

Parts Manual
PL70-1044EN
01/18/2013

Cleco®

MA3R-2272
Radial Piston Power Motor



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Specifications and Description

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Specifications Table:

Model	Maximum Allowable RPM		Stall Torque		Starting Torque		Weight		Air Consumption		Gear Ratio	Max. Overhung Load @ Stall*	
	@ Max. H hp	Free Speed	ft. lbs.	Nm	ft. lbs.	Nm	lbs.	kg	cfm	m3/min		lbs.	kg
MA3R-2272	183	400	155	210	84	114	67	30.1	87	2.46	6.5:1	2560	1161

* Note: Geared models assume overhung load located at 1.000" (25.40mm) from face of motor.

Language Version:

This Parts Manual is the **“Original Instructions”** intended for all persons who will use or repair these tools.

Product Identification:

Refer to the Specifications Table.

Noise and Vibration:

Refer to documents CE-1005DC and CE-1005TD.

General Description:

The Cleco MA3 series motors are of the five-cylinder radial piston style. This five-cylinder radial design, with its overlap of power impulses, provides even torque at all speeds, and full power in either direction of rotation. At least two pistons are always on a power stroke.

These motors are designed for continuous service on 60 to 100 PSI air pressure. If overloaded beyond their power capacity, the air motor will simply stall without damage.

These motors are available without directional valving or they can be equipped with a single direction air valve or a 4-way reversing valve.

Intended Use:

These pneumatic motors are intended to be a power source for other equipment. Use only for their designated purpose. Do not use in an improper manner that can cause motor damage and operator injury.

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General Instructions

Installation:

Make certain the airline is clean and free of scale and dirt before connecting to the air motor. Check all pipe fittings to make sure there are no air leaks.

During **continuous service**, these air motors should not operate faster than 65% of their rated free speed. Refer to the Specifications Table. An airline filter/lubricator should be installed as close to the air motor as possible.

During **intermittent service**, the splash lubrication from the motor case is adequate.

Check all cap screws to make sure they are properly tightened.

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

Lubrication:

Fill the motor case to the proper level before operating the motor.

Use Engine Oil* API Service Classified "SC" in the following weights:

Above 32° F - SAE 30W

Below 32° F - SAE 10W

Check the oil level daily and fill as necessary. If an airline lubricator has been installed, check daily and fill as necessary.

Motor Case: Approximately one (1) quart of oil is required to fill the motor case to the proper level.

To check the motor case for proper oil level, open the oil level pet cock. If oil does not flow from the pet cock, add the appropriate oil until it starts to flow and then close the oil level pet cock.

If the airline carries an excessive amount of water and a water trap can not be installed, use a good grade of motor oil (an oil that will emulsify with water) to prevent damage to vital motor parts.

Gear Case: Approximately one (1) quart of oil is required to fill the gear case to the proper oil level.

Use Engine Oil* API Service Classified "SC" in the following weights:

Above 32° F - SAE 30W

Below 32° F - SAE 10W

The oil must flow at all times to properly lubricate the gears and bearings.

To check the gear case for proper oil level, open the oil

level pet cock. If oil does not flow from the pet cock, add the appropriate oil until it starts to flow and then close the oil level pet cock.

Care and Maintenance:

Service the air motor regularly. The breather cap should be inspected frequently to make sure it is not plugged with dirt.

The drain plug in the motor case should be removed occasionally to allow any water or condensate in the bottom of the case to drain off. This should be done before adding new oil and after the motor has been idle long enough to permit the water and oil to separate.

Excessive use of oil is usually due to worn pistons and rings, a worn distributing valve and bushing, a damaged oil seal or a clogged breather cap.

Assembly Instructions:

Place the motor case face up (cylinder opening up) on a table. Install the valve bushing into the motor case counterbore from the outside until it bottoms out.

NOTE: The valve bushing must be put in a freezer before assembling into the motor case.

Install the five cylinder liners in the cylinder holes of the motor case until they bottom out. Lightly oil all pistons and cylinder liners.

Insert the master piston assembly directly across from the breather cap hole and attach the rod retainer assembly. Assemble the piston pin (threaded side up). Place the master piston washer over the connecting rod (washer ears go to the side of the connecting rod). Tighten the master piston nut and bend the washer ears over the nut.

Assemble the other four pistons to the rod retainer assembly using the piston pins. After all piston pins have been installed, secure with the retaining ring.

Place the cylinder gaskets and cylinder caps over the cylinder holes of the motor case and secure with the screws (tighten to 7 ft. lbs. torque).

Geared Models:

Press the bearing (60148) onto the pinion gear until it bottoms out. Tap the key (35D2) into the keyway and press the pinion gear into the crankshaft (drive end).

Press the bearing (12J33) onto the crankshaft (valve end) and install the crankshaft (valve end) into the valve bushing. Assemble the rod retainer assembly over the crankshaft. Center the piston assembly to the breather port. Press the bearing (12P5) onto the small diameter of the crankshaft (valve end) until it bottoms out. Slide the valve chest over the valve bushing and secure with the two screws and washers (tighten to 21 ft. lbs. torque).

Apply air to test run the assembly. Place a key (35D2) into the crankshaft (valve end) keyway and assemble the crankshaft (drive end).

Press the oil seal (60G117), flat side out, into the gear housing until it is flush with the outer edge of the housing. Press the bearing (12J9) into the gear housing until it bottoms out. Press the bearing (12J34) onto the gear and pinion (large gear end).

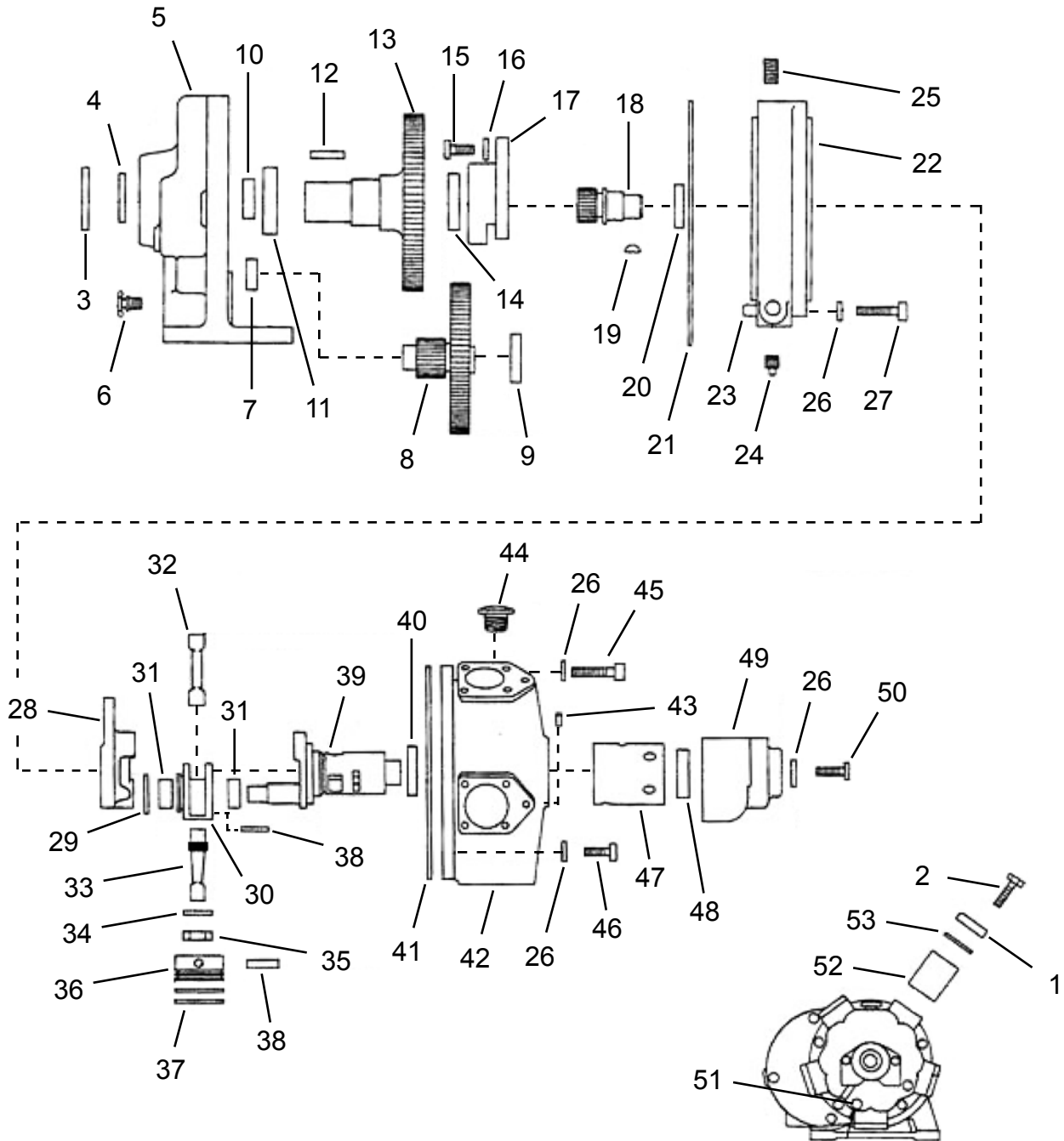
Press the bearing (12J36) onto the geared end of the gear and shaft. Press the bearing (12J7) and the wear ring onto the threaded end of the gear and shaft until they bottom out.

Place the gear and pinion, with bearing, into the bearing housing (MA3G20). Make sure the bearing bottoms out in the housing. Assemble the bearing housing (MA3G39) to the bearing housing (MA3G20) and secure with two screws and washers (tighten to 21 ft. lbs. torque).

Slide the gear and shaft into the gear housing and tap in until it bottoms out. Place the gasket over the bearing housing and assemble the bearing housing to the gear housing. Secure with three screws and washers (tighten to 21 ft. lbs. torque). Place the gasket over the motor case and assemble the motor case to the gear housing assembly (breather hole up). Secure with the five screws and washers; two screws (75P56) to the left of the breather hole and three screws (75P5) to the right of the breather hole. Tighten all screws to 21 ft. lbs. torque.

Assemble the pipe plugs and drain cocks. Fill the motor case with 3/4 pint of oil and the gear housing with 1-1/2 pints of oil.

“A”



Cleco®
MA3R-2272 Geared Motor

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Illustration "A"

Ref	Number	#	X	EN
				Description
1	MA322	5		Cylinder Cap
2	75V10	20	20	Cylinder Screw
3	95A9	1	3	Flat Washer
4	60G117	1	3	Oil Seal
5	MA3G1	1		Gear Housing
6	90C12	1	2	Drain Cock
7	12J9	1	2	Ball Bearing
8	MA3G38E	1		Gear and Pinion
9	12J34	1	2	Ball Bearing
10	MA3G40R	1	3	Wear Ring
11	12J7	1	2	Ball Bearing
12	35B117	1	2	Gear and Shaft Key
13	MA3G140C	1		Gear and Shaft
14	12J36	1	2	Ball Bearing
15	B150G	3	3	Bearing Housing Screw
16	W161PT	3	3	Flat Washer
17	MA3G39	1		Bearing Housing
18	MA3G38B	1		Pinion Gear
19	35D2	1	3	Woodruff Key
20	60148PT	1	2	Ball Bearing
21	MA3G25	1	3	Bearing Housing Gasket
22	MA3G20	1		Bearing Housing (includes Ref. 23)
23	DP162	1		Pin
24	64AA4	1		Pipe Plug
25	B110E	1		Pipe Plug
26	93G33	10	10	Flat Washer
27	75P60	3	3	Bearing Housing Screw
28	MA330D	1		Crankshaft (Drive End)
29	65W1	1	1	Retaining Ring
30	MA328X	1		Connecting Rod Retainer Assembly (includes Ref. 31)
31	800168	2	4	Needle Bearing
32	MA327	4		Connecting Rod
33	MA326B	1		Connecting Rod (Master)
34	MA326WA	1		Connecting Rod Washer (Master)
35	MA326N	1		Connecting Rod Nut (Master)
36	MA324	5		Piston
37	65A225	10	10	Piston Ring
38	MA325	10		Piston Pin
39	MA331	1		Crankshaft (Valve End)
40	12J33	1	2	Ball Bearing
41	MA319	1	3	Motor Case Gasket
42	MA318E	1		Motor Case (includes Ref. 43)
43	DP114	1		Motor Case Pin
44	540805	1	2	Low Profile Breather Cap
45	B156U	3	3	Motor Case Screw
46	845676	2	2	Motor Case Screw
47	MA311	1		Distributing Valve Bushing
48	12P5	1	2	Ball Bearing
49	533701	1		Valve Chest
50	B158S	2	2	Valve Chest Screw
51	64AA5	2		Pipe Plug
52	MA318L	5		Cylinder Liner
53	MA323	5	15	Cylinder Gasket

(#) Quantity

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



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.

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