

# PULCOM BG Bore Gauges

## Inner-Diameter Measuring Head for Post-Process



BG-10A

### ■ Features

#### High Precision

These heads provide the high precision required for inner diameter post-process measurements.

#### Diverse Measurements

Measuring heads are available for a diverse range of measurements, including one diameter, two diameters, ellipse, average diameter, hole with steps and taper.

#### Superior Cost Performance

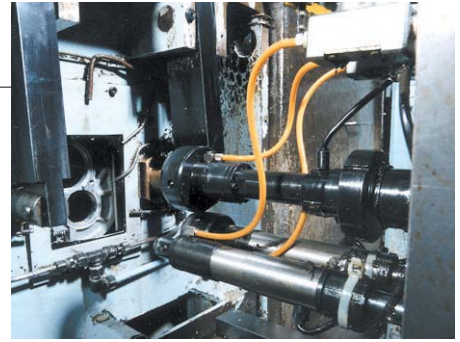
Standardization of the main unit, guide, fingers and contacts has eliminated the necessity of new designs for most parts. This has allowed us to produce them more quickly and inexpensively.

#### Complete Easy Mount Options

The components that support the measuring head such as the floating relieving unit and relieving unit are also standardized. This eliminates damage to the measuring unit do to machining errors and improper positioning.

#### No Air to Control

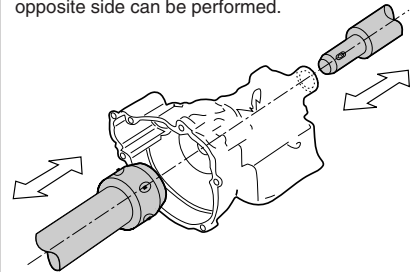
Since the unit is driven by electricity, management of the measuring air is not required.



### ■ Applications

#### Inner Diameter Measurement of Transmission Cases

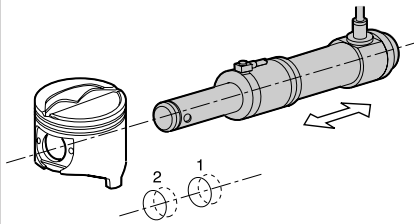
Insertion measurement for inner diameter at two locations on one side and one location on the opposite side can be performed.



BG-04 · BG-10A

#### Inner Diameter Measurement of Piston Pin Holes

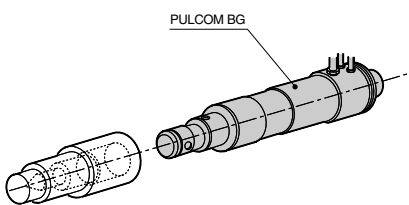
Two pin holes are sequentially measured, and two-direction measurement can be performed (Model BG-03 / BG-04).



BG-10A-502

#### Two-Step Inner Diameter Measurement (different diameters)

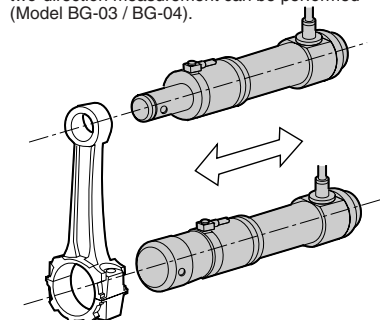
The inner diameter of two locations with different diameters can be simultaneously measured (judged). This is ideal for automatic measurement immediately after machining.



BG-03

#### Inner Diameter Measurement of Small/Large End Holes in Connecting Rods

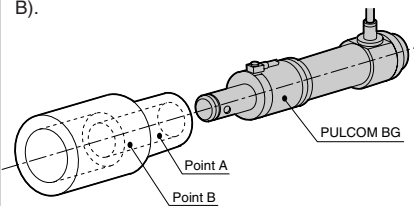
Two holes can be simultaneously measured and two-direction measurement can be performed (Model BG-03 / BG-04).



BG-10A-503

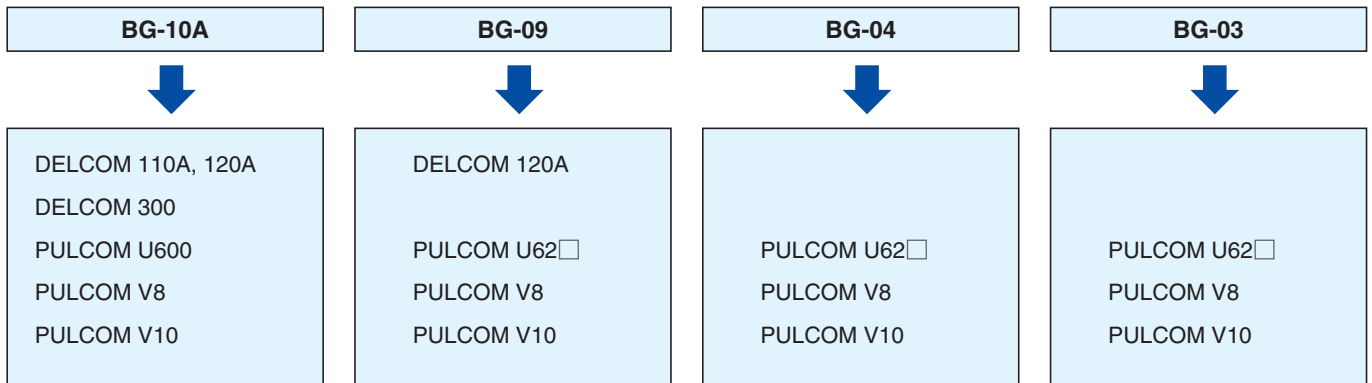
#### Cylindrical Inner Diameter/Taper Measurement

Precise measurement of diameter at one location is performed. The measuring point can be moved to measure the taper at two locations (A, B).



BG-10A-501

## PULCOM BG Measuring Head/Control Unit Configurations



### Specifications

Model	BG-10A			BG-09	BG-04	BG-03
	-501	-502	-503	—	—	—
Specifications	One inner diameter			Distance between centers	Two inner diameters (ellipse, taper), distance between centers	
Measuring items	One inner diameter			Distance between centers	Two inner diameters (ellipse, taper), distance between centers	
Computing method	Mechanical			Electric	Mechanical	Electric
Number of output connectors	X (G1)			X (G1 + G2)	X(G1), X(G2)	X (G1+G2), Y(G3+G4)
Measuring range	1			2	2	4
Measuring force	$\phi 1.5 - \phi 100$	$\phi 10 - \phi 100$		$\phi 1.5 - \phi 100$	$\phi 14 - \phi 100$	
	Without boot*	0.35 ± 0.15N ( $\phi 1.5 - \phi 100$ )				1.5 ± 0.3N
		0.75 ± 0.25N ( $\phi 10 - \phi 100$ )				
With boot	1 ± 0.25N ( $\phi 20 - \phi 100$ )					
Repeatability	1 $\mu$ m or less					
Contact material	Diamond or carbide alloy					
Guide dimension/shape	Dedicated for one workpiece					
Mounting orientation	$\phi 80$ or less: No limits (must be specified), Over $\phi 80$ : Plumb-bob vertical downwards					
Applicable FRU	None	A070511	A070510	None	A070510	
Applicable RU	None	A070513	A070512	None	A070512	

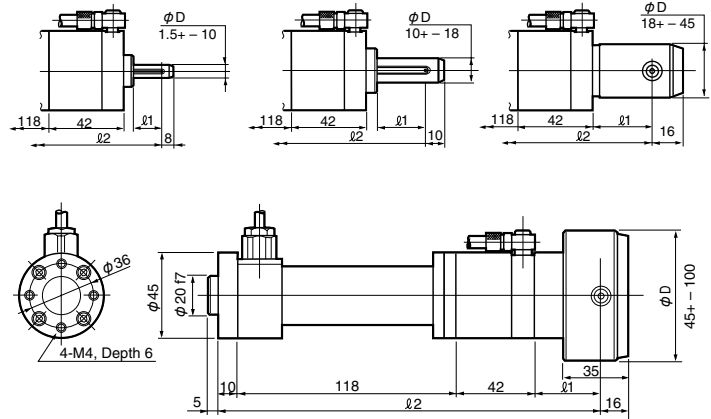
Model	FRU (Floating Unit)		RU (Relieving Unit)	
	A070511	A070510	A070513	A070512
Floating	Range	Min. $\phi 0.6$		—
	Operation force	20N		—
Relieving	Stroke	30 mm		30 mm
	Starting force	150N or less		150N
Mounting orientation	No limits (must be specified)		No limits (must be specified)	
Min. mounted distance between centers	65 mm	85 mm	65 mm	85 mm

\*: When no boot is provided, the unit is used after the cleaning process.

## Outer Appearance/Dimension Diagram

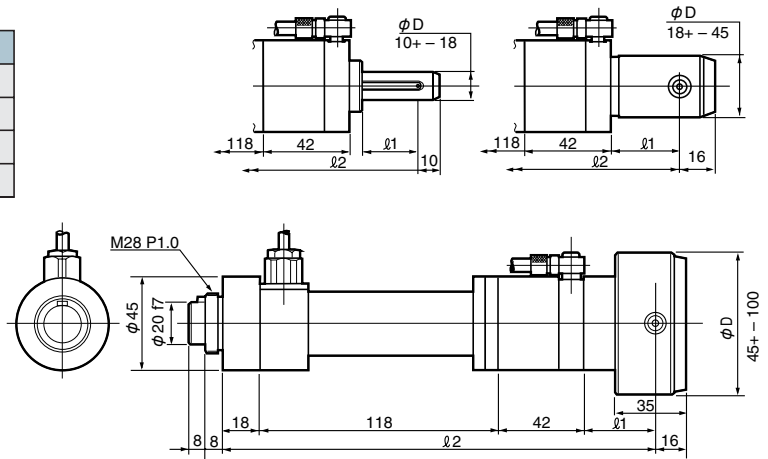
### BG-10A-501 Bore Gauge

$\phi D$	$\ell 1$	$\ell 2$
$\phi 1.5 - \phi 3$	D (no air blow)	176.5
$\phi 3 - \phi 10$	2D	190
$\phi 10 - \phi 18$	2D (no air blow)	205
$\phi 18 - \phi 100$	35	205
	57.5	227.5



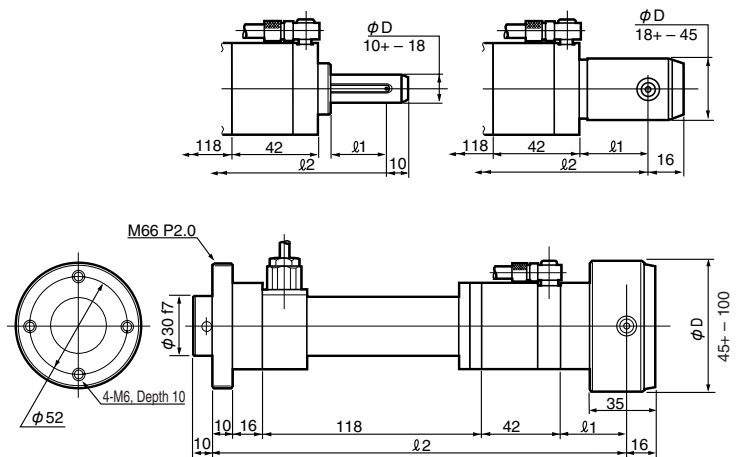
### BG-10A-502 Bore Gauge

$\phi D$	$\ell 1$	$\ell 2$
$\phi 3 - \phi 10$	2D	198
$\phi 10 - \phi 18$	2D (Max. 35)	213
$\phi 18 - \phi 100$	35	213
	57.5	235.5



### BG-10A-503 Bore Gauge

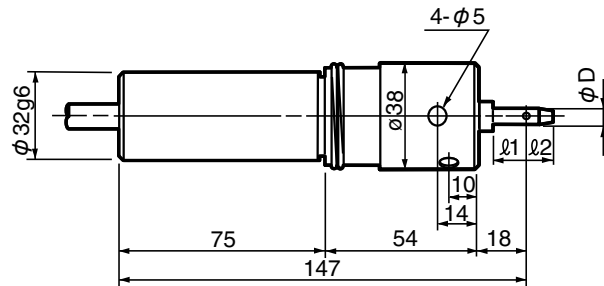
$\phi D$	$\ell 1$	$\ell 2$
$\phi 3 - \phi 10$	2D	206
$\phi 10 - \phi 18$	2D (Max. 35)	221
$\phi 18 - \phi 100$	35	221
	57.5	243.5



## Outer Appearance/Dimension Diagram

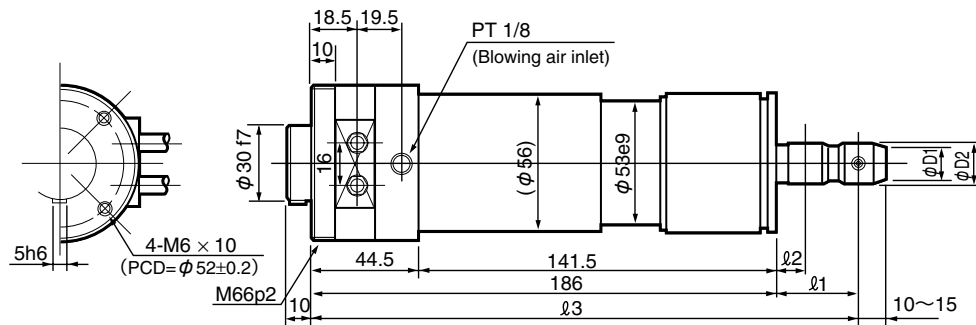
### BG-09 Bore Gauge

$\phi D$	$l_1$	$l_2$
$\phi 1.5 - \phi 3$	D	Within 2D
$\phi 3 - \phi 10$	2D	Within 2D
$\phi 10 - \phi 100$	2D	10 - 15



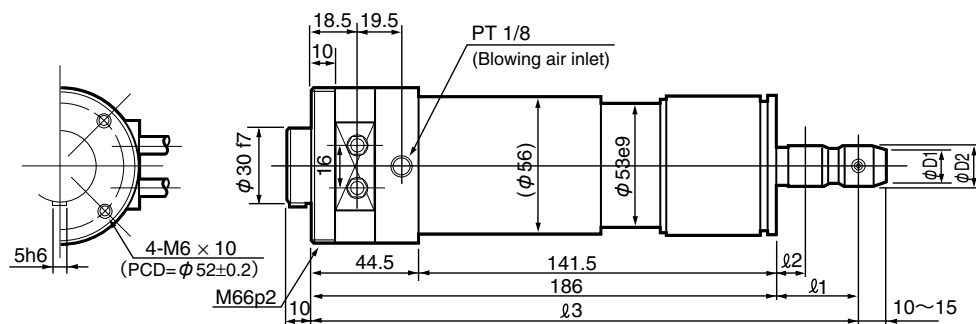
### BG-04 Bore Gauge

$\phi D$	$l_1$	$l_2$	$l_3$
$\phi 14 - \phi 100$	12	12	198
	25.5	25.5 or 12	211.5
$\phi 20 - \phi 100$	40.5	40.5, 25.5 or 12	226.5



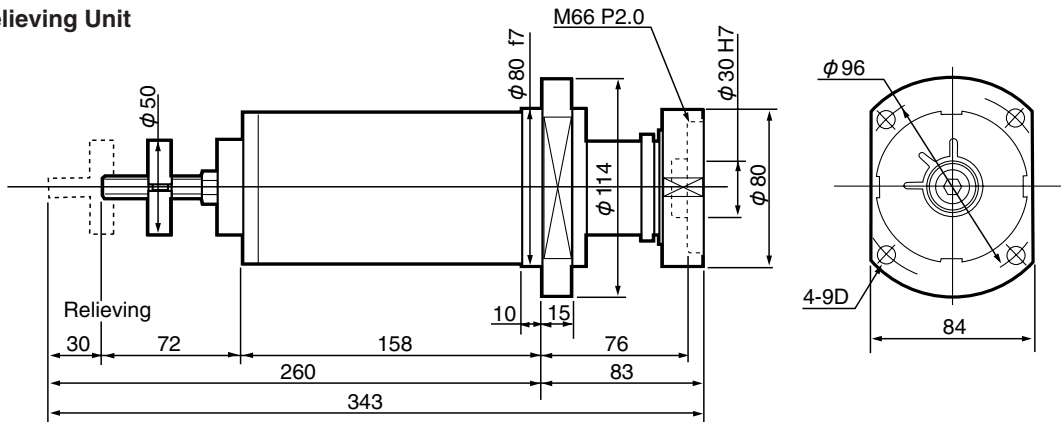
### BG-03 Bore Gauge

$\phi D$	$l_1$	$l_2$	$l_3$
$\phi 14 - \phi 100$	12	12	198
	25.5	25.5 or 12	211.5
$\phi 20 - \phi 100$	40.5	40.5, 25.5 or 12	226.5

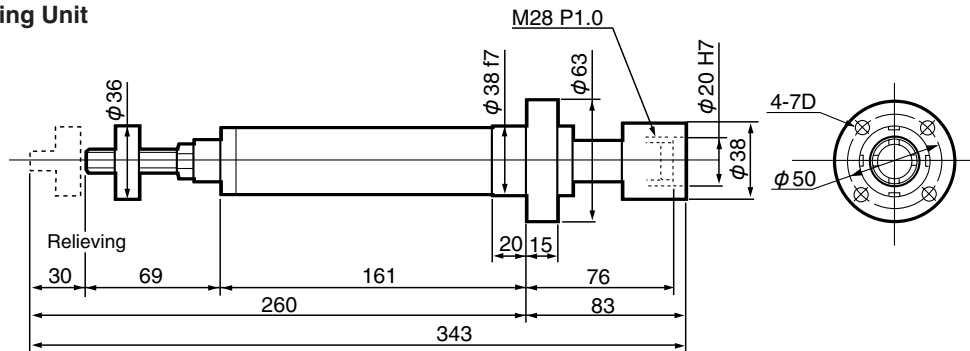


## Outer Appearance/Dimension Diagram

**A070510 Floating Relieving Unit**  
**A070512 Relieving Unit**



**A070511 Floating Relieving Unit**  
**A070513 Relieving Unit**



## Usage Guidelines

- **Keep your hand away from the measuring head when it is advanced (moved down) or retracted (moved up) as it may get caught between the hydraulic cylinder or other part, resulting in injury.**

Make sure that the unit and the machine on which it is installed are not operating before performing work on the unit.

- **Keep your hand away from the measuring head stylus when it is moving to avoid injury.**

Make sure that the unit and the machine on which it is installed are not operating before performing work on the unit.

- **Do not operate under any circumstances when the measuring unit or control unit is malfunctioning.**

"Malfunctioning" includes all situations in which the ready signal is Off.

- **Do not subject the unit to shock.**

Be careful when handling the unit as application of severe shock or dropping it may cause it to break down.

- **Handle the cable with care.**

Route the cable so that it will not be smashed or damaged by chips or other moving objects. Secure the cable so that it will not be pulled or rub against parts when the head moves. The cable should be 200mm or more away from other power supplies and routed through a separate duct.

- **Do not open the measuring head cover or other parts under any circumstances.**

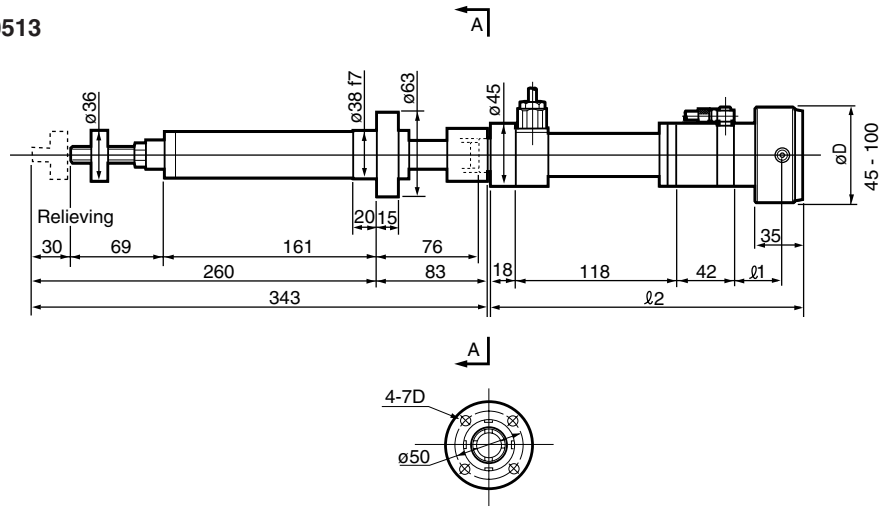
Do not loosen or rotate any clamp screws, adjustment screws or other screws unless following specific instructions.

- **Consult with ACCRETECH in advance before taking the unit to a different country to ensure compliance with applicable regulations and laws.**

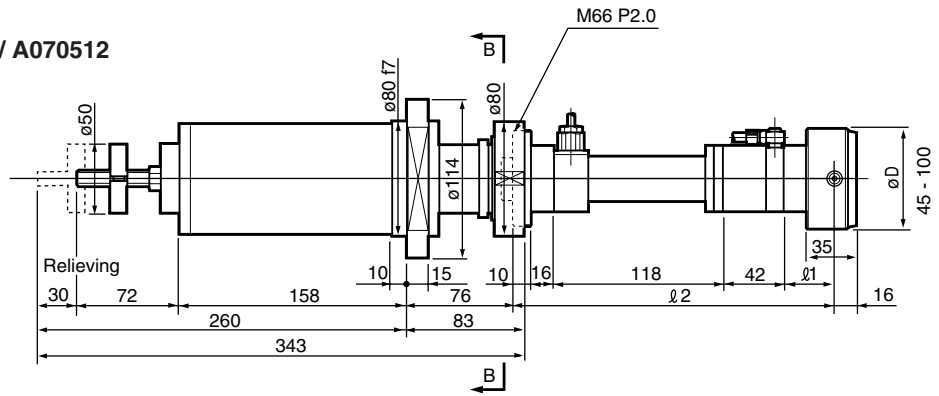
The unit should not be taken out of the country in which it is sold without consulting with ACCRETECH. We cannot be responsible for any problems when it is taken to a different country without advance notice.

## Outer Appearance/Dimension Diagram

BG-10A-502 + A070511 / A070513



BG-10A-503 + A070510 / A070512



BG-04 / BG-03 + A070510 / A070512

