Agilent Technologies

11752D
3.5 mm Connector Gage

Operating and Service Manual

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Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products.

For assistance, call your local Agilent Technologies Sales and Service Office (refer to "Service and Support" on page vi).

Service and Support

Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact your customer engineer through your local Agilent Technologies Service Center. You can find a list of local service representatives on the Web at: `http://www.agilent.com/find/assist`

If you do not have access to the Internet, one of these centers can direct you to your nearest representative:

United States (tel) 1 800 452 4844	**Latin America** (tel) (305) 269 7500 (fax) (305) 269 7599	**Canada** (tel) 1 877 894 4414 (fax) (905) 282-6495	**Europe** (tel) (+31) 20 547 2323 (fax) (+31) 20 547 2390
New Zealand (tel) 0 800 738 378 (fax) (+64) 4 495 8950	**Japan** (tel) (+81) 426 56 7832 (fax) (+81) 426 56 7840	**Australia** (tel) 1 800 629 485 (fax) (+61) 3 9210 5947	

Asia Call Center Numbers

Country	Phone Number	Fax Number
Singapore	1-800-375-8100	(65) 836-0252
Malaysia	1-800-828-848	1-800-801664
Philippines	(632) 8426802 1-800-16510170 (PLDT Subscriber Only)	(632) 8426809 1-800-16510288 (PLDT Subscriber Only)
Thailand	(088) 226-008 (outside Bangkok) (662) 661-3999 (within Bangkok)	(66) 1-661-3714
Hong Kong	800-930-871	(852) 2506 9233
Taiwan	0800-047-866	(886) 2 25456723
People's Republic of China	800-810-0189 (preferred) 10800-650-0021	10800-650-0121
India	1-600-11-2929	000-800-650-1101

Safety and Regulatory Information

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. This product has been designed and tested in accordance with international standards.

WARNING

The WARNING notice denotes a hazard. It calls attention to a procedure, practice, or the like, that, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

CAUTION

The **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

Instrument Markings

	When you see this symbol on your instrument, you should refer to the instruments instruction manual for important information.
	This symbol indicates hazardous voltages.
	This symbol indicates that the instrument requires alternating current (ac) input.
	The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.
	The C-Tick mark is a registered trademark of the Australian Spectrum Management Community.
	The CSA mark is a registered trademark of the Canadian Standards Association.
1SM1-A	This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPER 11, Clause 4).

	This symbol indicates that the power line switch is ON.
	This symbol indicates that the power line switch is in STANDBY position.
	This symbol indicates that the power line switch is OFF

Safety Earth Ground

This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Before Applying Power

Verify that the product is configured to match the available main power source as described in the input power configuration instructions in this manual. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply.

Overview

This operating manual contains information about initial inspection, performance tests, adjustments, operation, and troubleshooting of the Agilent 11752D connector gage.

Description

The 11752D connector gage is used to measure connector pin depth of 3.5 mm connectors. The connector gage contains:

- 3.5 mm connector gage (male)
- 3.5 mm connector gage (female)
- 3.5 mm gage master (male)
- 3.5 mm gage master (female)
- Protective caps
- Storage box

Instruments Covered

This instrument has a two-part serial number. The first four digits and the letter comprise the serial number prefix. The last five digits form a sequential suffix, which is unique to each instrument. The contents of this manual apply directly to instruments having the serial number prefix 2923A.

Manual Changes Supplement

A connector gage manufactured after the printing of this manual may have a serial number prefix that is not listed. If your connector gage has a prefix number different from 2923A, look for a yellow manual changes supplement that documents the differences.

In addition to change information, the supplement may contain information for correcting errors in the manual. To keep this manual as current and accurate as possible, Agilent recommends that you periodically request the latest manual changes supplement. The supplement is keyed to the manual print date code, E0489 (April 1989) and part number, both of which appear on the front cover.

Copies of the supplement are available on request from your nearest Agilent Technologies office.

For information concerning a serial number prefix not listed here or in the Manual Changes supplement, contact your nearest Agilent Technologies office.

Instrument Characteristics

The characteristics listed in Table 1 represent the typical characteristics or conditions that describe gage performance.

NOTE

Gage resolution depends on your ability to discern the position of the gage needle between divisions. The specification for this characteristic is based on tests of many people making the same measurement and independently indicating their readings.

Table 1 Characteristics

Characteristics and Conditions	Typical Limits	Comments
Measurement range	-0.005 in (–0.127 mm) to +0.005 in (+0.127 mm)	In 0.0001 in. (0.00254 mm) increments.
Gage resolution	0.00002 in (0.00051 mm)	Fifth of an increment
Gage calibration accuracy	0.00004 in (0.00102 mm)	
Gage repeatability	0.000025 in (0.00064 mm)	Quarter of an increment.
Master accuracy	0.00004 in (0.00102 mm)	
Total uncertainty:		
Worst case	0.000125 in (0.00318 mm)	Sum of resolution, repeatability, Gage and master accuracy limits.
RSS	0.000062 in (0.00157 mm)	Root sum of the squares.
Operating Environment:		
Temperature range	20° to 26°C	No temperature fluctuations greater than 1°C.
Humidity (at 26°C maximum dry bulb)	0 to 80%	
Maximum altitude	4.5 km (15,000 ft)	
Net weight	1 kg (2 lb 3 oz)	

Installation

Initial Inspection

Inspect the shipping container for damage. If the shipping container or packaging material is damaged, it should be kept until the contents of the shipment have been checked. If there is mechanical damage or if the Gages do not pass the performance tests, notify the nearest Agilent office. Keep the damaged shipping materials (if any) for inspection by the carrier and an Agilent representative.

Original Packaging

Containers and materials identical to those used in factory packaging are available through Agilent offices. If the Connector Gage is being returned to Agilent for calibration or service, attach a tag indicating the type of service required; return address, model number, and serial number. Also, mark the container *FRAGILE* to assure careful handling. In any correspondence, refer to the instrument by model number and serial number.

Storage and Shipping Environment

The connector gage should be stored in a clean, dry environment. The following limitations apply to both storage and shipment.

Temperature	–55 to +75 °C
Relative humidity	less than 95% at 40 °C
Altitude	less than 15.3 km (50,000 ft)

Operation

For instruction on connecting and care of microwave connectors refer to Application Note 326 *Principles o% Microivaw Connector Care* (part number 5954-1566). Also available is *Microlvave Connector Care* (part number 08510-90064).

Operating Environment

Device dimensions change with temperature. Therefore, the temperature of the gages and all connectors must be stable (within ±1°C) before calibration.

The operating environment for the connector gage should be within the following limits.

Temperature	+20 to 26 °C ± 1 °C (+68 to +79°F ± 1.8 °F)
Relative humidity	less than 80% at 26 °C dry bulb
Altitude	less than 4.5 km (15,000 ft)

NOTE Your fingers are a heat source. Thus, handle the devices as little as possible during calibration.

Operating Precautions

CAUTION To protect the sensitive microcircuits that may be connected to the connectors you are calibrating, always wear an electrostatic discharge-grounding strap connected to a conductive bench mat when working near sensitive equipment.

CAUTION Do not use hydrocarbons such as acetone, trichlorethylene, carbon tetrachloride or benzene to clean connector or gage surfaces. (See "Inspecting and Cleaning the Gages" on the next page.)

CAUTION Do not spray any liquid solvent directly onto connector or gage surfaces.

Connector wear eventually degrades performance. To prolong the life of your gages:

1. Clean all surfaces that comes in contact during calibration.
2. Do not measure a damaged connector; doing so could damage the gage. Replace damaged connectors.
3. Keep the protector caps on the gages and masters when not in use to prevent contamination.
4. Turn only the connector nut (not the gage itself) when making connection to avoid damage to the connector and gage. Torque should not exceed 81b-in (90 N-cm).

Using Connector Gages

During normal use, the connector gages should be inspected, cleaned, and zeroed prior to taking measurements.

Inspecting and Cleaning the Gages

Using an illuminated magnifying glass, inspect the connector gage and the gage master carefully as well as the connector you are about to measure. Foreign material on the gage, gage master or connector will make the measurement inaccurate.

To clean connector surfaces we recommend using compressed air, directing the air where it is needed through a plastic (not metal) nozzle.

If the compressed air does not remove the foreign material, use a cotton swab, or if the swab is too large, a round wooden toothpick (do not use metal) wrapped in a single layer of lint-free cleaning cloth soaked in isopropyl alcohol. (See Table 2.)

Dry the connector and gage surfaces with a brief blast of the compressed air.

Table 2 Recommended Cleaning Supplies

Part Number	Description
8500-0559	Isopropyl alcohol
5080-5400	Cotton swabs
9310-4242	Lint-free cleaning cloth

Zeroing the Gage

Connect the gage to the appropriate gage master and tighten only the connecting nut (do not turn gage or master) until finger tight. Lay the gage and master on a workbench. Use two wrenches, one standard 5/16 in. open end and one 5/16 in. torque wrench set to 8 lb-in (90 N-cm). While holding the fixed nut motionless with the open-end wrench, use the torque wrench on the connecting nut. The connecting nut for the male gage is located on the

gage master. The connecting nut for the female Gage is located on the Gage itself. Torque tile connecting nut to 8 lb-in (90 N-cm). Turn the Zero Set Knob (Figure 1) until the indicator is lined up with the zero indicator on the dial.

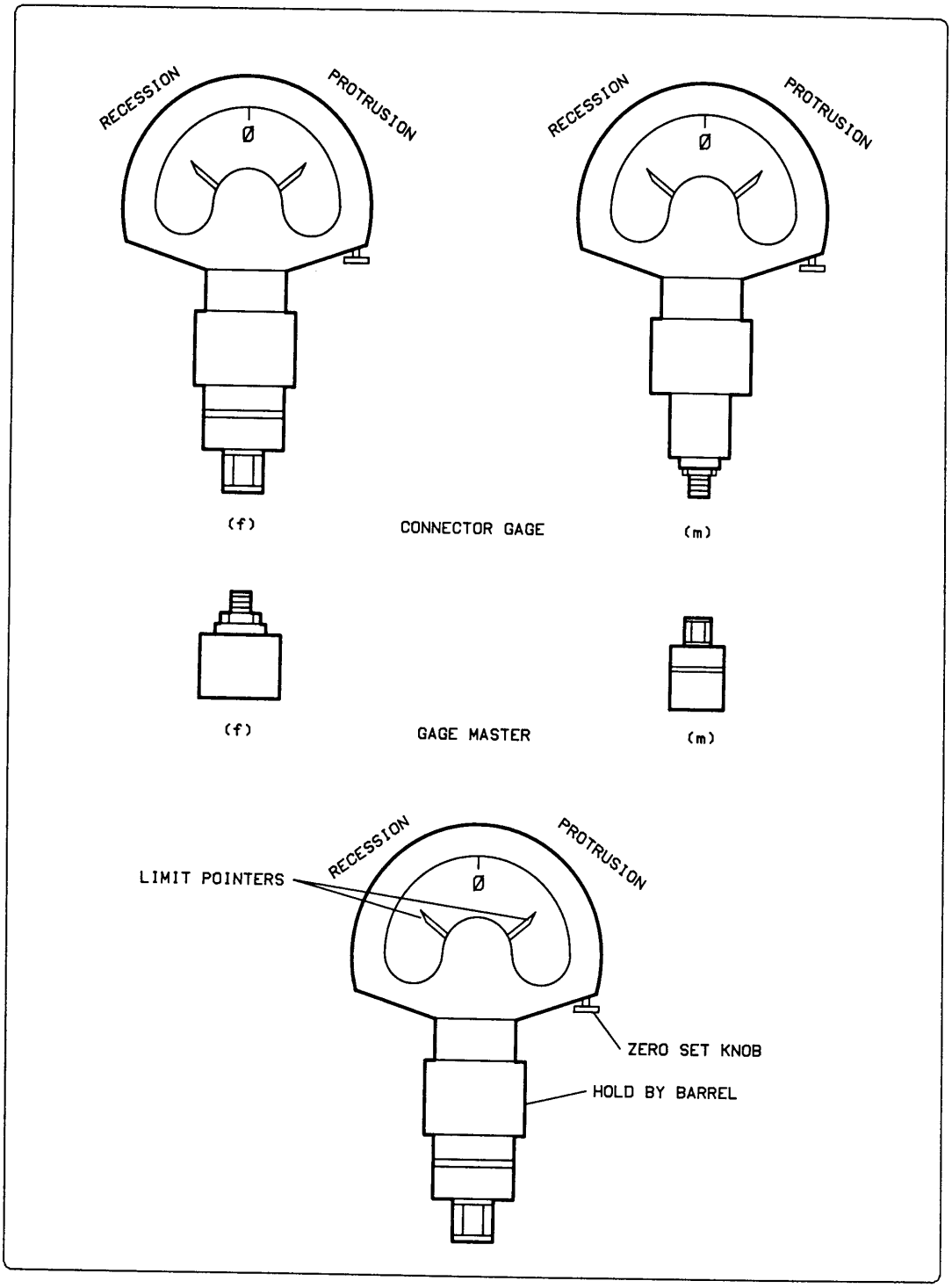

Figure 1 Agilent 11752D Connector Gage Features

Gages should be checked often, to make sure that the zero setting has not changed. Generally, when the gage pointer on a gage that has been recently zeroed does not line up exactly with the zero mark, the gage or calibration block needs cleaning.

Measuring Connectors

Measuring the recession of the center conductor behind the outer conductor-mating plane in a connector is done in exactly the same way, as zeroing the gage, except the zero set knob is not re-set when the measurement is made.

Hold the gage by the barrel only and torque only the connecting nut (do not turn the Gage or the device) to 8 lb-in (90 N-cm). Recession or protrusion will show as a reading counterclockwise or clockwise, respectively, from zero (see Figure 1).

NOTE

Protrusion of center conductor shoulder (male pin and end of female center pin) is not allowable on any 3.5 mm connector.

For maximum accuracy, measure the connector several times and take an average of the readings.

"Push-on" Measurement

The push-on feature of the 11752D female gage should only be used to obtain a quick measurement of the recession of the center conductor. It can also be used to verify the presence of a protrusion. If an accurate measurement is required the connecting nut must be threaded (and torqued) to the connector being measured.

To use the push-on feature, simply retract the connecting nut (as shown in Figure 2). While holding the gage by the barrel, (see Figure 1) push the connector gage gently, firmly, and evenly onto the center conductor of the connector being measured.

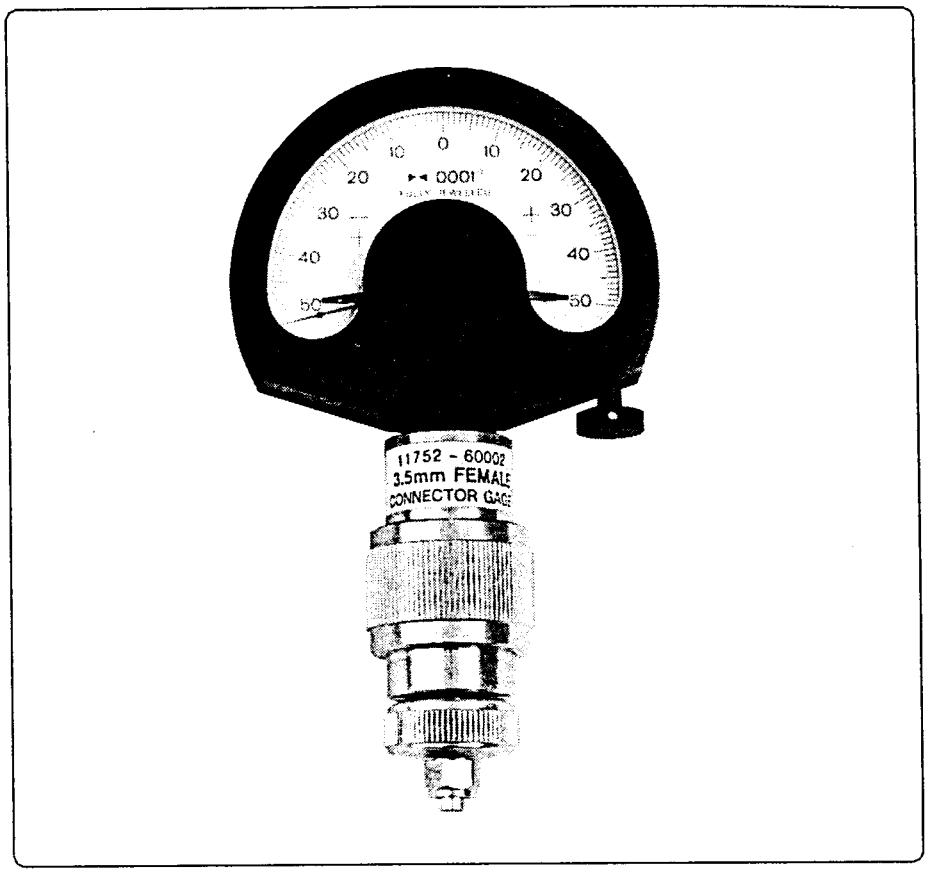

Figure 2 Female gage with connecting Nut Retracted

Helpful hints: Do not twist or rock the gage or apply pressure to the gage head. Uneven pressure on the center conductor or gage head will result in an uneven measurement. Practice. Use the female master to get a feel for the amount of pressure needed to obtain a zero reading on the gage.

Replaceable Parts

All replaceable parts are shown in Figure 3. There are no internal replaceable parts within the gages themselves.

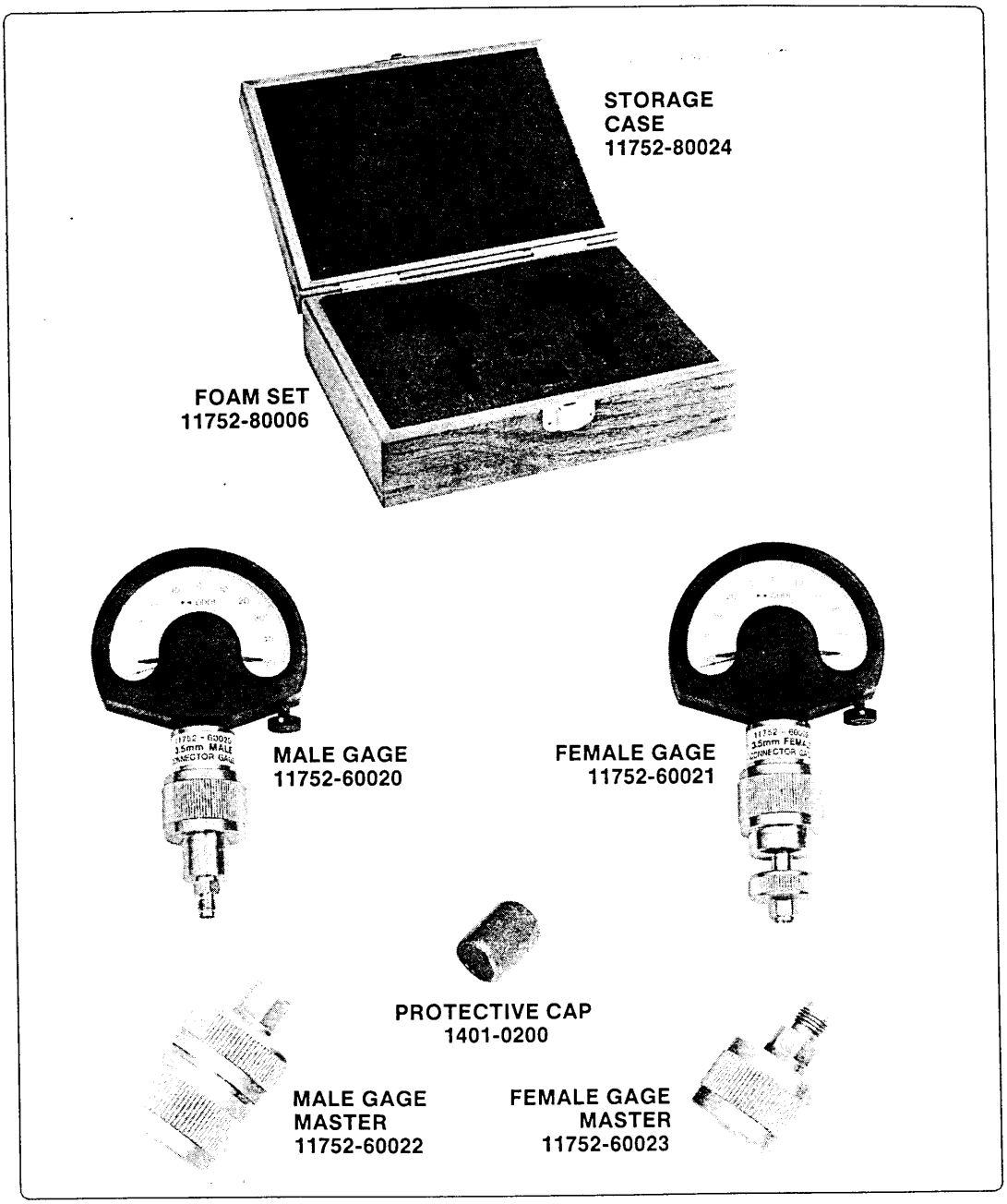

Figure 3 Agilent 11752D Connector Gage and Accessories

Service

Do not attempt to repair the gage or gage master. Any attempt to do so will void warranty. If repairs are needed contact your nearest Agilent sales and service office listed inside the cover of this manual.

Calibration

We recommend the gages be calibrated annually at an Agilent Technologies service office. A listing of Agilent sales and service offices is located inside the cover of this manual.