WORKMASTER®

WE FIND A WAY — OR MAKE ONE!

GO-M04 Gate Opener

OWNER / OPERATOR MANUAL

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SYMBOLS

The following symbols are found throughout this Owner/Operator Manual to alert the reader to the relative danger that may result from non-observance.

This indicates a situation in which a hazard is imminent and will result in a high probability of serious injury or death.

This indicates a potentially hazardous situation, which could result in minor to moderate injury.

CAUTION

This indicates a potentially hazardous situation or unsafe practice which could result in product or property damaged.

IMPORTANT

This symbol indicates a general statement to assist the user in the operation or maintenance of the equipment.

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I. INTRODUCTION

Fast, safe, and economical unloading of covered hopper cars continues to be a problem at most unloading sites. One of the biggest contributors to this problem is the often time-consuming and difficult job of opening and closing bottom gates or doors of these hopper cars. Load compaction, weather conditions, age, abuse, or corrosive or gritty bulk materials can combine to prevent gate mechanisms from operating smoothly.

Regardless of cause, the costs associated with the problem are significant. Delays in emptying the hopper cars means slow car turnaround, increased demurrage costs, and interrupted production schedules. Even more importantly, the chance of worker injury is high since at many unloading sites, clumsy or dangerous makeshift tools are used during the "fight" to open a stubborn gate.

To meet our commitment of **"WE FIND A WAY – OR MAKE ONE"**, **WORKMASTER** has developed a line of Hopper Car Gate Openers and accessories which provide a safe, efficient, and economical solution to the problem of opening easy, medium, and hard-to-open hopper car gates.

There are pneumatic, electric and manual units available producing up to 13,000 ft-lbs of torque eliminating the need for "cheater" bars, sledge hammers, jacks, and other improper tools sometimes used on this difficult job.

This Operator's Manual details the specifications, operation, maintenance, and safe use of the **GO-M04** Hopper Car Gate Opener. Experience has proven that the **GO-M04** Opener should be used on easy-to-open car gates. However, the same experience demonstrates that total satisfaction in use depends on attention to detail in operating and maintaining the unit.

The **GO-M04** Gate opener uses a geared action to open or close hopper car gates with a continuous 360° rotation in either clockwise (CW) or counter-clockwise (CCW) direction. Input and output rotation directions are the same. (EXAMPLE: Clockwise input rotation using the ratchet wrench creates clockwise output rotation on the Capstan Drive Fitting.)

IMPORTANT

All persons involved in the operation and maintenance of this equipment should be thoroughly familiar with the contents of this manual.

II. SAFETY

To prevent injury to yourself or others, and/or damage to equipment, you should adhere to the following basic safety instructions.

1. Read carefully the entire Operator's Manual prior to installing or operating equipment.

2. Always follow proper precautions and use proper tools and safety equipment.

3. Be sure to receive proper training.

4. Always use the equipment and all its components in applications for which they are approved.

5. Be sure to assemble all components correctly.

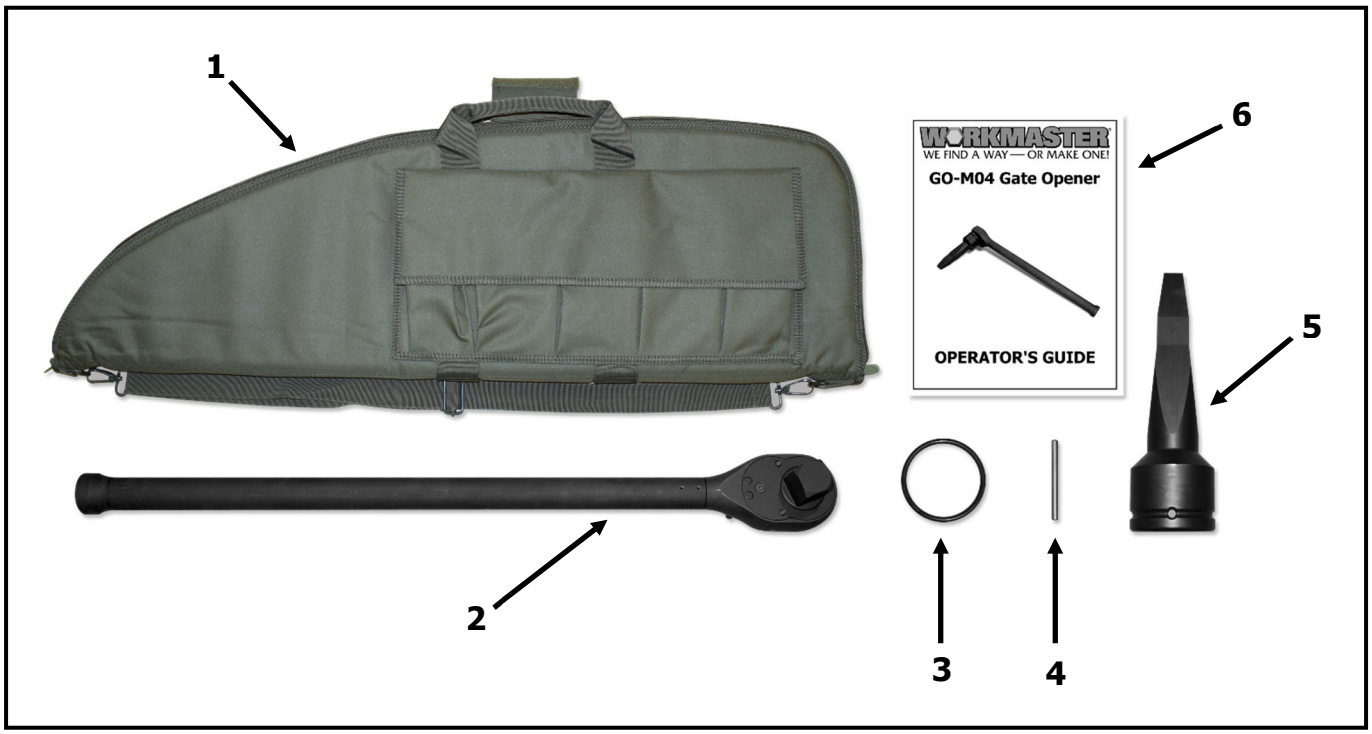
6. Never use worn, defective or damaged components.

7. Practice good housekeeping at all times, and maintain good lighting around all equipment.

8. Perform Lock-out/Tag-out procedure on all energy sources to the equipment, mounting structure, loading, and discharge systems in accordance with ANSI Standards before installation or maintenance.

III. SUPPLIED MATERIALS

The **GO-M04** comes shipped unassembled in its carry/storage bag. Prior to assembly, verify that all of the components are present and in good condition.

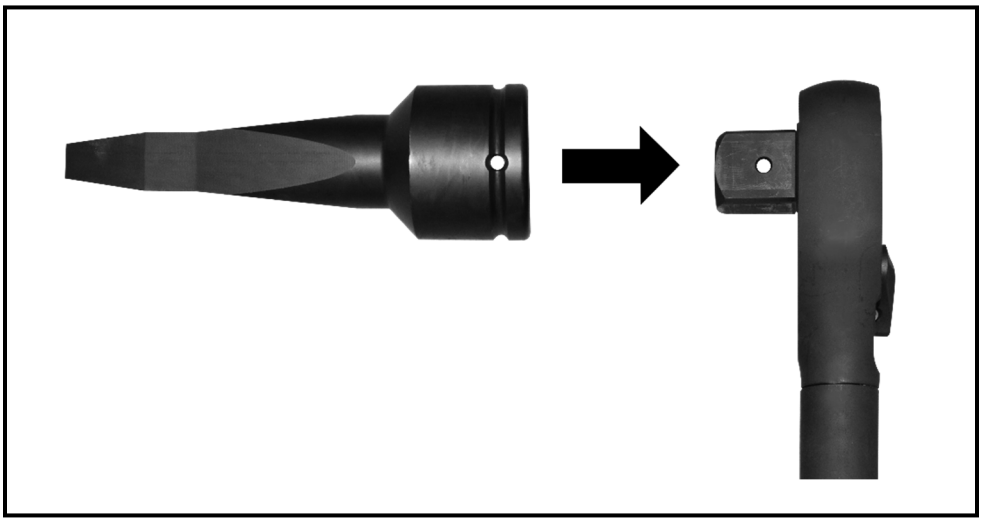


1. Carrying Case
2. Ratchet Wrench Assembly
3. O-Ring
4. Pin
5. Capstan Drive Fitting
6. Operator's Manual

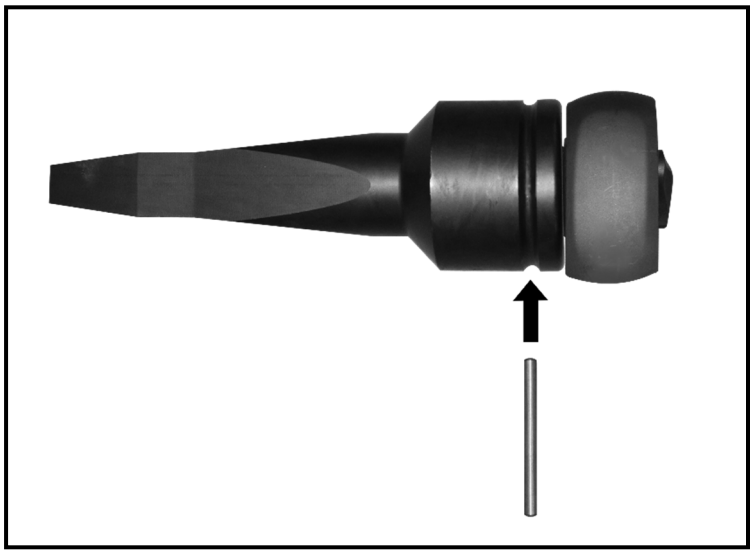
IV. ASSEMBLY

1. Place the Ratchet Wrench Assembly on a clean, flat surface.

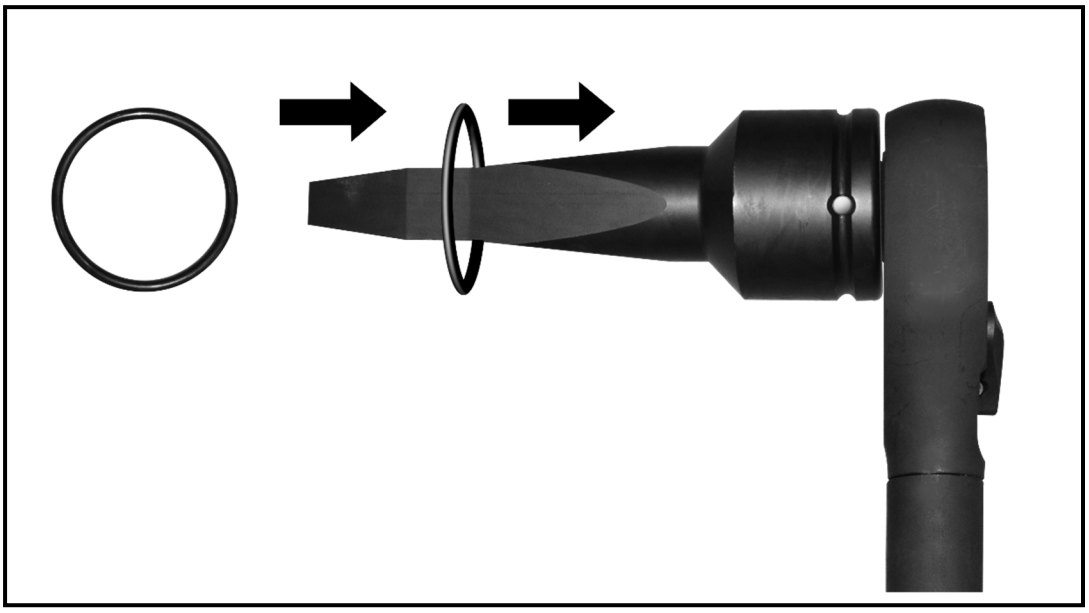
2. Place the Capstan Drive Fitting over the Ratchet Assembly's 1-1/2" square drive anvil.

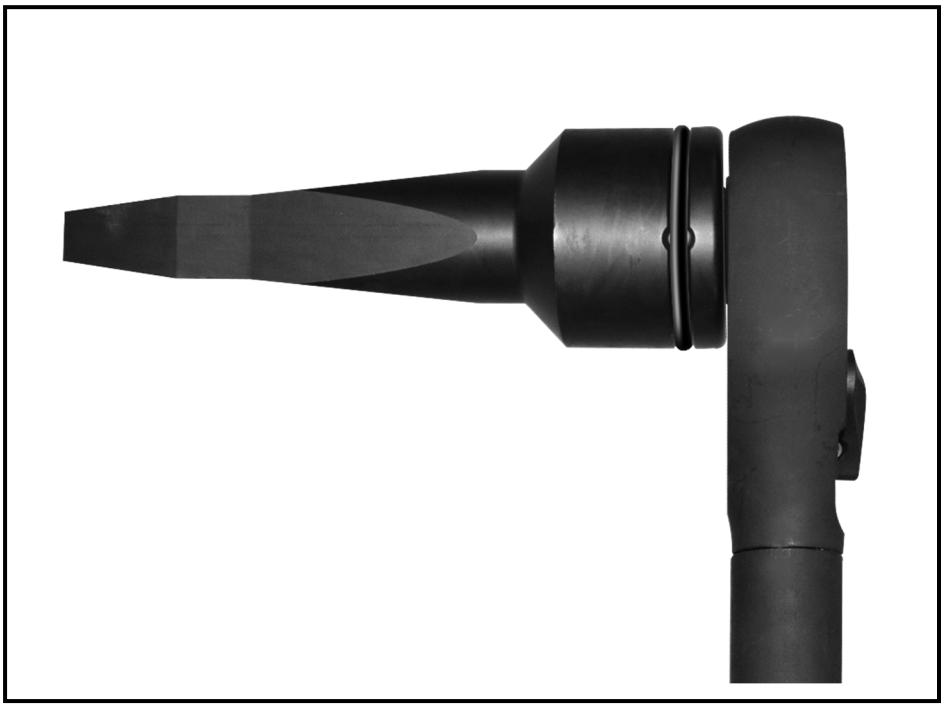


3. Insert Pin (provided) into the Drive Fitting and Wrench's thru-hole.



4. Slide the O-Ring (provided) over the Drive Fitting until it seats into the Fitting's ring-groove. This stops the Pin from coming out.





V. OPENING CAR GATES

1. Inspect and prepare the trackside worksite so that it will accommodate the practical and safe use of the **GO-M04** Gate Opener.

2. Disengage the Car Gate Locking Mechanism before attempting to open the gate.

CAUTION

Failure to disengage the Car Gate Locking Mechanism will damage the Opener.

3. Using the Capstan Swaging Kit (optional accessory, **PN: 33-11120**), clean-out and square-up the capstan socket on the car gate so that the Capstan Drive Fitting on the Ratchet Wrench's output drive can be aligned properly, and fully seated in the railcar gate's capstan socket.

IMPORTANT

Regular use of the CAPSTAN SWAGING KIT will ensure a long-life for your Drive Fitting and your Impactor's Square Drive Anvil. Also, a clean, square Capstan socket will maximize the torque transfer between the **GO-M3** Opener and the Car Gate.

4. Should the railcar's capstan barrel socket be completely worn, use our CAPSTAN RENEW ATTACHMENT, **PN 80-10728**, which slips over the barrel and then pin-locks in place to provide a reusable, perfectly formed female square socket.

5. Firmly seat the capstan drive fitting into the car's capstan socket.

6. Set the Wrench's direction of rotation (CW or CCW) (**Figure 1**) by securely positioning the pivoting selector pawl to the appropriate direction based on capstan travel.

7. Apply force to the ratchet wrench.

DANGER

Maintain firm hand control of the GO-M04 or the ratchet wrench handle during entire opening operation**.**

IMPORTANT

The preferred method is to pull on a ratchet wrench. Pushing on the ratchet wrench is normally considered dangerous because if slippage or breakage occurs, the operator can strike his/her knuckles. Sometimes, however, this is the only way the tool can be used. If this is the case, use extra caution, eg, wear gloves, use a shorter stroke, etc.

CAUTION

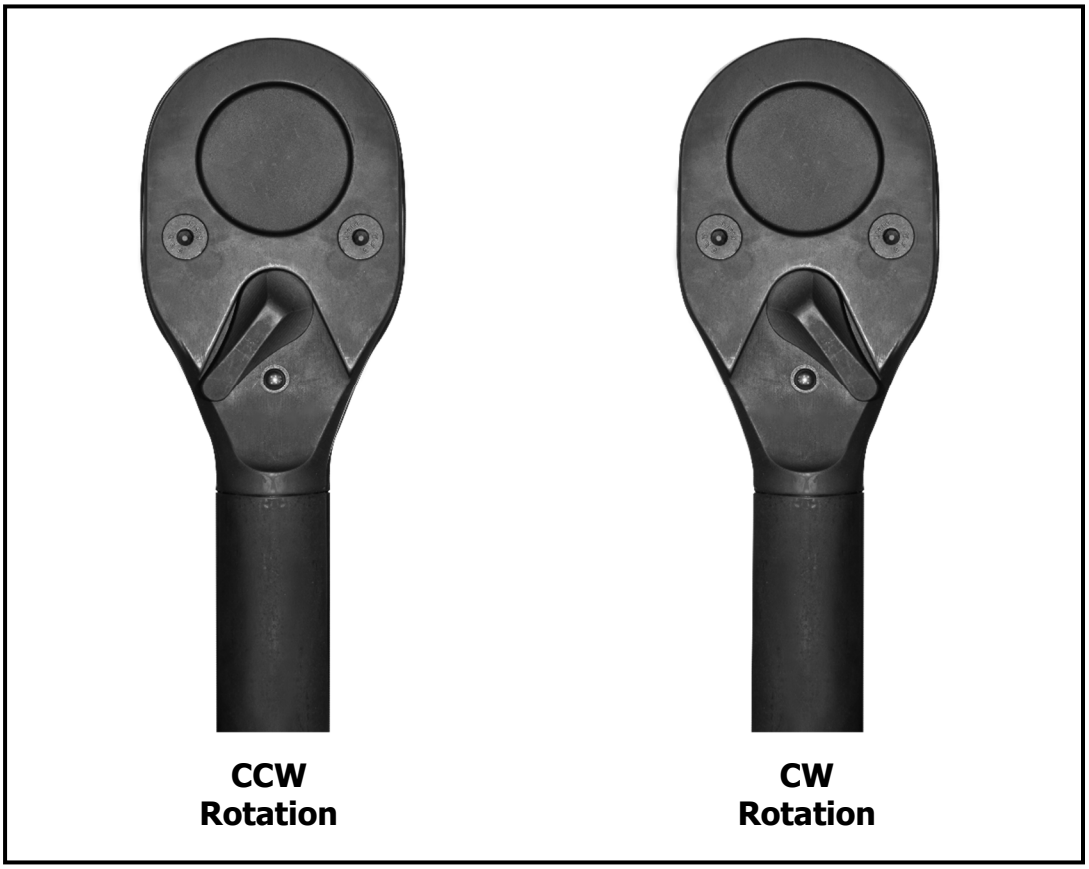
If the railcar gate will not move, STOP using the GO-M04 Opener and notify your Supervisor. Continued application of force will damage the Opener.

DANGER

Do not use other opening devices (pry bars, multipliers, etc.) to "help" the GO-M04 Opener.

8. When the gate is fully open, stop ratcheting and remove the **GO-M04** from the car's capstan socket.

Figure 1: F/R Direction



VI. CLOSING CAR GATES

1. Inspect and prepare the trackside worksite so that it will accommodate the practical and safe use of the **GO-M04** Gate Opener.

2. Disengage the Car Gate Locking Mechanism before attempting to close the gate.

CAUTION

Failure to disengage the Car Gate Locking Mechanism will damage the Opener.

3. Re-examine the car's capstan socket. Look for rounded edges, spalling or mushrooming. If needed, re-use the swage tool to square-up the capstan socket.

IMPORTANT

Regular use of the CAPSTAN SWAGING KIT will ensure a long-life for your Drive Fitting. Also, a clean, square capstan socket will maximize the torque transfer between the Opener and the car gate.

4. Firmly seat the Capstan Drive Fitting into the car's capstan socket.

5. Set the Wrench's direction of rotation (CW or CCW) (**Figure 1**) by securely positioning the pivoting selector pawl to the appropriate direction based on capstan travel.

6. Apply force to the Ratchet Wrench.

Maintain firm hand control of the GO-M04 or the ratchet wrench handle during entire opening operation.

IMPORTANT

The preferred method is to pull on a ratchet wrench. Pushing on the ratchet wrench is normally considered dangerous because if slippage or breakage occurs, the operator can strike his/her knuckles. Sometimes, however, this is the only way the tool can be used. If this is the case, use extra caution, eg, wear gloves, use a shorter stroke, etc.

CAUTION

If the railcar gate will not move, STOP using the **GO-M04** Opener, and notify your supervisor, continued operation will damage the Opener.

Do not use other opening devices (pry bars, multipliers, etc.) to "help" the **GO-M04** Opener.

7. When the gate is fully closed, stop ratcheting and remove the **GO-M04** from the car's capstan socket.

VII. EXTENSION BARS

An Extension Bar – of reasonable length – can be used to increase the **GO-M04**'s torque output. Although the gears inside the **GO-M04**'s ratcheting head are capable of generating up to 5,000 ft-lbs of torque, the length of the Extension Bar, the overlap of the Extension Bar on the **GO-M04** handle, and the type of force applied to the Extension Bar can cause the handle to bend. **A bent handle is not covered by warranty.**

CAUTION The addition of an Extension Bar introduces a potential hazard both to the Gate Opener and Operator if proper safety precautions are not followed.

1. Read and understand **Appendix B: Torque** found in this Manual before determining if an Extension should be used and what length the Extension should be so as to use the **GO-M04** safely.

2. Make sure an Extension Bar safely and **fully overlaps** the **GO-M04**'s Ratchet Handle.

3. Watch and maintain the Extension Bar's safety-overlap during ratcheting so as to eliminate the possibility of slipping or bending the Ratchet Handle.

4. Maintain firm footing and hand control during operation.

VIII. SERVICING THE GO-M04

When the **GO-M04** is in-for-maintenance and the unit has been disassembled (partial or complete), the components should be cleaned and inspected for wear before reassembly of the Opener. Proper maintenance of equipment often depends upon the ability of a service technician to determine whether a part or assembly is worn to the point where it should be replaced. Refer to **Section IX: Exploded View** during disassembly and reassembly of this Tool.

Always wear proper eye protection when servicing the **GO-M04**. Spring loaded mechanisms always pose an inherent danger.

DISASSEMBLY

1. Remove Positioning Bolt **[1]** from Cover Plate **[2]** using a 4mm Allen Wrench.

2. Remove Direction Switch **[8]** by pulling Switch away from Drive Case **[7]**. On newer units it may be necessary to "work" Switch back and forth while pulling from Drive Case.

3. Using a 5mm Allen Wrench, remove the two Screws **[9]** from the back of the Drive Case **[7]**.

4. Remove Cover Plate **[2]**.

IMPORTANT

At this point – make note of the position and orientation of each internal part. The Right Stopper [4] and Left Stopper [5] look very similar but are unique.

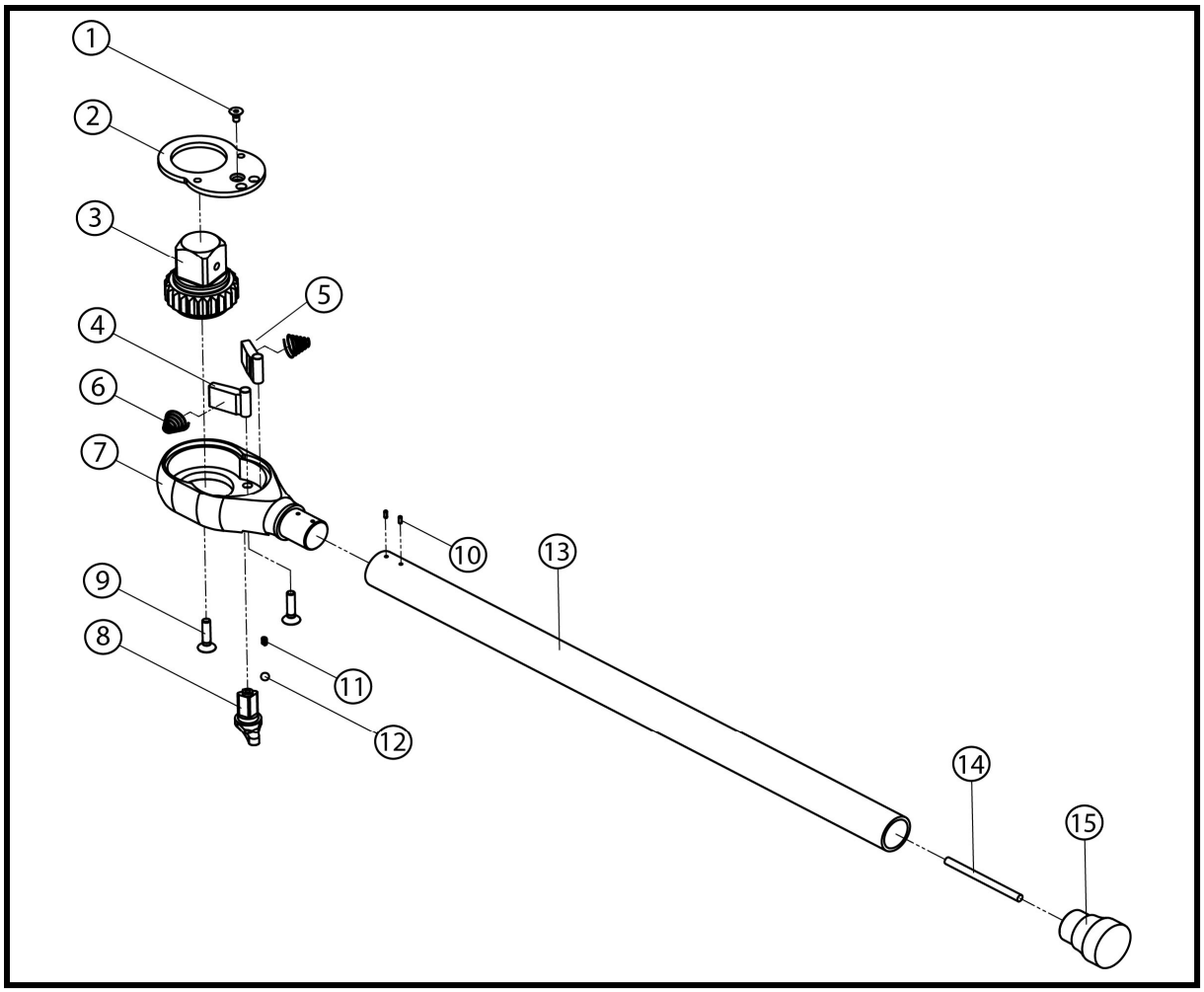
5. Remove Stopper Springs **[6]**.

6. Remove Left Stopper **[5]** and Right Stopper **[4]**.

7. Remove Drive Gear **[3]**.

8. After the parts have been cleaned, inspected and/or replaced, the **GO-M04** can be reassembled.

IX. EXPLODED VIEW



Item #	Part #	Description	Qty
1	33-M4001	Positioning Bolt	1
2	33-M4002	Cover Plate	1
3	33-M4003	Drive Gear	1
4	33-M4004	Right Stopper	1
5	33-M4005	Left Stopper	1
6	33-M4006	Spring	2
7	33-M4007	Drive Case	1
8	33-M4008	Direction Switch	1
9	33-M4009	Screw	2
10	33-M4010	Pin	2
11	33-M4011	Spring	1
12	33-M4012	Steel Ball	1
13	33-M4013	Handle	1
14	33-M4014	Release Pin	1
15	33-M4015	End Cap	1

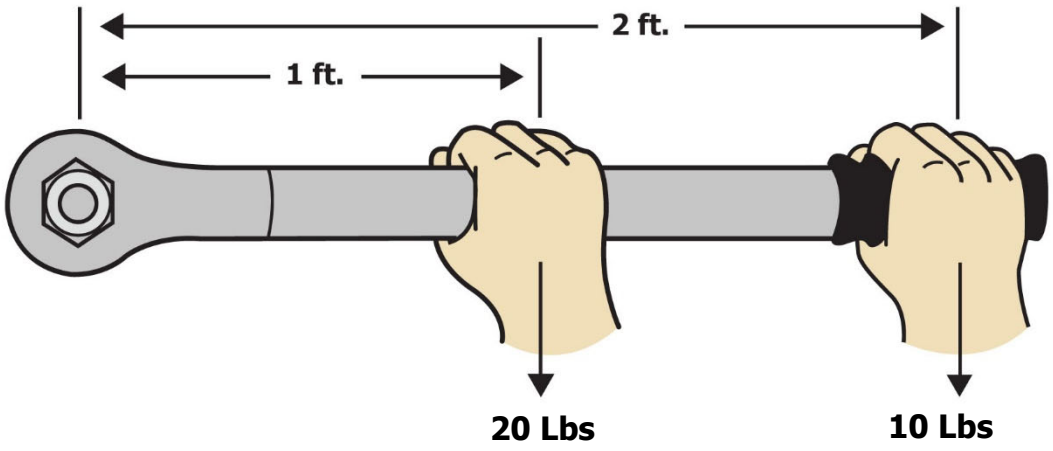
APPENDIX A: SPECIFICATIONS

GO-M04 SPECIFICATIONS	
Model:	**GO-M04** Manual Gate Opener; 1-1/2" Sq Dr
Power:	Manual; Ratchet Wrench
Working Torque:	400 lbs-ft
Frame Dimensions:	36" L x 3.5" W x 2.25" D
Finish Coating:	Black Oxide
Weight w/ Drive Fitting:	23.7 Lbs

APPENDIX B: TORQUE

Torque (T) is a "turning" or "twisting" force and differs from tension, which is created by a straight pull. Torque is the result of multiplying the value of the force (F) applied by the Distance from the point of application. The same torque result can be achieved with a lower force if the distance from the point of application is increased.

T = F X D



T = 20 Lbs x 1 Ft = 20 Ft-Lbs

T = 10 Lbs x 2 Ft = 20 Ft-Lbs

NOTES

NOTES

NOTES

Ask about other Railcar Products

RENEW ATTACHMENT

SWAGE KIT

CAPSTAN REPAIR

Opening hopper car slide gates with a completely worn Capstan Barrel is a problem. When the Barrel's female square is rounded-off, it resists any effort to get a grip with a Gate Opener Drive Fitting. **WORKMASTER** offers two solutions to the problem:

- **Capstan Renew Attachment (PN: 80-10728)**
- **Capstan Swage Kit (PN: 33-11120)**

RAILCAR VIBRATORS

Powerful Pneumatic, Electric, and Hydraulic Railcar Vibrators eliminate the safety and productivity problems associated with the dangerous, dirty, and slow job of unloading Hopper-Bottom Railcars. Select the force and frequency required to unload any type of material.

CRT Turbine Series Vibrator

Rail-Shaker Piston Vibrator

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