HIGH RELIABILITY CERAMIC-TO-METAL BRAZED, HIGH VOLTAGE CONNECTORS

INTRODUCTION
Teledyne Reynolds’ ceramic-to-metal facility is a separate operating division co-located with the Connector Products Division in our Marina Del Rey facility. The Ceramic Division has available to it the model shop, tooling, environmental testing, and Quality Assurance departments at the Marina Del Rey facilities. The division has programmable batch furnaces which provide highly repeatable brazing cycles. High current vacuum trigger switches are brazed in a vacuum furnace with on-line mass spectrometer, cryogenic filter and a turbo molecular pump.

TECHNOLOGY
High alumina ceramics, when properly metallized, plated, and brazed, exhibit excellent hermetic sealing and dielectric strength. These attributes make ceramic-to-metal assemblies ideal high voltage receptacles for containment of dielectric gases or fluids when subjected to the rigors of aerospace environments. Other severe environmental applications include high voltage connector feedthrough for cryogenic physics research and spaceborne electric propulsion. Teledyne Reynolds’ ceramic-to-metal receptacles and header assemblies use only the best quality, 94% (minimum) alumina ceramic metallized with moly-manganese, and nickel plated. Only military standard metals are used for contacts, shells, bellows and braze materials.

PRODUCT APPLICATIONS
Ceramic-to-metal connectors are finding more and more applications within high voltage power supplies and high vacuum assemblies because of the need for long term hermetic reliability. Teledyne Reynolds offers the component and system engineer various rear contact configurations, such as solder pot or turret for soldering and straight pin for flat cable weld attachment. The illustrations below depict different flange geometries and materials for hermetic and mechanical attachment, which need to be considered in the initial system design phase.

FEATURES
- Facility equipment includes: Hydrogen and Vacuum brazing furnaces.
- 94% (min.) alumina ceramic metallized with moly-manganese & nickel plated
- Product leak rates are $1 \times 10^{-8}$ cc/sec He at 1 ATM of differential pressure
- Both single-pin and multi-pin designs are available
- Custom designs available

Weld Flange with Relief Groove
A thick flange incorporating a weld relief groove is well-suited for welding. Laser, TIG, Electron Beam, etc. to a thick bulkhead with a similar weld relief groove.

Jam Nut/O-ring Flange
Standard o-ring sealing of receptacle body to a bulkhead where welding, brazing or soldering is not desirable.
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HIGH PRESSURE, HIGH VOLTAGE

**SERIES 730 • 10 kVDC & 720 • 20 kVDC**

- **SERIES 730**
  - Flange material: 304 stainless steel
  - Operating Voltage: 10 kVDC rating to 70,000 Ft.
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 1, 3, & 5: 12 kVDC
    - Pins 2, 4, & 6: 14 kVDC
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM diff. pressure
  - Solder flange installation - P/N 467-7024

- **SERIES 720**
  - Flange material: 304 stainless steel
  - Operating Voltage: 20 kVDC rating to 70,000 Ft.
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 1, 3, & 5: 12 kVDC
    - Pins 2, 4, & 6: 14 kVDC
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM diff. pressure
  - Solder flange installation - P/N 467-7022

**SERIES 720 • C720 and LGH L1I lead assemblies**

**SERIES 600 & 600 “S” • 5 kVDC**

- **SERIES 600**
  - Sealed for 15 PSI differential pressure
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM atm. diff. pressure
  - Operating Voltage: 5 kVDC @ 10 millitorr maximum pressure.
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 2, 4, & 6: 12 kVDC
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 1, 3, & 5: 14 kVDC
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM atm. diff. pressure
  - Solder flange installation - P/N 467-7022
  - Solder flange installation - P/N 467-7024

- **SERIES 600 “S” for Space Use**
  - P/N 467-7009
  - Sealed for 15 PSI differential pressure
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM atm. diff. pressure
  - Operating Voltage: 5 kVDC @ 10 millitorr maximum pressure.
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 2, 4, & 6: 12 kVDC
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 1, 3, & 5: 14 kVDC
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM atm. diff. pressure
  - Solder flange installation - P/N 467-7022
  - Solder flange installation - P/N 467-7024

**SERIES 600 • C730 and LGH 1/2I lead assemblies**

**SERIES 730 •10 kVDC & 720 • 20 kVDC**

- **SERIES 730**
  - Flange material: 304 stainless steel
  - Operating Voltage: 10 kVDC rating to 70,000 Ft.
  - Voltage Rating (sea level to 70,000 Ft.):
    - Pins 1, 3, & 5: 12 kVDC
    - Pins 2, 4, & 6: 14 kVDC
  - Max. Leak Rate: 1 x 10^-8 cc/sec. He @ 1 ATM atm. diff. pressure
  - Solder flange installation - P/N 467-7022
  - Solder flange installation - P/N 467-7024

**SERIES 720 • C720 and LGH L1I lead assemblies**

**ADVANCED SERIES MAGNUM PLUS •12 TO 14 kVDC**

- **ADVANCED SERIES PEWEE • 12 kVDC**
- **ADVANCED SERIES MAGNUM PLUS • 12 TO 14 kVDC**

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