

Interface Gauge Kit Manual



INTRODUCTION: Testing the interfaces of connectors and adapters upon incoming inspection is not only highly recommended, it is definitely a necessity. Interfaces not meeting specification will not only lead to degraded specification of the components, furthermore, these out of specification interfaces may damage the connectors of mating components or ruin the connectors of test equipment.

CHECKING THE INTERFACE: Spectrum Elektrotechnik GmbH manufactures a comprehensive line of connector gauges for measuring the critical interface dimensions of coaxial connectors. These connector gauges consist of an especially adapted dial indicator with appropriate bushings and pins that are designed to mate with the specific connector under test. The indicator of each gauge is zero set by a specific master gauge. When engaged to a connector, it measures the specific interface dimension from a specific reference plane. For every dimension of interest, a special gauge will be offered. This gives the most accurate results, allows easy calibration, fast testing and helps to avoid mistakes.

RESOLUTION: A number of gauges are available. The models are shown to the right. The main difference between these four types of gauges is the different resolution as well as the units of measurement: inches or metric. Only the digital gauges can be switched from metric to inch and vice versa.

“HAND-HELD” VERSUS “THREAD-ON”: Most Gauges shown are available as “Hand-Held” or “Thread-On”. The faster testing is possible by using the “Hand-Held” gauges, the more accurate readings will be achieved from the “Thread-On” gauges, as threading on the gauges will perfectly align them with the connector. Hand-Held means aligning gauge and connector freely, which may allow for mistakes.

INTERFACE DIMENSIONS: Interface dimensions are shown in this section. The important measurements are marked clearly for every connector series:

Dimensions, highlighted in a rectangular shape, are recommended for verification as a minimum. The connector gauges measuring all dimensions are included in the Expanded Calibration Kit and the Professional Kit as well.

Checking all dimensions will guarantee optimum performance of the connectors. The necessary connector gauges to measure all those dimensions are included in the Professional Calibration Kit only.

USING CONNECTOR GAUGES: Select the correct gauge for the connector under test. Inspect the gauge and the appropriate calibration block (master) and make sure that both are in good condition and clean. (Dirt on the gauge or the master will lead to inaccurate measurements and can transfer dirt to the connectors and damage them during gauging). Attach the calibration block carefully to the gauge. Zero the gauge by moving the dial until the gauge pointer reads zero. To verify that the setting is correct and repeatable, remove the calibration block and then attach it a second time.

When testing the connectors, make sure that they are not damaged and clean. When using the “Thread-On” gauges, tighten the connection with the appropriate Torque Wrench only.



Type H: This gauge is available with a resolution of 0.005mm, or 0.0001 inches.



Type K: This gauge is available with a resolution of 0.01mm, or 0.001 inches.

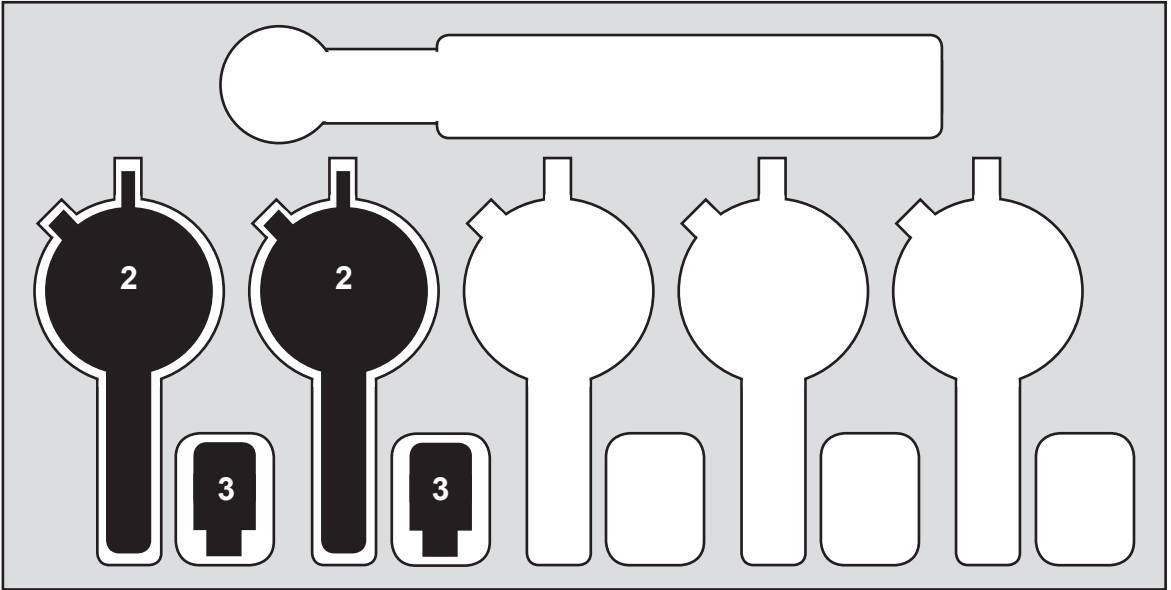


Type D: This gauge employs a digital readout and can be switched from a resolution of 0.01mm to 0.0005 inches.



Type T: This gauge uses a resolution of 0.001 mm and it is available in metric only.

Standard Gauge Kit



The actual layout and/or filling of the Instrument Case may differ from the schematic above. It depends on the size of the connector series, the number of gauges that are advisable for that connector series, and whether it is a Standard, or a Professional Kit. The layout of the Instrument Case itself for the Standard and the Professional Kits are identical. This is very advantageous, as someone can start with the Standard Kit, and fill the empty spots at a later stage to expand to the Professional Kit. Each instrument Case contains a space where the appropriate Torque Wrench can be fitted.

Description of Equipment Provided

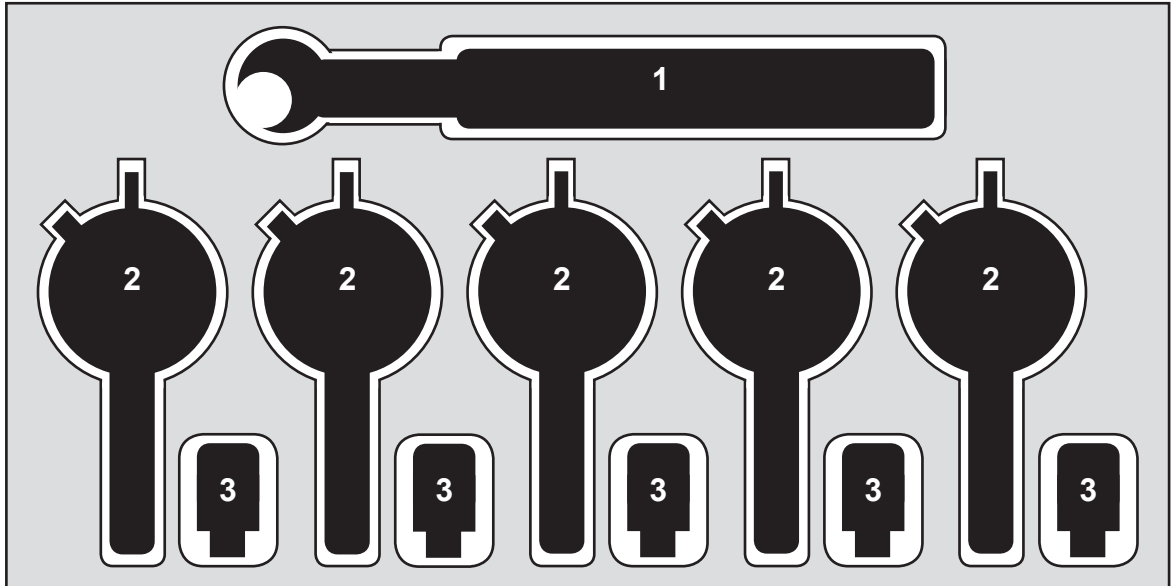
Standard Gauge Kit

2: Set of Connector Interface Gauges

3: Set of Gauge Calibration Blocks

Instrument case

Professional Gauge Kit



The actual layout and/or filling of the Instrument Case may differ from the schematic above. It depends on the size of the connector series, the number of gauges that are advisable for that connector series, and whether it is a Standard, or a Professional Kit. The layout of the Instrument Case itself for the Standard and the Professional Kits are identical. This is very advantageous, as someone can start with the Standard Kit, and fill the empty spots at a later stage to expand to the Professional Kit. Each Professional Kit contains already the appropriate Torque Wrench.

Description of Equipment Provided	Professional Gauge Kit
-----------------------------------	------------------------

- 1:** Torque Wrench
- 2:** Set of Connector Interface Gauges
- 3:** Set of Gauge Calibration Blocks

Instrument case

The Pin depth

Pin depth is the distance the center conductor mating plane (or dielectric) differs from being flush with the Reference Plane. The pin depth of a connector can be either protruding or recessed. When the pin (or dielectric) is protruding, the center conductor (or dielectric) extends beyond the Reference Plane. When the pin (or dielectric) is recessed, the inner conductor (or dielectric) is set behind the outer Reference Plane. The interface gauges will read a positive value when the pin is protruding and a negative value when the pin is recessed. See the following picture 1 as an example for the pin depth limits. If a connector's pin depth is protruding, that pin represents a potentially dangerous situation for any connector it might be mated with.

Spectrum Elektrotechnik GmbH verifies the mechanical characteristics of the devices in this kit before the kit leaves the factory. You can be assured that the devices in this will not exhibit center conductor protrusion and have the proper pin depth.

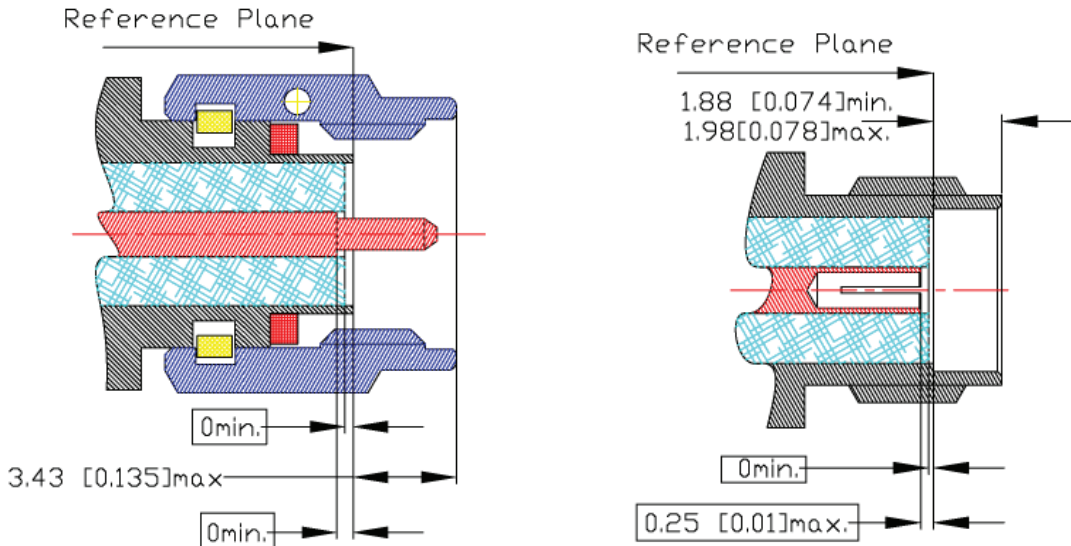


Figure 1

Dimensions shown are mm and [inches]

Interface Gauges

The gauges in a calibration kit are supplied for preventative maintenance. The interface gauges, which are designed to work either with male and female connectors, measure the depth of the center conductor or the dielectric. Refer to the appropriate Interface dimension Drawings in this Manual.

1. Instructions for Calibrating the **Thread-On** Interface Gauges
2. Refer to Figure 1 showing an example of the dimensions that need to be checked at connectors
3. Install the Master Block by turning only the nut on the Master Block if checking a Male Gauge or by turning the nut on the Gauge if checking a female Gauge. Do not turn the block or the gauge.
Refer to Figures 2 and 4.
4. Rotate the Gauge Face to the location where the needle rests on 0.
5. Use the fine adjustment Nut if necessary
6. Remove the Master Block.
7. After removing the Master Block, install the connector being measured
Refer to Figures 3 and 5. Without turning the gauge or the connector, install the connector and tighten finger tight.
8. Gently tap the gauge with your finger to settle the reading. Read the gauge dial.
9. Determine the viability of the connector by comparing your reading to the appropriate specifications

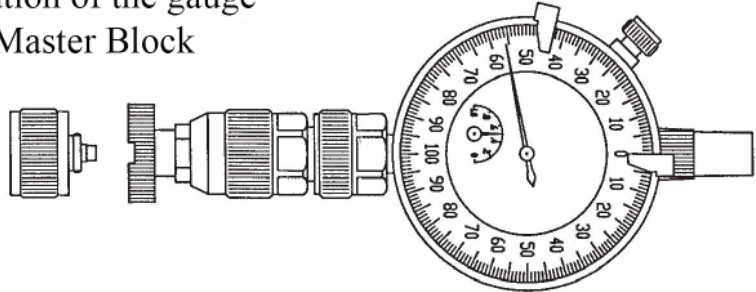
The handling of the **Hand-Held** Interface Gauges is similar and shown on Pictures 7 through 9.

Some most used Interface dimensions per MIL-STD-348B you will find on Pages 12ff. But there are more Interface Gauges available for almost any connector style. Please consult the factory for details on other connectors you require and their Interface dimensions.

Dimensions shown are mm and [inches]

Calibrating the Thread-On Female Connector Gauge

Check the calibration of the gauge by installing the Master Block



The Master Block is connected to the Female Interface Gauge

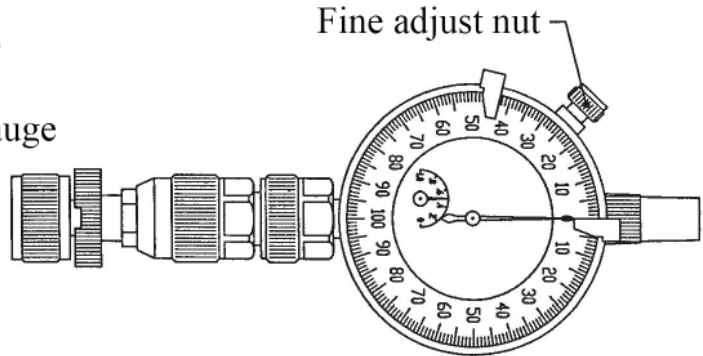
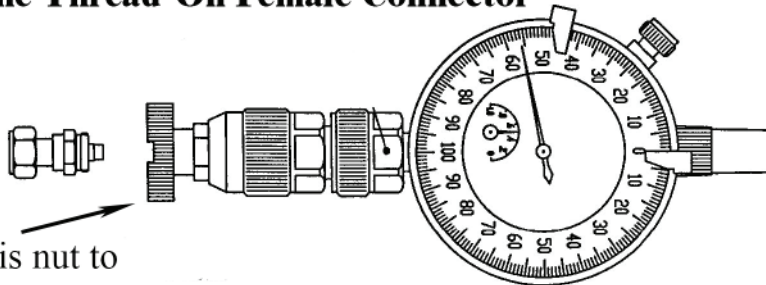


Figure 2

Measuring the Thread-On Female Connector



Turn this nut to connect the Female Connector to the Gauge

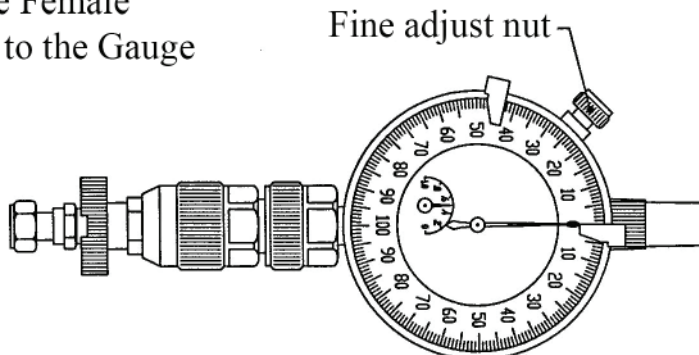
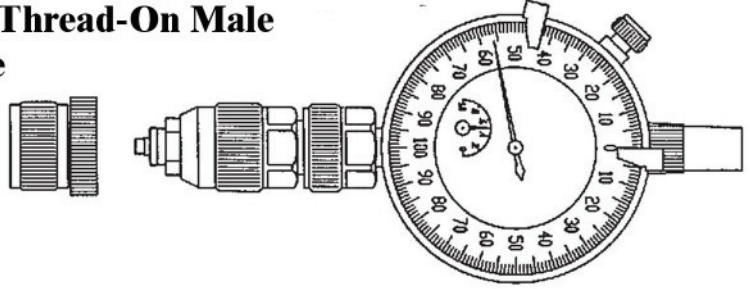


Figure 3

Calibrating the Thread-On Male Interface Gauge



Connecting the Master Block onto the Interface Gauge

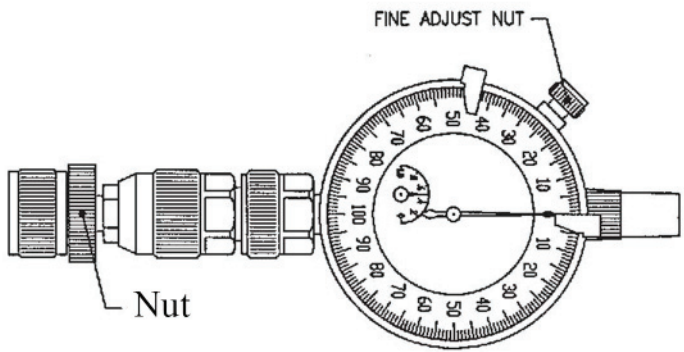
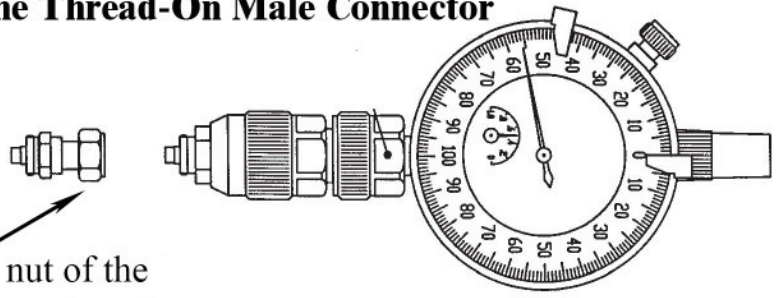


Figure 4

Measuring the Thread-On Male Connector



Turn the nut of the Male Connector when connecting to the Gauge

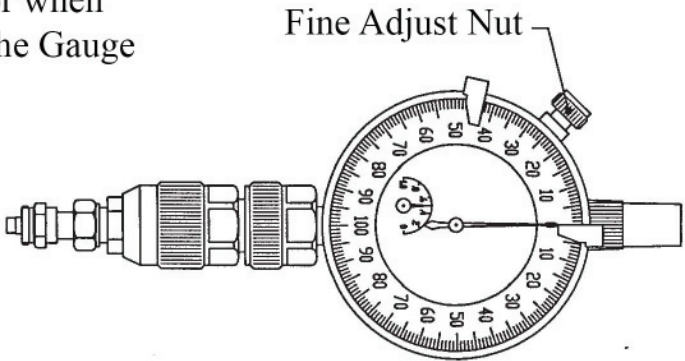
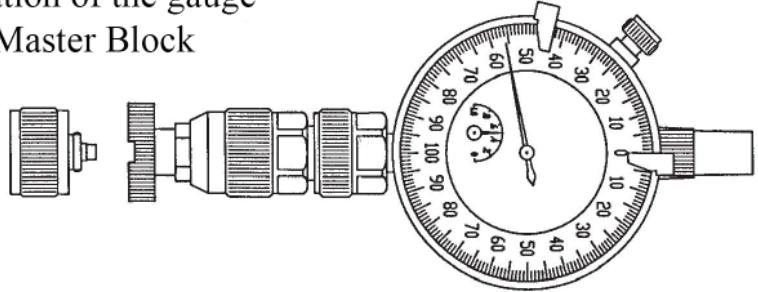


Figure 5

Calibrating the Hand-Held Female Connector Gauge

Check the calibration of the gauge by installing the Master Block



The Master Block is connected to the Female Interface Gauge

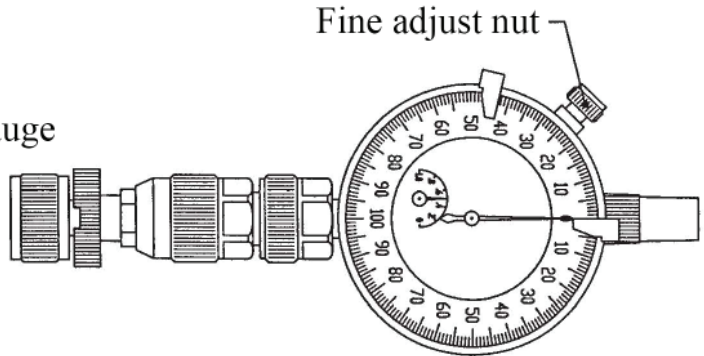
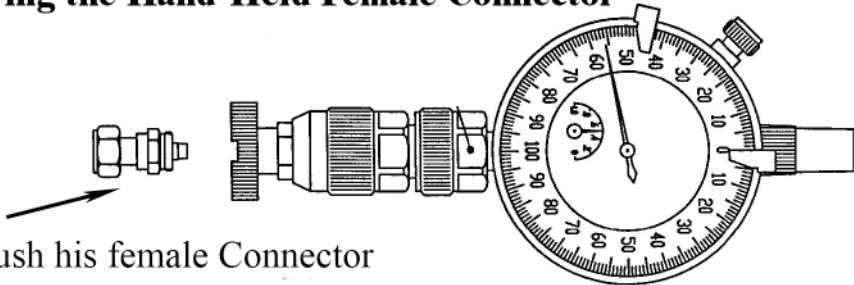


Figure 6

Measuring the Hand-Held Female Connector



Push his female Connector carefully into the Gauge and hold it in place for the reading

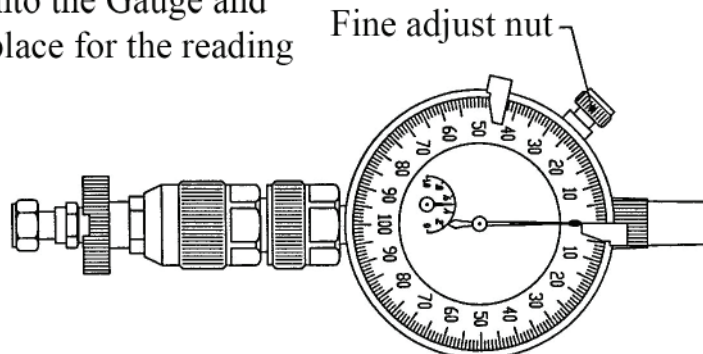
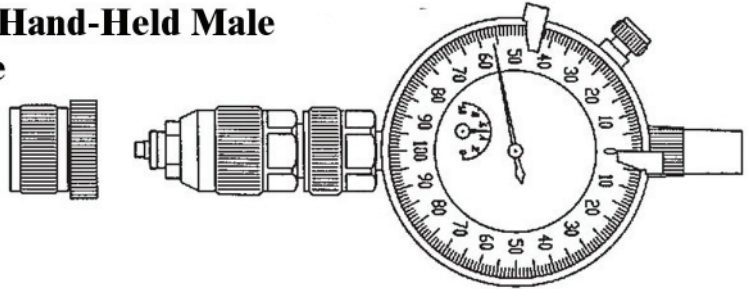


Figure 7

Calibrating the Hand-Held Male Interface Gauge



Connecting the Master Block onto the Interface Gauge

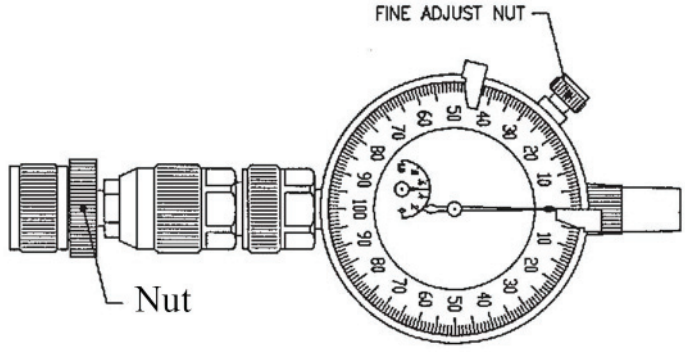
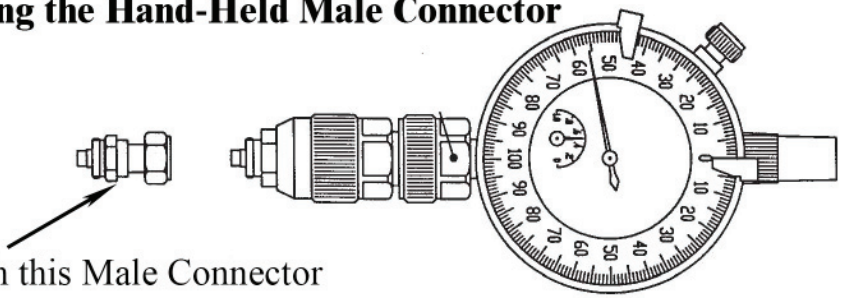


Figure 8

Measuring the Hand-Held Male Connector



Push this Male Connector carefully into the Gauge and hold it in place for the reading.

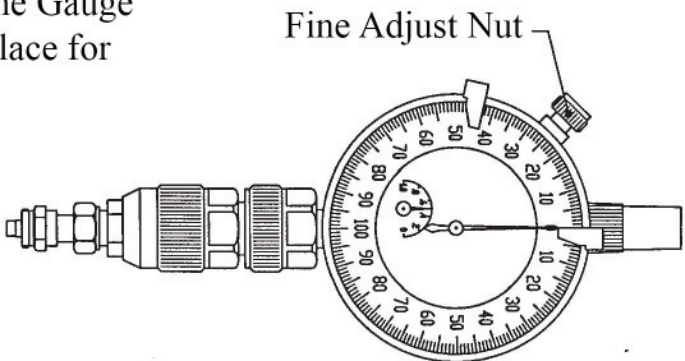
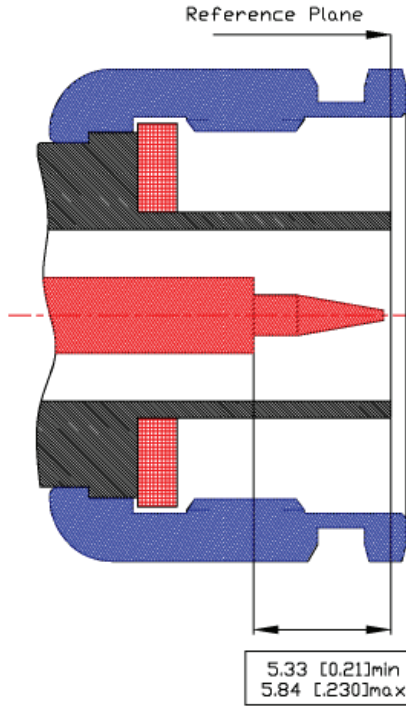
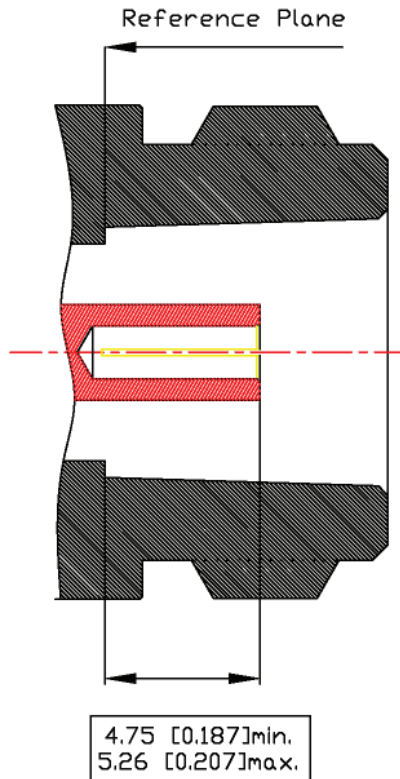


Figure 9

N



male

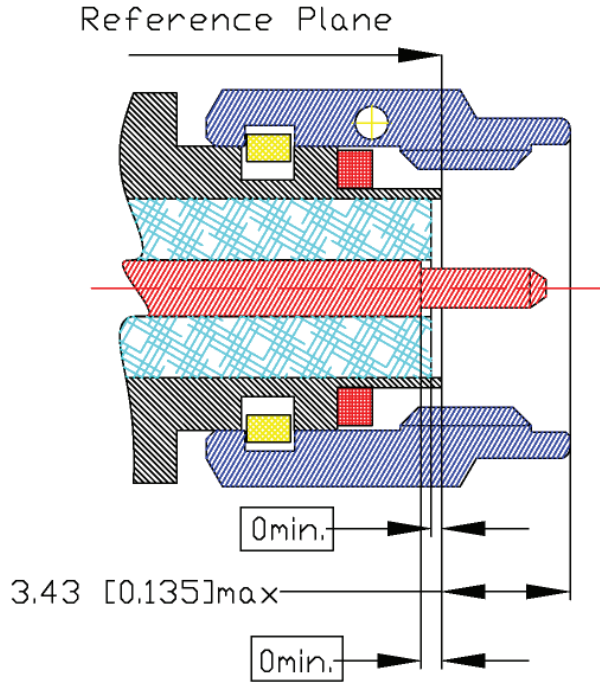


female

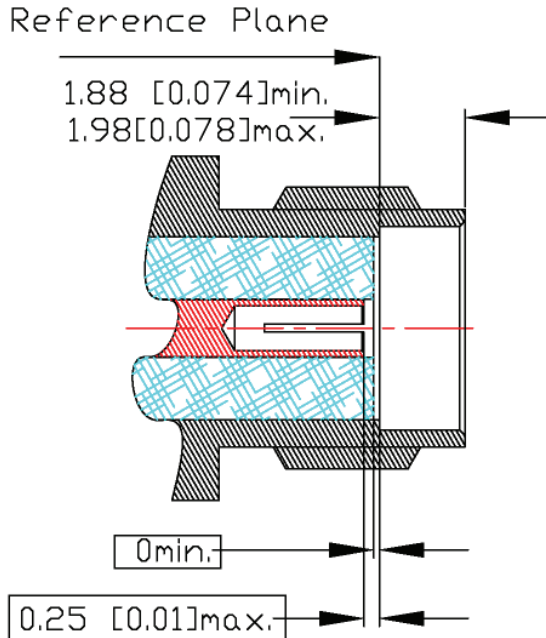
Dimensions shown are mm and [inches]

SMA

male



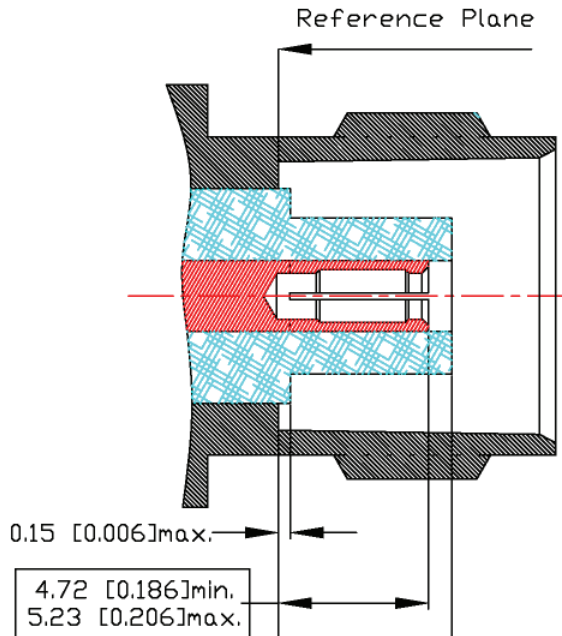
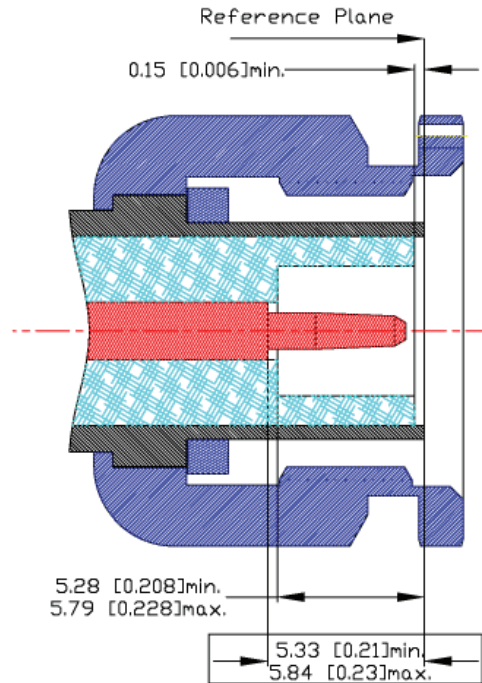
female



Dimensions shown are mm and [inches]

TNC

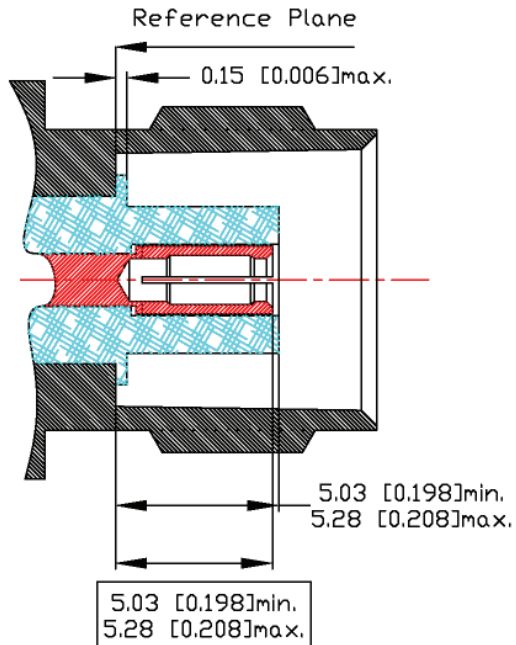
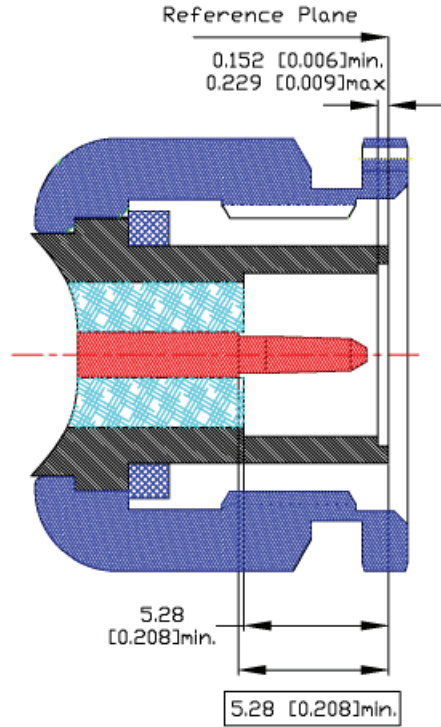
DC to 12 GHz



Dimensions shown are mm and [inches]

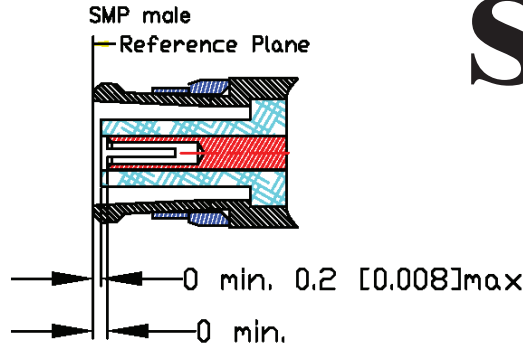
TNC

DC to 18 GHz

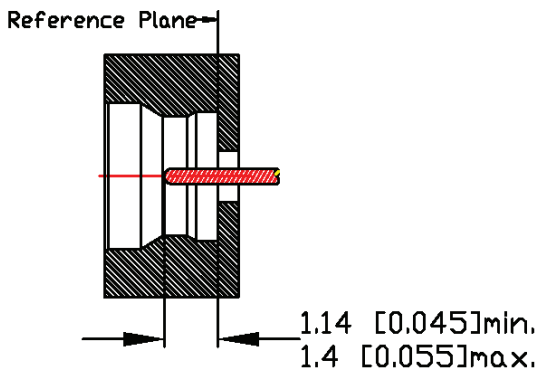


Dimensions shown are mm and [inches]

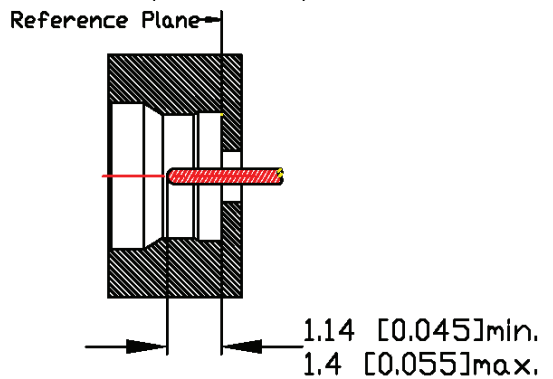
SMP



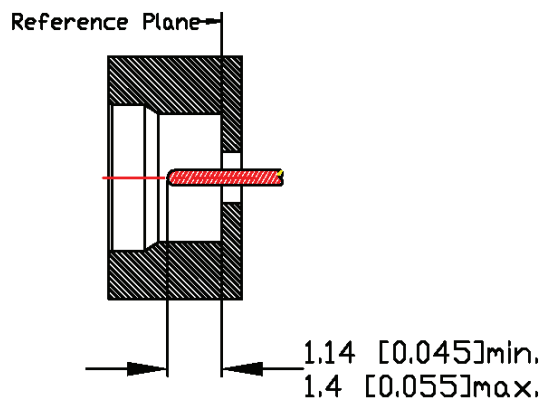
SMP female (full detent)



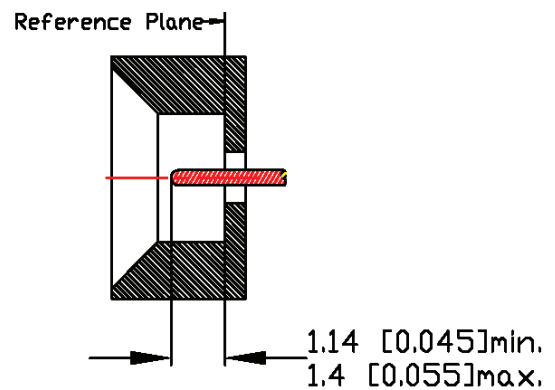
SMP female (limited detent)



SMP female (smooth bore)



SMP female (Catchers Mitt)



Dimensions shown are mm and [inches]

SQ-, TQ-, IQ-, BQ-, CQ- =
connecting 4, 7, 8, 10 or 12 coaxial RF-Lines at once

RQ23-DC26 =
connecting 23 coax RF-
& 26 Signal Lines at once



when Quality is needed



Hermetically Sealed Adapters

2.92mm, TNC, N, Feedthroughs
with venting holes for Vacuum Test Chambers

360° @ 1 GHz



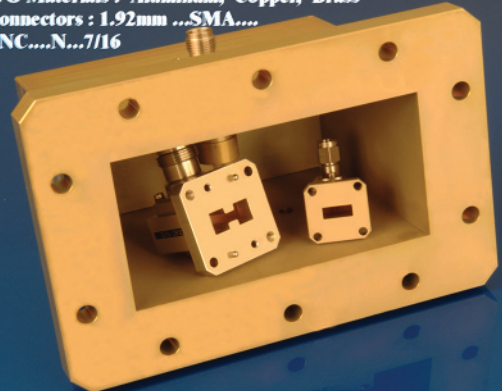
- 230° @ 12 GHz
- 350° @ 18 GHz
- 500° @ 26 GHz
- 590° @ 40 GHz
- 400° @ 50 GHz
- 600° @ 63 GHz

- 85° @ 2 GHz
- 520° @ 12 GHz
- 770° @ 18 GHz

www.spectrum-et.com

Big and Small,

we have 'em all
Almost any Waveguide to almost any Coax Connector
WG Materials : Aluminum, Copper, Brass
Connectors : 1.92mm ...SMA...
TNC...N...7/16



Email: Sales@Spectrum-et.com
Facsimile: +49-89-3548-0490

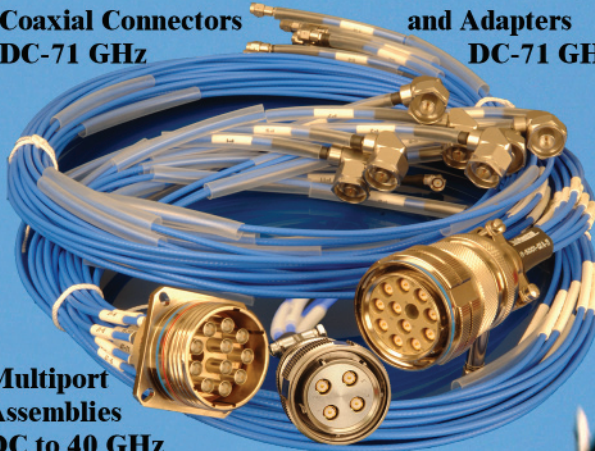
Our other Products



**Coaxial Connectors
DC-71 GHz**

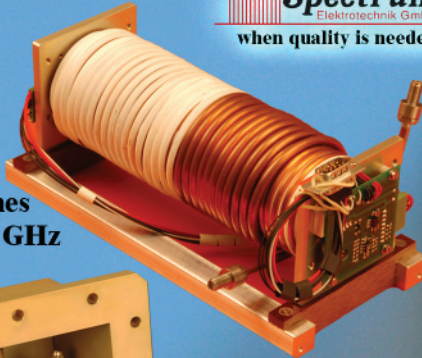
**and Adapters
DC-71 GHz**

**Multiport
Assemblies
DC to 40 GHz**

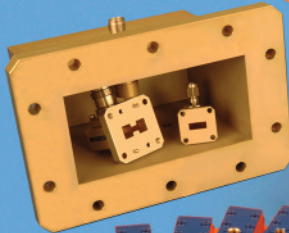


Spectrum
Elektrotechnik GmbH
when quality is needed

**Coaxial
Delay Lines
DC to 40 GHz**



**Cable Assemblies
DC to 71 GHz**



**Waveguide to
Coax Adapters**



**Gain Amplitude
Equalizers**

**Phase-Adjusters
DC to 63 GHz**



**Telephone: +49-89-3548-040
Fax: +49-89-3548-0490
Email: Sales@Spectrum-et.com**

www.spectrum-et.com

**T
A
K
E

O
F

W
I
T
H

O
U
R

P
R
O
D
U
C
T
S**