

Parts Manual
PL12EN-48EA-F
10/05/2011

OMEGA TECHNOLOGIES

Cleco®

48EA Series
Electronically Controlled Flush Socket Nutrunner



For additional product information visit our website at:

<https://dotcotool.com/product-category/cleco-tools/cleco-corded-electric-nutrunners-cleco-air-tools/cleco-48-series-transducer-control-flush-socket-corded-electric-nutrunners/>

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 “Model Nomenclature” page in this document.

Noise and Vibration:

Refer to documents CE-1002DC and CE-1002TD.

General Description:

Brushless DC electric transducer controlled right angle portable nutrunners.

Intended Use:

These DC electric tools are intended for tightening of threaded joints or running down fasteners. Use only for their designated purpose. Do not use as a hammer, lever or other improper usage that can cause tool damage and operator injury.

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“A”

48**E****A****X****XXX****XX****XX****X****X**Tool Series**48**Motor Style**E** = Brushless Electric MotorTool Type**A** = Right AngleFeature**-** = Matrix Tool Connector (Standard)**E** = Air LB ConnectorMaximum Torque Nm (rounded to nearest Nm)**F2****F3****F4****37** = 37 Nm**53** = 53 Nm**135** = 134 Nm**52** = 52 Nm**75** = 75 Nm**230** = 230 Nm**110** = 110 NmTool Termination**F2** = Flush Socket**F3** = Flush Socket**F4** = Flush SocketDrive Socket**Maximum Hex Size****F2** = MJ**F3** = EJ & MO**F4** = MR**Socket Number****EC** = 3/8"**MD** = 10mm**MI** = 15mm**MO** = 21mm**EE** = 1/2"**ME** = 11mm (7/16")**MJ** = 16mm (5/8")**MP** = 22mm**EF** = 9/16"**MF** = 12mm**MK** = 17mm**MQ** = 23mm**EH** = 11/16"**MG** = 13mm**ML** = 18mm**MR** = 24mm (15/16")**EJ** = 13/16"**MG** = 13mm**MM** = 19mm (3/4")**XX** = No drive socket**EK** = 7/8"**MH** = 24mm**MN** = 20mmExtension**0** = Flush**2** = 1/4" (6mm)**4** = 1/2" (13mm)**6** = 3/4" (19mm)**8** = 1" (25mm)Output Type**0** = Standard**1** = Fast Lead**2** = Magnetic

“B”

m-Pro-400 Series
Controller



TME-200 Series
Controller



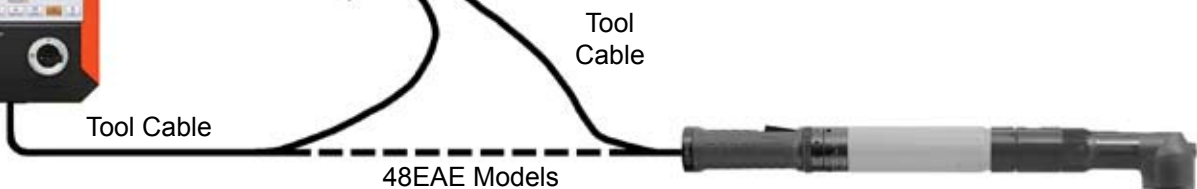
Complete Tool
Order Number
48EA(E)37F2xxxx
48EA(E)52F2xxxx
48EA(E)53F3xxxx
48EA(E)75F3xxxx
48EA(E)110F3xxxx
48EA(E)135F4xxxx
48EA(E)230F4xxxx



m-Pro-400GC
Global Controller



m-Pro-400-IT
Isolation Transformer
(48EA Models)



TME and m-Pro-400 Series Controllers

48EA	48EAE	EN
		Description
115 VAC	Standard	TMEI-114-15-U
115 VAC	DeviceNet	TMEI-114-15-U-ED
115 VAC	ProfiBus	TMEI-114-15-U-EP
TME-200	m-Pro-400	Controller
PL12()-1300	*	Programming Notes
575708	*	Battery
541683-01	*	Power Cord: 115VAC - USA
541683-02	*	Power Cord: 230VAC - USA
541683-03	*	Power Cord: 230VAC - Europe
542779-XXX	301877-XXX	Extension Cable
544056-XXX	301904-XXX	Swivel Cable
544055-XXX	301903-XXX	Swivel Cable - Right Angle
542778-XXX	301866-XXX	Tool Cable

* Note: Contact Apex Tool Group

TME-200 Series Controller

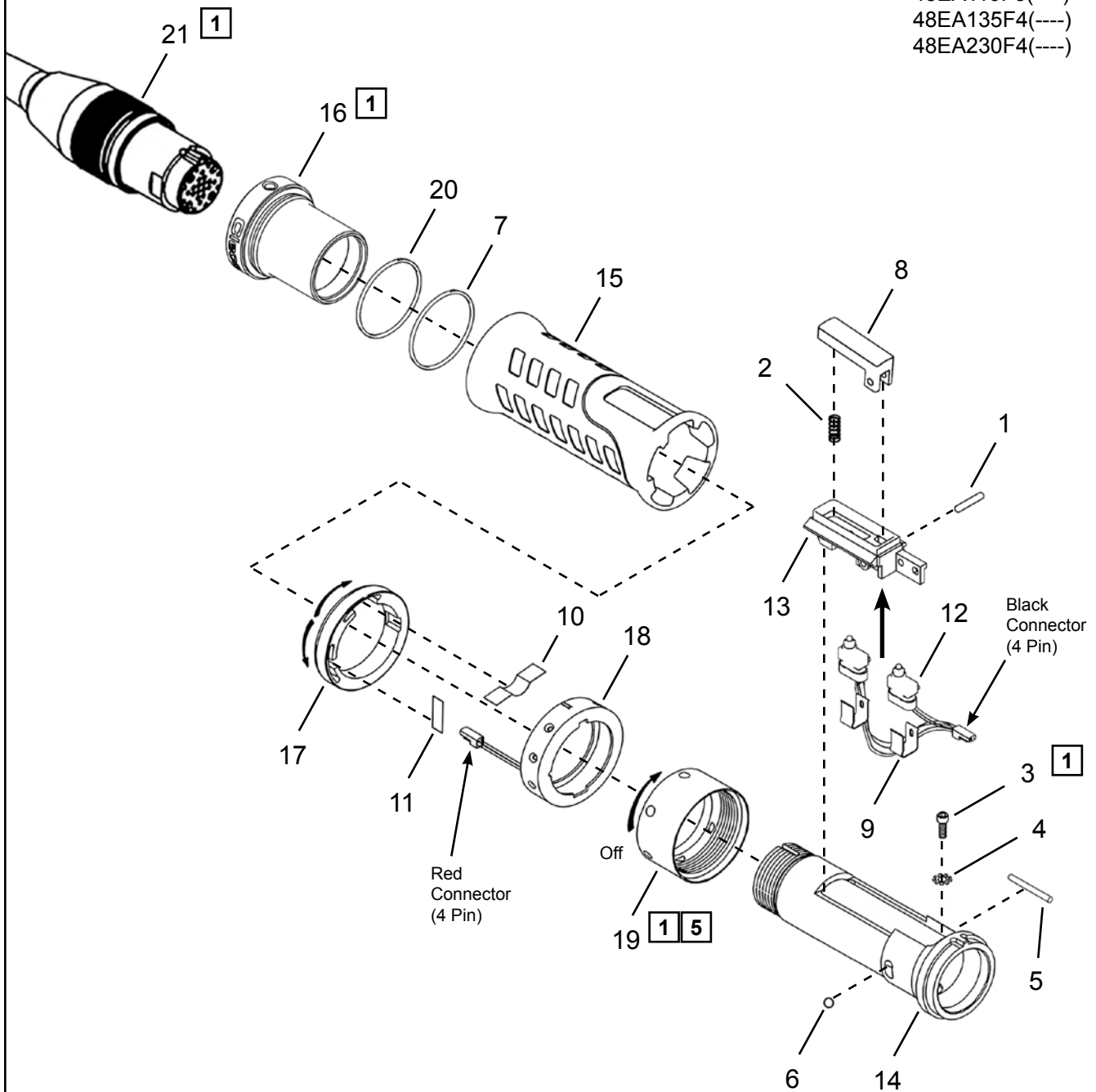
Supply Voltage	EN
	Order Number
115 VAC	TME-211-15-U
115 VAC	TME-221-15-U
230 VAC	TME-211-30-U
230 VAC	TME-221-30-U

Cleco®
Handle - Matrix Tool Connector

“C1”

Models

48EA37F2(----)
48EA52F2(----)
48EA53F3(----)
48EA75F3(----)
48EA110F3(----)
48EA135F4(----)
48EA230F4(----)



Cleco®
Handle - Matrix Tool Connector

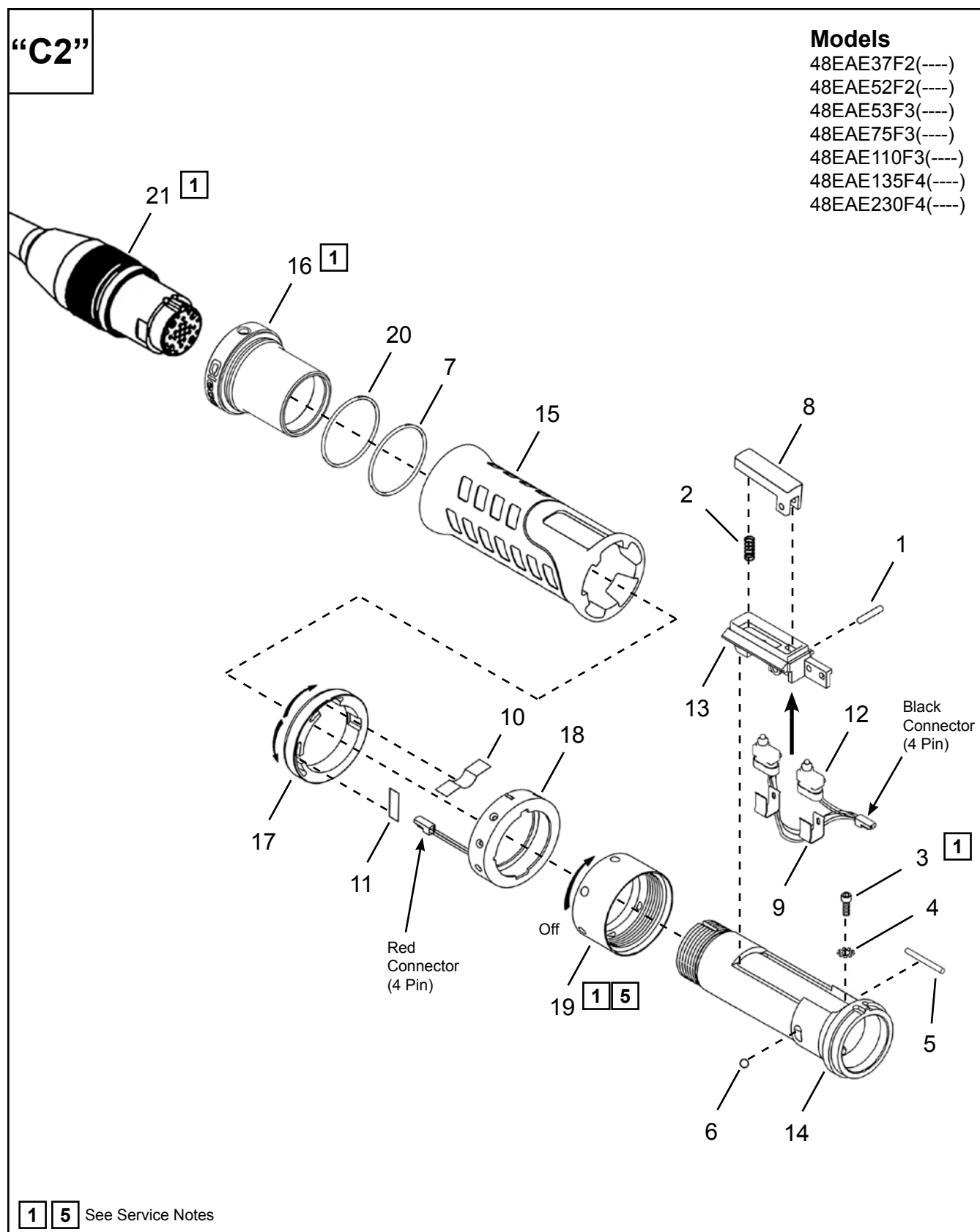
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Illustration "C1"

Ref	Number	#	X	EN
				Description
1	541480	1	3	Switch Pin
2	266255	1	3	Switch Spring
3	B159V	1	3	Cap Screw - #6-32
4	W115	1	3	Lock Washer
5	1009089	1	3	Housing Pin
6	1091PT	1	3	Steel Ball - 3/16"
7	22598	1	3	O-Ring
8	F900185	1		Switch Actuator
9	207317	2	2	Switch Spring Clip
10	541033	1	2	Reverse Spring
11	541624	1	2	Forward/Reverse Spring
12	F900571	1	2	Start/Reverse Switch
13	207316	1		Switch Holder
14	541015	1		Handle
15	207323	1		Handle Sleeve
16	207325	1		Connector Sleeve
17	542938	1		Reverse Ring
18	542819	1		Light Ring Assembly
19	541017	1		Handle Retainer Nut
20	524818	1	3	O-Ring
Tool Cable (Optional Length)				
21	542778-1M	1		1 meter cable
	542778-2M			2 meter cable
	542778-3M			3 meter cable
	542778-6M			6 meter cable
	542778-8M			8 meter cable
	542778-10M			10 meter cable
	542778-15M			15 meter cable
	542778-50M			50 meter cable
Inline Swivel Cable (Optional Length)				
21	544056-1M	1		1 meter cable
	544056-2M			2 meter cable
	544056-3M			3 meter cable
	544056-6M			6 meter cable
	544056-8M			8 meter cable
	544056-10M			10 meter cable
	544056-15M			15 meter cable
Angle Swivel Cable (Optional Length)				
21	544055-1M	1		1 meter cable
	544055-2M			2 meter cable
	544055-3M			3 meter cable
	544055-6M			6 meter cable
	544055-8M			8 meter cable
	544055-10M			10 meter cable
	544055-15M			15 meter cable
Tool Cable Extension (Optional Length)				
21	542779-1M	1		1 meter cable
	542779-2M			2 meter cable
	542779-3M			3 meter cable
	542779-6M			6 meter cable
	542779-10M			10 meter cable
	542779-15M			15 meter cable
	542779-50M			50 meter cable

(#) Quantity

(X) Recommended Spare Parts



Cleco®
Handle - Air LB Tool Connector

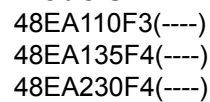
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Illustration "C2"

Ref	Number	#	X	EN
				Description
1	541480	1	3	Switch Pin
2	266255	1	3	Switch Spring
3	B159V	1	3	Cap Screw - #6-32
4	W115	1	3	Lock Washer
5	1009089	1	3	Housing Pin
6	1091PT	1	3	Steel Ball - 3/16"
7	22598	1	3	O-Ring
8	F900185	1		Switch Actuator
9	207317	2	2	Switch Spring Clip
10	541033	1	2	Reverse Spring
11	541624	1	2	Forward/Reverse Spring
12	F900571	1	2	Start/Reverse Switch
13	207316	1		Switch Holder
14	207322	1		Handle
15	207323	1		Handle Sleeve
16	207325E	1		Connector Sleeve
17	542938	1		Reverse Ring
18	542819	1		Light Ring Assembly
19	541017	1		Handle Retainer Nut
20	524818	1	3	O-Ring
Tool Cable (Optional Length)				
21	301866-2M	1		2 meter cable
	301866-3M			3 meter cable
	301866-4M			4 meter cable
	301866-6M			6 meter cable
	301866-8M			8 meter cable
	301866-10M			10 meter cable
	301866-15M			15 meter cable
Inline Swivel Cable (Optional Length)				
21	301904-2M	1		2 meter cable
	301904-3M			3 meter cable
	301904-8M			8 meter cable
	301904-15M			15 meter cable
Angle Swivel Cable (Optional Length)				
21	301903-2M	1		2 meter cable
	301903-3M			3 meter cable
	301903-8M			8 meter cable
	301903-15M			15 meter cable
Tool Cable Extension (Optional Length)				
21	301877-4M	1		4 meter cable
	301877-8M			8 meter cable
	301877-10M			10 meter cable
	301877-20M			20 meter cable
	301877-30M			30 meter cable
	301877-40M			40 meter cable
	301877-50M			50 meter cable

(#) Quantity

(X) Recommended Spare Parts



Cleco®
Motor - Matrix Tool Connector

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Illustration "D1"

Ref	Number	#	X	EN
				Description
1	17-111	3	6	Pan Head Screw - #4-40 x .19
2	541009	2	2	Wave Washer
3	542244	2	2	Stand Off - 5/16"
4	Table "D1"	1	2	Retaining Ring
5	542588	1		Motor Spacer
6	301761	1		Motor Assembly
7	Table "D1"	1		Transducer Assembly
8	Table "D1"	1		Housing
9	B159X	1	3	Pan Head Screw - #4-40 x 1/4
10	207353	1		Lock Nut

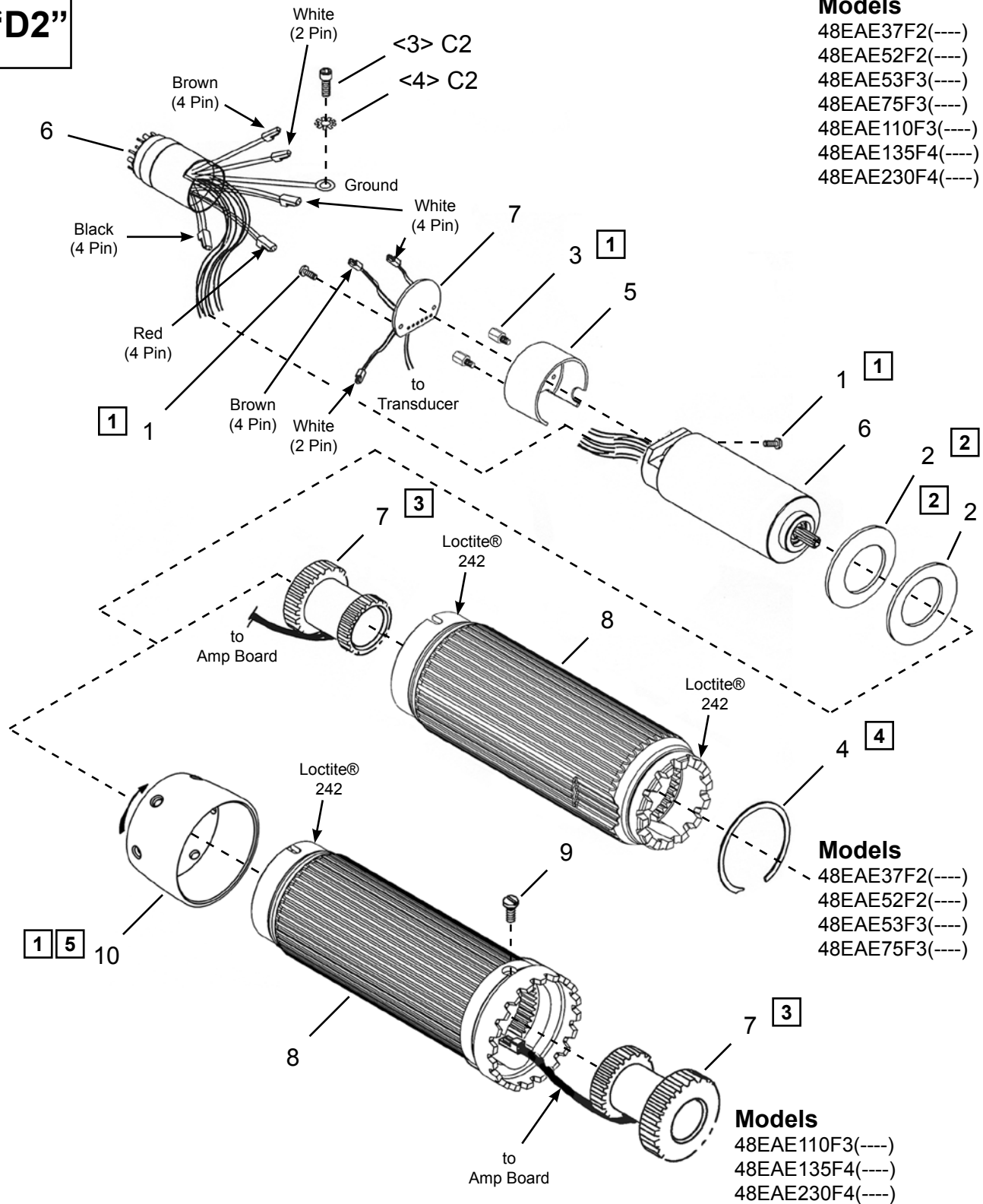
(#) Quantity

(X) Recommended Spare Parts

Table "D1"

Ref.	Description	#	48EA37 48EA53	#	48EA52 48EA75	#	48EA110 48EA135	#	48EA230
4	Retaining Ring	1	505306	1	505306		-----		-----
7	Transducer (unprogrammed)	1	542846-36	1	542846-48	1	542846-100	1	542846-40
	Transducer (programmed)	1	542846-36P	1	542846-48P	1	542846-100P	1	542846-40P
	Transducer Capacity		36 Nm		48 Nm		100 Nm		40 Nm
8	Housing	1	207340	1	207340	1	207341	1	207341

"D2"



1 2 3 4 5 See Service Notes

Cleco®
Motor - Air LB Tool Connector

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Illustration "D2"

Ref	Number	#	X	EN
				Description
1	17-111	3	6	Pan Head Screw - #4-40 x .19
2	541009	2	2	Wave Washer
3	542244	2	2	Stand Off - 5/16"
4	Table "D2"	1	2	Retaining Ring
5	542588	1		Motor Spacer
6	301761E	1		Motor Assembly
7	Table "D2"	1		Transducer Assembly
8	Table "D2"	1		Housing
9	B159X	1	3	Pan Head Screw - #4-40 x 1/4
10	207353	1		Lock Nut

(#) Quantity

(X) Recommended Spare Parts

Table "D2"

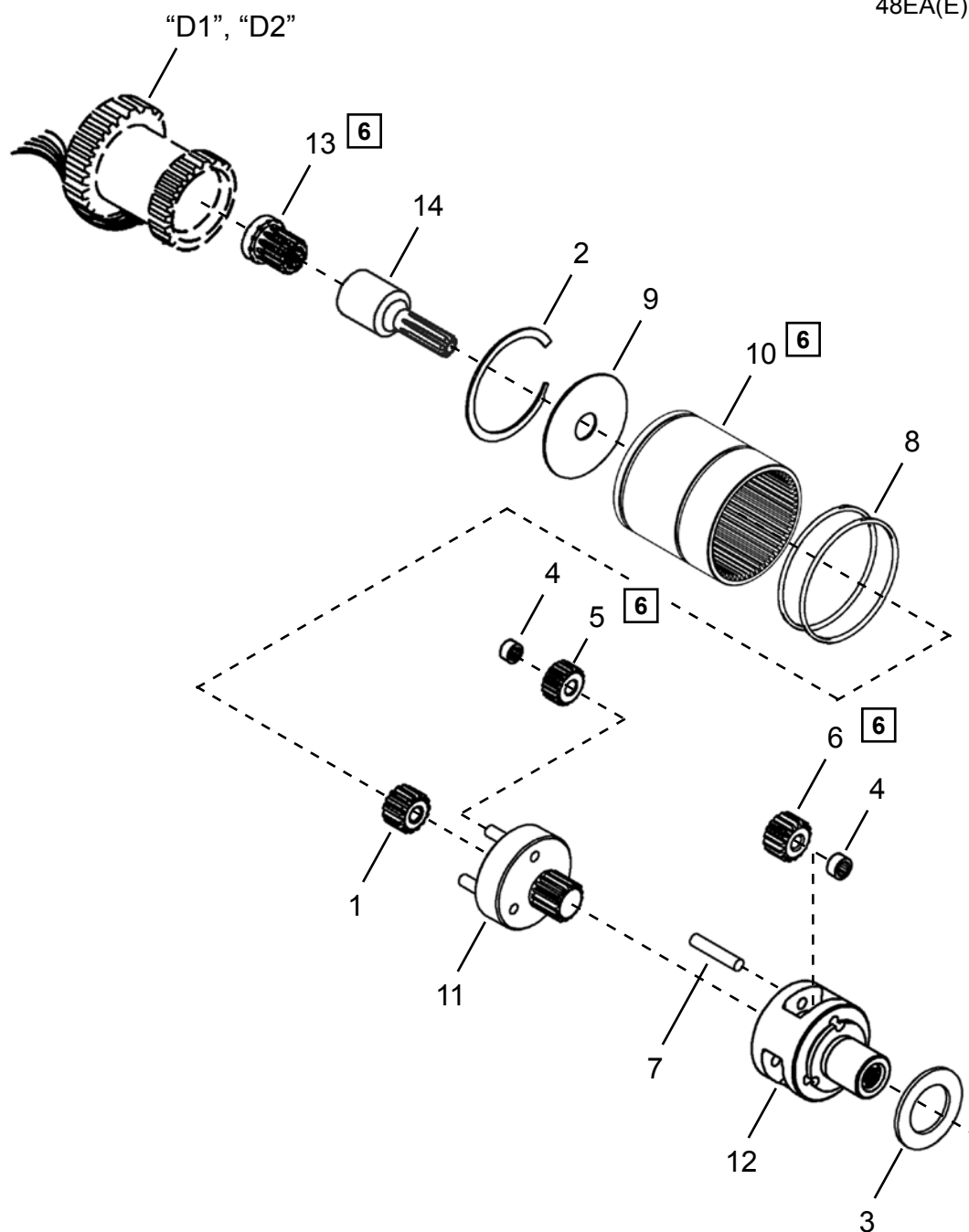
Ref.	Description	#	48EAE37 48EAE53	#	48EAE52 48EAE75	#	48EAE110 48EAE135	#	48EAE230
4	Retaining Ring	1	505306	1	505306		-----		-----
7	Transducer (unprogrammed)	1	542846-36	1	542846-48	1	542846-100	1	542846-40
	Transducer (programmed)	1	542846-36P	1	542846-48P	1	542846-100P	1	542846-40P
	Transducer Capacity		36 Nm		48 Nm		100 Nm		40 Nm
8	Housing	1	207340	1	207340	1	207341	1	207341

Cleco®
Double Stage Gearing

"E"

Models

48EA(E)37F2(----)
48EA(E)52F2(----)
48EA(E)53F3(----)
48EA(E)75F3(----)



6 See Service Notes

Cleco®
Double Stage Gearing

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Illustration "E"

Ref	Number	#	X	EN
				Description
1	541899	1	3	Slip-On Gear (17T)
2	800116	1	2	Retaining Ring
3	207303	1	2	Thrust Washer
4	203749	6	12	Needle Bearing
5	541894	3	6	Planet Gear (17T)
6	Table "E"	3	6	Planet Gear
7	541888	3	6	Planet Pin
8	542724	2	6	O-Ring
9	541887	1	2	Washer
10	542722	1		Ring Gear
11	Table "E"	1		Planet Carrier
12	Table "E"	1		Planet Cage
13	541044	1	2	Pinion Adapter
14	541898	1	2	Extension Pinion

(#) Quantity

(X) Recommended Spare Parts

(T) Teeth

Table "E"

Ref.	Description	#	48EA(E)37 48EA(E)53	#	48EA(E)52 48EA(E)75
6	Planet Gear	3	541894 (17T)	3	541897 (20T)
11	Planet Carrier	1	542230	1	542233
12	Planet Cage	1	542079	1	542099

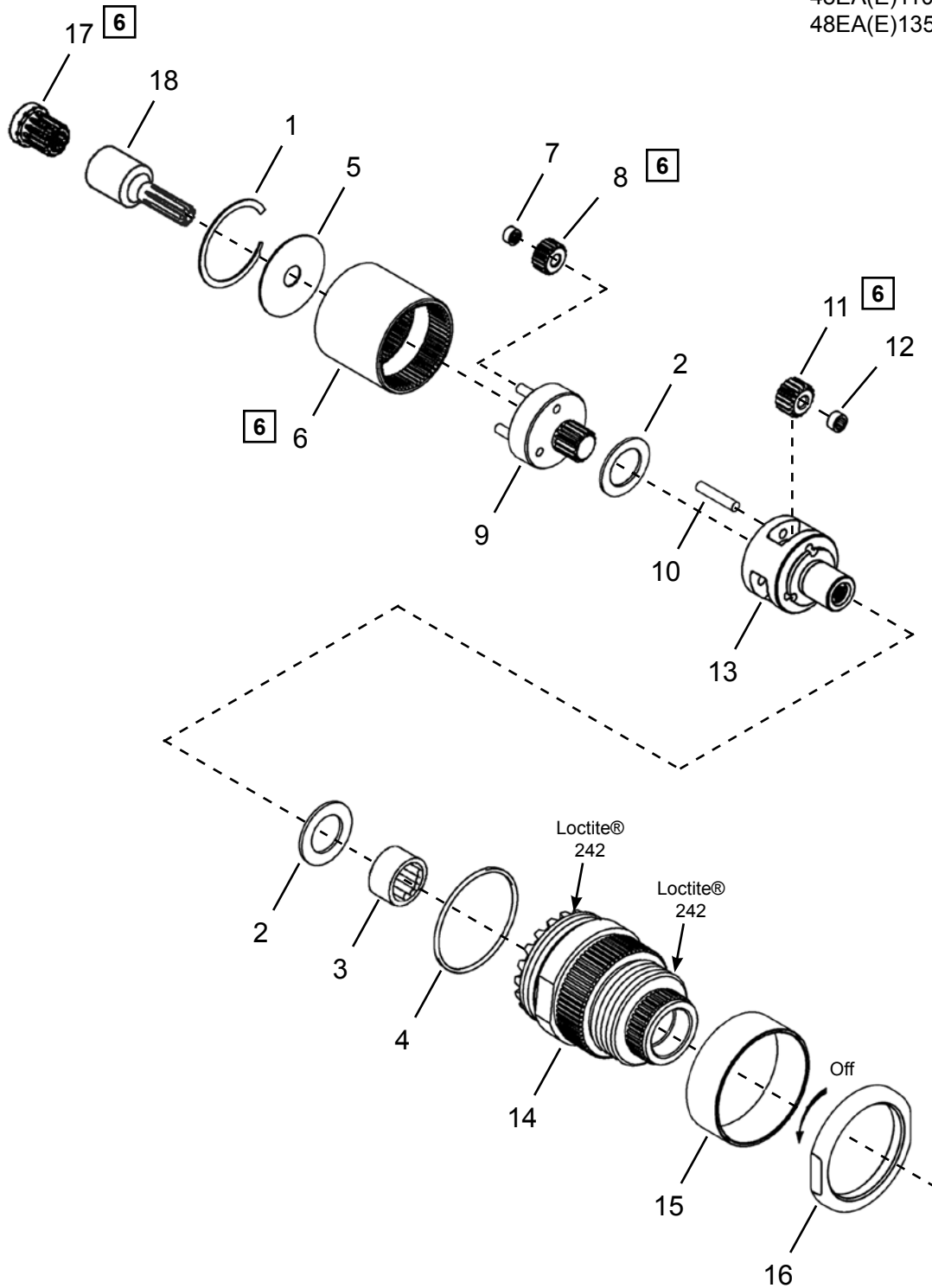
(T) Teeth

Cleco®
Double Stage Gearing

"F"

Models

48EA(E)110F3(----)
48EA(E)135F4(----)



6 See Service Notes

Cleco®
Double Stage Gearing

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Illustration "F"

Ref	Number	#	X	EN
				Description
1	541210	1	2	Retaining Ring
2	510675	2	4	Thrust Washer
3	800177	1	3	Needle Bearing
4	1010843	1	3	O-Ring
5	541185	1		Washer
6	541167	1		Ring Gear
7	541488	3	6	Needle Bearing
8	541478	3	6	Planet Gear (27T)
9	Table "F"	1		Planet Carrier
10	541492	3	6	Planet Pin
11	Table "F"	3	6	Planet Gear
12	541489	3	6	Needle Bearing
13	Table "F"	1		Planet Cage
14	541045	1		Gear Case (includes Ref. 3)
15	541169	1		Cover
16	207352	1		Retaining Nut
17	541044	1	2	Pinion Adapter
18	541898	1	2	Extension Pinion

(#) Quantity

(X) Recommended Spare Parts

(T) Teeth

Table "F"

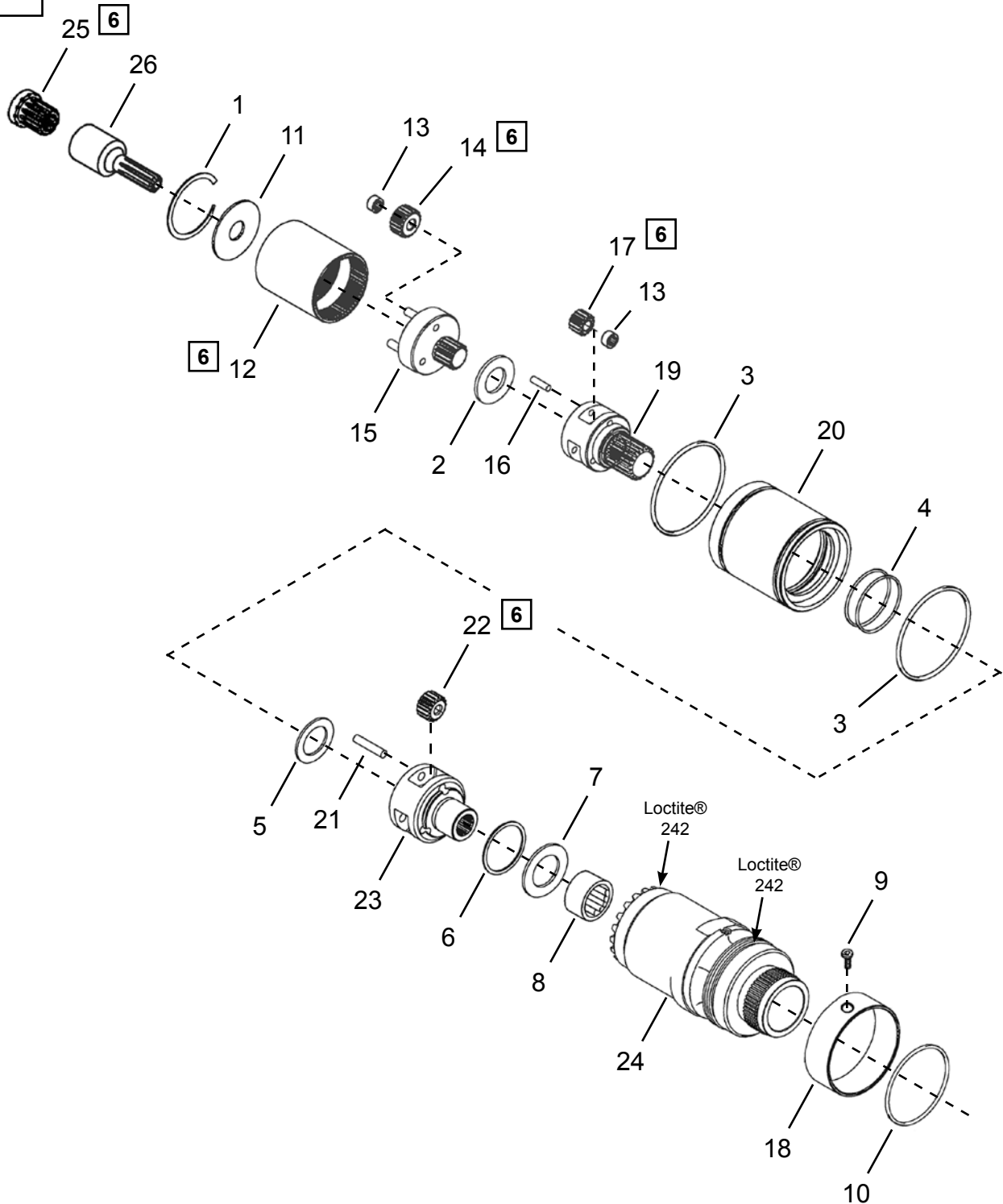
Ref.	Description	#	48EA(E)110	#	48EA(E)135
9	Planet Carrier	1	542333	1	542332
11	Planet Gear	3	541474 (17T)	3	541475 (21T)
13	Planet Cage	1	541279	1	541278

(T) Teeth

Cleco®
Triple Stage Gearing

Models
48EA(E)230F4(----)

“G”



6 See Service Notes

Cleco®
Triple Stage Gearing

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Illustration "G"

Ref	Number	#	X	EN
				Description
1	503405	1	2	Retaining Ring
2	542536	1	2	Thrust Washer
3	1012614	2	4	O-Ring
4	22598	2	4	O-Ring
5	510675	1	2	Thrust Washer
6	800201	1	2	Retaining Ring
7	502981	1	2	Thrust Washer
8	800168	1	3	Needle Bearing
9	B124Z	1	2	Socket Head Cap Screw - #6-32 x 1/4
10	30923	1	3	O-Ring
11	542337	1	2	Washer
12	541008	1		Ring Gear
13	203749	6	12	Needle Bearing
14	541477	3	6	Planet Gear (20T)
15	542327	1		Planet Carrier
16	541480	3	6	Planet Pin
17	541472	3	6	Planet Gear (14T)
18	542473	1		Cover
19	542531	1		Planet Cage
20	541438	1		Ring Gear Adapter
21	510754	3	6	Planet Pin
22	542474	3	6	Planet Gear (16T)
23	541436	1		Planet Cage
24	542471	1		Gear Case (includes Ref. 8 - 9)
25	541044	1	2	Pinion Adapter
26	541898	1	2	Extension Pinion

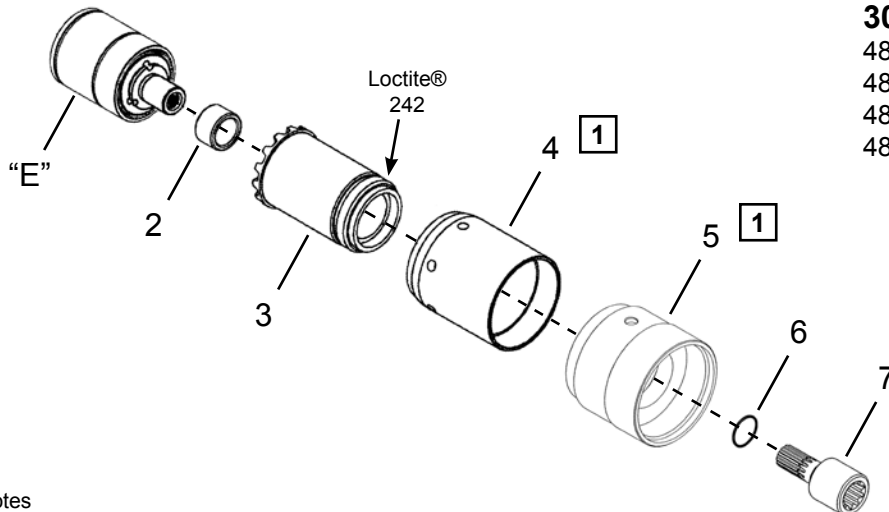
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(X) Recommended Spare Parts

(T) Teeth

Cleco®
Hold and Drive Adapters

"H"

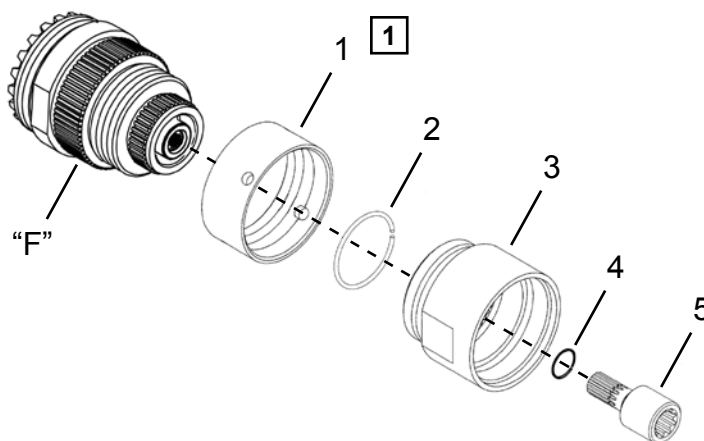


301788 Adapter

48EA(E)37F2(----)
48EA(E)52F2(----)
48EA(E)53F3(----)
48EA(E)75F3(----)

1 See Service Notes

"I"

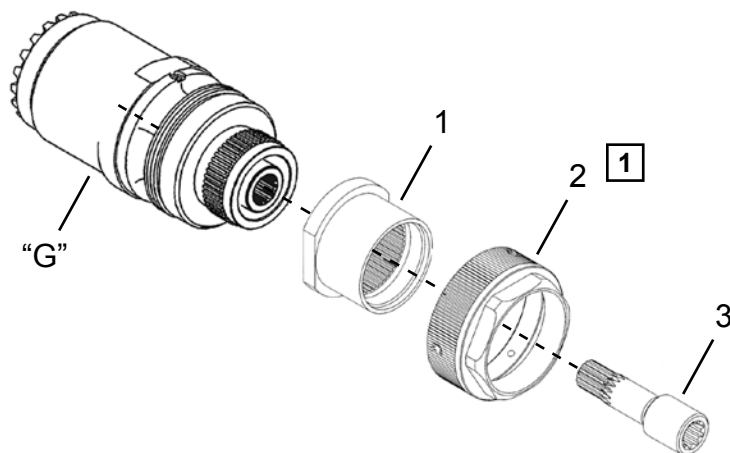


301909 Adapter

48EA(E)110F3(----)
48EA(E)135F4(----)

1 See Service Notes

"J"



301915 Adapter

48EA(E)230F4(----)

1 See Service Notes

Cleco®
Hold and Drive Adapters

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Illustration "H"

Ref	Number	#	X	EN
				Description
1	301789	1		Angle Head Adapter Assembly (includes Ref. 2-5)
2	500528	1	3	Needle Bearing
3	207347	1		Angle Head Adapter
4	543462-02	1		Gear Case Nut
5	207346	1		Angle Head Adapter
6	800146	1	2	Retaining Ring
7	543063	1	1	Drive Adapter

(#) Quantity

(X) Recommended Spare Parts

Illustration "I"

Ref	Number	#	X	EN
				Description
1	543065	1		Lock Nut
2	543062	1	2	Retaining Ring
3	543064	1		Attachment Adapter
4	800146	1	2	Retaining Ring
5	543063	1	1	Pinion Adapter

(#) Quantity

(X) Recommended Spare Parts

Illustration "J"

Ref	Number	#	X	EN
				Description
1	543066	1		Attachment Adapter
2	543068	1		Lock Nut
3	543067	1	1	Pinion Adapter

(#) Quantity

(X) Recommended Spare Parts

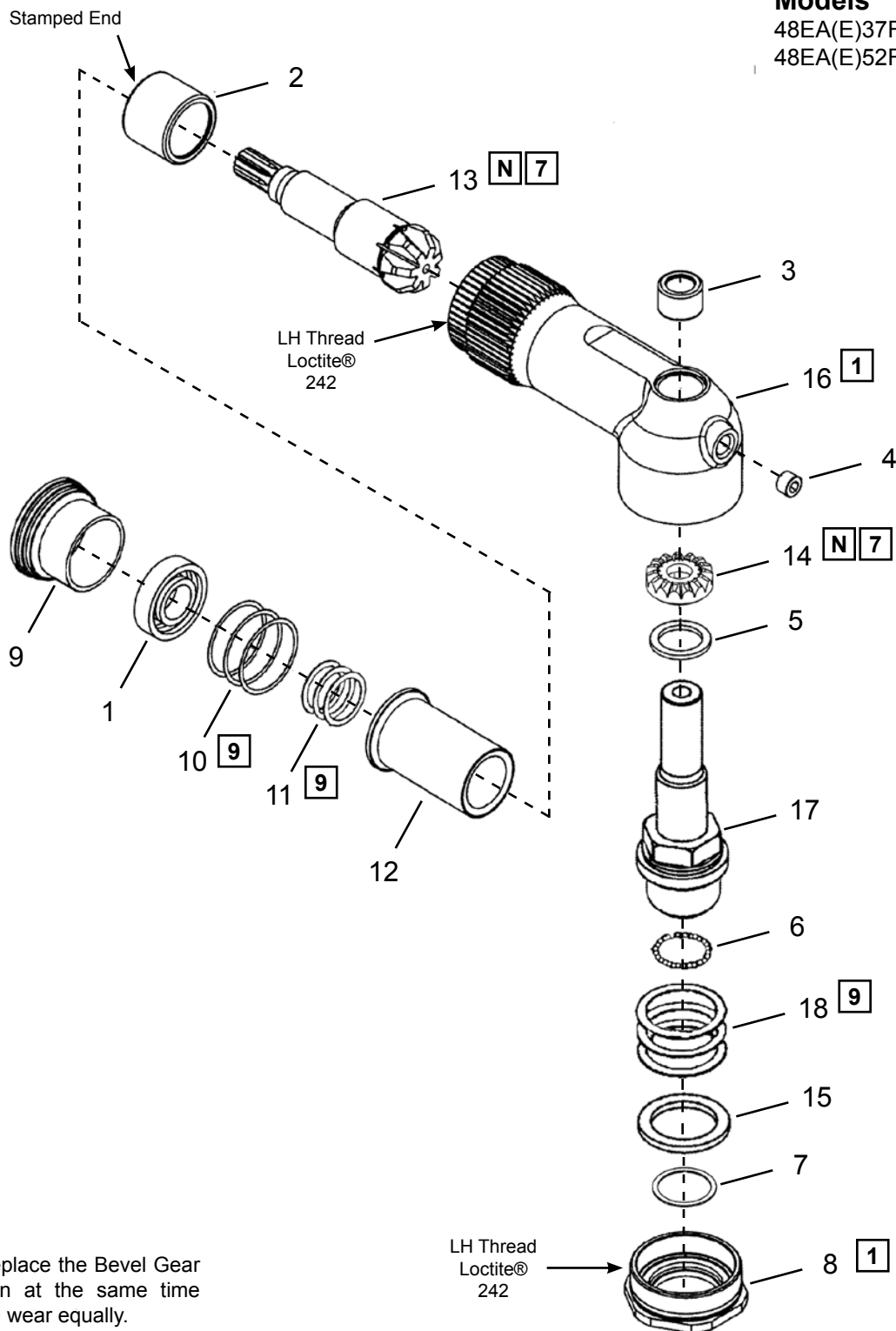
Flush Socket Attachment (F2)

“K”

Models

48EA(E)37F2(----)

48EA(E)52F2(----)



N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

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See Service Notes

Cleco®
Flush Socket Attachment (F2)

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Illustration "K"

Ref	Number	#	X	EN
				Description
1	92100007	1	2	Ball Bearing
2	92000035	1	2	Needle Bearing
3	92030011	1	2	Needle Bearing
4	12601432	1	1	Plug
5	12601407	1	2	Spacer
6	94010004	30	60	Steel Ball
7	819783	1	3	O-Ring
8	12601012D	1		End Nut
9	43288128	1		Spacer
10	126011372	AR	AR	Shim (.002")
	126011373	AR	AR	Shim (.003")
	126011275	AR	AR	Shim (.005")
11	94200016	AR	AR	Shim (.002")
	94200017	AR	AR	Shim (.003")
	94200018	AR	AR	Shim (.005")
12	12601098	1		Bearing Spacer
13	43287129	1	1	Bevel Pinion
14	12601260B	1	1	Bevel Gear
15	12601472	1	2	Spacer
16	43288130	1		Angle Housing (includes Ref. 4)
17	Table "K"	1		Flush Socket Spindle
18	12601137A2	AR	AR	Shim (.002")
	12601137A3	AR	AR	Shim (.003")
	12601137A5	AR	AR	Shim (.005")

(#) Quantity

(X) Recommended Spare Parts

Table "K"

Example: Spindle Number

48	E	A	E	52	F2	MD	0	0
						FS2		
						EC =	3/8"	
						EE =	1/2"	
						EF =	9/16"	
						MD =	10mm	
						ME =	11mm (7/16")	
						MF =	12mm	
						MG =	13mm	
						MH =	14mm	
						MI =	15mm	
						MJ =	16mm (5/8")	
								0 = Standard
								1 = Fast Lead
								2 = Magnetic
								0 = Flush
								2 = 1/4" (6mm)
								4 = 1/2" (13mm)
								6 = 3/4" (19mm)
								8 = 1" (25mm)

Flush Socket Attachment (F3)

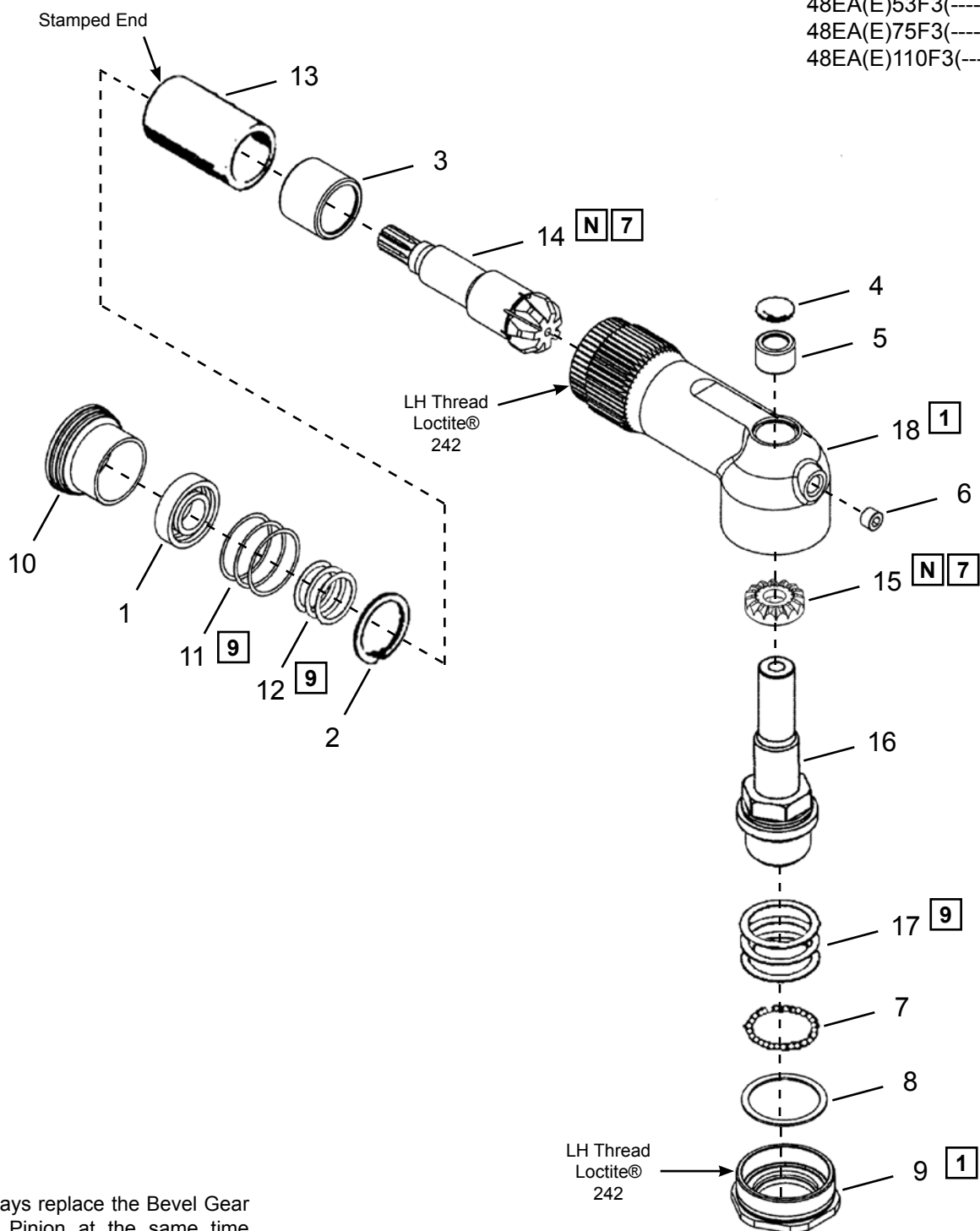
“L”

Models

48EA(E)53F3(----)

48EA(E)75F3(----)

48EA(E)110F3(----)



N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

1

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See Service Notes

Cleco®
Flush Socket Attachment (F3)

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Illustration "L"

Ref	Number	#	X	EN
				Description
1	92100133	1	2	Ball Bearing
2	92600020	1	2	Retaining Ring
3	92020046	1	2	Needle Bearing
4	12601479	1	2	Plug
5	92000021	1	2	Needle Bearing
6	93440006	1	1	Plug
7	94010006	33	66	Steel Ball
8	93010025	1	3	O-Ring
9	19557103	1		End Nut
10	48018105	1		Spacer
11	12601137A2	AR	AR	Shim (.002")
	12601137A3	AR	AR	Shim (.003")
	12601137A5	AR	AR	Shim (.005")
12	94200020	AR	AR	Shim (.002")
	94200021	AR	AR	Shim (.003")
	94200022	AR	AR	Shim (.005")
13	48019135	1		Bearing Spacer
14	48018103	1	1	Bevel Pinion
15	12601260A	1	1	Bevel Gear
16	Table "L"	1		Flush Socket Spindle
17	12601137B2	AR	AR	Shim (.002")
	12601137B3	AR	AR	Shim (.003")
	12601137B5	AR	AR	Shim (.005")
18	49107102	1		Angle Housing (includes Ref. 6)

(#) Quantity

(X) Recommended Spare Parts

Table "L"

Example: Spindle Number

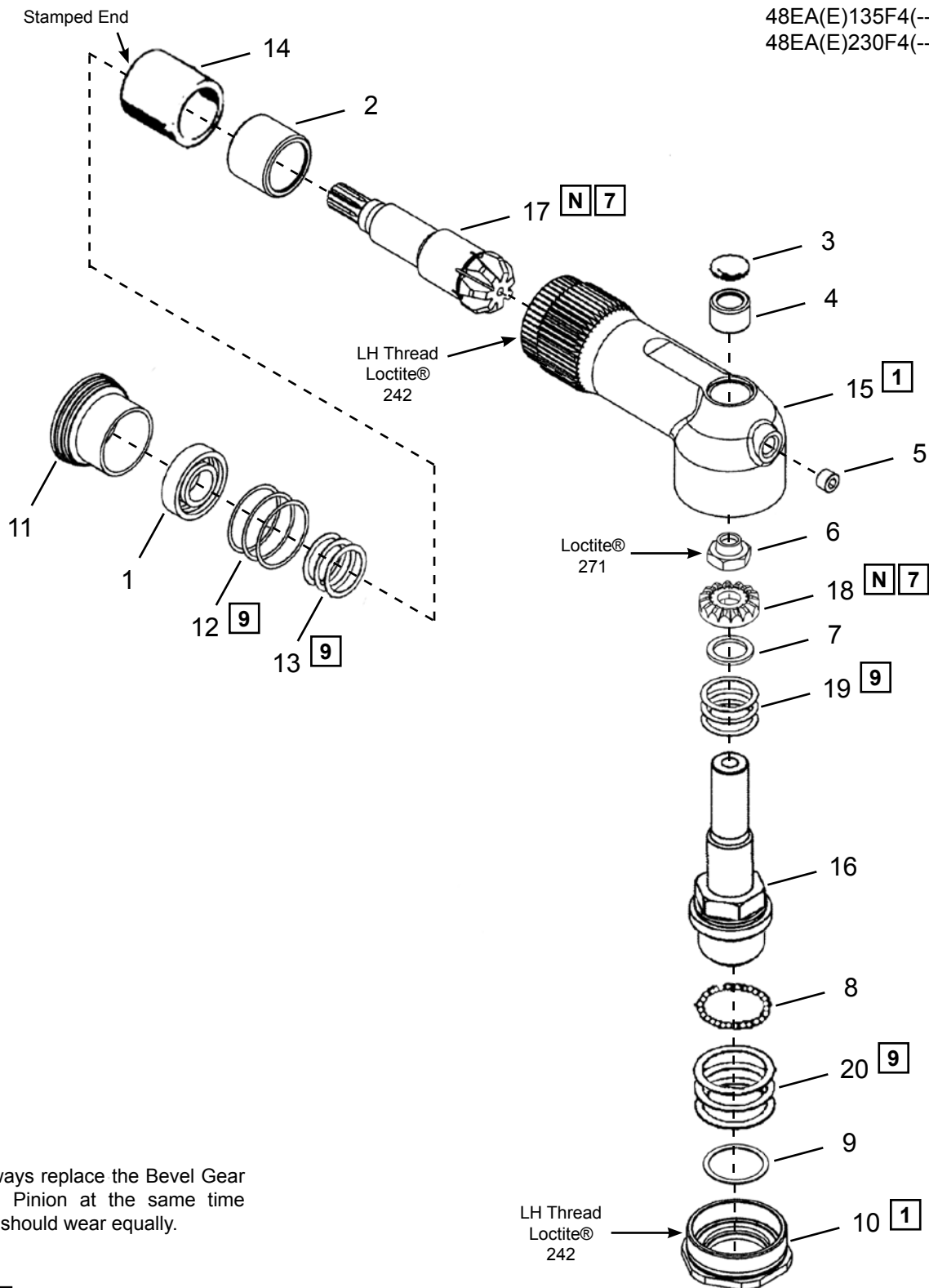
48	E	A	E	53	F3	MG	0	0
						FS3		
						EE = 1/2" EF = 9/16" EH = 11/16" EJ = 13/16" MG = 13mm MH = 14mm MI = 15mm MJ = 16mm (5/8") MK = 17mm ML = 18mm MM = 19mm (3/4") MN = 20mm MO = 21mm		0 = Standard 1 = Fast Lead 2 = Magnetic
								0 = Flush 2 = 1/4" (6mm) 4 = 1/2" (13mm) 6 = 3/4" (19mm) 8 = 1" (25mm)

"M"

Models

48EA(E)135F4(----)

48EA(E)230F4(----)



N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

1 7 9 See Service Notes

Illustration "M"

Ref	Number	#	X	EN
				Description
1	92100133	1	2	Ball Bearing
2	92000057	1	2	Needle Bearing
3	94190044	1	2	Plug
4	92000145	1	2	Needle Bearing
5	93440006	1	1	Plug
6	93200022	1	2	Lock Nut
7	48019173	1	2	Spacer
8	94010007	30	60	Steel Ball
9	93010027	1	3	O-Ring
10	48017172	1		End Nut
11	48018105	1		Spacer
12	12601137A2	AR	AR	Shim (.002")
	12601137A3	AR	AR	Shim (.003")
	12601137A5	AR	AR	Shim (.005")
13	94200020	AR	AR	Shim (.002")
	94200021	AR	AR	Shim (.003")
	94200022	AR	AR	Shim (.005")
14	48019142	1		Bearing Spacer
15	49096102	1		Angle Housing (includes Ref. 5)
16	Table "M"	1		Flush Socket Spindle
17	48017139	1	1	Bevel Pinion
18	48017140	1	1	Bevel Gear
19	48019145	AR	AR	Shim (.002")
	48019146	AR	AR	Shim (.003")
	48019147	AR	AR	Shim (.005")
20	48019148	AR	AR	Shim (.002")
	48019149	AR	AR	Shim (.003")
	48019150	AR	AR	Shim (.005")

(#) Quantity

(X) Recommended Spare Parts

Table "M"

Example: Spindle Number

48	E	A	E	135	F4	MM	0	0
----	---	---	---	-----	----	----	---	---

FS4

0 = Standard

1 = Fast Lead

2 = Magnetic

EH = 11/16"

EJ = 13/16"

EK = 7/8"

MJ = 16mm (5/8")

MK = 17mm

ML = 18mm

MM = 19mm (3/4")

MN = 20mm

MO = 21mm

MP = 22mm

MQ = 23mm

MR = 24mm (15/16")

0 = Flush

2 = 1/4" (6mm)

4 = 1/2" (13mm)

6 = 3/4" (19mm)

8 = 1" (25mm)

Cleco® Reaction Bar Installation

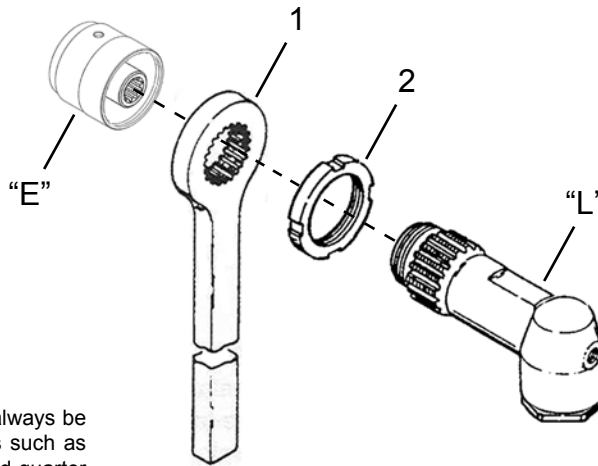
“N”

Models:
48EA(E)75F3(----)



WARNING

Reaction bar and bracket should always be used in higher torque applications such as above 50 ft.-lbs. (68 Nm) or in closed-quarter areas where injury to fingers could occur.



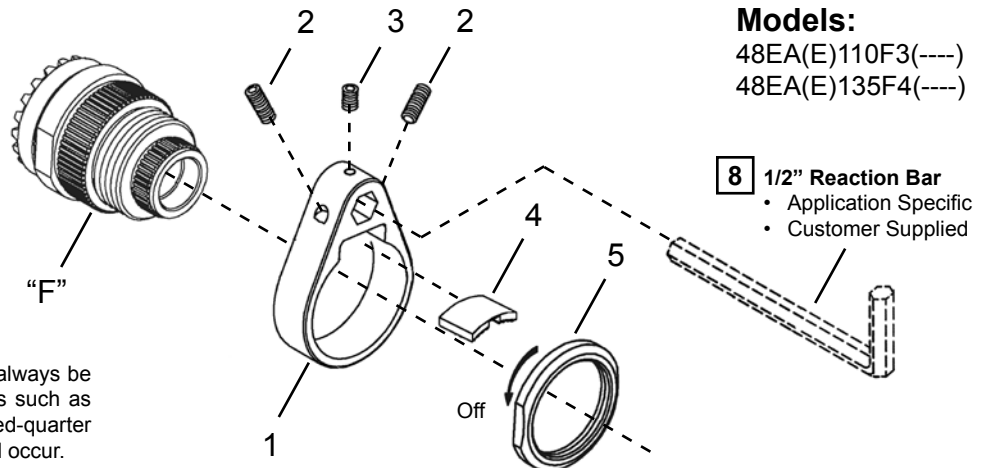
“O”

Models:
48EA(E)110F3(----)
48EA(E)135F4(----)



WARNING

Reaction bar and bracket should always be used in higher torque applications such as above 50 ft.-lbs. (68 Nm) or in closed-quarter areas where injury to fingers could occur.



8 See Service Notes

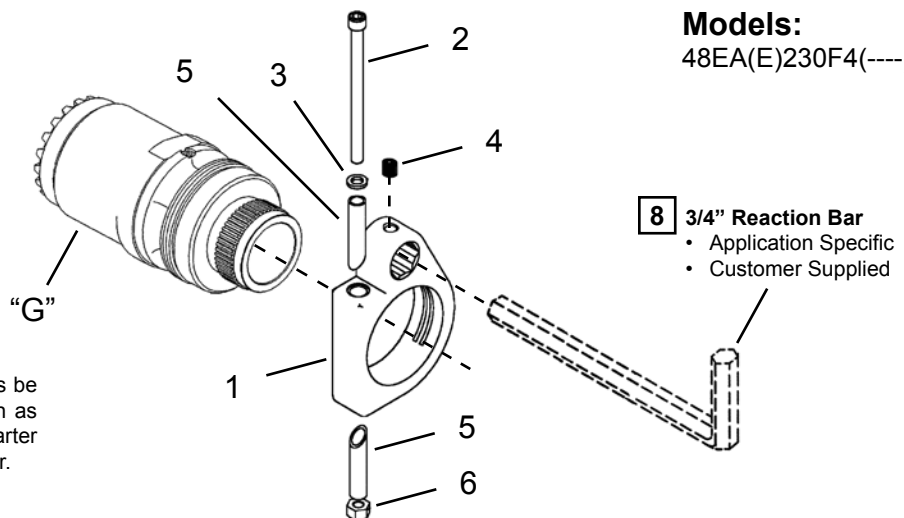
“P”

Models:
48EA(E)230F4(----)



WARNING

Reaction bar and bracket should always be used in higher torque applications such as above 50 ft.-lbs. (68 Nm) or in closed-quarter areas where injury to fingers could occur.



8 See Service Notes

Cleco®
Reaction Bar Installation

PL12EN-48EA-F
10/05/2011

Illustration "N"

Ref	Number	#	X	EN
				Description
1	48038160	1		Reaction Bar
2	49098103	1		Lock Nut

(#) Quantity

(X) Recommended Spare Parts

Illustration "O"

Ref	Number	#	X	EN
				Description
1	541206	1		Bracket (includes Ref. 2-3)
2	B132Z	2	4	Set Screw - #8-32 x 1/2
3	B129J	1	2	Set Screw - #8-32 x 5/16
4	541207	1		Splined Key
5	541490	1		Retaining Nut

(#) Quantity

(X) Recommended Spare Parts

Illustration "P"

Ref	Number	#	X	EN
				Description
1	531297	1		Bucking Bar Collar (includes Ref. 2-6)
2	B156A	1	2	Socket Head Screw
3	25285	1	2	Washer
4	B110D	1	3	Set Screw
5	531281	2	2	Locking Sleeve
6	C108Y	1	3	Nut

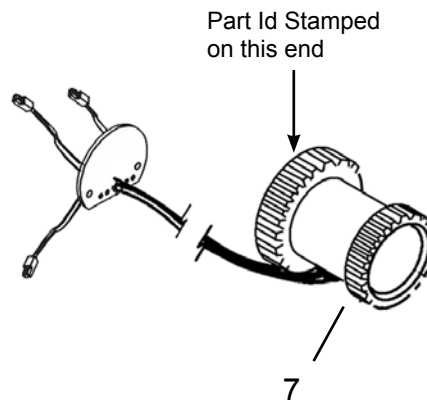
(#) Quantity

(X) Recommended Spare Parts

1 Tightening Torque

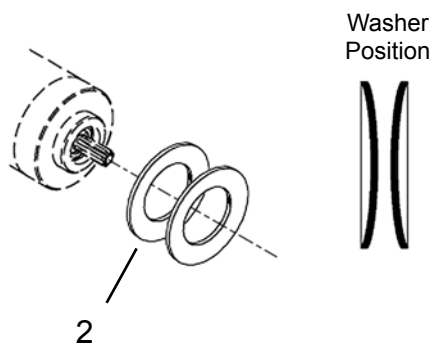
Illustration	Reference	Tightening torque	
		Ft-Lbs (in-lbs)	Nm
C1, C2	3	(10-14)	1,1-1,6
	16	25-30	34-41
	19	35-40	47-54
	21 (Swivel)	15-18	20-25
D1, D2	1	(4-6)	0,45-0,68
	3	(4-6)	0,45-0,68
	10	35-40	47-54
H	4	40-50	54-68
	5	40-50	54-68
I	1	40-50	54-68
J	2	40-50	54-68
K	8	30-40	61-74
	16	45-55	61-74
L	9	80-100	108-136
	18	50-60	68-81
M	10	80-100	108-136
	15	50-60	68-81

3 Transducer Identification

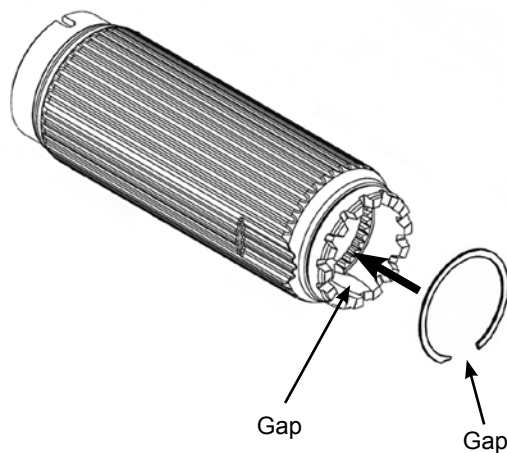


Transducers are not interchangeable, check part number.

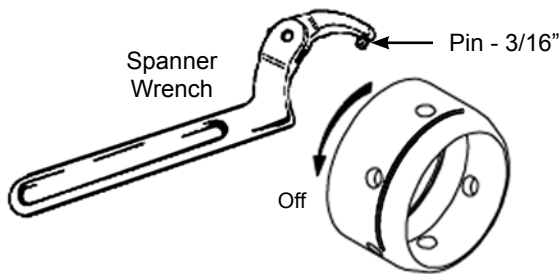
2 Washer Assembly



4 Retaining Ring Assembly

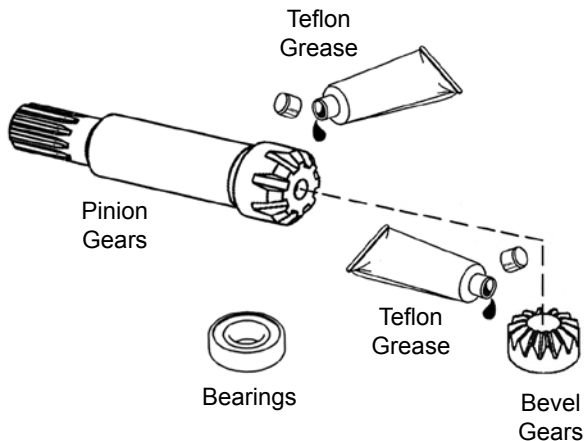


5 Spanner Wrench



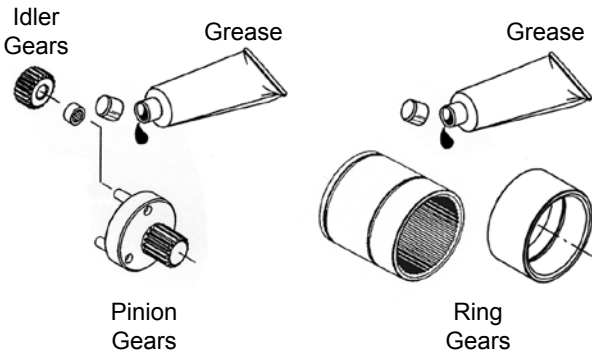
7 Angle Head Lubrication

540395 - 2 oz. (56 g)
513156 - 1 pound (0.45 kg)

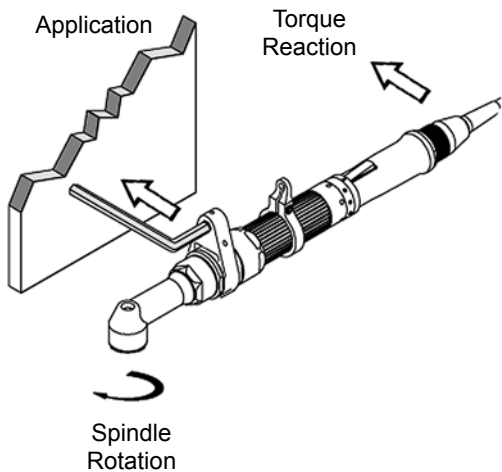


6 Gear Train Lubrication

541444 - 2 oz. (56 g)
541445 - 1 pound (0.45 kg)



8 Torque Reaction



1 Shim Assembly

Illustration "K"

F2 Series Shim Assembly:

- 1) Position Bevel Pinion Gear to dimension shown using Shims 10 or 11.
- 2) Assemble Bevel Gear and Drive Spindle using Shim 18 to obtain .002/.004 backlash after running gears under load.

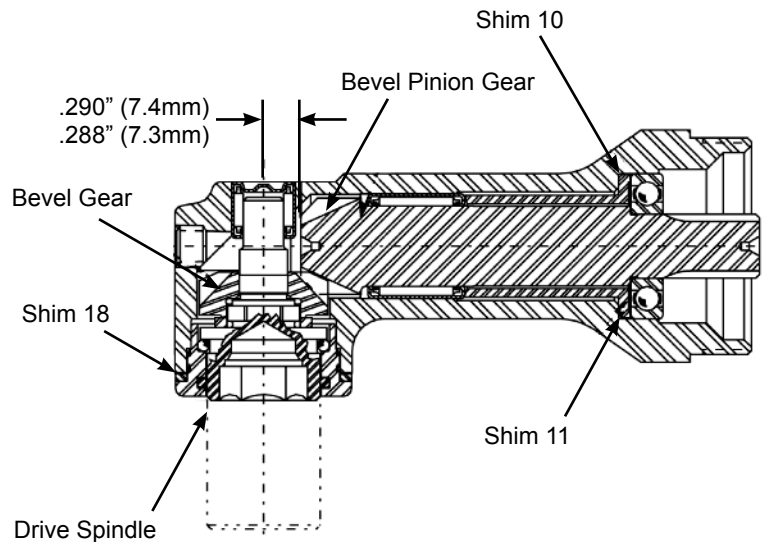


Illustration "L"

F3 Series Shim Assembly:

- 1) Position Bevel Pinion Gear to dimension shown using Shims 11 or 12.
- 2) Assemble Bevel Gear and Drive Spindle using Shim 17 to obtain .002/.004 backlash after running gears under load.

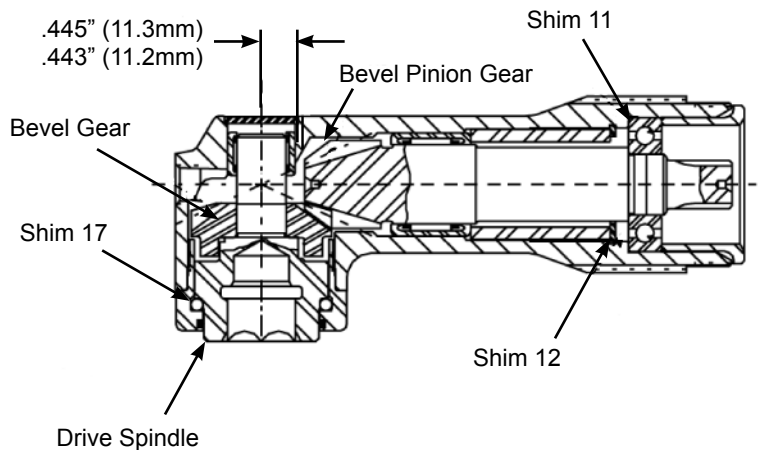
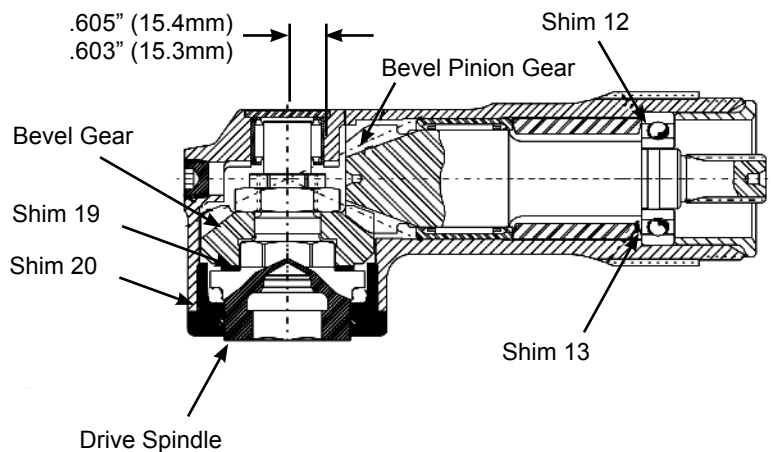


Illustration "M"

F4 Series Shim Assembly:

- 1) Position Bevel Pinion Gear to dimension shown using Shims 12 or 13.
- 2) Assemble Bevel Gear and Drive Spindle using Shims 19 and 20 to obtain .002/.004 backlash after running gears under load.



Cleco®
Tool Memory Parameters

PL12EN-48EA-F
10/05/2011

48EA(E) Tool Memory Parameters

Model Number	Max Speed [RPM]	Max Torque [Nm]	Torque Cal [Nm]	Transducer Type	Angle Cal [PPD]	Static Current Factor [Nm/A]
48EA(E)37F2xxxx	1225	37	45.8648	542846-31	70.2893	1.5491
48EA(E)52F2xxxx	860	52	69.5554	542846-48	99.1829	2.1859
48EA(E)53F3xxxx	850	53	65.5212	542846-31	100.4132	2.2130
48EA(E)75F3xxxx	600	74	99.3649	542846-48	141.6898	3.1226
48EA(E)110F3xxxx	400	110	203.5980	542846-100	213.0167	4.6946
48EA(E)135F4xxxx	270	134	201.4084	542846-100	318.8948	7.0280
48EA(E)230F4xxxx	150	227	297.2863	542846-40	567.7714	11.8873

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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1470 Post & Paddock
Grand Prairie, TX 75050
Tel: 972-641-9563
Fax: 972-641-9674

Detroit, MI
**Apex Tool Group
Sales & Service Center**
2630 Superior Court
Auburn Hills, MI 48326
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Fax: 248-391-7824

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**Apex Tool Group
Sales & Service Center**
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Houston, TX 77041
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Fax: 713-849-2047

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Fax: 562-802-1718

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