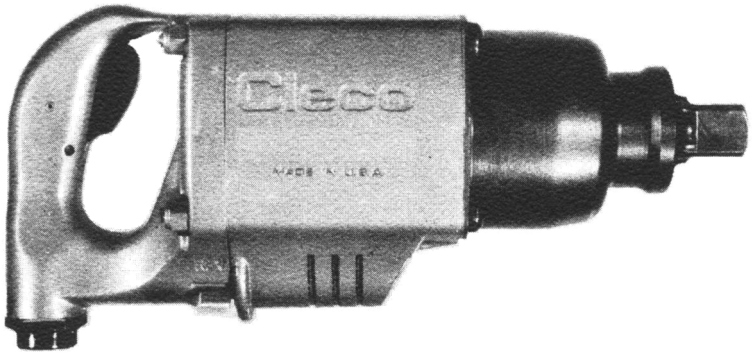
COOPER Tools

Operation & Service Manual
823035 **2/01**

Cleco®

W2109 & W2110 SERIES IMPACTS



W	X	X	-	XXXX	X	-	X	-	XX

Impact Wrench:

Handle:

P	Pistol Grip
T	Inside Trigger
——	Outside Trigger

Tool Size:

2109
2110

Tool Generation:

——	Concept
B	Second

Output Drive:

8	1"
S	Spline Drive (No. 5 Spline)

Optional Equipment:

6E	6" Extended Spindle
3E	3" Extended Spindle

NORTH AMERICA

CooperTools
P.O. Box 1410
Lexington, SC 29071

EUROPE

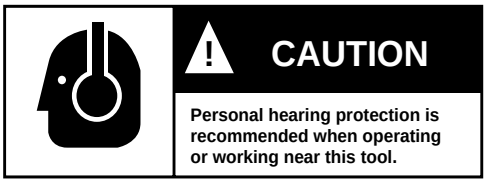
Cooper Power Tools GmbH & Co.
Postfach 30
D-73461 Westhausen

SafetyRecommendations

For your safety and the safety of others, read and understand the safety recommendations before operating an impact wrench.

Always wear protective equipment and clothing.

For additional information on eye protection, refer to Federal OSHA Regulations, 29 CFR, Section 1910.133, Eye and Face Protection, and ANSI Z87.1, Occupational and Educational Eye and Face Protection. This standard 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 (above 85 dBA). Close proximity of additional tools, reflective surfaces, process noises, and resonant structures can substantially contribute to the sound level experienced by the operator. 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 OSHA Regulations, 29 CFR, Section 1910.95, Occupational Noise Exposure, and American National Standards Institute, ANSI S12.6, Hearing Protectors.

- **Gloves and other protective clothing should be worn as required, unless they create a greater hazard.**

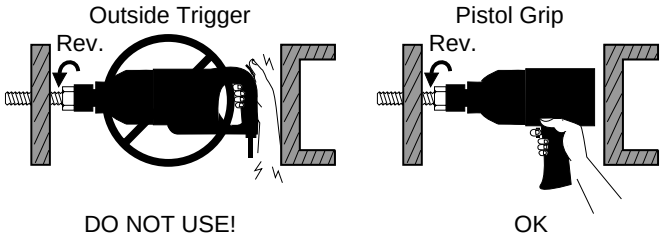
- **Do not wear loose fitting clothing, or clothing that may restrict movement, become entangled or in any way interfere with the safe operation of the impact.**

Cleco impact wrenches 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 highly 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 endanger adjacent personnel, clear air hose of accumulated dust and moisture. 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 accidently engaged.

Never use the air hose for supporting, lifting, or lowering the tool. Use a safety line or cable on the tool when working in elevated areas.

Tools with exposed throttles should not be used where obstructions can hold the throttle in the "on" position. An impact wrench operating in reverse will move backwards as a nut is removed and can trap an operator's hand, making it difficult to release an outside trigger. Inside trigger or pistol grip tools are advised for close quarter operation.



Only use sockets designed for use with impact wrenches. Never use a hand tool socket on an impact wrench. Hand tool sockets can break, resulting in a hazard from flying pieces. Inspect sockets, retainers, and drives regularly for wear or damage, and replace as necessary. Worn sockets reduce power, cause drive wear, and increase the chance for breakage and should not be used.

Impact wrenches equipped with the spline drive have an integral socket retainer pin which may be depressed by a screwdriver or similar tool when installing or removing a socket. Tools with square drives 3/4" and larger use an aor- ring and pin for socket retention. Retainers—either pin or integral—should be properly engaged to prevent dropping sockets into lower working levels. Always use socket retainer components recommended by the socket manufacturer. Never substitute wire, nails, or welding rods for retaining pins because they are dangerous if thrown from the tool at free speed, or if the protruding nail or wire is accidently grasped by the operator.

WARNING

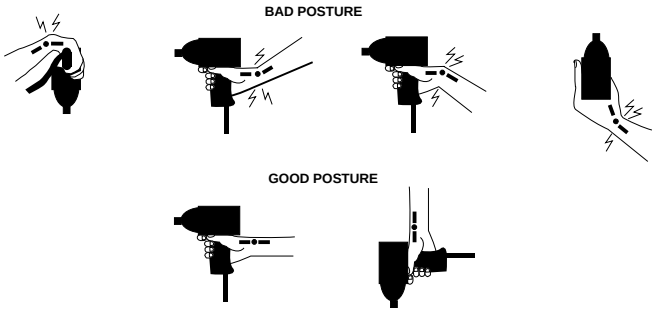
Repetitive work motions and/or vibration may cause injury to hands and arms.
Use minimum hand grip force consistent with proper control and safe operation.
Keep body and hands warm and dry.
Avoid anything that inhibits blood circulation.
Avoid continuous vibration exposure.
Keep wrists straight.
Avoid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

SafetyRecommendations

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.

Tool operators 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.



- **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.**

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
- Avoid anything that inhibits blood circulation
  - —Smoking Tobacco
  - —Cold Temperatures
  - —Certain Drugs
- Keep wrists as straight as possible
- Avoid highly repetitive movements of hands and wrists, and continuous vibration exposure

Work gloves with vibration reducing liners and wrist supports are available from some manufacturers of industrial work gloves. These gloves are designed to reduce and moderate the effects of extended vibration exposure and repetitive wrist trauma. Since they vary widely in design, material, vibration reduction, and wrist support qualities, it is recommended that the glove manufacturer be consulted for gloves 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.**

Also note that various tool wraps are available from a number of different manufacturers. Like gloves, these wraps are also intended to reduce and moderate the effects of extended vibration exposure. They vary widely in design, material, thickness, vibration reduction, effectiveness, and durability, so consideration must be given to choosing the proper wrap for the specific application.

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.

Warnings

The warnings found on these tools are an essential part of the product. Warnings should be checked periodically for ligibility. Replace warnings when missing or when the information can no longer be read. Replacements can be ordered as any spare part.

869976

For more information, 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.

These operating instructions and service manual should accompany tool if it is subsequently sold or ownership is changed.

GENERAL INFORMATION

AIR SUPPLY

Thetool isdesigned to operate on 90 psig (6.2 bar) airpressure (measured at the tool air inlet with the tool running) using a 1/2" (12.7mm) hose up to 8' (2.4m) in length. An automatic in-line filter-lubricator is highly recommended to supply the tool with cleanlubricated air. This will keepthe tool in sustained operation and increase its service life.

The air hose should be cleared of accumulated dirt and moisture, then one (1) teaspoon (5ml) of 1 OW machine oil should be poured into the tool's air inlet before connection the hose to the tool.

IMPORTANT: If a puick-disconnect coupling is used with the tool, it should be separated from the tool by a whip hose.

All tools and hoses should be installed by trained, competent personnel. Hoses and fittings should be inspected regularly for worn or damaged areas and replaced if necessary.

LUBRICATION

An automatic in-line filter-lubricator is recommended as it increases tool fif e and keeps the tool in sustained operation. The

in-line lubricator should be regularly checked and filled with a good grade of 1 OW 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. In the event an in-line lubricator is not used, the oil reservoir in the handle should be utilized.

The oil reservoir marked "30W oil" should not require attention until thetool istorn down for inspection purposes; however, if the tool is on the application for an unduly long period of time, the plug should be removed and the reservoir checked for the presence of oil. If oil is required, approximately 1-1/4 fluid ounces (40ml) of 30W oil should be added to the oil reservoir.

MAINTINANCE - DISASSEMBLY
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 atthat time and again when returned to service. The tool should be stored in a clean and dry environment.

GENERAL - ALL MODELS

Disconnect the tool from the air supply and unscrew and remove the four (4) nuts, No. 865006, then remove the handle assembly, gasket, No. 869293, and the motor clamp seal, No. 869281, from the rear of the motor unit.

Drive the four (4) housing bolts, No. 869288, out the front of the motor unit. Removing the anvil housing, No. 861721, will allow the complete impacting mechanism to slip out the front of the motor unit.

The impact wrench is now separated into four (4) basic assemblies. See the following paragraphs for commplete disassembly instructions on these assemblies.

ANVIL HOUSING

For better performance, it is recommended that the anvil housing seal, No 869289, be replaced during each repair The seal may be removed by prying it out with a screwdriver after removing retainer ring, No. 869511.

Should the anvil housing bushing. No. 869273, need replacing the housing seal will have to be removed as outlined above. Press the housing bushing out the rear of the housing using a suitable bushing driver.

IMPACT MECHANISM

Clamp the hammer, No. 869303, horizontally in a softjawed vise and drive the anvil* away from the hammer using a soft hammer. This will allow the anvil pin, No. 869290, spring clip, No 869274, hammer spring, No. 869282, to be removed from the front of the cam shaft, No. 869292.

Remove the hammer from the vise and slip the cam shaft and related components out of the rear of the cam, No. 869296. Remove the shock absorber, No 867980, (slight press fit) from the rear of the cam shaft. This will allow the insulator, No. 869012, butt plate, No. 869011, cam roller, No 869278 and cam roller shaft, No 869277. to be removed from the cam shaft Slip the cam, No. 869296, out of the rear of the hammer, being careful not to lose the timing pin, No. 869279

*NOTE On the spline drive anvils, should any of the socket retainer parts need replacing, a 5/32" (4mm) hole should be drilled in the socket retainer plunger, No. 867950,as shown in Figure 3. Insert a pin punch in the drilled hole and lightly tap the punch under the socket retainer pin, No. 867951. Pry on the punch to pop the pin out of its pocket in the plunger.

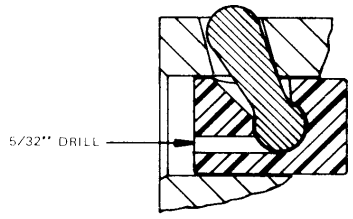


Figure 3

MOTOR UNIT
Remove the motor unit from the rear of the housing and disassemble for inspection of parts.

HANDLE ASSEMBLIES
For inspection of the throttle valve seal, No. 867977, unscrew the inlet bushing. This will allow the removal of the complete throttling mechanism.

If the throttle pin bushing should need replacing, tap the I.D. of the bushing with a 114-20 (6m) thread tap. Insert a 1/4-20 (6mm) bolt of the appropriate length and clamp the bolt in the vise. Drive the handle away from the vise using a soft mallet.

MAINTENANCE - REASSEMBLY

CLEANING AND INSPECTION

All oar[s should be cleaned in a solvent and inspected for wear or darnage. If rotor blades measure less than 11 32 (8 73mr-n) on either end. they should be replaced. Rotor bearings should be replaced if they feel rough after cleaning or show excessive looseness. Rotor shaft seals No 869275, should be replaced if they are badly worn or are no longer flexible.

HANDLE ASSEMBLIES
A. Spade Handles

VVInen installing the trigger, use a pin slightly smaller lhan the hole in the handle to loCate the trigger when driving the trigger pin, No. 832125, into the handle.

If the throttle pin bushing, No. 864975, was removed, the new bushing should be pressed in to a depth of 1-5/8" (4 1.28mm) from the bottom face of the handle.

Inspect the throttle valve seal, No. 867977, for wear or deterioration. If replacement is necessary, [he new seal should be pushed (cupped face first) on the throttle valve No 867974, from the taPered end.

The inlet bUshing, No 869283 should be torqued to 150 ft. lbs (204Nm) rninimurn.

B. Pistol Grip Handle

It the throttle pin bushing, No. 832211. was removed, the new bushing ShOLM be pressed in to a depth of 1-151/ 16 (49 2 1 mr-n) from the bottom face of the handle and the I D of the bushing sized to 1880"/.1887" dia. (4.775mm 4 793mm) after installation.

Inspect the throttle valve seal, No. 867977, for wear or deterioration. If replacement is necessary, the new seal should be pushed (cupped face first) on the throttle valve, No 867974, from the tapered end.

Inspect the "C" ring, No. 863009, and replace if necessary. Clean the threads in the handle arid on the inlet bushing and apply Locktite" No. 271 to the threads. Torque the bushing to 80 ft lbs. (109Nm) minimum.

MOTOR UNIT
During assembly of the bearing plates, the rotor shaft seals, No 869275, should be pressed into the bearing plates with their "lips" facing outward (visible after assembly). Pressing on the OUter race, install the rotor bearings, No. 863097. into the bearing plate.

Lubricate both the bearings arid seals with 30W oil and install the rotor, No. 869299, with the end stamped ~i rear" into one of the bearing plate assemblies (both bearing plates are identical). Insert the six (6) rotor blades into the blade slots and place the cylinder on the assembly with the air inlet holes down. Assemble the other bearing plate on the front of the rotor and install "0" ring, No. 619751, on this bearing plate. Lubricate this "C" ring and the two (2) "0" rings, No. 844312, in the motor bore. Place the motor unit on flat surface. front end up, and slide the motor housing down over the motor unit with the alignment pin, No. 864117 in place.

IMPACT MECHANISM
All parts should receive a thin coating of 30W oil before assembly. Insert the timing pin, No. 869279 into the. recess located on the small O.D. of the cam, No. 869296, and then install the cam and pin into the rear of the hamr-ner, No. 869303.

Install the cam roller shaft, No. 869277, in the cam shaft, No. 869292. Put the cam roller, No. 869278, on the roller shaft and slip the butt plate, No. 869011, insulator, No. 869012, and shock absorber, No. 867980, onto the rear of the cam shaft. Hold the cam shaft vertically on the work bench with the shock absorber down and tap the end of the cam shaft with a soft mallet to seat the cam shaft in the shock absorber.

Slip the cam shaft and related components through the cam and hammer assembly. Install the hammer spring, No. 869282, spring clip, No. 869274, and anvil pin, No. 869290, onto the front of the cam shaft and hammer assembly. Rotate the spring clip to accept the anvil pin and then install the anvil on top of the assembly (be sure the slot in the anvil lines up with the anvil pin) and drive the anvil down until the spring clip engages the recess in the anvil

To install the socket retainer pin, No. 867951, in the spline drive anvil insert socket retainer spring, No. 867949, and socket retainer plunger, No. 867950, into the anvil and then drive the socket retainer pin radially into the plunger

ANVIL HOUSING
When replacing the anvil housing seal, No. 869289, the housing bore should be cleaned with a solvent and then

coated with "PERMATEX" Aviation Form-A-Gasket No. 3H, and then be allowed to air dry at least four (4) minutes before

of the cam shaft. Hold the cam shaft vertically on the work bench with the shock absorber down and tap the end of the cam shaft with a soft mallet to seat the cam shaft in the shock absorber.

Slip the cam shaft and related components through the cam and hammer assembly. Install the hammer spring, No. 869282, spring clip, No. 869274, and anvil pin, No. 869290, onto the front of the cam shaft and hammer assembly. Rotate the spring clip to accept the anvil pin and then install the anvil on top of the assembly (be sure the slot in the anvil lines up with the anvil pin) and drive the anvil down until the spring clip engages the recess in the anvil

To install the socket retainer pin, No. 867951, in the spline drive anvil insert socket retainer spring, No. 867949, and socket retainer plunger, No. 867950, into the anvil and then drive the socket retainer pin radially into the plunger

ANVIL HOUSING

When replacing the anvil housing seal, No. 869289, the housing bore should be cleaned with a solvent and then coated with "PERMATEX" Aviation Form-A-Gasket No. 3H, and then be allowed to air dry at least four (4) minutes before pressing in the seal. Press the seal in with its "lip" toward the bore of the housing. ("Lip" should not be visible after assembly.)

GENERAL - ALL MODELS

Coat the impact mechanism with 30W oil and insert into the rotor. Lubricate the anvil housing seal, bushing and front bearing plate "C" ring with 30W oil and install the anvil housing. Install the dead handle, housing bolts, motor clamp seal, gasket, and handle or back cap, depending on model. NOTE Upper cut-out on the gasket aligns with the cylinder slot. Install the four (4) nuts, No 865006, and torque to 20 ft. lbs. (27Nm) minimum.

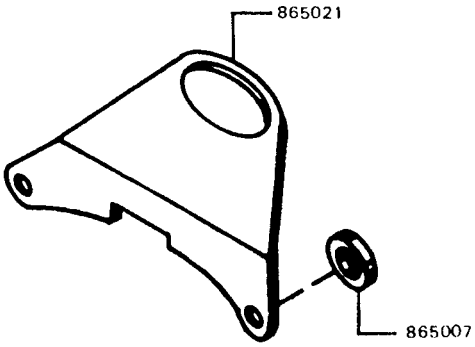
After complete assembly of the tool, 1-1/4 fluid ounces (40ml) of 30W oil should be added to the 30W oil fill hole.

SAFETY CHECK

All tools should be tested after repair or replacement of parts to assure that they are functioning properly.

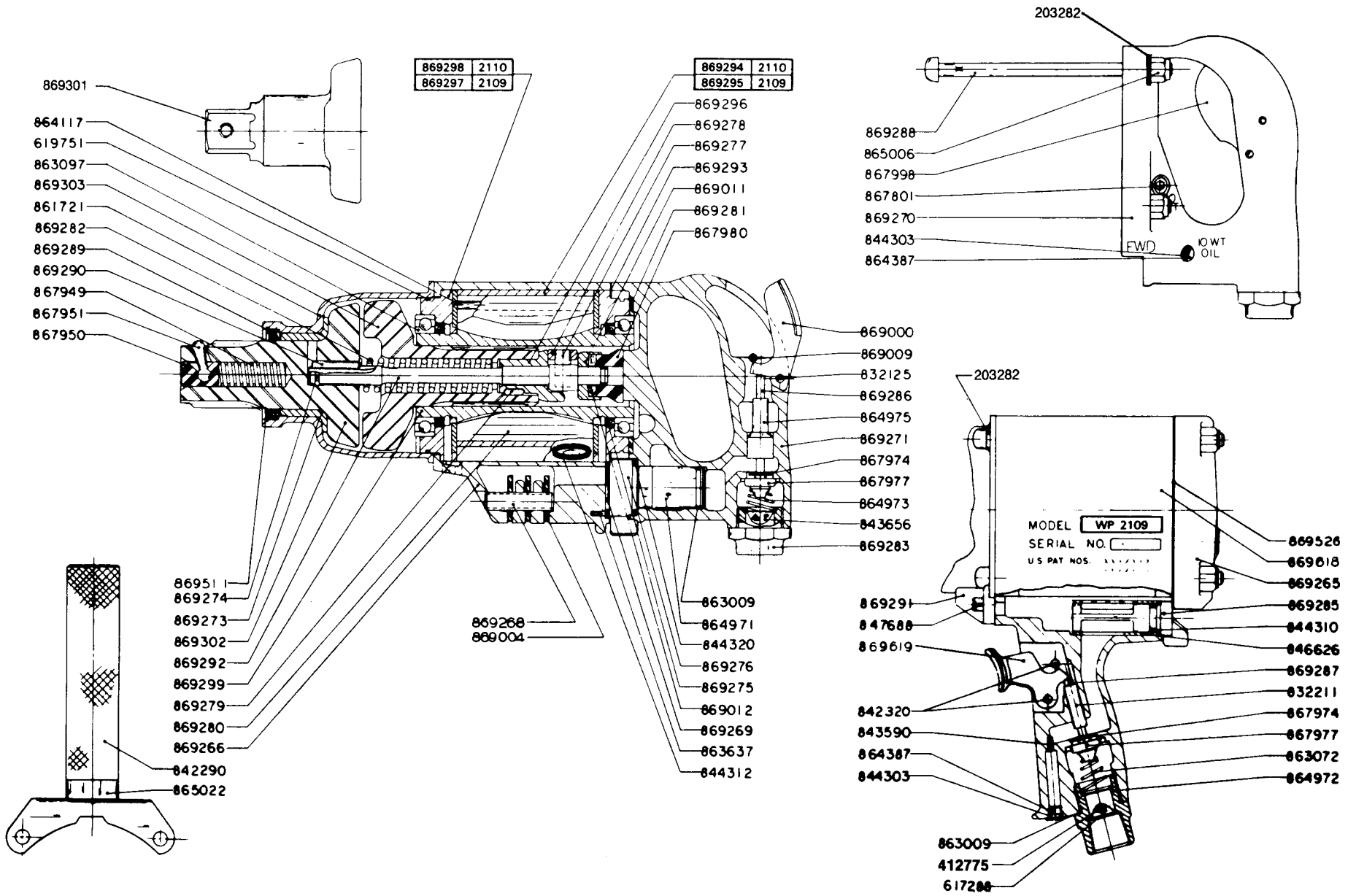
DRAWINGS AND PARTS LISTS

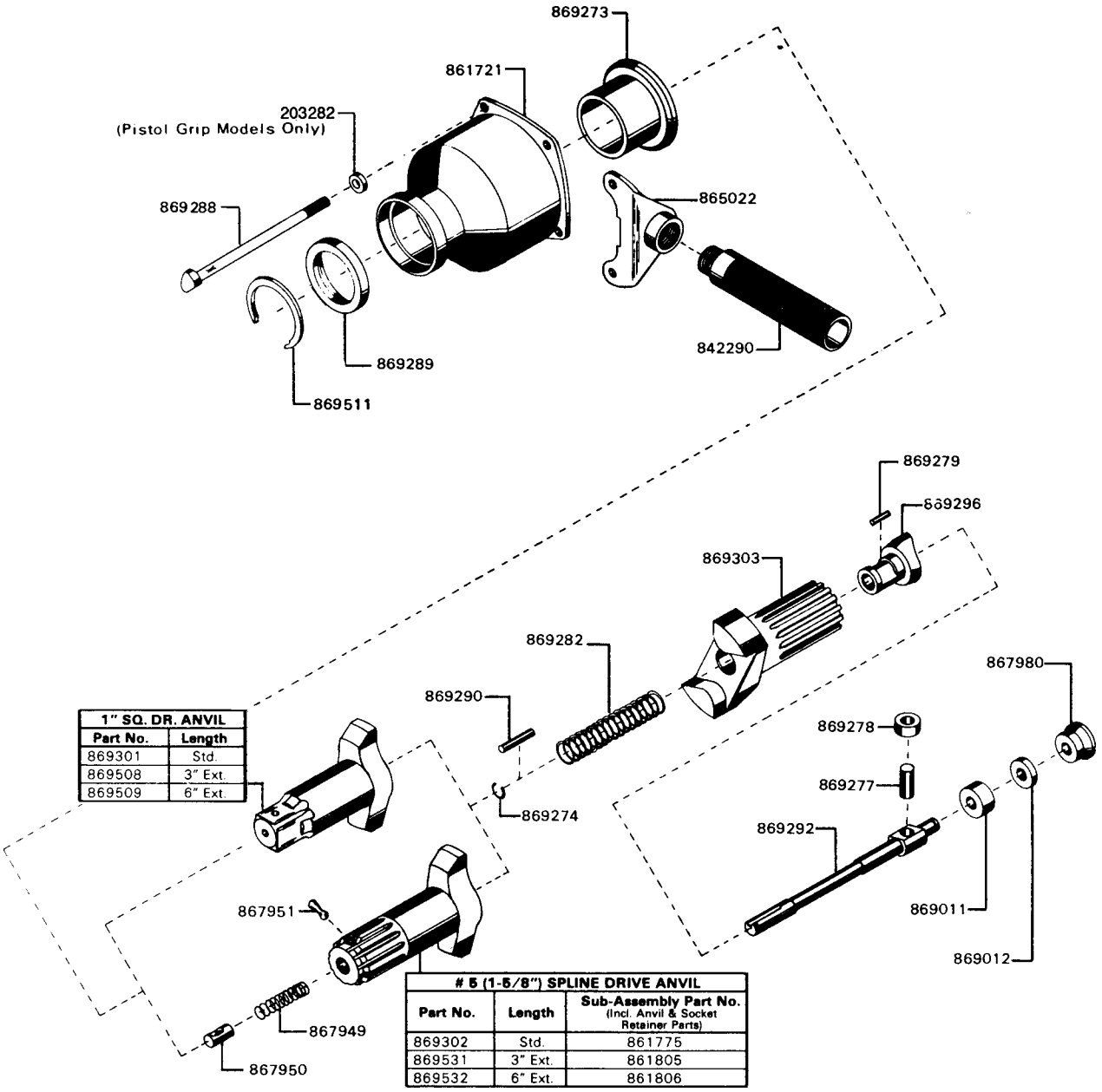
OPTIONAL PARTS



PARTS LIST – OPTIONAL PARTS

PART NO.	NAME OF PART	QTY.
865007	Spacer	1
865021	Suspension Bracket	1


869298 2110
869297 2109
869294 2110
869295 2109
869301
864117
619751
863097
869303
861721
869282
869289
869290
867949
867951
867950
869296
869278
869277
869293
869011
869281
867980
869000
869009
832125
869286
864975
869271
867974
867977
864973
843656
869283
869511
869274
869273
869302
869292
869299
869279
869280
869266
842290
865022
869268
869004
863009
864971
844320
869276
869275
869012
869269
863637
844312
203282
869288
865006
867998
867801
869270
844303
864387
FWD
10 WT OIL
203282
MODEL WP 2109
SERIAL NO.
U.S PAT NOS.
869526
869618
869265
869285
844310
846626
869287
832211
867974
867977
863072
864972
869291
847688
869619
842320
843590
864387
844303
863009
412775
617288

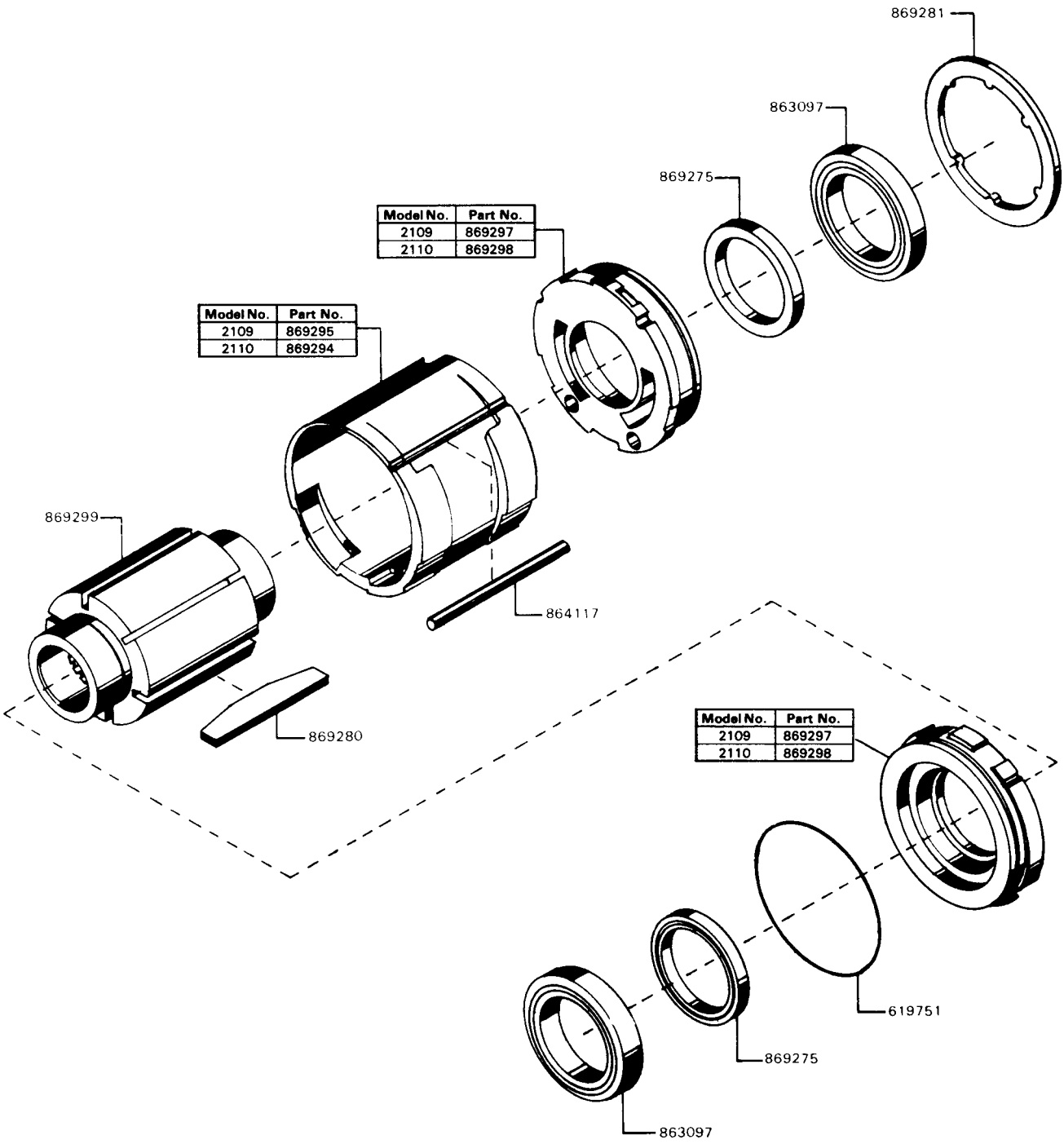


1" SQ. DR. ANVIL	
Part No.	Length
869301	Std.
869508	3" Ext.
869509	6" Ext.

# 5 (1-5/8") SPLINE DRIVE ANVIL		
Part No.	Length	Sub-Assembly Part No. (Incl. Anvil & Socket Retainer Parts)
869302	Std.	861775
869531	3" Ext.	861805
869532	6" Ext.	861806

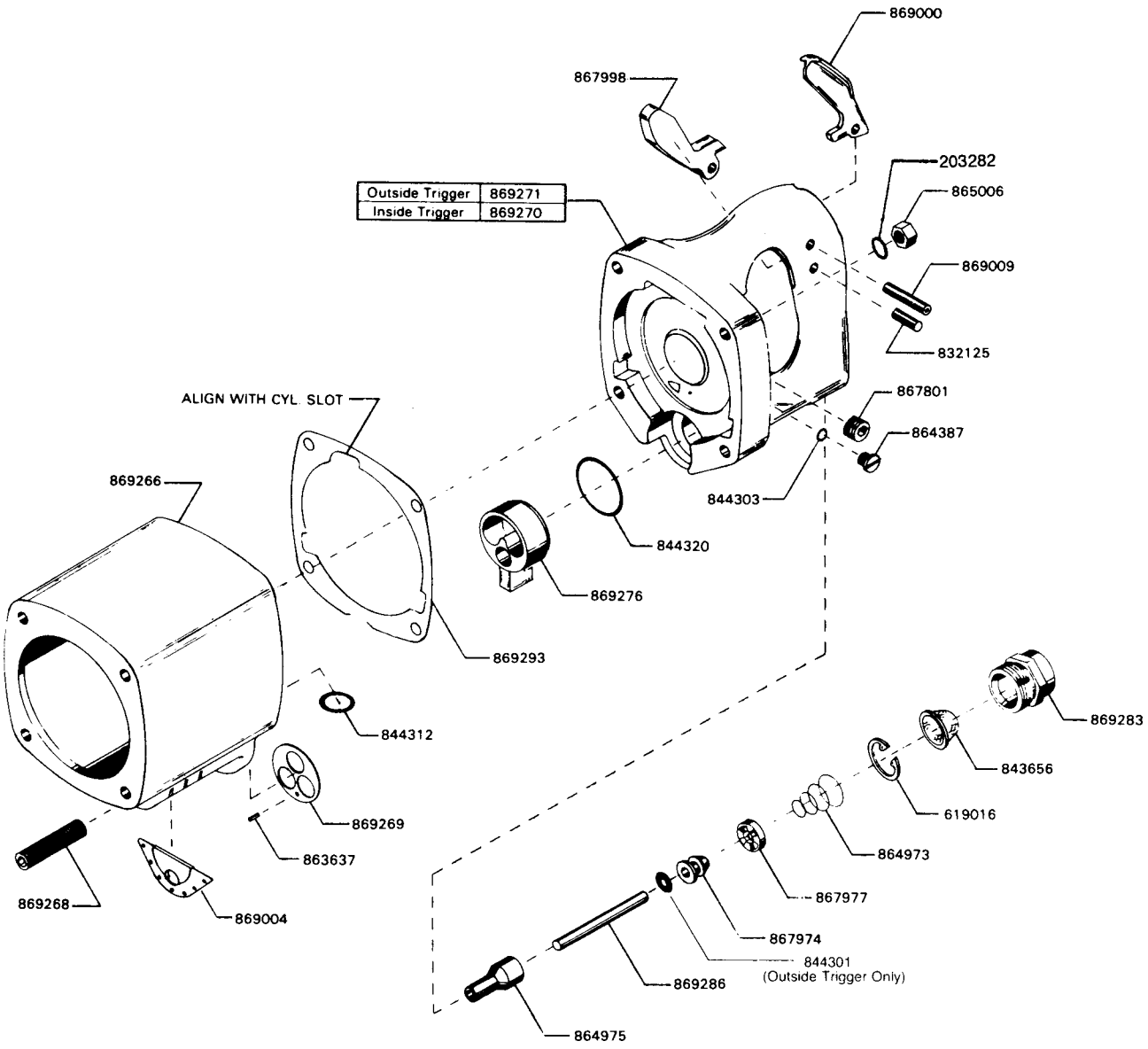
PARTS LIST — IMPACT MECHANISM

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
203282	Washer	2	869277	Cam Roller Shaft	1
842290	Support Handle	1	869278	Cam Roller	1
861721	Anvil Housing (incl. 869273, 869289, 869511)	1	869279	Timing Pin	1
861775	#5 (1-5/8") Std. Spline Drive Anvil (incl. 867949, 867950, 867951, 869302)	1	869282	Hammer Spring	1
861805	#5 (1-5/8") 3" Ext. Spline Drive Anvil (incl. 867949, 867950, 867951, 869531)	1	869288	Housing Bolt	4
861806	#5 (1-5/8") 6" Ext. Spline Drive Anvil (incl. 867949, 867950, 867951, 869532)	1	869289	Anvil Housing Seal	1
865022	Support Handle Bracket	1	869290	Anvil Pin	1
867949	Socket Retainer Spring	1	869292	Cam Shaft	1
867950	Socket Retainer Plunger	1	869296	Cam	1
867951	Socket Retainer Pin	1	869301	1" Sq. Dr. Anvil (Std.)	1
867980	Shock Absorber	1	869302	#5 (1-5/8") Spline Drive Anvil (Std.)	1
869011	Butt Plate	1	869303	Hammer	1
869012	Insulator	1	869508	1" Sq. Dr. Anvil (3" Ext.)	1
869273	Anvil Bushing	1	869509	1" Sq. Dr. Anvil (6" Ext.)	1
869274	Spring Clip	1	869511	Retainer Ring	1
			869531	#5 (1-5/8") Spline Drive Anvil (3" Ext.)	1
			869532	#5 (1-5/8") Spline Drive Anvil (6" Ext.)	1



PARTS LIST — MOTOR UNIT

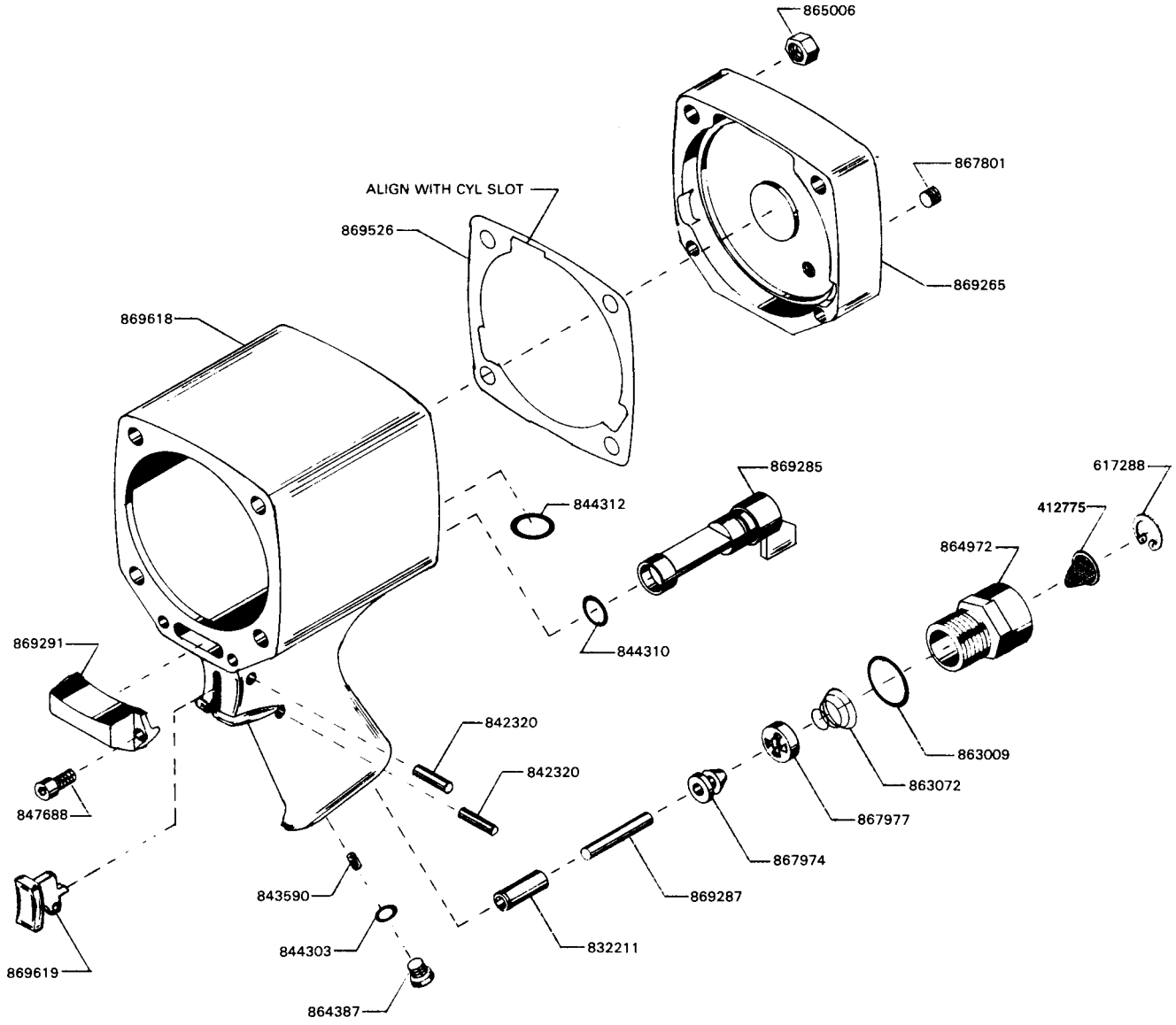
PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
619751	O-ring 2-13/16" X 3"	1	869294	2110 Cylinder	1
863097	Rotor Bearing	2	869295	2109 Cylinder	1
864117	Alignment Pin	1	869297	2109 Bearing Plate	1
869275	Rotor Shaft Seal	2	869298	2110 Bearing Plate	1
869280	Rotor Blade	6	869299	Rotor	1
869281	Motor Clamp Seal	1			



PARTS LIST — SPADE HANDLES AND MOTOR HOUSING

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
203282	Washer	2	867977	Throttle Valve Seal	1
619016	Retainer Ring	1	867998	Inside Trigger	1
832125	Trigger Pin	1	869000	Outside Trigger	1
842656	Inlet Screen	1	869004*	Muffler Plate	3
844301	O-ring 1/8" X 1/4"	1	869009	Trigger Stop Pin	1
844303	O-ring 3/16" X 5/16"	1	869266*	Motor Housing incl. 863637, 869004, 869268, 869269)	1
844312*	O-ring 5/8" X 13/16"	2	869268*	Retainer Screw	1
844320*	O-ring 1-1/16" X 1-5/16"	1	869269*	Wear Plate	1
863637*	Wear Plate Pin	1	869270	Inside Trigger Handle (incl 864975)	1
864387	10W Oil Fill Plug	1	869271	Outside Trigger Handle (incl. 864975)	1
864973	Throttle Valve Spring	1	869276*	Reversing Valve	1
864975	Throttle Pin Bushing	1	869283	Inlet Bushing	1
865006*	Nut	4	869286	Throttle Pin	1
867801	30W Oil Fill Plug	1	869293*	Gasket	1
867974	Throttle Valve	1			

*Denotes parts not included in subassemblies listed below.
The complete spade handle can be ordered as a subassembly using the part numbers listed below.
Outside Trigger - 861723 Inside Trigger - 861724



PARTS LIST — PISTOL GRIP MOTOR HOUSING

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
412775	Air Screen	1	865006*	Nut	4
617288	Air Screen Retainer Ring	1	867801*	Oil Fill Plug (30W)	1
832211	Throttle Pin Bushing	1	867974	Throttle Valve	1
842320	Pin	2	867977	Throttle Valve Seal	1
843590	Oiler Bushing	1	869265*	Backcap (incl. 867801)	1
844303	O-ring 3/16" X 5/16"	1	869285*	Reversing Valve	1
844310	O-ring 1/2" X 11/16"	1	869287	Throttle Rod	1
844312	O-ring 5/8" X 13/16"	2	869291*	Muffler	1
847688	Muffler Screw	2	869526*	Gasket	1
863009	O-ring 3/4" X 7/8"	1	869618	Motor Housing (incl. 832211, 843590)	1
863072	Throttle Valve Spring	1	869619	Trigger	1
864387	Oiler Plug (10W)	1			
864972	Inlet Bushing	1			

*Denotes parts not included in subassemblies listed below.
The complete pistol grip motor housing can be ordered as a subassembly using the part number listed below.
861808

COOPER Tools

CooperTools
670 Industrial Drive
Lexington, SC 29072
Phone: (803) 359-1200
Fax: (803) 359-2013
www.cooperindustries.com