

Parts Manual
PL12EN-48EA-H
10/06/2011

Cleco®

48EA Series
Electronically Controlled Hold-N-Drive 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:

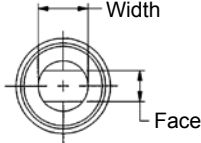
Brushless DC electric transducer controlled right angle portable nutrunners.

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	H	X	XX	X	XX	X
									Holding Socket Data		
<u>Tool Series</u> 48											
<u>Motor Style</u> E = Brushless Electric Motor											
<u>Tool Type</u> A = Right Angle											
<u>Feature</u> - = Matrix Tool Connector (Standard) E = Air LB Connector											
<u>Maximum Torque Nm (rounded to nearest Nm)</u> 53 = 53 Nm 135 = 135 Nm 75 = 75 Nm 230 = 230 Nm 110 = 112 Nm											
<u>Tool Termination</u> H = Hold and Drive											
<u>Retainer Shaft</u> 3 = 3.5" 6 = 5.875" 4 = 4.0" 9 = 9.5" 5 = 5.375"											
<u>Drive Socket</u> EE = 1/2" MG = 13mm MN = 20mm MU = 27mm (1-1/16") EF = 9/16" MH = 14mm MO = 21mm MX = 30mm (1-3/16") EH = 11/16" MI = 15mm MP = 22mm MZ = 32mm (1-1/4") EJ = 13/16" MJ = 16mm (5/8") MQ = 23mm XX = No Drive Socket EK = 7/8" MK = 17mm MR = 24mm (15/16") EM = 1" ML = 18mm MS = 25mm EO = 1-1/8" MM = 19mm (3/4") MT = 26mm											
<u>Style</u> F = Female Hex M = Male Hex T = Torx O = Female Oval											
<u>Hold Socket</u> BH = 5.16" (8mm) Hex - Apex Bit Holder EA = 1/4" M6 = 6mm MD = 10mm 30 = T30 XXX = No Holding Socket EC = 3/8" MA = 7mm ME = 11mm (7/16") 40 = T40 EE = 1/2" MB = 8mm (5/16") MF = 12mm 45 = T45 M5 = 5mm MC = 9mm MG = 13mm 50 = T50											
<u>Second Oval Dimension</u> Use unit of measure from width to identify oval requirements, see illustration.											
											

“B”

m-Pro-400 Series
Controller



TME-200 Series
Controller

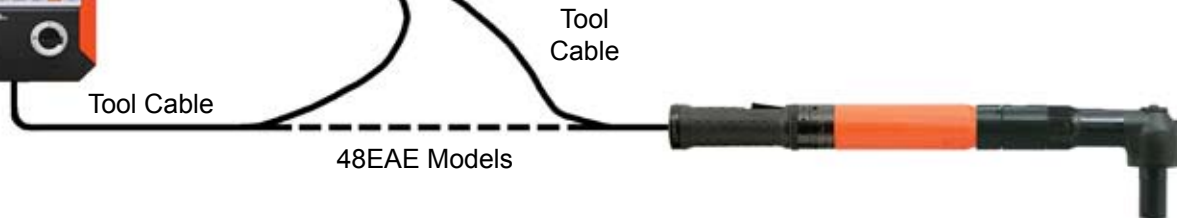


Complete Tool
Order Number
48EA(E)53Hxxxxxx
48EA(E)75Hxxxxxx
48EA(E)110Hxxxxxx
48EA(E)135Hxxxxxx
48EA(E)230Hxxxxxx

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

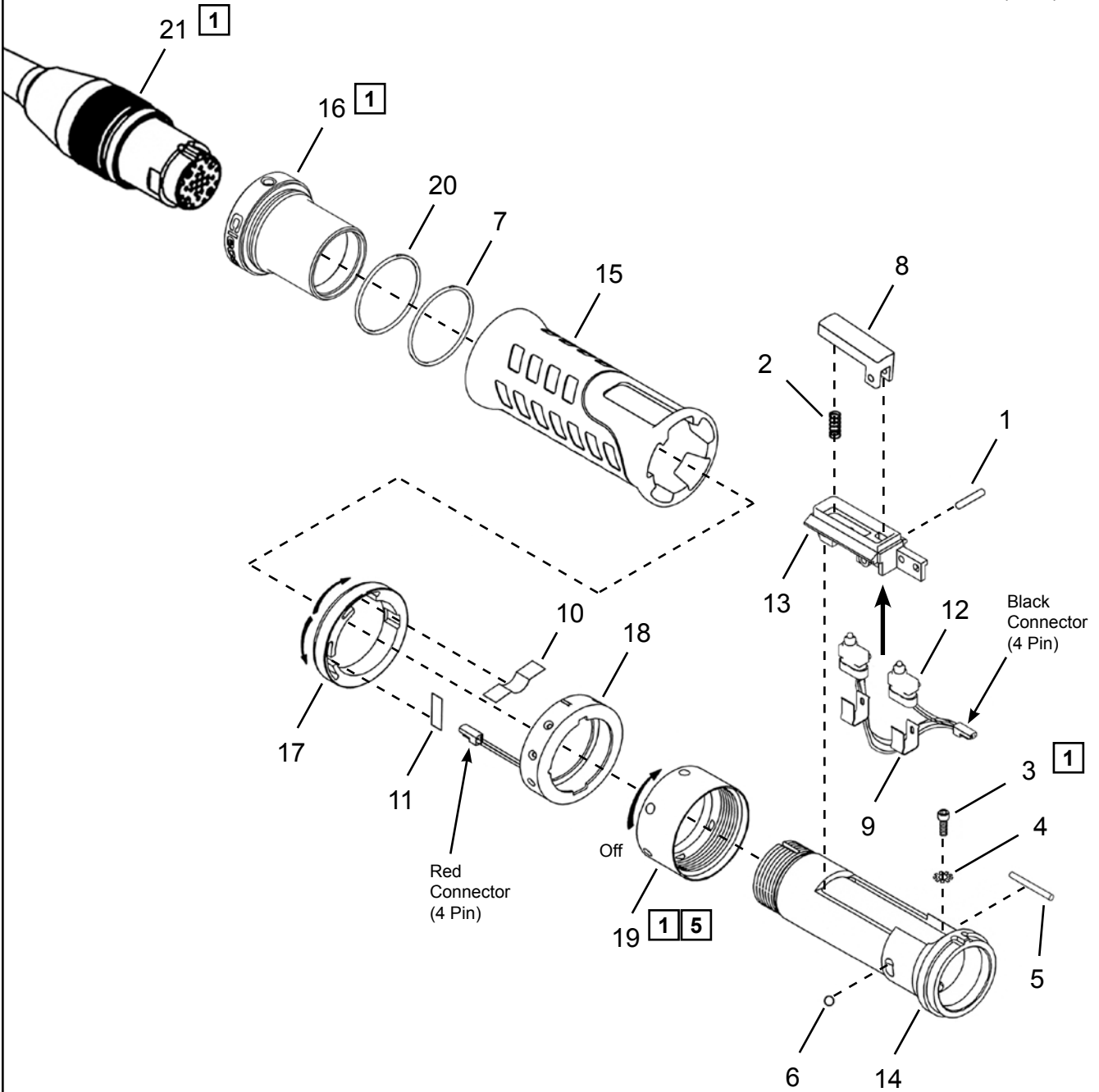
TME-200 Series Controller

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**
 48EA53H(-----)
 48EA75H(-----)
 48EA110H(-----)
 48EA135H(-----)
 48EA230H(-----)



1 5 See Service Notes

Handle - Matrix Tool Connector

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	

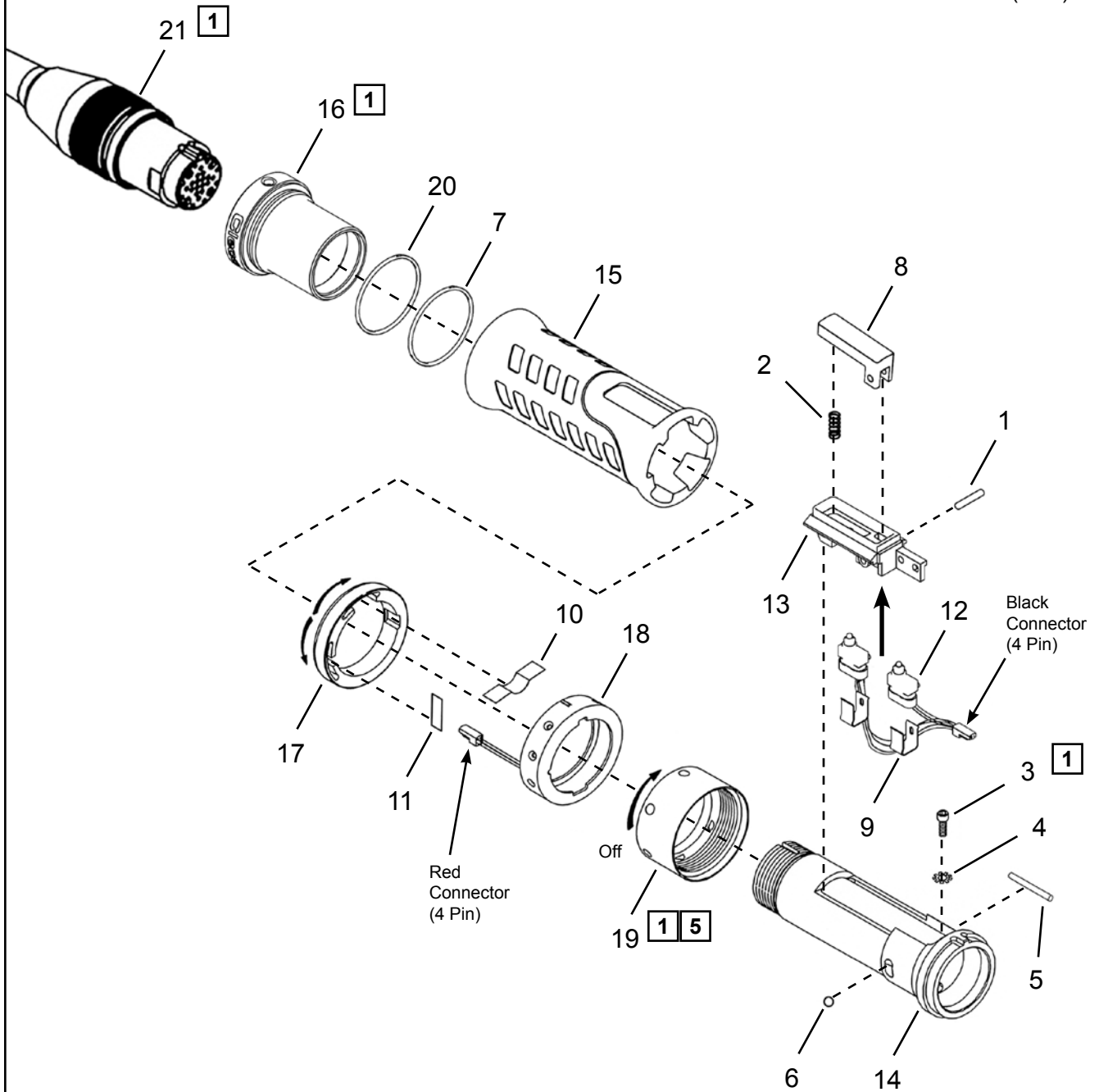
(#) Quantity

(X) Recommended Spare Parts

Cleco®
Handle - Air LB Tool Connector

“C2”

- Models**
 48EAE53H(-----)
 48EAE75H(-----)
 48EAE110H(-----)
 48EAE135H(-----)
 48EAE230H(-----)



1 5 See Service Notes

Handle - Air LB Tool Connector

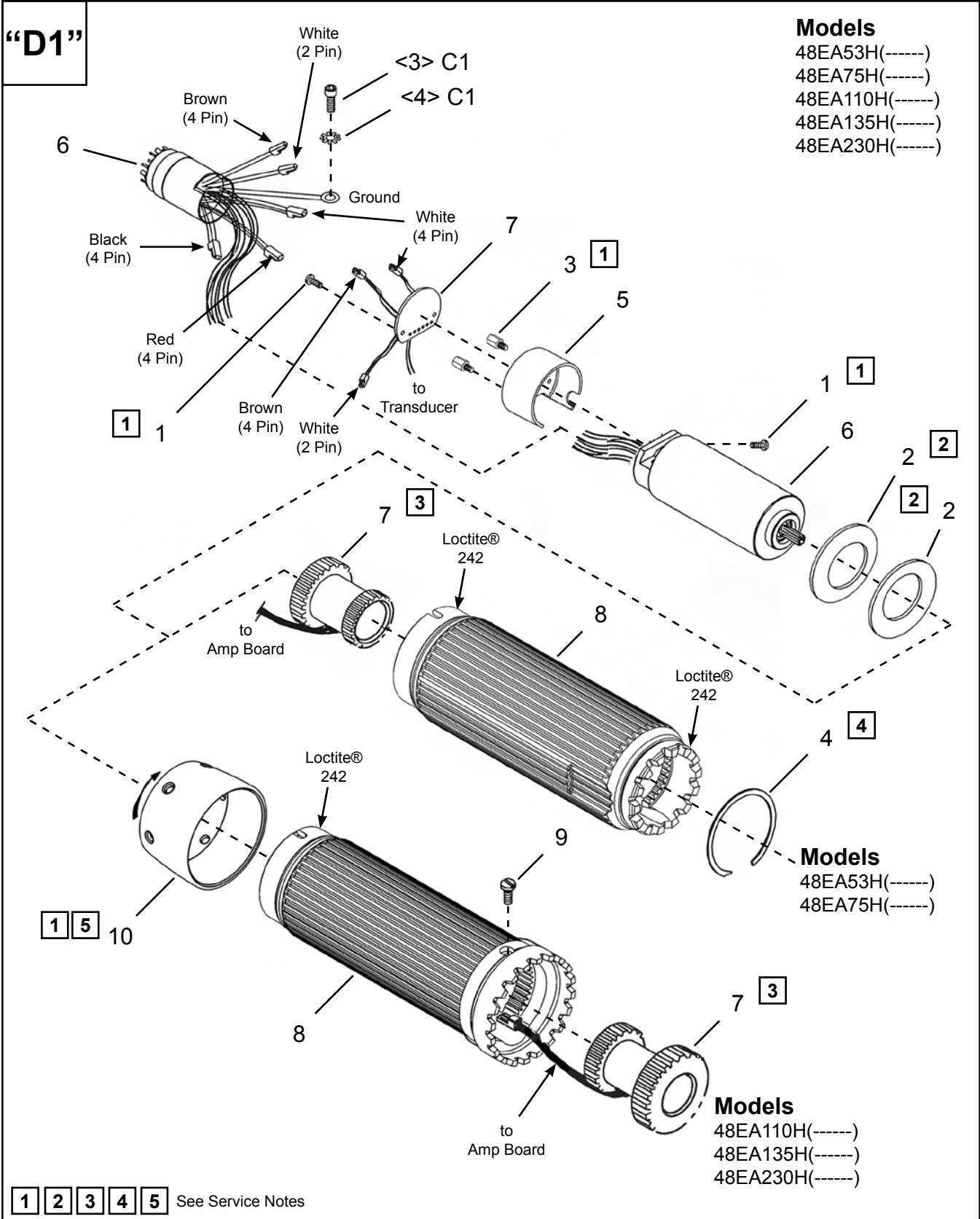
Illustration "C2"

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



Motor - Matrix Tool Connector

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	Table "D1"	1	3	Pan Head Screw - #4-40 x 1/4
10	Table "D1"	1		Lock Nut

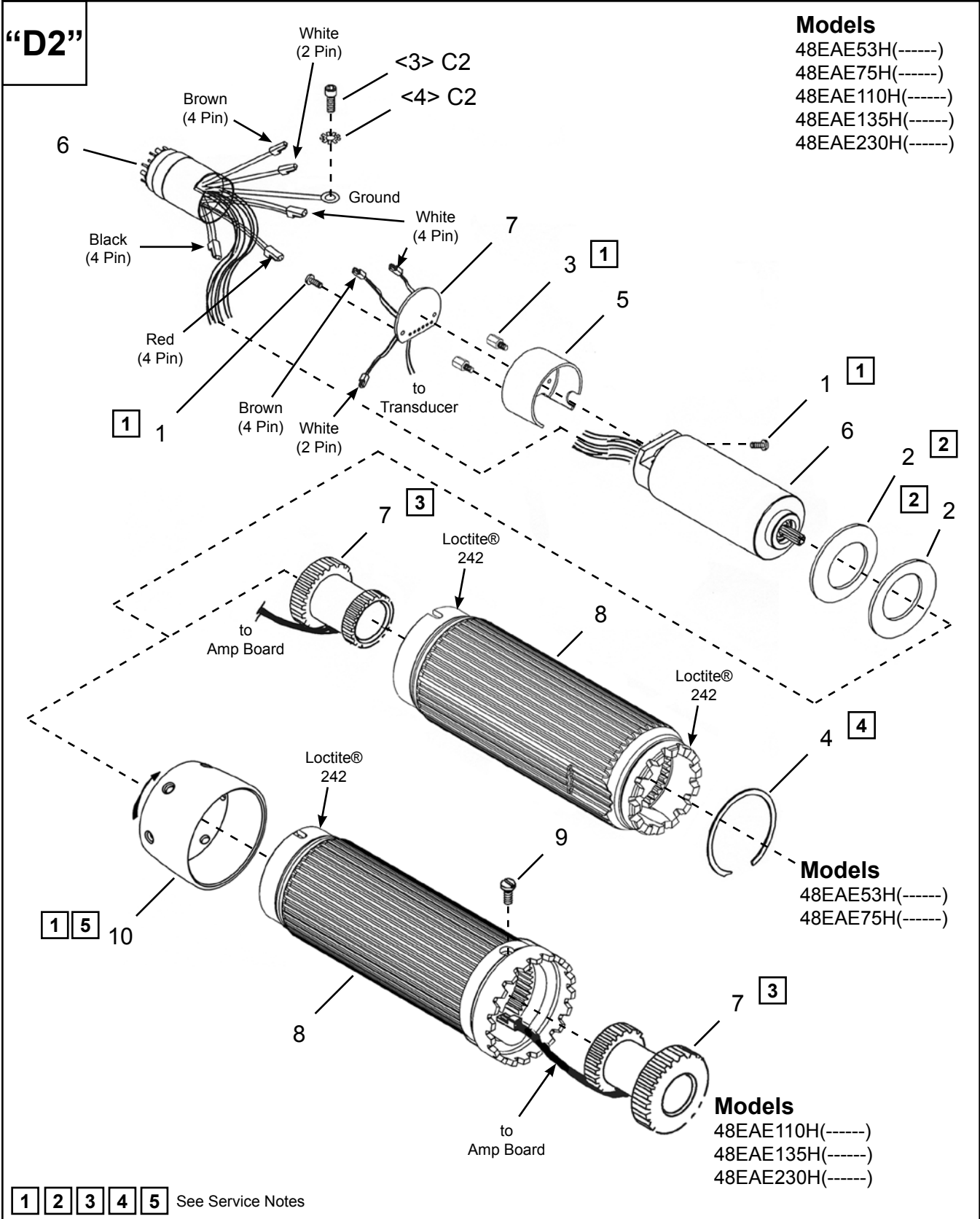
(#) Quantity

(X) Recommended Spare Parts

Table "D1"

Ref.	Description	#	48EA53	#	48EA75	#	48EA110 48EA135	#	48EA230
4	Retaining Ring	1	505306	1	505306		-----		-----
7	Transducer (unprogrammed)	1	542846-31	1	542846-48	1	542846-100	1	542846-40
	Transducer (programmed)	1	542846-31P	1	542846-48P	1	542846-100P	1	542846-40P
	Transducer Capacity		31 Nm		48 Nm		100 Nm		40 Nm
8	Housing	1	207340	1	207340	1	207341	1	207341
9	Screw		-----		-----	1	B159X	1	B159X
10	Lock Nut		-----		-----	1	207353	1	207353

Cleco®
Motor - Air LB Tool Connector



Motor - Air LB Tool Connector

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	Table "D2"	1	3	Pan Head Screw - #4-40 x 1/4	
10	Table "D2"	1		Lock Nut	

(#) Quantity

(X) Recommended Spare Parts

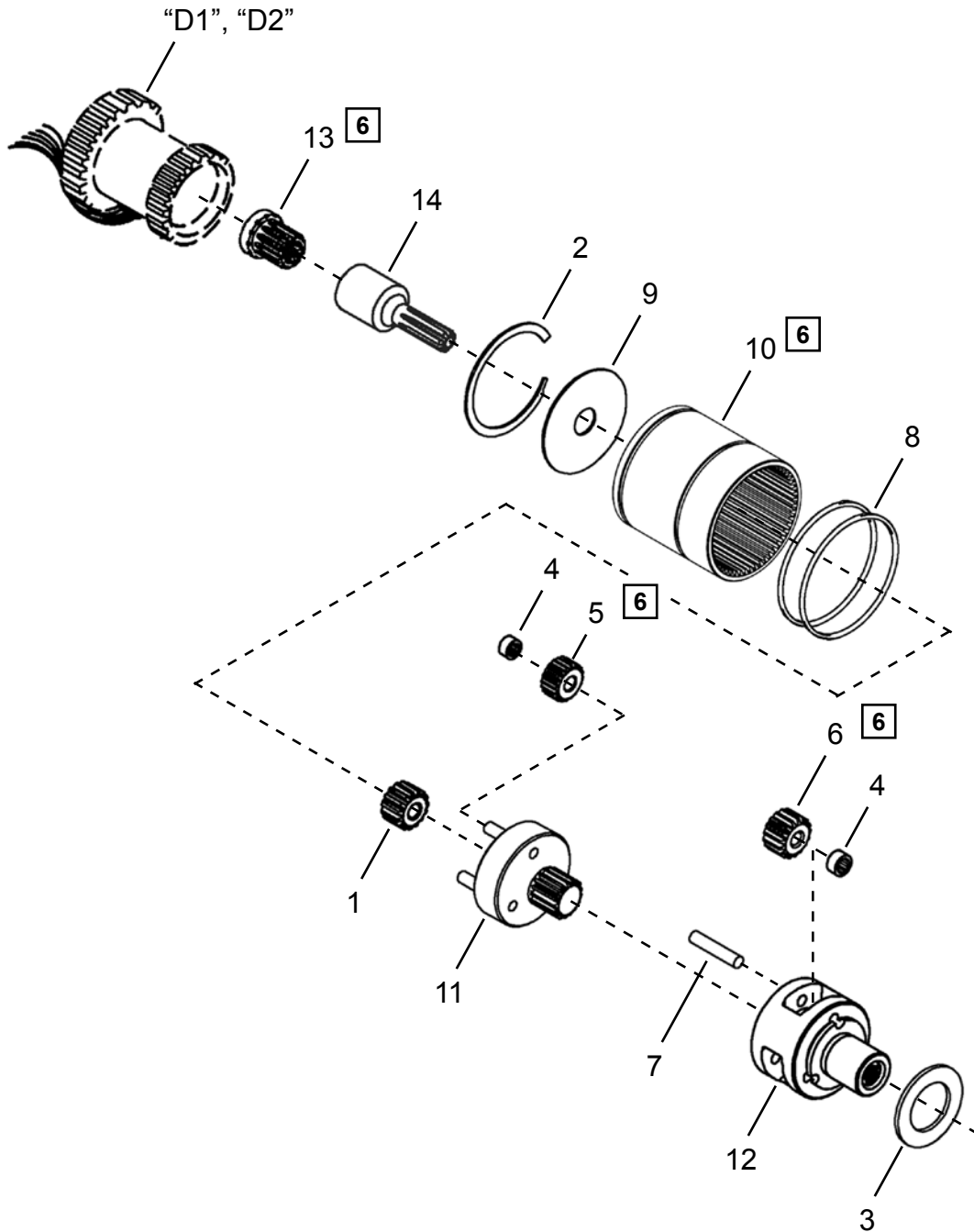
Table "D2"

Ref.	Description	#	48EAE53	#	48EAE75	#	48EAE110 48EAE135	#	48EAE230
4	Retaining Ring	1	505306	1	505306		-----		-----
7	Transducer (unprogrammed)	1	542846-31	1	542846-48	1	542846-100	1	542846-40
	Transducer (programmed)	1	542846-31P	1	542846-48P	1	542846-100P	1	542846-40P
	Transducer Capacity		31 Nm		48 Nm		100 Nm		40 Nm
8	Housing	1	207340	1	207340	1	207341	1	207341
9	Screw		-----		-----	1	B159X	1	B159X
10	Lock Nut		-----		-----	1	207353	1	207353

Cleco® Double Stage Gearing

“E”

Models
48EA(E)53H(-----)
48EA(E)75H(-----)



6 See Service Notes

Cleco®
Double Stage Gearing

PL12EN-48EA-H
10/06/2011

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"

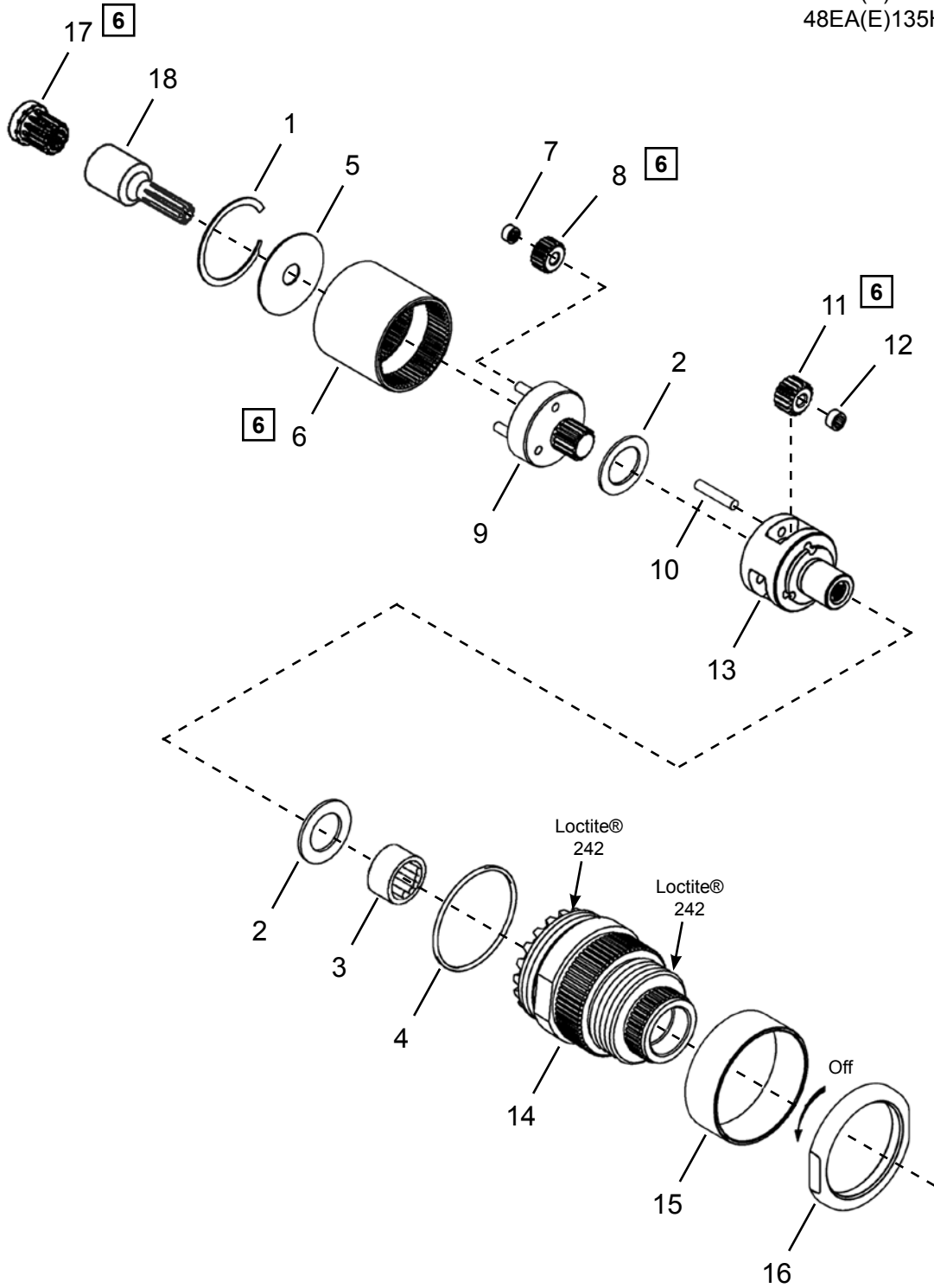
Ref.	Description	#	48EA(E)53	#	48EA(E)75
6	Planet Gear	3	541894 (17T)	3	541897 (20T)
11	Planet Carrier	1	542230	1	542233
12	Planet Cage	1	542079	1	542099

(T) Teeth

Cleco® Double Stage Gearing

“F”

Models
48EA(E)110H(-----)
48EA(E)135H(-----)



6 See Service Notes

Cleco®
Double Stage Gearing

PL12EN-48EA-H
10/06/2011

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"

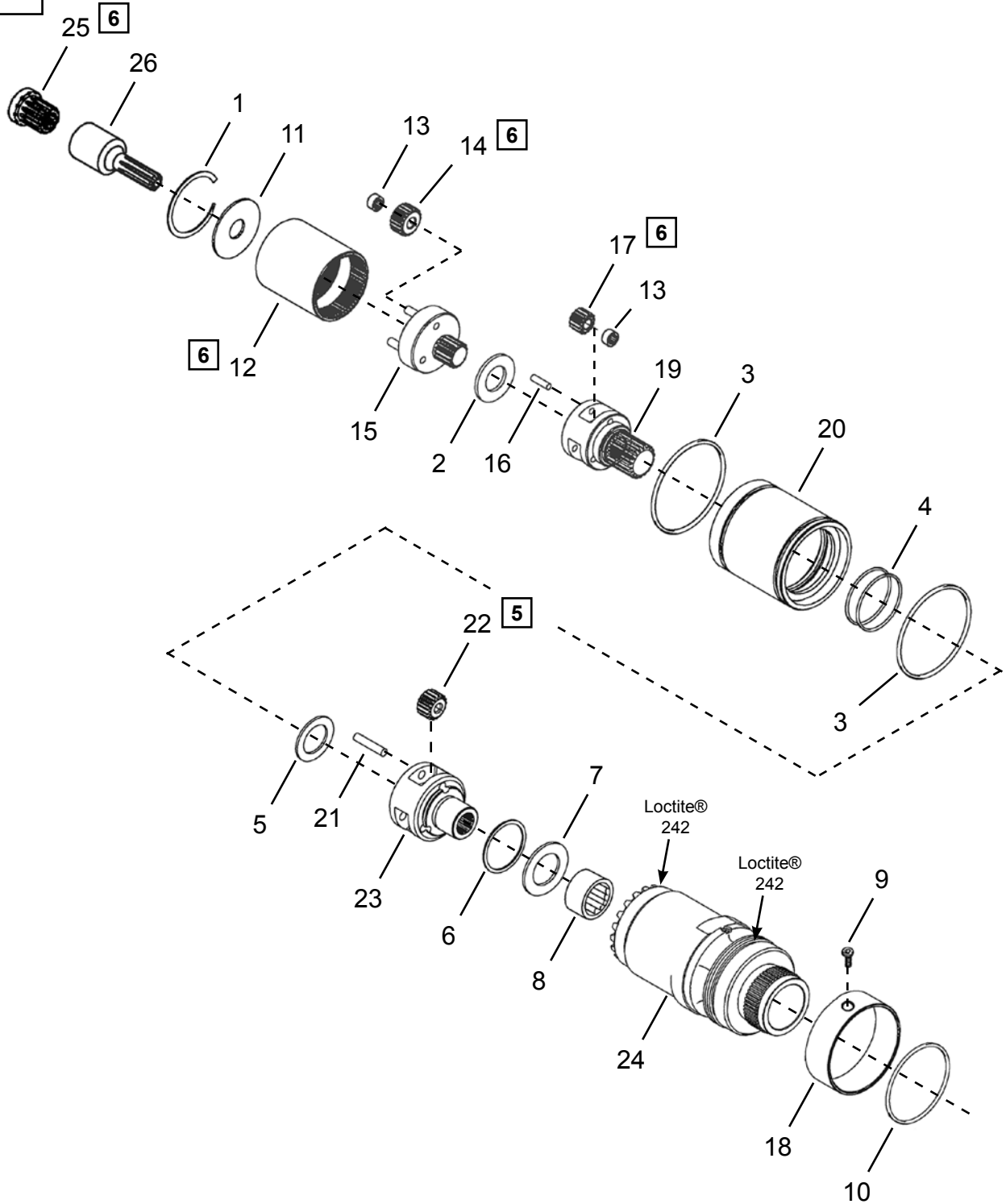
Ref.	Description	#	48EA(E)110	#	48EA(E)135
9	Planet Carrier	1	542333	1	542332
11	Planet Gear	3	541474 (17T)	3	541475 (21T)
13	Planet Cage	1	541279	1	541278

(T) Teeth

Cleco® Triple Stage Gearing

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

“G”



6 See Service Notes

Cleco®
Triple Stage Gearing

PL12EN-48EA-H
10/06/2011

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

(#) Quantity

(X) Recommended Spare Parts

(T) Teeth

Cleco®
Hold and Drive Adapters

“H”

Loctite®
242

“E”

2

3

4

5

6

7

301788 Adapter
48EA(E)53H(-----)
48EA(E)75H(-----)

1 See Service Notes

“I”

“F”

1

2

3

4

5

301909 Adapter
48EA(E)110H(-----)
48EA(E)135H(-----)

1 See Service Notes

“J”

“G”

1

2

3

301915 Adapter
48EA(E)230H(-----)

1 See Service Notes

Hold and Drive Adapters

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

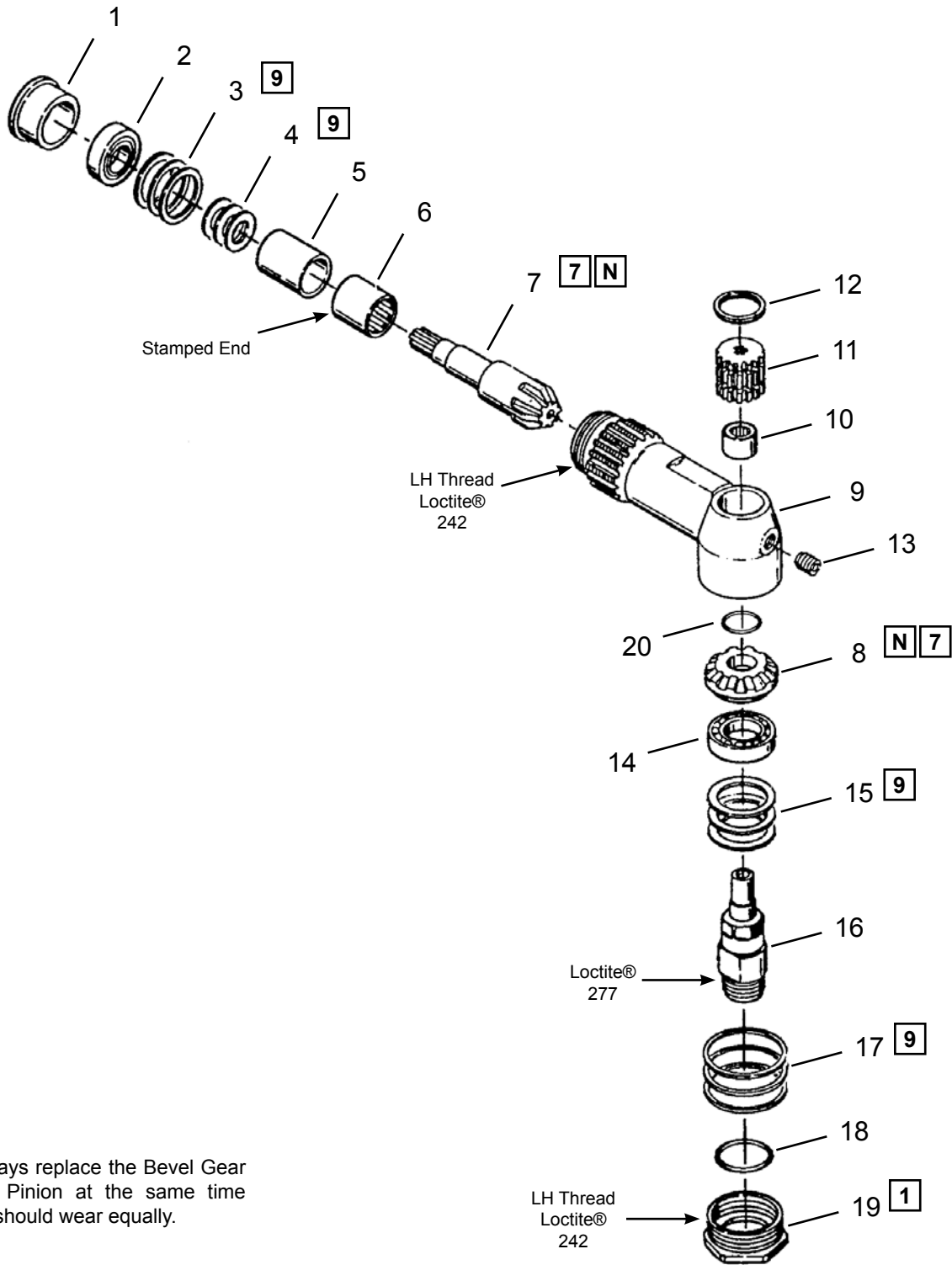
Illustration "J"

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

“K”



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

49096037 Hold-N-Drive Attachment

Illustration "K"

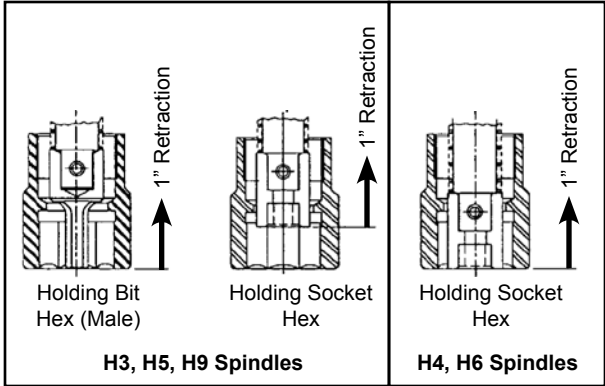
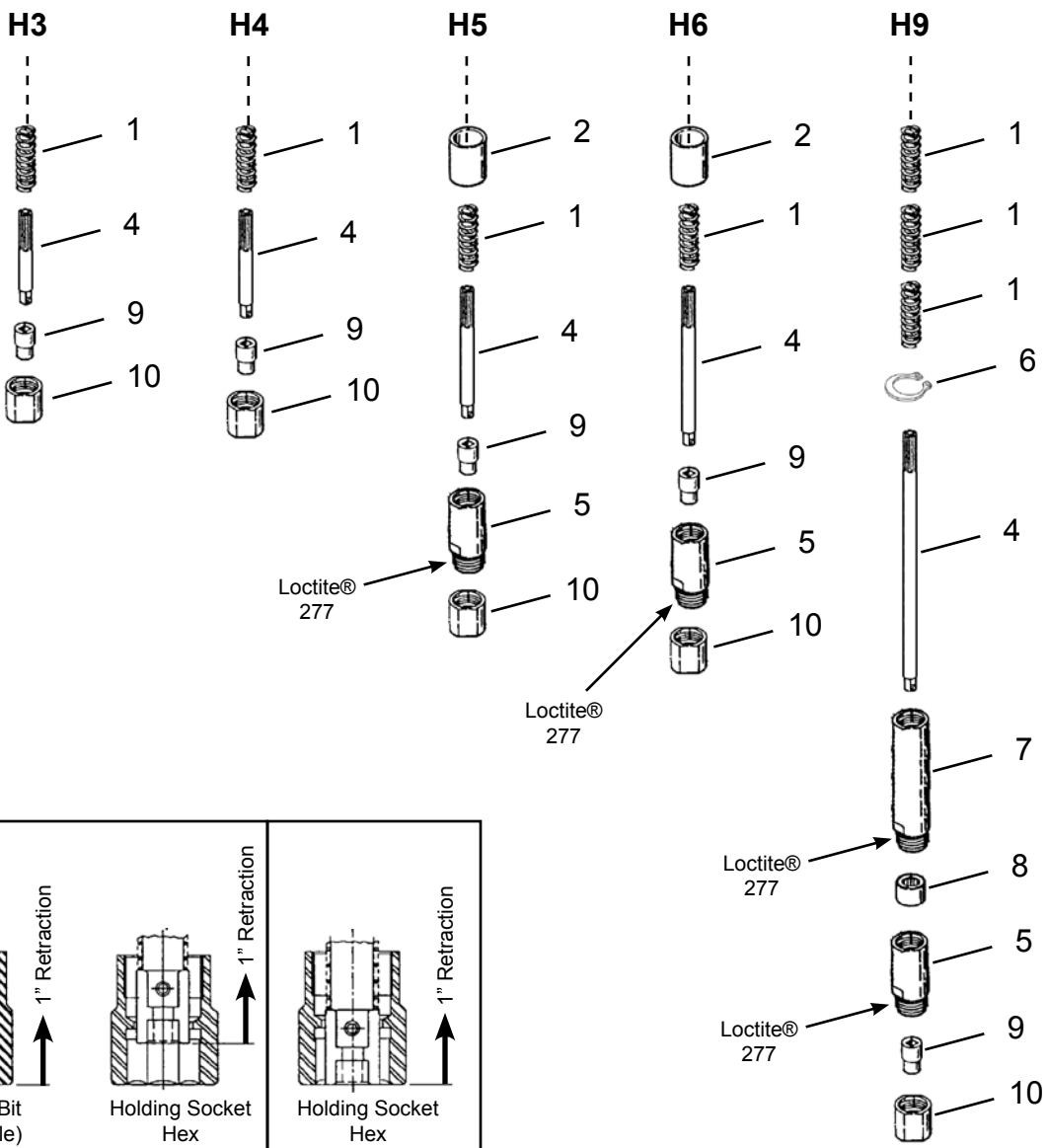
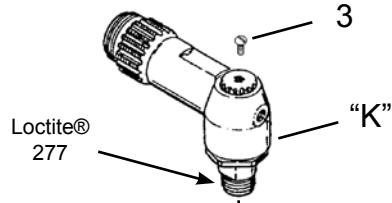
Ref	Number	#	X	EN
				Description
1	48018105	1		Spacer
2	92100133	1	2	Ball Bearing
3	12601137A2	AR	AR	Shim (.002")
	12601137A3	AR	AR	Shim (.003")
	12601137A5	AR	AR	Shim (.005")
4	94200020	AR	AR	Shim (.002")
	94200021	AR	AR	Shim (.003")
	94200022	AR	AR	Shim (.005")
5	48019142	1		Bearing Spacer
6	92000057	1	3	Needle Bearing
7	48017139	1	1	Bevel Pinion
8	48017140	1	1	Bevel Gear
9	49098133	1		Angle Housing (includes Ref. 13)
10	90000037	1	3	Needle Bearing
11	49098134	1		Retainer Cap
12	92800027	1	3	Retaining Ring
13	93440004	1	3	Pipe Plug
14	92100120	1	2	Ball Bearing
15	94200037	AR	AR	Shim (.002")
	94200038	AR	AR	Shim (.003")
	94200039	AR	AR	Shim (.005")
16	49097136	1		Drive Spindle
17	48019148	AR	AR	Shim (.002")
	48019149	AR	AR	Shim (.003")
	48019150	AR	AR	Shim (.005")
18	93010024	1	3	O-Ring
19	48017138	1		Retaining Nut
20	865233	1	3	Retaining Ring

(#) Quantity

(X) Recommended Spare Parts

Cleco®
Hold-N-Drive Outut Spindles

“L”



Cleco®

Hold-N-Drive Outut Spindles

PL12EN-48EA-H
10/06/2011

Illustration "L"

Ref	Number	#	X	EN	
				Description	
1	94070703	1	3	Spring (H3, H4, H5, H6)	
	94070703	3	9	Spring (H9)	
2	49098199	1		Support Bushing	
3	93300034	1	3	Screw	
4	Table "L"	1		Retainer Shaft	
5	49097151	1		Extension Adapter	
6	92670001	1	3	Retaining Ring	
7	49097209	1		Extension Adapter	
8	92190006	1	3	Needle Bearing	
9	Table "L1"	1	2	Holding Socket	
10	Table "L2"	1	2	Driving Socket	

(#) Quantity
(X) Recommended Spare Parts

Table "L"

Ref.	Description	#	H3	#	H4	#	H5	#	H6	#	H9
4	Retainer Shaft	1	49098138	1	49098135	1	49097152	1	49097153	1	49097163
	Shaft Length		3-1/2" (89mm)		4" (102mm)		5-3/8" (137mm)		5-7/8" (149mm)		9-1/2" (241mm)

Table "L1"

Ref. # 9 - Holding Socket											
Inch - Hex			Metric - Hex			Torx			Oval		
Size	Code	Number	Size	Code	Number	Size	Code	Number	Size	Code	Number
1/4" male	MEA	49098126	5mm male	MM5	49098157	T30 male	T30	49098219	1/4" x 5/16"	OEAB	49099117
1/4" female	FEA	49098155	5mm female	FM5	49098230	T40 male	T40	49099171	5/16" x 3/8"	OECB	49098149
5/16" male	MMB	49098211	6mm male	MM6	49098125	T45 male	T45	49099154	5 x 7 mm	OM5A	49098231
5/16" female	FMB	49098148	6mm female	FMB	49099218	T50 male	T50	49099146	5 x 8 mm	OM5B	49098224
3/8" male	MEC	49098127	7mm male	MMA	49098124				6 X 7 mm	OM6A	49098227
7/16" female	FME	49098180	7mm female	FMA	49098208				6 x 8 mm	OM6B	49099204
			8mm male	MMB	49098211				8 x 10 mm	OMBD	49098184
			8mm female	FMB	49098148				9 x 10 mm	OMCD	49098228
			9mm male	MMC	49098210				10 x 12 mm	OMDF	49099215
			9mm female	FMC	49098207						
			10mm male	MMD	49098201						
			10mm female	FMD	49098179						
			11mm female	FME	49098180						
			12mm female	FMF	49098182						

Note: XXX = No Holding Socket

Apex Bit Holder			Apex Hex Insert Bits		Apex Torx Insert Bits	
Size	Code	Number	1/4" Hex	5/16" Hex	1/4" Hex	5/16" Hex
1/4" hex	FBH4	207513	185-5mm	315-5mm	440-TX-15X	
5/16" hex	FBH5	207385	185-6mm	315-6mm	440-TX-20X	480-TX-20X
			185-6X	315-6X	440-TX-25X	480-TX-25X
8mm hex	FBH5	207385	185-7mm	315-7mm	440-TX-30X	480-TX-30X
			185-8mm	315-8mm	440-TX-40X	480-TX-40X
			185-9mm			480-TX-45X
			185-8X	315-8X		480-TX-50X
			185-10mm	315-10mm		
					440-TX-15IPX	
					440-TX-20IPX	
					440-TX-30IPX	480-30IPX
						480-40IPX
						480-45IPX
						480-50IPX

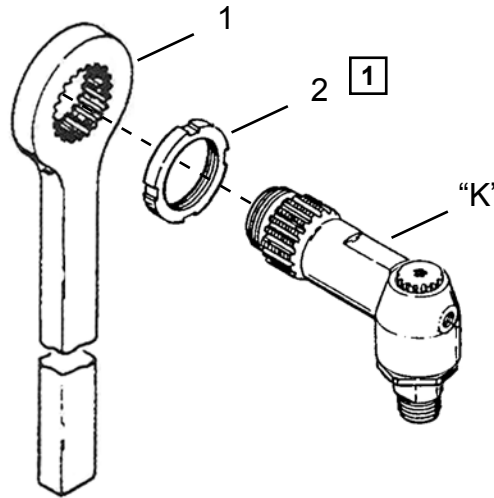
Table "L2"

Ref. # 10 - Driving Socket				
Code	Hex Size		Decimal	Part Number
	Metric	Inch		
MG		13	0.512	49097217
MH		14	0.551	49097175
	EF	9/16	0.562	49097114
MI		15	0.591	49097112
MJ		16	0.630	49097130
MK		17	0.669	49097177
	EH	11/16	0.688	49097115
ML		18	0.709	49097118
MM		19	0.750	49097120
MO		21	0.827	49097119
MP		22	0.866	49097176
MQ		23	0.905	49097218
MR		24	0.945	49097147
MU		27	1-1/16	49097212
XX	XX			No Socket

Cleco® Reaction Bar Installation

“M”

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

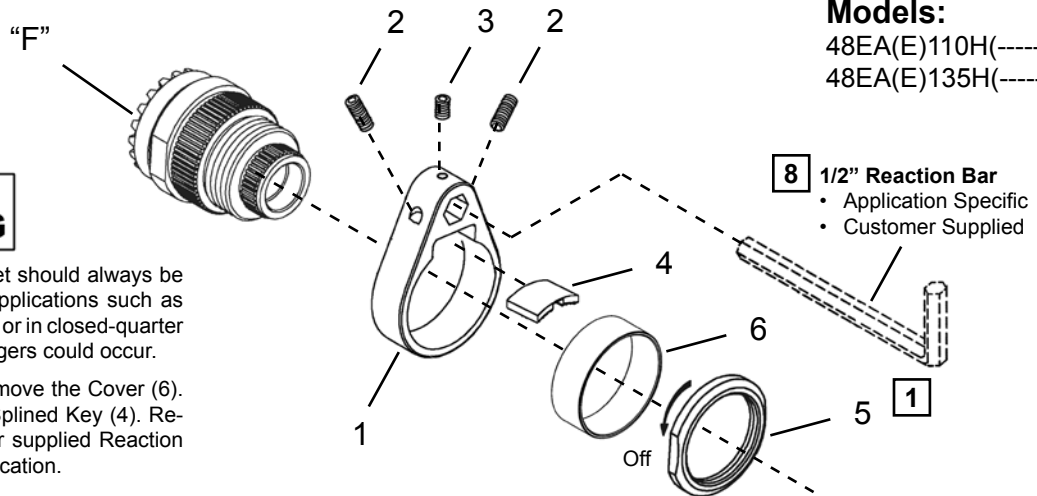


WARNING
Reaction bar and bracket should always be used in higher torque applications such as above 50 ft.-lbs. (68 Nm) or in closed-quarter areas where injury to fingers could occur.

1 See Service Notes

“N”

Models:
48EA(E)110H(-----)
48EA(E)135H(-----)



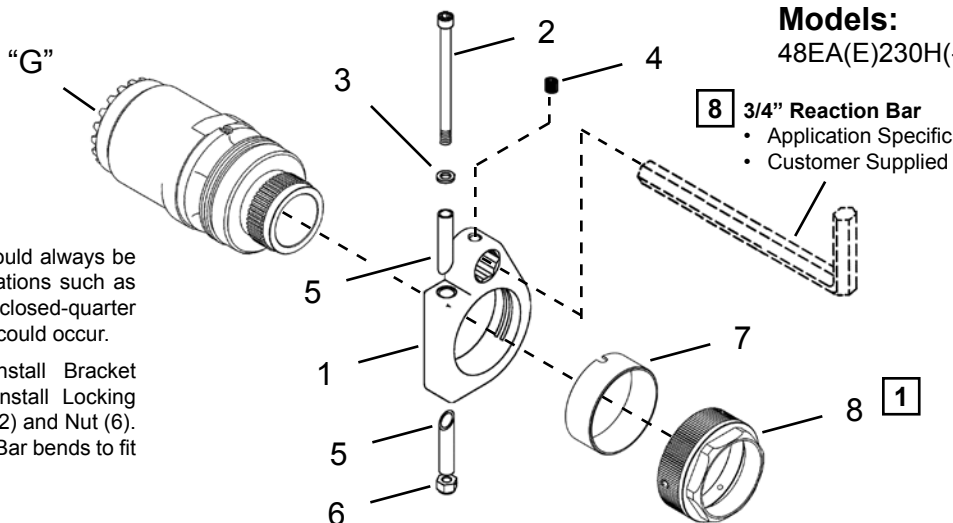
WARNING
Reaction bar and bracket should always be used in higher torque applications such as above 50 ft.-lbs. (68 Nm) or in closed-quarter areas where injury to fingers could occur.

Unscrew Nut (5) and remove the Cover (6). Install Bracket (1) and Splined Key (4). Re-install Nut (5). Customer supplied Reaction Bar bends to fit the application.

1 8 See Service Notes

“O”

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



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.

Remove the Cover (7). Install Bracket (1) over Gear Case hex. Install Locking Sleeve (5), Washer (3), Bolt (2) and Nut (6). Customer supplied Reaction Bar bends to fit the application.

1 8 See Service Notes

Cleco®
Reaction Bar Installation

PL12EN-48EA-H
10/06/2011

Illustration "M"

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

(#) Quantity
(X) Recommended Spare Parts

Illustration "N"

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	207352	1		Retaining Nut
6	541169	1		Cover

(#) Quantity
(X) Recommended Spare Parts

Illustration "O"

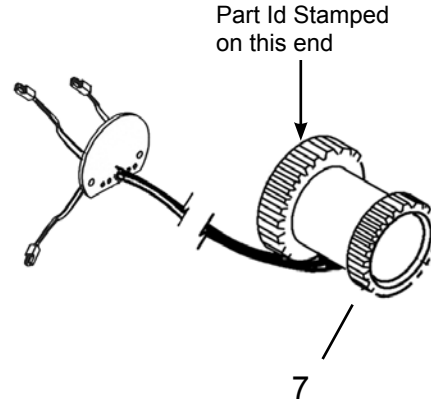
Ref	Number	#	X	EN
				Description
1	531297	1		Bucking Bar Collar (includes Ref. 2-6)
2	B156A	1	2	Socket Head Screw
3	25285	1	2	Washer
4	B110D	1	3	Set Screw
5	531281	2	2	Locking Sleeve
6	C108Y	1	3	Nut
7	542473	1		Cover
8	543068	1		Retaining Nut

(#) Quantity
(X) Recommended Spare Parts

1 Tightening Torque

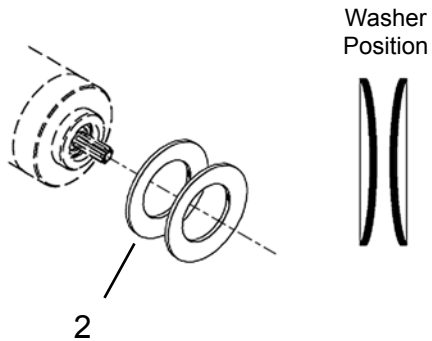
Illustration	Reference	Tightening torque	
		Ft-Lbs (in-lbs)	Nm
C1, C2	3	(10-14)	1,1-1,6
	16	25-30	34-41
	19	35-40	47-54
	21 (Swivel)	15-18	20-25
D1, D2	1	(4-6)	0,45-0,68
	3	(4-6)	0,45-0,68
	10	35-40	47-54
H	4	40-50	54-68
	5	40-50	54-68
I	1	40-50	54-68
J	2	40-50	54-68
K	19	80-100	108-136
M	2	40-50	54-68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

3 Transducer Identification

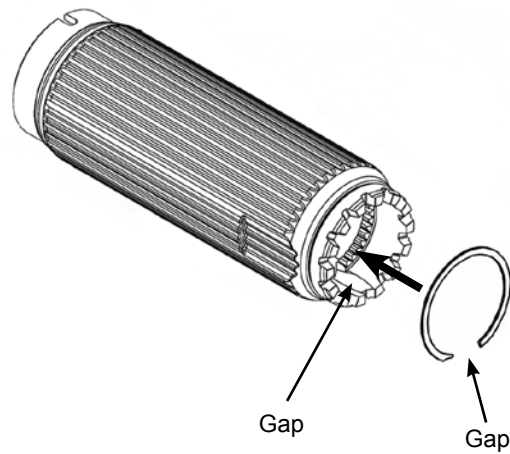


Transducers are not interchangeable, check part number.

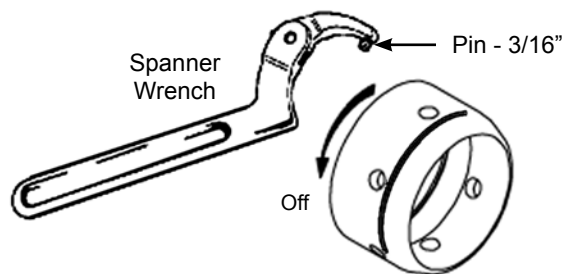
2 Washer Assembly



4 Retaining Ring Assembly

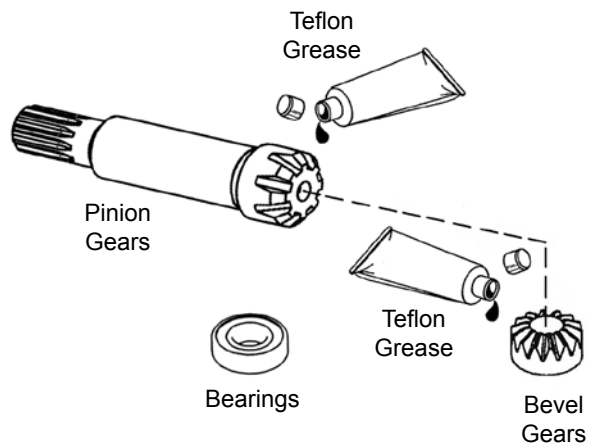


5 Spanner Wrench



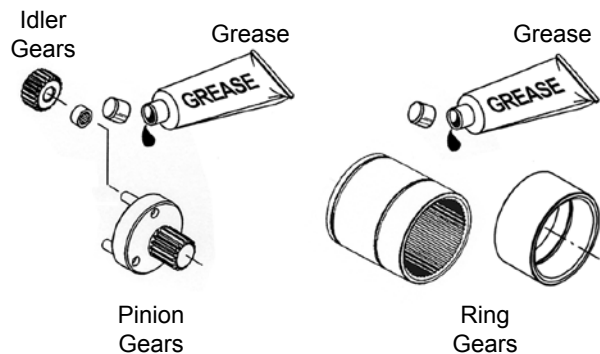
7 Angle Head Lubrication

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

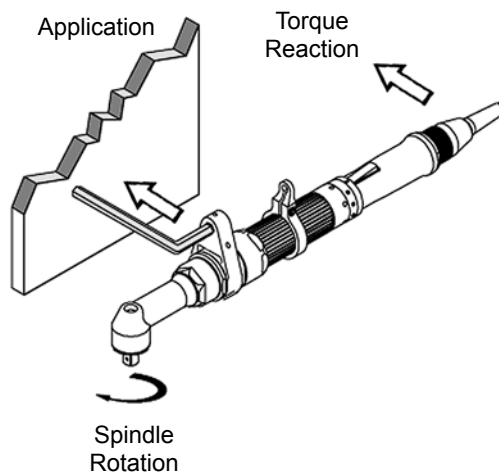


6 Gear Train Lubrication

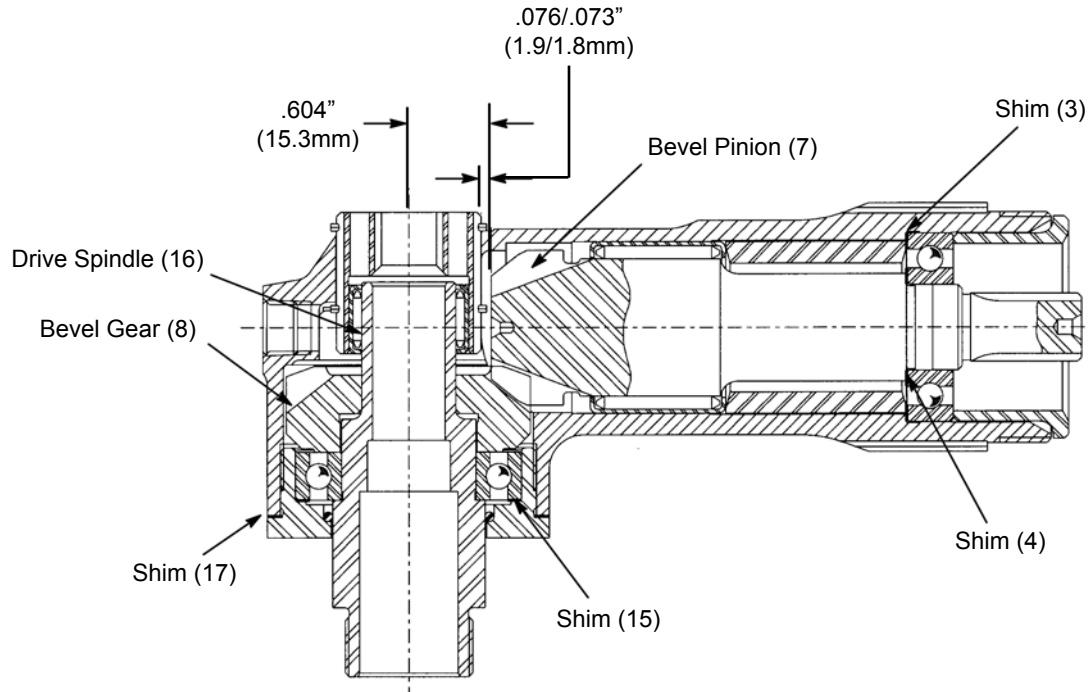
541444 - 2 oz. (56 g)
541445 - 1 pound (0.45 kg)



8 Torque Reaction



9 Shim Assembly



Assembly Notes:

Bevel Pinion: Use shims 3 or 4 to obtain the dimension shown.

Bevel Gear / Drive Spindle: Run the gears under load. Use shims 15 and 17 to obtain a .002/.004" (.05/.10mm) backlash

Tool Memory Parameters

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)53Hxxxxxx	850	53	65.5212	542846-31	100.4132	2.2130
48EA(E)75Hxxxxxx	600	74	99.3649	542846-48	141.6898	3.1227
48EA(E)110Hxxxxxx	400	112	203.5980	542846-100	213.0167	4.6946
48EA(E)135Hxxxxxx	270	134	201.4084	542846-100	318.8948	7.0280
48EA(E)230Hxxxxxx	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
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Fax: 972-641-9674

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

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Sales & Service Center**
6550 West Sam Houston
Parkway North, Suite 200
Houston, TX 77041
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Fax: 713-849-2047

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670 Industrial Drive
Lexington, SC 29072
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Fax: 803-358-7681

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Fax: 562-802-1718

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Fax: 425-497-0496

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