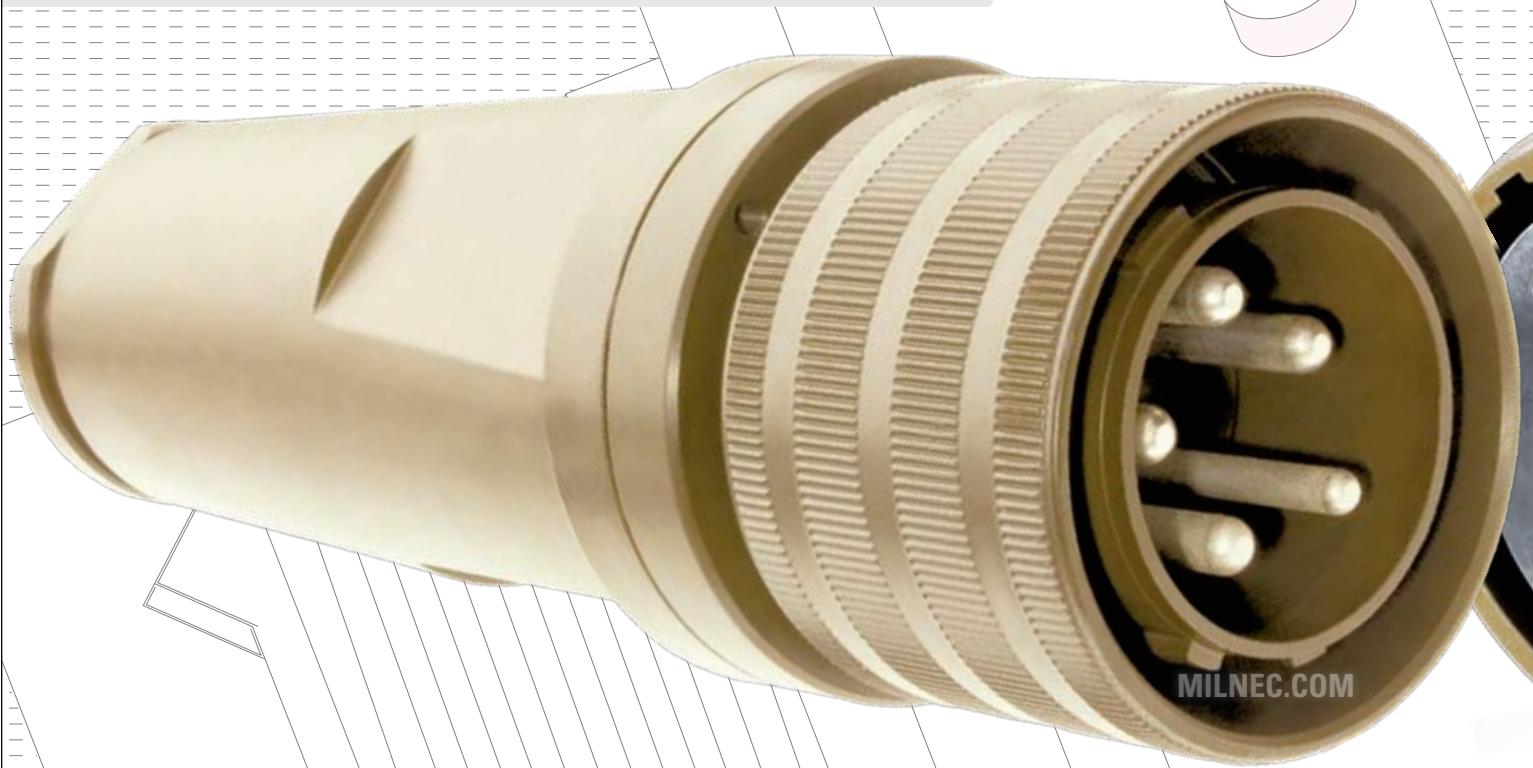


CL Series

Ruggedized High-Power Connectors



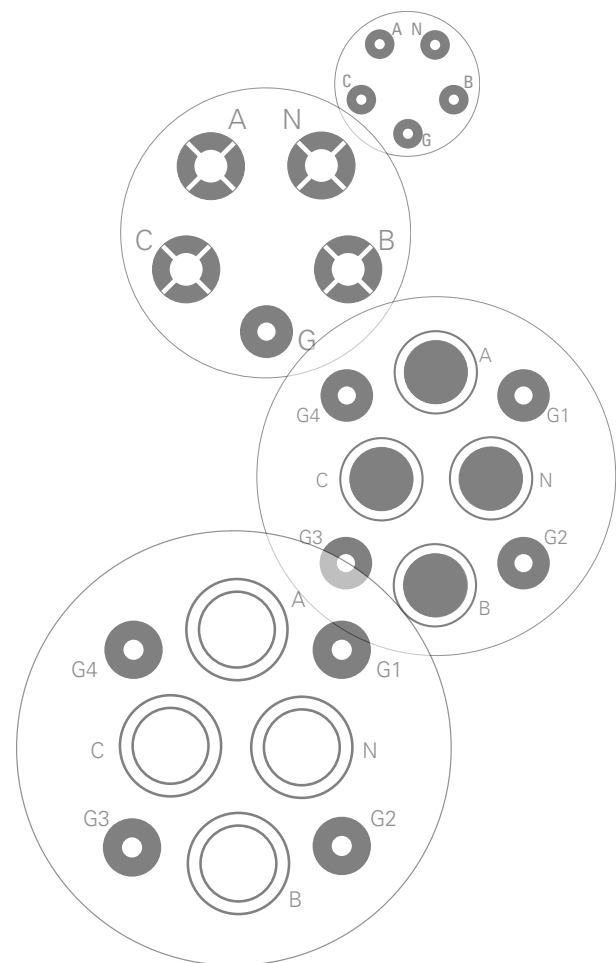
The CL Series of heavy duty connectors is ideal for rugged industrial or military applications that demand high-power delivery. Standardized parts for specific power requirements ensure equipment and personnel protection, while included backshells, covers, and other accessories provide environmental reliability.

- Heavy Duty Shells
- 40 to 200 Amps Rated
- Conductor Sizes 6 to 4/0 AWG
- Arc Quenching Design
- IP67 Environmental Protection
- Sealing Accessories Included

Rev. 1240.1



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Features & Benefits

CL Series • High-Power Connectors

Heavy Duty, High-Current Power Connectors

The CL Series features heavy duty, IP67 rated, power connectors built to withstand the rigors of power distribution applications for the most demanding military or industrial applications where reliability and safety are paramount. Connectors are designed with current-specific ratings ranging from 40 to 200 amps, with conductors ranging from size 6 to 4/0 AWG. The CL Series is built with industry leading safety features for complete protection to personnel and equipment under harsh environments, including an arc quenching design and strict unified keying for specific voltage, current, frequency, phase, and grounding.

- High-current rating from 40–200 amps
- Heavy duty shell construction
- Will accommodate wire sizes 6–4/0 AWG
- Full array of sealing accessory kits for complete environmental installations

Arc Quenching Design—Even Under Load

The CL Series' arc quenching design features recessed socket contacts within the insert that produce an arc suppressing chamber to protect the user when connectors are separated under load, even in the worst field conditions such as high humidity or wet or muddy conditions. In addition, connector shells are uniquely keyed to their specific current carrying capability to prevent cross-mating of cables with incompatible electrical loads.

- Receptacles (power source) supplied with recessed socket contacts only
- Plugs (equipment side) supplied with pin contacts only
- Arc quenching socket design
- Alternate rotations available



Heavy Duty Shell Construction

The CL Series is designed for extreme field service where connectors will be subjected to severe impacts or run over by vehicles. CL connectors are machined from high-strength aluminum shells for superior durability. Shells and backshells are finished with a conductive olive drab cadmium or non-conductive anodized finish for excellent corrosion resistance. Shell coupling is achieved with 2¼ turns of the plug's coupling ring. Shells feature impact resistant, double-start stub threads designed for reliable coupling without binding.

- High-strength aluminum shell construction
- 500 hr salt spray rated finishes
- Conductive or non-conductive finishes available
- Double-start stub thread design

IP67 Rated Waterproof Design

Integrated accessory kits come with all CL Series connectors. Plugs and cable receptacles feature protective metal backshells, a cable gland for waterproof sealing, and a cable grip for strain relief. The wall mount plug and receptacle come with a sealing gasket for the mounting location and a sealing gland and compression adapter on the connector to ensure an IP67 rating in any condition—mated or unmated. Also included is a heavy duty metal cover with a sash chain for additional sealing and protection.

- IP67 rated in any condition—mated or unmated
- Matching protective covers on all connectors
- Mounting gaskets for all flange mounted connectors
- Cable sealing backshells on cable plugs & receptacles

Rev. 1240.1

Design Prevents Dangerous Cross-Mating

CL connectors are designed to provide operator and equipment safety. They incorporate numerous safety measures to prevent accidental cross-mating with an incompatible power source. Connectors feature five positions of the main keyway to make it impossible to cross-mate adjacent cables of incompatible power voltages. In addition, alternate insert rotations are used to differentiate between 60 Hertz and 400 Hertz frequency AC circuits. Both of these features are set during manufacturing and cannot be changed by the operator.

- Shell keying differentiates specific voltages
- Alternate insert rotations available to distinguish between frequencies or adjacent cables
- Keying set during manufacturing and cannot be changed accidentally or by operator during use



Ground & Neutral—Mate First, Break Last

For safety, grounding and neutral contacts are slightly longer and engage before any of the power contacts touch. During disengagement the reverse occurs, allowing the power contacts to disconnect first, and the grounding and neutral contacts to break last. The CL Series is designed to meet all OSHA & National Electric Code requirements for grounding connectors.

- Ground and neutral contacts mate first and break last
- Contacts are removable and may be replaced
- Meets OSHA & National Electric Code requirements

Removable Contacts
Crimp contacts may be removed from connectors for replacement or repair.



Features & Benefits

Plugs (Equipment End)

- Straight w/ backshell
- Wall mount

Receptacles (Power Source)

- Cable connecting w/ backshell
- Wall mount

Backshell

- Heavy duty construction
- Environmental resistant
- Cable sealing gland design

Contacts

- Arc quenching design (sockets)
- Wire gauges 4/0–6 AWG
- Copper alloy, silver plated
- Ground & neutral, mate first and break last

Inserts

- 7 inserts available
- Heat & fluid resistant
- Alternate rotations available

Accessories

- Protective cover with sash chain
- Mounting gasket
- Cable grip
- Sealing gland

Material

- Aluminum

Finish

- Olive drab cadmium & anodized
- Conductive (AC applications)
- Non-conductive (DC applications)
- 500 hr salt spray rating

Termination

- Crimp

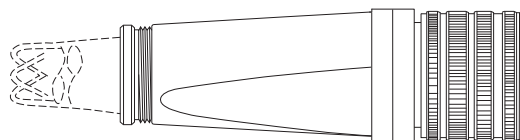
Coupling

- Double-start, stub threads
- 2¼ turns to couple

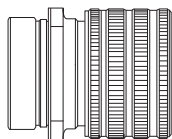
Component Overview

CL Series • High-Power Connectors

Plugs

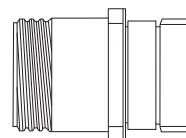


Cable Mount Plug
p. M-17

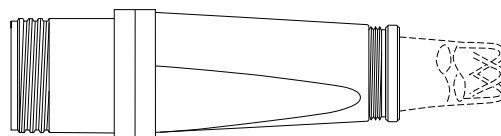


Wall Mount Plug
p. M-18

Receptacles

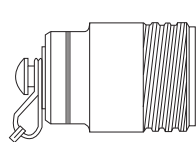


Wall Mount Receptacle
p. M-19

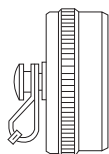


Cable Mount Receptacle
p. M-20

Covers

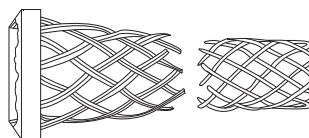


Plug Cover
p. M-21

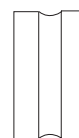


Receptacle Cover
p. M-21

Accessories

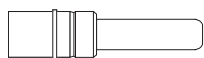


Cable Grip
p. M-23



Cable Sealing Gland
p. M-23

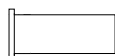
Contacts



Pin
p. M-13

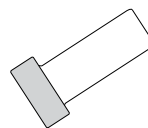


Socket
p. M-13

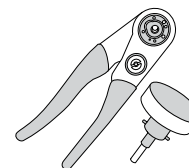


Contact Bushing
p. M-14

Tools



Extraction Tool
p. M-13



Crimper & Positioner
p. M-13

Rev. 1240.1

WITH GREAT POWER COMES GREAT RESPONSIBILITY



Reliable & Safe Power Connectors

All CL Series connectors are sized proportionally to their current carrying capability to reduce the possibility of inadequate wiring for heavy electrical loads. In addition, alternate keyways are set at fixed positions to distinguish different power sources so that personnel and equipment are always protected.

MILNEC
INTERCONNECT SYSTEMS

Series Specifications

CL Series • High-Power Connectors

Performance Specifications

Built to meet or exceed MIL-DTL-22992 specifications
Guaranteed fully compatible and interchangeable with respect to physical and performance characteristics with all existing MIL-DTL-22992 Class L military and commercial derivatives

Environmental Characteristics

Temperature Range

-67° to +257°F (-55° to +125°C)
Service life varies with the maximum internal hot spot temperature resulting from any combination of electrical load or ambient temperature:
77°F (25°C): Continuous
221°F (105°C): 35,000 hours
257°F (125°C): 1,000 hours

Heat Rise

Temperature rise of individual contacts will be no more than 54°F (30°C) above ambient temperature

Water Pressure

IP67 rating (environmental sealing) when used in conjunction with proper sealing accessories
Fully submersible to 3.3 ft (1m) for minimum of 4 hrs

Air Leakage Rate

Environmental connector air leakage rate shall not exceed 1 inch³/hr (4.55 x10⁻³ cm³/sec) at 30 psi (2.11 kg/cm²) pressure differential

Salt Spray Rating

500 hr salt spray rating

Humidity

Mated connectors shall maintain an insulation resistance of 100 megohms or greater at 77°F (25°C) with 95% humidity for duration of 20 days

Chemical Resistance to Fluids

20 hour full immersion (unmated) in hydraulic fluid and lubricating oil without damage or material degradation

Physical Characteristics

Coupling

Threaded, double-start stub threads, 2¼ turns to couple with knurled coupling ring

Coupling Torque

Engagement & Disengagement Force (max / min)
Shell Size 28: 12.32 ft-lb_f (16.7 N-m) / .68 ft-lb_f (.92 N-m)
Shell Size 32: 13.35 ft-lb_f (18.1 N-m) / .75 ft-lb_f (1.02 N-m)
Shell Size 44: 17.63 ft-lb_f (23.9 N-m) / .77 ft-lb_f (1.05 N-m)
Shell Size 52: 17.63 ft-lb_f (23.9 N-m) / .77 ft-lb_f (1.05 N-m)

Polarization

Single master key, and 4 minor keys

Insert Arrangements

7 inserts available

Insert Rotations

Normal polarization (N), plus 4 alternate insert rotational polarizations (W, X, Y, Z). Refer to the Alternate Insert Rotations chart on p. M-10 for availability.

Endurance Characteristics

Coupling Cycles

250 coupling cycles (minimum)

Shock

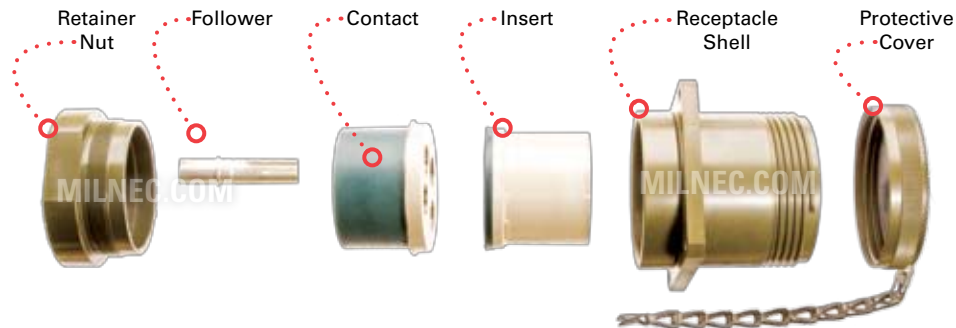
50g's, 11ms duration, three major axes,
10 microseconds maximum discontinuity

Vibration

Random vibration at 10 to 2,000Hz (15g's),
10 microseconds maximum discontinuity

Insert Retention

45 lb_f/in² (3.164 kg-cm²)



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Material Characteristics

Shell

High-grade aluminum alloy

Shell Plating

C Finish

Electrically conductive cadmium plate finish with an olive drab (light to dark in color) chromate after-treat for corrosion resistance (500 hr salt spray rating). Thickness of the coating shall be approximately 0.0001 in (.00254 mm).

N Finish

Non-conductive anodized coating finish (gray to black in color) for corrosion resistance (500 hr salt spray rating). Thickness of the coating shall be approximately 0.00005 in (.00127mm).

Shell-to-Shell Conductivity for C Finish

Maximum shell-to-shell conductivity potential drop shall not exceed 200 millivolts before conditioning, and 400 millivolts after conditioning, across the assembly

Insert Assembly

Plastic dielectric, removable

Spacer Assembly

Resilient neoprene dielectric, removable

Covers, Coupling Rings, Cable Sealing Adapters

High-grade aluminum alloy

Protective Cover Chain

Passivated stainless steel, sash chain able to withstand a 25 lb (11.3 kg) tensile force without damage

Cable Grip

Woven, stainless steel rope

Cable Gland

Neoprene or silicone

O-Ring Seal

Neoprene or silicone

Mounting Gasket

Neoprene or silicone

Contact Characteristics

Contact Design

Removable, rear-release crimp contacts

Contact Sizes

#6, #4, #4/0, #1/0

Contacts

Copper alloy

Contact Plating

Silver alloy plate, .0002 in (.0051 mm) minimum

Max Number of Contacts

8

Max Contact Resistance

<10 milliohm maximum resistance

Grounding

Automatic, grounding and neutral contacts have mate first/break last design

Arc Quenching

Recessed socket contacts within insert create an arc suppression chamber for safety

Max Voltage Drop

<10 millivolt maximum drop for grounding contacts

Contact Retention

Pin and socket contacts are designed to resist severe vibration and repeated connection and disconnection

Electrical Characteristics

Current Rating

200 amps (rated current) at 68°F (20°C)
for inserts 52-12 and 52-13

Max Operating Voltage

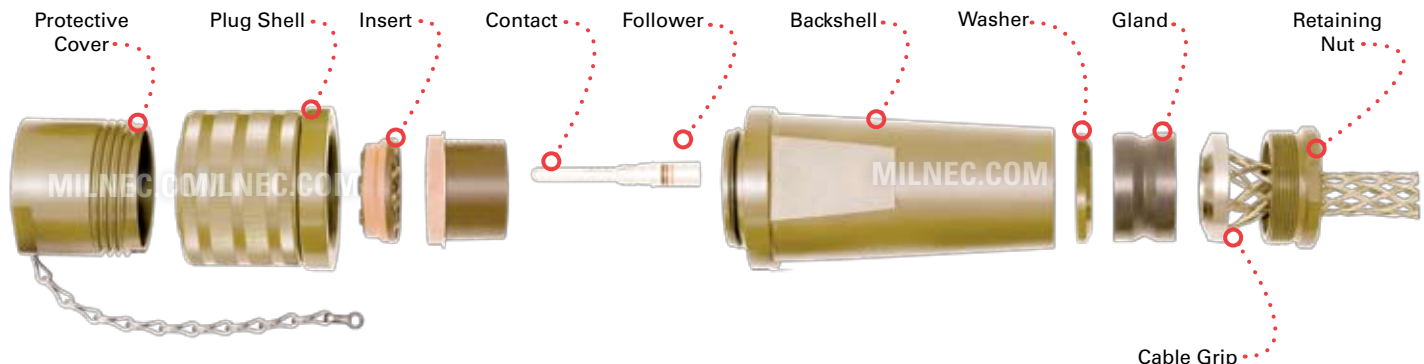
2,000 VAC (RMS) at sea level

Insulation Resistance

>5,000 megohms at 77°F (25°C)

Wire Size

6 to 4/0 AWG



How to Build Your CL Connector Part Number

A part number is comprised of a string of characters that represent the different elements of a connector. High-performance connectors are built to order from component form using a unique part number as a blueprint to specify particular characteristics. Each modifier of the part number represents a particular configuration.

Below is an example part number for a CL Series connector that designates, **1)** CL Series wall mount receptacle with socket contacts for power source, **2)** conductive olive drab cadmium finish for AC, **3)** 52-13 insert arrangement for 3 phase AC, 4 wire, grounding, **4)** key position #4 for 120/208 VAC, and **5)** normal rotation designates 60 Hz frequency. ■

CL00 C 52-13 4 N

1 2 3 4 5

1 Series Shell Style

Plugs (Equipment End)

- CL06** Cable mount plug with pin contacts
Includes backshell, cable grip, cover
p. M-17
- CL09** Wall mount plug with pin contacts
Includes backshell, gasket, cover
p. M-18

Receptacles (Power Source)

- CL00** Wall mount recept. with socket contacts
Includes backshell, gasket, cover
p. M-19
- CL01** Cable mount recept. with socket contacts
Includes backshell, cable grip, cover
p. M-20

2 Material & Finish

Aluminum

- C** Conductive for AC
Olive drab cadmium
500 hr. dynamic salt spray rating
- N** Non-conductive for DC
Anodized finish
500 hr. dynamic salt spray rating

3 Shell Size & Insert Arrangement

See Insert Arrangement Drawings, p. M-11

Determined by current capability and cable type

4 Master Key/Keyway Position

See Master Key/Keyway Position table, p. M-10

N	DC, 2 Wire, 28 VDC
1	AC, 3 Phase, 3 Wire, 450/480 VAC
4	AC, 1 Phase, 2 Wire, 120 VAC
4	AC, 1 Phase, 3 Wire, 120/240 VAC
4	AC, 3 Phase, 4 Wire, 120/208 VAC
5	AC, 1 Phase, 2 Wire, 240 VAC
5	AC, 3 Phase, 4 Wire, 240/416 VAC
6	AC, 3 Phase, 4 Wire, 277/480 VAC

5 Alternate Insert Rotations

Used to prevent cross-mating of different frequencies

Normal Rotation

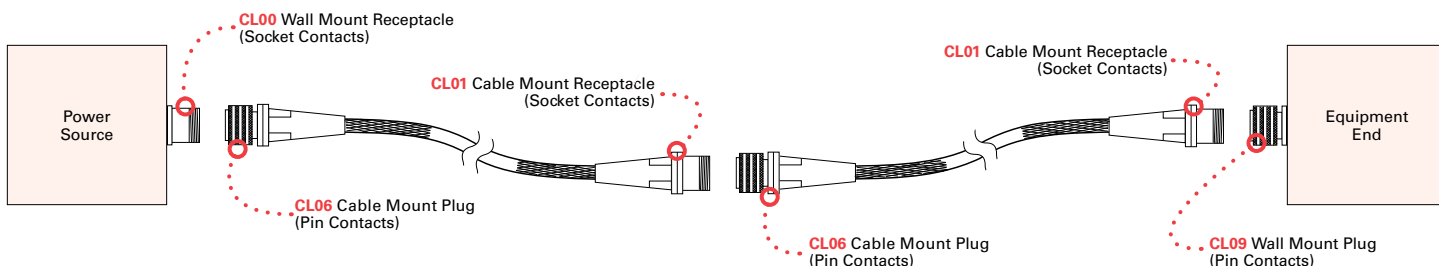
N	Normal (60 Hz AC or DC)
----------	----------------------------

Alternate Rotations

W, X, Y, Z	Alternate Rotations (400 Hz AC)
-------------------	------------------------------------

See Alternate Insert Rotations table on p. M-10
(Not all rotations are available for every insert arrangement)

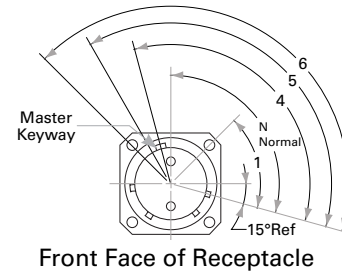
Typical Power Distribution Cable Assembly With Optional Extension Cord



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Shell Master Key/Keyway Position

Five master keyway positions are used to discriminate between different power sources such as two wire (DC), two wire single phase (AC), three wire single phase (AC), and four wire three phase (AC). This keying is established during manufacture and cannot be changed.



Master Key/Keyway Position

Shell Size		Current Rating (Amps)	Alternating Current (AC) 60Hz & 400Hz							Direct Current (DC)	
			1 Phase			3 Phase					
			2 Wire		3 Wire	3 Wire		4 Wire			2 Wire
			120 VAC	240 VAC	120/240 VAC	450/480 VAC	120/208 VAC	240/416 VAC	277/480 VAC		28 VDC
28	40	4	5	4	-	4	5	6	N		
32	60	4	5	4	-	4	5	6	N		
44	100	4	-	4	1	4	5	6	N		
52	200	-	-	4	-	4	5	6	N		

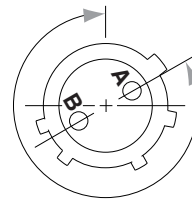
Selecting Your Alternate Insert Rotation

Alternate insert rotations are used to differentiate connectors sets of incompatible frequencies. However, if different frequencies are not a concern, alternate insert rotations may simply be used to distinguish similar connectors sets.

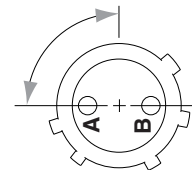
Rotations are designated at the time of ordering using rotation labels N (normal), W, X, Y, and Z. Some insert arrangements have limited or no alternate rotation options. This rotation is established during manufacture and cannot be changed.

Alternate Insert Rotations

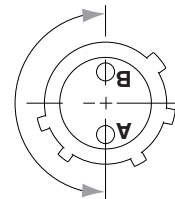
Insert Arrangement	60 Hz AC or DC	400 Hz AC			
	Normal	W	X	Y	Z
28-12	0°	-	-	180°	-
28-13	0°	-	-	180°	-
32-04	0°	-	90°	-	-
32-05	0°	-	90°	-	-
32-12	0°	-	-	180°	-
32-13	0°	-	-	180°	-
44-02	0°	-	-	-	-
44-03	0°	-	-	-	-
44-12	0°	-	-	-	60°
44-13	0°	-	-	-	60°
44-50	0°	-	-	-	-
44-51	0°	-	-	-	-
44-52	0°	-	-	-	-
44-56	0°	-	-	-	-
52-12	0°	300°	-	-	-
52-13	0°	300°	-	-	-



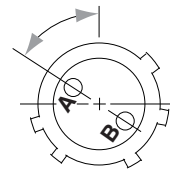
W Rotation



X Rotation



Y Rotation



Z Rotation

Looking into front face of pin insert or rear of socket insert.

Insert Arrangement Drawings

CL Series • High-Power Connectors

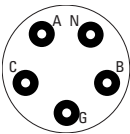
Insert Arrangement Selection

The CL Series is designed to provide safe interconnect solutions for military and industrial applications. The series' strict configuration control ensures maximum protection of personnel and equipment. Shell style, size, and contact type are all matched to specific voltage, current, frequency, phase, and grounding requirements. In addition, the CL Series' insert arrangements specify connector and cable combinations for interconnect reliability. Connector shells are sized according to current carrying capabilities, reducing the possibility of inadequate wiring for heavy electrical loads. ■



Various Power Options
Example of a CL09 wall mount plug with a 52-13 insert rated for 200 amps.

40 Amp Rating Shell Size 28



28-12, 28-13
Three phase AC, 4 wire, grounding

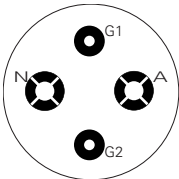
Cable

Insert	Cable Type
28-12	IPCEA, type G, round, 4 x #8 conductors
28-13	CO-04 HDF, (4/6-4/12R) 1090 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A, B, C	6	CLPP06	CLSS06
N, G	6N	CLPP06N	CLSS06

60 Amp Rating Shell Size 32



32-04, 32-05
Single phase AC, 2 wire, grounding

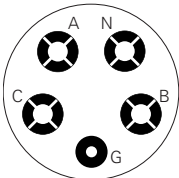
Cable

Insert	Cable Type
32-04	IPCEA, type G, round, 2 x #6 conductors
32-05	CO-02 HDF, (2/4-2/8R) 1100 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A	4	CLPP04	CLSS04
N	4N	CLPP04N	CLSS04
G1, G2	6N	CLPP06N	CLSS06

60 Amp Rating Shell Size 32



32-12, 32-13
Three phase AC, 4 wire, grounding

Cable

Insert	Cable Type
32-12	IPCEA, type G, round, 4 x #6 conductors
32-13	CO-04 HDF, (4/4-4/12R) 1290 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A, B, C	4	CLPP04	CLSS04
N	4N	CLPP04N	CLSS04
G	6N	CLPP06N	CLSS06

Contact Legend: 4/0 1/0 4 6

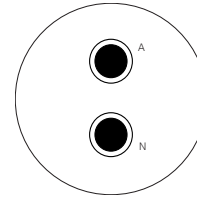
Rev. 1240.1

Cable

Insert	Cable Type
44-02	IPCEA, type W, round, 2 x #2 conductors
44-03	CO-02 HDF, (2/1) 1385 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A	1/0-1	CLPP10	CLSS10
N	1/0N-1	CLPP10N	CLSS10



44-02, 44-03
28 Volts DC, 2 wire

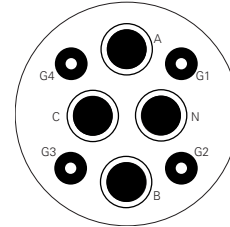
100 Amp Rating
Shell Size 44
For direct current (DC) application use only

Cable

Insert	Cable Type
44-12	IPCEA, type G, round, 4 x #2 conductors
44-13	CO-04 HDF, (4/1-4/8R) 1620 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A, B, C	1/0-1	CLPP10	CLSS10
N	1/0N-1	CLPP10N	CLSS10
G1, G2, G3, G4	6G	CLPP06G	CLSS06G



44-12, 44-13
Three phase AC, 4 wire, grounding

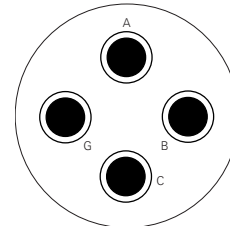
100 Amp Rating
Shell Size 44

Cable

Insert	Cable Type
44-50	Available in LC00 & LC09 only, 4 x #1 conductors
44-51	Available in LC06 & LC01 only, type W, round, 4 x #1 conductors
44-52	Available in LC06 only, IPCEA, type W, round, 4 x #2 conductors
44-56	Available in LC06 only, IPCEA, type W, round, 4 x #6 conductors

Contacts

Position	Contact Size	Pin	Socket
A, B, C	1/0-1	CLPP10	CLSS10
G	1/0N-1	CLPP10N	CLSS10



44-50, 44-51, 44-52, 44-56
Three phase AC, 3 wire, grounding

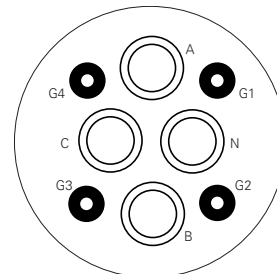
100 Amp Rating
Shell Size 44
For U.S. Navy ground support equipment use only

Cable

Insert	Cable Type
52-12	IPCEA, Type G, round, 4 x #4/0 conductors
52-13	CO-04 HDF, (4/0000-4/4R) 2380 per MIL-C-3432

Contacts

Position	Contact Size	Pin	Socket
A, B, C	4/0	CLPP40	CLSS40
N	4/0N	CLPP40N	CLSS40
G1, G2, G3, G4	4G	CLPP04G	CLSS04G



52-12, 52-13
Three phase AC, 4 wire, grounding

200 Amp Rating
Shell Size 52

Contact Legend:



Rev. 1240.1

Contact Specifications

CL Series • High-Power Connectors

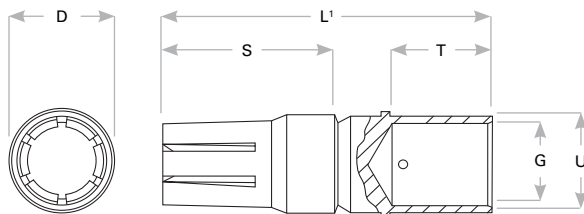
Contacts & Tooling

Contact Size	Contact Style	Part Number	Pneumatic Crimping Tool	Positioner	Die	Extraction Tool
#4/0	Socket	CLSS40	TU2301	TP2316	TD2307	TX2701
	Pin	CLPP40				
#4/ON		CLPP40N				
#1/0	Socket	CLSS10	TU2301	TP2314	TD2305	TX2703
	Pin	CLPP10				
#1/ON		CLPP10N				
#4	Socket	CLSS04	TU2301	TP2312	TD2304	TX2705
	Pin	CLPP04				
#4N		CLPP04N				
#4G	Socket	CLSS04G				
	Pin	CLPP04G				
#6	Socket	CLSS06	TU2301	TP2310	TD2303	TX2706
	Pin	CLPP06				
#6N		CLPP06N				
#6G	Socket	CLSS06G				
	Pin	CLPP06G				

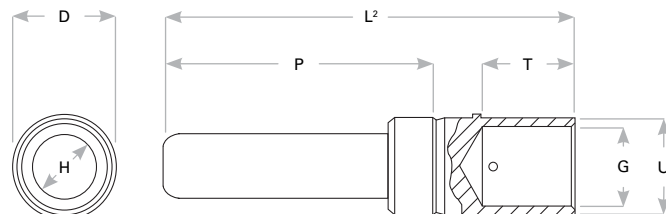
Contact Dimensions

Contact Size	Part Number	Contact Style	Wire Well Size	L ¹	S	D Dia	T	U Dia	G Dia	H Dia	L ²	P
#4/0	CLSS40	Socket	4/0	2.393 (60.8)	1.283 (32.6)	.781 (19.8)	.750 (19.1)	.750 (19.1)	.641 (16.3)	—	3.207 (81.5)	2.097 (53.3)
	CLPP40	Pin		—	—					.500 (12.7)		
#4/ON	CLPP40N			—	—						3.325 (84.5)	2.215 (56.3)
#1/0	CLSS10	Socket	1	2.393 (60.8)	1.283 (32.6)	.609 (15.5)	.750 (19.1)	.506 (12.9)	.406 (10.3)	—	3.207 (81.5)	2.097 (53.3)
	CLPP10	Pin		—	—					.357 (9.1)		
#1/ON	CLPP10N			—	—						3.325 (84.5)	2.215 (56.3)
#4	CLSS04	Socket	4	2.206 (56.0)	1.158 (29.4)	.417 (10.6)	.750 (19.1)	.374 (9.5)	.281 (7.1)	—	2.786 (70.8)	1.738 (44.2)
	CLPP04	Pin		—	—					.225 (5.7)		
#4N	CLPP04N			—	—						2.904 (73.8)	1.856 (47.1)
#4G	CLSS04G	Socket	4	2.862 (72.7)	1.752 (44.5)	.417 (10.6)	.750 (19.1)	.374 (9.5)	.281 (7.1)	—	2.856 (72.5)	1.746 (44.4)
	CLPP04G	Pin		—	—					.225 (5.7)		
#6	CLSS06	Socket	6	2.206 (56.0)	1.158 (29.4)	.342 (8.7)	.750 (19.1)	.312 (7.9)	.234 (5.9)	—	2.786 (70.8)	1.738 (44.2)
	CLPP06	Pin		—	—					.178 (4.5)		
#6N	CLPP06N			—	—						2.904 (73.8)	1.856 (47.1)
#6G	CLSS06G	Socket	6	2.862 (72.7)	1.752 (44.5)	.342 (8.7)	.750 (19.1)	.312 (7.9)	.234 (5.9)	—	2.856 (72.5)	1.746 (44.4)
	CLPP06G	Pin		—	—					.178 (4.5)		

Dimensions are in inches (mm).



Socket Contact



Pin Contact

Rev. 1240.1

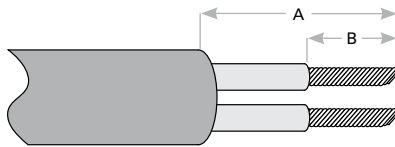
Current Rating By Contact & Shell Size

Shell Size	Contact Size			
	#6	#4	#1/0	#4/0
28	40A			
32		60A		
44			100A	
52				200A

Cable & Wire Jacket Strip Lengths

Shell Size	A Cable Jacket Strip Length	Contact Size	B Wire Jacket Strip Length
		#6	.750 (19.1)
		#4	.750 (19.1)
		#1/0	.750 (19.1)
		#2/0	.750 (19.1)
		#4/0	.750 (19.1)
28	3.00 (76.2)		
32	3.00 (76.2)		
44	4.25 (108.0)		
52	5.00 (127.0)		

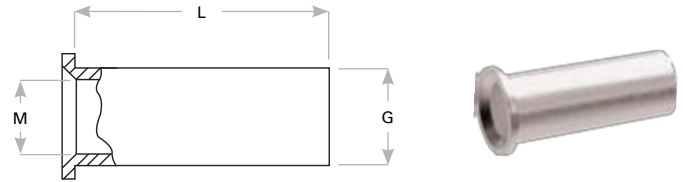
Dimensions are in inches (mm) unless otherwise noted.



Contact Reducing Bushings

Bushing Part Number	Contact Size	Wire Size	M Inner Dia	G Outer Dia	L Length
CRB6-10	#6	#10	.136 (3.5)	.225 (5.7)	.700 (17.8)
CRB6-9	#6	#9	.155 (3.9)	.225 (5.7)	.700 (17.8)
CRB6-8	#6	#8	.185 (4.7)	.225 (5.7)	.700 (17.8)
CRB4-8	#4	#8	.185 (4.7)	.272 (6.9)	.700 (17.8)
CRB4-6	#4	#6	.225 (5.7)	.272 (6.9)	.700 (17.8)
CRB4-5	#4	#5	.250 (6.6)	.272 (6.9)	.700 (17.8)
CRB1-6	#1	#6	.225 (5.7)	.396 (10.1)	.700 (17.8)
CRB1-2	#1	#2	.359 (9.1)	.396 (10.1)	.700 (17.8)
CRB0-2	#4/0	#2/0	.500 (12.7)	.629 (16.0)	.700 (17.8)

Contact reducing bushings are required when crimping a smaller wire than the contact is designed for. Dimensions are in inches (mm) unless otherwise noted.



Contact Reducing Bushing

Standardized Generator Wiring & Connections

Current	Generator Terminal Mark	Contact Designation	Conductor Circuit	International Phase Color Coding	
				USA	European Union
DC	+ (POS) Positive	A	Positive	Black	Black
	- (NEG) Ground	N	Negative	White	White
AC	L ₁	A	Phase A	Black	Brown
	L ₂	B	Phase B	Red	Black
	L ₃	C	Phase C	Blue	Gray
	L ₀	N	Neutral	White	Blue
	G (or GND)	G	Safety Grounding	Green	Green/Yellow

This wiring guide is only meant to serve as a reference. Always consult local and national wiring code before installing.

Test Current For Arc Rupture

Contact Size	Rated Current AC	Test Current AC
#6	40A	60A
#4	60A	90A
#1/0	100A	150A
#2/0	150A	225A
#4/0	200A	300A

Test ratings only. A connector cannot withstand maximum current through all contacts continuously. Please note that the establishment of electrical safety factors is left entirely in the designer's hands, since he or she is in the best position to know what peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

Coupling Torque Values

Thread Size	Torque Foot Pounds (Newton Meters)	
	Min	Max
2.000	38 (51.5)	42 (56.9)
2.250	44 (59.7)	48 (65.1)
3.000	65 (88.1)	70 (94.9)
3.500	70 (94.9)	75 (101.7)

Contact Retention Loads

Contact Size	Minimum Axial Load
#6	20 lbs (8.9 kg)
#4	25 lbs (11.1 kg)
#1/0	35 lbs (15.6 kg)
#2/0	35 lbs (15.6 kg)
#4/0	35 lbs (15.6 kg)

Contact Engagement & Separation Forces

Contact Size	Force	
	Maximum	Minimum
#6	10 lbs (4.4 kg)	.75 lbs (.3 kg)
#4	15 lbs (6.7 kg)	1.00 lbs (.4 kg)
#1/0	20 lbs (8.9 kg)	2.00 lbs (.9 kg)
#2/0	20 lbs (8.9 kg)	2.00 lbs (.9 kg)
#4/0	20 lbs (8.9 kg)	2.00 lbs (.9 kg)

Cable Pull-Out Test Loads

Weight of Cable per 1,000 ft (304.08 m)	Minimum Required Pull-Out Force	
	Without Cable Grip	With Cable Grip
Up to 350 lbs (155.5 kg)	50 lbs (22.2 kg)	75 lbs (33.3 kg)
351-725 lbs (156.0-322.1 kg)	75 lbs (33.3 kg)	150 lbs (66.7 kg)
726-1,000 lbs (322.7-444.6 kg)	100 lbs (44.4 kg)	200 lbs (88.9 kg)
Over 1,000 lbs (444.4 kg)	125 lbs (55.5 kg)	250 lbs (111.1 kg)

Installation Instructions

CL Series • High-Power Connectors

Contact Installation

Step 1 - Find the proper strip length for your cable jacket and individual wires, see the Contact Specifications on p. M-14.

Step 2 - Make a clean cut at the end of the wire to be terminated and strip the insulation to the correct length. After stripping the wire insulator, clean the exposed conductor with a swab of alcohol to remove any impurities.

Step 3 - Insert stripped conductors in contact wire wells. If contact bushing is used, insert conductor in bushing and bushing in contact wire well. If two or more ground wires are inserted into a single contact, make sure all the wires are fully seated in the wire well. Conductors should be visible through inspection hole on the side of the wire well.

Step 4 - Select the correct crimping tool, locator, and die from the table on p. M-13 for the contacts being installed. Follow the manufacturer's set-up and calibration instructions. With conductor or contact bushing in place, insert contact into tool. Close crimping die fully to create a uniform crimp.

Step 4 - Inspect crimp and ensure that the conductor is visible through the contact inspection hole. If no conductor is visible, the wire may require re-crimping with a new contact.

.....

Connector Assembly

Step 1 - If inserts are not already positioned in the connector shell, align the large tab on the insert with the large slot in the shell and push insert in until it bottoms out in the shell.

Step 2 - Apply a thin coating of grease to the edges of the contact holes in spacer or grommet assembly until locked into contact retainer clip.

Step 3 - Align the contacts with the proper holes in the insert. The small key on the insert must be aligned with the appropriate keyway on the spacer or grommet assembly. Slide the contacts into insert holes until the spacer or grommet assembly butts against the insert. A thin film of grease applied to the edges of the insert contact holes will provide maximum sealing efficiency.

Step 4 - Assemble the connector accessories. The back adapter O-ring should have a thin film of grease applied. Avoid getting grease on the inside surface of the gland and on the cable jacket.

Step 5 - Tighten retaining nut or gland nut on shell or adapter. A metal to metal seating condition is ideal, but it may not be attainable depending on maximum cable diameter.

Contact Removal

Step 1 - Loosen all rear accessories and slide them back along the cable.

Step 2 - Remove spacer or grommet assembly with contacts from connector insert.

Step 3 - Using the appropriate size contact removal tool from the table on p. M-13, push tool over the front of the contact to be removed until the tool bottoms in the spacer or grommet assembly hole. This will open the contact retaining clip and allow the contact to be removed from the spacer or grommet assembly from the rear. When using jacketed cable, all contacts should be released from their contact retention clips before removal from the spacer or grommet assembly.

Solder Termination

While crimping is the preferred contact termination, if crimping tools are unavailable, contacts may be solder terminated using rosin-alcohol solder flux, 60/40 grade solder, and a 500 watt soldering iron or probe type resistance soldering equipment. Be sure to pre-tin conductors before soldering. Solder cannot be present on shoulder of retention area of contact. ■



Rev. 1240.1

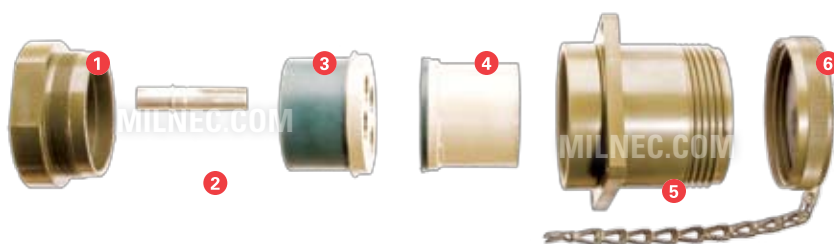
Installation Instructions

CL Series • High-Power Connectors



CL06 Cable Mount Plug

- | | |
|-----------------|------------|
| 1 Retaining Nut | 6 Follower |
| 2 Cable Grip | 7 Contact |
| 3 Sealing Gland | 8 Insert |
| 4 Gland Washer | 9 Shell |
| 5 Backshell | 10 Cover |



CL00 Wall Mount Receptacle

- | | |
|-----------------|----------|
| 1 Retaining Nut | 4 Insert |
| 2 Follower | 5 Shell |
| 3 Contact | 6 Cover |



CL01 Cable Mount Receptacle

- | | |
|-----------------|------------|
| 1 Retaining Nut | 6 Follower |
| 2 Cable Grip | 7 Contact |
| 3 Sealing Gland | 8 Insert |
| 4 Gland Washer | 9 Shell |
| 5 Backshell | 10 Cover |



CL09 Wall Mount Plug

- | | |
|-----------------|----------|
| 1 Retaining Nut | 4 Insert |
| 2 Follower | 5 Shell |
| 3 Contact | 6 Cover |

Rev. 1240.1

Cable Mount Plug

CL Series • High-Power Connectors

CL06 C 44-12 4 N

1 2 3 4 5

1 BASIC PART NUMBER

CL06 Cable mount plug
Pin contacts (equipment end)
Includes backshell, cable grip, cover

2 MATERIAL & FINISH

C Aluminum, olive drab cadmium
(Conductive for AC applications)
N Aluminum, anodized finish
(Non-conductive for DC applications)

3 SHELL SIZE & INSERT PATTERN

See Insert Arrangement Drawings, p. M-11

4 MASTER KEYWAY POSITION

Power requirements determine master key/keyway
(See Master Key/Keyway Position table, p. M-10)

5 ALTERNATE ROTATION

N NORMAL or W, X, Y, Z, see p. M-10 for availability



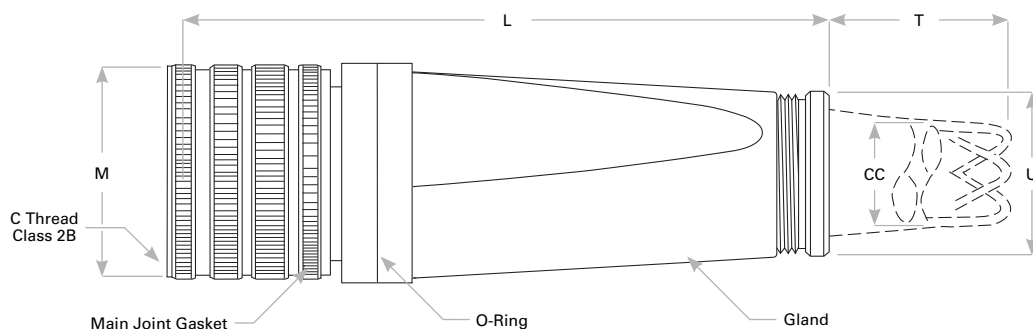
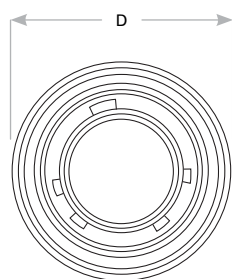
Straight plug with integrated backshell

This cable plug features an integrated backshell for reliable IP67 environmental protection. A cable grip comes with the plug for use with heavily jacketed cable, and the included cover protects contacts when the connector is disconnected.

Plug Dimensions

Shell Size Arrangement	D	C Thread Class 2B	L	T	M	U	CC Cable Clearance	
							Min	Max
28-12	2.439 (62.0)	2.000-.1428P-.2857L	8.188 (206.2)	7.188 (182.6)	2.312 (58.7)	2.000 (50.8)	.922 (23.4)	1.047 (26.6)
28-13				7.188 (182.6)			1.005 (25.5)	1.130 (28.7)
32-04	2.689 (68.3)	2.250-.1428P-.2857L	8.188 (206.2)	7.188 (182.6)	2.562 (65.1)	2.000 (50.8)	.844 (21.4)	.969 (24.6)
32-05, 32-12				7.188 (182.6)			1.005 (25.5)	1.130 (28.7)
32-13				8.688 (220.7)			1.217 (30.9)	1.342 (34.1)
44-02				10.688 (271.5)			1.187 (30.1)	1.312 (33.3)
44-03	3.667 (93.1)	3.000-.1428P-.2857L	10.172 (258.4)	9.688 (246.1)	3.531 (89.7)	2.500 (63.5)	1.313 (33.4)	1.438 (36.5)
44-12				10.688 (271.5)			1.391 (35.3)	1.516 (38.5)
44-13				12.688 (322.3)			1.547 (39.2)	1.672 (42.5)
44-51				11.688 (296.9)			1.609 (40.9)	1.734 (44.0)
44-52	3.667 (93.1)	3.000-.1428P-.2857L	10.172 (258.4)	11.188 (284.2)	3.531 (89.7)	2.500 (63.5)	1.435 (36.4)	1.525 (38.7)
44-56				7.188 (182.6)			1.065 (27.1)	1.135 (28.8)
52-12	4.167 (105.8)	3.500-.1428P-.2857L	11.109 (282.2)	17.188 (436.6)	4.016 (102.0)	3.250 (82.6)	2.183 (55.4)	2.328 (59.1)
52-13				18.188 (462.0)			2.308 (58.6)	2.453 (62.3)

Dimensions are in inches (mm).



Rev. 1240.1

CL09 C 44-12 4 N

- 1 **BASIC PART NUMBER**
CL09 Wall mount plug
Pin contacts (equipment end)
Includes backshell, gasket, cover
- 2 **MATERIAL & FINISH**
C Aluminum, olive drab cadmium
(Conductive for AC applications)
N Aluminum, anodized finish
(Non-conductive for DC applications)
- 3 **SHELL SIZE & INSERT PATTERN**
See Insert Arrangement Drawings, p. M-11
- 4 **MASTER KEYWAY POSITION**
Power requirements determine master key/keyway
(See Master Key/Keyway Position table, p. M-10)
- 5 **ALTERNATE ROTATION**
N NORMAL or W, X, Y, Z, see p. M-10 for availability

Note: See part builder (p. M-9) for complete information.



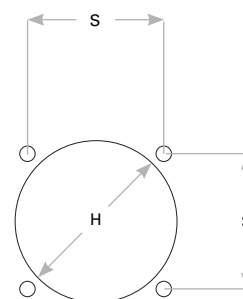
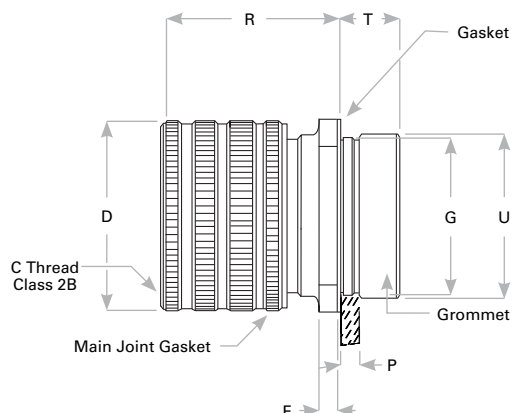
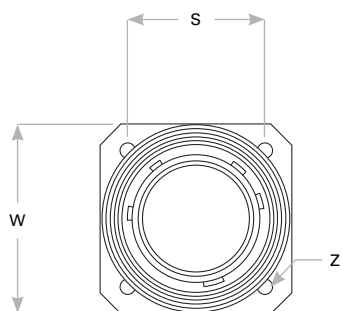
Plug for panel mounting

Designed for panel mounting on equipment receiving power. It mates with a cable mount receptacle supplying power. The included gasket seals the mounting location and ensures environmental protection. A cover keeps connector sealed, and contacts safe from harm when the connector is disconnected.

Plug Dimensions

Shell Size	W	Z	C Thread Class 2B	R	F	D	T	U	G	S	H
28	2.375 (60.3)	.177 (4.5)	2.000-.1428P-.2857L	2.639 (67.0)	.312 (7.9)	2.312 (58.7)	.959 (24.4)	2.000 (50.8)	1.938 (49.2)	1.844 (46.8)	1.976 (50.2)
32	2.625 (66.7)	.209 (5.3)	2.250-.1428P-.2857L	2.639 (67.0)	.312 (7.9)	2.562 (65.1)	.959 (24.4)	2.250 (57.2)	2.188 (55.6)	2.062 (52.4)	2.228 (56.6)
44	3.375 (85.7)	.281 (7.1)	3.000-.1428P-.2857L	2.998 (76.1)	.312 (7.9)	3.531 (89.7)	1.021 (25.9)	3.125 (79.4)	3.062 (77.8)	2.812 (71.4)	3.102 (78.8)
52	3.875 (98.4)	.281 (7.1)	3.500-.1428P-.2857L	2.998 (76.1)	.312 (7.9)	4.016 (102.0)	1.021 (25.9)	3.625 (92.1)	3.562 (90.5)	3.156 (80.2)	3.602 (91.5)

Dimensions are in inches (mm).



Panel Cut-Out

Wall Mount Receptacle

CL Series • High-Power Connectors



Panel mounted receptacle

A panel mounted receptacle is designed for generators or other power modules supplying power. An included gasket seals the mounting location while a cover protects contacts and coupling threads from environmental hazards.

CL00 C 44-12 4 N

- 1

2

3

4

5
- 1

BASIC PART NUMBER
CL00 Wall mount receptacle
Socket contacts (power source)
Includes backshell, gasket, cover
- 2

MATERIAL & FINISH
C Aluminum, olive drab cadmium
(Conductive for AC applications)
N Aluminum, anodized finish
(Non-conductive for DC applications)
- 3

SHELL SIZE & INSERT PATTERN
See Insert Arrangement Drawings, p. M-11
- 4

MASTER KEYWAY POSITION
Power requirements determine master key/keyway
(See Master Key/Keyway Position table, p. M-10)
- 5

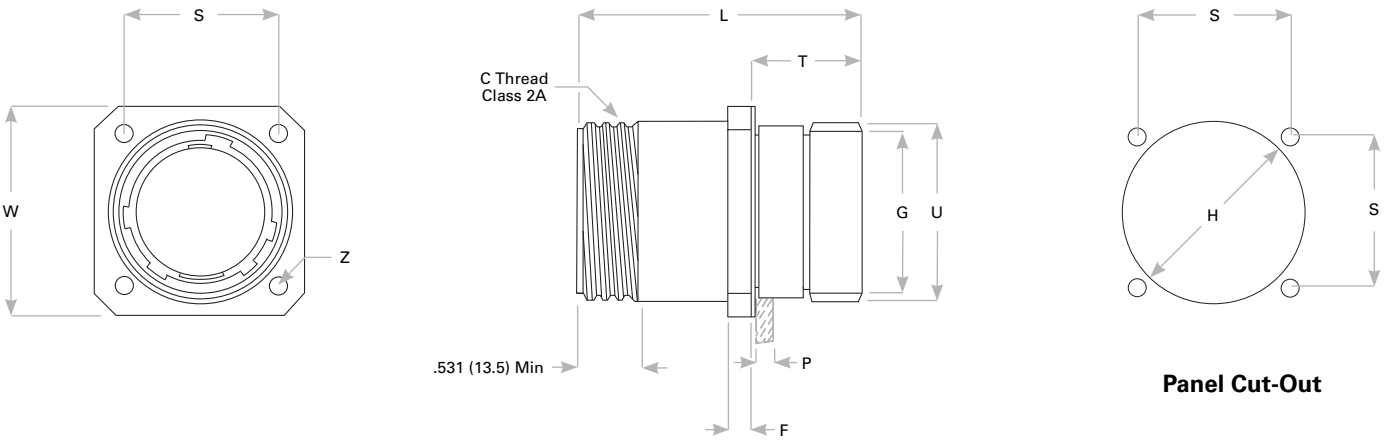
ALTERNATE ROTATION
N NORMAL or W, X, Y, Z, see p. M-10 for availability

Note: See part builder (p. M-9) for complete information.

Receptacle Dimensions

Shell Size	W	Z	C Thread Class 2A	L	F	T	U	G	S	H
28	2.375 (60.3)	.177 (4.5)	2.000-.1428P-.2857L	3.564 (90.6)	.312 (7.9)	1.376 (35.0)	2.000 (50.8)	1.938 (49.2)	1.844 (46.8)	1.976 (50.2)
32	2.625 (66.7)	.209 (5.3)	2.250-.1428P-.2857L	3.564 (90.6)	.312 (7.9)	1.376 (35.0)	2.250 (57.2)	2.188 (55.6)	2.062 (52.4)	2.228 (56.6)
44	3.375 (85.7)	.281 (7.1)	3.000-.1428P-.2857L	3.970 (100.8)	.312 (7.9)	1.438 (36.5)	3.125 (79.4)	3.062 (77.8)	2.812 (71.4)	3.102 (78.8)
52	3.875 (98.4)	.281 (7.1)	3.500-.1428P-.2857L	3.970 (100.8)	.312 (7.9)	1.438 (36.5)	3.625 (92.1)	3.562 (90.5)	3.156 (80.2)	3.602 (91.5)

Dimensions are in inches (mm).



Panel Cut-Out

CL01 C 44-12 4 N

- 1 **BASIC PART NUMBER**
CL01 Cable mount receptacle
 Socket contacts (power source)
 Includes backshell, cable grip, gland, cover
- 2 **MATERIAL & FINISH**
C Aluminum, olive drab cadmium
 (Conductive for AC applications)
N Aluminum, anodized finish
 (Non-conductive for DC applications)
- 3 **SHELL SIZE & INSERT PATTERN**
 See Insert Arrangement Drawings, p. M-11
- 4 **MASTER KEYWAY POSITION**
 Power requirements determines master key/keyway
 (See Master Key/Keyway Position table, p. M-10)
- 5 **ALTERNATE ROTATION**
N NORMAL or W, X, Y, Z, see p. M-10 for availability

Note: See part builder (p. M-9) for complete information.



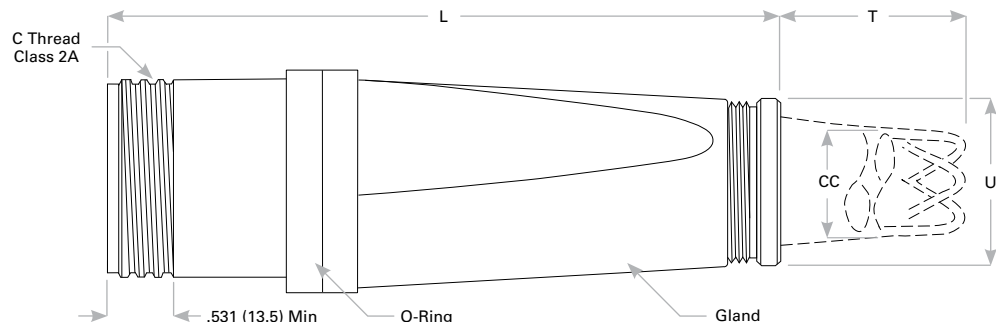
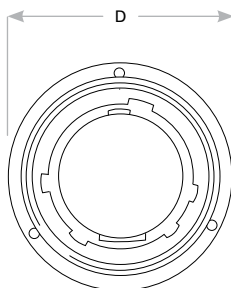
Cable mount power connector

A cable mount receptacle is used to supply power to equipment. The included metal backshell provides protection from rough handling and harsh environments. The connector also includes a protective cover and a cable grip for strain relief with heavily jacketed cables.

Receptacle Dimensions

Shell Size	D	C Thread Class 2B	L	T	U	CC Cable Clearance	
						Min	Max
28-12	2.439 (62.0)	2.000-.1428P-.2857L	8.156 (207.2)	7.188 (182.6)	2.000 (50.8)	.922 (23.4)	1.047 (26.6)
28-13				7.188 (182.6)		1.005 (25.5)	1.130 (28.7)
32-04				7.188 (182.6)		.844 (21.4)	.969 (24.6)
32-05, 32-12	2.689 (68.3)	2.250-.1428P-.2857L	8.156 (207.2)	7.188 (182.6)	2.000 (50.8)	1.005 (25.5)	1.130 (28.7)
32-13				8.688 (220.7)		1.217 (30.9)	1.342 (34.1)
44-02				10.688 (271.5)		1.187 (30.1)	1.312 (33.3)
44-03	3.667 (93.1)	3.000-.1428P-.2857L	10.125 (257.2)	9.688 (246.1)	2.500 (63.5)	1.313 (33.4)	1.438 (36.5)
44-12				10.688 (271.5)		1.391 (35.3)	1.516 (38.5)
44-13				12.688 (322.3)		1.547 (39.2)	1.672 (42.5)
44-51				11.688 (296.9)		1.609 (40.9)	1.734 (44.0)
52-12				17.188 (436.6)		2.183 (55.4)	2.328 (59.1)
52-13	4.167 (105.8)	3.500-.1428P-.2857L	11.062 (281.0)	18.188 (462.0)	3.250 (82.6)	2.308 (58.6)	2.453 (62.3)

Dimensions are in inches (mm).



Protective Covers

CL Series • High-Power Connectors



CLCP - 44 C

- 1

2

3
- 1

BASIC PART NUMBER

CLCP Plug cover

CLCR Receptacle cover
- 2

SHELL SIZE

See Protective Cover Dimensions table below
- 3

MATERIAL & FINISH

C Aluminum, olive drab cadmium
(Conductive for AC applications)

N Aluminum, anodized finish
(Non-conductive for DC applications)

Note: See part builder (p. M-9) for additional kit options.

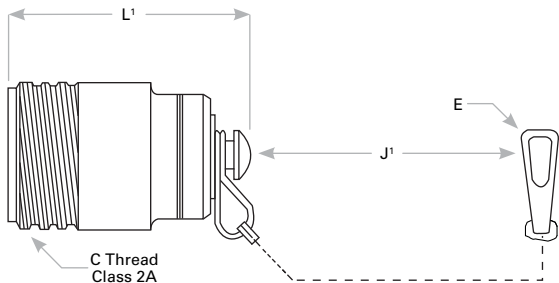
Protect contacts and coupling threads

Connectors should always have a cover to protect contacts and coupling threads from physical and environmental abuse. A sash chain keeps covers close at hand when needed. All CL Series connectors come with a matching protective cover.

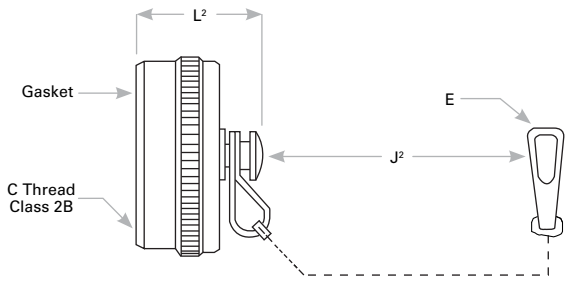
Protective Cover Dimensions

Shell Size	C Thread Class 2A	L ¹	E	J ¹ Chain Length	C Thread Class 2B	L ²	J ² Chain Length
28	2.000-.1428P-.2857L	2.266 (57.6)	.177 (4.5)	7.500 (190.5)	2.000-.1428P-.2857L	.969 (24.6)	6.000 (152.4)
32	2.250-.1428P-.2857L	2.266 (57.6)	.209 (5.3)	6.000 (152.4)	2.250-.1428P-.2857L	.969 (24.6)	4.500 (114.3)
44	3.000-.1428P-.2857L	2.484 (63.1)	.281 (7.1)	8.500 (215.9)	3.000-.1428P-.2857L	.969 (24.6)	7.500 (190.5)
52	3.500-.1428P-.2857L	2.484 (63.1)	.281 (7.1)	8.500 (215.9)	3.500-.1428P-.2857L	.969 (24.6)	7.500 (190.5)

Dimensions are in inches (mm).



Plug Cover



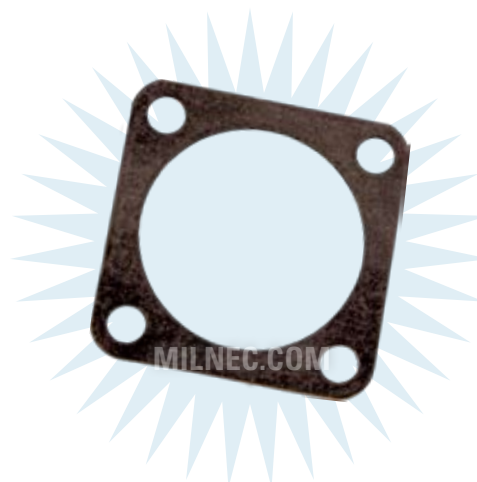
Receptacle Cover

Rev. 1240.1

CLGE - 44

- 1 BASIC PART NUMBER
CLGE Standard gasket
- 2 SHELL SIZE
See Gasket Dimensions table below

Note: See part builder (p. M-9) for additional kit options.



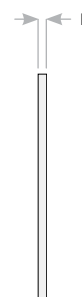
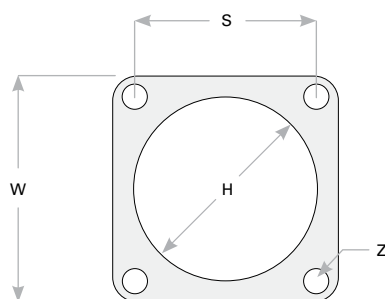
Provide a reliable environmental seal

Mounting gaskets provide a reliable seal between a receptacle and the mounting location, protecting the environmental integrity of your enclosure. Mounting gaskets are provided with all CL Series receptacles.

Gasket Dimensions

Shell Size	W	S	Z	H	F
28	2.375 (60.3)	1.844 (46.8)	.177 (4.5)	1.976 (50.2)	.031 (.8)
32	2.625 (66.7)	2.062 (52.4)	.209 (5.3)	2.228 (56.6)	.031 (.8)
44	3.375 (85.7)	2.812 (71.4)	.281 (7.1)	3.102 (78.8)	.031 (.8)
52	3.875 (98.4)	3.156 (80.2)	.281 (7.1)	3.602 (91.5)	.031 (.8)

Dimensions are in inches (mm).



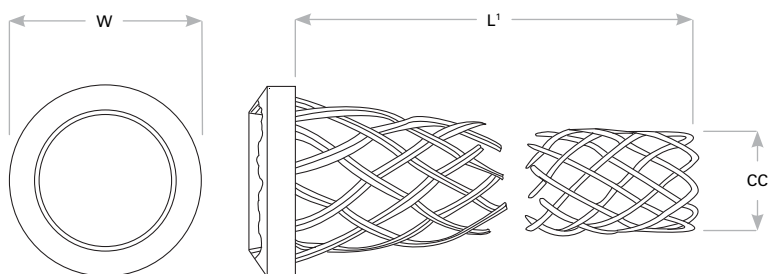
Cable Grip & Sealing Gland

CL Series • High-Power Connectors

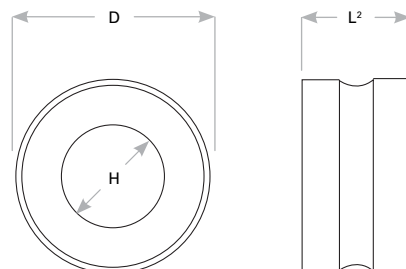
Cable Grip Dimensions

Insert Arrangement	Cable Grip				Sealing Gland			
	CC Dia Cable Clearance		W	L ¹	D	H	L ²	Min Cable Clearance
	Min	Max						
32-04	.832 (21.1)	.969 (24.6)	1.797 (45.6)	8.000 (203.2)	1.805 (45.8)	.969 (24.6)	1.034 (26.3)	.844 (21.4)
28-12	.891 (22.6)	1.047 (26.6)	1.797 (45.6)	8.000 (203.2)	1.805 (45.8)	1.047 (26.6)	1.034 (26.3)	.922 (23.4)
28-13 32-05 32-12	1.003 (25.5)	1.145 (29.1)	1.797 (45.6)	8.000 (203.2)	1.805 (45.9)	1.130 (28.7)	1.034 (26.3)	1.005 (25.5)
32-13	1.185 (30.1)	1.342 (34.1)	1.797 (45.6)	9.500 (241.3)	1.805 (45.9)	1.342 (34.1)	1.034 (26.3)	1.217 (30.9)
44-02	1.156 (29.4)	1.312 (33.3)	2.235 (56.8)	11.500 (292.1)	2.242 (57.0)	1.312 (33.3)	1.160 (29.5)	1.187 (30.1)
44-03	1.282 (32.6)	1.438 (36.5)	2.235 (56.8)	10.500 (266.7)	2.242 (57.0)	1.438 (36.5)	1.160 (29.5)	1.313 (33.4)
44-12	1.360 (34.5)	1.516 (38.5)	2.235 (56.8)	11.500 (292.1)	2.242 (57.0)	1.516 (38.5)	1.160 (29.5)	1.391 (35.3)
44-13	1.531 (38.9)	1.688 (42.9)	2.235 (56.8)	13.500 (342.9)	2.242 (57.0)	1.627 (41.3)	1.160 (29.5)	1.547 (39.3)
44-50 44-51	1.550 (39.4)	1.750 (44.5)	2.235 (56.8)	12.500 (317.5)	2.242 (57.0)	1.734 (44.0)	1.160 (29.5)	1.609 (40.9)
44-52	1.375 (34.9)	1.578 (40.1)	2.235 (56.8)	12.000 (304.8)	2.242 (57.0)	1.562 (39.7)	1.160 (29.5)	1.437 (36.5)
44-56	1.010 (25.7)	1.160 (29.5)	2.235 (56.8)	8.000 (203.2)	2.242 (57.0)	1.150 (29.2)	1.160 (29.5)	1.025 (26.0)
52-12	2.039 (51.8)	2.328 (59.1)	2.922 (74.2)	18.000 (457.2)	2.927 (74.4)	2.328 (59.1)	1.284 (32.6)	2.183 (55.5)
52-13	2.211 (56.2)	2.500 (63.5)	2.922 (74.2)	19.000 (482.6)	2.927 (74.4)	2.453 (62.3)	1.284 (32.6)	2.308 (58.6)

Dimensions are in inches (mm).



Cable Strain Relief



Cable Sealing Gland

