

# SA9003

## PRESS UNIT

### Instruction Manual

EN

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SA9003A961-00



# HIOKI

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### Warranty

Malfunctions occurring under conditions of normal use in conformity with the Instruction Manual and Product Precautionary Markings will be repaired free of charge. This warranty is valid for a period of one (1) year from the date of purchase. Please contact the distributor from which you purchased the product for further information on warranty provisions.

## Introduction

Thank you for choosing the Hioki SA9003 Press Unit. To ensure you get the most out of this device over the long term, please read this manual carefully and keep it available for future reference.

### The latest edition of the instruction manual

Please note that the information contained in this manual is subject to change due to product improvements or specification updates. To obtain the most recent version of this manual, please visit Hioki's website at:  
<https://www.hioki.com/global/support/download/>



### Target audience

This manual has been written for use by individuals who use the product or provide information about how to use the product. In explaining how to use the product, it assumes electrical knowledge (equivalent of the knowledge possessed by a graduate of an electrical program at a technical high school).

### Inspecting package contents

Upon receiving the product, inspect it for any damage or anomalies. If you discover any damage or find that the product does not perform as indicated in the specifications, please contact your authorized Hioki distributor or reseller.

<input type="checkbox"/> SA9003 Press Unit	
<input type="checkbox"/> Ratchet handle	
<input type="checkbox"/> Quick spinner	
<input type="checkbox"/> Short-compensation block	
<input type="checkbox"/> Instruction Manual (this manual)	

### Shipping precautions

Store the packaging materials after unpacking the device. Use the original packaging materials when shipping the device.

## Overview

The SA9003 Press Unit is a device designed to apply a load to powder been filled into the SA9004-01 Test Fixture. For details, see the Instruction Manual for the Powder Impedance Measurement System Instruction Manual.

### Powder Impedance Measurement System Instruction Manual

<https://www.hioki.com/global/support/download/>

SA2653



## Notations

### Safety notations

This manual classifies seriousness of risks and hazard levels as described below.

	<b>DANGER</b>	Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.
	<b>WARNING</b>	Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
	<b>CAUTION</b>	Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury or potential risks of damage to the supported product (or to other property).

	Indicates prohibited actions.
	Indicates mandatory actions.

### Symbols on the device

	Indicates the presence of a potential hazard. See the <i>Precautions for Use</i> section and warning messages listed at the beginning of each operating instruction in the instruction manual.
	Indicates the functional ground terminal.

### Symbols for various standards

	Indicates that the product complies with standards mandated by EU directives.
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### Accuracy labeling

The thickness measurement accuracy of the SA9003 is expressed by defining limit values for errors using the same measurement unit as measured values. The load measurement accuracy of the SA9003 is expressed by defining limit values for errors as a percentage of the full scale.

Full scale (rated load value)	Indicates a value with a rating of 60 kN. Limit values for full-scale errors are expressed as a percentage of the full scale (% of full scale or % f.s.).
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## Safety Information

This device has been designed in accordance with the international standard IEC 61010 and has undergone rigorous safety testing prior to shipment. However, using the device in a way not specified in this manual may compromise its safety features. Carefully read the following safety notes and the instruction manual for the measuring instrument to which this device is connected before use.

### DANGER

- Familiarize yourself with the contents of this manual before use.

Failure to follow this guidance will result in misuse, leading to serious bodily injury or damage to the device.

## Precautions for Use

Observe the following precautions to ensure the safe use of the device and to maximize its capabilities.

### WARNING

- Do not use the device in locations such as the following:

- Where it would be subject to direct sunlight or high temperatures
- Where it would be exposed to corrosive or explosive gases
- Where it would be exposed to powerful electromagnetic radiation or close to objects carrying an electric charge
- Where it would be close to an inductive heating device (such as high-frequency inductive heating devices and IH cooktops)
- Where it would be subject to a large amount of mechanical vibration
- Where it would be exposed to water, oil, chemicals, solvents
- Where it would be exposed to high humidity or condensation
- Where it would be exposed to an excessive amount of dust
- Where it would be unstable or inclined

Failure to follow this guidance could damage the device or cause it to malfunction, resulting in bodily injury.

### WARNING

- Do not apply a load if fingers or objects other than the SA9004-01 Test Fixture are placed in the SA9003 Press Unit.

Failure to follow this guidance could result in bodily injury or damage the device.

- Do not apply a load exceeding the rated capacity of 60 kN.

Failure to follow this guidance could result in bodily injury or damage the device.

### CAUTION

- Hold the left and right side handles.

Device weight: Approx. 20.7 kg

- Follow your company's safety guidelines, such as using anti-slip gloves and safety boots.

Failure to follow this guidance could cause bodily injury.

- Do not move the hydraulic jack during calibration and compensation.

Failure to follow this guidance may result in errors in calibration or compensation.

- Securely insert the SA9004-01 Test Fixture deep into the rail.

Failure to follow this guidance could damage the device.

- Use the ratchet handle when adjusting the load on the SA9003 Press Unit.

Using electric tools could damage the device or bodily injury.

- Apply a load to the powder gradually.

If the load applied to the powder is reduced, it could affect the thickness measurement values.

## Inspection Before Use

Inspect the device for malfunctions or damage and check it for proper operation before use.

If there is any malfunction or damage, please contact your authorized Hioki distributor or reseller.

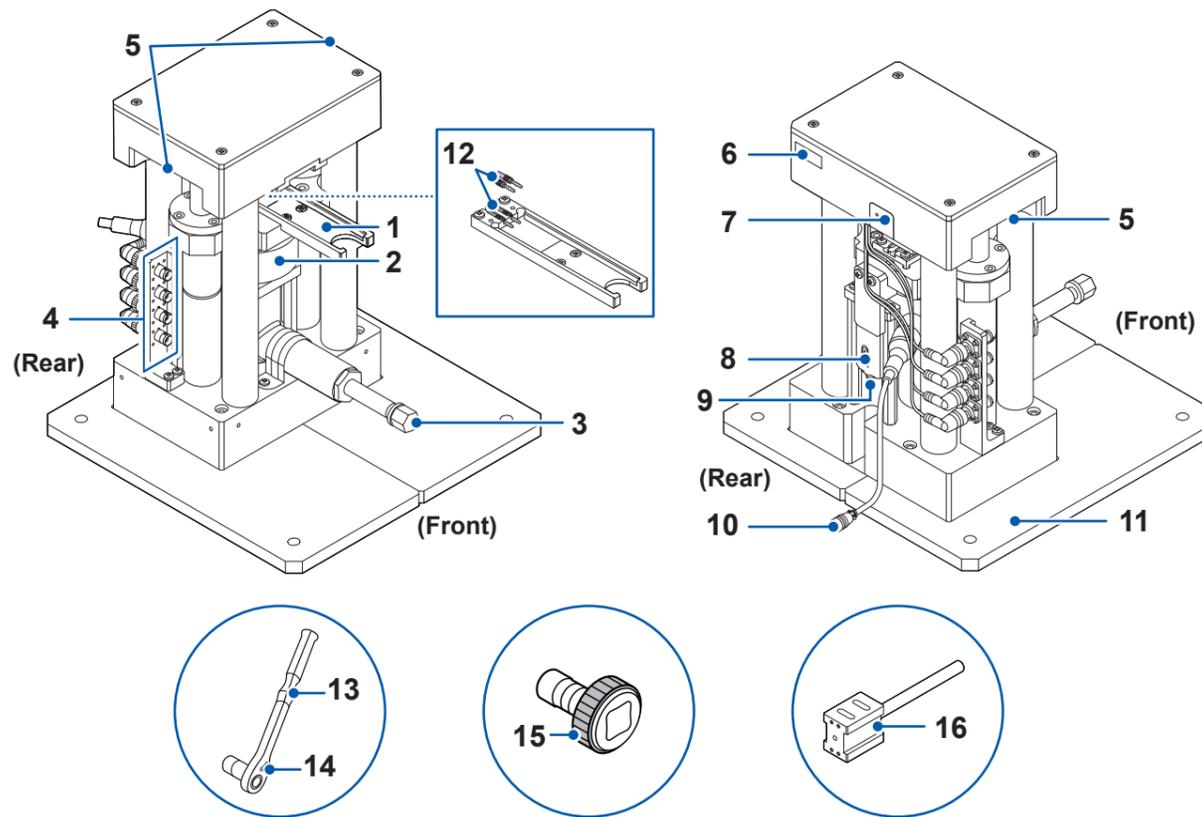
## How to Make Connection

For details on the connection method, see "2.4 Connecting the Sensor Unit and the Press Unit" and "2.5 Connecting the Measuring Instrument and the Press Unit Using the Connection Cable" in the Powder Impedance Measurement System Instruction Manual.

To use the device in a glove box, see "2.8 Using the SA9003 and the SA2654 in a Glove Box" in the Powder Impedance Measurement System Instruction Manual.

To position the SA9004-01 Test Fixture in the device, see "4.2 Positioning the Test Fixture in the Press Unit" in the Powder Impedance Measurement System Instruction Manual.

## Part Names and Functions



No.	Name	Function
1	Rail	Allows the SA9004-01 Test Fixture to be inserted.
2	Load cell	Measures the load on the powder.
3	Hydraulic jack	Applies load to the powder filled in the SA9004-01 Test Fixture.
4	BNC terminals	Connect the L2280 Connection Cable here.
5	Handles	Grasp to carry the device.
6	Serial number	The serial number consists of nine digits. The first two digits indicate the year of manufacture, while the second two digits indicate the month of manufacture. Do not remove this sticker because the number is required for product tracking.
7	Functional ground terminal	Reduces the effect of noise. For use in noisy locations, connect the functional ground terminal of the SA2654 Sensor Unit and that of the SA9003 Press Unit using the functional ground cable supplied with the SA2654 Sensor Unit.
8	Displacement meter	Measures the load on the powder.
9	Displacement-meter terminal	Connect the displacement-meter connector of the SA2654 Sensor Unit here.
10	Load-cell connector	Connect the load-cell connector of the SA2654 Sensor Unit here.
11	Bases	Prevent the SA9003 Press Unit from falling. Use the four M12 screw holes on the bases for fixing.
12	Banana plugs	Connects to the SA9004-01 Test Fixture terminals.
13	Ratchet handle	Attach to the hydraulic jack of the SA9003 Press Unit to apply the load. The ratchet handle comes with a socket. (width between parallel sides: 17 mm)
14	Switch lever	Use to switch between two ratchet handle modes: tightening mode (clockwise) and loosening mode (counterclockwise).
15	Quick spinner	Attach to the hydraulic jack of the SA9003 Press Unit to adjust the gap between the upper electrode of the Test Fixture and the Press Unit.
16	Short-compensation block	Use to perform the short compensation.

## Specifications

Dimensions	Approx. 300W × 322H × 300D mm (11.8W × 12.7H × 11.8D in., excluding protrusions)	
Weight	Approx. 20.7 kg (45.6 lb.)	
Frequency at which measurements can be made	DC to 8 MHz	
Structure	Four-terminal structure	
Connectable test fixture	SA9004-01 Test Fixture	
Residual impedance	Residual resistance when the terminals are short-circuited: 0.2 mΩ or less (with the short-compensation block connected, frequency: 100 Hz, with the L2280-01 connected) Stray capacitance between electrodes: 10 pF or less (the SA9004-01 electrode spacing: 1 mm, frequency: 1 MHz, with the L2280-01 connected)	
Connection means	Test Fixture	Banana plugs with a 2 mm diameter
	Connection cable	BNC connector
	Load cell	Dedicated connector
	Displacement meter	Dedicated connector
Product cables	1.5D-2V equivalent length: 200 mm	
Shield connection	The shield of the L2280-01/L2280-03 Connection Cable and the body of the SA9003 Press Unit are connected.	
Functional ground connection	The SA2654 Sensor Unit and the body of the SA9003 Press Unit are connected.	
Up/down stroke	Range of motion	0 mm to 8.5 mm
	Equipment	Hydraulic jack (screw type)
Load application	Load range	0 kN to 60 kN
	Equipment	Hydraulic jack (screw type)
Load measurement	Using the load cell	
	Measurement precision	±3% f.s.
Thickness measurement	Using the contact-type displacement meter	
	Measurement error	±10 μm
	(under a constant temperature environment, after calibration is performed) (within a load range of 10 kN to 60 kN, only with increasing load)	
Handle position	Bottom of the top plate	
Operating temperature and humidity range	23°C ±5°C (73°F ±9°F), 80% RH or less (non-condensing)	
Storage temperature and humidity range	-10°C to 50°C (14°F to 122°F), 80% RH or less	
Operating environment	Indoor use, pollution degree 2, altitude up to 2000 m (6562 ft.)	
Included accessories	See "Inspecting package contents."	
Product warranty duration	1 year	

## Maintenance and Service

### Cleaning

#### ⚠ CAUTION

- To clean the device, wipe it using a soft cloth moistened with water or a neutral detergent.
- ! Using solvent-containing detergents, such as benzene, alcohol, acetone, ether, ketone, thinner, and gasoline, or wiping the device with excessive force could cause deformation or discoloration.