Elevator and track guideway installation

rail-guide-installation

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

Scope

Straightness, parallelism and joint step of elevator, machine and automation guideways for installation crews.

Equipment and configuration guidance

• Laser straightness or autocollimator

• Magnetic mounts and targets

• Feeler gauges and joint tools

Principle and calculation

Evaluate per 5 m or full length; record joint step separately from rail tolerance.

On-site checklist

• Datum reproducible

• Per-section records

• Joints separate

• Same points after adjustment

Limitations

Airflow and shaft vibration affect long paths; tall buildings need staged datum transfer.

Detailed teaching example

Worked 5 m lift-rail straightness example

Scenario and task

Teaching example: a 5 m rail in ten bays, angles integrated, joint step measured separately; both compared with the rail tolerance. Synthetic data.

Preparation and measurement steps

01. Confirm rail spec, verticality requirement and joint positions.

02. Establish the datum line and check the working face section by section.

03. Measure rail parallelism and joint steps; mark outliers.

04. Adjust brackets and re-measure the same points.

Teaching example readings

• Bay angles in arc-seconds: +1.0, +0.5, +0.0, -0.5, -1.0, -0.5, +0.0, +0.5, +1.0, +0.0 over 500 mm bays.

• Accumulated profile in μm: 2.424, 3.636, 3.636, 2.424, 0, −1.212, −1.212, 0, 2.424, 2.424 μm.

• Joint step 15 μm, aligned with the running surface.

Calculation procedure

Δh = 2.424 μm; ten bays give a range of 4.848 μm. The joint step is a separate criterion and is not folded into the profile.

Example result and interpretation

Straightness is about 4.848 μm and evenly spread; the 15 μm joint step is near typical limits and should be corrected first.

Example verification checklist

• Bracket spacing and preload shape the curve; record them.

• Measure after the shaft temperature stabilises; direct sun bends the rail.

• Per-5 m and full-length evaluation differ greatly.

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