

TORQUE SPECIFICATIONS

05/05/08

TORQUE SERVICE ENTRANCE CONDUCTORS LUGS, CIRCUIT BREAKERS, AND ALL TERMINALS PER MANUFACTURER'S LISTING. CEC 110.3 (B), 110.14

THESE TABLES SHALL BE UTILIZED WHEN THE MANUFACTURER'S SPECIFICATIONS ARE NOT PROVIDED ON THE EQUIPMENT.

CEC Table 1.2

TIGHTENING TORQUES FOR SCREWS, * IN POUND-INCHES

Wire Size (AWG or Kcmil)	Slotted Head No. 10 and Larger		Hexagonal Head-External Drive Socket	
	Slot Width to 3/64 in. or Slot Length to ¼ in.	Slot Width Over 3/64 or Slot Length Over ¼ in.	Split-Bolt Connectors	Other Connectors
30-10	20	35	80	75
8	25	40	80	75
6	35	45	165	110
4	35	45	165	110
3	35	50	275	150
2	40	50	275	150
1	-	50	275	150
1/0	-	50	385	180
2/0	-	50	385	180
3/0	-	50	500	250
4/0	-	50	500	250
250	-	50	650	325
300	-	50	650	325
350	-	50	650	325
400	-	50	825	325
500	-	50	825	375
600	-	50	1000	375
700	-	50	1000	375
750	-	50	1000	375
800	-	50	1100	500
900	-	50	1100	500
1000	-	50	1100	500
1250	-	-	1100	600
1500	-	-	1100	600
1750	-	-	1100	600
2000	-	-	1100	600

*Clamping screws with multiple tightening means. For example, for a slotted hexagonal head screw, use the torque value associated with the tool used in the installation. UL uses both values when of slot width or length other than those specified, select the largest torque value associated with conductor size.

CEC Table 1.3

TORQUES IN POUND-INCHES FOR SLOTTED HEAD SCREWS***SMALLER THAN NO. 10, FOR USE WITH 8 AWG AND SMALLER CONDUCTORS**

Screw-Slot Length (in.)	Screw-Slot Width Less Than 3/64 in.	Screw-Slot Width 3/64 in. and Larger
To 5/32	7	9
5/32	7	12
3/16	7	12
7/32	7	12
1/4	9	12
9/32	-	15
Above 9/32	-	20

*Clamping screws with multiple tightening means. For example, for a slotted hexagonal head screw, use the torque value associated with the tool used in the installation. UL uses both values when testing. For slot lengths of intermediate values, select torques pertaining to next-shorter slot length.

CEC Table 1.4

TORQUES FOR RECESSED ALLEN HEAD SCREWS





Socket Size Across Flat (in.)	Torque Bolt (lb-in.)
1/8	45
5/32	100
3/16	120
7/32	150
1/4	200
5/16	275
3/8	375
1/2	500
9/16	600

CEC Table 1.5

LUG-BOLTING TORQUES FOR CONNECTIONS OF WIRE CONNECTORS TO BUSBARS





Bolt Diameter	Tightening Torque (lb-ft)
No. 8 or smaller	1.5
No. 10	2
1/4 in. or less	6
5/16 in.	11
3/8 in.	19
7/16 in.	30
1/2 in.	40
9/16 in. or larger	55

Torque Values for Graded Steel Bolts

Grade		SAE 1&2	SAE 5	SAE 6	SAE 8
Tensile Strength		44,000 PSI	105,000 PSI	130,000 PSI	150,000 PSI
Grade Mark					
Bolt Diameter	Threads Per Inch	Foot-Pounds Torque			
1/4"	20	5	7	10	10
5/16"	18	9	14	19	22
3/8"	16	15	25	34	37
7/16"	14	24	40	55	60
1/2"	13	37	60 ⁷²⁵ _{K12}	85	92
9/16"	12	53	88	120	132
5/8"	11	74	120	169	180
3/4"	10	120	200	280	296
7/8"	9	190	302	440	473
1"	8	282	463	660	714

The above values are based on approximately 75% of yield strength.
Fasteners must be lubricated (Petroleum Lubricant)

Bolt Torques for Buss Connections

Grade		SAE 1&2	SAE 5	SAE 6	SAE 8
Minimum Tensile Strength		64,000 PSI	105,000 PSI	133,000 PSI	150,000 PSI
Grade Mark					
Bolt Diameter	Threads Per Inch	Foot-Pounds Torque			
1/4"	20	4	5.6	8	8.4
5/16"	18	7.2	11.2	15.2	17.6
3/8"	16	12.0	20.0	27.2	29.6
7/16"	14	19.2	32.0	44.0	48.0
1/2"	13	29.6	48.0	68.0	73.6
9/16"	12	42.4	70.4	96.0	105.6
5/8"	11	59.2	96.0	133.6	144.0
3/4"	10	96.0	160.0	224.0	236.8
7/8"	9	152.0	241.6	352.0	378.4
1"	8	225.6	372.8	528.0	571.2

The above values are based on approximately 75% of yield strength.
Fasteners must be lubricated (Petroleum Lubricant)

SAE
75

Connecting Wire Torques

Screw Driver			Socket Head		
Wire AWG	Torque In-Lb	Torque Ft-Lb	Across Flats	Torque In-Lb	Torque Ft-Lb
18-10	35	2.9	1/8"	45	3.75
8	40	3.34	5/32"	100	8.34
6-4	45	3.75	3/16"	120	10
2-2/0	50	4.2	7/32"	150	12.5
			1/4"	200	16.67
			5/16"	275	22.9
			3/8"	375	31.25
			1/2"	500	41.67
			9/16"	600	50

NSi POLARIS™ CONNECTORS TORQUE CHART

WIRE SIZE	CONNECTOR SIZE							#4
	1000	750	500	350	250	3/0	1/0	
800-1000	550							
600-750	550	550						
500	450	450	450					
400		425	425					
350		400	400	400				
250		360	360	360	360			
4/0			250	250	250			
3/0			250	250	250	250		
2/0			180	180	180	180		
1/0			180	180	180	180	180	
#3-#1			150	150	150	150	150	
#4-#6			110	110	110	110	110	45
#8							75	40
#10-#14							35	35

See reverse for installation instructions and information with regard to UL listing. Not recommended for use with fine-stranded, flexible wire. For fine-stranded, flexible wire, contact your distributor regarding Polaris Grey™. A PROPERLY INSTALLED CONNECTOR WILL HAVE NO MORE THAN ONE CONDUCTOR PER PORT.

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NSi POLARIS™ CONNECTORS ASSEMBLY

STANDARD CONNECTORS

Wire insulation must be stripped in accordance with the chart below for standard Polaris™ Connectors. The wire insulation on a properly installed wire must be inside the insulated connector conductor port no less than 3/8 inch. Pressure screws must be secured at the torque value corresponding to the wire size and connector size shown on reverse side of this page. The UL listing applies for stranded wire only. AL/CU 600V max for building wire and 1000V max for signs or fixtures. When installing Mounting Connectors, use the chart below to select the appropriate mounting bolt, not to exceed 80 in/lbs.

CUSTOM CONNECTORS

When installing custom Polaris™ connectors, wire insulation must be stripped such that when the wire is inserted into the insulated connector conductor port, no less than 3/8 inch insulation is inside the conductor port. Insert the stripped wire until it stops against the back of the connector.

CONNECTOR SIZE	STRIPE LENGTH	BOLT DIA. FOR MOUNTING (IN.)
750MCM-H	3-1/4	5/16
ISRH 750	2-5/16	5/16
750MCM	2	5/16
500MCM	1-5/8	5/16
350MCM	1-3/8	5/16
250MCM	1-1/4	5/16
250MCM-ISR	1-1/8	5/16
3/0 AWG	1	1/4
1/0 AWG	7/8	1/4
3/0 AWG	11/16	3/16

Please note that some of the connector sizes and connector/wire size combinations shown on this sheet are not UL listed. Look for the UL Mark on the individual product to verify UL listed models and the correct wire sizes for the connector.

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