

Precision Instrument Maker interview questions

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What to expect

Precision Instrument Maker interviews balance hands-on trade skill with calibration discipline and quality awareness. Employers want to see that you can work to tight tolerances, follow procedures, and explain your reasoning when an instrument is out of specification.

- **Technical and calibration process:** Questions about reference standards, measurement uncertainty, adjustment methods and how you work from drawings.
- **Fault-finding and diagnostic scenarios:** Hypothetical or real faults where you describe how you isolate a mechanical, optical or electronic problem.
- **Behavioural and teamwork:** Past examples of working in a small workshop, handing over jobs, or dealing with a difficult repair.
- **Quality, safety and compliance:** Questions about ISO/IEC 17025, NATA requirements, WHS, traceability and documentation.
- **Client and stakeholder communication:** How you explain results, lead times or out-of-specification findings to customers, nurses, engineers or production staff.
- **Practical or work-sample:** A short bench task, drawing interpretation or calibration exercise, sometimes with a micrometer, CMM or reference gauge.

The process usually starts with a phone or video screen with a recruiter, then a site interview with a workshop supervisor and a senior instrument maker. You may be asked to complete a short practical task, such as calibrating a gauge or reading an engineering drawing, and to talk through your trade qualification and relevant experience. Some employers include a laboratory or workshop tour and a conversation with the calibration manager. The final stage is often a one-on-one with the workshop manager or team leader.

1. Walk me through how you calibrate a precision instrument against a reference standard, from receiving it to signing it off.

Why they ask

This is the core task of the role. Employers need to know you can follow a calibration process, not just use tools.

How to structure your answer

Walk through the steps in order: intake, inspection, setup, measurement, adjustment, re-test, record and sign-off. Mention the reference standard, environmental checks, and when you would stop and flag a repair.

Example answer

"First I check the instrument against its service history and any customer notes. I clean and inspect it for damage, then let it settle to the lab temperature. I set up the reference standard and check the environment, for example temperature and humidity, because that affects readings. I take readings across the instrument's range, comparing each point to the reference. If it is out, I adjust the mechanism, optical alignment or electronics as needed, then re-run the points. I record the as-found and as-left results, tag the instrument, and sign it off only when every point is within specification. If it cannot be brought into spec, I document why and flag it for repair or replacement."

2. Tell me about a time you diagnosed a fault that was not obvious. What did you do?

Why they ask

Fault-finding separates a maker who can assemble from one who can keep instruments reliable in service.

How to structure your answer

Use STAR: Situation, Task, Action, Result. Keep the symptom clear, explain each diagnostic step, and state how you confirmed the fix.

Example answer

"A customer returned a dial gauge that read correctly on the bench but drifted after a few hours in use. I could not reproduce it at first. I checked the obvious things: plunger movement, rack and pinion, and the dial mechanism. They looked fine. I then ran it through a temperature cycle and found the hairspring was touching a slightly bent bridge only when the instrument warmed up. I straightened the bridge, replaced the hairspring, and recalibrated the gauge. It stayed stable over a full day of testing, and the customer avoided replacing the instrument."

3. You are asked to repair an instrument but the correct replacement part is weeks away. How would you handle it?

Why they ask

Workshops often face parts delays. Employers want to see you protect accuracy and communicate honestly rather than forcing a repair.

How to structure your answer

Show judgement under pressure: safety and accuracy first, then options, communication with the customer or supervisor, documentation, and a review date.

Example answer

"I would first check whether the instrument can be safely used or adjusted without the part, or whether it should be taken out of service. I would tell the customer or supervisor the lead time and the risk of a temporary fix. If a temporary repair is acceptable and can be calibrated to specification, I would do it, record exactly what was done, and set a review date. If not, I would offer a loan instrument or prioritise other work. I would not return an instrument to service if it cannot hold tolerance."

4. What standards or quality systems have you worked under, and how do they affect your daily work?

Why they ask

Calibration and quality systems are central to this work. Your answer shows whether you understand traceability and documentation.

How to structure your answer

Name the framework, explain what it requires in practice, then give a concrete daily example. Avoid jargon without a plain meaning.

Example answer

"I have worked in a NATA accredited calibration laboratory under ISO/IEC 17025. That means every measurement has to be traceable, and I record as-found and as-left results, environmental conditions, and the reference standard used. It affects how I plan work: I check calibration due dates on reference equipment before I start, I follow written procedures, and I keep my bench tidy so I do not mix up instruments. I also follow Australian Standards and workplace WHS procedures when machining or handling optical components."

5. Describe a time you had to explain a technical calibration result to someone without a technical background.

Why they ask

Precision Instrument Makers often work with clinicians, engineers and production staff. Clear communication prevents misunderstandings.

How to structure your answer

Use STAR, but focus on how you translated the technical finding into plain language and agreed a practical next step.

Example answer

"A nurse at a clinic returned a thermometer that read slightly low. She did not want to hear about uncertainty budgets. I explained that the thermometer was outside the allowed range at two points, which meant temperatures could be recorded lower than they really were. I showed her the before and after readings on a simple chart and said we had adjusted it and retested it. She understood why it mattered for patient care, and we agreed on a shorter check interval until the next service."

6. What do you do to keep your hand fitting and machining skills sharp?

Why they ask

Hand skills and software skills both need maintenance. Employers want to see that you keep learning and take on difficult work.

How to structure your answer

Give specific examples of deliberate practice, then link them to the role. Show curiosity and willingness to learn new tools or methods.

Example answer

"I make small parts for my own projects, like a replacement gear for an old indicator, because it forces me to work to tight tolerances without a CNC. At work I ask to be put on the tricky jobs, such as fitting a new optical mount or scraping a bearing surface. I also read trade journals and take short courses when they come up, for example a refresher on PC-DMIS or LabVIEW. I find that hand skills fade if you do not use them, so I treat them like any other part of the job."