FREE VYRCO RESOURCE

Two different measurements: document before deciding

Guide and record for investigating dimensional discrepancies in mold components.

Intermediate level | Metrology, machining, mold and quality technicians.

Preserve two readings and their context so the responsible person can decide what to check. Complements dimensional record 05 and instrument pre-use check 07; does not replace them.

Original general guidance from VYRCO. Not a gage R&R study, calibration or acceptance rule. Does not establish that the instrument displaying more decimal places is correct.

Before comparing the numbers

1. Define what was intended to be measured

Identify the part, revision, characteristic, section, orientation and required condition. The VIM distinguishes the intended quantity from an isolated reading. [VIM-2.3] Two records labeled diameter may refer to different sections or definitions.

2. Preserve both records

Assign IDs A and B. Copy original readings, units, dates and sources without replacing either record. Distinguish the instrument indication from a result with documented corrections. Do not round values to make them agree.

3. Explain how each was obtained

Record the instrument, identification, method, operator, support, orientation and relevant documented conditions. Link applicable verification or calibration records. Do not infer temperatures or conditions that were not recorded.

4. Identify gaps before calculating

If part identity, characteristic or units differ, resolve the correspondence first. Subtracting compatible values only describes their difference. It is not automatically instrument error, uncertainty or an allowable tolerance. [VIM-2.9]

5. Prepare an authorized check

The responsible person defines the procedure, locations, order and repetitions needed. Keep all results and changes, including those that contradict the hypothesis. Two readings do not replace the design and analysis of a gage R&R study. [NIST-RR]

6. Separate the record from the decision

State what is observed, what is unknown and who must review it. Do not average discrepant readings merely to obtain an acceptable value. Any correction, acceptance or rejection requires a method, documented criterion and authorized decision maker.

1 / Common context and question

BLANK TEMPLATE. One record per comparison; fictional example kept separate.

Comparison ID / date / owner
Component / individual ID / drawing revision
Characteristic and definition / section / orientation
Drawing specification and tolerance / unit / or pending
Specific question to resolve
Readings A and B: same part and characteristic / evidence or doubt
Applicable procedure / revision / comparison criterion
Required and observed conditions / source or not recorded
Original evidence / location / custodian
Status: review pending / action authorized / decision documented

Enter unknown or not recorded where appropriate. Measurement uncertainty, if available, must be linked to the result and its reference; do not invent it from this difference. Keep attachments if more space is needed.

2 / Paired record A and B

BLANK TEMPLATE. One record per comparison; fictional example kept separate.

A: original reading / unit / date and time / source
A: instrument and ID / stated resolution / method / operator
A: location, support and orientation / recorded conditions
A: verification or calibration / applied corrections and reference
B: original reading / unit / date and time / source
B: instrument and ID / stated resolution / method / operator
B: location, support and orientation / recorded conditions
B: verification or calibration / applied corrections and reference
Difference B - A, if applicable / unit / changes and missing data
Review: hypothesis / next check / owner / decision

Enter unknown or not recorded where appropriate. Measurement uncertainty, if available, must be linked to the result and its reference; do not invent it from this difference. Keep attachments if more space is needed.

Original FICTIONAL example

Records received

Fictional component DEMO-MET, revision R-A. Record A: 20.010 mm; record B: 20.025 mm. All IDs, values and events in this example are invented. The decimal point is retained in both languages.

Descriptive calculation

B - A = 20.025 mm - 20.010 mm = +0.015 mm. The sign indicates that B is greater than A. This operation does not assign an uncertainty or establish which reading is correct.

Gap identified

A identifies section S-A; B only says diameter, with no section or orientation. It has not been established that both records describe the same characteristic. The calculation above remains a numerical difference, not a validated metrological comparison.

What is not concluded

The part is not declared out of tolerance: no drawing criterion was supplied. The instrument is not declared out of calibration and an average is not used for release. Nor is the difference attributed to temperature, support or operator without evidence.

Next step

Request the drawing and the location used for B. The responsible person defines a documented check of the correct characteristic. New readings receive new IDs and do not erase A or B; this example does not prescribe the number of repetitions.

Provisional closure

The numerical difference is documented; comparability, cause and acceptance decision remain pending. Completing the form is not approval of the part or validation of the measurement system.

Primary sources and scope

Sources accessed: 2026-10-20

VIM-2.3 - JCGM/BIPM - Annotated VIM3, 2.3 measurand

Scope: define the intended quantity and relevant conditions. This identified edition is cited, without claiming it is the latest edition. It does not prescribe a method for the component.

Open primary source

VIM-2.9 - JCGM/BIPM - Annotated VIM3, 2.9 measurement result

Scope: a result includes relevant information and generally a value and uncertainty. It supplies neither an uncertainty for the example nor an acceptance rule.

Open primary source

NIST-RR - NIST/SEMATECH - 2.4 Gauge R & R studies

Scope: measurement studies involve design, data collection and repeatability/reproducibility analysis. The form organizes preliminary evidence; it does not perform or validate an R&R study.

Open primary source

Limitations and hold points

- Does not specify tolerances, measuring force, thermal compensation, repetition count or calibration interval.

- Does not calculate uncertainty or establish accuracy, repeatability, reproducibility or process capability.

- Do not apply corrections without a valid model and reference; do not adjust or repair an instrument based on this form.

- Do not reach into a moving machine or mold to obtain a reading; follow authorized safety procedures.

- Does not establish regulatory or legal compliance. Technical decisions and release belong to the authorized person.

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