GREAT GOLDEN

GG Series

Power Connectors

Positronic®

global connector solutions



- **Featuring 200 Amp Size 0 Contacts**
- **Modular - 256 Possible Versions**
- **Hot Plug-Blind Mating**
- **“Safety Feature” Contacts**

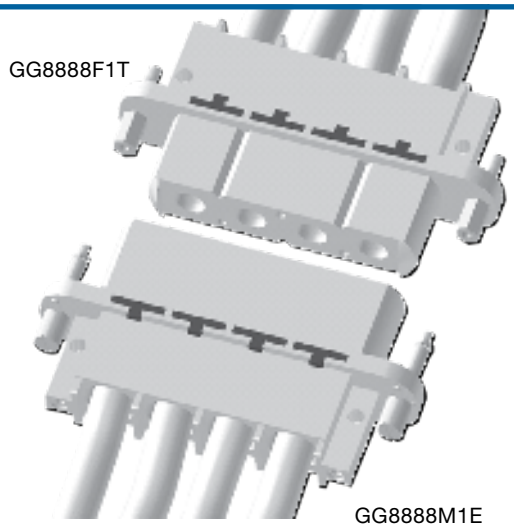
Catalog A-007 Rev NC

Downloaded from Arrow.com.

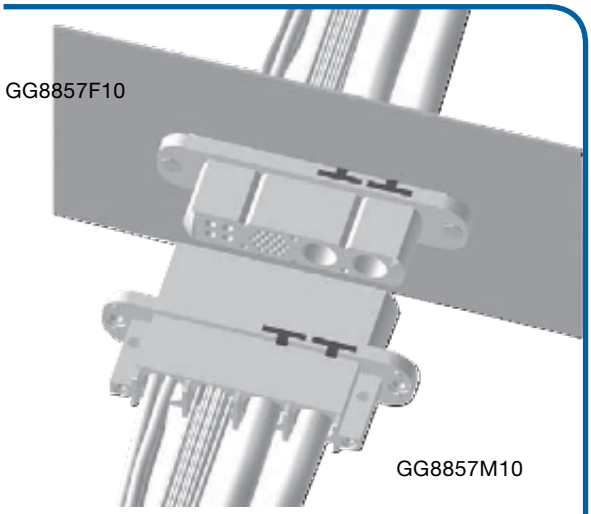


Typical Mating Systems

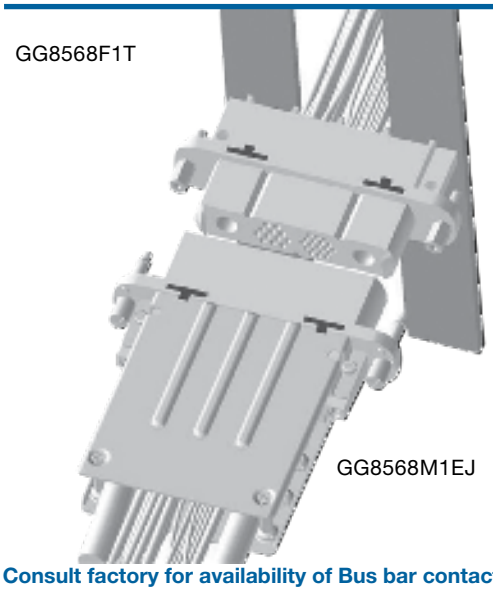
Cable to Cable



Panel Mount to Cable

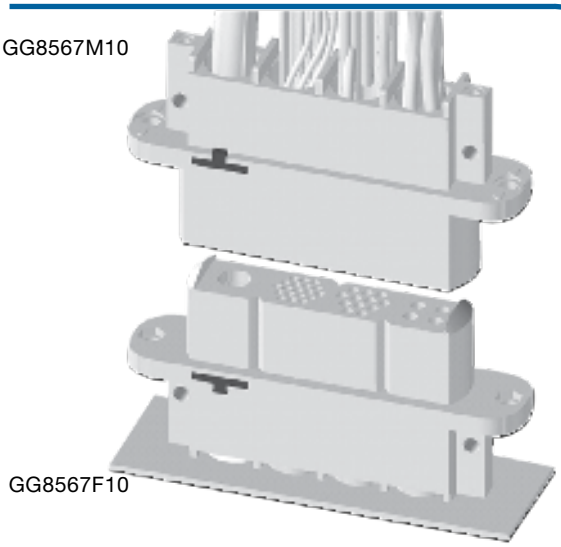


Cable to Bus bar



Consult factory for availability of Bus bar contacts

Cable to Straight PCB Mount



Consult factory for availability of Straight PCB Mount Contacts

Unless otherwise specified, dimensional tolerances are:

1) Male contact mating diameters : ±0.03 [0.001]
2) Contact termination diameters : ±0.08 [0.003]
3) All other diameters : ±0.13 [0.005]
4) All other dimensions : ±0.38 [0.015]

Dimensions are in millimeters [inches].
All dimensions are subject to change.

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

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Technical Characteristics

Materials and Finishes:

Insulators: Glass-filled nylon, UL 94V-0, Gold color
Consult factory for high performance glass-filled polyester material option.

Contacts: Precision machined copper alloy with gold flash over nickel. Other finishes available upon request.

Electrical Characteristics:

Contact Current Rating (per UL 1977):

*Size 0 Contacts: 200 amperes, continuous (high conductivity material).
175 amperes, continuous (standard material).
(Size 0 contact with 0 AWG wire)

Size 12 Contacts: 45 amperes, continuous (high conductivity material).
35 amperes, continuous (standard material).

Size 16 Contacts: 28 amperes, continuous (high conductivity material).
20 amperes, continuous (standard material).

Size 20 Contacts: 5 amperes, nominal (standard material).

Initial Contact Resistance Max (per IEC 60512-2, Test 2b) :

Size 0 Contacts: 0.00012 ohms (high conductivity material).
0.00038 ohms (standard material).

Size 12 Contacts: 0.0005 ohms (high conductivity material).
0.0016 ohms (standard material).

Size 16 Contacts: 0.0012 ohms (high conductivity material).
0.0024 ohms (standard material).

Size 20 Contacts: 0.0036 ohms (standard material).

Insulation Resistance (per IEC 60512-2, Test 3a): 5 G ohms.

Voltage Proof:

Size 0 Contacts: 3000 V r.m.s.
Size 12 Contacts: 1500 V r.m.s.
Size 16 Contacts: 1500 V r.m.s.
Size 20 Contacts: 1000 V r.m.s.

Working Voltage:

Size 0 Contacts: 250 V r.m.s.
Size 12 Contacts: 500 V r.m.s.
Size 16 Contacts: 500 V r.m.s.
Size 20 Contacts: 333 V r.m.s.

Hot Pluggable, Size 12 Contacts: 250 V AC at 25 amperes for 50 cycles.

Mechanical Characteristics:

Blind Mating System: Molded in guides allow for misalignment up to 4.50 mm [0.177 inch]

Polarization: Provided by connector body design.

Removable Contacts (Size 0):
Insert contact in rear face of insulator and secure with locking clip; release from rear face of insulator by, first, removing locking clip. Female contacts feature “Closed Entry” design.

Removable Contacts (Size 12, Size 16 and Size 20):
Insert/remove contacts via rear face of insulator; release contacts via front face of insulator with a contact extraction tool. Female contacts feature “Closed Entry” design.

Removable Contact Retention in Connector Body (per IEC 60512-8, Test 15a):

Size 0 Contacts: 132 N [30 lbs.]
Size 12 Contacts: 67 N [15 lbs.]
Size 16 Contacts: 67 N [15 lbs.]
Size 20 Contacts: 44 N [10 lbs.]

Sequential Contact Mating System:
Two level systems featured for Size 16 and Size 20 Contacts.

Consult factory for three levels of sequential contact mating option.

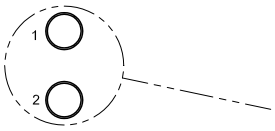
Mechanical Operations: 1,000 cycles.

Climatic Characteristic:

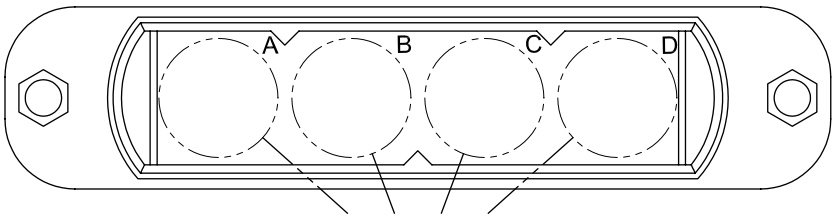
Working temperature: -55°C to +125°C.

Recognized:
UL: Certification in process.
TüV: Consult factory.

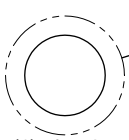
Connector Combination - Total of 256 combinations



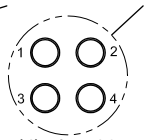
Two (2) size 8 power contact
(Consult factory for availability)



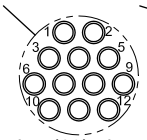
Four (4) modules
Any combination of modules is possible



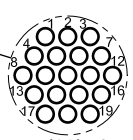
One (1) size 0 power contact



Four (4) size 12 power contacts



Twelve (12) size 16 power contacts



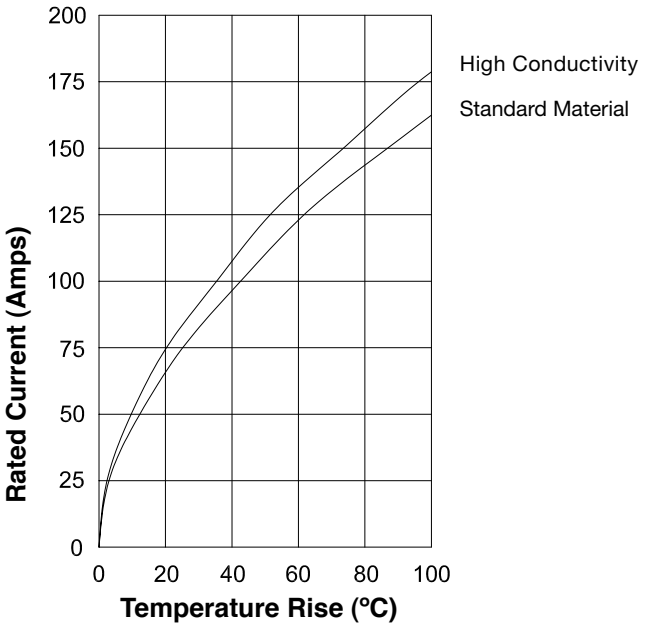
Nineteen (19) size 20 signal contacts

Downloaded from Arrow.com.

Temperature Rise Curves
Tested per IEC 60512-3, Test 5a

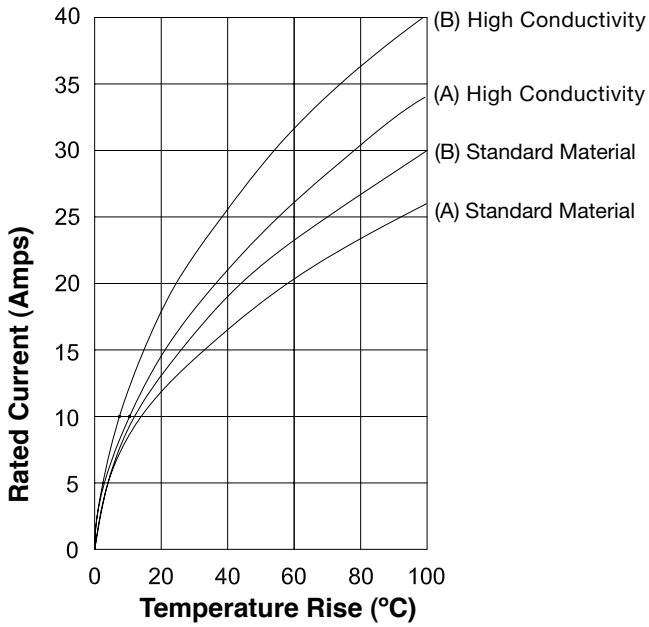


Size 0 Contact 4 AWG Wire



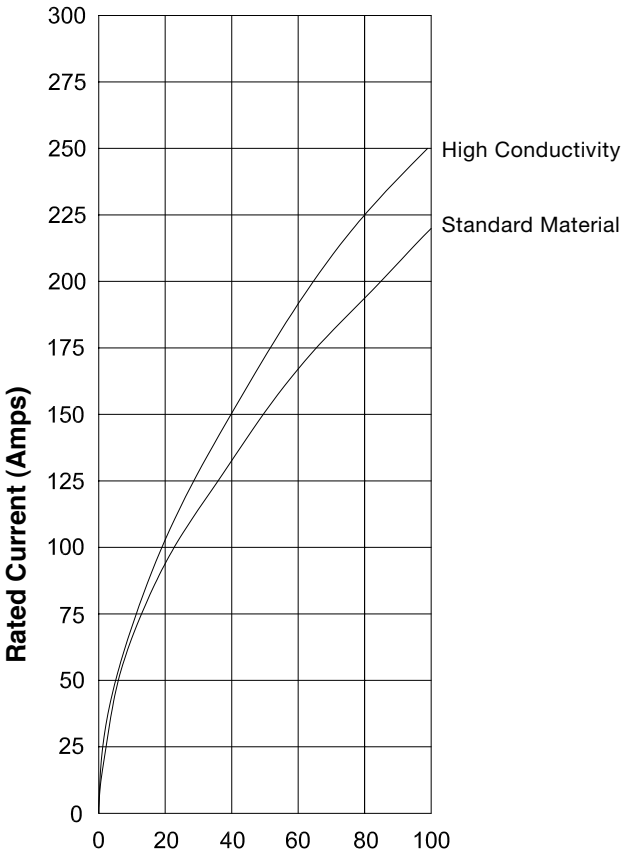
Above curves developed separately using Size 0 contact with 4 AWG wire. Four (4) Size 0 contacts under load.

Size 16 Contact 12 AWG Wire



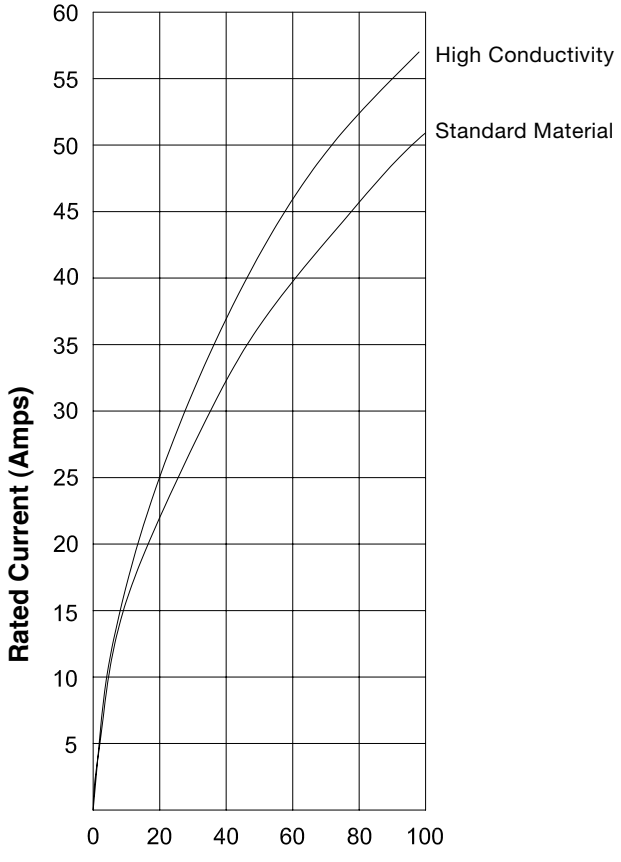
Above curves developed separately using Size 16 contact with 12 AWG wire. (A) Twelve (12) Size 16 contacts under load. (B) Six (6) Size 16 contacts under load.

Size 0 Contact 0 AWG Wire



Above curves developed separately using Size 0 contact with 0 AWG wire. Four (4) Size 0 contacts under load.

Size 12 Contact 10 AWG Wire



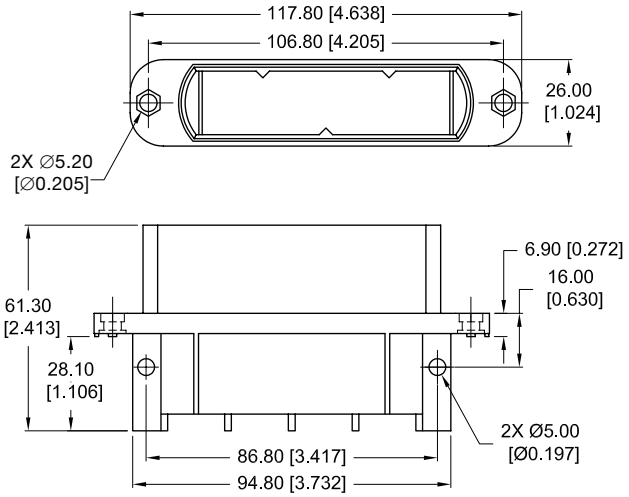
Above curves developed separately using Size 12 contact with 10AWG wire. Four (4) Size 12 contacts under load.

Downloaded from Arrow.com.

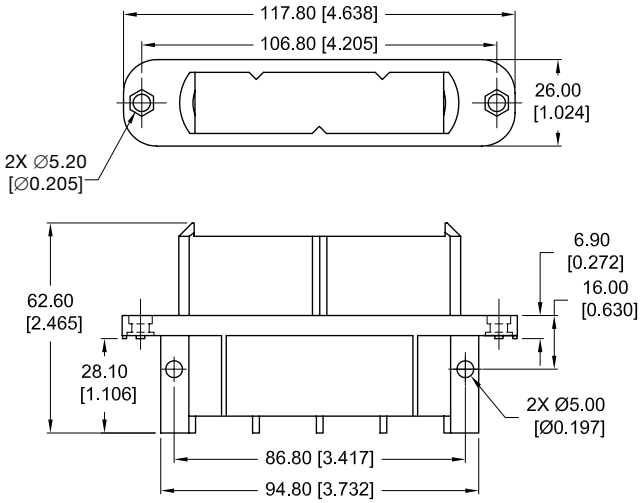


Outline Dimensions

Male Connector



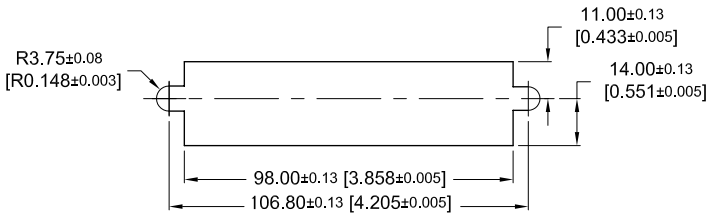
Female Connector



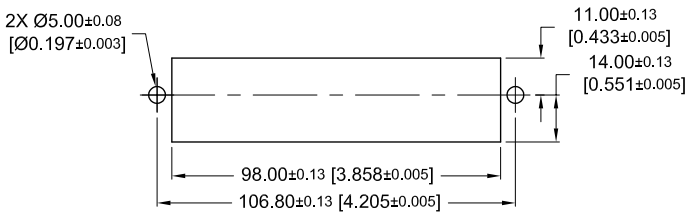
Removable contacts should be allowed to float after installation in the connector body.
This enables superior mating performance.

Panel Cutout

Panel Cutout Dimensions For Float Bushing



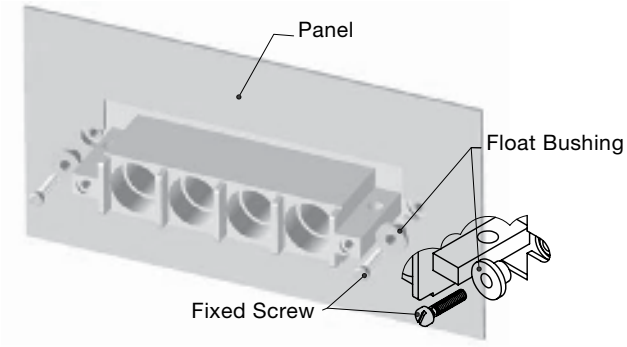
Panel Cutout Dimensions For Jackscrew System



Accessories

Float Bushing

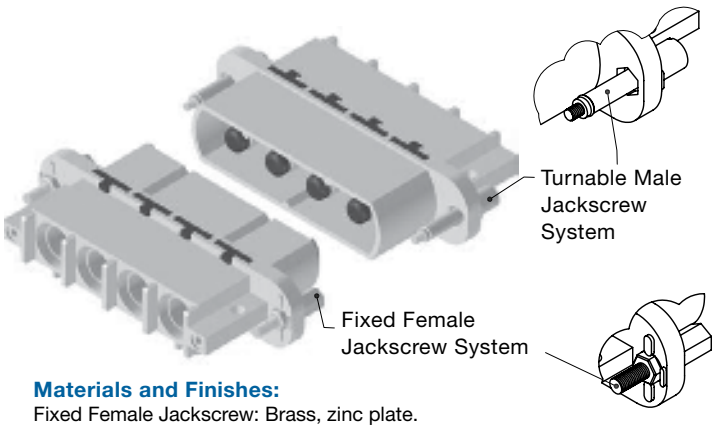
Specify code 82 or 83 in Step 5.



Materials and Finishes:
Float Bushing: Brass, zinc plating.
Bushing Screw: Brass, zinc plating .

Jackscrew System

Specify code E for Turnable Male Jackscrew or T for Fixed Female Jackscrew in Step 5.



Materials and Finishes:
Fixed Female Jackscrew: Brass, zinc plate.
Turnable Male Jackscrew: Brass, zinc plate.

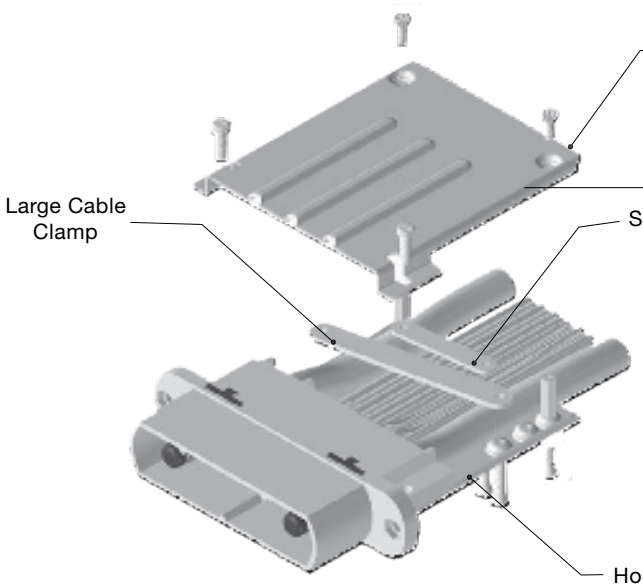
Contact factory for dimensions and details of accessories.

Downloaded from Arrow.com.



Hood with Cable Clamp

Designate Code J in step 5 of ordering information.



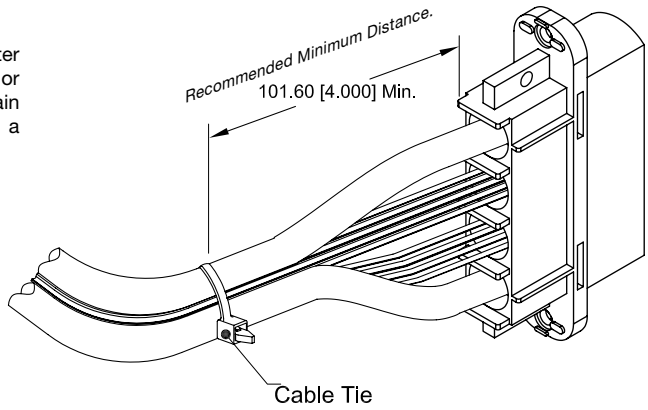
Hood Part Number
GG000000J

Materials and Finishes:
Hood, Clamps and Screws: Steel, Zinc plating.

Consult factory for availability of Hood

Application Without Hood

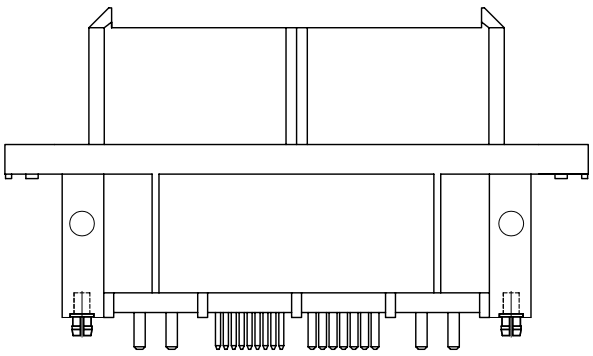
Removable contacts should be allowed to float after installation in the connector body. This enables superior mating performance. Therefore, wires must remain approximately perpendicular to the connector for a recommended minimum distance.
See diagram.



Removable, Solder, Straight PCB Mount Contacts

Typical connector installed with removable, solder, straight PCB mount contacts and Push-on Fasteners

Consult factory for straight PCB mount contacts (size 20, 16, and 12 only), alignment bars and push-on fastener ordering details and availability.

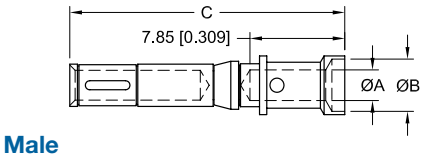


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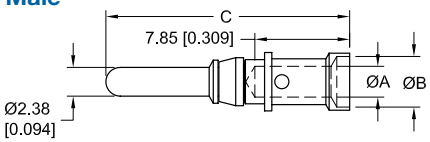


Size 12 Removable Crimp Contacts

Female



Male

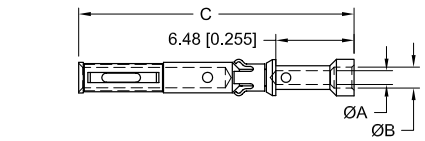


Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm²]	∅A	∅B	C
Female Contacts					
SFC1210N2	SFC1210N2S	10[6.0]	3.73[0.147]	N/A*	22.76[0.896]
SFC1212N2	SFC1212N2S	12[4.0]	2.54[0.100]	4.19[0.165]	
Male Contacts					
SMC1210BN	SMC1210BNS	10[6.0]	3.73[0.147]	N/A*	22.70[0.894]
SMC1212BN	SMC1212BNS	12[4.0]	2.54[0 .100]	4.19[0.165]	

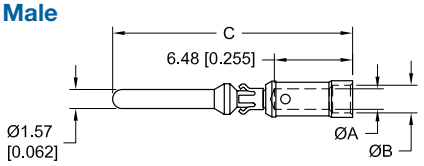
N/A*- Not applicable

Size 16 Removable Crimp Contacts

Female



Male

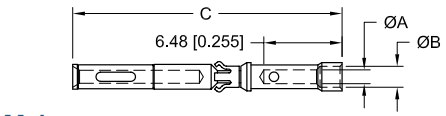


Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm²]	∅A	∅B	Sequential Mate	C
Female Contacts						
SFC1612N2	SFC1612N2S	12 [4.0]	N/A*	2.49[0.098]	N/A*	22.80 [0.898]
SFC1614N2	SFC1614N2S	14 [2.5]	2.06 [0.081]	2.64[0.104]		
SFC1616N2	SFC1616N2S	16 [1.5]	1.70 [0.067]	2.36[0.093		
SFC1620N2	SFC1620N2S	20 [0.5]	1.14 [0.045]	1.73[0.068]		
Male Contacts						
SMC1612AN	SMC1612ANS	12 [4.0]	N/A*	2.49[0.098]	First	23.68 [0.932]
SMC1612BN	SMC1612BNS				Standard	19.87 [0.782]
SMC1614AN	SMC1614ANS	14[2.5]	2.06 [0.081]	2.67[0.105]	First	23.68 [0.932]
SMC1614BN	SMC1614BNS				Standard	19.87 [0.782]
SMC1616AN	SMC1616ANS	16[1.5]	1.70[0.067]	2.36[0.093]	First	23.68 [0.932]
SMC1616BN	SMC1616BNS				Standard	19.87 [0.782]
SMC1620AN	SMC1620ANS	20 [0.5]	1.14 [0.045]	1.73[0.068]	First	23.68 [0.932]
SMC1620BN	SMC1620BNS				Standard	19.87 [0.782]

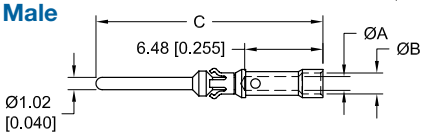
N/A*- Not applicable

Size 20 Removable Crimp Contacts

Female



Male



Part Number (Standard Material)	Wire Size AWG [mm²]	∅A	∅B	Sequential Mate	C
Female Contacts					
SFC2020N2	20[0.5]	1.14[0.045]	1.73[0.068]	N/A*	22.30[0.878]
Male Contacts					
SMC2020AN	20[0.5]	1.14[0.045]	1.73[0.068]	First	23.93[0.942]
SMC2020BN				Standard	20.12[0.792]

N/A*- Not applicable

Please use correct wire size and it should be smaller than ∅A of the contact.
Consult factory for other contact sizes, materials, finishes and termination styles.

Removable contacts should be allowed to float after installation in the connector body. This enables superior mating performance.

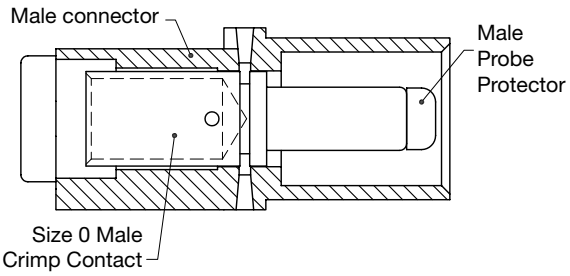
Materials:

Contacts: Copper alloy.
Retention Clips: Beryllium copper.

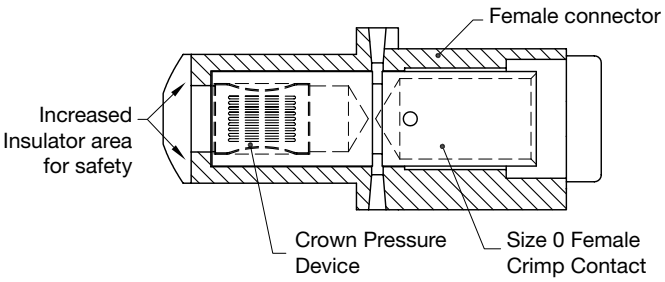
Finishes:

Gold flash over nickel plate.

Safety Features of Insulator and Size 0 Contact



The connector was designed to pass the IEC 60950 (figure 2C) test probe which provides protection from electric shock and energy hazards.



Materials and Finishes:

Male Probe Protector: Nylon, UL 94V-0, black color.
Crown Pressure Device: Beryllium copper, gold flash over nickel plate.

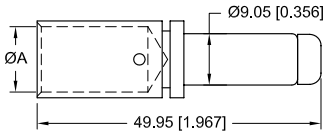
Downloaded from Arrow.com.

Removable Size 0 Contacts

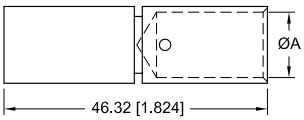


Size 0 Removable Crimp Contacts

Male



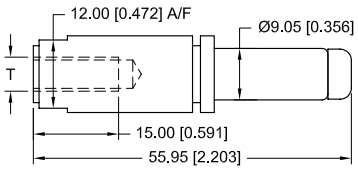
Female



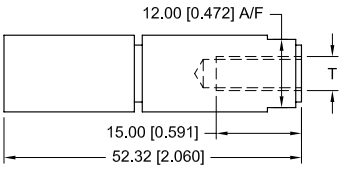
Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm²]	ØA
Female Contacts			
GGFC00N	GGFC00NS	0[55]	10.50 [0.413]
GGFC04N	GGFC04NS	4[25]	7.50 [0.295]
Male Contacts			
GGMC00N	GGMC00NS	0[55]	10.50 [0.413]
GGMC04N	GGMC04NS	4[25]	7.50 [0.295]

Size 0 Removable Contacts, Internal Threads For Typical Ring Terminal

Male



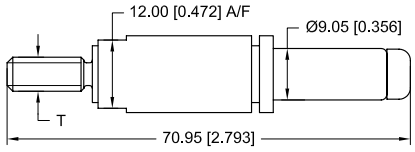
Female



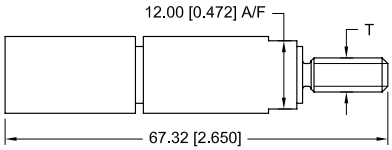
Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFIT00M	GGFIT00MS	M6 x 1
GGFIT00S	GGFIT00SS	1/4-20 UNC 2B
Male Contacts		
GGMIT00M	GGMIT00MS	M6 x 1
GGMIT00S	GGMIT00SS	1/4-20 UNC 2B

Size 0 Removable Contacts, External Threads For Typical Ring Terminal

Male



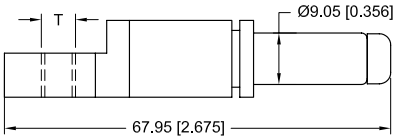
Female



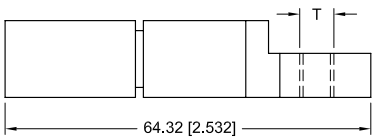
Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFET00M	GGFET00MS	M6 x 1
GGFET00S	GGFET00SS	1/4-20 UNC 2A
Male Contacts		
GGMET00M	GGMET00MS	M6 x 1
GGMET00S	GGMET00SS	1/4-20 UNC 2A

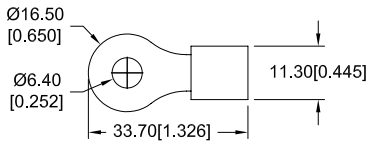
Size 0 Removable Contacts, Right Angle Threads For Typical Ring Terminal

Male



Female





Ring Terminal
(Shown for reference only.)

Consult factory for BUS bar contacts availability

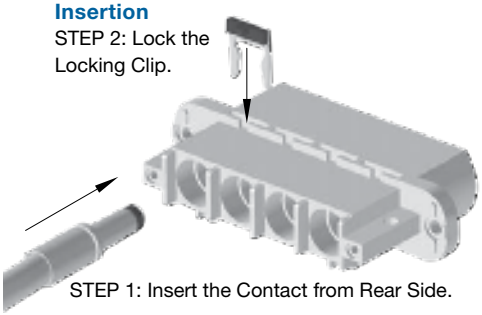
Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFRA00M	GGFRA00MS	M6 x 1
GGFRA00S	GGFRA00SS	1/4-20 UNC 2B
Male Contacts		
GGMRA00M	GGMRA00MS	M6 x 1
GGMRA00S	GGMRA00SS	1/4-20 UNC 2B

Materials:
Contacts: Copper alloy.
Locking Clips: Copper alloy and nylon.
Male Probe Plug : Nylon, UL 94V-O, black color

Finish:
Gold flash over nickel plate.
Consult factory for Silver plating option.

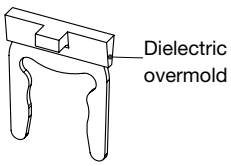
Insertion, Extraction, and Retention of Size 0 Contacts

Insertion
STEP 2: Lock the Locking Clip.



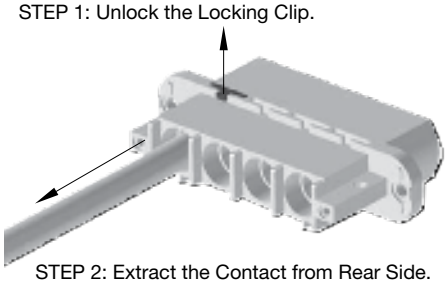
STEP 1: Insert the Contact from Rear Side.

Locking Clip



Materials:
Locking clip: Copper alloy with Nylon, UL 94V-O dielectric overmold, black color.
Finishes: Gold flash over nickel plate.

Extraction
STEP 1: Unlock the Locking Clip.



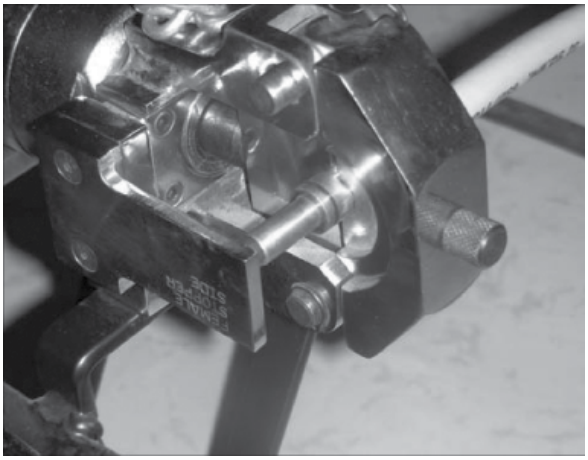
STEP 2: Extract the Contact from Rear Side.

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Recommended Tools for Removable Contacts



Crimping Tool Part Number 9504 -21 -0



Same crimping tool (9504 -21 -0) is used for crimping '0'AWG wire and '4' AWG wire

Disclosure Statement:

Positronic Industries cannot be held responsible for defective crimps when customer utilizes other vendor's crimp tools. Samples of '0' AWG wire with strands combination of 300/26, 478/28, 292/26 have been crimped and tested at factory and are deemed compatible with our crimp tool. Consult factory prior to utilizing strands combinations not called out above.

Recommended Assembly Procedure For Crimp Termination:

1. Carefully strip back the cable insulation by 20.00mm [0.787] inch without damaging any of the conductor strands.
2. Insert the conductor wire strands into the crimp barrel at the rear of the contact. Ensure that all of the conductor wire strands are captured within the crimp barrel and that the cable conductor wire is visible through the inspection hole.
3. Utilizing the crimping tool, crimp the contact (as shown) making sure that the cable remains straight, for a distance of one meter or the entire length of cable if less than one meter in length from the crimping die, and touches the contact stopper while performing the crimp operation as shown in figure A and B below.

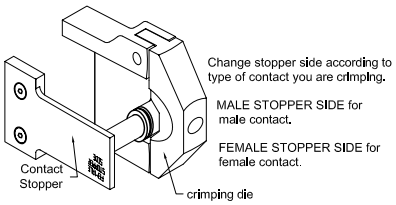


FIGURE 'A' Male contact

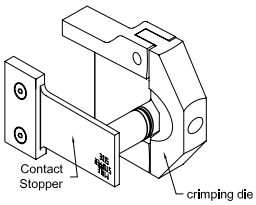
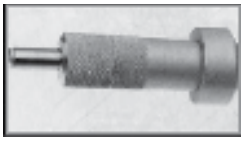


FIGURE 'B' Female contact

4. Examine crimp joints to ensure that the crimp is satisfactory.
5. Insert the crimp contact into the insulator and then visually align the locking clip groove and press in the locking clip. (As shown in Insertion and Extraction of Size 0 contact on page 7)
6. Ensure that the locking clip is flush with insulator.

Recommended Tools for Size 12, Size 16 and Size 20 Contacts

Contact Extraction Tool



Cycle-Controlled Step Adjustable Hand Crimp Tool



Contact Size	Contact Extraction Tool	Hand Crimp Tool
Size 12	2711-0-0-0	9501 with 9502-19-0-0 positioner
Size 16	9081-6-0-0	9501 with 9502-17-0-0 positioner for Male Contacts 9501 with 9502-26-0-0 positioner for Female Contacts
Size 20	9081-5-0-0	9507 with 9502-21-0-0 positioner for Male Contacts 9507 with 9502-25-0-0 positioner for Female Contacts

Please see Positronic's SUMO catalog or consult factory for crimping and wire stripping information on Size 12, 16 and 20 contacts

Positronic Recommended Conductor Tensile Strength (Pull Test)

To ensure proper crimp

Wire Size	Axial Load
0 AWG [55 mm^2]	2803N [630 lbs.]
4 AWG [25 mm^2]	1602N [360 lbs.]
10 AWG [6.0 mm^2]	601N [135lbs.]
12 AWG [4.0 mm^2]	445N [100 lbs.]
14 AWG [2.5 mm^2]	267N [60 lbs.]
16 AWG [1.5 mm^2]	165N [37 lbs.]
20 AWG [0.5 mm^2]	85N [19lbs.]

As per SAE AS 39029

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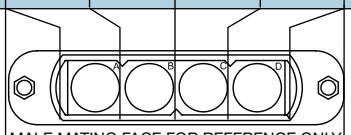
Ordering Information



Specify complete connector by following step 1 through step 5.

Step	1	2A	2B	2C	2D	3	4	5	6	7
Example	GG	8	7	6	8	M	1	0	/AA	xxx

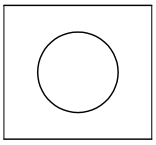
STEP 1: Basic Series
GG4 : GG Series



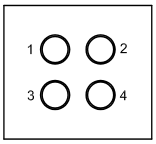
MALE MATING FACE FOR REFERENCE ONLY

STEPS 2: Connector Version
256 versions available . Specify using Step 2A through Step 2D. Each Step (2A, 2B, 2C, or 2D) can be any module.

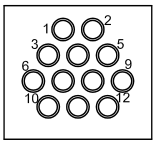
Code 8 :
One (1) size 0 power contact.



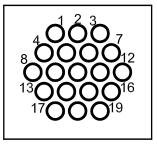
Code 7:
Four (4) size 12 power contacts.



Code 6:
Twelve (12) size 16 power contacts.



Code 5 :
Nineteen (19) size 20 signal contacts.



STEP 3: Connector Gender
F: Female
M: Male

STEP 4: Type of Contact
1: Removable contact.
Contacts ordered separately.

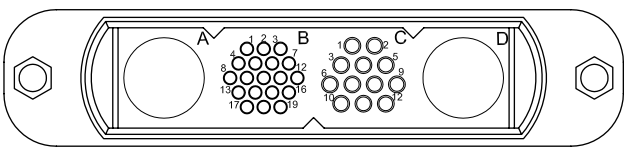
STEP 5: Mounting Style
0: No hardware.
82: Float mount 1.5 mm panel thickness.
83: Float mount 2.3 mm panel thickness.
E: Turnable male jackscrews .
T: Fixed female jackscrews.
J: Hood.*
EJ: Turnable male jackscrews with Hood.*
TJ: Fixed female jackscrews with Hood.*
*Consult factory for Hood availability.

STEP 6: Environmental Compliance options
/AA : Compliant per EU Directive 2002/95/EC (RoHS)
Example: GG8567F10/AA
Note: If no environmental options are required, this step will not be used.
Example: GG8567F10

STEP 7: Special Options
Consult factory for customization.

Part Number Example: GG8568M10
Code 8 = 1ea. Size 0 power contact (Step 2A)
Code 5 = 19ea. Size 20 signal contacts (Step 2B)
Code 6 = 12ea. Size 16 power contacts (Step 2C)
Code 8 = 1ea Size 0 power contact (Step 2D)

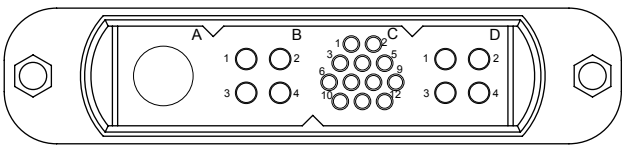
STEP 2A STEP 2B STEP 2C STEP 2D



MALE FACE FOR REFERENCE ONLY

Part Number Example: GG8767M1E
Code 8 = 1ea Size 0 power contact (Step 2A)
Code 7 = 4ea Size 12 power contacts (Step 2B)
Code 6 = 12ea Size 16 power contacts (Step 2C)
Code 7 = 4ea Size 12 power contacts (Step 2D)

STEP 2A STEP 2B STEP 2C STEP 2D



MALE FACE FOR REFERENCE ONLY

Consult factory for the availability of two (2) size 8 power contacts or other contact sizes.
Consult factory for high performance glass-filled polyester material option.

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GREAT GOLDEN

Power Connectors

GG Series

Positronic®
global connector solutions

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