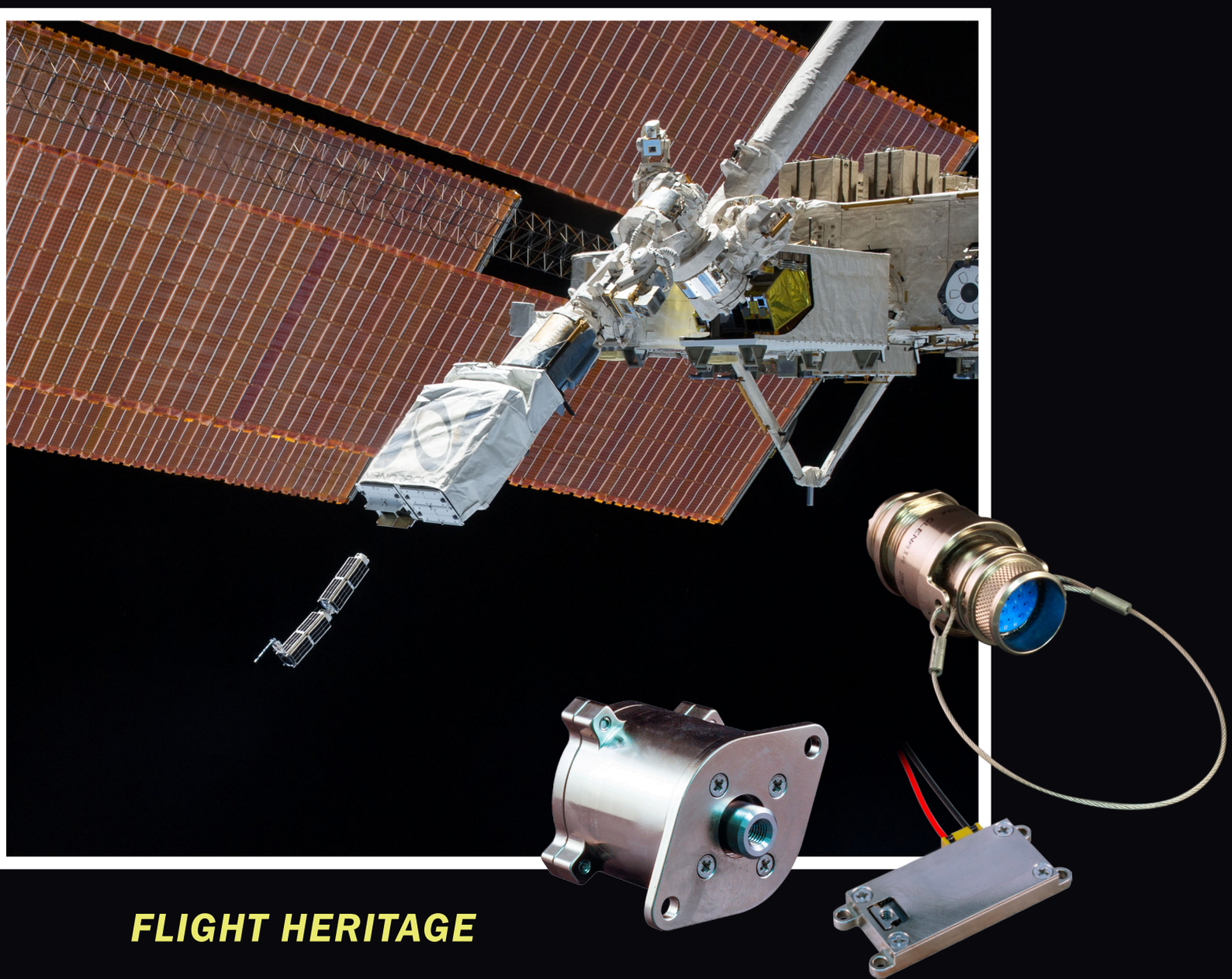
Glenair®



FLIGHT HERITAGE

SPACE MECHANISMS

Release Mechanisms · Blind Mate (ASF) Connectors · Lanyard-Release Connectors

AUGUST 2017

Glenair®

Commander Ed White on the first American spacewalk, 1965

SPACE PROVEN

Interconnect Technologies

We like to begin every discussion of Glenair's proven-performance space-grade products with the golden umbilical life support cable used by Commander Ed White in the first American space walk in 1965. This was a complex cable assembly with an exacting set of performance requirements. Even though this application is now over 50 years old, it still reflects Glenair's design and fabrication expertise and that we have been a go-to supplier for the space industry for over 5 decades.

Today we continue to manufacture a broad range of high-performance cables and components for space—from our innovative line of non-pyrotechnic HDRMs to high-reliability assisted separation force connectors. Glenair's proven space flight heritage includes interconnect and electromechanical technology on dozens of robotic spacecraft, including orbiters, landers, and rovers.

Many customers of discrete HDRM technology look to Glenair for the turnkey supply of interconnect wire and cabling. Non-pyrotechnic separation nuts utilize EMI shielded harness assemblies to supply primary and redundant initiation energy to the split spool actuator, and to transmit telemetry data from release sensors. Glenair operates the largest and best equipped wire harness assembly shop in the mission-critical interconnect industry and has supplied countless turnkey space-grade cable assemblies of this type.

PROVEN PERFORMANCE IN SPACE

- The "Golden Umbilical" life-support cable
- JPL Mars probes (orbiters, landers, and the Curiosity rover)
- AIRS satellite
- Gravity Probe mission
- Titan II launch vehicles
- EADS Astrium
- ESA Ariane 5
- Countless others

FLIGHT HERITAGE

Space Mechanisms

For interconnection and release applications
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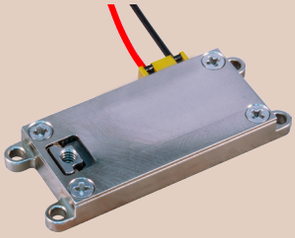
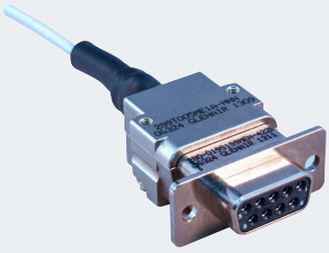


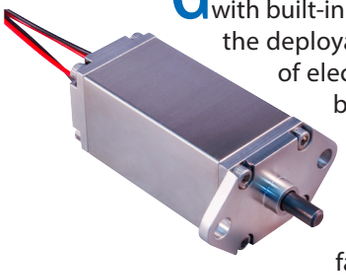


NASA NanoRack CubeSats deployed from the International Space Station. The ISS solar array panels provide the backdrop.

SERIES 06

Pyrotechnic-Free Space Mechanisms

High-reliability, non-explosive (split-spool) separation nuts and electromechanical release mechanisms for dependable stowage and release of deployable space systems



Glenair space mechanisms are optimized for foolproof release reliability with built-in mechanical and electrical redundancy. The planned release of the deployable satellite/payload is activated by a pre-determined value of electrical current to a fuse-wire system which causes the wire to break under tension and allows a pre-loaded mechanical bolt to actuate. Glenair's line of low-shock, redundant and non-redundant space mechanims includes both HDRM devices as well as a family of pin pushers and pin pullers. Customer-defined housing and mounting configurations are available. Consult factory for specific device TR level and qualification test reports.

Glenair pyrotechnic-free release mechanisms offer quick release time, low shock, relatively low power input, and virtually no temperature sensitivity. Glenair family of Space Mechanisms include separation nuts, HDRMs, pin pushers, and pin pullers which deliver a higher preload carrying capacity in comparison to similar devices.

- **Pyrotechnic-free alternative for single-event release of deployable space systems**
- **User-serviceable and refurbishable units**
- **Standard catalog as well as custom designs**
- **Not susceptible to transient and noise (EMI/EMP/ESD/RFI) inputs**
- **Extended temperature ranges: -150°C to +150°C**

Non-Explosive Space Mechanisms

HDRM, pin puller, and pin pusher selection guide

Pyrotechnic-Free Space Mechanisms

Technology overview

A

Glenair non-pyrotechnic space mechanism technology is based on a fusable wire-actuated separation nut design. Increasingly popular for its reliability and non-pyrotechnic action, fusable wire-actuated nut technology has the added benefit of being partially reusable and refurbishable post-deployment. Glenair HDRMs, pin pullers and pushers are immune to all forms of EMI or ESD, and capable of easily sustaining launch loads as well as defined preloads—with release deployment times comparable to conventional explosive actuators, but with low-shock and low power input.

A broad range of hold down release mechanism technologies have been historically used to hold secure and subsequently deploy satellites and other appendages (solar arrays, antenna reflectors, radiators, instruments, doors, sensors, booms, and so on) in space. Most of these technologies relied on non-reusable (explosive/pyrotechnic) designs that suffered from a broad range of deficiencies, including susceptibility to electromagnetic interference, problematic synchronization of release with mission requirements, high-shock release action, and significantly, the inability to reuse or refurbish the device during test. Historically, actuators and release devices of this type have included explosive release nuts, bolt cutters, separation nuts, and wire and pyro cable cutters

Glenair has taken a different path in the development of non-explosive HDRMs and other space mechanisms with a consumable initiator which, post-actuation, allows the device to be refurbished and reset on-site, or at the factory. Glenair fusable wire-actuated nut technology solves all of the problems associated with conventional explosive hold down and release devices.

Glenair family of pin pushers and pin pullers are low-shock mechanisms comprised of a spring-loaded pin held in place using the same fusable wire-actuated technology found in our hold down release mechanisms. Once actuated the restraining fuse wire breaks under tension causing the pin to retract under the force of the drive spring. The effects from the release of any potential energy in the loaded spring during actuation are countered by a measured delivery system to limit the effects of shock.

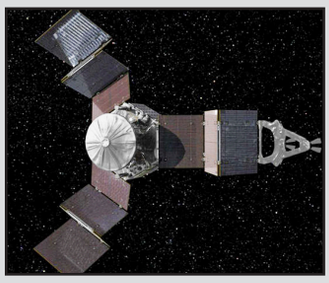
All three key components of Glenair space mechanisms (preloading assembly, release actuator, and load-carrying structure) may be packaged according to specific customer requirements including connectorization in place of wire leads. Packaging options include cylindrical or rectangular housings, lightweight materials, unique shapes and profiles, non-standard mounting dimensions and more. Consult the factory for complete information and TR Level qualification test reports.

SCALABLE DESIGNS: FROM CUBESATS TO 20,000 POUND PAYLOADS

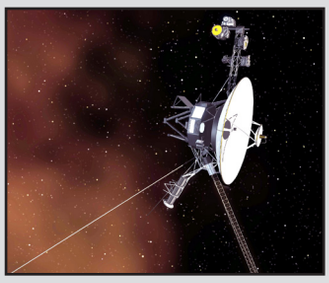
- **Fuse-wire based technology**
- **Redundant or non-redundant actuation circuit**
- **Space-rated and screened materials**
- **Electrical initiation up to 5 amps**

Build-to-spec solutions also available, including connectorized HDRMs, band porch shield termination feed-thrus and power draw resistors. Connectorized Solution above shown with Series 806 Mighty Mouse

DEPLOYMENT APPLICATIONS

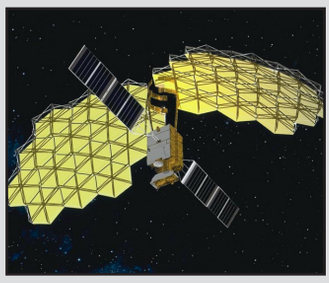


Solar Arrays



Booms and Masts

Antennas

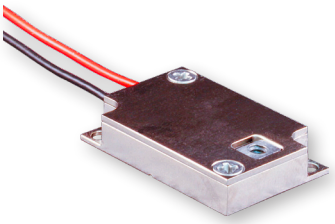


Reflectors

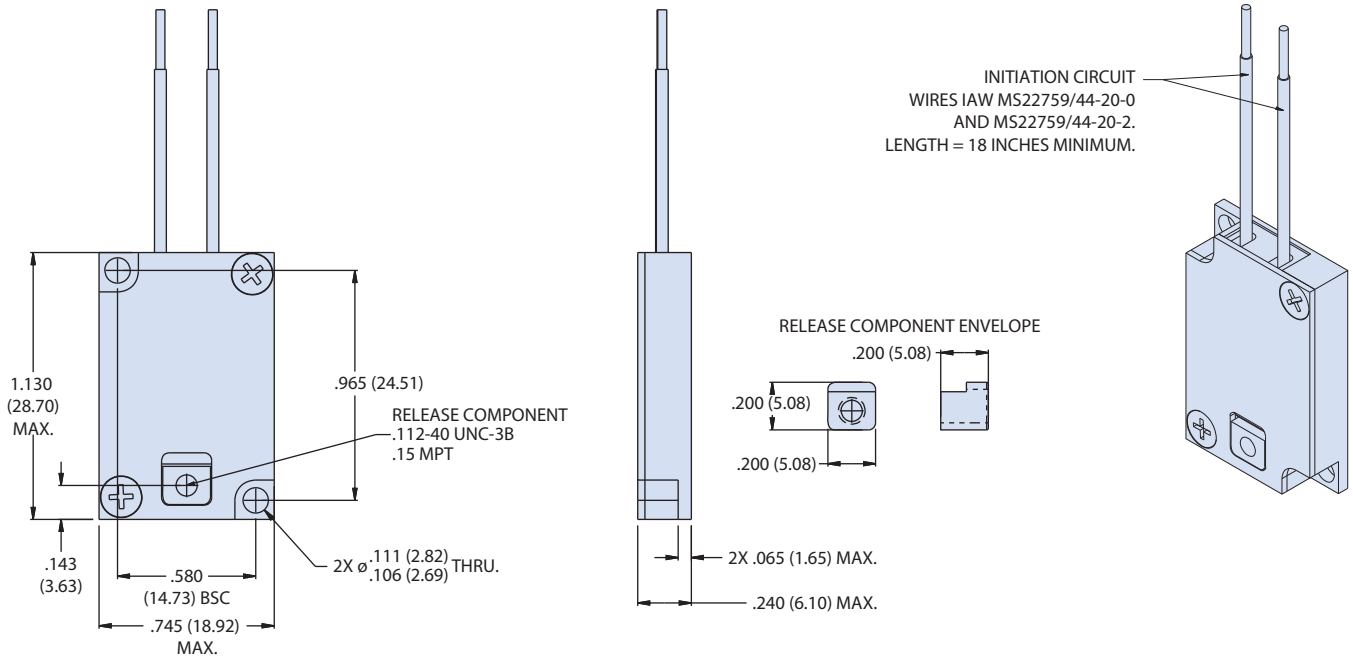
Light-duty hold-down release mechanism

5 lb. (Delrin) or 20 lb. (Stainless Steel) release preload
Non-redundant circuit

NON-REDUNDANT CIRCUIT HOLD DOWN RELEASE MECHANISM, LIGHT DUTY



How To Order			
Sample Part No.	**061**	**-002**	**-S**
Basic Part No.	Light/Medium Duty HDRM		
Dash No.	Non-Redundant Circuit		
Release Component Material	**S** - Stainless Steel **D** - Delrin		



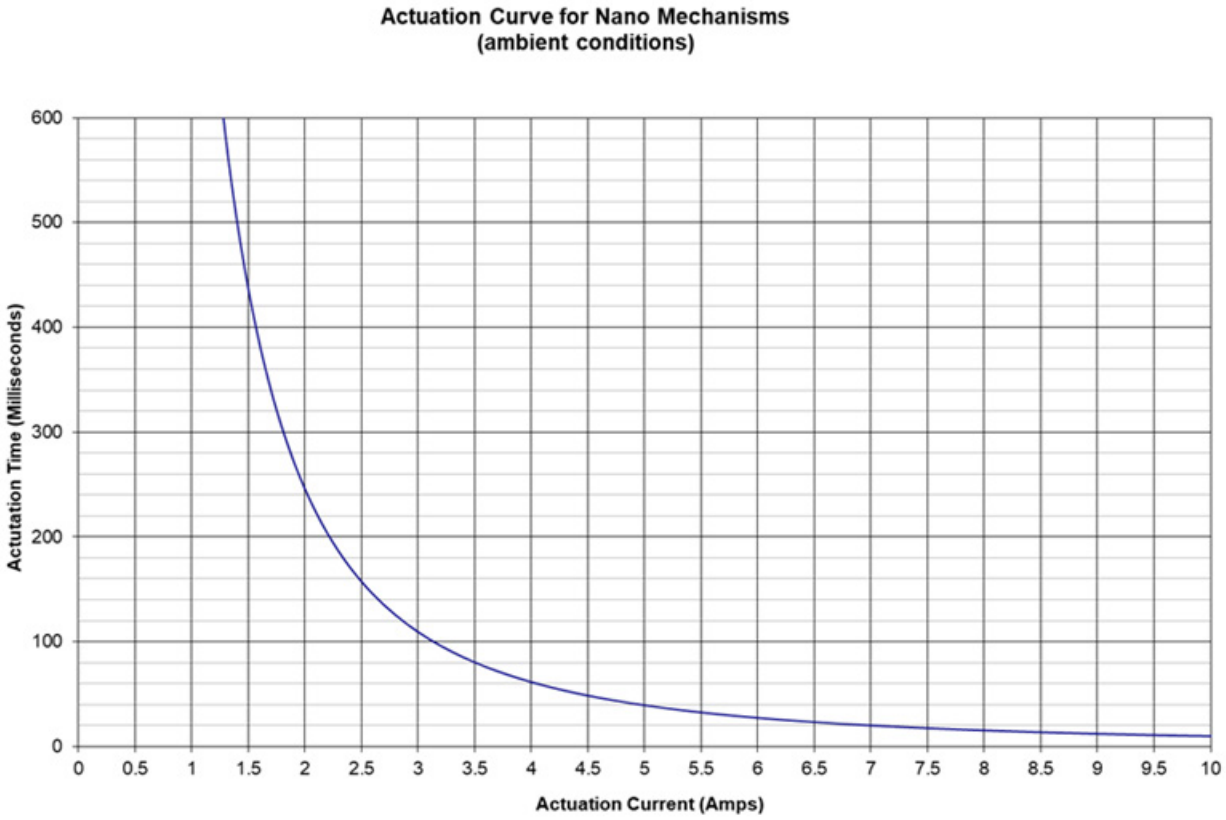
NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting.
2. Release preload:
   Stainless steel release component: max. limit 20 lbs (89 N)
   Delrin release component: max. limit 5 lbs (22 N)
3. Full qualification pending
4. Reference Glenair P/N 060-102 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	9 grams nominal weight
Release component thread	0.112-40 UNC-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Consult factory for connectorization options
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

Light-duty hold-down release mechanism

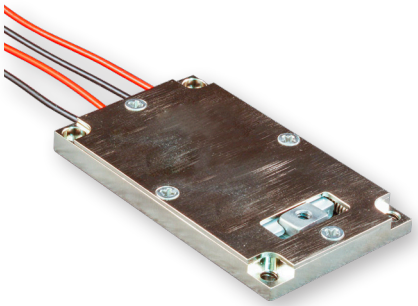
5 lb. (Delrin) or 20 lb. (Stainless Steel) release preload
Non-redundant circuit



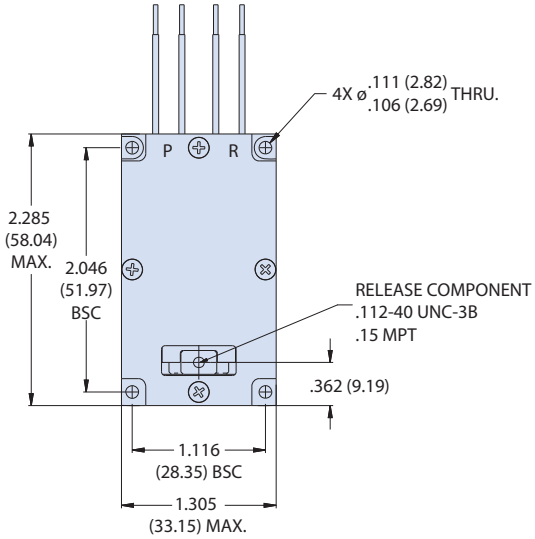
Light-duty hold-down release mechanisms

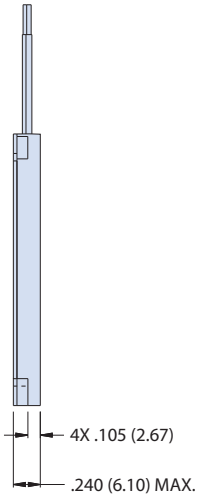
30 lb. (Stainless Steel) release preload
Electrically Redundant

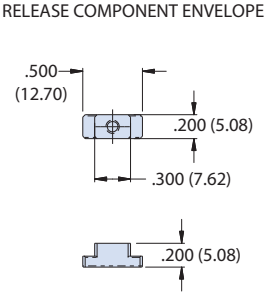
ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, LIGHT DUTY

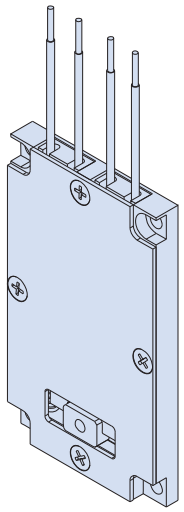


How To Order		
Sample Part No.	**061**	**-003**
Basic Part No.	Light/Medium Duty HDRM	
Dash No.	Redundant Circuit	









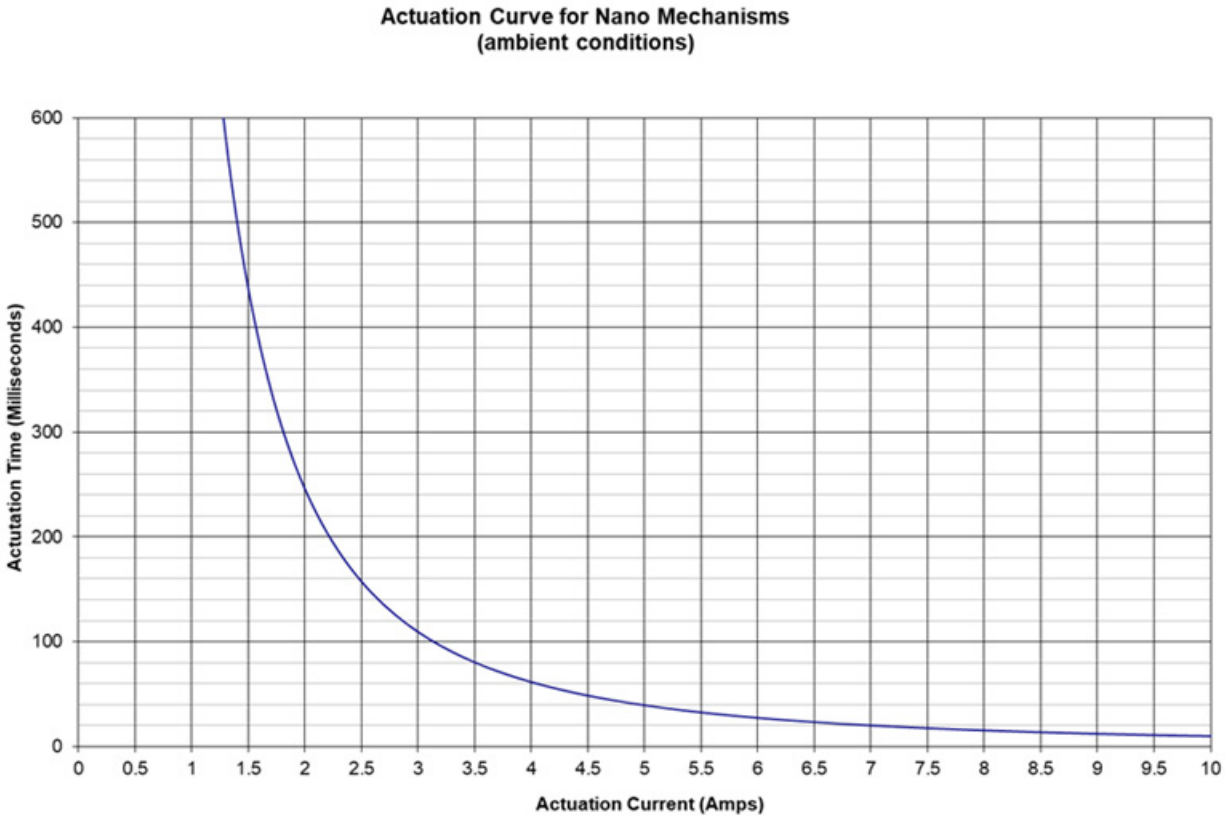
Physical characteristics	
Mass	27.8 grams nominal weight
Release component thread	0.112-40 UNC-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Consult factory for connectorization options
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload 30 lbs. (133 N)
3. Full qualification pending
4. Reference Glenair P/N 060-103 for refurbishment initiator
5. Metric threads available, consult factory for options

Light-duty hold-down release mechanisms

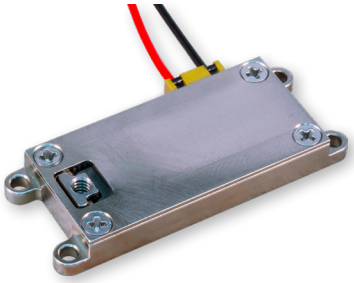
30 lb. (Stainless Steel) release preload
Electrically Redundant



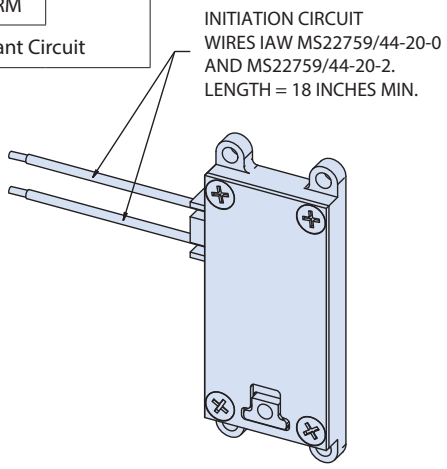
Light-duty hold-down release mechanism

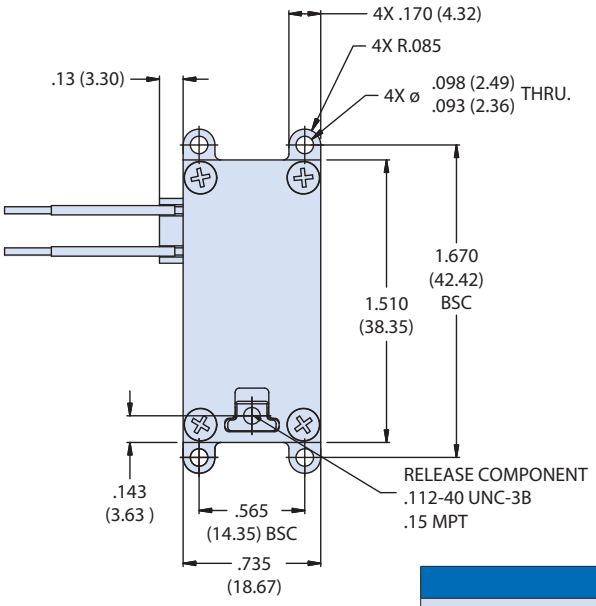
75 lb. release preload
Non-redundant circuit • side load

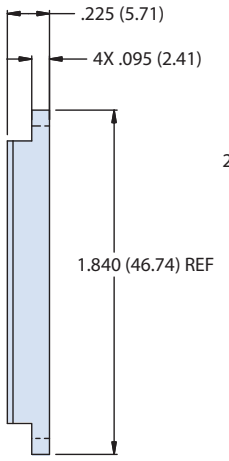
NON-REDUNDANT CIRCUIT HOLD DOWN RELEASE MECHANISM, LIGHT DUTY

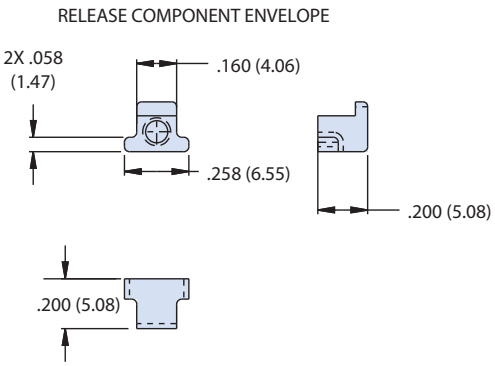


How To Order		
Sample Part No.	**061**	**-014**
Basic Part No.	Light/Medium Duty HDRM	
Dash No.	Side Load, Non-Redundant Circuit	









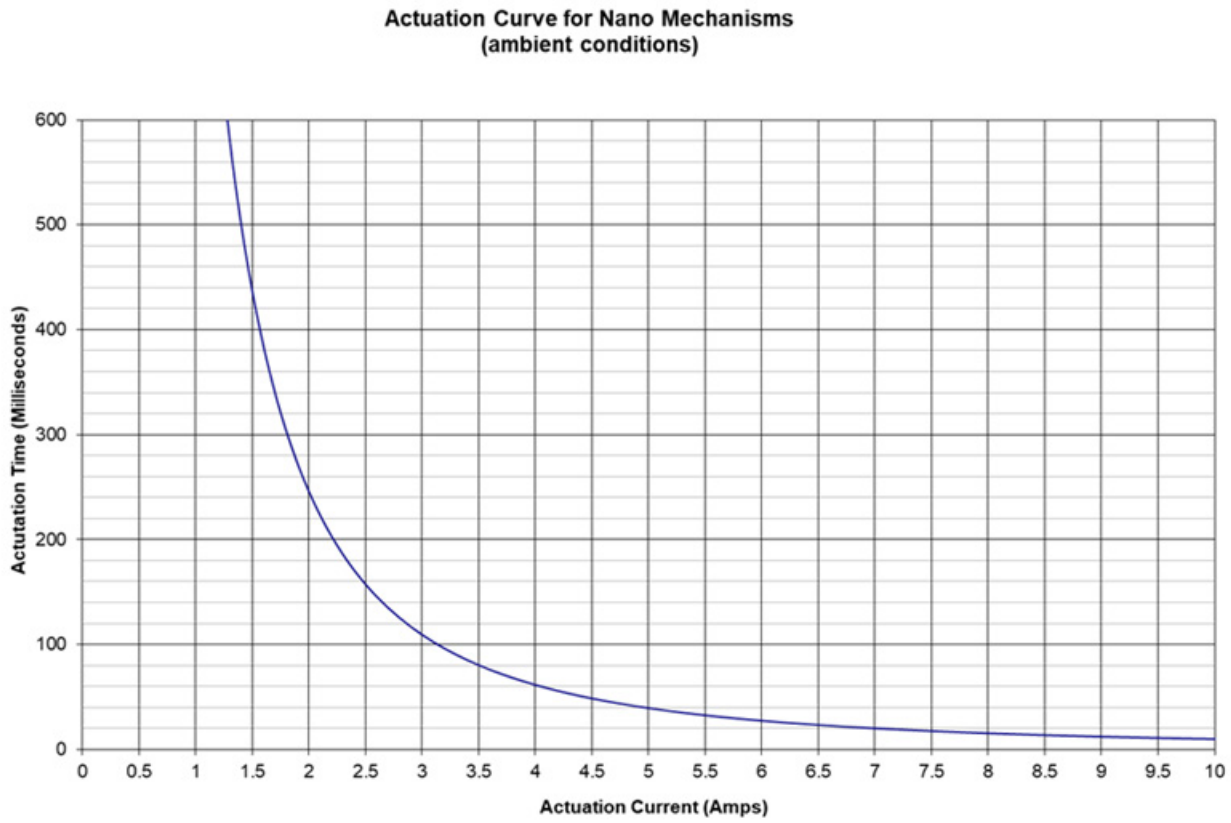
NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload: 75 lbs. (334N)
3. Full qualification complete, consult factory for test report.
4. Reference Glenair P/N 060-114 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	20.6 grams approximate weight
Release component thread	0.115-40 UNC-3B*
Material list	IAW MSFC-STD-3029
Device features	
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Consult factory for connectorization options
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

Light-duty hold-down release mechanism

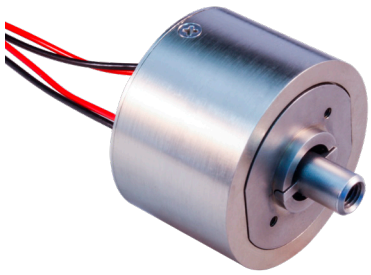
75 lb. release preload
Non-redundant circuit • side load



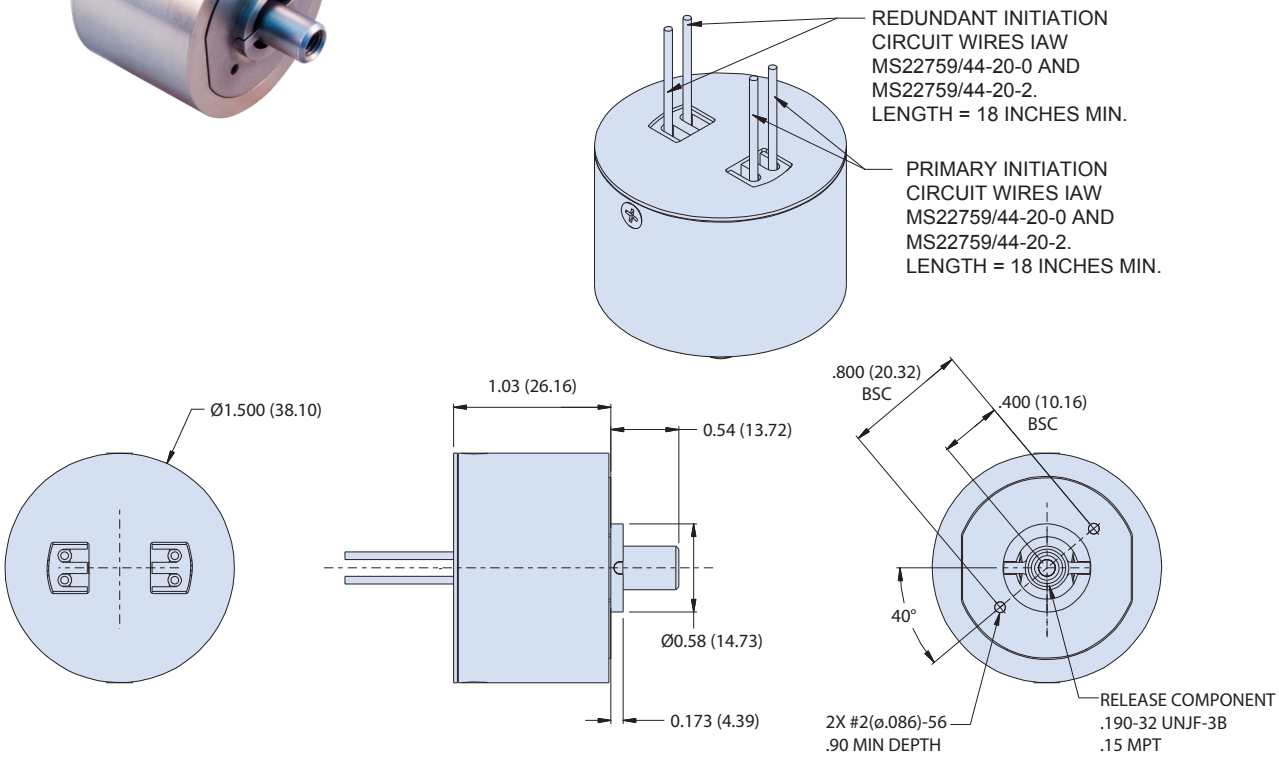
Medium-duty hold-down release mechanism

2500 lb. release preload
Electrically redundant

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, MEDIUM DUTY



How To Order		
Sample Part No.	**061**	**-005**
Basic Part No.	Light/Medium Duty HDRM	
Dash No.	Redundant Circuit	



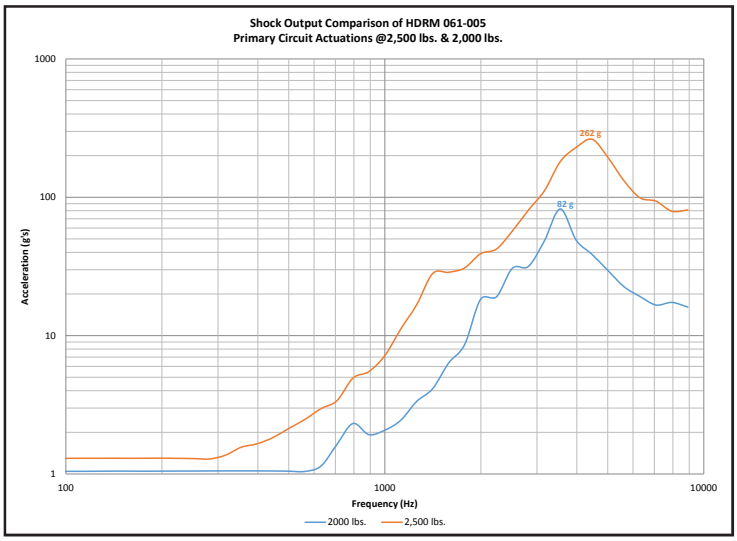
NOTES

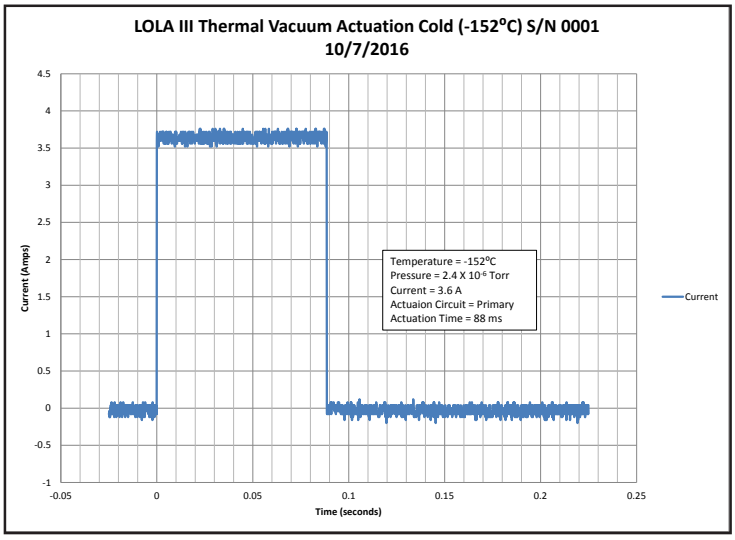
1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload 2500 lbs. (11.1 kN)
3. Reference Glenair P/N 060-105 for refurbishment initiator
4. Nominal actuation current 3.5 Amps
5. Metric threads available, consult factory for options

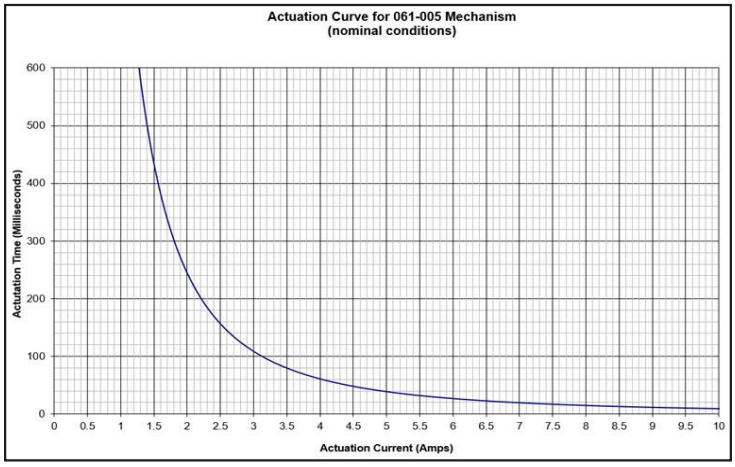
Physical characteristics	
Mass	84.9 grams nominal weight
Release component thread	0.190-32 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999994
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

Medium-duty hold-down release mechanism

2500 lb. release preload
Summary of qualification test data





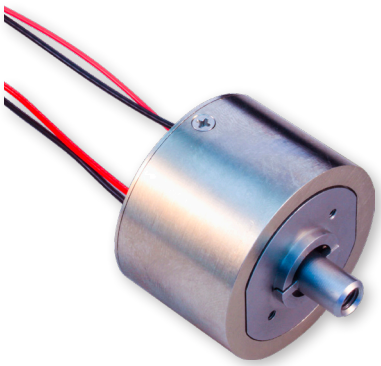


Tested Capability for 061-005	
Nominal Release Preload	2,250 pounds
Proof Preload	2,500 pounds
Ultimate Load	3,250 pounds
Electrical Resistance	1.5 ohms max
Sine Vibration 3 orthogonal axes	25 G's
Random Vibration 3 orthogonal axes	50.9 G_{rms}
Actuation Time	Under 100 ms @3.5 Amps
Shock Input	2,849 G's
Source Shock	Under 300 G's @2,500 pounds
Life Test	10 refurbishments during qualification and an expected continued usage
Temperature	-150°C to +150°C released in a vacuum (1x10-6 Torr)
Extended Preload	<4.0% loss

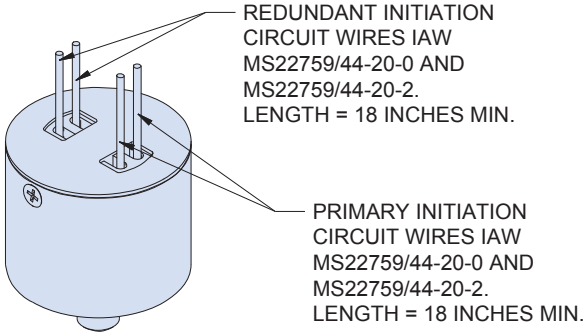
Medium-duty hold-down release mechanism

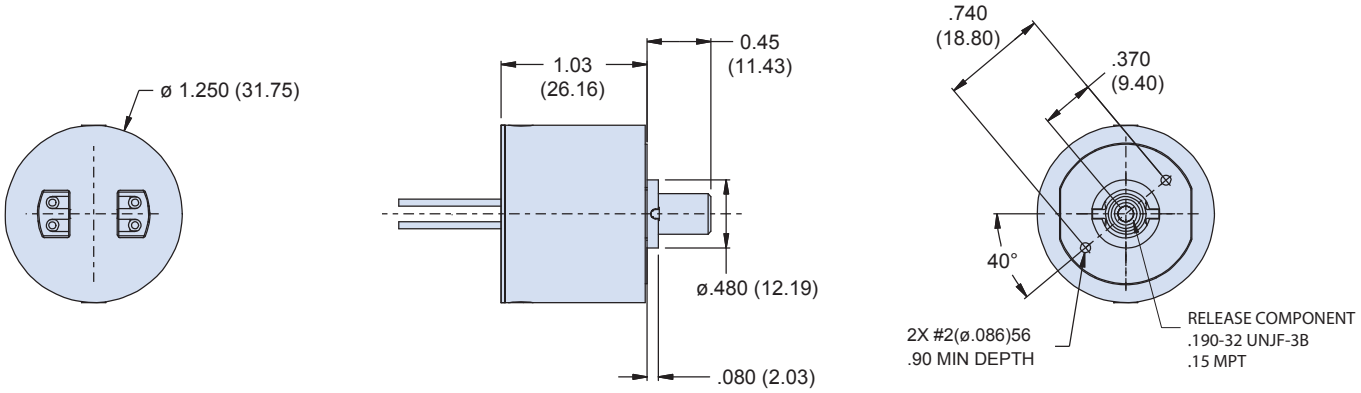
1000 lb. release preload
Electrically redundant

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, MEDIUM DUTY



How To Order		
Sample Part No.	**061**	**-006**
Basic Part No.	Light/Medium Duty HDRM	
Dash No.	Redundant Circuit	





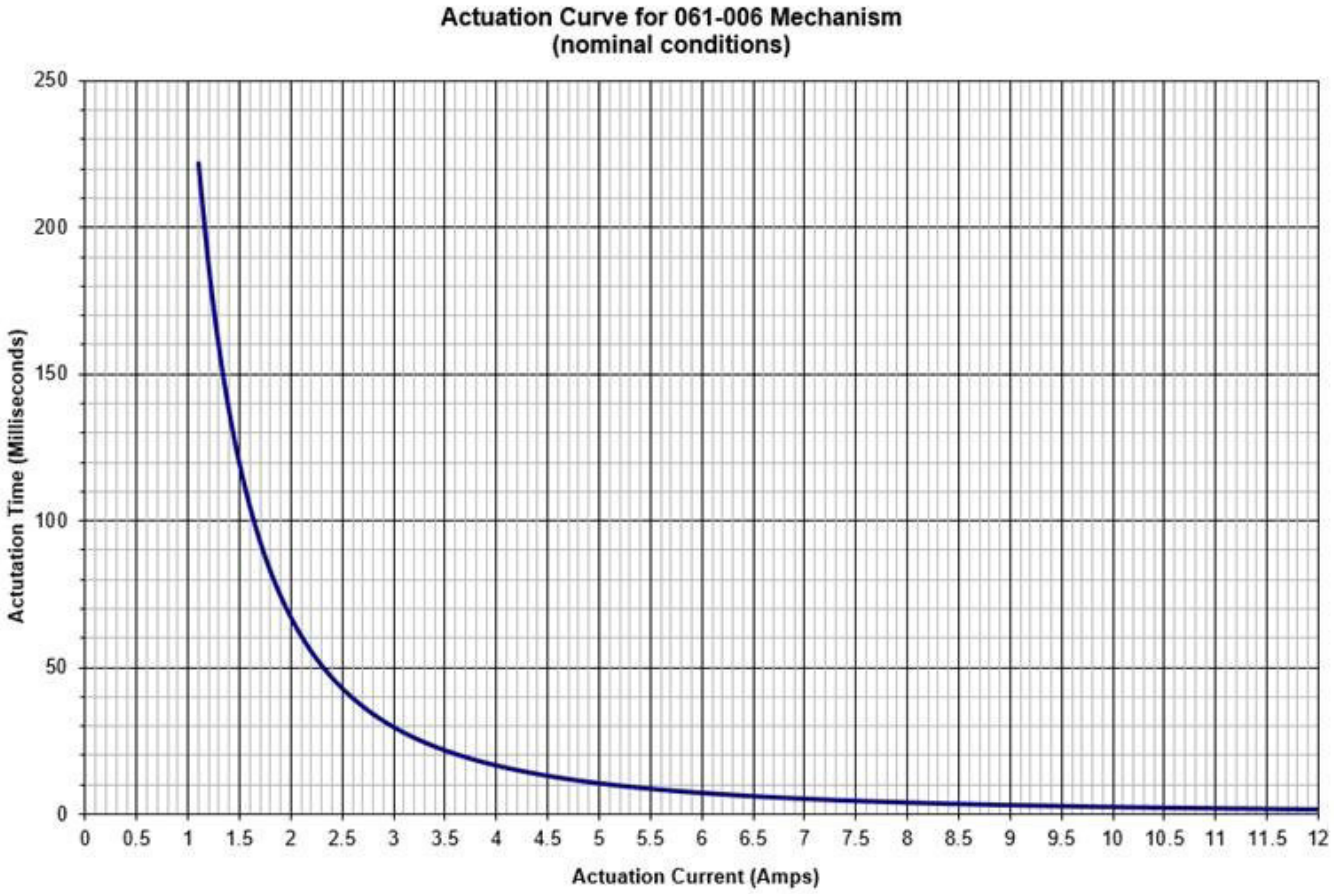
NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload 1000 lbs. (4.5 kN) on similar model, contact factory
3. Qualification complete
4. Reference Glenair P/N 060-106 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	65.3 grams approximate weight
Release component thread	0.190-32 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999994 (based off scaled design)
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

Medium-duty hold-down release mechanism

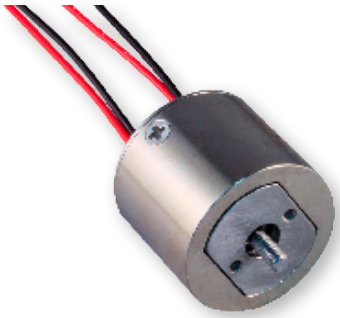
1000 lb. release preload
Actuation curve



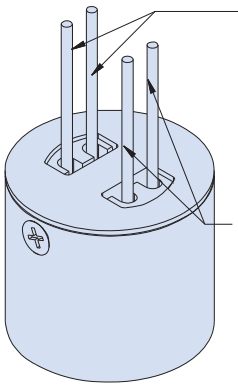
Medium-duty hold-down release mechanism

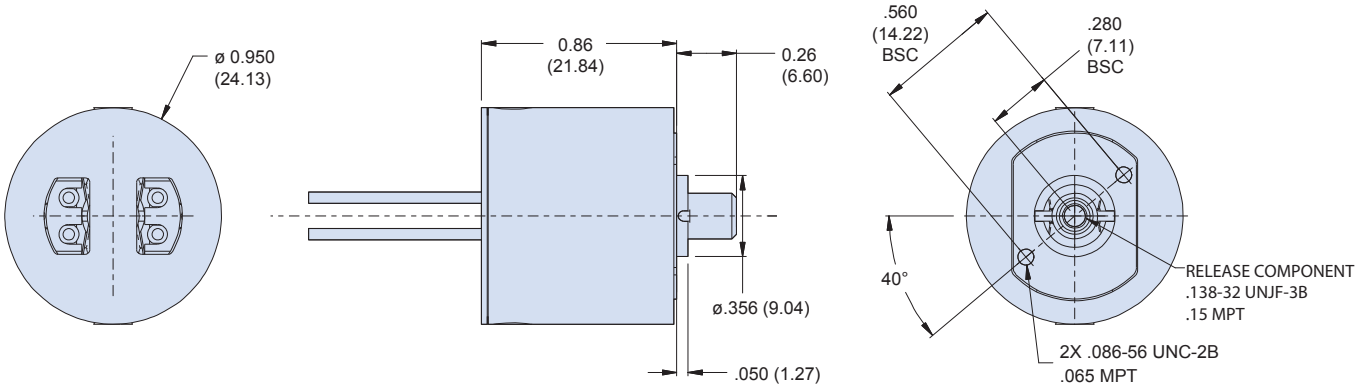
300 lb. release preload
Electrically redundant

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, MEDIUM DUTY



How To Order		
Sample Part No.	**061**	**-007**
Basic Part No.	Light/Medium Duty HDRM	
Dash No.	Redundant Circuit	





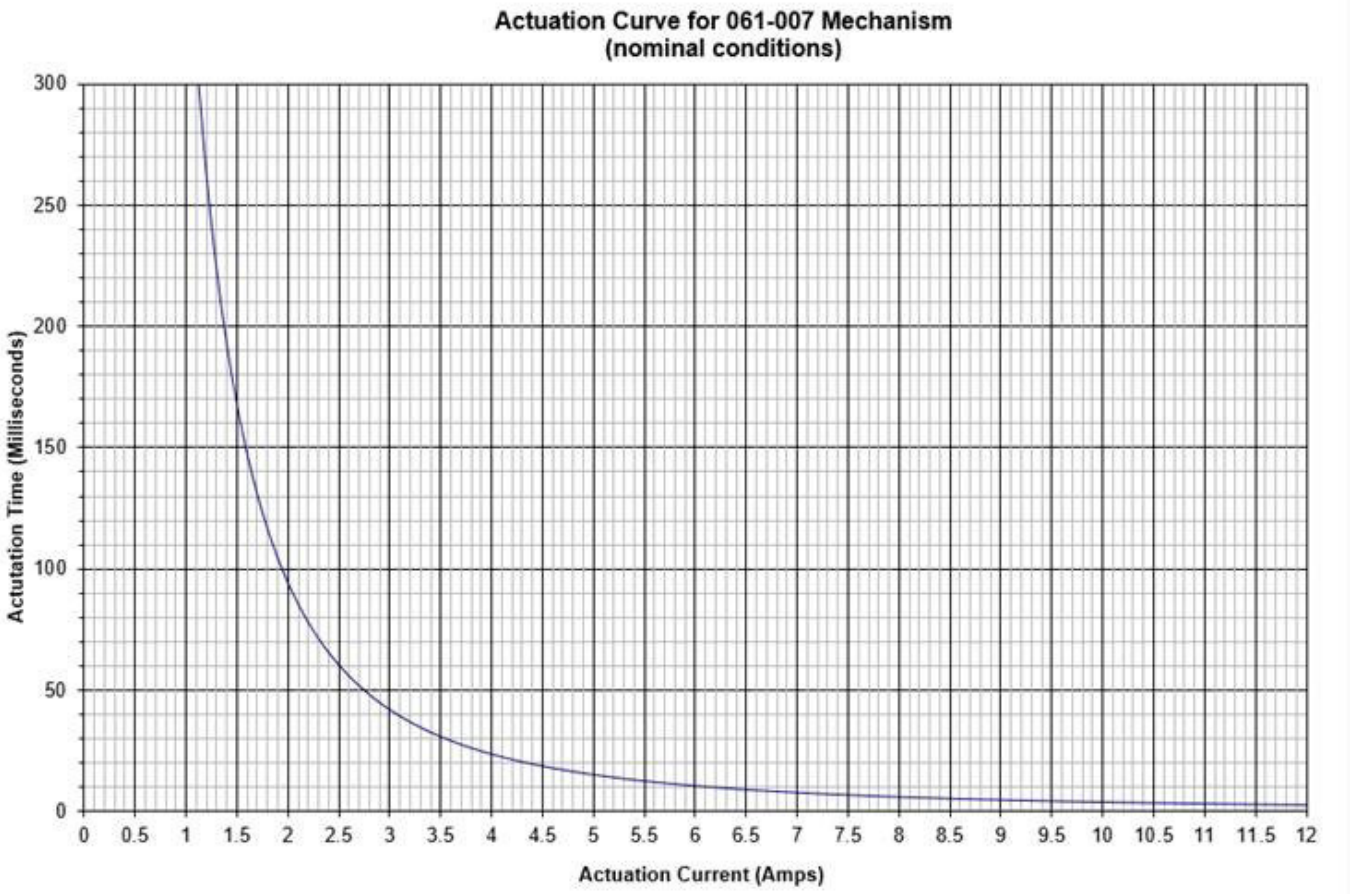
Physical characteristics	
Mass	38.6 grams approximate weight
Release component thread	0.138-32 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999994 (based off scaled design)
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload 300 lbs. (1.33 kN)
3. Full qualification pending
4. Reference Glenair P/N 060-107 for refurbishment initiator
5. Metric threads available, consult factory for options

Medium-duty hold-down release mechanism

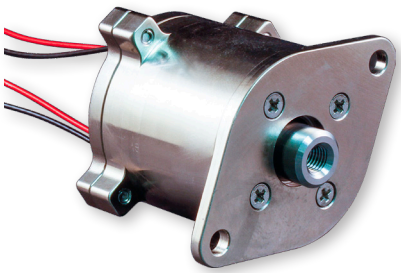
300 lb. release preload
Actuation curve



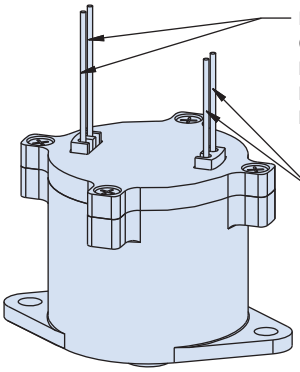
Heavy-duty hold-down release mechanism

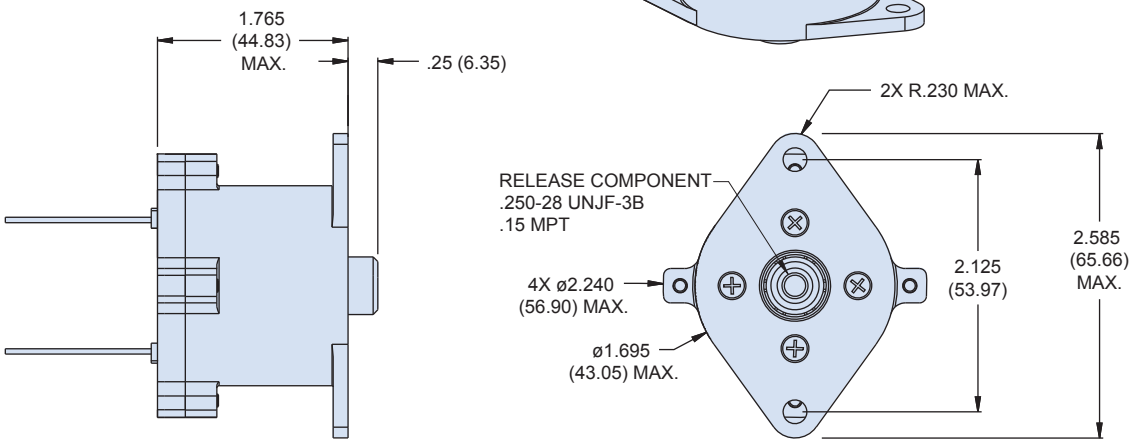
5000 lb. release preload
Electrically redundant

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, HEAVY DUTY



How To Order		
Sample Part No.	**062**	**-002**
Basic Part No.	Heavy Duty HDRM	
Dash No.	Redundant Circuit	



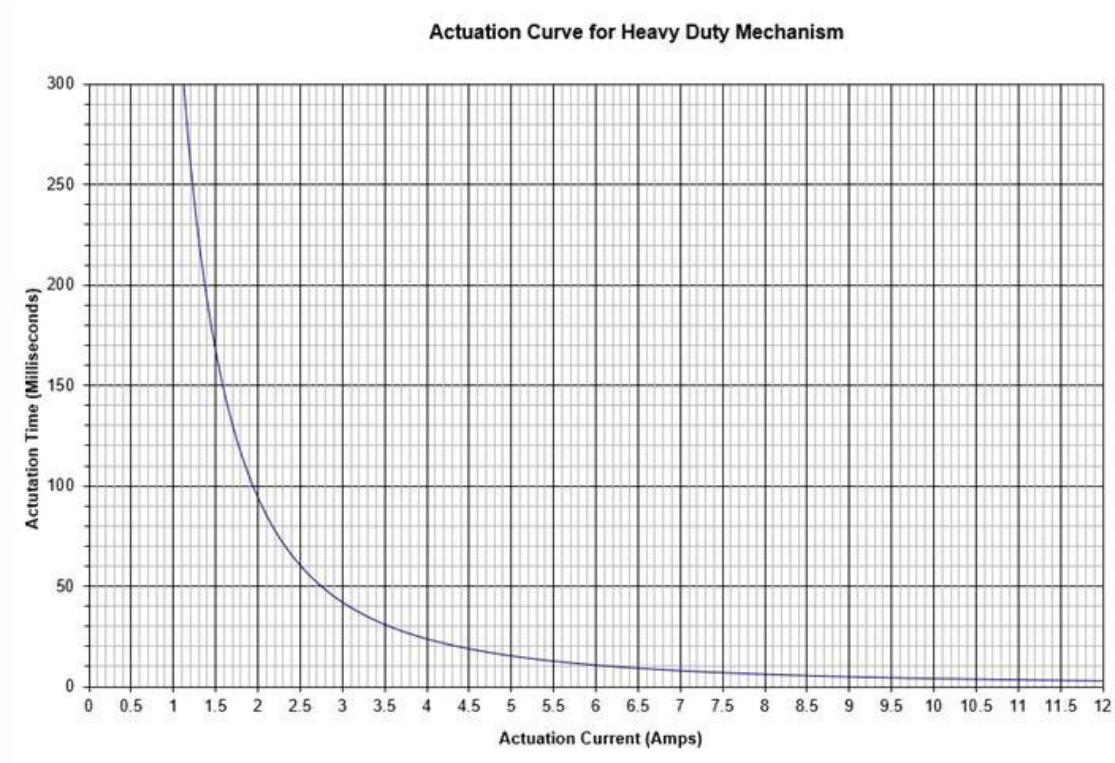


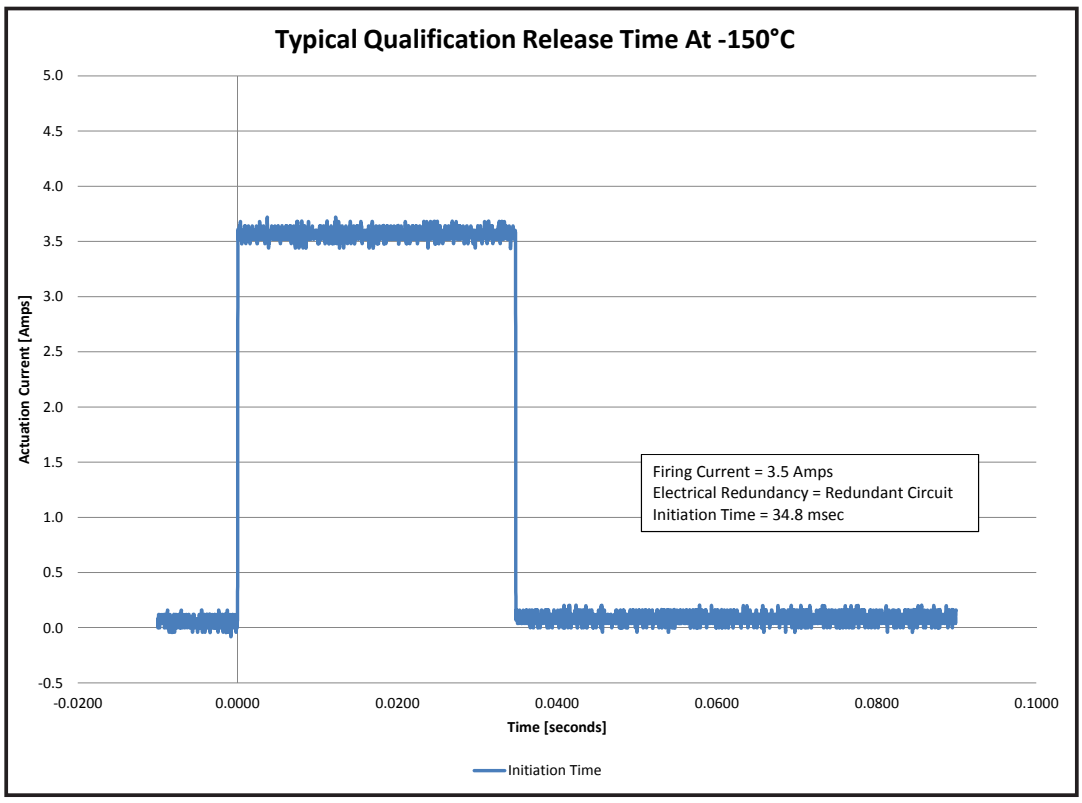
Available 069-201 mechanical release for use in place of refurbishment initiator. Consult factory for application notes.

Physical characteristics	
Mass	241 grams nominal weight with 18 inch lead wire included
Release component thread	0.250-28 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999995
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Complete test report available upon request	

Heavy-duty hold-down release mechanism

5000 lb. release preload
Electrically redundant





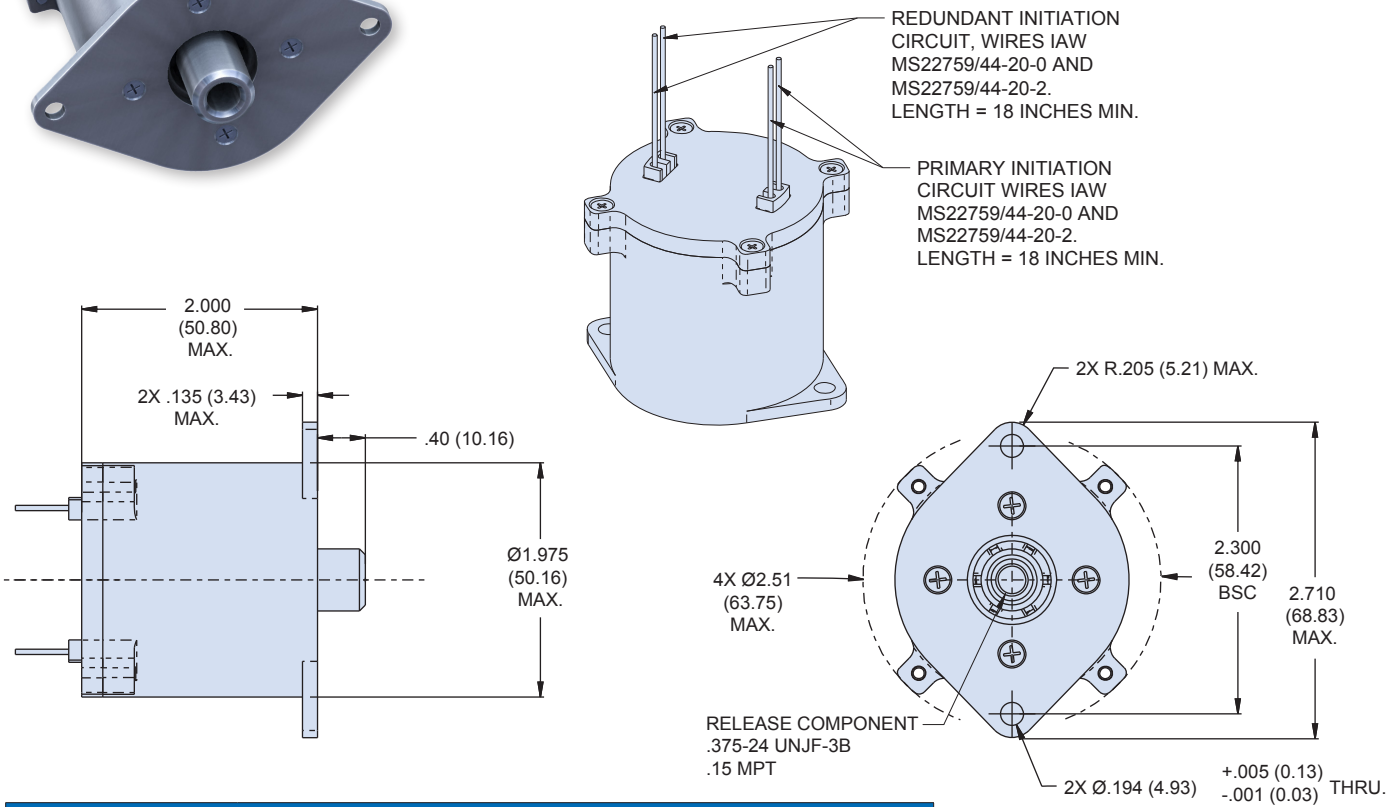
Heavy-duty hold-down release mechanisms

8750 lb. release preload
Electrically redundant

A

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, HEAVY DUTY

How To Order		
Sample Part No.	**063**	**-001**
Basic Part No.	Heavy Duty HDRM	
Dash No.	Redundant Circuit	



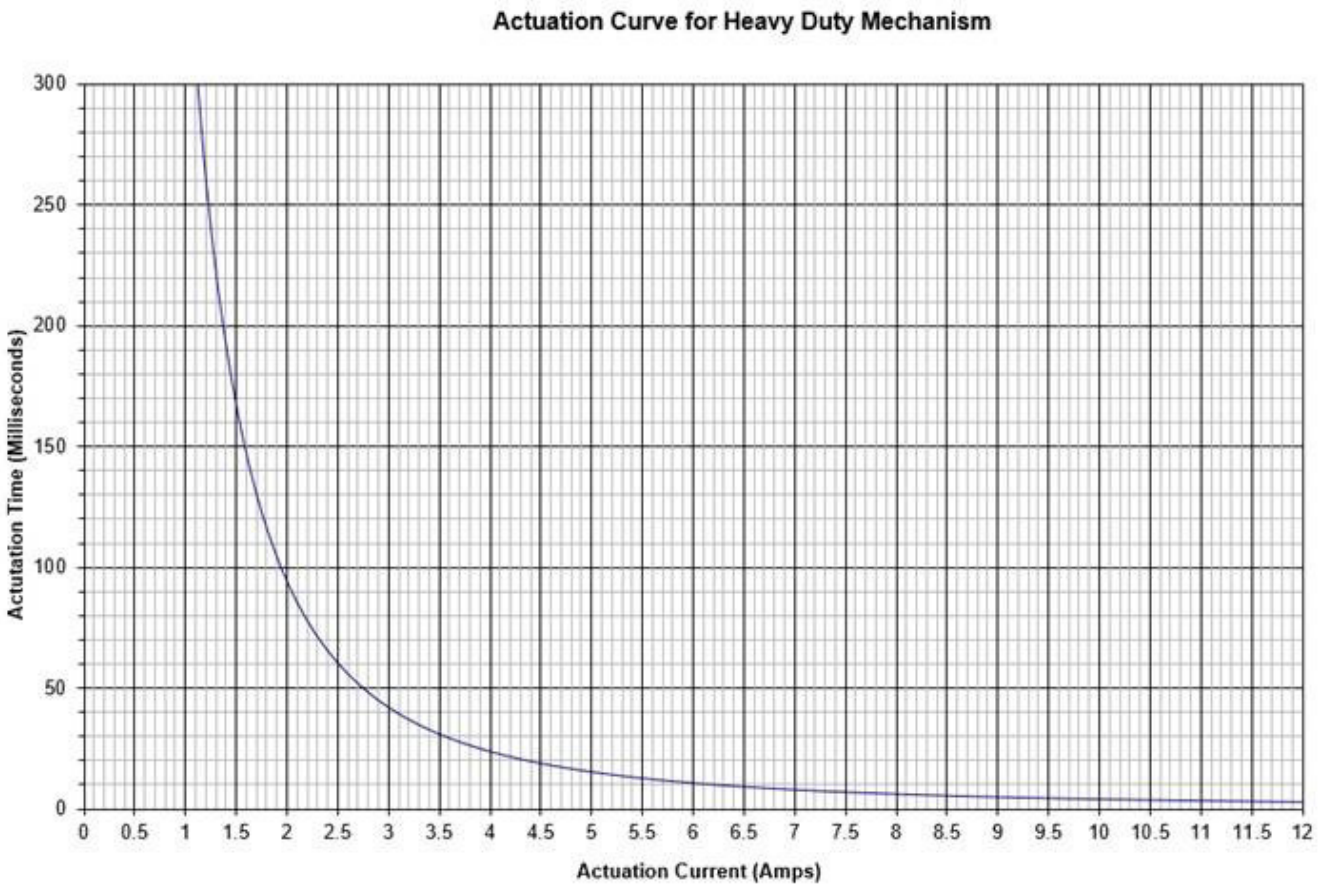
Physical characteristics	
Mass	335 grams approximate weight
Bolt	0.375-24 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999995 (based off scaled design)
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload: 8,750 lbs. (38.9 kN) Proof load: 12500 lbs. (55.6 kN) Ultimate preload: 16500 lbs. (73.4 kN) min.
3. Full qualification pending
4. Reference Glenair P/N 060-301 for refurbishment initiator
5. Metric threads available, consult factory for options

Heavy-duty hold-down release mechanisms

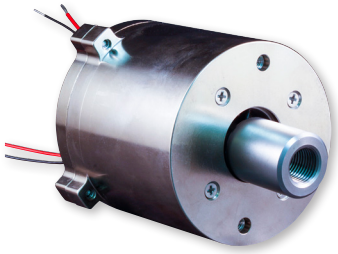
8750 lb. release preload
Electrically redundant



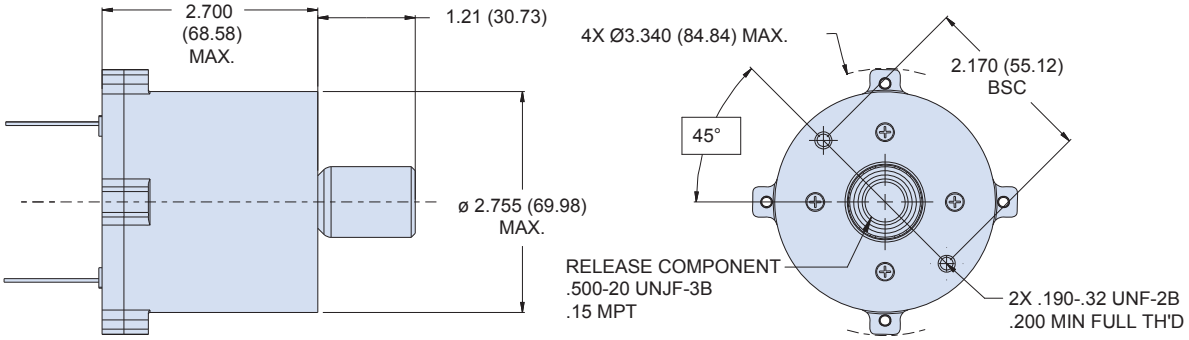
Heavy-duty hold-down release mechanisms

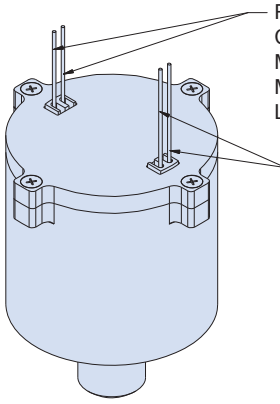
20,000 lb. release preload
Electrically redundant

ELECTRICALLY REDUNDANT HOLD DOWN RELEASE MECHANISM, HEAVY DUTY



How To Order		
Sample Part No.	**064**	**-001**
Basic Part No.	Heavy Duty HDRM	
Dash No.	Redundant Circuit	





Available 069-401 mechanical release for use in place of refurbishment initiator. Consult factory for application notes.

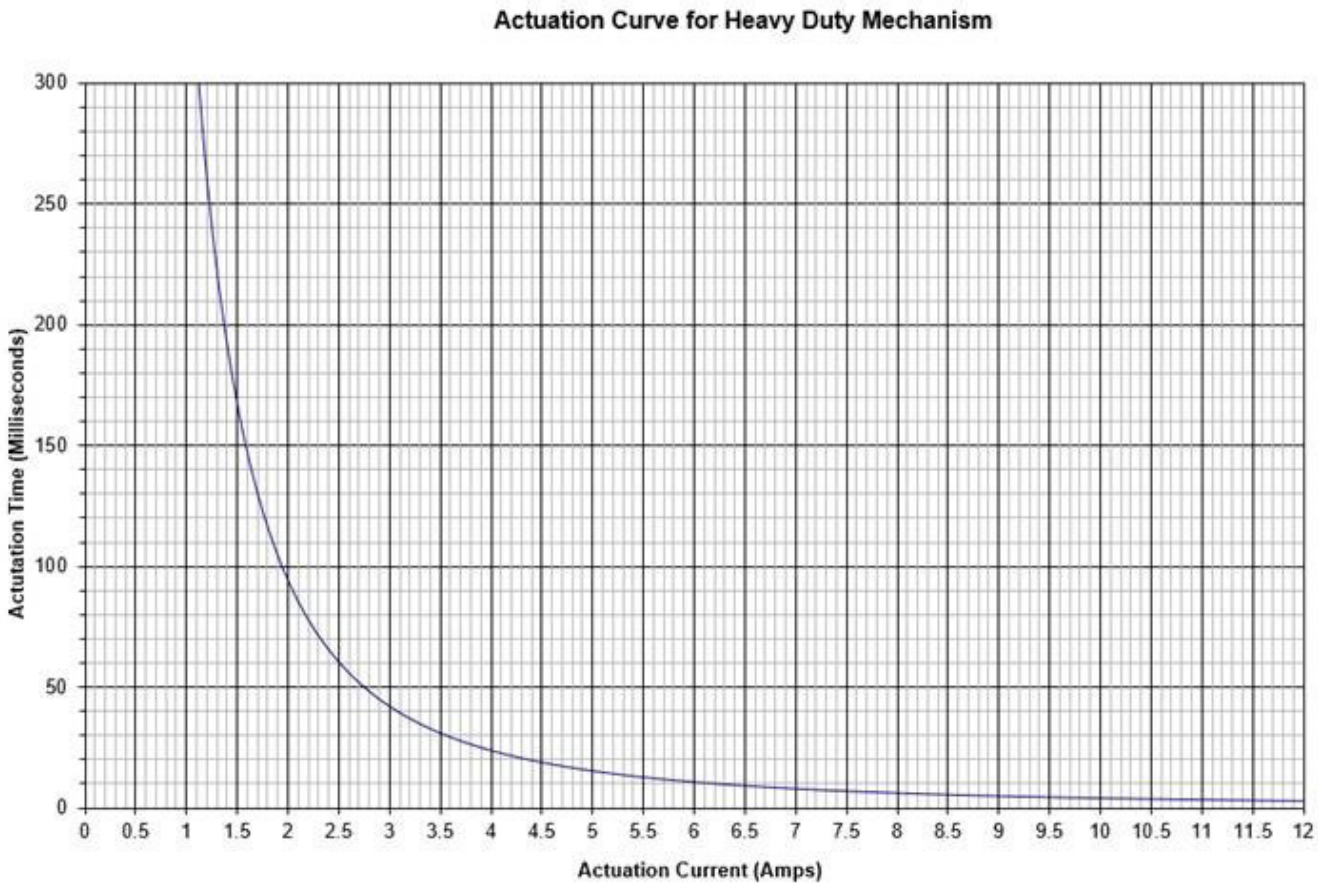
NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Release preload 20,000 lbs. (88.9 kN)
3. Full qualification pending
4. Reference Glenair P/N 060-401 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	870.4 grams nominal weight
Bolt	.500-20 UNJF-3B*
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Reliability prediction	0.9999995 (based off scaled design)
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for complete test report	

Heavy-duty hold-down release mechanisms

20,000 lb. release preload
Electrically redundant

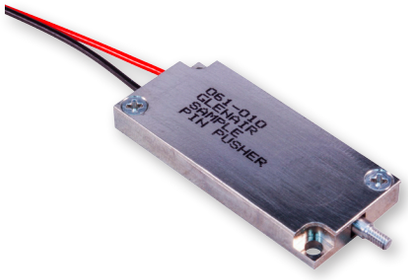


Light-duty pin pushers and pullers

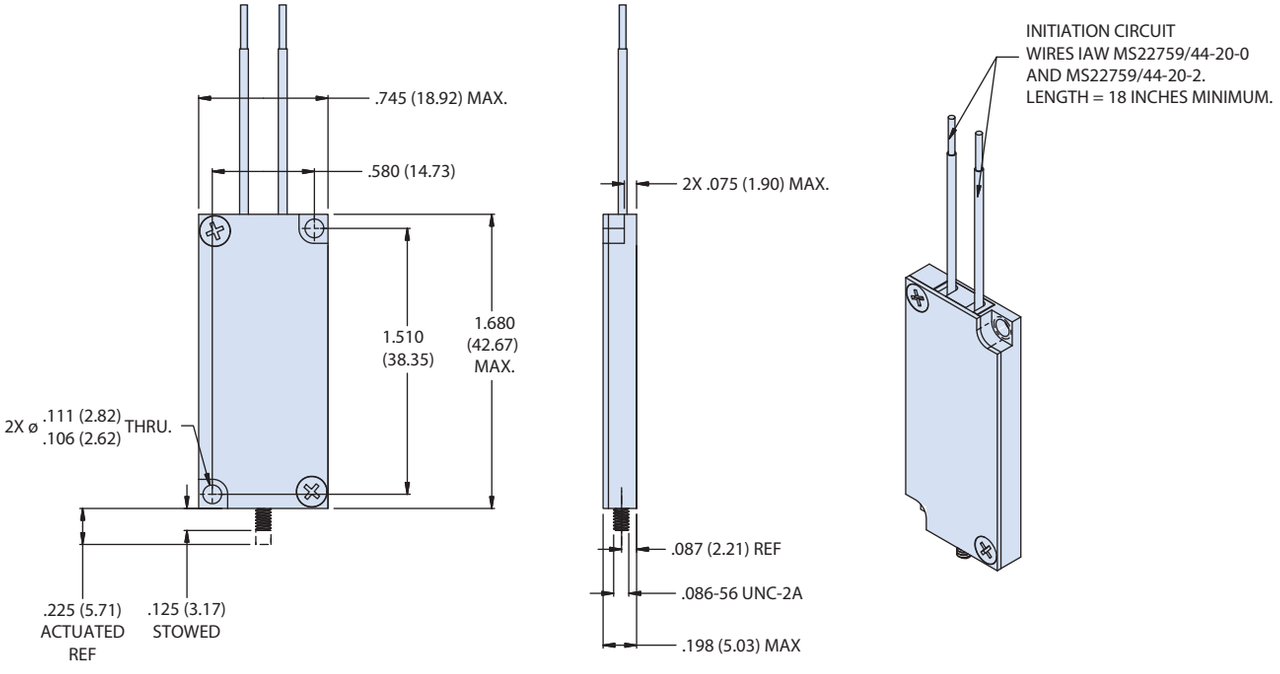
6 lb. push force
Non-redundant circuit

A

NON-REDUNDANT CIRCUIT PIN PUSHER MECHANISM, LIGHT DUTY



How To Order		
Sample Part No.	**061**	**-010**
Basic Part No.	Light-Duty Pin Pusher	
Dash No.	Non-Redundant Circuit	



NOTES

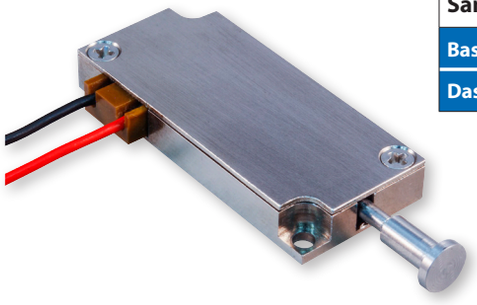
1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting.
2. Push load: 6 lbs. (26.7 N)
3. Full qualification pending
4. Reference Glenair P/N 060-711 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	15.2 grams approximate weight
Material list	IAW MSFC-STD-3029
Device features	
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

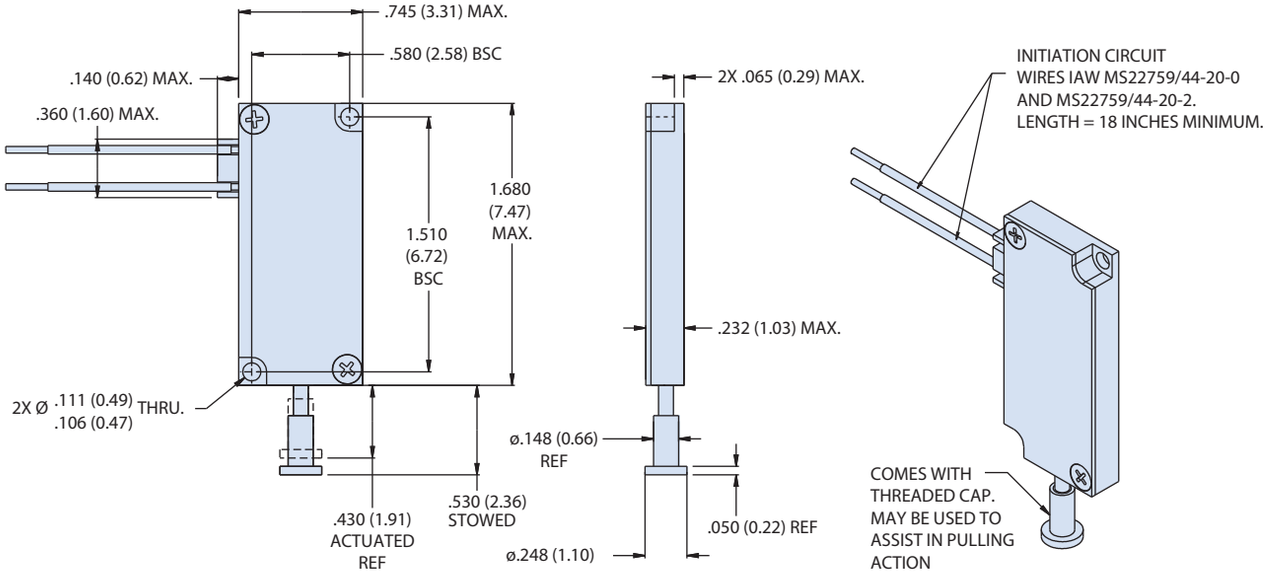
Light-duty pin pushers and pullers

18 lb. pull force
Non-redundant circuit

NON-REDUNDANT CIRCUIT PIN PULLER MECHANISM, LIGHT DUTY



How To Order		
Sample Part No.	**061**	**-009**
Basic Part No.	LIght-Duty Pin Puller	
Dash No.	Non-Redundant Circuit	



NOTES

1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting.
2. Release preload 18 lbs. (80 N)
3. Full qualification pending
4. Reference Glenair P/N 060-109 for refurbishment initiator
5. Metric threads available, consult factory for options

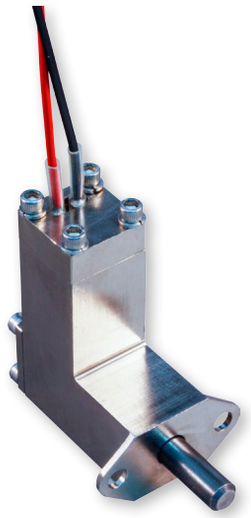
Physical characteristics	
Mass	16.2 grams nominal weight
Material list	IAW MSFC-STD-3029
Epoxy	Outgassing requirements per GSC19384
Device features	
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Scalable bolt size	Bolt size determines preload and can be scaled to accommodate a wide range of requirements
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for complete test report	

Light-duty pin pushers and pullers

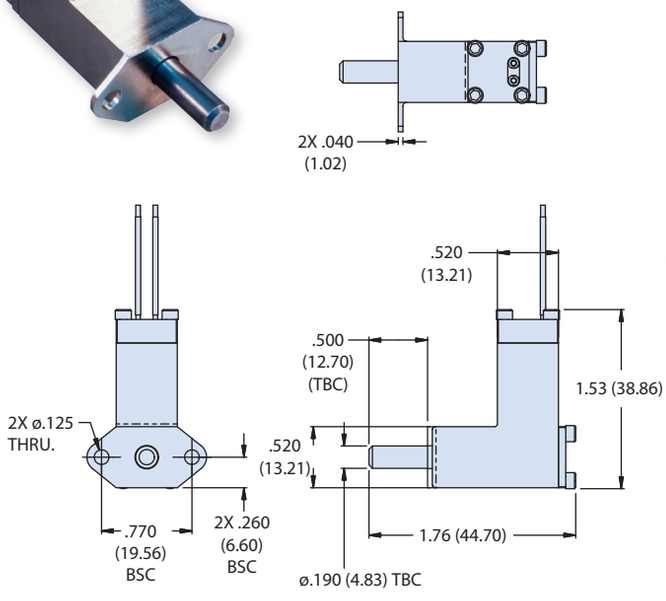
18 lb. pull force
Non-redundant circuit

A

NON-REDUNDANT CIRCUIT PIN PULLER MECHANISM, LIGHT DUTY



How To Order		
Sample Part No.	**061**	**-011**
Basic Part No.	Light-Duty Pin Puller	
Dash No.	Non-Redundant Circuit	



NOTES

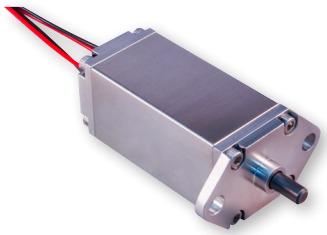
1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting.
2. Release preload: 18 lbs. (80.1 N) (TBC)
3. Full qualification pending
4. Reference Glenair P/N 060-112 for refurbishment initiator

Physical characteristics	
Mass	34.8 grams approximate weight
Material list	IAW MSFC-STD-3029
Device features	
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

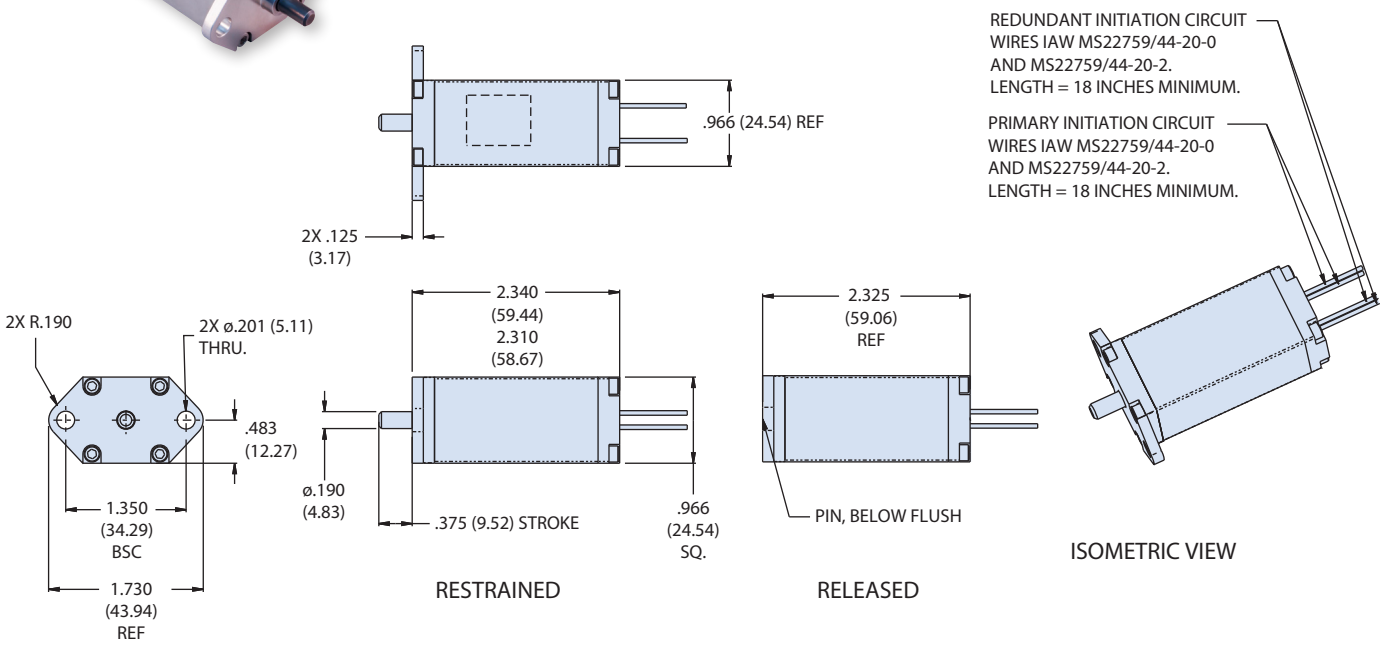
Medium-duty pin pushers and pullers

50 lb. pull force
Electrically redundant

ELECTRICALLY REDUNDANT PIN PULLER MECHANISM, MEDIUM DUTY



How To Order		
Sample Part No.	**061**	**-013**
Basic Part No.	Medium-Duty Pin Puller	
Dash No.	Redundant Circuit	



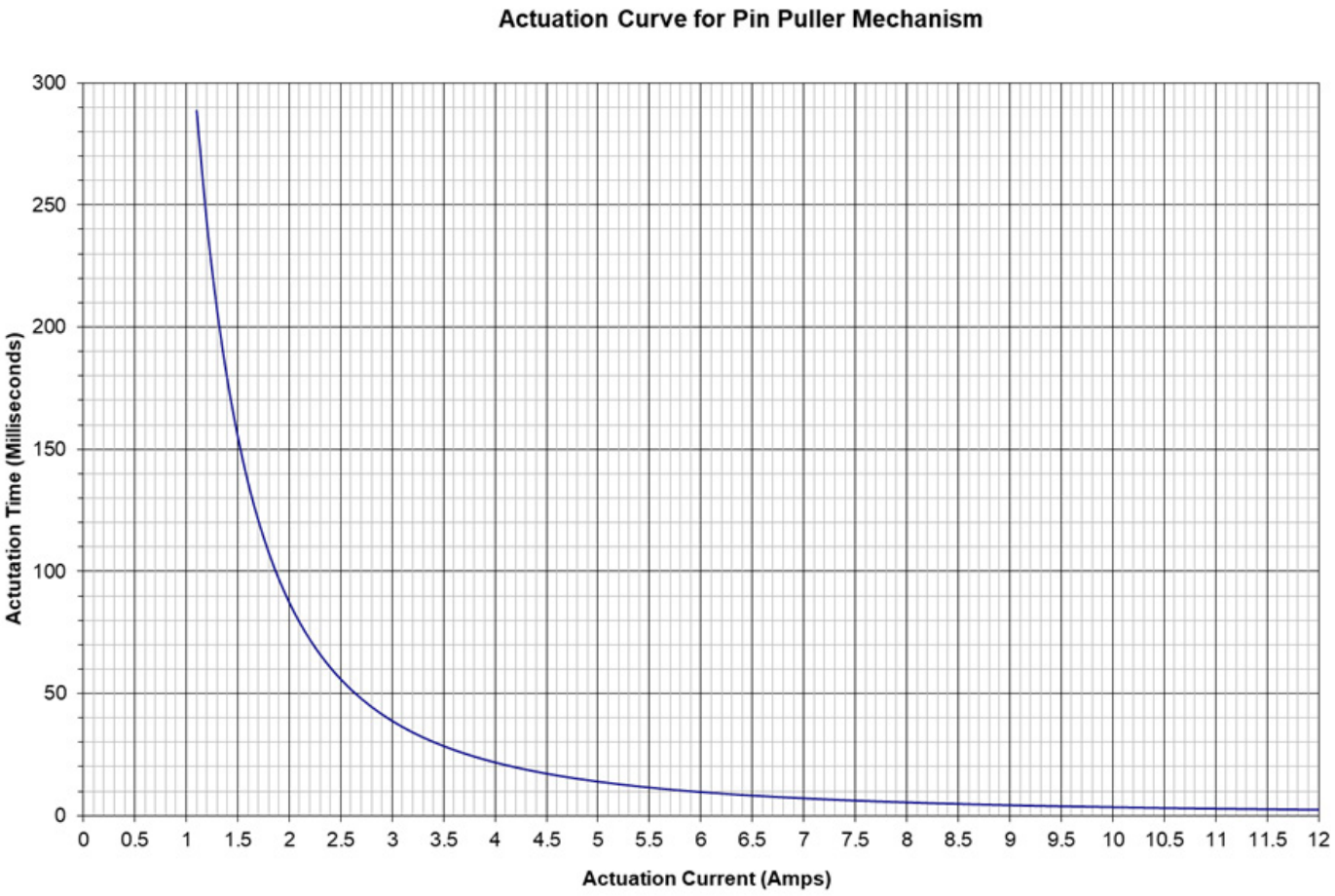
NOTES

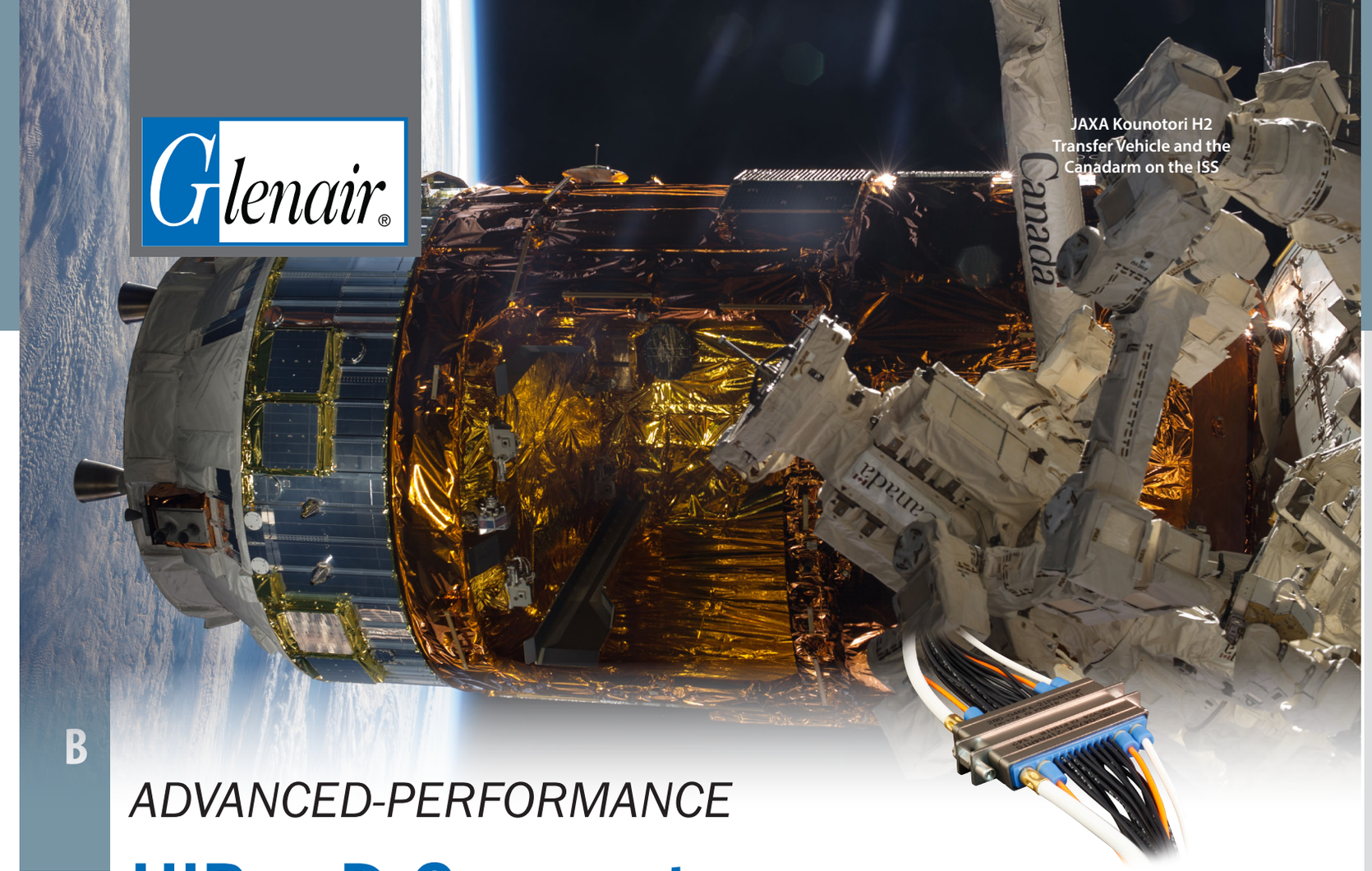
1. Unit is identified with Glenair name, CAGE code, part number, and date code, space permitting. Primary initiation circuit identified with "P" and redundant with "R".
2. Pull force: 50 lbs. (222 N)
3. Full qualification pending
4. Reference Glenair P/N 060-711 for refurbishment initiator
5. Metric threads available, consult factory for options

Physical characteristics	
Mass	145.8 grams approximate weight
Material list	IAW MSFC-STD-3029
Device features	
Redundant initiation	2 initiation points
Field refurbishable	Initiator can be replaced in less than 15 minutes by trained personnel
Packaging	External housing typically supplied with two mounting points. Custom housings and mountings available
Connectorization	Standard design supplied with wire inputs. Connectorized versions available
*Size callout based on the bolt size to be used. Metric thread also available. Consult factory for qualification test report.	

Medium-duty pin pushers and pullers

50 lb. pull force, electrically redundant





JAXA Kounotori H2 Transfer Vehicle and the Canadarm on the ISS

B

ADVANCED-PERFORMANCE

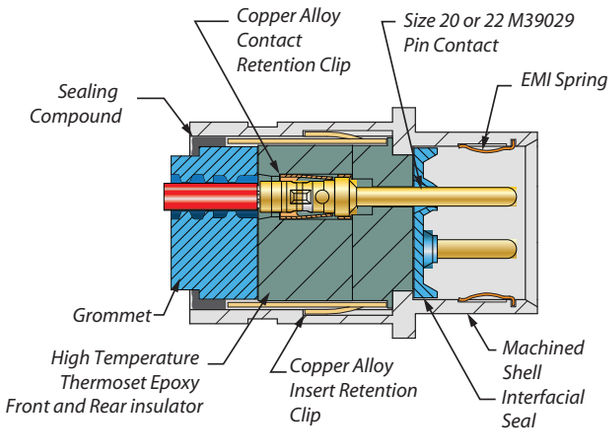
HiPer-D Connectors

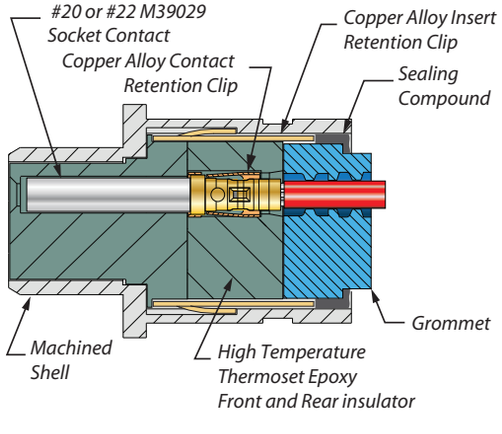
Space-grade M24308 intermateable

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 such as a one-piece machined shell, 200°C continuous operating temperature rating and enhanced, mated shell EMI/RFI protection via an integrated ground spring. Aerospace grade fluorosilicone grommets and face seals (JAXA / NASA outgassing available) provide environmental protection. The HiPer-D is intermateable, intermountable and interchangeable with standard M24308 D-Sub connectors.

- **Advanced temperature, vibration and EMC/ electrical performance**
- **11 standard and 20 combo insert arrangements**
- **High temperature epoxy insulators**
- **Watertight sealing**
- **Rugged machined one-piece shell**

STANDARD AND HIGH DENSITY HIPER-D® - CUTAWAY



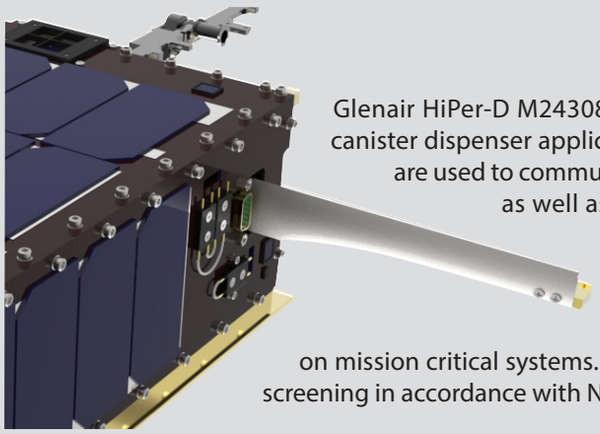


SERIES 28

HiPer-D Space Grade Connectors

Product Selection Guide

B



Glenair HiPer-D M24308 D-sub connectors are ideally suited for CubeSat or NanoSat canister dispenser applications where rack and panel or connectorized wire assemblies are used to communicate with HDRMs, pin pullers, pin pushers, door status sensors, as well as system communications and testing prior to deployment of satellite equipment. Standardized usage of M24308 connectors on hardware interfaces simplifies interconnection and communication. Glenair HiPer-D space grade M24308 D-sub connectors eliminate potential interconnect electrical problems on mission critical systems. Connectors are supplied with NASA/ESA/JAXA outgassing and screening in accordance with NASA EEE-INST-0002.

OTHER M24308 HIPER-D SOLUTIONS ALSO AVAILABLE - SEE OUR HIPER-D CATALOG

Sealed Panel Mount Technology

Combo HiPer-D Contact Arrangements

Ground Fingers for Improved EMC

Advanced Board Mount Features

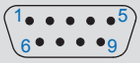
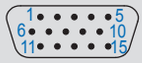
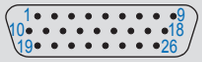
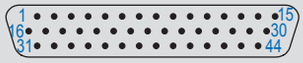
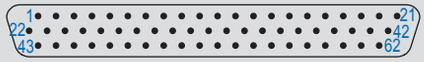
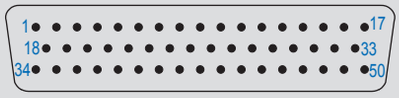
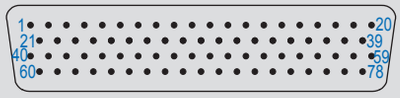
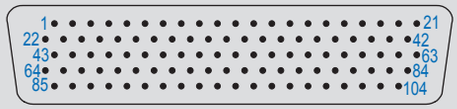
Modern EMI backshells

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

HiPer-D Space Grade Connectors

Available shell sizes and contact arrangements

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

	Standard Density	High Density
		
Arrangement	**1S9**	**1H15**
Shell Size	1	1
Contacts	9 #20	15 #22
		
Arrangement	**2s15**	**2H26**
Shell Size	2	2
Contacts	15 #20	26 #22
		
Arrangement	**3S25**	**3H44**
Shell Size	3	3
Contacts	25 #20	44 #22
		
Arrangement	**4S37**	**4H62**
Shell Size	4	4
Contacts	37 #20	62 #22
		
Arrangement	**5S50**	**5H78**
Shell Size	5	5
Contacts	50 #20	78 #22
		
Arrangement		**6H104**
Shell Size		6
Contacts		104 #22

HiPer-D Space Grade Connectors

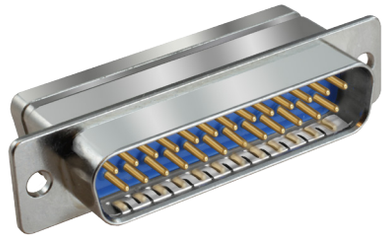
Reference and Technical Data

Description	Requirement	Procedure
Voltage Rating (DWV)	1000 VAC Sea Level	EIA-364-20
Operating Temperature	-65º C. to +200º C.	
Insulation Resistance	5000 megohms minimum	EIA-364-21
Current Rating	Size #20 7.5A, #22 5A	
Contact Resistance	**Wire Size** / **Test Current** / **Millivolt Drop** 20 / 7.5 / 55 22 / 5 / 73 24 / 3 / 45	EIA-364-06
Low Level Contact Resistance	**Wire Size** / **Max Milliohms** 20 / 9 22 / 15 24 / 20	EIA-364-23
Shell-to-Shell Resistance	2.5 milliohm max (ground spring required)	EIA-364-83
Shielding Effectiveness	**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
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	-65º C. to +200º C.	EIA-364-32
Humidity	10 cycles, 10 days, 25ºC to 65ºC	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

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

HiPer-D Space Grade Connectors

280-018P inline cable or panel mount pin connector, crimp termination

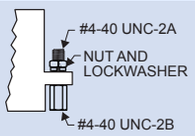
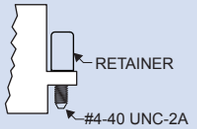
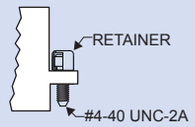
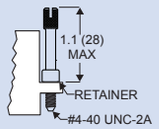
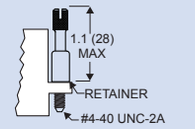


HiPer-D pin connectors for cable or panel mount feature crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged machined aluminum shell, waterproof sealing and optional ground springs for improved resistance to 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. 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

How To Order					
Sample Part Number	**280-018P**	**3S25**	**ME**	**G**	**P**
Basic Part Number	**280-018P**				
Shell Size-Contact Arrangement	See Shell Size - Contact Arrangements Table				
Shell Finish	**ME** = Electroless Nickel (RoHS) **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) **L** = Jackscrew, Hex Head, Low Profile **S** = Screwlock, Male, Hex Head, Low Profile	**P** = #4-40 Female Jackpost **K** = Jackscrew, Slot Head, Extended Length **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

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
	

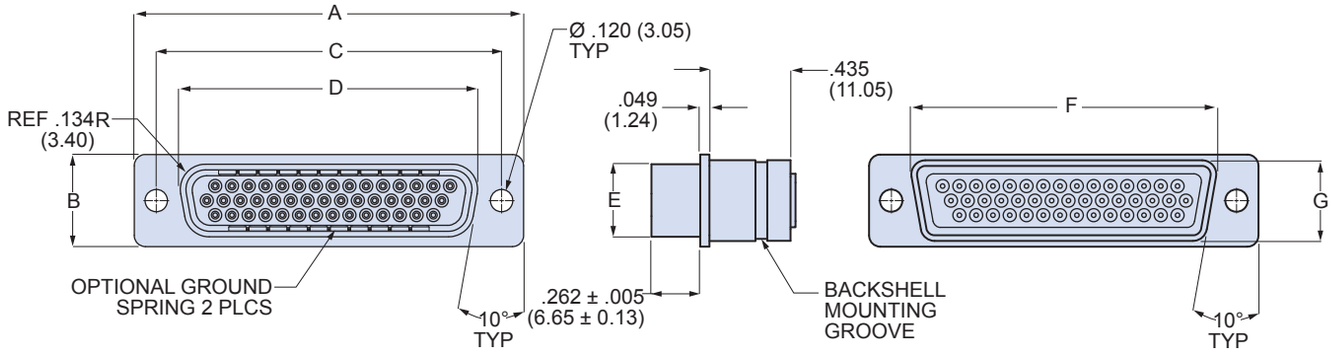
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet and Seal	Fluorosilicone rubber
EMI Spring	Copper alloy, nickel plated
Hardware	300 series stainless steel

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.

HiPer-D Space Grade Connectors

280-018P inline cable or panel mount pin connector, crimp termination

280-018P DIMENSIONS



Dimensions														
	A		B		C Basic		D		E		F Max.		G Max.	
Shell Size	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
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
6	2.729	69.32	.668	16.97	2.500	63.50	2.272	57.71	.563	14.30	2.312	58.72	.606	15.39

NOTES

1. 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.
2. For panel cutout dimensions, refer to ***Panel Cutouts and Printed Circuit Board Footprints***.
3. 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.
4. 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.
5. Additional electrical, mechanical and environmental specifications are listed in ***HiPer-D® Product Specification***.

HiPer-D Space Grade Connectors

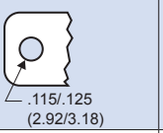
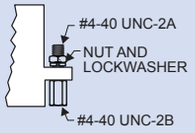
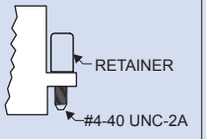
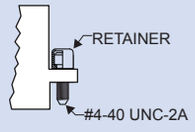
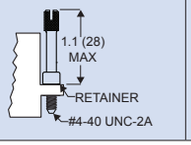
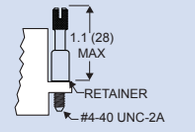
280-019S inline cable or panel mount socket connector,crimp termination

HiPer-D socket connectors for in-line cable or panel mount 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. 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

How To Order				
Sample Part Number	**280-019S**	**4H62**	**ME**	**L**
Basic Part Number	**280-019S**			
Shell Size-Contact Arrangement	See Shell Size - Contact Arrangements Table			
Shell Finish	**ME** = Electroless Nickel (RoHS) **Z2** = Gold (RoHS) **Z1** = Passivated Stainless Steel (RoHS)			
Mating Hardware	**N** = No Hardware (Through-Hole) **L** = Jackscrew, Hex Head, Low Profile **S** = Screwlock, Male, Hex Head, Low Profile		**P** = #4-40 Female Jackpost **K** = Jackscrew, Slot Head, Extended Length **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

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
	

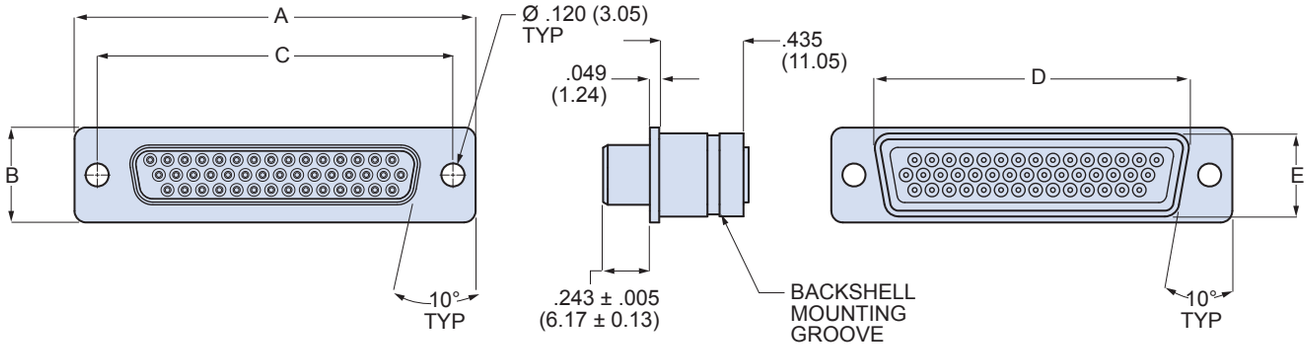
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

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.

HiPer-D Space Grade Connectors

280-019S inline cable or panel mount socket connector, crimp termination

280-019S DIMENSIONS



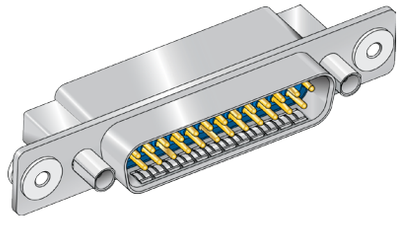
Dimensions										
	A		B		C Basic		D		E	
Shell Size	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in.	mm	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13
1	1.213	30.81	.494	12.55	.984	24.99	.769	19.53	.432	10.97
2	1.541	39.14	.494	12.55	1.312	33.32	1.093	27.76	.432	10.97
3	2.088	53.04	.494	12.55	1.852	47.04	1.635	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

1. 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.
2. For panel cutout dimensions, refer to ***Panel Cutouts and Printed Circuit Board Footprints***.
3. 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.
4. 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.
5. Additional electrical, mechanical and environmental specifications are listed in ***HiPer-D® Product Specification***.

HiPer-D Space Grade Connectors

280-030P float mount pin connector for blind mating with float bushings or guide pins, crimp termination

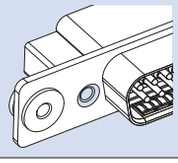
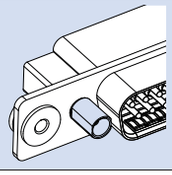
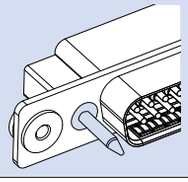


280-030P HiPer-D pin connectors feature stainless steel float bushings for blind mating. Attach to panel with #4-40 screws (not supplied with connector). Crimp, rear-releaseable size #20 or #22 contacts. Intermateable with standard M24308-type D-Subminiature connectors, the HiPer-D features a rugged 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

How To Order					
Sample Part Number	**280-030P**	**6H104**	**MT**	**N**	**N**
Basic Part Number	**280-030P**				
Shell Size-Contact Arrangement	See Shell Size - Contact Arrangements Table				
Shell Finish	**ME** = Electroless Nickel (RoHS) **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) **B** = Female Guide Bushings	**G** = Male Guide Pins			

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

Mating Hardware
N No Hardware #8-32 tapped hole

B Female Guide Bushings

G Male Guide Pins


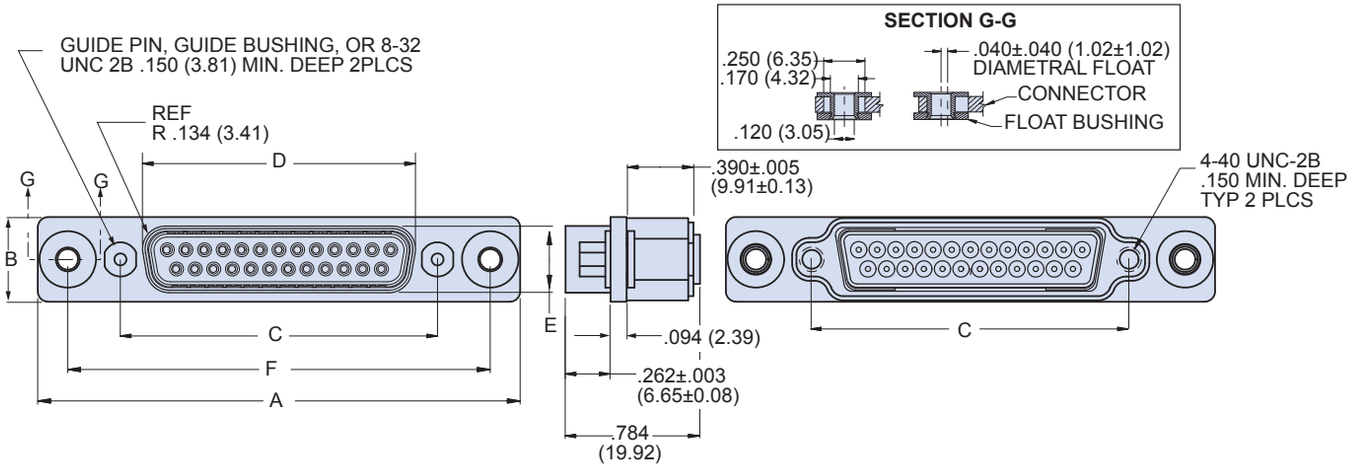
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet, Seal, O-ring	Fluorosilicone rubber
Hardware	300 series stainless steel

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.

HiPer-D Space Grade Connectors

280-030P float mount pin connector for blind mating with float bushings or guide pins, crimp termination

280-030P DIMENSIONS



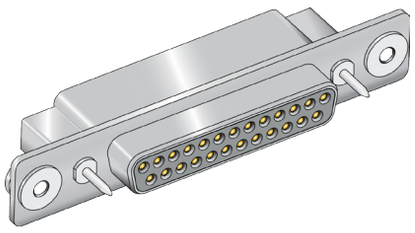
Dimnesions												
	A		B		C Basic		D		E		F Basic	
Shell Size	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	in.	mm	in ± .005	mm ± 0.13	in ± .005	mm ± 0.13	in	mm
1	1.986	50.44	.494	12.55	.984	24.99	.726	18.44	.389	9.88	1.636	41.55
2	2.314	58.78	.494	12.55	1.312	33.32	1.054	26.77	.389	9.88	1.964	49.89
3	2.854	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

1. 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.
2. For panel cutout dimensions, refer to ***Panel Cutouts and Printed Circuit Board Footprints***.
3. 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.
4. 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.
5. Additional electrical, mechanical and environmental specifications are listed in ***HiPer-D® Product Specification***.

HiPer-D Space Grade Connectors

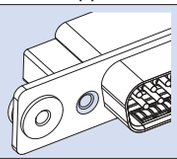
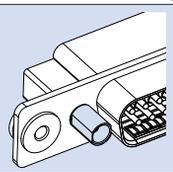
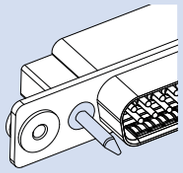
280-031S float mount socket connectors for blind mating with float mount bushings or guide pins, crimp termination



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).

How To Order				
Sample Part Number	**280-031S**	**2H26**	**Z2**	**G**
Basic Part Number	**280-031S**			
Shell Size-Contact Arrangement	See Shell Size - Contact Arrangements Table			
Shell Finish	**ME** = Electroless Nickel (RoHS) **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

Mating Hardware
N No Hardware #8-32 tapped hole

B Female Guide Bushings

G Male Guide Pins


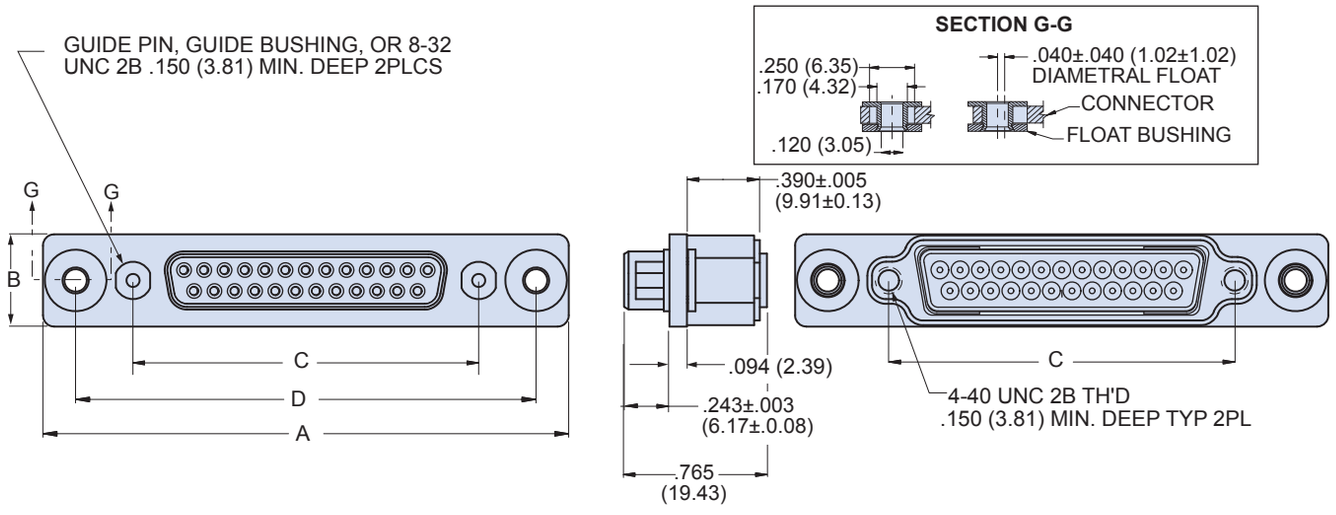
Materials and Finishes	
Shell	Aluminum alloy
Contacts	Copper alloy, 50 microin. gold plated
Insulators	Thermoset epoxy
Retention Clips	Copper alloy
Grommet	Fluorosilicone rubber
Hardware	300 series stainless steel

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.

HiPer-D Space Grade Connectors

280-031S float mount socket connectors for blind mating with float mount bushings or guide pins, crimp termination

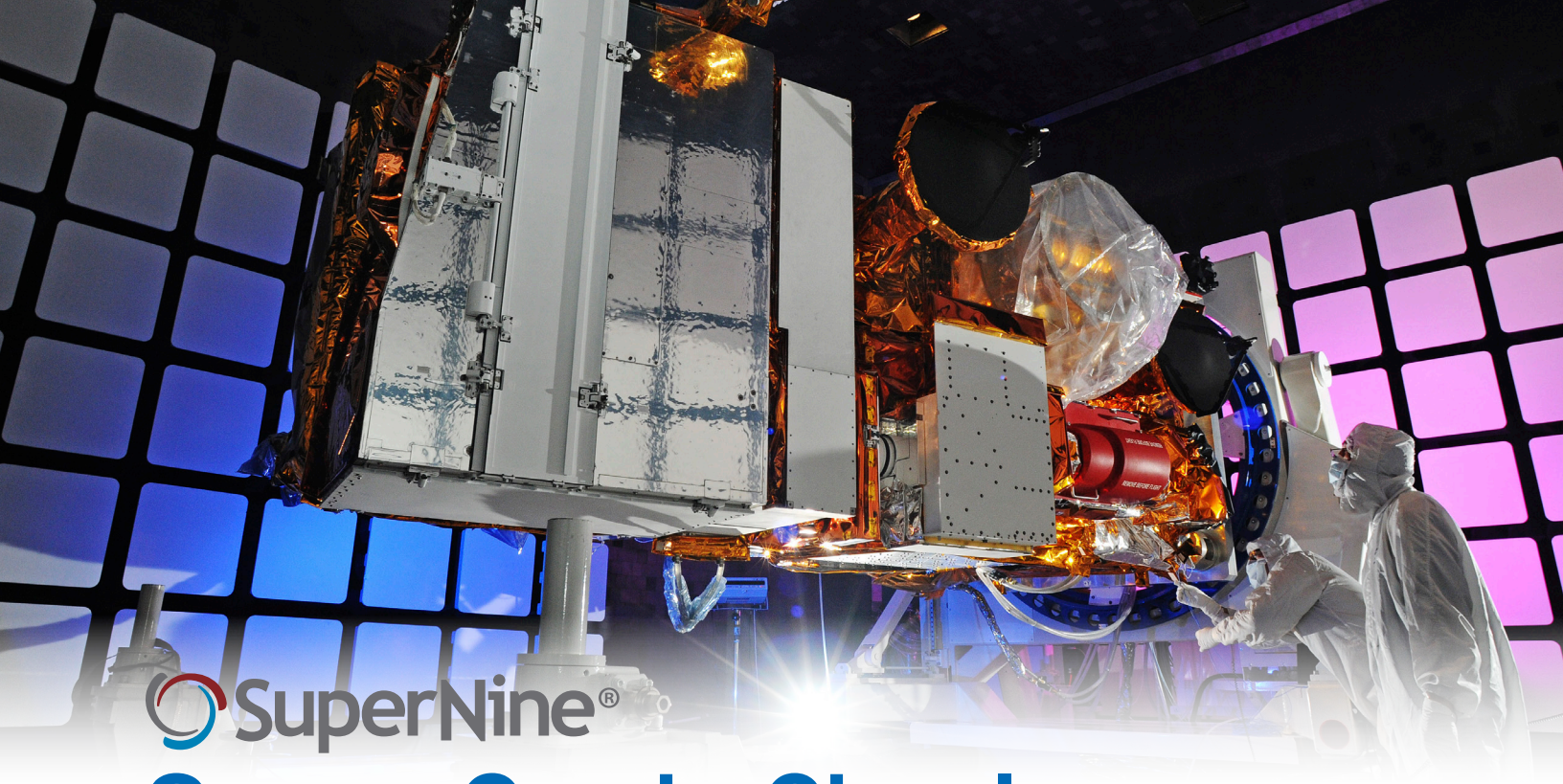
280-031S DIMENSIONS



Dimnesions								
Shell Size	A		B		C Basic		D Basic	
	in ± .015	mm ± 0.38	in ± .015	mm ± 0.38	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

1. 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.
2. For panel cutout dimensions, refer to ***Panel Cutouts and Printed Circuit Board Footprints***.
3. 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.
4. 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.
5. Additional electrical, mechanical and environmental specifications are listed in ***HiPer-D® Product Specification***.



SuperNine®

Space-Grade Circular Blind-Mate Connectors

Application: Glenair Series 253 blind-mate connectors are designed to meet applicable environmental, electrical and mechanical performance characteristics of D38999 Series III. The technology is well suited for use in commercial rack-and-panel instrumentation applications, as well as a blind-mate solution for satellite deployment, scientific research and development payloads, interstage, UAV, and munitions release and more.

- **Blind-mate, fixed and float-mount interconnects for non-ITAR commercial as well as military/defense applications**
- **Adjustable separation force (AKA assisted-release, zero extraction force) solutions**
- **Misalignment accommodation and special auxiliary sealing for trouble-free blind mating in environmental applications**
- **Available in most symmetrical MIL-STD-1560 insert arrangements with contacts sizes from #23 to #8**
- **Selected materials offer low outgassing properties and high resistance to both corrosion and stress corrosion cracking**
- **NASA outgassing bake-out process available**
- **Designed to withstand the rigors of launch and flight—including shock, vibration, thermal vacuum, acceleration, and temperature extremes**
- **Standard accessory threads and teeth per MIL-DTL-38999 accommodate a wide range of backshell accessories**
- **Crimp-removable contacts standard. Consult factory for PC tails, dual-flange standoffs, custom blind-mate configurations, and hermetically sealed options**

Current Rating	
Size Contact	Amps
23	5
22D	5
20	7.5
16	13
12	23

Unmated Test Voltages, AC RMS, 60 Hz				
Altitude (Feet)	Service Rating M	Service Rating N	Service Rating I	Service Rating II
Sea Level	1300	1000	1800	2300
50,000	550	400	600	800
70,000	350	260	400	500
100,000	200	260	200	200

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

Space-grade, blind-mate connectors
Float-mount and adjustable separation force connectors
MIL-DTL-38999 Series III type, environmental, crimp contact

CRITICAL MECHANICAL FEATURES OF BLIND-MATE AND ADJUSTABLE SEPARATION FORCE (ZEF) CONNECTORS

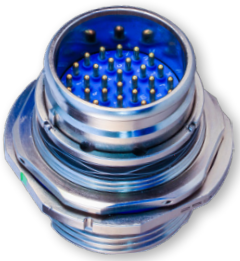
Roll-off nose: allows for the smooth disconnection of blind mate plugs and receptacles. Without this feature, connectors can catch or hang during mate and demate.

Float mounting: allows for a modicum of coplanar movement of the receptacle during rack-and-panel and other blind mate applications, preventing both contact and shell damage.

Misalignment accommodation: Additional radial, axial, and angular misalignment during mating is accounted for in the receptacle design with integral wave springs.

Sealing: Misalignment accommodation makes environmental sealing difficult in blind-mate connectors. The problem is solved with auxiliary external seals.

EMI shielding: Glenair incorporates ground springs in receptacle connectors as well as grounding fingers in special coupling nut-equipped plugs (253-018-G6 feed-thru shown) to optimize 360° shell-to-shell continuity.



Assisted separation force: Glenair supplies two styles of spring-loaded blind-mate connectors. **Adjustable kick-off styles** feature spring-loaded posts on the plug and an adjustment ring on the receptacle used to calibrate separation force. A second style uses wave springs on the shell body.

Available non-ITAR environmental blind-mate and adjustable separation force solutions		
Basic Part No.	**Description**	**Mates With**
253-014	Fixed jam-nut mount plug with roll-on/roll-off nose and Accessory threads	253-015
253-015	Floating jam-nut mount receptacle with misalignment accommodation and optional sealing	253-014
253-016	Fixed wall mount plug with spring assist (zero separation force)	253-017
253-017	Floating wall mount receptacle with adjustable separation force and misalignment accommodation	253-016
253-018-07	Blind-mate feed-thru, jam-nut mount plug with B-side D38999 type receptacle mating interface and assisted kick-off (spring force)	253-019
253-018-G6	Blind-mate in-line feed-thru with B-side D38999 type plug mating interface and assisted kick-off (spring force)	253-019
253-019	Floating jam-nut mount receptacle with misalignment accommodation and optional sealing	253-018
253-031	Blind-mate jam-nut mount plug with kick-off spring and accessory threads	253-032
253-032	Floating jam-nut mount receptacle with misalignment accommodation	253-031
253-033	Float mount feed-thru, jam nut mount receptacle to 38999 type Series III plug mating interface	253-019
253-025	Locking circuit and test mate connector	253-016

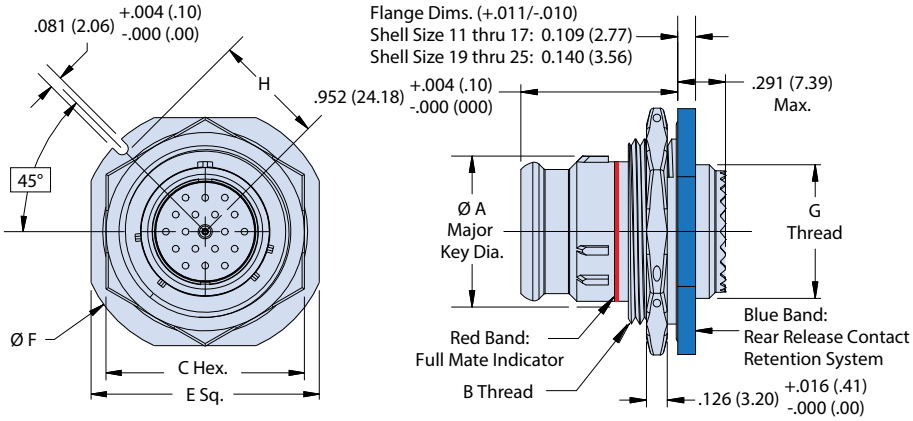
Space-grade, blind-mate connectors
Plug and receptacle pair, jam-nut mount
with misalignment accommodation and optional sealing

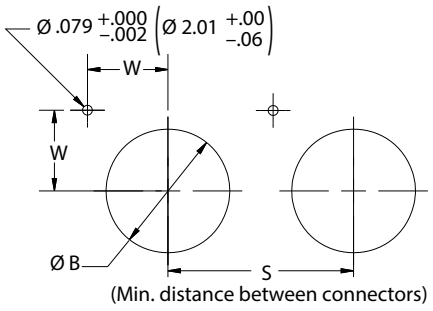
SuperNine®

Part Number Development								
Sample Part Number	**253-014**	**-07**	**ME**	**25-35**	**P**	**N**	**NS**	**H**
Series / Basic Part No.	**253** = Blind-mate **-014** = Plug (fixed mount) **-015** = Receptacle (float mount)							
Connector Style	**07** = Jam nut mount; contact factory for wall mount receptacles							
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated							
Shell Size - Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details							
Contact Type	**P** = Pin, crimp removable **S** = Socket, crimp removable **A** = Pin insert, less contacts **B** = Socket insert, less contacts							
Alternate Polarization	**A, B, C, D, E, N** = Normal (Polarization for intermateability with 253-014 is per MIL-DTL-38999 Series I)							
Non Sealing	**NS** = Non-Sealing (omit for external elastomer seal version, applies to 253-015 only)							
Jam-Nut Type	**H** = Hex **S** = Spanner with wire holes (applies to 015 only)							

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-014 FIXED JAM-NUT MOUNT PLUG WITH ROLL-ON/ROLL-OFF NOSE AND ACCESSORY THREADS





253-014 Dimensions							
Shell Size	A Max Dia.	Thread B Class 2A	C Max	E (±.016)	F Max Dia.	G Thread Class 2A	H (+0/-.008)
11	.673 (17.09)	.8125-20 UNEF	1.016 (25.81)	1.250 (31.75)	1.386 (35.20)	.5625-24	.604 (15.34)
13	.798 (20.27)	1.0000-20 UNEF	1.181 (30.00)	1.375 (34.92)	1.511 (38.38)	.6875-24	.666 (16.92)
15	.923 (23.44)	1.1250-18 UNEF	1.300 (33.02)	1.500 (38.10)	1.636 (41.55)	.8125-20	.729 (18.52)
17	1.048 (26.62)	1.2500-18 UNEF	1.457 (37.01)	1.625 (41.28)	1.761 (44.73)	.9375-20	.791 (20.09)
19	1.173 (29.79)	1.3750-18 UNEF	1.575 (40.00)	1.812 (46.02)	1.949 (49.50)	1.0625-18	.893 (22.68)
21	1.298 (32.97)	1.5000-18 UNEF	1.693 (43.00)	1.938 (49.23)	2.073 (52.65)	1.1875-18	.955 (24.26)
23	1.423 (36.14)	1.6250-18 UNEF	1.880 (47.75)	2.062 (52.37)	2.200 (55.88)	1.3125-18	1.017 (25.83)
25	1.548 (39.32)	1.7500-18 UNS	2.016 (51.21)	2.187 (55.55)	2.323 (59.00)	1.4375-18	1.096 (27.84)

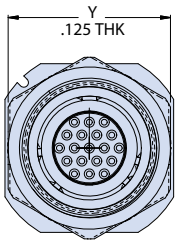
253-014 Recommended Panel Cutout Dimensions			
Shell Size	W	Diameter B ±.004	S
11	.460 (11.68)	0.821 (20.85)	1.282 (32.56)
13	.504 (12.80)	1.007 (25.58)	1.417 (35.99)
15	.549 (13.94)	1.134 (28.80)	1.559 (39.60)
17	.593 (15.06)	1.259 (31.98)	1.705 (43.31)
19	.665 (16.89)	1.384 (35.15)	1.850 (46.99)
21	.709 (18.01)	1.507 (38.28)	1.992 (50.60)
23	.753 (19.13)	1.634 (41.50)	2.134 (54.20)
25	.797 (20.24)	1.759 (44.68)	2.350 (59.69)

NOTES:

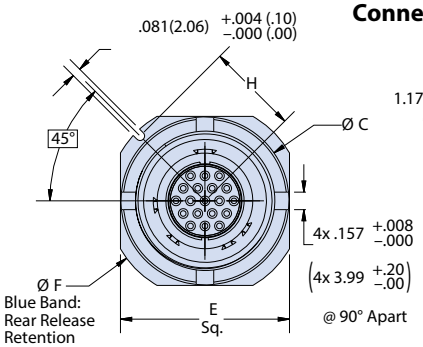
1. Glenair 253-014 is designed to mate with 253-015 with same insert arrangement.
2. Stainless steel locating pin to be shipped with connector
3. Misalignment capabilities are possible with 253-014, when mated to 253-015.
4. Contact manufacturer for outgassing options.
5. Material/finish
   - Shell, jam-nut: see P/N development, finish
   - Insulator: high grade rigid dielectric/N.A.
   - Seals: fluorosilicone blend/N.A.
   - contacts: copper alloy/gold plated

Space-grade blind-mate connectors
Plug and receptacle pair, jam-nut mount
with misalignment accommodation and optional sealing

253-015 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION AND OPTIONAL SEALING

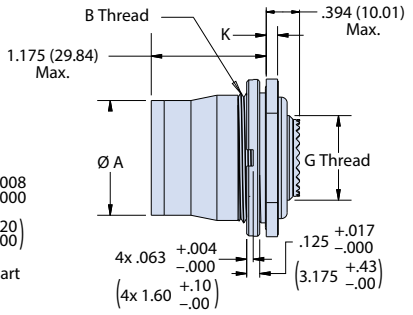


Hex Jam-nut



Spanner Jam-nut

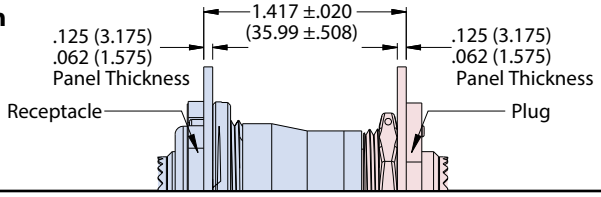
Connector Shown Includes Sealing Option

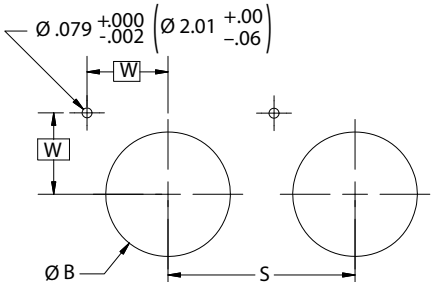


253-015 Dimensions									
Shell Size	A Max Dia.	Thread B Class 2A	C Max.	Y Hex	E ±.016(.41)	F Max Dia.	G Thd Class 2A	K +.011/.010 (+.28/.25)	H +0/-.008 (+0/-.20)
11	.853 (21.67)	1.0000-20 UNEF	1.264 (32.11)	1.181 (30.00)	1.266 (32.16)	1.500 (38.10)	.5625-24	.109 (2.77)	.666 (16.92)
13	.978 (24.84)	1.1250-18 UNEF	1.388 (35.26)	1.300 (33.02)	1.391 (35.33)	1.641 (41.68)	.6875-24	.109 (2.77)	.729 (18.52)
15	1.103 (28.02)	1.2500-18 UNEF	1.512 (38.40)	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.8125-20	.109 (2.77)	.791 (20.09)
17	1.228 (31.19)	1.3750-18 UNEF	1.638 (41.61)	1.575 (40.00)	1.641 (41.68)	1.938 (49.23)	.9375-20	.109 (2.77)	.893 (22.68)
19	1.353 (34.37)	1.5000-18 UNEF	1.823 (46.30)	1.693 (43.00)	1.828 (46.43)	2.062 (52.37)	1.0625-18	.140 (3.56)	.955 (24.26)
21	1.478 (37.54)	1.6250-18 UNEF	1.953 (49.61)	1.880 (47.75)	1.954 (49.63)	2.188 (55.58)	1.1875-18	.140 (3.56)	1.017 (25.83)
23	1.603 (40.72)	1.7500-18 UNS	2.075 (52.71)	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.3125-18	.140 (3.56)	1.080 (27.43)
25	1.728 (43.89)	1.8750-16 UNS	2.122 (53.90)	2.125 (53.97)	2.128 (54.05)	2.327 (59.11)	1.4375-18	.140 (3.56)	1.086 (27.58)

Distance between mated flanges.

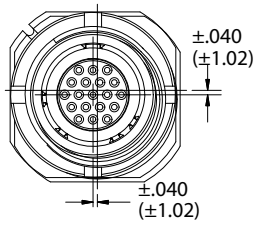
For reference only
(not deliverable)



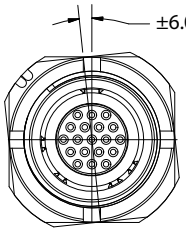


253-015 Misalignment Capabilities

Axial Misalignment

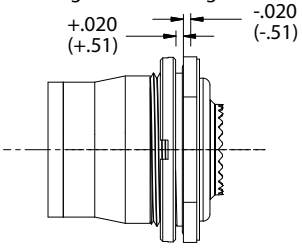


Angular Misalignment



Reference Only (Not Deliverable)

Longitudinal Misalignment



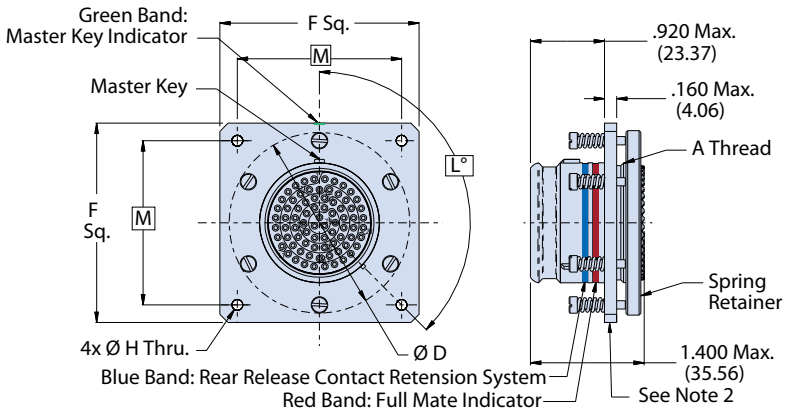
253-015 Recommended Panel Cutout Dimensions			
Shell Size	W	B Dia. ±.004 (.10)	S
11	.504 (12.80)	1.007 (25.58)	1.282 (32.56)
13	.549 (13.94)	1.134 (28.80)	1.417 (35.99)
15	.593 (15.06)	1.259 (31.98)	1.559 (39.60)
17	.665 (16.89)	1.384 (35.15)	1.705 (43.31)
19	.709 (18.01)	1.507 (38.28)	1.850 (46.99)
21	.753 (19.13)	1.634 (41.50)	1.992 (50.60)
23	.797 (20.24)	1.759 (44.68)	2.134 (54.20)
25	.842 (21.39)	1.884 (47.85)	2.262 (57.45)

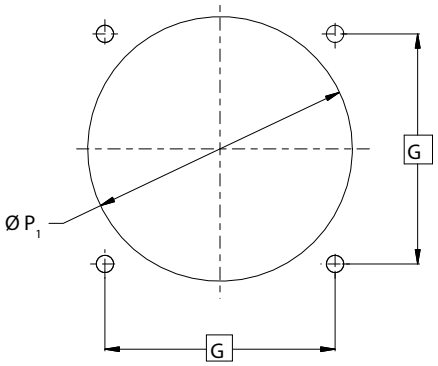
Space-grade, blind mate connectors
Wall mount assisted separation force (ZEF)
plug and receptacle pair with misalignment accommodation

Part Number Development								
Sample Part Number	**253-016**	**00**	**ME**	**21–35**	**S**	**N**	**MS**	**A**
Series / Basic Part No.	**253** = Blind-mate connector with adjustable assisted separation force **–016** = Plug (fixed mount) **–017** = Receptacle (float mount)							
Connector Style	**00** = Wall mount							
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated							
Shell Size-Insert Arrangement	Per MIL-STD-1560							
Contact Type	**P** = Pin, crimp removable **S** = Socket, crimp removable							
Alternate Polarization	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L°							
Contact Type	**MS** = Military specification							
Adjustment Ring Material	(253-017 receptacle only) **A** = Aluminum **C** = Corrosion-resistant steel							

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-016 FIXED WALL MOUNT PLUG WITH SPRING ASSIST (ZERO SEPARATION FORCE)



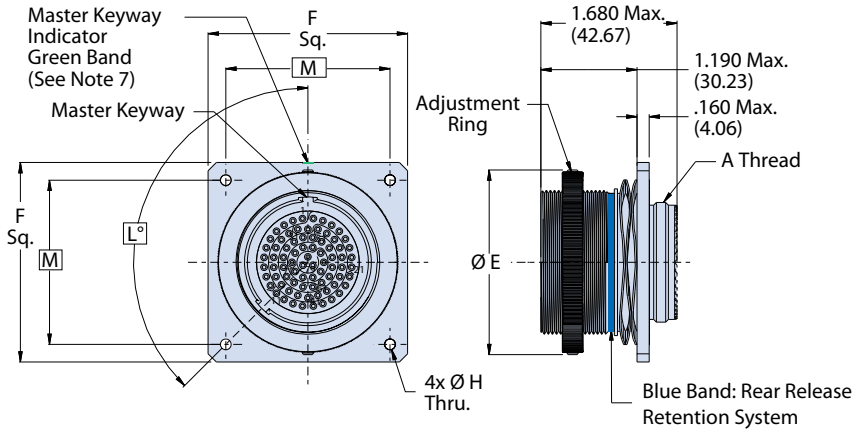


Recommended Panel Cut-out

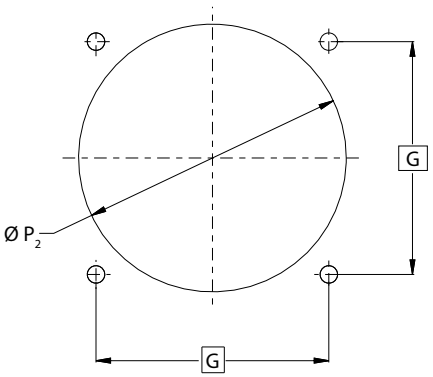
Dimensions for 253-016 and 253-017									
Shell Size	F Flange ±.010 (±.25)	M Square	Ø H ±.005 (±.13)	Ø D Max.	Ø E Max.	A Thread	Ø P_1 ±.005 (±.13)	Ø P_2 ±.005 (±.13)	G Square
9	1.430(36.32)	1.000(25.40)	.128(3.25)	1.250(31.75)	1.300 (33.02)	M12 X 1.0-6g-0.100R	1.300(33.02)	1.330 (33.78)	1.150 (29.21)
11	1.555(39.50)	1.200(30.48)	.128(3.25)	1.375(34.93)	1.425 (36.20)	M15 X 1.0-6g-0.100R	1.425(36.20)	1.455 (36.96)	1.200 (30.48)
13	1.680(42.67)	1.250(31.75)	.128(3.25)	1.500(38.10)	1.550 (39.37)	M18 X 1.0-6g-0.100R	1.550(39.37)	1.580 (40.13)	1.250 (31.75)
15	1.805(45.85)	1.375(34.93)	.128(3.25)	1.625(41.28)	1.675 (42.55)	M22 X 1.0-6g-0.100R	1.675(42.55)	1.705 (43.31)	1.375 (34.92)
17	1.930(49.02)	1.500(38.10)	.128(3.25)	1.750(44.45)	1.800 (45.72)	M25 X 1.0-6g-0.100R	1.800(45.72)	1.830 (46.48)	1.500 (38.10)
19	2.055(52.20)	1.625(41.28)	.128(3.25)	1.875(47.63)	1.925 (48.90)	M28 X 1.0-6g-0.100R	1.925(48.90)	1.955 (49.66)	1.625 (41.28)
21	2.180(55.37)	1.750(44.45)	.128(3.25)	2.000(50.80)	2.050 (52.07)	M31 X 1.0-6g-0.100R	2.050(52.07)	2.080 (52.83)	1.750 (44.45)
23	2.305(58.55)	1.875(47.63)	.154(3.91)	2.125(53.98)	2.175 (55.25)	M34 X 1.0-6g-0.100R	2.175(55.25)	2.205 (56.01)	1.875 (47.63)
25	2.430(61.72)	2.000(50.80)	.150(3.81)	2.250(57.15)	2.300 (58.42)	M37 X 1.0-6g-0.100R	2.300(58.42)	2.330 (59.18)	2.000 (50.80)

Space-grade, blind-mate connectors
Wall mount assisted separation force (ZEF)
plug and receptacle pair with misalignment accommodation

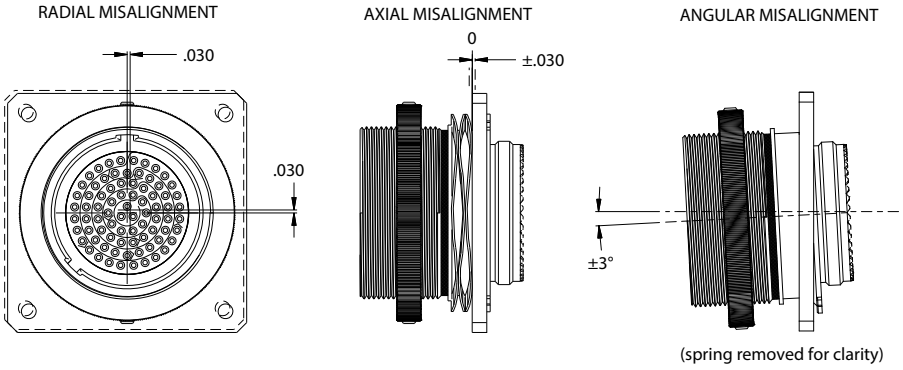
253-017 FLOATING WALL MOUNT RECEPTACLE WITH ADJUSTABLE SEPARATION FORCE AND MISALIGNMENT ACCOMMODATION



Recommended Panel Cut Out

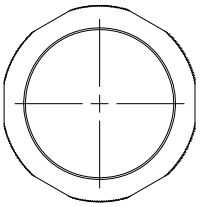


253-017 Misalignment Capabilities

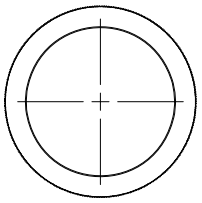


Adjustment Ring Geometry and Material Options

Contact manufacturer for other options



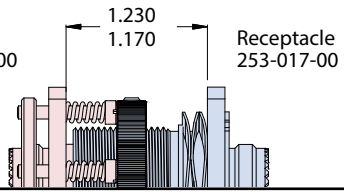
Cres (With Wrench Flats)



Al Alloy

Distance between mated flanges.

For reference only (not deliverable)



NOTES:

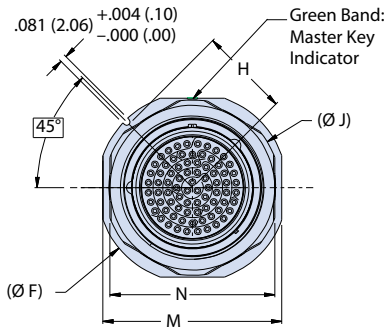
1. 253-017 mates with 253-016 fixed series.
2. Distance between mated mounting flanges: 1.170/1.230. Consult manufacturer other distance between mounting flanges is required
3. Separation force is adjustable ± 5 lbs when mated with 253-016 and 253-017 pairs have adjustable separation force of ±5 lbs
4. See Space-Grade guidelines material, in this section, for outgassing/screening options available
5. Spares: pin or socket contacts IAW AS39029 or per Glenair part number if controlled force contacts
6. Contact factory for PC tail versions
7. Material/finish
   - Shell (016 and 017), ring (017), retainer ring (016): see P/N development, finish
   - Wave spring(017), springs and spring retainer (016): CRES/ passivated
   - Insulators: high grade rigid dielectric/N.A.
   - Seals: fluorosilicone blend/N.A.

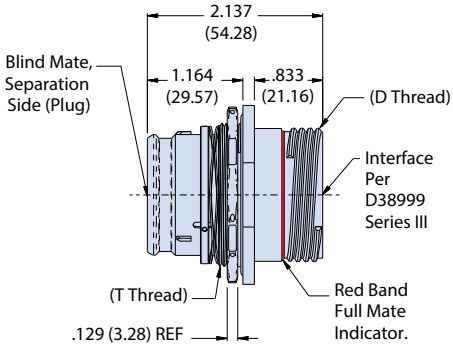
Space-grade, blind-mate connectors
Bulkhead feed-thrus with assisted kick-off
and standard triple-start plug and receptacle mating interfaces

Part Number Development						
Sample Part Number	**253-018**	**-07**	**ME**	**25-35**	**PP**	**N**
Series / Basic Part No.	**253-018** = Blind-mate feed-thru					
Connector Style	**-07** = Jam-nut mount, feed-thru plug (fixed) with rear D38999 type receptacle interface **-G6** = In-line plug with rear D38999 type plug interface and EMI spring					
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**PP** = Pin on both sides **BSDP** = Blind-mate side socket - D38999 side pin **SS** = Socket on both sides **BPDS** = Blind-mate side pin - D38999 side socket					
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L°. G6 only Refers to blind mate side. Plug/Receptacle side per MIL-DTL-38999					

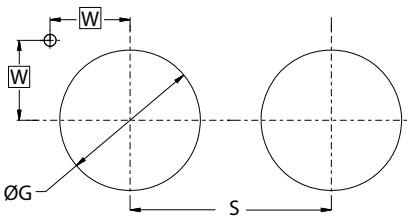
***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-018-07 BLIND-MATE FEED-THRU, JAM-NUT MOUNT PLUG WITH B-SIDE D38999 TYPE RECEPTACLE MATING INTERFACE AND ASSISTED KICK-OFF (SPRING FORCE)





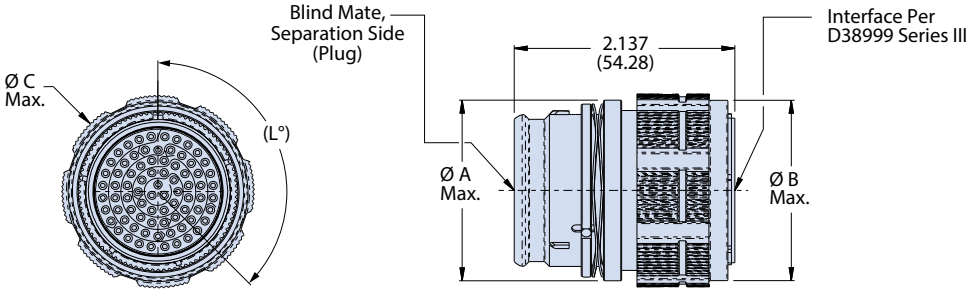
Dimensions							
Shell Size	**F Flange**	**H (End of Slot) [+0/-.008 (-.20)]**	**Ø J, Jam Nut**	**N, Jam Nut Flat**	**M, Flange Flats ±.010 (±.25)**	**T Thread Class 2A**	**D Thread 0.1P-0.3L-TS-2**
13	1.515 (38.48)	.666 (16.92)	1.375 (34.93)	1.175 (29.85)	1.430 (36.32)	1.000-20 UNEF	0.875 (22.23)
15	1.636 (41.55)	.729 (18.52)	1.500 (38.10)	1.300 (33.02)	1.500 (38.10)	1.125-18 UNEF	1.000 (25.40)
21	2.065 (52.45)	.955 (24.26)	1.875 (47.63)	1.688 (42.88)	1.930 (49.02)	1.500-18 UNEF	1.375 (34.92)
23	2.200 (55.88)	1.017 (25.83)	2.063 (52.40)	1.875 (47.63)	2.060 (52.32)	1.625-18 UNEF	1.500 (38.10)
25	2.316 (58.83)	1.096 (27.84)	2.141 (54.38)	2.010 (51.05)	2.180 (55.37)	1.750-18 UNS	1.625 (41.28)



Panel Cut-Out			
Shell Size	**Ø G, Thru Hole ±.004**	**W (Basic)**	**S**
13	1.009 (25.63)	.504 (12.80)	1.460 (37.08)
15	1.134 (28.80)	.549 (13.94)	1.545 (39.24)
21	1.509 (38.33)	.709 (18.01)	1.995 (50.67)
23	1.634 (41.50)	.753 (19.13)	2.120 (53.85)
25	1.759 (44.68)	.809 (20.55)	2.315 (58.80)

Space-grade, blind mate connectors
Feed-thru plug, jam-nut mount or in-line
IAW MIL-DTL-38999 Series III

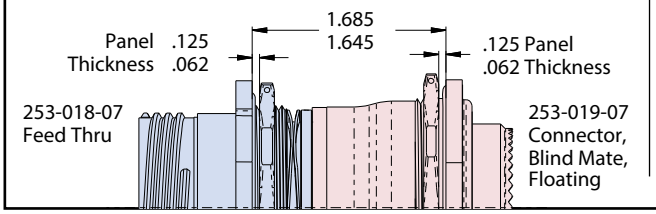
253-018-G6 BLIND-MATE IN-LINE PLUG WITH B-SIDE D38999 TYPE PLUG MATING INTERFACE AND ASSISTED KICK-OFF (SPRING FORCE)



Dimensions for 253-018-G6 Plug			
Shell Size	Ø A Max	Ø B Max.	Ø C Max
13	1.020 (25.91)	1.025 (26.03)	1.175 (29.85)
15	1.145 (29.08)	1.155 (29.34)	1.295 (32.89)
21	1.520 (38.61)	1.525 (38.73)	1.660 (42.16)
23	1.645 (41.78)	1.645 (41.78)	1.765 (44.83)
25	1.770 (44.96)	1.770 (44.96)	1.890 (48.01)

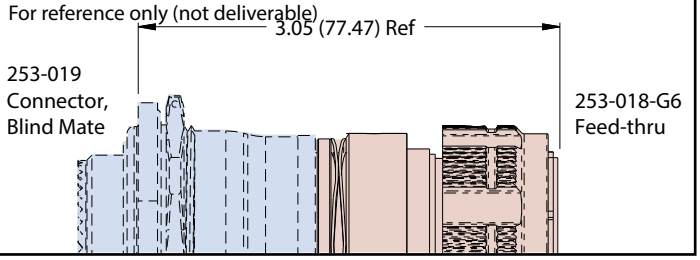
Distance between mated flanges.

For reference only (not deliverable)



Distance between mated connectors.

For reference only (not deliverable)



NOTES:

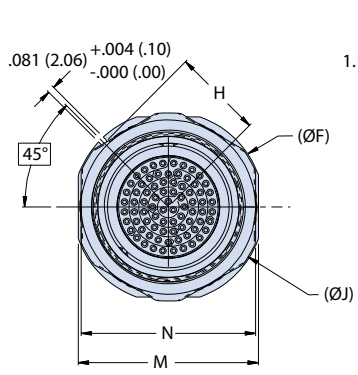
1. Mates with 253-019 and D38999 series III connectors with same insert arrangement and polarization
2. Distance between mated mounting flanges: 1.685/1.645. Consult manufacturer if other distance between mated mounting flanges is required
3. Misalignment capabilities are possible with mated pair reference Glenair connector 253-019.
4. See Space-Grade guidelines material, in this section, for outgassing/screening options available
5. Stainless steel locating pin (Ø.079) shipped with each -07 jam-nut receptacle connector
6. For feed-thru connector configurations that are either pin/pin or socket/socket, the position identification/ marking on the D38999 side of the connector will be as shown in MIL-STD-1560. The blind mate separation side will be the reverse identification marking
7. Blind mate side mates with 253-019 with reverse silkscreen marking for contact type PP (pin on both sides) or SS (socket on both sides)
8. Kick-off spring is not intended to offset all of the contact retention force for each insert arrangement
9. Material/finish
   - Shell, jam-nut coupling nut: see part number development, finish
   - Spring: CRES/passivated
   - Insulators: high grade rigid dielectric/N.A.
   - O-ring: fluorosilicone blend
   - Contacts: copper alloy/gold plated

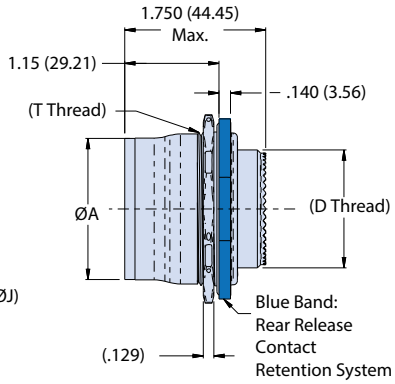
Space-grade, blind mate connectors
Floating jam-nut mount receptacle
for use with 253-018 bulkhead feed-thru

Part Number Development						
Sample Part Number	**253-019**	**-07**	**ME**	**25-35**	**S**	**N**
Series / Basic Part No.	**253-019** = Blind-mate receptacle for use with 253-018 bulkhead feed-thru					
Connector Mounting	**07** = Jam-nut mount (float mount), receptacle **007** = Jam-nut mount (float mount), receptacle; reverse silkscreen marking					
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details					
Contact Type	**S** = Socket, crimp removable **P** = Pin, crimp removable					
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L°. G6 only Refers to blind mate side. Plug/Receptacle side per MIL-DTL-38999					

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-019 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION AND OPTIONAL SEALING: MATES WITH 253-018 BULKHEAD FEED-THRU





Dimensions for 253-019-07 Jam Nut Receptacle								
Shell Size	**F Flange**	**H (End of Slot) 0.0/-.008(0.0/-.20)**	**Ø J Jam Nut**	**N, Jam Nut Flat ±.010 (±.25)**	**M, Flange Flats ±.010 (±.25)**	**T Thread Class 2A**	**D Thread Class 2A**	**Ø A ±.010 (±.25)**
13	1.640 (41.66)	0.729 (18.52)	1.500 (38.10)	1.300 (33.02)	1.390 (35.31)	1.125-18 UNEF	.6875-24	.970 (24.64)
15	1.750 (44.45)	0.791 (20.09)	1.625 (41.28)	1.450 (36.83)	1.515 (38.48)	1.250-18 UNEF	.8125-20	1.105 (28.07)
21	2.180 (55.37)	1.017 (25.83)	2.063 (52.40)	1.875 (47.63)	1.955 (49.66)	1.625-18 UNEF	1.1875-18	1.475 (37.47)
23	2.315 (58.80)	1.076 (27.33)	2.141 (54.38)	2.010 (51.05)	2.080 (52.83)	1.750-18 UNS	1.3125-18	1.595 (40.51)
25	2.330 (59.18)	1.100 (27.94)	2.300 (58.42)	2.125 (53.98)	2.195 (55.75)	1.875-16 UN	1.4375-18	1.720 (43.69)

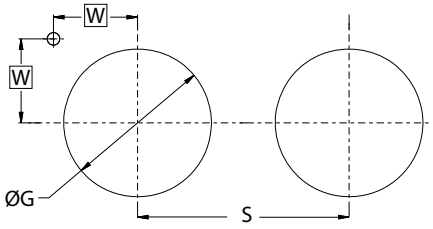
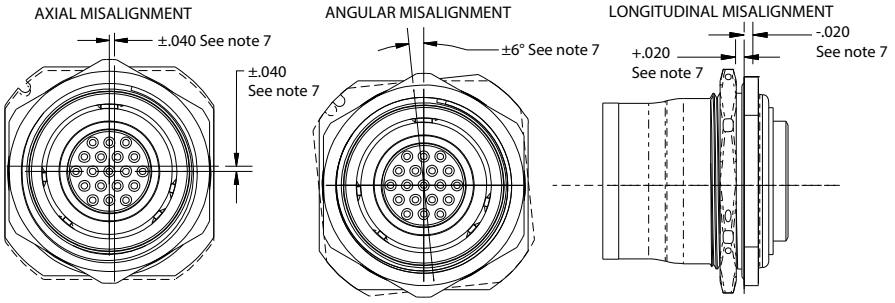


Table IV 253-019-07 Panel Cut-Out		
Shell Size	**Ø G, Thru-Hole ±.004**	**W (Basic)**
13	1.134 (28.80)	.549 (13.94)
15	1.259 (31.98)	.593 (15.06)
21	1.634 (41.50)	.753 (19.13)
23	1.759 (44.68)	.797 (20.24)
25	1.884 (47.85)	.810 (20.57)

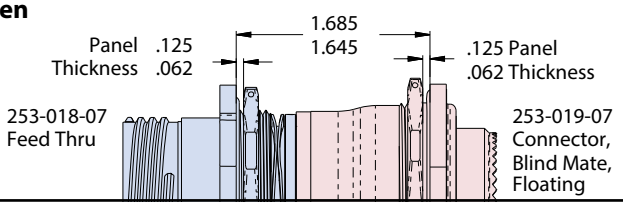
Space-grade, blind mate connectors
Floating jam-nut mount receptacle
for use with 253-018 bulkhead feed-thru

253-019 Misalignment Capabilities



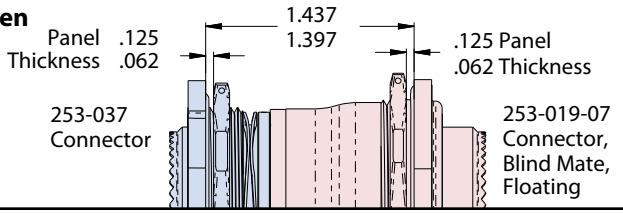
Distance between mated flanges.

For reference only (not deliverable)



Distance between mated flanges.

For reference only (not deliverable)



C

NOTES:

1. Connector mates with Glenair 253-018 and 253-037 fixed series connectors having same insert arrangement and polarization.
2. Distance between mated mounting flanges as shown. Consult manufacturer if other distance between mated mounting flanges is required.
3. Misalignment capability as shown.
4. See Space-Grade guidelines material, in this section, for outgassing/screening options available
5. Stainless steel locating pin (Ø.079) shipped with each connector
6. Contact factory for PC tail versions.
7. Dimensions and features are intended for customer use only. Dimensions are reference only and not measured during final inspection at factory.
8. Connector style 007, jam nut mount with reverse silkscreen marking is used when mating to 253-018 feed-thru connector that is contact type PP (pin on both sides) or SS (socket on both sides).
9. Material/finish
   - Shell, jam-nut: see part number development, finish
   - Spring: CRES/passivated
   - Insulators: high grade rigid dielectric/N.A.
   - Seals: fluorosilicone blend, silicone
   - Contacts: copper alloy/gold plated

Space-grade, blind mate connectors
Plug, jam-nut mount
with assisted kick-off (spring force)

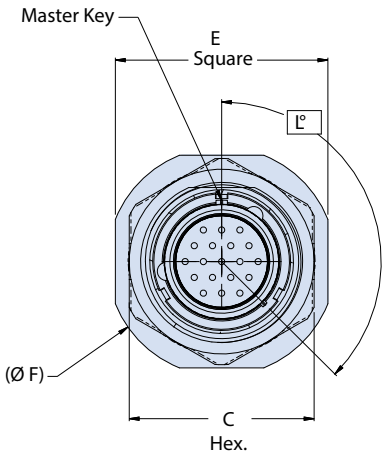
SuperNine®

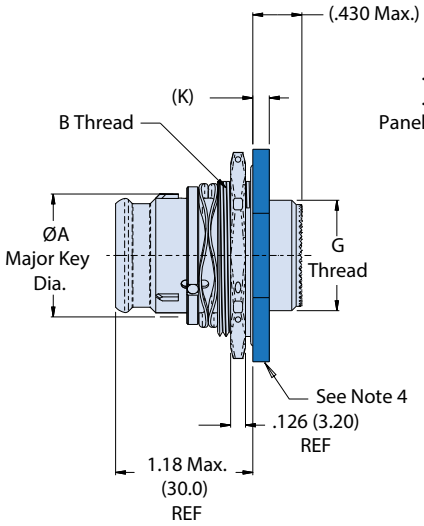
Part Number Development						
Sample Part Number	**253-031**	**-07**	**ME**	**25-35**	**P**	**N**
Series / Basic Part No.	**253-031** Blind-mate plug with non-adjustable assisted separation					
Connector Mounting	**-07** = Fixed jam-nut mount plug					
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, crimp removable **A** = Pin insert less contacts **S** = Socket, crimp removable **B** = Socket insert less contacts					
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L° BSC. Refers to blind mate side.					

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

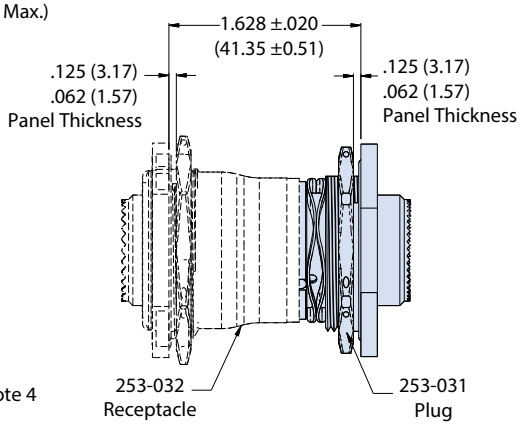
253-031 BLIND-MATE JAM-NUT MOUNT PLUG WITH KICK-OFF SPRING AND ACCESSORY THREADS

07 - Receptacle, Jam Nut Mount





Mated Jam Mount Connectors



*Dimensions shown are for reference only and not intended to be verified during final inspection

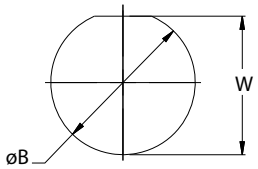
NOTES:

1. Connector mates with Glenair 253-032 series connector, having the same insert arrangement and polarization.
2. Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
3. See Space-Grade guidelines material, in this section, for outgassing/screening options available
4. Blue color band indicates rear release contact retention mechanism.
5. Kick-off spring is not intended to offset all of the contact retention force for each insert arrangement
6. Material/ finish:
   - Shell, jam-nut: see part number development table, finish
   - Insulators: high grade rigid dielectric / N.A.
   - Contacts: copper alloy/gold plated
   - O-ring: fluorosilicone blend / N.A.

Space-grade, blind mate connectors
Plug, jam-nut mount
with assisted kick-off (spring force)

Dimensions							
Shell Size	ØA Max	Thd B Class 2A	C Max	E ±.016(0.4)	ØF Max	G Thd Class 2A	K .011/-.010 (.28/.25)
11	.673 (17.09)	1.0000-20 UNEF	1.181 (30.00)	1.375 (34.92)	1.511 (38.38)	.5625-24	.109 (2.77)
13	.798 (20.27)	1.1250-18 UNEF	1.300 (33.02)	1.500 (38.10)	1.636 (41.55)	.6875-24	.109 (2.77)
15	.923 (23.44)	1.2500-18 UNEF	1.457 (37.01)	1.625 (41.28)	1.761 (44.73)	.8125-20	.109 (2.77)
17	1.048 (26.62)	1.3750-18 UNEF	1.575 (40.00)	1.812 (46.02)	1.949 (49.50)	.9375-20	.140 (3.56)
19	1.173 (29.79)	1.5000-18 UNEF	1.693 (43.00)	1.938 (49.23)	2.073 (52.65)	1.0625-18	.140 (3.56)
21	1.298 (32.97)	1.6250-18 UNEF	1.811 (46.00)	2.062 (52.37)	2.200 (55.88)	1.1875-18	.140 (3.56)
23	1.423 (36.14)	1.7500-18 UNS	2.016 (51.21)	2.187 (55.55)	2.323 (59.00)	1.3125-18	.140 (3.56)
25	1.548 (39.32)	1.8750-16 UNS	2.125 (53.97)	2.312 (58.72)	2.448 (62.18)	1.4375-18	.140 (3.56)

C



Recommended Panel Cutout		
Shell Size	Ø B .010/-.000 (0.25/.00)	W +.000/-.010 (.00/-.25)
11	1.010	0.955
13	1.135	1.085
15	1.260	1.210
17	1.385	1.335
19	1.510	1.460
21	1.635	1.585
23	1.760	1.710
25	1.885	1.835

Space-grade, blind mate connectors

SuperNine®

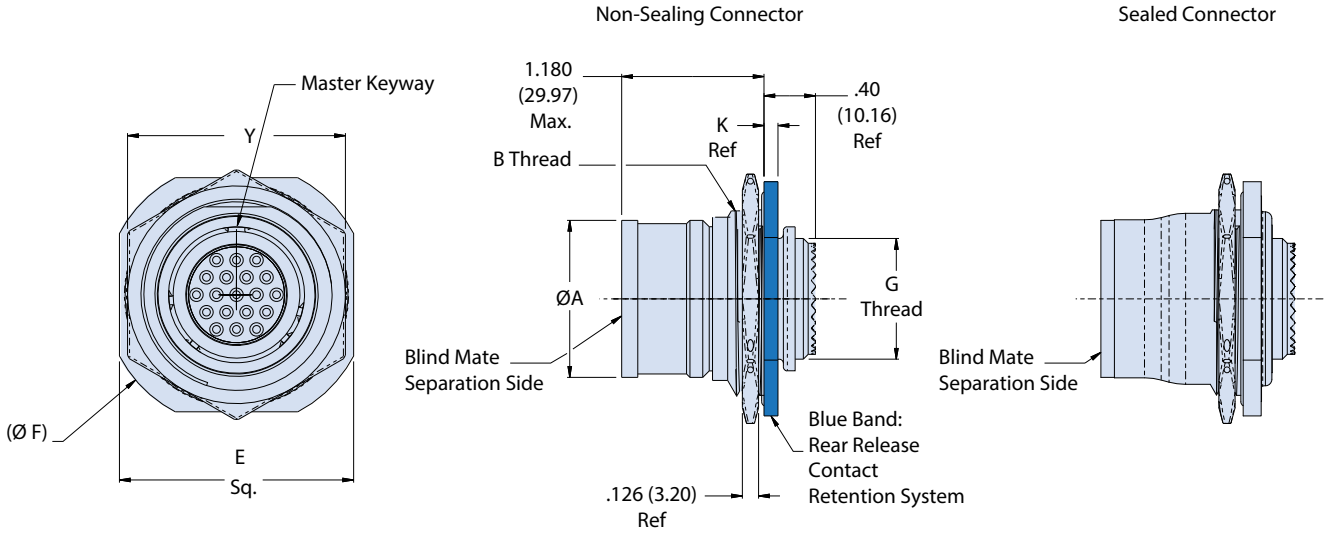
Blind-mate floating jam-nut mount receptacle

with misalignment accommodation; for use with 253-031 plug

Part Number Development							
Sample Part Number	**253-032**	**-07**	**ME**	**25-35**	**S**	**N**	**NS**
Series / Basic Part No.	**253-032** = Blind-mate receptacle for use with 253-031plug						
Connector Mounting	**-07** = Floating jam nut mount receptacle						
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated						
Shell Size-Insert Arrangement*	Per MIL-STD-1560; Symmetrical layouts only, consult factory for complete details.						
Contact Type	**P** = Pin, crimp removable **A** = Pin insert less contacts **S** = Socket, crimp removable **B** = Socket insert less contacts						
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L° BSC. Refers to blind mate side.						
Non Sealing	**NS** = Non-Sealing (omit for external elastomer seal version)						

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-032 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION; MATES WITH 253-031 ONLY



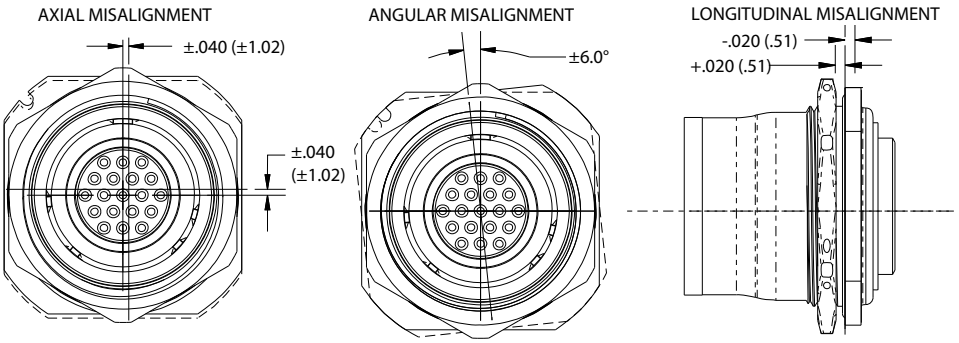
C

NOTES:

1. Connector mates with Glenair 253-031 series connector, having the same insert arrangement and polarization.
2. Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
3. Misalignment capabilities are possible when mated with Glenair connector 253-031
4. See Space-Grade guidelines material, in this section, for outgassing/screening options available
5. Material/ finish:
   - Shell, flange, jam-nut: see part number development, finish
   - Wave spring: CRES 17-7PH/passivate
   - Insulators: high grade rigid dielectric/N.A.
   - Contacts: copper alloy/gold plated
   - O-ring: fluorosilicone blend/N.A.

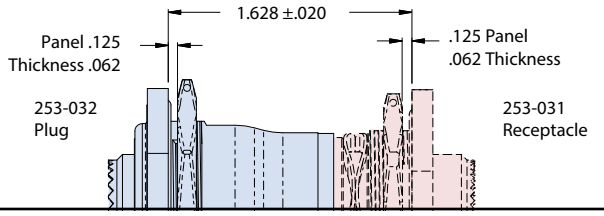
Space-grade, blind mate connectors
Floating jam-nut mount receptacle
with misalignment accommodation; for use with 253-031 plug

Misalignment Capabilities



Distance between mated flanges.

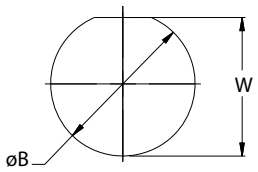
For reference only
(not deliverable)



C

Dimensions							
Shell Size	ØA Max	B Thd, Class 2A	Y Hex	E ±.016 (0.41)	Ø F Max	Thd G, Class 2A	K .011/-.010 (0.28/ 0.25)
11	.853 (21.67)	1.1250-18 UNEF	1.300 (33.02)	1.391 (35.33)	1.641 (41.68)	.5625-24	.109 (2.77)
13	.978 (24.84)	1.2500-18 UNEF	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.6875-24	.109 (2.77)
15	1.103 (28.02)	1.3750-18 UNEF	1.575 (40.00)	1.641 (41.68)	1.938 (49.23)	.8125-20	.109 (2.77)
17	1.228 (31.19)	1.5000-18 UNEF	1.693 (43.00)	1.828 (46.43)	2.062 (52.37)	.9375-20	.140 (3.56)
19	1.353 (34.37)	1.6250-18 UNEF	1.811 (46.00)	1.954 (49.63)	2.188 (55.58)	1.0625-18	.140 (3.56)
21	1.478 (37.54)	1.7500-18 UNS	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.1875-18	.140 (3.56)
23	1.603 (40.72)	1.8750-16 UNS	2.209 (56.11)	2.128 (54.05)	2.327 (59.11)	1.3125-18	.140 (3.56)
25	1.728 (43.89)	2.0000-16 UN	2.334 (59.28)	2.253 (57.23)	2.452 (62.28)	1.4375-18	.140 (3.56)

Recommended Panel Cutout		
Shell Size	Ø B .010/-.000 (0.25/.00)	W +.000/-.010 (.00/-.25)
11	1.135 (28.83)	1.085 (27.56)
13	1.260 (32.00)	1.210 (30.73)
15	1.385 (35.18)	1.335 (33.91)
17	1.510 (38.35)	1.460 (37.08)
19	1.635 (41.53)	1.585 (40.26)
21	1.760 (44.70)	1.710 (43.43)
23	1.885 (47.88)	1.835 (46.61)
25	2.010 (51.05)	1.960 (49.78)

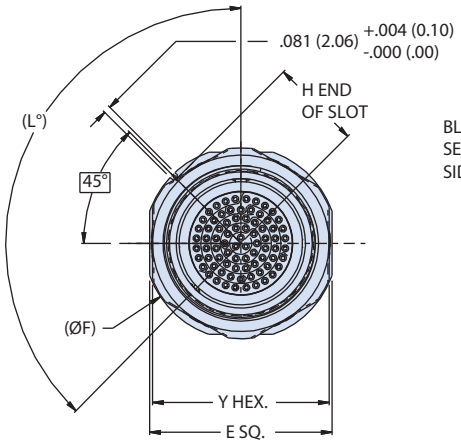


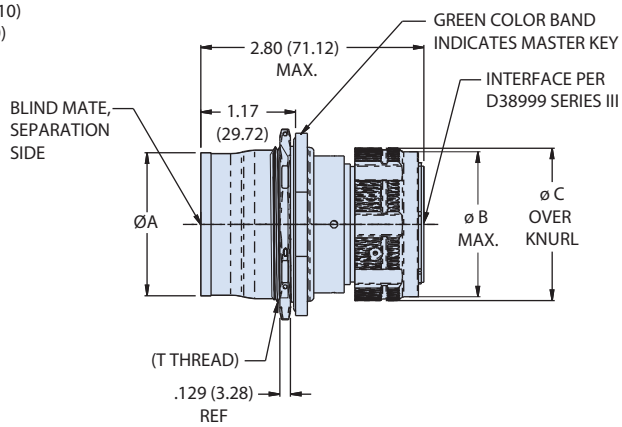
Space-grade, blind-mate connectors
Feed-thru receptacle, with D38999 type plug
IAW MIL-DTL-38999 Series III

Part Number Development						
Sample Part Number	**253-033**	**-07**	**ME**	**25-35**	**PP**	**N**
Series / Basic Part No.	**253-033** = Floating jam-nut mount, feed-thru receptacle with rear D38999 Series III plug interface. Receptacle interface also available, contact factory					
Connector Style	**-07** = Jam-nut mount, float mount					
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details					
Contact Type	**PP** = Pin on both sides **BSDP** = Blind-mate side socket - D38999 side pin **SS** = Socket on both sides **BPDS** = Blind-mate side pin - D38999 side socket					
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L°. Refers to blind mate side. Plug side per MIL-DTL-38999. See alternate polariztions table					

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-033 FLOAT MOUNT FEED-THRU, JAM NUT MOUNT RECEPTACLE TO 38999 TYPE SERIES III PLUG MATING INTERFACE





Alternate Polarizations	
ID	**L°**
N	135°
A	40°
B	65°
C	80°
D	210°
E	250°

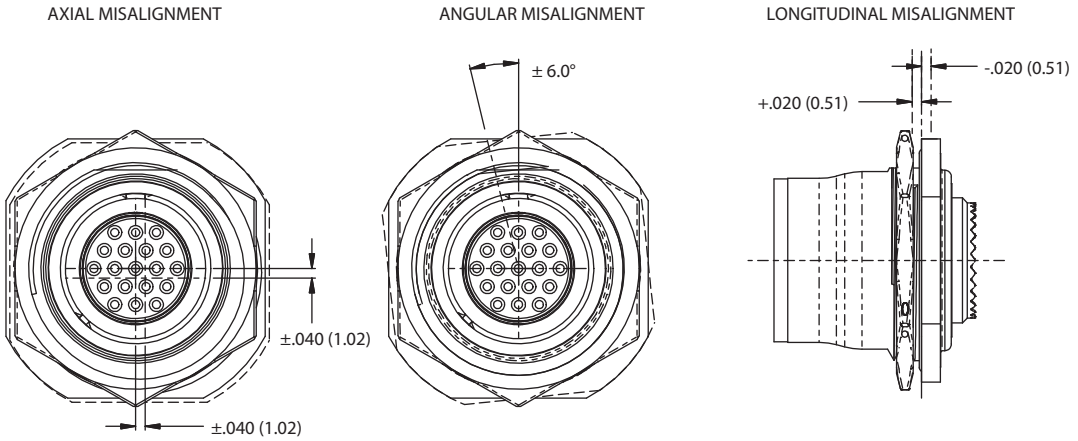
Dimensions for 253-033								
Shell Size	**Ø A Max**	**T Thread Class 2A**	**Y Hex Flats**	**E flange ±.016**	**ØF Flange**	**H End of Slot +0/-.008**	**ØB Max**	**ØC Max**
13	.978	1.1250-18 UNEF	1.300 (33.02)	1.391 (35.33)	1.6441 (41.76)	.729 (18.52)	1.050 (26.67)	1.200 (30.48)
15	1.103	1.2500-18 UNEF	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.791 (20.09)	1.180 (29.97)	1.320 (33.53)
23	1.603	1.7500-18 UNEF	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.072 (27.23)	1.670 (42.42)	1.790 (45.47)
25	1.728	1.8750-18 UNEF	2.125 (53.97)	2.200 (55.88)	2.327 (59.11)	1.096 (27.84)	1.800 (45.72)	1.920 (48.77)

NOTES:

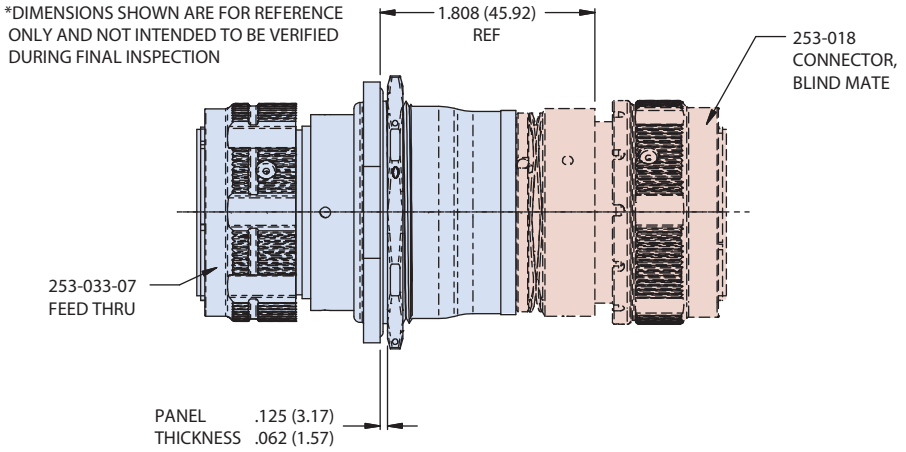
1. Distance between mated mounting flanges: 1.808 Consult manufacturer other distance between mounting flanges is required
2. See Space-Grade guidelines material, in this section, for outgassing/screening options available
3. Stainless steel locating pin (Ø.079) shipped with each connector
4. Misalignment capabilities are possible with mated pair reference Glenair connector 253-019

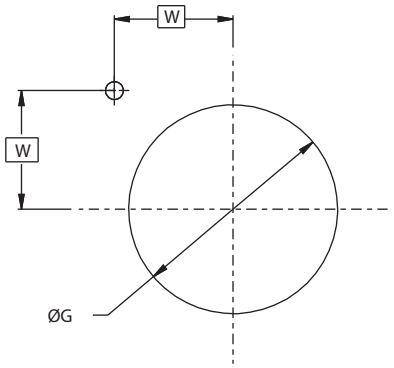
Space-grade, blind-mate connectors
Feed-thru receptacle, with D38999 type plug
IAW MIL-DTL-38999 Series III

MISALIGNMENT CAPABILITIES (see note 4)



Distance Between Mated Flanges





Recommended Panel Cut-out		
Shell Size	ØG, Thru Hole ±0004 (0.10)	W Basic
13	1.134 (28.80)	.549 (13.94)
15	1.259 (31.98)	.593 (15.06)
23	1.759 (44.68)	.797 (20.24)
25	1.884 (47.85)	.809 (20.55)

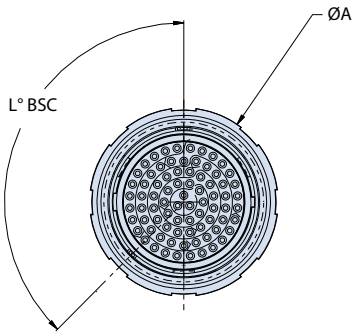
Space-grade, blind mate connectors
Locking circuit and test mate connector
IAW MIL-DTL-38999 Series III

SuperNine®

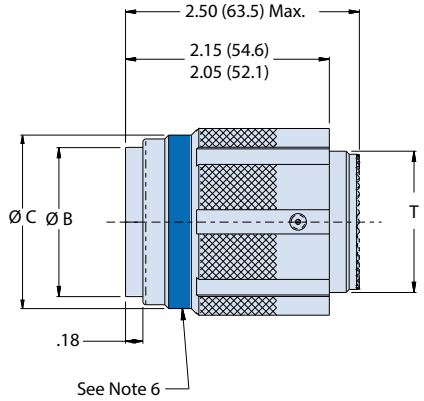
Part Number Developement						
Sample Part Number	**253-025**	**-G6**	**ME**	**23-43**	**P**	**N**
Series / Basic Part No.	**253-025** = Locking circuit and test mate connector					
Connector Mounting	**-G6** = In-line					
Material/Finish	**ME** = Aluminum, electroless nickel **ZL** = CRES, electrodeposited nickel **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, crimp removable **A** = Pin insert less contacts **S** = Socket, crimp removable **B** = Socket insert less contacts					
Alternate Polarization*	**A** = 40°, **B** = 65°, **C** = 80°, **D** = 210°, **E** =250°, **F** = 280°, **G** = 310°, **H**= 330°, **N** = 135° (Normal) Per L° Basic. Refers to blind mate side. Plug side per MIL-DTL-38999. See alternate polariztions table					

***Refer to section A for complete details.** Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

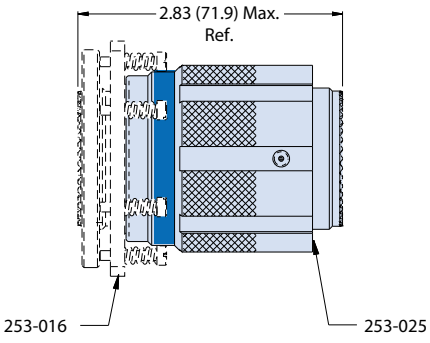
253-025 LOCKING CIRCUIT AND TEST MATE CONNECTOR, MATES WITH 253-016 PLUG



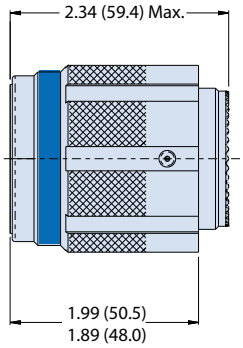
Ready To Mate



Mated Pair (Reference Only)
See Note 4



Mated



Dimensions				
Shell Size	**Ø A Max**	**Ø B**	**Ø C**	**T Thd 1.0-6g -0.100R**
17	1.55 (39.37)	1.10 (27.94)	1.29 (32.77)	M25
25	2.05 (52.07)	1.54 (39.12)	1.79 (45.47)	M37

NOTES:

1. Material/ finish:
   - Shell, coupling ring, segments - see part number development, finish
   - Insulators - high grade rigid dielectric / N.A.
   - Contacts - copper alloy / gold plated
2. Connector mates with Glenair 253-016 series connector, having the same insert arrangement and polarization.
3. Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
4. Connector mated with Glenair 253-016 is shown for reference only.
5. See Space-Grade guidelines material, in this section, for outgassing and screening options available
6. Blue color band indicates rear release contact retention system

C

JAM-FREE LAUNCHING

AS81703 Series 3 Type Lanyard Connectors

Ideal for high shock / high vibration environments including military space and defense applications such as missile and space payload deployment, the AS81703 provides jam-free, push-on, pull-off operation. Glenair's AS81703 Series 3 type connector series is intermateable and intermountable with currently available AS81703 mil-spec and commercial connectors, and offers several enhancements to the standard design: an integrated band porch for shield termination, 360° saw teeth for rear-end accessory clocking, and a red full-mate indicator stripe. The AS81703 Series 3 type connector is ideally suited for droppable stores, umbilical connect, air launch to orbit, and other extreme vibration and shock environments where rugged and reliable lanyard-release and push-pull mating is a must. Nineteen contact arrangements are available, including hybrid signal/power layouts, and a full complement of backshells and connector accessories is offered—with Glenair's high availability and quick delivery.

- **Intermateable and intermountable with available AS81703 connectors**
- **Signal, power, and high-speed shielded contact arrangements**
- **Reliable fail-safe axial-pull lanyard equipped coupling**
- **Instant disconnect for critical quick-release systems**
- **Available integrated band porch for easy shield termination**
- **360° saw teeth for accessory clocking**
- **Red full-mate indicator stripe**
- **Blind mate and rack-and-panel versions available**
- **Available backshells and accessories IAW AS81703**
- **Polarization keying for mis-mate prevention**

LANYARD-RELEASE

AS81703 Series 3 Type Connectors

Table of contents / selection guide

D

AS81703 Series 3 Type Connectors

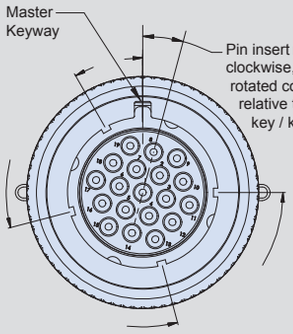
How to order

How To Order								
Sample Part Number	**253-020**	**–**	**06**	**ME**	**19-7**	**P**	**N**	
Basic Part Number	AS81703 Series 3 type connector							
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)							
Connector Style (and AS cross-ref)	**00** = Sq. flange mount receptacle AS34241 type (MS3424) **06** = Straight plug AS34671 type (MS3467) **07** = Jam nut mount receptacle AS34641 type (MS3464 **08** = Lanyard release plug MS3468 type (no SAE equivalent) **09** = Rack & panel plug AS34461 type (MS3446)							
Material / Finish	See Table I							
Shell Size / Insert Arrangement	See Table II, diagrams on pgs. 4–5							
Contact Styles	**P** = Pin insert **A** = Pin insert less contacts (not available for -09 Plug) **S** = Socket insert **B** = Socket insert less contacts (not available for -09 Plug)							
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III)							
Lanyard Ring Mod. Code (-08 Receptacle Only)	**Omit** = Standard Lanyard Ring **812** = Lanyard Ring Rotated 90° from Master Keyway							

Table I - Material and Finish

Code	Mil Class	Material	Finish
C	-	Aluminum Alloy	Black Anodize
ME	E		Electroless Nickel
NF	L		O.D. Cadmium over Electroless Nickel
MT	-		Nickel-PTFE
ZR	-		Zinc-Nickel/Black (Tri-Valent CR)

Insert Rotation and Insert Clocking Rotation



AS81703 Series 3 type connectors feature locksmith key/keyways. Plug connector keyways and receptacle connector keys are fixed for all sizes and contact arrangements.

Alternate Insert Clocking is specified in the part number. Pin inserts are rotated clockwise, Socket inserts rotated counter-clockwise relative to the master key/keyway, to the positions indicated in the table below.

Table II: Contact Arrangements

Contact Arrangement	Contact Size & Quantity		
	#20	#16	#12
3-50	3		
7-50	7		
12-6	6		
12-50	12		
19-4			12
19-7			7
19-12		12	
19-50	19		
27-2		14	
27-3	14	2	
27-5		19	
27-8		6	4
27-11	12		
27-50	27		
37-2		24	
37-3			12
37-50	37		
61-42	29	4	8
61-50	61		

Table III: Clocking Positions

Contact Arrangement	Alternate Insert Clocking Positions					
	N	W	X	Y	B	C
3-50	0°			75°		
7-50	0°				150°	
12-6	0°	25°	45°	80°	150°	220°
12-50	0°	15°	50°	75°	150°	225°
19-4	0°			22° 30'	135°	247° 30'
19-7	0°			75°	150°	225°
19-12	0°	25°	50°	75°	150°	225°
19-50	0°			75°	150°	225°
27-2	0°	25°	50°	75°	150°	225°
27-3	0°	25°	50°	75°	150°	225°
27-5	0°			75°	150°	225°
27-8	0°	25°	50°	75°	150°	225°
27-11	0°	25°	50°	75°	150°	225°
27-50	0°	25°	50°	75°	150°	225°
37-2	0°	25°	145°	227° 30'		
37-3	0°	20°	70°			
37-50	0°	25°	50°	75°	150°	225°
61-42	0°		67° 30'			
61-50	0°			75°	150°	225°

AS81703 Series 3 Type Connectors

General information / test report summary

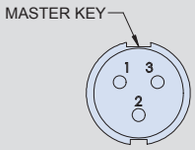
<table>
<tr><th colspan="3">Validation Test Summary. Tested IAW AS81703</th></tr>
<tr><th>Test</th><th>Requirement</th><th>Result</th></tr>
<tr><td>Magnetic Permeability</td><td>Relative Magnetic Permeability: ≤ 2.0 Mu</td><td>Pass</td></tr>
<tr><td>Maintenance Aging and Contact Forces</td><td>Insertion Force: ≤ 15 lbs.• Removal Force: ≤ 10 lbs.</td><td>Pass</td></tr>
<tr><td>Gage Location and Retention</td><td>Axial Displacement of the Test Gages: ≤ 0.012</td><td>Pass</td></tr>
<tr><td>Operating Forces</td><td>
<table>
<tr><th>Shell Size</th><th>Max Engagement force (lb)</th><th>Measured Engagement force (lb)</th><th>Min Disengagement force (lb)</th><th>Max Disengagement force (lb)</th><th>Measured Disengagement force (lb)</th></tr>
<tr><td rowspan="2">12</td><td rowspan="2">34</td><td>15.2</td><td rowspan="2">2</td><td rowspan="2">34</td><td>3.80</td></tr>
<tr><td>16.8</td><td>4.05</td></tr>
<tr><td rowspan="2">19</td><td rowspan="2">38</td><td>16.2</td><td rowspan="2">3</td><td rowspan="2">38</td><td>6.75</td></tr>
<tr><td>15.8</td><td>8.06</td></tr>
<tr><td rowspan="2">37</td><td rowspan="2">44</td><td>19.7</td><td rowspan="2">6</td><td rowspan="2">44</td><td>7.56</td></tr>
<tr><td>20.1</td><td>7.72</td></tr>
</table>
</td><td>Pass</td></tr>
<tr><td>Insulation Resistance, Room Temperature</td><td>Insulation resistance shall be >10,000 megohms</td><td>Pass</td></tr>
<tr><td>Dielectric Withstanding Voltage</td><td>No evidence of breakdown or flashover. Leakage Current ≤ 5 mA
<table>
<tr><th>Condition</th><th>Service Rating I</th><th>Service Rating II</th></tr>
<tr><td>Sea Level</td><td>600 V AC</td><td>1000 V AC</td></tr>
<tr><td>70,000 ft.</td><td>300 V AC</td><td>450 V AC</td></tr>
</table>
</td><td>Pass</td></tr>
<tr><td>Thermal Shock</td><td>Low Temperature: -55° ± 3°C • High Temperature: Class L 175° ± 3°C ; Class E, 200° ± 3°C.
5 cycles, 2 hour minimum soak. No damage detrimental to the connector</td><td>Pass</td></tr>
<tr><td>Insert Retention</td><td>Inserts shall not be dislocated from the specified insert position as shown on the applicable MS drawing when an effective pressure differential of 75 lbs.f/in^2 is applied</td><td>Pass</td></tr>
<tr><td>Vibration</td><td>10 to 2,000 Hz and return to 10 Hz in 20 minutes. 12 cycles in 4 hours for X,Y, and Z Axes. Total 12 hrs. Amplitude of 0.06" double amplitude or 20g, whichever is less. Support wires 8" both ends. Electrical load 100 mA max, open circuit <5V. Maximum initial R not to exceed 3 Ohms on individual loops. All samples measured no discontinuity on any axis.</td><td>Pass</td></tr>
<tr><td>Shock</td><td>15g peak value, half-sine pulse, 11ms duration. One shock each direction on 3 major axes.Mated connectors shall not be damaged and there shall be no loosening of parts. All samples measured no discontinuity on any axis.</td><td>Pass</td></tr>
<tr><td>Insulation Resistance, Elevated Temperature</td><td>After an exposure for 1000 hours at 200°C, the insulation resistance shall be greater than 500 megohms, unmated condition</td><td>Pass</td></tr>
<tr><td>Moisture Resistance</td><td>10 cycles, low temperature subcycle 5 cycles. Initial and final mated insulation resistance measured >100Mohms for all samples at 25°, 500V, 12s.</td><td>Pass</td></tr>
<tr><td>Insulation Resistance</td><td>Unmated, 500V, 120x, 10,000 megohms</td><td>Pass</td></tr>
<tr><td>Contact Resistance</td><td>#24 AWG wires crimped to size 20 contacts. Test current 3A, maximum mV drop 45 mV</td><td>Pass</td></tr>
<tr><td>Contact Retention</td><td>Axial load: 15 lb. Duration: 5 sec min. Rate: approx. 1lb/sec. Initial load of 2 lb before measuring contact displacement. Force applied in the direction tending to dislodge the contacts toward the rear of the connector. Displacement shall not exceed 0.012"</td><td>Pass</td></tr>
<tr><td>Magnetic Permeability</td><td>Relative magnetic permeability of connector assemblies < 2.0 Mu</td><td>Pass</td></tr>
<tr><td>Durability</td><td>500 mating cycles with no mechanical or electrical defects detrimental to operation</td><td>Pass</td></tr>
<tr><td>Salt Spray</td><td>Unmated, 48 hours, 20% salt concentration. No exposure of basic metal due to corrosion which will affect performance.</td><td>Pass</td></tr>
<tr><td>Fluid Immersion, Lubricating Oil</td><td>Unmated connectors immersed in MIL-PRF-7808 oil, 20 hours.</td><td>Pass</td></tr>
<tr><td colspan="3">Contact Glenair for complete validation test reports: GT-15-93 (AS81703, series 3, class E) and GT-15-94 (AS81703, series 3, class L).</td></tr>
</table>

MATERIALS/FINISHES

Shells, Jam Nuts, Lockwashers - Aluminum alloy
Insulators - High-grade rigid dielectric
O-Rings, Grommets, Peripheral Seals - Fluorosilicone or equivalent

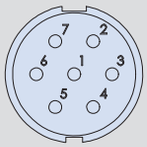
AS81703 Series 3 Type Connectors

Contact arrangements (pin face shown)



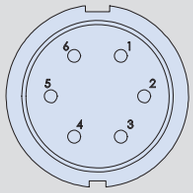
3-50

3X SIZE 20 CONTACT



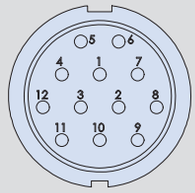
7-50

7X SIZE 20 CONTACT



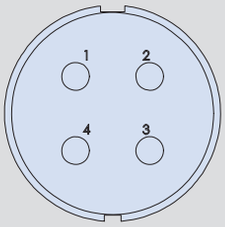
12-6

6X SIZE 20 CONTACT



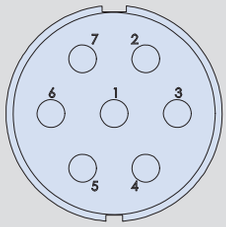
12-50

12X SIZE 20 CONTACT



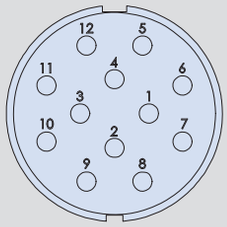
19-4

4X SIZE 12 CONTACT



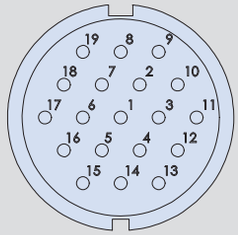
19-7

7X SIZE 12 CONTACT



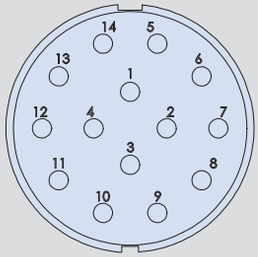
19-12

12 SIZE 16 CONTACT



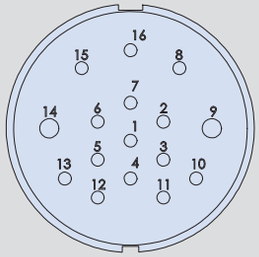
19-50

19X SIZE 20 CONTACT



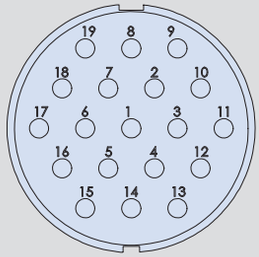
27-2

14X SIZE 16 CONTACT



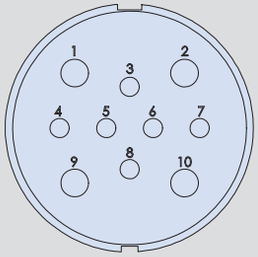
27-3

2X SIZE 16 CONTACT
14X SIZE 20 CONTACT



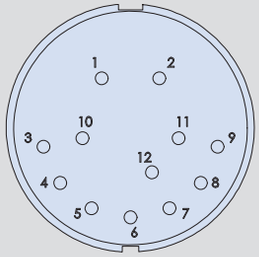
27-5

19X SIZE 16 CONTACT



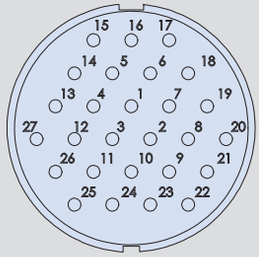
27-8

6X SIZE 16 CONTACT
4X SIZE 12 CONTACT



27-11

12X SIZE 20 CONTACT



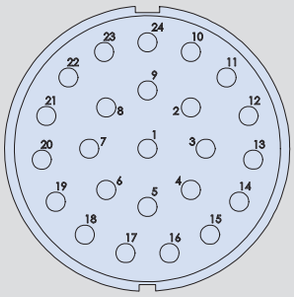
27-50

27X SIZE 20 CONTACT

D

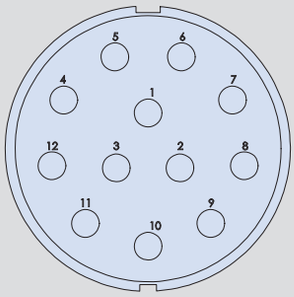
AS81703 Series 3 Type Connectors

Contact arrangements (pin face shown)



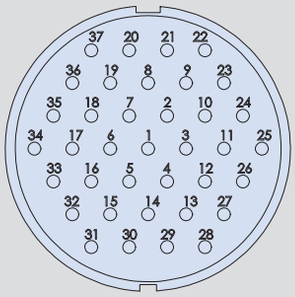
37-2

24X SIZE 16 CONTACT



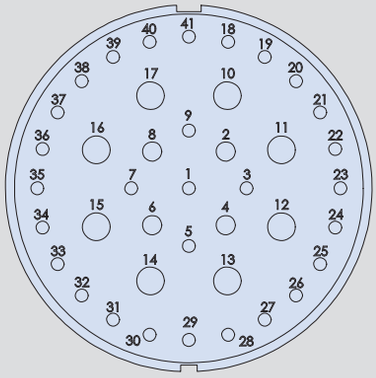
37-3

12X SIZE 12 CONTACT



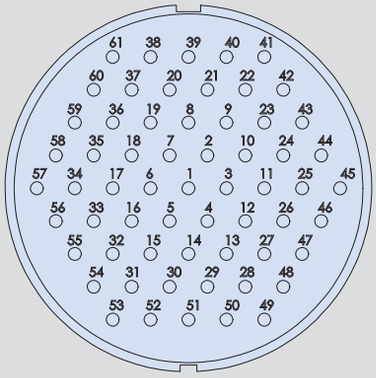
37-50

37X SIZE 20 CONTACT



61-42

4X SIZE 16 CONTACT
29X SIZE 20 CONTACT
8X SIZE 12 CONTACTS



61-50

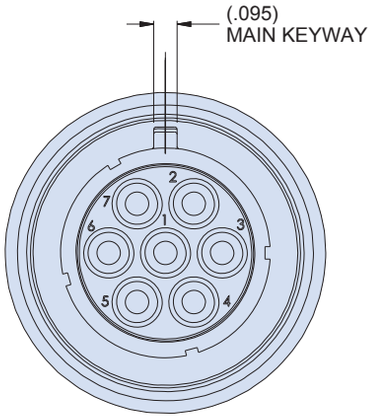
61X SIZE 20 CONTACT

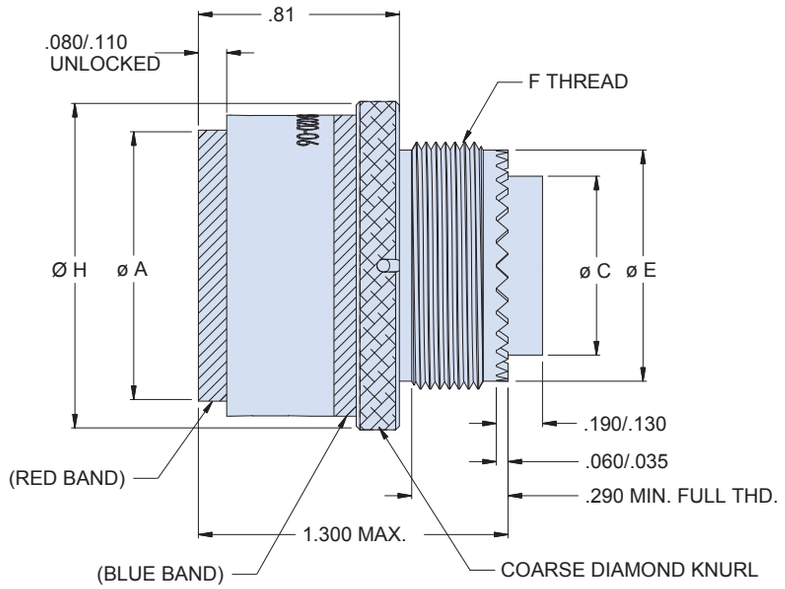
D

Plug

253-020-06

How To Order							
Sample Part Number	**253-020**	**–**	**06**	**ME**	**19-7**	**P**	**N**
Basic Part Number	AS81703 Series 3 type connector						
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)						
Connector Style	**06** = Straight plug AS34671 type (MS3467)						
Material / Finish	**C** = Al Alloy/Black Anodize **ME** = Al Alloy/Electroless Nickel **NF** = Al Alloy/Cad O.D. Over Electroless Nickel **MT** = Al Alloy/Nickel-PTFE **ZR** = Al Alloy/Zinc-Nickel Black						
Shell Size / Insert Arrangement	See Table II pg. 2, diagrams on pgs. 4–5						
Contact Styles	**P** = Pin insert **A** = Pin insert less contacts **S** = Socket insert **B** = Socket insert less contacts						
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III pg. 2)						





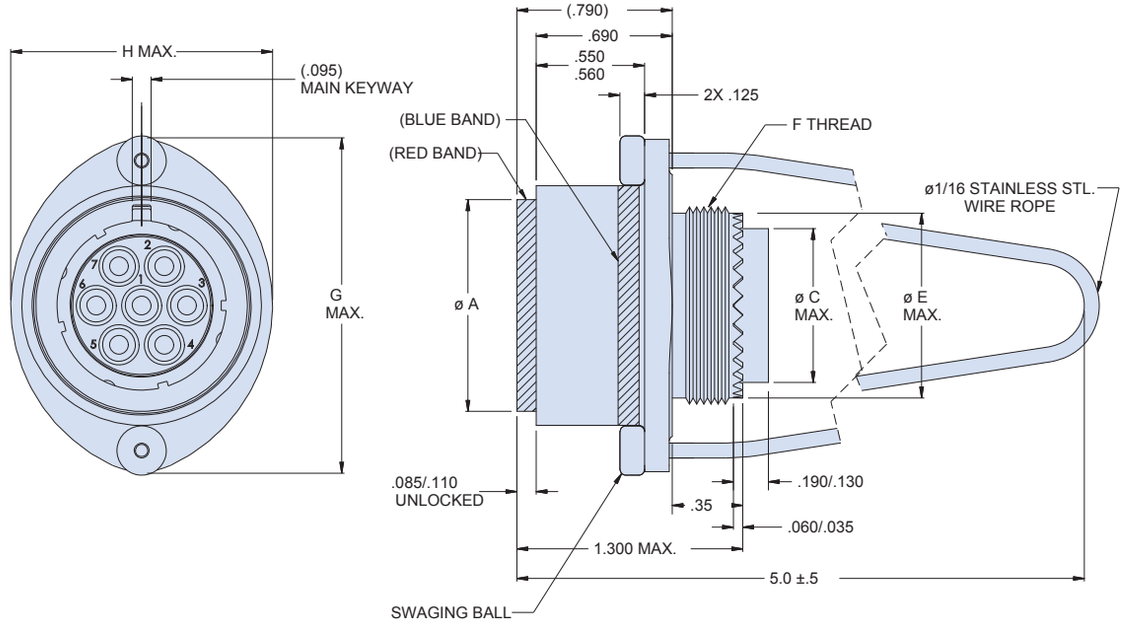
D

-06 Plug Dimensions									
Shell Size	Ø A		Ø C Max.		Ø E Max.		F Thd.	H	
	In. ± .02	mm ± .5	In.	mm	In.	mm		In. ± .025	mm ± .6
3	.657	16.7	.351	8.9	.509	12.9	9/16-24 UNEF-2A	.925	23.5
7	.795	20.2	.531	13.5	.687	17.4	3/4-20 UNEF-2A	1.062	27.0
12	.945	24.0	.665	16.9	.812	20.6	7/8-20 UNEF-2A	1.172	29.8
19	1.090	27.7	.790	20.1	.937	23.8	1-20 UNEF-2A	1.328	33.7
27	1.230	31.2	.869	22.1	.992	25.2	1 1/16-18 UNEF-2A	1.475	37.5
37	1.350	34.3	.994	25.2	1.117	28.4	1 3/16-18 UNEF-2A	1.610	40.9
61	1.620	41.1	1.280	32.5	1.427	36.2	1 1/2-18 UNEF-2A	1.890	48.0

Lanyard-release plug

253-020-08

How To Order								
Sample Part Number	**253-020**	**–**	**08**	**ME**	**19-7**	**P**	**N**	
Basic Part Number	AS81703 Series 3 type connector							
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)							
Connector Style	**08** = Lanyard release plug MS3468 type (no SAE equivalent)							
Material / Finish	**C** = Al Alloy/Black Anodize **ME** = Al Alloy/Electroless Nickel **MT** = Al Alloy/Nickel-PTFE **NF** = Al Alloy/Cad O.D. Over Electroless Nickel **ZR** = Al Alloy/Zinc-Nickel Black							
Shell Size / Insert Arrangement	See Table II pg. 2, diagrams on pgs. 4–5							
Contact Styles	**P** = Pin insert S = Socket insert **A** = Pin insert less contacts **B** = Socket insert less contacts							
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III pg. 2)							
Lanyard Ring Mod. Code	**Omit** = Standard Lanyard Ring **812** = Lanyard Ring Rotated 90° from Master Keyway							



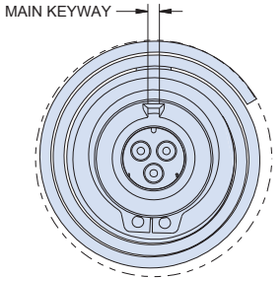
-08 Lanyard-Release Plug Dimensions										
Shell Size	Ø A		Ø C Max.		Ø E Max.		F Thd.	G Max.		H Max.	
	In.	mm	In.	mm	In.	mm		In.	mm	In.	mm
3	.657 .648	16.7 16.5	.351	8.9	.509	12.9	9⁄16-24 UNEF-2A	1.261	32.0	.925	23.5
7	.793 .782	20.1 19.9	.531	13.5	.687	17.4	¾-20 UNEF-2A	1.411	35.8	1.062	27.0
12	.942 .932	23.9 23.7	.665	16.9	.812	20.6	⅞-20 UNEF-2A	1.531	38.9	1.172	29.8
19	1.073 1.063	27.3 27.0	.790	20.1	.937	23.8	1-20 UNEF-2A	1.681	42.7	1.328	33.7
27	1.226 1.216	31.1 30.9	.869	22.1	.992	25.2	1 1⁄16-18 UNEF-2A	1.826	46.4	1.475	37.5
37	1.348 1.338	34.2 34.0	.994	25.2	1.117	28.4	1 3⁄16-18 UNEF-2A	1.915	48.6	1.610	40.9
61	1.614 1.604	41.0 40.7	1.280	32.5	1.427	36.2	1 ½-18 UNEF-2A	2.235	56.8	1.890	48.0

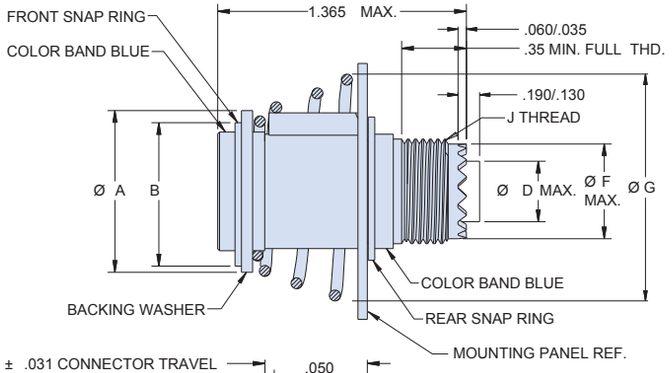
D

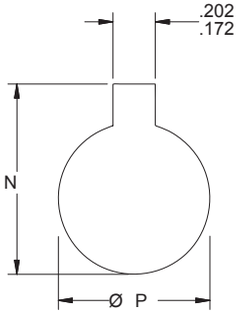
Rack-and-panel plug

253-020-09

How To Order							
Sample Part Number	**253-020**	**–**	**09**	**ME**	**19-7**	**P**	**N**
Basic Part Number	AS81703 Series 3 type connector						
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)						
Connector Style	**09** = Rack & panel plug AS34461 type (MS3446)						
Material / Finish	**C** = Al Alloy/Black Anodize **ME** = Al Alloy/Electroless Nickel **MT** = Al Alloy/Nickel-PTFE **NF** = Al Alloy/Cad O.D. Over Electroless Nickel **ZR** = Al Alloy/Zinc-Nickel Black						
Shell Size / Insert Arrangement	See Table II pg. 2, diagrams on pgs. 4–5						
Contact Styles	**P** = Pin insert S = Socket insert **A** = Pin insert less contacts **B** = Socket insert less contacts						
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III pg. 2)						

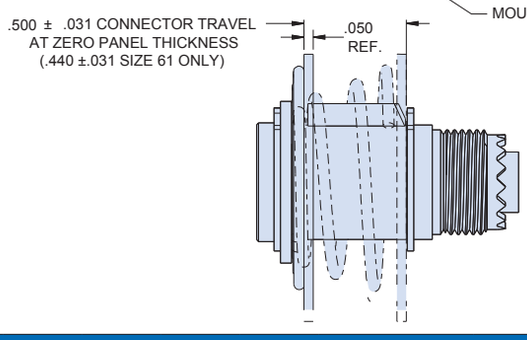






PANEL CUTOUT DETAIL

Panel Cutout Dimensions				
Shell Size	Ø P		N	
	In. ± .015	mm ± .4	In. ± .015	mm ± .4
3	.671	17.0	.843	21.4
7	.812	20.6	.984	25.0
12	.953	24.2	1.109	28.2
19	1.062	27.0	1.234	31.3
27	1.203	30.6	1.375	34.9
37	1.375	34.9	1.531	38.9
61	1.687	42.8	1.859	47.2



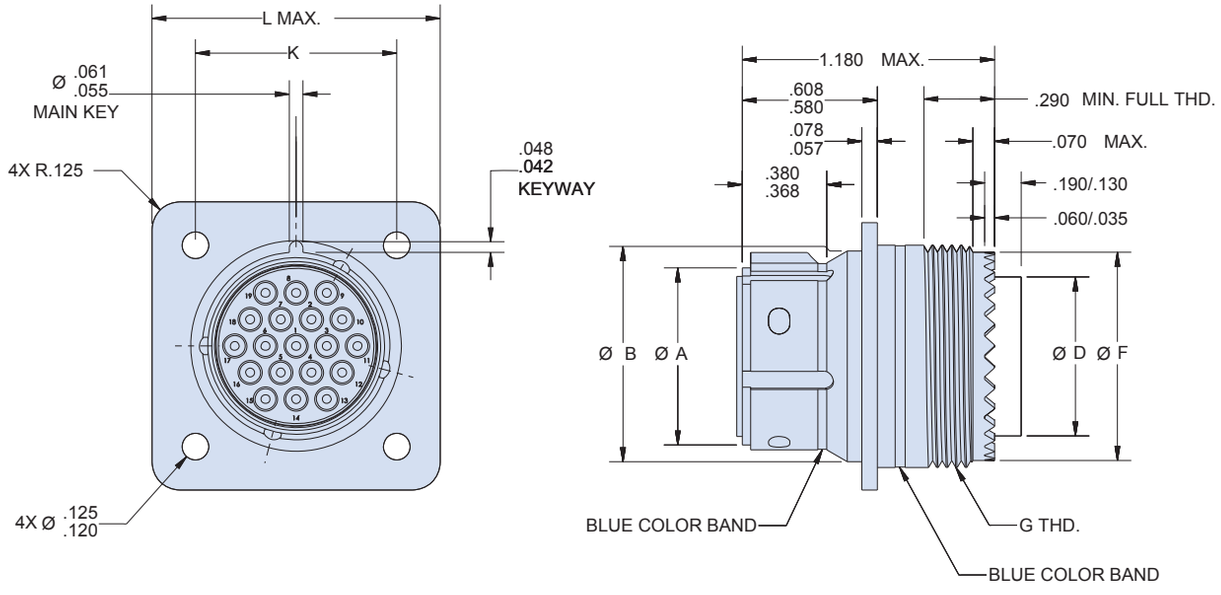
-09 Rack-and-Panel Plug Dimensions												
Shell Size	Ø A		Ø B Max.		Ø D Max.		Ø F Max.		Ø G Max.		J Thd.	Spring force when mated (lbs-In.)
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm		
3	.891 .869	22.6 22.1	.800	20.3	.351	8.9	.509	12.9	1.225	31.1	9/16-24 UNEF-2A	16 – 20
7	1.172 1.150	29.8 29.2	.990	25.1	.531	13.5	.687	17.4	1.356	34.4	¾-20 UNEF-2A	16 – 20
12	1.263 1.241	32.1 31.5	1.190	30.2	.665	16.9	.812	20.6	1.575	40.0	⅞-20 UNEF-2A	30 – 35
19	1.391 1.369	35.3 34.8	1.320	33.5	.790	20.1	.937	23.8	1.715	43.6	1-20 UNEF-2A	40 – 50
27	1.529 1.507	38.8 38.3	1.475	37.5	.869	22.1	.992	25.2	1.860	47.2	1 1/16-18 UNEF-2A	43 – 50
37	1.816 1.794	46.1 45.6	1.655	42.0	.994	25.2	1.117	28.4	2.120	53.8	1 3/16-18 UNEF-2A	45 – 53
61	2.150 2.118	54.6 53.8	2.025	51.4	1.280	32.5	1.427	36.2	2.850	72.4	1 ½-18 UNEF-2A	75 – 80

D

Wall-mount receptacle

253-020-00

How To Order							
Sample Part Number	**253-020**	**–**	**00**	**ME**	**19-7**	**P**	**N**
Basic Part Number	AS81703 Series 3 type connector						
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)						
Connector Style	**00** = Sq. flange mount receptacle AS34241 type (MS3424)						
Material / Finish	**C** = Al Alloy/Black Anodize **ME** = Al Alloy/Electroless Nickel **NF** = Al Alloy/Cad O.D. Over Electroless Nickel **MT** = Al Alloy/Nickel-PTFE **ZR** = Al Alloy/Zinc-Nickel Black						
Shell Size / Insert Arrangement	See Table II pg. 2, diagrams on pgs. 4–5						
Contact Styles	**P** = Pin insert **A** = Pin insert less contacts **S** = Socket insert **B** = Socket insert less contacts						
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III pg. 2)						



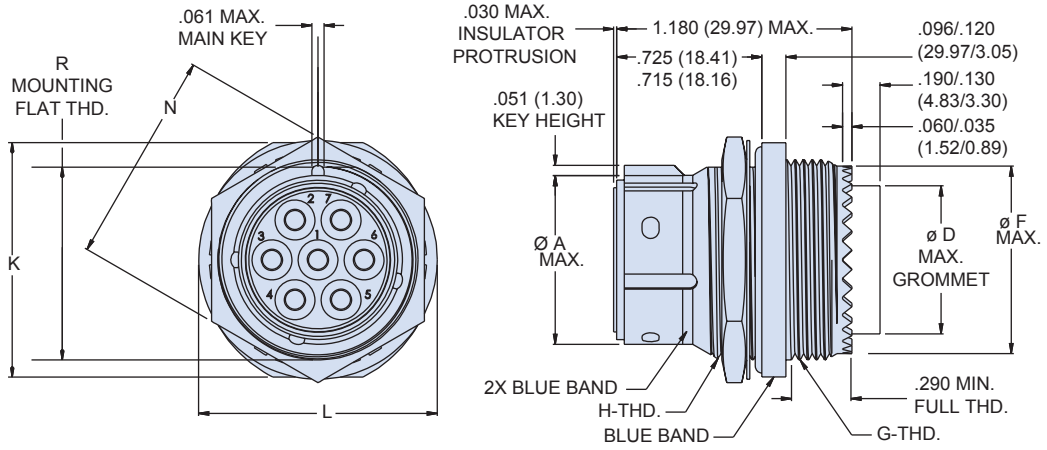
-00 Wall Mount Receptacle Dimensions												
Shell Size	Ø A		Ø B		Ø D Max.		Ø F Max.		G Thd.	K		L Max.	
	In.	mm	In. ±.003	mm ± .1	In.	mm	In.	mm		In.	mm	In.	mm
3	.441 .431	11.2 10.9	.573	14.6	.351	8.9	.509	12.9	9/16-24 UNEF-2A	.625	15.9	.896	22.8
7	.576 .566	14.6 14.4	.686	17.4	.531	13.5	.687	17.4	¾-20 UNEF-2A	.719	18.3	1.021	25.9
12	.710 .700	18.0 17.8	.823	20.9	.665	16.9	.812	20.6	⅞-20 UNEF-2A	.812	20.6	1.114	28.3
19	.849 .839	21.6 21.3	.948	24.1	.790	20.1	.937	23.8	1-20 UNEF-2A	.906	23.0	1.208	30.7
27	1.004 .994	25.5 25.2	1.132	28.8	.869	22.1	.992	25.2	1 1/16-18 UNEF-2A	.968	24.6	1.302	33.1
37	1.126 1.116	28.6 28.3	1.261	32.0	.994	25.2	1.117	28.4	1 3/16-18 UNEF-2A	1.187	30.1	1.458	37.0
61	1.414 1.404	35.9 35.7	1.573	40.0	1.280	32.5	1.427	36.2	1 ½-18 UNEF-2A	1.438	36.5	1.797	45.6

D

Jam nut receptacle

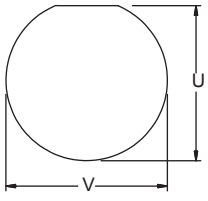
253-020-07

How To Order							
Sample Part Number	**253-020**	**–**	**09**	**ME**	**19-7**	**P**	**N**
Basic Part Number	AS81703 Series 3 type connector						
Rear Option	**–** = Accessory threads **B** = Band porch (consult factory)						
Connector Style	**07** = Jam nut receptacle AS34461 type (MS3446)						
Material / Finish	**C** = Al Alloy/Black Anodize **ME** = Al Alloy/Electroless Nickel **MT** = Al Alloy/Nickel-PTFE **NF** = Al Alloy/Cad O.D. Over Electroless Nickel **ZR** = Al Alloy/Zinc-Nickel Black						
Shell Size / Insert Arrangement	See Table II pg. 2, diagrams on pgs. 4–5						
Contact Styles	**P** = Pin insert S = Socket insert **A** = Pin insert less contacts **B** = Socket insert less contacts						
Insert Clocking Positions	**N**, **W**, **X**, **Y**, **B**, **C** (See Table III pg. 2)						



-07 Jam Nut Receptacle Dimensions

Shell Size	Ø A	Ø D Max.	Ø F Max.	G Thd.	H Thd.	K	L	R	N Mounting Nut
3	.441 (11.20) .431 (10.95)	.351 (8.92)	.509 (12.93)	9/16-24 UNEF-2A	9/16-24 UNEF-2A	.765 (19.43) .735 (18.67)	.765 (19.43) .735 (18.67)	.523 (13.28)	.625 (15.88)
7	.576 (14.63) .566 (14.38)	.531 (13.49)	.687 (17.45)	3/4-20 UNEF-2A	11/16-24 UNEF-2A	.890 (22.61) .860 (21.84)	.890 (22.61) .860 (21.84)	.655 (16.64)	.812 (20.62)
12	.710 (18.03) .700 (17.78)	.665 (16.89)	.812 (20.62)	7/8-20 UNEF-2A	13/16-20 UNEF-2A	1.077 (27.36) 1.047 (26.59)	1.077 (27.36) 1.047 (26.59)	.778 (19.76)	.937 (23.80)
19	.849 (21.56) .839 (21.31)	.790 (20.07)	.937 (23.80)	1-20 UNEF-2A	1-20 UNEF-2A	1.171 (29.74) 1.141 (28.98)	1.202 (30.53) 1.172 (29.77)	.963 (24.46)	1.062 (26.97)
27	1.004 (25.50) .994 (25.25)	.869 (22.07)	.992 (25.20)	1 1/16-18 UNEF-2A	1 1/8-18 UNEF-2A	1.327 (33.71) 1.297 (32.94)	1.327 (33.71) 1.297 (32.94)	1.089 (27.66)	1.250 (31.75)
37	1.126 (28.60) 1.116 (28.35)	.994 (25.25)	1.117 (28.37)	1 3/16-18 UNEF-2A	1 1/4-18 UNEF-2A	1.450 (36.83) 1.445 (36.70)	1.515 (38.48) 1.485 (37.72)	1.214 (30.84)	1.375 (34.92)
61	1.414 (35.92) 1.404 (35.66)	1.280 (32.51)	1.427 (36.25)	1 1/2-18 UNEF-2A	1 1/2-18 UNEF-2A	1.864 (47.35) 1.834 (46.58)	1.890 (48.01) 1.860 (47.24)	1.463 (37.16)	1.688 ±.015



PANEL CUTOUT

Panel Cutout

Shell Size	U	V	Shell Size	U	V	Shell Size	U	V
3	.538 (13.67) .534 (13.56)	.577 (14.66) .567 (14.40)	19	.973 (24.71) .969 (24.61)	1.013 (25.73) 1.003 (25.48)	61	1.471 (37.36) 1.467 (37.26)	1.514 (38.46) 1.504 (38.20)
7	.665 (16.89) .661 (16.79)	.701 (17.81) .961 (24.41)	27	1.099 (27.91) 1.095 (27.81)	1.138 (28.91) 1.128 (28.65)			
12	.788 (20.02) .784 (19.91)	.826 (20.98) .816 (20.73)	37	1.224 (31.09) 1.220 (30.99)	1.263 (32.08) 1.253 (31.83)			

D

Backshells and Accessories

Selection guide

D

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

Straight Strain Relief

AS85049/118

Product Series and Basic Part Number	Dash No. *Table I*		Finish *Table II*
M85049/118	S	08	W

S *= Detented Self-Locking*
N *= Non-Detented Self-Locking*
Use Dash (–) for Non-Self-Locking

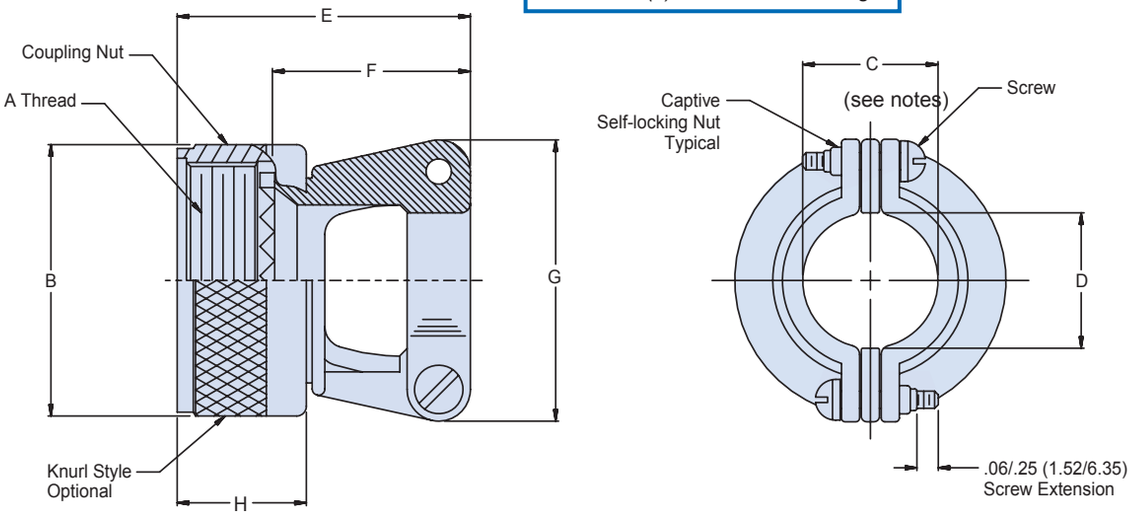


TABLE I: Dash Number, Shell Size, Thread and Dimensions

Dash No.	Screw Size	Shell Size	A Thread Class 2B	B Dia Max	C Dim ± .031 (0.8)	D Min	E Max Length	F Dim	G Dim Max	H Dim Max
03	4-40	3	9/16-24 UNEF	.95 (24.1)	.219 (5.6)	.22 (5.6)	1.14 (29.0)	.77 (19.6) .51 (13.0)	.88 (22.4)	.710 (18.00
12	4-40	7	3/4-20 UNEF	1.14 (29.0)	.344 (8.7)	.35 (8.9)	1.38 (35.1)	1.01 (25.7) .76 (19.3)	1.12 (28.4)	.710 (18.00
14	4-40	12	7/8-20 UNEF	1.26 (32.0)	.460 (11.7)	.47 (11.9)	1.38 (35.1)	1.01 (25.7) .76 (19.3)	1.19 (30.3)	.710 (18.00
16	4-40	19	1-20 UNEF	1.39 (35.3)	.545 (13.8)	.55 (14.0)	1.50 (38.1)	1.13 (28.7) .88 (22.4)	1.44 (36.6)	.710 (18.00
18	6-32	27	1 1/16-18 UNEF	1.51 (38.4)	.615 (15.6)	.62 (15.7)	1.75 (44.5)	1.38 (35.1) 1.13 (28.7)	1.56 (39.6)	.710 (18.00
20	6-32	37	1 3/16-18 UNEF	1.64 (41.7)	.698 (17.7)	.70 (17.8)	1.88 (47.8)	1.51 (38.4) 1.25 (31.8)	1.69 (42.9)	.710 (18.00
61	8-32	61	1 1/2-18 UNEF	1.95 (49.5)	.850 (21.6)	.85 (21.6)	2.13 (54.1)	1.76 (44.7) 1.51 (38.5)	1.88 (47.8)	.710 (18.0)

TABLE II: Material and Finish

Sym.	Material	Finish
A	Aluminum Alloy	Black Anodize
N		Electroless Nickel
W		Cadmium, Olive Drab
X		Nickel Fluorocarbon Polymer
Z		Zinc Nickel

NOTES

1. Glenair Series 600 Backshell Assembly Tools are recommended for assembly/installation.
2. Cable entry is measured with saddle bars closed and bottomed on clamp ears.
3. Material/Finish:
   Clamp body, coupling nut, saddles - Al alloy or 300 Series SST/See Table II.
   Clamp screws and lock nuts - CRES/Passivated, Silver plate optional.
   Anti-rotation device - Corrosion resistant material

90° Strain Relief

AS85049/120

Product Series and Basic Part Number	Dash No. *Table I*		Finish *Table II*
M85049/120	S	08	W

S *= Detented Self-Locking*
N *= Non-Detented Self-Locking*
Use Dash (–) for Non-Self-Locking

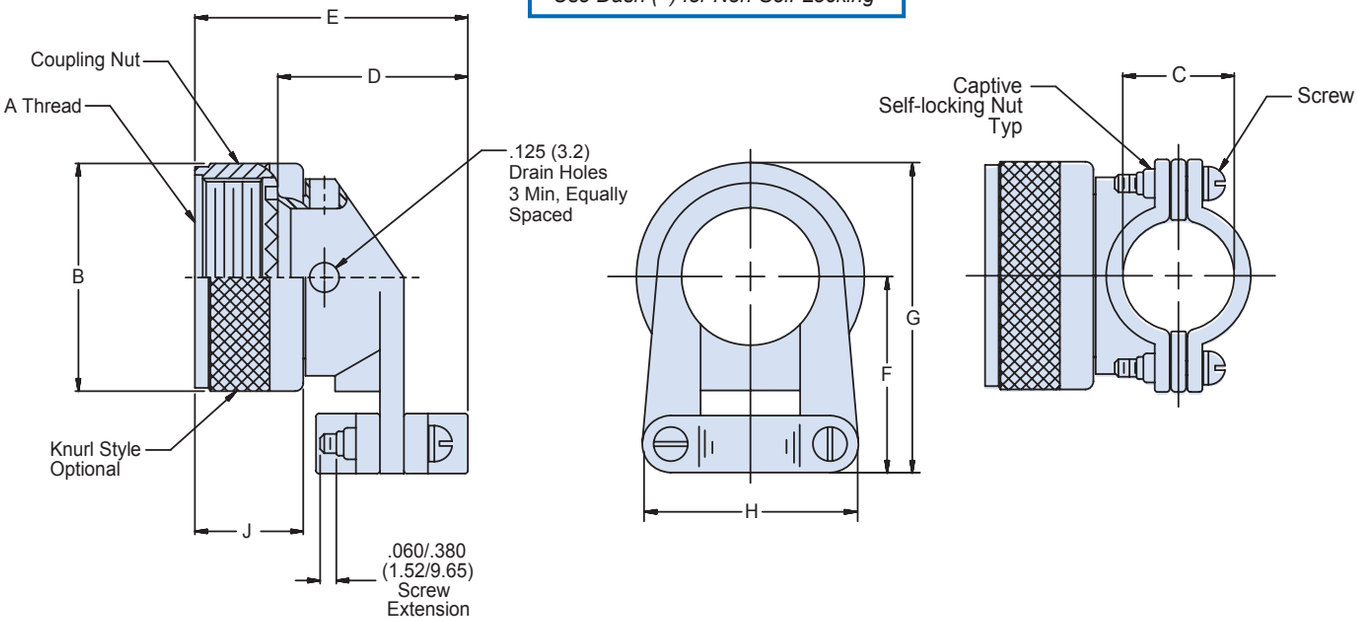


TABLE I: Dash Number, Shell Size, Thread and Dimensions

Dash No.	Screw Size	Shell Size	A Thread Class 2B	B Dia Max	C Dim ± .031 (0.8)	D Max	E Max Length	F Dim Max	G Dim Max	H Dim Max	J Dim Max
03	4-40	3	9/16-24 UNEF	.95 (24.1)	.219 (5.6)	.93 (23.6)	1.29 (32.8)	.84 (21.3)	1.32 (33.5)	.88 (22.4)	.710 (18.0)
12	4-40	7	3/4-20 UNEF	1.14 (29.0)	.344 (8.7)	1.21 (30.7)	1.57 (39.9)	.93 (23.6)	1.50 (38.1)	1.12 (28.4)	.710 (18.0)
14	4-40	12	7/8-20 UNEF	1.26 (32.0)	.460 (11.7)	1.27 (32.3)	1.63 (41.4)	1.00 (25.4)	1.62 (41.4)	1.19 (30.2)	.710 (18.0)
16	4-40	19	1-20 UNEF	1.39 (35.3)	.545 (13.8)	1.42 (36.1)	1.78 (45.2)	1.06 (26.9)	1.75 (44.5)	1.44 (36.6)	.710 (18.0)
18	6-32	27	1 1/16-18 UNEF	1.51 (38.4)	.615 (15.6)	1.53 (38.9)	1.89 (48.0)	1.23 (31.2)	1.99 (50.5)	1.56 (39.6)	.710 (18.0)
20	6-32	37	1 3/16-18 UNEF	1.64 (41.7)	.698 (17.7)	1.65 (41.9)	2.01 (51.1)	1.30 (33.0)	2.07 (52.6)	1.69 (42.9)	.710 (18.0)
61	8-32	61	1 1/2-18 UNEF	1.95 (49.5)	.850 (21.6)	1.90 (48.3)	2.26 (57.4)	1.45 (36.8)	2.43 (61.7)	1.88 (47.8)	.710 (18.0)

TABLE II: Material and Finish

Sym.	Material	Finish
A	Aluminum Alloy	Black Anodize
N		Electroless Nickel
W		Cadmium, Olive Drab
X		Nickel Fluorocarbon Polymer
Z		Zinc Nickel

NOTES

1. Glenair Series 600 Backshell Assembly Tools are recommended for assembly and installation.
2. Cable entry is measured with saddle bars closed and bottomed on clamp ears.
3. Material/Finish:
   Clamp body, coupling nut, saddles - Al alloy or 300 Series SST/See Table II.
   Clamp screws and lock nuts - CRES/Passivated, Silver plate optional.
   Anti-rotation device - Corrosion resistant material

Straight Strain Relief

AS85049/52

Basic Part Number — **M85049/52**

Dash No. — **S** | **10** | **W**

FOR NEW DESIGN USE AS85049/118

S = Self-Locking
-1 = Non-Self-Locking
N = *Non-Detented*

Material and Finish Designator
A = Aluminum, Black Anodize
N = Aluminum, Electroless Nickel
S = Stainless Steel, Passivate
W = Aluminum, 1000 Hr. Cadmium O.D. over Electroless Nickel

Superseded Part Number

MS3417-10 A

- Basic Part No. (Non-Self-Locking)
- Dash No.
- Metal and Finish Designator
  - A = Aluminum 1000 Hour Cadmium Olive Drab over Electroless Nickel
  - C = Aluminum, Cadmium Olive Drab
  - G = Aluminim Black Anodize
  - N = Aluminum, Electroless Nickel

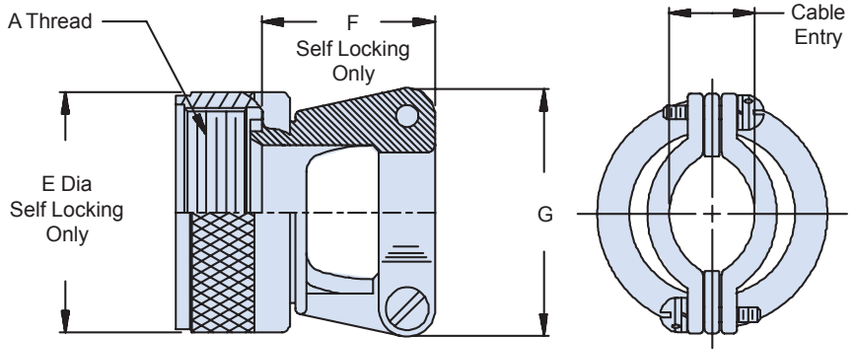


TABLE I: Shell Size, Cable Entry and Backshell Dimensions

Dash No.	Shell Size	A Thread Class 2B	Ø E Max Self-Locking		F Max Self-Locking		G Max		Cable Entry Min		Cable Entry Max	
03*	3	.562 - 24 UNEF	-	-	-	-	.782	(19.9)	.125	(3.2)	.204	(5.2)
12	7	.750 - 20 UNEF	1.135	(28.8)	.98	(24.9)	1.003	(24.6)	.291	(7.4)	.416	(10.6)
14	12	.875 - 20 UNEF	1.260	(32.0)	.98	(24.9)	1.061	(25.5)	.351	(8.9)	.476	(12.1)
16	19	1.000 - 20 UNEF	1.385	(35.2)	1.10	(27.9)	1.234	(26.9)	.501	(12.7)	.626	(15.9)
18	27	1.062 - 18 UNEF	1.510	(38.4)	1.35	(34.3)	1.466	(35.4)	.518	(13.2)	.706	(17.9)
20	37	1.188 - 18 UNEF	1.635	(41.5)	1.98	(50.3)	1.572	(37.2)	581	(14.8)	.831	(21.1)
61*	61	1.500 - 18 UNEF	-	-	-	-	1.775	(45.1)	.706	(17.9)	1.081	(27.5)

* Not Available in Self Locking

NOTES

1. Cable Entry is defined as the accommodation entry for the wire bundle or cable.
2. Dimensions are not intended for inspection criteria.
3. For complete dimensions, see the applicable Military Specification.

90° Strain Relief

AS85049/51

Basic Part Number | **Dash No.**

M85049/51 **S** **10** **W**

FOR NEW DESIGN USE AS85049/120

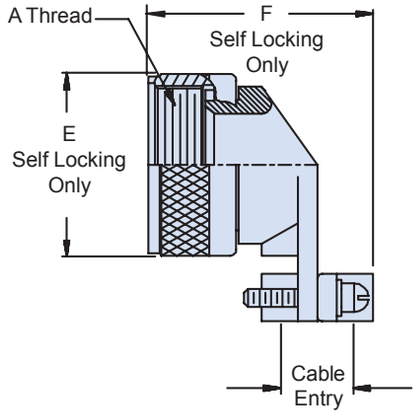
S = Self-Locking
-1 = Non-Self-Locking
N = *Non-Detented*

Material and Finish Designator
A = Aluminum, Black Anodize
N = Aluminum, Electroless Nickel
S = Stainless Steel, Passivate
W = Aluminum, 1000 Hr. Cadmium O.D. over Electroless Nickel

Superseded Part Number

MS3418-10 C

- Basic Part No. (Non-Self-Locking)
- Dash No.
- Metal and Finish Designator
  - A = Aluminum 1000 Hour Cadmium Olive Drab over Electroless Nickel
  - C = Aluminum, Cadmium Olive Drab
  - G = Aluminim Black Anodize
  - N = Aluminum, Electroless Nickel



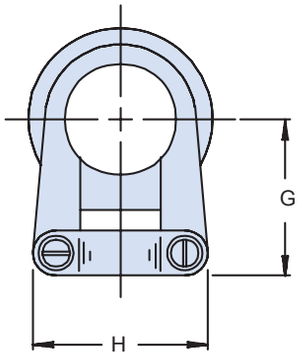


TABLE I: Shell Size, Cable Entry and Backshell Dimensions

Dash No.	Shell Size	A Thread Class 2B	Ø E Max Self-Locking		F Max Self-Locking		G ±.062	G (1.6)	H Max	H	Cable Entry Min	Cable Entry Min	Cable Entry Max	Cable Entry Max
3*	3	.562 - 24 UNEF	-	-	-	-	.777	(19.7)	.782	(19.9)	.125	(3.2)	.204	(5.2)
12	7	.750 - 20 UNEF	1.135	(28.8)	1.532	(38.9)	.867	(22.0)	.968	(24.6)	.291	(7.4)	.416	(10.6)
14	12	.875 - 20 UNEF	1.260	(32.0)	1.592	(40.4)	.930	(23.6)	1.003	(25.5)	.351	(8.9)	.476	(12.1)
16	19	1.000 - 20 UNEF	1.385	(35.2)	1.741	(44.2)	.994	(25.2)	1.061	(26.9)	.501	(12.7)	.626	(15.9)
18	27	1.062 - 18 UNEF	1.510	(38.4)	1.853	(47.1)	1.171	(29.7)	1.394	(35.4)	.518	(13.2)	.706	(17.9)
20	37	1.188 - 18 UNEF	1.635	(41.5)	1.978	(50.2)	1.234	(31.2)	1.466	(37.2)	581	(14.8)	.831	(21.1)
61*	61	1.500 - 18 UNEF	-	-	-	-	1.388	(35.3)	1.775	(45.1)	.706	(17.9)	1.081	(27.5)

* Not Available in Self Locking

NOTES

1. Cable Entry is defined as the accommodation entry for the wire bundle or cable.
2. Dimensions are not intended for inspection criteria.
3. For complete dimensions, see the applicable Military Specification.

Straight Shrink Boot Adapter

AS85049/60-1

Basic Part Number: M85049/60-1

Shell Size: W 22

Finish
- *A = Black Anodize*
- *W = 1000 Hr. Cadmium Olive Drab*
- *X = Nickel Fluorocarbon Polymer*
- *Y = Pure Dense Electrodeposited Aluminum*
- *Z = Zinc Nickel, Black*

Superseded Part Number

Basic Part Number: MS3158 - 22 C

Shell Size

Finish
- *A = 1,000 Hr. Cadmium Olive Drab*
- *C = Cadmium Olive Drab*
- *N = Electroless Nickel*

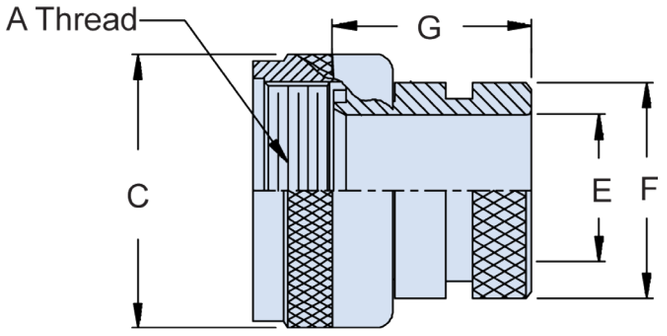


TABLE I: Shell Size, Thread and Dimensions

Dash No.	Shell Size	A Thread Class 2B	C Dia Max +.000 (0.0) -.045 (1.14)	E Min Dia	F Dia +.000 (0.0) -.020 (0.5)	G Max
3	3	.562 - 24 UNEF	.670 (17.0)	.250 (6.4)	.533 (13.5)	.832 (21.1)
12	7	.750 - 20 UNEF	.860 (21.8)	.491 (12.5)	.774 (19.7)	.832 (21.1)
14	12	.875 - 20 UNEF	.980 (24.9)	.565 (14.4)	.838 (21.3)	.832 (21.1)
16	19	1.000 - 20 UNEF	1.110 (28.2)	.690 (17.5)	.963 (24.5)	.832 (21.1)
18	27	1.062 - 18 UNEF	1.220 (31.0)	.769 (19.5)	1.042 (26.5)	.832 (21.1)
20	37	1.188 - 18 UNEF	1.350 (34.3)	.894 (22.7)	1.217 (30.9)	.832 (21.1)
61	61	1.500 - 18 UNEF	1.650 (41.9)	1.174 (29.8)	1.529 (38.8)	.832 (21.1)

NOTE

1. For complete dimensions see the applicable Military Specification.

Straight Shrink Boot Adapter

AS85049/60-2G

Basic Part Number	Shell Size	
M85049/60-2G	22	W

Finish
A = Black Anodize
W = 1000 Hr. Cadmium Olive Drab
X = Nickel Fluorocarbon Polymer
Y = Pure Dense Electrodeposited Aluminum
Z = Zinc Nickel, Black

Superseded Part Number

Basic Part Number	Shell Size	Style	
MS3416	- 22	G	C

Finish
C = Cadmium Olive Drab over Electroless Nickel
N = Electroless Nickel

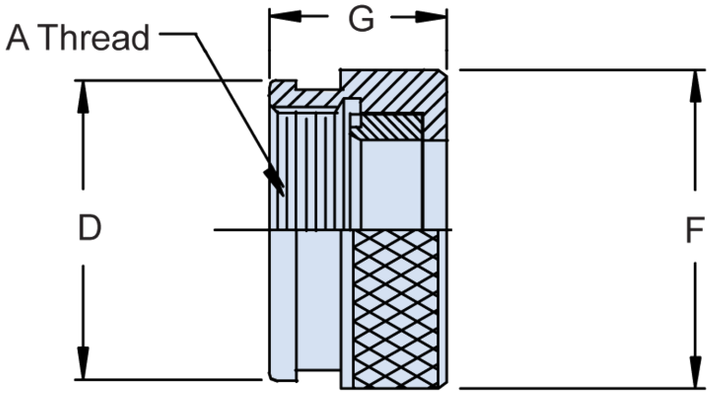


TABLE I: Shell Size, Thread and Dimensions

Dash No.	Shell Size	A Thread Class 2B	D Dia +.000 (0.0) -.020 (0.5)	F Dia +.000 (0.0) -.045 (1.1)	G Max
3	3	.562 - 24 UNEF	.709 (18.0)	.750 (19.1)	.540 (13.7)
12	7	.750 - 20 UNEF	.898 (22.8)	.938 (23.8)	.540 (13.7)
14	12	.875 - 20 UNEF	1.024 (26.0)	1.063 (27.0)	.540 (13.7)
16	19	1.000 - 20 UNEF	1.152 (29.3)	1.238 (31.4)	.540 (13.7)
18	27	1.062 - 18 UNEF	1.243 (31.6)	1.310 (33.3)	.540 (13.7)
20	37	1.188 - 18 UNEF	1.370 (34.8)	1.436 (36.5)	.540 (13.7)
61	61	1.500 - 18 UNEF	1.653 (42.0)	1.748 (44.4)	.540 (13.7)

NOTE

1. For complete dimensions see the applicable Military Specification.

Straight Crimp Ring Backshell and Crimp Ring

AS85049/26-1 and MS3419

Basic Part Number
M85049/26-1 = Adapter Only
M85049/26-2 = Crimp Ring Only
M85049/26-3 = Adapter with Crimp Ring
(See Page B-52 for Crimp Ring)

Shell Size
(Table II)

M85049/26-1 - 12 W

Finish
N = Electroless Nickel
W = 1,000 Hr. Cadmium Olive Drab over Electroless Nickel
X = Aluminum, Nickel Fluorocarbon Polymer
Z = Aluminum, Zinc-Nickel, Black

Superseded Part Number

MS3419-21 C
(Basic Part No. / Shell Size)

Finish
(Material is Aluminum Only)
A = Electroless Nickel
C = 500 Hr. Cadmium Olive Drab over Electroless Nickel

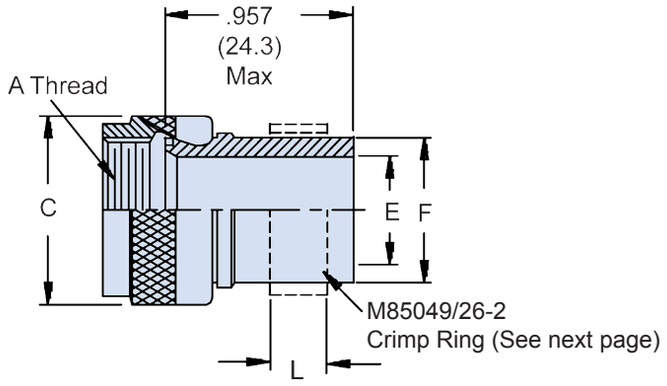


TABLE I: Adapter Shell Size,Thread, and Dimensions

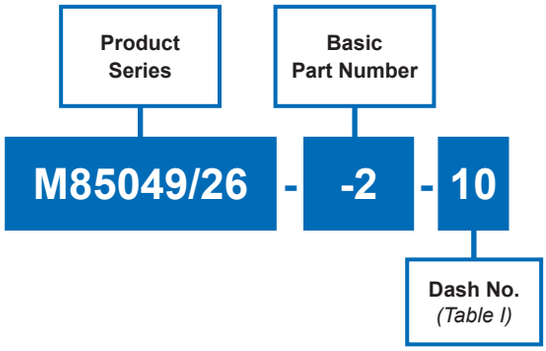
Dash No.	Shell Size	A Thread Class 2B	C Dia Max	E Dia	F Dia
3	3	.562 - 24 UNEF	.670 (17.0)	.250 (6.4)	.337 (8.6)
12	7	.750 - 20 UNEF	.860 (21.8)	.420 (10.7)	.500 (12.7)
14	12	.875 - 20 UNEF	.980 (24.9)	.540 (13.7)	.620 (15.7)
16	19	1.000 - 20 UNEF	1.110 (28.2)	.670 (17.0)	.750 (19.1)
18	27	1.062 - 18 UNEF	1.220 (31.0)	.789 (20.0)	.880 (22.4)
20	37	1.188 - 18 UNEF	1.350 (34.3)	.914 (23.2)	1.000 (25.4)
61	61	1.500 - 18 UNEF	1.650 (41.9)	1.210 (30.7)	1.359 (34.5)

NOTES

1. For complete dimensions see the applicable Military Specification.
2. Metric dimensions (mm) are in parentheses.

Backshell Crimp Ring

AS85049/26-2



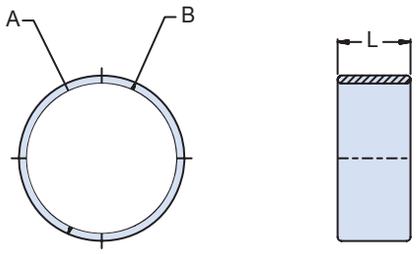


TABLE I: Shell Size, Thread, Cable Entry and Dimensions

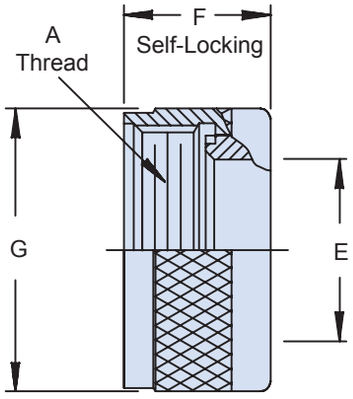
Dash No.	Shell Size	Color Code	A Dia Min	A Dia Max	B Dia Min	B Dia Max	L Dim ± ±.020 (0.5)	Installing Die Cat. No. (See Note 2)
8	3	GREEN	.400 (10.2)	.410 (10.4)	.448 (11.4)	.458 (11.6)	.250 (6.4)	GS405
12	7	RED	.585 (14.9)	.595 (15.1)	.660 (16.8)	.680 (17.3)	.440 (11.2)	GS590
14	12	BLUE	.705 (17.9)	.715 (18.2)	.780 (19.8)	.800 (20.3)	.440 (11.2)	GS710
16	19	GREY	.835 (21.2)	.845 (21.5)	.910 (23.1)	.930 (23.6)	.440 (11.2)	GS840
18	27	BROWN	1.005 (25.5)	1.015 (25.8)	1.080 (27.4)	1.100 (27.9)	.440 (11.2)	GS1010
20	37	GREEN	1.125 (28.6)	1.135 (28.8)	1.200 (30.5)	1.220 (31.0)	.440 (11.2)	GS1130
61	61	PURPLE	1.435 (36.4)	1.445 (36.7)	1.510 (38.4)	1.530 (38.9)	.440 (11.2)	GS1440

NOTES

1. Assembly identified with manufacturer's name and part number, space permitting.
2. Crimp tool shall be the Thomas and Betts Installing Head catalog number 13640 or equivalent (see Table I).
3. The installing dies (Thomas and Betts Cat. No.--See Table I) shall be used with the Thomas and Betts Installing head Catalog Number 13640 or an equivalent tool.
4. Material/Finish: Copper/Tin Plate.
5. Metric dimensions (mm) are in parentheses.

E-Nut (Self-Locking and Non-Self-Locking)

AS85049/31, MS3416 and MIL-DTL-85723/15N



Basic Part Number

M85049/31 S 22 W

Finish
A = Anodize, Black
N = Electroless Nickel
W = 1,000 Hour Cadmium Olive Drab over Electroless Nickel
X = Nickel Fluorocarbon Polymer
Y = Pure Dense Electrodeposited Aluminum
Z = Zinc-Nickel, Black

S = *Self-Locking*
N = *Non-Detented*
Use Dash for Non-Self-Locking

Shell Size

Superseded Part Number

M83723/15N-10 A

Basic Part No. (Non-Self-Locking Only)

Dash No.

Finish Designator
A = Non-Conductive, Black Anodize
R = Conductive, Electroless Nickel

Superseded Part Number

MS3416 -10-E A

Basic Part No. (Non-Self-Locking Only)

Dash No.

Style

Metal and Finish Designator
A = Aluminum 500 Hour Cad. Olive Drab Over Electroless Nickel
C = Aluminum, Cadmium Olive Drab
G = Aluminum, Black Anodize
N = Aluminum, Electroless Nickel

TABLE I: Shell Size, Thread and Dimensions

Shell Size	A Thread Class 2B	Ø E Max		F Max		Ø G Max	
3	.562 - 24 UNEF	.270	(6.9)	--		--	
7	.750 - 20 UNEF	.511	(13.0)	.710	(18.0)	1.135	(28.8)
12	.875 - 20 UNEF	.585	(14.9)	.710	(18.0)	1.260	(32.0)
19	1.000 - 20 UNEF	.710	(18.0)	.710	(18.0)	1.385	(35.2)
27	1.062 - 18 UNEF	.789	(20.0)	.710	(18.0)	1.510	(38.4)
37	1.188 - 18 UNEF	.914	(23.2)	.710	(18.0)	1.635	(41.5)
61	1.500 - 18 UNEF	1.194	(30.3)	--		--	

NOTES

1. For complete dimensions see the applicable Military Specification.
2. Metric dimensions (mm) are in parentheses.

90° Environmental Backshell

AS85049/9 and MS3188B

Basic Part Number | **Dash Number** *(Table II)*

M85049/9 - 21 N

Finish / Material

B = *Black Cadmium / Stainless Steel*
N = *Electroless Nickel / Aluminum*
S = *Passivated / Stainless Steel*
W = *1,000 Hr. Cadmium Olive Drab over Electroless Nickel / Aluminum*
X = *Nickel Fluorocarbon Polymer*
Y = *Pure Dense Electrodeposited Aluminum*
Z = *Zinc Nickel*
XS = *Nickel Fluorocarbon Polymer / Stainless Steel*
YS = *Pure Dense Electrodeposited Aluminum / Stainless Steel*
ZS = *Zinc Nickel, Black / Stainless Steel*

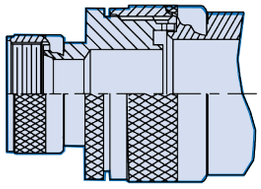
Superseded Part Number

MS3188B 21 N

Basic Part No. | Dash No.

Finish
(Material is Aluminum Only)

A = Cadmium Olive Drab over Nickel
C = Cadmium Olive Drab
N = Electroless Nickel



STYLE 2

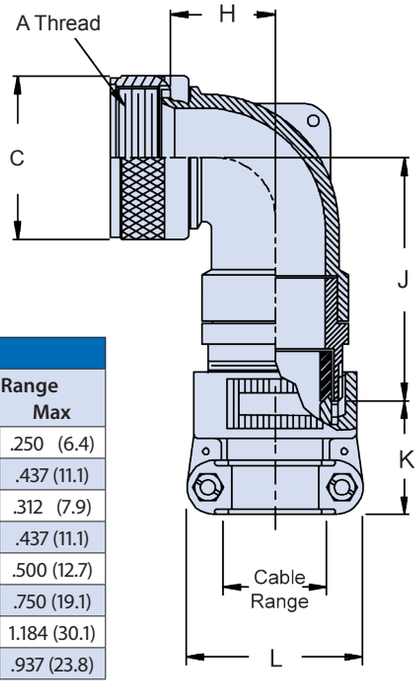


TABLE II: Dash Number and Cable Range

Dash No.	Shell Size	A Thread Ref	C Dia Max	H Max	J Max	K Ref.	L Max	Cable Range Min	Cable Range Max
1	03	9/16-24 UNEF	.98 (24.9)	.761 (19.3)	1.862 (47.3)	1.027 (26.1)	.957 (24.3)	.125 (3.2)	.250 (6.4)
2	03			1.511 (38.4)	1.382 (35.1)	1.027 (26.1)	1.145 (29.1)	.250 (6.4)	.437 (11.1)
6	12	7/8-20 UNEF	1.28 (32.5)	.766 (19.5)	2.002 (50.9)	1.027 (26.1)	.957 (24.3)	.125 (3.2)	.312 (7.9)
7	12			.766 (19.5)	2.002 (50.9)	1.027 (26.1)	1.145 (29.1)	.250 (6.4)	.437 (11.1)
8	12			.766 (19.5)	1.397 (35.5)	1.027 (26.1)	1.332 (33.8)	.350 (8.9)	.500 (12.7)
38	61	1-1/2-18 UNEF	1.89 (48.0)	1.291 (32.8)	2.442 (62.0)	1.059 (26.9)	1.551 (39.4)	.500 (12.7)	.750 (19.1)
39	61			1.291 (32.8)	2.087 (53.0)	1.375 (34.9)	2.113 (53.7)	.875 (22.2)	1.184 (30.1)
53	61			1.291 (32.8)	2.087 (53.0)	1.156 (29.4)	1.770 (45.0)	.625 (15.9)	.937 (23.8)

NOTES

1. For complete dimensions see the applicable Military Specification.
2. Metric dimensions (mm) are in parentheses.
3. When maximum cable entry is exceeded, Style 2 will be supplied.
4. Cable Range is defined as the accommodation range for the wire bundle or cable. Dimensions shown are not intended for inspection criteria.
5. Approximate chain lengths: Dash No. 01-12 = 5.0 (127.0); Dash No. 13-29 = 6.0 (152.4).

Straight EMI/RFI Environmental Backshell

AS85049/10 and MS3437A

Superseded Part Number

MS3437A 21 C

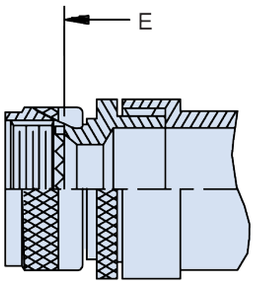
Basic Part No. | Dash No.

Finish
(Material is Aluminum Only)
A = Cadmium Olive Drab over Nickel
C = Cadmium Olive Drab
N = Electroless Nickel

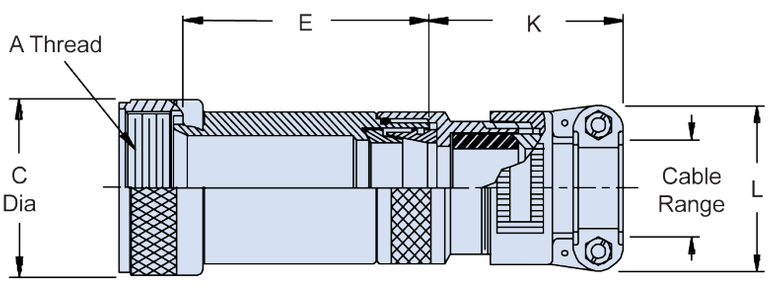
Basic Part Number | **Dash Number** *(Table II)*

M85049/10 - 21 W

Finish / Material
B *= Black Cadmium / Stainless Steel*
N *= Electroless Nickel / Aluminum*
S *= Passivated / Stainless Steel*
W *= 1,000 Hr. Cadmium Olive Drab over Electroless Nickel / Aluminum*
X *= Aluminum, Nickel Fluorocarbon Polymer*
Z *= Aluminum, Zinc-Nickel, Black*
XS *= Stainless Steel, Nickel Flurocarbon Polymer*
ZS *= Stainless Steel, Zinc-Nickel, Black*



STYLE 2



STYLE 1

TABLE I: Shell Size and Dimensions

Dash No.	Shell Size	A Thread Class 2B	C Dia Max
3	3	.562 - 24 UNEF	.67 (17.0)
12	7	.750 - 20 UNEF	.86 (21.8)
14	12	.875 - 20 UNEF	.98 (24.9)
16	19	1.000 - 20 UNEF	1.11 (28.2)
18	27	1.062 - 18 UNEF	1.22 (31.0)
20	37	1.188 - 18 UNEF	1.34 (34.0)
61	61	1.500 - 18 UNEF	1.65 (41.9)

TABLE II: Dash No., Style, Shell Size, Dimensions and Cable Range

Dash No.	Shell Size	Style	E Max	K Ref	L Max	Cable Range Min	Cable Range Max
01	3	1	2.125 (54.0)	1.544 (39.2)	.957 (24.3)	.125(3.2)	.250(6.4)
02	3	1	3.125 (79.4)	1.544 (39.2)	.957 (24.3)	.125(3.2)	.250(6.4)
03	3	2	2.875 (73.0)	1.544 (39.2)	1.145 (29.1)	.250(6.4)	.437 (11.1)
04	3	2	3.875 (98.4)	1.544 (39.2)	1.145 (29.1)	.250(6.4)	.437 (11.1)
13	12	1	2.125 (54.0)	1.544 (39.2)	1.145 (29.1)	.250(6.4)	.437 (11.1)
14	12	1	3.125 (79.4)	1.544 (39.2)	1.145 (29.1)	.250(6.4)	.437 (11.1)
15	12	2	2.875 (73.0)	1.844 (46.8)	1.332 (33.8)	.350(8.9)	.625 (15.9)
16	12	2	3.875 (98.4)	1.844 (46.8)	1.332 (33.8)	.350(8.9)	.625 (15.9)
103	61	1	3.125 (79.4)	1.916 (48.7)	1.551 (39.4)	.500 (12.7)	.750 (19.1)
104	61	1	4.125 (104.8)	1.916 (48.7)	1.551 (39.4)	.500 (12.7)	.750 (19.1)
105	61	1	3.125 (79.4)	2.000 (50.8)	1.770 (45.0)	.625 (15.9)	.937 (23.8)
106	61	1	4.125 (104.8)	2.000 (50.8)	1.770 (45.0)	.625 (15.9)	.937 (23.8)
107	61	2	3.875 (98.4)	2.230 (56.6)	2.113 (53.7)	.875 (22.2)	1.250 (31.8)
108	61	2	4.875 (123.8)	2.230 (56.6)	2.113 (53.7)	.875 (22.2)	1.250 (31.8)
109	61	2	3.875 (98.4)	2.024 (51.4)	2.363 (60.0)	1.000 (25.4)	1.375 (34.9)
110	61	2	4.875 (123.8)	2.024 (51.4)	2.363 (60.0)	1.000 (25.4)	1.375 (34.9)
111	12	1	2.125 (54.0)	1.844 (46.8)	1.332 (33.8)	.350 (8.9)	.500 (12.7)
114	12	1	2.125 (54.0)	1.544 (39.2)	.957 (24.3)	.125 (3.2)	.312 (7.9)
115	12	1	3.125 (79.4)	1.544 (39.2)	.957 (24.3)	.125 (3.2)	.312 (7.9)
138	12	1	2.125 (54.0)	1.844 (46.8)	1.332 (33.8)	.350 (8.9)	.500 (12.7)
139	12	1	3.125 (79.4)	1.844 (46.8)	1.332 (33.8)	.350 (8.9)	.500 (12.7)

NOTES

1. For complete dimensions see the applicable Military Specification.
2. Metric dimensions (mm) are in parentheses.
3. Cable Range is defined as the accommodation range for the wire bundle or cable. Dimensions shown are not intended for inspection criteria.

Straight Environmental Backshell

AS85049/11 and MS3437B

Superseded Part Number

MS3437B 21 N

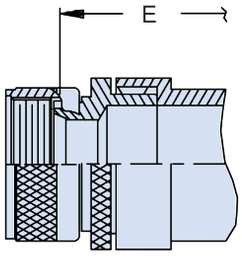
- Basic Part No.
- Dash No.
- **Finish** (Material is Aluminum Only)
  - **A** = Cadmium Olive Drab over Nickel
  - **C** = Cadmium Olive Drab
  - **N** = Electroless Nickel

Basic Part Number | **Dash Number** *(Table II)*

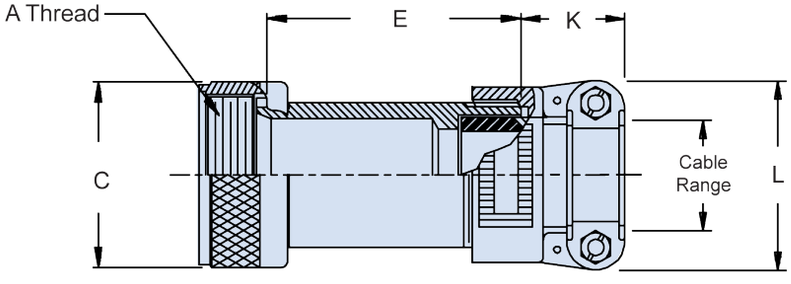
M85049/11 - 21 N

Finish / Material

- ***B*** = *Black Cadmium / Stainless Steel*
- ***N*** = *Electroless Nickel / Aluminum*
- ***S*** = *Passivated / Stainless Steel*
- ***W*** = *1,000 Hr. Cadmium Olive Drab over Electroless Nickel / Aluminum*
- ***X*** = *Aluminum, Nickel Fluorocarbon Polymer*
- ***Z*** = *Aluminum, Zinc-Nickel, Black*
- ***XS*** = *Stainless Steel, Nickel Flurocarbon Polymer*
- ***ZS*** = *Stainless Steel, Zinc-Nickel, Black*



STYLE 2



STYLE 1

TABLE I: Shell Size and Dimensions

Dash No.	Shell Size	A Thread Class 2B	C Dia Max
3	3	.562 - 24 UNEF	.67 (17.0)
12	7	.750 - 20 UNEF	.86 (21.8)
14	12	.875 - 20 UNEF	.98 (24.9)
16	19	1.000 - 20 UNEF	1.11 (28.2)
18	27	1.062 - 18 UNEF	1.22 (31.0)
20	37	1.188 - 18 UNEF	1.34 (34.0)
61	61	1.500 - 18 UNEF	1.65 (41.9)

TABLE II: Dash No., Style, Shell Size, Dimensions and Cable Range

Dash No.	Shell Size	Style	E Max	K Ref	L Max	Cable Range Min	Cable Range Max
01	3	1	2.125 (54.0)	1.027 (26.1)	.957 (24.3)	.125(3.2)	.250(6.4)
02	3	1	3.125 (79.4)	1.027 (26.1)	.957 (24.3)	.125(3.2)	.250(6.4)
03	3	2	2.875 (73.0)	1.027 (26.1)	1.145 (29.1)	.250(6.4)	.437 (11.1)
04	3	2	3.875 (98.4)	1.027 (26.1)	1.145 (29.1)	.250(6.4)	.437 (11.1)
13	12	1	2.125 (54.0)	1.027 (26.1)	1.145 (29.1)	.250(6.4)	.437 (11.1)
14	12	1	3.125 (79.4)	1.027 (26.1)	1.145 (29.1)	.250(6.4)	.437 (11.1)
15	12	2	2.875 (73.0)	1.027 (26.1)	1.332 (33.8)	.350(8.9)	.625 (15.9)
16	12	2	3.875 (98.4)	1.027 (26.1)	1.332 (33.8)	.350(8.9)	.625 (15.9)
103	61	1	3.125 (79.4)	1.059 (26.9)	1.551 (39.4)	.500 (12.7)	.750 (19.1)
104	61	1	4.125 (104.8)	1.059 (26.1)	1.551 (39.4)	.500 (12.7)	.750 (19.1)
105	61	1	3.125 (79.4)	1.156 (29.4)	1.770 (45.0)	.625 (15.9)	.937 (23.8)
106	61	1	4.125 (104.8)	1.156 (29.4)	1.770 (45.0)	.625 (15.9)	.937 (23.8)
107	61	2	3.875 (98.4)	1.375 (34.9)	2.113 (53.7)	.875 (22.2)	1.250 (31.8)
108	61	2	4.875 (123.8)	1.375 (34.9)	2.113 (53.7)	.875 (22.2)	1.250 (31.8)
109	61	2	3.875 (98.4)	1.500 (38.1)	2.363 (60.0)	1.000 (25.4)	1.375 (34.9)
110	61	2	4.875 (123.8)	1.500 (38.1)	2.363 (60.0)	1.000 (25.4)	1.375 (34.9)
111	12	1	2.125 (54.0)	1.027 (26.1)	1.332 (33.8)	.350 (8.9)	.500 (12.7)
114	12	1	2.125 (54.0)	1.027 (26.1)	.957 (24.3)	.125 (3.2)	.312 (7.9)
115	12	1	3.125 (79.4)	1.027 (26.1)	.957 (24.3)	.125 (3.2)	.312 (7.9)
138	12	1	2.125 (54.0)	1.027 (26.1)	1.332 (33.8)	.350 (8.9)	.500 (12.7)
139	12	1	3.125 (79.4)	1.027 (26.1)	1.332 (33.8)	.350 (8.9)	.500 (12.7)

NOTES

1. For complete dimensions see the applicable Military Specification.
2. Metric dimensions (mm) are in parentheses.
3. Cable Range is defined as the accommodation range for the wire bundle or cable. Dimensions shown are not intended for inspection criteria.

Outgassing Properties and Requirements

Specification information
Space-grade interconnect manufacturing and test capability

Outgassing and Inspection Modification Codes

Glenair space mechanisms and related interconnect solutions are ideally designed for deployment of CubeSat and NanoSat equipment. All HDRMs, and connectors feature materials, finishes, and performance specifications that perform to NASA EEE-INST-002

Outgassing

Space flight equipment requires low-outgassing components in order to prevent degradation to optics and other sensitive instruments. Various Glenair 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. The space industry has adopted a standardized test procedure, ASTM E595, to evaulate outgassing properties. The MIL-DTL-38999 specification Class G also details specific TVM and CVCM values. In Glenair's 186T process, for example, connectors and connector materials are heated to 175° C at a vacuum of 5 X 10^{-6} Torr for 48 hours. Items under test are 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. Glenair is able to offer outgas processing which assures all materials comply with their respective standards.

Note on Connector Material and Finish Options

Some types of metals are prohibited for space flight. "Pure Tin, Cadmium, Zinc shall not be used as a final finish on EEE part (NASA EEE-INST-002 Instructions for EEE Parts Selection, Screening, Qualification, and Derating). NASA recommends electroless nickel or gold finish on connector shells and gold finish for contacts.

Specifying Appropriate NASA Screening

1 ***Choose a NASA EEE-INST-002 Table 2A screening level.*** This table contains three screening levels: ***Level 1*** for missions requiring the highest reliability and lowest level of risk, ***Level 2*** for low to moderate risk missions, and ***Level 3*** missions where enhanced screening and inspection is not invoked.

2 ***Choose outgassing process and/or NASA inspection requirements.*** 9 options are available for NASA outgassing, see Table I for details. Cross reference Table II for inspections completed by screening level as required by NASA standards.

3 ***Select the modification code*** from the table and add it to the part number. Example: 253-01600ME21–35PNMSA-**429.**

Table I: Outgassing per NASA Screening Levels and D38999, Class G

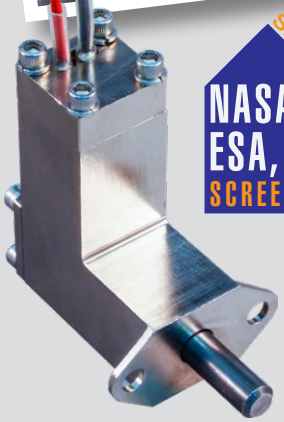
Screening Level	No Outgas Processing	48 Hour Oven Bake 175° C 100%	Thermal Vacuum* Outgassing 24 Hour 125° C 100%	Thermal Vacuum* Outgassing 48 Hour 175° C 100%	Mod Code
No Screening			●		186M (ASTM E595)
				●	186T (Class G)
3			●		429L
2	●				429
			●		429A
		●			429K
1	●				429B
			●		429C
		●			429J

*Thermal vacuum of 10^{-6} Torr.

Table II: NASA EEE-INST-02, Table 2A Screening Levels

Inspection	Level 1	Level 2	Level 3
Visual	100%	100%	100%
Mechanical	2	2	
Dielectric Withstanding Voltage	2	2	
Insulation Resistance	2	2	
Contact Engagement & Separation Force	2		
Hermeticity (Sealed Receptacles Only)	100%	100%	100%
Coupling Force	2		

Note: required inspection quantity shown. Zero acceptance of failures allowed for all quantities inspected. Inspection is not performed/required for MIL-DTL-38999, Class G



SPACE GRADE
NASA
ESA, JAXA
SCREENED

Glenair's family of space mechanisms are manufactured in certified cleanrooms. Full qualification test reports are available for every device type. NASA/ESA outgas processing and screening completed on-site. All operations are managed under a single certified quality system with unprecedented levels of performance.

But don't take it from us... take it from NASA

File Message Insert Options Format Text Review

Send To... Chris Toomey; Cc... Bcc... Subject: Glenair Supplier Audit Appreciation

December 5, 2016

Good afternoon Mr. Christopher J. Toomey…and to the Glenair Family

On behalf of the NASA Launch Services Program (LSP) and the Safety and Mission Assurance Division (SMA), I would like to express sincere appreciation for the hospitality afforded our NASA team… last week. It is obvious that your company takes pride and recognizes the value in meeting and even exceeding the intents of the Aerospace Standard AS9100. We came away with a positive sense in the partnership… . You have a remarkable campus facility and a remarkable employee team there in Glendale, and I am sure, throughout your vast network of offices and facilities around the world as well. The Quality leadership has done an outstanding job implementing a working Quality Management System around your successful business model. Thank you for recognizing the importance of this particular supplier audit to NASA… , as we seek crucial information relative to the NASA Certification… .

…I would like to express some of the other very positive comments that our team came away with regarding this audit. All of your employee team should take pride in the quality of your finished product line for your customers. To that end, here is a listing of but a few of our team's observations during the audit process:

1. Welcoming hospitality to customers
2. Informative Corporate Overview Presentation
3. Positive Employee Attitudes about the workplace
4. Informative and thorough process walk-downs
5. Informative and thorough production facility walk-downs
6. Processing area cleanliness and 5S organization
7. Timely Corrective Action and effective Preventive Action plans
8. Top Management involvement and participation in the QMS – AS9100 processes
9. Expertise of the employee team members
10. …and the ability of a randomly selected employee to express the Quality Policy and what it means to him in his position with the company

A formal compilation report is in work, and should reflect the over arching positive note, which recognizes that the audit at Glenair had no Major and no Minor findings whatsoever. Please forward to any appropriate team members who have contributed to this successful audit.

Respectfully,
Paul Cloues, NASA Quality Engineer
NASA Launch Services Program
Safety and Mission Assurance, SA-D
Analysis Planning and Test (APT) Research

Chris Toomey

E

PROVEN FLIGHT HERITAGE

SPACE-GRADE SOLUTIONS

NASA · ESA · JAXA · Commercial

Complex space-grade cable assemblies (shown: Glenair-made "Golden Umbilical")

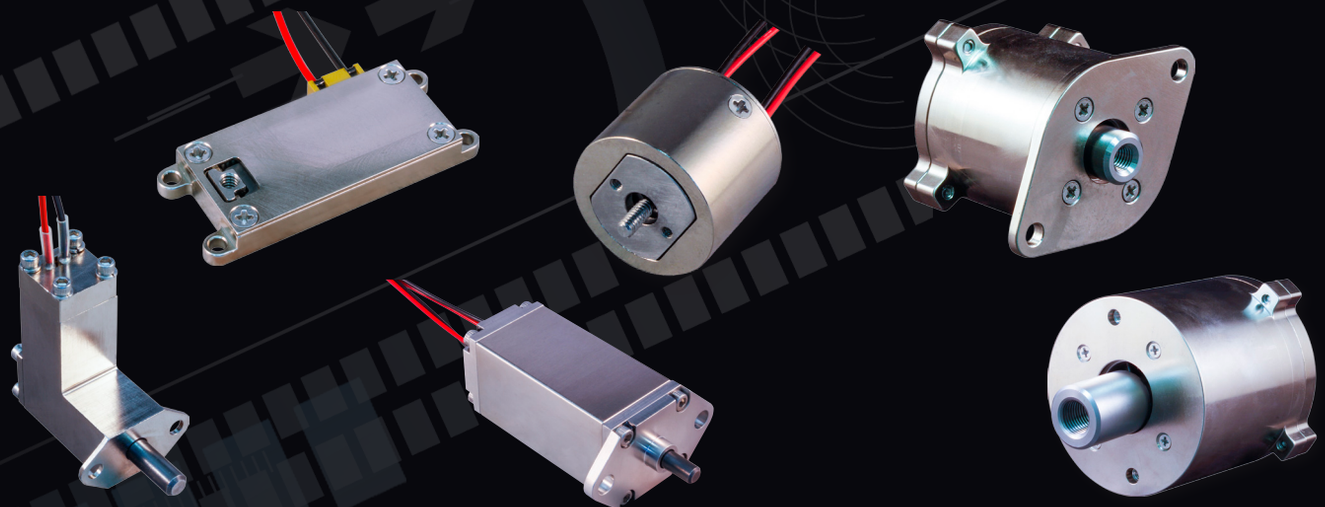
TURNKEY, SPACE-GRADE EMI/RFI WIRE HARNESS AND CABLE ASSEMBLIES

Multibranch Micro-D / Mighty Mouse cable assembly with ArmorLite™ lightweight EMI shield overbraiding

EMI/RFI shielded multibranch Micro-D connector assembly with Glenair Series 23 SuperNine® panel mount I/O connector

Repairable backshell-equipped cable assembly for a space lab application

HOLD-DOWN RELEASE MECHANISMS, PIN PULLERS AND PIN PUSHERS



Light Duty
Up to 75 lb release payload

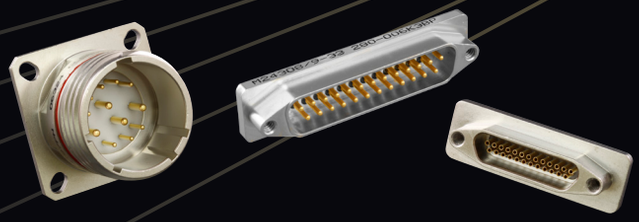
Medium Duty
Up to 1,000 lb release payload

Heavy Duty
Up to 20,000 lb release payload

SPACEWIRE CERTIFIED CABLES

Laboratory and flight variants

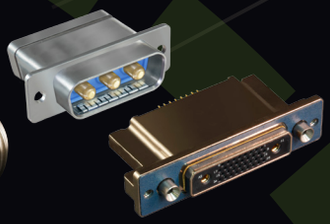
SPACE-QUALIFIED HERMETIC RECEPTACLES



Glass-to-metal and CODE RED encapsulant hermetic solutions for high-pressure / low-leakage space applications

EMI/RFI FILTER CONNECTORS

MIL-DTL-38999 type, Series 80 Mighty Mouse, and other circulars

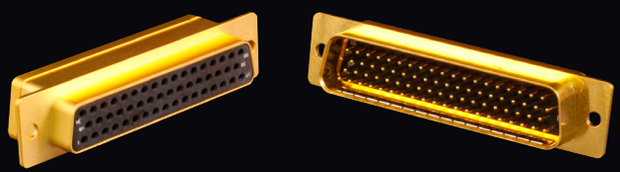


HiPer-D and Micro-Crimp filtered rectangulars

SPACE-GRADE 83513 MICRO-D AND 32139 NANO

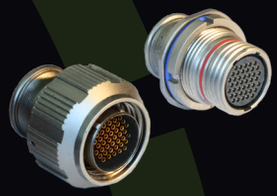
ESA and NASA screened connectors and backshells available as discrete components or wired pigtail assemblies

SERIES 28 HIPER-D M24308 INTERMATEABLE

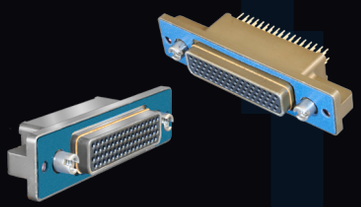


Qualified MIL-DTL-24308 Class K Space-Grade Hermetic, environmental, filter, Sav-Con® s and cordsets

LIGHTWEIGHT MIGHTY MOUSE AND SERIES 79



Small, lightweight, high-density ideally suited for space programs



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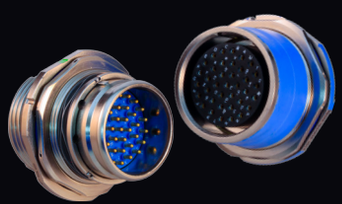
ASSISTED-RELEASE, AND LANYARD QUICK-DISCONNECTS



Blind mate D38999 type feedthrough with kick-off assist

Lanyard-release quick-disconnects

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