



Technology overview: blind-mate, assisted separation force, dead-face, and other payload deployment interconnects



BLIND-MATE AND ASSISTED SEPARATION FORCE CONNECTORS FOR SPACE FLIGHT APPLICATIONS

Glenair blind-mate assisted separation force connectors are engineered for mission-critical in-flight electrical disconnect applications, including satellite deployment, spacecraft stage separation, missile staging, and umbilical release. These connector pairs deliver precisely tuned assisted separation characteristics—with fully-configurable degrees of force—eliminating the need for lanyard-based actuation technologies.

Design and Functionality

Each connector assembly is built around either standard MIL-DTL-38999 insert arrangements (MIL-STD-1560 power and signal) or high-speed insert arrangements for shielded data and RF contacts. To ensure smooth and reliable operation, mated connector pairs are calibrated at the factory to account for mating friction and pin / socket normal force retention. A floating shell design prevents mechanical jamming during mating or separation, even under misaligned conditions. The system accommodates both linear and angular misalignment, enabling full blind-mating capabilities. All assemblies are compatible with standard environmental backshells and can be delivered as part of a turnkey separation package. We also offer integration with Glenair non-pyrotechnic Hold Down and Release Mechanisms (HDRMs), as well as turnkey cable harnessing—to deliver lightweight, low-shock, high-reliability solutions for space separation events.

LOCKING CIRCUIT TEST-MATE CONNECTOR



Available physical and electrical interlock solution prevents inadvertent armed or enabled state of critical control circuits. Typically mates with fixed-mount chassis or bus interconnect, often as part of a pre-flight safety chain.

SPACE-GRADE MIL-DTL-38999 SERIES III SuperNine® Blind-Mate / ASF Connectors



Technology overview

APPLICATIONS



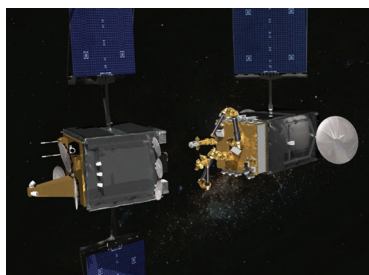
Satellite, spacecraft,
and payload deployment



Stage separation
in spacecraft



Umbilical disconnection in
exoatmospheric launch applications



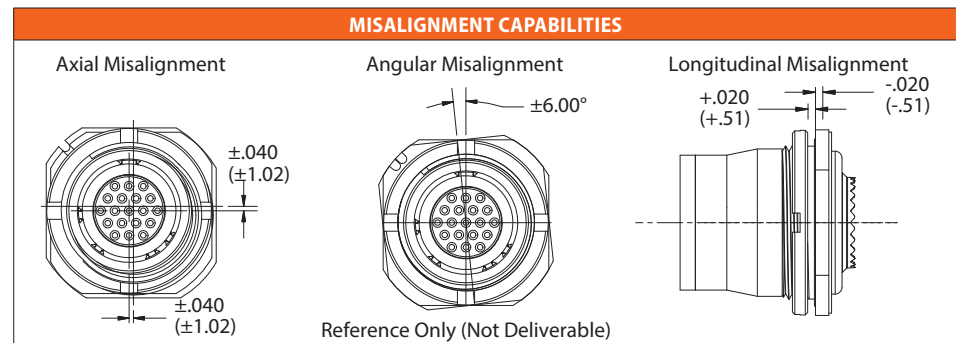
Panel disconnect in cargo pallet
and modular payload deployment

DEAD-FACE IN-FLIGHT SEPARATION CONNECTORS Glenair dead-face (DF) blind-mate connectors are designed for critical in-flight separation tasks in spacecraft, satellite systems, and missile staging. These connectors feature built-in electrical isolation that occurs prior to mechanical disconnection—enhancing system safety and electrical integrity during separation events.

Design and Operation

Glenair dead-face DF connector systems utilize MIL-DTL-38999-qualified insert patterns and standard AS39029 contacts. A key feature of the design is the internal isolation shuttle, which disengages signal paths ahead of the physical break at the separation plane. This design ensures that electrical interfaces remain protected from transients or shorts during and after separation, even in extreme environments. Each connector pair is calibrated during manufacturing to offset normal retention forces such as pin engagement, ensuring consistent and reliable separation performance. The connectors include a floating shell to prevent binding under load or misalignment. Rear-mount installation options simplify integration into panels or structures. The rear interface of the DF connector is compatible with standard MIL-DTL-38999 backshell accessories.

FIXED-MOUNT VS. FLOAT-MOUNT Glenair Blind-Mate interconnects are supplied in two mounting configurations: fixed-mount and float-mount. Both designs incorporate roll-on, roll-off plug nose architectures for reliable mating of connectors in blind-mate (rack-and-panel type) applications. Both styles are rear-mountable for ease-of-installation and termination. Float mount designs offer superior accommodation of connector misalignment in radial (axial), angular (tilt), and longitudinal (depth) orientations. In practical application, fixed-mount (Side A) connectors are typically installed on the chassis bus or frame for stability, while float mount designs with misalignment accommodation (Side B) are commonly installed on the removable payload tray or door.



CONNECTOR CLASSES Glenair blind-mate and assisted separation force interconnects are available in the broadest range of connector classes in the industry including crimp, PC-tail, hermetic, float-mount, fixed-mount, dead face, bulkhead feed-thru, high-speed data / RF, and standard power/signal. Special environmental sealing is available for float-mount configurations. Selected part numbers may be supplied with integrated shield termination band porches for optimal SWaP. How to Order pages provide information on mating connectors and available insert arrangements. Consult the factory for custom configurations.