Glenair®

Series 80 Mighty Mouse Connectors & Cables

The Shielded Environmental Connector wi
Mil-Spec Performance and Ultraminiature

United States ▪ United Kingdom ▪ Germany ▪ France ▪ Nordic

✓ In Stock!

- 43 Insert Arrangements
- Six Shell Styles
- From One to 130 Crimp/PCB Contacts
- Point-to-Point Cordsets

SERIES 80

MIGHTY MOUSE

- **Up To 71% Weight Savings and 52% Size Savings Compared to MIL-DTL-38999**
- **The World's Best Availability—Thousands of Part Numbers In Stock and Ready for Immediate Same-Day Shipment**

Series 801
Mighty Mouse
7 Contacts

MIL-DTL-38999
6 Contacts

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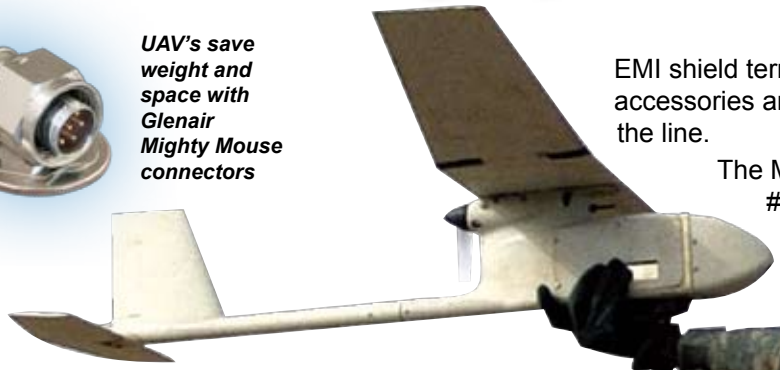
Series 80 Mighty Mouse At-a-Glance

SERIES 80 Mighty Mouse AT A GLANCE

UAV's save weight and space with Glenair Mighty Mouse connectors



The Series 80 Mighty Mouse Connector is designed for high-reliability aerospace/defense interconnect applications requiring robust environmental performance and reduced size and weight. The Series 80 Mighty Mouse Connector offers virtually equal performance to MIL-DTL-38999 interconnects with up to 71% weight and 52% size savings for similar contact layouts.

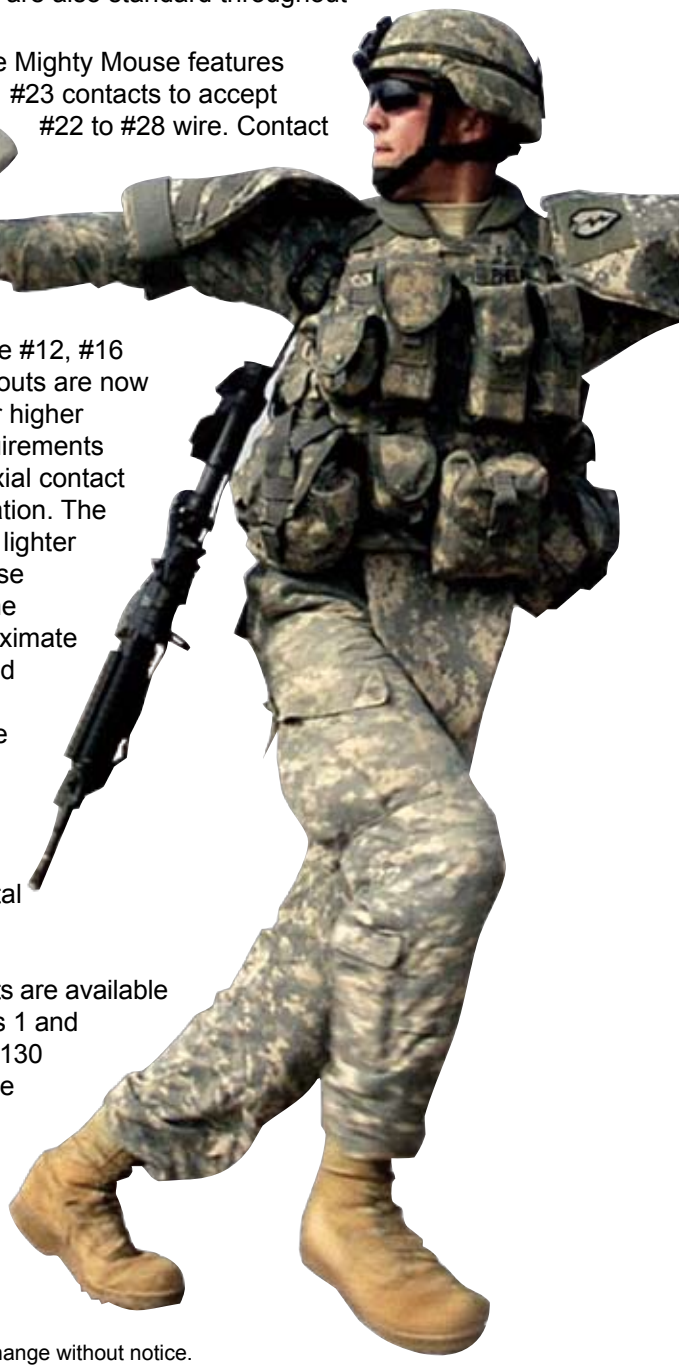
The Series 80 Connector was originally developed as a smaller and lighter alternative to D38999 connectors for aerospace applications such as Attack Helicopters and Unmanned Aerial Vehicles. Today, the Series 80 Mighty Mouse serves in dozens of safety-critical defense, medical, industrial and geo-physical applications.

The Series 80 Mighty Mouse Connector is supplied in six standard designs:

- ***Series 800 Light Duty UN Thread***
- ***Series 801 Heavy Duty Double-Start***
- ***Series 802 "Aqua Mouse" Harsh Environmental***
- ***Series 803 Bayonet***
- ***Series 804 Quick-Disconnect***
- ***Series 805 Triple-Start***

All the connectors in the Series 80 family are available with rear-release crimp contacts or with PC tail or solder cup terminations. Shell styles, including in-line plugs, square-flange and jam-nut receptacles are available for all types. Integrated banding platforms for EMI shield termination or rear-end threads for backshell accessories are also standard throughout the line.

The Mighty Mouse features #23 contacts to accept #22 to #28 wire. Contact spacing is .076." Size #12, #16 and #20 layouts are now available for higher current requirements and for coaxial contact accommodation. The smaller and lighter Mighty Mouse maintains the same approximate electrical and mechanical performance of larger and heavier Military Standard environmental connectors. Insert arrangements are available for as few as 1 and as many as 130 contacts. The products presented in this



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catalog, including cable sets and backshells, are available with accelerated lead-times—many are packaged for immediate same-day shipment. Custom layouts, such as might be required to accommodate a different gage or type of contact, may be readily incorporated into existing shell and coupling designs.

Born in the U.S.A.

Series 80 Mighty Mouse Connectors are manufactured at Glenair's Air Way factory in Glendale, California. The plant occupies approximately 450,000 square feet. Glenair's connector manufacturing facility is vertically integrated. All connector fabrication, including precision machining, hermetic firing, component assembly, contact termination, potting and electrical testing are completed at the factory.

For custom connector applications, we operate a dedicated prototype development shop complete with CNC machining and EDM equipment. In addition, a wide range of electrical, mechanical and environmental tests are completed in-house including dielectric withstanding voltage, contact resistance, contact engagement and separation, mating cycles, pressure testing and outgassing. Glenair is well versed in connector design and development, and has been producing and qualifying military-standard type connectors for over 35 years. Our Microway facility in Chicago, a 35,000 sq. ft. plant, contributes additional design and tooling resources to the Series 80 Mighty Mouse. Our UK Factory in Mansfield, England participates in performance testing of the product and in the assembly of bespoke cable assemblies for the UK and other EU customers.

Glenair is well known in the interconnect industry as the world's largest manufacturer of military standard and commercial connector accessories (backshells, dust-caps, EMI shield termination devices and so on). We are also the world's largest supplier of MIL-DTL-83513 Micro-D Connectors and M24758 Conduit Systems and Fittings. We also produce hermetic connectors qualified to MIL-DTL-38999 and MIL-DTL-24308, MIL-C-28840 Shipboard Connectors, MIL-DTL-38999 Fiber Optic Connectors and MIL-T-29504 Termini. Our Commercial-Off-the-Shelf connector products include our Harsh Environmental Series 22 Geo-Marine® Connectors, Sav-Con® Connector Savers, hermetic D-Subminiature products and hundreds of special purpose or custom interconnects for high-performance applications.

The Series 801 Connector offers up to 71% weight savings and 52% size reduction when compared to D38999 Series III Connectors.

Mil-Qualified Weight Savings

Glenair has qualified thousands of weight saving connectors, backshells, fiber optic components, conduit assemblies and junction-box enclosures to existing and new Mil-Specs. For the Series 80 Mighty Mouse Connector however, we followed the D38999 specification as a guideline for benchmarking performance standards, but took a radically different approach from the Mil-Spec when designing the physical envelope of the product. To appreciate the results, please see the weight and dimension tables that are provided for each individual connector type in this catalog. Note the extraordinary delta between Mighty Mouse and MIL-DTL-38999.

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Series 80 Mighty Mouse
Product Selection Guide

The Series 80 Mighty Mouse Connector is designed for high-reliability commercial and aerospace/defense interconnect applications that require both robust environmental/EMI performance and reduced size and weight. The Series 80 Mighty Mouse Connector offers comparable performance to MIL-DTL-38999 Series interconnects with up to 71% weight and 52% size savings for similar contact layouts. The six versions of the product offer a variety of styles and features to suit just about any application.

	Series 800	Series 801
		
Description	**Original Mighty Mouse with UNF Threads**	**Double-Start ACME Thread**
Notes	A general purpose connector for high-speed Ethernet switches, tactical equipment and instrumentation.	More rugged keys and threads compared to Series 800. Faster mating, slightly larger than Series 800.
Number of Contacts	1 to 37	1 to 130
Coupling	Threaded Coupling with 4 ½ Turns to Full Mate	Threaded Coupling with 1 ½ Turns to Full Mate
Water Immersion, Mated	MIL-STD-810 Method 512 1 Meter for 1 Hour	MIL-STD-810 Method 512 1 Meter for 1 Hour
EMI Shielding	Good	Good
Vibration and Shock	37 g's Random Vibration; 300 g's Shock	37 g's Random Vibration; 300 g's Shock
Mating Cycles	2000 Cycles	2000 Cycles
Electrical Performance	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC
Proven Performance Applications	Commercial air frame sensors; UAV telemetry; Tactical computers; field radios	Military air frame; Dismounted soldier; Tactical ground weaponry; Avionic (FLIR) systems

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Series 80 Mighty Mouse
Product Selection Guide

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Series 802	Series 803	Series 804	Series 805
			
"Aqua Mouse" 3500 PSI	**Bayonet**	**Push-Pull**	**Triple-Start ACME Thread**
Rugged stainless steel, resists chemicals. For geophysical and underwater applications.	Quick-mating, light duty, general purpose. Not rated for immersion. 50 milliohms shell-to-shell resistance.	Breakaway connector for headsets and tactical equipment. Gold-plated spring for long mating life and superior EMI shielding.	"Clicker" ratchet mechanism and ground spring for military airframes and avionics boxes. Fast-mating, D38999 equivalent.
1 to 130	1 to 55	1 to 55	1 to 130
Threaded Coupling with UN Threads	Push-to-Mate, ¼ Turn to Lock	Quick-Disconnect	One Full Turn for Full Mate
1000 Feet Immersion in Salt Water	Splashproof	MIL-STD-810 Method 512 1 Meter for 1 Hour	MIL-STD-810 Method 512 1 Meter for 1 Hour
Good	Fair	Very Good	Excellent
37 g's Random Vibration; 300 g's Shock	37 g's Random Vibration; 300 g's Shock	37 g's Random Vibration; 300 g's Shock	37 g's Random Vibration; 300 g's Shock
2000 Cycles	250 Cycles Aluminum 2000 Cycles SST	2000 Cycles	500 Cycles
#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC
Pipe line inspection equipment; Well logging; Amphibious vehicles; Unmanned submersibles	Soldier system radios; Autosport diagnostics; Airborne surveillance; Communication systems	Helmet breakaway connector; QDC battery; Missile applications; Weapon interconnects	Autosport; Military air frame; Joint Strike Fighter

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Series 80 Mighty Mouse Connectors
Introduction

Featured Products

Filtered Mighty Mouse

Glenair's filtered Mighty Mouse connectors provide significant size and weight savings compared to larger mil-spec connectors. Designed to meet stringent aerospace performance requirements, Mighty Mouse filtered connectors are offered with standard filter arrays or with customized filters to meet your specific needs.

Right Angle Board Mount Connectors

Now available with 3, 4, 7, 10, 13 and 19 contacts, these connectors offer military grade performance in a small, economical package. These connectors are rated for MIL-STD-810 Method 512 immersion. ***Available in Series 800 and Series 801.***

Meet the "Clicker"

Series 801 plugs are now available with a ratcheting mechanism. The ratcheting coupling nut prevents unintended de-mating when subjected to high levels of shock and vibration. The coupling nut is .100" larger than the standard self-locking nut. The Series 801 double-start Mighty Mouse connector is widely used on battlefield computers and weapons systems.

Series 801 Plug with Ratchet Mechanism

New Power and Coaxial Layouts

43 contact layouts are now available, including new size #12, #16 and #20HD contact arrangements. Also available with printed circuit board contacts.

Series 801 "9-4" layout with 4 #16 contacts compared to MIL-DTL-38999 "13-4" layout with 4 #16 contacts

Glenair's "21-12" insert arrangement with 12 size 12 power pins for 23 amp current rating.

Pneumatic Contacts

These stainless steel contacts snap into size 12 contact cavities. Rated at 100 psi, these "gas" contacts are ideal for pitot tube connections in unmanned aerial vehicles.

New "17-7" insert arrangement with 7 size 12 contacts

Size 12 and size 16 PC tails are standard

Pneumatic contacts for Mighty Mouse connectors

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Featured Products

Need More Contacts?

Joining the Mighty Mouse lineup is a 130 pin connector. Available in Series 801, 802 and 805, this layout has 130 size #23 contacts in a low-profile, lightweight package.

Series 80 Cordsets for High-Speed Data

Now available with RJ-45 plugs and USB 2.0 connectors, Glenair's *ASAP* Mighty Mouse overmolded cordsets offer watertight sealing and excellent cold temperature flexibility. New features include expanded wire size choices, right angle overmolding, and low smoke, zero halogen jacketing for installation where combustion toxicity is a concern.

Cat 5e and USB 2.0 overmolded cables with rugged low smoke zero halogen polyurethane jackets

Heat Shrink Boots

Glenair has selected straight and right angle boots to fit Series 80 connectors. Available in Mil-Spec and low smoke/zero halogen materials, these boots are adhesive lined.

New Rubber Covers

Rubber covers are now available for Series 801 and Series 804 connectors. These fungus-resistant neoprene covers are preferred for man-portable soldier equipment.

Can't Find What You Need in this Catalog?

Get the part you need with no strings attached. Glenair welcomes your custom connector requirements. Our vertically integrated manufacturing guarantees fast delivery with no minimum order quantity.

Spring-Loaded Protective Covers

Glenair now offers a spring-loaded cover for Series 804 quick-disconnect receptacles. Made of aluminum alloy, the cover has a rubber gasket for a watertight seal when unmated.

Optical Fiber Mighty Mouse

Get the best of both worlds: the small size of the Series 80 combined with Mil-Spec optical fiber performance. This 4 channel connector is ideal for 1000BASE-LX. Contact Glenair for more information.

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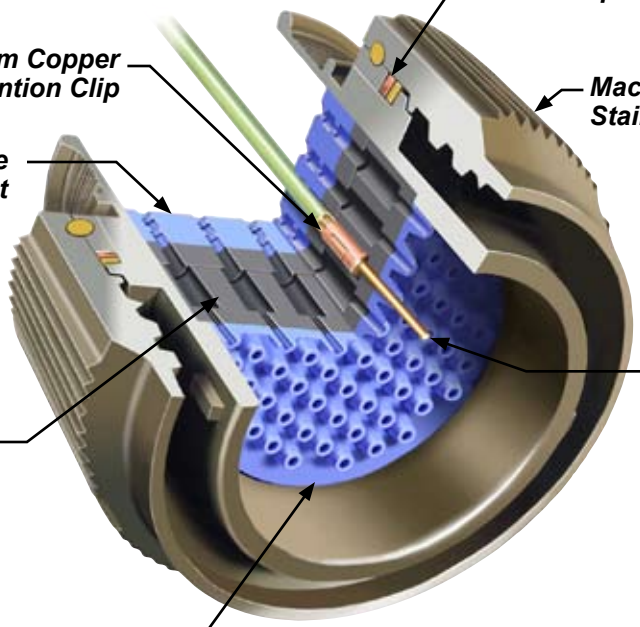
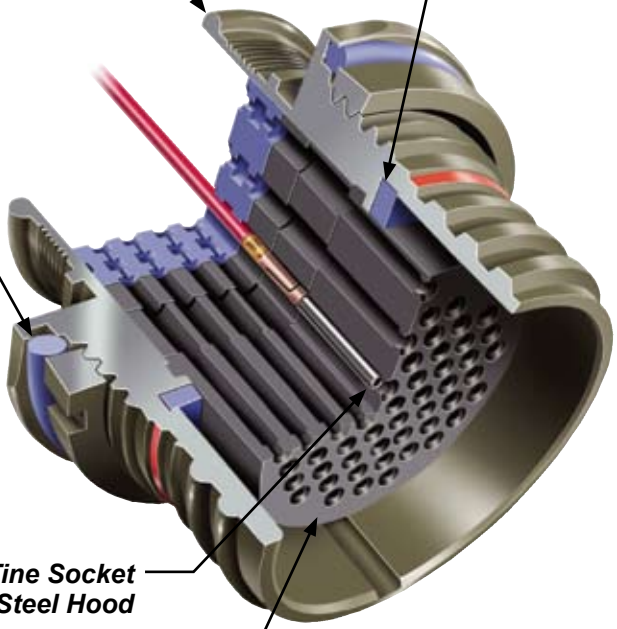
Series 80 Mighty Mouse
Cutaway View of Series 801

Plug



Jam Nut Receptacle



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SERIES 80 "MIGHTY MOUSE" CONTACT ARRANGEMENTS

Contact Size		Contact Quantity					Contact Arrangement					
		#23	#20	#20HD	#16	#12	Series 800	Series 801	Series 802	Series 803	Series 804	Series 805
Size #23 Contacts 5 Amp Max. Current 500 VAC #22-#28 AWG		3					5-3	5-3	5-3	5-3	5-3	Not Avail.
		4					6-4	6-4	6-4	6-4	6-4	8-4
		6					6-6	6-6	6-6	6-6	6-6	8-6
		7					6-7	6-7	6-7	6-7	6-7	8-7
		10					7-10	7-10	7-10	7-10	7-10	9-10
		13					8-13	8-13	8-13	8-13	8-13	10-13
		19					9-19	9-19	9-19	9-19	9-19	11-19
		26					10-26	10-26	10-26	10-26	10-26	12-26
		37					12-37	13-37	12-37	12-37	12-37	15-37
		55					Not Avail.	16-55	14-55	14-55	14-55	18-55
		85					Not Avail.	17-85	15-85	Not Avail.	Not Avail.	19-85
		130					Not Avail.	21-130	21-130	Not Avail.	Not Avail.	23-130
Size #20HD Contacts 7.5 Amp Max. Current 750 VAC #20-#24 AWG				3			6-23	6-23	6-23	6-23	6-23	8-23
				5			7-25	7-25	7-25	7-25	7-25	9-25
				8			8-28	8-28	8-28	8-28	8-28	10-28
				10			9-210	9-210	9-210	9-210	9-210	11-210
				20			12-220	13-220	12-220	12-220	12-220	15-220
				35			Not Avail.	16-235	14-235	14-235	14-235	18-235
				41			Not Avail.	17-241	15-241	Not Avail.	Not Avail.	19-241
				69			Not Avail.	21-269	21-269	Not Avail.	Not Avail.	23-269
Size #16 Contacts 13 Amp Max. Current 1800 VAC #16-#20 AWG					1		6-1	6-1	6-1	6-1	6-1	8-1
					2		8-2	8-2	8-2	8-2	8-2	10-2
					4		9-4	9-4	9-4	9-4	9-4	11-4
					5		10-5	10-5	10-5	10-5	10-5	12-5
					7		12-7	13-7	12-7	12-7	12-7	15-7
					12		Not Avail.	16-12	14-12	14-12	14-12	18-12
					14		Not Avail.	17-14	15-14	Not Avail.	Not Avail.	19-14
					22		Not Avail.	21-22	21-22	Not Avail.	Not Avail.	23-22
Size #12 Contacts 23 Amp Max. Current 1800 VAC #12-#14 AWG						1	7-1	7-1	7-1	7-1	7-1	9-1
						2	10-2	10-2	10-2	10-2	10-2	12-2
						2	12-2	13-2	12-2	12-2	12-2	15-2
						3	12-3	13-3	12-3	12-3	12-3	15-3
						5	Not Avail.	16-5	14-5	14-5	14-5	18-5
						7	Not Avail.	17-7	15-7	Not Avail.	Not Avail.	19-7
						12	Not Avail.	21-12	21-12	Not Avail.	Not Avail.	23-12
Contact Arrangements with Mixed Size (Combo) Layouts		4	2				8-200	8-200	8-200	8-200	8-200	10-200
		8	2				9-201	9-201	9-201	9-201	9-201	11-201
		4			2		9-200	9-200	9-200	9-200	9-200	11-200
		8			2		10-202	10-202	10-202	10-202	10-202	12-202
		4				2	10-201	10-201	10-201	10-201	10-201	12-201
		6				2	12-200	13-200	12-200	12-200	12-200	15-200
		10				2	12-201	13-201	12-201	12-201	12-201	15-201
		12				1	10-200	10-200	10-200	10-200	10-200	12-200

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SERIES 80

MIGHTY MOUSE

- **The World's Best Availability of Any High-Performance Miniature Connector**
- **Thousands of Part Numbers In Stock and Ready for Same-Day Shipment**

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Series 80 Mighty Mouse
Contacts and Tools
Product Selection Guide

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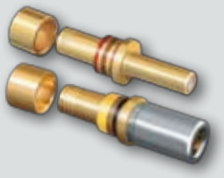

#16 and #12 Coaxial Contacts
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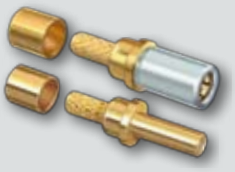

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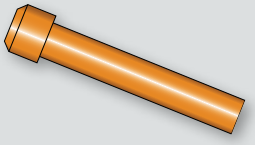

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Series 80 Mighty Mouse
General Information

About Series 80 Mighty Mouse Contacts

This section of the catalog contains ordering information for contacts. Series 80 Mighty Mouse connectors are supplied with a full complement of crimp contacts. Contacts are terminated to wire using special tools and are snapped into place by hand or with a hand-held insertion tool. Damaged or miswired contacts may be removed from the connector using special extraction tools.

Although the connectors are supplied with a full complement of contacts, extra contacts are commonly purchased as spares or to use for quality assurance purposes such as crimp tensile tests.

Coaxial contacts must be ordered separately. If your application requires coaxial contacts, select contact types "A" or "B" (pin or socket) in the connector part number. The connector will be supplied without contacts. Select the appropriate coaxial or pneumatic contact from this catalog.

Mighty Mouse contacts conform to the requirements of ***Aerospace Standard AS39029***. This SAE specification defines the design, dimensions and performance of contacts used in aerospace grade electrical connectors. The "***general specification***" covers a variety of contacts including thermocouple, hermetic, coaxial and triaxial types.

The ***"slash sheets"*** contain dimensions and other information for specific types of contacts. Each contact is assigned a ***Basic Identification Number (BIN)***, a non-significant three digit code corresponding to the color code on the contacts.

A ***Qualified Products List (QPL)*** identifies those manufacturers whose products have been verified to meet all requirements.

Series 80 Size #23 and size #20HD contacts conform to AS39029 requirements, but are not covered by a slash sheet. Size #20, #16 and size #12 contacts are standard AS39029 contacts.

About Crimp Tools

Series 80 signal, power and coaxial contacts are crimped to wire using mil spec crimpers. ***Military Specification MIL-DTL-22520*** provides the aerospace/defense industry with a common set of rugged, reliable hand crimp tools. This specification controls the voltage drop and tensile strength of crimp terminations.

Before ordering, check to see if you might already have these tools! We have listed the military part number and the Daniels part number. Daniels Manufacturing Corporation is the leading manufacturer of these tools. However, size #23 and #20HD contacts require special positioners unique to the Mighty Mouse product line.

Tip: Use the Tool Code to Find The Right Crimp Tool

1

Find the contact part number in the catalog. Note the tool codes in the right column. These tool codes identify the crimp tools required to terminate the contact. Usually two tools are required—a crimp frame plus a positioner to locate the contact.

Contact Type	Wire Size	Material	Part Number	Ø A		Color Band	Tool Code
				In.	mm.		
Pin	#22 – #28	BeCu	809-001	.0335-.0355	0.851-0.902	None	A, C
Pin	#26 – #30	BeCu	809-042	.0229-.0245	0.582-0.622	Blue	A, D
Pin	#22 – #28	Alumel	809-065A	.0335-.0355	0.851-0.902	None	A, C
Pin	#22 – #28	Chromel	809-065C	.0335-.0355	0.851-0.902	None	A, C
Socket	#22 – #28	BeCu	809-002	.0335-.0355	0.851-0.902	None	A, C
Socket	#26 – #30	BeCu	809-043	.0229-.0245	0.582-0.622	Blue	A, D
Socket	#22 – #28	Alumel	809-066A	.0335-.0355	0.851-0.902	None	A, C
Socket	#22 – #28	Chromel	809-066C	.0335-.0355	0.851-0.902	None	A, C

2

Turn to the tool section starting on page A-10. Each crimp tool is identified with a letter code. Match the contact letter to the tool letter.

Miniature Adjustable Crimp Tools

These crimp tools perform precision eight indent crimps for gas-tight wire terminations and excellent tensile strength. Adjustment wheel has 8 settings. Ratchet mechanism prevents improper crimps. Use with bayonet-type positioners. Check calibration with M22520/3 gages. Length is 6.75 inches, weight is approx. 10 oz.

A Standard M22520/2-01 crimper. Use with standard size #23 and #20HD Mighty Mouse contacts and with M39029/76 and /78 coaxial center contacts. Requires positioner, ordered separately.

B Special MH992 crimper used with 50 ohm matched impedance coaxial inner contacts. Requires positioner, ordered separately.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
A	809-015	M22520/2-01	AFM8	A
B	809-128	(none)	MH992	B

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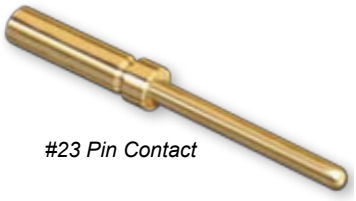
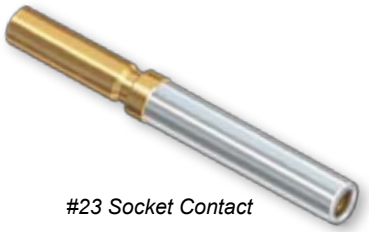
Size #23 Crimp Contacts



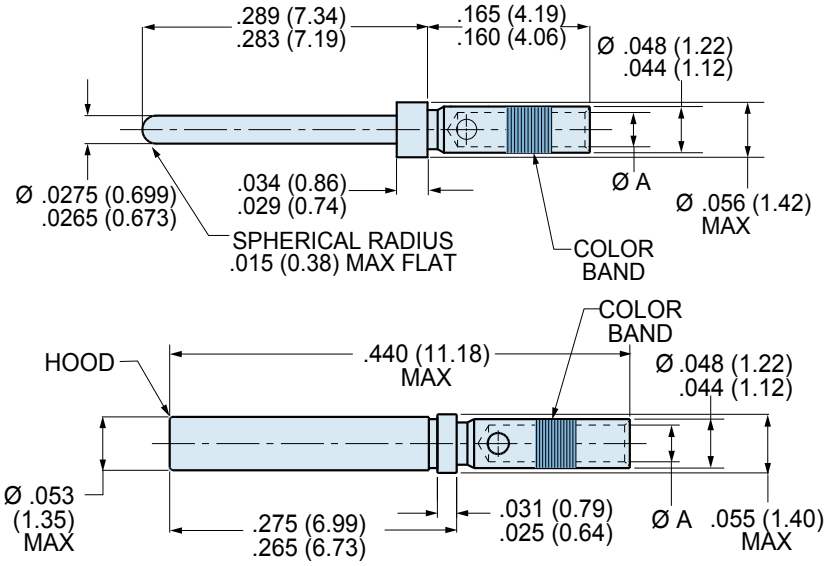
#23 Pin Contact



#23 Socket Contact

Standard size #23 contacts accept #22 to #28 AWG wire. Choose "small bore" versions for #26 to #30 AWG wire. For thermocouple applications, specify alumel or chromel contacts. Contacts are bulk packaged. Terminate with standard M22520 crimper with special positioner.

Contact Type	Wire Size	Material	Part Number	Ø A		Color Band	Tool Code
				In.	mm.		
Pin	#22 – #28	BeCu	809-001	.0335-.0355	0.851-0.902	None	A, C
Pin	#26 – #30	BeCu	809-042	.0229-.0245	0.582-0.622	Blue	A, D
Pin	#22 – #28	Alumel	809-065A	.0335-.0355	0.851-0.902	None	A, C
Pin	#22 – #28	Chromel	809-065C	.0335-.0355	0.851-0.902	None	A, C
Socket	#22 – #28	BeCu	809-002	.0335-.0355	0.851-0.902	None	A, C
Socket	#26 – #30	BeCu	809-043	.0229-.0245	0.582-0.622	Blue	A, D
Socket	#22 – #28	Alumel	809-066A	.0335-.0355	0.851-0.902	None	A, C
Socket	#22 – #28	Chromel	809-066C	.0335-.0355	0.851-0.902	None	A, C



CRIMP TENSILE STRENGTH		
Values are in pounds and are minimums.		
Wire Gage	Silver or Tin Coated Copper Wire	Nickel Coated Copper Wire
#22	12	8
#24	8	6
#26	5	3
#28	3	2
#30	1.5	1.5

Material and Finish

Beryllium copper alloy per ASTM B196 or B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.
Thermocouple contacts: alumel or chromel alloy, unplated, per ANSI 96.1
Socket contact hood: stainless steel, passivated per AMS-QQ-P-35.

Specifications

Current Rating: 5 Amps maximum
Voltage Drop (at 5 Amps and 25° C): 70 millivolts maximum
Temperature Range: -65° to + 200° C
Socket Contact Minimum Separation Force: 0.5 ounces

Crimp Tools and Insertion/Removal Tools

Crimper: 809-015
Positioner: 809-005 (standard). Use P/N 809-057 for small bore contacts 809-065 and 809-066
Standard Insertion/Removal Tool: 809-088

Dimensions in inches (millimeters) and are subject to change without notice.

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Series 80 Mighty Mouse
Contacts and Tools
Size #23 Crimp Contact Instructions

How To Terminate, Install and Remove Size #23 Contacts

1 ***Set Up Crimp Tool.*** Install proper positioner into crimp tool. The label on the positioner shows the proper tool setting for each wire size. Turn the adjustment wheel to the correct setting.

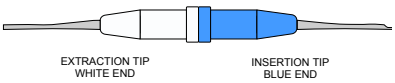
2 ***Strip Wire.*** Remove wire insulation, taking care to avoid nicking or cutting wire strands. Strip wire to length shown.

3 ***Insert wire*** into contact. The wire should be visible in the inspection hole.

4 Insert contact into crimp tool as shown. Make sure that the contact is fully inserted into the tool. Squeeze handle completely. The ratchet mechanism will not allow a partial crimp. Release handle and remove contact.

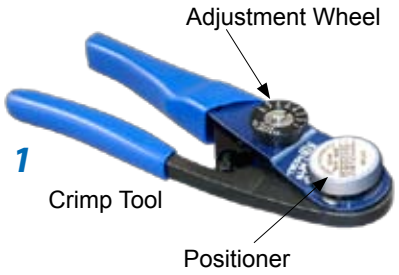
5 ***Inspect crimped contact.*** Wire should be fully inserted and the crimp should be uniform in appearance.

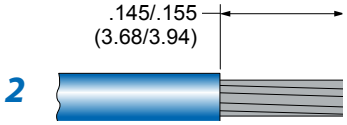
Insertion/Extraction Tool 809-088

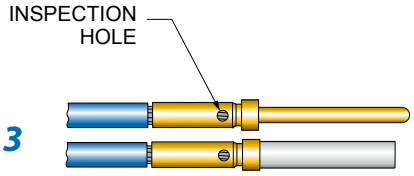


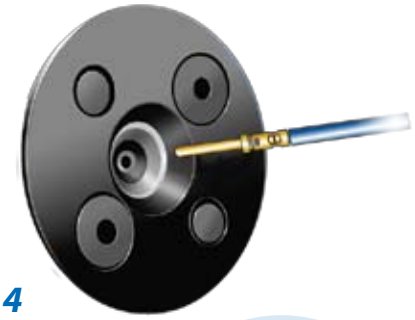
6 ***Install contact into connector.*** Push the contact through the rear grommet until the contact locks into place. This can usually be done by hand without the need for a tool. If the wire gage is #26 or smaller, a tool is helpful. There are two techniques for installing contacts with a tool. One method is to push the contact in by hand, then use the tool to finish the insertion. The other method is to position the insertion tip against the contact shoulder, then insert the contact. Use insertion/extraction tool 809-088 to install contacts. Slide the wire into the groove on the blue end of the tool. Slide the tool tip up the contact until it touches the contact shoulder. **USE CARE TO AVOID DAMAGING THE CONNECTOR.**

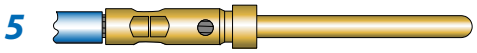
7 ***Contact Extraction.*** Use tool 809-088. The white end is used for contact extraction. First, push the wire into the groove of the metal tip. Slide the tip of the tool into the connector. Push the tool into the connector cavity until the tip bottoms in the connector. Avoid wiggling or rocking the tip. This may damage the cavity. A straight push is best. Pinch the wire between your finger and the white plastic grip and slide the tool and contact out of the connector. **Wire insulation diameter greater than 0.045 inches (1.14mm) is too large to work properly with the extraction tool. connector damage is possible.**

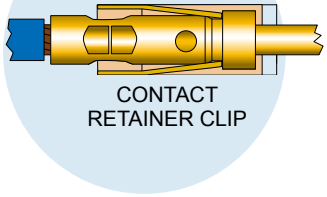


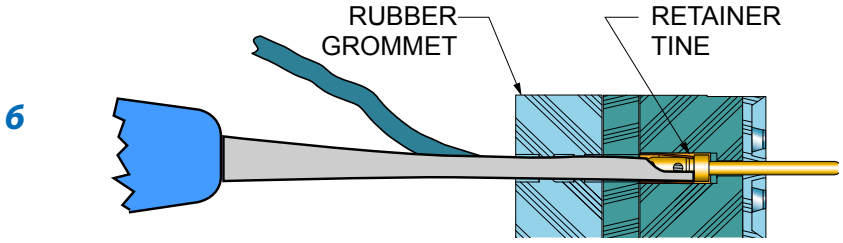


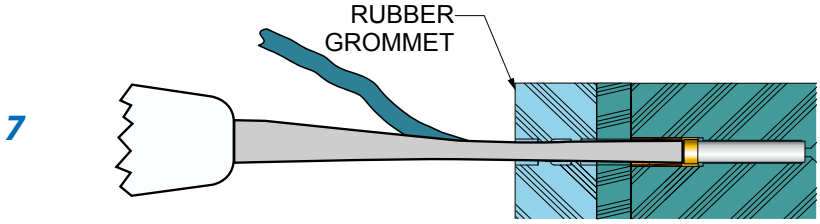












Dimensions in inches (millimeters) and are subject to change without notice.

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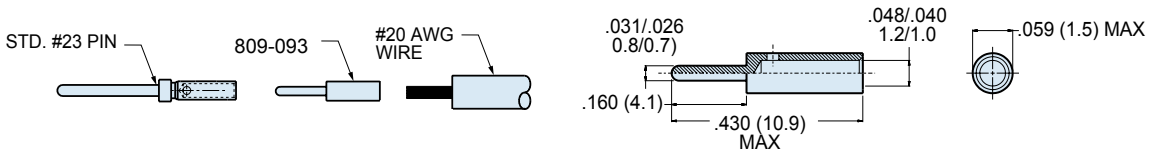
Adapter for Crimping #20 AWG Wire to Size #23 Contacts

#20 AWG Wire Adapter

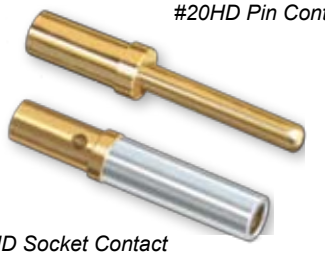
Size #22 AWG wire is the largest wire size that fits standard size 23 contacts. Use this adapter to attach larger #20 gage wire. First, crimp wire to adapter, then crimp the adapter into the size #23 contact. Adapters are made of tellurium copper alloy #1452, and are gold plated. Crimp with M22520/1-01 tool and 809-138 (Daniels TH653) positioner. These adapters cannot be removed from connectors.

Adapter Size	Wire Size	Part Number	Tool Code
#22-20	#20	**809-093**	J, L



Size #20HD Crimp Contacts

#20HD Pin Contact

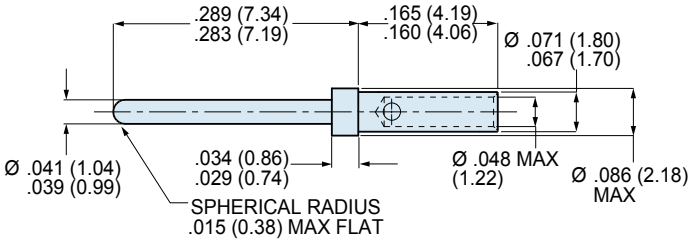


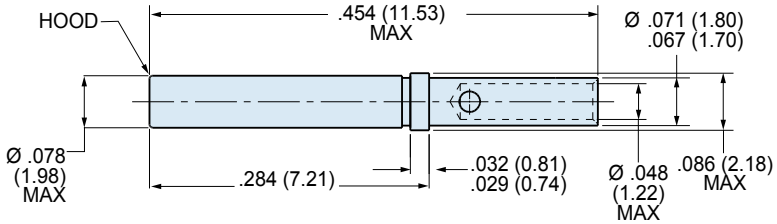
#20HD Socket Contact

High-density size #20HD contacts accept #20 to #24 AWG wire. At rated test current of 7.5 amps, the maximum voltage drop is 55 millivolts. Contacts are gold-plated copper alloy. Socket contacts feature stainless steel hoods to protect against probe damage. Contacts are bulk packaged. Terminate with M22520/2-01 crimper and 809-206 positioner.

Contact Type	Wire Size	Part Number	Tool Code
Pin	#20 – #24	**809-204**	A, I
Socket	#20 – #24	**809-205**	A, I

CRIMP TENSILE STRENGTH		
Values are in pounds and are minimums.		
Wire Gage	Silver or Tin Coated Copper Wire	Nickel Coated Copper Wire
#20	20	19
#22	12	8
#24	8	6





Material and Finish

Beryllium copper alloy, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches. Socket contact hood: stainless steel, passivated per AMS-QQ-P-35.

Specifications

Current Rating: 7.5 Amps maximum
Temperature Range: -65° to + 200° C
Socket Contact Minimum Separation Force: 0.7 ounces

Dimensions in inches (millimeters) and are subject to change without notice.

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Series 80 Mighty Mouse Contacts and Tools

#20, #16, #12 Contacts

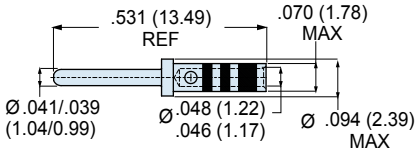
Size #20 Crimp Contacts

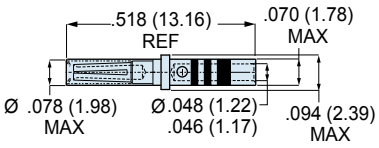
#20 Pin Contact

#20 Socket Contact

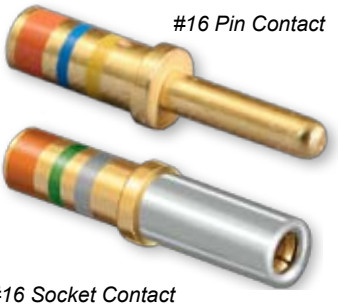
Standard size #20 contacts accept #20 to #24 AWG wire. At rated test current of 7.5 amps, the maximum voltage drop is 55 millivolts. Contacts are gold-plated copper alloy. Socket contacts feature stainless steel hoods to protect against probe damage. Approved to SAE-AMS-39029. Contacts are bulk packaged. Terminate with M22520/1-01 crimper and M22520/1-04 positioner.

Contact Type	Wire Size	Part Number	Military Part Number	Color Band			Tool Code
				1st	2nd	3rd	
Pin	#20 – #24	850-002-20-363	M39029/58-363	Orange	Blue	Orange	J, K
Socket	#20 – #24	850-003-20-357	M39029/57-357	Orange	Green	Violet	J, K





Size #16 Crimp Contacts

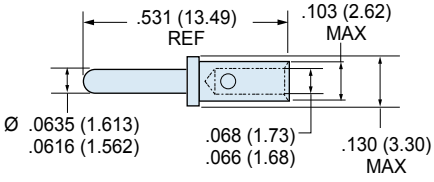


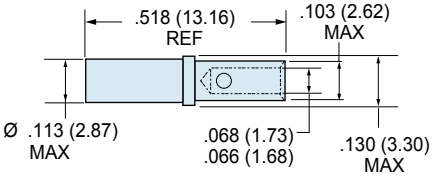
#16 Pin Contact

#16 Socket Contact

Standard size #16 contacts accept #16 to #20 AWG wire. At rated test current of 13 amps, the maximum voltage drop is 74 millivolts. Contacts are gold-plated copper alloy. Socket contacts feature stainless steel hoods to protect against probe damage. Approved to SAE-AMS-39029. Contacts are bulk packaged. Terminate with M22520/1-01 crimper and M22520/1-04 positioner.

Contact Type	Wire Size	Part Number	Military Part Number	Color Band			Tool Code
				1st	2nd	3rd	
Pin	#16 – #20	809-110	M39029/58-364	Orange	Blue	Yellow	J, K
Socket	#16 – #20	809-111	M39029/57-358	Orange	Green	Gray	J, K





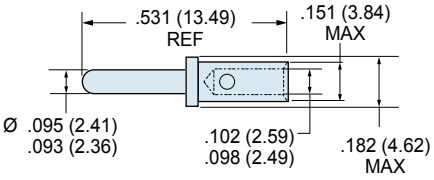
Size #12 Crimp Contacts

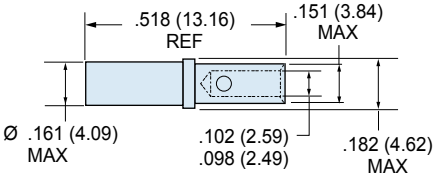
#12 Pin Contact

#12 Socket Contact

Standard size #12 contacts accept #12 to #14 AWG wire. At rated test current of 23 amps, the maximum voltage drop is 63 millivolts. Contacts are gold-plated copper alloy. Socket contacts feature stainless steel hoods to protect against probe damage. Approved to SAE AS39029. Contacts are bulk packaged. Terminate with M22520/1-01 crimper and M22520/1-04 positioner.

Contact Type	Wire Size	Part Number	Military Part Number	Color Band			Tool Code
				1st	2nd	3rd	
Pin	#12 – #14	809-112	M39029/58-365	Orange	Blue	Green	J, K
Socket	#12 – #14	809-113	M39029/57-359	Orange	Green	White	J, K





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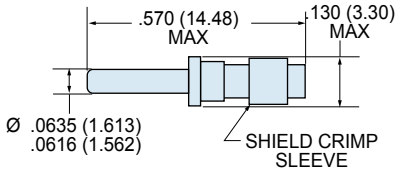
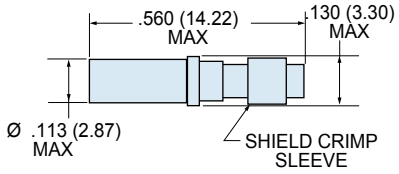
Size #16 Coaxial Contacts

These #16 contacts accept 50 ohm and 75 ohm coaxial cable. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV voltage rating is 800 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and are unassembled with instruction sheet. One contact consists of outer contact , fluorocarbon dielectric, inner contact and shield crimp sleeve. Inner and outer contacts are gold-plated copper alloy. Approved to SAE AS39029. VSWR rating 1.5:1 maximum up to 700 MHz. 5000 megohm insulation resistance.

Type	Cable Size	Part Number	Military Part Number	Color Band			Tool Code
				1st	2nd	3rd	
Pin	RG174, RG316, RG179	809-114	M39029/76-424	Yellow	Red	Yellow	A, E, M, N
Pin	RG178	809-115	M39029/76-425	Yellow	Red	Green	A, E, M, N
Socket	RG174, RG316, RG179	809-116	M39029/78-432	Yellow	Orange	Red	A, E, M, N
Socket	RG178	809-117	M39029/78-433	Yellow	Orange	Orange	A, E, M, N

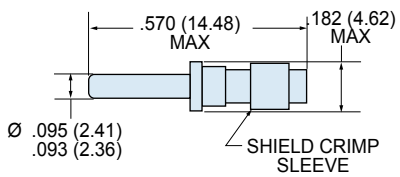


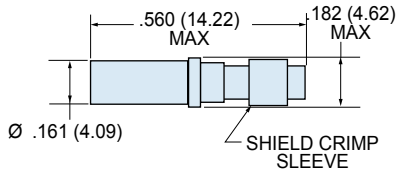


Size #12 Coaxial Contacts

These #12 contacts accept 50 ohm and 75 ohm coaxial cable. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV voltage rating is 1000 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact , fluorocarbon dielectric, inner contact and shield crimp sleeve. Inner and outer contacts are gold-plated copper alloy. Approved to SAE AS39029. VSWR rating 1.5:1 maximum up to 700 MHz. 5000 megohm insulation resistance.

Type	Cable Size	Part Number	Military Part Number	Color Band			Tool Code
				1st	2nd	3rd	
Pin	RG174, RG316, RG179	809-118	M39029/28-211	Red	Brown	Brown	A, G, O, P
Pin	RG180	809-119	M39029/28-409	Yellow	Black	White	A, G, O, P
Socket	RG174, RG316, RG179	809-120	M39029/27-210	Red	Brown	Black	A, G, O, P
Socket	RG180	809-121	M39029/27-402	Yellow	Black	Red	A, G, O, P





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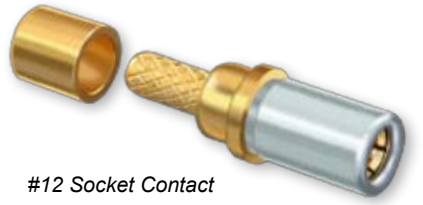
Series 80 Mighty Mouse
Contacts and Tools
Matched Impedance Coaxial Contacts

Size #12, 50 Ohm Matched Impedance Coaxial Contacts

#12 Pin Contact



#12 Socket Contact

These contacts offer improved frequency response compared to standard coaxial contacts above. VSWR is 1.32:1 at 3GHz . Nominal impedance is 50 ohms. Insertion loss at 3GHz is 0.20 dB maximum. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV voltage rating is 1000 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. Inner and outer contacts are gold-plated copper alloy. 5000 megohm insulation resistance. Terminate crimp type coaxial center contact with hand tool 809-128 (Daniels MH992). Terminate cable braid to contact with 809-129 (Daniels HX4) parallel action crimp tool and 809-120 (Daniels Y196) hex die.

Contact Type	Cable Type	Part Number	Termination	Fig.	Tool Code
Pin	M17/113-RG316	**852-016-01**	Crimp	1	B, H, Q, R
Pin	M17/152-00001(RG316DS)	**852-016-02**	Crimp	1	B, H, Q, R
Pin	M17/93-RG178	**852-016-03**	Crimp	1	B, F, Q, R
Pin	TFLEX-405	**852-018**	Solder	2	(No Tool)
Socket	M17/113-RG316	**852-015-01**	Crimp	3	B, H, Q, R
Socket	M17/152-00001(RG316DS)	**852-015-02**	Crimp	3	B, H, Q, R
Socket	M17/93-RG178	**852-015-03**	Crimp	3	B, F, Q, R
Socket	TFLEX-405	**852-017**	Solder	4	(No Tool)

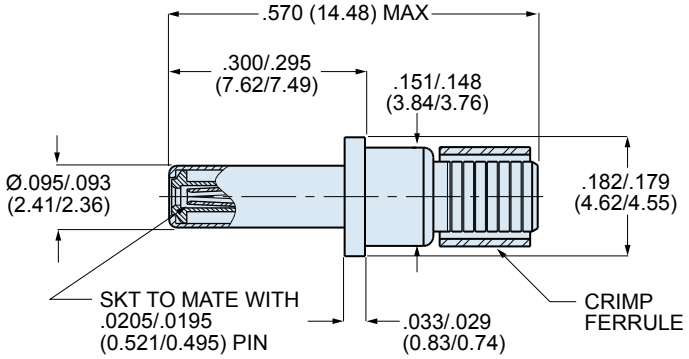


Figure 1

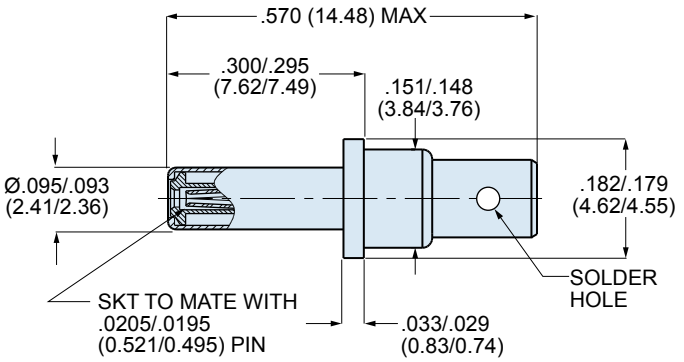


Figure 2

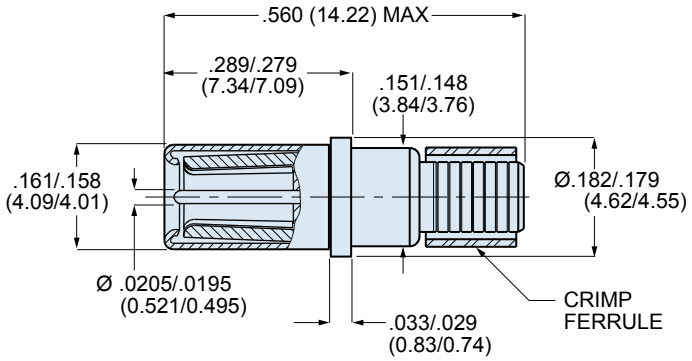


Figure 3

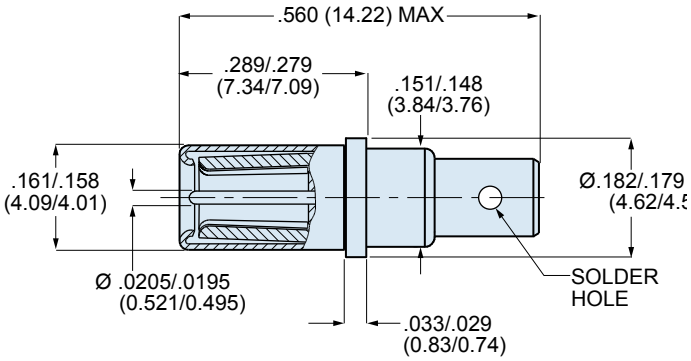


Figure 4

Dimensions in inches (millimeters) and are subject to change without notice.

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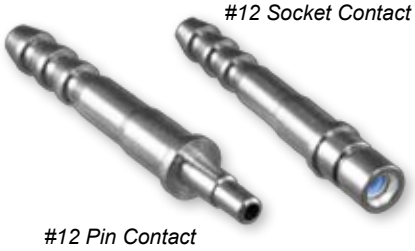
Size #12 Pneumatic Contacts

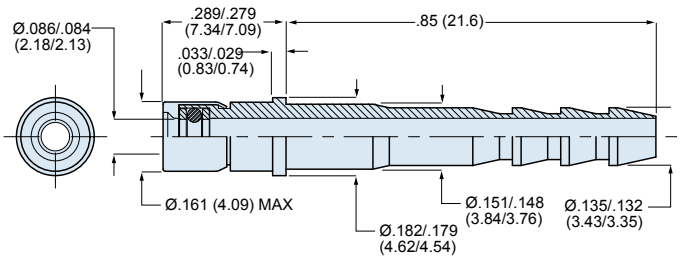


Stainless steel pneumatic contacts attach to 3/32 inch (2.38) diameter tubing. Socket contact has o-ring and PTFE backup washers. Contacts snap into size #12 connector cavities. Ideal for pitot tube connections, these pneumatic contacts are rated for 100 PSI maximum air pressure. No installation tool is required. Remove contacts with plastic extraction tool 809-132.

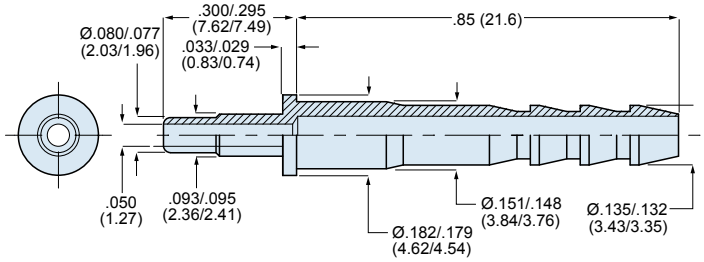
Contact Type	Tube I.D.	Part Number
Pin	.094 (2.38)	857-011
Socket	.094 (2.38)	857-010

Material and Finish

Body and Cap: stainless steel, passivated
O-ring: fluorosilicone
Washers: PTFE

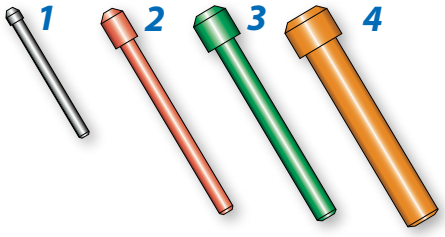


857-010 Socket Contact



857-011 Pin Contact

Grommet Sealing Plugs



Grommet sealing plugs are used to seal unwired contact cavities. The size #23 sealing plug is specially designed to fit Glenair Series 80 grommets. Sizes 20, 16 and 12 plugs conform to MS27488 requirements. After installing unwired contacts into unused cavities, insert knob end of sealing plug into grommet until it bottoms against the unwired contact per illustration. Install sealing plugs with standard contact insertion/extraction tools . Size #23 plug is polyphenylsulphone, other sizes are per MS27488 requirements.

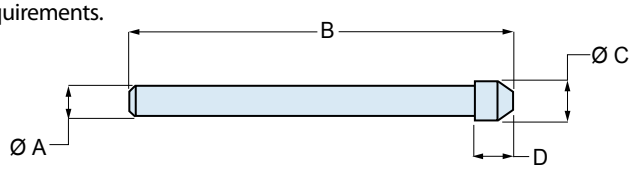
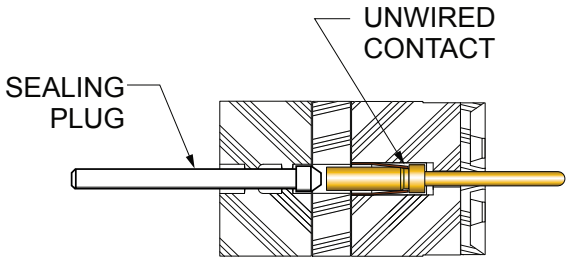


Fig.	Size	Color	Part Number	Military Part Number	Insertion/ Removal Tool	A Ref.		B Ref.		C Ref.		D Ref.	
						in.	mm.	in.	mm.	in.	mm.	in.	mm.
1	#23	Black	809-155	(None)	M81969/14-01	.040	1.02	.51	13.0	.052	1.32	.050	1.27
2	#20	Red	859-012	MS27488-20-2	M81969/14-11	.053	1.35	.82	20.8	.085	2.16	.125	3.18
3	#16	Green	859-013	MS27488-16-2	M81969/14-03	.074	1.88	.88	22.4	.125	3.18	.125	3.18
4	#12	Orange	859-014	MS27488-12-2	M81969/14-04	.120	3.05	.85	21.6	.165	4.19	.125	3.18

Installation of Sealing Plugs

"When installing sealing plug in connector cavities without contacts, the end opposite the knob shall be inserted first and the knob shall be seated against the grommet face. When installing into cavities with contacts, the sealing plugs shall be installed knob end first and shall bottom on the contact wire barrel."
(NAVAIR 01-1A-505–1 Installation manual)



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Series 80 Mighty Mouse
Contacts and Tools
Crimp Tools and Positioners

Miniature Adjustable Crimp Tools

These crimp tools perform precision eight indent crimps for gas-tight wire terminations and excellent tensile strength. Adjustment wheel has 8 settings. Ratchet mechanism prevents improper crimps. Use with bayonet-type positioners. Check calibration with M22520/3 gages. Length is 6.75 inches, weight is approx. 10 oz.

A Standard M22520/2-01 crimper. Use with standard size #23 and #20HD Mighty Mouse contacts and with M39029/76 and /78 coaxial center contacts. Requires positioner, ordered separately.

B Special MH992 crimper used with 50 ohm matched impedance coaxial inner contacts. Requires positioner, ordered separately.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
A	809-015	M22520/2-01	AFM8	A
B	809-128	(none)	MH992	B

Positioners For Use With Miniature Adjustable Crimp Tools

These bayonet-type positioners hold contacts at correct height for crimping with M22520/2 type miniature step adjustable tools, above. Face plate shows correct tool settings.

C Positioner for standard size #23 contacts. #22-#28 AWG. Use with 809-015 crimp tool.

D Positioner for small bore size #23 contacts. #26-#30 AWG. Use with 809-015 crimp tool.

E Positioner for M39029/76 and 78 coaxial inner contact. Use with 809-015 crimp tool.

F Positioner for matched impedance #12 coaxial inner contact. Use with 809-128 crimp tool.

G Positioner for M39029/27 and 28 #12 coaxial inner contact. Use with 809-015 crimp tool.

H Positioner for matched impedance #12 coaxial inner contact. Use with 809-128 crimp tool.

I Positioner for #20HD contacts. Use with 809-015 crimp tool.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
C	809-005	(none)	K1461	C
D	809-057	(none)	(none)	D
E	809-125	M22520/2-35	K532-1	E
F	809-124	(none)	K1360	F
G	809-135	M22520/2-34	K323	G
H	859-006	(none)	K1721	H
I	809-206	(none)	(none)	I

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Crimp Tool And Positioner For #12, #16 and #20 Power Contacts, 809-093 Adapters

J Crimp tool for use with size #20, #16 and #12 power pins. 9.75 inches OAL, 1.25 pounds. Use with M39029/57 and /58 contacts and 809-093 adapters.

K Positioner for use with size #20, #12 and #16 Power contacts.

L Positioner for use with 809-093 adapters.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
J	809-136	M22520/1-01	AF8	J
K	809-137	M22520/1-04	TH163	K
L	809-138	(none)	TH653	L

Crimp Tool And Positioner For #16 Coaxial Outer Contact

For crimping size #16 shield sleeves. These mil spec approved tools feature a ratchet mechanism to prevent damage from overcrimping. Check calibration with M22520/3 gage.

M Crimp tool for use with size #16 coaxial contacts. Blue handles. 9.75 inches OAL, 1.25 pounds.

N Positioner for use with size #16 coaxial contacts. Use with 809-127 (M22520/4-01) crimp tool.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
M	809-127	M22520/4-01	GS100-1	M
N	809-126	M22520/4-02	GP295	N

Crimp Tool And Positioner For #12 Coaxial Outer Contact

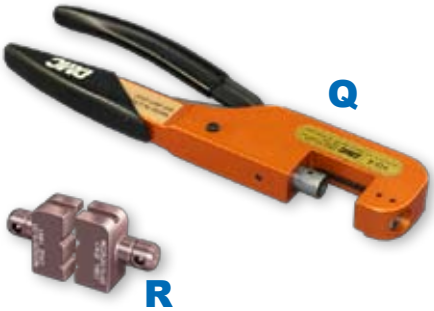
For crimping size #12 shield sleeves. These mil spec approved tools feature a ratchet mechanism to prevent damage from overcrimping. Check calibration with M22520/3 gage.

O Crimp tool for use with size #12 coaxial contacts. Black handles. 9.75 inches OAL, 1.25 pounds.

P Positioner for use with size #12 coaxial contacts. Use with 809-133 (M22520/31-01) crimp tool.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
O	809-133	M22520/31-01	GS200-1	O
P	809-134	M22520/31-02	G2P330	P

Parallel Action Crimp Tool and Hex Die Set for 50 Ohm Matched Impedance #12 Coax



Q Parallel action tool for use with hex crimp dies. 11 inches OAL, 2.0 pounds. Anodized aluminum frame, steel mechanism, plastic handles. Includes tool for die set removal. Accepts all M22520/5 die sets.

R Die set for terminating coaxial shield to outer contact. Use with size #12 matched impedance M39029/102 and 103 type coaxial contacts. Set consists of upper and lower halves. Made of hardened steel with black oxide finish. Die set has two closures.

Figure	Part Number	Military Part Number	Daniels Part Number	Tool Code
Q	809-129	M22520/5-01	HX4	Q
R	809-130	M22520/5-03	Y196	R

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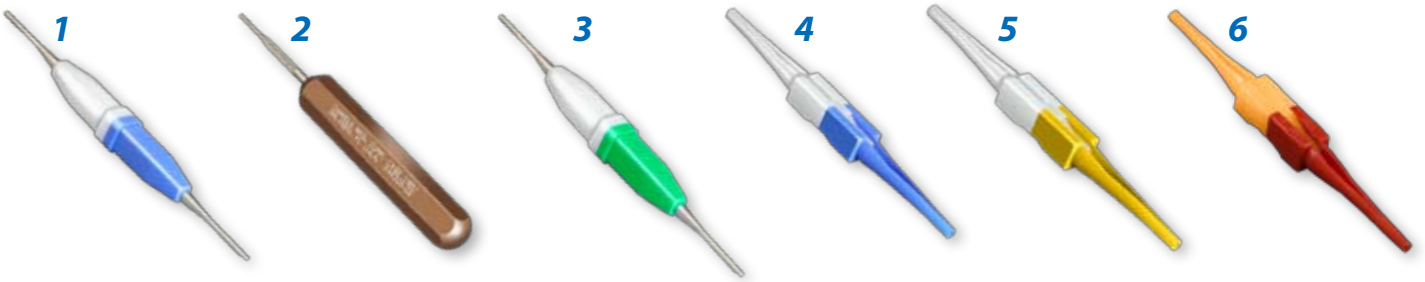
Series 80 Mighty Mouse Contacts and Tools

Contact Insertion and Removal Tools and Contact Retention Tester 809-107

Contact Insertion and Removal Tools



1 Insertion/Extraction Tool for #23 Contacts. This tool features molded plastic grips and sturdy stainless steel tips. Blue/White molded handle.

2 Insertion Tool for #23 Contacts. This tool features anodized aluminum handle and stainless steel insertion tip.

3 Insertion/Extraction Tool for #20HD Contacts. This tool features molded plastic grips and sturdy stainless steel tips. Green/White molded handle.

4 Insertion/Extraction Tool for #16 Contacts. Use with size #16 coaxial or power contacts. Economical molded plastic. White extraction tip, blue insertion tip.

5 Insertion/Extraction Tool for #12 Contacts. Use with size #12 coaxial or power contacts. Molded plastic. White extraction tip, yellow insertion tip.

6 Insertion/Extraction Tool for #20 Contacts. Molded plastic. Orange extraction tip, red insertion tip.

Figure	Size	Type	Part Number	Military Part Number	Daniels Part Number
1	#23	Insertion/Extraction	809-088	(None)	(None)
2	#23	Insertion Only	809-013	(None)	DAK225-22
3	#20HD	Insertion/Extraction	809-203	(None)	(None)
4	#16	Insertion/Extraction	809-131	M81969/14-03	(None)
5	#12	Insertion/extraction	809-132	M81969/14-04	(None)
6	#20	Insertion/extraction	809-207	M81969/14-10	(None)

Contact Retention Tester for Size #23 Contacts

Check for properly seated contacts with this spring-loaded tester. Apply the tool tip to the mating end of a contact. Push on the handle until the spring compresses to the recommended force. A visual indicator shows full compression. The contact is properly retained if it is not displaced.

The adjustable handle should be set to 3.2 pounds (14.2 N). The pin tip is used with #23 pin contacts. The socket tip is used with #23 socket contacts.

Order the complete kit, or order the tips and handle separately.

Figure	Description	Part Number	Daniels Part Number
1	Handle	809-107-1	HT250-2
2	Pin Tip	809-107-2	68-023-01
	Socket Tip (not shown)	809-107-3	67-023-01
	Complete Kit	809-107-4	(None)

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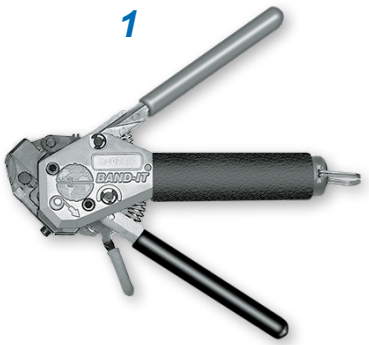
BAND-IT® Shield Termination System



Fast, cost-effective shield termination. Attach cable shields to Series 80 connectors or backshells with ***BAND-IT***® stainless steel straps. The ***BAND-IT***® system offers fast termination and the flexibility to handle a wide range of parts with just one band size. Approved for aerospace and defense, these straps have successfully passed rigorous shock, vibration and environmental testing.

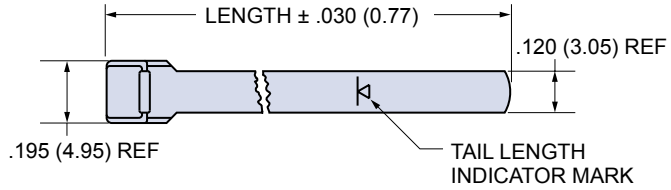
1 Micro Band Installation Tool. Use with .120" (3.05 mm) wide bands. 6.75 inches (172 mm.) length, 1.2 pounds (0.6 Kg.)

2 Micro Band, .120" (3.05 mm) wide. Available in two lengths, flat or pre-coiled. Stainless steel.

Figure	Description	Part Number
1	Micro Band Installation Tool	600-061

Figure	Length		Part Number		Acommodates Diameter	
	in.	mm.	Flat	Pre-Coiled	in.	mm.
2	8.125	206.38	600-057	600-057-1	.88	22.35
2	14.250	361.95	600-083	600-083-1	1.88	47.75

Contact Glenair or visit our website (glenair.com) to view our complete line of ***BAND-IT***® products, including pneumatic tools for high volume production and calibration kits.



BAND-IT® Shield Termination Instructions

1. Prepare Cable Braid for termination process (Figure 1).
2. Push Braid forward over Adapter Retention Lip to the Adapter Incline Point (or .4" [10.2mm] minimum braid length). Milk Braid as required to remove slack and insure a snug fit around the shield termination area (Figure 2).
3. Prepare the Band in the following manner:

   IMPORTANT: Due to Connector/Adapter circumference, it may be necessary to prepare the Band around the Cable or Retention Area.

   A. Roll Band through the Buckle Slot twice. (Bands must be double-coiled.)

   B. Pull on Band until Mark (▷|) is within approximately .250 inch (6.4mm) of Buckle Slot (Figure 3). The Band may be tightened further if desired.

***NOTE: Prepared Band should have (▷|) Mark visible approximately where shown in Figure* 3.**

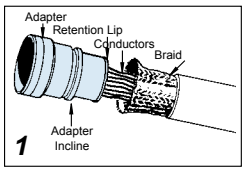
Shield Termination

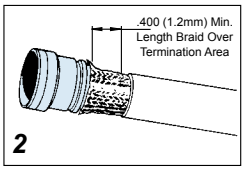
Clamping Process (Figures 4 thru 8)

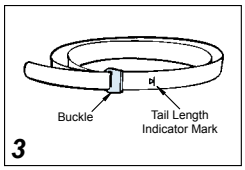
NOTE: To free Tool Handles, move Holding Clips to center of Tool.

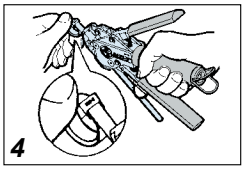
4. Squeeze Gripper Release Lever and insert Band into the front end opening of the Tool. (NOTE: Circular portion of looped band must always face downward.)
5. Aligning the Band and Tool with the Shield Termination Area, squeeze Black Pull-Up Handle repeatedly using short strokes until it locks against Tool Body. (This indicates the Band is compressed to the Tool Precalibrated Tension.)

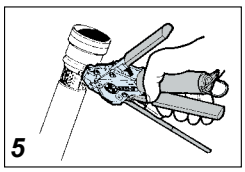
   NOTE: If alignment of band and shield is unsatisfactory, tension on band can be relaxed by pushing on slotted release lever on top of tool. Make adjustments as necessary and again squeeze black pull-up handle.
6. Complete the Clamping Process by squeezing the Gray Cut-Off Handle.
7. Remove excess band from tool and dispose.
8. Inspect Shield Termination.

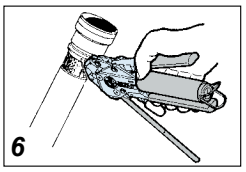


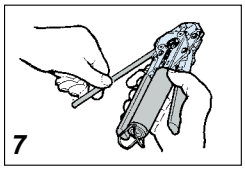


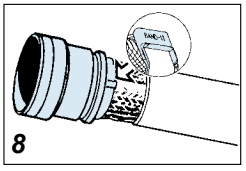












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Series 80 Mighty Mouse
Contacts and Tools
Jam Nut Tightening Tools
Connector Holding Fixtures

Spanner Tool for Tightening Series 80 Jam Nuts

Use these tools to tighten Series 80 jam nuts. 1/4" or 3/8" square drive for use with torque wrenches. Heat-treated steel, nickel plated.

	Spanner Tool Part Number					
Shell Size	Series 800	Series 801	Series 803	Series 804 Style 07	Series 804 Style 00	Series 805
5	600-146-01	600-146-02	600-137-05	600-146-03	600-147-5	—
6	600-146-02	600-146-03	600-137-06	600-146-04	600-147-6	—
7	600-146-03	600-146-05	600-137-07	600-146-06	600-147-7	—
8	600-146-04	600-146-05	600-137-08	600-146-06	600-147-7	600-154-08
9	600-146-05	600-146-06	600-137-09	600-146-07	600-147-9	600-154-09
10	600-146-06	600-146-07	600-137-10	600-146-08	600-147-10	600-154-09
11	—	—	—	—	—	600-154-11
12	600-146-08	—	600-137-12	600-146-10	600-147-12	600-154-12
13	—	600-146-10	—	—	—	—
14	600-146-10	—	600-137-14	600-146-12	600-147-14	—
15	600-146-11	—	600-137-15	600-146-13	600-147-15	600-154-15
16	—	600-146-13	—	—	—	—
17	—	600-146-14	—	—	—	—
18	—	—	—	—	—	600-154-18
19	—	—	—	—	—	600-154-19
21	—	600-146-17	—	—	—	—
23	—	—	—	—	—	600-154-23

Connector Holding Tool for Tightening Backshells and Accessories

1

2

1 Plug tool for holding Series 80 plug connectors. Heat-treated steel, nickel plated.

2 Receptacle tool for holding Series 80 receptacle connectors. Heat-treated steel, nickel plated.

Shell Size	Holding Tool Part Number (Add P or R)									
	Series 800		Series 801		Series 803		Series 804		Series 805	
5	600M005-05	★	600MM005-05	♦	600-140-5	★	600-141-5	■	—	
6	600M005-06	★	600MM005-06	♦	600-140-6	★	600-141-6	■	—	
7	600M005-07	★	600MM005-07	♦	600-140-7	★	600-141-7	■	—	
8	600M005-08	★	600MM005-08	♦	600-140-8	★	600-141-8	■	600-155-8	■
9	600M005-09	★	600MM005-09	♦	600-140-9	★	600-141-9	■	600-155-9	■
10	600M005-10	★	600MM005-10	♦	600-140-10	★	600-141-10	■	600-155-10	■
11	—		—		—		—		600-155-11	■
12	600M005-12	★	—		600-140-12	★	600-141-12	■	600-155-12	■
13	—		600MM005-13	♦	—		—		—	
14	—		—		600-140-14	★	600-141-14	■	—	
15	—		—		600-140-15	★	600-141-15	■	600-155-15	■
16	—		600MM005-16	♦	—		—		—	
17	—		600MM005-17	♦	—		—		—	
18	—		—		—		—		600-155-18	■
19	—		—		—		—		600-155-19	■
21	—		600MM005-21	♦	—		—		—	
23	—		—		—		—		600-155-23	■

★ Add *P* for plug holder or *R* for receptacle holder, followed by polarizing position (*N*,*X*,*Y*, *Z*).
♦ Add *P* for plug holder or *R* for receptacle holder, followed by polarizing position (*A*,*B*,*C*, *D*).
■ Add *P* for plug holder or *R* for receptacle holder.

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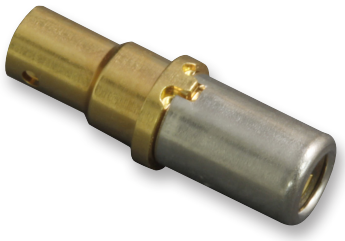
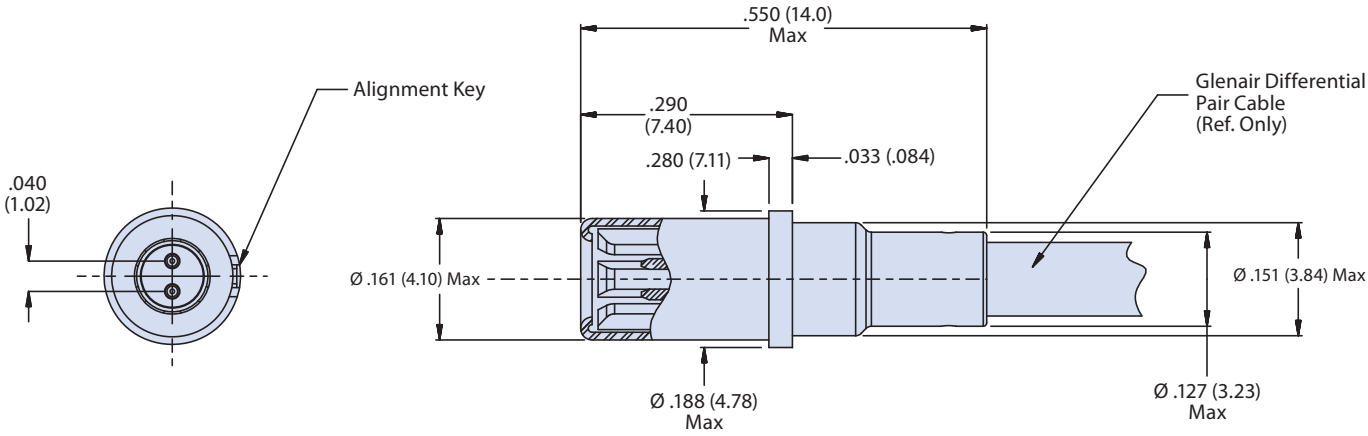
853-015
Size #12 Differential Twinax Socket Contact
For Use with Mighty Mouse and Series 79 Micro-Crimp

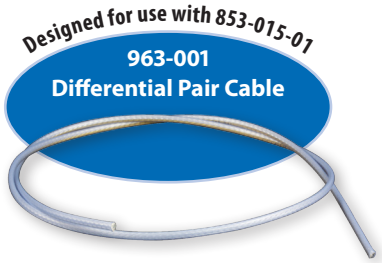
Size #12 Differential Twinax Socket Contact for Multi-Gigabit Data Rate Applications



These solder terminated #12 twinax socket contacts accept 100 ohm twinax cable. Current rating is 1 Amp. DWV rating is 500 Vac rms sea level, 125 Vac at 70,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact, center contact and crimp sleeve. All contacts are gold-plated copper alloy. 5000 megohm insulation resistance at 200Vdc. Mates with: 853-016. Ideally suited for multi-gigabit data rate applications such as 1000 Base-T gigabit ethernet.

Type	Glenair Part No.	Military Part No.	AWG Wire Size	Cable Accommodation	Impedence	Frequency Range	VSWR	Insertion Loss
Socket	853-015-01	N/A	28	859-041 963-001	100-Ohms Nominal	DC to 10 GHz	1.1 + (.03 * F GHz)	1.3 *F GHz





Material and Finish
Contact Body: Copper Alloy/Gold Plated
Center Contact: Copper Alloy/Gold Plated
Crimp Sleeve: Brass or equivalent/Gold Plated

Electrical Parameters
Differential Impedence: 100-ohms nominal
Frequency Range: DC to 10 Ghz
VSWR: 1.1+(.03* F GHz)
Insertion Loss: 1/3* F GHz
Dielectric Withstanding Voltage: 500 Vrms
Insulation Resistence: 5000 Megohms minimum

Notes
Contact is designed to accommodate Glenair P/N 963-001 cable.
For assembly instructions, see AI85014.
Socket contact shall mate with Glenair Pin Contact P/N 853-016-XX.
For use in Glenair Mighty Mouse and Series 79 Micro-Crimp connectors only.
PCB Tail-equipped contacts also available. Consult factory.

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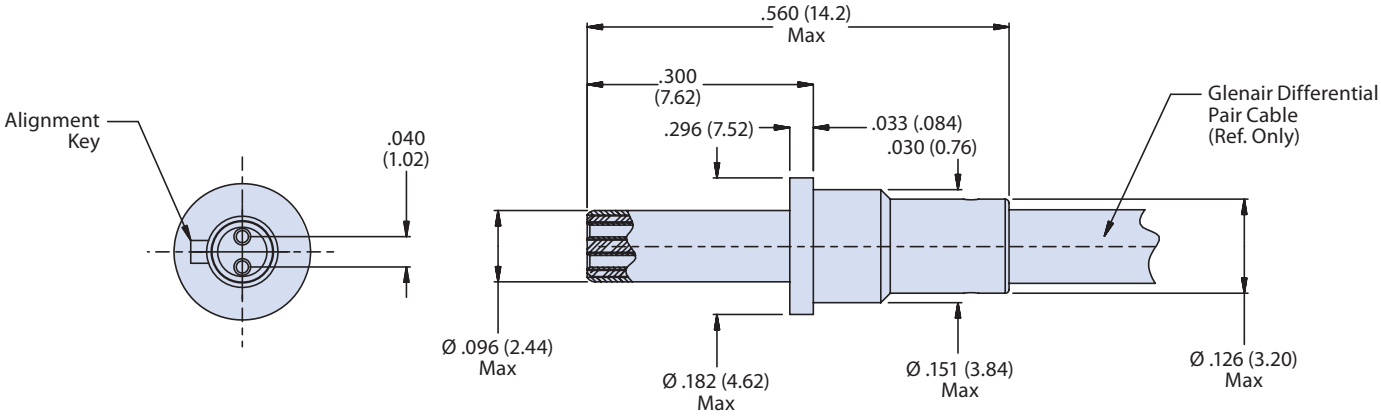
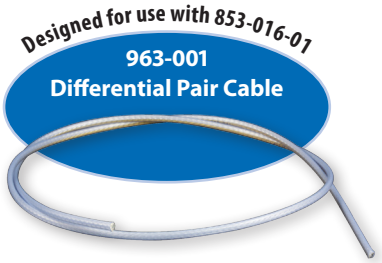
Size #12 Differential Twinax Pin Contact for Multi-Gigabit Data Rate Applications

These solder terminated #12 twinax pin contacts accept 100 ohm twinax cable. Current rating is 1 Amp. DWV rating is 500 Vac rms sea level, 125 Vac at 70,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact, center contact and crimp sleeve. All contacts are gold-plated copper alloy. 5000 megohm insulation resistance at 200Vdc. Mates with: 853-015. Ideally suited for multi-gigabit data rate applications such as 1000 Base-T gigabit ethernet.

Type	Glenair Part No.	Military Part No.	AWG Wire Size	Cable Accommodation	Impedence	Frequency Range	VSWR	Insertion Loss
Pin	853-016-01	N/A	28	859-041 963-001	100-Ohms Nominal	DC to 10 GHz	1.1 + (.03 * F GHz)	1.3 *F GHz





Material and Finish

Contact Body: Copper Alloy/Gold Plated
Center Contact: Copper Alloy/Gold Plated
Crimp Sleeve: Brass or equivalent/Gold Plated

Electrical Parameters

Differential Impedence: 100-ohms nominal
Frequency Range: DC to 10 Ghz
VSWR: 1.1+(.03* F Ghz)
Insertion Loss: 1/3* F Ghz
Dielectric Withstanding Voltage: 500 Vrms
Insulation Resistence: 5000 Megohms minimum

Notes

Contact is designed to accommodate Glenair P/N 963-001 cable.
For assembly instructions, see AI85014.
Pin contact shall mate with Glenair Socket Contact P/N 853-015-XX.
For use in Glenair Mighty Mouse and Series 79 Micro-Crimp connectors only.
PCB Tail-equipped contacts also available. Consult factory.

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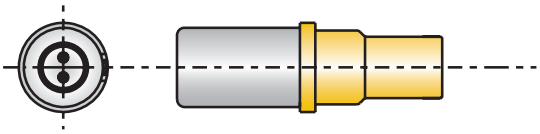
AI85014
Twinax Socket Contact
Assembly Instructions

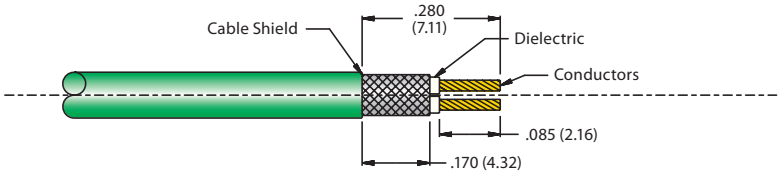


Socket Contact

100 Ohm Parallel Cable

STEP 1

1. Strip cable to dimensions shown. ***Be careful not to flare braid open***.
2. Pre-tin conductor and braid shield.
3. Clean the solder joint with alcohol.

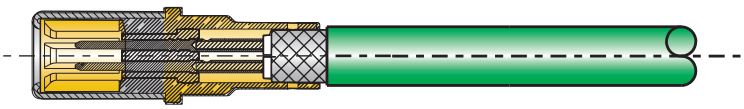


STEP 2

1. Insert cable into socket contact. ***Make sure center conductor lines up to the center socket.***

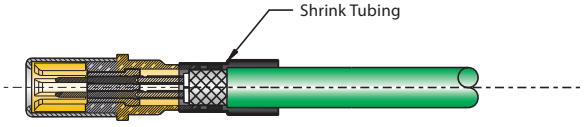
STEP 3

1. Install center conductors until they bottom-out in the contact cavity. ***Inspect to ensure cable shield is visible through the inspection hole***.
2. Apply flux and solder through the inspection hole; remove residues and contamination with alcohol after soldering.



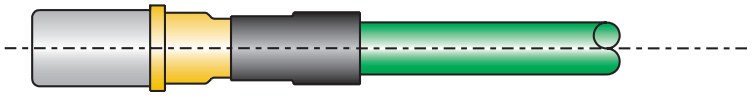
STEP 4

1. Install M23053/5-204 or M23053/6-204 shrink tubing; cover solder area and extend insulation by minimum of one wire diameter.



STEP 5

1. Illustrates final assembly.



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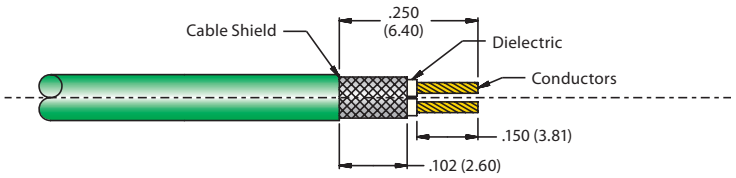
AI85015
Twinax Pin Contact
Assembly Instructions

Pin Contact

100 Ohm Parallel Cable

STEP 1

1. Strip cable to dimensions shown. ***Be careful not to flare braid open***.
2. Pre-tin conductor and braid shield.
3. Clean the solder joint with alcohol.

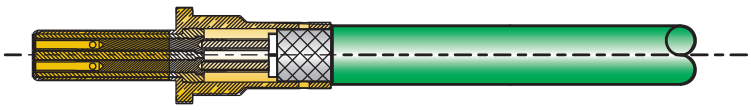


STEP 2

1. Insert cable into pin contact. ***Make sure center conductor lines up to the center pin.***

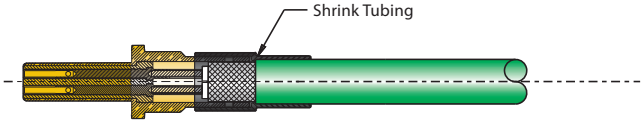
STEP 3

1. Install center conductors until they bottom-out in the contact cavity. ***Inspect to ensure cable shield is visible through the inspection hole***.
2. Apply flux and solder through the inspection hole; remove residues and contamination with alcohol after soldering.



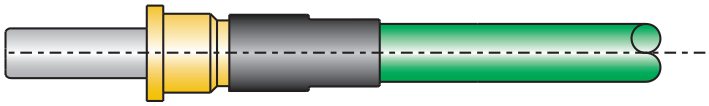
STEP 4

1. Install M23053/5-204 or M23053/6-204 shrink tubing; cover solder area and extend insulation by minimum of one wire diameter.



STEP 5

1. Illustrates final assembly.



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Series 80 Mighty Mouse Contact Arrangements

SERIES 80 MIGHTY MOUSE CONTACT ARRANGEMENTS

Contact Size		Number of Contacts	Contact Arrangement					
			Series 800	Series 801	Series 802	Series 803	Series 804	Series 805
Size #23 Contacts #22-#28 AWG		3	5-3	5-3	5-3	5-3	5-3	Not Avail.
		4	6-4	6-4	6-4	6-4	6-4	8-4
		6	6-6	6-6	6-6	6-6	6-6	8-6
		7	6-7	6-7	6-7	6-7	6-7	8-7
		10	7-10	7-10	7-10	7-10	7-10	9-10
		13	8-13	8-13	8-13	8-13	8-13	10-13
		19	9-19	9-19	9-19	9-19	9-19	11-19
		26	10-26	10-26	10-26	10-26	10-26	12-26
		31	11-31	11-31	11-31	11-31	11-31	13-31
		37	12-37	13-37	12-37	12-37	12-37	15-37
		55	Not Avail.	16-55	14-55	14-55	14-55	18-55
		85	Not Avail.	17-85	15-85	Not Avail.	Not Avail.	19-85
		100	Not Avail.	19-100	19-100	Not Avail.	Not Avail.	21-100
		130	Not Avail.	21-130	21-130	Not Avail.	Not Avail.	23-130
Size #20HD Contacts #20-#24 AWG		3	6-23	6-23	6-23	6-23	6-23	8-23
		5	7-25	7-25	7-25	7-25	7-25	9-25
		8	8-28	8-28	8-28	8-28	8-28	10-28
		10	9-210	9-210	9-210	9-210	9-210	11-210
		20	12-220	13-220	12-220	12-220	12-220	15-220
		35	Not Avail.	16-235	14-235	14-235	14-235	18-235
		41	Not Avail.	17-241	15-241	Not Avail.	Not Avail.	19-241
		55	Not Avail.	19-255	19-255	Not Avail.	Not Avail.	19-255
		69	Not Avail.	21-269	21-269	Not Avail.	Not Avail.	23-269
Size #16 Contacts #16-#20 AWG		1	6-1	6-1	6-1	6-1	6-1	8-1
		2	8-2	8-2	8-2	8-2	8-2	10-2
		4	9-4	9-4	9-4	9-4	9-4	11-4
		5	10-5	10-5	10-5	10-5	10-5	12-5
		7	12-7	13-7	12-7	12-7	12-7	15-7
		12	Not Avail.	16-12	14-12	14-12	14-12	18-12
		14	Not Avail.	17-14	15-14	Not Avail.	Not Avail.	19-14
		19	Not Avail.	19-19	19-19	Not Avail.	Not Avail.	21-19
		22	Not Avail.	21-22	21-22	Not Avail.	Not Avail.	23-22
Size #12 Contacts #12-#14 AWG		1	7-1	7-1	7-1	7-1	7-1	9-1
		2	10-2	10-2	10-2	10-2	10-2	12-2
		2	12-2	13-2	12-2	12-2	12-2	15-2
		3	12-3	13-3	12-3	12-3	12-3	15-3
		5	Not Avail.	16-5	14-5	14-5	14-5	18-5
		7	Not Avail.	17-7	15-7	Not Avail.	Not Avail.	19-7
		12	Not Avail.	21-12	21-12	Not Avail.	Not Avail.	23-12
Size #8 Contacts #8 AWG		1	8-1	8-1	8-1	8-1	8-1	10-1
		2	Not Avail.	16-2	14-2	14-2	14-2	18-2
		3	Not Avail.	17-3	15-3	Not Avail.	Not Avail.	19-3
		4	Not Avail.	19-4	19-4	Not Avail.	Not Avail.	21-4
		5	Not Avail.	21-5	21-5	Not Avail.	Not Avail.	23-5

SERIES 80 MIGHTY MOUSE COMBO ARRANGEMENTS

Contact Arrangements with Mixed Size (Combo) Layouts	Contact Size and Qty					Contact Arrangement					
	#23	#20	#20HD	#16	#12	Series 800	Series 801	Series 802	Series 803	Series 804	Series 805
	4	2				8-200	8-200	8-200	8-200	8-200	10-200
	8	2				9-201	9-201	9-201	9-201	9-201	11-201
	4			2		9-200	9-200	9-200	9-200	9-200	11-200
	8			2		10-202	10-202	10-202	10-202	10-202	12-202
	4				2	10-201	10-201	10-201	10-201	10-201	12-201
	6				2	12-200	13-200	12-200	12-200	12-200	15-200
	10				2	12-201	13-201	12-201	12-201	12-201	15-201
	12				1	10-200	10-200	10-200	10-200	10-200	12-200

Dimensions in inches (millimeters) and are subject to change without notice.

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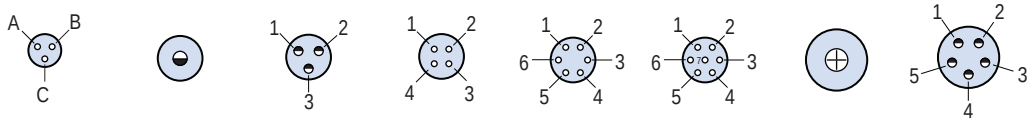
Series 80 Mighty Mouse Contact Arrangements

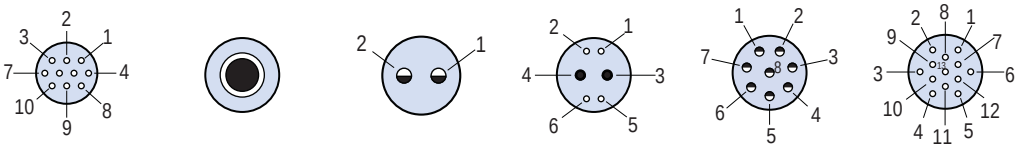
Mating Face View of Pin Connector (socket connector numbers are reversed)

Contact Legend
#23 ○ #20HD ◓ #20 ● #16 ◒ #12 ⊕



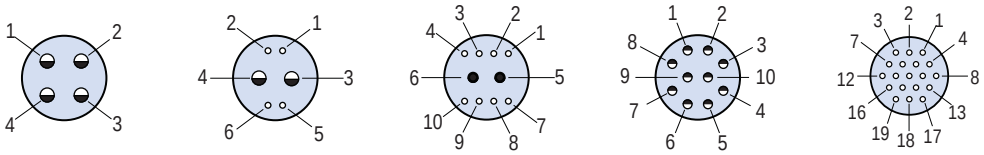
Series 800, 801, 802, 803, 804	5-3	6-1	6-23	6-4	6-6	6-7	7-1	7-25
Series 805	Not Avail.	8-1	8-23	8-4	8-6	8-7	9-1	9-25
No. of Contacts	3	1	3	4	6	7	1	5
Contact Size	#23	#16	#20HD	#23	#23	#23	#12	#20HD
DWV Voltage (VAC)	500	1800	750	500	500	500	1800	750
Current Rating (Amps)	5	13	7.5	5	5	5	23	7.5

Contact Legend
#23 #20HD #20 #16
#12 #8



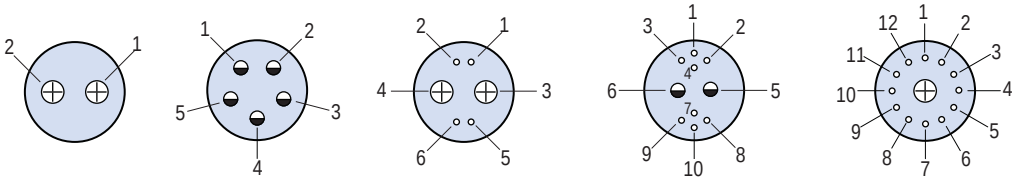
Series 800, 801, 802, 803, 804	7-10	8-1	8-2	8-200	8-28	8-13
Series 805	9-10	10-1	10-2	10-200	10-28	10-13
No. of Contacts	10	1	2	2 4	8	13
Contact Size	#23	#8	#16	#20 #23	#20HD	#23
DWV Voltage (VAC)	500	1800	1800	1000 500	750	500
Current Rating (Amps)	5	46	13	7 5	7.5	5

Contact Legend
#23 ○ #20HD ◓ #20 ● #16 ◒ #12 ⊕



Series 800, 801, 802, 803, 804	9-4	9-200	9-201	9-210	9-19
Series 805	11-4	11-200	11-201	11-210	11-19
No. of Contacts	4	2 4	2 8	10	19
Contact Size	#16	#16 #23	#20 #23	#20HD	#23
DWV Voltage (VAC)	1800	1800 500	1000 500	750	500
Current Rating (Amps)	13	13 5	7.5 5	7.5	5

Contact Legend
#23 ○ #20HD ◓ #20 ● #16 ◒ #12 ⊕



Series 800, 801, 802, 803, 804	10-2	10-5	10-201	10-202	10-200
Series 805	12-2	12-5	12-201	12-202	12-200
No. of Contacts	2	5	2 4	2 8	1 12
Contact Size	#12	#16	#12 #23	#16 #23	#12 #23
DWV Voltage (VAC)	1800	1800	1800 500	1800 500	1800 500
Current Rating (Amps)	23	13	23 5	13 5	23 5

Dimensions in inches (millimeters) and are subject to change without notice.

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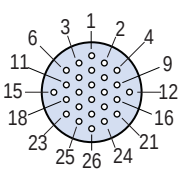
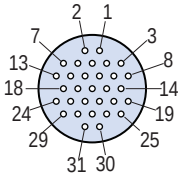
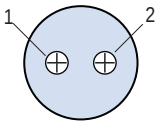
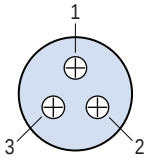
Mating Face View of Pin Connector (socket connector numbers are reversed)

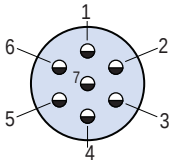
Contact Legend
#23
#20HD
#20
#16
#12





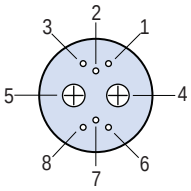


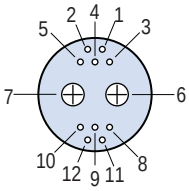


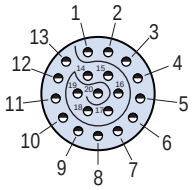


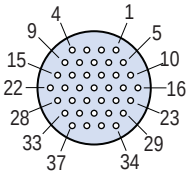
Series 800, 802, 803, 804	10-26	11-31	12-2	12-3	12-7
Series 801	10-26	11-31	13-2	13-3	13-7
Series 805	12-26	13-31	15-2	15-3	15-7
No. of Contacts	26	31	2	3	7
Contact Size	#23	#23	#12	#12	#16
DWV Voltage (VAC)	500	500	1800	1800	1800
Current Rating (Amps)	5	5	23	23	13

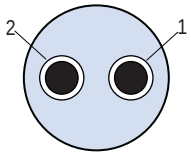
Contact Legend
#23 #20HD #20 #16
#12 #8





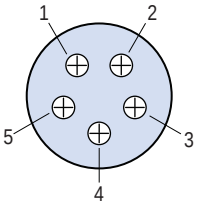


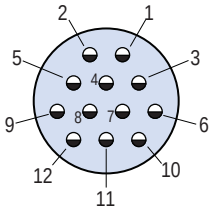


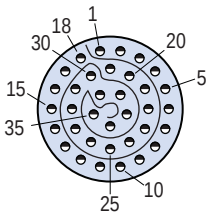


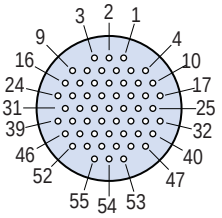
Series 800	12-200	12-201	12-220	12-37	Not Avail.
Series 802, 803, 804	12-200	12-201	12-220	12-37	14-2
Series 801	13-200	13-201	13-220	13-37	16-2
Series 805	15-200	15-201	15-220	15-37	18-2
No. of Contacts	2 6	2 10	20	37	2
Contact Size	#12 #23	#12 #23	#20HD	#23	#8
DWV Voltage (VAC)	1800 500	1800 500	750	500	1800
Current Rating (Amps)	23 5	23 5	7.5	5	46

Contact Legend
#23
#20HD
#20
#16
#12









Series 802, 803, 804	14-5	14-12	14-235	14-55
Series 801	16-5	16-12	16-235	16-55
Series 805	18-5	18-12	18-235	18-55
No. of Contacts	5	12	35	55
Contact Size	#12	#16	#20HD	#23
DWV Voltage (VAC)	1800	1800	750	500
Current Rating (Amps)	23	13	7.5	5

Dimensions in inches (millimeters) and are subject to change without notice.

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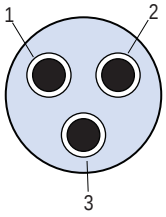
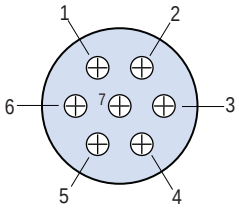
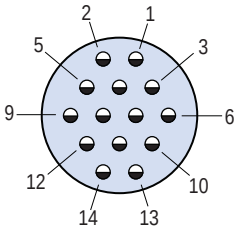
Mating Face View of Pin Connector (socket connector numbers are reversed)

Contact Legend
#23
#20HD
#20
#16
#12
#8

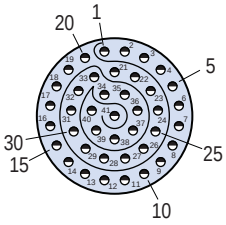


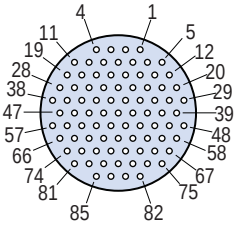


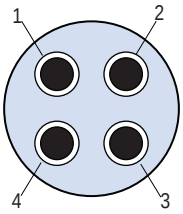


Series 801	17-3	17-7	17-14
Series 802	15-3	15-7	15-14
Series 805	19-3	19-7	19-14
No. of Contacts	3	7	14
Contact Size	#8	#12	#16
DWV Voltage (VAC)	1800	1800	1800
Current Rating (Amps)	46	23	13

Contact Legend
#23
#20HD
#20
#16
#12
#8

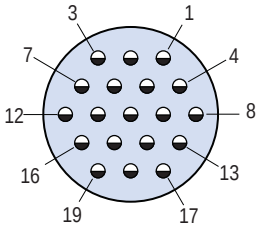


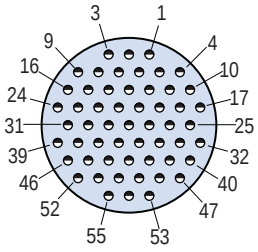


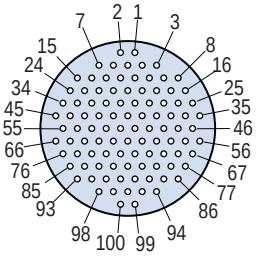


Series 801	17-241	17-85	19-4
Series 802	15-241	15-85	19-4
Series 805	19-241	19-85	21-4
No. of Contacts	41	85	4
Contact Size	#20HD	#23	#8
DWV Voltage (VAC)	750	500	1800
Current Rating (Amps)	7.5	5	46

Contact Legend
#23
#20HD
#20
#16
#12
#8







Series 801, 802	19-19	19-255	19-100
Series 805	21-19	21-255	21-100
No. of Contacts	19	55	100
Contact Size	#16	#20HD	#23
DWV Voltage (VAC)	1800	750	500
Current Rating (Amps)	13	7.5	5

Dimensions in inches (millimeters) and are subject to change without notice.

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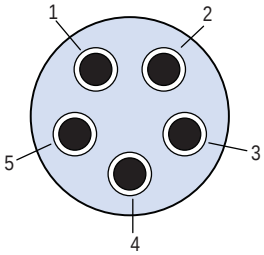
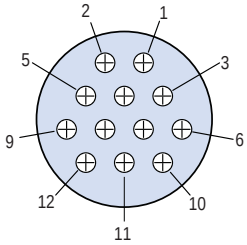
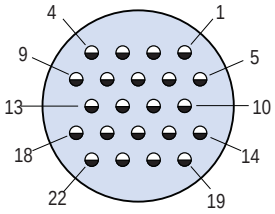
Mating Face View of Pin Connector (socket connector numbers are reversed)

Contact Legend
#23
#20HD
#20
#16
#12
#8

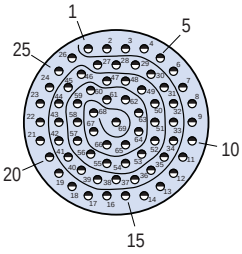


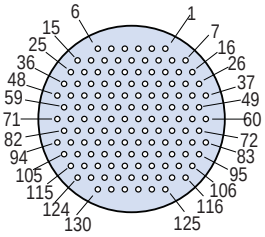




Series 801, 802	21-5	21-12	21-22
Series 805	23-5	23-12	23-22
No. of Contacts	5	12	22
Contact Size	#8	#12	#16
DWV Voltage (VAC)	1800	1800	1800
Current Rating (Amps)	46	23	13

Contact Legend
#23
#20HD
#20
#16
#12
#8





Series 801, 802	21-269	21-130
Series 805	23-269	23-130
No. of Contacts	69	130
Contact Size	#20HD	#23
DWV Voltage (VAC)	750	500
Current Rating (Amps)	7.5	5

Dimensions in inches (millimeters) and are subject to change without notice.

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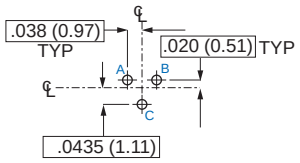
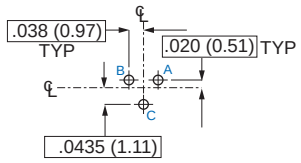
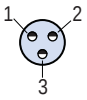
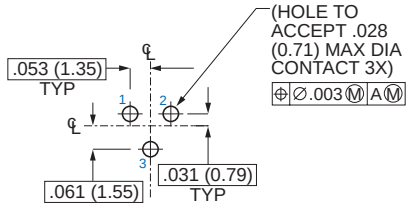
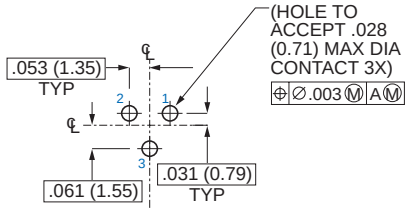
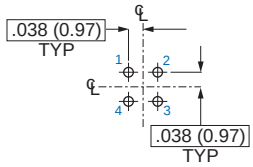
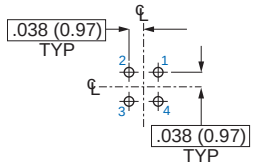
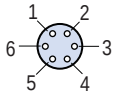
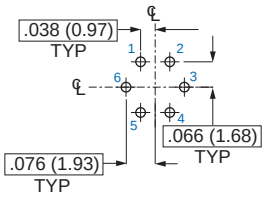
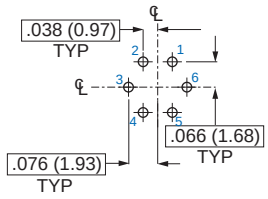
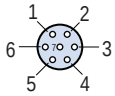
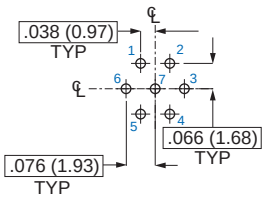
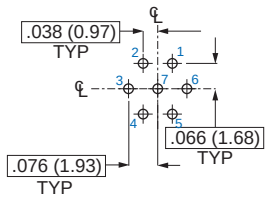
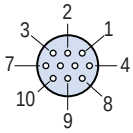
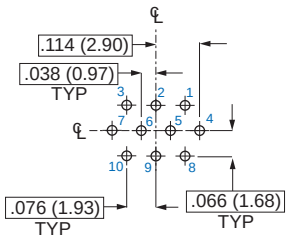
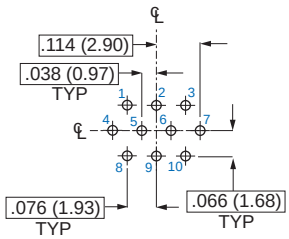
Series 80 Mighty Mouse Technical Reference
Straight PCB Footprints

Component Mounting Side of PCB

 **Insert Arrangement 5-3** 3 #23 Contacts .022 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**
 **Insert Arrangement 6-23, 8-23** 3 #20HD Contacts .028 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**
 **Insert Arrangement 6-4, 8-4** 4 #23 Contacts .022 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**
 **Insert Arrangement 6-6, 8-6** 6 #23 Contacts .022 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**
 **Insert Arrangement 6-7, 8-7** 7 #23 Contacts .022 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**
 **Insert Arrangement 7-10, 9-10** 10 #23 Contacts .022 (0.56) Max. Dia. Tail	 **Pin Connector**	 **Socket Connector**

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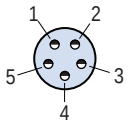
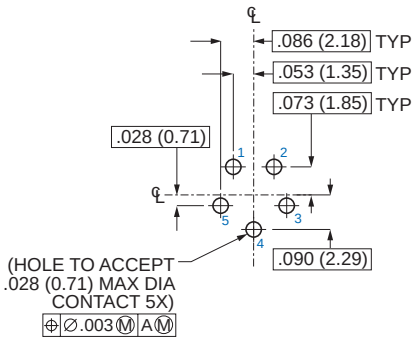
Series 80 Mighty Mouse Technical Reference
Straight PCB Footprints

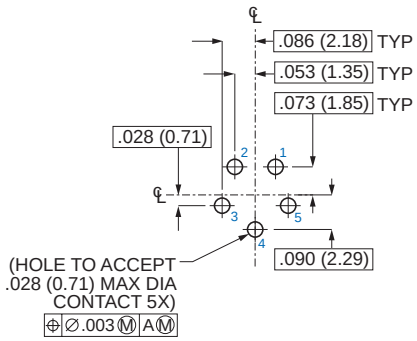
Component Mounting Side of PCB



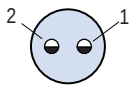
Insert Arrangement
7-25, 9-25
5 #20HD Contacts
.028 (0.71) Max. Dia. Tail



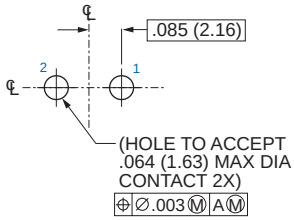
Pin Connector



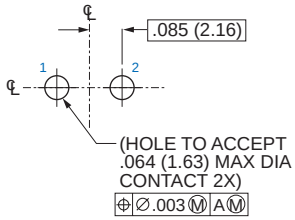
Socket Connector



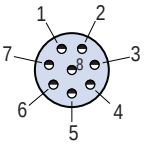
Insert Arrangement
8-2, 10-2
2 #16 Contacts



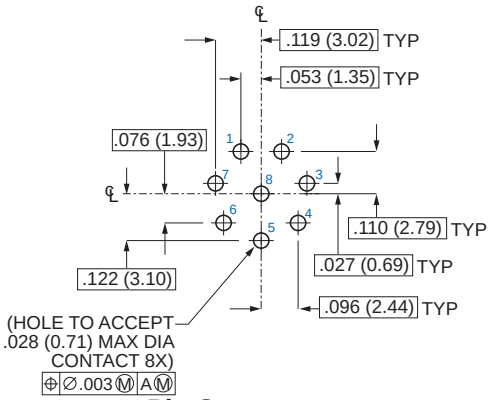
Pin Connector



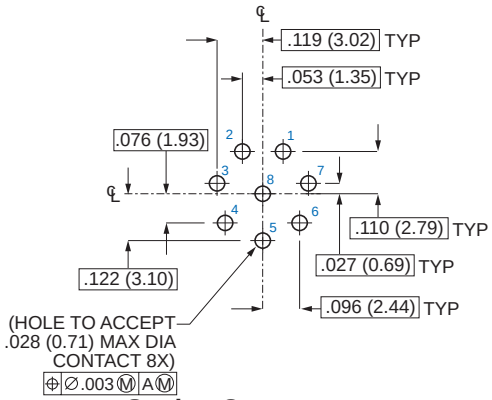
Socket Connector



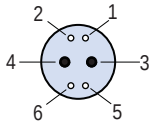
Insert Arrangement
8-28, 10-28
8 #20HD Contacts



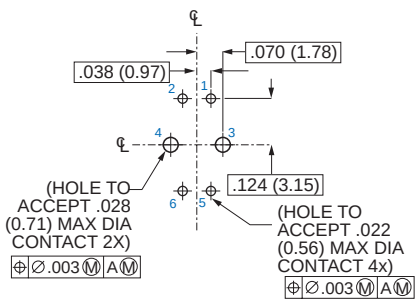
Pin Connector



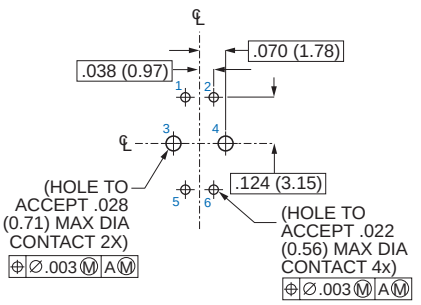
Socket Connector



Insert Arrangement
8-200, 10-200
2 #20 Contacts
4 #23 Contacts



Pin Connector



Socket Connector

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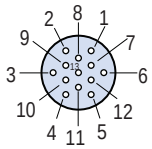
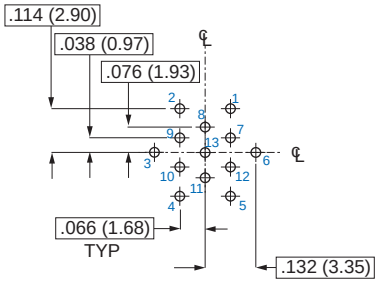
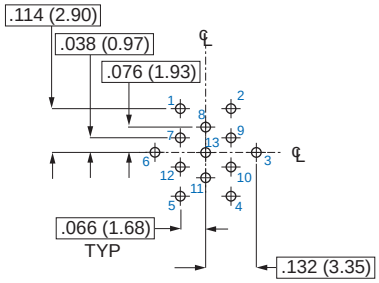
Component Mounting Side of PCB



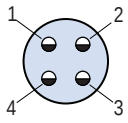
Insert Arrangement
8-13, 10-13
13 #23 Contacts
.022 (0.56) Max. Dia. Tail



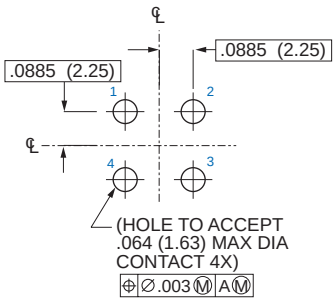
Pin Connector



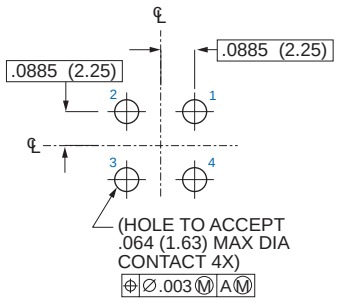
Socket Connector



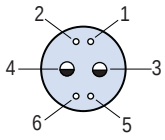
Insert Arrangement
9-4, 11-4
4 #16 Contacts



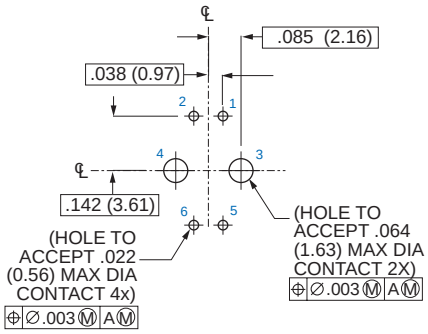
Pin Connector



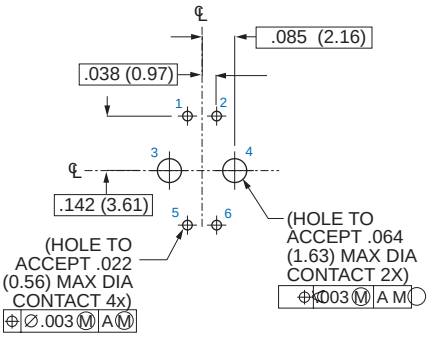
Socket Connector



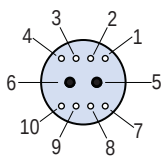
Insert Arrangement
9-200, 11-200
4 #23 Contacts
2 #16 Contacts



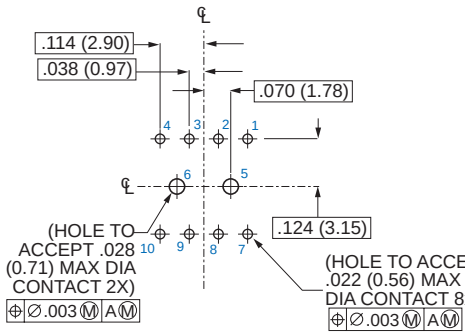
Pin Connector



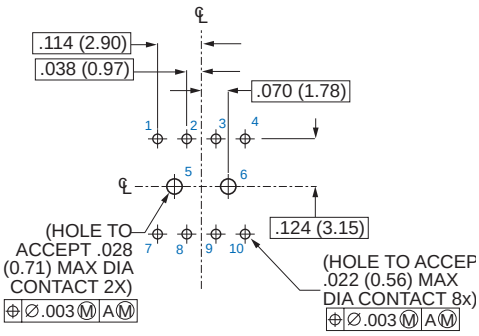
Socket Connector



Insert Arrangement
9-201, 11-201
2 #20 Contacts
8 #23 Contacts



Pin Connector



Socket Connector

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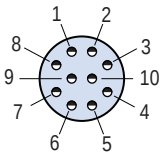
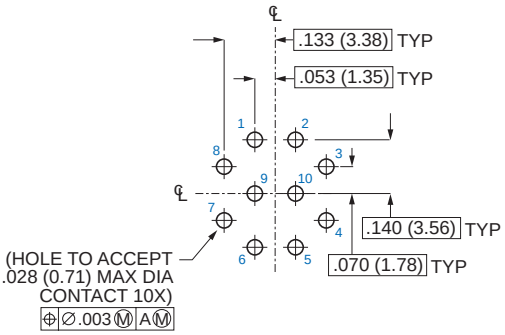
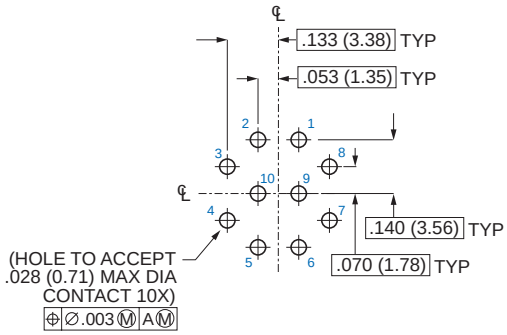
Component Mounting Side of PCB



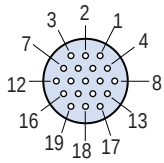
Insert Arrangement
9-210, 11-210
10 #20HD Contacts



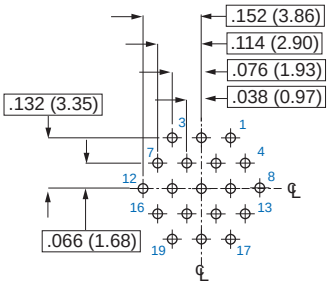
Pin Connector



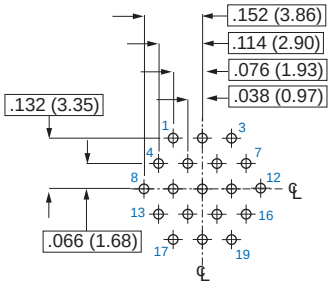
Socket Connector



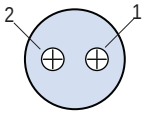
Insert Arrangement
9-19, 11-19
19 #23 Contacts
.022 (0.56) Max. Dia. Tail



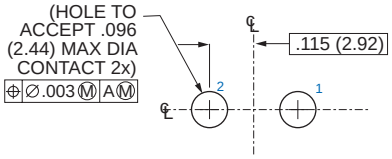
Pin Connector



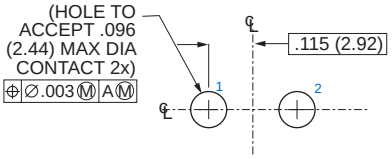
Socket Connector



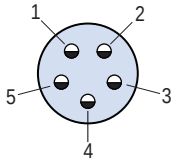
Insert Arrangement
10-2, 12-2
2 #12 Contacts



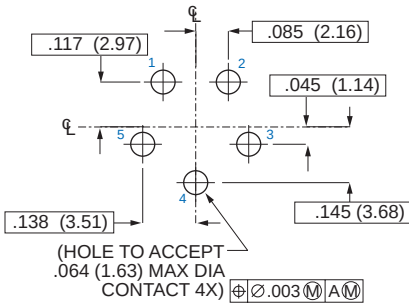
Pin Connector



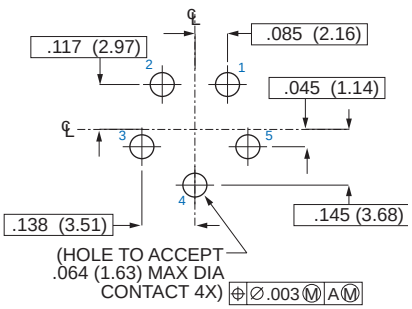
Socket Connector



Insert Arrangement
10-5, 12-5
5 #16 Contacts



Pin Connector



Socket Connector

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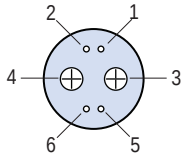
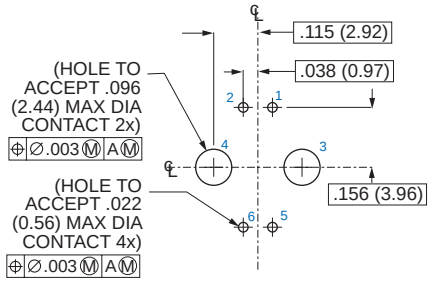
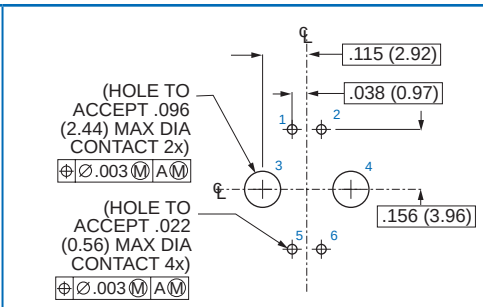
Component Mounting Side of PCB



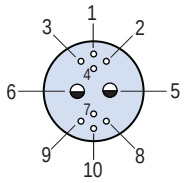
Insert Arrangement
10-201, 12-201
2 #12 Contacts
4 #23 Contacts



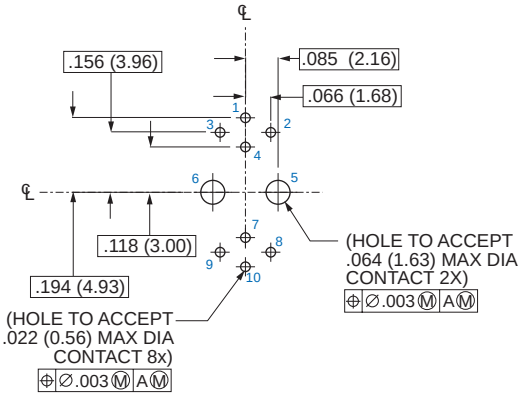
Pin Connector



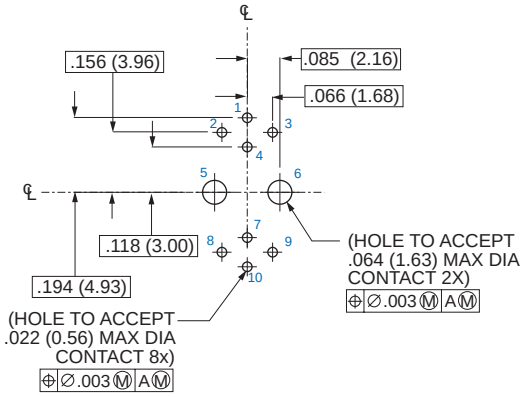
Socket Connector



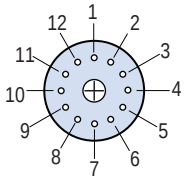
Insert Arrangement
10-202, 12-202
2 #16 Contacts
8 #23 Contacts



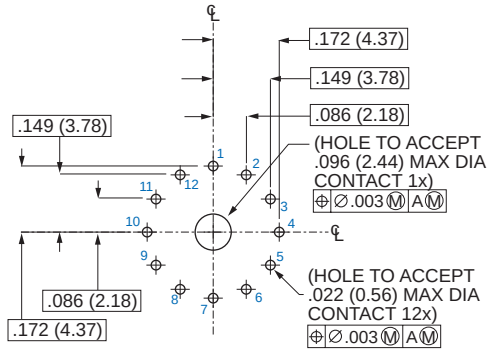
Pin Connector



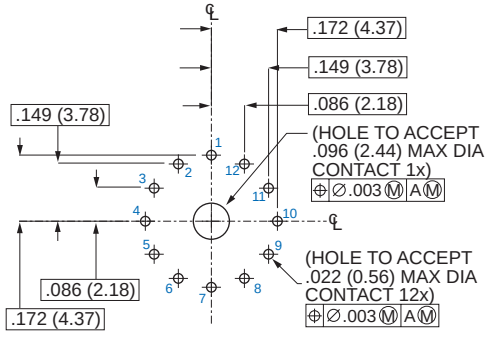
Socket Connector



Insert Arrangement
10-200, 12-200
1 #12 Contact
12 #23 Contacts



Pin Connector



Socket Connector

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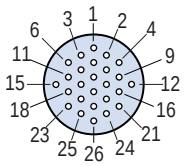
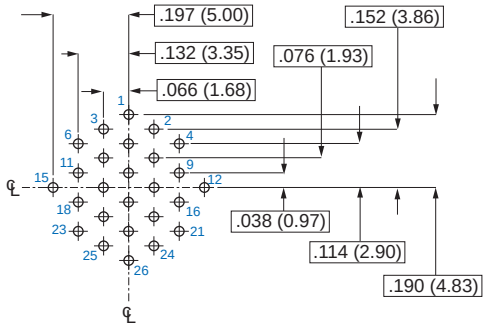
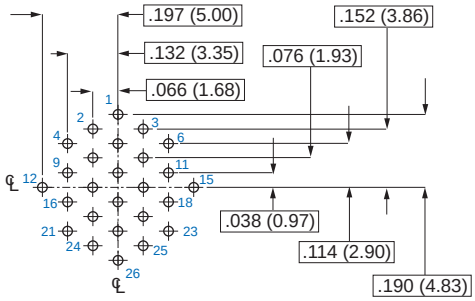
Component Mounting Side of PCB



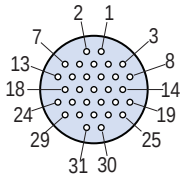
Insert Arrangement
10-26, 12-26
26 #23 Contacts
.022 (0.56) Max. Dia. Tail



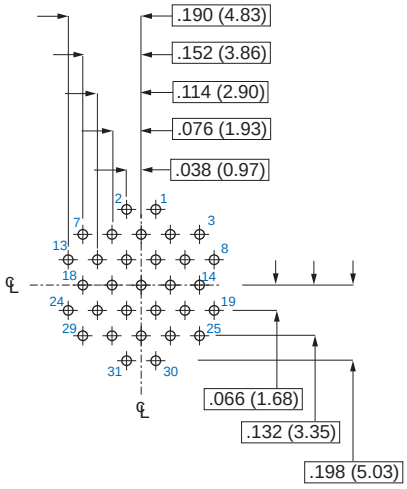
Pin Connector



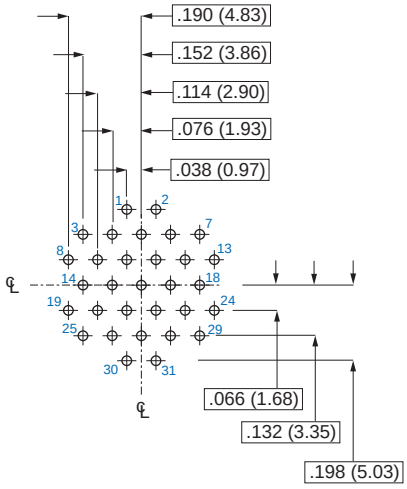
Socket Connector



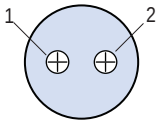
Insert Arrangement
11-31, 13-31
31 #23 Contacts
.022 (0.56) Max. Dia. Tail



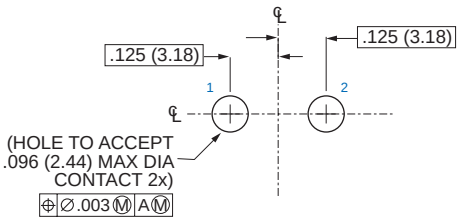
Pin Connector



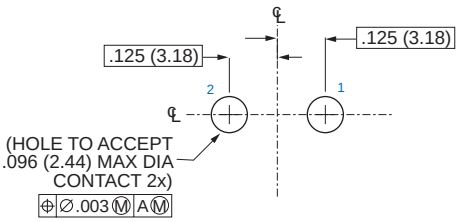
Socket Connector



Insert Arrangement
12-2, 13-2, 15-2
2 #12 Contacts



Pin Connector



Socket Connector

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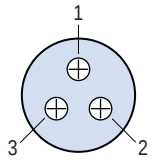
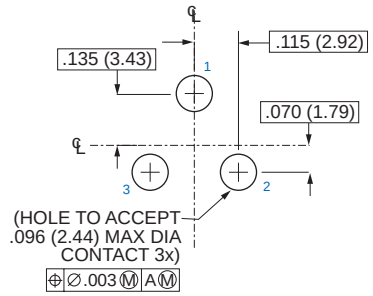
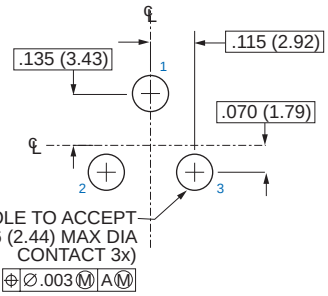
Component Mounting Side of PCB



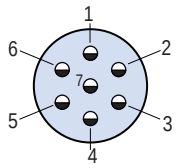
Insert Arrangement
12-3, 13-3, 15-3
3 #12 Contacts



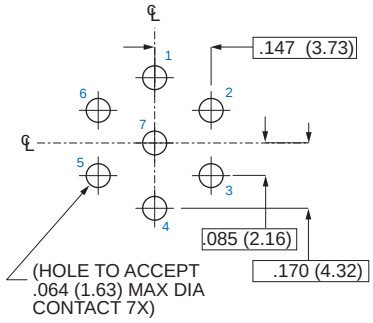
Pin Connector



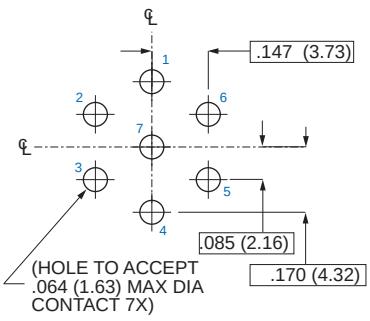
Socket Connector



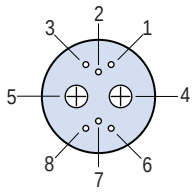
Insert Arrangement
12-7, 13-7, 15-7
7 #16 Contacts



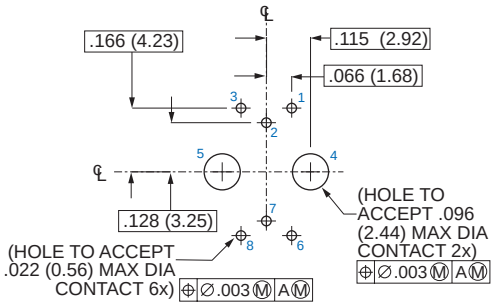
Pin Connector



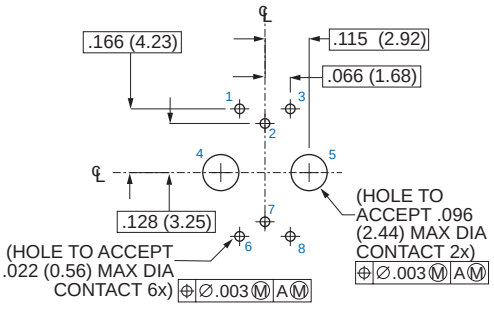
Socket Connector



Insert Arrangement
12-200, 13-200, 15-200
2 #12 Contacts
6 #23 Contacts



Pin Connector



Socket Connector

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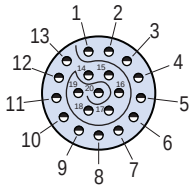
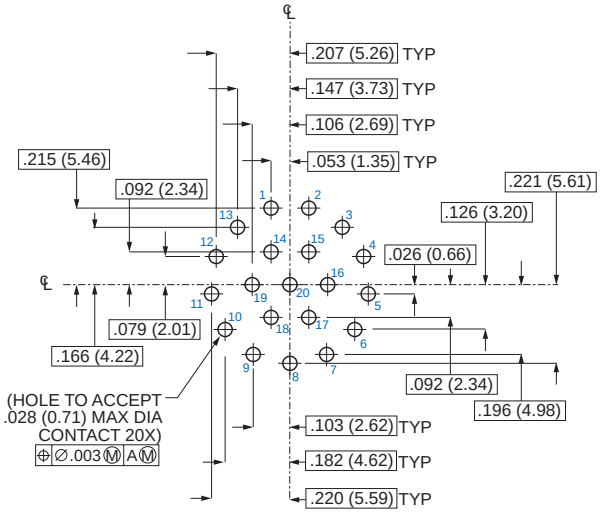
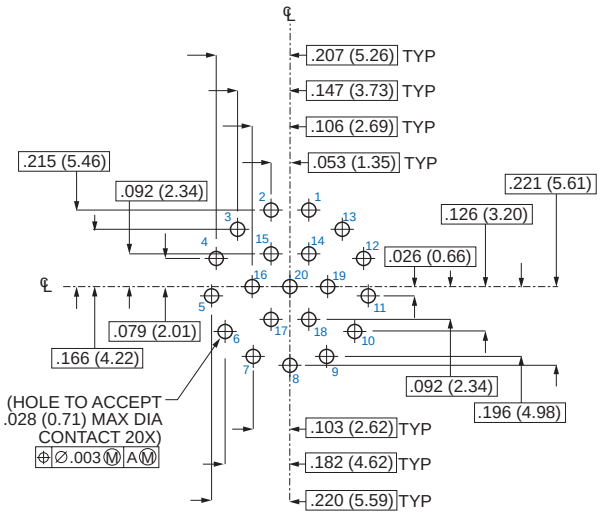
Component Mounting Side of PCB



Insert Arrangement
12-220, 13-220, 15-220
20 #20HD Contacts



Pin Connector



Socket Connector

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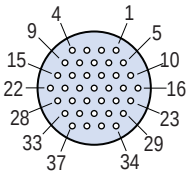
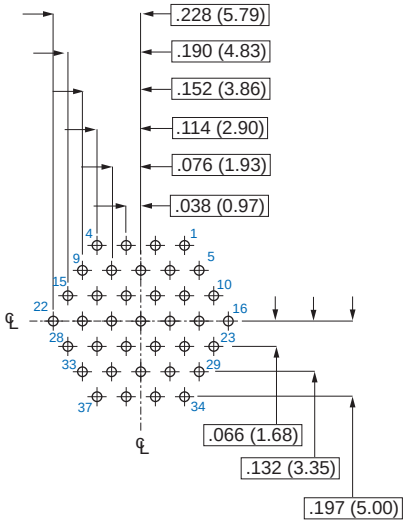
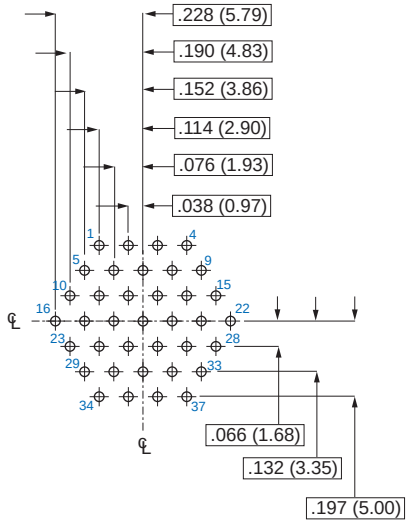
Component Mounting Side of PCB



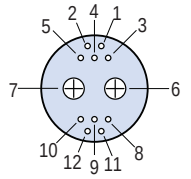
Insert Arrangement
12-37, 13-37, 15-37
37 #23 Contacts
.022 (0.56) Max. Dia. Tail



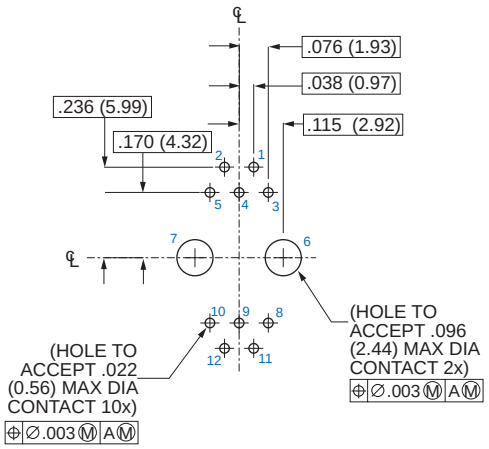
Pin Connector



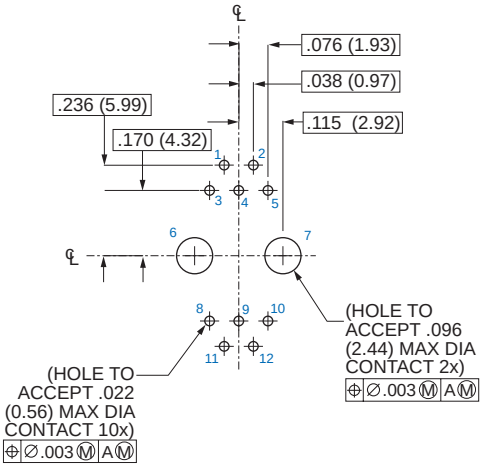
Socket Connector



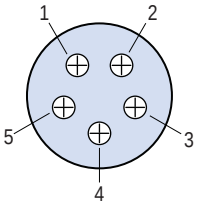
Insert Arrangement
12-201, 13-201, 15-201
2 #12 Contacts
10 #23 Contacts



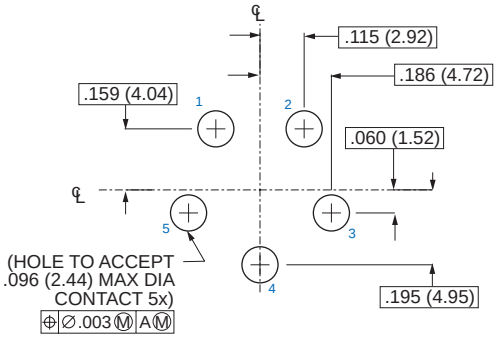
Pin Connector



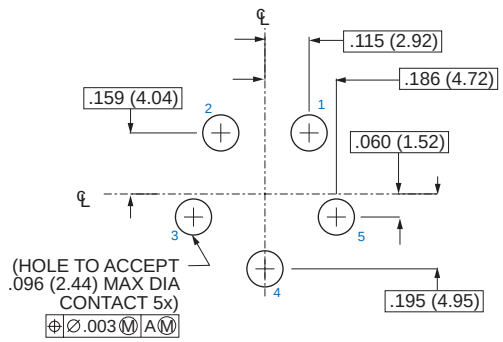
Socket Connector



Insert Arrangement
14-5, 16-5, 18-5
5 #12 Contacts



Pin Connector



Socket Connector

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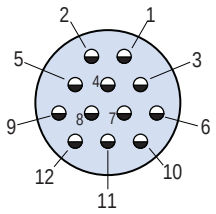
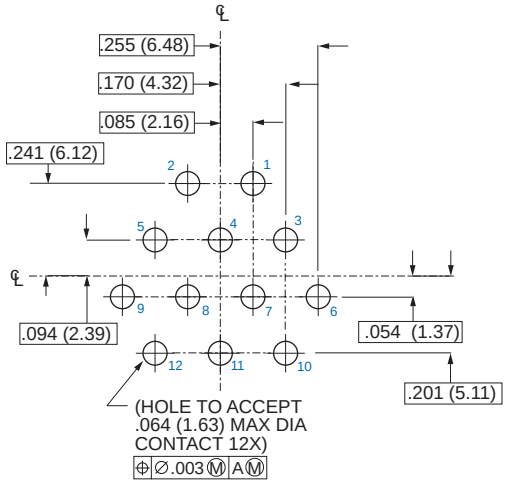
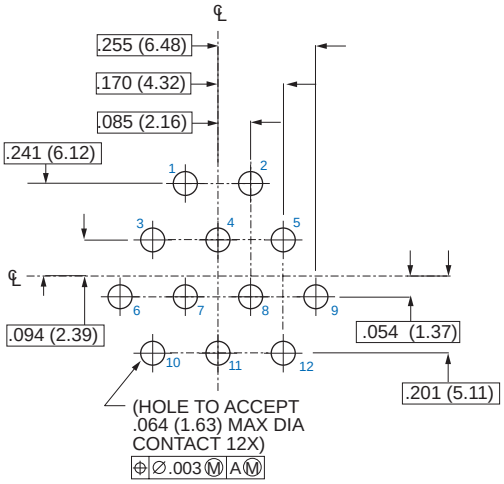
Component Mounting Side of PCB



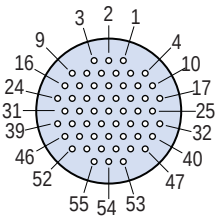
Insert Arrangement
14-12, 16-12, 18-12
12 #16 Contacts



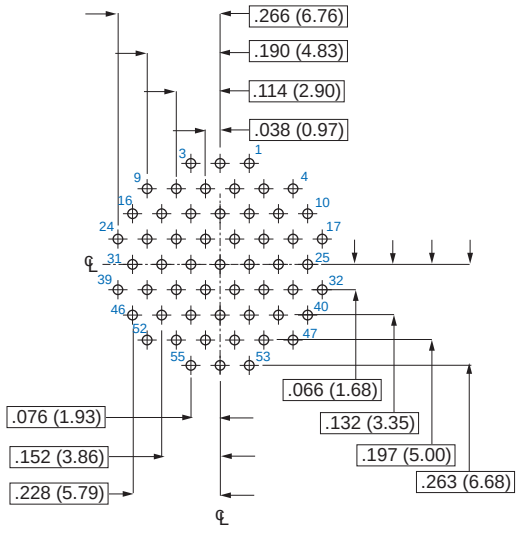
Pin Connector



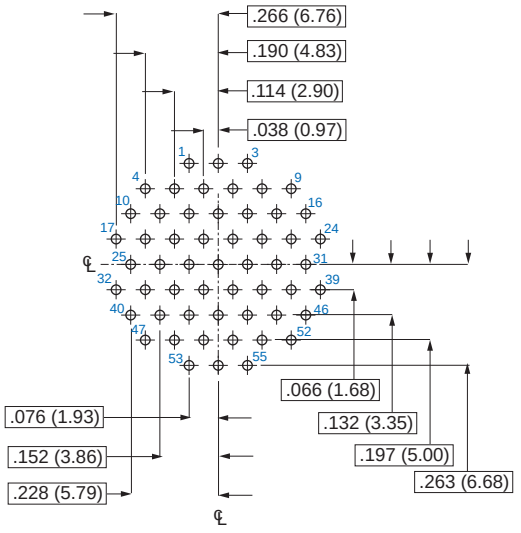
Socket Connector



Insert Arrangement
14-55, 16-55, 18-55
55 #23 Contacts
.022 (0.56) Max. Dia. Tail



Pin Connector



Socket Connector

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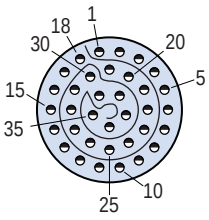
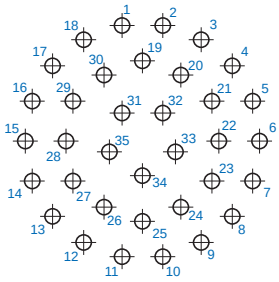
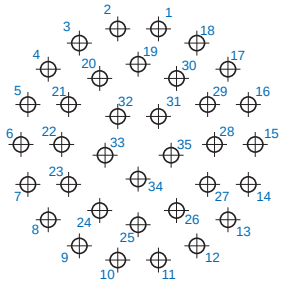
Component Mounting Side of PCB



Insert Arrangement
14-235, 16-235, 18-235
35 #20HD Contacts
.028 (0.71) Max. Dia. Tail

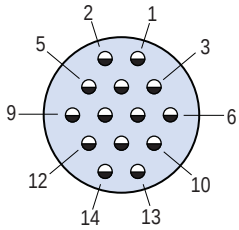


Pin Connector

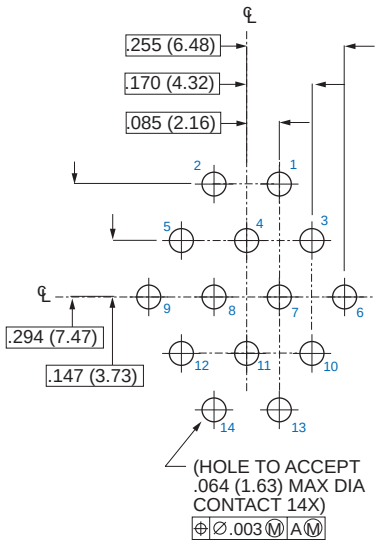


Socket Connector

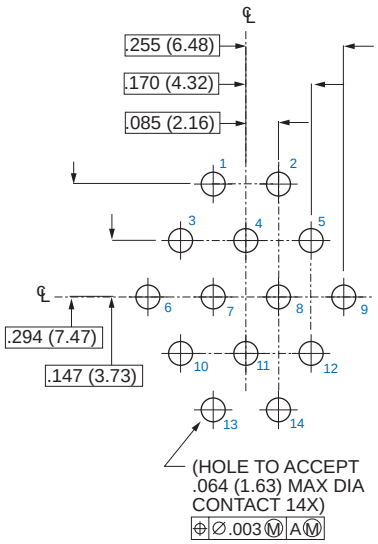
Pin No.	X		Y		Pin No.	X		Y		Pin No.	X		Y	
	In.	mm.	In.	mm.		In.	mm.	In.	mm.		In.	mm.	In.	mm.
1	-.053	-1.35	.301	7.65	13	-.234	-5.94	-.196	-4.98	25	.000	0.00	-.209	-5.31
2	.053	1.35	.301	7.65	14	-.287	-7.29	-.104	-2.64	26	-.100	-2.54	-.172	-4.37
3	.153	3.89	.264	6.71	15	-.305	-7.75	.000	0.00	27	-.181	-4.60	-.104	-2.64
4	.234	5.94	.196	4.98	16	-.287	7.29	.104	2.64	28	-.199	-5.05	.000	0.00
5	.287	7.29	.104	2.64	17	-.234	-5.94	.196	4.98	29	-.181	-4.60	.104	2.64
6	.305	7.75	.000	0.00	18	-.153	-3.89	.264	6.71	30	-.100	-2.54	.172	4.37
7	.287	7.29	-.104	-2.64	19	.000	0.00	.209	5.31	31	-.053	-1.35	.073	1.85
8	.234	5.94	-.196	-4.98	20	.100	2.54	.172	4.37	32	.053	1.35	.073	1.85
9	.153	3.89	-.264	-6.71	21	.181	4.60	.104	2.64	33	.086	2.18	-.028	-0.71
10	.053	1.35	-.301	-7.65	22	.199	5.05	.000	0.00	34	.000	0.00	-.090	-2.29
11	-.053	-1.35	-.301	-7.65	23	.181	4.60	-.104	-2.64	35	-.086	-2.18	-.028	-0.71
12	-.153	-3.89	-.264	-6.71	24	.100	2.54	-.172	-4.37					



Insert Arrangement
15-14, 17-14, 19-14
14 #16 Contacts



Pin Connector



Socket Connector

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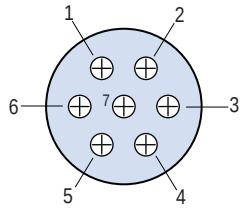
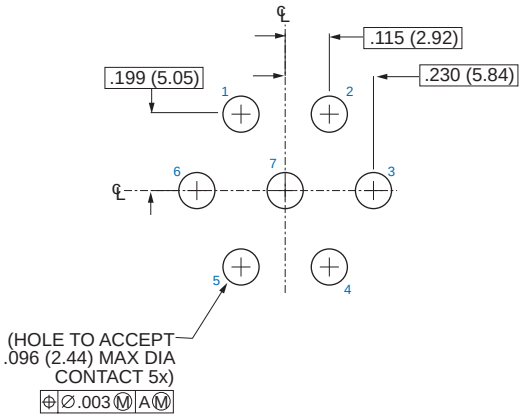
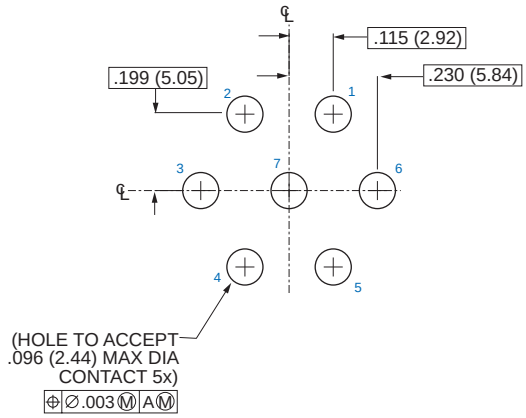
Series 80 Mighty Mouse Technical Reference
Straight PCB Footprints



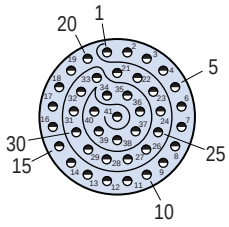
Insert Arrangement
15-7, 17-7, 19-7
7 #12 Contacts



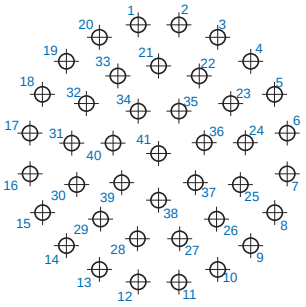
Pin Connector



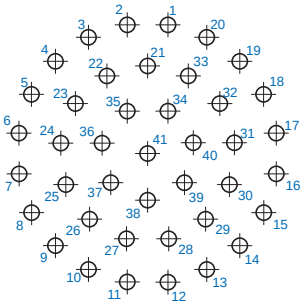
Socket Connector



Insert Arrangement
15-241, 16-241, 18-241
41 #20HD Contacts
.028 (0.71) Max. Dia. Tail



Pin Connector



Socket Connector

Pin No.	X		Y		Pin No.	X		Y		Pin No.	X		Y	
	In.	mm.	In.	mm.		In.	mm.	In.	mm.		In.	mm.	In.	mm.
1	-.053	-1.35	.335	8.51	**15**	-.302	-7.67	-.154	-3.91	**29**	-.151	-3.84	-.171	-4.34
2	.053	1.35	.335	8.51	**16**	-.335	-8.51	-.053	-1.35	**30**	-.213	-5.41	-.081	-2.06
3	.154	3.91	.302	7.67	**17**	-.335	-8.51	.053	1.35	**31**	-.226	-5.74	.028	0.71
4	.240	6.10	.240	6.10	**18**	-.302	-7.67	.154	3.91	**32**	-.188	-4.78	.130	3.30
5	.302	7.67	.154	3.91	**19**	-.240	-6.10	.240	6.10	**33**	-.106	-2.69	.202	5.13
6	.335	8.51	.053	1.35	**20**	-.154	-3.91	.302	7.67	**34**	-.053	-1.35	.110	2.79
7	.335	8.51	-.053	-1.35	**21**	.000	0.00	.228	5.79	**35**	.053	1.35	.110	2.79
8	.302	7.67	-.154	-3.91	**22**	.106	2.69	.202	5.13	**36**	.119	3.02	.027	0.69
9	.240	6.10	-.240	-6.10	**23**	.188	4.78	.130	3.30	**37**	.096	2.44	-.076	-1.93
10	.154	3.91	-.302	-7.67	**24**	.226	5.74	.028	0.71	**38**	.000	0.00	-.122	-3.10
11	.053	1.35	-.335	-8.51	**25**	.213	5.41	-.081	-2.06	**39**	-.096	-2.44	-.076	-1.93
12	-.053	-1.35	-.335	-8.51	**26**	.151	3.84	-.171	-4.34	**40**	-.119	-3.02	.027	0.69
13	-.154	-3.91	-.302	-7.67	**27**	.055	1.40	-.222	-5.64	**41**	.000	0.00	.000	0.00
14	-.240	-6.10	-.240	-6.10	**28**	-.055	-1.40	-.222	-5.64					

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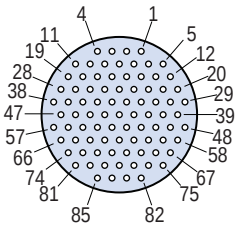
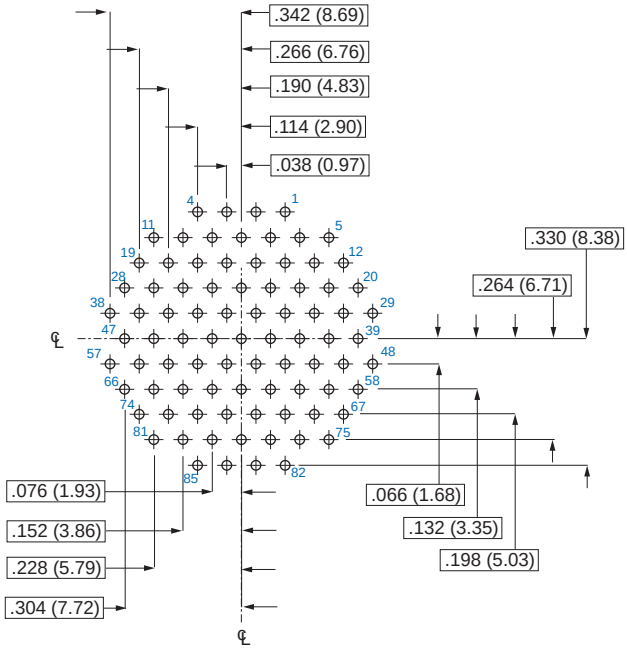
www.glenair.com
E-Mail: sales@glenair.com

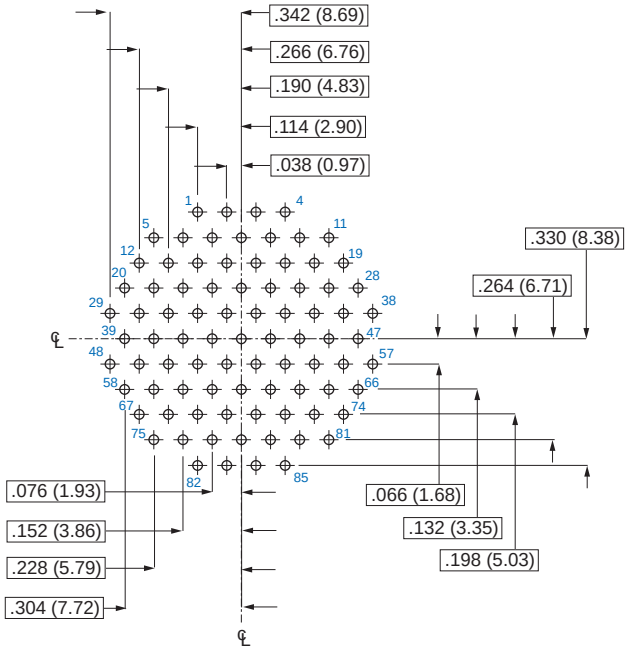
Component Mounting Side of PCB



Insert Arrangement
15-85, 17-85, 19-85
85 #23 Contacts
.022 (0.56) Max. Dia. Tail



Pin Connector



Socket Connector

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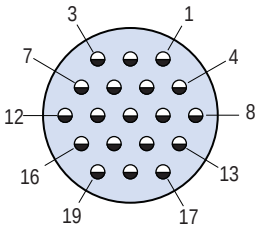
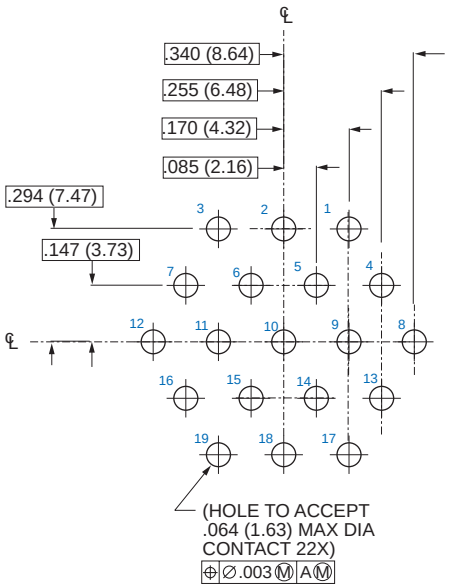
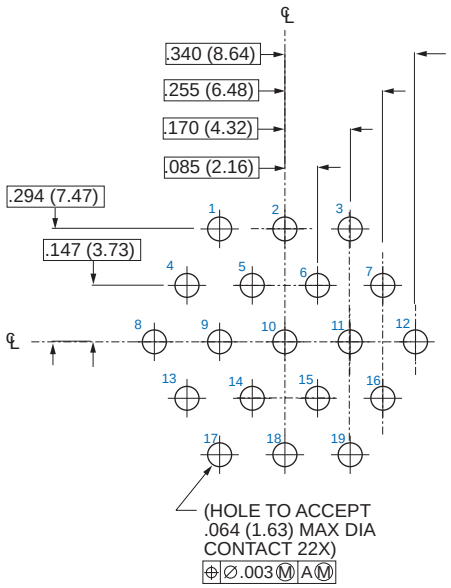
Component Mounting Side of PCB



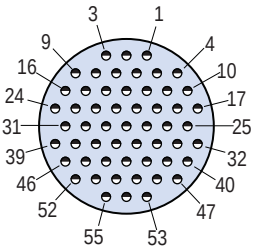
Insert Arrangement
19-19, 21-19
19 #16 Contacts



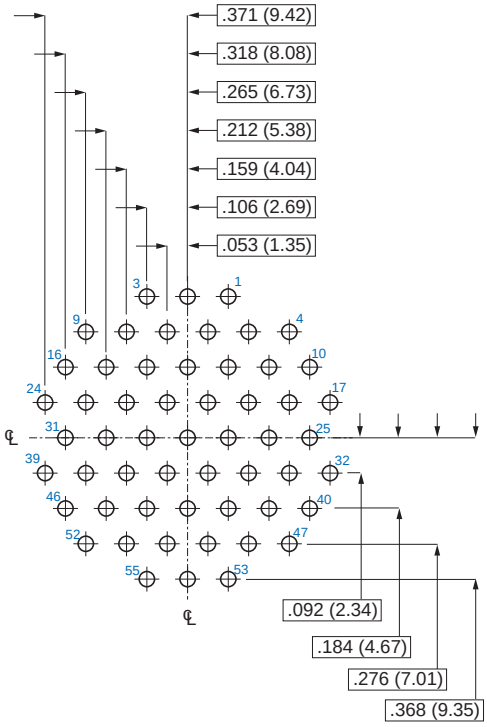
Pin Connector



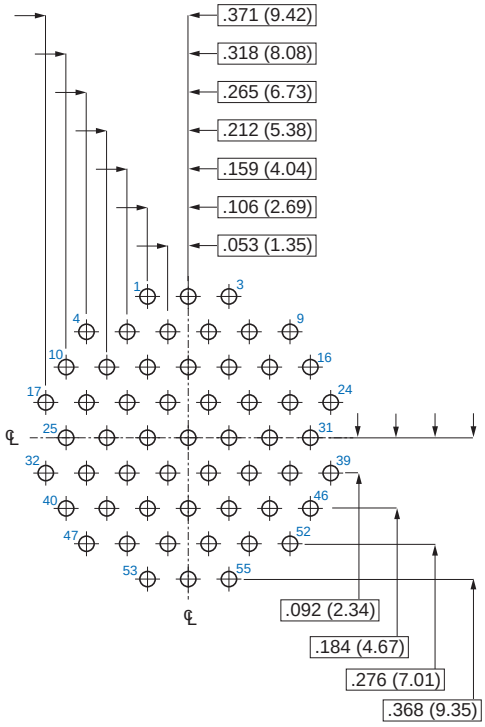
Socket Connector



Insert Arrangement
19-255, 21-255
55 #20HD Contacts
.028 (0.71) Max. Dia. Tail



Pin Connector



Socket Connector

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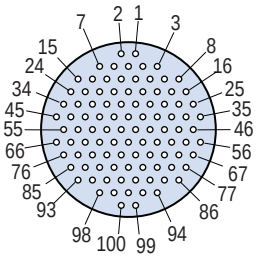
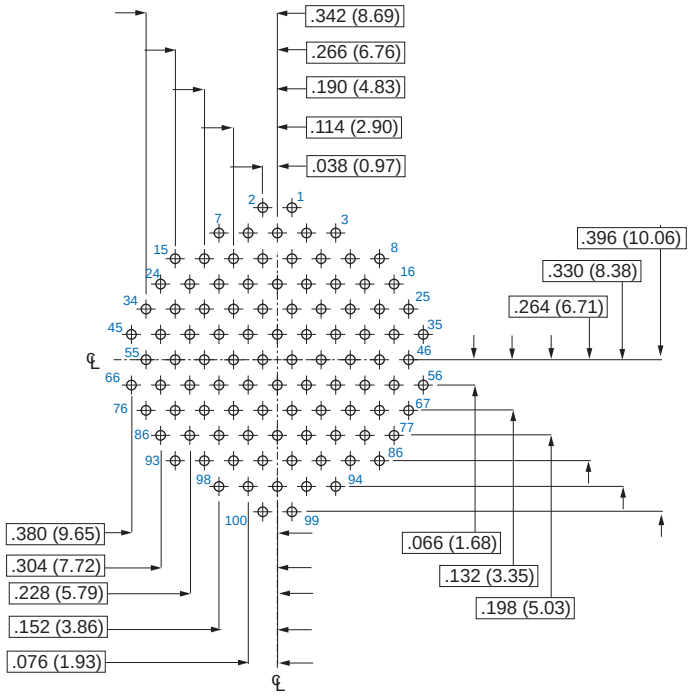
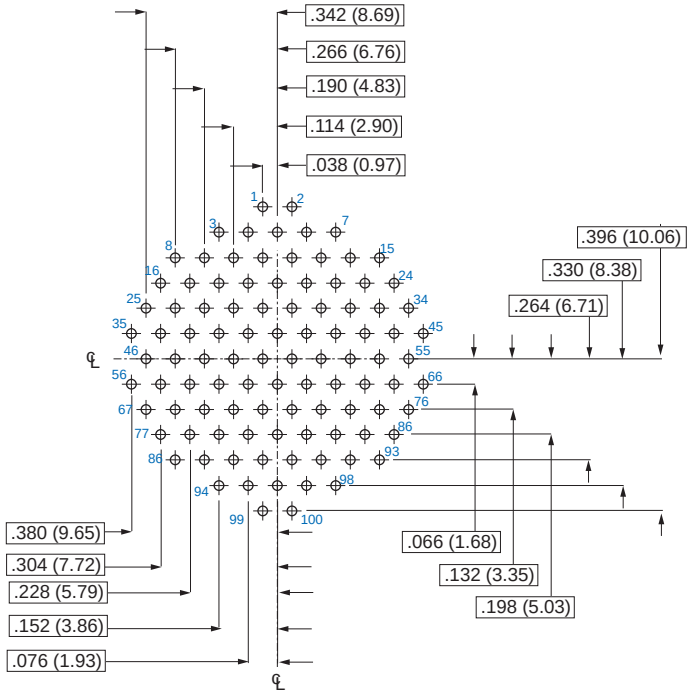
Component Mounting Side of PCB



Insert Arrangement
19-100, 21-100
100 #23 Contacts



Pin Connector



Socket Connector

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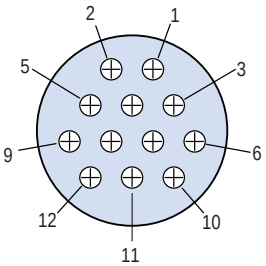
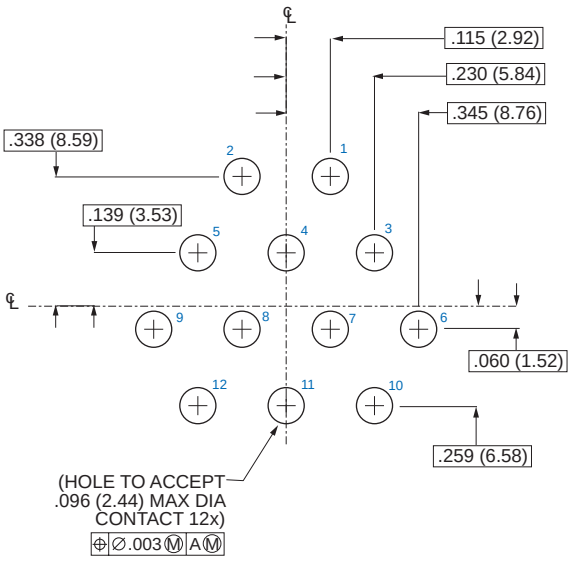
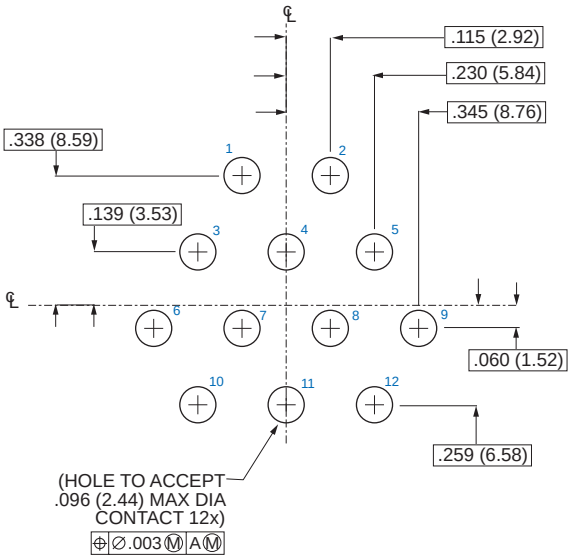
Component Mounting Side of PCB



Insert Arrangement
21-12, 23-12
12 #12 Contacts



Pin Connector



Socket Connector

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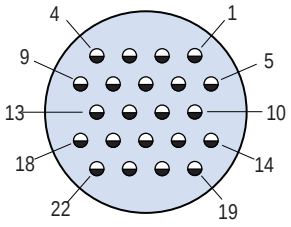
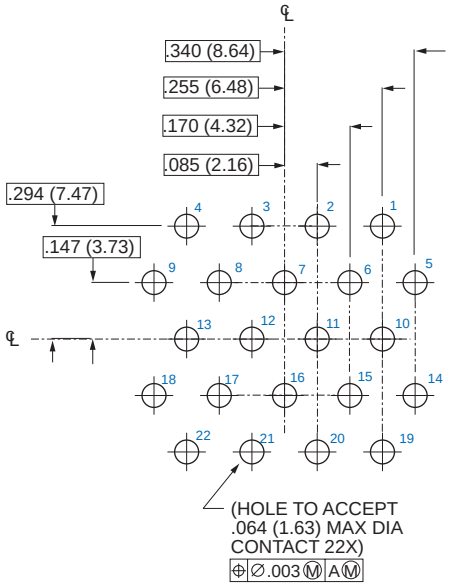
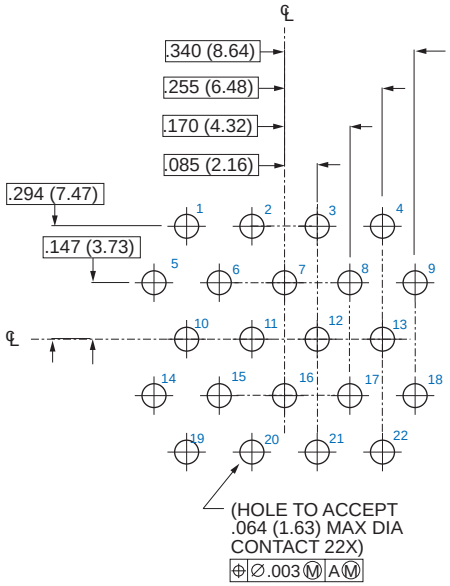
Component Mounting Side of PCB



Insert Arrangement
21-22, 23-22
22 #16 Contacts



Pin Connector



Socket Connector

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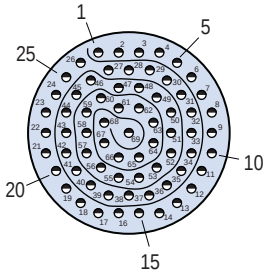
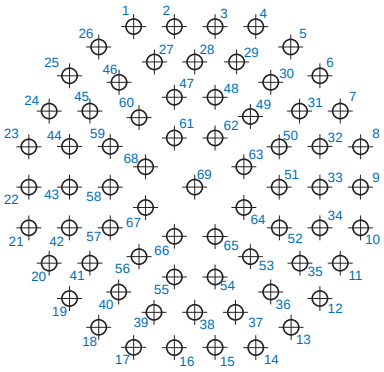
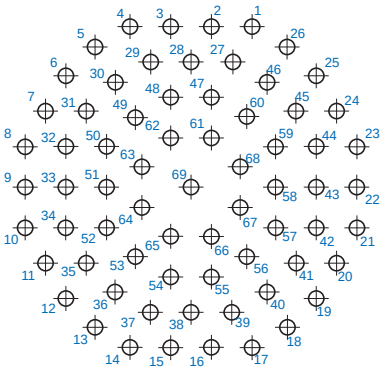
Component Mounting Side of PCB



Insert Arrangement
21-269, 23-269
69 #20HD Contacts
.028 (0.71) Max. Dia. Tail



Pin Connector



Socket Connector

Pin No.	X		Y		Pin No.	X		Y		Pin No.	X		Y	
	In.	mm.	In.	mm.		In.	mm.	In.	mm.		In.	mm.	In.	mm.
1	-.159	-4.04	.418	10.62	**24**	-.379	-9.63	.198	5.03	**47**	-.053	-1.35	.234	5.94
2	-.053	-1.35	.418	10.62	**25**	-.326	-8.28	.290	7.37	**48**	.053	1.35	.234	5.94
3	.053	1.35	.418	10.62	**26**	-.251	-6.38	.365	9.27	**49**	.145	3.68	.181	4.60
4	.159	4.04	.418	10.62	**27**	-.106	-2.69	.326	8.28	**50**	.220	5.59	.106	2.69
5	.251	6.38	.365	9.27	**28**	.000	0.00	.326	8.28	**51**	.220	5.59	.000	0.00
6	.326	8.28	.290	7.37	**29**	.106	-2.69	.326	8.28	**52**	.220	5.59	-.106	-2.69
7	.379	9.63	.198	5.03	**30**	.198	5.03	.273	6.93	**53**	.145	3.68	-.181	-4.60
8	.432	10.97	.106	2.69	**31**	.273	6.93	.198	5.03	**54**	.053	1.35	-.234	-5.94
9	.432	10.97	.000	0.00	**32**	.326	8.28	.106	2.69	**55**	-.053	-1.35	-.234	-5.94
10	.432	10.97	-.106	-2.69	**33**	.326	8.28	.000	0.00	**56**	-.145	-3.68	-.181	-4.60
11	.379	9.63	-.198	-5.03	**34**	.326	8.28	-.106	-2.69	**57**	-.220	-5.59	-.106	-2.69
12	.326	8.28	-.290	-7.37	**35**	.273	6.93	-.198	-5.03	**58**	.220	-5.59	.000	0.00
13	.251	6.38	-.365	-9.27	**36**	.198	5.03	-.273	-6.93	**59**	-.220	-5.59	.106	2.69
14	.159	4.04	-.418	-10.62	**37**	.106	2.69	-.326	-8.28	**60**	-.145	-3.68	.181	4.60
15	.053	1.35	-.418	-10.62	**38**	.000	0.00	-.326	-8.28	**61**	-.053	-1.35	.128	3.25
16	-.053	-1.35	-.418	-10.62	**39**	-.106	-2.69	-.326	-8.28	**62**	.053	1.35	.128	3.25
17	-.159	-4.04	-.418	-10.62	**40**	-.198	-5.03	-.273	-6.93	**63**	.128	3.25	.053	1.35
18	-.251	-6.38	-.365	-9.27	**41**	-.273	-6.93	-.198	-5.03	**64**	.128	3.25	-.053	-1.35
19	-.326	-8.28	-.290	-7.37	**42**	-.326	-8.28	-.106	-2.69	**65**	.053	1.35	-.128	-3.25
20	-.379	-9.63	-.198	-5.03	**43**	-.326	-8.28	.000	0.00	**66**	-.053	-1.35	-.128	-3.25
21	-.432	-10.97	-.106	-2.69	**44**	-.326	-8.28	.106	2.69	**67**	-.128	-3.25	-.053	-1.35
22	-.432	-10.97	.000	0.00	**45**	-.273	-6.93	.198	5.03	**68**	-.128	-3.25	.053	1.35
23	-.432	-10.97	.106	2.69	**46**	-.198	-5.03	.273	6.93	**69**	.000	0.00	.000	0.00

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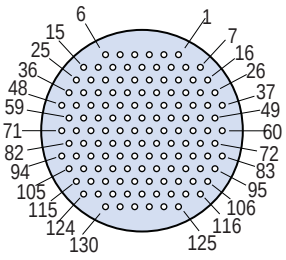
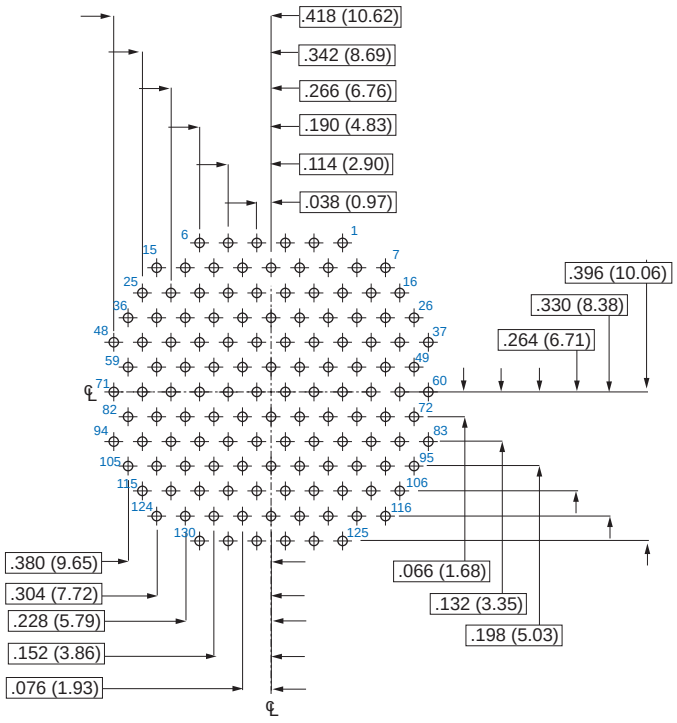
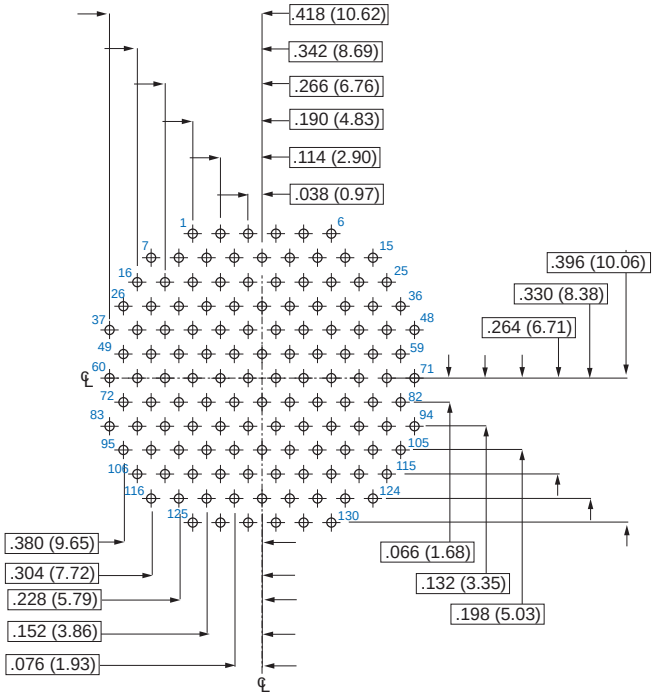
Component Mounting Side of PCB



Insert Arrangement
21-130, 23-130
130 #23 Contacts
.022 (0.56) Max. Dia. Tail



Pin Connector



Socket Connector

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SERIES 800 RECOMMENDED TORQUE VALUES

Shell Size Series 800	Coupling Torque				Jam Nut Tightening				Backshell Tightening			
	In-Lbs.		N-m		In-Lbs.		N-m		In-Lbs.		N-m	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
5	13	17	1.5	1.9	20	25	2.2	2.8	13	17	1.5	1.9
6	18	22	2.0	2.5	20	25	2.2	2.8	18	22	2.0	2.5
7	20	25	2.3	2.8	20	25	2.2	2.8	30	40	3.4	4.5
8	30	40	3.4	4.5	20	25	2.2	2.8	30	40	3.4	4.5
9	30	40	3.4	4.5	25	30	2.8	3.3	35	45	4.0	5.1
10	35	45	4.0	5.1	25	30	2.8	3.3	35	45	4.0	5.1
12	35	45	4.0	5.1	25	30	2.8	3.3	35	45	4.0	5.1

SERIES 801, 802, 803, 804, 805 RECOMMENDED TORQUE VALUES

Shell Size Series 801, 802, 803, 804	Shell Size Series 805	Coupling Torque				Jam Nut Tightening				Backshell Tightening			
		In-Lbs.		N-m		In-Lbs.		N-m		In-Lbs.		N-m	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
5	**-**	25	35	2.8	4.0	20	25	2.2	2.8	13	17	1.5	1.9
6	**8**	35	40	4.0	4.5	20	25	2.2	2.8	18	22	2.0	2.5
7	**9**	35	40	4.0	4.5	20	25	2.2	2.8	30	40	3.4	4.5
8	**10**	40	50	4.5	5.7	20	25	2.2	2.8	30	40	3.4	4.5
9	**11**	40	50	4.5	5.7	20	25	2.2	2.8	35	45	4.0	5.1
10	**12**	50	60	5.7	6.8	25	30	2.8	3.3	35	45	4.0	5.1
12, 13	**15**	50	60	5.7	6.8	25	30	2.8	3.3	35	45	4.0	5.1
14, 16	**18**	55	65	6.2	7.3	25	30	2.8	3.3	35	45	4.0	5.1
15, 17	**19**	55	65	6.2	7.3	25	30	2.8	3.3	35	45	4.0	5.1
21	**23**	55	65	6.2	7.3	25	30	2.8	3.3	35	45	4.0	5.1

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Series 80 Mighty Mouse Technical Reference
Product Specification Summary
Performance Specs, Materials and Finishes

PERFORMANCE SPECIFICATIONS	
Current Rating (Maximum)	Size #23 Contact: 5 A. Size #20 contact: 7.5 A. Size #16 contact: 13 A. Size #12 contact: 23 A.
Test Voltage (Dielectric Withstanding Voltage) Mated Connectors	Size #23 contacts: 500 VAC RMS sea level, 100 VAC RMS 70,000 feet Size #20 contacts: 1800 VAC RMS sea level, 325 VAC RMS 70,000 feet Size #20HD contacts: 750 VAC RMS sea level, 150 VAC RMS 70,000 feet Size #16 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 70,000 feet Size #12 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 70,000 feet
Insulation Resistance	5000 megohms minimum
Contact Resistance	Size #23 Contact: 73 millivolt drop at 5 A. test current Size #20 contact: 55 millivolt drop at 7.5 A. test current Size #16 contact: 49 millivolt drop at 13 A. test current Size #12 contact: 42 millivolt drop at 23 A. test current
Operating Temperature	-55° C. to +150° C.
Immersion, Mated	1 meter water immersion for 1 hour (Series 803 splashproof only)
Shock	300 g
Vibration	37 g
Magnetic Permeability	2.0 µ maximum
Please refer to the comprehensive Series 80 Product Specification for additional parameters and test methods. Filter and hermetic versions have performance specifications which differ from this information.	

MATERIALS AND FINISHES (1)	
Aluminum Shell, Barrel, and Coupling Nut	Al uminum alloy 6061 T6
Stainless Steel Shell, Barrel Coupling and Jam Nut	Stainless steel per AMS-QQ-S-763
Front and Rear Insulators	Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLCP-30F
Contact Retention Clip	Beryllium copper, heat-treated, unplated
Grommet, Peripheral Seal and Interfacial Seal	Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Hermetic Insert	Vitreous glass
Contacts	Copper alloy, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches
Pin Contact, Hermetic	Nickel-iron alloy per ASTM F30 (Alloy 52),50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35
Adhesives	Silicone and epoxy
Potting Compound, PCB and Solder Cup Versions	Environmental and Hermetic Connectors: High-strength epoxy, Hysol EE4215. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant.
Filter Element	Multilayer Ceramic Planar Array, ferrite inductors
(1) Refer to Section E for Series 802 “Aqua Mouse” matrerials and finishes.	

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DESCRIPTION	REQUIREMENT	PROCEDURE
ELECTRICAL		
Contact resistance	SAE AS39029 Table V Wire Size / Test Current / Max Voltage Drop 12 / 23 / 42 14 / 17 / 40 16 / 13 / 49 20 / 7.5 / 55 22 / 5 / 73 24 / 3 / 45 26 / 2 / 52 28 / 1.5 / 54	EIA-364-06 IEC 60512-2-1 Test current in amperes. Voltage drop in millivolts. Silver-coated copper wire, +25°C.
Low level contact resistance	Wire Size / Max. Milliohms 16 / 5 20 / 9 22 / 15 24 / 20 26 / 31 28 / 50	EIA-364-23 100 milliamperes maximum and 20 millivolts maximum open circuit voltage
Insulation resistance	5000 megohms minimum	EIA-364-21 IEC-60512-3-1 500 volts DC ± 50 volts. Test between adjacent contacts and contacts to shell.
Dielectric withstanding voltage, sea level	No breakdown or flashover #23 contacts 500 volts #20HD contacts 750 volts #16 contacts 1800 volts #12 contacts 1800 volts	EIA-364-20 IEC-60512-4-1 AC rms 60 Hz. One minute dwell. Unmated or mated
Dielectric withstanding voltage, 70,000 feet altitude	No breakdown or flashover #23 contacts 100 volts #20HD contacts 150 volts #16 contacts 1000 volts #12 contacts 1000 volts	EIA-364-20 IEC-60512-4-1 AC rms 60 Hz. One minute dwell. mated condition
Current carrying capacity	Contact Size / Max Current 12 / 23 16 / 13 20 / 7.5 23 / 5	EIA-364-70 Method 1 IEC-60512-5 Test 9b

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Series 80 Mighty Mouse Technical Reference
Complete Product Specification

<table>
<tr><th>DESCRIPTION</th><th>REQUIREMENT</th><th>PROCEDURE</th></tr>
<tr><td>Shell-to-shell conductivity, Initial</td><td>The maximum voltage drop across a mated pair shall not exceed the values shown.
<u>Series</u> <u>Voltage Drop</u>
800 10
801 10
802 10
803 100
804 2
805 2</td><td>EIA-364-83
IEC-60512-2-6
Electroless nickel plated connectors.</td></tr>
<tr><td>Shell-to-shell conductivity, after conditioning (48 hours salt spray)</td><td>The maximum voltage drop across a mated pair shall not exceed the values shown.
<u>Series</u> <u>Voltage Drop</u>
800 20
801 20
802 20
803 200
804 4
805 4</td><td>EIA-364-83
IEC-60512-2-6
Electroless nickel plated connectors.</td></tr>
<tr><td>Shielding effectiveness, low frequency (100MHz-1000 MHz)</td><td><table><tr><th></th><th colspan="2">dB Min. Attenuation</th></tr><tr><th>Frequency</th><th>Series 800, 801, 802, 804, 805</th><th>Series 803</th></tr><tr><td>100 MHz</td><td>75</td><td>60</td></tr><tr><td>200 MHz</td><td>70</td><td>55</td></tr><tr><td>300 MHz</td><td>65</td><td>55</td></tr><tr><td>400 MHz</td><td>63</td><td>50</td></tr><tr><td>800 MHz</td><td>58</td><td>45</td></tr><tr><td>1000 MHz</td><td>55</td><td>40</td></tr></table></td><td>MIL-DTL-38999 para. 4.5.28.1
Electroless nickel plated connectors</td></tr>
<tr><td>Shielding effectiveness, high frequency (1Ghz-10GHz)</td><td><table><tr><th></th><th colspan="2">dB Min. Attenuation</th></tr><tr><th>Frequency</th><th>Series 800, 801, 802, 804</th><th>Series 805</th></tr><tr><td>1 GHz</td><td>55</td><td>85</td></tr><tr><td>3 GHz</td><td>50</td><td>69</td></tr><tr><td>5 GHz</td><td>45</td><td>66</td></tr><tr><td>19 GHz</td><td>40</td><td>65</td></tr></table></td><td>EIA-364-66
IEC-60512-23-3
Electroless nickel plated connectors</td></tr>
</table>

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DESCRIPTION	REQUIREMENT	PROCEDURE
MECHANICAL		
Vibration, sine	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	MIL-STD-202 Method 204, test Condition G 30 g's, 3 axes, 4 hours per axis
Vibration, random	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	EIA-364-28 Test Condition V Letter I IEC-60512-6-4 100 milliamp test current 50- 2,000 Hz 37.80 g rms
Gunfire vibration	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	MIL-STD-810F Method 519.5
Mechanical shock	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after shock test.	EIA-364-27 Condition D IEC-60512-6-3 3 shocks X 3 axes X 2 directions = 18 shocks 2941 m/s^2 (300 g's), 3 ms, half-sine
Mechanical durability, at ambient temperature	No deterioration which will adversely affect the connector after 2000 cycles of mating and unmating. Connectors shall meet contact resistance, insulation resistance, shell-to-shell resistance, DWV, and mating and unmating force.	EIA-364-09 IEC-60512-5 Test 9a
Solderability, PC tail contacts	95% solder coverage. Smooth, bright and even finish.	EIA-364-52 Category 3 IEC-60512-12-1 IEC-68-2-20 Test Ta, method 1 8 hours steam aging prior to test 245° C, 4-5 sec. dwell 10X magnification
Resistance To Soldering Heat	No damage to connector. Connectors shall meet insulation resistance and waterproof sealing requirements.	EIA-364-56 IEC-60512-12-5 Test 12e 260° C, 10 seconds (PC tail)

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Series 80 Mighty Mouse Technical Reference
Complete Product Specification

<table>
<tr><th>DESCRIPTION</th><th>REQUIREMENT</th><th>PROCEDURE</th></tr>
<tr><td>Impact</td><td>No impairment of function. Connector shall meet contact resistance, insulation resistance and waterproof sealing.</td><td>EIA-364-42
IEC-60512-5 test 7b
1 meter
8 drops</td></tr>
<tr><td>Contact retention</td><td><table><tr><th>Contact Size</th><th>Min. Pounds</th><th>Min. Newtons</th></tr><tr><td>23</td><td>6</td><td>27</td></tr><tr><td>20</td><td>15</td><td>67</td></tr><tr><td>20HD</td><td>9</td><td>40</td></tr><tr><td>16</td><td>25</td><td>111</td></tr><tr><td>12</td><td>25</td><td>111</td></tr></table></td><td>EIA-364-29</td></tr>
<tr><td>Contact separation force</td><td><table><tr><th>Contact Size</th><th>Min. Ounces</th><th>Min. Newtons</th></tr><tr><td>23</td><td>0.5</td><td>0.14</td></tr><tr><td>20</td><td>0.7</td><td>0.19</td></tr><tr><td>16</td><td>2.0</td><td>0.56</td></tr><tr><td>12</td><td>3.0</td><td>0.83</td></tr></table></td><td>SAE AS39029</td></tr>
<tr><td>Coupling torque</td><td>Threaded coupling connector coupling torque shall not exceed the following requirements.<table><tr><th colspan="2">Shell Size</th><th rowspan="2">Inch Pound</th></tr><tr><th>Series 800, 801</th><th>Series 805</th></tr><tr><td>5, 6, 7</td><td>8, 9</td><td>8</td></tr><tr><td>8,9</td><td>10, 11</td><td>9</td></tr><tr><td>10</td><td>12</td><td>12</td></tr><tr><td>12, 13</td><td>15</td><td>16</td></tr><tr><td>14, 15,</td><td>18</td><td>28</td></tr><tr><td>16, 17</td><td>19</td><td>24</td></tr><tr><td>21</td><td></td><td>32</td></tr><tr><td></td><td>23</td><td>36</td></tr></table></td><td></td></tr>
<tr><td>Unmating force (Series 804)</td><td>Series 804 quick-disconnect connectors<table><tr><th>Contact Arrangement</th><th>Inch Pound</th></tr><tr><td>5-3</td><td>10.6</td></tr><tr><td>6-4</td><td>10.8</td></tr><tr><td>6-7</td><td>11.4</td></tr><tr><td>7-10</td><td>12.0</td></tr><tr><td>8-13</td><td>12.6</td></tr><tr><td>9-19</td><td>13.8</td></tr><tr><td>10-26</td><td>15.2</td></tr><tr><td>12-37</td><td>17.4</td></tr><tr><td>14-55</td><td>21.0</td></tr></table></td><td></td></tr>
</table>

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<table>
<tr><th>DESCRIPTION</th><th>REQUIREMENT</th><th>PROCEDURE</th></tr>
<tr><td>Insert retention</td><td>Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts.
<table>
<tr><th colspan="3">Shell Size</th><th rowspan="2">Min. Force in Pounds</th></tr>
<tr><th>Ser. 800, 803, 804</th><th>Ser. 801</th><th>Ser. 805</th></tr>
<tr><td>5</td><td>5</td><td></td><td>25</td></tr>
<tr><td>6</td><td>6</td><td>8</td><td>25</td></tr>
<tr><td>7</td><td>7</td><td>9</td><td>25</td></tr>
<tr><td>8</td><td>8</td><td>10</td><td>25</td></tr>
<tr><td>9</td><td>9</td><td>11</td><td>25</td></tr>
<tr><td>10</td><td>10</td><td>12</td><td>25</td></tr>
<tr><td>12</td><td>13</td><td>15</td><td>25</td></tr>
<tr><td>14</td><td>16</td><td>18</td><td>40</td></tr>
<tr><td>15</td><td>17</td><td>19</td><td>50</td></tr>
<tr><td></td><td>21</td><td>23</td><td>80</td></tr>
</table></td><td>EIA-365-35</td></tr>
<tr><td>Residual magnetism</td><td>2 μ maximum.</td><td>EIA-364-54</td></tr>
<tr><th colspan="3">ENVIRONMENTAL</th></tr>
<tr><td>Operating temperature</td><td>-65° to +150°C</td><td></td></tr>
<tr><td>Water immersion, mated</td><td>No evidence of water penetration into mated connectors. ≥ 100 MΩ insulation resistance.</td><td>MIL-STD-810F Method 512.4
1 meter immersion
1 hour</td></tr>
<tr><td>Water immersion, open face panel mount receptacles with non-removable printed circuit board or solder cup contacts</td><td>Connectors with waterblock potting process (Glenair Modification Code 518 required).
1 X 10^{-4} cc/second maximum helium leak rate at 1 atmosphere pressure differential following thermal shock conditioning.</td><td>EIA-365-02
3 cycles thermal shock
-57°C to +71°C
75 min. dwell
5 minute transfer rate</td></tr>
<tr><td>Humidity, cyclic (damp heat, cyclic) (moisture resistance)</td><td>No deterioration which will adversely affect the connector. 100 megohms minimum insulation resistance during the final cycle. Following the recovery period, connectors shall meet contact resistance, shell-to-shell resistance and DWV requirements.</td><td>EIA-364-31 Condition B Method III
IEC-60512-11-12
80-98% RH
10 cycles (10 days)
+25° C to +65° C
Step 7b vibration deleted.
24 hour recovery period.</td></tr>
</table>

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Series 80 Mighty Mouse Technical Reference
Complete Product Specification

DESCRIPTION	REQUIREMENT	PROCEDURE
21 day humidity (damp heat, long term)	No deterioration which will adversely affect the connector. Following the drying period, connectors shall meet 100 megohms minimum, contact resistance, shell-to-shell resistance, DWV, mating and unmating requirements.	EIA-364-31 Condition C Method II IEC-60512-11-3 Severity C 90-95% RH 40° C Apply 100 volts DC during test. 4 hours drying time at ambient temperature prior to final measurements.
Thermal shock	No mechanical damage or loosening of parts. Following thermal shock, connector shall meet contact resistance, DWV, insulation resistance and shell-to-shell resistance requirements.	EIA-364-32 Test Condition IV IEC-60512-11-4 5 cycles consisting of -65° C 30 minutes, +25° C 5 minutes max., +150° C 30 minutes, +25° C 5 minutes max.
Corrosion (salt mist)	No exposure of base metal. Connectors shall meet DWV and contact resistance requirements following the test.	EIA-364-26 IEC 60512-11-6 5% salt solution 35° C Unmated connectors **Code C**: 48 hours **Code M**: 48hours **Code MT**: 500 hours **Code NF**: 500 hours **Code ZN**: 500 hours **Code ZNU**: 500 hours **Code UCR**: 500 hours
Sand and dust	Mated connectors shall withstand the effects of blowing sand and dust	MIL-STD-810F, Method 510.4
Fungus	Connector materials shall be fungus inert.	MIL-STD-810F, Method 508.5
Fluid immersion	No visible damage from immersion in various fuels and oils. Connector shall meet coupling torque and dielectric withstanding voltage requirements.	EIA-364-10 Unmated connectors
Altitude immersion	No evidence of moisture on connector interface or contacts. Connector shall meet dielectric withstanding voltage.	EIA-364-03 Wired crimp connectors with supplemental potting. Printed circuit board and solder cup connectors with standard factory-installed potting.
Outgassing	The entire connector assembly shall be capable of meeting a maximum Total Mass Loss (TML) of 1% and a Total Collected Volatile Material Loss (TCVML) of 0.1% following additional processing for outgassing control.	ASTM-E595

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Five things you should know about Series 80 connectors for space flight

1 Material Selection: What materials are approved for space-grade connectors? What materials are prohibited? Does the Series 80 connector contain space-approved materials?

2 Outgassing: What is outgassing, why is it important, and how does it affect connector selection? Is special processing required to meet outgassing requirements?

3 Screening: What is NASA screening and what level of screening is required?

4 Magnetic permeability: Are nonmagnetic connectors required?

5 Cryogenic exposure: Are these connectors suitable for -200° C. exposure?

Series 80 Connectors for Space Flight

The small size and reduced weight of the Series 80 connector make it an excellent choice for space instrumentation. Series 80 connectors are available with special screening and outgassing for satellites and space vehicles. This section explains NASA guideline for connector selection, screening and outgassing. This section also explains how to order connectors screened to meet NASA EEE-INST-002.

HOW TO ORDER SPACE GRADE SERIES 80 CONNECTORS

Step 1: Find a Standard Part Number

Electroless nickel plated shells are preferred for space flight. Cadmium plating is prohibited.

Step 2: Select a NASA Screening Level

The term “Screening Level” refers to the final inspection procedure.
Level 1 for mission-critical highest reliability
Level 2 for high reliability
Level 3 for standard reliability

Step 3: Choose Outgassing Processing

A detailed explanation of outgassing is on the following pages. The fluorosilicone rubber seals commonly used on aerospace-grade connectors such as MIL-DTL-38999 and Series 80 connectors, along with certain bonding agents and inks, do not meet NASA outgassing requirements unless the connector is specially processed. Glenair outgassing tests have shown oven baking or thermal vacuum outgassing processing are sufficient to reduce outgassing levels to NASA standards. Oven baking is more economical than thermal vacuum outgassing.

Step 4: Select the Mod 429 Code that Matches the Desired Level of Screening and Outgassing

Use the following table to choose the right modification code. Add the mod code to the connector part number. Example: 801-007-16M6-7PA-***429C***

NASA SCREENING LEVELS AND MODIFICATION CODES

NASA Screening Level	Special Screening Only	Special Screening Plus Outgassing Processing	
		8 Hour Oven Bake 400° F.	**Thermal Vacuum Outgassing** 24 hrs. 125° C.
Level 1 Highest Reliability	Mod 429B	Mod 429J	Mod 429C
Level 2 High Reliability	Mod 429	Mod 429K	Mod 429A
Level 3 Standard Reliability	(Use standard part number)	Mod 186	Mod 186M

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Series 80 Mighty Mouse Technical Reference Guidelines for Space-Grade Applications

Series 80 Connectors for Space Flight

1 Material Selection: ***What materials are approved for space flight? What materials are restricted? How to choose the right materials for Series 80 connectors.***

What materials are approved for space flight?

Section C2 "Connectors and Contacts" of NASA EEE-INST-002 provides guidelines for materials used in connectors for space flight applications. Aluminum is a preferred material for connector components, and electroless nickel is the preferred finish. Beryllium copper is a preferred material for contacts. 50 microinch minimum gold plating is the preferred contact finish. LCP is a preferred material for dielectric insulating materials.

What materials are prohibited?

100% tin plating shall not be used. Pure tin can grow "whiskers" which can lead to catastrophic electrical short circuits. Silver plating is prohibited because of corrosion concerns. Cadmium is prohibited because it is unstable in vacuum environments.

Specifying Series 80 connectors for space flight

Standard Series 80 connectors meet NASA guidelines for material selection. Specify "M" for aluminum shells with electroless nickel finish. The table below lists the Series 80 materials.

SERIES 80 CONNECTOR MATERIALS APPROVED FOR SPACE FLIGHT

Component	Material	Notes
Shells, Coupling Nuts, Jam Nuts	Aluminum alloy 6061 T6, electroless nickel plated	Approved for Space Flight
Rigid Insulators	Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLCP-30F	Approved for Space Flight
Contact Retention Clip	Beryllium copper, heat-treated, unplated	Approved for Space Flight
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988	Requires outgassing processing
Hermetic Insert	Vitreous glass	Approved for Space Flight
Pin Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Approved for Space Flight
Pin Contact, Hermetic	Nickel-iron alloy per ASTM F30 (Alloy 52),50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Ferromagnetic material.
Socket Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.	Approved for Space Flight
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35	Approved for Space Flight
Adhesives	RTV and epoxies (see following table for outgassing info)	Requires outgassing processing
Potting Compound, PCB and Solder Cup Versions	Environmental and Hermetic Connectors: Stycast 2651/Catalyst 9 epoxy encapsulant. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant.	Approved for Space Flight
Filter Element	Multilayer Ceramic Planar Array, ferrite inductors	Approved for Space Flight

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2 Outgassing: *What is outgassing and how does it affect connector selection? Is special processing required to meet outgassing requirements?*

What is outgassing?

Plastic and rubber materials give off gaseous molecules. For example, the smell inside a new car is caused by polymer outgassing. Heat and vacuum increase the rate of diffusion. In a spacecraft the gases coming off polymers can contaminate optical surfaces and instruments. The result is degraded performance.

How is outgassing measured?

The space industry has adopted a standardized test procedure, ASTM E 595, to evaluate outgassing properties of polymers. Small samples of material are heated to 125° C. at a vacuum of 5 X 10^{-5} torr for 24 hours.

Then the sample is weighed to calculate the *Total Mass Loss* (TML). The TML cannot exceed 1.00% of the total initial mass. During the test, outgassed matter condenses on a cooled collector plate. The quantity of outgassed matter is caluclated to determine the *Collected Volatile Condensable Material* (CVCM). The CVCM cannot exceed 0.10% of the original specimen mass.

Is special outgassing processing necessary on Series 80 connectors?

NASA states "A bakeout for outgassing control is driven by the application and may be required where tight contamination control must be maintained." NASA generally recommends that military circular connectors undergo outgassing processing. This processing can be performed by Glenair; however, some customers prefer to fabricate higher level subassemblies before outgassing processing.

Outgassing At-a-Glance

1 Fluorosilicone rubber components and encapsulants exceed NASA outgassing limits.

2 NASA recommends outgassing processing to reduce outgassing to acceptable levels.

3 An inexpensive oven bakeout has better results than the more costly thermal vacuum outgassing. The higher temperature of the oven bakeout is more effective at removing volatile materials. However, both methods assure compliance with outgassing limits.

4 Glenair Mod 429 codes provide an easy ordering solution, whatever the outgassing option.

OUTGASSING PROPERTIES OF MATERIALS USED IN SERIES 80 CONNECTORS

Component	Material	TML %	TCVML %	Test Reference
Front and Rear Insulator	Liquid Crystal Polymer Vectra C130	0.03	0.0	NASA Test # GSC17478
Rear Grommet Interfacial Seal Peripheral Seal	Blended flourosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% flourosilicone per MIL-R-25988	0.48	0.14	Glenair testing conducted at NuSil Technology 02/27/2001
Front-To-Rear Insulator Bonding Material	Eccobond 104 A/B	0.52	0.08	Emerson & Cuming Data Sheet
Insulator-to-Rubber Bonding Material	DC3145 RTV, per MIL-A-46146	2.52	0.58	NASA Test GSC28621
Coupling Nut Retainer	Torlon® 4203L	1.88	0.01	Glenair Test at NuSil Technology 03-12-2003
Coupling Nut Epoxy	Hysol C9-4215	0.48	0.01	Glenair Test
O-Ring	Flourosilicone Rubber	0.32	0.03	NASA Test GSFC8687
White Epoxy Ink for Silkscreening	Markem 7224 White	0.49	0.03	NASA Test #GSC19899
Black Ink for Part Number Identification	Videojet #16-5600Q	TBD	TBD	
Potting Compound, Solder Cup and PC Tail Connectors	Hysol C9-4215	0.48	0.01	Glenair Test
Potting Compound, Solder Cup and PC Tail Connectors	DC3145 RTV, per MIL-A-46146	2.52	0.58	NASA Test GSC28621
Potting Compound, Filter Receptacles	Stycast epoxy, 2850FT/Catalyst 11	0.29	0.02	Mfgr Data Sheet

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Series 80 Mighty Mouse Technical Reference Guidelines for Space-Grade Applications

3 Screening: *What is NASA screening and what level of screening is required?*

What is NASA screening?

NASA specification EEE-INST-002 provides instructions on selecting, screening and qualifying parts for use on NASA GSFC space flight projects. Table 2A in the NASA specification contains inspection instructions for circular connectors including MIL-DTL-38999. Series 80 connectors are not mentioned in the NASA spec but are similar to D38999 connectors, so Table 2A applies by similarity to Series 80 connectors.

What screening level is required?

NASA defines three levels of screening: level 1 for highest reliability, level 2 for high reliability, and level 3 for standard reliability. Level 3 equates to standard lot acceptance inspection. Levels 1 and 2 call for additional testing.

What about qualification requirements?

Projects using connectors covered by military specifications are typically able to waive qualification testing. The Series 80 connector has been rigorously tested by Glenair but is not covered by a military specification. Projects considering using the Series 80 for space flight should obtain guidance from the overseeing space agency regarding the suitability of existing Glenair Series 80 test data, available on request.

NASA EEE-INST-002 SCREENING REQUIREMENTS

Inspection/ Test	NASA Level 1	NASA Level 2
Visual Inspection	100%	100%
Mechanical	2 pcs.	2 pcs.
Voltage (DWV)	2 pcs.	2 pcs.
Insulation Resistance	2 pcs.	2 pcs.
Contact Engagement and Separation Force (socket contacts)	2 pcs.	N/A
Coupling Force	2 pcs.	N/A
Air leakage (Hermetic connectors only)	100%	100%
Solderability/Resistance to Soldering Heat	2 pcs.	N/A
1. NASA screening requirements from Table 2A of EEE-INST-002 “Screening Requirements for Circular Connectors...”		

4 Magnetic permeability: *Are nonmagnetic connectors required?*

Spacecraft designers generally avoid the use of ferromagnetic materials, which can become magnetized and can interfere with sensitive instruments. Series 80 aluminum shell connectors have a maximum permeability of 2 mu. Hermetic Series 80 connector pins are iron alloy, a highly magnetic material.

5 Cryogenic exposure: *Space programs sometimes need cryogenic connectors capable of withstanding temperatures as low as -270° C. Can Series 80 connectors operate satisfactorily at this temperature?*

Series 80 connectors are rated to -65° C. Glenair does not have data to validate these connectors for cryogenic applications. EEE-INST-002 states “...experience has proven it is possible for (non-certified) connector types to be used successfully at cryogenic temperatures. It is recommended that connector samples should be subjected to five cycles of cryogenic temperature...(followed by examination for cracks and DWV)”.

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SERIES 80 MODIFICATION CODES

Modification Code	Description	Application Notes	Part Number Example
MOD-186	Oven bake connector for 8 hours at 400° F.	Intended for space flight applications. See **Guidelines for Space-Grade Applications.**	800-006-06M5-3SN-***186***
MOD-429	Special NASA high-reliability screening and processing	Use this mod code on all Series 80 connectors. See **Guidelines for Space-Grade Applications.**	801-010-02M13-37PB-***429J***
MOD-489	Solder dip PC tails in 63/37 tin-lead	For use with all connectors with PC tail contacts.	801-011-02M7-10PA-***489***
MOD-501	Replace spanner-style jam nut w/ hex-style jam nut w/ safety wire holes	Use this mod code on all Series 80 rear panel mount jam nut connectors (style 07).	800-010-07M6-4SN-***501***
MOD-518	Waterblock sealing of printed circuit board and solder cup receptacles. Sealing meets 10^{-4} cc/second maximum helium leak rate at 15 PSI pressure differential following three cycles of thermal shock.	For use on all panel mount receptacles with printed circuit board or solder cup contacts.	801-011-07M9-19SA-***518***

STANDARD MATERIAL AND FINISH CODES

Code	Material	Finish	Finish Specification	Hrs. Salt Spray	Electrical Conductivity	Operating Temp. Range	RoHS Compliance
AB	Marine Bronze	Unplated		1000	Conductive	-65 to +200°C	✓
AL	Aluminum	AlumiPlate	MIL-DTL-83488	1000	Conductive	-65 to +175°C	✓
C	Aluminum	Anodize, Black	AMS-A-8625	48	Non-Conductive	-65 to +175°C	✓
E	Aluminum	Chem Film	MIL-DTL-5541	168	Conductive	-65 to +175°C	
G2	Aluminum	Anodize, Hardcoat	AMS-A-8625	336	Non-Conductive	-65 to +200°C	✓
JF	Aluminum	Cadmium, Gold	SAE-AMS-QQ-P-416	1000	Conductive	-65 to +175°C	
LF	Aluminum	Cadmium, Clear	SAE-AMS-QQ-P-416	1000	Conductive	-65 to +175°C	
M	Aluminum	Electroless Nickel	AMS-C-26074	48	Conductive	-65 to +200°C	✓
MT	Aluminum	Nickel-PTFE	GMF-002	500	Conductive	-65 to +175°C	✓
NC	Aluminum	Zinc-Cobalt, Olive Drab	ASTM B 840	350	Conductive	-65 to +175°C	
NF	Aluminum	Cadmium, Olive Drab	SAE-AMS-QQ-P-416	500	Conductive	-65 to +175°C	
P	Stainless Steel	Electrodeposited Nickel	SAE-AMS-QQ-N-290	500	Conductive	-65 to +200°C	✓
Z1	Stainless Steel	Passivate	SAE-AMS-QQ-P-35	1000	Conductive	-65 to +200°C	✓
Z2	Aluminum	Gold	MIL-DTL-45204	48	Conductive	-65 to +200°C	✓
ZC	Stainless Steel	Zinc-Cobalt, Black	ASTM-B840		Conductive	-65 to +175°C	
ZCR	Stainless Steel	Zinc-Cobalt, Black (RoHS)	ASTM-B840		Conductive	-65 to +175°C	✓
ZL	Stainless Steel	Electrodeposited Nickel	SAE-AMS-QQ-N-290	1000	Conductive	-65 to +200°C	✓
ZM	Stainless Steel	Electroless Nickel	AMS-C-26074		Conductive	-65 to +200°C	✓
ZMT	Stainless Steel	Nickel-PTFE	GMF-002	1000	Conductive	-65 to +175°C	✓
ZN	Aluminum	Zinc-Nickel, Olive Drab	ASTM B841	500	Conductive	-65 to +175°C	
ZNU	Aluminum	Zinc-Nickel, Black	ASTM B841	500	Conductive	-65 to +175°C	
ZR	Aluminum	Zinc-Nickel, Black	ASTM B841	1000	Conductive	-65 to +175°C	✓
ZU	Stainless Steel	Cadmium, Black	SAE-AMS-QQ-P-416	1000	Conductive	-65 to +175°C	
ZW	Stainless Steel	Cadmium, Olive Drab	SAE-AMS-QQ-P-416	2000	Conductive	-65 to +175°C	

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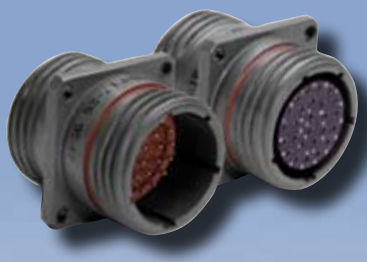

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