

# User Manual

## Intendend Use

The measuring tool is designed for determining diameters of pipes and manholes.

## Safety Instructions



All instructions must be read and observed in order for the measuring tool to function safely.

Never make warning signs on the measuring tool unrecognizable.

Keep these instructions safe.



**LASER LIGHT**  
**LASER CLASS 1**

- **Caution:** – The use of other operating or adjusting equipment or the application of other processing methods than those mentioned here, can lead to dangerous radiation exposure.
- **Do not direct the laser beam at persons or animals and do not stare into the front-LED and the laser beam yourself.**  
This measuring tool produces invisible (infrared) laser radiation of laser class 1 according to IEC 60825-1:2014. The front LED produces a very bright light. This can lead to persons being blinded.
- **Do not leave the switched-on measuring tool unattended and switch off the measuring tool after use. Don't let children in particular use the measuring tool.** They could inadvertently blind people.

- **Do not work with the measuring tool in potentially explosive environments where flammable liquids, gases or dusts are present.** Sparks can be produced in the measuring tool which may ignite dust or fumes.
- **Avoid sharp impacts or falls of the measuring tool.** After strong external influences, they should carry out a function and accuracy check before further work.
- **Protect the measuring tool from heat, fire and permanent sunlight.** When transporting or storing, take care to avoid permanent exposure to sunlight. There is a risk of explosion (battery) and damage to the measuring sensors.
- **The Aluminum telescopic rod is conductive !!!**  
**Therefore take care about your environment, especially conducting wires above you (overhead power lines).**
- **Have the measuring tool repaired only through qualified specialists using original spare parts.** This ensures that the safety of the measuring tool is maintained.

## Structure and use of the DiaMeter

Check the DiaMeter for damage (e. g. cables etc.)

Especially the lenses of the measuring head must be clean and must not be scratched.

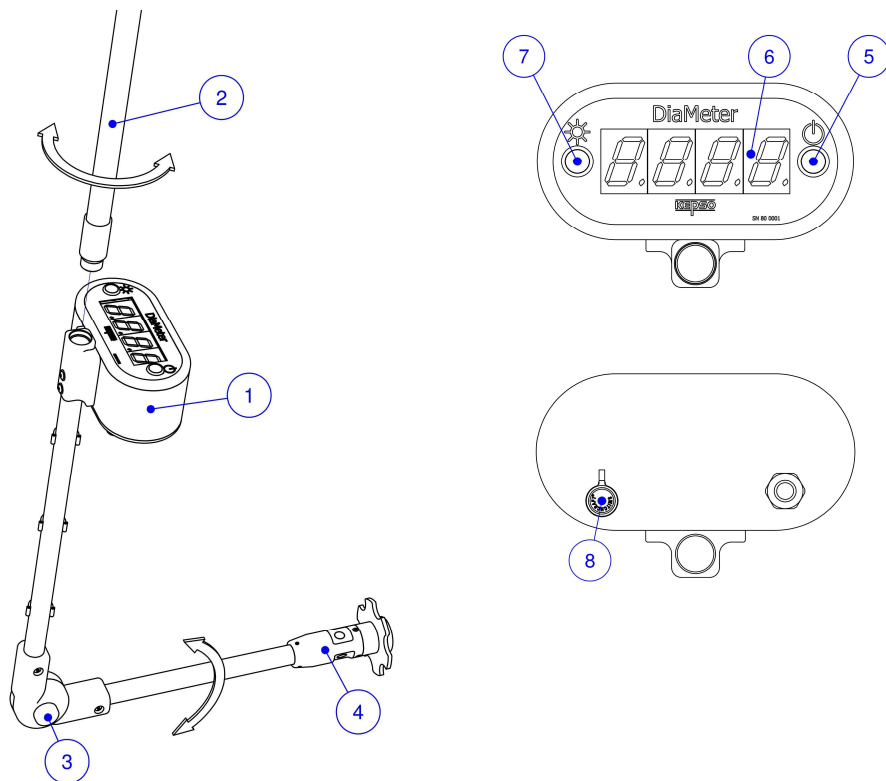
The DiaMeter ① is powered by a fixed rechargeable battery.

They may need to recharge the battery before use.

⇒ **note: Charging the battery.**

Screw the telescopic rod ② onto the DiaMeter ①.

The angle (position) of the measuring head ④ can be adjusted and locked by pressing the button ③ on the articulated joint. Place the measuring head with the articulated joint in the desired position.



- ❗ In the vertical position of the measuring head, manhole diameters can be measured.
- ❗ Pipes can be measured in horizontal position of the measuring head.
- ❗ A manhole depth measurement is not possible.
- ❗ The measuring head ④ is waterproof and may be submerged. Under water, the sensor signals are strongly distorted so that measurement is not possible.
- ❗ The DiaMeter display element ① is protected against splash water only and must not be submerged.

## Switch on

Press the on-off Button ⑤, switches on the DiaMeter.

After a few seconds, the display ⑥ will show “batt” followed by the state of charge of the battery in % (e. g. 90%).

After a few seconds the front LED is switched on, the sensors in the measuring head are activated and the current measured value in mm (or inch) is displayed. If no measured value can be determined, the display shows ---- .

Now the measuring tool is ready for use.

## Switch off

When running, the DiaMeter is switched off by pressing the On-Off button ⑤.

① To extend the battery life, the DiaMeter switches off after 15min. independently.

## Front Light

At the front of the measuring head there is a high-power LED ⑩ for illumination to better detect and measure pipes.

① The front light is switched on automatically when the DiaMeter is switched on.

The light intensity is reduced to 50 percent by pressing the blue light button ⑦ (approx. 1sec).

A second press of the light button ⑦ switches off the front light.

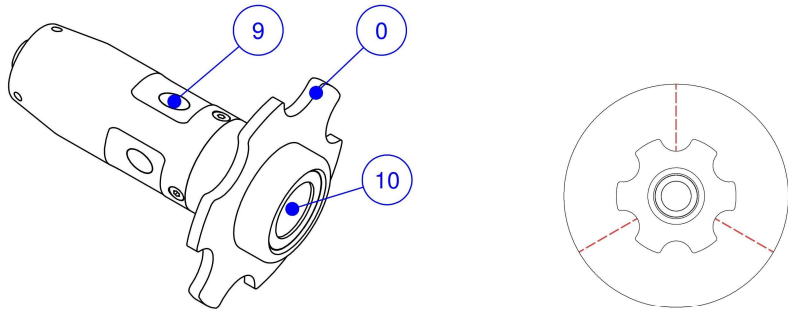
Another push turns the light back to 100% brightness.

① The measurement is independent of the light setting.

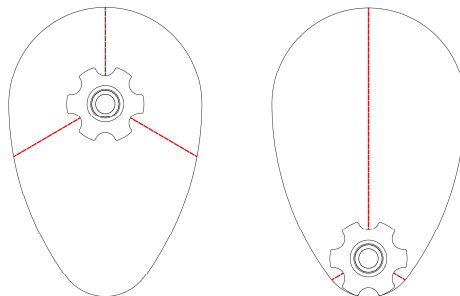
## Functional principle of the measurement

Three infrared laser ToF (time of flight) distance sensors (invisible laser beam) are positioned at an angle of 120° each on the measuring head ⑨. They measure the respective distance to the pipe wall. The pipe diameter is then calculated and displayed in the display unit ⑥.

The measured value is displayed in whole mm.



- ① If the display in inch is desired, this can be changed by a KEP SO service centre. The measured value is then displayed with one decimal place (e.g. 7.8) .
- ① Measurement only works in circular pipes or manholes. The measuring head does not have to be aligned in the middle of the pipe. However, the deviation from the centre should not exceed 20% of the pipe diameter.
- ① However, the accuracy of the measurement depends on the alignment and centering in the pipe.
- ① The protective ring ⑩ on the measuring head has a diameter of 80mm. It ensures that the distance between the sensors and the pipe wall is sufficiently large for a functioning measurement.
- ① A special feature are egg-shaped pipes. Here the diameter can be determined in the upper area of the egg profile. If the measuring head is placed in the sole, the measured value indicates the height of the egg profile.



## Charging the battery

The DiaMeter has a fixed Li-Ion battery that cannot be changed.

### Use only the supplied charger for charging.




Charge the DiaMeter only indoors and at ambient temperatures between +5° C and +40 °C.

The charger is not protected against moisture.



1. Turn off the Diameter.
2. Connect the charger to the DiaMeter. The DiaMeter charging socket ⑧ is on the back of the display unit.
3. Plug the power cable of the charger into the power socket.
4. Once the charging process is complete, disconnect the charging cable and close the charging socket ⑧ again with the protective cap (protection against water).

### Charge status displayed on the charger:

The LED on the charger shows the current state of charge of the battery.

	yellow:	Battery is charging
	flashing yellow:	Battery reaches 80% to 95% of its capacity, the battery is charged further
	green:	Battery is fully charged

① For a complete charge the DiaMeter has to be charged approx. 3h.

	flashing green:	The DiaMeter is not connected to the charger.
	flashing red:	Error Indications: Please refer to the charger manual.

## Transport

Use the supplied transport bag for transport and pay attention to the transport conditions (temperature, vibration, etc.).

The DiaMeter has a built-in Li-Ion battery

- ⓘ Li-Ion batteries are subject to the Dangerous Goods Legislation requirements.
- ⓘ The DiaMeter can be transported by the user on the road without further restrictions.
- ⓘ When shipping by third parties (e. g. air transport or forward agency), special requirements on packaging and labelling must be observed. Get the advice of a dangerous goods expert.
- ⓘ Please also observe the possibility of more detailed national regulations.

## Included in delivery

- Measuring tool: DiaMeter
- Telescopic rod, extendable from 130cm to 280cm.
- Charger and country-specific mains power cord
- Transport-bag

## Accessories

- Extension Poles.
- For Manhole depth measurements: e.g., Laser distance measurement tool.
- Various adapters for connecting other telescopic rods.

## Technical specifications

<b>DiaMeter:</b>	
Item number:	080-0900-00
Measurement range	100mm ... 2000mm (4in ... 80in)
Measuring accuracy Diameter < 1000mm (< 40in)	± 5mm +1Digit (± 0.2in + 1Digit)
Wight DiaMeter	1,3kg
Measurement frequency	2 Measurements / Second
Power	Li-Ion battery with 3 cells 11,1V, 3,45Ah
Operating time with full Light	approx. 6h
Operating temperature range	+5°C .... +40°C (40°F ... 105°F)
Connection	Charging socket
Screw-on telescopic rod	
DiaMeter Transport-bag	580 x 220 x 150 mm

<b>Telescopic rod:</b>	
Length Telescopic rod	130cm ... 280cm (4ft ... 9ft)
Wight Telescopic rod	1,2kg

<b>Charger 3743</b>	
AC input	100-240V AC, 50-60Hz max. 0,5A
Mains power cord	1,5m



## Maintenance and Service

- ① Always keep the measuring tool clean.
- ① Wipe off debris using a moist and soft cloth.  
Do not use any cleaning agents.
- ① Maintain the measuring head, with the same care as required for eyeglasses or the lens of a camera.
- ① If the measuring tool should fail despite the care taken in manufacturing and testing procedures, repair should be carried out by an authorized after-sales service center of KEP SO. Do not open the measuring tool yourself.
- ① Please indicate the 6-digit serial number according to the nameplate of the measuring tool for all questions and spare parts orders.

## Disposal

Measuring tools, accessories and packing should be sorted for environmentally friendly recycling.

*Only for EC countries:*



Do not dispose the measuring tool into household waste!

According to the European Directive 2012/19/EU on waste electrical and electronic equipment, no longer useable measuring tools must be collected separately and according to the 2006/66/EC, defective or used battery packs must be collected separately and disposed of an environmentally correct manner.

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# DiaMeter

