

EN

OPERATING MANUAL
DIGITAL SOUND LEVEL METER



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Notes regarding the operating manual

Symbols

 **Warning of electrical voltage**
 This symbol indicates dangers to the life and health of persons due to electrical voltage.

 **Warning**
 This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.

 **Caution**
 This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Notice
 This signal word indicates important information (e.g. material damage), but does not indicate hazards.

 **Info**
 Information marked with this symbol helps you to carry out your tasks quickly and safely.

 **Follow the manual**
 Information marked with this symbol indicates that the operating manual must be observed.

You can download the current version of the operating manual and the EU declaration of conformity via the following link:



SL400



<http://hub.trotec.com/?id=39644>

Legal notice

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Changes to construction in the interests of constant improvements to the product, as well as changes to the shape and colour are reserved.

The scope of delivery may vary from product images. This document was created with all due care.

Trotec GmbH & Co. KG accepts no liability whatsoever for possible mistakes or omissions.

The only party responsible for determining valid measured results, drawing conclusions and deriving actions is the user.

Trotec GmbH & Co. KG accepts no claims of warranty for the correctness of the determined measured values or measured results.

Further, Trotec GmbH & Co. KG accepts no liability whatsoever for possible mistakes or damage which have been caused by utilising the determined measured results.

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Warranty and liability

The device complies with the fundamental health and safety requirements of the applicable EU regulations and was tested at the factory for perfect functionality multiple times.

If malfunctions occur nonetheless, please contact your dealer or distributor.

When making a warranty claim, supply the device number (see the rear of the device).

When manufacturer's instructions or legal regulations have not been followed, or after unauthorised changes to the device are made, the manufacturer is not responsible for the resulting damages. Changes to the device or unauthorised replacement of individual parts can drastically impact the electrical safety of this product and will result in the loss of the warranty. Liability does not extend to damages to people or property caused by the device being used other than as described in the instructions in this operating manual. Subject to changes to technical design and model changes as part of constant development and product improvement without prior notice.

No liability is accepted for damages resulting from improper use. In such a case, any warranty claims will be voided also.

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!

- Do not use the device in potentially explosive rooms.
- Do not use the device in aggressive atmosphere.
- Do not immerse the device in water. Do not allow liquids to penetrate into the device.
- The device may only be used in dry surroundings and must not be used in the rain or at a relative humidity exceeding the operating conditions.
- Protect the device from permanent direct sunlight.
- Do not expose the device to strong vibrations.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Do not open the device with a tool.
- Only use the device if sufficient safety precautions were taken at the surveyed location (e.g. when performing measurements along public roads, on building sites etc.). Otherwise do not use the device.
- Observe the storage and operating conditions (see chapter Technical data).

Intended use

Only use the device for sound level measurements within the measuring range specified in the technical data.

To use the device for its intended use, only use accessories and spare parts which have been approved by Trotec.

Improper use

Do not use the device in potentially explosive atmospheres, for measurements in liquids and at live parts. Trotec accepts no liability for damages resulting from improper use. In such a case, any warranty claims will be voided. Any unauthorised modifications, alterations or structural changes to the device are forbidden.

Personnel qualifications

People who use this device must:

- have read and understood the operating manual, especially the Safety chapter.

Personal protective equipment



Wear ear protection

Wear hearing protection when handling the device.

Residual risks

Warning
 Ensure sufficient ear protection when there are sources of loud sound. There is a danger of hearing damage.

Warning
 Do not leave the packaging lying around. Children may use it as a dangerous toy.

Warning
 The device is not a toy and does not belong in the hands of children.

Warning
 Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!

Notice
 To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Notice
 Do not use abrasive cleaners or solvents to clean the device.

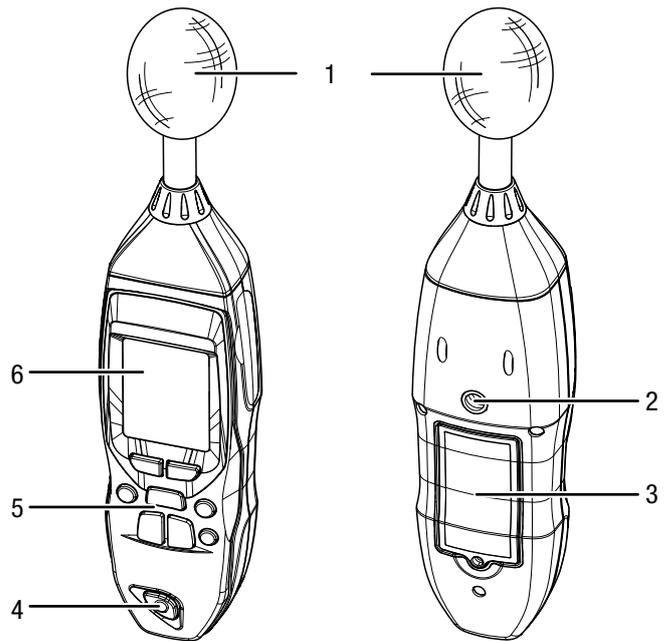
Information about the device

Device description

This digital sound level meter was specifically designed to perform noise measurements and quality inspections in various areas and different locations. The measurements can be carried out e.g. at your workplace, at the office, in factories, schools, at home or on busy roads. This permits the introduction of preventative measures and helps to guard against noise-induced diseases.

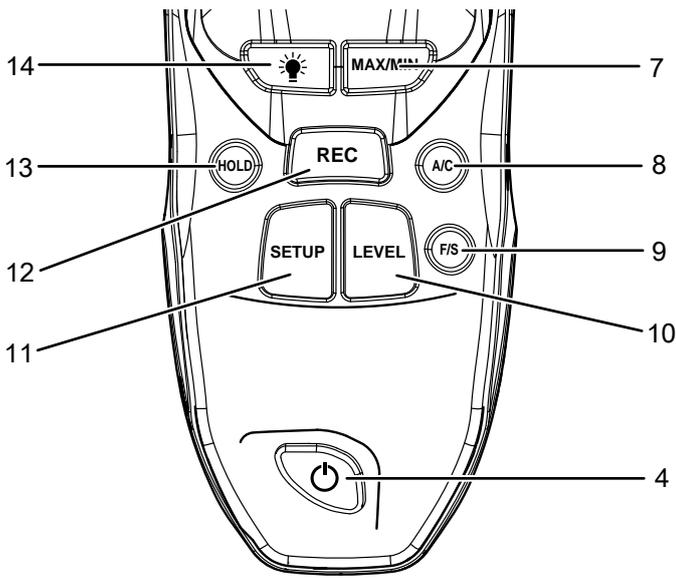
- The device meets the requirements of the standard for digital sound level meters DIN EN 61672-1.
- display of maximum and minimum values
- indication when exceeding the measuring range
- indication when falling below the measuring range
- dBA and dBC display
- data transfer to PC software via USB

Device depiction



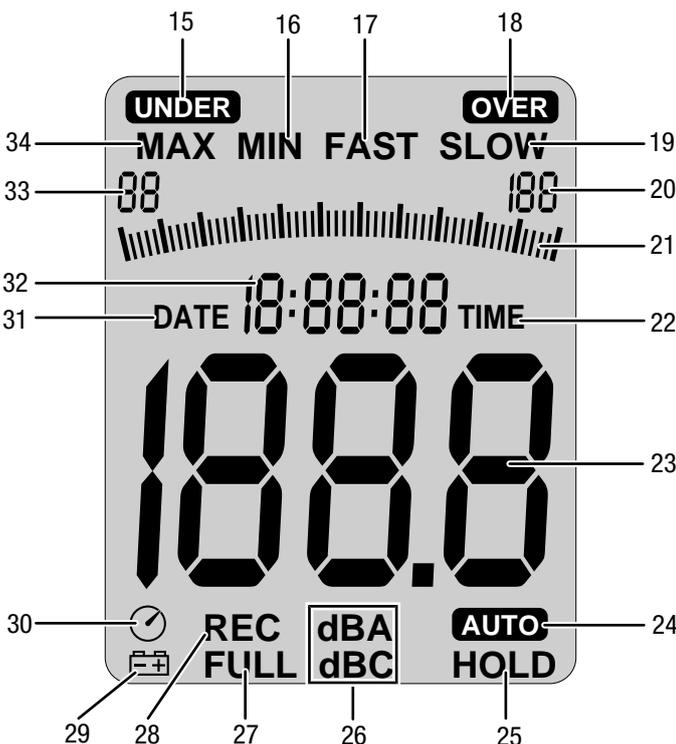
No.	Designation
1	Measuring probe with protective cap
2	Tripod thread
3	Battery compartment with cover
4	Power button
5	Control panel
6	Display

Control panel



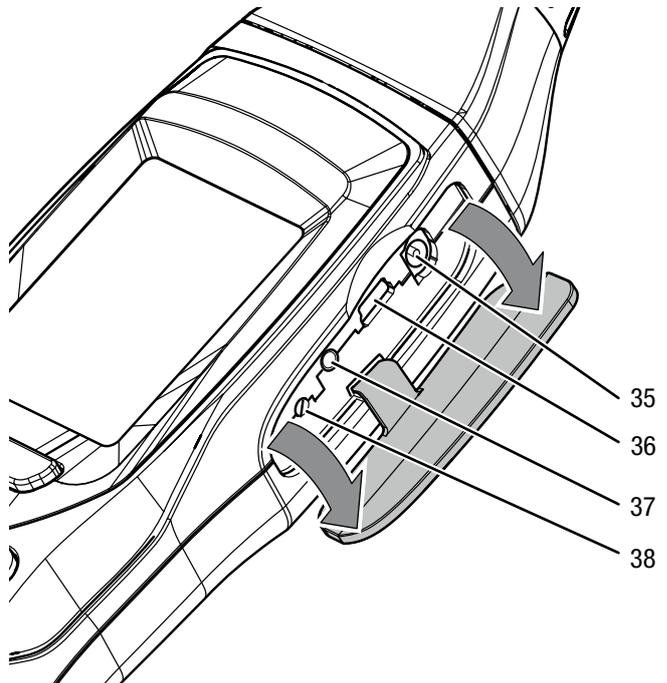
No.	Designation
4	Power button
7	MAX/MIN button
8	A/C button
9	F/S button
10	LEVEL button
11	SETUP button
12	REC button
13	HOLD button
14	Button for background illumination

Display



No.	Designation
15	UNDER indication (i.e. fallen below measuring range)
16	MIN indication
17	FAST indication
18	OVER indication (i.e. measuring range exceeded)
19	SLOW indication
20	Indication of the scale's maximum value
21	Display of the measuring scale
22	TIME indication
23	Measured value display
24	AUTO indication
25	HOLD indication
26	dBA / dBC indication
27	FULL indication (memory full)
28	REC indication
29	Battery status indication
30	Indication for automatic switch-off
31	DATE indication
32	Time / date display
33	Indication of the scale's minimum value
34	MAX indication

Connections



No.	Designation
35	Connection for the power adapter (DC 9 V)
36	Mini USB port
37	3.5 mm jack *
38	Setscrew for calibration

* e.g. to connect a frequency analyser or recorder

Technical data

Parameter	Value
Model	SL400
Article number	3.510.005.020
Measuring range	30 dB to 130 dB
Accuracy	±1.4 dB (class 2 according to DIN EN 61672)
Resolution	0.1 dB
Frequency range	31.5 Hz to 8kHz
Dynamic range	50 dB
Partial measuring ranges	30 dB to 80 dB, 50 dB to 100 dB, 80 dB to 130 dB, 30 dB to 130 dB
Display response time	500 ms
Power supply	9 V battery 006P or NEDA 1604 or IEC 6F22
Alarm function	<i>OVER</i> : Measuring range exceeded <i>UNDER</i> : Fallen below measuring range
Time weighting	<i>FAST</i> : 125 ms <i>SLOW</i> : 1 s
Microphone	1/2-inch electret condenser microphone
Operating conditions	0 °C to 40 °C with 10 % to 90 % RH
Storage conditions	-10 °C to +60 °C with 10 % to 75 % RH
Weight	305 g
Dimensions (length x width x height)	255 x 63 x 45 mm
Automatic switch-off	Switch-off after approx. 15 min of non-use

Scope of delivery

- 1 x Digital sound level meter
- 1 x Wind shield for microphone
- 1 x Mini tripod
- 1 x CD with software
- 1 x USB cable
- 1 x Transport case
- 1 x Mini screwdriver
- 1 x 9 V battery
- 1 x Power adapter
- 1 x Quick guide

Transport and storage

Notice

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Storage

- dry and protected from frost and heat
- protected from dust and direct sunlight
- with a cover to protect it from invasive dust if necessary
- The storage temperature is the same as the range given in the Technical data chapter.
- Remove batteries from the device when not in use for a longer period of time.

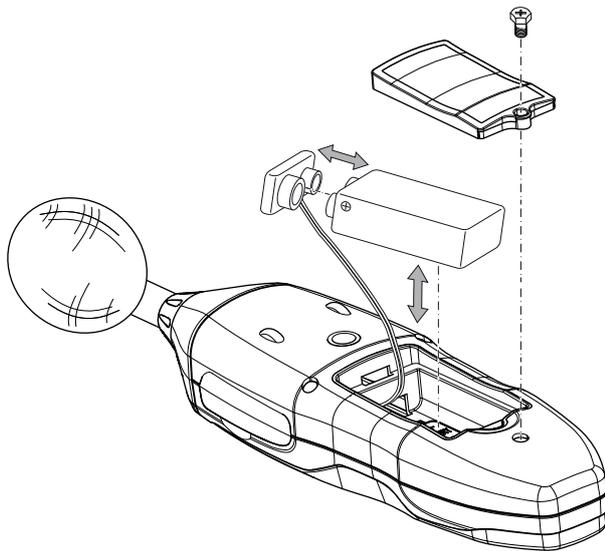
Operation

Inserting the battery

Insert the supplied battery before first use.

Notice

Make sure that the surface of the device is dry and the device is switched off.



1. Open the battery compartment at the rear of the device by loosening the screw at the cover.
2. Use the battery clip to connect the 9 V battery with correct polarity.
3. Place the battery with the battery clip into the battery compartment.
4. Reattach the cover to the battery compartment.
5. Retighten the screw at the battery compartment.

Switching the device and performing measurements



Info

Note that moving from a cold area to a warm area can lead to condensation forming on the device's circuit board. This physical and unavoidable effect can falsify the measurement. In this case, the display shows either no measured values or they are incorrect. Wait a few minutes until the device has become adjusted to the changed conditions before carrying out a measurement.



Info

Please note that the measurement of a sound source always has to be carried out directly. There must be no objects or persons located in between the microphone and the sound source, unless their influence on the sound intensity is to be measured on purpose as well.

1. Press the Power button (4) for approx. 2 s.
 - ⇒ The display (6) is switched on and the device is ready for operation.
 - ⇒ The current measured value is displayed in the measurement value display (23).
2. Point the device at the sound source to be measured.
 - ⇒ Wait for a moment to achieve a stable measured value.

Setting the measuring range

The device has different measuring ranges which can be selected as needed or according to the expected sound level. If the expected sound level range is a known factor, one should always select the corresponding measuring range whenever possible, since this permits an optimum resolution of the scale (21) at all times.

- Lower measuring range: 30 to 80 dB
- Medium measuring range: 50 to 100 dB
- Upper measuring range: 80 to 130 dB
- Auto: 30 to 130 dB

Please proceed as follows to set the measuring range:

1. Repeatedly press the *LEVEL* button (10) until the desired measuring range is displayed on both ends of the scale (20 and 33).
 - ⇒ The scale will be adjusted automatically.
 - ⇒ The *UNDER* (15) or *OVER* (18) indication will be displayed, if applicable. If so, you should adjust the measuring range further.

Measured curve setting (dBA / dBC)

You can choose whether your measured values are to be displayed according to dB(A) or dB(C).

Please proceed as follows to set the measured curve:

1. Repeatedly press the *A/C* button (8) until either dB(A) or dB(C) is displayed in pos. 26.
 - ⇒ The measured value will be adjusted automatically.

Setting the MAX/MIN function

By use of the MAX/MIN function you can retain either the highest or the lowest value of the current measurement.

Please proceed as follows to set the MAX/MIN function:

1. Press the *MAX/MIN* button (7).
 - ⇒ The *MAX* indication (34) appears on the display.
 - ⇒ The measured value display (23) will be frozen and changes only if a new higher value is measured.
2. Press the *MAX/MIN* button (7) again.
 - ⇒ The *MIN* indication (16) appears on the display.
 - ⇒ The measured value display (23) will be frozen and changes only if a new lower value is measured.
3. Press the *MAX/MIN* button (7) again to quit using the MAX/MIN function.

Setting the HOLD function

By use of the HOLD function you can retain the currently measured value.

Please proceed as follows to set the HOLD function:

1. Press the *HOLD* button (13).
 - ⇒ The *HOLD* indication (25) appears on the display.
 - ⇒ The measured value display (23) will be frozen.
2. Press the *HOLD* button (13) again.
 - ⇒ The currently measured value is indicated.
 - ⇒ The *HOLD* indication (25) disappears.

Setting the time weighting

You can choose between a *FAST* and *SLOW* time weighting.

- *FAST*: 125 ms (real-time signal evaluation)
- *SLOW*: 1 s (average signal evaluation)

Please proceed as follows to set the time weighting:

1. Press the *F/S* button (9) until the desired type of time weighting (*FAST* 17 or *SLOW* 19) is indicated on the display.

Switching the background illumination on or off

The device comes with an optionally selectable background illumination.

Please proceed as follows to switch the background illumination on or off:

1. Press the button for background illumination (14) to switch the background illumination on or off.

Setting the automatic switch-off

The device comes equipped with an automatic switch-off function and switches off automatically if no button was pressed for approx. 15 min.

Please proceed as follows to activate or deactivate the automatic switch-off function:

1. Press the *SETUP* button (11).
 - ⇒ The indication for automatic switch-off (30) appears on the display.
 - ⇒ The automatic switch-off function is activated.
2. Press the *SETUP* button (11) again to deactivate the automatic switch-off function.

Setting the time and date

You can adjust the time and date for the device.

You can save the settings at any time and exit the menu by means of the *HOLD* button (13).

To do so, please proceed as follows:

- ✓ The device is switched off.
1. Press and hold the *SETUP* button (11).
 2. Switch the device on.
 - ⇒ The *TIME* indication (22) briefly appears on the display.

3. Release the *SETUP* button (11).
 - ⇒ The *DATE* indication (31) appears on the display. Also indicated is the current date in the year-month format as well as the day in the measured value display.
4. Press the *SETUP* button (11) again.
 - ⇒ The *TIME* indication (22) and the set minutes are displayed.
5. Press the *LEVEL* button (10) to adjust the minutes.
6. Press the *SETUP* button (11) again.
 - ⇒ The *TIME* indication (22) and the set hours are displayed. *h-P* stands for *P.M.* and *h-A* for *A.M.*
7. Press the *LEVEL* button (10) to adjust the hours.
8. Press the *SETUP* button (11) again.
 - ⇒ The *DATE* indication (31) and the set day are displayed.
9. Press the *LEVEL* button (10) to change the day.
10. Press the *SETUP* button (11) again.
 - ⇒ The *DATE* indication (31) and the set month are displayed.
11. Press the *LEVEL* button (10) to change the month.
12. Press the *SETUP* button (11) again.
 - ⇒ The *DATE* indication (31) and the set year are displayed.
13. Press the *LEVEL* button (10) to change the year.
14. Press the *HOLD* button (13) to save the new time and date settings.

If you do not want to save the settings made for time and date, press the *SETUP* button (11) again whilst in the display for setting the year.

 - ⇒ The indication *rSt* appears on the display.
15. To reset the settings for time and date to the factory default, press the *HOLD* button (13).
16. In order to return to the menu for setting time and date, press the *SETUP* button (11) when *rSt* is displayed.
 - ⇒ The next setting corresponds to the menu for adjusting the current date as described in step 3.

Recording measurement series on the device (REC / Logging)

1. Press the *REC* button (12) to activate the device's recording function.
 - ⇒ The *REC* indication (28) appears on the display.
2. Press the *REC* button (12) again to stop recording measured values.
 - ⇒ The measurement will be stored on the device memory with time and date.

Adjusting the saving interval of the device

- ✓ The device is switched off.
1. Press and hold the button for background illumination (14).
 2. Switch the device on.
 - ⇒ *0001 Int* appears on the display.
 3. Press *LEVEL* (10) to adjust the saving interval between *0001* and *0059* seconds.
 4. Press the *HOLD* button (13) to save the setting.
 - ⇒ The new saving interval is saved until the device is switched off.

Deleting data memory

- ✓ The device is switched off.
1. Press and hold the *REC* button (12).
 2. Switch the device on.
 - ⇒ The indication *CLR* appears on the display.
 - ⇒ All data records on the device memory will be deleted.

Setting the data transmission via USB

In order to transfer data for further analysis to a PC via USB, please proceed as follows:

1. Install the supplied software on your PC, see chapter Software.
2. Start the software.
3. Connect the device to the PC using the supplied USB cable.
4. Press the *SETUP* button (11) to activate both the real-time display of the device in the software interface and the data transfer mode.
 - ⇒ The automatic switch-off function will be deactivated for the duration of data transmission.
5. For the data transmission from the device to the PC please follow the instructions in the software help file.
6. Press the *SETUP* button (11) again to terminate the connection between device and PC.

Assembling the tripod

The device is equipped with a 1/4 inch tripod thread. If required, you can mount the device onto a tripod.

Switching the device off

If the automatic switch-off function is enabled, the device switches off automatically after approx. 15 min without keystroke.

1. Press the Power button (4) until the device is switched off.
 - ⇒ Indicated on the display is a countdown from 3 to 1.

Software

The supplied free software is designed for useful basic functionalities. Trotec assumes no liability with regard to this free software and also provides no support on that score. Trotec accepts no liability concerning the use of this free software and is under no obligation to make adjustments or to further develop updates or upgrades.

Installation requirements

Ensure that the following minimum requirements for installing the PC software are fulfilled:

- Supported operating systems (32 or 64 bit version):
 - Windows 10
 - Windows 8
 - Windows 7
 - Windows Vista
- Hardware requirements:
 - processor speed: min. 90 MHz
 - 32 MB RAM, minimum
 - 7 MB hard disk space, minimum
 - a minimum screen resolution of 1024 x 768 with a 16 bit colour depth

Installing the PC software

Administrator rights are required for the software installation.

1. Place the supplied software CD into the CD-ROM drive.
2. Open the CD-ROM contents in an Explorer window and double-click the *setup.exe* file.
3. Follow the instructions of the installation wizard.

Starting the PC software

1. Connect the measuring device to your PC via the mini USB cable provided in the scope of delivery.
2. Switch on the measuring device if necessary.
3. Start the software.

Information about using the PC software is provided in the software help file.

Maintenance and repair

Cleaning

Clean the device with a soft, damp and lint-free cloth. Ensure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Battery change

A battery change is required when the battery status indication (29) flashes or the device can no longer be switched on (see chapter Inserting the battery).

Calibration

The device is already factory-calibrated and optimally adjusted. A recalibration requires special tools. In the case of a recalibration please contact the Trotec service.

Disposal



The icon with the crossed-out waste bin on waste electrical or electronic equipment stipulates that this equipment must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. For further return options provided by us please refer to our website www.trotec24.com.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.

You are responsible for deleting any personal data stored on the waste equipment to be disposed of.

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