Positronic Industries
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HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

Size 16 and 20 Contacts

Connectors Qualified to MIL-DTL-28748

Contacts Qualified to SAE AS 39029

IEC Publication 807-7

U.L. Recognized, File #E49351

Telecommunication U.L. File #E140980

GMCT Series connectors are heavy-duty, multi-pole, high reliability connectors qualified to MIL-DTL-28748 specifications. Termination styles are crimp, solder cup, straight solder, wrap post, press-fit, and crimp shielded. According to contact size selected, GMCT Series connectors are intermateable with Positronic GAP and GAPL series connectors.

Thirteen contact variants, 9 through 104 poles, are offered. Contacts can have 0.062 inch [1.57mm] diameters, rated to 13 amperes per contact, or have 0.040 inch [1.02mm] diameters, rated to 7.5 amperes per contact. GMCT Series crimp contacts are qualified to SAE AS 39029.

A wide array of mounting, locking, shrouding and polarizing accessories is available for this series. For details, see the Heavy-Duty Rectangular Connector Accessories section.

Due to its many termination styles, its wide range of contact variants, and an array of cable support accessories, GMCT Series connectors are widely utilized in navigational systems, robotics, mainframe and peripheral computers, medical equipment, telecommunications, instrumentation and process control applications.

GMCT SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Qualified to MIL-DTL-28748/3 and MIL-DTL-28748/4. Contacts qualified to SAE AS 39029/34 and SAE AS 39029/35.

UNDERWRITERS LABORATORY RECOGNIZED:

File No. E49351.

INTERNATIONAL STANDARDS:

IEC 807-7.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator: Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.

Removable Contacts: Copper alloy, gold flash over nickel. Military contacts plated 0.000050 inch [1.27 microns] gold over copper. Other finishes available upon request.

Hoods, Cable Adapters: Aluminum with yellow or black anodize.

Shells: Aluminum with yellow or black anodize.

Jackscrew System: Passivated stainless steel.

Polarizing Guides: Copper alloy with nickel plate or passivated stainless steel.

Vibration Locks: Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Removable Contacts: Insert contact to rear face of insulator, release from front face of insulator. Both size 16 [13 amps] and size 20 [7.5 amps] contacts available. Female contact has "closed entry" design for highest reliability.

Contact Retention in Insulator: 20 lbs. [89N] after 10 cycles of contact insertion/extraction.

Contact Termination: Crimp all wire sizes from 14 AWG [2.5 mm²] through 28 AWG [0.08 mm²]. Also, solder cup, press-fit, wrap post and solder printed board terminations. Also, crimp and shielded contacts.

Locking Systems: Friction, vibration locks and jackscrews.

Polarization: Polarized guides, polarized shells and jackscrew system.

Mechanical Operations: 1000 operations per IEC 512-5.

Jackscrews: Standard threads, 6-32 UNC on all sizes, except 60 and 104 connector variant, which uses 8-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating (maximum): Size 16: 0.062 inch [1.57 mm] diameter. - 13 amps maximum.
Size 20: 0.040 inch [1.02 mm] diameter. - 7.5 amps maximum.

Initial Contact Resistance: Size 16 – 0.003 ohms.
Size 20 – 0.007 ohms.

Flash over Voltage: 2700 V.AC [rms].

Test Voltage: Size 16 - 2000 V.AC [rms].
Size 20 - 1200 V.AC [rms].

Insulation Resistance (minimum): 5 G ohms.

Clearance and Creepage Distance (minimum): 0.080 inch [2.03 mm].

Working Temperature: -65°C to 150°C.

Working Voltage: 500 V.AC [rms].

Coaxial Contacts:
Characteristic Impedance: 50 ohms.
Initial Contact Resistance: 0.012 ohms max.

POSITRONIC INDUSTRIES RoHS Compliant Part EU Directive 2002/95/EC

For RoHS options see page 21.

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

TYPICAL MATING ASSEMBLIES

PICTURES ARE 80% OF ACTUAL SIZE

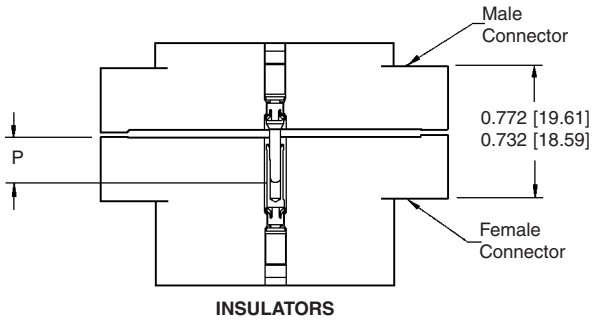
GMCT26F0E100JB

GAP26MDS4T0000

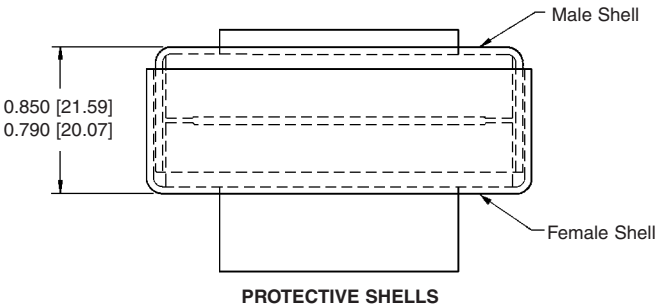
GMCT34F00RAZ0

GMCT34M0TWA00

CONNECTOR MATING DIMENSIONS



INSULATORS



PROTECTIVE SHELLS

P: 0.276 [7.01] MINIMUM PENETRATION OF MALE CONTACT IN "CLOSED ENTRY" DESIGN FEMALE CONTACT TO ENSURE MINIMUM CONTACT RESISTANCE.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
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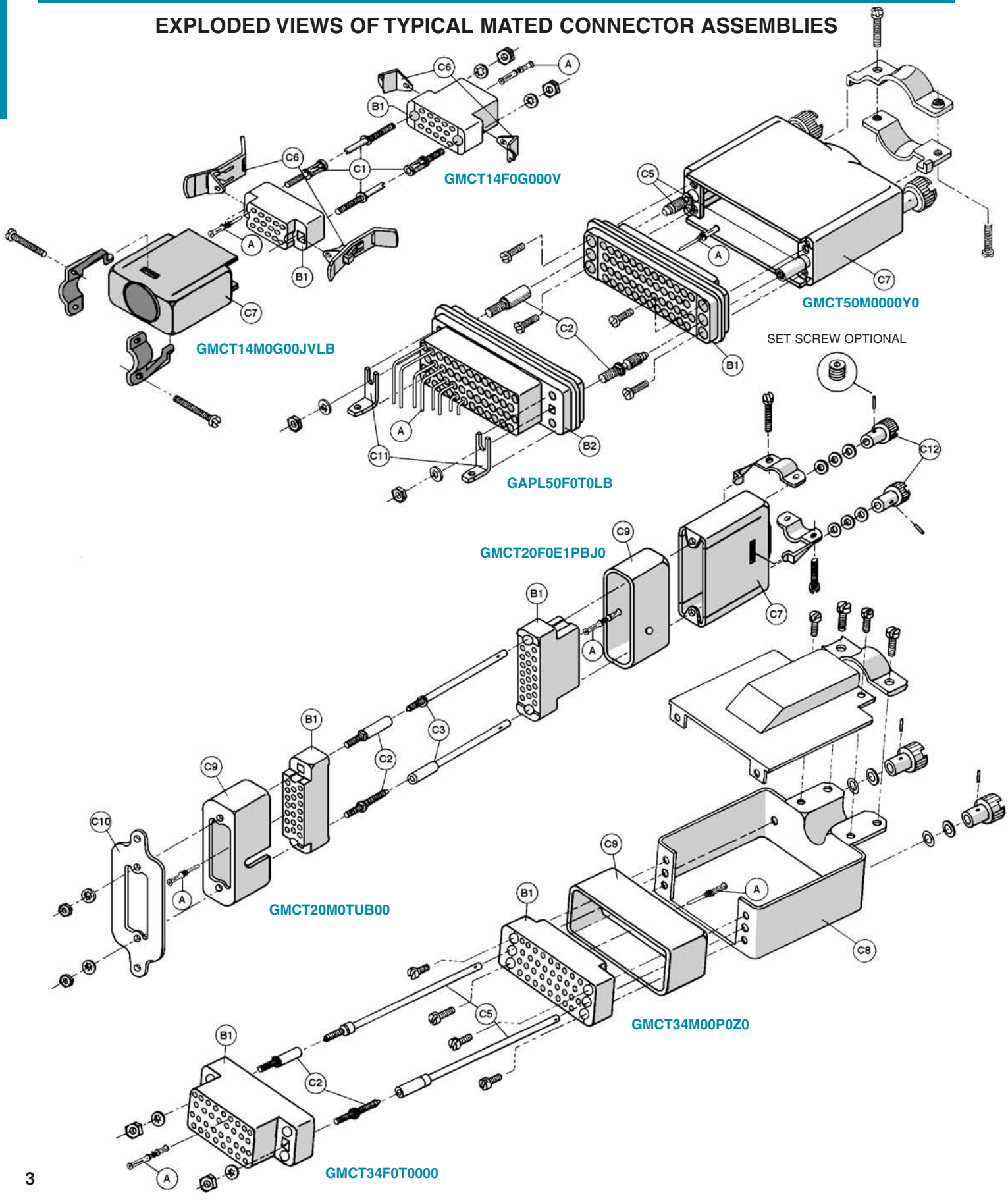
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

EXPLODED VIEWS OF TYPICAL MATED CONNECTOR ASSEMBLIES



HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

CONNECTOR COMPONENT DESCRIPTION AND TERMINOLOGY

A - Male and female contacts, size 16 and size 20. Power, signal and shielded. Terminations are crimp, solder cup, wrap post, printed board straight solder and press-fit.

B1 - Unloaded connector insulators, male and female. Insulator retention system retains all contact termination types. Insulator may be used as a free or fixed connector.

B2 - Loaded connector insulators, male and female. Insulators may be preloaded per customer requirements with contacts having terminations of 90° or straight solder printed board mount, wrap post and press-fit. Insulator contact positions may be selectively loaded with contacts. Unloaded insulator contact positions remain unloaded and reserved for future use. Connectors are normally fixed panel or printed board connectors.

C1 - Polarizing guides, male and female, ensure correct alignment and coupling of male and female connectors. They may also be used for keying when used in corner positions of connector variants 34, 42, 50, 60, 66, 75 and 104 poles.

C2 - Fixed jackscrews are the stationary threaded members of the jackscrew system. Threaded pilots and sockets of the jackscrew system also provide connector polarization to ensure correct connector coupling.

C3 - Long turnable jackscrews, the rotating threaded members of the jackscrew system, are used with a free connector having a hood for cable support. Used on connector variants 9, 14, 18, 20, 21, 26 and 41 poles. Knobs, C-12, may be affixed to turnable jackscrews using either roll pins or set screws.

C4 - Short turnable jackscrews are used to polarize and mechanically assist with the coupling of the male and female connectors when the free connector is not equipped with a hood.

C5 - Long turnable jackscrews, factory assembled to hood (cable adapter) for polarization and mechanical assistance in the coupling of the free connector to the fixed connector. Used on connector variants with 34, 42, 50, 60, 66, 75 and 104 poles.

C6 - Vibration locking system consists of lock tabs on fixed connector and locking levers on free cable connectors. Normally used on connector variants 7, 9, 14, 18, 20, 21 and 26 poles. Locks connectors in coupled position.

C7 - Hoods (cable adapters) are used on the free connector to provide cable support and contact protection. May also mechanically support either the turnable or fixed members of the jackscrew system.

C8 - Side access hoods (cable adapters). Extra strength, quick cable assembly to connector, fixed or free, to provide cable support and relieve stress on contact termination. Supplied with both turnable and fixed jackscrew systems.

C9 - Shells (shrouds), both male and female, protect male and female contacts from damage. Also used to provide additional polarization combinations.

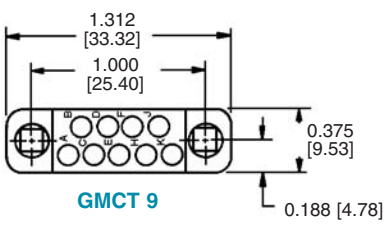
C10 - Mounting plates, with or without float bushings, provide a stronger mechanical method of mounting the fixed connector to a panel. May be used with shells.

C11 - Mounting angle brackets provide a means of mechanically affixing the fixed connector to the printed board.

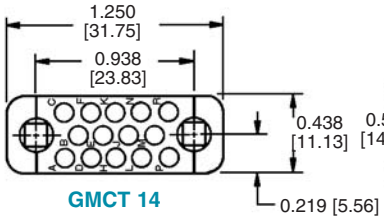
C12 - Knobs of turnable jackscrews may be affixed to the jackscrews by using either the roll pin or set screw method. Specify method desired in step 9 of order numbering system.

INSULATOR DIMENSIONS

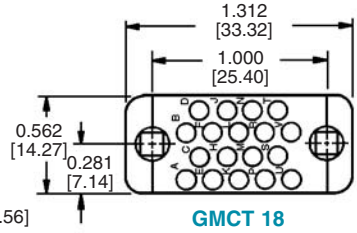
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



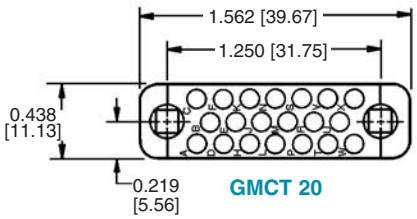
GMCT 9



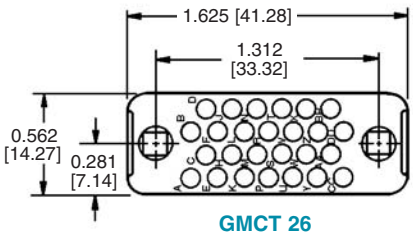
GMCT 14



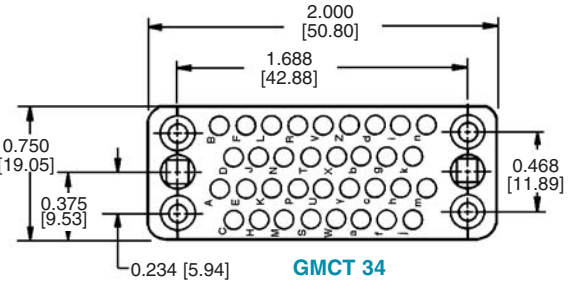
GMCT 18



GMCT 20



GMCT 26



GMCT 34

DIMENSIONS ARE IN INCHES [MILLIMETERS].
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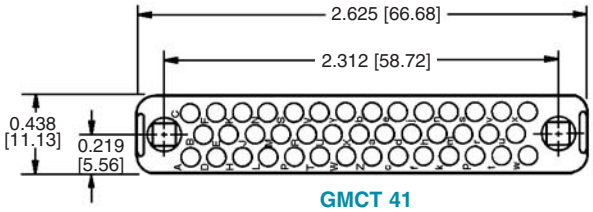
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

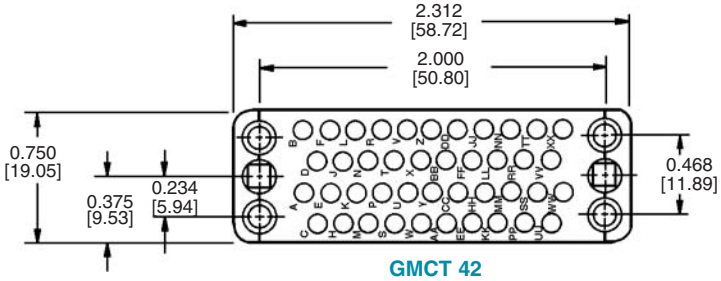
Standard
Density
Rectangular

INSULATOR DIMENSIONS

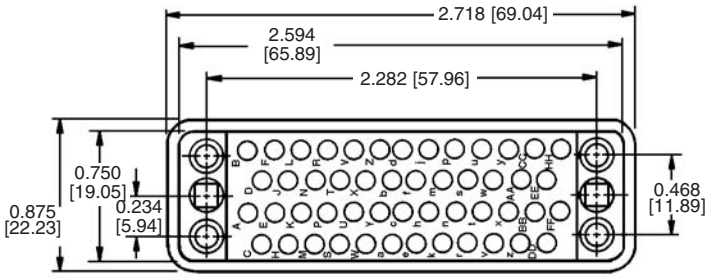
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



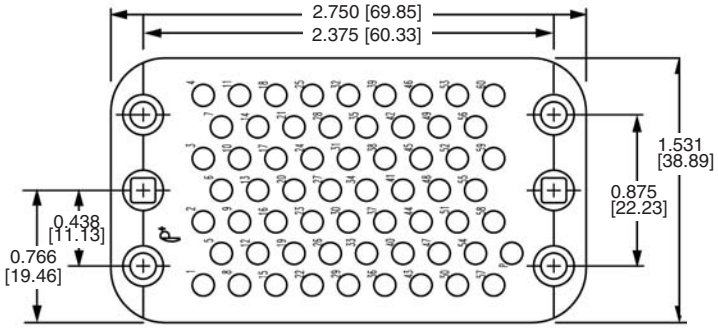
GMCT 41



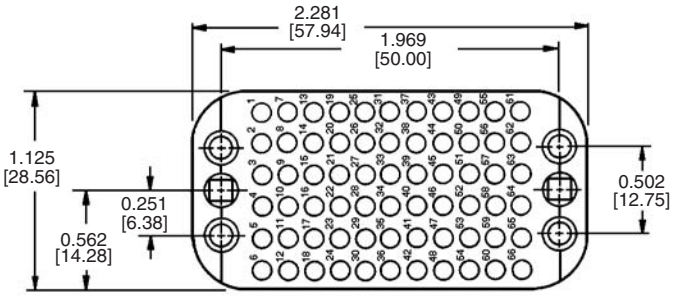
GMCT 42



GMCT 50



GMCT 60*



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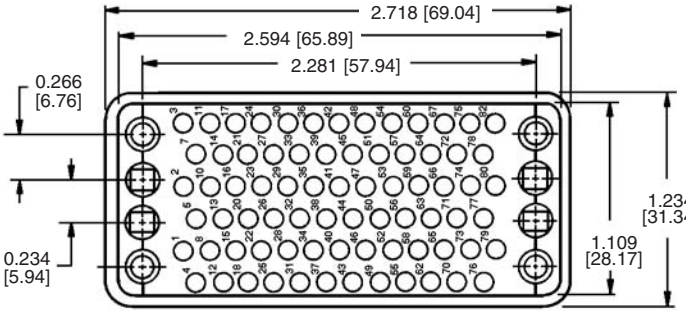
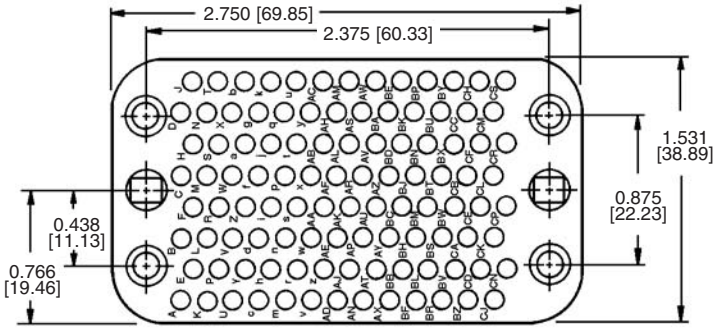


GMCT 75



GMCT 104

***CONTACT TECHNICAL SALES FOR U.L. APPROVAL STATUS OF GMCT60 VARIANT.**

MATERIAL: GLASS FILLED DIALLYL PHTHALATE PER ASTM-D-5948 TYPE SDG-F

SEE GMCT SERIES PRINTED BOARD HOLE PATTERN PAGE FOR CONNECTOR VARIANT CONTACT HOLE POSITIONS

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

INSULATOR DIMENSIONS

FIGURE 1

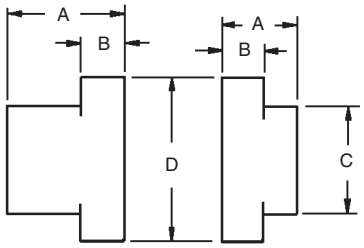
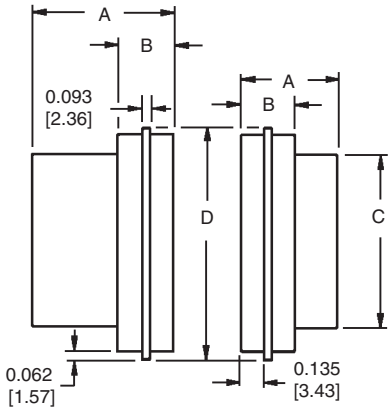


FIGURE 2



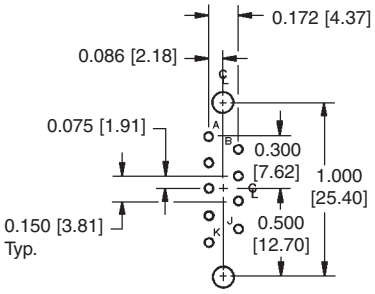
MATERIAL: GLASS FILLED DIALLYL PHTHALATE PER ASTM-D-5948 TYPE SDG-F

CATALOG NUMBER	FIGURE	A	B	C	D
GMCT9F	1	0.856 [21.74]	0.370 [9.40]	0.810 [20.57]	1.312 [33.32]
GMCT9M	1	0.511 [12.98]	0.370 [9.40]	0.810 [20.57]	1.312 [33.32]
GMCT14F	1	0.856 [21.74]	0.370 [9.40]	0.778 [19.76]	1.250 [31.75]
GMCT14M	1	0.511 [12.98]	0.370 [9.40]	0.778 [19.76]	1.250 [31.75]
GMCT18F	1	0.856 [21.74]	0.370 [9.40]	0.772 [19.61]	1.312 [33.32]
GMCT18M	1	0.511 [12.98]	0.370 [9.40]	0.772 [19.61]	1.312 [33.32]
GMCT20F	1	0.856 [21.74]	0.370 [9.40]	1.072 [27.23]	1.562 [39.67]
GMCT20M	1	0.511 [12.98]	0.370 [9.40]	1.072 [27.23]	1.562 [39.67]
GMCT26F	1	0.856 [21.74]	0.370 [9.40]	1.072 [27.23]	1.625 [41.28]
GMCT26M	1	0.511 [12.98]	0.370 [9.40]	1.072 [27.23]	1.625 [41.28]
GMCT34F	1	0.856 [21.74]	0.370 [9.40]	1.375 [34.93]	2.000 [50.80]
GMCT34M	1	0.511 [12.98]	0.370 [9.40]	1.375 [34.93]	2.000 [50.80]
GMCT41F	1	0.856 [21.74]	0.370 [9.40]	2.125 [53.98]	2.625 [66.68]
GMCT41M	1	0.511 [12.98]	0.370 [9.40]	2.125 [53.98]	2.625 [66.68]
GMCT42F	1	0.866 [22.00]	0.370 [9.40]	1.672 [42.47]	2.312 [58.72]
GMCT42M	1	0.525 [13.34]	0.370 [9.40]	1.672 [42.47]	2.312 [58.72]
GMCT50F	2	0.856 [21.74]	0.370 [9.40]	1.972 [50.09]	2.718 [69.04]
GMCT50M	2	0.511 [12.98]	0.370 [9.40]	1.972 [50.09]	2.718 [69.04]
GMCT60F	1	0.856 [21.74]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT60M	1	0.511 [12.98]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT66F	1	0.856 [21.74]	0.370 [9.40]	1.673 [42.49]	2.281 [57.94]
GMCT66M	1	0.525 [13.34]	0.370 [9.40]	1.673 [42.49]	2.281 [57.94]
GMCT75F	2	0.856 [21.74]	0.370 [9.40]	1.980 [50.29]	2.718 [69.04]
GMCT75M	2	0.511 [12.98]	0.370 [9.40]	1.980 [50.29]	2.718 [69.04]
GMCT104F	1	0.856 [21.74]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT104M	1	0.511 [12.98]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

FOR STRAIGHT SOLDER CONTACTS AND COMPLIANT TERMINATION PRESS-FIT CONTACTS
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



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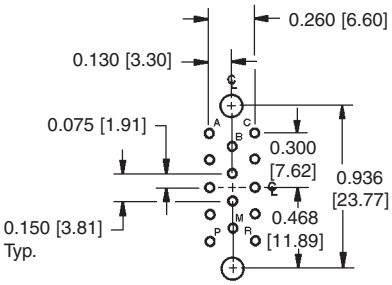

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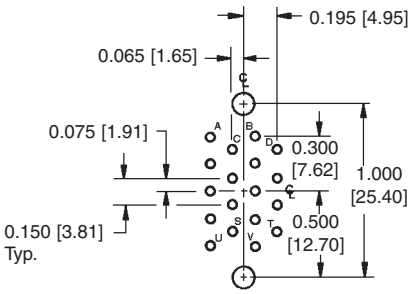

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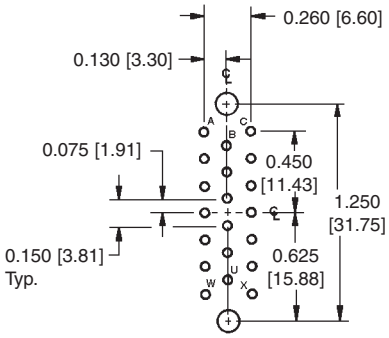

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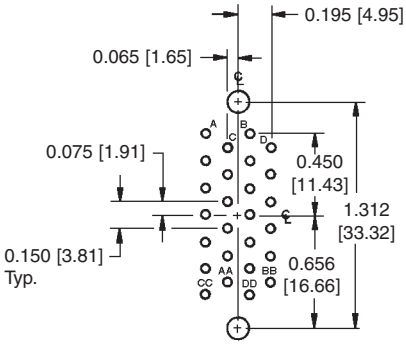

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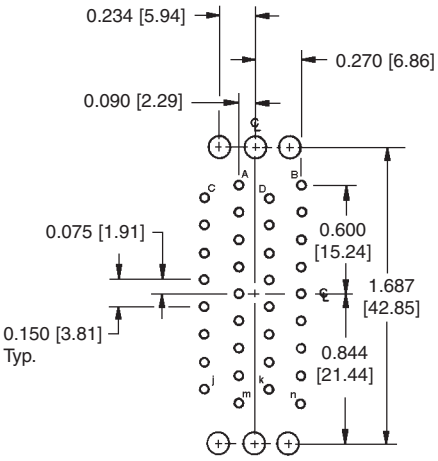

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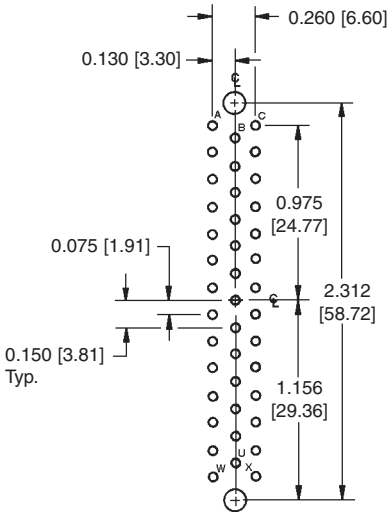

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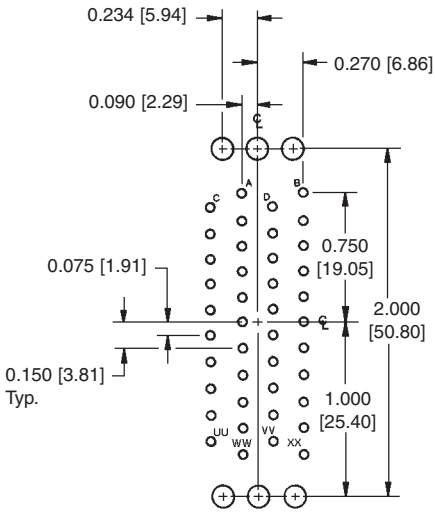


SIZE 42

HOLE IDENTIFICATION FOR REFERENCE ONLY

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 9 THROUGH 50, 66 AND 75. SUGGEST 0.149 [3.78] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 60 AND 104.

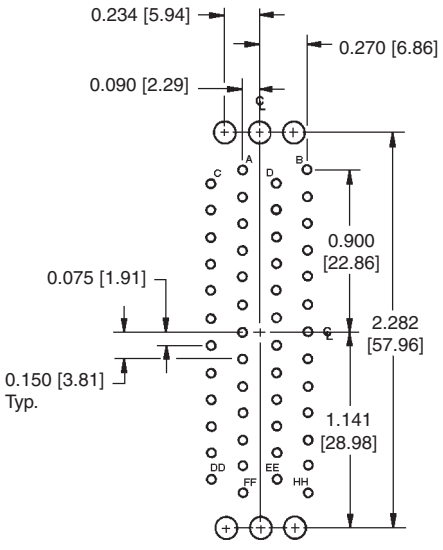
SUGGEST 0.040 [1.02] Ø HOLES IN PRINTED BOARD FOR GMCT SERIES STRAIGHT SOLDER CONTACTS

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT TERMINATION PRESS-FIT CONTACTS, SEE PAGE 13.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

FOR STRAIGHT SOLDER CONTACTS AND COMPLIANT TERMINATION PRESS-FIT CONTACTS
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



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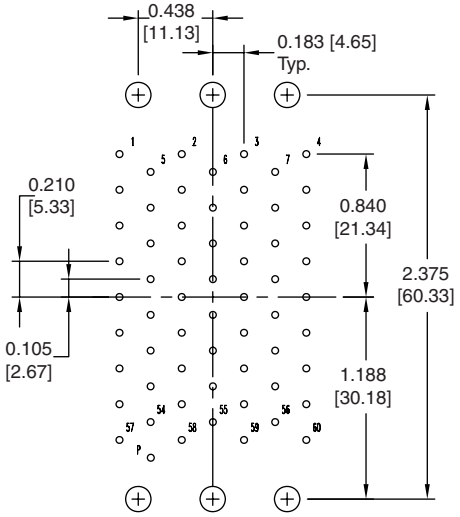

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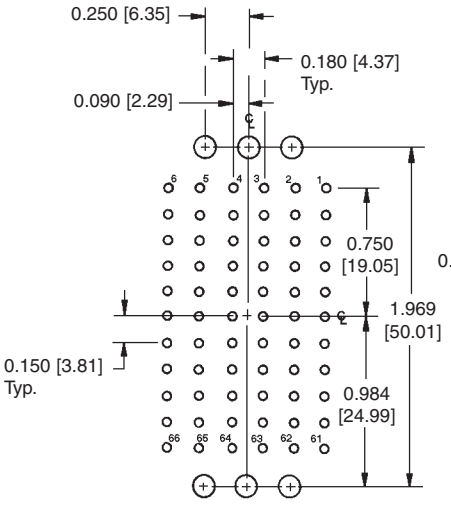

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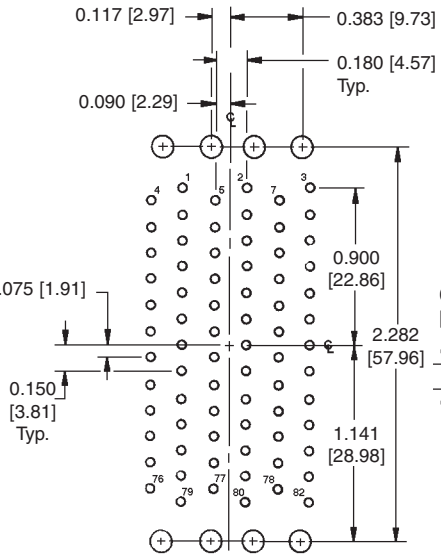
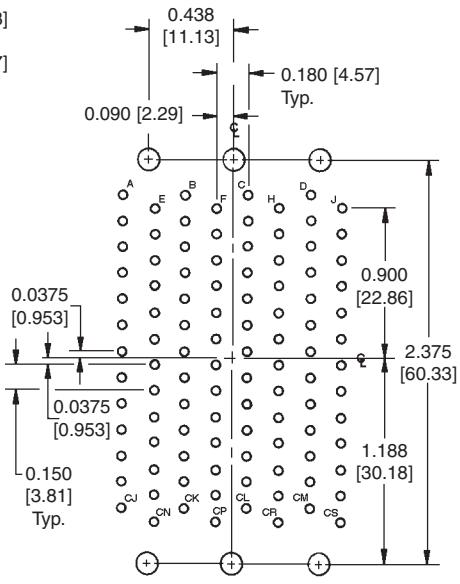


SIZE 75



SIZE 104

HOLE IDENTIFICATION FOR REFERENCE ONLY

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 9 THROUGH 50, 66 AND 75. SUGGEST 0.149 [3.78] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 60 AND 104.

SUGGEST 0.040 [1.02] Ø HOLES IN PRINTED BOARD FOR GMCT SERIES STRAIGHT SOLDER CONTACTS

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT TERMINATION PRESS-FIT CONTACTS, SEE PAGE 13.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

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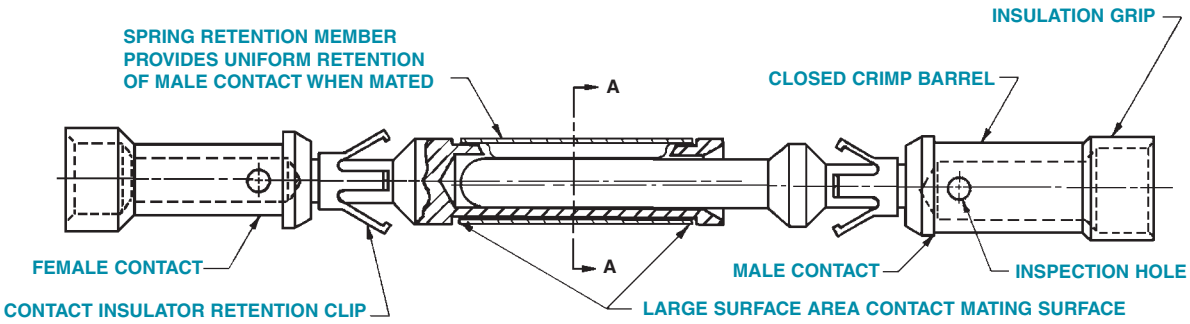
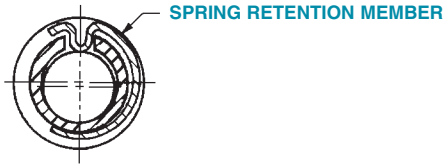
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

"LARGE SURFACE AREA CONTACT MATING SYSTEM"
HIGH RELIABILITY "CLOSED ENTRY" DESIGN

PRECISION MACHINED, SOLID COPPER ALLOY





SECTION A-A
ENLARGED

All contacts of the GMCT series connector family utilize the "Large Surface Area (L.S.A.) Contact Mating System." The "L.S.A. Contact Mating System" insures the lowest level of contact resistance during mechanical endurance tests of 1000 coupling cycles or more. Contact insertion/withdrawal forces remain substantially the same during the life of the connector.

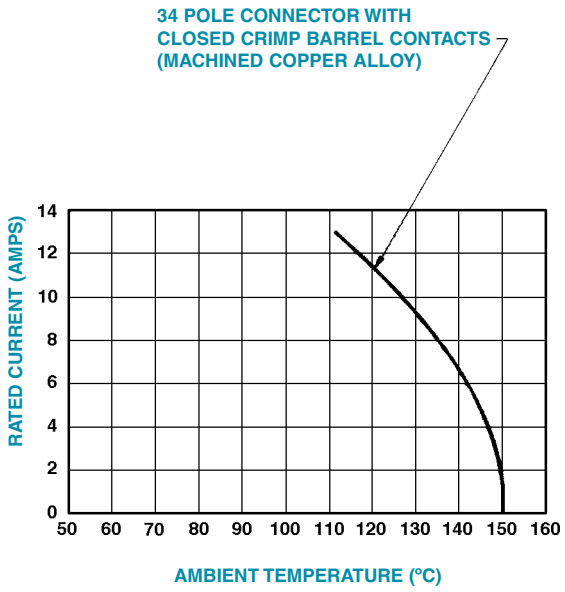
The GMCT series uses only "Closed Entry" design female contacts. The "Closed Entry" design prevents probe damage to the female contacts, and will not allow the female contact to accept misaligned or bent male contacts.

All GMCT series contacts are precision machined from solid, copper alloy barstock. They are durable, smooth in construction, and have greater amperage capacities than hollow, sheet metal style contacts. This is graphically illustrated by the amperage-temperature rise curves developed for the 34 pole GMCT insulator using 16 AWG [1.5 mm^2] wire [see diagram page 10]. The precision machined, removable contact also has a more durable insulator retention system than the hollow, sheet metal style contact. After ten removal cycles from its insulator, the precision machined contact will withstand axial forces in excess of 20 lbs. [89N]. In comparison, the hollow, sheet metal style contact is limited to 10 lbs. [44.5N] after ten removal cycles from its insulator retention system.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

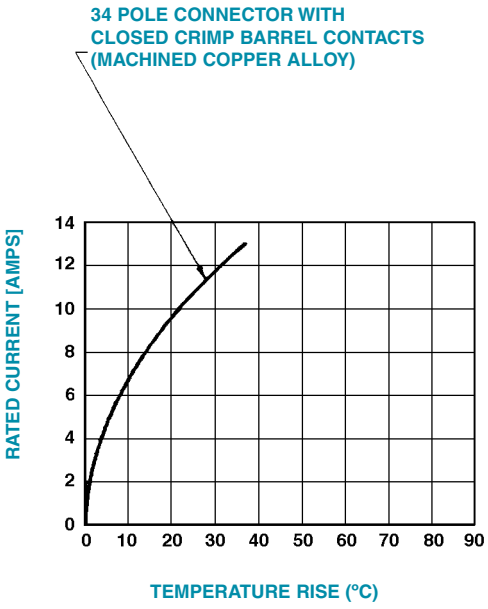
CURRENT-TEMPERATURE DERATING CURVE

(TESTED PER IEC PUBLICATION 512-3, TEST 5b)



CURVE DEVELOPED USING SIZE 16 CONTACT WITH 16 AWG (1.5 mm^2) SIZE WIRE

TEMPERATURE RISE CURVE



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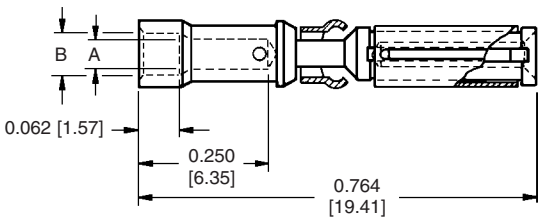
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

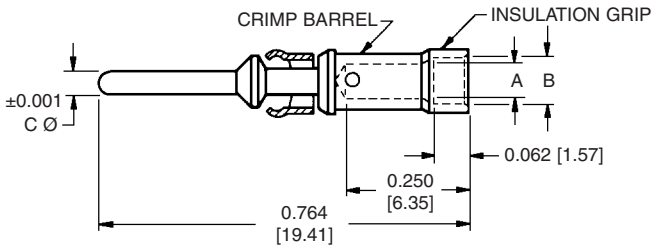
CRIMP CONTACTS

CLOSED CRIMP BARREL WITH INSULATION GRIP (SUPPORT)
PRECISION MACHINED, SOLID COPPER ALLOY

FEMALE CONTACT ("CLOSED ENTRY" DESIGN)



MALE CONTACT



POWER AND SIGNAL CONTACTS

PART NUMBER	WIRE SIZE AWG/[mm²]	A	B	NOMINAL RATING
FC114N2	14 / 16 [2.5/1.5]	0.081 [2.06]	0.105 [2.67]	13 AMP
FC116N2	16 / 18 [1.5/1.0]	0.067 [1.70]	0.093 [2.36]	13 AMP
FC120N2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	13 AMP
FC124N2	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	13 AMP
FC126N2	26 / 28 / 30 / 32 [0.12-0.03]	0.025 [0.64]	0.046 [1.17]	13 AMP
FC216N2	16 / 18 [1.5/0.8]	0.067 [1.70]	0.093 [2.36]	7.5 AMP
FC220N2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	7.5 AMP
FC224N2	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	7.5 AMP

PART NUMBER	WIRE SIZE AWG/[mm²]	A	B	C	NOMINAL RATING
MC114N	14 / 16 [2.5/1.5]	0.081 [2.06]	0.105 [2.67]	0.062 [1.57]	13 AMP
MC116N	16 / 18 [1.5/1.0]	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	13 AMP
MC120N	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	0.062 [1.57]	13 AMP
MC124N	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	0.062 [1.57]	13 AMP
MC126N	26 / 28 / 30 / 32 [0.12-0.03]	0.025 [0.64]	0.046 [1.17]	0.062 [1.57]	13 AMP
MC216N	16 / 18 [1.5/0.8]	0.067 [1.70]	0.093 [2.36]	0.040 [1.02]	7.5 AMP
MC220N	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	0.040 [1.02]	7.5 AMP
MC224N	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	0.040 [1.02]	7.5 AMP

MATERIAL: COPPER ALLOY FINISH:
GOLD FLASH OVER NICKEL

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

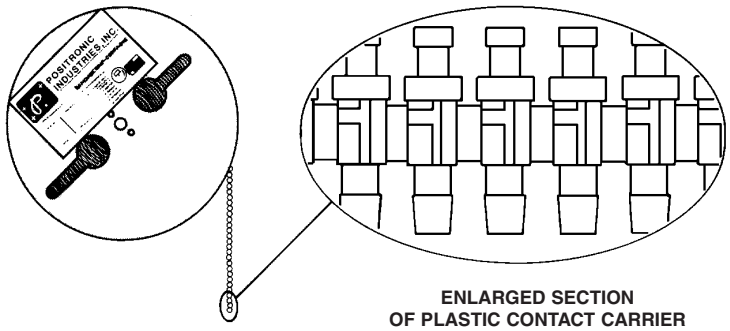
FC120N2

MC120N

For GMCT crimping information, see page 16 and 17.

Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FC220N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MC120N-50

REELS FOR AUTOMATIC CRIMP TOOLS



ENLARGED SECTION OF PLASTIC CONTACT CARRIER

REELED CONTACTS

Contacts may be supplied on plastic carriers, packaged on reels of 2,000 contacts for use with bench mounted automatic strip and crimp tool part number 9550-0 for contact sizes 14 AWG [2.5 mm²] through 24 AWG [0.25 mm²] or part number 9550-1 for contact size 26 AWG [0.12 mm²]. The same type carrier is used for both male and female contacts of the same size and type, and requires no change in crimping tool.

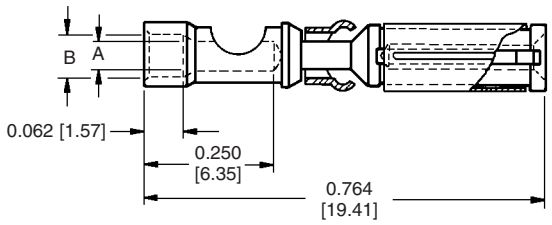
All male and female crimp style contacts can be ordered in reels by adding the letter "R" after the contact part number, such as MC116NR for a male contact and FC120N2R for a female contact. Wire sizes 14 AWG [2.5 mm²] to 28 AWG [0.08 mm²] can be accommodated by the crimping.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

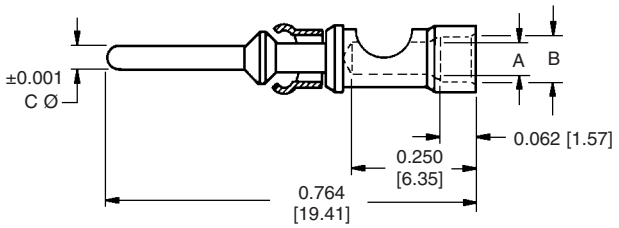
SOLDER CUP CONTACTS

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



PART NUMBER	WIRE SIZE MAX.	A	B	NOMINAL RATING
FS114N2	14 AWG [2.5 mm²]	0.081 [2.06]	0.105 [2.67]	13 AMP
FS116N2	16 AWG [1.5 mm²]	0.067 [1.70]	0.093 [2.36]	13 AMP
FS120N2	20 AWG [0.5 mm²]	0.045 [1.14]	0.065 [1.65]	13 AMP
FS124N2	24 AWG [0.25 mm²]	0.027 [0.69]	0.055 [1.40]	13 AMP
FS216N2	16 AWG [1.5 mm²]	0.067 [1.70]	0.093 [2.36]	7.5 AMP
FS220N2	20 AWG [0.5 mm²]	0.045 [1.14]	0.065 [1.65]	7.5 AMP
FS224N2	24 AWG [0.25 mm²]	0.027 [0.69]	0.055 [1.40]	7.5 AMP

MALE CONTACT



PART NUMBER	WIRE SIZE MAX.	A	B	C	NOMINAL RATING
MS114N	14 AWG [2.5 mm²]	0.081 [2.06]	0.105 [2.67]	0.062 [1.57]	13 AMP
MS116N	16 AWG [1.5 mm²]	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	13 AMP
MS120N	20 AWG [0.5 mm²]	0.045 [1.14]	0.065 [1.65]	0.062 [1.57]	13 AMP
MS124N	24 AWG [0.25 mm²]	0.027 [0.69]	0.055 [1.40]	0.062 [1.57]	13 AMP
MS216N	16 AWG [1.5 mm²]	0.067 [1.70]	0.093 [2.36]	0.040 [1.02]	7.5 AMP
MS220N	20 AWG [0.5 mm²]	0.045 [1.14]	0.065 [1.65]	0.040 [1.02]	7.5 AMP
MS224N	24 AWG [0.25 mm²]	0.027 [0.69]	0.055 [1.40]	0.040 [1.02]	7.5 AMP

MATERIAL: COPPER ALLOY
FINISH: GOLD FLASH OVER NICKEL

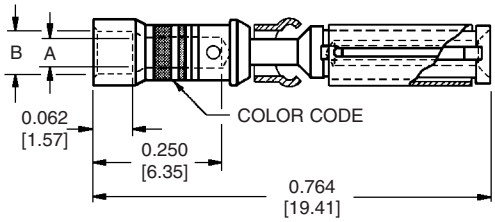
Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FS220N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MS120N-50

CONTACTS ARE NOT SUPPLIED WITH CONNECTORS AND MUST BE ORDERED SEPARATELY

MILITARY CRIMP CONTACTS

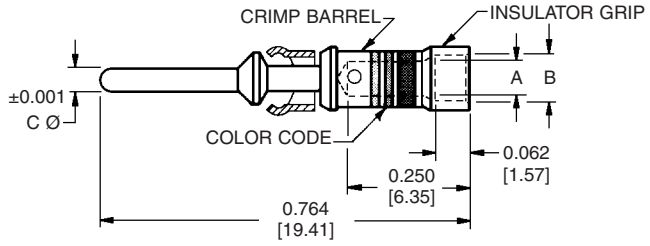
QUALIFIED TO SAE AS 39029/34 AND SAE AS 39029/35

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



PART NUMBER	A	B	COLOR CODE
M39029/35-274	0.045 [1.14]	0.068 [1.73]	RED/ VIOLET/ YELLOW
M39029/35-275	0.045 [1.14]	0.068 [1.73]	RED/ VIOLET/ GREEN
M39029/35-276	0.067 [1.70]	0.093 [2.36]	RED/ VIOLET/ BLUE

MALE CONTACT



PART NUMBER	A	B	C	COLOR CODE
M39029/34-271	0.045 [1.14]	0.068 [1.73]	0.040 [1.02]	RED/ VIOLET/ BROWN
M39029/34-272	0.045 [1.14]	0.068 [1.73]	0.062 [1.57]	RED/ VIOLET/ RED
M39029/34-273	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	RED/ VIOLET/ ORANGE

MATERIAL: COPPER ALLOY
FINISH: 0.000050 [1.27 MICRONS] GOLD OVER COPPER

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

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HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

COMPLIANT TERMINATION PRESS-FIT CONTACTS

PRECISION MACHINED, COPPER ALLOY

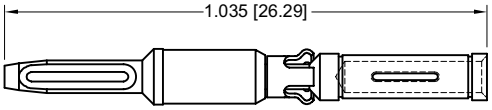
MATERIAL: COPPER ALLOY

FINISH: GOLD FLASH OVER NICKEL

CONTACTS ARE NOT SUPPLIED WITH CONNECTORS AND MUST BE ORDERED SEPARATELY.

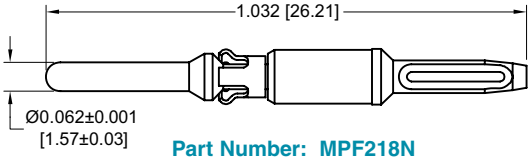
SEE PAGE 7 FOR PRINTED BOARD CONTACT HOLE POSITIONS.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



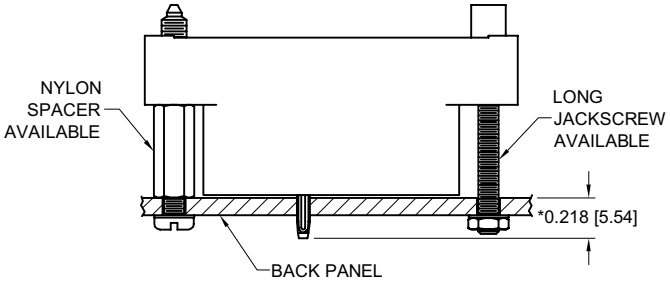
Part Number: FPF218N2

MALE CONTACT

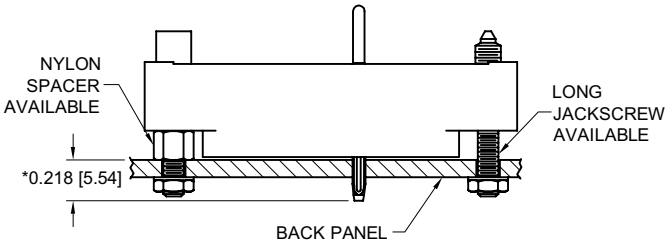


Part Number: MPF218N

FEMALE CONNECTOR



MALE CONNECTOR

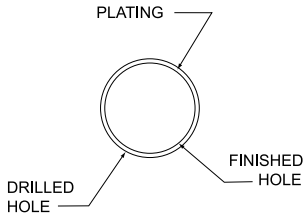


Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel.
Example: FPF218N2-14
add -50 for 0.000050 [1.27 microns] gold over copper.
Example: MPF218N-50

CONSULT TECHNICAL SALES FOR PRESS-FIT INSTALLATION TOOL.
CONSULT TECHNICAL SALES FOR PART NUMBERS FOR THE LONG JACKSCREW OR NYLON SPACER.
***ADDITIONAL CONTACT EXTENSION LENGTHS AVAILABLE.**
CONSULT TECHNICAL SALES FOR AVAILABILITY OF SOLID PRESS-FIT CONTACTS.

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for PBC holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.



PRESS-FIT CONTACT HOLE

Note: For PCB plating compositions not shown, consult Technical Sales.

BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	**CONTACT SIZE / TYPE**	**RECOMMENDED DRILL HOLE SIZE**	**RECOMMENDED PLATING**	**FINISHED HOLE SIZES**
TIN-LEAD SOLDER PCB	**16 BI-SPRING**	ø0.069±0.001 [ø1.750±0.025]	0.0006 [15µ] minimum solder over 0.0010 [25µ] min. copper	ø0.0630+0.0035-0.0024 [ø1.600+0.090-0.060]
RoHS PCB PLATING OPTIONS				
COPPER PCB	**16 BI-SPRING**	ø0.069±0.001 [ø1.750±0.025]	0.0010 [25µ] min. copper	ø0.0630+0.0035-0.0024 [ø1.600+0.090-0.060]
IMMERSION TIN PCB	**16 BI-SPRING**	ø0.069±0.001 [ø1.750±0.025]	0.000033±0.000006 [0.85±0.15µ] immersion tin over 0.0010 [25µ] min. copper	ø0.0630+0.0035-0.0024 [ø1.600+0.090-0.060]
IMMERSION SILVER PCB	**16 BI-SPRING**	ø0.069±0.001 [ø1.750±0.025]	0.000013±0.000007 [0.34±0.17µ] immersion silver over 0.0010 [25µ] min. copper	ø0.0630+0.0035-0.0024 [ø1.600+0.090-0.060]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	**16 BI-SPRING**	ø0.069±0.001 [ø1.750±0.025]	0.000002 [0.05µ] min. immersion gold over 0.000177±0.000059 [4.5±1.5µ] electroless nickel per IPC-4552 over 0.0010 [25µ] min. copper	ø0.0630+0.0035-0.0024 [ø1.600+0.090-0.060]

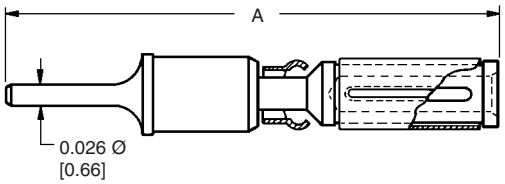
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

STRAIGHT SOLDER CONTACTS

PRECISION MACHINED, SOLID COPPER ALLOY

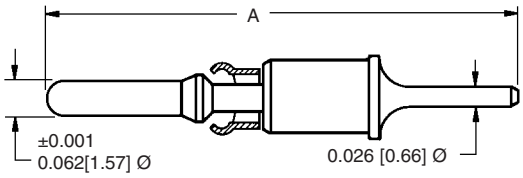
FEMALE CONTACT "CLOSED ENTRY" DESIGN



MATERIAL: COPPER ALLOY

FINISH: GOLD FLASH OVER NICKEL

MALE CONTACT



PART NUMBER	A	B
FDS125N2	0.950 [24.13]	0.125 [3.18]
FDS156N2	0.981 [24.92]	0.156 [3.96]
FDS187N2	1.012 [25.70]	0.187 [4.75]

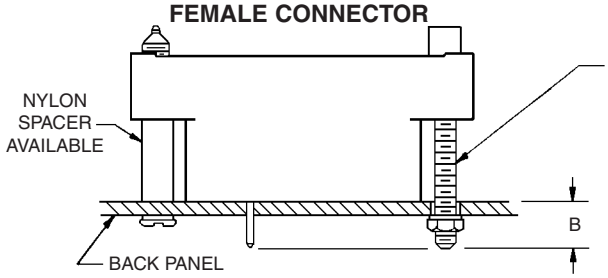
CONSULT TECHNICAL SALES FOR CONTACTS OF DIFFERENT LENGTHS AND TAIL DIAMETERS

UNLESS SPECIFIED OTHERWISE, STRAIGHT SOLDER CONTACTS ARE NOT SUPPLIED WITH CONNECTORS AND MUST BE ORDERED SEPARATELY

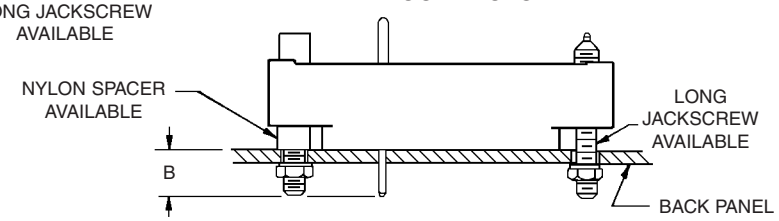
CONTACTS MAY BE INSTALLED IN CONNECTOR TO CUSTOMER ORDER

PART NUMBER	A	B
MDS125N	0.950 [24.13]	0.125 [3.18]
MDS156N	0.981 [24.92]	0.156 [3.96]
MDS187N	1.012 [25.70]	0.187 [4.75]

FEMALE CONNECTOR



MALE CONNECTOR



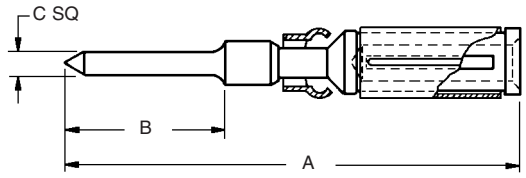
Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FDS156N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MDS187N-50

CONSULT TECHNICAL SALES FOR PART NUMBERS FOR THE LONG JACKSCREW OR NYLON SPACER

WRAP POST CONTACTS

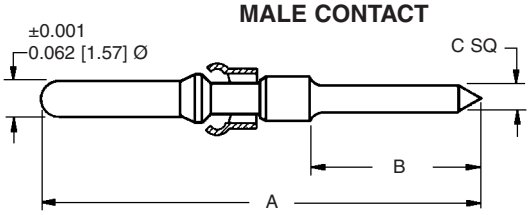
PRECISION MACHINED, SOLID COPPER ALLOY

FEMALE CONTACT "CLOSED ENTRY" DESIGN



CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

MALE CONTACT

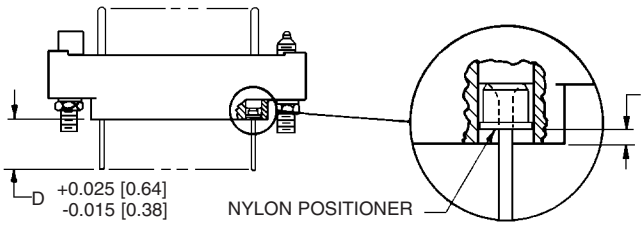


PART NUMBER	A	B	C	D
FW814N2	1.335 [33.91]	0.695 [17.65]	0.025 [0.64]	0.500 [12.70]
FW845N2	1.335 [33.91]	0.695 [17.65]	0.045 [1.14]	0.500 [12.70]

MATERIAL: COPPER ALLOY

FINISH: GOLD FLASH OVER NICKEL

PART NUMBER	A	B	C	D
MW814N	1.335 [33.91]	0.695 [17.65]	0.025 [0.64]	0.500 [12.70]
MW845N	1.335 [33.91]	0.695 [17.65]	0.045 [1.14]	0.500 [12.70]



ORDER POSITIONER 9167-1 WITH THE 0.025 SQ. CONTACT AND 9167-2 WITH THE 0.045 SQ. CONTACT

CONSULT TECHNICAL SALES FOR CONTACTS OF DIFFERENT TAIL LENGTHS

CONSULT TECHNICAL SALES FOR NYLON POSITIONER INSTALLATION TOOL

Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FW814N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MW845N-50

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

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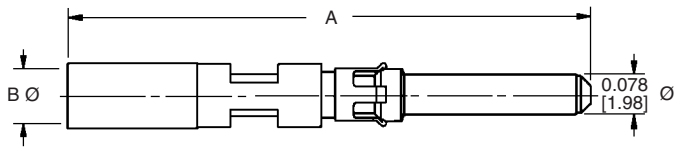
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

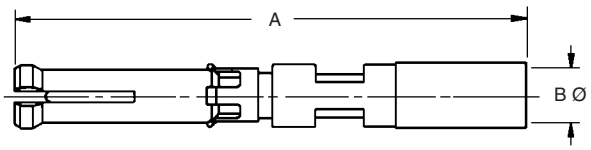
Standard
Density
Rectangular

CRIMP SHIELDED CONTACTS

MALE CONTACT



FEMALE CONTACT



FCS126N2

MCS126N

CONTACT DESIGNATION	PART NUMBER	A	B Ø	CABLE SIZE
MALE	MCS126N	0.993 [25.22]	0.045 [1.14]	RG 178 B/U RG 196 A/U
FEMALE	FCS126N2	0.967 [24.56]	0.045 [1.14]	RG 178 B/U RG 196 A/U
MALE	MCS226N	1.048 [26.62]	0.070 [1.78]	RG 179 B/U RG 316 /U
FEMALE	FCS226N2	1.022 [25.96]	0.070 [1.78]	RG 179 B/U RG 316 /U

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulating Material: (Dielectric) PCTFE.

Inner Contacts: Phosphor bronze, 0.000030 inch [0.75 microns] gold over nickel.

Outer Contacts: Brass and beryllium copper, gold flash over nickel. Other finishes available upon request.

MECHANICAL CHARACTERISTICS:*

Contact Retention In Insulator: 20 lbs. [89N].

Removable Contacts: Rear insertion, front removable.

Insertion Force Per Contact: 8 oz. [2.2N] per contact maximum.

Durability: 100 cycles minimum.

Vibration: 20g from 10 HZ to 500 HZ.

Shock: 30g - 11 ms.

9506-0 CRIMP TOOL

ELECTRICAL CHARACTERISTICS:

MICRO-COAXIAL CONTACTS	Contact/Wire Combinations			
	126N		226N	
	RG178	RG196	RG179	RG316
Characteristic Impedance (ohms)	50	50	75	50
Frequency Range	0-500 MHz			
VSWR				
0 to 200 MHz	1.25			
200 to 500 MHz	1.70		2.25	
Insertion Loss @ 500 MHz	0.2 dB		1.0 dB	

Dielectric Strength At Sea Level: 600 V rms.

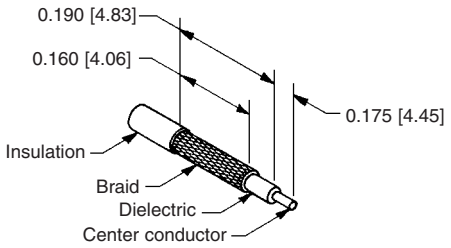
Initial Contact Resistance: 0.012 ohms maximum.

Insulator Resistance: 5 G ohms.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

SHIELDED CABLE STRIP LENGTH



DIMENSIONS ARE IN INCHES [MILLIMETERS].
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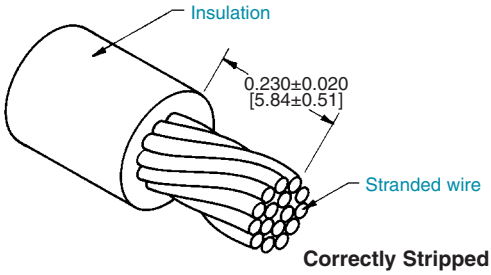
CRIMPING INFORMATION FOR GMCT SERIES CRIMP CONTACTS

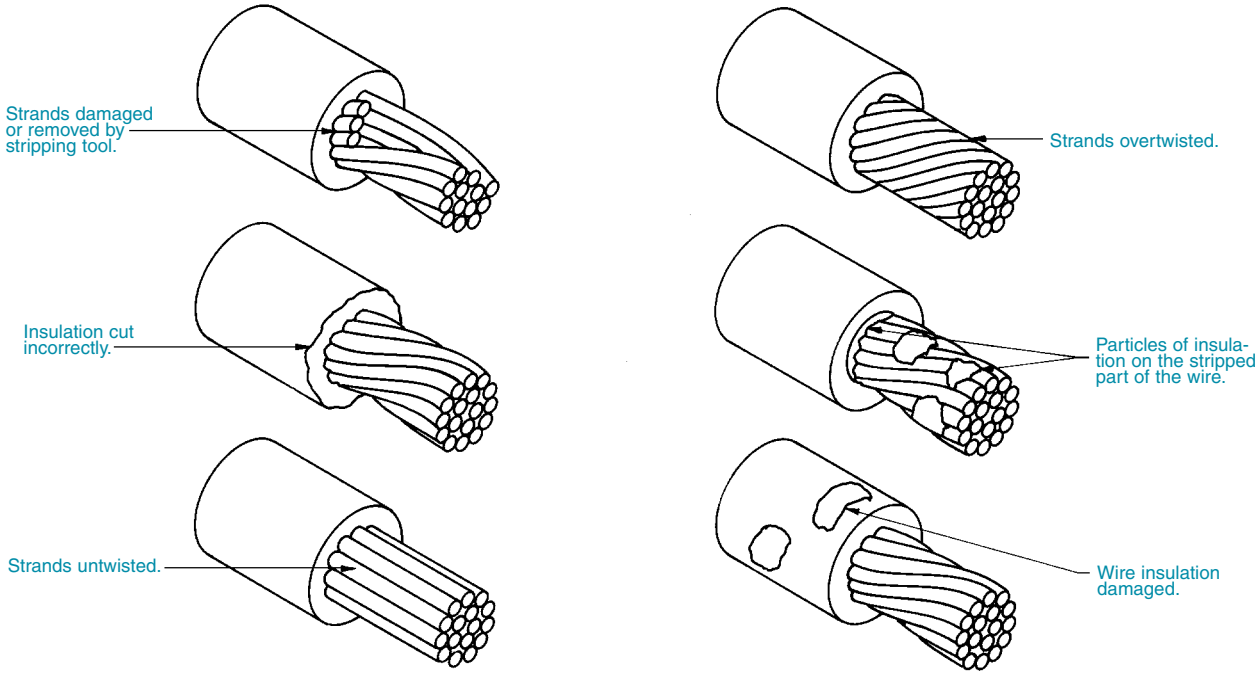
USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Step 1: Strip wire to indicated length.

Take Care Not To:
- **Damage or remove strands.**
- **Untwist or overtwist strands.**
- **Leave insulation particles on strands.**
- **Damage insulation.**



Correctly Stripped Wire



Examples of Stripping Faults

Step 2: Crimp wire to contact.

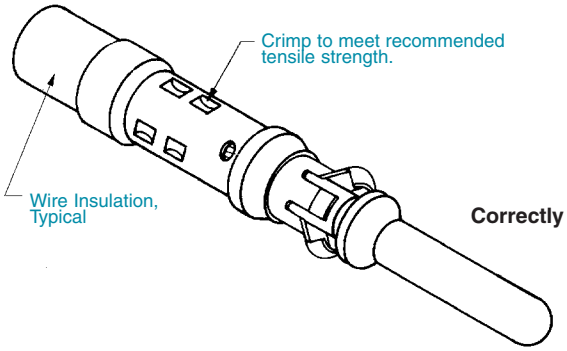
For Hand Crimp Tool:
- **Place contact into crimping tool.**
- **Insert wire into contact.**
- **Center contact by slowly closing the crimping tool until the crimp indenters make contact with the crimp barrel.**
- **Complete the cycle of the crimping tool in one smooth motion.**
- **Remove the crimped contact.**

For Automatic Crimp Tool:
- **Insert the wire into the contact, positioned in the crimp tool by the plastic carrier.**
- **Depress the activating device of the crimping tool to start the crimping cycle.**
- **Remove the crimped contact.**

CRIMPING INFORMATION FOR GMCT SERIES CRIMP CONTACTS

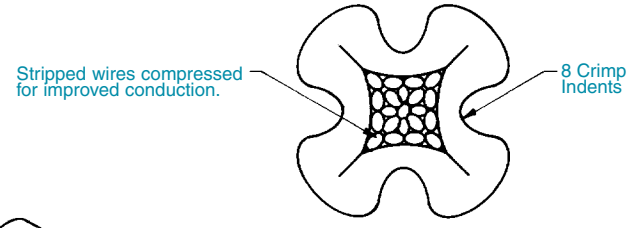
Step 3: Inspect the crimp.

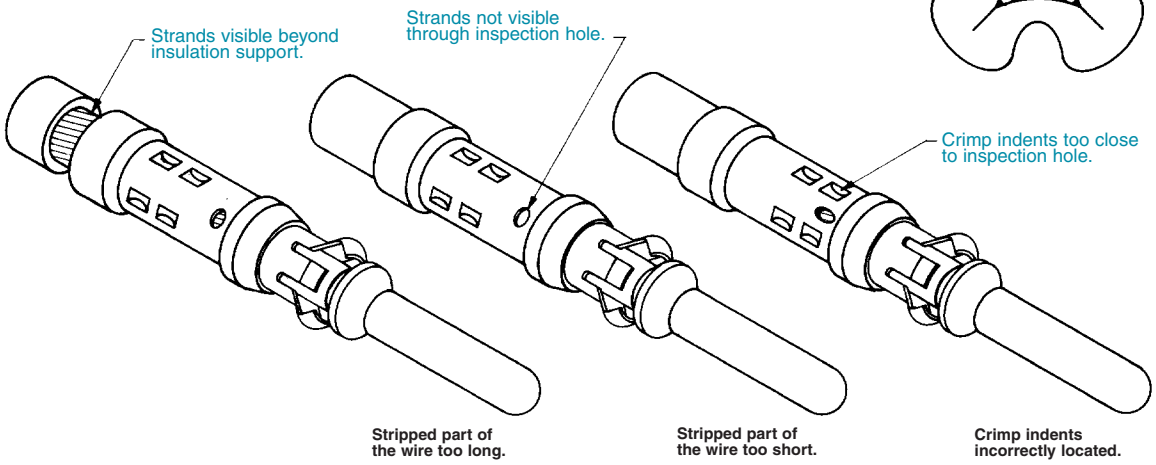
For All Tools:
- **Strands to be visible through the inspection hole.**
- **Strands not to be visible beyond the insulation support.**
- **Crimped contact to meet recommended conductor tensile force shown in chart.**
- **Check for peeled gold and bent contacts.**



Correctly Crimped Contact

Cross Section of Correctly Crimped Contact





Examples of Crimping Faults

Positronic Recommended Conductor Tensile Strength	
WIRE SIZE AWG/[mm²]	**AXIAL LOAD POUNDS/[N]**
14 [2.5]	70 [311]
16 [1.5]	50 [222]
18 [1.0]	28 [125]
20 [0.5]	20 [89]
22 [0.3]	12 [53]
24 [0.25]	8 [36]
26 [0.12]	5 [22]
28 [0.08]	3 [13]

POSITRONIC RECOMMENDED TOOLS		
TOOL TYPE	**CONTACT SIZE AWG [mm²]**	**TOOL NUMBERS**
AUTOMATIC CRIMP TOOL:	14-24 [2.5-0.25]	9550-0-0-0
	26-28 [0.12-0.08]	9550-1-0-0
HAND CRIMP TOOL:	14-24 [2.5-0.25]	9501-0-0-0 WITH 9502-1-0-0 POSITIONER
	26-28 [0.12-0.08]	9507-0-0-0 WITH 9502-18-0-0 POSITIONER
INSERTION TOOL:	N/A	9099-0-0-0
EXTRACTION TOOL:	N/A	9081-0-0-0

Conductor tensile strength values are derived using silver-tin plated copper wires. Values may change depending upon what type of wire is used.

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HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

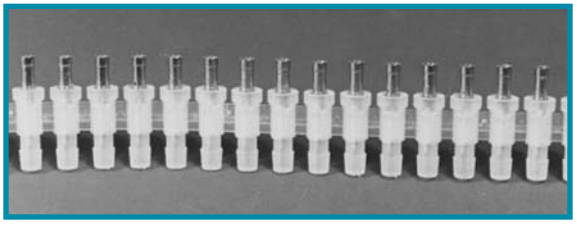
CYCLE-CONTROLLED STEP ADJUSTABLE HAND CRIMP TOOL

**M22520/1-01
**Part No. 9501-0-0-0

Features of this positive ratchet action tool include accommodations for wire sizes 14 AWG [2.5 mm^2] through 28 AWG [0.08 mm^2] and eight (8) impression crimp on wires and contacts of various compositions. Required for use with this basic tool is the turret head part number 9502-1-0-0.

CONTACT CARRIERS FOR AUTOMATIC CRIMP TOOL

Molded thermoplastic carriers in a continuous belt feed contacts to the crimp station of the automatic crimp tool. They also locate the contacts in respect to the tool's indenters. The carriers are color coded red, blue, yellow, green, orange or natural for contact identification for both MS and proprietary applications.



AUTOMATIC CRIMP TOOL, PNEUMATICALLY ACTUATED

Part No. 9550-0-0-0

This fast cycling automatic crimp tool produces an 8 indent crimp on wire sizes 14 AWG [2.5 mm^2] through 28 AWG [0.08 mm^2].

*To order, specify part number 9550-0-0-0. Foot control valve is supplied as a standard accessory.

*Specify part number 9550-1-0-0 for FC126N2 and MC126N contacts only for automatic feed crimp tool.

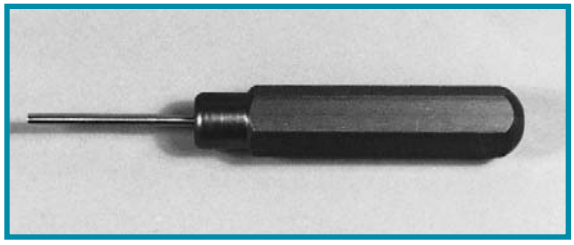
**Specify part number 9507-0-0-0 crimp tool and 9502-18-0-0 positioner for cycle controlled step adjustable hand crimp tool for FC126N2 and MC126N contacts only.

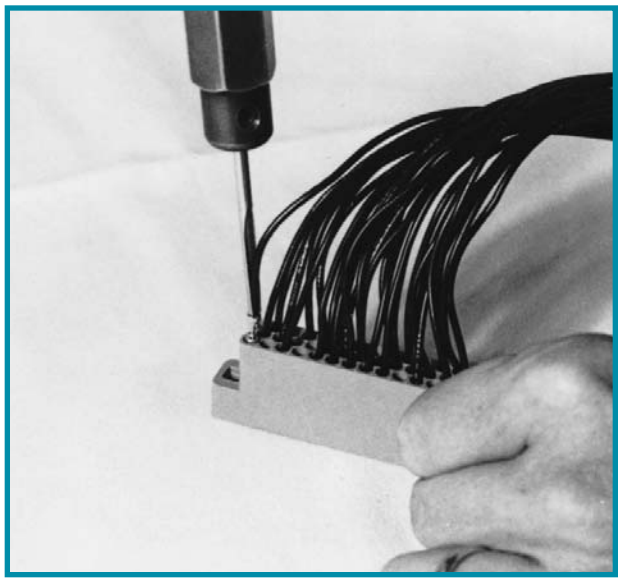
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

CONTACT INSERTION TOOL

Part No. 9099-0-0-0

An easy-to-use contact insertion tool for 14 AWG [2.5 mm^2] and smaller wires. See photographic demonstration shown below for recommended insertion procedure.

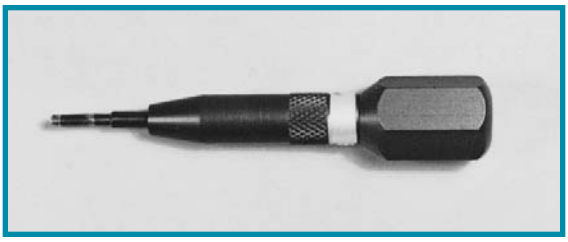


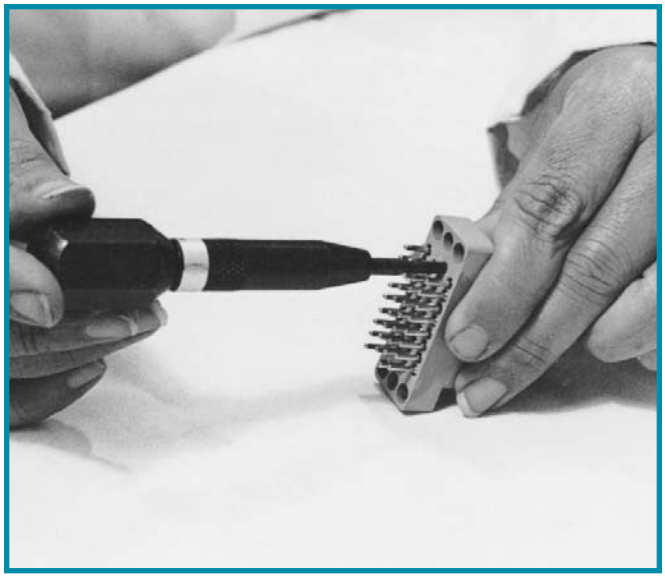


CONTACT EXTRACTION TOOL

Part No. 9081-0-0-0

The spring loaded contact extraction tool simplifies the extraction of removable contacts from the connector insulators. Simply insert the hollow tool tip over the male or female contact from the front face of the insulator, rotate the tool slightly while increasing the pushing force against the butt of the extraction tool. The contact will be released from the insulator retention system and “pop out” of the rear face of the insulator. See photo below for recommended removal procedure.





HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

REMOVABLE CONTACT ORDERING ASSISTANCE CHART

GMCT SERIES CRIMP AND SOLDER CUP CONTACT TERMINATIONS

TERMINATION TYPE	CONTACT FUNCTION	CONTACT SIZE	WIRE SIZE	MALE PART NUMBER	FEMALE PART NUMBER
CRIMP	POWER	16	14 AWG [2.5 mm²] - 16 AWG [1.5 mm²]	MC114N	FC114N2
			16 AWG [1.5 mm²] - 18 AWG [1.0 mm²]	MC116N	FC116N2
		20	16 AWG [1.5 mm²] - 18 AWG [1.0 mm²]	MC216N	FC216N2
	SIGNAL	16	20 AWG [0.5 mm²] - 24 AWG [0.25 mm²]	MC120N	FC120N2
			24 AWG [0.25 mm²] - 28 AWG [0.08 mm²]	MC124N	FC124N2
			26 AWG [0.12 mm²] - 28 AWG [0.08 mm²]	MC126N	FC126N2
		20	20 AWG [0.5 mm²] - 24 AWG [0.25 mm²]	MC220N	FC220N2
			24 AWG [0.25 mm²] - 28 AWG [0.08 mm²]	MC224N	FC224N2
	MILITARY	16	16 AWG [1.5 mm²] - 20 AWG [0.5 mm²]	M39029/34-273	M39029/35-276
			20 AWG [0.5 mm²] - 24 AWG [0.25 mm²]	M39029/34-272	M39029/35-275
		20	20 AWG [0.5 mm²] - 24 AWG [0.25 mm²]	M39029/34-271	M39029/35-274
	COAX	--	RG 178 B/U, RG 196 A/U	MCS126N	FCS126N2
			RG 179 A/U, RG 316 /U	MCS226N	FCS226N2
SOLDER CUP	POWER	16	14 AWG [2.5 mm²] max.	MS114N	FS114N2
			16 AWG [1.5 mm²] max.	MS116N	FS116N2
		20	16 AWG [1.5 mm²] max.	MS216N	FS216N2
	SIGNAL	16	20 AWG [0.5 mm²] max.	MS120N	FS120N2
			24 AWG [0.25 mm²] max.	MS124N	FS124N2
		20	20 AWG [0.5 mm²] max.	MS220N	FS220N2
			24 AWG [0.25 mm²] max.	MS224N	FS224N2

FOR ORDERING CRIMP CONTACTS ON REELS, ADD R TO PART NUMBER.
EXAMPLES: MC114NR OR FC114N2R.

GMCT SERIES PRINTED BOARD MOUNT CONTACT TERMINATIONS

TERMINATION TYPE	CONTACT SIZE	USABLE TERMINATION LENGTH	TERMINATION DIMENSION	MALE PART NUMBER	FEMALE PART NUMBER
STRAIGHT	16	0.125 [3.18]	0.026 Ø [0.66]	MDS125N	FDS125N2
		0.156 [3.96]	0.026 Ø [0.66]	MDS156N	FDS156N2
		0.187 [4.75]	0.026 Ø [0.66]	MDS187N	FDS187N2
WRAP POST	16	0.695 [17.65]	0.025 SQUARE [0.64]	MW814N	FW814N2
		0.695 [17.65]	0.045 SQUARE [1.14]	MW845N	FW845N2
COMPLIANT PRESS FIT	16	0.218 [5.54]		MPF218N	FPF218N2

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HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10		11
EXAMPLE	GMCT	34	F	0	0	R	A	Z	0	/AA	—	

STEP 1 - BASIC SERIES

GMCT Series

STEP 2 - CONNECTOR VARIANTS

9, 14, 18, 20, 26, 34, 41, 42, 50, 60, 66, 75, 104

STEP 3 - CONNECTOR GENDER

M - Male Insulator
F - Female Insulator

STEP 4 - CONTACT TERMINATION TYPE

All Female contacts “closed entry” design.
0 - Contacts to be ordered separately, see Contact ordering charts.

*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM

G - Polarizing grounding guides.
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
E - Short turnable jackscrews, offered with set screw option.
EL - Long turnable jackscrews, offered with set screw option.
E1 - Turnable jackscrews used on 9, 14, 18, 20, 26 and 41 variant hoods, offered with set screw option.
0 - If no polarizing guides or jackscrews are required. Also, use “0” if ordering hoods equipped with jackscrews, for variants 34, 42, 50, 60, 66, 75 and 104, see STEP 8.

*STEP 6 - SHELLS AND MOUNTING PLATES

P - Male shell, not available on 41 variant.
R - Female shell, not available on 41 variant.
H - Mounting plate, not available on 41 variant.
W - Male shell with mounting plate.
U - Female shell with mounting plate.
0 - If no shells or mounting plates are required.

*STEP 7 - POLARIZATION POSITIONS OF SHELLS

Select letter to designate position of male pin and female slot for polarization system.

A, B, C, D, E, F, G
0 – If no polarization is required or if no shells are required.

*STEP 8 - CABLE ADAPTERS (HOODS)

J - Top opening hood (formed), not offered on 60, 66 and 104 variants.
L - Side opening hood (formed), not offered on 60, 66 and 104 variants.
Q - Top opening hood (drawn), offered on 60, 66 and 104 variants.
S - Side opening hood (drawn), offered on 60, 66 and 104 variants.
Y - Top opening hood (formed), equipped with stainless steel jackscrew system, offered on 34, 42, 50 and 75 variants.
I - Side opening hood (formed), equipped with stainless steel jackscrew system, offered on 34, 42, 50 and 75 variants.
Z - Top opening hood (drawn), equipped with stainless steel jackscrew system, offered on 34, 50, 60, 66, 75 and 104 variants.
V - Side opening hood (drawn), equipped with stainless steel jackscrew system, offered on 34, 50, 60, 66, 75 and 104 variants.
0 - If no hoods are required.

*STEP 9 - ADDITIONAL FEATURES

B - For black anodized aluminum parts.
C - Set screw option, offered on the E, EL and E1.
R - For yellow chromate coating on aluminum parts.
V - Lock tab, offered on 9, 14, 18, 20, 26, 34, 41 and 42 variants.
VL - Lock lever, offered on 9, 14, 18, 20, 26, 34, 41 and 42 variants.
FB - Floating bushings for mounting plate.
0 - If no additional options are required.

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: GMCT34F00RAZ0

STEP 11 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.

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