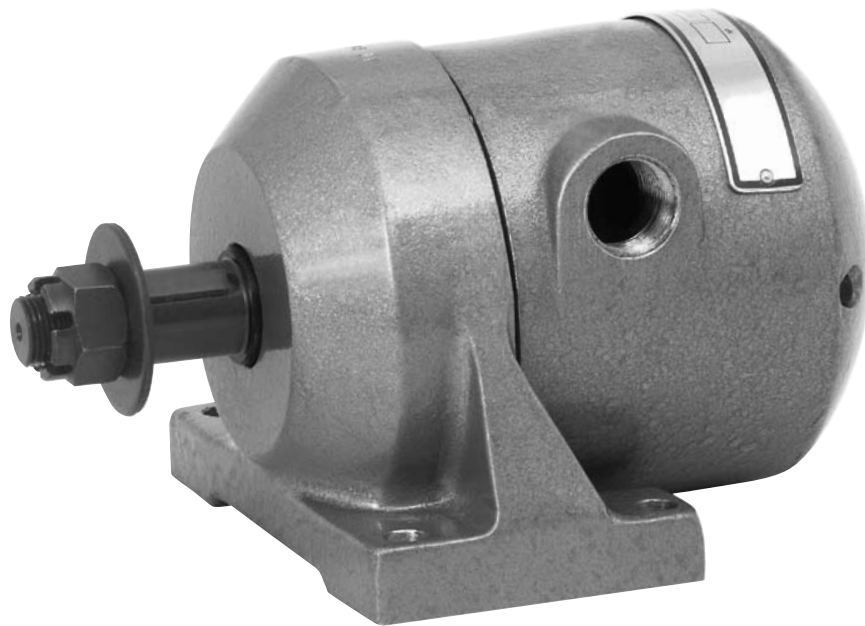


Instruction Manual
PL70-1058EN
07/08/2013

Cleco®

MR50 Series
Rotary Vane Power Motors



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For this Instruction Manual

This Instruction Manual is the Original Instruction Manual intended for all persons who will operate and maintain these tools.

This Instruction Manual

- provides important notes for the safe and efficient use of these tools.
- describes the function and operation of the MR50 series tools.
- serves as a reference guide for technical data, service intervals and spare parts ordering.
- provides information on optional equipment.

Identification text:

MR50 represents all models of the rotary vane power motor as described in this manual

→ indicates a required action

• indicates a list

<..> indicates a reference number from the exploded parts drawings

Arial indicates an important feature or instruction written in **Arial Bold**

Identification graphic:

→ indicates a directional movement

↓ indicates a function or force

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Model Number	Maximum Allowable RPM		Stall Torque		Starting Torque		Weight		Air Consumption		Gear Ratio	Maximum Overhung Load @ Stall *	
	@ Max. HP	Free Speed	ft. lbs.	Nm	ft. lbs.	Nm	lbs.	kg	cfm	m3/min		lbs.	kg
Foot Mounting - 1-1/8" (Geared) Diameter Keyed Spindle													
MR50R115M	247	450	245.0	332	173.0	235	46.0	21.0	172	4.87	23.1:1	2110	957
MR50R116M	181	330	356.0	483	260.0	353	46.0	21.0	172	4.87	31.58:1	2110	957
Flange Mounting - 1" (Non-Geared) or 1-1/8" (Geared) Diameter Keyed Spindle													
MR50R114M	5700	10500	11.9	16	8.7	12	18.5	8.4	172	4.87	----	2110	685
MR50R117M	247	450	245.0	332	173.0	235	46.0	21.0	172	4.87	23.1:1	2110	957
MR50R118M	181	330	356.0	483	260.0	353	46.0	21.0	172	4.87	31.58:1	2110	957

* Note: Non-geared models assume overhung load located at 0.625" (15.88mm) from the face of the motor.

* Note: Geared models assume overhung load located at 0.875" (22.02mm) from the face of the motor.

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1 Safety

1.1 Warnings and notes

Warning notes are identified by a signal word and a pictogram.

- The signal word indicates the severity and probability of the impending danger.
- The pictogram indicates the type of danger.

WARNING!



WARNING identifies a potentially **hazardous** situation which, if not avoided, may result in serious injury.

CAUTION!



CAUTION identifies a potentially **hazardous** situation which, if not avoided, may result in minor or moderate injury or property and environmental damage.

NOTE



NOTE identifies general information which may include application tips or useful information but no hazardous situations.



Important information that must be read and understood by all personnel installing, operating or maintaining this equipment.

1.2 Basic requirements for safe working practices



All personnel involved with the installation, operation or maintenance of these tools must read and understand all safety instructions contained in this manual. Failure to comply with these instructions could result in serious injury or property damage.

These safety instructions are not intended to be all inclusive. Study and comply with all applicable National, State and Local regulations.

CAUTION!

Work Area:



- Ensure there is enough space in the work area.
- Keep the work area clean.
- Keep the work area well ventilated.

Personnel Safety:

- Inspect the air supply hoses and fittings. Do not use damaged, frayed or deteriorated hoses.
- Make sure the air supply hose is securely attached to the tool.
- Install adequate guards for all moving parts of the power motor or it's application.

Safety working with and around power motors:

- Make sure the motor is securely mounted to the application.
 - Make sure the output spindle is fully engaged with the application.
 - Disconnect the air supply before servicing the motor
-

1.3 Operator training

All personnel must be properly trained before operating the MR50 tools. The MR50 tools are to be repaired by fully trained personnel only.

1.4 Personal protective equipment

When working



- Wear eye protection to protect against flying metal splinters.
- Wear hearing protection

Danger of injury by being caught by moving equipment.



- Wear a hair net
- Do not wear close fitting clothing
- Do not wear jewelry

1.5 Designated use

The MR50 is designed exclusively as a power source to be integrated into an application.

- Do not modify the MR50, any guard or accessory.
- Use only with accessory parts which are approved by the manufacturer.
- Do not use in any improper manner that can cause damage to the motor.

1.6 Codes and standards

It is mandatory that all national, state and local codes and standards be followed.

1.7 Noise and vibration

No data available on this equipment.

Scope of Supply, Transport and Storage

2 Scope of supply, transport and storage

2.1 Items supplied

Check shipment for transit damage and ensure that all items have been supplied:

- 1 MR50
- 1 PL70-1058EN instruction manual
- 1 Declaration of Conformity (if applicable)
- 1 Lubrication sheet
- 1 Warranty statement

2.2 Transport

Transport and store the MR50 in the original packaging. The packaging is recyclable.

2.3 Storage

For short term storage (less than 2 hours) and protection against damage:

→ Place the MR50 in a location on the workbench to avoid accidental startup.

For storage longer than 2 hours:

→ Disconnect the air supply from the MR50

Object	Time Period	Storage Temperature
MR50 without air supply	No guideline	-13°F to 104°F (-25°C to 40°C)

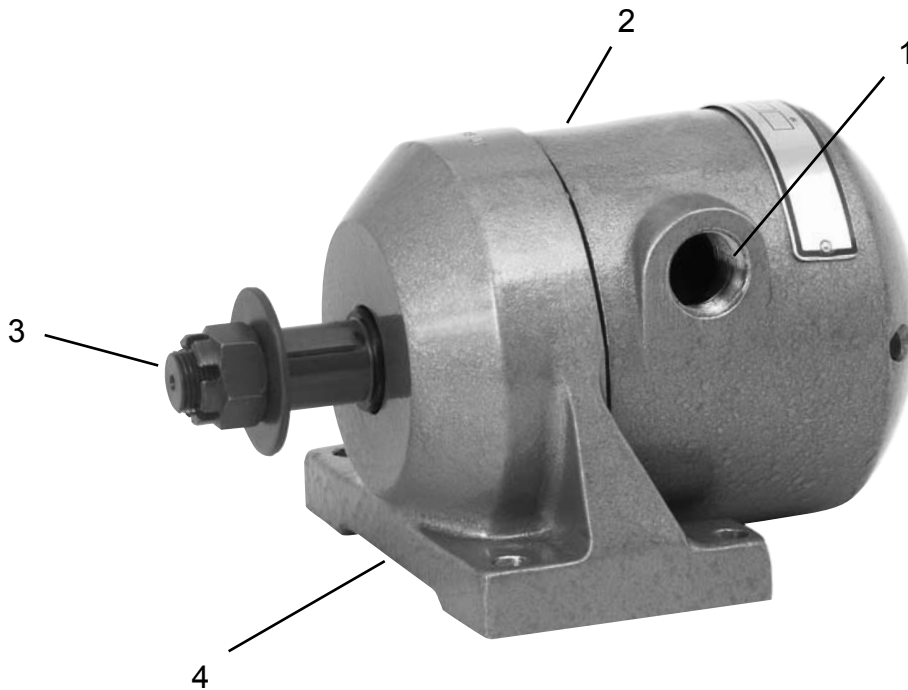
3 Product description

3.1 General description

- Pneumatic powered radial piston power motor
- 5.5 Horsepower
- Non-geared or geared model options
- Foot or flange mounting options

3.2 Operation and functional elements

This section describes the operational and functional elements of the MR50.



Ref.	Description
1	Air Inlet
2	Motor Assembly
3	Output Shaft
4	Foot Mounting

4 Accessories



5 Before initial operation

5.1 Ambient conditions

Ambient temperature: 41°F (5°C) to a maximum of 104°F (40°C)

Acceptable relative humidity: 25% to 90%, non-condensing

5.2 Air supply

Parameter	Description
Air Hose	Air inlet: 3/4" (19,1 mm) Maximum length: 16.4' (5 m)
Working pressure range	60 to 100 psi (414 to 689 kPa) Recommended: 90 psi (620 kPa)
Compressed air	Air quality according to ISO 8573-1, quality class 2.4.3 The compressed air must be clean and dry.

NOTE



To attain consistent results, maintain a constant working pressure using a suitable air line unit consisting of a filter, lubricator and regulator.

- The inside diameter of the air hose must be free of residue, clean if necessary.
- If a line lubricator is used, it should be filled daily

5.3 Connecting the air supply to the tool

WARNING!



The air hose can disconnect from the motor by itself and whip around uncontrollably.

- Turn off the compressed air before connecting to the motor.
- Securely connect the air hose to the motor.
- Turn on the compressed air.

5.4 Tool set up

The motor must be configured for the application.

6 First operation

6.1 Putting into use

The MR50 series motors are a rotary vane type with spring loaded blades. All motors feature durable construction with precision heavy-duty bearings throughout, and multiple blade rotors for smooth power. These motors require air line lubrication for long, trouble-free service. The MR50 series motors perform satisfactorily in high temperature areas up to 200°F (93°C).

- Make sure the air line is clean and free of scale and dirt before connecting to the motor.
- Make sure all pipe fittings are securely tightened to prevent air leaks.
- Make sure the air supply is securely attached and the compressor is turned on.
- Make sure the output spindle is properly engaged with the application.
- Make sure all necessary guards are in place to protect operator from rotating mechanisms.

If an excessive amount of water is found in the air line, a water trap should be installed to trap as much as possible before it reaches the MR50 motor.

7 Troubleshooting

Malfunction	Possible causes	Remedy
Tool does not start	Improper air supply	→ Make sure there is adequate air pressure at the tool air inlet
	Motor dry from lack of lubrication	→ Check the oil levels in the motor case and gear case. Add oil as necessary.
	Broken gears	→ Tool disassembly required (parts replacement)
Tool runs slow and lacks torque	Improper air supply	→ Make sure there is adequate air pressure at the tool air inlet
	Motor dry from lack of lubrication	→ Check the oil levels in the motor case and gear case. Add oil as necessary.

8 Maintenance

CAUTION!



Danger of injury from accidental start up.
Turn off the compressed air before performing any maintenance.

8.1 Service schedule

Only qualified and trained personnel are permitted to perform maintenance on these motors.

Regular maintenance reduces operating faults, repair costs and downtime. In addition to the following service schedule, implement a safety related maintenance program that takes the local regulations for repair and maintenance for all operating phases of the motor into account.

Maintenance Interval	Designation
Daily	<ul style="list-style-type: none">→ Visual inspection of air supply hose and connections→ Inspect airline filter, regulator and lubricator for proper operation→ Check the tool for excessive vibration or unusual noises→ Visual inspection of all external components of the tool
Weekly	<ul style="list-style-type: none">→ Inspect the air hose for damage or wear→ inspect the output spindle for damage or wear→ Inspect the airline lubrication for proper function

8.2 Lubricants

For proper function and long service life, use of the correct lubricant is essential.

Oil identification

Use a light air tool oil, Cleco part number 500021. This oil is available from Apex Tool Group in the following quantities:

533484: 1 pint

533485: 1 gallon

DO NOT SUBSITUTE LUBRICANTS!

9 Repair instructions

9.1 Motor run-in or test procedure

- Connect the power motor to an air supply of 90 psig pressure with no load on the motor output shaft.
- Open the throttle valve so a minimum amount of air will turn the motor slowly, the motor must run free.
- Open the throttle valve until the motor runs at a high even speed.
- No additional run-in time is required to improve the motor performance.

9.2 Disassembly of motor (non-gear and geared models)

- Remove the four (4) screws from the motor case and carefully remove the motor case by hand. **DO NOT FORCE.**
- Disengage the lockwasher tang from the lock nut and remove the lock nut, lock washer and motor plate (rear) with the ball bearing.
- *Note: The rotor vanes and rotor vane springs can now be serviced without any additional disassembly.*
- Remove the cylinder, rotor vanes, rotor vane springs and dowel pin. The motor shaft and motor plate (front) can now be removed.
- *Note: Non-gear models have a nut and washer securing the motor shaft to the motor case.*

NOTE



NOTE



9.3 Disassembly of gearing (geared models)

- Remove the six (6) screws securing the motor case plate assembly to the gear case.
- Remove the nut and washer from the output shaft of the upper gear.
- Remove the motor case plate assembly from the gear case. The upper and lower gears should stay assembled to the motor case plate when it is removed from the gear case.
- The bearing on the gear case end of the lower gear shaft must be removed before the upper gear can be disassembled from the motor case plate.
- Remove the lower gear from the motor case plate.
- Remove the four (4) screws and washers securing the bracket to the moto case plate.

9.4 Inspection of parts

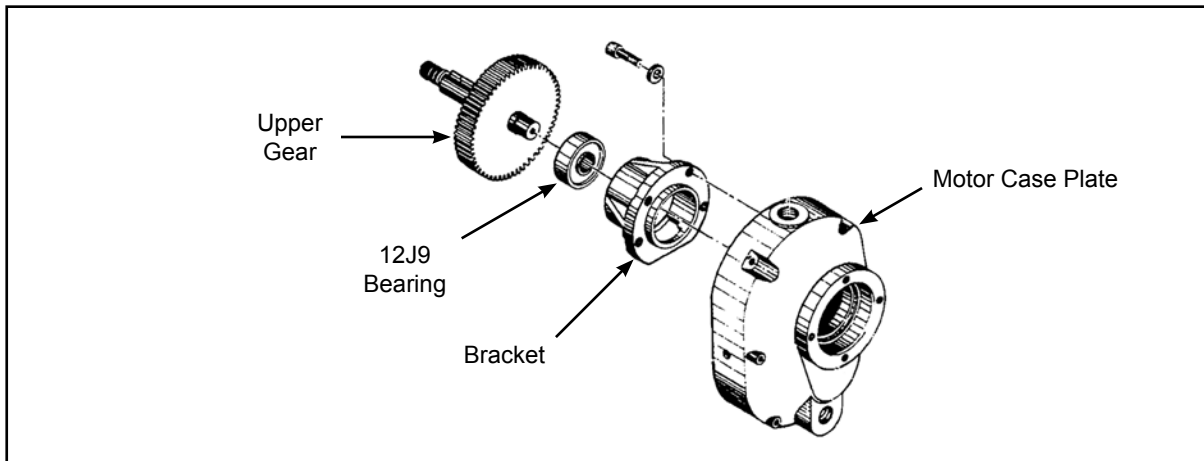
Clean all parts (except bearings, o-rings and rotor vanes) in a solvent and blow dry. Thoroughly inspect all parts for excessive wear or damage and replace as necessary with genuine Cleco replacement parts as specified in Section 10.

Minor scoring in the cylinder and on the motor plates can be removed by honing or resurfacing the parts.

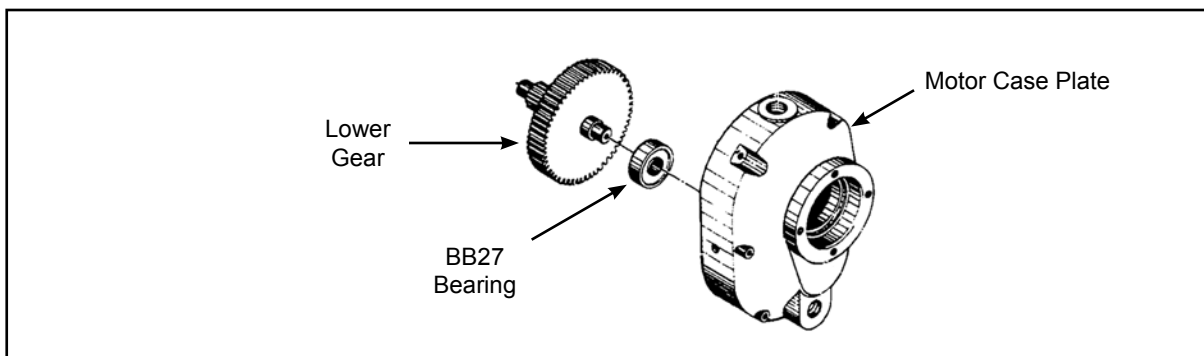
Check the condition and length of the rotor vanes. The length of the vanes should be .002" to .0075" shorter than the cylinder and they must fit freely into the rotor slots.

9.5 Assembly of gearing (geared models)

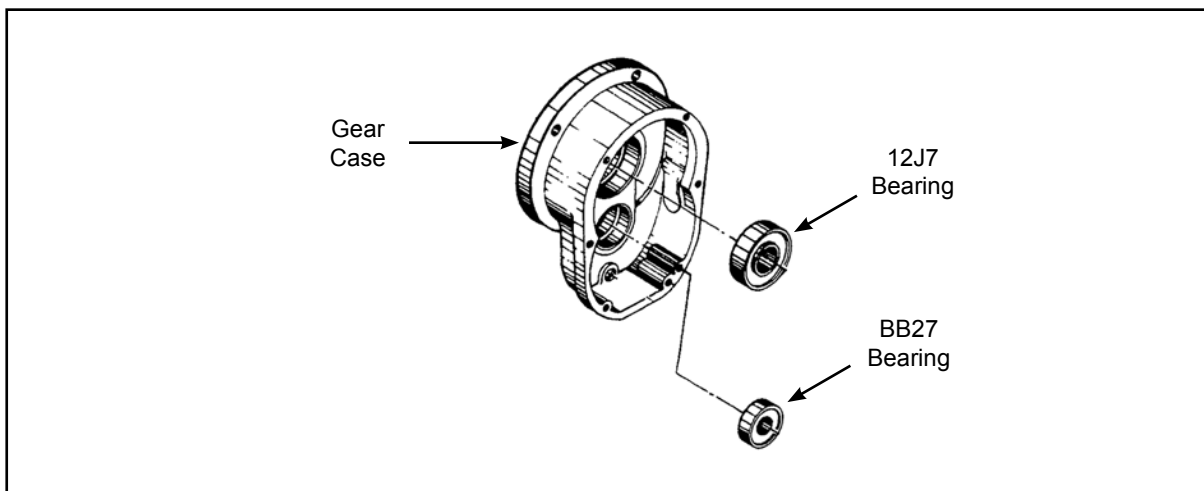
- Place the motor case plate horizontally on a workbench with the large open side facing up.
- Assemble the bearing (12J9) and upper gear into the bracket. Assemble the bracket to the motor case plate using four (4) washers and screws.



- Assemble the bearing (BB27) and lower gear into the motor case plate.



- Press the upper gear bearing (12J7) and lower gear bearing (BB27) into the gear case.

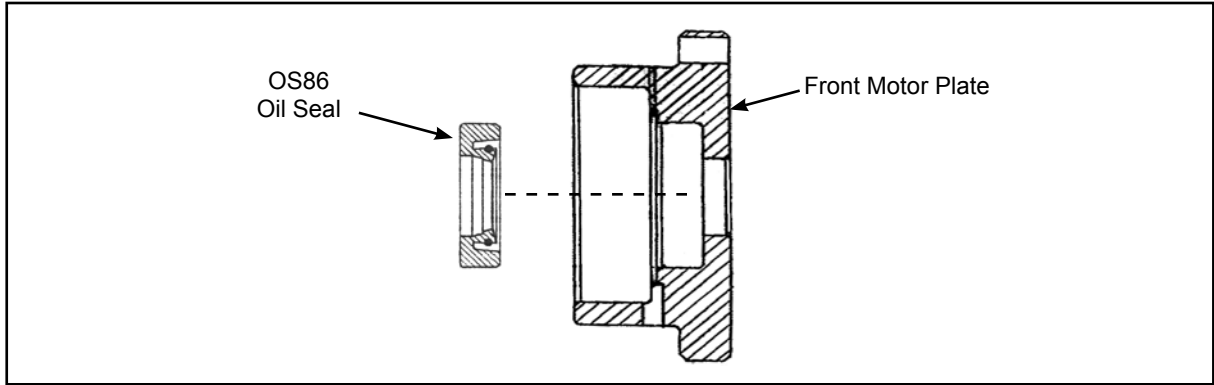


- Position the gasket on the motor case plate and assemble the gear case.

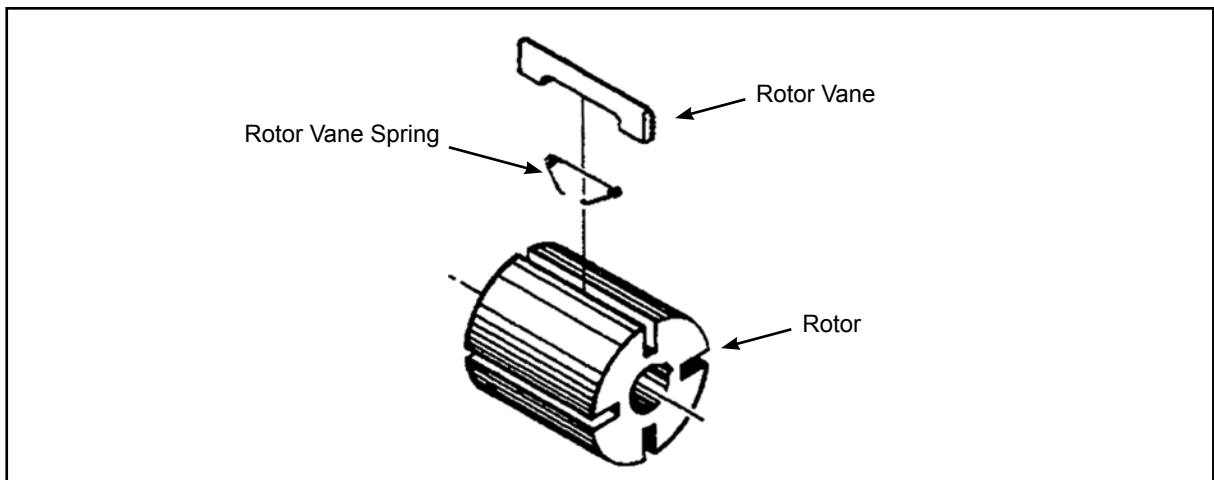
Cleco® Repair Instructions

9.6 Assembly of motor (non-geared and geared models)

- Press the large bearing (BB128) onto the motor shaft.
- Press the oil seal (OS86) into the front motor plate. Note: The seal must be assembled with the lip down, as shown.



- Assemble the front motor plate over the large bearing on the motor shaft.
- Place the two woodruff keys in the key slots of the motor shaft and assemble the rotor and cylinder onto the motor shaft.
- Install the rotor vane springs and rotor vanes into the rotor slots. Note: The spring arms must set in the bottom of each slot.



- **Geared Models:** Make sure the splined end of the motor shaft engages completely with the gears.
- Assemble the small bearing (BB127) into the rear motor plate. Note: The small bearing must be assembled by hand.
- Assemble the rear motor plate, with bearing, onto the motor shaft.
- Install the lock washer and lock nut onto the motor shaft. **CAUTION: Tighten the lock nut to a maximum of 40 ft. lbs. torque. Overtightening can cause damage to the motor components.** Lock one of the washer tangs into the lock nut.
- Insert the dowel pin through the motor plates and cylinder.



9.6 Assembly of motor (non-geared and geared models) (continued)

CAUTION!



- Place the rear motor case over the motor assembly. Align the dowel pin with the hole in the motor case. **CAUTION: Assemble the motor case by hand and do not drive the motor case over the motor assembly. Watch for burrs on the front and rear motor plates as well as the cylinder.**
- Using four (4) screws, secure the rear motor case to the front motor case (non-geared) models or motor case plate (geared models). There should be approximately 1/16" gap between the motor cases when assembly is complete.

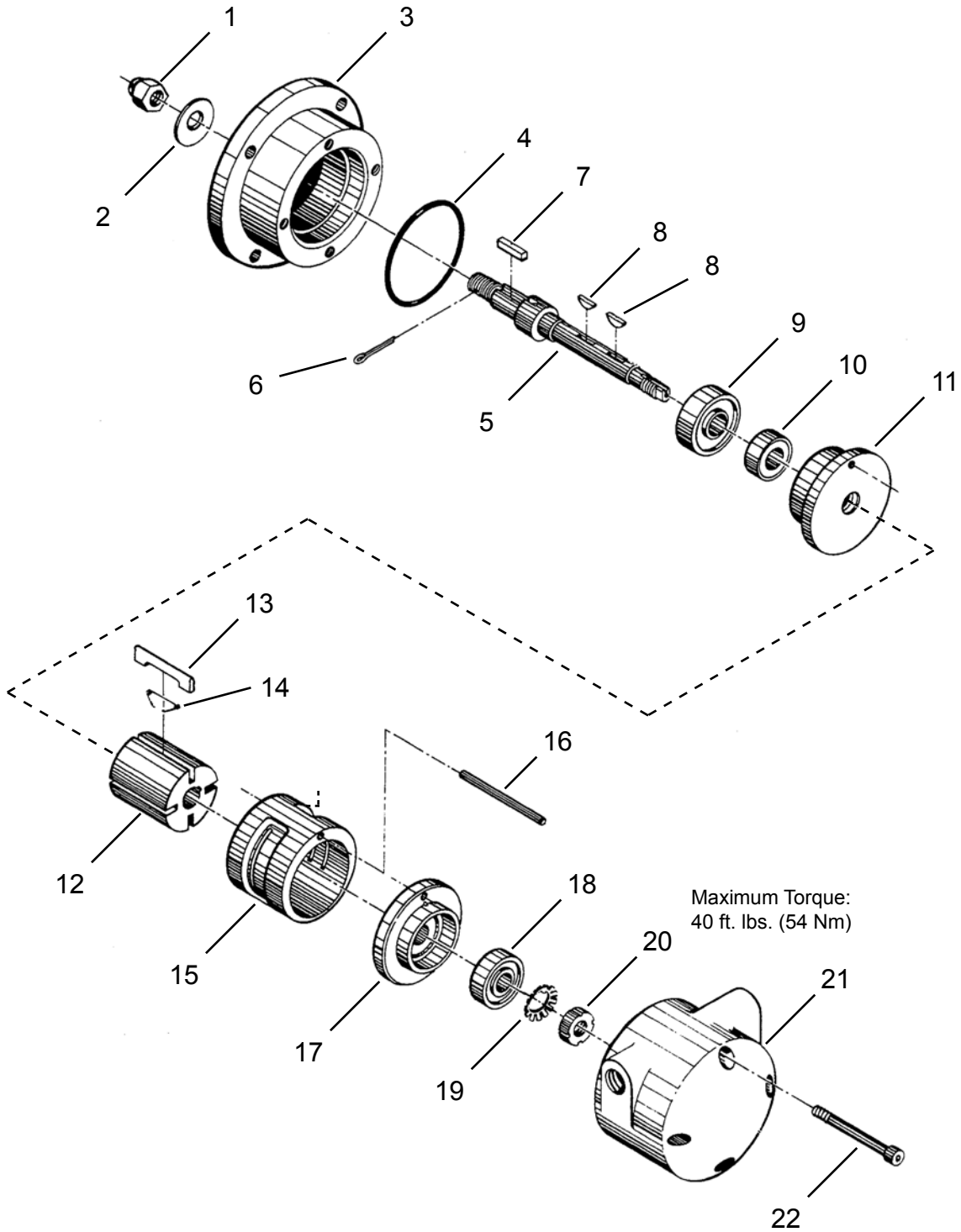
NOTE



- Connect the air line and open the valve slightly to determine if the motor idles freely.
- *Note: If an excessive amount of oil was used during assembly, the motor will run rough until the surplus oil is exhausted.*

10.1 MR50 Series Non-Geared - Flange Mounted

Model
MR50R114M



10.1 MR50 Series Non-Geared Flange Mounted

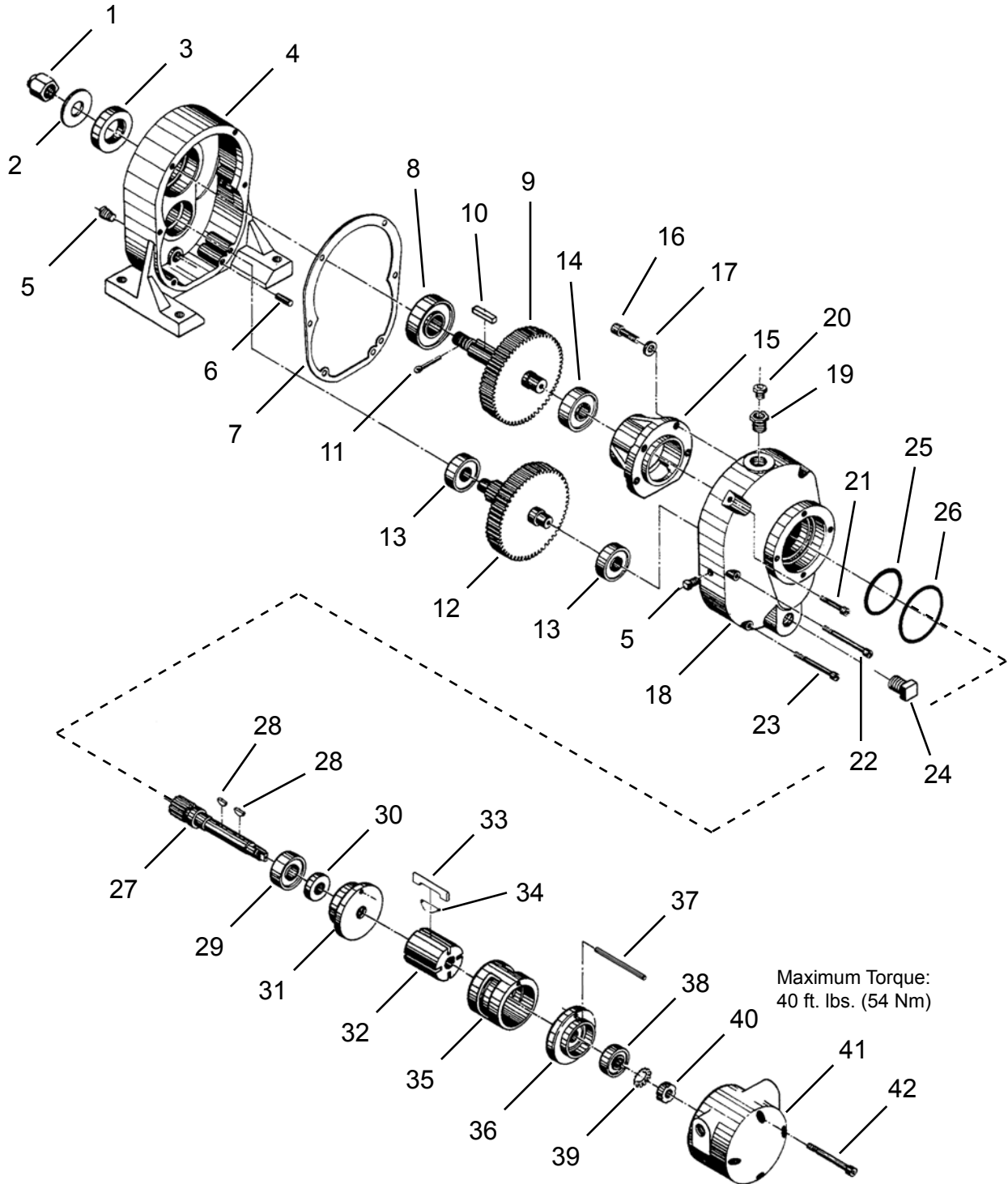
Ref	Number	#	X	EN
				Description
1	C109W	1	2	Output Shaft Hex Nut
2	W10	1	2	Output Shaft Washer
3	1036862	1		Motor Case (Front)
4	OG19	1	3	O-Ring
5	MR50A11A	1		Motor Shaft
6	P101J	1	3	Cotter Pin
7	MR50A12	1	3	Motor Shaft Key
8	MR50A11K	2	6	Woodruff Key
9	BB128	1	2	Ball Bearing
10	OS86	1	3	Oil Seal
11	1036876	1		Motor Plate (Front)
12	MR50A7	1		Rotor
13	MR50A9M	4	8	Rotor Vane
14	542018	4	8	Rotor Vane Spring
15	1034859	1		Cylinder
16	MR50A6	1		Dowel Pin
17	MR50A5	1		Motor Plate (Rear)
18	BB127	1	2	Ball Bearing
19	NDL9	1	1	Lock Washer
20	NDN7	1	1	Lock Nut
21	1035645	1		Motor Case (Rear)
22	SHA25	4		Motor Case Screw
23	530322	1		Name Plate (not shown)
24	534820	2		Drive Screw (not shown)

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

10.2 MR50 Series Geared - Foot Mounted

Model
MR50R115M
MR50R116M



10.2 MR50 Series Geared Foot Mounted

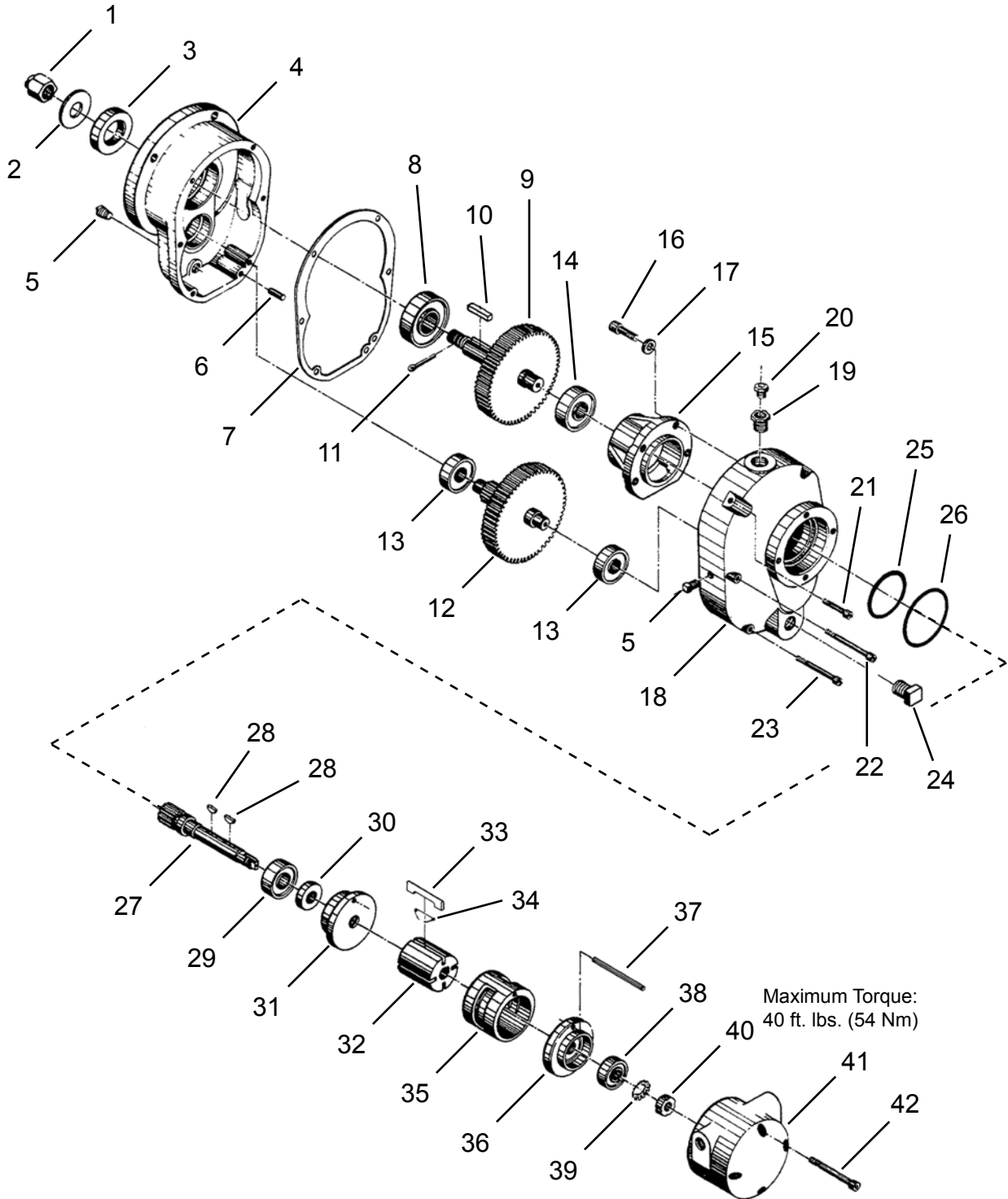
Ref	Number	#	X	EN
				Description
1	C109W	1	2	Output Shaft Hex Nut
2	W10	1	2	Output Shaft Washer
3	OS20	1	3	Oil Seal
4	MR50C18A	1		Gear Case
5	F504PT	2	2	Pipe Plug
6	20572	1		Dowel Pin
7	MR50C19A	1	3	Gear Case Gasket
8	12J7	1	2	Ball Bearing
9	MR50C22	1		Gear (Model: MR50R115M)
	MR50C22E	1		Gear (Model: MR50R116M)
10	1035557	1	3	Gear Shaft Key
11	P101K	1	3	Cotter Pin
12	MR50C24	1		Gear (Model: MR50R115M)
	MR50C24E	1		Gear (Model: MR50R116M)
13	BB27	2	4	Ball Bearing
14	12J19	1	2	Ball Bearing
15	MR50C21B	1		Bracket
16	B127Z	4	4	Bracket Screw
17	W161PT	4	4	Bracket Washer
18	MR50C20A	1		Motor Case Plate (includes Ref. 6)
19	F579	1		Relief Valve Bushing
20	500189	1	1	Relief Valve
21	B129N	2	2	Screw
22	B117B	2	2	Screw
23	B119R	2	2	Screw
24	B112E	1	1	Pipe Plug
25	26022	1	3	O-Ring
26	OG19	1	3	O-Ring
27	MR50C11A	1		Motor Shaft
28	MR50A11K	2	6	Woodruff Key
29	BB128	1	2	Ball Bearing
30	OS86	1	3	Oil Seal
31	1036876	1		Motor Plate (Front)
32	MR50A7	1		Rotor
33	MR50A9M	4	8	Rotor Vane
34	542018	4	8	Rotor Vane Spring
35	1034859	1		Cylinder
36	MR50A5	1		Motor Plate (Rear)
37	MR50A6	1		Dowel Pin
38	BB127	1	2	Ball Bearing
39	NDL9	1	1	Lock Washer
40	NDN7	1	1	Lock Nut
41	1035645	1		Motor Case (Rear)
42	SHA25	4		Motor Case Screw
43	530322	1		Name Plate (not shown)
44	534820	2		Drive Screw (not shown)

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

10.3 MR50 Series Geared - Flange Mounted

Model
MR50R117M
MR50R118M



10.3 MR50 Series Geared Flange Mounted

Ref	Number	#	X	EN
				Description
1	C109W	1	2	Output Shaft Hex Nut
2	W10	1	2	Output Shaft Washer
3	OS20	1	3	Oil Seal
4	MR50D18	1		Gear Case
5	F504PT	2	2	Pipe Plug
6	20572	1		Dowel Pin
7	MR50C19A	1	3	Gear Case Gasket
8	12J7	1	2	Ball Bearing
9	MR50C22	1		Gear (Model: MR50R117M)
	MR50C22E	1		Gear (Model: MR50R118M)
10	1035557	1	3	Gear Shaft Key
11	P101K	1	3	Cotter Pin
12	MR50C24	1		Gear (Model: MR50R117M)
	MR50C24E	1		Gear (Model: MR50R118M)
13	BB27	2	4	Ball Bearing
14	12J19	1	2	Ball Bearing
15	MR50C21B	1		Bracket
16	B127Z	4	4	Bracket Screw
17	W161PT	4	4	Bracket Washer
18	MR50C20A	1		Motor Case Plate (includes Ref. 6)
19	F579	1		Relief Valve Bushing
20	500189	1	1	Relief Valve
21	B129N	2	2	Screw
22	B117B	2	2	Screw
23	B119R	2	2	Screw
24	B112E	1	1	Pipe Plug
25	26022	1	3	O-Ring
26	OG19	1	3	O-Ring
27	MR50C11A	1		Motor Shaft
28	MR50A11K	2	6	Woodruff Key
29	BB128	1	2	Ball Bearing
30	OS86	1	3	Oil Seal
31	1036876	1		Motor Plate (Front)
32	MR50A7	1		Rotor
33	MR50A9M	4	8	Rotor Vane
34	542018	4	8	Rotor Vane Spring
35	1034859	1		Cylinder
36	MR50A5	1		Motor Plate (Rear)
37	MR50A6	1		Dowel Pin
38	BB127	1	2	Ball Bearing
39	NDL9	1	1	Lock Washer
40	NDN7	1	1	Lock Nut
41	1035645	1		Motor Case (Rear)
42	SHA25	4		Motor Case Screw
43	530322	1		Name Plate (not shown)
44	534820	2		Drive Screw (not shown)

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

11 Technical data

11.1 MR50 Specifications

Model Number	Maximum Allowable RPM		Stall Torque		Starting Torque		Weight		Air Consumption		Gear Ratio	Maximum Overhung Load @ Stall *	
	@ Max. HP	Free Speed	ft. lbs.	Nm	ft. lbs.	Nm	lbs.	kg	cfm	m3/min		lbs.	kg
Foot Mounting - 1-1/8" (Geared) Diameter Keyed Spindle													
MR50R115M	247	450	245.0	332	173.0	235	46.0	21.0	172	4.87	23.1:1	2110	957
MR50R116M	181	330	356.0	483	260.0	353	46.0	21.0	172	4.87	31.58:1	2110	957
Flange Mounting - 1" (Non-Geared) or 1-1/8" (Geared) Diameter Keyed Spindle													
MR50R114M	5700	10500	11.9	16	8.7	12	18.5	8.4	172	4.87	----	2110	685
MR50R117M	247	450	245.0	332	173.0	235	46.0	21.0	172	4.87	23.1:1	2110	957
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* Note: Non-geared models assume overhung load located at 0.625" (15.88mm) from the face of the motor.

* Note: Geared models assume overhung load located at 0.875" (22.02mm) from the face of the motor.

12 Service

12.1 Replacement parts

NOTE



Use only original Cleco replacement parts. Failure to comply can result in reduced power and increased service requirements. The tool warranty may be voided if replacement parts are not manufactured or approved by Apex Tool Group.

12.2 Tool repairs

Only qualified and trained personnel are to repair this equipment.

12.3 Warranty repairs

All warranty repairs are to be performed by an authorized Apex Tool Group service center. Contact your local representative for assistance with warranty repair claims.

13 Disposal

CAUTION!



Injuries and environmental damage from improper disposal.

Components and auxiliary materials of the tool pose risks to health and the environment.

- Capture auxiliary materials (oils, greases) when drained and dispose of them properly.
- Separate the packaging components and dispose of them properly.
- Comply with all applicable local regulations.



Observe local disposal guidelines for all components of this tool and its packaging.



Sales & Service Centers

Note: All locations may not service all products. Please contact the nearest Sales & Service Center for the appropriate facility to handle your service requirements.

Detroit, Michigan

**Apex Tool Group
Sales & Service Center**
2630 Superior Court
Auburn Hills, MI 48326
Tel: (248) 393-5640
Fax: (248) 391-6295

Houston, Texas

**Apex Tool Group
Sales & Service Center**
6550 West Sam Houston
Parkway North, Suite 200
Houston, TX 77041
Tel: (713) 849-2364
Fax: (713) 849-2047

Lexington, South Carolina

Apex Tool Group
670 Industrial Drive
Lexington, SC 29072
Tel: (800) 845-5629
Tel: (803) 951-7544
Fax: (803) 358-7681

Los Angeles, California

**Apex Tool Group
Sales & Service Center**
6881 Stanton Avenue
Unit B
Buena Park, CA 90621
Tel: (714) 994-1491
Fax: (714) 994-9576

Seattle, Washington

**Apex Tool Group
Sales & Service Center**
2865 152nd Avenue N.E.
Redmond, WA 98052
Tel: (425) 497-0476
Fax: (425) 497-0496

York, Pennsylvania

**Apex Tool Group
Sales & Service Center**
3990 East Market Street
York, PA 17402
Tel: (717) 755-2933
Fax: (717) 757-5063

Brazil

**Apex Tool Group
Sales & Service Center**
Av. Liberdade, 4055
Zona Industrial - Iporanga
18087-170 Sorocaba
SP Brazil
Tel: +55 15 2383929
Fax: +55 15 2383260

Canada

**Apex Tool Group
Sales & Service Center**
7631 Bath Road
Mississauga, Ont. L4T
3T1
Canada
Tel: (866) 691-6212
Tel: (905) 673-4400

China

Cooper (China) Co., Ltd.
an Apex Tool Group, LLC
company
955 Sheng Li Road,
Heqing Pudong, Shanghai
China 201201
Tel: +86-21-28994176
Fax: +86-21-51118446

England

**Apex Tool Group
GmbH & Co. OHG**
C/O Spline Gauges
Piccadilly, Tamworth
Staffordshire B78 2ER
United Kingdom
Tel: +44 1827 8741 28
Fax: +44 1827 8741 28

France

Apex Tool Group S.N.C.
25 rue Maurice Chevalier
B.P. 28
77831 Ozoir-La-Ferrière
Cedex, France
Tel: +33 1 64 43 22 00
Fax: +33 1 64 43 17 17

Germany

**Apex Tool Group
GmbH & Co. OHG**
Industriestraße 1
73463 Westhausen
Germany
Tel: +49 (0) 73 63 81 0
Fax: +49 (0) 73 63 81 222

Hungary

**Apex Tool Group
Hungaria Kft**
Platánfa u.2
9027 Győr
Hungary
Tel: +36 96 66 1383
Fax: +36 96 66 1135

India

**Apex Power Tools India
Private Limited**
Gala No. 1, Plot No. 5
S. No. 234, 235 & 245
Indialand Global
Industrial Park
Taluka-Mulsi, Phase I
Hinjawadi, Pune 411057
Maharashtra, India

Mexico

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Parque Industrial Querétaro
Querétaro, QRO 76220
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