COOPER Tools

Operation & Service Manual
823157 **2/01**

Cleco®

75 Series Nutrunners

75	X	N	X	L	-	XX	X	-	X

Series:
75

Rotation:
— Non Reversible
R Reversible

Nutrunner:

Clutch Designation:
A Clecomatic
— Stall Type

Handle:
L Lever

Gear Train Designation:
2 4
3 6

Angle Terminations:
V VHD Hold & Drive
X

Output Drive:
4 1/2"
5 5/8"
6 3/4"
S Built-in Socket (Specify Size)
T Threaded Spindle

For additional product information visit our website at http://www.clecotools.com

NORTH AMERICA

CooperTools
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Lexington, SC 29071

EUROPE

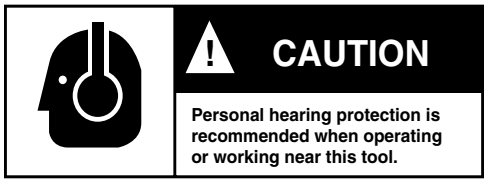
Cooper Power Tools GmbH & Co.
Postfach 30
D-73461 Westhausen

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 above 90 PSIG and worn motor components can also increase sound level emitted by tool. Proper hearing conservation measures, including annual audiograms and training in the use and fit of hearing protection devices may be necessary. 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.

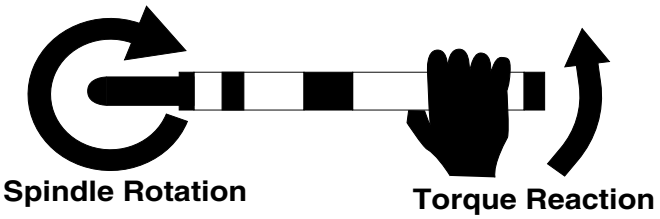
Cleco nutrunners are designed to operate on 90 psig (6.2 bar) maximum air pressure. If the tool is properly sized and applied, higher air pressure is unnecessary. Excessive air pressure increases the loads and stresses on the tool parts, sockets, and fasteners and may result in breakage. Installation 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). Being careful not to endanger adjacent personnel, clear the air hose of accumulated dust and moisture. Before connecting a tool to the air hose or 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 accidently engaged.

⚠ CAUTION

When using right angle nutrunners, be sure the throttle is positioned relative to the angle head so that the throttle will not become wedged against an adjacent object in the "ON" position due to torque reaction. The angle head may be repositioned with respect to the lever to accommodate proper location for task. If tool is to be reversed, locate throttle lever in a neutral position that will prevent entrapment. Refer to operating instructions for additional information.

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.

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. Operator must then resist stall torque until throttle is released.



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

Safety Recommendations

⚠ WARNING

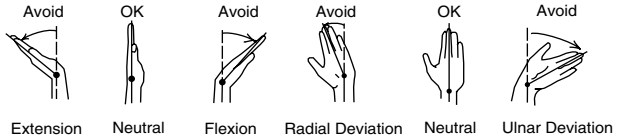
Repetitive work motions and/or vibration may cause injury to hands and arms.
Use minimum hand grip force consistent with proper control and safe operation.
Keep body and hands warm and dry.
Avoid anything that inhibits blood circulation.
Avoid continuous vibration exposure.
Keep wrists straight.
Avoid repeated bending of wrists and hands.

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.

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



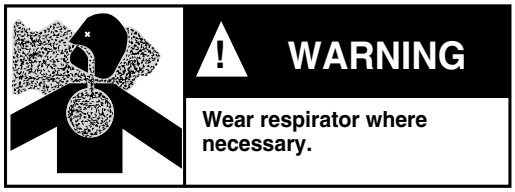
- Tasks should be performed in such a manner that the wrists are maintained in a neutral position, which is not flexed, hyperextended, or turned side to side.
- Stressful postures should be avoided — select a tool appropriate for the job and work location
- Avoid highly repetitive movements of hands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

Work gloves with vibration reducing liners and wrist supports are available from some manufacturers of industrial work gloves. Tool wraps and grips are also available from a number of different manufacturers. These gloves, wraps, and wrist supports are designed to reduce and moderate the effects of extended vibration exposure and repetitive wrist trauma. Since they vary widely in design, material, thickness, vibration reduction, and wrist support qualities, it is recommended that the glove, tool wrap, or wrist support manufacturer be consulted for items designed for your specific application. **WARNING! Proper fit of gloves is important. Improperly fitted gloves may restrict blood flow to the fingers and can substantially reduce grip strength.**

Safety Recommendations

ADDITIONAL SAFETY RECOMMENDATIONS FOR USE OF RIGHT ANGLE DRILLS

Follow good machine shop practices. Rotating shafts and moving components can entangle and entrap, and can result in serious injuries. Never wear long hair, loose-fitting clothes, gloves, ties, or jewelry when working with or near a drill of any type.



Drilling or other use of this tool may produce hazardous fumes and/or dust. To avoid adverse health effects, utilize adequate ventilation and/or a respirator. Read the material safety data sheet of any cutting fluids or materials involved in the drilling process.

⚠ CAUTION

- Drill bits are sharp. Handle them carefully to avoid injury.
- The cutting tool maximum speed rating must equal or exceed the rated speed of the tool.
- Use the appropriate size chuck key to securely tighten a drill bit in the chuck.
- Use precautions when drilling because of the possibility of the cutting tool bending or breaking.
- High reaction torque may be experienced by the operator with any drill at breakthrough.
- Drill bits or accessories not centered properly in the chuck can cause excessive wobble or vibration.

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

OPERATING INSTRUCTIONS

The No. 75 Right Angle Nutrunner is designed to operate on 90 PSIG (6.2 bar) air pressure using a 1/2" hose up to 8 ft. in length.

IMPORTANT: The reaction bracket, No. 202484, must fully engage the spline on the right angle head. Position the bracket forward on the small diameter of the head and then move it rearward to engage the spine.

75 CLECOMATIC NUTRUNNERS

The 75 Clecomatic Nutrunner is designed to operate on 90 PSIG 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.

CLECOMATIC CLUTCH ADJUSTMENT

Rotate the adjustment cover until the adjustment slot is uncovered. With the angle head end of the tool facing away, use a 5/32" diameter pin to rotate the adjusting nut clockwise to increase the torque setting and counterclockwise to decrease the setting. After adjustment, rotate the cover over the slot.

⚠ 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 resist the stall torque until he releases the throttle.

OPERATIONAL CHECK: Grip tool securely and be prepared to counteract stall torque in case clutch is improperly adjusted. Use proper reaction bar. THIS IS A HIGH TORQUE TOOL.

75 STALL TYPE NUTRUNNERS

The 75 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.

AIR SUPPLY

For maximum performance, use a 1/2" I.D. air hose no longer than 8' in length. If additional length is required, a 3/4" or larger hose should be connected to the 1/2" hose. The air hose should be cleared of accumulated dirt and moisture, then one (1) teaspoonful of 10W machine oil should be pou- red 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 for approximately 30 seconds. The lubricator is properly set when a very 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 and right angle 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 or 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

Clecomatic Tools

Clamp the flats of the handle in a vise with the tool in a vertical position.

Using a suitable wrench, loosen (left hand threads) the clamp nut, No. 869878, and remove the angle head assembly. Unscrew and remove the clutch housing and gear case assemblies. Clamp the gear case in the vise and unscrew the clutch housing.

Slip the motor unit out the front of the handle. It may be necessary to bump the handle on the work bench to loosen the motor.

Stall Type Tools

Clamp the flats of the handle in a vise with the tool in a vertical position.

Using a suitable wrench, loosen (left hand threads) the clamp nut, No. 869878, and remove the angle head assembly. Unscrew and remove the gear case assembly.

Slip the motor unit out the front of the handle. It may be necessary to bump the handle on the work bench to loosen the motor.

SUBASSEMBLIES DISASSEMBLY

Right Angle Head

Remove the bearing cap lock screw (1/16 hex), No. 867997, and unscrew (lee hand threads) the bearing cap. Clamp the square drive in the vise and use a sort mallet to drive the angle head off. Press the spindle out of the driven gear and then press the spindle out of the ball bearing.

Unscrew and remove the bearing retainer, No. 869877, and grease plug, No. 867546. Use a suitable driver to drive the pinion gear out of the housing.

Clecomatic Clutch

Important: The adjustment cover, No. 869918, retains the ball spring, No. 869919, and steel ball, No. 842162, and care should be exercised to prevent their loss.

Use a 5/32" (3.96mm) diameter pin to lower the clutch adjustment. This will allow the clutch retainer ring, No. 869920, to be removed from the clutch housing. Remove the clutch assembly from the housing. Use a suitable bearing puller to remove ball bearing, No. 847022, drive shaft washer, No. 869918, trip sleeve spring, No. 869918, and trip sleeve, No. 867670, from the drive shad No. 869915.

NOTE: Trip Plunger, No. 869916, trip plunger spring, No. 867671, and two (2) balls, No. 842161, should also be removed at this time. Use a sharp pointed instrument to remove the cam retainer ring, No. 869921, from the ball retainer, No. 869914. Slip the drive shaft, No. 869915, and clutch cam, No. 869913, out the rear of the ball retainer, No. 869914.

Gear Case

Slip the entire gear train out the rear of the gear case. The 2nd reduction idler gears may be removed for inspection by driving the idler gear pins, No. 869908, out the rear of the spider.

Motor

Use a soft faced mallet to drive the rotor out of the front rotor bearing, No. 847528. This will allow the removal of the front bearing plate, No. 869923, cylinder, and five (5) rotor blades, No. 869927, from the rotor, No. 203147. Clamp the rotor lightly in the vise and unscrew the rotor lock nut, No. 865352. Rest the rear bearing plate on the vise jaws and use a soft faced mallet to drive the rotor out of the rear rotor bearing.

Handle

Unscrew the inlet bushing, No. 869933, for inspection of the throttle components. The air inlet screen, No. 843656, should be washed in a solvent and blown out in the reverse of normal airflow. Replace if damaged or clogged.

REASSEMBLY

The tool is reassembled in the reverse order of disassembly. Clean all parts thoroughly in a solvent 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 if they measure less than 3/8" (9.5mm) at either end. All gear teeth, bearings, and pins should receive a close inspection and be replace if necessary. All gears and open bearings should receive a generous amount of No. 2 Moly grease during reassembly.

Motor

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 .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 No. 2 Moly grease after assembly of the motor unit.

IMPORTANT: During reassembly of the complete tool, it is important that the motor be free. After the tool is completely assembled, the right angle 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.

1st REDUCTION GEAR TRAIN REASSEMBLY

- 2 Gear Train (13 Tooth Spider)
21 Tooth idler gears on inner set of gear pins.

- 3 Gear Train (19 Tooth Spider)
21 Tooth idler gears on inner set of gear pins.

- 4 Gear Train (13 Tooth Spider)
17 Tooth idler gears on outer set of gear pins using 16 tooth pinion on rotor.

- 5 Gear Train (19 Tooth Spider)
17 Tooth idler gears on outer set of gear pins using 16 tooth pinion on rotor.

Clutch

The clutch is reassembled in the reverse order of disassembly;. The torque spring bearing, No.867683, must be assembled so that the solid side of the ball separator is facing the torque spring plate, No. 867669.

Right Angle Head

When installing needle bearings, press only on the bearing's stamped end. The pinion needle bearing should be slipped on the pinion gear and pressed into the housing to the following depth:

"V" Right Angle Head = 3- 3/16" (81mm)
"X" Right Angle Head = 3" (76.2mm)

The pinion bearing retainer, No. 869877, should be tightened to 35 to 40 ft. lbs. (47.5 to 54.2Nm) ensure proper gear make-up.

The driven gear bearing cap should be torqued to 100/110ft.-lb. (135/149Nm) and the bearing cap lock screw torqued to 10 in.-lb. (11.52cmkg) minimum. Note: When assembling the angle head to the complete tool, the clamp nut, No. 869878, (lee hand threads) must be torqued to 100/110ft.-lb. (135/149Nm).

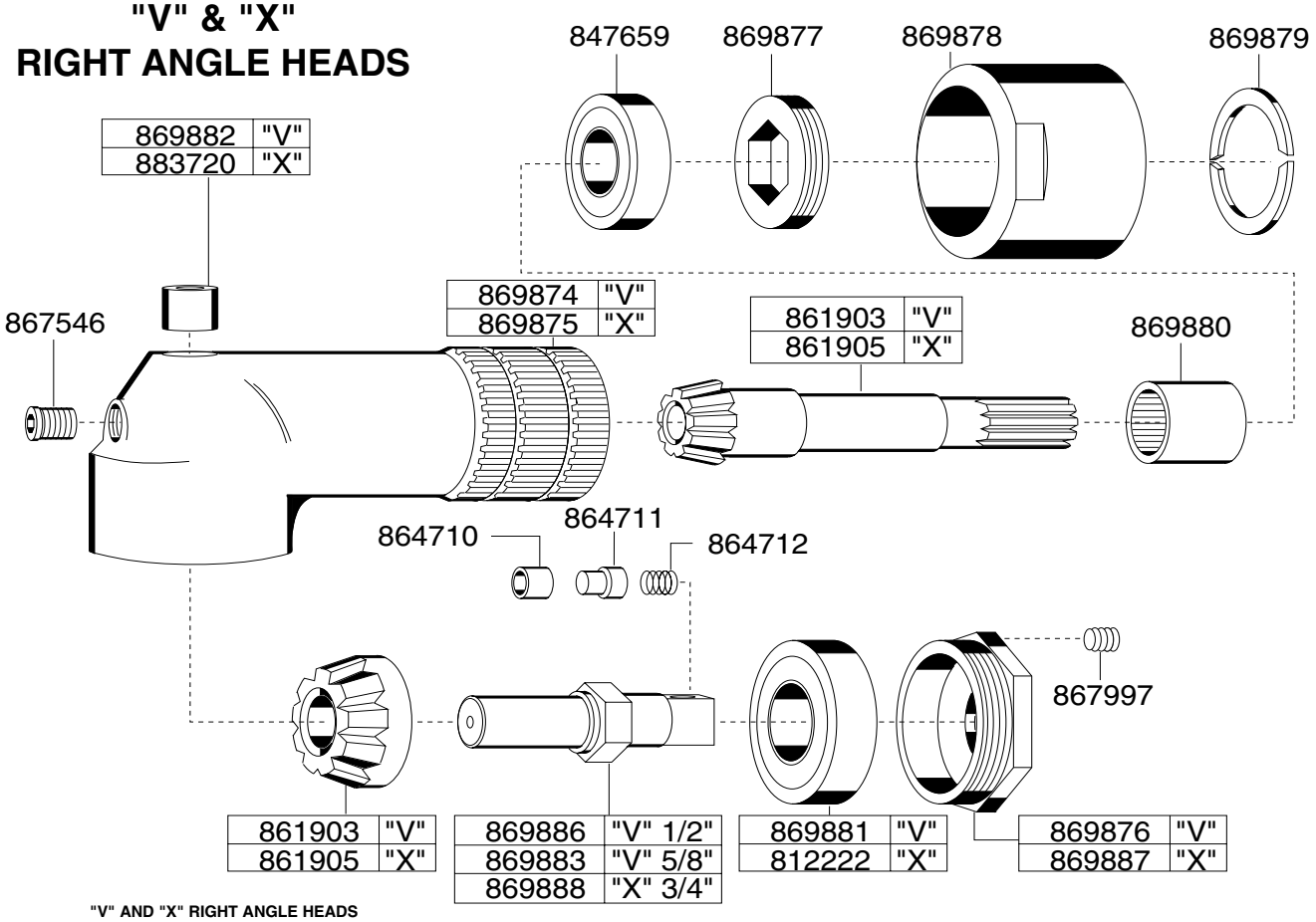
TRIP ROD SIZING

During reassembly of the Clecomatic tools, the trip rod must be ground flush (+0/- 1/32) (+0/- 0.793mm) with the end of the rotor. Hold the motor firmly in the handle at the time the trip rod is being sized to length.

SAFETY CHECK

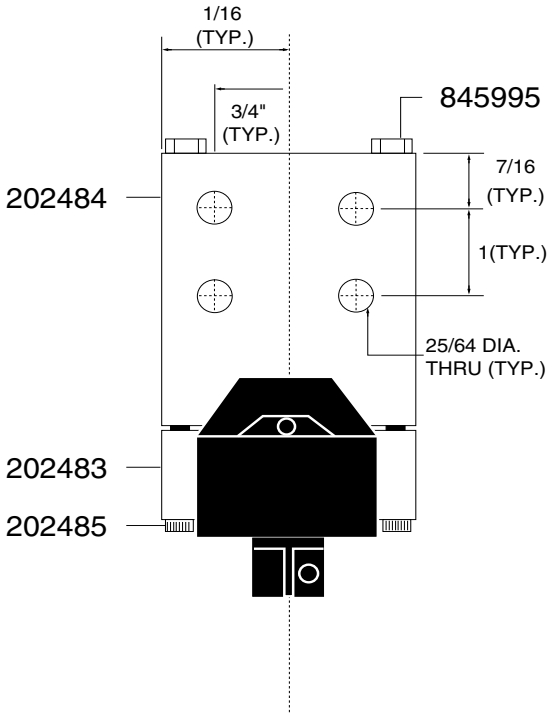
After repair or replacement of parts, tools equipped with an automatic shut-off device should be tested to verify that they are functioning properly.

"V" & "X"
RIGHT ANGLE HEADS



"V" AND "X" RIGHT ANGLE HEADS

PART NO.	NAME OF PART	QTY.
202483	Reaction Bar Clamp	1
202484	Reaction Bracket	1
202485	Bracket Bolt	2
812222	"X" Spindle Ball Bearing	1
845995	Jam Nut	2
847659	Pinion Ball Bearing	1
861903	"V" Gear Set—(Incl. Both Gears 9T & 12T)	1
861905	"X" Gear Set—(Incl. Both Gears 8T & 17T)	1
864710	Lock Pin Retainer (5/8" requires 2)	1
864711	Socket Lock Pin	1
864712	Lock Pin Spring	1
867546	Grease Plug	1
867997	Bearing Cap Lock Screw	1
869874	"V" Right Angle Head	1
869875	"X" Right Angle Head	1
869876	"V" Bearing Cap—(Incl. 867997)	1
869877	Bearing Retainer	1
869878*	Clamp Nut	1
869879*	Clamp Ring	1
869880	Pinion Needle Bearing	1
869881	"V" Spindle Ball Bearing	1
869882	"V" Spindle Needle Bearing	1
869883	"V" Spindle (5/8" Sq. Dr.)—(Incl. 864710 (2), 864711, 864712)	1
869886	"V" Spindle (1/2" Sq. Dr.)—(Incl. 864710 (2), 864711 864712)	1
869887	"X" Bearing Cap (Incl. 867997)	1
869888	"X" Spindle (3/4" Sq. Dr.)—(Incl. 864710, 864711, 864712)	1
883720	"X" Spindle Needle Bearing	1
	OPTIONAL PARTS	
869883	"V" Spindle (5/8" Sq. Dr.)—(Incl. Socket Lock Pin Components	
869889	"X" Spindle (5/8" Sq. Dr.)—(Incl. Socket Lock Pin Cornponents	

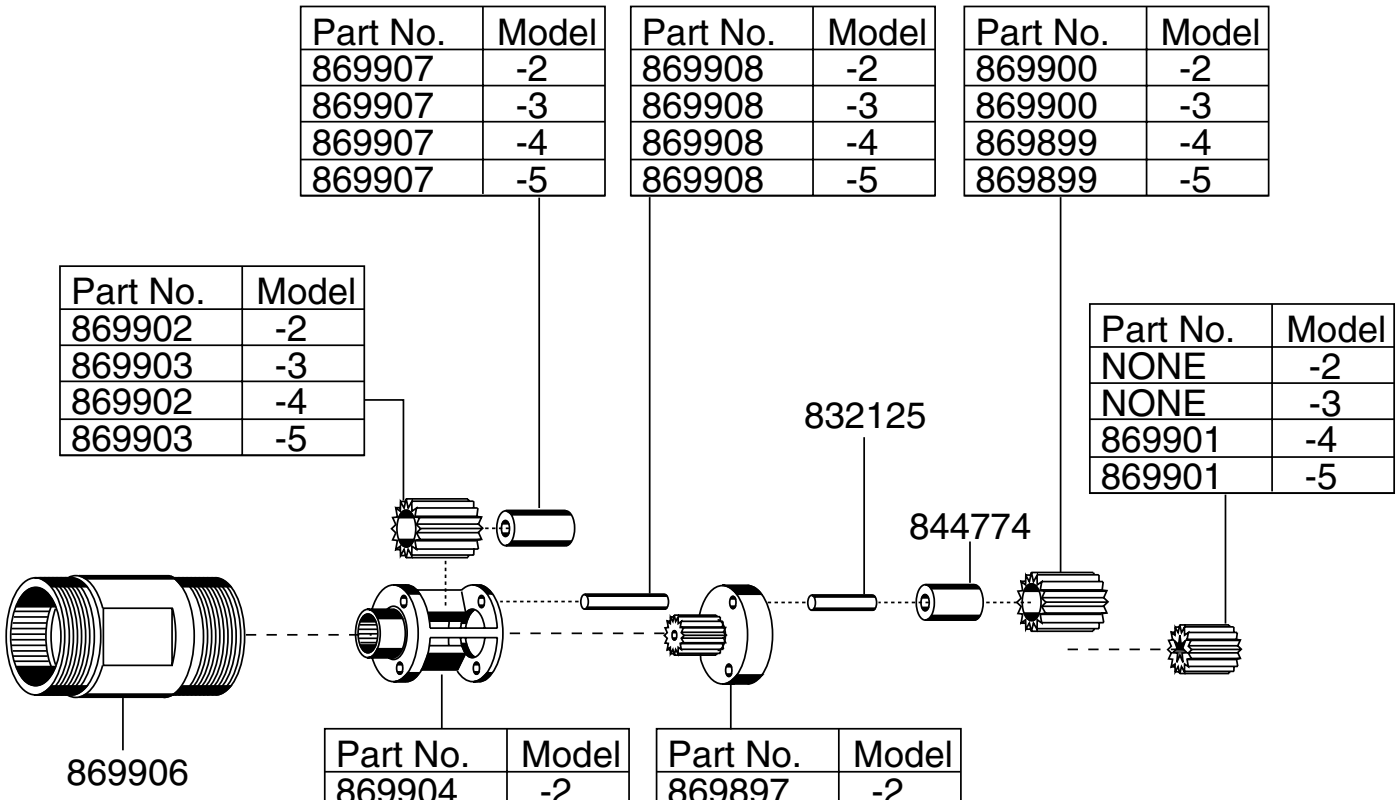


*Denotes Parts not included in Subassemblies listed below.
The Complete Right Angle Head can be purchased as a Subassembly using the following Part Numbers:

"V"- 1/2" Right Angle Head—Part No. 861904
"V"- 5/8" Right Angle Head—Part No. 861980
"X"- 3/4" Right Angle Head—Part No. 861906

The Complete Reaction Bar Bracket can be purchased as a Subassembly using Part No. 201034.

75 NUTRUNNER GEAR TRAINS

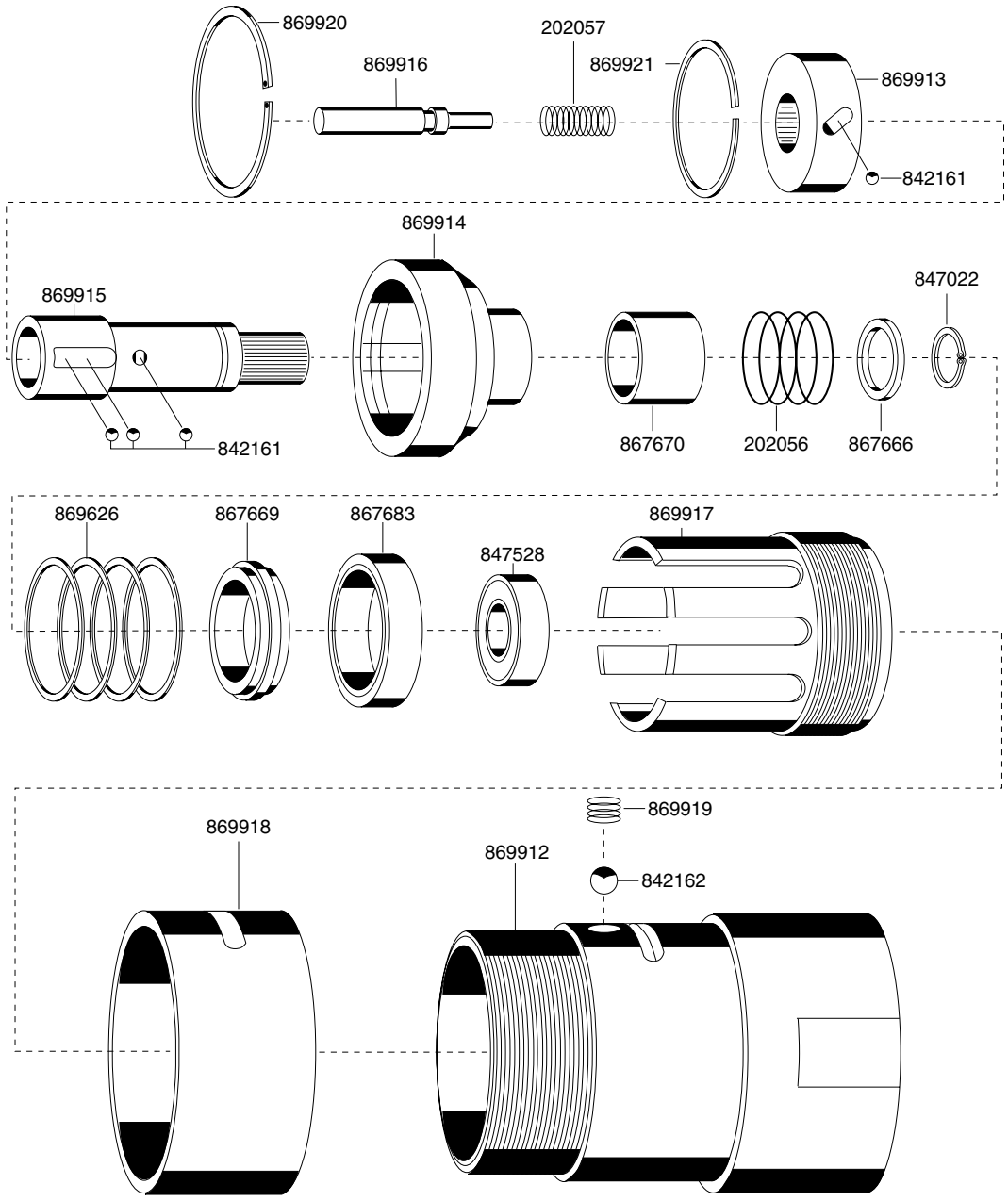


PARTS LIST — GEAR TRAINS

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
832125	Idler Gear Pin	6	869902	- 2 & - 4 Idler Gear (18T)	3
844774	Idler Gear Bearing	3	869903	- 3 & - 5 Idler Gear (15T)	3
869897	- 2 & - 4 Spider - Incl. 832125	1	869904	- 2 & - 4 Spider	1
869898	- 3 & - 5 Spider- Incl. 832125	1	869905	- 3 & - 5 Spider	1
869899	- 4 & - 5 Idler Gear (17T) Incl. 844774	3	869906	Gear Case (50T)	1
869900	- 2 & - 3 Idler Gear (21T) Incl. 844774	3	869907	Needle Roller (13 Per Gear)	39
869901	- 4 & - 5 Pinion Gear (16T) (7T I.D.)	1	869908	Idler Gear Pin	3

The complete gear trains can be purchased as a subassembly using the following part numbers:
- 2 - 861915, - 3 - 861914, - 4 - 861913, - 5 - 861912.

75 NUTRUNNER CLECOMATIC CLUTCH

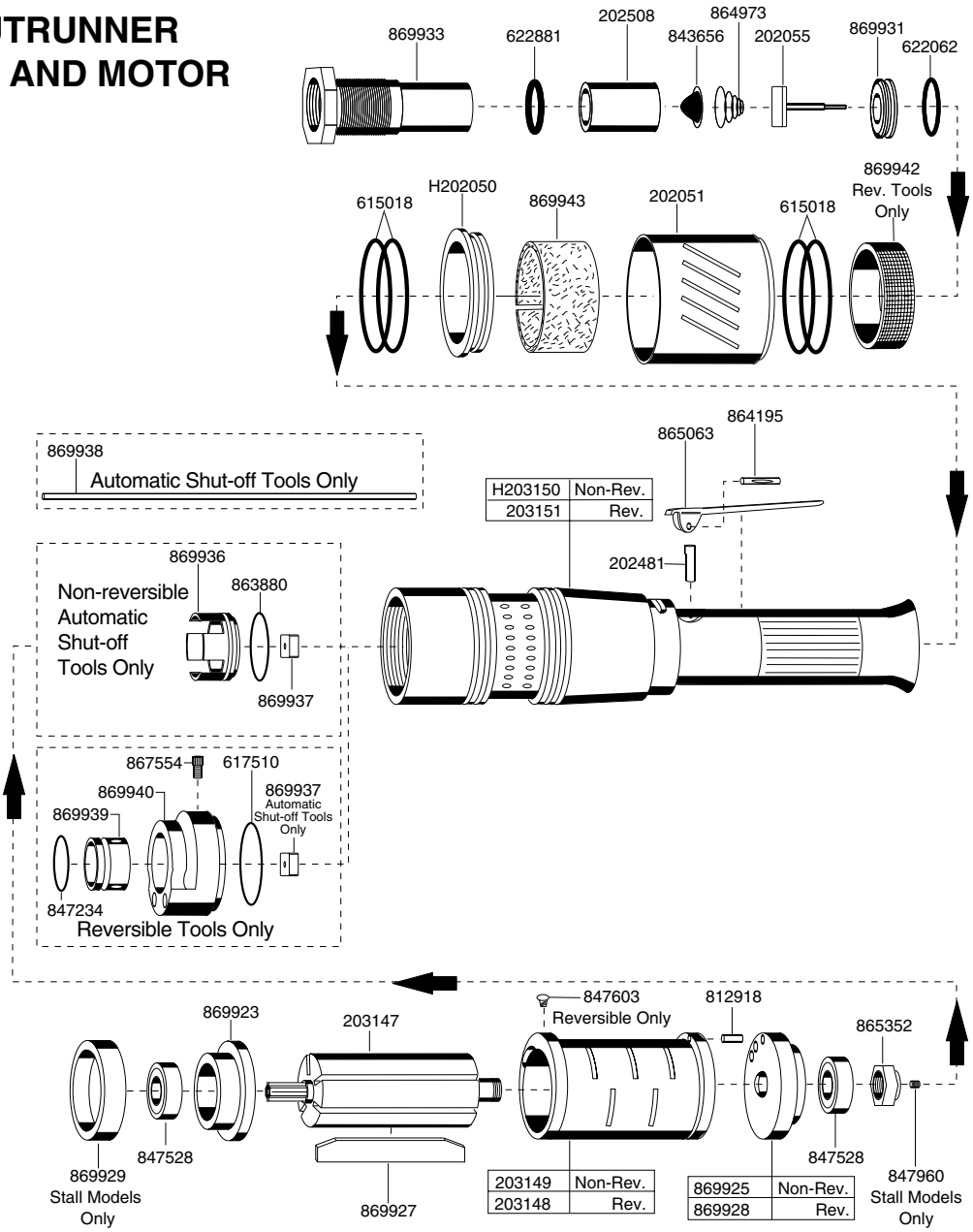


PARTS LIST — 75 CLECOMATIC CLUTCH

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
202056	Trip Sleeve Spring	1	869912	Clutch Housing	1
202057	Trip Plunger Spring	1	869913	Clutch Cam	1
842161	3/16" Steel Ball	11	869914	Ball Retainer	1
842162	1/4" Steel Ball	1	869915	Drive Shaft	1
847022	Retainer Ring	1	869916	Trip Plunger	1
847528	Ball Bearing	1	869917	Adjusting Nut	1
867666	Drive Shaft Washer	1	869918	Adjustment Cover	1
867669	Torque Spring Plate	1	869919	Ball Spring	1
867670	Trip Sleeve	1	869920	Clutch Retainer Ring	1
867683	Torque Spring Bearing	1	869921	Cam Retainer Ring	1
869626	Torque Spring	1			

The complete clutch can be purchased as a subassembly using part no. 861916.

75 NUTRUNNER HANDLE AND MOTOR



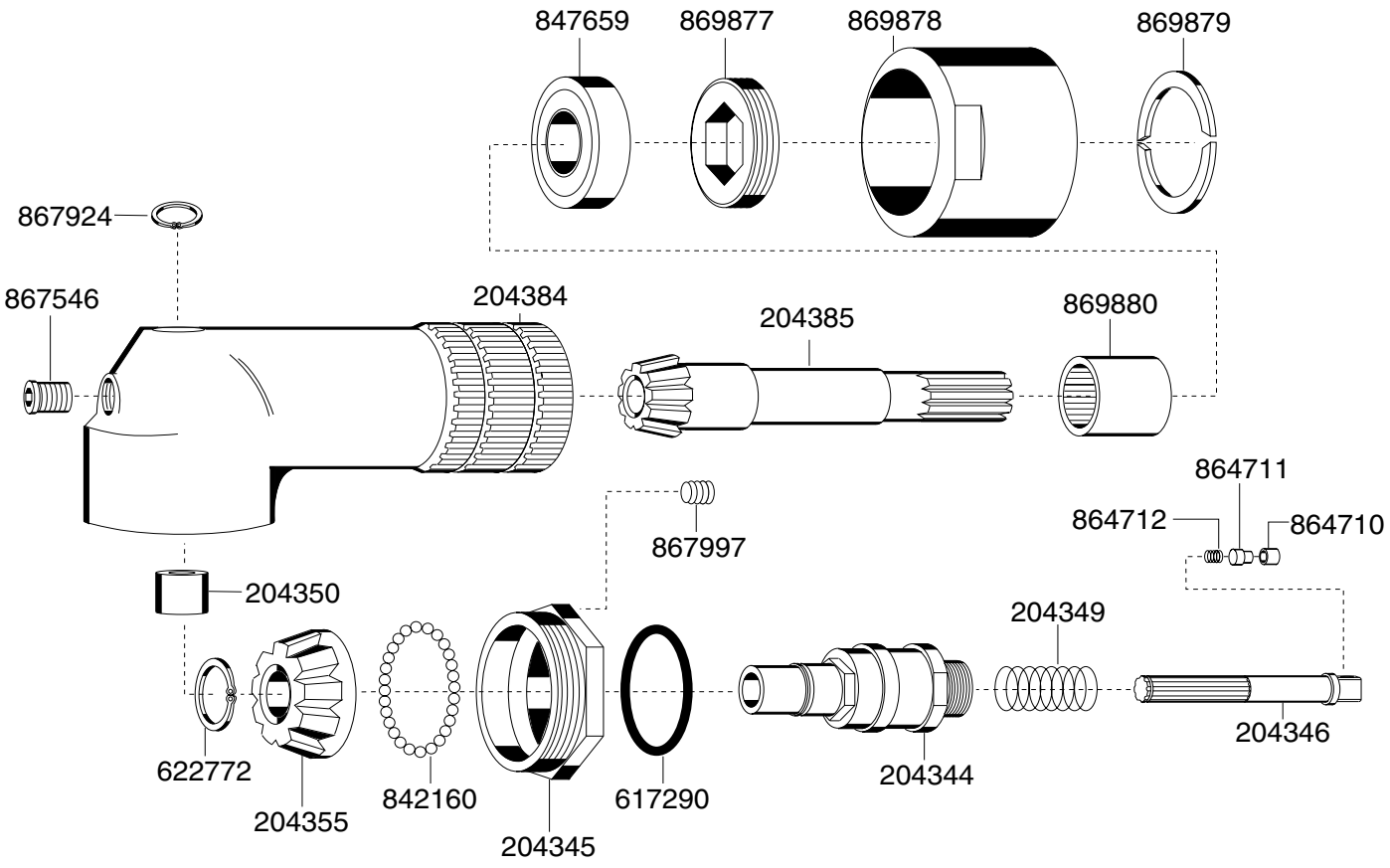
PARTS LIST — 75 HANDLE AND MOTOR

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
202050	Deflector Spacer	1	863880	"O"-Ring 1/4" x 1/8"	1
202051	Exhaust Deflector	1	864195	Throttle Lever Pin	1
202055	Throttle Valve	1	864973	Throttle Valve Spring	1
202481	Throttle Valve Pin	1	865063	Throttle Lever	1
202508	Inlet Spacer	1	865352	Rotor Lock Nut	1
203147	Rotor (7T)	1	867554	Reversing Valve Screw (Reversible Tools only)	1
203148	Cylinder (Reversible Tools only)	1	869923	Front Bearing Plate	1
203149	Cylinder (Non-Reversible only)(incl. 812918)	1	869925	Rear Bearing Plate (Non-Reversible Tools only)	1
H203150	Handle (Non-ReversibleTools only)	1	869927	Rotor Blade	5
203151	Handle (Reversible Tools only)	1	869928	Rear Bearing Plate (Reversible Tools only)	1
615018	"O"-Ring 2/2" x 2/8"	4	869929	Motor Spacer *	1
617510	"O"-Ring 2/8" x 2/16" (Reversible Tools only)	1	869931	Throttle Valve Seat	1
622062	"O"-Ring 7/8" x 1/16"	1	869933	Inlet Bushing	1
622881	"O"-Ring 15/16" x 1/8"	1	869936	Valve Block	1
812918	Cylinder Pin	1	869937	Shut-Off Valve (Automatic Shut-off Tools only)	1
843656	Air Inlet Screen	1	869938	Trip Rod (Automatic Shut-off Tools only) *	1
847234	"O"-Ring 1/8" x 1/4" (Reversible Tools only)	1	869939	Valve Block (Reversible Tools only)	1
847603	Cylinder Alignment Screw (Reversible Tools only)	1	869940	Reversing Valve (Reversible Tools only)	1
847960	Set Screw	1	869942	Reversing Ring (Reversible Tools only)	1
847528	Rotor Bearing	2	869943	Muffler	1

*Denotes parts not included in Subassemblies listed below.

COMPLETE SUBASSEMBLIES		
	Clecomatic Tools	Stalls Tools
Motor Housing	Non-Rev. - 201327, Rev. - 201330	Non-Rev. - 201328, Rev. - 201329

"V" RIGHT ANGLE HOLD & DRIVE HEAD



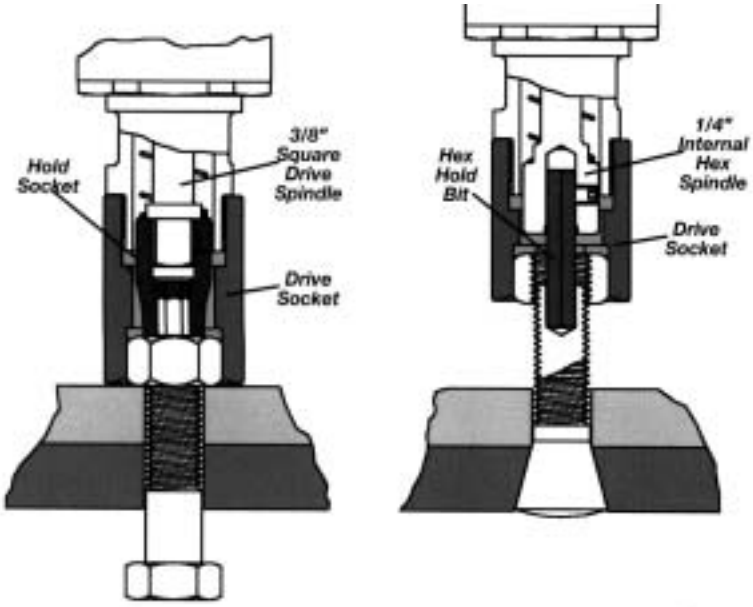
PART NO.	DESCRIPTION	QTY.
204344	DRIVE SPINDLE	1
204345	BEARING CAP	1
204346	HOLD SPINDLE	1
204347	CLAMP RING†	1
204348	CLAMP NUT†	1
204349	SPRING	1
204350	NEEDLE BEARING	1
204355	DRIVEN GEAR	1
204384	ANGLE HEAD HOUSING	1
204385	PINION	1
617290	"O"-RING	1
622772	RETAINING RING	1
842160	BALL	22
847659	BALL BEARING	1
864710	LOCK PIN RETAINER*	1
864711	SOCKET LOCK PIN*	1
864712	LOCK PIN SPRING*	1
867546	PIPE PLUG	1
867924	RETAINER RING	1
867997	SET SCREW	1
869877	BEARING RETAINER	1
869880	ROLLER BEARING	1

† PARTS NOT INCLUDED IN SUBASSEMBLY

*INCLUDED ON 204346

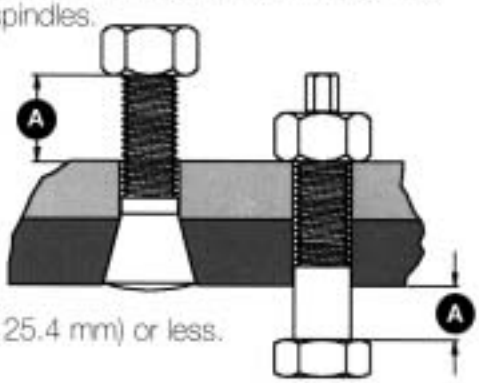
COMPLETE ANGLE HEAD SUBASSEMBLY: 201709

110 FT. LBS.(150Nm) MAXIMUM RECOMMENDED TORQUE



Hold & Drive bolts are used in automotive and truck frame applications. They reduce assembly handling to one person working from one side of the workpiece. The bolt is held from the same side. This also eliminates reaction bars since the bolt absorbs the torque.

Below are instructions for determining drive socket lengths for Hold & Drive heads with 3/8" square drive or 1/4" internal hex hold spindles.

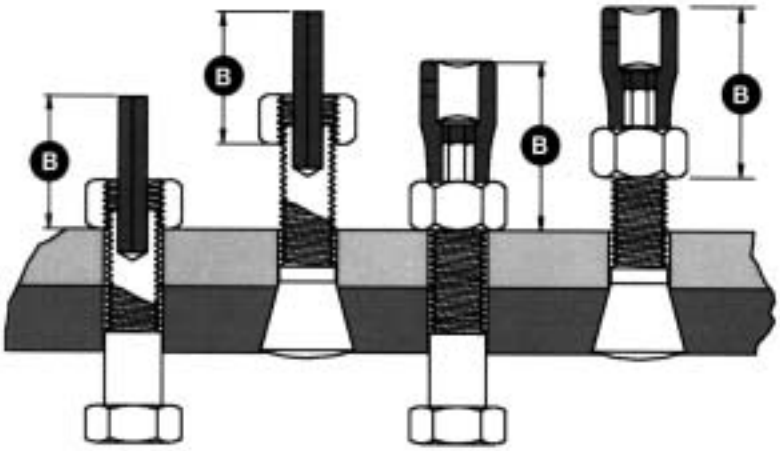


STEP ONE

Check distance **A** on the threaded joint. This dimension must be 1" (25.4 mm) or less.

STEP TWO

Select the proper size 3/8" square drive socket or bit required to hold the bolt. The outside diameter of the socket or bit must be less than .725" (18.4 mm).



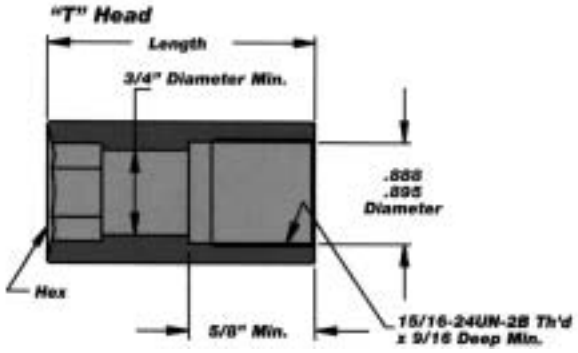
STEP THREE

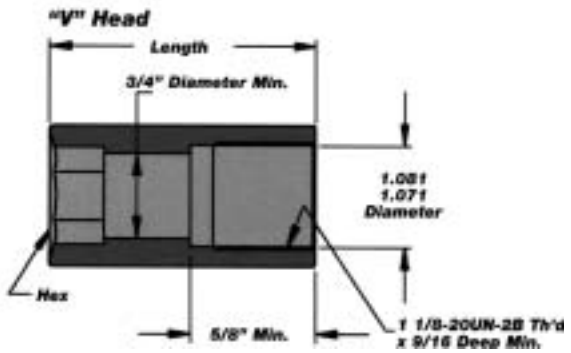
Measure the length from the end of the hex bit, or the square drive end of the socket to the base of the nut (dimension **B**). The length of the drive socket is determined by adding 1/4" (6.4 mm) to dimension **B** for the standard length hold spindle, and 1 1/4" (31.8 mm) to dimension **B** for the extended length hold spindle.

STEP FOUR

Manufacture of Drive Socket

Drive sockets may be made from impact wrench sockets. Make the drive socket by machining the impact wrench socket from the square drive end to the dimensions shown below.

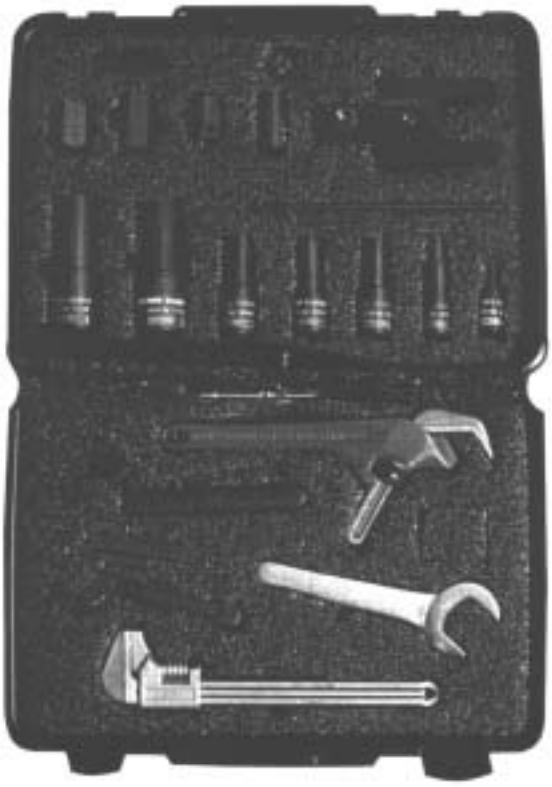




TOOL MAINTENANCE AND REPAIR KIT

FEATURES:

- Kit contains a variety of specialty tools for maintenance and repair of Cleco air tools
- Maintenance and repair tools are designed for screwdrivers, nutrunners and right angle grinders
- Kit has nineteen specialty tools for work in hard-to-reach places, seating bearings, tightening gear cases and holding tools while they are being serviced
- Components can be ordered individually or as a complete kit with tough molded case and pre-sized insert for holding tools securely in place



KIT CONTENTS

Code Number	Description	For Use With
889451	Bearing Driver	"F" or "RA-5" anglehead
889452	Bearing Driver	"K" or "RA-10" anglehead
889453	Bearing Driver	"M" or "RA-12" anglehead for 45/55 nutrunners
889454	Bearing Driver	"P" anglehead for 40 nutrunner
889455	Bearing Driver	"P" anglehead for 45/55 nutrunners
889456	Bearing Driver	"T" or "RA-13" anglehead
889457	Bearing Driver	"V" or "RA-18" anglehead
889458	Bearing Driver	"X" or "RA-20" anglehead
889459	Bearing Cap Tool	"M" or "RA-12" anglehead
889460	Bearing Cap Tool	"K" or "RA-10" anglehead
889462	Bearing Retainer Tool	"M" or "RA-12" anglehead
889463	Bearing Retainer Tool	"V", "RA-18", "X" , "RA-20" anglehead
889461	Holding Fixture	5, 8, 88, 9, 35, & 40 screwdrivers and nutrunners
204569	Adjustable Wrench	gear cases
204566	Offset Adj. Wrench	gear cases
204567	1-7/16" O.E. Wrench	gear cases
204568	Hook Spanner Wrench	large clutch housing
203804	Hook Spanner Wrench	small clutch housings
203803	Gear Case Wrench	5 series gear cases
204564	T-Bar	Used with all bearing cap and bearing ret. tools
204570	Tool Case	Carrying case for kit
201757	Assembly Tool Repair Kit-all above included	

NOTES

COOPER Tools

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