR	1
34	15793-011	LIMIT SWITCH	1
33	66099-000	WELDMENT COVER	1
32	11248-004	NUT 1/4-20 HEX	2
31	63664-008	ORIFICE. HYDRAFORCE #7051070	1
30	66368-000	BRACKET	1
29	66185-000	CABLE	1
28	66179-000	VALVE DELTA	1
27	11240-006	WASHER FLAT 3/8 DIA	2
26	11254-006	SCREW IHC GR5 3/8-16 X 3/4	2
25	20343-004	FITTING CAP 6MB	1
24	11934-001	FITTING 90° ELBOW 4MB- 4MJ	1
23	11934-007	FITTING 90° ELBOW 8MB- 6 MJ	1
22	65363-099	HOSE GUARD NYLON FT 1.5	1
21	11941-005	FITTING STRAIGHT 6MB- 6 MJ	8
20	12822-003	CONTROL VALVE ASSEMBLY	1
19	11728-004	SCREW SOC HD #10-32 X 1/2	2
18	66014-001	ELECTRICAL BOX ASSEMBLY	1
17	64195-128	CABLE ASS'Y X 128	1
16	64195-053	CABLE ASS'Y X 63	1
15	64195-001	CABLE ASS'Y X 12	3
14	11248-005	NUT 5/16-18 HEX	8
13	11253-006	SCREW IHC 5/16-18UNC X 3/4	10
12	66180-000	CHARGER	1
11	15795-000	BATTERY 6V 220AMP	4
10	66013-000	CONTROLLER ASSEMBLY	1
9	66041-000	HOSE KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
7	66060-000	DECAL KIT INSTALLATION	1
6	05832-000	WASHER LOCK 1/4	2
5	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
4	66055-001	GUARDRAIL INSTALLATION	1
3	66059-000	POWER MODULE	REF
2	66058-000	CONTROL MODULE	REF
1	66051-000	BASIC ASSEMBLY	1

UP-RIGHT, INC.

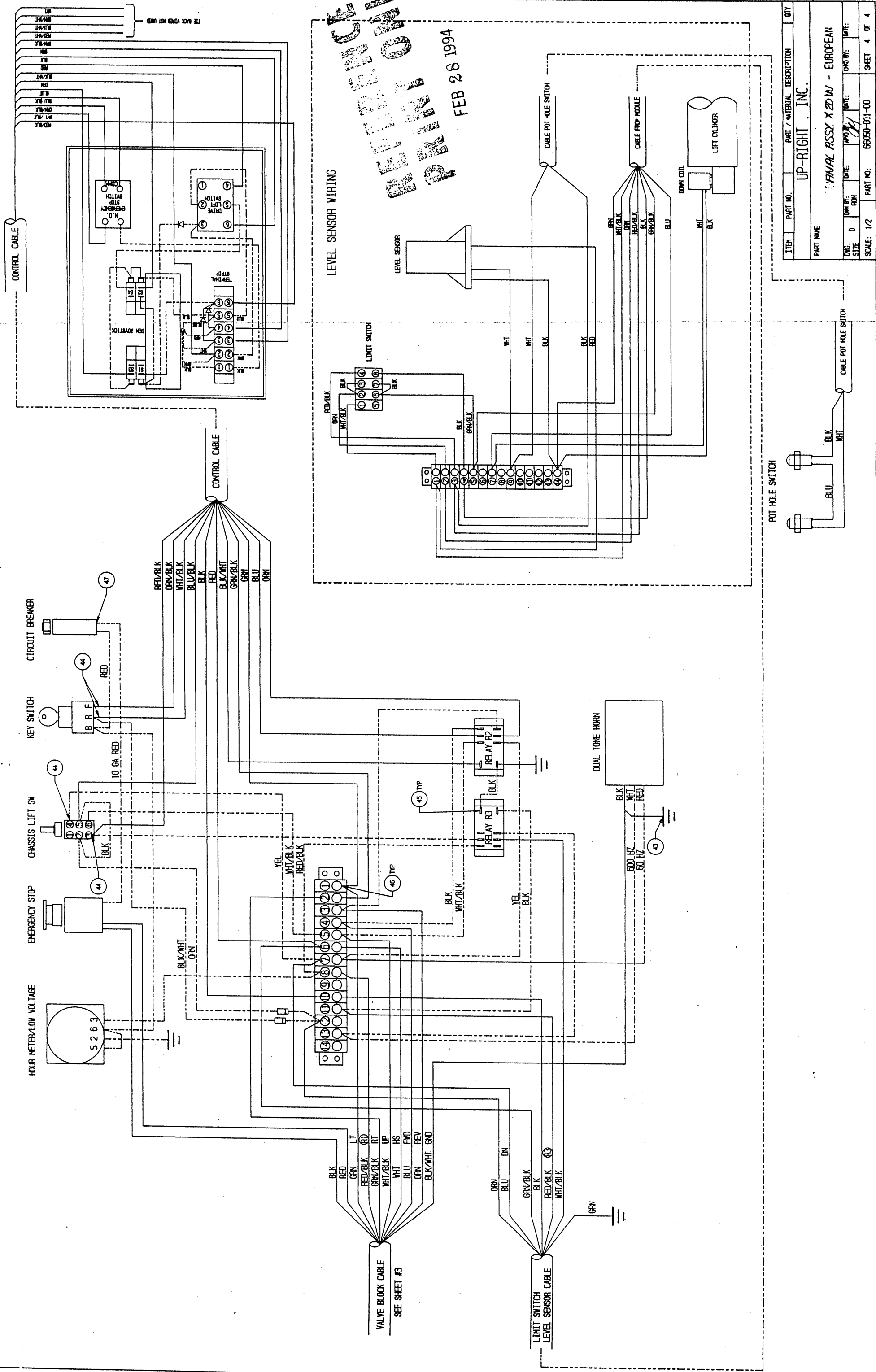
FINAL ASSEMBLY #20W (EUROPEAN)

DATE	TIME	DATE	TIME	DATE	TIME
10/12/93	2:11 PM	10/12/93	2:11 PM	10/12/93	2:11 PM
SCALE: 1/10	PART NO: 66050-001	SHEET 1 OF 4			

RECEIVED
 FEB 28 1994
 2 PM



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY X20W (EUROPEAN)			
DATE	TIME	DATE	TIME
0	00	4/20/93	11
SIZE	0	DATE	TIME
SCALE: 1/10	PART NO: 66050-001-00	SHEET 2 OF 4	

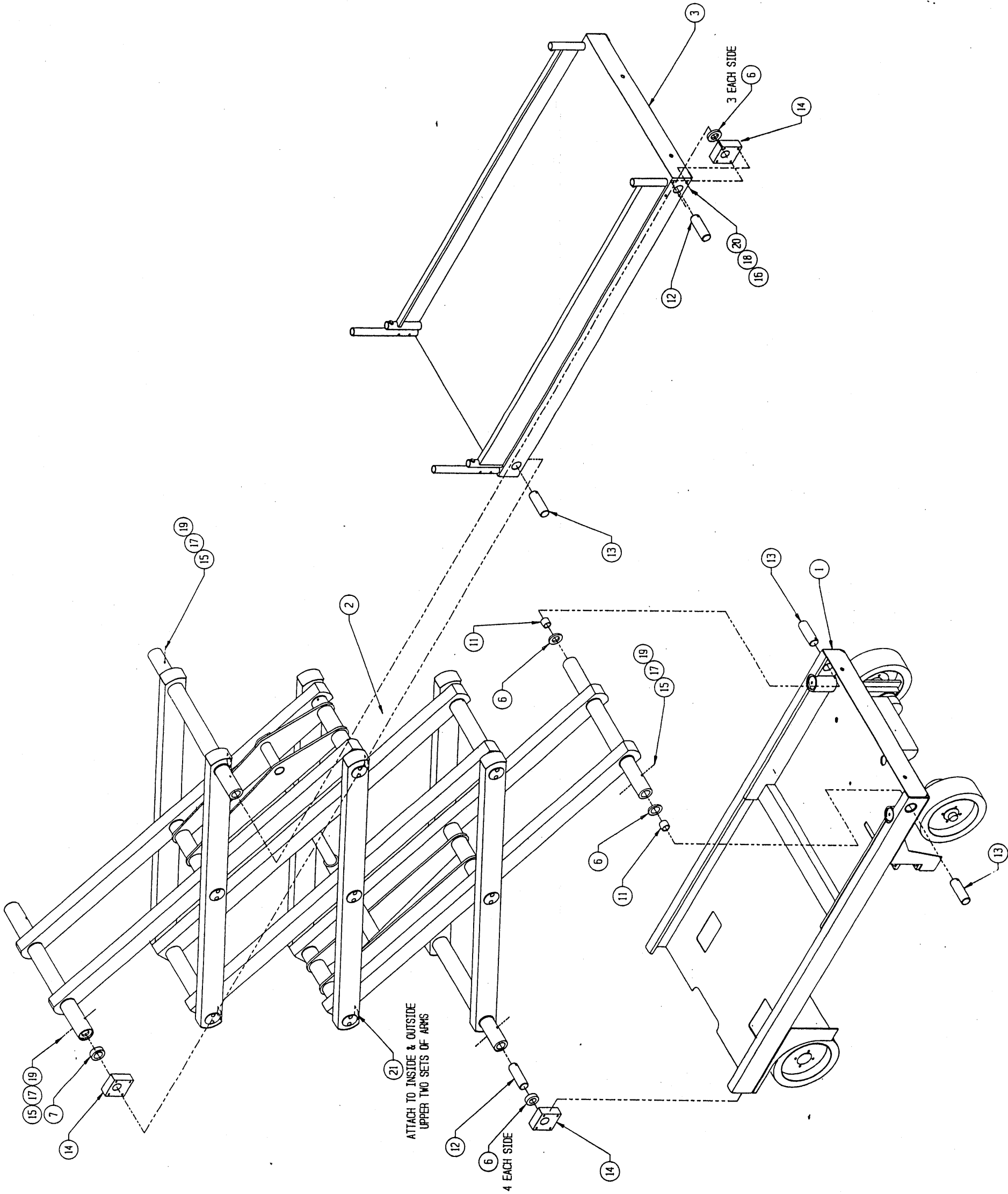


WIRING

FEB 28 1994

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT INC.			
PART NAME			
FINAL RSSY X 20 W - EUROPEAN			
ENG. SIZE	D	TORN W/:	DATE:
		RON	
SCALE: 1/2		PART NO:	DATE:
		66050-071-00	
		SHEET 4	OF 4

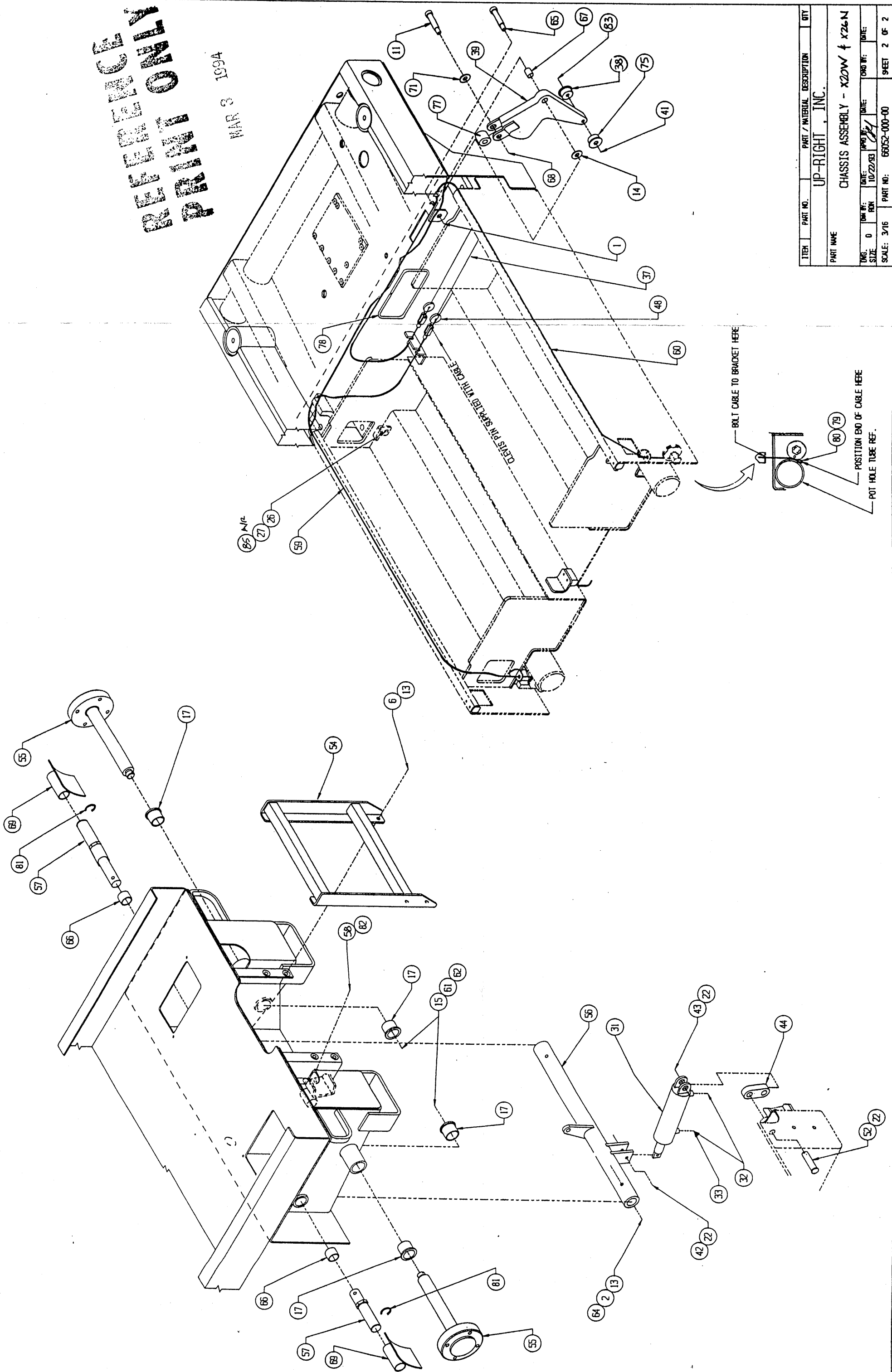
REV	DESCRIPTION	DATE	BY



21	66509-000-00	TAPE, PRESSURE SENSITIVE 2 X 2 X .030	2.6 FT
20	11248-006-00	NUT 3/8-16	8
19	11248-005-00	NUT 5/16-18	8
18	11240-006-00	WASHER 3/8 FLAT	8
17	11240-005-00	WASHER 5/16 FLAT	8
16	11254-032-00	SCREW HHC 3/8-16 X 4 L6	8
15	11253-032-00	SCREW HHC 5/16-18 X 4 L6	8
14	66191-000-00	SIDE BLOCK	6
13	66222-002-00	MOUNTING PIN	4
12	66222-001-00	MOUNTING PIN	4
11	66183-001-00	BEARING EAGLE PITCHER #323624	2
10			
9			
8			
7	66189-001-00	WEAR PAD 3/8	2
6	66189-000-00	WEAR PAD 1/4	16
5			
4			
3	66292-000-00	PLATFORM WELDMENT	1
2	66053-000-00	SCISSOR ASSEMBLY	1
1	66052-000-00	CHASSIS ASSEMBLY	1
PART / MATERIAL DESCRIPTION			
UP-RIGHT, INC.			
PART NAME			
BASIC ASSEMBLY - 4820			
DATE	10/12/93	DATE	10/12/93
BY	J. J. J.	BY	J. J. J.
SCALE	3/32	ENG SIZE	D
PART NO.	66051-000	SHEET	1 OF 1

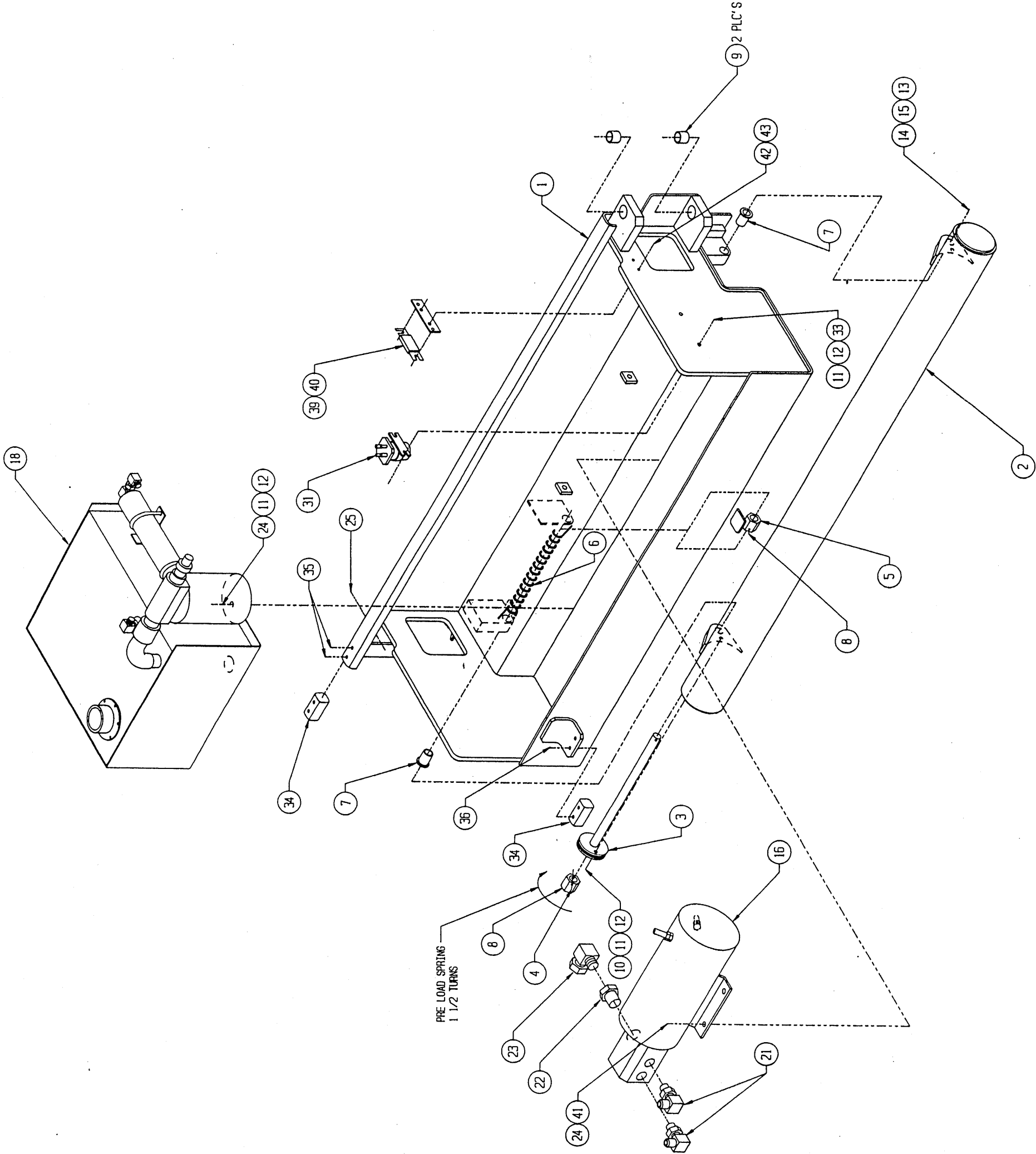
REFERENCE ONLY
PRINT ONLY

MAR 3 1994



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
CHASSIS ASSEMBLY - X20W & X26N			
DATE:	DATE:	DATE:	DATE:
10/22/93	10/22/93	10/22/93	10/22/93
SCALE: 3/16	PART NO: 66052-000-00	SHEET 2 OF 2	

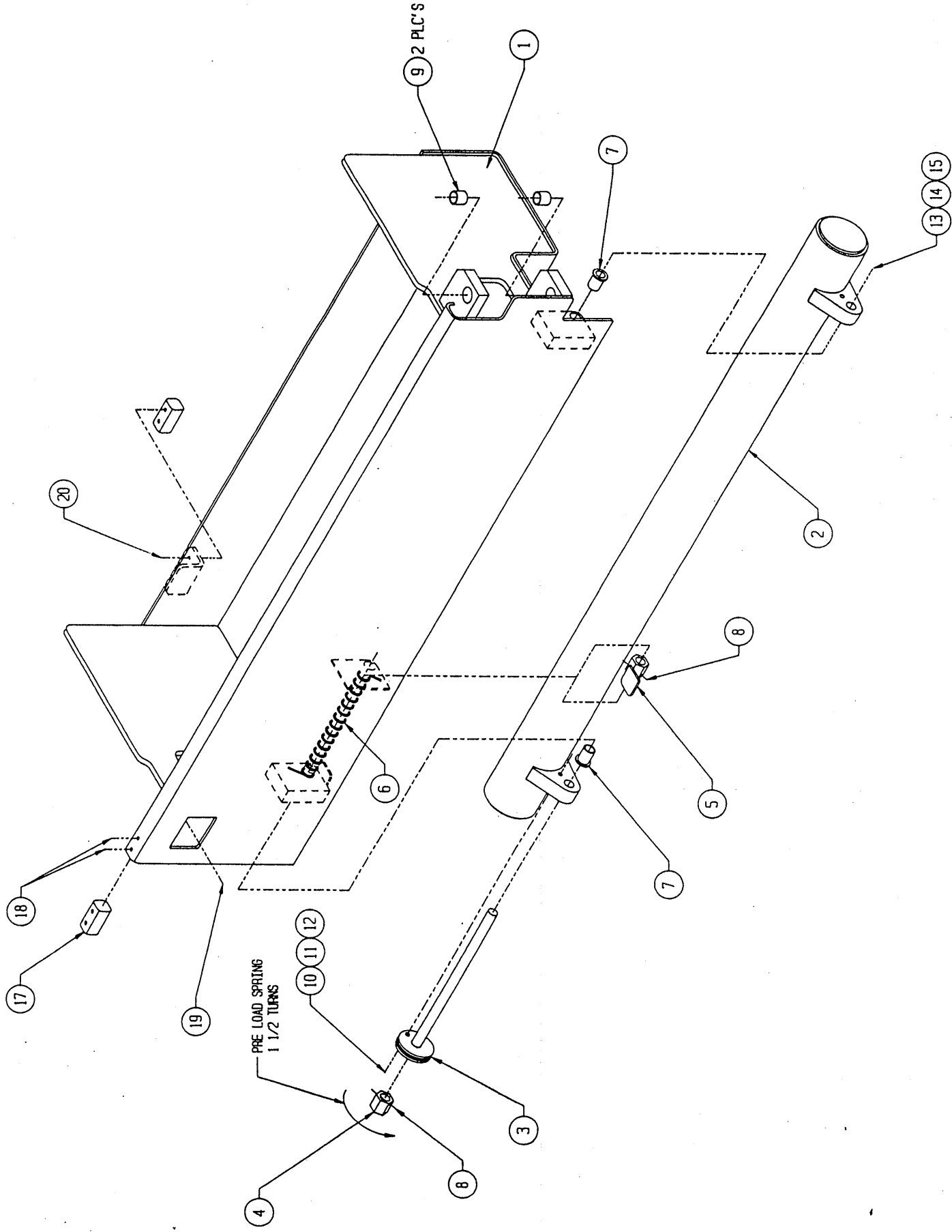
REV	DESCRIPTION	DATE	CHG. BY



43	11248-003-00	NUT HEX #10-24	2
42	13965-010-00	SCREW HEX HD #10-24 X 1 1/4	2
41	11238-005-00	LOCKWASHER 5/16	2
40	10148-001-00	RISE 175 AMP	1
39	10149-000-00	RISE BLOCK	1
38			
37	14066-008-00	SCREW 1/4-20 X 1 HEX HG	2
36	11828-008-00	SCREW 1/4-20 X 1 FLAT HD SOC	2
35	66192-000-00	BLOCK COVER	2
34	11252-010-00	SCREW HHC GR5 1/4-20 X 1 1/4	2
33			
32	10122-000-00	SOLENOID 24V	1
31	11273-006-00	JAM NUT 3/8-16	1
30	11248-006-00	NUT ESNA 3/8-16	3
29			
28	11254-036-00	SCREW HHC GR5 3/8-16 X 4 1/2	1
27	11254-032-00	SCREW HHC GR5 3/8-16 X 4	1
26	62791-002-00	LATCH COVER	1
25	11253-010-00	SCREW HHC GR5 5/16-18 X 1 1/4	2
24			
23	13968-005-00	FITTING	1
22	14280-006-00	FITTING	1
21	11934-004-00	FITTING ELBOW GHRH-GN1	2
20			
19	66016-000-00	HYDRAULIC RESERVOIR ASSY	1
18			
17	15797-000-00	POWER UNIT	1
16	11246-008-00	NUT 1/2-13 HEX THIN	1
15	11240-010-00	WASHER 5/8 FLAT	1
14	63559-002-00	SHOULDER BOLT 5/8 DIA X 1 1/4	1
13	11248-004-00	NUT 1/4-20 HEX	3
12			
11	11240-004-00	WASHER 1/4 FLAT	3
10	11252-016-00	SCREW HHC GR5 1/4-20 X 2	1
9	27931-058-00	RISHING OILITE #AA-1005-5	2
8	11753-014-00	COTTER PIN 1/8 X 1 3/4	2
7	11781-011-00	BUSHING FLANGE OILITE #F-703-1	2
6	66173-000-00	SPRING - TORSION L.H.	1
5	66317-000-00	WELDMENT - BAR	1
4	66365-000-00	BAR - SPRING	1
3	66316-000-00	SHAFT - WELDMENT	1
2	66314-00-00	WELDMENT TUBE	1
1	66074-000-00	CONTROL MODULE WELDMENT	1
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY

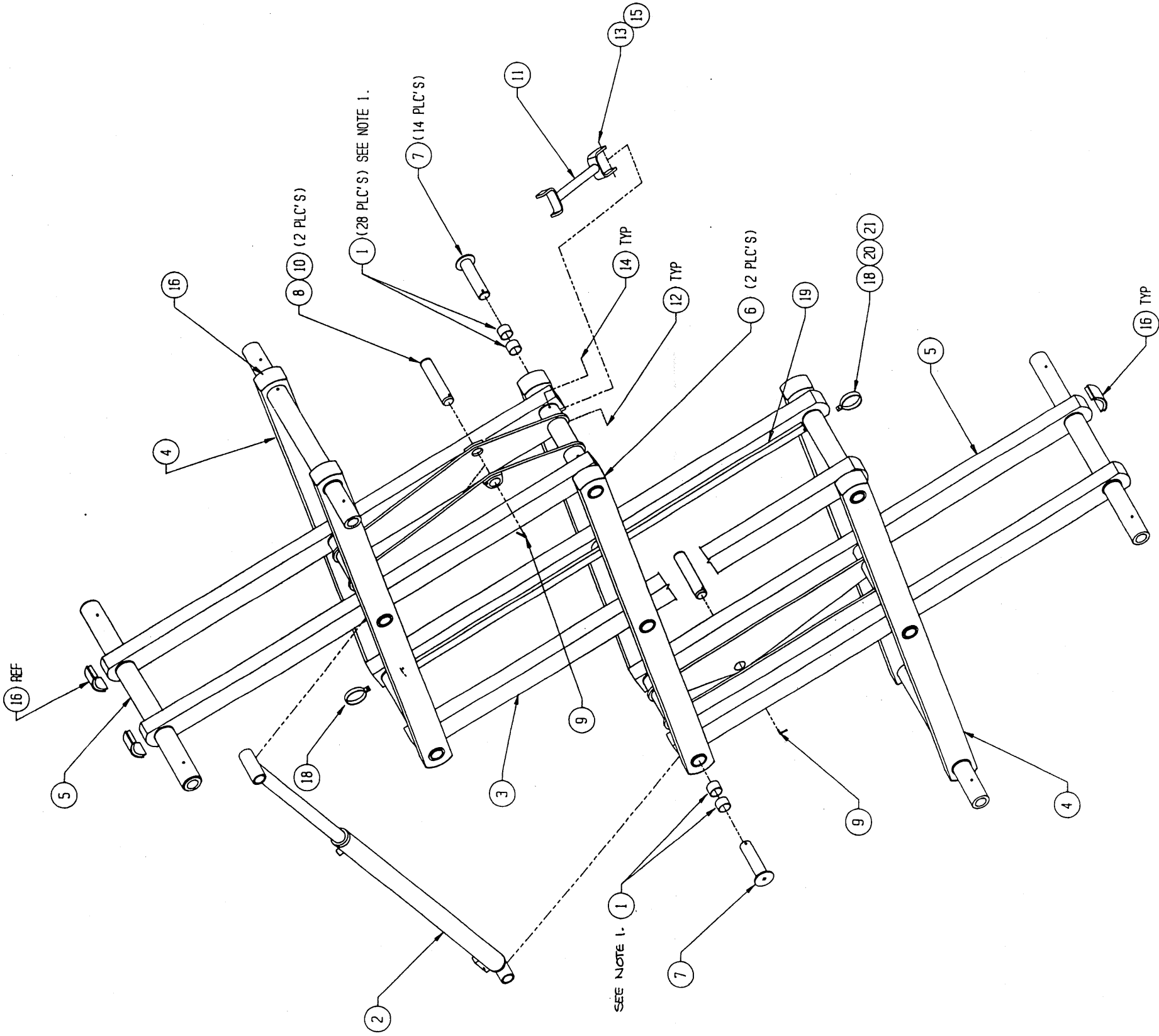
PART NAME			
CONTROL MODULE ASSEMBLY, WIDE UNITS			
UP-RIGHT, INC.			
DATE: 10/25/93	DATE: 1/20/94	DATE: 1/20/94	DATE: 1/20/94
SIZE: 0	REV: 1	REV: 1	REV: 1
SCALE: 1/4	PART NO: 66058-000	SHEET 1	OF 1

REV	DESCRIPTION	DATE	DWG. BY



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
20	14066-008-00	SCREW 1/4-20 X 3/4 HEX HD	2
19	62791-001-00	LATCH COVER	1
18	11828-008-00	SCREW 1/4-20 X 1 FLAT HD SOC	2
17	66192-000-00	BLACK COVER	2
16	11246-008-00	NUT 1/2-13 HEX THIN	1
15	11240-010-00	WASHER 5/8 FLAT	1
14	63559-002-00	SHOULDER BOLT 5/8 DIA X 1 1/4	1
13	11248-004-00	NUT 1/4-20 HEX	1
12	11240-004-00	WASHER 1/4 DIA FLAT	1
11	11252-016-00	SCREW HC 665 1/4-20 X 2	1
10	27931-058-00	BUSHING OILITE #AA-1005-5	2
9	11753-012-00	COTTER PIN 1/8 X 1 1/2	2
8	11781-011-00	BUSHING FLANGE OILITE #FF-703-1	2
7	66172-000-0	SPRING - TORSION R.H.	1
6	66318-000-00	WELDMEN - BAR	1
5	66365-000-00	BAR - SPRING	1
4	66316-00-00	WELDMEN - SPRING SHAFT	1
3	66314-000-00	WELDMEN - TUBE	1
2	66075-000-00	POWER MODULE WELDMENT	1
1			
UP-RIGHT, INC.			
PART NAME			
POWER MODULE ASSEMBLY, WIDE UNITS			
TWG	D	DATE	10/25/93
SIZE	0	DATE	11/20/94
SCALE	1/4	PART NO.	66059-000
		SHEET	OF 1

NOTE: 1. PRESS A BEARING IN FROM BOTH SIDES OF 3 X 5 TUBE UNTIL FLUSH WITH COLLAR.

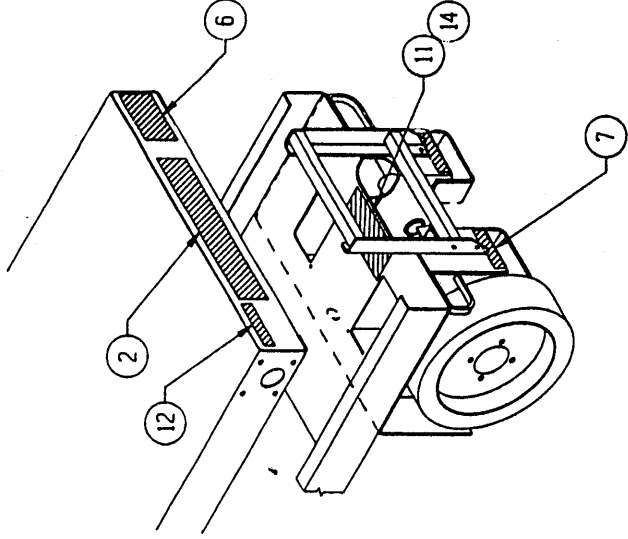
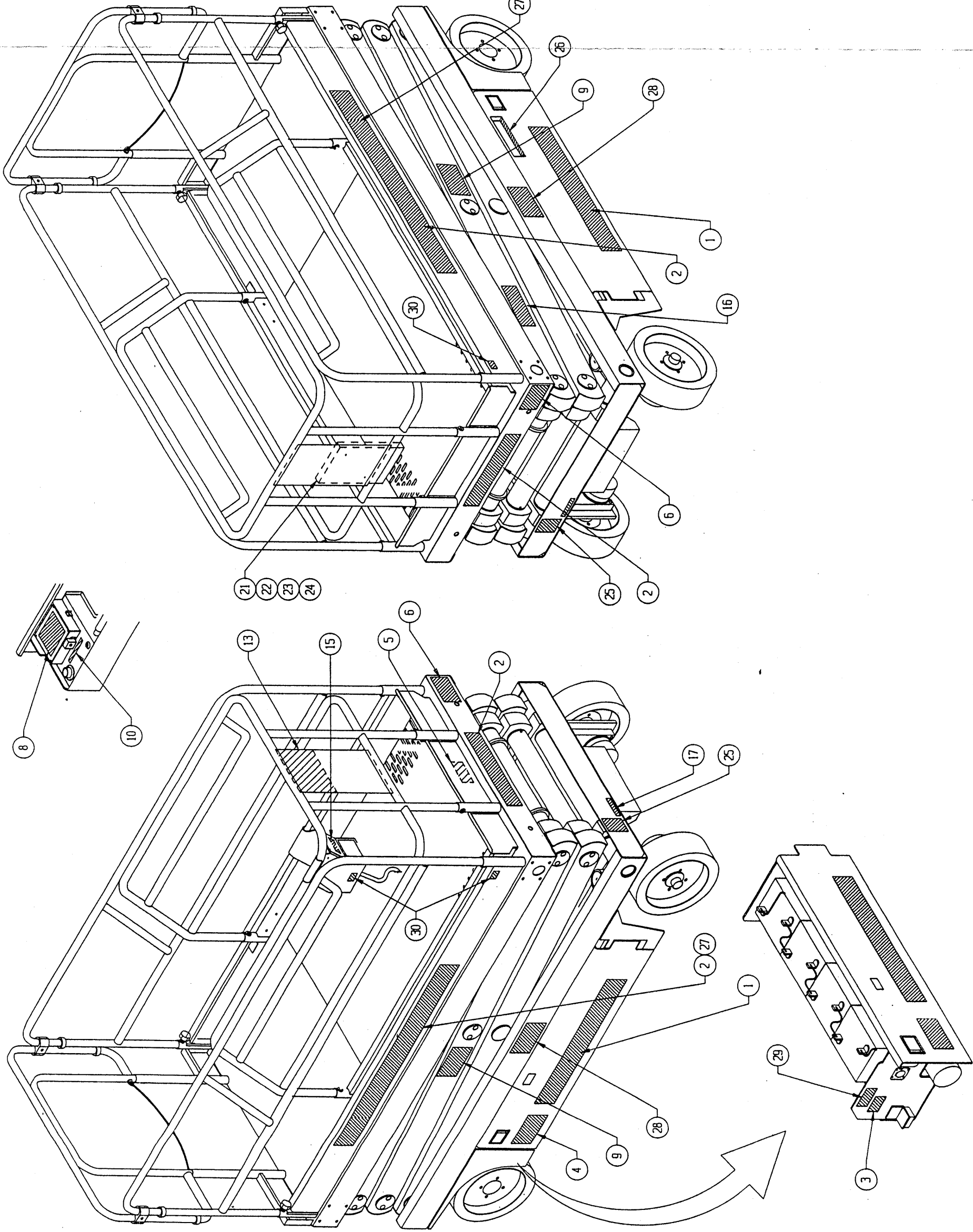


ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
21	11252-008-00	SCREW IHC GR5 1/4-20 X 1	2
20	11248-004-00	NUT HEX 1/4-20	2
19	66226-000-00	CHANNEL, CABLE	1
18	66199-000-00	PIPE RING	2
17			
16	66177-000-00	SCISSOR END CAP	24
15	11254-040-00	SCREW IHC GR5 3/8-16 X 5	1
14	11253-032-00	SCREW IHC GR5 5/16-18 X 4	14
13	11248-006-00	NUT HEX 3/8-16	1
12	11248-005-00	NUT HEX 5/16-18	14
11	66214-000-00	WELDMENT, SAFETY STAND	1
10	11754-032-00	RET RING TRIARC #5100-200	2
9	66225-000-00	PIN, SHAFT LOCKING	2
8	66224-000-00	PIN, LIFT CYLINDER	2
7	66210-000-00	WELDMENT, PIVOT PIN	14
6	66211-003-00	WELDMENT, MID OUTER 1/8	2
5	66238-000-00	WELDMENT, BOTTOM INNER 3/16	2
4	66240-000-00	WELDMENT, TOP & BOTTOM OUTER 1/8	2
3	66201-000-00	WELDMENT, MID INNER TUBE 1/8	1
2	66601-000-00	LIFT CYLINDER	1
1	66183-000-00	BEARING, OILITE #EP3236-24	28

UP-RIGHT, INC.			
PART NAME			
ASSEMBLY, SCISSOR ARM 4820			
DWG. 0	DATE: 2/18/93	APPROVED: [Signature]	DATE: 1-10-94
SIZE: 1/10	PART NO: 66053-000-00	CHG NO: 1	OF 1

REV	DESCRIPTION	DATE	CHG. BY

NOTE: 1. EUROPEAN MODEL INSTALL
DECORATIVE DECALS ONLY.



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
30	64444-000-00	DECAL USA	4
29	62562-000-00	DECAL DANGER	1
28	61684-016-00	DECAL X	2
27	61684-019-00	DECAL X 20 V	2
26	66539-000-00	DECAL LOWER CONTROLS	1
25	66536-000-00	DECAL WARNING (COLLISION)	1
24	11240-004-00	WASHER 1/4 FLAT	2
23	11248-004-00	NUT 1/4-20 HEX	2
22	11252-006-00	SCREW H/C 1/4-20 X 3/4 LG	2
21	10076-000-00	MANUAL CASE	1
20			
19	65677-000-00	ANST MANUAL	1
18	65672-000-00	USER MANUAL	1
17	66538-000-00	DECAL OPER LOWER PULL HANDLE	1
16	66561-000-00	DECAL SAFETY STAND	1
15	66564-000-00	DECAL READ INSTRUCTIONS	1
14	63308-000-00	TACK	4
13	66530-000-00	DECAL DANGER	1
12	61220-001-00	DECAL ANST	1
11	61205-000-00	DECAL NAME PLATE	1
10	60197-000-00	DECAL HYDRAULIC FLUID	1
9	66533-000-00	DECAL WARNING	2
8	66535-000-00	DECAL LIMIT SWITCHES	1
7	14222-003-99	DECAL FORK LIFT HOPE	2
6	66536-000-00	DECAL MAX LOAD 1000 LBS	2
5	66551-000-00	DECAL MAX LOAD 250 LBS	1
4	66532-000-00	DECAL MOTOR GAS	1
3	05221-000-00	DECAL MAINTAIN BATTERY	1
2	61683-004-00	DECAL UPRIGHT	4
1	61683-006-00	DECAL UPRIGHT	2

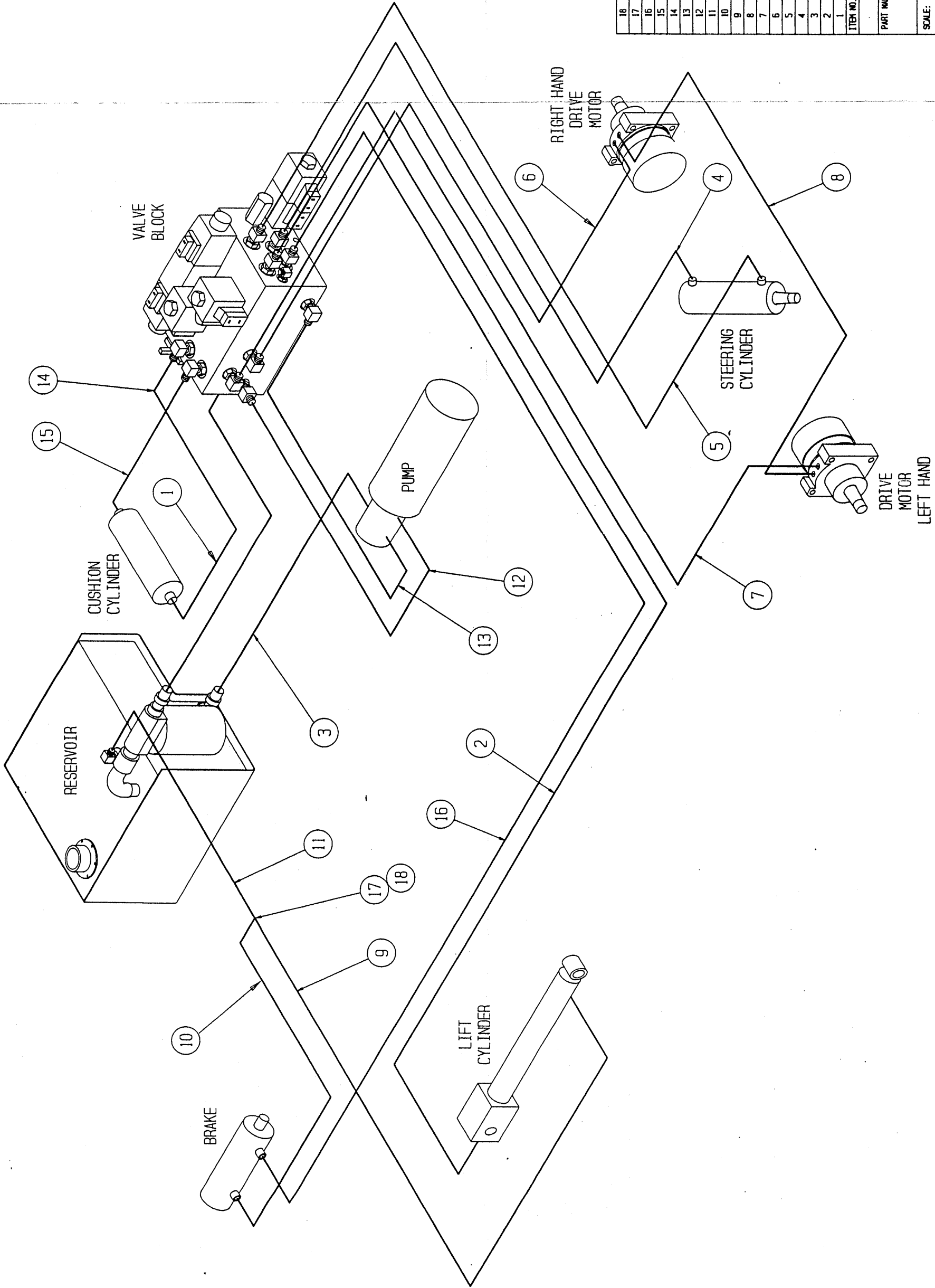
UP-RIGHT, INC.

PART NAME

DECAL KIT INSTALLATION 4820

DATE	DATE	DATE	DATE
10/12/83	10/12/83	10/12/83	10/12/83
SCALE: 1/10	PART NO: 66050-000	SHEET 1 OF 1	

REV	DESCRIPTION	DATE	BY



ITEM NO.	PART NO.	PART / MATERIAL DESCRIPTION	QTY
1	11937-003-00	FITTING #6 SWIVEL 90° EL.	1
2	20032-003-00	FITTING #6 TEE	1
3	60861-017-00	HOSE ASSEMBLY X 100	1
4	60861-040-00	HOSE ASSEMBLY X 11 1/2	1
5	60861-027-00	HOSE ASSEMBLY X 16	1
6	60861-024-00	HOSE ASSEMBLY X 17	1
7	60861-022-00	HOSE ASSEMBLY X 14	1
8	60861-032-00	HOSE ASSEMBLY X 33	1
9	60861-023-00	HOSE ASSEMBLY X 97 1/2	1
10	60861-081-00	HOSE ASSEMBLY X 174	1
11	60861-074-00	HOSE ASSEMBLY X 58 1/2	1
12	60861-055-00	HOSE ASSEMBLY X 83	1
13	60861-077-00	HOSE ASSEMBLY X 55 1/2	1
14	60861-078-00	HOSE ASSEMBLY X 57 1/2	1
15	61789-012-00	HOSE ASSEMBLY X 12 1/2	1
16	60861-057-00	HOSE ASSEMBLY X 158	1
17	60861-021-00	HOSE ASSEMBLY X 12	1

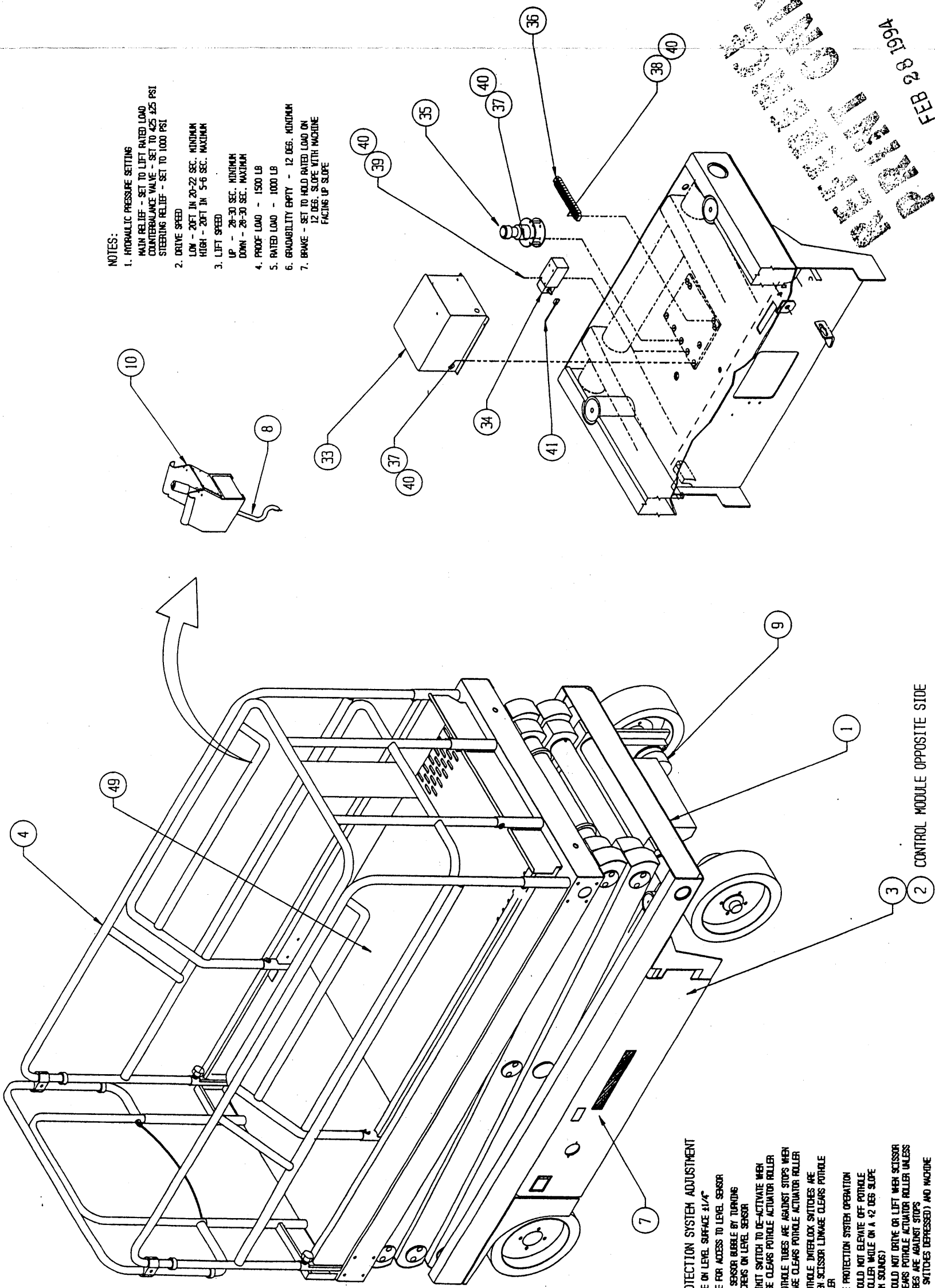
UP-RIGHT, INC.			
PART NAME			
HOSE KIT / INSTL - 4820			
SCALE: 1/4"	DWG NO: 10/25/93	DATE: 10/25/93	DATE: 10/25/93
DWG SIZE: 0	PART NO: 65061-000	SHEET 1 OF 1	

REVISIONS		
REV	DESCRIPTION	DATE
1	66001-15793 WAS 66111-27860A00065342-99	1-12-94 JPT

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
60	10154-000	COVER BATTERY TERMINAL	8
59	29961-001	SEAL	1
58	10131-009	CABLE, 16 GA 12 COND	15 FT
57	26551-005	RIVET, POP 1/8 X .25	2
56	29961-000	INLET PLUG	1
55			
54			
53			
52			
51			
50			
49	66056-000	DECK EXTENSION INSTALLATION	1
48	11252-008	SCREW IHC 685 1/4-20 UNC X 1	2
47	29616-003	CONN PUSH 10-12 GA .25	1
46	29610-002	CONN FORK 14-16 GA #8	31
45	29931-003	CONN PUSH 14-16 GA .25	16
44	29601-013	CONN RING 14-16 GA #10	8
43	29601-015	CONN RING 14-16 GA 3/8	4
42			
41	15793-015	LEVER	1
40	11238-002	WASHER #10 LOCK	10
39	11275-012	SCREW #10-32 X 1 3/4	2
38	11275-006	SCREW #10-32 X 3/4	2
37	11275-004	SCREW #10-32 X 1/2	6
36	29928-004	TERMINAL BLOCK	1
35	29945-011	LEVEL SENSOR	1
34	15793-011	LIMIT SWITCH	1
33	66399-000	WELDMENT COVER	1
32	11248-004	NUT 1/4-20 HEX	2
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
30	66368-000	BRACKET	1
29	66185-000	CABLE	1
28	66179-000	VALVE DELTA	1
27	11240-006	WASHER FLAT 3/8 DIA	2
26	11254-006	SCREW IHC 685 3/8-16 X 3/4	2
25	20343-004	FITTING CAP 6/8	1
24	11934-001	FITTING 90° ELBOW 4/8-4/8	1
23	11934-007	FITTING 90° ELBOW 8/8-6/8	1
22	65349-079	HOSE GUARD NYLON FT 1.5	1
21	11941-005	FITTING STRAIGHT 6/8-6/8	8
20	12822-003	CONTROL VALVE ASSEMBLY	1
19	11728-004	SCREW SOC HD #10-32 X 1/2	2
18	66014-000	ELECTRICAL BOX ASSEMBLY	1
17	64195-128	CABLE ASS'Y X 128	1
16	64195-063	CABLE ASS'Y X 63	1
15	64195-001	CABLE ASS'Y X 12	3
14	11248-005	NUT 5/16-18 HEX	8
13	11253-006	SCREW IHC 5/16-18UNC X 3/4	10
12	66180-000	CHARGER	1
11	15796-000	BATTERY 6V 220AMP	4
10	66013-000	CONTROLLER ASSEMBLY	1
9	66061-080	HOSE KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
7	66110-000	DECAL KIT INSTALLATION	1
6	09832-000	WASHER LOCK 1/4	2
5	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
4	66055-000	GUARDRAIL INSTALLATION	1
3	66059-000	POWER MODULE	REF
2	66058-000	CONTROL MODULE	REF
1	66101-000	BASIC ASSEMBLY	1

UP-RIGHT, INC.		
PART NAME	PART NO.	QTY
FINAL ASSEMBLY X26M JDM		
DATE: 10/2/93	DATE: 1-3-94	DATE:
SIZE: 0	SCALE: 1/10	SHEET 1 OF 4

- NOTES:
1. HYDRAULIC PRESSURE SETTING
MAIN RELIEF - SET TO LIFT RATED LOAD
COUNTERBALANCE VALVE - SET TO 425 PSI
STEERING RELIEF - SET TO 1000 PSI
 2. DRIVE SPEED
LOW - 20 FT IN 20-22 SEC. MINIMUM
HIGH - 20 FT IN 5-6 SEC. MAXIMUM
 3. LIFT SPEED
UP - 20-30 SEC. MINIMUM
DOWN - 20-30 SEC. MAXIMUM
 4. PROOF LOAD - 1500 LB
 5. RATED LOAD - 1000 LB
 6. GRADABILITY EMPTY - 12 DEG. MINIMUM
 7. BRAKE - SET TO HOLD RATED LOAD ON 12 DEG. SLOPE WITH MACHINE FACING UP SLOPE



POTHOLE PROTECTION SYSTEM ADJUSTMENT

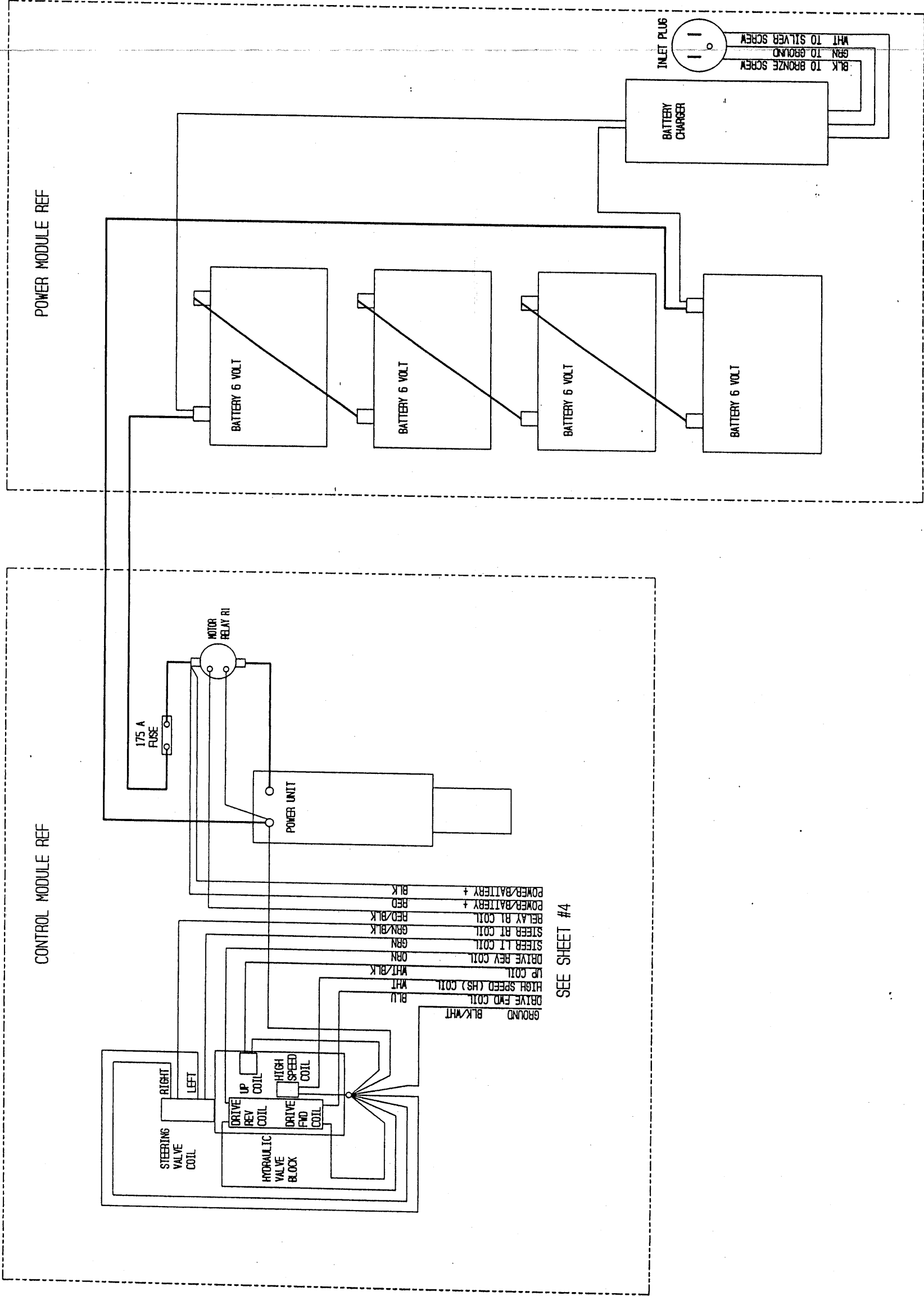
1. PLACE MACHINE ON LEVEL SURFACE 3/4"
2. RAISE MACHINE FOR ACCESS TO LEVEL SENSOR
3. CENTER LEVEL SENSOR BUBBLE BY TURNING ADJUSTMENT SCREWS ON LEVEL SENSOR
4. SET "DOWN" LIMIT SWITCH TO DE-ACTIVATE WHEN SENSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
5. CHECK THAT POTHOLE TUBES ARE AGAINST STOPS WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
6. CHECK THAT POTHOLE INTERLOCK SWITCHES ARE DE-PRESSED WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
7. CHECK POTHOLE PROTECTION SYSTEM OPERATION
 - A. MACHINE SHOULD NOT BE WHE OFF POTHOLE ACTUATOR ROLLER WHILE ON A 42 DEG SLOPE (TILT ALARM SOUNDS)
 - B. MACHINE SHOULD NOT DRIVE OR LIFT WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER UNLESS POTHOLE TUBES ARE AGAINST STOPS (INTERLOCK SWITCHES DE-PRESSED) AND MACHINE IS LEVEL
 - C. MACHINE SHOULD HAVE LOW SPEED DRIVE WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
 - D. MACHINE SHOULD HAVE HIGH SPEED DRIVE WHEN SCISSOR LINKAGE IS ON POTHOLE ACTUATOR ROLLER
 - E. TILT ALARM SHOULD SOUND WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER AND EITHER THE POTHOLE TUBES ARE NOT AGAINST STOPS OR THE MACHINE IS OFF LEVEL BY MORE THAN 2 DEG

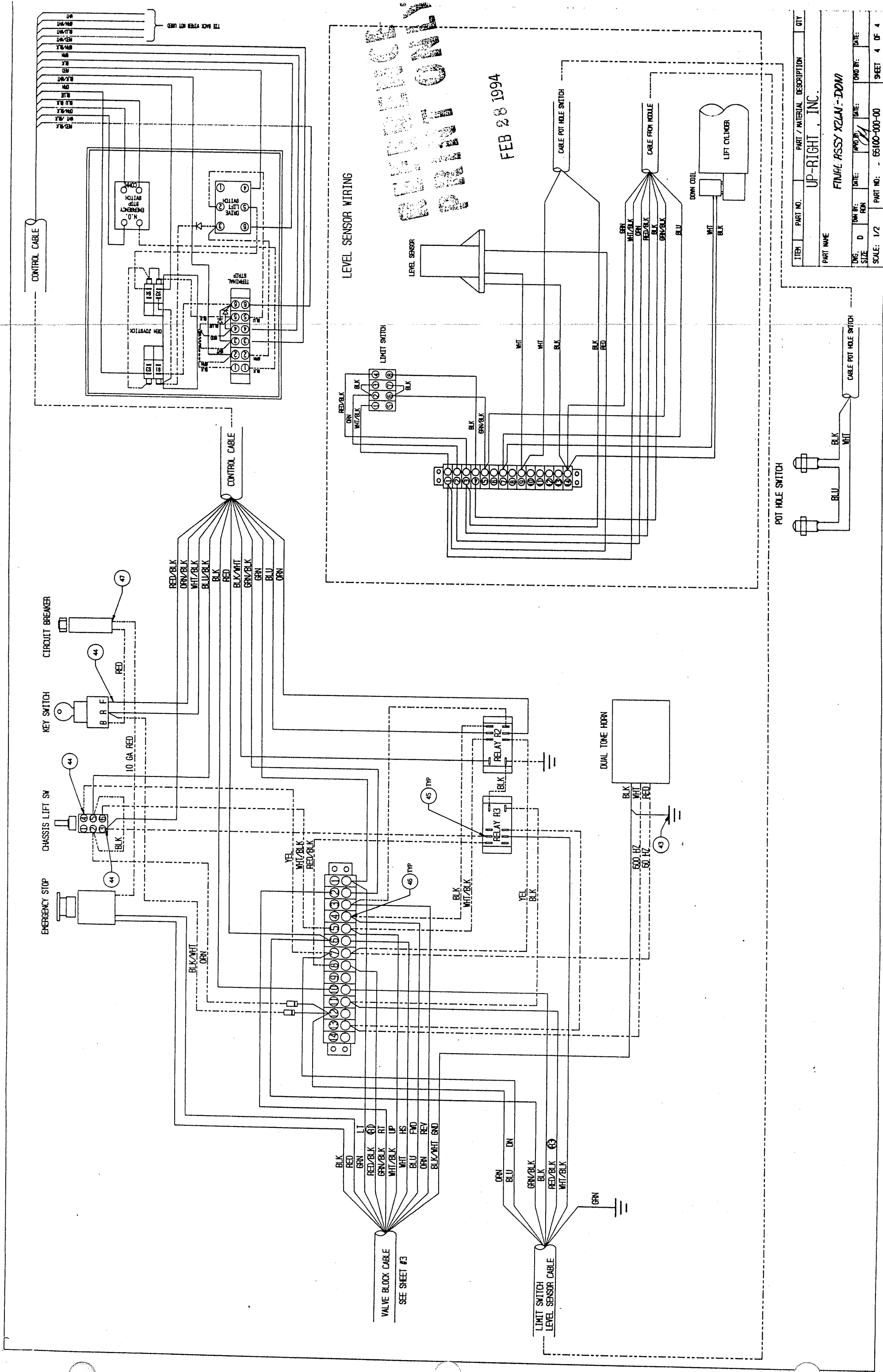
CONTROL MODULE OPPOSITE SIDE

REVISION 1

FEB 28 1994

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
		UP-RIGHT, INC.	
PART NAME			
FINAL ASSEMBLY X26N - DOMESTIC			
DATE	DATE	DATE	DATE
SIZE	SIZE	SIZE	SIZE
SCALE: 1/2	PART NO: 66100-000-00	SHEET 3 OF 4	

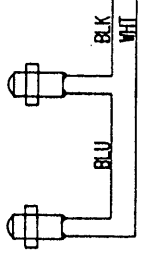




LEVEL SENSOR WIRING

REWORK ONLY
FEB 28 1994

POT HOLE SWITCH



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSY X2LW-1-DDM			
DOC. NO.	0	DATE:	DATE:
SIZE	D	REV. BY:	REV. BY:
SCALE:	1/2	PART NO.:	65100-000-00
			SHEET 4 OF 4

REV	DESCRIPTION	DATE	CHG. BY
1	66011-15703-15 LARS 66011-2706L DADD 65369-99	2-17-99	JPT

REVISIONS

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
60	10154-000	COVER BATTERY TERMINAL	8
59			
58	10131-099	CABLE, 16 GA 12 COND	15 FT
57	26551-005	RIVET, POP	2
56	66576-000	COVER PLATE	1
55			
54			
53			
52			
51			
50	66056-000	DECK EXTENSION INSTALLATION	1
49			
48	11252-008	SCREW IHC GR5 1/4-20 UNC X 1	2
47	29616-003	CONN PUSH 10-12 GA	1
46	29610-002	CONN FORK 14-16 GA #8	31
45	29931-003	CONN PUSH 14-16 GA	16
44	29601-013	CONN RING 14-16 GA #10	8
43	29601-015	CONN RING 14-16 GA 3/8	4
42	63965-001	PRESSURE GAGE	1
41	15793-015	LEVER	1
40	11238-002	WASHER #10 LOCK	10
39	11275-012	SCREW #10-32 X 1 3/4	2
38	11275-006	SCREW #10-32 X 3/4	2
37	11275-004	SCREW #10-32 X 1/2	6
36	29928-004	TERMINAL BLOCK	1
35	29945-011	LEVEL SENSOR	1
34	15793-011	LIMIT SWITCH	1
33	66399-000	WELDMENT COVER	1
32	11248-004	NUT 1/4-20 HEX	2
31	63664-008	ORIFICE, HYDRAFORCE #7051070	1
30	66368-000	BRACKET	1
29	66185-000	CABLE	1
28	66179-000	VALVE DELTA	1
27	11240-006	WASHER FLAT 3/8 DIA	2
26	11254-006	SCREW IHC GR5 3/8-16 X 3/4	2
25	20343-004	FITTING CAP 8MB	1
24	11934-001	FITTING 90° ELBOW 4MB- 4MJ	1
23	11934-007	FITTING 90° ELBOW 8MB- 6 MJ	1
22	65367-079	HOSE GUARD NYLON FT 1.5	1
21	11941-005	FITTING STRAIGHT 8MB- 6 MJ	8
20	12822-003	CONTROL VALVE ASSEMBLY	1
19	11728-004	SCREW SOC HD #10-32 X 1/2	2
18	66014-001	ELECTRICAL BOX ASSEMBLY	1
17	64195-128	CABLE ASS'Y X 128	1
16	64195-063	CABLE ASS'Y X 63	1
15	64195-001	CABLE ASS'Y X 12	3
14	11248-005	NUT 5/16-18 HEX	8
13	11253-006	SCREW IHC 5/16-18UNC X 3/4	10
12	66180-000	CHARGER	1
11	15796-000	BATTERY 6V 220AMP	4
10	66013-000	CONTROLLER ASSEMBLY	1
9	66041-000	HOSE KIT INSTALLATION	1
8	66012-000	CONTROL CABLE ASSY	1
7	66110-000	DECAL KIT INSTALLATION	1
6	05832-000	WASHER LOCK 1/4	2
5	11828-008	SCREW 1/4-20 X 1 FLAT HD SOC	2
4	66055-001	GUARDRAIL INSTALLATION	1
3	66059-000	POWER MODULE	REF
2	66058-000	CONTROL MODULE	REF
1	66101-000	BASIC ASSEMBLY	1

UP-RIGHT, INC.

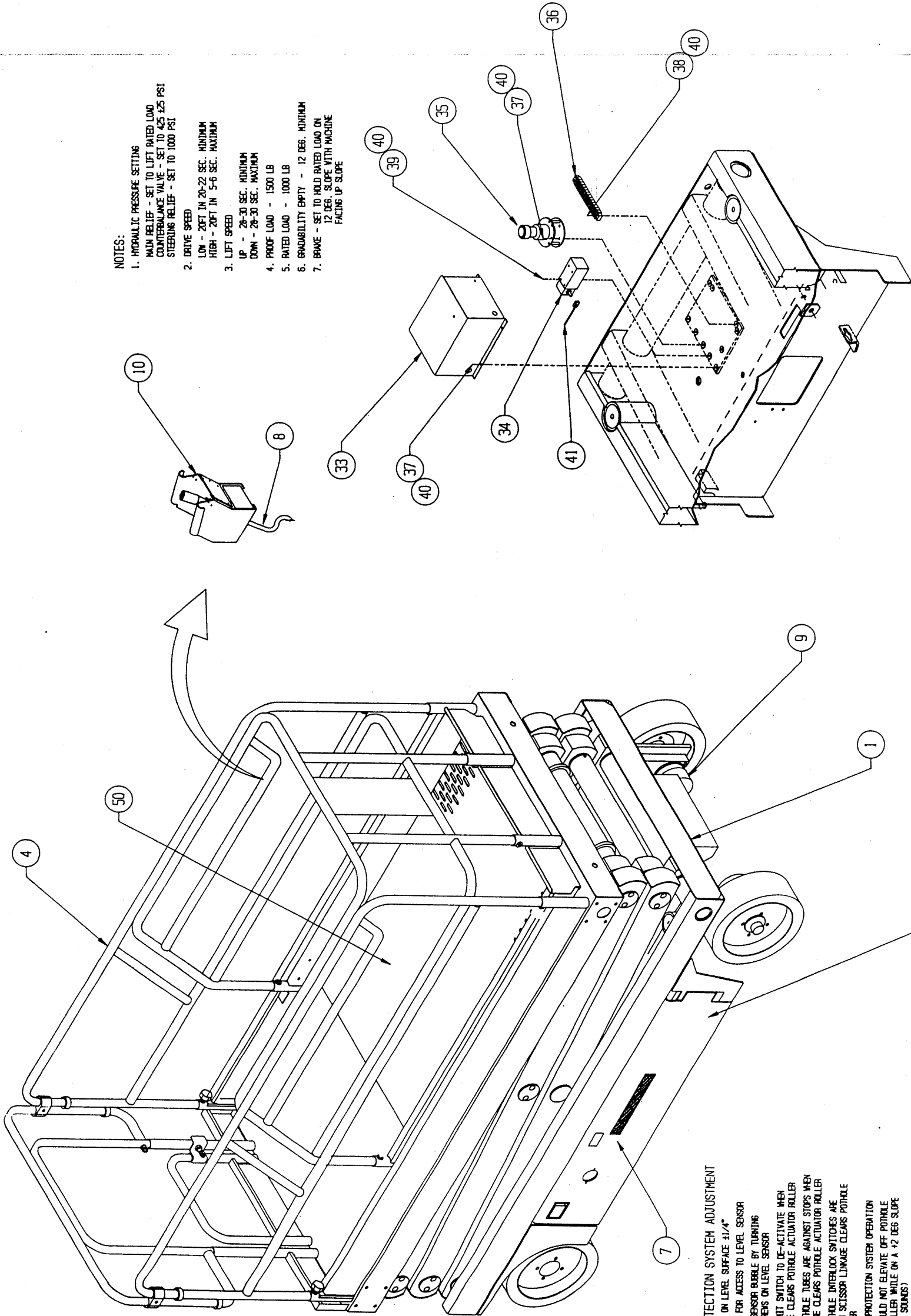
PART NAME

FINAL ASSEMBLY X26M EUROPEAN

REV	DATE	APP'D BY	DATE	CHK'D BY	DATE
0	10/12/93	JH	12-2-94		
1					

SCALE	1/10	PART NO.	66100-001	SHEET	1 OF 4
-------	------	----------	-----------	-------	--------

- NOTES:
1. HYDRAULIC PRESSURE SETTING
MAIN RELIEF - SET TO LIFT RATED LOAD
COUNTERBALANCE VALVE - SET TO 425 KPSI
STEERING RELIEF - SET TO 1000 PSI
 2. DRIVE SPEED
LOW - 20FT IN 20-22 SEC. MINIMUM
HIGH - 20FT IN 5-6 SEC. MAXIMUM
 3. LIFT SPEED
UP - 20-30 SEC. MINIMUM
DOWN - 20-30 SEC. MAXIMUM
 4. PROOF LOAD - 1500 LB
 5. RATED LOAD - 1000 LB
 6. GRADABILITY EMPTY - 12 DEG. MINIMUM
 7. BRAKE - SET TO HOLD RATED LOAD ON 12 DEG. SLOPE WITH MACHINE FACING UP SLOPE

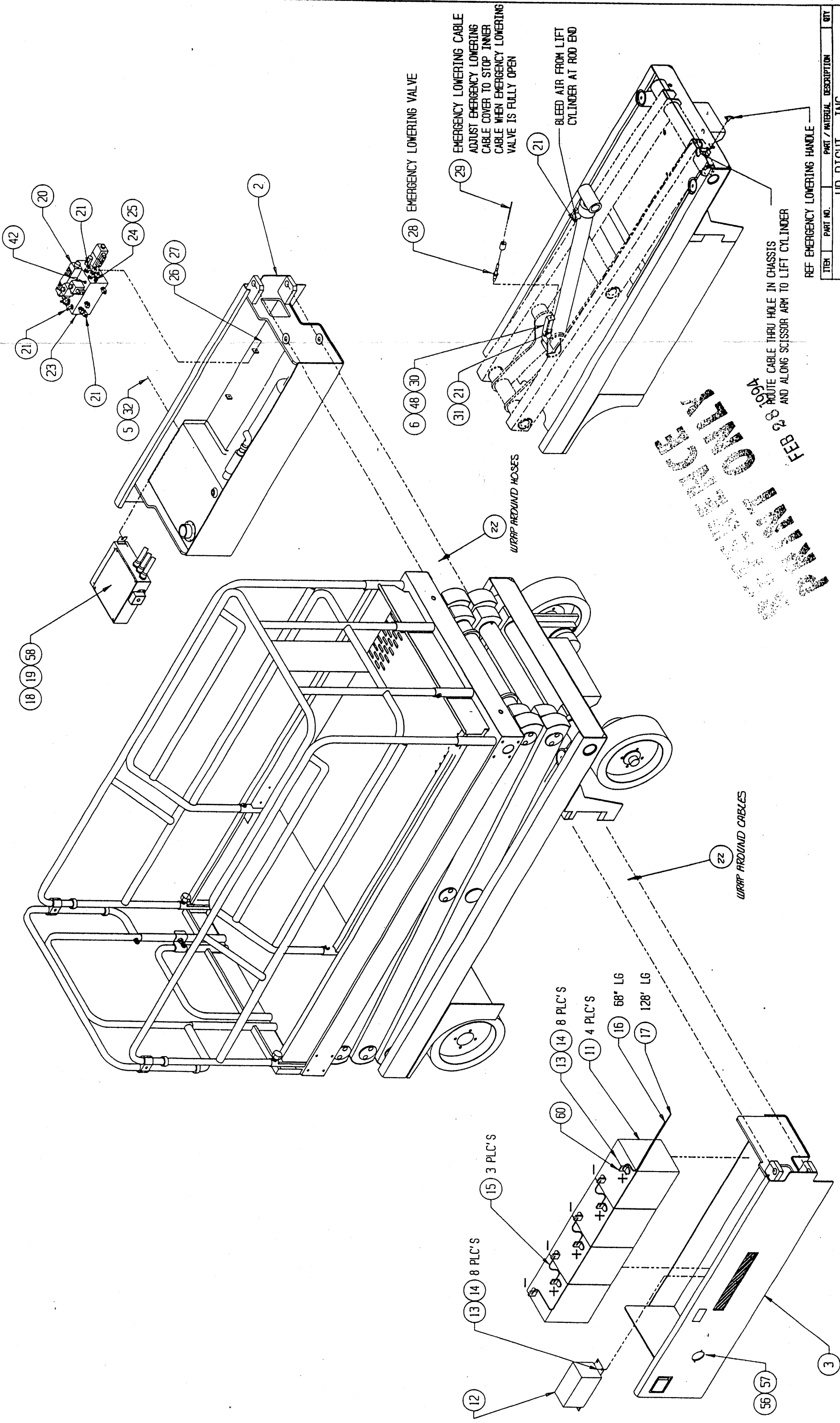


POTHOLE PROTECTION SYSTEM ADJUSTMENT

1. PLACE MACHINE ON LEVEL SURFACE 1/4"
2. RAISE MACHINE FOR ACCESS TO LEVEL SENSOR
3. CENTER LEVEL SENSOR RIBBLE BY TURNING ADJUSTMENT SCREWS ON LEVEL SENSOR
4. SET "DOWN" LIMIT SWITCH TO DE-ACTIVATE WHEN SENSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
5. CHECK THAT POTHOLE TUBES ARE AGAINST STOPS WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
6. CHECK THAT POTHOLE INTERLOCK SWITCHES ARE DE-PRESSED WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
7. CHECK POTHOLE PROTECTION SYSTEM OPERATION
 - A. MACHINE SHOULD NOT ELEVATE OFF POTHOLE ACTUATOR ROLLER WHILE ON A 42 DEG SLOPE (TILT ALARM SOUNDS)
 - B. MACHINE SHOULD NOT DRIVE OR LIFT WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER UNLESS POTHOLE TUBES ARE AGAINST STOPS (INTERLOCK SWITCHES DE-PRESSED) AND MACHINE IS LEVEL
 - C. MACHINE SHOULD HAVE LOW SPEED DRIVE WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER
 - D. MACHINE SHOULD HAVE HIGH SPEED DRIVE WHEN SCISSOR LINKAGE IS ON POTHOLE ACTUATOR ROLLER
 - E. TILT ALARM SHOULD SOUND WHEN SCISSOR LINKAGE CLEARS POTHOLE ACTUATOR ROLLER AND EITHER THE POTHOLE TUBES ARE NOT AGAINST STOPS OR THE MACHINE IS OFF LEVEL BY MORE THAN 2 DEG

CONTROL MODULE OPPOSITE SIDE

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
67	29496-099	WIRE 16GA 2 COND	FT 10
66	29452-099	WIRE 16GA BLK	FT 3
65	29601-040	CONN 5/16 RING - 16/14 GA	3
64	64195-011	CABLE ASSY X 11	1
63	64195-005	CABLE ASSY X 5	1
62	66019-001	HYDRAULIC SCHEMATIC	REF
61	66018-001	ELECTRICAL SCHEMATIC	REF

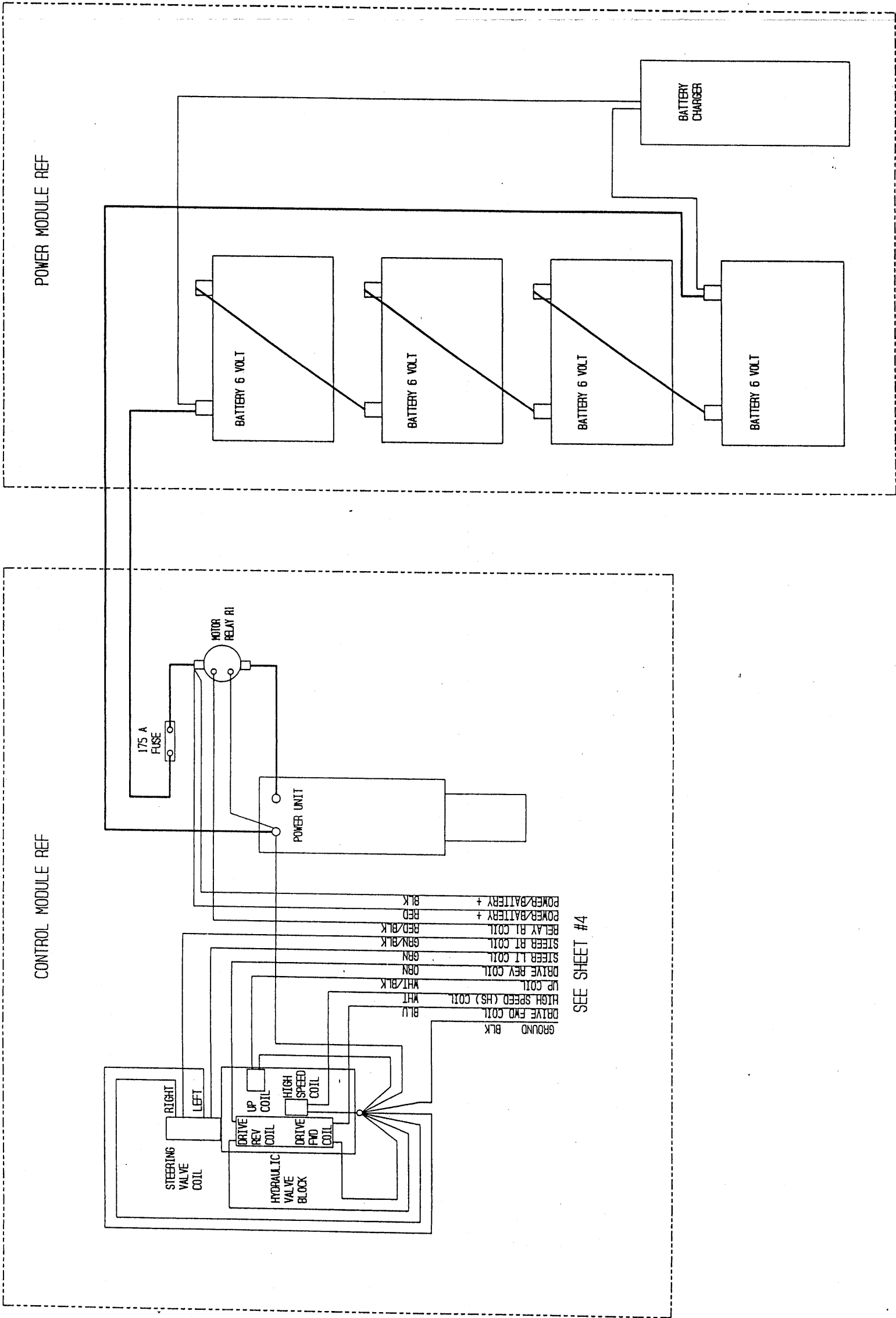


100% INSPECTION
 100% TESTED
 100% APPROVED
 FEB 28 1994

REF. EMERGENCY LOWERING HANDLE

ROUTE CABLE THRU HOLE IN CHASSIS
AND ALONG SCISSOR ARM TO LIFT CYLINDER

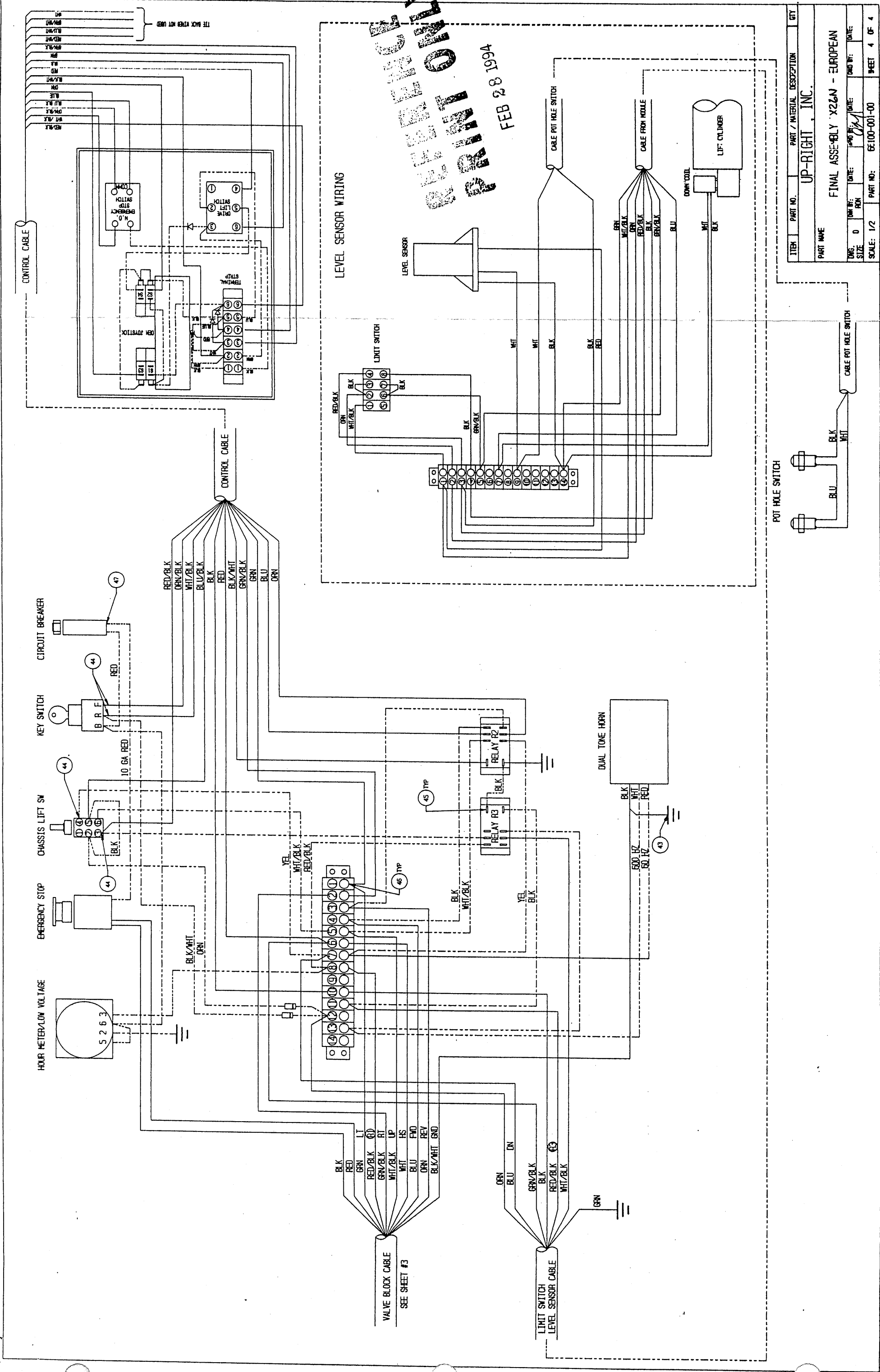
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY.
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY X264W (EUROPEAN)			
DATE:	TIME BY:	DATE:	TIME BY:
SIZE:	FORN:	DATE:	TIME BY:
SCALE: 1/10	PART NO: 66100-001-00	SHEET 2 OF 4	



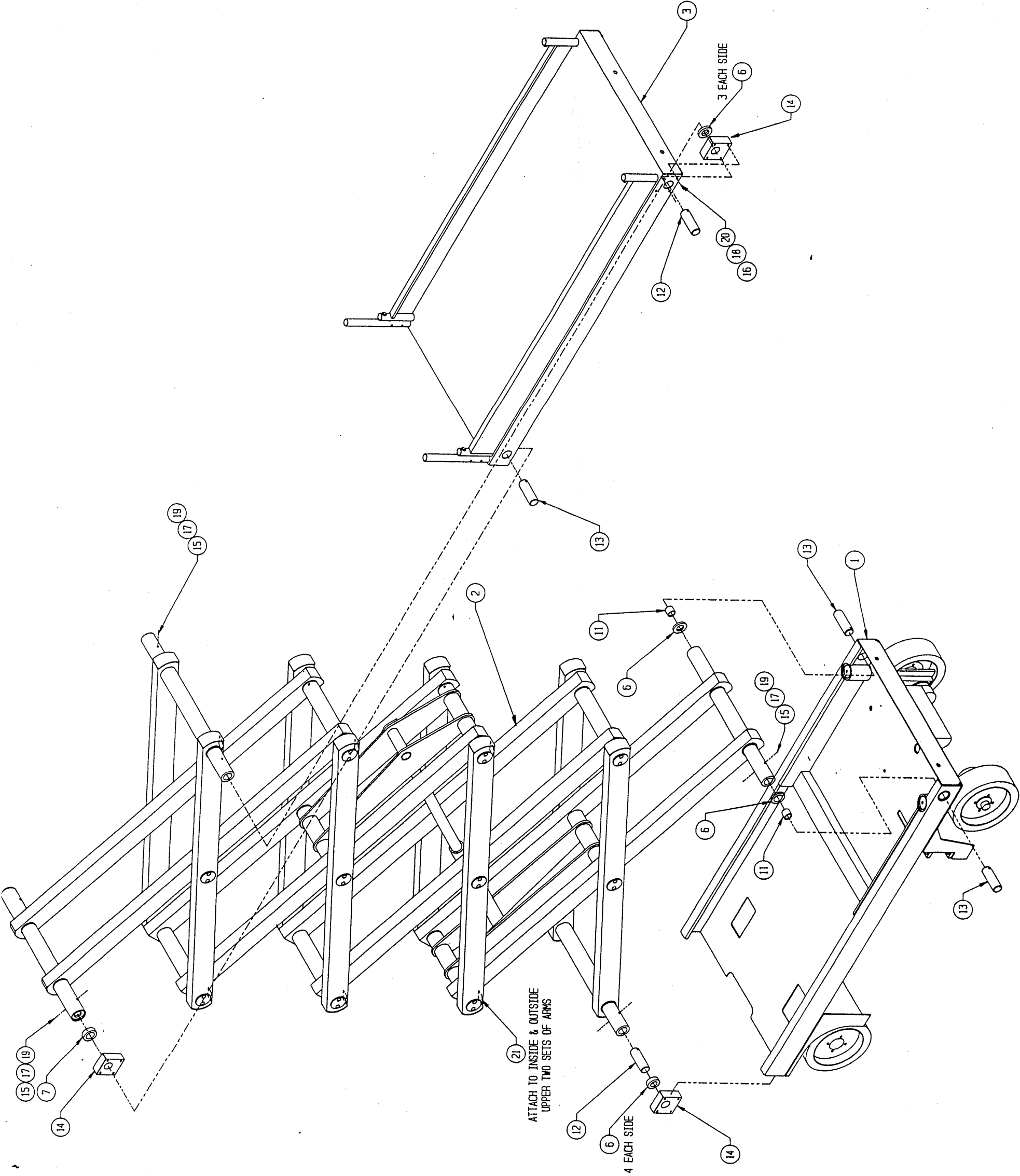
REPRINT ONLY

FEB 28 1994

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
UP-RIGHT, INC.			
PART NAME			
FINAL ASSEMBLY X26N EUROPEAN			
DWG. NO.	0	DATE: 10/24/93	DATE: 10/24/93
SIZE	0	REV: 1	REV: 1
SCALE: 1/2	PART NO: 66100-001-00	SHEET 3 OF 4	

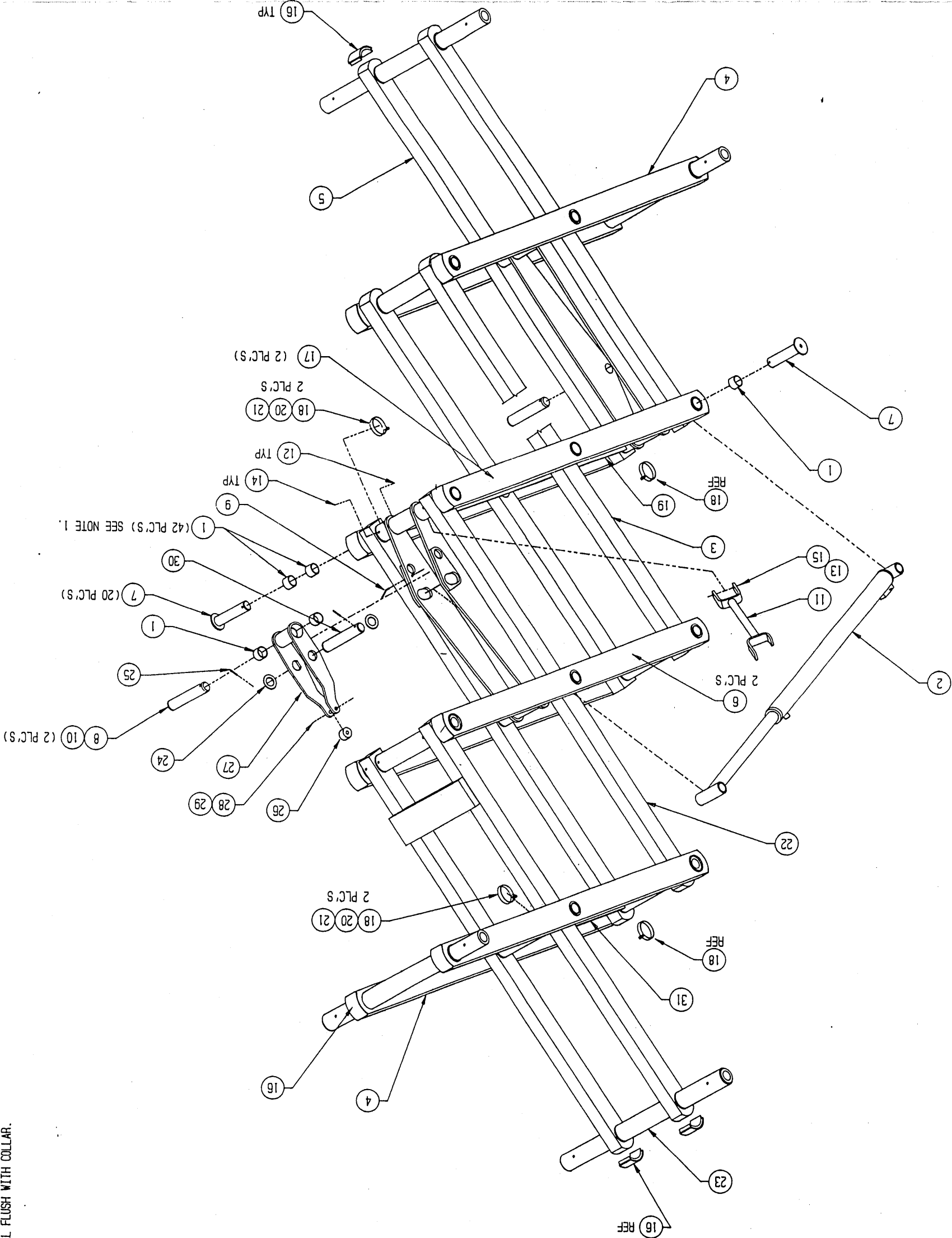


REV	DESCRIPTION	DATE	CHKD. BY
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ITEM NO.	PART NO.	PART / MATERIAL DESCRIPTION	QTY
21	66509-000-00	TAPE, PRESSURE SENSITIVE 2 X 2 X .030	4 FT
20	11248-006-00	NUT 3/8-16	8
19	11248-005-00	NUT 5/16-18	8
18	11240-006-00	WASHER 3/8 FLAT	8
17	11240-005-00	WASHER 5/16 FLAT	8
16	11254-032-00	SCREW HHC 3/8-16 X 4 LG	8
15	11253-032-00	SCREW HHC 5/16-18 X 4 LG	8
14	66191-000-00	SLIDE BLOCK	6
13	66222-002-00	MOUNTING PIN	4
12	66222-001-00	MOUNTING PIN	4
11	66183-001-00	BEARING EAGLE PITCHER #323632	2
10			
9			
8			
7	66189-001-00	WEAR PAD 3/8	2
6	66189-000-00	WEAR PAD 1/4	16
5			
4			
3	66202-000-00	PLATFORM WELDMENT	1
2	66103-000-00	SCISSOR ASSEMBLY	1
1	66052-000-00	CHASSIS ASSEMBLY	1
PART / MATERIAL DESCRIPTION			QTY
UP-RIGHT, INC.			
PART NAME			
BASIC ASSEMBLY - 4826			
DATE: 10/12/93	DATE: 10/12/93	DATE: 10/12/93	DATE: 10/12/93
L.S.	L.S.	L.S.	L.S.
SCALE: 3/2	DWG SIZE: 0	PART NO: 66101-000	SHEET 1 OF 1

NOTE: 1. PRESS A BEARING IN FROM BOTH SIDES OF 3 X 5 TUBE UNTILL FLUSH WITH COLLAR.



RECEIVED
FEB 10 1994

REV	DESCRIPTION	DATE	CHG. BY

ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
31	66225-001-00	CHANNEL, CABLE	1
30	66224-001-00	PIN, LIFT CYLINDER	1
29	11248-010-00	NUT 5/8-11 HEX	1
28	11257-028-00	SCREW IHC 5/8-11 X 3 1/2	1
27	66574-000-00	WELDMENT, TORSION ARM	1
26	65367-001-00	BEARING TORRINGTON #YDRS32	1
25	11740-024-00	ROLL PIN 1/2 X 3	2
24	11239-002-00	WASHER 2 DIA ASH	2
23	66121-000-00	WELDMENT, TOP INNER ARM 1/8	1
22	66120-000-00	WELDMENT, MID INNER ARM 3/16	1
21	11252-008-00	SCREW IHC 6/8 1/4-20 X 1	4
20	11248-004-00	NUT HEX 1/4-20	4
19	66226-000-00	CHANNEL, CABLE	1
18	66199-000-00	PIPE RING	4
17	66211-001-00	WELDMENT, MID OUTER ARM 1/8	2
16	66177-000-00	SCISSOR END CAP	32
15	11254-040-00	SCREW IHC 6/8 3/8-16 X 5	1
14	11253-032-00	SCREW IHC 6/8 5/16-18 X 4	20
13	11248-006-00	NUT HEX 3/8-16	1
12	11248-005-00	NUT HEX 5/16-18	20
11	66214-000-00	WELDMENT, SAFETY STAND	1
10	11764-032-00	RET RING TRUMC #5100-200	2
9	66225-000-00	PIN, SHAFT LOCKING	2
8	66224-000-00	PIN, LIFT CYLINDER	2
7	66210-000-00	WELDMENT, PIVOT PIN	20
6	66211-002-00	WELDMENT, MID OUTER 1/4	2
5	66238-000-00	WELDMENT, BOTTOM INNER 3/16	1
4	66240-000-00	WELDMENT, TOP & BOTTOM OUTER 1/8	2
3	66201-001-00	WELDMENT, MID INNER TUBE 1/8	1
2	66601-000-00	LIFT CYLINDER	1
1	66183-000-00	BEARING, OILITE #BF3236-24	42

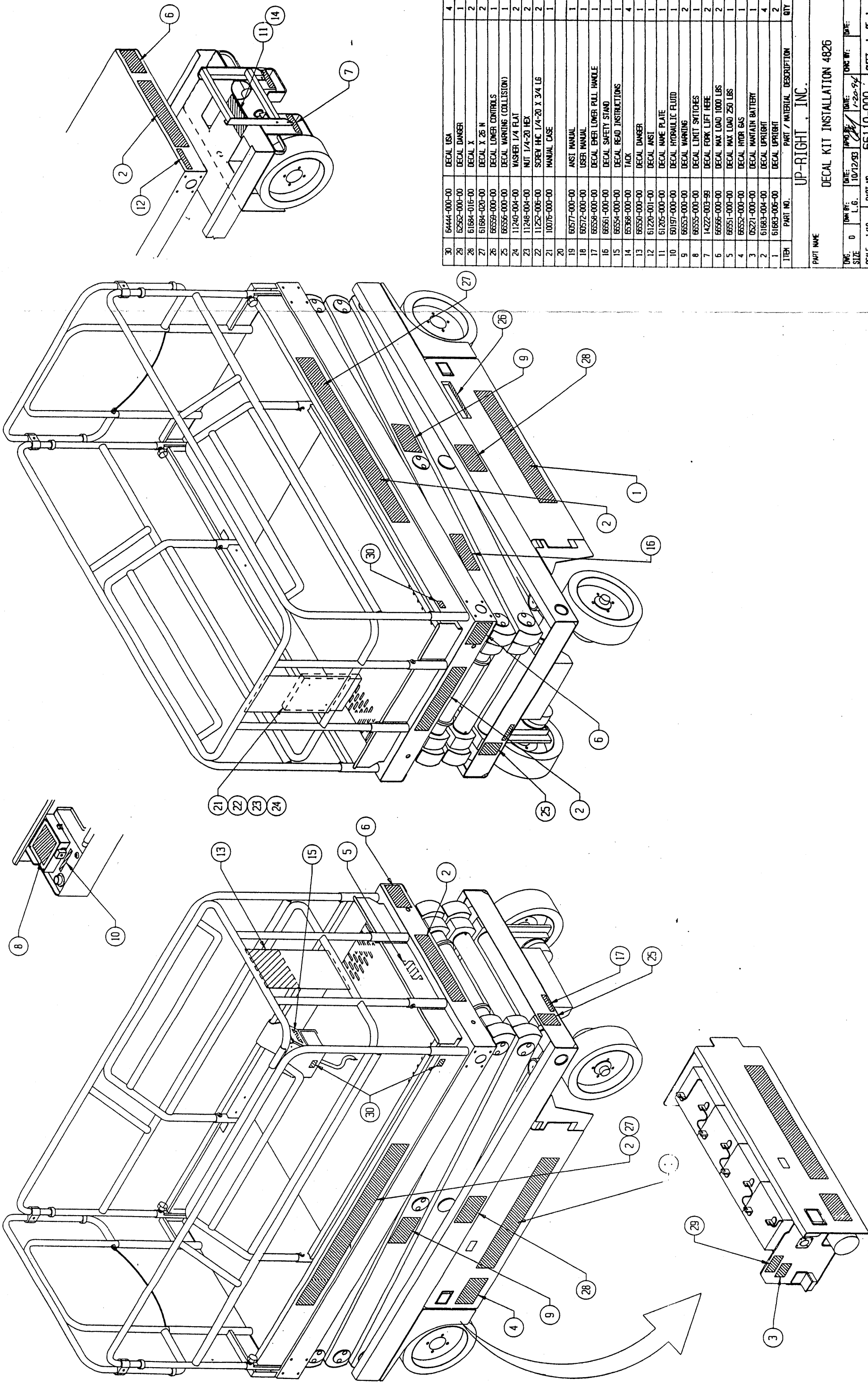
UP-RIGHT, INC.

PART NAME

ASSEMBLY, SCISSOR ARM 4826

DATE:	DATE:	DATE:	DATE:
2/10/93	2/10/93	2/10/93	2/10/93
SCALE: 1/10	PART NO: 66103-000-00	SHEET 1 OF 1	

NOTE: 1. EUROPEAN MODEL INSTALL
DECORATIVE DECALS ONLY.



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
30	64444-000-00	DECAL USA	4
29	62552-000-00	DECAL DANGER	1
28	61684-016-00	DECAL X	2
27	61684-020-00	DECAL X 26 N	2
26	66559-000-00	DECAL LOWER CONTROLS	1
25	66556-000-00	DECAL WARNING (COLLISION)	1
24	11240-004-00	WASHER 1/4 FLAT	2
23	11248-004-00	NUT 1/4-20 HEX	2
22	11252-006-00	SPRNG HRC 1/4-20 X 3/4 LG	2
21	10076-000-00	MANUAL CASE	1
20			
19	60577-000-00	ANST MANUAL	1
18	60572-000-00	USER MANUAL	1
17	66558-000-00	DECAL EVER LOWER PULL HANDLE	1
16	66561-000-00	DECAL SAFETY STAND	1
15	66554-000-00	DECAL READ INSTRUCTIONS	1
14	65369-000-00	TACK	4
13	66550-000-00	DECAL DANGER	1
12	61220-001-00	DECAL ANST	1
11	61205-000-00	DECAL NAME PLATE	1
10	60197-000-00	DECAL HYDRAULIC FLUID	1
9	66553-000-00	DECAL WARNING	2
8	66555-000-00	DECAL LIMIT SWITCHES	1
7	14222-003-99	DECAL FORK LIFT HERE	2
6	66566-000-00	DECAL MAX LOAD 1000 LBS	2
5	66551-000-00	DECAL MAX LOAD 250 LBS	1
4	66552-000-00	DECAL HYDR GAS	1
3	05221-000-00	DECAL MAINTAIN BATTERY	1
2	61683-004-00	DECAL UPRIGHT	4
1	61683-006-00	DECAL UPRIGHT	2

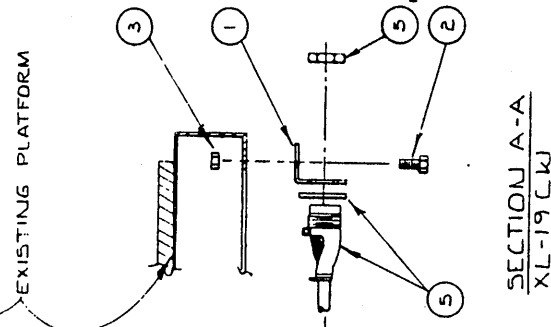
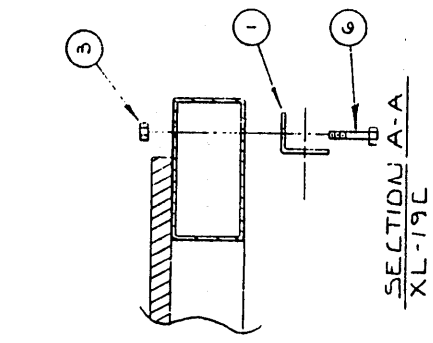
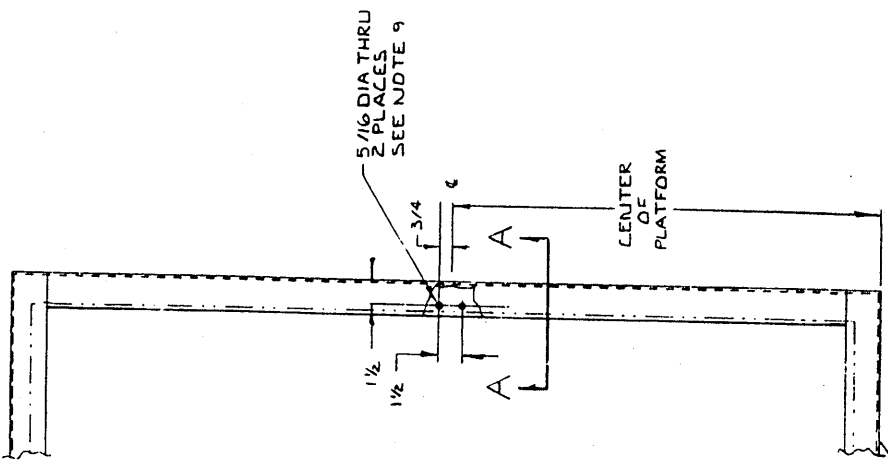
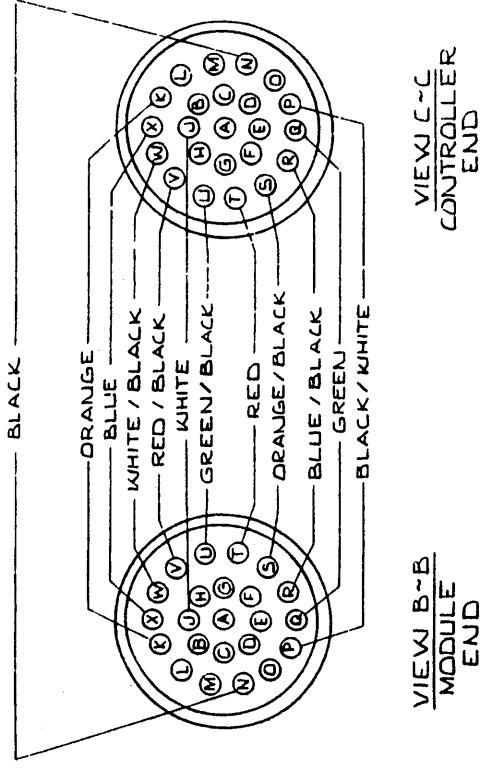
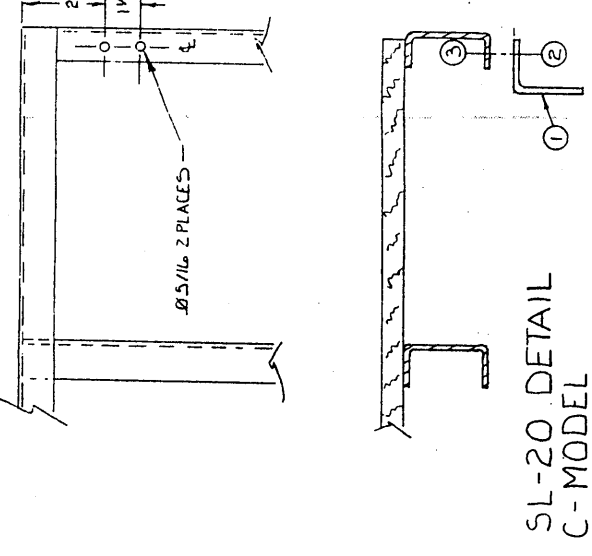
UP-RIGHT, INC.

PART NAME

DECAL KIT INSTALLATION 4826

DOC. 0	DATE: 10/12/93	DATE: 1-20-94	DATE:
SIZE: 1/10	PART NO: 66110-000	SHEET 1 OF 1	

Rev	Date	Change
1	3-13-68	ADD SL-20
2	1-20-69	28800-15 QTY 11 WAS 8
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007
5	3-3-93	REVISED LOCATION OF SL-20 WIRE



1. Drill holes in platform.
2. Mount bracket to platform.
3. Remove cable from its clamps or holding tabs at front of platform.
4. Route cable to bracket and then cut cable at bracket. Before cutting check that there will be adequate cable to position controller in its normal position.
5. Cut outer cable cover of linkage cable back approximately 1-1/2 inch and strip approximately 1/4 inch of each wire end.
6. Crimp sockets (28800-005-00) onto wire ends and insert into connector (28800-016-00). Refer to View B-B.
7. Attach connector to bracket and install relief.
8. Cut outer cable cover of controller and back approximately 1-1/2 inch and strip approximately 1/4 inch of each wire.
9. Slide boot and clamp onto cable.
10. Crimp pins (28800-004-00) onto ends of wires and insert into connector (28800-003-00). Refer to View C-C.
11. Clamp boot to connector.
12. Connect controller and test machine for proper function.

6	11252 026-00	SCREW 1/4-20 UNC MHC X 2 1/2	2
		TIE WRAP	1
5	28800 014-00	LOCKWASHER DEUTSCH #112264	1
	28800 013-00	NUT PANEL DEUTSCH #112263	1
	28800 005-00	SOCKET CONTACT	12
	28800 016-00	RECEPTACLE CONNECTOR WITH CLAMP	1
	28800 015-00	SEALING PLUG - DEUTSCH #114017	11
4	28800 004-00	PIN CONTACT	12
	28800 003-00	PLUG CONNECTOR WITH CLAMP	1
3	11248 004-00	LOCKNUT 1/4-20 UNC HEX	2
2	11252 002-00	SCREW 1/4-20 UNC CAP X 3/4	2
1	000-00	BRACKET, CABLE CONNECTOR	1

REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

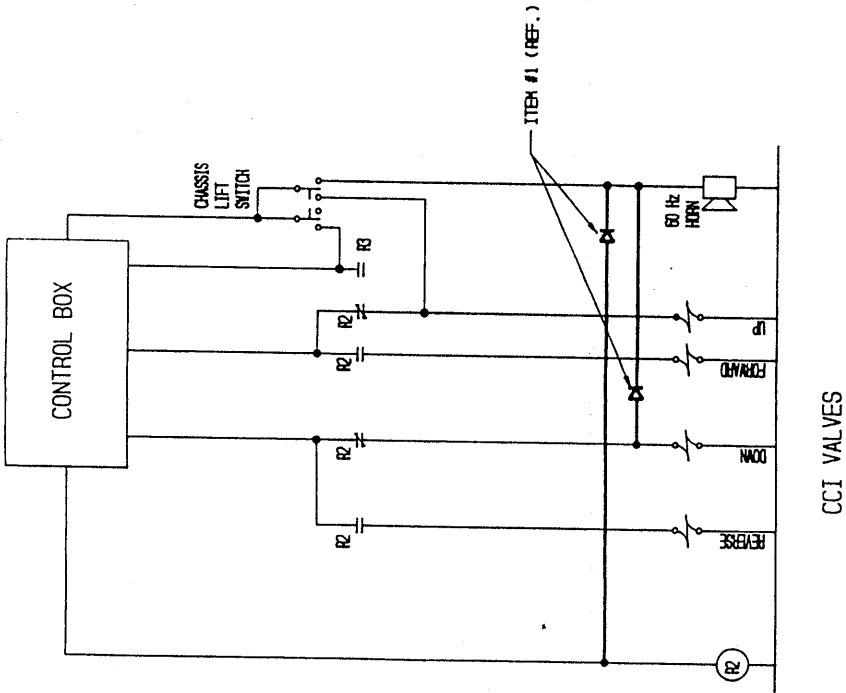
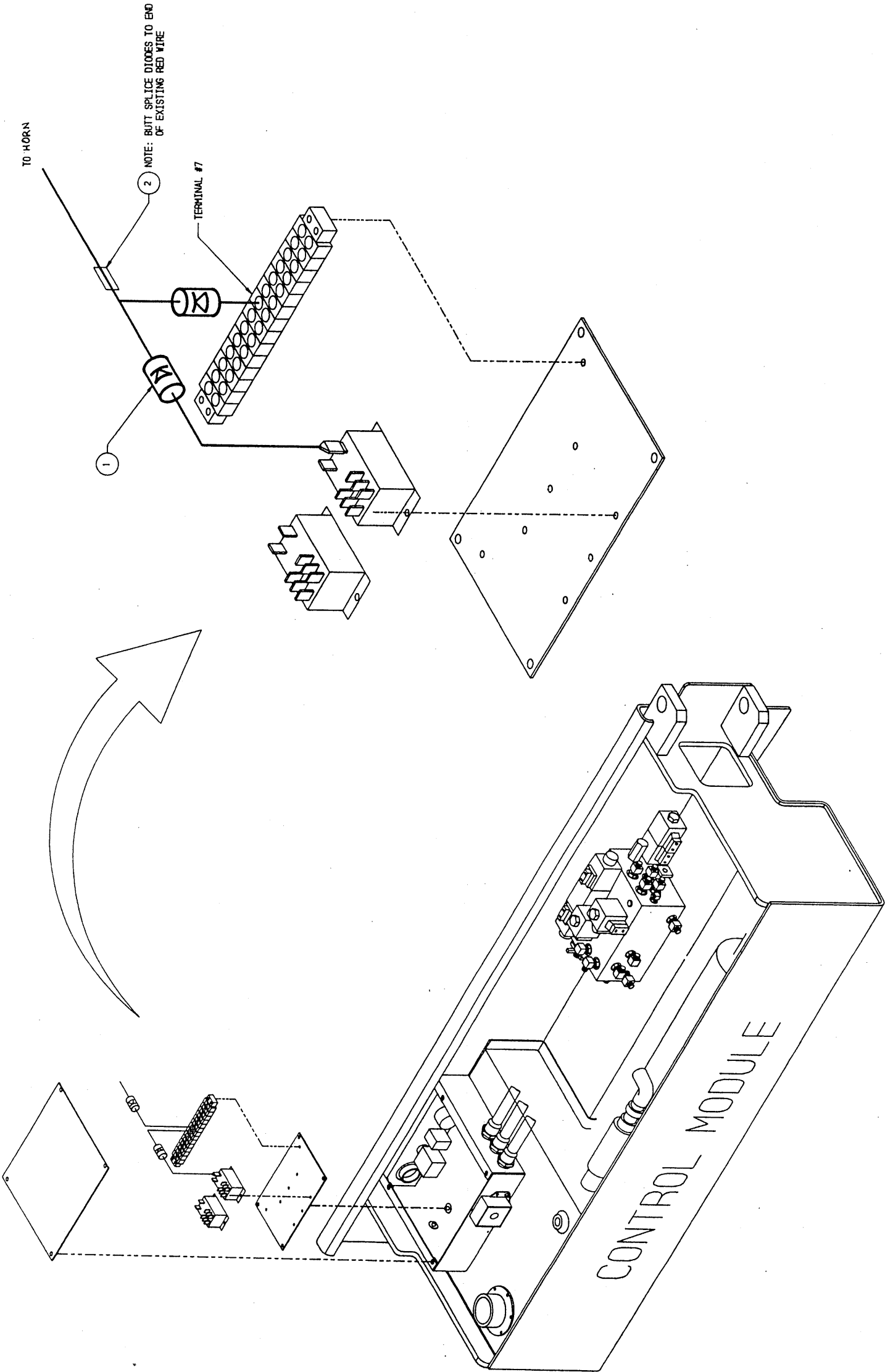
REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

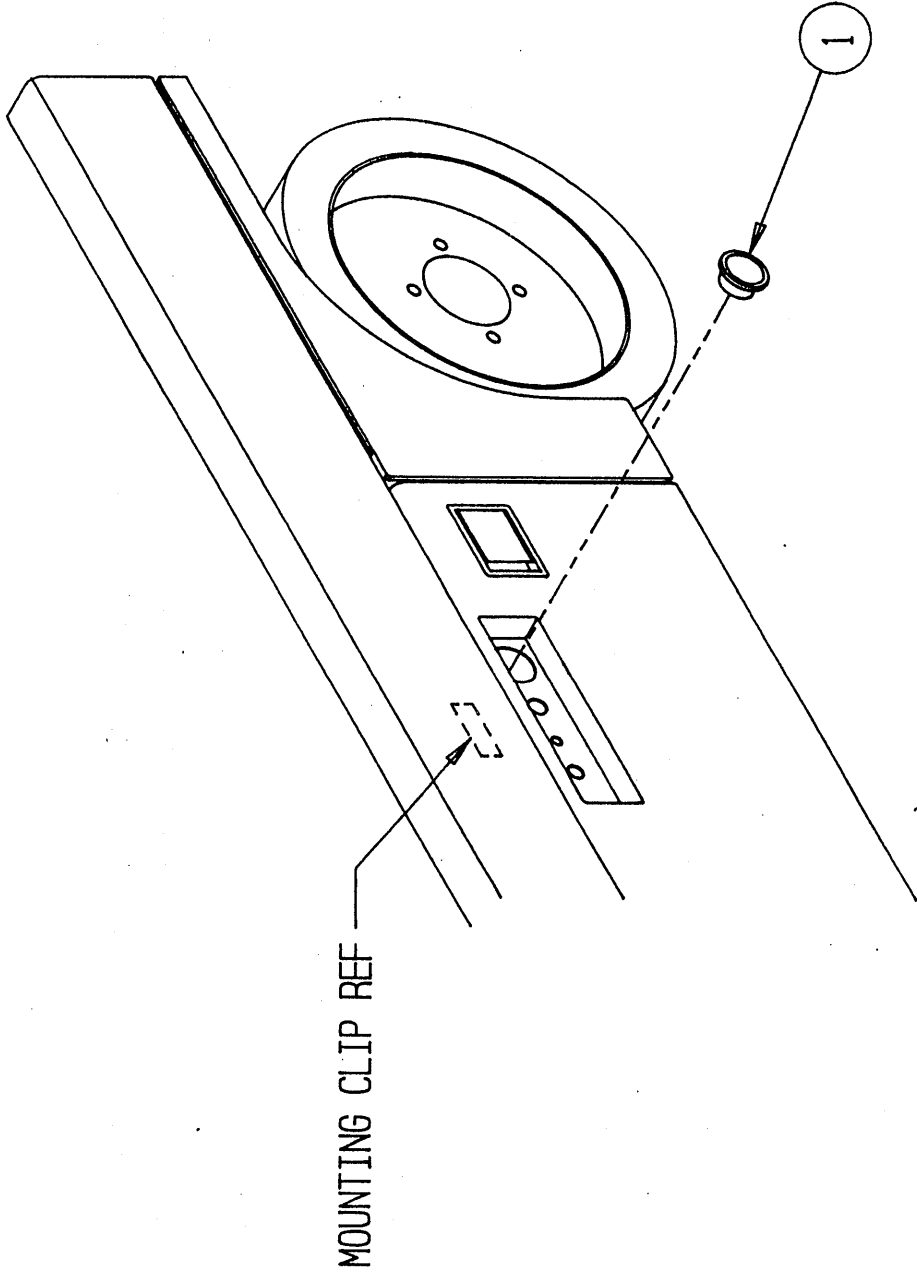
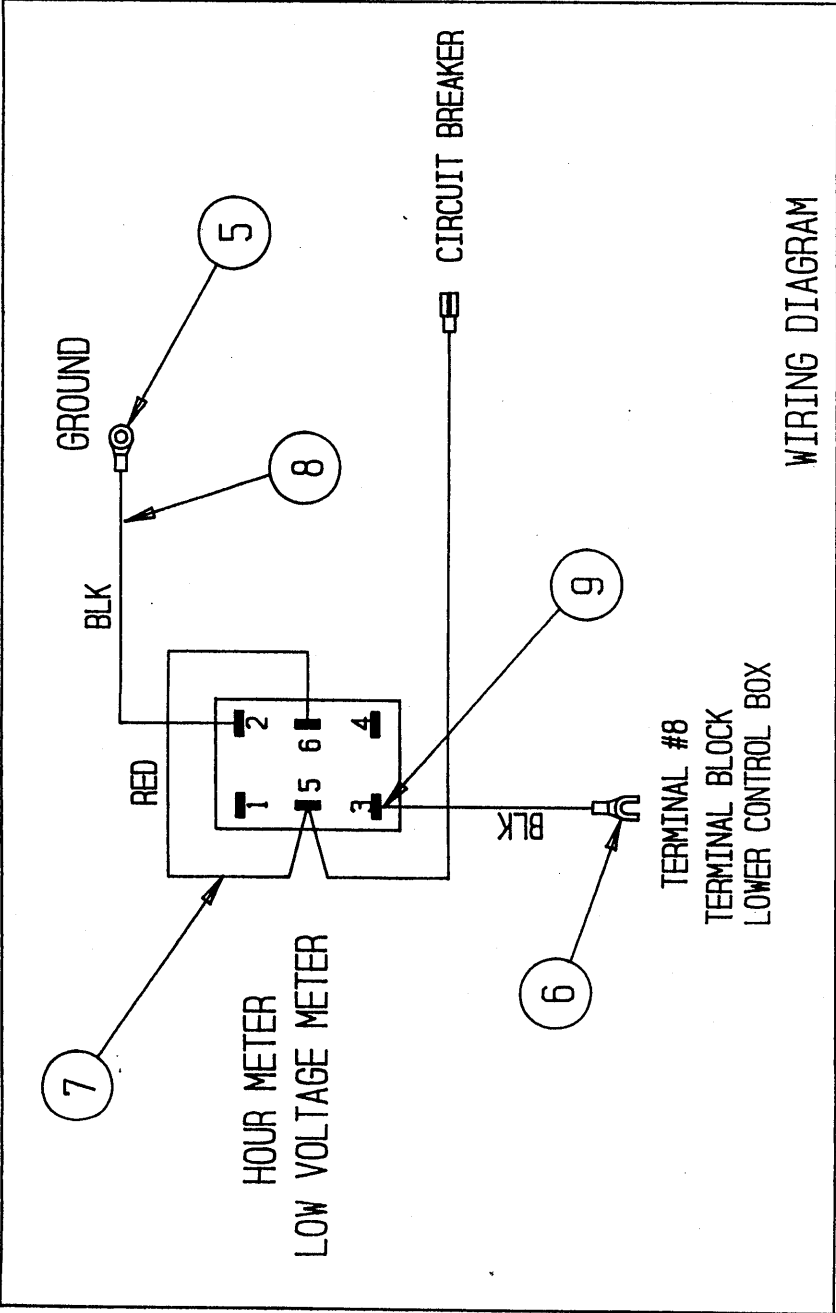
REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

REV	DATE	DESCRIPTION	QUANTITY	UNIT	REVISION
1	3-13-68	ADD SL-20	2	PCB	1
2	1-20-69	28800-15 QTY 11 WAS 8	11	PCB	2
3	1-27-69	REVISED LOCATION OF ITEM 1, 2, 3	1	PCB	3
4	2-18-72	DELETE PIN 28800-001, 28800-002, 28800-007	1	PCB	4
5	3-3-93	REVISED LOCATION OF SL-20 WIRE	1	PCB	5

REVISIONS			
REV	DESCRIPTION	DATE	CHG. BY
1			



2	23620-003	CONN BUTT 12-10	1
1	23625-002	DIODE	2
ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
1775 Part Name 1775 Part Number 1775 Part Description			
PART NAME			
OPTION, FORWARD/REVERSE MOTION ALARM			
DATE:	DATE:	DATE:	DATE:
SIZE: 0	LTG: 11/09/93	22/	11-13-93
SCALE: 3/16	PART NO: 66612-000	SHEET 1 OF 1	



REVISIONS			
REV	DESCRIPTION	DATE	CHGD. BY

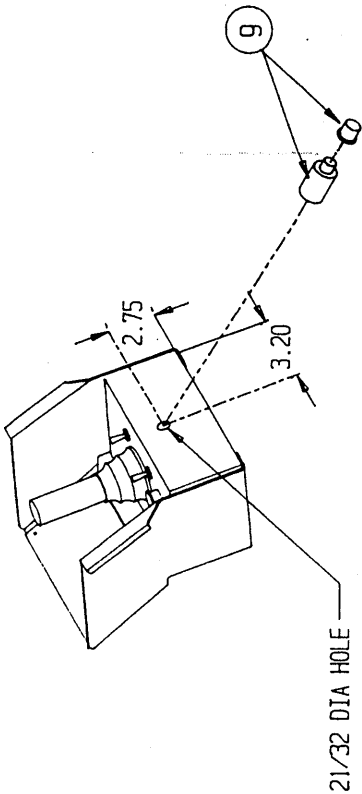
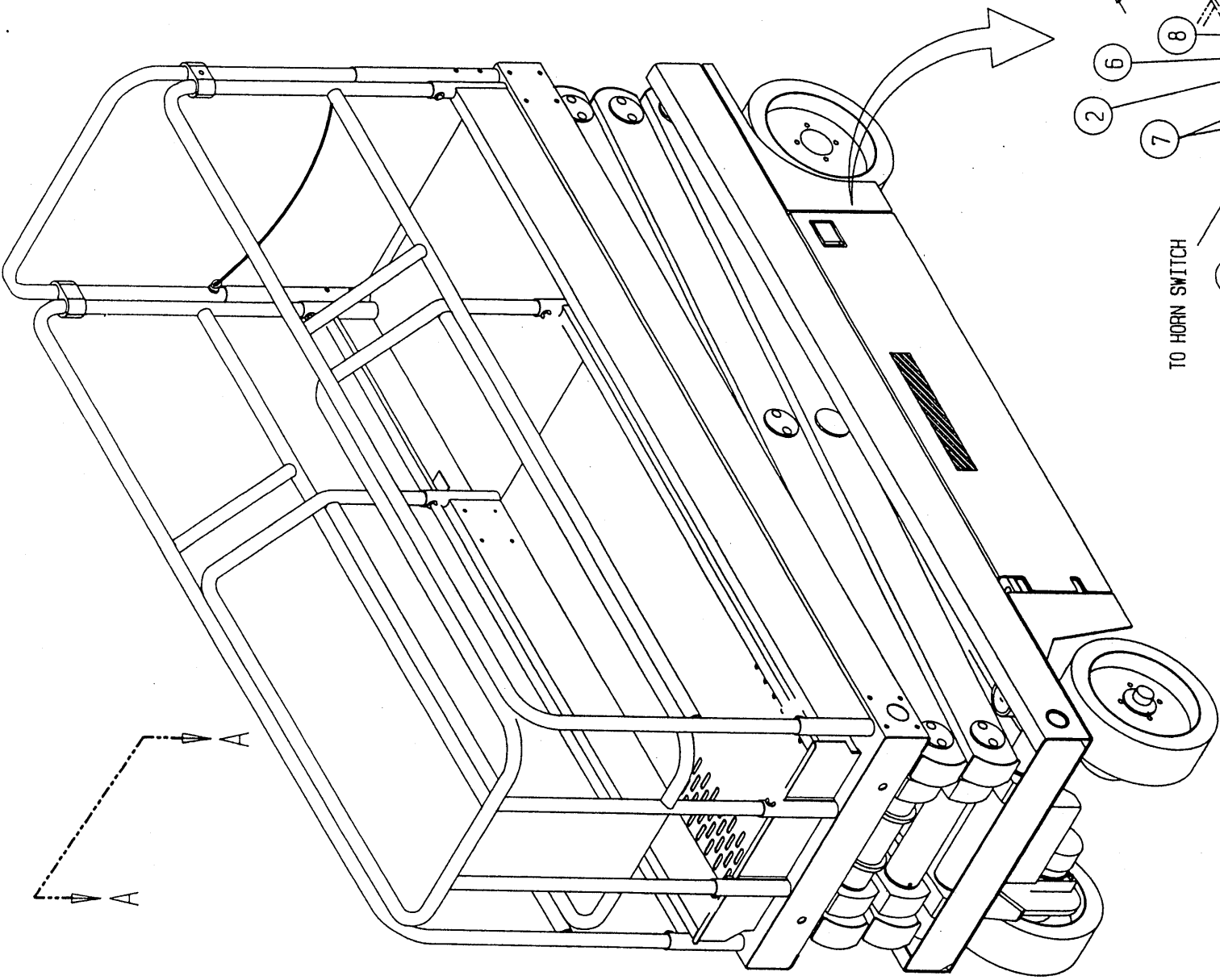
10				
9	29931-003-00	CONN PUSH TERM		4
8	29456-099-00	WIRE 16 GA YEL X 15"	FT	1.33
7	29454-099-00	WIRE 16 GA RED X 12"	FT.	1.00
6	29610-002-00	CONN FORK TERM		1
5	29601-013-00	CONN RING TERM		1
4				
3				
2				
1	29959-000-00	HR/LOW VOLTAGE IND.		1
ITEM	PART NO.	PART / MATERIAL DESCRIPTION		QTY

UP-RIGHT , INC.

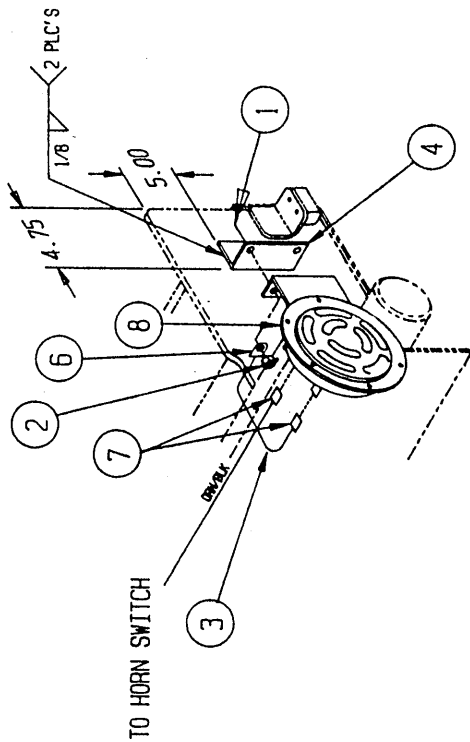
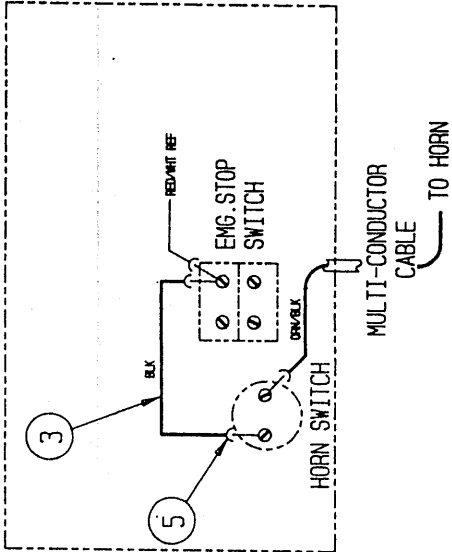
PART NAME

HOUR/LOW VOLTAGE INDICATOR

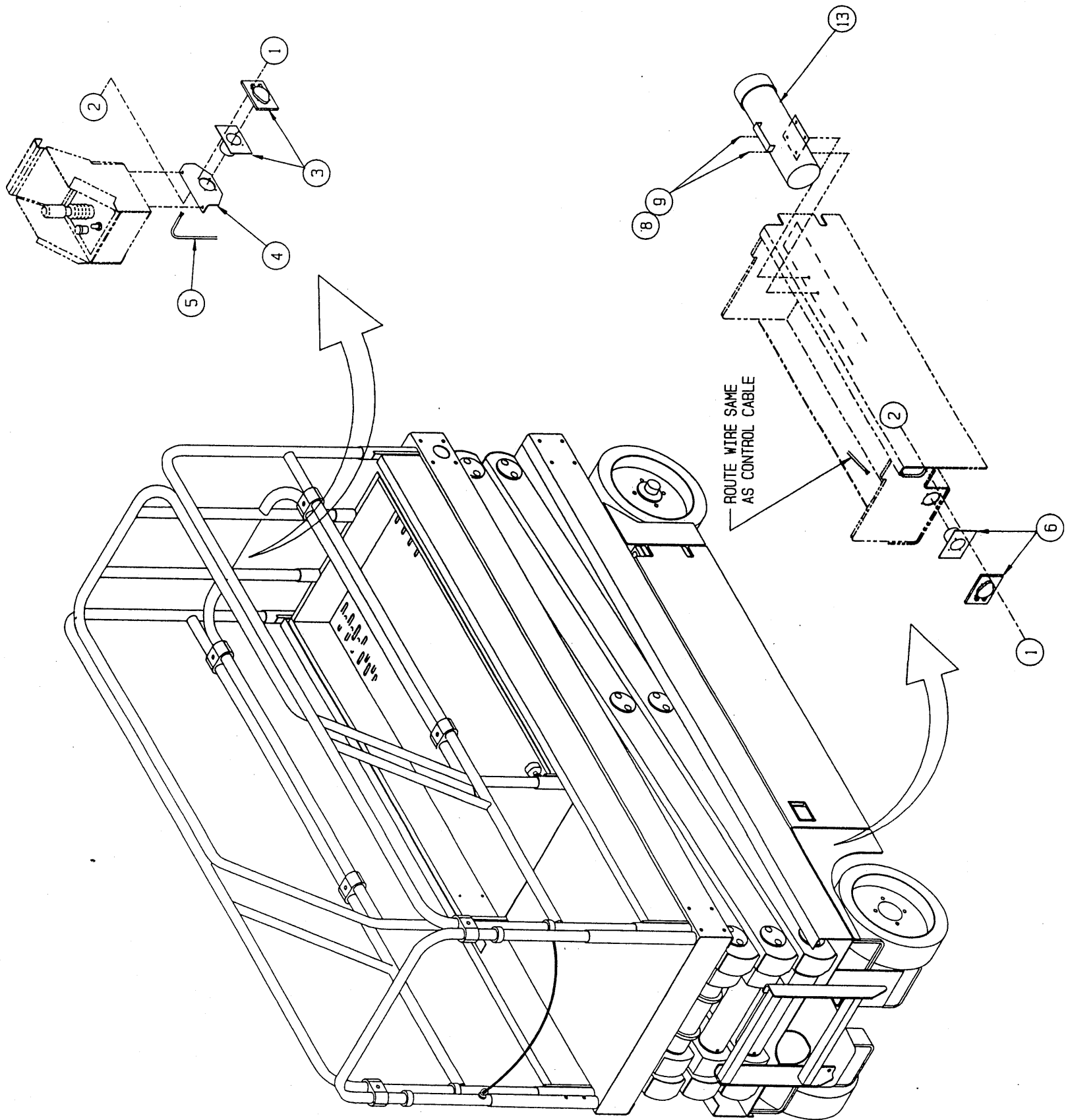
DWG. SIZE	B	DWN BY: RON	DATE: 10/27/93	APVD BY: <i>[Signature]</i>	DATE: 11-13-93	CHD BY:	DATE:
SCALE:	1/1	PART NO:	66613-000-00	SHEET	1	OF	1



VIEW A-A



ITEM	PART NO.	PART / MATERIAL DESCRIPTION	QTY
9	63917-000-00	SWITCH PUSHBUTTON	1
8	23556-000-00	HORN 24V	1
7	23515-002-00	CONNECTOR PUSH	2
6	23501-014-00	CONNECTOR RING	1
5	23510-002-00	CONNECTOR FORK	3
4	65507-000-00	BRACKET, HORN	1
3	29452-000-00	WIRE 16 GA BLACK	FT 1.00
2	11248-004-00	NUT HEX 1/4-20	2
1	11252-000-00	SCREW HX 1/4-20 X 1	2
PART NAME			
UP-RIGHT, INC.			
PART NAME			
HORN OPTION XL20			
DATE	CHKD BY	DATE	CHKD BY
SIZE	DATE	DATE	DATE
SCALE: 3/16	PART NO. 65514-000-00	SHEET 1 OF 1	



15	CABLE ASSY (POS)	1
14	CABLE ASSY (NEG)	1
13	GENERATOR HONEYWELL #JA24A 24V	1
12		1
11	GENERATOR EXTENSION CORD (50')	1
10		1
9	SCREW HHC 1/4-20 X 1	2
8	NUT 1/4-20 UNC	2
7		1
6	OUTLET, HUBBELL #610M64	1
5	WIRE, 14GA 3 COND.	37'
4	BRACKET	1
3	OUTLET, HUBBELL #610M65	1
2	NUT, ESNA #6-32	8
1	SCREW RD HD #6-32 X 1/2 LG.	8
ITEM	PART NO.	QTY
UP-RIGHT, INC.		
PART NAME		
GENERATOR OPTION X20		
DATE	DATE	DATE
SIZE	DATE	DATE
SCALE: 1/8	PART NO. 66615-000-00	SHEET 1 OF 1

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: 559/891-5200

FAX: 559/896-9012

PARTSFAX: 559/896-9244

**UpRight Ireland,
Ltd.**

Pottery Road

Dun Laoire

Ireland

TEL: +353-1-202-4100

FAX: +353-1-202-4105

P/N 060571-000

9902 .05-K Rev-A