

Parts Manual
PL12EN-48ES-1
10/09/2012

Cleco®

48ES Series
Electronically Controlled Inline Nutrunner



For additional product information visit our website at <http://www.apextoolgroup.com>

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 inline 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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Cleco®
Model Nomenclature

PL12EN-48ES-1
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“A”

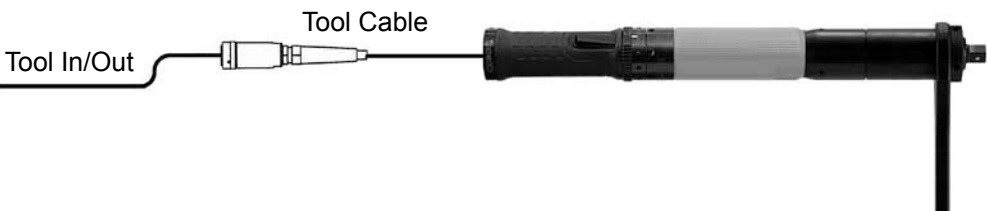
	48	E	S	X	XXX	XXX	X
<u>Tool Series</u> 48							
<u>Motor Style</u> E = Brushless Electric Motor							
<u>Tool Type</u> S = Inline							
<u>Feature</u> - = Matrix Tool Connector (Standard) E = Air LB Connector							
<u>Maximum Torque Nm (rounded to nearest Nm)</u> 65 = 65 Nm 90 = 90 Nm 125 = 125 Nm 150 = 150 Nm							
<u>Attachment</u> D4 = 1/2" Square Drive							
<u>Spindle Type</u> - = Pin Retainer (Standard) B = Ball Retainer							

“B”

m-Pro-400 Series
Controller



TME-200 Series
Controller

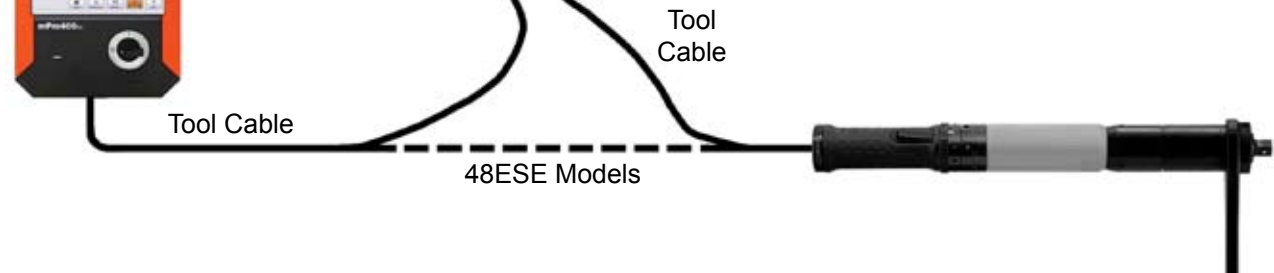


Complete Tool
Order Number
48ES(E)65D4
48ES(E)65D4B
48ES(E)90D4
48ES(E)90D4B
48ES(E)125D4
48ES(E)125D4B
48ES(E)150D4
48ES(E)150D4B

m-Pro-400GC
Global Controller



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



TME and m-Pro-400 Series Controllers

48ES	48ESE	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

[illegible]

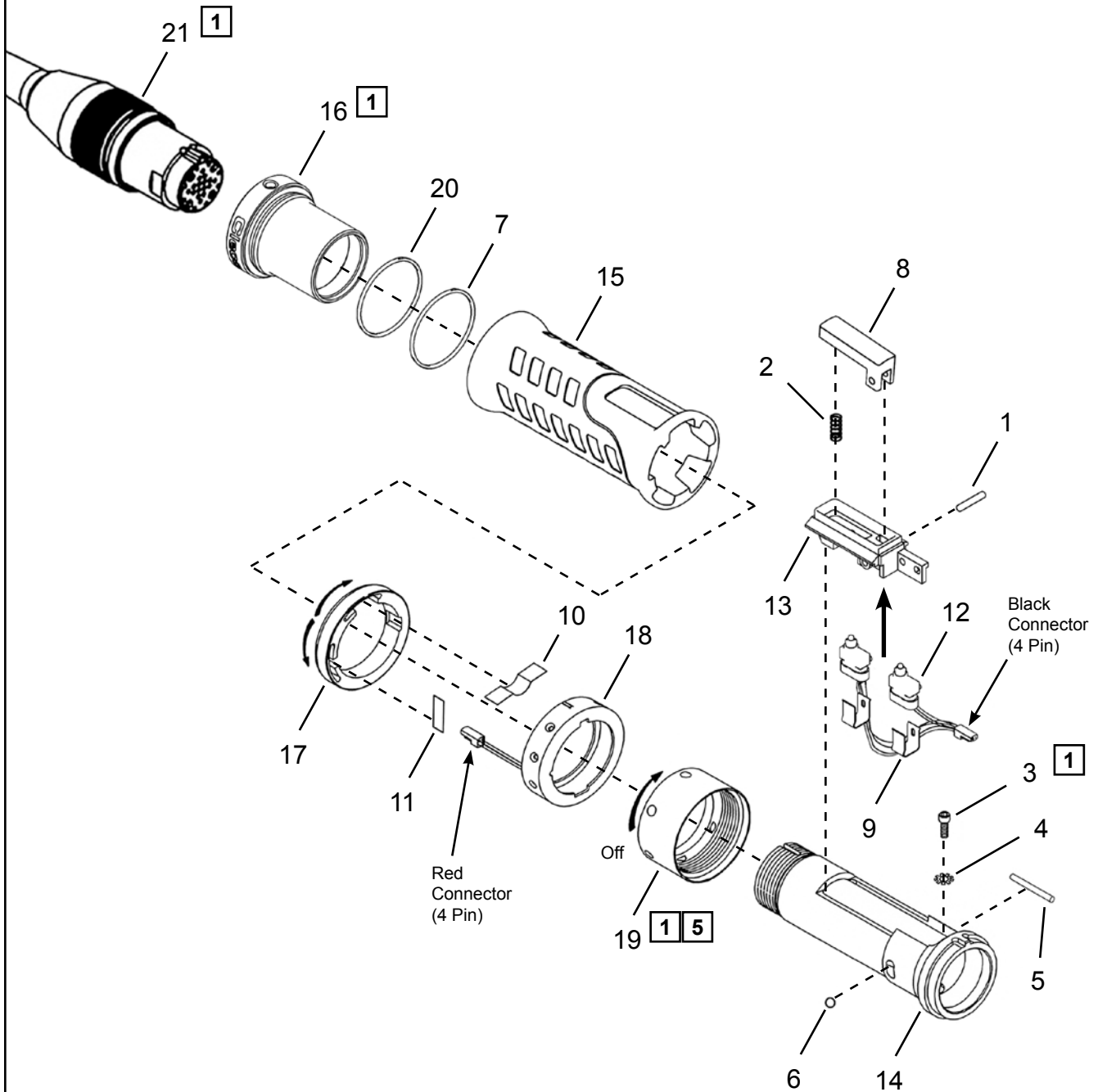
Technical drawing of the 48ES(E)90D4(B) tool, showing a side view with dimensions in inches and millimeters. The tool features a 1/2 inch square drive, a .67 inch (17mm) top width, a .24 inch (6.1mm) bottom width, a .50 inch (12.7mm) base width, and a total length of 16.61 inches (422mm). The main body has a diameter of Ø1.82 inches (46mm) and a textured grip section with a diameter of Ø1.50 inches (38mm). The tool is labeled 'Clisco' at the end.

Page 5

“D1”

Models

48ES65(---)
48ES90(---)
48ES125(---)
48ES150(---)



Cleco®
Handle - Matrix Tool Connector

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Illustration "D1"

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
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

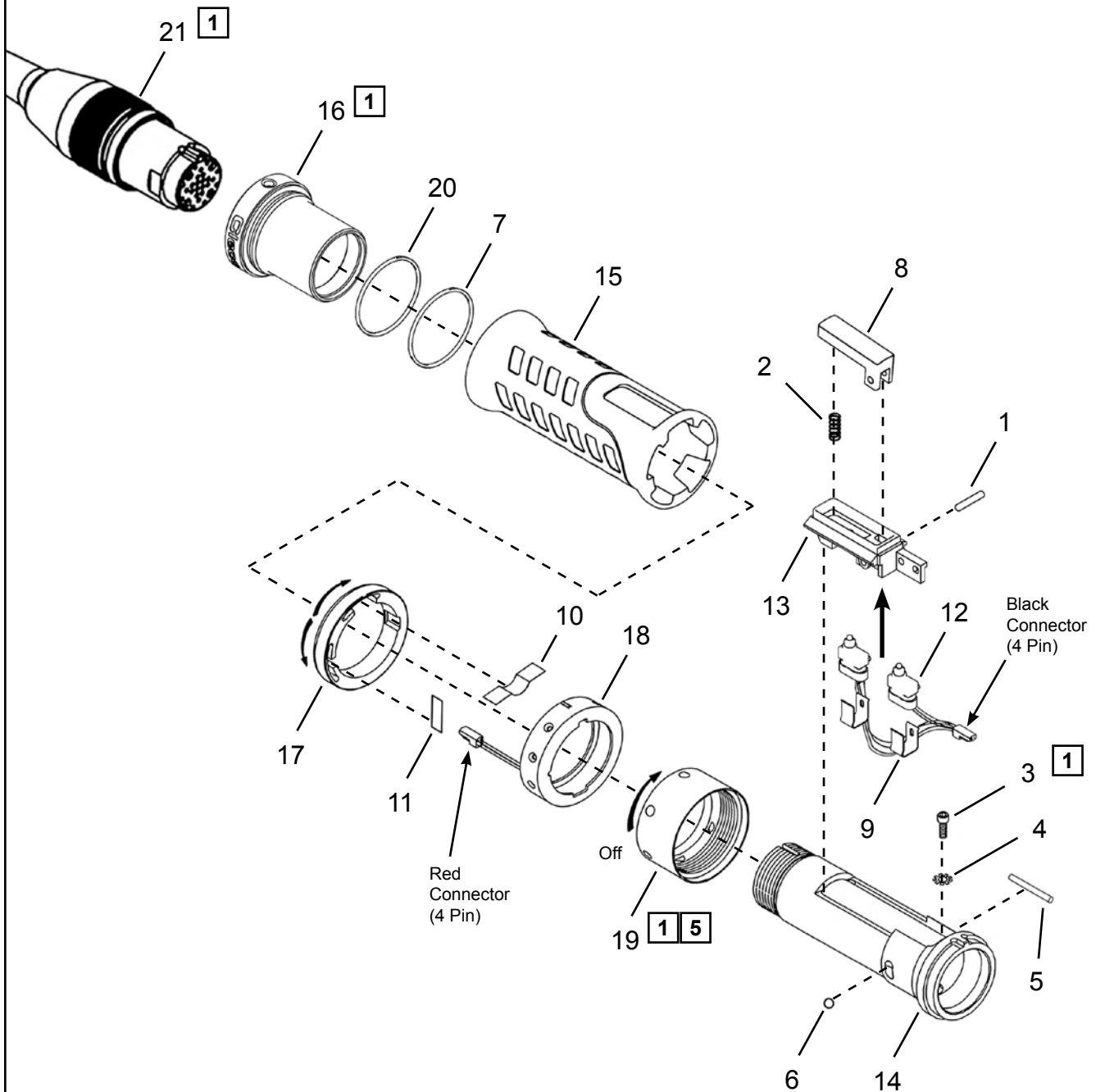
(#) Quantity

(X) Recommended Spare Parts

"D2"

Models

48ESE65(---)
48ESE90(---)
48ESE125(---)
48ESE150(---)



Cleco®
Handle - Air LB Tool Connector

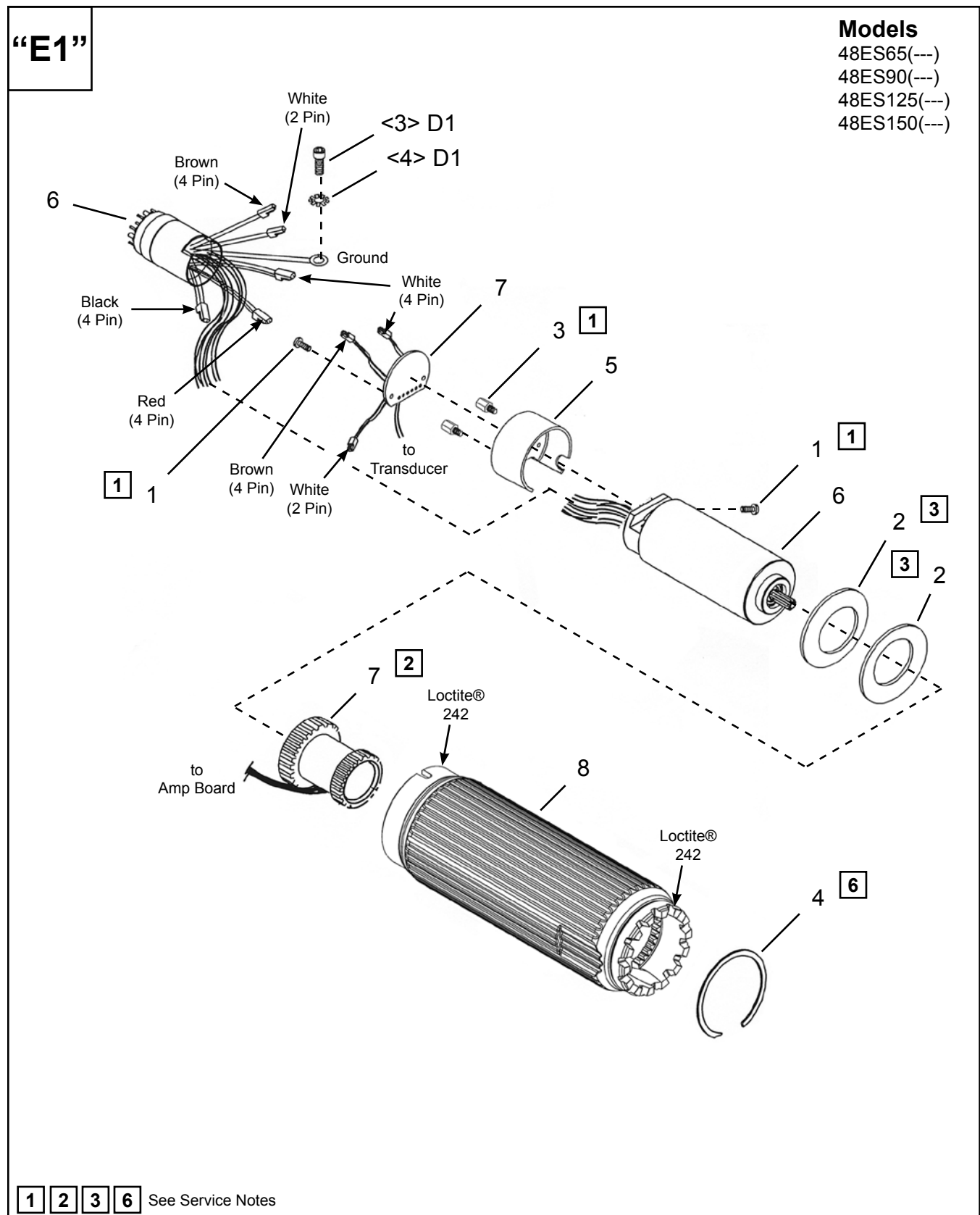
PL12EN-48ES-1
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Illustration "D2"

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 "E1"

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	505306	1	2	Retaining Ring
5	542588	1		Motor Spacer
6	301761	1		Motor Assembly
7	Table "E1"	1		Transducer Assembly
8	207340	1		Housing

(#) Quantity

(X) Recommended Spare Parts

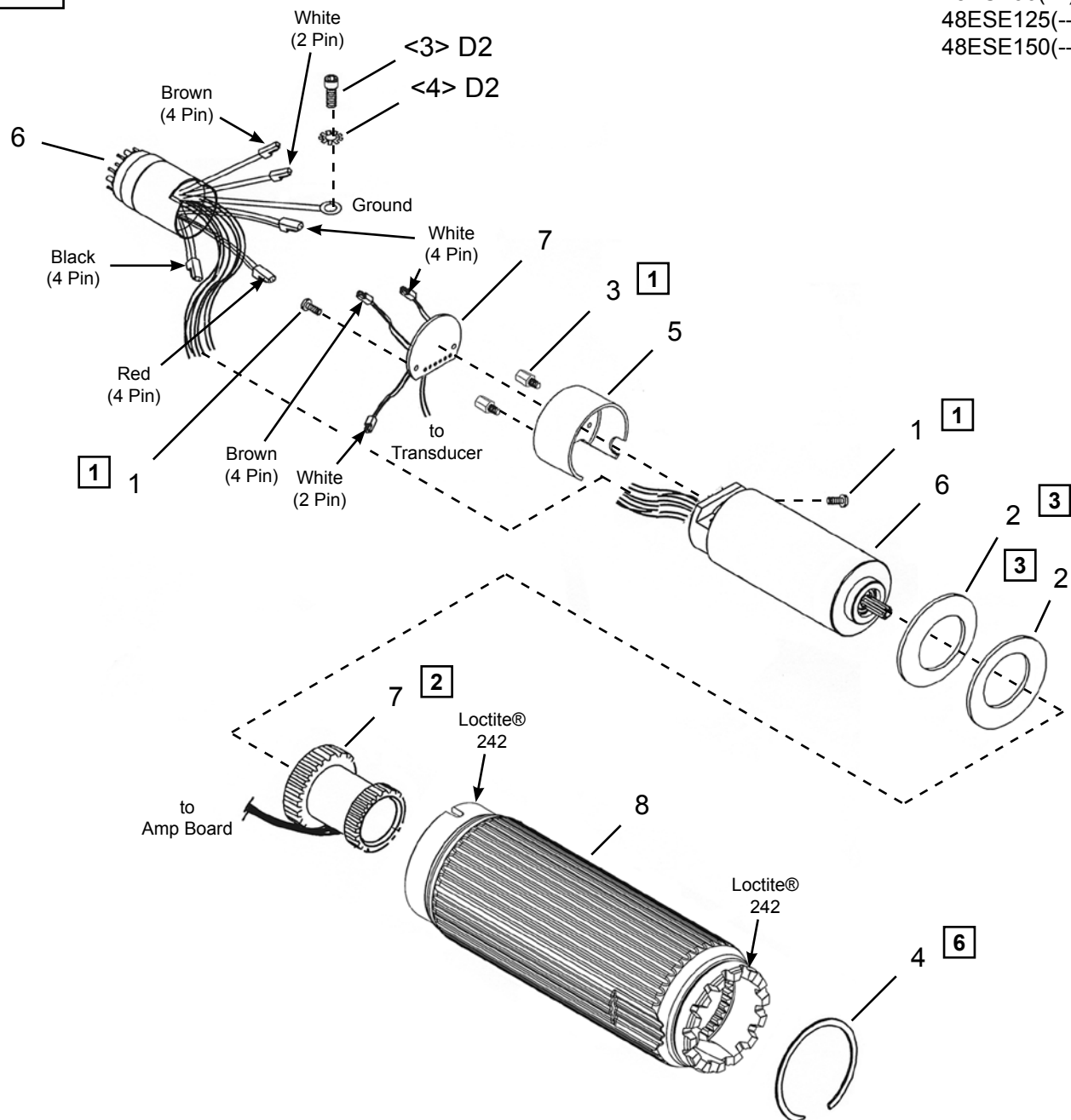
Table "E1"

Ref.	Description	#	48ES65D4	#	48ES90D4	#	48ES125D4 48ES150D4
7	Transducer (unprogrammed)	1	542846-12	1	542846-31	1	542846-36
	Transducer (programmed)	1	542846-12P	1	542846-31P	1	542846-36P
	Transducer Capacity		12 Nm		31 Nm		36 Nm

“E2”

Models

48ESE65(---)
48ESE90(---)
48ESE125(---)
48ESE150(---)



1 2 3 6 See Service Notes

Cleco®
Motor - Air LB Tool Connector

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Illustration "E2"

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	505306	1	2	Retaining Ring
5	542588	1		Motor Spacer
6	301761E	1		Motor Assembly
7	Table "E2"	1		Transducer Assembly
8	207340	1		Housing

(#) Quantity

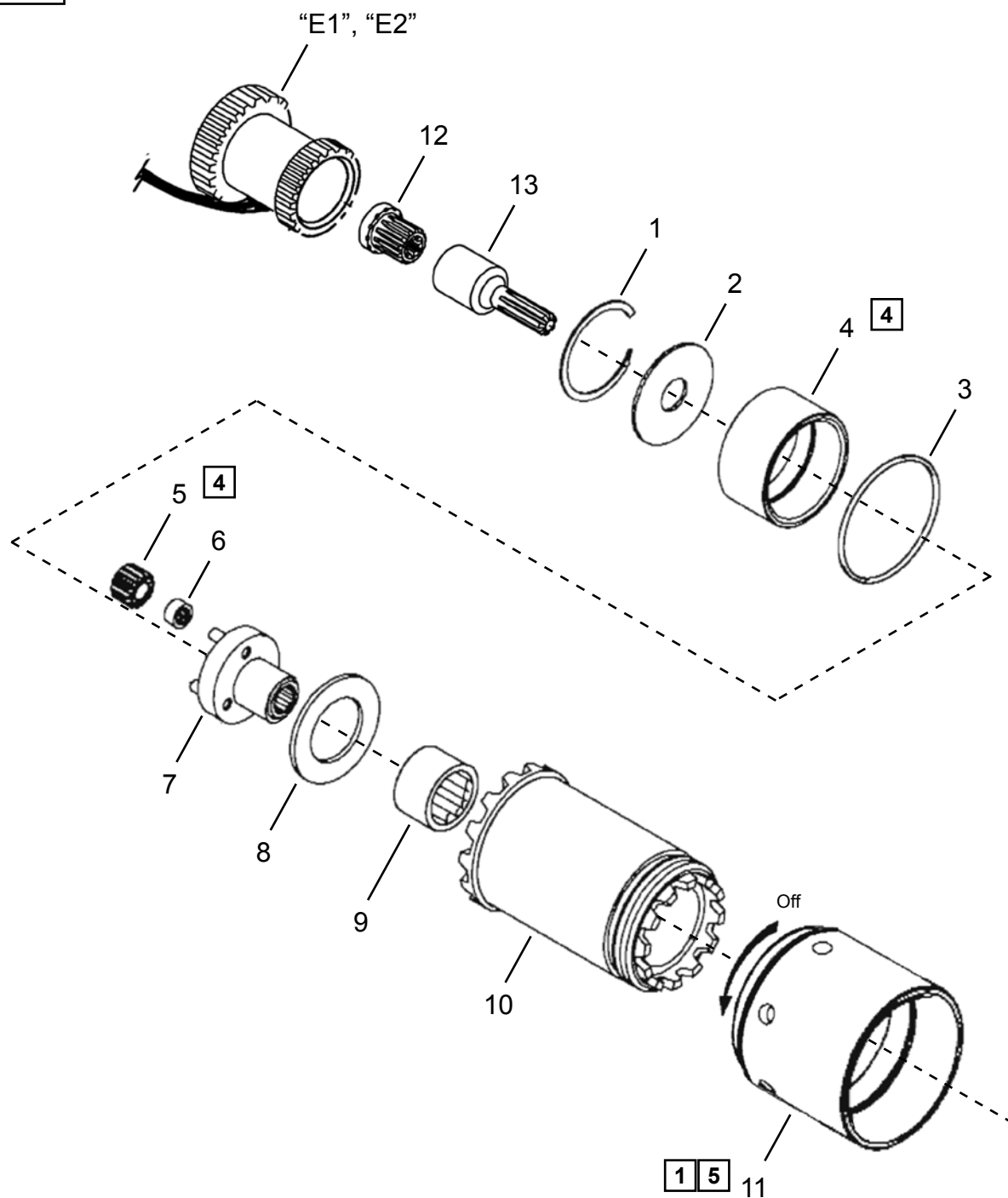
(X) Recommended Spare Parts

Table "E2"

Ref.	Description	#	48ESE65D4	#	48ESE90D4	#	48ESE125D4 48ESE150D4
7	Transducer (unprogrammed)	1	542846-12	1	542846-31	1	542846-36
	Transducer (programmed)	1	542846-12P	1	542846-31P	1	542846-36P
	Transducer Capacity		12 Nm		31 Nm		36 Nm

"F"

Models
48ES(E)65(---)



1 4 5 See Service Notes

Cleco®
Single Stage Gearing

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Illustration "F"

Ref	Number	#	X	EN
				Description
1	800116	1	2	Retaining Ring
2	541887	1		Retention Washer
3	1011732	1	3	O-Ring
4	542090	1		Ring Gear
5	541893	3	6	Planet Gear (21T)
6	203749	3	6	Needle Bearing
7	542793	1		Output Spindle
8	502983	1		Thrust Race
9	500528	1	2	Needle Bearing
10	542794	1		Attachment Adapter (includes Ref. 9)
11	543462-01	1		Gear Case Nut
12	541044	1	2	Pinion Adapter
13	541898	1	2	Extension Pinion

(#) Quantity

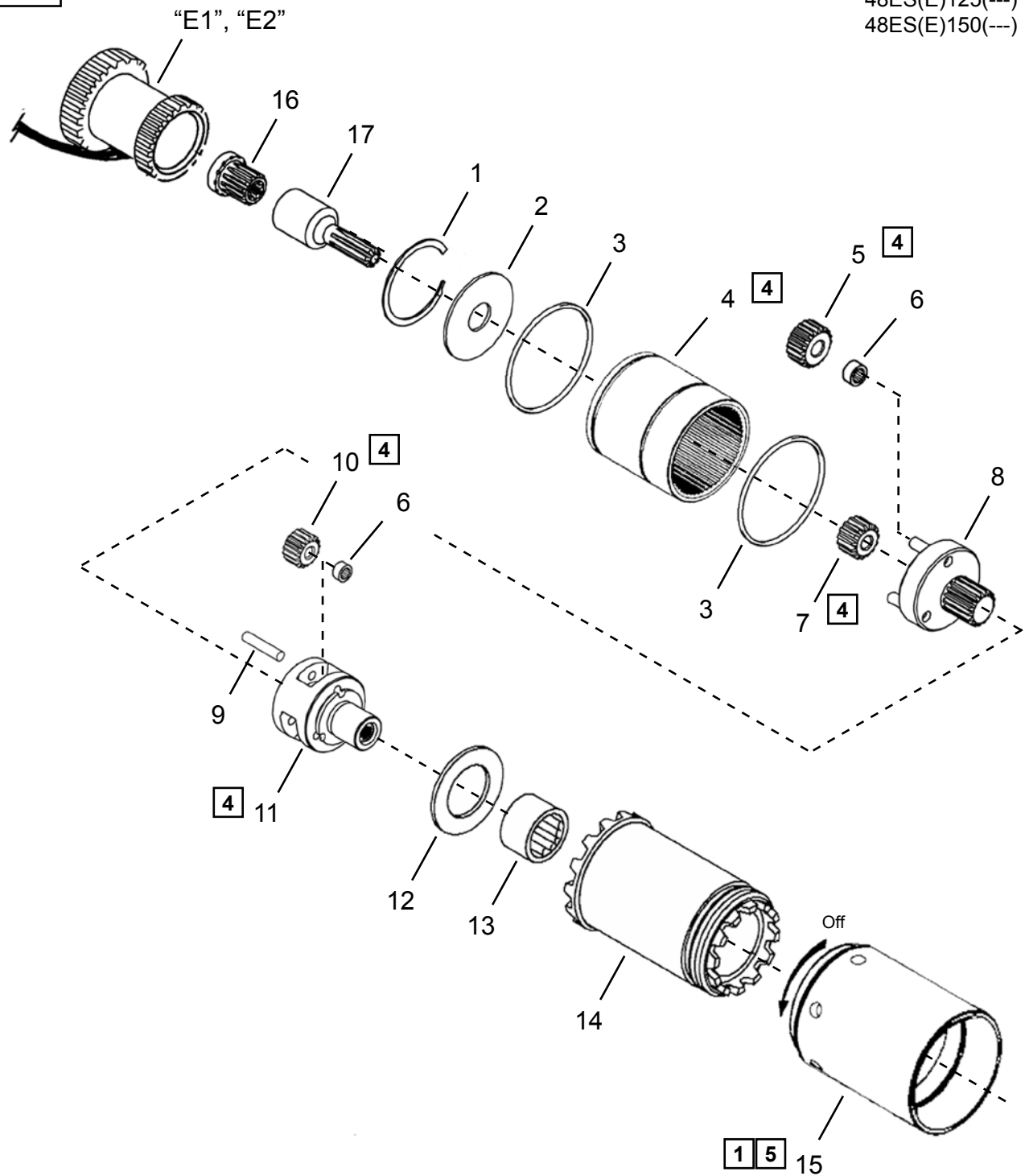
(X) Recommended Spare Parts

(T) Teeth

“G”

Models

48ES(E)90(---)
48ES(E)125(---)
48ES(E)150(---)



1 4 5 See Service Notes

Cleco®
Double Stage Gearing

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Illustration "G"

Ref	Number	#	X	EN
				Description
1	800116	1	2	Retaining Ring
2	541887	1		Retention Washer
3	542724	2	6	O-Ring
4	542722	1		Ring Gear
5	541894	3	6	Planet Gear (17T)
6	203749	6	12	Needle Bearing
7	541899	1	1	Slip-On Gear
8	Table "G"	1		Planet Carrier
9	541888	3	6	Planet Gear Pin
10	Table "G"	3	6	Planet Gear
11	Table "G"	1		Lower Gear Cage
12	502983	1		Thrust Race
13	500528	1	2	Needle Bearing
14	542829	1		Attachment Adapter (includes Ref. 13)
15	543462-02	1		Gear Case Nut
16	541044	1	2	Pinion Adapter
17	541898	1	2	Extension Pinion

(#) Quantity

(X) Recommended Spare Parts

(T) Teeth

Table "G"

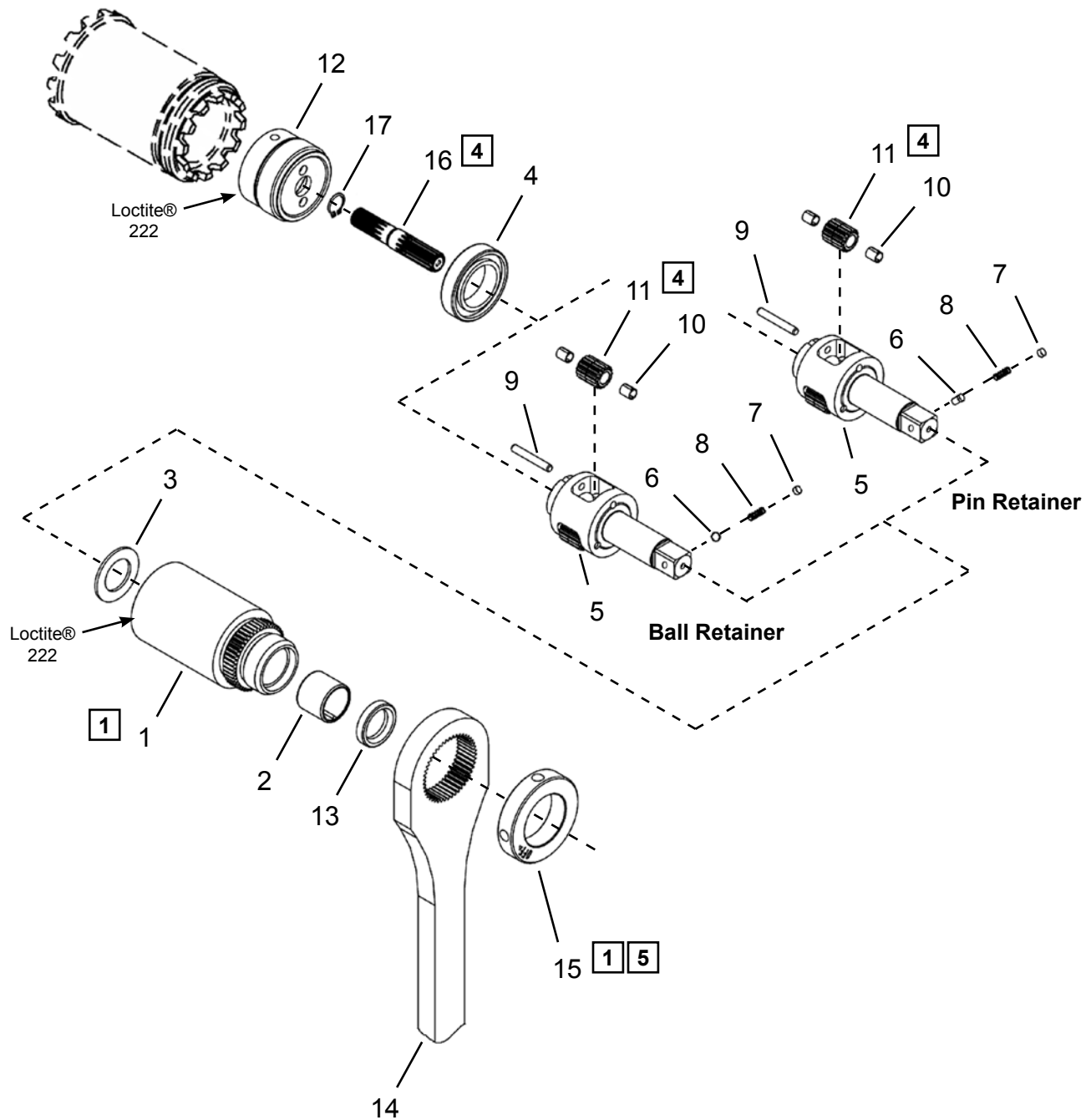
Ref.	Description	#	48ES(E)90D4(B)	#	48ES(E)125D4(B)	#	48ES(E)150D4(B)
8	Planet Carrier	1	542230	1	542233	1	542233
10	Planet Gear	3	541894 (17T)	3	541897 (20T)	3	541897 (20T)
11	Planet Cage	1	542079	1	542099	1	542099

(T) Teeth

"H"

Models

48ES(E)65D4(B)
48ES(E)150D4(B)



Cleco®
Output Gearing

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Illustration "H"

Ref	Number	#	X	EN
				Description
--	Table "H"	1		Gear Case Assembly
1	543461	1		Gear Case
2	203253	1	2	Needle Bearing
3	502981	1		Thrust Race
4	92100120	1	2	Ball Bearing
5	Table "H"	1		Output Spindle - Pin (includes Ref. 6-7-8)
	Table "H"	1		Output Spindle - Ball (includes Ref. 6-7-8)
6	Table "H"	1	3	Retainer Button
	Table "H"	1	3	Steel Ball
7	Table "H"	1	3	Plug Retainer
8	Table "H"	1	3	Spring
9	543507	3	6	Planet Pin
10	543508	6	12	Needle Bearing
11	543460	3	6	Planet Gear (21T)
12	543463	1		Gear Case Adapter
13	93140030	1	2	Oil Seal
14	Table "H1"	1		Torque Bar
15	11841013	1		Lock Nut
16	543459	1	1	Pinion Shaft
17	800146	1	2	Retaining Ring

(#) Quantity

(X) Recommended Spare Parts

(T) Teeth

Table "H"

Ref.	Description	#	48ES(E)65D4 48ES(E)150D4	#	48ES(E)65D4B 48ES(E)150D4B
--	Gear Case Assembly	1	543465-02	1	543465-04
5	Output Spindle	1	543458-01	1	543997-01
6	Retainer Button	1	24499	--	-----
	Steel Ball	--	-----	1	1014198
7	Plug Retainer	1	26989	1	LB-501
8	Spring	1	9D6481	1	WS-371-B

Table "H1"

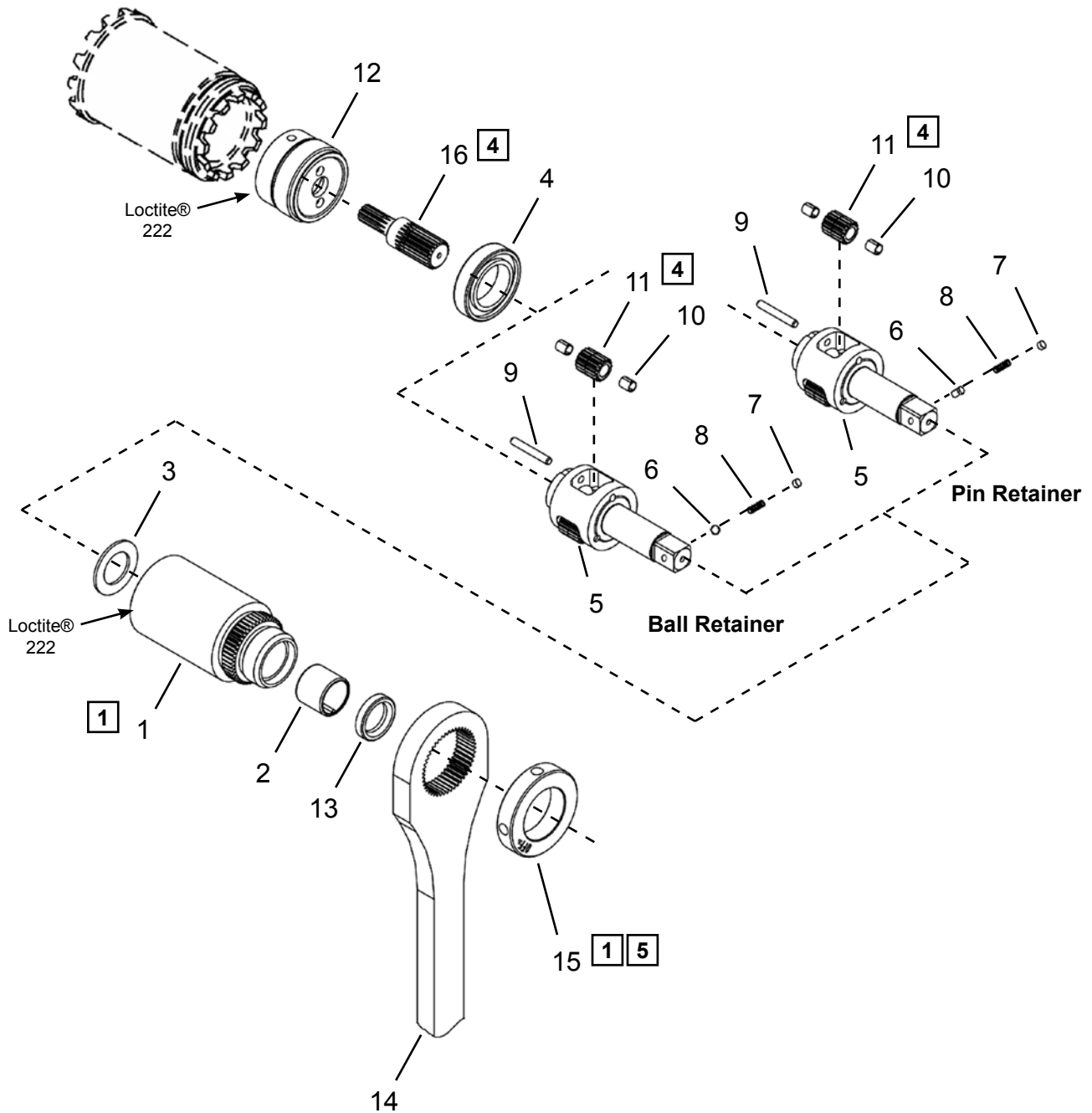
Ref.	Description	#	48ES(E)65D4(B)	#	48ES(E)150D4(B)
14	Torque Bar	1	48047126	1	48047128
	Material		Aluminum		Steel

"1"

Models

48ES(E)90D4(B)

48ES(E)125D4(B)



1 4 5 See Service Notes

Illustration "I"

Ref	Number	#	X	EN
				Description
--	Table "I"	1		Gear Case Assembly
1	543461	1		Gear Case
2	203253	1	2	Needle Bearing
3	502981	1		Thrust Race
4	92100120	1	2	Ball Bearing
5	Table "I"	1		Output Spindle - Pin (includes Ref. 6-7-8)
	Table "I"	1		Output Spindle - Ball (includes Ref. 6-7-8)
6	Table "I"	1	3	Retainer Button
	Table "I"	1	3	Steel Ball
7	Table "I"	1	3	Plug Retainer
8	Table "I"	1	3	Spring
9	543506	3	6	Planet Pin
10	92110002	6	12	Needle Bearing
11	543457	3	6	Planet Gear (17T)
12	543463	1		Gear Case Adapter
13	93140030	1	2	Oil Seal
14	48047128	1		Torque Bar (Steel)
15	11841013	1		Lock Nut
16	543456	1	1	Pinion Shaft

(#) Quantity
(X) Recommended Spare Parts
(T) Teeth

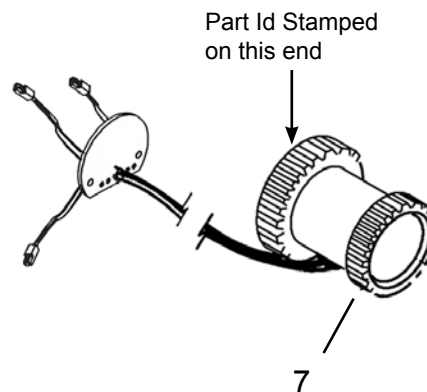
Table "I"

Ref.	Description	#	48ES(E)90D4 48ES(E)125D4	#	48ES(E)90D4B 48ES(E)125D4B
--	Gear Case Assembly	1	543465-01	1	543465-03
5	Output Spindle	1	543455-01	1	543996-01
6	Retainer Button	1	24499	--	-----
	Steel Ball	--	-----	1	1014198
7	Plug Retainer	1	26989	1	LB-501
8	Spring	1	9D6481	1	WS-371-B

1 Tightening Torque

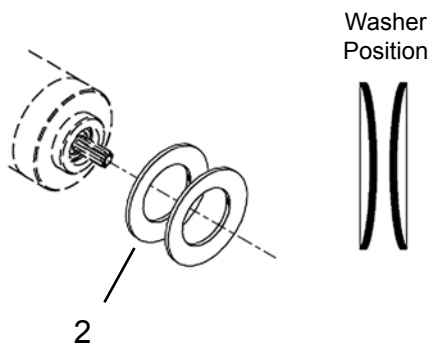
Illustration	Reference	Tightening torque	
		Ft-Lbs (in-lbs)	Nm
D1, D2	3	(10-14)	1,1-1,6
	16	25-30	34-41
	19	35-40	47-54
	21 (Swivel)	15-18	20-25
E1, E2	1	(4-6)	0,45-0,68
	3	(4-6)	0,45-0,68
F	11	35-40	47-54
G	15	35-40	47-54
H	1	35-40	47-54
	15	35-40	47-54
I	1	35-40	47-54
	15	35-40	47-54

2 Transducer Identification



Transducers are not interchangeable, check part number.

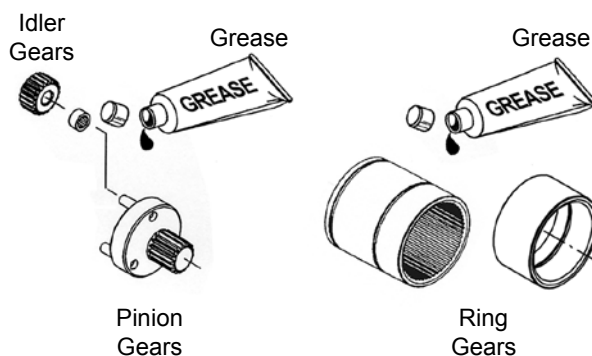
3 Washer Assembly



4 Gear Train Lubrication

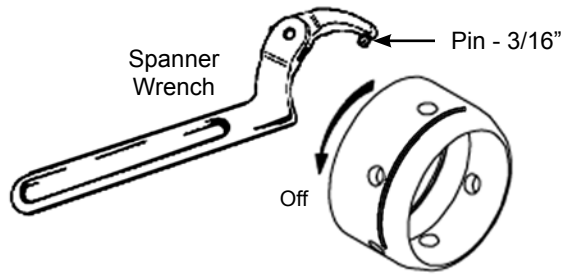
541444 - 2 oz. (56 g)

541445 - 1 pound (0.45 kg)

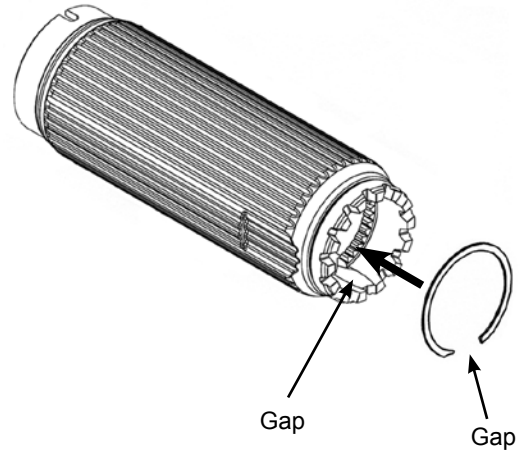


Service Notes / Tool Memory Parameters

5 Spanner Wrench



6 Retaining Ring Assembly



48ES(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]
48ES(E)65D4	750	65	70.3865	542846-12	113.2308	2.7124
48ES(E)65D4B	750	65	70.3865	542846-12	113.2308	2.7124
48ES(E)90D4	510	90	111.9428	542846-31	166.1383	3.7809
48ES(E)90D4B	510	90	111.9428	542846-31	166.1383	3.7809
48ES(E)125D4	360	125	127.3235	542846-36	234.4323	5.3350
48ES(E)125D4B	360	125	127.3235	542846-36	234.4323	5.3350
48ES(E)150D4	240	150	190.6085	542846-36	350.9548	7.9868
48ES(E)150D4B	240	150	190.6085	542846-36	350.9548	7.9868

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, MI

**Apex Tool Group
Sales & Service Center**
2630 Superior Court
Auburn Hills, MI 48326
Tel: 248-391-3700
Fax: 248-391-7824

Houston, TX

**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, SC

Apex Tool Group
670 Industrial Drive
Lexington, SC 29072
Tel: 800-845-5629
Tel: 803-951-7544
Fax: 803-358-7681

Los Angeles, CA

**Apex Tool Group
Sales & Service Center**
15503 Blackburn Avenue
Norwalk, CA 90650
Tel: 562-623-4457
Fax: 562-802-1718

Seattle, WA

**Apex Tool Group
Sales & Service Center**
2865 152nd Avenue N.E.
Redmond, WA 98052
Tel: 425-497-0476
Fax: 425-497-0496

York, PA

**Apex Tool Group
Sales & Service Center**
3990 East Market Street
York, PA 17402
Tel: 717-755-2933
Fax: 717-757-5063

Canada

**Apex Tool Group
Sales & Service Center**
5925 McLaughlin Road
Mississauga, Ont. L5R 1B8
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
Tel: +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
Apex Tool Group, LLC
Vialidad El Pueblito #103
Parque Industrial Querétaro
Querétaro, QRO 76220
Mexico
Tel: +52 (442) 211-3800
Fax: +52 (442) 103-0443

Brazil

Cooper Tools Industrial Ltda.
a company of
Apex Tool Group, LLC
Av. Liberdade, 4055
Zona Industrial - Iporanga
18087-170 Sorocaba
SP Brazil
Tel: +55 15 2383929
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
Apex, NC 27539
Phone: 919-387-0099
Fax: 919-387-2614
www.apextoolgroup.com

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