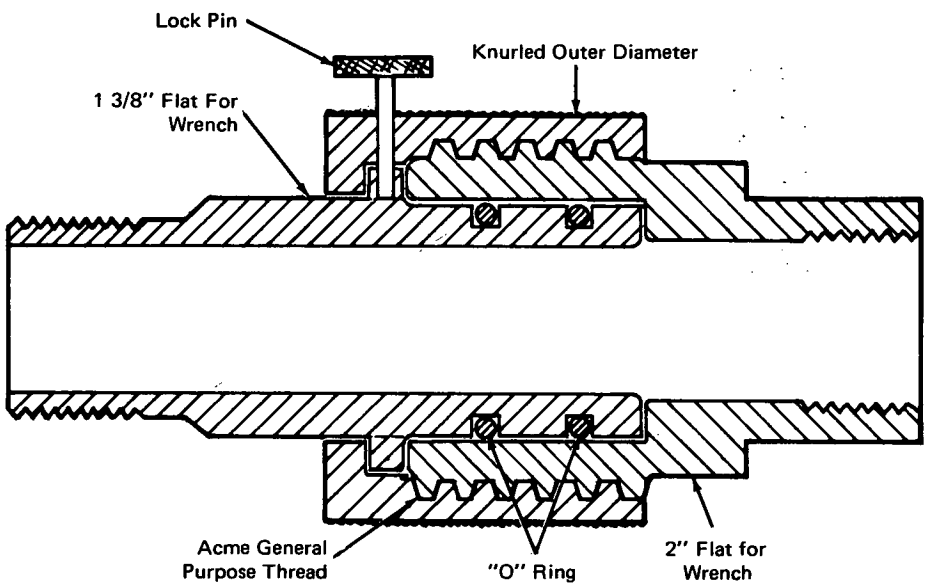
NASA TECH BRIEF

Lewis Research Center

Positive Fast Sealing Union Connections



The problem:

Union connections used for connecting high pressure 16.65 x 10^6 N/m^2 (2400 psig) flexible hoses from gas storage manifolds to gas transport trailers employ a metal-to-metal seat and a connecting nut that is tightened by wrenches to compress the mating seats together.

Location of the union connection on the transport trailers limits accessibility and requires the use of a short slugging wrench driven by a hammer to tighten the connection.

Also, when tightening the union connections, it is possible to twist the flexible hose, causing possible damage.

The solution:

A union connection that uses "O" ring seals rather than the metal-to-metal seal, which can be quickly assembled and disassembled without the use of wrenches, and which does not twist the hose.

How it's done:

The union fitting is designed to use double "O" ring seals between the mating parts, as shown in the figure. The retaining or connecting nut and the female sealing section of the union connection are provided with general purpose Acme threads, to facilitate thread engagement and quick connection. When the connection is completed, a locking pin is inserted that engages a slot milled in the flange of the male sealing section to prevent the connecting nut from backing off due to vibration. Two milled slots 180° apart provide pin engagement with a maximum one-quarter turn of the nut. A hold-down clip will retain the locking pin.

Notes:

1. Non-extrusion back-up rings are used with the "O" rings for these high pressure applications.
2. Worn or damaged "O" rings are easily replaced to restore the connector to full effectiveness.

(continued overleaf)

3. This type of union connection can be used for any liquid or gaseous systems that require quick and easy connections and disconnections for transferring fluids from one container to another.
4. No further documentation is available. Technical questions, however, may be directed to:

   Technology Utilization Officer
   Lewis Research Center
   21000 Brookpark Road
   Cleveland, Ohio 44135
   Reference: B72-10133

Patent status:

NASA has decided not to apply for a patent.

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