

Instruction Manual

Common for Tool Setters for Machining Centers

This product is a tool presetter for CNC machine tools. It is used for presetting tool length, detecting breakage, and correcting thermal distortion. Read the following operating instructions and precautions carefully before use.

■ Specification

Specifications vary by model. Please use the product after fully confirming the specification drawing.

■ Installation

1. Mechanical

Install the tool setter on a table or fixture with guaranteed perpendicularity and parallelism to the main axis, so that the tool bit straightly presses the contact. When installing the tool setter, clean up the installing surface and tighten all bolts securely. If perpendicularity and parallelism of the surface are not guaranteed, perform adjustment before installation. Especially in the case of using a retractable unit where the sensor is moved, pay attention to the repeatability of the contact's position, perpendicularity, and parallelism at the detection point, as well as the unit's thermal distortion and rigidity (effects due to mass and contact force).

2. Electrical

Specifications vary by model. After fully confirming the specification drawing, perform wiring with the power to the machine or equipment turned OFF.

Caution: Do not perform hot swapping.

3. Cable handling

- 1) Since the switching contacts and interface elements may be damaged due to the flow of current in excess of the rating caused by noise or surge induction, place the sensor at an adequate distance from any power lines or other sources of noise.
- 2) Do not pull the cable by excessive force. Max. 30N (3kgf).
- 3) The minimum bending radius of the cable is R7.
- 4) Be careful during installation to avoid any damage on the cable (resulting in loss of waterproofing property). In the case of the damage can be expected, use of wire braid and protect tube is recommended. When using a protect tube, the minimum bending radius is R25.

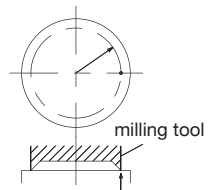
■ Precautions

1. Proper Tool Bit Contact

- 1) Use the tool setter so that the tool bit straightly presses the contact.
- 2) Do not press the contact beyond the stroke. Pressing beyond the stroke will damage the sensor or cutting tool.
- 3) It is recommended that the speed at which the tool bit touches the contact be within the range of 50 to 200 mm/min.
- 4) Operating speed slower than 10mm/min is not recommended.

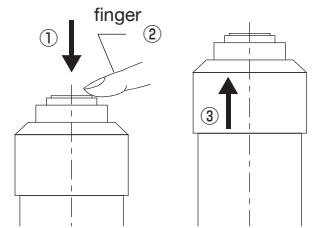
2. How to preset a large milling tool with a large-diameter detecting contact

To avoid inclination error, place the cutter so that it touches the detecting contact as the picture (the distance from the center of the detecting contact to the point each cutter touches is constant). Or place the cutter so that it touches the center of the detecting contact.



Caution:

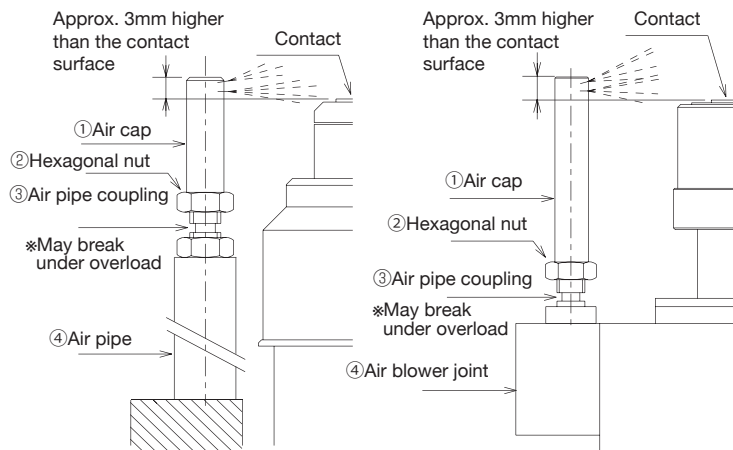
When pushing the detecting contact surface to the stroke end by a finger, do not flip the finger off abruptly as the picture. Such action often causes malfunction resulting from disengagement of the interior components. When pushing down the detecting contact by a tool in operation, do not slide the tool side way while holding it down.



■ Air pipe installation

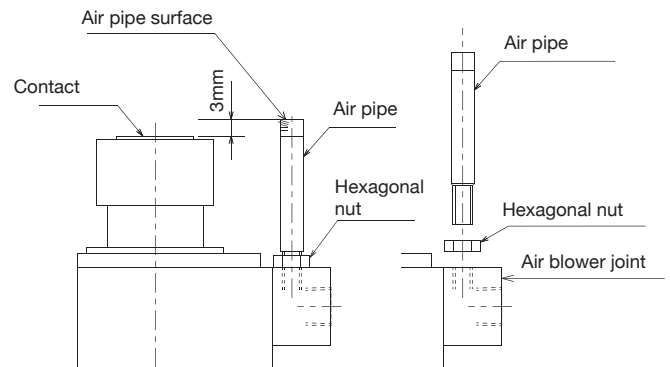
1. When an air pipe coupling is available

- 1) Attach the air pipe coupling to the air blow unit or air pipe.
- 2) Adjust the height of the air cap or air pipe so that its surface is higher than the contact surface by approx. 3mm.
- 3) Secure with a hexagonal nut.



2. When an air pipe coupling is not available

- 1) Attach the air pipe to the air blow unit.
- 2) Adjust the height of the air pipe so that its surface is higher than the contact surface by approx. 3mm (approx. 2.5mm for P21).
- 3) Secure with a hexagonal nut.

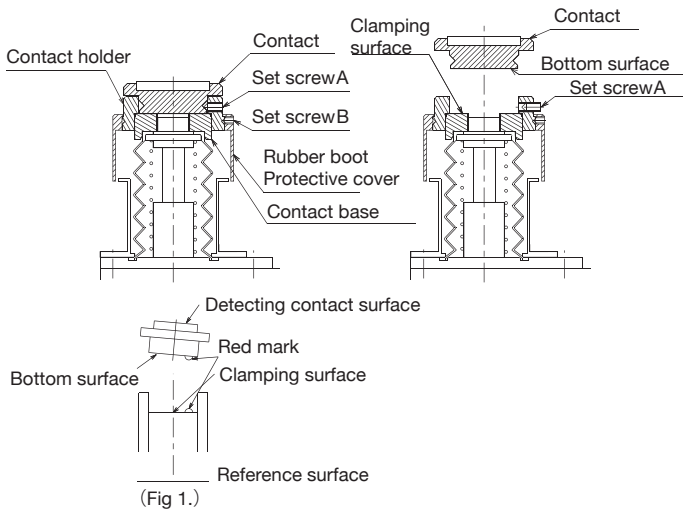


Replacement of the contact (Replaceable type)

- 1) Loosen the set screws A (M2.6, 3 pieces) by about 2 mm.
(No need to remove them)
- 2) Draw out the used detecting contact.
- 3) Place a new detecting contact so that the clamping surface and bottom of the new contact fit perfectly, and tighten the three set screws little by little so that screw tightening torque is applied evenly to all the three screws.
Parallelism between reference surface and clamping surface is 0.005/20.
(Red marking on the lowest position of the new contact and another red marking on the highest position of sensor side clamping surface) Align the two red markings to offset subtle error in parallelism (Fig.1)

Caution

- 1) Do not loosen the set screw B.
- 2) Cleaning the clamping surface before the replacement is strongly recommended.
- 3) Do not rotate the protective cover and its connecting part.
(result in the loss of parallelism)



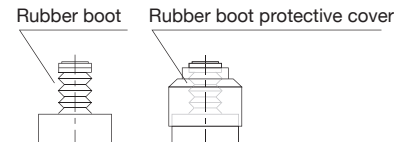
Other precautions

1. Contact force

- 1) The contact force mentioned on the specification drawing or catalog is the value in the specified installation manner. Unless otherwise specified, it is the value for "vertical" installation.
- 2) When using a vertical tool setter as a horizontal one, the contact force increases by the mass of the movable part. Particular caution is required for large-diameter contact specification ($\varnothing 30\text{mm}$ or more).
- 3) When using a horizontal tool setter as a vertical one, poor contact return may occur due to the mass of the movable part. Particular caution is required for large-diameter contacts and low contact force specification.

2. Protection against cuttings and coolant

- 1) If there is a risk of damage to rubber boots due to cuttings, please use the type with a protective cover.



- 2) An extra protector against cuttings or a retractable system for purposes other than tool length measurement is separately needed in the following cases.

- When there is a risk of interference with contact operation by accumulated cuttings
- When cuttings or coolant scatter severely
- When hit by high pressure coolant
- When used horizontally



3. Cleaning

- 1) Clean off periodically the detecting contact surface with alcohol, to get rid of oil and cuttings which cannot be removed by the air blower.
- 2) **For protective cover boot**
Clean the protective cover boot when there is the risk of cuttings and other debris having accumulated to where they impair movement or return.

Terms of Warranty

Before using our products, we would like to request that our customers have an understanding of our warranty policy and the functions and specifications of applicable products as indicated by our catalogs, instruction manuals and website to ensure that they are used properly under specified conditions.

1. Applicable Products

The warranty defined below is applicable to products manufactured and sold by METROL (to be referred to as the "applicable products").

2. Warranty Period

The warranty for applicable products is valid for 1 year and 3 months from the original delivery date to the location designated by the customer.

* Durability, lifetime and repeatability are described based on our test conditions. Please note that the performance is not guaranteed under your specific usage environment.

3. Range of Coverage

- a. A replacement product will be provided on an exchange basis or the malfunctioning product will be repaired free of charge within the warranty period. If the product is or becomes defective due to faulty materials or workmanship, as determined solely by METROL. However, applicable products will not be covered by the warranty in the case of the following malfunctions even within the warranty period.
 - (1) Malfunctions due to use of a product in a manner that deviates from standards, specifications, environments, usage procedures or usage precautions described in the catalog, instruction manual or specifications.
 - (2) Malfunctions having occurred for reasons other than those attributable to the delivered product.
 - (3) Malfunctions having occurred due to disassembly, modifications or repairs made by someone other than a METROL representative.
 - (4) Malfunctions or damage that results from external causes outside our control which shall include accidents, fires, natural disasters, or other force majeure.
- b. The range of coverage is limited to the warranty of the applicable product only, and any other secondary loss or damage resulting from the malfunction of an applicable product is not covered by the warranty.
- c. Please be aware that we do not offer installation, uninstallation, on-site confirmation, or on-site repairs.

4. Applications

Applicable products are designed and manufactured as general-purpose products used in ordinary industrial environments. In the case of incorporating an applicable product in an apparatus, machine or system, please confirm the suitability of the application or any related standards, regulations, and restrictions. With respect to the applications indicated below in particular, customers are requested to conduct the necessary tests regarding usage conditions and other details on an actual product in advance. Please consult us for samples for evaluation.

- ① Applications for which usage conditions or environment are outside those presumed by the manufacturer or applications unable to be confirmed as being appropriate by the manufacturer when using applicable products.
- ② Applications likely to have an effect on human life or property (such as nuclear power equipment, transportation machinery or medical devices), applications used in public utilities (such as electricity, gas, or water lines), or applications of a similar nature.
- ③ Applications in harsh environments (special environments, environments requiring heat resistance, vacuum, magnetic fields, and the like)

5. Attention

- Durability, lifetime and repeatability are described based on our test conditions. Please note that the performance is not guaranteed under your specific usage environment.
- The rightmost number of the Ingress Protection (IP) code represents a product's resistance to water only and may not apply to coolants.
- The contents of this catalog, including specific models, specifications, and any other contents, are subject to change without notice at METROL's sole discretion.
- These terms apply to products traded and used in Japan.