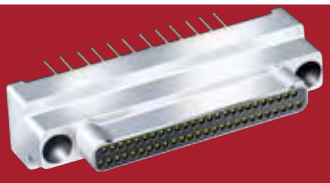
Glenair®



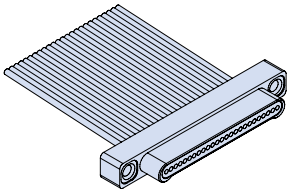
Series 89 Nanominiature Connectors

MIL-DTL-32139 Qualified Connectors for Mission-Critical Board-to-Wire Applications

United States ■ United Kingdom ■ Germany ■ France ■ Nordic ■ Italy ■ Spain ■ Japan

Series 89 Nanominiature Product Selection Guide

Pre-Wired Single Row Connectors



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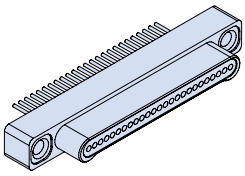

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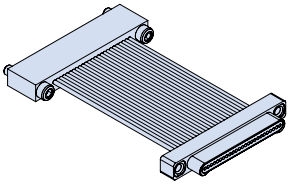

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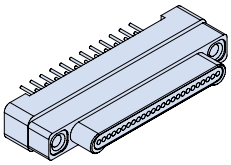
Single Row Printed Circuit Board Connectors



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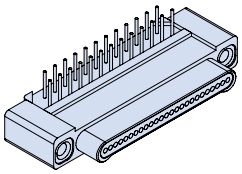

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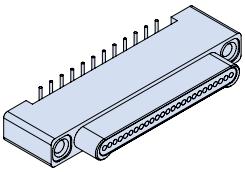

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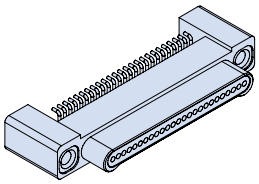

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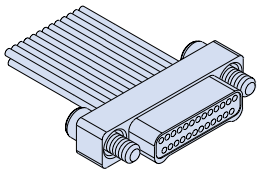
Pre-Wired Double Row Connectors



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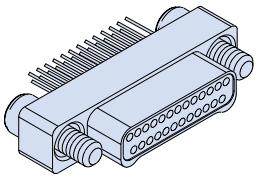

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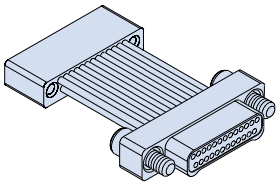

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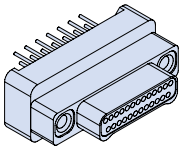
Double Row Printed Circuit Board Connectors



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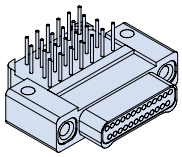

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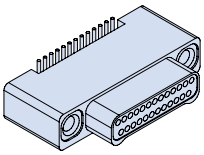

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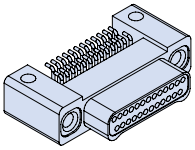

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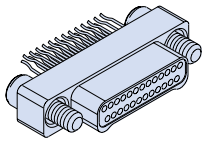

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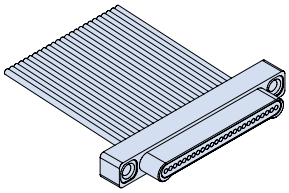
Pre-Wired MIL-DTL-32139 Connectors



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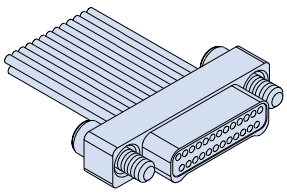

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Single Row, Printed Circuit Board

Double Row, Pre-Wired

Double Row, Printed Circuit Board

MIL-DTL-32139, Pre-Wired, Single and Double Row

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Series 89 Nanominiature Connectors

Nanominiature Connectors At A Glance

Nanominiature connectors are high reliability ultraminiature interconnects intended for critical applications where size and weight restrictions will not allow the use of larger connectors. Typical applications include miniaturized electronics boxes used in UAV's, satellites, missile systems, and geophysical instruments. Contact spacing of 0.025 inches combined with a rugged contact system allow these nano connectors to be used in demanding environments where commercial-grade connectors should not be used.

How Small Are They?

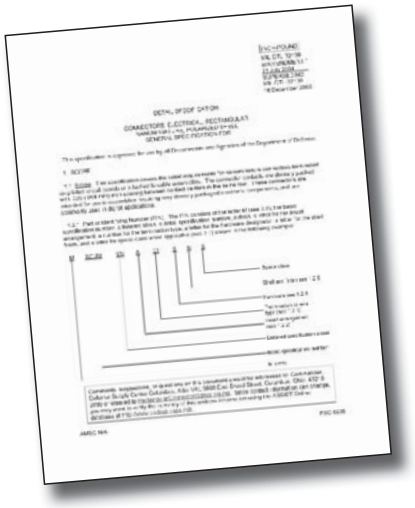
D-Subminiature Connector
Contacts on 0.109 Inch Spacing

Micro-D Connector
Contacts on 0.050 Inch Spacing

Nano Connector
Contacts on 0.025 Inch Spacing

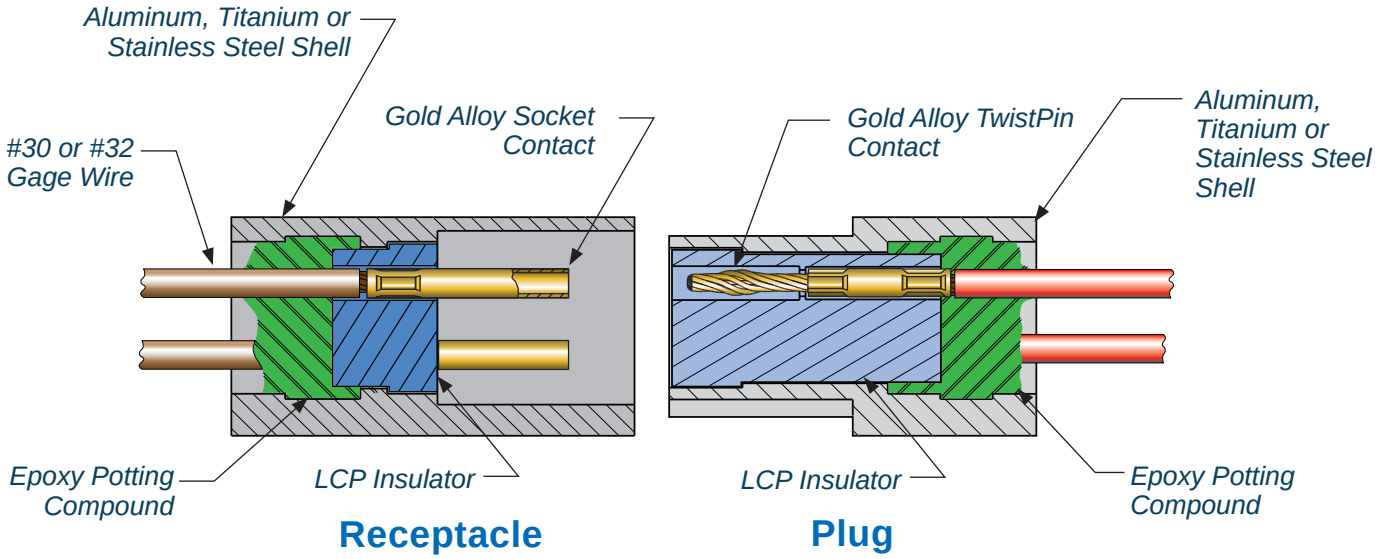
MIL-DTL-32139 At-A-Glance

High reliability nanominiature connectors are covered by military specification MIL-DTL-32139. This document assures intermateability and interchangeability. The specification covers pre-wired single and double row metal shell connectors—manufactured and qualified by Glenair. The Glenair Series 89 products in this catalog also meet the electrical, mechanical and interface requirements of the military specification, but offer options not specifically covered in the mil-spec.



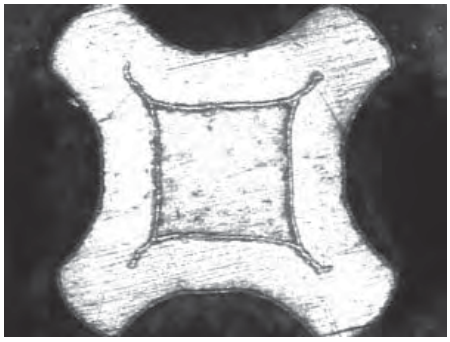
Key Features

- **1 AMP Current Rating**
- **.025 Inch (0.64 mm.) Contact Spacing**
- **#30 and #32 Gage Wire Accommodation**
- **Single and Double Row**
- **Metal Shell, Aluminum, Titanium or Stainless Steel**
- **TwistPin Contact System**
- **Gold Alloy Contact, Unplated**
- **Thru-Hole and Surface Mount PCB Versions**



The Nano TwistPin Advantage

MIL-DTL-32139 defines the minimum acceptable performance levels for Nanominiature connectors. Manufacturers are given considerable leeway when it comes to contact design, wire termination, contact finish and material selection. Stamped and formed contacts, for example, are used in nanominiature connectors due to their low-cost and ease of manufacture. But independent testing clearly shows that TwistPin style contacts provide superior performance in hostile environments. If you have already made the decision to use a Nano sized connector, then you owe it to yourself to understand the very real differences between stamped pins and the Glenair TwistPin Contact System.



Transverse Cross-Section of a TwistPin Contact Crimped to Solid Wire

Three Reasons to Choose TwistPins

1 Gas-Tight Crimp Joint

TwistPin contacts assure gas-tight crimp joints for stable resistance after years of environmental exposure. The photograph at left demonstrates the superiority of a gas-tight, void-free 4-indent crimp.

2 Better Shock and Vibration Performance

The nanominiature TwistPin contact is made from six strands of wire. The five outer strands provide multiple points of contact with the mating socket contact for superior shock and vibration performance.

3 Corrosion-Proof Contact Alloy

Both the TwistPin contact and the mating socket contact are made from a special alloy consisting of 71% gold, 8% platinum and 5% silver alloyed with copper and zinc.

Series 89 Nanominiature Connectors
Performance Summary, Materials and Finishes

Glenair's 0.025 inch contact spacing Series 89 Nanominiature connector is the latest evolution in rectangular shaped connectors for board-level I/O applications. Featuring solid gold TwistPin contacts and aluminum, titanium or stainless steel shells, the Nanominiature is the smallest, yet remarkably robust, connector we make. Glenair is one of the first interconnect manufacturers to qualify to the new MIL-DTL-32139 Nanominiature Mil-Spec for these precision-machined connectors that deliver both ultra high density and maximum weight and space savings. These high reliability ultra miniature interconnects are ideal for critical applications where size and weight restrictions preclude the use of larger connectors such as M24308 D-Sub-miniatures. Ideal for military applications of all types, the rugged contact system allows Glenair's Nano connectors to be used in the most demanding miniaturized applications.

The Glenair Nano contact system consists of a TwistPin (a miniaturized version of the Glenair Micro-D TwistPin) and a tubular socket providing excellent durability and superior resistance to shock and vibration. Accommodating #30 or #32 AWG wire, Nano TwistPin contacts handle 1 AMP current rating and 70 Volts AC RMS operating voltage.

SERIES 89 NANOMINIATURE CONNECTOR PERFORMANCE SUMMARY	
Contact Spacing	.025" (0.64) Contact Centers
Wire Accommodation	#30-#32 AWG
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	250 VAC RMS Sea Level, 100 VAC RMS 70,000 Feet
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 Millivolt Drop Maximum, 1 AMP Current, #30 AWG Wire
Vibration	20 g's, in Accordance with EIA-364-28, Condition IV
Shock	100 g's, in Accordance with EIA-364-27, Condition G
Durability	200 Mating Cycles
Corrosion Resistance	48 Hours Salt Spray In Accordance With EIA-364-26, Condition B
Humidity	96 Hours, In Accordance with EIA-364-31 Condition A
Contact Engaging/Separation Force	5 Ounce Maximum, 0.4 Ounce Minimum
Thermal Vacuum Outgassing	Total Mass Loss (TML) 1.0% Max., Volatile Condensible Material (VCM) 0.1% Max.

MATERIALS AND FINISHES	
Connector Shell	Aluminum Alloy, Cadmium Plated per SAE-AMS-QQ-P-416 Type II Class 1. Aluminum Alloy, Electroless Nickel Plated Per SAE-AMS-C-26074, Class 3 or 4, Grade B Titanium Alloy per MIL-T-81556, Unplated 300 Series Stainless Steel per ASTM A582
Insulator	Liquid Crystal Polymer (LCP),per MIL-M-24519 GLCP-30F, 30% Glass-Filled
Pin Contact	Spring Temper Gold Alloy, Unplated, Per ASTM B477 and ASTM B541.
Socket Contact	Gold Alloy, Unplated, Per ASTM B477 or ASTM B541.
Hardware	300 Series Stainless Steel
PCB Trays	Liquid Crystal Polymer (LCP),per MIL-M-24519 GLP-30F, 30% Glass-Filled
Encapsulant	Epoxy

Six things you should know about Nano connectors for space flight:

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

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

3 **Magnetic Permeability**: Are nonmagnetic connectors required?

4 **Cryogenic Exposure**: Are Nano connectors suitable for -200° C. exposure?

5 **Materials**: Nano connectors offer a variety of materials and plating finishes. Which ones are recommended for space flight?

6 **Wire Corrosion**: M22759/33 irradiated Tefzel® wire is preferred for space applications. What about corrosion problems caused by this wire?

Save Time and Trouble with Mod 429 Space Grade Nanominiature Connectors

M32139 Class S Nanominiature connectors are DSCC approved for space programs. NASA EEE-INST-002 provides guidance on additional screening for Nano connectors. Glenair Mod 429 upgrades inspection and screening to NASA requirements without the need for a customer Statement of Work or Specification Control Drawing. This section explains Glenair Mod 429 ordering, and provides valuable information on outgassing and other space flight topics.

HOW TO ORDER SPACE GRADE NANO CONNECTORS

Step 1: Find a Standard Nano Part Number

Titanium shells, nickel-plated aluminum shells and stainless steel shells are suitable for use in vacuum environments. Cadmium plating is prohibited for space flight.

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: Outgassing Processing

Glenair Nano connectors are certified to meet NASA outgassing requirements without special processing. However, if additional outgassing processing is required, choose the appropriate suffix code from the table below.

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: 891-002-9ST-0A1-12J-***429***

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

Series 89 Nanominiature Connectors
Mod 429 Space Grade Information

1 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 calculated to determine the ***Collected Volatile Condensable Material*** (CVCM). The CVCM cannot exceed 0.10% of the original specimen mass.

Do Nano Connectors Require Special Outgassing Processing?

No. Nano connectors meet NASA outgassing requirements without special processing.

2 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 2J in the NASA spec contains specific inspection instructions for Nanominiature connectors. These screening requirements exceed the standard mil spec inspection levels.

What Screening Level is Required for Space Applications?

NASA defines three levels of screening: level 1 for highest reliability, level 2 for high reliability, and level 3 for standard reliability.

Is Glenair NASA Certified?

Yes. Meeting NASA requirements means not only inspecting per EEE-INST-002, but also building parts in accordance with NASA Technical Standard NASA-STD-8739.4 “Crimping, Interconnecting Cables, Harnesses, and Wiring”. Glenair fully meets these requirements and has obtained NASA certification. Our extra inspection steps reflect the fact that pre-wired connectors not only require best practices on the assembly floor, but also require thorough final electrical and mechanical testing. For more information on Glenair's NASA qualifications and certifications, please contact our Micro-D and Nanominiature connector product manager.

SCREENING REQUIREMENTS

Inspection/ Test	Glenair Level 1 (Mod 429B)	Glenair Level 2 (Mod 429)
Visual Inspection	100% (10X)	100%
Mechanical	100%	2 pcs.
Voltage (DWV)	100%	100%
Insulation Resistance	100%	100%
Low Level Contact Resistance	100% (Read and Record)	2 pcs. (Read and Record)
Mating Force	2 pcs.	N/A
Contact/Wire Retention	2 pcs.	N/A
Solderability/Resistance to Soldering Heat	2 pcs.	N/A

3 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. Nano connectors have a maximum permeability of 2 mu.

4 Cryogenic Exposure: Are Nano connectors suitable for use at temperatures approaching -200° C. ?

Nano connectors are rated to -55° C. Glenair has not performed testing below this temperature. 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)".

5 Materials: Which materials are recommended for space flight?

Cadmium plated shells are prohibited from space programs. Other Nano materials are acceptable.

6 Wire Corrosion: M22759/33 irradiated Tefzel® wire is preferred for space applications. What about corrosion problems caused by this wire?

Does M22759/33 Wire Have an Outgassing Problem?

Irradiated Tefzel® wire is known to cause tarnishing and corrosion of metal parts in close proximity, usually in sealed bags. Both MIL-DTL-32139 and NASA EEE-INST-002 contain cautionary notes regarding this problem. Wire manufacturers have not been able to eliminate this problem. This corrosion problem is referred to as "wire outgassing", which has led to confusion over the term outgassing. This problem has nothing to do with the ability of the wire to meet the TML and CVCM outgassing requirements of ASTM E595. M22759/33 irradiated Tefzel wire continues to be the wire of choice for spacecraft. This wire complies with outgassing requirements.

Nano connectors with M22759/33 wire should not be stored in sealed bags for extended periods.

New Unit Pack Minimizes Corrosion

Glenair has adopted an inovative new packaging system to protect the connector from performance hindering corrosion. Metal shell connectors supplied wtih M22759/33 wire are now packaged as follows: the connector is wrapped in Teflon® tape and placed in a ventilated sulpher-free paper envelope to ensure that your mission-critical component arrives in perfect order.

OUTGASSING PROPERTIES OF NANO CONNECTORS

Component	Material	Brand Name	% Total Mass Loss	% Collected Volatile Condensable Material	Test Report
Thermoplastic Insulators and PCB Trays	Liquid Crystal Polymer	Vectra® C-130	0.03	0.00	NASA Test #GSC17478
Potting Compound	Epoxy	Hysol C9-4215	0.48	0.01	Glenair Test
Wire	Tefzel®	Tefzel®	0.22	0.01	NASA Test #GSC19998

1 SCOPE

1.1 **Scope**. This specification covers performance requirements for Glenair nanominiature connectors manufactured in accordance with MIL-DTL-32139.

1.2 **Description**. Metal shell nanominiature connectors on .025 inch (0.64 mm) centers, with TwistPin contacts.

2 ORDER OF PRECEDENCE

2.1 **Order of Precedence**. In the event of a conflict between the requirements of this specification and the references cited herein, this document takes precedence. The requirements set forth in customer specifications and Glenair detail drawings shall take precedence over this document.

3.1 ELECTRICAL REQUIREMENTS

3.1.1 **Insulation Resistance**. 5,000 megohms minimum between any pair of contacts and any contact and the shell when tested in accordance with EIA-364 Procedure 21. Test voltage 100 volts DC.

3.1.2 **Dielectric Withstanding Voltage**.

3.1.2.1 **Dielectric Withstanding Voltage (sea level)**. 250 volts ac, rms 60 Hz. Connectors shall show no evidence of breakdown or flashover when subjected to the DWV test of EIA-364 Procedure 20.

3.1.2.2 **Dielectric Withstanding Voltage (70,000 feet).** 100 volts ac, rms 60 Hz. Connectors shall show no evidence of breakdown or flashover when subjected to the DWV test of EIA-364 Procedure 20.

3.1.3 **Contact Resistance**

3.1.3.1 **Contact Resistance**. The voltage drop of a mated pair of contacts attached to wires shall not exceed 71 millivolt drop maximum using a 1 ampere test current, when tested in accordance with EAI-364-06, using M22759/33-30 wire.

3.1.4 **Low Signal Level Contact Resistance**. When tested with a micro-ohmeter using a test current of 10 milliamperes maximum, the resistance of a mated pair of contacts shall be 71 milliohms maximum using M22759/33-30 wire. Test procedure shall be in accordance with EIA-364-23.

3.1.5 **Contact Current Capability**. Contacts shall be capable of carrying 1.0 ampere in continuous duty operation from -55° C to +125° C when tested in accordance with EIA-364-70.

3.1.6 **Magnetic Permeability**. Magnetic permeability, when tested in accordance with EIA-364-54, shall not exceed 2 mu.

3.2 MECHANICAL REQUIREMENTS

3.2.1 **Contact Engaging and Separation Force**. Maximum engaging force shall be 5.0 ounces when tested in accordance with MIL-DTL-32139A paragraph 4.7.5. Minimum separation force shall be 0.4 ounces.

3.2.2 **Connector Mating and Unmating Force**. The maximum mating and unmating force shall not exceed a value equal to 7 ounces times the number of contacts, when tested per MIL-DTL-32139 paragraph 4.7.6. Mate connectors three times before initial measurements are taken.

3.2.3 **Contact Retention**. Contacts, when tested in accordance with EIA-364-29, shall withstand a 2 pound axial load for a minimum of 5 seconds.

3.2.4 **Crimp Tensile Strength**. Wire shall not break or pull out of crimp joints at an applied force of less than 1.0 pound (0.44 kg) for 30 AWG wire, when tested in accordance with EIA-364-08. Wire breakage other than at the crimp shall not constitute failure.

3.2.5 **Insert Retention**. Inserts shall not be dislodged or moved from their original position when subjected to an axial load of 50 pounds per square inch when tested in accordance with EIA-364-35.

3.2.6 **Resistance to Soldering Heat.** There shall be no degradation of the plastic, bonding adhesives, or sealing elastomers. Connector insulators shall also be capable of withstanding solder heat without evidence of deteriorating, deforming, or change of physical dimensions in accordance with EIA-364-56.

3.2.7 **Solderability**. Solder cup and printed circuit terminals shall meet the solderability requirements of MIL-STD-202 Method 208.

3.2.8 **Durability**. 200 mating and unmating cycles in accordance with test procedure EIA-364-09. Engaging and separation force and mating forces shall not exceed the requirements of 3.2.1 and 3.2.2. Connectors shall withstand shock vibration and DWV tests following durability.

3.3 ENVIRONMENTAL REQUIREMENTS

3.3.1 **Salt Spray (corrosion)**. Nickel-plated aluminum connectors shall show no exposure of base metal due to corrosion when subjected to the salt spray test of EIA-364-26, condition B, with a 48 hour duration. Stainless and titanium shell connectors shall withstand 500 hour salt spray without corrosion detrimental to the operation of the connector. In addition, connectors shall meet contact resistance, low circuit level contact resistance and mating force requirements.

3.3.2 **Fluid Immersion**. Connectors shall meet mating force requirements following 20 hours immersion in synthetic lubricating oil, 2 hours in Perchloroethylene cleaning solvent, and 1 hour immersion in coolanol 25, when tested in accordance with MIL-DTL-32139A paragraph 4.7.17. There shall be no degradation of the plastic, bonding adhesives, or elastomers.

3.3.3 **Thermal Vacuum Outgassing**. Connector shall not exceed 1.0% total mass loss (TML) or 0.1% total volatile condensible materials (VCM) when tested in accordance with ASTM E595.

Outgassing properties of Nanominiature components

Component	Material	Brand Name	% Total Mass Loss (TML)	% Collected Volatile Condensable Material (VCM)	Test Report
Thermoplastic Insulators and PCB Trays	Liquid Crystal Polymer	Vectra® C-130	0.03	0.00	NASA Test #GSC17478
Potting Compound	Epoxy	Hysol C9-4215	0.48	0.01	Glenair Test
Wire	Tefzel®	Tefzel®	0.22	0.01	NASA Test #GSC19998

3.3.4 **Thermal Shock**. Unmated connectors shall withstand 5 cycles of thermal shock with a minimum temperature of -55° C and a maximum temperature of 125° C when tested in accordance with EIA-364-32, Condition I. Connectors shall not exhibit any detrimental damage or degradation of electrical performance.

3.3.5 **Humidity**. Wired, mated connectors shall be subjected to humidity conditioning in accordance with EIA-364-31, Test Condition A (excluding steps 7a and 7b). On completion of step 6 of the final cycle, connectors shall be removed from the chamber, unmated and surface moisture removed. Connectors shall pass a DWV test of 100 volts (rms 60 hertz ac). Within 1 to 2 hours after removal of surface moisture, connectors shall meet 1 megohm insulation resistance. Following 24 hour conditioning, connectors shall meet 1000 megohm insulation resistance.

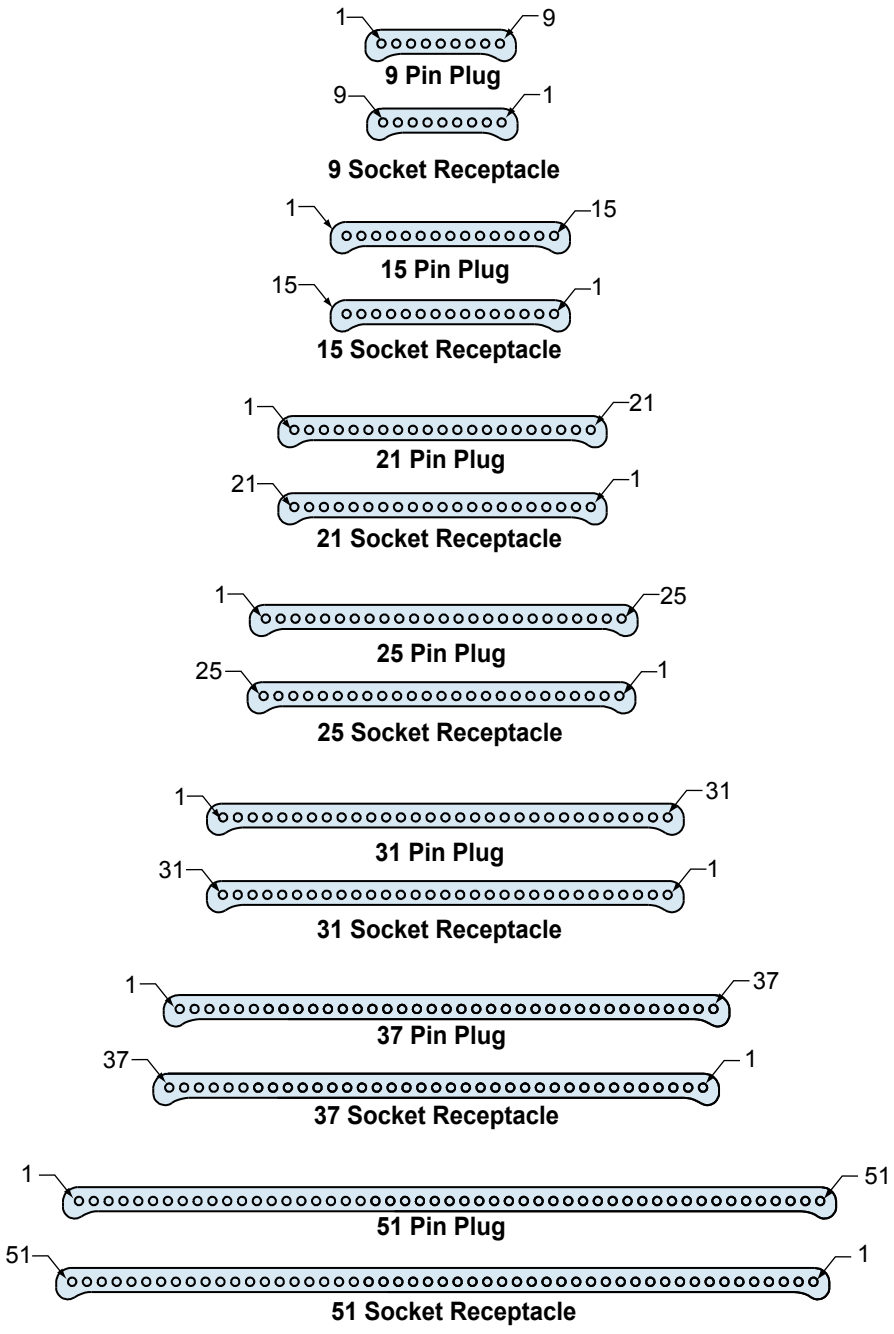
3.3.6 **Vibration (sine)**. Connectors, when mated, wired in series and fixtured in accordance with MIL-DTL-32139A, shall exhibit no change of resistance greater than 10 ohms, which lasts longer than 10 nanoseconds, in accordance with test procedure EIA-364-28. Connectors shall not be damaged and no loosening of parts shall occur. Peak level 20 g.

3.3.7 **Shock**. Connectors, when mated, wired in series and fixtured in accordance with MIL-DTL-32139A, shall not exhibit any discontinuity longer than 10 nanoseconds when tested in accordance with EIA-364-87, which specifies a 100 milliampere maximum test current. Connectors shall not be damaged and no loosening of parts shall occur. Peak acceleration 100 g's.

3.3.8 **Marking Permanency**. Connector marking shall meet the requirements of MIL-STD-202 Method 215.

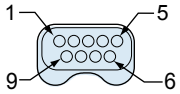
3.3.9 **Fungus Resistance**. Materials used in the construction of these connectors shall be fungus inert in accordance with ASTM G21.

Mating Face, Pin (Plug) and Socket (Receptacle) Single Row Connectors

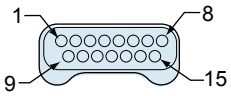


Series 89 Nanominiature Connectors
Double Row Contact Arrangements

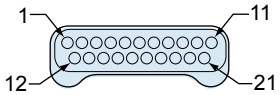
Mating Face of Pin (Plug) Connector



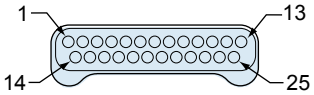
9 Contacts



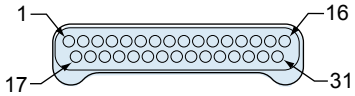
15 Contacts



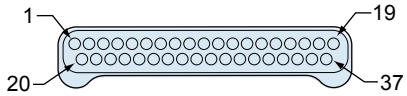
21 Contacts



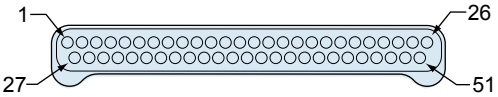
25 Contacts



31 Contacts

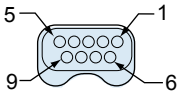


37 Contacts

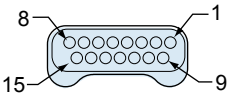


51 Contacts

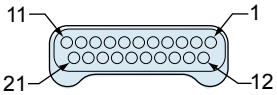
Mating Face of Socket (Receptacle) Connector



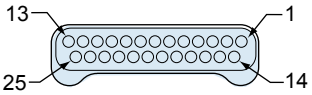
9 Contacts



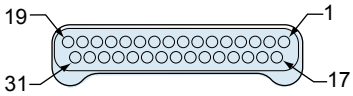
15 Contacts



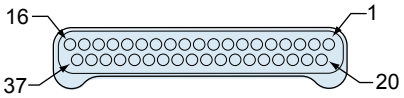
21 Contacts



25 Contacts



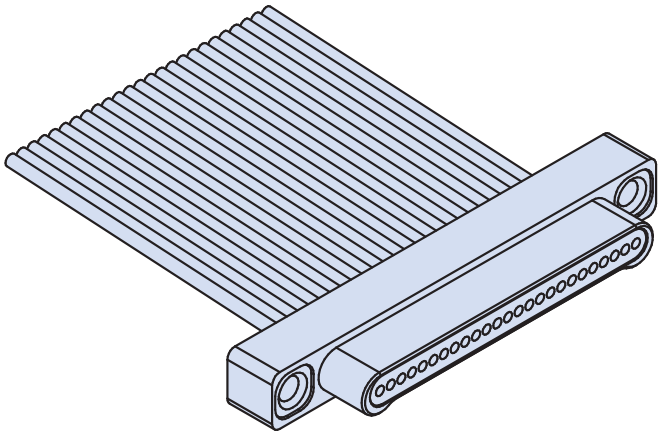
31 Contacts



37 Contacts

51 Contacts

890-001 and -002
Series 89 Nanominiature Connectors
Single Row Insulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

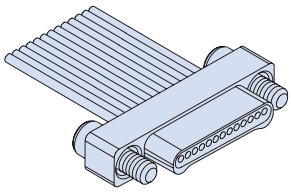
HOW TO ORDER NANOMINIATURE CONNECTORS WITH INSULATED WIRE

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Color Code	Wire Length Inches	Hardware
890-001 Plug, Pin Contacts, Single Row, Nanominiature **890-002** Receptacle, Socket Contacts, Single Row, Nanominiature	Plugs (890-001) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-002) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**A** Ultralightweight XLETFE Insulation, Silver-Coated Ultrahigh-Strength Copper (Not available for #32 AWG) **B** Extruded PTFE Insulation, NEMA HP3-ETX (MIL-W-16878/6) **C** Cross-Linked Modified ETFE Insulation, MIL-W-22759/33 (Not available for #32 AWG)	**1** White **2** Yellow **7** 10 Color Repeating (wire type A is striped, types B and C are solid colors)	**18** Wire Length In Inches. "18" Specifies 18 Inches.	**J** Jackscrew, #0-80 **T** #0-80 Female Thread Female threads are available on plug connectors only if the shell material is titanium or stainless steel.

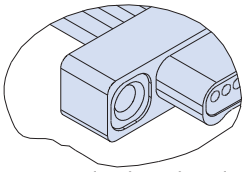
Sample Part Number

890-002	**– 9S**	**A1**	**– 0**	**A**	**1**	**– 12**	**J**

PLUG (PIN) CONNECTOR

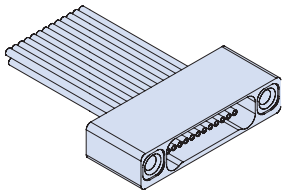


"J" Jackscrew Option

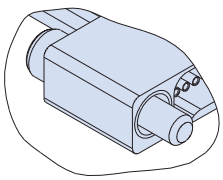


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option

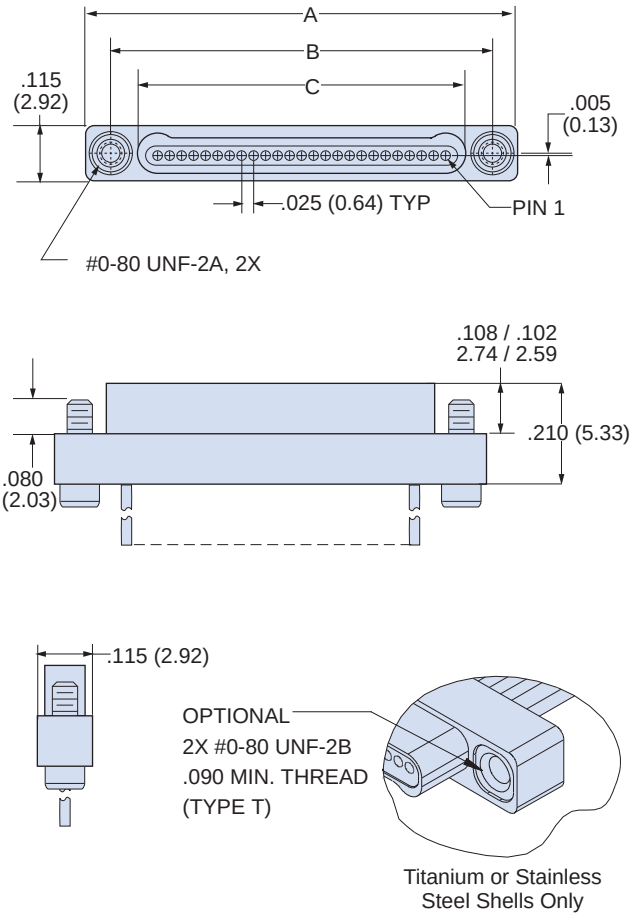


"J" Jackscrew Option

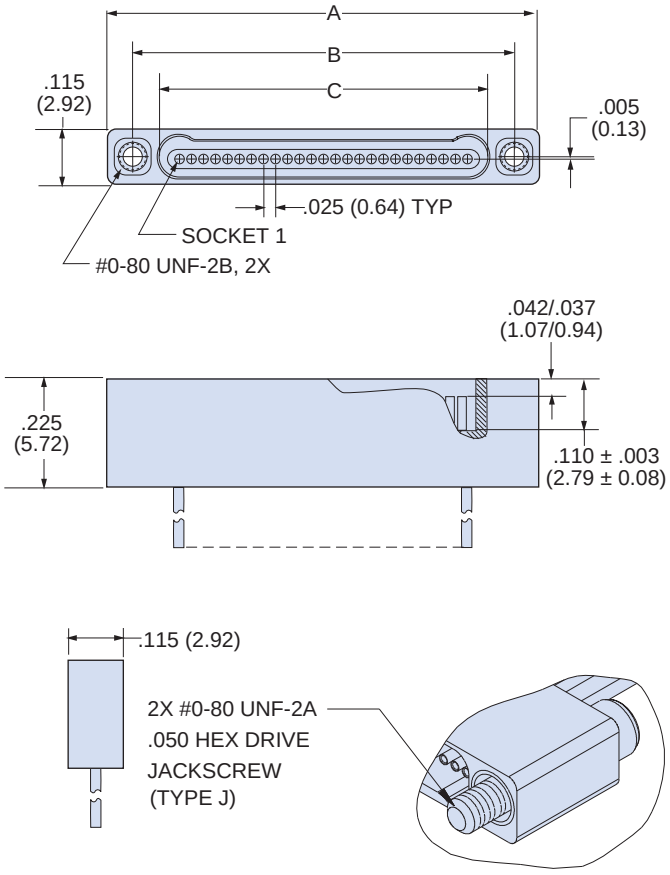
890-001 and -002
Series 89 Nanominiature Connectors
Single Row Insulated Wire Pigtail Assemblies

SINGLE ROW NANO PIGTAIL DIMENSIONS

Plug (Pin) Connectors

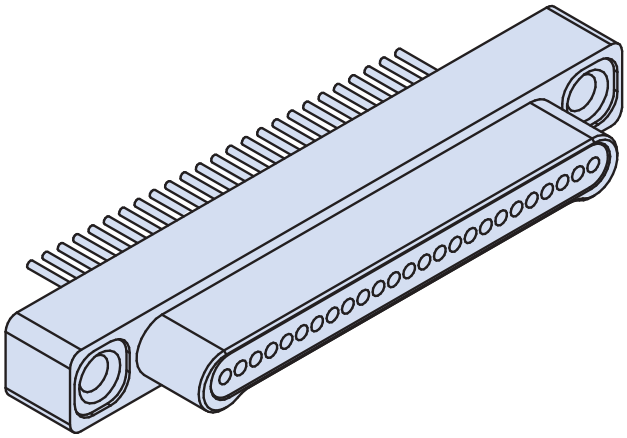


Receptacle (Socket) Connectors



Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

890-003 and -004
Series 89 Nanominiature Connectors
Single Row Uninsulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to solid wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

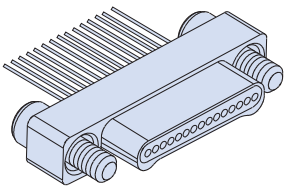
TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

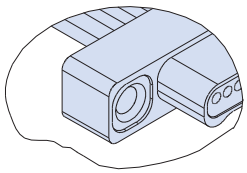
HOW TO ORDER NANOMINIATURE CONNECTORS WITH UNINSULATED WIRE

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Length	Hardware
890-003 Plug, Pin Contacts, Single Row, Nanominiature **890-004** Receptacle, Socket Contacts, Single Row, Nanominiature	Plugs (890-003) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-004) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**D3** Single Strand Copper Wire, Uninsulated, with Gold Plating	**.125** **.250** **.375** **.500** Wire Length in Inches	**J** Jackscrew, #0-80 **T** #0-80 Female Thread Female threads are available on plug connectors only if the shell material is titanium or stainless steel.
Sample Part Number						
890-003	**– 31P**	**A2**	**– 0**	**D3**	**– .250**	**J**

PLUG (PIN) CONNECTOR

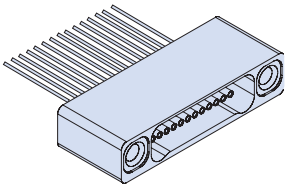


"J" Jackscrew Option

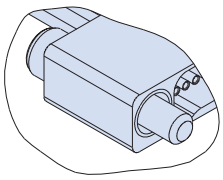


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option



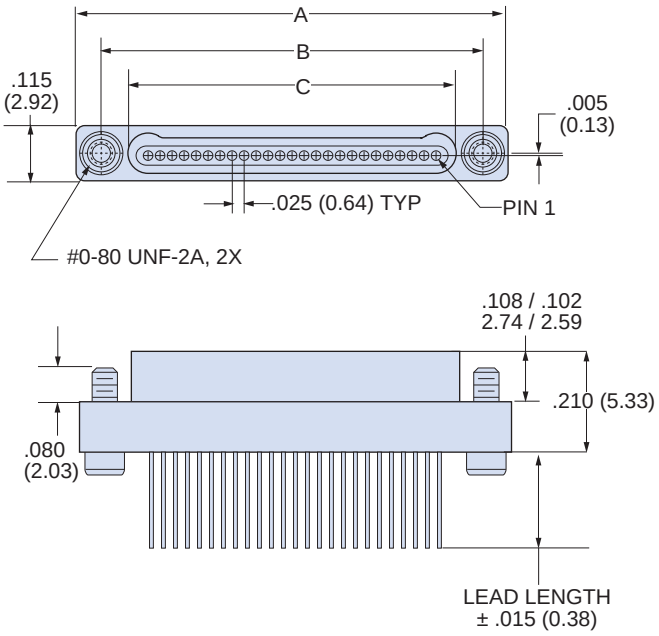
"J" Jackscrew Option

CAGE Code 06324/0CA77
Printed in U.S.A.

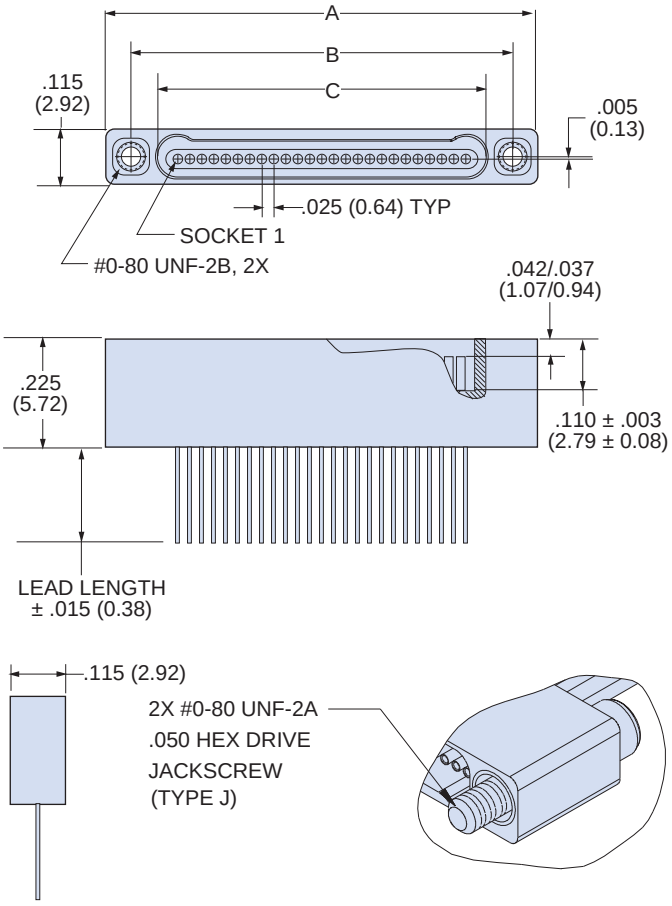
890-003 and -004
Series 89 Nanominiature Connectors
Single Row Uninsulated Wire Pigtail Assemblies

SINGLE ROW NANO PIGTAIL DIMENSIONS

Plug (Pin) Connectors

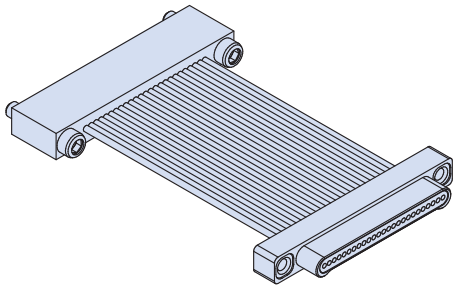


Receptacle (Socket) Connectors



Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

890-005
Series 89 Nanominiature Connectors
Single Row Back-To-Back Cables



Glenair's Back-To-Back Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

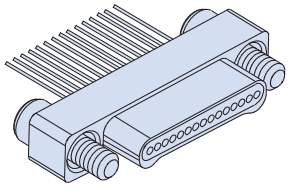
HOW TO ORDER SINGLE ROW BACK-TO-BACK JUMPERS

Series	Number of Contacts	Connector Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Color Code	Length Inches	Hardware
890-005 Back-To-Back Cables, Single Row, Nanominiature	**9** **15** **21** **25** **31** **37** **51**	**GP** Plug (Pin) Connector on Both Ends **GS** Receptacle (Socket) Connector on Both Ends **CS** Plug (Pin) On One End, Receptacle On The Other End	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**A** Ultralightweight XLETFE Insulation, Silver-Coated Ultrahigh-Strength Copper (Not available for #32 gage) **B** Extruded PTFE Insulation, NEMA HP3-ETX (MIL-W-16878/6) **C** Cross-Linked Modified ETFE Insulation, MIL-W-22759/33 (Not available for #32 AWG)	**1** White **2** Yellow **7** 10 Color Repeating (wire type A is striped, types B and C are solid colors)	**Overall Length In Inches Including Connectors** **Example:** **"12" specifies 12 inches OAL**	**JJ** = Jackscrews on both ends (GP, GS, CS) **JT** = Jackscrews on plug, threaded holes on receptacle (CS) **JP** = Jackscrews on plug, threaded holes on plug (GP)(*See Note Below) **TJ** = Jackscrews on receptacle, threaded holes on plug (CS)(*See Note Below) **JR** = Jackscrews on receptacle, threaded holes on receptacle (GS) **TT** = Threaded holes both ends (GP, GS, CS)(*See Note Below) * Specify titanium or stainless steel shells when ordering plugs with female threads

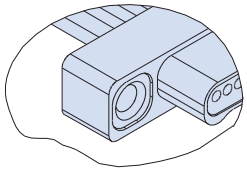
Sample Part Number

890-005	– 9	GP	A1	– 0	A	1	– 12	JP

PLUG (PIN) CONNECTOR

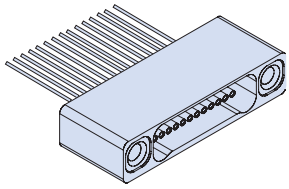


"J" Jackscrew Option

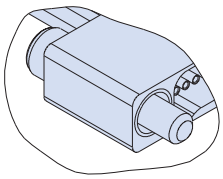


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option

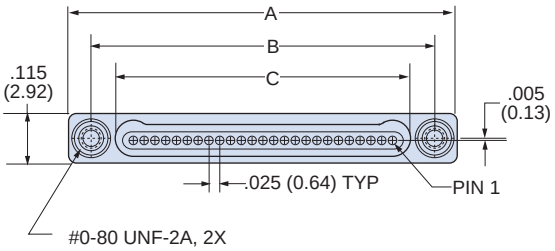


"J" Jackscrew Option

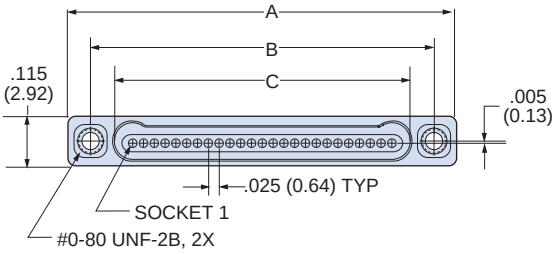
890-005
Series 89 Nanominiature Connectors
Single Row Back-To-Back Cables

SINGLE ROW NANO BACK-TO-BACK DIMENSIONS

Plug (Pin) Connectors

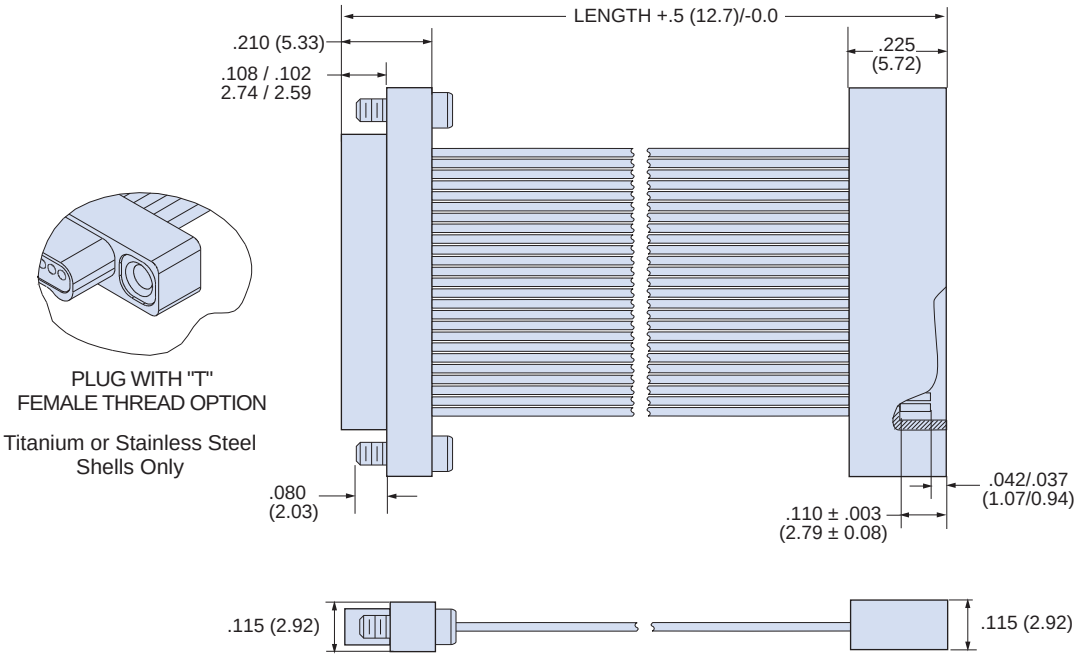


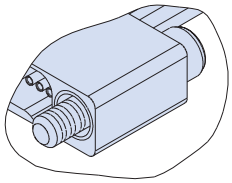
Receptacle (Socket) Connectors



PLUG WITH "T"
FEMALE THREAD OPTION

Titanium or Stainless Steel
Shells Only

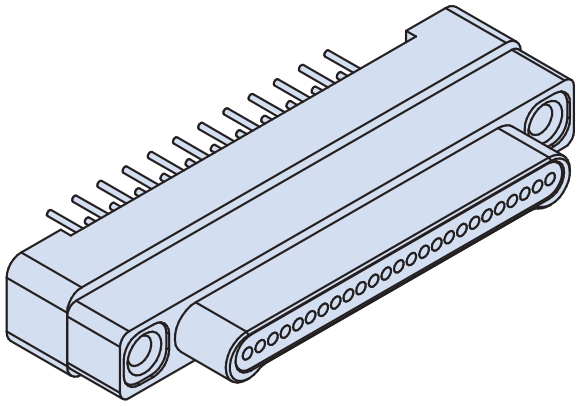




RECEPTACLE WITH "J"
JACKSCREW OPTION

Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

890-006 and -007
Series 89 Nanominiature Connectors
Single Row Vertical Mount Printed Circuit Board



Vertical Mount PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 890 single row metal shell nanominiature connector.

HOW TO ORDER VERTICAL MOUNT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	PC Tail Length	Hardware
890-006 Plug, Pin Contacts, Single Row, Vertical PCB Nanominiature **890-007** Receptacle, Socket Contacts, Single Row, Vertical PCB Nanominiature	Plugs (890-006) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-007) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BST** "**B**oard **S**traight **T**hru-Hole"	**1** .110 Inch (2.79 mm) **2** .172 Inch (4.37 mm)	**J** Jackscrew, #0-80 **T** #0-80 Female Thread
Sample Part Number					
890-007	**– 31S**	**T**	**– BST**	**1**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

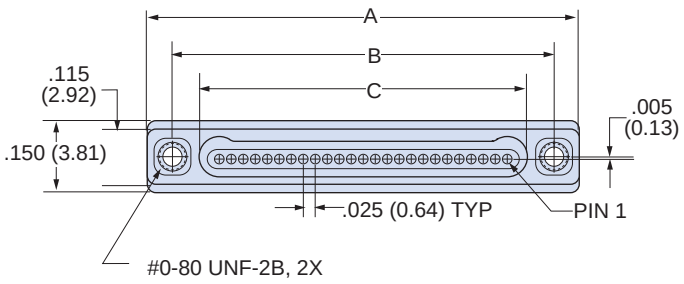
SPECIFICATIONS

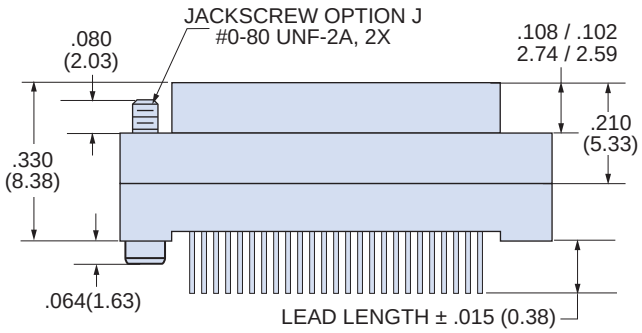
Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. VCM

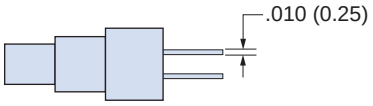
890-006 and -007
Series 89 Nanominiature Connectors
Single Row Vertical Mount Printed Circuit Board

SINGLE ROW VERTICAL NANO PCB DIMENSIONS

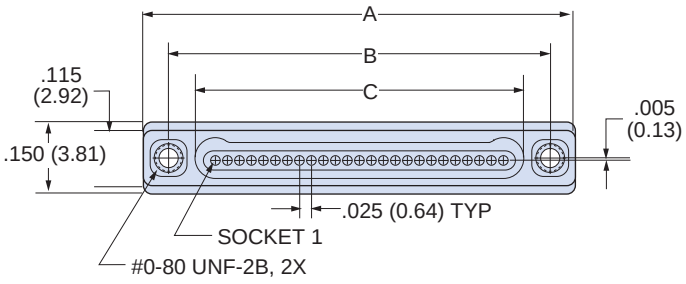
Plug (Pin) Connectors

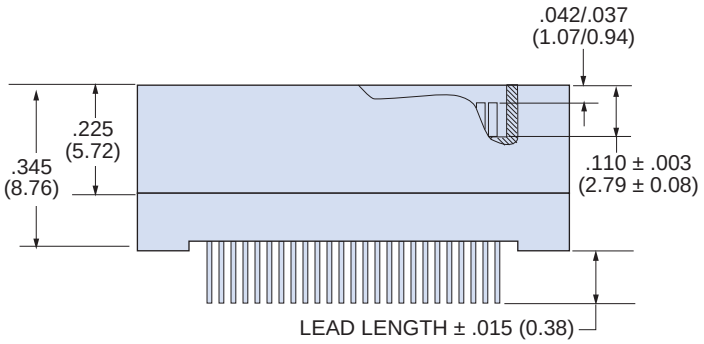


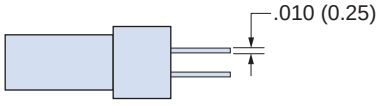




Receptacle (Socket) Connectors







Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
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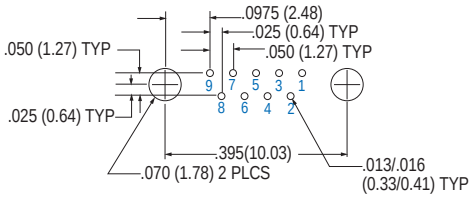
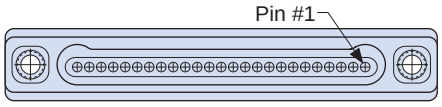
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

Patterns shown are for connector mounting side of PC Board.

VERTICAL PCB PLUG (PIN) CONNECTOR LAYOUT 890-006

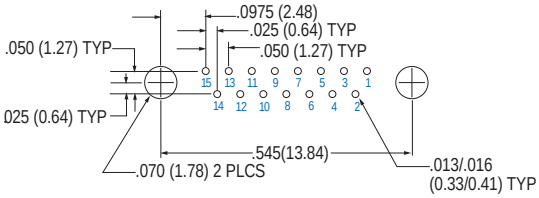
9 Contacts



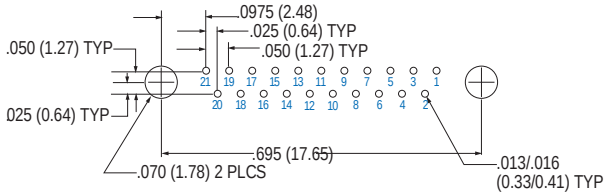


Connector Mating Face

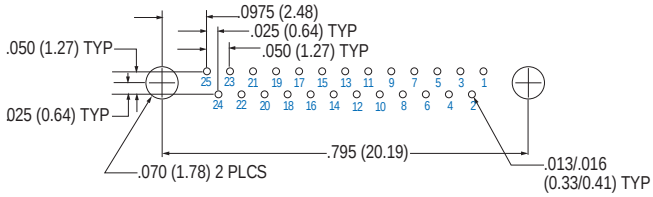
15 Contacts



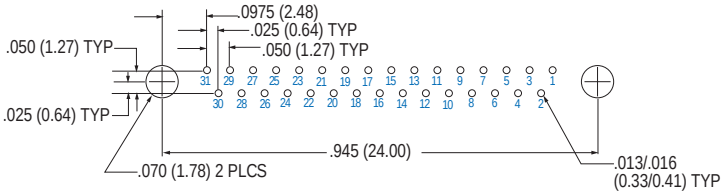
21 Contacts



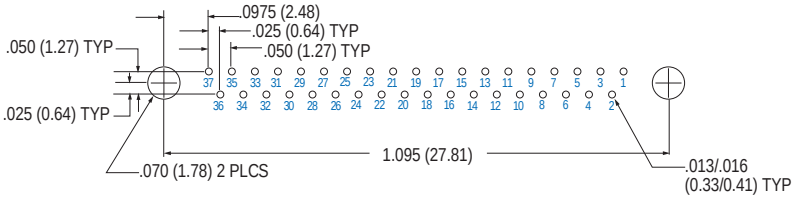
25 Contacts



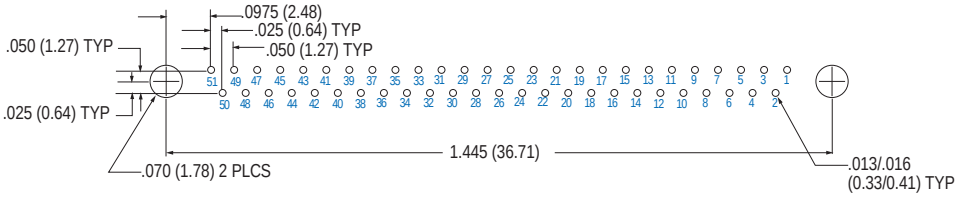
31 Contacts



37 Contacts



51 Contacts

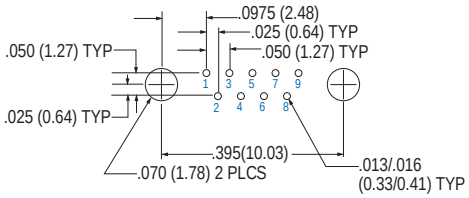


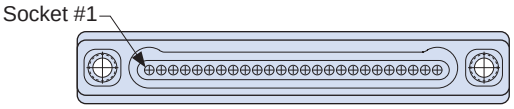
890-006 and -007
Series 89 Nanominiature Connectors
Single Row Vertical Mount Printed Circuit Board

Patterns shown are for connector mounting side of PC Board.

VERTICAL PCB RECEPTACLE (SOCKET) CONNECTOR LAYOUT 890-007

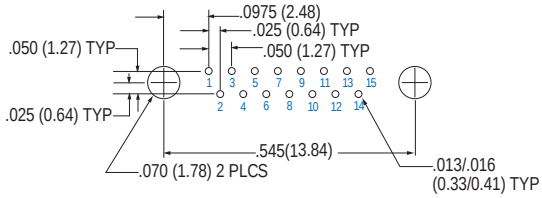
9 Contacts



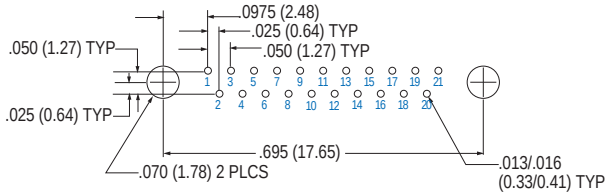


Connector Mating Face

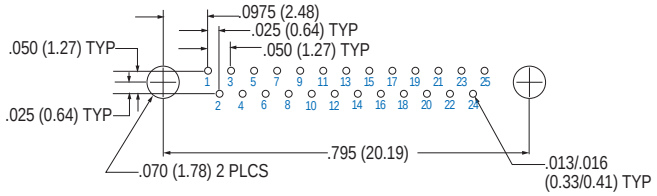
15 Contacts



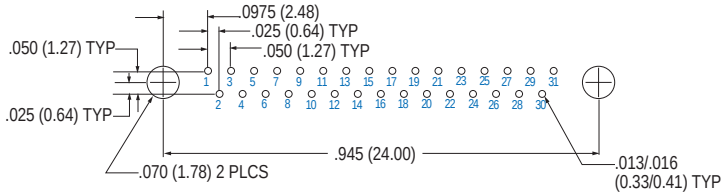
21 Contacts



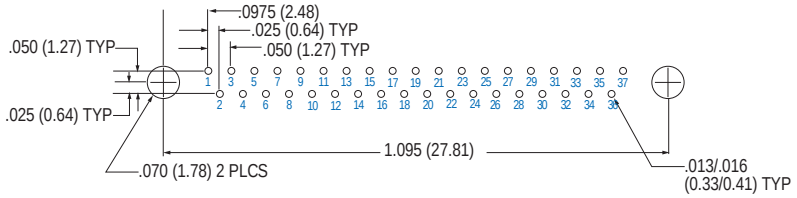
25 Contacts



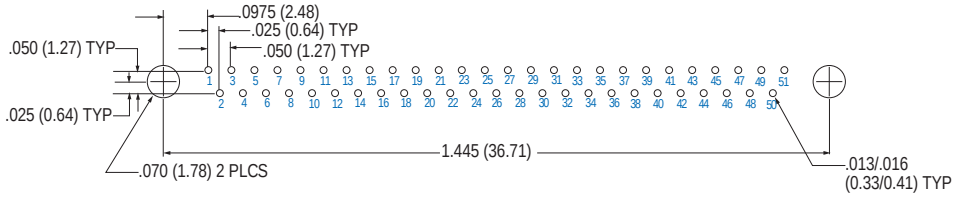
31 Contacts



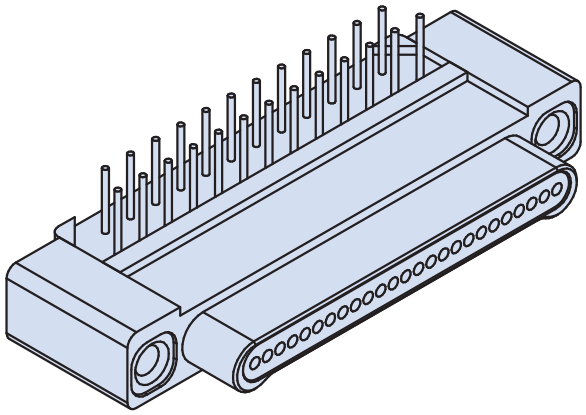
37 Contacts



51 Contacts



890-008 and -009
Series 89 Nanominiature Connectors
Single Row Right Angle Printed Circuit Board



Right Angle Thru Hole PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 890 single row metal shell nanominiature connector.

HOW TO ORDER RIGHT ANGLE PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	PC Tail Length	Hardware
890-008 Plug, Pin Contacts, Single Row, Right Angle Thru-Hole PCB Nanominiature **890-009** Receptacle, Socket Contacts, Single Row, Right Angle Thru-Hole PCB Nanominiature	Plugs (890-008) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-009) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BRT** "Board Right Angle Thru-Hole"	**1** .110 Inch (2.79 mm) **2** .172 Inch (4.37 mm)	**J** Jackscrew, #0-80 **T** #0-80 Female Thread
Sample Part Number					
890-008	**– 51P**	**A2**	**– BRT**	**1**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

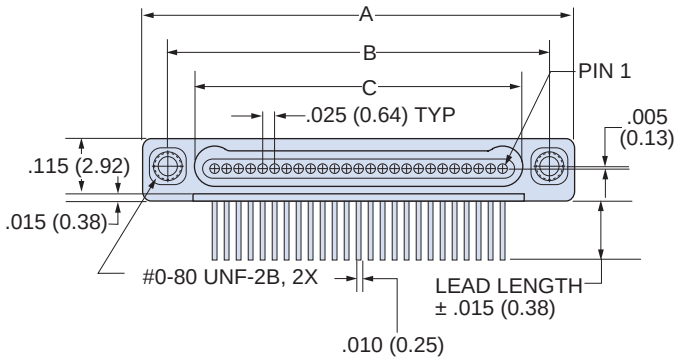
SPECIFICATIONS

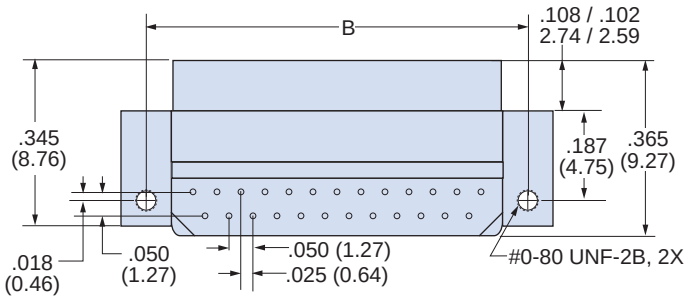
Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. VCM

890-008 and -009
Series 89 Nanominiature Connectors
Single Row Right Angle Printed Circuit Board

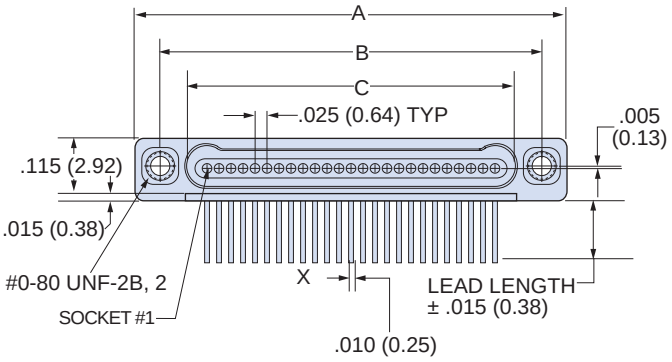
SINGLE ROW NANO RIGHT ANGLE PCB DIMENSIONS

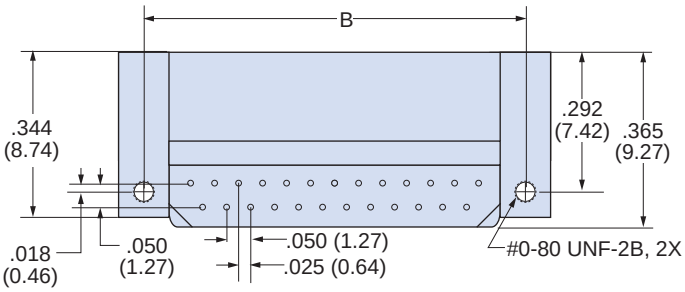
Plug (Pin) Connectors





Receptacle (Socket) Connectors



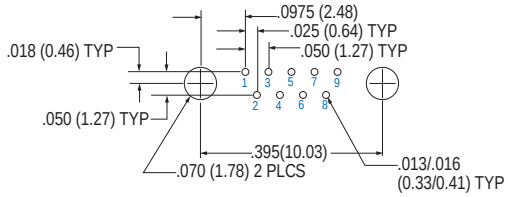


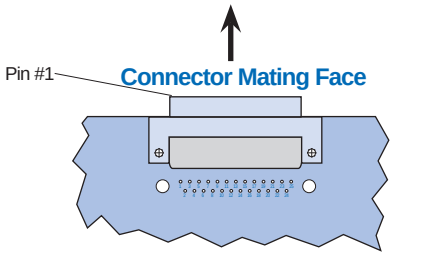
Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

Patterns shown are for connector mounting side of PC Board.

RIGHT ANGLE PCB PLUG (PIN) CONNECTOR LAYOUT 890-008

9 Contacts

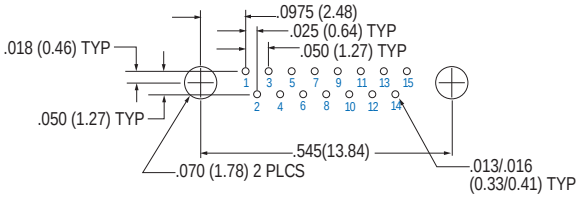




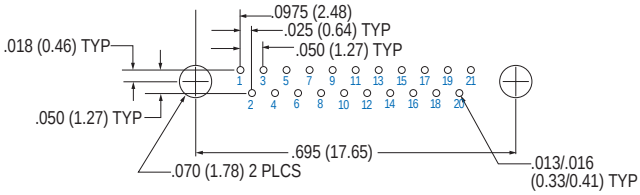
Component Mounting Side of PCB

(25P actual size)

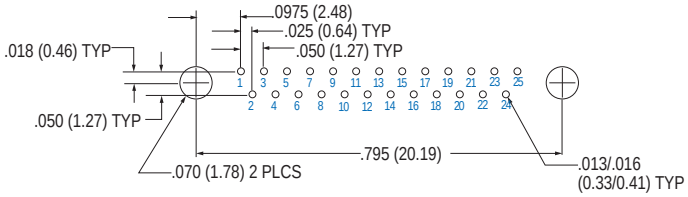
15 Contacts



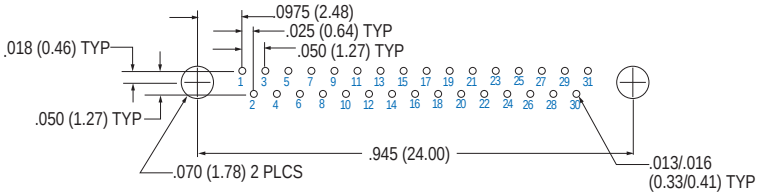
21 Contacts



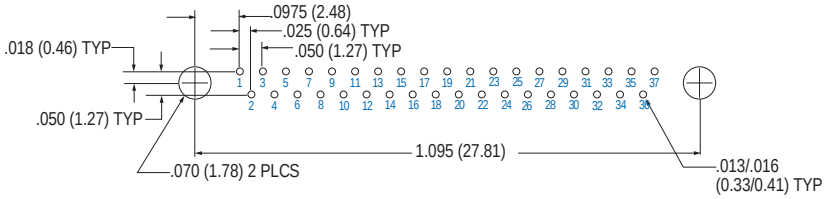
25 Contacts



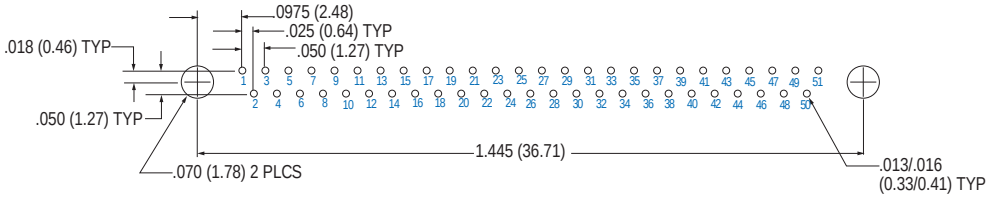
31 Contacts



37 Contacts



51 Contacts

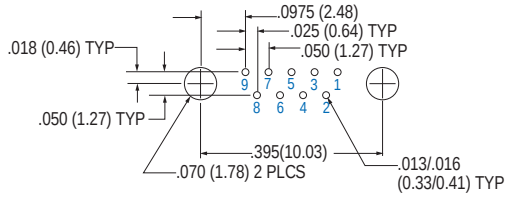


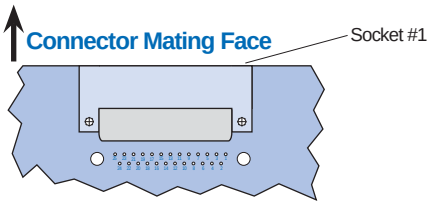
890-008 and -009
Series 89 Nanominiature Connectors
Single Row Right Angle Printed Circuit Board

Patterns shown are for connector mounting side of PC Board.

RIGHT ANGLE PCB RECEPTACLE (SOCKET) CONNECTOR LAYOUT 890-009

9 Contacts

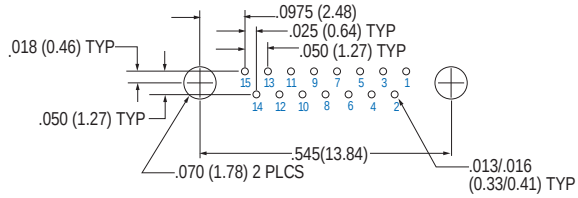




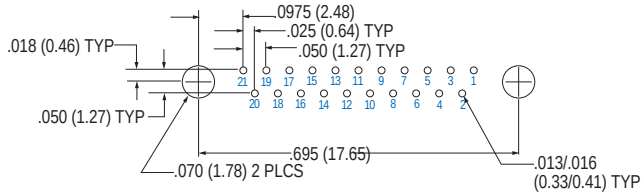
Component Mounting Side of PCB

(25S actual size)

15 Contacts



21 Contacts



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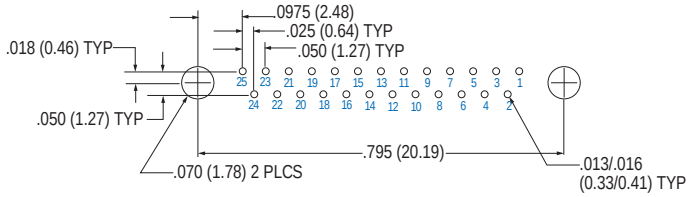
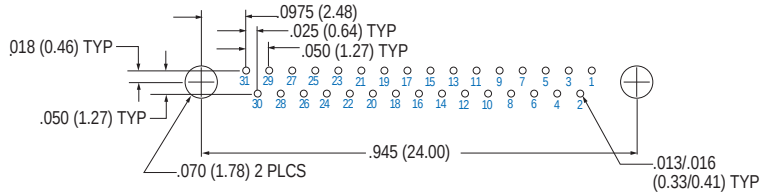
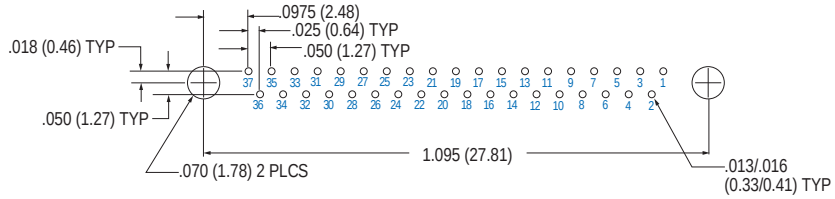


31 Contacts



37 Contacts



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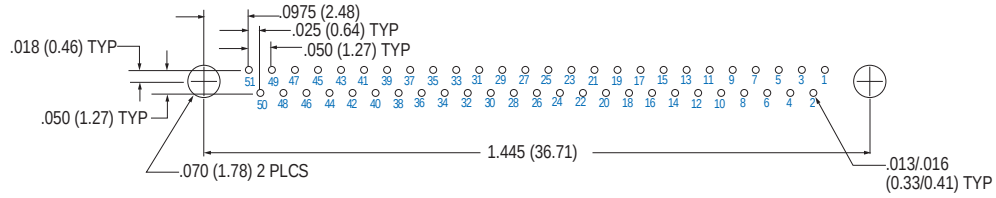
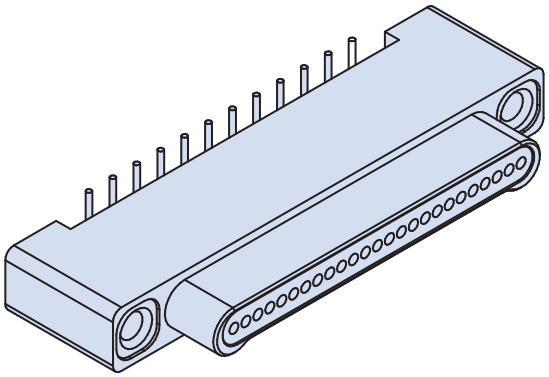


890-010 and -011
Series 89 Nanominiature Connectors
Single Row Vertical Surface Mount PCB



Vertical SMT PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 890 single row metal shell nanominiature connector.

HOW TO ORDER VERTICAL SMT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	Hardware
890-010 Plug, Pin Contacts, Single Row, Vertical SMT Nanominiature **890-011** Receptacle, Socket Contacts, Single Row, Vertical SMT Nanominiature	Plugs (890-010) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-011) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BSS** "**B**oard **S**traight **S**urface Mount"	**T** #0-80 Female Thread
Sample Part Number				
890-010	**– 37P**	**A1**	**–BSS**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

SPECIFICATIONS

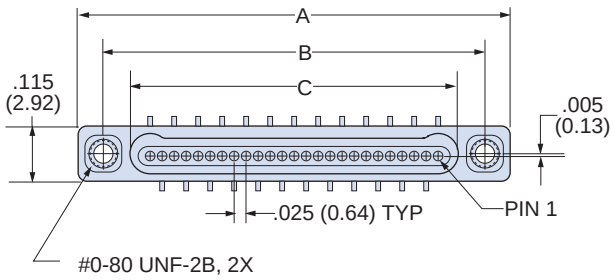
Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. VCM

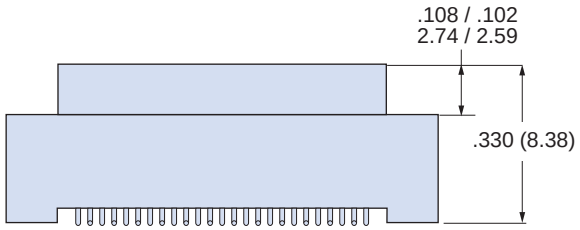
CAGE Code 06324/0CA77
Printed in U.S.A.

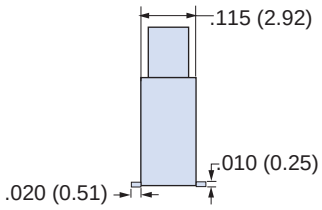
890-010 and -011
Series 89 Nanominiature Connectors
Single Row Vertical Surface Mount PCB

SINGLE ROW NANO VERTICAL SMT DIMENSIONS

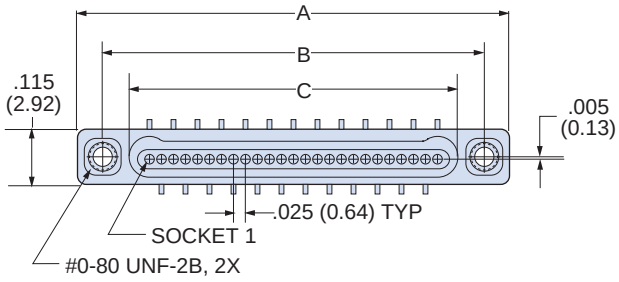
Plug (Pin) Connectors

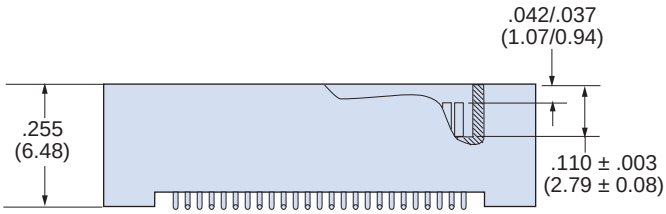


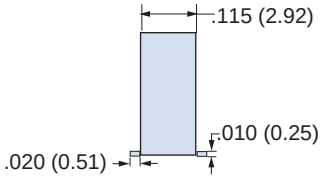




Receptacle (Socket) Connectors





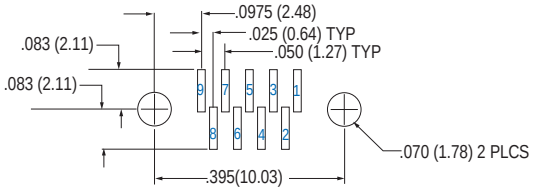


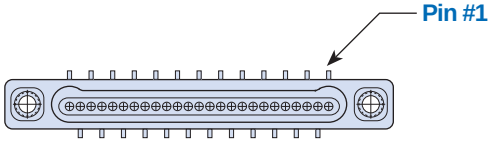
Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

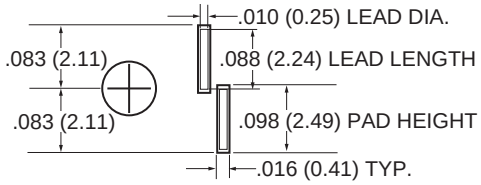
VERTICAL SMT PLUG (PIN) CONNECTOR LAYOUT 890-010

Component Mounting Side of Printed Circuit Board

9 Contacts

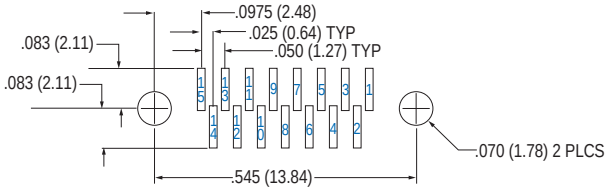




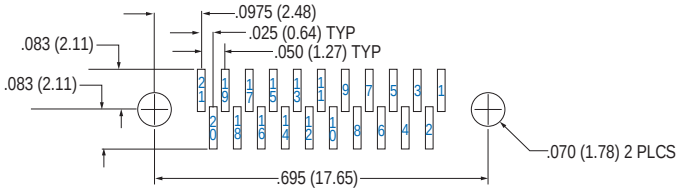


PAD/FOOTPRINT DETAIL

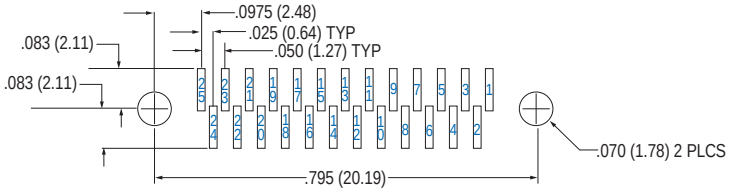
15 Contacts



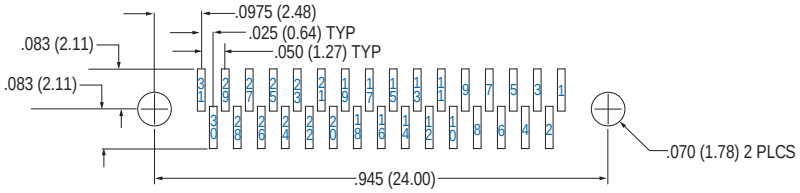
21 Contacts



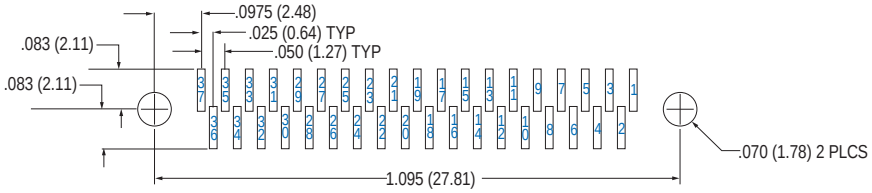
25 Contacts



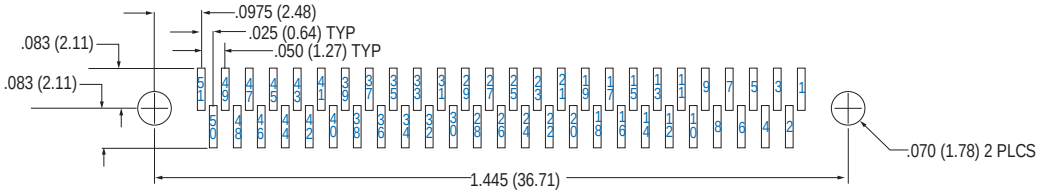
31 Contacts



37 Contacts



51 Contacts

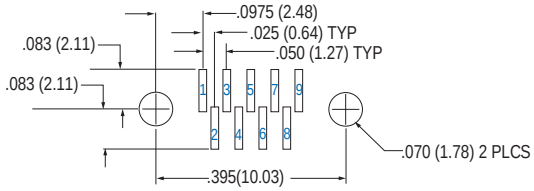


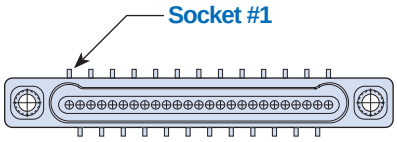
890-010 and -011
Series 89 Nanominiature Connectors
Single Row Vertical Mount SMT

VERTICAL SMT RECEPTACLE (SOCKET) CONNECTOR LAYOUT 890-011

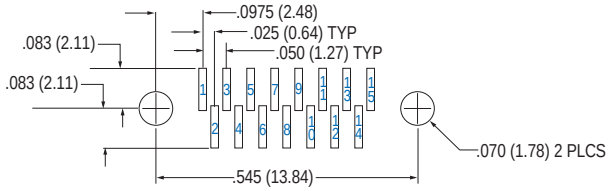
Component Mounting Side of Printed Circuit Board

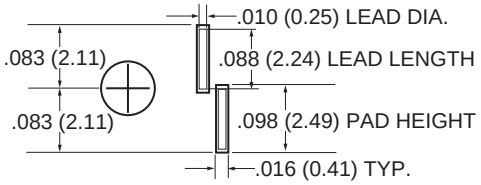
9 Contacts





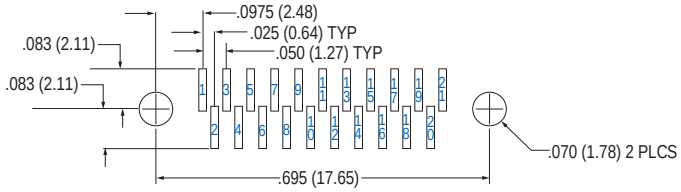
15 Contacts





PAD/FOOTPRINT DETAIL

21 Contacts



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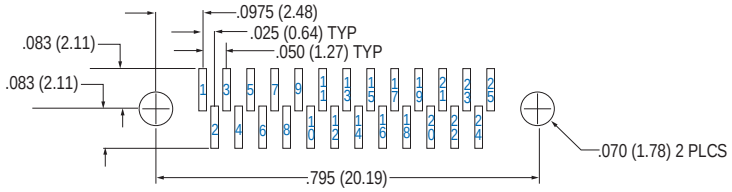

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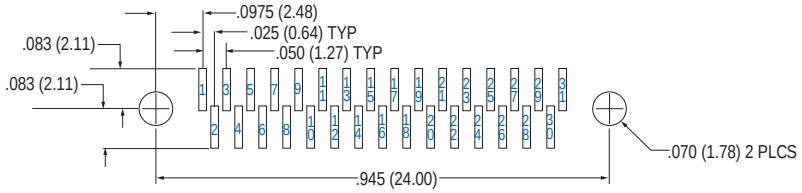
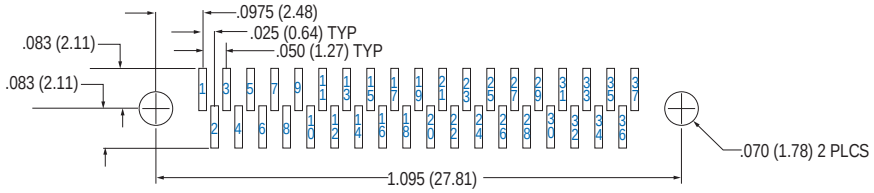
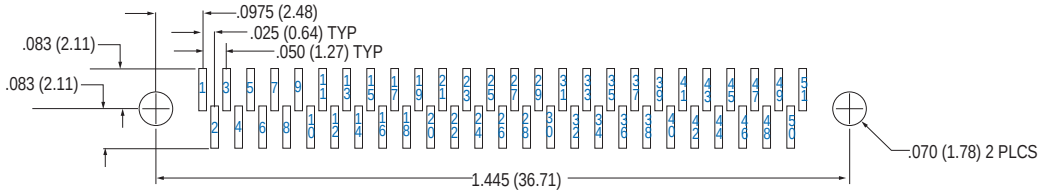


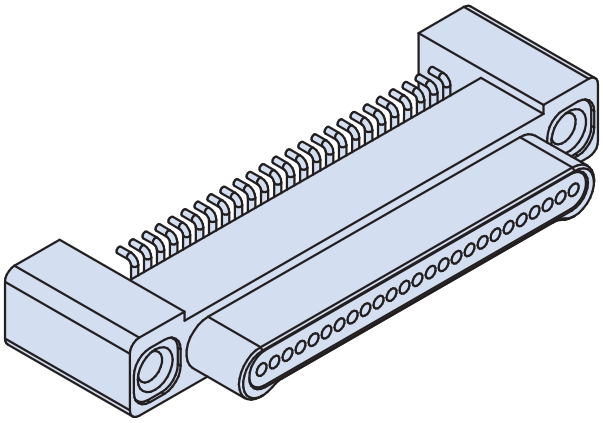
37 Contacts



51 Contacts



890-012 and -013
Series 89 Nanominiature Connectors
Single Row Right Angle Surface Mount PCB



Right Angle SMT PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 890 single row metal shell nanominiature connector.

HOW TO ORDER RIGHT ANGLE SMT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	Hardware
890-012 Plug, Pin Contacts, Single Row, Right Angle SMT Nanominiature **890-013** Receptacle, Socket Contacts, Single Row, Right Angle SMT Nanominiature	Plugs (890-012) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (890-013) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BRS** "**B**oard **R**ight Angle **S**urface Mount"	**T** #0-80 Female Thread
Sample Part Number				
890-012	**– 51P**	**T**	**– BRS**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

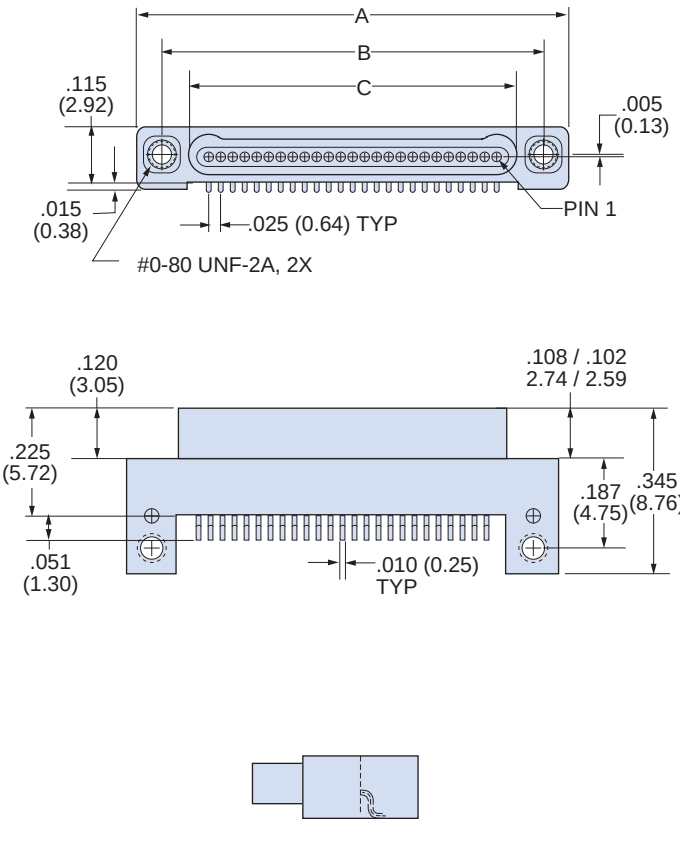
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max VCM

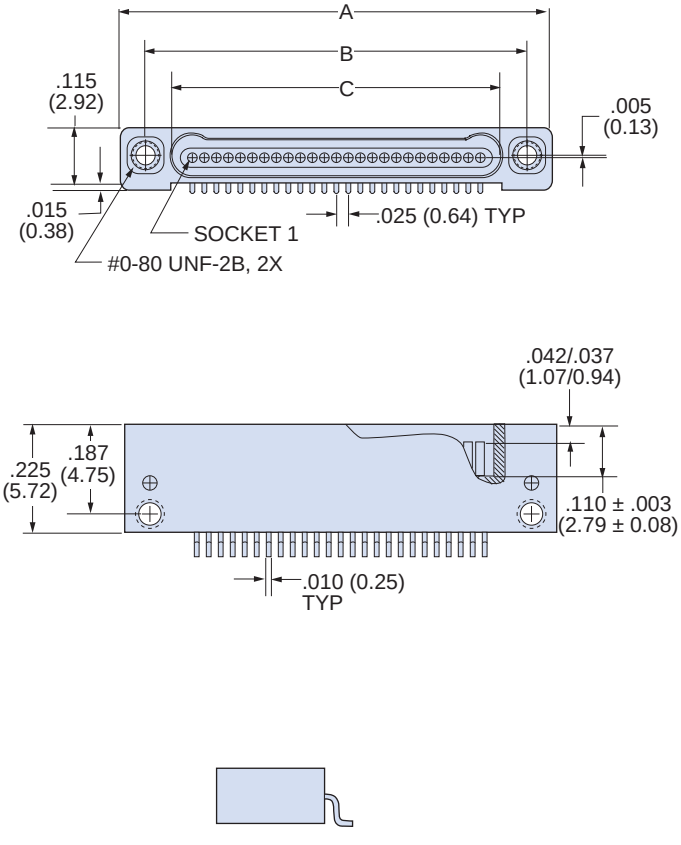
890-012 and -013
Series 89 Nanominiature Connectors
Single Row Right Angle Surface Mount PCB

SINGLE ROW NANO RIGHT ANGLE SMT DIMENSIONS

Plug (Pin) Connectors



Receptacle (Socket) Connectors

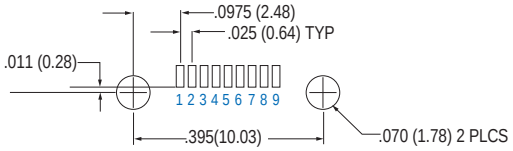


Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

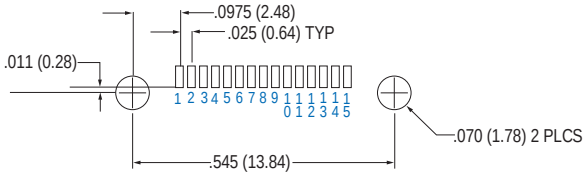
RIGHT ANGLE SMT PLUG (PIN) CONNECTOR LAYOUT 890-012

Component Mounting Side of Printed Circuit Board

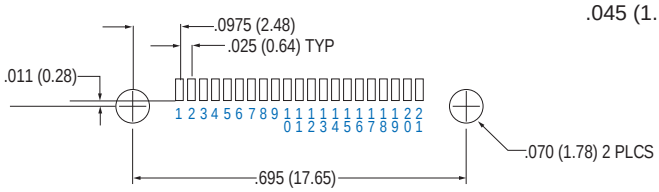
9 Contacts



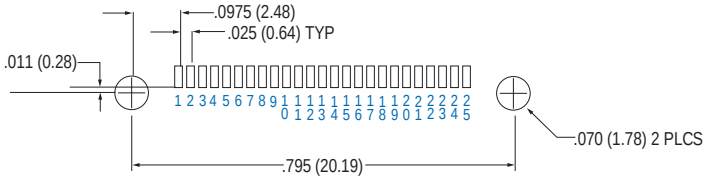
15 Contacts



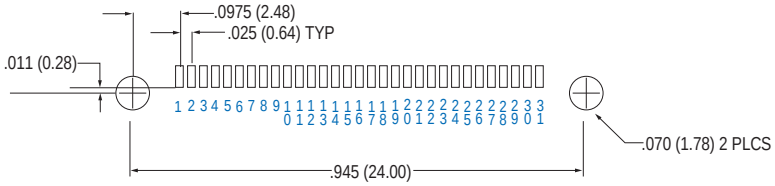
21 Contacts



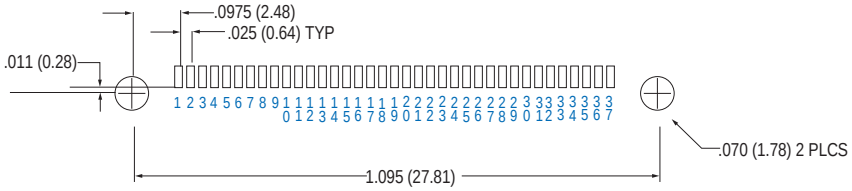
25 Contacts



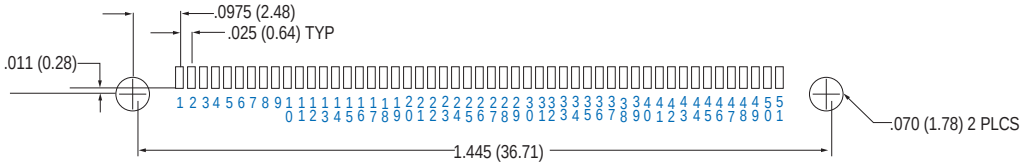
31 Contacts

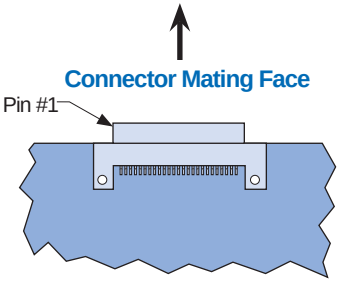


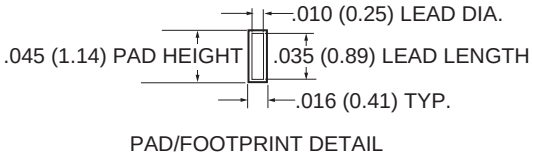
37 Contacts



51 Contacts







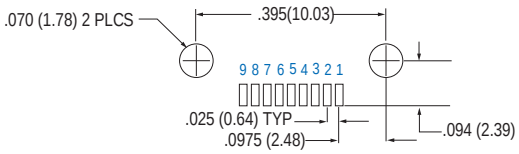
PAD/FOOTPRINT DETAIL

890-012 and -013
Series 89 Nanominiature Connectors
Single Row Right Angle Surface Mount PCB

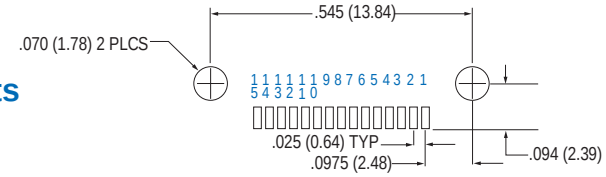
RIGHT ANGLE SMT RECEPTACLE (SOCKET) CONNECTOR LAYOUT 890-013

Component Mounting Side of Printed Circuit Board

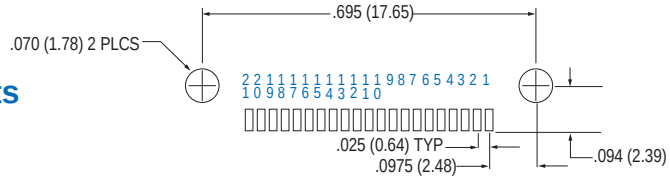
9 Contacts



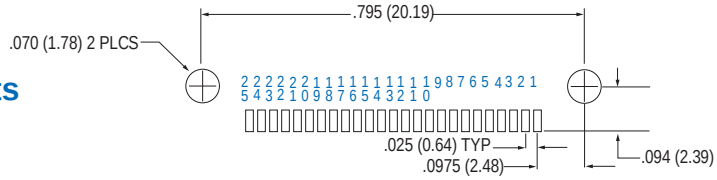
15 Contacts



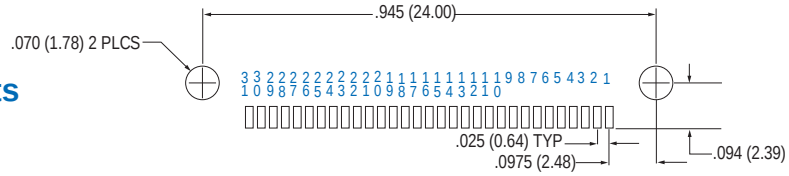
21 Contacts



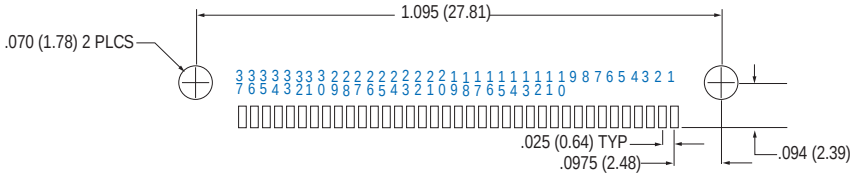
25 Contacts



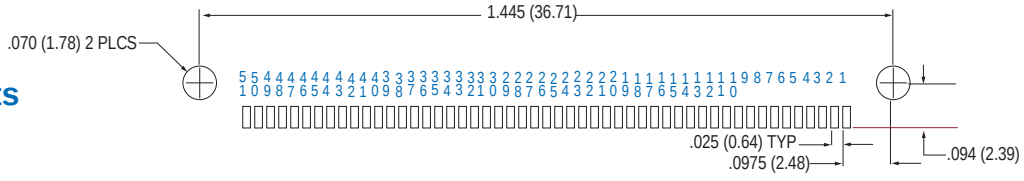
31 Contacts

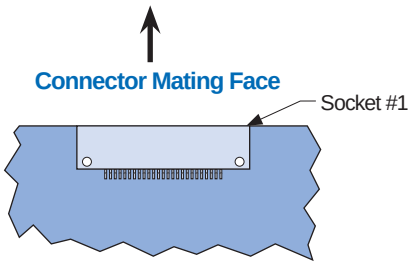


37 Contacts



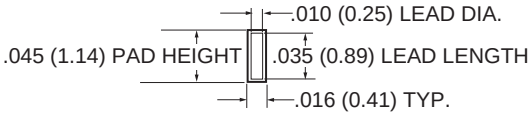
51 Contacts





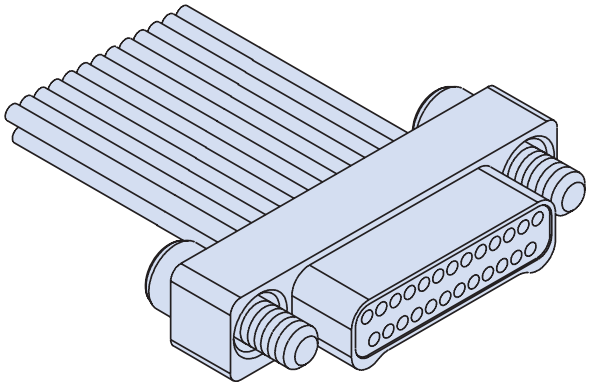
Component Mounting Side of PCB

(25S actual size)



PAD/FOOTPRINT DETAIL

891-001 and -002
Series 89 Nanominiature Connectors
Double Row Insulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

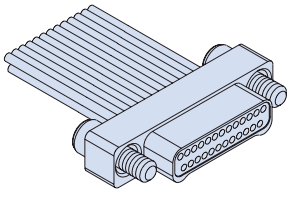
TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

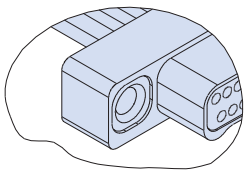
HOW TO ORDER NANOMINIATURE CONNECTORS WITH INSULATED WIRE

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Color Code	Wire Length Inches	Hardware
891-001 Plug, Pin Contacts, Double Row, Nanominiature **891-002** Receptacle, Socket Contacts, Double Row, Nanominiature	Plugs (891-001) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-002) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**A** Ultralightweight XLETFE Insulation, Silver-Coated Ultrahigh-Strength Copper (Not available for #32 AWG) **B** Extruded PTFE Insulation, NEMA HP3-ETX (MIL-W-16878/6) **C** Cross-Linked Modified ETFE Insulation, MIL-W-22759/33 (Not available for #32 AWG)	**1** White **2** Yellow **7** 10 Color Repeating (wire type A is striped, types B and C are solid colors)	**18** Wire Length In Inches. "18" Specifies 18 Inches.	**J** Jackscrew, #0-80 **T** #0-80 Female Threads Female threads are available on plug connectors only if the shell material is titanium or stainless steel.
Sample Part Number							
891-002	**— 37S**	**A1**	**—0**	**A**	**1**	**— 12**	**J**

PLUG (PIN) CONNECTOR

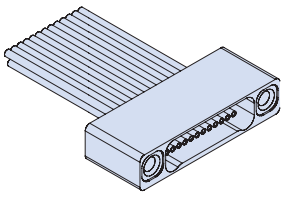


"J" Jackscrew Option

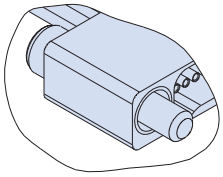


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option

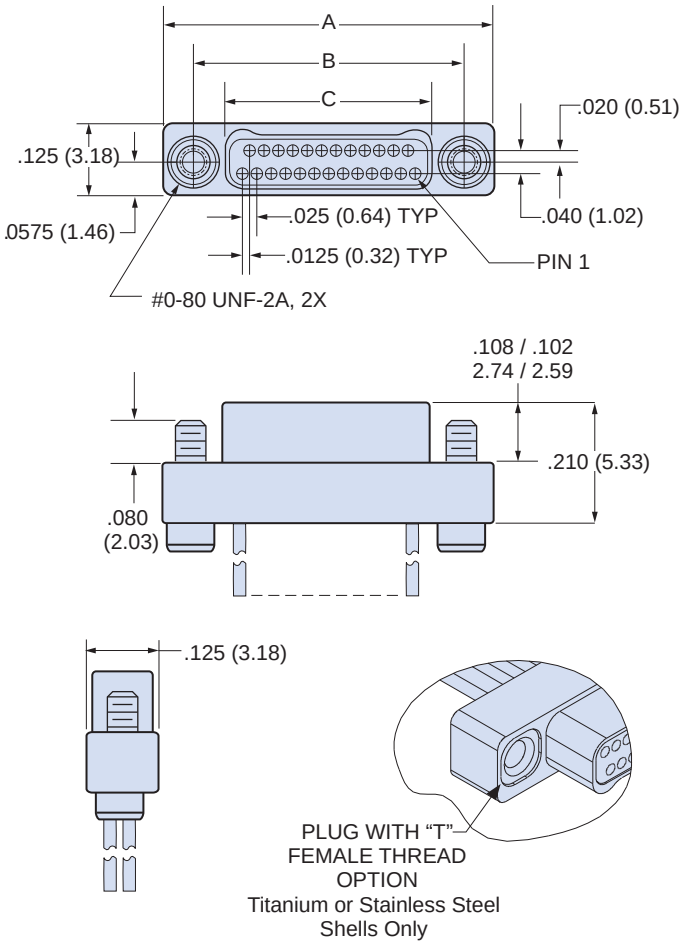


"J" Jackscrew Option

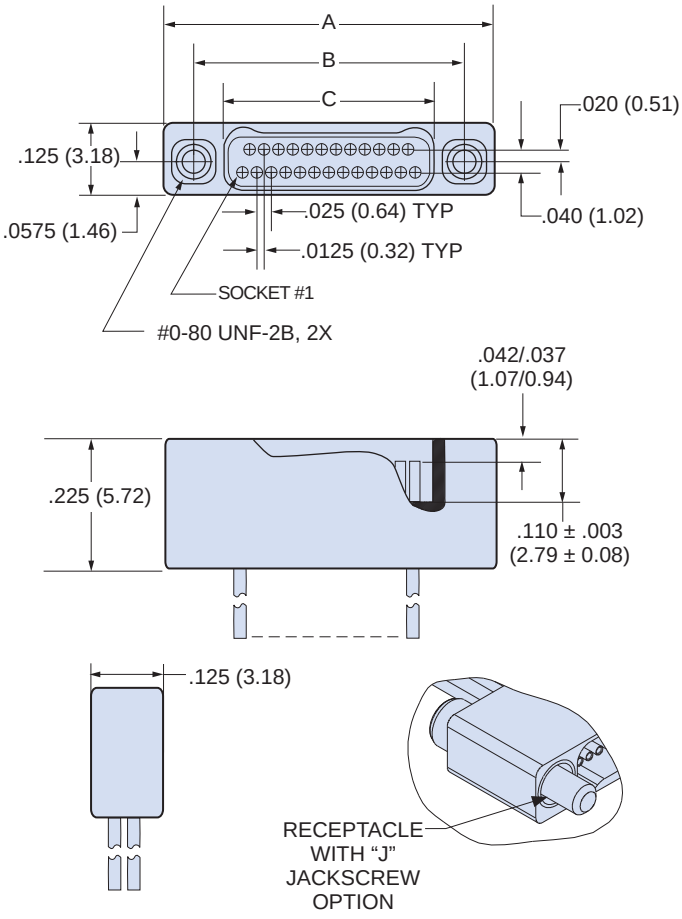
891-001 and -002
Series 89 Nanominiature Connectors
Double Row Insulated Wire Pigtail Assemblies

DOUBLE ROW NANO PIGTAIL DIMENSIONS

Plug (Pin) Connectors

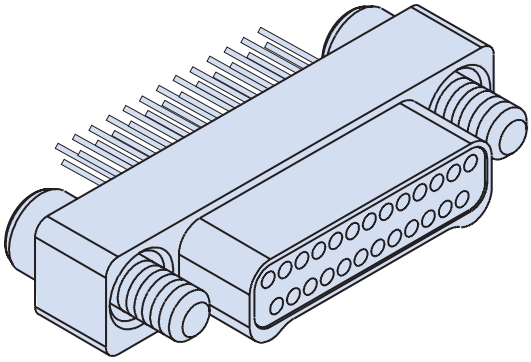


Receptacle (Socket) Connectors



Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

891-003 and -004
Series 89 Nanominiature Connectors
Double Row Uninsulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to solid wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

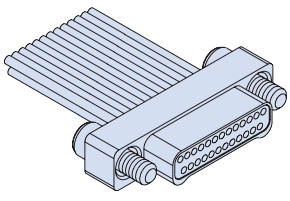
TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

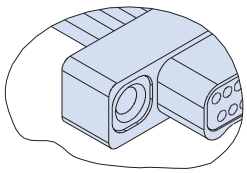
HOW TO ORDER NANOMINIATURE CONNECTORS WITH UNINSULATED WIRE

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Length	Hardware
891-003 Plug, Pin Contacts, Double Row, Nanominiature, Uninsulated Wire **891-004** Receptacle, Socket Contacts, Double Row, Nanominiature, Uninsulated Wire	Plugs (891-003) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-004) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**D3** Single Strand Copper Wire, Uninsulated, with Gold Plating	**.125** **.250** **.375** **.500** Wire Length in Inches	**J** Jackscrew, #0-80 **T** #0-80 Female Thread Female Threads are available on plug connectors only if the shell material is titanium or stainless steel.
Sample Part Number						
891-003	**— 9P**	**A1**	**—0**	**D3**	**— 12**	**J**

PLUG (PIN) CONNECTOR

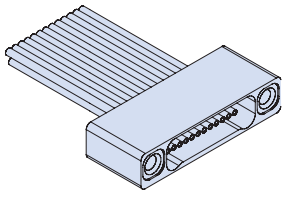


"J" Jackscrew Option

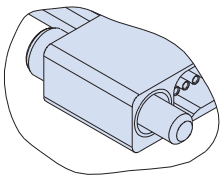


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option

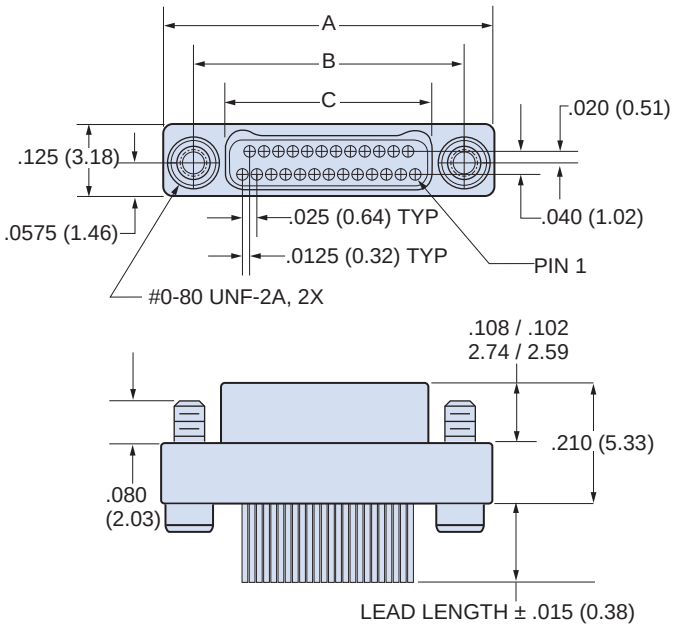


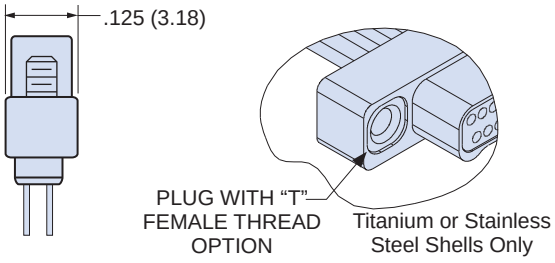
"J" Jackscrew Option

891-003 and -004
Series 89 Nanominiature Connectors
Double Row Uninsulated Wire Pigtail Assemblies

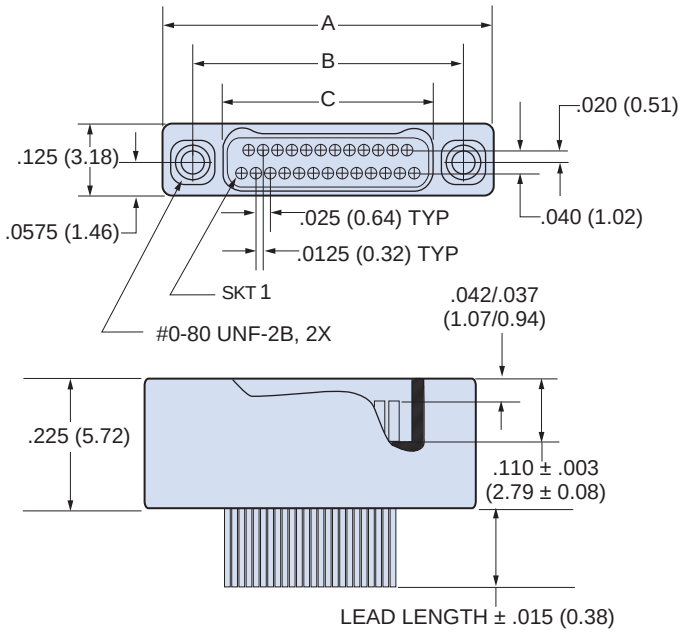
DOUBLE ROW NANO PIGTAIL DIMENSIONS

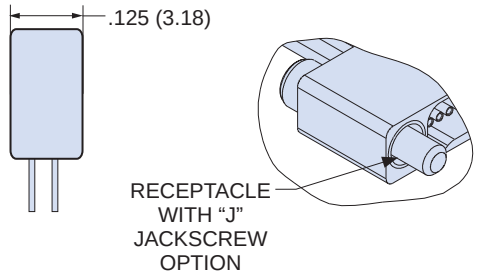
Plug (Pin) Connectors





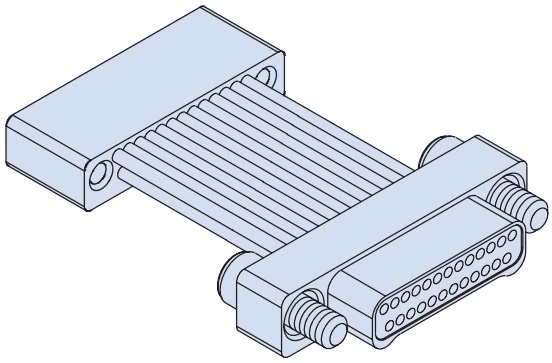
Receptacle (Socket) Connectors





Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

891-005
Series 89 Nanominiature Connectors
Double Row Back-To-Back



Glenair's Back-To-Back Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium preformance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC. Wire gages #30 and #32 AWG.

TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

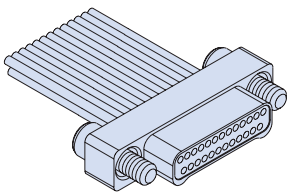
HOW TO ORDER DOUBLE ROW BACK-TO-BACK JUMPERS

Series	Number of Contacts	Connector Type	Shell Material and Finish	Wire Gage	Wire Type	Wire Color Code	Length Inches	Hardware
891-005 Back-To-Back Cables, Double Row, Nanominiature	**9** **15** **21** **25** **31** **37** **51**	**GP** Plug (Pin) Connector on Both Ends **GS** Receptacle (Socket) Connector on Both Ends **CS** Plug (Pin) On One End, Receptacle On The Other End	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**0** #30 AWG **2** #32 AWG	**A** Ultralightweight XLETFE Insulation, Silver-Coated Ultrahigh-Strength Copper (Not available for #32 AWG) **B** Extruded PTFE Insulation, NEMA HP3-ETX (MIL-W-16878/6) **C** Cross-Linked Modified ETFE Insulation, MIL-W-22759/33 (Not available for #32 AWG)	**1** White **2** Yellow **7** 10 Color Repeating (wire type A is striped, types B and C are solid colors)	**Overall Length** **In Inches** **Including Connectors** **Example:** **"12" specifies 12 inches OAL**	**JJ** = Jackscrews on both ends (GP, GS, CS) **JT** = Jackscrews on plug, threaded holes on receptacle (CS) **JP** = Jackscrews on plug, threaded holes on plug (GP)(*See Note Below) **TJ** = Jackscrews on receptacle, threaded holes on plug (CS)(*See Note Below) **JR** = Jackscrews on receptacle, threaded holes on receptacle (GS) **TT** = Threaded holes both ends (GP, GS, CS)(*See Note Below) * Specify titanium or stainless steel shells when ordering plugs with female threads.

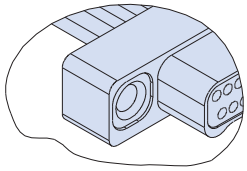
Sample Part Number

891-005	— 9	GP	A1	—0	A	1	— 12	J

PLUG (PIN) CONNECTOR

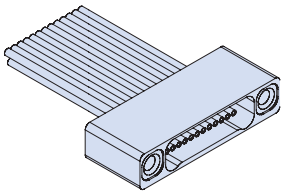


"J" Jackscrew Option

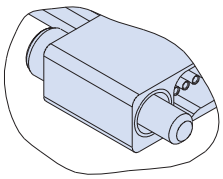


"T" Female Thread Option
Titanium or Stainless Steel Shells Only

RECEPTACLE (SOCKET) CONNECTOR



"T" Female Thread Option

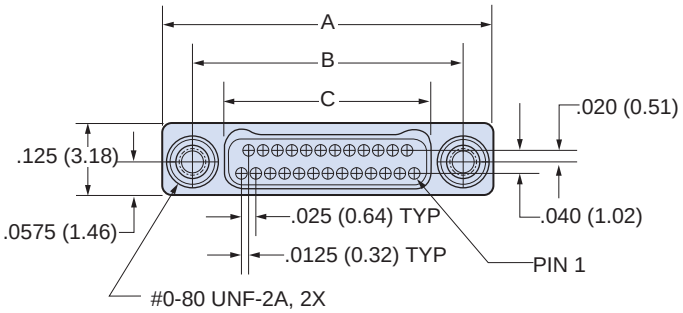


"J" Jackscrew Option

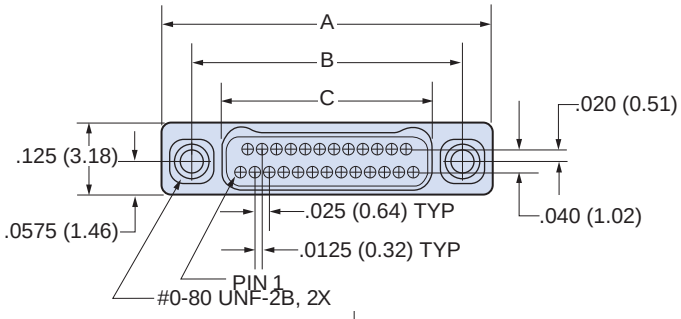
891-005
Series 89 Nanominiature Connectors
Double Row Back-To-Back

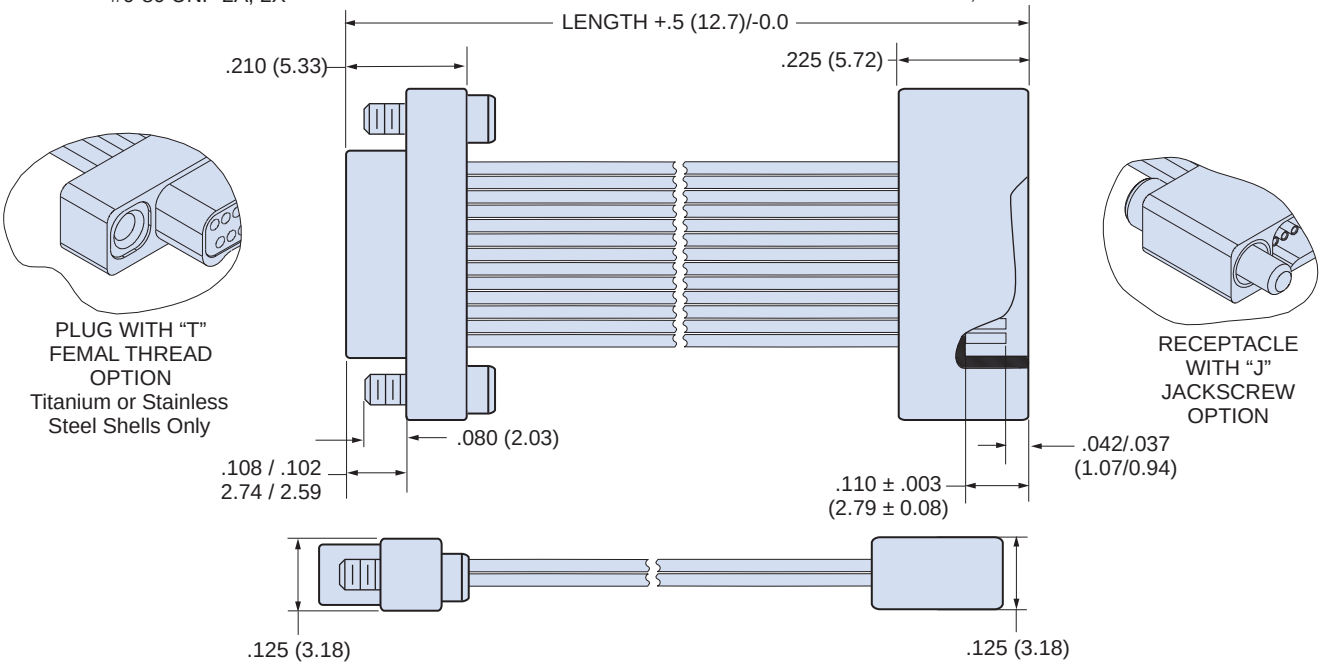
DOUBLE ROW NANO BACK-TO-BACK PIGTAIL DIMENSIONS

Plug (Pin) Connectors



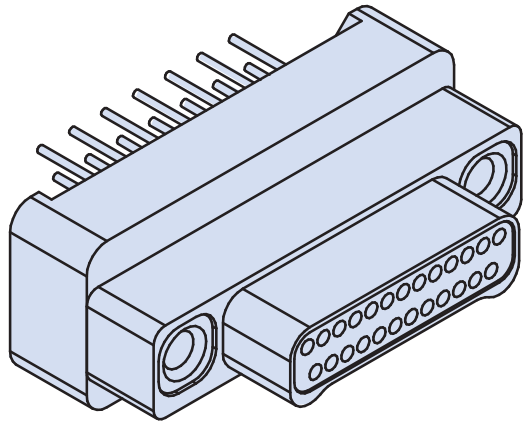
Receptacle (Socket) Connectors





Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ±0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

891-006 and -007
Series 89 Nanominiature Connectors
Double Row Thru Hole Vertical Mount Printed Circuit Board



Vertical Mount PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 891 Double row metal shell nanominiature connector.

HOW TO ORDER VERTICAL MOUNT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	PC Tail Length	Hardware
891-006 Plug, Pin Contacts, Double Row, Vertical PCB Nanominiature **891-007** Receptacle, Socket Contacts, Double Row, Vertical PCB Nanominiature	Plugs (891-006) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-007) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BST** "**B**oard **S**traight **T**hru-Hole"	**1** .110 Inch (2.79 mm) **2** .172 Inch (4.37 mm)	**J** Jackscrew, #0-80 **T** #0-80 Female Thread
Sample Part Number					
891-007	**— 31S**	**T**	**—BST**	**1**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

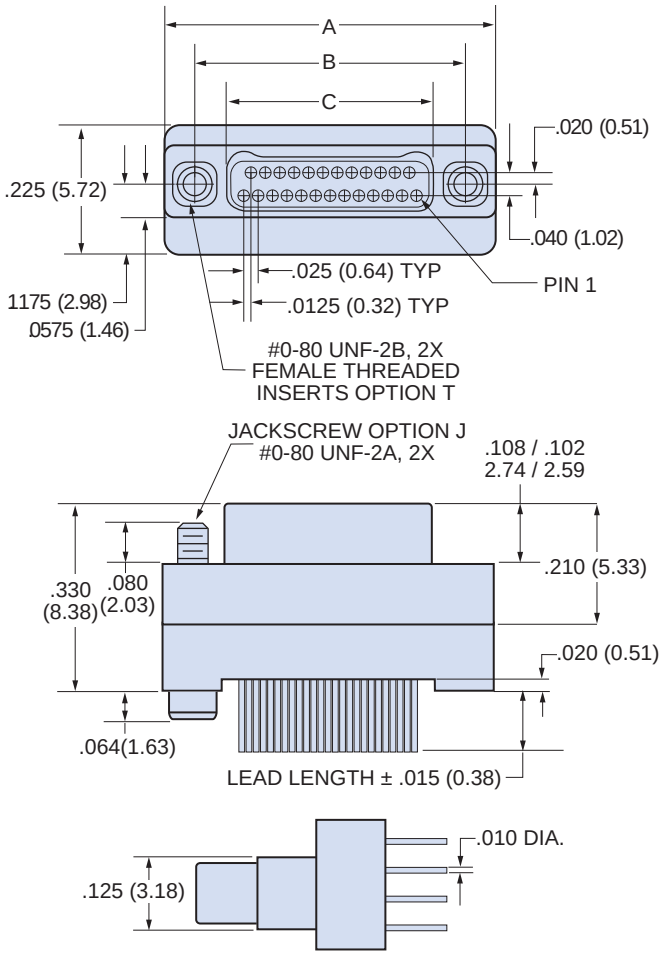
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max.

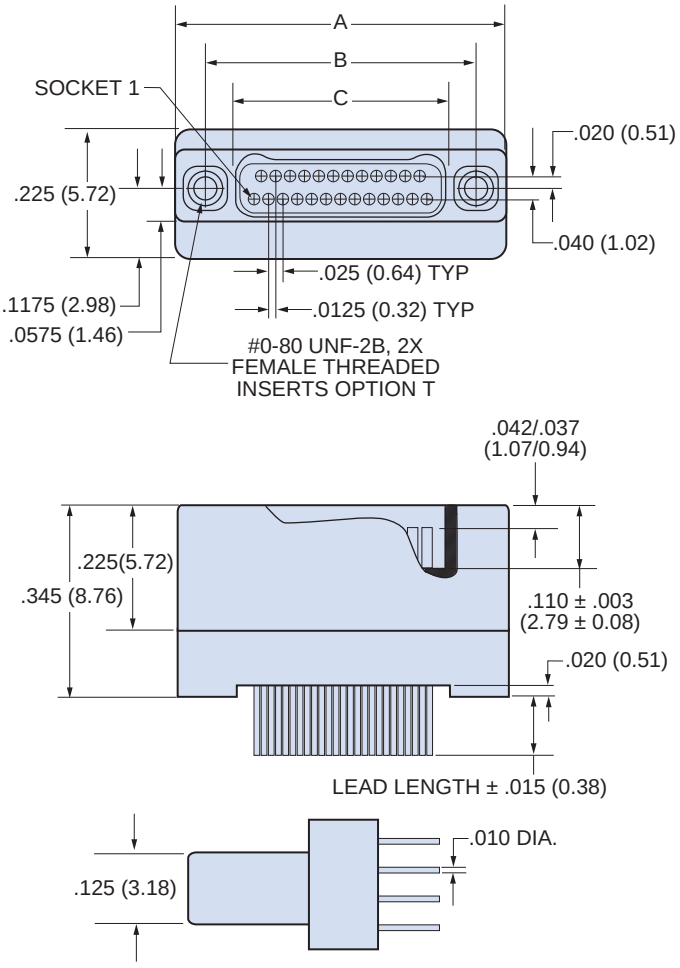
891-006 and -007
Series 89 Nanominiature Connectors
Double Row Thru Hole Vertical Mount Printed Circuit Board

DOUBLE ROW VERTICAL PCB NANO DIMENSIONS

Plug (Pin) Connectors



Receptacle (Socket) Connectors

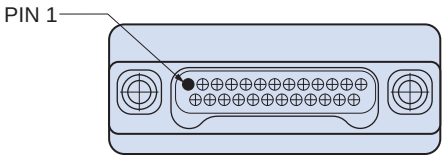


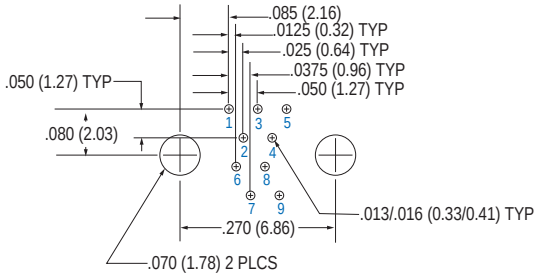
Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ±0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

891-006 and -007
Series 89 Nanominiature Connectors
Double Row Thru Hole Vertical Mount Printed Circuit Board

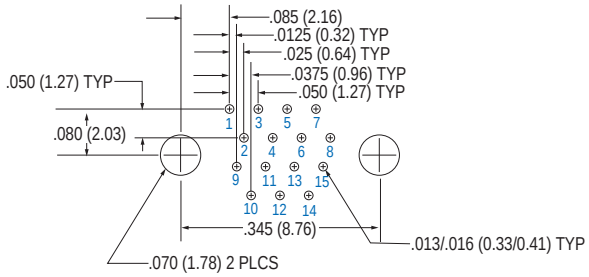
Patterns shown are for connector mounting side of PC Board.

VERTICAL PCB PLUG (PIN) CONNECTOR LAYOUT 891-006

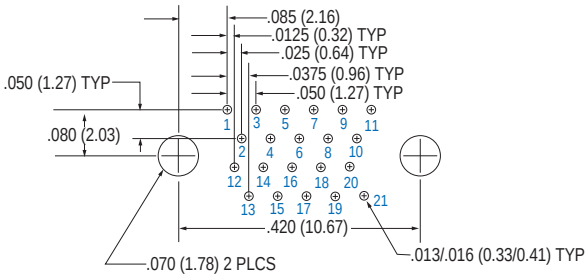




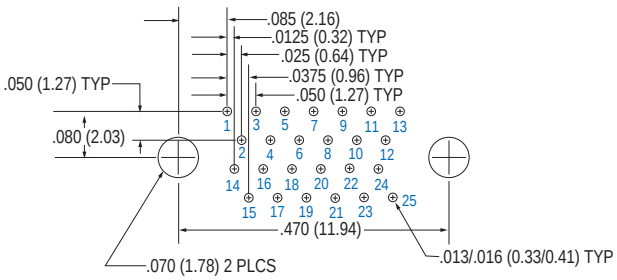
9 Contacts



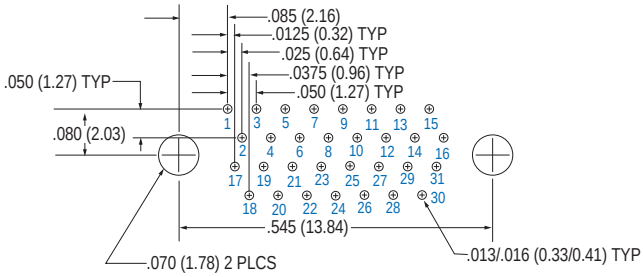
15 Contacts



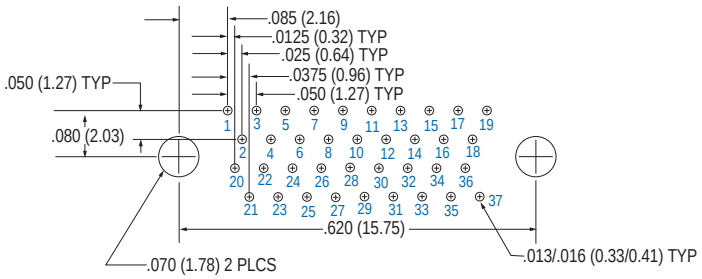
21 Contacts



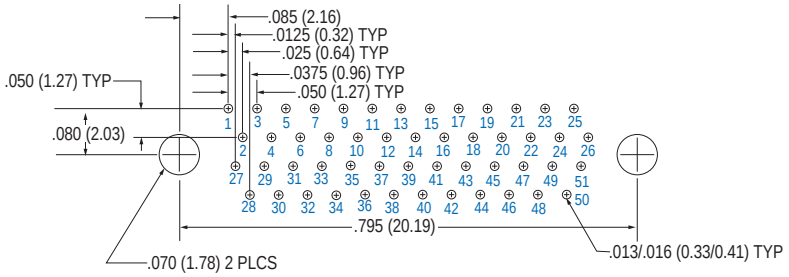
25 Contacts



31 Contacts



37 Contacts

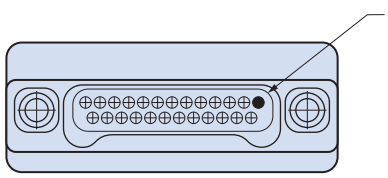


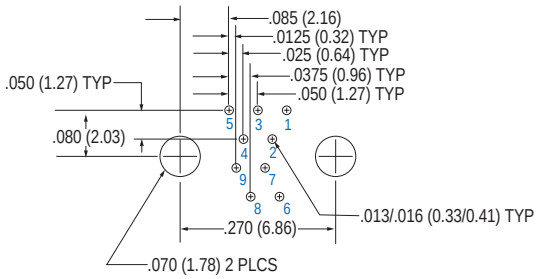
51 Contacts

891-006 and -007
Series 89 Nanominiature Connectors
Double Row Thru Hole Vertical Mount Printed Circuit Board

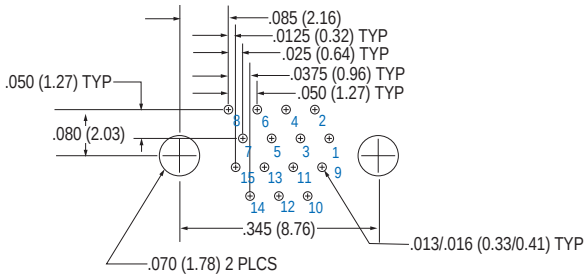
Patterns shown are for connector mounting side of PC Board.

VERTICAL PCB RECEPTACLE (SOCKET) CONNECTOR LAYOUT 891-007

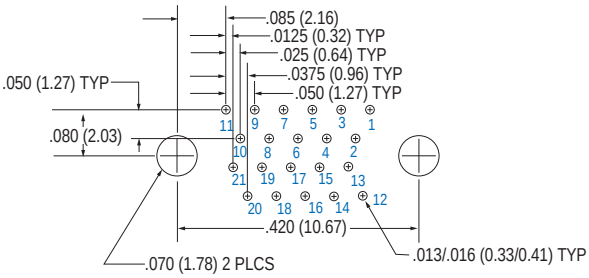




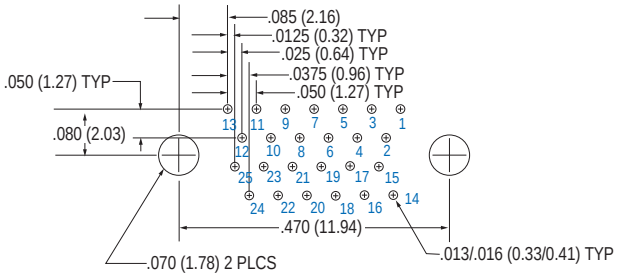
9 Contacts



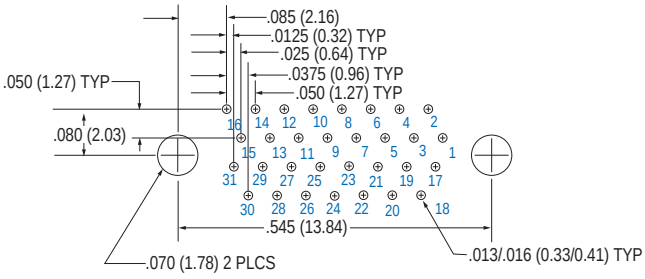
15 Contacts



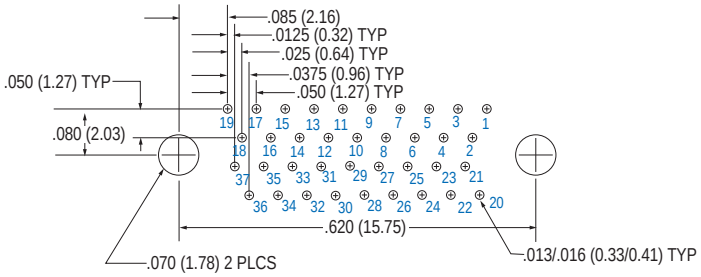
21 Contacts



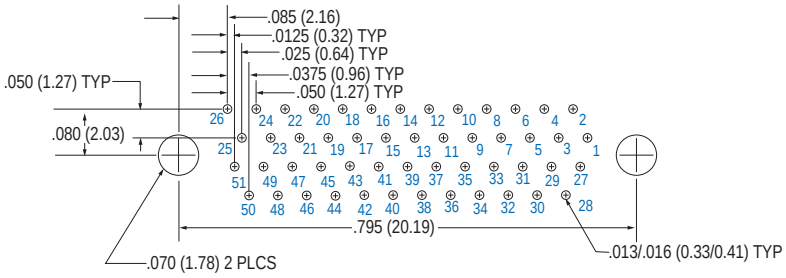
25 Contacts



31 Contacts

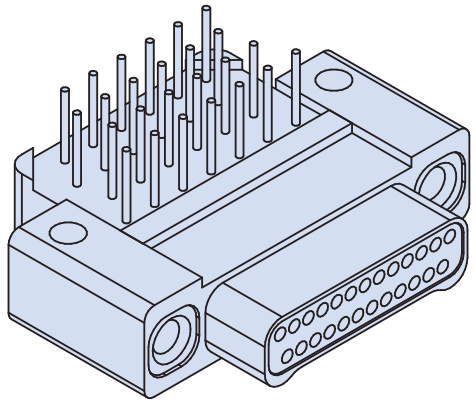


37 Contacts



51 Contacts

891-008 and -009
Series 89 Nanominiature Connectors
Double Row Thru Hole Right Angle Printed Circuit Board



Right Angle Mount PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 891 Double row metal shell nanominiature connector.

HOW TO ORDER RIGHT ANGLE MOUNT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	PC Tail Length	Hardware
891-008 Plug, Pin Contacts, Double Row, Right Angle PCB Nanominiature **891-009** Receptacle, Socket Contacts, Double Row, Right Angle PCB Nanominiature	Plugs (891-008) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-009) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BRT** "**B**oard **R**ight Angle **T**hru-Hole"	**1** .110 Inch (2.79 mm) **2** .172 Inch (4.37 mm)	**J** Jackscrew, #0-80 **T** #0-80 Female Thread
Sample Part Number					
891-009	**— 31S**	**T**	**—BRT**	**1**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

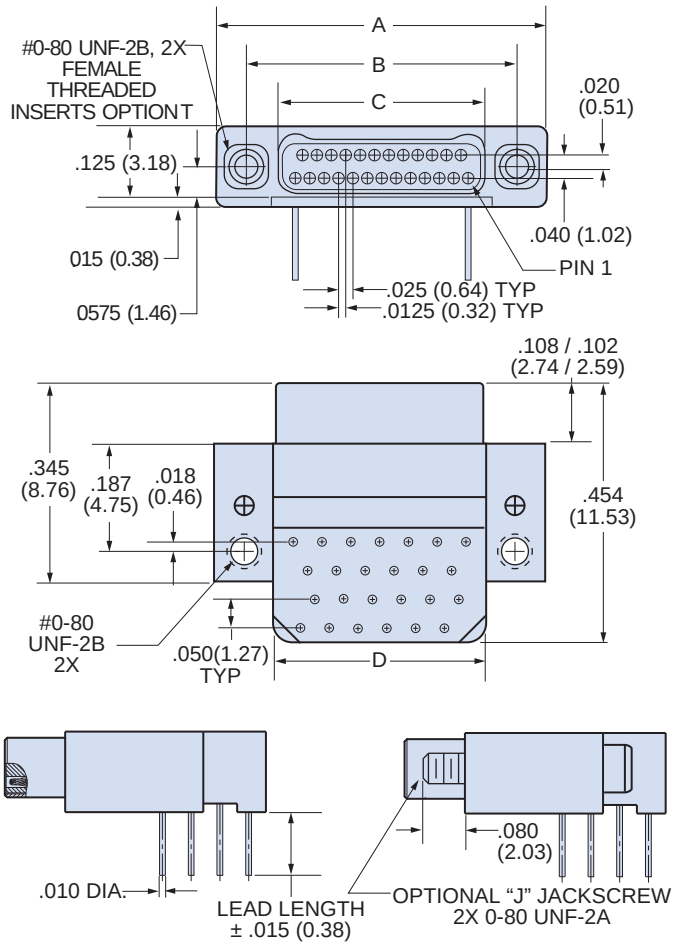
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max.

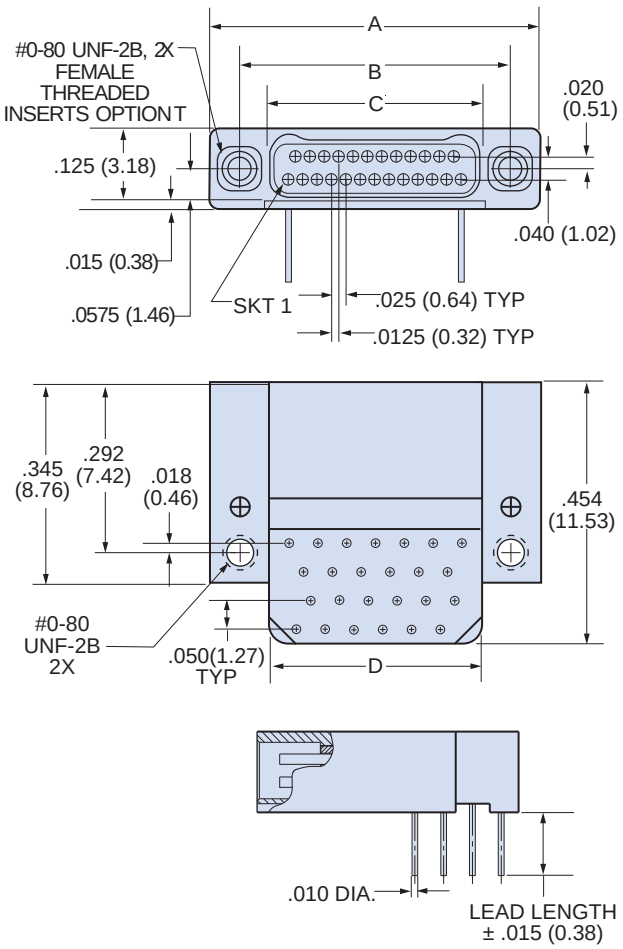
891-008 and -009
Series 89 Nanominiature Connectors
Double Row Thru Hole Right Angle Printed Circuit Board

DOUBLE ROW RIGHT ANGLE PCB NANO DIMENSIONS

Plug (Pin) Connectors



Receptacle (Socket) Connectors

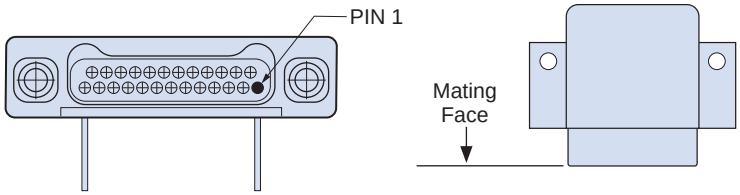


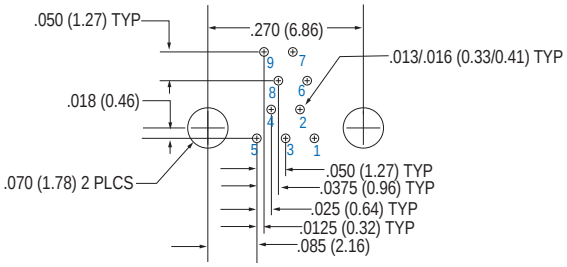
Layout	A		B BSC.		C BSC.		D	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.	In. ± .005	mm. ± 0.13
9P	.375	9.52	.270	6.86	.160	4.06	.170	4.32
9S	.375	9.52	.270	6.86	.163	4.14	.170	4.32
15P	.450	11.43	.345	8.76	.235	5.97	.245	6.22
15S	.450	11.43	.345	8.76	.238	6.04	.245	6.22
21P	.525	13.33	.420	10.67	.310	7.87	.320	8.13
21S	.525	13.33	.420	10.67	.313	7.95	.320	8.13
25P	.575	14.60	.470	11.94	.360	9.14	.370	9.40
25S	.575	14.60	.470	11.94	.363	9.22	.370	9.40
31P	.650	16.51	.545	13.84	.435	11.05	.445	11.30
31S	.650	16.51	.545	13.84	.438	11.12	.445	11.30
37P	.725	18.41	.620	15.75	.510	12.95	.520	13.21
37S	.725	18.41	.620	15.75	.513	13.03	.520	13.21
51P	.900	22.86	.795	20.19	.685	17.40	.695	17.65
51S	.900	22.86	.795	20.19	.688	17.47	.695	17.65

891-008 and -009
Series 89 Nanominiature Connectors
Double Row Thru Hole Right Angle Printed Circuit Board

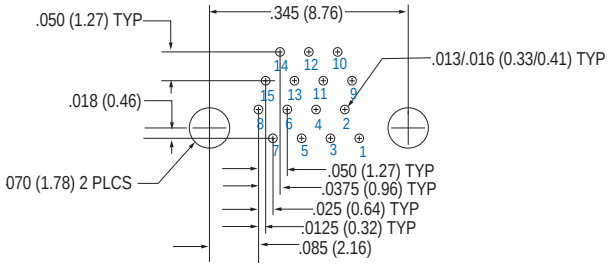
Patterns shown are for connector mounting side of PC Board.

RIGHT ANGLE PCB PLUG (PIN) CONNECTOR LAYOUT 891-008

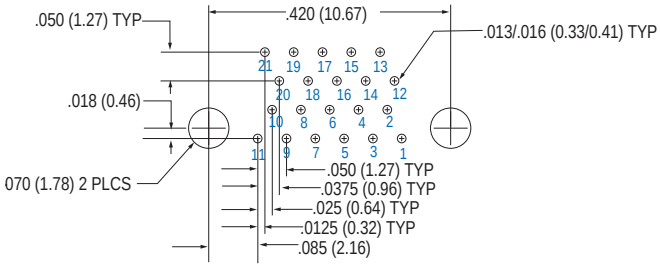




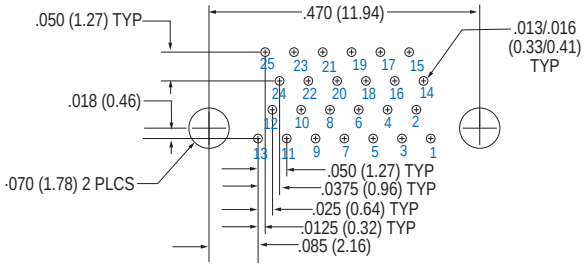
9 Contacts



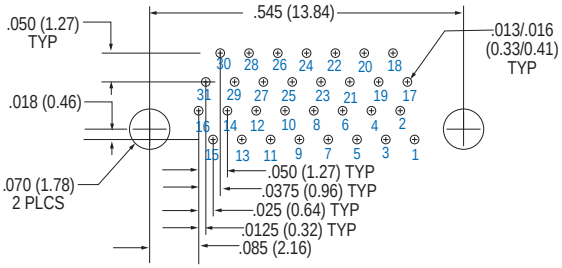
15 Contacts



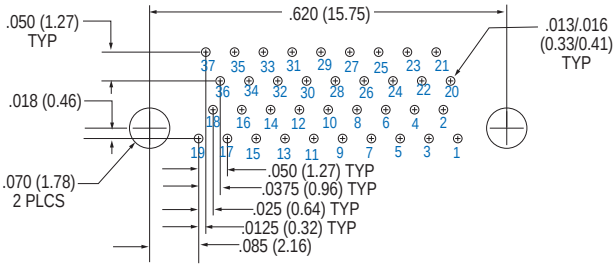
21 Contacts



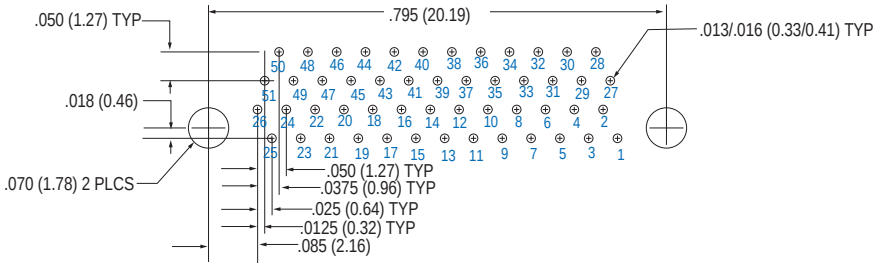
25 Contacts



31 Contacts



37 Contacts

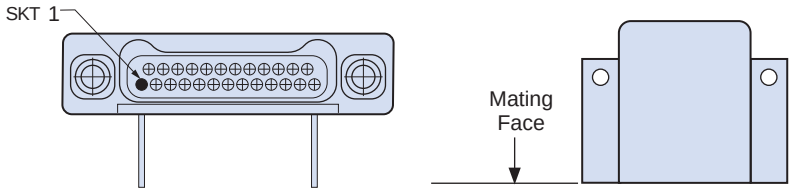


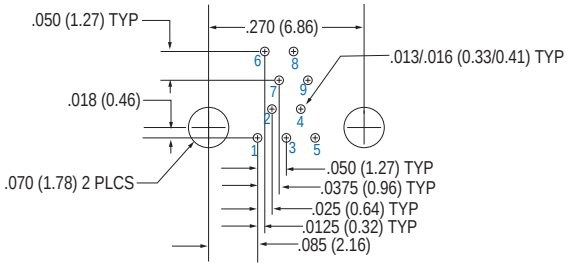
51 Contacts

891-008 and -009
Series 89 Nanominiature Connectors
Double Row Thru Hole Right Angle Printed Circuit Board

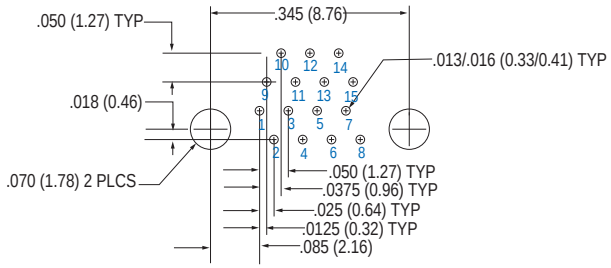
Patterns shown are for connector mounting side of PC Board.

RIGHT ANGLE PCB RECEPTACLE (SOCKET) CONNECTOR LAYOUT 891-009

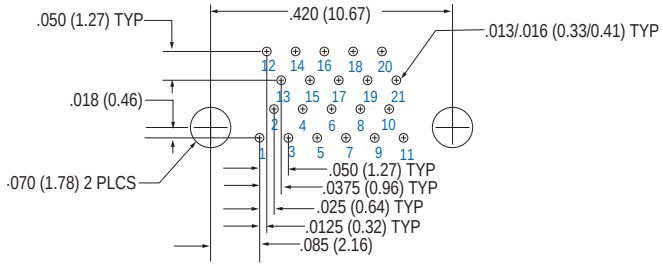




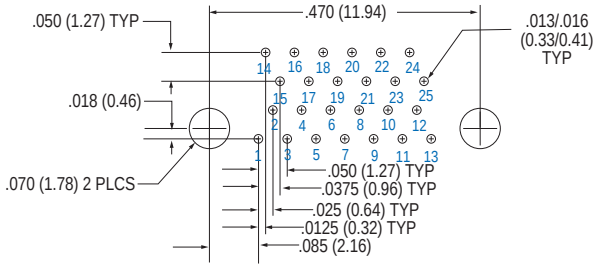
9 Contacts



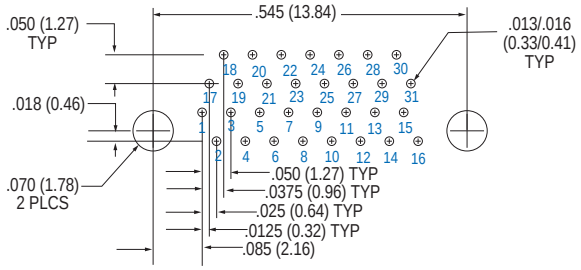
15 Contacts



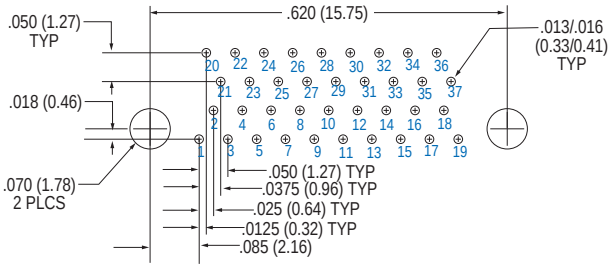
21 Contacts



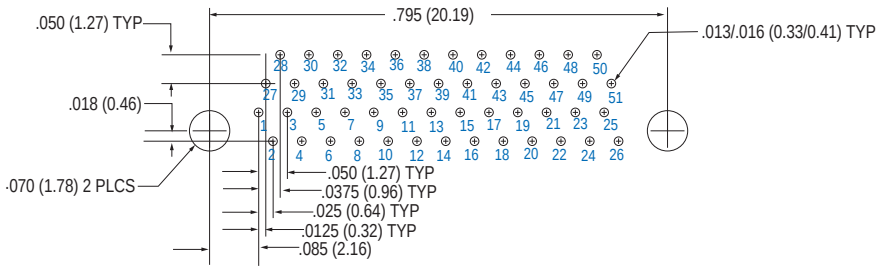
25 Contacts



31 Contacts

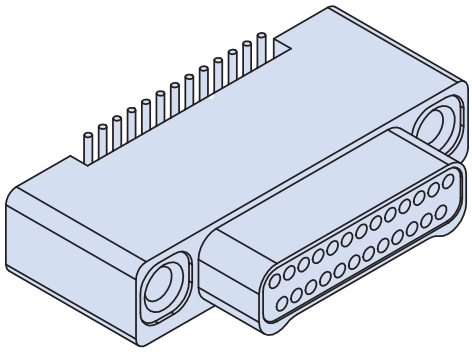


37 Contacts



51 Contacts

891-010 and -011
Series 89 Nanominiature Connectors
Double Row Vertical Surface Mount



Vertical Surface Mount PCB Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped #30 AWG gold-plated wire. These nanomimiature connectors offer premium performance and reliability for demanding applications.

Choose Aluminum, Titanium or Stainless Steel Shells in eight layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139.

HOW TO ORDER VERTICAL MOUNT SMT CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	Hardware
891-010 Plug, Pin Contacts, Double Row, Vertical SMT Nanominiature **891-011** Receptacle, Socket Contacts, Double Row, Vertical SMT Nanominiature	Plugs (891-010) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-011) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BSS** "**B**oard **S**urface Mount **S**traight"	**T** #0-80 Female Thread
Sample Part Number				
891-011	**— 51S**	**A2**	**—BSS**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

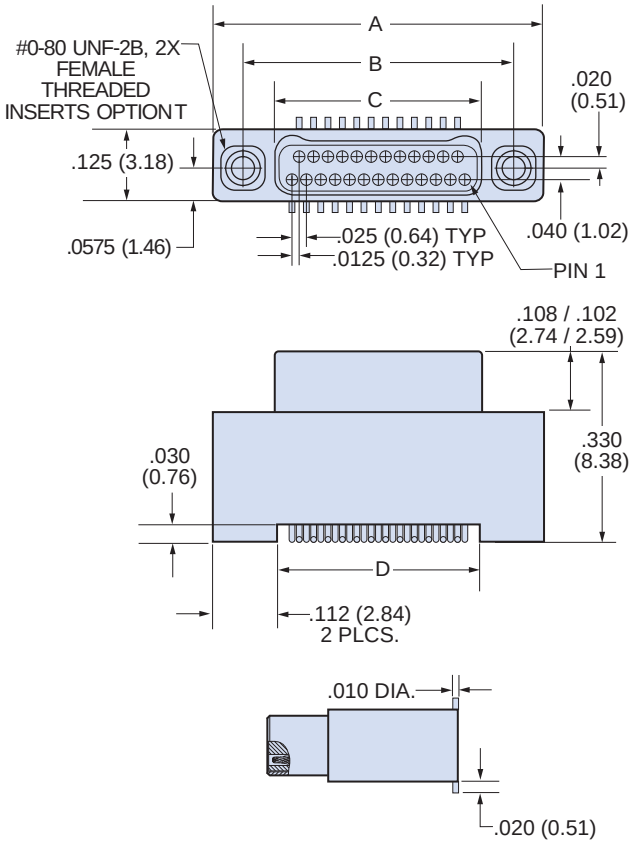
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. VCM

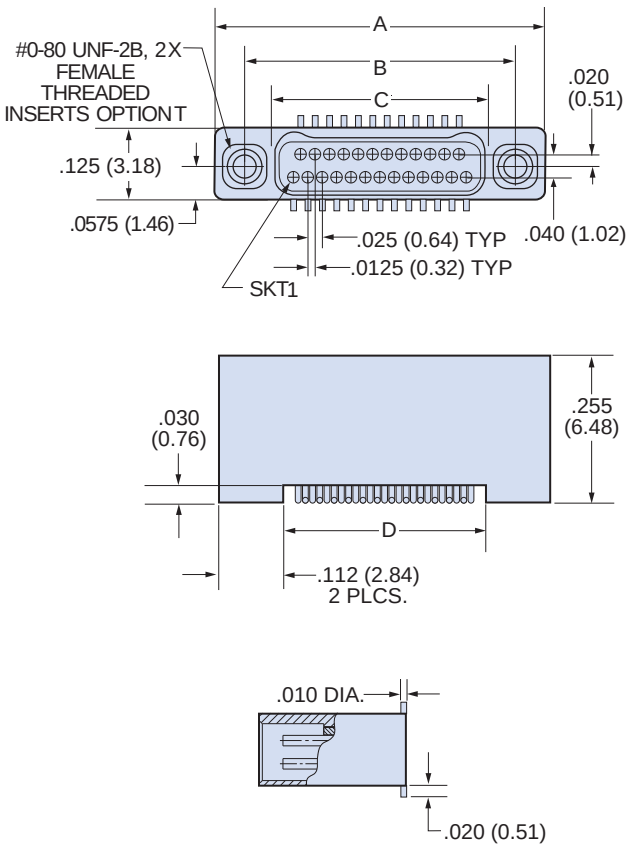
891-010 and -011
Series 89 Nanominiature Connectors
Double Row Vertical Surface Mount

DOUBLE ROW VERTICAL SURFACE MOUNT NANO DIMENSIONS

Plug (Pin) Connectors



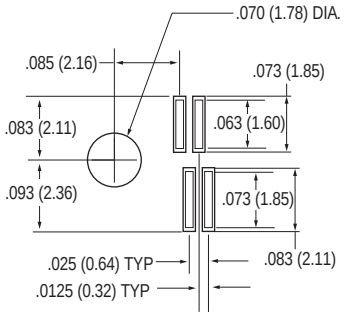
Receptacle (Socket) Connectors



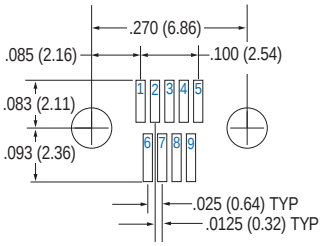
Layout	A		B BSC.		C BSC.		D	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.	In. ± .005	mm. ± 0.13
9P	.375	9.52	.270	6.86	.160	4.06	.152	3.86
9S	.375	9.52	.270	6.86	.163	4.14	.152	3.86
15P	.450	11.43	.345	8.76	.235	5.97	.227	5.77
15S	.450	11.43	.345	8.76	.238	6.04	.227	5.77
21P	.525	13.33	.420	10.67	.310	7.87	.302	7.67
21S	.525	13.33	.420	10.67	.313	7.95	.302	7.67
25P	.575	14.60	.470	11.94	.360	9.14	.352	8.94
25S	.575	14.60	.470	11.94	.363	9.22	.352	8.94
31P	.650	16.51	.545	13.84	.435	11.05	.427	10.85
31S	.650	16.51	.545	13.84	.438	11.12	.427	10.85
37P	.725	18.41	.620	15.75	.510	12.95	.502	12.75
37S	.725	18.41	.620	15.75	.513	13.03	.502	12.75
51P	.900	22.86	.795	20.19	.685	17.40	.677	17.20
51S	.900	22.86	.795	20.19	.688	17.47	.677	17.20

Patterns shown are for connector mounting side of PC Board.

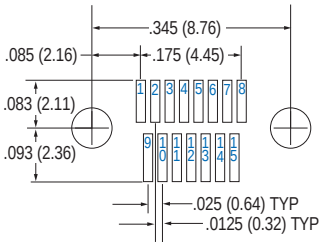
DOUBLE ROW VERTICAL SURFACE MOUNT BOARD LAYOUT—891-010 PLUGS (PIN CONTACTS)



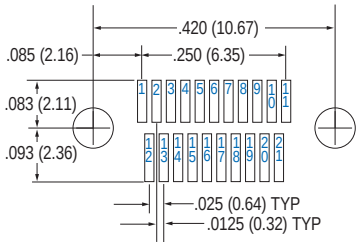
PAD/ FOOTPRINT DETAIL



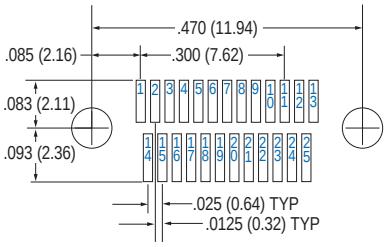
9 Contacts



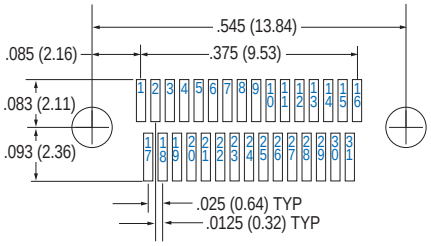
15 Contacts



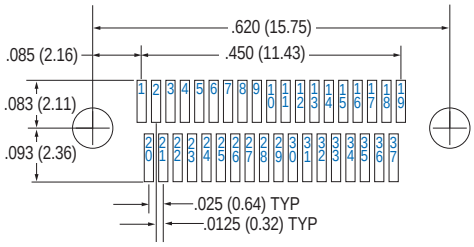
21 Contacts



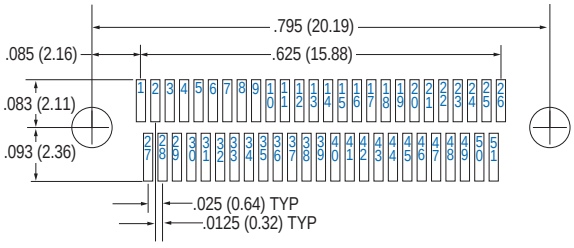
25 Contacts



31 Contacts



37 Contacts

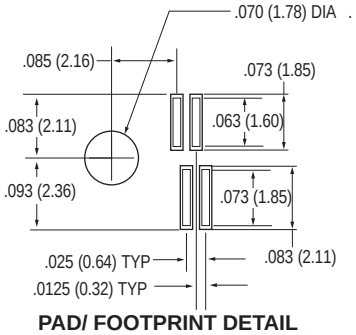


51 Contacts

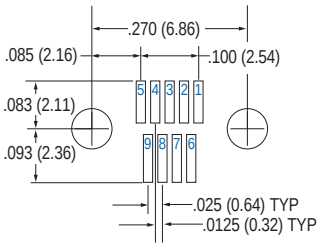
891-010 and -011
Series 89 Nanominiature Connectors
Double Row Vertical Surface Mount

Patterns shown are for connector mounting side of PC Board.

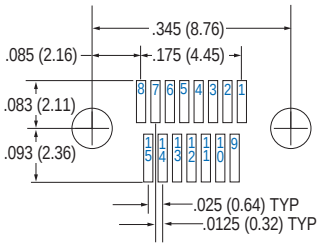
DOUBLE ROW VERTICAL SURFACE MOUNT BOARD LAYOUT—891-011 RECEPTACLES



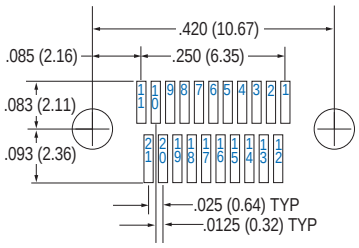
PAD/ FOOTPRINT DETAIL



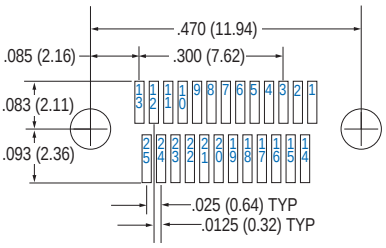
9 Contacts



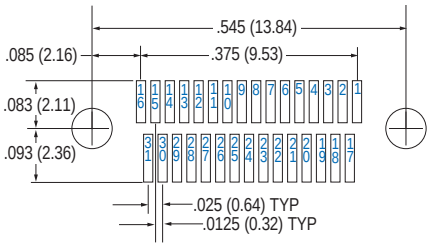
15 Contacts



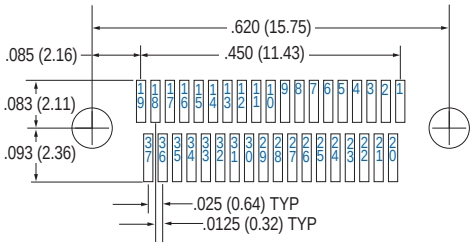
21 Contacts



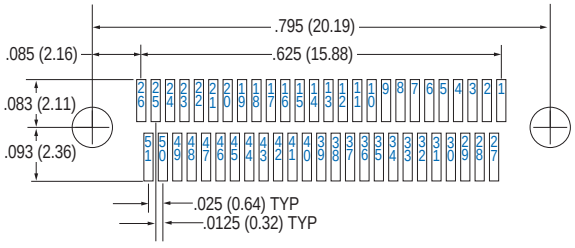
25 Contacts



31 Contacts

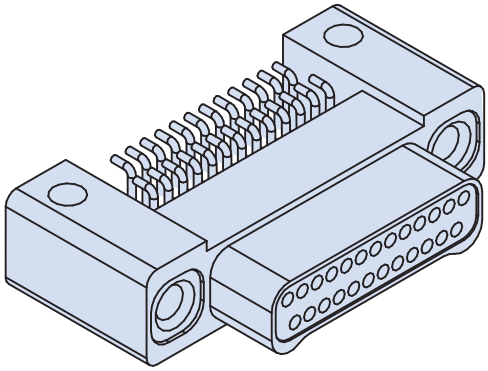


37 Contacts



51 Contacts

891-012 and -013
Series 89 Nanominiature Connectors
Double Row Right Angle Surface Mount



Right Angle Surface Mount PCB Nano Connectors feature gold alloy TwistPin contacts. These nanomimiature connectors offer premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139.

HOW TO ORDER RIGHT ANGLE SURFACE MOUNT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	Hardware
891-012 Plug, Pin Contacts, Double Row, Right Angle Surface Mount Nanominiature **891-013** Receptacle, Socket Contacts, Double Row, Right Angle Surface Mount Nanominiature	Plugs (891-012) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-013) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**BRS** "**B**oard **R**ight Angle **S**urface Mount"	**T** #0-80 Female Threads
Sample Part Number				
891-012	**— 25P**	**A1**	**—BRS**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

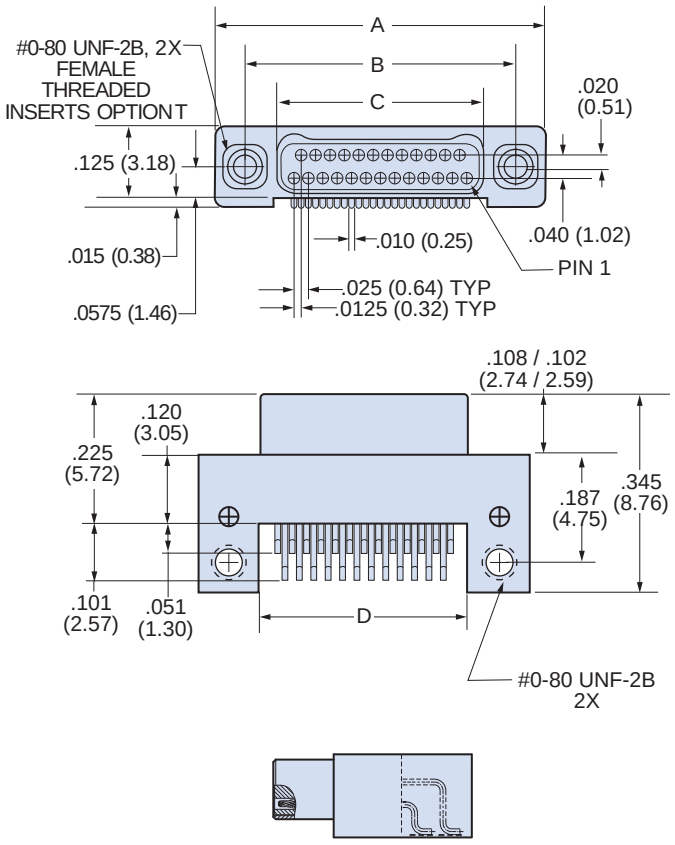
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. CVCM

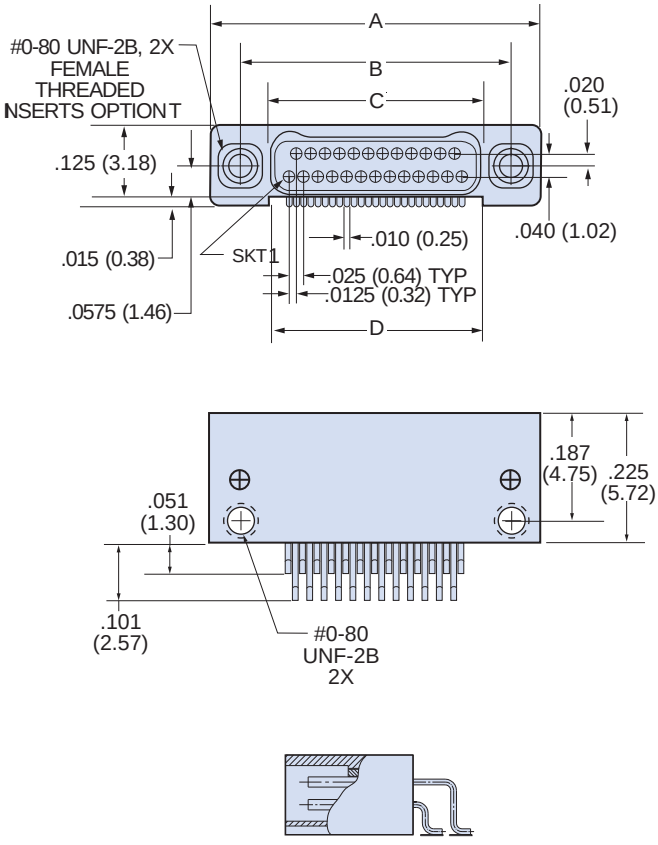
891-012 and -013
Series 89 Nanominiature Connectors
Double Row Right Angle Surface Mount

DOUBLE ROW RIGHT ANGLE SURFACE MOUNT NANO DIMENSIONS

Plug (Pin) Connectors



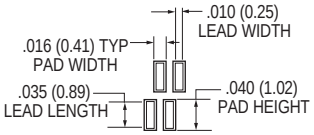
Receptacle (Socket) Connectors



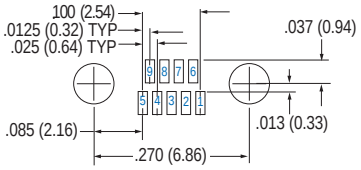
Layout	A		B BSC.		C BSC.		D	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.	In. ± .005	mm. ± 0.13
9P	.375	9.52	.270	6.86	.160	4.06	.170	4.32
9S	.375	9.52	.270	6.86	.163	4.14	.170	4.32
15P	.450	11.43	.345	8.76	.235	5.97	.245	6.22
15S	.450	11.43	.345	8.76	.238	6.04	.245	6.22
21P	.525	13.33	.420	10.67	.310	7.87	.320	8.13
21S	.525	13.33	.420	10.67	.313	7.95	.320	8.13
25P	.575	14.60	.470	11.94	.360	9.14	.370	9.40
25S	.575	14.60	.470	11.94	.363	9.22	.370	9.40
31P	.650	16.51	.545	13.84	.435	11.05	.445	11.30
31S	.650	16.51	.545	13.84	.438	11.12	.445	11.30
37P	.725	18.41	.620	15.75	.510	12.95	.520	13.21
37S	.725	18.41	.620	15.75	.513	13.03	.520	13.21
51P	.900	22.86	.795	20.19	.685	17.40	.695	17.65
51S	.900	22.86	.795	20.19	.688	17.47	.695	17.65

Patterns shown are for connector mounting side of PC Board.

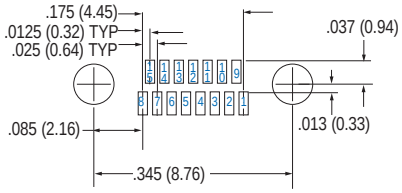
DOUBLE ROW RIGHT ANGLE SURFACE MOUNT BOARD LAYOUT—891-012 PLUGS (PIN CONTACTS)



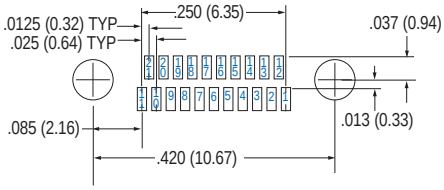
PAD/ FOOTPRINT DETAIL



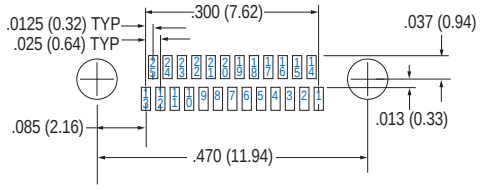
9 Contacts



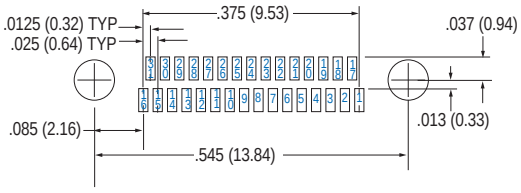
15 Contacts



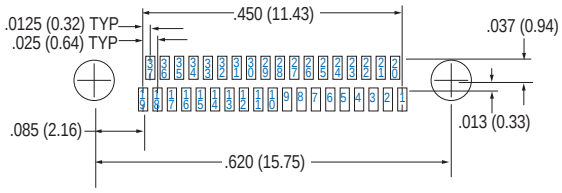
21 Contacts



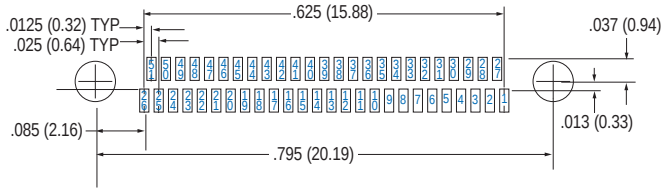
25 Contacts



31 Contacts



37 Contacts

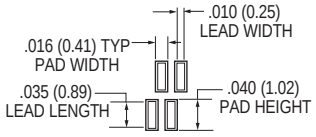


51 Contacts

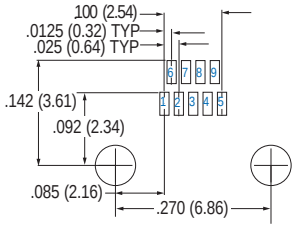
891-012 and -013
Series 89 Nanominiature Connectors
Double Row Right Angle Surface Mount

Patterns shown are for connector mounting side of PC Board.

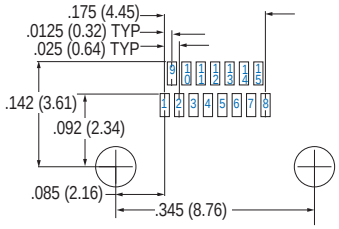
DOUBLE ROW RIGHT ANGLE SURFACE MOUNT BOARD LAYOUT—891-013 RECEPTACLES



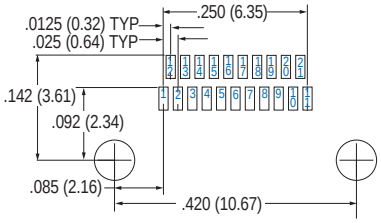
PAD/ FOOTPRINT DETAIL



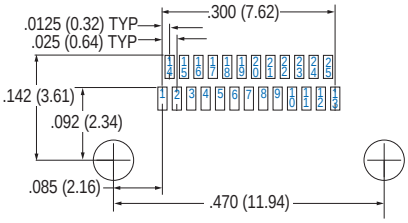
9 Contacts



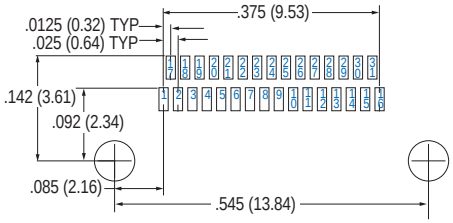
15 Contacts



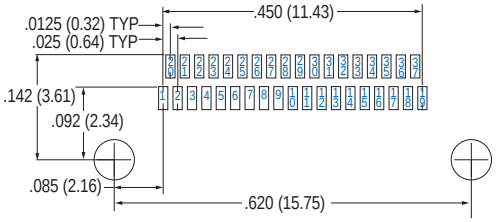
21 Contacts



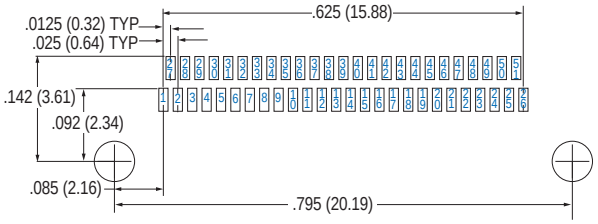
25 Contacts



31 Contacts

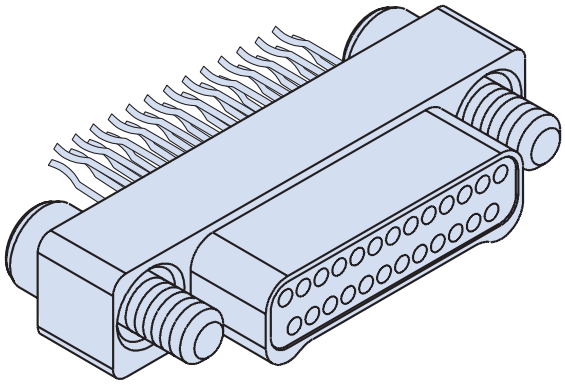


37 Contacts



51 Contacts

891-014 and -015
Series 89 Nanominiature Connectors
Straddle Mount



Straddle Mount PCB Nano Connectors feature gold alloy TwistPin contacts, offering premium performance and reliability for demanding applications. Available with #0-80 female threads, or with jackscrews for use with flexible circuits.

Pre-Tinned PC Tails are coated with Sn63Pb37 tin-lead for excellent solderability.

Choose Aluminum, Titanium or Stainless Steel Shells in seven layouts from 9 to 51 contacts. Complies to the requirements of MIL-DTL-32139. These connectors are intermateable with any corresponding Glenair Series 891 Double row metal shell nanominiature connector.

HOW TO ORDER STRADDLE MOUNT PCB CONNECTORS

Series	Insert Arrangement/ Contact Type	Shell Material and Finish	Termination Type	Hardware
891-014 Plug, Pin Contacts, Double Row, Straddle Mount Nanominiature **891-015** Receptacle, Socket Contacts, Double Row, Straddle Mount Nanominiature	Plugs (891-014) **9P** **15P** **21P** **25P** **31P** **37P** **51P** Receptacles (891-015) **9S** **15S** **21S** **25S** **31S** **37S** **51S**	**A1** Aluminum Shell, Cadmium Plating **A2** Aluminum Shell, Electroless Nickel Plating **T** Titanium Shell, Unplated **S** Stainless Steel Shell, Passivated	**STM** "**ST**raddle **M**ount"	**J** Jackscrew, #0-80 **T** #0-80 Female Thread
Sample Part Number				
891-015	**— 37S**	**A1**	**—STM**	**T**

MATERIALS AND FINISHES

Connector Shell	See Ordering Information
Insulator	Liquid Crystal Polymer (LCP),30% Glass-Filled
Contacts	Gold Alloy, Unplated
Hardware	300 Series Stainless Steel
PC Tails	#30 (.010 Dia.) Copper Wire, Solder Dipped
PCB Trays	Liquid Crystal Polymer (LCP) or Epoxy
Encapsulant	Epoxy

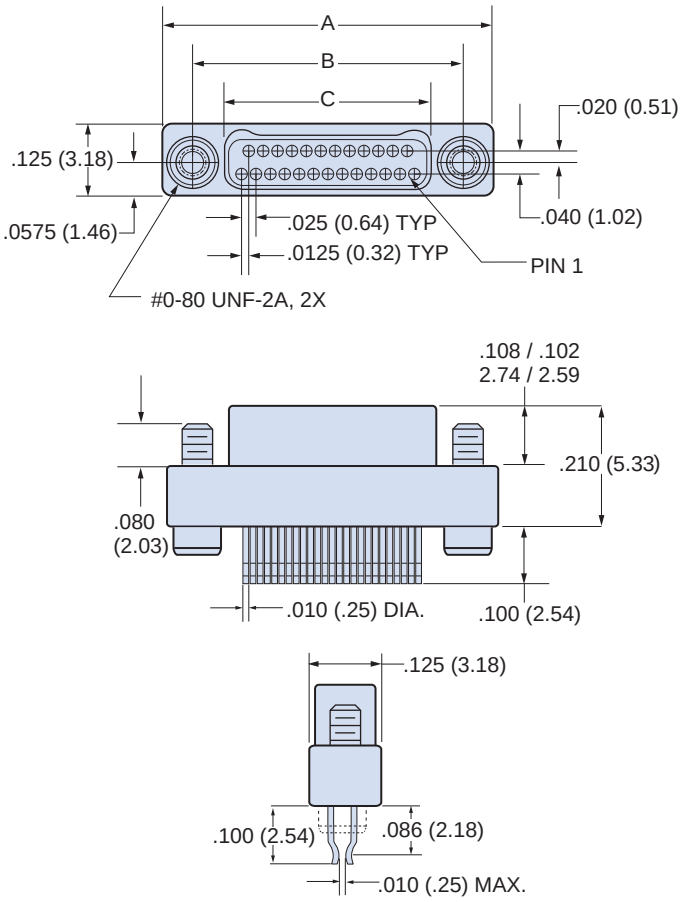
SPECIFICATIONS

Durability	200 Cycles Minimum
Current Rating	1 AMP Maximum
Voltage Rating (DWV)	300 VAC RMS Sea Level
Insulation Resistance	5000 Megohms Minimum
Operating Temperature	-55° C. to +125° C.
Contact Resistance	71 mV. @1 AMP #30 AWG Wire
Thermal Vacuum Outgassing	1.0% Max TML, 0.1% Max. VCM

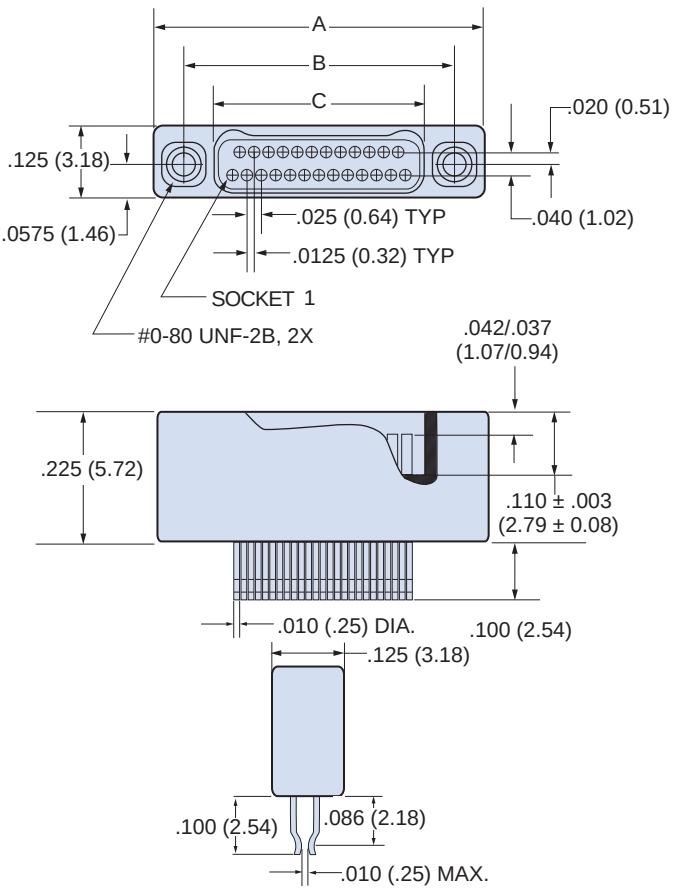
891-014 and -015
Series 89 Nanominiature Connectors
Straddle Mount

STRADDLE MOUNT NANO DIMENSIONS

Plug (Pin) Connectors

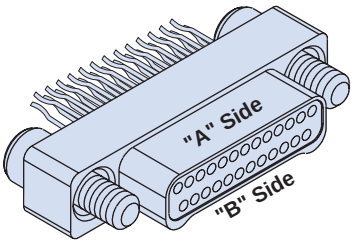


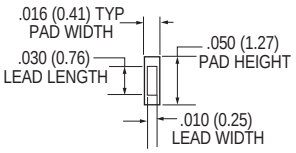
Receptacle (Socket) Connectors



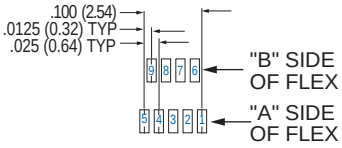
Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

STRADDLE MOUNT BOARD LAYOUT — 891-014 PLUGS (PIN CONTACTS)

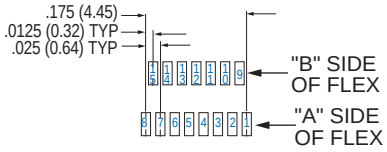




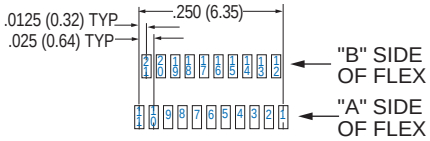
PAD/ FOOTPRINT DETAIL



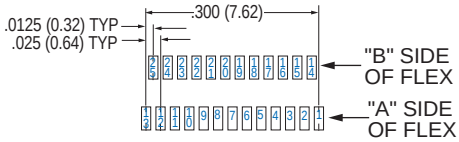
9 Contacts



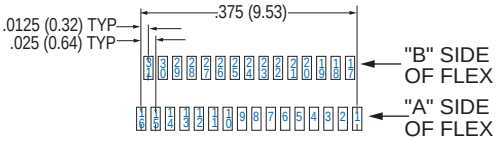
15 Contacts



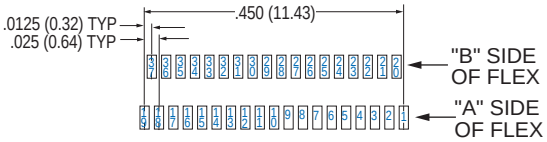
21 Contacts



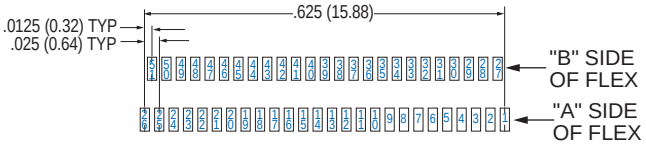
25 Contacts



31 Contacts



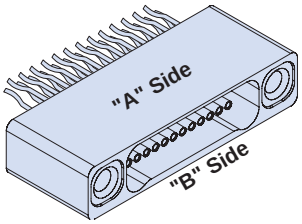
37 Contacts

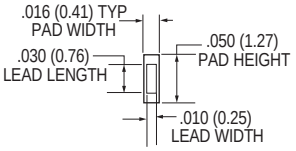


51 Contacts

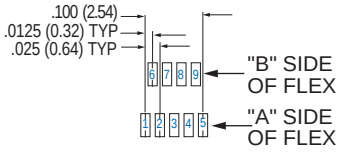
891-014 and -015
Series 89 Nanominiature Connectors
Straddle Mount

STRADDLE MOUNT BOARD LAYOUT—891-015 RECEPTACLES

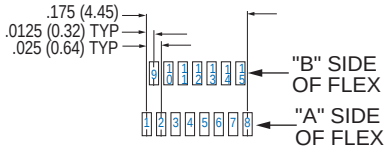




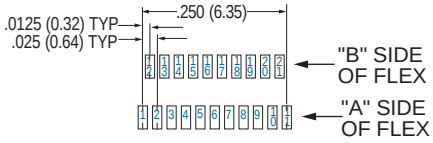
PAD/ FOOTPRINT DETAIL



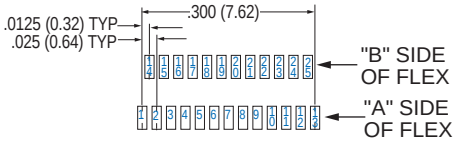
9 Contacts



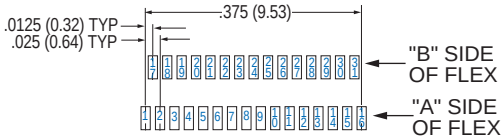
15 Contacts



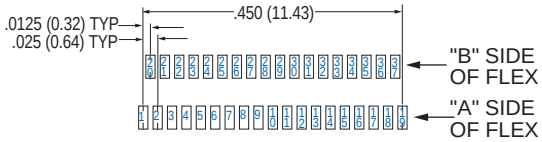
21 Contacts



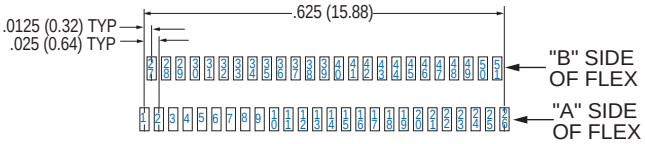
25 Contacts



31 Contacts

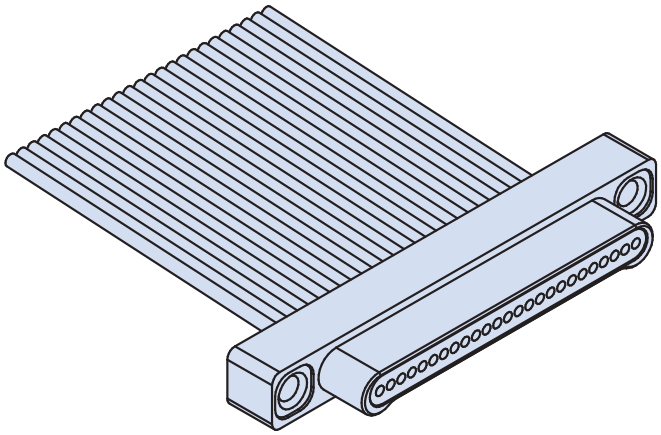


37 Contacts



51 Contacts

MIL-DTL-32139/01 and /02
Nanominiature Connectors
Single Row Insulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium performance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC.

TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

TABLE 1 M32139 WIRE TYPE

Wire Type	Specification	Color	Length Inches (mm)
01	NEMA HP3-ETXBBB	White	6 (152)
02	NEMA HP3-ETXBBB	White	18 (457)
03	NEMA HP3-ETXBBB	White	36 (914)
04	NEMA HP3-ETXBBB	10 Color(2)	6 (152)
05	NEMA HP3-ETXBBB	10 Color(2)	18 (457)
06	NEMA HP3-ETXBBB	10 Color(2)	36 (914)
07	M22759/33-30	White	6 (152)
08	M22759/33-30	White	18 (457)
09	M22759/33-30	White	36 (914)
10	M22759/33-30	10 Color(2)	6 (152)
11	M22759/33-30	10 Color(2)	18 (457)
12	M22759/33-30	10 Color(2)	36 (914)
13	04047-30A(1)	White	6 (152)
14	04047-30A(1)	White	18 (457)
15	04047-30A(1)	White	36 (914)
16	04047-30A(1)	10 Color(2)	6 (152)
17	04047-30A(1)	10 Color(2)	18 (457)
18	04047-30A(1)	10 Color(2)	36 (914)

Notes:
1. DSCC 04047 is a special composite wire subject to additional cost and longer delivery.
2. Color coding per MIL-STD-681, System 1, except using ten solid colors in repeating sequence.

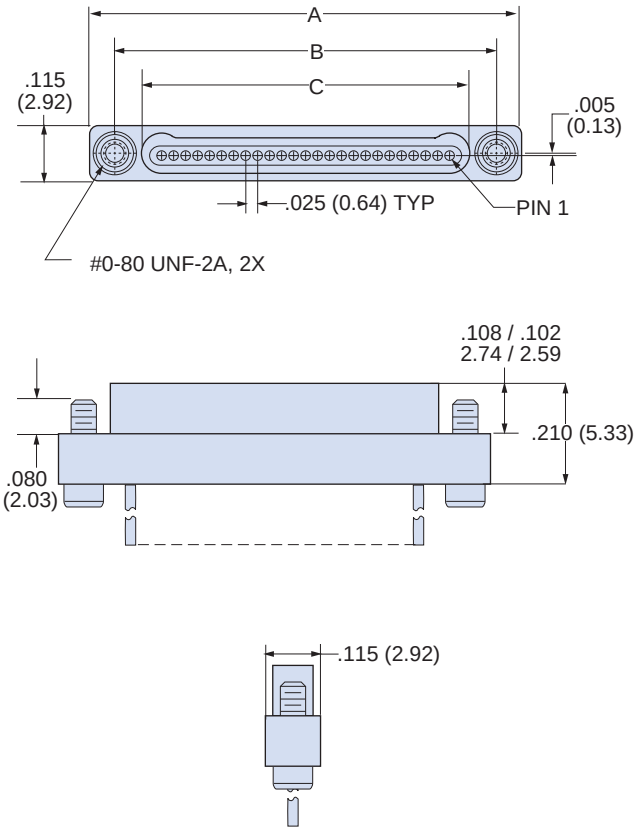
HOW TO ORDER SINGLE ROW MIL-DTL-32139 NANOMINIATURE CONNECTORS

Series	Insert Arrangement	Wire Type	Hardware	Shell Material and Finish	Space Class
M32139/01 Plug, Pin Contacts, Single Row, Nanominiature **M32139/02** Receptacle, Socket Contacts, Single Row, Nanominiature	**A** – 9 contacts **B** – 15 contacts **C** – 21 contacts **D** – 25 contacts **E** – 31 contacts **F** – 37 contacts **G** – 51 contacts	**See Table 1** All wire types specify 30 AWG stranded wire.	**S** Jackscrew M32139/03 Plug Only **T** Threaded Hole M32139/04 Receptacle Only	**C** Aluminum, Cadmium Finish (Not for Space) **N** Aluminum, Electroless Nickel Finish **S** Stainless Steel, Passivated Finish **T** Titanium (No Finish)	**(Blank)** for non-space applications **S** Space Grade
Sample Part Number					
M32139/01	**-A**	**01**	**S**	**N**	**S**

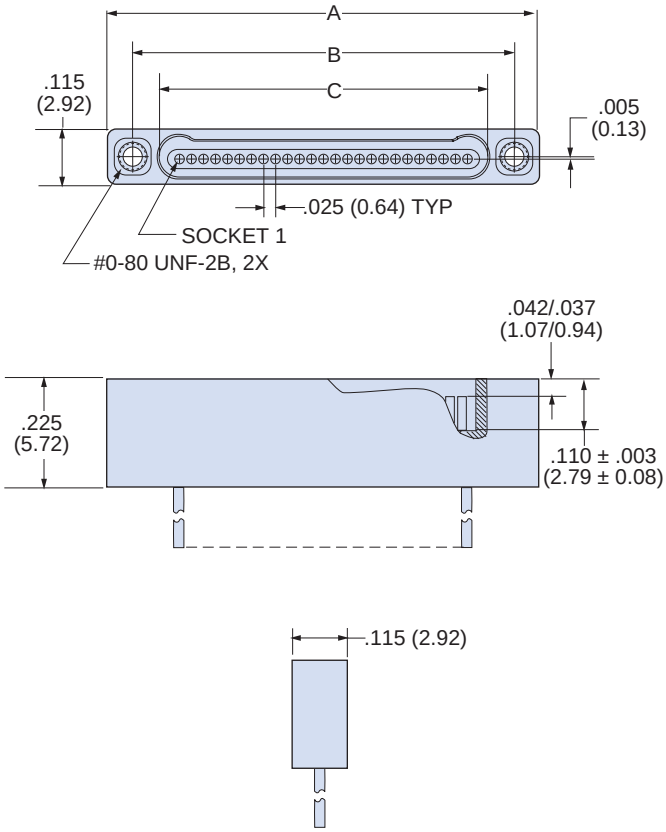
MIL-DTL-32139/01 and /02
Nanominiature Connectors
Single Row Insulated Wire Pigtail Assemblies

SINGLE ROW NANO PIGTAIL DIMENSIONS

Plug (Pin) Connectors

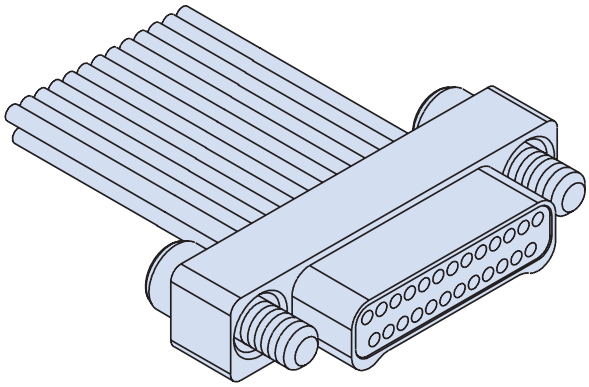


Receptacle (Socket) Connectors



Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.500	12.70	.395	10.03	.284	7.21
9S	.500	12.70	.395	10.03	.285	7.24
15P	.650	16.51	.545	13.84	.434	11.02
15S	.650	16.51	.545	13.84	.435	11.05
21P	.800	20.32	.695	17.65	.584	14.83
21S	.800	20.32	.695	17.65	.585	14.86
25P	.900	22.86	.795	20.19	.684	17.37
25S	.900	22.86	.795	20.19	.685	17.40
31P	1.050	26.67	.945	24.00	.834	21.18
31S	1.050	26.67	.945	24.00	.835	21.21
37P	1.200	30.48	1.095	27.81	.984	24.99
37S	1.200	30.48	1.095	27.81	.985	24.02
51P	1.550	39.37	1.445	36.70	1.334	33.88
51S	1.550	39.37	1.445	36.70	1.335	33.91

MIL-DTL-32139/03 and /04
Nanominiature Connectors
Double Row Insulated Wire Pigtail Assemblies



Glenair's Pigtail Nano Connectors feature gold alloy TwistPin contacts. Contacts are precision-crimped to insulated, stranded wire. These nanomimiature connectors offer premium performance and reliability for demanding applications. Contact spacing is .025 inches. 1 amp current rating, DWV rating 300 volts AC.

TwistPin Contact System assures premium performance in demanding environments. The gold/platinum alloy contacts will stand up to years of exposure without corrosion.

Typical Applications include UAV's, satellites, missile systems and geophysical instruments.

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04	NEMA HP3-ETXBBB	10 Color(2)	6 (152)
05	NEMA HP3-ETXBBB	10 Color(2)	18 (457)
06	NEMA HP3-ETXBBB	10 Color(2)	36 (914)
07	M22759/33-30	White	6 (152)
08	M22759/33-30	White	18 (457)
09	M22759/33-30	White	36 (914)
10	M22759/33-30	10 Color(2)	6 (152)
11	M22759/33-30	10 Color(2)	18 (457)
12	M22759/33-30	10 Color(2)	36 (914)
13	04047-30A(1)	White	6 (152)
14	04047-30A(1)	White	18 (457)
15	04047-30A(1)	White	36 (914)
16	04047-30A(1)	10 Color(2)	6 (152)
17	04047-30A(1)	10 Color(2)	18 (457)
18	04047-30A(1)	10 Color(2)	36 (914)

Notes:
1. DSCC 04047 is a special composite wire subject to additional cost and longer delivery.
2. Color coding per MIL-STD-681, System 1, except using ten solid colors in repeating sequence.

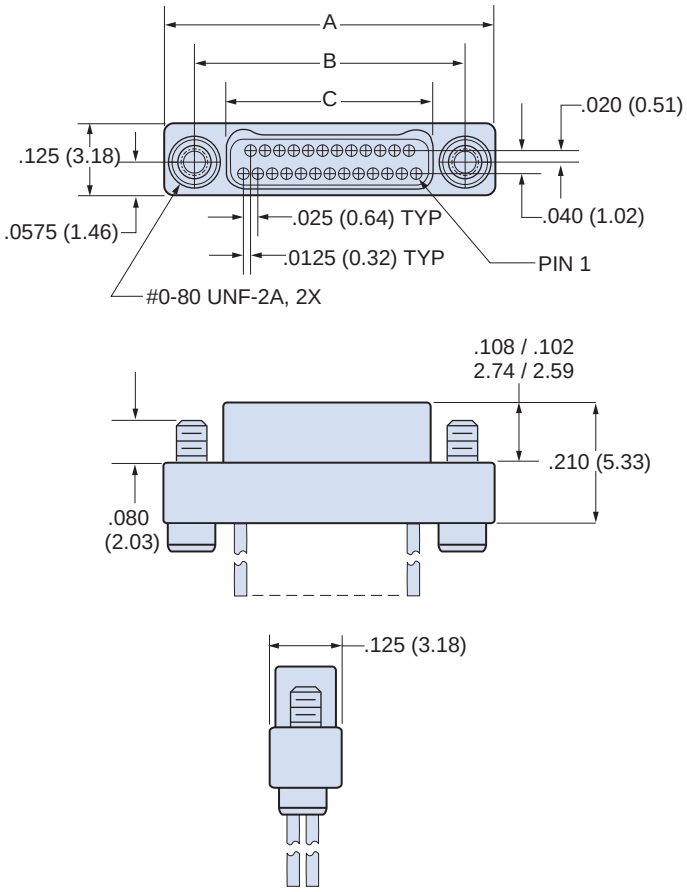
HOW TO ORDER DOUBLE ROW MIL-DTL-32139 NANOMINIATURE CONNECTORS

Series	Insert Arrangement	Wire Type	Hardware	Shell Material and Finish	Space Class
M32139/03 Plug, Pin Contacts, Double Row, Nanominiature **M32139/04** Receptacle, Socket Contacts, Double Row, Nanominiature	**A** – 9 contacts **B** – 15 contacts **C** – 21 contacts **D** – 25 contacts **E** – 31 contacts **F** – 37 contacts **G** – 51 contacts	**See Table I** All wire types specify 30 AWG stranded wire.	**S** Jackscrew M32139/03 Plug Only **T** Threaded Hole M32139/04 Receptacle Only	**C** Aluminum, Cadmium Finish (Not for Space) **N** Aluminum, Electroless Nickel Finish **S** Stainless Steel, Passivated Finish **T** Titanium (No Finish)	**(Blank)** for non-space applications **S** Space Grade
Sample Part Number					
M32139/03	**-A**	**01**	**S**	**N**	**S**

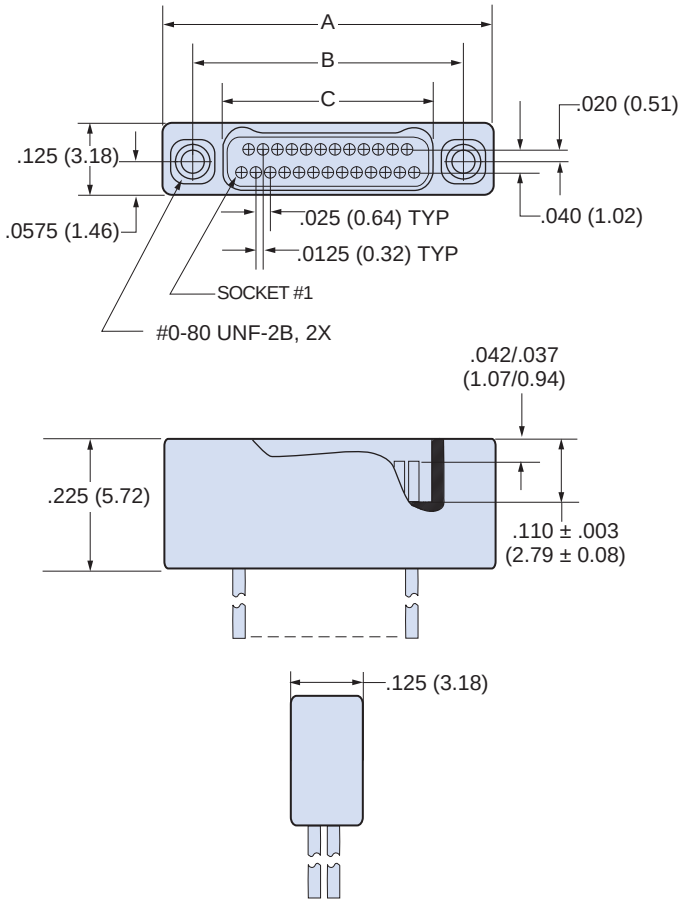
MIL-DTL-32139/03 and /04
Nanominiature Connectors
Double Row Insulated Wire Pigtail Assemblies

DOUBLE ROW NANO PIGTAIL DIMENSIONS

Plug (Pin) Connectors



Receptacle (Socket) Connectors



Layout	A		B BSC.		C BSC.	
	In. ± .005	mm. ± 0.13	In.	mm.	In.	mm.
9P	.375	9.52	.270	6.86	.160	4.06
9S	.375	9.52	.270	6.86	.163	4.14
15P	.450	11.43	.345	8.76	.235	5.97
15S	.450	11.43	.345	8.76	.238	6.04
21P	.525	13.33	.420	10.67	.310	7.87
21S	.525	13.33	.420	10.67	.313	7.95
25P	.575	14.60	.470	11.94	.360	9.14
25S	.575	14.60	.470	11.94	.363	9.22
31P	.650	16.51	.545	13.84	.435	11.05
31S	.650	16.51	.545	13.84	.438	11.12
37P	.725	18.41	.620	15.75	.510	12.95
37S	.725	18.41	.620	15.75	.513	13.03
51P	.900	22.86	.795	20.19	.685	17.40
51S	.900	22.86	.795	20.19	.688	17.47

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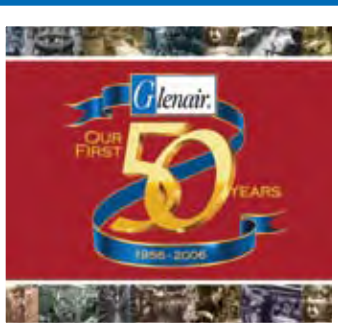

In addition to over a dozen product line catalogs, the CD includes a powerful part number development program that takes all the pain and confusion out of ordering interconnect components. An easy-to-use inventory search program provides ready access to 60,000 MIL-STD and commercial part numbers.

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Connector Covers, Caps and Boots
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D38999 Fiber Optic Connectors and Termini
M28876 Fiber Optic Connectors and Termini
MIL-DTL-38999 Hermetic Connectors
MIL-C-28840 Shipboard Connectors
Series 80 “Mighty Mouse” Connectors
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Series 22 Geo-Marine® Connectors
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