

## AUTOMATIC COMPLEX FOR MEASURING GEOMETRIC DIMENSIONS OF RAILWAY WHEELS KS-528

The automatic measuring complex developed by Amest is used to make a complete check on wheels manufactured in non-stop three-shift serial production.

The station is easy to set for all types and dimensions of wheels manufactured in the client's factory, i.e. from small tram wheels to huge locomotive wheels. To ensure reliability of optical components the entire station is situated in a lockable compartment with opaque sliding walls and an inner roller-blind to keep it sheltered and protected against light.

The output of the station – checking 40 wheels an hour, including assessment and statistical processing of the results – can match the tempo of the client's production line by a sufficient margin.

### Description of the complex

Geometric parameters are measured by a measuring portal, connected to an intelligent universal fixture comprising 3 universal clamping sections which precisely fix the wheel and set the revolution speed as it is being measured. The complex contains an input – output desk, internal rotary manipulator and measuring portal equipped with CD-cameras and rotary lasers.

The measurements are taken by the CD-cameras, which simultaneously record and measure the path of the rotary lasers. The cameras capture the axis at a certain angle, so they are able to display the position of the path, the form of the profile and the geometry of all surfaces, facets or radiuses of the hub and rim of the wheel and the inner diameter, recorded at a depth of up to 30 mm.

The shape of the railway wheel is scanned using a system of cameras and lasers. The laser triangulation principle is used to measure the shape.

### Parameters of automatic complex

Wheel geometry measuring cycle .....	max. 60 s.
Scan speed .....	2 faces/s
Number of faces per wheel turn .....	60

### Parameters of wheels measured

wheel diameter .....	up to 1400 mm
wheel rim width.....	up to 170 mm
wheel weight.....	up to 1100 kg

### Print out of railway wheel parameters measured

- 1.1. Profile of rolling disk.
- 1.2. Outer diameter of rolling disk
  - ovalness;
  - deviations from circularity.
- 1.3. Inner diameter with outer side of wheel.
- 1.4. Inner diameter with inner side of wheel.
- 1.5. Diameter of hub aperture.
- 1.6. Hub length.
- 1.7. Clearance and recess of hub.
- 1.8. Outer diameter of hub with outer and inner sides.
- 1.9. Width of wheel rim.
- 1.10. Thickness of wheel rim.
- 1.11. Eccentricity of hub aperture to diameter of rolling disk.
- 1.12. Eccentricity of hub aperture to inner diameter.
- 1.13. Differences in thickness of hub walls.
- 1.14. Profile of disk

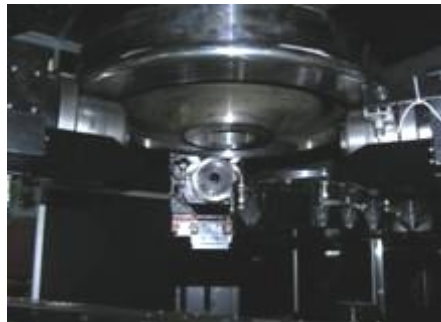
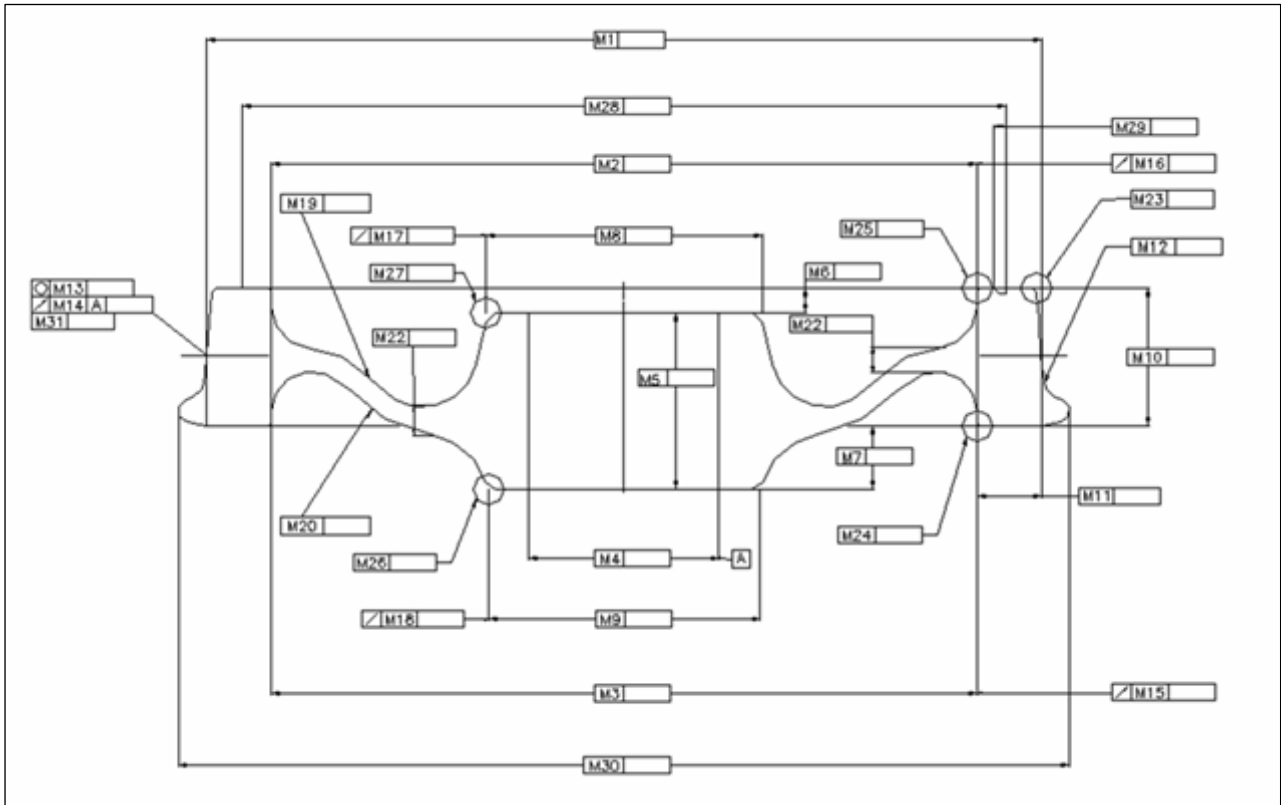


- 1.15. Thickness of disk
- 1.16. Facets.
- 1.17. Diameter of last regrinding groove

The rotary manipulator speeds up the measurement process – while one arm measures, the other arm scans the measured wheel and another is immediately loaded.

The optical components of the measuring facility are covered by opaque sliding walls and a ceiling panel, ensuring they are accurate and reliable. This also protects against external lighting.

The parameters of the wheels are checked and then assessed by a special electronic system using custom software ensuring that the results measured from each wheel are logged and saved.



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