

Products for cutting process

In the cutting process, numerical and quantitative correction must be made based on the measured data after the machining, so that inconsistency in quality due to tool wear is kept at a certain level. The PULCOM series of TOKYO SEIMITSU offers a wide selection. They are applicable for a variety of measurements on workpieces, such as outer diameter, inner diameter, width, splines (discontinuous surface), etc. Compatible with the fieldbus telecommunication standard and improved in linking with CNC and PLC, they centrally control accumulated data and underlie further quality enhancement. ATC machining centers have a risk of sudden defects due to chips getting into the space between the tool taper and the main spindle. The ATC runout detection system fully detects chip invasion before machining and prevents defects.



**Control Units
PULCOM V10A**



**Control Units
PULCOM V9**

P.30

P.38

P.142

**Measuring Heads
PULCOM BG**



P.148

**Measuring Heads
PULCOM BG-141**



P.204

**Inner-Diameter
Measuring Head for ATC
BG-300**



P.162

**Air micrometer
Inner diameter measuring head**





Control Units
PULCOM V8

P.44



Control Units
PULCOM V6B

P.48



ATC Runout Detection System

P.200

P.178

A/E Converter



P.92

Measuring Heads
PULCOM Σ



P.112

Measuring Heads
Γ II / Γ III



P.126

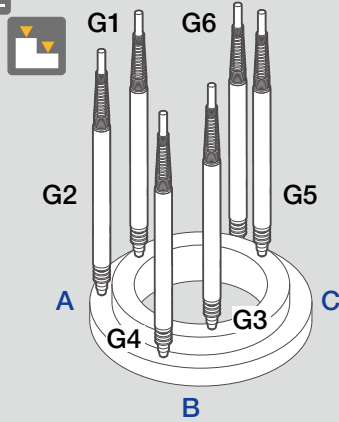
Measuring Heads
Γ-DII



Application examples/Configuration examples



Height and step difference



Height and step difference measurement of stepped workpiece

By means of six detectors, three points with step difference, A (G1, G2), B (G3, G4) and C (G5, G6), are measured respectively, and the average step difference is calculated and output as measurement result.

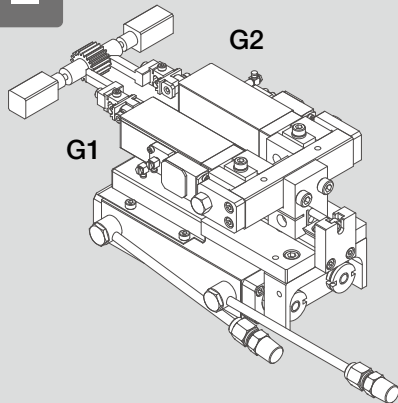
$$[\{(G1 - G2) + (G3 - G4) + (G5 - G6)\} / 3]$$

P.180

Plunger type detector **E-DT-80SG**



Width



Gear face width measurement

Retract mechanism enables workpieces to be inserted without hitting the edge of the gear.

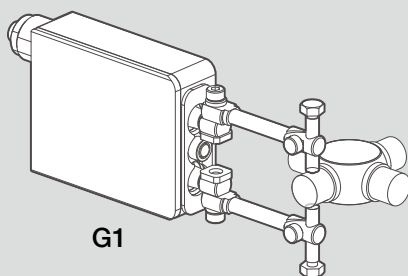
$$[G1 + G2 = \text{Width}]$$

P.112

Γ II-AR



Outer diameter



Universal joint outer diameter measurement

The application can measure the point that requires high precision.

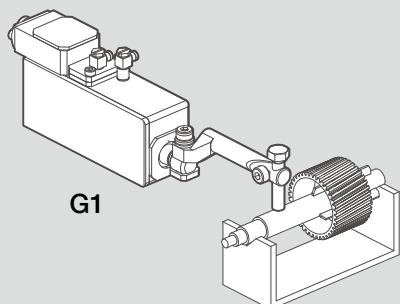
$$[G1 = \text{Outer diameter}]$$

P.100

MOD



Runout



Outer diameter runout measurement

Runout is measured before or immediately after the machining. Outer diameter can also be measured using two detectors.

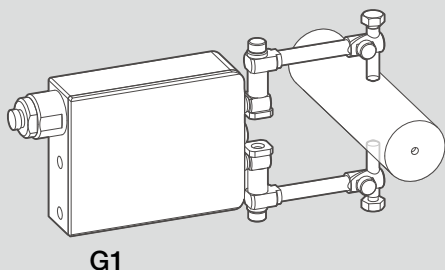
[Memory function P-P (G1)]

P.112

Γ II-AR



Outer diameter



Cylindrical outer diameter measurement

It enables measuring of outer diameter with smooth surface during machining (in-process) or after machining (post-process).

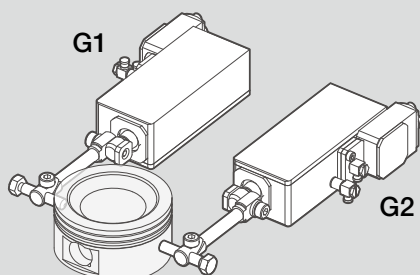
[G1 = Outer diameter]

P.100

MOD



Outer diameter



Piston outer diameter measurement (maximum diameter)

Through changing of fingers, measurement in line with the outer diameters of workpieces is possible.

[Memory function MAX (G1 + G2) = Outer diameter]

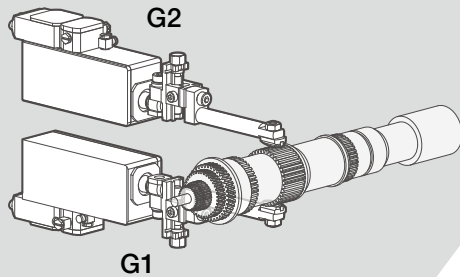
P.112

Γ II-AR

Application examples/Configuration examples



Outer diameter



Outer diameter measurement on discontinuous surface

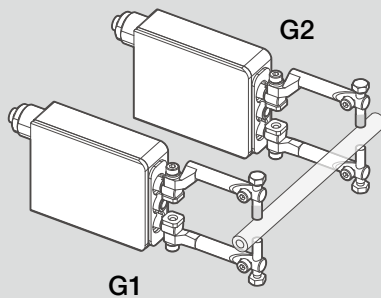
Through combined application with the control unit with the maximum value memory function, keyways and splines can be measured with high precision.

[Memory function MAX (G1 + G2) = Outer diameter]

P.112 Γ II-SAR



Cylindricity



Outer diameter cylindricity measurement

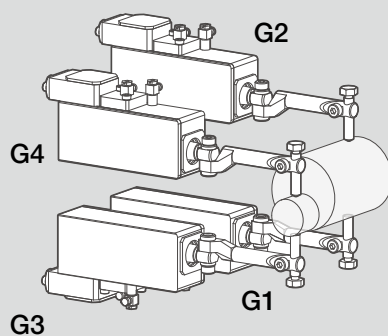
Through measurement of a workpiece's outer diameter at two points simultaneously and processing of the result, cylindricity can be measured and judged.

[G1 - G2 = Cylindricity]

P.100 MOD



Concentricity, coaxiality



Stepped outer diameter eccentricity measurement

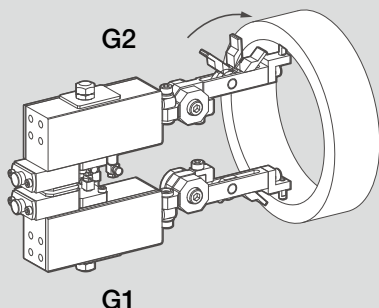
By means of two heads that perform calculation for workpieces with different centers and diameters, eccentricity is measured.

[(G2 + G3) - (G1 + G4) = Eccentricity]

P.112 Γ III-AR



Inner diameter



Ring inner diameter measurement

Manual zero setting can be done easily. All you need to do is to loosen the finger contact by turning the lever, turn the lever to the opposite side while pushing the finger contact to the workpiece, and clamp. It can be used for up to 40 mm of diameter difference.

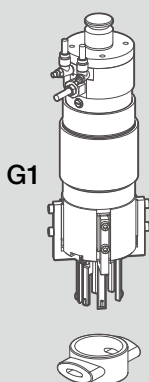
$$[G1 + G2 = \text{Inner diameter}]$$

P.112
P.238

Γ III-ARA + Flex Finger



Inner diameter



Inner diameter measurement of housings

Through combined application with the size shift function, measurement is possible without a setup change as long as the diameter difference is Φ 10 mm or less.

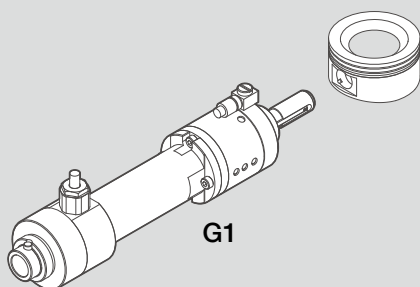
$$[G1 = \text{Inner diameter}]$$

P.148

Automatic Centering Bore Gages PULCOM BG-141



Inner diameter



Inner diameter measurement of piston pin holes

Two pinholes are measured one by one.

$$[G1 = \text{Inner diameter}]$$

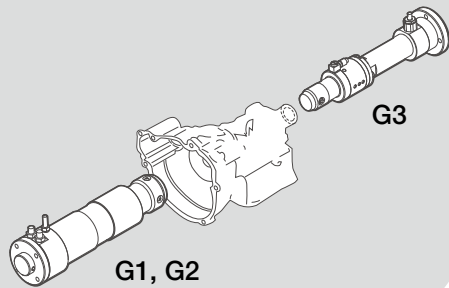
P.142

Bore Gage PULCOM BG BG-10A-502

Application examples/Configuration examples



Inner diameter



Inner diameter measurement of transmission cases

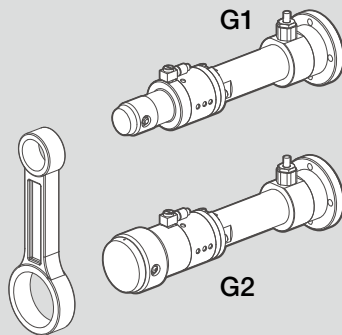
Simultaneous insertion measurements can be performed for inner diameter at two locations on one side and one location on the other side can be performed.

[G1 = Inner diameter, G2 = Inner diameter, G3 = Inner diameter]

P.142 Bore Gage PULCOM BG **BG-04/BG-10A**



Inner diameter



Inner diameter measurement of small / large end holes in connecting rods

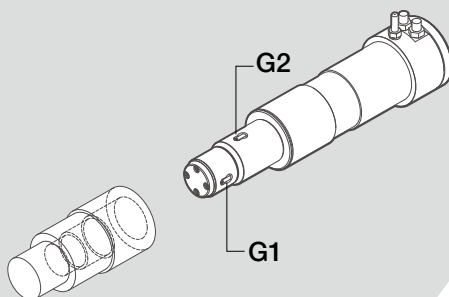
Holes at two locations are measured simultaneously.

[G1 = Inner diameter 1, G2 = Inner diameter 2]

P.142 Bore Gage PULCOM BG **BG-10A-503**



Inner diameter



Two-step inner diameter measurement (different diameters)

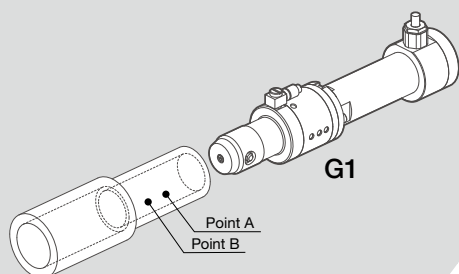
Different inner diameters at two locations are measured (judged) simultaneously and output.

[G1 = Inner diameter 1, G2 = Inner diameter 2]

P.142 Bore Gage PULCOM BG **BG-03**



Inner diameter, taper



Cylinder bore inner diameter and taper measurement

Precision measurement is performed for inner diameter at one location. With a measuring point moved from one location (A) to another (B), taper between the two locations (A, B) can be measured.

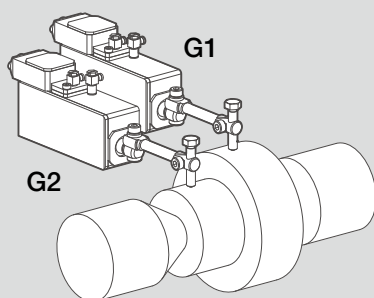
$$[G1 = \text{Inner diameter (M1)}] \quad [G1 = \text{Inner diameter (M2)}]$$

$$[(M1 - M2) = \text{Taper}]$$

P.142

Bore Gage PULCOM BG **BG-10A-501**


Concentricity, coaxiality




Concentricity measurement

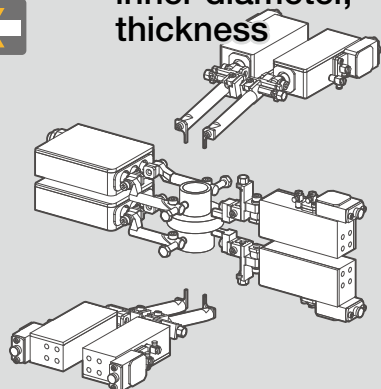
Two circumferences with different outer diameters are measured while being rotated, and the result obtained from calculation $(G1-G2)/2$ is judged and output.

$$[(G1 - G2) / 2]$$

P.112

Γ II-AR


Outer diameter, inner diameter, thickness



Measurement of outer diameter, inner diameter, and thickness

Through combined application with the control unit PULCOM V10A or others, outer diameter at two locations, inner diameter at two locations and thickness at one location can be simultaneously measured and simultaneously judged and output.

P.112
P.100**Γ II MOD**