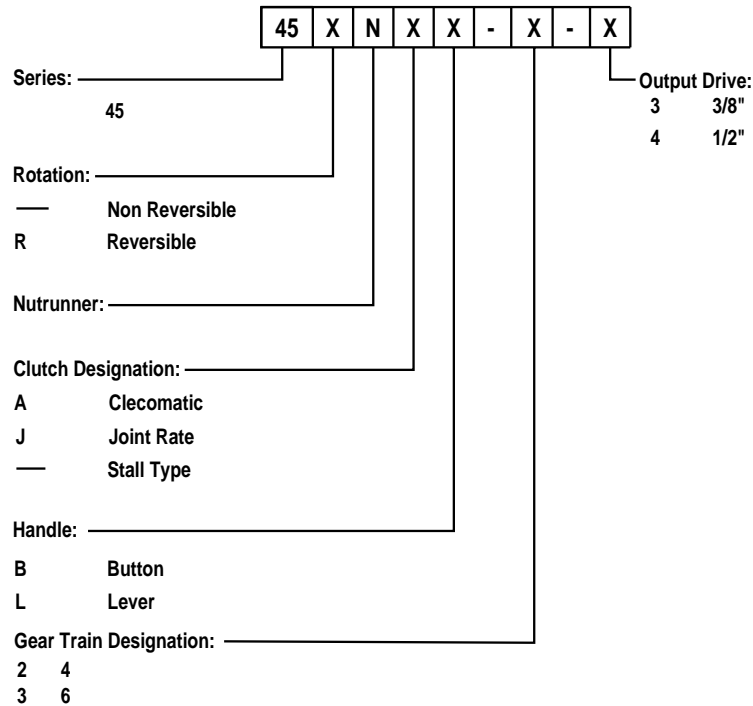
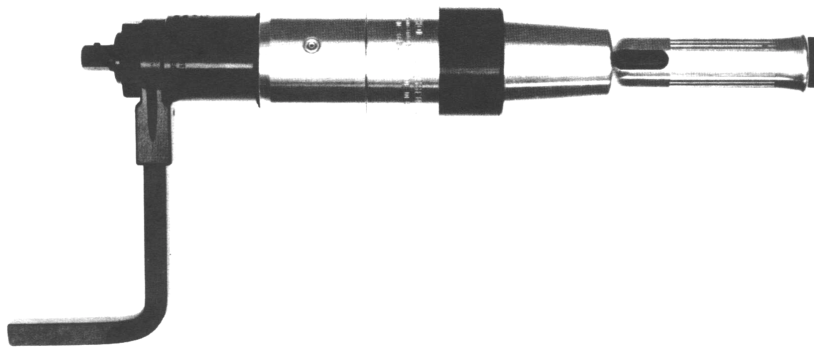


# Cleco®

## 45 Series Inline Reaction Bar Nutrunners



NORTH AMERICA

**CooperTools**  
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Lexington, SC 29071

EUROPE

**Cooper Power Tools GmbH & Co.**  
Postfach 30  
D-73461 Westhausen

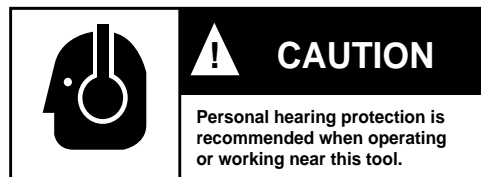
# Safety Recommendations

For your safety and the safety of others, read and understand the safety recommendations and operating instructions before operating a nutrunner.

**Always wear protective equipment:**



For additional information on eye protection and face protection, refer to Federal OSHA Regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection, and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.



Hearing protection is recommended in high noise areas 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises and resonant structures can substantially contribute to, and increase the noise level in the area. Excessive air pressure 90PSIG or worn motor components can also increase sound level emitted by tool. For additional information on hearing protection, refer to Federal Regulations, Section 1910.95, Occupational Noise Exposure, and American National Standards Institute, ANSI S12.6, Hearing Protectors.

Cleco nutrunners are designed to operate on 90 psig (6.2 bar) maximum air pressure. If the tool is properly sized and applied, higher air pressure is unnecessary. Excessive air pressure increases the loads and stresses on the tool parts, sockets, and fasteners and may result in breakage. Installation of a filter-regulator-lubricator in the air supply line ahead of the tool is recommended.

Before the tool is connected to the air supply, check the throttle for proper operation (i.e., throttle moves freely and returns to closed position). Clear the air hose of accumulated dust and moisture. Be careful not to endanger adjacent personnel. Before removing a tool from service or changing sockets, make sure the air line is shut off and drained of air. This will prevent the tool from operating if the throttle is accidentally engaged.

It is essential for safe operation that any operator of a nutrunner use good balance, sure footing, and proper posture in anticipation of a torque reaction. Insure that the operator's hand will not be wedged or pinched between the work and the tool when operating.

Reaction bar nutrunners are equipped with a torque reaction bar. These bars can be braced against the work or other suitable points to absorb and relieve the operator of the torque reaction transmitted

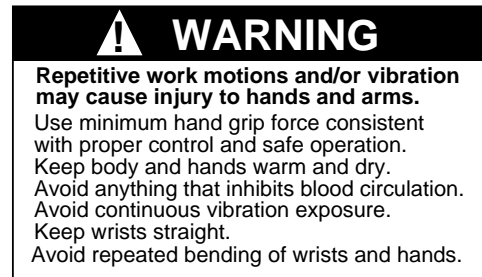
by the tool. Tool balance arms are also available to absorb the torque reaction of the tool while balancing the weight of the tool for improved ergonomic applications.



If the tool is to be reversed, locate torque reaction bar in a position that will resist torque reaction and prevent entrapment. See Directions on next page.

Tools with clutches can stall rather than shut-off if adjusted over maximum power output of tool, or if there is a drop in air pressure. Reaction bar must be properly positioned to resist torque. Operator must release throttle to stop tool if this occurs. Do not use without properly positioned reaction bar.

Reversible tools can have torque reactions in either direction. The reaction bar must be properly positioned to resist the torque reaction.



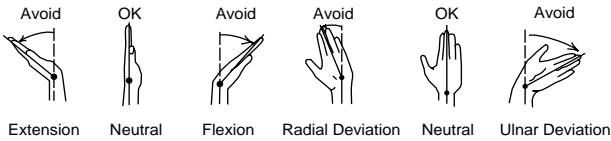
Some individuals may be susceptible to disorders of the hands and arms when performing tasks consisting of highly repetitive motions and/or exposure to extended vibration. Cumulative trauma disorders such as carpal tunnel syndrome and tendonitis may be caused or aggravated by repetitious, forceful exertions of the hands and arms. Vibration may contribute to a condition called Raynaud's Syndrome. These disorders develop gradually over periods of weeks, months, and years. It is presently unknown to what extent exposure to vibrations or repetitive motions may contribute to the disorders. Hereditary factors, vasculatory or circulatory problems, exposure to cold and dampness, diet, smoking and work practices are thought to contribute to the conditions.

Any tool operator should be aware of the following warning signs and symptoms so that a problem can be addressed before it becomes a debilitating injury. Any user suffering prolonged symptoms of tingling, numbness, blanching of fingers, clumsiness or weakened grip, nocturnal pain in the hand, or any other disorder of the shoulders, arms, wrists, or fingers is advised to consult a physician. If it is determined that the symptoms are job related or aggravated by movements and postures dictated by the job design, it may be necessary for the employer to take steps to prevent further occurrences. These steps might include, but are not limited to, repositioning the workpiece or redesigning the workstation, reassigning workers to other jobs, rotating jobs, changing work pace, and/or changing the type of tool used so as to minimize stress on the operator. Some tasks may require more than one type of tool to obtain the optimum operator/tool/task relationship.

# Safety Recommendations

The following suggestions will help reduce or moderate the effects of repetitive work motions and/or extended vibration exposure:

- Use a minimum hand grip force consistent with proper control and safe operation
- Keep body and hands warm and dry (cold weather is reported to be a major factor contributing to Raynaud's Syndrome)
- Avoid anything that inhibits blood circulation
  - Smoking Tobacco (another contributing factor)
  - Cold Temperatures
  - Certain Drugs



- Tasks should be performed in such a manner that the wrists are maintained in a neutral position, which is not flexed, hyperextended, or turned side to side.
- Stressful postures should be avoided — select a tool appropriate for the job and work location
- Avoid highly repetitive movements of hands and wrists, and continuous vibration exposure (after each period of operation, exercise to increase blood circulation)
- Keep tool well maintained and replace worn parts

For more information on the safe use of portable air tools, see the latest edition of ANSI B186.1, Safety Code for Portable Air Tools, available from the American National Standards Institute, Inc. 11 West 42nd Street, New York, NY 10036.

This information is a compilation of general safety practices obtained from various sources available at the date of production. However, our company does not represent that every acceptable safety practice is offered herein, or that abnormal or unusual circumstances may not warrant or require additional procedures. Your work may require additional specific safety procedures. Follow these procedures as required by your company.

## Warning Labels

The warning labels found on these tools are an essential part of this product. Labels should not be removed. Labels should be checked periodically for legibility. Replace warning labels when missing or when the information can no longer be read. Replacement labels can be ordered as any spare part.



203185



203289

**WARNING** OVERLOADED REACTION BARS MAY BEND OR BREAK! USE THIS GUIDE FOR PROPER APPLICATION OF THE CLECO REACTION BAR.

**Standard Length Spindle** X = 2 1/2" Minimum  
Y = 2 1/2" Maximum  
Torque Capacity = 125 Ft. Lbs. Maximum

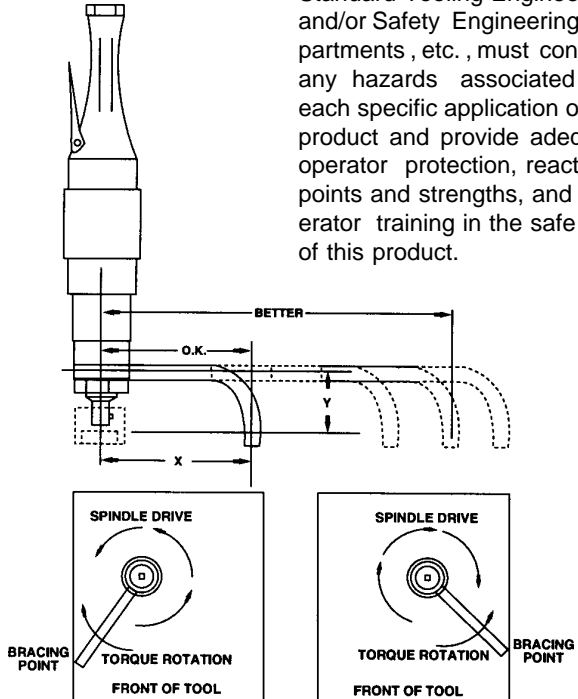
**3" Longer Than Standard Spindle** X = 4" Minimum  
Y = 5 1/2" Maximum  
Torque Capacity = 80 Ft. Lbs. Maximum

These capacities apply to Cleco Reaction Bars code numbers: 869769-0, 869770-8, 202007-1, 202008-9, 202009-7.

**WARNING**

Substitute bars without proper metallurgy may not be adequate. Use Cleco reaction bars.

Due to the multitude and variety of tooling applications involving reaction bar nutrunners, the "User's" Methods Engineering, Standard Tooling Engineering, and/or Safety Engineering Departments, etc., must consider any hazards associated with each specific application of this product and provide adequate operator protection, reaction points and strengths, and operator training in the safe use of this product.



The reaction bar is secured to the tool and braced against the work in the opposite direction of spindle rotation. This will transfer the torque reaction from the tool to the work.

## OPERATING INSTRUCTIONS

### 45 STALL-TYPE NUTRUNNERS

The 45 stall-type nutrunner is designed to develop maximum rated torque at 90 psig. Torque output is controlled by a pressure regulator in the air supply line. Adjust the regulator until the desired torque is reached.

### 45 CLECOMATIC NUTRUNNERS

The 45 Clecomatic nutrunner is designed to operate on 90 psig maximum air pressure but does not depend on controlled air pressure to maintain accurate torque. Accurate torque is achieved by setting the Clecomatic clutch to the desired torque on the application. The tool will shut off automatically at this torque. Releasing the throttle will allow the tool to reset for the next cycle.

**CAUTION** If the clutch is adjusted over the maximum power output of the tool, the clutch will not function and the tool will operate like a stall-type tool. Also, if the tool is being operated at its upper torque limits, a drop in air pressure could cause the clutch not to function due to a loss of motor power and the tool will function like a stall-type tool. If the tool stalls the operator must release throttle to stop tool.

Reaction bar must be properly positioned against adequate stop. Do not use without reaction bar.

### CLECOMATIC CLUTCH ADJUSTMENT

Depress the pin, No. 864711, and rotate the adjustment cover, No. 867677, 180 ° so it lines up with the adjustment slot. With the angle head end of the tool facing outward, away from the operator, use a 1/8" diameter pin to rotate the adjustment nut, No. 867678, clockwise to increase the torque and counter-clockwise to decrease the torque.

Note: The steel ball, No. 844077, is a positive lock for the adjustment nut and must be in place in a locking slot before the adjusting cover is rotated to the locked position after each clutch adjustment is completed.

### 45 JOINT RATE NUTRUNNERS

The 45 joint rate tool is designed to give repeatable torque and automatic shut off, regardless of the joint conditions (i.e. soft pull, hard pull). Target torque is achieved through the use of an in-line pressure regulator.

Note: To ensure automatic shut off, the air pressure should not be adjusted below 40 psig at the tool, with the tool operating.

### AIR SUPPLY

For maximum performance, use a 3/8" I.D. air hose no longer than 8' in length. If additional length is required, a 1/2" or larger hose should be connected to the 3/8" hose.

The air hose should be cleared of accumulated dirt and moisture, then one (1) teaspoon of 10W machine oil should be poured into the tool's air inlet before connecting the hose to the tool.

## LUBRICATION

An automatic in-line filter-lubricator is recommended as it increases tool life and keeps the tool in sustained operation. The in-line lubricator should be regularly checked and filled with a good grade of 10W machine oil. Proper adjustment of the in-line lubricator is performed by placing a sheet of paper next to the exhaust ports and holding the throttle open approximately 30 seconds. The lubricator is properly set when a light stain of oil collects on the paper. Excessive amounts of oil should be avoided.

Application of the tool should govern how frequently it is greased. It is recommended that the idler gears receive a generous amount of NLGI 2-EP grease through the grease fittings after 40 hours of operation.

## STORAGE

In the event that it becomes necessary to store the tool for an extended period of time (overnight, weekend, etc.), it should receive a generous amount of lubrication at that time and again when returned to service. The tool should be stored in a clean and dry environment.

## SERVICE INSTRUCTIONS

### DISASSEMBLY—GENERAL

#### Stall Tools

To disassemble the tool, clamp the motor housing lightly in a soft-jawed vise with the tool in a vertical position. Using a suitable wrench, loosen and remove the gear case. Using a soft-faced mallet, tap the front of the motor housing to remove the motor unit.

#### Automatic Shut-Off Tools

To disassemble the tool, clamp the flats of the clutch housing in a soft-jawed vise and loosen the gear case. Clamp motor housing in the vise and using a suitable wrench, loosen the clutch housing from the motor housing. Tap the front of the motor housing with a soft-faced mallet to remove the motor unit.

### SUBASSEMBLY DISASSEMBLY

#### Gear Train

The complete gear train may be slipped out of the rear of the gear case. By driving the idler gear pins out of the rear of the spiders, the idler gears can be removed from the spider pockets.

#### Clecomatic Clutch

Remove the adjustment cover by sliding it off the back of the clutch housing. Be careful not to lose the steel ball, No. 844077, that will drop out at this time. Using the slots provided on the rear face of the adjusting nut, No. 867678, unscrew it from the clutch housing. The torque spring bearing, No. 867683; spring plate, No. 867669; and torque spring, No. 867665, will come out through the rear of the clutch housing. With a soft mallet, tap on the gear end of the clutch to remove it from the clutch housing. By removing the retainer ring, No. 847022; the drive shaft washer, No. 867666; trip sleeve spring, No. 202056; trip sleeve, No. 867670; and two (2) steel balls, No. 842161, can be

removed from the drive shaft. Remove the clutch cam bearing, No. 619377, with a suitable puller. Using a sharp instrument, remove the spiral ring, No. 865436. This will allow the clutch cam, No. 867676; three (3) steel balls, No. 842161; trip plunger spring, No. 867671; and trip plunger, No. 867668, to be removed through the front of the drive shaft. To remove the six (6) steel balls, No. 844265, slide the ball retainer, No. 867673, off over the rear of the drive shaft.

### Motor Unit

Clamp the cylinder lightly in the vise with the gear end of the rotor up. Note: The rotor pinion, No. 867524, used on the -4 and -6 models should be removed at this time. Drive the rotor out of the front rotor bearing, No. 619377. Be careful not to damage the rotor. The front bearing plate, No. 869054, cylinder, and rotor blades, No. 869575, can now be removed from the rotor. Clamp the body of the rotor in the vise with the rear bearing plate up. After unscrewing the bearing lock nut, No. 865352, the rotor can be driven out of the rear rotor bearing.

### Motor Housing — Lever

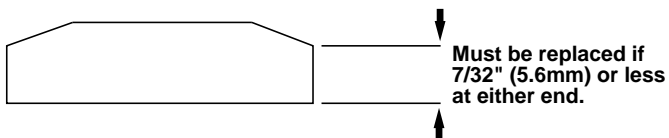
Unscrewing the throttle valve cap, No. 864531, will allow removal of the throttle valve for inspection of the throttle valve seal, No. 847366. Drive out the throttle lever pin, No. 847808, for removal of the throttle lever, No. 847505. The exhaust deflector, No. 869736, and muffler, No. 202743, can be slipped off the rear of the housing after the rear "O"-ring, No. 864737, is removed. On the automatic shut-off tools, the valve block, No. 867682, and shut-off valve, No. 867667, can be removed from the front of the housing.

### Motor Housing — Button

Unscrew the inlet bushing No. 896654 to remove the throttle valve parts. To remove throttle button No. 867516 the throttle valve must be removed first. Unscrew reversing valve screw to remove reversing ring No. 869667 and reversing valve No. 869650. Remove "O"-ring No. 864737 to remove exhaust deflector and muffler.

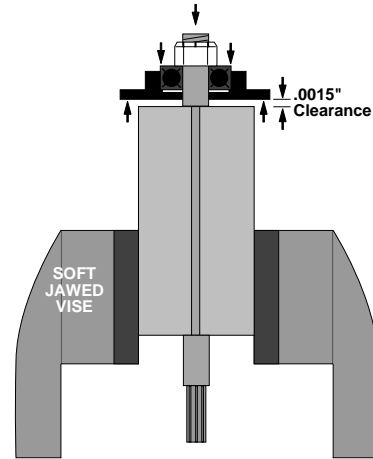
### REASSEMBLY

The tool is reassembled in the reverse order of disassembly. Clean all parts thoroughly in kerosene and inspect for damage or wear. Check all bearings for wear which can be detected by excessive end play and/or roughness which would indicate a brinelled condition. The rotor blades should be replaced at every repair cycle or if they measure less than 7/32" (5.6mm) at either end. All gear teeth, bearings, and pins should receive a close inspection and be replaced if necessary.



To assemble the motor, install the rear rotor bearing into the rear bearing plate. Make sure the outer bearing race is firmly seated in the bearing plate. Clamp the rotor body lightly in the vise with the threaded end up and slip the rear bearing plate assembly onto the rotor shaft far enough for the bearing lock nut to start. Tighten

the lock nut until there is approximately .001"/.0015" clearance between the rotor and bearing plate. The outer bearing race should be firmly seated and the rotor bumped forward when checking this clearance. Pack both rotor bearings with a good grade of NLGI 2-EP grease after assembly of the motor unit.



Note: During reassembly of the complete tool, it is important that the motor be free. After the tool is completely assembled, the square drive spindle should turn freely using a small hand wrench. If the spindle does not turn freely, the motor should be checked for proper spacing. Do not run the tool until the spindle turns freely. Failure to do this could result in damage to motor components.

During reassembly of the gear train, all of the various gears and bearings should receive a generous amount of NLGI 2-EP grease.

The clutch is assembled in the reverse order of disassembly. The torque spring bearing, No. 867683, must be assembled so the solid side of the ball separator is facing toward the torque spring.

During reassembly of the stall tools, the motor make-up plate, No. 869059, should be installed with the opening toward the grease fitting inside the motor housing. During reassembly on the automatic shut-off tools, the tip rod must be ground flush (+0 to -1/32) with the hex end of the rotor. Hold the motor firmly in the housing at the time the trip rod is being sized to length.

Pour a few drops of 10W machine oil into the air inlet after complete assembly to insure immediate lubrication of all motor parts when air is applied.

### SAFETY CHECK

After repair or replacement of parts, tools equipped with an automatic shut-off device should be tested to verify that they are functioning properly.

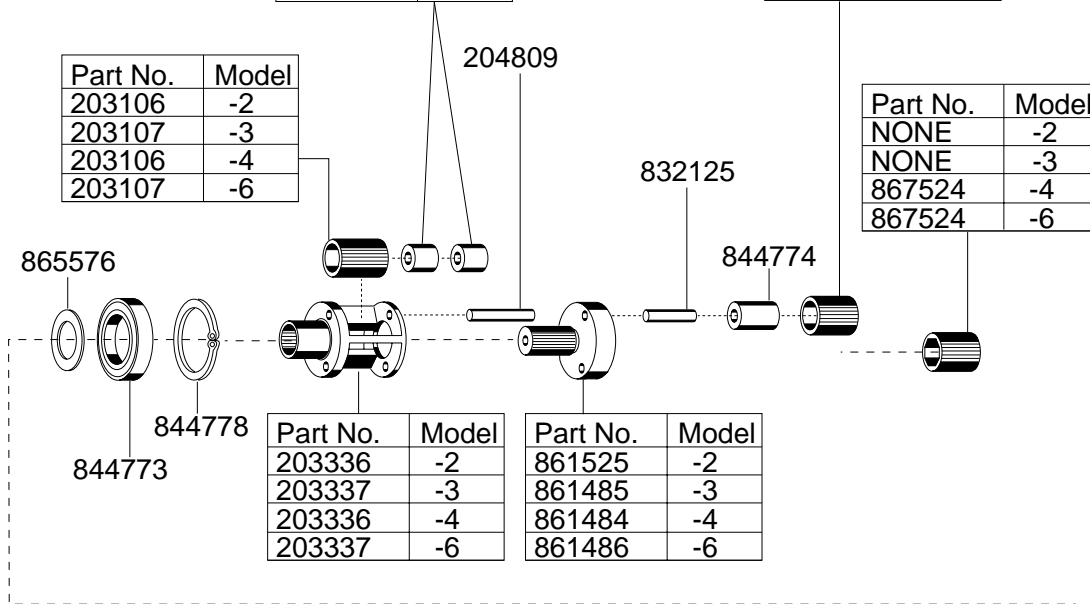
## 45 & 55 INLINE REACTION BAR NUTRUNNER GEAR TRAINS

Part No.	Model
844774	-2
844774	-3
844774	-4
844774	-6

Part No.	Model
867526	-2
867526	-3
867523	-4
867523	-6

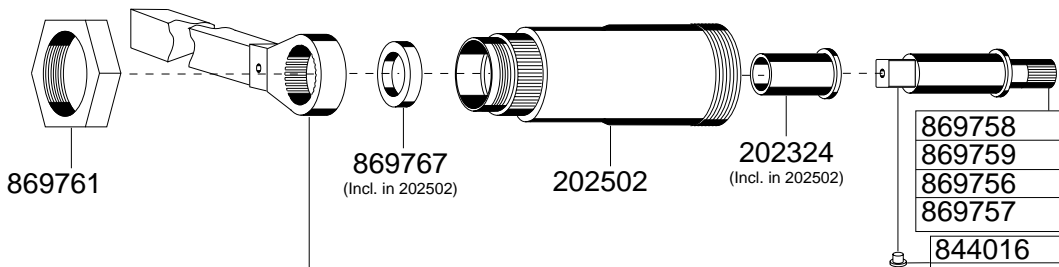
Part No.	Model
203106	-2
203107	-3
203106	-4
203107	-6

Part No.	Model
NONE	-2
NONE	-3
867524	-4
867524	-6



Part No.	Model
203336	-2
203337	-3
203336	-4
203337	-6

Part No.	Model
861525	-2
861485	-3
861484	-4
861486	-6



869758	3/8" Sq. Dr.
869759	3/8" Sq. Dr. 3" Ext.
869756	1/2" Sq. Dr.
869757	1/2" Sq. Dr. 3" Ext.

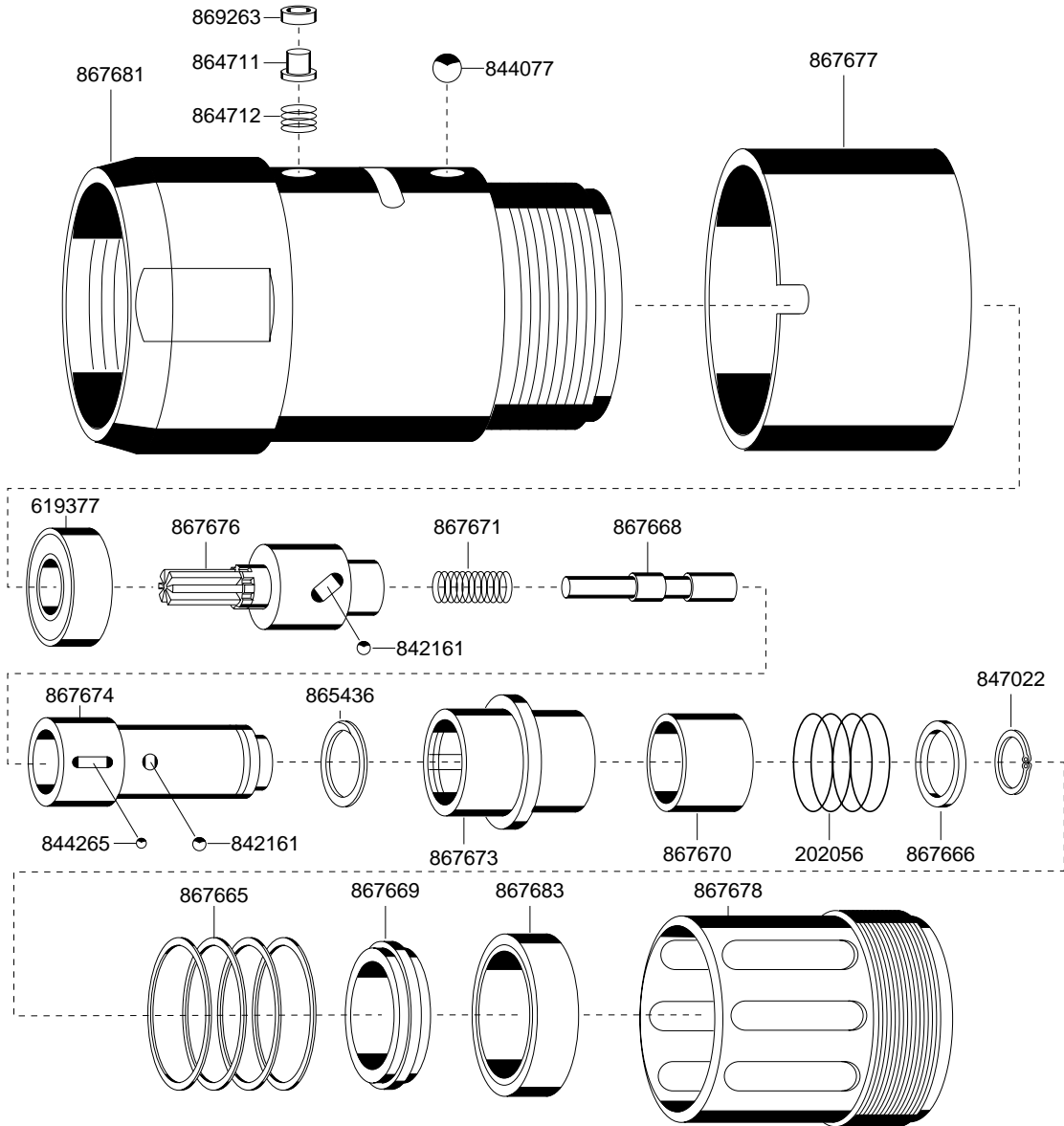
844016	3/8"
844011	1/2"
844017	3/8"
844014	1/2"
844013	3/8"
844013	1/2"

REACTION BAR				
Material	Complete Reaction Bar	Reaction Bar Only	Head Only	Pin
Aluminum	869769	202009	202007	884126
Steel	869770	202008	202007	884126

### PARTS LIST — 45 & 55 GEAR TRAINS

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
202007	Reaction Bar Head	1	861486	- 6 —1st Red. Spider- 19T (incl. Pin)	1
202008	Reaction Bar (Steel)	1	861525	- 2 —1st Red. Spider- 13T (incl. Pin)	1
202009	Reaction Bar (Aluminum)	1	867523	- 4, - 6 —1st Red. Gear- 17T (incl. 844774)	3
202324	Spindle Bushing	1	867524	- 4, - 6 — Rotor Pinion 6T	1
202502	Gear Case (incl. 869767 & 202324)	1	867526	- 2, - 3 —1st Red. Gear - 21T (incl. 844774)	3
203106	- 2 — 2nd Red. Gear- 18T (incl. 844774)	3	869756	1/2" Sq. Dr. Spindle (incl. Ret. Pin)	1
203107	- 3, - 6 — 2nd Red. Gear- 15T (incl. 844774)	3	869757	1/2" Sq. Dr. Spindle " Ext. (incl. Ret. Pin)	1
204809	2nd Red. Gear	3	869758	3/8" Sq. Dr. Spindle (incl. Ret. Pin)	1
832125	- 2, - 3, - 4, - 6 —1st Red. Gear Pin	3	869759	3/8" Sq. Dr. Spindle " Ext. (incl. Ret. Pin)	1
844011	Socket Retainer Pin	1	869761	Lock Nut	1
844013	Retainer Plug	1	869767	Grease Seal	1
844014	Spring	1	869769	Aluminum Reaction Bar (incl. 202007, 202008, 884126)	1
844016	Socket Retainer Pin	1	869770	Steel Reaction Bar (incl. 202007, 202008, 884126)	1
844017	Spring	1	884126	Pin	1
844773	Ball Bearing	1			
844774	Gear Bearing	9			
844778	Retainer Ring	1			
861484	- 4 —1st Red. Spider - 13T (incl. Pin)	1			
861485	- 3 —1st Red. Spider- 19T (incl. Pin)	1			

## 45 CLECOMATIC CLUTCH

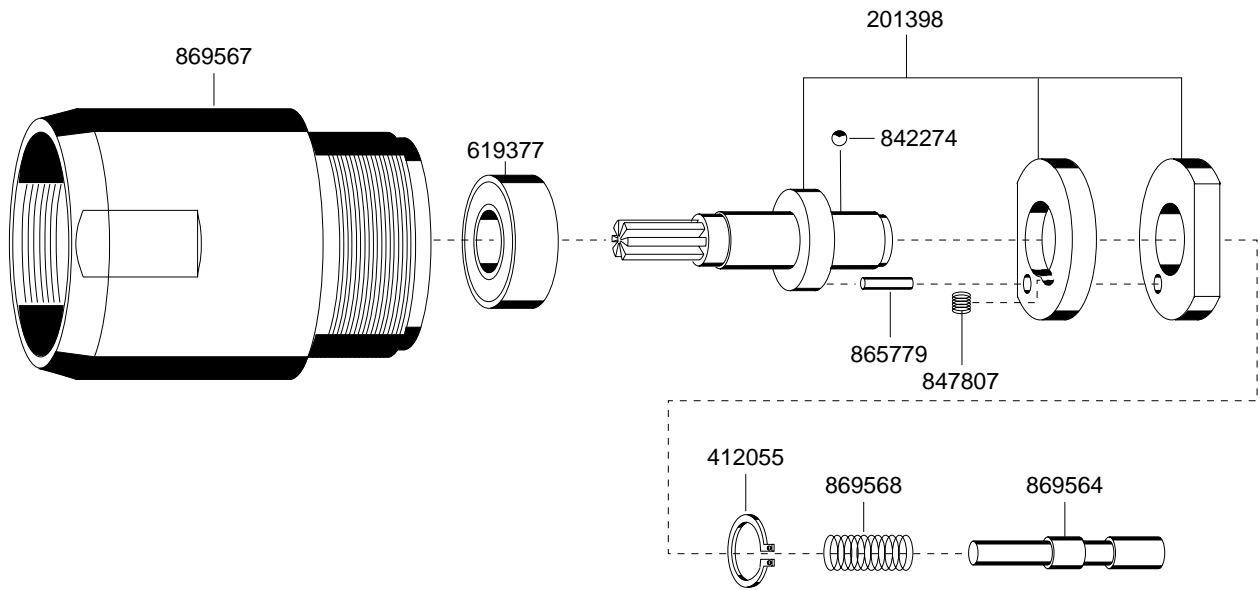


### PARTS LIST — CLECOMATIC CLUTCH

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
202056	Trip Sleeve Spring	1	867669	Torque Spring Plate	1
619377	Clutch Cam Bearing	1	867670	Trip Sleeve	1
842161	Steel Ball 3/16" Dia.	5	867671	Trip Plunger Spring	1
844077	Steel Ball 5/16" Dia.	1	867673	Ball Retainer	1
844265	Steel Ball 1/8" Dia.	6	867674	Drive Shaft	1
847022	Washer Retainer Ring	1	867676	Clutch Cam	1
864711	Pin	1	867677	Adjustment Hole Cover	1
864712	Pin Spring	1	867678	Adjustment Nut	1
865436	Spiral Ring	1	867681	Clutch Housing (incl. 864711, 864712, 869263)	1
867665	Torque Spring	1	867683	Torque Spring Bearing	1
867666	Drive Shaft Washer	1	869263	Pin Sleeve	1
867668	Trip Plunger	1			

The complete clutch with housing can be purchased as a subassembly using Part No. 861551.

# 45 JOINT RATE CLUTCH



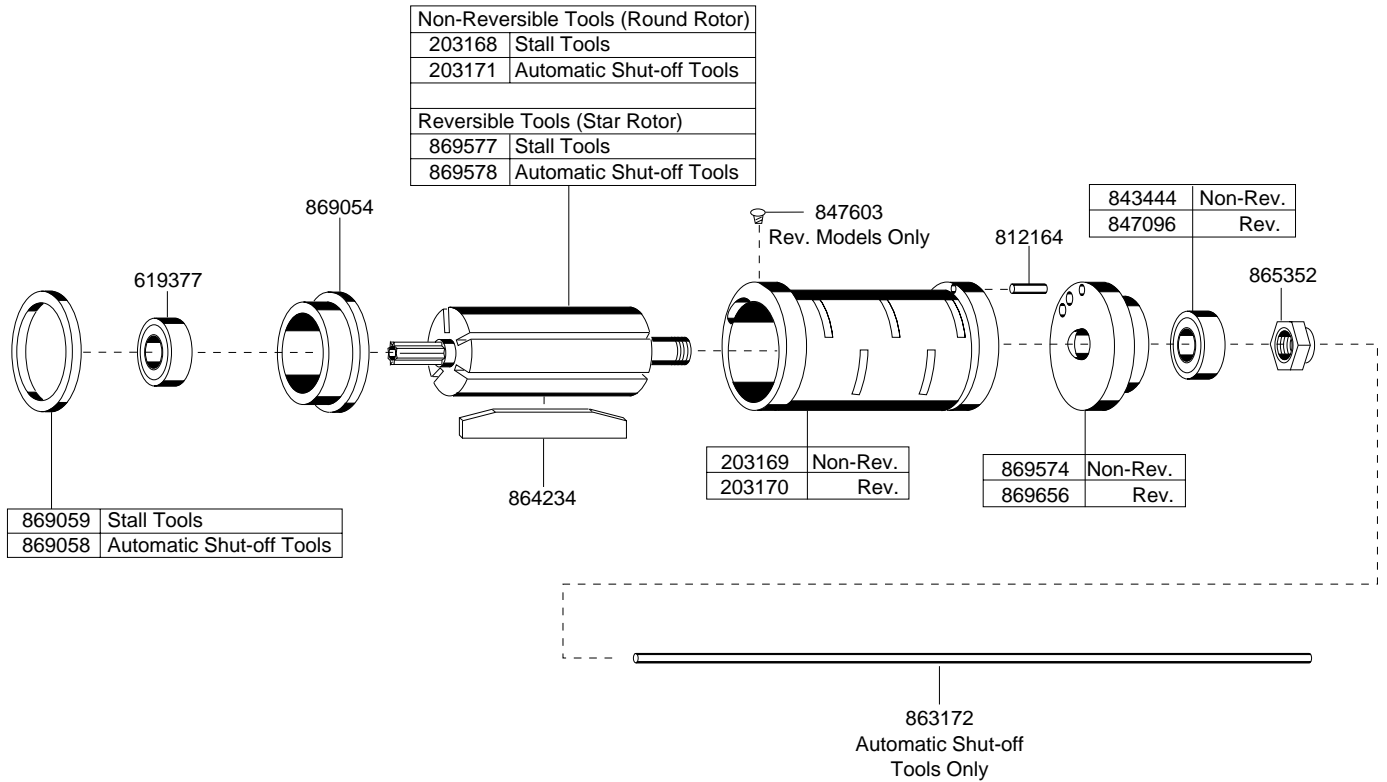
## PARTS LIST — JOINT RATE CLUTCH

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
201398	DRIVE SHAFT SUBASSEMBLY	1	865779	PIN	1
412055	RETAINERRING	1	869564	PLUNGER	1
619377	BALL BEARING	1	869567	HOUSING	1
842274	STEEL BALL (5/32")	1	869568	PLUNGER SPRING	1
847807	SPRING	1			

The complete clutch with housing can be purchased as a subassembly using Part No. 861019.



# 45 NUTRUNNER MOTORS

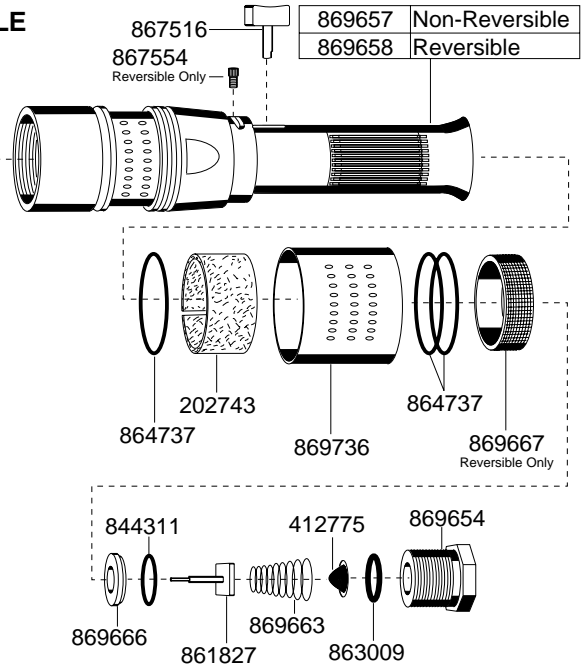
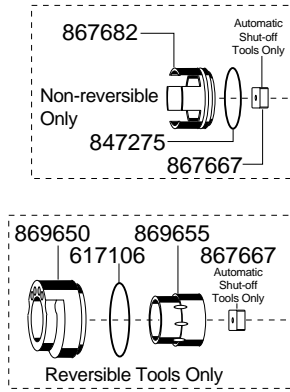


## PARTS LIST — MOTORS

PART NO.	NAME OF PART	QTY.
203168	Rotor- 7T (Non-Rev. Stall)	1
203169	Cylinder (Non-Reversible) - incl. 812164	1
203170	Cylinder (Reversible) - incl. 812164	1
203171	Rotor-Hex (Non-Rev. Automatic Shut-off)	1
619377	Front Rotor Bearing	1
812164	Cylinder Pin	1
843444	Rear Rotor Bearing (Non-Reversible)	1
847096	Rear Rotor Bearing (Reversible)	1
847603	Alignment Pin (Reversible)	1
863172	Trip Rod (Automatic Shut-off)	1
864234	Rotor Blade	5
865352	Rotor Lock Nut	1
869054	Front Bearing Plate	1
869058	Motor Spacer (Automatic Shut-off)	1
869059	Motor Spacer (Stall)	1
869574	Rear Bearing Plate (Non-Reversible)	1
869577	Rotor- 7T (Rev. Stall)	1
869578	Rotor-Hex (Rev. Automatic Shut-off)	1
869656	Rear Bearing Plate (Reversible)	1

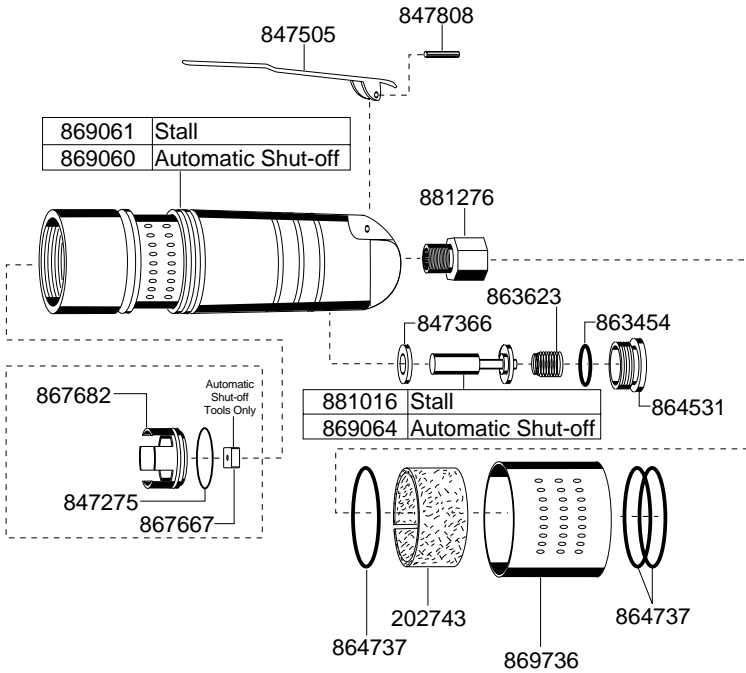
# 45 HANDLE

## BUTTON HANDLE



### PARTS LIST HANDLE SUBASSEMBLIES

## LEVER HANDLE



PART NO.	NAME OF PART	QTY.
202743	Muffer	1
412775	Inlet Screen	1
617106	"O"-Ring 1 3/8" x 1 9/16"	1
844311	"O"-Ring 9/16" x 3/4"	1
847275	"O"-Ring 1 1/16" x 1 3/16"	1
847366	Throttle Valve Seal	1
847505	Throttle Lever	1
847808	Throttle Lever Pin	1
861827	Throttle Valve	1
863009	"O"-Ring 3/4" x 7/8"	1
863454	"O"-Ring 9/16" x 11/16"	1
863623	Throttle Valve Spring	1
864531	Throttle Valve Cap	1
864737	"O"-Ring 1 7/8" x 2"	3
867516	Throttle Button	1
867554	Reversing Valve Screw	1
867667	Shutoff Valve	1
867682	Valve Block	1
869060	Lever Handle Automatic Shut-off	1
869061	Lever Handle Stall	1
869064	Throttle Valve Automatic Shut-off (incl. 847366)	1
869650	Reversing Valve	1
869654	Inlet Bushing	1
869655	Motor Spacer	1
869657	Non-Reversible Button Throttle Handle	1
869658	Reversible Button Throttle Handle	1
869663	Throttle Valve Spring	1
869666	Valve Seat	1
869667	Reversing Ring	1
869736	Exhaust Deflector	1
881016	Throttle Valve Stall (incl. 847366)	1
881276	Inlet Bushing	1

### COMPLETE HANDLE SUBASSEMBLIES

861639	45NL
861640	45NAL & 45NJL
861817	45NAB & 45NJB
861818	45RNAB
861820	45NB
861821	45RNB





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