

Gel-filled pH Electrode (35660-54 / 35660-56)  
Instruction Manual

This manual describes the operation of the gel-filled pH electrode, 35660-54/35660-56. Be sure to read this manual carefully, before using the electrode.

**Conformable standards**

This equipment conforms to the following standards:






RoHS: EN50581

9. Monitoring and control instruments

**Authorised representative in EU**

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**Caution on use****Safety precautions**

 <b>CAUTION</b>	
	<b>Chemical solution</b> If the internal material comes in contact with the hands or skin, wash immediately with water.
	<b>Glass fragments</b> Glass fragments can cause injury. The tip of the electrode are made of glass. Be careful not to break them.

**Points of concern**

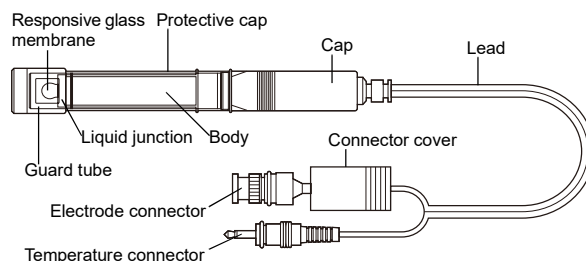
- Do not give an excessive shock to the electrode.
- Cracked or chapped electrode can not be used. Replace such electrode with a new one.
- Do not wet the connector with water or sample and do not touch the connector with wet fingers. If it is wet measured value might be erroneous.
- If the dirt on the responsive glass membrane or liquid junction can not be removed by pure water, clean them with the other way referring to the Maintenance. (Refer to Maintenance (page 2).)
- Avoid continuous measurement soaking in the strong acidic or alkaline solution concentrated more than 0.01 mol/L. These solution may reduce the performance and the lifetime of the electrode.
- Do not to use the electrode in a solution in which hydrofluoric acid (HF) is contained. Glassware will corrode in the HF solution.
- Avoid sudden temperature change over 50 °C on the electrode. The body of the electrode might be deformed or the glassware might be cracked.
- Solid particles of silver chloride might be observed floating in the inner solution of the responsive glass membrane. This is not a problem and this will not affect performances of the electrode.
- Do not use the electrode in any place where operation temperature is out of the specified range.
- Do not swing the electrode like a pendulum, and do not pull up the electrode by the lead wire. Also, avoid

hanging the electrode or the pH meter by the lead wire. It may be a cause of breaking wires.

- When disposing of the product, follow the related laws and/or regulations of your country for disposal of the product.

**Packaged contents**

Name	Q ty
Electrode	1 pc
Instruction manual (this book)	1 booklet

**Specifications and parts description****Part name****Specifications**

Electrode model	35660-54, 35660-56
Measurement range	pH 0 to 14
Operation temperature range	0°C to 80°C
Storage temperature range	0°C to 50°C
Internal electrode	Silver/silver chloride
Reference electrode system	Double junction
Reference electrode internal electrolyte	Polymer-gel, 3.3 mol/L KCl
Liquid junction material	Porous sintered polyethylene
Wetted material	Glass, butyl rubber, polycarbonate, polyethylene
Electrode length	150 mm
Ext. diam. of wetted part	16 mm
Liquid junction height	Approximately 15 mm (from the tip of electrode)
Cable length	10D: 1 m 20D: 2 m
Connector	BNC/Mini plug
Temperature probe	NTC
Maximum dipping depth	1 m
Zero point	pH7.0

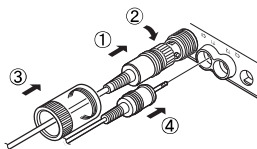
**Note**

Body material is plastic. Do not use organic solvents (such as acetone or toluene).

## Preparations

### Connecting to pH meter

1. Insert the electrode connector into the connector port sleeve on the meter, after aligning with the pin. Do not insert the connector unless it is aligned properly with the connector port.
2. Press the electrode connector into the connector port on the meter, while turning the connector to the right.
3. Slide the connector cover over the connector. Then, push the cover in straight until it comes in light contact with the meter case. Do not turn the cover.
4. Insert the temperature connector into the jack on the meter. Insert the connector firmly, until the O-ring on the connector can no longer be seen.



#### Note

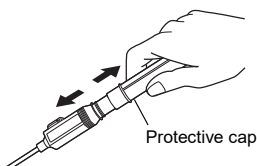
Be sure to install the temperature connector. If not, accurate measurement cannot be performed.

## Measurement (calibration)

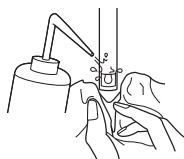
#### Note

White crystal powder of KCl may appear around on the end of the protective cap after long time storage. The powder may not be a cause of trouble for measuring pH, and wash them with pure water.

1. Remove the protective cap.



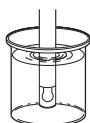
2. Clean the electrode with pure water (or deionized water) and wipe it with filter paper or tissue paper, prior to every immersion into the standard or sample solution.



3. When there are air bubbles inside the responsive glass membrane, shake the electrode lightly to remove bubbles.



4. Immerse the responsive glass membrane and the liquid junction in the sample solution completely.



5. Shake the electrode in the sample solution lightly to remove bubbles. If bubbles remain on the electrode surface, accurate measurement cannot be performed.



#### Note

- The time for submerged measurement within 1 m of the depth is limited in 30 minutes.
- For the calibration and the measurement of the pH meter, refer to the instruction manual of the pH meter.

## Maintenance

#### Note

Do not use organic solvents (such as acetone or tetrahydrofuran) as cleaning solutions. Using such chemicals may damage the body of the electrode or cause a decline in performance.

Dirt on the responsive glass membrane or the liquid junction by the test solution may cause a decline in electrode response and sensitivity or measurement error. If the electrode is very dirty and cannot be washed clean using pure water (or deionized water), perform cleaning as follows.

### Cleaning of electrode

1. The responsive glass membrane can be cleaned by wiping it with cotton gauze containing cleansing agent. The liquid junction can be cleaned by applying it with cotton gauze containing cleansing agent. (- 30 minutes)



Type of dirt	Cleansing agent
General	Diluted neutral cleansing agent
Oil	Alcohol, or diluted neutral cleansing agent
Inorganic substance	Hydrochloric acid approximately 1 mol/L

2. Rinse the electrode with pure water (or deionized water) completely.



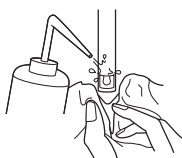
3. Immerse the liquid junction completely into 3.33 mol/L KCl solution for approximately 30 minutes before use.

#### Note

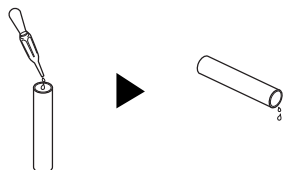
- Do not apply excessive force to the glass membrane on wiping.
- Be sure to perform calibration prior to measurement after cleaning the electrode.

## Storage

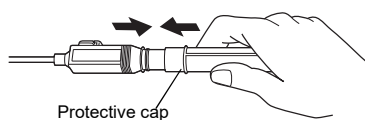
1. Clean the electrode well with pure water (or deionized water) to remove sample completely and wipe it with filter paper or tissue paper.



2. Add enough pure water (or deionized water) to soak the sponge in the protective cap, and then discard the residual water.



3. Attach the protective cap.



### Note

- Do not dry the responsive glass membrane and the liquid junction. If they are dry, immerse the electrode into 3.33 mol/L KCl solution for approximately one day. After these procedures, perform calibration. If calibration cannot be performed correctly, replace the electrode.
- Keep the liquid junction away from the water for storage. Otherwise, the electrode life span will be shortened.
- Avoid storing the electrode in hot and humid locations. Store the electrode indoors, out of direct sunlight.

## For accurate measurement

For accurate measurement, refer to the items below.

- In reference to the instruction of the pH meter, perform temperature compensation manually or automatically.
  - Temperature of the standard solution and the sample solution should be the same.
  - Rinse the electrode with the sample solution before measurement.
  - Perform calibration before measurement.
- If measurement is performed every day, perform calibration once or more a day.