

Deflection Tester

Deflection Tester for Gear

Instruction Manual

To ensure correct use, please read this instruction manual carefully before use. After reading, keep it in a safe place where the user can always refer to it.



OBISHI KEIKI SEISAKUSHO Co., Ltd.

Safety Precautions

- ※Before use, please read this instruction manual carefully and use the product correctly.
- ※The precautions shown here are intended to ensure the safe and proper use of the product and to prevent any potential hazards to the user.
- ※The precautions are categorized into three levels — **Danger, Warning, and Caution** — to clearly indicate the severity and urgency of potential harm or damage that may occur if the product is mishandled.

For Safe and Proper Use		
This instruction manual includes various symbols and pictograms throughout the text to ensure correct use of the product and to prevent harm or damage to the user. The symbols and their meanings are as follows. ● Please read the text after fully understanding the symbols and their meanings. ● After reading, be sure to keep this manual in a place where anyone using the product can easily refer to it at any time. ● All of these are safety-related instructions, so please be sure to follow them.		
	Danger	This indicates situations where incorrect handling could result in imminent risk of death or serious injury.
	Warning	This indicates situations where incorrect handling could potentially result in death or serious injury.
	Caution	This indicates situations where incorrect handling may result in injury to persons or only property damage.
Examples of symbols		The △ symbol indicates the presence of danger, warning, or caution messages, with specific precautions described within the figure. (The left figure is used to indicate general danger, warning, or caution without specifying details.)
		The ○ symbol indicates prohibited actions, with specific precautions described within or below the figure. (The figure on the left is used for general prohibition notices without specifying particular actions.)
		The ● symbol indicates mandatory actions, with specific instructions detailed within the figure. (The figure on the left is used for general mandatory actions or instructions without specifying details.)

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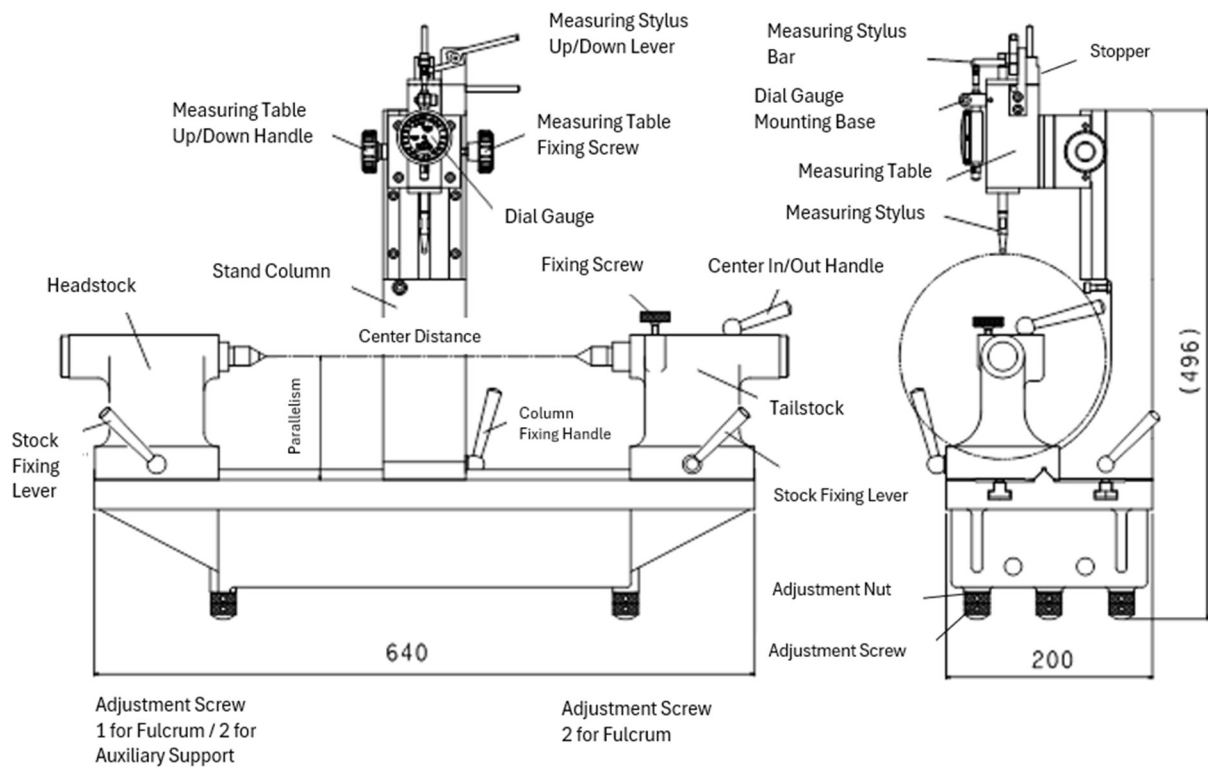
1. Product Features

- This device is used for measuring circular pitch runout of gears.
- The dial gauge holder moves up and down by a rack gear mechanism.
- The stylus can be easily raised or lowered by lever operation.
- Seven styluses are included as standard (covering module 1 to 4 in increments of 0.5).

Note: A dial gauge and test bar are not included. Please prepare them separately.

Note: Special-dimension styluses can also be manufactured upon request.

2. Names of Parts and External View



3. Specifications

Code No.	Model	Length (mm)	Center Distance (mm)	Maximum diameter (mm)	Use Center	Parallelism (μ m)	Mass (kg)
SR101	SR-1	640	300	200	Carbide MT-2	4	72

4. Instructions for Use

Installation Method

- ① Place the instrument on a surface plate or a stable installation stand.
Note: When placing it on a surface plate, place spacers under the adjustment screws to avoid scratching the top surface of the plate.
- ② Support the instrument at three points: one fulcrum adjustment screw on the left side (center) and two fulcrum adjustment screws on the right side.
- ③ As shown in Figures a and b, place the precision level and adjust the instrument so that it is level.
 - Use a precision level with a sensitivity of 0.1 mm/m or less.
 - Adjust until the indication of the level is within two graduations.
- ④ Tighten the adjustment nuts to prevent the adjustment screws from loosening, and confirm the level again.
- ⑤ Turn the two auxiliary adjustment screws on the left side (both ends) by hand to prevent tipping.

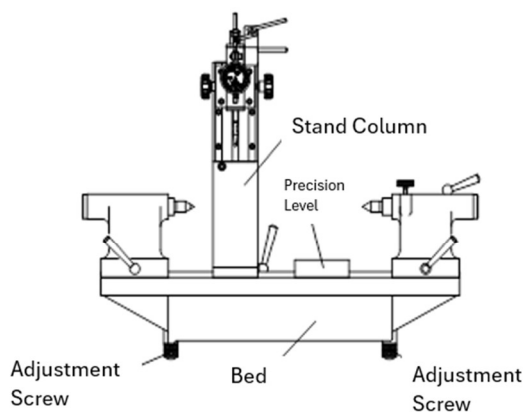


Figure a

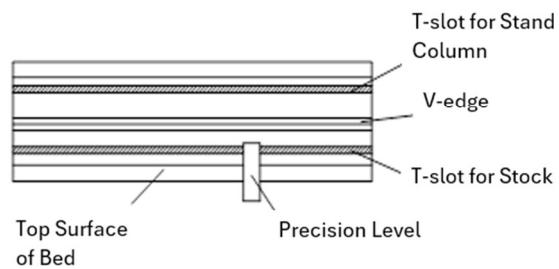


Figure b

Measurement Procedure

- ① Select a measuring stylus and attach it to the measuring table. Place a wrench on the recessed part of the stylus, hold the slider by hand, and tighten it lightly.
- ② Insert the dial gauge into the mounting base so that the stylus of the dial gauge contacts the measuring stylus bar.
- ③ Mount the workpiece according to the workpiece mounting procedure described below.
- ④ Release the stand column lock, move the stand column so that the measuring stylus and the measuring position are aligned in a straight line, and fix it.
- ⑤ Lower the measuring table to bring the measuring stylus into contact with the workpiece, then fix the measuring table.

- ⑥ Rotate the dial gauge scale plate to set it to the zero position.
Move the measuring stylus up and down several times with the lever and confirm that it returns to zero.
- ⑦ Raise the measuring stylus with the up/down lever, rotate the workpiece to the next measuring point, and lower the stylus.
- ⑧ Record the deflection of the needle.
- ⑨ Repeat steps 7 and 8 to complete the measurement.

< When Replacing the Workpiece at the Same Measuring Position >

- a. Raise the measuring stylus using the stylus up/down lever.
 - b. Rotate the stopper at the top of the measuring table by 90 degrees and lower the stylus. The stylus will be held at a fixed height.
 - c. Replace the workpiece.
Note: Be careful not to let the workpiece contact the stylus.
 - d. Raise the measuring stylus with the stylus up/down lever, rotate the stopper 90 degrees, and lower the stylus.
Operate slowly so that the stylus contacts the measuring point of the workpiece.
 - e. Repeat steps 7 and 8 above to carry out the measurement.
- ⑩ After measurement, raise the measuring table, move the stand column, and secure it firmly.
 - ⑪ Remove the workpiece first, then remove the dial gauge and the measuring stylus.

Workpiece Mounting Procedure

Note: Always fix the stock when attaching the workpiece.

Note: Adjust the position of the stock so that the center of gravity is at the center of the instrument.

If the center of gravity is near the outside, stable measurement may not be possible and the instrument may tip over.

- ① Place the instrument on a stable stand.
- ② Loosen the fixing screw of the tailstock and operate the center in/out handle to confirm that the center moves in and out.
At this time, understanding the stroke of the center will make stock position adjustment smoother.
- ③ Operate the stock fixing lever to release the lock.
(At shipment, the stock fixing lever is in the vertical position and the lock is released.)
- ④ According to the length of the workpiece to be measured, move the stocks evenly to the left and right to adjust.

Note: Move them slowly and carefully, otherwise there is a risk of colliding with the opposite stock.

- ⑤ Operate the stock fixing lever to secure the stock firmly.
By tilting the lever to either side, the stock will be fixed.
- ⑥ Insert the center hole on the left side of the workpiece into the headstock-side center.
- ⑦ While supporting the workpiece, operate the center in/out handle and keep the center retracted.
- ⑧ Align the center hole on the right side of the workpiece with the stock-side center, and slowly operate the center in/out handle to insert the center into the center hole.
- ⑨ When the workpiece is securely held, tighten the fixing screw.
- ⑩ After measurement, support the workpiece to prevent it from falling, then slowly operate the center in/out handle to remove the workpiece. (Follow steps 6–9 in reverse order.)

5. Adjustment Method

Adjustment of the Stock Lock Lever

- ① Loosen the stock lock lever.
- ② Move the stock so that the convex piece under the stock protrudes slightly outside the bed T-slot.
- ③ Rotate the convex piece.
- ④ Return the stock onto the bed, tighten the stock lock lever, and check its position.
- ⑤ Move the stock along the bed and make sure it moves smoothly.
- ⑥ If readjustment is required, repeat steps 1–5.

Note: If the convex piece is higher than the top surface of the T-slot, it will not fit into the slot.

Note: The adjustment range is extremely small, so handle with care.

Adjustment of the Center In/Out Handle

- ① As shown in Figure 3, loosen the set screw for fixing the plug and remove the plug.
Since a spring is inserted, take care not to let the plug fly out.
- ② Loosen the set screw for fixing the center in/out handle, lift the handle, and remove it.
- ③ Rotate the center in/out handle to the desired position and insert it so that it meshes with the rack.
- ④ Move the center in/out handle back and forth and check its position again.
- ⑤ After confirmation, install the set screw for fixing the center in/out handle.

Caution: If overtightened, the center in/out handle will not move.

- ⑥ Insert the spring, press in the plug, and install the set screw for fixing the plug.
- ⑦ If readjustment is required, repeat steps 1–6.

The figure shows the standard SA type, and the shape may differ slightly from this instrument.

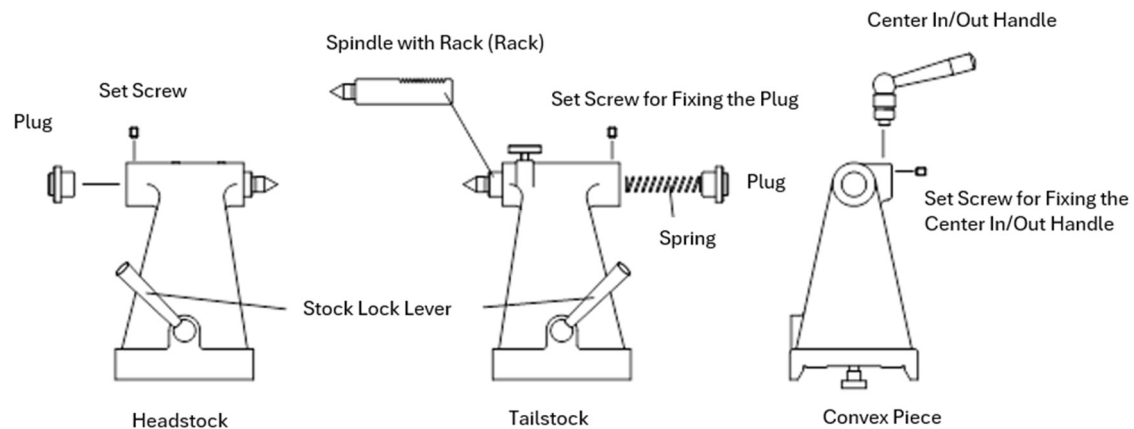


Figure 3. Adjustment of the Convex Piece and the Center In/Out Handle

6. Replacement of the Center

If damage (such as chipping or wear) is found on the tip of the center, replace the center with a new one immediately.

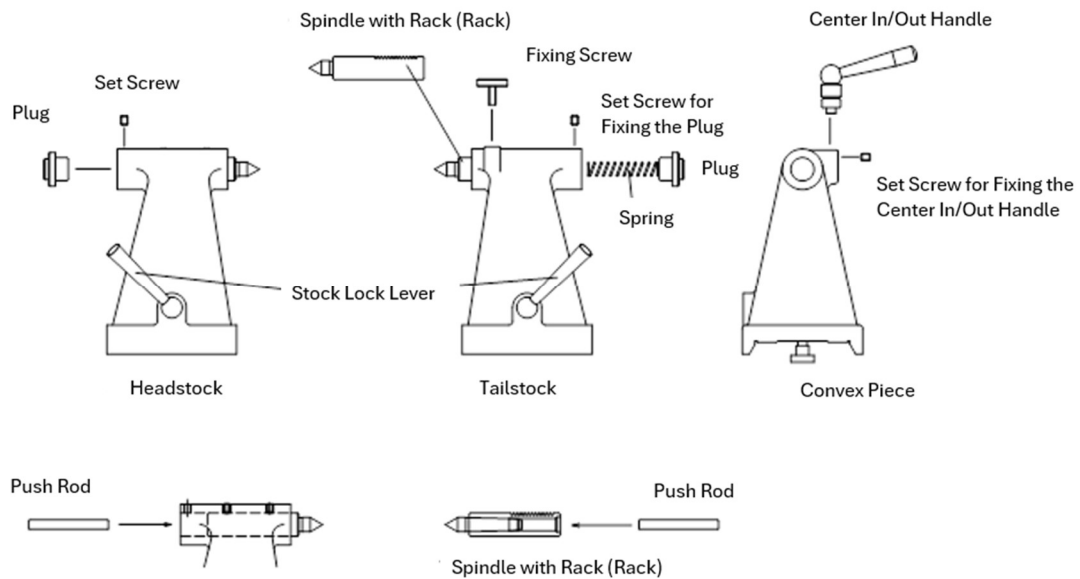
Headstock Side

- ① Loosen the set screw and remove the plug.
- ② Prepare a push rod and insert it into the stock to remove the center.
- ③ Insert a new center.
- ④ To protect the tip of the center, place a wooden block or similar material against it and tap lightly with a plastic hammer.
- ⑤ Reattach the plug and set screw.

Tailstock Side

- ① Remove the fixing screw.
- ② Loosen each set screw, and remove the plug and the Center In/Out Handle.
Caution: Since a spring is inserted, take care not to let the plug fly out.
- ③ Pull out the spindle with rack .
- ④ Insert a push rod into the rack spindle and lightly tap to remove the center.
- ⑤ To protect the tip of the center, place a wooden block or similar material against it and lightly tap with a plastic hammer.
- ⑥ Insert the spindle and the Center In/Out Handle, and adjust their position.
- ⑦ Secure the spindle, insert the spring, attach the plug and set screw, and finally install the fixing screw.

The figure shows the standard SA type, and the shape may differ slightly from this instrument.



7. Precautions for Use

- ① Clean the Precision Surface and the measurement surface of the workpiece before use.
- ② Handle the instrument carefully during use and storage to avoid impact or shock.
- ③ Allow the instrument to acclimate to the ambient temperature before use.
- ④ Do not use or store the instrument in places with drastic temperature changes.
- ⑤ Set this instrument on a stable location with a solid foundation, free from twisting or tilting.
If it is placed on an unstable surface, the accuracy of the bed surface may be affected, and there is a risk of the instrument tipping over or falling due to its weight.
- ⑥ When installing this instrument on a surface plate, check the load capacity of the surface plate (maximum concentrated load mass, JIS B 7513 Table 5).
- ⑦ Do not apply excessive load or impact to the bed or centers.
- △ ⑧ Before mounting the workpiece, always make sure that the stock is securely fixed.
If the stock is not fixed, the spring force inside the tailstock may cause the stock to move, resulting in the workpiece coming off the centers and falling.
- ⑨ Check that the center holes of the workpiece are properly engaged with the centers of this instrument.
If they are not properly engaged, the workpiece may fall when released.
- ⑩ When removing the workpiece, firmly support it with your hand or an equivalent fixture while removing it.
- ⑪ When moving the stock, always move it gradually and carefully.

If it is moved too much at once, the stock may slip on the bed and collide with the opposite stock, causing damage to the centers.

In particular, when the distance between the centers is narrow, lightly tap the rear of the stock and adjust it slowly.

- ⑫ The parallelism between the bottom surface of the bed and the centers is not guaranteed in the initial state.

Always check the parallelism during use and make adjustments as necessary.

- ⑬ When moving this instrument, always move it with the stocks fixed.

Note: When transporting by vehicle, insert cardboard or similar material between the two stocks and secure them firmly with string or other means to prevent movement, even if the fixing handle loosens due to vibration.

- ⑭ Do not place this instrument in locations subject to vibration or other similar conditions.

- ⑮ After use, always perform rust prevention treatment on the instrument.

- ⑯ If there are scratches or damage, have the instrument repaired and inspected. Remove minor scratches on the Precision Surface locally with an Arkansas stone or similar before use.

- ⑰ Check the instrument for abnormalities before use in the following cases:

- When the instrument has been dropped.
- When an object has been dropped onto the instrument.

- ⑱ Use the instrument only after regularly checking for any abnormalities.

- △ ⑲ If the product has sharp edges, handle it carefully to avoid injuring your fingers or other parts of your body.

- ⑳ For heavy products, handle placement and other operations with two or more people, and take care to avoid injury.

- ㉑ Use cloth or nylon sleeves for lifting. Do not use hard materials such as metal chains or wires, as they may cause scratches or cracks on the product and pose a risk of injury to the operator.

- △ ㉒ Wear protective gloves and safety glasses as necessary to prevent injury while working.

- △ ㉓ Do not use this product if it is damaged or deteriorated, as it may cause injury or accidents.

- △ ㉔ If an injury occurs, give first aid immediately and seek medical attention if necessary.

Contact Information

JIS Certified Factory



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Design, development, manufacturing, and calibration services for precision measuring instruments (levels, surface plates, straight edges, reference measuring instruments, square rulers, blocks, dial gauge stands, comparators, angle measuring instruments, bench centers, squareness measuring instruments).