

Instruction Manual
PL71-250EN
10/07/2014

OMEGA TECHNOLOGIES

Cleco®

C3 Series
Rotary Vane Power Motors



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<https://dotcotool.com/product-category/cleco-tools/cleco-air-motors/cleco-c3n-series-rotary-vane-air-motors/>

Cleco®

Product Specifications

PL71-250EN

10/07/2014

C3 Series Rotary Vane Power Motors

Model Number	RPM		Stall Torque		Weight		Air Consumption		Air Inlet	Gear Ratio	Maximum Overhung Load @ Stall *	
	at Max. hp	Free Speed	ft. lbs.	Nm	lbs.	kg	cfm	m3/min	NPT		lbs.	kg
Non-Reversible Models												
C3N041M	7500	15000	1.5	2.0	4.00	1.8	28	0.79	1/4"	----	470	213
C3N045M	1400	2800	5.5	7.5	4.00	1.8	28	0.79	1/4"	5:1	470	213
C3N054M	1000	2000	7.0	9.5	4.00	1.8	28	0.79	1/4"	6.6:1	470	213
C3N055M	600	1200	12.5	17.0	4.50	2.0	28	0.79	1/4"	12.56:1	470	213
C3N051M	400	800	17.5	24.0	4.50	2.0	28	0.79	1/4"	17.74:1	470	213
C3N044M	300	600	22.0	30.0	4.50	2.0	28	0.79	1/4"	23.47:1	470	213
C3N043M	200	400	30.5	42.0	4.50	2.0	28	0.79	1/4"	33:1	470	213
Reversible Models												
C3R048M	1400	2800	4.0	5.4	4.13	1.9	28	0.79	1/4"	3.55:1	470	213
C3R050M	700	1400	6.5	8.8	4.13	1.9	28	0.79	1/4"	6.6:1	470	213
C3R047M	400	800	11.5	15.6	4.63	2.1	28	0.79	1/4"	12.56:1	470	213
C3R046M	300	600	17.0	23.0	4.63	2.1	28	0.79	1/4"	17.74:1	470	213
C3R040M	200	400	20.0	27.0	4.63	2.1	28	0.79	1/4"	23.47:1	470	213
C3R039M	150	300	28.0	38.0	4.63	2.1	28	0.79	1/4"	33:1	470	213

* Note: All models assume overhung load located at 0.94" (23.81mm)

The original language of this manual is English.

Product Safety Information:

Intended Use:

This pneumatic motor is to be used exclusively as a power source to be integrated into an application.

For additional product safety information refer to Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG document CE-2005, General Safety Instructions for Air Motors.



The motor must not be modified in any manner unless approved in writing by Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG. All safety devices must be properly installed and maintained in good working order.

Declaration of Incorporation:

We affirm that this machine complies with the basic requirements of the following directives (2006/42/EC) and is intended for installation / assembly in a / with other machine(s). Commissioning of the incomplete machine is prohibited until such time that the incomplete machine has been incorporated in a machine that complies with the EC Machinery Directive 2006/42/EC and for which there is an EC Declaration of Conformity in accordance with Appendix II A. We furthermore declare that the special technical documentation for the incomplete machine is in accordance with Appendix VII Part B. We undertake to have it passed on to the market surveillance body upon request by our representative for the compilation of technical documentation. The following Sections of Appendix I of Directive 2006/42/EC have been fulfilled: 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.5. Applied harmonized standards are ISO 12100-1: 2004-04, ISO 12100-2:2004-04.

The name, job function and address of the person authorized to compile the technical file.

Mr. Vishnu Irigireddy
Director of Global R&D- Mechanical Engineering
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072

I. V. Vishnu Varadhan

Signature: Vishnu Irigireddy
Date: October 06, 2014

Air Line Lubrication:

Use Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG's lightweight air tool oil 500021 (available in quantities shown in the following chart) or an SAE-5 lightweight spindle oil.

Part No.	Packaged	Designation
540397	1 Quart (0.94 liter)	Airlube 10W/NR-420LB DR
533485	1 US Gallon (3.78 liter)	Airlube 10W/NR-420LB DR

Recommended Grease:

Part No.	Packaged	Designation
540395	2 oz. (0.06 kg)	Teflon Grease
513156	16 oz. (0.45 kg)	Teflon Grease

Air Supply Line:

Parameter	Description
Air Hose	Minimum inside diameter: 1/4" (6.35mm) Maximum length: 8.0' (2.5 m)
Working pressure range	Performance rated at: 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.

Service and Repair:

Tool service and repair should be performed by an authorized Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG Service Center. Refer to the last page of this manual for locations.

Disposal:



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

Copyright Protection:

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Repair instructions

Lubrication

“DO NOT SUBSTITUTE LUBRICANTS”

The proper grades of oil and grease are essential to the efficient operation of these air motors. Heavy oil will not flow through a lubricator at a satisfactory rate to insure proper lubrication to the motor. Greases that are too stiff will channel and fail to lubricate properly and greases that are too thin will blow out of the motor. Improper lubrication or inadequate lubricants can cause extensive motor damage.

Whenever the tool is disassembled, pack the gearing with approximately 1/4 ounce of Teflon grease.



Excessive grease in the motor housing will cause a loss in motor performance. Not enough grease will cause premature motor failure.

Disassembly of Power Motor

Always clamp on the flats of the housing when securing the motor in a smooth jawed vise.

Using an Allen wrench, remove the set screw and lead shot from the mounting flange.

Secure the lock sleeve with a strap wrench and remove the mounting flange (left hand thread).

When separating the motor housing from the remote head assembly the end of 23747 key must be lifted using a pointed object. The key will feed from the slot as the motor housing is unthreaded from the remote head assembly.

Parts Inspection and Replacement

Clean all parts, except bearings, o-rings and rotor blades, in a solvent and blow dry. Clean the air strainer(s) thoroughly.

Replace any motor parts showing excessive wear or scoring. Minor scoring in the cylinder and on the end plates can be removed by honing or resurfacing the parts. Check the condition and length of the rotor blades. The blade length should be .002" to .007" shorter than the cylinder and must fit freely into the rotor slots.

Carefully inspect the gearing components for excessive wear or broken teeth. The internal ring gear of the gear case(s) will normally outlive several sets of planetary gears. However, the gear case(s) must be replaced if other than normal wear is apparent; broken teeth, etc.

If gear replacement is necessary, it is recommended that the planetary gear set and any mating gears be replaced at the same time. The wear pattern on a gear not replaced will repeat on mating gears.

Replace worn or damaged parts using only Cleco brand replacement parts available from Apex Tool Group, LLC.

Assembly of Power Motor

Reassemble all parts in reverse order of disassembly.

Use care when placing the motor sub-assembly into the housing. When properly assembled, the lower end plate will be approximately 1/32" below the shoulder on the inside of the housing.

Reversible Models: Make certain the cylinder pin is inserted into the small locating hole in the remote head assembly.

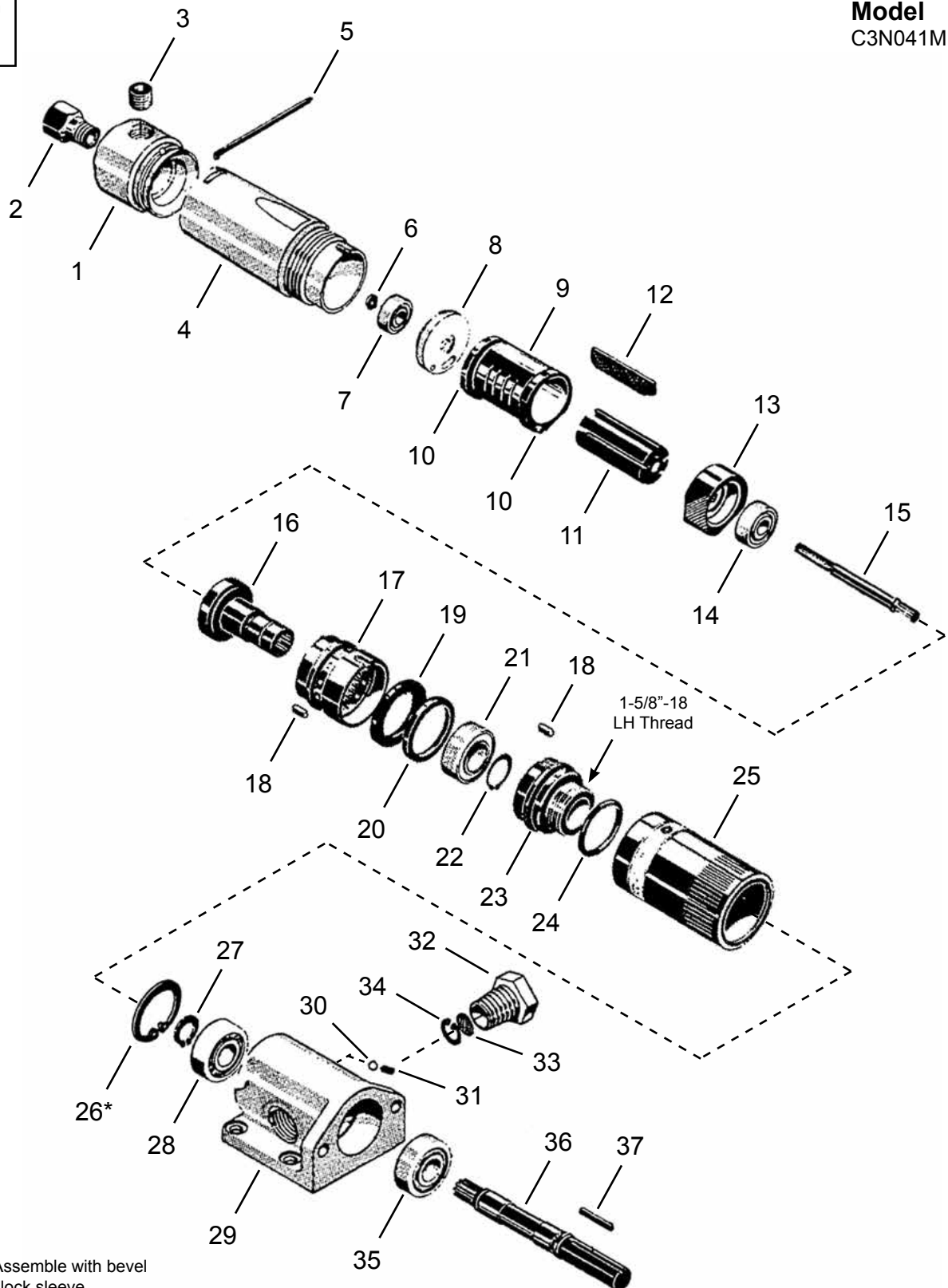
To assemble the housing to the remote head, insert the hooked end of the 23747 soft iron key through the slot in the housing and into the mating hole in the remote head. The key will wind around the groove as the housing is threaded onto the remote head.

Thread the lock sleeve onto the housing. Squirt two(2) or three(3) drops of air tool oil into the air strainer and attach the air supply line. While running the motor, tighten the lock sleeve to approximately 30 ft. lbs. of torque or until the motor reaches maximum pitch (excessive torque is not required).

Thread the mounting flange assembly onto the motor housing assembly. Tighten the mounting flange to approximately 65 ft. lbs. of torque.

Insert the lead shot into the hole in the side of the mounting flange tighten the set screw until the lead shot deforms in the threads of the motor housing.

"A"



* Note: Assemble with bevel
towards lock sleeve

Cleco®
Non-Reversible - Direct Drive

PL71-250EN
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Illustration "A": C3 Non-Reversible Direct Drive

Ref	Number	#	X	EN
				Description
1	A30265	1		Remote Head Assembly (includes Ref. 2-3)
2	A31116	1	2	Air Strainer
3	F551	1		Plug
4	30247PT	1		Motor Housing
5	23747	1	2	Soft Iron Key
6	800249	1	3	Retaining Ring
7	19592	1	2	Ball Bearing
8	517365	1		Upper End Plate
9	517943	1		Cylinder (includes Ref. 10)
10	E101D	2	4	Cylinder Pin
11	23734	1		Rotor
12	10111	5	10	Rotor Blade
13	30246	1		Lower End Plate
14	1010770	1	2	Ball Bearing
15	30255	1		Long Spindle Gear
16	501091	1		Direct Drive Spindle
17	30225PT	1		Gear Case
18	60887	2	6	Key
19	503843	1		Spacer
20	30244PT	1		Spacer
21	503825	1	2	Ball Bearing
22	800148	1	2	Retaining Ring
23	30260	1		Cap
24	512563	1	3	O-Ring
25	501867	1		Lock Sleeve
--	518302	1		Spindle Housing Assembly (includes Ref. 26-37)
26	512177	1	1	Retaining Ring
27	800248	1	2	Retaining Ring
28	40G155	1	2	Ball Bearing
29	519148	1		Mounting Flange
30	L101A	1	3	Lead Shot
31	B102A	1	3	Set Screw
32	519203	2		Muffler (includes Ref. 33-34)
33	519204	2	4	Muffler Disc
34	800072	2	4	Retaining Ring
35	27463PT	1	2	Ball Bearing
36	30261	1		Output Spindle
37	29887PT	1	3	Key

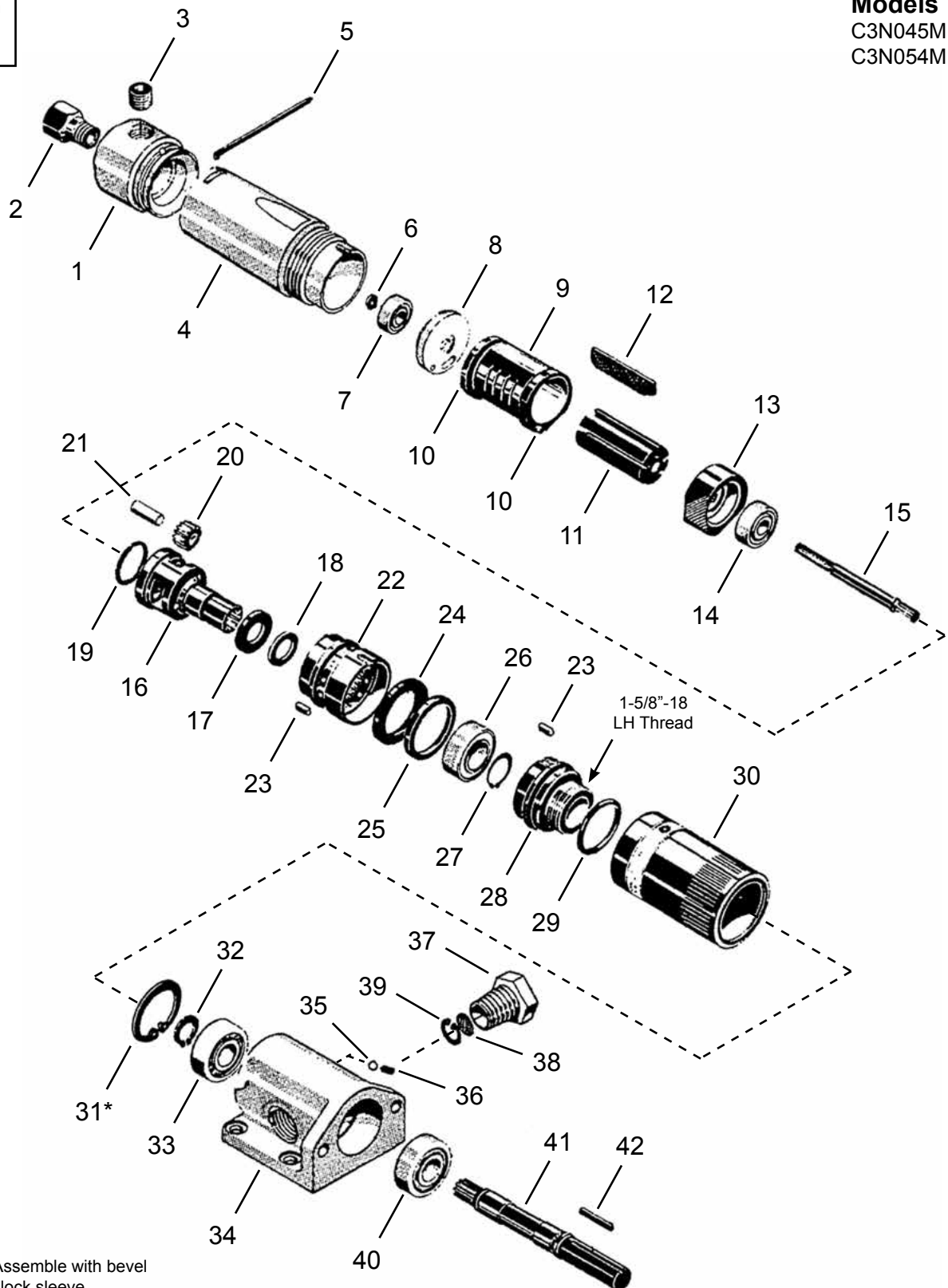
(#) Quantity

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

Cleco®
Non-Reversible - Single Geared

"B"

Models
C3N045M
C3N054M



* Note: Assemble with bevel
towards lock sleeve

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Non-Reversible - Single Geared

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Illustration "B": C3 Non-Reversible Single Geared

Ref	Number	#	X	EN
				Description
1	A30265	1		Remote Head Assembly (includes Ref. 2-3)
2	A31116	1	2	Air Strainer
3	F551	1		Plug
4	30247PT	1		Motor Housing
5	23747	1	2	Soft Iron Key
6	800249	1	3	Retaining Ring
7	19592	1	2	Ball Bearing
8	517365	1		Upper End Plate
9	517943	1		Cylinder (includes Ref. 10)
10	E101D	2	4	Cylinder Pin
11	23734	1		Rotor
12	10111	5	10	Rotor Blade
13	30246	1		Lower End Plate
14	1010770	1	2	Ball Bearing
15	Table "B"	1		Long Spindle Gear
16	Table "B"	1		Gear Cage (includes Ref. 17-18)
17	531244	1		Washer
18	800148	1	1	Retaining Ring
19	800116	1	1	Retaining Ring
20	Table "B"	3	6	Planetary Gear
21	23756	3	6	Planetary Gear Pin
22	30225PT	1		Gear Case
23	60887	2	6	Key
24	503843	1		Spacer
25	30244PT	1		Spacer
26	503825	1	2	Ball Bearing
27	800148	1	2	Retaining Ring
28	30260	1		Cap
29	512563	1	3	O-Ring
30	501867	1		Lock Sleeve
--	518302	1		Spindle Housing Assembly (includes Ref. 31-42)
31	512177	1	1	Retaining Ring
32	800248	1	2	Retaining Ring
33	40G155	1	2	Ball Bearing
34	519148	1		Mounting Flange
35	L101A	1	3	Lead Shot
36	B102A	1	3	Set Screw
37	519203	2		Muffler (includes Ref. 38-39)
38	519204	2	4	Muffler Disc
39	800072	2	4	Retaining Ring
40	27463PT	1	2	Ball Bearing
41	30261	1		Output Spindle
42	29887PT	1	3	Key

(#) Quantity

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

Table "B"

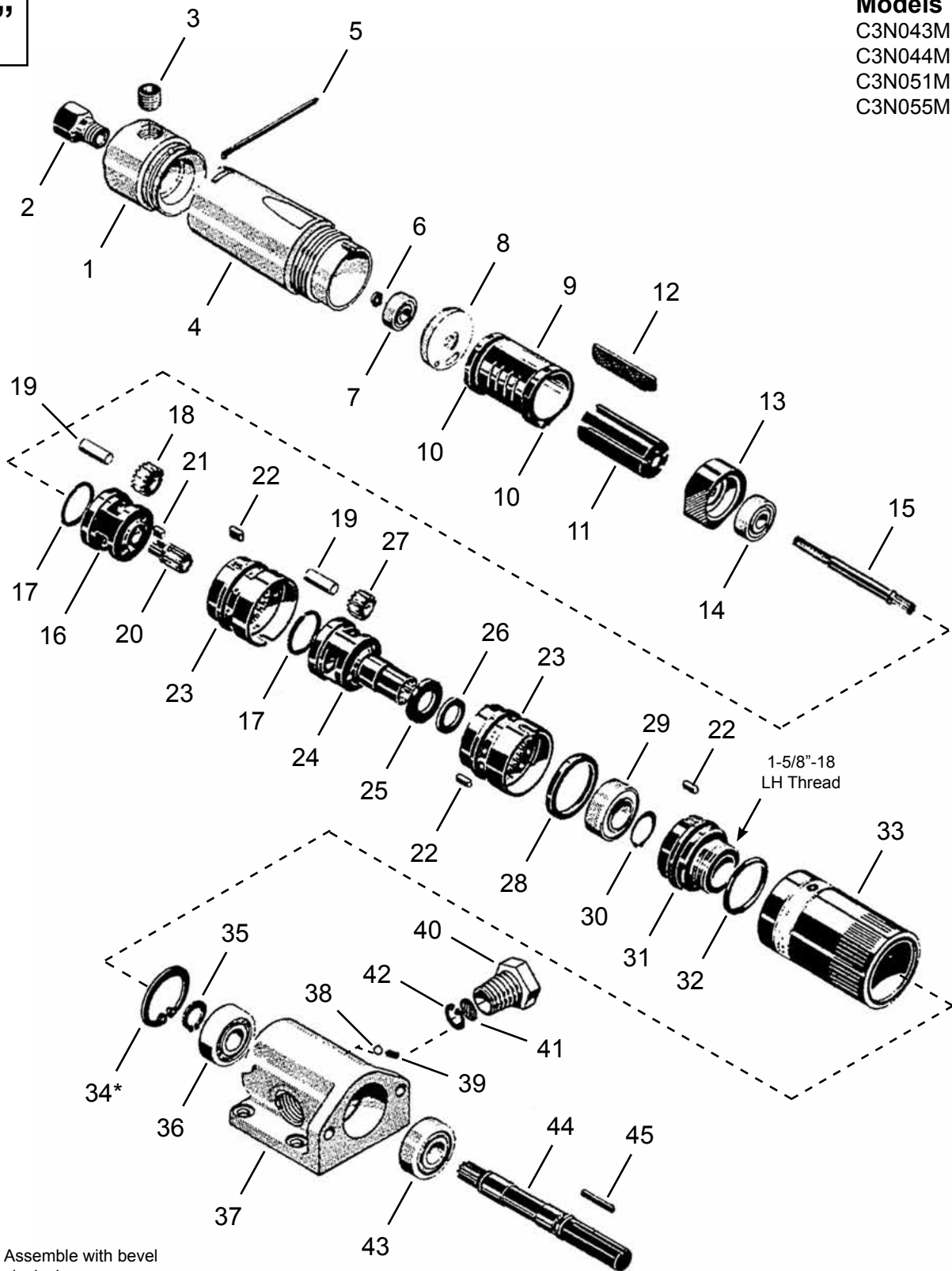
Ref.	Description	#	C3N054M	#	C3N045M
--	Free Speed (RPM)		2,000		2,800
15	Long Spindle Gear	1	30376PT	1	30256
16	Gear Cage	1	505976	1	505977
20	Planetary Gear	3	501115 (23T)	3	501114 (21T)

(T) Teeth

Cleco®
Non-Reversible - Double Geared

"C"

Models
C3N043M
C3N044M
C3N051M
C3N055M



* Note: Assemble with bevel
towards lock sleeve

Cleco®

Non-Reversible - Double Geared

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Illustration "C": C3 Non-Reversible Double Geared

Ref	Number	#	X	EN
				Description
1	A30265	1		Remote Head Assembly (includes Ref. 2-3)
2	A31116	1	2	Air Strainer
3	F551	1		Plug
4	30247PT	1		Motor Housing
5	23747	1	2	Soft Iron Key
6	800249	1	3	Retaining Ring
7	19592	1	2	Ball Bearing
8	517365	1		Upper End Plate
9	517943	1		Cylinder (includes Ref. 10)
10	E101D	2	4	Cylinder Pin
11	23734	1		Rotor
12	10111	5	10	Rotor Blade
13	30246	1		Lower End Plate
14	1010770	1	2	Ball Bearing
15	Table "C"	1		Long Spindle Gear
16	Table "C"	1		Upper Gear Cage
17	800116	2	2	Retaining Ring
18	Table "C"	2	4	Upper Planetary Gear
19	23756	5	10	Planetary Gear Pin
20	Table "C"	1	2	Short Spindle Gear
21	O73	1	3	Key
22	60887	3	9	Key
23	30225PT	2		Gear Case
24	Table "C"	1		Lower Gear Cage (includes Ref. 25-26)
25	531244	1		Washer
26	800148	1	1	Retaining Ring
27	Table "C"	3	6	Lower Planetary Gear
28	30244PT	1		Spacer
29	503825	1	2	Ball Bearing
30	800148	1	2	Retaining Ring
31	30260	1		Cap
32	512563	1	3	O-Ring
33	518450	1		Lock Sleeve
--	518302	1		Spindle Housing Assembly (includes Ref. 34-45)
34	512177	1	1	Retaining Ring
35	800248	1	2	Retaining Ring
36	40G155	1	2	Ball Bearing
37	519148	1		Mounting Flange
38	L101A	1	3	Lead Shot
39	B102A	1	3	Set Screw
40	519203	2		Muffler (includes Ref. 41-42)
41	519204	2	4	Muffler Disc
42	800072	2	4	Retaining Ring
43	27463PT	1	2	Ball Bearing
44	30261	1		Output Spindle
45	29887PT	1	3	Key

(#) Quantity

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

Table "C"

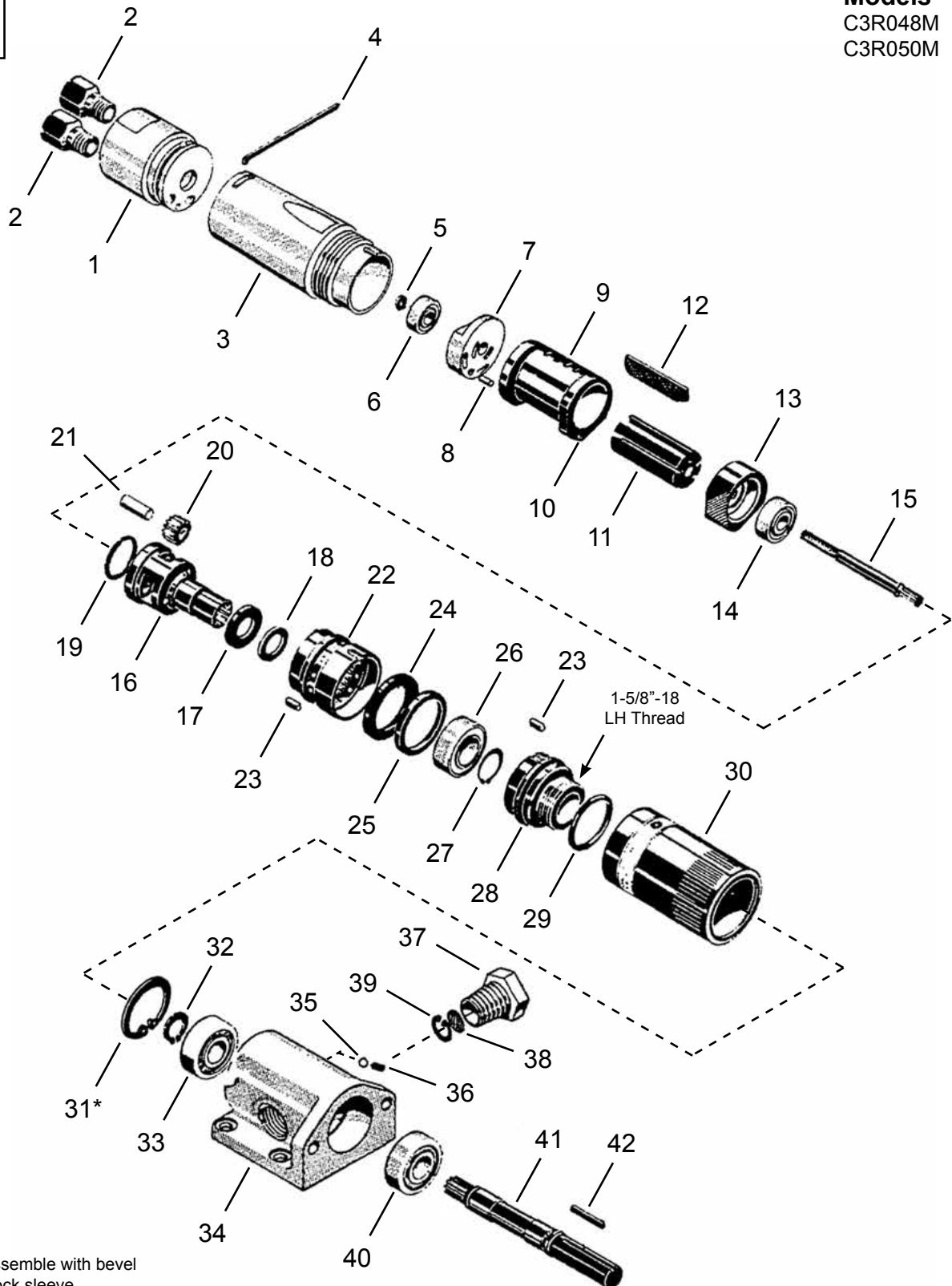
Ref.	Description	#	C3N043M	#	C3N044M	#	C3N051M	#	C3N055M
--	Free Speed (RPM)		400		600		800		1,200
15	Long Spindle Gear	1	30376PT	1	30376PT	1	30256	1	30255
16	Upper Gear Cage	1	A30249PT	1	A30249PT	1	A30250PT	1	A30248
18	Upper Planetary Gear	2	501115 (23T)	2	501115 (23T)	2	501114 (21T)	2	501116 (17)
20	Short Spindle Gear	1	501118	1	501117	1	501117	1	501117
24	Lower Gear Cage	1	505977	1	505975	1	505975	1	505975
27	Lower Planetary Gear	3	501114 (21T)	3	501116 (17)	3	501116 (17)	3	501116 (17)

(T) Teeth

Cleco®
Reversible - Single Geared

"D"

Models
C3R048M
C3R050M



* Note: Assemble with bevel
towards lock sleeve

Cleco®

Reversible - Single Geared

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Illustration "D": C3 Reversible Single Geared

Ref	Number	#	X	EN
				Description
1	A30264	1		Remote Head Assembly (includes Ref. 2)
2	A31116	2	4	Air Strainer
3	30235PT	1		Motor Housing
4	23747	1	2	Soft Iron Key
5	800249	1	3	Retaining Ring
6	19592	1	2	Ball Bearing
7	A30232	1		Upper End Plate (includes Ref. 8)
8	RP101M	1	2	Upper End Plate Pin
9	A30228	1		Cylinder (includes Ref. 10)
10	E101D	1	2	Cylinder Pin
11	23734	1		Rotor
12	10111	5	10	Rotor Blade
13	30246	1		Lower End Plate
14	1010770	1	2	Ball Bearing
15	Table "D"	1		Long Spindle Gear
16	Table "D"	1		Gear Cage (includes Ref. 17-18)
17	531244	1		Washer
18	800148	1	1	Retaining Ring
19	800116	1	1	Retaining Ring
20	Table "D"	3	6	Planetary Gear
21	23756	3	6	Planetary Gear Pin
22	30225PT	1		Gear Case
23	60887	2	6	Key
24	503843	1		Spacer
25	30244PT	1		Spacer
26	503825	1	2	Ball Bearing
27	800148	1	2	Retaining Ring
28	30260	1		Cap
29	512563	1	3	O-Ring
30	501867	1		Lock Sleeve
--	518302	1		Spindle Housing Assembly (includes Ref. 31-42)
31	512177	1	1	Retaining Ring
32	800248	1	2	Retaining Ring
33	40G155	1	2	Ball Bearing
34	519148	1		Mounting Flange
35	L101A	1	3	Lead Shot
36	B102A	1	3	Set Screw
37	519203	2		Muffler (includes Ref. 38-39)
38	519204	2	4	Muffler Disc
39	800072	2	4	Retaining Ring
40	27463PT	1	2	Ball Bearing
41	30261	1		Output Spindle
42	29887PT	1	3	Key

(#) Quantity

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

Table "D"

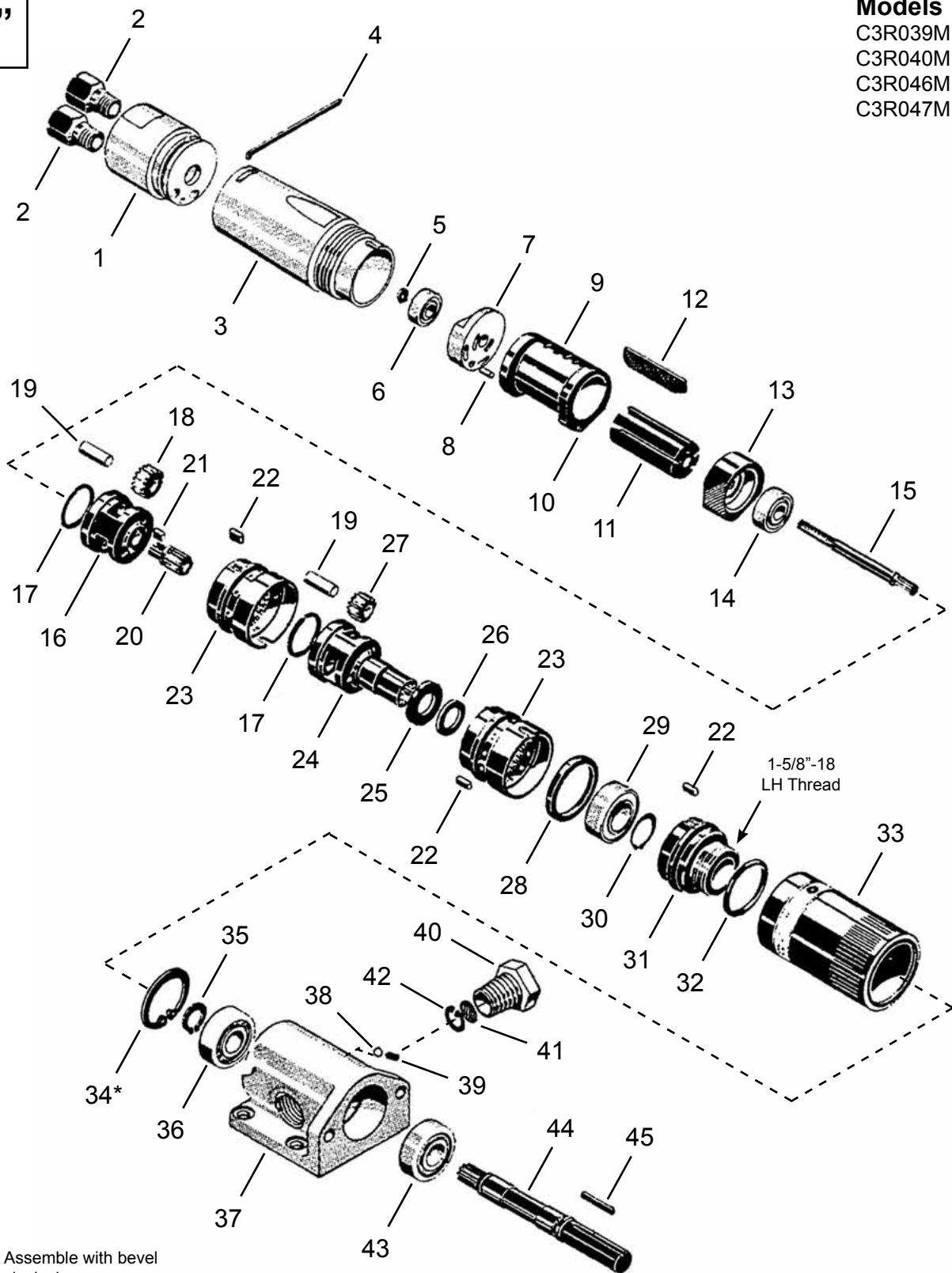
Ref.	Description	#	C3R050M	#	C3R048M
--	Free Speed (RPM)		1,400		2,800
15	Long Spindle Gear	1	30376PT	1	30255
16	Gear Cage	1	505976	1	502975
20	Planetary Gear	3	501115 (23T)	3	501116 (17T)

(T) Teeth

Cleco®
Reversible - Double Geared

"E"

Models
C3R039M
C3R040M
C3R046M
C3R047M



* Note: Assemble with bevel
towards lock sleeve

Cleco®

Reversible - Double Geared

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Illustration "E": C3 Reversible Double Geared

Ref	Number	#	X	EN
				Description
1	A30264	1		Remote Head Assembly (includes Ref. 2)
2	A31116	2	4	Air Strainer
3	30235PT	1		Motor Housing
4	23747	1	2	Soft Iron Key
5	800249	1	3	Retaining Ring
6	19592	1	2	Ball Bearing
7	A30232	1		Upper End Plate (includes Ref. 8)
8	RP101M	1	2	Upper End Plate Pin
9	A30226	1		Cylinder (includes Ref. 10)
10	E101D	1	2	Cylinder Pin
11	23734	1		Rotor
12	10111	5	10	Rotor Blade
13	30246	1		Lower End Plate
14	1010770	1	2	Ball Bearing
15	Table "E"	1		Long Spindle Gear
16	Table "E"	1		Upper Gear Cage
17	800116	2	2	Retaining Ring
18	Table "E"	2	4	Upper Planetary Gear
19	23756	5	10	Planetary Gear Pin
20	Table "E"	1	2	Short Spindle Gear
21	O73	1	3	Key
22	60887	3	9	Key
23	30225PT	2		Gear Case
24	Table "E"	1		Lower Gear Cage (includes Ref. 25-26)
25	531244	1		Washer
26	800148	1	1	Retaining Ring
27	Table "E"	3	6	Lower Planetary Gear
28	30244PT	1		Spacer
29	503825	1	2	Ball Bearing
30	800148	1	2	Retaining Ring
31	30260	1		Cap
32	512563	1	3	O-Ring
33	518450	1		Lock Sleeve
--	518302	1		Spindle Housing Assembly (includes Ref. 34-45)
34	512177	1	1	Retaining Ring
35	800248	1	2	Retaining Ring
36	40G155	1	2	Ball Bearing
37	519148	1		Mounting Flange
38	L101A	1	3	Lead Shot
39	B102A	1	3	Set Screw
40	519203	2		Muffler (includes Ref. 41-42)
41	519204	2	4	Muffler Disc
42	800072	2	4	Retaining Ring
43	27463PT	1	2	Ball Bearing
44	30261	1		Output Spindle
45	29887PT	1	3	Key

(#) Quantity

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

Table "E"

Ref.	Description	#	C3R039M	#	C3R040M	#	C3R046M	#	C3R047M
--	Free Speed (RPM)		300		400		600		800
15	Long Spindle Gear	1	30376PT	1	30376PT	1	30256	1	30255
16	Upper Gear Cage	1	A30249PT	1	A30249PT	1	A30250PT	1	A30248
18	Upper Planetary Gear	2	501115 (23T)	2	501115 (23T)	2	501114 (21T)	2	501116 (17)
20	Short Spindle Gear	1	501118	1	501117	1	501117	1	501117
24	Lower Gear Cage	1	505977	1	505975	1	505975	1	505975
27	Lower Planetary Gear	3	501114 (21T)	3	501116 (17)	3	501116 (17)	3	501116 (17)

(T) Teeth

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.

Brazil

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