

## Dial Indicator / Comparator

# DIAL GAUGE

Model No.	DI-10KD	WDI-0342	WDI-0558SP
	WDI-10	WDI-0542	WDI-1058SP
	DI-1058		WDI-0158SP

Thank you for purchasing the Niigata Seiki Dial Gauge.

Used with a Magnetic Base or Indicator Stand, this gauge will show the difference in height or position relative to a zero point set at a reference position.

## APPLICATIONS

- Comparing parts to a master part during inspection
- Measuring machine tools positioning accuracy

- Measuring runout for rotary shafts
- Checking vise parallelism on milling machines
- Measuring flatness of surfaces and assemblies
- Confirming machine tool feed distance

● For safe and proper use of this product, please read this instruction manual before use and follow the procedures described. Please keep manual where it is accessible to user for future reference.

● Keep this manual with the instrument if transferred or leased to a third party.

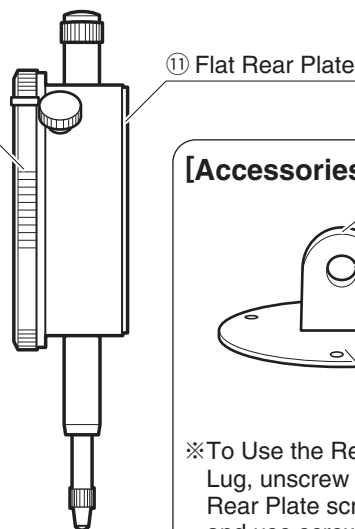
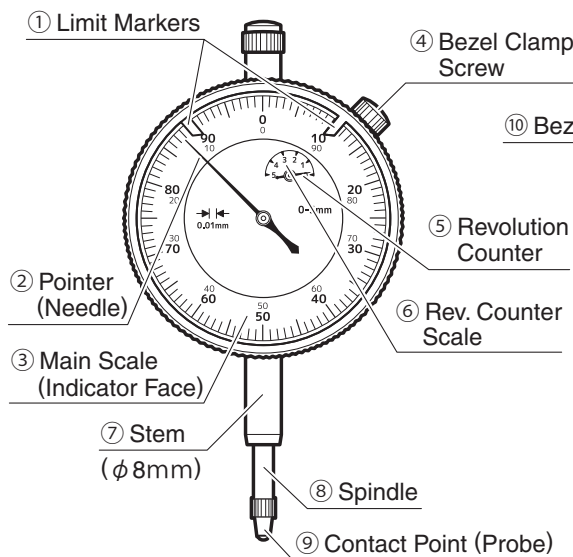
● For inquiries about this product, please contact dealer or Niigata Seiki at the address listed on the following page.

## SAFETY NOTIFICATIONS

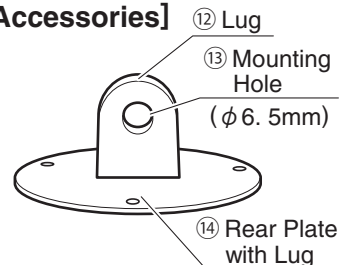
Throughout this manual, "⚠" symbol indicates RISK OF PERSONAL INJURY OR PROPERTY DAMAGE if not followed.

The "⊘" symbol indicates something which is PROHIBITED, and the "⊙" symbol Indicates REQUIRED step or necessary condition.

## PART IDENTIFICATION, FUNCTION ※Model WDI-0558SP shown



### [Accessories]



※To Use the Rear Plate with Lug, unscrew the Standard Flat Rear Plate screws, replace, and use screws to secure.

- ① Limit Markers ..... For marking acceptance range for Pass/Fail testing
- ② Pointer (Needle) ..... Shows measurement on Main Scale
- ③ Main Scale ..... Main Scale, rotate Bezel (⑩) to turn
- ④ Bezel Clamp Screw ..... Clamps Scale to prevent rotation (DI-10KD/WDI-0558SP/WDI-1058SP/WDI-0158SP only)
- ⑤ Revolution Counter ..... Pointer indicates Main Scale × 100
- ⑥ Rev. Counter Scale ..... Each division is Main Scale × 100

- ⑦ Stem ..... For holding and mounting Gauge
- ⑧ Spindle ..... Shaft moves up and down with measurement
- ⑨ Contact Point ..... Probe which contacts workpiece
- ⑩ Bezel ..... Rotate to turn Main Scale (③)
- ⑪ Flat Rear Plate ..... Standard back cover
- ⑫ Lug ..... Alternate mounting point
- ⑬ Mounting Hole ..... For mounting Gauge
- ⑭ Rear Plate with Lug ..... Accessory back cover for mounting Gauge using Lug

# SAFETY PRECAUTIONS

Please Observe

Always follow the procedures specified below in order to prevent harm to yourself or others, and to prevent damage to property.

■ Content marked as follows indicates risk of injury or damage if not followed.



## WARNING

Indicates risk of personal injury or property damage if not followed.

■ These symbols mark content that must be observed.



Denotes a prohibition – You **MUST NOT** do.



Denotes a requirement – You **MUST** do.



## CAUTION



**Read the manual and follow all instructions.**

- Use of product other than as described in the manual may cause accident.



**Use only as indicator Gauge.**

- Use for any purpose other than measuring may damage or wear the instrument. Improper use may also cause accident.



**Use in an environment which meets the following conditions:**

- Temperature within range of 0~40°C, humidity 30~70% (non-condensing.)
- Location with minimal dust, oil, oil mist, and protected from direct sunlight.
- Location protected from use by children and unauthorized people.
- Use in location contrary to the above may cause poor accuracy, damage to the product, or may result in accident or injury.



**Handle With Care.**

- Do not drop or subject to shock, do not place under heavy objects. Damage may cause failure or poor accuracy.



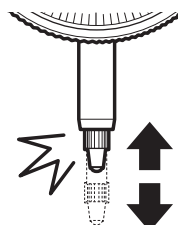
**Do not disassemble or modify.**

- It may damage Gauge and cause poor accuracy
- If Bezel Clamp Screw is removed, internal components may come loose and become misaligned causing product failure.

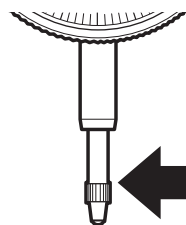


**Do not shock Spindle.**

- Rapid motion, or lateral force may damage Gauge and cause poor accuracy.



No Rapid Motion



No Lateral Force

## PREPARATION - Mounting

Dial gauge must be securely mounted such as on a comparator stand or magnetic base. Please follow these guidelines.



**Make sure Gauge holder is rigid.**

- Holder must be sufficiently secure to prevent deflection from the weight of the Gauge.
- Holder must be rigid enough to hold Gauge and not to lift from measurement force.
- Holder support arm should be as short as possible to prevent deflection.
- ※ Deflection or lifting will cause measurement error such as origin position error and inaccuracies in measured reading.



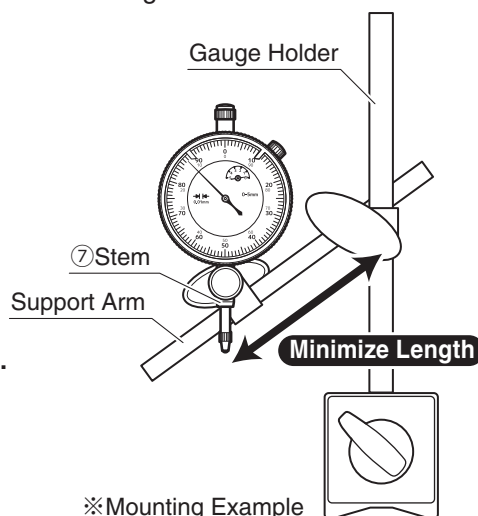
**Dial Gauge must only be attached by Stem or Rear Lug.**

- Mounting of gauge by other than Stem or Lug will cause inaccuracy and product damage.



**During installation, do not over-tighten the Stem.**

- Excessive force on the Stem may cause Spindle to bind.



# HOW TO USE - Preparation

## ① Confirm that the Contact Point and Rear Plate are tightly fastened.

If loose, tighten Contact Point and Rear Plate Screws.

## ② Attach to the Gauge Holder using the Stem or Rear Lug.

Mounting Gauge by other than Stem or Lug will cause inaccuracy and product damage.

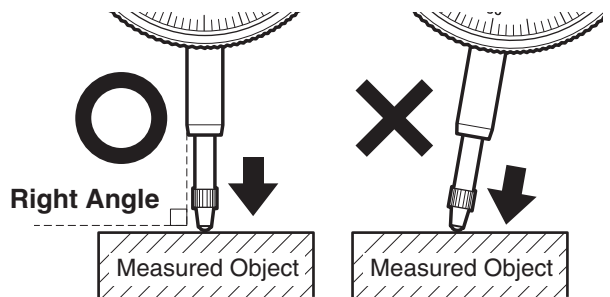
## ③ Confirm that Pointer and Revolution Counter movement is smooth.

Using fingertip, gently press on Contact Point to move the Spindle up and down. Motion of Pointers should be smooth. If it is not smooth make sure Stem is not clamped too tight, and adjust. Also make sure Pointer is stable at set position.

## ④ Make sure Spindle axis is perpendicular to measured surface.

If Spindle (Contact Point) is not at a right angle to surface, Gauge will not operate properly and measurement will be inaccurate. Always keep the Spindle axis perpendicular.

※When used to check parallelism of Milling Machine vise, use a Magnetic Base to mount the Gauge perpendicular to surface, and move it out of the way during operation to prevent interference.



# HOW TO USE - Comparison Measurements

## ① Set Up Reference Part.

Carefully lift Spindle with fingertip, and, taking care not to hit Spindle from the side, insert the Reference Part or Master under Contact Point.

## ② Set the Origin.

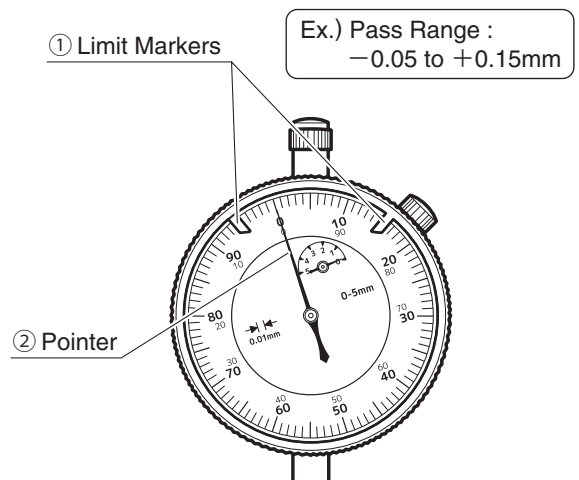
Adjust the gauge mount or rotate the Bezel to set the Gauge to "0".

## ③ Remove Reference, and begin measurements.

Remove Reference or Master, careful not to shock Spindle. Insert part to be measured and read the measurement off the Scale.

### ※Setting the Limit Markers

Limit Markers can be moved to show acceptance range for measurements.



# HOW TO USE - Parallelism, Flatness, Runout, etc.

## ① Position Contact Point on surface.

Carefully lifting Spindle with fingertip, and taking care not to hit Spindle from the side, position the surface to be measured under the Contact Point.

## ② Set the Origin.

Adjust the gauge mount, or rotate the Bezel to set the Gauge to "0".

## ③ Read the scale as the measured part is moved.

Slowly move the part while monitoring the Pointer and reading the measurement.

# TROUBLESHOOTING

## ■ Origin position shifts during measurement.

- Temperature changes during measurement can cause repeatability error. Please try the following solutions:
  - Use in location with constant temperature.
  - When taking measurements, periodically adjust zero point using a Master reference to correct for temperature induced drift.

## ■ Measurement is not stable, or measurement accuracy is poor.

- Contact Point may be worn.  
Worn Contact Point will affect accuracy. Periodically check for wear, and replace if wear is affecting measurement accuracy.

# SPECIFICATIONS

Model No.	Graduation (mm)	Measurement Range (mm)	Scale	Retrace Error ( $\mu\text{m}$ )	Measuring Force (N)	Range (1 rev.) (mm)	Adjacent Error (1/10 rev.): ( $\mu\text{m}$ )	Full Range Accuracy ( $\mu\text{m}$ )	Repeat Accuracy ( $\mu\text{m}$ )	Contact Point	Weight (g)
DI-10KD	0.01	0~10	$\pm 0-100$	5	$\leq 1.5\text{N}$	1	8	$\pm 20$	5	Steel Ball	125
WDI-10	0.01	0~10	$\pm 0-100$	5	$\leq 1.5\text{N}$	1	8	$\pm 20$	5		180
DI-1058	0.01	0~10	$\pm 0-100$	5	$\leq 1.5\text{N}$	1	8	$\pm 20$	5		180
WDI-0342	0.01	0~ 3	$\pm 0-50$	6	$\leq 1.5\text{N}$	0.5	8	$\pm 14$	5		100
WDI-0542	0.01	0~ 5	$\pm 0-50$	6	$\leq 1.5\text{N}$	0.5	9	$\pm 16$	5		100
WDI-0558SP	0.01	0~ 5	$\pm 0-100$	3	$\leq 1.5\text{N}$	1	8	$\pm 16$	3	Carbide Ball	190
WDI-1058SP	0.01	0~10	$\pm 0-100$	3	$\leq 1.5\text{N}$	1	10	$\pm 20$	3		190
WDI-0158SP	0.001	0~ 1	0-100-0	2	$\leq 2\text{N}$	0.2	3	$\pm 5$	0.3		190

- Replacement Contact Point Part No. : DI-10KD...DI-CPK、WDI-10·DI-1058·WDI-0342·WDI-0542...DI-CP WDI-0558SP·WDI-1058SP·WDI-0158SP...WDI-W

# AFTER USE CARE, STORAGE

- **Remove any dust or dirt after use. ※Do not lubricate.**
  - Wipe any contamination from Spindle sliding surface using a dry cloth, or cloth moistened with alcohol.
  - To clean other surfaces, wipe with a soft dry cloth, or a cloth moistened with a mild cleaner.
- **Check for wear of Contact Point.**
  - Measurement accuracy will be affected by worn Contact Point. Regularly check for wear and replace Contact Point if worn.
- **Store in provided case in a cool, dark, and dry location.**
  - During storage, make sure there is no force on the Spindle (such as pushed in, or lateral force.)
  - Keep away from moisture and direct sunlight, and secure from unauthorized personnel.

# CALIBRATION

**To maintain measurement accuracy, periodic calibration is recommended.**

(For reference, we recommend a calibration interval of 3~4 months when used in a factory.)

Outside Japan, Please contact distributor or place of purchase to inquire about calibrations services.

**NIIGATA SEIKI Co., Ltd.**

6-15-22, Tsukanome, Sanjo, Niigata, Japan, 955-0055  
Tel. : +81-256-31-5670 Fax. : +81-256-39-7730  
MAIL intl.sales@niigataseiki.co.jp  
URL <http://www.niigataseiki.co.jp>

I360-K1 1808