Prepare the plan

Before programming the CMM: define what you will verify

Intermediate · Metrology, mold component manufacturing and verification

Prepare a reviewable measurement plan before programming or running a coordinate measuring machine (CMM). Use one worksheet per characteristic and plan revision.

Original general guidance. Complements dimensional records and measurement-discrepancy reviews; does not replace the drawing, equipment manual, applicable standard, or responsible reviewer’s approval. This is not an operating instruction.

1. Define the question

Identify the part, characteristic, drawing, and revision. Copy the requirement and unit from the controlled source. Separate the design requirement from the result you intend to report. Record missing references before programming.

2. Make the strategy explicit

Document fixturing, alignment, and drawing references. Describe the surface to be measured and any exclusions, with justification awaiting review. NPL covers sampling, alignment, cleanliness, temperature, surface finish, and geometry in CMM strategy. [NPL-41]

3. Separate proposals from evidence

Record the proposed sensor configuration, point or scanning strategy, and software evaluation. Identify where each setting will be defined. This worksheet specifies no speeds, forces, point counts, filters, or algorithms. A completed field does not establish that the strategy is suitable.

Review before deciding

4. Plan the method review

State the evidence needed to justify the method for this characteristic and who will review it. NIST explains that traceability alone does not guarantee fitness for purpose; uncertainty must suit the measurement need. [NIST-TRACE] A calibration label is not approval of the plan.

5. Link the program and report

Assign an ID and revision to the program and report. Record units, characteristic, evaluation method, and the source of any applicable decision rule. Retain original data and authorized changes; do not overwrite evidence to obtain a favorable result.

6. Close open questions

Classify each item as documented, pending, or not applicable with a reason. Assign an owner and expected evidence. Plan review, authorization to run, and part acceptance are separate decisions; this document grants none automatically.

Practice case

FICTIONAL EXAMPLE — PLAN-DEMO-CMM, component INSERT-DEMO. A characteristic identified as F-DEMO is to be reviewed. The drawing is stated as revision B, while the received model is revision A. Alignment is labeled “automatic,” without a document reference. No dimensions or tolerances are supplied. Review outcome: plan pending; confirm the drawing/model pair and document alignment with the responsible reviewer. No program, run, or part is approved. All names, revisions, and events are invented.

Limits

Does not define a valid strategy for every geometry. Does not authorize machine motion, guarding changes, setup, measurement, or release. Specifies no tolerances, calibration intervals, settings, or regulatory compliance. Technical decisions require the authorized owner and applicable documentation.

Blank worksheet / 1-2

ID / Rev.: _____ Característica / Feature: _____

One characteristic per worksheet. Complete both pages. Unavailable does not mean zero.

1. Plan ID / revision / date / author

2. Part / component / sample identification

3. Drawing and CAD model / revision / discrepancies

4. Characteristic / definition of what is measured

5. Requirement / unit / document reference

6. Proposed references and alignment / source

7. Fixturing and support / part condition

8. Cleanliness / environment / evidence per procedure

Blank worksheet / 2-2

ID / Rev.: _____ Característica / Feature: _____

One characteristic per worksheet. Complete both pages. Unavailable does not mean zero.

9. Equipment / sensor / configuration / applicable records

10. Proposed points or scanning / justification for review

11. Software / version / evaluation / documented settings

12. Method suitability evidence / uncertainty if applicable

13. Program / revision / intended output report

14. Decision rule / source / owner if applicable

15. Open questions / impact / owner / due date

16. Reviewer / plan decision / evidence / date

Review closure and sources

ID / Rev.: _____ Característica / Feature: _____

Original supplementary record. Completing it does not authorize actions.

Plan review decision / reviewer / evidence / date

Authorization to run / owner / linked record

Part acceptance / owner / linked report

Open item / owner / required evidence / due date

How to use it

PDF for handwriting; TXT for local editing. Use pending or not applicable with a reason. Keep the characteristic reference across pages. No submission, encryption, or autosave.

Sources and scope | 2026-10-28

NPL-41 - https://eprintspublications.npl.co.uk/2044/

NIST-TRACE - https://www.nist.gov/metrology/metrological-traceability

NPL: public abstract of GPG41 (2014), not the full PDF; strategy topics, no settings adopted. NIST: traceability does not guarantee fitness for purpose. This worksheet is a VYRCO proposal, not certification or a requirement issued by those bodies.