

## Bore Gages

### Bore Gages SERIES 511 — Short Leg Type

- This is a bore gage for measuring  $\varnothing 18$  to 160 mm inside diameter.
- With a short length below the grip, a lightweight and easy-to-handle body makes it easier to insert the gage in a narrow space or perform measurements on a table.
- Carbide-tipped contact point and anvil for durability and wear resistance.



511-761

Note: The dial indicator and the dial protection cover are optional.  
Refer to page 08-50 for details.

### SPECIFICATIONS

| Metric     |            |                              |                |                     |                      |                     |                 |
|------------|------------|------------------------------|----------------|---------------------|----------------------|---------------------|-----------------|
| Code No.   | Range (mm) | Stroke of contact point (mm) | Accuracy* (μm) | Repeatability* (μm) | Adjacent error* (μm) | Measuring force (N) | Guide force (N) |
| 511-761    | 18 - 35    | 1.2                          | 2              | 0.5                 | 1                    | 4 or less           | 6 or less       |
| 511-762    | 35 - 60    |                              |                |                     |                      | 5 or less           | 10 or less      |
| 511-763    | 50 - 150   |                              |                |                     |                      |                     |                 |
| 511-764    | 100 - 160  | 1.6                          | 2              | 0.5                 | 1                    |                     |                 |
| 511-771-20 | 18 - 35    |                              |                |                     |                      |                     |                 |
| 511-772-20 | 35 - 60    |                              |                |                     |                      |                     |                 |
| 511-773-20 | 50 - 150   |                              |                |                     |                      |                     |                 |
| 511-774-20 | 100 - 160  | 1.6                          | 2              | 0.5                 | 1                    | 5 or less           | 10 or less      |
| 511-766-20 | 18 - 35    |                              |                |                     |                      |                     |                 |
| 511-767-20 | 35 - 60    |                              |                |                     |                      |                     |                 |
| 511-768-20 | 50 - 150   |                              |                |                     |                      |                     |                 |
| 511-769-20 | 100 - 160  |                              |                |                     |                      |                     |                 |

| Code No.   | Content of set |                                     |                       |         |                        |              |         | Probing depth (mm) |              |
|------------|----------------|-------------------------------------|-----------------------|---------|------------------------|--------------|---------|--------------------|--------------|
|            | Bore gage      | Dial indicator                      | Dial protection cover | Anvil   | Interchangeable Washer | Sub-Anvil    | Spanner |                    |              |
| 511-761    | 511-761        | Not supplied                        | Not supplied          | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.   | 50                 |              |
| 511-762    | 511-762        |                                     |                       | 6 pcs.  | 4 pcs.                 |              | 1 pc.   |                    | Not supplied |
| 511-763    | 511-763        |                                     |                       | 11 pcs. |                        |              |         |                    |              |
| 511-764    | 511-764        |                                     |                       | 13 pcs. |                        |              |         |                    |              |
| 511-771-20 | 511-761        | 2109AB-10<br>(Graduation: 0.001 mm) | 21DZA000              | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.   | 50                 |              |
| 511-772-20 | 511-762        |                                     |                       | 6 pcs.  | 4 pcs.                 |              | 1 pc.   |                    | Not supplied |
| 511-773-20 | 511-763        |                                     |                       | 11 pcs. |                        |              |         |                    |              |
| 511-774-20 | 511-764        |                                     |                       | 13 pcs. |                        |              |         |                    |              |
| 511-766-20 | 511-761        | 2046AB<br>(Graduation: 0.01 mm)     | 21DZA000              | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.   | 50                 |              |
| 511-767-20 | 511-762        |                                     |                       | 6 pcs.  | 4 pcs.                 |              | 1 pc.   |                    | Not supplied |
| 511-768-20 | 511-763        |                                     |                       | 11 pcs. |                        |              |         |                    |              |
| 511-769-20 | 511-764        |                                     |                       | 13 pcs. |                        |              |         |                    |              |

\* Accuracy of the bore gage alone.

Note 1: A 50 mm sub-anvil is supplied with 511-763.

Note 2: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

### Measurement example



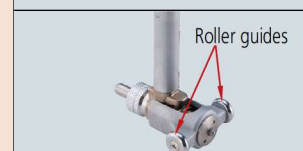
### Contact Points



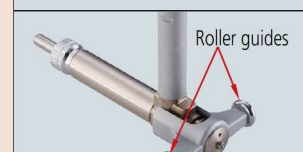
18 - 35 mm / 0.7 - 1.4 in



35 - 60 mm / 1.4 - 2.5 in



50 - 150 mm / 2.0 - 6.0 in



100 - 160 mm / 4.0 - 6.5 in

### The dial protection cover, recommended indicators

Refer to page 08-50.

## SPECIFICATIONS

| Inch       |            |                              |                |                     |                      |                     |                 |  |  |  |
|------------|------------|------------------------------|----------------|---------------------|----------------------|---------------------|-----------------|--|--|--|
| Code No.   | Range (in) | Stroke of contact point (in) | Accuracy* (in) | Repeatability* (in) | Adjacent error* (in) | Measuring force (N) | Guide force (N) |  |  |  |
| 511-781    | 0.7 - 1.4  | 0.047                        | 0.00008        | 0.00002             | 0.00004              | 4 or less           | 6 or less       |  |  |  |
| 511-782    | 1.4 - 2.5  |                              |                |                     |                      | 5 or less           | 10 or less      |  |  |  |
| 511-783    | 2.0 - 6.0  |                              |                |                     |                      |                     |                 |  |  |  |
| 511-784    | 4.0 - 6.5  | 0.063                        | 0.00008        | 0.00002             | 0.00004              | 4 or less           | 6 or less       |  |  |  |
| 511-791-20 | 0.7 - 1.4  | 0.047                        |                |                     |                      | 5 or less           | 10 or less      |  |  |  |
| 511-792-20 | 1.4 - 2.5  |                              |                |                     |                      |                     |                 |  |  |  |
| 511-793-20 | 2.0 - 6.0  |                              |                |                     |                      |                     |                 |  |  |  |
| 511-794-20 | 4.0 - 6.5  | 0.063                        | 0.00008        | 0.00002             | 0.00004              | 4 or less           | 6 or less       |  |  |  |
| 511-786-20 | 0.7 - 1.4  | 0.047                        |                |                     |                      | 5 or less           | 10 or less      |  |  |  |
| 511-787-20 | 1.4 - 2.5  |                              |                |                     |                      |                     |                 |  |  |  |
| 511-788-20 | 2.0 - 6.0  |                              |                |                     |                      |                     |                 |  |  |  |
| 511-789-20 | 4.0 - 6.5  | 0.063                        |                |                     |                      | 5 or less           | 10 or less      |  |  |  |

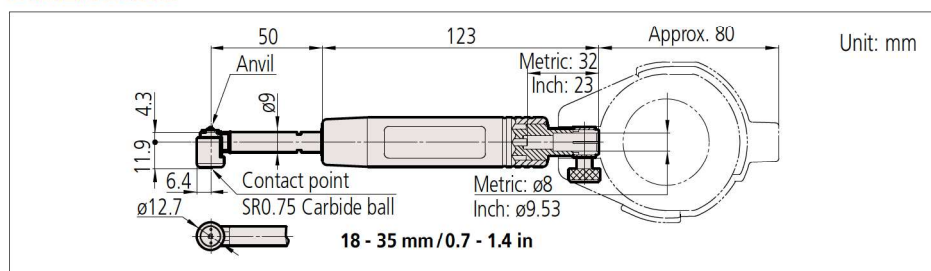
| Code No.   | Content of set |                                         |                       |         |                        |              |              | Probing depth (in) |  |
|------------|----------------|-----------------------------------------|-----------------------|---------|------------------------|--------------|--------------|--------------------|--|
|            | Bore gage      | Dial indicator                          | Dial protection cover | Anvil   | Interchangeable Washer | Sub-Anvil    | Spanner      |                    |  |
| 511-781    | 511-781        | Not supplied                            | Not supplied          | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.        | 2                  |  |
| 511-782    | 511-782        |                                         |                       | 6 pcs.  | 4 pcs.                 | 1 pc.        | Not supplied |                    |  |
| 511-783    | 511-783        |                                         |                       | 11 pcs. |                        |              |              |                    |  |
| 511-784    | 511-784        |                                         |                       | 13 pcs. |                        |              |              |                    |  |
| 511-791-20 | 511-781        | 2923AB-10<br>(Graduation:<br>0.0001 in) | 21DZA000              | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.        | 2                  |  |
| 511-792-20 | 511-782        |                                         |                       | 6 pcs.  | 4 pcs.                 | 1 pc.        | Not supplied |                    |  |
| 511-793-20 | 511-783        |                                         |                       | 11 pcs. |                        |              |              |                    |  |
| 511-794-20 | 511-784        |                                         |                       | 13 pcs. |                        |              |              |                    |  |
| 511-786-20 | 511-781        | 2922AB<br>(Graduation:<br>0.0005 in)    | 21DZA000              | 9 pcs.  | 2 pcs.                 | Not supplied | 1 pc.        | 2                  |  |
| 511-787-20 | 511-782        |                                         |                       | 6 pcs.  | 4 pcs.                 | 1 pc.        | Not supplied |                    |  |
| 511-788-20 | 511-783        |                                         |                       | 11 pcs. |                        |              |              |                    |  |
| 511-789-20 | 511-784        |                                         |                       | 13 pcs. |                        |              |              |                    |  |

\* Accuracy of the bore gage alone.

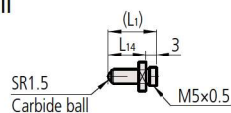
Note 1: A 2" sub-anvil is supplied with 511-783.

Note 2: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

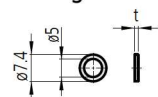
## DIMENSIONS



Anvil

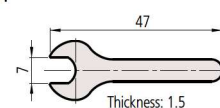


Interchangeable washer



| t (mm) | Code No. |
|--------|----------|
| 0.5    | 205623   |
| 1      | 205624   |

Spanner 102148



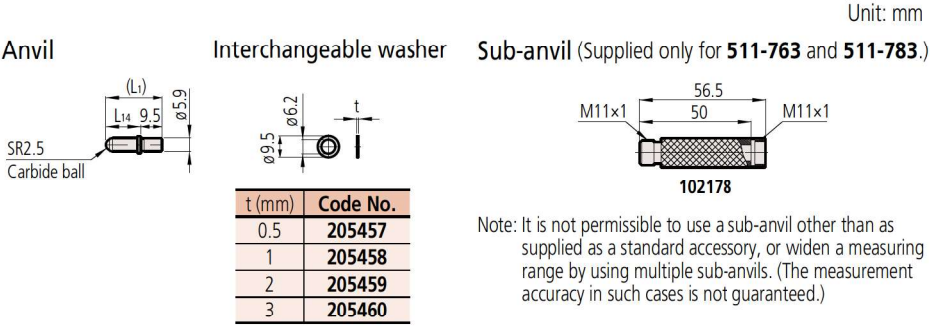
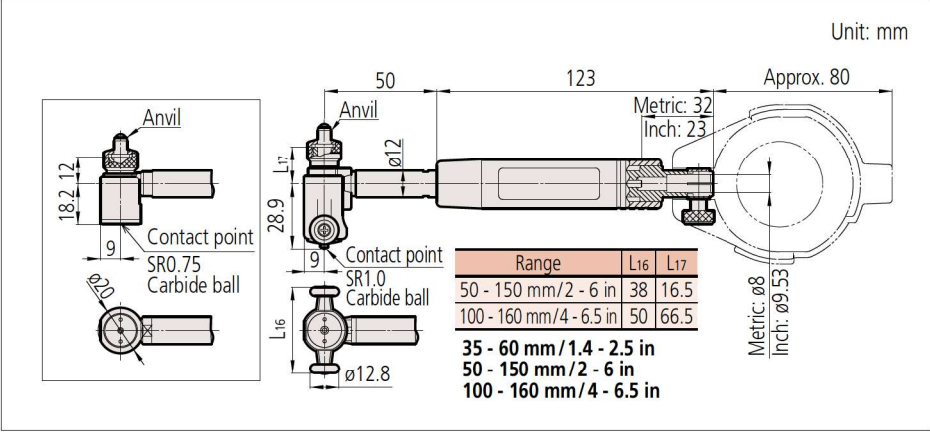
## STANDARD ACCESSORIES

| Bore gage<br>(Main body) | Anvil      |           |                              |                 |                 |
|--------------------------|------------|-----------|------------------------------|-----------------|-----------------|
|                          | Marked No. | Code No.  | Indication of measuring size | L1              | L14             |
| 511-761<br>511-781       | 1          | 21DZA213A | 18 mm/0.71 in                | 5.5 mm/0.22 in  | 2.5 mm/0.10 in  |
|                          | 2          | 21DZA213B | 20 mm/0.79 in                | 7.5 mm/0.30 in  | 4.5 mm/0.18 in  |
|                          | 3          | 21DZA213C | 22 mm/0.87 in                | 9.5 mm/0.37 in  | 6.5 mm/0.26 in  |
|                          | 4          | 21DZA213D | 24 mm/0.94 in                | 11.5 mm/0.45 in | 8.5 mm/0.33 in  |
|                          | 5          | 21DZA213E | 26 mm/1.02 in                | 13.5 mm/0.53 in | 10.5 mm/0.41 in |
|                          | 6          | 21DZA213F | 28 mm/1.10 in                | 15.5 mm/0.61 in | 12.5 mm/0.49 in |
|                          | 7          | 21DZA213G | 30 mm/1.18 in                | 17.5 mm/0.69 in | 14.5 mm/0.57 in |
|                          | 8          | 21DZA213H | 32 mm/1.26 in                | 19.5 mm/0.77 in | 16.5 mm/0.65 in |
|                          | 9          | 21DZA213J | 34 mm/1.34 in                | 21.5 mm/0.85 in | 18.5 mm/0.73 in |

Bore Gages

Bore Gages  
SERIES 511 — Short Leg Type

DIMENSIONS



STANDARD ACCESSORIES

| Bore gage<br>(Main body)                                     | Anvil      |           |                                     |    |      |
|--------------------------------------------------------------|------------|-----------|-------------------------------------|----|------|
|                                                              | Marked No. | Code No.  | Indication of measuring size        | L1 | L14  |
| 511-762<br>511-782                                           | 1          | 21DZA232A | 35 mm / 1.38 in                     | 15 | 5.5  |
|                                                              | 2          | 21DZA232B | 40 mm / 1.57 in                     | 20 | 10.5 |
|                                                              | 3          | 21DZA232C | 45 mm / 1.77 in                     | 25 | 15.5 |
|                                                              | 4          | 21DZA232D | 50 mm / 1.97 in                     | 30 | 20.5 |
|                                                              | 5          | 21DZA232E | 55 mm / 2.17 in                     | 35 | 25.5 |
|                                                              | 6          | 21DZA232F | 60 mm / 2.36 in                     | 40 | 30.5 |
| 511-763<br>511-783<br>( ) Using<br>50 mm / 2 in<br>Sub Anvil | 1          | 21DZA232A | 50 mm (100 mm) / 1.97 in (3.94 in)  | 15 | 5.5  |
|                                                              | 2          | 21DZA232B | 55 mm (105 mm) / 2.17 in (4.13 in)  | 20 | 10.5 |
|                                                              | 3          | 21DZA232C | 60 mm (110 mm) / 2.36 in (4.33 in)  | 25 | 15.5 |
|                                                              | 4          | 21DZA232D | 65 mm (115 mm) / 2.55 in (4.53 in)  | 30 | 20.5 |
|                                                              | 5          | 21DZA232E | 70 mm (120 mm) / 2.74 in (4.72 in)  | 35 | 25.5 |
|                                                              | 6          | 21DZA232F | 75 mm (125 mm) / 2.93 in (4.92 in)  | 40 | 30.5 |
|                                                              | 7          | 21DZA232G | 80 mm (130 mm) / 3.12 in (5.12 in)  | 45 | 35.5 |
|                                                              | 8          | 21DZA232H | 85 mm (135 mm) / 3.31 in (5.31 in)  | 50 | 40.5 |
|                                                              | 9          | 21DZA232J | 90 mm (140 mm) / 3.50 in (5.51 in)  | 55 | 45.5 |
|                                                              | 10         | 21DZA232L | 95 mm (145 mm) / 3.69 in (5.71 in)  | 60 | 50.5 |
|                                                              | 11         | 21DZA232M | 100 mm (150 mm) / 3.88 in (5.91 in) | 65 | 55.5 |
| 511-764<br>511-784                                           | 1          | 21DZA232A | 100 mm / 3.94 in                    | 15 | 5.5  |
|                                                              | 2          | 21DZA232B | 105 mm / 4.13 in                    | 20 | 10.5 |
|                                                              | 3          | 21DZA232C | 110 mm / 4.33 in                    | 25 | 15.5 |
|                                                              | 4          | 21DZA232D | 115 mm / 4.53 in                    | 30 | 20.5 |
|                                                              | 5          | 21DZA232E | 120 mm / 4.72 in                    | 35 | 25.5 |
|                                                              | 6          | 21DZA232F | 125 mm / 4.92 in                    | 40 | 30.5 |
|                                                              | 7          | 21DZA232G | 130 mm / 5.12 in                    | 45 | 35.5 |
|                                                              | 8          | 21DZA232H | 135 mm / 5.31 in                    | 50 | 40.5 |
|                                                              | 9          | 21DZA232J | 140 mm / 5.51 in                    | 55 | 45.5 |
|                                                              | 10         | 21DZA232L | 145 mm / 5.71 in                    | 60 | 50.5 |
|                                                              | 11         | 21DZA232M | 150 mm / 5.91 in                    | 65 | 55.5 |
|                                                              | 12         | 21DZA232N | 155 mm / 6.10 in                    | 70 | 60.5 |
|                                                              | 13         | 21DZA232P | 160 mm / 6.30 in                    | 75 | 65.5 |

Recommended Digimatic Indicators  
Refer to page 08-36.