

SERIES 28

HiPer-D Connectors and Accessories

HIGH-PERFORMANCE M24308 INTERMATEABLE D-SUB CONNECTORS

OCTOBER 2013

SERIES 28

HiPer-D

The MIL-DTL-24308 intermateable and intermountable connector with advanced environmental and EMI shielding performance



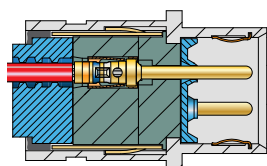
The Glenair Series 28 HiPer-D connector is intermateable and intermountable with standard M24308 type D-Subs, and meets the need for improved performance in hostile environments. Unlike standard M24308 connectors with stamped steel shells, the HiPer-D is precision-machined from aluminum or stainless steel. The dielectric inserts are made with thermoset epoxy for improved resistance to chemicals and are capable of withstanding 200°C continuous operating temperature. Aerospace-grade fluorosilicone grommets and face seals provide watertight sealing. Integrated grounding fingers provide superior electromagnetic compatibility. Best of all, the HiPer-D is available in every standard and high-density M24308 layout as well as combo layouts integrating power and shielded contacts. Like all Glenair high-performance solutions, HiPer-D is stocked for immediate same-day shipment.



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HiPer-D Connectors and Accessories

Product Selection Guide



Introduction and Technical Reference

HiPer-D product facts • shell plating options • materials and finishes • product specification • space grade information

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HiPer-D Standard and High Density Connectors

Crimp and PC tail environmental connectors with standard density #20 contacts and high density #22 contacts

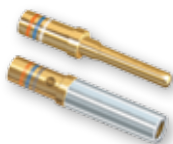
B



HiPer-D Combo Connectors

Crimp and PC tail environmental connectors with #20 and #8 contacts for signal, power and RF applications

C



HiPer-D Contacts and Tools

Signal contacts, power contacts, coaxial contacts, crimp tools, insertion/extraction tools

D



HiPer-D Backshells and Accessories

EMI backshells, environmental backshells, protective covers, Sav-Con® connector savers, gender changers, hardware kits, and heatshrink boots

E



HiPer-D Panel Cutouts and Printed Circuit Board Footprints

Panel mounting dimensions and PC board mounting hole patterns for vertical, right angle signal and combo connectors

F

Product Features

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About the HiPer-D

The HiPer-D connector is a M24308-type D-Subminiature connector with superior design features. Unlike standard M24308 connectors with stamped steel shells, the HiPer-D connector features a one-piece machined shell. Rated for 200°C continuous operating temperature, the HiPer-D features thermoset epoxy insulators. Aerospace grade fluorosilicone grommets and face seals provide environmental protection. The HiPer-D is intermateable, intermountable and interchangeable with standard M24308 D-Sub connectors. A ground spring offers enhanced EMI/RFI protection.



Applications

- Power Controllers
- Phased Array Radar
- Video
- Data Recorders
- Space Vehicles
- Unmanned Vehicles
- Avionics
- Missiles

Product Features

- Environmental, crimp removable rectangular connector
- Advanced temperature, vibration and EMC/ electrical performance
- M24308/D-Sub intermateable
- Enhanced panel mounting options
- Cadmium-free plating choices
- Available in all 11 "standard" and 20 "combo" insert arrangements
- Standard Density (#20) and High Density (#22) layouts
- Size #8 Power and coax contacts
- EMI spring
- High temperature thermoset epoxy insulators
- Watertight sealing
- Rugged machined one-piece shell
- Optional guide pins for blind mating

Enhanced Panel Mount Features

HiPer-D connectors with O-ring and threaded mounting holes for watertight panel attachment. Guide pins are available for blind mate applications.



Combo HiPer-D

HiPer-D with mixed size #8 and size #20 contacts for signal, power and RF applications



Improved EMI Performance

HiPer-D pin connectors with ground spring for consistent mating forces and low shell-to-shell resistance.



Improved Board Mount Features

HiPer-D PCB connectors feature threaded board attachment holes, integral standoffs and an EMI shroud on right angle tails.

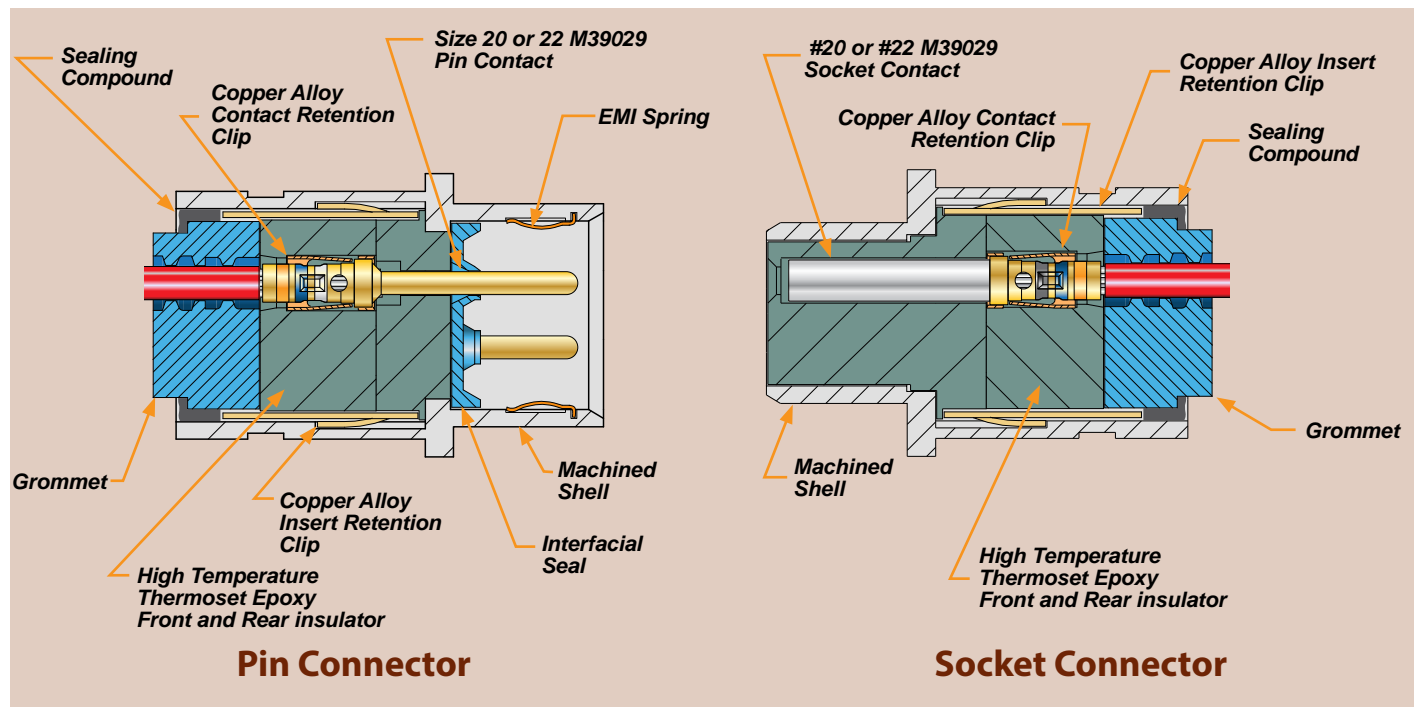


EMI backshells

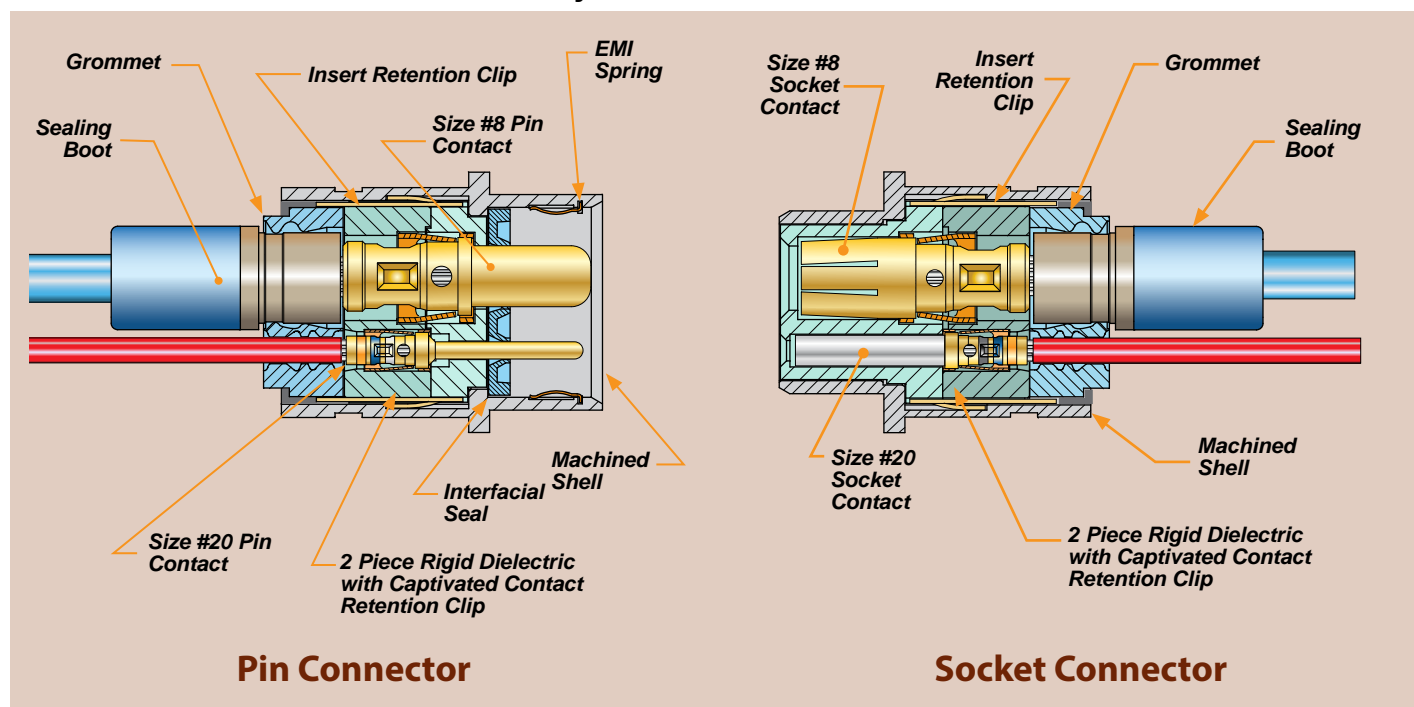
HiPer-D backshells are designed to optimize EMI performance and save weight.



Cutaway View - Standard and High Density



Cutaway View - Combo HiPer-D



ABOUT SERIES 28 HIPER-D SHELL PLATING OPTIONS



HiPer-D connectors are available with aluminum or stainless steel shells, plated with a variety of finishes to meet every application. These options include high performance cadmium-free finishes. The United States Department of Defense (DOD) has mandated the elimination of cadmium from DOD weapons systems because of toxicity concerns. The European Union has also restricted the use of cadmium on electronics equipment (RoHS).

In this catalog's ordering information you will find five preferred material and finish options: electroless nickel, yellow chromate over cadmium, nickel-PTFE, black zinc-nickel and passivated stainless steel. The table below shows selected additional options that are also available on any Series 28 HiPer-D connector. Glenair offers the industry's widest selection of shell material and plating options with no minimum order quantity or setup charge.

HiPer-D Aluminum Shell Plating Codes

Shell Plating	Glenair Plating Code	Salt Fog (Hours)	RoHS Compliant	Conductivity	Typical Applications
Electroless Nickel	ME	96	Yes	Excellent	Space vehicles, missiles, avionics, unmanned vehicles, instrumentation. Corresponds to MIL-DTL-24308 Class K.
Nickel-PTFE	MT	500	Yes	Excellent	Harsh environment, soldier systems, communications equipment. Corresponds to MIL-DTL-24308 Code T.
Zinc-Nickel with Black Chromate	ZR	500	Yes	Good	Harsh environment, soldier systems. Corresponds to MIL-DTL-24308 Code K.
Cadmium with Olive-Drab Chromate	NF	500	No	Excellent	Harsh environment, military equipment.
Cadmium with Yellow Chromate	JF	500	No	Excellent	General purpose military equipment. Comparable to MIL-DTL-24308 Code F.
Black Anodize	C	336	Yes	Non-Conductive	Applications where EMI shielding is not required.
Gold	Z2	48	Yes	Excellent	Space. Corresponds to M24308 Class M.
Chem Film	E	48	No	Excellent	Avionics
Stainless Steel, Electroless Nickel	ZM	500	Yes	Excellent	Extreme environments where stainless steel is preferred for strength, corrosion resistance, and where high conductivity is desired.
Stainless Steel, Passivated	Z1	500	Yes	Good	Extreme environments where stainless steel is preferred for strength, corrosion resistance. Corresponds to MIL-DTL-24308 Class P.

Materials and Finishes

Description	Material	Finish
Contacts	Copper Alloy	Gold (50 microin.) over nickel
Socket Contact Hood (Size 20, 22)	Stainless steel	Passivated
Shell	Aluminum Alloy or stainless steel	See ordering information
Insulators	Thermoset epoxy resin per ASTM D-5948	None
Interfacial Seal	Fluorosilicone	None
Grommet	Fluorosilicone	None
EMI Spring	Copper alloy	Electroless nickel
Contact retention clips	Copper alloy	None
Insert retention clip	Copper alloy	None
Adhesive/Sealant	RTV silicone	None
Hardware	Stainless steel (300 series)	Passivated
O-ring	Fluorosilicone	None

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Product Specification

Description	Requirement	Procedure																																	
ELECTRICAL																																			
Contact Resistance	SAE AS39029 Table V <table><tr><th>Max Wire Size</th><th>Test Current</th><th>Voltage Drop</th></tr><tr><td>8</td><td>46</td><td>26</td></tr><tr><td>10</td><td>33</td><td>33</td></tr><tr><td>12</td><td>23</td><td>42</td></tr><tr><td>14</td><td>17</td><td>40</td></tr><tr><td>16</td><td>13</td><td>49</td></tr><tr><td>20</td><td>7.5</td><td>55</td></tr><tr><td>22</td><td>5</td><td>73</td></tr><tr><td>24</td><td>3</td><td>45</td></tr><tr><td>26</td><td>2</td><td>52</td></tr><tr><td>28</td><td>1.5</td><td>54</td></tr></table>	Max Wire Size	Test Current	Voltage Drop	8	46	26	10	33	33	12	23	42	14	17	40	16	13	49	20	7.5	55	22	5	73	24	3	45	26	2	52	28	1.5	54	EIA-364-06 IEC 60512-2-1 Test current in amperes. Voltage drop in milli-volts. Silver-coated copper wire, +25°C.
Max Wire Size	Test Current	Voltage Drop																																	
8	46	26																																	
10	33	33																																	
12	23	42																																	
14	17	40																																	
16	13	49																																	
20	7.5	55																																	
22	5	73																																	
24	3	45																																	
26	2	52																																	
28	1.5	54																																	
Low Level Contact Resistance	<table><tr><th>Wire Size</th><th>Max. Milliohms</th></tr><tr><td>20</td><td>9</td></tr><tr><td>22</td><td>15</td></tr><tr><td>24</td><td>20</td></tr><tr><td>26</td><td>31</td></tr><tr><td>28</td><td>50</td></tr></table>	Wire Size	Max. Milliohms	20	9	22	15	24	20	26	31	28	50	EIA-364-23 100 milli-amperes maximum and 20 milli-volts maximum open circuit voltage																					
Wire Size	Max. Milliohms																																		
20	9																																		
22	15																																		
24	20																																		
26	31																																		
28	50																																		
Insulation Resistance	5000 megohms minimum	EIA-364-21 IEC-60512-3-1 500 volts DC ± 50 volts. Test between adjacent contacts and contacts to shell.																																	

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Description	Requirement		Procedure
Dielectric Withstanding Voltage	No breakdown or flashover		EIA-364-20 IEC-60512-4-1 Sea level AC RMS 50 or 60 Hz. One minute dwell. 1000 volts
Current Rating	Contact Size	Max Current	EIA-364-70 Method 1 IEC-60512-5 Test 9b
	8	40	
	20	7.5	
	22	5	
Shell-to-Shell Resistance (connectors with ground springs)	2.5 milli-volt drop maximum		EIA-364-83 IEC-60512-2-6 Electroless nickel plated connectors.
Shielding Effectiveness	Frequency GHz	Min Attenuation (dB)	EIA-364-66 IEC-60512-23-3 Pin Connector with Optional Grounding Spring, Electroless nickel plated shells
	0.1	100	
	0.4	90	
	0.8	85	
	1.0	80	
	3.0	55	
	6.0	40	
	10.0	30	
MECHANICAL			
Water Immersion	No evidence of water penetration into mated connectors. No evidence of water penetration into an unmated panel mounted PCB receptacle. $\geq 100 \text{ M}\Omega$ insulation resistance.		MIL-STD-810F Method 512.4 1 meter immersion 1 hour
Air Pressure	No detectable moisture. $\geq 100 \text{ M}\Omega$ insulation resistance.		IEC-60512-7 Test 14b 0.4 bar overpressure 48 hours immersion at a depth of 150mm in 25° C tap water.
Ingress Protection	IP67 rating		IEC-60529
Vibration, Sine	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.		EIA-364-28 Test Condition IV IEC-60512-6-4 100 milliamp test current 254 mm/sec from 10-50 Hz; 1.5 mm double amplitude from 50-140 Hz, and 60 G from 140-2,000 Hz
Vibration, Random	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.		EIA-364-28 Test Condition VI Letter J IEC-60512-6-4 100 milliamp test current 50- 2,000 Hz 43.92 g RMS

Description	Requirement	Procedure
Mechanical Shock	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after shock test.	EIA-364-27 Condition D IEC-60512-6-3 3 shocks X 3 axes X 2 directions = 18 shocks 2941 m/s ² (300 g's), 3 ms, half-sine
Thermal Shock	No mechanical damage or loosening of parts. Following thermal shock, connector shall meet contact resistance, DWV, insulation resistance and shell-to-shell resistance requirements.	EIA-364-32 Test Condition IV IEC-60512-11-4 5 cycles consisting of -65° C 30 minutes, +25° C 5 minutes max., +200° C 30 minutes, +25° C 5 minutes max.
Humidity, Cyclic (Damp Heat, Cyclic) (Moisture Resistance)	No deterioration which will adversely affect the connector. 100 meg-ohms minimum insulation resistance during the final cycle. Following the recovery period, connectors shall meet contact resistance, shell-to-shell resistance and DWV requirements.	EIA-364-31 Condition B Method III IEC-60512-11-12 80-98% RH 10 cycles (10 days) +25° C to +65° C Step 7b vibration deleted. 24 hour recovery period.
21 Day Humidity (Damp heat, Long Term)	No deterioration which will adversely affect the connector. Following the drying period, connectors shall meet 100 meg-ohms minimum, contact resistance, shell-to-shell resistance, DWV, mating and un-mating requirements.	EIA-364-31 Condition B Method III IEC-60512-11-12 80-98% RH 10 cycles (10 days) +25° C to +65° C Step 7b vibration deleted. 24 hour recovery period.
Mechanical Durability, at Ambient Temperature	No deterioration which will adversely affect the connector after 500 cycles of mating and un-mating. Connectors shall meet contact resistance, insulation resistance, shell-to-shell resistance, DWV, and mating and un-mating force.	EIA-364-09 IEC-60512-5 Test 9a
Corrosion (Salt Mist)	No exposure of base metal. Connectors shall meet DWV and contact resistance requirements following the test.	EIA-364-26 IEC 60512-11-6 5% salt solution 35° C Unmated connectors Code ME: Electroless nickel 96 hours Code MT: Nickel-PTFE 500 hours Code JF: Cadmium 500 hours Code ZR: Zn-Ni 500 hours
Solderability, PC Tail Contacts	95% solder coverage. Smooth, bright and even finish.	EIA-364-52 Category 3 IEC-60512-12-1 IEC-68-2-20 Test Ta, method 1 8 hours steam aging prior to test 245° C 4-5 sec. dwell 10X magnification

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Description	Requirement	Procedure																					
Resistance To Soldering Heat	No damage to connector. Connectors shall meet insulation resistance and waterproof sealing requirements.	EIA-364-56 IEC-60512-12-5 Test 12e 260° C, 10 seconds (PC tail)																					
Impact, Cable Connectors	No impairment of function. Connector shall meet contact resistance, insulation resistance and waterproof sealing.	EIA-364-42 IEC-60512-5 Test 7b 1 meter, 8 drops																					
Fluid Immersion	No damage from immersion in various fuels and oils. Connector shall meet mating/un-mating force and dielectric withstanding voltage.	EIA-364-10																					
Altitude Immersion	No evidence of moisture on connector interface or contacts. Connector shall meet dielectric withstanding voltage.	EIA-364-03																					
Contact Retention	<table> <tr> <th>Contact Size</th><th>Min. Pounds</th><th>Min. Newtons</th></tr> <tr> <td>8</td><td>25</td><td>111</td></tr> <tr> <td>22</td><td>9</td><td>40</td></tr> <tr> <td>20</td><td>9</td><td>40</td></tr> </table>	Contact Size	Min. Pounds	Min. Newtons	8	25	111	22	9	40	20	9	40	EIA-364-29 .012 inch maximum displacement, both axial directions									
Contact Size	Min. Pounds	Min. Newtons																					
8	25	111																					
22	9	40																					
20	9	40																					
Contact Separation Force	<table> <tr> <th>Contact Size</th><th>Min. Ounces</th><th>Min. Newtons</th></tr> <tr> <td>22</td><td>0.5</td><td>0.14</td></tr> <tr> <td>20</td><td>0.7</td><td>0.19</td></tr> </table>	Contact Size	Min. Ounces	Min. Newtons	22	0.5	0.14	20	0.7	0.19	SAE AS39029												
Contact Size	Min. Ounces	Min. Newtons																					
22	0.5	0.14																					
20	0.7	0.19																					
Mating and Un-mating Force, connectors with size 20 or size 22 contacts	<table> <tr> <th>Shell Size</th><th>Min. Unmating</th><th>Max. Mating</th></tr> <tr> <td>1</td><td>0.75</td><td>10.0</td></tr> <tr> <td>2</td><td>1.00</td><td>17.0</td></tr> <tr> <td>3</td><td>1.75</td><td>28.0</td></tr> <tr> <td>4</td><td>2.50</td><td>39.0</td></tr> <tr> <td>5</td><td>3.25</td><td>49.0</td></tr> <tr> <td>6</td><td>4.50</td><td>65.0</td></tr> </table>	Shell Size	Min. Unmating	Max. Mating	1	0.75	10.0	2	1.00	17.0	3	1.75	28.0	4	2.50	39.0	5	3.25	49.0	6	4.50	65.0	EIA-364-13 Full complement of contacts 1 to 10 inches per minute travel rate
Shell Size	Min. Unmating	Max. Mating																					
1	0.75	10.0																					
2	1.00	17.0																					
3	1.75	28.0																					
4	2.50	39.0																					
5	3.25	49.0																					
6	4.50	65.0																					
Maximum Mating Force, combo HiPer-D connectors with size 8 and size 20 contacts	[(# of size 8 contacts) X 5.0 pounds] + [(# of size 20HD contacts) X .75 pounds] + [3.0 pounds]	EIA-364-13 Full complement of contacts 1 to 10 inches per minute travel rate																					
Magnetic Permeability	2 μ maximum.	EIA-364-54																					
Insert Retention	No dislocation of inserts from their original positions when subjected to an axial load of 60 pounds per square inch	EIA-364-35 Apply force at a rate of 10 pounds per square inch per second until specified pressure is reached.																					

Outgassing

- HiPer-D® connectors must be specially processed to meet ASTM E595 outgassing requirements.
- Modification codes are a convenient way to specify special outgassing bakeout or thermal vacuum outgassing.

Space flight equipment requires low-outgassing components in order to prevent degradation to optics and other sensitive instruments. The space industry has adopted a standardized test procedure, ASTM E595, to evaluate outgassing properties. In the ASTM test, material samples are heated to 125° C at a vacuum of 5×10^{-5} torr for 24 hours. The test sample is then weighed to calculate the Total Mass Loss (TML), which may not exceed 1.0% of the total initial mass. A collector plate is used to determine the Collected Volatile Condensable Material (CVCM), which may not exceed 0.1% of the total original specimen mass. HiPer-D® connectors contain nonmetallic materials such as rubber, plastic, adhesives and potting compounds which can give off gasses when subjected to a vacuum or high heat. Unless the connector is specially processed, the TML and CVCM can exceed allowable limits. Glenair is able to offer two bakeout processes which assure all materials comply with ASTM E595: a 48 hour oven bakeout at 175° C or a 24 hour thermal vacuum outgassing at 125° C. The table below shows suffix codes which specify outgassing processing.

Connector Material and Finish for Space Applications

- Cadmium and silver plating are prohibited in space.
- Specify electroless nickel plating or gold plating on connector shells

Some types of metals are prohibited from space flight. "Cadmium, zinc, chemically coated cadmium or zinc, or silver shall not be used as a connector or contact finish" (NASA EEE-INST-002 Instructions for EEE Parts Selection, Screening, Qualification, and Derating). NASA recommends electroless nickel or gold plating on connector shells and gold plating for contacts.

NASA Screening

- "Mission critical" connectors for space flight should undergo rigorous 100% final inspection.
- Modification codes are available to invoke special screening.

NASA recommends that connectors for space flight be specially screened. NASA EEE-INST-002 Instructions for EEE Parts Selection, Screening, Qualification, and Derating contains three levels of screening: level 1 for highest reliability, level 2 for high reliability and level 3 for standard reliability. Glenair suffix codes are available to invoke NASA screening. The table below shows these "Mod" codes which can also include outgassing processing.

NASA Screening Levels and Modification Codes			
NASA Screening Level	Special Screening Only	Special Screening Plus Outgassing Processing	
		48 Hour Oven Bake 175° C.	Thermal Vacuum Outgassing 24 hrs. 125° C.
Level 1 Highest Reliability	Mod 429B	Mod 429J	Mod 429C
Level 2 High Reliability	Mod 429	Mod 429K	Mod 429A
Level 3 Standard Reliability	(Use standard part number)	Mod 186	Mod 186M

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Residual Magnetism versus Magnetic Permeability

- HiPer-D connectors have a magnetic permeability rating of 2 μ
- 100% residual magnetism screening is available on request. NMB (200 gamma) is the preferred screening level.

Ever since the dawn of the Space Age, D-Subminiature connectors have been used in satellites and space vehicles. However, standard D-Subs with cadmium-plated steel shells are not suitable for space. The space industry, led by the Goddard Space Flight Center (GSFC), created specifications for gold-plated brass D-Sub connectors. These specs called for 100% residual magnetism screening, because D-Subs were sometimes used on magnetically sensitive instruments. NMB (200 gamma residual magnetism) and NMC (20 gamma) became the most widely specified levels of residual magnetism. Meanwhile, M83513 Micro-D connectors and various military circular connectors were also widely used on space programs. Unlike the D-Sub connector and its special residual magnetism screening, these other connectors simply had to meet a 2 μ magnetic permeability requirement. This requirement is easily met with conventional nickel-plated aluminum alloy connectors. Glenair's HiPer-D connector meets the 2 μ permeability rating now considered acceptable for most space instruments. However, if 100% residual magnetism screening is required, Glenair can furnish NMB-rated connectors. Please contact Glenair for ordering information.

Special Note on HiPer-D Material Outgassing Properties

- Standard HiPer-D connectors contain RTV silicones DC3140 and DC3145. These materials slightly exceed ASTM E595 outgassing limits, even after bakeout.
- Mod Codes 186 and 429 replace standard RTV with Dow Corning 6-1125 CV space-approved RTV.

Standard HiPer-D connectors contain RTV silicone sealants. Testing has shown that these materials can exceed outgassing limits even when specially baked or thermal vacuum outgassed. All space-grade HiPer-D connectors are manufactured with a special Dow Corning RTV specifically recommended for space flight. Whenever a space-grade modification code appears in the part number, the special RTV replaces the standard RTV. With this exception, a space-grade HiPer-D is identical to a standard part except for screening and/or outgassing processing. Modification codes 186 and 429 assure that the RTV meets outgassing requirements.

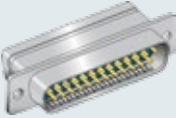
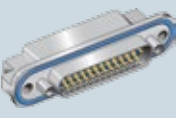
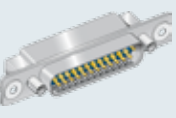
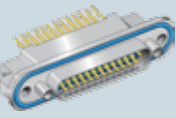

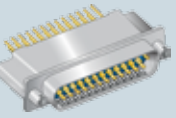
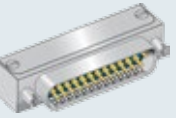
SERIES 28

HiPer-D Standard and High-Density Connectors


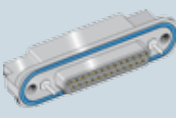
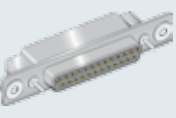
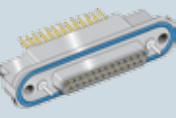

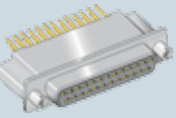
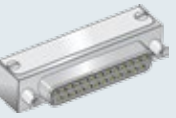
Product Selection Guide and Contact Arrangements



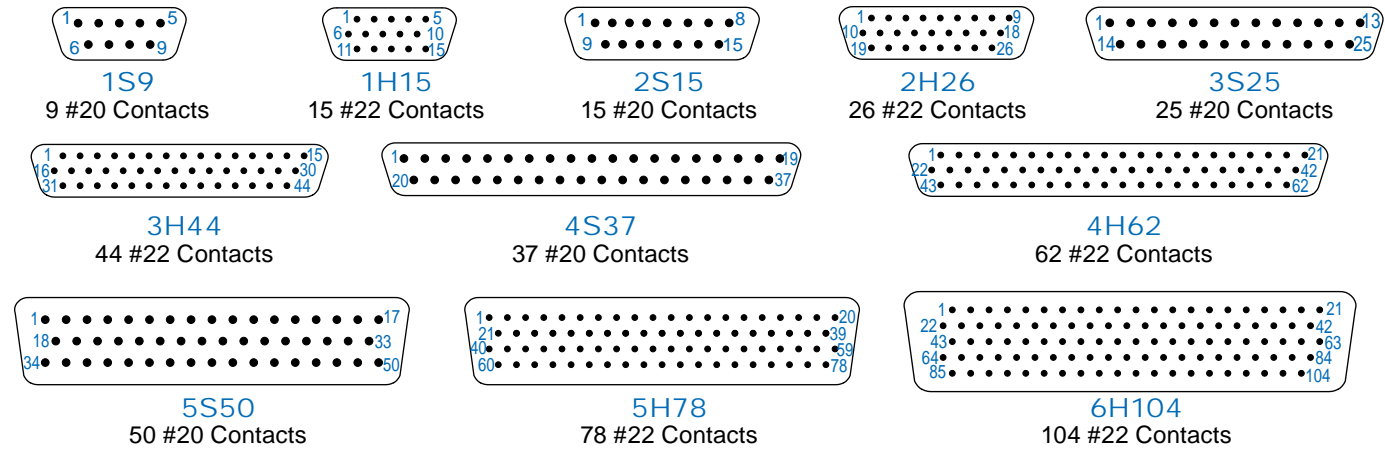
Pin Connector Product Selection Guide

CRIMP TERMINATION For Attaching Wires			PC BOARD With Panel O-Ring		PC BOARD Low Profile Flange	
Cable	Rear Panel Mount	Float Mount	Straight PCB	Right Angle PCB	Straight PCB	Right Angle PCB
						
280-018P Page B-4	280-020P Page B-8	280-030P Page B-28	280-022P Page B-12	280-024P Page B-16	280-026P Page B-20	280-028P Page B-24

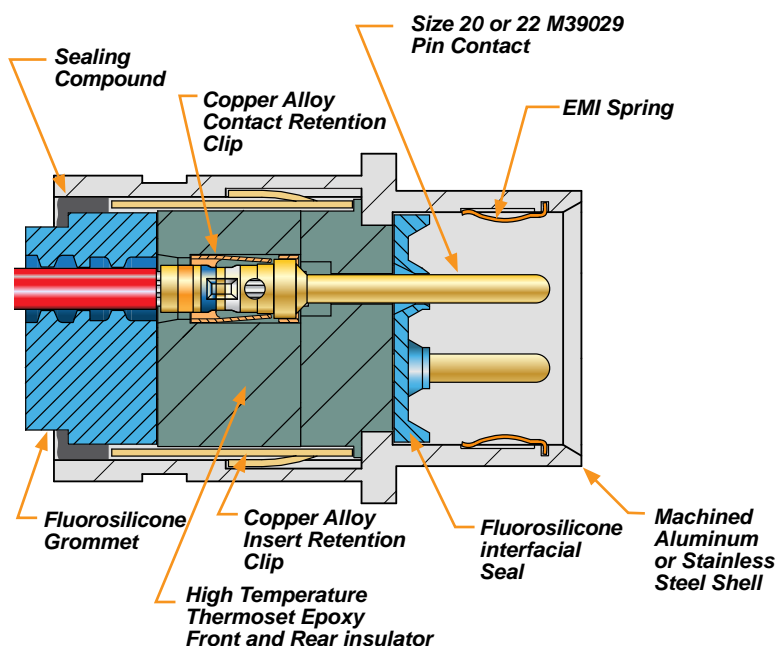
Socket Connector Product Selection Guide

CRIMP TERMINATION For Attaching Wires			PC BOARD With Panel O-Ring		PC BOARD Low Profile Flange	
Cable	Rear Panel Mount	Float Mount	Straight PCB	Right Angle PCB	Straight PCB	Right Angle PCB
						
280-019S Page B-6	280-021S Page B-10	280-031S Page B-30	280-023S Page B-14	280-025S Page B-18	280-027S Page B-22	280-029S Page B-26

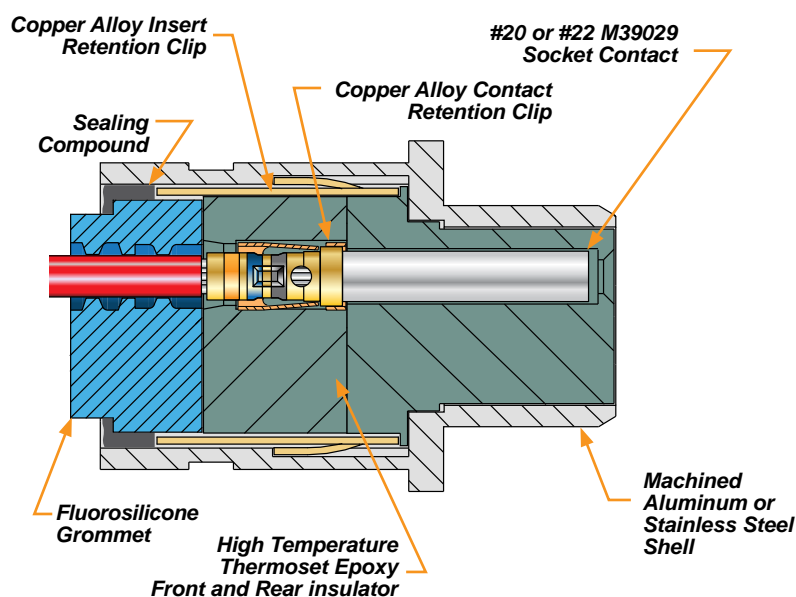
STANDARD AND HIGH DENSITY CONTACT ARRANGEMENTS (face view of pin connector)



PIN CONNECTOR



SOCKET CONNECTOR



HiPer-D: the ideal distributed replacement for big, bulky and expensive ARINC 600 type connectors.

Product Facts

- Environmental, crimp removable rectangular connector
- Advanced temperature, vibration and EMC/electrical performance
- M24308/D-Sub intermateable
- Fits panel and PCB footprint of M24308 D-Sub products
- Available in all 11 "standard" insert arrangements
- Standard Density (#20) and High Density (#22)
- EMI spring
- High temperature thermoset epoxy insulators
- Watertight sealing
- Rugged machined one-piece shell
- Optional guide pins for blind mating

Available configurations

- **Crimp termination** for attaching wire or cable: Standard cable, rear panel mount and float mount
- **Printed circuit board termination** for rear panel mounting: Straight and right angle
- **Low profile printed circuit board termination:** Straight and right angle

Materials and Finishes

Description	Material	Finish
Contacts	Copper Alloy	Gold (50 microin.) over nickel
Socket Contact Hood (Size 20, 22)	Stainless steel	Passivated
Shell	Aluminum Alloy or stainless steel	See ordering information
Insulators	Thermoset epoxy resin per ASTM D-5948	None
Interfacial Seal	Fluorosilicone	None
Grommet	Fluorosilicone	None
EMI Spring	Copper alloy	Electroless nickel
Contact retention clips	Copper alloy	None
Insert retention clip	Copper alloy	None
Sealant	RTV silicone	None
Hardware	Stainless steel (300 series)	Passivated
O-ring	Fluorosilicone	None

B

Product Specifications

Description	Requirement	Procedure																
Voltage Rating (DWV)	1000 VAC Sea Level	EIA-364-20																
Operating Temperature	-65° C. to +200° C.																	
Insulation Resistance	5000 megohms minimum	EIA-364-21																
Current Rating	Size #20 7.5A, #22 5A																	
Contact Resistance	<table><tr><th>Wire Size</th><th>Test Current</th><th>Millivolt Drop</th></tr><tr><td>20</td><td>7.5</td><td>55</td></tr><tr><td>22</td><td>5</td><td>73</td></tr><tr><td>24</td><td>3</td><td>45</td></tr></table>	Wire Size	Test Current	Millivolt Drop	20	7.5	55	22	5	73	24	3	45	EIA-364-06				
Wire Size	Test Current	Millivolt Drop																
20	7.5	55																
22	5	73																
24	3	45																
Low Level Contact Resistance	<table><tr><th>Wire Size</th><th>Max Milliohms</th></tr><tr><td>20</td><td>9</td></tr><tr><td>22</td><td>15</td></tr><tr><td>24</td><td>20</td></tr></table>	Wire Size	Max Milliohms	20	9	22	15	24	20	EIA-364-23								
Wire Size	Max Milliohms																	
20	9																	
22	15																	
24	20																	
Shell-to-Shell Resistance	2.5 milliohm max (ground spring required)	EIA-364-83																
Shielding Effectiveness	<table><tr><th>Freq. GHz</th><th>Min Attenuation (dB)</th></tr><tr><td>0.1</td><td>100</td></tr><tr><td>0.4</td><td>90</td></tr><tr><td>0.8</td><td>85</td></tr><tr><td>1.0</td><td>80</td></tr><tr><td>3.0</td><td>55</td></tr><tr><td>6.0</td><td>40</td></tr><tr><td>10.0</td><td>30</td></tr></table>	Freq. GHz	Min Attenuation (dB)	0.1	100	0.4	90	0.8	85	1.0	80	3.0	55	6.0	40	10.0	30	EIA-364-66 Electroless nickel plated shells with ground spring installed
Freq. GHz	Min Attenuation (dB)																	
0.1	100																	
0.4	90																	
0.8	85																	
1.0	80																	
3.0	55																	
6.0	40																	
10.0	30																	
Water Immersion, mated	1 hour immersion at a depth of 1 meter	MIL-STD-810F Method 512.4																
Ingress Protection Rating	IP67, mated connectors	IEC-60529																
Vibration, Sine	20 g's	EIA-364-28																
Vibration, Random	43 g's	EIA-364-28																
Mechanical Shock	300 g's	EIA-364-27																
Thermal Shock	-65° C. to +200° C.	EIA-364-32																
Humidity	10 cycles, 10 days, 25°C to 65°C	EIA-364-31																
Altitude Immersion	75,000 feet	EIA-364-03																
Fluid Immersion	No damage from solvents, oils, and fuels	EIA-364-10																
Magnetic Permeability	2 μ maximum	EIA-364-54																
Mechanical Durability	500 Mating Cycles	EIA-364-09																

HiPer-D Standard and High-Density Connectors



280-018P pin connectors with standard M24308 type mounting flange, crimp termination



HiPer-D pin connectors feature crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Gold-plated size #20 contacts conform to M39029/64-369 and accept #20 to #24 AWG wire. Gold-plated size #22 contacts conform to M39029/58-360 and accept #22 to #28 AWG wire. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

Ordering Information					
Sample Part Number	280-018P	3S25	ME	G	P
Basic Part Number	280-018P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

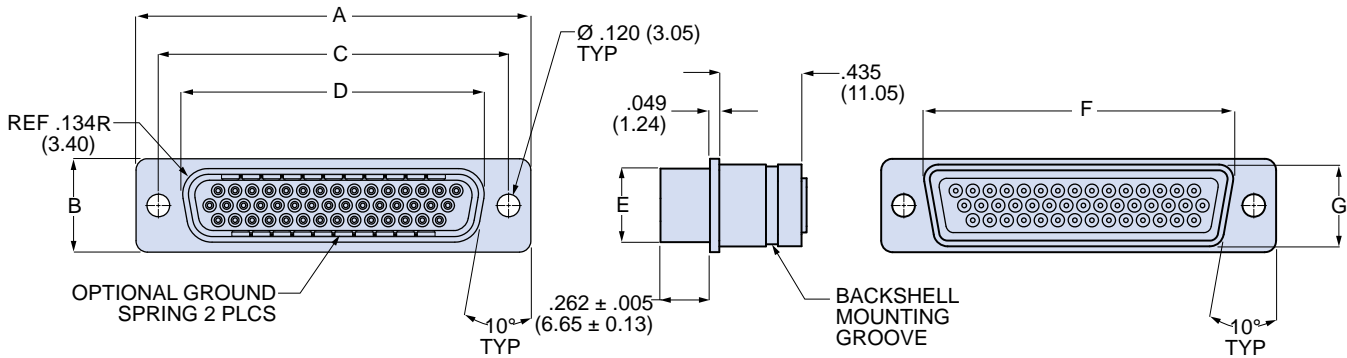
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet and Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

280-018P pin connectors with standard M24308 type mounting flange, crimp termination

280-018P DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Max.		G Max.	
	in	mm	in	mm	in.	mm	in	mm	in	mm	in.	mm	in.	mm
1	± .015	± 0.38	± .015	± 0.38	.984	24.99	.726	18.44	.389	9.88	.769	19.53	.432	10.97
2	± .015	± 0.38	± .015	± 0.38	1.312	33.32	1.054	26.77	.389	9.88	1.093	27.76	.432	10.97
3	± .015	± 0.38	± .015	± 0.38	1.852	47.04	1.594	40.49	.389	9.88	1.635	41.53	.432	10.97
4	± .015	± 0.38	± .015	± 0.38	2.500	63.50	2.242	56.95	.389	9.88	2.282	57.96	.432	10.97
5	± .015	± 0.38	± .015	± 0.38	2.406	61.11	2.139	54.33	.501	12.73	2.188	55.58	.544	13.82
6	± .015	± 0.38	± .015	± 0.38	2.500	63.50	2.272	57.71	.563	14.30	2.312	58.72	.606	15.39

NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-019S socket connectors with standard M24308 type mounting flange, crimp termination



HiPer-D socket connectors feature crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell and waterproof sealing. Gold-plated size #20 contacts conform to M39029/63-368 and accept #20 to #24 AWG wire. Gold-plated size #22 contacts conform to M39029/57-354 and accept #22 to #28 AWG wire. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone rear grommet meets IP67 immersion requirement. Shell has backshell attachment groove. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

Ordering Information				
Sample Part Number	280-019S	4H62	ME	L
Basic Part Number	280-019S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length			

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

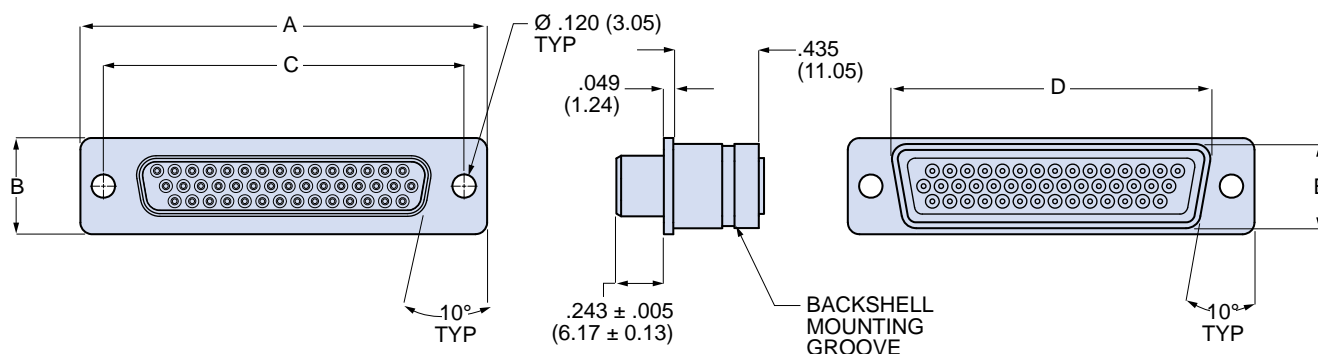
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

280-019S socket connectors with standard M24308 type mounting flange, crimp termination

280-019S DIMENSIONS



Shell Size	A		B		C Basic		D		E	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.769	19.53	.432	10.97
2	1.541	39.14	.494	12.55	1.312	33.32	1.093	27.76	.432	10.97
3	2.088	53.04	.494	12.55	1.852	47.04	1.635	41.53	.432	10.97
4	2.729	69.32	.494	12.55	2.500	63.50	2.282	57.96	.432	10.97
5	2.635	66.93	.605	15.37	2.406	61.11	2.188	55.58	.544	13.82
6	2.729	69.32	.668	16.97	2.500	63.50	2.312	58.72	.606	15.39

NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-020P panel mount pin connectors with O-ring mounting flange, crimp termination



Rear panel mount HiPer-D pin connectors feature crimp, rear-releaseable size #20 or #22 contacts and O-ring for a watertight panel seal. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell, environmental sealing and optional ground springs for improved resistance to electromagnetic interference. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the rear of the connector allow attachment of HiPer-D EMI backshells. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement (mated). 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

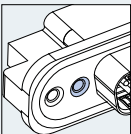
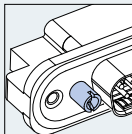
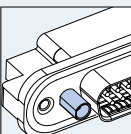
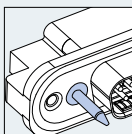
B

Ordering Information					
Sample Part Number	280-020P	3H44	JF	G	P
Basic Part Number	280-020P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

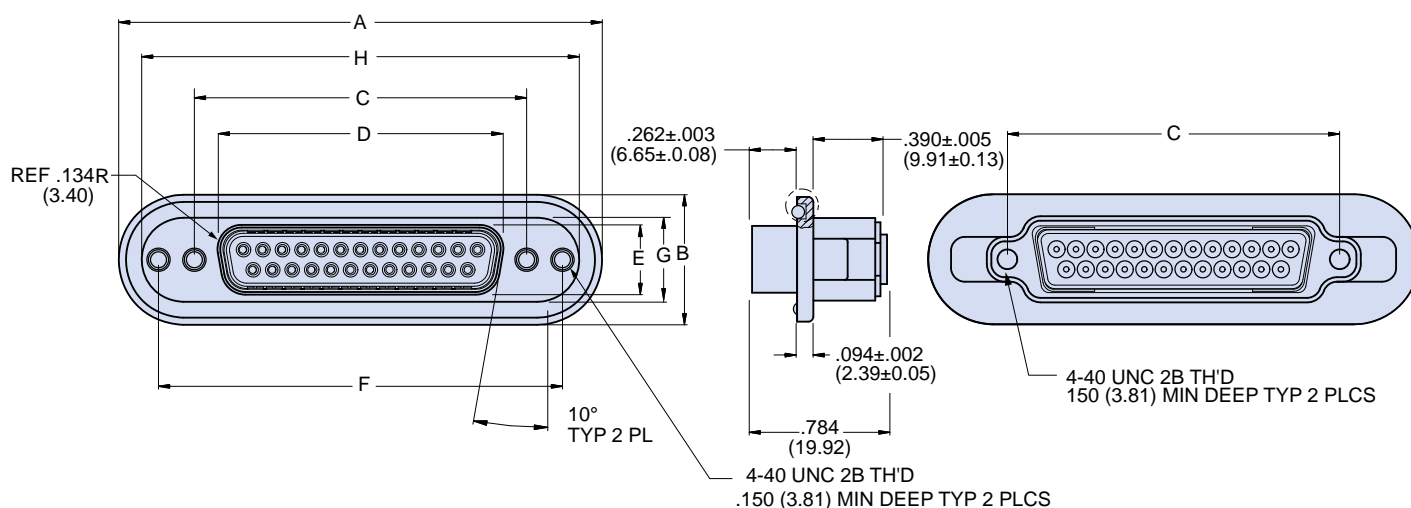
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Beryllium copper alloy
O-ring, Grommet, Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts 
B Female Guide Bushings 	G Male Guide Pins 

280-020P panel mount pin connectors with O-ring mounting flange, crimp termination

280-020P DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic		G		H	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38
1	1.865	47.37	.725	18.42	.984	24.99	.726	18.44	.389	9.88	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	1.054	26.77	.389	9.88	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	1.594	40.49	.389	9.88	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.242	56.95	.389	9.88	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.139	54.33	.501	12.73	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.272	57.71	.563	14.30	2.940	74.68	.643	16.33	3.127	79.43

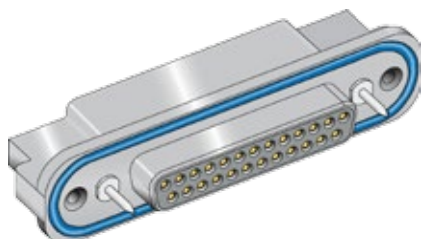
NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-021S panel mount socket connectors with O-ring mounting flange, crimp termination



Rear panel mount HiPer-D socket connectors feature crimp, rear-releaseable size #20 or #22 contacts and a flange O-ring for a watertight panel seal. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell and environmental sealing. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the rear of the connector allow attachment of HiPer-D EMI backshells. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Connector meets IP67 immersion requirement (mated) . 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

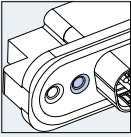
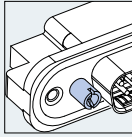
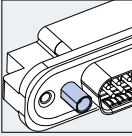
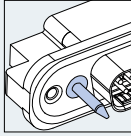
B

Ordering Information				
Sample Part Number	280-021S	2H26	Z2	G
Basic Part Number	280-021S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings			

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

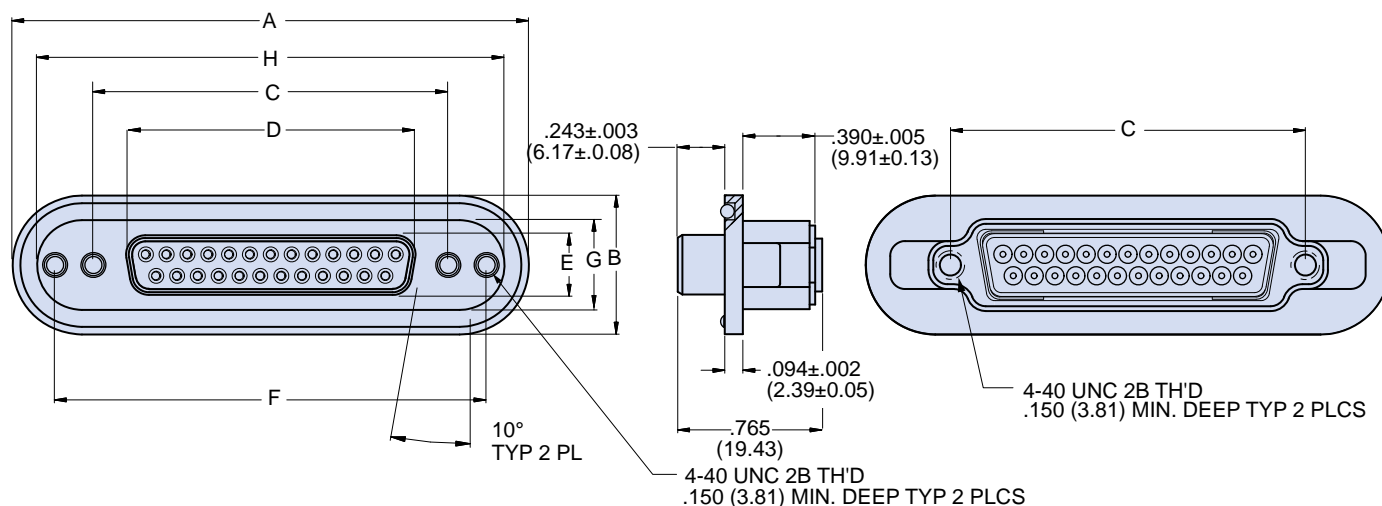
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
O-ring, Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts 
B Female Guide Bushings 	G Male Guide Pins 

280-021S panel mount socket connectors with O-ring mounting flange, crimp termination

280-021S DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic		G		H	
	in	mm	in	mm	in.	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	.643	16.33	.311	7.90	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	.971	24.66	.311	7.90	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	1.511	38.38	.311	7.90	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.159	54.84	.311	7.90	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.064	52.43	.423	10.74	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.189	55.60	.485	12.32	2.940	74.68	.643	16.33	3.127	79.43

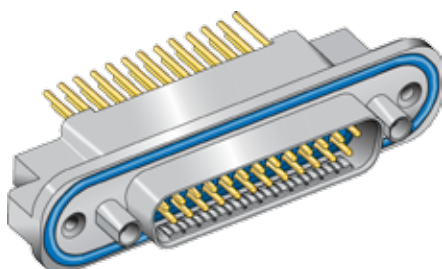
NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-022P straight PC tail pin connectors with O-ring flange for rear panel mounting



Rear panel mount HiPer-D pin connectors feature non-removable size #20 or #22 straight PC tail contacts and a flange O-ring for a watertight panel seal. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the rear of the connector allow attachment to circuit board. Contacts are gold plated and potted with epoxy. Aluminum shell. Glass-reinforced thermoset epoxy insulator, fluorosilicone face seal. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

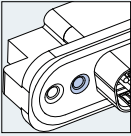
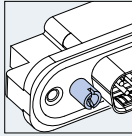
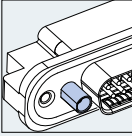
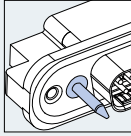
B

How To Order						
Sample Part Number	280-022P	2S15	ME	G	P	A
Basic Part Number	280-022P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

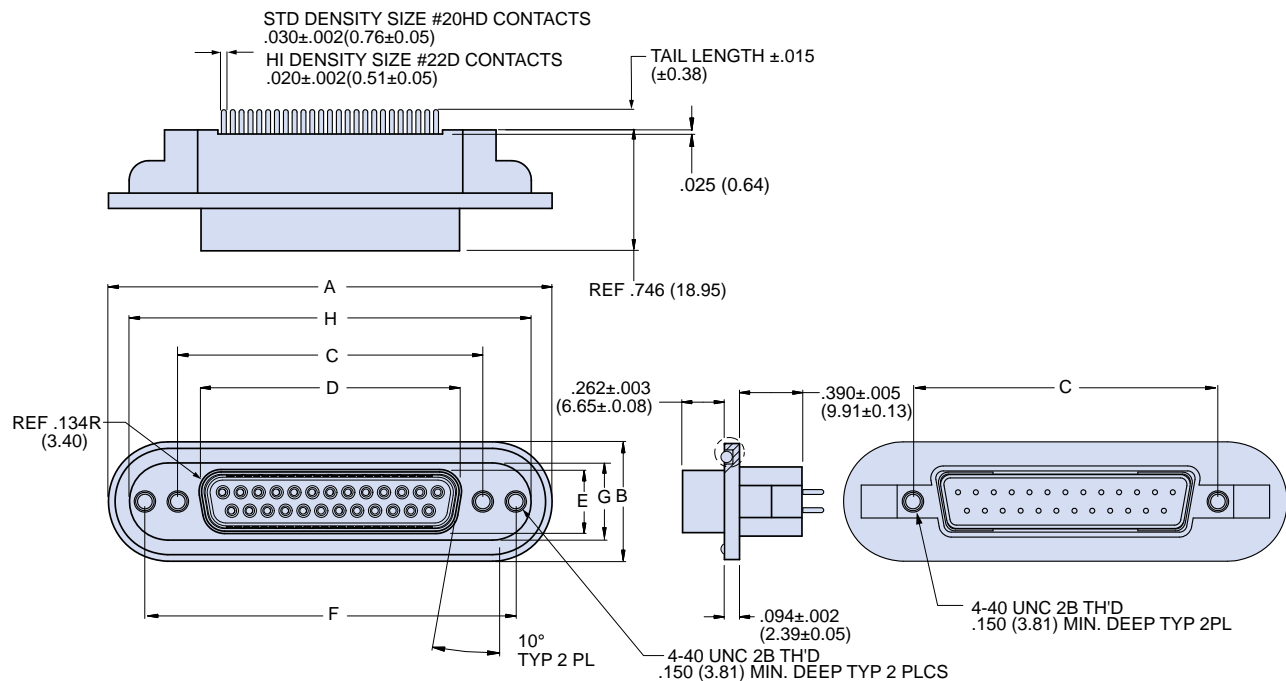
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Beryllium copper alloy
O-ring and Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts 
B Female Guide Bushings 	G Male Guide Pins 

280-022P straight PC tail pin connectors with O-ring flange for rear panel mounting

280-022P DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic		G		H	
	in	mm	in	mm	in.	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	.726	18.44	.389	9.88	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	1.054	26.77	.389	9.88	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	1.594	40.49	.389	9.88	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.242	56.95	.389	9.88	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.139	54.33	.501	12.73	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.272	57.71	.563	14.30	2.940	74.68	.643	16.33	3.127	79.43

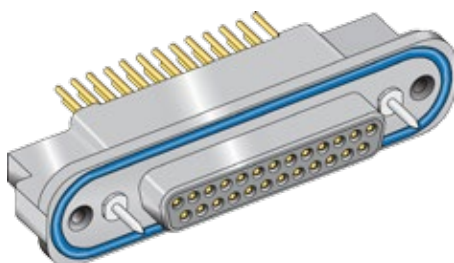
NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-023S straight PC tail socket connectors with O-ring flange for rear panel mounting



Rear panel mount HiPer-D socket connectors feature non-removable size #20 or #22 straight PC tail contacts and a flange O-ring for a watertight panel seal. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the rear of the connector allow attachment to circuit board. Contacts are potted with epoxy. Aluminum shell. Glass-reinforced thermoset epoxy insulators. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

How To Order					
Sample Part Number	280-023S	6H104	MT	B	B
Basic Part Number	280-023S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

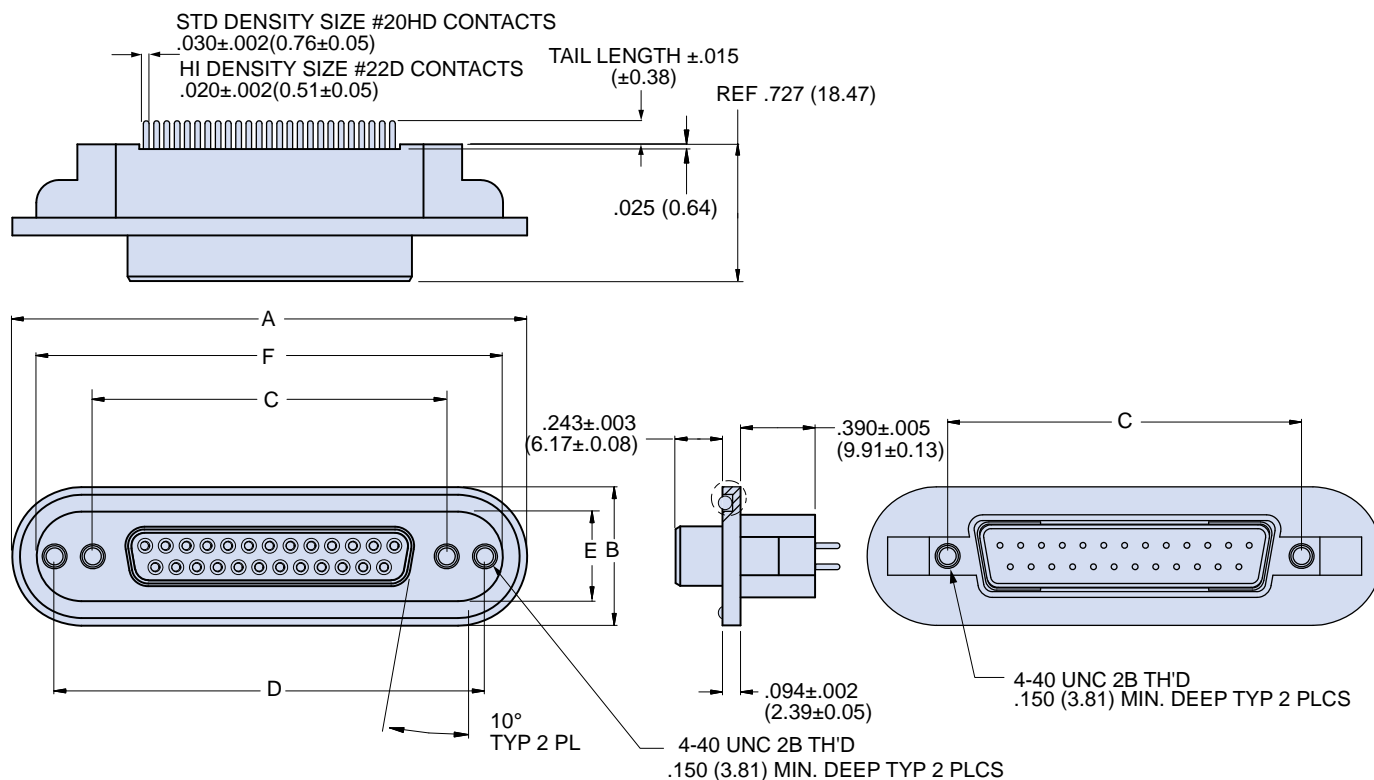
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulator	Thermoset epoxy
Potting Compound	Epoxy
O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts
B Female Guide Bushings 	G Male Guide Pins

280-023S straight PC tail socket connectors with O-ring flange for rear panel mounting

280-023S DIMENSIONS



Shell Size	A		B		C Basic		D Basic		E		F	
	in	mm	in	mm	in.	mm	in	mm	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.940	74.68	.643	16.33	3.127	79.43

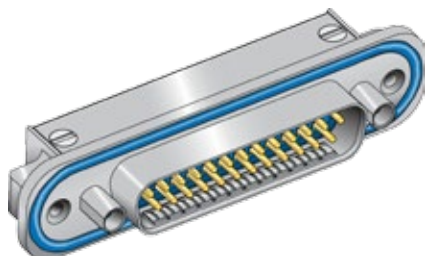
NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-024P right angle PC tail pin connectors with O-ring flange for rear panel mounting



Right angle printed circuit board HiPer-D pin connectors feature rugged one-piece machined aluminum shell and stainless steel shroud for improved EMI protection. Contacts are non-removable size #20 or #22 PC tail contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features environmental sealing and optional ground springs for improved resistance to electromagnetic interference. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the bottom of connector allow attachment to circuit board. Contacts are potted with epoxy. Glass-reinforced thermoset epoxy insulators, fluorosilicone face seal. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

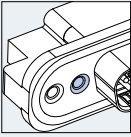
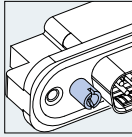
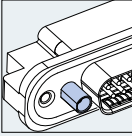
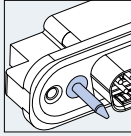
B

How To Order						
Sample Part Number	280-024P	4S37	Z2	N	B	B
Basic Part Number	280-024P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

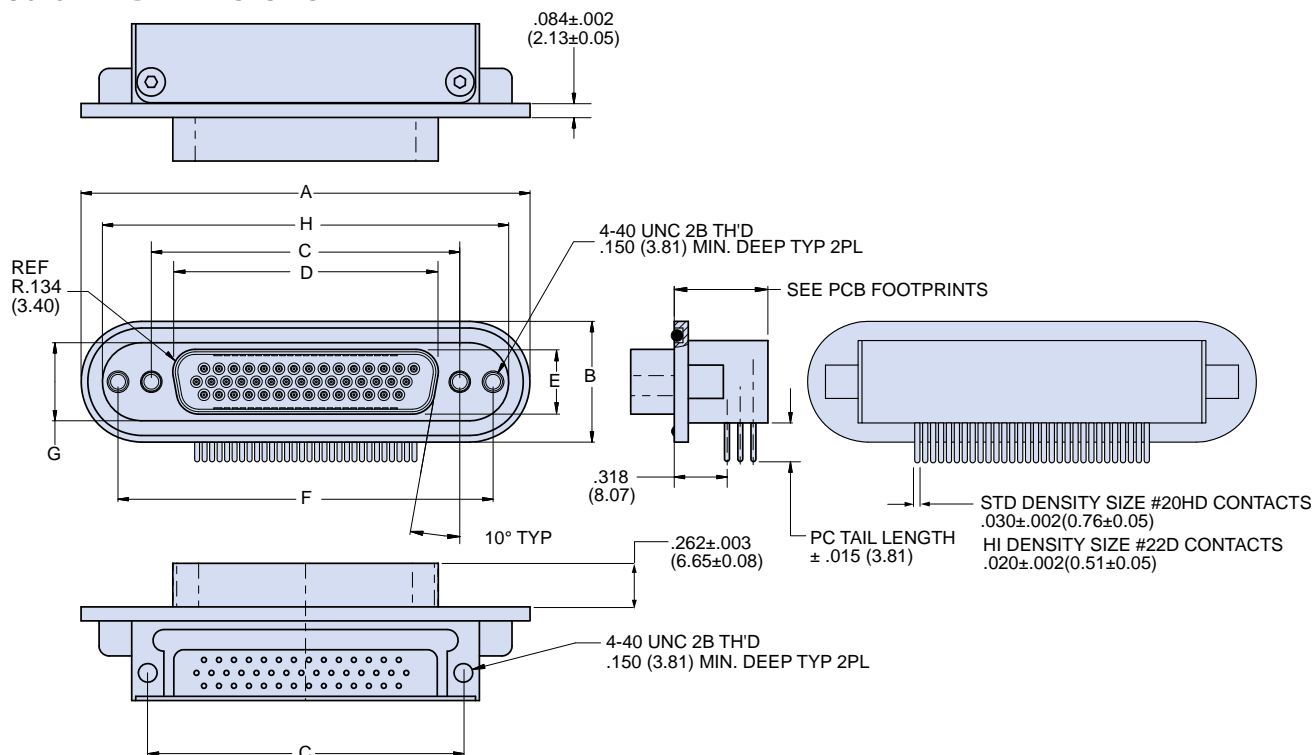
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Potting Compound	Epoxy
Face Seal and O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts 
B Female Guide Bushings 	G Male Guide Pins 

280-024P right angle PC tail pin connectors with O-ring flange for rear panel mounting

280-024P DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic		G		H	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38
1	1.865	47.37	.725	18.42	.984	24.99	.726	18.44	.389	9.88	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	1.054	26.77	.389	9.88	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	1.594	40.49	.389	9.88	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.242	56.95	.389	9.88	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.139	54.33	.501	12.73	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.272	57.71	.563	14.30	2.940	74.68	.643	16.33	3.127	79.43

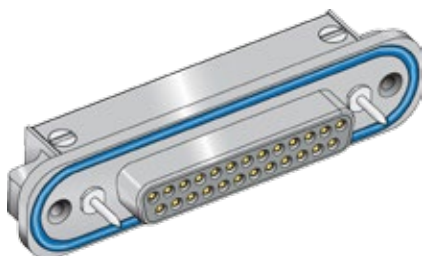
NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-025S right angle PC tail socket connectors with O-ring flange for rear panel mounting



Rear panel mount HiPer-D right angle PC tail socket connectors feature rugged one-piece machined aluminum shell and stainless steel shroud for improved EMI protection. Contacts are non-removable size #20 or #22. Flange O-ring provides panel seal. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features environmental sealing and optional blind mate hardware. #4-40 threaded mounting holes simplify panel attachment. Threaded holes on the bottom of the connector allow attachment to circuit board. Contacts are potted with epoxy. Glass-reinforced thermoset epoxy insulators. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

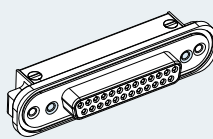
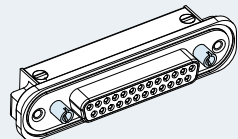
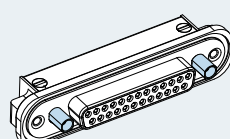
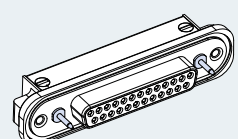
B

How To Order					
Sample Part Number	280-025S	5H78	MT	G	B
Basic Part Number	280-025S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

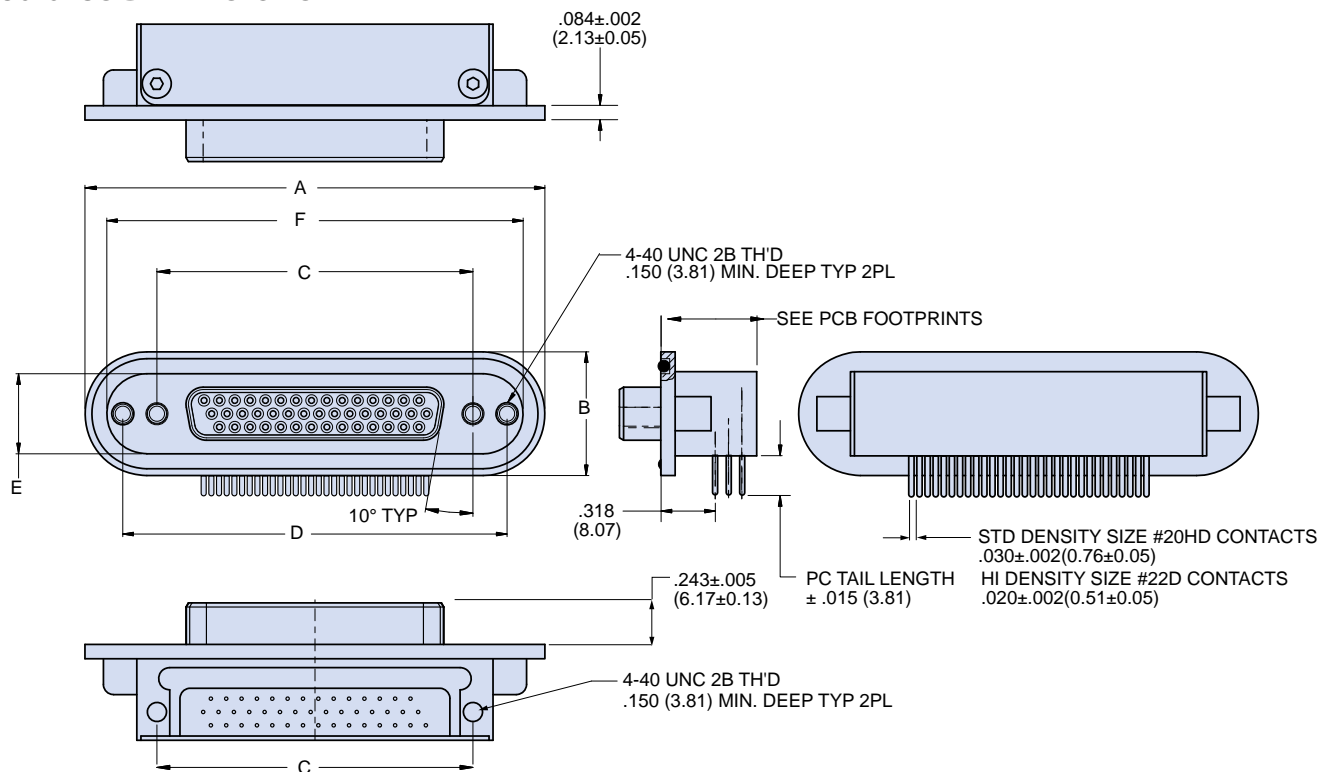
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulator	Thermoset epoxy
Potting Compound	Epoxy
O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #8-32 tapped hole 	P #4-40 Female Jackposts 
B Female Guide Bushings 	G Male Guide Pins 

280-025S right angle PC tail socket connectors with O-ring flange for rear panel mounting

280-025S DIMENSIONS



Shell Size	A		B		C Basic		D Basic		E		F	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38
1	1.865	47.37	.725	18.42	.984	24.99	1.424	36.17	.469	11.91	1.609	40.87
2	2.200	55.88	.725	18.42	1.312	33.32	1.752	44.50	.469	11.91	1.944	49.38
3	2.736	69.49	.725	18.42	1.852	47.04	2.292	58.22	.469	11.91	2.480	62.99
4	3.385	85.98	.725	18.42	2.500	63.50	2.940	74.68	.469	11.91	3.129	79.48
5	3.289	83.54	.837	21.26	2.406	61.11	2.846	72.29	.581	14.76	3.033	77.04
6	3.383	85.93	.899	22.83	2.500	63.50	2.940	74.68	.643	16.33	3.127	79.43

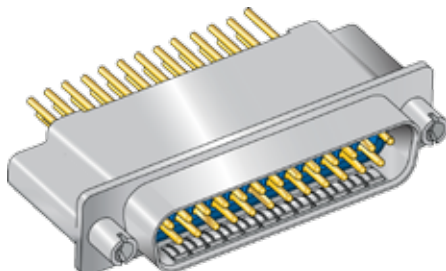
NOTES

1. Contacts are factory-installed, non-removable and are potted with epoxy.
2. HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
3. For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
4. For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
5. HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
6. Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-026P straight PC tail pin connectors with low profile mounting flange



Low profile HiPer-D straight PC tail pin connectors feature non-removable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Threaded holes on the rear of the connector allow attachment to circuit board. Contacts are potted with epoxy. Aluminum shell. Glass-reinforced thermoset epoxy insulators, fluorosilicone face seal. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

How To Order						
Sample Part Number	280-026P	5S50	JF	N	P	B
Basic Part Number	280-026P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware (supplied with #4-40 tapped holes) P = #4-40 Female Jackposts					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

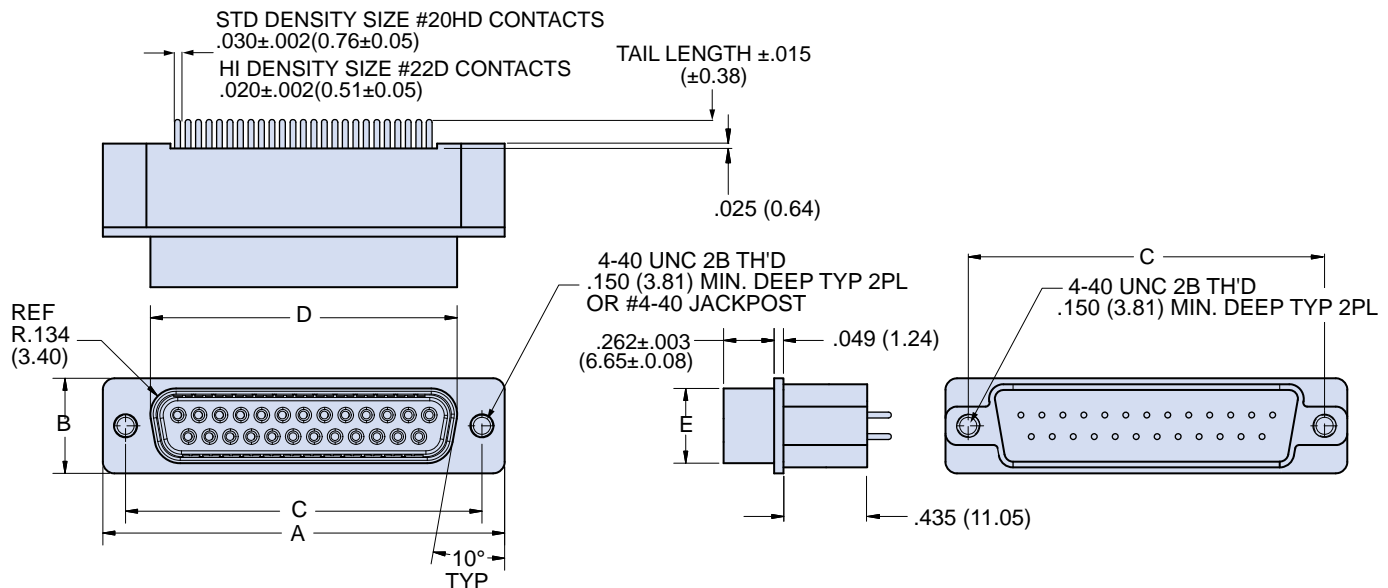
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulator	Thermoset epoxy
Potting Compound	Epoxy
Face Seal	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes	P #4-40 Female Jackposts
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

280-026P straight PC tail pin connectors with low profile mounting flange

280-026P DIMENSIONS



Shell Size	A		B		C Basic		D		E	
	in $\pm .015$	mm ± 0.38	in $\pm .015$	mm ± 0.38	in. $\pm .005$	mm ± 0.13	in $\pm .005$	mm ± 0.13	in $\pm .005$	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.726	18.44	.389	9.88
2	1.541	39.14	.494	12.55	1.312	33.32	1.054	26.77	.389	9.88
3	2.088	53.04	.494	12.55	1.852	47.04	1.594	40.49	.389	9.88
4	2.729	69.32	.494	12.55	2.500	63.50	2.242	56.95	.389	9.88
5	2.635	66.93	.605	15.37	2.406	61.11	2.139	54.33	.501	12.73
6	2.729	69.32	.668	16.97	2.500	63.50	2.272	57.71	.563	14.30

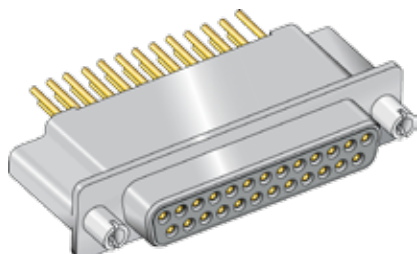
NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-027S straight PC tail socket connectors with low profile mounting flange



Low profile HiPer-D straight PC tail socket connectors feature non-removable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Threaded holes on the rear of the connector allow attachment to circuit board. Contacts are potted with epoxy. Aluminum shell. Glass-reinforced thermoset epoxy insulators. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

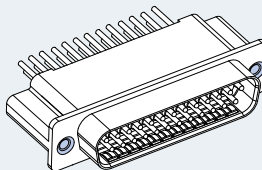
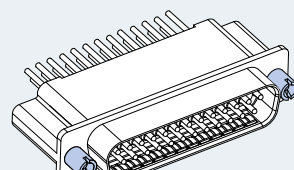
B

How To Order					
Sample Part Number	280-027S	1H15	ME	B	B
Basic Part Number	280-027S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) P = #4-40 Female Jackposts				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

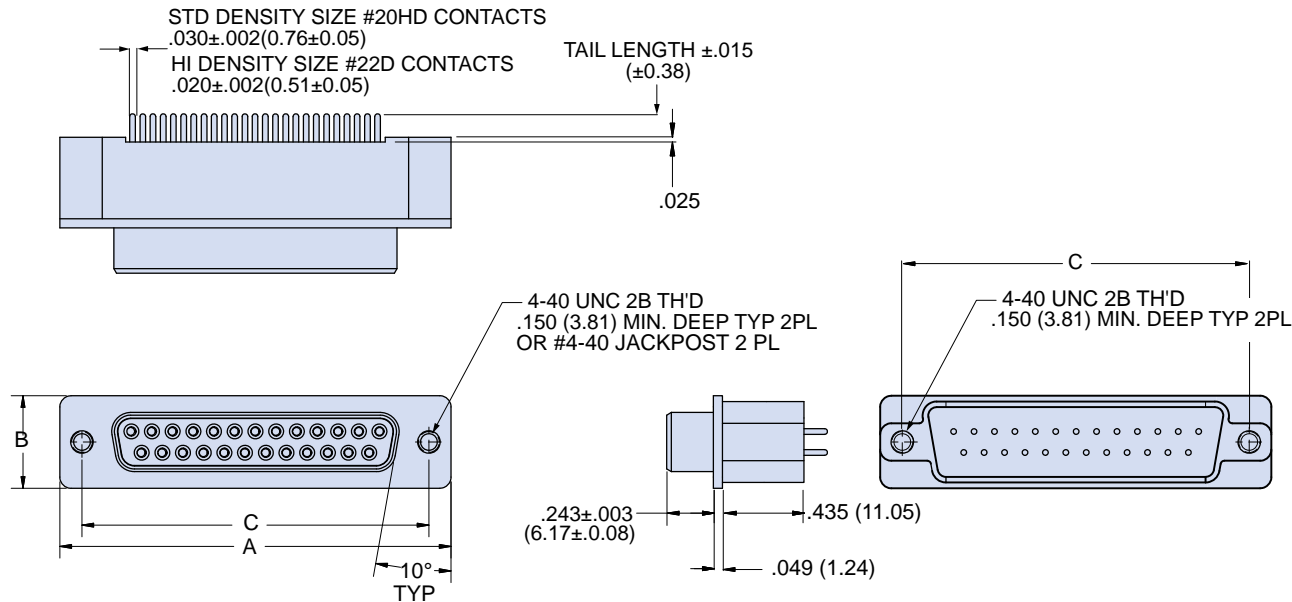
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold plated
Insulator	Thermoset epoxy
Potting Compound	Epoxy
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

280-027S straight PC tail socket connectors with low profile mounting flange

280-027S DIMENSIONS



Shell Size	A		B		C Basic	
	in	mm	in	mm	in.	mm
1	1.213	30.81	.494	12.55	.984	24.99
2	1.541	39.14	.494	12.55	1.312	33.32
3	2.088	53.04	.494	12.55	1.852	47.04
4	2.729	69.32	.494	12.55	2.500	63.50
5	2.635	66.93	.605	15.37	2.406	61.11
6	2.729	69.32	.668	16.97	2.500	63.50

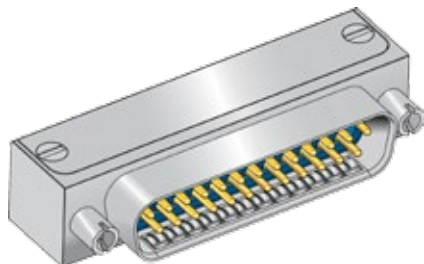
NOTES

1. Contacts are factory-installed, non-removable and are potted with epoxy.
2. HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
3. For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
4. For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
5. HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
6. Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-028P right angle PC tail pin connectors with low profile mounting flange



Low profile right angle PC tail HiPer-D pin connectors feature rugged machined aluminum shell and stainless steel cover for improved EMI protection. Contacts are non-removable, size #20 or #22. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a resilient face seal for environmental protection and optional ground springs for improved resistance to electromagnetic interference. Threaded holes on the bottom of the connector allow attachment to circuit board. Contacts are potted with epoxy. Glass-reinforced thermoset epoxy insulators, fluorosilicone face seal. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

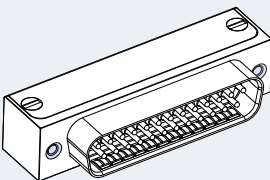
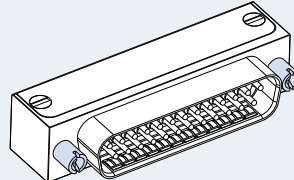
B

How To Order						
Sample Part Number	280-028P	4H62	ME	G	N	A
Basic Part Number	280-028P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware (supplied with #4-40 tapped holes) P = #4-40 Female Jackposts					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

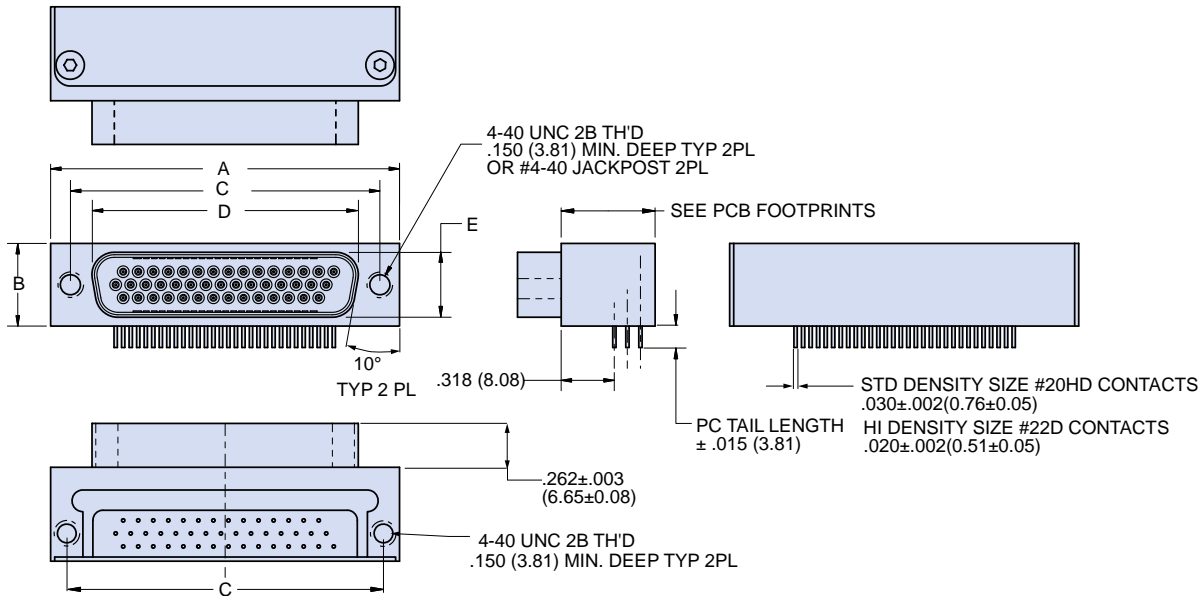
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Potting Compound	Epoxy
Interfacial Seal	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

280-028P right angle PC tail pin connectors with low profile mounting flange

280-028P DIMENSIONS

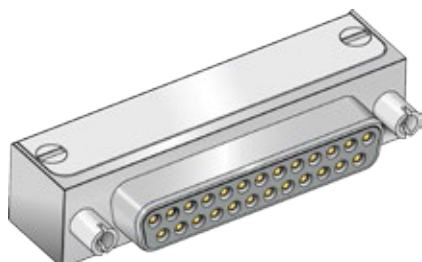


Shell Size	A		B		C Basic		D		E	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.726	18.44	.389	9.88
2	1.541	39.14	.494	12.55	1.312	33.32	1.054	26.77	.389	9.88
3	2.088	53.04	.494	12.55	1.852	47.04	1.594	40.49	.389	9.88
4	2.729	69.32	.494	12.55	2.500	63.50	2.242	56.95	.389	9.88
5	2.635	66.93	.605	15.37	2.406	61.11	2.139	54.33	.501	12.73
6	2.729	69.32	.668	16.97	2.500	63.50	2.272	57.71	.563	14.30

NOTES

1. Contacts are factory-installed, non-removable and are potted with epoxy.
2. HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
3. For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
4. For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
5. HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
6. Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

280-029S right angle PC tail socket connectors with low profile mounting flange



Low profile right angle PC tail HiPer-D socket connectors feature rugged machined aluminum shell and stainless steel cover for improved EMI protection. Contacts are non-removable size, #20 or #22. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features epoxy potting for environmental sealing. Threaded holes on the rear of the connector allow attachment to circuit board. Glass-reinforced thermoset epoxy insulators. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

How To Order					
Sample Part Number	280-029S	3S25	JF	P	A
Basic Part Number	280-029S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware (supplied with #4-40 tapped holes) P = #4-40 Female Jackposts				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

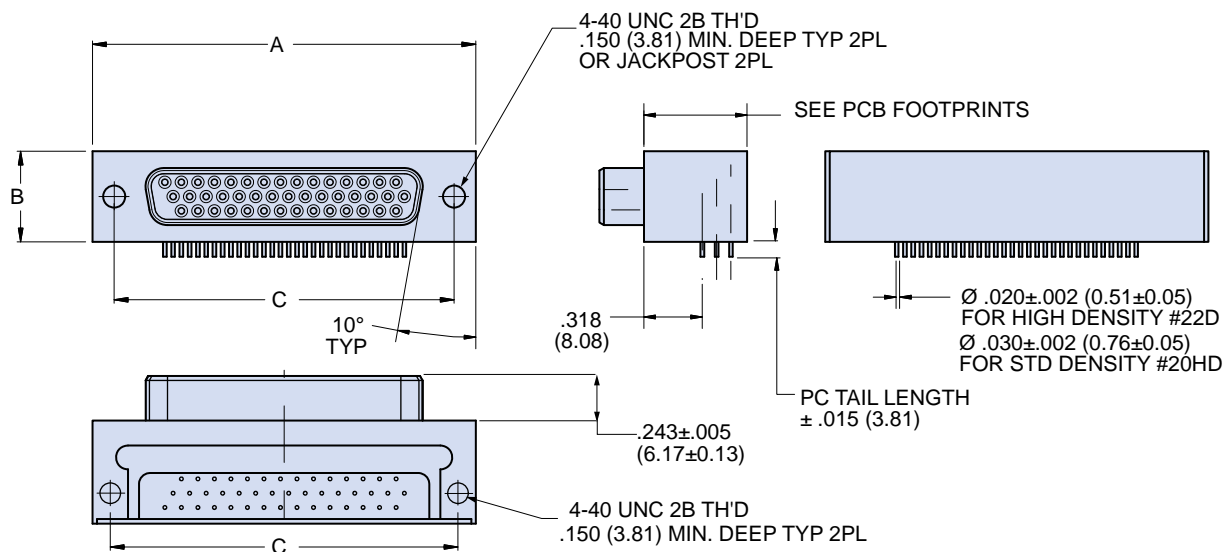
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold plated
Insulator	Thermoset epoxy
Potting Compound	Epoxy
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes	P #4-40 Female Jackposts
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

280-029S right angle PC tail socket connectors with low profile mounting flange

280-029S DIMENSIONS



Shell Size	A		B		C Basic	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .015	mm ± 0.38
1	1.213	30.81	.494	12.55	.984	24.99
2	1.541	39.14	.494	12.55	1.312	33.32
3	2.088	53.04	.494	12.55	1.852	47.04
4	2.729	69.32	.494	12.55	2.500	63.50
5	2.635	66.93	.605	15.37	2.406	61.11
6	2.729	69.32	.668	16.97	2.500	63.50

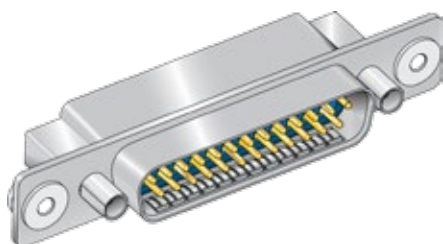
NOTES

1. Contacts are factory-installed, non-removable and are potted with epoxy.
2. HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices . Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
3. For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
4. For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
5. HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
6. Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Standard and High-Density Connectors



280-030P float mount pin connectors for blind mating, crimp termination



280-030P HiPer-D pin connectors feature stainless steel float bushings for blind mating. Attach to panel with #4-40 screws (not supplied with connector). Crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell, rubber seals and optional ground springs for improved resistance to electromagnetic interference. Threaded holes on the rear of the connector allow direct attachment of HiPer-D EMI backshells. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement (mated). 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

Ordering Information					
Sample Part Number	280-030P	6H104	MT	N	N
Basic Part Number	280-030P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware (supplied with #8-32 tapped hole) G = Male Guide Pins B = Female Guide Bushings				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

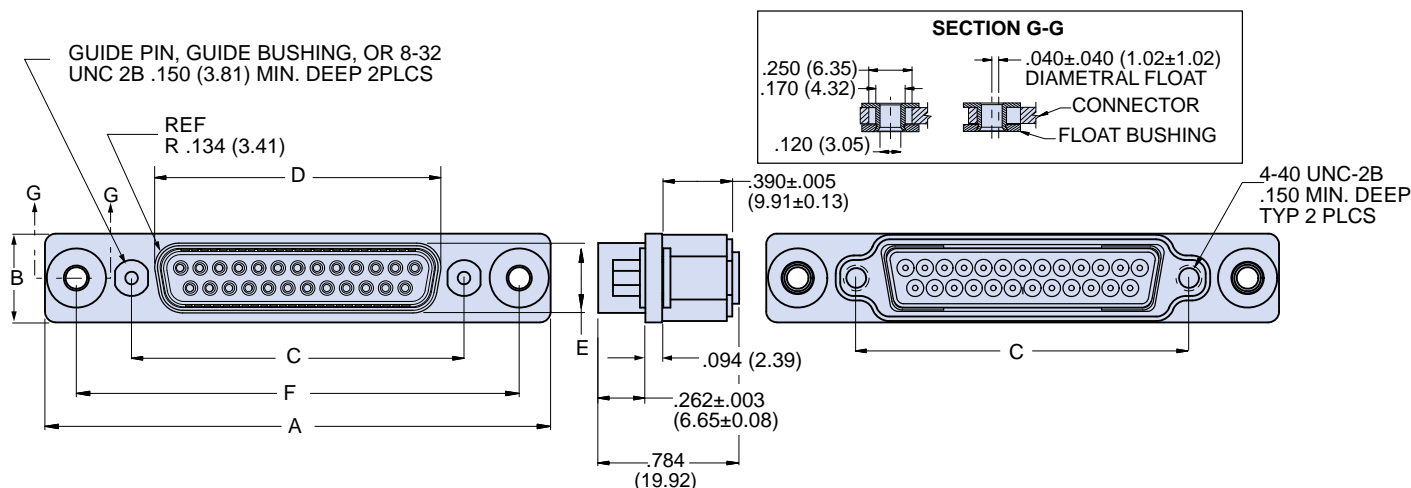
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, Seal, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N No Hardware #8-32 tapped hole	B Female Guide Bushings	G Male Guide Pins

280-030P float mount pin connectors for blind mating, crimp termination

280-030P DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.986	50.44	.494	12.55	.984	24.99	.726	18.44	.389	9.88	1.636	41.55
2	2.314	58.78	.494	12.55	1.312	33.32	1.054	26.77	.389	9.88	1.964	49.89
3	2.854	72.49	.494	12.55	1.852	47.04	1.594	40.49	.389	9.88	2.504	63.60
4	3.502	88.95	.494	12.55	2.500	63.50	2.242	56.95	.389	9.88	3.152	80.06
5	3.408	86.56	.600	15.24	2.406	61.11	2.139	54.33	.501	12.73	3.058	77.67
6	3.502	88.95	.662	16.81	2.500	63.50	2.272	57.71	.563	14.30	3.152	80.06

NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

280-031S float mount socket connectors for blind mating, crimp termination



280-031S HiPer-D socket connectors feature stainless steel floating bushings for blind mate applications. Attach to panel with #4-40 screws (not supplied with connector). Crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell and rubber grommet. Threaded holes on the rear of the connector allow attachment of HiPer-D EMI backshells. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Connector meets IP67 immersion requirement. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

Ordering Information				
Sample Part Number	280-031S	2H26	Z2	G
Basic Part Number	280-031S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware (supplied with #8-32 tapped holes) G = Male Guide Pins B = Female Guide Bushings			

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

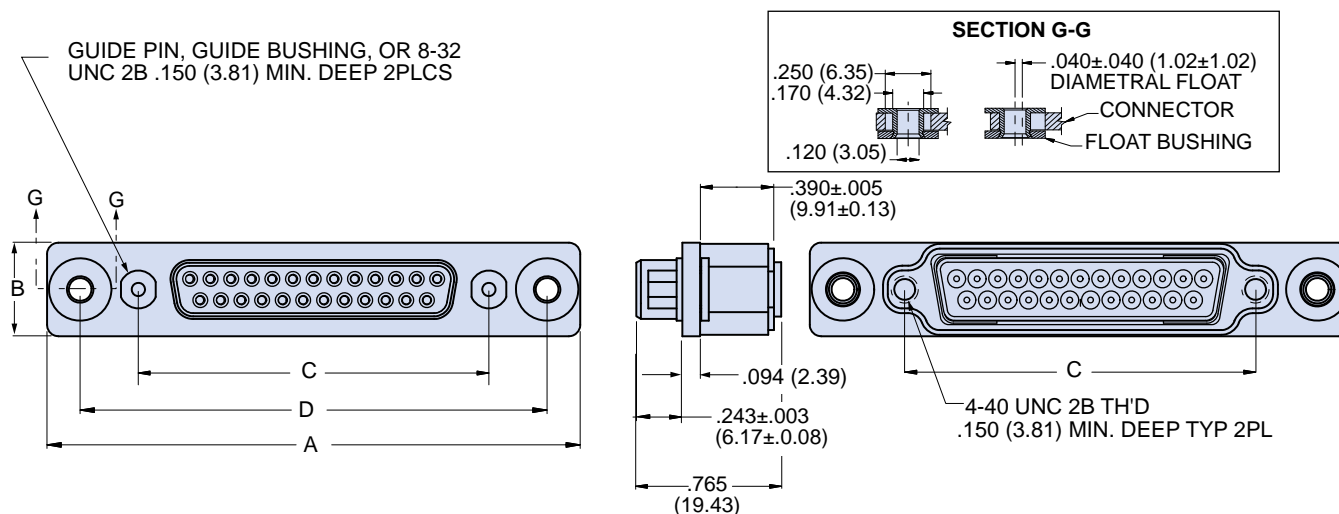
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N No Hardware #8-32 tapped hole	B Female Guide Bushings	G Male Guide Pins

280-031S float mount socket connectors for blind mating, crimp termination

280-031S DIMENSIONS



Shell Size	A		B		C Basic		D Basic	
	in	mm	in	mm	in.	mm	in	mm
1	1.986	50.44	.494	12.55	.984	24.99	1.636	41.55
2	2.314	58.78	.494	12.55	1.312	33.32	1.964	49.89
3	2.854	72.49	.494	12.55	1.852	47.04	2.504	63.60
4	3.502	88.95	.494	12.55	2.500	63.50	3.152	80.06
5	3.408	86.56	.600	15.24	2.406	61.11	3.058	77.67
6	3.502	88.95	.662	16.81	2.500	63.50	3.152	80.06

NOTES

- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

280-086 pin connectors with standard M24308 type mounting flange, integral banding platform and crimp termination



HiPer-D® pin connectors feature integrated banding platform, crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D® features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Gold-plated size #20 contacts conform to M39029/64-369 and accept #20 to #24 AWG wire. Gold-plated size #22 contacts conform to M39029/58-360 and accept #22 to #28 AWG wire. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).

B

Ordering Information					
Sample Part Number	280-086P	3S25	ME	G	P
Basic Part Number	280-086P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) Z1 = Passivated Stainless Steel (RoHS) ZM = Nickel over Stainless				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

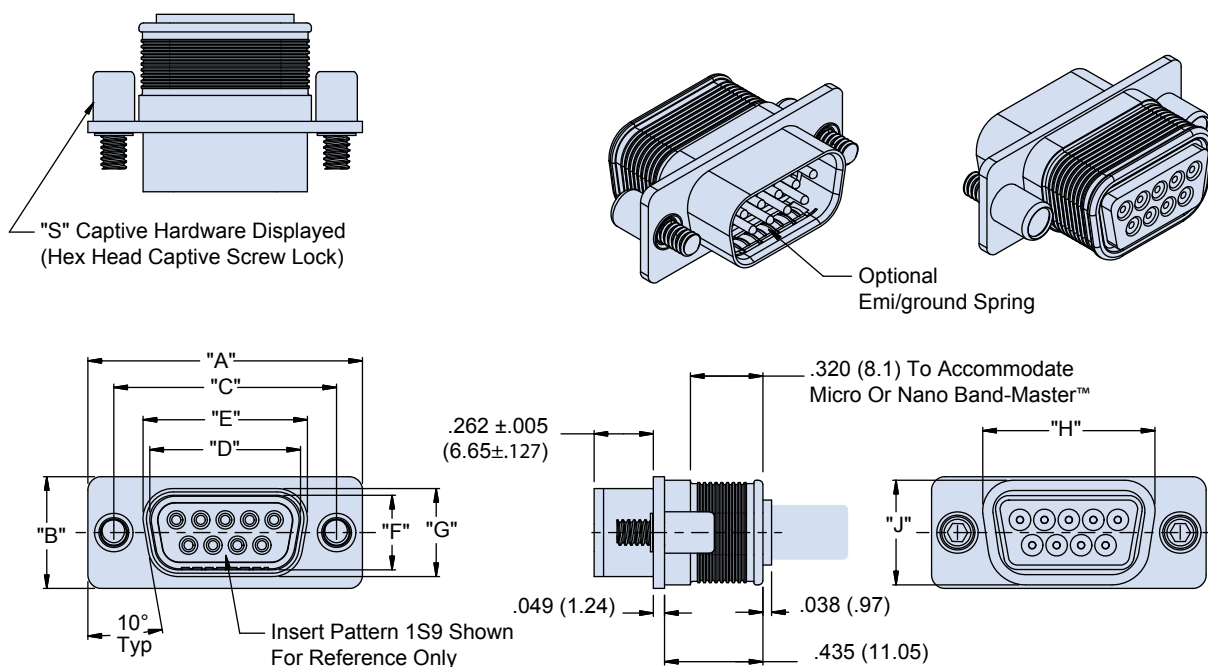
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet and Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

280-086 pin connectors with standard M24308 type mounting flange, integral banding platform and crimp termination

280-086P DIMENSIONS



Shell Size	Insert Pattern	"A" ±.015		"B" ±.015		"C" ±.005		"D" ±.005		"E" ±.005		"F" ±.005		"G" ±.005		"H"		"J"		Contact P/N
		in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	
1	SD 9	1.213	30.81	0.494	12.55	0.984	24.99	0.666	16.92	0.726	18.44	0.329	8.36	0.389	9.88	0.760	19.30	0.462	11.73	M39029/64-369
	HD 15																			M39029/58-360
2	SD 15	1.541	39.14	0.494	12.55	1.312	33.32	0.994	25.25	1.054	26.77	0.329	8.36	0.389	9.88	1.089	27.66	0.462	11.73	M39029/64-369
	HD 26																			M39029/58-360
3	SD 25	2.088	53.03	0.494	12.55	1.852	47.04	1.534	38.96	1.594	40.49	0.329	8.36	0.389	9.88	1.629	41.38	0.462	11.73	M39029/64-369
	HD 44																			M39029/58-360
4	SD 37	2.729	69.32	0.494	12.55	2.5	63.50	2.182	55.42	2.242	56.95	0.329	8.36	0.389	9.88	2.277	57.84	0.462	11.73	M39029/64-369
	HD 62																			M39029/58-360
5	SD 50	2.635	66.93	0.605	15.37	2.406	61.11	2.079	52.81	2.139	54.33	0.441	11.20	0.501	12.73	2.182	55.42	0.474	12.04	M39029/64-369
	HD 78																			M39029/58-369
6	HD 104	2.729	69.32	0.668	16.97	2.5	63.50	2.212	56.18	2.272	57.71	0.503	12.78	0.563	14.30	2.307	58.60	0.626	15.90	M39029/58-360

NOTES

- HiPer-D® connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D® Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D® Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D® connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D® Product Specification](#).

SERIES 28

HiPer-D® Standard and High-Density Connectors



280-087 socket connectors with standard M24308 type mounting flange, integral banding platform and crimp termination



HiPer-D® socket connectors feature integrated banding platform, crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D® features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Gold-plated size #20 contacts conform to M39029/64-369 and accept #20 to #24 AWG wire. Gold-plated size #22 contacts conform to M39029/58-360 and accept #22 to #28 AWG wire. Contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 5 Amps (#22) or 7.5 Amps (#20).


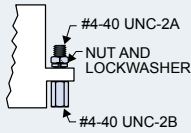
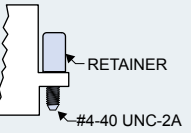
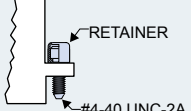
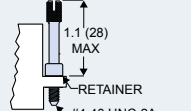
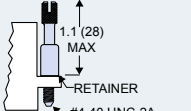
B

Ordering Information					
Sample Part Number	280-087S	3S25	ME	N	P
Basic Part Number	280-087S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) Z1 = Passivated Stainless Steel (RoHS) ZM = Nickel over Stainless				
Ground Spring	N = No Ground Spring				
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104

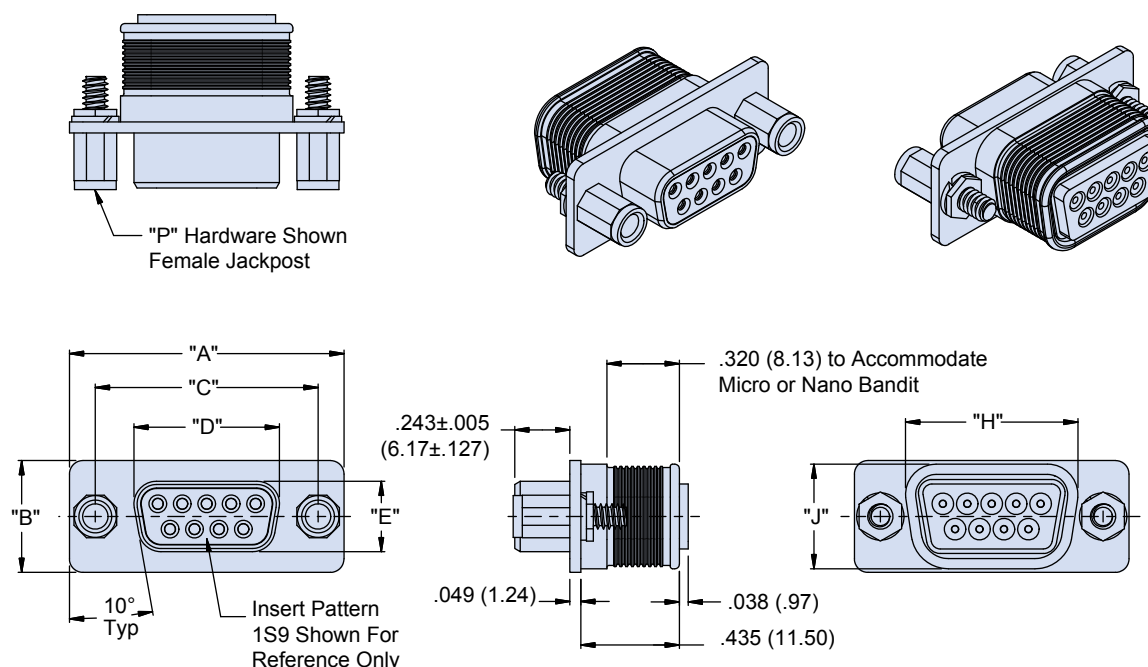
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet and Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

Specifications	
Current Rating	#22 5 AMPS, #20 7.5 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head 
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock 

280-087 socket connectors with standard M24308 type mounting flange, integral banding platform and crimp termination

280-087S DIMENSIONS



Shell Size	Insert Pattern	"A" ±.015		"B" ±.015		"C" ±.005		"D" ±.005		"E" ±.005		"H"		"J"		Contact P/N
		In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	
1	SD 9	1.213	30.81	0.494	12.55	0.984	24.99	0.643	16.33	0.311	7.90	0.760	19.30	0.462	11.73	M39029/63-368
	HD 15															M39029/57-354
2	SD 15	1.541	39.14	0.494	12.55	1.312	33.32	0.971	24.66	0.311	7.90	1.089	27.66	0.462	11.73	M39029/63-368
	HD 26															M39029/57-354
3	SD 25	2.088	53.04	0.494	12.55	1.852	47.04	1.511	38.8	0.311	7.90	1.629	41.38	0.462	11.73	M39029/63-368
	HD 44															M39029/57-354
4	SD 37	2.729	69.32	0.494	12.55	2.5	63.50	2.159	54.84	0.311	7.90	2.277	57.84	0.462	11.73	M39029/63-368
	HD 62															M39029/57-354
5	SD 50	2.635	66.93	0.605	15.37	2.406	61.11	2.064	52.43	0.423	10.74	2.182	55.42	0.474	12.04	M39029/63-368
	HD 78															M39029/57-354
6	HD 104	2.729	69.32	0.668	16.97	2.5	63.50	2.189	55.60	0.486	12.34	2.307	58.60	0.626	15.90	M39029/57-354

NOTES

- HiPer-D® connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D® Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D® Contacts and Crimp Tools](#) for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- HiPer-D® connectors meet the requirements of MIL-DTL-24308 and are intermateable with standard M24308-type D-Subminiature connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D® Product Specification](#).

SERIES 28

Combo HiPer-D

Now available—twenty power, signal, and RF combo arrangements. Tooled and ready for immediate application.



Combo D-subminiature M24308 connectors are ideally suited for use in analog signal, power, and RF applications. Glenair HiPer-D connectors with combo layouts deliver both the flexibility and convenience of mixed size #8 and size #20 contact arrangements, as well as the high performance attributes of this ruggedized, environmental version of the M24308. Over 20 insert arrangements are available, including native size #8 as well as mixed size #8 and size #20. Crimp contact and PC board terminations are available with both standard and low profile shells. Designed for use in power controllers, radar systems, video applications and other military and aerospace electronic equipment. All HiPer-D combo arrangements are tooled and ready for immediate application.



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SERIES 28
HiPer-D Combo Connectors
Product Selection Guide



Combo HiPer-D

The Ruggedized D-Sub Connector for Hybrid Power, Signal and RF Applications



About the Combo HiPer-D

The Combo *Hi-Performance* D-Sub connector combines size #8 power or RF contacts with size #20 signal pins. The HiPer-D meets the need for improved performance in hostile environments. Unlike standard M24308 connectors with stamped steel shells, the HiPer-D connector features a one-piece machined aluminum shell. The thermoset epoxy insulators are capable of 200°C continuous operating temperature. Aerospace grade fluorosilicone grommets and face seals provide environmental protection.



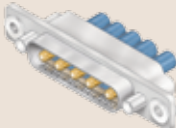


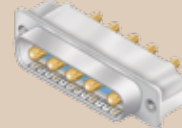

Product Facts C-2

Contact Arrangements C-3

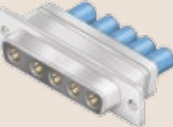

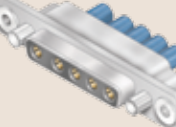
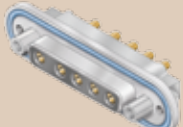


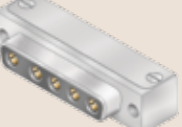
Materials and Finishes C-4

Product Specifications C-5

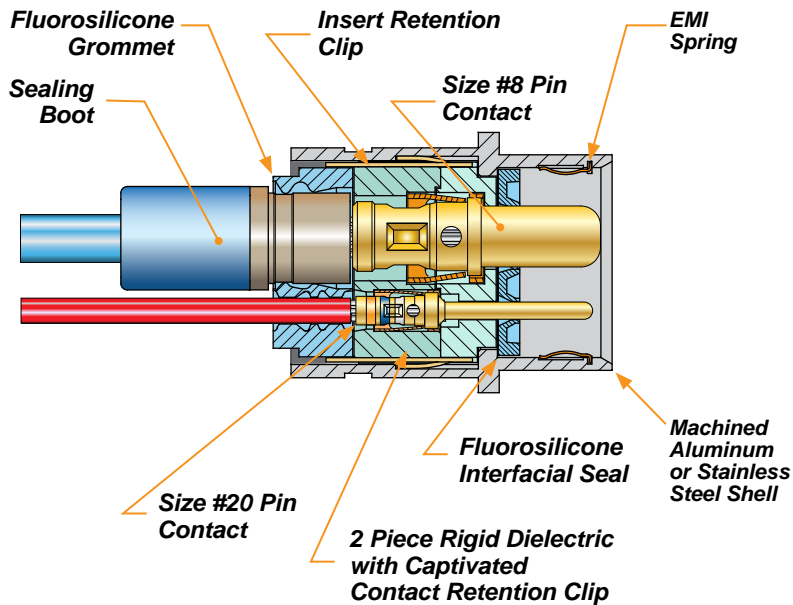
Pin Connector Product Selection Guide

CRIMP TERMINATION For Attaching Wires			PC BOARD With Panel O-Ring		PC BOARD Low Profile Flange	
Cable	Rear Panel Mount	Float Mount	Straight PCB	Right Angle PCB	Straight PCB	Right Angle PCB
						
280-046P Page C-6	280-048P Page C-10	280-058P Page C-30	280-050P Page C-14	280-052P Page C-18	280-054P Page C-22	280-056P Page C-26

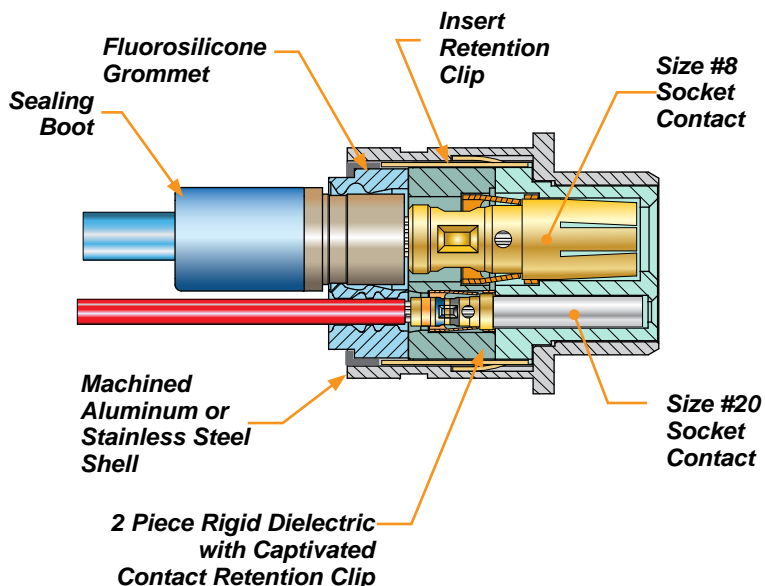
Socket Connector Product Selection Guide

CRIMP TERMINATION For Attaching Wires			PC BOARD With Panel O-Ring		PC BOARD Low Profile Flange	
Cable	Rear Panel Mount	Float Mount	Straight PCB	Right Angle PCB	Straight PCB	Right Angle PCB
						
280-047S Page C-8	280-049S Page C-12	280-059S Page C-32	280-051S Page C-16	280-053S Page C-20	280-055S Page C-24	280-057S Page C-28

PIN CONNECTOR



SOCKET CONNECTOR



Product Features

- Environmental, crimp removable
- Coax, power and mixed signal
- 20 "combo" insert arrangements
- EMI spring
- High temperature thermoset epoxy insulators
- Watertight sealing
- Rugged machined one-piece shell
- Optimized panel mount features

Available Configurations

- Crimp termination
- Printed circuit board termination for rear panel mounting or freestanding

Applications

- Power controllers
- Phased array radar
- Video
- Data recorders
- Space vehicles
- Unmanned vehicles
- Avionics
- Missiles

Combo HiPer-D power, signal and RF contact arrangements

Mating face of pin connector. Socket connector numbers are reversed.

Arrangement	1-2W2	1-5W1	2-3W3	2-7W2	2-11W1
Shell Size	1	1	2	2	2
Contacts	2 #8	4 #20, 1 #8	3 #8	5 #20, 2 #8	10 #20, 1 #8

Arrangement	3-13W3	3-17W2	3-21W1	3-5W5
Shell Size	3	3	3	3
Contacts	10 #20, 3 #8	15 #20, 2 #8	20 #20, 1 #8	5 #8

Arrangement	3-9W4	4-13W6	4-17W5
Shell Size	3	4	4
Contacts	5 #20, 4 #8	7 #20, 6 #8	12 #20, 5 #8

Arrangement	4-21WA4	4-25W3
Shell Size	4	4
Contacts	17 #20, 4 #8	22 #20, 3 #8

Arrangement	4-27W2	4-8W8
Shell Size	4	4
Contacts	25 #20, 2 #8	8 #8

Arrangement	5-24W7	5-36W4
Shell Size	4	5
Contacts	17 #20, 7 #8	32 #20, 4 #8

Arrangement	5-43W2	5-47W1
Shell Size	5	5
Contacts	41 #20, 2 #8	46 #20, 1 #8

Combo HiPer-D Materials and Finishes

Description	Material	Finish
Contacts	Copper Alloy	Gold plated 50 microinches minimum over nickel underplate
Socket Contact Hood (Size 20)	Stainless steel	Passivated
Shell	Aluminum Alloy 6061 or stainless steel (300 series)	See ordering information
Insulators	Thermoset epoxy resin per ASTM D-5948	None
Interfacial Seal	Fluorosilicone	None
Grommet	Fluorosilicone	None
EMI Spring	Copper alloy	Electroless nickel
Contact retention clips	Copper alloy	None
Insert retention clip	Copper alloy	None
Sealant	RTV silicone	None
Hardware	Stainless steel (300 series)	Passivated
O-ring	Fluorosilicone	None

Combo HiPer-D Product Specifications

Description	Requirement	Procedure																											
Voltage Rating (DWV)	1000 VAC Sea Level	EIA-364-20																											
Operating Temperature	-65° C. to +200° C.																												
Insulation Resistance	5000 megohms minimum	EIA-364-21																											
Current Rating	Size #20 contacts 7.5 Amps max. Size #8 contacts 40 Amps max.																												
Contact Resistance	<table><tr><th>Wire Size</th><th>Test Current</th><th>Millivolt Drop</th></tr><tr><td>8</td><td>46</td><td>26</td></tr><tr><td>10</td><td>33</td><td>33</td></tr><tr><td>12</td><td>23</td><td>42</td></tr><tr><td>14</td><td>17</td><td>40</td></tr><tr><td>16</td><td>13</td><td>49</td></tr><tr><td>20</td><td>7.5</td><td>55</td></tr><tr><td>22</td><td>5</td><td>73</td></tr><tr><td>24</td><td>3</td><td>45</td></tr></table>	Wire Size	Test Current	Millivolt Drop	8	46	26	10	33	33	12	23	42	14	17	40	16	13	49	20	7.5	55	22	5	73	24	3	45	EIA-364-06
Wire Size	Test Current	Millivolt Drop																											
8	46	26																											
10	33	33																											
12	23	42																											
14	17	40																											
16	13	49																											
20	7.5	55																											
22	5	73																											
24	3	45																											
Low Level Contact Resistance	<table><tr><th>Wire Size</th><th>Max Milliohms</th></tr><tr><td>20</td><td>9</td></tr><tr><td>22</td><td>15</td></tr><tr><td>24</td><td>20</td></tr></table>	Wire Size	Max Milliohms	20	9	22	15	24	20	EIA-364-23																			
Wire Size	Max Milliohms																												
20	9																												
22	15																												
24	20																												
Shell-to-Shell Resistance (connectors with ground springs)	2.5 milli-volt drop maximum	EIA-364-83																											
Shielding Effectiveness	<table><tr><th>Freq. GHz</th><th>Min Attenuation (dB)</th></tr><tr><td>0.1</td><td>100</td></tr><tr><td>0.4</td><td>90</td></tr><tr><td>0.8</td><td>85</td></tr><tr><td>1.0</td><td>80</td></tr><tr><td>3.0</td><td>55</td></tr><tr><td>6.0</td><td>40</td></tr><tr><td>10.0</td><td>30</td></tr></table>	Freq. GHz	Min Attenuation (dB)	0.1	100	0.4	90	0.8	85	1.0	80	3.0	55	6.0	40	10.0	30	EIA-364-66 Electroless nickel plated shells with ground spring installed											
Freq. GHz	Min Attenuation (dB)																												
0.1	100																												
0.4	90																												
0.8	85																												
1.0	80																												
3.0	55																												
6.0	40																												
10.0	30																												
Water Immersion, mated	1 hour immersion at a depth of 1 meter	MIL-STD-810F Method 512.4																											
Ingress Protection Rating	IP67, mated connectors	IEC-60529																											
Vibration, Sine	20 g's	EIA-364-28																											
Vibration, Random	43 g's	EIA-364-28																											
Mechanical Shock	300 g's	EIA-364-27																											
Thermal Shock	-65° C. to +200° C.	EIA-364-32																											
Humidity	10 cycles, 10 days, 25°C to 65°C	EIA-364-31																											
Salt Spray	<table><tr><th>Shell Finish</th><th>Code</th><th>Hours</th></tr><tr><td>Yel Chromate/ Cadmium</td><td>JF</td><td>500</td></tr><tr><td>Electroless Nickel</td><td>ME</td><td>96</td></tr><tr><td>Nickel-PTFE</td><td>MT</td><td>500</td></tr><tr><td>Gold</td><td>Z2</td><td>48</td></tr><tr><td>Passivated Stainless Steel</td><td>Z1</td><td>500</td></tr></table>	Shell Finish	Code	Hours	Yel Chromate/ Cadmium	JF	500	Electroless Nickel	ME	96	Nickel-PTFE	MT	500	Gold	Z2	48	Passivated Stainless Steel	Z1	500	EIA-364-26									
Shell Finish	Code	Hours																											
Yel Chromate/ Cadmium	JF	500																											
Electroless Nickel	ME	96																											
Nickel-PTFE	MT	500																											
Gold	Z2	48																											
Passivated Stainless Steel	Z1	500																											
Altitude Immersion	75,000 feet	EIA-364-03																											
Fluid Immersion	No damage from solvents, oils, and fuels	EIA-364-10																											
Magnetic Permeability	2 μ maximum	EIA-364-54																											
Mating Force	[(# of size 8 contacts) X 5.0] + [(# of size 20 contacts) X .75] + 3 = (Maximum Mating Force in pounds)	EIA-364-13																											
Mechanical Durability	500 Mating Cycles	EIA-364-09																											

HiPer-D Combo Connectors



280-046P combo cable pin connectors with standard mounting flange, crimp termination



Combo HiPer-D pin connectors feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information					
Sample Part Number	280-046P	3-5W5	MT	G	P
Basic Part Number	280-046P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
EMI Spring	Copper alloy, nickel plated
Retention Clips	Copper alloy
Grommet, Face Seal	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

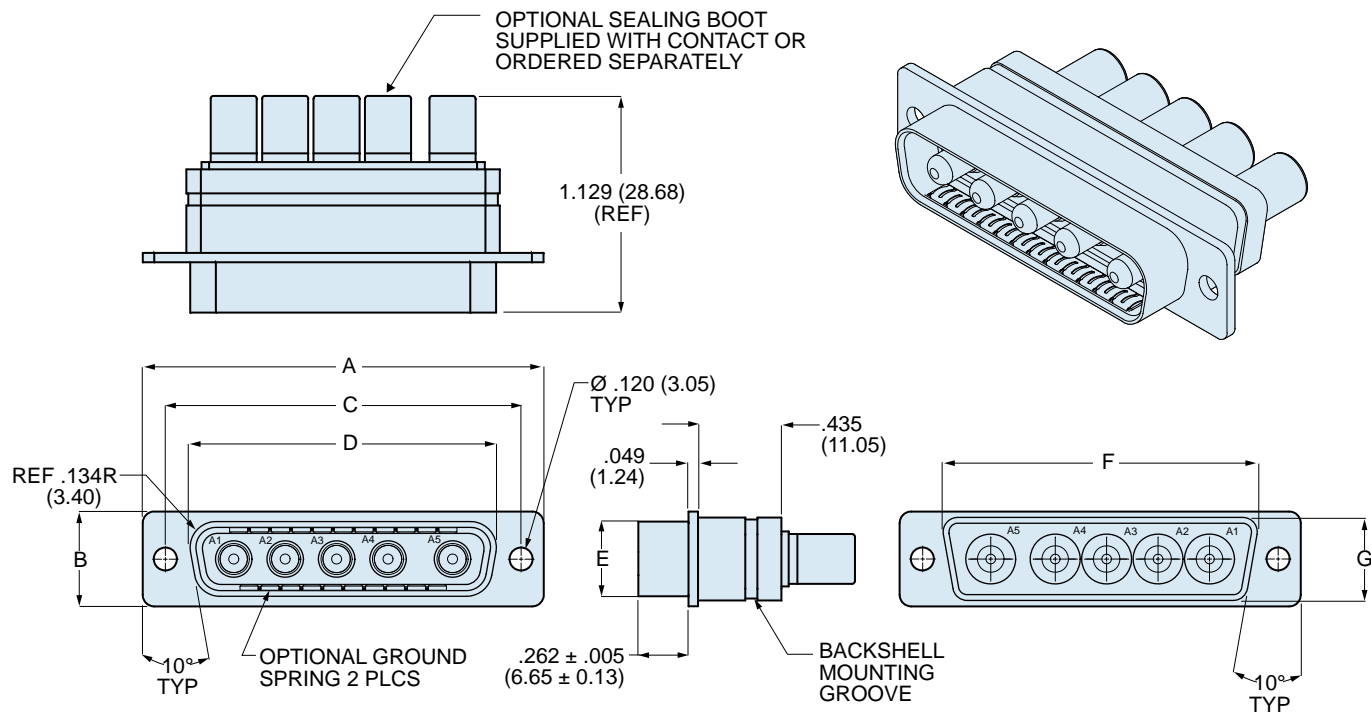
SERIES 28

HiPer-D Combo Connectors



280-046P combo cable pin connectors with standard mounting flange, crimp termination

280-046P DIMENSIONS



Dimensions														
Shell Size	A		B		C Basic		D		E		F Max.		G Max.	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in. ± .005	mm ± 0.13	in. ± .005	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.726	18.44	.389	9.88	.769	19.53	.432	10.97
2	1.541	39.14	.494	12.55	1.312	33.32	1.054	26.77	.389	9.88	1.093	27.76	.432	10.97
3	2.088	53.04	.494	12.55	1.852	47.04	1.594	40.49	.389	9.88	1.635	41.53	.432	10.97
4	2.729	69.32	.494	12.55	2.500	63.50	2.242	56.95	.389	9.88	2.282	57.96	.432	10.97
5	2.635	66.93	.605	15.37	2.406	61.11	2.139	54.33	.501	12.73	2.188	55.58	.544	13.82

NOTES

- See [About Series 28 HiPer-D Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Combo Connectors



280-047S combo cable socket connectors with standard mounting flange, crimp termination



Combo HiPer-D socket connectors feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone rear grommet meets IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information				
Sample Part Number	280-047S	3-5W5	MT	P
Basic Part Number	280-047S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware (Through-Hole) P = #4-40 Female Jackpost L = Jackscrew, Hex Head, Low Profile K = Jackscrew, Slot Head, Extended Length S = Screwlock, Male, Hex Head, Low Profile T = Screwlock, Male, Slot Head, Extended Length			

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

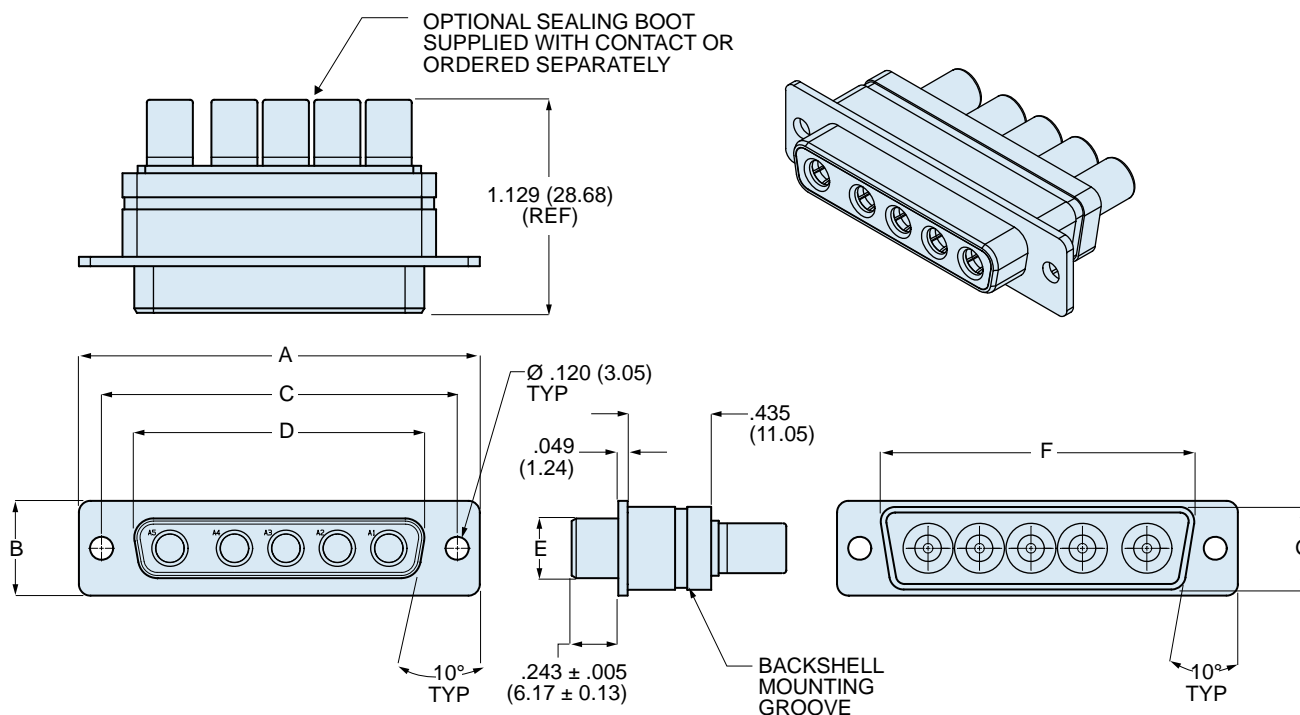
SERIES 28

HiPer-D Combo Connectors



280-047S combo cable socket connectors with standard mounting flange, crimp termination

280-047S DIMENSIONS



Dimensions														
Shell Size	A		B		C Basic		D		E		F		G	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.643	16.33	.311	7.90	.769	19.53	.432	10.97
2	1.541	39.14	.494	12.55	1.312	33.32	.971	24.66	.311	7.90	1.093	27.76	.432	10.97
3	2.088	53.04	.494	12.55	1.852	47.04	1.511	38.38	.311	7.90	1.635	41.53	.432	10.97
4	2.729	69.32	.494	12.55	2.500	63.50	2.159	54.84	.311	7.90	2.282	57.96	.432	10.97
5	2.635	66.93	.605	15.37	2.406	61.11	2.054	52.17	.423	10.74	2.188	55.58	.544	13.82

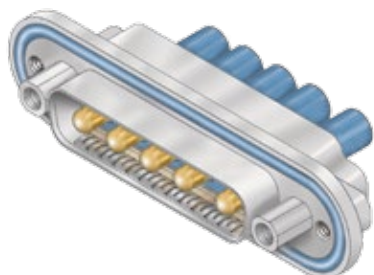
NOTES

- See [About Series 28 HiPer-D Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are intermateable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

HiPer-D Combo Connectors



280-048P panel mount pin combo connectors with O-ring mounting flange, crimp termination



Combo HiPer-D pin connectors feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information					
Sample Part Number	280-048P	4-8W8	JF	G	P
Basic Part Number	280-048P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

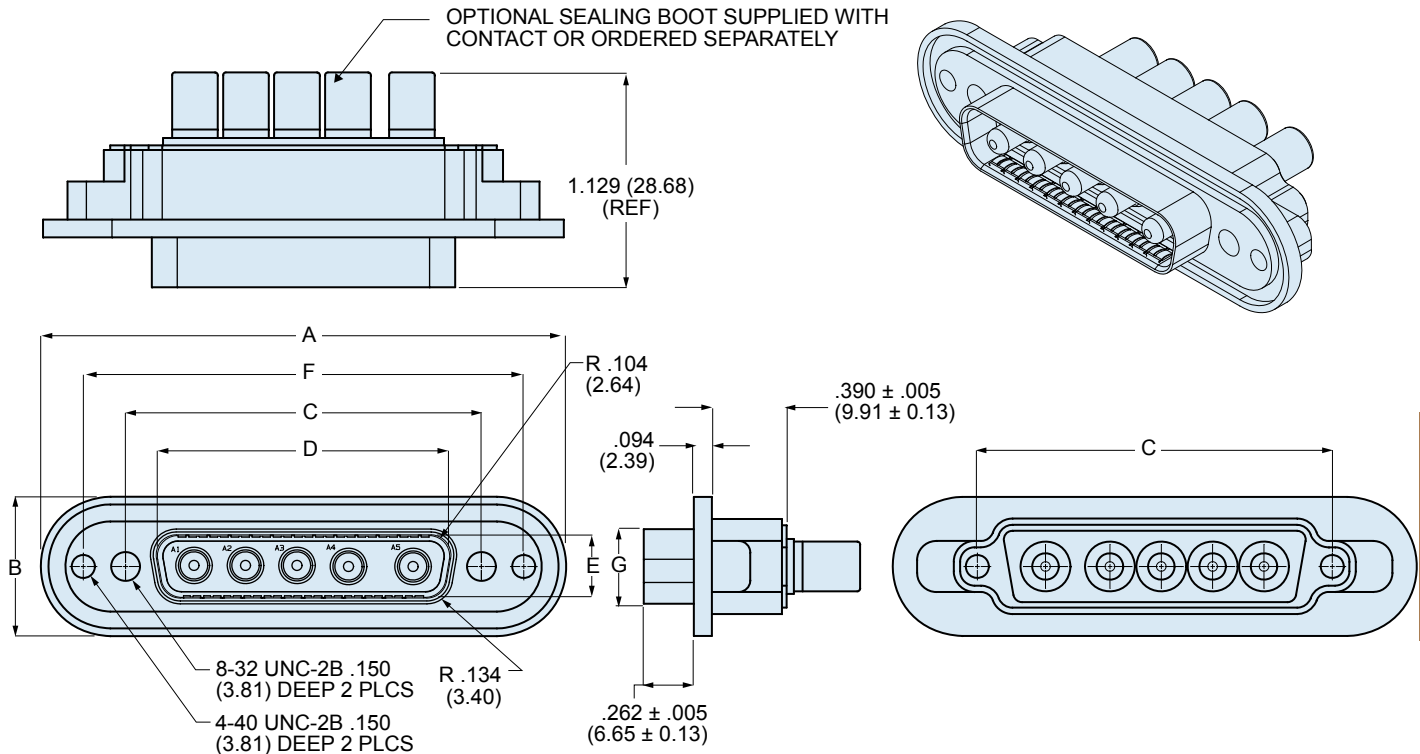
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
EMI Spring	Copper alloy, nickel plated
Retention Clips	Copper alloy
Grommet, Seal, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

280-048P panel mount pin combo connectors with O-ring mounting flange, crimp termination

280-048P DIMENSIONS



Dimensions														
Shell Size	A		B		C Basic		D		E		F Basic		G	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .015	mm ± 0.38	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38
1	1.865	47.37	.725	18.42	.984	24.99	.726	18.44	.329	8.36	1.424	36.17	.389	9.88
2	2.200	55.88	.725	18.42	1.312	33.32	1.054	26.77	.329	8.36	1.752	44.50	.389	9.88
3	2.736	69.49	.725	18.42	1.852	47.04	1.594	40.49	.329	8.36	2.292	58.22	.389	9.88
4	3.385	85.98	.725	18.42	2.500	63.50	2.242	56.95	.329	8.36	2.940	74.68	.389	9.88
5	3.289	83.54	.837	21.26	2.406	61.11	2.139	54.33	.441	11.20	2.846	72.29	.501	12.73

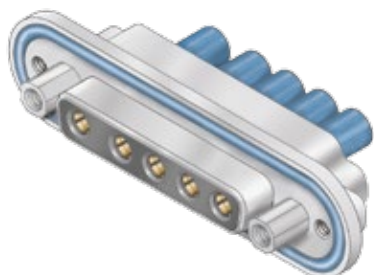
NOTES

- See [About Series 28 HiPer-D® Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D® Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D® Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D® connectors meet the applicable requirements of MIL-DTL-24308 and are intermateable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D® connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D® Product Specification](#).

HiPer-D Combo Connectors



280-049S panel mount socket combo connectors with O-ring mounting flange, crimp termination



Combo HiPer-D socket connectors feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell, wire grommet and panel O-ring for watertight sealing. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Suitable for aircraft and space vehicles. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information				
Sample Part Number	280-049S	3-13W3	MT	N
Basic Part Number	280-049S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings			

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

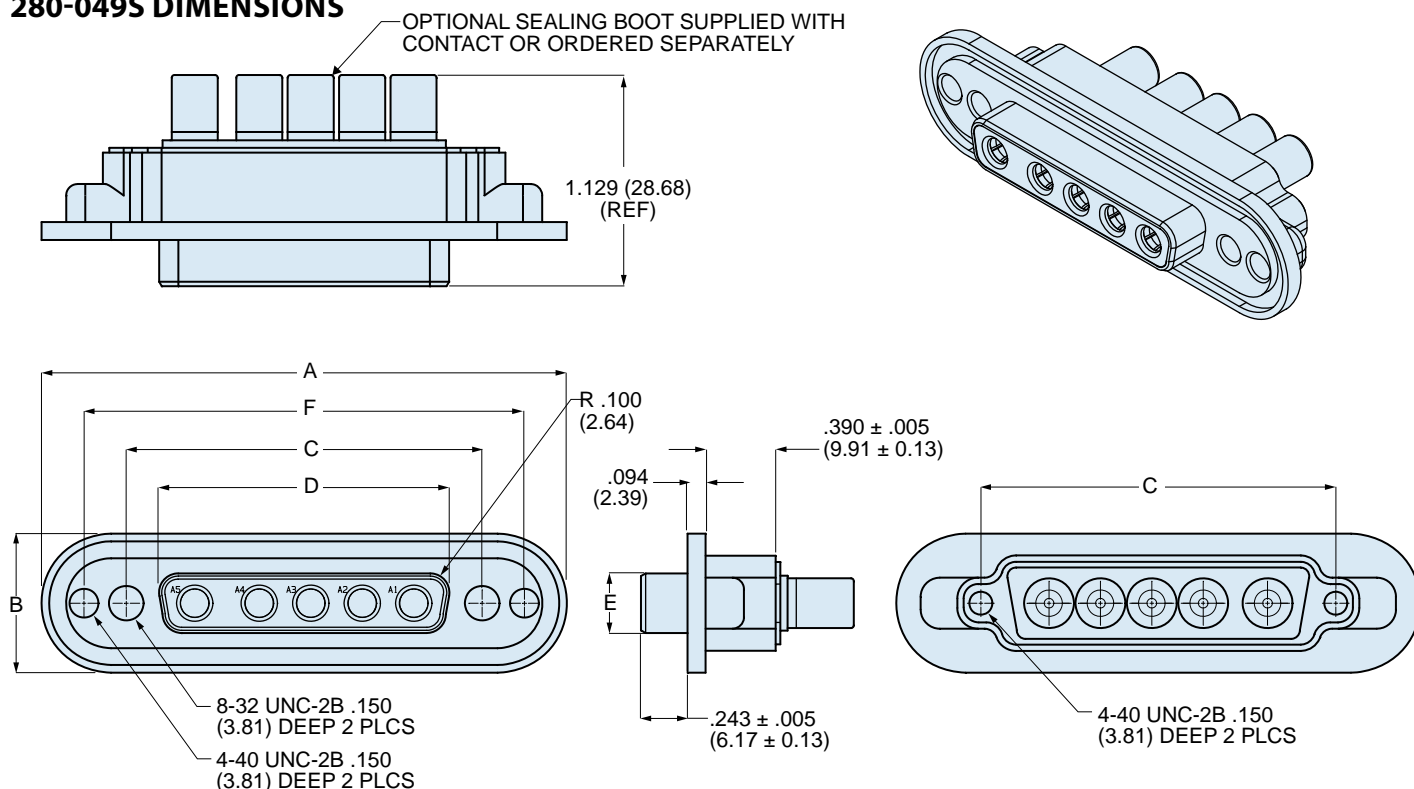
SERIES 28

HiPer-D Combo Connectors



280-049S panel mount socket combo connectors with O-ring mounting flange, crimp termination

280-049S DIMENSIONS



Shell Size	A		B		C Basic		D		E		F Basic	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.865	47.37	.725	18.42	.984	24.99	.643	16.33	.311	7.90	1.424	36.17
2	2.200	55.88	.725	18.42	1.312	33.32	.971	24.66	.311	7.90	1.752	44.50
3	2.736	69.49	.725	18.42	1.852	47.04	1.511	38.38	.311	7.90	2.292	58.22
4	3.385	85.98	.725	18.42	2.500	63.50	2.159	54.84	.311	7.90	2.940	74.68
5	3.289	83.54	.837	21.26	2.406	61.11	2.064	52.43	.423	10.74	2.846	72.29

NOTES

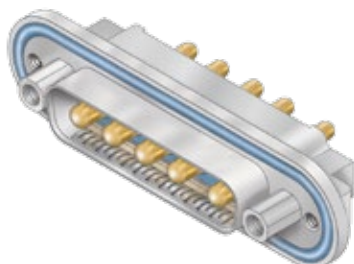
- See [About Series 28 HiPer-D Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-050P straight PC tail combo pin connectors with O-ring flange for rear panel mounting



The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Optional ground springs for improved resistance to electromagnetic interference. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone face seal and O-ring. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order						
Sample Part Number	280-050P	3-5P5	MT	G	P	A
Basic Part Number	280-050P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

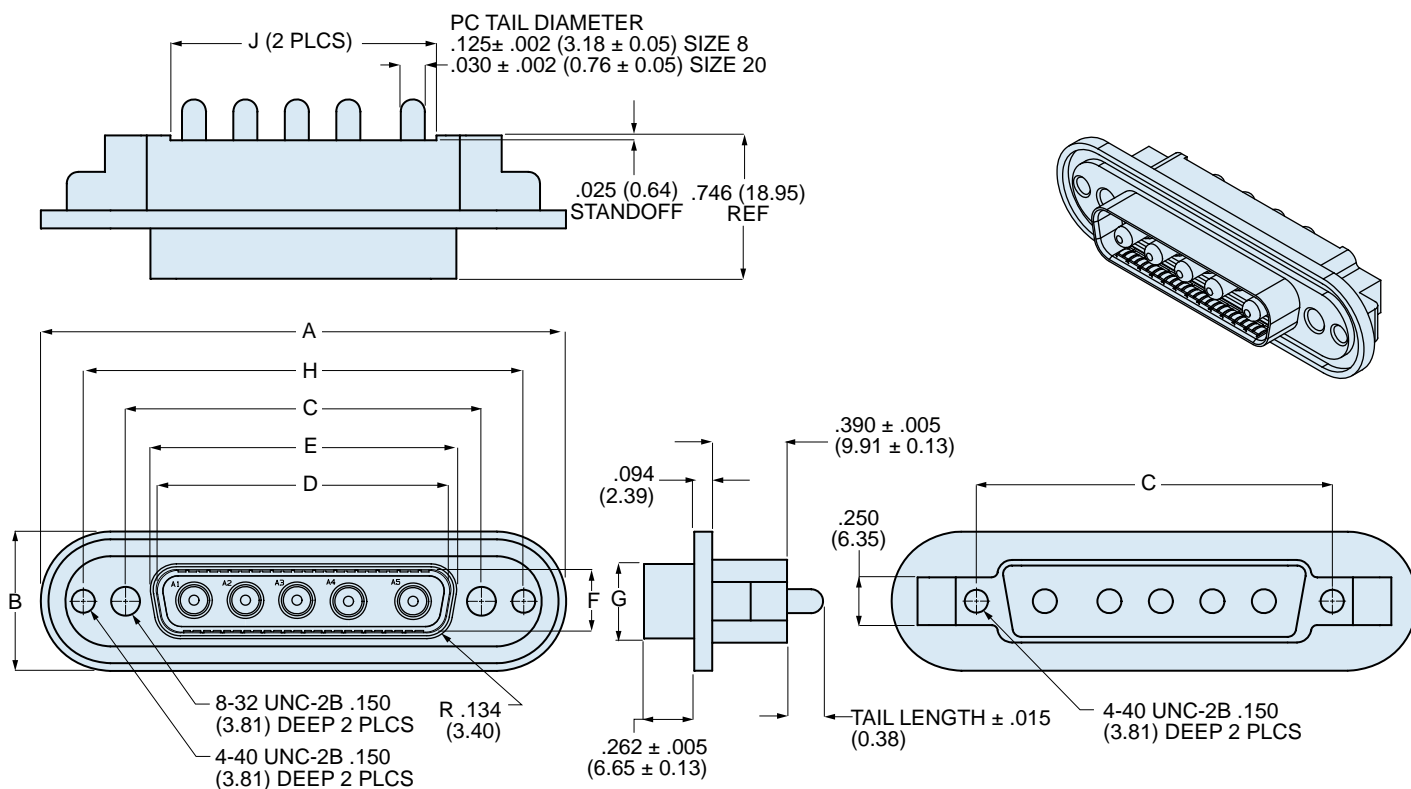
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
Potting Compound	Epoxy
EMI Spring	Copper alloy, nickel plated
Face Seal, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

280-050P straight PC tail combo pin connectors with O-ring flange for rear panel mounting

280-050P DIMENSIONS

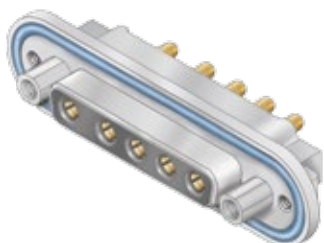


Dimensions																		
Shell Size	A		B		C Basic		D		E		F		G		H Basic		J	
	in	mm	in	mm			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
	± .015	± 0.38	± .015	± 0.38	in.	mm	± .005	± 0.13	± .005	± 0.13	± .005	± 0.13	± .015	± 0.38	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	.666	16.92	.726	18.44	.329	8.36	.389	9.88	1.424	36.17	.520	13.21
2	2.200	55.88	.725	18.42	1.312	33.32	.994	25.25	1.054	26.77	.329	8.36	.389	9.88	1.752	44.50	.844	21.44
3	2.736	69.49	.725	18.42	1.852	47.04	1.534	38.96	1.594	40.49	.329	8.36	.389	9.88	2.292	58.22	1.386	35.20
4	3.385	85.98	.725	18.42	2.500	63.50	2.182	55.42	2.242	56.95	.329	8.36	.389	9.88	2.940	74.68	2.034	51.66
5	3.289	83.54	.837	21.26	2.406	61.11	2.079	52.81	2.139	54.33	.441	11.20	.501	12.73	2.846	72.29	1.987	50.47

NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

280-051S straight PC tail combo socket connectors with O-ring flange for rear panel mounting



The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing and "closed entry" contact cavity for improved contact protection. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone O-ring. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order					
Sample Part Number	280-051S	3-13P3	ME	N	A
Basic Part Number	280-051S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
O-ring	Fluorosilicone rubber
Potting Compound	Epoxy
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

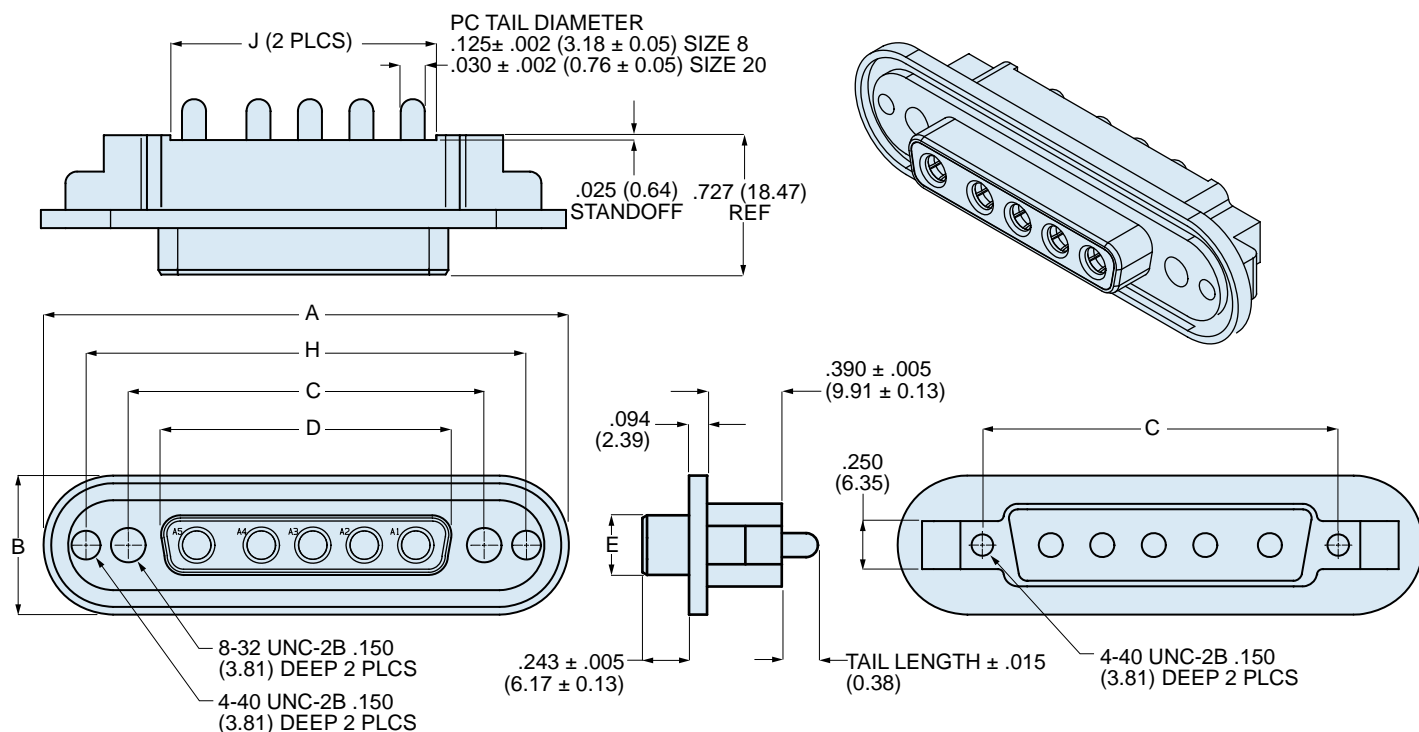
SERIES 28

HiPer-D Combo Connectors



280-051S straight PC tail combo socket connectors with O-ring flange for rear panel mounting

280-051S DIMENSIONS



Dimensions														
Shell Size	A		B		C Basic		D		E		H Basic		J	
	in	mm	in	mm	in.	mm	in	mm	in	mm	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	.643	16.33	.311	7.90	1.424	36.17	.520	13.21
2	2.200	55.88	.725	18.42	1.312	33.32	.971	24.66	.311	7.90	1.752	44.50	.844	21.44
3	2.736	69.49	.725	18.42	1.852	47.04	1.511	38.38	.311	7.90	2.292	58.22	1.386	35.20
4	3.385	85.98	.725	18.42	2.500	63.50	2.159	54.84	.311	7.90	2.940	74.68	2.034	51.66
5	3.289	83.54	.837	21.26	2.406	61.11	2.064	52.43	.423	10.74	2.846	72.29	1.987	50.47

NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices. Glenair offers the industry's widest selection of plating and material choices with no setup charge, no minimum order quantity and no schedule impact.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-052P right angle PC tail combo pin connectors with O-ring flange for rear panel mounting



The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Optional ground springs for improved resistance to electromagnetic interference. Stainless steel EMI shroud. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone face seal and O-ring. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order						
Sample Part Number	280-052P	3-5P5	ME	G	B	B
Basic Part Number	280-052P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

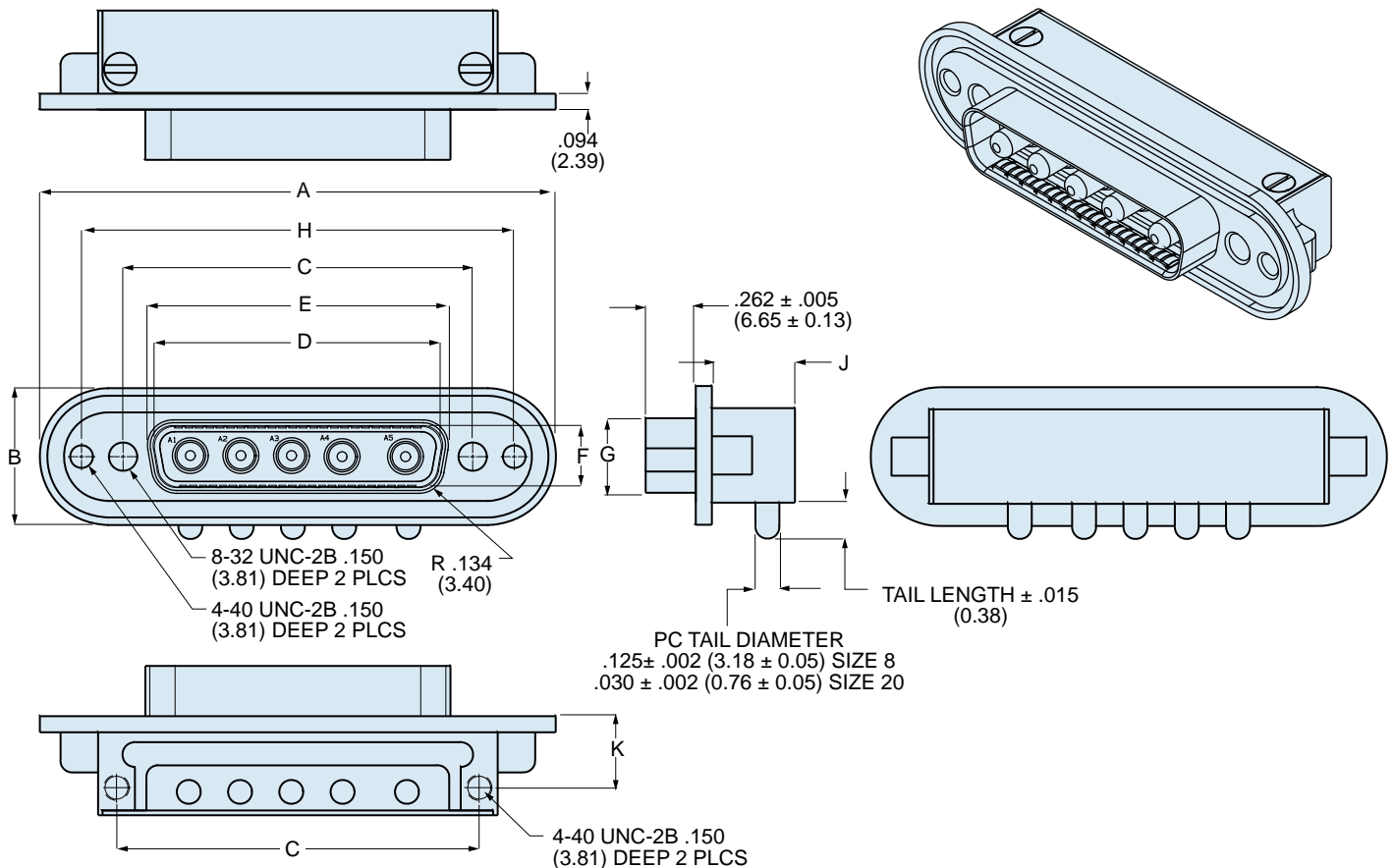
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
Potting Compound	Epoxy
EMI Spring	Copper alloy, nickel plated
Face Seal, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel
Shroud	Stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

280-052P right angle PC tail combo pin connectors with O-ring flange for rear panel mounting

280-052P DIMENSIONS



Dimensions																				
Shell Size	A		B		C Basic		D		E		F		G		H Basic		J		K	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1	1.865	47.37	.725	18.42	.984	24.99	.666	16.92	.726	18.44	.329	8.36	.389	9.88	1.424	36.17	.518	13.16	.374	9.50
2	2.200	55.88	.725	18.42	1.312	33.32	.994	25.25	1.054	26.77	.329	8.36	.389	9.88	1.752	44.50	.518	13.16	.374	9.50
3	2.736	69.49	.725	18.42	1.852	47.04	1.534	38.96	1.594	40.49	.329	8.36	.389	9.88	2.292	58.22	.518	13.16	.374	9.50
4	3.385	85.98	.725	18.42	2.500	63.50	2.182	55.42	2.242	56.95	.329	8.36	.389	9.88	2.940	74.68	.518	13.16	.374	9.50
5	3.289	83.54	.837	21.26	2.406	61.11	2.079	52.81	2.139	54.33	.441	11.20	.501	12.73	2.846	72.29	.630	16.00	.430	10.92

NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-053S right angle PC tail combo socket connectors with O-ring flange for rear panel mounting



The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing and "closed entry" contact cavity for improved contact protection. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone O-ring. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order					
Sample Part Number	280-053S	3-13P3	ME	N	A
Basic Part Number	280-053S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts G = Male Guide Pins B = Female Guide Bushings				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

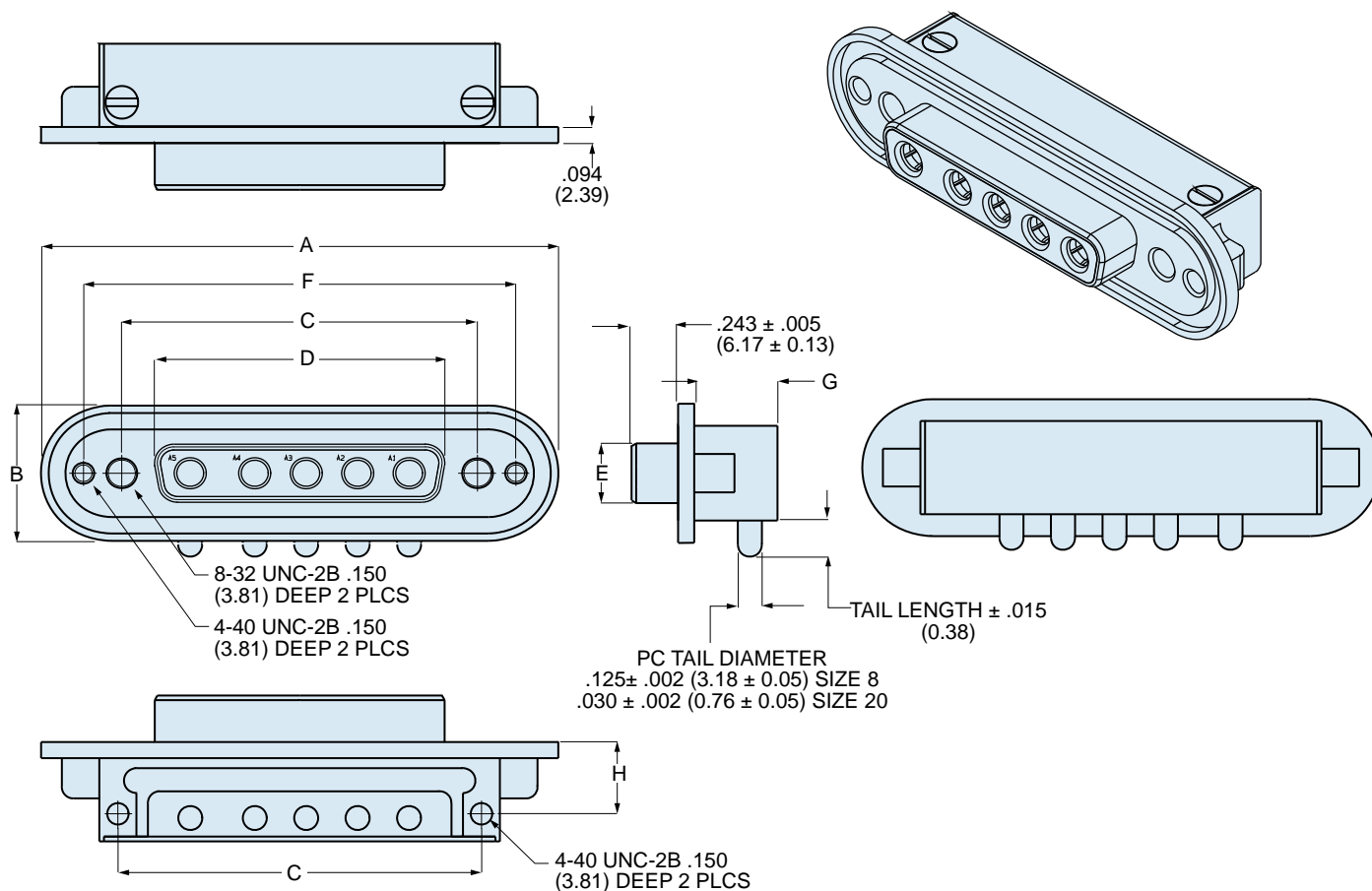
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
O-ring	Fluorosilicone rubber
Potting Compound	Epoxy
Hardware	300 series stainless steel
Shroud	Stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	P Female Jackposts #4-40, Non-removable
B Female Guide Bushings Non-removable 	G Male Guide Pins Non-removable

280-053S right angle PC tail combo socket connectors with O-ring flange for rear panel mounting

280-053S DIMENSIONS



Dimensions																
Shell Size	A		B		C Basic		D		E		F Basic		G		H	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in.	mm	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in	mm	in	mm	in ± .005	mm ± 0.13
1	1.865	47.37	.725	18.42	.984	24.99	.643	16.33	.311	7.90	1.424	36.17	.518	13.16	.374	9.50
2	2.200	55.88	.725	18.42	1.312	33.32	.971	24.66	.311	7.90	1.752	44.50	.518	13.16	.374	9.50
3	2.736	69.49	.725	18.42	1.852	47.04	1.511	38.38	.311	7.90	2.292	58.22	.518	13.16	.374	9.50
4	3.385	85.98	.725	18.42	2.500	63.50	2.159	54.84	.311	7.90	2.940	74.68	.518	13.16	.374	9.50
5	3.289	83.54	.837	21.26	2.406	61.11	2.064	52.43	.423	10.74	2.846	72.29	.630	16.00	.430	10.92

NOTES

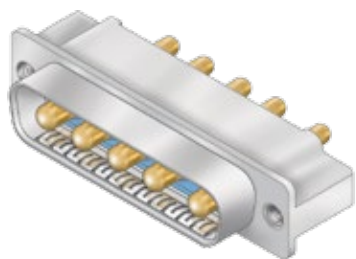
- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-054P straight PC tail pin connectors with low profile mounting flange



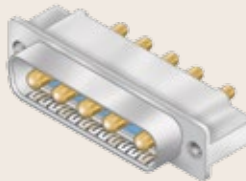
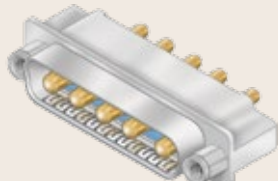
The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Optional ground springs for improved resistance to electromagnetic interference. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone face seal. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order						
Sample Part Number	280-054P	5-43P2	JF	N	N	B
Basic Part Number	280-054P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware P = #4-40 Female Jackposts					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
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5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

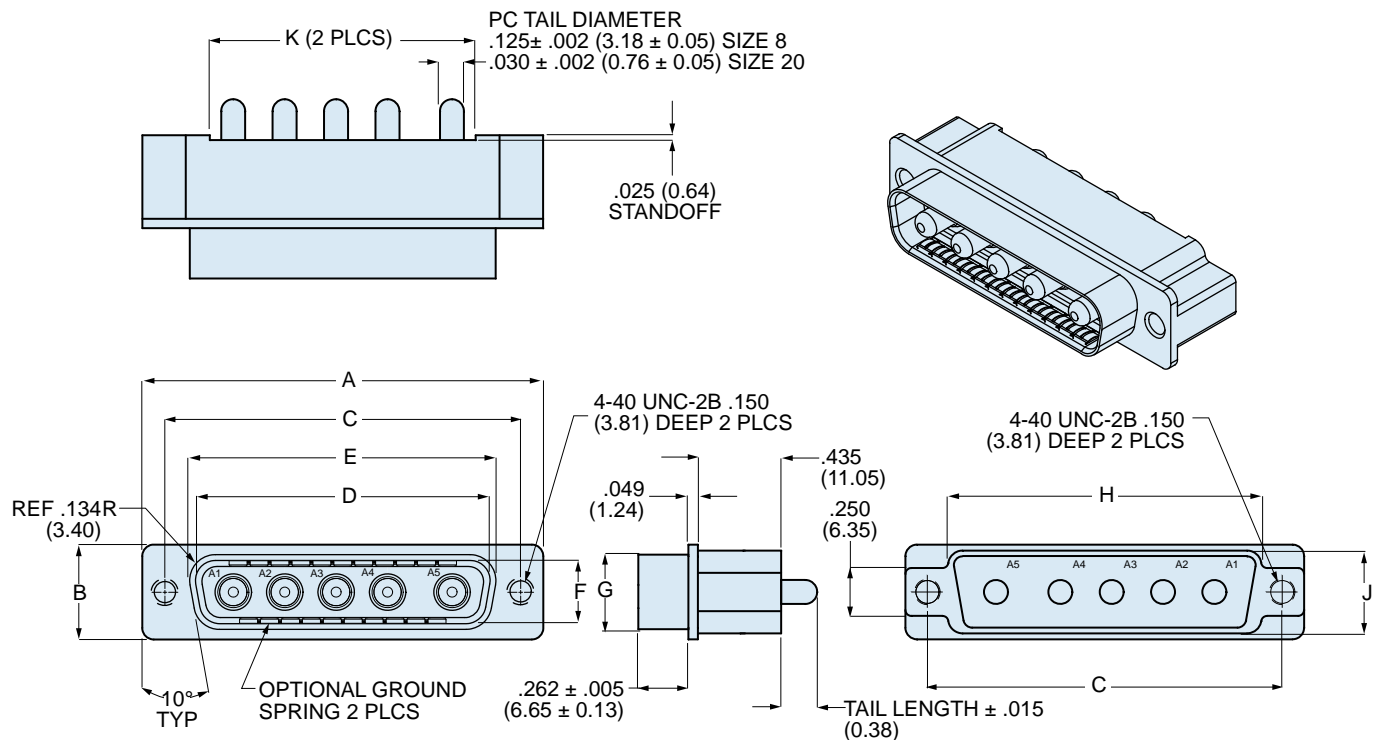
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
EMI Spring	Copper alloy, nickel plated
Face Seal	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

280-054P straight PC tail pin connectors with low profile mounting flange

280-054P DIMENSIONS



Dimensions																				
Shell Size	A		B		C Basic		D		E		F		G		H Max		J Max		K Max	
	in	mm	in	mm			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
	± .015	± 0.38	± .015	± 0.38	in.	mm	± .005	± 0.13	± .005	± 0.13	± .005	± 0.13	± .005	± 0.13	in	mm	in	mm	in	mm
1	1.213	30.81	.494	12.55	.984	24.99	.666	16.92	.726	18.44	.329	8.36	.389	9.88	.769	19.53	.432	10.97	.520	13.21
2	1.541	39.14	.494	12.55	1.312	33.32	.994	25.25	1.054	26.77	.329	8.36	.389	9.88	1.093	27.76	.432	10.97	.844	21.44
3	2.088	53.04	.494	12.55	1.852	47.04	1.534	38.96	1.594	40.49	.329	8.36	.389	9.88	1.636	41.55	.432	10.97	1.386	35.20
4	2.729	69.32	.494	12.55	2.500	63.50	2.182	55.42	2.242	56.95	.329	8.36	.389	9.88	2.282	57.96	.432	10.97	2.034	51.66
5	2.635	66.93	.605	15.37	2.406	61.11	2.079	52.81	2.139	54.33	.441	11.20	.501	12.73	2.188	55.58	.544	13.82	1.887	47.93

NOTES

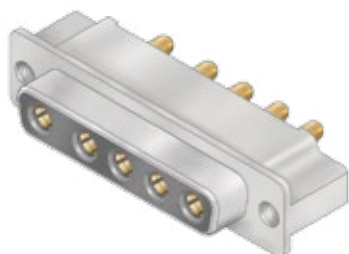
- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-055S straight PC tail socket connectors with low profile mounting flange



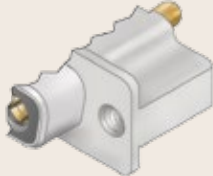
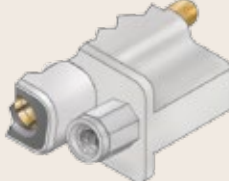
The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing and "closed entry" contact cavity for improved contact protection. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order					
Sample Part Number	280-055S	1-2P2	ME	P	A
Basic Part Number	280-055S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Mating Hardware	N = No Hardware P = #4-40 Female Jackpost				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
Potting Compound	Epoxy
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

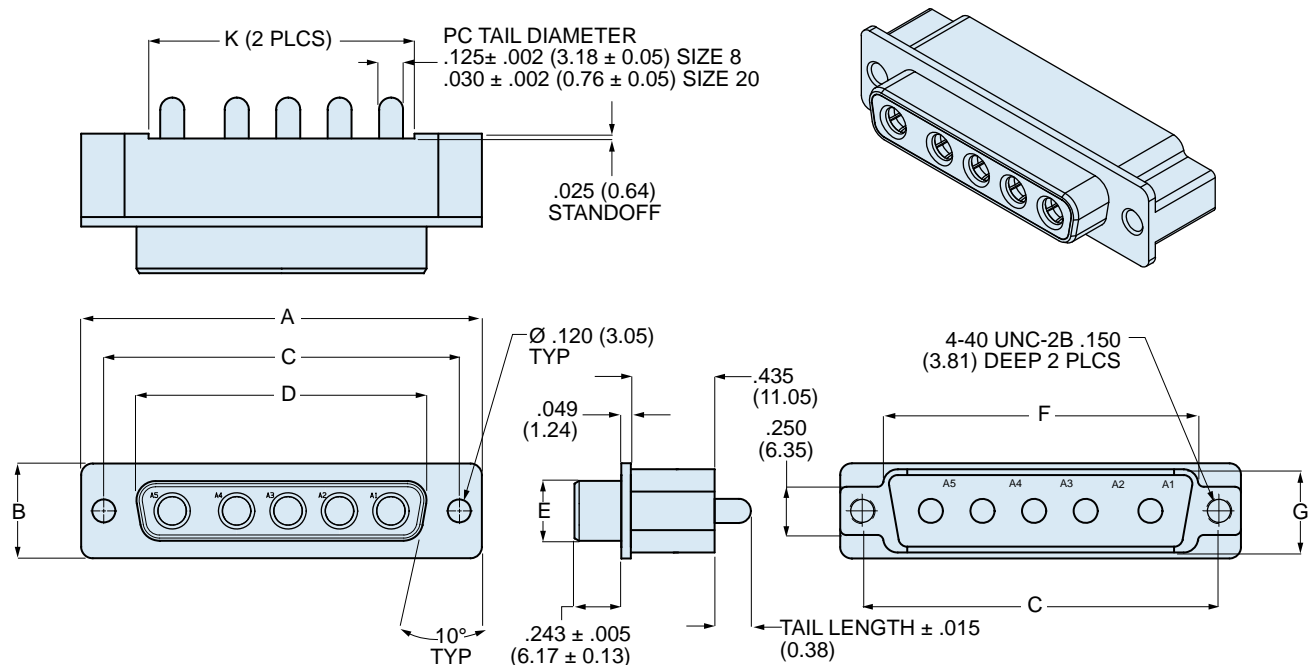
SERIES 28

HiPer-D Combo Connectors



280-055S straight PC tail socket connectors with low profile mounting flange

280-055S DIMENSIONS



Dimensions																
Shell Size	A		B		C Basic		D		E		F Max		G Max		H Max	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. in.	mm	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in. in.	mm	in. in.	mm	in. in.	mm
1	1.213	30.81	.494	12.55	.984	24.99	.643	16.33	.311	7.90	.769	19.53	.432	10.97	.520	13.21
2	1.541	39.14	.494	12.55	1.312	33.32	.971	24.66	.311	7.90	1.093	27.76	.432	10.97	.844	21.44
3	2.088	53.04	.494	12.55	1.852	47.04	1.511	38.38	.311	7.90	1.636	41.55	.432	10.97	1.386	35.20
4	2.729	69.32	.494	12.55	2.500	63.50	2.159	54.84	.311	7.90	2.282	57.96	.432	10.97	2.034	51.66
5	2.635	66.93	.605	15.37	2.406	61.11	2.054	52.17	.423	10.74	2.188	55.58	.544	13.82	1.887	47.93

NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-056P right angle PC tail pin connectors with low profile mounting flange



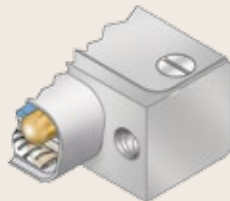
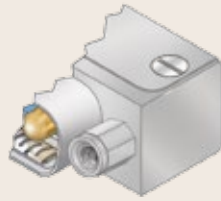
The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Optional ground springs for improved resistance to electromagnetic interference. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound, fluorosilicone face seal. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order						
Sample Part Number	280-056P	3-5P5	Z2	G	P	A
Basic Part Number	280-056P					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)					
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring					
Mating Hardware	N = No Hardware P = #4-40 Female Jackpost					
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length					

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
EMI Spring	Copper alloy, nickel plated
Face Seal	Fluorosilicone rubber
Hardware	300 series stainless steel
Shroud, Contact	Aluminum alloy

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

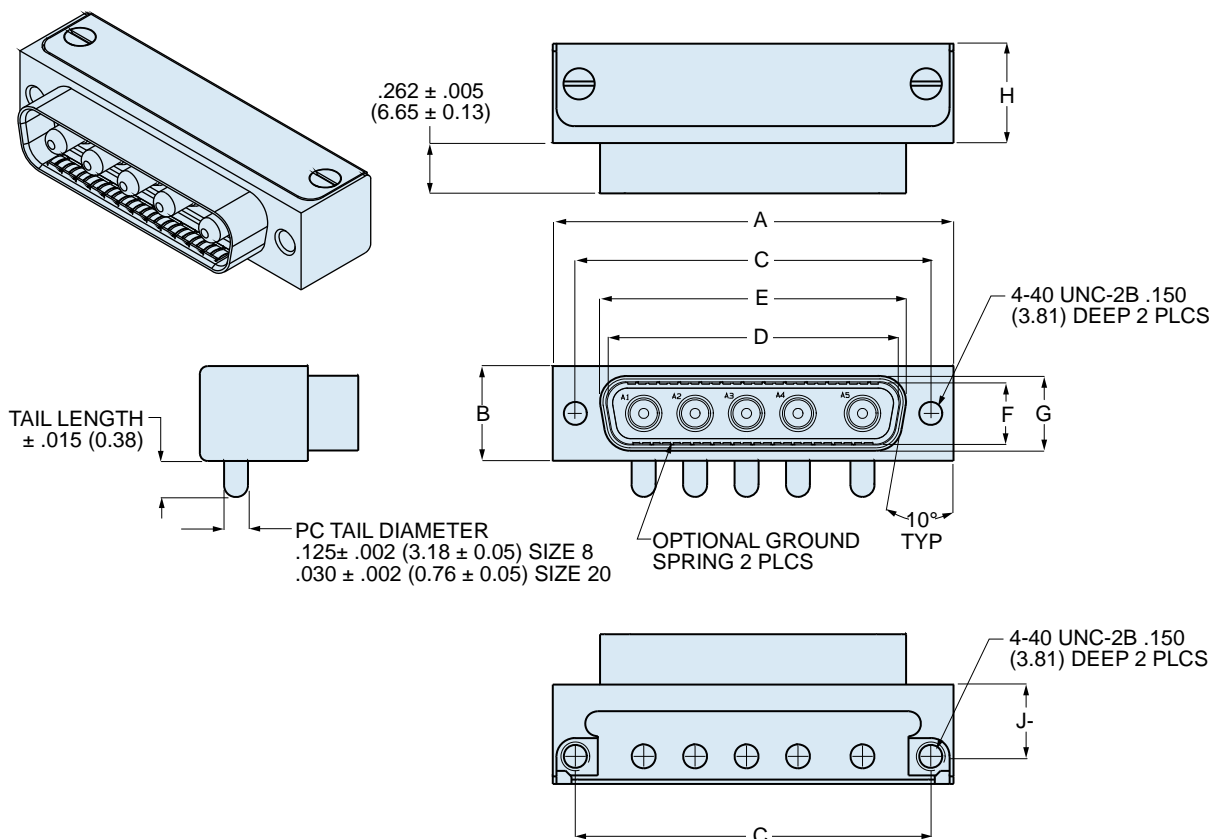
SERIES 28

HiPer-D Combo Connectors



280-056P right angle PC tail pin connectors with low profile mounting flange

280-056P DIMENSIONS



Dimensions																		
Shell Size	A		B		C Basic		D		E		F		G		H		J	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1	1.213	30.81	.494	12.55	.984	24.99	.666	16.92	.726	18.44	.329	8.36	.389	9.88	.518	13.16	.374	9.50
2	1.541	39.14	.494	12.55	1.312	33.32	.994	25.25	1.054	26.77	.329	8.36	.389	9.88	.518	13.16	.374	9.50
3	2.088	53.04	.494	12.55	1.852	47.04	1.534	38.96	1.594	40.49	.329	8.36	.389	9.88	.518	13.16	.374	9.50
4	2.729	69.32	.494	12.55	2.500	63.50	2.182	55.42	2.242	56.95	.329	8.36	.389	9.88	.518	13.16	.374	9.50
5	2.635	66.93	.605	15.37	2.406	61.11	2.079	52.81	2.139	54.33	.441	11.20	.501	12.73	.630	16.00	.430	10.92

NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-057S right angle PC tail socket connectors with low profile mounting flange



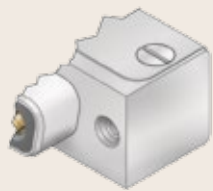
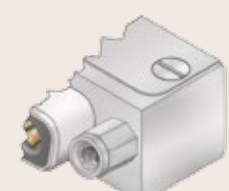
The HiPer-D is a high performance version of the M24308-type D-Subminiature connector. HiPer-D connectors feature improved EMI performance and environmental sealing and "closed entry" contact cavity for improved contact protection. Factory-installed PC tail contacts, integral board standoffs and threaded holes for attaching to circuit board. Gold-plated copper alloy contacts, one-piece machined aluminum shell, glass-reinforced thermoset epoxy insulator, epoxy potting compound. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

How To Order					
Sample Part Number	280-057S	4-27P2	JF	P	B
Basic Part Number	280-057S				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Hardware Option	N = No Hardware P = #4-40 Female Jackpost				
PC Tail Length	A = .125 (3.18) Tail Length B = .250 (6.35) Tail Length				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2P2		2
1-5P1	4	1
2-3P3		3
2-7P2	5	2
2-11P1	10	1
3-5P5		5
3-9P4	5	4
3-13P3	10	3
3-17P2	15	2
3-21P1	20	1
4-8P8		8
4-13P6	7	6
4-17P5	12	5
4-21PA4	17	4
4-25P3	22	3
4-27P2	25	2
5-24P7	17	7
5-36P4	32	4
5-43P2	41	2
5-47P1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulator	Thermoset epoxy
Potting Compound	Epoxy
Hardware	300 series stainless steel
Shroud	Stainless steel

Mating Hardware	
N No Hardware #4-40 Female Threads in Mounting Holes 	P #4-40 Female Jackposts 
Choose this option for rear panel mounting and order jackpost kit 289-016 separately.	

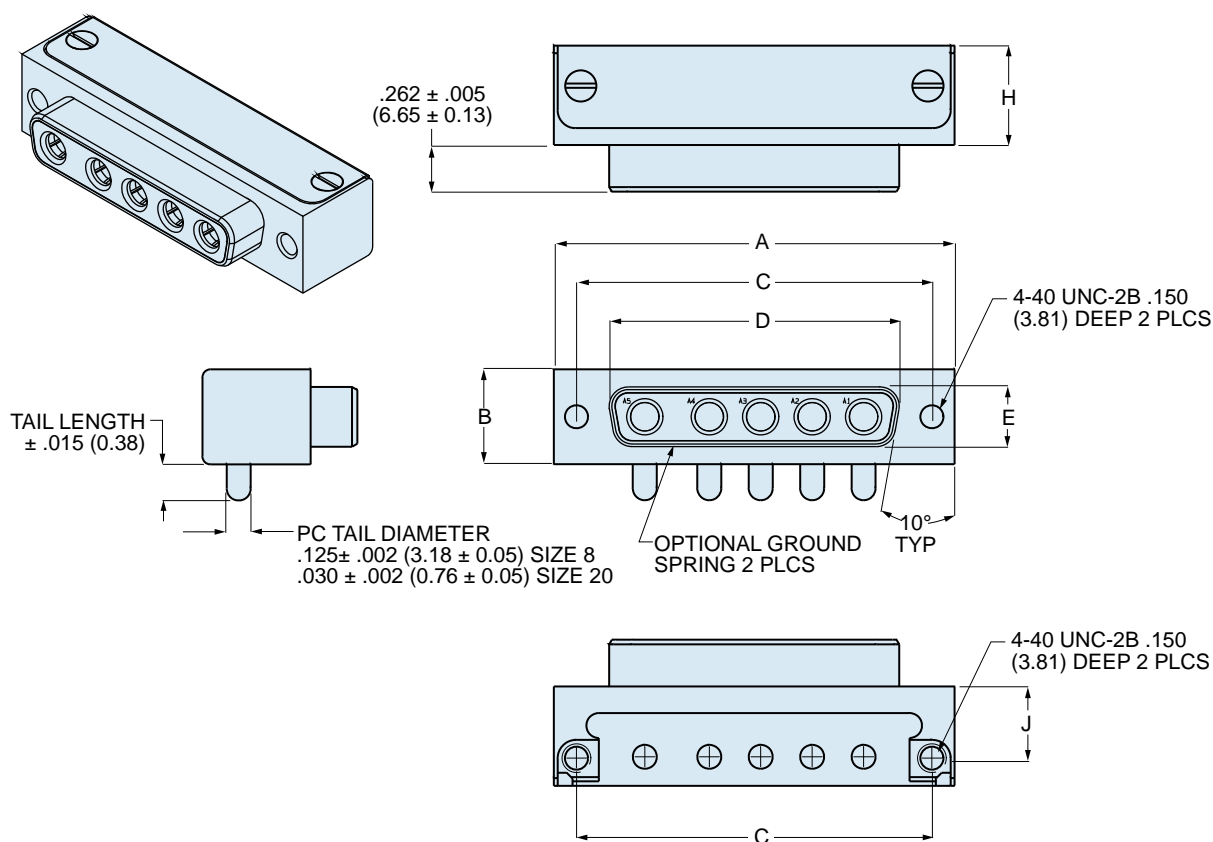
SERIES 28

HiPer-D Combo Connectors



280-057S right angle PC tail socket connectors with low profile mounting flange

280-057S DIMENSIONS



Shell Size	Dimensions															
	A		B		C Basic		D		E		F Max		G Max		H Max	
	in $\pm .015$	mm ± 0.38	in $\pm .015$	mm ± 0.38	in. $\pm .015$	mm ± 0.38	in $\pm .005$	mm ± 0.13	in $\pm .005$	mm ± 0.13	in. $\pm .005$	mm ± 0.13	in. $\pm .005$	mm ± 0.13	in. $\pm .005$	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.643	16.33	.311	7.90	.769	19.53	.432	10.97	.520	13.21
2	1.541	39.14	.494	12.55	1.312	33.32	.971	24.66	.311	7.90	1.093	27.76	.432	10.97	.844	21.44
3	2.088	53.04	.494	12.55	1.852	47.04	1.511	38.38	.311	7.90	1.636	41.55	.432	10.97	1.386	35.20
4	2.729	69.32	.494	12.55	2.500	63.50	2.159	54.84	.311	7.90	2.282	57.96	.432	10.97	2.034	51.66
5	2.635	66.93	.605	15.37	2.406	61.11	2.054	52.17	.423	10.74	2.188	55.58	.544	13.82	1.887	47.93

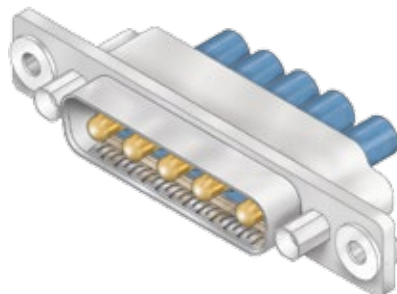
NOTES

- Contacts are factory-installed, non-removable and are potted with epoxy.
- HiPer-D connectors are available with a wide variety of materials and finishes. See [About Series 28 HiPer-D Shell Plating Options](#) for additional choices.
- For panel cutout dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- For printed circuit board mounting dimensions, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard M24308-type D-Subminiature combo connectors with corresponding contact arrangements and type.
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28 HiPer-D Combo Connectors



280-058P float mount combo pin connectors for blind mating, crimp termination



Combo HiPer-D pin connectors feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to electromagnetic interference. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone face seal and rear grommet meet IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information					
Sample Part Number	280-058P	4-25W3	JF	G	P
Basic Part Number	280-058P				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	N = No Hardware G = Male Guide Pins B = Female Guide Bushings				

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

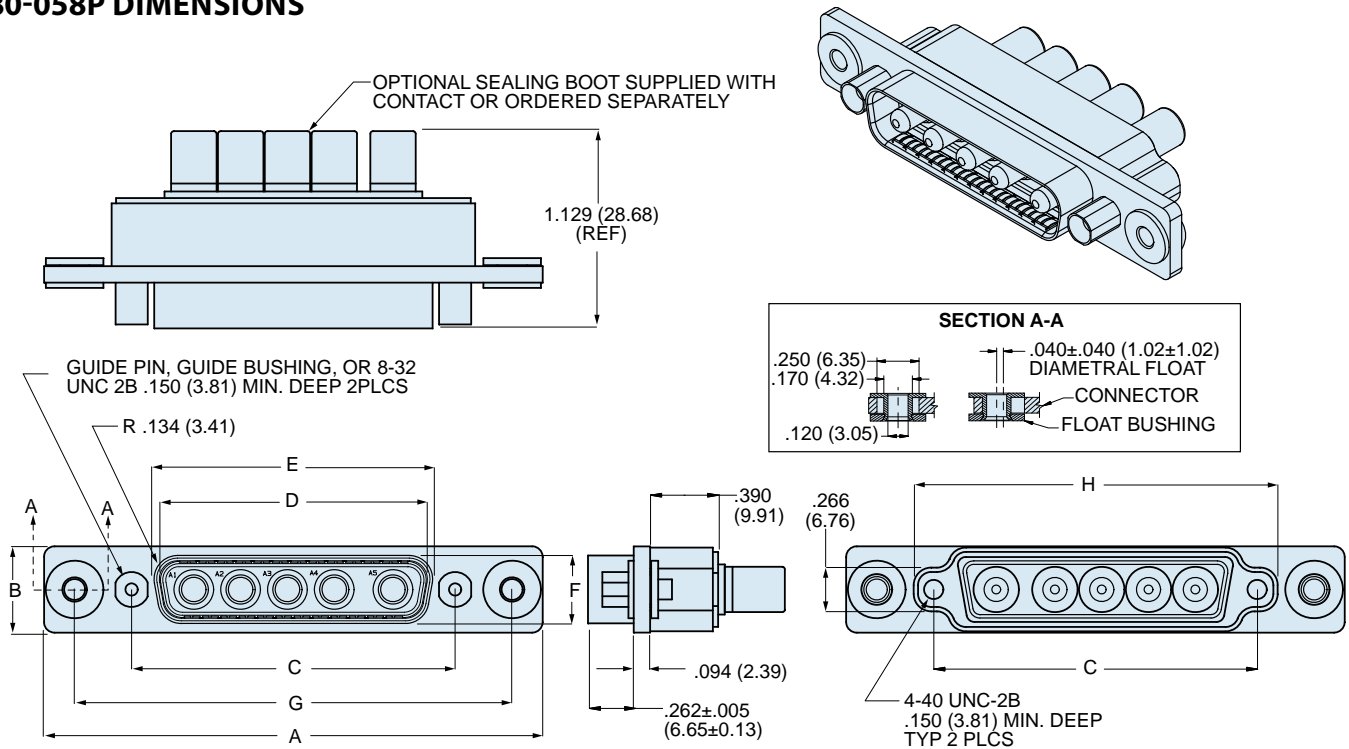
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
EMI Spring	Copper alloy, nickel plated
Retention Clips	Copper alloy
Grommet, Seal	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	B Female Guide Bushings Non-removable
G Male Guide Pins Non-removable 	

280-058P float mount combo pin connectors for blind mating, crimp termination

280-058P DIMENSIONS



Shell Size	A		B		C Basic		E		F		G Basic		H	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.986	50.44	.494	12.55	.984	24.99	.726	18.44	.329	8.36	1.636	41.55	1.213	30.81
2	2.314	58.78	.494	12.55	1.312	33.32	1.054	26.77	.329	8.36	1.964	49.89	1.541	39.14
3	2.854	72.49	.494	12.55	1.852	47.04	1.594	40.49	.329	8.36	2.504	63.60	2.081	52.86
4	3.502	88.95	.494	12.55	2.500	63.50	2.242	56.95	.329	8.36	3.152	80.06	2.729	69.32
5	3.408	86.56	.600	15.24	2.406	61.11	2.139	54.33	.441	11.20	3.058	77.67	2.635	66.93

NOTES

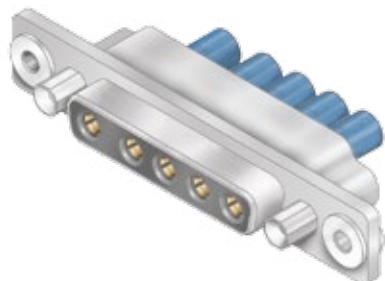
- See [About Series 28 HiPer-D Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are interchangeable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28

HiPer-D Combo Connectors



280-059S float mount combo socket connectors for blind mating, crimp termination



Combo HiPer-D float mount connectors for blind mate applications feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D features a rugged machined aluminum shell and wire grommet for environmental protection. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone rear grommet meets IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information				
Sample Part Number	280-059S	5-24W7	ME	G
Basic Part Number	280-059S			
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table			
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)			
Mating Hardware	N = No Hardware G = Male Guide Pins B = Female Guide Bushings			

Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#8
1-2W2		2
1-5W1	4	1
2-3W3		3
2-7W2	5	2
2-11W1	10	1
3-5W5		5
3-9W4	5	4
3-13W3	10	3
3-17W2	15	2
3-21W1	20	1
4-8W8		8
4-13W6	7	6
4-17W5	12	5
4-21WA4	17	4
4-25W3	22	3
4-27W2	25	2
5-24W7	17	7
5-36W4	32	4
5-43W2	41	2
5-47W1	46	1

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

Mating Hardware	
N No Hardware #8-32 tapped hole 	B Female Guide Bushings Non-removable
G Male Guide Pins Non-removable 	

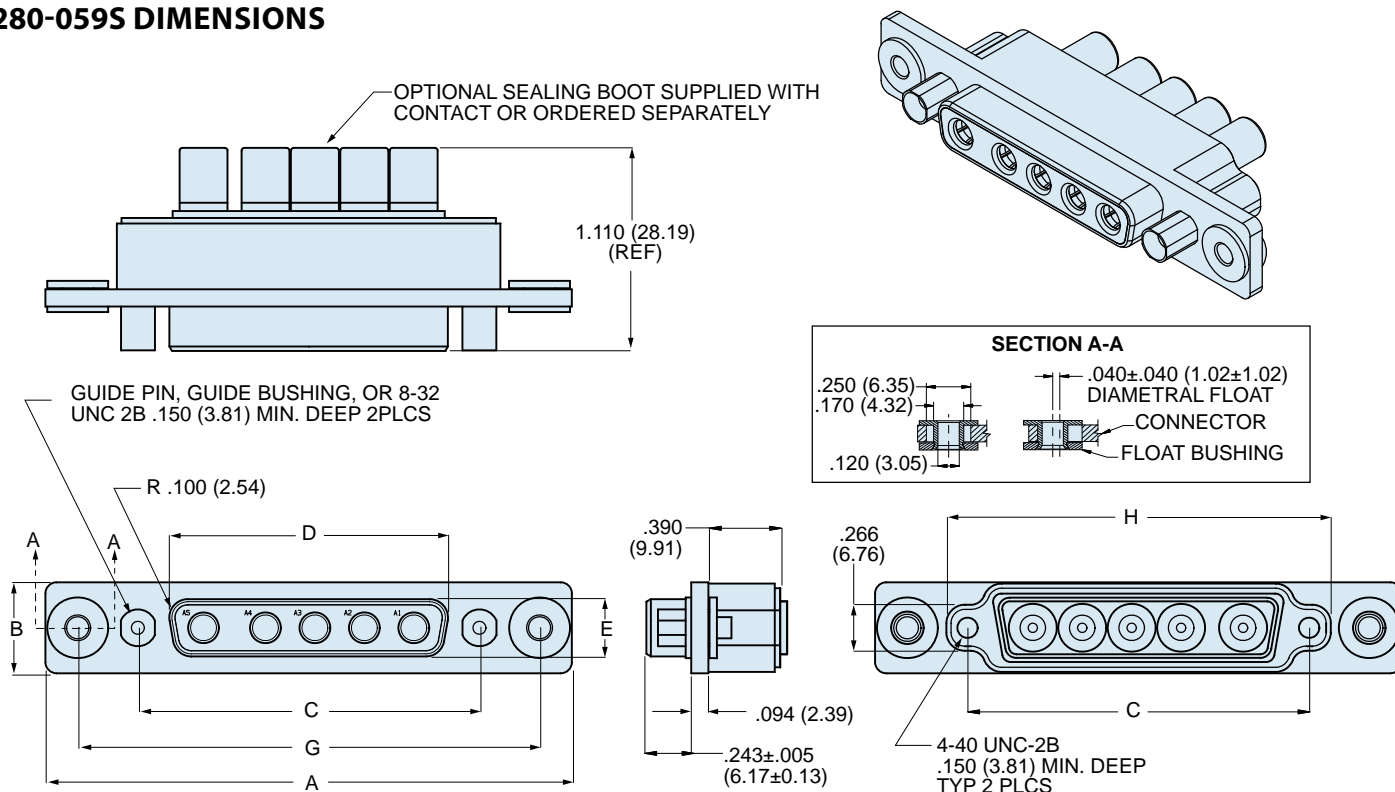
SERIES 28

HiPer-D Combo Connectors



280-059S float mount combo socket connectors for blind mating, crimp termination

280-059S DIMENSIONS



Shell Size	A		B		C Basic		E		G Basic		H	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in. ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.986	50.44	.494	12.55	.984	24.99	.311	7.90	1.636	41.55	1.213	30.81
2	2.314	58.78	.494	12.55	1.312	33.32	.311	7.90	1.964	49.89	1.541	39.14
3	2.854	72.49	.494	12.55	1.852	47.04	.311	7.90	2.504	63.60	2.081	52.86
4	3.502	88.95	.494	12.55	2.500	63.50	.311	7.90	3.152	80.06	2.729	69.32
5	3.408	86.56	.600	15.24	2.406	61.11	.423	10.74	3.058	77.67	2.635	66.93

NOTES

- See [About Series 28 HiPer-D Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D connectors meet the applicable requirements of MIL-DTL-24308 and are intermateable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D Product Specification](#).

SERIES 28 HiPer-D® Combo Connectors



280-088P combo cable pin connectors with standard mounting flange, integral banding platform and crimp termination



Combo HiPer-D® Combo-D connectors, with integral banding platform, feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D® features a rugged machined aluminum shell and wire grommet for environmental protection. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone rear grommet meets IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information						
Sample Part Number	280-088	P	1-5W1	ME	G	S
Basic Part Number	280-088					
Contact	P = Pin A - Less contact					
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table					
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) Z1 = Passivated Stainless Steel (RoHS) ZM = Nickel Over Stainless					
Ground Option	G = EMI/Gronding N = None					
Mating Hardware	N = No Hardware P = Female Jackpost L = Low Profile Hex Head Captive Jackscrew K = Slot Head Extended Jackscrew S = Hex Head Captive Screwlock T = Slot Head Extended Captive Screwlock					

Contact Arrangements			
Shell Size-Contact Arr.	Contact Size and Qty		
	#22	#20	#8
1-2W2			2
1-5W1		4	1
2-3W3			3
2-7W2		5	2
2-11W1		10	1
3-5W5			5
3-9W4		5	4
3-13W3		10	3
3-17W2		15	2
3-21W1		20	1
4-8W8			8
4-13W6		7	6
4-17W5		12	5
4-21WA4		17	4
4-25W3		22	3
4-27W2		25	2
5-24W7		17	7
5-36W4		32	4
5-43W2		41	2
5-47W1		46	1

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

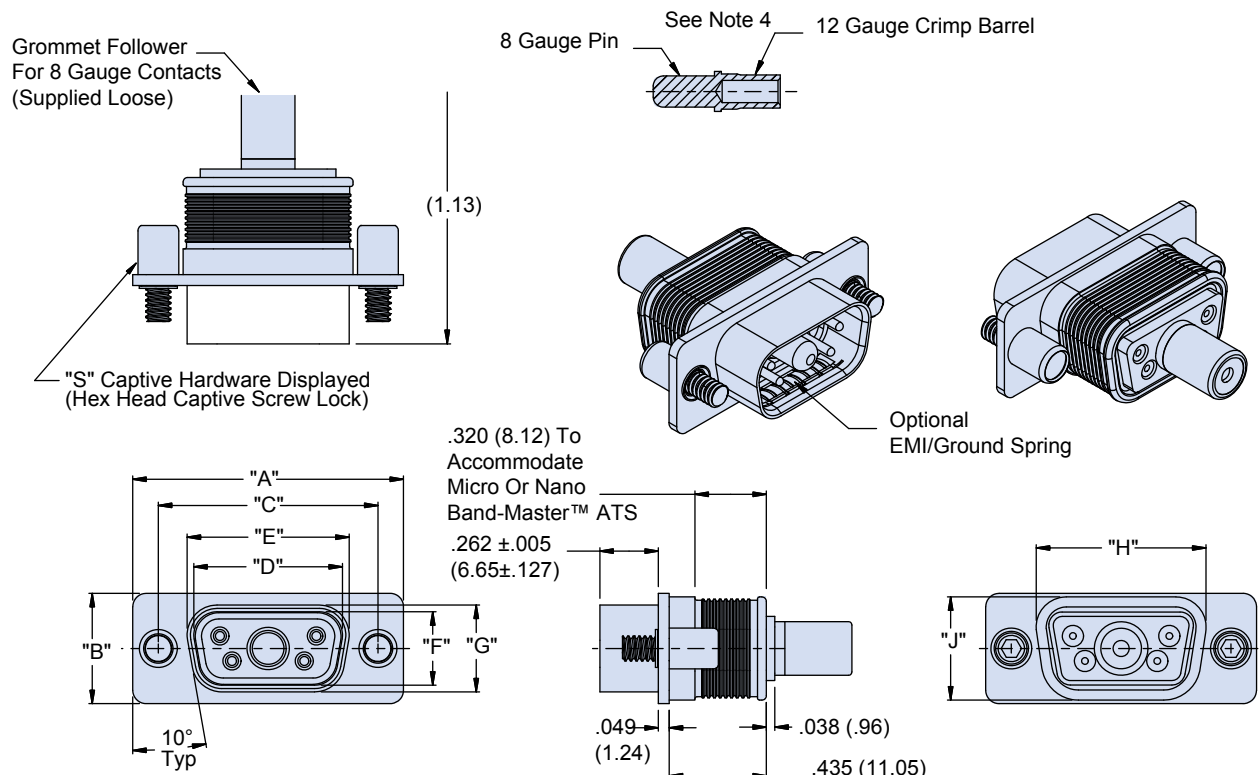
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

SERIES 28 HiPer-D® Combo Connectors



280-088P combo cable pin connectors with standard mounting flange, integral banding platform and crimp termination

280-088P DIMENSIONS



Dimensions																		
SHELL SIZE	"A" ±.015		"B" ±.015		"C" ±.005		"D" ±.005		"E" ±.005		"F" ±.005		"G" ±.005		"H"		"J"	
	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
1	1.213	30.81	0.494	12.55	0.984	24.99	0.666	16.92	0.726	18.44	0.329	8.36	0.389	9.88	0.760	19.30	0.462	11.73
2	1.541	39.14	0.494	12.55	1.312	33.32	0.994	25.25	1.054	26.77	0.329	8.36	0.389	9.88	1.089	27.66	0.462	11.73
3	2.088	53.04	0.494	12.55	1.852	47.04	1.534	38.96	1.594	40.48	0.329	8.36	0.389	9.88	1.629	41.38	0.462	11.73
4	2.729	69.32	0.494	12.55	2.5	63.50	2.182	55.42	2.242	56.94	0.329	8.36	0.389	9.88	2.277	57.84	0.462	11.73
5	2.635	66.93	0.605	15.37	2.406	61.11	2.079	52.81	2.139	54.33	0.441	11.20	0.501	12.73	2.182	55.42	0.474	12.04
6	2.729	69.32	0.668	16.97	2.5	63.50	2.212	56.18	2.272	57.71	0.503	12.77	0.563	14.30	2.307	58.60	0.626	15.90

NOTES

- See [About Series 28 HiPer-D® Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D® Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D® Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D® connectors meet the applicable requirements of MIL-DTL-24308 and are intermateable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D® connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D® Product Specification](#).

SERIES 28 HiPer-D® Combo Connectors



280-089P combo cable socket connectors with standard mounting flange, integral banding platform and crimp termination



Combo HiPer-D® Combo-D connectors, with integral banding platform, feature size #20 signal contacts and size #8 power or coax contacts. **Size #8 contacts are ordered separately.** The HiPer-D® features a rugged machined aluminum shell and wire grommet for environmental protection. Size #20 contacts are packaged with connector. Terminate contacts with crimp tools purchased separately. Glass-reinforced thermoset epoxy insulators, copper alloy retention clips. Fluorosilicone rear grommet meets IP67 immersion requirement. 1000 VAC, 7.5 Amps (#20), up to 40 Amps with size #8 power contacts.

Ordering Information					
Sample Part Number	280-089	S	1-5W1	ME	P
Basic Part Number	280-089				
Contact	S = Socket A = Less contact				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Shell Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) Z1 = Passivated Stainless Steel (RoHS) ZM = Nickel Over Stainless				
Mating Hardware	N = No Hardware P = Female Jackpost L = Low Profile Hex Head Captive Jackscrew K = Slot Head Extended Jackscrew S = Hex Head Captive Screwlock T = Slot Head Extended Captive Screwlock				

Shell Size-Contact Arr.	Contact Size and Qty		
	#22	#20	#8
1-2W2			2
1-5W1		4	1
2-3W3			3
2-7W2		5	2
2-11W1		10	1
3-5W5			5
3-9W4		5	4
3-13W3		10	3
3-17W2		15	2
3-21W1		20	1
4-8W8			8
4-13W6		7	6
4-17W5		12	5
4-21WA4		17	4
4-25W3		22	3
4-27W2		25	2
5-24W7		17	7
5-36W4		32	4
5-43W2		41	2
5-47W1		46	1

Mating Hardware		
N Thru-Hole No Hardware 	P Female Jackpost 	S Captive Screwlock, Hex Head
L Captive Jackscrew, Hex Head 	K Slot-Head Extended Jackscrew 	T Slot-Head Extended Captive Screwlock

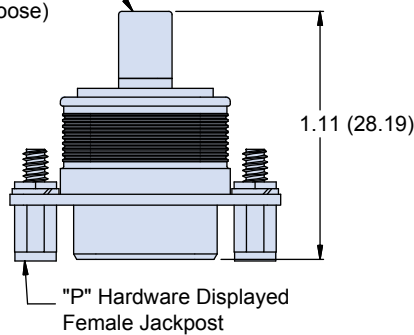
Specifications	
Current Rating	#20 7.5 AMPS, #8 40 AMPS
Test Voltage	1000 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C. to +200° C.
Ingress Protection	IP 67
Shock	300 g.
Vibration, Random	43.92 g.

Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microinches gold
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

280-089P combo cable socket connectors with standard mounting flange, integral banding platform and crimp termination

280-089P DIMENSIONS

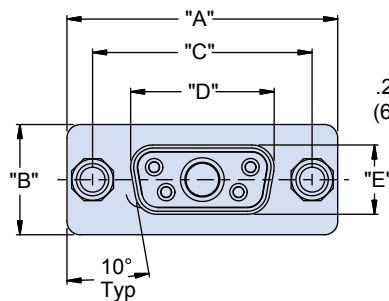
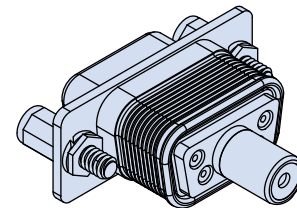
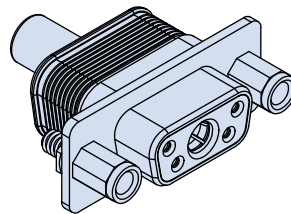
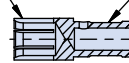
Grommet Follower
For 8 Gauge Contacts
(Supplied Loose)



8 Gauge Socket

See Note 4

12 Gauge
Crimp Barrel



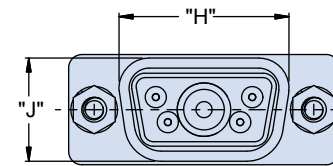
.243±.005
(6.17±.13)

.320 (8.13) To Accommodate
Micro Or Nano Bandit

.049 (1.24)

.038 (.97)

.435 (11.05)



Dimensions														
Shell Size	"A" ±.015		"B" ±.015		"C" ±.005		"D" ±.005		"E" ±.005		"H"		"J"	
	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
1	1.213	30.81	0.494	12.55	0.984	24.99	0.643	16.33	0.311	7.90	0.760	19.30	0.462	11.73
2	1.541	39.14	0.494	12.55	1.312	33.32	0.971	24.66	0.311	7.90	1.089	27.66	0.462	11.73
3	2.088	53.04	0.494	12.55	1.852	47.04	1.511	38.38	0.311	7.90	1.629	41.38	0.462	11.73
4	2.729	69.32	0.494	12.55	2.5	63.50	2.159	54.84	0.311	7.90	2.277	57.84	0.462	11.73
5	2.635	66.93	0.605	15.37	2.406	61.11	2.064	52.43	0.423	10.74	2.182	55.42	0.474	12.04
6	2.729	69.32	0.668	16.97	2.5	63.50	2.189	55.60	0.486	12.34	2.307	58.60	0.626	15.90

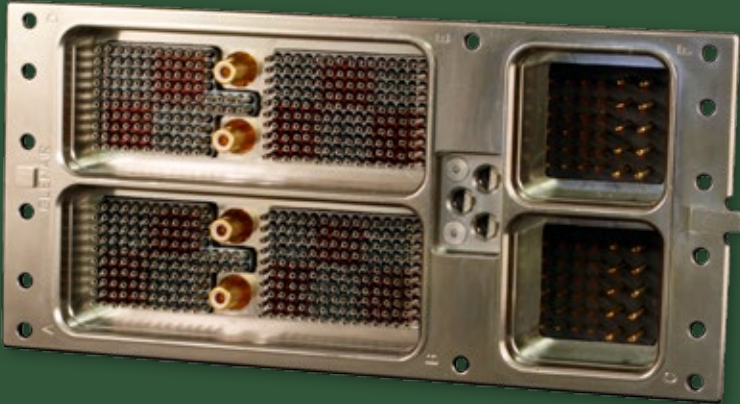
NOTES

- See [About Series 28 HiPer-D® Shell Plating Options](#) for additional shell material and finish options. Glenair offers the industry's widest selection of plating options with no minimum order quantities or setup charges.
- For panel cutouts, refer to [Panel Cutouts and Printed Circuit Board Footprints](#).
- Connectors are supplied with size #20 crimp contacts per M39029. Contacts are not installed. Refer to [HiPer-D® Contacts and Tools](#) section for contact part numbers, specifications, crimp tool information, and insertion/extraction tools.
- Size 8 contacts are ordered separately.** Refer to [HiPer-D® Contacts and Tools](#) section for contact ordering information, specifications, crimp tool information, and insertion/extraction tools.
- Combo HiPer-D® connectors meet the applicable requirements of MIL-DTL-24308 and are intermateable with standard non-environmental D Subminiature connectors with corresponding contact arrangements and type. **Size 8 contacts from other manufacturers cannot be installed in HiPer-D® connectors.**
- Additional electrical, mechanical and environmental specifications are listed in [HiPer-D® Product Specification](#).

SERIES 28

HiPer-D vs. ARINC 600

Smaller, lighter HiPer-Ds with robust EMI/grounding performance save weight, and reduce assembly time and complexity compared to conventional ARINC backplane/motherboard configurations.



Legacy ARINC 600 type solutions are no longer optimized for the size and weight reduction requirements of today's aircraft industry.

Available HiPer-D insert arrangements, from 9 – 104 way and supported contact types including size #22 and #20 signal as well as size #8 power and coax.



High-performance HiPer-D connectors with their advanced EMI shielding, grounding, environmental sealing, and guide-pin-managed blind mate capabilities allow designers to implement a distributed architecture model with significant performance advantages.

The opportunity to replace big, bulky and expensive ARINC 600 type rack-and-panel connectors with a distributed architecture utilizing discrete D-subminiature connectors is finally realized with the high-performance Glenair HiPer-D. With the outstanding performance of the HiPer-D, system designers are now able to optimize available space in equipment consoles and boxes without compromising EMC or temperature tolerances. Distributed interconnect architectures of this type also allow for easier troubleshooting, and the ability to eliminate expensive motherboards and of course, cumbersome rack-and-panel ARINC connectors. The ability to separate out intrinsically safe functions—for example segregating power circuits completely from signal circuits—allows designers to build handier systems which are easier to assemble and maintain.



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SERIES 28
HiPer-D Contacts and Tools
Product Selection Guide



HiPer-D Contacts and Tools Product Selection Guide



#20 Contacts

Crimp contacts for standard HiPer-D connectors

D-2



#22 Contacts

Crimp contacts for high density HiPer-D connectors

D-3



#8 Power Contacts for Combo HiPer-D

Crimp contacts for AWG #12 and #16 wire

D-4



50 Ohm Coax Contacts for Combo HiPer-D

Size #8 50 ohm coax contacts for RG316 and RG178 cable

D-5



75 Ohm Coax Contacts and Cable for Combo HiPer-D

75 ohm coax contacts for RG179, RS170 and SMPTE 292M applications

D-6



High Frequency 50 Ohm Coax Contacts for Combo HiPer-D

50 ohm coax contacts for M17/133-RG405 equivalent flexible cable

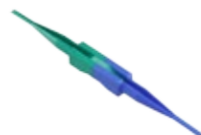
D-8



Crimp Tools

Crimp tools for terminating #20, #22 and #8 power and #8 coax contacts

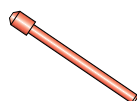
D-9



Contact Insertion and Removal Tools

Plastic tools for inserting and extracting #8, #20 and #22 contacts

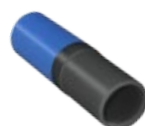
D-10



Grommet Sealing Plugs

MS27488 hole filler plugs for unused connector cavities

D-10



Sealing Boot

Sealing boot for #8 combo HiPer-D contacts

D-10

#20 crimp contacts for standard HiPer-D connectors

#20 CRIMP CONTACTS

#20 contacts accept #20 to #24 AWG wire. These gold-plated copper alloy contacts meet the requirements of SAE AS39029. Use with all Series 28 HiPer-D crimp connectors with size #20 cavities.



Fig. 1
Pin Contact



Fig. 2
Socket Contact

Material and Finish

Copper alloy, 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-150 microinches.

Socket contact hood: 305 CRES, passivated.

Specifications

AWG Wire Accommodation: #20 - #24

Current Rating: 7.5 Amps maximum

Voltage Drop (at 7.5 Amps and 25° C, #20AWG silver-plated wire):
55 millivolts maximum

Temperature Range: -65° to + 200° C.

Socket Min. Separation Force: 0.7 ounces

See SAE AS39029 for additional electrical, mechanical and environmental specifications.

Crimp Tools and Insertion/Removal Tools

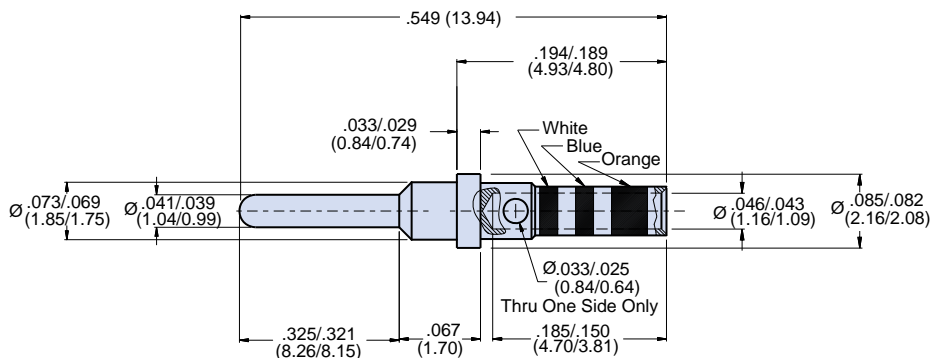
Crimper: 809-015 (M22520/2-01)

Positioner: 859-016 (M22520/2-08)

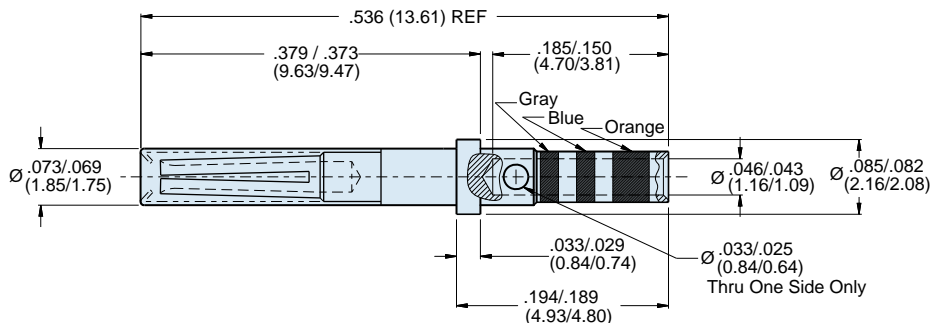
Insertion/Removal Tool: 859-017

(M81969/39-01)

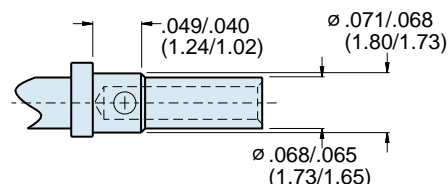
Contact Type	Fig.	Wire Size	Part Number	M39029 Part Number
Pin	1	#20-24	850-022-20-369	M39029/64-369
Socket	2	#20-24	850-021-20-368	M39029/63-368



Pin Contact



Socket Contact



Pin and Socket Crimp Barrel Dimensions

Crimp Tensile Strength		
Axial load in minimum pounds.		
Wire Gage	Silver or Tin Coated Copper Wire	Nickel Coated Copper Wire
#20	20	19
#22	12	8
#24	8	6

SERIES 28 HiPer-D Contacts and Tools



#22 crimp contacts for high density HiPer-D connectors

#22 CRIMP CONTACTS

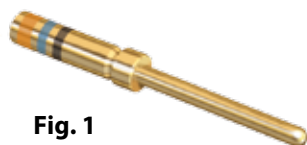


Fig. 1
Pin Contact



Fig. 2
Socket Contact

Material and Finish

Copper alloy, 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-150 microinches.

Socket contact hood: 305 CRES, passivated.

Specifications

AWG Wire Accommodation: #22 - #28

Current Rating: 5 Amps maximum

Voltage Drop (at 5 Amps and 25° C, #22 AWG silver-plated wire): 73 mV. maximum

Temperature Range: -65° to + 200° C.

Socket Minimum Sep. Force: 0.7 ounces

See SAE AS39029 for additional electrical, mechanical and environmental specifications.

Crimp Tools and Insertion/ Removal Tools

Crimper: 809-015 (M22520/2-01)

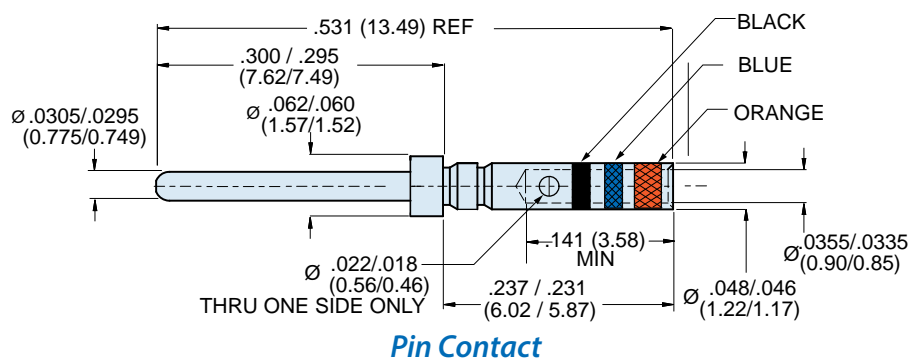
Positioner: Pin 859-018 (M22520/2-09)

Socket 859-019 (M22520/2-06)

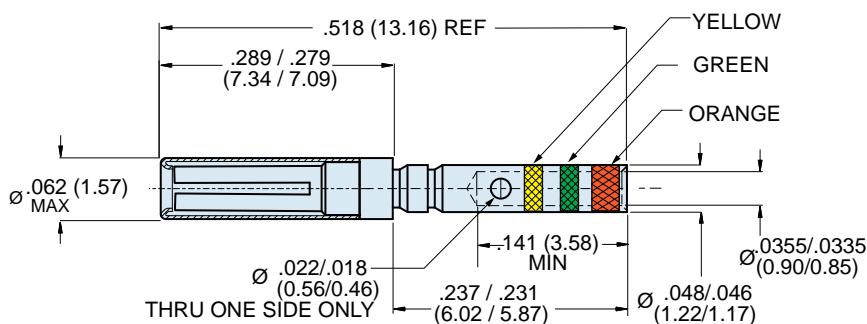
Insertion/Removal Tool: 859-020 (M81969/14-01)

#22 contacts accept #22 to #28 AWG wire. These gold-plated copper alloy contacts meet the requirements of SAE AS39029. Use with all Series 28 HiPer-D crimp connectors with size #22 cavities.

Contact Type	Fig.	Wire Size	Part Number	M39029 Part Number
Pin	1	#22-28	850-002-22-360	M39029/58-360
Socket	2	#22-28	850-003-22-354	M39029/57-354



Pin Contact



Socket Contact

Crimp Tensile Strength		
Axial load in minimum pounds.		
Wire Gage	Silver or Tin Coated Copper Wire	Nickel Coated Copper Wire
#22	12	8
#24	8	6
#26	5	3
#28	3	2

#8 power contacts for combo HiPer-D connectors

#8 POWER CONTACTS FOR COMBO HIPER-D CONNECTORS

These size #8 contacts snap into Glenair combo HiPer-D size #8 cavities and can be removed with a plastic extraction tool. Crimp termination. Two sizes are available, #0812 for AWG 12-14 wire, and #0816 for AWG 16-18 wire. Gold plated copper alloy, 1000 VAC DWV rating, 23 amp current rating. Optional sealing boot prevents moisture ingress. *Intermateable with standard D-Subminiature size #8 power contacts.*

Fig. 1
Pin Contact
850-056

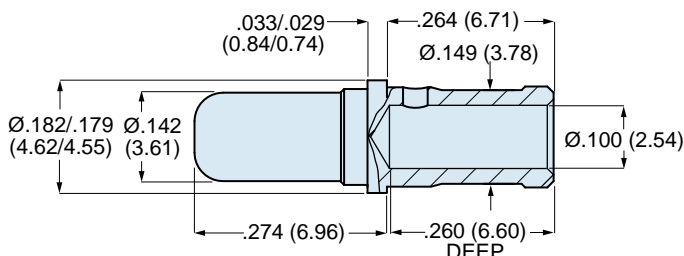


Fig. 2
Socket Contact
850-057

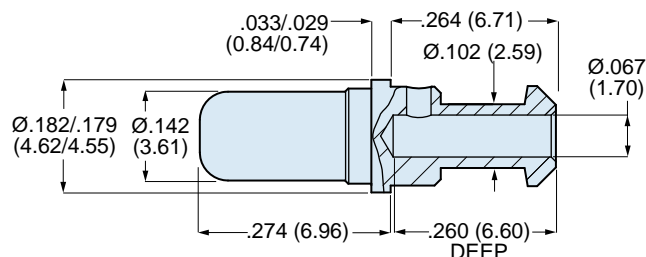


Fig.	Contact Type	AWG Wire Size	Part Number Contact Only	Part Number Contact and Sealing Boot
1	Pin	#12, #14	850-056-0812	850-056-0812F
		#16, #18	850-056-0816	850-056-0816F
2	Socket	#12, #14	850-057-0812	850-057-0812F
		#16, #18	850-057-0816	850-057-0816F

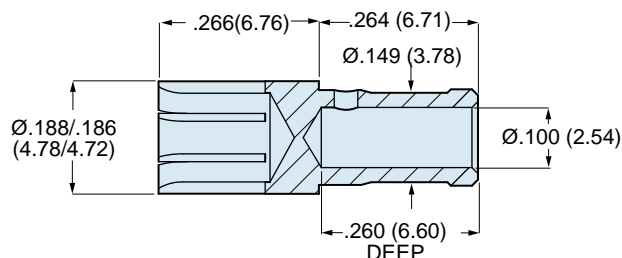
Pin Contact
850-056-0812



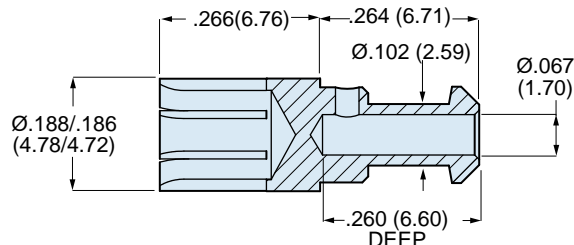
Pin Contact
850-056-0816



Socket Contact
850-057-0812



Socket Contact
850-057-0816



Material and Finish

Contact: Copper alloy, 50 microinches gold over nickel.

Sealing Boot: Thermoplastic and Fluorosilicone

Specifications

Current Rating: 23 Amps

Contact Resistance: 10 milliohms

Crimp Tensile Strength: AS39029 Table 10

Temperature Range: -65° to + 200° C.

Tools

Crimp Tool: 859-081 (Daniels M309)

Positioner for Crimp Tool: 859-083 (Daniels TP1711)

Insertion/Extraction Tool: 809-132 (M81969/14-04)

50 OHM COAX CONTACTS FOR COMBO HIPER-D CONNECTORS

These coax contacts snap into Glenair combo HiPer-D size #8 cavities and can be removed with a plastic extraction tool. Crimp termination. 50 ohm nominal impedance, DC - 3GHz frequency range. Gold plated copper alloy, Teflon® dielectric. 1000 VAC DWV rating, 5 Amp current rating. Optional sealing boot prevents moisture ingress. *Intermateable with standard D-Subminiature size #8 socket coaxial contacts.*



Fig. 1
Pin Contact
852-084

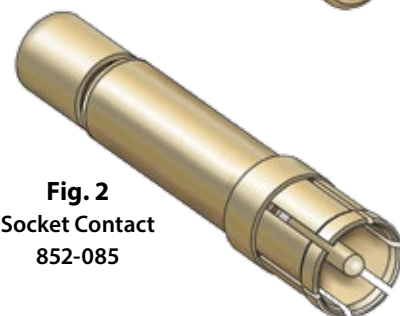


Fig. 2
Socket Contact
852-085

Material and Finish

Contact and Crimp Sleeve: Copper alloy, 50 microinches gold over nickel.

Dielectric: Teflon®

Sealing Boot: Thermoplastic and Fluorosilicone

Specifications

Impedance: 50 ohms

Frequency: DC – 3GHz

Current Rating: 5 Amps maximum

Contact Resistance: 10 milliohms

Temperature Range: -65° to + 200° C.

Dielectric Withstanding Voltage: 1000 VAC

Insulation Resistance: 5 gigohms

Tools

Crimp Tool for Inner Contact: 809-015
(M22520/2-01, Daniels AFM8)

Inner Contact Positioner for 852-084:
859-098

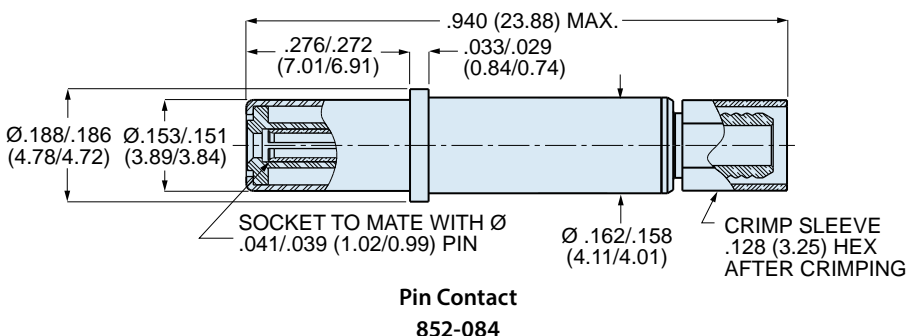
Inner Contact Positioner for 852-085:
859-099

Hex Crimp Tool for Cable Shield: 809-129
(M22520/5-01, Daniels HX4)

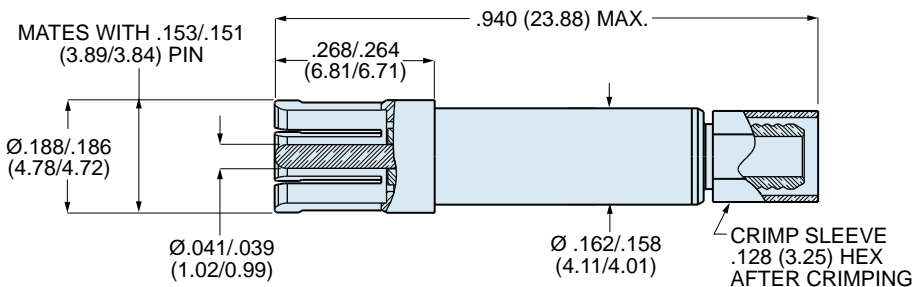
Hex Die Set: 809-130 (M22520/5-03)

Insertion/Extraction Tool: 809-132
(M81969/14-04)

Fig.	Contact Type	Cable Accommodation	Part Number Contact Only	Part Number Contact and Sealing Boot
1	Pin	M17/113-RG316	852-084-01	852-084-01F
		M17/93-RG178	852-084-02	852-084-02F
		M17/152-00001 (RG316DS)	852-084-03	852-084-03F
2	Socket	M17/113-RG316	852-085-01	852-085-01F
		M17/93-RG178	852-085-02	852-085-02F
		M17/152-00001 (RG316DS)	852-085-03	852-085-03F



Pin Contact
852-084



Socket Contact
852-085

SERIES 28

HiPer-D Contacts and Tools

75 ohm coaxial contacts



75 OHM COAX CONTACTS



Fig. 1
Pin Contact
852-086

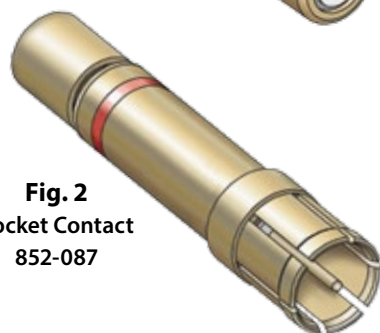


Fig. 2
Socket Contact
852-087

Material and Finish

Contact and Crimp Sleeve: Copper alloy, 50 microinches gold over nickel.

Dielectric: Teflon®

Sealing Boot: Thermoplastic and Fluorosilicone

Specifications

Impedance: 75 ohms

Frequency: DC – 3GHz

Current Rating: 3 amps maximum

Contact Resistance: 10 milliohms

Temperature Range: -65° to + 200° C.

Dielectric Withstanding Voltage: 1000 VAC

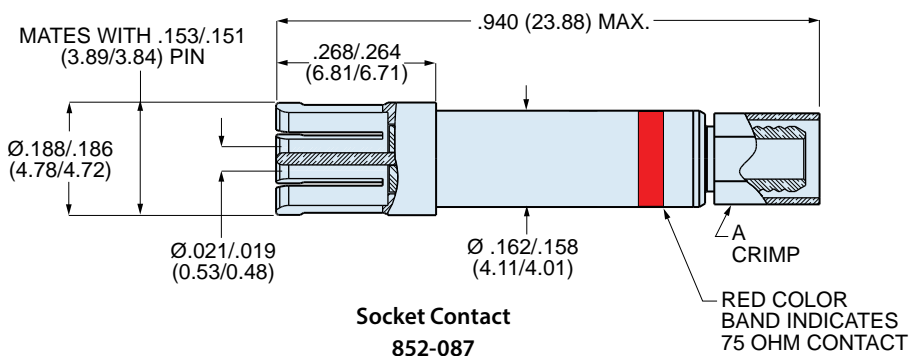
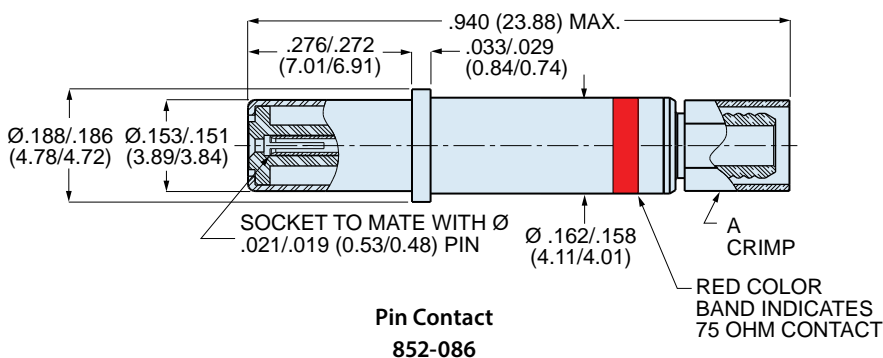
Insulation Resistance: 5 gigohms

Insertion/Extraction Tool

Part Number
809-132
(M81969/14-04)

These coax contacts snap into Glenair combo HiPer-D size #8 cavities and can be removed with a plastic extraction tool. Crimp termination. 75 ohm nominal impedance, DC - 3GHz frequency range. Use with RG179 coax cable or high bandwidth PIC cable for RS170 or SMPTE 292M video. Gold plated copper alloy, Teflon® dielectric. 1000 VAC DWV rating, 3 amp current rating. Optional sealing boot prevents moisture ingress. **These contacts are designed for use only with Glenair Combo HiPer-D connectors and cannot be installed in other connectors.**

Fig.	Contact Type	Cable Accommodation	Part Number Contact Only	Part Number Contact and Sealing Boot	A Crimp Size	
					In.	mm.
1	Pin	M17/964-RG179	852-086-01	852-086-01F	.128 Hex	3.25 Hex
		PIC™ V75268, V76261, V73263	852-086-02	852-086-02F	Ø .156	Ø 3.96
2	Socket	M17/964-RG179	852-087-01	852-087-01F	.128 Hex	3.25 Hex
		PIC™ V75268, V76261, V73263	852-087-02	852-087-02F	Ø .156	Ø 3.96

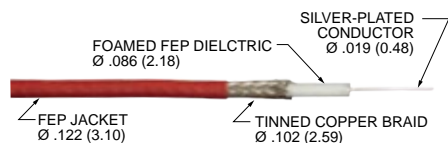


TOOLING INFORMATION FOR 75 OHM CONTACTS

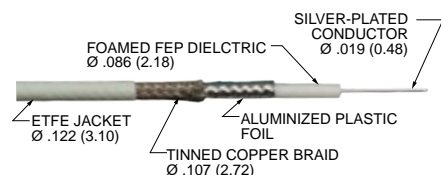
Part Number	Type	Inner Contact Tooling		Shield Crimp Sleeve Tooling	
		Crimp Tool	Positioner	Crimp Tool	Positioner
852-086-01	PIN	809-015 (M22520/2-01)	859-098	809-129	809-130
852-086-02	PIN			809-133	859-100
852-087-01	SOCKET		859-099	809-129	809-130
852-087-02	SOCKET			809-133	859-100

75 ohm high performance coaxial cable

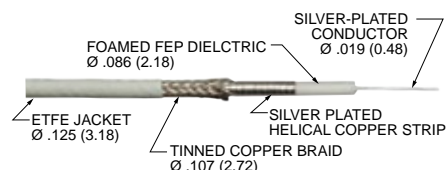
75 OHM HIGH PERFORMANCE COAXIAL CABLE



1 75 ohm coaxial cable for RS170 video applications. 50 dB shielding effectiveness. Tinned copper braid shield. Red FEP jacket.



2 75 ohm coaxial cable for RS170 video applications. 90 dB shielding effectiveness. 100% coverage aluminized plastic foil under tinned copper braid shield. ETFE jacket, white.



3 75 ohm coaxial cable for SMPTE 292M video applications. 110 dB shielding effectiveness. 100% coverage helical copper strip under tinned copper braid shield. ETFE jacket, white.

PIC™ brand video cable is specially designed and manufactured for reliable performance in aircraft systems and other harsh environments involving high temperature, EMI and corrosive materials. Improved strength, lower attenuation and better shielding compared with M17/94-RG179. Silver-plated conductor, foamed FEP dielectric, tinned copper braid, FEP or ETFE jacket. Skydrol resistant, RoHS compliant, meets FAA FAR Parts 23 and 25, Appendix F flammability, complies with MIL-DTL-17.

	Cable 1		Cable 2		Cable 3	
Glenair Part No.	960-130		960-131		960-132	
Ref. PIC™ Part No.	V75268		V76261		V73263	
Impedance (ohms)	75		75		75	
Shielding Effectiveness (dB)	50		90		110	
Video Application	RS170		RS170		SMPTE 292M	
First Shield	Tinned copper braid, 95% coverage					
Second Shield	None		Aluminized film, 100% coverage		Silver plated helical copper strip, 100%	
Temperature Rating	-55° to +150° C		-55° to +150° C		-55° to +150° C	
Minimum Bend Radius	0.6 in. (15mm.)		0.6 in. (15mm.)		0.65 in. (16.5mm.)	
Weight (lbs/100 ft.)	1.2 lbs		1.1 lbs		1.5 lbs	
Capacitance (pF/ft)	16.0		16.0		16.0	
Velocity of Propagation %	80		80		80	
Time Delay	1.28		1.28		1.28	
Attenuation (dB/100 ft)	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
1 MHz	0.51	0.55	0.49	0.52	0.43	0.58
10 MHz	1.70	1.77	1.6	1.71	1.4	1.6
100 MHz	5.3	5.7	5.1	5.5	4.5	5.0
400 MHz	11.1	11.8	10.6	11.3	9.6	10.6
1.45 GHz	23.0	24.6	21.9	23.4	20.0	22.0
3 GHz	35.0	37.4	33.7	36.1	30.9	34.0

50 ohm coaxial contacts for RG405 type flexible cable

50 OHM COAXIAL CONTACTS FOR RG405 TYPE FLEXIBLE CABLE

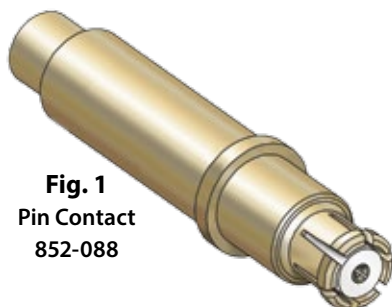


Fig. 1
Pin Contact
852-088

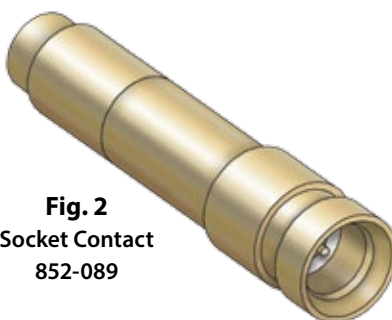
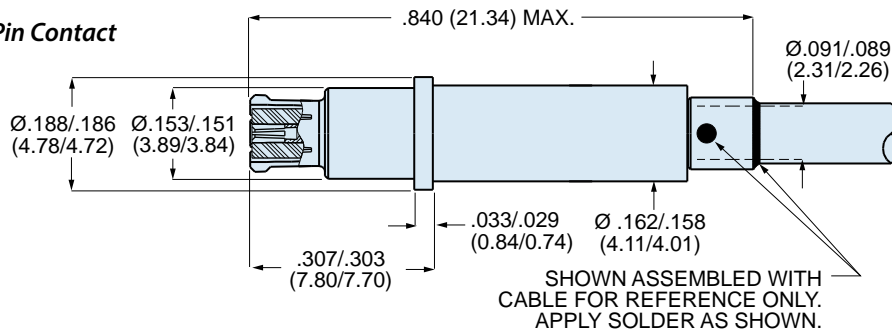


Fig. 2
Socket Contact
852-089

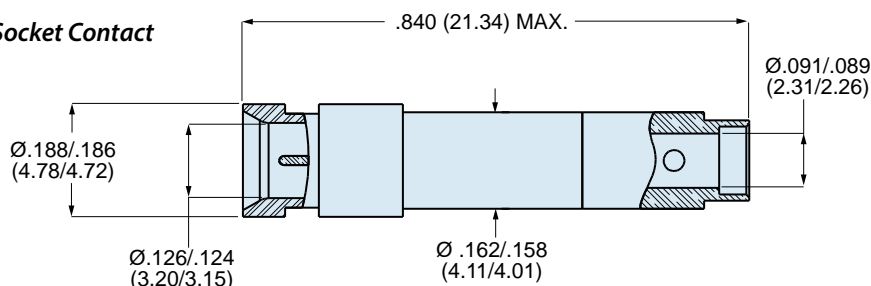
These coax contacts snap into Glenair combo HiPer-D size #8 cavities and can be removed with a plastic extraction tool. Solder termination. 50 ohm nominal impedance, DC -18GHz frequency range. Use with LLF-1087 (Tensolite) or TFlex-405 (Times Microwave) coax cables. Gold plated copper alloy, teflon® dielectric. 1000 VAC DWV rating. Optional sealing boot prevents moisture ingress. **These contacts are designed for use only with Glenair Combo HiPer-D connectors and cannot be installed in other connectors.**

Fig.	Contact Type	Cable Accommodation	Part Number Contact Only	Part Number Contact and Sealing Boot
1	Pin	LLF-1087 (Tensolite), TFlex-405 (Times Microwave)	852-088-01	852-088-01F
2	Socket	LLF-1087 (Tensolite), TFlex-405 (Times Microwave)	852-089-01	852-089-01F

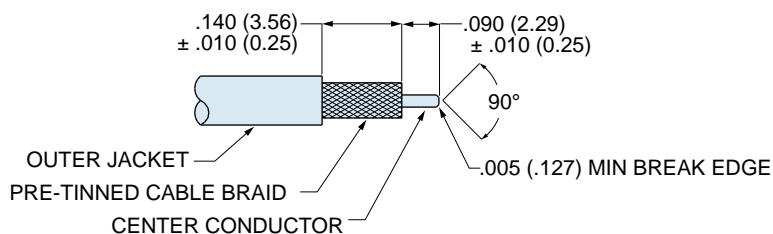
Pin Contact



Socket Contact



ASSEMBLY INSTRUCTIONS



- Slide sealing boot onto coaxial cable.
- Strip cable as shown.
- Pre-tin cable braid.
- Break edge of center conductor as shown.
- Push cable into contact body. Center conductor should be seated into center contact.
- Solder cable braid to contact body as shown in Pin Contact illustration above.
- Snap assembled contact into connector and slide sealing boot into place.

Material and Finish

Body and Contact: Copper alloy, 50 microinches gold over nickel.

Dielectric: PTFE

Cable Insert: Brass, 50 microinches gold over nickel.

Sealing Boot: Thermoplastic and Fluorosilicone

Specifications

Impedance: 50 ohms

Frequency: DC - 18 GHz

VSWR: 1.10 + (.01 X Freq GHz)

Insertion Loss: .06 X SQRT(Freq GHz)

RF Leakage: < -90 - Freq GHz

Temperature Range: -65° to + 200° C.

Dielectric Withstanding Voltage: 1000 VAC

Insulation Resistance: 5 gigohms

Mechanical Durability: 500 Mating Cycles

Center Contact Retention: 2 lbs. min.

Maximum Engaging Force: 2.5 lbs.

Minimum Separation Force: 0.5 lbs.

CRIMP TOOL FOR STANDARD HIPER-D CONTACTS AND COAXIAL INNER CONTACTS



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

Fig.	Descrip.	Application	Part Number	Military Part Number	Daniels Part Number ⁽¹⁾
A	Crimp Tool		809-015	M22520/2-01	AFM8
B	Positioner	#20 contacts	859-016	M22520/2-08	K13-1
B	Positioner	#22 pin contact	859-018	M22520/2-09	K42
B	Positioner	#22 socket contact	859-019	M22520/2-06	K41
B	Positioner	50 and 75 ohm pin contact	859-098	None	None
B	Positioner	50 and 75 ohm socket contact	859-099	None	None

CRIMP TOOL FOR SIZE #8 POWER HIPER-D CONTACTS



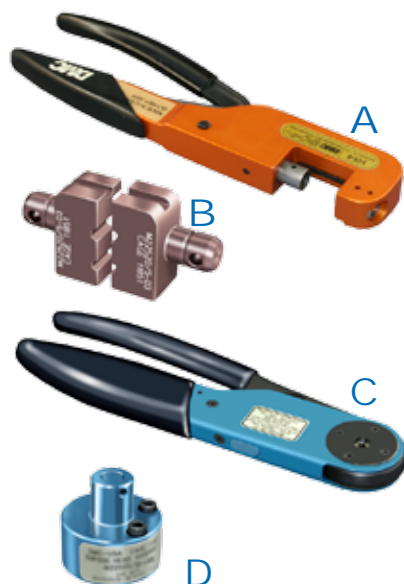
Heavy-duty M309 crimp tool for AWG size 8 to 18 wire. Adjustment wheel has 8 settings. Double action ratchet mechanism prevents improper crimps. Use with positioner, ordered separately.

A M309 crimper. Use with size #8 combo HiPer-D contacts. Length is 9.75 inches, weight is 15 oz.

B TP1711 Positioner for use with M309 tool. Use with part number 850-056 and 850-057 size #8 power contacts.

Figure	Description	Part Number	Daniels Part Number ⁽¹⁾
A	Crimp Tool	859-081	M309
B	Positioner	859-083	TP1711

CRIMP TOOL FOR TERMINATING COAXIAL SHIELD CRIMP SLEEVE



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

B M22520/5-03 hex die set for terminating coaxial shield to outer body of coaxial contact. Set consists of upper and lower halves. Made of hardened steel with black oxide finish. Die set has two closures: .105 (2.67) hex across flats and .128 (3.25).

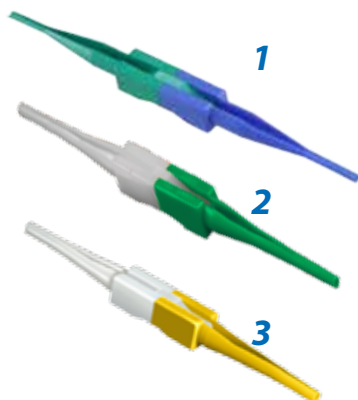
C Ratcheting crimp tool for terminating coaxial shield crimp sleeve. Use with 75 ohm contacts 852-086-02 and 852-087-02. 9.75 inches OAL, 1.25 pounds.

D Positioner for use with 809-133 crimper. Use with 75 ohm contacts 852-086-02 and 852-087-02.

Ref. Coaxial Contact Part Number	Fig.	Descrip.	Part Number	Military Part Number	Daniels Part Number ⁽¹⁾
852-084, 852-085, 852-086-01, 852-087-01	A	Crimp Tool	809-129	M22520/5-01	HX4
	B	Hex Die Set	809-130	M22520/5-03	Y196
852-086-02	C	Crimp Tool	809-133	M22520/31-1	GS200-1
852-087-02	D	Positioner	859-100	None	None

(1) Daniels Manufacturing Corporation, Orlando, Florida is the industry-leading supplier of mil spec contact termination tooling. In addition to the tools shown in this catalog, the Daniels product line includes a complete range of installation tools and semi-automatic equipment.

CONTACT INSERTION AND REMOVAL TOOLS



1 Insertion/Extraction Tool for #20 contacts. This plastic tool features green insertion tip and blue extraction tip.

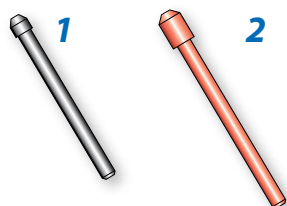
2 Insertion/Extraction Tool for #22 contacts. This plastic tool features green insertion tip and white extraction tip.

3 Insertion/Extraction Tool for #8 Combo HiPer-D contacts. This plastic tool features yellow insertion tip and white extraction tip.

Figure	Size	Part Number	Military Part Number
1	#20	859-017	M81969/39-01
2	#22	859-020	M81969/14-01
3	#12*	809-132	M81969/14-04

*Size 12 tool fits Combo HiPer-D size #8 connectors and contacts

GROMMET SEALING PLUGS FOR SIZE #22 AND #20HD CONNECTORS



Grommet sealing plugs are used to seal unwired contact cavities. These plugs conform to MS27488 requirements. After installing unwired contacts into unused cavities, insert knob end of sealing plug into grommet until it bottoms against the unwired contact per illustration. Install sealing plugs with standard contact insertion/extraction tools.

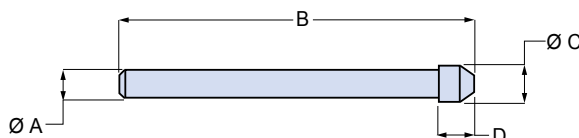


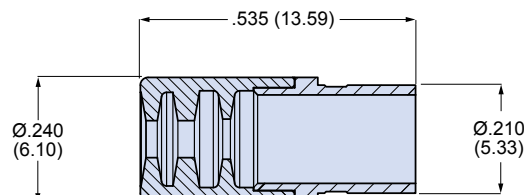
Fig.	Size	Color	Part Number	Military Part Number	Insertion/Removal Tool	A Ref.		B Ref.		C Ref.		D Ref.	
						in.	mm	in.	mm	in.	mm	in.	mm
1	#22	Black	859-021	MS27488-22-2	859-020	.042	1.07	.51	13.0	.062	1.57	.125	3.18
2	#20	Red	859-012	MS27488-20-2	809-203D	.053	1.35	.82	20.8	.085	2.16	.125	3.18

SEALING BOOT FOR COMBO HIPER-D



Sealing boot prevents moisture and contamination from entering combo HiPer-D connectors. Slide onto wire before terminating contact. Install contact into connector, then slide sealing boot into connector grommet. Fluorosilicone grommet, thermoset epoxy follower. -65°C to +200°C.

Wire Dia. (in.)	Wire Dia. (mm.)	Part Number
.050 - .090	1.27 - 2.29	859-093-01
.090 - .130	2.29 - 3.30	859-093-02
.130 - .170	3.30 - 4.32	859-093-03



SERIES 28

HiPer-D Accessories

Product Selection Guide



HiPer-D Accessories Product Selection Guide



Protective Covers

Metal covers with lanyard attachments

E-2



Conductive Dust Caps

ESD protected black plastic dust caps

E-4



Low Profile EMI Banding Backshell for HiPer-D Cable Connectors

Two piece backshell fits into groove on HiPer-D cable connector shell

E-5



Environmental EMI Banding Backshell for HiPer-D Cable Connectors

One piece backshell for HiPer-D cable connectors

E-8



Environmental EMI Banding Backshell for Panel Mount Connectors

One piece backshell attaches directly to panel mount HiPer-D connectors

E-11



Jackpost Kits

#4-40 stainless steel jackposts

E-15



Guide Pins, Bushings and Jackposts

Blind mate and locking hardware for panel mount HiPer-D connectors

E-16



Sav-Con® Connector Savers

Standard and high density connector savers

E-17



Gender Changers

M-M and F-F gender changers

E-19



Band-Master Tool and Bands

Terminate cable braid with precision banding tool

E-20



"Full Nelson" Elliptical Heatshrink Boots

Specially designed boots fit HiPer-D backshells with large elliptical cable entries

E-21

SERIES 28
HiPer-D Accessories


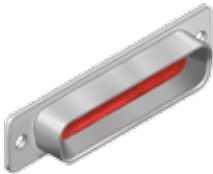
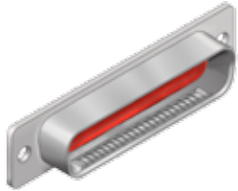


Protective Covers for HiPer-D connectors
289-003, 289-004, 289-019

HIPER-D PROTECTIVE COVERS



Aluminum or stainless steel protective covers fit Glenair Series 28 HiPer-D connectors and MIL-DTL-24308 connectors. Cover for pin connector fits inside connector shell and seats on connector face seal for watertight protection. Cover for socket connector fits over connector shell and has rubber gasket. Attach to panel with optional stainless steel lanyard and ring terminal.

Protective Cover Types		
Pin Cover	Socket Cover	Socket Cover w/ EMI Spring
		
<p>Fig. 1 Cover for use with HiPer-D pin connectors. Part number 289-003.</p>	<p>Fig. 2 Cover for use with HiPer-D socket connectors. Supplied without EMI spring. Fluorosilicone rubber gasket. Part number 289-019.</p>	<p>Fig. 3 Cover for use with HiPer-D socket connectors. Supplied with EMI spring. Fluorosilicone rubber gasket. Part number 289-004.</p>

Hardware Options

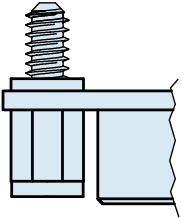


Fig. 4
Female Jackposts (P)
#4-40 Thread
Stainless Steel

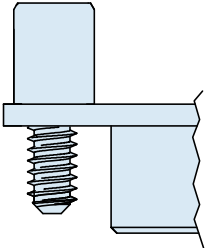
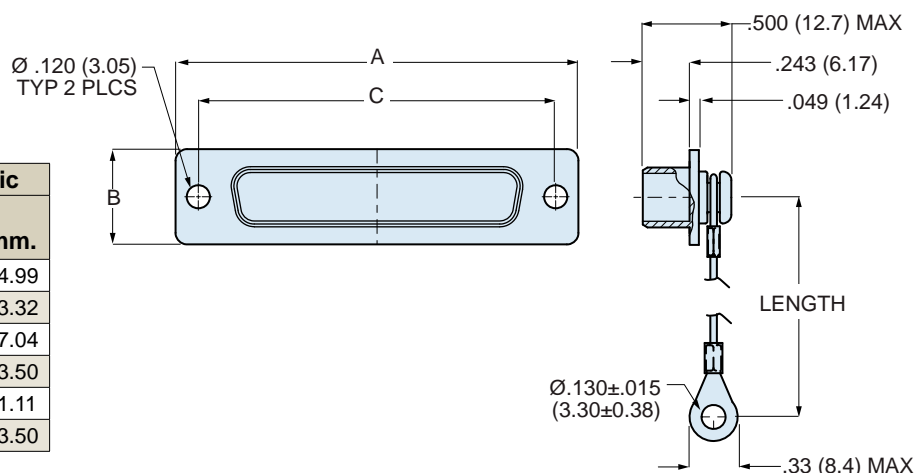


Fig. 5
Male Screwlocks (S)
#4-40 Thread
Stainless Steel

Ordering Information						
Sample Part Number	289-003	2	Z2	P	F	4
Basic Part Number	<p>289-003 = Pin Connector Cover (Fig. 1) 289-019 = Socket Connector Cover (Fig. 2) 289-004 = Socket Connector Cover w/ EMI Spring (Fig. 3)</p>					
Shell Size	<p>1 = Shell Size 1 2 = Shell Size 2 3 = Shell Size 3 4 = Shell Size 4 5 = Shell Size 5 6 = Shell Size 6</p>					
Finish	<p>ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)</p>					
Hardware	<p>N = No Hardware P = #4-40 Stainless Steel Jackposts (Fig. 4) S = Captive SST Hex Head Male Screwlocks (Fig. 5)</p>					
Lanyard Type	<p>N = No Attachment F = Nylon-Coated SST Lanyard w/ Ring Terminal H = Teflon®-Coated SST Lanyard w/ Ring Terminal</p>					
Lanyard Length	<p>(Omit for No Attachment) Length in Inches</p>					

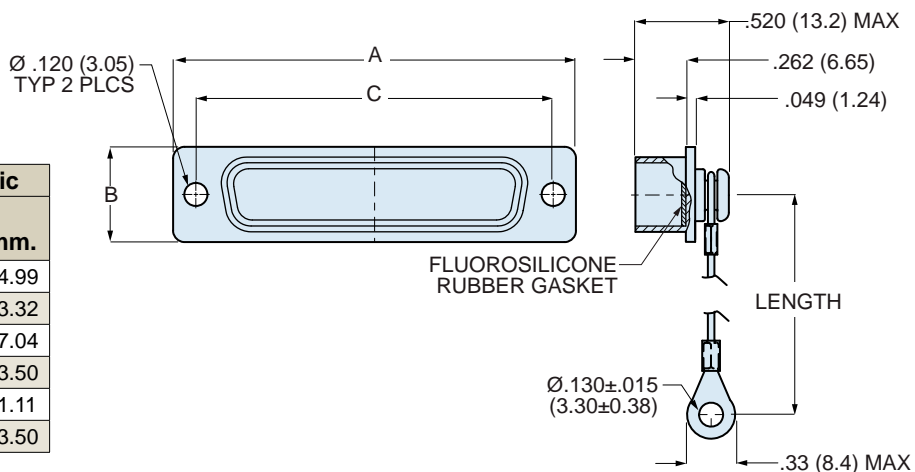
289-003 DIMENSIONS

Shell Size	A		B		C Basic	
	In .	mm.	In .	mm.	In.	mm.
1	1.213	30.81	.494	12.55	.984	24.99
2	1.541	39.14	.494	12.55	1.312	33.32
3	2.088	53.04	.494	12.55	1.852	47.04
4	2.729	69.32	.494	12.55	2.500	63.50
5	2.635	66.93	.605	15.37	2.406	61.11
6	2.729	69.32	.668	16.97	2.500	63.50



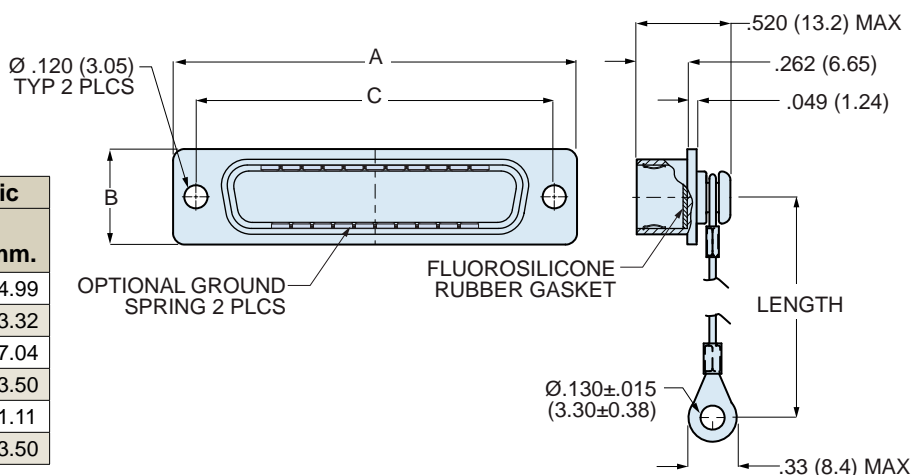
289-019 DIMENSIONS

Shell Size	A		B		C Basic	
	In .	mm.	In .	mm.	In.	mm.
1	1.213	30.81	.494	12.55	.984	24.99
2	1.541	39.14	.494	12.55	1.312	33.32
3	2.088	53.04	.494	12.55	1.852	47.04
4	2.729	69.32	.494	12.55	2.500	63.50
5	2.635	66.93	.605	15.37	2.406	61.11
6	2.729	69.32	.668	16.97	2.500	63.50



289-004 DIMENSIONS

Shell Size	A		B		C Basic	
	In .	mm.	In .	mm.	In.	mm.
1	1.213	30.81	.494	12.55	.984	24.99
2	1.541	39.14	.494	12.55	1.312	33.32
3	2.088	53.04	.494	12.55	1.852	47.04
4	2.729	69.32	.494	12.55	2.500	63.50
5	2.635	66.93	.605	15.37	2.406	61.11
6	2.729	69.32	.668	16.97	2.500	63.50

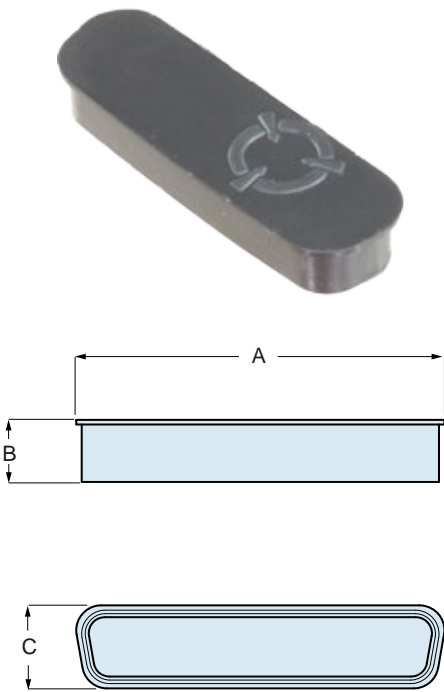


SERIES 28
HiPer-D Accessories



Conductive dust caps for HiPer-D connectors
289-052

CONDUCTIVE DUST CAPS



Black plastic conductive dust caps fit HiPer-D and M24308-type D-subminiature connectors. Molded in conductive polyethylene copolymer (EVA), these caps provide electrostatic discharge protection to sensitive equipment. 140°F maximum service temperature. These caps meet the static decay requirement of MIL-PRF-81705. Surface resistivity is less than 1×10^5 ohms/square. Integral lip allows easy removal.

Conductive Dust Caps								
Shell Size	Type	Part Number	A Max.		B Max.		C Max.	
			In.	mm.	In.	mm.	In.	mm.
1	Pin	289-052-1-P	.826	20.98	.300	7.62	.489	12.42
	Socket	289-052-1-S	.743	18.87	.283	6.93	.411	10.44
2	Pin	289-052-2-P	1.154	29.31	.300	7.62	.489	12.42
	Socket	289-052-2-S	1.071	27.20	.283	6.93	.411	10.44
3	Pin	289-052-3-P	1.694	43.03	.300	7.62	.489	12.42
	Socket	289-052-3-S	1.611	40.92	.283	6.93	.411	10.44
4	Pin	289-052-4-P	2.342	59.49	.300	7.62	.489	12.42
	Socket	289-052-4-S	2.259	57.38	.283	6.93	.411	10.44
5	Pin	289-052-5-P	2.239	56.87	.300	7.62	.601	15.27
	Socket	289-052-5-S	2.164	54.97	.283	6.93	.523	13.28
6	Pin	289-052-6-P	2.372	60.25	.300	7.62	.663	16.84
	Socket	289-052-6-S	2.289	58.14	.283	6.93	.586	14.88

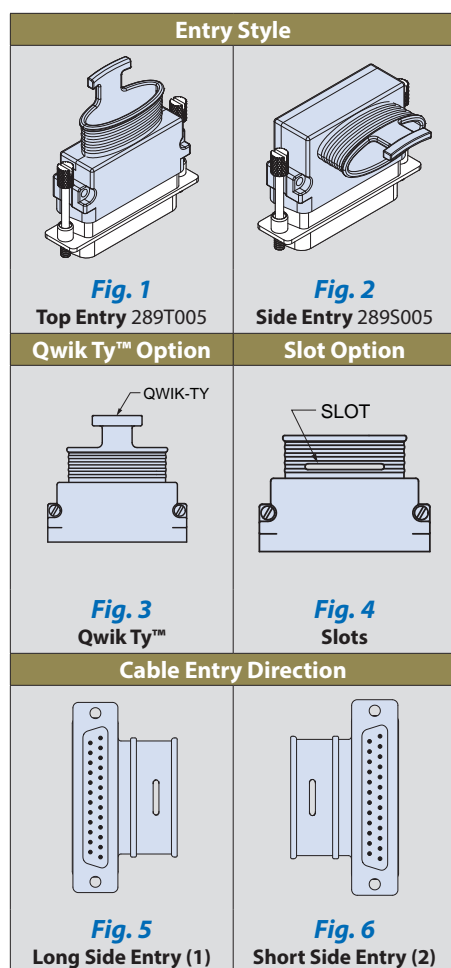
SERIES 28 HiPer-D® Accessories



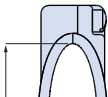
Low-Profile EMI Backshell, two-piece, elliptical entry, non-environmental 289T005 top entry, 289S005 side entry



Lightweight, low profile space-saving two piece backshell fits securely into groove in HiPer-D® connectors. Fits standard HiPer-D® pin and socket connectors (280-018P, 280-019S) and Combo HiPer-D® connectors (280-046P and 280-047S). Terminate cable shield with optional Band-Master™ATS clamping band. Elliptical cable entry provides room for large wire bundles. Machined aluminum alloy or stainless steel backshell consists of two interlocking housings and two 300 series stainless steel screws. Overlapping seam improves EMI shielding performance. Compatible with Glenair Series 77 lipped heat-shrink boots. Non-environmental.



Entry Style		Ordering Information							
		Sample Part Number	289T005	MT	3	B	-N	N	K
Fig. 1 Top Entry 289T005	Fig. 2 Side Entry 289S005	Basic Part Number	289T005 = Top Entry (Fig. 1) 289S005 = Side Entry (Fig. 2)						
Qwik Ty™ Option	Slot Option	Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)						
		Shell Size	1 = Shell Size 1 2 = Shell Size 2 3 = Shell Size 3 4 = Shell Size 4 5 = Shell Size 5 6 = Shell Size 6						
Fig. 3 Qwik Ty™	Fig. 4 Slots	Entry Size	A, B, C or D See Cable Entry Size Table Below						
Cable Entry Direction		Qwik Ty™ Option	N = Supplied without Qwik Ty™ T = With Qwik Ty™ Strain Relief (Fig. 3)						
		Slot Option	N = Supplied without Slots S = With Slots for Terminating Individual Shields (Fig. 4)						
Fig. 5 Long Side Entry (1)	Fig. 6 Short Side Entry (2)	EMI/RFI Band	N = Supplied without Band K = Supplied with Pre-Coiled Band (600-052-1)						
		Cable Entry Direction	Omit for 289T005. Applies only to 289S005. 1 = Cable Exit on Long Side of Shell Keystone (Fig. 5) 2 = Cable Exit on Short Side of Shell Keystone (Fig. 6)						

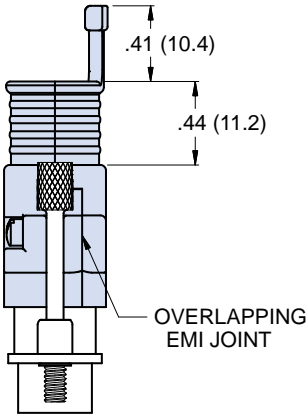
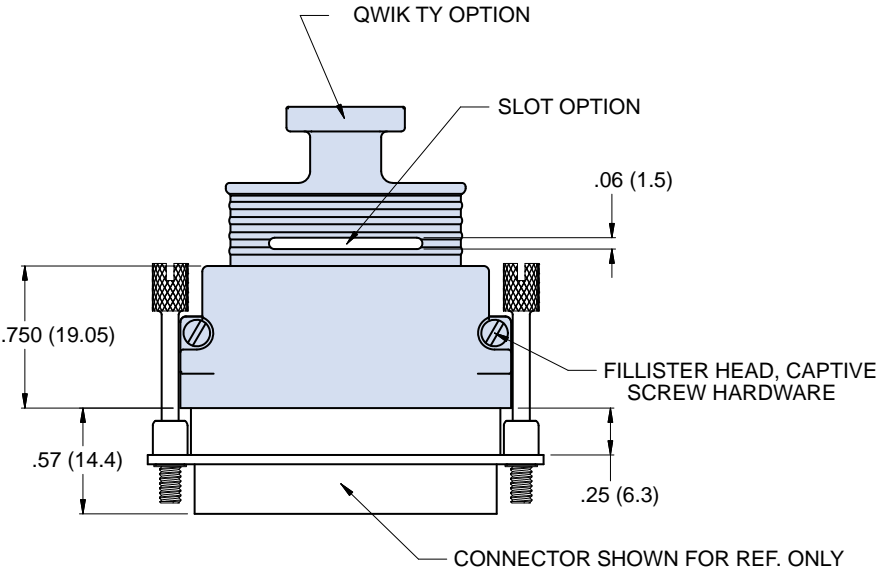
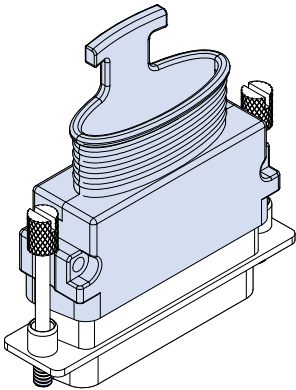
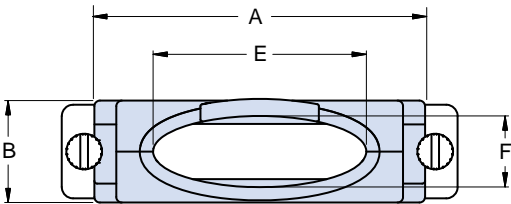
Cable Entry Size																	
	Shell Size	SIZE A				SIZE B				SIZE C				SIZE D			
		E		F		E		F		E		F		E		F	
		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
	1	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
	2	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
	3	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
	4	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
	5	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
	6	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

SERIES 28
HiPer-D® Accessories



Low-Profile EMI Backshell, two-piece, elliptical entry, non-environmental
289T005 top entry

289T005 DIMENSIONS



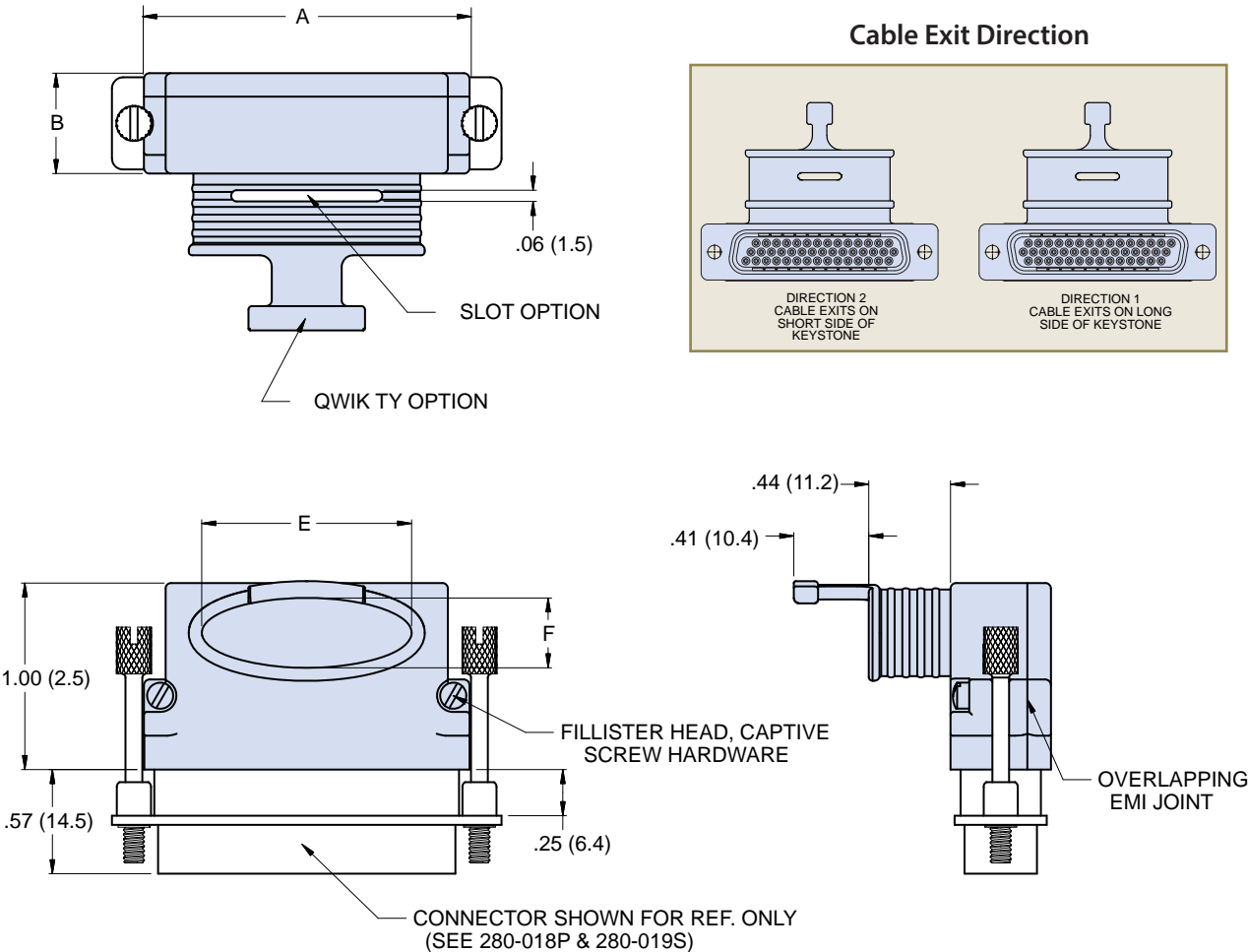
Dimensions																				
Shell Size					Entry Size A				Entry Size B				Entry Size C				Entry Size D			
	A Max		B Max		E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	.880	22.35	.509	12.93	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	1.210	30.73	.509	12.93	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	1.750	44.45	.509	12.93	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	2.400	60.96	.509	12.93	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	2.305	58.55	.620	15.75	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	2.400	60.96	.683	17.35	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

SERIES 28
HiPer-D® Accessories



Low-Profile EMI Backshell, two-piece, elliptical entry, non-environmental
 289S005 side entry

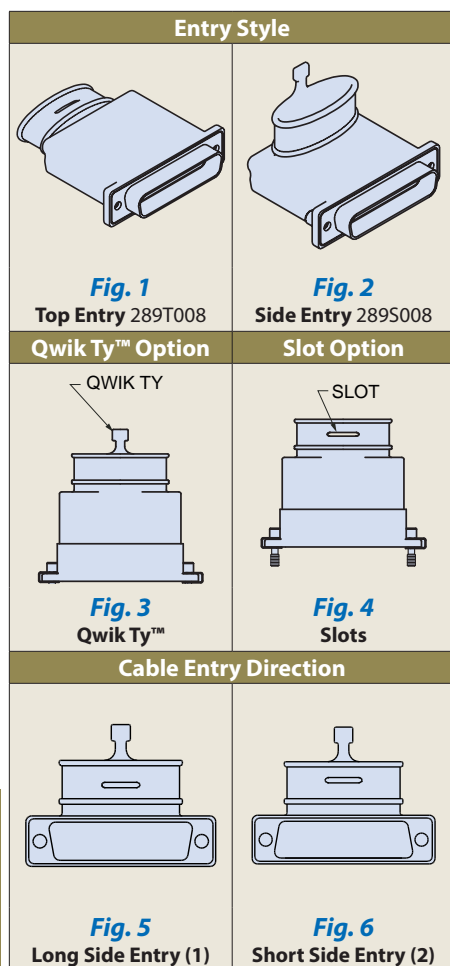
289S005 DIMENSIONS



Dimensions																				
Shell Size					Entry Size A				Entry Size B				Entry Size C				Entry Size D			
	A Max		B Max		E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	.894	22.71	.550	13.97	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	1.218	30.94	.550	13.97	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	1.760	44.70	.550	13.97	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	2.408	61.16	.550	13.97	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	2.297	58.34	.654	16.61	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	2.422	61.52	.716	18.19	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97



289-008 backshell provides watertight EMI protection for HiPer-D® connectors. Fits standard HiPer-D® pin and socket connectors (280-018P, 280-019S) and Combo HiPer-D® connectors (280-046P and 280-047S). Available with top entry or side entry. Terminate cable shield with optional Band-Master™ATS clamping band. Elliptical cable entry provides room for large wire bundles. Backshell consists of solid one piece housing, two stainless steel hex head jackscrews, two jackscrew retainer clips and silicone rubber sealing gasket. Aluminum or stainless steel. Use with Glenair Series 77 heat-shrink boot.



Entry Style	
Fig. 1 Top Entry 289T008	Fig. 2 Side Entry 289S008
Qwik Ty™ Option	
Fig. 3 Qwik Ty™	Fig. 4 Slots
Cable Entry Direction	
Fig. 5 Long Side Entry (1)	Fig. 6 Short Side Entry (2)

Ordering Information									
Sample Part Number	289S008	JF	6	A	T	S	K	2	
Basic Part Number	289T008 = Top Entry (Fig. 1) 289S008 = Side Entry (Fig. 2)								
Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)								
Shell Size	1 = Shell Size 1 2 = Shell Size 2 3 = Shell Size 3 4 = Shell Size 4 5 = Shell Size 5 6 = Shell Size 6								
Entry Size	A, B, C or D See Cable Entry Size Table Below								
Qwik Ty™ Option	N = Supplied without Qwik Ty™ T = With Qwik Ty™ Strain Relief (Fig. 3)								
Slot Option	N = Supplied without Slots S = With Slots for Terminating Individual Shields (Fig. 4)								
EMI/RFI Band	N = Supplied without Band K = Supplied with Pre-Coiled Band (600-052-1)								
Cable Entry Direction	Omit for 289T008. Applies only to 289S008. 1 = Cable Exit on Long Side of Shell Keystone (Fig. 5) 2 = Cable Exit on Short Side of Shell Keystone (Fig. 6)								

Cable Entry Size																
Shell Size	Entry Size A				Entry Size B				Entry Size C				Entry Size D			
	E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

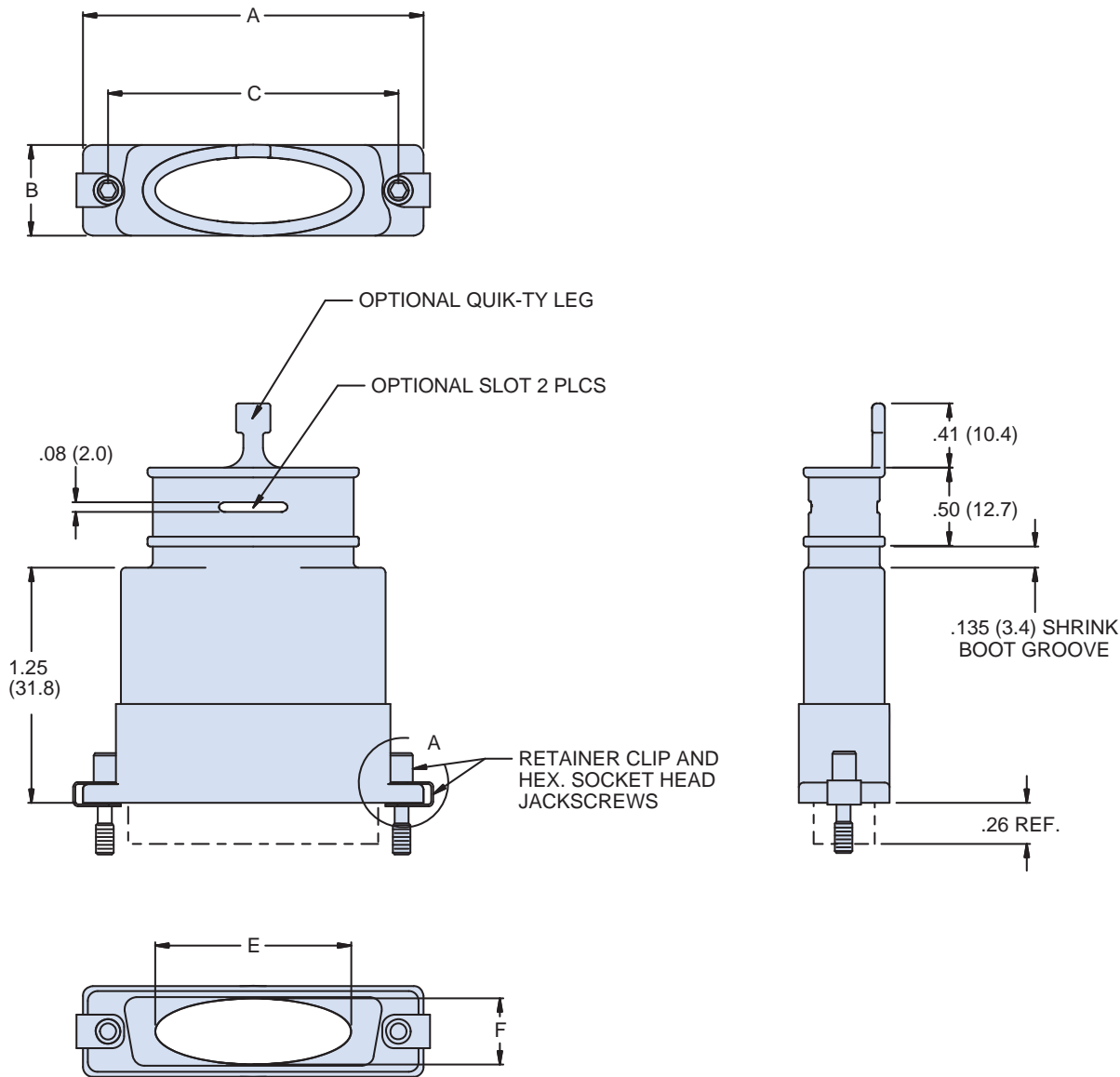
SERIES 28

HiPer-D® Accessories



EMI Backshell, one-piece, environmental
289T008 top entry

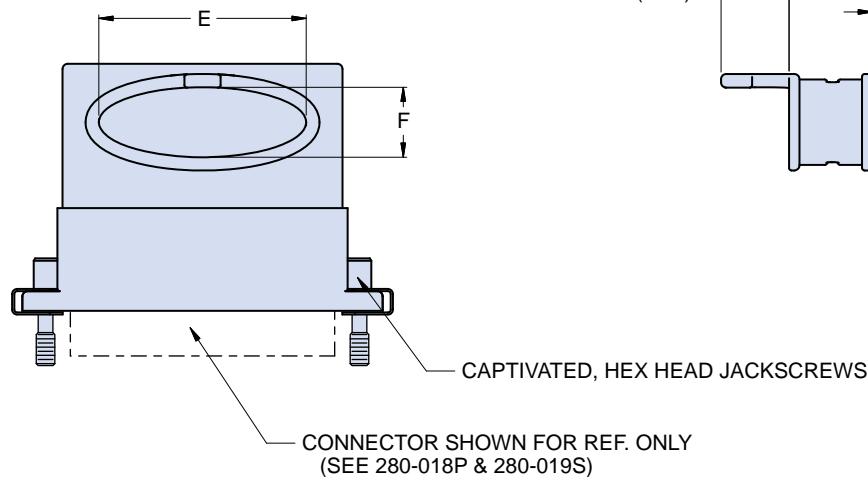
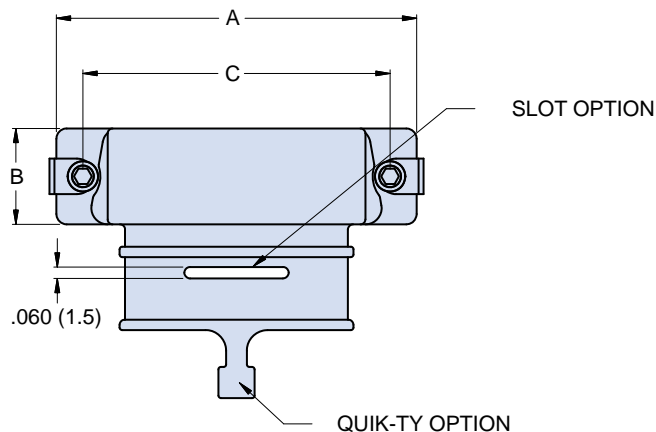
289T008 DIMENSIONS



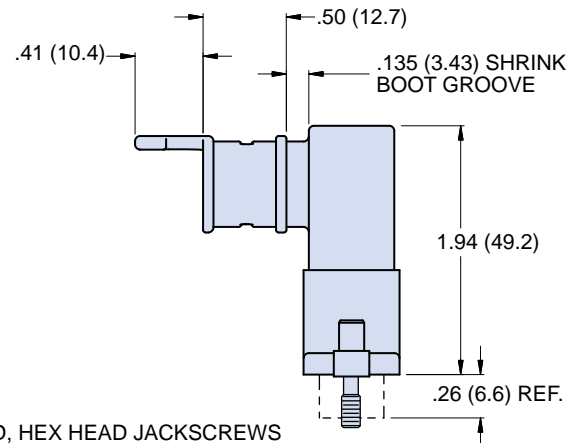
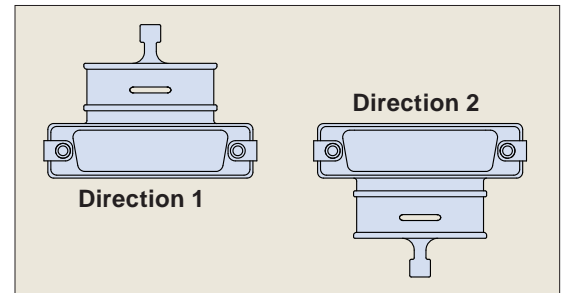
Dimensions																						
Shell Size	A Max		B Max		C Basic		Entry Size A				Entry Size B				Entry Size C				Entry Size D			
							E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	1.395	35.43	.624	15.85	.984	24.99	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	1.706	43.33	.624	15.85	1.312	33.32	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	2.265	57.53	.624	15.85	1.852	47.04	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	2.900	73.66	.624	15.85	2.500	63.50	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	2.800	71.12	.750	19.05	2.406	61.11	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	2.900	73.66	.844	21.44	2.500	63.50	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

EMI Backshell, one-piece, environmental
289S008 side entry

289S008 DIMENSIONS



Cable Exit Direction



E

Dimensions																						
Shell Size							Entry Size A				Entry Size B				Entry Size C				Entry Size D			
	A Max		B Max		C Basic		E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	1.395	35.43	.624	15.85	.984	24.99	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	1.706	43.33	.624	15.85	1.312	33.32	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	2.265	57.53	.624	15.85	1.852	47.04	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	2.900	73.66	.624	15.85	2.500	63.50	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	2.800	71.12	.750	19.05	2.406	61.11	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	2.900	73.66	.844	21.44	2.500	63.50	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

SERIES 28

HiPer-D Accessories

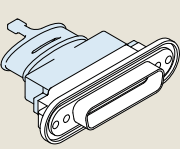
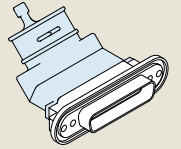
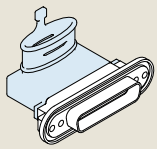
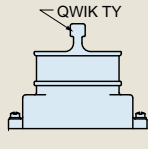
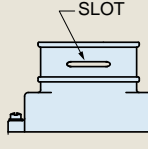
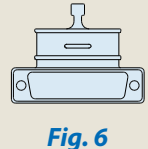
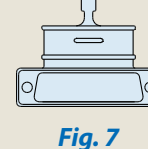


EMI Backshell, one-piece, environmental, panel mount

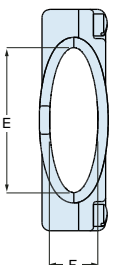
289T007 top entry, 289B007 45° entry, 289S007 side entry



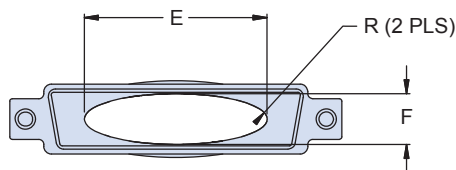
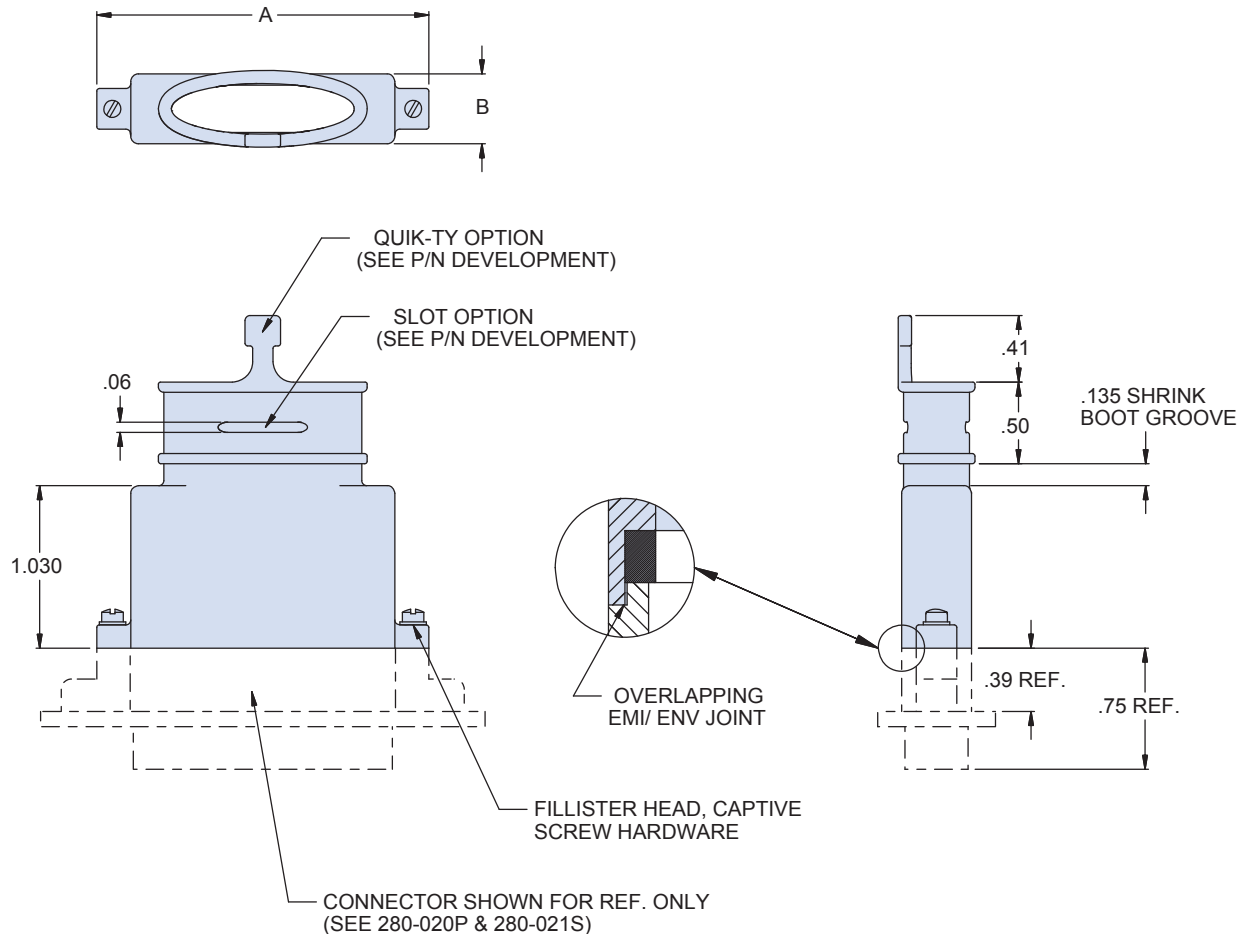
289-007 backshell fits panel mount HiPer-D connectors with threaded holes. Available in straight, right angle and 45° versions. Aluminum or stainless steel body, fluorosilicone rubber gasket and stainless steel screws. Design also features a boot groove for the attachment of Series 77 heatshrink boots. Terminate cable shield with optional BAND-IT® band. Optional slot allows easy termination of multiple individual cable shields. Attach cable ties to optional Qwik Ty™ leg.

Entry Style	
 Fig. 1 Top Entry 289T007	 Fig. 2 Side Entry 289S008
 Fig. 3 45° Entry 289B007	
Qwik Ty™ Option	Slot Option
 Fig. 4 Qwik Ty™	 Fig. 5 Slots
Cable Entry Direction	
 Fig. 6 Long Side Entry (1)	 Fig. 7 Short Side Entry (2)

Ordering Information								
Sample Part Number	289B007	MT	2	C	N	N	N	1
Basic Part Number	289T007 = Top Entry (Fig. 1) 289S007 = Side Entry (Fig. 2) 289B007 = 45° Entry (Fig. 3)							
Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)							
Shell Size	1 = Shell Size 1 2 = Shell Size 2 3 = Shell Size 3 4 = Shell Size 4 5 = Shell Size 5 6 = Shell Size 6							
Entry Size	A, B, C or D See Cable Entry Size Table Below							
Qwik Ty™ Option	N = Supplied without Qwik Ty™ T = With Qwik Ty™ Strain Relief (Fig. 4)							
Slot Option	N = Supplied without Slots S = With Slots for Terminating Individual Shields (Fig. 5)							
EMI/RFI Band	N = Supplied without Band K = Supplied with Pre-Coiled Band (600-052-1)							
Cable Entry Direction	Omit for 289T007. Applies only to 289S007 and 289B007. 1 = Cable Exit on Long Side of Shell Keystone (Fig. 6) 2 = Cable Exit on Short Side of Shell Keystone (Fig. 7)							

Cable Entry Size																	
	Shell Size	Entry Size A				Entry Size B				Entry Size C				Entry Size D			
		E		F		E		F		E		F		E		F	
		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
	1	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53	
3	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53	
4	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53	
5	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32	
6	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97	

289T007 DIMENSIONS



Dimensions																										
Shell Size					Entry Size A				Entry Size B				Entry Size C				Entry Size D									
	A Max		B Max		E		F		E		F		R		E		F		R		E		F		R	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	1.181	30.00	.526	13.36	.143	3.63	.143	3.63	.195	4.95	.195	4.95	N/A		.242	6.15	.242	6.15	N/A		.438	11.13	.375	9.53	.160	4.06
2	1.506	38.25	.526	13.36	.188	4.78	.188	4.78	.256	6.50	.256	6.50	N/A		.480	12.19	.375	9.53	.125	3.18	.688	17.48	.375	9.53	.130	3.30
3	2.046	51.97	.526	13.36	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.125	3.18	.780	19.81	.375	9.53	.125	3.18	1.125	28.58	.375	9.53	.109	2.77
4	2.694	68.43	.526	13.36	.291	7.39	.291	7.39	.800	20.32	.375	9.53	.125	3.18	1.260	32.00	.375	9.53	.125	3.18	1.813	46.05	.375	9.53	.109	2.77
5	2.600	66.04	.628	15.92	.326	8.28	.326	8.28	.770	19.56	.485	12.32	.156	3.96	1.250	31.75	.485	12.32	.156	3.96	1.750	44.45	.485	12.32	.125	3.18
6	2.694	68.43	.690	17.53	.376	9.55	.376	9.55	.863	21.92	.550	13.97	.188	4.78	1.323	33.60	.550	13.97	.156	3.96	1.875	47.63	.550	13.97	.125	3.18

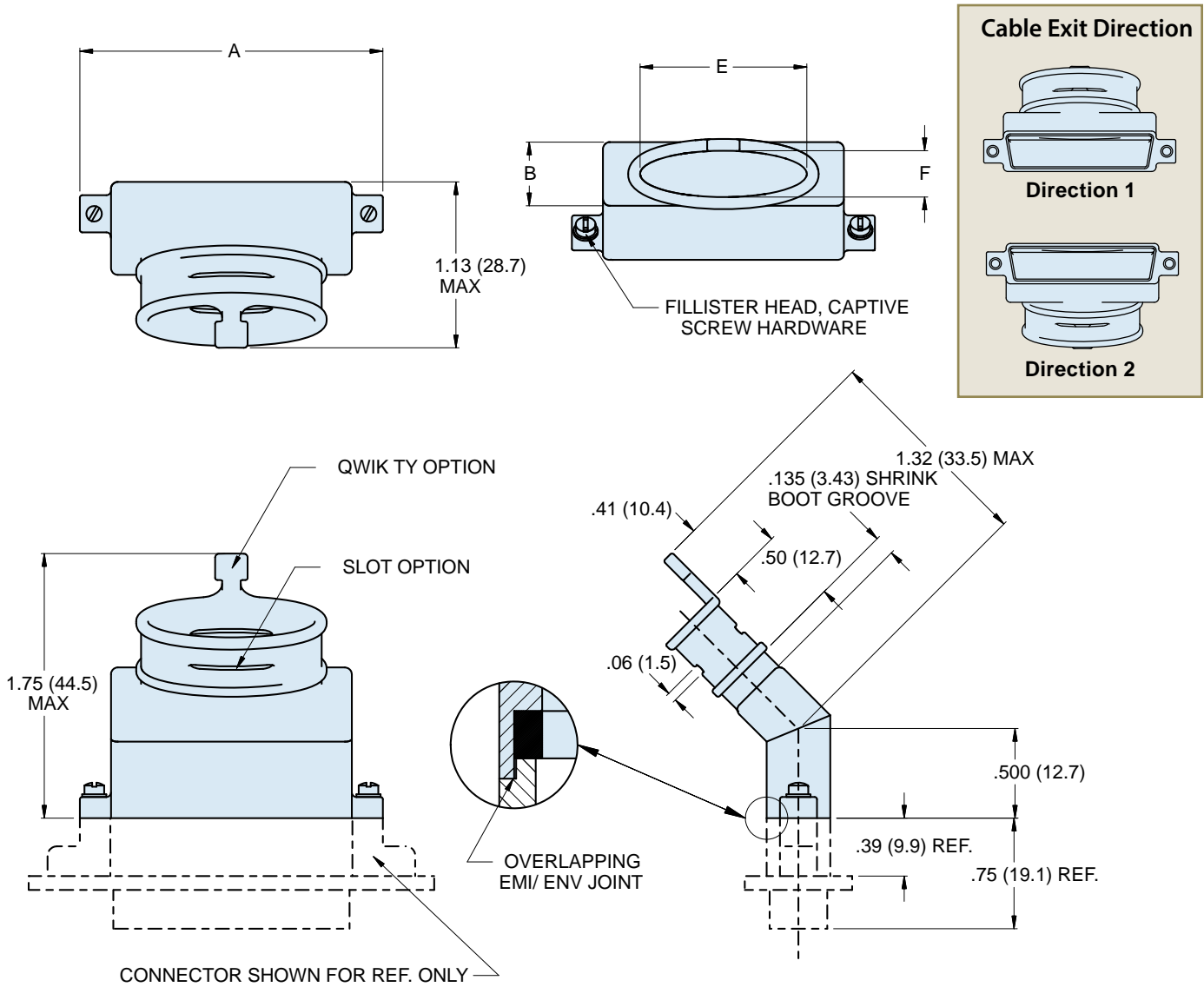
SERIES 28

HiPer-D Accessories



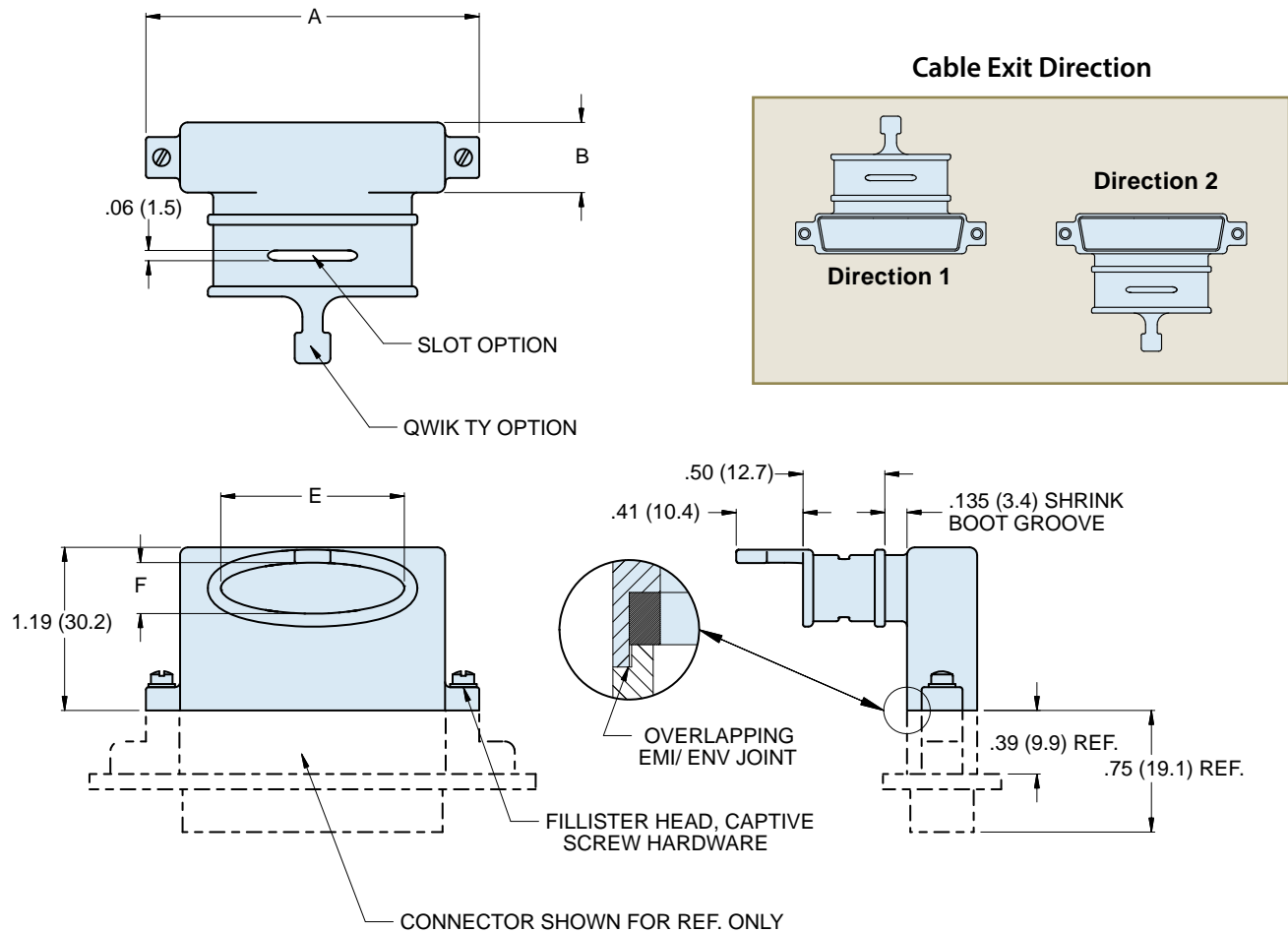
EMI Backshell, one-piece, environmental, panel mount
289B007 45° entry

289B007 DIMENSIONS



Dimensions																				
Shell Size					Entry Size A				Entry Size B				Entry Size C				Entry Size D			
	A Max		B Max		E		F		E		F		E		F		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1	1.181	30.00	.526	13.36	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13	.375	9.53
2	1.506	38.25	.526	13.36	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48	.375	9.53
3	2.046	51.97	.526	13.36	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58	.375	9.53
4	2.694	68.43	.526	13.36	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05	.375	9.53
5	2.600	66.04	.628	15.92	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45	.485	12.32
6	2.694	68.43	.690	17.53	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63	.550	13.97

289S007 DIMENSIONS



E

Dimensions																		
Shell Size	SIZE A				SIZE B				SIZE C				SIZE D				In.	mm
	A Max	B Max	E	F	E	F	E	F	E	F	E	F	E	F	E	F		
In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.
1	1.181	30.00	.526	13.36	.143	3.63	.143	3.63	.195	4.95	.195	4.95	.242	6.15	.242	6.15	.438	11.13
2	1.506	38.25	.526	13.36	.188	4.78	.188	4.78	.256	6.50	.256	6.50	.480	12.19	.375	9.53	.688	17.48
3	2.046	51.97	.526	13.36	.245	6.22	.245	6.22	.550	13.97	.375	9.53	.780	19.81	.375	9.53	1.125	28.58
4	2.694	68.43	.526	13.36	.291	7.39	.291	7.39	.800	20.32	.375	9.53	1.260	32.00	.375	9.53	1.813	46.05
5	2.600	66.04	.628	15.92	.326	8.28	.326	8.28	.770	19.56	.485	12.32	1.250	31.75	.485	12.32	1.750	44.45
6	2.694	68.43	.690	17.53	.376	9.55	.376	9.55	.863	21.92	.550	13.97	1.323	33.60	.550	13.97	1.875	47.63

SERIES 28
HiPer-D Accessories
 Jackpost Kits
 289-015 and 289-016



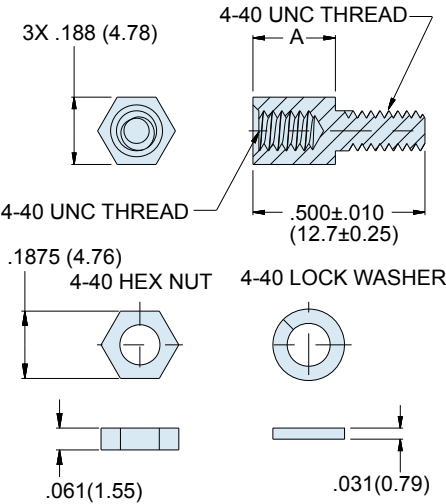
289-015 JACKPOST KIT FOR HIPER-D CABLE CONNECTORS

Jackpost kits for panel mounting of HiPer-D cable connectors. 289-015 jackposts fit HiPer-D cable connectors 280-018P, 280-019S, 280-046P and 280-047S. For front-mounted and cable-mounted connectors, use 289-015-A. For rear panel mounted connectors, choose the correct jackpost based on panel thickness. #4-40 UNC 2B threads. One kit consists of (2) jackposts, (2) hex nuts and (2) split lockwashers. 300 series stainless steel, passivated.



Hiper-D Jackpost Kits for Cable Connectors				
Panel Thickness		Part Number	A	
In.	mm.		In.	mm.
(none)	(none)	289-015-A	.250	6.35
.031	0.79	289-015-B	.219	5.56
.047	1.19	289-015-C	.203	5.16
.062	1.57	289-015-D	.188	4.78
.093 ⁽¹⁾	2.36 ⁽¹⁾	289-015-D	.188	4.78
.125 ⁽¹⁾	3.18 ⁽¹⁾	289-015-D	.188	4.78

Note (1) Panels thicker than .062 (1.57) must be counterbored.



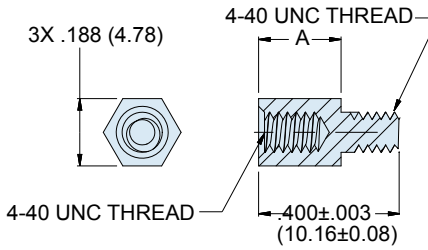
289-016 JACKPOST KIT FOR LOW PROFILE PCB CONNECTORS

Stainless steel jackposts for panel mounting of low profile HiPer-D PCB connectors. For freestanding connectors, use 289-016-A. For rear panel mounted connectors, choose the correct jackpost based on panel thickness. #4-40 UNC 2B threads. 300 series stainless steel, passivated. One kit consists of (2) jackposts. Install into connector flange with threadlocking compound (not supplied).



Hiper-D Jackpost Kits for PCB Connectors				
Panel Thickness		Part Number	A	
In.	mm.		In.	mm.
(none)	(none)	289-016-A	.250	6.35
.031	0.79	289-016-B	.219	5.56
.047	1.19	289-016-C	.203	5.16
.062	1.57	289-016-D	.188	4.78
.093 ⁽¹⁾	2.36 ⁽¹⁾	289-016-D	.188	4.78
.125 ⁽¹⁾	3.18 ⁽¹⁾	289-016-D	.188	4.78

Note (1) Panels thicker than .062 (1.57) must be counterbored.



SERIES 28 HiPer-D Accessories



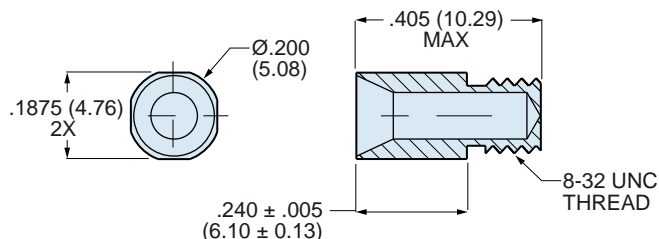
Guide pins, bushings and jackposts for panel mount connectors
289-014-B, 289-014-G, and 289-014-P

289-014-B GUIDE BUSHING KIT



Part Number
289-014-B

Style "B" guide bushing for blind mate applications has #8-32 thread for installation into panel mount HiPer-D connectors with corresponding #8-32 tapped flange. 300 series stainless steel, passivated. One kit consists of (2) bushings. Install with threadlocking compound. Mates with style "G" guide pin 289-014-G.

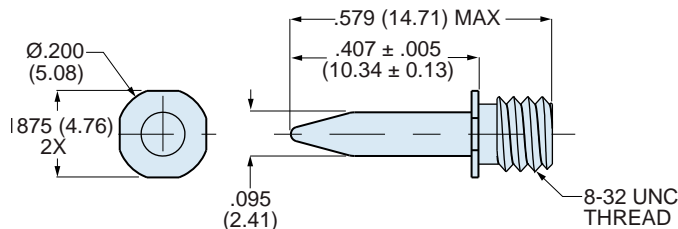


289-014-G GUIDE PIN KIT



Part Number
289-014-G

Style "G" guide pin for blind mate applications has #8-32 thread for installation into panel mount HiPer-D connectors with corresponding #8-32 tapped flange. 300 series stainless steel, passivated. One kit consists of (2) guide pins. Install with threadlocking compound. Mates with style "B" guide bushing 289-014-B.

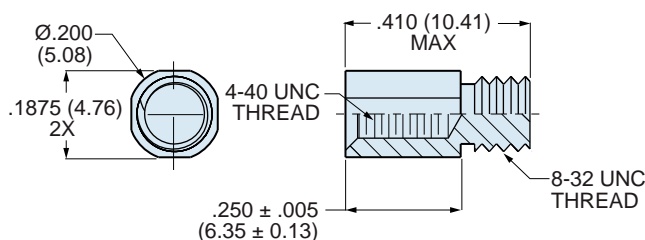


289-014-P JACKPOST KIT



Part Number
289-014-P

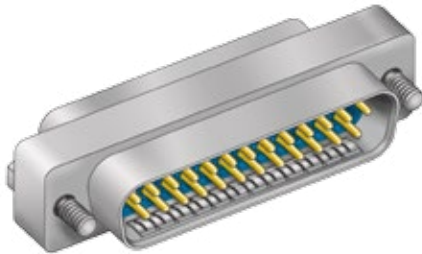
Style "P" jackpost has #8-32 thread for installation into panel mount HiPer-D connectors with corresponding #8-32 tapped flange. 300 series stainless steel, passivated. One kit consists of (2) jackposts. Install with threadlocking compound. Mates with all standard #4-40 male screw locks and jackscrews.



SERIES 28 HiPer-D Accessories



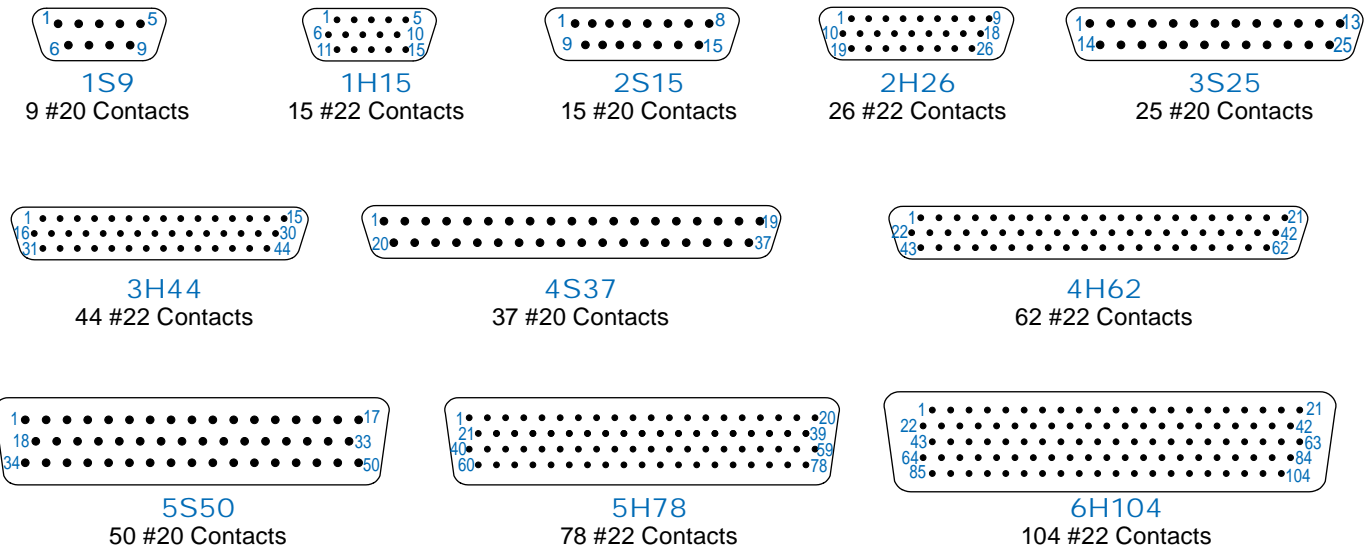
Sav-Con® D-subminiature connector saver 289-012



Prevent damage to expensive instruments and cables with Glenair HiPer-D Sav-Cons®. One side is a pin connector and the other side is a socket connector. Low profile one-piece machined aluminum housing and ground spring protect circuits from EMI problems. Contacts are heavy gold plated for improved durability. Available in standard density and high density contact arrangements. Contacts are factory-installed. Pin mating face has fluorosilicone rubber seal. Choose electroless nickel or gold shell finish for avionics and space applications. Choose cadmium for compatibility with cadmium or zinc plated M24308 connectors, or choose nickel-PTFE for maximum corrosion protection. Other materials and finishes available on request.

How To Order							
Contact Size	Contact Density	No. of Contacts	Shell Size	Electroless Nickel Shell Finish <i>Space, Avionics (ME)</i>	Gold Plated Shell <i>Space (Z2)</i>	Nickel-PTFE Finish <i>Maximum Corrosion Protection (MT)</i>	Cadmium Shell Finish <i>General Purpose (JF)</i>
#20	Standard	9	1	289-0121S9MEGR	289-0121S9Z2GR	289-0121S9MTGR	289-0121S9JFGR
		15	2	289-0122S15MEGR	289-0122S15Z2GR	289-0122S15MTGR	289-0122S15JFGR
		25	3	289-0123S25MEGR	289-0123S25Z2GR	289-0123S25MTGR	289-0123S25JFGR
		37	4	289-0124S37MEGR	289-0124S37Z2GR	289-0124S37MTGR	289-0124S37JFGR
		50	5	289-0125S50MEGR	289-0125S50Z2GR	289-0125S50MTGR	289-0125S50JFGR
#22	High Density	15	1	289-0121H15MEGR	289-0121H15Z2GR	289-0121H15MTGR	289-0121H15JFGR
		26	2	289-0122H26MEGR	289-0122H26Z2GR	289-0122H26MTGR	289-0122H26JFGR
		44	3	289-0123H44MEGR	289-0123H44Z2GR	289-0123H44MTGR	289-0123H44JFGR
		62	4	289-0124H62MEGR	289-0124H62Z2GR	289-0124H62MTGR	289-0124H62JFGR
		78	5	289-0125H78MEGR	289-0125H78Z2GR	289-0125H78MTGR	289-0125H78JFGR
		104	6	289-0126H104MEGR	289-0126H104Z2GR	289-0126H104MTGR	289-0126H104JFGR

STANDARD AND HIGH DENSITY CONTACT ARRANGEMENTS (face view of pin connector)



SERIES 28
HiPer-D Accessories

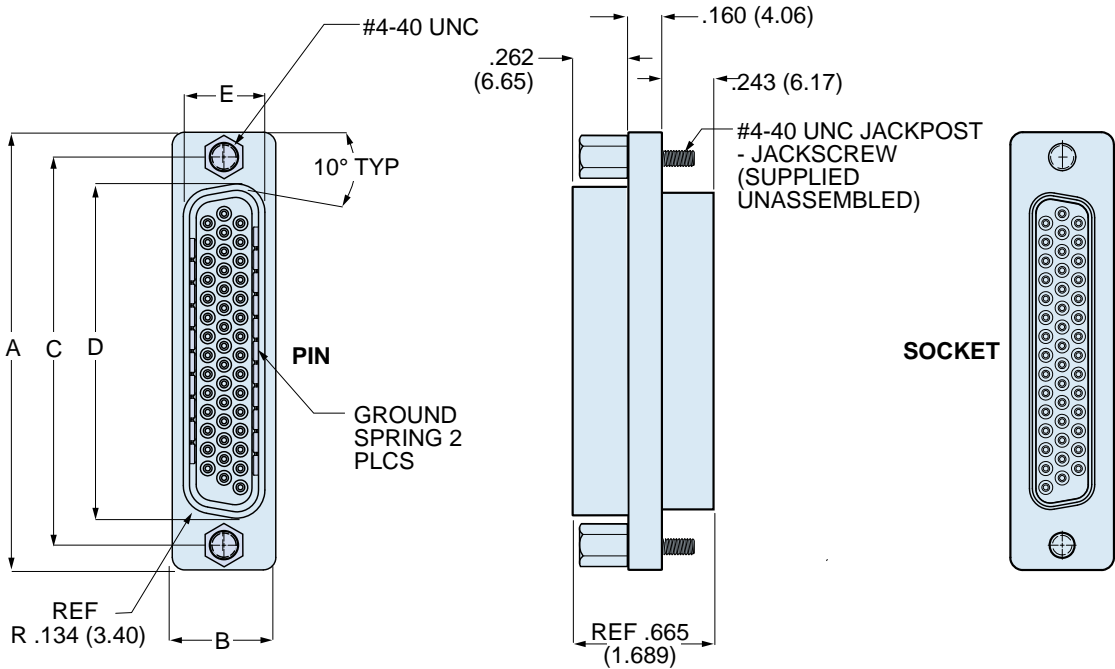


Sav-Con® D-subminiature connector saver
289-012

289-012 SAV-CON MATERIALS, FINISHES AND SPECIFICATIONS

Specifications		Materials and Finishes	
Current Rating	#20 7.5 AMPS, #8 40 AMPS	Shell	Aluminum alloy
Test Voltage	1000 VAC RMS	Contacts	Copper alloy, 50 microinches gold
Insulation Resistance	5000 megohms minimum	Insulator	Thermoset epoxy
Operating Temperature	-65° C. to +200° C.	EMI Spring	Copper alloy, nickel plated
Shock	300 g.	Face Seal	Fluorosilicone rubber
Vibration, Random	43.92 g.	Hardware	300 series stainless steel

289-012 SAV-CON DIMENSIONS



Shell Size	A		B		C Basic		D		E		F		G	
	In .	mm.	In .	mm.	In.	mm.	In .	mm.	In .	mm.	In .	mm.	In .	mm.
1	± .015	± 0.38	± .015	± 0.38	.984	24.99	.726	18.44	.329	8.36	.311	7.90	.643	16.33
2	± .015	± 0.38	± .015	± 0.38	1.312	33.32	1.054	26.77	.329	8.36	.311	7.90	.971	24.66
3	± .015	± 0.38	± .015	± 0.38	1.852	47.04	1.594	40.49	.329	8.36	.311	7.90	1.511	38.38
4	± .015	± 0.38	± .015	± 0.38	2.500	63.50	2.242	56.95	.329	8.36	.311	7.90	2.159	54.84
5	± .015	± 0.38	± .015	± 0.38	2.406	61.11	2.139	54.33	.441	11.20	.423	10.74	2.064	52.43
6	± .015	± 0.38	± .015	± 0.38	2.500	63.50	2.272	57.71	.503	12.78	.486	12.34	2.189	55.60

SERIES 28

HiPer-D Accessories



D-subminiature gender changer

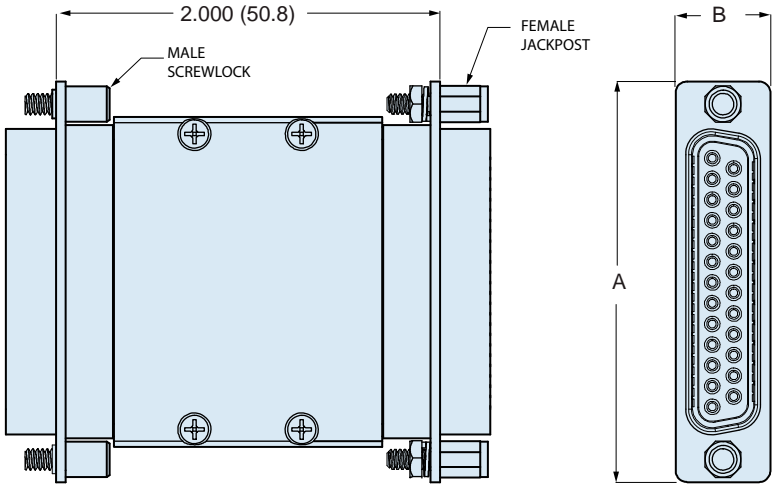
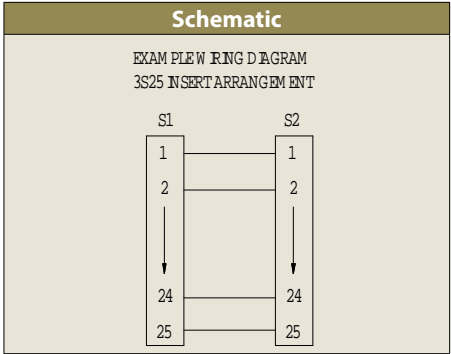
289-057P, 289-058S



HiPer-D Gender Changers provide a convenient way to change the gender of an interface to allow attachment of a mismatched cable. Two styles are available: male-male and female-female. Machined metal housing protects circuits from EMI problems. Contacts are heavy gold plated for improved durability. Available in standard density and high density contact arrangements. Intermateable with standard M24308-type connectors. Pin mating face has fluorosilicone rubber seal. Choose electroless nickel or gold shell finish for avionics and space applications. Choose cadmium for compatibility with cadmium or zinc plated M24308 connectors, or choose nickel-PTFE for maximum corrosion protection. Other materials and finishes available on request.

Ordering Information					
Sample Part Number	289-057P	3S25	ME	N	1
Basic Part Number	289-057P = Male-Male with Pin Contacts 289-058S = Female-Female with Socket Contacts				
Shell Size-Contact Arrangement	Contact Arrangements are shown in the adjacent table				
Finish	ME = Electroless Nickel (RoHS) MT = Nickel-PTFE (RoHS) JF = Cadmium with Yellow Chromate Z2 = Gold (RoHS) Z1 = Passivated Stainless Steel (RoHS)				
Ground Spring	Omit for 289-058S. Applies to 289-057P Male-Male adapter only. G = Supplied with EMI Ground Spring N = No Ground Spring				
Mating Hardware	1 = Captive #4-40 Male Screwlocks on Both Ends 2 = #4-40 Female Jackposts on Both Ends 3 = Captive #4-40 Male Screwlocks on One End, #4-40 Female Jackposts on One End				

Shell Size - Contact Arrangements		
Shell Size-Contact Arr.	Contact Size and Qty	
	#20	#22
Standard Density		
1S9	9	
2S15	15	
3S25	25	
4S37	37	
5S50	50	
High Density		
1H15		15
2H26		26
3H44		44
4H62		62
5H78		78
6H104		104



Dimensions				
Shell Size	A		B	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38
1	1.213	30.81	.494	12.55
2	1.541	39.14	.494	12.55
3	2.088	53.04	.494	12.55
4	2.729	69.32	.494	12.55
5	2.635	66.93	.605	15.37
6	2.729	69.32	.668	16.97

SERIES 28 HiPer-D Accessories



Band-Master™ ATS tool and bands for termination of cable braid 600-058 tool, 600-052 and 600-090 band straps

BAND-MASTER™ ATS TOOL AND BANDS



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

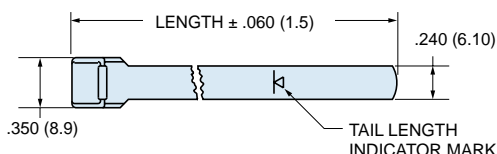
1 Band installation Tool. Use with .240" (6.10 mm) wide bands. 6.75 inches (172 mm) length, 1.2 pounds (0.6 Kg.)

2 Standard Band, .240" (6.10 mm) wide. Available in two lengths, flat or pre-coiled. Stainless steel.

Figure	Description	Part Number
1	Band installation Tool	600-058

Figure	Length		Part Number		Accommodates Diameter	
	in.	mm	Flat	Pre-Coiled	in.	mm
2	14.250	362.1	600-052	600-052-1	1.8	45.7
2	18.000	457.2	600-090	600-090-1	2.5	63.5

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



BAND-MASTER™ SHIELD TERMINATION INSTRUCTIONS

1. Prepare Cable Braid for termination process (Figure 1).
2. Push Braid forward over Adapter Retention Lip to the Adapter Incline Point (or .4" [10.2mm] minimum braid length). Milk Braid as required to remove slack and insure a snug fit around the shield termination area (Figure 2).
3. Prepare the Band in the following manner:
IMPORTANT: Due to Connector/Adapter circumference, it may be necessary to prepare the Band around the Cable or Retention Area.
A. Roll Band through the Buckle Slot twice. (Bands must be double-coiled.)
B. Pull on Band until Mark (▶) is within approximately .250 inch (6.4mm) of Buckle Slot (Figure 3). The Band may be tightened further if desired.

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

Shield Termination

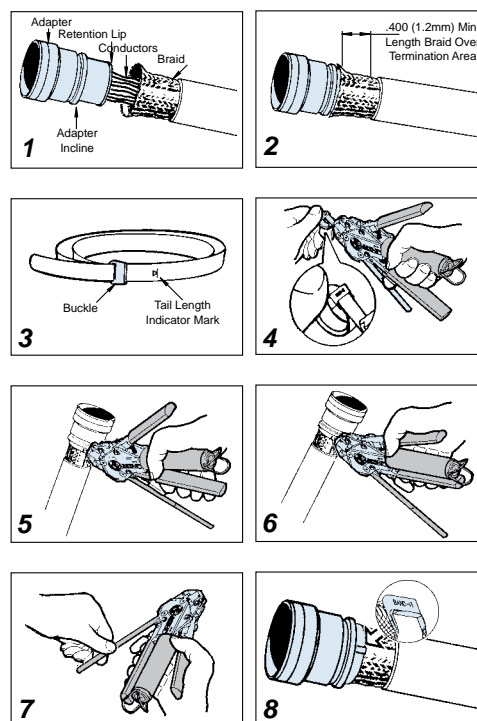
Clamping Process (Figures 4 thru 8)

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

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

NOTE: If alignment of band and shield is unsatisfactory, tension on band can be relaxed by pushing on slotted release lever on top of tool. Make adjustments as necessary and again squeeze black pull-up handle.

6. Complete the Clamping Process by squeezing the Gray Cut-Off Handle.
7. Remove excess band from tool and dispose.
8. Inspect Shield Termination.



SERIES 28
HiPer-D Accessories



Elliptical D-subminiature heatshrink boots
770-030

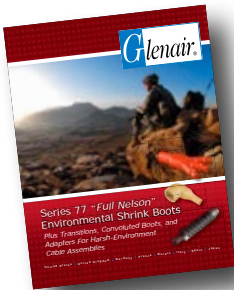


About User-Installed Adhesive

Heat-shrink boots are not watertight unless equipped with pre-coated or user-installed adhesives. When heat is applied to the boot, the adhesive melts and fixes the boot to the adapter and cable jacket to provide the necessary sealing as well as mechanical strain-relief. For maximum performance Glenair recommends Type U user-installed two-part epoxy adhesive which offers reduced boot installation time and easier installation. Pre-coated boots require additional care to install because the boot must be heated sufficiently to activate the epoxy, at the risk of overheating the overall assembly. A single 50 ml duo syringe can coat many boots. The duo syringe can be re-capped for re-use. Inexpensive mixing nozzles must be discarded after each use.

NOTE: Glenair high-performance two part epoxy meets VG95343 part 15.

See next page for ordering information on user-installed two part epoxy adhesive.



Series 77 "Full Nelson" Shrink Boot Catalog has additional boot styles, technical information, installation instructions and other heatshrink products. Contact Glenair or go to www.glenair.com.

Elliptical heatshrink boots are designed for Glenair rectangular HiPer-D backshells with large elliptical cable entries. Heatshrink boots provide strain relief and environmental protection. Shape-memory polymer returns to as-molded shape when heat is applied. Boot lip fits adapter groove for precise fit. Semi-rigid high performance elastomer resists high temperature and withstands exposure to petroleum-based fluids and fuels. Also available with non-halogenated flame-retardant polyolefin for use where limited fire hazard is required.

MATERIAL SELECTION GUIDE

- 1
- Type 1 High Performance Elastomer** -75°C to +150°C. Semi-rigid high performance elastomer combines excellent resistance to fuels, oils and solvents with superior performance at extreme temperatures. Material meets the requirements of VG95343 Type 6, BSG 198-5-DE, EN62329-102 and SAE AS5258 Type H. Recommended for demanding applications such as military vehicles and petrochemical exploration.
- 2
- Type 2 Zero Halogen Polyolefin** -30°C to +135°C. Low Smoke Zero Halogen (LSZH) polyolefin boots meet low smoke and toxicity requirements of shipboard, transit and aircraft systems. Oxygen index greater than 30%, smoke index less than 20, and toxicity index under 3 per 100 grams. Material meets requirements of NAVSEA 5617649, VG95343 Part 29, BSG 198-5-DF, EN62329-101 and SAE AS5258 Type G. Good resistance to oils, fuels and solvents.

PRE-COATED ADHESIVE SELECTION GUIDE

- W1
- Low Smoke Zero Halogen (LSZH) polyamide hot melt adhesive Coating.** Bonds well to a variety of substrates. Good creep resistance at elevated temperatures. Excellent bond strength at low temperature. Good resistance to fuels and oils. -55°C to +105°C. Compatible with Type 1 and Type 2 boot materials.
- R
- High Temperature Epoxy Adhesive Coating.** Glenair's highest performance pre-coated adhesive. The material requires careful installation using trained operators. -75°C to 150°C. Withstands prolonged high temperature immersion in fuels and oils. Excellent peel adhesion. Compatible with Type 1 and Type 2 boot materials.

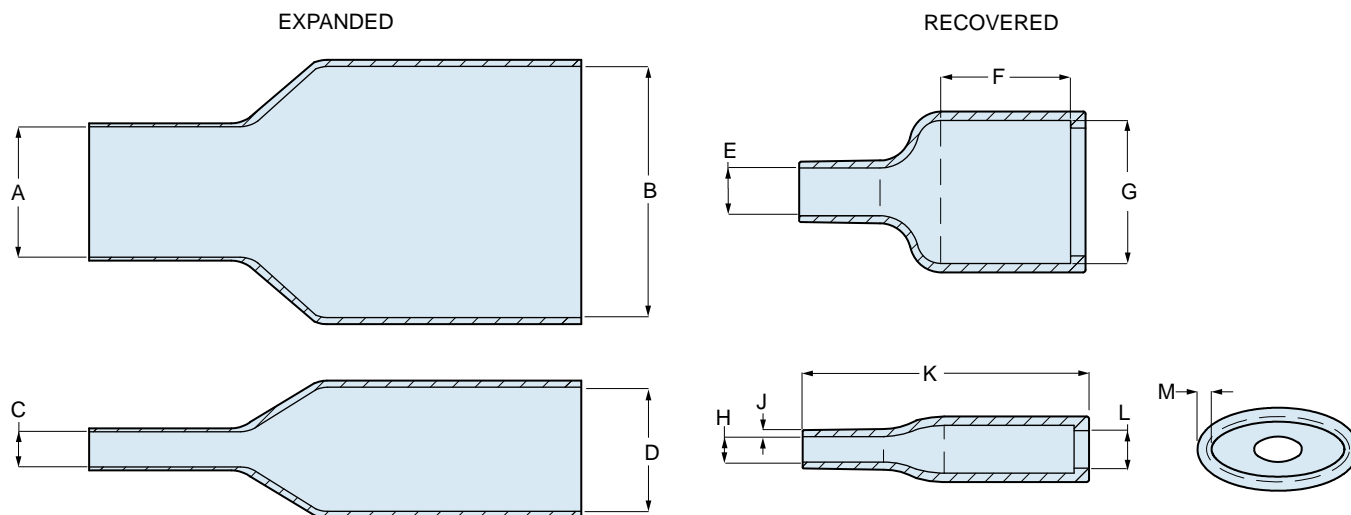
Ordering Information					
Sample Part Number	770-030	1	05	R	
Basic Part Number	770-030				
Material	1 = High Performance Elastomer 2 = Zero Halogen Polyolefin				
Boot Size	05 = Size 05 06 = Size 06 (see next page for dimensions)				
Adhesive Lining	W1 = Low Smoke Zero Halogen Polyamide Hot Melt Adhesive R = High Temperature, High Strength Epoxy Adhesive Omit for boot with no adhesive lining				

SERIES 28 HiPer-D Accessories



Elliptical D-subminiature heatshrink boots 770-030

770-030 HEATSHRINK BOOT DIMENSIONS



Boot Size	A Min		B Min		C Min		D Min		E Max		F $\pm 10\%$		G Max		H Max		J $\pm 10\%$		K $\pm 10\%$		L Max		M $\pm 10\%$	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
05	1.50	38.1	2.00	50.8	.800	20.3	1.00	25.4	.375	9.53	1.062	27	1.125	28.6	.200	5.08	.060	1.52	2.29	58.2	.375	9.53	.070	1.78
06	1.80	45.7	2.50	63.5	.580	14.7	1.50	38.1	.450	11.43	1.062	27	1.637	41.6	.145	3.68	.060	1.52	3.05	77.5	.375	9.53	.070	1.78

770-030 HEATSHRINK BOOT IDENTIFICATION MARKINGS

Heatshrink boots are identified with molded-in lettering. This lettering shows the boot type, boot size and orientation. Position the boot so that the lipped "A" end is toward the adapter and the "C" end is toward the cable. Assembly instructions are in the **Series 77 "Full Nelson" Environmental Shrink Boots** catalog, available at www.glenair.com.



USER-INSTALLED BOOT ADHESIVE, DISPENSING GUN AND MIXING NOZZLE



Part Number
779-001



Part Number
779-002



Part Number	Count Per Pack
779-003	12

High performance flexible two part thermoset epoxy provides high strength flexible bond from -55° to 150°C. 50 mL duo syringe fits standard dispensing guns. Use with square green mixing nozzle sold separately. 12 hour cure time at 20°C, 1 hour at 85°C, 30 minutes at 150°C. Apply to inside of boot with wooden spatula. 18 month shelf life.

Twin push-rod 1:1 ratio epoxy dispensing gun for use with duo syringe epoxy and mixing nozzle sold separately. Durable heavy-duty plastic. Gun type hand grip with ratcheting trigger to advance push-rods.

1:1 ratio mixing nozzle attaches to duo syringe with 1/2 turn and locks into place. Nozzle provides consistent mixing of resin and hardener. Kit consists of (12) nozzles.

Section F

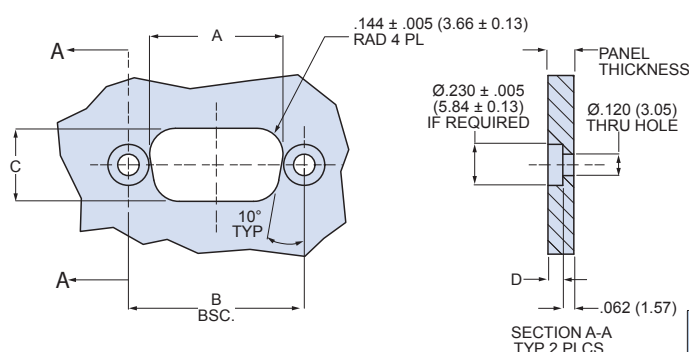
HiPer-D Panel Cutouts and PCB Footprints

Connector Part Number	Description	Panel Cutout Page No.	PCB Footprint Page No.
280-018P	Cable Connector, Pin Contacts	F-2	—
280-019S	Cable Connector, Socket Contacts	F-2	—
280-020P	Panel Mount, Pin Contacts	F-3	—
280-021S	Panel Mount, Socket Contacts	F-3	—
280-022P	Straight PCB, Pin Contacts	F-3	F-4 - F-6
280-023S	Straight PCB, Socket Contacts	F-3	F-7 - F-9
280-024P	Right Angle PCB, Pin Contacts	F-3	F-10 - F-12
280-025S	Right Angle PCB, Socket Contacts	F-3	F-13 - F-15
280-026P	Straight PCB, Pin Contacts	F-2	F-4 - F-6
280-027S	Straight PCB, Socket Contacts	F-2	F-7 - F-9
280-028P	Right Angle PCB, Pin Contacts	F-2	F-10 - F-12
280-029S	Right Angle PCB, Socket Contacts	F-2	F-13 - F-19
280-030P	Float Mount, Pin Contacts	F-3	—
280-031S	Float Mount, Socket Contacts	F-3	—
280-046P	Cable Connector, Pin Contacts	F-2	—
280-047S	Cable Connector, Socket Contacts	F-2	—
280-048P	Panel Mount, Pin Contacts	F-3	—
280-049P	Panel Mount, Socket Contacts	F-3	—
280-050P	Straight PCB, Pin Contacts	F-3	F-16 - F-19
280-051S	Straight PCB, Socket Contacts	F-3	F-20 - F-23
280-052P	Right Angle PCB, Pin Contacts	F-3	F-24 - F-28
280-053S	Right Angle PCB, Socket Contacts	F-3	F-29 - F-33
280-054P	Straight PCB, Pin Contacts	F-2	F-16 - F-19
280-055S	Straight PCB, Socket Contacts	F-2	F-20 - F-23
280-056P	Right Angle PCB, Pin Contacts	F-2	F-24 - F-28
280-057S	Right Angle PCB, Socket Contacts	F-2	F-29 - F-33
280-058P	Float Mount, Pin Contacts	F-3	—
280-059S	Float Mount, Socket Contacts	F-3	—

Panel cutout and mounting information for cable connectors and low profile PCB connectors

PANEL CUTOUT FOR REAR-MOUNTED CABLE CONNECTORS AND LOW PROFILE PCB CONNECTORS

Rear Mount Panel Cutout ⁽¹⁾



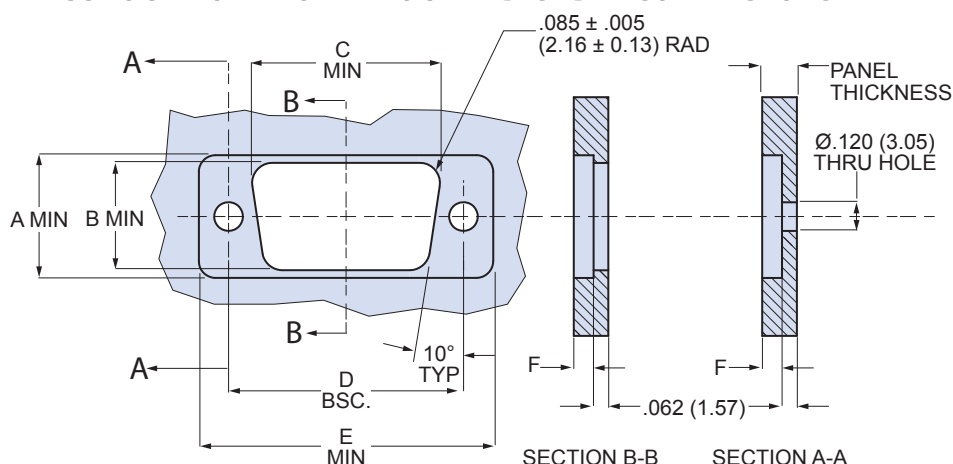
Shell Size	A		B Basic		C	
	in	mm	in	mm	in.	mm
	+0.005 -0.000	+0.13 -0.00			+0.005 -0.000	+0.13 -0.00
1	.746	18.95	.984	24.99	.409	10.39
2	1.074	27.28	1.312	33.32	.409	10.39
3	1.614	41.00	1.852	47.04	.409	10.39
4	2.262	57.45	2.500	63.50	.409	10.39
5	2.159	54.84	2.406	61.11	.521	13.23
6	2.288	58.12	2.500	63.50	.583	14.81

Application Note for Rear Panel Mounting

- (1) For rear mounting with female Jackposts, use shortened jackposts per the table at right. For panel thickness greater than .062 (1.57), the panel must be counterbored.

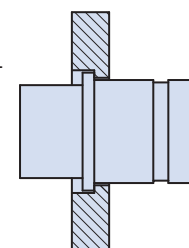
Panel Thickness		D		Jackpost Part Number for Cable Connectors	Jackpost Part Number for Low Prof. PCB Connectors
in	mm	in	mm		
No Panel	N/A	N/A	N/A	289-015-A	289-016-A
.031	0.79	N/A	N/A	289-015-B	289-016-B
.047	1.19	N/A	N/A	289-015-C	289-016-C
.062	1.57	N/A	N/A	289-015-D	289-016-D
.093	2.36	.031	0.79	289-015-D	289-016-D
.125	3.18	.063	1.60	289-015-D	289-016-D
.156	3.96	.094	2.39	289-015-D	289-015-D

PANEL CUTOUT FOR FRONT-MOUNTED CABLE CONNECTORS



Front Mount Panel Cutout

WHEN FRONT PANEL MOUNTING ON PANELS THICKER THAN .062 (1.57), CONNECTOR WILL SIT IN PANEL AS SHOWN



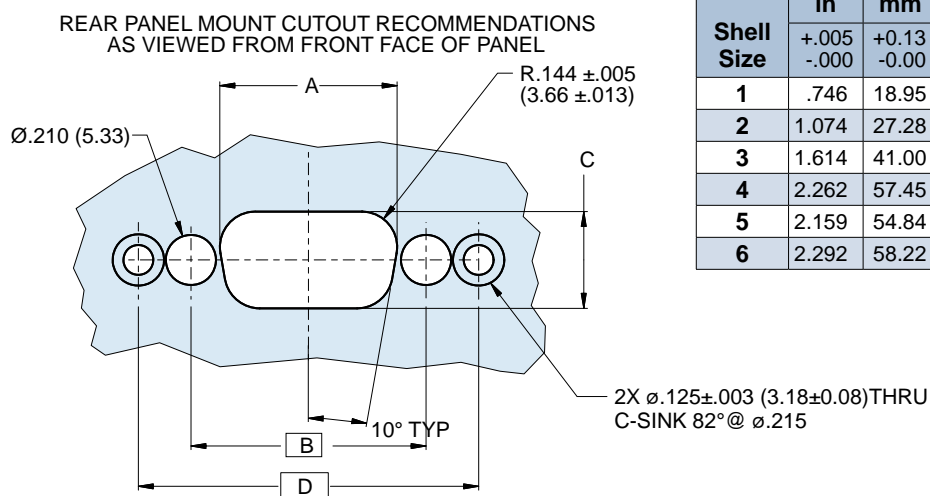
Shell Size	A		B		C		D Basic		E	
	in	mm	in	mm	in.	mm	in	mm	in.	mm
	+0.005 -0.000	+0.13 -0.00	+0.005 -0.000	+0.13 -0.00	+0.005 -0.000	+0.13 -0.00			+0.005 -0.000	+0.13 -0.00
1	.514	13.06	.450	11.43	.787	19.99	.984	24.99	1.233	31.32
2	.514	13.06	.450	11.43	1.111	28.22	1.312	33.32	1.561	39.65
3	.514	13.06	.450	11.43	1.653	41.99	1.852	47.04	2.108	53.54
4	.514	13.06	.450	11.43	2.300	58.42	2.500	63.50	2.749	69.82
5	.625	15.88	.552	14.02	2.190	55.63	2.406	61.11	2.655	67.44
6	.688	17.48	.614	15.60	2.315	58.80	2.500	63.50	2.749	69.82

Application Note for Front Panel Mounting

Panels thicker than .062 (1.57) should be machined as shown in order to prevent interference with mounting hardware and backshells. Front-mounted connectors are compatible with female Jackpost 289-015-A or M24308/26-1.

Panel cutout for panel mount connectors with O-ring and panel cutout for float mount connectors

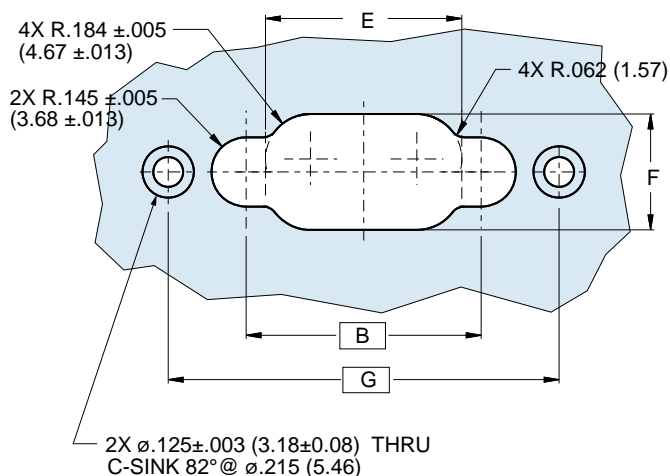
PANEL CUTOUT FOR PANEL MOUNT CONNECTORS WITH O-RING



Shell Size	A		B Basic		C		D Basic	
	in	mm	in	mm	in.	mm	in	mm
	+0.005 -0.000	+0.13 -0.00			+0.005 -0.000	+0.13 -0.00		
1	.746	18.95	.984	24.99	.409	10.39	1.424	36.17
2	1.074	27.28	1.312	33.32	.409	10.39	1.752	44.50
3	1.614	41.00	1.852	47.04	.409	10.39	2.292	58.22
4	2.262	57.45	2.500	63.50	.409	10.39	2.940	74.68
5	2.159	54.84	2.406	61.11	.521	13.23	2.846	72.29
6	2.292	58.22	2.500	63.50	.583	14.81	2.940	74.68

PANEL CUTOUT FOR FLOAT MOUNT CONNECTORS

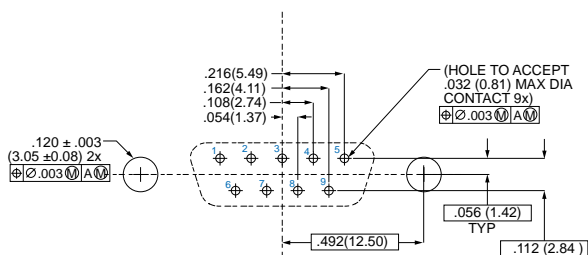
REAR PANEL CUTOUT VIEWED FROM FRONT OF PANEL



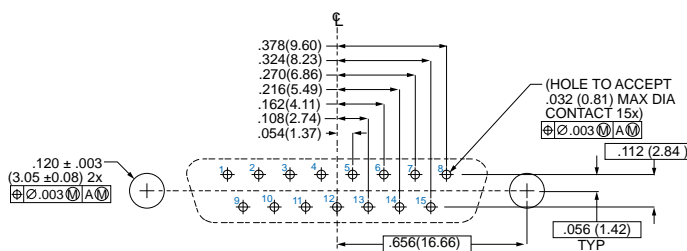
Shell Size	B Basic		E		F		G Basic	
	in	mm	in	mm	in.	mm	in	mm
					+0.005 -0.000	+0.13 -0.00		
1	.984	24.99	.826	20.98	.489	12.42	1.636	41.55
2	1.312	33.32	1.154	29.31	.489	12.42	1.964	49.89
3	1.852	47.04	1.694	43.03	.489	12.42	2.504	63.60
4	2.500	63.50	2.342	59.49	.489	12.42	3.152	80.06
5	2.406	61.11	2.239	56.87	.601	15.27	3.058	77.67
6	2.500	63.50	2.372	60.25	.663	16.84	3.152	80.06

PCB footprints for standard and high density pin connectors with straight PC tails

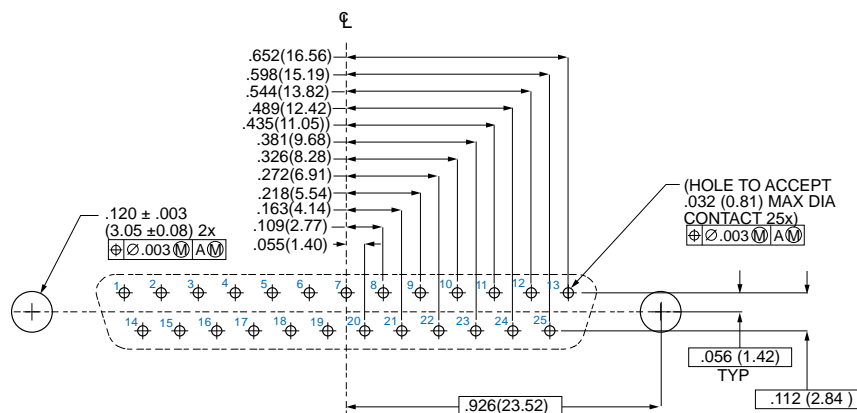
PCB FOOTPRINT FOR 280-022P AND 280-026P CONNECTORS



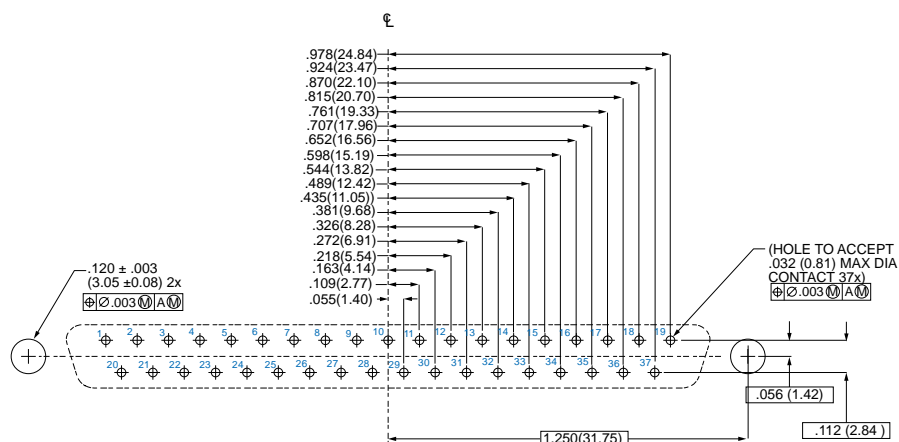
1S9
9 #20



2S15
15 #20



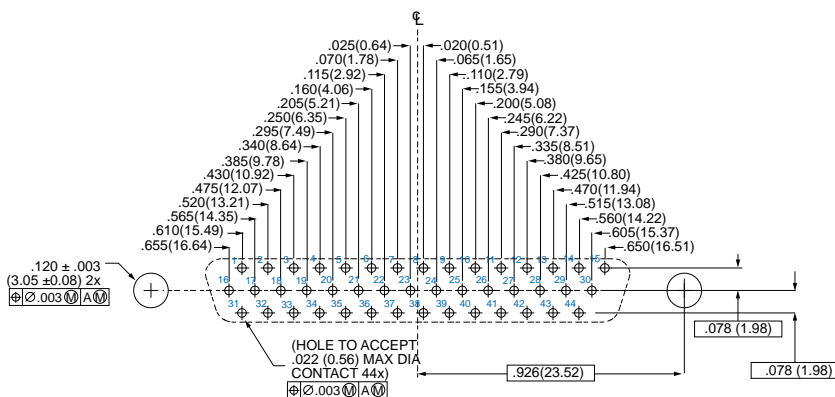
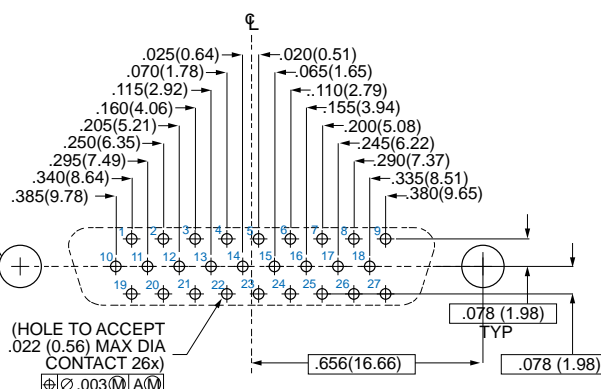
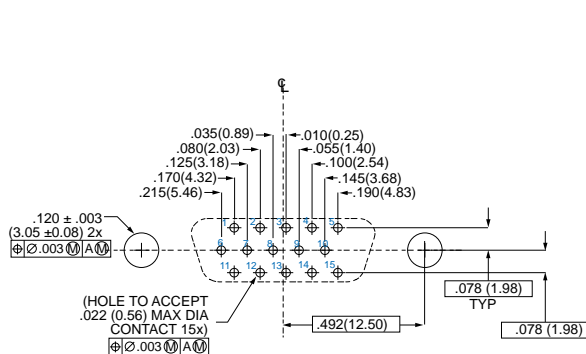
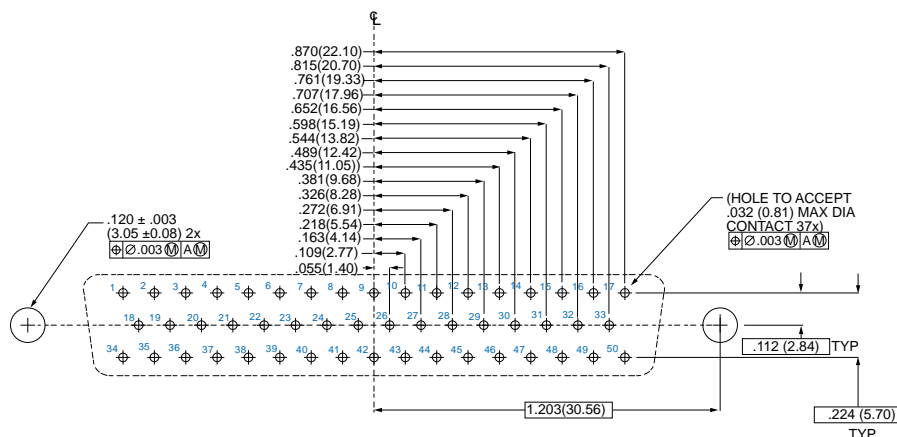
3S25
25 #20



4S37
37 #20

PCB footprints for standard and high density pin connectors with straight PC tails

PCB FOOTPRINT FOR 280-022P AND 280-026P CONNECTORS

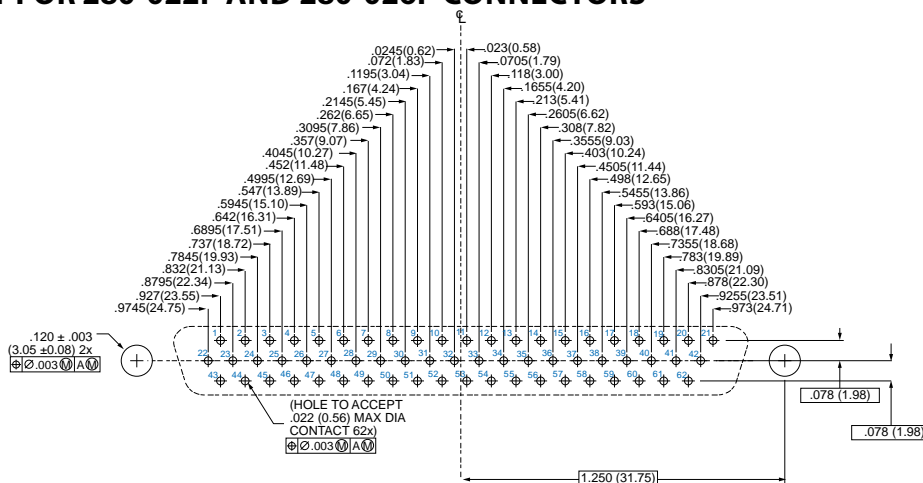


PCB footprints for standard and high density pin connectors with straight PC tails

PCB FOOTPRINT FOR 280-022P AND 280-026P CONNECTORS

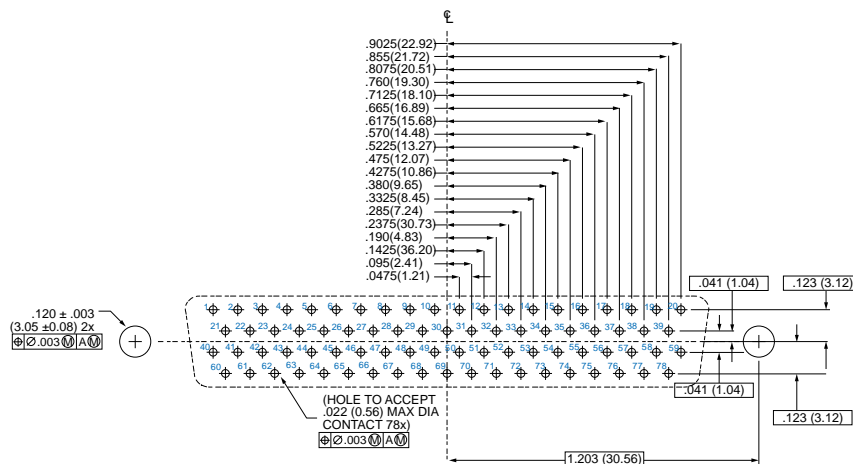
4H62

62 #22



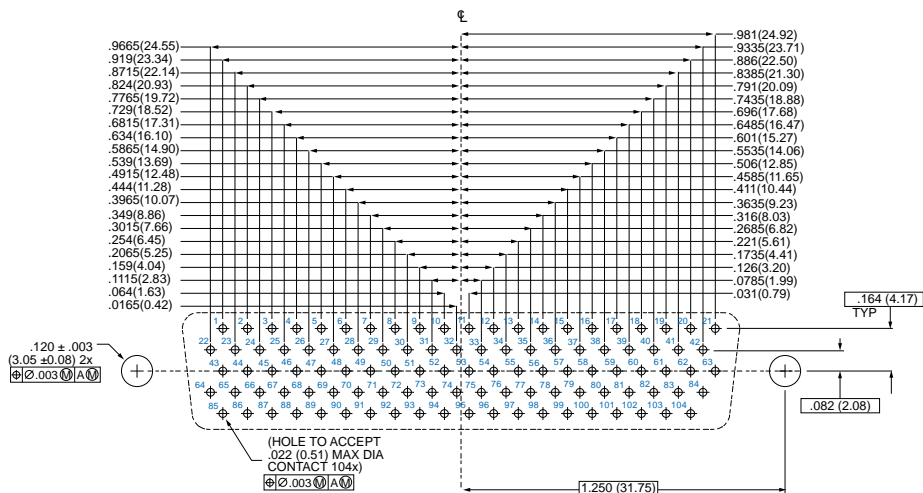
5H78

78 #22



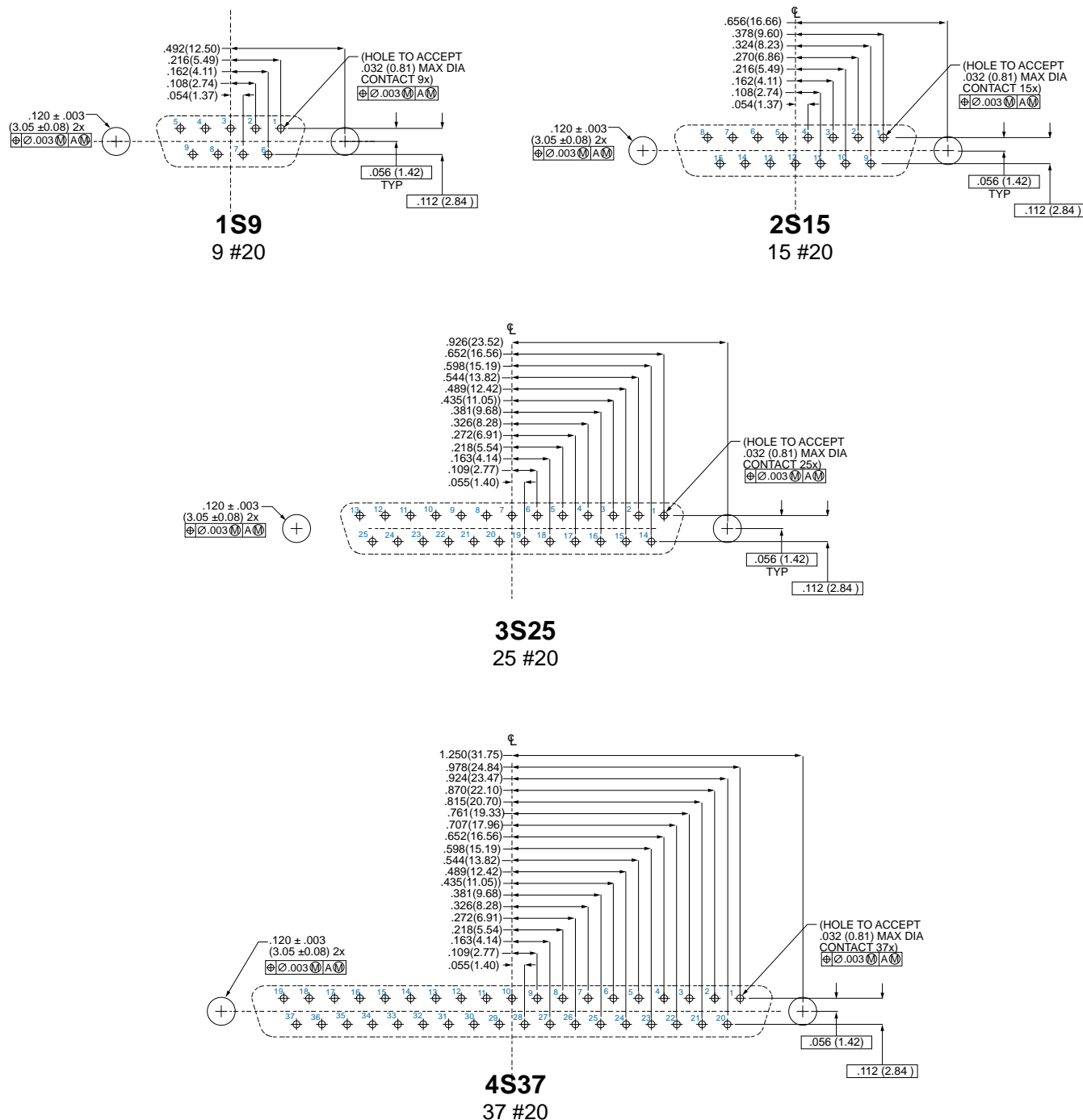
6H104

104 #22

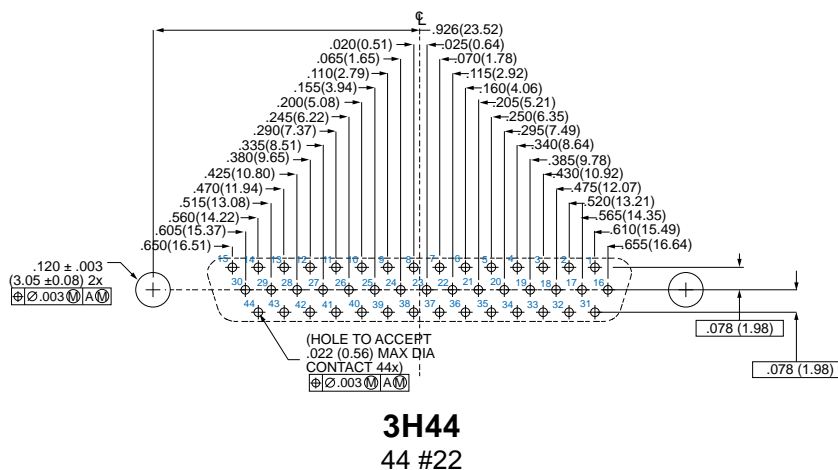
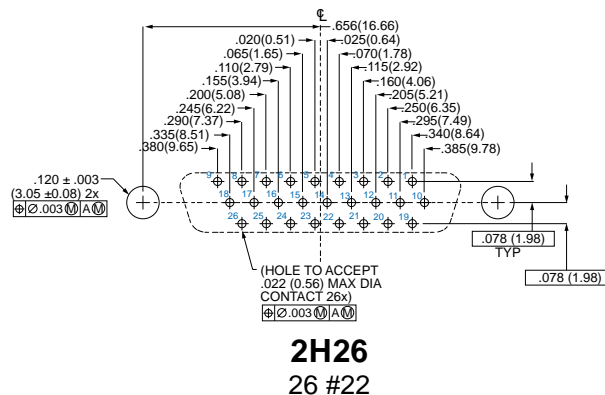


PCB footprints for standard and high density socket connectors with straight PC tails

PCB FOOTPRINT FOR 280-023S AND 280-027S CONNECTORS



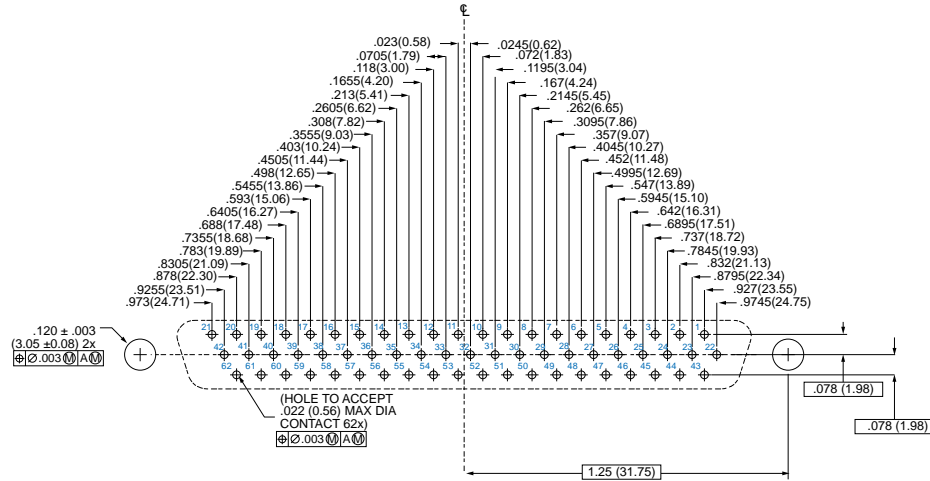
Technical drawing of a 5S50 50 #20 component. The drawing shows a rectangular component with a dashed outline. It features a central vertical slot and a horizontal slot. Numerous dimensions are provided in inches and millimeters. Key dimensions include: overall width 1.203 (30.56), overall height 1.203 (30.56), and a central slot width of .112 (2.84) TYP. The drawing also shows a hole to accept a .032 (0.81) MAX DIA CONTACT (37x). The component is labeled 5S50 50 #20.



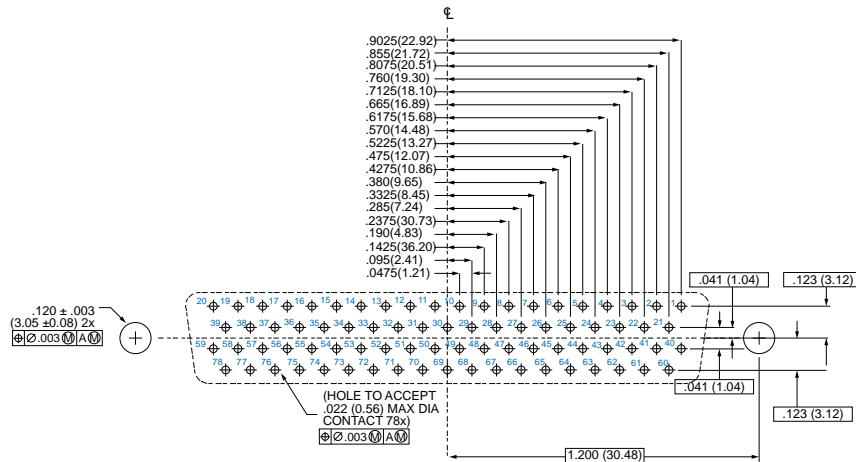
PCB footprints for standard and high density socket connectors with straight PC tails

PCB FOOTPRINT FOR 280-023S AND 280-027S CONNECTORS

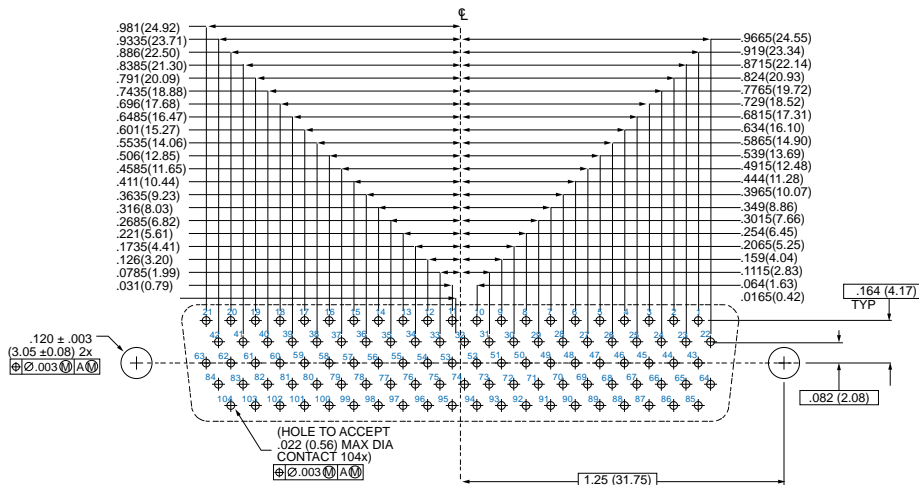
4H62
62 #22



5H78
78 #22

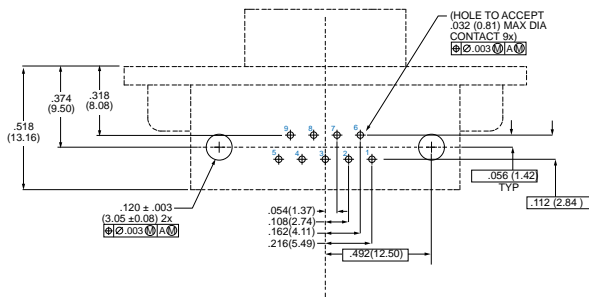


6H104
104 #22

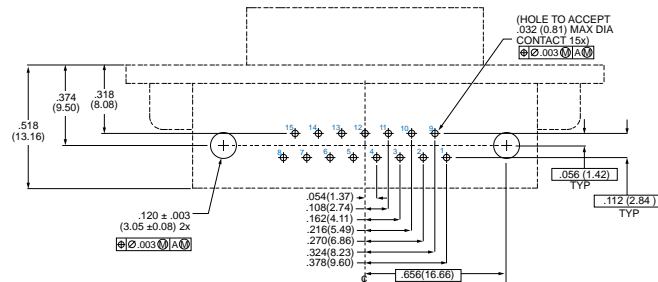


PCB footprints for standard and high density pin connectors with right angle PC tails

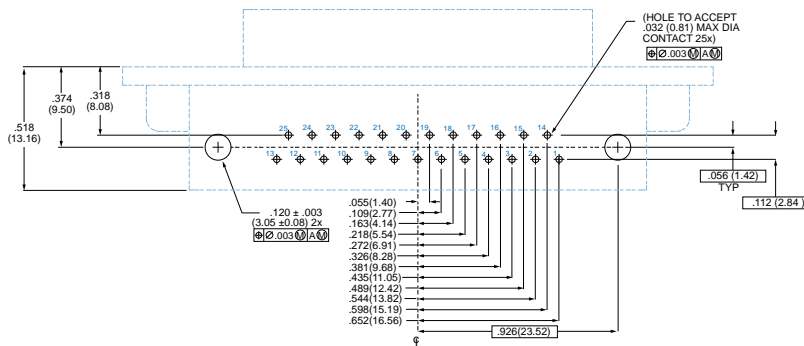
PCB FOOTPRINT FOR 280-024P AND 280-028P CONNECTORS



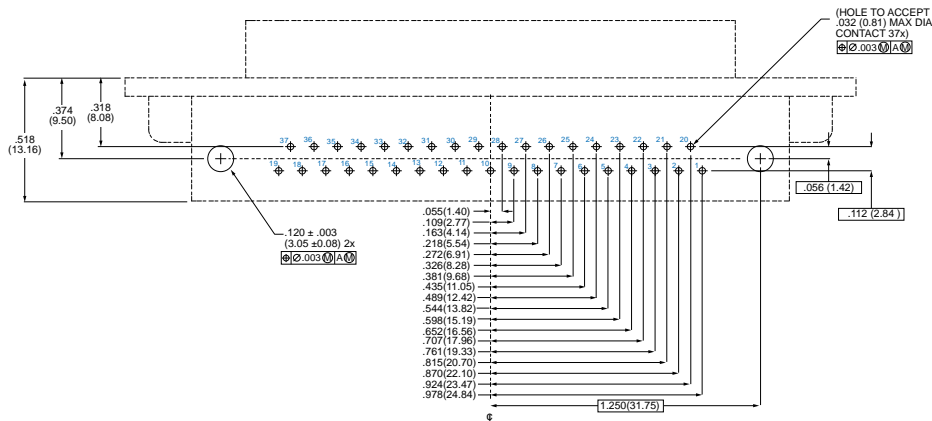
1S9
9 #20



2S15
15 #20



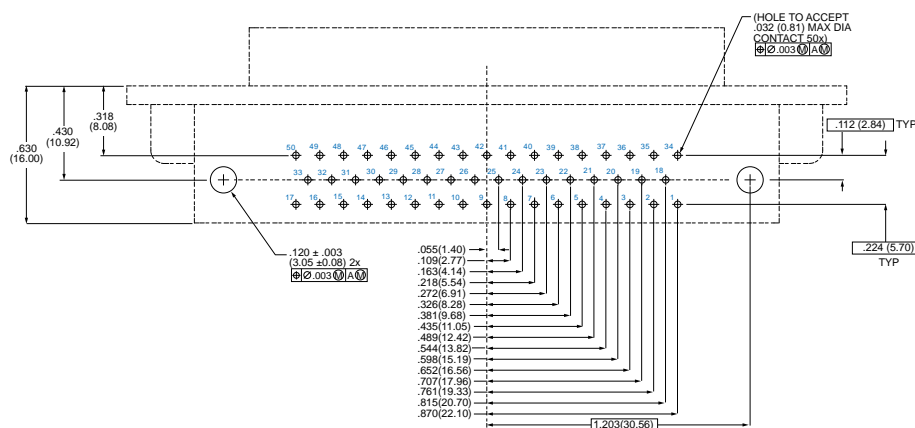
3S25
25 #20



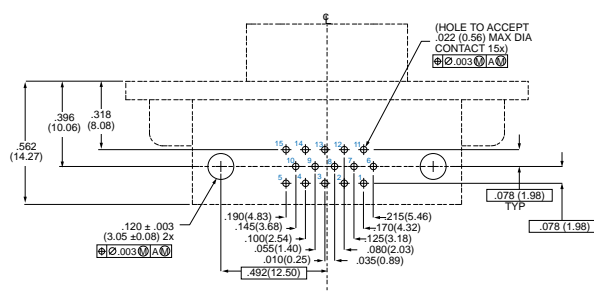
4S37
37 #20

PCB footprints for standard and high density pin connectors with right angle PC tails

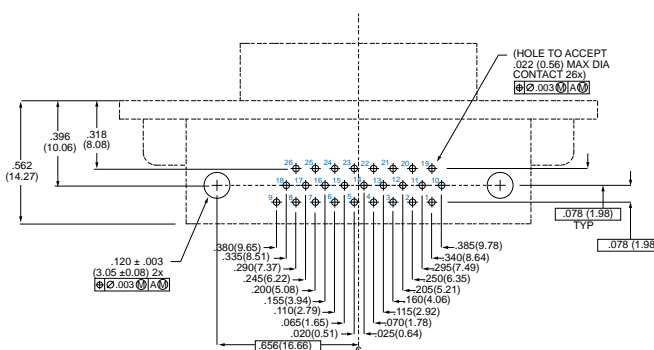
PCB FOOTPRINT FOR 280-024P AND 280-028P CONNECTORS



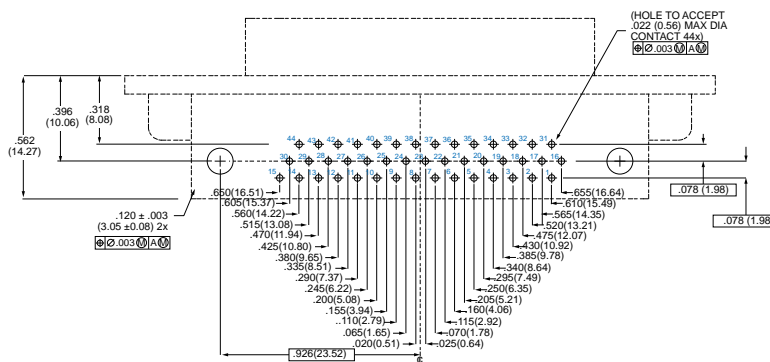
55S0
50 #20



1H15
15 #22



2H26
26 #22

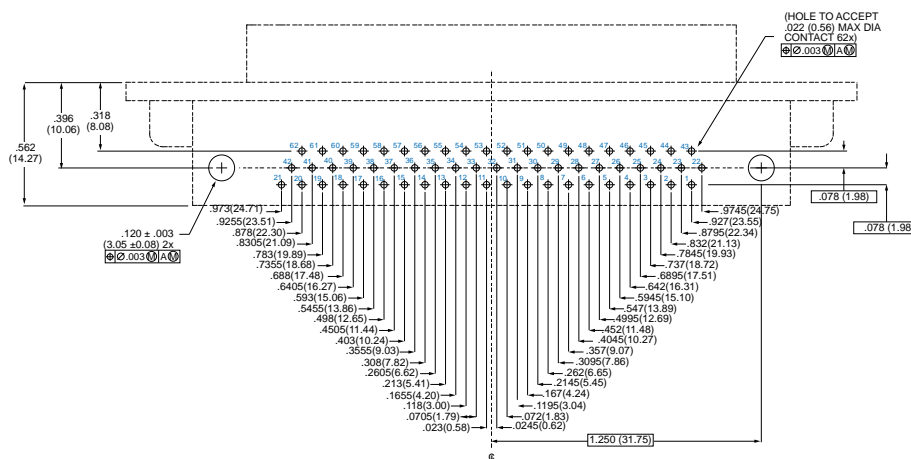


3H44
44 #22

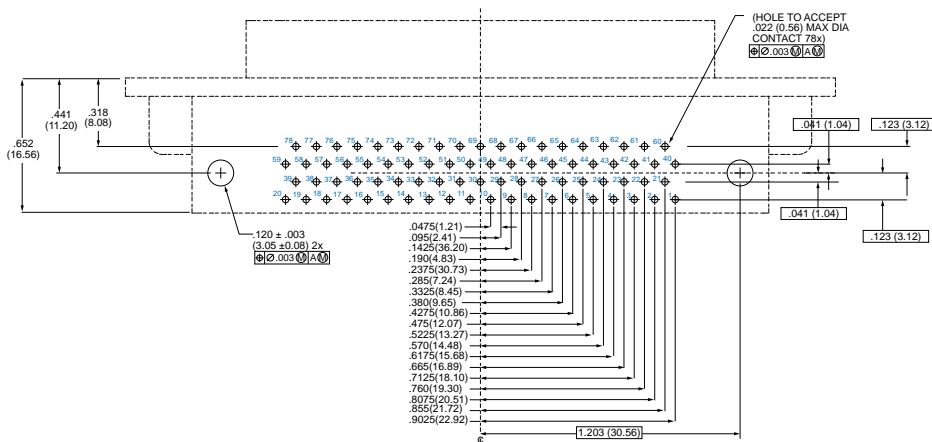
PCB footprints for standard and high density pin connectors with right angle PC tails

PCB FOOTPRINT FOR 280-024P AND 280-028P CONNECTORS

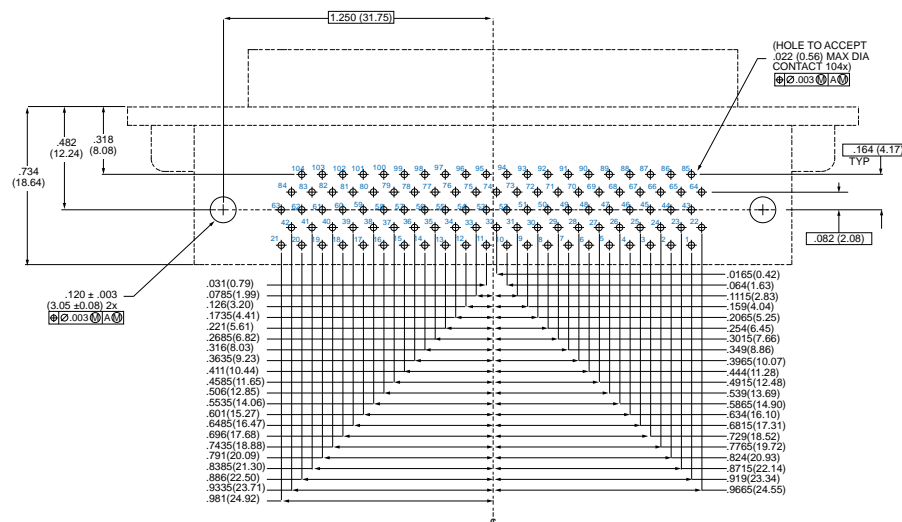
4H62
62 #22



5H78
78 #22

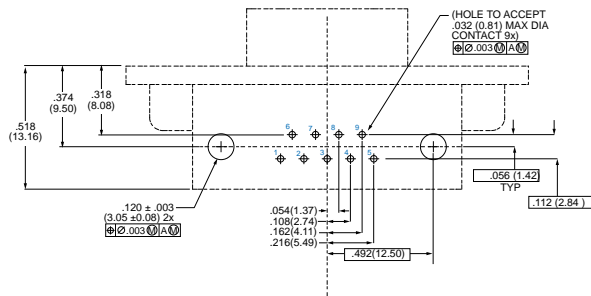


6H104
104 #22

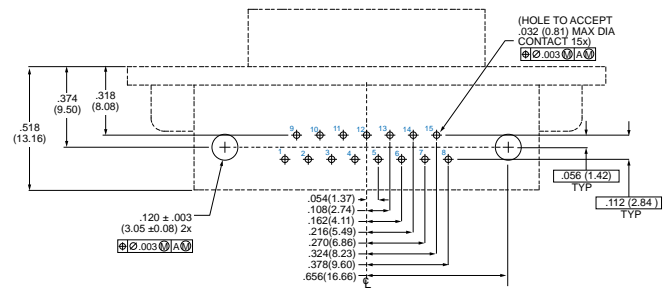


PCB footprints for standard and high density socket connectors with right angle PC tails

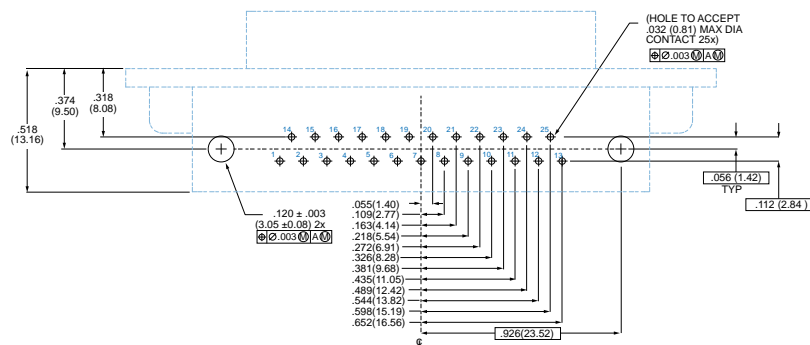
PCB FOOTPRINT FOR 280-025S AND 280-029S CONNECTORS



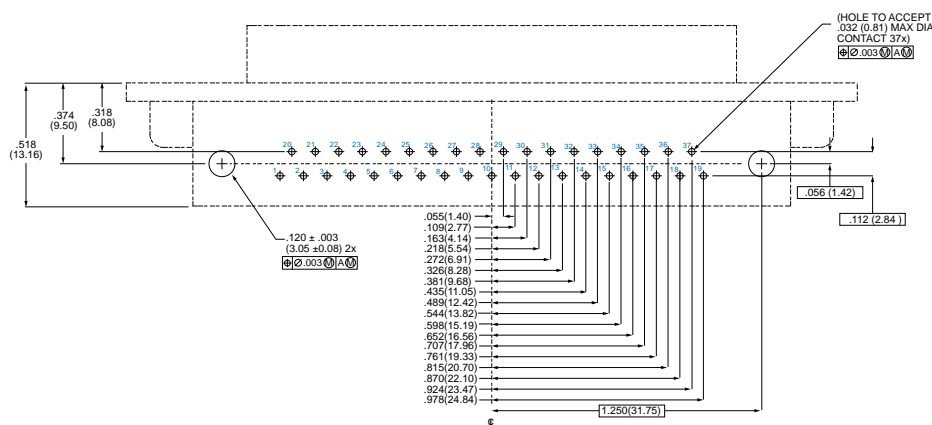
1S9
9 #20



2S15
15 #20



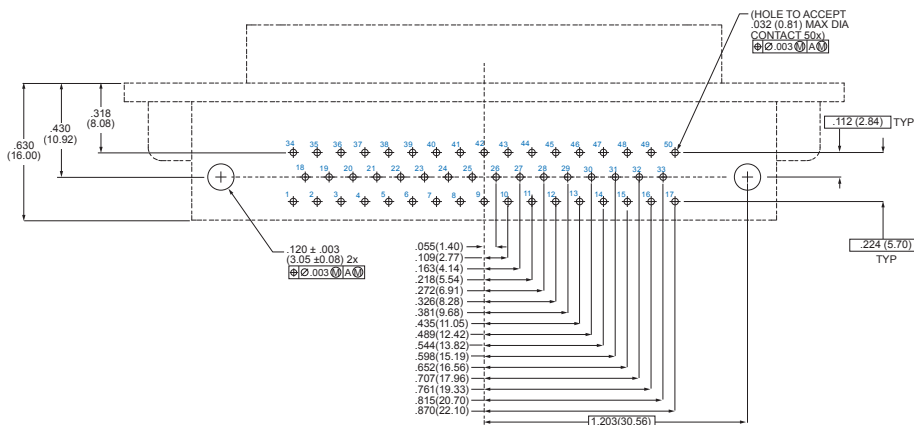
3S25
25 #20



4S37
37 #20

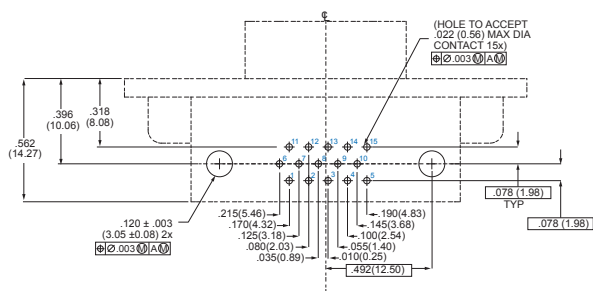
PCB footprints for standard and high density socket connectors with right angle PC tails

PCB FOOTPRINT FOR 280-025S AND 280-029S CONNECTORS



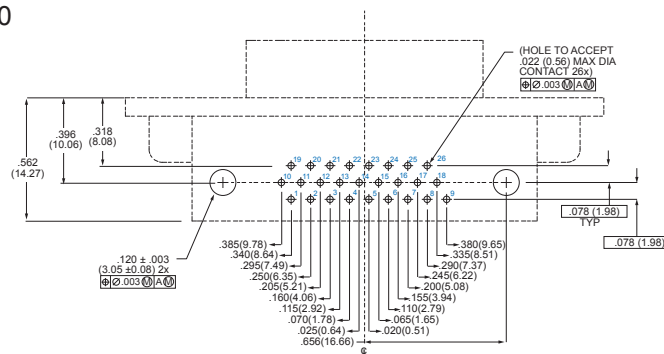
5S50

50 #20



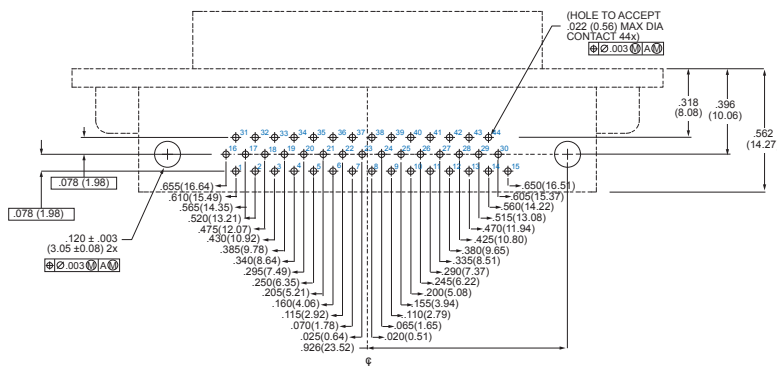
1H15

15 #22



2H26

26 #22



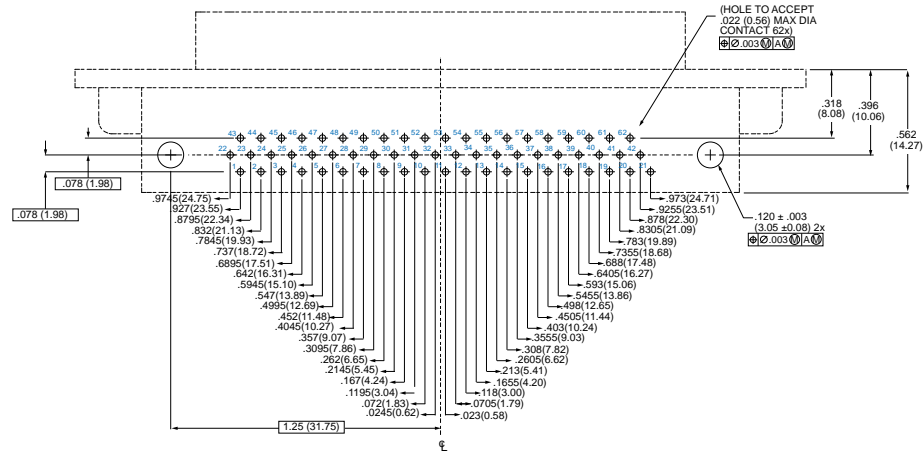
3H44

44 #22

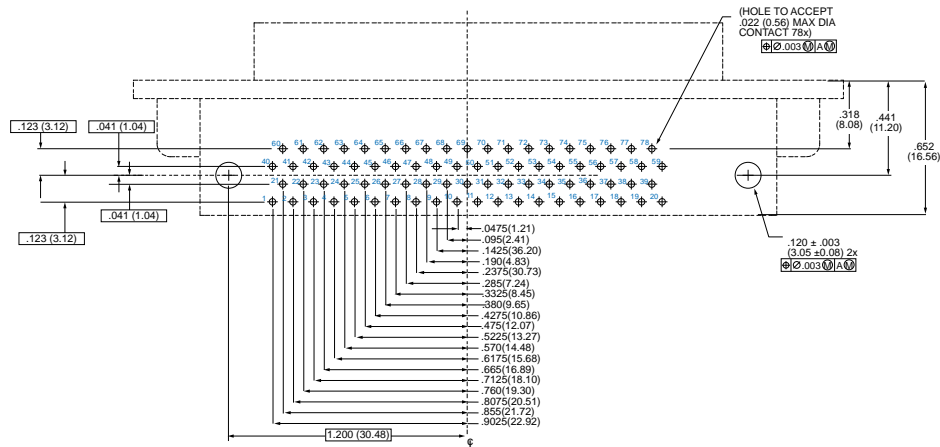
PCB footprints for standard and high density socket connectors with right angle PC tails

PCB FOOTPRINT FOR 280-025S AND 280-029S CONNECTORS

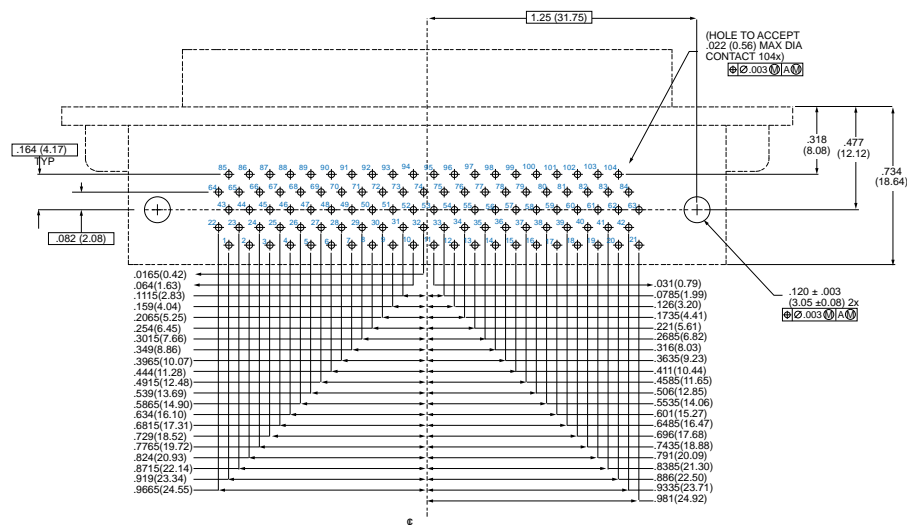
4H62
62 #22



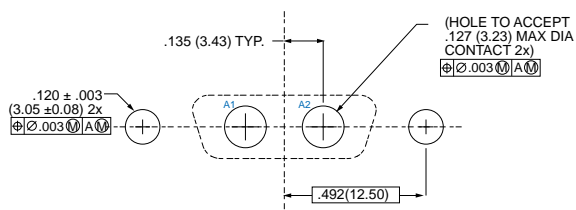
5H78
78 #22



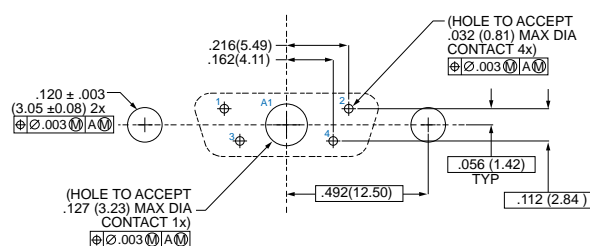
6H104
104 #22



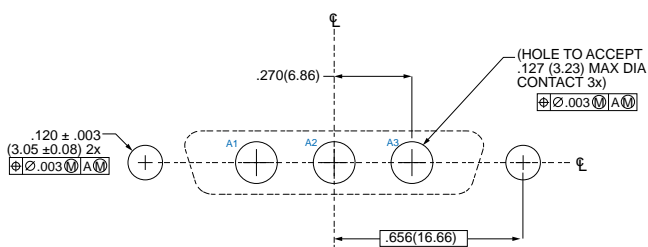
PCB FOOTPRINT FOR 280-050P AND 280-054P COMBO CONNECTORS



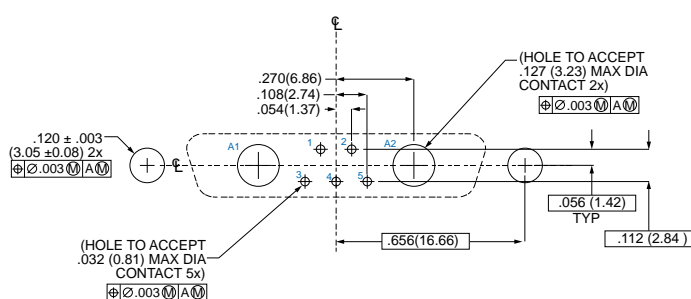
1-2P2
2 #8



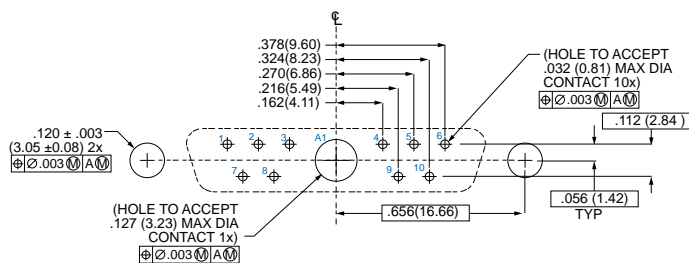
1-5P1
1 #8, 4 #20



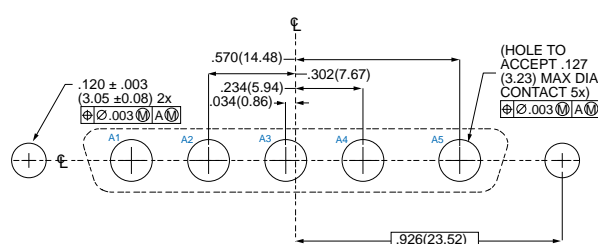
2-3P3
3 #8



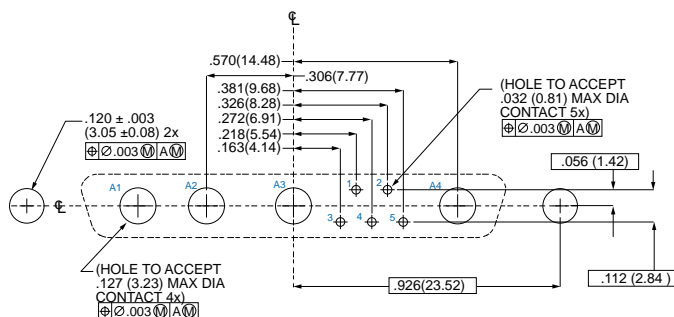
2-7P2
2 #8, 5 #20



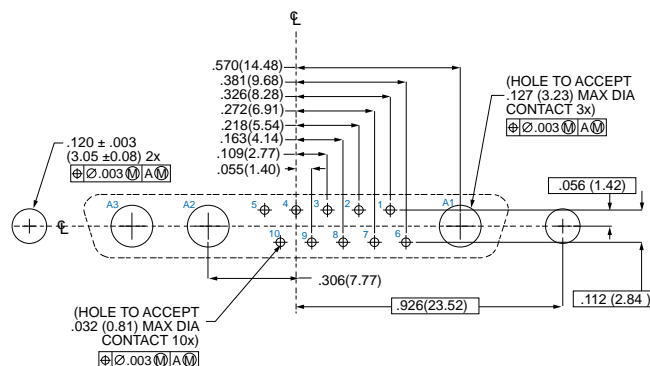
2-11P1
1 #8, 10 #20



3-5P5
5 #8

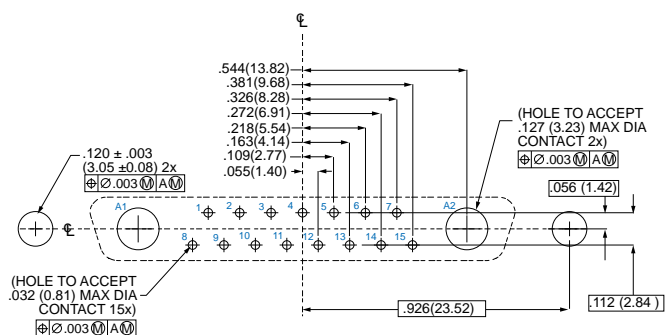


3-9P4
4 #8, 5 #20

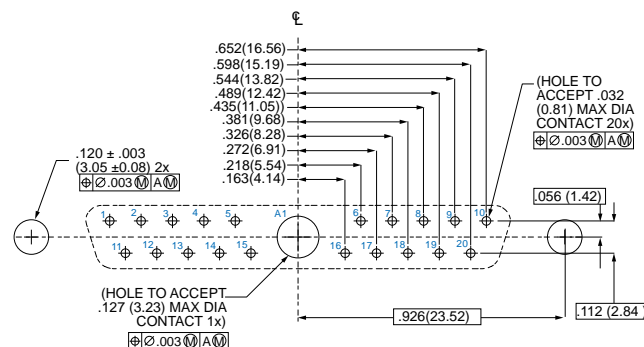


3-13P3
3 #8, 10 #20

PCB FOOTPRINT FOR 280-050P AND 280-054P COMBO CONNECTORS

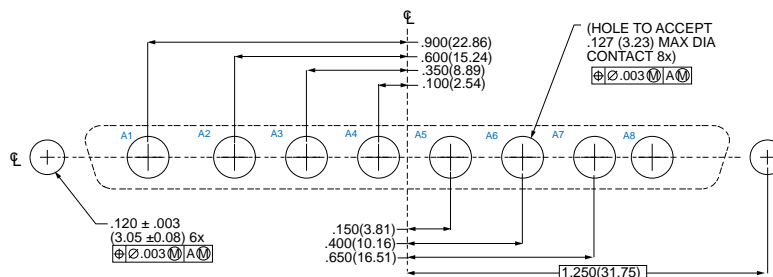


3-17P2
2 #8, 15 #20

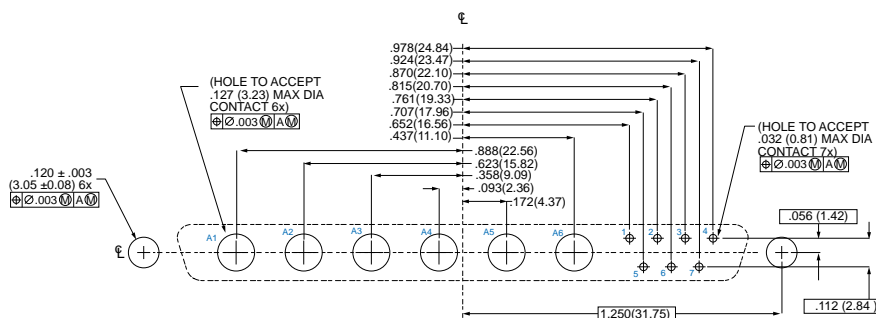


3-21P1
1 #8, 20 #20

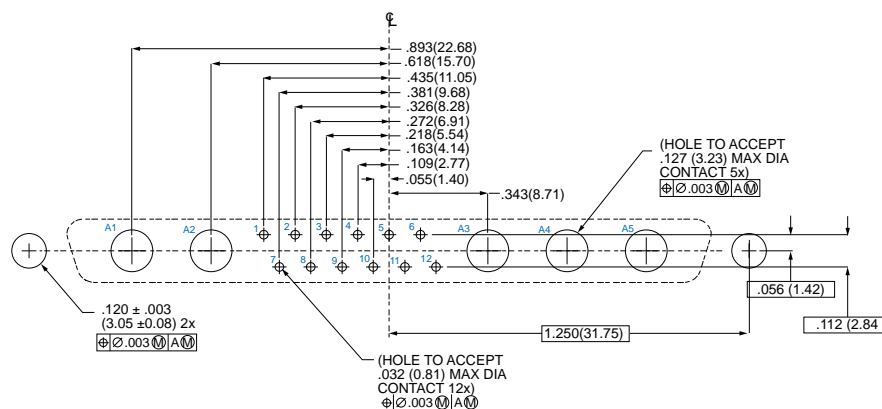
4-8P8
8 #8



4-13P6
6 #8, 7 #20



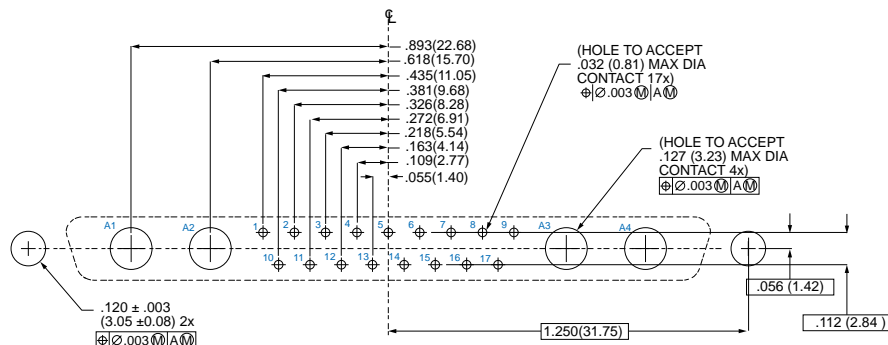
4-17P5
5 #8, 12 #20



PCB FOOTPRINT FOR 280-050P AND 280-054P COMBO CONNECTORS

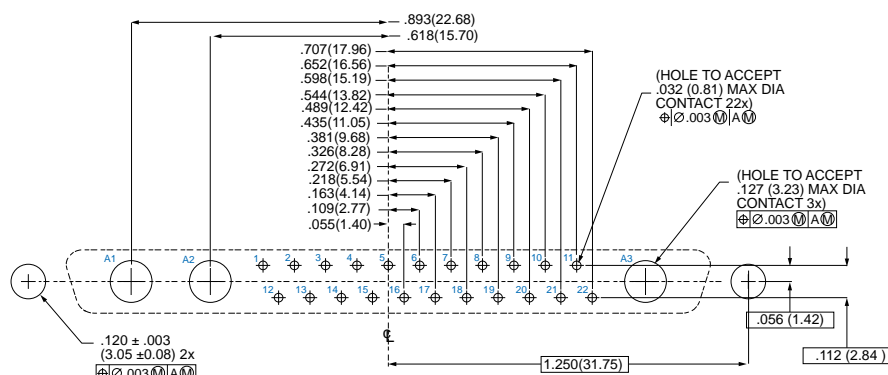
4-21PA4

4 #8, 17 #20



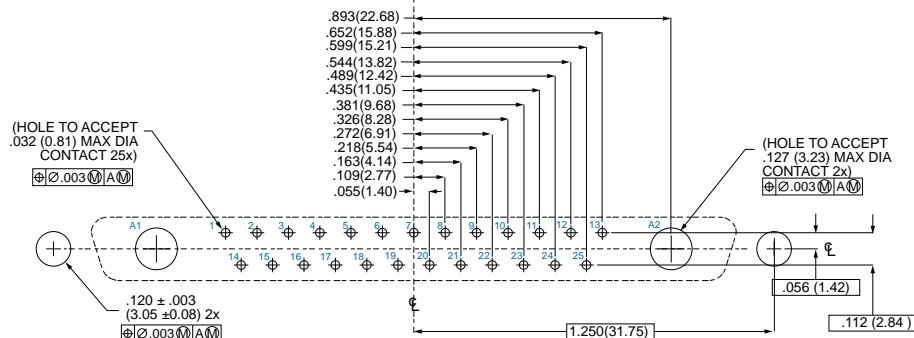
4-25P3

3 #8, 22 #20



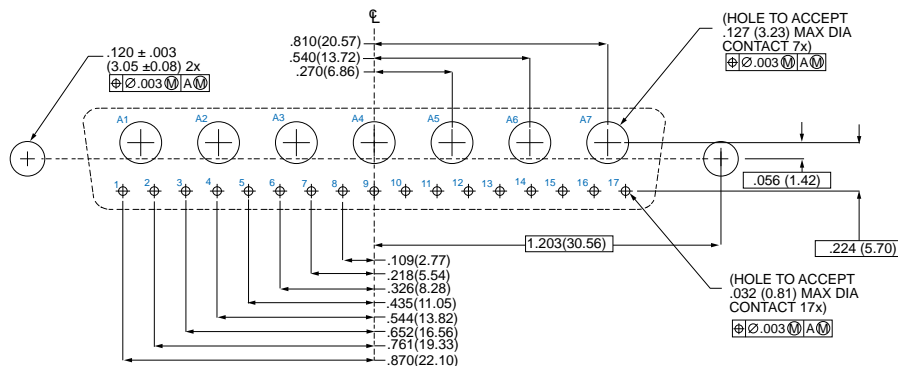
4-27P2

2 #8, 25 #20



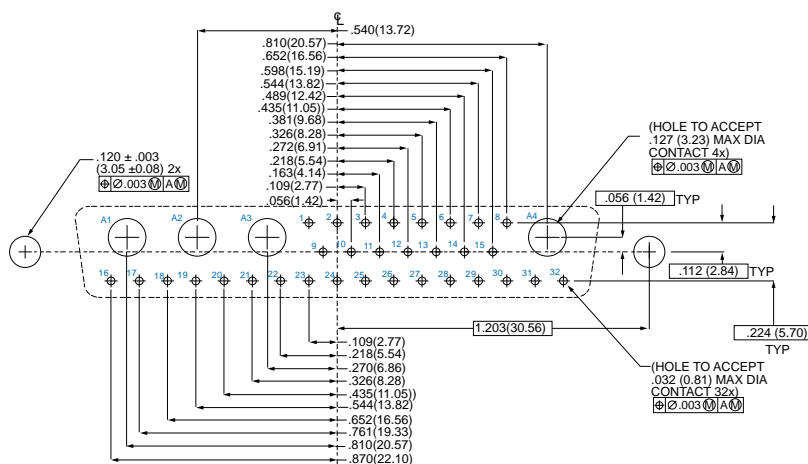
5-24P7

7 #8, 17 #20

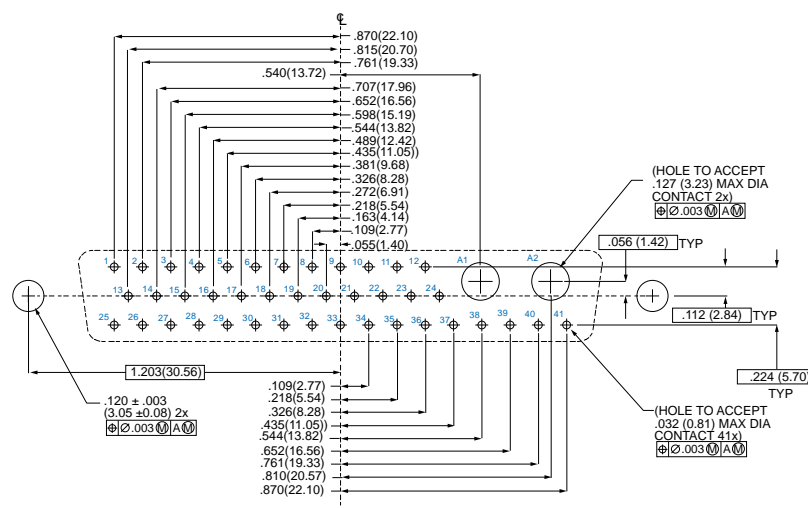


PCB FOOTPRINT FOR 280-050P AND 280-054P COMBO CONNECTORS

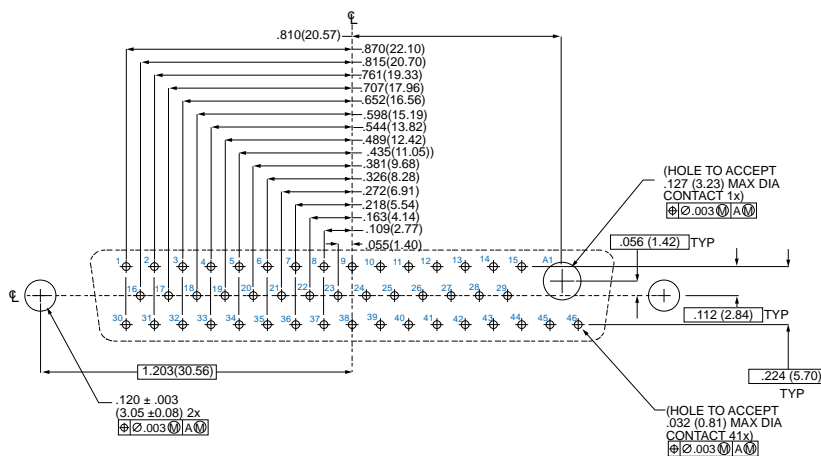
5-36P4
4 #8, 32 #20



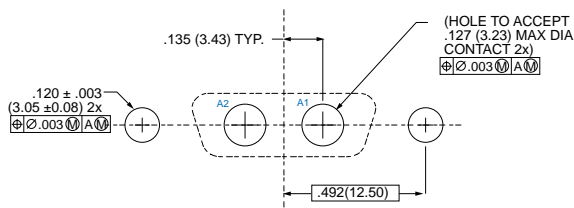
5-43P2
2 #8, 41 #20



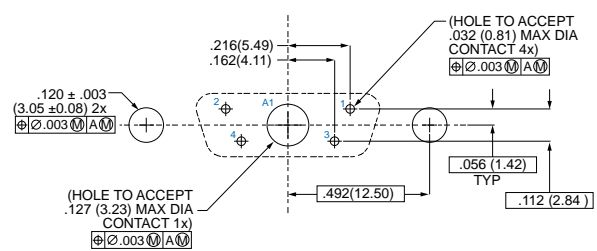
5-47P1
1 #8, 46 #20



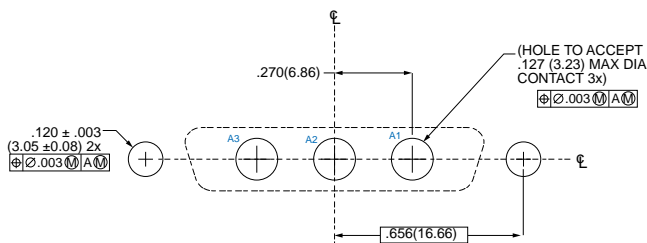
PCB FOOTPRINT FOR 280-051S AND 280-055S COMBO CONNECTORS



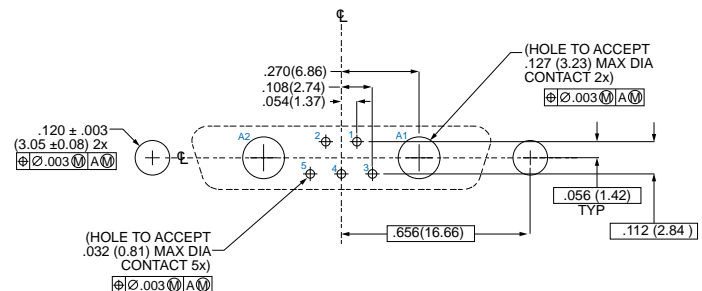
1-2P2
2 #8



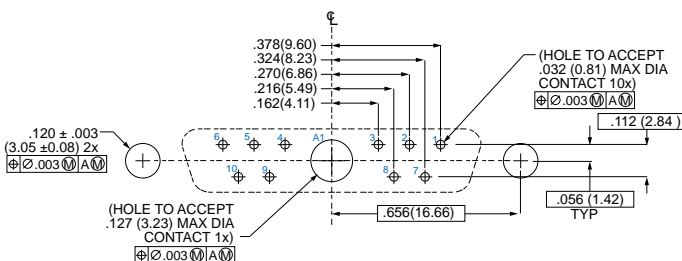
1-5P1
1 #8, 4 #20



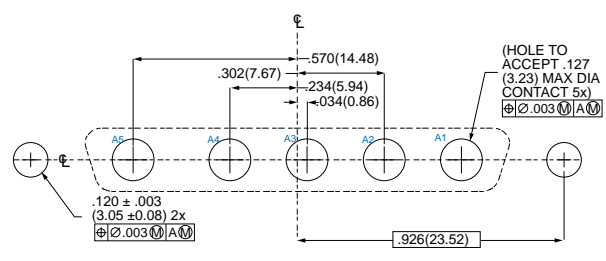
2-3P3
3 #8



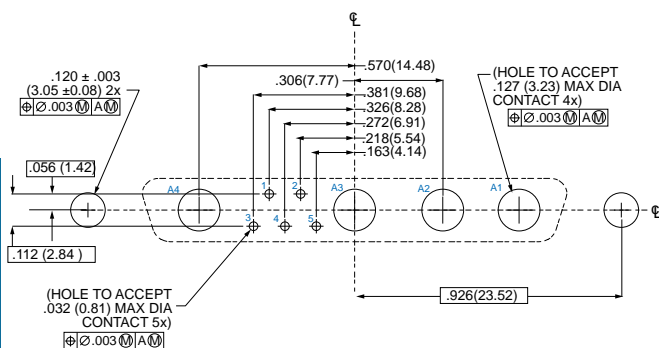
2-7P2
2 #8, 5 #20



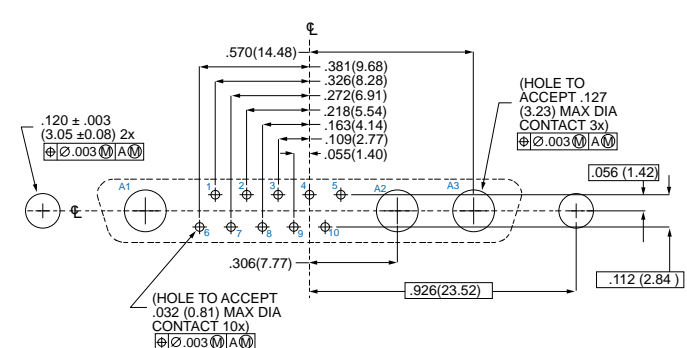
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1 #8, 10 #20



3-5P5
5 #8

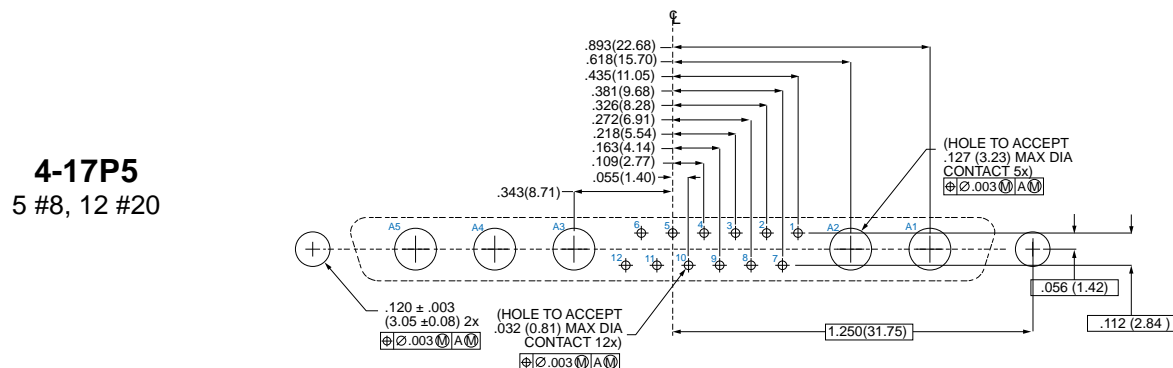
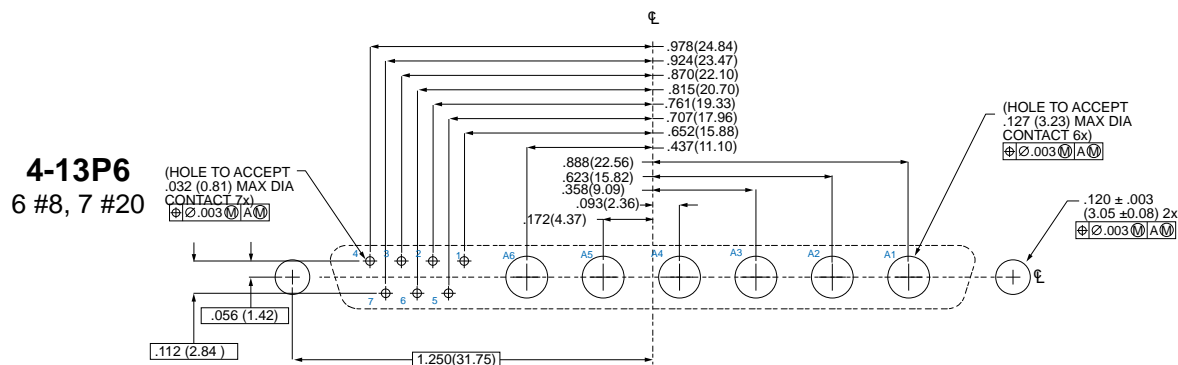
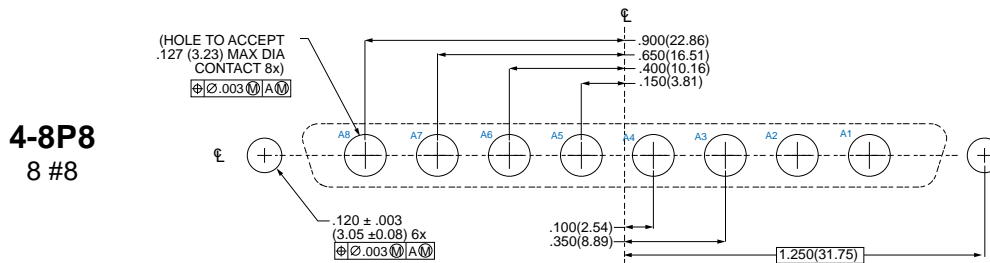
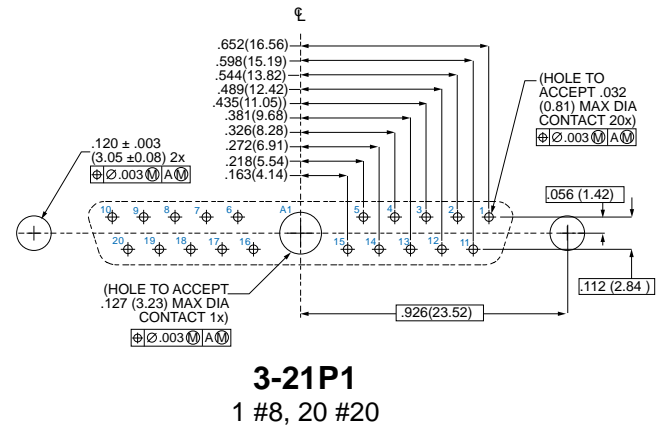
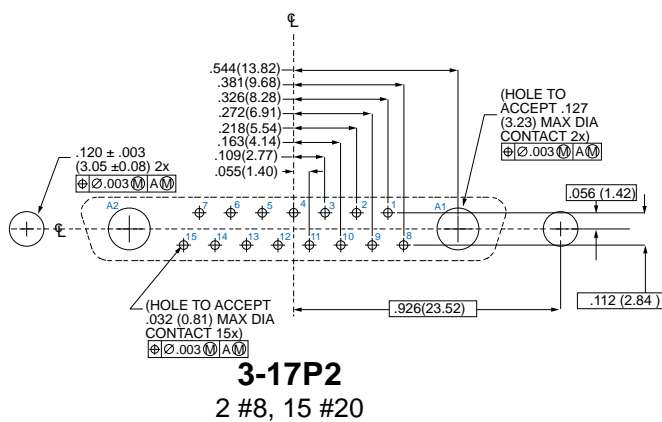


3-9P4
4 #8, 5 #20



3-13P3
3 #8, 10 #20

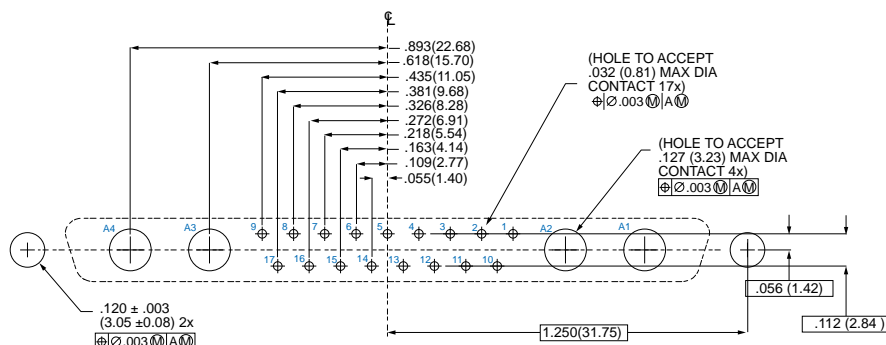
PCB FOOTPRINT FOR 280-051S AND 280-055S COMBO CONNECTORS



PCB FOOTPRINT FOR 280-051S AND 280-055S COMBO CONNECTORS

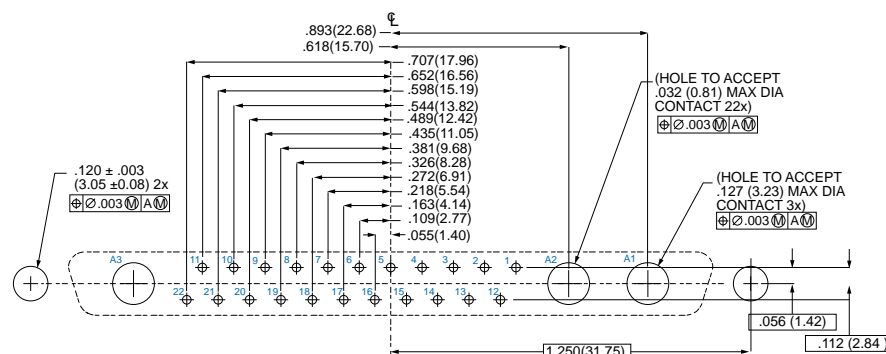
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4 #8, 17 #20



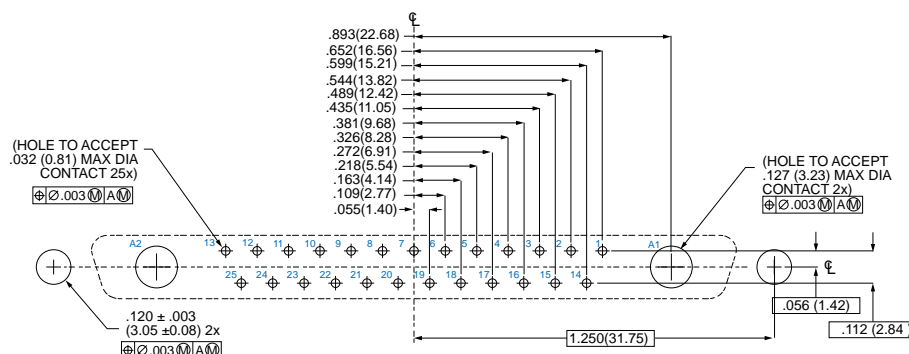
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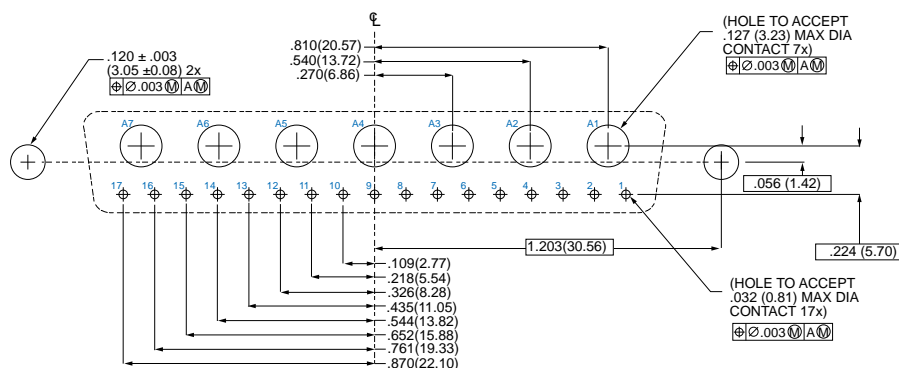
4-27P2

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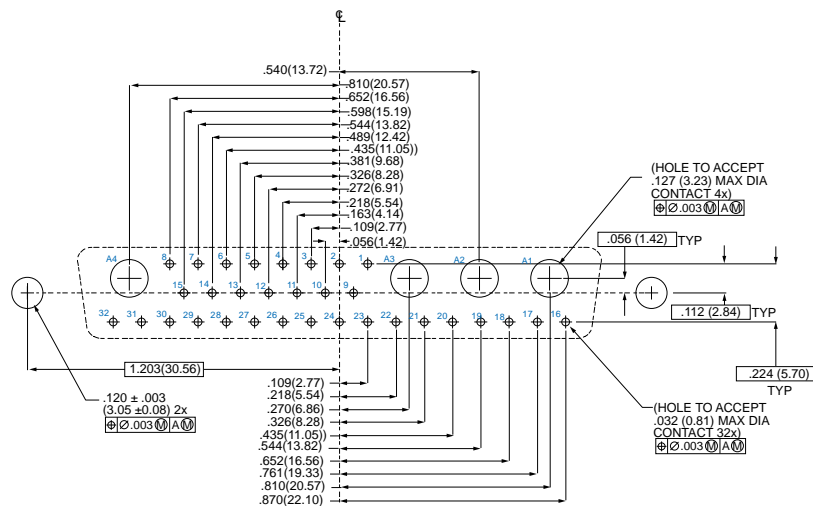
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7 #8, 17 #20

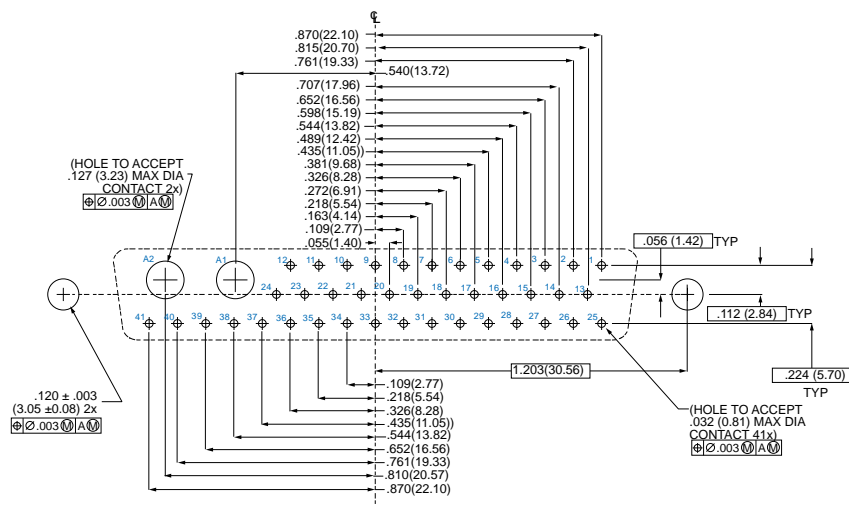


PCB FOOTPRINT FOR 280-051S AND 280-055S COMBO CONNECTORS

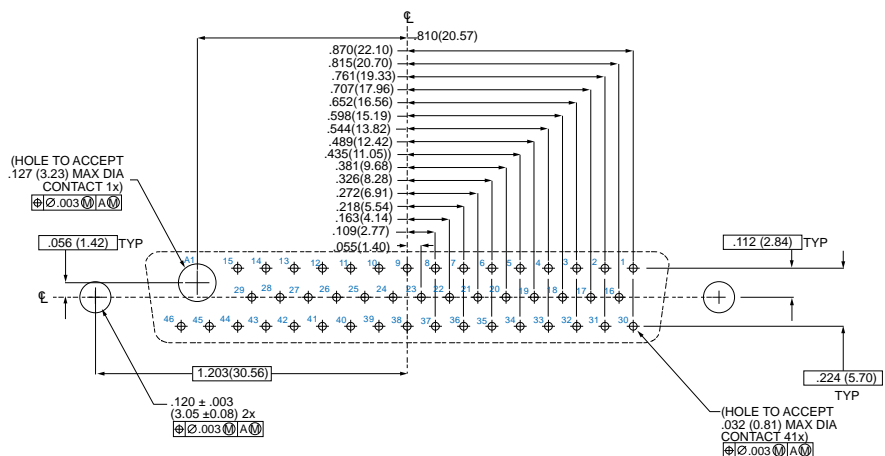
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4 #8, 32 #20



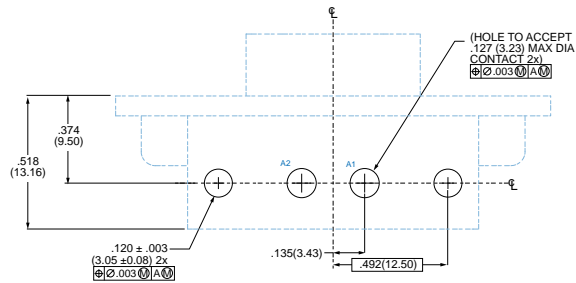
5-43P2
2 #8, 41 #20



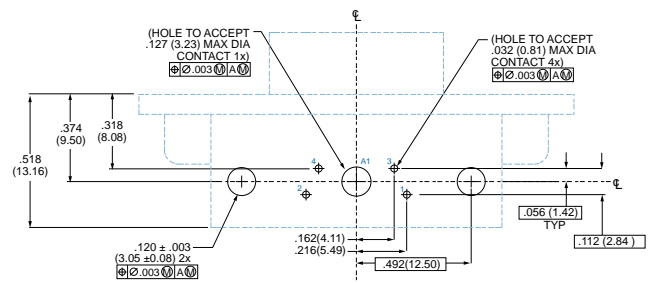
5-47P1
1 #8, 46 #20



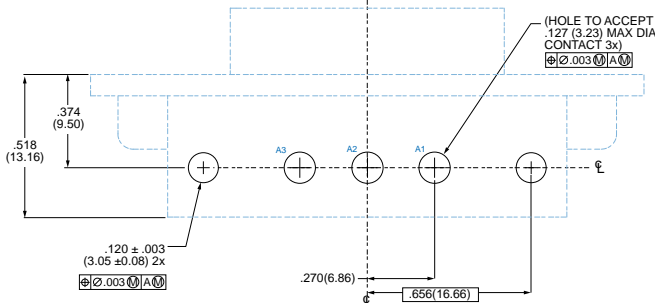
PCB FOOTPRINT FOR 280-052P AND 280-056P COMBO CONNECTORS



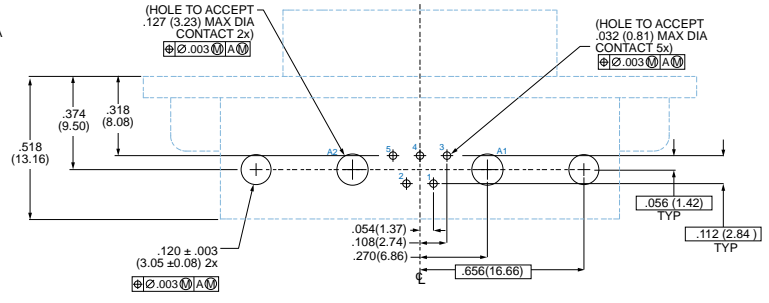
1-2P2
2 #8



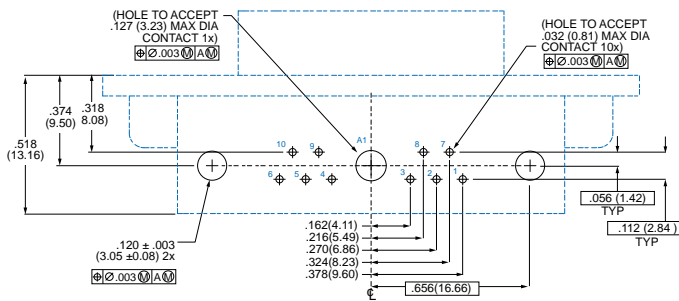
1-5P1
1 #8, 4 #20



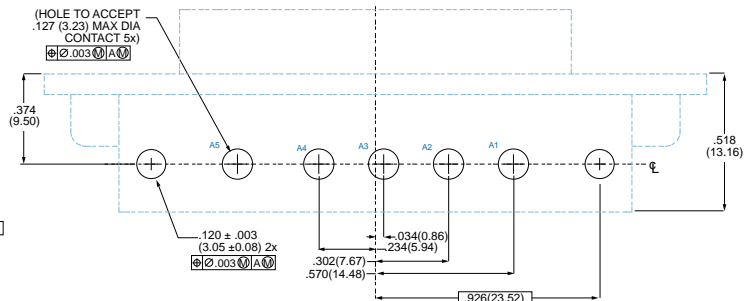
2-3P3
3 #8



2-7P2
2 #8, 5 #20

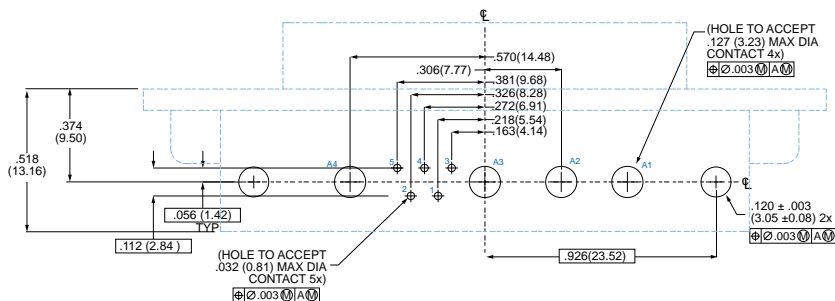


2-11P1
1 #8, 10 #20



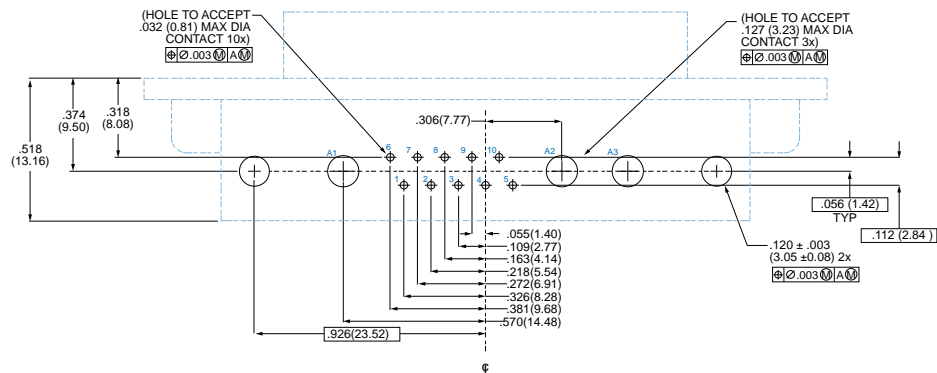
3-5P5
5 #8

3-9P4
4 #8, 5 #20

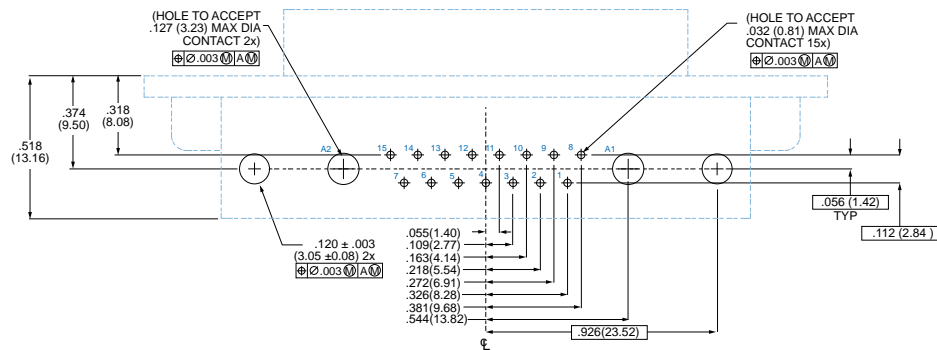


PCB FOOTPRINT FOR 280-052P AND 280-056P COMBO CONNECTORS

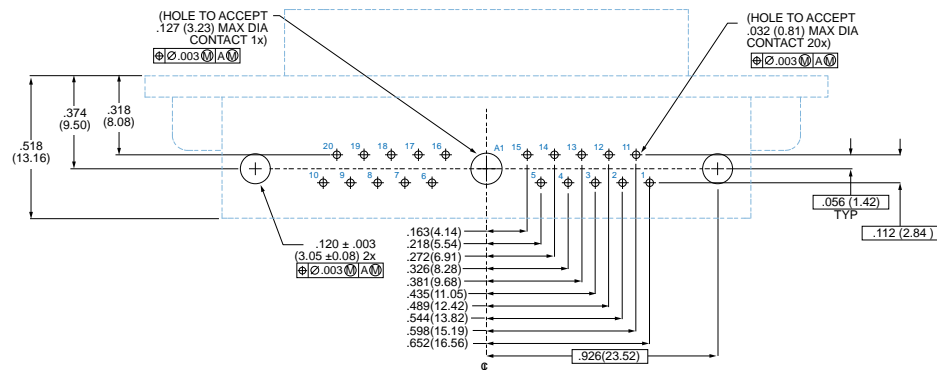
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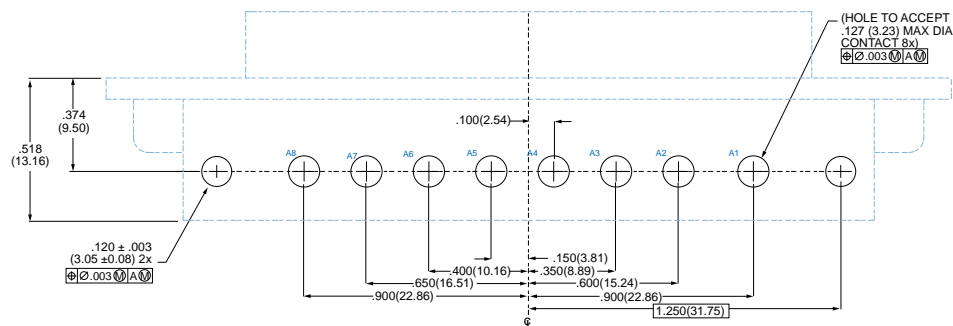
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3-21P1
1 #8, 20 #20

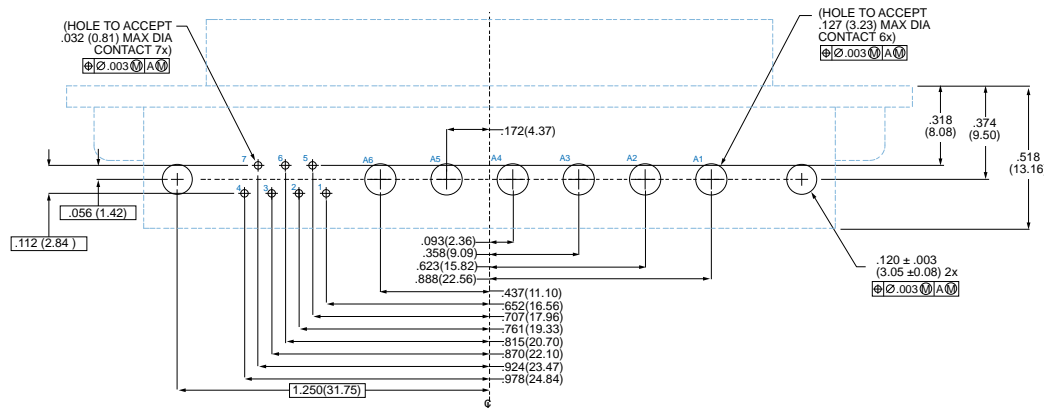


4-8P8
8 #8

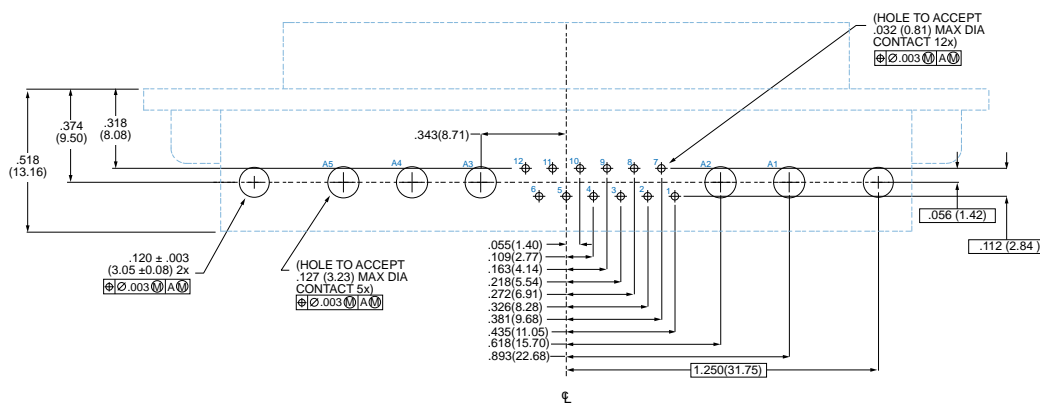


PCB FOOTPRINT FOR 280-052P AND 280-056P COMBO CONNECTORS

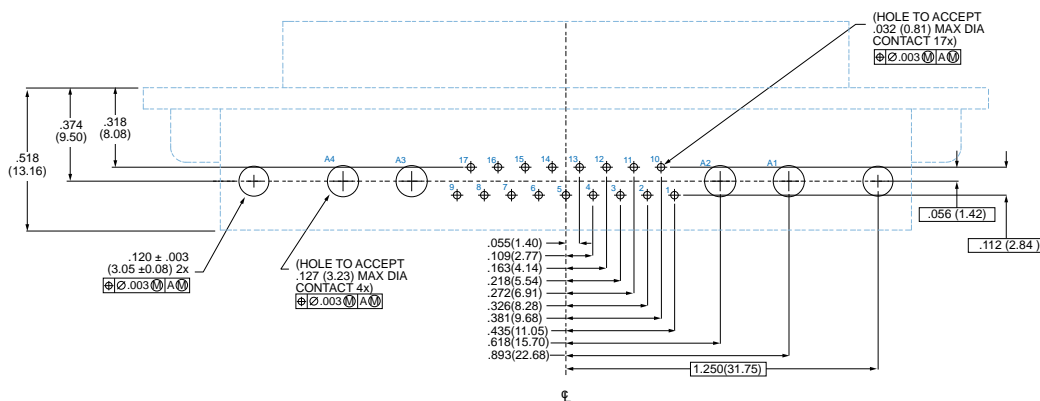
4-13P6
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4-17P5
4 #8, 12 #20



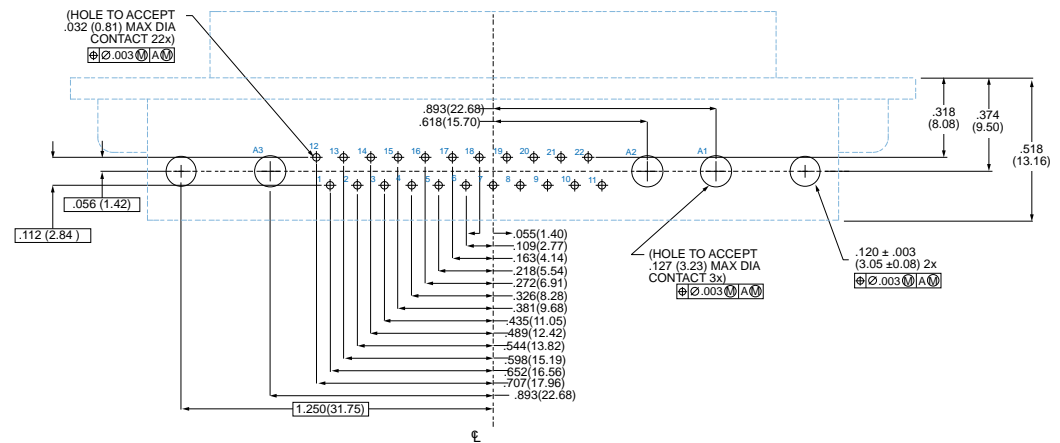
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4 #8, 17 #20



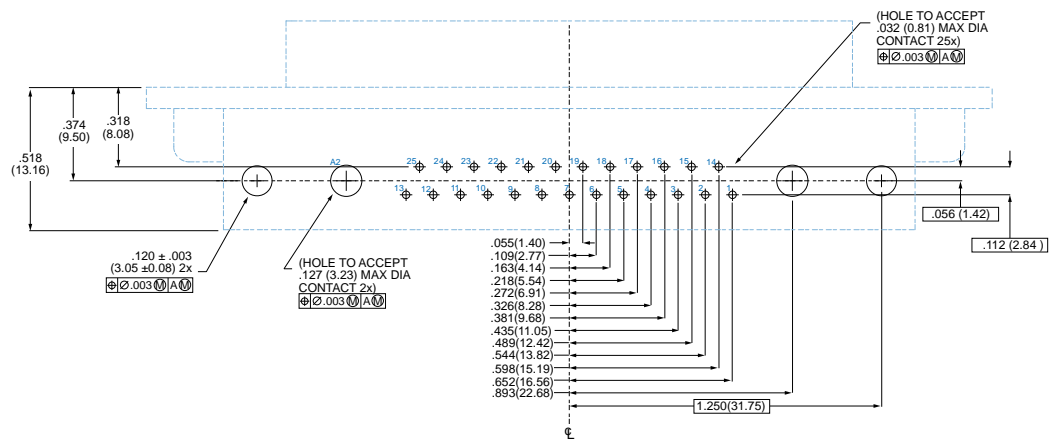
PCB footprints for combo pin connectors with right angle PC tails

PCB FOOTPRINT FOR 280-052P AND 280-056P COMBO CONNECTORS

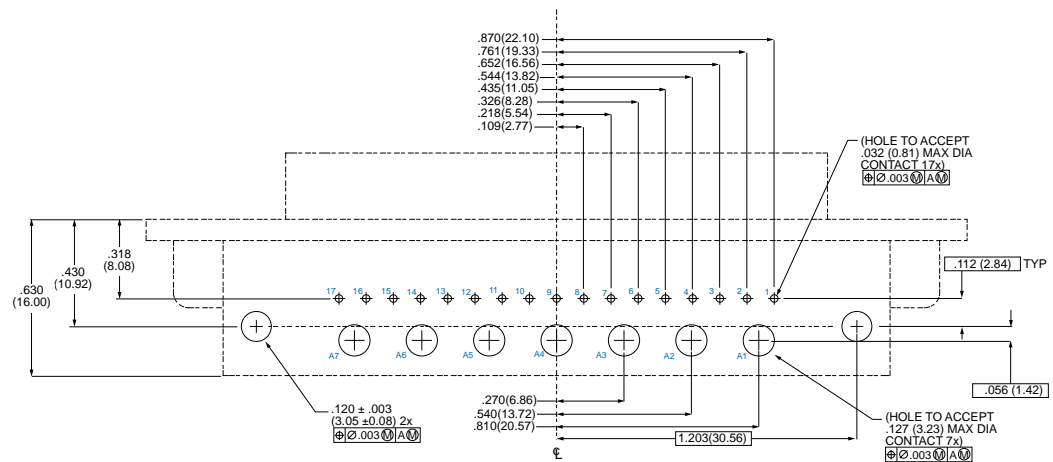
4-25P3
3 #8, 22 #20



4-27P2
2 #8, 25 #20

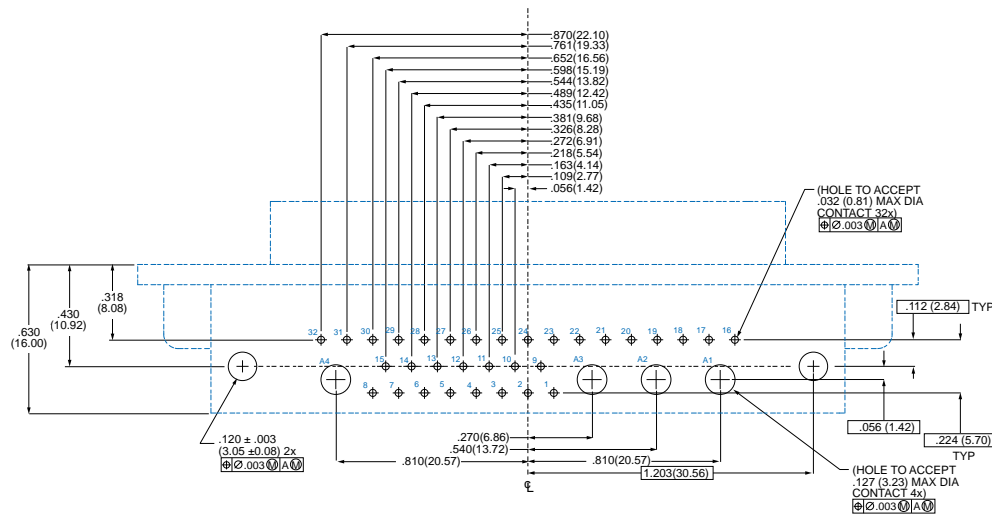


5-24P7
7 #8, 17 #20

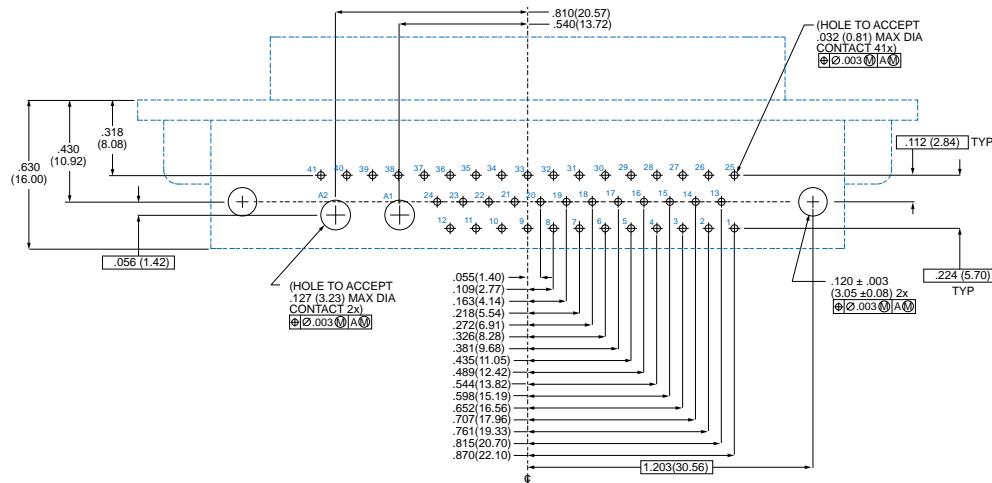


PCB FOOTPRINT FOR 280-052P AND 280-056P COMBO CONNECTORS

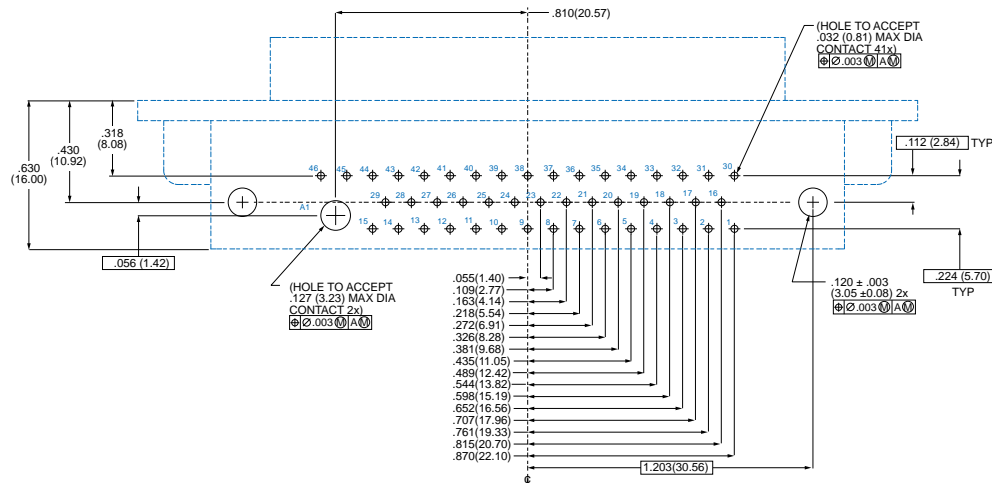
5-36P4
4 #8, 32 #20



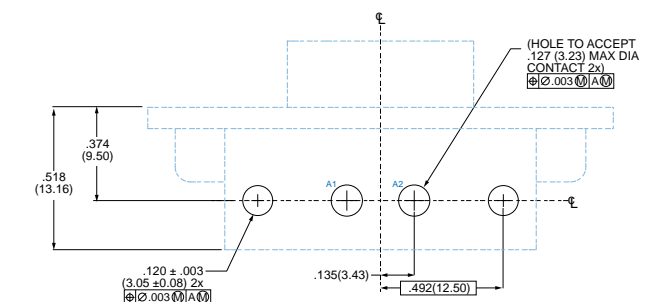
5-43P2
2 #8, 41 #20



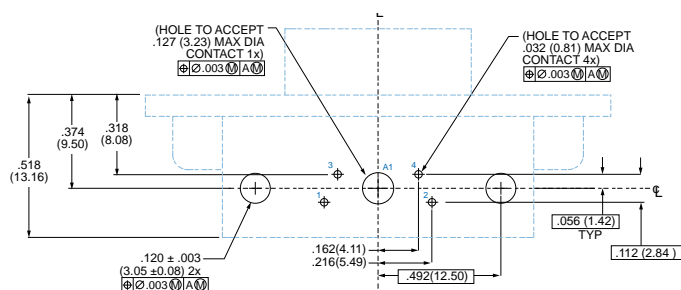
5-47P1
1 #8, 46 #20



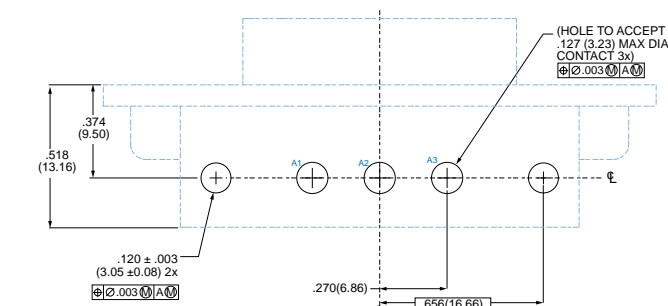
PCB FOOTPRINT FOR 280-053S AND 280-057S COMBO CONNECTORS



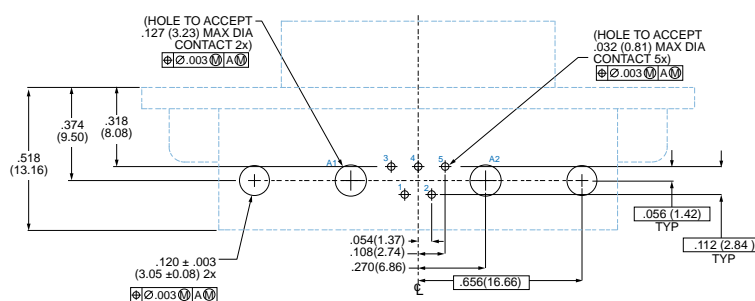
1-2P2
2 #8



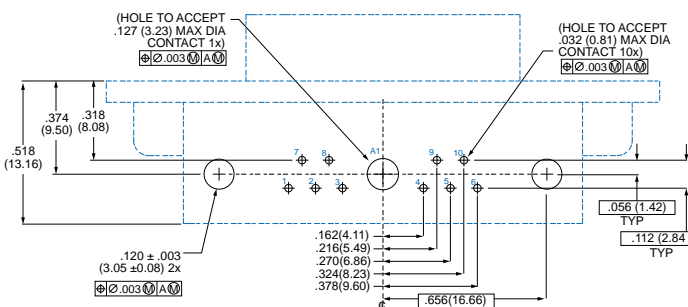
1-5P1
1 #8, 4 #20



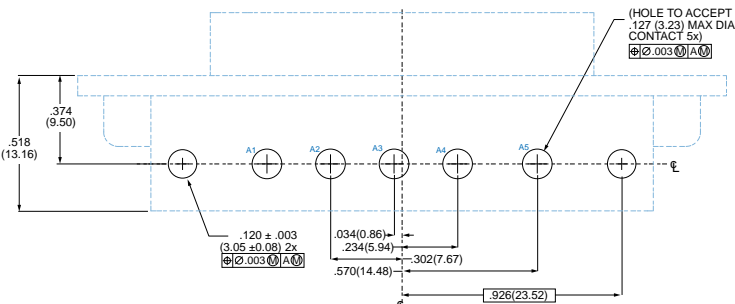
2-3P3
3 #8



2-7P2
2 #8, 5 #20

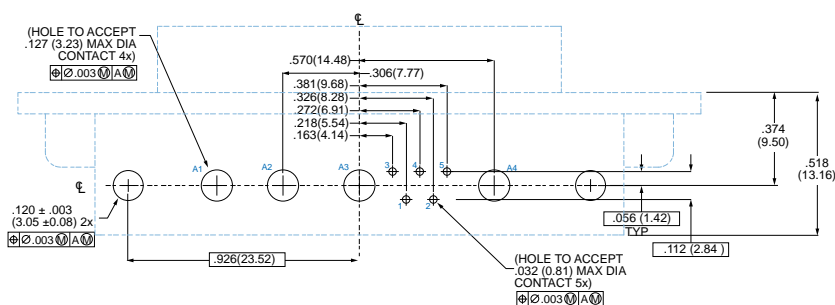


2-11P1
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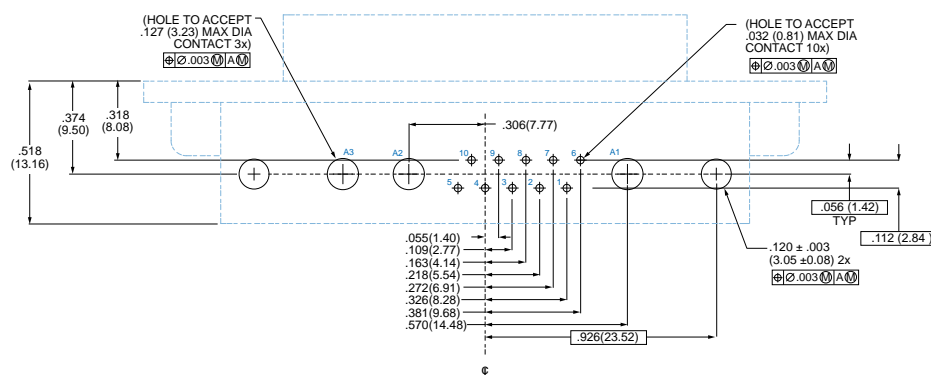
3-5P5
5 #8

3-9P4
4 #8, 5 #20

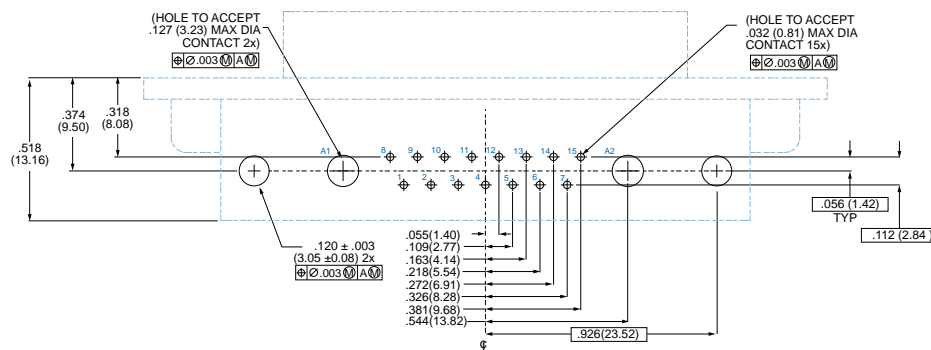


PCB FOOTPRINT FOR 280-053S AND 280-057S COMBO CONNECTORS

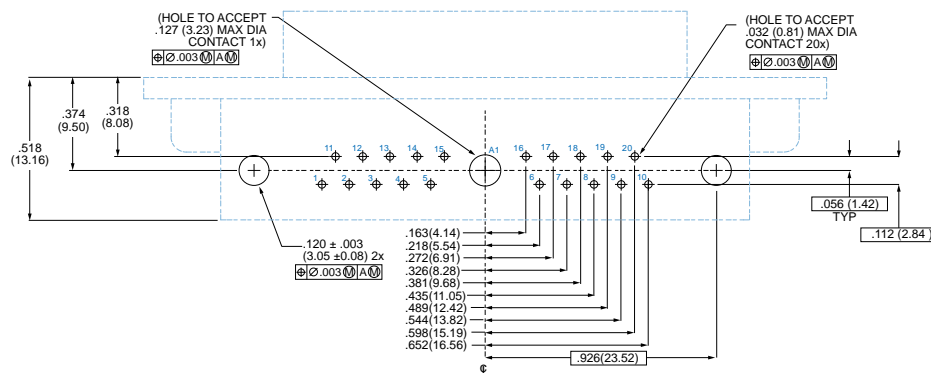
3-13P3
3 #8, 10 #20



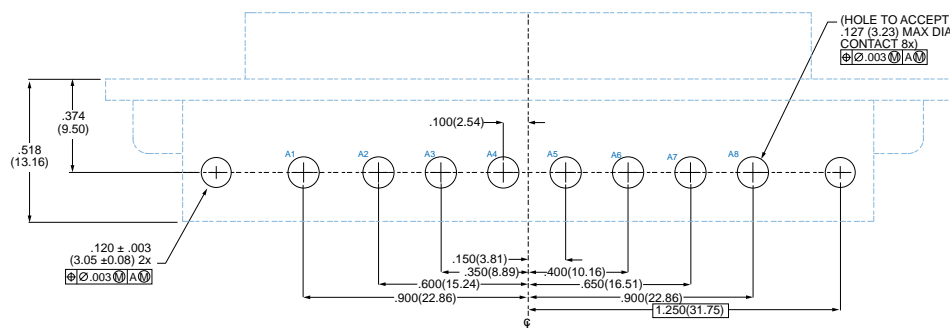
3-17P2
2 #8, 15 #20



3-21P1
1 #8, 20 #20

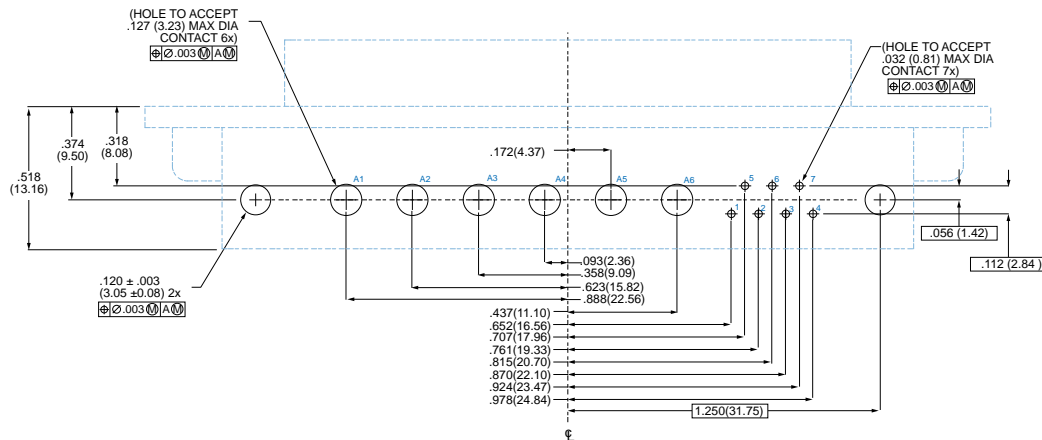


4-8P8
8 #8

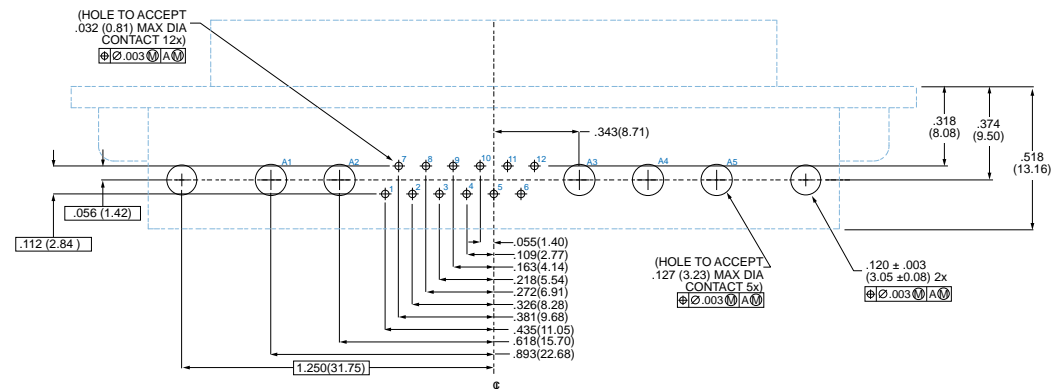


PCB FOOTPRINT FOR 280-053S AND 280-057S COMBO CONNECTORS

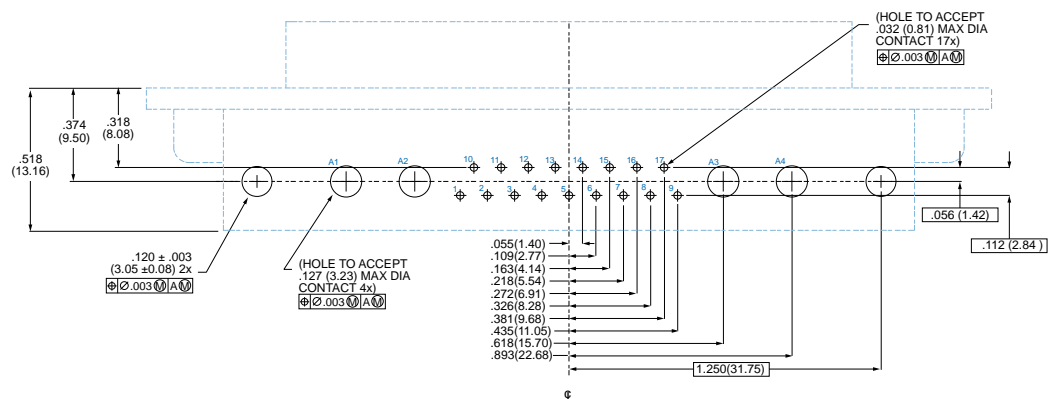
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6 #8, 7 #20



4-17P5
5 #8, 12 #20

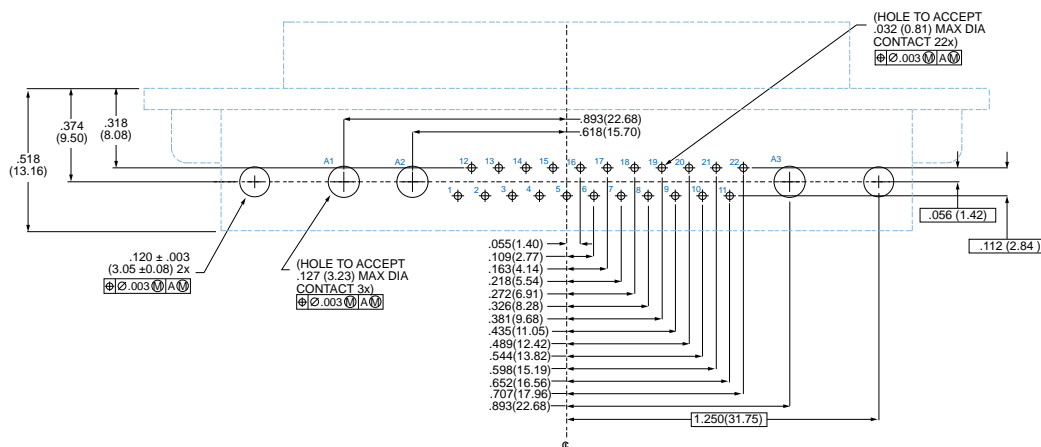


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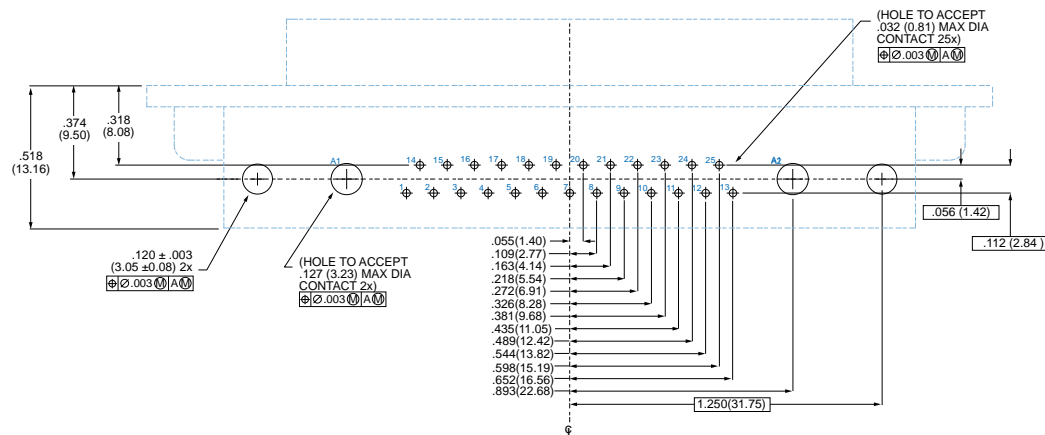


PCB FOOTPRINT FOR 280-053S AND 280-057S COMBO CONNECTORS

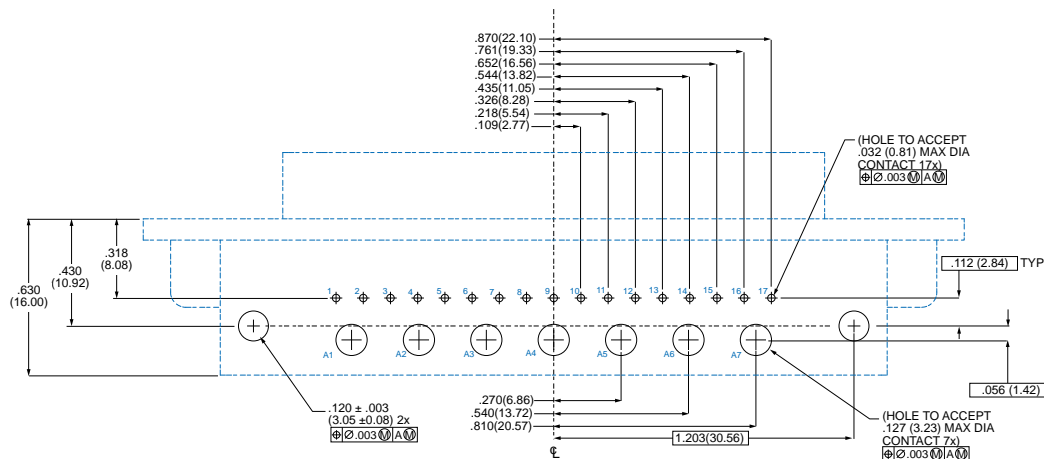
4-25P3
3 #8, 22 #20



4-27P2
2 #8, 25 #20

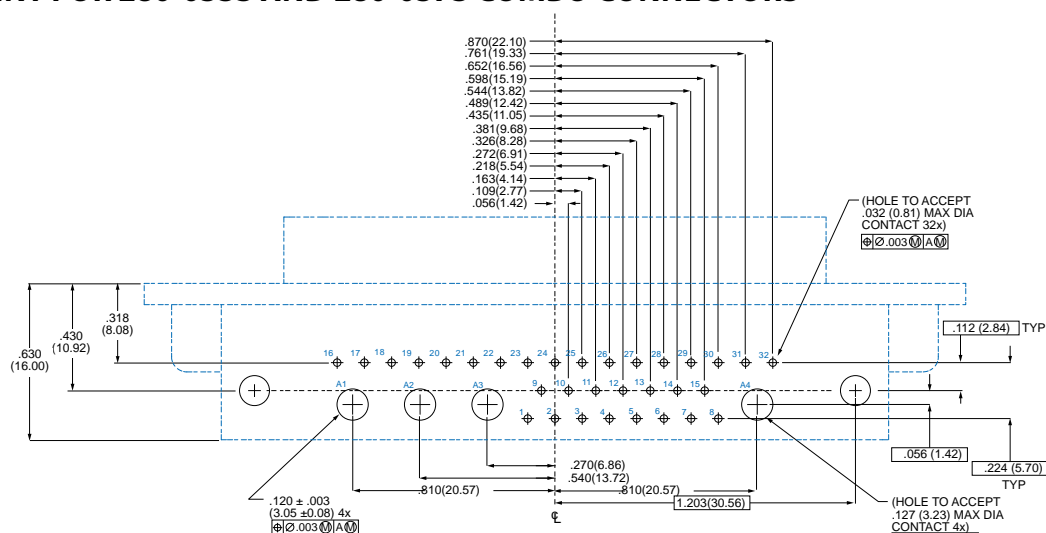


5-24P7
7 #8, 17 #20

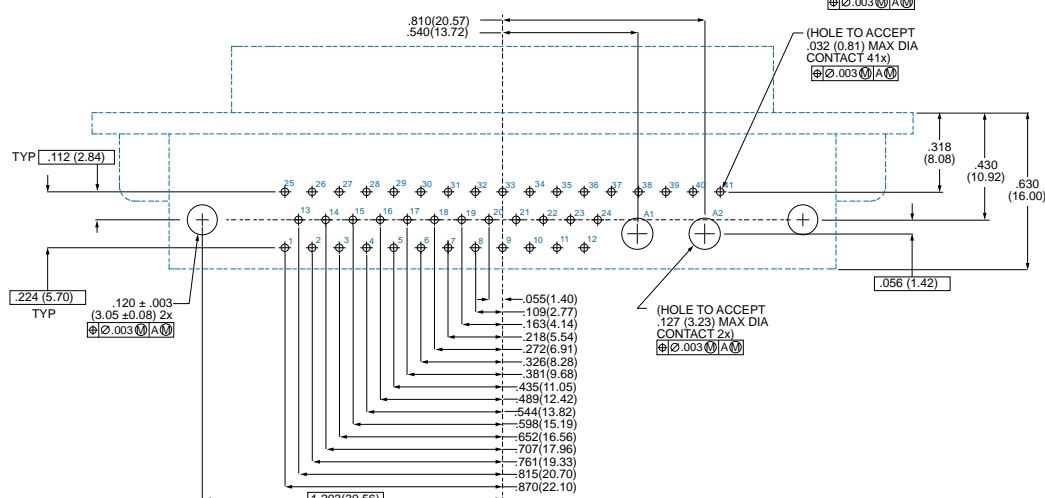


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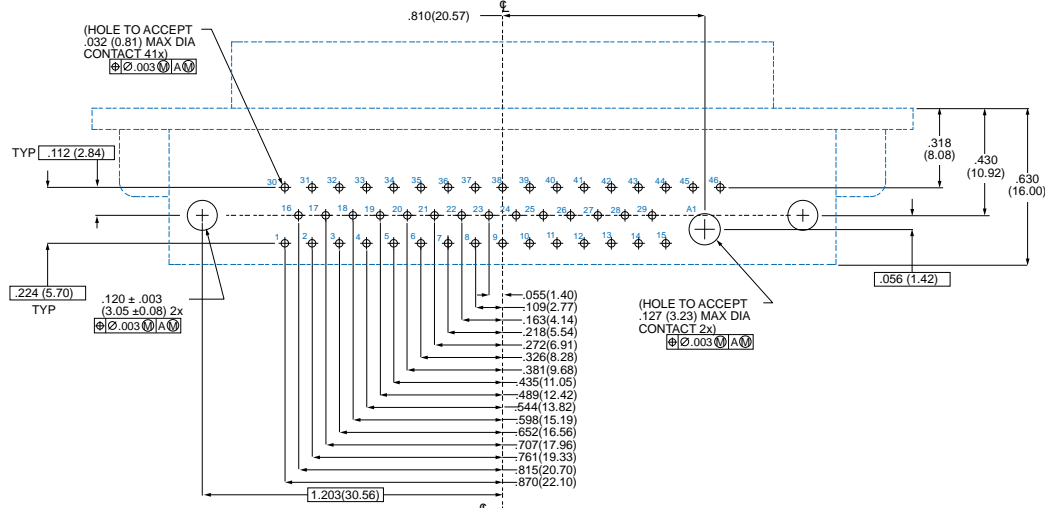
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5-43P2 2 #8, 41 #20



5-47P1 1 #8, 46 #20



SERIES 28

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SERIES GMLM

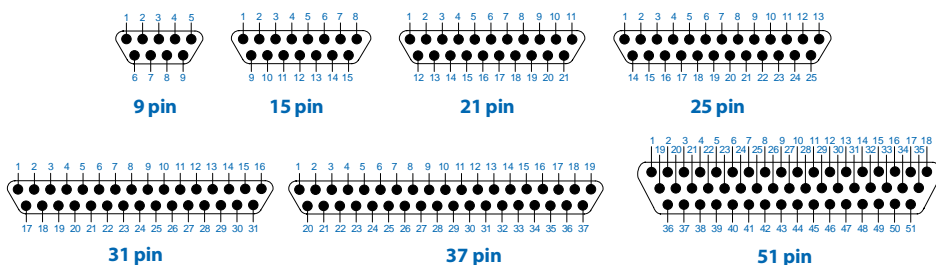
MasterLatch™

QUICK-DISCONNECT MICRO-D

MasterLatch (GMLM) Quick-release locking Micro-D connector pairs are equipped with a precision latching and locking mechanism. The single thumb latch on the plug side actuates a pair of locking latches that mate quickly and reliably to GMLM receptacles. These TwistPin equipped, low-insertion-force connectors meet all the standard performance requirements of MIL-DTL-8513 including vibration, shock, and mating durability. Choose from 7 different insert arrangements from 9 to 51 way. The unique ergonomic latching mechanism can be easily activated with a thumb and forefinger grip even when wearing gloves, or when difficult access to connector pairs makes the use of jacking hardware and tools impossible.

- Precision latch meets MIL-DTL-8513 vibration and shock
- Low insertion force TwistPin contacts
- Easy-to-activate latching mechanism

Face view pin connector - Micro-D contact arrangements



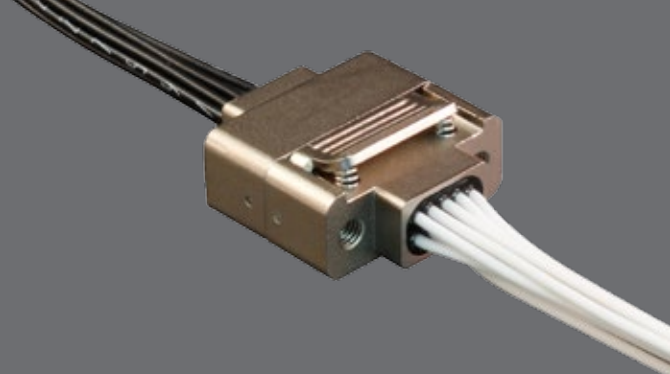
Glenair®

For more information
contact Glenair at
818-247-6000 or
visit our website at
www.glenair.com

SERIES GMLM

MasterLatch™

QUICK-DISCONNECT MICRO-D



How To Order GMLM MasterLatch™

Sample Part Number		GMLM	2	L	-25	P	-6	K	7	-18
Product Series	GMLM Glenair MasterLatch™ Micro-D									
Shell Plating	1- Cadmium 2- Nickel 4- Black Anodize 5- Gold 6- Chem Film									
Insulator Material	L - LCP or PPS									
Contact Layout	9, 15, 21, 25, 31, 37, 51									
Connector Type	P - Single Ended Pin (Plug) S - Pin (Plug) Connector Both Ends									
Wire Gauge	4 - 24 AWG 6 - 26 AWG 8 - 28 AWG 0 - 30 AWG (30 AWG-Lab Only)									
Wire Type	K - M22759/11 600 Vrms Teflon (TFE) J - M22759/33 600 Vrms Modified Cross-Linked Tefzel (ETFE)									
Wire Color Code	1 - White 2 - Yellow 5 - Color Coded 7 - Ten Color Repeating									
Cable Length In Inches	18 - 18 inches									

Series GMLM MasterLatch™ Dimensions

Pin				Socket			
Layout	A Max	B Max	C	D Max	E Max	F Max	G
9P	0.785	0.333	0.320	0.610	0.290	0.400	0.183
9S	0.785	0.342	0.320	0.429	0.295	0.400	0.183
15P	0.935	0.483	0.320	0.610	0.290	0.550	0.183
15S	0.935	0.492	0.320	0.429	0.295	0.550	0.183
21P	1.085	0.633	0.320	0.610	0.290	0.700	0.183
21S	1.085	0.642	0.320	0.429	0.295	0.700	0.183
25P	1.185	0.733	0.320	0.610	0.290	0.800	0.183
25S	1.185	0.742	0.320	0.429	0.295	0.800	0.183
31P	1.335	0.883	0.320	0.610	0.290	0.950	0.183
31S	1.335	0.892	0.320	0.429	0.295	0.950	0.183
37P	1.485	1.033	0.320	0.610	0.290	1.100	0.183
37S	1.485	1.042	0.320	0.429	0.295	1.100	0.183
51P	1.435	0.983	0.320	0.610	0.290	1.050	0.183
51S	1.435	0.992	0.320	0.429	0.295	1.050	0.183

MasterLatch™ GMLM connectors are sold as prewired pigtails only, with 18 inch wire leads. Contact factory for alternative lengths.

MATERIAL AND FINISH

- Insulator: Liquid crystal polymer or PPS
- Wire: M22759/11 600 Vrms Teflon (TFE) or M22759/33 600 Vrms Modified Cross-Linked Tefzel (ETFE)
- Pin Contacts: Gold-plated beryllium copper alloy
- Socket Contacts: Gold-plated phosphor bronze alloy
- Shell: Aluminum alloy with choice of cadmium plate, electroless nickel, black anodize, gold, or chem film
- Latching mechanism: Stainless steel



For more information
contact Glenair at
818-247-6000 or
visit our website at
www.glenair.com

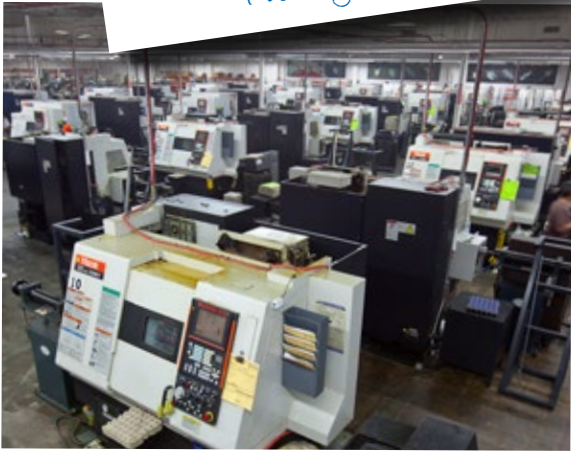
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