

# Engineered Solutions

# Inline Shaft Measurement

## Measurement Task

- Diameter on bearing carrier
- Axial runout on shaft

## The Solution

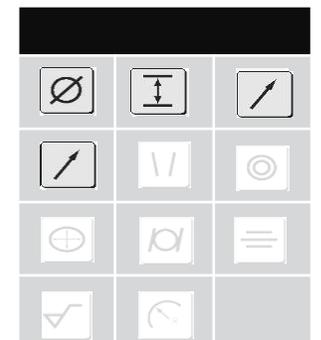
This measurement station is designed for both manual and automatic loading by applying a robot.

After loading the workpiece a housing will close the station automatically. Center tips will close to fix the workpiece. Static and dynamic measurements are being performed fully automatic.

Afterwards results being displayed and transferred to QS-Data-Base of the customer and housing is opened for unloading and loading of next workpiece.



Automation:	full-automatic
Main application:	shaft; gear
Reference No:	66



# Measuring Station for Dynamic Cam Angle Determination

## Measurement Task

- Determination of the cam angle of drive and output camshaft in relation to the integrated Hall sensors
- Dynamic measurement of the cam angle in the cylinder head cover
- Evaluation of the cam angle as "best fit"
- Graphic representation of the cam shape / result

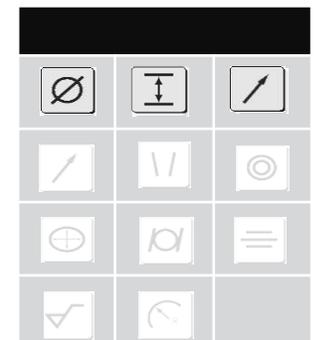
## The Solution

This measuring station is designed for 100% end-of-line measurement of cylinder head covers and the camshafts already mounted in them. The station is integrated into the production line. Loading and unloading is done by a robot. After loading the actual measuring cell, the measurement is carried out. Depending on the design and cycle time requirements, the station is equipped with several measuring cells that can be loaded in parallel.

The evaluation of the cam angle is carried out as a "best-fit" similar to a form tester with graphic display of the result.



Automation:	inline
Main application:	camshaft, cylinderhead
Reference No:	83



# Measurement of Diameters on Gear-Shaft

## Measurement Task

Measurement of different diameters on different sections statically.

Cycle time realized is 30 sec..

## The Solution

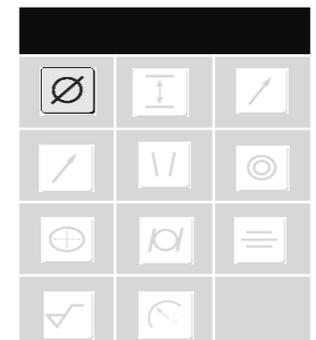
This automatic gage is for 100% measurement of diameter of gear secondary axis. The station is integrated in the production line. The procedure of measurement is:

- Auto loading
- Part type detection (data-matrix-camera)
- Removal on Vé + referencing
- Includes pneumatic measurement
- Auto unloading

The machine is design to measure different type of parts (flex plant approach). The adjustment of probes to serve the different geometries is done automatically depending on the information of data matrix information.



Automation:	inline
Main application:	shaft, gear
Reference No:	47



# Inline Measurement of Differential Housing

## Measurement Task

High precision measurement of different inner diameters and length of a differential gearbox

## The Solution

This solution is designed for full automatic inline operation. The parts are positioned to the measuring station by robot loading. During loading the measurement head is covered safely underneath a metal sheet housing. After loading process is finished the measurement head moves automatically axial into the workpiece. The measurement head is build as an mechanical bore gauge.

The special feature of this solution is the high accuracy of the measurement with a repeatability of 1 micron.

Cycle time realised is 10 s.



Automation:	inline
Main application:	gear
Reference No:	89

