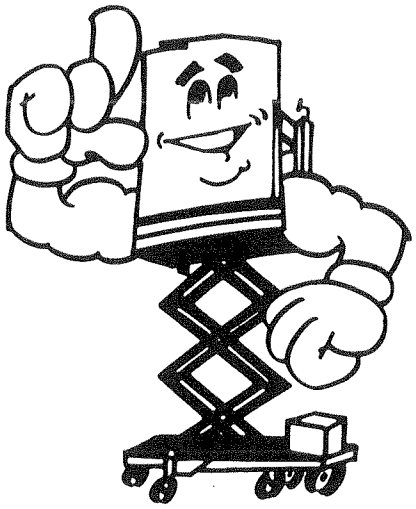
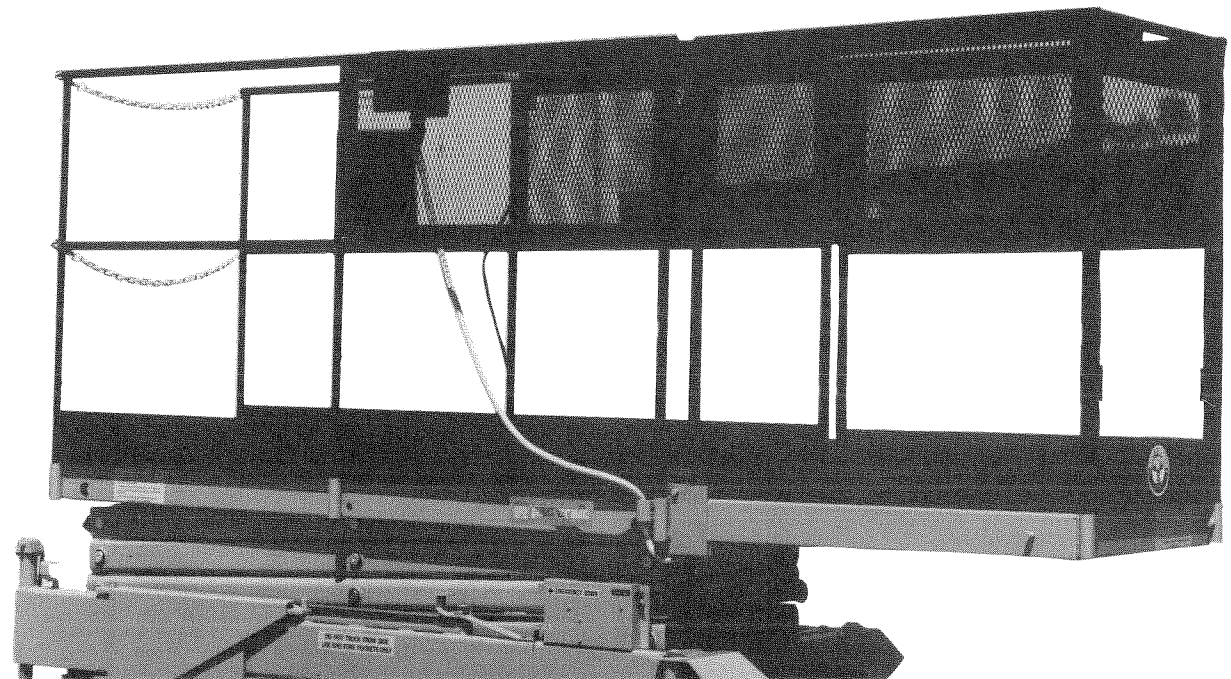


HEFF-T-HERMAN

Model 140, 140EP
141, 141EP

Operating, Service and Maintenance Manual



PAC-CRAFT PRODUCTS
A DIVISION OF
MAYVILLE ENGINEERING COMPANY, INC.
715 SOUTH STREET, P.O. BOX 267
MAYVILLE, WISCONSIN 53050

U.S. PATENT NO.
4,171,120 AND 4,114,854

5858 REV. 1

NOTES

Table of Contents

1. INTRODUCTION

LIMITED OWNER WARRANTY

Pac Craft Products warrants its equipment against defects in workmanship and materials under normal use and service for one (1) year from date of authenticated purchase; excluded from such warranty is the battery which carries a ninety (90) day warranty from such purchase and prorated thereafter up to one (1) year. Warranty within such warranty period is limited to replacement of equipment or parts thereof shipped prepaid to Pac Craft, and which has been found, upon inspection by Pac Craft, to be defective. Pac Craft's sole obligation and buyer's exclusive remedy hereunder shall be limited to such repair or replacement.

PAC CRAFT SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR CONTINGENT DAMAGES WHATSOEVER. USE OF OTHER THAN FACTORY AUTHORIZED PARTS, MISUSE, OR MODIFICATION VOIDS THIS WARRANTY. PARTS OTHER THAN OF OUR MANUFACTURE ARE SUBJECT TO THE ORIGINAL MANUFACTURERS WARRANTY.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTIES PROVIDED HEREIN.

OPERATOR QUALIFICATIONS

Heff-T-Herman is to be operated and maintained by qualified personnel only!

To qualify for operation and maintenance of this unit, an individual must read and thoroughly understand this manual. If a proposed operator or maintenance man fails to understand any segment of this manual, his Supervisor can clarify the misunderstanding through written correspondence or a phone call to:

Pac-Craft Products
a Division of
Mayville Engineering Company, Inc.
715 South Street, P.O. Box 267
Mayville, Wisconsin 53050
414-387-4500

NOTES

SAFETY AND LIMITATIONS

Pac-Craft designs Heff-T-Herman lift work platforms to be safe and reliable. They are rugged and maneuverable but must be used only for purposes and ways intended.

The following precautions are based on common sense and on the code of safe practices developed by the Scaffold Industry Association, Inc. for the elevating work platform industry.

1. Respect your machine: do not neglect or misuse it.
2. Check jobsite for unsafe working conditions.
3. Inspect machine before using. Do not use machine if it is malfunctioning in any way.
4. Use machine only for purposes for which it was designed.
5. Never take chances. Do not use machine if your physical condition is uncertain in any way.
6. The platform and its enclosures are not insulated. Do not use near electrically energized circuits.
7. An operator of any type of work platform is subject to certain hazards that cannot be protected by mechanical means. It is therfore essential that operators be competent, careful, physically and mentally fit, and thoroughly trained in safe operation of this machine.

DESCRIPTION

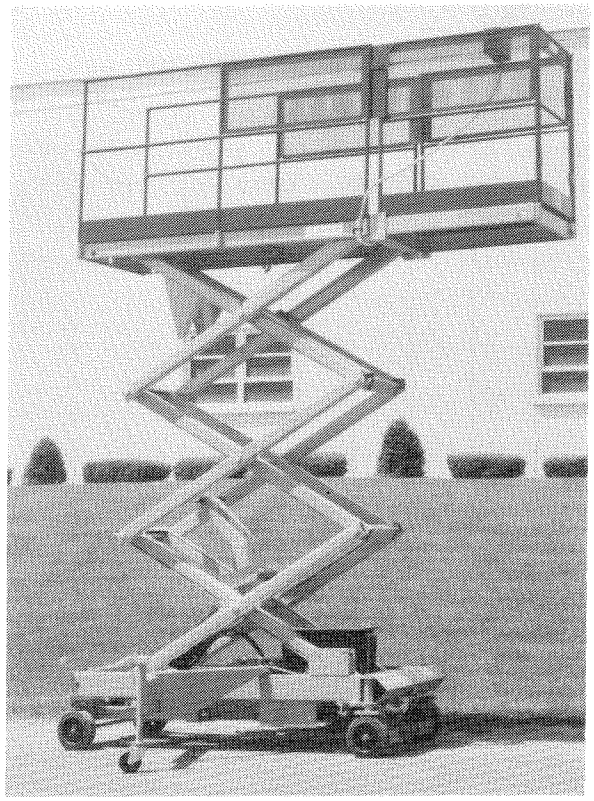
General

Heff-T-Herman Model 140 and 141 series lift platforms, Figure 1, are electrically actuated hydraulically operated units.

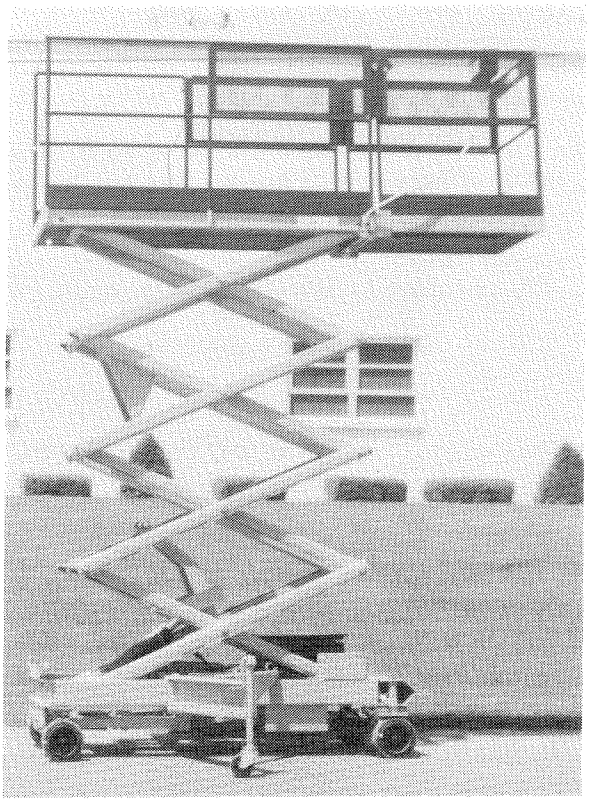
The platform is raised and lowered by a scissor mechanism. The unit is propelled by two (2) hydraulic drive motors in the front wheels; and is steered by a hydraulic cylinder.

All functions are controlled from a control console on the platform. An emergency lowering and auxiliary lift control box is mounted on the base.

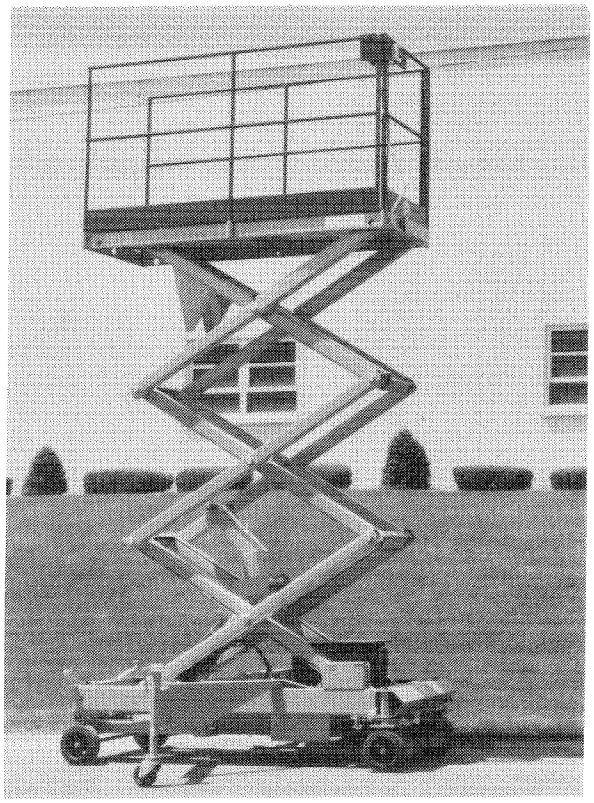
Models 140EP and 141EP are the same as 140 and 141 models, except they have tilt out extended work platforms. Figure 1.



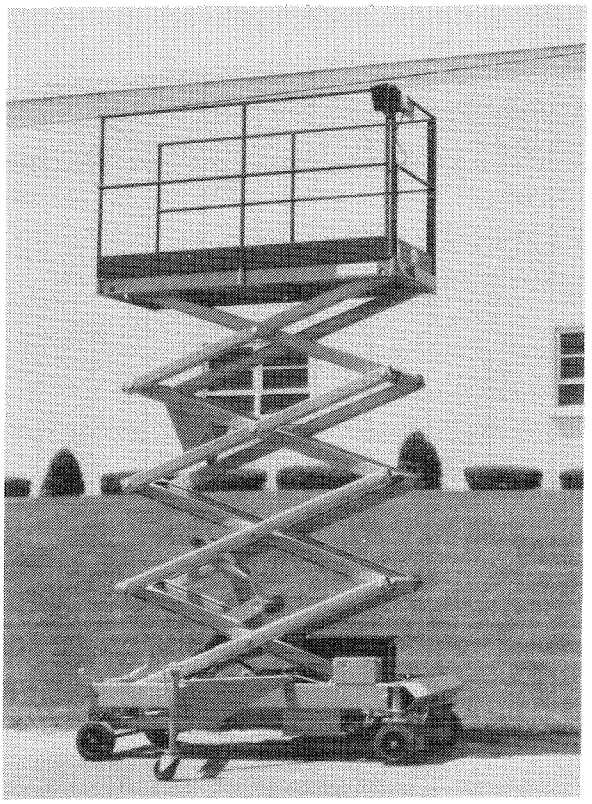
140EP



141EP



140



141

Figure 1. Heff-T-Herman 140 & 141 Series.

SPECIFICATIONS

	Model 140	Model 141
Working Height	21 ft (6.4 m)	25 ft (7.6 m)
Maximum Platform Height	15 ft (4.6 m)	19 ft (5.8 m)
Minimum Platform Height	30 in (76.2 cm)	34 in (86.7 cm)
Minimum Stowed Height w/siderails	72 in (1.83 m)	76 in (1.93 m)
Platform Size	27 x 81 in (68.6 x 205.7 cm)	27 x 81 in (68.6 x 205.7 cm)
Load Capacity	1000 lbs (453.6 kg)	600 lbs (272 kg)
Length	92.8 in (2.37 m)	92.8 in (2.37 m)
Width	34.5 in (87.6 cm)	34.5 in (87.6 cm)
Wheel Base	78 in (1.98 m)	78 in (1.98 m)
Track	31.5 in (80.0 cm)	31.5 in (80.0 cm)
Railing Height	42 in (106.7 cm)	42 in (106.7 cm)
Hydraulic Pressure (max.)	2150 PSI	2150 PSI
Hydraulic Oil (All Models)	Filmite Oil Corp (Flomite #150) added when manufactured	
Approved Alternate Oils	1. Atlantic Richfield Co. (duro AW S-150) 2. Gulf Oil Corp. (Harmony 43 AW) 3. Mobile Oil Corp. (D.T.E. -24) 4. Standard Oil Co. (Industron 44) 5. Texaco, Inc. (Rando Oil HD-A)	
Electrical Power	12 VDC @ 375 amp hr	12 VDC @ 375 amp hr
Weight	2445 (1110 kg)	2620 (1218 kg)

Above specifications also apply to Model 140EP and 141EP except as follows:

	Model 140EP	Model 141EP
Extended Platform Size	25.8 x 40.8 in (65.5 x 103.5 cm)	25.8 x 40.8 in (65.5 x 103.5 cm)
Load Capacity (on extended platform)	300 lbs (136.1 kg) max.	300 lbs (136.1 kg) max.
Load Capacity (Distributed on both platforms)	1000 lbs (453.6 kg) max.	500 lbs (226.8 kg) max.
Weight	2580 lbs (1170 kg)	2820 lbs (1279 kg)

Through our constant effort to upgrade our products, specifications and design may change without notice.

2. OPERATION

SET UP

Installation. Extending Platform (140EP and 141EP)

1. Install pivot pin as follows:
   a. Remove expanpin (part 5793) from pivot pin (part 1833).
   b. Remove pivot pin from extending platform assembly (part 1871).
   c. Line up holes in extending platform with holes in main unit and slide pivot pin through holes. Figure 2.
   d. Secure pivot pin with expanpin (part 5793), Figure 2.

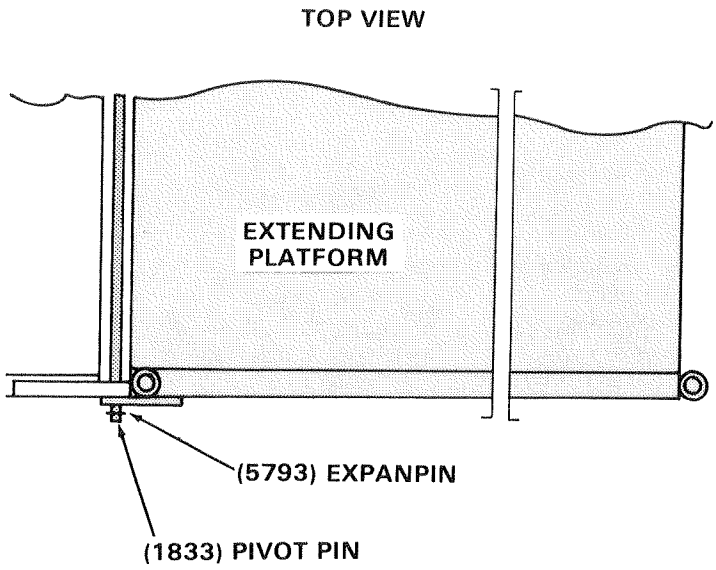


Figure 2. Installing Pivot Pin.

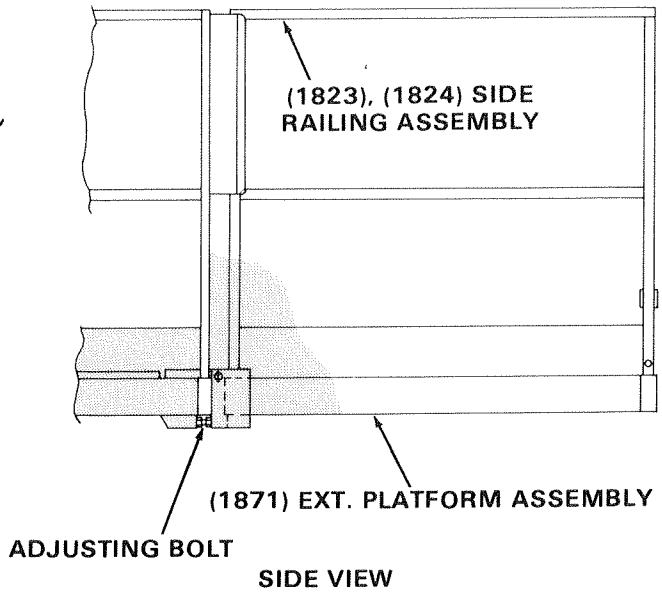


Figure 3. Adjusting Level of Extending Platform.

2. Adjust level of extending platform by turning adjusting bolts on main platform, Figure 3.
3. Install rails as follows:
   a. Slide R.H. and L.H. rails (parts 1823 & 1824) into pockets on platform (with retaining clips for front rail assembly to the inside).
   b. Secure side rails by tightening bolts in pockets. Figure 4.

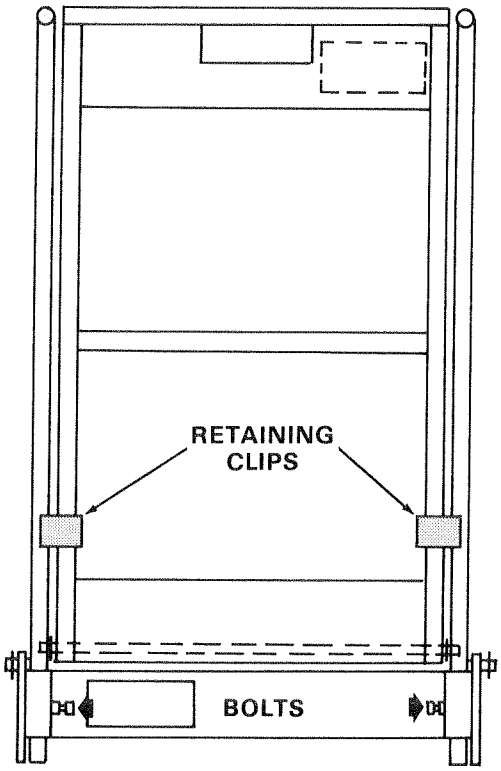


Figure 4. Installing Side Rails.

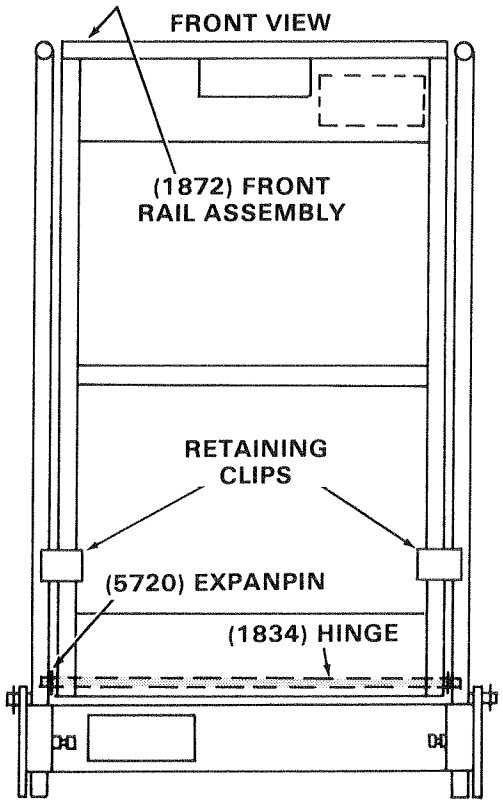


Figure 5. Installing Hinge

4. Install hinge (front rail pivot pin) as follows, Figure 5:

   a. Remove expanpin (5720) from hinge pin (1834) and remove hinge pin from front rail assembly (1872).

   b. Line up holes in front rail with holes in side rails; slide hinge pin through holes, and secure with expanpin (5720).

5. Attach decals with platform in extended position as follows, Figure 6:

WARNING

Check that capacity ratings on decals are the same as decals on main platform.

   a. Place one decal upside down on outside front end of platform.

NOTE

Operator can see this decal when platform is in stowed position.

   b. Place one decal right side up on inside of front railing.

NOTE

Operator can see this decal when platform is in extended position.

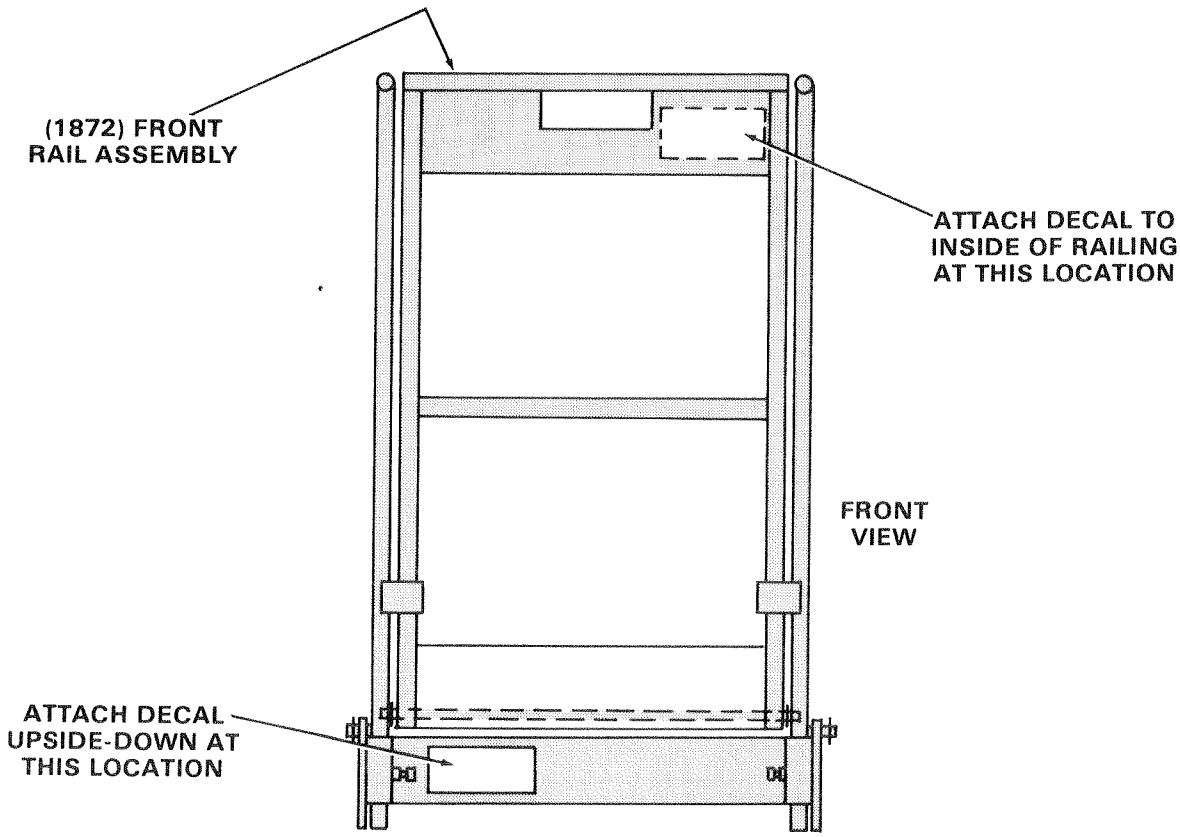


Figure 6. Attaching Decals.

CAUTION

When putting extending platform in stowed position, make sure control console and cable are out of the way.

Operation of Extending Platform

NOTE

When you are changing the position of the extending platform from "stowed" to "extended," follow the steps below.

CAUTION

Be sure to move control box and cord out of the way before extending platform.

1. Grasp top rail with left hand.
2. Free latch with right hand.
3. Lower platform carefully with both hands.

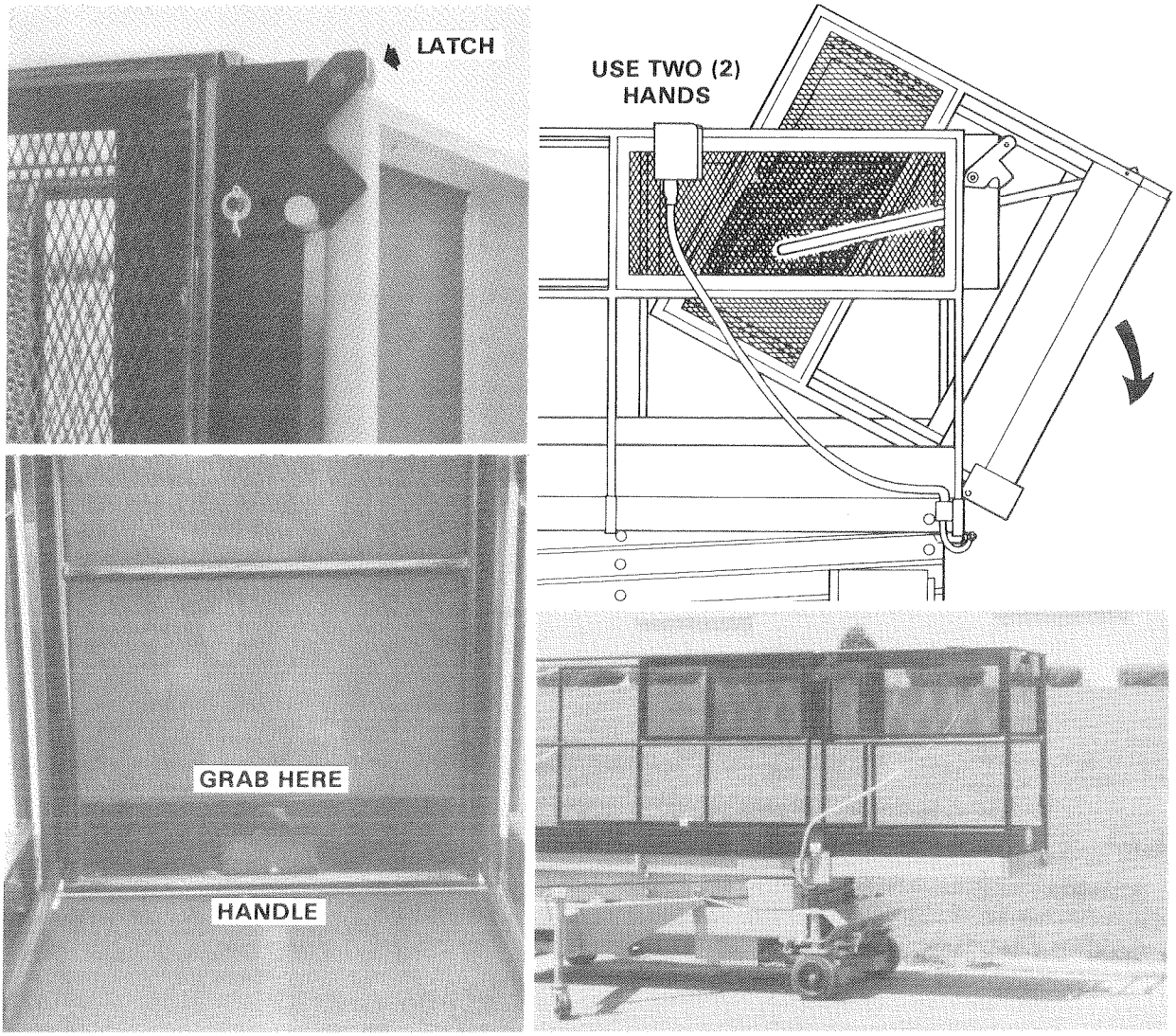


Figure 7. Unfolding Extending Platform.

Installation. Control Console.

NOTE

Control console is packed and located under platform deck, between scissors for shipping purposes.

1. Remove deck board to locate console.
2. Remove from package and connect to cable at front of machine.

GENERAL OPERATING RULES AND SAFETY

1. **BEFORE OPERATION** — MAKE SURE MACHINE IS PROPERLY SERVICED. DO NOT USE MACHINE IF IT IS NOT WORKING PROPERLY.
2. MAKE SURE PLATFORM GUARD RAILINGS AND SAFETY CHAINS ARE IN PLACE WHENEVER SOMEONE IS ON THE PLATFORM.
3. ALWAYS SET PARKING BRAKE BEFORE RAISING PLATFORM.
4. ALWAYS EXTEND AND LOCK OUTRIGGERS BEFORE RAISING PLATFORM.
5. **DO NOT** OPERATE ON UNEVEN, SOFT OR SLOPED SURFACE.
6. **DO NOT** EXCEED LOAD CAPACITY OF PLATFORM.
7. ALWAYS CHECK CLEARANCE AROUND MACHINE BEFORE MANEUVERING, ESPECIALLY BEFORE LOWERING PLATFORM.
8. **DO NOT** USE NEAR POWER LINES: PLATFORM AND ENCLOSURE ARE **NOT INSULATED.**
9. **DO NOT** RAISE PLATFORM WHEN MACHINE IS ON INCLINE.

CONTROLS

NOTE

All controls are on a movable control console and an auxiliary, raise and lower switch is on a control box on the base. Figure 8.

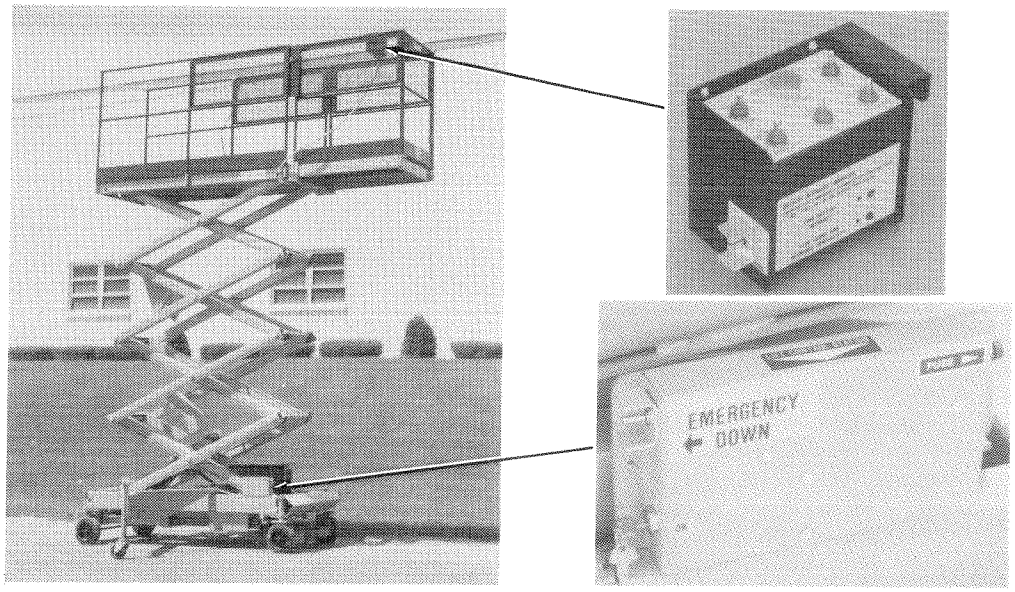


Figure 8. Controls.

Emergency Stop

The emergency stop is the large red button. Pushing in the button stops all functions of the machine and activates the parking brake, Figure 9. Pulling out the button reactivates circuits.

NOTE

This switch, when depressed, has a power drain on battery. **USE FOR EMERGENCY USE ONLY.**

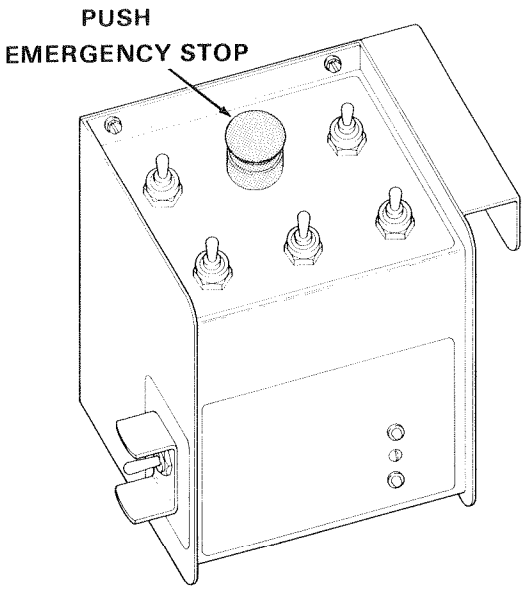


Figure 9. Emergency Stop.

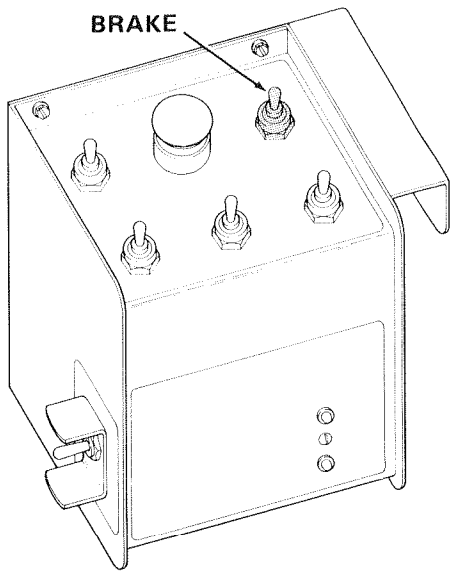


Figure 10. Parking Brake.

Parking Brake

The parking brake is a spring set, hydraulic release brake, actuated by a brake switch on the console, Figure 10. When the switch is activated, the brake solenoid valve is energized, hydraulic fluid is released from the brake cylinder and the spring applies pressure through the brake pads to the rear wheels.

To apply brake, move toggle switch in either direction, Figure 10.

The brake automatically releases when either forward or reverse is used.

Stop Control

An electronic stop control is located in the lower control station. Releasing the drive switch when the machine is in forward or reverse activates the stop control which allows the machine to coast approximately one foot to a rolling stop.

NOTE

When traveling in forward or reverse, moving the drive switch to the opposite direction will result in an immediate change in direction.

Main Switch

The on/off key is located on the lower control station, Figure 11. The key must be turned to on position to operate the Heff-T-Herman.

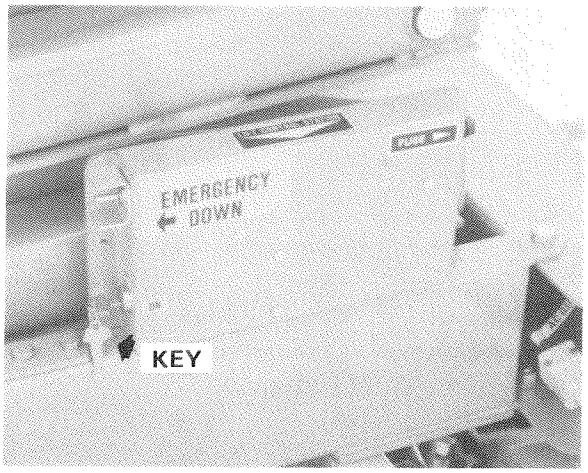


Figure 11. Key, Main Switch.

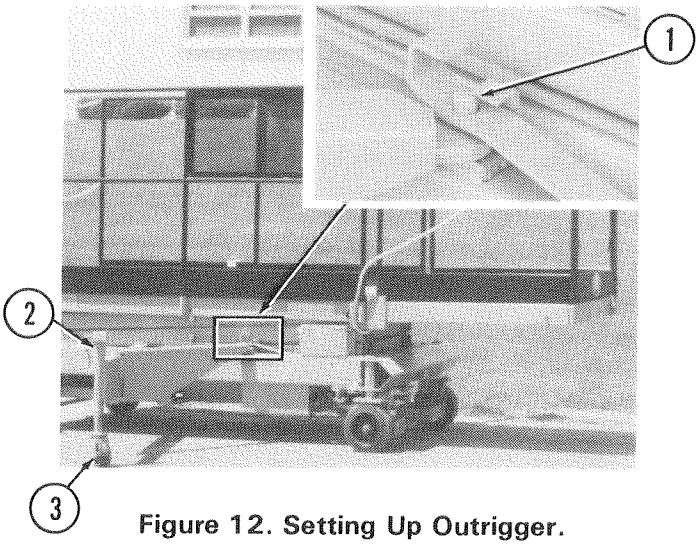


Figure 12. Setting Up Outrigger.

Raising Platform

1. Extend outrigger on each side as follows:
   a. Lift latch at rear of base frame and swing outrigger until it latches in fully extended position, (1) Figure 12.
   b. Turn jack handle (2) until wheel makes solid contact to surface, (3) Figure 12.
2. Move lift/drive toggle switch to lift, (1) Figure 13.
3. Move up/down toggle switch to up, (2) Figure 13.

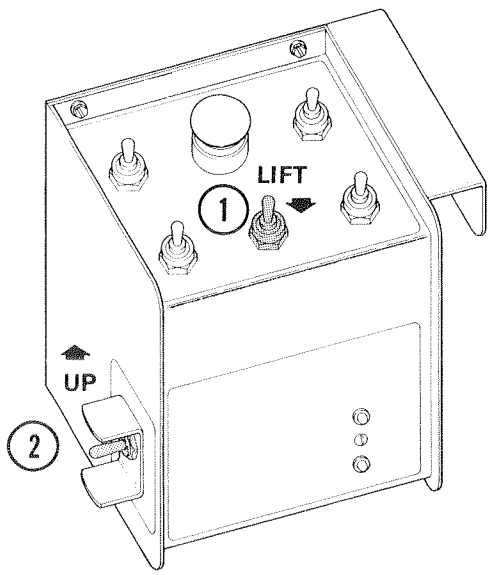


Figure 13. Raising Platform.

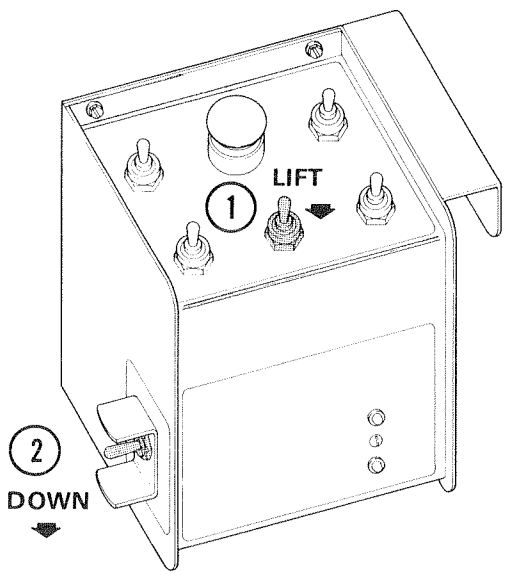


Figure 14. Lowering Platform.

4. To stop platform, release switch.

Lowering Platform Figure 14

1. Move lift/drive switch to lift. (1)
2. Move up/down switch to down. (2)
3. To stop, release switch.

NOTE

All models have dual controls for raising and lowering. The second set of controls is at the lower control station. The down switch always overrides the up switch if both switches are activated at the same time. Figure 15.

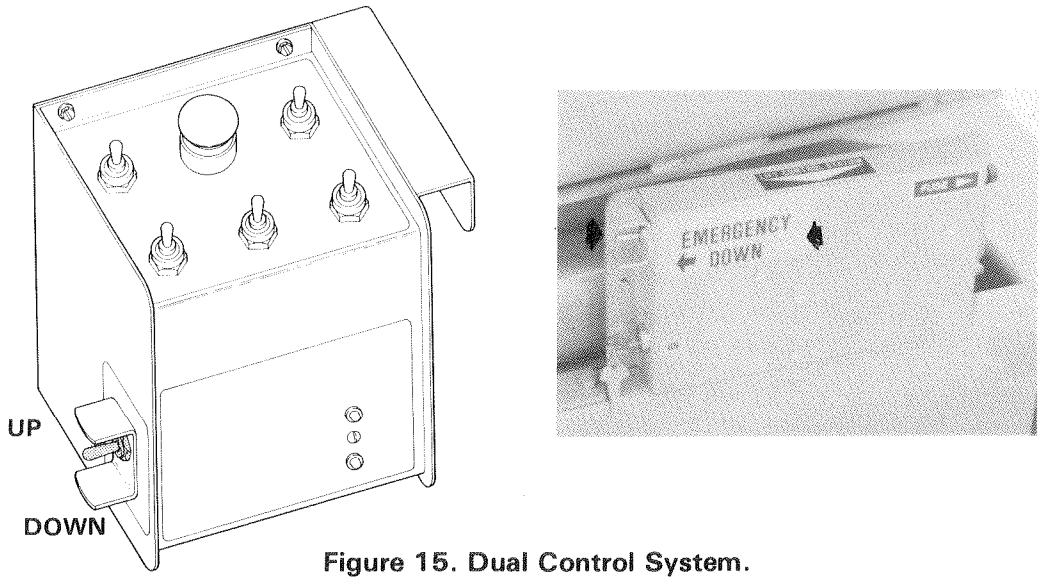


Figure 15. Dual Control System.

4. Retract outriggers as follows:
   a. Turn jack handle until wheel is in full up position.
   b. Disengage outrigger latch and push beam of outrigger toward side of unit until latched.

Travel, Forward or Reverse. Figure 16

1. Move lift/drive toggle switch to drive. (1)
2. Move fast/slow switch to speed desired. (2)
3. Move forward/reverse switch to direction desired. (3)

Steering, Left or Right. Figure 17

1. Move lift/drive switch to drive. (1)
2. Move steering switch to left or right. (2)

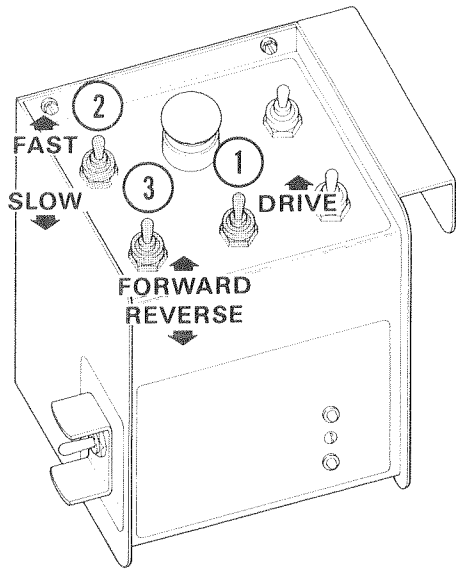


Figure 16. Traveling.

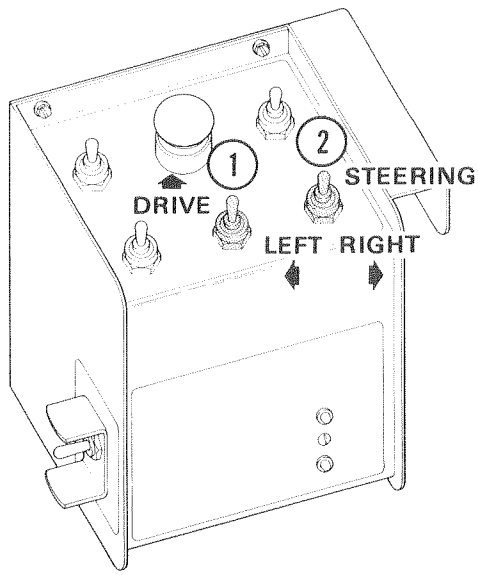


Figure 17. Steering.

3. MAINTENANCE

TROUBLESHOOTING

WARNING

BEFORE ANY ATTEMPT IS MADE TO SERVICE MACHINE WHEN EXTENDED OR PARTIALLY EXTENDED, IT IS ABSOLUTELY NECESSARY TO ENGAGE THE MAINTENANCE LOCKS. (Procedure below): Figure 18.

1. Remove load from platform.
2. Raise platform as high as necessary to engage MAINTENANCE LOCKS.
3. Raise MAINTENANCE LOCKS located at the rear inside corners of base frame so that MAINTENANCE LOCKS are turned into the full lock position.
4. Lower platform until lower beams make contact with the MAINTENANCE LOCKS.

DO NOT SERVICE EXTENDED OR PARTIALLY EXTENDED MACHINE UNTIL THE ABOVE PROCEDURE IS FOLLOWED.

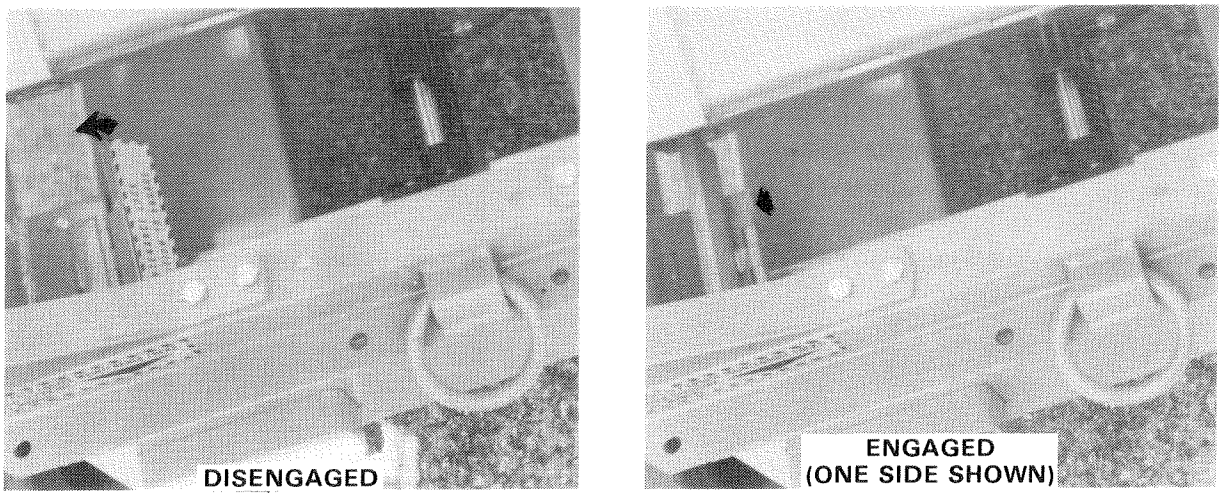


Figure 18. Engaging Maintenance Locks.

Problem	Possible Cause	Repair Procedure
No UP Motion (Pump not operating)	1. Blown fuse.	1. Check fuse and replace if necessary.
	2. Dead battery.	1. Check and charge battery as directed in MAINTENANCE section.
	3. Defective UP limit switch.	1. Check continuity. If defective, replace switch.
	4. Electrical circuit defective.	1. Refer to electrical schematic.
	5. Worn brushes.	1. Replace.
	6. Shorted armature.	1. Replace motor.
	7. Defective motor start solenoid.	1. Replace start solenoid.
	8. Defective emergency stop switch or solenoid.	1. Replace switch or solenoid.
	9. Defective key switch.	1. Replace key switch.
	10. Defective up switch.	1. Replace up switch.
No UP Motion (Pump operating)	1. Hydraulic fluid level low.	1. Add fluid (see MAINTENANCE section).
	2. Pump cavitation caused by: a. Improper fluid for temperature conditions. b. Fouled screen in reservoir.	1. Drain reservoir and bleed system. Use only recommended type fluids. (See MAINTENANCE section). 1. Drain reservoir, clean screen, and bleed system. (See MAINTENANCE).
	3. Defective up valve or coil.	1. Replace up valve or coil.
	4. Electrical circuitry defective.	1. Refer to electrical schematic.

Problem	Possible Cause	Repair Procedure
Ascent Speed Slow or Erratic	1. Weak battery.	1. Charge battery (See MAINTENANCE).
	2. Loose connections in electrical circuitry.	1. Perform visual inspection and ensure all connections are secure.
	3. Momentary short in wiring.	1. Refer to electrical schematic.
	4. Bent structural members.	1. Replace damaged members as necessary (See visual structural inspection in MAINTENANCE section).
	5. Restriction in hydraulic line.	1. Replace defective hydraulic line.
	6. Defective or jammed seals in hydraulic lift cylinder.	1. Replace cylinder.
	7. Gear or gear cavity worn or damaged.	1. Replace pump unit. (See REPLACEMENT section).
	8. Worn brushes in motor.	1. Replace brushes.
Descent speed slow	1. Flow control out of adjustment.	1. Adjust (See ADJUSTMENT section).
	2. Friction in structural members.	1. Lubricate and check for damaged members and cracked welds. (See MAINTENANCE.)
		2. Replace damaged structural members. This is to be done by factory authorized personnel only.
	3. Obstruction in hydraulic hose.	1. Replace defective hose.
	4. Bad down valve.	1. Replace valve.
Unit will not descend	1. Down signal not applied to down solenoid.	1. Check fuse. 2. Check battery charge. 3. Check faulty wiring. Refer to wiring diagram.
	2. Faulty down solenoid.	1. Replace down solenoid.
Unit creeps down	1. Dirt lodged in down valve.	1. Flush system as follows: Simultaneously — a. Depress **down** switch at base of unit and hold. b. Depress **up** switch at platform console and hold.
	2. Damaged seal in lift cylinder.	1. Replace hydraulic cylinder. (See MAINTENANCE section).
	3. Defective down, check valve.	1. Replace valve.
Drive function inoperative (Hydraulic pump not operating)	1. Defective lift/drive or forward/reverse switch.	1. Check continuity. Replace switch.
	2. Defective electrical circuitry.	1. Refer to electrical schematic.
	3. Defective motor start solenoid.	1. Replace start solenoid.

Problem	Possible Cause	Repair Procedure
Drive function inoperative in either direction. (Hydraulic pump operating)	1. Defective forward/ reverse switch.	1. Replace switch.
	2. Defective drive valve or solenoid.	1. Replace drive valve or solenoid.
	3. Defective electrical circuitry.	1. Refer to electrical schematic.
	4. Defective emergency stop or key switch.	1. Replace switch.
	5. Defective motor start solenoid or cutoff solenoid.	1. Replace solenoid.
	6. Low battery.	1. Charge battery.
	7. Defective hydraulic motor.	1. Replace drive motor.
	8. Defective brake.	1. Adjust brake. (See MAINTENANCE.)
No motion in one **Drive** direction only	1. Defective forward/ reverse valve or solenoid in faulty mode.	1. Replace defective valve or solenoid.
	2. Defective electrical circuit.	1. Refer to electrical schematic.
Machine travels in fast speed when platform is above 7 ft.	1. Misadjusted or defective SLOW HI-LIMIT switch.	1. Adjust or replace defective switch.
	2. Defective electrical circuitry.	1. Refer to electrical schematic.
	3. Defective slow speed valve or solenoid or slow speed switch.	1. Replace defective valve, solenoid or switch.
Machine travels in fast speed when slow is selected.	1. Defective electrical circuitry.	1. Refer to electrical schematic.
	2. Defective slow speed valve or solenoid, or slow speed switch.	1. Replace defective valve, solenoid or switch.
Brake does not release	1. Defective electrical circuitry.	1. Refer to electrical schematic.
	2. Defective brake valve or solenoid.	2. Replace valve or solenoid.
	3. Bad check valve.	3. Replace check valve.
	4. Brake pads misadjusted.	4. Adjust brake (See ADJUSTMENTS).
Brake does not set	1. Misadjusted brake pads or spring.	1. Adjust brake (See ADJUSTMENTS).
	2. Defective brake valve.	2. Replace.

Problem	Possible Cause	Repair Procedure
Steering inoperative	1. Defective electrical circuitry.	1. Refer to electrical schematic.
	2. Defective steering valve or solenoid.	1. Replace valve or solenoid.
	3. Defective steering switch.	1. Replace switch.
	4. Cylinder seals worn.	1. Replace cylinder.

INSPECTION AND LUBRICATION

Notes, Cautions and Warnings

NOTE: means added information.

CAUTION: means failure to follow instructions could cause damage to equipment.

WARNING: means failure to follow instructions could lead to a hazardous condition that could result in injury to personnel.

WARNING

There is always a potential hazard to maintenance personnel working on a scissors type lifting device.

Therefore:

1. Do all maintenance through floorboard with unit lowered whenever possible.
2. If necessary to work on raised unit always use maintenance locks, built into the unit, which mechanically lock the mechanism in a raised position.

NOTE

Tables below: Table 3A is a daily inspection schedule and log; 3B is a weekly inspection schedule and log; and 3C is an overall schedule.

WARNING

Follow lubrication procedures. Failure to lubricate pivot areas of scissors and lift cylinder will result in damage to structural parts and bushings which could lead to personal injury or death.

Battery
1. Check Wiring
2. Check Fluid Level
Hydraulic System
1. Check for Leaks
2. Check Hoses
Scissor System
1. Check for Damage
2. Check Snap Rings

Keep log as follows:
1. Inspect components
2. Check Boxes if components OK
   or
   Make repairs
3. Initial boxes

Key:
B = Battery
H = Hydraulic System
S = Scissor System

MONTH																															
DAY							7							14						21						28					
INIT.																															
B-1																															
2																															
H-1																															
2																															
S-1																															
2																															
MONTH																															
DAY							7							14						21						28					
INIT.																															
B-1																															
2																															
H-1																															
2																															
S-1																															
2																															
MONTH																															
DAY							7							14						21						28					
INIT.																															
B-1																															
2																															
H-1																															
2																															
S-1																															
2																															

Table 3A. Inspection and Lubrication Daily Log.

COMPONENT	Check and Initial Every 40 hours of USE, or Monthly
MONTH	
DAY	
INITIAL	
Battery	
1. Clean Battery	
2. Coat Terminals	
Hydraulic System	
1. Check Fluid Level	
2. Inspect Commutator and brushes*	Date Last Checked _____
3. Check Fittings	
Scissor System	
1. Oil Pivot Points & Rollers	
Drive and Lift Mechanisms	
1. Oil Steering Pivot Points	
2. Oil Brake Pivot Points	
3. Grease Lift Arm, Pivot Tube	
4. Grease Lift Cylinder Rod End	
Main Frame	
1. Grease Front Wheels	
2. Pack Rear Wheel Bearings*	Date Last Done _____
3. Check Structure and Pivot Pins	
Control System	
1. Check Terminals and Plugs	
2. Check Cords	

*Check every 6 months

Table 3B. Inspection and Lubrication Weekly Log.

	TIME INTERVAL			
COMPONENT	DAILY	WEEKLY	6 MONTHS	1 YEAR
Battery				
1. Check Wiring	X			
2. Check Fluid Level	X			
3. Clean Battery Connections		X		
4. Coat Terminals		X		
Hydraulic System				
1. Check for Leaks	X			
2. Check Fluid Level		X		
3. Inspect Commutator and Brushes			X	
4. Check Hoses	X			
5. Check Fittings		X		
Scissor System				
1. Check for Damage	X			
2. Oil Pivot Points and Rollers		X		
Drive and Lift Mechanism				
1. Oil Steering Pivot Points		X		
2. Oil Brake Pivot Points		X		
3. Grease Lift Arm, Pivot Tube		X		
4. Grease Lift Cylinder Rod End		X		
Main Frame				
1. Grease Front Wheels		X		
2. Pack Rear Wheel Bearings			X	
3. Check Structure		X		
4. Check Pivot Pins				X
Control System				
1. Check Terminals and Plugs		X		
2. Check Cords		X		

Table 3C. Inspection & Lubrication Schedule.

1. Lubricate the following areas with EP. 90 oil after 40 hours of use or monthly.

   a. All pivot areas of scissor members, including both sides of bushings in beams, Figure 19.

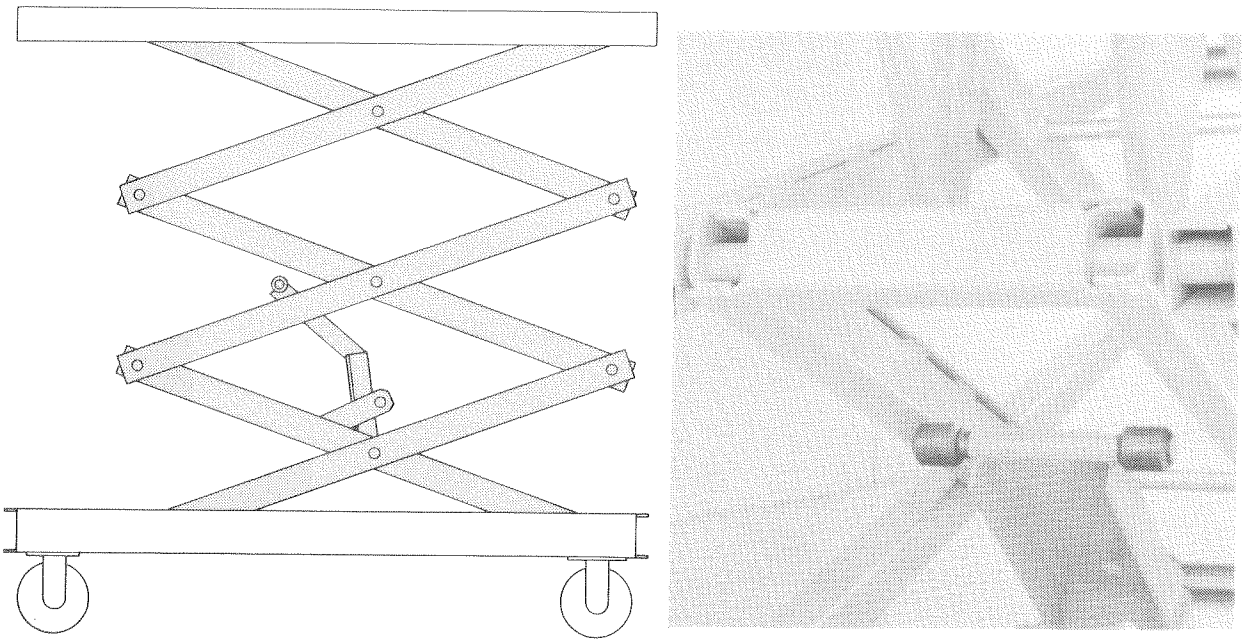


Figure 19. Lubricating Scissors Mechanism.

   b. Pivot points of steering cylinder and steering system, Figure 20.

   c. Pivot areas of brake linkage, Figure 21.

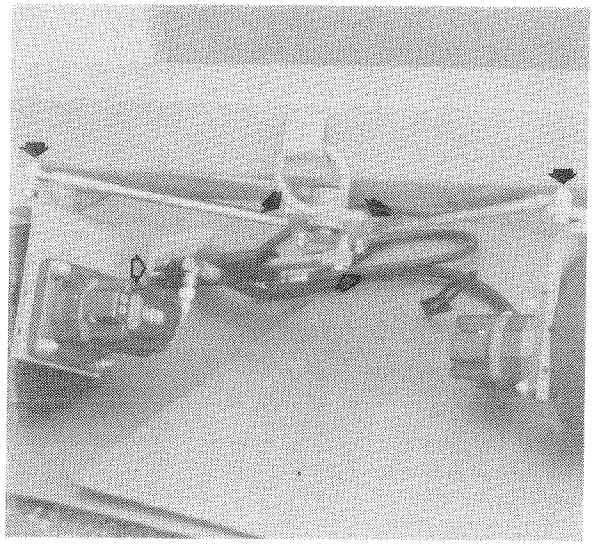


Figure 20. Lubricating Steering Linkage.

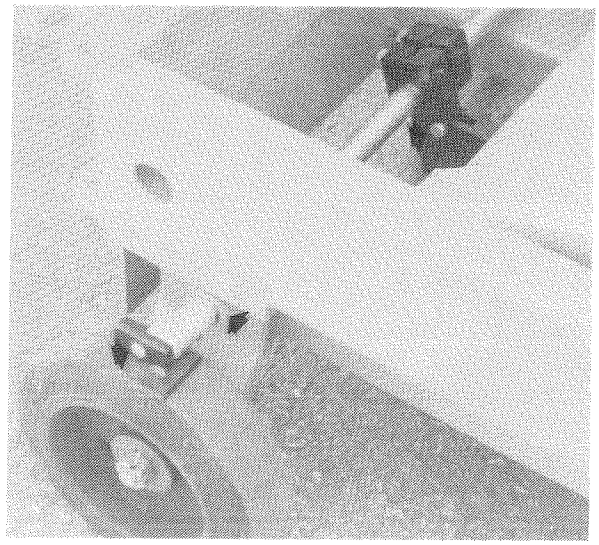


Figure 21. Lubricating Brake Linkage.

   d. Lift arm, platform, and base rollers.

NOTE

Lubricate shaft on both sides of roller but do not get oil on surface rollers ride on, Figure 22.

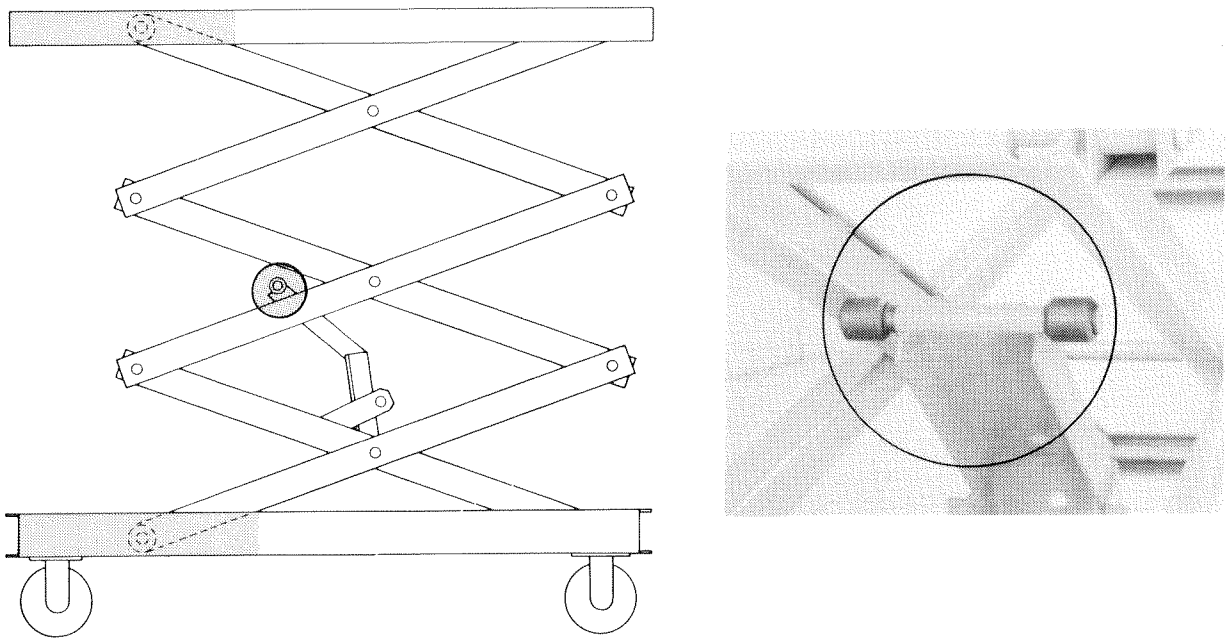


Figure 22. Lubricating Lift Arm, Platform and Base rollers.

2. Grease the following fittings, Figure 23.
   a. Lift arm pivot tube.
   b. Cylinder rod at connecting point to the lift arm.
   c. Front wheel spindles.

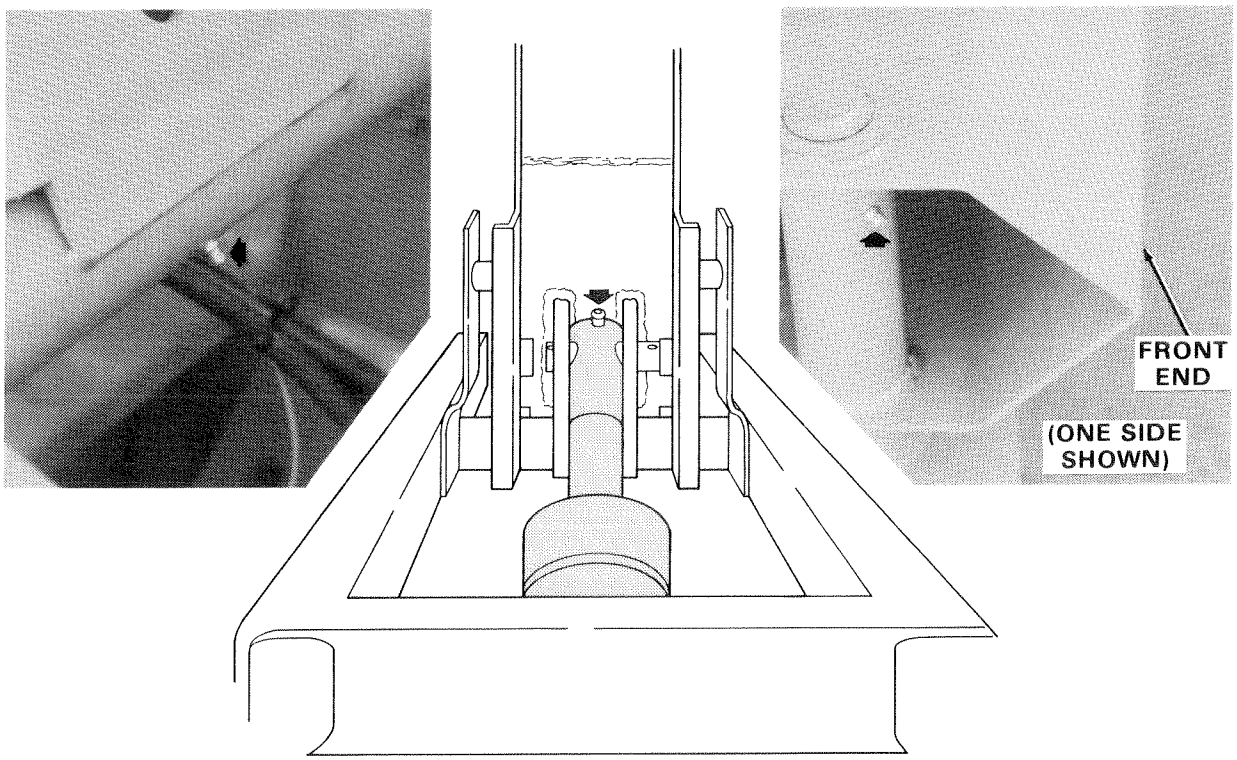


Figure 23. Location of Grease Fittings.

3. Pack rear wheel bearings every six (6) months.

Structure

1. Inspect structure as follows:

   a. Look machine over carefully for bent structural parts: beams, main frame, platform, lift arm, pivot pins, etc.

CAUTION

Overloading can lead to bent parts and fatigue in pivot pins.

   b. Replace all bent members and pins. (See REPLACEMENT section.)

CAUTION

Whenever any structural part of the machine is damaged in any way, the lower pivot pin at the center of the lower cross beams should also be replaced.

SERVICING

Battery

WARNING

Never smoke or use other combustibles near battery. Make sure there is plenty of ventilation. Hydrogen fumes could lead to explosion.

NOTE

Your Heff-T-Herman is supplied with a heavy duty, deep cycle battery. The care and maintenance of the battery has much to do with how well your machine functions.

Checking and Filling

1. Lower platform completely.
2. Remove floorboards.
3. If there is any dirt or corrosion on battery, wash with solution of 5 teaspoons baking soda per quart of warm water.
4. Remove battery caps and check fluid.
5. Fill, if needed, as follows:

   a. Before charging, fluid must be above plates in battery.

   b. After charging, fill to within 1/2" below split ring.

CAUTION

Do not overfill. Fluid will expand as it becomes warm from charging and seep out of the battery. When water is then added, the solution is weakened and a loss of ampere hour capacity results.

Never add acid to battery.

6. Coat terminals with petroleum jelly or equivalent coating.

Charging Notes

1. The surrounding temperature has a great effect on the power reserve in a battery.

   a. A battery 100% charged at 80° F.
      —drops to 65% at 32° F.
      —drops to 40% at 0° F.

   b. A battery 46% charged at 80° F.
      —drops to 32% at 31° F.
      —drops to 21% at 0° F.

2. When battery temperature reaches 125°, battery should be taken off charge and cooled to room temperature or the charging rate should be lowered.

3. Battery should be brought to full charge as soon as possible after continuous use.

   (Lead plates in discharged batteries become hardened and sulfated. The battery eventually will not deliver its rated capacity or come up to a full charge. Several long slow charges and fast discharges help restore plate condition.)

4. Once a month, battery should be given an equalizing charge of 25% over regular charge. Charge must be given at low rate to avoid gassing.

Charging

1. Lower platform completely.
2. Remove floorboards.
3. Remove caps, check fluid level and if needed, fill to cover plates.

NOTE

After charging, fill to 1/2" below split ring.

4. Plug charger into 110 VAC, 60 HZ power source.
5. Turn timer clockwise to "ON" position.
6. Charge until meter reads in finish area or near zero (0). (Charger will turn off automatically when timer runs out.)
7. Unplug charger.
8. Check that fluid level is up to 1/2" below split rings and reinstall caps.

Hydraulic System

1. Check hydraulic pump motor as follows:

NOTE

Common maintenance on DC motors is brush replacement. It is recommended that brushes be checked and replaced if necessary, along with commutator inspection, approximately every six months. The time element will greatly vary depending on how the machine is being used and the condition of the battery. It is to your advantage to keep the battery fully charged and in top condition to eliminate service problems in general, and to extend the life of the motor and brushes.

a. Check condition of brushes and commutator.

b. Replace brushes if worn or damaged in any way.

2. Check and fill hydraulic reservoir as follows:

   a. Lower platform completely.

   b. Remove front floorboard.

   c. Unscrew filler plug/dipstick on reservoir.

   d. Check that fluid level is up to 1" from top.

   e. Fill with mineral base hydraulic fluid, with mill spec MIL-0-5606 or equivalent.

3. Clean hydraulic reservoir screen as follows:

   a. Remove pump as outlined under REPLACEMENT.

   b. Remove reservoir.

   c. Remove screen and clean.

   d. Install screen and reservoir.

   e. Install pump into machine.

   f. Refill with approved fluid.

4. Bleed hydraulic system whenever system has been drained, as follows:

   a. Fill reservoir as outlined above in Step #2 above.

   b. Run platform all the way up and down six times, and recheck fluid level between each cycle, and refill as required.

ADJUSTMENTS

WARNING

This procedure requires platform to be raised for access to unit through opened lifting beams. Serious injury or death could result if the Maintenance Locks are not properly engaged before performing this procedure. **NEVER** work through beams or place yourself under the raised platform during maintenance without the Maintenance Locks properly engaged.

Up Limit Switch

1. Raise unit to specified height measured from ground level.

   15 ft. to top of platform board on model 140.
   19 ft. to top of platform board on model 141.

2. Set limit switch to actuate against lower beam at this height.

NOTE

Full stroke of cylinder is not used in lifting platform to ensure a more efficient hydraulic system.

Brakes.

NOTE

Adjust brake pads so that there is 1/8" space between brake pad and wheel, when disengaged.

1. Adjust pads as follows:

   a. Loosen cap screw holding brake shaft and rotate brake shaft to obtain 1/8" dimension. Tighten capscrew, Figure 24.

   b. Repeat on other side.

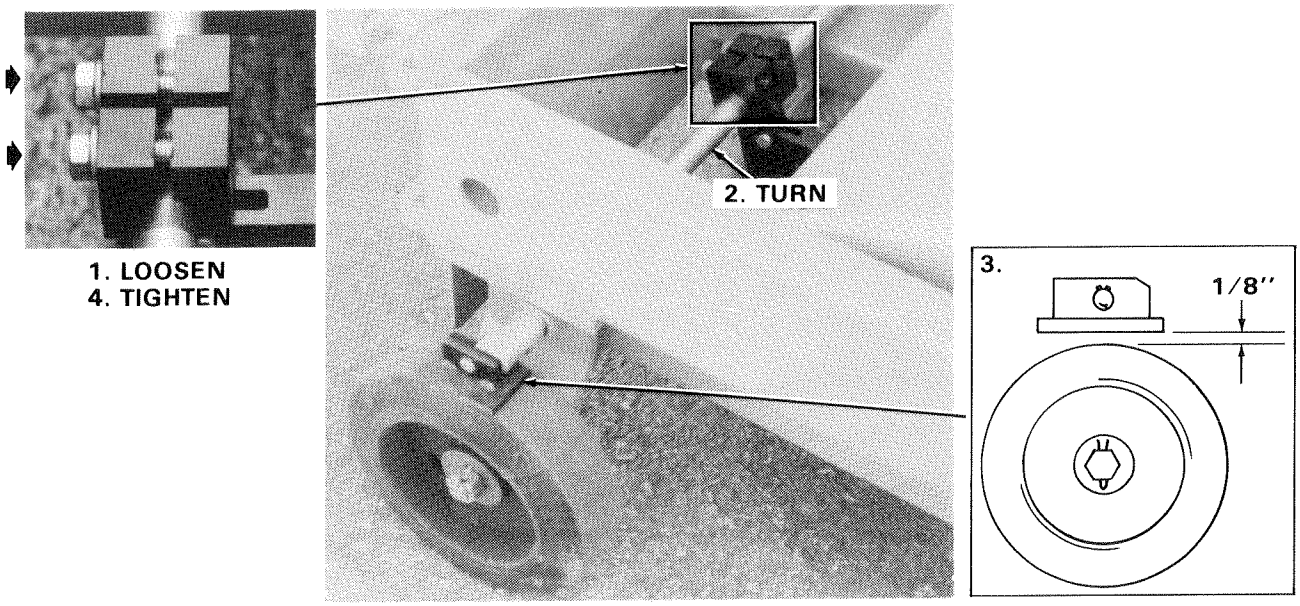


Figure 24. Adjusting Brakes.

2. Test brake tension spring as follows:

   a. Actuate brake switch and hold to on position.

   b. Attempt to go forward or backward. If unit moves, brake spring must be adjusted.

3. Adjust brake tension spring as follows:

NOTE

Tighten spring only enough to hold unit.

   a. Tighten nut on spring bolt.

   b. Test holding power again (tests in Step #2 above).

Front Wheel Alignment

NOTE

Front wheels should be aligned so that wheel brackets are parallel to the center bar, Figure 25.

1. Adjust tie rods so that brackets are parallel to center bar.

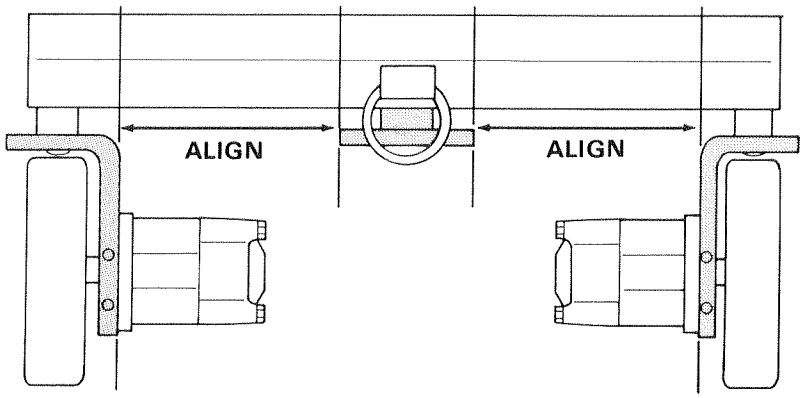


Figure 25. Aligning Front Wheels.

Flow Control Valve

1. Raise unit to fully extended position. (Engage maintenance locks while adjusting.)
2. Depress DOWN switch and open or close flow control valve, as necessary, to adjust descent speed of platform to about 6" per second.

REPLACEMENT

Battery

1. Lower unit completely.
2. Remove front floorboard.
3. Remove both nuts from battery hold down board and remove board.
4. Remove both battery cables.
5. Remove battery, using a sling, by lifting it straight up and out of base.

Hydraulic Pump and Motor

WARNING

This procedure requires platform to be raised for access to unit through opened lifting beams. Serious injury or death could result if the Maintenance Locks are not properly engaged before performing this procedure. **NEVER** work through beams or place yourself under the raised platform during maintenance without the Maintenance Locks properly engaged.

1. Raise platform approximately 3/4 way extended.
2. Raise maintenance locks, at rear inside corners of base frame so that locks are turned into the full lock position. Figure 26.
3. Lower platform until lower beams touch maintenance locks.
4. Remove positive (+) battery cable from battery.

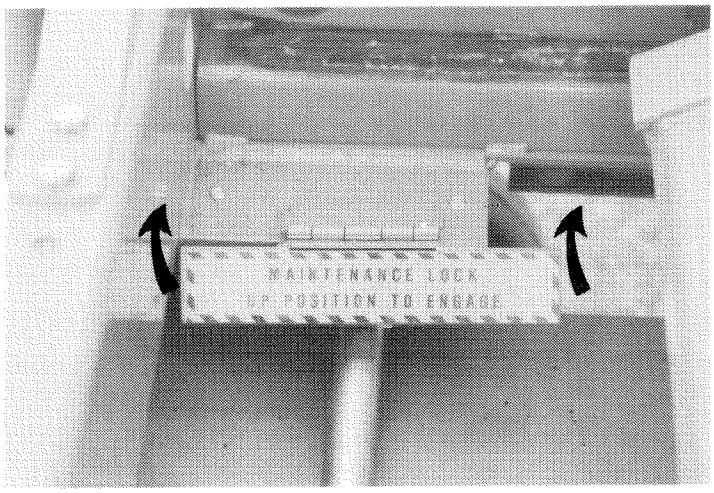


Figure 26. Engaging Maintenance Locks.

5. Tag and remove wires and positive (+) battery cable from hydraulic pump and motor assembly.
6. Remove return line hose from hydraulic pump reservoir, and return line hose on right side of hydraulic pump. Plug fittings in pump to prevent oil from spilling.

NOTE

In the following step, the high pressure hydraulic line may still be under pressure and fluid will squirt out when line is disconnected. Use of a drip pan under unit is recommended. Do not reuse fluid, as it may become contaminated.

7. Disconnect high pressure hose from hydraulic pump.
8. Remove two bolts securing hydraulic pump to base mount from underside of base.
9. On Stone pump only, remove two nuts, bolts and flatwashers securing hydraulic reservoir to base at end of reservoir.
10. Rotate hydraulic pump and reservoir assembly and lift up through beam over battery.
11. Install new or repaired hydraulic pump and reservoir assembly in reverse order of removal.
12. Fill hydraulic reservoir until fluid is approximately one inch (1") from top (use hydraulic fluid conforming to Mil Spec MIL-0-5606 or equivalent).
13. Raise platform, disengage maintenance locks and completely lower platform.
14. Bleed air from hydraulic system (see Step #4 under Servicing — Hydraulic System).

Hydraulic Lift Cylinder

WARNING

1. This procedure requires platform to be raised for access to unit through opened lifting beams.

   NEVER work through beams unless maintenance locks are engaged correctly; serious injury or death can result if locks are not correctly engaged, Figure 27.

2. Follow steps in order. Failure to do this could result in serious injury or death.

1. Raise platform.
2. Engage Maintenance Locks, Figure 27.
3. Place a 4" x 4" x 36" long block of hardwood under center pivot pin of lower beam for added safety, Figure 28.

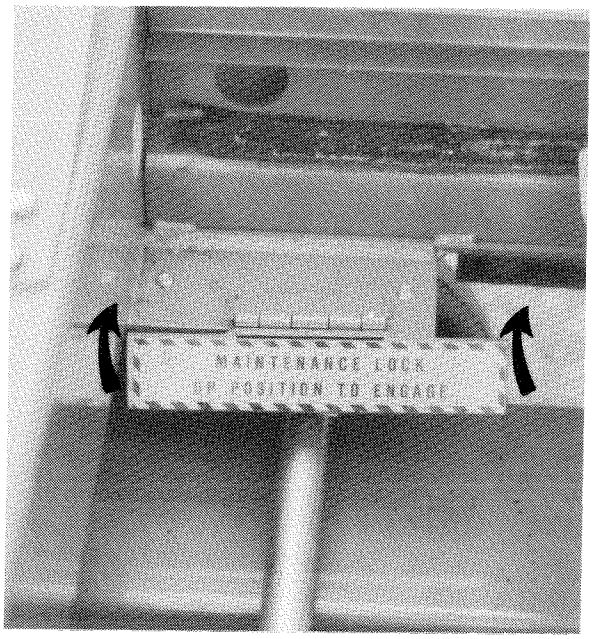


Figure 27. Engaging Maintenance Locks.

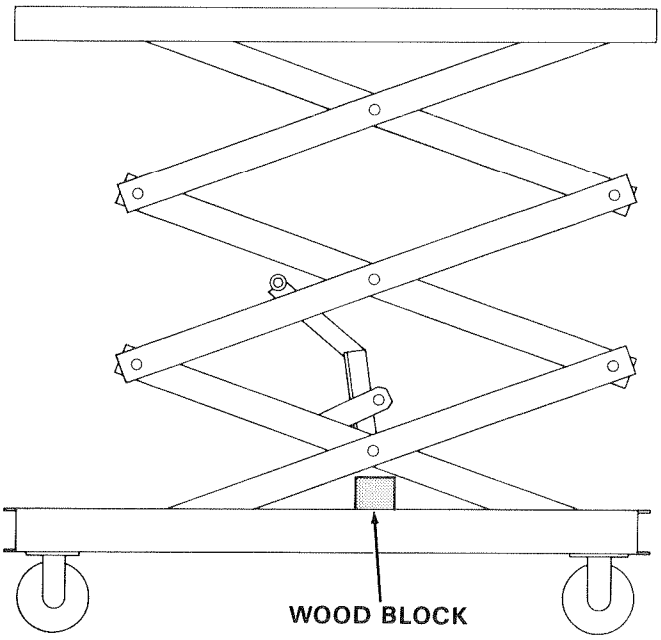


Figure 28.

4. Lower platform until lower beams touch maintenance locks.
5. Remove cotter pin from lower cylinder pin.
6. Set up to remove cylinder as follows:

   a. Attach rope to end of lift arm, around roller and wrap once around center pivot bar which is third from bottom center pivot bar. Attach a weight of about 8 lbs. to end of rope, Figure 29.

NOTE

The weight counter-balances the lift arm and makes it easy to maneuver.

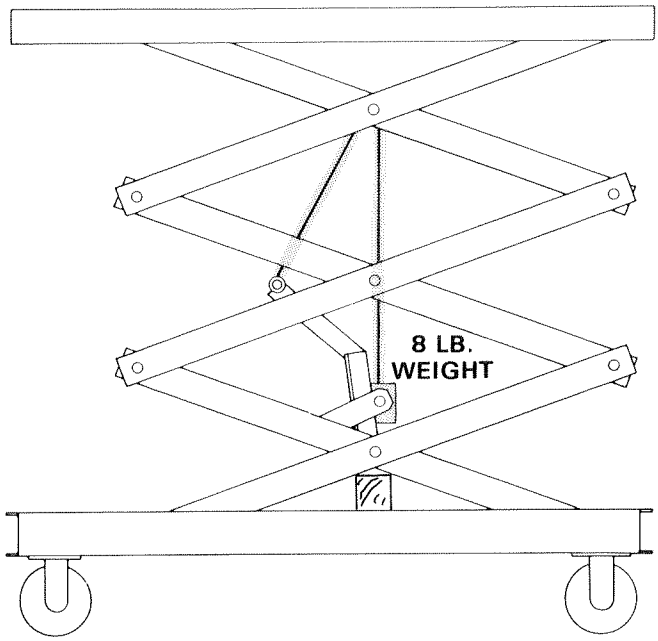


Figure 29. Counter Balancing Lift Arm.

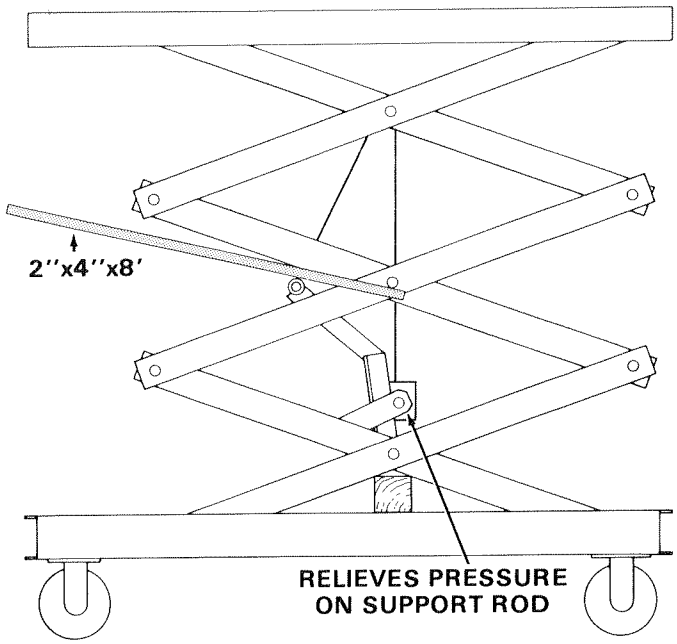


Figure 30. Taking Pressure Off Lift Support Rod.

Relieve pressure on lift arm support rod by activating down switch with the aid of a vise grip pliers as weight, and forcing lift arm down with a board (2"x4"x8') until there is 1/2" clearance between arm and support rod.

7. Remove low pressure hose from upper end of cylinder and high pressure hose from lower end of cylinder.
8. Remove lower cylinder pin. Lower cylinder toward floor and pivot lift arm down as far as possible.
9. Remove one plug from lift arm at attaching point to cylinder.
10. Remove upper lift arm pin and remove cylinder.
11. Install new or repaired hydraulic cylinder in reverse order.
12. Grease top cylinder pin before reinstalling new cylinder, Figure 31.

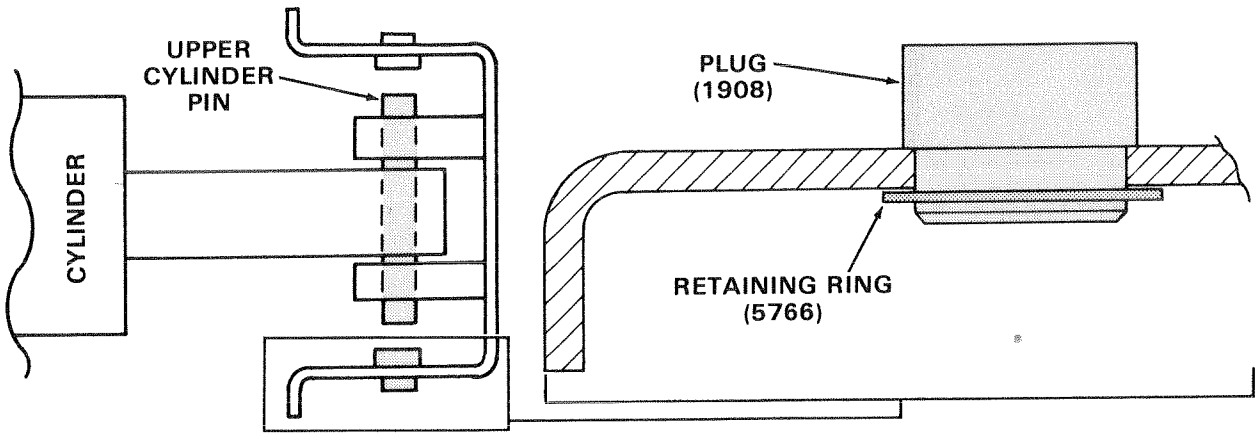


Figure 31. Top Cylinder Pin.

13. Grease and replace bottom cylinder pin as follows, Figure 32:

    a. Install pin with spacer on each side and secure with cotter pin.

WARNING

Be sure that one leg of cotter pin is bent 90° to ensure that when cylinder pin rotates it will not straighten leg of cotter pin.

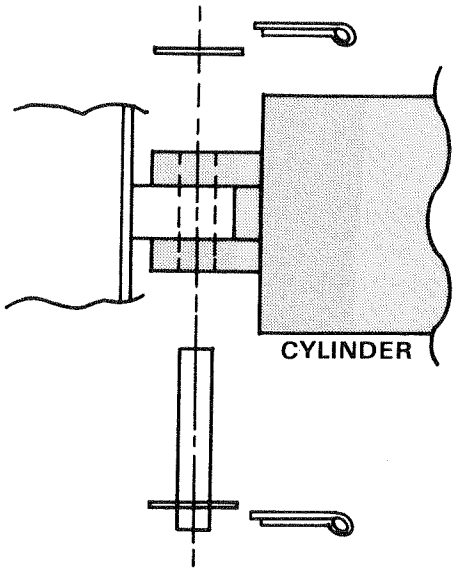


Figure 32. Bottom Cylinder Pin.

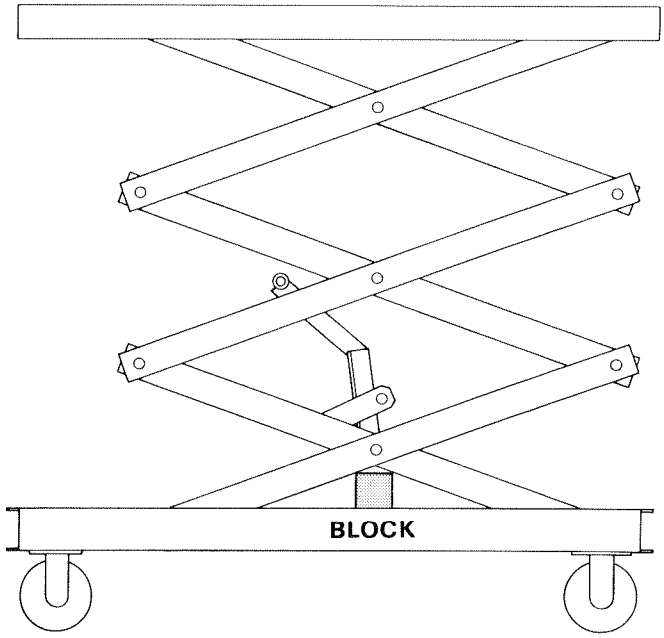


Figure 33. Blocking Up Lower Beam.

14. Raise platform, disengage maintenance locks and completely lower platform.

15. Bleed air from system (see Step #4 under Servicing — Hydraulic System).

Lower Beam, Center Pivot Bar (All Models)

WARNING

Failure to follow instructions in proper sequence could result in serious injury or death.

1. Place machine so that there is room to work on the right side of machine.

NOTE

This makes it easier to use lift switch.

2. Set up to remove pivot bar as follows:

    a. Raise platform high enough to place a 4" x 4" x 36" long block of hardwood on top of machine base and under lower beam center pivot bar, Figure 33.

b. Lower platform until beams rest on 4 x 4.

c. Insert jack between second and third inner beam from bottom of unit, Figure 34.

d. Spread beams approximately 2" with jack.

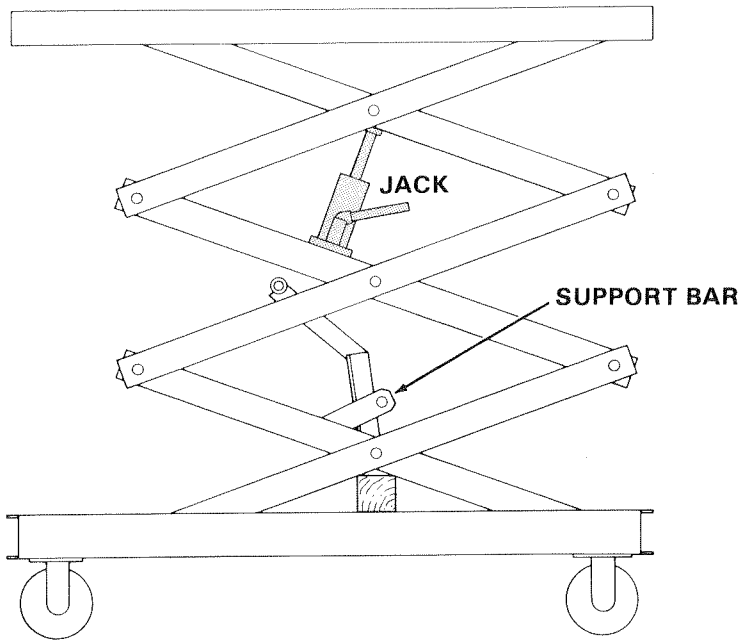


Figure 34. Installing Jack.

d. Actuate lift switch until lift arm makes firm contact with support bar, Figure 34.

NOTE

This step is designed to remove free play from lift arm to maintain alignment of bushings.

CAUTION

Do not overlift or jack may fall out of place.

3. Remove retaining ring from end of pivot bar.
4. Attach one retaining ring to new pivot bar (Part Number 1853).
5. Install new bar as follows:

   a. Lubricate new pivot bar with anti-seize compound or heavy grease.

WARNING

Keep opposite side of machine clear of people when driving the old bar out with the new pivot bar, in the next step. The old bar can shoot out of beam bushings at high speed, causing injury to people and/or damage to nearby equipment.

CAUTION

In the following step, use a rawhide or lead hammer. Do not use a steel hammer on pivot bar or damage to the retaining ring groove can result.

b. Rap the end of the old pivot bar with the hammer to start the bar through the first beam.

c. Place the free end of the new pivot bar against the old bar and drive the new bar in with hammer.

NOTE

If bushings become misaligned, it may be necessary to do one of the following:

1. If bushings are vertically misaligned, the 4 x 4 must be moved fore or aft with hammer.
2. If bushings are horizontally misaligned, adjust with jack either up or down.

c. Attach retaining ring to other end of pivot bar.

6. Remove hydraulic jack and remove 4 x 4 block raising unit with lift control.
7. Check unit for proper operation before returning to service.

Lower Middle Beam, Center Pivot Bar. (141 Models Only)

WARNING

Perform the following procedure with unit in the fully down (stowed) position. Attempting to replace this pivot bar with the platform raised could cause serious injury or death.

1. Place machine so that there is room to work on right side of machine.

NOTE

This makes it easier to use lift switch.

2. Remove retaining ring from end of pivot bar.
3. Attach one retaining ring to new pivot bar (Part Number 1853).
4. Install new pivot bar as follows:

a. Lubricate new pivot bar with anti-seize compound or heavy grease.

WARNING

Keep opposite side of machine clear of people when driving the old pivot bar out with the new pivot bar. The old bar can shoot out of beam bushings at high speed, causing injury to people or damage to nearby equipment.

CAUTION

In the following step, use a rawhide or lead hammer. Do not use a steel hammer directly on pivot bar or damage to retaining ring groove can result.

b. Rap the end of the old pivot bar with hammer to start bar through the first beam.

c. Place free end of new pivot bar against old bar and drive new bar in with hammer.

NOTE

If bushings get misaligned, realign by jogging platform up slightly with lift control.

d. Attach retaining ring to other end of pivot bar.

5. Check unit for proper operation before returning to service.

Up-Limit Switch

WARNING

In this procedure, platform is raised for access to unit through opened lifting beams.

NEVER work through beams unless maintenance locks are correctly engaged; serious injury or death can result if locks are not correctly engaged.

1. Raise platform.
2. Engage maintenance locks, Figure 35.

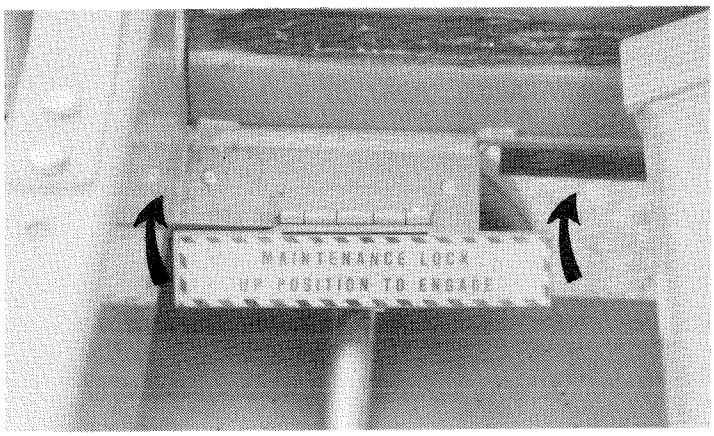


Figure 35. Engaging Maintenance Locks.

3. Lower platform until lower beams touch maintenance locks.
4. Remove positive (+) battery cable from battery. Disconnect 115 vac from EM unit.
5. Remove two bolts, lockwashers and flatwashers securing up-limit switch to mounting bracket.
6. Open cover on switch, disconnect wires, and mark them for correct reassembly.
7. Connect wires to new switch and install in reverse order.
8. Perform up-limit switch adjustment procedure in ADJUSTMENTS section.

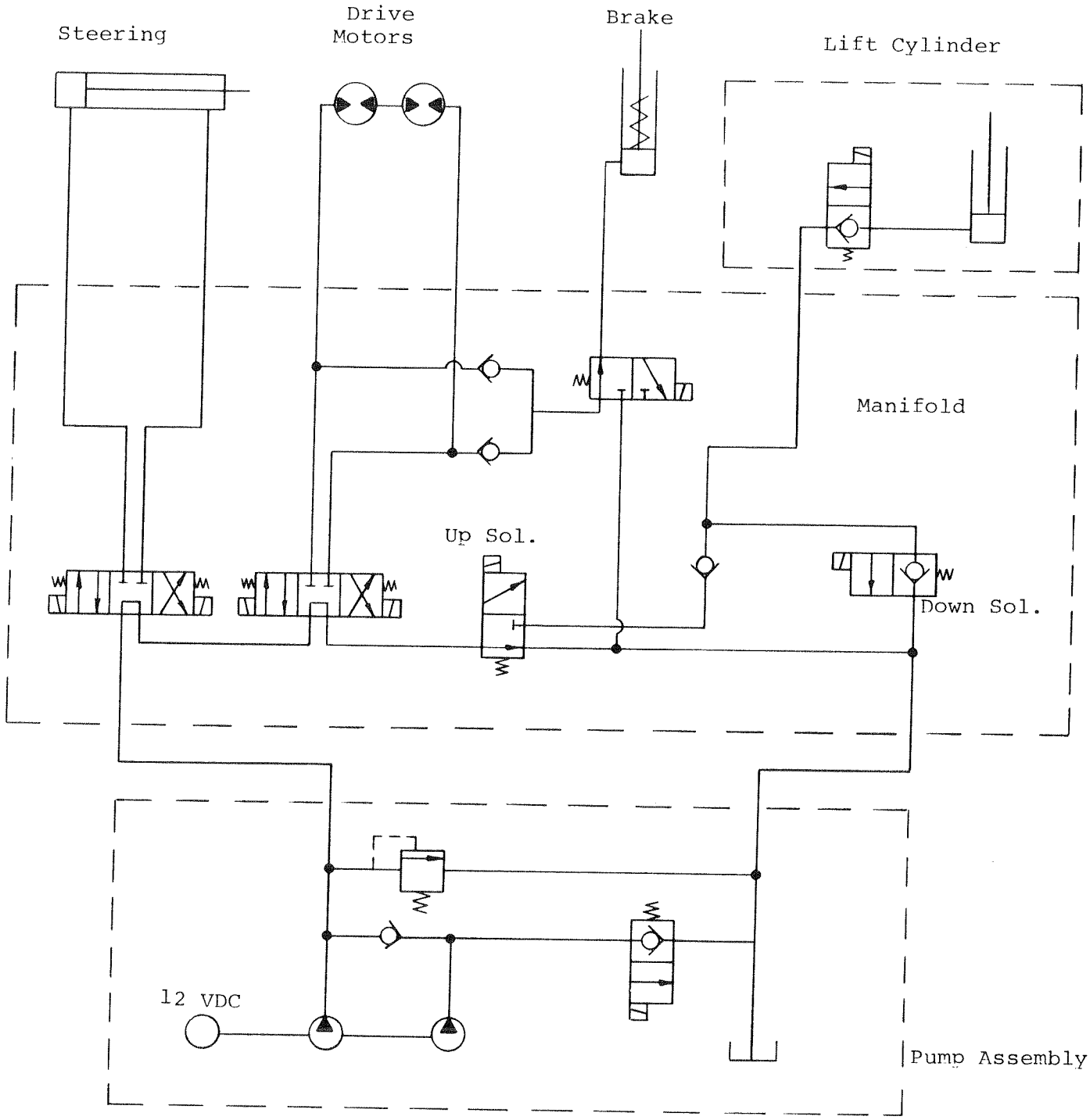


Figure 36. Hydraulic Schematic.

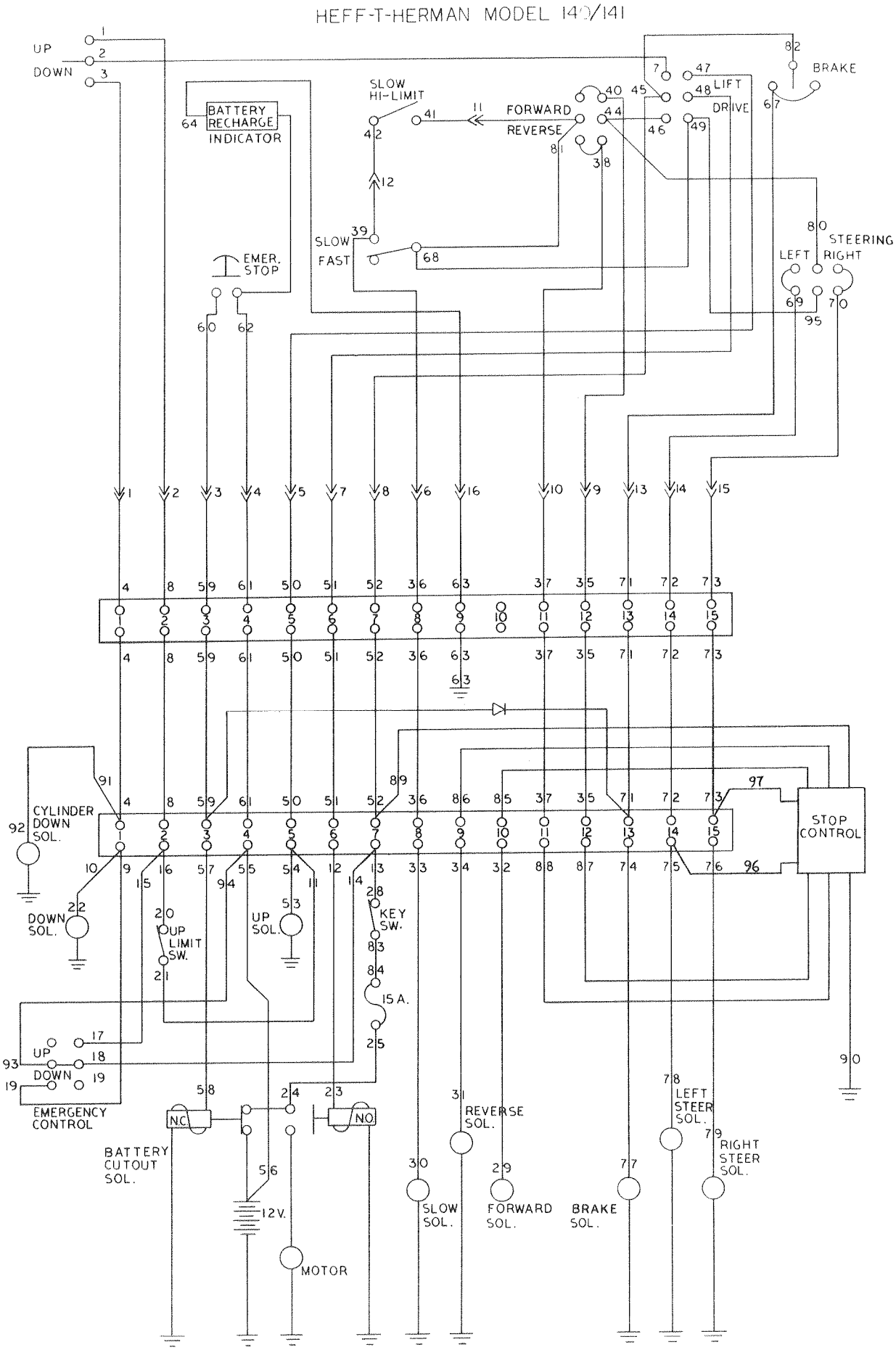


Figure 37. Wiring Diagram.

4. PARTS CATALOG

PARTS ORDERING PROCEDURE

1. All parts should be ordered from Pac-Craft Products, a Division of Mayville Engineering Company, Inc., 715 South Street, P.O. Box 267, Mayville, Wisconsin 53050.
2. All orders should be accompanied by a Purchase Order.
3. Always furnish part number from service manual or give complete description of parts desired, if part numbers are not available.
4. Provide Model and Serial Number of unit when ordering parts.
5. All parts will be shipped F.O.B. Mayville, Wisconsin.

RETURNING PARTS UNDER WARRANTY

1. Written authorization must be obtained from Pac-Craft Products Service Department before returning parts under warranty.
2. All defective parts returned to Pac-Craft must be shipped to Pac-Craft Products PREPAID.
3. Any parts returned must be accompanied by unit Model and Serial Number from which the part was taken.

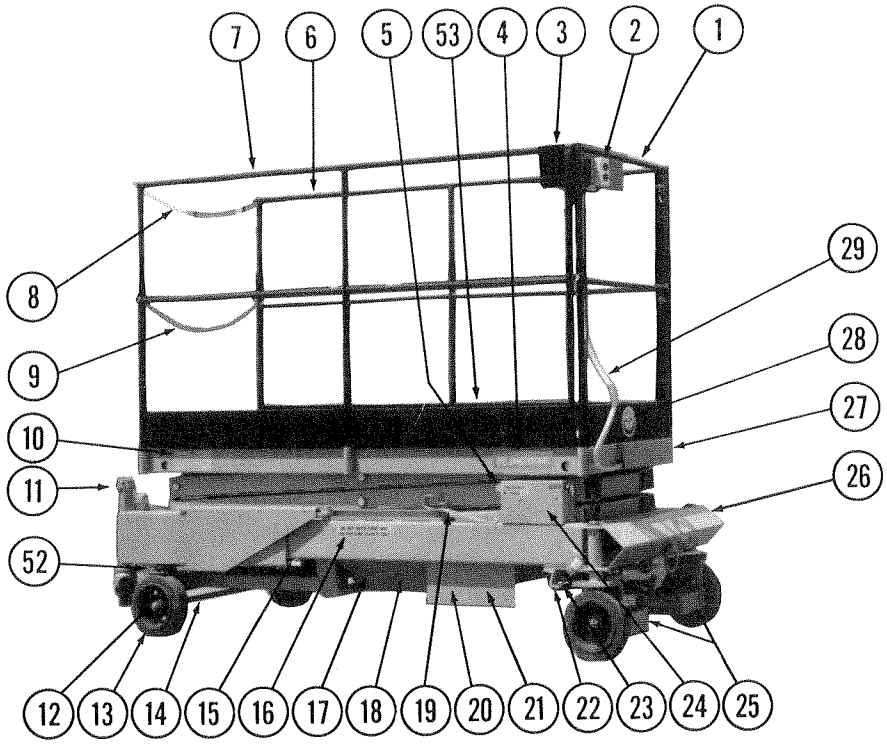


Figure 38.

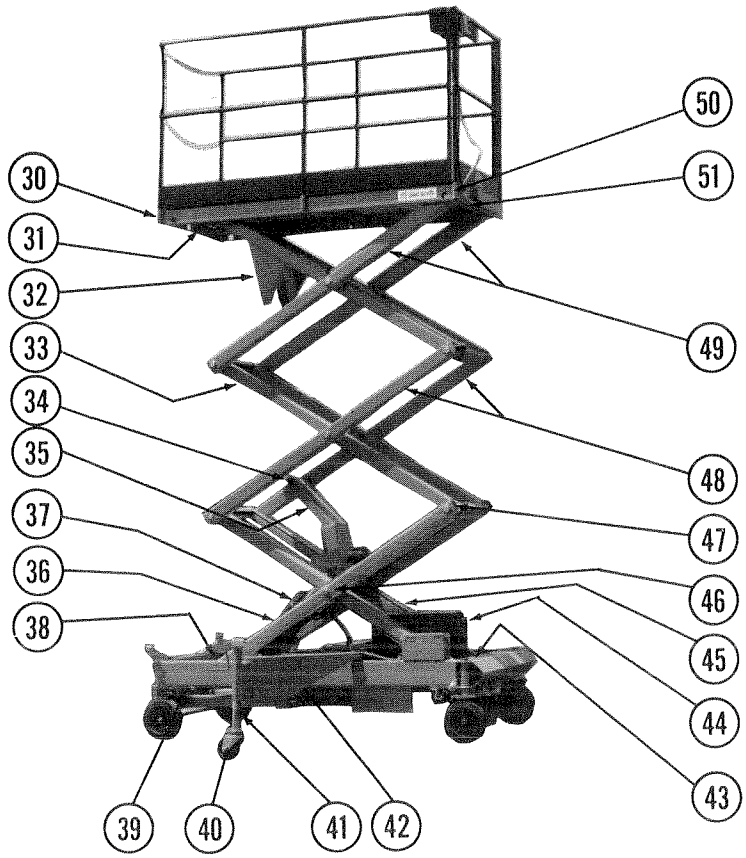


Figure 39.

MODEL 140 Figures 38 and 39

Item	Part No.	Description	Quantity
1	1057	Front Rail Assembly	1
2	1505	110 Kit Sub-Assembly	1
3	1874	Upper Control Box Assembly (See Figure #49)	1
4	5307	Decal, Pac Craft	2
5	5744	Decal, Emergency Down	1
6	1287	Side Rail Assembly L.H.	1
7	1286	Side Rail Assembly R.H.	1
8	1366	Guard Chain, Top	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
9	1445	Guard Chain, Bottom	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
10	5256	Decal, 116 Mach., 1000# Cap.	3
11	5504	Cover Kit (Clip and Cover)	2
12	5685	Roller Bearing and Race	2
	5686	Spanner Bushing	2
	5737	Hex Slotted Nut	2
	1835	Thrust Washer, Inner	2
	1836	Thrust Washer, Outer	2
13	1804	Rear Wheel Weldment	2
14	1771	Rear Axle Weldment	1
15	1302	Pivot Bar and Pin Assembly	4
16	5747	Decal, Trucking Inst.	2
17	5790	Charger, Battery (Far Side) (See Figure #52, 53)	1
18	1917	Pump Assembly (not shown) (See Figure #46, 47)	1
19	1297	Outrigger Latch	4
20	1903	Guard, Manifold	1
21	1858	Valve Bank Assembly (not shown) (See Figure #51)	1
22	1838	Cylinder Mounting Bracket	1
23	5677	Steering Cylinder	1
24	1860	Lower Control Box Assembly	1
25	1892	Bracket, Motor Guard	2
26	1857	Front Drive Assembly (See Figure #48)	1
27	1893	Cover, Terminal Board	1
28	5468	Decal, Heff-T-Herman	1
29	5698	Harness Assembly	1
30	1040	Platform Weldment	1
31	1062	Roller Bar	1
	1033	Roller	2
	1039	Retaining Ring	4
32	1882	Upper Inner Beam Assembly	1
33	1881	Inner Beam Assembly	1
34	1033	Roller	2
	1039	Retaining ring	4
35	1316	Lift Arm Assembly	1
36	1869	Lower Outer Beam Assembly	1
37	5770	Cylinder Assembly 5 x 12 (See Figure #50)	1
38	1036	Roller Bar	1
	1033	Roller	2
39	1845	Base Assembly	1
40	1315	Outrigger Caster	2
41	1303	Outrigger/Jack Assembly (shown)	1
	1304	Outrigger/Jack Assembly (opposite)	1
42	1306	Support Beam and Pivot (shown)	1
	1307	Support Beam and Pivot (opposite)	1
43	1038	Connecting Pin	2
	1039	Retaining Ring	4
44	5746	Battery	1
	5354	Battery Board	1
	5581	Battery Cover	1
	5212	Battery Cable, Negative	1
	1891	Tie Rod	2
45	1870	Beam and Support Arm Assembly	1
46	1853	Pivot Bar	1
47	1918	Pivot Bar	6
48	1879P	Beam Assembly, Painted	2
49	1883	Beam Assembly/Raceway R.H.	1
	1884	Beam Assembly/Raceway L.H.	1

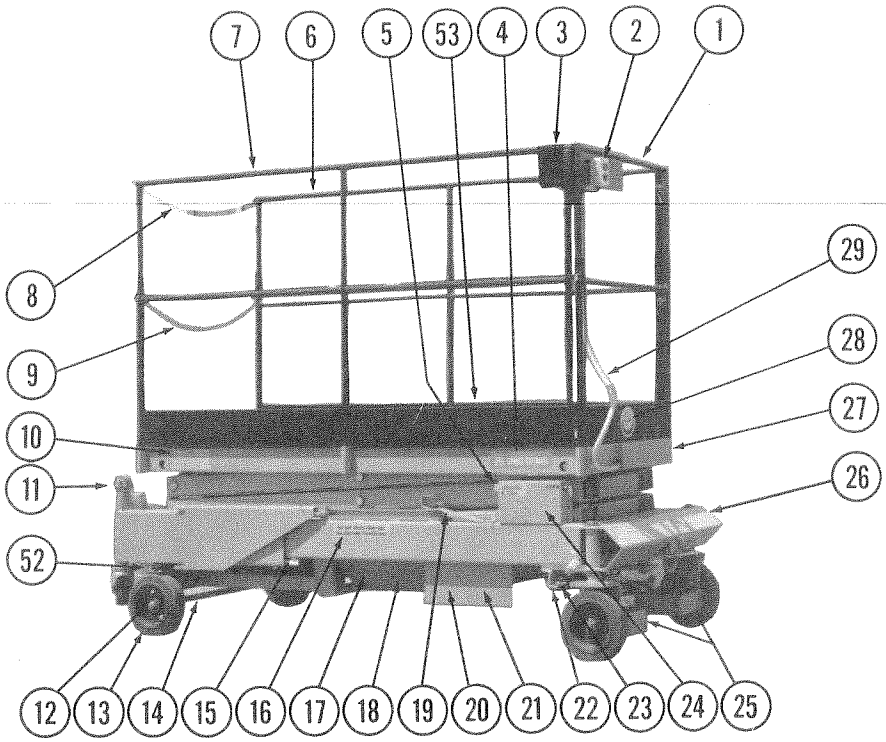


Figure 38.

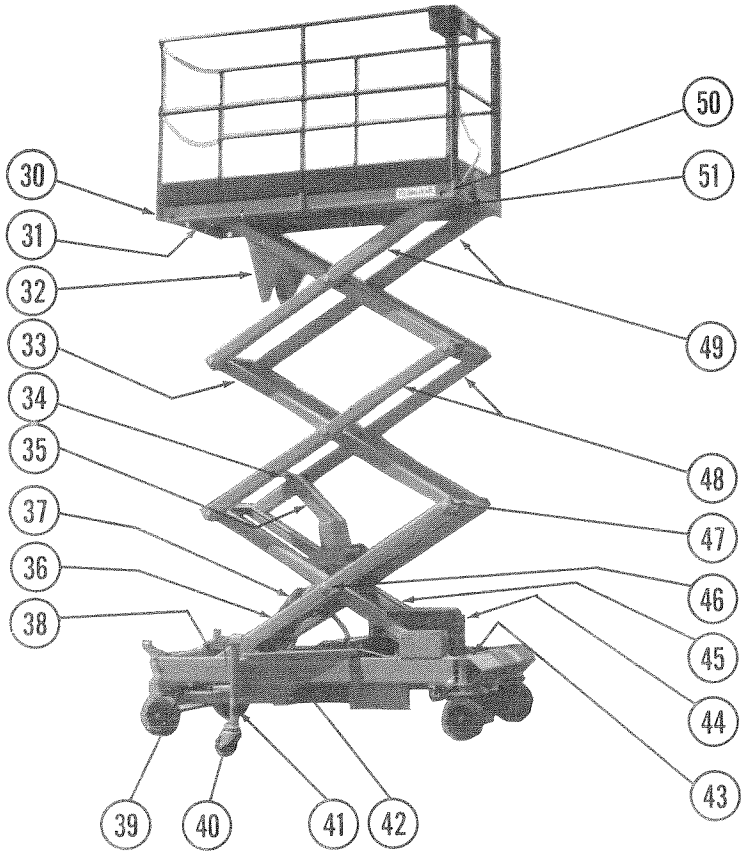
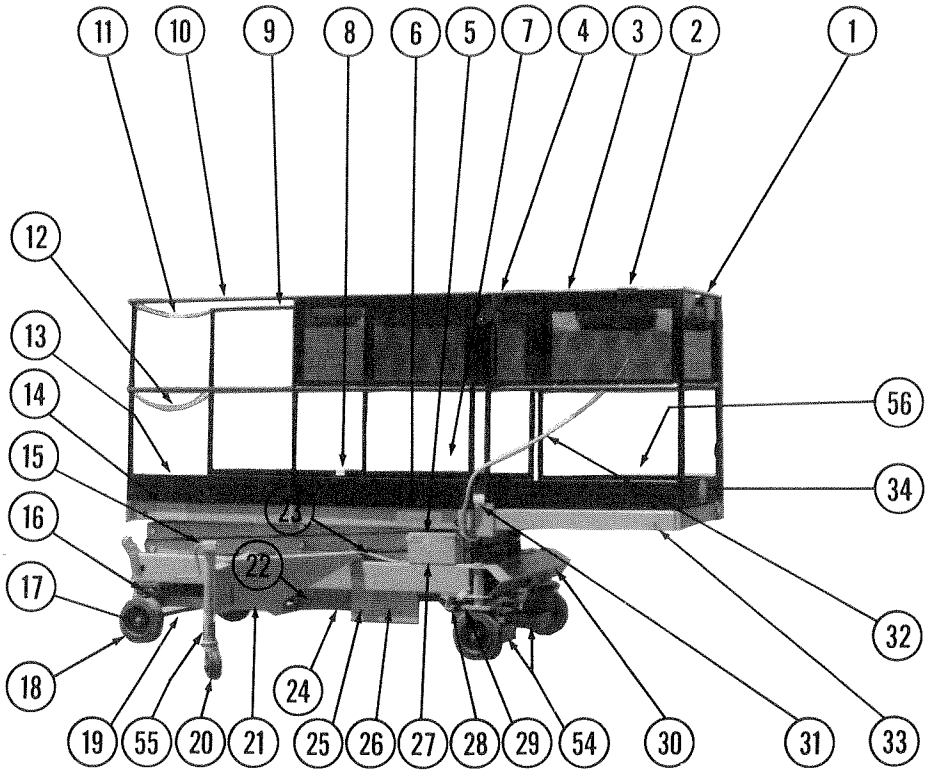


Figure 39.

MODEL 140 (Cont'd) Figures 38 and 39

Item	Part No.	Description	Quantity
50	1377	Connecting Pin	1
	5339	Retaining Ring	2
51	5369	Switch	1
52	1797	Brake pad	2
	5736	Retaining Ring	2
	1794	Eccentric	2
	1800	Brake Actuator Assembly	1
	1851	Adjusting Rod	1
	5678	Brake Cylinder	1
	5687	Spring, Brake	1
	1864	Clevis, Brake Cylinder	1
53	1279	Floor Board	2



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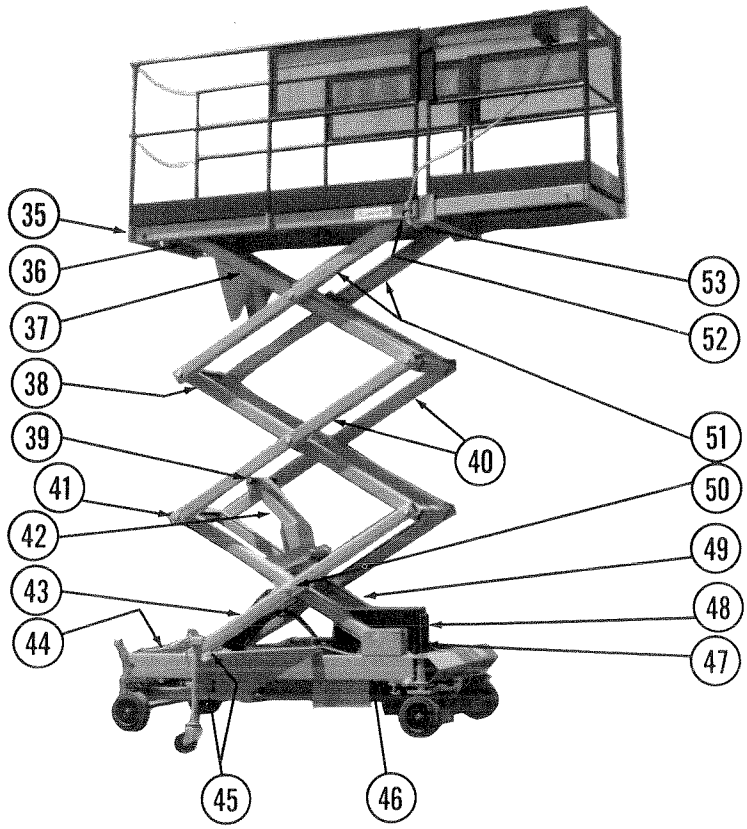

Figure 41.

MODEL 140EP Figures 40 and 41

Item	Part No.	Description	Quantity
1	1827	Front Rail Weldment	1
	1834	Pivot Pin, Front Rail	1
2	1874	Upper Control Box Assembly (See Figure #49)	1
3	1823	Side Railing Weldment R.H.	1
	1824	Side Railing Weldment L.H.	1
4	1886	Lock lever	1
5	5744	Decal, Emergency Down	1
6	5307	Decal, Pac Craft	2
7	5714	Front Floor Board	1
8	1538	110 A.C. Kit Sub-Assembly	1
9	1809	Side Rail L.H.	1
10	1808	Side Rail R.H.	1
11	1366	Guard Chain, Top	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
12	1445	Guard Chain, Bottom	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
13	1279	Floor Board	1
14	5742	Decal, 140EP Inst.	4
15	5504	Cover Kit (Clip and Cover)	2
16	1797	Brake Pad	2
	5736	Retaining Ring	2
	1794	Eccentric	2
	1800	Brake Actuator Assembly	1
	1851	Adjusting Rod	1
	5678	Brake Cylinder	1
	5687	Spring, Brake	1
	1864	Clevis, Brake Cylinder	1
17	5685	Roller Bearing and Race	2
	5686	Spanner Bushing	2
	5737	Hex Slotted Nut	2
	1835	Thrust Washer, Inner	2
	1836	Thrust Washer, Outer	2
18	1804	Rear Wheel Weldment	2
19	1771	Rear Axle Weldment	1
20	1315	Outrigger Caster	2
21	1306	Support Beam and Pivot (shown)	1
	1307	Support Beam and Pivot (opposite)	1
22	5790	Charger Assembly (Opposite Side) (See Figure #52, 53)	1
23	1297	Outrigger Latch	4
24	1917	Pump Assembly (not shown) (See Figure #46, 47)	1
25	1903	Guard, Manifold	1
26	1858	Valve Bank Assembly (not shown) (See Figure #51)	1
27	1860	Lower Control Box Assembly	1
28	1838	Cylinder Mounting Bracket	1
29	5677	Steering Cylinder	1
30	1857	Front Drive Assembly (See Figure #48)	1
31	1833	Pivot Pin	1
32	5699	Harness Assembly	1
33	1782	Extending Platform Assembly	1
34	5468	Decal, Heff-T-Herman	1
35	1846	Platform Assembly	1
36	1062	Roller Bar	1
	1033	Roller	2
	1039	Retaining Ring	4
37	1882	Upper Inner Beam Assembly	1
38	1881	Inner Beam Assembly	1
39	1033	Roller	2
	1039	Retaining Ring	4
40	1879P	Beam Assembly, Painted	2
41	1918	Pivot Bar	6
42	1316	Lift Arm Assembly	1
43	5770	Cylinder Assembly 5 x 12 (See Figure #50)	1
44	1036	Roller Bar	1
	1033	Roller	2
45	1302	Pivot Bar and Pin Assembly	4
46	1845	Base Assembly	1
47	1038	Connecting Pin	2
	1039	Retaining Ring	4

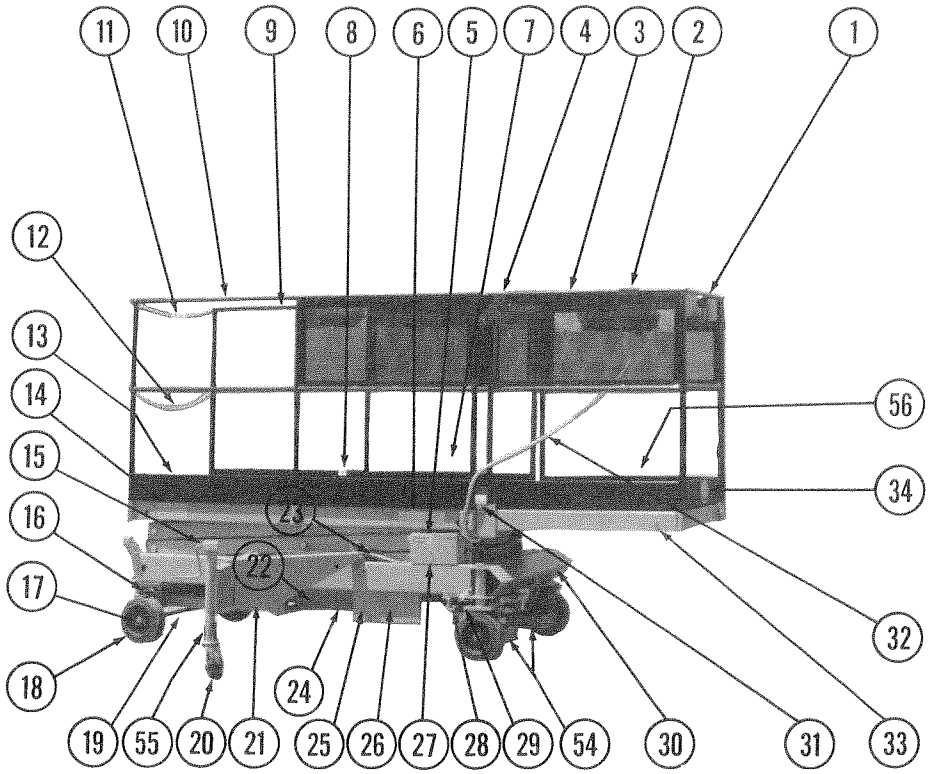

Figure 40.

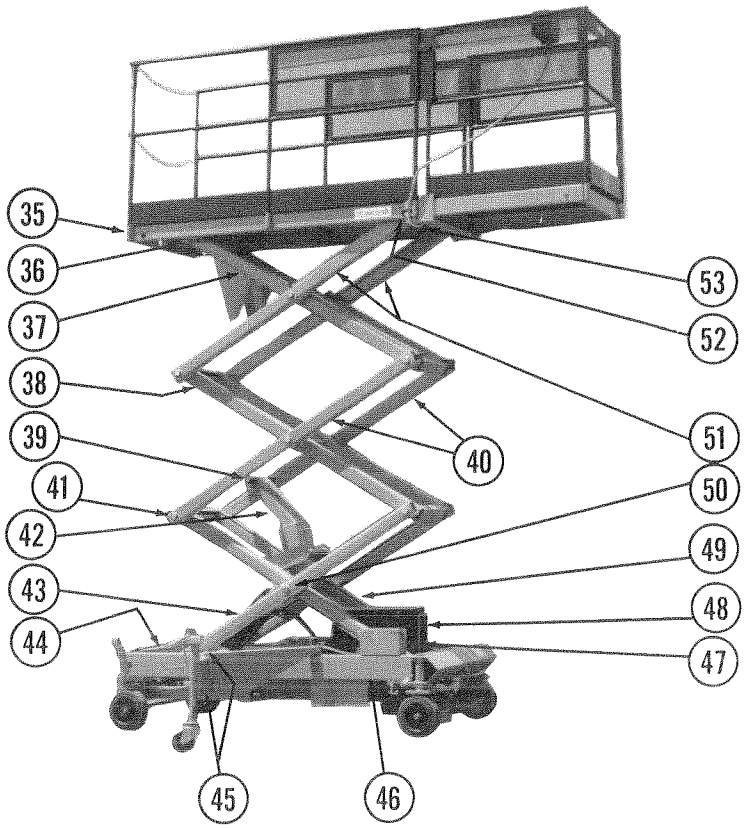

Figure 41.

MODEL 140EP (Cont'd) Figures 40 and 41

Item	Part No.	Description	Quantity
48	5746	Battery	1
	5354	Battery Board	1
	5581	Battery Cover	1
	5212	Battery Cable, Negative	1
	1891	Tie Rod	2
49	1870	Beam and Support Arm Assembly	1
50	1853	Pivot Bar	1
51	1883	Beam Assembly/Raceway R.H.	1
	1884	Beam Assembly/Raceway L.H.	1
52	1377	Connecting Pin	1
	5339	Retaining Ring	2
53	5369	Switch	1
54	1892	Bracket, Motor Guard	2
55	1303	Outrigger/Jack Assembly (shown)	1
	1304	Outrigger/Jack Assembly (opposite)	1
56	5716	Platform Floor Board	1

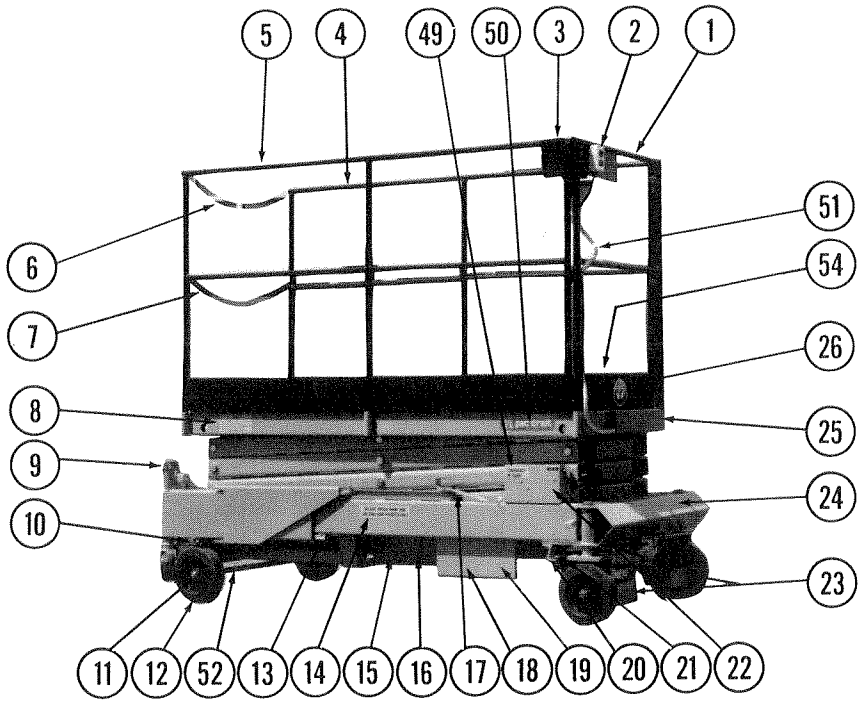

Figure 42.

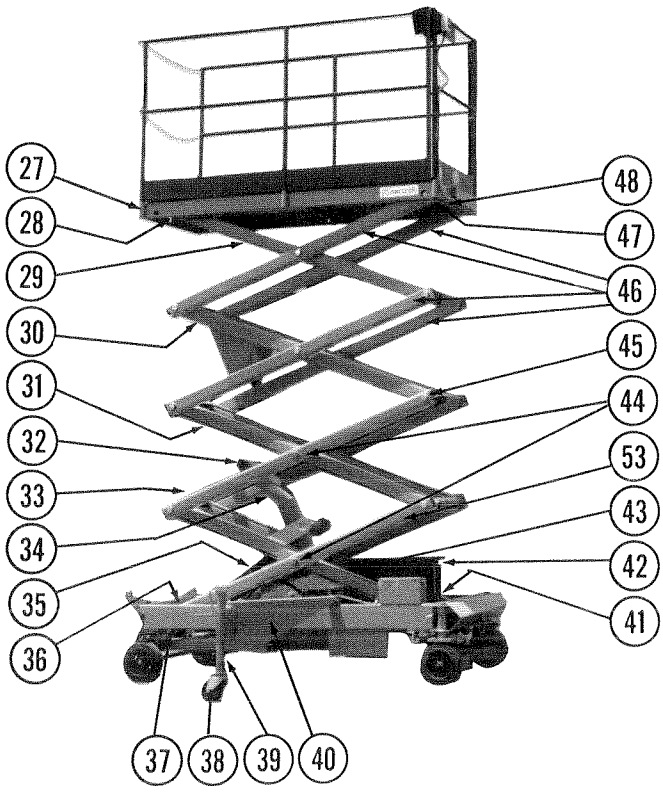

Figure 43.

MODEL 141 Figures 42 and 43

Item	Part No.	Description	Quantity
1	1057	Front Rail Weldment	1
2	1538	110 Kit Sub-Assembly	1
3	1874	Upper Control Box Assembly (See Figure #49)	1
4	1287	Side Rail Assembly L.H.	1
5	1286	Side Rail Assembly R.H.	1
6	1366	Guard Chain, Top	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
7	1445	Guard Chain, Bottom	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
8	5741	Label 141, Inst.	3
9	5504	Cover Kit (Clip and Cover)	2
10	1797	Brake Pad	2
	5736	Retaining ring	2
	1794	Eccentric	2
	1800	Brake Actuator Assemble	1
	1851	Adjusting Rod	1
	5678	Brake Cylinder	1
	5687	Spring, Brake	1
	1864	Clevis, Brake Cylinder	1
11	5685	Roller Bearing and Race	2
	5686	Spanner Bushing	2
	5737	Hex Slotted Nut	2
	1835	Thrust Washer, Inner	2
	1836	Thrust Washer, Outer	2
12	1804	Rear Wheel Weldment	2
13	1302	Pivot Bar and Pin Assembly	4
14	5747	Decal, Trucking Inst.	2
15	5790	Charger, Battery (Far Side) (See Figure #52, 53)	1
16	1917	Pump Assembly (not shown) (See Figure #46, 47)	1
17	1297	Outrigger Latch	4
18	1903	Guard, Manifold	1
19	1858	Valve Bank Assembly (not shown) (See Figure #51)	1
20	1838	Cylinder Mounting Bracket	1
21	5677	Steering Cylinder	1
22	1860	Lower Control Box Assembly	1
23	1892	Bracket, Motor Guard	2
24	1857	Front, Drive Assembly (See Figure #48)	1
25	1893	Cover, Terminal Board	1
26	5468	Decal, Heff-T-Herman	1
27	1040	Platform Weldment	1
28	1062	Roller Bar	1
	1033	Roller	2
	1039	Retaining ring	4
29	1881	Inner Beam Assembly	1
30	1880	Upper Inner Beam Assembly	1
31	1877	Inner Beam Assembly	1
32	1033	Roller	2
	1039	Retaining Ring	4
33	1867P	Lower Beam Assembly, Painted	2
34	1316	Lift Arm Assembly	1
35	5770	Cylinder Assembly 5 x 12 (See Figure #50)	1
36	1036	Roller Bar	1
	1033	Roller	2
37	1845	Base Assembly	1
38	1315	Outrigger Caster	2
39	1303	Outrigger/Jack Assembly (shown)	1
	1304	Outrigger/Jack Assembly (opposite)	1
40	1306	Support Beam and Pivot (shown)	1
	1307	Support Beam and Pivot (opposite)	1
41	1038	Connecting Pin	2
	1039	Retaining Ring	4
42	5746	Battery	1
	5354	Battery Board	1
	5581	Battery Cover	1
	5212	Battery Cable, Negative	1
	1891	Tie Rod	2
43	1870	Beam and Support Arm Assembly	1
44	1853	Pivot Bar	2

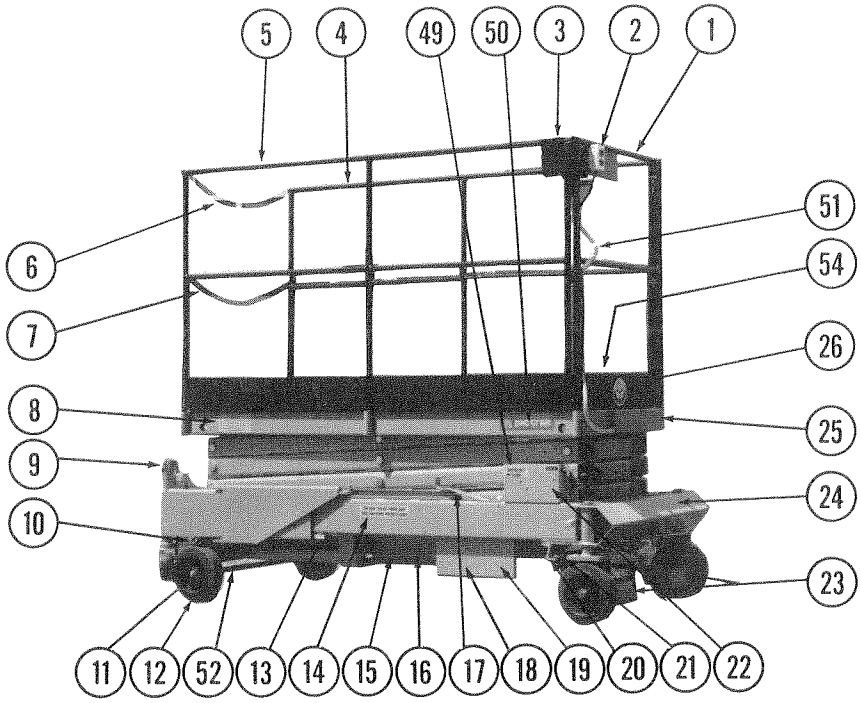

Figure 42.

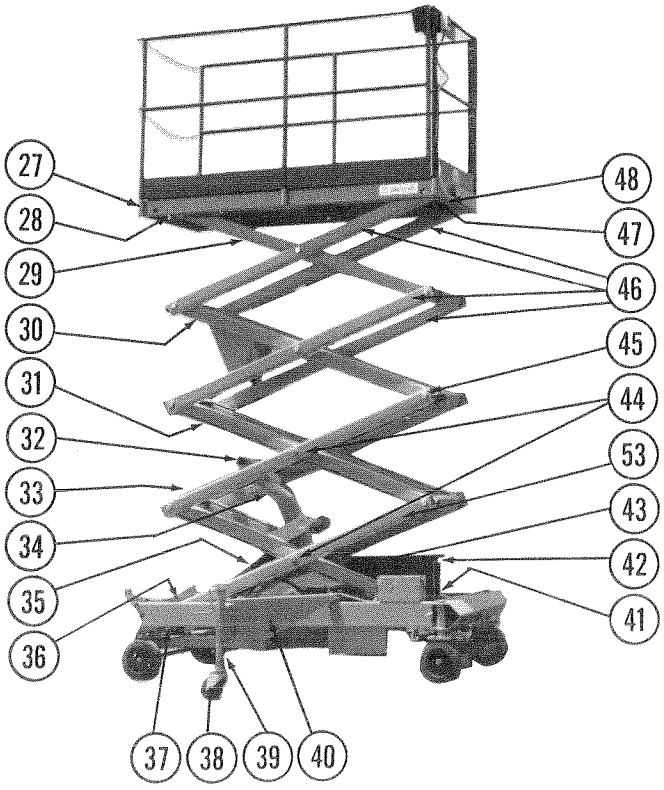

Figure 43.

MODEL 141 (Cont'd) Figures 42 and 43

Item	Part No.	Description	Quantity
45	1918	Pivot Bar	8
46	1879P	Beam Assembly, Painted	4
47	1377	Connecting Pin	1
	5339	Retaining Ring	2
48	5369	Switch	1
49	5744	Decal, Emergency Down	1
50	5307	Decal, Pac Craft	2
51	5698	Harness Assembly	1
52	1771	Rear Axle Weldment	1
53	1869	Lower Outer Beam Assembly	1
54	1279	Floor Board	2

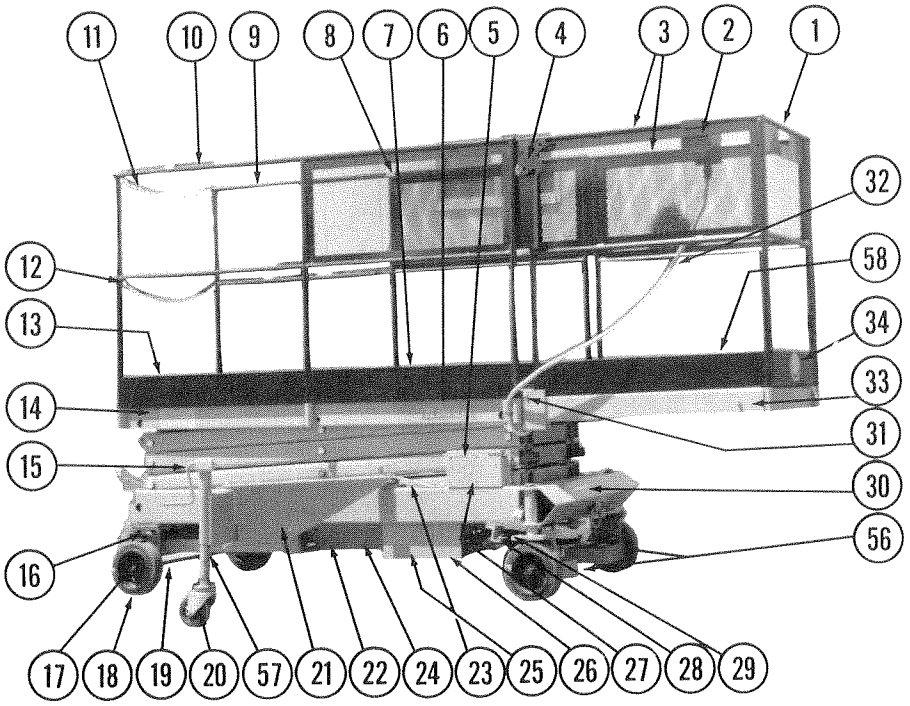

Figure 44.

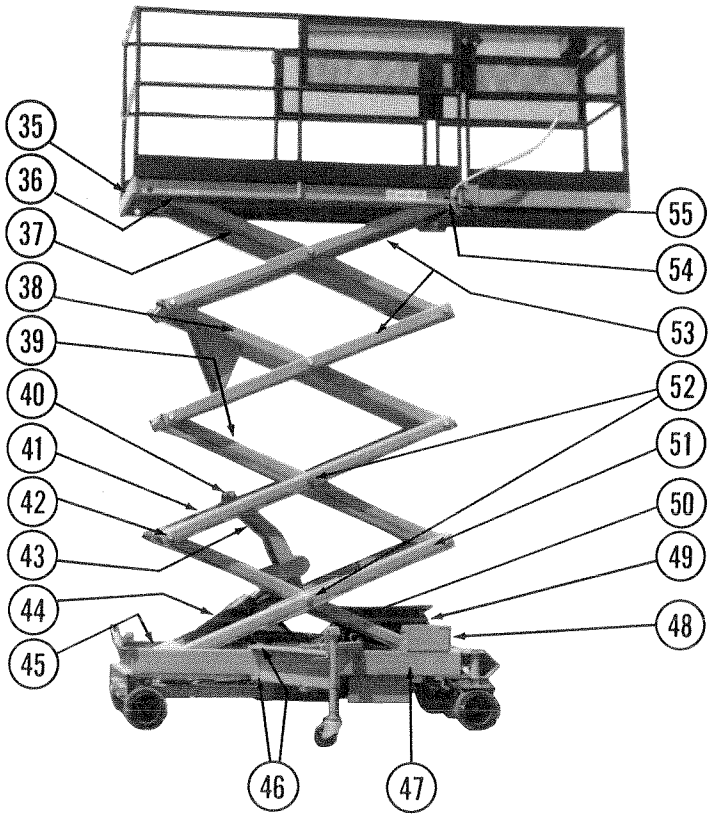

Figure 45.

MODEL 141EP Figures 44 and 45

Item	Part No.	Description	Quantity
1	1827	Front Rail Assembly	1
	1834	Pivot Pin, Front Rail	1
2	1874	Upper Control Box Assembly (See Figure #49)	1
3	1823	Side Railing Weldment R.H.	1
	1824	Side Railing Weldment L.H.	1
4	1886	Lock lever	1
5	5744	Decal, Emergency Down	1
6	5307	Decal, Pac Craft	2
7	5714	Front Floor Board	1
8	1558	110 A.C. Kit Sub-Assembly	1
9	1809	Side Rail L.H.	1
10	1808	Side Rail R.H.	1
11	1366	Guard Chain Top	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
12	1445	Guard Chain, Bottom	1
	5236	Swivel Snap	1
	5239	Connecting Link	2
13	1279	Floor Board	1
14	5743	Decal, 141EP Inst.	4
15	5504	Cover Kit (Clip and Cover)	2
16	1797	Brake Pad	2
	5736	Retaining Ring	2
	1794	Eccentric	2
	1800	Brake Actuator Assembly	1
	1851	Adjusting Rod	1
	5678	Brake Cylinder	1
	5687	Spring, Brake	1
	1864	Clevis, Brake Cylinder	1
17	5685	Roller Bearing and Race	2
	5686	Spanner Bushing	2
	5737	Hex Slotted Nut	2
	1835	Thrust Washer, Inner	2
	1836	Thrust Washer, Outer	2
18	1804	Rear Wheel Weldment	2
19	1771	Rear Axle Weldment	1
20	1315	Outrigger Caster	2
21	1306	Support Beam and Pivot (shown)	1
	1307	Support Beam and Pivot (opposite)	1
22	5790	Charger Assembly (Opposite Side) (See Figure #52, 53)	1
23	1297	Outrigger Latch	4
24	1917	Pump Assembly (not shown) (See Figure #46, 47)	1
25	1903	Guard, Manifold	1
26	1858	Valve Bank Assembly (not shown) (See Figure #51)	1
27	1860	Lower Control Box Assembly	1
28	1838	Cylinder Mounting Bracket	1
29	5677	Steering Cylinder	1
30	1857	Front Drive Assembly (See Figure #48)	1
31	1833	Pivot Pin	1
32	5699	Harness Assembly	1
33	1782	Extending Platform Assembly	1
34	5468	Decal, Heff-T-Herman	1
35	1846	Platform Assembly	1
36	1062	Roller Bar	1
	1033	Roller	2
	1039	Retaining Ring	4
37	1881	Inner Beam Assembly	1
38	1880	Upper Inner Beam Assembly	1
39	1877	Inner Beam Assembly	1
40	1033	Roller	2
	1039	Retaining Ring	4
41	1867P	Lower Beam Assembly, Painted	2
42	1918	Pivot Bar	8
43	1316	Lift Arm Assembly	1
44	5770	Cylinder Assembly 5 x 12 (See Figure #50)	1
45	1036	Roller Bar	1
	1033	Roller	2
46	1302	Pivot Bar and Pin Assembly	4
47	1845	Base Assembly	1

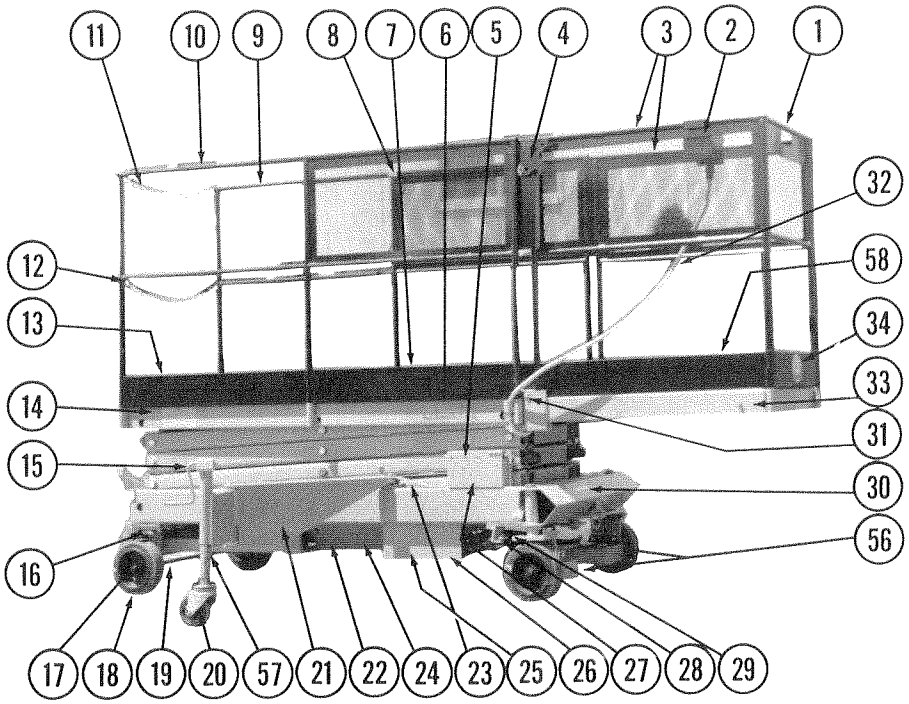

Figure 44.

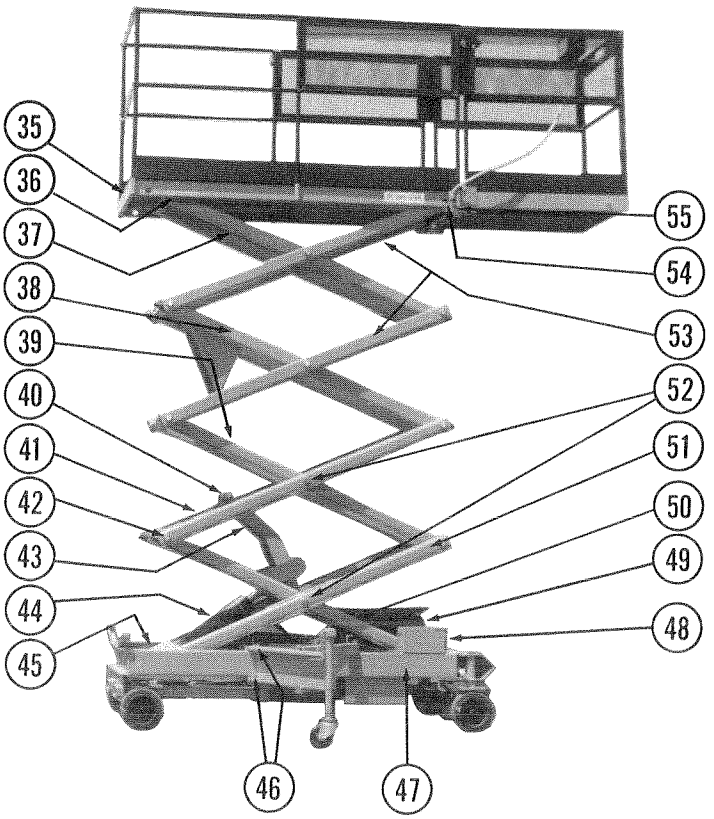

Figure 45.

MODEL 141EP (Cont'd) Figures 44 and 45

Item	Part No.	Description	Quantity
48	1038	Connecting Pin	2
	1039	Retaining Ring	4
49	5746	Battery	1
	5354	Battery Board	1
	5581	Battery Cover	1
	5212	Battery Cable, Negative	1
	1891	Tie Rod	2
50	1870	Beam and Support Arm Assembly	1
51	1869	Lower Outer Beam Assembly	1
52	1853	Pivot Bar	2
53	1879P	Beam Assembly, Painted	4
54	1377	Connecting Pin	1
	5339	Retaining Ring	2
55	5369	Switch	1
56	1892	Bracket, Motor Guard	2
57	1303	Outrigger/Jack Assembly (shown)	1
	1304	Outrigger/Jack Assembly (opposite)	1
58	5716	Platform Floor Board	1

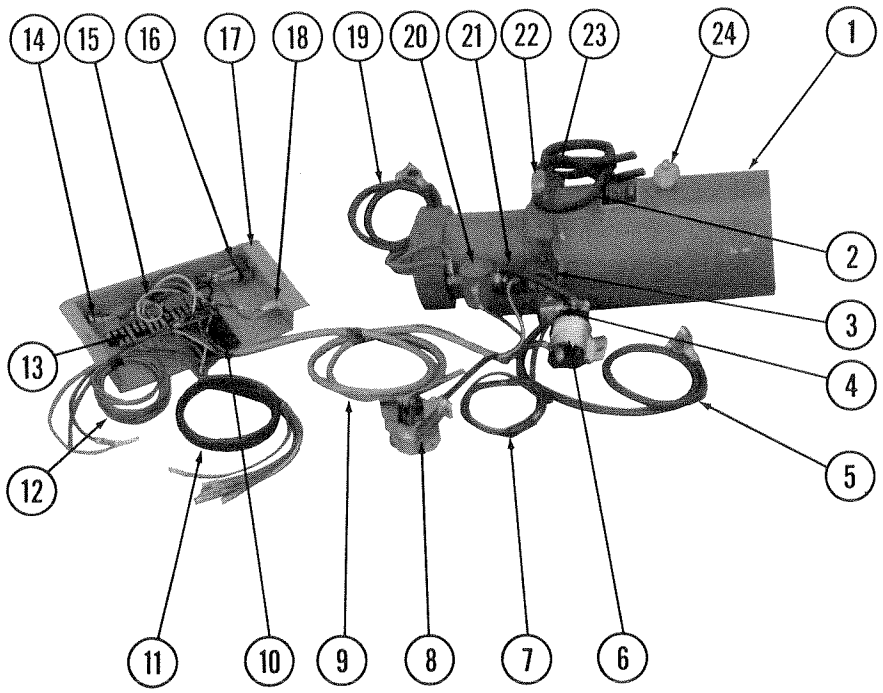

Figure 46.

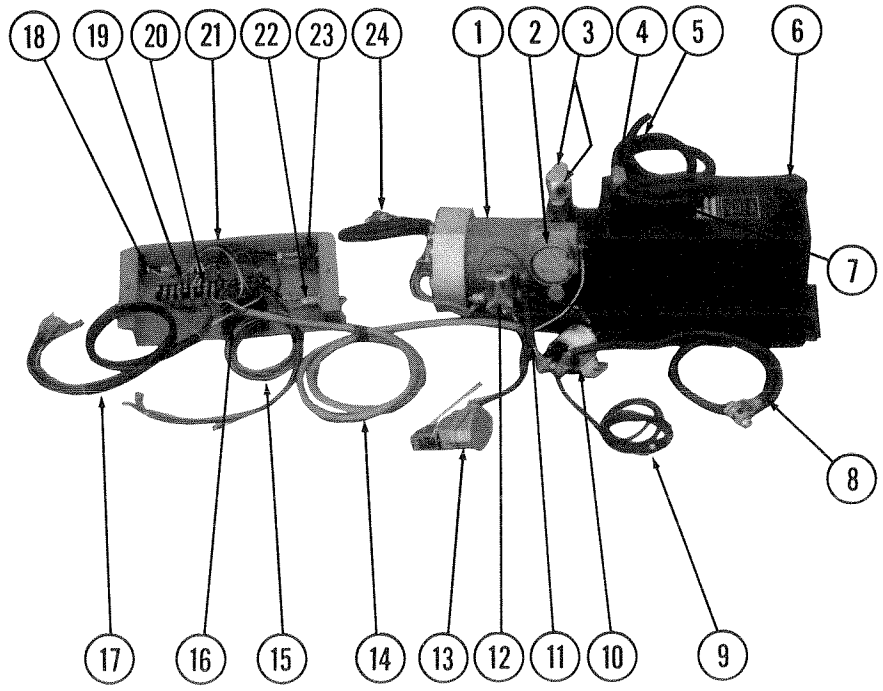

Figure 47.

MTE PUMP Figure 46

Item	Part No.	Description	Quantity
1	5613	Pump Assembly	1
2	5789	Hydraulic Hose	1
3	5436	Solenoid Valve	1
	5488	Solenoid "Only"	1
	5475	"O" Ring Seal Kit	1
4	5472	Street Elbow	2
5	5211	Battery Cable, Positive	1
6	5718	Solenoid Switch	1
7	53607	Jumper Wire	1
8	5325	Micro Switch	1
	5624	Harness, Main	1
	5365	Connecting Clamp	1
9	5624	Harness Main	1
10	5739	Stop Control	1
11	5700	Harness, Valve Bank	1
12	5777	Wire	1
13	5708	Terminal Board	1
14	5265	Fuse Holder	1
15	5799	Brake Diode Assembly	1
16	5694	Switch, Toggle	1
17	1813	Control Box, Lower	1
18	5596	Key Switch	1
19	5212	Battery Cable, Negative	1
20	5771	Solenoid	1
21	5625	Wire, Solenoid Valve	1
22	5107	Fitting, Tee	1
	5052	Fitting, Barbed	2
	5112	Nipple	1
23	5430	Hydraulic Hose	1
24	5657	Breather/Dip Stick	1

STONE PUMP Figure 47

Item	Part No.	Description	Quantity
1	5712	Hydraulic Pump	1
2	5366	Solenoid	1
3	5472	Street Elbow	2
4	5107	Fitting, Tee	1
	5052	Fitting, Barbed	2
	5112	Nipple	1
5	5430	Hydraulic Hose	1
6	5807	Breather Cap	1
7	5789	Hydraulic Hose	1
8	5211	Battery Cable Assembly Pos.	1
9	53607	Jumper Wire	1
10	5718	Solenoid Switch	1
11	5625	Wire, Solenoid Switch	1
12	5771	Switch	1
13	5325	Micro Switch	1
	5624	Harness, Main	1
	5365	Connecting Clamp	1
14	5624	Harness, Main	1
15	5623	Wire	1
16	5739	Stop Control	1
17	5700	Harness, Valve Bank	1
18	5265	Fuse Holder	1
19	5799	Brake Diode Assembly	1
20	5708	Terminal Block	1
21	1813	Control Box, Lower	1
22	5596	Key Switch	1
23	5694	Switch, Toggle	1
24	5212	Battery Cable, Negative	1

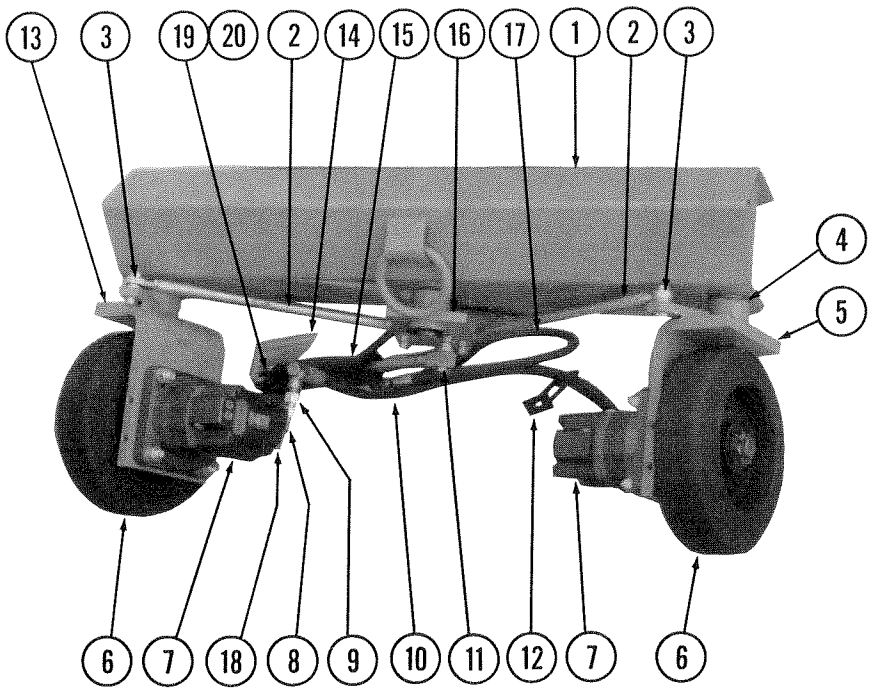

Figure 48.

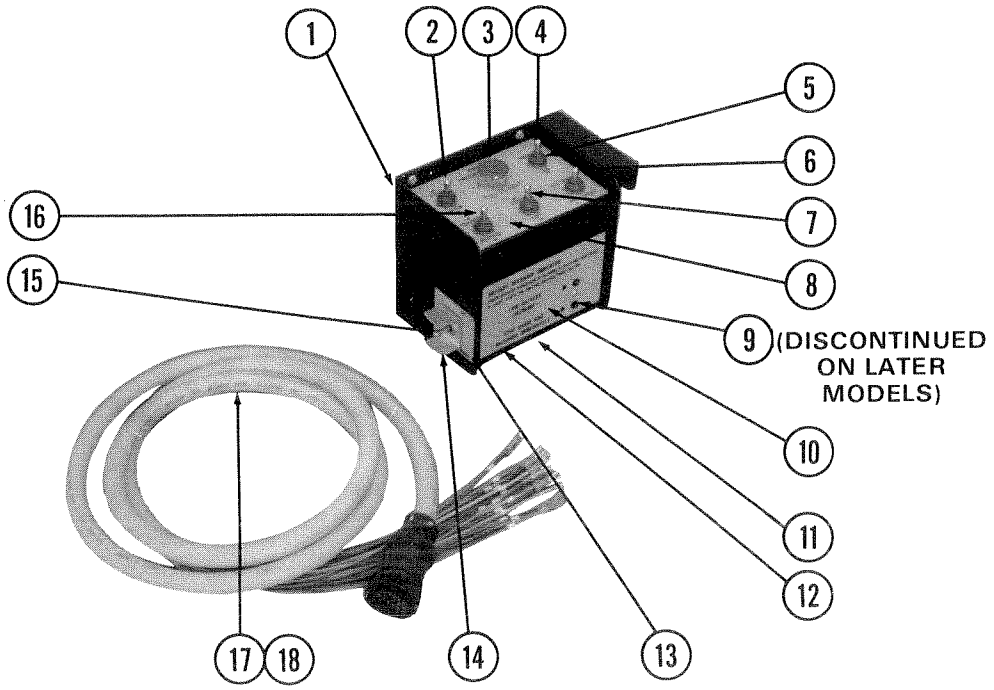

Figure 49.

FRONT DRIVE ASSEMBLY (1857) Figure 48

Item	Part No.	Description	Quantity
1	1766	Main Bracket, Front	1
2	1837	Tie Rod	2
3	5679	Rod End, Steering	4
4	5683	Thrust Washer	2
5	1777	Wheel Bracket, L.H.	1
6	1803	Front Wheel Weldment	2
7	5672	Wheel Motor	2
8	5106	Fitting, Elbow	4
9	5794	Pipe Extender	4
10	5702	Hose, Drive Crossover	1
11	1841	Cylinder Rod End	1
12	1920	Hose Hanger	1
13	1776	Wheel Bracket R.H.	1
14	1839	Cylinder Mounting Bracket	1
15	5677	Cylinder, Steering	1
16	1791	Pivot Plate Weldment	1
17	5705	Hose, Steering	2
18	5740	Adapter	4
19	5710	Clevis Pin	1
20	5787	Cotter Pin	1

UPPER CONTROL BOX ASSEMBLY (1874) Figure 49

Item	Part No.	Description	Quantity
1	1815	Wrapper Assembly	1
2	5630	Toggle Switch	1
3	5722	Switch, Emergency Stop	1
4	5230	Toggle Switch	1
5	5692	Boot, Toggle	5
6	5694	Switch	1
7	5275	Switch	1
8	5689	Label, Control Box Top	1
9	5632	Indicator, Battery Condition (Discontinued on later models)	1
10	5690	Label, Control Box Front	1
11	5696	Control Box Harness (not shown)	1
12	1819	Control Box Panel	1
13	5691	Control Box Label, Side	1
14	1313	Switch Guard	1
15	5230	Toggle Switch	1
16	5694	Toggle Switch	1
17	5698	Harness Assembly (Models 140 & 141 Only)	1
18	5699	Harness Assembly (Models 140EP & 141EP Only)	1

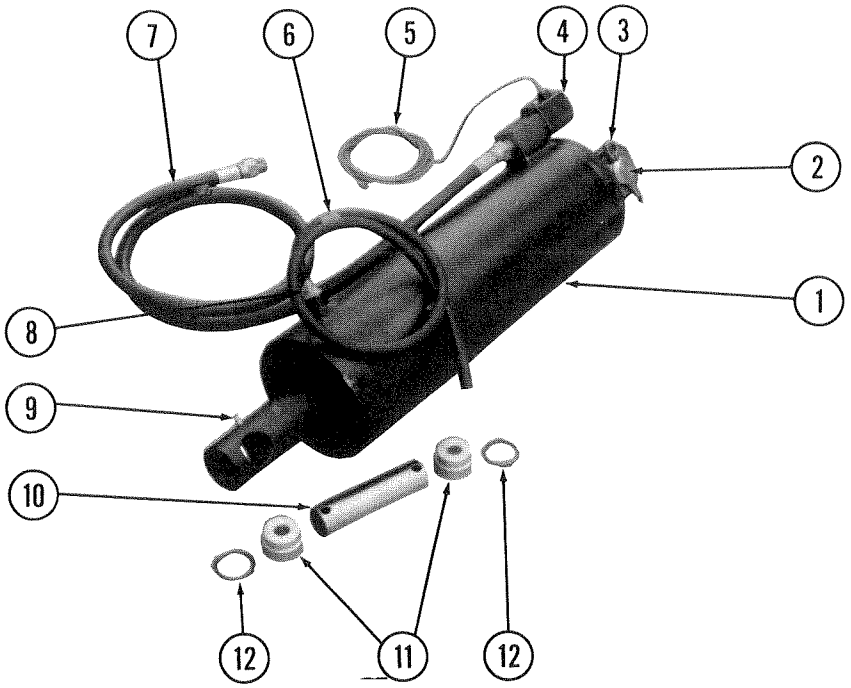

Figure 50.

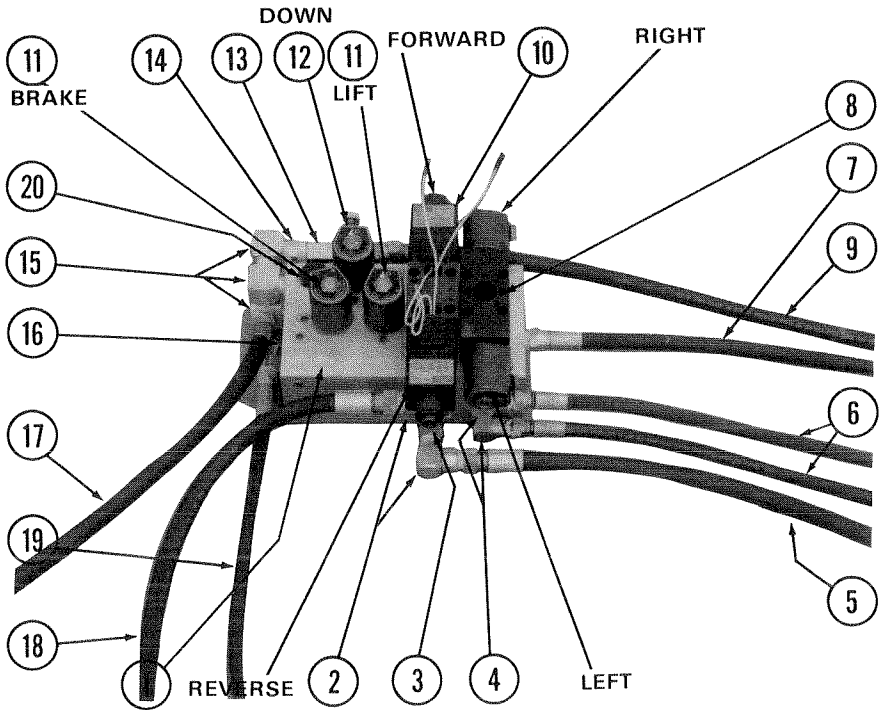

Figure 51.

CYLINDER AND RELATED PARTS Figure 50

Item	Part No.	Description	Quantity
1	5770	Cylinder Assembly, 5 x 12	1
2	1907	Cylinder Pin, Lower	1
3	5765	Cotter Pin 3/8 x 2-1/2	2
4	5436	Solenoid Valve	1
5	5777	Wire	1
6	5430	Hose, Low Pressure	1
7	5357	Hydraulic Hose Assembly	1
8	5052	Barbed Fitting	1
9	5432	Grease Fitting	1
10	1529	Upper Cylinder Pin	1
11	1908	Plug	2
12	5766	Retaining Ring	2

VALVE BANK ASSEMBLY (1858) Figure 51

Item	Part No.	Description	Quantity
1	1844	Manifold	1
2	5472	Street Elbow	2
3	5786	Male Adapter	1
4	5106	Fitting Elbow	2
5	5704	Hose, Drive	1
6	5705	Hose, Steering	2
7	5728	Hose	1
8	5726	Solenoid Valve - 4-Way - T	1
9	5357	Hydraulic Hose Assembly	1
10	5793	Valve, 4-Way, 3 Position Tandem	1
11	5463	Solenoid	2
12	5436	Solenoid	1
13	5749	Flow Control	1
14	5752	Nipple	1
15	5472	Street Elbow	3
16	5106	Fitting Elbow	1
17	5728	Hose	1
18	5704	Hose, Drive	1
19	5703	Hose, Brake	1
20	5434	Check Valve	3

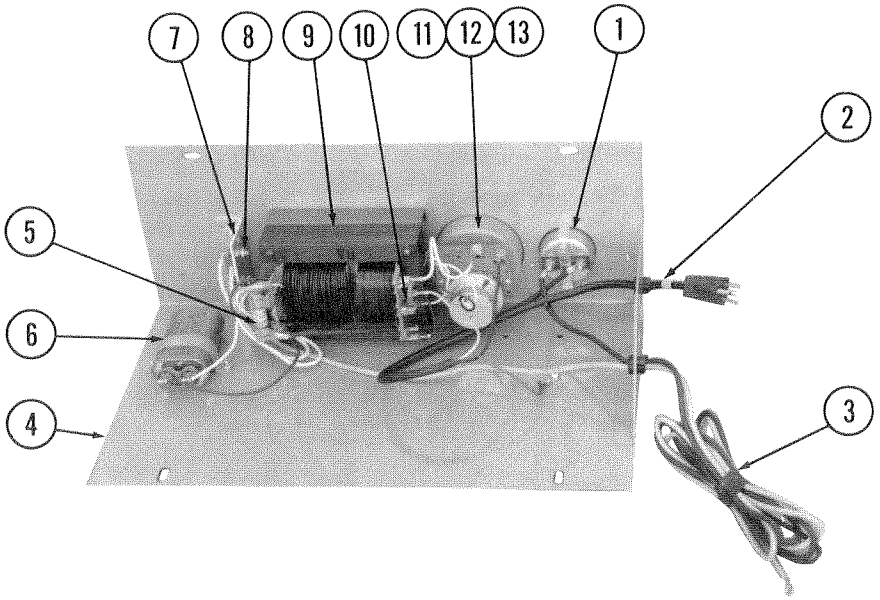

Figure 52.

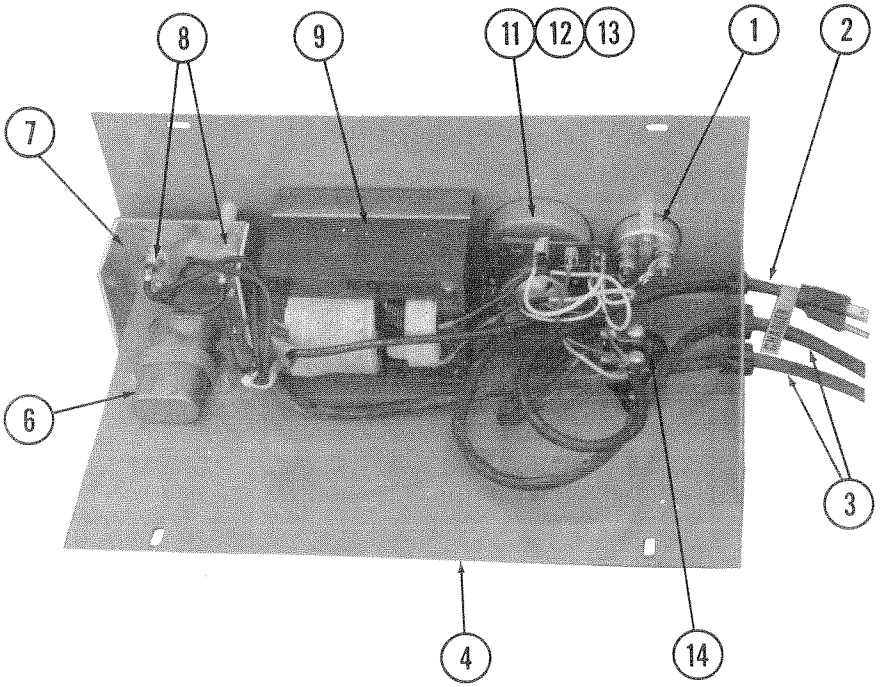

Figure 53.

20 AMP "L" CASE BATTERY CHARGER
PART NO. 5790 Figure 52

Item	Part No.	Description	Quantity
1	5554	Ammeter	1
2	5649	A.C. Cord	1
3	5651	D.C. Cord (Negative) Black	1
	5650	D.C. Cord (Positive) White	1
4	1902	Charger Bracket Assembly	1
5	5551	D.C. Fuse	1
6	5550	Capacitor	1
7	5553	Heat Sink Assembly With Rectifier	1
8	5646	Rectifier (Diode)	2
9	5549	Transformer	1
10	5552	A.C. Fuse	1
11	5642	Timer, 18 Hour	1
12	5556	Timer Knob	1
13	5643	Timer Dial Plate	1

40 AMP "L" CASE BATTERY CHARGER
PART NO. 5791 Figure 53

Item	Part No.	Description	Quantity
1	5641	Ammeter	1
2	5649	A.C. Cord	1
3	5652	D.C. Cord	2
4	1902	Charger Bracket Assembly	1
6	5550	Capacitor	1
7	5645	Heat Sink Assembly With Rectifier	1
8	5644	Rectifier (Diode)	2
9	5647	Transformer	1
11	5642	Timer, 18 Hour	1
12	5556	Timer Knob	1
13	5643	Timer Dial Plate	1
14	5640	Circuit Breaker	1