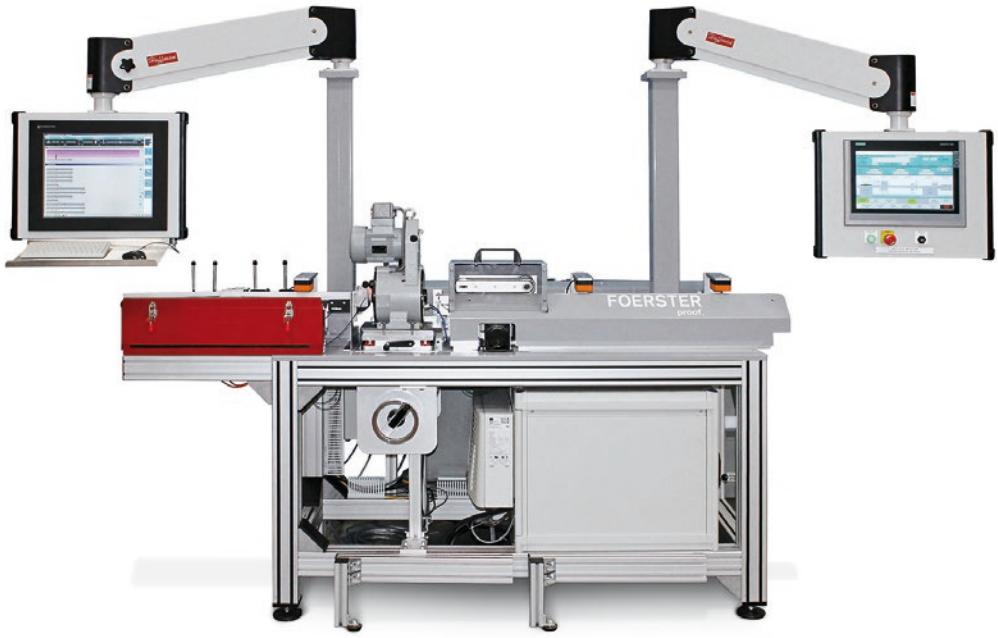
ROTO-PUSH

Test system for long cylindrical components such as needle bearings, valve guides and piston rods



Characteristics

ROTO-PUSH is the FOERSTER standard turn-key system for testing "long" cylindrical components such as needle bearings, valve guides, or piston rods. The integration of the mechanical handling together with the STATOGRAPH® eddy-current test equipment makes ROTO-PUSH the perfect solution. ROTO-PUSH offers outstanding test sensitivity for detecting longitudinal, transversal, and pointing defects on smooth cylindrical surfaces. Probes which rotate at high-velocity provide an overlapping test coverage pattern which measures the surface quality of the tested parts. Premium reporting capabilities provide statistical data to quality professionals who conduct process improvement initiatives. The system is full of features while remaining compact, ergonomic and maintenance friendly.

Structure:

ROTO-PUSH consists of:

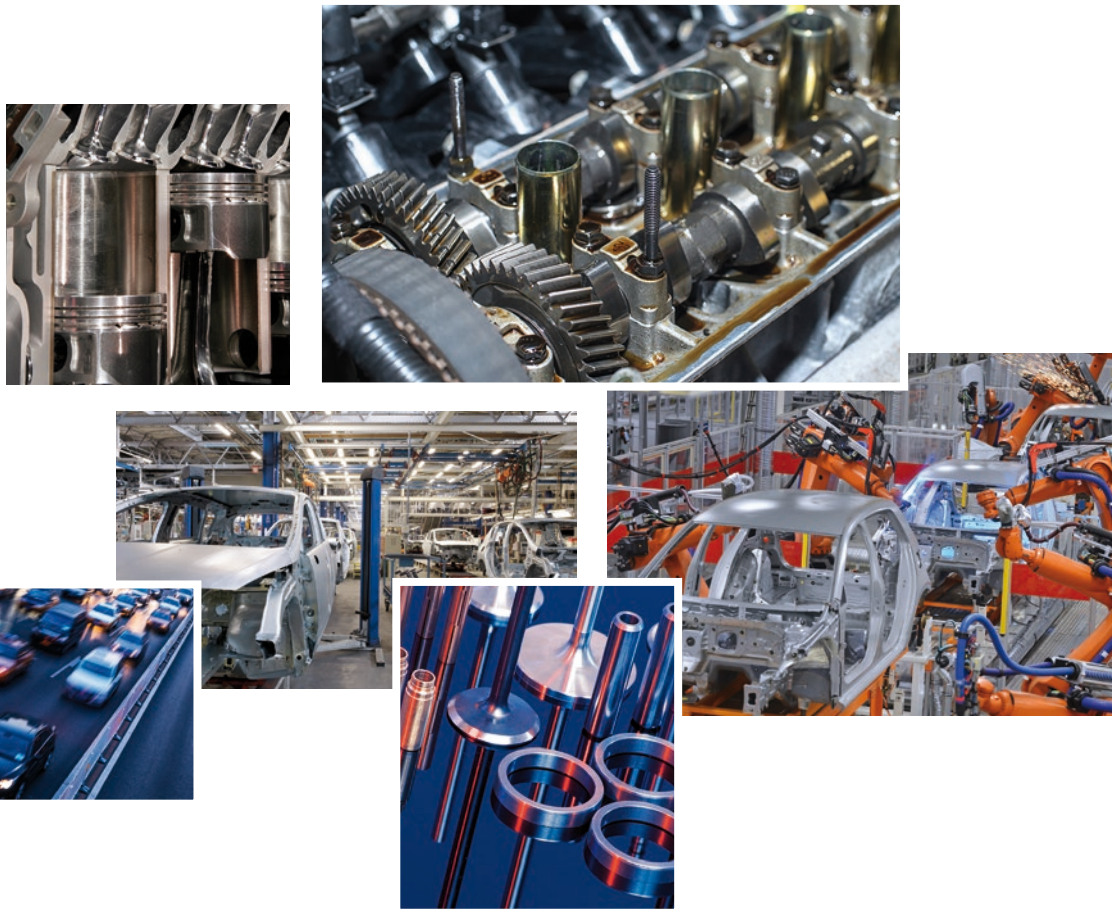
- Complete mechanical unit including test part loading, feeding module, unloading and sorting module
- Optionally Integrated Automatic Mastering Station module
- Electronic part tracking control
- Siemens SPS S 7 interface terminal

Optionally equipped with:

- STATOGRAPH ECM or STATOGRAPH DS
- Rotating head Ro 20, max. 18,000 rpm, rotating head Ro 35, max. 9,000 rpm or rotating head Ro 65, max. 6,000 rpm
  All options feature motor controls and clearance compensation. Optional Automatic Mastering Station.

Test Principle

Depending on the configuration of the ROTO-PUSH, a 0° differential probes or a 0° and a 90° differential probe are integrated into the rotating head. The 0° probe allows the detection of longitudinal, point, and transverse defects while the 90° probe ensures the detection of shorter transverse and very small point defects. The probes rotate around the test material at high speed (up to 18,000 rpm) while the test specimens are conveyed longitudinally through the rotating device. Depending on the feed rate desired, the rotating head is equipped with either one or two channels. By accurately controlling the feed rate, the helical test pattern covers the material without gaps, so a 100% inspection of the surface occurs. The entire system is adjustable to suit the requirements of the application. determined by the probe spur width and the rotational speed of the rotating head.



Application

- Non-destructive testing for surface defects of ferrous, austenitic and non-ferrous material
- Testing of "long" cylindrical components (such as needle bearings, valve guides, and piston rods)
- Dimensions of the parts: diameter from 7 up to 20 mm with a relation from part length to diameter > 5
- Test part ends must be free of overhanging burrs

Automatic Test Procedure

The test pieces arrive singly at a constant speed conveyor belt, which transports them into a feeding module. In the feeding module, the test pieces lie axially one after the other and are guided at a constant speed through the FOERSTER rotating head. The rotating head is mounted on an automatically movable table and can be extended on rails for adjustment and maintenance work. After passing through the rotating head, the test specimens are separated by a further conveyor belt.

The assignment of the test results to the individual test items and the corresponding control of the sorting unit (OK / NOK) belonging to the ROTO-PUSH is carried out during the evaluation of the path signals. The path signal evaluation, coupled with an edge detection sensor, also serves the elimination of interfering contours (e.g. caused by grooves and threads on the test length).

Mastering Station Module

A master part with defined defects is stored in a special parking position of the ROTO-PUSH. ROTO-PUSH rotates the master part into the feeding module and transports it through the rotating head.

The system determines whether all defined defects have been correctly detected and, if the result is positive, releases further testing. The master part is then automatically retracted to the parking position. When a batch is completed, the mechanical device of the master check is used to enable the system to empty. The master part then acts as a slide, which – in the absence of further test pieces at the end of the slide – pushes the last test pieces of the batch through the rotating head.

Technical Data

Description	Turnkey station for testing cylindrical, rod-like components consisting of: – Complete mechanics – Rotating head
Test Zones	Outer cylindrical surface, up to 3 test zones
Test specimen dimensions	Outer diameter: 6 - 65 mm Length: 30 - 750 mm Length/Diameter Ratio > 5
Detectable defects	Longitudinal, transversal and punctual defects
Testing speed	– Depending on the chosen probe track width and the rotational speed of the rotating head – Testing speed: max. 200 mm/s
Test electronics	one-channel STATOGRAPH ECM or multi-channel STATOGRAPH DS with motor control optional: – MAGNATEST for material classification – Data visualization and documentation
Probe type	Ro 20, max. 18,000 rpm Ro 35, max. 9,000 rpm Ro 65, max. 6,000 rpm equipped with a 0° probe or a 0° and a 90° probe
Test frequency	30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz
Evaluation mode	Vector analyzis Phase-selective component analyzis Clearance compensation
Supply voltage	230 V +/- 10%, 50 / 60 Hz and 400 V for the drive
Pneumatics	6 - 10 bar
Ambient temperature	+ 5° C - + 40 ° C
Degree of Protection	IP 54

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