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Form No. SP04896400

Parts List &
Operating Instructions
for:

1735B

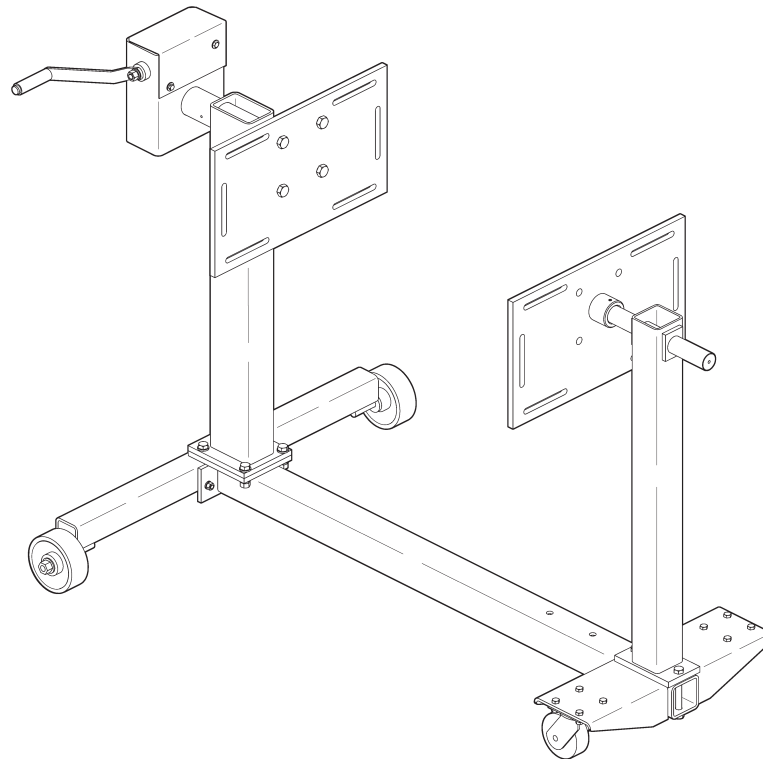
Original Instructions

Motor-Rotor® Universal Repair Stand

Maximum Capacity: 907 kg (2000 lbs.)

Weight: 131.5 kg (290 lbs.)

Description: Heavy-duty repair stand designed as a work-holding device for engines, transmissions, torque converters, and rear axles from trucks, tractors, and construction machinery.



Explanation of Safety Signal Words

The safety signal word designates the degree or level of hazard seriousness.

! **DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

! **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

! **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Sheet No. 1 of 4

Issue Date: Ver. 01 March 8, 2024

Safety Precautions



CAUTION: To prevent personal injury and/ or property damage,



- Study, understand, and follow all safety precautions and operating instructions before using this repair stand. If the operator cannot read instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.



- Only qualified operators may install, operate, adjust, maintain, clean, repair, inspect, or transport this repair stand.



- Wear eye protection that meets ANSI Z87.1 and OSHA standards.
- Do not exceed the rated capacity of 907 kg (2000 lbs.).
- Use only on a hard, level surface.
- Lock the handle locking mechanism before applying a load to the engine stand. Lock the handle locking mechanism once the engine is in a working position.



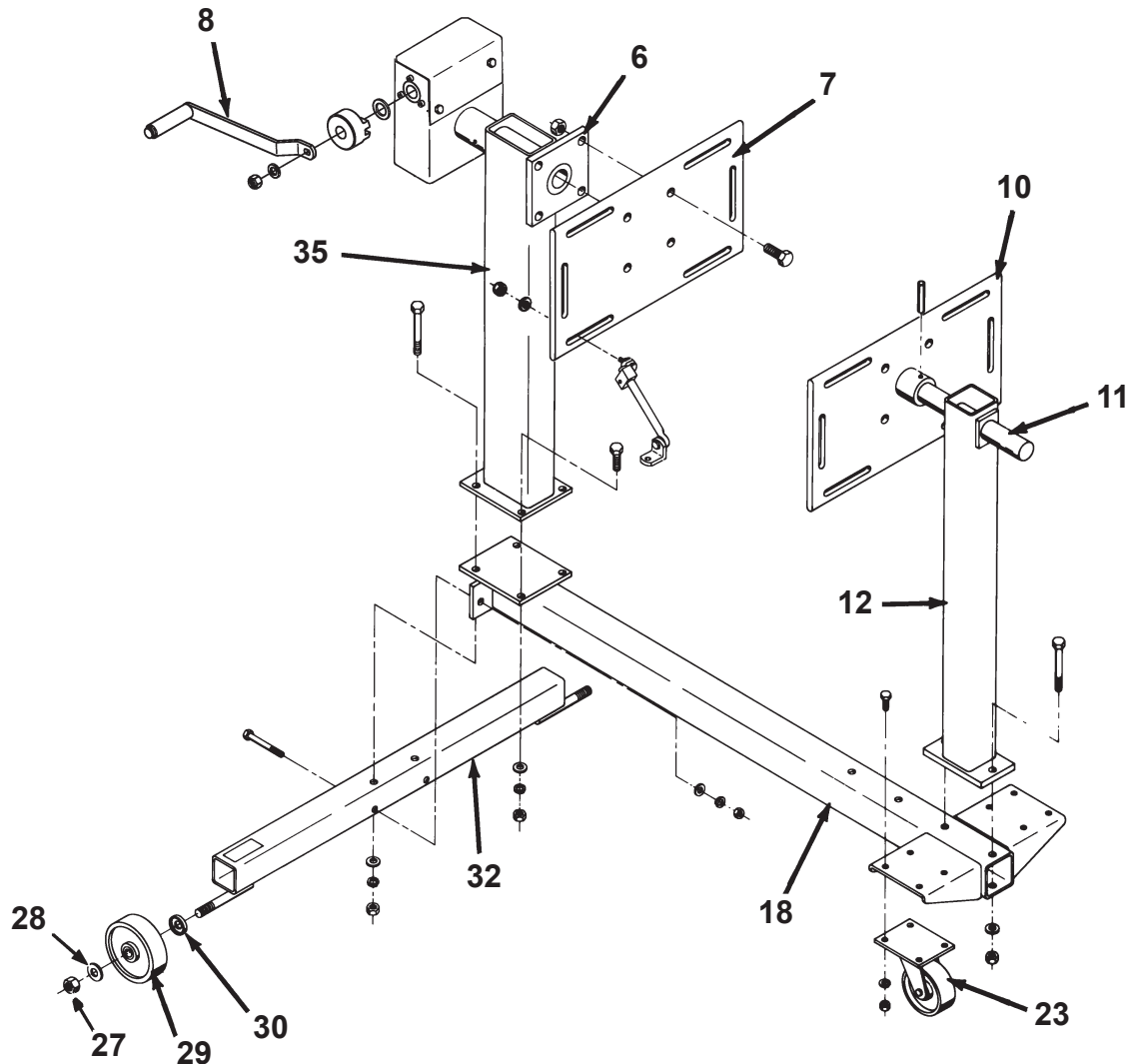
- Ensure the load is centered and secured to mounting attachments. Use metric property class 8.8 or SAE Grade 5 cap screws (or better) to attach mounting adapters to the repair stand and to the component. Mount the engine so weight is balanced within 51 mm (2.0 inches) of the repair stand centerline.



- An engine that weighs less than 454 kg (1,000 lbs.) may be mounted with a minimum of four (4) adjust-a-grip arms; an engine that weighs more than 454 kg (1,000 lbs.) must be mounted with special adapters or with a minimum of six (6) adjust-a-grip arms.



- Rotate large components slowly to avoid bouncing.
- Move the repair stand **SLOWLY** to avoid tipping.
- Never work under an engine or any other component mounted to this repair stand.
- Do not use this repair stand for anything other than its intended purpose.
- No alteration shall be made to this product. Use only those attachments and / or adapters supplied by the manufacturer.
- Inspect the condition of the repair stand before each use; do not use if damaged, altered, or in poor condition.
- Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by OTC.



Assembly Instructions

Item numbers in parentheses refer to the graphic on this page.

1. Use 3/8-16 UNC x 88.9 mm (3.5 in.) cap screws to securely bolt the rear axle (Item 32) to lower frame (18).
2. Place a wheel lock (30) on each axle, with the knurled portion of the wheel lock facing toward the wheel. Slide a wheel (29) onto each axle, and secure with a washer (28) and self-locking nut (27).
3. Use 3/8-16 UNC x 25.4 mm (1.0 in.) cap screws to fasten the swivel casters (23) to the front of the lower frame.
4. Use 1/2-13 UNC x 101.6 mm (4 in.) and 1/2-13 UNC x 38.1 mm (1.5 in.) cap screws to securely bolt the inner post (35) to the lower frame assembly.
5. Use 5/8-11 UNC x 44.5 mm (1.75 in.) cap screws to securely bolt the plate (7) to the mounting plate (6).
6. Use 1/2-13 UNC x 101.6 mm (4.0 in.) cap screws to bolt the outer post (12) to the lower frame.
7. Use a 1/4 x 57.2 mm (2.25 in.) roll pin to assemble the support plate (10) to the rod (11). Insert this assembly into the outer post (12).
8. Position the handle (8) as shown, and secure it to the shaft with the 12.7 mm (.50 in.) diameter self-locking nut and washer.

Operating Instructions

1. Verify the handle locking mechanism on the engine stand is engaged before mounting an engine. Refer to Figure 1.
2. Determine the engine's center of balance (or greatest concentration of weight).
3. Position the engine so its center of balance is located in the center of the mounting area of the support plates. See Figure 2.

⚠ CAUTION: A load weighing the maximum rated capacity of 907 kg (2,000 lbs.) must be balanced to within 51 mm (2.0 inches) of the centerline of the support plates. An off-center load could cause the repair stand to be unstable when rotated.

4. Attach the universal mounting arms to suitable mounting holes. Attach the arms at various angles, and as far apart as practical for greater supporting strength.

⚠ CAUTION: To prevent personal injury and equipment damage,

- Use only metric property class 8.8 or SAE Grade 5 cap screws. Refer to Figure 3.
- Because of the many different ways to mount engines, the exact number of mounting arms needed is hard to specify. However, six (6) mounting arms are required when mounting components weighing between 454 kg (1,000 lbs.) and 907 kg (2,000 lbs.)

5. After the engine and universal mounting arms are correctly positioned, torque all mounting hardware cap screws to 82–102 N•m (60–75 ft. lbs.)
6. Verify the engine is securely mounted to the repair stand and all mounting hardware is torqued.
7. Slowly release the engine from the lifting device.
8. Use the hand crank as necessary to rotate the engine into an optimum working position.

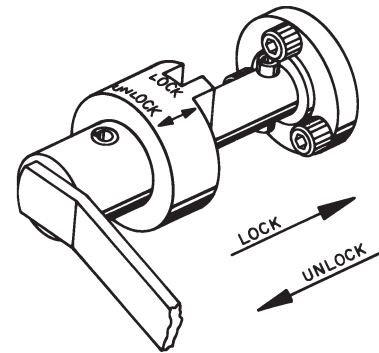


Figure 1

Handle Locking Mechanism

To ensure engine stability in all positions, this repair stand is equipped with a positive-crank handle locking mechanism. See Figure 1.

To Engage: Slide the collar inward toward the gear housing. Align and engage the collar slots with the socket head cap screws of the housing. It may be necessary to rotate the crank slightly to engage the collar.

To Disengage: Slide the collar away from the housing beyond the shaft's ball detent.

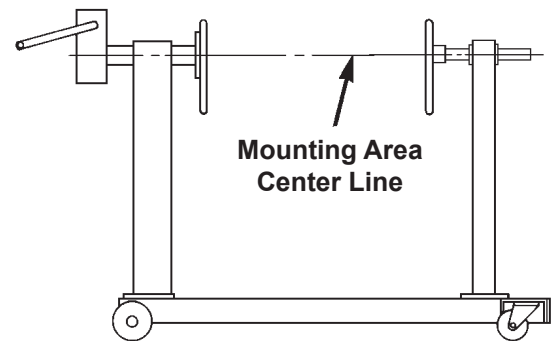


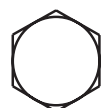
Figure 2



SAE
Grade 5



Metric
Property Class 8.8



Not Graded
(no markings)

Figure 3

Inspection and Maintenance



CAUTION: To prevent personal injury,



- Only qualified personnel shall perform inspections and repairs to this repair stand.
- Do not use your fingers to apply grease to the gear box assembly; fingers can easily be caught in the worm gear.

Inspection

Before each use, an approved inspector must inspect the repair stand for bends, cracks, dents, elongated holes, or missing hardware. If damage is found, discontinue use.

Maintenance

1. Periodically grease the zerk (Item 36 in the parts list) on the rotating shaft located on the inner post.
2. Periodically clean the wheels and casters, and apply a low-temperature grease.
3. Keep the worm gear assembly well lubricated. Brush Molykote®-type GN paste into the gear assembly from the bottom of the housing while rotating the gear box.
4. Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by US Service Solutions LLC.

Adjusting the Worm Gear Assembly

Periodic adjustment of the worm gear assembly may be necessary due to wear or replacement of parts. To remove free play from the worm gear assembly:

1. Remove all weight from the repair stand.
2. Loosen the small socket head set screw (see Figure 4).
3. Turn the large socket head set screw clockwise until there is no free play. Torque the large socket head set screw to 8 N•m (70 in. lbs.).
4. Tighten the small set screw.
5. Rotate the crank handle until the support plate has been rotated one complete turn.
6. Place a torque wrench on the crank handle nut as shown in Figure 5. The torque required to move the handle should be no more than 7 N•m (60 in. lbs.).

Disposal

At the end of the useful life of the repair stand, dispose of repair stand components according to local regulations.

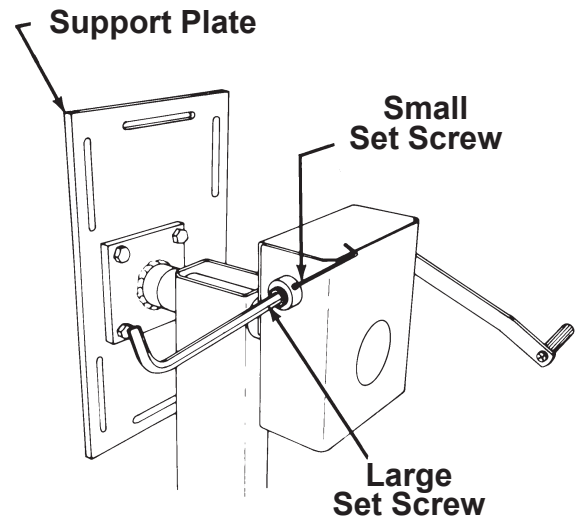


Figure 4

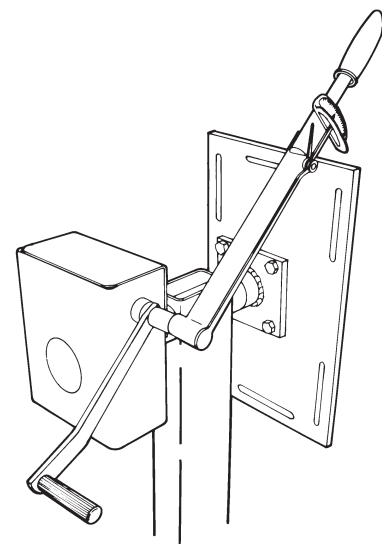
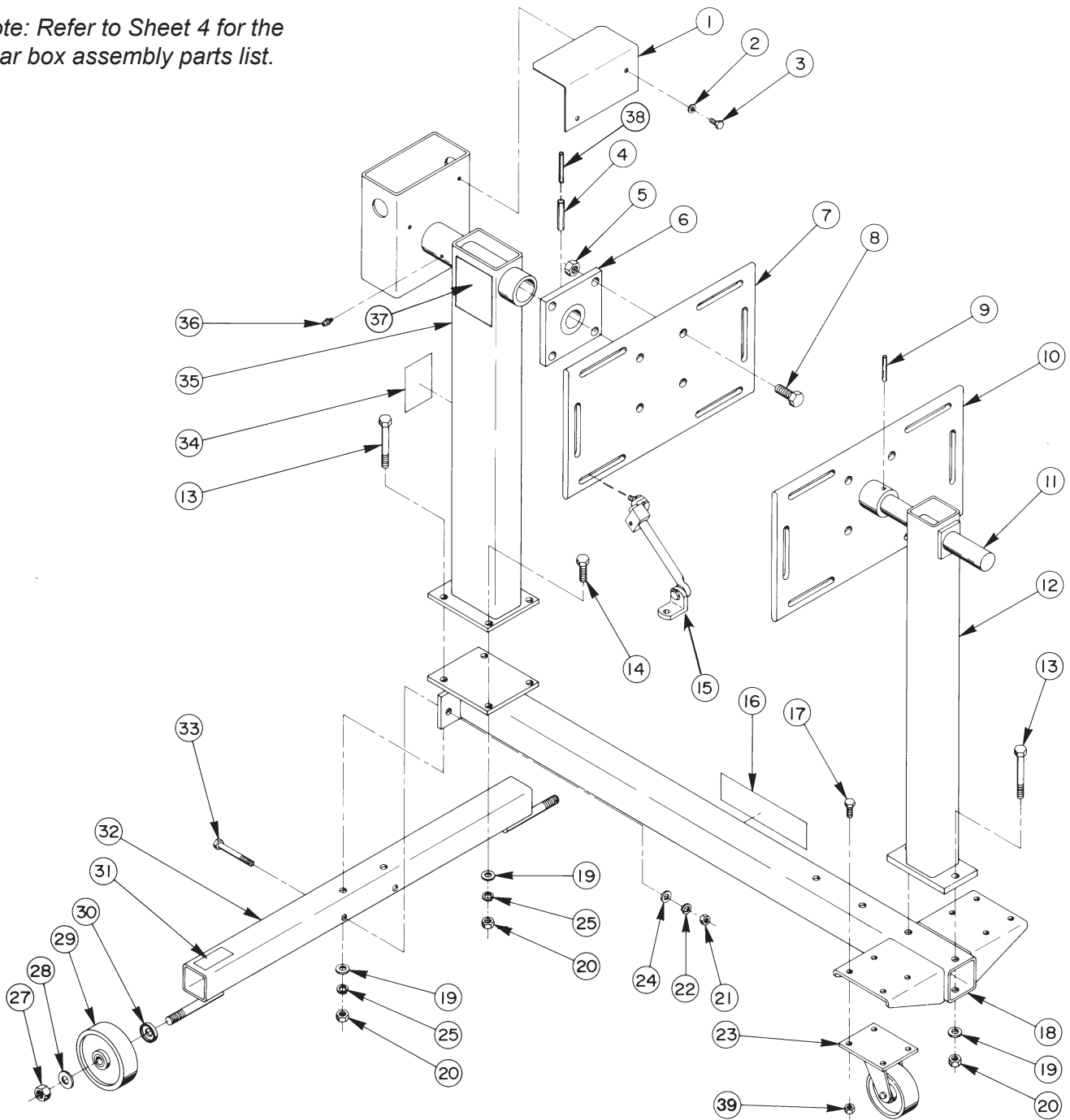


Figure 5

Parts List

Note: Refer to Sheet 4 for the gear box assembly parts list.



Refer to any operating instructions included with the product for detailed information about operation, testing, disassembly, reassembly, and preventive maintenance.

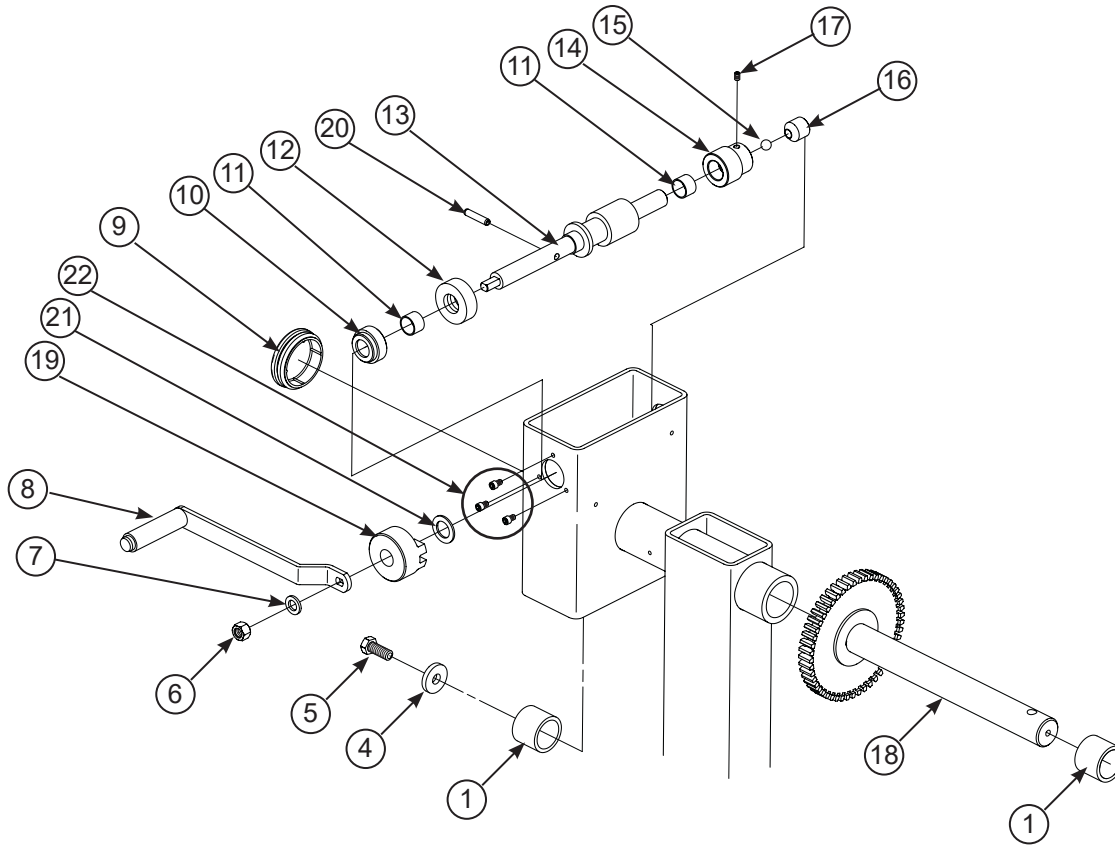
Items found in this parts list have been carefully tested and selected by OTC. **Therefore: Use only genuine replacement parts.**

Additional questions can be directed to our Technical Service Dept.

Item No.	Part No.	No. Req'd	Description
1	537197	1	Cover
2	*	2	Washer—for 1/4 inch bolt
3	*	2	Cap Screw—1/4-20 UNC x 15.9 mm (.625 in.) lg.
4	*	1	Spring Pin—12 mm x 65 mm (.50 in. x 2.56 in.)
5	*	4	Nut—5/8-11 UNC
6	537205	1	Mounting Plate
7	539591	1	Plate
8	*	4	Cap Screw—5/8-11 UNC x 44.5 mm (1.75 in.) lg.
9	*	1	Grooved Pin—6 mm x 60 mm (.25 in. x 2.36 in.)
10	537202	1	Support Plate
11	537192	1	Rod
12	537199	1	Outer Post
13	*	4	Cap Screw—1/2-13 UNC x 101.6 mm (4.0 in.) lg.
14	*	2	Cap Screw—1/2-13 UNC x 38.1 mm (1.50 in.) lg.
15	538578	4	Universal Arm Assembly
16	12926	1	Motor-Rotor Decal
17	*	8	Cap Screw—3/8-16 UNC x 19 mm (.75 in.) lg.
18	537200	1	Lower Frame
19	*	6	Washer—for 1/2 inch bolt
20	*	6	Nut—1/2-13 UNC
21	*	2	Nut—3/8-16 UNC
22	*	2	Lockwasher—for 3/8 inch bolt
23	541027	2	Swivel Caster
24	*	2	Washer—for 3/8 inch bolt
25	*	4	Lockwasher—for 1/2 inch bolt
27	*	2	Locknut—5/8-11 UNC
28	*	2	Washer—for 5/8 inch bolt
29	541032	2	Wheel
30	537196	2	Wheel Lock
31	206182	1	Decal
32	537203	1	Rear Axle
33	*	2	Cap Screw—3/8-16 UNC x 88.9 mm (3.50 in.) lg.
34	11280	1	Decal
35	537201	1	Inner Post
36	*	1	Grease Fitting
37	538576	1	Warning / Logo Decal
38	*	1	Spring Pin—8 mm x 65 mm (.315 in. x 2.56 in.)
39	*	8	Locknut—3/8-16 UNC

CAUTION: To prevent equipment failure, replacement hardware must be Grade 2 or better. Cap screws must be SAE Grade 5 or Metric Property Class 8.8. Items marked with an asterisk (*) are contained in Hardware Kit No. 549844.

Gear Box Assembly



Item No.	Part No.	No. Req'd	Description
1	*	2	Bearing Sleeve
4	*	1	Washer—for 1/2 inch bolt
5	*	1	Self-locking Screw 1/2-13 x 31.8 mm (1.25 in.); torque to 7/14 N•m (60/120 in. lbs.)
6	*	1	Locknut—1/2-13 UNC
7	*	1	Washer—for 1/4 inch bolt
8	548176	1	Handle
9	*	1	Plug
10	537194	1	Collar
11	*	2	Bearing Sleeve
12	*	1	Thrust Roller Bearing
13	565590	1	Worm Shaft Assembly
14	537195	1	Collar
15	*	1	Steel Ball—127 mm (.50 in.) dia.
16	*	1	Set Screw
17	*	1	Set Screw
18	537204	1	Gear and Shaft Assembly
19	38369	1	Lock
20	*	1	Spring Pin
21	*	1	Thrust-bearing Washer
22	*	3	Socket HD Cap Screw

Note: The worm gear and the zerk on the rotating shaft were greased at assembly using No. 12387 Mobilux Lithium Grease and No. 210158 Gear Lubricant.