



Cleco®
Table of Contents

PL12-1000EN
09/29/2014

mPro400GC Specifications	4
mPro400CG Dimensions.....	5
General Safety and Controller Operation	6-7
mPro400GC Connections.....	8-11
Master Controller: mPro400GC-M	
Enclosure	12-13
Chassis	14-15
Assembly	16-17
Schematic	18-19
Primary Controller: mPro400GC-P	
Enclosure	20-21
Chassis	22-23
Assembly	24-25
Schematic	26-27
Primary Controller (1-2): mPro400GC-P-12	
Enclosure	28-29
Chassis	30-31
Assembly	32-33
Schematic	34-35
Primary Controller (230VDC): mPro400GC-P230	
Enclosure	36-37
Chassis	38-39
Assembly	40-41
Schematic	42-43
Secondary Controller: mPro400GC-S	
Enclosure	44-45
Chassis	46-47
Assembly	48-49
Schematic	50-51
Secondary Controller (1-2): mPro400GC-S-12	
Enclosure	52-53
Chassis	54-55
Assembly	56-57
Schematic	58-59
Secondary Controller (230VDC) - mPro400GC-S230	
Enclosure	60-61
Chassis	62-63
Assembly	64-65
Schematic	66-67
Economy Controller (Torque Control): mPro400GC-E	
Enclosure	68-69
Chassis	70-71
Assembly	72-73
Schematic	74-75
Economy Controller (Current Control): mPro400GC-I	
Enclosure	76-77
Chassis	78-79
Assembly	80-81
Schematic	82-83

Cleco®
mPro400GC Specifications

Model	Description	Tool Compatibility	Weight		Width		Height		Depth	
			lbs.	kg	in.	mm	in.	mm	in.	mm
MPro400GC-M	Master	Cleco LiveWire DGD Intelligent Spindle *	23.3	10.6	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-P	Primary	Cleco 18/48 series Cleco LiveWire DGD Intelligent Spindle *	30.7	13.9	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-P-12	Primary 1-2	Cleco LiveWire DGD Intelligent Spindle * DGD/EMT Fixtured Spindles - Size 1-2	30.7	13.9	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-P230	Primary 230V only	Cleco 18/48 series Cleco LiveWire DGD Intelligent Spindle *	30.7	13.9	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-S	Secondary	Cleco 18/48 Series	28.1	12.7	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-S-12	Secondary 1-2	DGD/EMT Fixtured Spindles - Size 1-2	28.1	12.7	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-S230	Secondary 230V only	Cleco 18/48 Series	28.1	12.7	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-E	Economy Torque Control	Cleco 18/48 Series (Torque Control)	28.1	12.7	10.5	266.7	15.0	381.0	12.9	327.66
MPro400GC-I	Economy Current Control	Cleco 18/48 Series (Current Control)	28.1	12.7	10.5	266.7	15.0	381.0	12.9	327.66

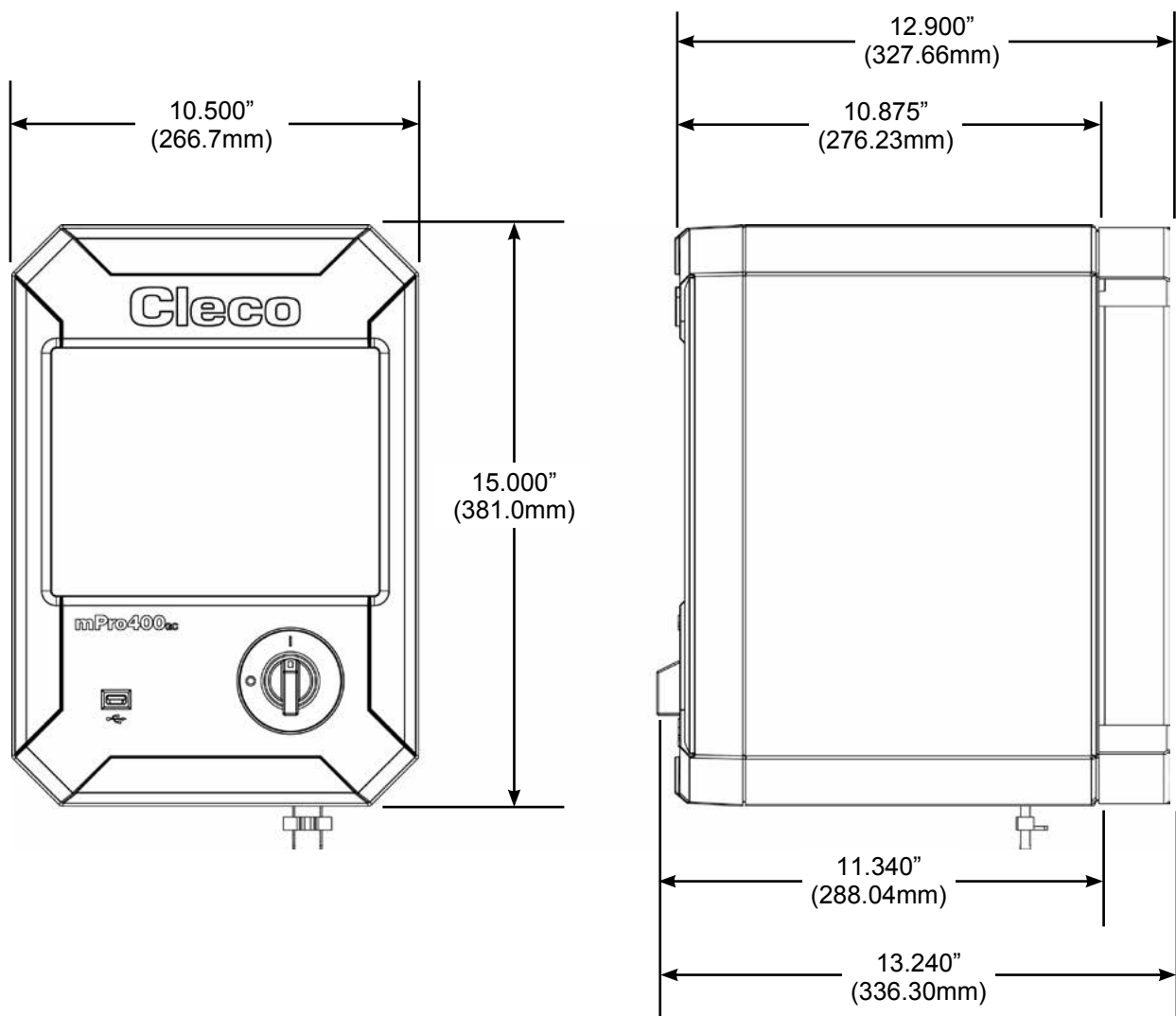
* Requires quote to accommodate hardware configurations.

Note: 17/47/67 and Matrix versions of the 18/48 series tools require an Isolation Transformer (544185PT) for use with Primary and Secondary controllers.

Cleco®
mPro400GC Dimensions

PL12-1000EN
09/29/2014

“A”



General Safety and Controller Operation

About this parts manual:

This Parts Manual is the **“Original Instructions”** intended for all persons who will use or repair the mPro400GC controller.

This parts manual does the following:

- It provides component part numbers for ordering of replacement parts.
- It provides tightening specifications for fasteners used in the assembly of this product.

The following documents provide additional information for the operation of the mPro400GC controller.

- PL12-1001EN Programming Manual
- PL12-1004EN Quick Set-Up Guide

Product Identification:

Refer to the “Model Nomenclature” page in this document.

General Description:

Single platform tightening control for safety critical assembly applications.

Intended Use:

These controllers are used with Cleco 18/48 series DC electric corded tools, LiveWire cordless tools and DGD/EMT fixtured spindles for precise tightening control of assembly applications. Use only for their designated purpose. Improper usage of this equipment can cause property damage and potential operator injury.

If there is any doubt regarding the safe operation of this electric tool controller, consult with Apex Tool Group before operating.

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Workplace safety symbols:

This warning sign identifies all references to safe work practices in this parts manual, alerting of hazards to life and health of personnel. Observe these notes and proceed with special care in the situations described. Pass all safety instructions on to other operators. In addition to the safety instructions in this parts manual, all local safety and accident prevention rules must be observed.



This warning sign identifies all references to potential electrical shock, alerting of hazards to life and health of personnel. Observe these notes and proceed with special care in the situations described. Pass all safety instructions on to other operators. In addition to the safety instructions in this parts manual, all local safety and accident prevention rules must be observed.

General Safety Instructions:

These safety instructions must be accessible to the operator at all times. They must be shown and made available to personnel involved in the use or repair of the equipment.

These safety instructions are not intended to be all inclusive. It is mandatory that national, state and local safety and wiring standards be followed during installation. These standards take precedence over any information presented in this section.



Always disconnect the power supply before servicing or repairing this controller.



Immediately shut off the controller in the case of unusual sound, vibration or odor. Disconnect the power supply and have qualified personnel check the controller and repair as necessary.

Do not modify the controller, any guard or accessory unless approved in writing by Apex Tool Group.

Implement and follow a Safety Maintenance Program to provide inspection and maintenance of all phases of controller and electronic operation and electrical system in accordance with local standards.

Eye and Hearing Protection:

Impact resistant eye protection must be worn while operating or working near this controller and the assembly tools networked with it.

Hearing protection is recommended in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises and resonant structures can substantially contribute to and increase the noise level in the area.



To avoid the hazard of electrical shock or burn, the following instructions must be adhered to. Failure to follow these instructions may also cause damage to your unit and void existing warranties.

- Do not energize the unit until all connections have been properly made.
- Equipment must be properly grounded before applying power. Units energized by cord and plug must be connected to an approved and properly grounded receptacle.
- All units must be energized by an isolated line.
- The door must always be closed and secured prior to energizing the unit.
- Ensure the power switch is in the “off” position prior to connecting the power cord.

NOTE Though it is not mandatory, the following instructions are highly recommended for the protected operation of your controller.



- Use an isolation transformer and surge arrestor on the incoming isolated line.
- Use oversized feeder lines to reduce electrical noise and voltage drop.

Power Source:

The controller requires a power supply connection of:

- 104-126 VAC or 207-253 VAC / 50-60 Hz single phase / 1A input current (rated), 16A (peak)

Torque Specifications for Fasteners:

Basic engineering practice should be used when assembling threaded components. Tightening torque values are shown on the exploded views as a guide for disassembly and assembly.

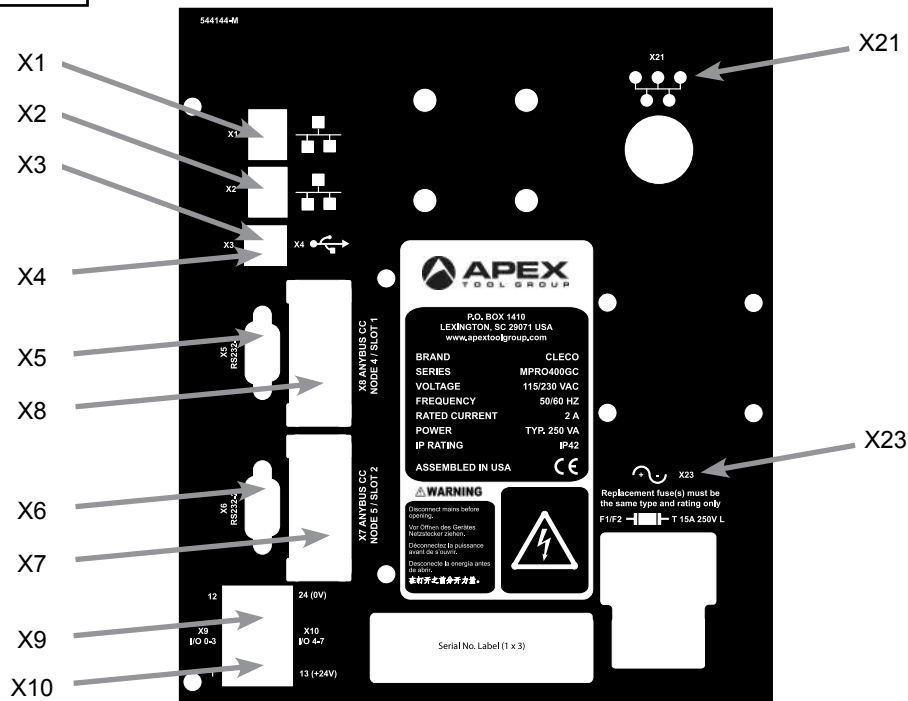


A “Hand” image indicates “Hand Tighten Only”.

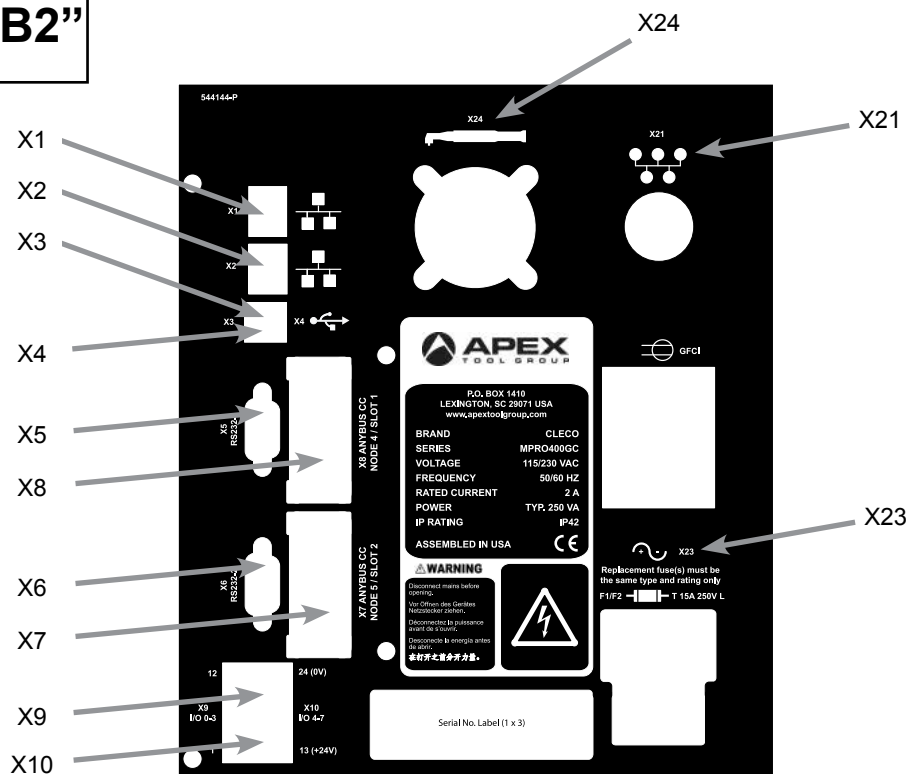
Cleco®

mPro400GC Connections

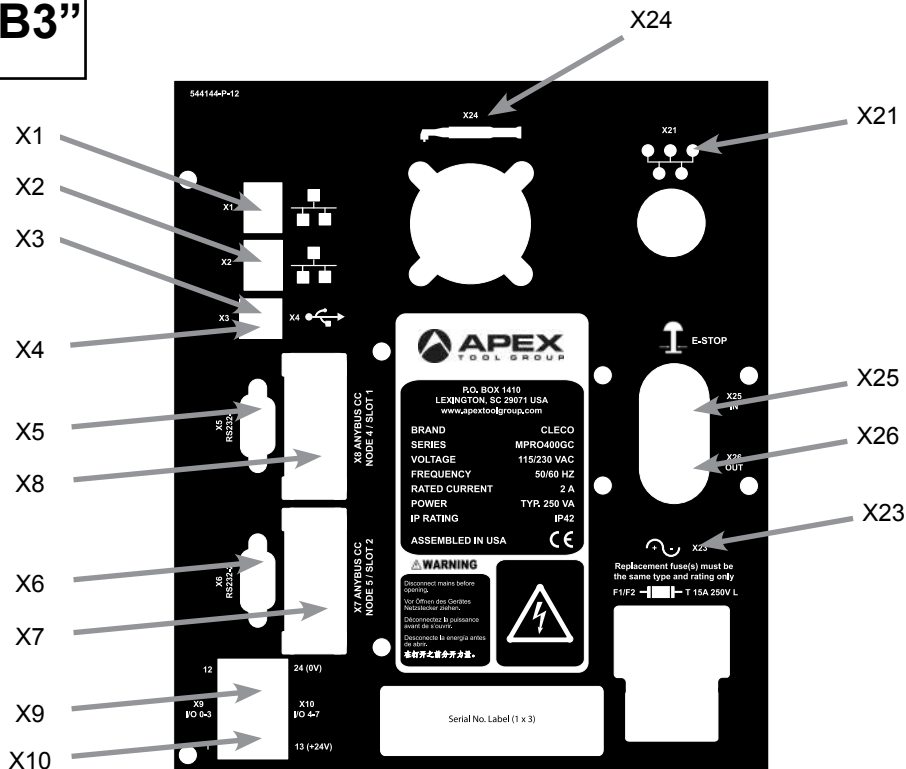
“B1”



“B2”



“B3”

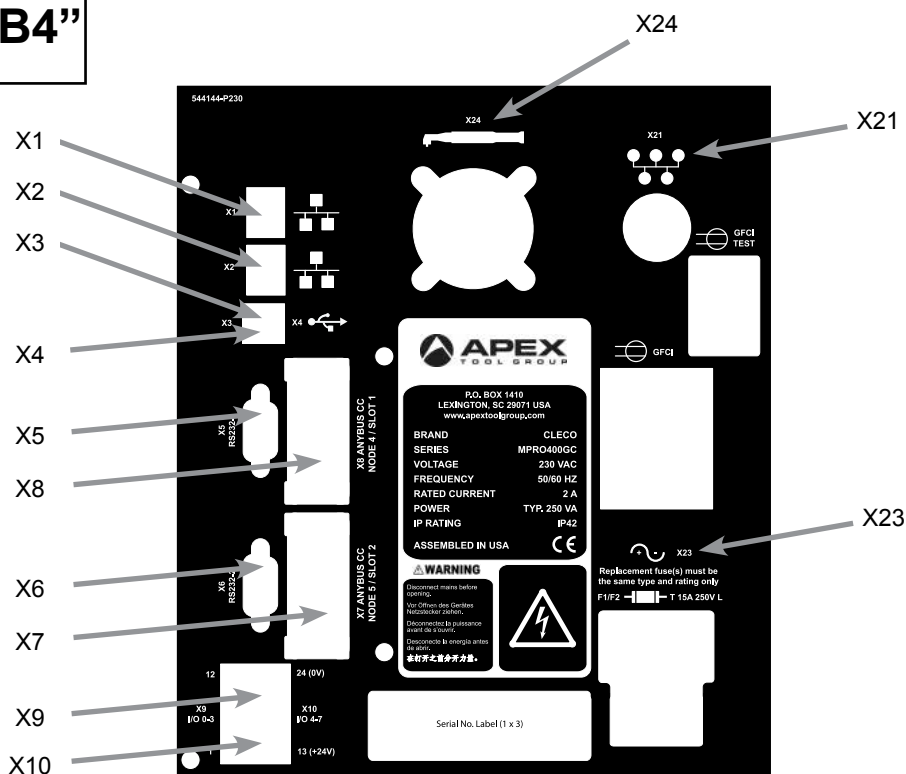


mPro400GC-P-12

Legend

- X1 = Ethernet Connector # 1
- X2 = Ethernet Connector # 2
- X3 = USB Port # 1
- X4 = USB Port # 2
- X5 = Serial Connector # 1
- X6 = Serial Connector # 2
- X7 = Anybus
- X8 = Anybus
- X9 = I/O Connectors
- X10 = I/O Connectors
- X21 = System Bus Connector
- X23 = Power Connexion
- X24 = Tool Connector
- X25 = E-Stop Input
- X26 = E-Stop Output

“B4”



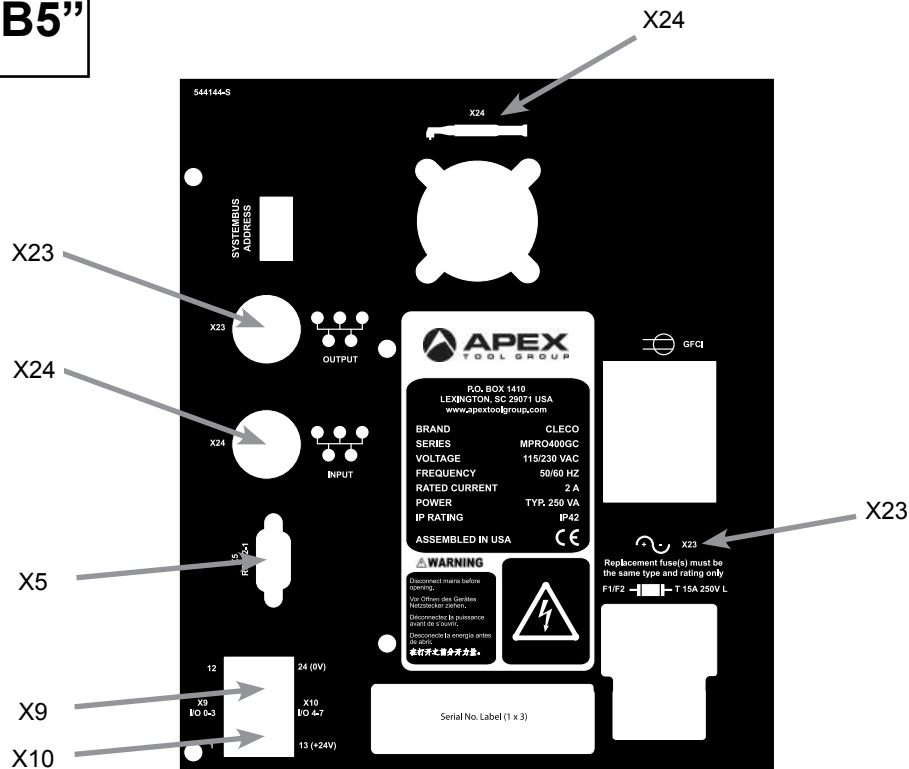
mPro400GC-P230

Legend

- X1 = Ethernet Connector # 1
- X2 = Ethernet Connector # 2
- X3 = USB Port # 1
- X4 = USB Port # 2
- X5 = Serial Connector # 1
- X6 = Serial Connector # 2
- X7 = Anybus
- X8 = Anybus
- X9 = I/O Connectors
- X10 = I/O Connectors
- X21 = System Bus Connector
- X23 = Power Connexion
- X24 = Tool Connector

Cleco®
mPro400GC Connections

“B5”

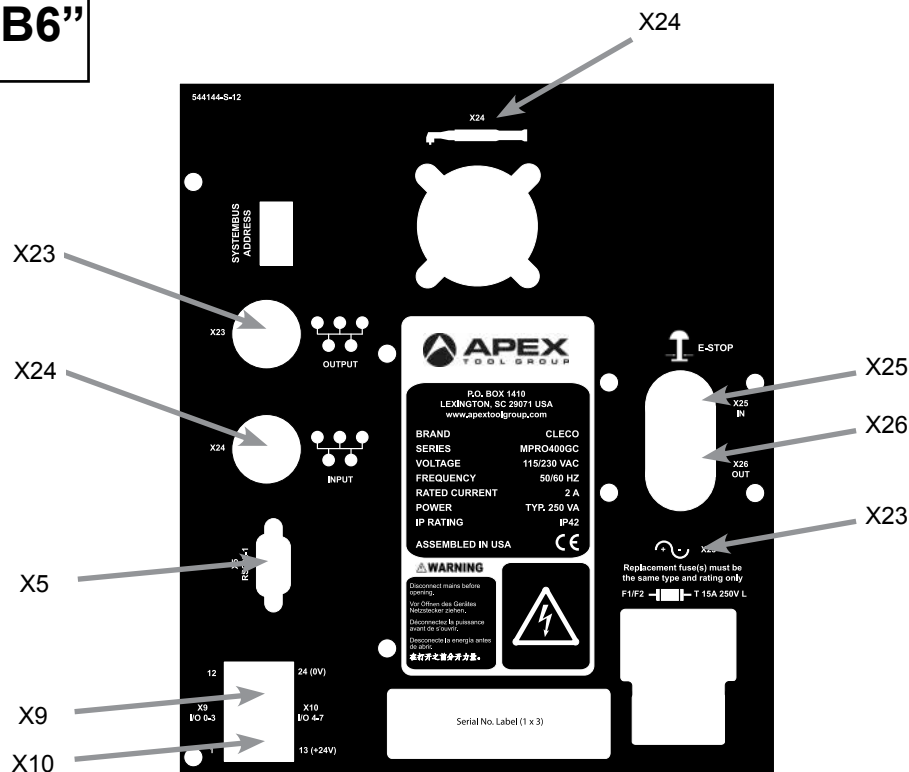


mPro400GC-S

Legend

- X5 = Serial Connector # 1
- X9 = I/O Connectors
- X10 = I/O Connectors
- X23 = Power Connection
- X24 = Tool Connector

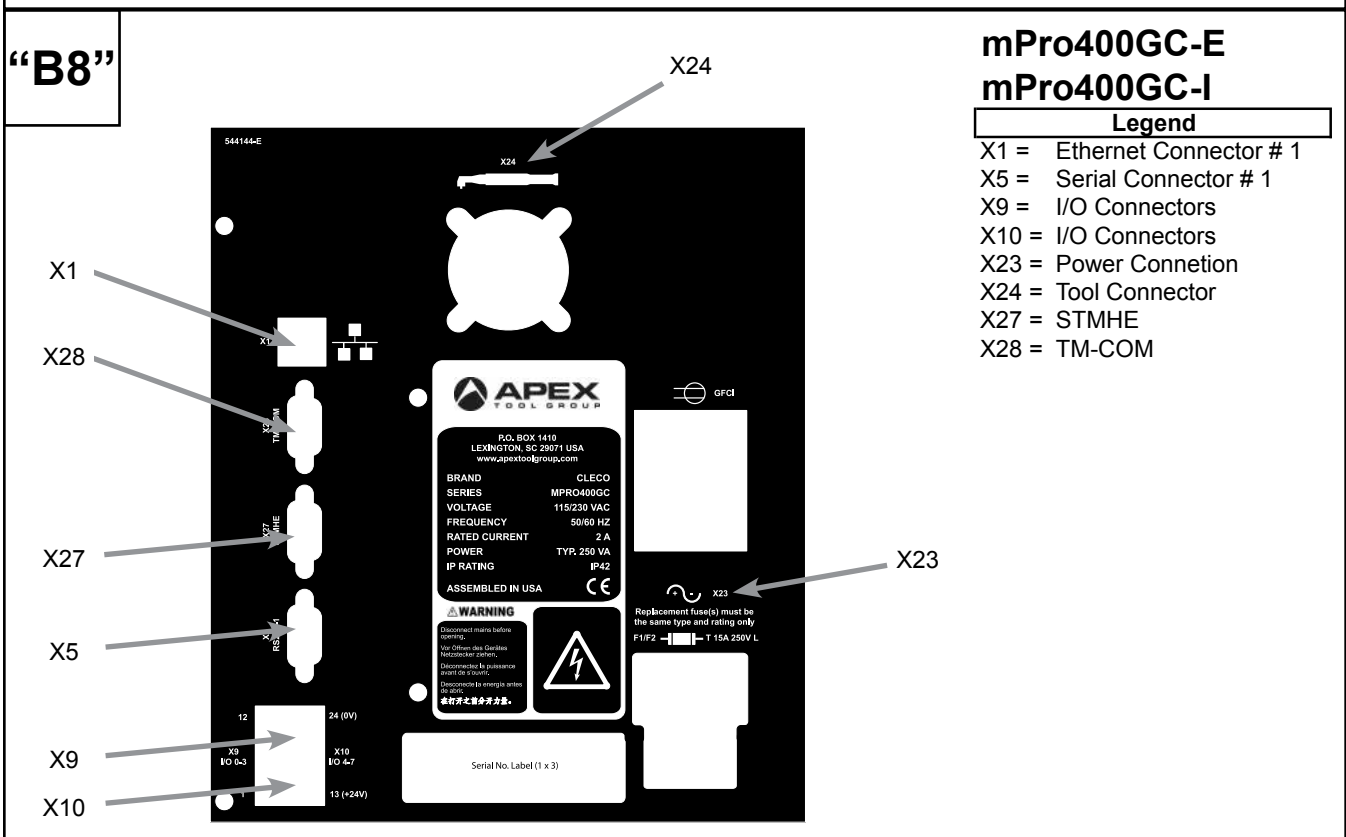
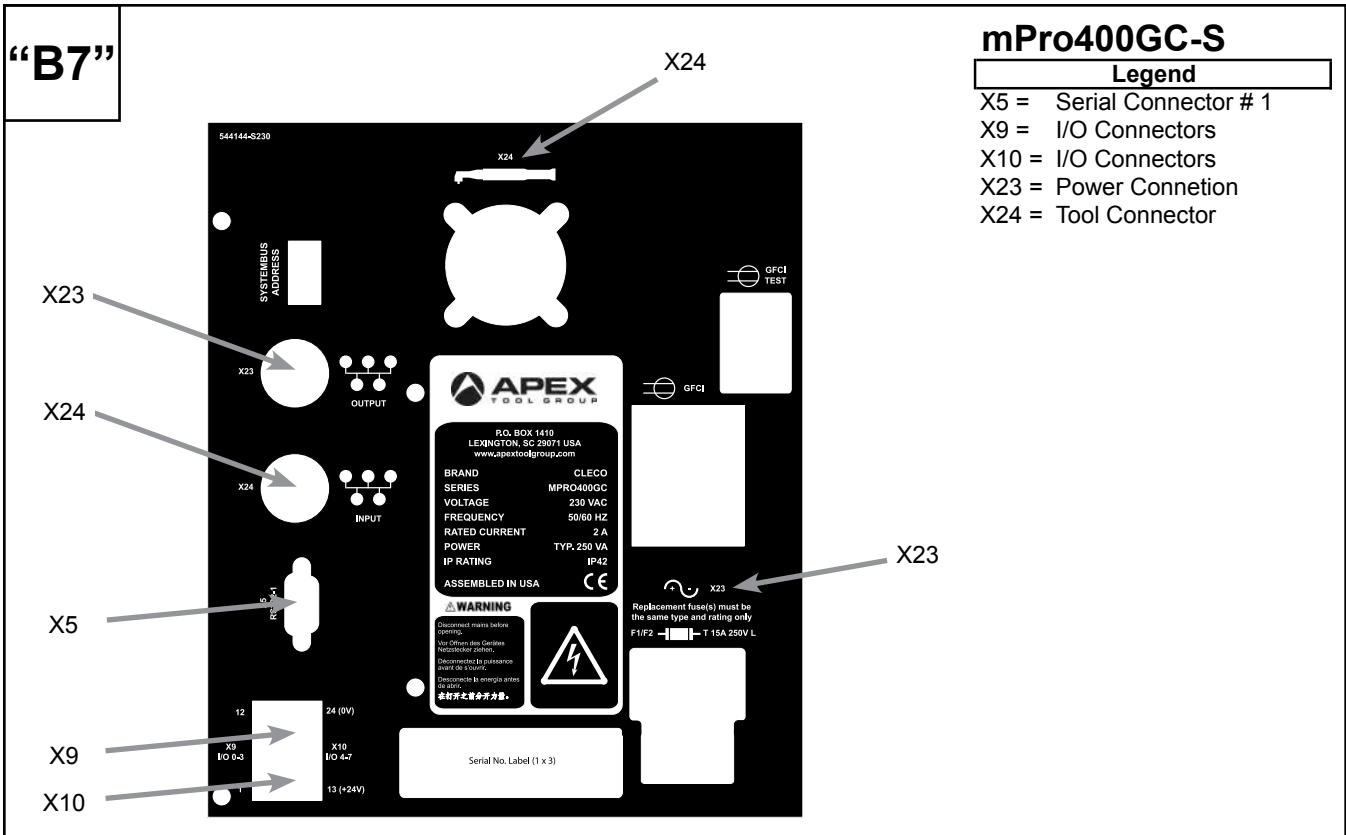
“B6”



mPro400GC-S-12

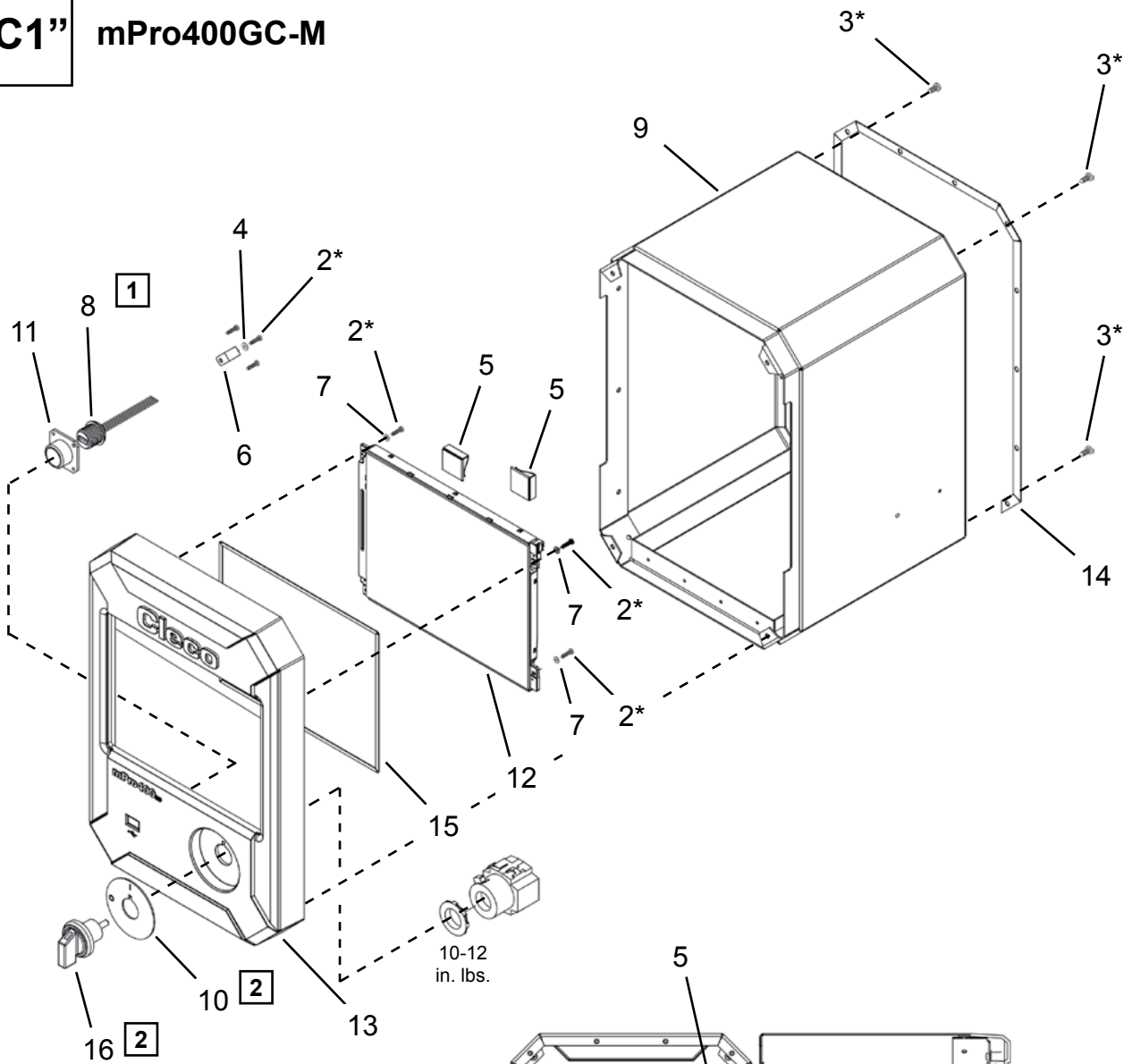
Legend

- X5 = Serial Connector # 1
- X9 = I/O Connectors
- X10 = I/O Connectors
- X23 = Power Connection
- X24 = Tool Connector
- X25 = E-Stop Input
- X26 = E-Stop Output



“C1”

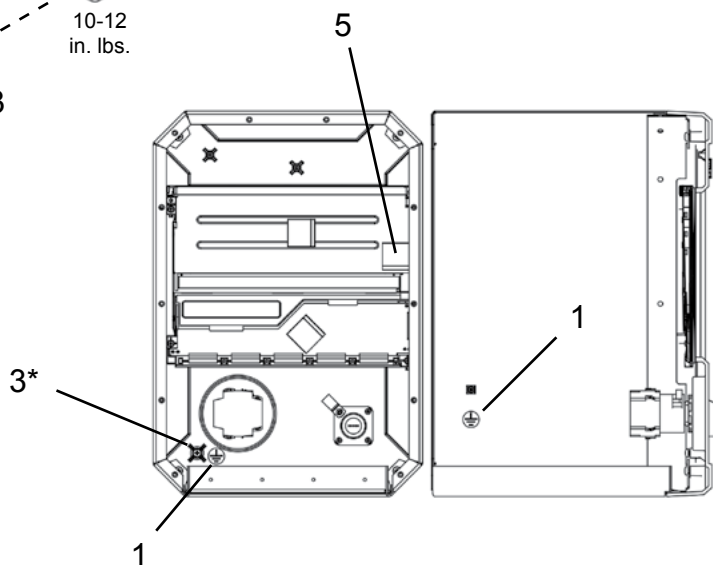
mPro400GC-M



* Note:
Tightening Torque:
2 = Hand tight
3 = 15-20 in. lbs.

1 Align USB contacts with
bottom edge of flange

2 Align switch knob keyway with
escutcheon plate key



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Master Controller Enclosure

PL12-1000EN
09/29/2014

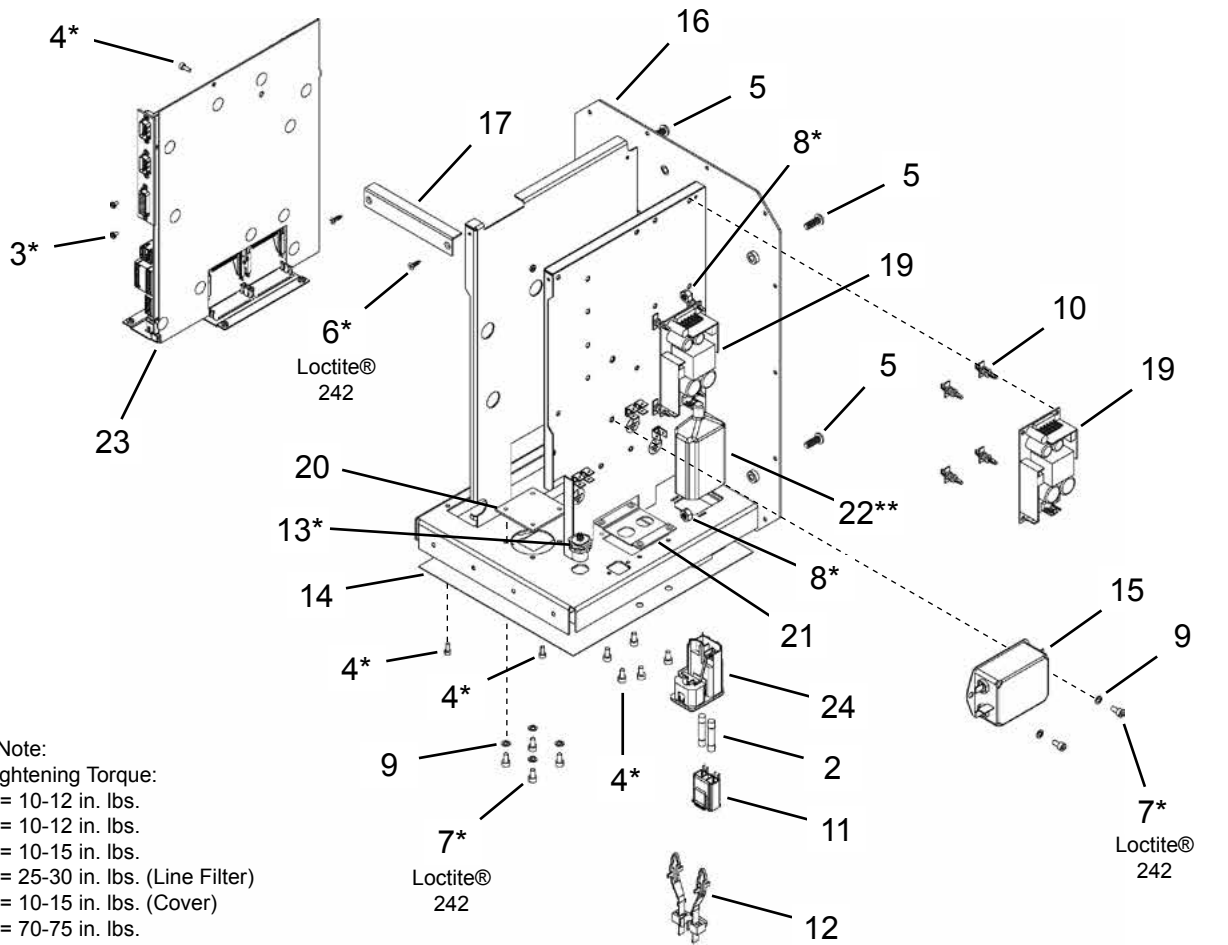
Illustration "C1" - Enclosure (-M)

Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-37	8	20	Phillips Head Screw (#4-20 x 1/2")
3	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
4	542942-10	3	6	Nylon Washer (M3)
5	542944-13	3		Cable Clip
6	542944-21	1		Cable Clamp
7	543319-1	4		Wave Washer (M3)
8	544124-9	1		USB Connector
9	544129PT	1		Enclosure
10	544133PT	1		Escutcheon Plate
11	544134PT	1		USB Flange
12	544255PT	1	2	LED Display Screen (Touch)
13	544139PT	1		Facade Assembly
14	544141PT	1		Enclosure Gasket
15	544142PT	1		Display Gasket
16	544155PT	1	2	Switch Assembly

(#) Quantity

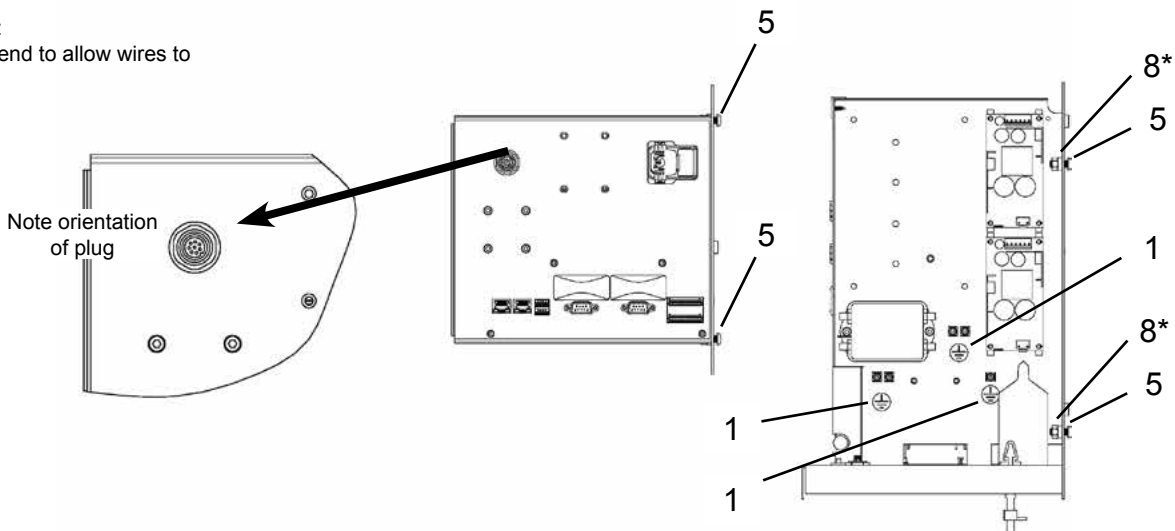
(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

“C2”



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 10-12 in. lbs.
6 = 10-15 in. lbs.
7 = 25-30 in. lbs. (Line Filter)
7 = 10-15 in. lbs. (Cover)
8 = 70-75 in. lbs.
13 = 70-75 in. lbs.

**** Note:**
Cut off end to allow wires to exit



Cleco®
Master Controller Chassis

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09/29/2014

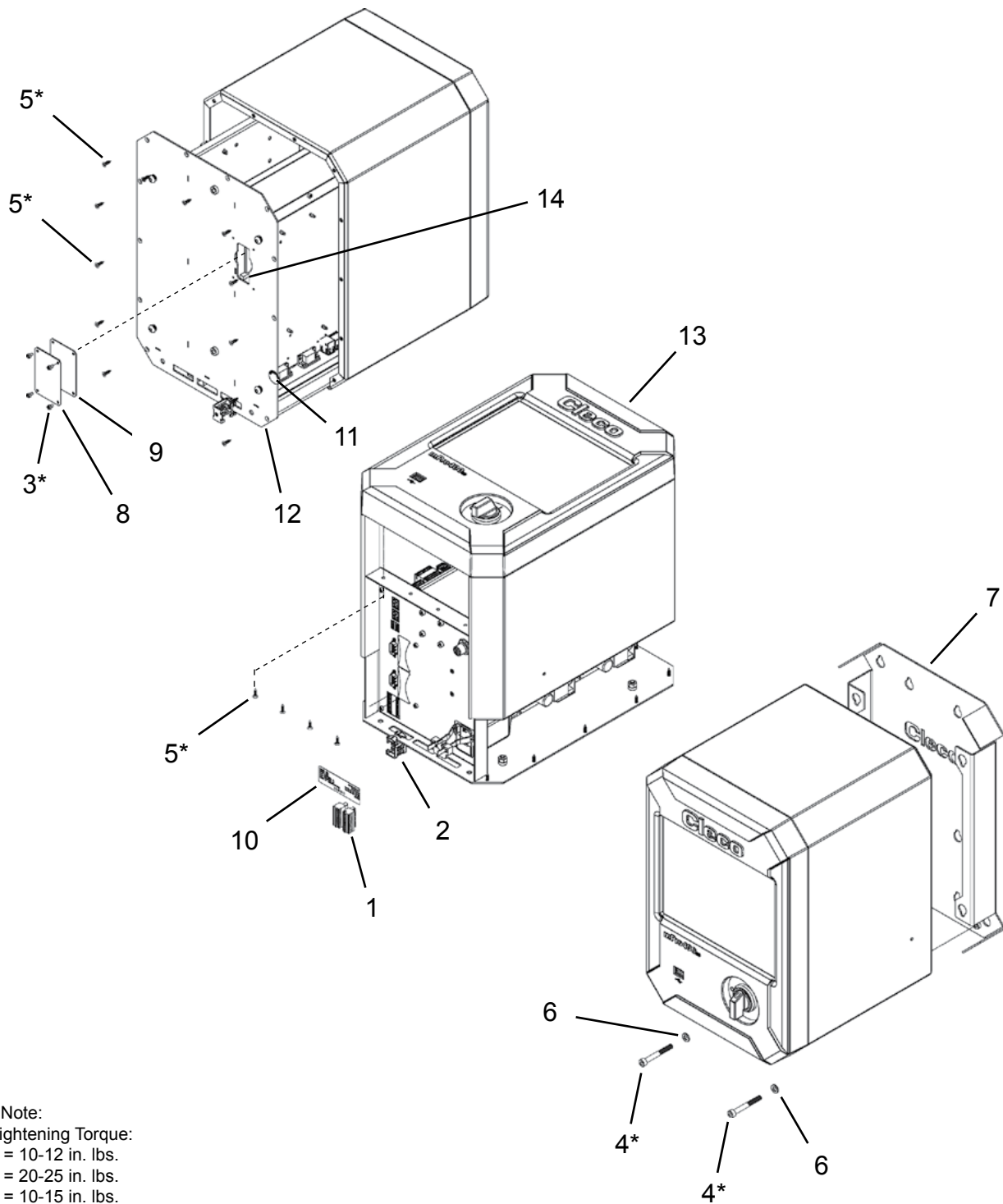
Illustration "C2" - Chassis (-M)

Ref	Number	#	X	EN
				Description
1	541615	3		Ground Strap Label
2	541796	2	4	Fuse (115V 15A Slowblow)
3	542940-38	2	4	Screw (#4-40 x 3/16")
4	542940-2	9	18	Socket Head Cap Screw (M3 x 0.5 x 8mm)
5	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
6	542940-34	2	4	Screw (#6 x 3/8")
7	542940-4	6	12	Socket Head Cap Screw (M4 x 0.7 x 8mm)
8	542941-6	4	8	Nut (M6 Low Profile)
9	542942-11	6	12	Lockwasher (M4 Split)
10	542943-19	8	16	Nylon Standoff (.375")
11	543834	1		Fuse Drawer
12	544004-1	1		Plug Retainer
13	544124-12	1		Output Cable (+24VDC)
14	544144-M	1		Graphics Panel
15	544182PT	1		Line Filter
16	544127PT	1		Chassis
17	544130PT	1		Connector Bracket
18	544206PT	1		I/O Plate (not shown)
19	544135PT	2	4	Power Supply (24VDC)
20	544162PT	1		Tool Connector Cover
21	544206PT-1	1		Connector Bracket
22	544253PT	1		Inlet Cover
23	PCA2030-1	1	2	Motherboard Assembly
24	543833	1	2	Power Entry Module
25	PEM S-M3-271	1		Self Clinching Nut (not shown)

(#) Quantity

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

“C3” mPro400GC-M



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 20-25 in. lbs.
5 = 10-15 in. lbs.

Cleco®
Master Controller Assembly

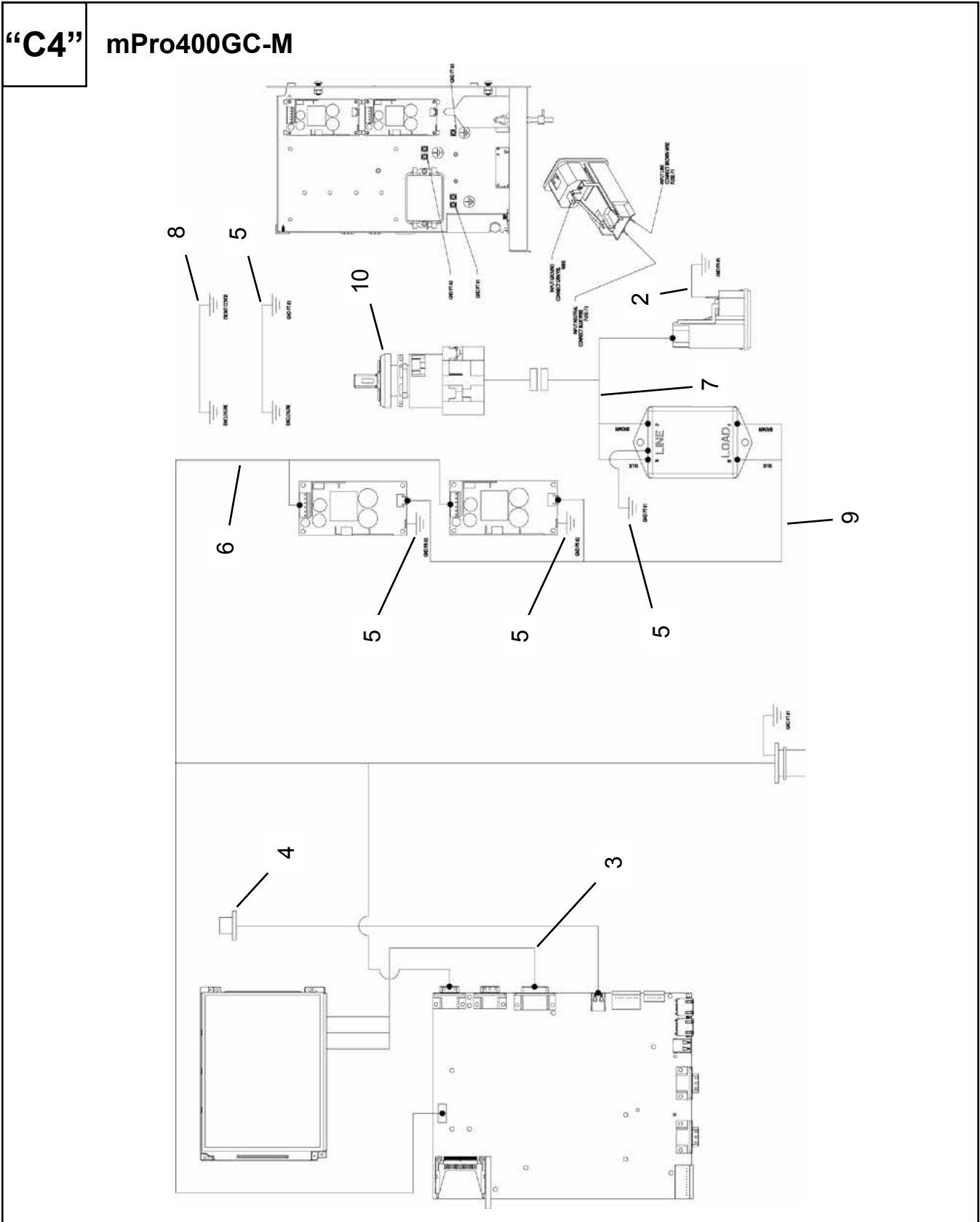
PL12-1000EN
09/29/2014

Illustration "C3" - Controller Assembly (-M)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-M	1		Chassis Assembly (Illustration "C2")
13	mPro400GC-M	1		Enclosure Assembly (Illustration "C1")
14	544163PT-1G	1		Compact Flash

(#) Quantity

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



Cleco®
Master Controller Schematic

PL12-1000EN
09/29/2014

Illustration "C4" - Schematic (-M)

Ref	Number	#	X	EN
				Description
1	542944-6	4		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-50	1		Display Cable
4	544124-9	1		USB Cable
5	544124-10	4		Ground Cable
6	544124-12	1		Output Cable (+24VDC)
7	544124-19	1		GFCI / Filter Cable
8	544124-17	1		Ground Cable
9	544124-55	1		Input Cable (+24VDC)
10	544155PT	1	2	Switch Assembly

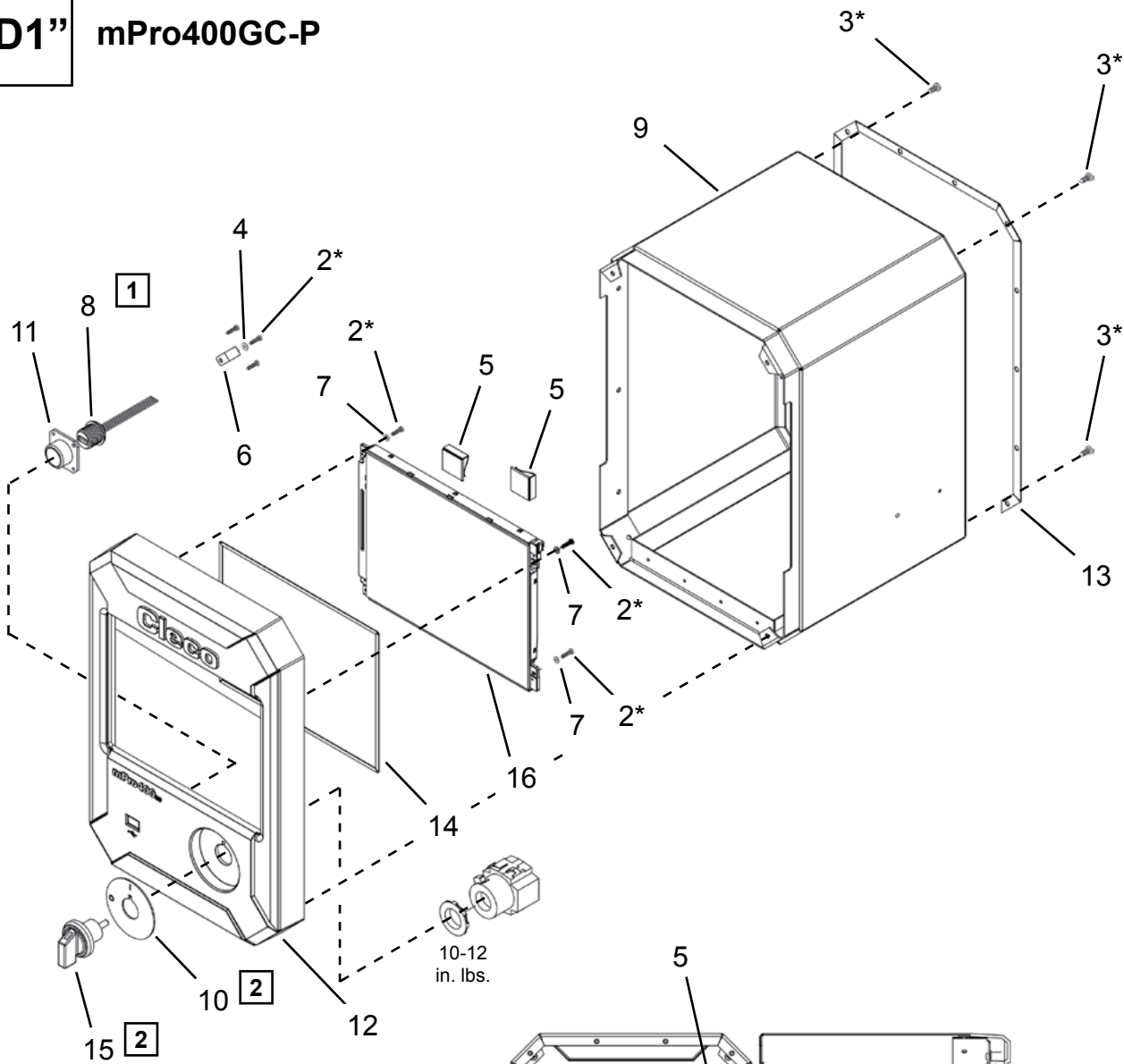
(#) Quantity

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

Cleco®
Primary Controller Enclosure

“D1”

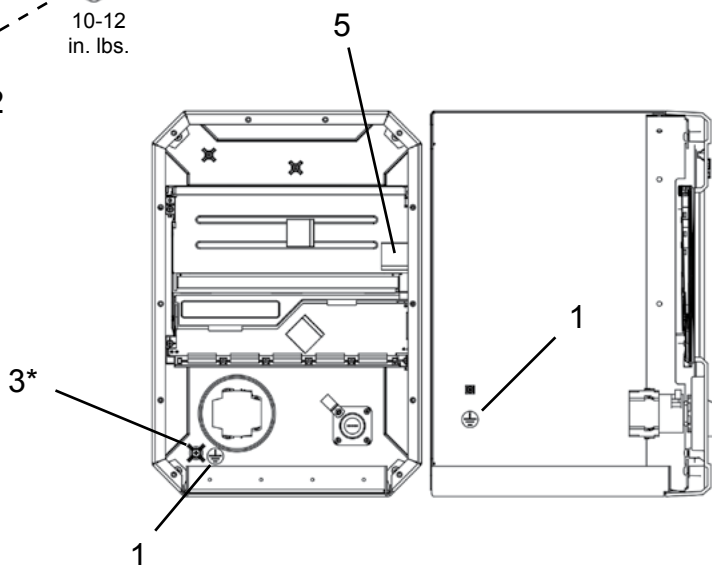
mPro400GC-P



* Note:
Tightening Torque:
2 = Hand tight
3 = 15-20 in. lbs.

1 Align USB contacts with
bottom edge of flange

2 Align switch knob keyway with
escutcheon plate key



Cleco®
Primary Controller Enclosure

PL12-1000EN
09/29/2014

Illustration "D1" - Enclosure (-P)

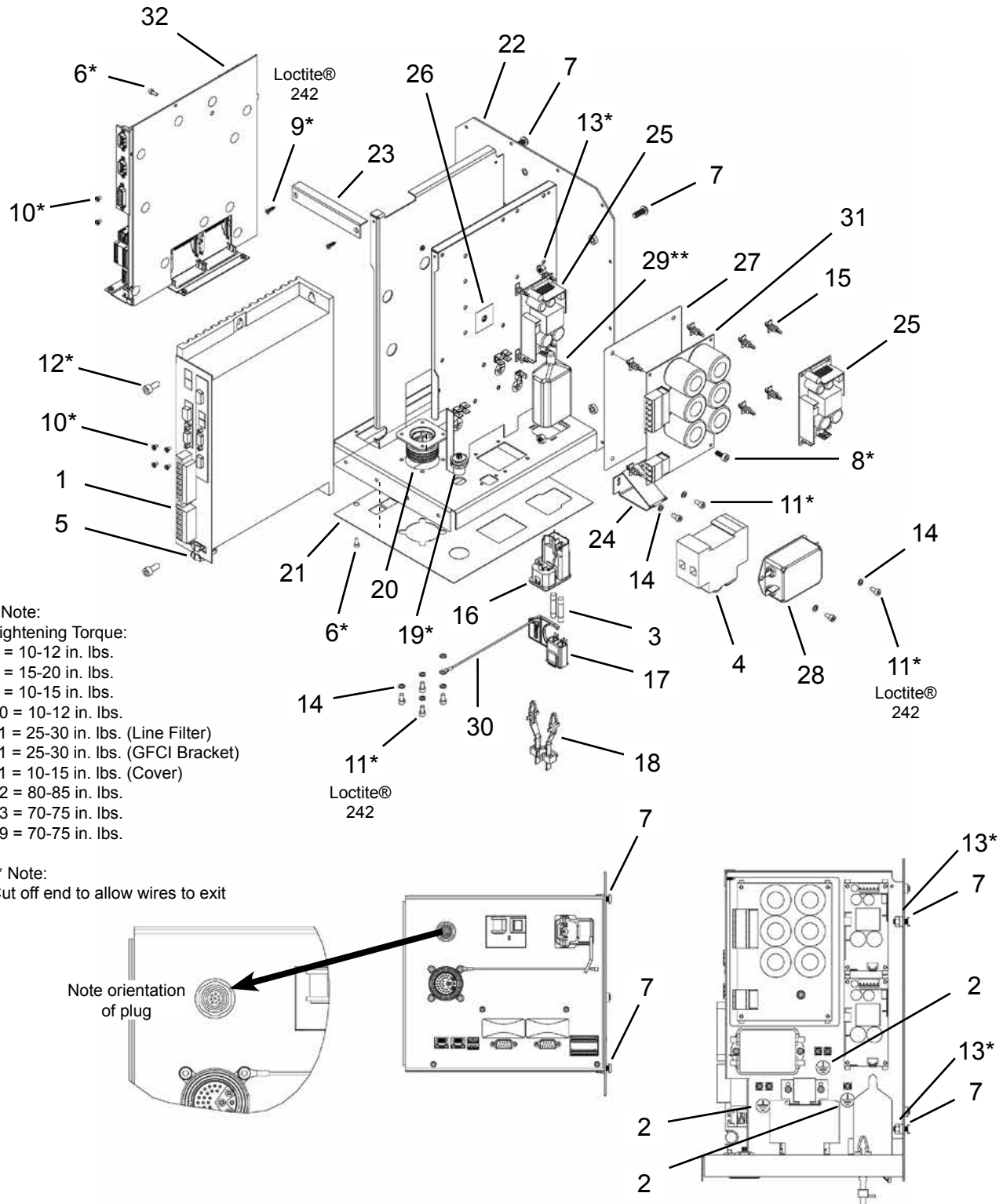
Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-37	8	16	Phillips Head Screw (#4-20 x 1/2")
3	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
4	542942-10	1	2	Nylon Washer (M3)
5	542944-13	3		Cable Clip
6	542944-21	1		Cable Clamp
7	543319-1	4	8	Wave Washer (M3)
8	544124-9	1		USB Connector
9	544129PT	1		Enclosure
10	544133PT	1		Escutcheon Plate
11	544134PT	1		USB Flange
12	544139PT	1		Facade Assembly
13	544141PT	1		Enclosure Gasket
14	544142PT	1		Display Gasket
15	544155PT	1	2	Switch Assembly
16	544255PT	1	1	LED Display Screen (Touch)

(#) Quantity

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

Cleco®
Primary Controller Chassis

“D2” mPro400GC-P



Cleco®
Primary Controller Chassis

PL12-1000EN
09/29/2014

Illustration "D2" - Chassis (-P)

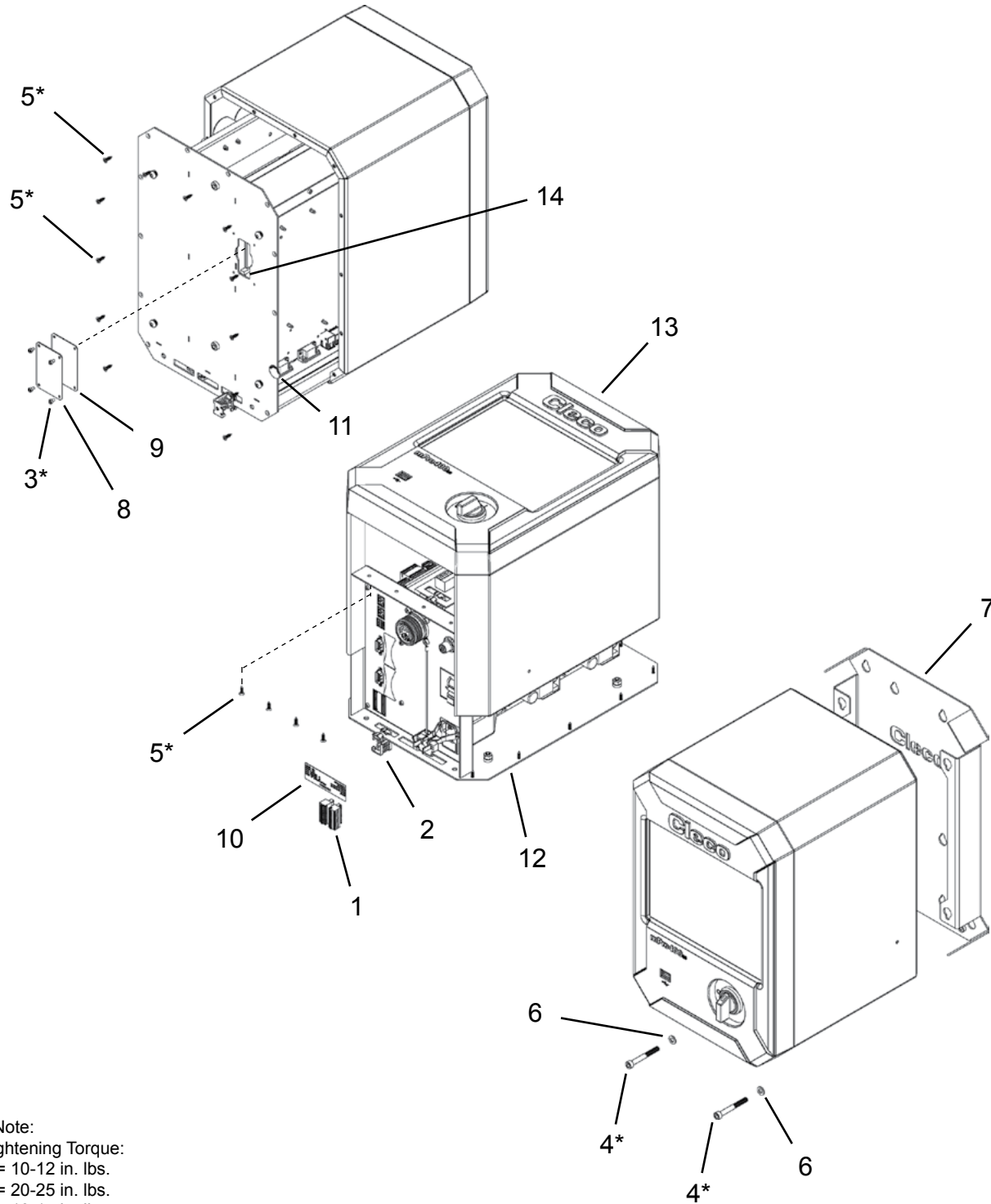
Ref	Number	#	X	EN
				Description
1	544180PT	1		STMH.1 Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1	2	GFCI
5	542897	1		Shield Clamp
6	542940-2	5	10	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-33	1	2	Socket Head Cap Screw (M5 x 0.8 x 12mm)
9	542940-34	2	4	Screw (#6 x 3/8")
10	542940-38	6	12	Screw (#4-40 x 3/16")
11	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
12	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
13	542941-6	4	8	Nut (M6 Low Profile)
14	542942-11	9	18	Lockwasher (M4 Split)
15	542943-19	12	24	Nylon Standoff (.375")
16	543833	1		Power Entry Module
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-12	1		Output Cable (+24VDC)
20	544124-4	1		Tool Cable
21	544144-P	1		Graphics Panel
22	544127PT	1		Chassis
23	544130PT	1		Connector Bracket
24	544131PT	1		GFCI Bracket
25	544135PT	2	4	Power Supply (24VDC)
26	544145PT	1		Thermal Tape
27	544146PT	1		Voltage Doubler Insulator
28	544182PT	1	2	Line Filter
29	544253PT	1		Inlet Cover
30	544271PT	1		Connector Clip Assembly
31	PCA2025P	1	2	Voltage Doubler - Programmed
32	PCA2030-1	1	2	Motherboard Assembly

(#) Quantity

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

Cleco®
Primary Controller Assembly

"D3" mPro400GC-P



Cleco®
Primary Controller Assembly

PL12-1000EN
09/29/2014

Illustration "D3" - Controller Assembly (-P)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-P	1		Chassis Assembly (Illustration "D2")
13	mPro400GC-P	1		Enclosure Assembly (Illustration "D1")
14	544163PT-1G	1		Compact Flash

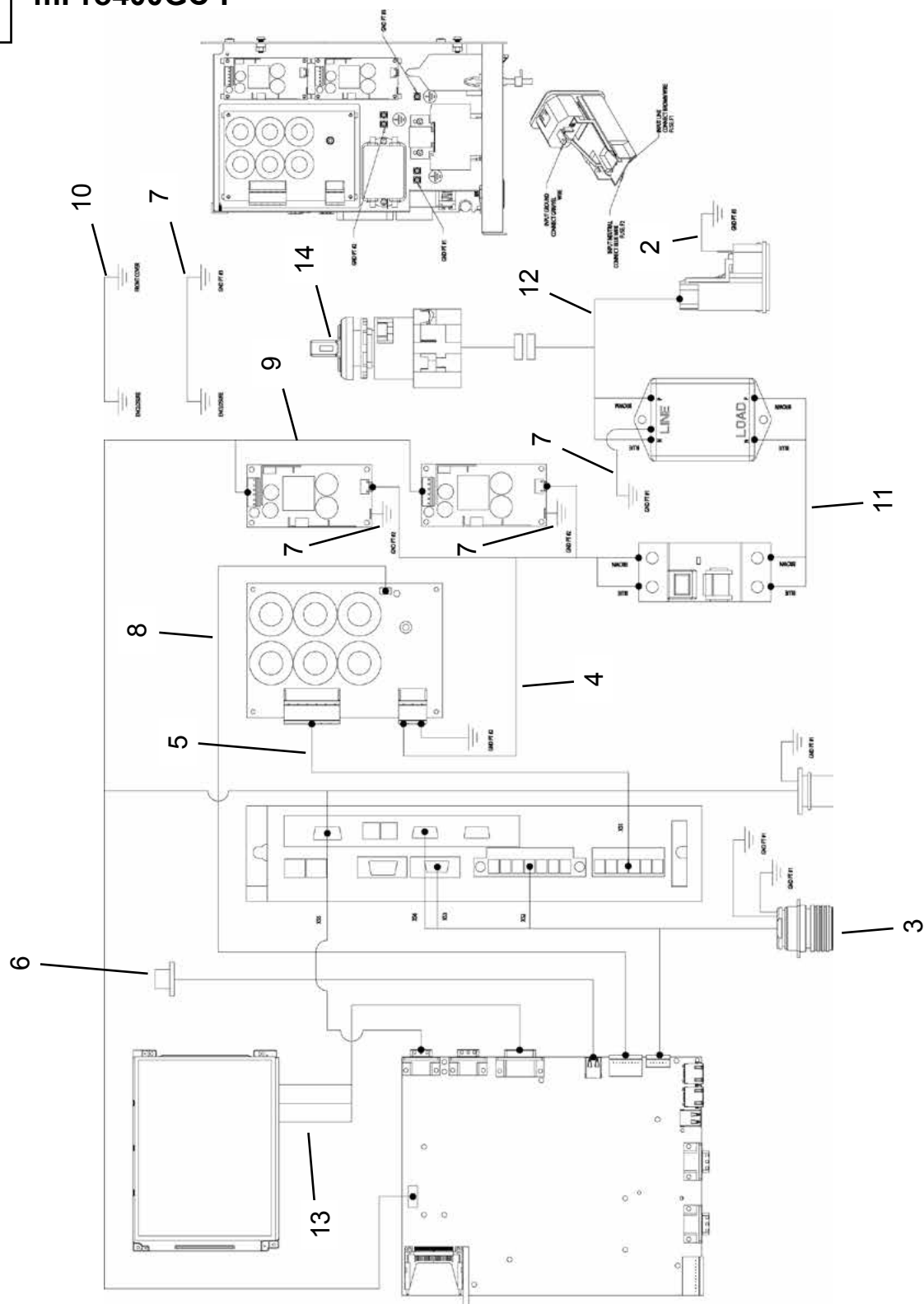
(#) Quantity

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

Cleco® Primary Controller Schematic

“D4”

mPro400GC-P



Cleco®
Primary Controller Schematic

PL12-1000EN
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Illustration "D4" - Schematic (-P)

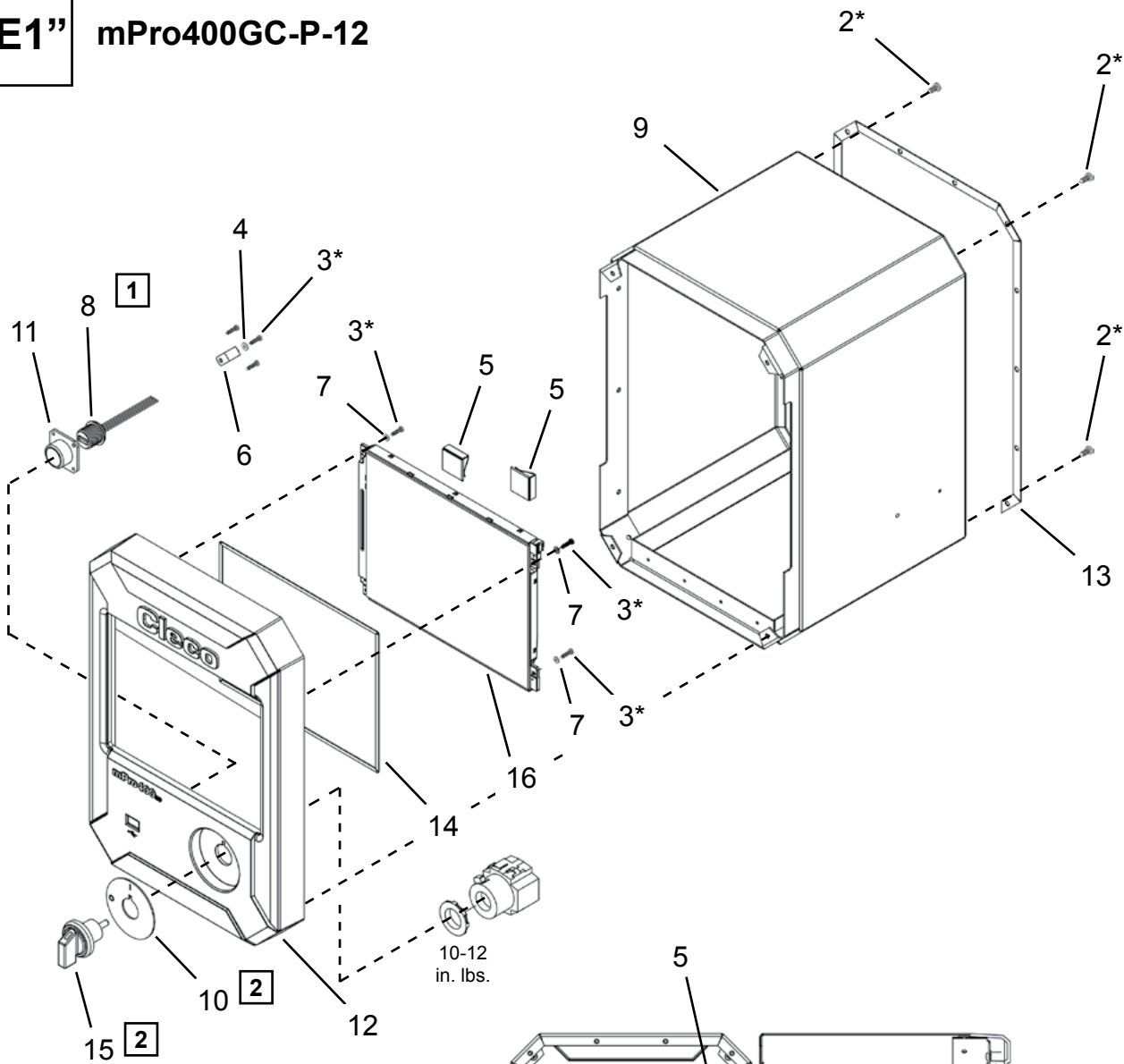
Ref	Number	#	X	EN
				Description
1	542944-6	4		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-4	1		Internal Tool Cable
4	544124-5	1		Voltage Doubler Input Cable
5	544124-6	1		Voltage Doubler Output Cable
6	544124-9	1		USB Cable
7	544124-10	4		Ground Cable
8	544124-11	1		Voltage Doubler Shutdown Cable
9	544124-12	1		Output Cable (+24VDC)
10	544124-17	1		Ground Cable
11	544124-19	1		GFCI / Filter Cable
12	544124-20	1		Filter / Switch Cable
13	544124-50	1		Display Cable
14	544155PT	1	2	Switch Assembly

(#) Quantity

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

“E1”

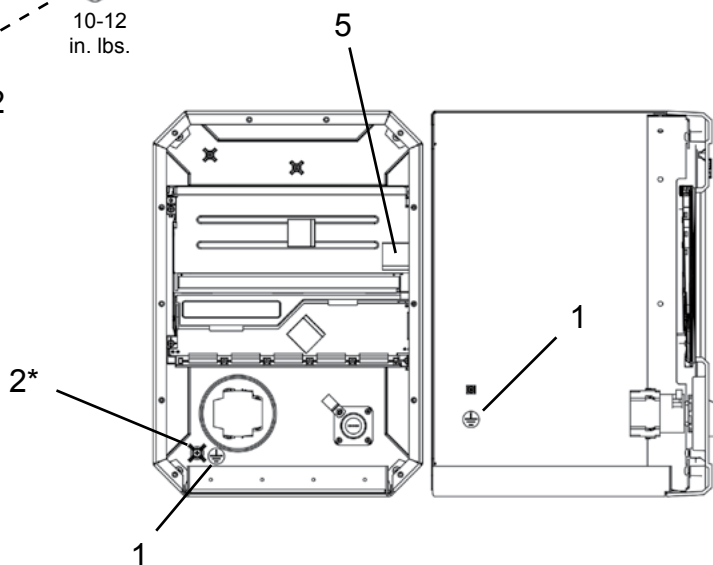
mPro400GC-P-12



* Note:
Tightening Torque:
2 = 15-20 in. lbs.
3 = Hand tight

1 Align USB contacts with
bottom edge of flange

2 Align switch knob keyway with
escutcheon plate key



Cleco®
Primary 1-2 Controller Enclosure

PL12-1000EN
09/29/2014

Illustration "E1" - Enclosure (-P-12)

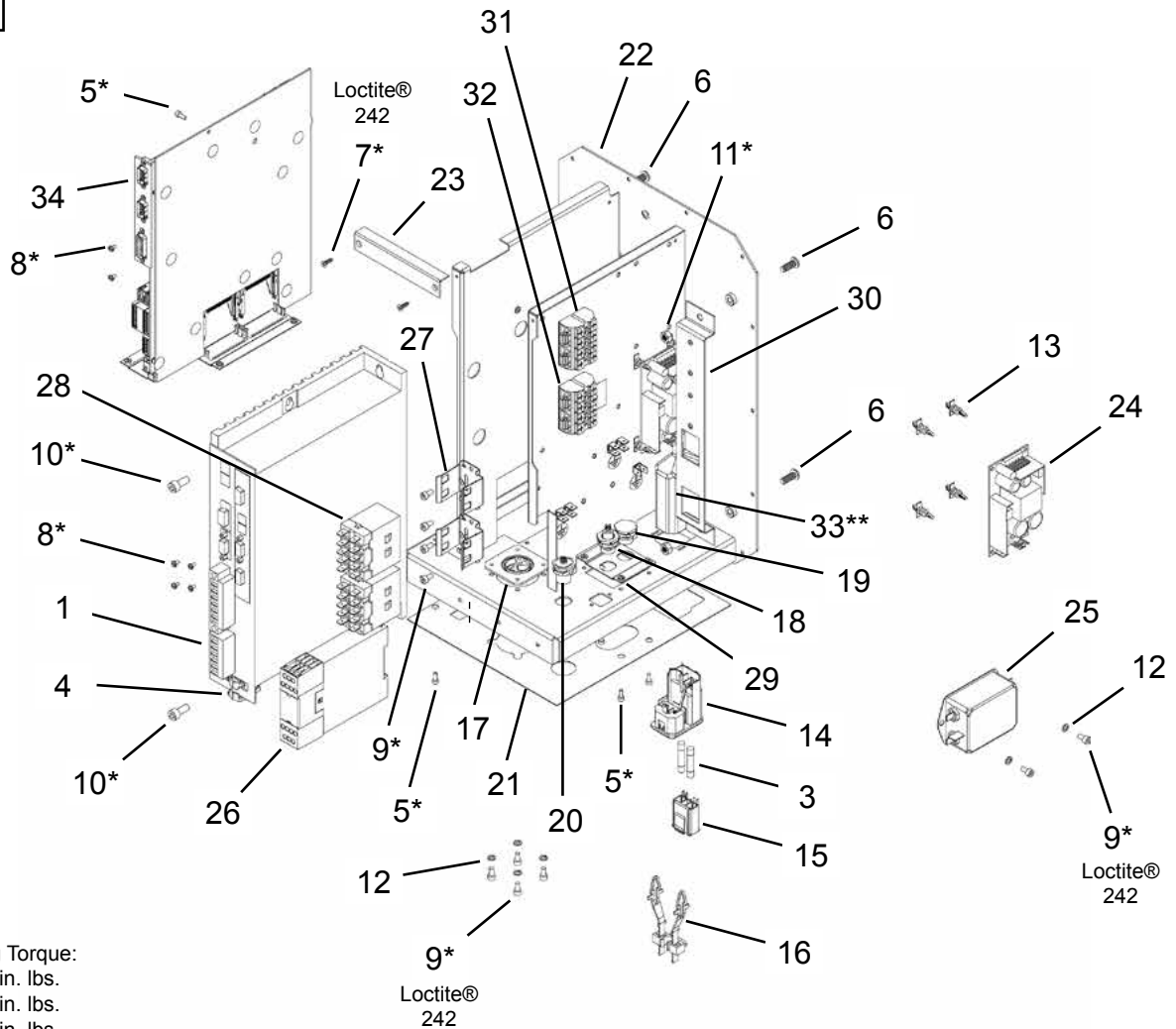
Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	8	16	Phillips Head Screw (#4-20 x 1/2")
4	542942-10	1	2	Nylon Washer (M3)
5	542944-13	3		Cable Clip
6	542944-21	1		Cable Clamp
7	543319-1	4	8	Wave Washer (M3)
8	544124-9	1		USB Connector
9	544129PT	1		Enclosure
10	544133PT	1		Escutcheon Plate
11	544134PT	1		USB Flange
12	544139PT	1		Facade Assembly
13	544141PT	1		Enclosure Gasket
14	544142PT	1		Display Gasket
15	544155PT	1	2	Switch Assembly
16	544255PT	1	1	LED Display Screen (Touch)

(#) Quantity

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

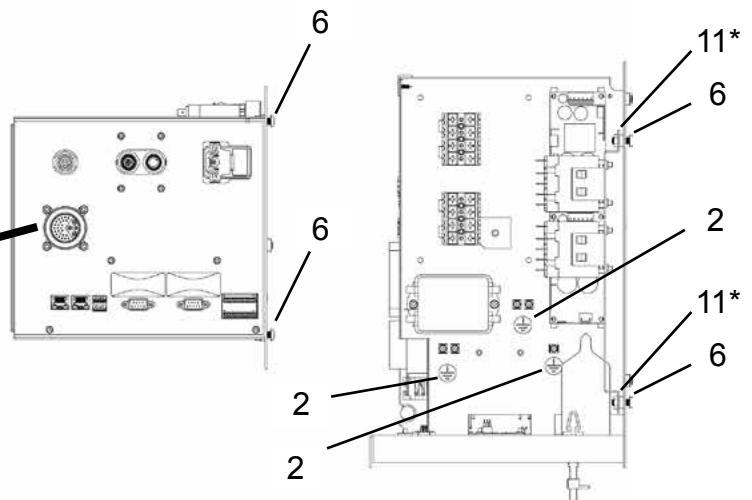
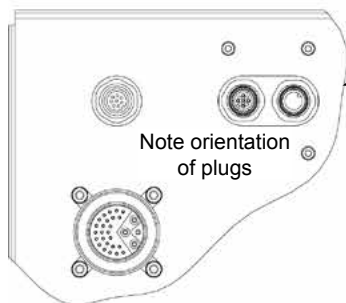
“E2”

mPro400GC-P-12



* Note:
Tightening Torque:
5 = 10-12 in. lbs.
7 = 10-15 in. lbs.
8 = 10-12 in. lbs.
9 = 25-30 in. lbs.
10 = 80-85 in. lbs.
11 = 70-75 in. lbs.

** Note:
Cut off end to allow wires to exit



Cleco®
Primary 1-2 Controller Chassis

PL12-1000EN
09/29/2014

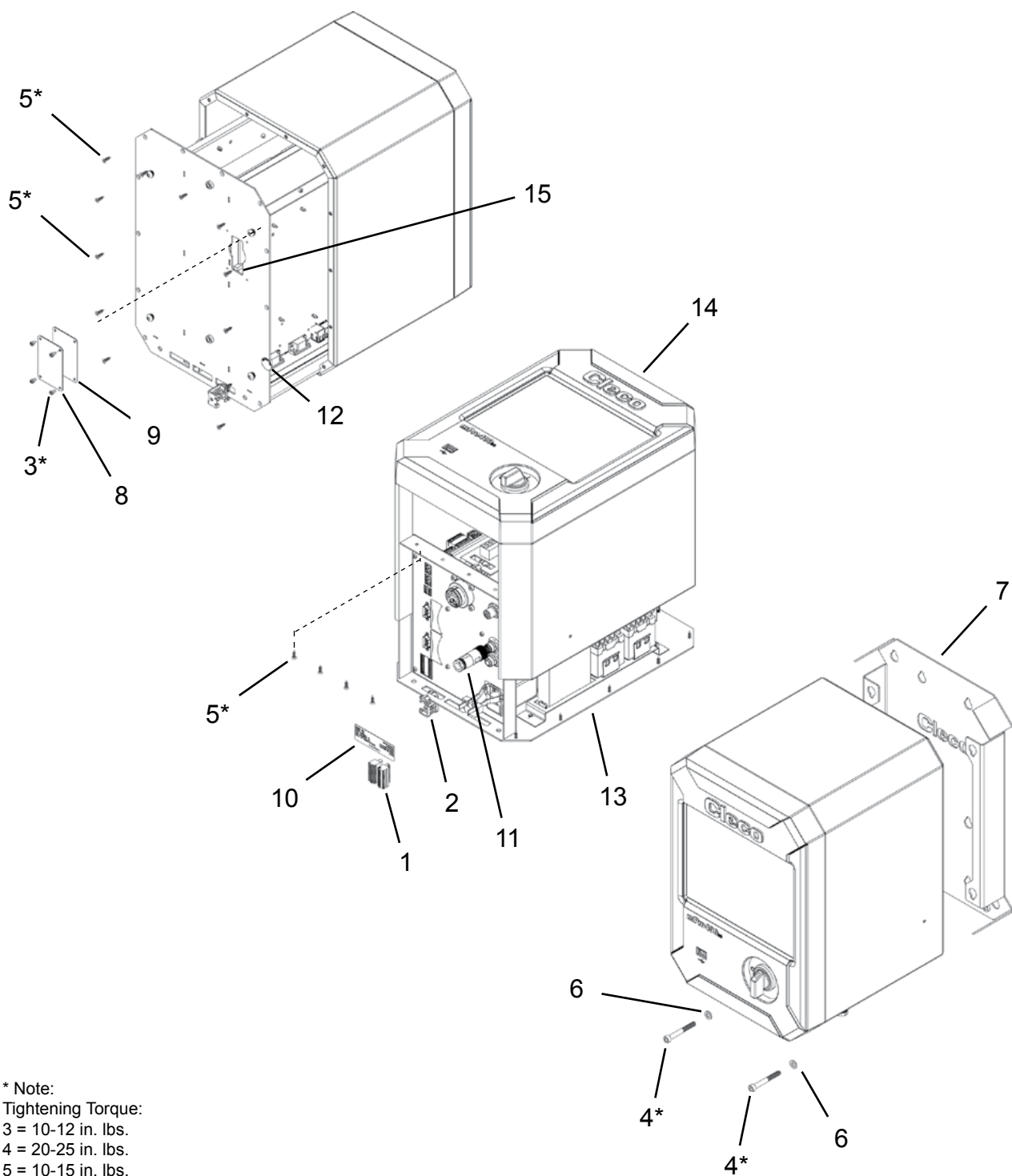
Illustration "E2" - Chassis (-P-12)

Ref	Number	#	X	EN
				Description
1	544339PT	1		STMH12 Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542897	1		Shield Clamp
5	542940-2	9	18	Socket Head Cap Screw (M3 x 0.5 x 8mm)
6	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
7	542940-34	2	4	Screw (#6 x 3/8")
8	542940-38	6	12	Screw (#4-40 x 3/16")
9	542940-4	10	20	Socket Head Cap Screw (M4 x 0.7 x 8mm)
10	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
11	542941-6	4	8	Nut (M6 Low Profile)
12	542942-11	6	12	Lockwasher (M4 Split)
13	542943-19	8	16	Nylon Standoff (.375")
14	543833	1		Power Entry Module
15	543834	1		Fuse Drawer
16	544004-1	1		Plug Retainer
17	544124-23	1		Internal Tool Cable
18	544124-31	1		E-Stop Cable
19	544124-36	1		E-Stop Output Cable
20	544124-43	1		Output Cable (+24VDC)
21	544144-P-12	1		Graphics Panel
22	544127PT	1		Chassis
23	544130PT	1		Connector Bracket
24	544135PT	2	4	Power Supply (24VDC)
25	544182PT	1	2	Line Filter
26	544200PT	1		Emergency Stop Relay
27	544201PT	2		W-Bracket
28	544202PT	2		Power Relay
29	544206PT-1	1		Connector Bracket
30	544207PT-1	1		Relay Bracket
31	544220PT	2		Terminal Block
32	544221PT	4		Terminal Block Jumper
33	544253PT	1		Inlet Cover
34	PCA2030-1	1	2	Motherboard Assembly

(#) Quantity

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

“E3” mPro400GC-P-12



Cleco®
Primary 1-2 Controller Assembly

PL12-1000EN
09/29/2014

Illustration "E3" - Controller Assembly (-P-12)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544208PT	1		E-Stop Mating Connector
12	544252PT	1		Tamper Proof Seal
13	mPro400GC-P-12	1		Chassis Assembly (Illustration "E2")
14	mPro400GC-P-12	1		Enclosure Assembly (Illustration "E1")
15	544163PT-1G	1		Compact Flash

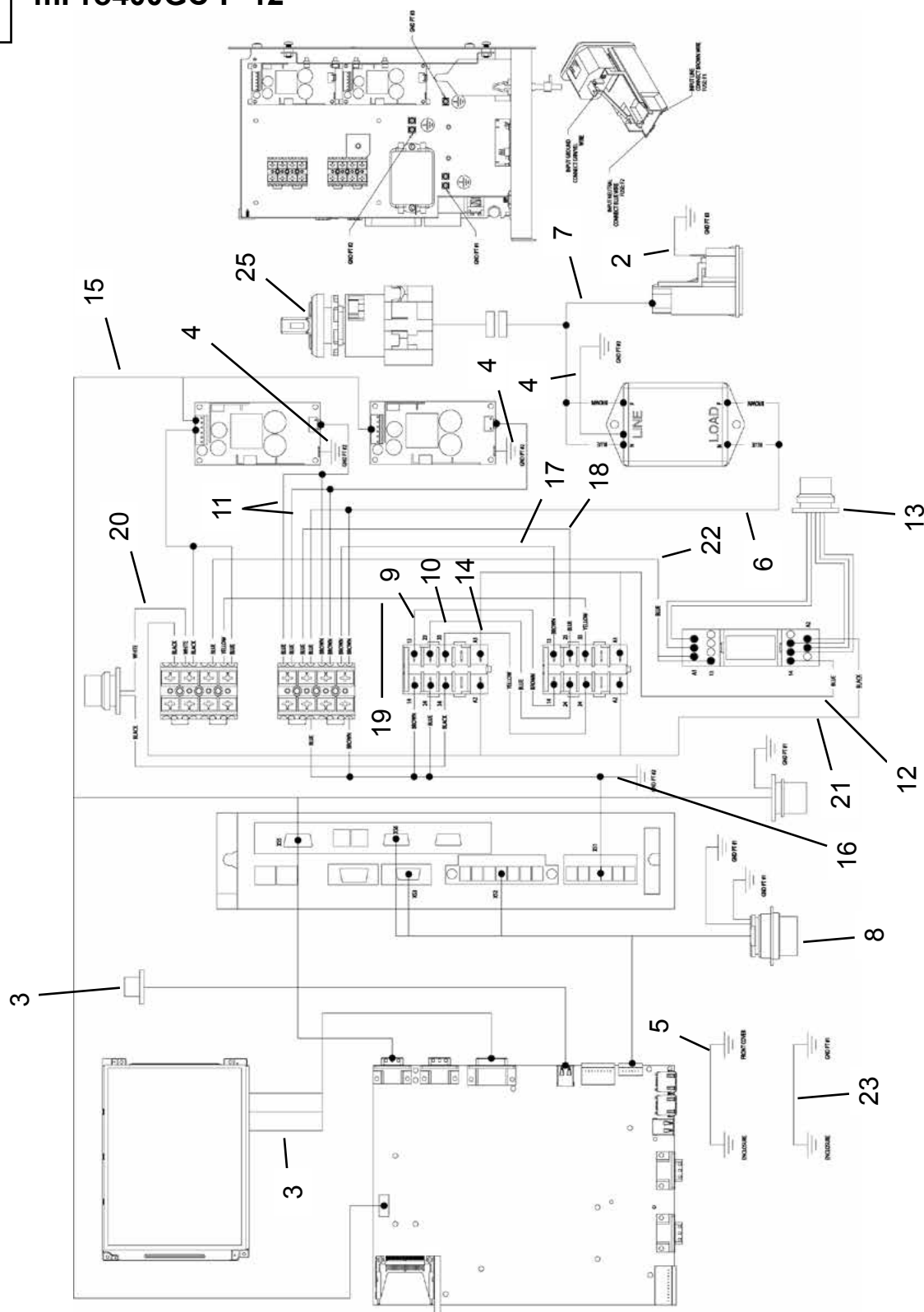
(#) Quantity

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

Cleco®
Primary 1-2 Controller Schematic

“E4”

mPro400GC-P-12



Cleco®
Primary 1-2 Controller Schematic

PL12-1000EN
09/29/2014

Illustration "E4" - Schematic (-P-12)

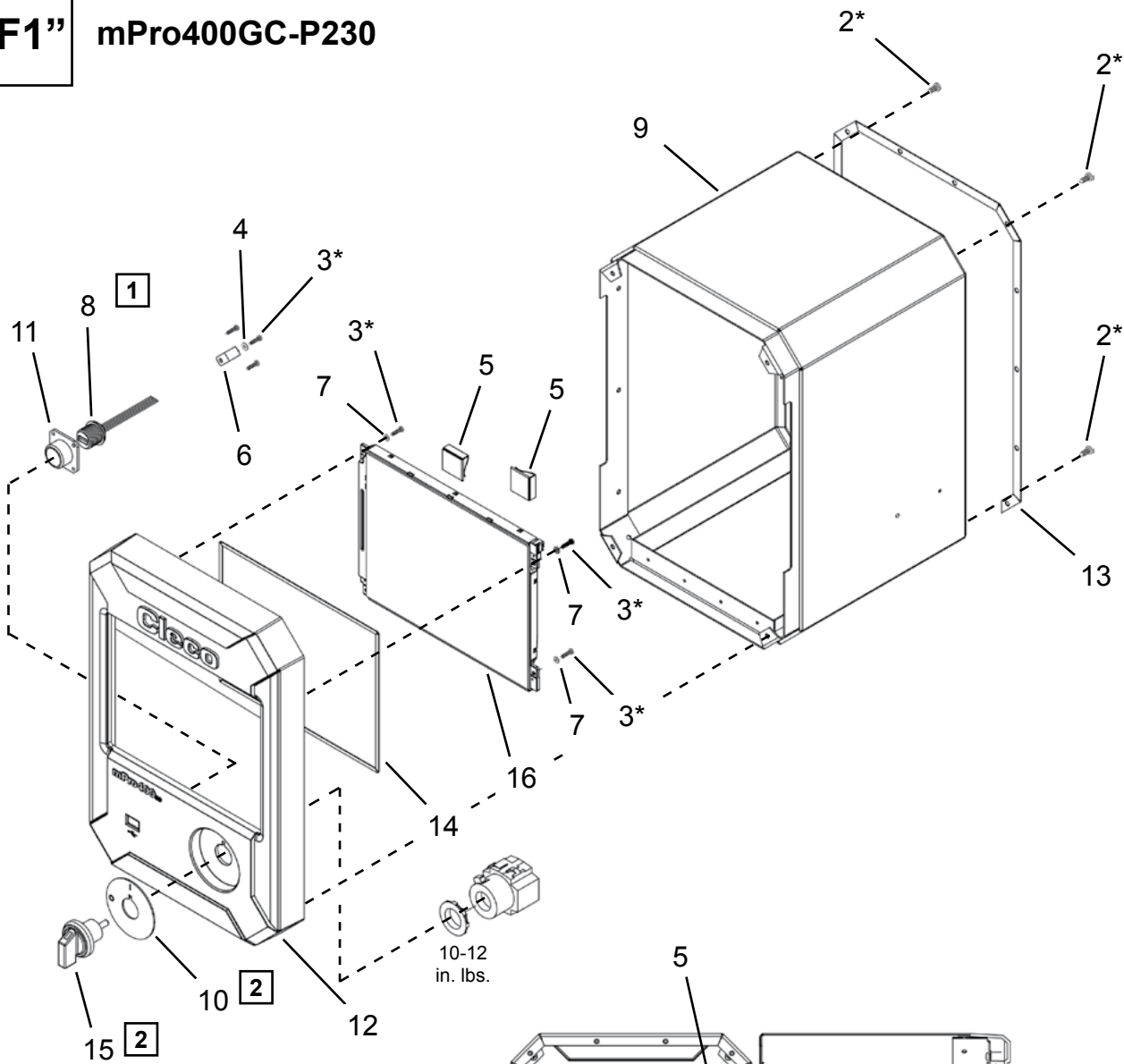
Ref	Number	#	X	EN
				Description
1	542944-6	4		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-9	1		USB Cable
4	544124-10	3		Ground Cable
5	544124-17	1		Ground Cable
6	544124-19	1		GFCI / Filter Cable
7	544124-20	1		Filter / Switch Cable
8	544124-23	1		Internal Tool Cable
9	544124-25	1		Line Cable
10	544124-26	1		Neutral Cable
11	544124-27	2		Input Cable (+24VDC)
12	544124-29	1		Relay High Cable
13	544124-31	1		E-Stop Cable
14	544124-34	1		Cable (+24VDC)
15	544124-36	1		E-Stop Output Cable
16	544124-37	1		Servo Power Cable
17	544124-40	1		Input Line Cable
18	544124-41	1		Input Neutral Cable
19	544124-42	1		Input Cable (+24VDC)
20	544124-43	1		I/O Cable (-12)
21	544124-44	1		Relay Low Cable
22	544124-45	1		Safety Power Cable
23	544124-48	1		Ground Cable
24	544124-50	1		Display Cable
25	544155PT	1	2	Switch Assembly

(#) Quantity

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

“F1”

mPro400GC-P230



* Note:

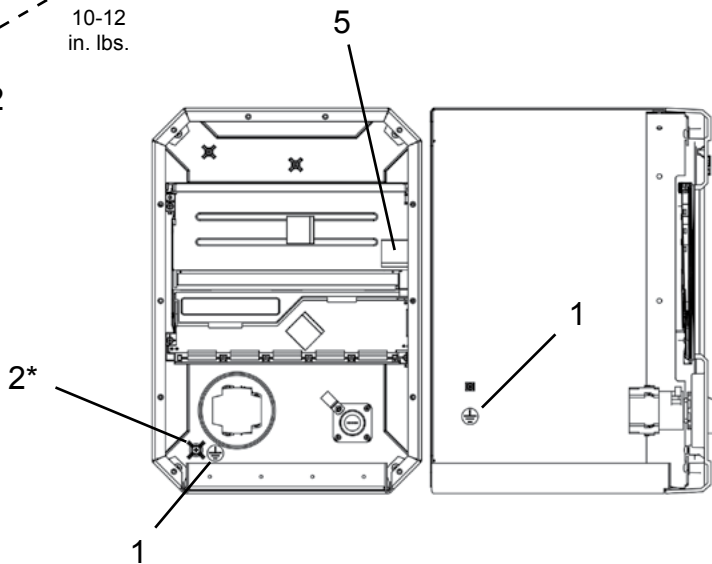
Tightening Torque:

2 = 15-20 in. lbs.

3 = Hand tight

1 Align USB contacts with bottom edge of flange

2 Align switch knob keyway with escutcheon plate key



Cleco®
Primary (230VDC) Controller Enclosure

PL12-1000EN
09/29/2014

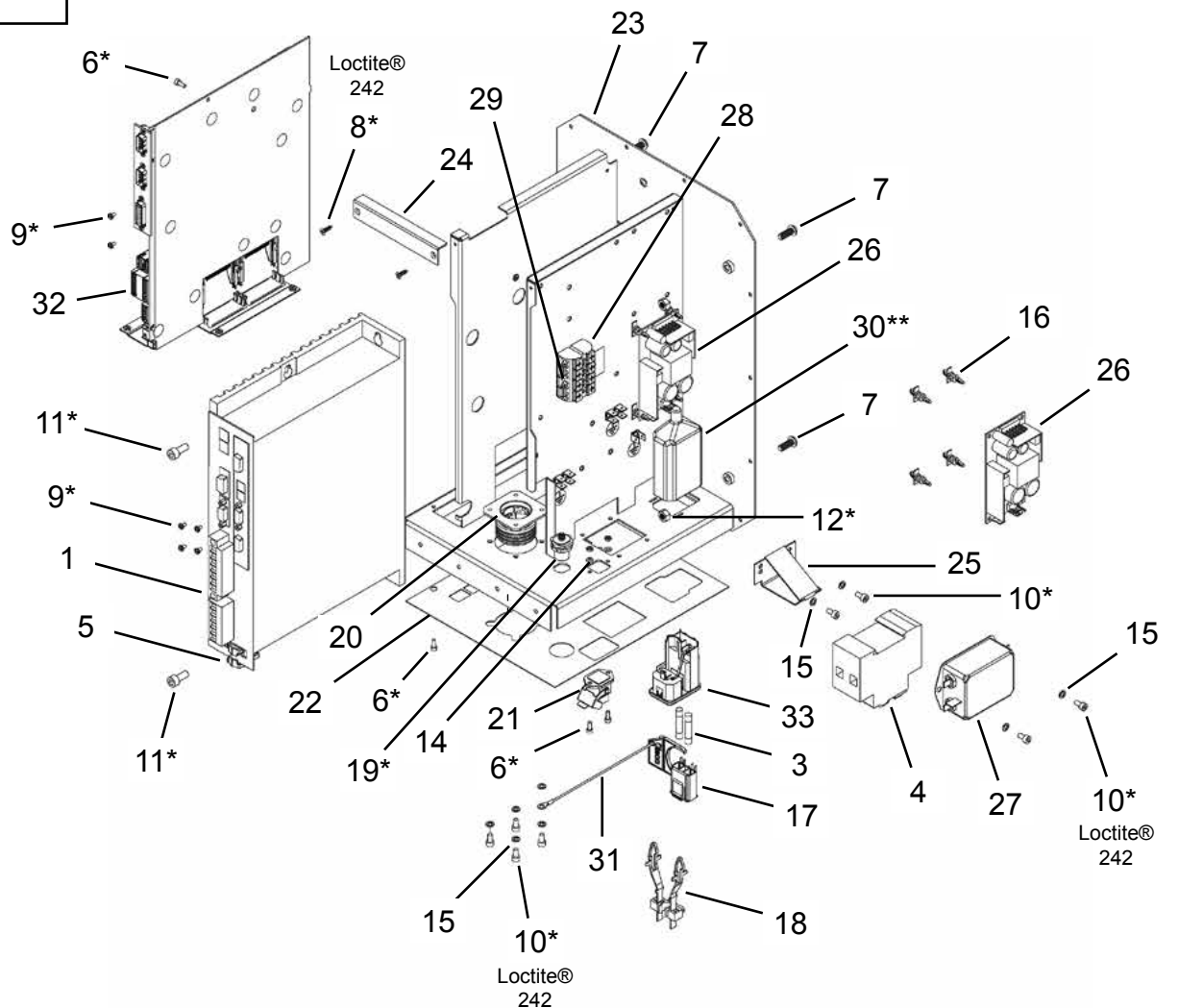
Illustration "F1" - Enclosure (-P230)

Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	8	16	Phillips Head Screw (#4-20 x 1/2")
4	542942-10	1	2	Nylon Washer (M3)
5	542944-13	3		Cable Clip
6	542944-21	1		Cable Clamp
7	543319-1	4	8	Wave Washer (M3)
8	544124-9	1		USB Connector
9	544129PT	1		Enclosure
10	544133PT	1		Escutcheon Plate
11	544134PT	1		USB Flange
12	544139PT	1		Facade Assembly
13	544141PT	1		Enclosure Gasket
14	544142PT	1		Display Gasket
15	544155PT	1	2	Switch Assembly
16	544255PT	1	1	LED Display Screen (Touch)

(#) Quantity

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

“F2” mPro400GC-P230



*** Note:**

Tightening Torque:

6 = 10-12 in. lbs.

8 = 10-15 in. lbs.

9 = 10-12 in. lbs.

10 = 25-30 in. lbs. (Line Filter)

10 = 25-30 in. lbs. (GFCI Bracket)

10 = 10-15 in. lbs. (Tool Cable)

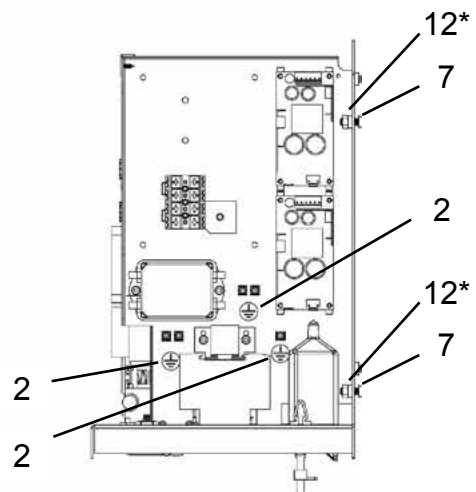
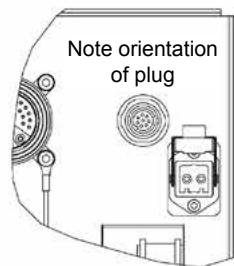
11 = 80-85 in. lbs.

12 = 70-75 in. lbs.

19 = 70-75 in. lbs.

**** Note:**

Cut off end to allow wires to exit



Cleco®
Primary (230VDC) Controller Chassis

PL12-1000EN
09/29/2014

Illustration "F2" - Chassis (-P230)

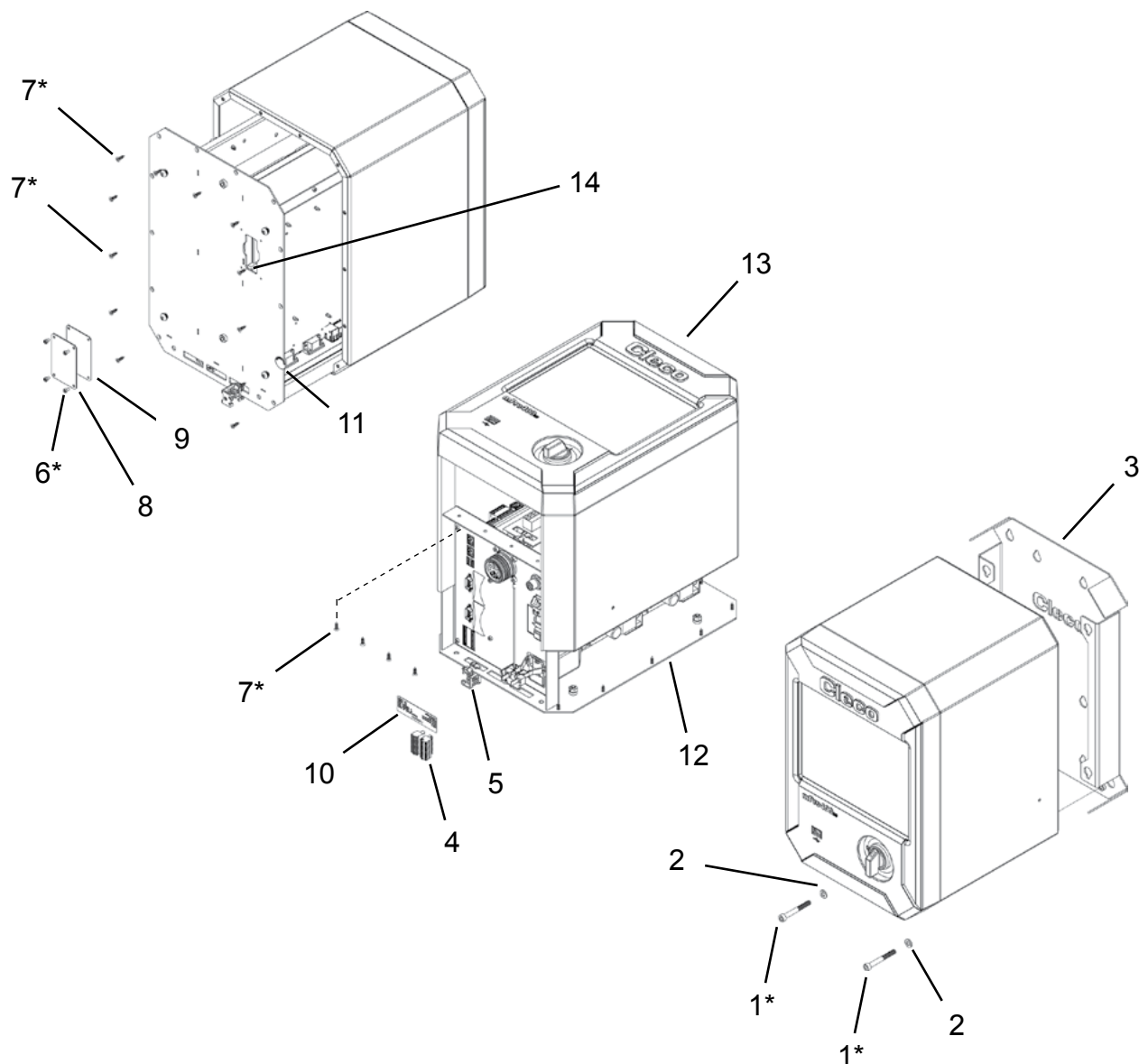
Ref	Number	#	X	EN
				Description
1	544180PT	1		STMH. 1 Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1		GFCI
5	542897	1		Shield Clamp
6	542940-2	7	14	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-34	2	4	Screw (#6 x 3/8")
9	542940-38	6	12	Screw (#4-40 x 3/16")
10	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
11	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
12	542941-6	4	8	Nut (M6 Low Profile)
13	542941-7	2	4	Nut (M3 x 0.5mm)
14	542942-1	2	4	Starwasher (M3)
15	542942-11	9	18	Lockwasher (M4 Split)
16	542943-19	8	16	Nylon Standoff (.375")
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-12	1		Output Cable (+24VDC)
20	544124-4	1		Tool Cable
21	544124-58	1		GFCI Test Connector Cable
22	544144-P230	1		Graphics Panel
23	544127PT	1		Chassis
24	544130PT	1		Connector Bracket
25	544131PT	1		GFCI Bracket
26	544135PT	2	4	Power Supply (24VDC)
27	544182PT	1	2	Line Filter
28	544220PT	1		Terminal Block
29	544221PT	2		Terminal Block Jumper
30	544253PT	1		Inlet Cover
31	544271PT	1		Connector Clip Assembly
32	PCA2030-1	1	2	Motherboard Assembly
33	543833	1		Power Entry Module

(#) Quantity

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

“F3”

mPro400GC-P230



* Note:
Tightening Torque:
1 = 20-25 in. lbs.
6 = 10-12 in. lbs.
7 = 10-15 in. lbs.

Primary (230VDC) Controller Assembly

Illustration "F3" - Controller Assembly (-P230)

Ref	Number	#	X	EN
				Description
1	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
2	542942-4	2	4	Lockwasher (M6)
3	544128PT	1		Mounting Plate
4	542893-9	2	4	Connector (12 Position)
5	542897	1		Shield Clamp Assembly
6	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
7	542940-34	16	32	Screw (#6 x 3/8")
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-P230	1		Chassis Assembly (Illustration "F2")
13	mPro400GC-P230	1		Enclosure Assembly (Illustration "F1")
14	544163PT-1G	1		Compact Flash

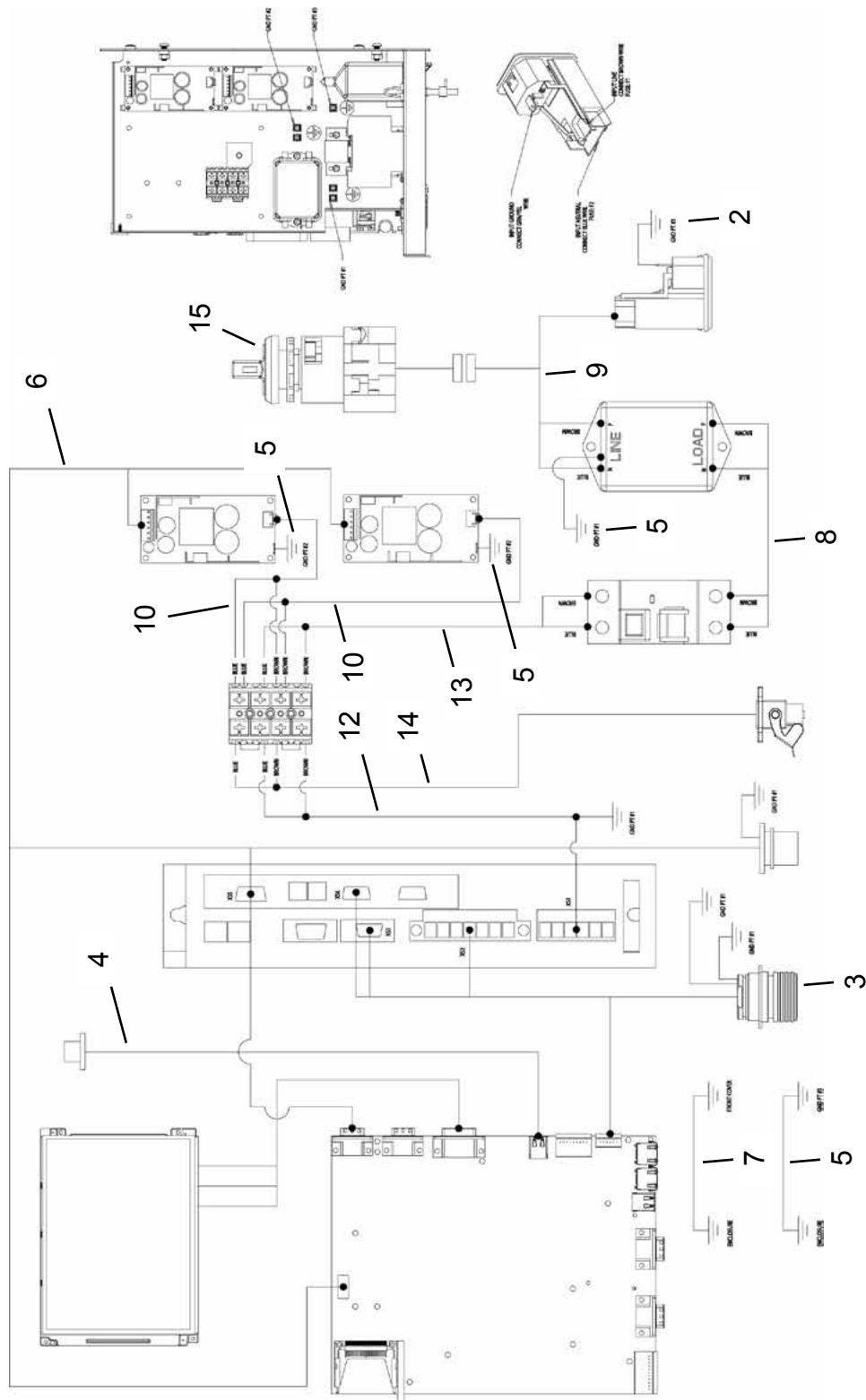
(#) Quantity

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

Cleco®
Primary (230VDC) Controller Schematic

“F4”

mPro400GC-P230



Primary (230VDC) Controller Schematic

Illustration "F4" - Schematic (-P230)

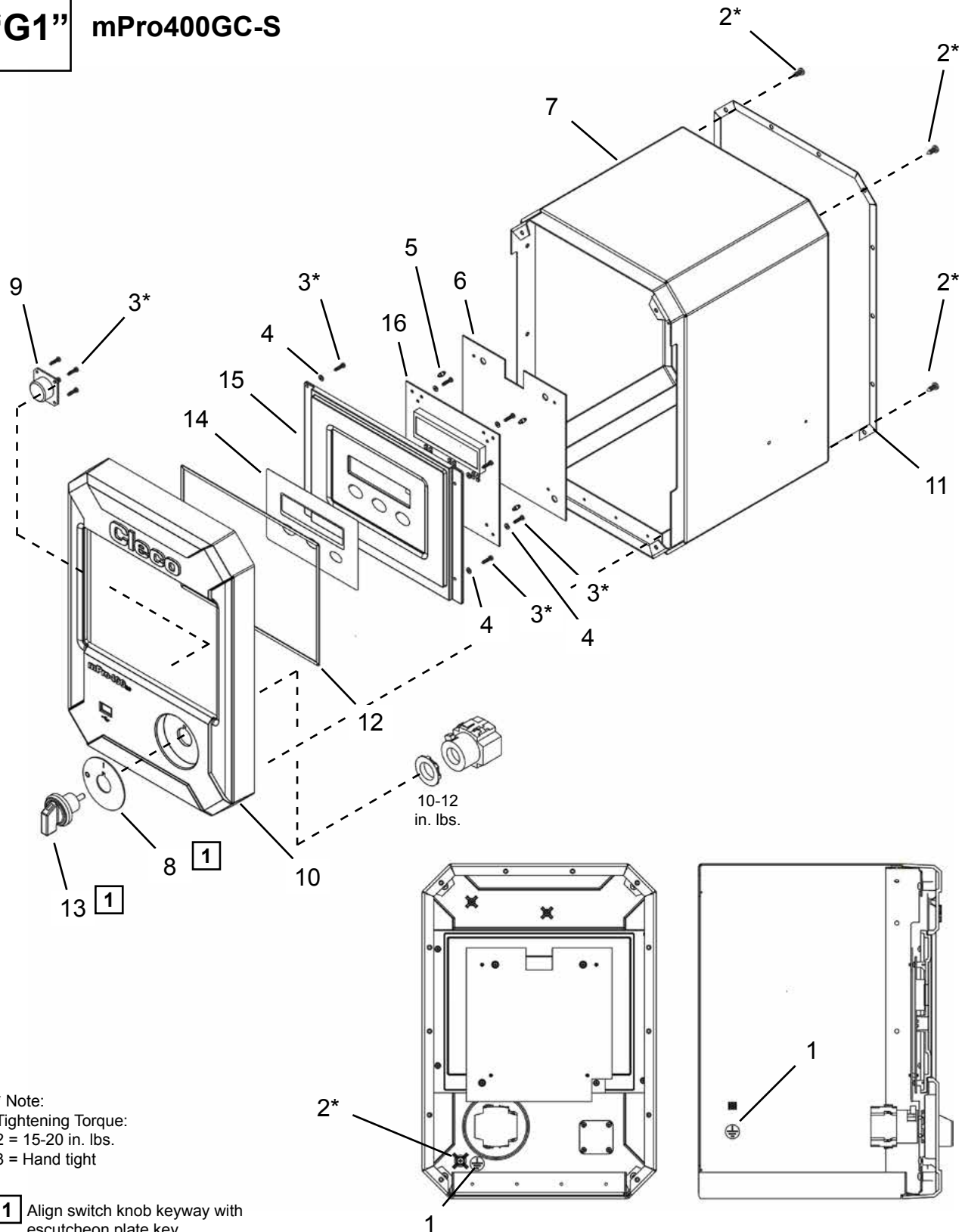
Ref	Number	#	X	EN
				Description
1	542944-6	4		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-4	1		Internal Tool Cable
4	544124-9	1		USB Cable
5	544124-10	4		Ground Cable
6	544124-12	1		Output Cable (+24VDC)
7	544124-17	1		Ground Cable
8	544124-19	1		GFCI / Filter Cable
9	544124-20	1		Filter / Switch Cable
10	544124-27	1		Input Cable (+24VDC)
11	544124-50	1		Display Cable
12	544124-56	1		Servo Power Cable
13	544124-57	1		GFCI Output Cable
14	544124-58	1		GFCI Test Connector Cable
15	544155PT	1	2	Switch Assembly

(#) Quantity

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

“G1”

mPro400GC-S



Cleco®
Secondary Controller Enclosure

PL12-1000EN
09/29/2014

Illustration "G1" - Enclosure (-S)

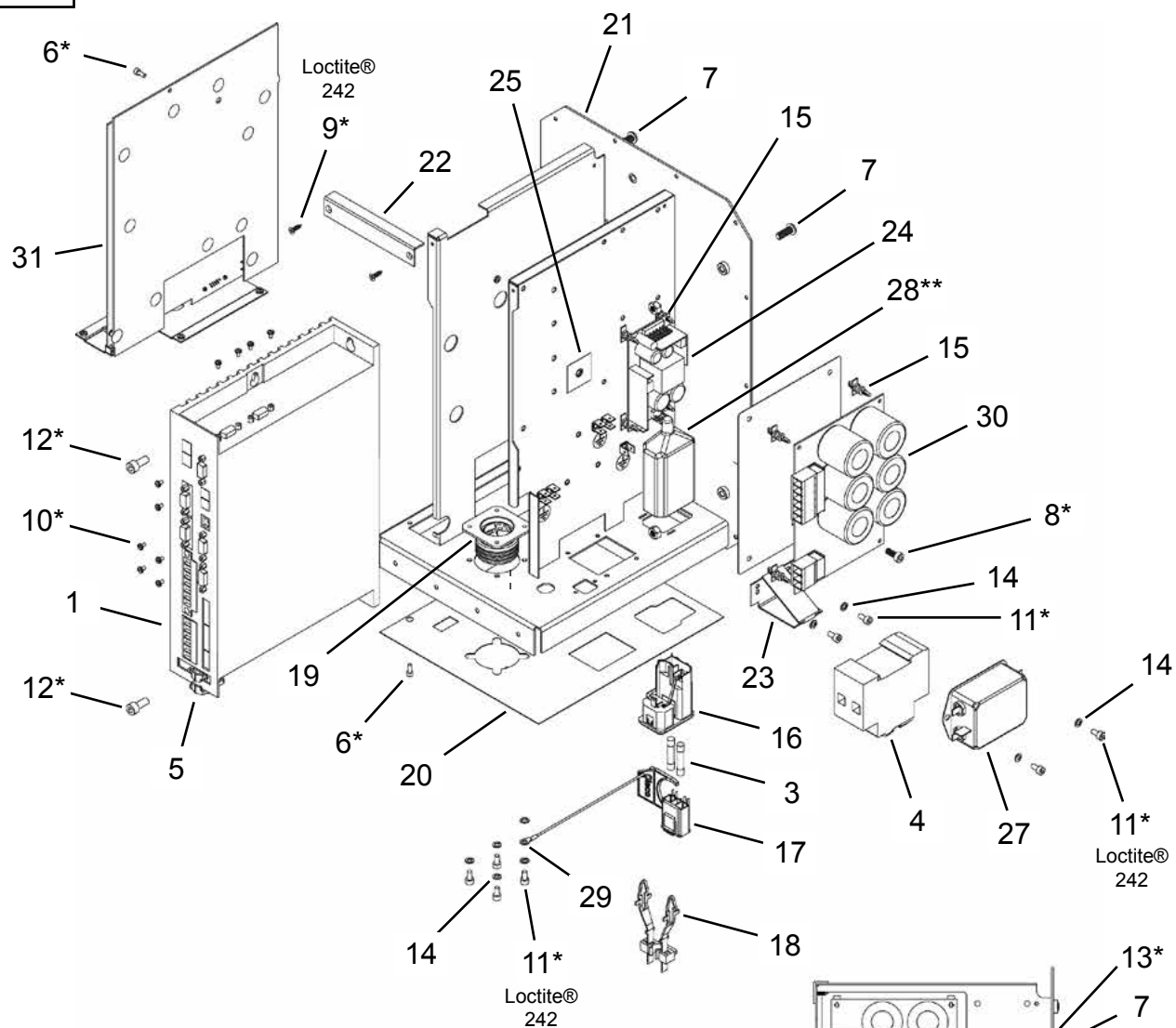
Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	12	24	Phillips Head Screw (#4-20 x 1/2")
4	543319-1	8	16	Wave Washer (M3)
5	543320-2	4	8	Plastic Standoff
6	543324	1		Isolation Plate
7	544129PT	1		Enclosure
8	544133PT	1		Escutcheon Plate
9	544134PT-1	1		USB Flange
10	544139PT	1		Facade Assembly
11	544141PT	1		Enclosure Gasket
12	544142PT	1		Display Gasket
13	544155PT	1	2	Switch Assembly
14	544157PT	1		Secondary Front Label
15	544158PT	1		Adapter Plate
16	PCA2012-1	1		PC Board Display Assembly

(#) Quantity

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

Cleco®
Secondary Controller Chassis

“G2” mPro400GC-S



*** Note:**

Tightening Torque:

6 = 10-12 in. lbs.

8 = 15-20 in. lbs.

9 = 10-12 in. lbs.

10 = 10-12 in. lbs.

11 = 25-30 in. lbs. (Line Filter)

11 = 25-30 in. lbs. (GFCI Bracket)

11 = 10-15 in. lbs. (Tool Cable)

12 = 80-85 in. lbs.

13 = 70-75 in. lbs.

**** Note:**

Cut off end to allow wires to exit

Attach connector
clip assembly
exactly as shown

Cleco®
Secondary Controller Chassis

PL12-1000EN
09/29/2014

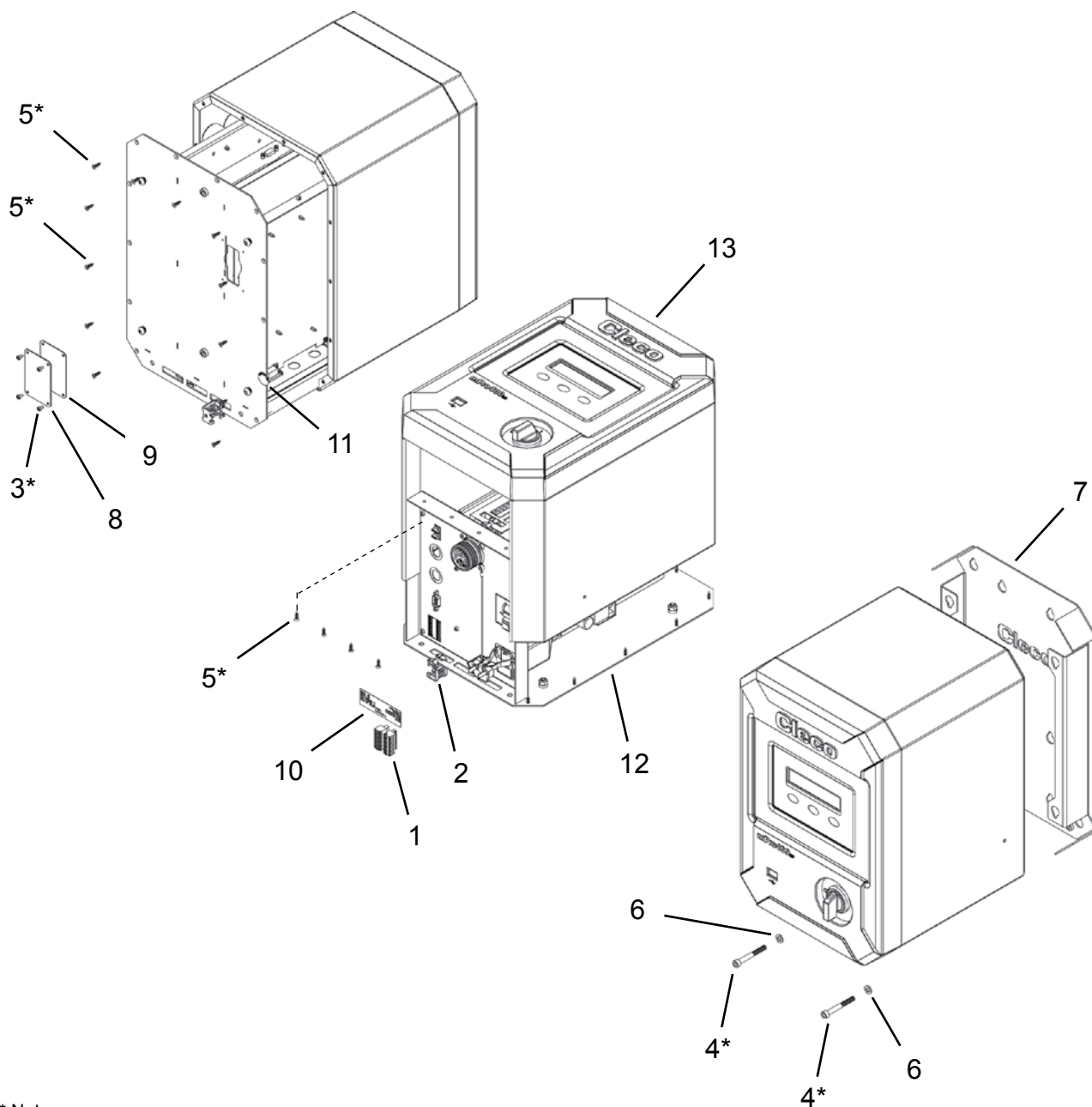
Illustration "G2" - Chassis (-S)

Ref	Number	#	X	EN
				Description
1	544181PT	1		STMHE Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1		GFCI
5	542897	1		Shield Clamp
6	542940-2	5	10	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-33	1	2	Flat Head Self Tapping Screw (#6 x 3/8")
9	542940-34	2	4	Screw (#6 x 3/8")
10	542940-38	10	20	Screw (#4-40 x 3/16")
11	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
12	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
13	542941-6	4	8	Nut (M6 Low Profile)
14	542942-11	9	18	Lockwasher (M4 Split)
15	542943-19	8	16	Nylon Standoff (.375")
16	543833	1		Power Entry Module
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-4	1		Tool Cable
20	544144-S	1		Graphics Panel
21	544127PT	1		Chassis
22	544130PT	1		Connector Bracket
23	544131PT	1		GFCI Bracket
24	544135PT	2	4	Power Supply (24VDC)
25	544145PT	1	2	Thermal Tape
26	544146PT	1		Voltage Doubler Insulator
27	544182PT	1	2	Line Filter
28	544253PT	1		Inlet Cover
29	544271PT	1		Connector Clip Assembly
30	PCA2025P	1		Voltage Doubler - Programmed
31	PCA2031-1	1		Secondary I/O Assembly

(#) Quantity

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

“G3” mPro400GC-S



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 20-25 in. lbs.
5 = 10-15 in. lbs.

Cleco®
Secondary Controller Assembly

PL12-1000EN
09/29/2014

Illustration "G3" - Controller Assembly (-S)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-S	1		Chassis Assembly (Illustration "G2")
13	mPro400GC-S	1		Enclosure Assembly (Illustration "G1")

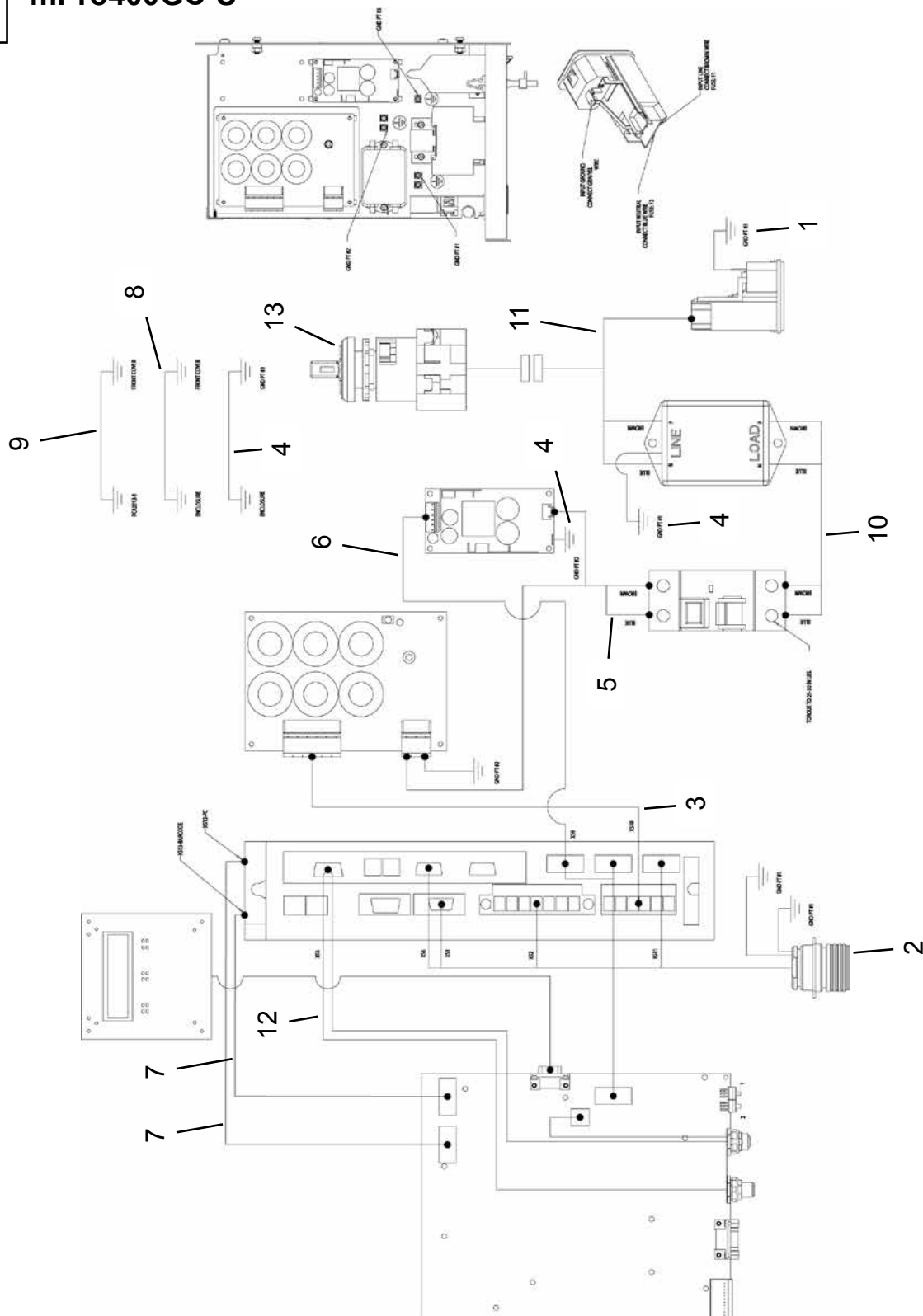
(#) Quantity

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

Cleco®
Secondary Controller Schematic

"G4"

mPro400GC-S



Cleco®
Secondary Controller Schematic

PL12-1000EN
09/29/2014

Illustration "G4" - Schematic (-S)

Ref	Number	#	X	EN
				Description
1	544124-1	1		AC Input Ground Cable
2	544124-4	1		Internal Tool Cable
3	544124-6	1		VD Output Cable
4	544124-10	3		Ground Cable
5	544124-13	1		VD Input Cable
6	544124-14	1		I/O Cable
7	544124-16	2		Secondary Ribbon Cable
8	544124-17	1		Ground Cable
9	544124-18	1		Ground Cable
10	544124-19	1		GFCI / Filter Cable
11	544124-20	1		Filter / Switch Cable
12	544124-49P	1		Internal Systembus Cable
13	544155PT	1	2	Switch Assembly

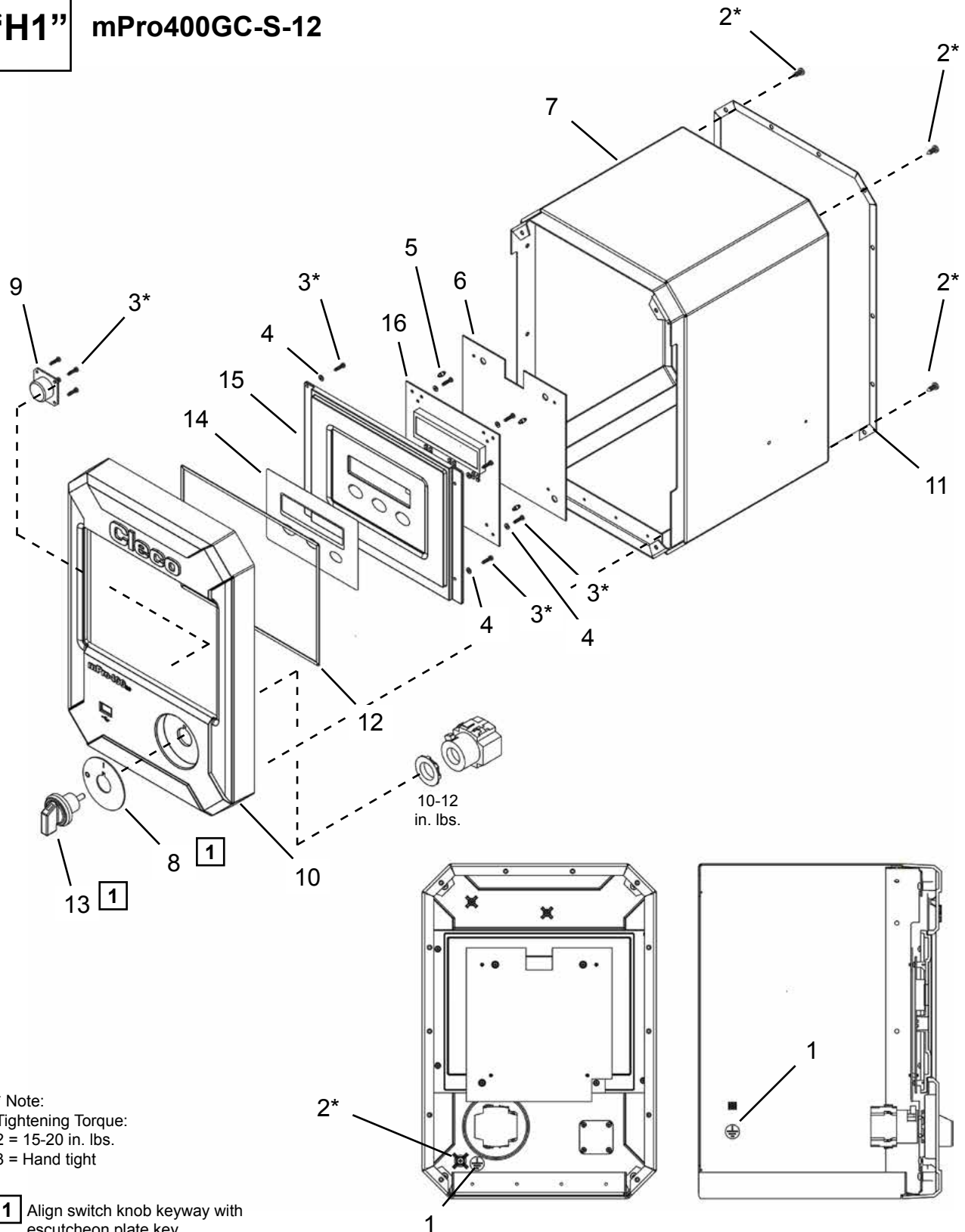
(#) Quantity

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

Cleco®
Secondary 1-2 Controller Enclosure

"H1"

mPro400GC-S-12



Cleco®
Secondary 1-2 Controller Enclosure

PL12-1000EN
09/29/2014

Illustration "H1" - Enclosure (-S-12)

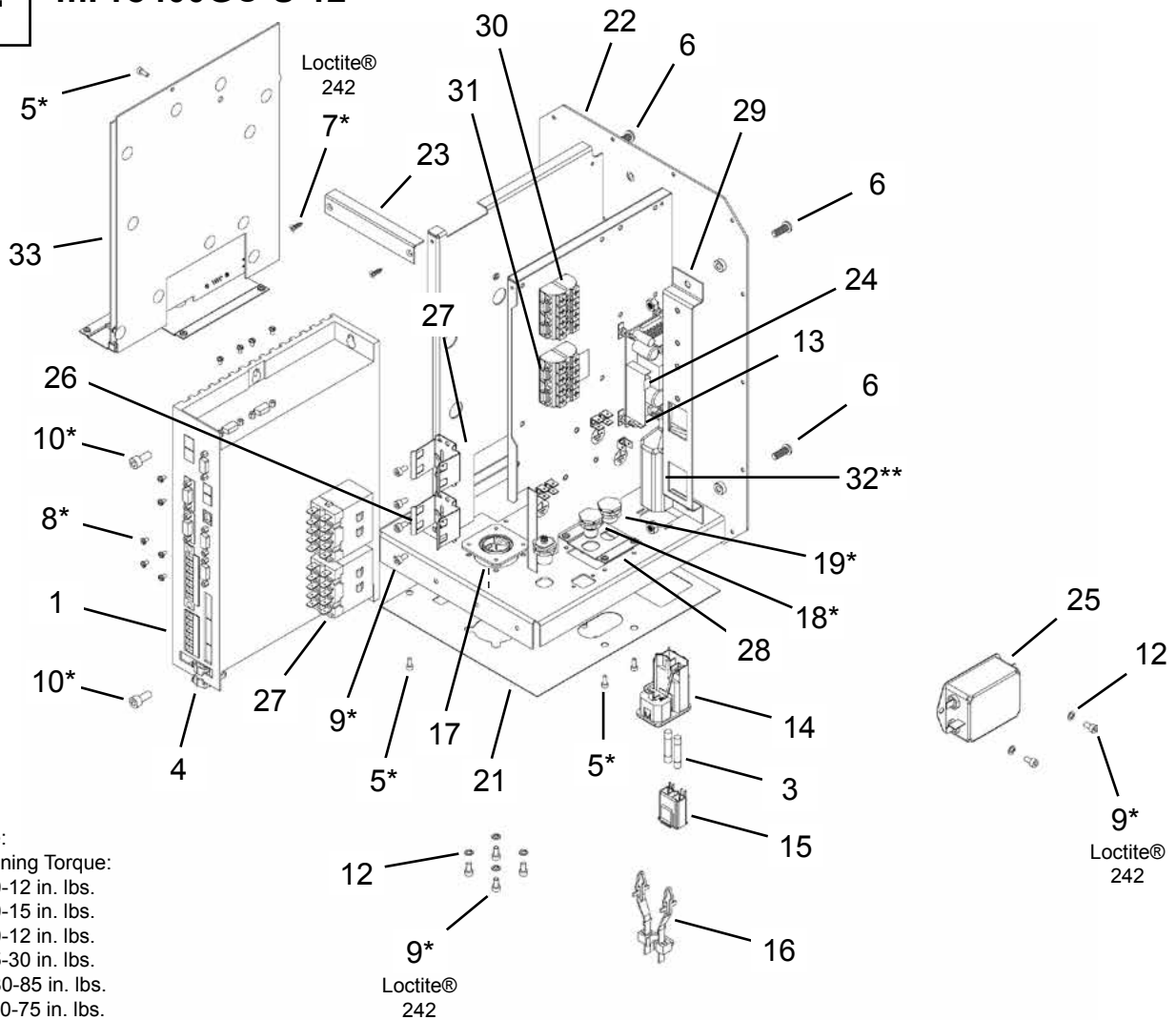
Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	12	24	Phillips Head Screw (#4-20 x 1/2")
4	543319-1	8	16	Wave Washer (M3)
5	543320-2	4	8	Plastic Standoff
6	543324	1		Isolation Plate
7	544129PT	1		Enclosure
8	544133PT	1		Escutcheon Plate
9	544134PT-1	1		USB Flange
10	544139PT	1		Facade Assembly
11	544141PT	1		Enclosure Gasket
12	544142PT	1		Display Gasket
13	544155PT	1	2	Switch Assembly
14	544157PT	1		Secondary Front Label
15	544158PT	1		Adapter Plate
16	PCA2012-1	1		PC Board Display Assembly

(#) Quantity

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

“H2”

mPro400GC-S-12



* Note:

Tightening Torque:

5 = 10-12 in. lbs.

7 = 10-15 in. lbs.

8 = 10-12 in. lbs.

9 = 25-30 in. lbs.

10 = 80-85 in. lbs.

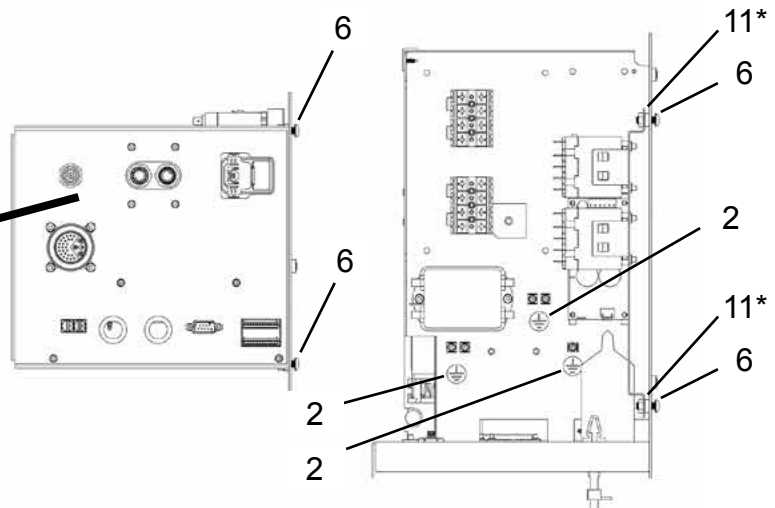
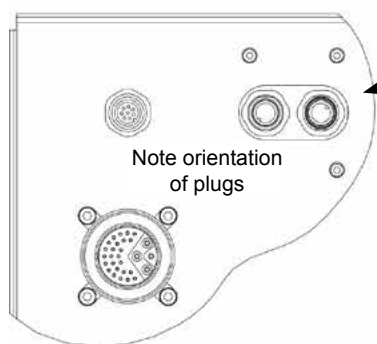
11 = 70-75 in. lbs.

18 = 70-75 in. lbs.

19 = 70-75 in. lbs.

** Note:

Cut off end to allow wires to exit



Cleco®
Secondary 1-2 Controller Chassis

PL12-1000EN
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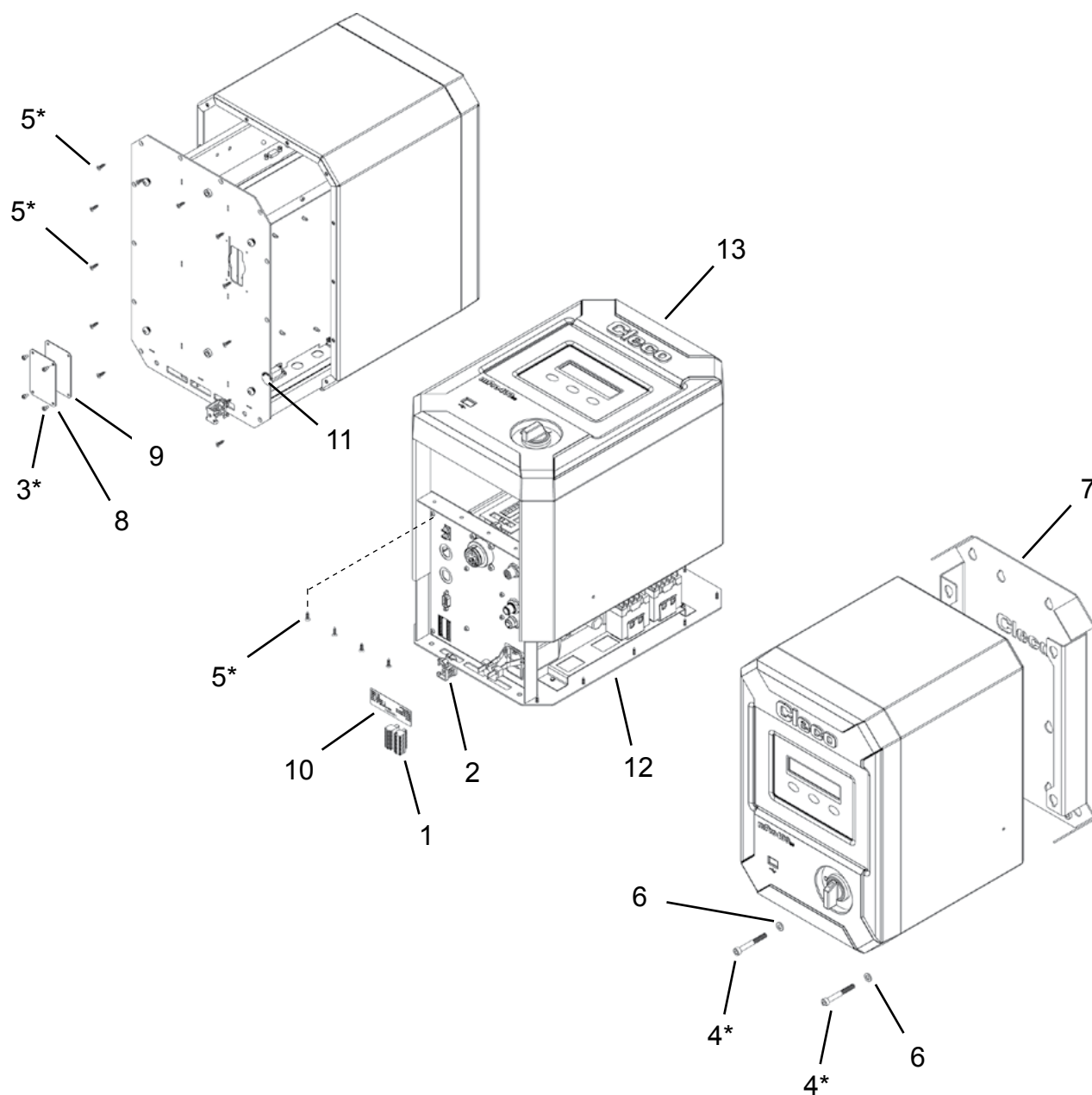
Illustration "H2" - Chassis (-S-12)

Ref	Number	#	X	EN
				Description
1	544181PT	1		STMHE Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542897	1		Shield Clamp
5	542940-2	9	18	Socket Head Cap Screw (M3 x 0.5 x 8mm)
6	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
7	542940-34	2	4	Screw (#6 x 3/8")
8	542940-38	10	20	Screw (#4-40 x 3/16")
9	542940-4	10	20	Socket Head Cap Screw (M4 x 0.7 x 8mm)
10	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
11	542941-6	4	8	Nut (M6 Low Profile)
12	542942-11	6	12	Lockwasher (M4 Split)
13	542943-19	4	8	Nylon Standoff (.375")
14	543833	1		Power Entry Module
15	543834	1		Fuse Drawer
16	544004-1	1		Plug Retainer
17	544124-23	1		Internal Tool Cable
18	544124-33	1		E-Stop Input Cable
19	544124-36	1		E-Stop Output Cable
20	544124-43	1		Output Cable (+24VDC)
21	544144-S-12	1		Graphics Panel
22	544127PT	1		Chassis
23	544130PT	1		Connector Bracket
24	544135PT	1		Power Supply (+24VDC)
25	544182PT	1		Line Filter
26	544201PT	2		W-Bracket
27	544202PT	2		Power Relay
28	544206PT-1	1		Connector Bracket
29	544207PT-1	1		Relay Bracket
30	544220PT	2		Terminal Block
31	544221PT	4		Terminal Block Jumper
32	544253PT	1		Inlet Cover
33	PCA2031-1	1		Secondary I/O Assembly

(#) Quantity

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

“H3” mPro400GC-S-12



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 20-25 in. lbs.
5 = 10-15 in. lbs.

Cleco®
Secondary 1-2 Controller Assembly

PL12-1000EN
09/29/2014

Illustration "H3" - Controller Assembly (-S-12)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-S-12	1		Chassis Assembly (Illustration "H2")
13	mPro400GC-S-12	1		Enclosure Assembly (Illustration "H1")

(#) Quantity

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



Cleco®
Secondary 1-2 Controller Schematic

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Illustration "H4" - Schematic (-S-12)

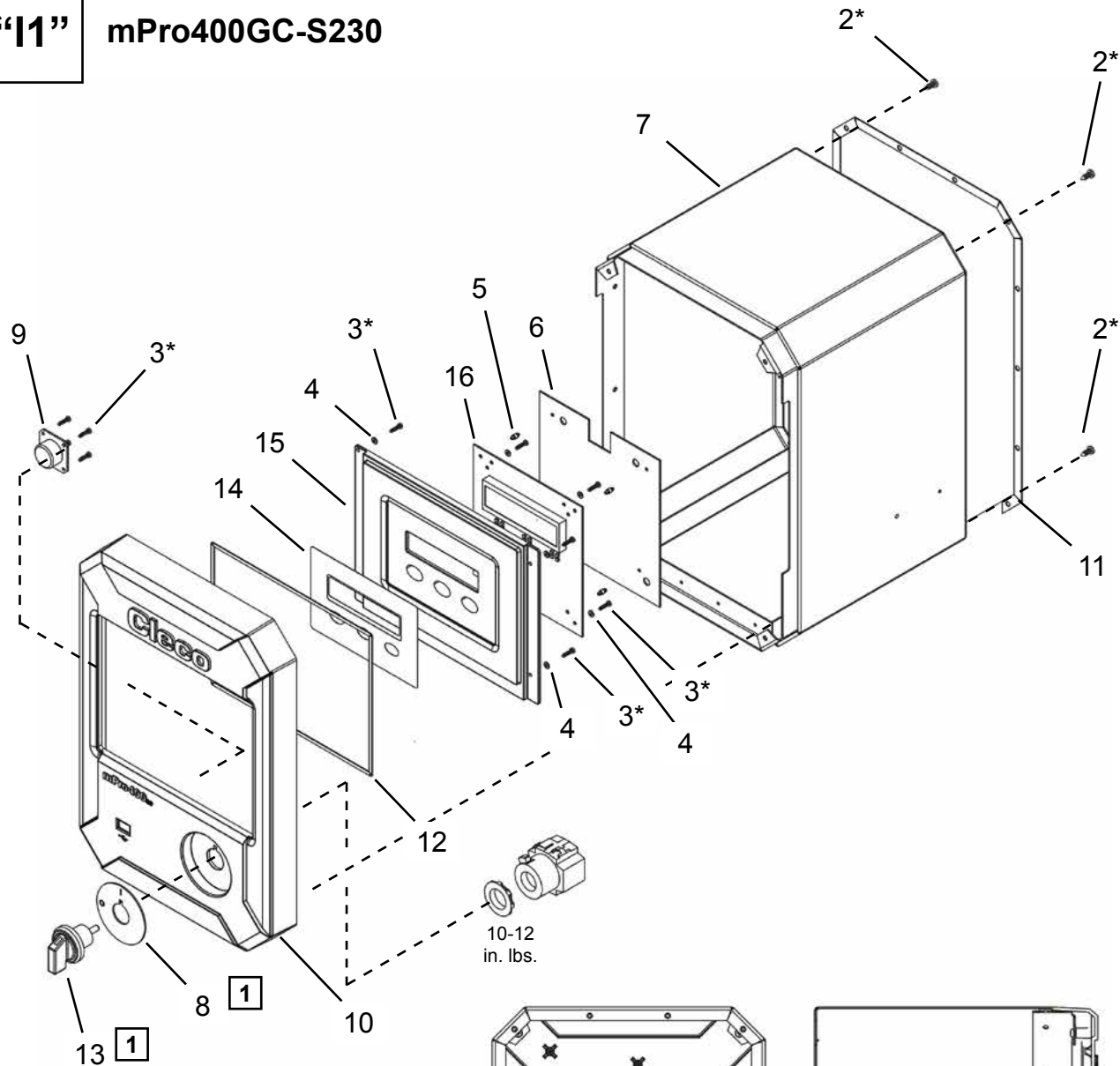
Ref	Number	#	X	EN
				Description
1	542944-6	3		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-10	2		Ground Cable
4	544124-16	2		Secondary Ribbon Cable
5	544124-17	1		Ground Cable
6	544124-18	1		Ground Cable
7	544124-19	1		GFCI / Filter Cable
8	544124-20	1		Filter / Switch Cable
9	544124-23	1		Internal Tool Cable
10	544124-25	1		Line Cable
11	544124-26	1		Neutral Cable
12	544124-27	1		Input Cable (+24VDC)
13	544124-32	1		I/O Cable
14	544124-33	1		E-Stop Input Cable
15	544124-34	1		Cable (+24VDC)
16	544124-36	1		E-Stop Output Cable
17	544124-37	1		Servo Power Cable
18	544124-40	1		Input Line Cable
19	544124-41	1		Input Neutral Cable
20	544124-42	1		Input Cable (+24VDC)
21	544124-46	1		Output Cable (+24VDC)
22	544124-48	1		Ground Cable
23	544124-49P	1		Internal Systembus Cable
24	544155PT	1	2	Switch Assembly

(#) Quantity

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

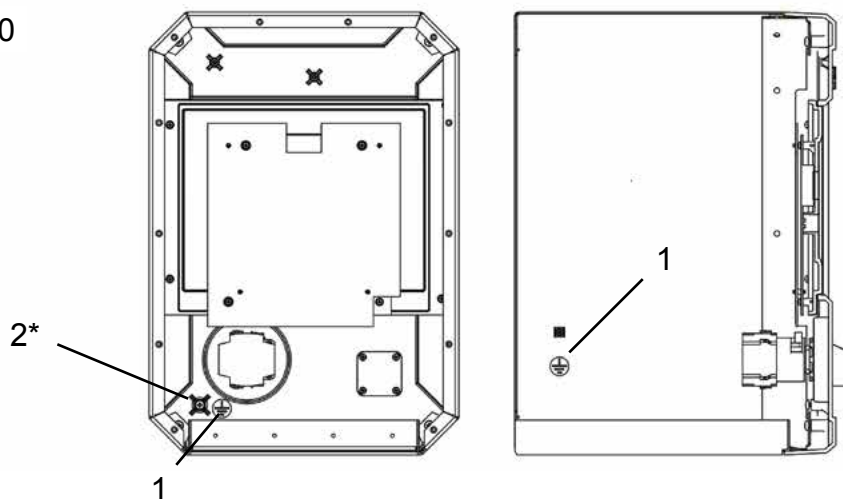
"1"

mPro400GC-S230



* Note:
Tightening Torque:
2 = 15-20 in. lbs.
3 = Hand tight

1 Align switch knob keyway with
escutcheon plate key



Cleco®
Secondary (230VDC) Controller Enclosure

PL12-1000EN
09/29/2014

Illustration "I1" - Enclosure (-S230)

Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	12	24	Phillips Head Screw (#4-20 x 1/2")
4	543319-1	8	16	Wave Washer (M3)
5	543320-2	4	8	Plastic Standoff
6	543324	1		Isolation Plate
7	544129PT	1		Enclosure
8	544133PT	1		Escutcheon Plate
9	544134PT-1	1		USB Flange
10	544139PT	1		Facade Assembly
11	544141PT	1		Enclosure Gasket
12	544142PT	1		Display Gasket
13	544155PT	1	2	Switch Assembly
14	544157PT	1		Secondary Front Label
15	544158PT	1		Adapter Plate
16	PCA2012-1	1		PC Board Display Assembly

(#) Quantity

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

Secondary (230VDC) Controller Chassis

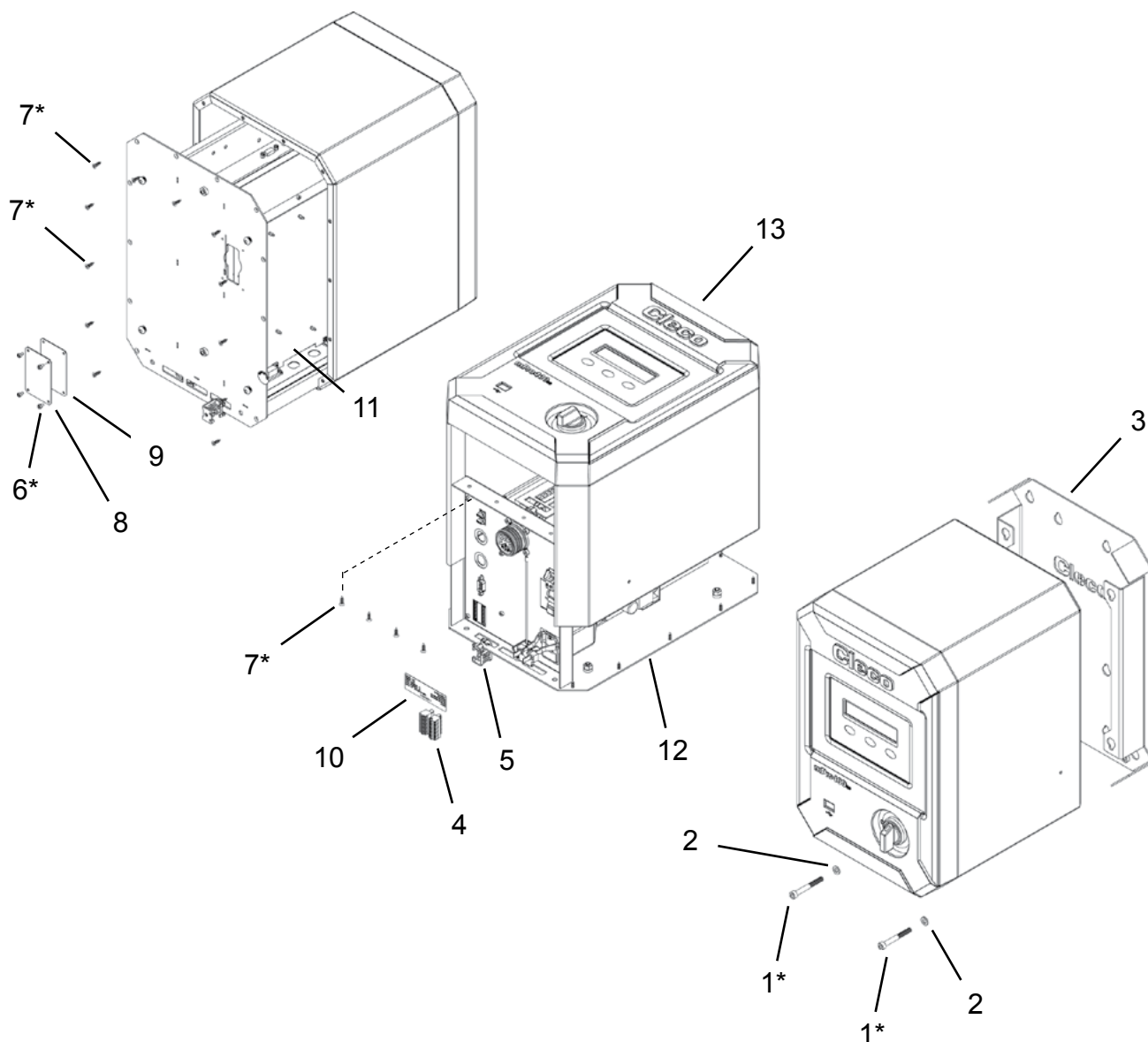
Illustration "I2" - Chassis (-S230)

Ref	Number	#	X	EN
				Description
1	544181PT	1		STMHE Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1		GFCI
5	542897	1		Shield Clamp
6	542940-2	7	14	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-34	2	4	Screw (#6 x 3/8")
9	542940-38	10	20	Screw (#4-40 x 3/16")
10	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
11	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
12	542941-6	4	8	Nut (M6 Low Profile)
13	542941-7	2	4	Nut (M3 x 0.5mm)
14	542942-1	2	4	Starwasher (M3)
15	542942-11	9	18	Lockwasher (M4 Split)
16	542943-19	4	8	Nylon Standoff (.375")
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-4	1		Tool Cable
20	544124-58	1		GFCI Test Connector Cable
21	544144-S230	1		Graphics Panel
22	544127PT	1		Chassis
23	544130PT	1		Connector Bracket
24	544131PT	1		GFCI Bracket
25	544135PT	1		Power Supply (+24VDC)
26	544182PT	1		Line Filter
27	544220PT	1		Terminal Block
28	544221PT	2		Terminal Block Jumper
29	544253PT	1		Inlet Cover
30	544271PT	1		Connector Clip Assembly
31	PCA2031-1	1		Secondary I/O Assembly
32	543833	1		Power Entry Module

(#) Quantity

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

"13" mPro400GC-S230



* Note:
Tightening Torque:
1 = 20-25 in. lbs.
6 = 10-12 in. lbs.
7 = 10-15 in. lbs.

Cleco®
Secondary (230VDC) Controller Assembly

PL12-1000EN
09/29/2014

Illustration "I3" - Controller Assembly (-S230)

Ref	Number	#	X	EN
				Description
1	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
2	542942-4	2	4	Lockwasher (M6)
3	544128PT	1		Mounting Plate
4	542893-9	2	4	Connector (12 Position)
5	542897	1		Shield Clamp Assembly
6	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
7	542940-34	16	32	Screw (#6 x 3/8")
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-S230	1		Chassis Assembly (Illustration "I2")
13	mPro400GC-S230	1		Enclosure Assembly (Illustration "I1")

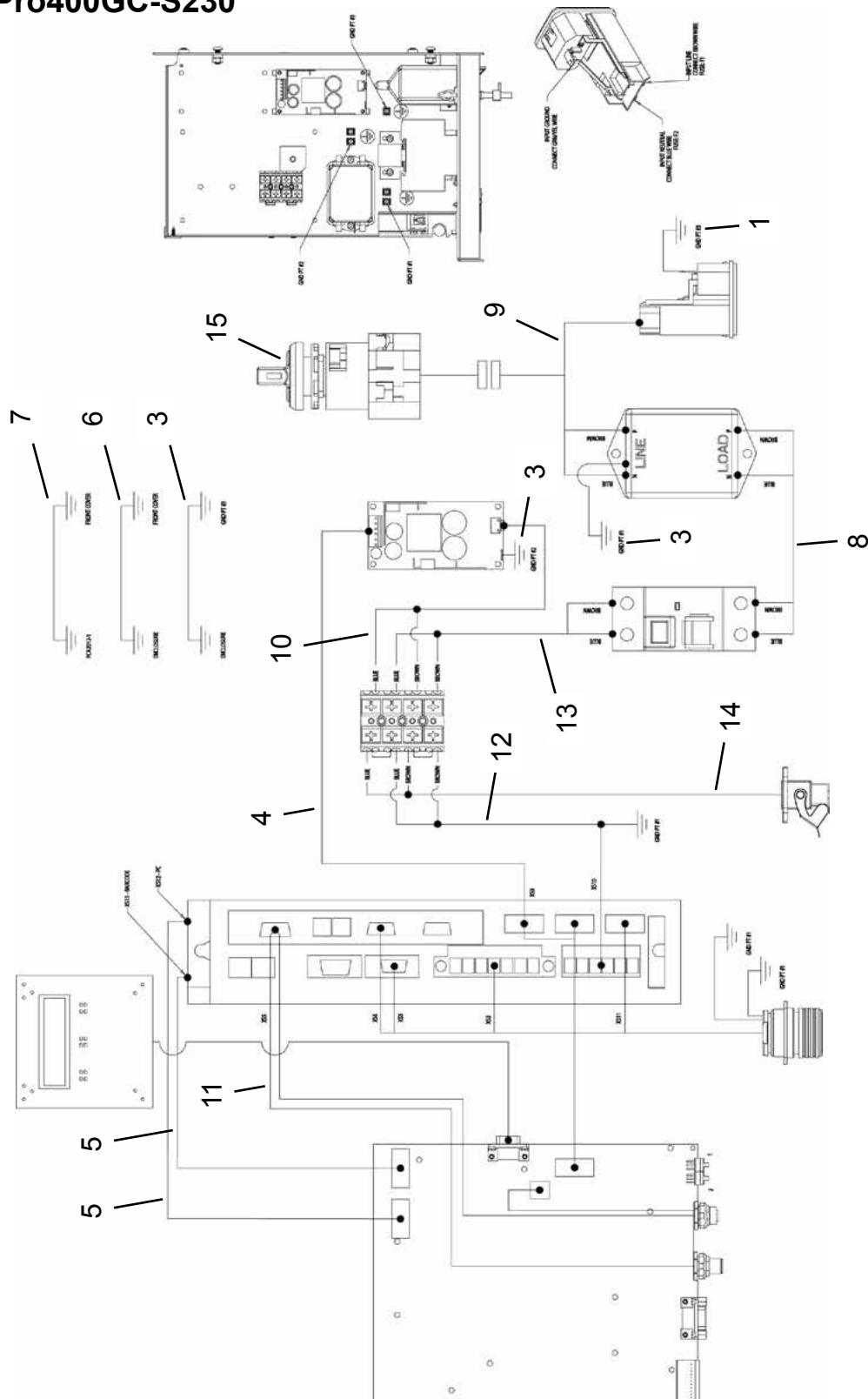
(#) Quantity

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

Secondary (230VDC) Controller Schematic

"14"

mPro400GC-S230



Cleco®
Secondary (230VDC) Controller Schematic

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Illustration "I4" - Schematic (-S230)

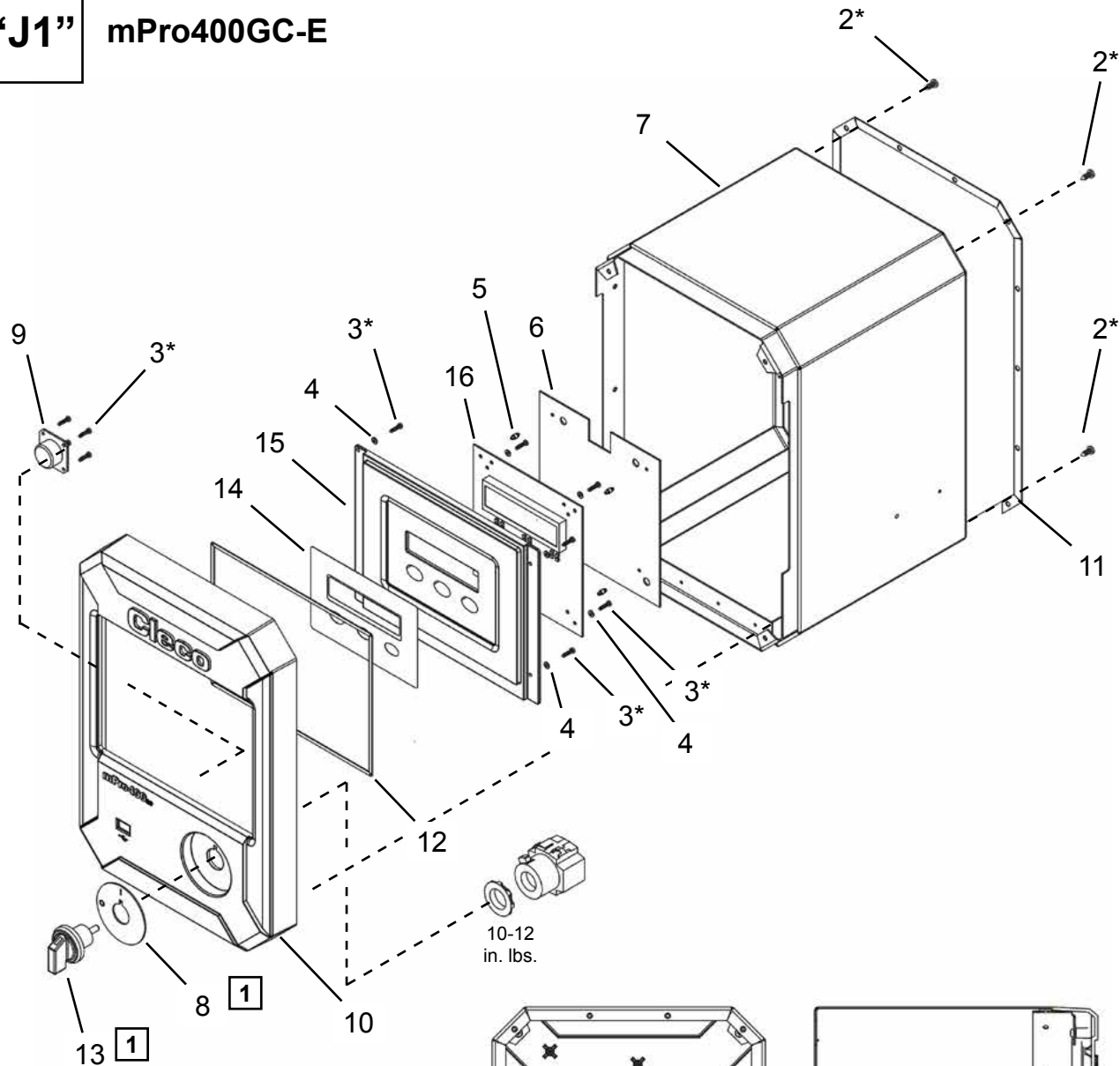
Ref	Number	#	X	EN
				Description
1	544124-1	1		AC Input Ground Cable
2	544124-4	1		Internal Tool Cable
3	544124-10	3		Ground Cable
4	544124-14	1		I/O Cable
5	544124-16	2		Secondary Ribbon Cable
6	544124-17	1		Ground Cable
7	544124-18	1		Ground Cable
8	544124-19	1		GFCI / Filter Cable
9	544124-20	1		Filter / Switch Cable
10	544124-27	1		Input Cable (+24VDC)
11	544124-49P	1		Internal Systembus Cable
12	544124-56	1		Servo Power Cable
13	544124-57	1		GFCI Output Cable
14	544124-58	1		GFCI Test Connector Cable
15	544155PT	1	2	Switch Assembly

(#) Quantity

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

“J1”

mPro400GC-E



* Note:
Tightening Torque:
2 = 15-20 in. lbs.
3 = Hand tight

1 Align switch knob keyway with
escutcheon plate key

Economy Controller (Torque Control) Enclosure

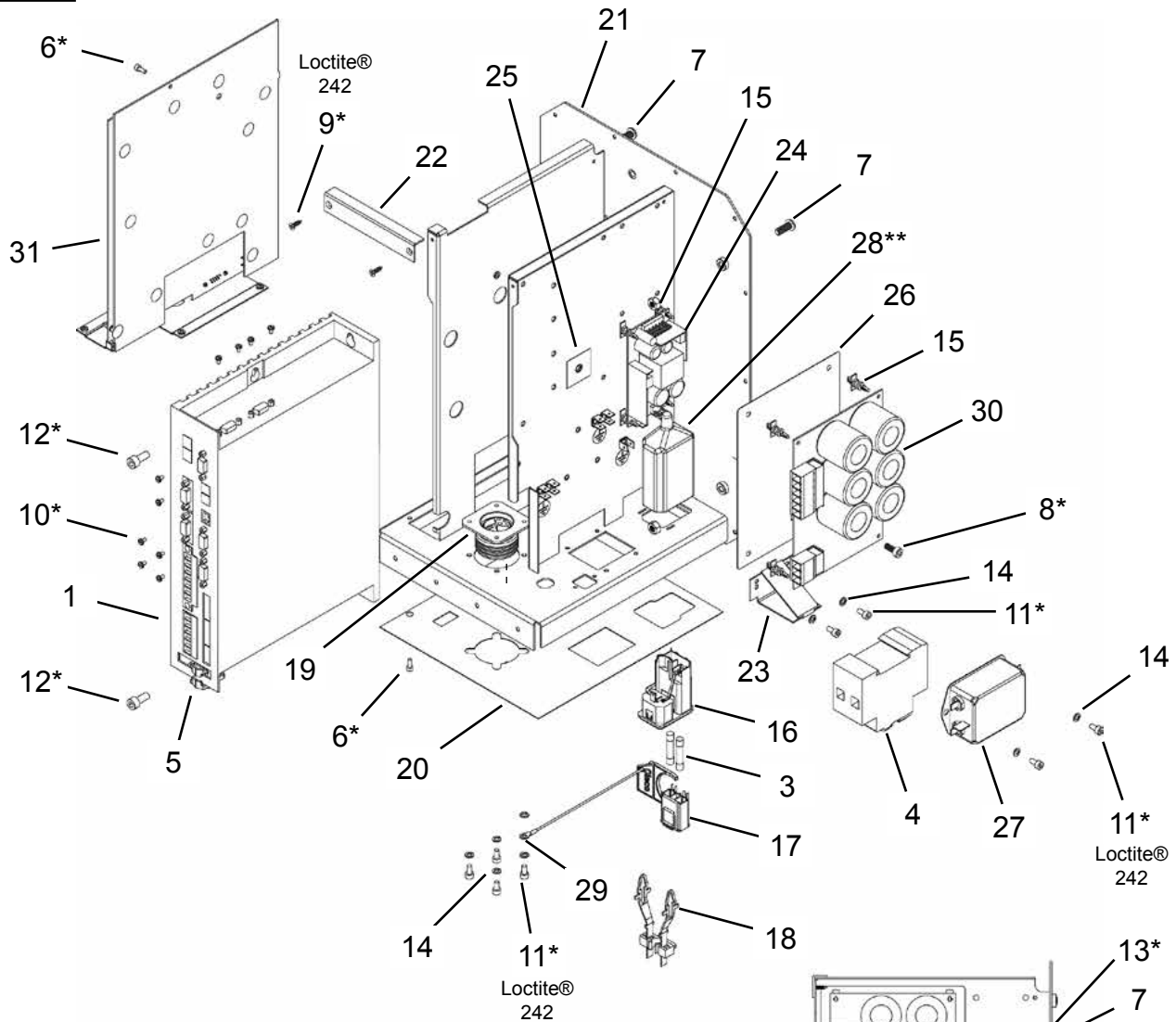
Illustration "J1" - Enclosure (-E)

Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	12	24	Phillips Head Screw (#4-20 x 1/2")
4	543319-1	8	16	Wave Washer (M3)
5	543320-2	4	8	Plastic Standoff
6	543324	1		Isolation Plate
7	544129PT	1		Enclosure
8	544133PT	1		Escutcheon Plate
9	544134PT-1	1		USB Flange
10	544139PT	1		Facade Assembly
11	544141PT	1		Enclosure Gasket
12	544142PT	1		Display Gasket
13	544155PT	1	2	Switch Assembly
14	544157PT-1	1		Secondary Front Label
15	544158PT	1		Adapter Plate
16	PCA2012-1	1		PC Board Display Assembly

(#) Quantity

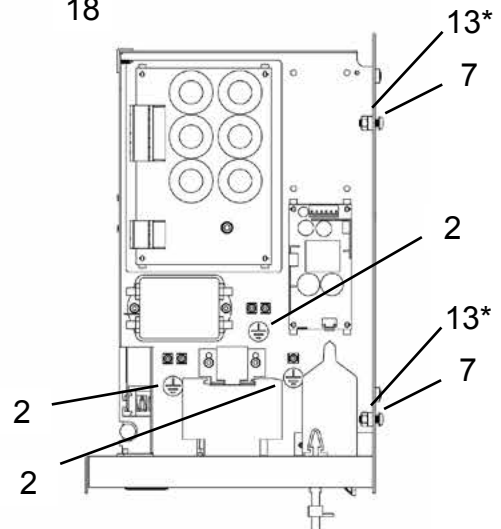
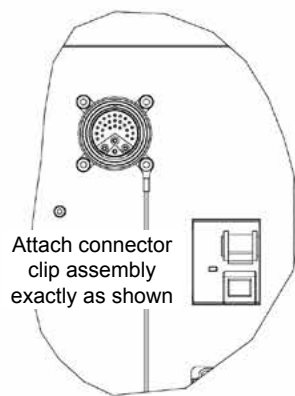
(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

“J2” mPro400GC-E



* Note:
Tightening Torque:
6 = 10-12 in. lbs.
8 = 15-20 in. lbs.
9 = 10-15 in. lbs.
10 = 10-12 in. lbs.
11 = 25-30 in. lbs.
12 = 80-85 in. lbs.
13 = 70-75 in. lbs.

** Note:
Cut off end to allow wires to exit



Cleco®
Economy Controller (Torque Control) Chassis

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09/29/2014

Illustration "J2" - Chassis (-E)

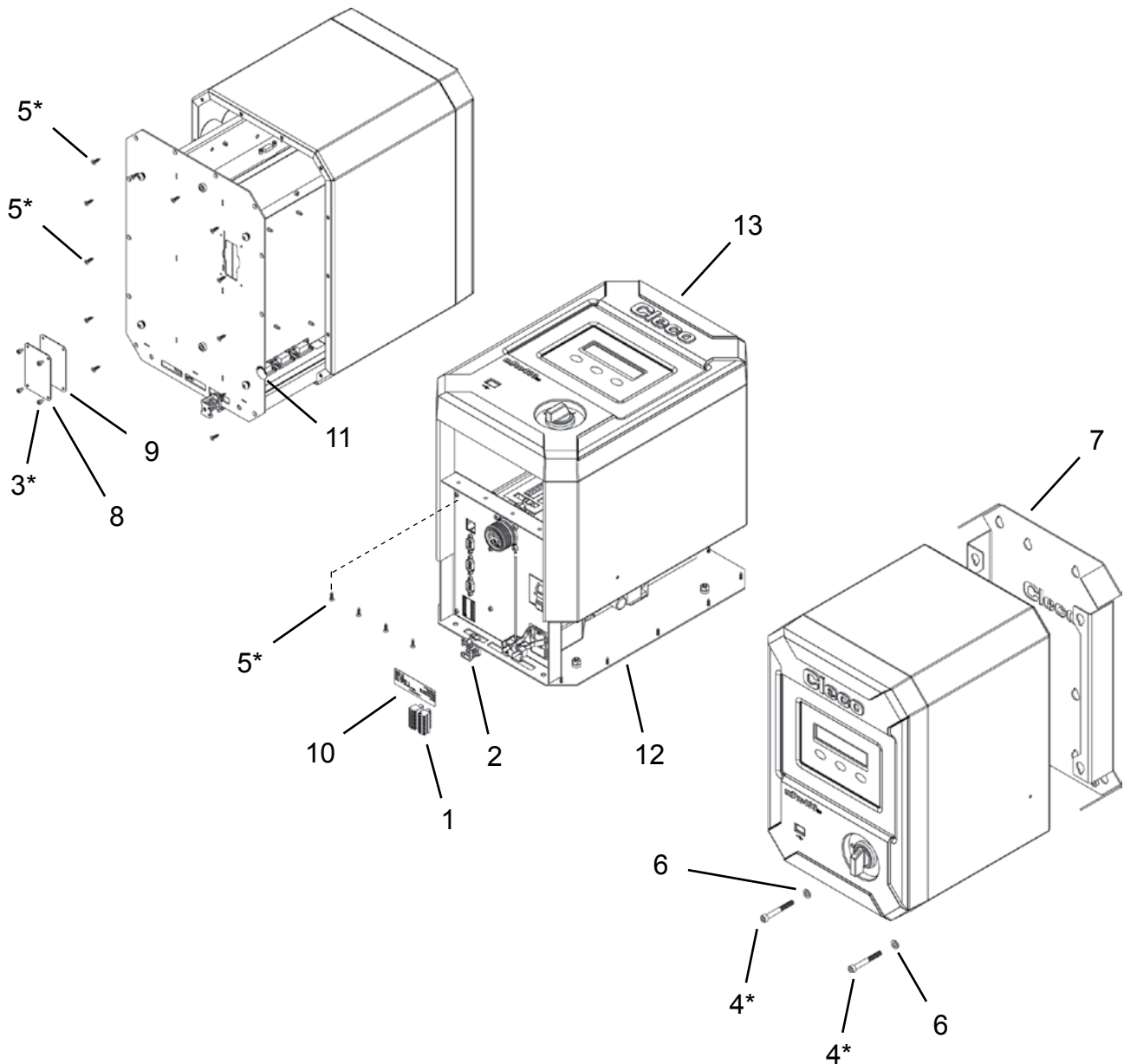
Ref	Number	#	X	EN
				Description
1	544340PT	1		STMHE Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1		GFCI
5	542897	1		Shield Clamp
6	542940-2	5	10	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-33	1	2	Self Tapping Flat Head Screw (M5 x 8 x 12mm)
9	542940-34	2	4	Screw (#6 x 3/8")
10	542940-38	10	20	Screw (#4-40 x 3/16")
11	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
12	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
13	542941-6	4	8	Nut (M6 Low Profile)
14	542942-11	9	18	Lockwasher (M4 Split)
15	542943-19	8	16	Nylon Standoff (.375")
16	543833	1		Power Entry Module
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-4	1		Tool Cable
20	544144-E	1		Graphics Panel
21	544127PT	1		Chassis
22	544130PT	1		Connector Bracket
23	544131PT	1		GFCI Bracket
24	544135PT	1		Power Supply (+24VDC)
25	544145PT	1	2	Thermal Tape
26	544146PT	1		Voltage Doubler Insulator
27	544182PT	1		Line Filter
28	544253PT	1		Inlet Cover
29	544271PT	1		Connector Clip Assembly
30	PCA2025P	1		Voltage Doubler - Programmed
31	PCA2032-1	1		I/O Assembly

(#) Quantity

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

“J3”

mPro400GC-E



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 20-25 in. lbs.
5 = 10-15 in. lbs.

Economy Controller (Torque Control) Assembly

Illustration "J3" - Controller Assembly (-E)

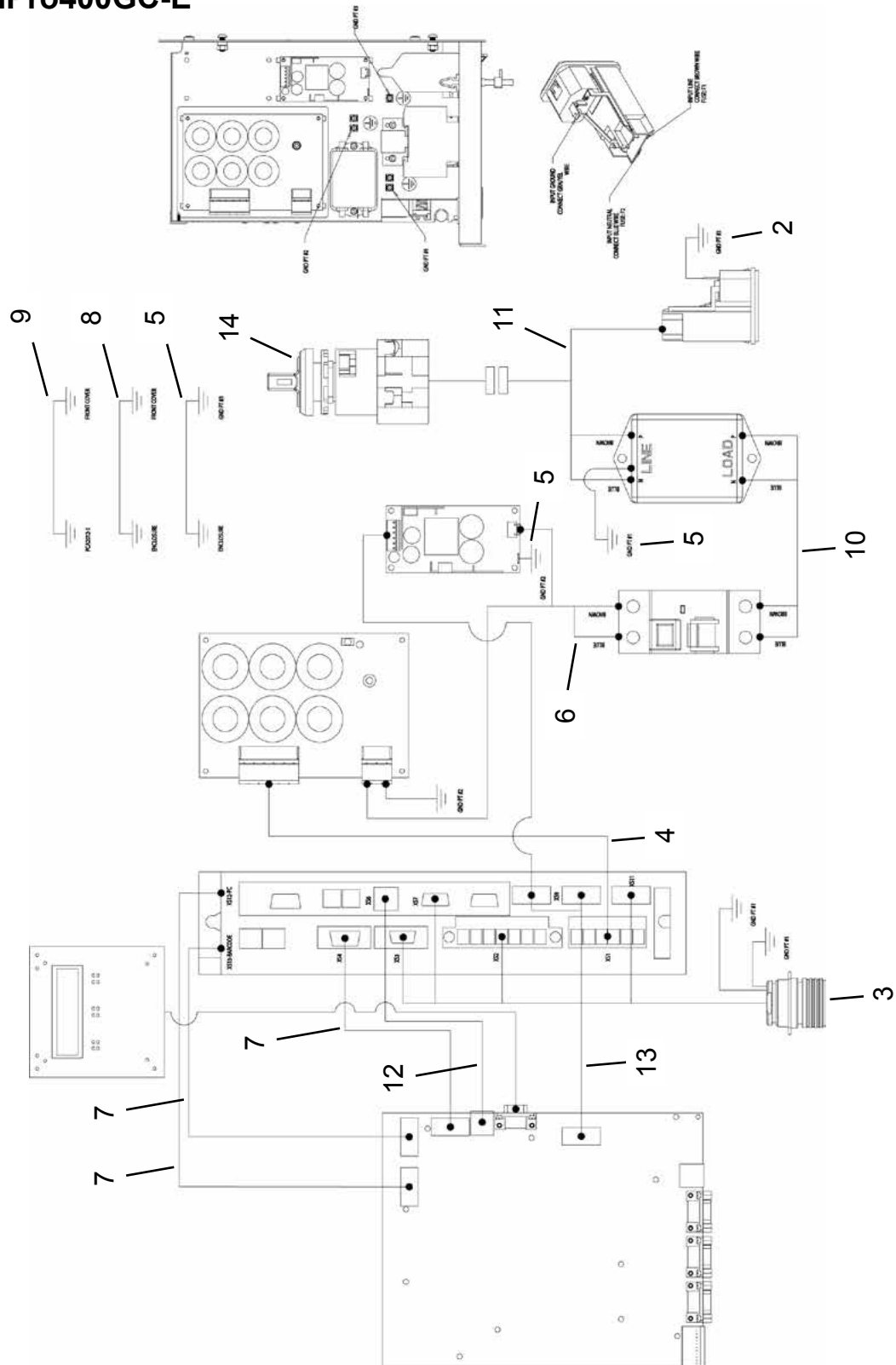
Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-E	1		Chassis Assembly (Illustration "J2")
13	mPro400GC-E	1		Enclosure Assembly (Illustration "J1")

(#) Quantity

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

“J4”

mPro400GC-E



Economy Controller (Torque Control) Schematic

Illustration "J4" - Schematic (-E)

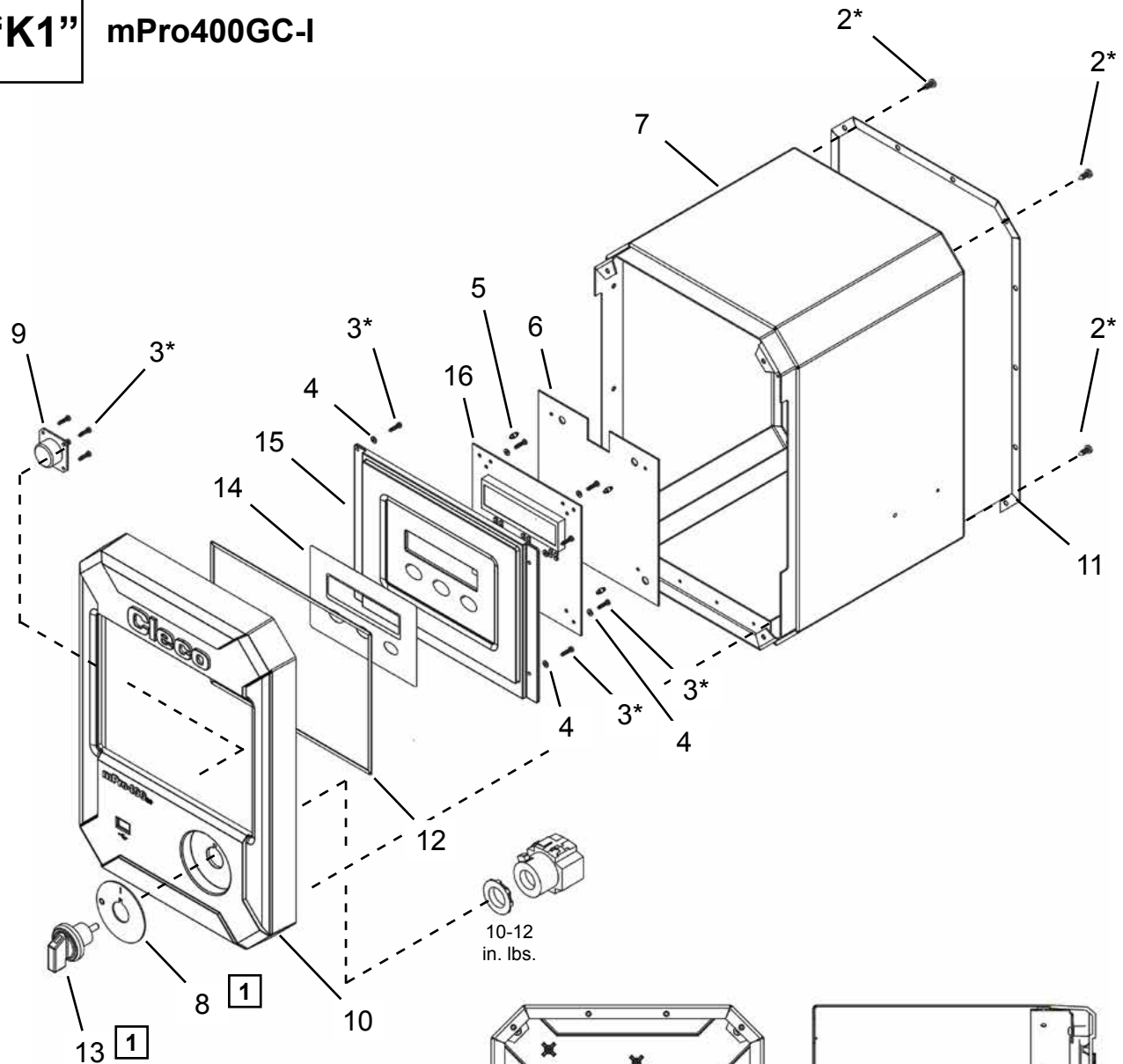
Ref	Number	#	X	EN
				Description
1	542944-6	1		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-4	1		Internal Tool Cable
4	544124-6	1		VD Output Cable
5	544124-10	3		Ground Cable
6	544124-13	1		VD Input Cable
7	544124-16	3		Secondary Ribbon Cable
8	544124-17	1		Ground Cable
9	544124-18	1		Ground Cable
10	544124-19	1		GFCI / Filter Cable
11	544124-20	1		Filter / Switch Cable
12	544124-21	1		Ethernet Cable
13	544124-47	1		I/O Cable
14	544155PT	1	2	Switch Assembly

(#) Quantity

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

“K1”

mPro400GC-I



* Note:
Tightening Torque:
2 = 15-20 in. lbs.
3 = Hand tight

1 Align switch knob keyway with
escutcheon plate key

Economy Controller (Current Control) Enclosure

Illustration "K1" - Enclosure (-I)

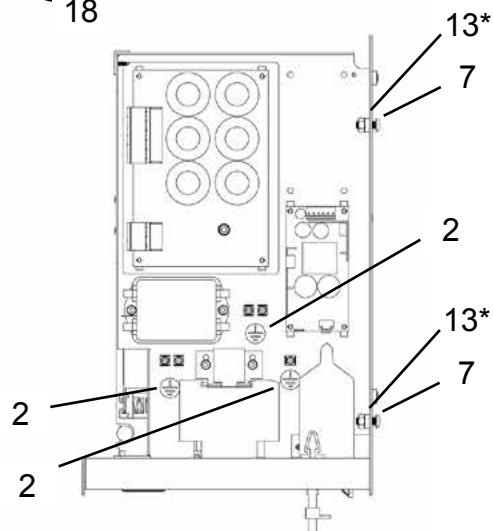
Ref	Number	#	X	EN
				Description
1	541615	2		Ground Strap Label
2	542940-36	5	10	Phillips Head Screw (#8-16 x 1/2")
3	542940-37	12	24	Phillips Head Screw (#4-20 x 1/2")
4	543319-1	8	16	Wave Washer (M3)
5	543320-2	4	8	Plastic Standoff
6	543324	1		Isolation Plate
7	544129PT	1		Enclosure
8	544133PT	1		Escutcheon Plate
9	544134PT-1	1		USB Flange
10	544139PT	1		Facade Assembly
11	544141PT	1		Enclosure Gasket
12	544142PT	1		Display Gasket
13	544155PT	1	2	Switch Assembly
14	544157PT-1	1		Secondary Front Label
15	544158PT	1		Adapter Plate
16	PCA2012-1	1		PC Board Display Assembly

(#) Quantity

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

Cut off end to allow wires to exit

Attach connector
clip assembly
exactly as shown



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Economy Controller (Current Control) Chassis

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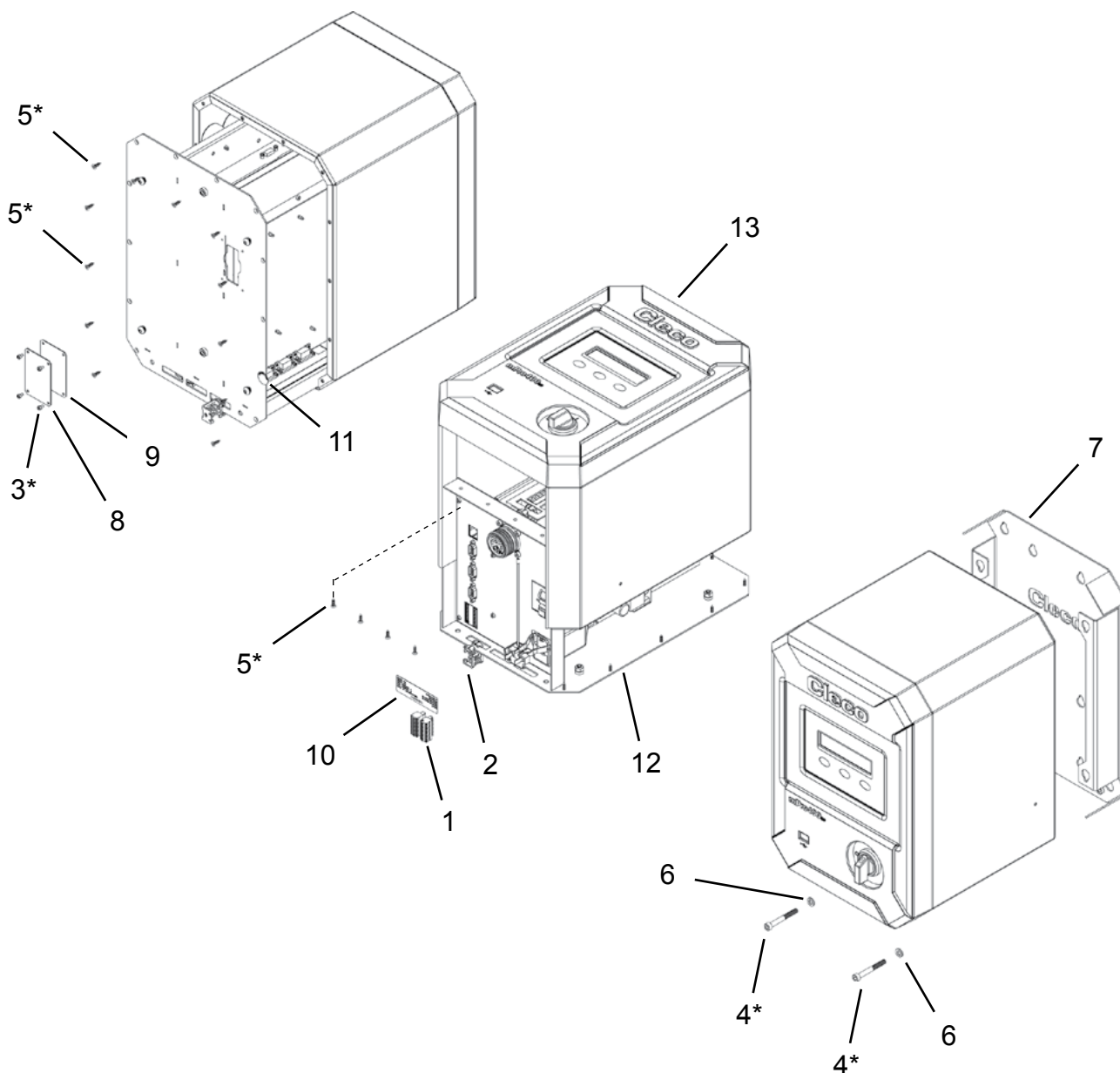
Illustration "K2" - Chassis (-I)

Ref	Number	#	X	EN
				Description
1	544341PT	1		STMHE Module - Programmed
2	541615	3		Ground Strap Label
3	541796	2	4	Fuse (115V 15A Slowblow)
4	542804	1		GFCI
5	542897	1		Shield Clamp
6	542940-2	5	10	Socket Head Cap Screw (M3 x 0.5 x 8mm)
7	542940-30	4	8	Button Socket Head Cap Screw (M6 x 1.0 x 16mm)
8	542940-33	1	2	Self Tapping Flat Head Screw (M5 x 8 x 12mm)
9	542940-34	2	4	Screw (#6 x 3/8")
10	542940-38	10	20	Screw (#4-40 x 3/16")
11	542940-4	8	16	Socket Head Cap Screw (M4 x 0.7 x 8mm)
12	542940-6	2	4	Socket Head Cap Screw (M6 x 1.0 x 14mm)
13	542941-6	4	8	Nut (M6 Low Profile)
14	542942-11	9	18	Lockwasher (M4 Split)
15	542943-19	8	16	Nylon Standoff (.375")
16	543833	1		Power Entry Module
17	543834	1		Fuse Drawer
18	544004-1	1		Plug Retainer
19	544124-22	1		Tool Cable
20	544144-E	1		Graphics Panel
21	544127PT	1		Chassis
22	544130PT	1		Connector Bracket
23	544131PT	1		GFCI Bracket
24	544135PT	1		Power Supply (+24VDC)
25	544145PT	1	2	Thermal Tape
26	544146PT	1		Voltage Doubler Insulator
27	544182PT	1		Line Filter
28	544253PT	1		Inlet Cover
29	544271PT	1		Connector Clip Assembly
30	PCA2025P	1		Voltage Doubler - Programmed
31	PCA2032-1	1		I/O Assembly

(#) Quantity

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

“K3” mPro400GC-I



* Note:
Tightening Torque:
3 = 10-12 in. lbs.
4 = 20-25 in. lbs.
5 = 10-15 in. lbs.

Economy Controller (Current Control) Assembly

Illustration "K3" - Controller Assembly (-I)

Ref	Number	#	X	EN
				Description
1	542893-9	2	4	Connector (12 Position)
2	542897	1		Shield Clamp Assembly
3	542940-23	4	8	Socket Head Cap Screw (M3 x 0.5 x 5mm)
4	542940-31	2	4	Socket Head Cap Screw (M6 x 1.0 x 50mm)
5	542940-34	16	32	Screw (#6 x 3/8")
6	542942-4	2	4	Lockwasher (M6)
7	544128PT	1		Mounting Plate
8	544132PT	1		CF Cover
9	544140PT	1	2	CF Cover Gasket
10	544143PT	1		Serial Label
11	544252PT	1		Tamper Proof Seal
12	mPro400GC-I	1		Chassis Assembly (Illustration "K2")
13	mPro400GC-I	1		Enclosure Assembly (Illustration "K1")

(#) Quantity

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



Economy Controller (Current Control) Schematic

Illustration "K4" - Schematic (-I)

Ref	Number	#	X	EN
				Description
1	542944-6	1		Cable Tie (not shown)
2	544124-1	1		AC Input Ground Cable
3	544124-22	1		Internal Tool Cable
4	544124-6	1		VD Output Cable
5	544124-10	3		Ground Cable
6	544124-13	1		VD Input Cable
7	544124-16	3		Secondary Ribbon Cable
8	544124-17	1		Ground Cable
9	544124-18	1		Ground Cable
10	544124-19	1		GFCI / Filter Cable
11	544124-20	1		Filter / Switch Cable
12	544124-21	1		Ethernet Cable
13	544124-47	1		I/O Cable
14	544155PT	1	2	Switch Assembly

(#) Quantity

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

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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