Seal-Connect®
Conductor Material and Design

Innovative Connectors

Traditionally, conductor materials in hermetic high-temperature and high-pressure connectors have been chosen based on the coefficients of thermal expansion as related to glass-sealing materials. This was required to maintain the integrity of the brittle glass seal. When manufacturing glass-to-metal sealed hermetic connectors, extreme temperatures must be considered to ensure full compression of the glass during firing.

Without the constraint of matching thermal expansion coefficients in glass seals, conductor materials can be chosen to fit the application rather than the method of manufacture.

Automatic screw machines fabricate conductors from a wide variety of materials.

Materials	Specifications
Beryllium Copper	ASTM B196
Nickel Silver	ASTM B151
Inconel X 750	AMS 5698
17-4 PH Stainless Steel	AMS 5643
316 Stainless Steel	ASTM A276

Note: Preferred material is Beryllium Copper for up to 400°F (204°C). For higher than 400°F (204°C), consult Greene Tweed.

High-precision equipment and rigorously controlled raw material allow standard tolerances on the order of 0.0015 in. (0.00381 cm) total.

The pin of a reliable connector should be uniform and consistent in size to ensure proper contact force with the spring-finger socket. This allows full interchangeability among mating pins and sockets without variation in contact resistance.

Several standard sizes are readily produced. Sizes are numbered to correspond with the American Wire Gauge (AWG) standard wire sizes. The following table represents the male pin diameter.

Typical	
Pin Diameters	
#20	0.040 in. (0.102 cm)
#18	0.047 in. (0.119 cm)
#16	0.062 in. (0.157 cm)
#14	0.078 in. (0.198 cm)
#12	0.094 in. (0.239 cm)
#8	0.125 in. (0.317 cm)

Note: Any other size pin/socket combination can also be produced depending on customer requirements.

Standard sockets produced to properly engage these pin diameters will have the following load characteristics. The minimum contact force is characterized by the amount of load the socket will retain using the smallest possible male pin diameter. This extraction force is measured using an Ametek Accuforce® III digital force gauge.

Contact Us
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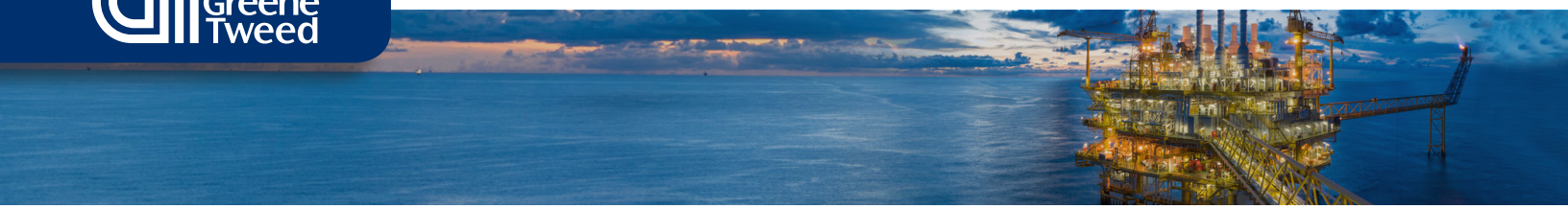


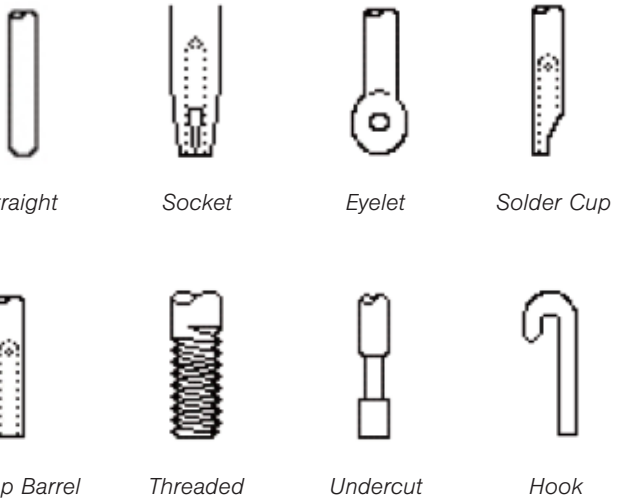
Greene Tweed uses four-way split sockets, unless size dictates moving to a two-way split socket, designed to ensure uniform contact under vibration. Nickel-plated, brass cover sleeves protect in most applications.

Typical Sockets	
Extraction Force	
#20	2–6 oz (0.06–0.17 kg)
#18	2–6 oz (0.06–0.17 kg)
#16	8–24 oz (0.22–0.68 kg)
#14	8–36 oz (0.22–1.02 kg)
#12	10–48 oz (0.28–1.36 kg)
#8	14–56 oz (0.40–1.59 kg)

Gold plating produces mating contacts with the minimal contact resistance and removes the possibility of corrosion. A ductile nickel underplate minimizes contact resistance and provides excellent adherence to the gold.

In a completely nonmagnetic environment the nickel underplate can be replaced with a copper strike. In the case of certain stainless steels, a copper strike precedes nickel underplate. Unless otherwise specified, a 50 µin thick gold plate will be used per AMS 2422.

End terminations of the conductor may be specified as shown below with pins, sockets, solder cups, eyelets, hooks, crimp barrels, etc., or any combination.



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