SOUTHWEST MICROWAVE, INC.
Microwave Products Division
9055 South McKemy Street
Tempe, Arizona 85284-2946 USA
Telephone (480) 783-0201
Fax (480) 783-0360

INSTALLATION PROCEDURE FOR FLANGE MOUNT MICROWAVE CONNECTORS PRODUCED BY SOUTHWEST MICROWAVE

Microwave connectors by Southwest Microwave are uniquely designed to optimize transmission line parameters. This results in a cost-effective solution where higher frequency performance is important, along with repeatability and reliability.

MOUNTING CONSIDERATIONS

- Connector installation deserves the same care and attention that is provided for internal parts and the processing of circuits. The work and cost associated with precision etching, plating, semiconductor placement, etc., should be complimented by the same care in connector placement. Using inferior connectors on high performance products is not cost effective due to tuning required and performance degradation. Similarly, improper mounting may degrade the unique performance of a Southwest Microwave connector.

- Solid 360-degree metal-to-metal contact is required for both the pin-socket interface and the outer-coaxial-to-panel path. Positive electrical pathways insure a continuous coaxial transmission line. Reflection losses are minimized. This is basic microwave technology but it is sometimes ignored when only mechanical mounting is considered.
  - Never use conductive O-rings to mount connectors for microwave or millimeter wave applications. The space needed for the groove to hold the O-ring moves the O-ring away from the outer coaxial paths. Therefore, the result is not 50-ohms. Performance will be degraded for higher frequency applications.
  - These connectors are part of a microwave transmission line. If environmental or pressure sealing is required, Southwest Microwave should be contacted to assure that a proper connection is provided that will still provide 360 degree grounding and also include considerations for environmental or pressure sealing.

- Specific items to consider include:
  - Most connector flanges have slightly irregular surfaces due to bar stock cutoff, drilling of holes, etc.
  - Panels are not perfectly flat.
  - Prior to assembly, connectors should be tested back-to-back to confirm performance. If results differ in the application, then other parameters must be evaluated for cause.
  - If a hermetic seal is to be used with the connector, the seal must be installed first using the hole patterns, installation tools and fixtures as shown in Southwest Microwave's product literature. Installation dimensions and tooling varies for different seals.
  - If accessories such as pins and dielectrics are to be used with the connector, the user should determine their own choices for installation of the pins, etc. If the pin is first installed into the connectors, then it should be attached to circuit after the

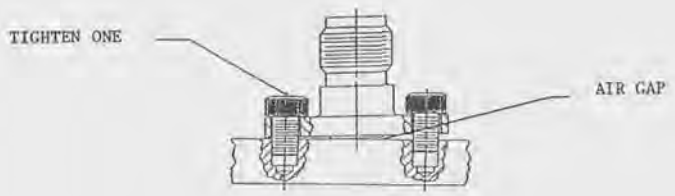
connector is mounted. Alternatively, the pin first may be soldered in place. Care must be taken to assure that the proper length of pin is available for insertion into the connector. These parameters are "application specific" and are based upon user dimensions not controlled by Southwest Microwave.

- The installer must remember that there is a raised 360-degree metal grounding ring around the center coaxial area.
  - The raised ring is intended to provide a high normal force for electrical grounding at the coaxial path.
  - The raised area does not extend outward for the entire flange. It is possible to improperly mount the connector with one side lower than the other side if the installer is not careful.

INSTALLATION STEPS

(Note: The user is reminded to think about the actions involved with replacing a spare tire. Lug nuts are snug in place and incremental tightening is done for opposing nuts during repetitive cycles. Eventually, all nuts are tightening evenly.)

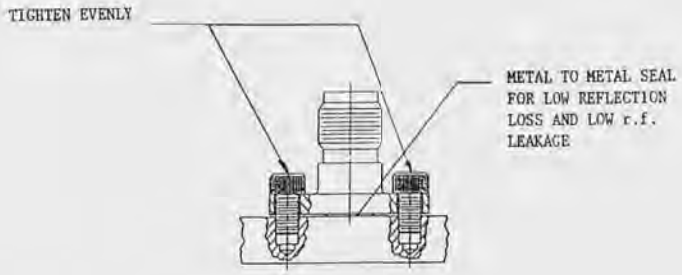
A. First, the connector is placed in position with the rear-pin (or other accessory) properly aligned.
B. Next, the mounting holes in the connector flange are aligned with the mounting holes in the panel or housing.
C. The screws must be installed using minimal force. Do NOT torque-down. Initially, do NOT fully secure the screws. The screws should be "snug" but still permit very slight minor movement of the connector.
D. It is important that the connector flange be kept parallel to the panel. It must not be cocked so that one edge is closer to the panel than the other edge. The raised 360-degree metal grounding ring must rest evenly against the panel.
   - If one side is torqued down tightly without balancing with the other side, then the opposite flange will lift up away from the panel.
   - This will cause the part of the 360-degree metal ring under the lifted side to also be lifted up and not lie flat against the panel. There will be an air gap under the raised side, preventing 360-degree grounding. The result is degraded performance.



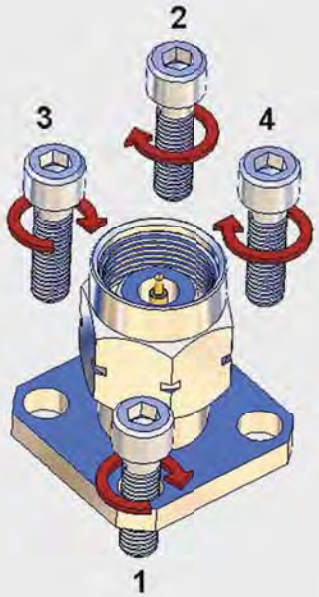
Rev. A

PROPER INSTALLATION OF FLANGE MOUNT MICROWAVE CONNECTORS
PRODUCED BY SOUTHWEST MICROWAVE, Page 3.

E. The screws are installed by applying force to opposite screws, until all hardware is properly secured. For connectors with more than 2 mounting screws, screws should be snugged and then incrementally tightened going from one screw to another in rotation.



For example, a possible sequence for screw-tightening a 4-hole mount connector could be the following:



Rev. A