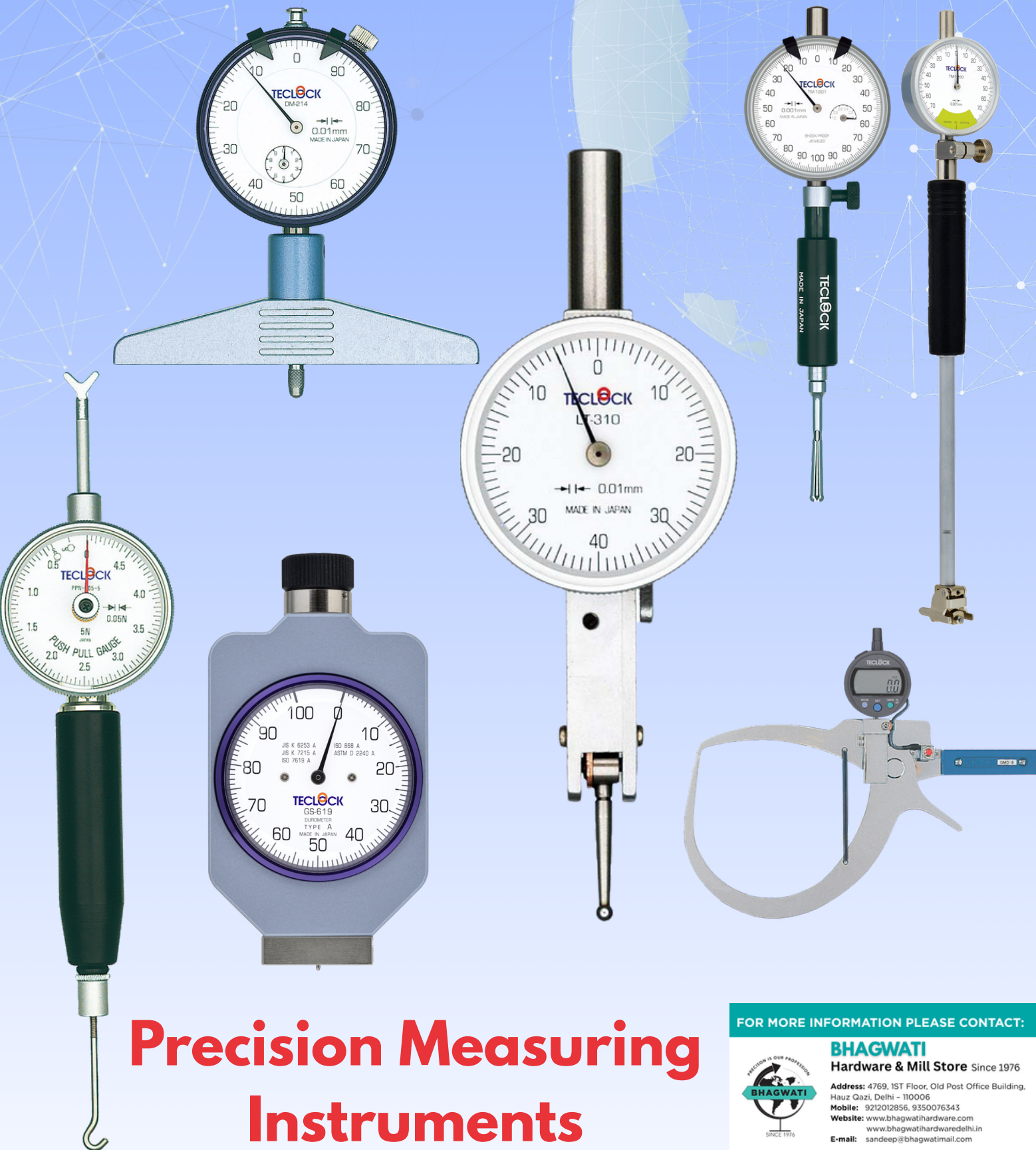


# TECLOCK



## Precision Measuring Instruments

FOR MORE INFORMATION PLEASE CONTACT:



**BHAGWATI**

Hardware & Mill Store Since 1976

Address: 4769, 1ST Floor, Old Post Office Building,  
Hauz Qazi, Delhi - 110006

Mobile: 9212012856, 9350076343

Website: [www.bhagwatihardware.com](http://www.bhagwatihardware.com)  
[www.bhagwatihardwaredelhi.in](http://www.bhagwatihardwaredelhi.in)

E-mail: [sandeep@bhagwatimail.com](mailto:sandeep@bhagwatimail.com)

AN ISO 9001 : 2015 CERTIFIED COMPANY

# Dial Indicator

Dial Indicator is surely utilized at manufacturing sites where dimensional high accuracy is needed to be confirmed. The graduation (1- graduation) depends on usage and Teclock offers 6 kinds of graduations, namely 0.0005mm, 0.001mm, 0.005mm, 0.01mm, 0.05mm and 0.1mm. The strokes are available from 0.08mm (the shortest) up to 150mm. Dial Indicator is normally not used independent but its stem or lug back is fixed to a jig and holds work piece with the measuring stand and contact point, and displacement volume is read with short hand and pointer. The dial indicator is applied for direct measurement to measure actual dimension and comparative measurement for measuring displacement volume from a certain standard dimension.

## 0.001mm Dial Indicator

- Standard type dial indicators of graduation 0.001mm and bezel diameter 56mm.
- Durability is pursued by protecting mechanical parts like gears with shock absorbing mechanism (Teclock unique shock proof mechanism).
- Jeweled bearing is applied for improving durability.
- Stable repeatability accuracy is realized with lever enlargement mechanism built-in.
- Tolerance hand is provided as standard accessory for all models for positive tolerance setting.
- Lifting lever (Option) can be mounted . (Refer to page 25)
- Bezel clamp (Option) can be mounted (except for TM-1201PW).
- Measuring ability can be changed .
- In case that flat back is required, add suffix "F" to the end of model number (example =TM-1201F).



**TM-1201**  
Popular type

Graduation 0.001mm  
Measuring Range 1mm



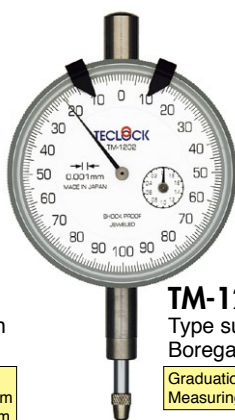
**TM-1201PW**  
Oil-proof type

Graduation 0.001mm  
Measuring Range 1mm



**TM-1251**  
Wide graduation  
width type

Graduation 0.001mm  
Measuring Range 1mm  
One Revolution 0.1mm



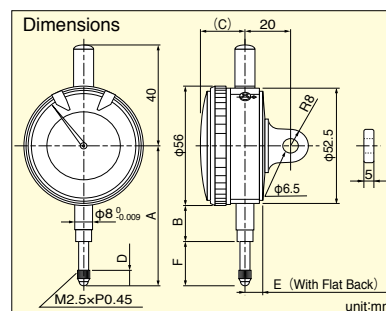
**TM-1202**  
Type suitable to  
Boregauge

Graduation 0.001mm  
Measuring Range 2mm



**TM-1205**  
5mm stroke type

Graduation 0.001mm  
Measuring Range 5mm



Dimensions Table

| Model     | A         | B    | C    | D          | E | F  |
|-----------|-----------|------|------|------------|---|----|
| TM-1201   | 62        | 18   | 15   | 7.5        | 8 | 16 |
| TM-1201PW | 65.5 (18) | 13.5 | 11   | 8.5 (19.5) |   |    |
| TM-1251   | 62        | 18   | 15   | 7.5        | 8 | 16 |
| TM-1202   | 62        | 19   | 15   | 7.5        | 8 | 16 |
| TM-1205   | 62        | 19   | 15.5 | 7.5        | 8 | 16 |

unit:mm

### Specifications

| Model     | Graduation (mm) | Measuring Range (Free Stroke) (mm) | Repeatability (μm) | Indication Error (μm) |                |              |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|-----------|-----------------|------------------------------------|--------------------|-----------------------|----------------|--------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|           |                 |                                    |                    | Adjacent Error        | 1/2 Revolution | 1 Revolution | 2 Revolution | Total Range |                 |                        |                     |            |
| TM-1201   | 0.001           | 1 (3)                              | 0.5                | 2.5                   | ±3             | ±4           | ±4           | ±5          | 3               | ZS-017                 | 1.5 or less         | 170        |
| TM-1201PW | 0.001           | 1 (3)                              | 0.5                | 2.5                   | ±3             | ±4           | ±4           | ±5          | 3               | ZS-028                 | 1.5 or less         | 180        |
| TM-1251   | 0.001           | 1 (3)                              | 0.8                | 2.5                   | ±3             | ±4           | ±4           | ±5          | 3               | ZS-017                 | 1.5 or less         | 170        |
| TM-1202   | 0.001           | 2 (2)                              | 0.5                | 4                     | ±5             | ±6           | ±6           | ±7          | 3               | ZS-017                 | 1.5 or less         | 170        |
| TM-1205   | 0.001           | 5 (-)                              | 1                  | 5                     | ±6             | ±7           | ±8           | ±10         | 4               | ZS-017                 | 1.5 or less         | 170        |

\*In case flat back is required, please add suffix "F" to the end of model number. (example=TM-1201F)

## 0.01mm Dial Indicator

- This is the most standard type dial indicator of graduation 0.01mm
- The model can be selected out of stainless stem, coaxial revolution pointer, oil discharge function and analog function depending on usage.
- These are standard series with high durability and high accuracy by pursuing parts accuracy.
- Lifting lever (Option) can be mounted (Refer to page 25).
- Bezel clamp (Option) can be mounted (except for TM-110PW / TM-110G).
- Measuring ability can be changed .
- In case that flat back is required, add suffix "F" to the end of model number (example =TM-110F).



**TM-110**  
Standard type

Graduation 0.01mm  
Measuring Range 10mm



**TM-110R**  
Reversed dial  
type

Graduation 0.01mm  
Measuring Range 10mm



**TM-110D**  
Coaxial revolution  
pointers type

Graduation 0.01mm  
Measuring Range 10mm



**TM-110-4A**  
With oil ejection  
holed bezel type

Graduation 0.01mm  
Measuring Range 10mm



**TM-110PW**  
Oil-Proof type

Graduation 0.01mm  
Measuring Range 10mm



**TM-110P**  
Direct reading  
graduation type

Graduation 0.01mm  
Measuring Range 10mm



**TM-105**  
Type suitable to  
Boregauge

Graduation 0.01mm  
Measuring Range 5mm



**TM-105W**  
Reversed type

Graduation 0.01mm  
Measuring Range 5mm



**TM-5106**  
Wide scale width type

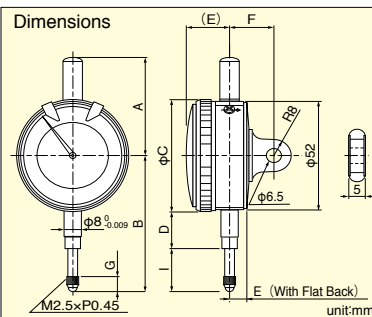
Graduation 0.01mm  
Measuring Range 5mm



**TM-5105**

Graduation 0.005mm  
Measuring Range 5mm

### 0.005mm Dial Indicators



Dimension Table

| Model     | A    | B    | C  | D      | E    | F  | G   | H   | I    |
|-----------|------|------|----|--------|------|----|-----|-----|------|
| TM-110    | 48   | 65   | 55 | 18     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-110R   | 48   | 65   | 55 | 18     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-110D   | 48   | 65   | 55 | 18     | 17.6 | 20 | 7.5 | 7.8 | 19.5 |
| TM-110-4A | 48   | 65   | 55 | 18     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-110PW  | 44.5 | 68.5 | 56 | (17.5) | 14.5 | 20 | 11  | 8.3 | 23.0 |
| TM-110P   | 48   | 65   | 55 | 18     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-105    | 48   | 65   | 55 | 18     | 15.5 | *  | 7.5 | 7.8 | 19.5 |
| * TM-105W | 48   | 65   | 55 | 18     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-5106   | 48   | 65   | 55 | 19     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |
| TM-5105   | 48   | 65   | 55 | 19     | 15.5 | 20 | 7.5 | 7.8 | 19.5 |

\*Indicator is supplied with Flat back.

unit:mm

### Specifications

| Model     | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |                |              |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|-----------|-----------------|----------------------|--------------------|-----------------------|----------------|--------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|           |                 |                      |                    | Adjacent Error        | 1/2 Revolution | 1 Revolution | 2 Revolution | Total Range |                 |                        |                     |            |
| TM-110    | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-110R   | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-110D   | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-017                 | 1.4 or less         | 115        |
| TM-110-4A | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-110PW  | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-028                 | 1.4 or less         | 150        |
| TM-110P   | 0.01            | 10                   | 5                  | 8                     | ±9             | ±10          | ±15          | ±15         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-105    | 0.01            | 5                    | 5                  | 8                     | ±9             | ±10          | ±12          | ±12         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-105W   | 0.01            | 5                    | 5                  | 8                     | ±9             | ±10          | ±12          | ±12         | 5               | ZS-017                 | 1.4 or less         | 110        |
| TM-5106   | 0.01            | 5                    | 3                  | 7                     | ±8             | ±9           | ±10          | ±12         | 5               | ZS-017                 | 1.4 or less         | 145        |
| TM-5105   | 0.005           | 5                    | 3                  | 7                     | ±8             | ±9           | ±10          | ±12         | 5               | ZS-017                 | 1.4 or less         | 145        |

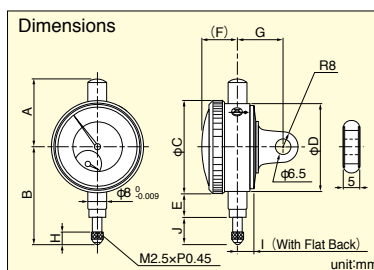
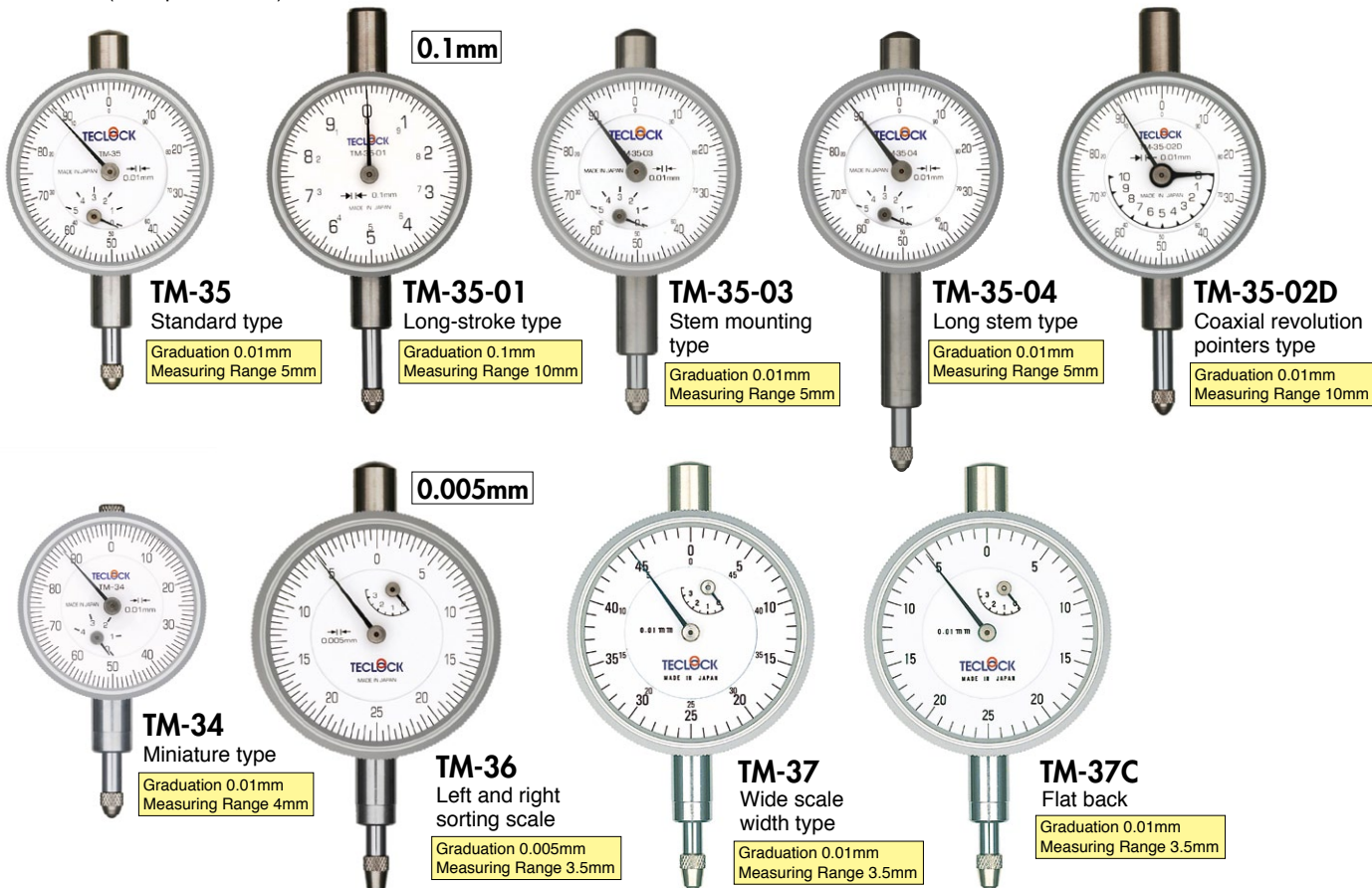
\*In case flat back is required, please add suffix "F" to the end of model number. (example=TM-1201F)



## Small Dial Indicator

- As bezel diameter is small (minimum diameter=36mm), these are suitable to measure at the narrow setting space of production lines and many measuring points by being mounted to the machine.
- Lifting lever (Option) can be mounted (except for TM-34).
- In case that flat back is required, add suffix "F" to the end of model number (example =TM-35f).

- Measuring range 3.5mm, 4mm, 5mm, and 10mm are available in spite of small size.
- Bezel clamp (Option) can be mounted.
- Measuring ability can be changed. (Refer to page 23)



Dimensions Table

| Model     | A    | B    | C  | D    | E  | F    | G    | H   | I   | J    |
|-----------|------|------|----|------|----|------|------|-----|-----|------|
| TM-35     | 27.4 | 41.3 | 39 | 36.5 | 10 | 14.5 | 19   | 5   | 6.2 | 11.8 |
| TM-35-01  | 32.5 | 46   | 39 | 36.5 | 10 | 14.5 | 19   | 5   | 6.2 | 16.5 |
| TM-35-03  | 27.4 | 46   | 39 | 36.5 | 15 | 14.5 | 19   | 5   | 6.2 | 11.5 |
| TM-35-04  | 27.4 | 58   | 39 | 36.5 | 26 | 14.5 | 19   | 5   | 6.2 | 12.5 |
| TM-35-02D | 32.5 | 46   | 39 | 36.5 | 10 | 16.5 | 19   | 5   | 6.2 | 16.5 |
| TM-34     | 20   | 39.5 | 35 | 32   | 10 | 13   | 19   | 5   | 6.5 | 12   |
| TM-36     | 33.5 | 50   | 47 | 44   | 13 | 15.5 | 19.7 | 7.5 | 7   | 13.5 |
| TM-37     | 33.5 | 50   | 47 | 44   | 13 | 15.5 | 19.7 | 7.5 | 7   | 13.5 |
| * TM-37C  | 33.5 | 50   | 47 | 44   | 13 | 15.5 | *    | 7.5 | 7   | 13.5 |

\*Indicator is supplied with Flat back.

unit:mm

### Specifications

| Model     | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|-----------|-----------------|----------------------|--------------------|-----------------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|           |                 |                      |                    | Adjacent Error        | 1 Revolution | Total Range |                 |                        |                     |            |
| TM-35     | 0.01            | 5                    | 5                  | 9                     | ±13          | ±15         | 6               | ZS-014                 | 1.3 or less         | 72         |
| TM-35-01  | 0.1             | 10                   | —                  | —                     | —            | ±50         | —               | ZS-014                 | 1.5 or less         | 72         |
| TM-35-03  | 0.01            | 5                    | 5                  | 9                     | ±13          | ±15         | 6               | ZS-014                 | 1.3 or less         | 72         |
| TM-35-04  | 0.01            | 5                    | 5                  | 9                     | ±13          | ±15         | 6               | ZS-014                 | 1.3 or less         | 75         |
| TM-35-02D | 0.01            | 10                   | 5                  | 9                     | ±13          | ±18         | 7               | ZS-014                 | 1.6 or less         | 75         |
| TM-34     | 0.01            | 4                    | 5                  | 8                     | ±11          | ±15         | 6               | ZS-014                 | 1.0 or less         | 60         |
| TM-36     | 0.005           | 3.5                  | 5                  | 8                     | ±10          | ±12         | 5               | ZS-017                 | 1.2 or less         | 85         |
| TM-37     | 0.01            | 3.5                  | 5                  | 8                     | ±10          | ±12         | 6               | ZS-017                 | 1.2 or less         | 85         |
| TM-37C    | 0.01            | 3.5                  | 5                  | 8                     | ±10          | ±12         | 6               | ZS-017                 | 1.2 or less         | 85         |

\*In case flat back is required, please add suffix "F" to the end of model number. (example=TM-1201f)



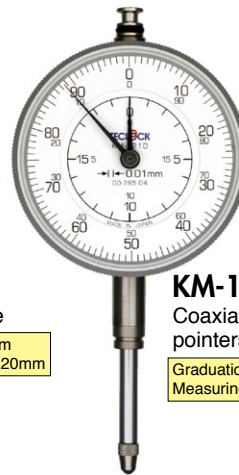
## 0.01mm Long Stroke Dial Indicator

- 20mm, 30mm long stroke dial indicators are available.
- Teclock unique shock proof mechanism is built-in to all models.
- Lifting lever (Option) can be mounted (except for KM-121PW).
- Bezel clamp (Option) can be mounted (except for KM-121PW).
- In case that flat back is required, add suffix "f" to the end of model number (example =KM-121f).



**KM-121**  
Standard type

Graduation 0.01mm  
Measuring Range 20mm



**KM-121D**  
Coaxial revolution pointers type

Graduation 0.01mm  
Measuring Range 20mm



**KM-121PW**  
Oil-proof type

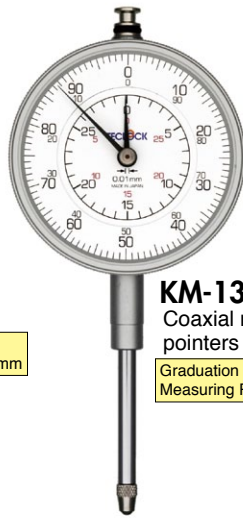
Graduation 0.01mm  
Measuring Range 20mm

### Measuring Range 30mm



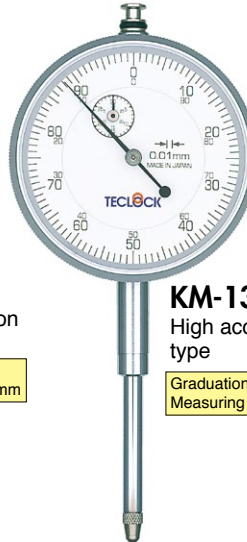
**KM-131**  
Standard type

Graduation 0.01mm  
Measuring Range 30mm



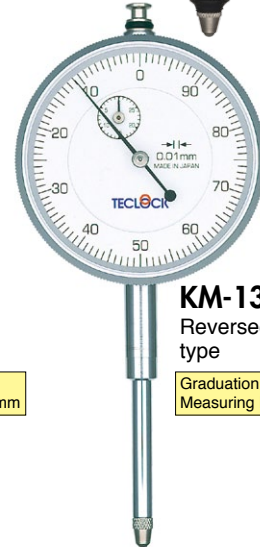
**KM-132D**  
Coaxial revolution pointers type

Graduation 0.01mm  
Measuring Range 30mm



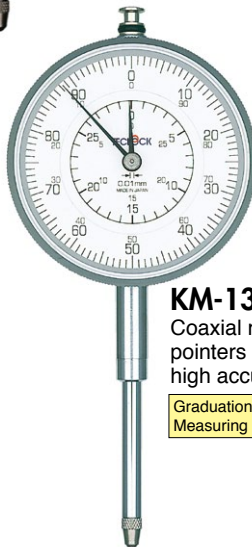
**KM-130**  
High accurate type

Graduation 0.01mm  
Measuring Range 30mm



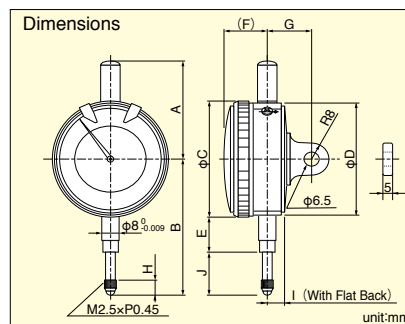
**KM-130R**  
Reversed dial type

Graduation 0.01mm  
Measuring Range 30mm



**KM-130D**  
Coaxial revolution pointers type in the high accuracy

Graduation 0.01mm  
Measuring Range 30mm



Dimensions Table

| Model    | A    | B  | C  | D    | E      | F    | G  | H   | I   | J      |
|----------|------|----|----|------|--------|------|----|-----|-----|--------|
| KM-121   | 36   | 75 | 55 | 52   | 18     | 15.5 | 20 | 7.5 | 7.8 | 29.5   |
| KM-121D  | 36   | 75 | 55 | 52   | 18     | 17.6 | 20 | 7.5 | 7.8 | 29.5   |
| KM-121PW | 55   | 89 | 56 | 52   | (17.5) | 14.5 | 20 | 11  | 8.3 | (43.5) |
| KM-131   | 36   | 86 | 55 | 52   | 19     | 15.5 | 20 | 7.5 | 8   | 39.5   |
| KM-132D  | 36   | 86 | 55 | 52   | 19     | 17.3 | 20 | 7.5 | 8   | 39.5   |
| KM-130   | 38.5 | 92 | 59 | 54.5 | 22.7   | 17.5 | 22 | 7.5 | 9.6 | 39.8   |
| KM-130R  | 38.5 | 92 | 59 | 54.5 | 22.7   | 17.5 | 22 | 7.5 | 9.6 | 39.8   |
| KM-130D  | 38.5 | 92 | 59 | 54.5 | 22.7   | 19.5 | 22 | 7.5 | 9.6 | 39.8   |

unit:mm

### Specifications

| Model    | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|----------|-----------------|----------------------|--------------------|-----------------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|          |                 |                      |                    | Adjacent Error        | 1 Revolution | Total Range |                 |                        |                     |            |
| KM-121   | 0.01            | 20                   | 5                  | 10                    | ±15          | ±20         | 7               | ZS-017                 | 2.2 or less         | 110        |
| KM-121D  | 0.01            | 20                   | 5                  | 10                    | ±15          | ±20         | 7               | ZS-017                 | 2.2 or less         | 115        |
| KM-121PW | 0.01            | 20                   | 5                  | 10                    | ±15          | ±20         | 7               | ZS-028                 | 2.2 or less         | 120        |
| KM-131   | 0.01            | 30                   | 5                  | 14                    | ±18          | ±35         | 8               | ZS-017                 | 2.5 or less         | 150        |
| KM-132D  | 0.01            | 30                   | 5                  | 14                    | ±18          | ±35         | 8               | ZS-017                 | 2.5 or less         | 155        |
| KM-130   | 0.01            | 30                   | 5                  | 14                    | ±18          | ±25         | 7               | ZS-017                 | 2.2 or less         | 150        |
| KM-130R  | 0.01            | 30                   | 5                  | 14                    | ±18          | ±25         | 7               | ZS-017                 | 2.2 or less         | 150        |
| KM-130D  | 0.01            | 30                   | 5                  | 14                    | ±18          | ±25         | 7               | ZS-017                 | 2.2 or less         | 155        |

\*In case flat back is required, please add suffix "f" to the end of model number.



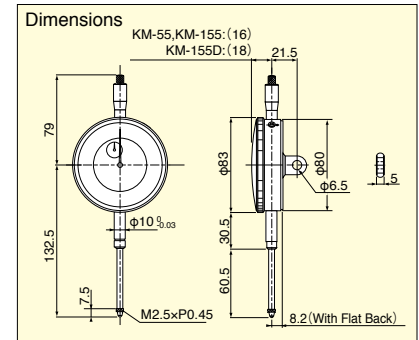
- 50mm, 100mm, 150mm long stroke dial indicators with a large graduation plates are available.
- Measuring up to 150mm is materialized with highest precision components of high durability and Teclock original and unique enlargement mechanism is built-in.

- 
- | KM-55                                     | KM-155                                    | KM-1                          |
|-------------------------------------------|-------------------------------------------|-------------------------------|
| Durability emphasis type                  | Wide graduation width type                | Coaxial pointer               |
| Graduation 0.05mm<br>Measuring Range 50mm | Graduation 0.01mm<br>Measuring Range 50mm | Graduation<br>Measuring Range |

Graduation 0.05mm  
Measuring Range 50mm

Graduation 0.01mm  
Measuring Range 50mm

Graduation 0.01mm  
Measuring Range 50mm



| Model   | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|---------|-----------------|----------------------|--------------------|-----------------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|         |                 |                      |                    | Adjacent Error        | 1 Revolution | Total Range |                 |                        |                     |            |
| KM-55   | 0.05            | 50                   | 20                 | 30                    | ±50          | ±100        | 15              | ZS-017                 | 2.5 or less         | 290        |
| KM-155  | 0.01            | 50                   | 5                  | 15                    | ±20          | ±35         | 9               | ZS-017                 | 2.5 or less         | 290        |
| KM-155D | 0.01            | 50                   | 5                  | 15                    | ±20          | ±35         | 9               | ZS-017                 | 2.5 or less         | 295        |

**KM-05100**  
Coaxial revolution pointers type  
Graduation 0.05mm  
Measuring Range 100mm

**KM-05150**  
Coaxial revolution pointers type  
Graduation 0.05mm  
Measuring Range 150mm

525mm

The longest mechanical type model: KM-05150

| Model    | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | T Ind |
|----------|-----------------|----------------------|--------------------|-------|
| KM-05100 | 0.05            | 100                  | 30                 |       |

Graduation 0.05mm  
Measuring Range 100mm

Graduation 0.05mm  
Measuring Range 150mm

[illegible]

| Model    | A   | B   | C  | D   | E   |
|----------|-----|-----|----|-----|-----|
| KM-05100 | 140 | 235 | 44 | 80  | 111 |
| KM-05150 | 190 | 335 | 55 | 120 | 160 |

unit:mm

| Model    | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Total Range Indication Error (μm) | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|----------|-----------------|----------------------|--------------------|-----------------------------------|-----------------|------------------------|---------------------|------------|
| KM-05100 | 0.05            | 100                  | 30                 | ±100                              | 15              | ZS-018                 | 2.5 or less         | 550        |
| KM-05150 | 0.05            | 150                  | 30                 | ±150                              | 15              | ZS-018                 | 3.0 or less         | 680        |



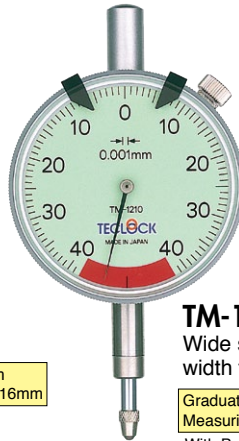
# One Revolution Dial Indicator

- These are indicators that are effective for comparative measurement with 0.0005mm, 0.001mm, and 0.01mm.
- High durability is realized with Teclock original and unique enlargement mechanism is built-in.
- Limiter is mounted as standard.
- Measuring ranges are subdivided to 0.08mm, 0.16mm, 0.2mm and 1.0mm.
- Clump is attached to 0.001mm model.
- Lifting lever (Option) can be mounted.
- In case that flat back is required, add suffix "f" to the end of model number (example =TM-1200 f).



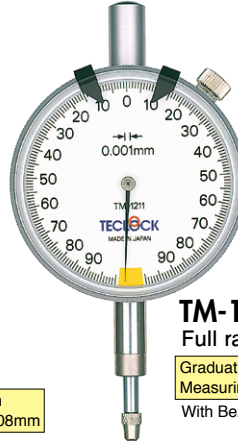
**TM-1200**  
Standard type

Graduation 0.001mm  
Measuring Range 0.16mm  
With Bezel clamp



**TM-1210**  
Wide scale width type

Graduation 0.001mm  
Measuring Range 0.08mm  
With Bezel clamp



**TM-1211**  
Full range type

Graduation 0.001mm  
Measuring Range 0.2mm  
With Bezel clamp



**TM-102**  
Graduation of 0.01mm type

Graduation 0.01mm  
Measuring Range 1.0mm  
Bezel clamp (Option)



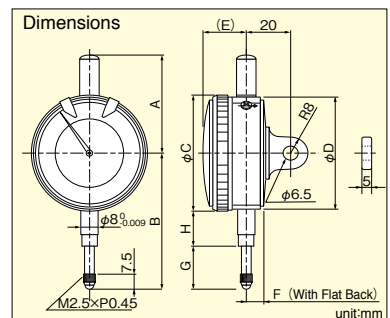
**TM-98**  
Graduation of 0.1mm type

Graduation 0.1mm  
Measuring Range 3.2mm  
Bezel clamp (Option)



**TM-5210**  
Minimum graduation type

Graduation 0.0005mm  
Measuring Range 0.08mm



## Specifications

| Model   | Graduation (mm) | Measuring Range (Free Stroke) (mm) | Repeatability (μm) | Indication Error (μm) |              |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|---------|-----------------|------------------------------------|--------------------|-----------------------|--------------|-------------|-----------------|------------------------|---------------------|------------|
|         |                 |                                    |                    | Adjacent Error        | 1 Revolution | Total Range |                 |                        |                     |            |
| TM-1200 | 0.001           | 0.16 (3.5)                         | 0.5                | 2.5                   | -            | ±5          | 3               | ZS-017                 | 1.5 or less         | 175        |
| TM-1210 | 0.001           | 0.08 (3.5)                         | 0.8                | 2.5                   | -            | ±3.5        | 3               | ZS-017                 | 1.5 or less         | 175        |
| TM-1211 | 0.001           | 0.2 (3.5)                          | 0.5                | 2.5                   | -            | ±5          | 3               | ZS-017                 | 1.5 or less         | 175        |
| TM-102  | 0.01            | 1 (5)                              | 5                  | 7                     | -            | ±10         | 5               | ZS-017                 | 1.4 or less         | 150        |
| TM-98   | 0.1             | 3.2 (6)                            | 20                 | 20                    | -            | ±40         | 20              | ZS-017                 | 1.4 or less         | 150        |
| TM-5210 | 0.0005          | 0.08 (3.5)                         | 0.8                | 2.5                   | -            | ±2.5        | 2.5             | ZS-017                 | 1.5 or less         | 175        |

\*In case flat back is required, please add suffix "f" to the end of model number.

## Dimensions Table

| Model   | A    | B  | C  | D    | E    | F   | G  | H    |
|---------|------|----|----|------|------|-----|----|------|
| TM-1200 | 44.5 | 62 | 56 | 52.5 | 15   | 8   | 16 | 18   |
| TM-1210 | 44.5 | 62 | 56 | 52.5 | 15   | 8   | 16 | 18   |
| TM-1211 | 44.5 | 62 | 56 | 52.5 | 15   | 8   | 16 | 18   |
| TM-102  | 48   | 65 | 55 | 52   | 15.8 | 8   | 19 | 18.5 |
| TM-98   | 48   | 65 | 55 | 52   | 15.8 | 7.8 | 19 | 18.5 |
| TM-5210 | 44.5 | 62 | 56 | 52.5 | 15   | 8   | 16 | 18   |

unit:mm



## Dial Indicator

### 0.1mm Dial Indicator

- These are 0.1mm graduation dial indicators.
- 3 types of 10mm, 20mm and 30mm are available depending on measuring ranges.
- Lifting lever (Option) can be mounted.
- This is used to measure approximate dimensional judgment for woodwork and leather goods etc. and also applicable for measurement of judge deviation dimension.
- Lifting lever (Option) can be mounted.
- Measuring ability can be changed. (Refer to page 23)
- In case that flat back is required, add suffix "f" to the end of model number (example =TM-91f).



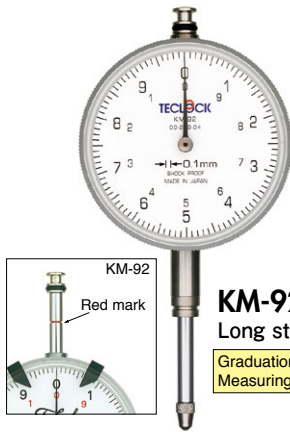
**TM-91**  
Standard type

Graduation 0.1mm  
Measuring Range 10mm



**TM-91R**  
Reversed dial type

Graduation 0.1mm  
Measuring Range 10mm



**KM-92**  
Long stroke type

Graduation 0.1mm  
Measuring Range 20mm



**KM-93**  
Long stroke type

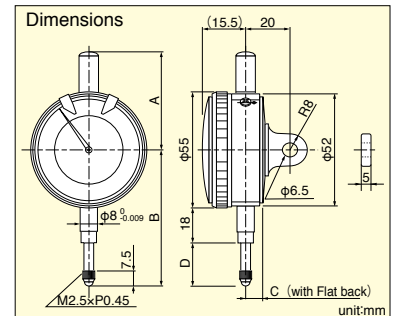
Graduation 0.1mm  
Measuring Range 30mm



**TM-35-01**  
Small type

Graduation 0.1mm  
Measuring Range 10mm

(See page 20)



Dimensions Table

| Model  | A  | B  | C   | D    |
|--------|----|----|-----|------|
| TM-91  | 48 | 65 | 7.8 | 19.5 |
| TM-91R | 48 | 65 | 7.8 | 19.5 |
| KM-92  | 36 | 75 | 7.8 | 29.5 |
| KM-93  | 36 | 85 | 7.8 | 39.5 |

unit:mm

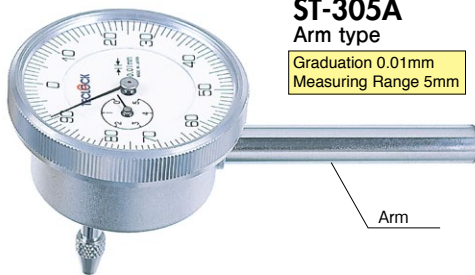
#### Specifications

| Model  | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |             | Hysteresis (μm) | Standard Contact Point | Measuring Force (N) | Weight (g) |
|--------|-----------------|----------------------|--------------------|-----------------------|-------------|-----------------|------------------------|---------------------|------------|
|        |                 |                      |                    | 1 Revolution          | Total Range |                 |                        |                     |            |
| TM-91  | 0.1             | 10                   | 35                 | -                     | ±50         | -               | ZS-017                 | 1.4 or less         | 110        |
| TM-91R | 0.1             | 10                   | 35                 | -                     | ±50         | -               | ZS-017                 | 1.4 or less         | 110        |
| KM-92  | 0.1             | 20                   | 35                 | ±50                   | ±60         | -               | ZS-017                 | 2.2 or less         | 110        |
| KM-93  | 0.1             | 30                   | 35                 | ±50                   | ±70         | -               | ZS-017                 | 2.5 or less         | 120        |

\*In case flat back is required, please add suffix "f" to the end of model number.

### Back Plunger Dial Indicator

- These are different from general indicators, of which gradation plate can be set in parallel to measuring face. It is suitable for leveling smooth surface and reading from the front of measuring point.



**ST-305A**  
Arm type

Graduation 0.01mm  
Measuring Range 5mm

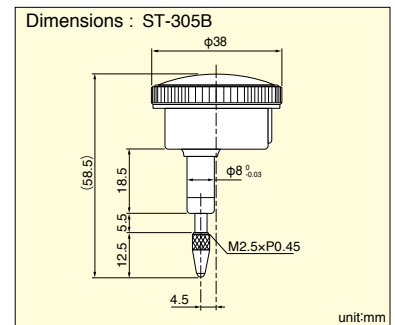
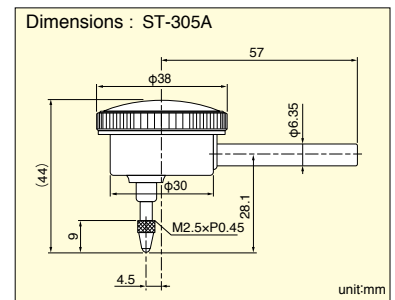


**ST-305B**  
Stem type

Graduation 0.01mm  
Measuring Range 5mm



Displacement of can be read from above.



#### Specifications

| Model   | Graduation (mm) | Measuring Range (mm) | Repeatability (μm) | Indication Error (μm) |                |              |              |             | Hysteresis (μm) | Measuring Force (N) | Weight (g) |
|---------|-----------------|----------------------|--------------------|-----------------------|----------------|--------------|--------------|-------------|-----------------|---------------------|------------|
|         |                 |                      |                    | Adjacent Error        | 1/2 Revolution | 1 Revolution | 2 Revolution | Total Range |                 |                     |            |
| ST-305A | 0.01            | 5                    | 5                  | 10                    | ±12            | ±15          | ±20          | ±20         | 6               | 1.4 or less         | 80         |
| ST-305B | 0.01            | 5                    | 5                  | 10                    | ±12            | ±15          | ±20          | ±20         | 6               | 1.4 or less         | 80         |



## Table for low measuring forced dial indicator (Build to order)

| Model   | Start Measuring Force (N) | Stop Measuring Force (N) | Standard Measuring Force (N) |
|---------|---------------------------|--------------------------|------------------------------|
| TM-1201 | 0.8                       | 1.1                      | 1.5                          |
| TM-1202 | 0.8                       | 1.1                      | 1.5                          |
| TM-1205 | 0.6                       | 0.8                      | 1.5                          |
| TM-5105 | 0.4                       | 0.9                      | 1.4                          |
| TM-110  | 0.2                       | 0.4                      | 1.4                          |

| Model | Start Measuring Force(N) | Stop Measuring Force(N) | Standard Measuring Force (N) |
|-------|--------------------------|-------------------------|------------------------------|
| TM-34 | 0.15                     | 0.3                     | 1.0                          |
| TM-35 | 0.15                     | 0.2                     | 1.3                          |
| TM-36 | 0.4                      | 0.7                     | 1.2                          |
| TM-37 | 0.4                      | 0.7                     | 1.2                          |
| KM-92 | 0.18                     | 0.35                    | 2.2                          |

| Model  | Start Measuring Force(N) | Stop Measuring Force(N) | Standard Measuring Force (N) |
|--------|--------------------------|-------------------------|------------------------------|
| KM-121 | 0.3                      | 0.5                     | 2.2                          |
| KM-130 | 0.4                      | 0.6                     | 2.2                          |
| KM-155 | 0.7                      | 1.2                     | 2.5                          |
| KM-131 | 0.2                      | 0.5                     | 2.5                          |

(Note) You can not use in the reverse posture.

### Lifting Lever Set ZY Series

Spindle can be moved up and down by installing lift lever. It is convenient to use dial indicator by installing it to a stand.



With Lifting Lever  
TM-110

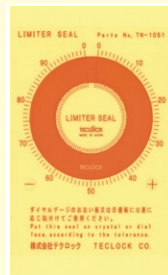


1. Moving lift lever down,
2. Spindle gets up
3. Pointer rotates in clockwise direction
4. Short hand rotates in counter clockwise direction.

| Code No. | Applicable Models                                                                                                                                       |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| ZY-900   | TM-91, TM-110, TM-110P, TM-110D, TM-110-4A, TM-110G, DM-210, DM-210P, DM-211, DM-213, DM-214, DM-280, DM-283, TM-98, TM-91R, TM-110R                    |
| ZY-901   | TM-35, TM-35-03, TM-35-04                                                                                                                               |
| ZY-902   | TM-102, TM-5210, TM-105, TM-105W, TM-5105, TM-5106, TM-5210, TM-1200, TM-1201, TM-1202, TM-1205, TM-1251, TM-1210, TM-1211, DM-250, DM-250P, DM-251     |
| ZY-922   | KM-130, KM-130D, KM-130R                                                                                                                                |
| ZY-904   | KM-121, KM-121D, KM-131, KM-132D, KM-92, KM-93, DM-220, DM-221, DM-223, DM-223P, DM-224, DM-224P, DM-230, DM-233, DM-234                                |
| ZY-905   | TM-36, TM-37, TM-37C                                                                                                                                    |
| ZY-913   | TM-35-01, TM-35-02D                                                                                                                                     |
| ZY-918   | PC-440J, PC-465J, DMD-210J, DMD-211J, DMD-213J, DMD-214J, DMD-215J, DMD-293J, PC-480S2, PC-485S2, DMD-210S2, DMD-211S2, DMD-213S2, DMD-250S2, DMD-252S2 |

### Limiter Seal

Seal is for judging tolerance of dial indicator. Putting seal to cover plate of dial indicator becomes mark to judge tolerance.



TN-1051 Red



TN-1052 Blue



TN-1053 Green

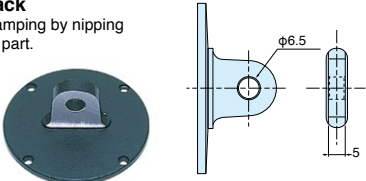
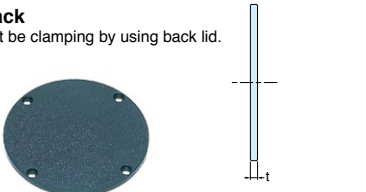
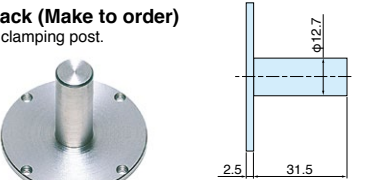
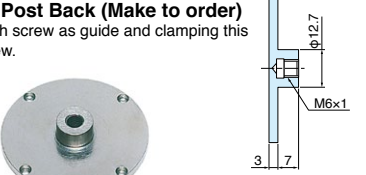
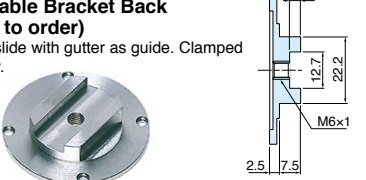
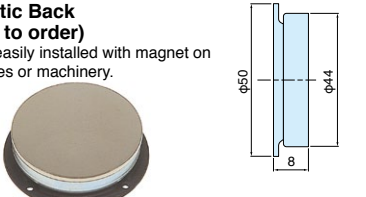


Dial Indicator used.  
For outer frame diameter  
φ55-φ59.  
It can be used for TM-110 /  
TM-1201



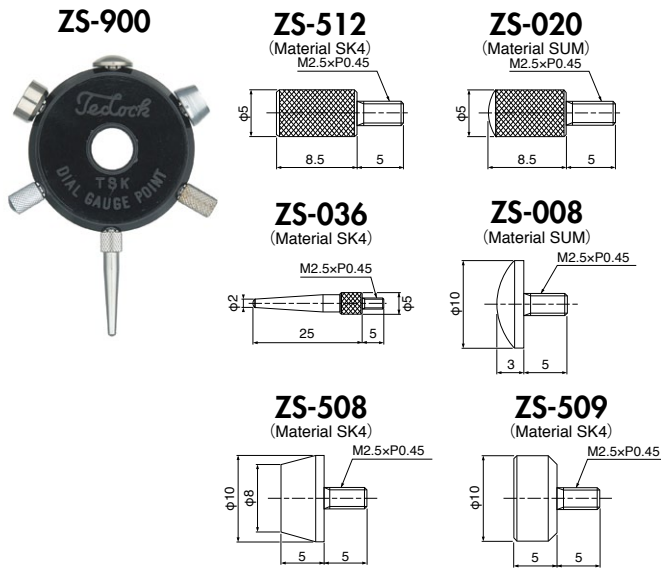
## Parts & Accessories

### Back

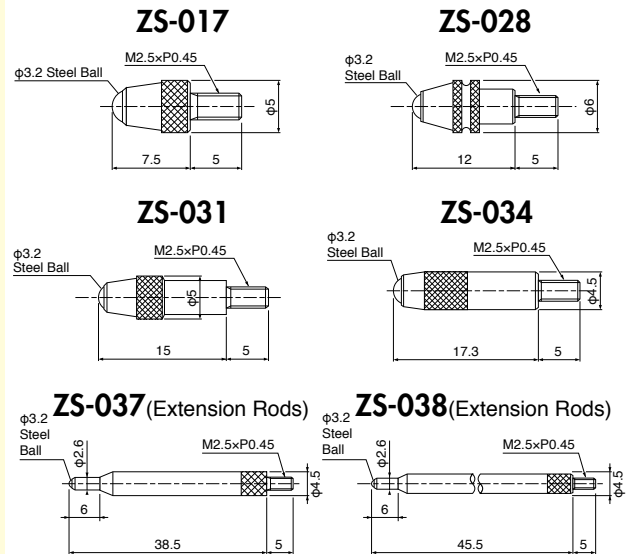
| Backs                                                                                                                                                                                                                              | Code No.                                                                                                                                                               | Applicable Models                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lug Back</b><br>Bezel clamping by nipping lug back part.<br> Small type have 2-holes. unit : mm                                                | ZL-010<br>ZL-021<br>ZL-024<br>ZL-007<br>ZL-012<br>ZL-013<br>ZL-017                                                                                                     | TM-1200, TM-1201, TM-1201PW, TM-1202, TM-1251, TM-102, TM-98, TM-5210, TM-110, TM-110R, TM-110D, TM-110-4A, TM-110PW, TM-110G, TM-110P, TM-105, TM-105W, TM-5105, TM-5106, TM-91, TM-91R, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-1210, TM-1211<br>TM-34<br>TM-35, TM-35-01, TM-35-02D, TM-35-03, TM-35-04<br>TM-36, TM-37, TM-37C<br>TM-1205<br>KM-130, KM-130D, KM-130R<br>KM-55, KM-155, KM-155D   |
| <b>Flat Back</b><br>It can not be clamping by using back lid.<br> Small type have 2-holes. unit : mm                                              | ZL-066 (t=2.3mm) (Plastic)<br>ZL-067 (t=2mm) (Alumi)<br>ZL-060 (t=1.5mm)<br>ZL-062 (t=1.5mm)<br>ZL-063 (t=1.5mm)<br>ZL-073 (t=2mm)<br>ZL-076 (t=2mm)<br>ZL-072 (t=2mm) | TM-110, TM-110R, TM-110G, TM-110P, TM-105, TM-105W, TM-5105, TM-5106, TM-102, TM-91, TM-91R, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-98, TM-110D, TM-110-4A<br>TM-1200, TM-1201, TM-1201PW, TM-1202, TM-5210, TM-1210, TM-1211, TM-1251, TM-110PW<br>TM-34<br>TM-35, TM-35-01, TM-35-02D, TM-35-03, TM-35-04<br>TM-36, TM-37, TM-37C<br>TM-1205<br>KM-130, KM-130D, KM-130R<br>KM-55, KM-155, KM-155D |
| <b>Post Back (Make to order)</b><br>Used by clamping post.<br> Small type have 2-holes. unit : mm                                                 | ZL-120<br>ZL-121<br>ZL-122<br>ZL-123<br>ZL-124                                                                                                                         | TM-1200, TM-1201, TM-1201PW, TM-1202, TM-1251, TM-102, TM-5210, TM-110, TM-110R, TM-110D, TM-110-4A, TM-110PW, TM-110G, TM-105, TM-105W, TM-5105, TM-5106, TM-91, TM-91R, TM-98, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-1210, TM-1211<br>TM-35, TM-35-01, TM-35-02D, TM-35-03, TM-35-04<br>TM-36, TM-37, TM-37C<br>KM-130, KM-130D, KM-130R<br>KM-55, KM-155, KM-155D                                |
| <b>Screw Post Back (Make to order)</b><br>Used with screw as guide and clamping this with screw.<br> Small type have 2-holes. unit : mm         | ZL-130<br>ZL-131<br>ZL-132<br>ZL-133<br>ZL-134                                                                                                                         | TM-1200, TM-1201, TM-1201PW, TM-1202, TM-1251, TM-102, TM-5210, TM-110, TM-110R, TM-110D, TM-110-4A, TM-110PW, TM-110G, TM-110P, TM-105, TM-105W, TM-5105, TM-5106, TM-91, TM-91R, TM-98, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-1210, TM-1211<br>TM-35, TM-35-01, TM-35-02D, TM-35-03, TM-35-04<br>TM-36, TM-37, TM-37C<br>KM-130, KM-130D, KM-130R<br>KM-55, KM-155, KM-155D                       |
| <b>Adjustable Bracket Back (Make to order)</b><br>Can be slide with gutter as guide. Clamped by screw.<br> Small type have 2-holes. unit : mm   | ZL-140<br>ZL-142<br>ZL-141<br>ZL-143                                                                                                                                   | TM-1200, TM-1201, TM-1201PW, TM-1202, TM-1251, TM-102, TM-5210, TM-110, TM-110R, TM-110D, TM-110-4A, TM-110PW, TM-110G, TM-105, TM-110P, TM-105W, TM-5105, TM-5106, TM-91, TM-91R, TM-98, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-1210, TM-1211<br>TM-35, TM-35-01, TM-35-02D, TM-35-03, TM-35-04<br>TM-36, TM-37, TM-37C<br>KM-55, KM-155, KM-155D                                                   |
| <b>Magnetic Back (Make to order)</b><br>Can be easily installed with magnet on iron Plates or machinery.<br> Small type have 2-holes. unit : mm | ZL-900                                                                                                                                                                 | TM-1200, TM-1201, TM-1201PW, TM-1202, TM-1251, TM-102, TM-5210, TM-110, TM-110R, TM-110D, TM-110-4A, TM-110PW, TM-110G, TM-105, TM-110P, TM-105W, TM-5105, TM-5106, TM-91, TM-91R, TM-98, KM-92, KM-93, KM-121, KM-121D, KM-121PW, KM-131, KM-132D, TM-1210, TM-1211                                                                                                                                                       |



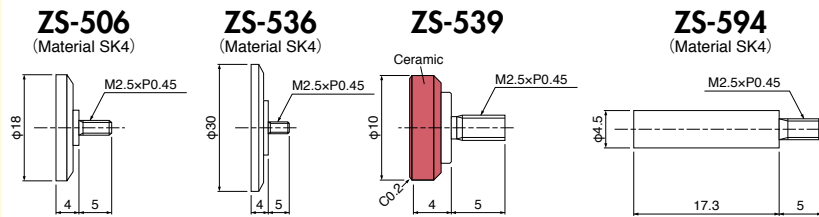
## Contact Point Set



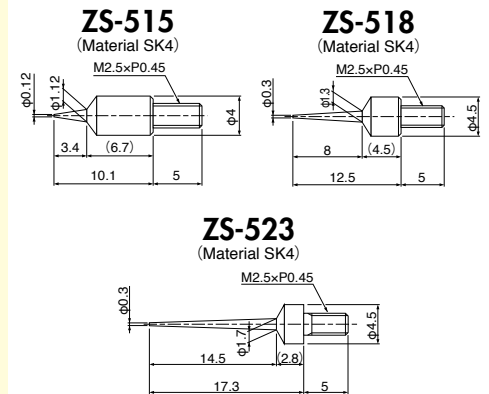
## Steel Ball Contact Point



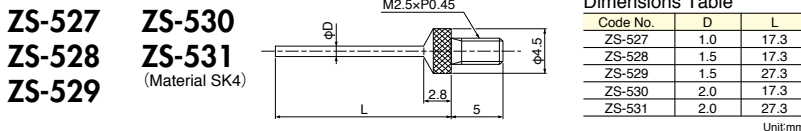
## Flat Contact Point



## Needle Contact Point



## Flat Needle Contact Point



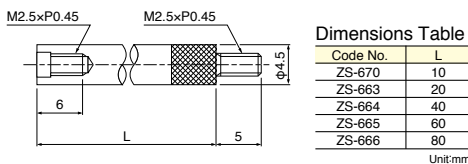
Dimensions Table

| Code No. | D   | L    |
|----------|-----|------|
| ZS-527   | 1.0 | 17.3 |
| ZS-528   | 1.5 | 17.3 |
| ZS-529   | 1.5 | 27.3 |
| ZS-530   | 2.0 | 17.3 |
| ZS-531   | 2.0 | 27.3 |

Unit:mm

## Extension Rods

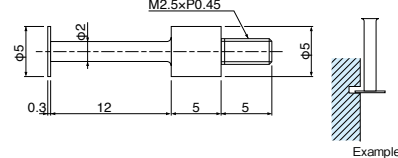
**ZS-663·664·665·666·670**  
(Material SUM)



Unit:mm

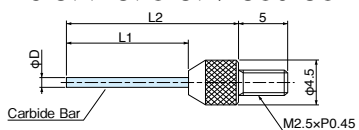
## T-shape Contact Point

**ZS-526**  
(Material SK4)



## Carbide Flat Needle Contact Point

**ZS-577·578·579·580·581·582·583**



Dimensions Table

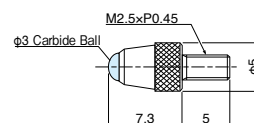
| Code No. | D   | L1 | L2   |
|----------|-----|----|------|
| ZS-577   | 0.5 | 12 | 18.3 |
| ZS-578   | 0.8 | 12 | 18.3 |
| ZS-579   | 1.0 | 12 | 18.3 |

| Code No. | D   | L1 | L2   |
|----------|-----|----|------|
| ZS-580   | 1.5 | 12 | 18.3 |
| ZS-581   | 1.5 | 22 | 28.3 |
| ZS-582   | 2.0 | 12 | 18.3 |
| ZS-583   | 2.0 | 22 | 28.3 |

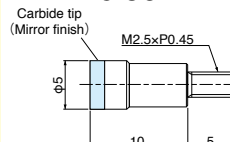
Unit:mm

## Carbide Contact Point

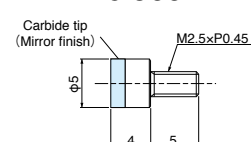
**ZS-117**



**ZS-532**



**ZS-533**



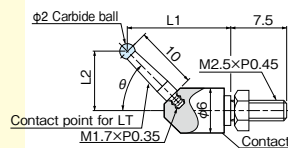


## Dial Indicator

### Special Contact Point

#### ZS-907·908·909

(Offset Contact Point with ZS-713)



Dimensions Table

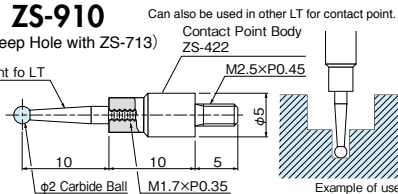
| Code No. | Contact point body | θ   | L1   | L2   |
|----------|--------------------|-----|------|------|
| ZS-907   | ZS-419             | 30° | 17.1 | 7    |
| ZS-908   | ZS-420             | 45° | 15.1 | 9.1  |
| ZS-909   | ZS-421             | 60° | 12.3 | 10.7 |

Can also be used in other LT for contact point.

#### ZS-910

(for Deep Hole with ZS-713)

Contact point to LT



### Roller Point

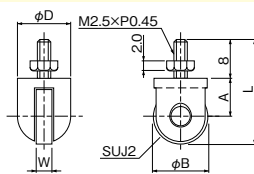
#### ZS-802·803·804

(Material SUJ2)

Dimensions Table

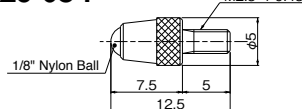
| Code No. | A    | B  | D  | L    | W   |
|----------|------|----|----|------|-----|
| ZS-802   | 5.5  | 6  | 6  | 16.5 | 2.6 |
| ZS-803   | 8    | 11 | 11 | 21.5 | 4   |
| ZS-804   | 13.5 | 22 | 14 | 32.5 | 7   |

unit:mm



### Nylon Ball Point

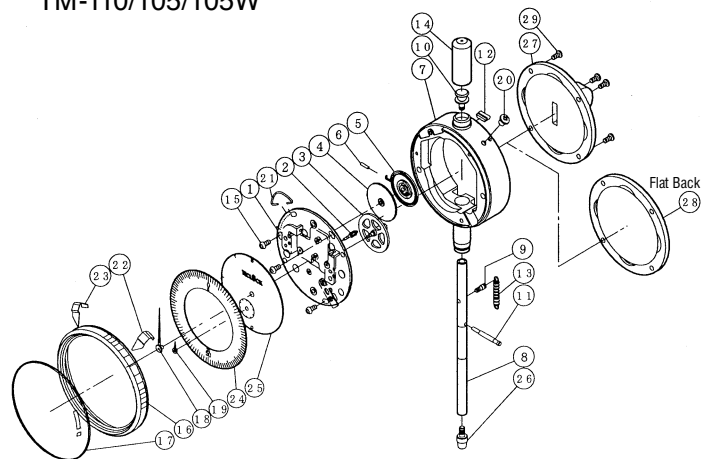
#### ZS-054



## Parts List

### 0.01mm Dial Indicator

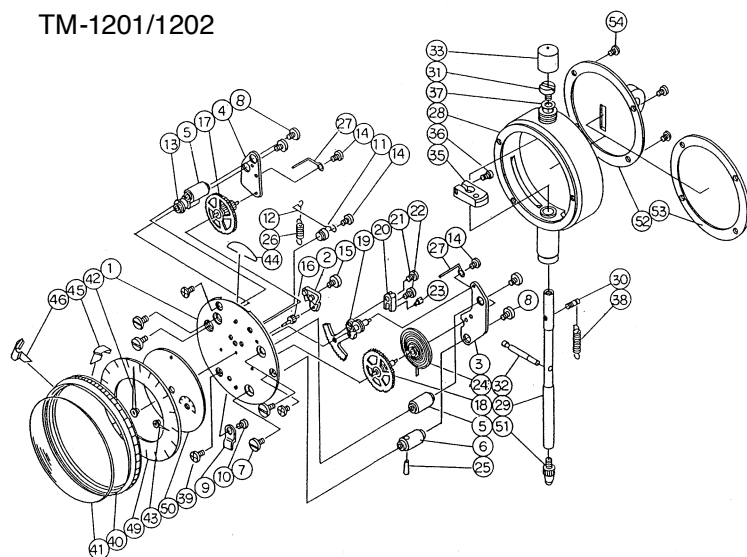
#### TM-110/105/105W



| Key No. | Model No.<br>Product No. | TM-110<br>00-465-04 | TM-105<br>00-461-04 | TM-105W<br>00-463-03 |
|---------|--------------------------|---------------------|---------------------|----------------------|
|         | Part Name                |                     |                     |                      |
| 1       | Bottom Plate Assy        |                     | DG-110501S          |                      |
| 2       | Center Pinion            |                     | DG-110009S          |                      |
| 3       | #1 Gear Assy             |                     | DG-110511S          |                      |
| 4       | #2 Gear Assy             |                     | DG-110514P          |                      |
| 5       | Hair Spring              |                     | DG-110516           |                      |
| 6       | Hair Spring Pin          |                     | DG-921018           |                      |
| 7       | Case                     |                     | DG-110541S          |                      |
| 8       | Spindle                  | DG-110046S          | DG-105046S          |                      |
| 9       | Stop Screw               |                     | DG-110047           |                      |
| 10      | Top Point                |                     | DG-110048S          |                      |
| 11      | Slide Pin                |                     | DG-110049S          |                      |
| 12      | Shock Pillow             |                     | DG-110056S          |                      |
| 13      | Spring                   |                     | DG-110067           |                      |
| 14      | Cap                      |                     | ZY-006              |                      |
| 15      | Bottom Plate Screw       |                     | 001523              |                      |
| 16      | Bezel                    | DG-110081S          | DG-121081S          |                      |
| 17      | Dial Cover               | DG-110088           |                     |                      |
| 18      | Pointer                  |                     | DG-110584           |                      |
| 19      | Counter Hand             |                     | DG-110586           |                      |
| 20      | #0 Screw                 |                     | 021033              |                      |
| 21      | Bezel Spring             |                     | DG-110090S          |                      |
| 22      | Tolerance Hand R         |                     | DG-110092           |                      |
| 23      | Tolerance Hand L         |                     | DG-110093           |                      |
| 24      | Dial Plate               | T-5101              | T-62                | T-5101               |
| 25      | Counter Hand Dial Plate  | T-5262              | T-5271              | T-5269               |
| 26      | Contact Point            |                     | ZS-017              |                      |
| 27      | Lug Back                 | ZL-010              |                     | ZL-010               |
| 28      | Flat Back                |                     | ZL-066              |                      |
| 29      | #0 Screw                 |                     | 001328              |                      |

### 0.001mm Dial Indicator

#### TM-1201/1202



| Key No. | Part name           | TM-1201    | TM1202     | Key No. | Part name               | TM-1201 | TM1202     |
|---------|---------------------|------------|------------|---------|-------------------------|---------|------------|
| 1       | Bottom Plate        |            |            | 28      | Case                    |         | DG-1201641 |
| 2       | Center Bearing      |            |            | 29      | Spindle                 |         | DG-1201046 |
| 3       | #1 Upper Plate      |            |            | 30      | Stop Screw              |         | DG-1201047 |
| 4       | #2 Upper Plate      |            |            | 31      | Top Screw               |         | DG-36048   |
| 5       | #1 Post             |            |            | 32      | Slide Pin               |         | DG-1201049 |
| 6       | #2 Post             |            |            | 33      | Cap                     |         | ZY-012     |
| 7       | Upper Plate Screw A |            |            | 35      | Contacting Point Assy.  |         | DG-1201554 |
| 8       | Upper Plate Screw B |            |            | 36      | Contacting Point Assy.  |         | DG-1201056 |
| 9       | Bezel Clamp         |            |            | 37      | Top Washer              |         | DG-1201058 |
| 10      | Bezel Clamp Screw   |            |            | 38      | Spring                  |         | DG-1201067 |
| 11      | Lever Statto        |            |            | 39      | Base Plate Screw        |         | 001314     |
| 12      | Spring Lever        |            |            | 40      | Bezel                   |         | DG-1201081 |
| 13      | #3 Post             |            |            | 41      | Dial Cover              |         | DG-1201088 |
| 14      | Spring Lever Screw  |            |            | 42      | Pointer                 |         | DG-1201584 |
| 15      | #0 Screw            |            | 001308     | 43      | Counter Hand            |         | DG-1201586 |
| 16      | Center Pinion       | DG-1201009 | DG-1202009 | 44      | Bezel Spring            |         | DG-110090  |
| 17      | #1 Gear Assy.       | DG-1201511 | DG-1202511 | 45      | Tolerance Hand R        |         | DG-110092  |
| 18      | #2 Gear Assy.       | DG-1201514 |            | 46      | Tolerance Hand L        |         | DG-110093  |
| 19      | Sector Gear Assy.   | DG-1201323 |            | 49      | Dial Plate              |         | T-53048    |
| 20      | Bracket             | DG-1201331 |            | 50      | Counter Hand Dial Plate | T-5004B | T-5005B    |
| 21      | Bracket Screw A     | DG-1201032 |            | 51      | Contact Point           |         | ZS-017     |
| 22      | Bracket Screw B     | DG-1201033 |            | 52      | Lug Back                |         | ZL-010     |
| 23      | Cam                 | DG-1201034 |            | 54      | Lug Back Screw          |         | 001314     |
| 24      | Hair Spring         | DG-121516  |            |         |                         |         |            |
| 25      | Hair Spring Pin     | DG-131018  |            |         |                         |         |            |
| 26      | Spring B            | DG-1201037 |            |         |                         |         |            |
| 27      | Stopper             | DG-1201038 |            |         |                         |         |            |