HAFNER

Measuring Automaton for Bevel Drive Pinion

Brief description

- measuring automaton post process

Measuring task

- measurement of diameters, lengths, run-out tolerances (radial run-outs)

Technology

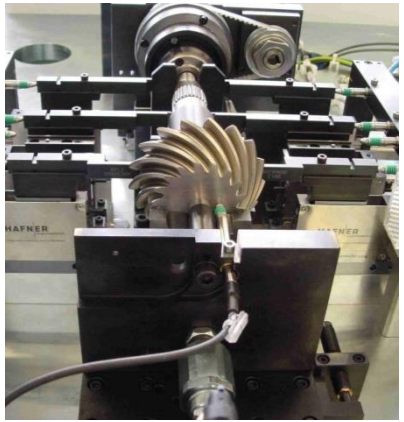
- tactile
- dynamic

Tolerances

- Ø tolerance = 11µm

Special features

- loading/unloading: with an integrated handling
- changeover: manual, in 5 min
- identification of the types of workpieces
- nok-classification



HAFNER

Measuring Automaton for Bevel Drive Pinion

Brief description

- measuring automaton post-process

Measuring task

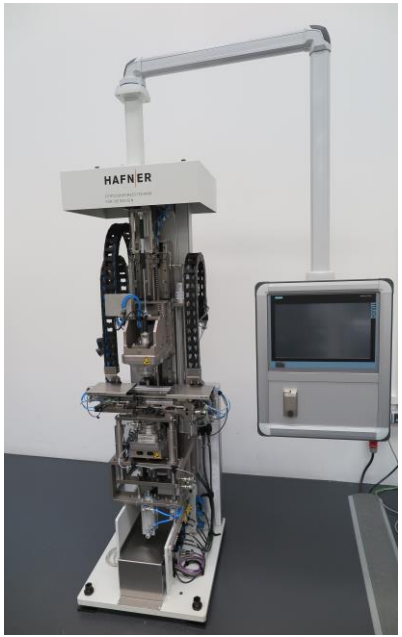
- measurement of diameters, lengths, form and position tolerances, run-out tolerances (radial run-outs, axial run-outs)

Technology

- tactile
- dynamic

Special features

- cycle time: 5-6 s + one-off temperature recording (3 s)
- changeover: without changeover
- calibration: automatic
- control system: external control
- additional monitor and operating unit
- including temperature compensation



HAFNER

Measuring Automaton for Bevel Drive Pinion

Brief description

- measuring automaton post process

Measuring task

- measurement of diameters, lengths, run-out tolerances (radial run-outs)

Technology

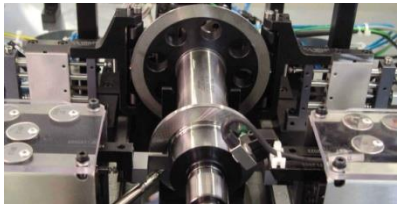
- tactile
- dynamic

Tolerances

- Ø tolerance = 11µm

Special features

- loading/unloading: with a handling supplied by the customer
- changeover: without changeover
- flexible longitudinal positioning of the measuring position



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Measuring Automaton for Bevel Drive Pinion

Brief description

- measuring automaton for 100% check

Measuring task

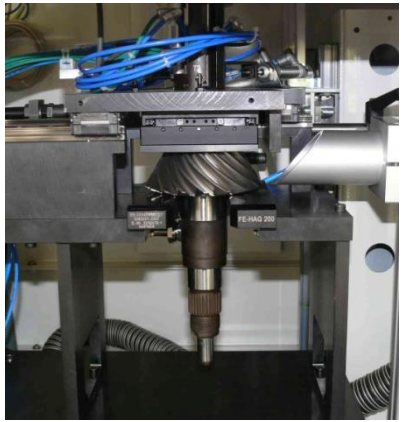
- measurement of lengths

Technology

- tactile
- static

Special features

- changeover: manual, in 1 min
- workpiece marking by means of laser
- interface to the upstream gear set tester for determining the axle distance „Bevel Drive Pinion to Ring Gear“
- calculation of the assembly size from “Bevel Drive Pinion and Ring Gear”



HAFNER

Measuring Automaton for Bevel Drive Pinion

Brief description
- measuring automaton post-process

Measuring task
- measurement of diameters

Technology
- tactile
- static

Tolerances
- Ø tolerance < 11 µm

Special features
- cycle time: < 10 s
- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: without changeover
- control system: PC control

3367556/he

HAFNER

Measuring/Marking Automaton for Bevel Drive Pinion/Ring Gear

Brief description

- measuring automaton for 100% check
- workpiece marking by means of DMC-Code

Measuring task

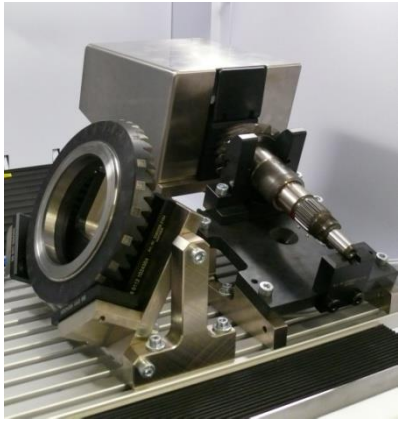
- measurement of lengths

Technology

- tactile
- static

Special features

- cycle time: 50 s
- loading/unloading: manual
- workpiece marking (DMC-Code) by means of laser
- changeover: manual, < 5 min
- interface to the upstream gear set tester for determining the axle distance „Bevel Drive Pinion to Ring Gear“
- calculation of the assembly size from “Bevel Drive Pinion and Ring Gear”



3345145/ri

HAFNER

Measuring Automaton for Drive Shaft

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of lengths, run-out tolerances (radial run-outs), hardness (evaluation attributive: hardened/not hardened), surface (evaluation attributive: blasted/not blasted)

Technology

- tactile as well as contactless, magnet-inductive (hardness) and optical (surface)
- dynamic

Special features

- cycle time: 16 s
- loading/unloading: on a conveyor supplied by the customer
- calibration: automatic
- changeover: without changeover
- control system: PLC control
- identification of the types of workpieces
- mix mode for 10 different types of workpieces

3339098/ta

HAFNER

Measuring System for Output Shaft

Brief description

- measuring system for sample check resp. for 100% check

Measuring task

- measurement of diameters, lenghts, tooth pitch, two-ball dimension, parallelism, coaxiality, run-out tolerances (radial run-outs, axial run-outs), form tolerances (cylindric form) evaluation according to DIN

Technology

- tactile
- dynamic

Tolerances

- cylindric form 5µm

Special features

- cycle time: 30-80 s depending on the measuring program
- loading/unloading and calibration: manual
- changeover: without changeover for multiple workpieces
- control system: PC control
- 4 different measuring devices/operations combined
- flexibility: additional workpieces (rotationally symmetric) freely programmable

3352847/eis

HAFNER

Measuring Automaton for Shafts

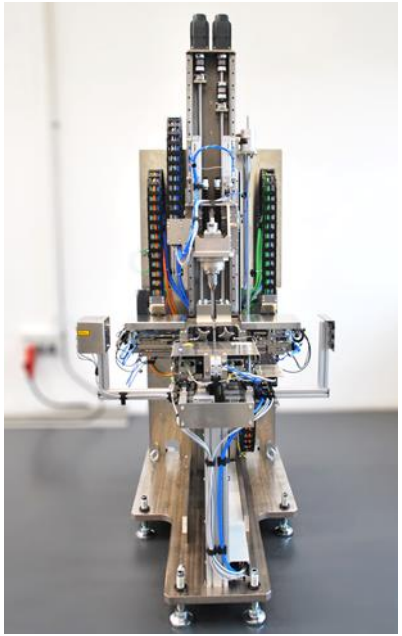
Brief description
- measuring automaton post process

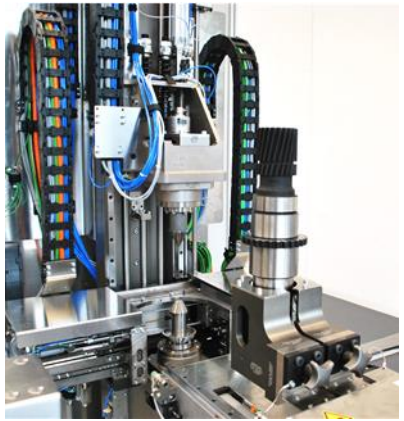
Measuring task
- measurement of diameters, lengths, temperature/compensation of the temperature

Technology
- tactile
- dynamic

Tolerances
- Repeatability and linearity < 1 µm

Special features
- cycle time: 3-4 s
- loading/unloading: with a handling supplied by the customer
- calibration: manual
- changeover: without changeover for two workpiece types
  - lengths up to approx. 650 mm
  - diameters up to approx. 200 mm
- control system: PLC control





3364690/ol

HAFNER

Measuring Automaton for Shafts

Brief description

- measuring automaton post-process for 100% check

Measuring task

- measurement of diameters, lengths, run-out tolerances (radial run-outs), orientation tolerances (parallelisms, right angularities)

Technology

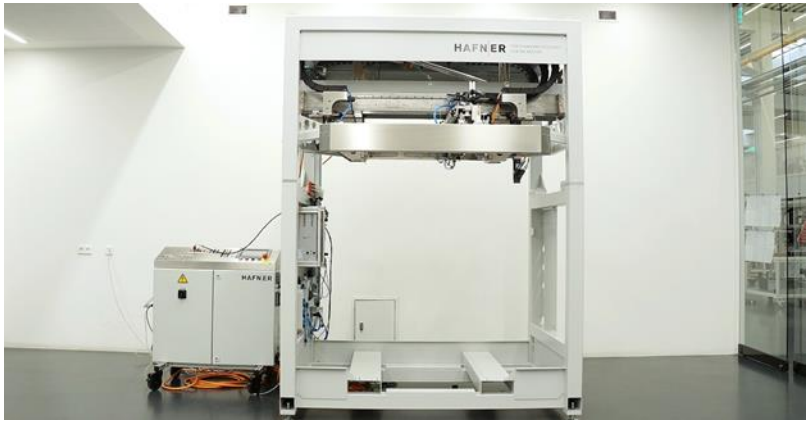
- tactile
- static

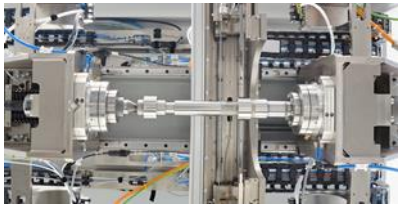
Tolerances

- Ø tolerance < 10 µm

Special features

- cycle time: Ø 4 s
- loading/unloading: with gantry loader supplied by customer
- calibration: automatic (integrated)
- changeover: without changeover
- workpiece range
  - length up to 900 mm
  - workpiece diameter up to 320 mm





3368753/he

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Measuring Automaton for Shaft

Brief description
- measuring automaton post process

Measuring task
- measurement of diameters, lengths, temperature/compensation of the temperature

Technology
- tactile
- static as well as dynamic

Tolerances
- repeatability and linearity < 1 µm

Special features
- loading/unloading: on a conveyor and workpiece carrier (supplied by the customer)
- calibration: automatic
- control system: external control
- workpiece range
  length 100 – 650mm
  diameter 10 – 150mm

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Measuring Automaton for Shaft

Brief description

- measuring automaton post process

Measuring task

- measurement of diameters, lengths, form and location tolerances temperature/compensation of the temperature
- measurement of SAE gears, run-outs and two-ball measurement

Technology

- tactile
- static as well as dynamic

Tolerances

- repeatability and linearity < 1 µm

Special features

- loading/unloading: supply unit without changeover for heavy truck shafts
- calibration: automatic
- control system: external control
- workpiece range
  length 100 – 650mm
  diameter 10 – 150mm

3350904/ol

HAFNER

Measuring Automaton for Shaft

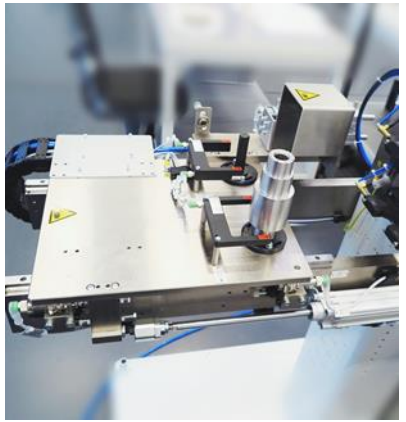
Brief description
- measuring automaton post-process

Measuring task
- measurement of diameters

Technology
- tactile
- static

Tolerances
- Ø tolerance ± 8 µm

Special features
- cycle time: < 10 s
- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: without changeover
- control system: external control



HAFNER

Measuring Automaton for Axle Shaft Pinion

Brief Description

- measuring automaton for 100% check

Measuring Task

- measurement of diameters, lengths, run-out tolerances (radial run-outs, axial run-outs)

Technology

- tactile
- static

Tolerances

- Ø tolerance = 20 µm

Special Features

- cycle time : 6 s
- loading/unloading: with a handling supplied by the customer
- changeover: manual
- changeover is possible for a large range of parts of different types (pinion and gear) and sizes
- control system: external control

3336195/ib

HAFNER

Measuring Automaton for Differential Housing

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, lengths, form tolerances (roundnesses), location tolerances (concentricities), run-out tolerances (axial run-outs)

Technology

- tactile
- static as well as dynamic

Tolerances

- Ø tolerance < 11 µm

Special features

- cycle time: < 60 s
- loading/unloading: with own handling from customer conveyor
- calibration: automatic
- changeover: manual
- control system: PLC control
- workpiece marking with ink jet
- nok-classification

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Measuring Automaton for Differential Housing

Brief description

- post process measuring automaton

Measuring task

- measurement of diameters, lengths, form tolerances, orientation tolerances, location tolerances and run-out tolerances; temperature/compensation of the temperature
- determination of the inner sphere and its position to the axles

Technology

- tactile
- static as well as dynamic

Tolerances

- i.a. flatness of the ring gear flange 0,02 mm

Special features

- cycle time: < 30 s (incl. change of workpiece)
- calibration: automatic
- control system: PLC control
- loading/unloading: with a handling supplied by the customer

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Measuring Automaton for Differential Housing

Brief description

- measuring automaton for 100% check

Measuring task

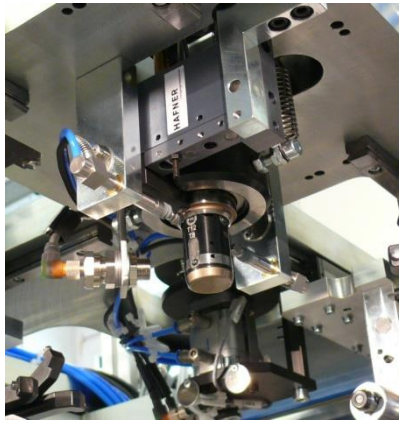
- measurement of diameters, lengths, orientation tolerances (right angularities), location tolerances (positions, concentricities), run-out tolerances (radial run-outs, axial run-outs)

Technology

- tactile
- static as well as dynamic

Special features

- loading/unloading: with a handling supplied by the customer
- calibration: manual
- changeover: manual for two different types of housings
- control system: external control
- insensitivity to dirt by hanging arrangement of the measuring technology



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Measuring Automaton for Differential Gear Housing

Brief description

- measuring automaton for 100% check

Measuring Task

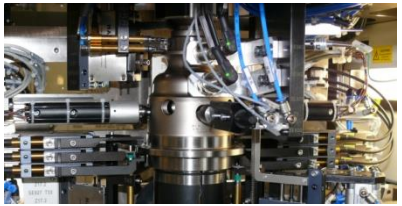
- measurement of diameters, lengths, form tolerances (flatnesses), orientation tolerances (parallelisms, right angularities), location tolerances (symmetries, coaxialities), run-out tolerances (radial run-outs, axial run-outs)

Technology

- tactile
- static as well as dynamic

Special features

- cycle time: 55 s
- loading/unloading: with an integrated handling from a conveyor
- calibration: manual or automatic
- changeover: manual or automatic
- control system: PLC control
- nok-classification



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Measuring Automaton for Differential Housing - Flange

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of Diameters, lengths, orientation tolerances (parallelisms), form tolerances (flatnesses), location tolerances (symmetries, coaxialities), run-out tolerances (radial run-outs, axial run-outs)

Technology

- tactile
- static as well as dynamic

Special features

- cycle time: 25 s
- loading/unloading: with an integrated handling from a conveyor
- calibration: manual
- changeover: without changeover for two work pieces
- control system: PLC control
- nok-classification via slide

HAFNER

Measuring Automaton for Differential Housing

Brief description

- measuring automaton for 100% check

Measuring task

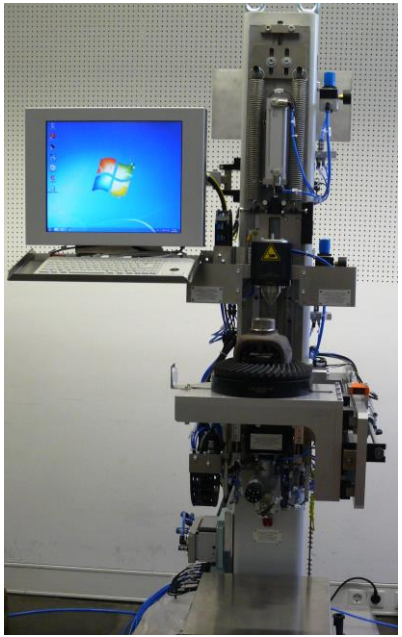
- measurement of run-out tolerances (axial run-outs in two tracks)

Technology

- tactile
- dynamic

Special features

- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: without changeover within one part family, for other part families manual changeover without readjustment of the probes, in a few minutes
- control system: external control



3350146/ib

HAFNER

Measuring Devices and Gauges for Rear Axle Housing

Brief description

- measuring devices and plug-in gauges for sample check

Measuring task

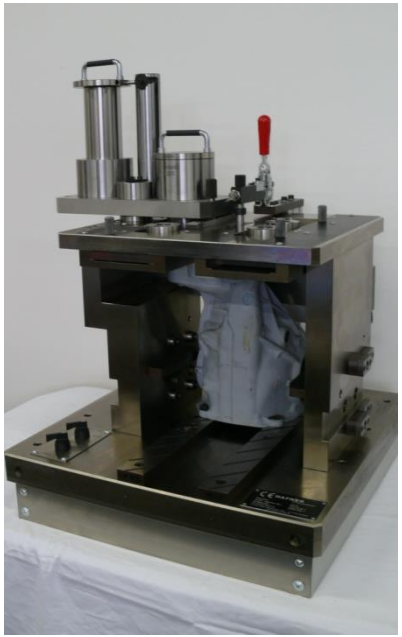
- measurement resp. gauging of length, location tolerances (positions)

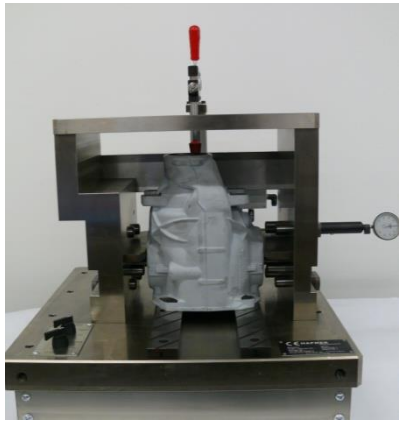
Technology

- tactile
- static
- gauging

Special features

- changeover: without replacement parts
- mix mode for 9 different types of workpieces





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Measuring Device and Plug-in Gauge for Rear Axle Housing (alu)

Brief description
- measuring system for sample check

Measuring task
- measurement of distances to housing middle, heights
- gauging of bore diameters and positions

Technology
- tactile
- static

Tolerances
- ± 0,05 mm

Special features
- loading/unloading: manual
- calibration: manual
- changeover: without changeover

3346862/ri

HAFNER

Measuring System for Rear Axle Housing

Brief description

- measuring system for sample check

Measuring task

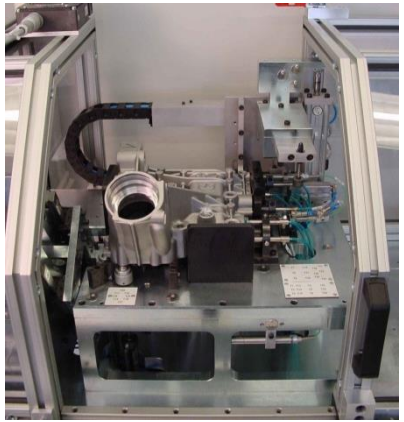
- measurement of diameters, lengths, form tolerances (flatnesses), location tolerances (positions)

Technology

- tactile
- static

Special features

- loading/unloading: manual
- control system: PC control
- lifting of the probes



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Measuring System for Rear Axle Housing

Brief description

- measuring system for 100% check or sample check and classification

Measuring task

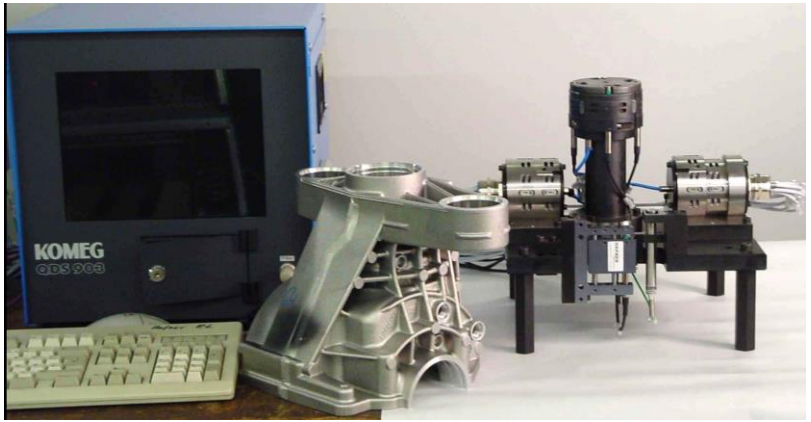
- measurement of diameters, lengths, orientation tolerances (parallelisms, right angularities), location tolerances (positions, symmetries, concentricities)

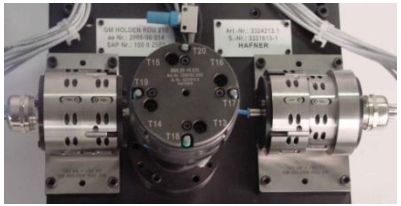
Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual





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Measuring Device for Rear Axle Housing

Brief description

- measuring device for sample check

Measuring task

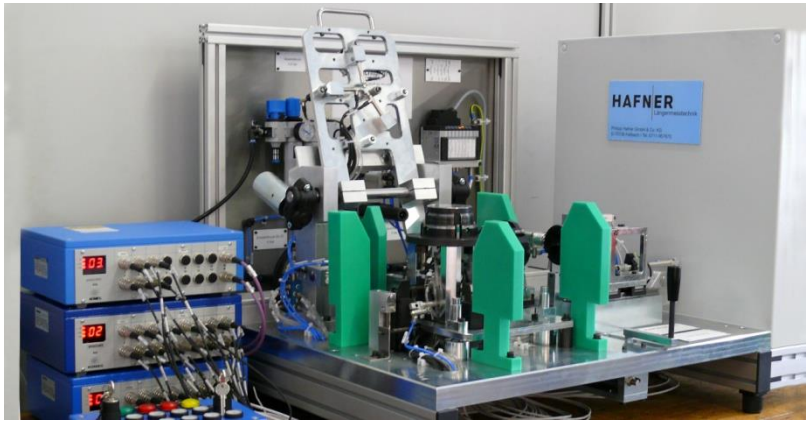
- measurement of diameters, lengths, location tolerances (positions), through oil hole

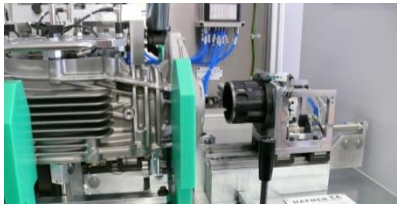
Technology

- tactile as well as contactless, optical
- static

Special features

- loading/unloading: manual
- calibration: manual
- control system: PC control





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Measuring Automaton for Rear Axle Housing

Brief description

- measuring automaton for 100% check and classification

Measuring task

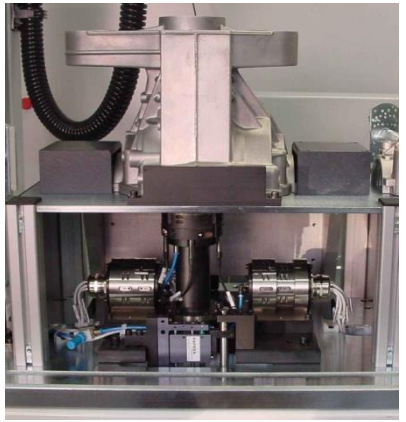
- measurement of diameters, lengths, orientation tolerances (parallelisms, right angularities), location tolerances (positions, symmetries, concentricities)

Technology

- tactile
- static

Special features

- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- control system: PLC control



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Measuring Automaton for Rear Axle Housing

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, form tolerances (flatnesses), orientation tolerances (right angularities), hypoid offset and symmetry offset of the axes

Technology

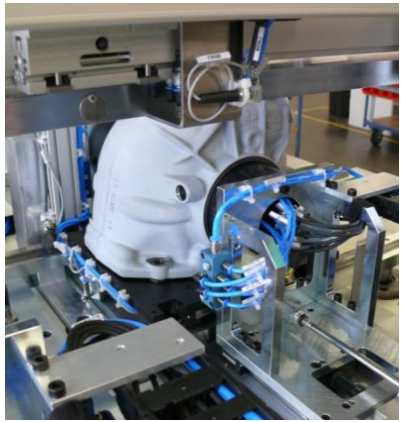
- tactile
- static

Tolerances

- 25 µm for the axial offset
- 19 µm for holes of the bearing seat

Special features

- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: without changeover for two types
- control system: external control
- workpiece marking by means of videojet ink system
- traceability of the workpieces



3339005/he

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Measuring Automaton for Rear Axle Housing

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, form tolerances (flatnesses), orientation tolerances (right angularities), hypoid offset and symmetry offset of the axes

Technology

- tactile
- static

Tolerances

- 25 µm for the axial offset
- 19 µm for holes of the bearing seat

Special features

- cycle time: < 35 s
- loading/unloading: manual
- calibration: automatic
- changeover: without changeover for two types
- workpiece marking by means of videojet ink system
- traceability of the workpieces

3363921/he

HAFNER

Measuring System for Housing for Internal Geared Pump

Brief description

- measuring system for sample check

Measuring task

- measurement of diameters, lengths, location tolerances (positions), temperature/compensation of the temperature (OP10)
- measurement of diameters, lengths, form tolerances (cylinder forms, flatnesses), run-out tolerances (radial run-outs, axial run-outs), temperature/compensation of the temperature (OP20)

Technology

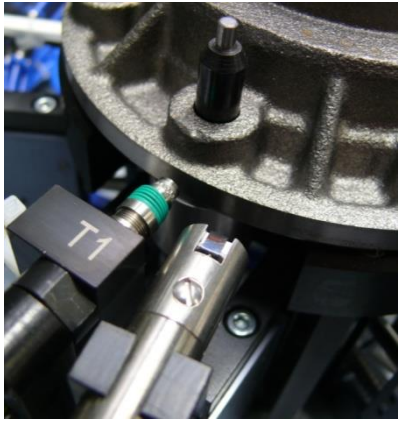
- tactile
- static (OP10) / static as well as dynamic (OP20)

Tolerances

- Ø tolerance = H7, cylinder form = 5 µm,
  run-out tolerances = 10 µm

Special features

- loading/unloading: manual
- calibration: manual
- control system: PC control (measuring computer and I/O-moduls)



3341348/eis

HAFNER

Measuring Automaton for eTransmission

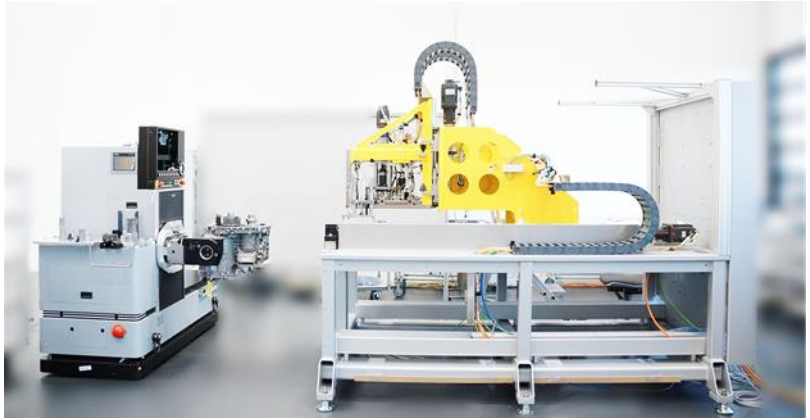
Brief description
- measuring automaton for 100% check

Measuring task
- measurement of distance

Technology
- tactile
- static as well as dynamic

Tolerances
- class width 10 µm

Special features
- cycle time: ≤ 40 s
- calibration: automatic
- changeover: automatic
- control system: PLC control
- workpiece supply by automated guided vehicle system
- protective device / access guarding by muting-system



HAFNER

Measuring Automaton for eTransmission disc magazine & surface seal

Brief description

- measuring automaton for 100% check and classification

Measuring task

- measurement of distance, thickness

Technology

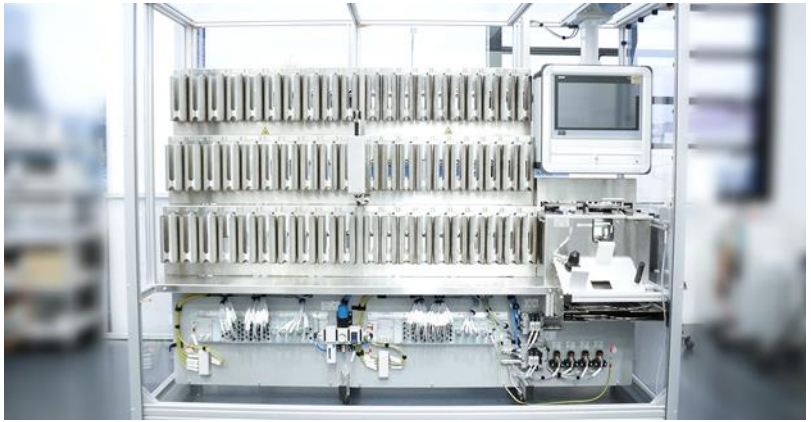
- taktil
- statisch

Tolerances

- class width 10 µm

Special features

- loading/unloading: manual
- calibration: manual
- changeover: without changeover
- „pick-by-light“ disc magazine
- modular construction of the disc depot
- countermeasuring device
- measuring device for surface seal



HAFNER

Measuring Device for eTransmission

Brief description
- measuring device for control measurements

Measuring task
- measurement of distance

Technology
- tactile
- static as well as dynamic

Tolerances
- distance 20 µm

Special features
- loading/unloading: manual
- calibration: manual
- changeover: manual for two workpiece types
- weight: Preload on bearing unit

3366080/eis

HAFNER

Measuring Automaton for Transmission Housing

Brief description

- measuring automaton for 100% check

Measuring task

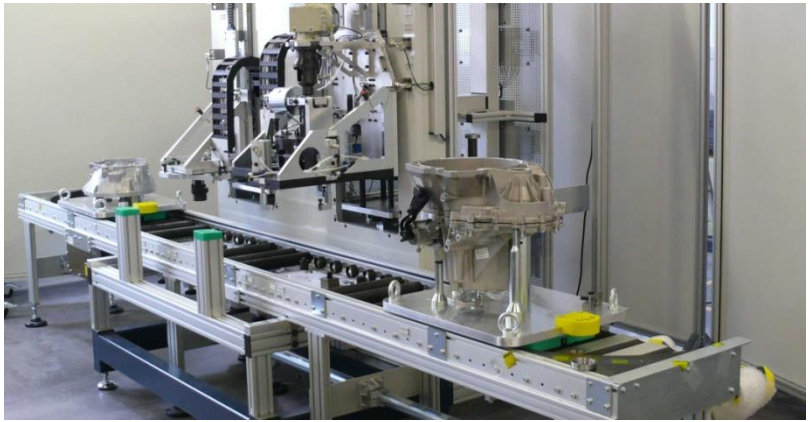
- measurement of distance to the parting plane (transmission- and clutch housing)

Technology

- tactile
- static as well as dynamic (under preload 245N)

Special features

- cycle time: 25 s
- calibration: automatic, with integrated setting master feeding (MIN and MAX)
- measuring capability for the class range



HAFNER

Measuring Devices and Gauges for Transmission Housing

Brief description

- measuring devices and gauges for sample check

Measuring task

- measurement resp. gauging of diameters, lengths, thread, compensation of the temperature, groove distance

Technology

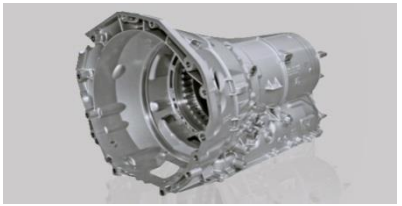
- tactile
- static

Tolerances

- for diameter e.g. Ø 50n6

Special features

- changeover: manual
- measuring desk designed for 2 types of workpieces
- combined measuring head for Ø-groove distance and offset
- compact measuring head on a separated side table



3340780/eis

HAFNER

Measuring System for Transmission Housing

Brief description

- measuring system for sample check

Measuring task

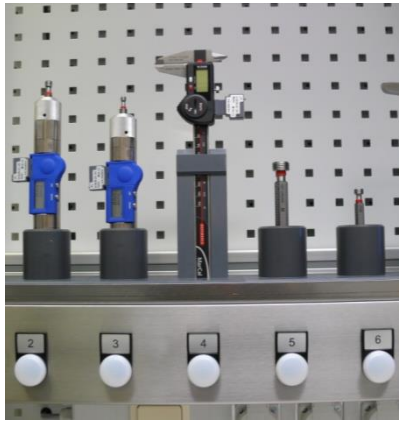
- measurement of bore diameter, threads / length of thread, lenghts, depth

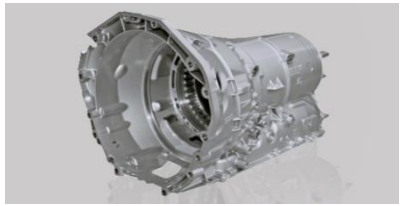
Technology

- tactile
- static

Special features

- calibration: manual respectively not necessary
- changeover: without changeover for 5 different types of workpieces
- „Pick-to-Light“- operator guidance for about 25 measuring devices and gauges
- identification of the types of workpieces via manual scanning device (RFID-Chips)
- wireless measuring devices and gauges (data transfer via radio)





3351260/ol

HAFNER

Measuring Automaton for Dual Clutch Transmission Housing

Brief description

- measuring automaton postprocess

Measuring task

- measurement of diameters, lengths, location tolerances (concentricities)

Technology

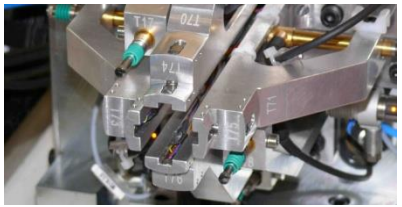
- tactile
- static

Tolerances

- Ø tolerance = 12 µm; concentricities = 40 µm

Special features

- loading/unloading: with an integrated handling
- calibration: automatic
- identification of the types of workpieces
- traceability of the workpieces
- nok-classification



HAFNER

Measuring System for Dual Clutch

Brief description

- measuring system for sample check

Measuring task

- measurement of diameters, lengths, orientation tolerances (parallelisms, right angularities), location tolerances (symmetries, concentricities), run-out tolerances (radial run-outs, axial run-outs), temperature/compensation of the temperature

Technology

- tactile
- static as well as dynamic

Special features

- cycle time: 20 s
- fast adaption concept in case of an enlargement of the production

HAFNER

Measuring Automaton for Clutch Housing

Brief description

- measuring automaton for 100% check (inline)

Measuring task

- measurement of diameters, lengths, distances between axles

Technology

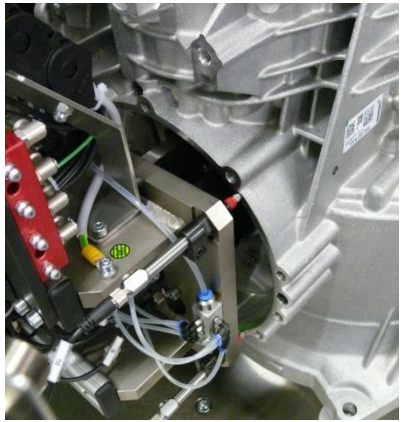
- static
- tactile

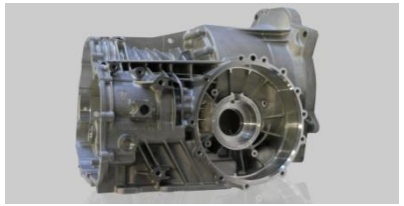
Tolerances

- ± 10 µm

Special features

- cycle time: ~ 15 s
- loading/unloading: with robotic arm supplied by the customer
- calibration: automatic
- control system: external control
- temperature compensation





3349099/eis

HAFNER

Measuring Automaton for Synchroniser Ring

Brief description

- measuring automaton for 100% check

Measuring task

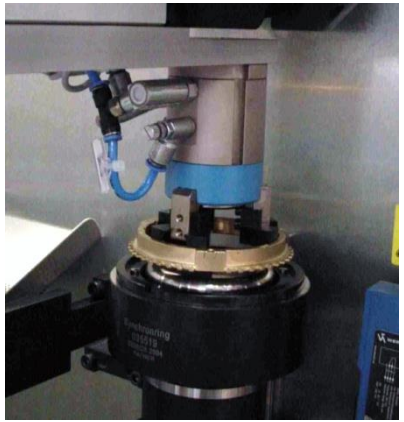
- measurement of lengths (cone penetration depth)

Technology

- tactile
- static

Special features

- loading/unloading: with an integrated handling
- calibration: automatic
- nok-classification
- storage of workpieces for removal for a SPC measurement



HAFNER

Measuring Device for two-ball dimension of Tooth Systems

Brief description

- measuring device for 100% check or sample check

Measuring task

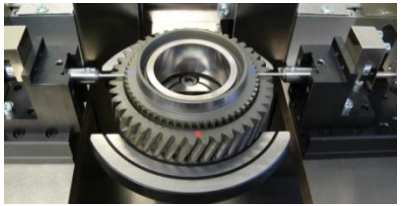
- measurement of diametrical two-ball dimension for internal and external toothing

Technology

- tactile
- static

Special features

- loading/unloading: manual
- varying measuring positions manually adjustable
- suitable for connection to measuring computer or probe reader
- changeover: manual, without readjustment of the probes in < 5 min
- measuring range:
  inner diameter 35 – 120 mm
  outer diameter 30 – 160 mm



3351879/ol

HAFNER

Measuring Automaton for Ring Gear

Brief description

- measuring automaton postprocess

Measuring task

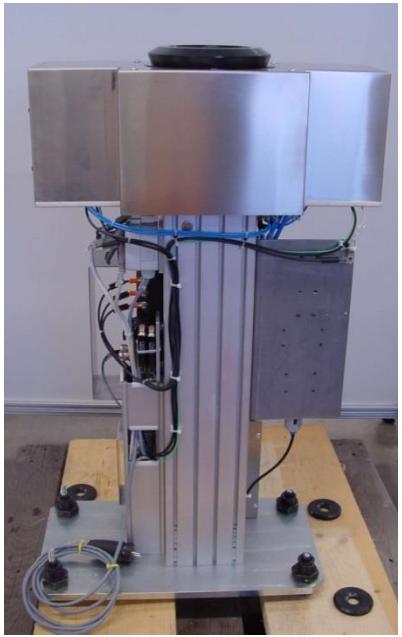
- measurement of diameters

Technology

- tactile
- static

Special features

- loading/unloading: with a handling supplied by the customer
- changeover: without changeover
- centering workpiece holder
- measuring range: diameter of 110 mm to 145 mm



3331315/ri

HAFNER

Measuring Automaton for Ring Gear

Brief description

- measuring automaton postprocess

Measuring task

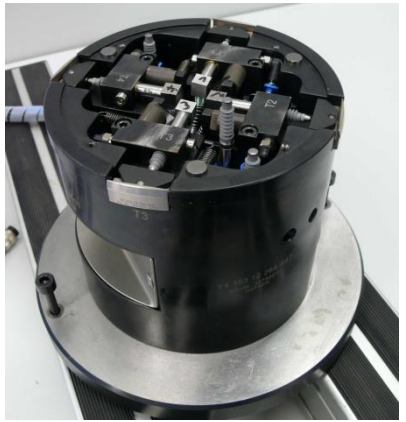
- measurement of diameters, lengths

Technology

- tactile
- static

Special features

- cycle time: < 60 s
- calibration: automatic with setting master feeding
- part-specific changing measuring heads
- inner diameter is measured at the gearing range



3438729/eis

HAFNER

Measuring Automaton for Ring Gear and Pinion

Brief description

- measuring automaton for 100% check

Measuring task

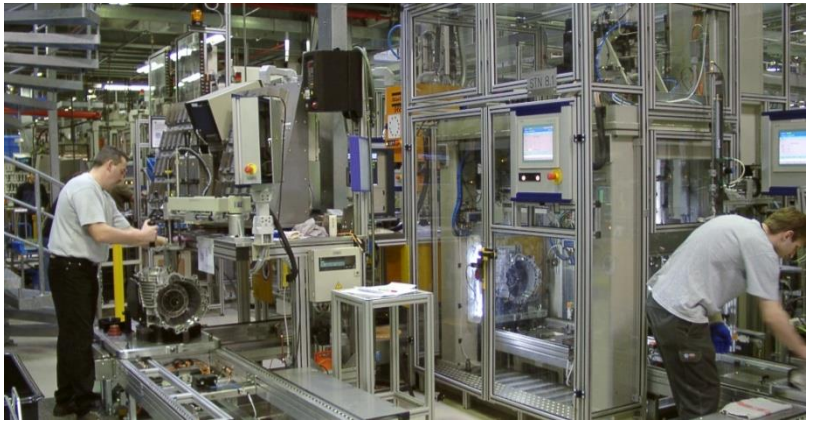
- measurement of backlash between ring gear and pinion

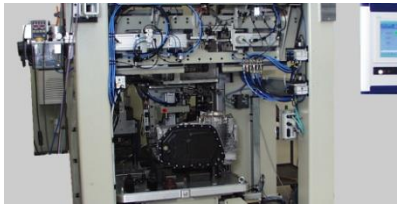
Technology

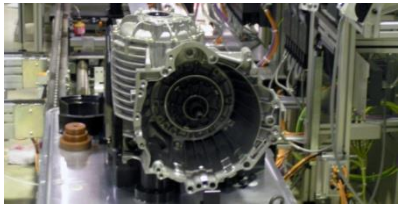
- dynamic

Special features

- loading/unloading: with an integrated handling
- calibration: automatic
- record the tooth flank characteristic to measure the backlash of the complete toothed wheel work
- measuring of the backlash of the entire toothing by data monitoring of the total tooth flank characteristic diagram







HAFNER

Measuring System for Pinion Cage

Brief description

- measuring system for sample check

Measuring task

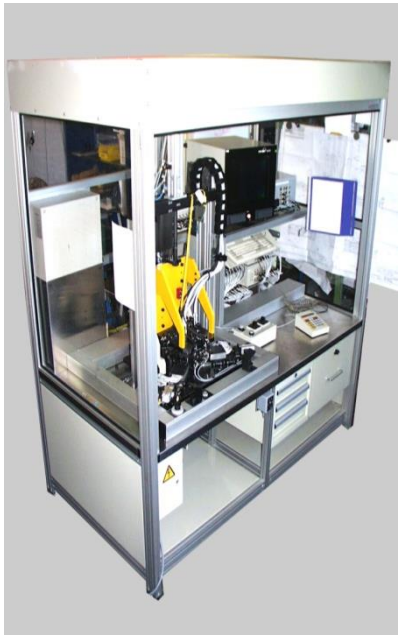
- measurement of diameters, lengths, form tolerances (flatnesses), orientation tolerances (right angularities), location tolerances (symmetries)

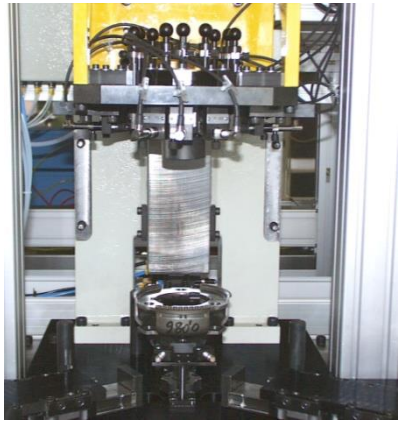
Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual
- workpiece marking by means of pin marker





HAFNER

Measuring Device for Ring Gear (Planetary Gear)

Brief description

- measuring device for 100% check

Measuring task

- measurement of two-ball dimension; partially in two different planes

Technology

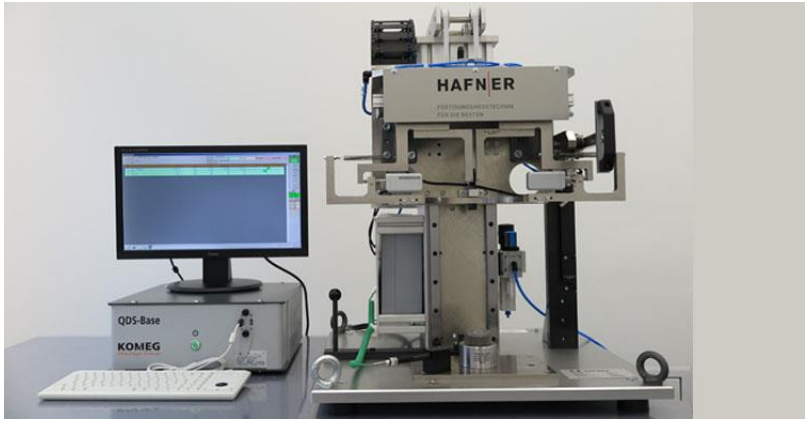
- static
- tactile

Tolerances

- Ø = 8 µm

Special features

- cycle time: 10-12 s, handling included
- calibration: manual
- a wide range of workpieces can be handled with few changeover parts
- changeover: manual, < 5min
- temperature compensation (handheld probe)



HAFNER

Measuring System for Planetary Gears - Blanks

Brief description

- measuring system for sample check
- Measuring task
- measurement of diameters, lengths, run-outs (axial run-out)

Technology

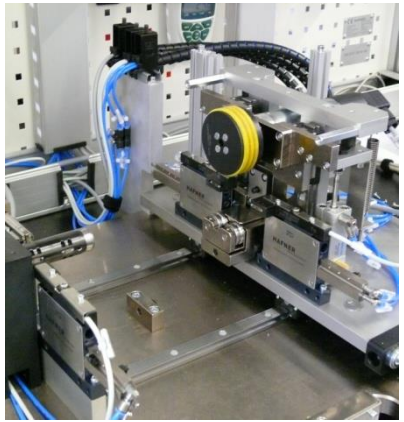
- tactile
- dynamic

Tolerances

- Ø-tolerance 11 µm

Special features

- cycle time: < 15 s
- loading/unloading: manual
- calibration: manual
- changeover: manual, without readjustment of the probes in < 5 min
- control system: PC control (measuring computer)
- measurement of the axial run-outs right and left to the middle axis during one revolution



HAFNER

Measuring Automaton for Planetary Gears

Brief description

- measuring automaton post process

Measuring task

- measurement of diameters, lengths, roundness and cylinder form (each according to DIN-ISO)

Technology

- tactile
- dynamic

Tolerances

- roundness 4 µm

Special features

- cycle time: 30 s
- loading/unloading: with handling sys. supplied by the customer
- calibration: automatic
- changeover: manual, without readjustment of the probes in about 10 min
- control system: external control
- detection of grinding and surface defects by way of scanning the workpieces in 7 measuring tracks

3351622/eis

HAFNER

Measuring Automaton for Switching Groups

Brief description

- measuring automaton for 100% check

Measuring task

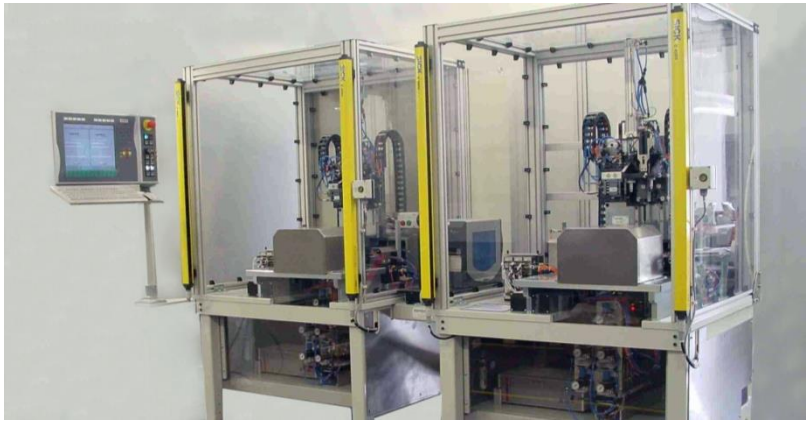
- measurement of angels, feed paths, functional check (measurement of all gears)

Technology

- tactile

Special features

- cycle time : 60 s
- loading/unloading: manual
- workpiece marking by means of pin marker
- printout of nok-protocols with a label printer



3327003/ba

HAFNER

Measuring Automaton for Gear Shift Rail with Fork

Brief description

- measuring automaton for 100% check

Measuring task

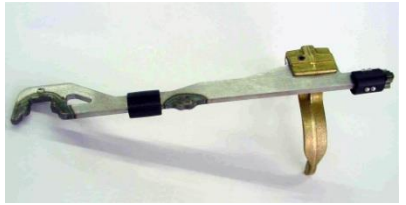
- measurement of diameters, lengths, motion and clearance measurement

Technology

- tactile
- static

Special features

- cycle time: 25 s
- loading/unloading: manual or with a handling supplied by the customer
- changeover: automatic (for 2 types of workpieces)
- control system: PLC control
- workpiece marking by means of pin marker
- laser printer to display the measuring results for the set-up mode
- four similar designed measuring automatons respectively one for gear 1/2, gear 3/4, gear 5/6 and reverse



3332636/he

HAFNER

Measuring Automaton for Gear Shift Rail with Fork

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, lengths, orientation tolerances (right angularities), location tolerances (positions, symmetries)

Technology

- tactile
- static

Special features

- cycle time: 20 s
- loading/unloading: manual or with a handling supplied by the customer
- control system: PLC control
- workpiece marking by means of a colour dot
- datamatrix code –registration before the measurement
- four similar designed measuring automatons respectively one for gear 1/3, gear 2/4, gear 5/7 and gear 6/reverse

3337991/ba

HAFNER

Measuring Automaton for Fixed Disc

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, lengths, location tolerances (concentricities), run-out tolerances (radial run-outs, axial run-outs), compensation of the temperature

Technology

- tactile
- dynamic

Tolerances

- Ø tolerance < 8 µm

Special features

- loading/unloading: manual
- changeover: automatic
- additional extension possible: loading/unloading automatic, interface to machine tool

HAFNER

Measuring System for Fixed Disc

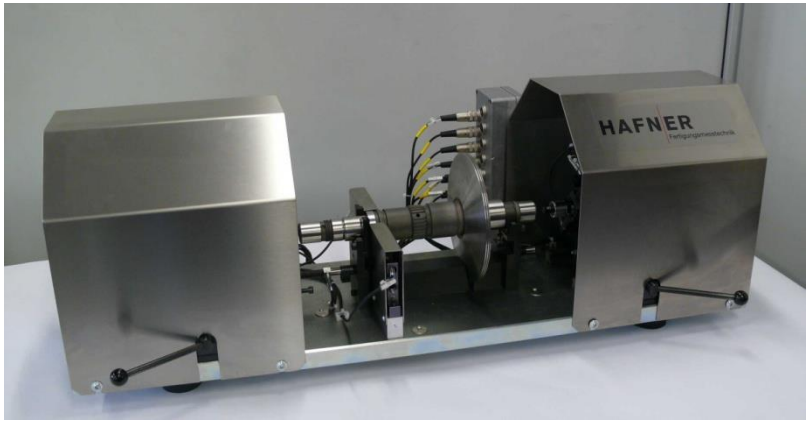
Brief description
- measuring system for sample check

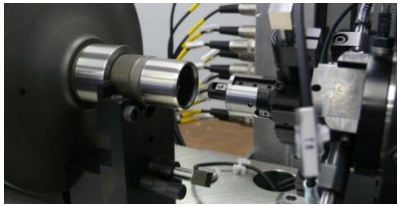
Measuring task
- measurement of diameters, lengths

Technology
- tactile
- static

Tolerances
- diameter of the internal bore < 10 µm

Special features
- loading/unloading: manual
- calibration: manual
- feed motion: manual, no two-hand start necessary





HAFNER

Measuring Automaton for Transmission Plate

Brief description

- measuring automaton for 100% check

Measuring task

- measurement of diameters, lengths, form tolerances (flatnesses), orientation tolerances (parallelisms, right angularities), location tolerances (positions)

Technology

- tactile
- static

Special features

- loading/unloading: with an integrated handling
- calibration: automatic
- changeover: manual
- batch mode for 3 different types of workpieces

HAFNER

Measuring System for Transmission Plate

Brief description

- measuring system for sample check

Measuring task

- measurement of diameters, lengths, form tolerances (flatnesses, roundnesses), orientation tolerances (parallelisms, right angularities)

Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual
- control system: PLC control of the adjacent measuring automaton

3330732/he

HAFNER

Measuring and Assembly Automaton for Differential Shaft

Brief description

- measuring and assembly automaton for 100% check

Measuring task

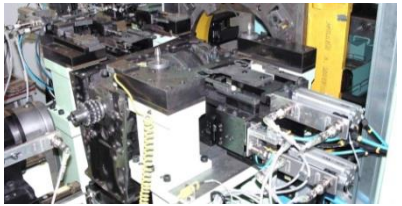
- measurement of thickness of the disc for the backlash, measurement of the backlash

Technology

- tactile
- static as well as dynamic

Special features

- loading/unloading: with an integrated handling
- calibration: automatic
- nok-classification
- automatic disc depot



HAFNER

Measuring System for Helical Gear

Brief description

- measuring system for sample check

Measuring task

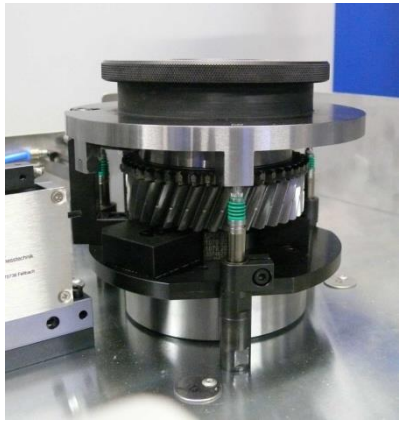
- measurement of lengths, positions, orientation tolerances (parallelisms)

Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual, without readjustment of the probes



HAFNER

Measuring System for Clutch Body

Brief description

- measuring system for sample check

Measuring task

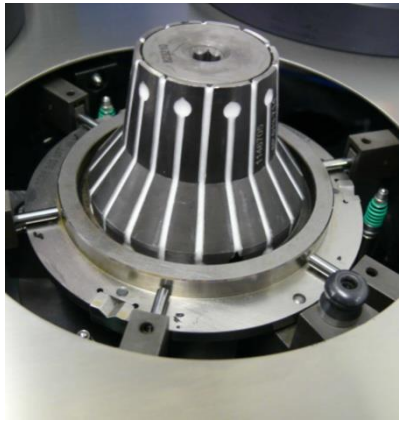
- measurement of lengths, orientation tolerances (parallelisms), location tolerances (positions), run-out tolerances (axial run-outs)

Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual, without readjustment of the probes



HAFNER

Measuring Automaton for stator OP20

Brief description
- measuring automaton for 100% check

Measuring task
- measurement of internal diameters, heights

Technology
- tactile
- static

Tolerances
- Ø tolerance 0,04 mm
- height tolerance -0,100 mm

Special features
- cycle time : < 26 s
- loading/unloading: with an integrated handling
- calibration: automatic
- changeover: manual, only workpiece support
- control system: external control
- nok-classification

HAFNER

Measuring Automaton for stator OP10

Brief description
- measuring automaton for 100% check

Measuring task
- measurement of internal diameters, parallelism

Technology
- tactile
- static

Tolerances
- Ø tolerance 0,04 mm
- parallelism 0,08 mm

Special features
- cycle time : < 26 s
- loading/unloading: with an integrated handling
- calibration: automatic
- changeover: manual, only press stamp
- control system: PLC control
- nok-classification
- joining station for stator with 200 kN

HAFNER

Plug-in Automaton for Plug Gear of Sun Wheel Shaft

Brief description

- inspection automaton for 100% check

Measuring task

- check/gauging of gearing

Technology

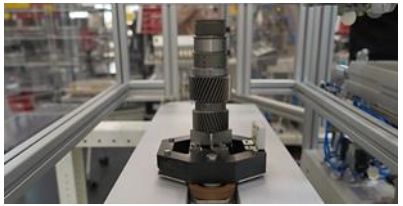
- tactile
- static

Tolerances

- gear tolerances + form tolerances

Special features

- cycle time: < 18 s
- loading/unloading: with an integrated handling
- nok-classification
- power/path monitoring
- optional temperature measurement (design of gear ring to the desired workpiece temperature)
- gauge ring on total length of the gearing
- gauging function designed over the entire length of the gear



3356547/he

HAFNER

Measuring Automaton for Gear

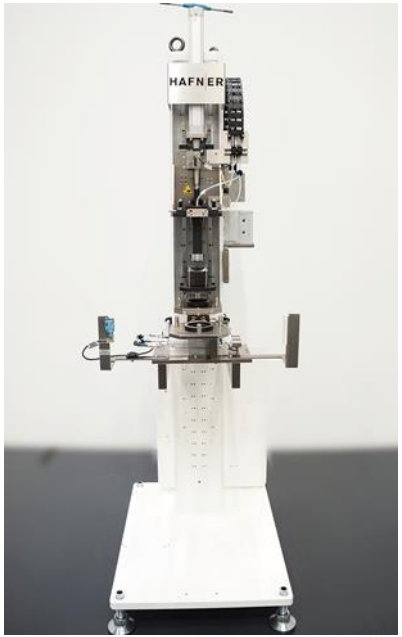
Brief description
- measuring automaton post-process

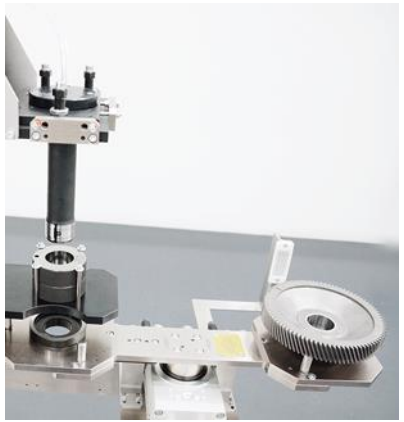
Measuring task
- measurement of diameters, sequential levels

Technology
- tactile
- static

Tolerances
- Ø tolerance ± 5 µm

Special features
- cycle time: 5-7 s (1-2 s per level)
- loading/unloading: with a handling supplied by the customer
- calibration: automatic (integrated with min-max adjustment)
- changeover: manual (for interchangeable part spectrum / part type Ø)
- control system: external control





HAFNER

Measuring Automaton for Gear

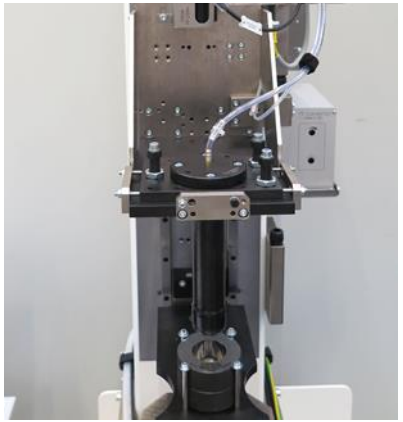
Brief description
- measuring automaton post process

Measuring task
- measurement of diameters
- Specials: temperature/compensation

Technology
- air mandrel (2x2measuring points) with quick-change flange
- static
- flexible approach of several measuring levels

Tolerances
- Ø tolerance ± 5 µm

Special features
- cycle time: 5-7 s
- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: manual
- control: PC control



HAFNER

Measuring Automaton for Gear

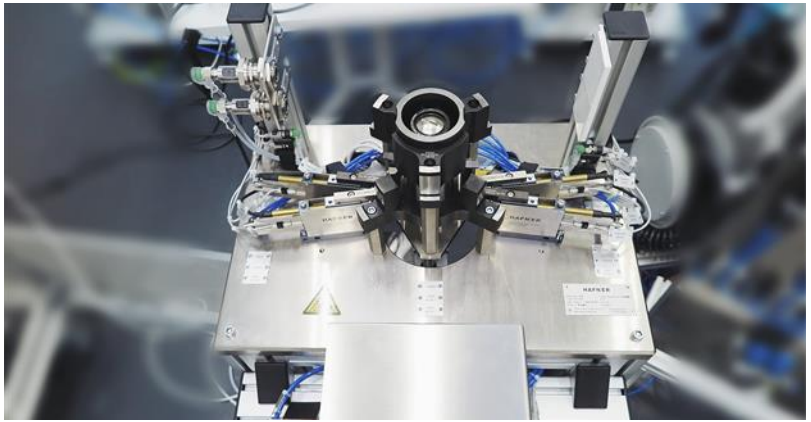
Brief description
- measuring automaton post-process

Measuring task
- measurement of diameters

Technology
- tactile
- static

Tolerances
- Ø tolerance ± 8 µm

Special features
- cycle time: < 10 s
- loading/unloading: with a handling supplied by the customer
- calibration: automatic
- changeover: without changeover
- control system: external control



HAFNER

Measuring System for Shifting Rods

Brief description

- measuring system for 100% check

Measuring task

- measurement of diamters, diametrical two-ball dimension, symmetry

Technology

- tactile
- static

Special features

- loading/unloading: manual
- calibration: manual
- changeover: manual, without readjustment of the probes in a few minutes
- control system: PC control
- interlinked measuring sequence for both measuring devices (symmetry and diameters)
- data interface to laser marking system supplied by the customer