

Symptom	Possible Causes	Remedy
Drift	Junction blocked	Remove sleeve. Clean glass stem and sleeve
	Membrane not clean	Remove sleeve. Clean glass membrane
	Membrane aged or damaged	Allow longer measuring time or replace
	Temperature changes	Stabilise temperature
Noisy	Bubble in membrane	Flick electrode downward
	Poor connection	Check connection
	Junction not immersed fully	Lower electrode into solution below junction
	Insufficient electrolyte	Refill electrolyte
Low Slope (<95%)	Contaminated buffers	Replace buffers
	Membrane not clean	Clean membrane
	Membrane aged	Allow more time for stabilisation, or replace
	Electrode polarised	Isolate sample electrically
Slow Response	Membrane not clean	Clean membrane
	Membrane aged	Allow more time for stabilisation, or replace
Incorrect Reading after Cal	Junction blocked or unclean	Clean junction
Reads pH7 for all Buffers	Electrical short	Check connector
	Internal short	Replace electrode
Reads pH4-5 all Buffers	Membrane or stem cracked	Replace electrode
Large Offset (>0.5pH)	Insufficient sleeve electrolyte	Refill electrolyte
	Junction blocked/unclean	Clean junction
	Electrode polarised	Isolate sample electrically

Warranty

Any electrode found to be faulty due to manufacture will be replaced. IJ electrodes have a warranty of 6 months from date of purchase, however we reserve the right to void warranty if the electrode has been used in an unsuitable application. Please visit our web site to register your electrode as soon as you receive your electrode.

IJ electrodes will have an expected lifetime of 2-4 years in ideal samples at room temperature. This will be reduced in chemically aggressive or abrasive samples, and at high temperatures.

Specifications

Parameter	Operating Range
pH Range	0-14 pH (C glass) 0-12 pH (A glass)
Zero Potential Point	pH 7.0 ± 0.5
Temperature Range	0 – 60°C
Reference Type	Double Junction Ag/AgCl/sat KCl
Body and sleeve	Polypropylene
Overall Length	150mm
Barrel Diameter	12mm
Cable Length	1m standard, longer to order.
Connector	BNC standard, others on request



Water Quality Instruments

pH Electrode Instructions: Intermediate Junction Series

IJ44



TPS Pty Ltd

4 Jamberoo Street
Springwood Queensland 4127 Australia
Telephone +61 7 32 900 400
Facsimile +61 7 3808 4871
tps@tps.com.au
www.tps.com.au

Introduction

This guide contains the basic information for proper use of your new IJ44 pH electrode. A more comprehensive manual is also available for download from our website www.tps.com.au

Preparation

IJ44A/C electrodes are shipped without sleeve electrolyte, and **must be filled prior to use!**



First, holding the electrode by the sleeve, gently ease the rubber wetting cap off the sleeve. Hold the electrode body just above the sleeve and remove the sleeve from the electrode by gently rotating and pulling along the axis of the electrode. **Do not Bend!**

Invert the electrode. Fill the annular space with electrolyte as shown.

Slide the sleeve back on the electrode and properly seat the black O-ring into the electrode body. **DO NOT exert a sideways force** as this may damage the electrode. Ensure excess electrolyte is expelled out the end of the electrode through the ground junction. Make sure there are no air bubbles in the sleeve!



With the pH bulb facing downwards, gently flick the electrode downward to remove any bubbles from within the membrane, and then store in 2-3M KCl before use.

Calibration

- Turn on the pH meter and connect the pH electrode and temperature sensor (if available).
- Remove the wetting cap from the electrode and rinse the electrode with distilled water.
- Perform a calibration by immersing the electrode in the first pH buffer (pH 7.0 or 6.86), and stir. Adjust the reading when stable.
- Rinse the electrode and repeat the process with the second pH buffer (usually pH 4.01 or 10.01).
- To check the calibration, recheck the 1st buffer value; the reading should be within ± 0.02 pH of the buffer value. If not, repeat the calibration.
- Rinse the electrode with distilled water or portions of the sample to be measured.
- Buffers values should bracket the sample pH.

Helpful Hints

- Use the same technique during calibration and sample measurements (including stirring rates).
- Try to ensure that the pH buffers and the samples are at the same temperature (within ± 5 C or better).
- Calibrate regularly, and always use fresh buffers.
- Keep all connections dry.
- Use a dedicated high impedance pH meter.
- Immerse the electrode so that the reference junction is below the surface.
- Do not use in fluoride solutions of low pH, since this will damage the glass membrane.
- Minimise contact with sulphide vapours and change the sleeve electrolyte frequently in these conditions.

Maintenance

- When not in use (short term storage), keep the electrode immersed in 2-3M KCl solution to stabilise junction potentials.
- pH membranes are NOT damaged if allowed to dry. pH glass usually rehydrates in under an hour.
- Replace the sleeve electrolyte when necessary. The frequency of replacement is best determined by experience; however it should be more frequent when measuring contaminated samples.
- For long term storage, remove and clean the sleeve. Replace the sleeve (without electrolyte) and attach the wetting cap.
- Do NOT store the electrode in DI or distilled water!

Cleaning

Cleanliness of the sensor and junction is critical for accurate measurement. Drift, poor slope and slow response are often due to an unclean sensor/junction.

Clean the electrode periodically. Remove the sleeve; clean the membrane, ground glass stem and sleeve as below (**Do not use abrasive materials!**)

Method One- Alkaline samples and scale: soak membrane in 1M HCl for an hour. Wash well with water and condition in 20% KCl before use.

Method Two- Grease and oil: wipe the membrane and ground stem with cotton or tissue soaked in acetone followed by methylated spirits. Wash with distilled water before use.

Method Three- Solids and organics: wipe the membrane and junction with cotton or tissue soaked in a mild non-alkaline detergent. Wash with distilled water and condition in 20% KCl before use.

Method Four- Strongly adsorbed and chemically bonded impurities: Remove with non-abrasive cleaner such as Jif^(TM). Use undiluted on a soft cloth and scrub the membrane well. Wash well with water and condition in 20% KCl before use.

Method Five- Protein contamination: soak electrode in 1% Pepsin solution in 0.1M HCl for 15 minutes, followed by rinsing with distilled water. Finally, condition in 20% KCl before use.