Instruction Manual
PL70-1052EN
07/08/2013

OMEGA TECHNOLOGIES

Cleco®

MM Series
Radial Piston Power Motors

For additional product information visit our website at:
https://dotcotool.com/product-category/cleco-tools/cleco-air-motors/cleco-mm-series-radial-piston-air-motors/

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 MM series tools.
- serves as a reference guide for technical data, service intervals and spare parts ordering.
- provides information on optional equipment.

Identification text:

MM	represents all models of the radial piston 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

Copyright protection:

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
Single Direction Valving													
MMS396M	1070	2100	138	187	82	111	210	95.3	348	9.86	----	2500	1134
MMS400M	206	400	715	970	424	575	226	102.5	336	9.52	5.2:1	2800	1270
Reversible Valving													
MMR397M	1010	2100	138	187	82	111	214	97.1	352	9.97	----	2500	1134
MMR401M	194	400	715	970	424	575	231	104.8	332	9.40	5.2:1	2800	1270
MMR399M	71	150	1952	2647	1157	1569	231	104.8	345	9.77	14.2:1	2800	1270
without Valving													
MMW421M	1010	2100	138	187	82	111	214	97.1	352	9.97	----	2500	1134
MMW423M	194	400	715	970	424	575	231	104.8	332	940	5.2:1	2800	1270
MMW422M	71	150	1952	2647	1157	1569	231	104.8	345	9.77	14.2:1	2800	1270

* Note: All models assume overhung load located at 1.000" (25.40mm) from the face of the motor.
**Note: These motors must be operated with sufficient load to prevent speed from exceeding maximum allowable speed.

Cleco®

Contents

10 Spare parts

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

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

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

- Do not modify the MM, 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.

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 MM

1 PL70-1052EN instruction manual

1 Declaration of Conformity (if applicable)

1 Lubrication sheet

1 Warranty statement

2.2 Transport

Transport and store the MB 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 MM in a location on the workbench to avoid accidental startup.

For storage longer than 2 hours:

→ Disconnect the air supply from the MM

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

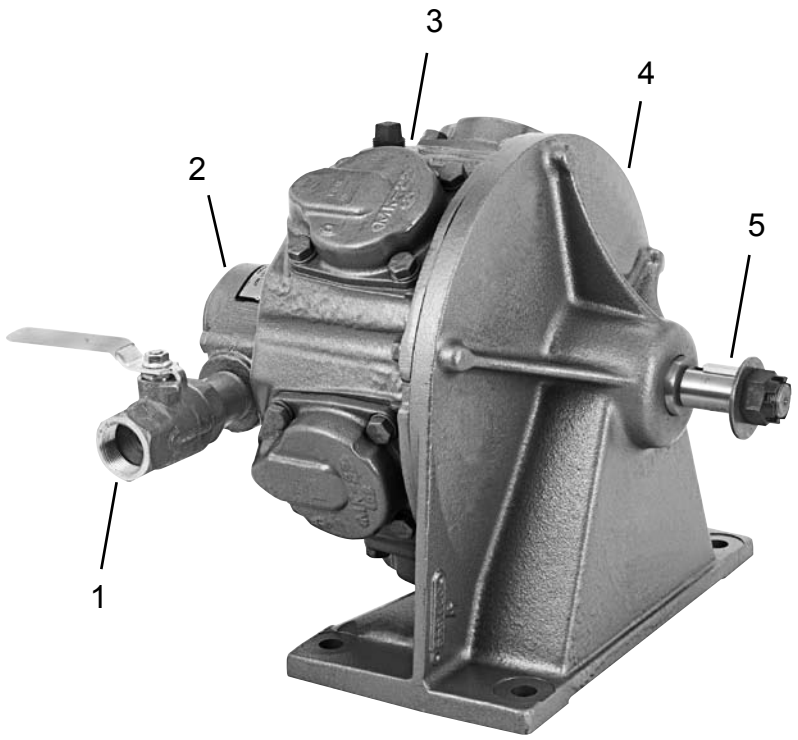
3 Product description

3.1 General description

- Pneumatic powered radial piston power motor
- 15 Horsepower
- Direct drive or geared model options
- No valving, single direction valving and reversible valving options

3.2 Operation and functional elements

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



Ref.	Description
1	Air Inlet
2	Valve Chest
3	Motor Assembly
4	Gearing Assembly
5	Output Shaft

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: 1-1/4" (31,75 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

Oil identification

Fill the motor to the proper level before operating.
Use engine oil API Service Classified "SC" in the following weights:

- **Above 32° F: SAE 30W**
- **Below 32° F: SAE 10W**

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 MM series motors are a five cylinder radial piston type. This radial design, with it's 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 60-100 PSI air pressure. If overloaded beyond their power capacity, the motor will simply stall without causing any damage.

- → 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.

Continuous Operation: Do not operate the MM motors faster than 65% of free speed. Install a filter/ lubricator unit in the air line as close as possible to the MM motor.

Intermittent Operation: The splash lubrication from the motor case will be adequate.

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 MM 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	→ 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	→ Inspect the air hose for damage or wear → inspect the output spindle for damage or wear → Inspect the breather cap to make sure it is not plugged, clean or replace → Remove the motor case drain plug to allow water and condensate to drain out → Check oil levels in the motor case and gear case, add as necessary

8.2 Lubricants

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

Oil identification

Fill the motor to the proper level before operating.
Use engine oil API Service Classified “SC” in the following weights:

- Above 32° F: SAE 30W
- Below 32° F: SAE 10W

If the air line carries an excessive amount of water and a water trap cannot be installed, use a good grade of motor oil that will emulsify with water to prevent damage to vital parts of the motor.

Oil quantity

Approximately 1-1/2 quarts of oil is required to fill the motor case to the proper oil level. Approximately 1 quart of oil is required to fill the gear case to the proper oil level. The oil must flow at all times to properly lubricate the motor components, gears and bearings.

To check the MM for proper oil level, open the oil level pet cock. If oil does not flow from the pet cock, add the proper oil until oil begins to flow. Securely tighten the oil level pet cock.

Remove the oil drain plug in the motor case occasionally and drain off accumulated water before adding new oil.

Excessive use of oil is usually due to:

- Worn pistons
- Worn piston rings
- Worn distributing valve and bushing
- Damaged oil seals
- Clogged breather cap

9 Repair instructions

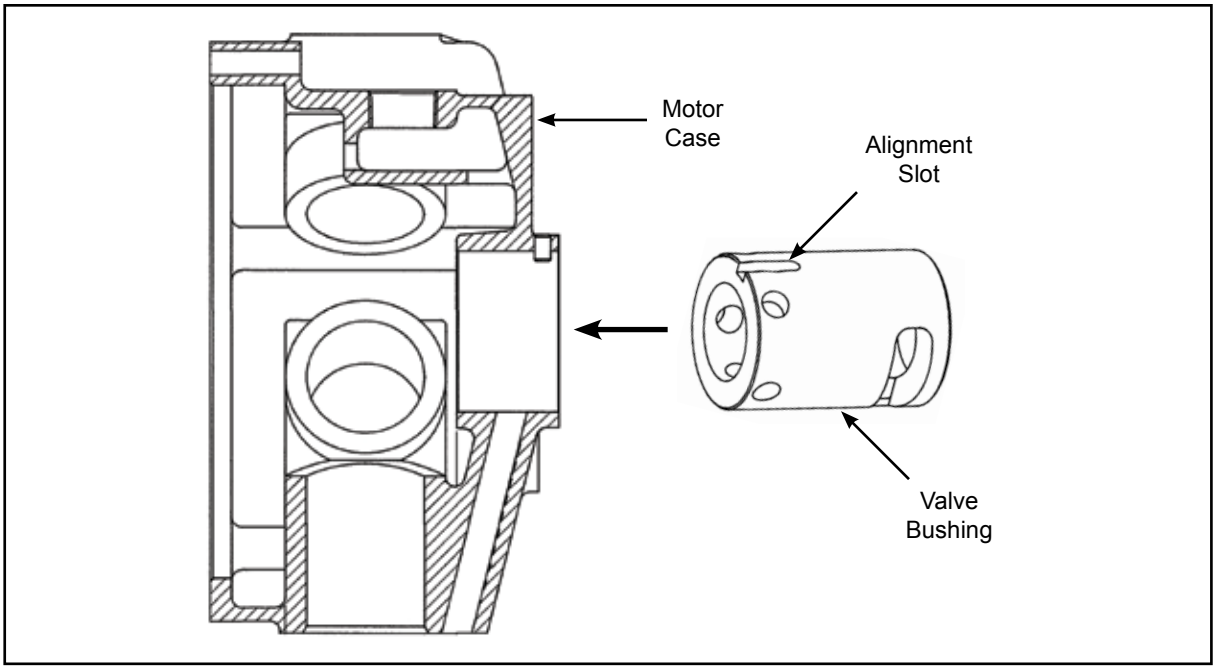
9.1 Motor case assembly

Install the pin (DP114) into the motor case until approximately 1/8” is exposed in the distributing valve bushing hole.

Install the valve bushing (200MAM502) into the motor case counter bore until it is flush with the inside edge of the counter bore. The valve bushing has a slot to enable proper alignment during assembly.

NOTE

The valve bushing must be placed in a freezer, for a period of time, before assembling into the motor case. This will cause the bushing to contract allowing easier assembly into the motor case.



9.2 Direct drive models: assembly

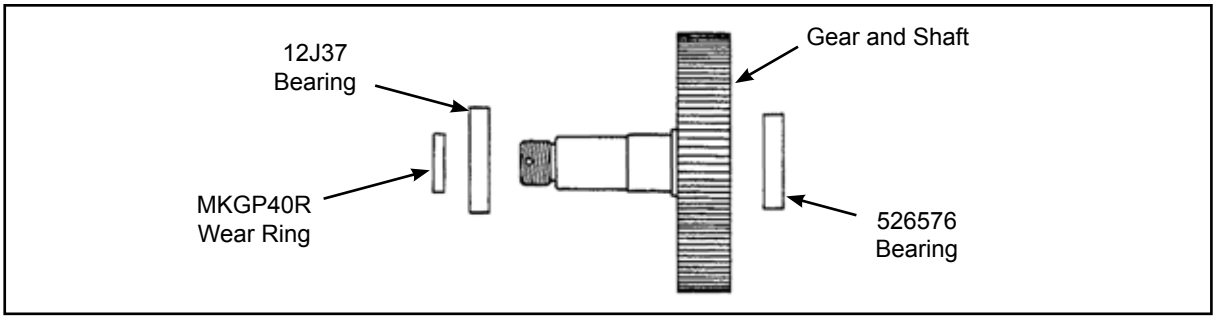
- Install the piston rings in the grooves on the pistons. The step on the ring must be toward the open part of the piston.
- Assemble a retainer into one end of the hole in the pistons.
- Slip the bushing (MK33), chamfer down, over the crankshaft (drive end) until it bottoms out. Line up the oil holes with the groove in the crankshaft.
- Put a light coating of oil on the bushing (MK28) and slide it over the bushing (MK33) on the crankshaft.
- Tap the key (35D13) into the keyway on the crankshaft.
- Place one connecting rod retainer over the bushing (MK28). Place the five connecting rods into the connecting rod retainer. Make sure the lettering on the rods are up. Place the other connecting rod retainer over the connecting rods and bushing (MK28).
- 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 (MK32). Secure with the nut (50E5) and cotter pin.

9.2 Direct drive models: assembly (continued)

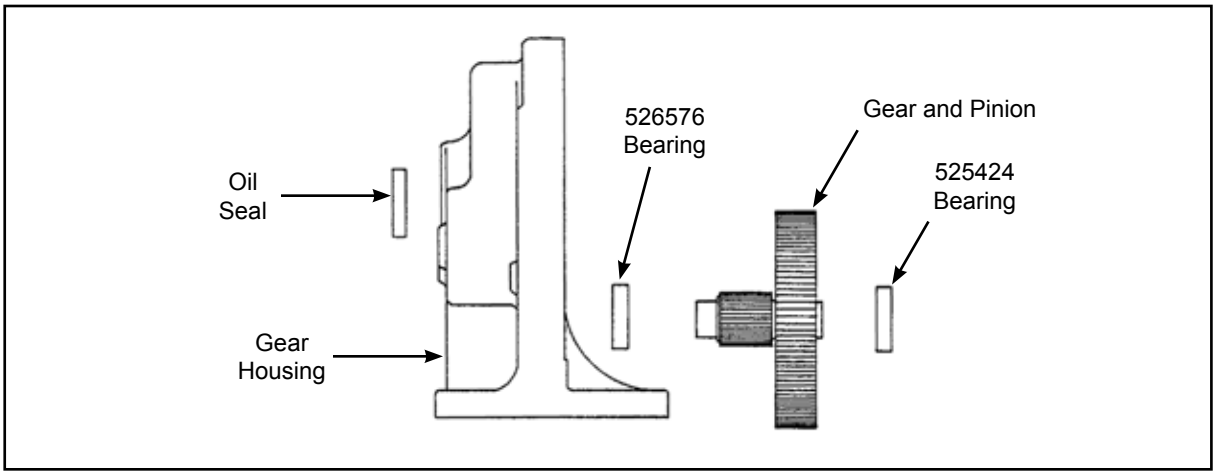
- Press the bearing (12J37) onto the crankshaft assembly until it bottoms out.
- Place the crankshaft assembly into the motor case and tap into position.
- Using the piston pins, attach the five pistons to the connecting rods and secure with the retainers (MK26).
- Place a cylinder gasket on each of the cylinders. Oil the inside of the cylinders.
- Compress the piston rings and slide a cylinder over each piston. Secure the cylinders using the washers (95G24) and screws (75A20). Tighten the screws to 45 ft. lbs. (61 Nm) torque.
- Lightly oil the valve bushing and distributor valve. Insert the distributor valve into the valve bushing (locate in dowel pin).
- Slide the valve chest over the bushing and secure with two washers (95G24) and screws (75A167). Tighten the screws to 45 ft. lbs. (61 Nm) torque.
- Apply air to the unit and test run in one direction only.
- Press the bearing (12GG2) into the frame until it bottoms out.
- Place the bearing (12J15) onto the non-threaded end of the shaft until it bottoms out.
- Tap the key (35D13) into the motor shaft keyway.
- Place the shaft assembly into the crankshaft assembly and tap in until it bottoms out.
- Place the gasket on the motor case and assemble the motor case to the motor frame, breather hole up. Secure with washers (95G24) and screws (75A12). Tighten the screws to 45 ft. lbs (61 Nm) torque.
- Assemble the pipe plugs and drain cock. Fill the motor case with 1 quart of oil.

9.3 Geared models: assembly

- Press the bearing (525424) onto the large gear end of the gear and pinion.
- Press the bearing (526576) onto the geared end of the gear and shaft until it bottoms out. Press the bearing (12J37) and then the wear ring (MKGP40R) onto the threaded end of the gear and shaft until they bottom out.



- Press the oil seal (60G115) into the gear housing until it is flush with the outside edge of the housing.
- Press the gear and pinion bearing (526576) into the housing until it bottoms out.
- Insert the gear and shaft assembly into the gear housing and tap in until it bottoms out.
- Install the gear and pinion assembly into the gear housing.



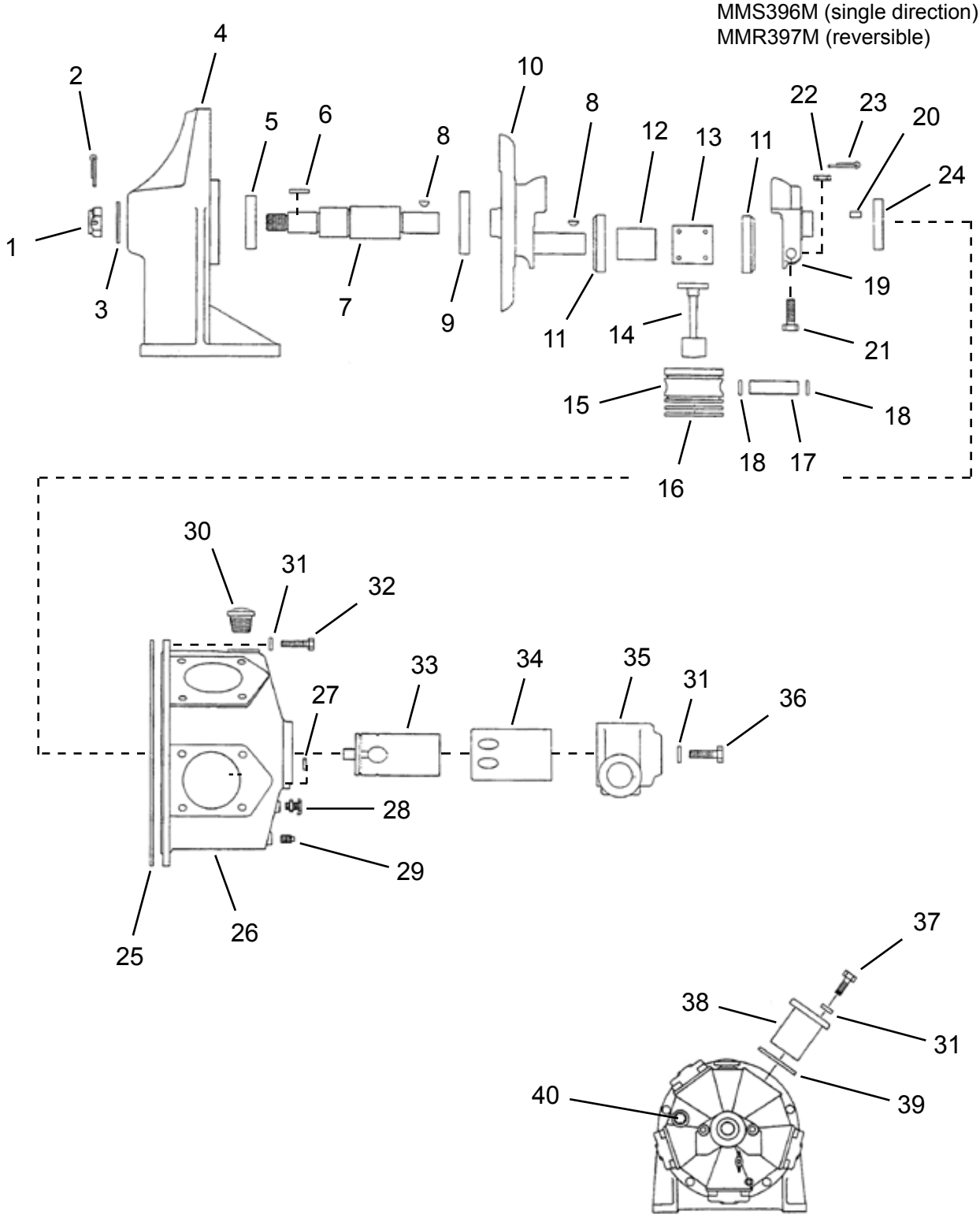
- Place the bearing housing (MK39) on the bearing housing (MK20) and secure with three washers (W125) and screws (75B4). Tighten the screws to 45 ft. lbs. (61 Nm) torque.
- Place the gasket (HK25) over the gear housing and assemble the bearing housing. Make sure the pin in the bearing housing fits into the mating hole in the gear housing.
- Press the bearing (12J37) onto the pinion gear until it bottoms out. Tap the key (35D13) into the pinion gear keyway. Insert the pinion gear assembly into the crankshaft assembly until it bottoms out.

9.3 Geared models: assembly (continued)

- Install the piston rings in the grooves on the pistons. The step on the ring must be toward the open part of the piston.
- Assemble a retainer into one end of the hole in the pistons.
- Slip the bushing (MK33), chamfer down, over the crankshaft (drive end) until it bottoms out. Line up the oil holes with the groove in the crankshaft
- Put a light coating of oil on the bushing (MK28) and slide it over the bushing (MK33) on the crankshaft.
- Tap the key (35D13) into the keyway on the crankshaft.
- Place one connecting rod retainer over the bushing (MK28). Place the five connecting rods into the connecting rod retainer. Make sure the lettering on the rods are up. Place the other connecting rod retainer over the connecting rods and bushing (MK28).
- 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 (MK32). Secure with the nut (50E5) and cotter pin.
- Press the bearing (12J37) onto the crankshaft assembly until it bottoms out.
- Place the crankshaft assembly into the motor case and tap into position.
- Using the piston pins, attach the five pistons to the connecting rods and secure with the retainers (MK26).
- Place a cylinder gasket on each of the cylinders. Oil the inside of the cylinders.
- Compress the piston rings and slide a cylinder over each piston. Secure the cylinders using the washers (95G24) and screws (75A20). Tighten the screws to 45 ft. lbs. (61 Nm) torque.
- Lightly oil the valve bushing and distributor valve. Insert the distributor valve into the valve bushing (locate in dowel pin).
- Slide the valve chest over the bushing and secure with two washers (95G24) and screws (75A167). Tighten the screws to 45 ft. lbs. (61 Nm) torque.
- Apply air to the unit and test run in one direction only.
- Place the gasket on the motor case and assemble the motor case to the motor frame, breather hole up. Secure with washers (95G24) and screws (75A12). Tighten the screws to 45 ft. lbs (61 Nm) torque.
- Assemble the pipe plugs and drain cock. Fill the motor case with 1-1/2 quarts of oil and the gear housing with 1 quart of oil.

10.1 MM Series Direct Drive Power Motor

Models
MMW421M (without valving)
MMS396M (single direction)
MMR397M (reversible)



10.1 MM Series Direct Drive Power Motor

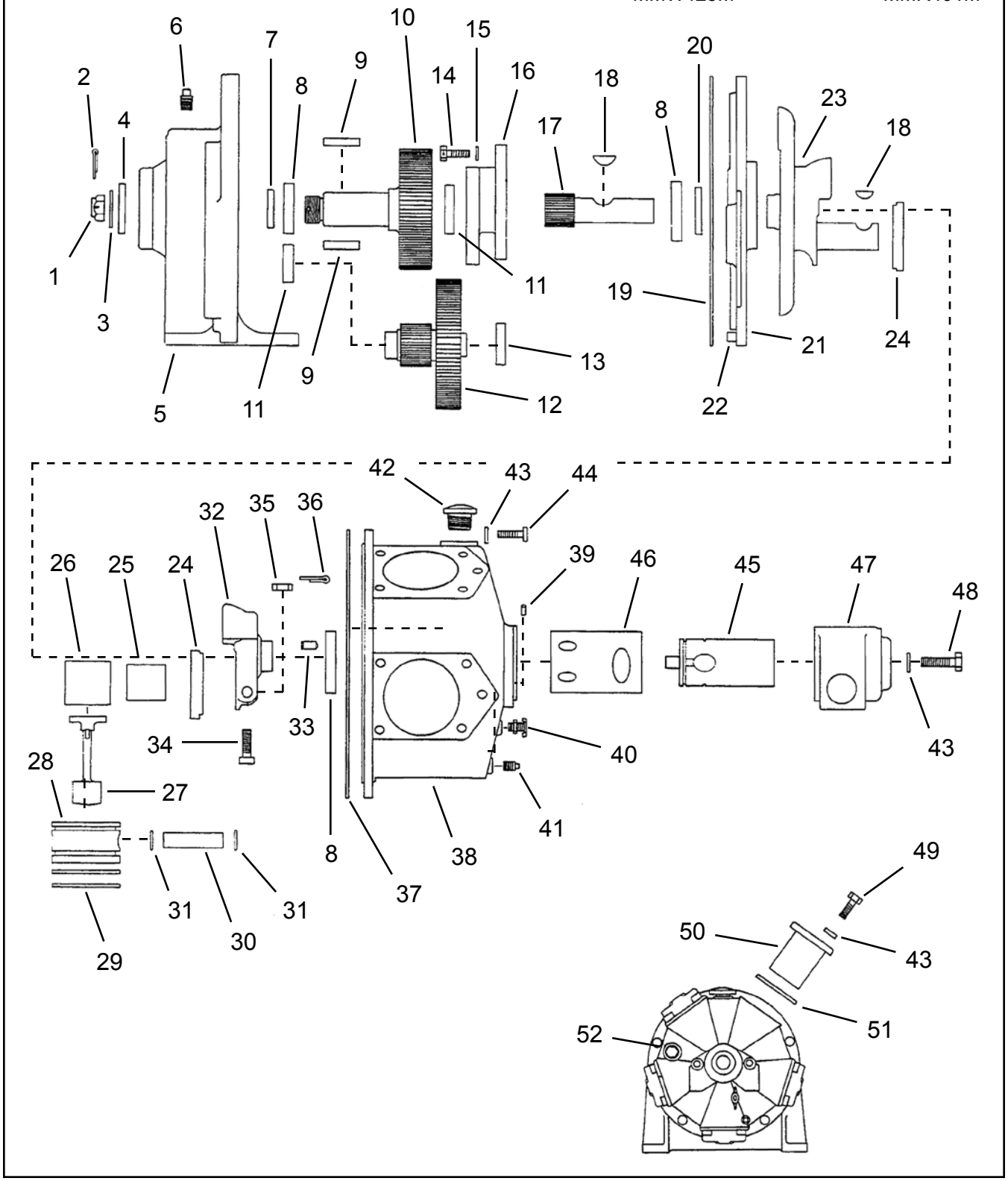
Ref	Number	#	X	EN Description
1	50E11	1	2	Output Shaft Hex Nut
2	62E9	1	3	Cotter Pin
3	95A10	1	2	Output Shaft Washer
4	MKA7	1		Motor Frame
5	12GG2	1	2	Ball Bearing
6	35B207	1	3	Motor Shaft Key
7	MKA3	1		Motor Shaft
8	35D13	2	6	Woodruff Key
9	12J15	1	2	Ball Bearing
10	MK30Y	1		Crankshaft (Drive End)
11	MB29	2		Connecting Rod Retainer
12	MK33	1		Crankshaft Bushing
13	MK28	1		Connecting Rod Bushing
14	MK27	5		Connecting Rod
15	MM24	5		Piston
16	65A224	10	10	Piston Ring
17	MM25	5		Piston Pin
18	MK26	10	10	Piston Pin Retainer
19	MM31	1		Crankshaft (Valve End) (includes Ref. 20)
20	DP142	1		Crankshaft Pin
21	MK32	1	1	Crankshaft Bolt
22	50E5	1	1	Hex Castle Nut
23	P101J	1	3	Cotter Pin
24	12J37	1	2	Ball Bearing
25	MK19	1	3	Motor Case Gasket
26	MM18	1		Motor Case (includes Ref. 27)
27	DP114	1		Motor Case Pin
28	90C12	1	2	Drain Cock
29	64AA5	1		Pipe Plug
30	542139	1	2	Low Profile Breather Cap
31	95G24	27	27	Flat Washer
32	75A12	5	5	Motor Case Screw
33	MM13	1		Distributing Valve
34	200MAM502	1		Distributing Valve Bushing
35	533799	1		Valve Chest
36	75A167	2	2	Valve Chest Screw
37	75A20	20	20	Cylinder Screw
38	MM22	5		Cylinder
39	MM23	5	15	Cylinder Gasket
40	64A5	1		Pipe Plug

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

10.2.1 MM Series Geared Power Motor

Models

MMW422M	MMS400M	MMR399M
MMW423M		MMR401M



10.2.1 MM Series Geared Power Motor

Ref	Number	#	X	EN Description
1	MKU52	1	2	Output Shaft Hex Nut
2	62E66	1	3	Cotter Pin
3	95A11	1	2	Output Shaft Washer
4	60G115	1	3	Oil Seal
5	MKG1	1		Gear Housing (includes Ref. 6)
6	B110E	1	2	Pipe Plug
7	MKGP40R	1	3	Wear Ring
8	12J37	3	6	Ball Bearing
9	35B125	2	4	Gear and Shaft Key
10	Table 10.2	1		Gear and Shaft
11	526576	2	4	Ball Bearing
12	Table 10.2	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	Table 10.2	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	MM24	5		Piston
29	65A224	10	10	Piston Ring
30	MM25	5		Piston Pin
31	MK26	10		Piston Pin Retainer
32	MM31	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

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

Table 10.2.1

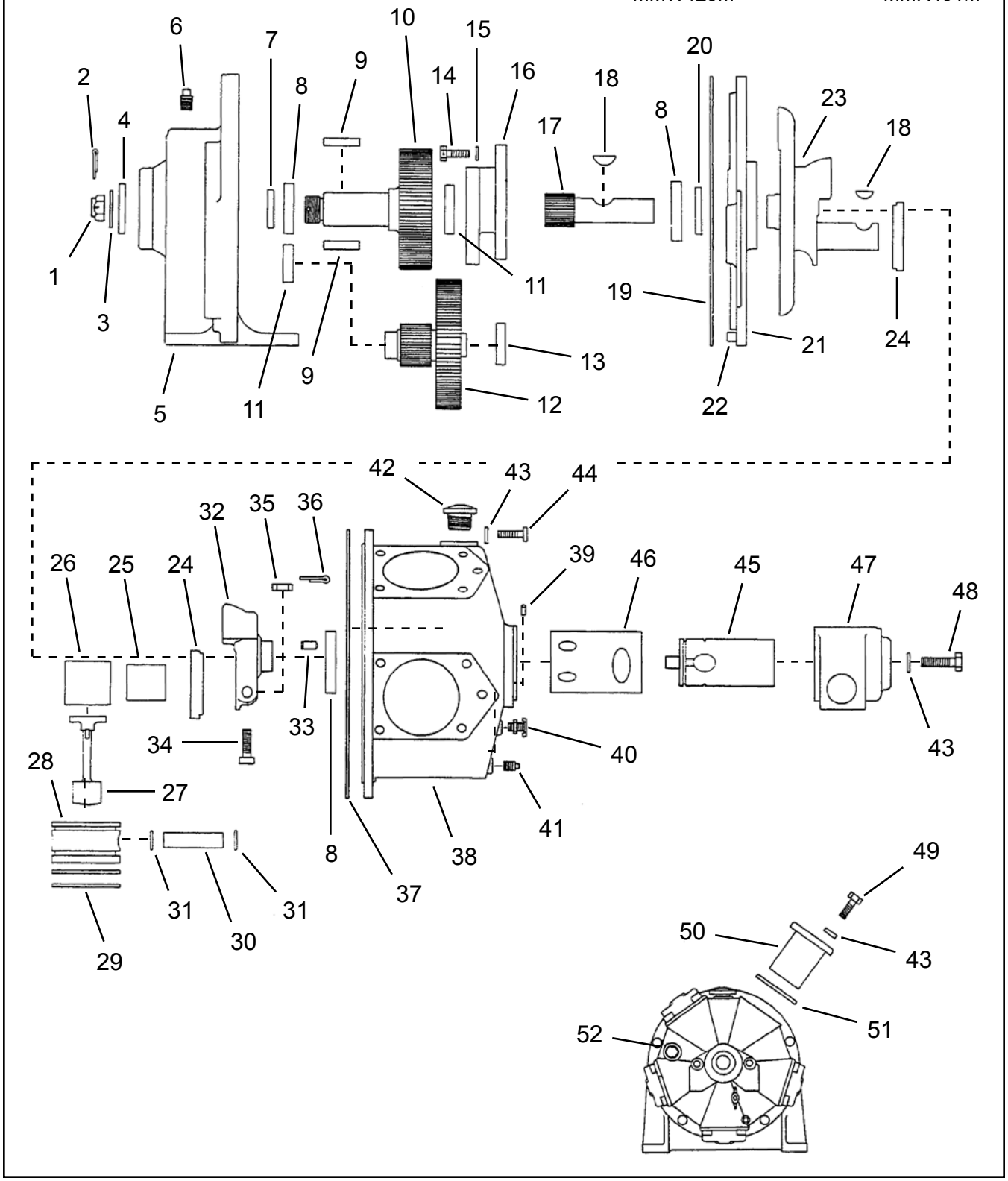
Ref.	Description	#	MMR399M MMW422M	#	MMS400M MMR401M MMW423M
--	Gear Ratio		14.2:1		5.2:1
--	Valving		Note 1		Note 1
10	Gear and Shaft	1	MKG50S	1	MKG51S
12	Gear and Pinion	1	MK38A	1	MKG38
17	Pinion Gear	1	MK37	1	MKG37

Note 1: MMW = no valving, MMS = Single Direction, MMR = Reversible

10.2.2 MM Series Geared Power Motor

Models

MMW422M	MMS400M	MMR399M
MMW423M		MMR401M



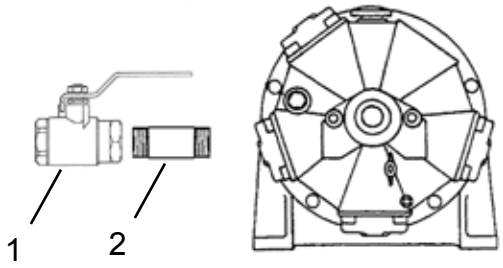
10.2.2 MM Series Geared Power Motor (continued)

Ref	Number	#	X	EN Description
37	MK19	1	3	Motor Case Gasket
38	MM18	1		Motor Case (includes Ref. 39)
39	DP114	1		Motor Case Pin
40	90C12	2	4	Drain Cock
41	64AA5	1		Pipe Plug
42	542139	1	2	Low Profile Breather Cap
43	95G24	27	27	Flat Washer
44	B154M	5	5	Motor Case Screw
45	MM13	1		Distributing Valve
46	200MAM502	1		Distributing Valve Bushing
47	533799	1		Valve Chest
48	75A167	2	2	Valve Chest Screw
49	75A20	20	20	Cylinder Screw
50	MM22	5		Cylinder
51	MM23	5	15	Cylinder Gasket
52	64A5	1		Pipe Plug

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

10.3 Single Direction Valving

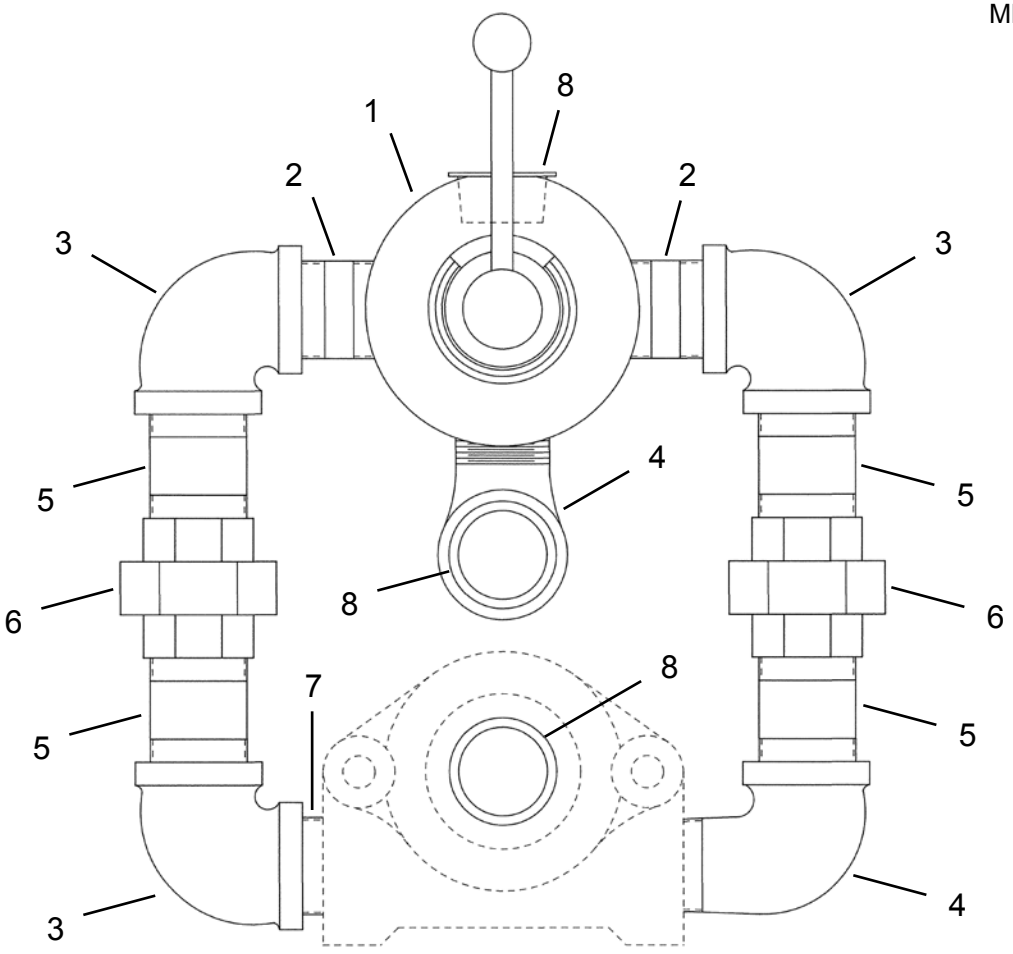
Models
MMS396M
MMS400M



MM Motor

10.4 Reversible Valving

Models
MMR397M
MMR399M
MMR401M



Valve Chest

10.3 Single Direction Valving

Ref	Number	#	X	EN Description
1	90A39	1		Air Control Valve
2	63J11	1		Pipe Nipple (1-1/4" NPT x 3" Long)

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

10.4 Reversible Valving

Ref	Number	#	X	EN Description
1	539527	1		4-Way Air Control Valve
2	63J16	2		Pipe Nipple (1-1/4" NPT x 2-1/2" Long)
3	818451	3		90° Elbow (1-1/4" NPT)
4	64D7	2		90° Street Elbow (1-1/4" NPT)
5	63J11	4		Pipe Nipple (1-1/4" NPT x 3" Long)
6	64Z5	2		Union (1-1/4" NPT)
7	63J15	1		Pipe Nipple (1-1/4" NPT x 1-5/8" Long)
8	532320	3		Plastic Plug Cap

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

11 Technical data

11.1 MM 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
Single Direction Valving													
MMS396M	1070	2100	138	187	82	111	210	95.3	348	9.86	----	2500	1134
MMS400M	206	400	715	970	424	575	226	102.5	336	9.52	5.2:1	2800	1270
Reversible Valving													
MMR397M	1010	2100	138	187	82	111	214	97.1	352	9.97	----	2500	1134
MMR401M	194	400	715	970	424	575	231	104.8	332	9.40	5.2:1	2800	1270
MMR399M	71	150	1952	2647	1157	1569	231	104.8	345	9.77	14.2:1	2800	1270
without Valving													
MMW421M	1010	2100	138	187	82	111	214	97.1	352	9.97	----	2500	1134
MMW423M	194	400	715	970	424	575	231	104.8	332	940	5.2:1	2800	1270
MMW422M	71	150	1952	2647	1157	1569	231	104.8	345	9.77	14.2:1	2800	1270

* Note: All models assume overhung load located at 1.000" (25.40mm) from the face of the motor.
**Note: These motors must be operated with sufficient load to prevent speed from exceeding maximum allowable speed.

12 Service

12.1 Replacement parts

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
Platànfa u.2
9027 Györ
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
Apex Tool Group México
S. **de R.L. de C.V.**
Vialidad El Pueblito #103
Parque Industrial Querétaro
Querétaro, QRO 76220
Mexico
Tel: +52 (442) 211-3800
Fax: +52 (442) 103-0443

Apex Tool Group, LLC
1000 Lufkin Road
Apex, NC 27539
Phone: 919-387-0099
Fax: 919-387-2614
www.apextoolgroup.com

Cleco®

PL70-1052EN/Printed in USA 07/2013/