

Crack Detection of **Tie Rods** (Steering Component)

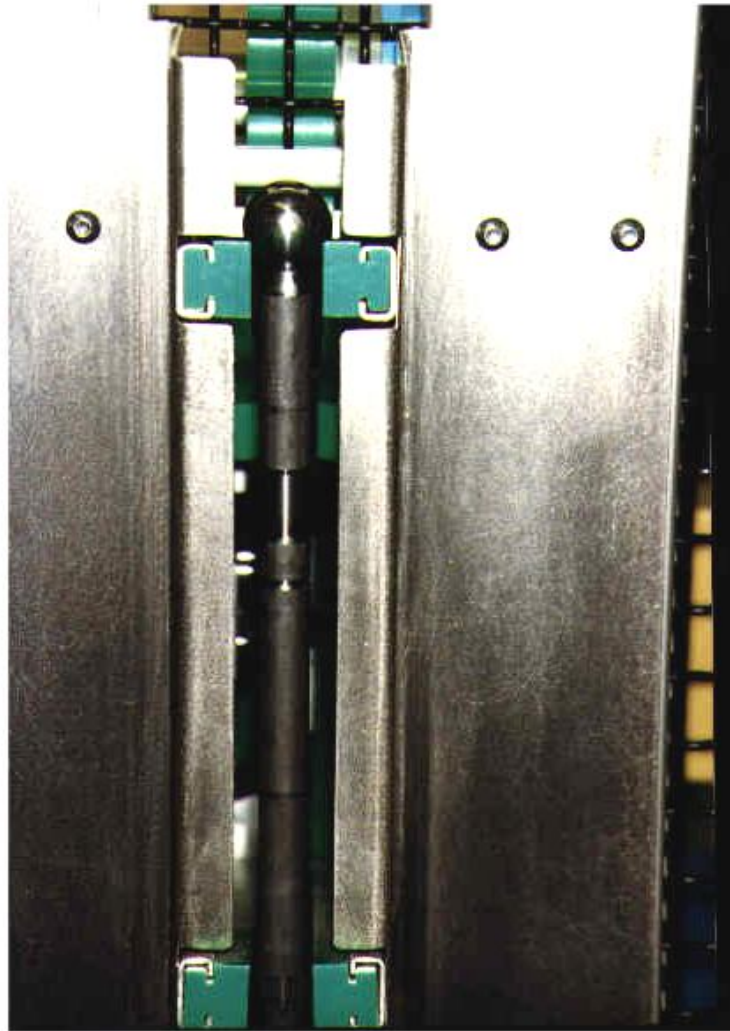
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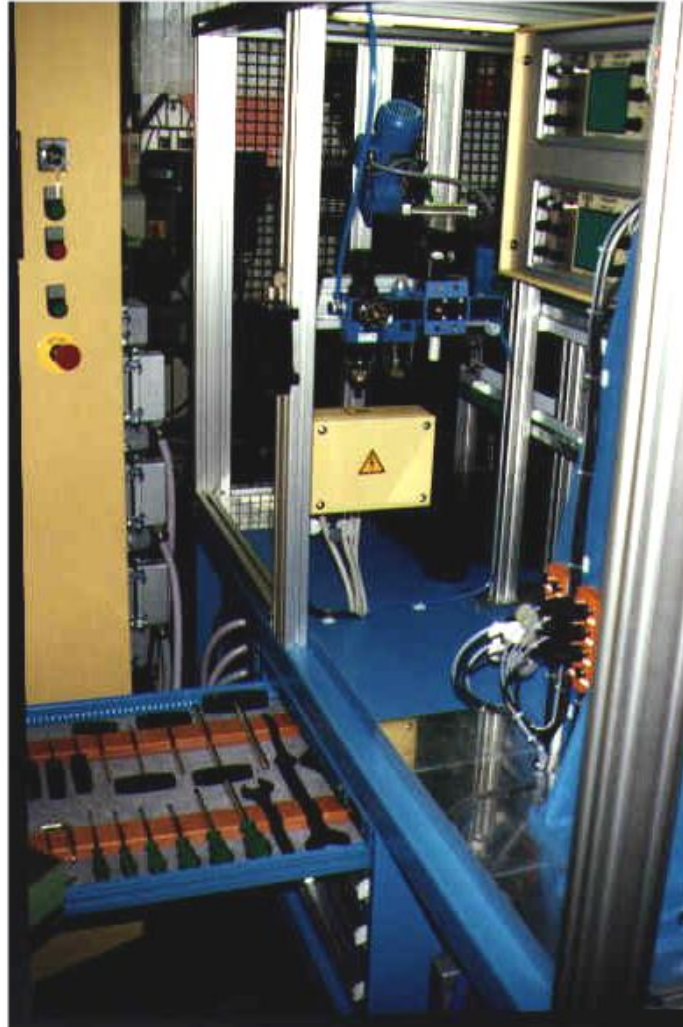
Flanged spindles are motorcar steering components underlying utmost safety restrictions. All components manufactured in bulk must be 100% free of cracks. Cracks of 0.1mm depth and only a few millimeters length have to be detected reliably. An additional problem of the parts described here is that they differ in length between 250mm and 400mm and are bended +/- 2mm, which requires special concepts of probe mechanism. In addition to 100% crack detection a solution had to be developed regarding change-over to other types of spindles.

The test system is designed for constant mixed operation, ie. different spindles have to be checked and change-over time from one type of spindle to another must not exceed 5 minutes. ibg developed a special software concept so that change-over time of less than 3 minutes was realized. A further claim of the customer was machine availability of more than 95% in 2-shift-operation, which is also fulfilled with the test unit described here. Regular control during daily operation with defined parts are carried out to guarantee that all defects will be detected reliably.

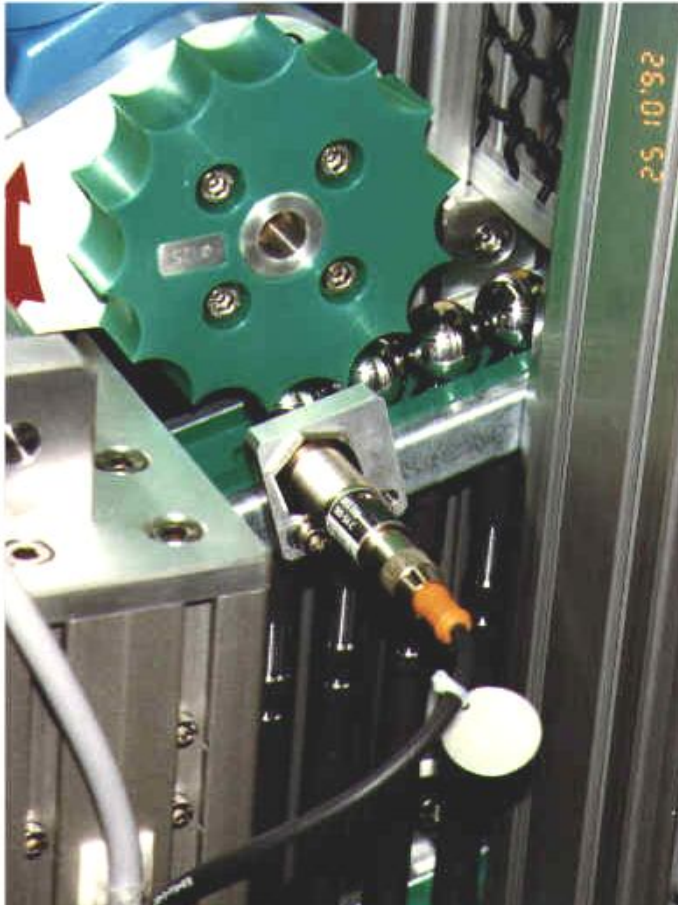
3 test systems as described above have meanwhile been delivered to TRW Ehrenreich, Gelsenkirchen (suppliers to automotive industry). The first unit supplied has been working in 2-shifts without any problem since January 1992. Some hundreds of thousands of tie rods have meanwhile been tested.

- Length of parts 250 - 400mm
- 1 probe for testing of ball
- 3 probes for testing of shaft
- Minimum crack depth 100µm
- 7.5 sec/part
- Change-over time to other parts: max 3 min

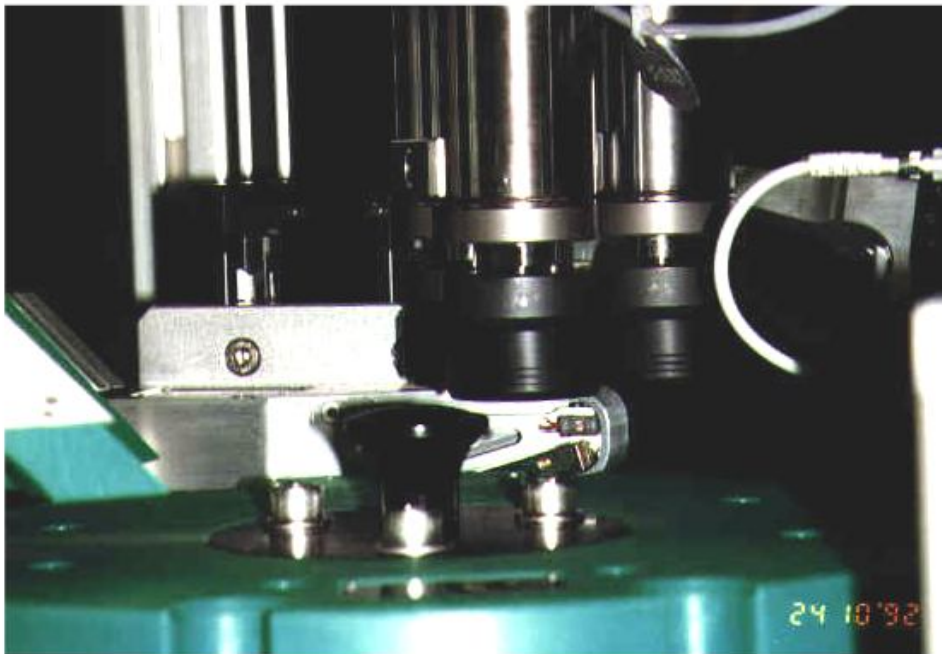




Test system with tool cabinet

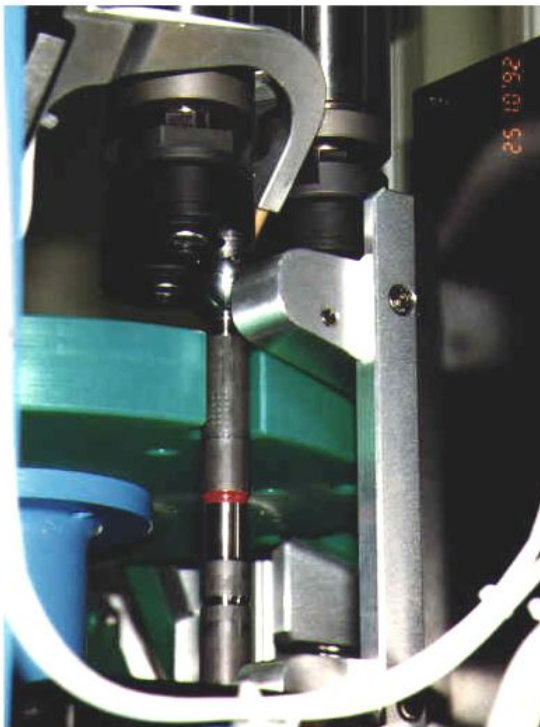
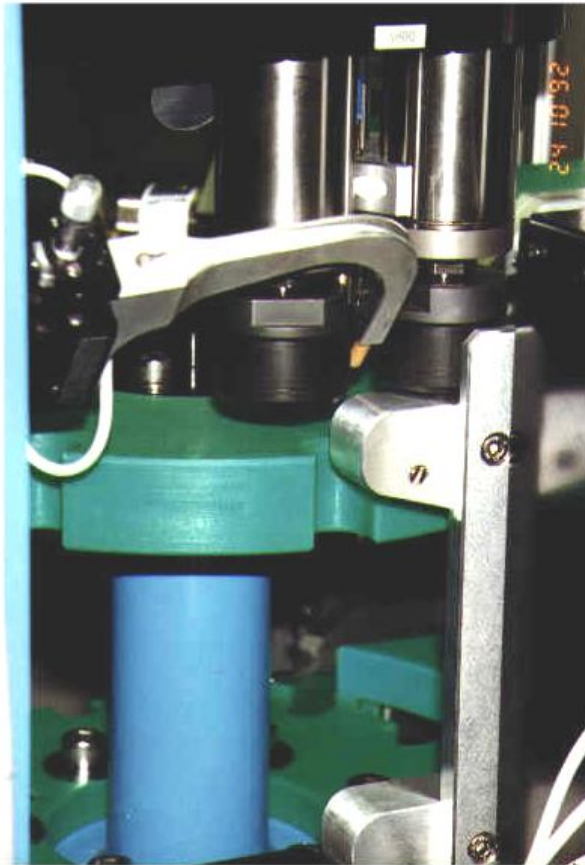


Unmatching



*Traction wheels,
ceramic probe*

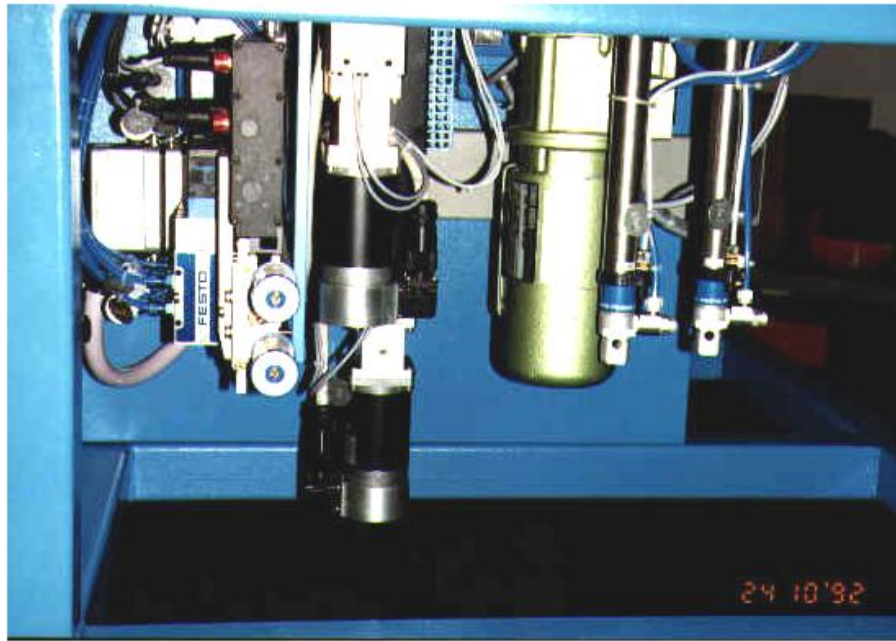
*Probes
without test part*



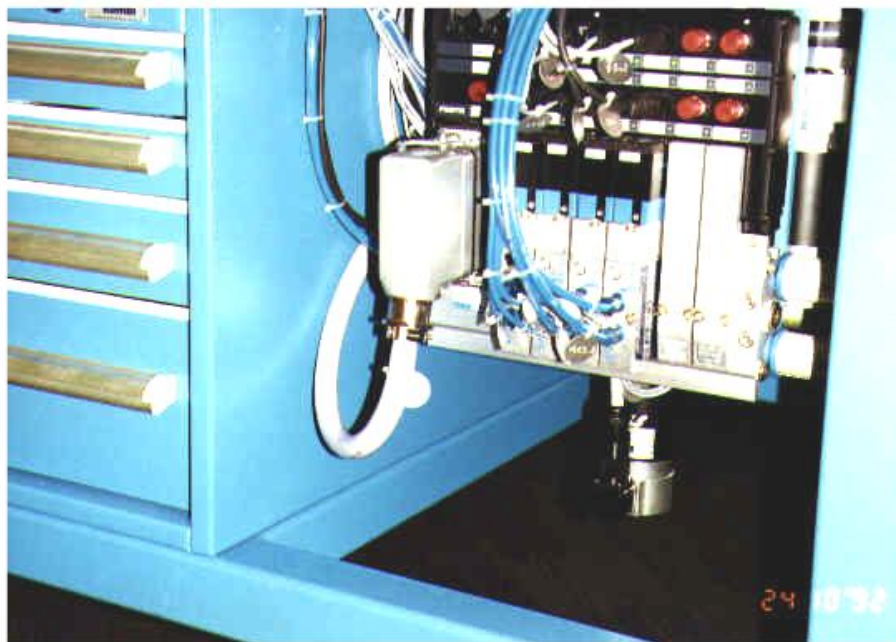
*Test part
probe*

Part under test





Rapid change-over to other parts



Pneumatic partition, sensor connection

Communication via

- clear text display and
- function keys

