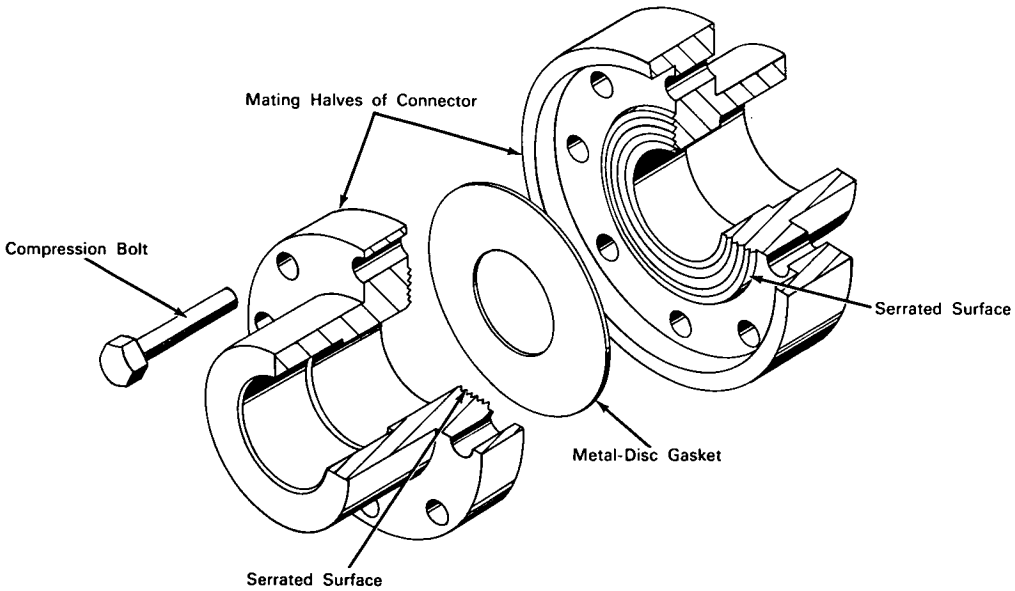
December 1964

Brief 64-10327

NASA TECH BRIEF

This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Connector Seals Fluid Lines at Cryogenic Temperatures and High Vacuums



The problem: To provide a connector that will serve as a positive seal for fluids at temperatures ranging from near absolute zero to 300°F. The seal must be suitable for use in vacuums at pressures down to 10^{-8} mm of mercury. Commercially available connectors did not meet rigid sealing specifications for such low pressures.

The solution: A connector incorporating a gasket in the form of a metal disk that is compressed between two sets of serrations.

How it's done: The metal disk is installed between two sets of mating serrations to form two sealing surfaces, one on each side of the disk. Compression on the disk is applied by uniform tightening of the flange bolts. Uniform compression on both sealing surfaces is ensured by the spring action of the disk. Any difference in the coefficient of thermal expansion between the disk and flange (which is normally very slight) is offset by the spring action of the disk.

Notes:

1. The simplicity of the design of the connector should eliminate the need of other more expensive connectors. The connectors can be easily fabricated from readily available standard stock using simple tools.
2. The connectors can be quickly installed or removed. Installation does not require soldering or welding within vacuum chambers and hence reduces the possibility of chamber contamination.

(continued overleaf)

3. Inquiries concerning this invention may be directed to:

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Reference: B64-10327

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA Headquarters, Washington, D.C., 20546.

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