

Automotive Applications Chassis and Gearing

Inspection of ball pivots/globe joints

Ball pivots are manufactured in a wide range of sizes and materials both as standard components (e. g. DIN 71803) and as customized parts in special sizes and materials. Globe joints are crucial to the safety when used as components in axles and steering.

Areas of inspection:

Ball, cone, shaft, collar, drive fit

Solution:

Automated eddy current inspection in one or more test stations using tools for 5 different ball pivots

Probe types:

KDS-2, differential system shielded

KDA-38, differential system with distance compensation

Frequency:

Medium frequency range

Defect size:

- ▶ Groove: 5 mm x 0.1 mm x 0.1 mm (L x W x D)
- ▶ Groove: 3 mm x 0.1 mm x 0.1 mm (L x W x D)

Cycle time:

- ▶ 5 sec/part with 100 % of the ball, collar and shaft being inspected
- ▶ Change-over time approx. 15 minutes

Probe data KDA-38

Application:

Dynamic crack detection, superficial cracks, dependent on the direction of the inspection, with distance compensation to suppress variations of the distance

Coil system:

Differential ferrite core, transformer, with distance compensation, magnetically shielded

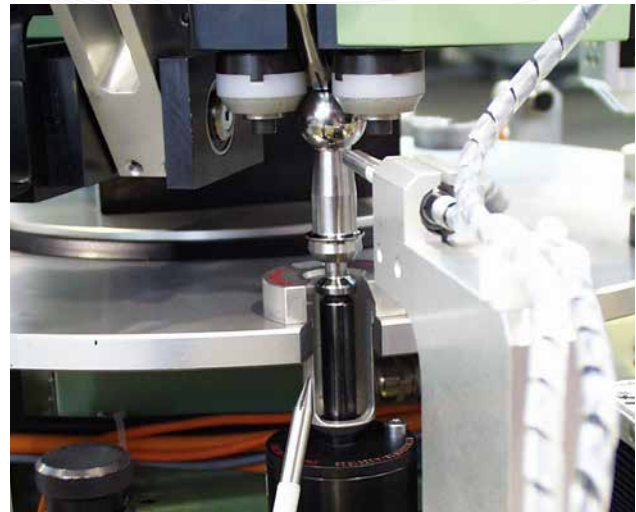
Frequency range: 50 kHz - 1 MHz

Active area: approx. 2 mm

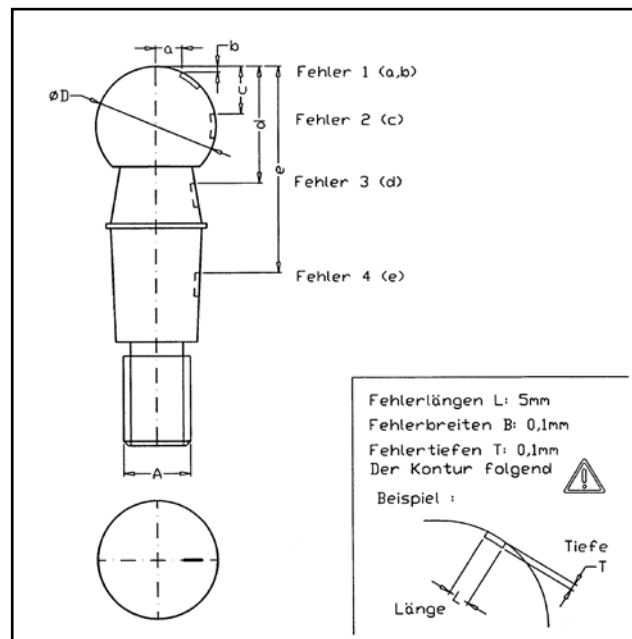
Penetration depth: low

Technical data:

- Housing:** metal (stainless steel)
- Design:** customized
- Connection:** customized



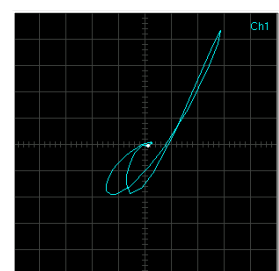
System for the fully automated crack detection on ball pivots



Drawing ball pivot with the positions of the reference defects

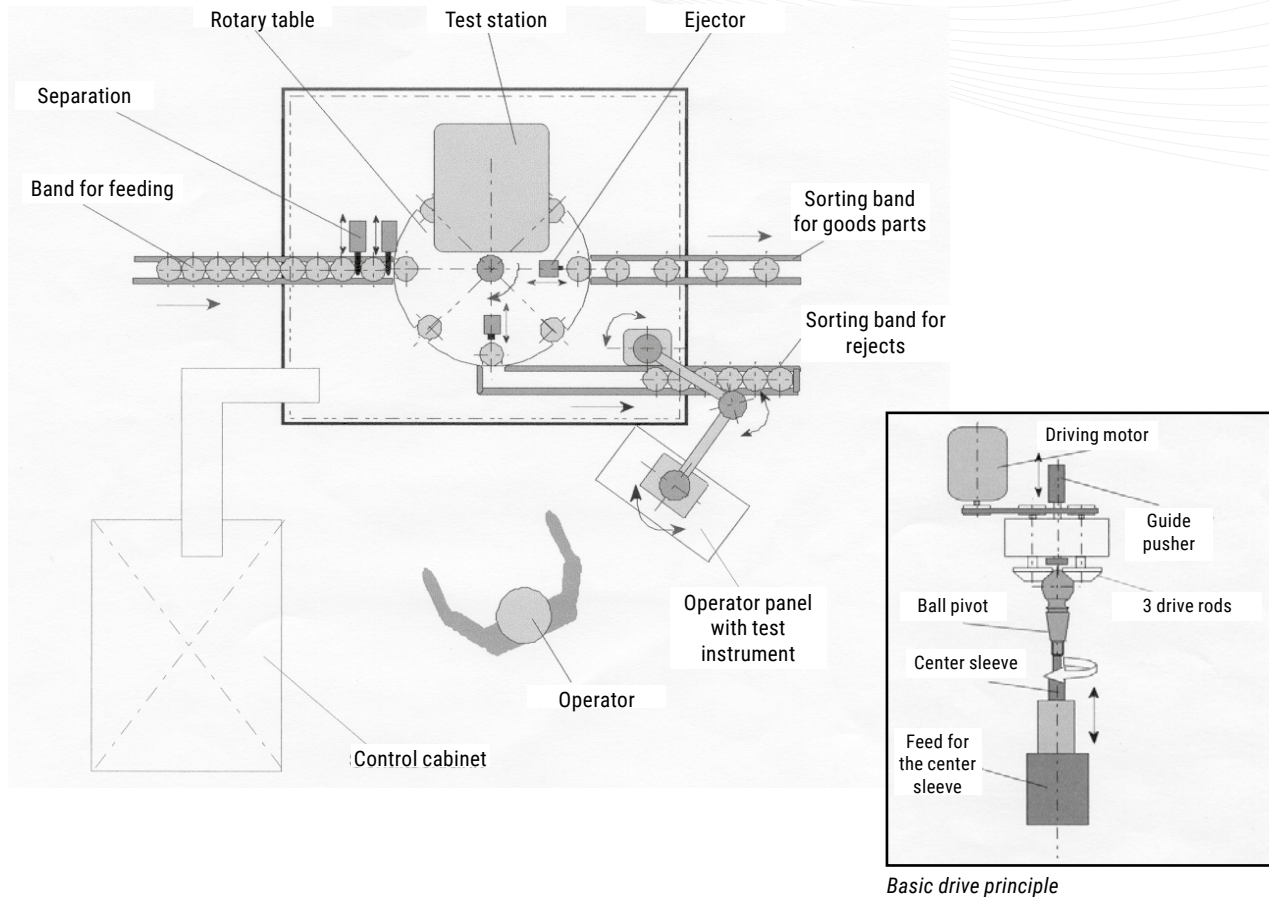


Layout of the inspection



Signal

Diagram of the inspection system



Probe data KDS-2

Application:

Dynamic crack detection, superficial cracks, dependent on the direction of the inspection, without influence by the edges, suppression of variations of the permeability in the upper frequency range

Coil system:

Differential ferrite core, transformer, with distance compensation, magnetically shielded

Frequency range: 500 kHz - 8 MHz

Active area: approx. 1.5 mm

Penetration depth: low

Technical data:

Housing: metal (stainless steel)

Design: customized

Connection: customized

ELOTEST PL600 test instrument

Application: Eddy current test instrument for the inspection during production; fastest material sorting and high-resolution crack detection; extremely fast due to 100 kHz bandwidth for the test signal; extremely low-noise and stable due to fully digitized signal processing; extremely flexible for up to 256 test channels. Frequency range: 10 Hz – 12 MHz

