

Operation & Service Manual 823209 2/01

# Cleco®



		1	36	F	R	V	X
Series: —							
136							
Tool Type	e:						
R	Reciprocating						
Speed: -							
V	Variable						
Handle: _							
Х	Spade						

NORTH AMERICA	EUROPE
CooperTools	Cooper Power Tools GmbH & Co.
P.O. Box 1410	Postfach 30
Lexington, SC 29071	D-73461 Westhausen

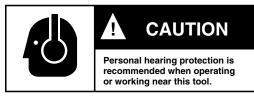
# **Safety Recommendations**

For your safety and the safety of others, read and understand the safety recommendations before operating this saw.

#### Always wear protective equipment.



**Caution:** Faceshields do not provide unlimited protection against flying particles and are not to be considered as eye protection. ANSI Z87.1 states that separate eyewear shall be used. 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.



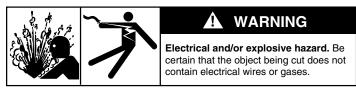
Hearing protection is recommended in high noise areas (above 85 dBA). Close proximity of additional tools, reflective surfaces, process noises, and resonant structures can substantially contribute to the sound level experienced by the operator. Proper hearing conservation measures, including annual audiograms 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.



Other protective clothing should be worn as required, unless it creates a greater hazard. Do not wear loose fitting clothing or any jewelry. Gloves can be caught in the the rotating blade causing severe injury. Avoid inhaling dust resulting from the operation of this saw. Wear approved respirator or mask if ventilation is inadequate. Respirators should be selected, fitted, used and maintained in accordance with Occupational Safety and Health Administration and other applicable regulations.

This saw is designed to operate on 90 psig (6.2 bar) max. air pressure. Installation of a filter-regulator-lubricator in air supply line is highly recommended. Before tool is connected to air supply, check throttle for proper operation, i.e., throttle moves freely and returns to closed position. Clear air hose of accumulated dust and moisture. Be careful not to endanger adjacent personnel. Before removing tool from service or changing blades, make sure air line is shut off and drained of air. This will prevent tool from operating if throttle is accidently engaged. Do not use tool to drain residual air from air line. A self-relieving valve is recommended for this purpose.

**Work Environment.** Work areas should be kept clean and free from clutter. Visitors should be kept away from work area. The air hose should be suspended or placed to prevent damage to the hose or inadvertent tripping to workers. An improperly placed hose can be hooked by a vehicle or worker pulling the saw out of the user's hands or causing a loss of balance. After use the saw should be disconnected properly and stored.



**Safe Use.** Keep both hands on the saw and away from the cutting area while the blade is rotating. Blades should be kept sharp. Materials to be cut must be securely held to prevent movement. Be aware that end pieces may fall after being cut, and care must be exercised. Never use liquid coolants or cutting oils on the blade or band mechanism. Damage may occur to the blade guides and pulley tires. When cutting conduit or pipe, be certain that live electrical wires and explosive and/or harmful gases or liquids are not present.

## 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 exposureorders 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.

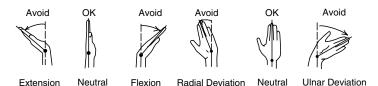
Tool operators should be aware of the following warning signs and symptoms so that a problem can be addressed before it becomes a debilitating injury. Any user suffering prolonged symptoms of tingling, numbness, blanching of fingers, clumsiness or weakened grip, nocturnal pain in the hand, or any other 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

# **Safety Recommendations**

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 contribut
  - ing factor)
  - Cold Temperatures
    Certain Drugs



- Tasks should be performed in such a manner that the wrists are maintained in a neutral posi tion, which is not flexed, hyperextended, or turned side to side
- Stressful postures should be avoided select a tool appropriate for the job and work lo cation
- 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 (a preventative maintanance program with scheduled inspections is highly recommended)

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. 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.



204204

204203

204737

### READ SAFETY RECOMMENDATIONS BEFORE CONNECTING TOOL.

### **OPERATING INSTRUCTIONS**

The Cleco reciprocating saw is designed to operate on 90 psig (6.2 bar) maximum air pressure, using a 5/16" (8mm) x 8' whip hose. If additional length is required, the next larger hose size may be connected to the 8' whip hose.

The Cleco reciprocating saw is designed for cutting wood up to 12" thick, metal up to 3/4" thick and various other materials, such as plastics, fiberglass, hard rubber, etc.

A WARNING The handle, gear housing, intermediate plate, blade and pivoting guide shoe may be made live if the blade cuts into live wiring. To prevent accidental electrical shock, all electricity to material being cut must be completly shut off.

#### STARTING AND STOPPING SAW

Connect air supply. Depress throttle lever to start saw. Releasing throttle lever will stop saw.

#### SELECTING THE BLADE

For best performance, longer blade life, and smoother cut, select the proper blade for the job. A wide assortment of blades are available.

When cutting metal always select a blade which will allow at least three teeth to be engaged in the thickness of material.

#### INSTALLING THE BLADE



Turn off air and bleed air hose before installing or removing blades.

1. Use hex wrench to loosen blade clamp screw (A) Fig. 1, by turning counterclockwise three to four turns.

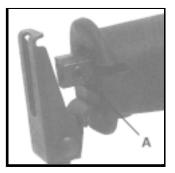


Fig. 1

2. Insert the blade into the blade clamp until it bottoms. When the blade is properly positioned: the hole in the blade shank will align with the hole (B) Fig. 2, in the backside of blade clamp.

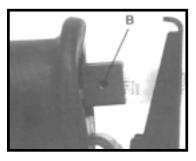


Fig. 2

3. Firmly tighten clamp screw.

4. To remove blade, loosen blade clamp three to four turns and pull blade from clamp.

#### **PIVOTING GUIDE SHOE**

The shoe (A) Fig. 3, serves as a rest while making a cut. It is pivoted so the saw may be gradually raised to a position perpendicular to the work as the saw is moved toward the operator.

## A CAUTION Do not operate the saw with the guide shoe removed.



Fig. 3

#### USING THE SAW

#### **STARTING WORK**

Consult the Blade Selector Charts for the blade best suited for the material to be cut. For greatest economy, use the shortest blade suitable for the thickness of the material to be cut.

Be sure the material to be cut is rigid. Small work pieces should be securely clamped in a bench vise or to a work table. As the work progresses in scroll or curved cut-out pieces, the material may be adjusted to accommodate the movement of the saw. If the work is large enough, it may be hand held across saw horses. The saw cuts freely with only slight feed pressure. Forcing the saw will not make it cut faster.

#### SAWING WOOD

The saw is used much the same as a hand saw in that it is moved toward the operator during the cutting operation. However, since the blade cuts on the up-stroke instead of the down-stroke as in the case of the hand saw, the good or finish side of the work should face down during the cutting operation.

#### **PLUNGE CUTS**

The saw can be used for plunge cutting wood, plywood, wallboard, and plastic materials. DO NOT attempt to plunge cut metal.

Clearly mark line of cut on the work. Grasp front housing with one hand and rear handle with the other hand. To start cut, rest saw on shoe bracket, align blade with the marked line of cut, (blade NOT touching work), as shown in Fig. 4. Start saw. Using bracket as a pivot point, roll saw forward by raising rear handle, as shown in Fig. 5. When blade has cut through the work, continue raising the rear handle until saw is perpendicular to the work surface. Keep saw in this position and move blade along line of cut.

#### SAWING METAL

When cutting angle, H-beam, I-beam, channel, etc., start the cut on the surface where the greatest number of teeth will contact the work. To make a pocket cut, drill a starting hole first. To extend blade life, cutting oil can be applied to the work surface along the line of the cut.

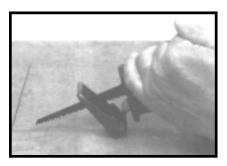


Fig. 4



Fig. 5

#### MAINTENANCE

#### **KEEP TOOL CLEAN**

Periodically blow out all air passages with dry compressed air. Remove build up of grime resulting from working green or sappy wood. The rubber boot may be cleaned with a soft damp cloth. NEVER use solvents, as they could possibly dissolve or otherwise damage the material.

#### 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.

#### 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.

#### ALL-PURPOSE SAW BLADES

A blade for every type of sawing application; will cut smoothly and easily through wood, metal and composition material. Blades designed for use on Porter-Cable, Cleco and most competive saws.

Proper Blade Selection for metal: ALWAYS select a blade where at least three teeth are engaged in the thickness of the metal.

PORTER-CABLE BLADES							
Porter-Ca Blades	s Number	Quantity Per Pkg.	Blade Length	Teeth Per in.	Blade Width	Recommended Use	
METAL CUTTING - 5%" Wide Bi	-Metal						
20 minun	12452-5	5	4	10	5/8	Heavy gauge metals, bar stock 1%" thick and above – hard rubber	
	12447-5	5	4	14	5⁄8	Heavy ga. (non-ferrous) metals – bar & angle stock – cast aluminum – copper – brass – galvanized pipe – tubing (over 18 ga.)	
20	12448-5 12448-10	5 <b>0</b> 100	4	18	5%	Heavy ga. (non-ferrous) metals – bar & angle stock – stainless – galvanized pipe – tubing (over 18 ga.)	
	12453-5	5	4	21	5⁄18	Light to medium gauge metals, 18 ga. to 1/8" thick – conduit – pipe – channels and tubing	
_ه	12451-5 12451-10	5 <b>0</b> 100	6	14	5⁄8	Heavy gauge (non-ferrous metals) – bar & angle stock – cast aluminum – copper – brass – galvanized pipe – tubing (over 18 ga.)	
	12454-5 12454-10	5 D 100	6	18	5⁄8	Heavy gauge (non-ferrous metals) – bar & angle stock – stainless – galvanized pipe – tubing (over 18 ga.)	
	12464-5 12464-10	5 0 100	6	24	5/8	Sheet stell (under 18 ga.) – galvanized pipe – tubing (under 18 ga.)	
	12471-5	5	9	10/14	5/8	Medium-to-heavy gauge metal cutting	
METAL CUTTING - ¾" Wide Bi	-Metal, Metal (	Cutting Bl	ades with	longer	lasting (	COBALT Alloy Teeth	
	12490-5	5	4	18	3⁄4	Heavy gauge metals, bar stock 1/8" thick and above – hard rubber	
	12491-5	5	4	24	3⁄4	Light to medium gauge metals, 18 ga. to %" thick - conduit - pipe - channels and tubing	
	- 12492-5	5	6	10	3⁄4	Heavy gauge (non-ferrous metals) – bar & angle	
	12494-5	5	6	10/14	3⁄4	stock – cast aluminum – copper – brass –	
	12493-5	5	6	14	3⁄4	galvanized pipe - tubing (over 18 ga.)	
	12495-5	5	6	18	3⁄4	Heavy gauge (non-ferrous metals) – bar & angle stock – stainless – galvanized pipe – tubing (over 18 ga.)	
	12496-5	5	6	24	3⁄4	Sheet steel (under 18 ga.) – galvanized pipe – tubing (under 18 ga.)	
_ •	12498-5	5	9	10/14	3⁄4	Medium-to-heavy gauge metal cutting	
	12497-5	5	9	18	3⁄4	Heavy gauge (non-ferrous metals) – bar & angle stock – stainless – galvanized pipe – tubing (over 18 ga.)	
	12499-5	5	12	10/14	3⁄4	Medium-to-heavy gauge metal cutting	
SPECIAL PURPOSE - Very Fas	st Wood Cutting						
	12478-5	5	9	3	3⁄4	Aggressive, very fast, dry wood Very fast,	
SPECIAL PURPOSE – Plaster	12477-5	5	9	6	3⁄4	cuts in both directions – Green wood	
	12469-5	5	6	6	5/8	Plaster, including plaster with metal lath – plaster board	
SPECIAL PURPOSE – Tungster	n Grit 12479-5	5	9	Grit Edge	5⁄8	Cast iron pipe – abrasive materials	

Porter-Cable Blades		Quantity Per Pkg.	Blade Length	Teeth Per In.	Blade Width	Recommended Use
WOOD CUTTING - High Carbide Si	eel					
	12406-5	5	3%	6	1/2	Premium quality-scroll cutting, hard wood, plywood, plastic
	12409-5	5	6	6	3⁄4	
	12400-5 12400-100	5 100	6	6	3⁄4	General roughing-in wood
	12402-5	5	9	6	3⁄4	General roughing-in wood
	12403-5 12403-100	5 100	12	6	3⁄4	General roughing in wood
WOOD CUTTING - Bi-Metal						
20	12455-5 12455-100	5 100	6	6	3⁄4	General roughing in wood
ــــــــــــــــــــــــــــــــــــــ	12465-5 12499-5	5 5	6 6	6 10	3⁄4	Nail embedded wood, course cut, plastic, ' insulating board
	12458-5	5	6	7	3⁄4	General roughing-in wood, nail embedded
£0	12470-5 12470-100		9	5/7	3⁄4	General roughing-in wood
<u>د</u>	12467-5	5 5	9 12	<u>6</u> 6	3⁄4	General roughing in wood
METAL CUTTING - High Speed Ste	el					
	12415-5 12415-100	5 100	6	10	5⁄18	Heavy ga. (non-ferrous) metals – bar & angle stock – cast aluminum – hard rubber – plastic, including laminates – pressed wood
	12421-5 12421-100	5 100	6	14	5/8	Heavy ga. (non-ferrous) metals-bar & angle stock – cast iron – sheet steel (over 18 ga.) – hard rubber-pressed wood-fibergláss
	12427-5 12427-100	5 100	6	18	5/8	Heavy ga. (non-ferrous) metals – bar & angle stock – cast iron – sheet aluminum
	12433-5	5	6	24	5⁄18	Sheet steel (under 18 ga.) – galvanized pipe – tubing (under 18 ga.)
METAL CUTTING - Scroll Shape Bi	Metal					· · · · · · · · · · · · · · · · · · ·
	12422-5	5	3½	10	5/8	Heavy ga. ferrous & non-ferrous metals – rubber – pressed wood – fiberglass
20 million	12423-5	5	3½	14	5⁄8	Heavy ga. ferrous & non-ferrous metals – rubber – pressed wood – fiberglass
	12426-5	5	3½	18	5/8	Metals – scroll – stainless – cast iron – bar & angle stock – gal. pipe – tubing (over 18 ga.)

#### DISASSEMBLY

#### HANDLE

Should the throttle valve seal 847426, need replacing, unscrew the throttle valve cap 867753, for removal of the throttle valve and components.

The tool is equipped with an air screen for protection of the internal motor parts from foreign material. The air screen located in the inlet bushing may be removed for cleaning and inspection by unscrewing the inlet bushing 867758. If the screen is torn or damaged, the inlet bushing should be replaced. The throttle handle and motor housing, may be removed for cleaning and inspection by unscrewing the two (2) socket head cap screws and nuts after the tool is disassembled to the point that the motor can be removed to allow access to nuts inside motor housing.

#### **MOTOR HOUSING & MOTOR**

The front housing and intermediate plate 204683, must be removed from motor housing to remove motor. Remove four (4) hex cap screws holding the front housing and intermediate plate to motor housing. The motor can be pulled from motor housing. The "O"-rings and mufflers can be removed from motor.

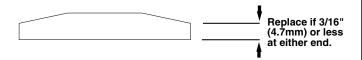
Use a suitable driver to drive the front rotor shaft out of the front rotor bearing. After removing the cylinder and rotor blades, the rear rotor shaft may be driven out of the rear rotor bearing.

#### FRONT HOUSING & INTERMEDIATE PLATE

To disassemble the front housing 204692, from the intermediate plate 204683, remove (4) four hex cap screws and lift complete unit off the intermediate plate. The secondary muffler can be removed for inspection.

#### REASSEMBLY

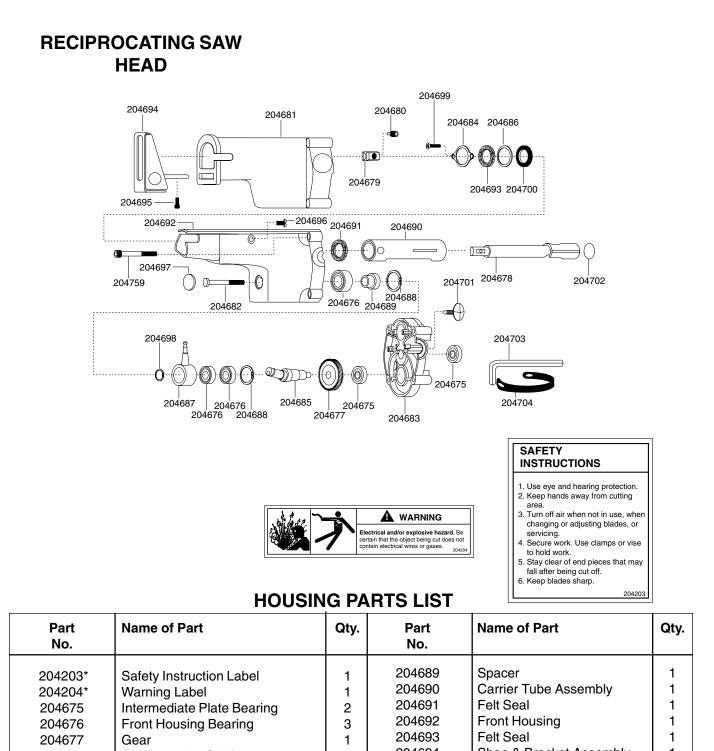
The tool is reassembled in the reverse order of disassembly. Inspect all parts for damage or wear. It is recommended that new rotor blades be installed at each repair cycle. If not replaced, the used ones must measure a minimum of 3/16" (4.7mm) at both ends.



Replace bearings that are rough or have excessive end play. Install the front rotor bearing in the front bearing plate and measure the distance from the face of the bearing plate to the inner race of the bearing with the bearing race loaded rearward. Select or fit by sanding, a rotor collar .001" (.025mm) to .002" (.050mm) longer than this measurement. Install the rotor blades, cylinder rear bearing plate, and rear bearing on the rotor. After final assembly of the motor unit, the cylinder should be held securely but not tightly between the two plates. The rotor should not rub either plate.

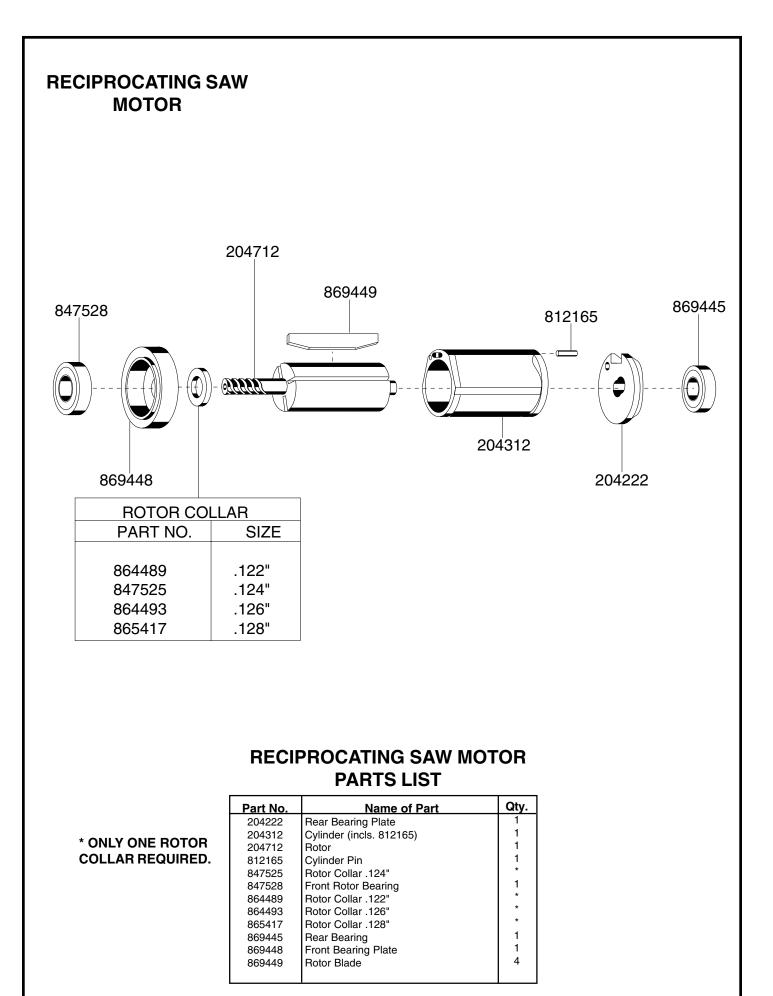
**Note:** Tighten 204727 locknuts holding handle to backhead, to a maximum of 12 ft. lbs. of torque during reassembly.

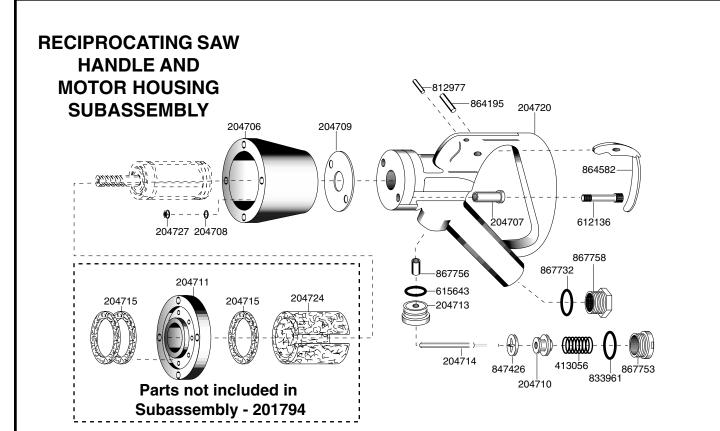
Tighten all screws and nuts securely during reassembly. Place a few drops of 10W machine oil in the air inlet to ensure positive lubrication of all motor parts as soon as air is applied.



Part No.	Name of Part	Qty.	Part No.	Name of Part	Qty.
No. 204203* 204204* 204675 204676 204677 204678 204679 204680 204681 204681 204682 204683 204683 204684 204685 204686	Safety Instruction Label Warning Label Intermediate Plate Bearing Front Housing Bearing Gear Reciprocating Shaft Blade Clamp Blade Clamp Screw Insulator Boot Front Housing Screw Intermediate Plate Plate Drive Shaft Flat Washer	1 1 2 3 1 1 1 1 1 1 1		Spacer Carrier Tube Assembly Felt Seal Front Housing Felt Seal Shoe & Bracket Assembly Shoe Screw Carrier Tube Screw Plug Retaining Ring Plate Screw Oil Seal Plug O-Ring Wrench	1 1 1 1 1 1 1 1 2 1 1 1 1 1 1
204687 204688	Wobble Plate Retaining Ring	2	204704* 204759	Wrench Holder Housing Bolts	1 4

\* Parts not included in head. The complete head can be purchased using part no. 204738.





PART NO.	NAME OF PART	QUANTITY
204706	Motor Housing	1
204707	Insert	2 2
204708	Washer	2
204709	Spacer	1
204710	Throttle Valve	1
204711*	Motor Housing Plate	1
204713	Throttle Bushing	1
204714	Throttle Pin	1
204715*	Muffler	3
204720	Handle	1
204724*	Muffler	1
204727	Lock Nut	2
413056	Throttle Valve Spring	1
612136	Socket Head Cap Screw	2
615643	"O"-Ring	1
812977	Lever Stop Pin	1
833961	"O"-Ring 13/16" x 1"	1
847426	Throttle Valve Seal	1
864195	Throttle Lever Pin	1
864582	Throttle Lever	1
867732	"O"-Ring 1-1/8" x 5/16"	1
867753	Throttle Valve Cap	1
867756	Throttle Pin Bushing	1
867758	Inlet Bushing	1

### RECIPROCATING SAW HANDLE AND MOTOR HOUSING PARTS LIST

The complete handle and motor housing can be purchased as a subassembly using part no. 201794.

\* Parts not included in handle and motor housing subassembly.



