

# READ FIRST—Connector Care

**NOTE**

Refer to [www.keysight.com](http://www.keysight.com) for the complete version of this chapter in the Install Guide for your instruments and devices.

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## Electrostatic Discharge

Protection against ESD (electrostatic discharge) is essential while connecting, inspecting, or cleaning connectors attached to a static-sensitive circuit (such as those found in test sets).

## Visual Inspection

Visual inspection and, if necessary, cleaning should be done every time a connection is made. Metal particles from the connector threads may fall into the connector when it is disconnected. One connection made with a dirty or damaged connector can damage both connectors beyond repair.

### Look for Obvious Defects and Damage First

Examine the connectors first for obvious defects and damage: badly worn plating on the connector interface, deformed threads, or bent, broken, or misaligned center conductors.

Connector wear is caused by connecting and disconnecting the devices. The more use a connector gets, the faster it wears and degrades. The wear is greatly accelerated when connectors are not kept clean, or are not properly connected.

Connector wear eventually degrades the performance of the device. Calibration devices should have a long life if their use is on the order of a few times per week.

The test port connectors on the network analyzer test set may have many connections each day, and are therefore more subject to wear. It is recommended that an adapter be used as a test port saver to minimize the wear on the test set's connectors. Replace devices with worn connectors.

## Cleaning Connectors

### Inspect the Mating Plane Surfaces

Flat contact between the connectors at all points on their mating plane surfaces is required for a good connection. For more details, refer to [www.keysight.com](http://www.keysight.com) for the complete version of this chapter in the Install Guide for your instruments and devices. Look especially for deep scratches or dents, and for dirt and metal particles on the connector mating plane surfaces. Also look for signs of damage due to excessive or uneven wear or misalignment.

## Cleaning Connectors

Clean connectors are essential for ensuring the integrity of RF and microwave coaxial connections. Connectors and cables should be cleaned before each use. Refer to [www.keysight.com](http://www.keysight.com) for the complete version of this chapter in the Install Guide for your instruments and devices.

## Gaging Connectors

The gages available from Keysight Technologies are intended for preventive maintenance and troubleshooting purposes only. Refer to [www.keysight.com](http://www.keysight.com) for the complete version of this Installation Note.

## Connections

Good connections require a skilled operator. **The most common cause of measurement error is poor connections.** The following procedures illustrate how to make good connections.

### How to Make a Connection

#### Preliminary Connection

1. Ground yourself and all devices. Wear a grounded wrist strap and work on an anti-static mat. Refer to [Chapter , “Electrostatic Discharge”, on page 1](#) for ESD precautions.
2. Visually inspect the connectors. Refer to [“Visual Inspection” on page 1](#).
3. If necessary, clean the connectors. Refer to [“Cleaning Connectors” on page 2](#).
4. Use a connector gage to verify that all center conductors are within observed pin depth values. Refer to [www.keysight.com](http://www.keysight.com) for the complete version of this Installation Note.
5. Carefully align the connectors. The male connector center pin must slip concentrically into the contact finger of the female connector.

6. Push the connectors straight together. Do **not** twist or screw them together. As the center conductors mate, there is usually a slight resistance.

**CAUTION**

Do not turn the device body. Only turn the connector nut. Damage to the center conductor can occur if the device body is twisted.

7. The preliminary connection is tight enough when the mating plane surfaces make uniform, light contact. Do not overtighten this connection.

A connection in which the outer conductors make gentle contact at all points on both mating surfaces is sufficient. Very light finger pressure is enough.

8. Make sure the connectors are properly supported. Relieve any side pressure on the connection from long or heavy devices or cables.

### Final Connection Using a Torque Wrench

**NOTE**

Using a torque wrench guarantees that the connection is not too tight, preventing possible connector damage. It also guarantees that all connections are equally tight.

Table 1 Torque Wrench Information

Connector Type	Torque Setting	Torque Tolerance
Refer to <a href="http://www.keysight.com">www.keysight.com</a> for the complete version of this chapter in the Install Guide for your instruments and devices.	90 N-cm (8 in-lb)	$\pm 9.0$ N-cm ( $\pm 0.8$ in-lb)

**CAUTION**

You don't have to fully break the handle of the torque wrench to reach the specified torque; doing so can cause the handle to kick back and loosen the connection. Any give at all in the handle is sufficient torque.

### How to Separate a Connection

To avoid lateral (bending) force on the connector mating plane surfaces, always support the devices and connections.

**CAUTION**

Turn the connector nut, *not* the device body. Major damage to the center conductor can occur if the device body is twisted.

# Connections

This information is subject to change without notice.

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