

GENERAL

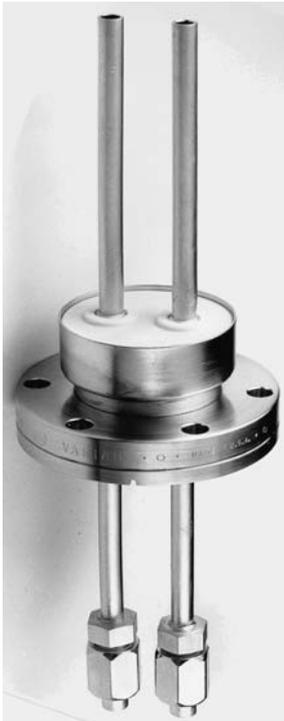
The 10 kW power feedthrough is useful in industrial heating applications and research laboratories.

The body of the feedthrough consists of a disc of high alumina ceramic brazed into a Kovar cup that is welded to a ConFlat® flange (2 ¾" O.D., 1 ½" I.D.). Two inlet tubes of ¼" O.D. OFHC copper are brazed to the ceramic and extend approximately three inches on each side of the feedthrough body.

Mild steel is used for the internal flare fittings because of its low electrical resistivity and high strength. The copper tubing and fittings are gold plated to reduce RF heating losses and oxidation. The tubing carried cooling water and up to 10 kW RF power.

External connections can be made by any one of several methods. Brass fittings are recommended to reduce induction heating losses. Flare, compression or quick-disconnect fittings can be used, or lines can be brazed or soldered directly to the feedthrough tubing.

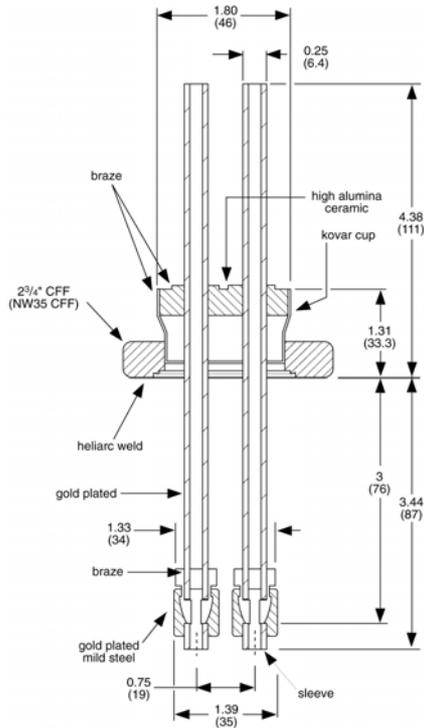
The feedthrough can also be used as an insulated feedthrough to circulate liquid through a vacuum chamber.



SPECIFICATIONS

Vacuum range	Down to below 10^{-11} Torr
Tubulation	¼" O.D. OFHC copper
Rated power transmission	10 kW at 450 kHz 1.25 amperes
Rated voltage	8 kV (below 10^{-4} Torr)
Mounting	The flange mates with any other 2 ¾" O.D. ConFlat flange. Connection tubing must have a clear I.D. of 1 21/64" (34 mm) or larger to provide clearance during installation.
Outside connections	¼" copper tubing can be attached by standard flare, compression or quick-disconnect fittings, or can be soldered directly to external lines.
Vacuum side connections	Special bakeable flare fittings. A male fitting is brazed to each tube. Mating female fittings are included for user's fixture. After flaring, sealing torque of 12-15 ft-lbs will produce a leak-tight connection bakeable to 300°C.
Temperature range	Operating : -100°C to +300°C.
Thermal shock	Maximum temperature change should not exceed 25°C/minute.
Water pressure	Maximum 500 psi (35 bar).
Flange	304LN forged stainless steel.
Conductor tubing	Gold plated OFHC copper. Brazed to ceramic.
Cup	Kovar (Ni, Co and Fe). Heliar welded to the flange. Brazed to ceramic.
Brazing material	Alloy : Cu-Au
Ceramic	94% Al_2O_3
Internal connectors	Gold plated mild steel. Threads are coated with dry molybdenum disulfide for lubrication.

Figure 1 - RF power feedthrough outline drawing



Flange connection

- 1) Place a new copper gasket between the two flanges. The gasket fits into the step of each flange and provides axial alignment.
- 2) Insert screws through both flanges and lubricate the threads with high pressure, high temperature lubricant (Fel-Pro C-100). Also lubricate between the nuts and flange.
- 3) Attach the nuts and tighten each to approximately 5-8 ft-lbs of torque. This will partially close the gap between the flange faces. Repeat the sequential tightening.
- 4) The copper gasket is partially sheared in making the seal, and the bolts should be tightened until the flange faces meet and a pronounced increase in torque is felt (10 to 12 ft-lbs).

Internal connections

- 1) Slide the nut and sleeve over the 1/4" O.D. copper tubing to be connected to the feedthrough.
- 2) Flare the tubing end to a 90° (approx.) included angle using standard flaring techniques.
- 3) Slide the sleeve up behind the flare and position the tubing on the feedthrough fitting.
- 4) Engage the nut and tighten to 12-15 ft-lbs of torque. Use a second wrench to balance the torque while tightening.
- 5) Threads of the male fitting have been lubricated with a dry high temperature lubricant before shipping. Subsequent sealings may require additional lubricant (Molykote 321) to prevent galling.

DISPOSAL

Meaning of the "WEEE" logo found in labels

The following symbol is applied in accordance with the EC WEEE (Waste Electrical and Electronic Equipment) Directive. This symbol (**valid only in countries of the European Community**) indicates that the product it applies to must NOT be disposed of together with ordinary domestic or industrial waste but must be sent to a differentiated waste collection system. The end user is therefore invited to contact the supplier of the device, whether the Parent Company or a retailer, to initiate the collection and disposal process after checking the contractual terms and conditions of sale.

