Level and face inspection plan for a vertical lathe table

vertical-lathe-table

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Application template; not a claim of a completed customer project.

Scope

For the installation level and face flatness of a vertical lathe circular table (Ø1600 mm, example/teaching data). The autocollimator measures radial generatrices through the centre; an electronic level cross-checks the overall tilt in two orthogonal directions. Lines are tied to a common datum at the centre to evaluate flatness and derive the levelling correction.

Equipment and configuration guidance

• Photoelectric autocollimator (0.1″ class) with 200 mm reflector base (example)

• Calibrated electronic level

• Centring and station marking tools

• Temperature logger

Principle and calculation

$\Delta h = L \cdot \tan\theta$; with L=200 mm, 1″≈0.970 μm (example/teaching data). The centre node height is the mean over radial lines. Tilt follows from the least-squares plane normal, $\alpha \approx \arctan(\Delta h / D)$, with D the diameter.

On-site checklist

• Rotary support and clamping state recorded

• Centre-node closure checked

• Tilt difference between instruments within the agreed limit

Suggested records

• Radial generatrix profiles

• Tilt magnitude and azimuth

• Cross-check table and levelling shim advice

Limitations

Does not assess table runout or spindle rotation accuracy; high-frequency local waviness between spans is outside the resolution of this plan. Adjustment conclusions apply to the support and temperature state at measurement.

Detailed teaching example

Vertical Lathe Table Level and Face Inspection · Tutorial Case

Scenario and task

Teaching demonstration, not a real customer project: radial segmented level measurement of a vertical lathe circular table face; data are instructional settings.

Workflow overview

Stop & clean → Radial setup → Read per step → Convert heights → Level evaluation

Preparation and measurement steps

01. Stop the table and clean the face

02. Place an electronic level on a 200 mm bridge along one radius

03. Step outward from the table centre along the radius, reading each segment

04. Take two readings per segment and average

05. Compute segment heights and cumulative deviation

Teaching example readings

• Bridge span L=200 mm; segment 1 electronic level reading θ□=-0.4″

• Segment 2 electronic level reading θ□=+0.6″

• Segment 3 electronic level reading θ□=-0.2″

Calculation procedure

Height conversion: Δh = L·tan(θ·π/648000)×1000 (μm). Segment 1: 200×tan(-0.4″)=-0.39 μm; Segment 2: 200×tan(+0.6″)=+0.58 μm; Segment 3: 200×tan(-0.2″)=-0.19 μm. Cumulative heights: 0→-0.39→+0.19→+0.00 μm; peak-to-valley PV=+0.19−(-0.39)=+0.58 μm.

Example result and interpretation

Tutorial result PV≈0.58 μm, demonstrating micrometre-level evaluation of the radial level of the vertical lathe face.

Example verification checklist

• Bridge spans clear of T-slots; use a spanning insert if needed

• Let the level thermally settle before reading

• Measure along the radius and its reverse for cross-check

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