Calibration Kit Overview

The Agilent 85032B and 85032E type-N calibration kits are used to calibrate Agilent network analyzers up to 6 GHz for measurements of components with 50Ω type-N connectors.

Kit Contents

The 85032B calibration kit contains the following:

- one male and one female open termination
- one male and one female short termination
- one male and one female 50Ω load
- two type-N-male to 7-mm adapters (included with Option 100)
- two type-N-female to 7-mm adapters (included with Option 100)

Refer to Table 6-1 and Figure 6-1 for a complete list of kit contents and their associated part numbers.

The 85032E calibration kit contains the following:

- one male combination open/short termination
- one male 50Ω load

Refer to Table 6-2 and Figure 6-2 for a complete list of kit contents and their associated part numbers.

Broadband Loads

The broadband loads are instrument-grade, 50Ω terminations that have been optimized for performance up to 6 GHz. The rugged internal structure provides for highly repeatable connections. A distributed resistive element on sapphire provides excellent stability and return loss.

Opens and Shorts

The opens and shorts are built from parts that are machined to the current state-of the-art precision machining.

The short's inner conductors have a one-piece construction, common with the shorting plane. This construction provides for extremely repeatable connections.

The female open has a separate-piece inner conductor that is made from a low-dielectric-constant plastic to minimize compensation values.

Both the opens and shorts are constructed so that the pin depth can be controlled very tightly, thereby minimizing phase errors. Some of the opens and shorts have offsets. The lengths of these offsets are designed so that the difference in phase of their reflection coefficients is approximately 180 degrees at all frequencies.

Adapters

Like the other devices in the kit, the adapters are built to very tight tolerances to provide good broadband performance. The adapters utilize a dual-beaded connector structure to ensure stable, repeatable connections. The beads are designed to minimize return loss and are separated far enough so that interaction between the beads is minimized.

The adapters are designed so that their nominal electrical lengths are the same, which allows them to be used in calibration procedures for non-insertable devices.

Calibration Definitions

The calibration kit must be selected and the calibration definitions for the devices in the kit installed in the network analyzer prior to performing a calibration. Refer to your network analyzer user's guide for instructions on selecting the calibration kit and performing a calibration.

The calibration definitions can be:

- resident within the analyzer
- entered from the front panel

Installation of the Calibration Definitions

The calibration definitions for the kit may be permanently installed in the internal memory or hard disk of the network analyzer.

If the calibration definitions for the kit are not permanently installed in the network analyzer, they must be manually entered. Refer to your network analyzer user's guide for instructions.

Options

The following options are available for the Agilent 85032B/E.

Option 100 (85032B only) Option 100 adds the four type-N to 7-mm adapters to the calibration kit.

Option 003 (85032B only) This option provides a limited calibration for the devices in the calibration kit to 3 GHz instead of 6 GHz. This calibration option can be requested *only* from an Agilent service center. It cannot be ordered from the factory.

Option UK6 This option adds a certificate of calibration and the corresponding calibration data for the devices in the calibration kit.

Equipment Required but Not Supplied

Gages, torque and open-end wrenches, and various connector cleaning supplies are *not* included in the calibration kit but are required to ensure successful operation of the calibration kit. Refer to Table 6-3 on page 6-5 for ordering information

Incoming Inspection

Verify that the shipment is complete by referring to Figure 6-1 or Figure 6-2.

Check for damage. The foam-lined storage case provides protection during shipping.

If the case or any device appears damaged, or if the shipment is incomplete, contact Agilent. See Table 5-1 on page 5-3. Agilent will arrange for repair or replacement of incomplete or damaged shipments without waiting for a settlement from the transportation company.

When you send the kit or device to Agilent, include a service tag (found near the end of this manual) with the following information:

- your company name and address
- the name of a technical contact person within your company, and the person's complete phone number
- the model number and serial number of the kit
- the part number and serial number of the device
- the type of service required
- a *detailed* description of the problem

Recording the Device Serial Numbers

In addition to the kit serial number, the devices in this kit are individually serialized (serial numbers are labeled onto the body of each device). Record these serial numbers in Table 1-1 for the 85032B and Table 1-2 for the 85032E. Recording the serial numbers will prevent confusing the devices in this kit with similar devices in other kits.

Table 1-1 Serial Number Record for 85032B

Device	Serial Number
Calibration kit	_____
Male broadband load	_____
Female broadband load	_____
Male open	_____
Female open	_____
Male short	_____
Female short	_____
Type-N-male to 7-mm adapter	_____
Type-N-male to 7-mm adapter	_____
Type-N-female to 7-mm adapter	_____
Type-N-female to 7-mm adapter	_____

Table 1-2 Serial Number Record for 85032E

Device	Serial Number
Calibration kit	_____
Male broadband load	_____
Male combination open/short	_____

Clarifying the Sex of a Connector

In this manual, the sex of calibration devices and adapters are referred to in terms of their connector interface. For example, a male open has a male connector.

However, during a measurement calibration, the network analyzer softkey menus label a type-N calibration device with reference to the sex of the analyzer's test port connector—not the calibration device connector. For example, the label SHORT(F) on the analyzer's display refers to the short that is to be connected to the female test port. This will be a male short from the calibration kit.

Conversely, connector gages are referred to in terms of the connector that it measures. For instance, a male connector gage has a female connector on the gage so that it can measure male devices.

Preventive Maintenance

The best techniques for maintaining the integrity of the devices in this kit include:

- routine visual inspection
- cleaning
- proper gaging
- proper connection techniques

All of the above are described in Chapter 3 , "Use, Maintenance, and Care of the Devices." Failure to detect and remove dirt or metallic particles on a mating plane surface can degrade repeatability and accuracy and can damage any connector mated to it. Improper connections, resulting from pin depth values being out of the *observed* limits (see Table 2-2 on page 2-4), or from bad connections, can also damage these devices.

Introduction

Table 6-1 lists the replacement part numbers for items included in the 85032B calibration kit and Figure 6-1 illustrates each of these items.

Table 6-2 lists the replacement part numbers for items included in the 85032E calibration kit and Figure 6-2 illustrates each of these items.

Table 6-3 lists the replacement part numbers for items recommended or required for successful operation but not included in the calibration kit.

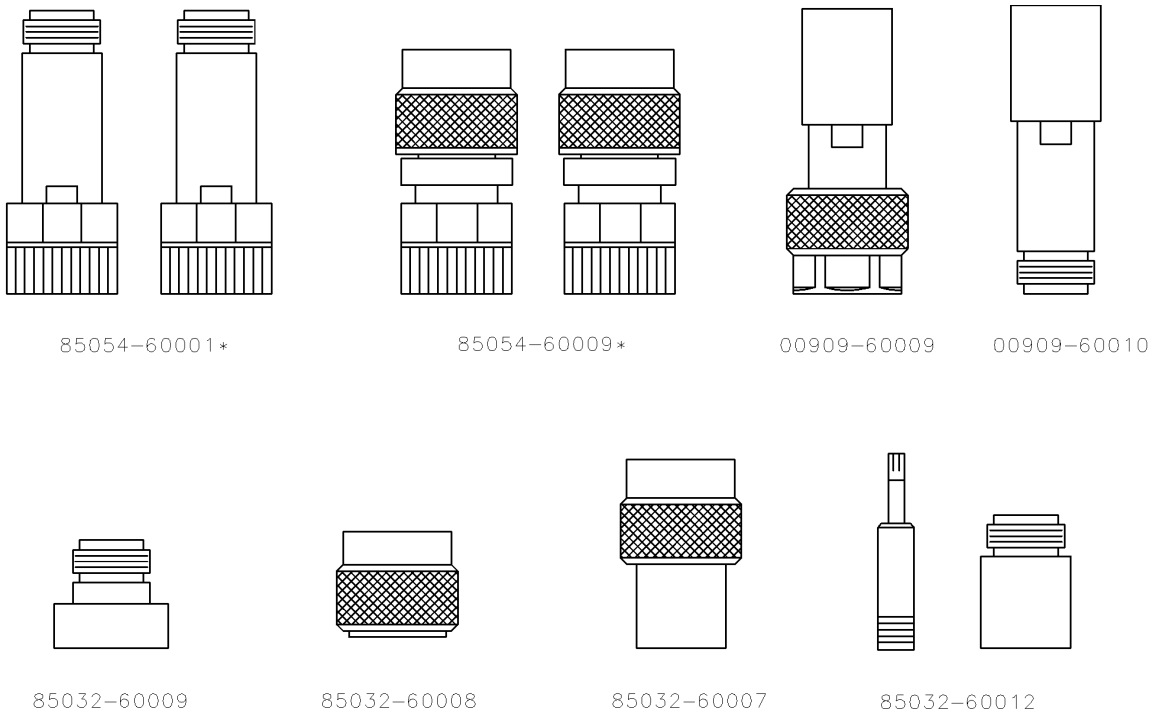
To order a listed part, note the description, the part number, and the quantity desired. Telephone or send your order to Agilent Technologies. See Table 5-1 on page 5-3.

Table 6-1 Replaceable Parts for the 85032B Calibration Kit

Item No.	Description	Qty Per Kit	Agilent Part Number
Calibration Devices (50Ω Type-N)			
1	Male broadband load	1	00909-60009
2	Female broadband load	1	00909-60010
3	Male short	1	85032-60008
4	Female short	1	85032-60009
5	Male open	1	85032-60007
6	Female open[a]	1	85032-60012
Adapters (included with Option 100)[b]			
7	Type-N-male to 7-mm	2	85054-60009
8	Type-N-female to 7-mm	2	85054-60001
Calibration Kit Storage Case			
9	Box assembly (includes case and foam pad set)	1	85032-60010
10	Case (without foam pad set)[c]	1	85032-80002
11	Foam pad set[c]	1	85032-80003
Protective End Caps for Connectors			
12	Female end cap for type-N	as required	1401-0225
13	Male end cap for type-N and 7 mm	as required	1401-0214
Miscellaneous Items			
15	User's and service guide	1	85032-90020

a. Includes center conductor extender.
b. Refer to "Options" on page 1-3 for description of available options.
c. Included in box assembly.

Figure 6-1 Replaceable Parts for the 85032B Calibration Kit



* Included in option 100

Not Shown:

- User's and service guide
- Storage case
- Protective end caps

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Table 6-2 Replaceable Parts for the 85032E Calibration Kit

Item No.	Description	Qty Per Kit	Agilent Part Number
Calibration Devices (50Ω Type-N)			
1	Male broadband load	1	00909-60009
2	Male combination open/short	1	85032-60011
Calibration Kit Storage Case			
3	Case (without foam pad set)	1	9211-1582
4	Foam pad set	1	85023-80005
5	Kit identification label	1	85032-80014
Protective End Caps for Connectors			
6	Male end cap for type-N and 7 mm	as required	1401-0214
Miscellaneous Items			
7	User's and service guide	1	85032-90020

Figure 6-2 Replaceable Parts for the 85032E Calibration Kit

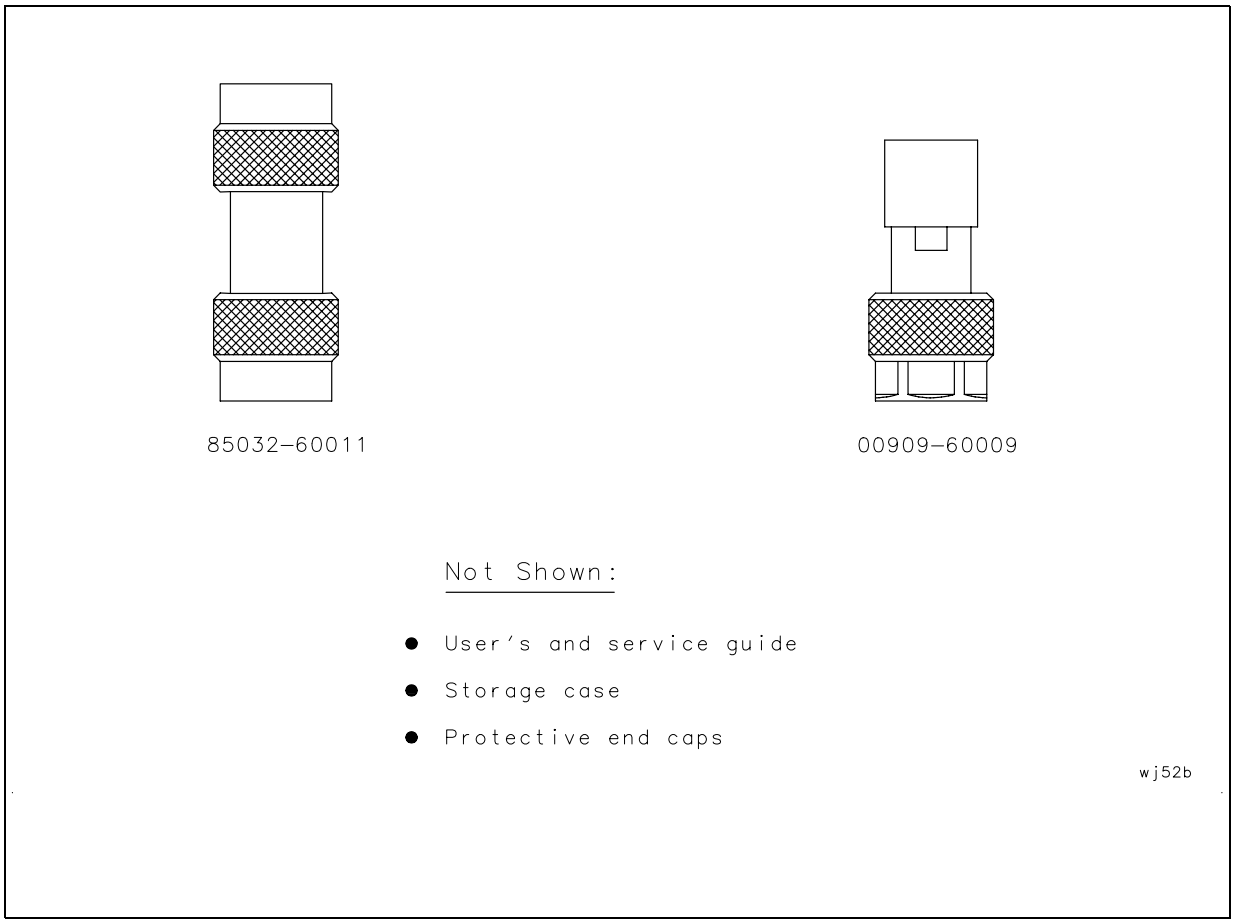

Table 6-3 Replaceable Parts—Items Not Included in the Calibration Kit

Item No.	Description	Qty	Agilent Part Number
Connector Gages[a] (Type-N)			
1	Gage set (includes items listed below)	1	85054-60049
2	Female gage	1	85054-60050
3	Female gage master	1	85054-60052
4	Male gage	1	85054-60051
5	Male gage master	1	85054-60053
6	Centering bead (2 supplied with gage set)	1	85054-80028
Wrenches			
7	3/4 in, 135 N-cm (12 in-lb) torque wrench	1	8710-1766
8	1/2 in and 9/16 in open-end wrench	1	8710-1770
9	3/4 in open-end wrench	1	8720-0011
ESD Protective Devices			
10	Grounding wrist strap	1	9300-1367
11	5 ft grounding cord for wrist strap	1	9300-0980
12	2 ft by 4 ft conductive table mat with 15 ft grounding wire	1	9300-0797
13	ESD heel strap	1	9300-1308
Connector Cleaning Supplies			
14	Isopropyl alcohol	30 ml	8500-5344
15	Foam tipped cleaning swabs	100	9301-1243

a. To ensure you choose the correct gage, refer to, "Clarifying the Sex of a Connector" on page 1-6.