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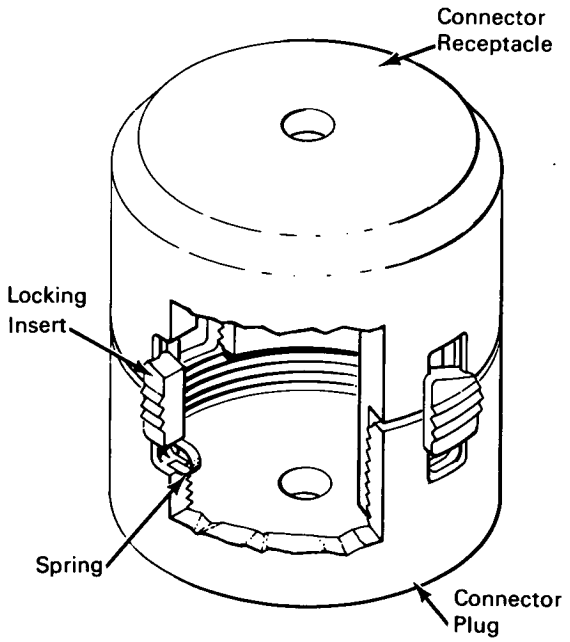
NASA TECH BRIEF

Connector Locking Device

Electric connectors (type AN) require safety wiring after assembly to prevent vibrations from unfastening the components. Safety wiring is very difficult, especially on multiconnector installations; among closely grouped connectors, it is often necessary to disconnect several connectors. The slidable spring-loaded connector locking device was developed to eliminate the need for safety wiring, and may be adapted to other threaded assemblies that require locking.



As shown in the figure, the locking device is in position between the connector plug and connector receptacle. The threaded plug cannot vibrate loose because the insert is wedged into at least one of three or more slots formed on the outer diameter of the receptacle. This wedging is effected after the threaded plug is in its tightened position and is accomplished by the spring-loaded insert moving in the slot contoured in the plug until the tightening is complete. At this point the insert wedges into the receptacle slot, completing the interference that prevents any loosening rotation.

A double stepped contour is formed on the sidewalls of the plug. The bottom of this contour has a depression for the flat wire spring. An insert, similar in shape to that shown, fits into the slot. The angular upper surface enables the plug to be threaded freely on the receptacle until the locking point is reached. Two sides of the insert are slotted so that it will fit into the plug and be guided in the up and down movement. Projections for a finger grip are located on the outer surface of the insert. A "U" shaped spring is placed between the bottom of the insert and the depression in the plug. Distorting the metal of the insert and of the plug around the spring will retain the insert while the plug is not connected. The size of the spring and its retention must be very carefully controlled to retain the insert and be free to slide only within the depression of the plug.

To remove the connector manually, it is only necessary to slide the insert into the plug side so that the tip clears the receptacle. If hand release is not possible, a simple tool can be made to fit into the opening between the insert and the receptacle.

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Kennedy Space Center
Code AD-PAT
Kennedy Space Center, Florida 32899
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(continued overleaf)

Patent status:
No patent action is contemplated by NASA.

Source: Lee W. Rabb of
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