Guide attitude-angle inspection plan for a mechanical press slide

press-slide-guide

SHANGHAI MICROCRE OPTICS-MECH TECH CO.,LTD

Telephone: 400-812-7833 | 021-58391850

Address: 1478 Nanfeng Road, Fengcheng Town, Fengxian District, Shanghai, China | Postal code: 201411

Contact email: shanghai@yr17.net

Service email: rockwei@yr17.net

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

Scope

For pitch/yaw measurement over the full stroke of a mechanical press slide (300 mm stroke, example/teaching data), used to assess guide clearance uniformity and gib parallelism. The mirror is rigidly mounted on the slide; the autocollimator on a stable press-frame stand reads station by station, with bidirectional averaging.

Equipment and configuration guidance

• Dual-axis photoelectric autocollimator (0.1″ class)

• Rigid mirror mounting fixture for the slide

• Two dial indicators with magnetic bases (auxiliary comparison, example)

• Station positioning and temperature logging tools

Principle and calculation

Guide clearance change at each corner $\Delta g_i \approx \theta_{pitch} \cdot y_i + \theta_{yaw} \cdot x_i$ (small-angle approximation), with x_i, y_i the corner coordinates from the slide centre. 1″ over a 1000 mm guide length ≈4.85 μm attitude difference (example/teaching data).

On-site checklist

• Mirror mounting rigidity verified

• No creeping readings at stations

• Bidirectional differences corroborated by dial indicators

Suggested records

• In-stroke attitude curves (pitch/yaw)

• Four-corner guide clearance change table

• Guide and clearance adjustment advice

Limitations

Static station readings do not reflect guide behaviour under dynamic stamping loads; the 3D wear distribution of the guides needs contact measurement. Clearance conversion uses the small-angle approximation; note when exceeded.

Detailed teaching example

Mechanical Press Slide Guide Angular Deviation Inspection · Tutorial Case

Scenario and task

Teaching demonstration, not a real customer project: segmented angular survey of the column guide faces within a press slide guide deviation test; data are instructional settings.

Workflow overview

Lock the slide → Set optical axis → Step along face → Log readings → Evaluate deviation

Preparation and measurement steps

01. Park the slide at bottom dead centre and mechanically lock it

02. Mount the autocollimator on the bed with the optical axis vertical along the column guide

03. Step a 200 mm bridge up against the guide face

04. Record the pitch reading per segment

05. Cumulate and convert for guide angular deviation

Teaching example readings

• Bridge span L=200 mm; segment 1 autocollimator reading θ□=-1.8″

• Segment 2 autocollimator reading θ□=+1.2″

• Segment 3 autocollimator reading θ□=-0.6″

Calculation procedure

Height conversion: Δh = L·tan(θ·π/648000)×1000 (μm). Segment 1: 200×tan(-1.8″)=-1.75 μm; Segment 2: 200×tan(+1.2″)=+1.16 μm; Segment 3: 200×tan(-0.6″)=-0.58 μm. Cumulative heights: 0→-1.75→-0.59→-1.17 μm; peak-to-valley PV=+0.00−(-1.75)=+1.75 μm.

Example result and interpretation

Tutorial result PV≈1.75 μm, demonstrating measurement and evaluation of slide guide geometry error.

Example verification checklist

• Slide locking confirmed against accidental descent

• Bridge seated tightly on the guide face

• Measure up and down passes and average

Document generated: 2026-11-16