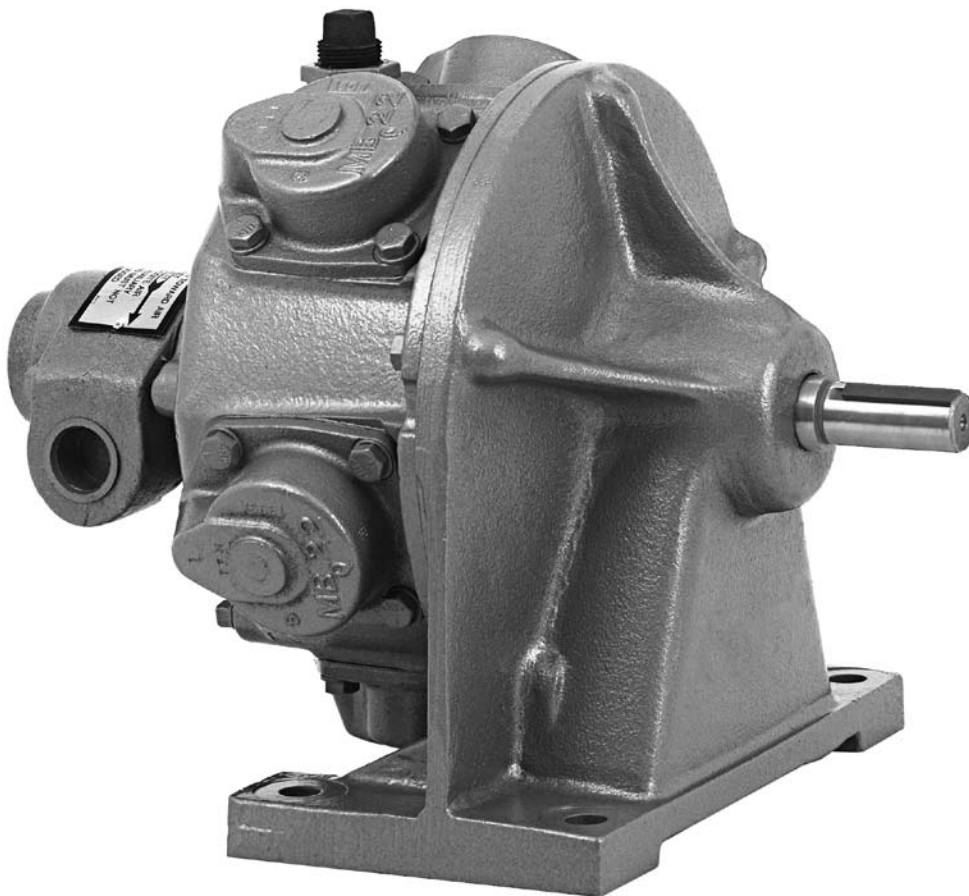


Parts Manual  
PL70-1027EN  
06/25/2012

# Cleco®

**MKW-2302**  
Radial Piston Power Motor



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## Specifications and Description

**PL70-1027EN**  
06/25/2012

### 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
<b>No Valving</b>													
MKW-2302	183	375	606	822	374	507	230	104.3	299	8.47	5.2:1	2800	1270

\* Note: All models assume overhung load located at 1.00" (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 MK 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 and one-half (1-1/2) quarts 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 piston rings into the grooves on the pistons (step on ring toward open part of piston). Put a retainer in one end of the hole in the pistons. Slip the bushing, chamfer down, over the drive end of the crankshaft until it bottoms out. Line up the holes with the groove in the crankshaft. Put a light coating of oil on the bushing and tap the key on the crankshaft.

Place on connecting rod retainer over the bushing. Place the five connecting rods into the connecting rod retainer (lettering on rod up). Place the other connecting rod retainer over the connecting rods and the bushing. Assemble the crankshaft (drive end) to the crankshaft (valve end). Line up the shaft groove with the hole in the crankshaft and insert the screw. Secure with the castle nut and cotter pin.

Press the bearing onto the crankshaft assembly until it bottoms out. Place the crankshaft assembly into the motor case and tap into position. Attach the five pistons to the connecting rods with the piston pins and secure with the retainers.

Oil the inside wall of each cylinder. Place a gasket on each cylinder. Compress the piston rings and slide a cylinder over each piston. Secure each cylinder with four washers and screws. Tighten to 45 ft. lbs. torque.

Oil the valve bushing and distributor valve, then insert the distributor valve into the valve bushing (locate the dowel pin). Slide the valve chest over the bushing and secure with two washers and screws. Tighten to 45 ft. lbs. torque. Apply air to the unit and test run in one direction only.

**Geared Models:**

Press a bearing (525424) onto the large gear end of the gear and pinion. Press a bearing (526576) onto the geared end of the gear and shaft until it bottoms out. Press the bearing (12J37) and wear ring onto the threaded end of the gear and shaft until they bottom out.

Press the oil seal into the gear housing until is flush with the outside edge of the housing. Press the bearing (526576), for the gear and pinion, into the housing until it bottoms out. Insert the gear and shaft into the gear housing and tap in until it bottoms out. Install the gear and pinion into the gear housing.

Press the oil seal into the bearing housing. Place the bearing housing (MK39) on the bearing housing (MK20) and secure with three washers and screws. Tighten to 45 ft. lbs. torque. Thread the wire through the holes in the screws and secure the ends.

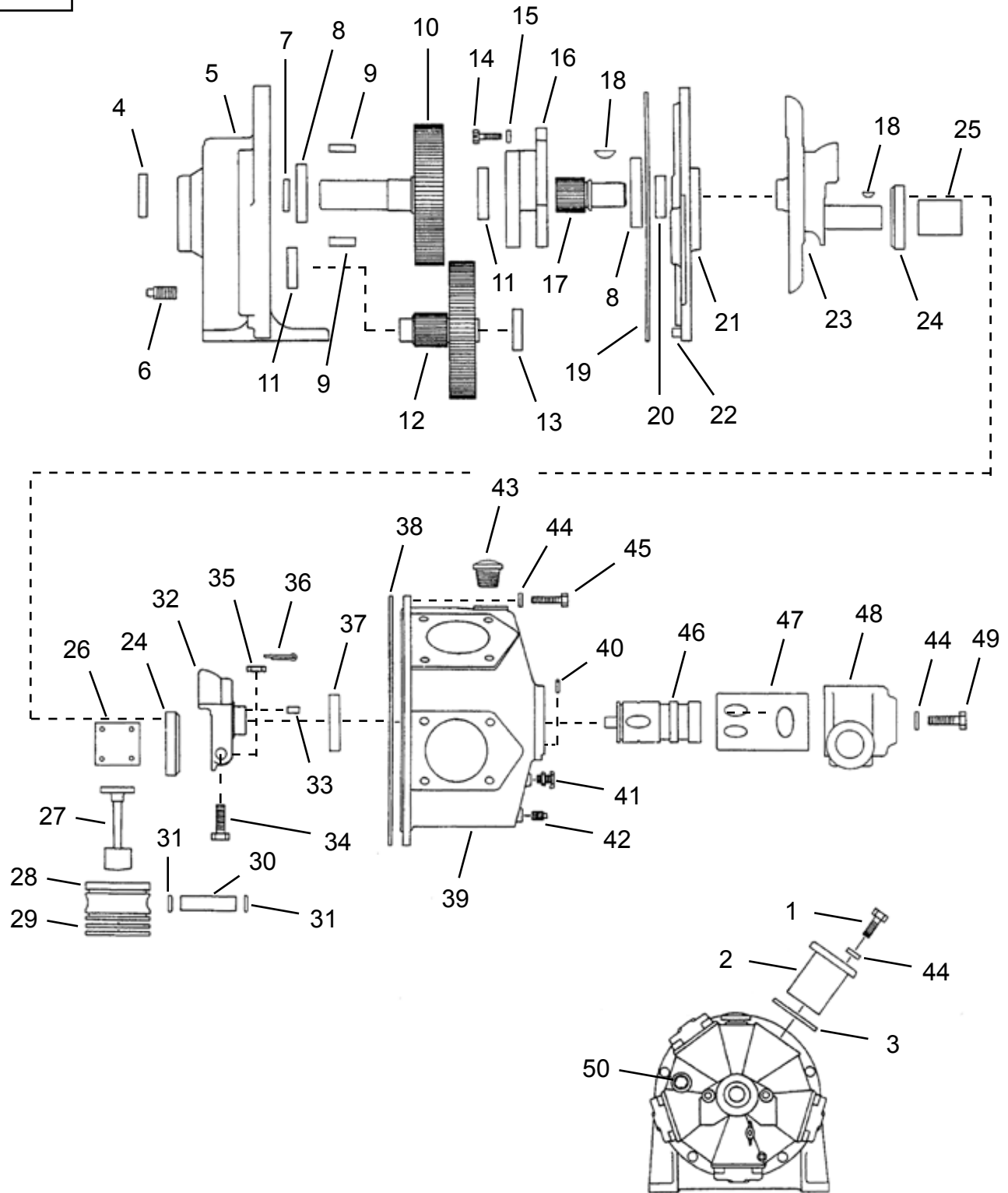
Place the gasket over the gear housing and assemble the bearing housing. Make sure the pin in the bearing housing fits into the mating hole in the gear housing.

Press the bearing (12J37) onto the pinion gear until it bottoms out. Tap the key into the keyway on the pinion gear. Insert the pinion gear into the crankshaft assembly until it bottoms out.

Place the gasket on the motor case and assemble the motor case to the gear housing assembly (breather hole up). Secure with five washers and screws. Tighten to 45 ft. lbs. torque.

Assemble the plugs and pet cocks, then fill the motor case with two quarts of oil and the gear housing with one quart of oil.

“A”



**Illustration "A"**

Ref	Number	#	X	EN
				Description
1	75A4	20	20	Cylinder Screw
2	MK22	5		Cylinder
3	MK23	5	15	Cylinder Gasket
4	60G115	1	3	Oil Seal
5	MKG1	1		Gear Housing (includes 1 Ref. 6)
6	B110E	3		Pipe Plug
7	MKGP40R	1	3	Wear Ring
8	12J37	2	4	Ball Bearing
9	35B125	2	4	Gear and Shaft Key
10	537218PT	1		Gear and Shaft
11	526576	2	4	Ball Bearing
12	MKG38	1		Gear and Pinion
13	525424	1	2	Ball Bearing
14	75B4	3	3	Bearing Housing Screw
15	W125	3	3	Flat Washer
16	MK39	1		Bearing Housing
17	MKG37	1		Pinion Gear
18	35D13	2	6	Woodruff Key
19	HK25	1	3	Bearing Housing Gasket
20	60G116	1	3	Oil Seal
21	MK20	1		Bearing Housing (includes Ref. 22)
22	DP162	1		Pin
23	MK30Y	1		Crankshaft (Drive End)
24	MK29	2		Connecting Rod Retainer
25	MK33	1	1	Crankshaft Bushing
26	MK28	1	1	Connecting Rod Bushing
27	MK27	5		Connecting Rod
28	MK24	5		Piston
29	65A222	10	10	Piston Ring
30	MK25	5		Piston Pin
31	MK26	10		Piston Pin Retainer
32	MK31	1		Crankshaft (Valve End) (includes Ref. 33)
33	DP142	1		Crankshaft Pin
34	MK32	1	1	Crankshaft Bolt
35	50E5	1	1	Hex Castle Nut
36	P101J	1	3	Cotter Pin
37	12J30	1	2	Ball Bearing
38	MK19	1	3	Motor Case Gasket
39	MK18	1		Motor Case (includes Ref. 40)
40	DP114	1		Motor Case Pin
41	90C12	2	4	Drain Cock
42	64AA5	1		Pipe Plug
43	542139	1	2	Low Profile Breather Cap
44	95G24	27	27	Flat Washer
45	B154M	5	5	Motor Case Screw
46	MKL13	1		Distributing Valve
47	MK11	1		Distributing Valve Bushing
48	533763	1		Valve Chest
49	75A208	2	2	Valve Chest Screw
50	64A5	1		Pipe Plug

(#) Quantity

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

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Canada  
Tel: 905-501-4785  
Fax: 905-501-4786

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

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 SAS**  
25 rue Maurice Chevalier  
77330 Ozoir-La-Ferrière  
France  
Tel: +33 1 6443 2200  
Fax: +33 1 6443 1717

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

Mexico  
Cooper Tools  
de México S.A. de C.V.  
a company of  
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Vialidad El Pueblito #103  
Parque Industrial Querétaro  
Querétaro, QRO 76220  
Mexico  
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Fax: +52 (442) 103-0443

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Cooper Tools Industrial Ltda.  
a company of  
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SP Brazil  
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Fax: +55 15 2383260

Hungary  
Cooper Tools Hungaria Kft.  
a company of  
Apex Tool Group, LLC  
Berkenyefa sor 7  
Pf: 640  
9027 Győr  
Hungary  
Tel: +36 96 66 1383  
Fax: +36 96 66 1135

Apex Tool Group, LLC  
1000 Lufkin Road  
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Phone: 919-387-0099  
Fax: 919-387-2614  
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