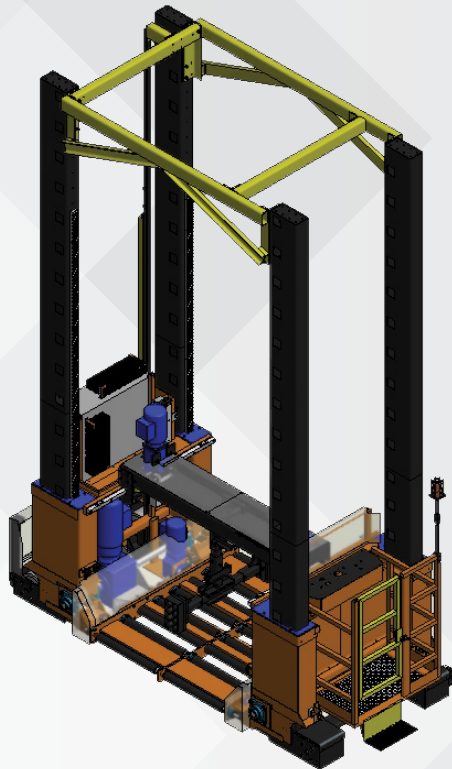


# **PROSERIES<sup>®</sup>**

## **Battery Bull Electric Level 4–6 Battery Handling Equipment**



# **OWNER'S MANUAL**

# CONTENTS

Introduction .....	3
Symbol Identification Chart.....	4
Danger, Warning, Caution Labels.....	5
Operator Controls Description .....	6
Control Console .....	7
Battery Bull Roller Bed Height Alignment Procedure .....	8
Operating Instructions .....	9
Free Wheel Alignment .....	11
TORQUE-TAMER™ Adjustment .....	11
TORQUE-TAMER™ Installation Instruction .....	12
Recommended Lubricant.....	13

# INTRODUCTION

## **PROSERIES**<sup>®</sup>

The information contained in this document is critical for safe handling and proper use of the Battery Bull Electric Level 4–6. It contains a global system specification as well as related safety measures, codes of behavior, a guideline for commissioning and recommended maintenance. This document must be retained and available for users working with and responsible for the battery handling equipment. All users are responsible for ensuring that all applications of the system are appropriate and safe, based on conditions anticipated or encountered during operation.

This owner's manual contains important safety instructions. Read and understand the sections on safety and operation of the battery before operating the battery and the equipment into which it is installed.

It is the owner's responsibility to ensure the use of this documentation and all related activities comply with applicable legal requirements in their respective countries.

This owner's manual is not intended to substitute for any training on handling and operating the Battery Bull Electric Level 4–6 that may be required by local laws and/or industry standards. Proper instruction and training of all users must be ensured prior to any contact with the battery system.

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### **Your Safety and the Safety of others is Very Important**


**⚠ WARNING** You can be killed or seriously injured if you don't follow these instructions.



# LABELS

## Danger, Warning, Caution Labels

<b>⚠ DANGER!</b>	
	Only certified operators should attempt to lift/carry loads with this unit. Keep the area under load clear when operating the unit.
	Hazardous Fumes. Corrosive gases from battery acid can cause blindness, lung damage, and burn skin. Use caution when transporting batteries. Refer damaged batteries to qualified personnel.
	Do not attempt to operate this equipment if you are impaired (ill, under the influence of medication, alcohol, etc.). Errors in operation can cause hazardous and potentially LETHAL conditions.

<b>⚠ DANGER!</b>	
	Do not attempt to gain access to areas of the unit where dangerous voltages are present. Refer servicing to qualified service personnel.

<b>⚠ WARNING!</b>	
	Crush Hazard! Keep hands clear.

<b>⚠ WARNING!</b>	
	Crush Hazard! Keep feet clear.

<b>⚠ WARNING!</b>	
	Moving Parts! Keep hands and fingers clear.

<b>⚠ CAUTION!</b>	
	Use care when entering or exiting the operator control station. Do not attempt to enter or exit the control station when the machine is elevated except in emergencies.
	
	Eye protection required when operating this equipment.
	Safety shoes are required to operate equipment safely.
	To reduce the risk of accident or collision, use caution when driving the unit in reverse.

<b>⚠ DANGER!</b>	
	Crush Hazard! Keep body clear.

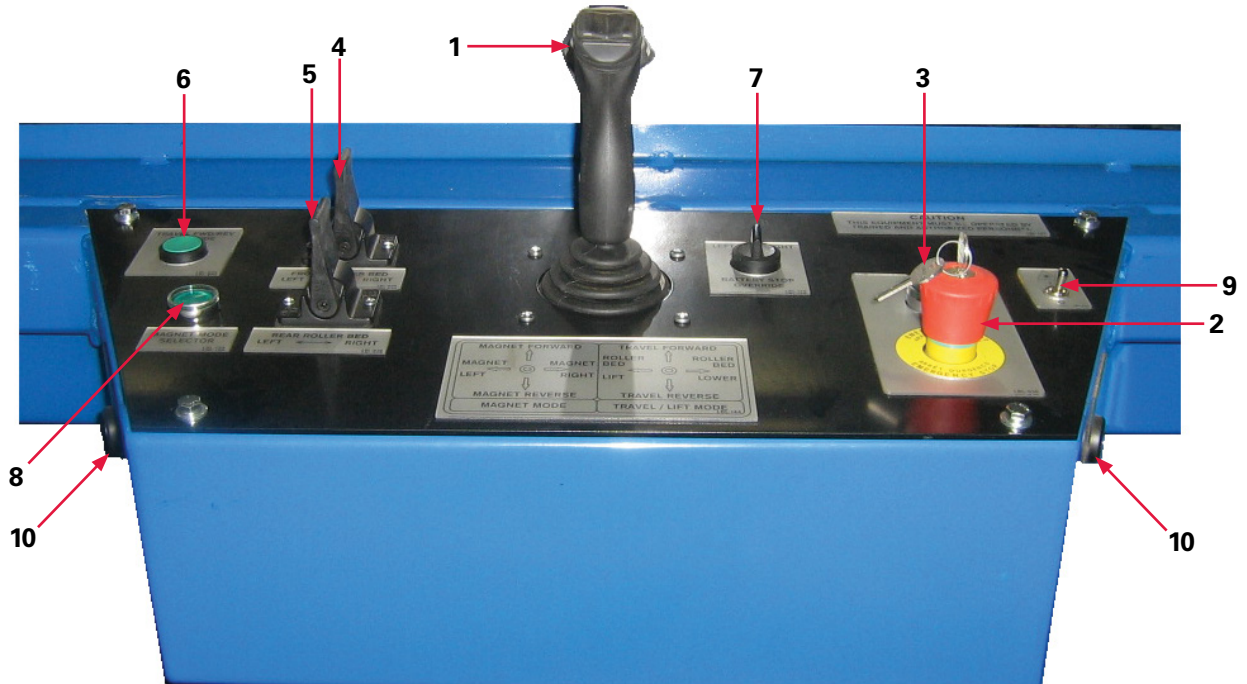
<b>⚠ CAUTION!</b>	
	Do not operate without all guards, covers, and panels in place.

<b>⚠ CAUTION!</b>	
	Pinch Hazard! Keep hands clear.

# OPERATOR CONTROLS

## Operator Controls Description

Model: BBE-TS



#	Description
1	Control Joystick
2	Emergency Stop
3	Start Button
4	Front Roller Bed
5	Rear Roller Bed

#	Description
6	Travel Override
7	Battery Stop Override
8	Magnet Mode Selector
9	Laser Alignment
10	Two-Handed Operation Buttons

# CONTROL CONSOLE

## Control Console

The H-BBE-TS Battery Bull is operated using one 4-position Joystick Handle (**Number 1**), with different function modes, and two paddle-style joysticks.

**NOTE:** TWO-HANDED CONTROL IS REQUIRED FOR ALL OPERATIONS, **Number 10**.

Travel/Lift Mode (Default/Mode)

To drive the Battery Bull forward, push either one of the Two Handed Operation buttons and squeeze the joystick (**Number 1**) to activate the dead man switch. Then slowly push the joystick forward to travel forward or slowly pull the joystick back to travel backward.

To lift/lower the roller bed, push either one of the Two-Handed Operation buttons and squeeze the joystick. Push the joystick to the left to raise the roller bed or to the right to lower the roller bed.

**NOTE:** All functions are logical and variable i.e. you move the joystick in the direction you wish to travel and the further you move it the faster you go.

**Magnet Mode:** This mode is activated by pressing the small green Magnet Mode Selector push button (**Number 8**). A green light will appear when this mode is active. To move the magnet, push one of the two-handed operation switches, then squeeze the Control Joystick (**Number 1**) and push forward, OR pull the joystick backward for reverse. To move the magnet sideways, push one of the two-handed operation switches, then squeeze the joystick and

push to the left to move the magnet left, OR to move the magnet right, move the joystick right. All functions are logical and variable. Push the green Magnet Mode Selector Push Button (**Number 8**) again to EXIT this mode.

The Roller Beds are each controlled by a paddle switch that is independent of the 4-position Joystick Handle. Moving the Front Roller Bed (**Number 4**) to the left will power the front Roller Bed. Moving it to the right will power the front Roller Bed to the right.

This functionality is the same for the Rear Roller Bed (**Number 5**).

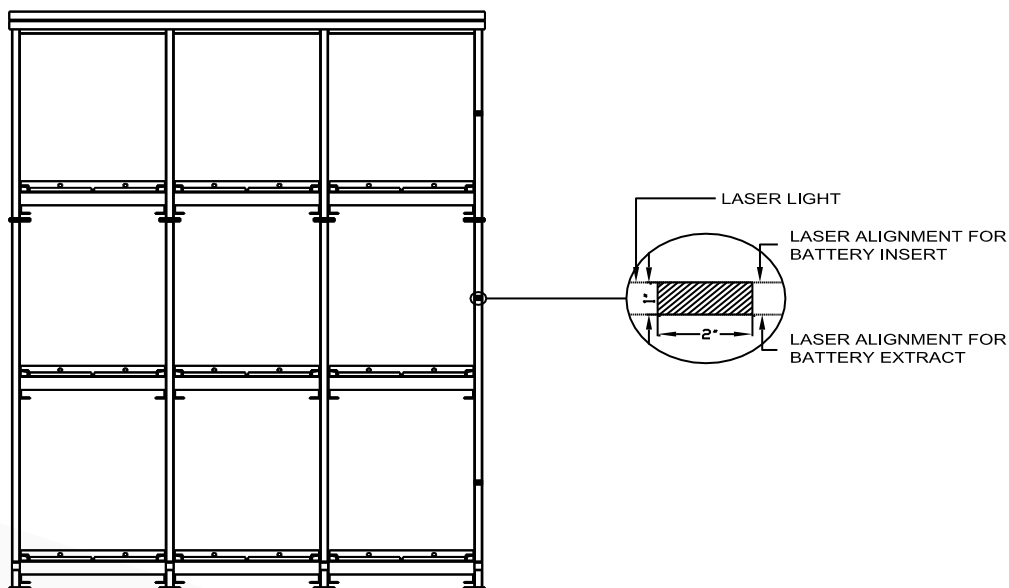
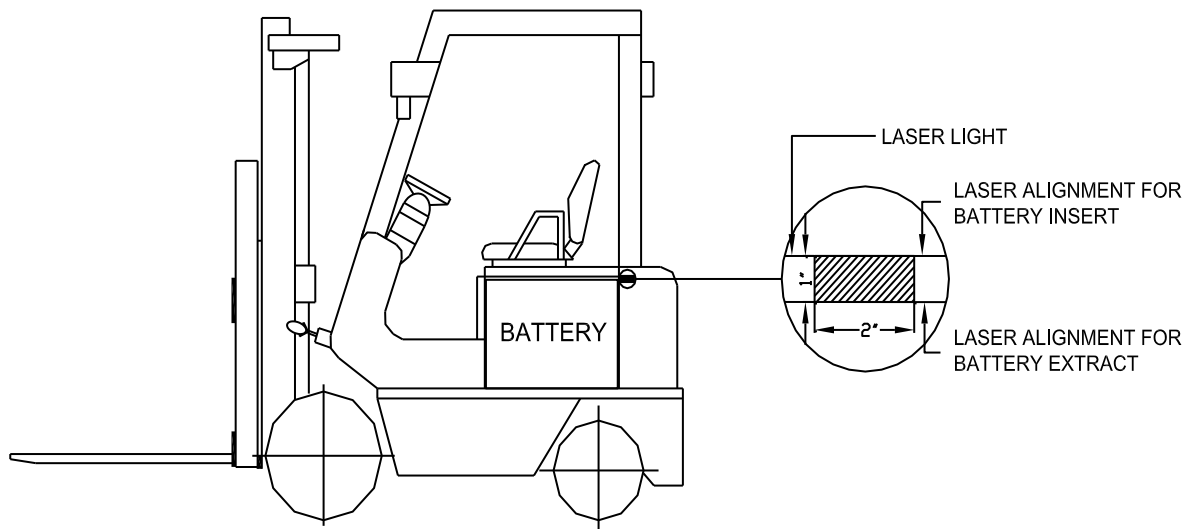
This machine is equipped with electrically powered mechanical battery safety stops. These battery safety stops automatically retract when a battery is being loaded into the Battery Bull. Once the battery is completely inside the Battery Bull, the battery safety stops automatically extend up to prevent any accidental rollout of the battery. The only way to unload a battery from the Battery Bull is to power the roller bed left or right and as the battery moves toward the stop, turn the Battery Stop Override switch (**Number 7**) to retract the battery safety stop for the appropriate side to allow the battery to exit the Battery Bull.

The ON/OFF function of the magnet is controlled by a rocker switch on top of the Control Joystick (**Number 1**). To turn the magnet ON, depress the switch to the right; to turn the magnet OFF, depress the switch to the left.

# ALIGNMENT PROCEDURE

## Battery Bull Roller Bed Height Alignment Procedure


- Push the green Start button (**Number 3**) to activate the machine.
- Flip the Laser Alignment toggle switch to the ON position (**Number 9**).
- Align the top of the roller with the bottom of the white tape when the battery compartment is in the lift truck or the top of the roller in the roller stand frame.
- Mark the side of the battery compartment with a 1" [25 mm] wide white tape aligning the center of the tape with the laser light.
- Align the horizontal laser light with the lower edge of the white tape when extracting the battery from the lift truck or roller stand.
- Align the horizontal laser light with the upper edge of the white tape when inserting the battery in the lift truck or in the roller stand frame.





# OPERATING INSTRUCTIONS





## Operating Instructions







 Before operating the Battery Bull it is important that the operator thoroughly reviews and understands the proper safety procedures and instructions as outlined in this Owner's Manual and as indicated on the console in front of the operator's station.



Safety shoes, safety glasses, and protective clothing are mandatory in battery rooms. Be sure to wear them at all times. Rubber gloves, rubber apron, and full face shields are required when washing and servicing forklift batteries. Always use caution and common sense.




**NOTE:** A safety harness may be required; check local codes/regulations.

 <b>DANGER!</b>	
	Only certified operators should attempt to lift/carry loads with this unit. Keep the area under load clear when operating the unit.
	Hazardous Fumes. Corrosive gases from battery acid can cause blindness, lung damage, and burn skin. Use caution when transporting batteries. Refer damaged batteries to qualified personnel.
	Do not attempt to operate this equipment if you are impaired (ill, under the influence of medication, alcohol, etc.). Errors in operation can cause hazardous and potentially LETHAL conditions.

 <b>CAUTION!</b>	
	Use care when entering or exiting the operator control station. Do not attempt to enter or exit the control station when the machine is elevated except in emergencies.
	
	Eye protection is required when operating this equipment.
	Safety shoes are required to operate equipment safely.
	To reduce the risk of accident or collision, use caution when driving the unit in reverse.










### Preparation:

- Park the LiftTruck in a parallel position adjacent to the Battery Bull, leaving approximately 2" [50 mm] clearance (a painted reference line on the floor will ensure the correct LiftTruck position every time).
- Prepare the LiftTruck for battery removal as follows:
  - Lower the forks until they sit flat on the floor.
  - Engage the parking brake.
  - Remove any protective covers.
  - Remove the battery retaining gate.
  - Unplug the battery and position the connector plug and cable so as to prevent snagging or pinching during the battery removal process.
  - Inspect the battery for any damage (physical, leaks, etc.) and report to the supervisor immediately. Follow proper handling procedures.

- Open the access gate and enter the operator's platform of the Battery Bull. **NOTE:** Do not disable the safety gate limit switch. Do not exit the operator's platform when elevated, except in an emergency. Visibility is limited when elevated.  
- Secure the access gate and then push the green Start Button (**Number 3**) to activate the machine. Locate the Control Joystick (**Number 1**). Push one of the Two-Handed Operation buttons and then push the Joystick forward/reverse and drive the Battery Bull alongside the LiftTruck so that the center line of the selected roller bed is centered to the battery in the LiftTruck. Lift/lower the roller bed so that it is approximately 1" [25mm] below the battery compartment of the LiftTruck. 

# OPERATING INSTRUCTIONS

## Operating Instructions (cont.)

5. Enter Magnet Mode Selector (**Number 8**). The green light will be on. Drive the magnet so it is just touching the center of the battery in the Lift Truck, then activate the magnet. Thumb controls on **Number 1**—Right turns the magnet ON—Left turns OFF. 
6. If the Photo switch beam is broken by the magnet arm the machine will not travel until the magnet is retracted. This is to prevent the machine from traveling when the magnet is protruding out of the machine.
7. Push the Travel Override button (**Number 6**) and a two-handed operator switch (optional) to cautiously move the machine forward or reverse when positioning the magnet onto the battery.
8. When contact is made and the magnet has a firm grip on the battery, move the joystick to pull the battery from the Lift Truck until the leading edge of the battery is approximately 2" [51mm] past the center line of the first roller in the Battery Bull.
9. Enter Magnet Mode Selector (**Number 8**). The green light will be off. Move the Joystick to the left until the roller bed starts to lift the battery. (Do not lift more than 1" [25mm] above the truck bed height.)
10. Deactivate the magnet. Enter Magnet Mode Selector. The green light will be on. Use the joystick to move the magnet to a neutral position (centered between the two roller beds). Enter Travel/Lift Mode. The green light will be off. 
11. Move the paddle switch for the appropriate Roller Bed, away from the Lift Truck. The urethane rollers will pull the battery from the Lift Truck and into the Battery Bull.
12. Using the Control Joystick, drive the Battery Bull to the next available fully charged battery.
13. Stop the Battery Bull so that the operator's station is adjacent to the selected battery. Turn off the charger (if necessary), unplug the battery, and disengage the roller bed safety stop. 
14. Reverse the Battery Bull until its empty Roller Bed is centered with the selected charged battery. 
- WARNING** Be sure the area below the Roller Bed is clear before lowering it.
15. Enter Magnet Mode Selector. The green light will be on. Drive the magnet toward the selected charged battery and when contact is made, activate the magnet. 
16. Use the joystick to slowly pull the battery from the charging stand until the leading edge of the battery is approximately 2" [51 mm] past the center line of the first roller in the Battery Bull.
17. Enter Travel/Lift Mode. Green light will be off. Move the joystick to the left until the roller bed starts to lift the battery. (Do not lift more than 1" [25 mm] above the charging stand roller height.)
18. Deactivate the magnet. Enter Magnet Position Mode. Green light will be on. Use the joystick to move the magnet to a neutral position (centered between the two roller beds).
19. Move the appropriate paddle joystick away from the charging stand. The urethane rollers will pull the battery from the charging stand and into the Battery Bull. 
20. Drive the Battery Bull forward/reverse until the discharged battery is in line with the newly vacated charging stand.
21. Move the appropriate paddle switch toward the vacated charging stand to propel the discharged battery into the vacated charging stand. Remember to turn the Battery Stop Override switch (**Number 7**) to retract the appropriate battery safety stop and allow the battery to exit the Battery Bull.
22. If the battery does not fully enter the charging stand, use the magnet to gently push it completely in (it is not necessary to activate the magnet). Return the magnet to its neutral position.
23. Drive the Battery Bull forward, allowing the operator access to engage the roller bed safety stop and plug the discharged battery into the charger.
24. Drive the Battery Bull toward the Lift Truck and align the charged battery to the Lift Truck compartment.
25. Lift the powered roller bed until the bottom of the battery is approximately 1" [25 mm] above the top of the Lift Truck compartment rollers/slider.
26. Use the appropriate paddle switch to propel the charged battery into the Lift Truck. If the battery does not go completely in, lower the Battery Bull roller bed 1 to 2" [25 to 51 mm] and then use the magnet to gently push the battery to the back stop (it is not necessary to activate the magnet).
27. Return the magnet to its neutral position and park the Battery Bull in its designated spot.
28. Prepare the Lift Truck for use as follows:
  - Plug the battery into the Lift Truck.
  - Install the battery retaining gate.
  - Install all protective covers.

## Free Wheel Alignment

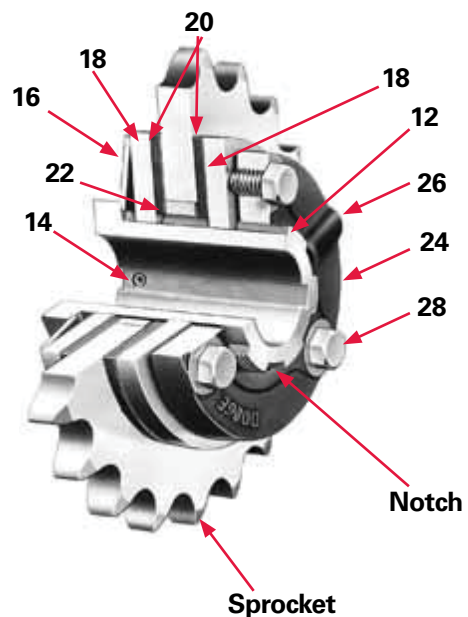
- Remove the wheel cover from both the front and rear wheels.
- Place a straight-edge flat bar or a level on the steel part of the drive wheel (front wheel).
- The straight edge should be parallel to the side tube of the bottom frame.
- If adjustment is required, loosen the pillow block mounting bolts and move the wheels until the straight edge is parallel to the main frame  $\pm 1/16"$ .
- Retighten the pillow block bolts and replace the wheel covers.

## TORQUE-TAMER™ Adjustment

**⚠ WARNING** To ensure that the drive is not unexpectedly started, turn off and lock out or tag the power source before proceeding. Failure to observe these precautions could result in bodily injury.

1. Back off tension screws **Number 28** at least three times.
2. Loosen adjusting nut set screw **Number 26** at least nine turns.
3. Tighten adjusting nut assembly **Number 24** hand tight.
  - For travel TORQUE-TAMER™, No back off required.
  - For bridge TORQUE-TAMER™, unscrew adjusting nut assembly **Number 24** until set screw **Number 26** passes over 5 notches.
  - For roller-bed TORQUE-TAMER™, unscrew adjusting nut assembly **Number 24** until set screw **Number 26** passes over 6 notches.
  - For magnet TORQUE-TAMER™, unscrew adjusting nut assembly **Number 24** until set screw **Number 26** passes over 8 notches.
4. Tighten adjusting nut set screw **Number 26** in the selected spline notch. Do not tighten set screw on threads of the hub.
5. Tighten tension screws **Number 28** alternately and evenly until the heads bottom. Do not use washers under the heads of these screws.
6. Check the alignment of the drive. If necessary, loosen hub set screw **Number 14** and shift hub **Number 12** on the shaft.

A shaft would extend from left to right through the bore of the hub **Number 12**. A sprocket would be captured between the two friction discs **Number 20** and this sprocket is free to rotate on the bushing **Number 22**. The hub **Number 12** is keyed to the shaft; therefore any rotational force applied to the sprocket will be transmitted to the shaft



through the friction discs **Number 20** to the pressure plates **Number 18** which are splined to the hub **Number 12**. The amount of torque transmitted to the shaft depends on how much the spring **Number 16** is compressed which is determined by the distance between the spring and the adjusting nut **Number 24**. It is important to understand that to increase or decrease the amount of torque transmitted, the adjusting nut **Number 24** must be turned clockwise to increase or counterclockwise to decrease the torque. See the above instructions for details. Do not try to adjust the clutch by loosening or tightening the tension screws **Number 28**, results will be unpredictable. The only position these screws should be in when the clutch is in operation is fully bottomed out. Do not overtighten these bolts; the heads twist off easily.

# TORQUE-TAMER™

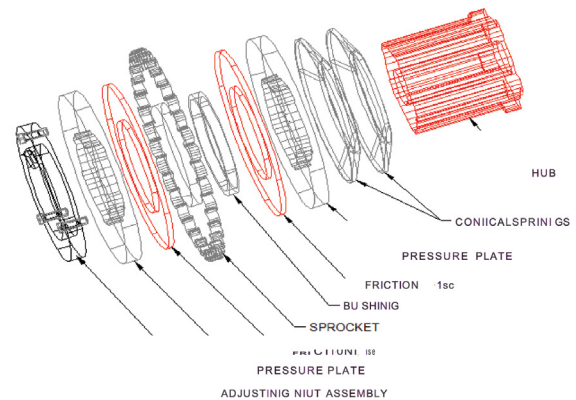
## TORQUE-TAMER™ Adjustment (cont.)

**Number 22** is a sacrificial bushing made of sintered iron. Its purpose is to provide a wear surface between the sprocket and the hub during the period when the clutch is slipping. The inexpensive bushing will be worn rather than the sprocket or hub. This bushing will, in time, wear away entirely.

This will allow the sprocket to move off-center and rotate eccentrically. If you observe a chain that drives a TORQUE-TAMER™ alternating between very tight and too loose, the most likely cause is the wearing away of this bushing, which should be replaced.

## TORQUE-TAMER™ Installation Instruction

1. Insert two conical springs onto the hub. Ensure that the conical springs are positioned, as shown in the diagram.
  2. Insert one pressure plate onto the hub.
  3. Insert one friction disc into the hub.
  4. Insert bushing onto the hub.
  5. Insert a sprocket onto the hub. Ensure that the sprocket sits on the bushing.
  6. Insert a second friction disc onto the hub.
  7. Insert the second pressure plate onto the hub.
  8. Insert adjusting nut assembly onto the hub.
- NOTE:** Friction disc must be kept clean and free of oil or moisture at all times to obtain proper functioning of the TORQUE-TAMER™. Do not use washer under heads of tension screws.



# LUBRICANT

## Recommended Lubricant

Item	Description	Number
Gear Racks	OPEN GEAR WIRE ROPE LUBE SCHAEFFERS 200	CBS-3597
Chain Lube	SPRAY INTO CONTAINER USE BRUSH TO APPLY SCHAEFFERS 200	CBS-3597
Posts	DRY MOLY LUBE EBPEERLESS 73084	CBS-3712
Bearings	ROTANNM/LOWSON BLUE GREASE P-35000	CBS-1208
Cleaner	WD-40 (LOCAL PURCHASE)	
Antiseize	LOCTITE®-SILVER ANTI-SEIZE LUBRICANT	CBS-4236

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