

# MEASURING TOOLS

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- TOUCH PROBE & EDGE FINDER .....I1
- TOOL OFFSET SENSOR .....I6
- CENTERING DEVICE FOR SMALL LATHES ..... I10
- TOOL PRESETTER..... I11
- STATIC/DYNAMIC PRECISION TEST BAR ..... I13
- CERAMIC TAPER GAUGE FOR MACHINE SPINDLE  
INSPECTION ..... I16
- MEASURING DEVICE FOR PULLING FORCE ... I17
- ATC ARM POSITIONING TOOL ..... I18
- PRECISION ELECTRON LEVEL ..... I19
- FLEXIBLE ARM STAND ..... I20

The 3-dimensional touch sensor that detects touch-position instantaneously.

**PMPC Series****With battery alarm function**

- Instantaneously detects reference points even on non-conductive workpieces and machines!
- Notification of touchpoint with LED and beep.



For all workpieces and machine tools



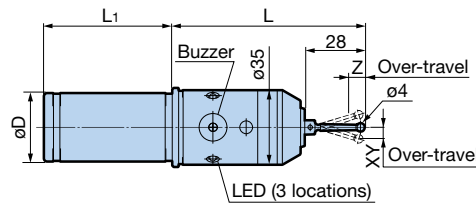
Notifies via LED



Notifies via buzzer



LED flashes to indicate that battery life is low

**[Cylindrical Shank Type]**

| Model          | øDh7 | L   | L <sub>1</sub> | Weight (kg) |
|----------------|------|-----|----------------|-------------|
| <b>PMPC-20</b> | 20   | 100 | 50             | 0.5         |
| <b>PMPC-32</b> | 32   | 90  | 60             | 0.7         |

1. ST28-4R stylus is included.

Stylus replacements **I4**

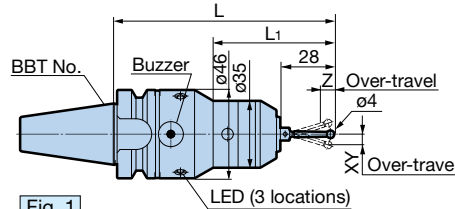
**[BBT Shank Type]**

Fig. 1

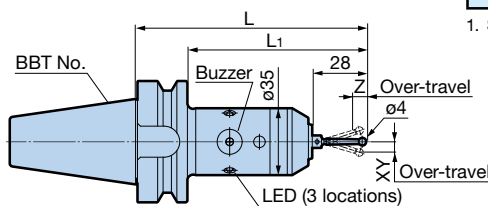


Fig. 2



BIG-PLUS (BBT Shank) tools can be used on both BIG-PLUS spindles and conventional BT spindles.

| Model                 | Fig. | L   | L <sub>1</sub> | Weight (kg) |
|-----------------------|------|-----|----------------|-------------|
| <b>BBT30-PMPC-115</b> | 1    | 115 | 63             | 0.8         |
| <b>BBT40-PMPC-120</b> | 2    | 120 | 93             | 1.3         |

1. ST28-4R stylus is included.

Stylus replacements **I4**

|                    |                                   |          |  |
|--------------------|-----------------------------------|----------|--|
| Repeatability      | $\pm 1 \mu\text{m}$ (2 $\sigma$ ) |          |  |
| Over-travel        | XY $\pm 12\text{mm}$ Z 5mm        |          |  |
| Measuring pressure | XY 0.4N Z 1.5N                    |          |  |
| Battery            | <b>PMPC-20, 32</b>                | LR1 x 2P |  |
|                    | <b>BBT40-PMPC-120</b>             |          |  |
|                    | <b>BBT30-PMPC-115</b>             | CR2 x 1  |  |

|              |                       |                      |
|--------------|-----------------------|----------------------|
| Battery life | <b>PMPC-20, 32</b>    | 280 continuous hours |
|              | <b>BBT40-PMPC-120</b> |                      |
|              | <b>BBT30-PMPC-115</b> | 260 continuous hours |

1. The specifications above are values when ST28-4R stylus is used.

2. Repeatability is affected by stylus length.

3. There is a delay of approx.  $5 \mu\text{m}$  in XY direction and  $2 \mu\text{m}$  in Z direction when the stylus contacts the workpiece measuring surface to illuminate the LED.

## BASE MASTER

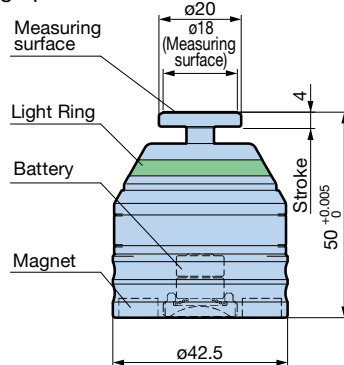
**[BM-50H]** **NEW**

- Electronic detection of cutting edge position.
- Repeatability  $\pm 1 \mu\text{m}$  ( $2\sigma$ ).



CE  
Registered Design

Model **BM-50H**



For use with  
conductive  
workpieces and  
machine tools



Notifies  
using 360°  
lighting

|                    |                                   |
|--------------------|-----------------------------------|
| Height accuracy    | $50^{+0.005}_0$ mm                |
| Repeatability      | $\pm 1 \mu\text{m}$ ( $2\sigma$ ) |
| Min. tool diameter | $\phi 1\text{mm}$                 |
| Measuring pressure | 2N                                |
| Stroke             | 4mm                               |
| Touch signal       | Light ring illuminates (green)    |
| Battery            | SR44 x 2                          |
| Battery life       | 8 continuous hours                |
| Weight             | 250g                              |

※ Type without magnets is also available. If required, add /N at the end of the model number when ordering.  
(Example: **BM-50H/N**)

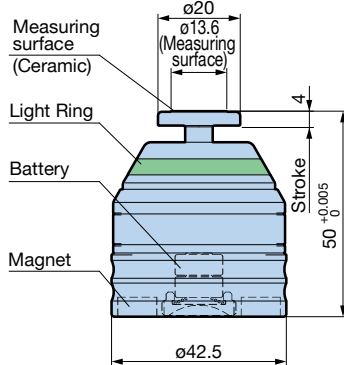
**[BM-50GH]** **NEW**

- Supports any tools and workpieces.
- Uses ceramic for the measurement section.



CE  
Registered Design

Model **BM-50GH**



For all cutting  
tools, workpieces  
and machine  
tools



Notifies  
using 360°  
lighting

|                    |                                   |
|--------------------|-----------------------------------|
| Height accuracy    | $50^{+0.005}_0$ mm                |
| Repeatability      | $\pm 1 \mu\text{m}$ ( $2\sigma$ ) |
| Min. tool diameter | $\phi 1\text{mm}$                 |
| Measuring pressure | 2N                                |
| Stroke             | 4mm                               |
| Touch signal       | Light ring illuminates (green)    |
| Battery            | SR44 x 2                          |
| Battery life       | 8 continuous hours                |
| Weight             | 240g                              |

※ Type without magnets is also available. If required, add /N at the end of the model number when ordering.  
(Example: **BM-50GH/N**)

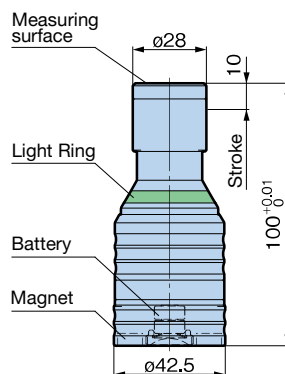
**[BM-100GH]** **NEW**

- Detects cutting edge position of 100mm from workpiece.



Easily visible  
measuring surface  
even with large  
machines  
CE  
Registered Design

Model **BM-100GH**



For all cutting  
tools, workpieces  
and machine  
tools



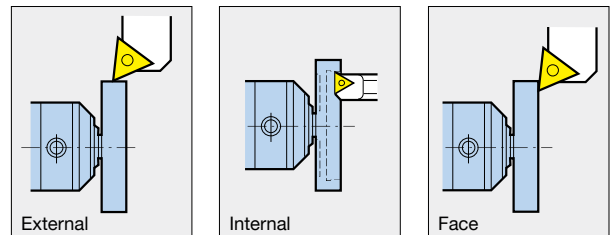
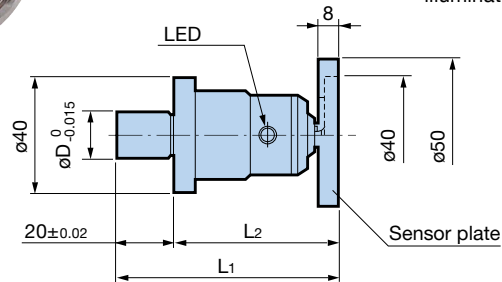
Notifies  
using 360°  
lighting

|                    |                                   |
|--------------------|-----------------------------------|
| Height accuracy    | $100^{+0.01}_0$ mm                |
| Repeatability      | $\pm 1 \mu\text{m}$ ( $2\sigma$ ) |
| Min. tool diameter | $\phi 1\text{mm}$                 |
| Measuring pressure | 2N                                |
| Stroke             | 10mm                              |
| Touch signal       | Light ring illuminates (green)    |
| Battery            | SR44 x 2                          |
| Battery life       | 8 continuous hours                |
| Weight             | 380g                              |

※ Type without magnets is also available. If required, add /N at the end of the model number when ordering.  
(Example: **BM-100GH/N**)

- Do not use in X/Y direction.

- Quick detection of the cutting edge position.
- Effective in reducing setup time for CNC Lathes.
- Detectable with various tool bits for external, internal and face turning.



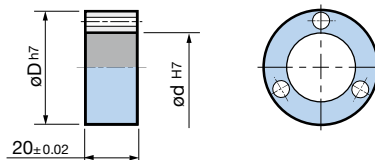
Clamp the  $\varnothing D$  section of LATHE MASTER with chuck jaws. LED illuminates when the tip of the tool touches the sensor plate.

| Model        | øD | L <sub>1</sub> | L <sub>2</sub> | Repeatability | Battery  |
|--------------|----|----------------|----------------|---------------|----------|
| <b>LM-15</b> | 15 | 75             | 55             | ±2 μm         | BR425    |
| <b>LM-30</b> | 30 | 65             | 45             |               | SR44 x 2 |



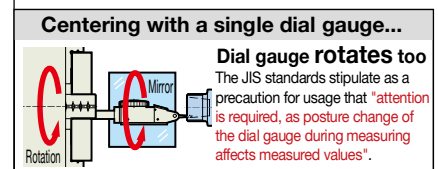
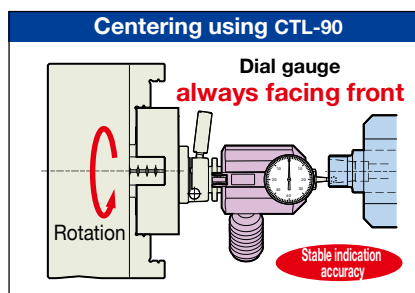
- Machine and tools must be electro-conductive for measurement.

If the chuck jaw diameter does not fit,  
an optional collar set is available.

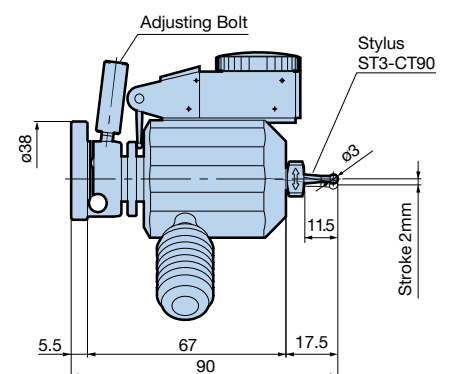
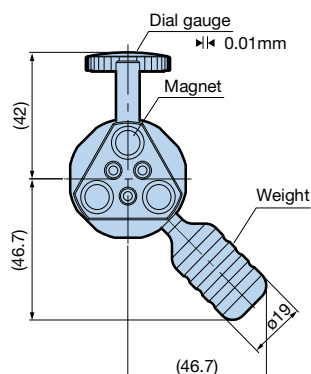


| Model         | Inner diameter<br>$\varnothing d$ | Outer diameter $\varnothing D$ |
|---------------|-----------------------------------|--------------------------------|
| <b>LM15CS</b> | 15                                | 20, 25, 30 (1 pc each)         |
| <b>LM30CS</b> | 30                                | 35, 40, 45, 50 (1 pc each)     |

- Unique centering tool with superior visibility, as dial gauge always stays in front of the operator.
- Fine adjustment mechanism aids easy centering (2mm adjustment amount).
- Unrestricted mounting positions with a magnet base.
- Compact design of 90mm total length, ideal for small lathes.

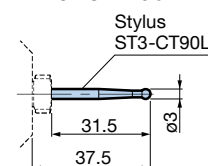


|       |               |
|-------|---------------|
| Model | <b>CTL-90</b> |
|-------|---------------|



■ **Long stylus (Optional Accessory)**  
for CTL-90

|                              |                                |
|------------------------------|--------------------------------|
| Min. scale                   | 0.01mm                         |
| Max. operating spindle speed | 50min <sup>-1</sup>            |
| Stroke amount                | 2mm                            |
| Weight                       | 0.4kg                          |
| Standard accessory           | Stylus: ST3-CT90<br>(tip ruby) |



|       |                  |
|-------|------------------|
| Model | <b>ST3-CT90L</b> |
|-------|------------------|

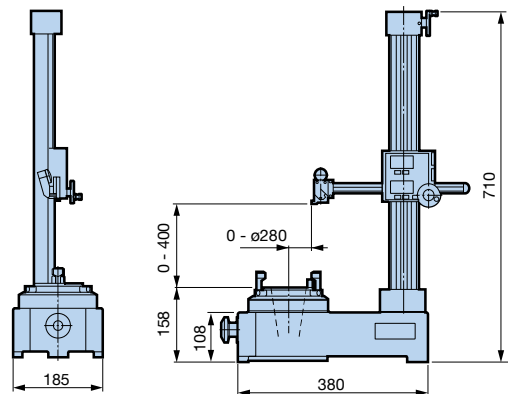
Tip: Ruby

2D edge sensor enables simple presetting.

- A simple and compactly designed presetter featuring a digital scale.
- Maintains long-term taper accuracy with a ceramic spindle.

**2D  
edge sensor  
used**

### 2D edge sensor



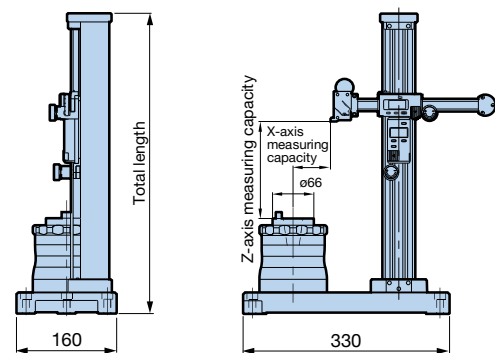
| Model            | Taper        | Measuring capacity (mm)             | Min. scale | Power Supply                    | Operating temperature | Weight (kg) |
|------------------|--------------|-------------------------------------|------------|---------------------------------|-----------------------|-------------|
| <b>TPS-40N</b>   | BT40         | X-axis: 0 - ø280<br>Z-axis: 0 - 400 | 0.01mm     | 3V lithium battery x 2 (CR2032) | +5°C - +40°C          | 38.5        |
| <b>-50N</b>      | BT50         |                                     |            |                                 |                       | 41.0        |
| <b>-HSK 40-N</b> | HSK-A40      |                                     |            |                                 |                       | 41.0        |
| <b>-HSK 50-N</b> | HSK-A50      |                                     |            |                                 |                       | 41.0        |
| <b>-HSK 63-N</b> | HSK-A63      |                                     |            |                                 |                       | 41.0        |
| <b>-C5N</b>      | BIG CAPTO C5 |                                     |            |                                 |                       | 41.0        |
| <b>-C6N</b>      | BIG CAPTO C6 |                                     |            |                                 |                       | 41.0        |
| <b>-C8N</b>      | BIG CAPTO C8 |                                     |            |                                 |                       | 42.0        |

1. Origin can be set with the spindle itself.

2. Various adapters and test bars are available as optional products.

3. HSK-E types without Drive Key grooves cannot be mounted.

### [Compact Type]



| Model      | Taper   | Total length | Measuring capacity (mm) |         | Min. scale | Power supply        | Operating temperature | Weight (kg) |
|------------|---------|--------------|-------------------------|---------|------------|---------------------|-----------------------|-------------|
|            |         |              | X-axis                  | Z-axis  |            |                     |                       |             |
| TPS-30E    | BT30    | 480          | 0 - ø180                | 0 - 250 | 0.01mm     | SR44<br>Battery x 2 | +5°C -<br>+40°C       | 18.5        |
| -40E       | BT40    | 50 - 300     |                         | 20.0    |            |                     |                       |             |
| TPS-HSK40E | HSK-A40 | 530          |                         | 0 - 250 |            |                     |                       | 21.0        |
| -HSK50E    | HSK-A50 |              |                         | 21.0    |            |                     |                       |             |
| -HSK63E    | HSK-A63 |              |                         | 0 - 235 |            |                     |                       | 21.5        |

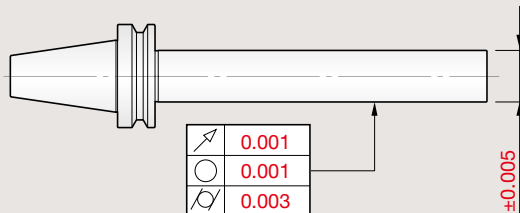
1. An optional Setting Gauge (SG40-50) is required to set reference values for TPS-40E.

A high-precision test bar developed by BIG's precise machining technology.

- Periodic accuracy evaluation eliminates machining defects.

## Precision standard of BIG Test Bars

BIG provides high quality test bars, produced under a strict quality control system.



|                          |          |
|--------------------------|----------|
| Runout accuracy          | 0.001mm  |
| Roundness                | 0.001mm  |
| Cylindricity             | 0.003mm  |
| Outer diameter tolerance | ±0.005mm |

※ Runout accuracy uses dual-center reference.

## Calibration certificate and traceability diagram (with charge)

A calibration certificate and traceability diagram is offered upon request with charge for reliable use of these test bars or for the customers certified with ISO9000.

Traceability is defined under JIS Z8103 as "the establishment of a pathway related to national and international standards in which standard instruments or measuring instruments are continually calibrated according to higher-level measurement standards."



Static accuracy of machining centers is regulated in JIS-B6336. We recommend periodic accuracy checks for stable production.

### JIS standard machine spindle value

#### Runout of spindle inner taper

|               | Horizontal MC      | Vertical MC       |
|---------------|--------------------|-------------------|
| Test bar nose | 0.01 (mm) or less  | 0.01 (mm) or less |
| 300mm tip     | 0.015 (mm) or less | 0.02 (mm) or less |

## [BIG-PLUS Type]



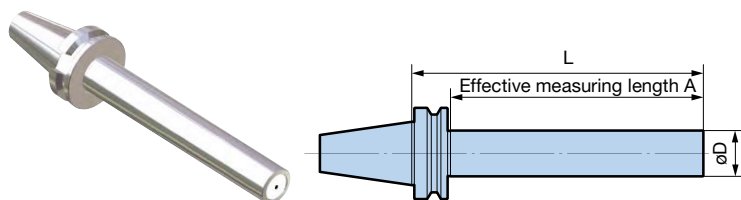
### Caution

- Only use PULLSTUD BOLTS made by BIG.

PULLSTUD BOLT G37

BBT Shank (MAS403 and JIS B6339)

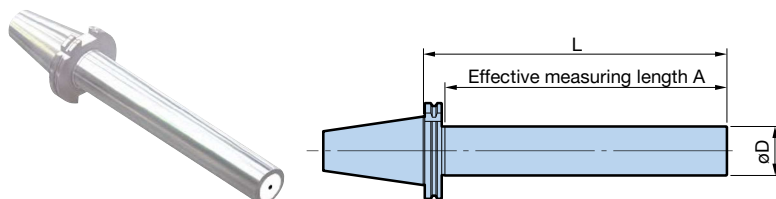
- The short type is ideal for ATC repeatability inspection.



| BIG-PLUS BBT SHANK Model | L   | A   | øD |
|--------------------------|-----|-----|----|
| BBT30-32-L150            | 150 | 125 | 32 |
| -L235                    | 235 | 210 |    |
| BBT40-50-L200            | 200 | 170 | 50 |
| -L350                    | 350 | 320 |    |
| BBT50-50-L200            | 200 | 159 | 50 |
| -L360                    | 360 | 319 |    |

1. The BBT Shank conforms to JIS-BT standards.

BDV Shank (DIN 69871 and ISO 7388-1)

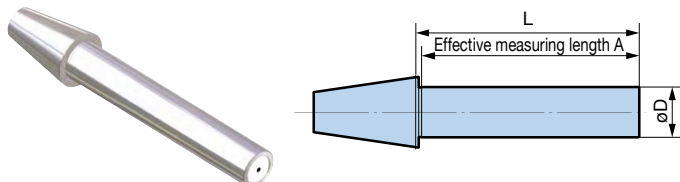


BIG-PLUS (BDV Shank) tools can be used on both BIG-PLUS spindles and conventional DV spindles.

| BIG-PLUS BDV SHANK Model | L   | A   | øD |
|--------------------------|-----|-----|----|
| BDV40-50-L340SD          | 340 | 310 | 50 |
| BDV50-50-L340SD          | 340 | 318 | 50 |

## [Basic Type]

- Can also be used as a setting gauge for tool presetters.



| Model        | L   | A   | øD |
|--------------|-----|-----|----|
| NT30-32-L150 | 150 | 142 | 32 |
| -L225        | 225 | 217 |    |
| NT40-50-L200 | 200 | 184 | 50 |
| -L335        | 335 | 319 |    |
| NT50-50-L200 | 200 | 191 | 50 |
| -L335        | 335 | 326 |    |

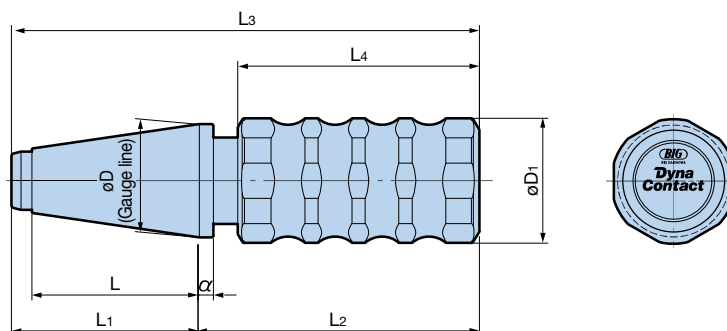
For machine spindle taper inspection.

Ceramic gauge makes the taper contact easily visible.

- Higher hardness than steel for good scratch resistance.
- Made of ceramic (white), it allows even a thin coating of Prussian blue to show up clearly.
- Rustproof, non-magnetizing, no aging deterioration.



**Taper angle:  $8^{\circ}17'50'' \pm 1''$**



| Model         | Taper No. | oD    | oD <sub>1</sub> | L     | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | α | Weight (kg) |
|---------------|-----------|-------|-----------------|-------|----------------|----------------|----------------|----------------|---|-------------|
| <b>DC-30P</b> | 30        | 31.75 | 36              | 48.4  | 56.4           | 106.6          | 163            | 93.6           | 6 | 0.52        |
| <b>-40P</b>   | 40        | 44.45 | 49              | 65.4  | 73.4           | 110.6          | 184            | 95             | 6 | 1.22        |
| <b>-50P</b>   | 50        | 69.85 | 49              | 101.8 | 111.8          | 113.2          | 225            | 95             | 8 | 2.62        |

1. Can also be used with ANSI/DIN and other international standard spindles.



In aluminum case

# DYNA FORCE

Measures pulling force of machine tool spindles and tool clamp equipment, a vital factor of machine tool performance.

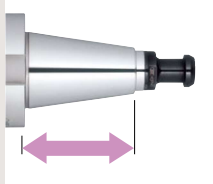
- Prevents machining errors and shortened tool life due to decreased pulling force.
- Measurement values visible at a glance with digital display. (Minimum display unit 0.1kN)
- Lightweight and compact display aids measuring work.



## An Essential for Machine Maintenance

The pulling force produced could deteriorate due to degradation of disc springs or wear of the components of the booster, due to many years of punishing use. Decreased pulling force reduces static rigidity, causing chatter, decreased machining accuracy, and shortened tool life. Periodic inspections with DYNA FORCE can prevent problems in advance.

## Long taper for increased reliability



The taper is long, with a shape similar to regular tools, enabling highly reliable measurement values.

## Supports all taper sizes with a single display

A single display can be used with all taper sizes, reducing costs.

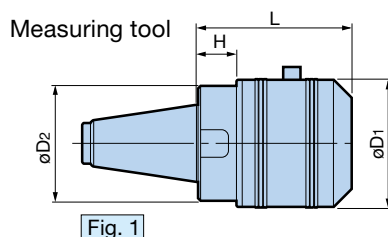
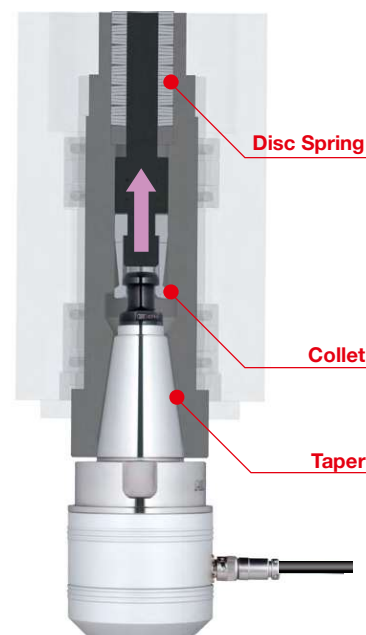
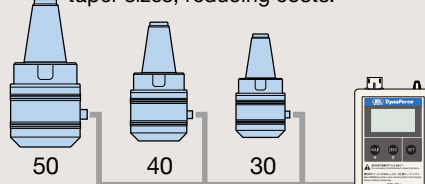


Fig. 1

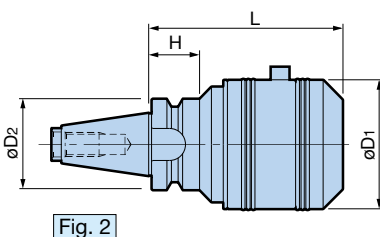


Fig. 2

Display

Cable

Case



Conforms to domestic and international standards (JIS, DIN, ANSI).

| Set Model  | Set contents   |      |                                    |               | Taper size | Rated capacity  | øD <sub>1</sub> | øD <sub>2</sub> | L   | H  | Weight (kg) |
|------------|----------------|------|------------------------------------|---------------|------------|-----------------|-----------------|-----------------|-----|----|-------------|
|            | Measuring tool | Fig. | Display                            | Cable         |            |                 |                 |                 |     |    |             |
| SNT30-DF10 | NT30-DF10      | 1    | DFA-1<br>(Includes 2 AA batteries) | DFC-1<br>(2m) | 30         | 10kN (980kgf)   | 65              | 58              | 80  | 20 | 1.5         |
| SBT30-DF10 | BT30-DF10      | 2    |                                    |               |            |                 |                 | 46              | 98  | 26 | 1.6         |
| SNT40-DF30 | NT40-DF30      | 1    |                                    |               | 40         | 30kN (2,940kgf) | 73              | 66              | 90  | 24 | 2.5         |
| SNT50-DF50 | NT50-DF50      | 1    |                                    |               | 50         | 50kN (4,900kgf) | 96              | 90              | 110 | 33 | 6.0         |
| -DF30 ※    | -DF30          | 1    |                                    |               |            | 30kN (2,940kgf) | 73              | 70              | 86  | 20 | 3.9         |

- The items are also sold individually. (Single measuring tool also provided with exclusive case.)
- BT model is a special purpose product for use with machines where manual mounting is impossible.
- BT model can be used on JIS BT and BBT spindle machines only.
- Pullstud bolt must be ordered separately. Note that standard pullstud bolt can be used with the machines that require JIS or MAS standard pullstud bolts, while the exclusive pullstud bolts are required for the machines with other standard spindles such as DIN or CAT.

5. ※ indicates lightweight type.

A calibration certificate and traceability diagram is offered upon request with charge for reliable use of these measuring instruments.

## Exclusive pullstud bolts

- DIN/ANSI/CAT standard spindles require exclusive pullstud bolts.
- MAS and JIS standards permit the use of standard pullstud bolts.
- These exclusive pullstud bolts cannot be used with the BT and BT Dyna Force models.



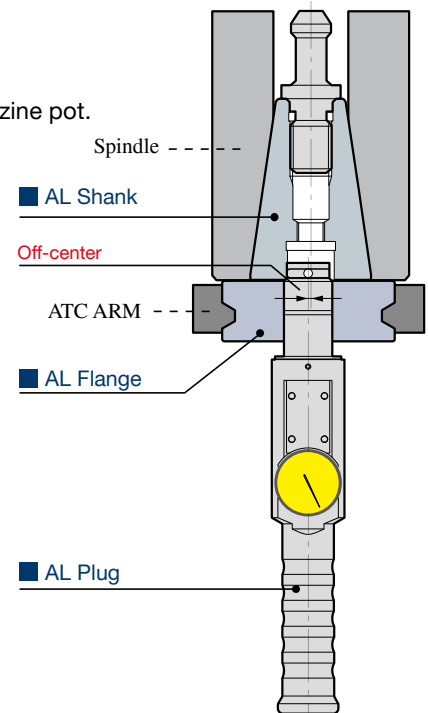
| Standard number            |        | Shank No. |           |           |
|----------------------------|--------|-----------|-----------|-----------|
|                            |        | 30        | 40        | 50        |
| DIN Standard (DIN 69872)   |        | DF-PDV30  | DF-PDV40A | DF-PDV50A |
| ISO Standard (ISO 7388)    | Form A | —         |           |           |
|                            | Form B | —         | DF-PAV40  | DF-PAV50  |
| ANSI Standard (ANSI B5.50) |        | DF-PAV30  |           |           |
| CAT Standard (ASME B5.50)  |        | DF-PCV30  | DF-PCV40  | DF-PCV50  |

To retain machine tool spindle accuracy!

- Measures misalignment of the spindle center and ATC arm.
- Measures the position of the ATC arm to the center of the machine spindle or magazine pot.

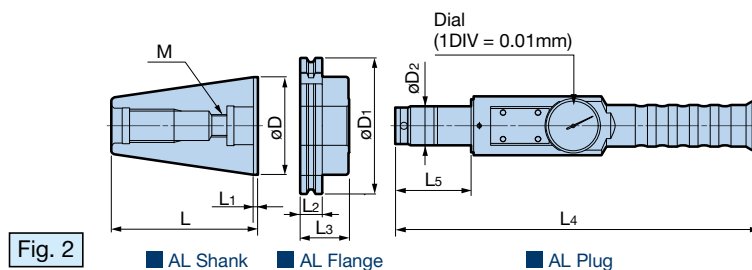
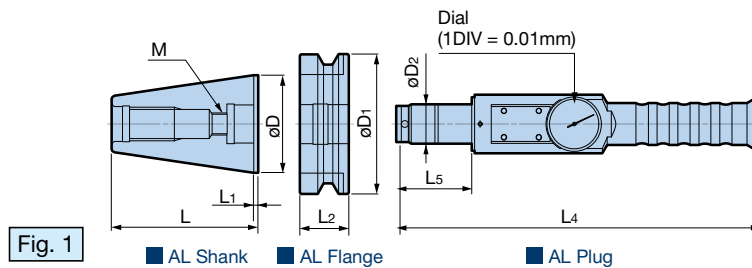
**How to use**

1. Mount the AL Shank on the machine spindle and AL Flange on the ATC Arm.
2. Insert the AL Plug into the AL Flange.
3. Rotate the AL Plug and find the highest and lowest positions indicated on the dial gauge. This direction is the center misalignment direction, and half the difference is the misalignment amount.
4. Adjust the position of the ATC Arm so that the entire  $\phi D2$  section of the AL Plug can be fully inserted into the AL Flange.



In exclusive case

**[BT/ DV Shank Type]**



| Set Model  | Fig. | øD    | D <sub>1</sub> | D <sub>2</sub> | L      | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | M  |
|------------|------|-------|----------------|----------------|--------|----------------|----------------|----------------|----------------|----------------|----|
| BT30-ATC18 | 1    | 31.75 | 46.00          | 18             | 50.40  | 2.0            | 20.0           | -              | 251            | 44             | 12 |
| BT40-ATC20 |      | 44.45 | 63.00          | 20             | 67.40  | 2.0            | 25.0           | -              | 251            | 44             | 12 |
| BT50-ATC28 |      | 69.85 | 100.00         | 28             | 104.80 | 3.0            | 35.0           | -              | 261            | 54             | 16 |
| DV40-ATC20 | 2    | 44.45 | 63.55          | 20             | 71.60  | 3.2            | 15.9           | 24.3           | 251            | 44             | 12 |
| DV50-ATC28 |      | 69.85 | 97.50          | 28             | 104.95 | 3.2            | 15.9           | 35.3           | 261            | 54             | 16 |

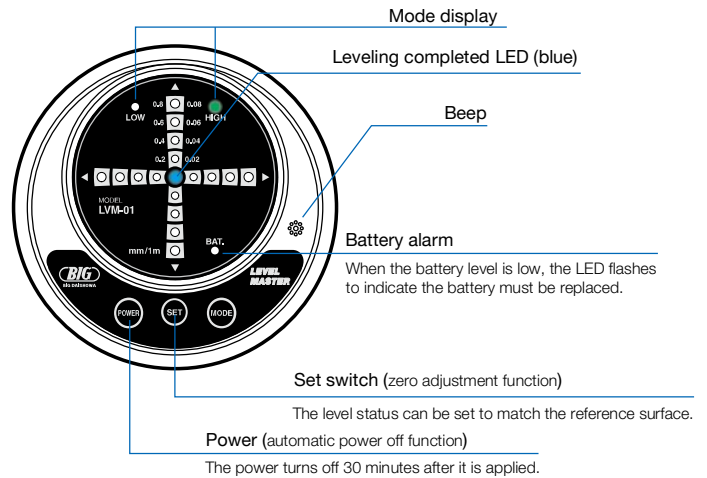
1. Contact us for CAT Standard 7/24 taper shank versions.

# PRECISION ELECTRON LEVEL **LEVEL MASTER**

For level management of machine tools/precision assembly devices

- 2-axis simultaneous level detector.
- Notifies leveling completion with LED and beep.
- Uses optical level detection sensor.

High precision of  
0.01mm or less per 1m



Instantaneous display of level status with LED

## HIGH Mode

- Flashing: Over 0.08mm
- Lit: 0.08mm or less
- Lit: 0.06mm or less
- Lit: 0.04mm or less
- Lit: 0.02mm or less
- Lit: 0.01mm or less

Tilt at 1m distance

## LOW Mode

- Flashing: Over 0.8mm
- Lit: 0.8mm or less
- Lit: 0.6mm or less
- Lit: 0.4mm or less
- Lit: 0.2mm or less
- Lit: 0.1mm or less

Tilt at 1m distance

Notifies leveling completion with LED and beep

## HIGH Mode

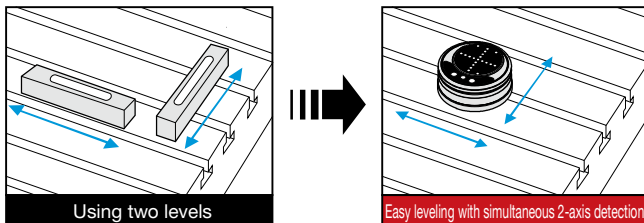
When level is  
**0.01mm/1m or less**

## LOW Mode

When level is  
**0.1mm/1m or less**

Notification with LED (blue) and beep

2-axis simultaneous detection High precision of 0.01mm or less per 1m



2-axis simultaneous detection makes leveling drastically faster and more economical, compared to the conventional process of using two separate levels.

| Model                       | LVM-01                                 |
|-----------------------------|----------------------------------------|
| Minimum read value          | 0.01mm/1m                              |
| Power                       | Alkaline dry cell: LR03 (AAA) x 4P     |
| Automatic power off         | Power off 30 minutes after application |
| Operating temperature range | 0°C - 40°C (recommended 20°C ±5°C)     |
| Battery life                | 50 continuous hours                    |
| Dimensions                  | ø109 x H46                             |
| Weight                      | 0.99kg                                 |

※ For high-precision level adjustment, we recommend confirming the level with a reference surface such as a surface plate before use.

## Set Contents

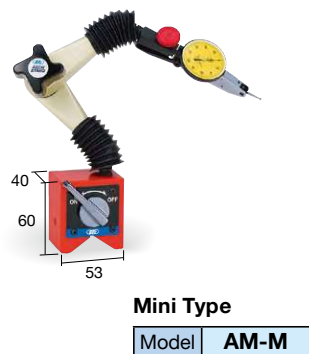
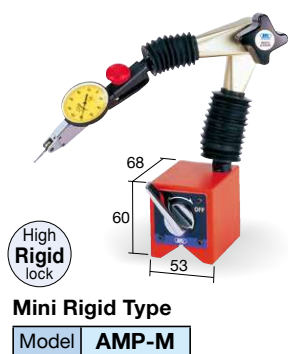
- LEVEL MASTER body
- Exclusive aluminum case
- Battery (Alkaline dry cell: LR03 (AAA) x 4 pcs)
- Operation manual
- Inspection Certificate



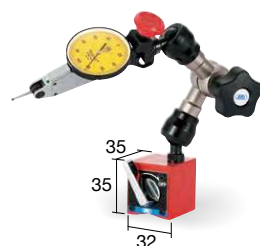
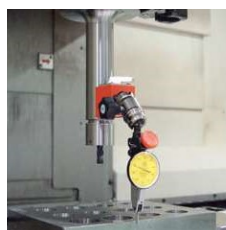
Flexible arm stand which locks solidly by the special cam mechanism.

### [Magnetic Base Type]

- Firmly fixed with a powerful magnet.



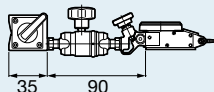
Compact yet tough arm and powerful clamp.



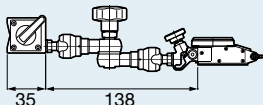
※ Test indicators and dial gauges are not included with any model.

The thread size of the joint between the magnet and arm is M8 x P1.25 for **AMM**, **AML** and **AM** and M10 x P1.5 for **AMP** and **ASP**.

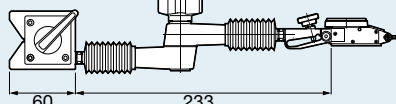
#### ● AMM-M



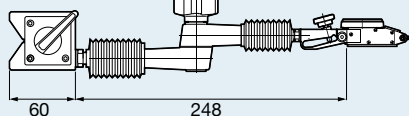
#### ● AML-M



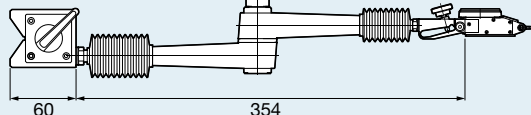
#### ● AM-M



#### ● AMP-M



#### ● ASP-M



Gauge support details **I21**