

Parts Manual
PL12EN-48ES
03/17/2015

Cleco®

48ES Series
Electronically Controlled Inline Nutrunner



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

Cleco®
Model Nomenclature

PL12EN-48ES
03/17/2015

“A”

48	E	S	X	XX	XX	X
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Tool Series

48

Motor Style

E = Brushless Electric Motor

Tool Type

S = Inline

Feature

- = Matrix Tool Connector (Standard)

E = Air LB Connector

Maximum Torque Nm (rounded to nearest Nm)

12 = 12 Nm

25 = 25 Nm

36 = 36 Nm

48 = 48 Nm

Attachment

Q = 1/4" Hex Slip Chuck

D2 = 1/4" Square Drive

D3 = 3/8" Square Drive

Spindle Type

- = Pin Retainer (Standard)

B = Ball Retainer

The original language of this manual is English.

Product Safety Information:

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 in any improper manner that could cause damage to the tool or injure the operator.

For additional product safety information refer to Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG document GS-2002, General Safety Instructions Electric Assembly Tools.



This DC electric assembly tool 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. Abuse, misuse, or failure to obey this and any other issued warnings may result in injury or death.

EC Declaration of Conformity:

We affirm that the product specified herein is to be considered a machine in conjunction with a fastening control from Apex Tool Group. We further declare that this machine is in accordance with the following EC Regulations, 2006/42/EC and 2004/108/EC. Applied harmonized standards are ISO 12100:2010.

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

Signature: Vishnu Irigireddy
Date: April 21, 2014

Noise and Vibration:

48ES Series: Noise Level ≤ 68 dB(A)
48ESE Series: Noise Level ≤ 68 dB(A)

48ES Series: Vibration < 2.5 m/s²
48ESE Series: Vibration < 2.5 m/s²

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.

Copyright Protection:

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“B”

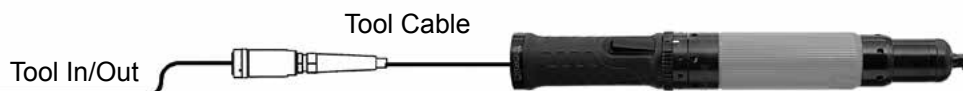
m-Pro-400 Series
Controller



TME-200 Series
Controller



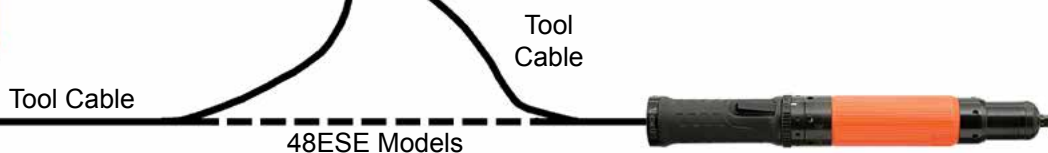
Complete Tool
Order Number
48ES(E)12Q
48ES(E)12D2
48ES(E)12D2B
48ES(E)25D3
48ES(E)25D3B
48ES(E)36D3
48ES(E)36D3B
48ES(E)48D3
48ES(E)48D3B



m-Pro-400GC
Global Controller



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



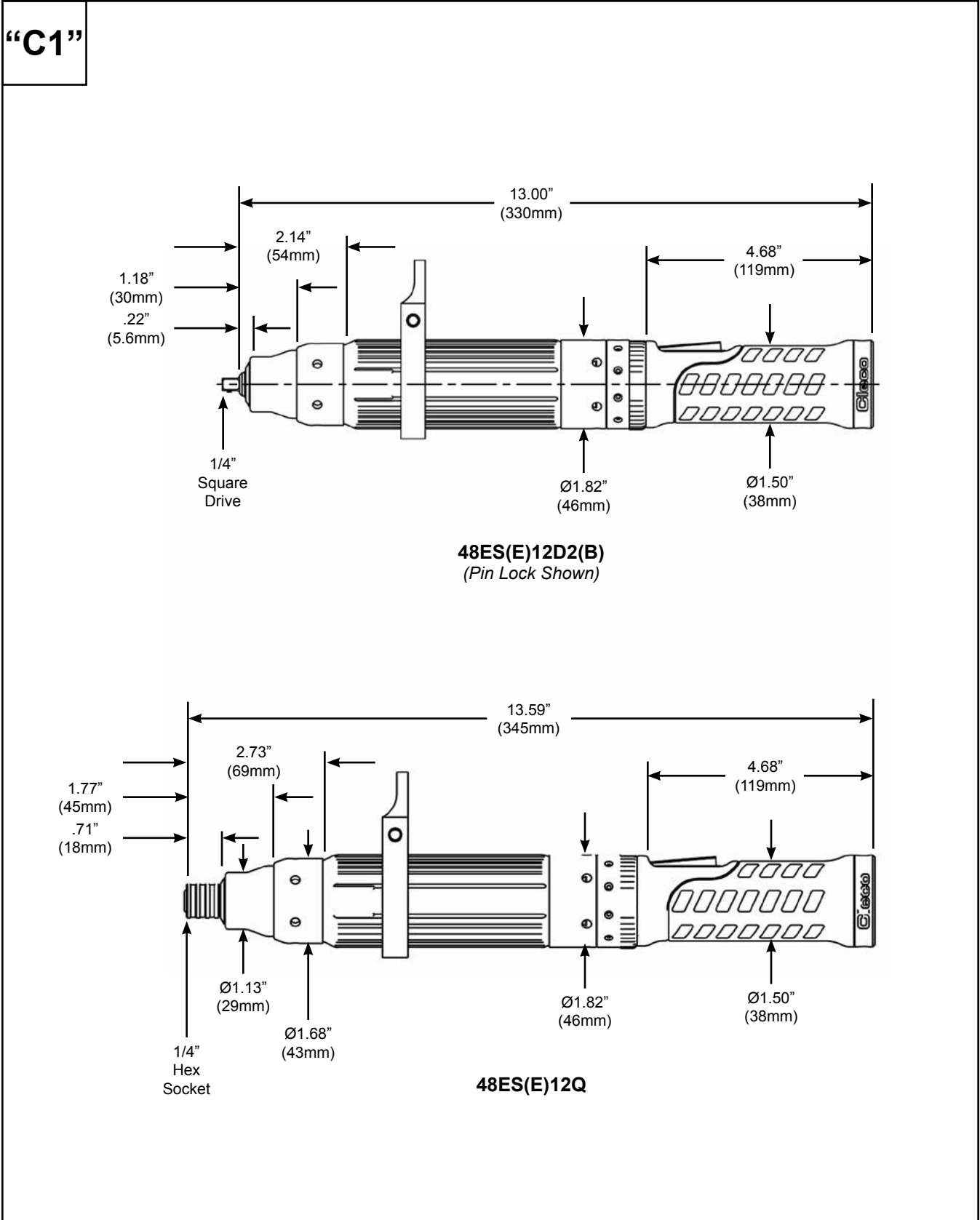
TME and m-Pro-400 Series Controllers

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

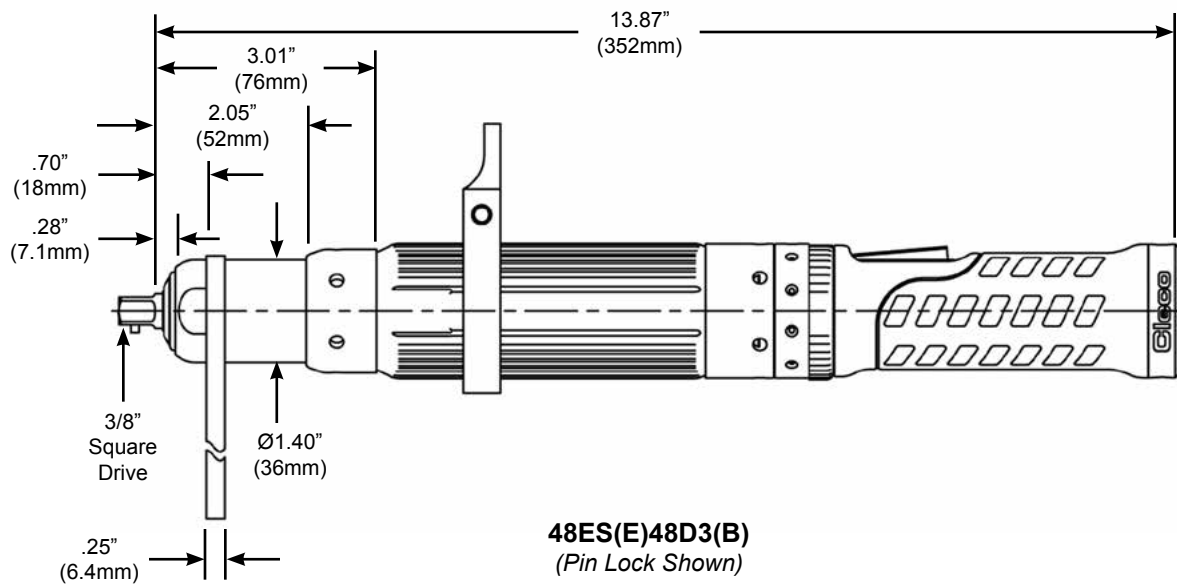
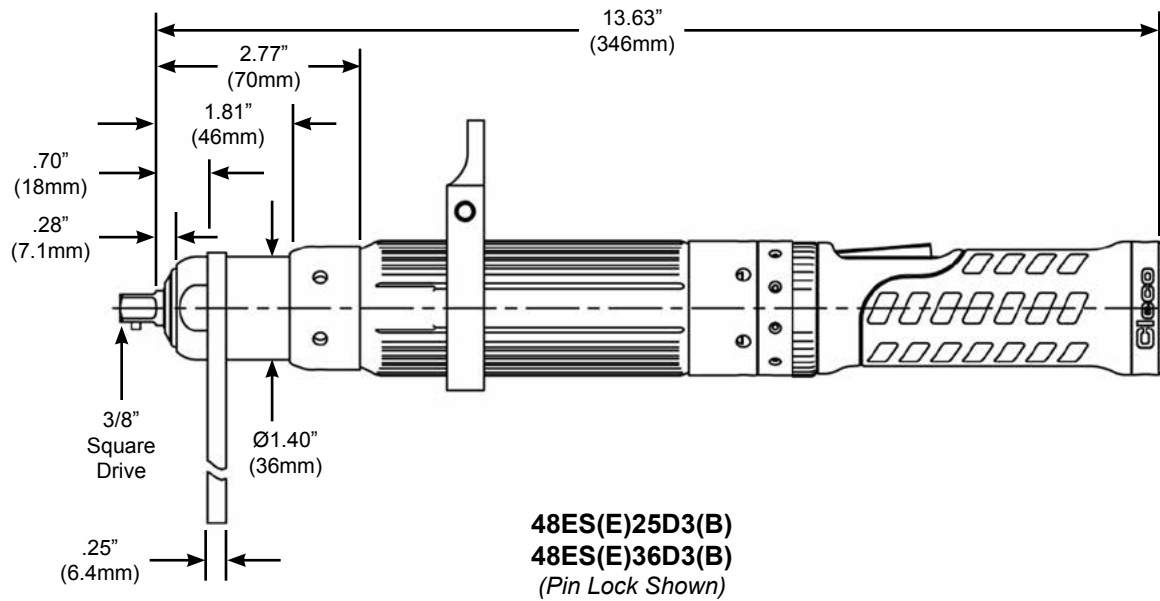
* Note: Contact Apex Tool Group

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



“C2”



“D1”

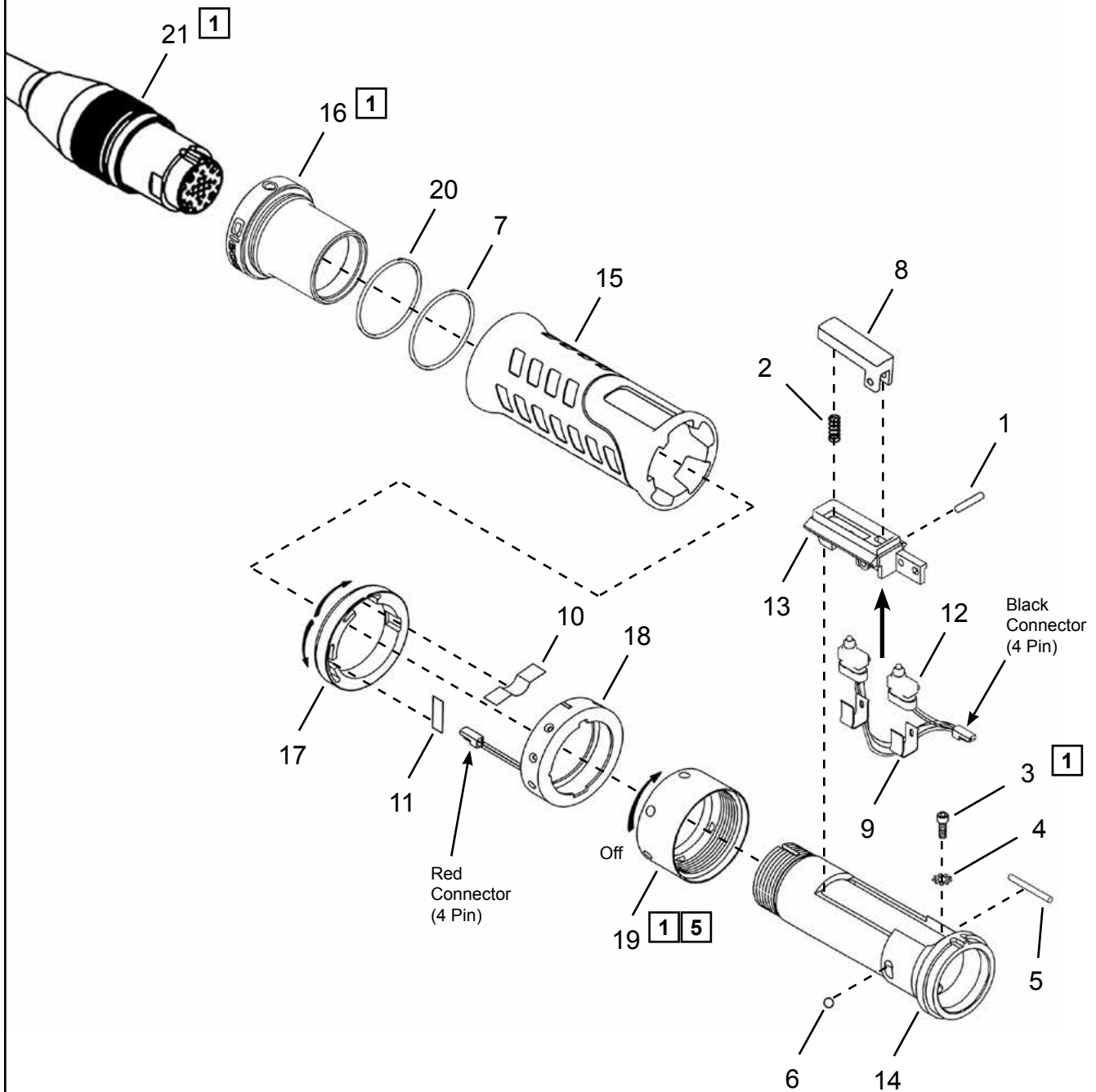
Models

48ES12(---)

48ES25(---)

48ES36(---)

48ES48(---)



Cleco®
Handle - Matrix Tool Connector

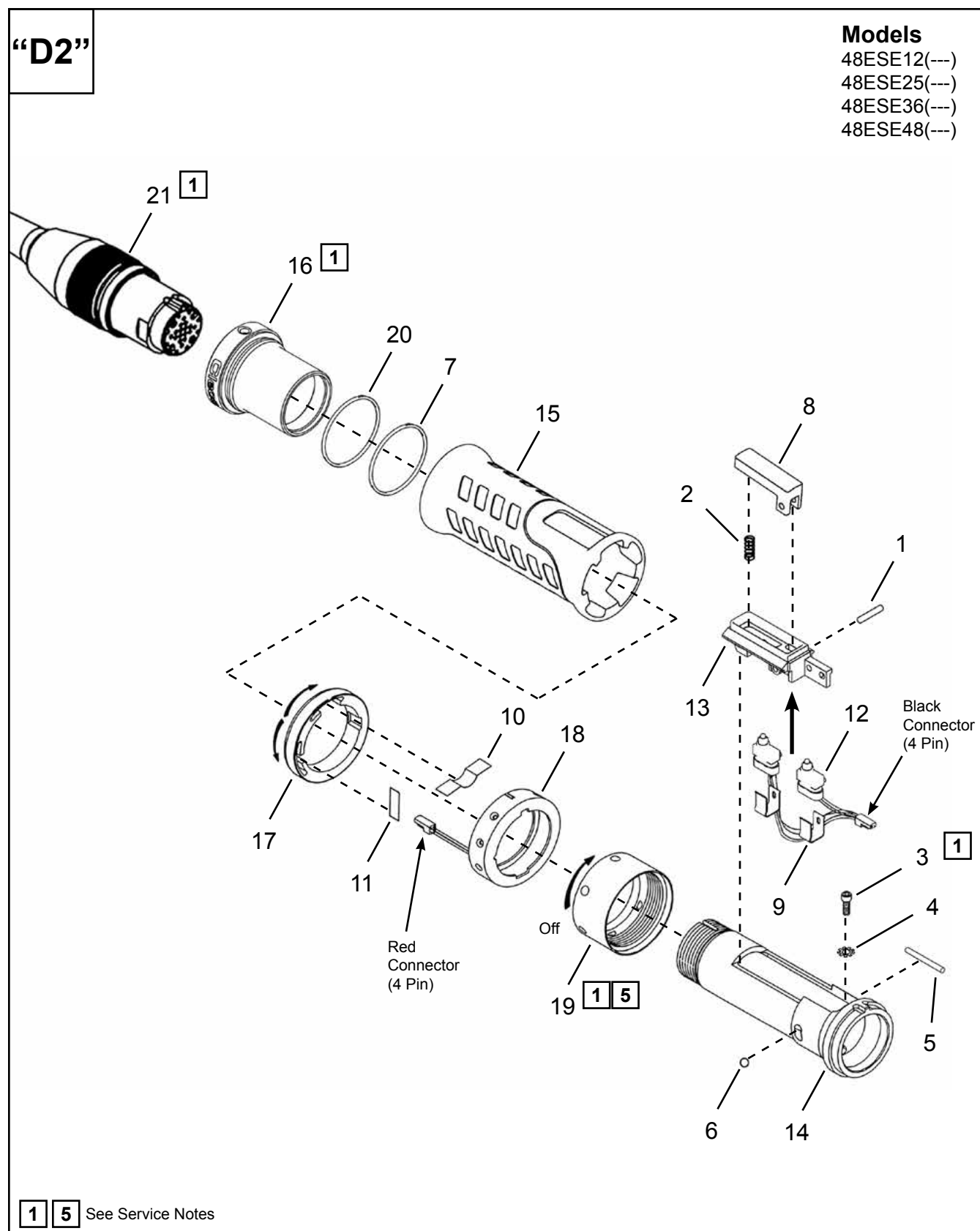
PL12EN-48ES
03/17/2015

Illustration "D1"

Ref	Number	#	X	EN
				Description
1	541840	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 (quantity shown based on 1-5 tools in operation)



Cleco®
Handle - Air LB Tool Connector

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03/17/2015

Illustration "D2"

Ref	Number	#	X	EN
				Description
1	541840	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 (quantity shown based on 1-5 tools in operation)

“E1”

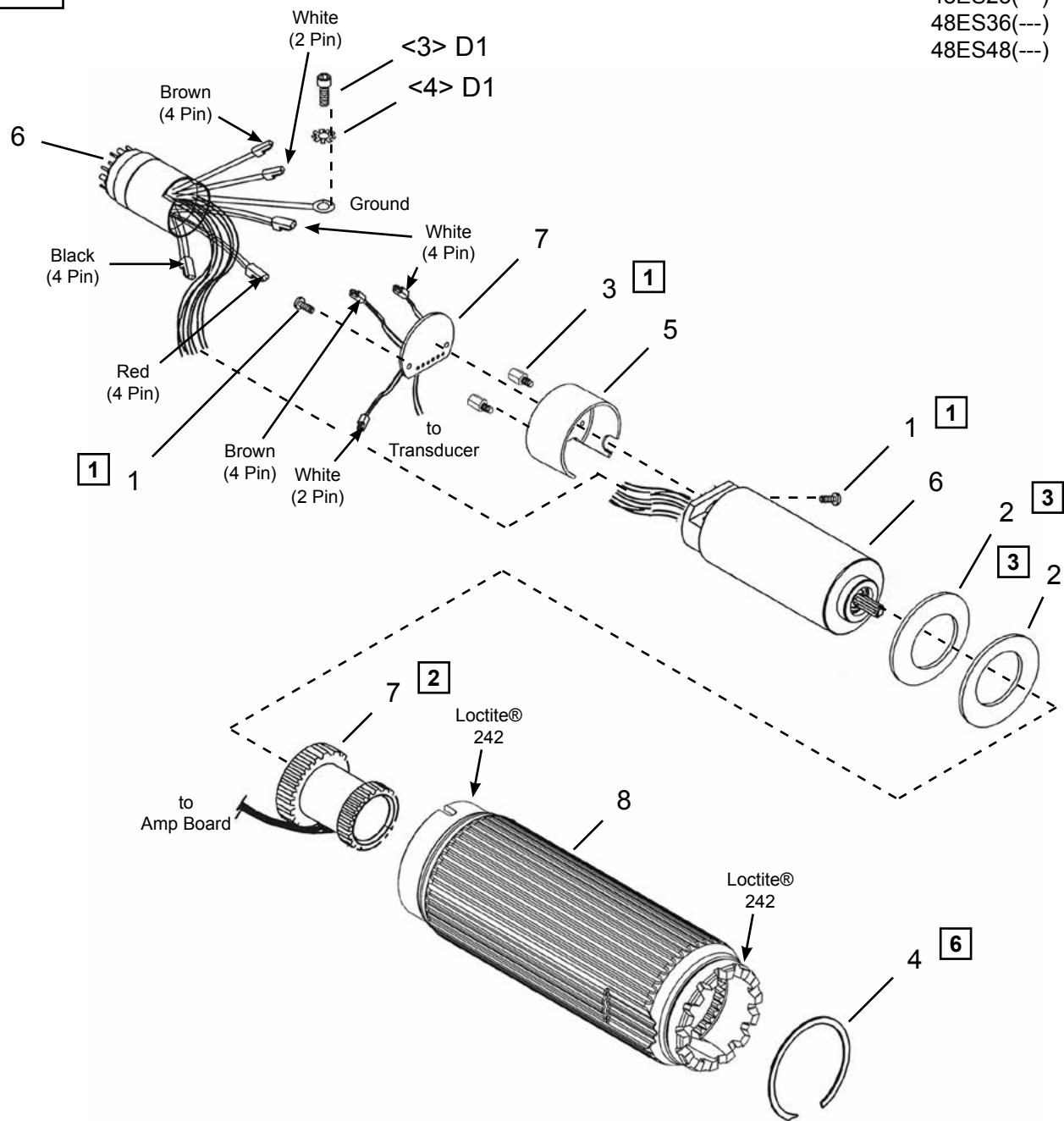
Models

48ES12(---)

48ES25(---)

48ES36(---)

48ES48(---)



1 2 3 6 See Service Notes

Cleco®
Motor - Matrix Tool Connector

PL12EN-48ES
03/17/2015

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 (quantity shown based on 1-5 tools in operation)

Table "E1"

Ref.	Description	#	48ES12Q 48ES12D2	#	48ES25D3	#	48ES36D3	#	48ES48D3
7	Transducer (unprogrammed)	1	542846-12	1	542846-31	1	542846-36	1	542846-48
	Transducer (programmed)	1	542846-12P	1	542846-31P	1	542846-36P	1	542846-48P
	Transducer Capacity		12 Nm		31 Nm		36 Nm		48 Nm

“E2”

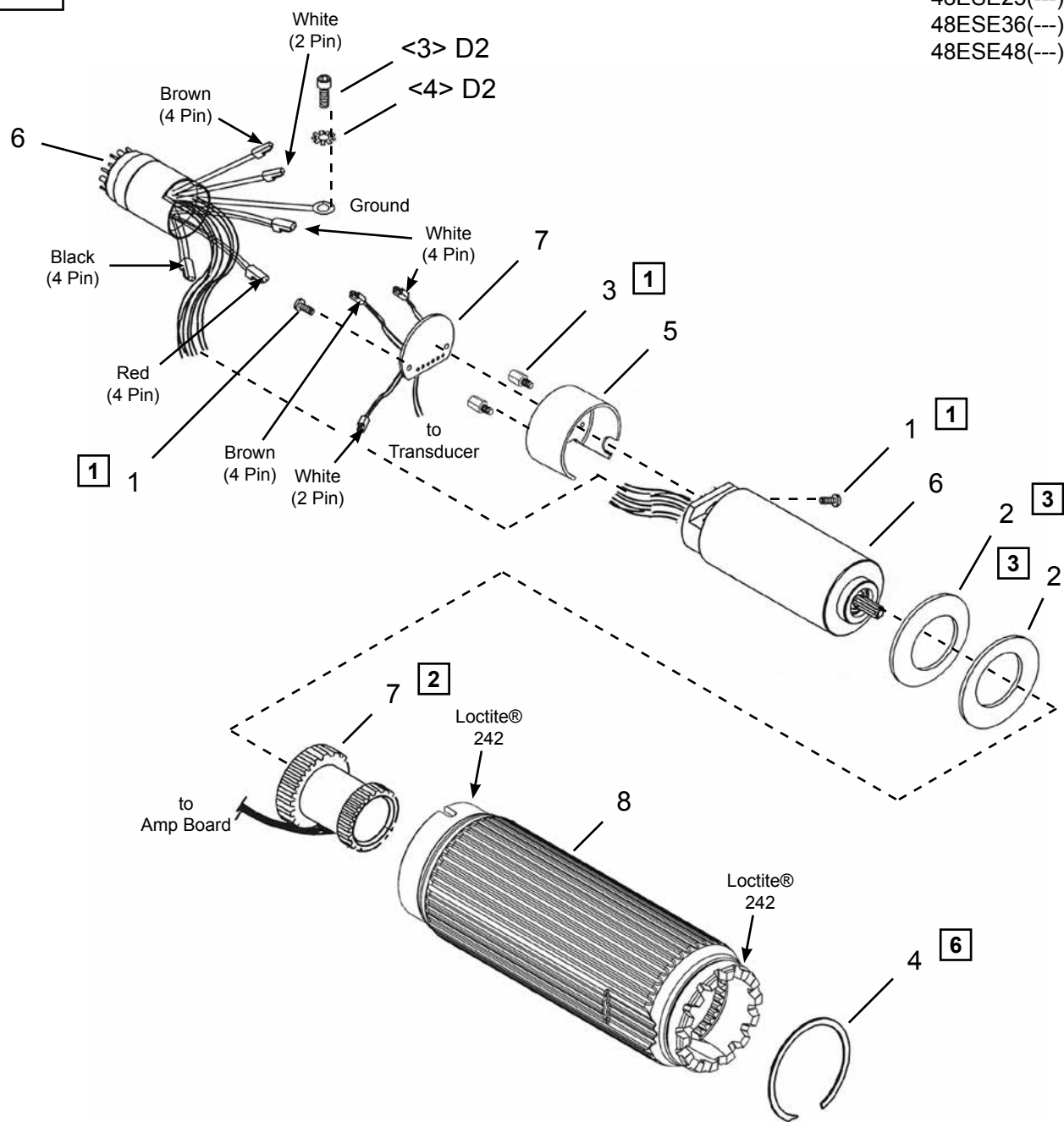
Models

48ESE12(---)

48ESE25(---)

48ESE36(---)

48ESE48(---)



1 2 3 6 See Service Notes

Cleco®
Motor - Air LB Tool Connector

PL12EN-48ES
03/17/2015

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 (quantity shown based on 1-5 tools in operation)

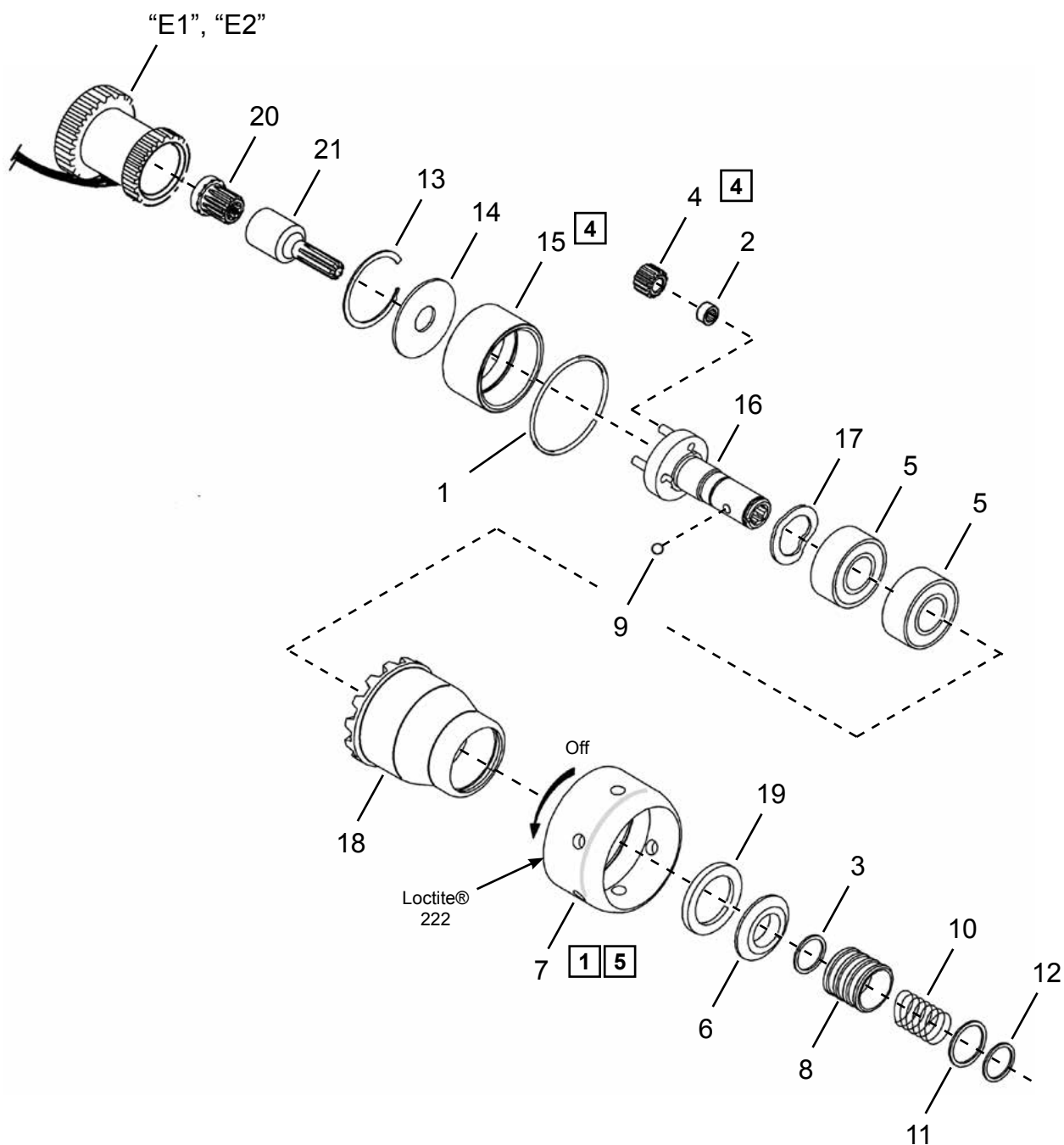
Table "E2"

Ref.	Description	#	48ESE12Q 48ESE12D2	#	48ESE25D3	#	48ESE36D3	#	48ESE48D3
7	Transducer (unprogrammed)	1	542846-12	1	542846-31	1	542846-36	1	542846-48
	Transducer (programmed)	1	542846-12P	1	542846-31P	1	542846-36P	1	542846-48P
	Transducer Capacity		12 Nm		31 Nm		36 Nm		48 Nm

Cleco®
Single Stage Gearing

"F"

Models
48ES(E)12Q



1 4 5 See Service Notes

Cleco®
Single Stage Gearing

PL12EN-48ES
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Illustration "F"

Ref	Number	#	X	EN
				Description
1	1011732	1	4	O-Ring
2	203749	3	6	Needle Bearing
3	833688	1	2	Retaining Ring
4	541893	3	6	Planet Gear (21T)
5	542089	2	4	Ball Bearing
6	541914	1		Spindle Washer
7	541904	1		Front Nut
8	536592	1		Sleeve
9	844265	1	4	Steel Ball (1/8")
10	540842	1	2	Spring
11	540800	1	2	Washer
12	503009	1	2	Retaining Ring
13	800116	1	2	Retaining Ring
14	541887	1		Retention Washer
15	542090	1		Ring Gear (52T)
16	542092	1		Output Spindle
17	1019356	1		Wave Washer
18	542091	1		Gear Case
19	542076	1		Retaining Ring
20	541044	1	2	Pinion Adapter
21	541898	1	2	Extension Pinion

(#) Quantity

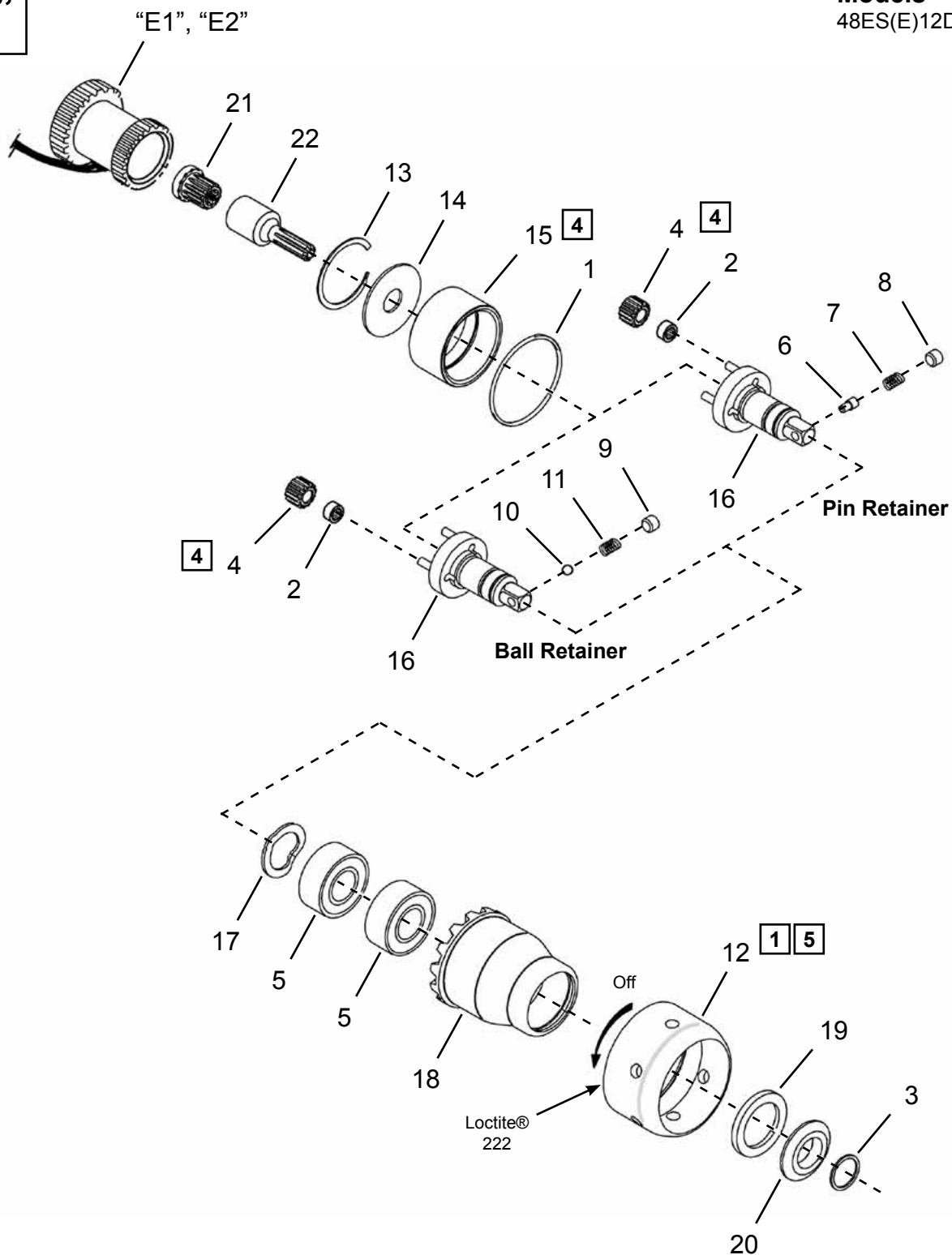
(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

(T) Teeth

Cleco®
Single Stage Gearing

"G"

Models
48ES(E)12D2(B)



1 4 5 See Service Notes

Cleco®
Single Stage Gearing

PL12EN-48ES
03/17/2015

Illustration "G"

Ref	Number	#	X	EN
				Description
1	1011732	1	4	O-Ring
2	203749	3	6	Needle Bearing
3	800216	1	2	Retaining Ring
4	541893	3	6	Planet Gear (21T)
5	542089	2	4	Ball Bearing
6	23569	1	3	Button
7	27722PT	1	3	Spring
8	26989PT	1	3	Plug
9	LB-252	1	3	Bushing
10	94010006	1	3	Steel Ball
11	WS-252	1	3	Spring
12	541904	1		Front Nut
13	8000116	1	2	Retaining Ring
14	541887	1		Retention Washer
15	542090	1		Ring Gear (52T)
16	Table "G"	1		Output Spindle - Pin (includes Ref. 6-7-8)
	Table "G"	1		Output Spindle - Ball (includes Ref. 9-10-11)
17	1019356	1		Wave Washer
18	542091	1		Gear Case
19	542076	1		Retaining Ring
20	541919	1		Spindle Washer
21	541044	1	2	Pinion Adapter
22	541898	1	2	Extension Pinion

(#) Quantity

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

(T) Teeth

Table "G"

Ref.	Description	#	48ES(E)12D2	#	48ES(E)12D2B
16	Output Spindle	1	542093	1	543423

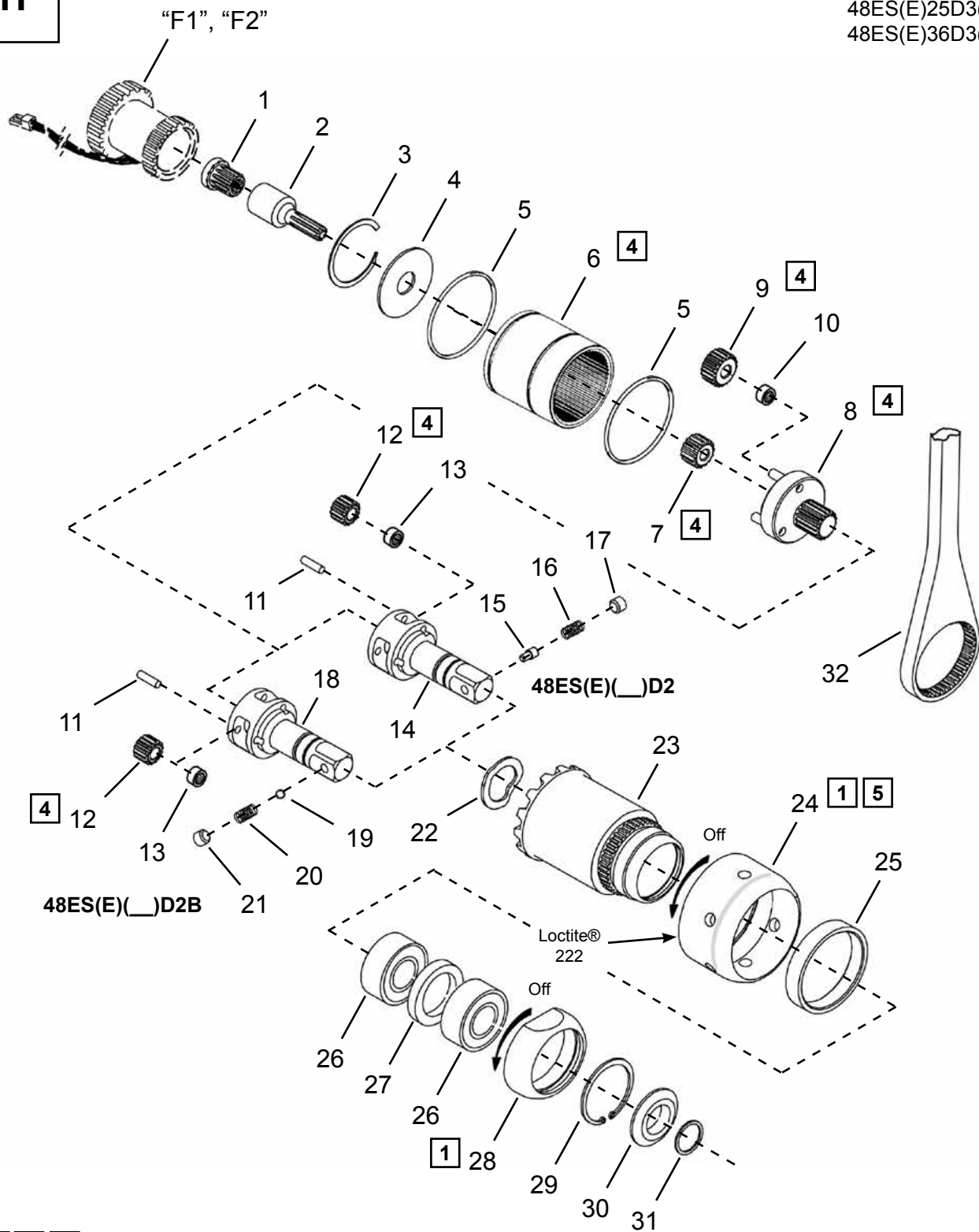
Cleco®
Double Stage Gearing

"H"

Models

48ES(E)25D3(B)

48ES(E)36D3(B)



1 4 5 See Service Notes

Cleco®
Double Stage Gearing

PL12EN-48ES
03/17/2015

Illustration "H"

Ref	Number	#	X	EN
				Description
1	541044	1	2	Pinion Adapter
2	541898	1	2	Extension Pinion
3	800116	1	2	Retaining Ring
4	541887	1		Washer
5	542724	2	4	O-Ring
6	542722	1		Ring Gear
7	541899	1	2	Slip-On Gear (17T)
8	Table "H"	1		Idler Plate
9	541894	3	6	Planet Gear (17T)
10	203749	3	6	Needle Bearing
11	541888	3	6	Planet Pin
12	Table "H"	3	6	Planet Gear
13	203749	3	6	Needle Bearing
14	Table "H"	1		Output Spindle - Pin (includes Ref. 15-17)
15	24499	1	3	Button
16	9D6481	1	3	Spring
17	26989PT	1	3	Plug
18	Table "H"	1		Output Spindle - Ball (includes Ref. 19-21)
19	1091PT	1	3	Steel Ball
20	WS-371	1	3	Spring
21	LB-370	1	3	Plug
22	1019356	1	2	Wave Washer
23	542723	1		Gear Case
24	541904	1		Front Nut
25	542134	1		Spline Guard
26	542089	2	4	Ball Bearing
27	541775	1		Bearing Spacer
28	542097	1		Retaining Nut
29	542076	1	3	Retaining Ring
30	541919	1		Spindle Washer
31	800216	1	3	Retaining Ring
32	542127	1		Reaction Bar

(#) Quantity

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

(T) Teeth

Table "H"

Ref.	Description	#	48ES(E)25D3	#	48ES(E)36D3
8	Idler Plate	1	542230	1	542233
12	Planet Gear	3	541894 (17T)	3	541897 (21T)
14	Output Spindle - Pin	1	541916	1	541917
18	Output Spindle - Ball	1	543424	1	543425

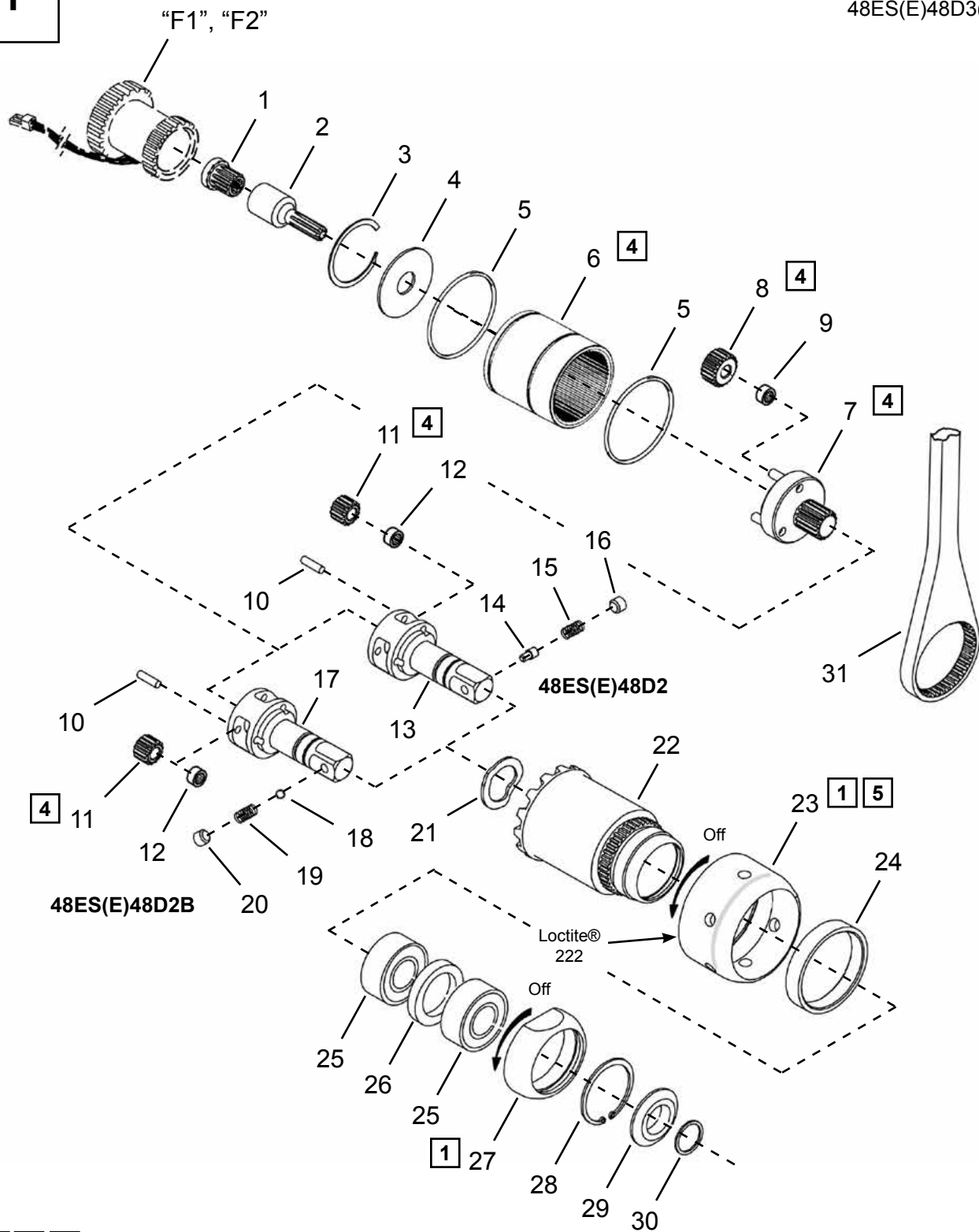
(T) Teeth

Cleco®
Double Stage Gearing

Models

48ES(E)48D3(B)

"1"



1 4 5 See Service Notes

Cleco®
Double Stage Gearing

PL12EN-48ES
03/17/2015

Illustration "I"

Ref	Number	#	X	EN
				Description
1	541044	1	2	Pinion Adapter
2	541898	1	2	Extension Pinion
3	800116	1	2	Retaining Ring
4	541887	1		Washer
5	542724	2	4	O-Ring
6	542668	1		Ring Gear
7	542671	1		Idler Plate
8	541893	3	6	Planet Gear (21T
9	203749	3	6	Needle Bearing
10	542666	3	6	Planet Pin
11	542669	3	6	Planet Gear (17T)
12	203784PT	3	6	Needle Bearing
13	542670	1		Output Spindle - Pin (includes Ref. 14-16)
14	24499	1	3	Button
15	9D6481	1	3	Spring
16	26989PT	1	3	Plug
17	543426	1		Output Spindle - Ball (includes Ref. 18-20)
18	1091PT	1	3	Steel Ball
19	WS-371	1	3	Spring
20	LB-370	1	3	Plug
21	1019356	1	2	Wave Washer
22	542673	1		Gear Case
23	541904	1		Front Nut
24	542134	1		Spline Guard
25	542089	2	4	Ball Bearing
26	542672	1		Bearing Spacer
27	542097	1		Retaining Nut
28	542076	1	3	Retaining Ring
29	541919	1		Spindle Washer
30	800216	1	3	Retaining Ring
31	542127	1		Reaction Bar

(#) Quantity

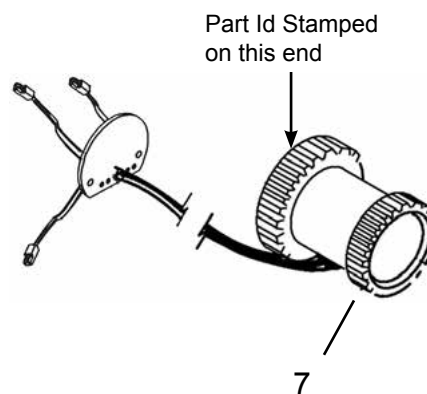
(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

(T) Teeth

1 Tightening Torque

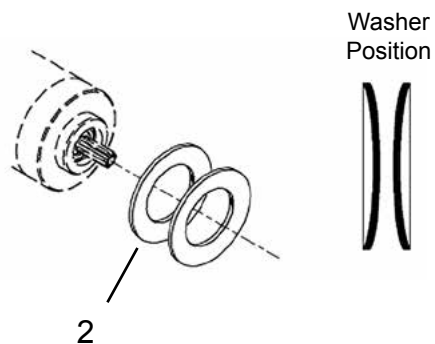
Illustration	Reference	Tightening torque	
		Ft-Lbs (in-lbs)	Nm
D1, D2	3	(10-14)	1,1-1,6
	16	25-30	34-41
	19	35-40	47-54
	21 (Swivel)	15-18	20-25
E1, E2	1	(4-6)	0,45-0,68
	3	(4-6)	0,45-0,68
F	7	35-40	47-54
G	12	35-40	47-54
H	24	35-40	47-54
	28	30-35	41-47
I	23	35-40	47-54
	27	30-35	41-47

2 Transducer Identification



Transducers are not interchangeable, check part number.

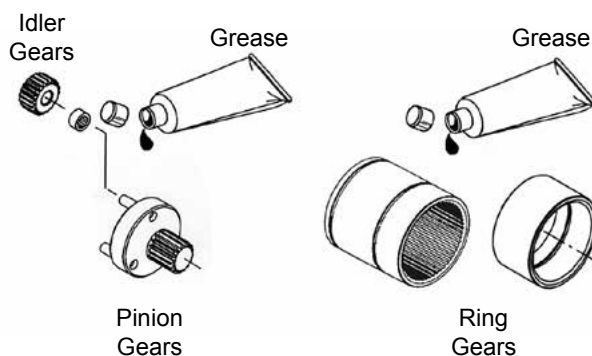
3 Washer Assembly



4 Gear Train Lubrication

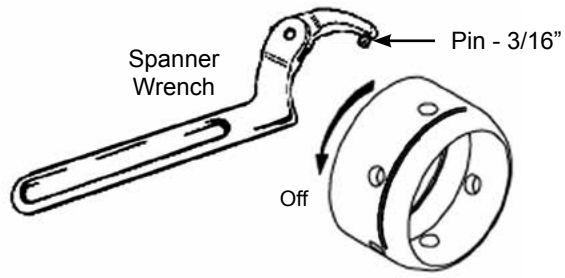
541444 - 2 oz. (56 g)

541445 - 1 pound (0.45 kg)

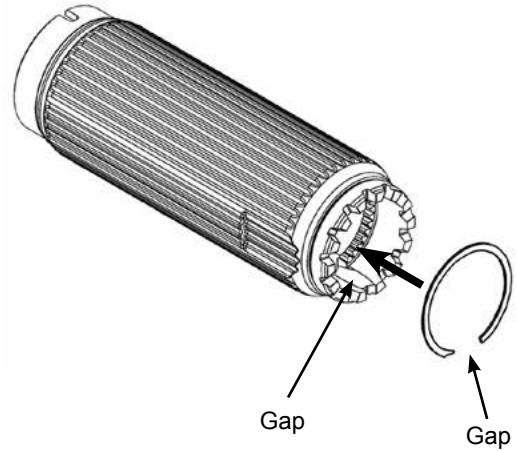


Service Notes / Tool Memory Parameters

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)12Q	4000	12	13.9592	540846-12	21.3330	0.5379
48ES(E)12D2(B)	4000	12	13.9592	542846-12	21.3330	0.5379
48ES(E)25D3(B)	1820	25	33.2354	542846-31	46.8588	1.1225
48ES(E)36D3(B)	1290	36	37.8018	542846-36	66.1209	1.5840
48ES(E)48D3(B)	985	48	49.8132	542846-48	86.5869	2.0742

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

**Apex Tool Group
Ind. Com. Ferram. Ltda**
Av. Liberdade, 4055
Zona Industrial Iporanga
Sorocaba, São Paulo
CEP# 18087-170
Brazil
Tel: +55 15 3238 3820
Fax: +55 15 3238 3938

Canada

**Apex Tool Canada, Ltd
Sales & Service Center**
7631 Bath Road
Mississauga, Ont. L4T 3T1
Canada
Tel: (866) 691-6212
Tel: (905) 673-4400

China

**Apex Power Tool Trading (Shanghai)
Co., Ltd**
Building A8, No. 38
Dongsheng Road
Pudong, Shanghai
China 201201
Tel: +86-21-60880320
Fax: +86-21-60880298
www.aptpowertools.com.cn

England

**Apex Tool Group
GmbH & Co. OHG**
C/O Spline Gauges
Piccadilly, Tamworth
Staffordshire B78 2ER
United Kingdom
Tel: +44 1827 872 771
Fax: +44 1827 8741 28

France

Apex Tool Group SAS
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
www.apexpowertools.eu

Hungary

**Apex Tool Group
Hungaria Kft**
Platánfa u.2
9027 Győr
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
Tel: +91-20-66761111

Mexico

**Apex Tool Group
Manufacturing México
S. de RL de CV**
Vialidad El Pueblito #103
Parque Industrial Querétaro
Querétaro, QRO
CP# 76220
Mexico
Tel: +52 (442) 211-3800
Fax: +52 (800) 685-5560

USA - Detroit, Michigan

Apex Tool Group
2630 Superior Court
Auburn Hills, MI 48326
Tel: (248) 393-5640
Fax: (248) 391-6295

USA - Lexington, South Carolina

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

USA - York, Pennsylvania

Apex Tool Group
3990 East Market Street
York, PA 17402
Tel: (717) 755-2933
Fax: (717) 757-5063

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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