

Three-Wire Unit



Safety Precautions

To ensure operator safety, use this product according to the directions, functions and specifications given in this User's Manual.
Use under other conditions may compromise safety.

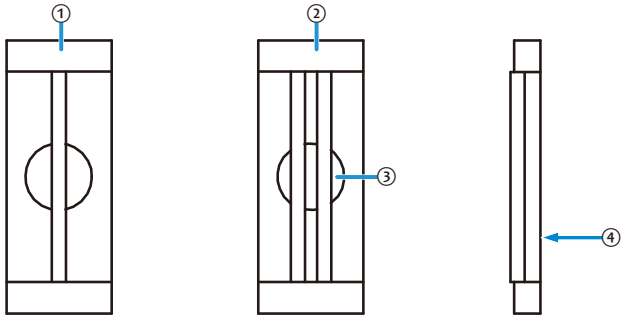
NOTICE Shows risks that could result in property damage.

- Do not disassemble or modify. Doing so will void the warranty.
- Do not use or store the product in a place with sudden temperature changes. Adapt the product to ambient temperature before use.
- Do not store the product in a place with high humidity or a lot of dust.
- Do not use the product in a place where it may contact water, etc.
- Apply anti-rust treatment after use if the product is used in a place where it is directly exposed to splashes of coolant, etc. Rust may cause malfunction.
- Do not apply excessive force or subject to sudden impacts such as dropping.
- Remove dust, cutting chips, etc. and apply anti-rust oil after use.

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1.Names of Components



- ① Single-wire unit
② Dual-wire unit
③ Support hole diameter
④ Wire diameter marking

2.Selecting the Wire Diameter

Important

The Three-Wire Unit cannot be used with screws whose external shape exceeds ø50 mm, since they will interfere with each other.

Select the optimal wire size for measurement from the table below with reference to the pitch or the thread per inch of the workpiece (screw).

Part No.	Wire diameter (mm)	Pitch type		
		Metric screw thread 60° (mm)	Unified screw thread 60° (thread per inch)	Whitworth screw thread 55° (thread per inch)
952131	0.170	0.2, 0.25, 0.3	80	-
952132	0.195	0.35	72	-
952133	0.220	0.4	64	-
952134	0.250	0.45	56	60
952135	0.290	0.5	48	48
952136	0.335	0.6	44, 40	40
952137	0.390	0.7	36	36
952138	0.455	0.75, 0.8	32	32
952139	0.530	0.9	28	28, 26
952140	0.620	1.0	24	24, 22
952141	0.725	1.25	20	20, 19, 18
952142	0.895	1.5	18, 16	16
952143	1.100	1.75, 2.0	14, 13, 12	14, 12
952144	1.350	2.5	11, 10	11, 10
952145	1.650	3.0	9, 8	9, 8
952146	2.050	3.5	7	7
952147	2.550	4.0, 4.5	6	6
952148	3.200	5.0, 5.5, 6.0	5, 4.5	5, 4.5

This product is intended to be used on the shop floor. If the optimum wire diameter does not match the wire diameter of this product, use one close to the optimum wire diameter. There will be minimal effect on measurement.

The effects of wire diameter difference (mm) and error of half-angle (minute) on the effective diameter when three wires other than the optimum wire diameter are used can be obtained by the following approximation formula.

■ Approximation Formula

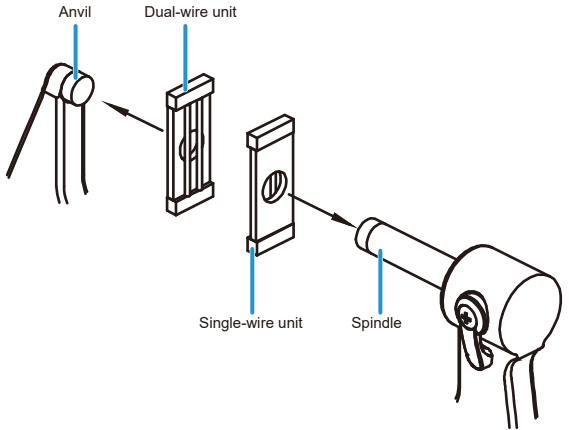
Error in effective diameter (μm) ≈ wire diameter difference (mm) x error of half angle (minute)

3.Measurement Method

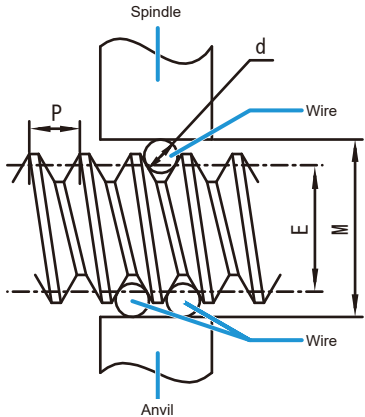
- 1 Attach the single-wire unit to the spindle and the dual-wire unit to the anvil of the micrometer, using the support hole diameter.

Tips

It is also possible to attach the single-wire unit and the dual-wire unit in reverse; however, it is better to attach the dual-wire unit to the anvil for better workability.



- 2 Bring the wires into contact with the workpiece (screw) as shown below.



- 3 Read the value of the micrometer to which the product is attached.
4 Calculate the effective diameter by substituting the micrometer reading into the effective diameter calculation formula below.

■ Effective Diameter Calculation Formula

• Metric screw thread, unified screw thread (60°) :
 $E = M - 3d + 0.866025P$

• Whitworth screw thread (55°) :
 $E = M - 3.16568d + 0.960491P$

E = Thread effective diameter
M = Micrometer reading
d = Three-Wire Unit wire diameter
P = Screw thread pitch