

Measuring Tool for Welding

WELDING GAUGE

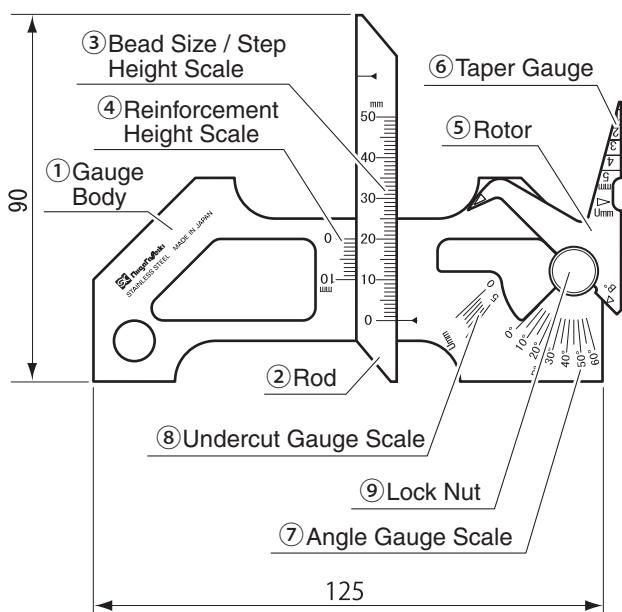
Thank you for purchasing the Welding Gauge.

This product is a precision measurement tool designed for measuring Fillet Bead Width, Step Height, Reinforcement Height, Fillet Throat Depth, Bevel Angle, Undercut Depth and Root Gap.

- 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 to a third party.
- For inquiries about this product, please contact distributor or place of purchase.

■ PART IDENTIFICATION and FUNCTION

※WG-3 Shown (⑤～⑨ for WG-3 Only)



- ① Gauge Body Measurement reference surfaces for attached Rod and Rotor.
- ② Rod For measuring bead dimensions and step height.
- ③ Bead Size / Step Height Scale Scale for reading fillet bead width, step height, and fillet throat thickness measurements.
- ④ Reinforcement Height Scale Scale for reading reinforcement height measurements.
- ⑤ Rotor For measuring undercut depth and bevel angle. In addition, the Rotor includes a taper gauge for root gap measurements.
- ⑥ Taper Gauge Gauge and scale for measuring root gap.
- ⑦ Angle Gauge Scale Scale for reading bevel angle measurements.
- ⑧ Undercut Gauge Scale Scale for reading undercut measurements.
- ⑨ Lock Nut Adjusted at time of manufacture to insure smooth operation.
Thread locking compound has been applied, please do not loosen.

SPECIFICATIONS

- Material : Stainless Steel (Type 410)
- Weight : 198g (WG-3), 187g (WG-5)
- Length Measurement Accuracy : $\pm 0.4\text{mm}$
- Angle Measurement Accuracy : $\pm 0.7^\circ$
- Measurement Range:
 - Bead size / Step height 50mm
 - Reinforcement Height 10mm
 - Undercut Depth 5mm (WG-3 only)
 - Bevel Angle $0 \sim 60^\circ$ (WG-3 only)
 - Root Gap $0.5 \sim 5\text{mm}$ (WG-3 only)
- Graduation Spacing:
 - Angle Scale 5° (WG-3 only)
 - Length Scales 1mm

CALIBRATION

- In order to assure measurement accuracy, annual calibration is recommended.

Due to wear on measuring surfaces, accuracy may not be maintained with extended use. We recommend implementation of a regular accuracy check.

Outside Japan,

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

SAFETY PRECAUTIONS

Please Observe

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

■ The following symbol marks the following risk if the accompanying text is disregarded.



Caution Indicates risk of **PERSONAL INJURY** or **PROPERTY DAMAGE** if not followed.

■ These symbols are used to indicate content as follows:



Denotes a prohibition-
You MUST NOT do



Denotes a requirement-
You MUST do



Caution



Read the instruction manual and follow the instructions.

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



Use only for measuring.

- 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:

- **Dry location protected from rain and moisture.**
- **Not exposed to 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 expose to shock, do not place under heavy objects. Improper handling may cause damage and inaccuracy.



Do not disassemble or modify.

- May cause damage or inaccuracy. For repairs, please contact distributor or place of purchase.



Do not force the Rod beyond limit.

- Measurement range is 0~50mm. If Rod is forced, it may slide beyond this limit. When returned to measuring range accuracy will not be affected, but repeated forcing will cause damage and poor accuracy.



Do not loosen lock nut.

- Lock nut is adjusted and secured with thread adhesive at time of manufacture. Loosening nut may damage product and cause inaccuracy.



Handle Rotor tips with caution.

- The Rotor tips are sharp; Please use care to prevent injuring fingers or hand when handling gauge.
- When not in use, we recommend that Rotor is set in position as shown in Figure 1, with Rotor tips not exposed.
- It is recommended that operator wears gloves when using gauge.

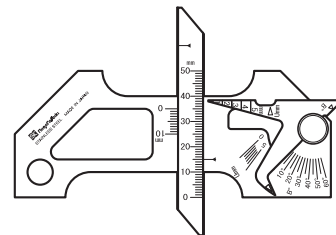
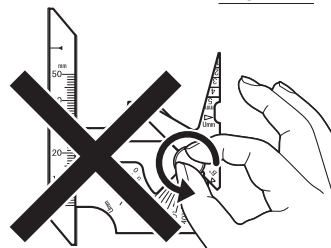
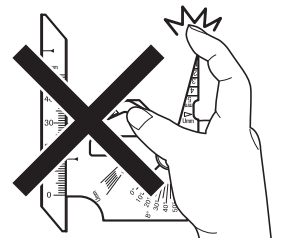


Figure 1 - Storage Position



Do not loosen lock nut



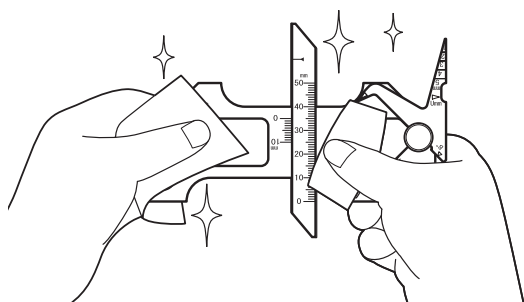
Use Caution, Rotor tips are sharp

PREPARATION BEFORE USE

Before each use please prepare properly

Wipe all surfaces with a dry cloth to remove any dust or foreign matter.

- Contamination under sliding surfaces will interfere with smooth operation.

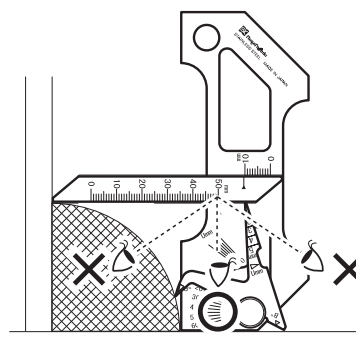


READING THE SCALE

Care must be taken to read scales properly

Read from directly in front of scale.

- Reading from side or at angle will cause error due to parallax.



Note the reading position

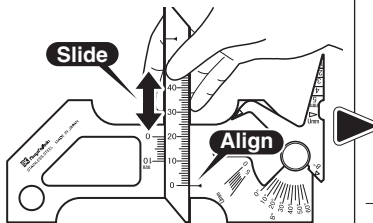
How to Use

The gauge performs six different types of length measurements, and one angle measurement.
The following procedures show which measuring surface to use, and which scale to read for each measurement type.

FILLET BEAD WIDTH MEASUREMENT

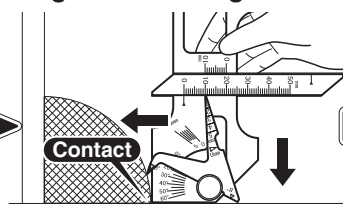
Measurement Range : 0~50mm

① Adjust the Rod to position 0mm



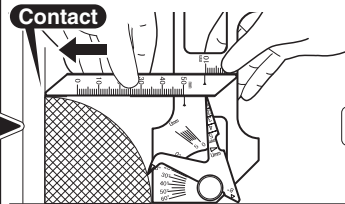
Slide the Rod to align gauge body marker (—) with scale 0mm line.

② Place reference surface against bead edge



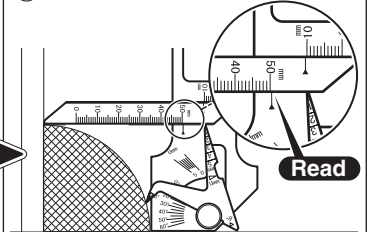
Position gauge body on base plate as shown and slide against bead edge until it contacts with reference surface.

③ Slide the Rod



With gauge body in position ②, slide Rod to contact the other plate.

④ Read the Scale

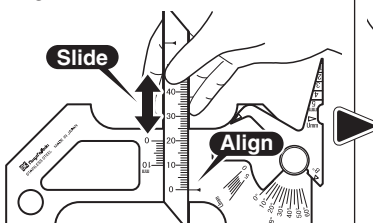


Read the measurement at the marker (—) using the Bead Size / Step Height Scale. (Example above: 50mm)

STEP HEIGHT MEASUREMENT

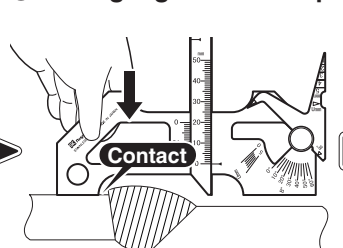
Measurement Range : 0~50mm

① Adjust the Rod to position 0mm



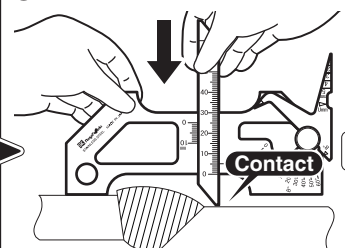
Slide the Rod to align gauge body marker (—) with scale 0mm line.

② Place gauge across step



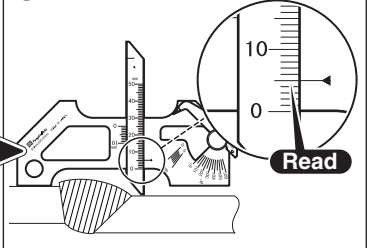
Position gauge body on base plate as shown with reference surface in firm contact with the high portion of the step.

③ Slide the Rod



With gauge body in position ②, slide Rod to contact the other plate.

④ Read the Scale

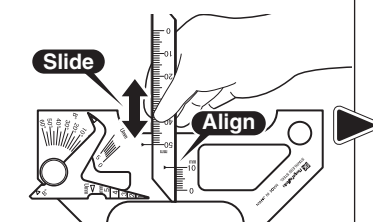


Read the measurement at the marker (—) using the Bead Size / Step Height Scale. (Example above: 5mm)

REINFORCEMENT HEIGHT MEASUREMENT

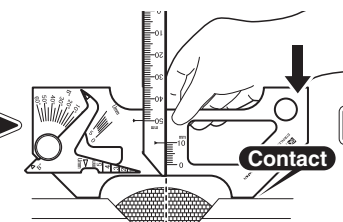
Measuring Range : 0~10mm

① Adjust the Rod to position 10mm



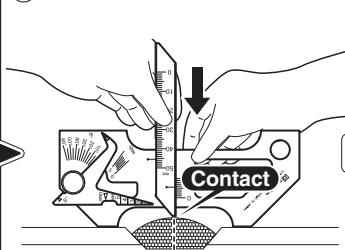
Position the gauge as show in the drawing and slide the Rod to align the red maker (—) with the Reinforcement Height Scale 10mm line.

② Place the gauge across the bead



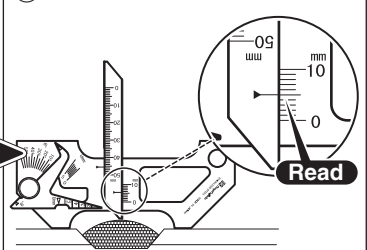
Position the reference surfaces of the gauge in firm contact with the base plate across the bead.

③ Slide the Rod



With gauge body in position ②, slide Rod to contact the bead surface.

④ Read the Scale

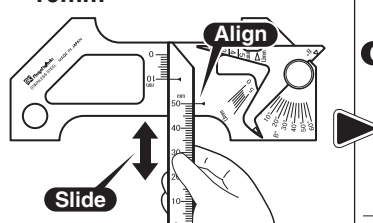


Read the measurement at the marker (—) using the Reinforcement Height Scale. (Example above: 5mm)

FILLET THROAT THICKNESS MEASUREMENT

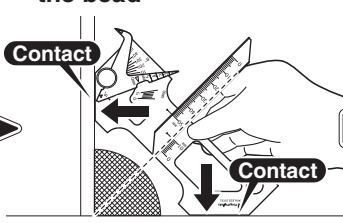
Measurement Range : 0~50mm

① Adjust the Rod to position 10mm



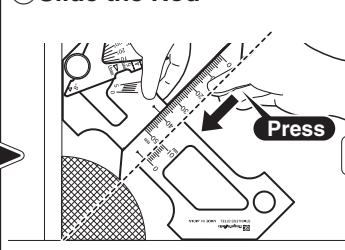
Slide the Rod to align gauge body marker (—) with scale 50mm line.

② Place the gauge across the bead



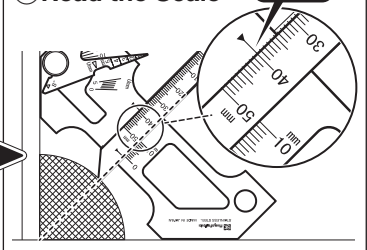
Position the reference surfaces of the gauge in firm contact with the plates across the bead.

③ Slide the Rod



With gauge body in position ②, slide Rod to contact the fillet surface.

④ Read the Scale

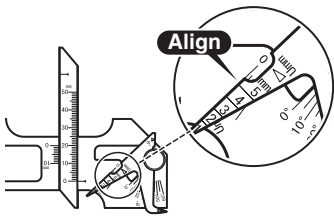


Read the measurement at the marker (—) using the Bead Size / Step Height Scale. (Example above: 40mm)

UNDERCUT DEPTH MEASUREMENT (WG-3 Only)

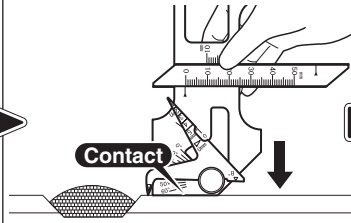
Measurement Range : 0~5mm

① Adjust the Rotor to position 0mm



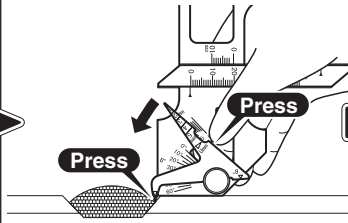
Turn the Rotor as shown to align with Undercut scale 0mm line.

② Place the gauge near the undercut



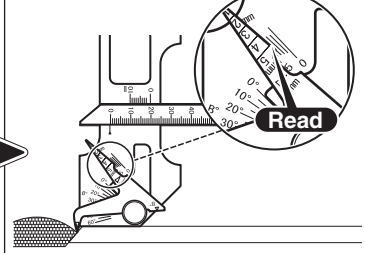
Position the gauge as shown in the drawing with the reference surface against the plate.

③ Place the gauge near the undercut



Gradually move the gauge along the plate while applying pressure to the Rotor to locate the lowest point.

④ Read the Scale

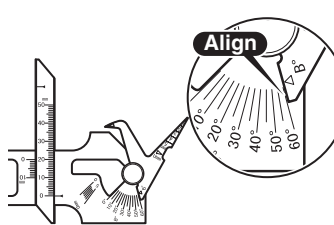


Read the measurement at the edge of the Rotor using the Undercut Scale. (Example above: 3mm)

BEVEL ANGLE MEASUREMENT (WG-3 Only)

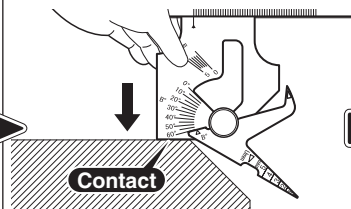
Measuring Range : 0~60°

① Adjust the Rotor to 60°



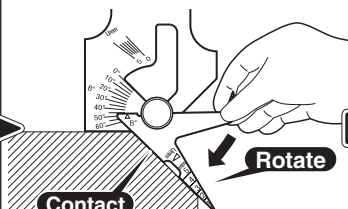
Turn the Rotor as shown to align the Rotor reference edge with the Angle Scale 60° line.

② Place the gauge near the bevel



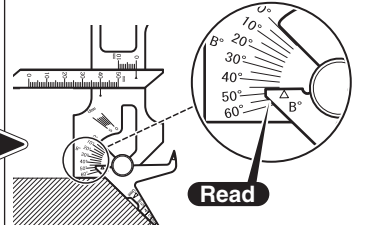
Position the gauge as shown in the drawing with the reference surface against the plate.

③ Rotate the Rotor face onto bevel



With the gauge reference surface on the plate, turn the Rotor until its edge is in full contact with the bevel.

④ Read the Scale

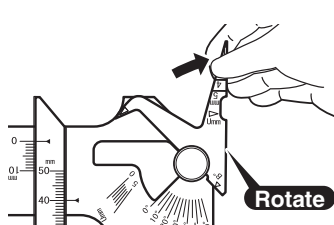


Read the measurement off the Angle Scale at the Rotor ΔB° marker. (Example above: 45°)

ROOT GAP MEASUREMENT (WG-3 Only)

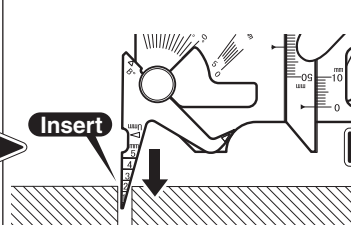
Measurement Range : 0.5~5mm

① Position the Rotor



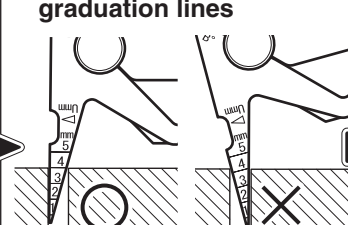
Rotate the Rotor as shown in the drawing.

② Insert gauge into gap



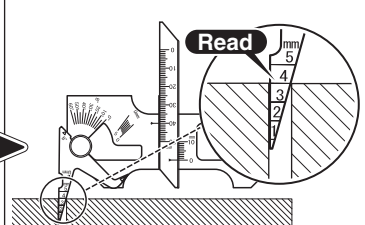
Insert the Taper Gauge tip into the gap until both sides of the gauge are in contact with the plate.

③ Check the slope of the graduation lines



When properly aligned, the scale lines should be parallel to the top surface and both ends of the line at the measurement should contact the edge of the gap.

④ Read the Scale



Read the measurement off the Taper Gauge scale. (Example above: 4mm)

CLEANING · STORAGE

- **Remove any oil or dust from surface using a dry cloth.**
Foreign matter between body and Rod or Rotor will prevent smooth operation.
- **For severe dirt, use alcohol to clean.**
DO NOT use harsh solvent such as gasoline or thinner as they may remove the printed scale markings.
- **Before use, inspect to make sure there is no damage or scratches to surface or measuring tips.**
Dents or burrs on surface will affect accuracy. In some cases, burrs to surface can be removed with an oil-stone -- Please arrange for service.
- **After use, store in provided storage case in a cool dry place.**
Keep away from moisture or direct sunlight and or location where unauthorized personnel can access.

FREQUENTLY ASKED QUESTIONS

- I want to adjust the tension on the Rod and Rotor.
- The Rotor has come loose during use.
- What to do if I have loosened the Lock Nut.
 - ⇒ The Rod and Rotor tension is part of the structure of the gauge and can not be adjusted by the customer. If either has come loose during use, or need adjustment, please contact distributor or place of purchase for service.
 - ⇒ With extensive use, any foreign matter or dust between sliding surface will cause wear and looseness. Always use dry cloth to remove any contamination before use.

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