

Instruction Manual
PL70-1074EN
03/14/2014

Cleco®

A6R-2221
Reversible Axial Piston Power Motor



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Nomenclature

Model Number	Maximum Allowable RPM		Stall Torque		Starting Torque		Weight		Gear Ratio	Maximum Overhung Load @ Stall *	
	@ Max. HP	Free Speed	ft. lbs.	Nm	ft. lbs.	Nm	lbs.	kg		lbs.	kg
A6R-2221	89	170	223	302	163	221	43	19.5	20.3:1	1000	454

* Note: All models assume overhung load located at 2.25" (57.15mm) from the face of the motor.

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 Irigreddy
Director of Global R&D- Mechanical Engineering
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072

Signature: Vishnu Irigreddy
Date: March 10, 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
A123771	16 oz. (0.45 kg)	Shell Alvania® EP 00
540450	16 oz. (0.45 kg)	Chevron Black Pearl® EP NLGI

Air Supply Line:

Parameter	Description
Air Hose	Minimum inside diameter: 3/8" (9.5mm) Maximum length: 16.4' (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 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.

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Repair instructions

Lubrication

“DO NOT SUBSTITUTE LUBRICANTS”

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

Grease fittings are located on the motor housing and the gear housing for each stage of gearing. The following quantities of A123771 (*High Temp 540450*) grease are provided during factory assembly and these same amounts must be provided whenever the air motor is disassembled.

- Motor assembly: 6 oz.
- Gearing assembly (each): 2 oz.

During normal operation, the motor wil loose a small amount of grease through the exhaust making it necessary to add grease at regular intervals. After each 50 hours of operation add 2.0 oz. of A123771 (*High Temp 540450*) grease to the motor housing.



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

Too much grease in the gear case will force the seal out of the front housing.

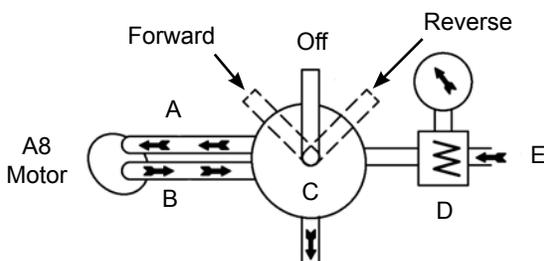
The gear case will lose grease through the motor. The motor will siphon gear grease, saturated with airline oil, through the exhaust. After 200 hours of operation, add 0.5 oz. of A123771 (*High Temp 540450*) grease into each gear housing.

Valving

If a valve is used, it should have a full flow air passage to utilize full powe of the motor. For quick motor stops, an all-ports closed-in-neutral type valve with a spring return should be used.

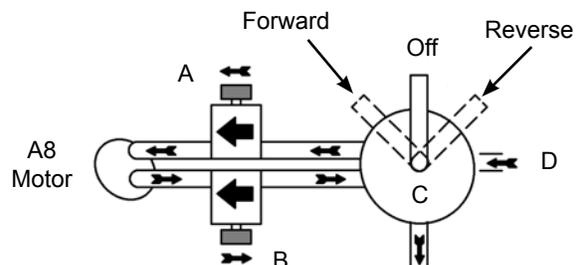
Torque Output Control

- A) When air enters from this side
- B) it must exhaust without restrictions.
- C) Four-Way valve
- D) Pressure regulator
- E) Air supply



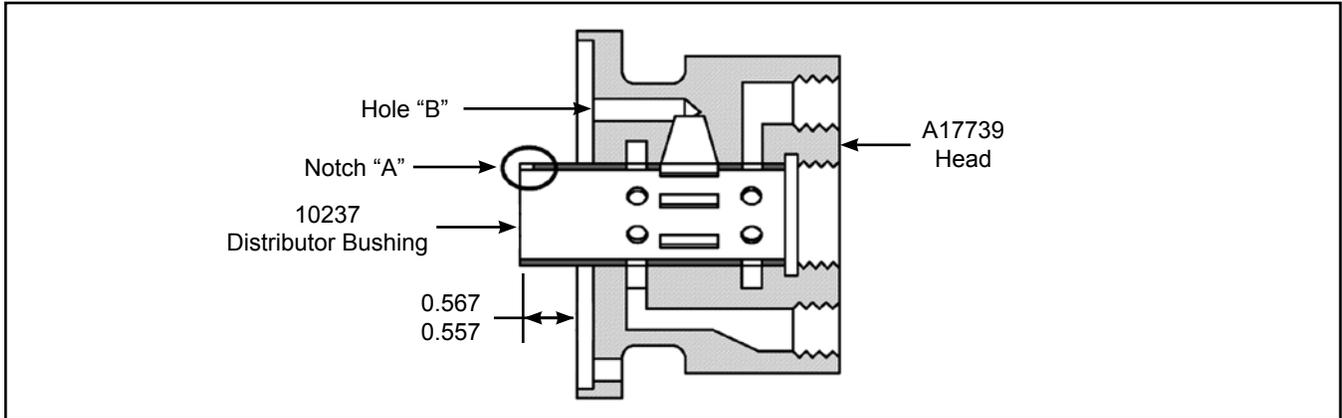
Control Forward and Reverse Speeds

- A) Metered flow control (inlet)
- B) Free (open) flow control (exhaust)
- C) Four-Way valve
- D) Air supply



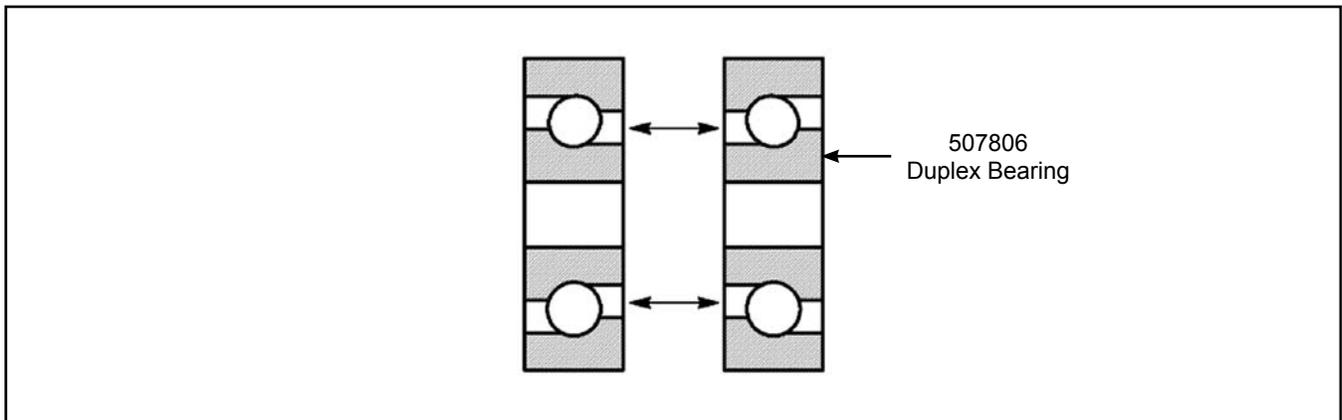
Distributor bushing assembly

Press the new bushing into the head to the dimension shown. Notch "A" in the bushing must align with hole "B" in the head.



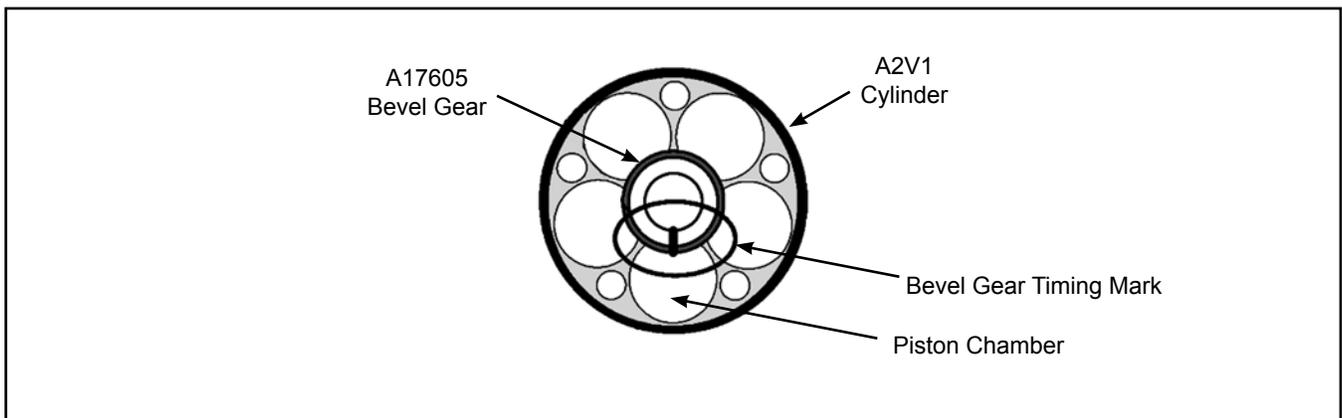
Duplex bearing assembly

The small diameters of the bearings must face each other when assembled.



Bevel gear timing mark

Make sure the timing mark on the bevel gear is aligned with the center of a piston chamber before assembling the driveshaft assembly into the cylinder.



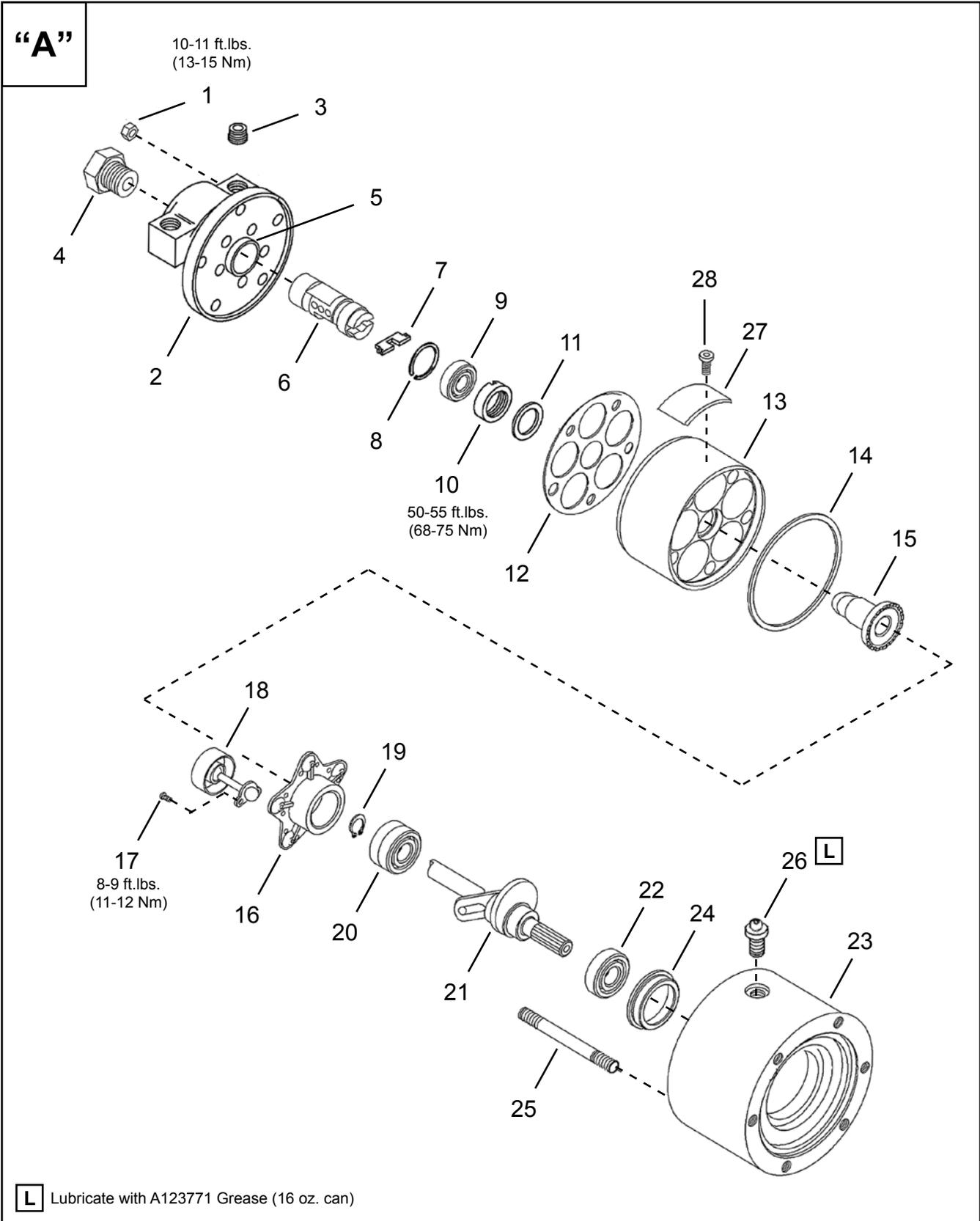


Illustration "A": Power Unit

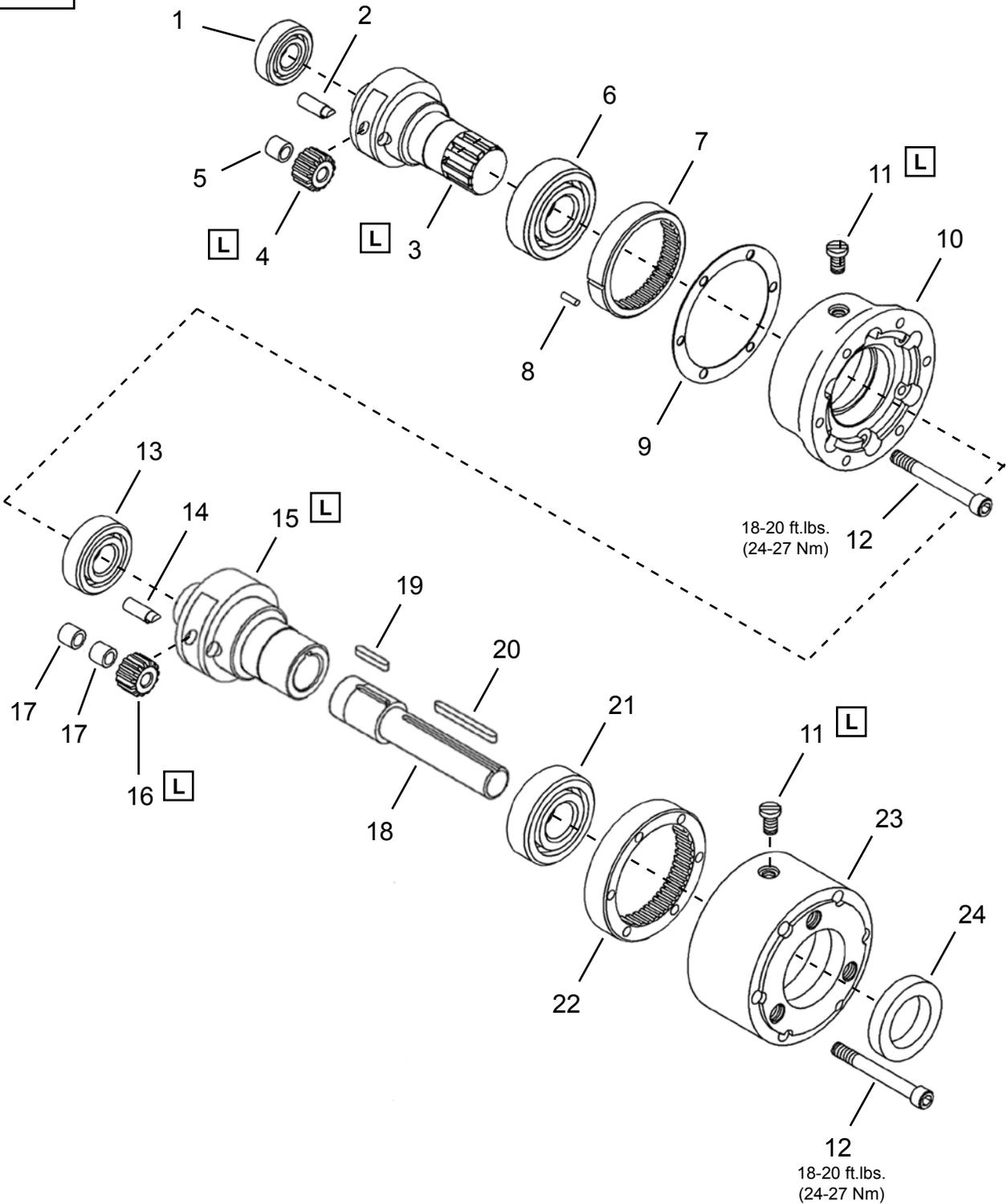
Ref	Number	#	X	EN
				Description
1	C108S	5	10	Head Assembly Nut
2	A17739	1		Head Assembly (includes Ref. 3-5)
3	B112E	2	2	Pipe Plug
4	17748	1	1	Reducer Bushing
5	10237	1	1	Distributor Bushing
6	A10226	1		Distributor (includes Ref. 7-8)
7	2VR43	1	1	Drive Key
8	800090	1	3	Retaining Ring
9	2V85	1	2	Ball Bearing
10	2V169	1		Lock Nut
11	2V272	1		Washer
12	2V1891	1	3	Head Gasket
13	A2V1	1		Cylinder
14	10027	1	3	Cylinder Gasket
15	A17605	1	1	Bevel Gear
--	533944	1		Socket Plate Assembly (includes Ref. 16-18)
16	507692	1		Socket Plate
17	B135Z	10	20	Socket Head Cap Screw (10-24 NC-2 x 1/4)
18	A2V2	5	5	Piston Assembly
19	800251	1	3	Retaining Ring
20	507806	1	2	Duplex Ball Bearing
21	507808	1		Driveshaft
22	22G155	1	2	Ball Bearing
23	A18317	1		Rear Housing (includes Ref. 24-25)
24	18364PT	1	1	Rear Housing Bearing Liner
25	27401PT	5	5	Rear Housing Stud (5/16-24 x 6.188)
26	RG78	1	1	Grease Fitting
27	530322	1		Nameplate
28	534820	2		Drive Screw

(#) Quantity

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

Cleco® Double Stage Gearing

“B”



L Lubricate with A123771 Grease (16 oz. can)

Cleco®
Double Stage Gearing

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Illustration "B": Double Stage Gearing Assembly

Ref	Number	#	X	EN
				Description
1	525424	1	2	Ball Bearing
2	10032	2	4	Planetary Gear Pin
3	30739PT	1		Gear Cage
4	540766PT	2	4	Planetary Gear (19T) (includes Ref. 5)
5	845845	2	4	Planetary Gear Needle Bearing
6	30075	1	2	Ball Bearing
7	10019	1		Ring Gear
8	DP120PT	1	2	Ring Gear Pin
9	10026	1	3	Center Housing Gasket
10	30062PT	1		Center Housing
11	30775PT	2	2	Flush Type Grease Fitting
12	B127D	12	12	Socket Head Cap Screw (5/16-18 x 3)
13	30076PT	1	2	Ball Bearing
14	30058PT	2	4	Planetary Gear Pin
15	30051	1		Gear Cage
16	A30055	2	4	Planetary Gear (16T) (includes Ref. 17)
17	11700	4	8	Planetary Gear Needle Bearing
18	30053PT	1		Output Spindle
19	30071PT	1	3	Gear Cage Key
20	30072PT	1	3	Output Spindle Key
21	30063PT	1	2	Ball Bearing
22	30056PT	1		Ring Gear
23	30049	1		Front Housing
24	30057PT	1	3	Oil Seal

(#) Quantity

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





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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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