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**Model 9504-010  
750 LB. PORTABLE CRANE**

**OPERATION and MAINTENANCE MANUAL  
with ILLUSTRATED PARTS LIST**

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Nov-00

# **REGENT MFG., INC.**

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### **1.0 Introduction**

This manual is issued as a basic service and maintenance manual covering the Model 9504-010, 750 lb. Portable Crane, manufactured by Regent Mfg., Inc., 11905 Regentview Avenue, Downey, CA, U.S.A., phone number (562) 862-1174, FAX No. (562) 861-9624.

To derive maximum service, it is recommended that personnel have an understanding of the equipment before attempting to operate the jack. It is mandatory that the operating procedures herein be followed.

### **2.0 Specifications**

Capacity	750 lb.
Maximum Hook Height	162 in.
Reach	
750 lb. Capacity:	
Maximum	74 in.
Minimum	70 in.
250 lb. Capacity	82 in.
Overall Height	180 in.
Outrigger Area Required	144 x 144 in.
Weight	590 lb.

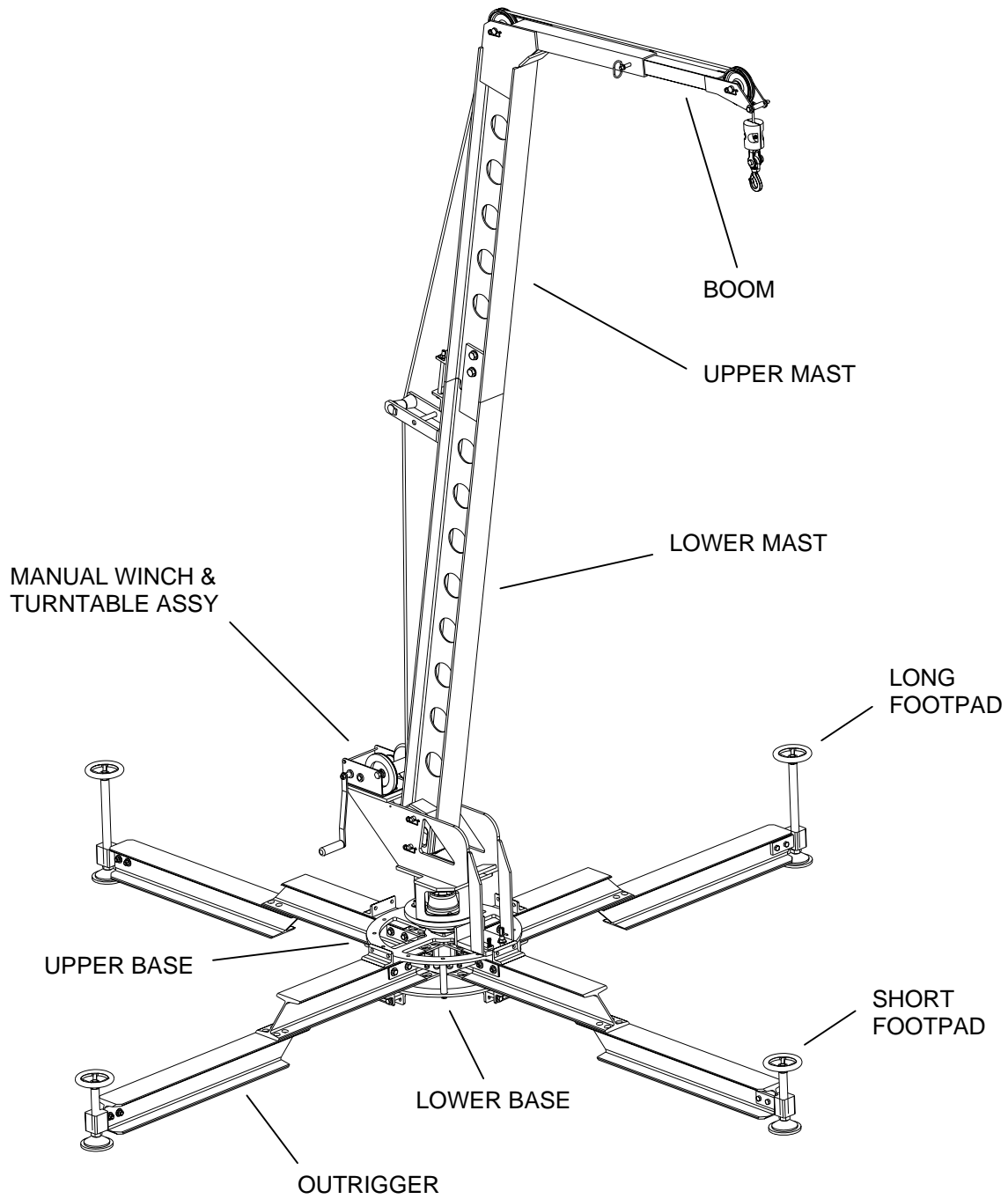
### **3.0 Description**

Regent's Model 9504-010, 750 lb. Portable Crane, is designed to remove various components from aircraft without the need for an overhead crane. When disassembled and stored in its storage containers, the crane can be taken aboard an HH-60J helicopter for deployment to recovery sites for field maintenance and recovery of aircraft. Once on site, two persons can assemble and operate the crane in ground slope conditions of up to 12°. The crane is capable of lifting and rotating up to 750 pounds. For extended reach operations such as HH-60J accessory and input modules, the boom can be extended an additional 12 inches, which allows the crane to lift and rotate up to 250 pounds.

The crane consists of four outriggers, two short leveling footpads, two long leveling footpads, a lower base, an upper base, a turntable assembly with manual winch, a lower mast, an upper mast and an extendable boom. The manual winch contains an automatic disk brake that will hold the load in position without operator assistance.

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**Figure 1**



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**4.0 Assembly Tools Required**

The following tools are required for assembly and disassembly of the crane:

- |   |   |
|---|---|
| $\frac{3}{4}$ Open End Wrench             | $\frac{3}{4}$ Socket with Ratchet Handle  |
| $1\frac{1}{8}$ Open End Wrench            | $1\frac{1}{8}$ Socket with Ratchet Handle |
| $1\frac{1}{2}$ Socket with Ratchet Handle | $\frac{3}{16}$ Allen Wrench               |
| 4x4 x 6 in. long Board (4 Req'd.)         | 10 inch Drift Pin                         |
| "Ford" Wrench                             | Soft Mallet                               |

**5.0 Crane Assembly – Level Operation**

5.1 Clear area where crane will be assembled and verify there is sufficient overhead clearance for the mast and boom.

**WARNING: FOR SOFT TERRAIN, ENSURE ADAQUATE FOOTPAD SHORING IS AVAILABLE.**

5.2 Arrange storage containers and open tops.



OUTRIGGERS



LOWER MAST



UPPER & LOWER  
BASE ASSY'S



WINCH & TURNTABLE ASSY



UPPER MAST, BOOM & LEVELING  
FOOTPADS

5.3 Remove all four outriggers and both the long and short leveling footpads.

5.4 Assemble footpads to outriggers. NOTE: For sloped operation, see 6.0 below.



LONG FOOTPAD ASSEMBLY

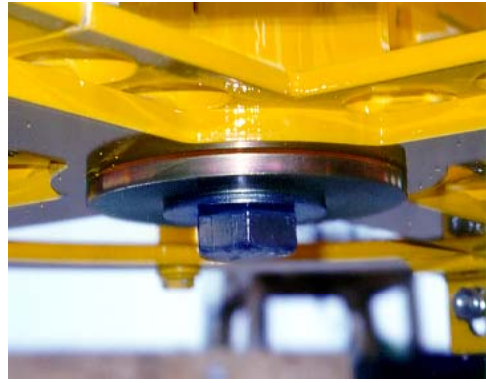


SHORT FOOTPAD ASSEMBLY

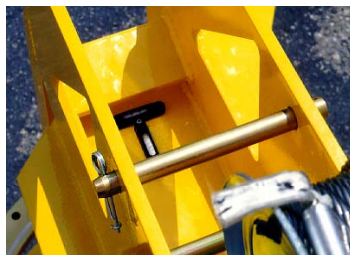
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**5.0 Crane Assembly (Continued)**

- 5.5 Remove lower base and position on ground with bottom angles resting on 4x4's.
- 5.6 Insert each outrigger fully into lower base until ends butt together. Ensure that the short leveling footpads are positioned closest to the aircraft. Finger-tighten the attaching bolts.
- 5.7 Assemble upper base to lower base. Ensure that alignment marks on each line up. Finger-tighten attaching bolts.



- 5.8 Tighten the installed bolts in the following sequence, then remove the 4x4's from under the base:
  - 5.8.1 Upper-to-lower base bolts (4).
  - 5.8.2 Center base bolt.
  - 5.8.3 Shorter bolts through the web of each outrigger.
  - 5.8.4 Longer tension bolts on the bottom of each outrigger.
  - 5.8.5 Ensure all bolts are firmly tightened.
- 5.9 Remove turntable assembly and assemble to hub on upper base. **NOTE: NUTS ARE LEFT HAND THREAD.**
- 5.10 Position outriggers and turntable assembly as needed for operation.  
**WARNING: INSURE ADAQUATE CLEARANCES ARE AVAILABLE FOR CRANE OPERATION.**
- 5.11 Rotate turntable assembly until bubble levels are aligned in the direction of the outriggers.



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**5.0 Crane Assembly (Continued)**

- 5.12 Adjust leveling footpads until the crane turntable assembly is level.
- 5.13 Remove lower mast and assemble to turntable assembly with lower pivot pin.
- 5.14 Remove upper mast and assemble to lower mast. Finger-tighten the attaching bolts.



- 5.15 First tighten longer tension bolts, then the shorter bolts through the web of the mast.



- 5.16 Remove boom and install it into the upper mast and pin in position. NOTE: Mast assembly may need to be lifted slightly to allow the boom to be inserted into the upper mast.



- 5.17 Remove spacer at end of boom by removing nut, bolt and both washers.

**5.0 Crane Assembly (Continued)**

5.18 Pay out cable assembly from winch and feed cable over "V" roller and both pulleys.

**WARNING: KEEP HANDS CLEAR OF CABLE DRUM AND PULLEYS.**



5.19 Re-assemble spacer at end of boom with nut, bolt and both washers.



5.20 Tighten loose cable on winch drum, ensuring cable is free from tangles and hook weight is flat against bottom of boom.

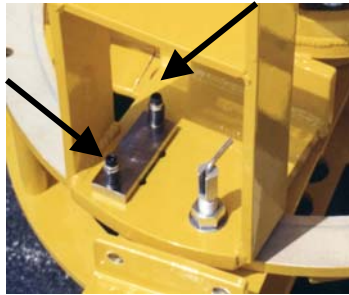
5.21 Rotate winch handle clockwise to raise mast and boom assembly, until holes align between turntable and mast. Insert pin through turntable and mast and lock with spring clip. NOTE: It may be necessary to manually assist the lifting of the mast and boom assembly for the first few feet of lift.



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**5.0 Crane Assembly (Continued)**

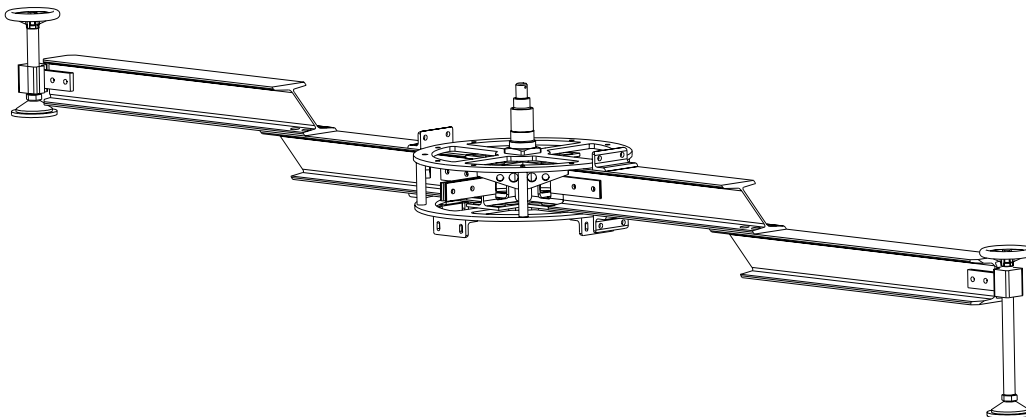
- 5.22 With bubble levels aligned in the direction of the outriggers, adjust leveling footpads as necessary to level crane and ensure all footpads contact ground.
- 5.23 Ensure turntable roller is in contact with ring on upper base throughout rotation of turntable assembly. Adjust roller as necessary by tightening both socket head capscrews until bearing begins to contact ring, then tighten two full turns.



- 5.24 Crane is now ready for operation.

**6.0 Crane Assembly – Sloped Operation**

- 6.1 For sloped operation, assemble outriggers as follows:
  - 6.1.1 Insert the two outriggers “up slope” with the short footpads and outriggers in the up position.
  - 6.1.2 Insert the two outriggers “down slope” with the long footpads and outriggers in the down position.
  - 6.1.3 Assemble as described in 5.5 thru 5.24.





**7.0 Operation**

- 7.1 Visually inspect crane for damaged or missing components.
- 7.2 Disengage rotation lock pin and manually rotate mast and boom assembly into position to center hook over load. NOTE: Boom may be extended by removing boom lock pin and sliding boom out from upper mast, then locking in place.

**WARNING: CRANE CAPACITY IS 250 POUNDS WITH BOOM IN FULLY EXTENDED POSITION.**

**WARNING: KEEP HANDS CLEAR OF CABLE DRUM AND PULLEYS.**

- 7.3 Rotate winch handle counterclockwise to lower hook to desired height.
- 7.4 Ensure load is totally disconnected before lifting. Turn winch handle clockwise to raise load. Stop turning handle to hold load in place.

**8.0 Crane Disassembly**

- 8.1 Rotate winch handle clockwise to fully raise hook weight against bottom of boom.
- 8.2 Rotate turntable assembly so that mast may be lowered clear of any obstructions.
- 8.3 With mast and boom assembly weight supported by winch, remove top mast lock pin.



- 8.4 Rotate winch counterclockwise to lower mast and boom assembly fully.

**WARNING: ENSURE PERSONNEL ARE CLEAR OF MAST AND BOOM BEFORE LOWERING. RAPID DESCENT OF MAST AND BOOM WILL OCCUR DURING LAST FEW FEET OF LOWERING.**

**WARNING: KEEP HANDS CLEAR OF CABLE DRUM AND PULLEYS.**

**8.0 Crane Disassembly** (Continued)

- 8.5 Remove spacer at end of boom by removing nut, bolt and both washers.
- 8.6 Remove cable assembly from all pulleys. Rotate winch handle clockwise and wind cable on winch drum, ensuring cable is wound tight and free of tangles.
- 8.7 Re-assemble spacer at end of boom with nut, bolt and both washers.
- 8.8 Remove boom from upper mast. **NOTE:** Mast assembly may need to be lifted slightly to allow the boom to be removed from upper mast. Store in storage container.
- 8.9 Disassemble upper mast from lower mast by removing longer tension bolts and then shorter bolts through the web. Store in storage container.
- 8.10 Remove lower mast from turntable assembly by removing lower pivot pin. Store in storage container.
- 8.11 Remove turntable assembly from hub on upper base. **NOTE: NUTS ARE LEFT HAND THREAD.** Store in storage container.
- 8.12 Position 4x4's under bottom angles on lower base.
- 8.13 Remove upper base from lower base by removing upper-to-lower base bolts (4) and center base bolt.
- 8.14 Remove all four outriggers by removing longer tension bolts on the bottom and then the shorter bolts through the web.
- 8.15 Remove footpads from outriggers. Store footpads and outriggers in storage containers.
- 8.16 Store lower and upper bases in storage container.

**9.0 Preventative Maintenance Schedule**

The following Preventative Maintenance Schedule is provided as a guide to insure that the Crane is always ready for operation. The time intervals listed are a general recommendation only. The actual interval used should include factors for the climatic conditions in which the equipment is stored and the frequency of equipment use.

Grease winch teeth	6 months
Grease footpad adjusting screws	6 months
Grease hub bearing	12 months

**10.0 Repair Guidelines**

- 10.1 All aluminum components are fabricated from 6061-T6 and have been heat treated after welding. CAUTION: Any weld repair will affect the heat treatment of these components. Proper AWS welding and heat treat procedures must be followed for any repair.
- 10.2 All steel components may be weld repaired with standard AWS welding procedures.

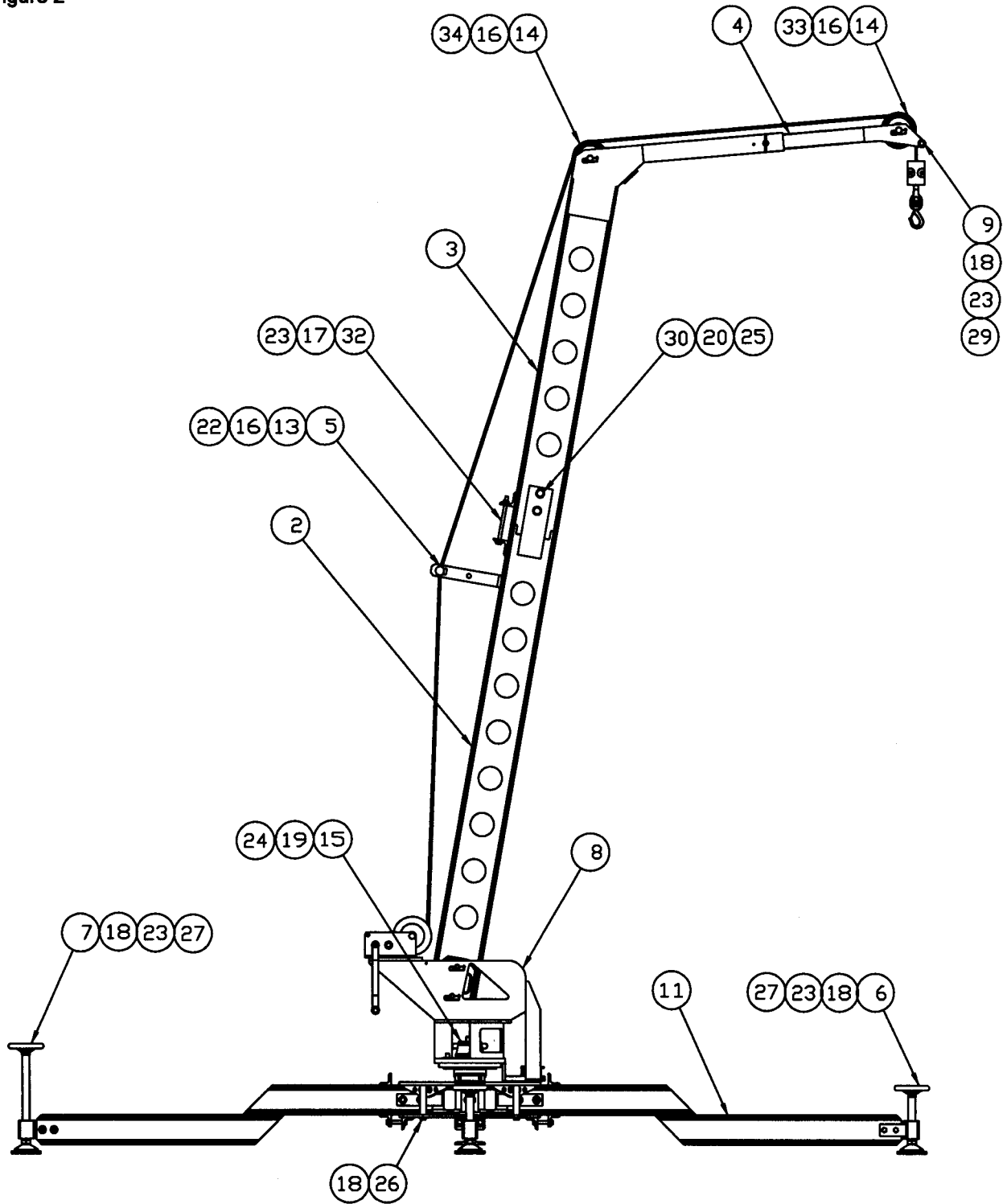
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 Figure 2

FIG. & ITEM NO.	PART NUMBER	DESCRIPTION	UNITS PER ASS'Y
2-	9504-010	750 Lbs Portable Crane .....	Ref.
-1	9504-101	Spindle Base Weldment.....	1
-2	9504-104	1 <sup>st</sup> Stage Mast .....	1
-3	9504-105	Boom Weldment .....	1
-4	9504-107	Boom Extension .....	1
-5	9504-118	Pivot Pin, Mast .....	2
-6	9504-124	Leveling Footpad, Short .....	2
-7	9504-125	Leveling Footpad, Long.....	2
-8	9504-129	Turn Table Assembly .....	1
-9	9504-136	Spacer, Boom .....	1
-10	9504-137	Spacer, Plate.....	1
-11	9504-208	Outrigger .....	4
-12	9504-211	Base Weldment.....	1
-13	9319-19	Tube .....	1
-14	916272	Pulley (McKissick) .....	2
-15	521069	Hub (Hadco) .....	1
-16	90174A114	Pin, Safety (McMaster-Carr).....	3
-17	98497A661	Pin, Hitchn (McMaster-Carr) .....	1
-18	MS27183-17	Washer.....	58
-19	MS27183-21	Washer.....	6
-20	MS27183-23	Washer.....	4
-21	MS27183-27	Washer.....	1
-22	FF-1207-5	Flange Bearing (Oilite) .....	2
-23	MS35691-33	Nut, Hex .....	27
-24	MS27952-35	Nut, Hex .....	6
-25	MS35691-57	Nut, Hex .....	2
-26	MS90726-111	Capscrew, Hex.....	4
-27	MS90726-113	Capscrew, Hex.....	14
-28	MS90726-120	Capscrew, Hex.....	8
-29	MS90726-123	Capscrew, Hex.....	1
-30	MS90726-188	Capscrew, Hex.....	2
-31	MS90726-228	Capscrew, Hex.....	1
-32	.50-13UNC x 8.50 LG	Capscrew, Hex.....	2
-33	MS20392-12C97	Pin, Headed.....	1
-34	MS20392-12C121	Pin, Headed.....	1

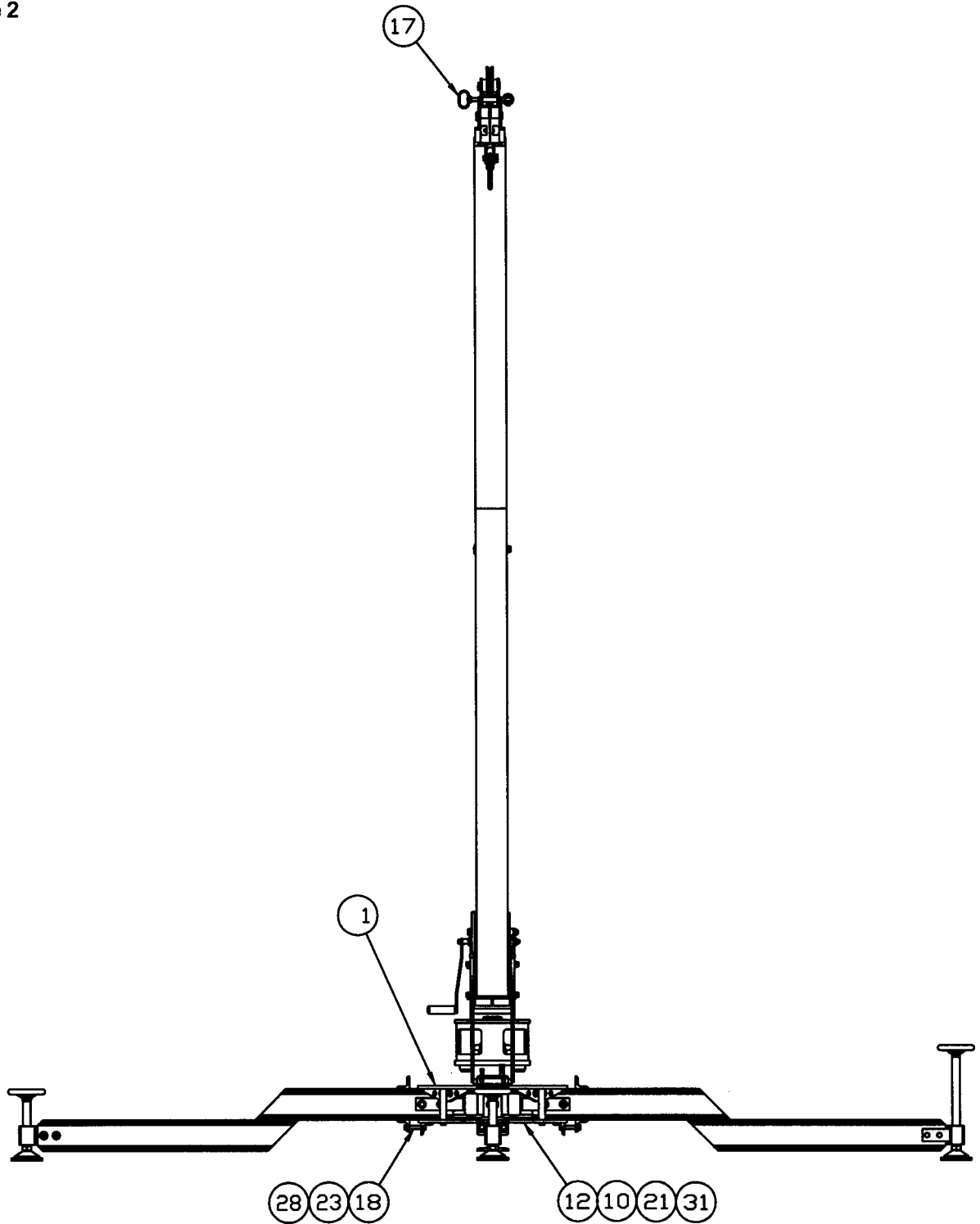
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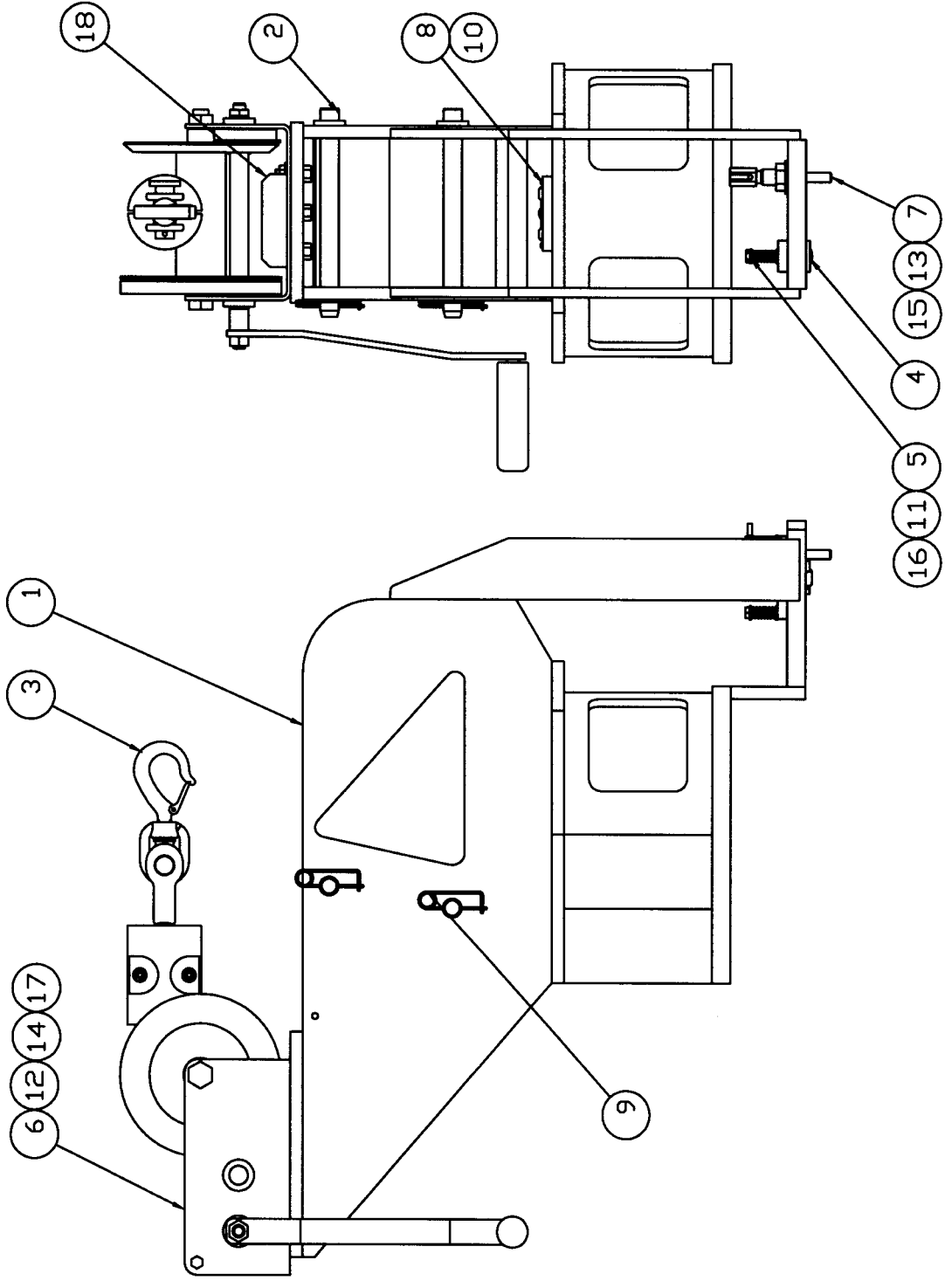
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 Figure 3

FIG. & ITEM NO.	PART NUMBER	DESCRIPTION	UNITS PER ASS'Y
3-	9504-129	Turn Table Assembly .....	Ref.
-1	9504-103	Turn Table Weldment .....	1
-2	9504-116	Pin .....	2
-3	9504-120	Cable Assembly .....	1
	9504-112	Cable Weight.....	1
	9504-121	Cable Assembly .....	1
	S-322A	Swivel Hook (Crosby Group).....	1
	MS90726-12	Capscrew, Hex.....	2
	MS27183-9	Flat Washer.....	2
	MS35338-44	Lockwasher .....	2
	MS35691-1	Nut, Hex .....	2
-4	9504-126	Roller Support Assembly.....	1
-5	9504-134	Spring .....	2
-6	K2550	Winch (Fulton).....	1
-7	3403A73	Plunger Spring (McMaster-Carr) .....	1
-8	2160A3	Level Tubular (McMaster-Carr) .....	2
-9	90174A114	Pin, Safety (McMaster-Carr).....	2
-10	MS24625-14	Screw .....	4
-11	MS27183-9	Washer.....	4
-12	MS27183-13	Washer.....	3
-13	MS27183-21	Washer.....	1
-14	MS35691-21	Nut, Hex .....	3
-15	MS35691-53	Nut, Hex .....	1
-16	MS16998-49	Capscrew, Socket Head.....	2
-17	MS90726-61	Capscrew, Hex.....	3
-18	9504-150	Winch Brace.....	1

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Figure 3





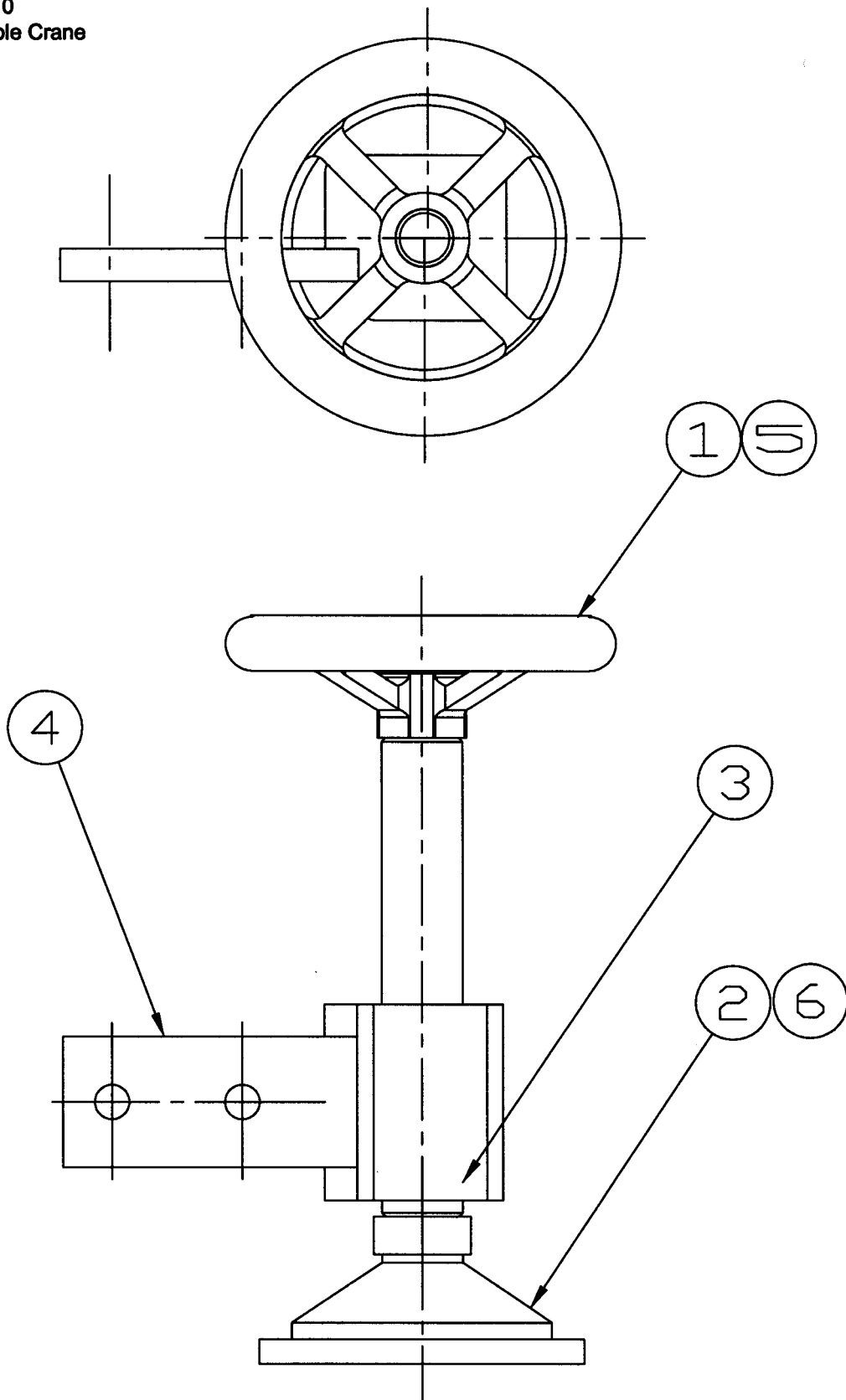
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Figure 4

FIG. & ITEM NO.	PART NUMBER	DESCRIPTION	UNITS PER ASS'Y
4-	9504-124	Leveling Footpad .....	Ref.
-1	9406-6	Handwheel .....	1
-2	9504-109	Footpad .....	1
-3	9504-110	Leveling Stud.....	1
-4	9504-114	Leveling Support .....	1
-5	92383A264	Spring Pin (McMaster-Carr) .....	1
-6	242	Threadlocker (Loctite Corp.) .....	AR

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Figure 4



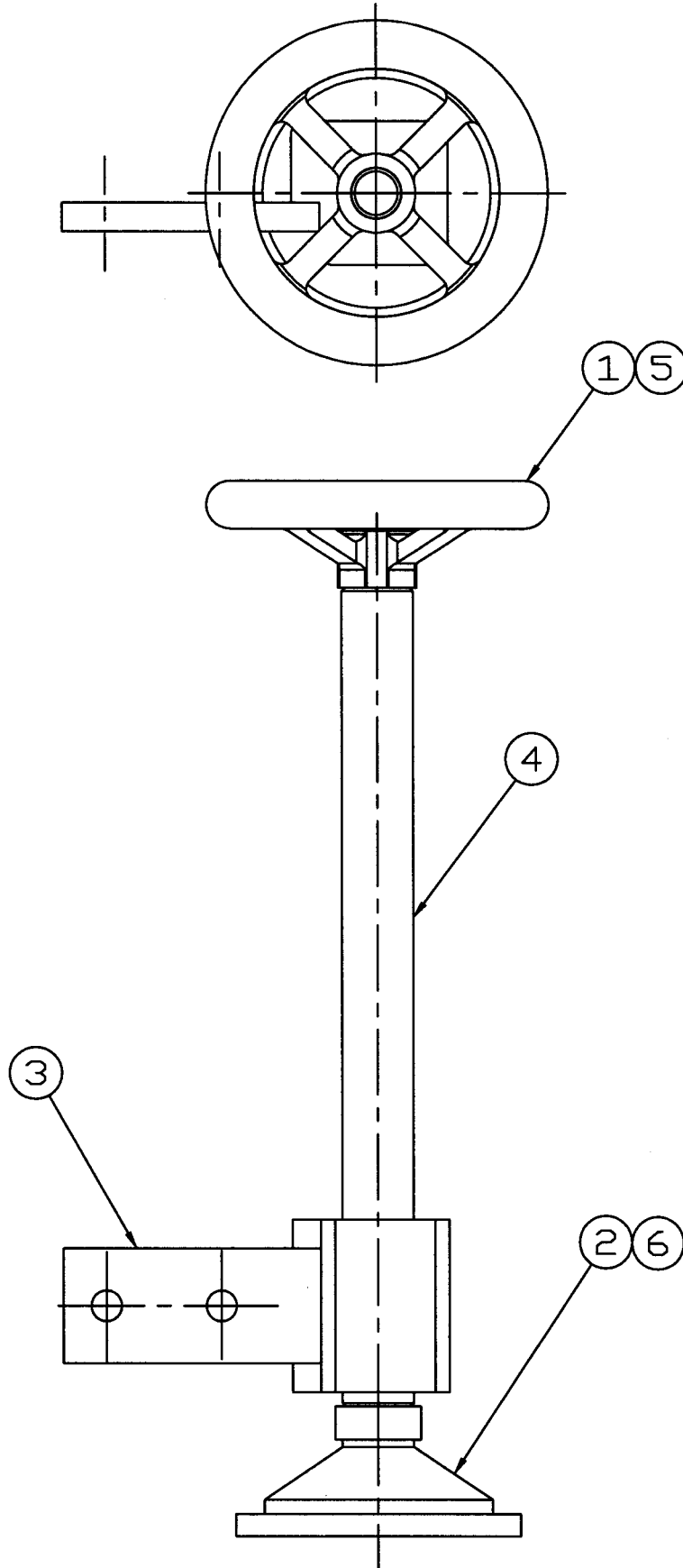
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Figure 5

FIG. & ITEM NO.	PART NUMBER	DESCRIPTION	UNITS PER ASS'Y
5-	9504-125	Leveling Footpad .....	Ref.
-1	9406-6	Handwheel .....	1
-2	9504-109	Footpad .....	1
-3	9504-119	Leveling Stud.....	1
-4	9504-114	Leveling Support .....	1
-5	92383A264	Spring Pin (McMaster-Carr) .....	1
-6	242	Threadlocker (Loctite Corp.) .....	AR

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Figure 5



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APPENDIX

# FULTON Performance Products



## K2550 STANDARD WORK WINCH OWNERS' MANUAL

### WARNING

- This winch is of a general purpose design for manual operation only and the load rating is based on a intermittent duty cycle. This winch is **not** designed to be a human hoist and should never be operated when there are persons positioned on or under the load being lifted or moved.
- Do not get oil or grease on friction disks, Item #17. This could allow

the load to slip or fall.

- Obey crank rotation instructions as disregard could cause bodily harm or property damage. When facing the crank handle side of the winch, crank **clockwise to lift or move the load, counter-clockwise to lower the load**. Never release the crank handle unless the ratchet pawl is fully engaged and supporting the load.

### CAUTION

Never exceed the **rated capacities** shown below and on the winch frame.

Maintain a **minimum of three wraps of cable on the drum** at all times.

**Never use worn, kinked, or frayed cable**. These conditions are unsafe. **Replace the cable immediately**.

Be sure that the cable on the winch is strong enough to support the load to be lifted. Always inspect the cable and hook before each use

to make sure they are not damaged. If the cable or hook breaks, the cable can act like a whip and inflict serious injury to anyone in it's path.

Never stand along side the winch cable, or guide the cable with your hands.

Never permit anyone on or under the load that is being pulled or lifted.

Never operate with wet or oily hands and always use a firm grip on the handle.

Never leave a weight hanging by the winch while the winch is unattended, as unauthorized persons may attempt to operate the winch, thereby, creating an unsafe condition.

### TECHNICAL SPECIFICATIONS

Load Capacity first layer 2500 lbs. (6.7kN)

Load Capacity top layer 1500 lbs. (5.5kN)

Cable 5/16" Dia. 7 x 19 Aircraft (8mm)

15.8:1 Gear Ratio, Maximum Mechanical Advantage 101:1

Automatic load holding brake system

When cranking counter-clockwise this winch incorporates a mechanical brake by-pass system that winds cable off the drum when the load is very light. The brake will reset when the load is increased.

### INSTALLATION

1 Assemble handle onto flattened input shaft end. Tighten the 1/2-13 locknut against handle. Note: Do not remove the locknut on the opposite end of input shaft. It is an important part of the load-lok braking system and must be intact. See Fig. 1.

2 Bolt or weld the winch to a structure capable of supporting at least 5 times the load the winch will be pulling.

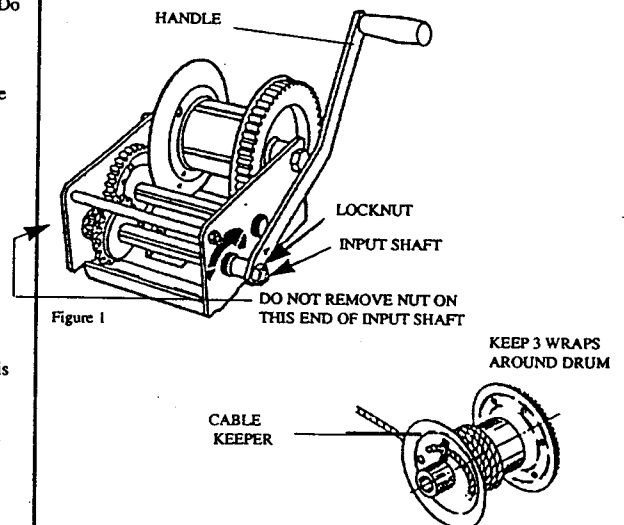
When bolting the winch down, use at least grade 5, 3/8 dia. bolts, flat washers and locknut (not supplied).

#### CABLE TO DRUM

1 Feed cable under the bottom of drum, thru hole, and through cable clamp with one inch extending past clamp.

2 With keeper nuts and lockwashers outside the drum side, tighten nuts until adequate cable clamping is acquired.

3 Always be sure the cable is pulling straight off the winch not at an angle. This will prevent the cable from rubbing against the sides of the drum, which can damage the cable.



### OPERATION

The brake is actuated by turning the handle. The load-lok brake is designed to hold the load whenever the handle is released.

#### A TO PULL CABLE IN OR RAISE LOAD

1 The cable must be securely fastened to the object being moved or lifted and to the winch drum.

2 Always be sure that the cable and cable attachments are not damaged and are strong enough for the load. Assure there is adequate safety factor for

all components used.

3 Referring to the "Load-Unload" decal on side of winch, crank handle clockwise to move or lift, making sure the clicking sound of the ratchet is heard.

#### B TO LET CABLE OUT OR LOWER LOAD

1 Referring to the "Load-Unload" decal on side of winch, crank handle counterclockwise. No clicking sound will be heard because the load-lok braking system is now activated.

## MAINTENANCE

Do not get oil or grease on friction disks. This could allow the load to slip or fall.

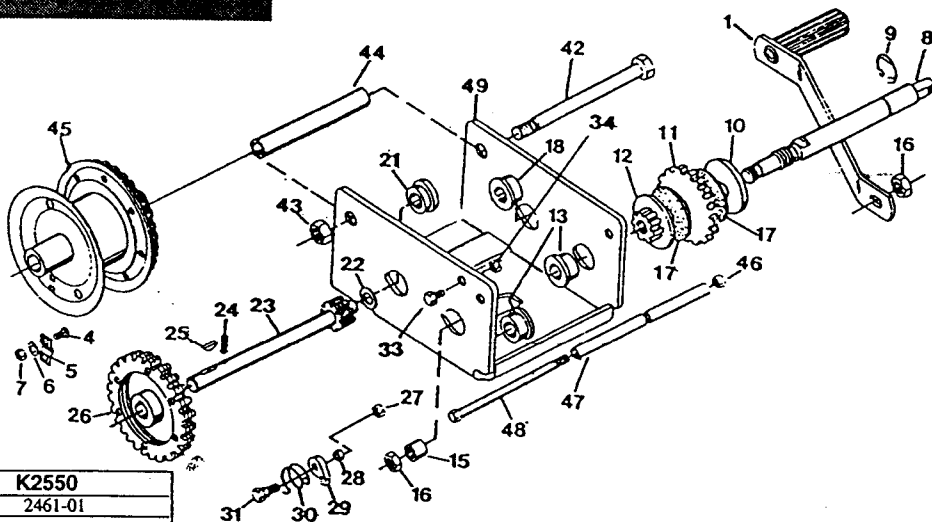
- 1 Maintain a film of automotive type grease to both the pinion and drum gear teeth, and to the O.D. of drum bearing, Item 44, at all times.
- 2 Keep ratchet pawl pivot, bushings, and pinion threads lubricated with automotive engine oil at all times.

3 Check brake friction disks, Items 17, for wear. If less than 1/16 of an inch thick, cracked, or broken, they must be replaced.

4 During each usage, check for proper ratchet operation as follows: When cranking cable in, a loud clicking sound should be heard. When cranking cable out, there is no clicking and the ratchet pawl should be fully engaged into the ratchet gear teeth.

### PARTS LIST

When repairing the winch, mark all parts in the order of disassembly to insure proper re-assembly.



ITEM	DESCRIPTION	K2550
1	HANDLE ASSEMBLY	2461-01
4	BOLT	
5	CABLE CLAMP	Cable Keeper
6	LOCKWASHER	Kit
7	NUT	5621-01
8	INPUT SHAFT	
9	RETAINING RING	
10	BRAKE DISC	
11	RATCHET GEAR	
12	PINION GEAR	Input Shaft
13	BUSHING	Kit
15	SPACER	1565S01
16	NUT	
17	FRICITION DISC	Kit 1578S00
18	BUSHING	
21	BUSHING	
22	WASHER	Intermediate
23	INTERMEDIATE SHAFT	Shaft
24	ROLLPIN	Kit
25	WOODRUFF KEY	1568S01
26	GEAR	
27	NUT	
28	SPACER	Ratchet
29	RATCHET PAWL	Kit
30	SPRING	6730S00
31	SHOULDER BOLT	
33	CAPSCREW	218-01
34	LOCKNUT	36-01
42	DRUM BOLT T-GRADE 5	6395-01
43	LOCKNUT	83-01
44	DRUM SPACER	6394-01
45	DRUM ASSEMBLY	N/A
46	LOCKNUT	36-01
47	FRAME SPACER	6586-01(2)
48	BOLT	6587-01
49	FRAME	N/A

### HOW TO ORDER REPAIR PARTS

Always replace broken or bent parts before using this product. Use only Fulton Performance Product's parts or parts of equal quality for repair. Replacement parts are available through Fulton Performance Product's Customer Service Department, (715)693-1700. Please specify product model number, name of parts, and part number.

### LIMITED WARRANTY

Fulton products are warranted to the original consumer purchaser to be free from defects in material and workmanship under normal use and service, ordinary wear and tear excepted, for a period of three (3) years from the date of purchase as shown on the Customer's receipt. This warranty shall not apply to any defects caused by: (I) physical abuse of the goods or any component or acts of vandalism by any persons other than Fulton, it's employees, agents, or subcontractors; (II) alterations, modifications, additions, or repairs made during the applicable warranty period by anyone other than Fulton employees, agents or subcontractors; (III) improper installation or use contrary to Fulton's instruction; or (IV) accidents or damage resulting from fire, water, wind, hail, lightning, electrical surge or failure, earthquake, theft or similar causes not caused or contributed to by the negligence of Fulton or it's employees, agents, or subcontractors.