03

Micrometer Heads

Digimatic Micrometer Heads

U-WAVE fit

Measurement Data Wireless Communication System

Bluetooth® communication enables wireless transfer of measurement data from Digimatic micrometers and callipers to PCs, smartphones, tablets and such other devices.

IP65

IP Codes

The code indicates the degree of protection against the ingress of foreign materials and water as defined in the IEC standard (IEC 60529). The number indicates the protection level.
(Refer to page 3)

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

TÜV Rheinland Certification Marks

All products with the marks have passed the IP test carried out by the German accreditation organization, TÜV Rheinland.

Micrometer Heads (Fine Spindle Feed of 0.1 mm/rev)

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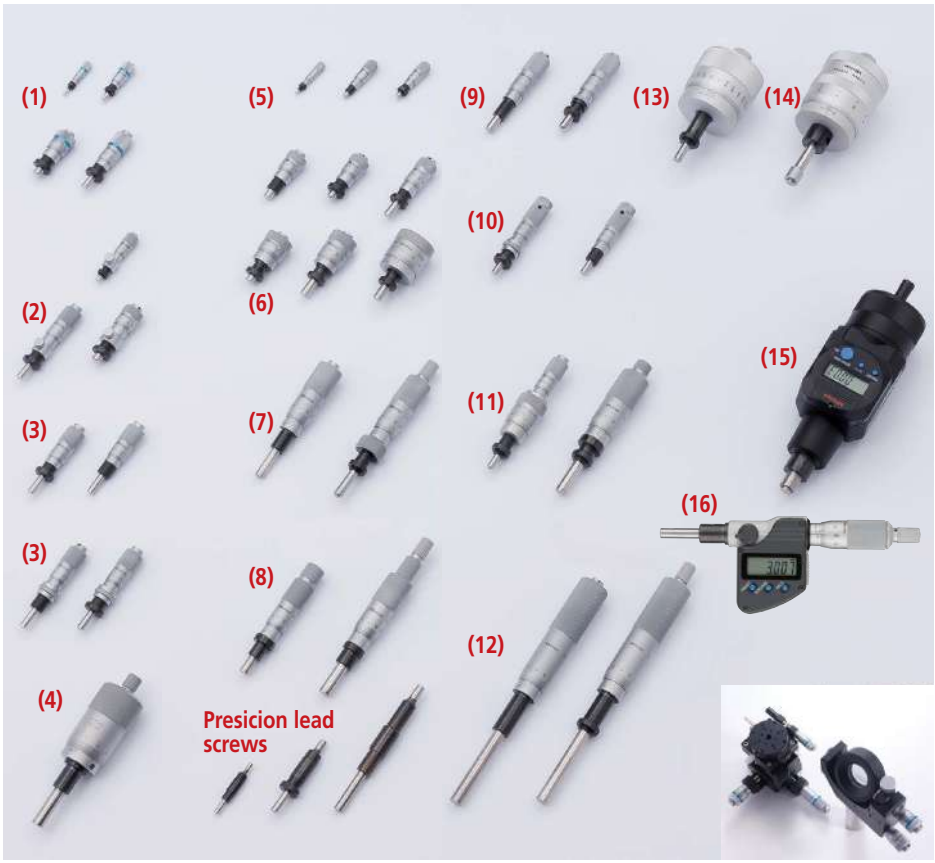
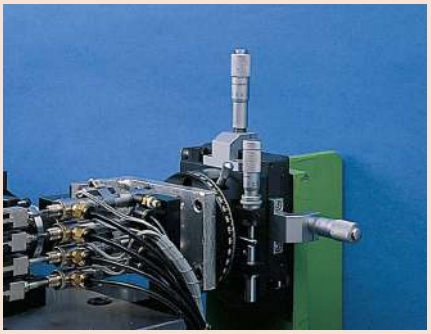
Digimatic Micrometer Heads (Digital display)

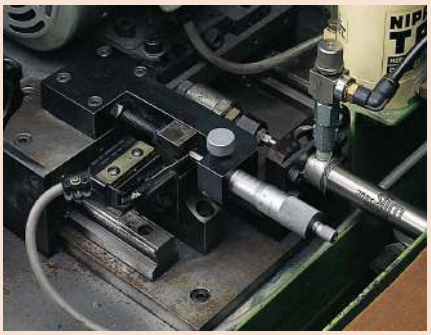
Micrometer Heads (Analog display/Standard type/High function type)

Optional Accessories

Micrometer Head Selection Guide







Also refer to "Quick Guide to Precision Measuring Instruments" from page 13-11.

Range	Main feature of head			Series	Page
1 mm/0.02 in	High-Function	Differential Screw Thread Translator (Extra-Fine Feed) Type		110	03-37 to 03-38
2.5 mm/0.05 in	High-Function	Differential Screw Thread Translator (Extra-Fine Feed) Type	(11)		03-37 to 03-38
5 mm/0.2 in	High-Function	Fine Spindle Feed of 0.1 mm/rev	(1)	148	03-34 to 03-35
	Standard	Small/Ultra-small Type	(5)		03-7 to 03-8
6.5 mm/0.25 in	Standard	Locking-screw Type	(2)		03-28 to 03-31
	High-Function	Fine Spindle Feed of 0.1 mm/rev	(1)		03-34 to 03-35
	High-Function	Fine Spindle Feed of 0.25 mm/rev			03-36
	Standard	Small/Ultra-small Type	(5)		03-7 to 03-8
		Short Thimble with Choice of Diameter	(6)		03-9 to 03-11
10 mm	High-Function	Large Thimble Type	(13)	152	03-39 to 03-40
13 mm/0.5 in	Standard	Locking-screw Type	(2)	148	03-28 to 03-31
	High-Function	Fine Spindle Feed of 0.25 mm/rev			03-36
		Differential Screw Thread Translator (Extra-Fine Feed) Type	(11)	110	03-37 to 03-38
		Short Thimble with Choice of Diameter	(6)	148	03-9 to 03-11
	Standard	Small Standard Type	(3)		03-12 to 03-14
		Small Thimble Diameter Standard Type	(10)		03-15 to 03-17
15 mm/0.5 in	High-Function	Non-rotating Spindle Type	(8)	153	03-32
	High-Function	Quick Spindle Feed of 1 mm/rev	(4)	152	03-33
	Standard	Small Standard Type with Carbide-tipped Spindle	(9)	149	03-18 to 03-19
25 mm/1 in	Digimatic	Clear digital display, Non-rotating spindle and IP 65 rated version	(16)	350	03-4 to 03-6
		Clear digital display, Non-rotating spindle			
	High-Function	Non-rotating Spindle Type	(8)	153	03-32
		Quick Spindle Feed of 1 mm/rev		152	03-33
		Large Thimble Type			03-39 to 03-40
		XY-Stage Type	(14)		03-41
		High Accuracy and Resolution		153	03-42
		Digit Counter Type		250	03-43
	Standard	Medium-sized Standard Type	(7)	150	03-20 to 03-23
		Medium-sized Standard Type with 8 mm Diameter Spindle		151	03-24 to 03-27
50 mm/2 in	Digimatic		(15)	164	03-4
	High-Function	Large Thimble Type		152	03-39 to 03-40
		Long Stroke Non-rotating Spindle		197	03-42
	Standard	Medium-sized Standard Type with 8 mm Diameter Spindle	(12)	151	03-24 to 03-27
60 - 75 mm	Micro Jack			7	03-43

IP65 U-WAVE fit

Dust- and Water-Protected TÜVRheinland CERTIFIED www.tuv.com ID 0000040191

Applicable models:
350-261-30, **350-271-30**, **350-273-30**, **350-28X-30**, **350-361-30** and **350-38X-30**

Digimatic Micrometer Heads SERIES 164, 350

- Easy-to-read digital display.
- All models support data output.

164-163

350-281-30 (IP65)

Functions (series 164)

Origin point setting (ABS measurement system):
Resets the ABS origin at the current spindle position to the minimum value of the measuring range and switches to ABS mode.
Zero-setting (INC measurement system):
A brief press on the ZERO/ABS button sets display to zero at the current spindle position and switches to the incremental (INC) measuring mode. A longer press resets to the ABS measuring mode.
Data output:
Equipped with output port for transferring measurement data to a Statistical Process Control (SPC) and measurement system.
Auto power ON/OFF:
The reading on the display disappears after this instrument is idle for about 20 minutes, but the reading and measurement mode are retained. Turning the spindle causes the reading on the display to reappear.
Error alarm:
In case of an overflow on the display or a computing error, an error message appears on the display and the measuring function stops. This prevents an instrument from giving an erroneous reading. Also, when the battery voltage drops to a certain level, the low-battery indicator appears well before the micrometer becomes unusable.

Optional Accessories

Code No.	Type	Description
264-020	—	USB Input Tool Series USB Keyboard Signal Conversion Type **IT-020U**
05CZA662	B	Connection cable (1 m): for **series 350** (IP65)
05CZA663	B	Connection cable (2 m): for **series 350** (IP65)
959149	C	Connection cable for **series 164** (1 m)
959150	C	Connection cable for **series 164** (2 m)
06AFM380B	B	USB Input Tool Direct for **series 350** (IP65) (2 m)
06AFM380C	C	USB Input Tool Direct for **series 164** (2 m)
02AZD790B	B	Connection cable for **U-WAVE-T** (160 mm): for **series 350** (IP65)
02AZE140B	B	Connection cable for **U-WAVE-T** For foot switch: for **series 350** (IP65)
02AZD790C	C	Connection cable for **U-WAVE-T** (160 mm): for **series 164**
02AZE140C	C	Connection cable for **U-WAVE-T** For foot switch: for **series 164**
264-622	IP67	**U-WAVE-TM**
264-623	Buzzer	**U-WAVE-TM**
264-626	IP67	**U-WAVE-TMB**
264-627	Buzzer	**U-WAVE-TMB**
02AZF310	IP67	Connecting unit for **U-WAVE-TM/TMB***

* Cannot be used with **164-163** and **164-164**

SPECIFICATIONS

Metric

Code No.	Range (mm)	Resolution (mm)	Graduation (mm)	Stem	Stem dia. (mm)	Spindle end	Graduation features	Maximum permissible error J_{MPE} (µm)
164-163	0 - 50	0.001	—	Plain	18	Flat (carbide tip)	—	±3
350-251-30*1	0 - 25		0.01	Plain	10	Flat (carbide tip)	Standard	±2
350-252-30*1				W/clamp nut				
350-253-30*1				Plain		Spherical (SR4) (carbide tip)		
350-254-30*1				W/clamp nut				
350-281-30*2				Plain	12	Flat (carbide tip)		
350-282-30*2				W/clamp nut				
350-283-30*2				Plain		Spherical (SR4) (carbide tip)		
350-284-30*2				W/clamp nut				
350-261-30*2				Plain		Flat		
350-271-30*2								
350-272-30*1				W/clamp nut				
350-273-30*2				Plain		Spherical (SR4) (carbide tip)		
350-274-30*1				W/clamp nut				

Inch/Metric

Code No.	Range (in)	Resolution	Graduation	Stem	Stem dia. (in)	Spindle end	Graduation features	Maximum permissible error J_{MPE} (in)
164-164	0 - 2	0.00005 in/ 0.001 mm	—	Plain	0.709	Flat (carbide tip)	—	±0.00015
350-351-30*1	0 - 1		0.001 in/ 0.01 mm	Plain	0.375	Flat (carbide tip)	Standard	±0.0001
350-352-30*1				W/clamp nut				
350-353-30*1				Plain		Spherical (SR4) (carbide tip)		
350-354-30*1				W/clamp nut				
350-357-30*1				Plain	0.5	Flat (carbide tip)		
350-381-30*2								
350-382-30*2				W/clamp nut				
350-383-30*2				Plain		Spherical (SR4) (carbide tip)		
350-384-30*2				W/clamp nut				
350-361-30*2				Plain		Flat		

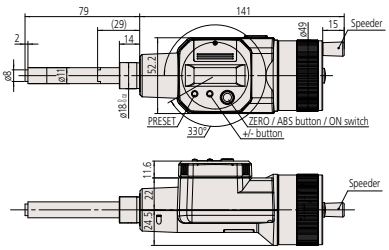
- Power source for **series 350**: SR44 battery (1 pc.), **938882** included as standard (for operational checks)
  Power source for **series 164**: SR44 battery (2 pcs.), **938882** included as standard (for operational checks)
- Battery life: Approx. 2.4 years under normal use (for **350-XXX**)
  Approx. 1.8 years under normal use (for **164-163**, **164**)
- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: Satin-chrome plated

*1 These models are not water-proof.
*2 IP65 dust/water protection type. Stem diameter of IP65 type is 12 mm.
Note: For functional details of **series 350** refer to page 02-7. Origin setting is by presetting.

DIMENSIONS

Plain Stem

Plain stem



Unit: mm

164-163 Rotatable display Mass: 490 g
( ): with spindle fully retracted.

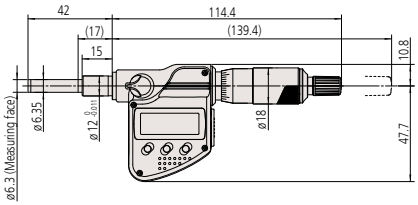
Mitutoyo

Digimatic Micrometer Heads
SERIES 164, 350

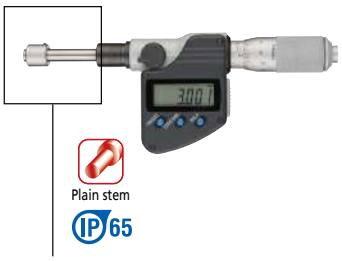
DIMENSIONS

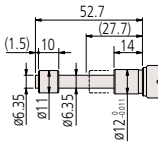
Plain Stem

Unit: mm

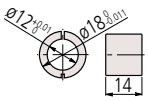


350-281-30
(Stem dia. 12 mm, water-proof type) Mass: 230 g

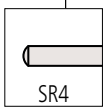




Equipped with a non-rotating device
350-261-30
(Stem dia. 12 mm, water-proof type)
Mass: 235 g



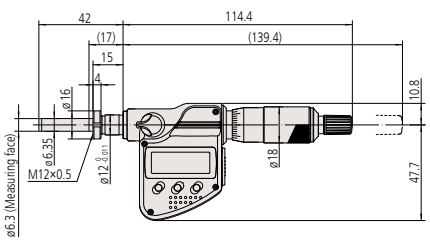
Bush (standard accessory)
350-261-30



Spherical face
350-283-30
*1

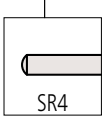
*1 Other dimensions are the same as **350-281-30**.
( ): with spindle fully retracted.

Stem locknut



- Fixture thickness: 11.5 mm

350-282-30 (Stem dia. 12 mm, equipped with locknut, water-proof type) Mass: 230 g



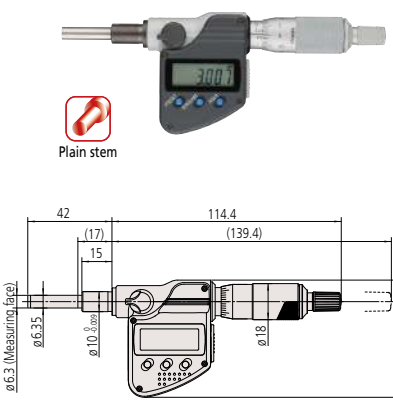
Spherical face
350-284-30
*2

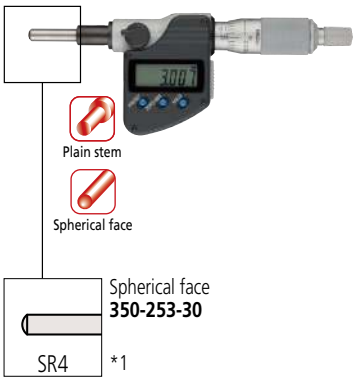
*2 Other dimensions are the same as **350-282-30**.
( ): with spindle fully retracted.

DIMENSIONS

Plain Stem

Unit: mm

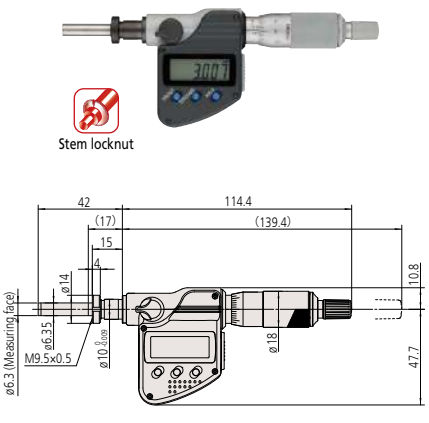


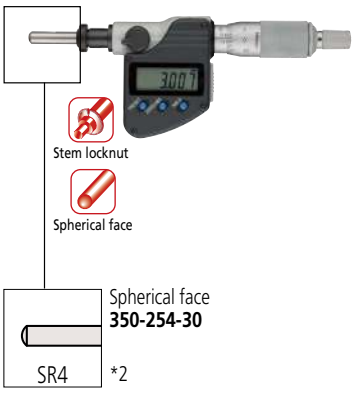


350-251-30
(Stem dia. 10 mm, for general use) Mass: 230 g

*1 Other dimensions are the same as **350-251-30**.
( ): with spindle fully retracted.

Stem Locknut





- Fixture thickness: 11.5 mm

350-252-30
(Stem dia. 10 mm, for general use) Mass: 230 g

*2 Other dimensions are the same as **350-252-30**.
( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Small/Ultra-small Type

- Miniature and light-weight micrometer heads for easier incorporation into machines, jigs and fixtures.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Stem dia. (mm)	Stem	Spindle end	Graduation	Maximum permissible error J_{MPE} (µm)
148-215	0 - 5	3.5	Plain	Spherical (SR1.5)	Standard	±5
148-216			W/clamp nut			
148-201-10	0 - 6.5	6	Plain	Flat		
148-203-10			W/clamp nut			
148-205-10			Plain	Spherical (SR3)		
148-207-10			W/clamp nut			
148-209-10			Plain	Flat	Reverse reading	
148-211-10			W/clamp nut			

Inch

Code No.	Range (in)	Stem dia. (in)	Stem	Spindle end	Graduation	Maximum permissible error J_{MPE} (in)
148-217	0 - 0.2	0.156	Plain	Spherical (SR1.5)	Standard	±0.00025
148-218			W/clamp nut			
148-202-10	0 - 0.25	0.25	Plain	Flat		
148-204-10			W/clamp nut			
148-206-10			Plain	Spherical (SR3)		
148-208-10			W/clamp nut			
148-210-10*			Plain	Flat	Reverse reading	
148-212-10*			W/clamp nut			

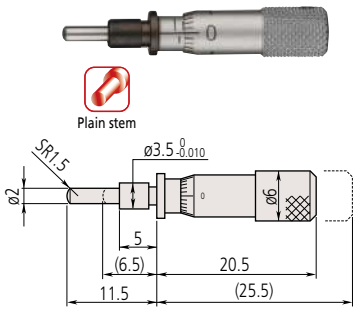
- Graduation: 0.02 mm (**148-215**, **148-216**), 0.01 mm or 0.001 in
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

* Made-to-order models

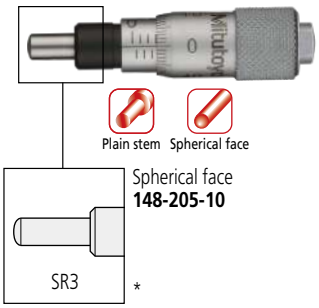
DIMENSIONS

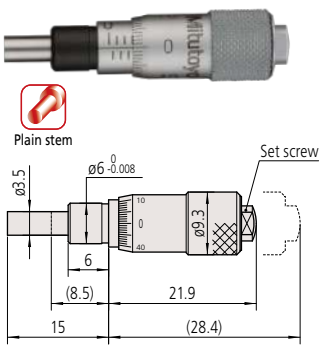
Plain Stem

Unit: mm

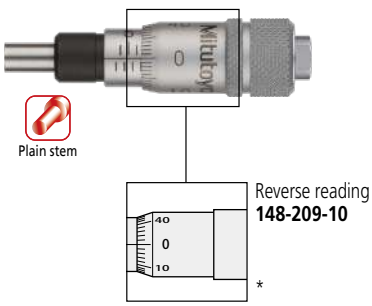


148-215 Mass: 4 g





148-201-10 Mass: 10 g



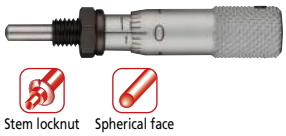
* Other dimensions are the same as **148-201-10**.
( ): with spindle fully retracted.

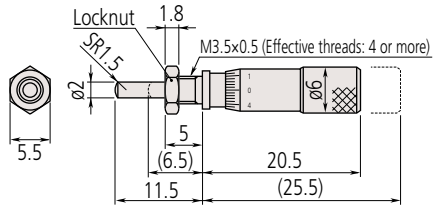
Micrometer Heads
SERIES 148 — Small/Ultra-small Type

DIMENSIONS

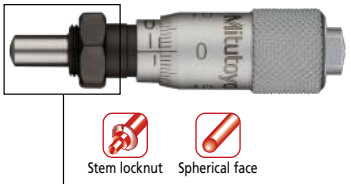
Stem Locknut

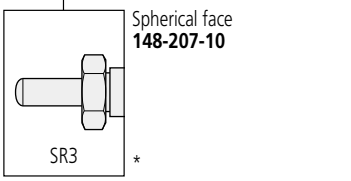
Unit: mm

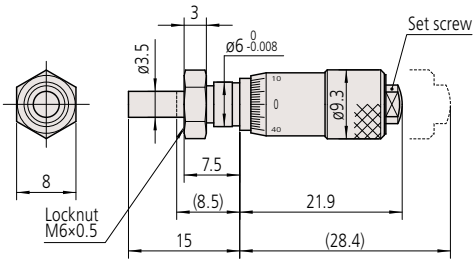




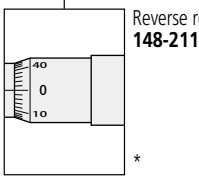
• Fixture thickness: 3 mm
148-216 Mass: 4 g







• Fixture thickness: 4 mm
148-203-10 Mass: 10 g



* Other dimensions are the same as **148-203-10**.
( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Short Thimble with Choice of Diameter

- Short body design maintains measuring range for limited space applications.
- Three types of thimble diameters can be selected depending on applications.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Thimble dia. (mm)
148-301-10	0 - 6.5	±2	9.5	Plain	Flat	15
148-302-10				W/clamp nut		
148-303-10				Plain		20
148-304-10				W/clamp nut		
148-313-10				Plain	Spherical (SR4)	15
148-314-10				W/clamp nut		
148-307-10	0 - 13			Plain	Flat	15
148-308-10				W/clamp nut		
148-309-10				Plain		20
148-310-10				W/clamp nut		
148-311-10				Plain		29
148-312-10				W/clamp nut		

- Graduation: 0.01 mm
- Spindle pitch: 0.5 mm
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

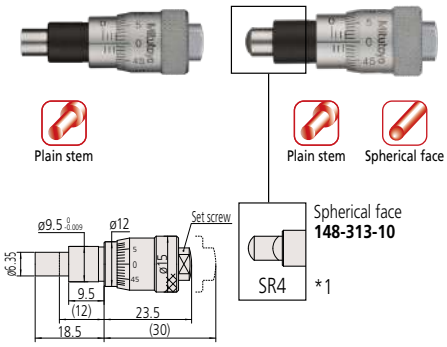
Inch

Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Thimble dia. (in)
148-351-10	0 - 0.25	±0.0001	0.375	Plain	Flat	0.59
148-352-10				W/clamp nut		
148-353-10				Plain		0.79
148-354-10				W/clamp nut		
148-357-10	0 - 0.5			Plain		0.59
148-358-10				W/clamp nut		
148-359-10				Plain		0.79
148-360-10				W/clamp nut		

- Graduation: 0.001 in
- Spindle pitch: 0.025 in
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

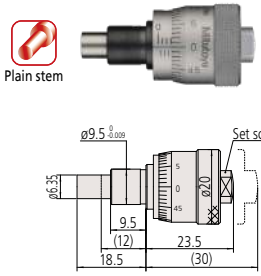
DIMENSIONS

Plain Stem



148-301-10
Mass: 26 g
Thimble diameter: 15

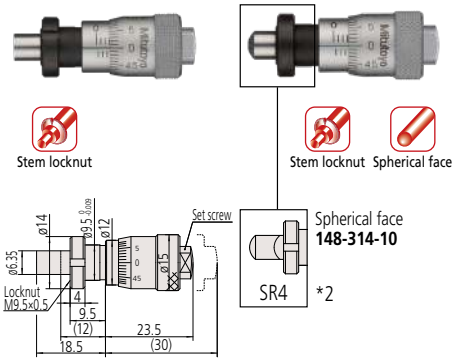
*1 Other dimensions are the same as **148-301-10**.



148-303-10
Mass: 39 g
Thimble diameter: 20

Stem Locknut

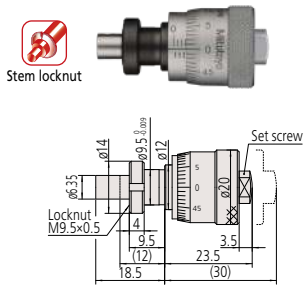
Unit: mm



- Fixture thickness: 6 mm

148-302-10
Mass: 26 g
Thimble diameter: 15

*2 Other dimensions are the same as **148-302-10**.



- Fixture thickness: 6 mm

148-304-10
Mass: 39 g
Thimble diameter: 20

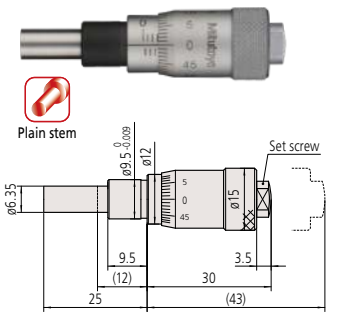
( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Short Thimble with Choice of Diameter

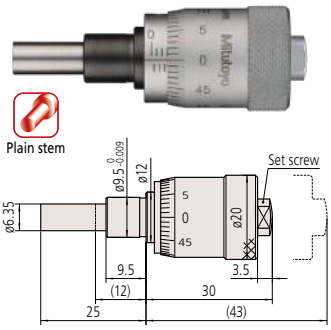
DIMENSIONS

Unit: mm

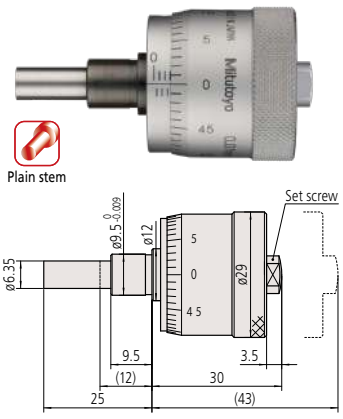
Plain Stem



148-307-10
Mass: 35 g Thimble diameter: 15

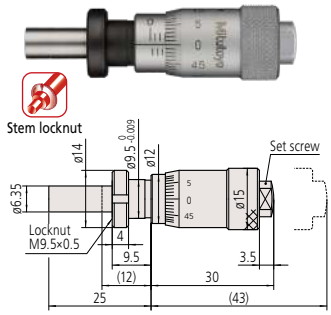


148-309-10
Mass: 55 g Thimble diameter: 20

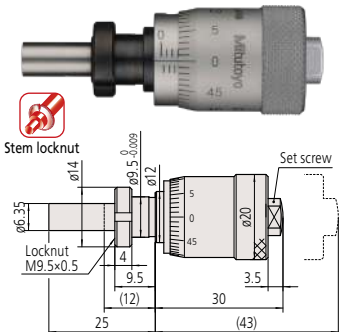


148-311-10
Mass: 103 g Thimble diameter: 29

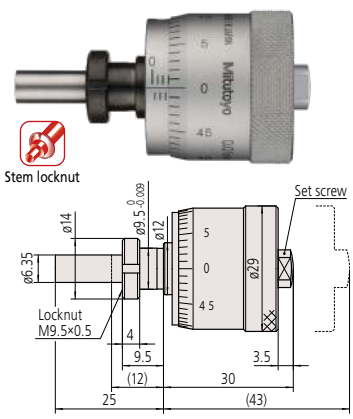
Stem Locknut



• Fixture thickness: 6 mm
148-308-10
Mass: 35 g Thimble diameter: 15



• Fixture thickness: 6 mm
148-310-10
Mass: 55 g Thimble diameter: 20



• Fixture thickness: 6 mm
148-312-10
Mass: 103 g Thimble diameter: 29

( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Small Standard Type

• Measuring range: 13 mm

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Graduation features
148-104-10	0 - 13	±2	9.5	Plain	Flat	Standard
148-103-10				W/clamp nut		
148-121-10				Plain*		
148-120-10				W/clamp nut*		
148-801-10				Plain	Spherical (SR4)	
148-802-10				W/clamp nut		
148-803-10				Plain*		
148-804-10				W/clamp nut*		
148-821-10				Plain	Flat	Reverse reading
148-822-10				W/clamp nut		
148-823-10				Plain*		
148-824-10				W/clamp nut*		

• Graduation: 0.01 mm
• Spindle pitch: 0.5 mm
• Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
• Scale finishing: Satin-chrome plated
* With spindle lock

Inch

Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Graduation features
148-112-10	0 - 0.5	±0.0001	0.375	Plain	Flat	Standard
148-111-10*2				W/clamp nut		
148-123-10				Plain*1		
148-122-10				W/clamp nut*1		
148-811-10				Plain	Spherical (SR4)	
148-812-10				W/clamp nut		
148-813-10				Plain*1		
148-814-10				W/clamp nut*1		
148-831-10				Plain	Flat	Reverse reading
148-832-10				W/clamp nut		
148-833-10				Plain*1		
148-834-10				W/clamp nut*1		

• Graduation: 0.001 in
• Spindle pitch: 0.025 in
• Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
• Scale finishing: Satin-chrome plated
*1 With spindle lock
*2 Made-to-order models

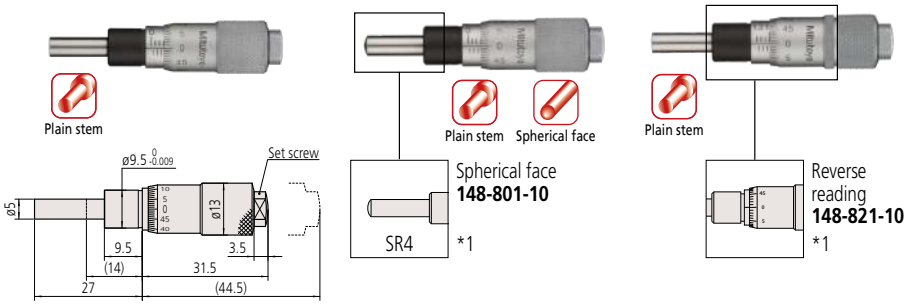
Micrometer Heads
SERIES 148 — Small Standard Type

DIMENSIONS

Plain Stem

Mass: 30 g

Unit: mm

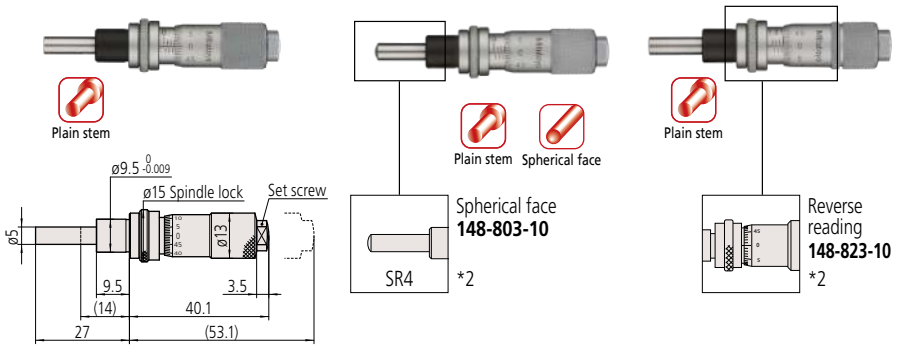


148-104-10

*1 Other dimensions are the same as **148-104-10**.

Plain Stem and Spindle Lock

Mass: 40 g



148-121-10

*2 Other dimensions are the same as **148-121-10**.

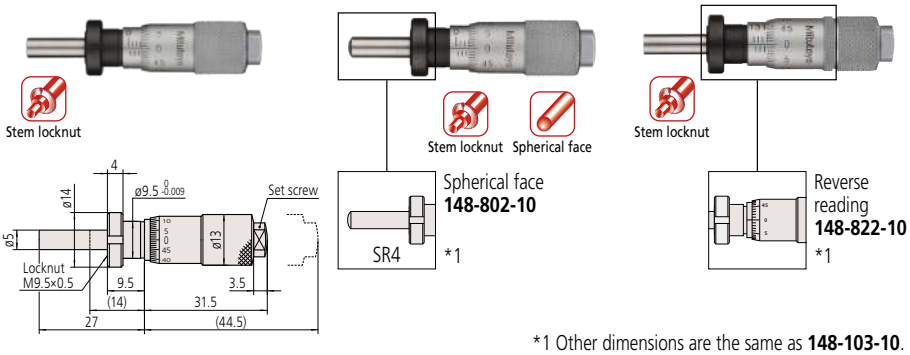
( ): with spindle fully retracted.

DIMENSIONS

Stem Locknut

Mass: 35 g

Unit: mm

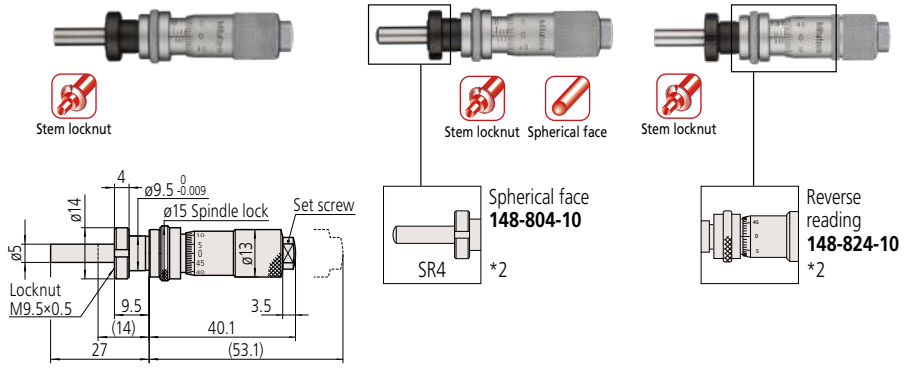


*1 Other dimensions are the same as **148-103-10**.

• Fixture thickness: 6 mm
148-103-10

Stem Locknut and Spindle Lock

Mass: 45 g



• Fixture thickness: 6 mm
148-120-10

*2 Other dimensions are the same as **148-120-10**.

( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Small Thimble Diameter Standard Type

- Measuring range: 13 mm
- The thimble can be set to zero at any position by loosening the setscrew.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Special features
148-503	0 - 13	±2	9.5	Plain	Flat	Standard
148-508				W/clamp nut		
148-506				Plain*1		
148-504				W/clamp nut*1		
148-853				Plain	Spherical (SR4)	
148-854				W/clamp nut*1		
148-863				Plain	Flat	Reverse reading
148-864				W/clamp nut*1		
148-858*2				W/clamp nut	Spherical (SR4)	Standard
148-866*2				Plain*1	Flat	Reverse reading
148-856*2				Plain*1	Spherical (SR4)	Standard
148-868*2				W/clamp nut	Flat	Reverse reading

- Graduation: 0.01 mm
- Spindle pitch: 0.5 mm
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

*1 With spindle lock
*2 Made-to-order models

Inch

Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Special features
148-501	0 - 0.5	±0.0001	0.375	Plain	Flat	Standard
148-507*2				W/clamp nut		
148-505				Plain*1		
148-502				W/clamp nut*1		
148-851				Plain	Spherical (SR4)	
148-852				W/clamp nut*1		
148-861				Plain	Flat	Reverse reading
148-862				W/clamp nut*1		

- Graduation: 0.001 in
- Spindle pitch: 0.025 in
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

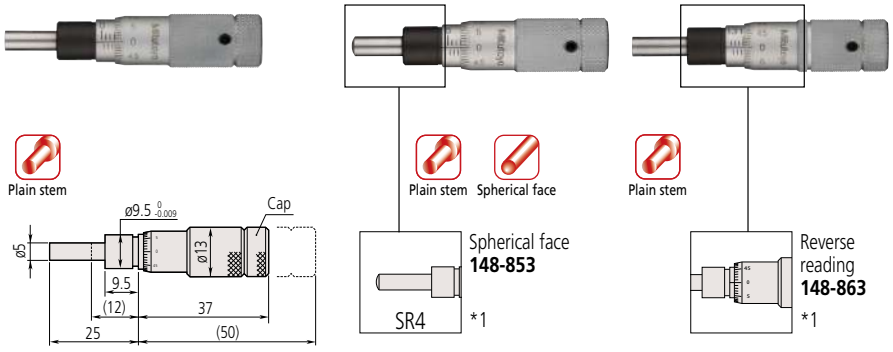
*1 With spindle lock
*2 Made-to-order models

DIMENSIONS

Plain Stem

Mass: 35 g

Unit: mm

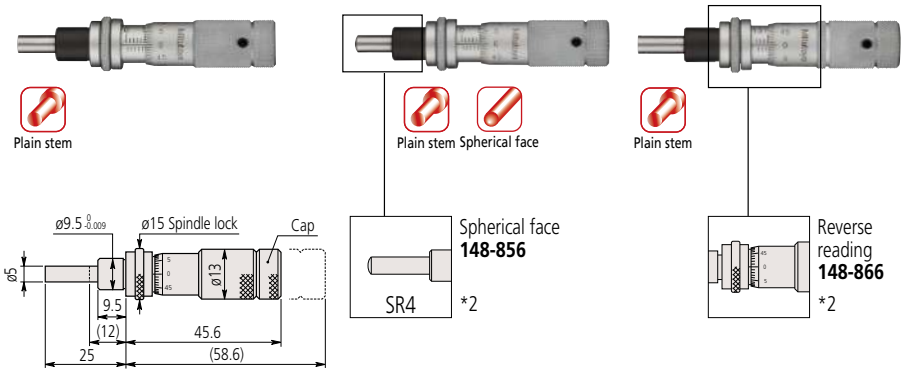


148-503

*1 Other dimensions are the same as **148-503**.

Plain Stem and Spindle Lock

Mass: 35 g



148-506

*2 Other dimensions are the same as **148-506**.

( ): with spindle fully retracted.

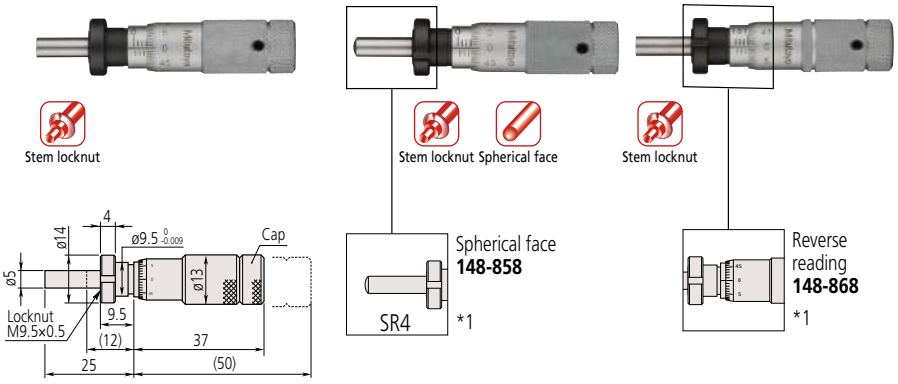
Micrometer Heads
SERIES 148 — Small Thimble Diameter Standard Type

DIMENSIONS

Stem Locknut

Mass: 40 g

Unit: mm

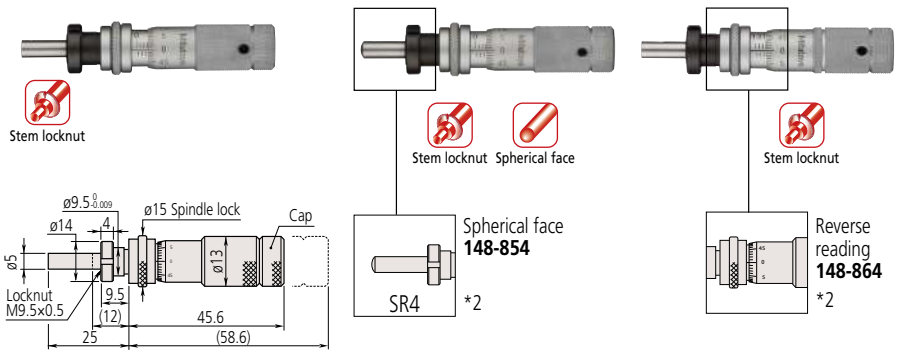


• Fixture thickness: 6 mm
148-508

*1 Other dimensions are the same as **148-508**.

Stem Locknut and Spindle Lock

Mass: 40 g



• Fixture thickness: 6 mm
148-504

*2 Other dimensions are the same as **148-504**.
( ): with spindle fully retracted.

Micrometer Heads
SERIES 149 — Small Standard Type with Carbide-tipped Spindle

• Carbide-tipped spindle provides high abrasion resistance.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Graduation features
149-132-10	0 - 15	±2	9.5	Plain	Flat (carbide tip)	Standard
149-131-10				W/clamp nut		
149-183-10				Plain*1		
149-184-10				W/clamp nut*1		
149-801-10				Plain	Spherical (SR4) (carbide tip)	
149-802-10				W/clamp nut		
149-821-10				Plain	Flat (carbide tip)	Reverse reading
149-822-10				W/clamp nut		
149-803-10*2				Plain*1	Spherical (SR4) (carbide tip)	Standard
149-804-10*2				W/clamp nut*1		
149-823-10*2				Plain*1	Flat (carbide tip)	Reverse reading
149-824-10*2				W/clamp nut*1		

Inch

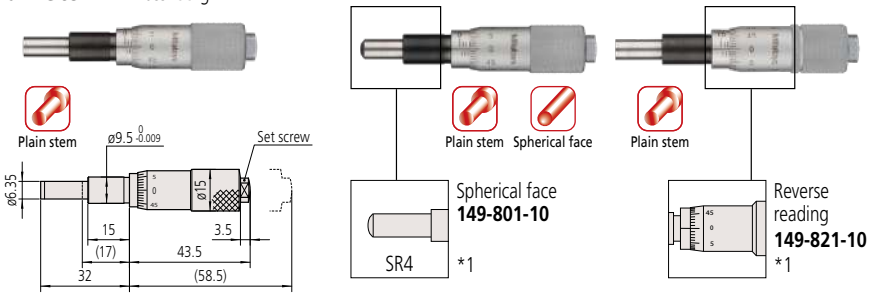
Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Graduation features
149-148-10	0 - 0.5	±0.0001	0.375	Plain	Flat (carbide tip)	Standard
149-147-10				W/clamp nut		
149-185-10*3				Plain*1		
149-182-10				W/clamp nut*1		
149-811-10				Plain	Spherical (SR4) (carbide tip)	
149-812-10				W/clamp nut		
149-831-10*2				Plain	Flat (carbide tip)	Reverse reading
149-832-10*2				W/clamp nut		
149-181*2				Plain*1		Standard

• Graduation: 0.01 mm or 0.001 in
• Spindle pitch: 0.5 mm or 0.025 in
• Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
• Scale finishing: Satin-chrome plated
*1 With spindle lock *2 Made-to-order models *3 W/rachet (**149-181**) is available

DIMENSIONS

Plain Stem Mass: 55 g

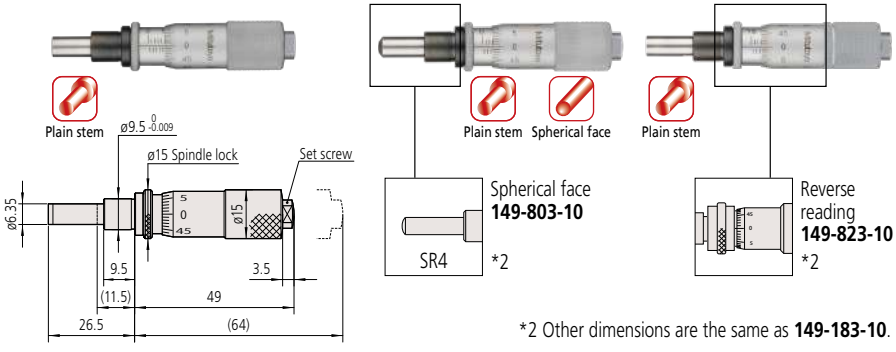
Unit: mm



149-132-10

*1 Other dimensions are the same as **149-132-10**.

Plain Stem and Spindle Lock Mass: 55 g



149-183-10

*2 Other dimensions are the same as **149-183-10**.
( ): with spindle fully retracted.

Mitutoyo

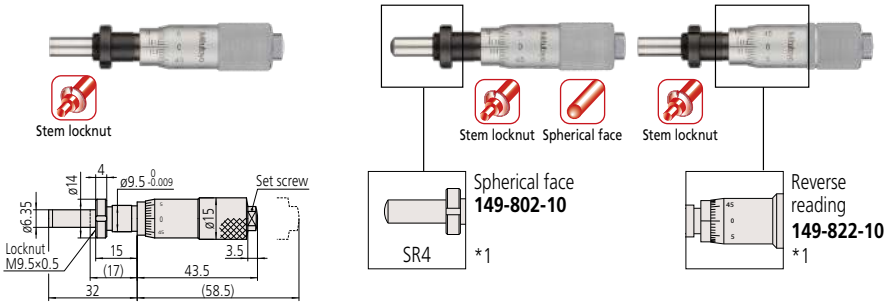
Micrometer Heads
SERIES 149 — Small Standard Type with Carbide-tipped Spindle

DIMENSIONS

Stem Locknut

Mass: 60 g

Unit: mm

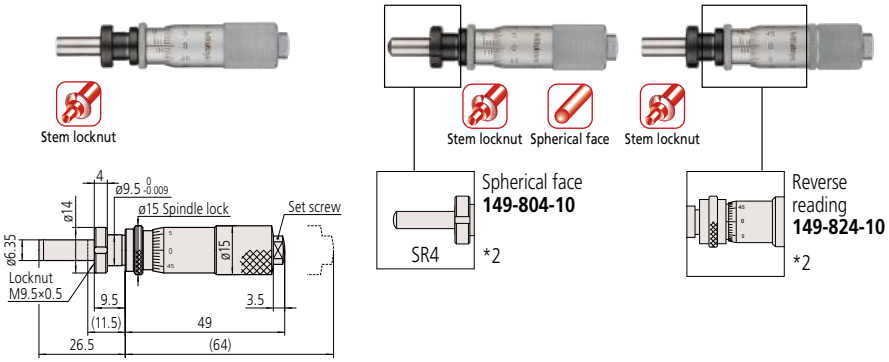


- Fixture thickness: 11.5 mm
  149-131-10

*1 Other dimensions are the same as **149-131-10**.

Stem Locknut and Spindle Lock

Mass: 60 g



- Fixture thickness: 6 mm
  149-184-10

*2 Other dimensions are the same as **149-184-10**.
( ): with spindle fully retracted.

Micrometer Heads
SERIES 150 — Medium-sized Standard Type

• Measuring range: 25 mm

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Special features
150-192	0 - 25	±2	10	Plain	Flat (carbide tip)	Standard
150-191				W/clamp nut		
150-209				Plain*1		
150-210				W/clamp nut*1		
150-801				Plain	Spherical (SR4) (carbide tip)	
150-802				W/clamp nut		
150-821				Plain	Flat (carbide tip)	Reverse reading
150-822				W/clamp nut		
150-190				Plain		W/vernier (0.001 mm)
150-189				W/clamp nut		
150-183*2				Plain*1		
150-184				W/clamp nut*1		
150-196-10				Plain		W/o ratchet stop
150-195-10				W/clamp nut		
150-211-10				Plain*1		
150-212-10				W/clamp nut*1		
150-803*2				Plain*1	Spherical (SR4) (carbide tip)	Standard
150-804*2				W/clamp nut*1		
150-823*2				Plain*1	Flat (carbide tip)	Reverse reading
150-824*2				W/clamp nut*1		

• Graduation: 0.01 mm, 0.001 mm (w/vernier)
• Spindle pitch: 0.5 mm
• Measuring face: Material/Carbide tip (Only long spindle model is alloy tool steel),
Hardness/90 HRA or more (Only long spindle model is 60 HRC or more), Lapped
• Scale finishing: Satin-chrome plated
*1 With spindle lock
*2 Made-to-order models

Inch

Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Special features
150-208	0 - 1	±0.0001	0.375	Plain	Flat (carbide tip)	Standard
150-207				W/clamp nut		
150-213*2				Plain*1		
150-214*2				W/clamp nut*1		
150-811				Plain	Spherical (SR4) (carbide tip)	
150-812				W/clamp nut		
150-831				Plain	Flat (carbide tip)	Reverse graduation
150-832				W/clamp nut		
150-206				Plain		W/vernier (0.0001 in)
150-205*2				W/clamp nut		
150-215*2				Plain*1		
150-216*2				W/clamp nut*1		
150-198-10				Plain		W/ o ratchet stop
150-197-10				W/clamp nut		
150-217*2				Plain*1		
150-218*2				W/clamp nut*1		

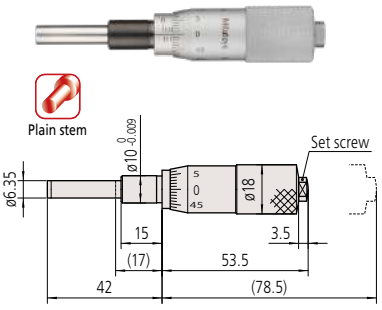
• Graduation: 0.001 in or 0.0001 in (w/vernier)
• Spindle pitch: 0.025 in
• Measuring face: Material/Carbide tip (Only long spindle model is alloy tool steel),
Hardness/90 HRA or more (Only long spindle model is 60 HRC or more), Lapped
• Scale finishing: Satin-chrome plated
*1 With spindle lock
*2 Made-to-order models

Mitutoyo

Micrometer Heads
SERIES 150 — Medium-sized Standard Type

DIMENSIONS

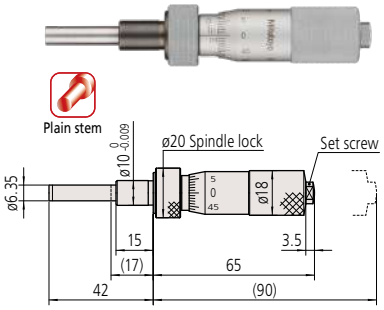
Plain Stem



150-196-10 Mass: 95 g

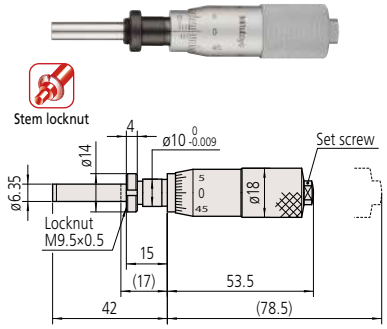
Plain Stem and Spindle Lock

Unit: mm



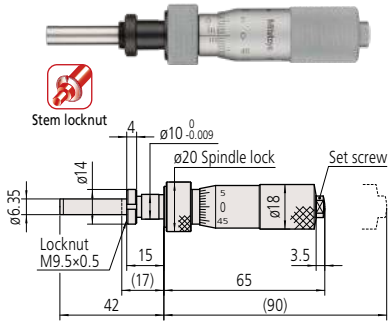
150-211-10 Mass: 115 g

Stem Locknut



Fixture thickness: 11.5 mm
150-195-10 Mass: 110 g

Stem Locknut and Spindle Lock



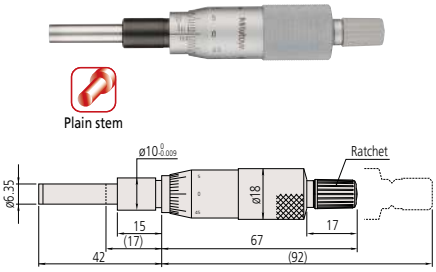
Fixture thickness: 11.5 mm
150-212-10 Mass: 115 g

( ): with spindle fully retracted.

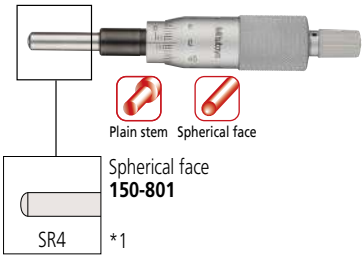
DIMENSIONS

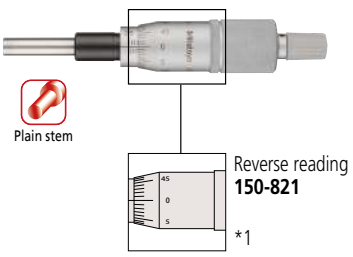
( ): with spindle fully retracted. Unit: mm

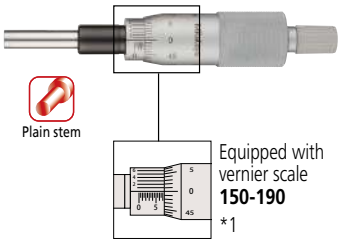
Plain Stem Mass: 95 g



150-192

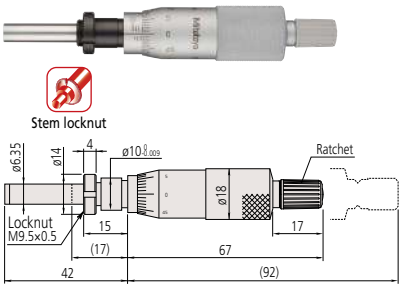




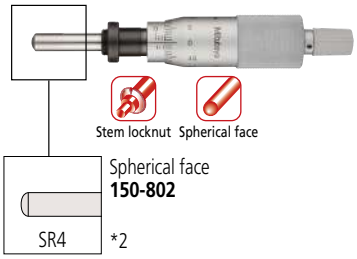


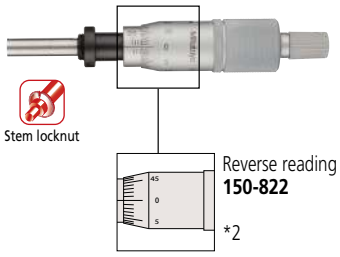
*1 Other dimensions are the same as **150-192**.

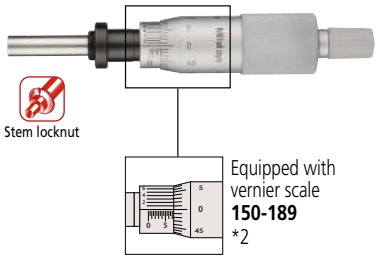
Stem Locknut Mass: 100 g



• Fixture thickness: 11.5 mm
150-191







*2 Other dimensions are the same as **150-191**.

Mitutoyo

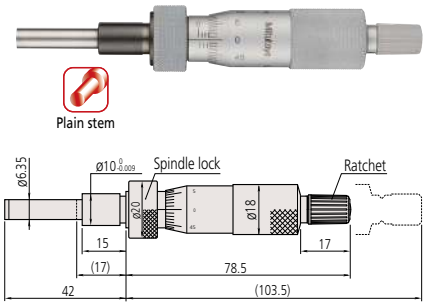
Micrometer Heads
SERIES 150 — Medium-sized Standard Type

DIMENSIONS

( ): with spindle fully retracted. Unit: mm

Plain Stem and Spindle Lock

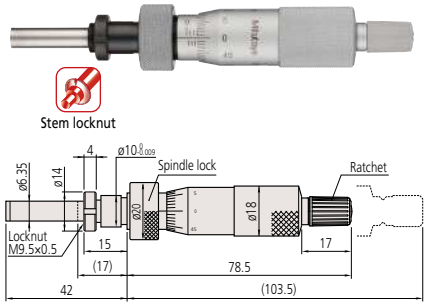
Mass: 110 g



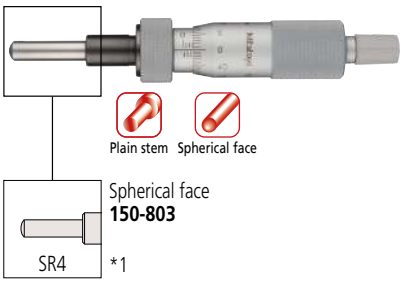
150-209

Stem Locknut and Spindle Lock

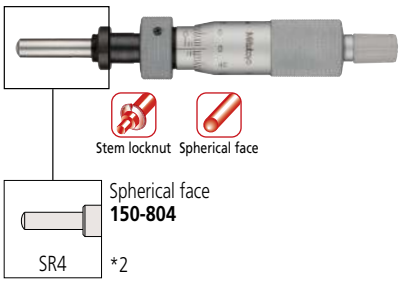
Mass: 115 g



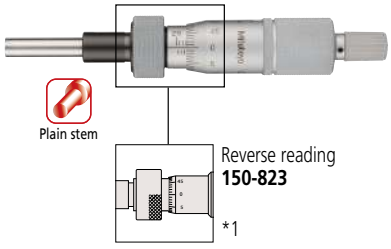
• Fixture thickness: 11.5 mm
150-210



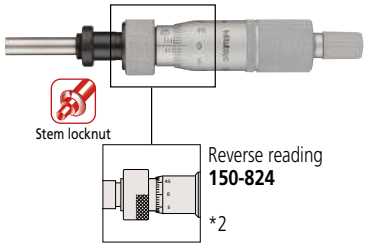
Spherical face
150-803
*1



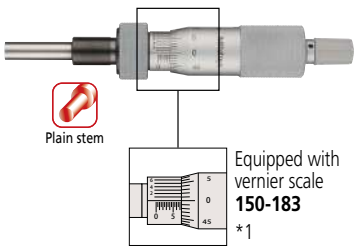
Spherical face
150-804
*2



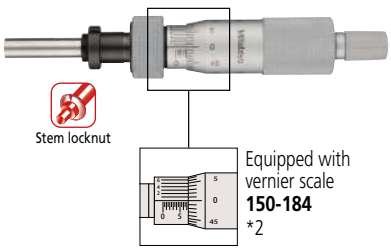
Reverse reading
150-823
*1



Reverse reading
150-824
*2



Equipped with vernier scale
150-183
*1



Equipped with vernier scale
150-184
*2

*1 Other dimensions are the same as **150-209**.

*2 Other dimensions are the same as **150-210**.

Micrometer Heads
SERIES 151 — Medium-sized Standard Type with 8 mm Diameter Spindle

- Larger spindle (ø8 mm) for heavy-duty applications (normally ø6.35 mm).

SPECIFICATIONS

Metric

Code No.	Range (mm)	Maximum permissible error J_{MPE} (µm)	Stem dia. (mm)	Stem	Spindle end	Special features
151-224	0 - 25	±2	12	Plain	Flat (carbide tip)	—
151-223				W/clamp nut		
151-214*2				Plain*1		
151-213*2				W/clamp nut*1		
151-222				Plain		W/vernier (0.001 mm)
151-221				W/clamp nut		
151-212*2				Plain*1		
151-211*2				W/clamp nut*1		
151-227-10				Plain		W/o ratchet stop
151-228-10				W/clamp nut		
151-225-10				Plain*1		
151-226-10				W/clamp nut*1		
151-256	0 - 50	±4		Plain		—
151-255				W/clamp nut		
151-260-10				Plain		W/o ratchet stop
151-259-10				W/clamp nut		

- Graduation: 0.01 mm, 0.001 mm (w/vernier)
- Spindle pitch: 0.5 mm
- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: Satin-chrome plated

*1 With spindle lock
*2 Made-to-order models

Inch

Code No.	Range (in)	Maximum permissible error J_{MPE} (in)	Stem dia. (in)	Stem	Spindle end	Special features
151-240	0 - 1	±0.0001	0.5	Plain	Flat (carbide tip)	—
151-239				W/clamp nut		
151-238				Plain		W/vernier (0.0001 in)
151-237				W/clamp nut		
151-241-10*2				Plain*1		W/o ratchet stop
151-242-10*2				W/clamp nut*1		
151-243-10*2				Plain*1		W/o ratchet stop (0.0001 in)
151-244-10*2				W/clamp nut*1		
151-272	0 - 2	±0.0002		Plain		—
151-271				W/clamp nut		

- Graduation: 0.001 in or 0.0001 in (w/vernier)
- Spindle pitch: 0.025 in
- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: Satin-chrome plated

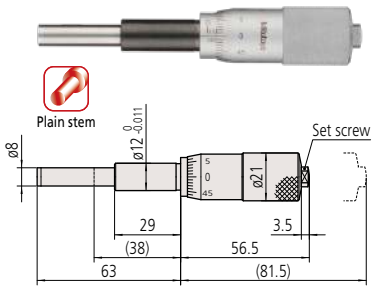
*1 With spindle lock
*2 Made-to-order models

Micrometer Heads
SERIES 151 — Medium-sized Standard Type with 8 mm Diameter Spindle

DIMENSIONS

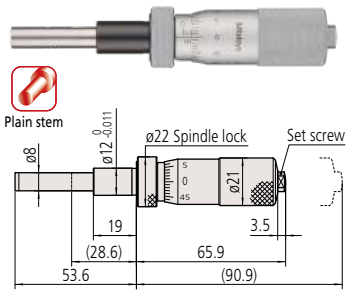
Unit: mm

Plain Stem



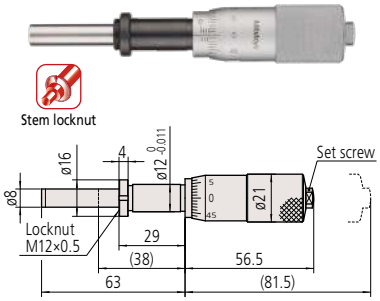
151-227-10 Mass: 150 g

Plain Stem and Spindle Lock



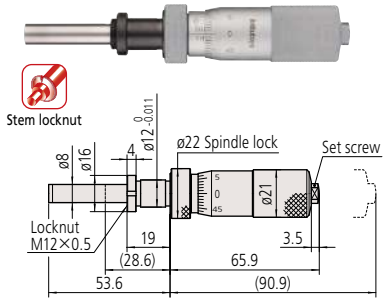
151-225-10 Mass: 165 g

Stem Locknut



• Fixture thickness: 25.5 mm
151-228-10 Mass: 155 g

Stem Locknut and Spindle Lock



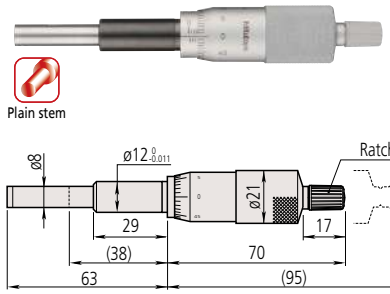
• Fixture thickness: 15.5 mm
151-226-10 Mass: 165 g

( ): with spindle fully retracted.

DIMENSIONS

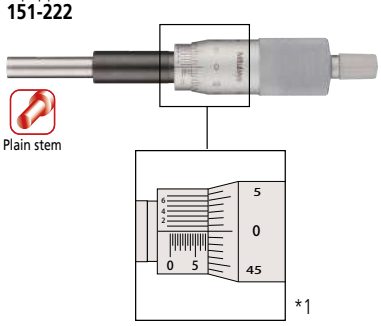
Plain Stem

Unit: mm



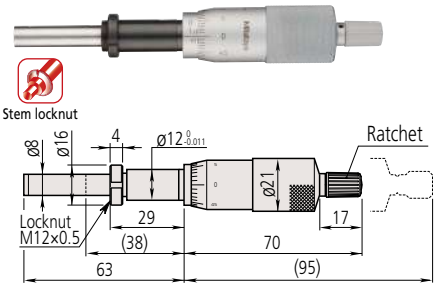
151-224 Mass: 150 g

Equipped with vernier scale
151-222



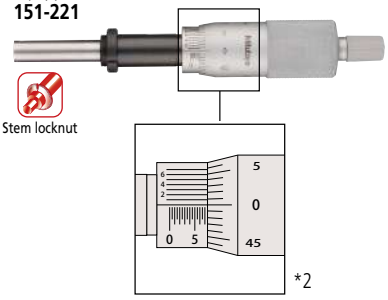
*1 Other dimensions are the same as **151-224**.

Stem Locknut



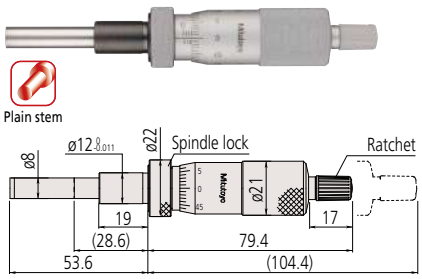
• Fixture thickness: 25.5 mm
151-223 Mass: 155 g

Equipped with vernier scale
151-221



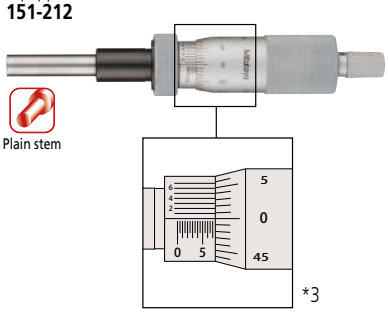
*2 Other dimensions are the same as **151-223**.

Stem Locknut and Spindle Lock



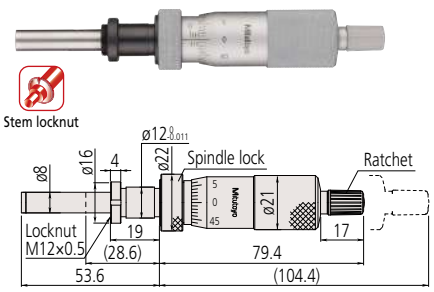
151-214 Mass: 160 g

Equipped with vernier scale
151-212



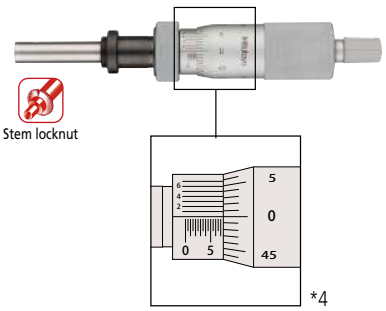
*3 Other dimensions are the same as **151-214**.

Stem Locknut and Spindle Lock



• Fixture thickness: 15.5 mm
151-213 Mass: 165 g

Equipped with vernier scale
151-211



*4 Other dimensions are the same as **151-213**.
( ): with spindle fully retracted.

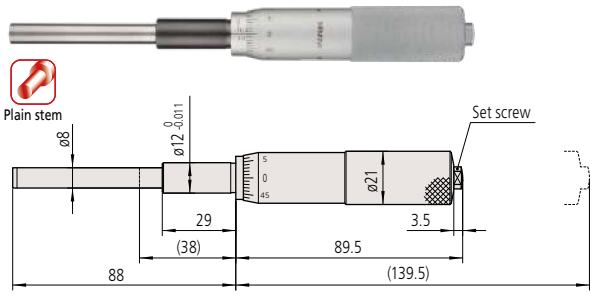
Mitutoyo

Micrometer Heads
SERIES 151 — Medium-sized Standard Type with 8 mm Diameter Spindle

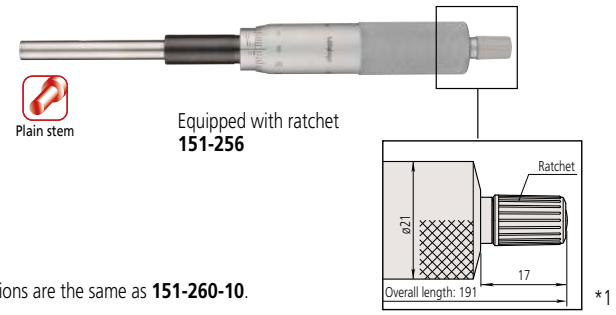
DIMENSIONS

Plain Stem

Unit: mm



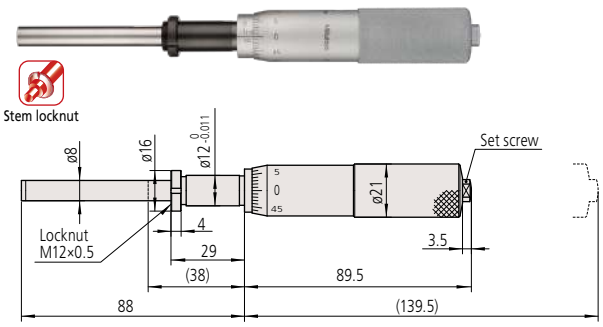
151-260-10 Mass: 240 g



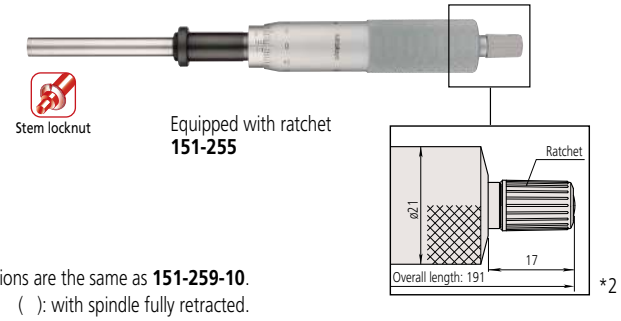
*1 Other dimensions are the same as **151-260-10**.

*1

Stem Locknut



• Fixture thickness: 25.5 mm
151-259-10 Mass: 250 g



*2 Other dimensions are the same as **151-259-10**.
( ): with spindle fully retracted.

*2

Micrometer Heads
SERIES 148 — Locking-screw Type

- This model with enhanced clamping force created by a locking screw can be reliably used on positioning equipment or instruments constantly exposed to vibration.
- Position of the locking screw is the same as the sleeve index line.

Secure spindle

SPECIFICATIONS

Metric

Code No.	Range (mm)	Graduation (mm)	Stem dia. (mm)	Stem	Spindle end	Graduation features	Maximum permissible error J_{MPE} (µm)
148-220-10	0 - 6.5	0.01	6	Plain	Flat	Standard	±5
148-221-10				W/clamp nut			
148-222-10				Plain	Spherical (SR3)		
148-223-10				W/clamp nut			
148-150-10	0 - 13		9.5	Plain	Flat		±2
148-151-10				W/clamp nut			
148-152-10				Plain	Spherical (SR4)		
148-153-10				W/clamp nut			
148-316-10	0 - 6.5			Plain	Flat		
148-317-10				W/clamp nut			
148-318-10				Plain	Spherical (SR4)		
148-319-10				W/clamp nut			

- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

Inch

Code No.	Range (in)	Graduation (in)	Stem dia. (in)	Stem	Spindle end	Graduation features	Maximum permissible error J_{MPE} (in)
148-230-10	0 - 0.25	0.001	0.25	Plain	Flat	Standard	±0.00025
148-231-10				W/clamp nut			
148-232-10				Plain	Spherical (SR3)		
148-233-10				W/clamp nut			
148-160-10	0 - 0.5		0.375	Plain	Flat		±0.0001
148-161-10				W/clamp nut			
148-162-10				Plain	Spherical (SR4)		
148-163-10				W/clamp nut			
148-326-10	0 - 0.25			Plain	Flat		
148-327-10				W/clamp nut			
148-328-10				Plain	Spherical (SR4)		
148-329-10				W/clamp nut			

- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

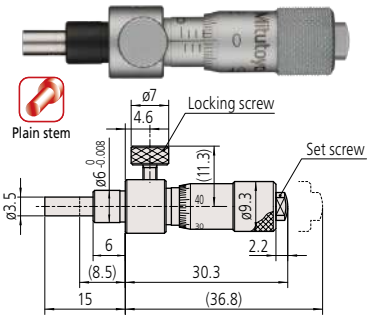
Mitutoyo

Micrometer Heads
SERIES 148 — Locking-screw Type

DIMENSIONS

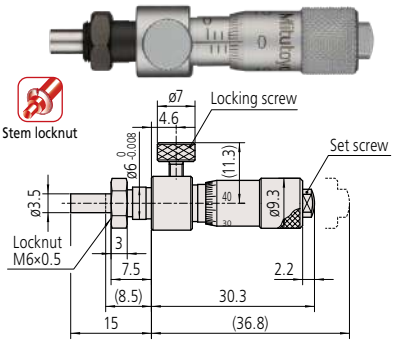
Unit: mm

Plain Stem



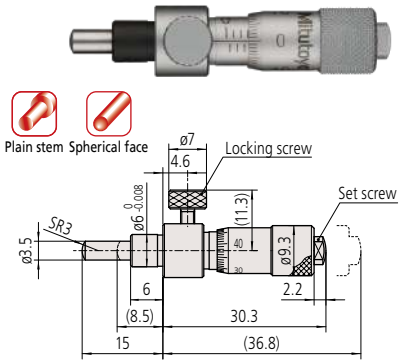
148-220-10 Mass: 16 g

Stem Locknut



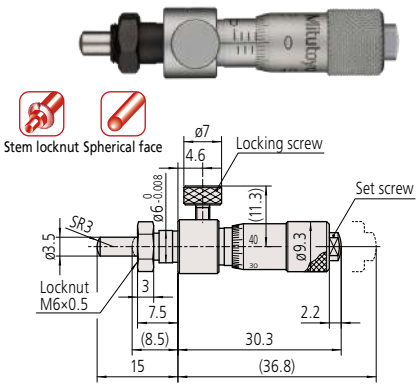
• Fixture thickness: 4 mm
148-221-10 Mass: 17 g

Plain Stem



Spherical face (SR3)
148-222-10 Mass: 16 g

Stem Locknut



Spherical face (SR3) • Fixture thickness: 4 mm
148-223-10 Mass: 17 g

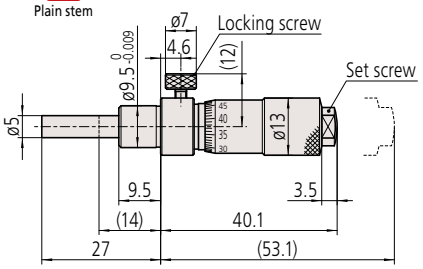
( ): with spindle fully retracted.

DIMENSIONS

Unit: mm

Plain Stem

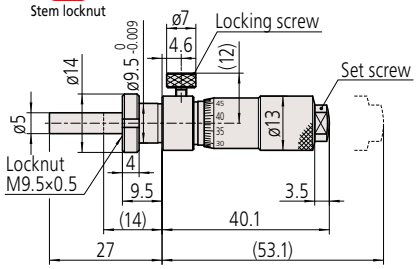
Plain stem



148-150-10 Mass: 40 g

Stem Locknut

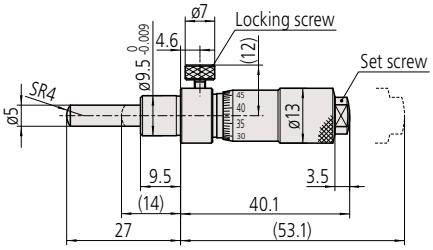
Stem locknut



• Fixture thickness: 6 mm
148-151-10 Mass: 43 g

Plain Stem

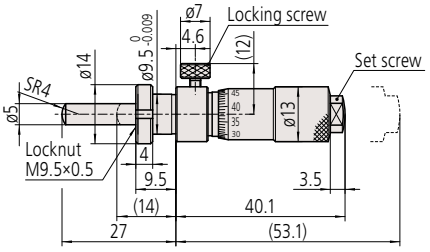
Plain stem Spherical face



Spherical face (SR4)
148-152-10 Mass: 40 g

Stem Locknut

Stem locknut Spherical face



Spherical face (SR4) • Fixture thickness: 6 mm
148-153-10 Mass: 43 g

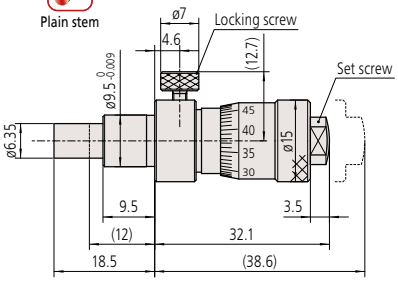
( ): with spindle fully retracted.

Mitutoyo

Micrometer Heads
SERIES 148 — Locking-screw Type

DIMENSIONS

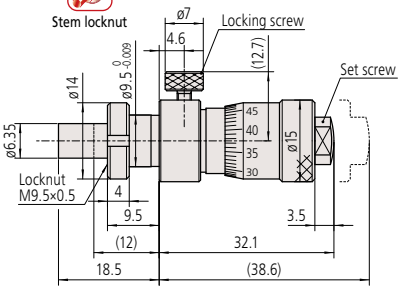
Plain Stem



148-316-10 Mass: 40 g

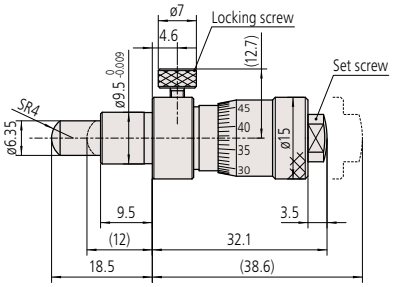
Stem Locknut

Unit: mm



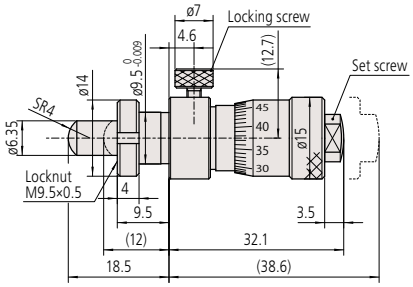
• Fixture thickness: 6 mm
148-317-10 Mass: 43 g

Plain Stem



Spherical surface (SR4)
148-318-10 Mass: 40 g

Stem Locknut



Spherical surface (SR4) • Fixture thickness: 6 mm
148-319-10 Mass: 43 g

( ): with spindle fully retracted.

Micrometer Heads
SERIES 153 — Non-rotating Spindle Type

- Micrometer head with non-rotating spindle.
- Torsion-free feed reduces workpiece deformation and wear.
- Allows highly accurate positioning.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Graduation (mm)	Graduation features	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)
153-101	0 - 15	0.01	Standard	9.5	Plain	Flat (carbide tip)	0.5	±3
153-201*1	0 - 25	0.01	Standard	12				
153-202*1		0.001	W/vernier (0.001 mm)					
153-203		0.01	Standard					
153-204		0.001	W/vernier (0.001 mm)					

Inch

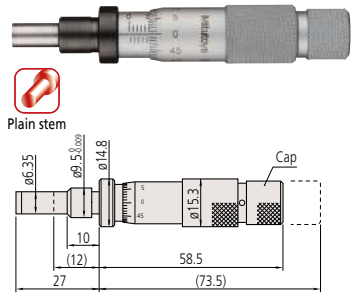
Code No.	Range (in)	Graduation (in)	Special features	Stem dia. (in)	Stem	Spindle end	Spindle pitch (in)	Maximum permissible error J_{MPE} (in)
153-108*2	0 - 0.5	0.001	W/vernier (0.0001 in)	0.375	Plain	Flat (carbide tip)	0.025	±0.00015
153-205*1	0 - 1	0.001	Standard	0.5				
153-206*1		0.0001	W/vernier (0.0001 in)					
153-207		0.001	Standard					
153-208		0.0001	W/vernier (0.0001 in)					

- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: Satin-chrome plated

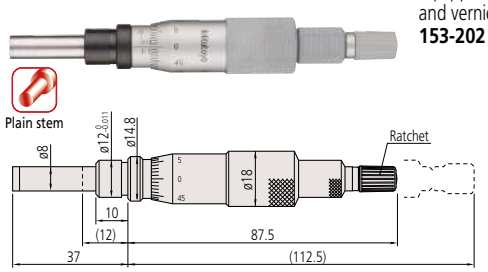
*1 With ratchet stop *2 Made-to-order model

DIMENSIONS

Unit: mm

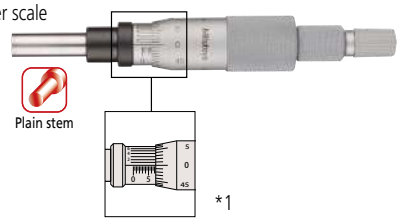


153-101 Mass: 70 g

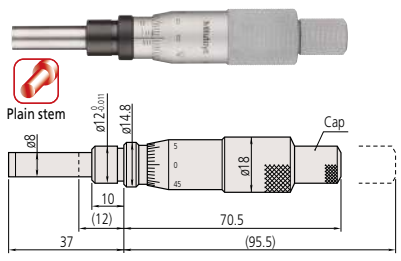


153-201 Mass: 125 g

Equipped with ratchet and vernier scale
153-202

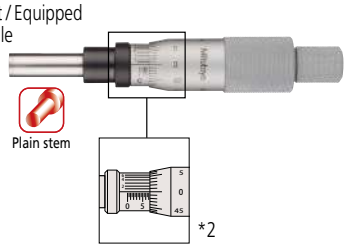


*1 Other dimensions are the same as **153-201**.



153-203 Mass: 125 g

Without ratchet/Equipped with vernier scale
153-204



*2 Other dimensions are the same as **153-203**.

( ): with spindle fully retracted.

Mitutoyo

Micrometer Heads
SERIES 152 — Quick Spindle Feed of 1 mm/rev

- This model enables double-speed spindle feeding of 1 mm/rev (compared with 0.5 mm/rev on typical products) to enable quick positioning.
- It also has a good load-bearing capacity.

SPECIFICATIONS

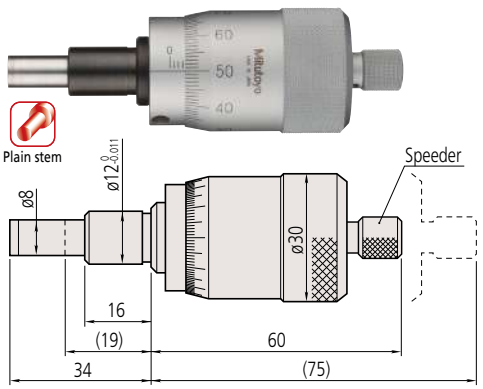
Metric

Code No.	Range (mm)	Graduation (mm)	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)
152-101	0 - 15	0.01	12	Plain	Flat (carbide tip)	1	±2
152-102	0 - 25						

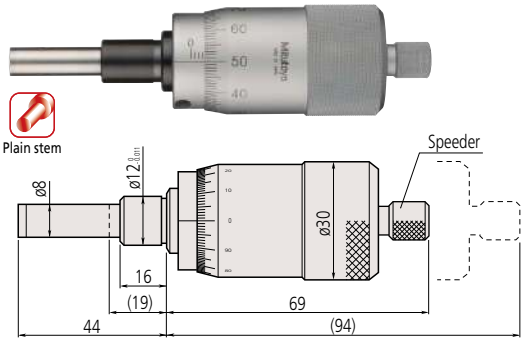
- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: Satin-chrome plated

DIMENSIONS

Unit: mm



152-101 Mass: 220 g



152-102 Mass: 230 g

( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Fine Spindle Feed of 0.1 mm/rev

- Fine spindle feeding of just 0.1 mm/rev (one fifth compared with standard model). Suitable for extra-fine adjustment and positioning.
- External dimensions are compatible with standard 0.5 mm pitch heads.
- Suitable for the fine feeding of precision stages on semiconductor equipment and optical-axis alignment device.

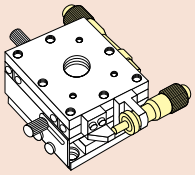
Spindle Pitch

Pitch=0.1 mm

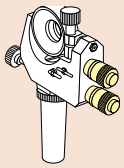
Pitch=0.5 mm

Typical Applications

- Semiconductor-wafer positioning machinery and optical component alignment units, etc.
- Precision X-Y table positioning

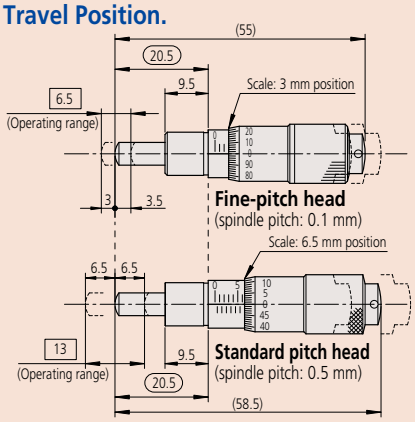


- Precision adjustment of mirror in holder



Precision adjustment of mirror in holder

Comparison of Mounting Dimensions Between a Fine-pitch Head and a Standard-pitch Head at the Mid-range Travel Position.



Note: While the fine-pitch micrometer head has a measuring range of 6.5 mm, the standard head has a larger range of 13 mm.
When replacing a standard head, the fine-pitch type can use the common range in the middle of the spindle travel. The standard and compact types of fine-pitch head are otherwise completely interchangeable.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Graduation (mm)	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)	Special features
148-142-10	0 - 6.5	0.002	9.5	Plain	Spherical (SR4)	0.1	±2	—
148-143-10				W/clamp nut				
148-342-10				Plain				Thicker & shorter thimble
148-343-10				W/clamp nut				
148-242-10			6	Plain	Spherical (SR3)		±5	Small thimble diameter
148-243-10				W/clamp nut				
148-244	0 - 5	0.004	3.5	Plain	Spherical (SR1.5)			
148-245				W/clamp nut				

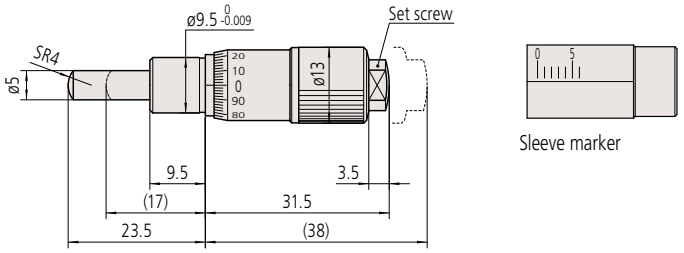
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

DIMENSIONS

Plain Stem

Unit: mm

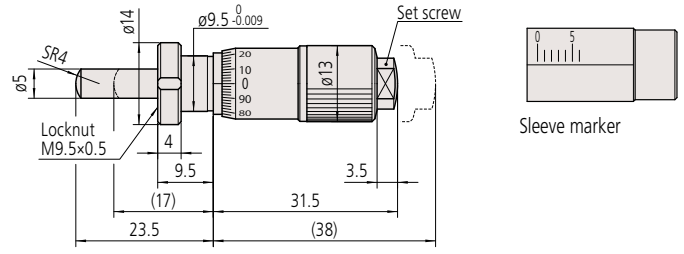
Plain stem Spherical face



148-142-10 Mass: 31 g

Stem Locknut

Stem locknut Spherical face



- Fixture thickness: 6 mm

148-143-10 Mass: 34 g

( ): with spindle fully retracted.

Mitutoyo

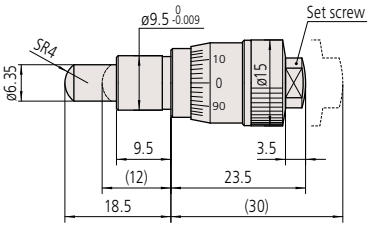
Micrometer Heads
SERIES 148 — Fine Spindle Feed of 0.1 mm/rev

DIMENSIONS

Unit: mm

Plain Stem

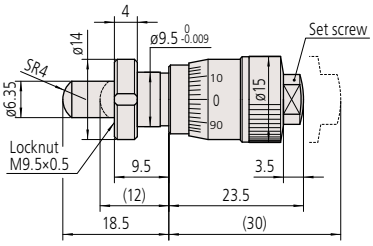
Plain stem Spherical face

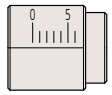


148-342-10 Mass: 29 g

Stem Locknut

Stem locknut Spherical face



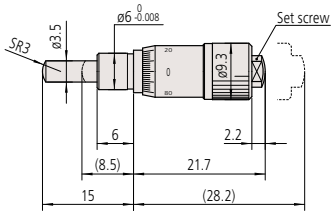


Sleeve marker

• Fixture thickness: 6 mm
148-343-10 Mass: 31 g

Plain Stem

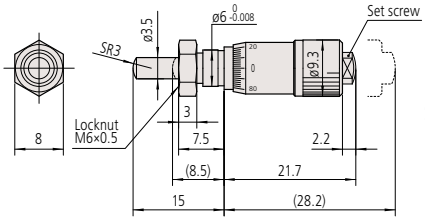
Plain stem Spherical face

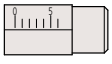


148-242-10 Mass: 10 g

Stem Locknut

Stem locknut Spherical face



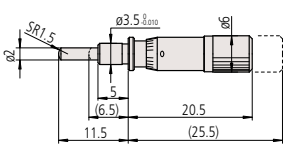


Sleeve marker

• Fixture thickness: 4 mm
148-243-10 Mass: 10 g

Plain Stem

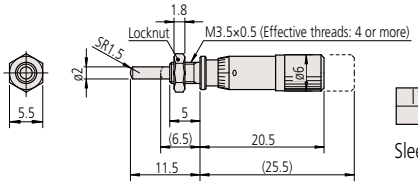
Plain stem Spherical face



148-244 Mass: 4 g

Stem Locknut

Stem locknut Spherical face



Sleeve marker

• Fixture thickness: 3 mm
148-245 Mass: 5 g

( ): with spindle fully retracted.

Micrometer Heads
SERIES 148 — Fine Spindle Feed of 0.25 mm/rev

- Fine spindle feeding of just 0.25 mm/rev for fine adjustment and positioning.

SPECIFICATIONS

Metric

Code No.	Range (mm)	Graduation (mm)	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)
148-132-10	0 - 13	0.01	9.5	Plain	Spherical (SR4)	0.25	±2
148-133-10				W/clamp nut			
148-322-10	0 - 6.5			Plain			
148-323-10				W/clamp nut			

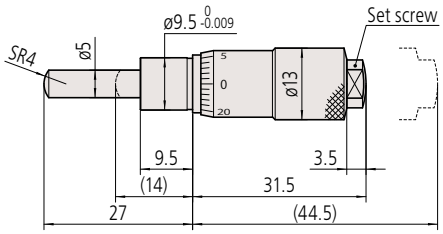
- Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
- Scale finishing: Satin-chrome plated

DIMENSIONS

Plain Stem

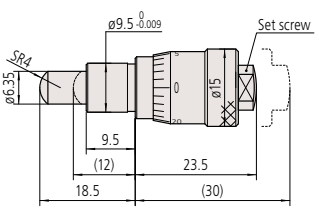
Unit: mm

Plain stem Spherical face



148-132-10 Mass: 30 g

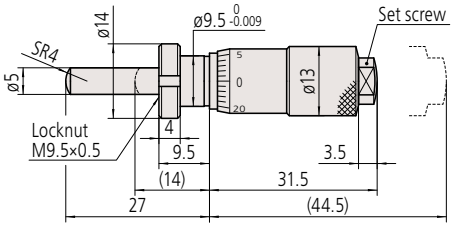
Plain stem Spherical face



148-322-10 Mass: 30 g

Stem Locknut

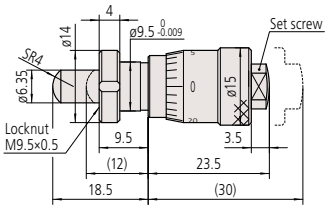
Stem locknut Spherical face



- Fixture thickness: 6 mm

148-133-10 Mass: 35 g

Stem locknut Spherical face



- Fixture thickness: 6 mm

148-323-10 Mass: 35 g

( ): with spindle fully retracted.

Mitutoyo

Micrometer Heads
SERIES 110 — Differential Screw Thread Translator (Extra-Fine Feed) Type

- Differential movements of spindle threads and units allow extra-fine spindle feeding (0.05 mm/rev), resulting in high-resolution measurements.

SPECIFICATIONS

Metric

Code No.	Range (mm)		Graduation (mm)		Graduation features
110-101	0 - 2.5		0.001		Standard
110-102			0.0001		Fine
110-105-10	0 - 1		0.001		Standard
110-106-10			0.0001		Fine
110-107-10			0.001		Standard
110-108-10			0.0001		Fine
110-502-10	Thimble (fine)	0 - 0.2	Thimble (fine)	0.0005	Dual scales; 0.2 mm fine-feed range
	Thimble (coarse)	0 - 13	Thimble (coarse)	0.01	

Code No.	Stem dia. (mm)	Stem	Spindle end	Maximum permissible error J_{MPE}*2 (µm)
110-101	12	W/clamp nut	Flat (carbide tip)	±5/±1.5
110-102				
110-105-10				±3/±1.5
110-106-10				
110-107-10			Spherical (SR10) (carbide tip)	
110-108-10				
110-502-10	9.5		Spherical	±3/±1.5

Inch

Code No.	Range (in)		Graduation (in)		Graduation features
110-111	0 - 0.05		0.00002		Standard
110-112			0.000005		Fine
110-115-10*1	0 - 0.02		0.00002		Standard
110-116-10*1			0.000005		Fine
110-117-10*1			0.00002		Standard
110-118-10*1			0.000005		Fine
110-504-10	Thimble (fine)	0 - 0.006	Thimble (fine)	0.00002	Dual scales; 0.2 mm/0.006 in fine-feed range
	Thimble (coarse)	0 - 0.5	Thimble (coarse)	0.001	

Code No.	Stem dia. (in)	Stem	Spindle end	Maximum permissible error J_{MPE}*2 (in)
110-111	0.5	W/clamp nut	Flat (carbide tip)	±0.00025/±0.00006
110-112				
110-115-10*1				±0.00015/±0.00006
110-116-10*1				
110-117-10*1			Spherical (SR10) (carbide tip)	
110-118-10*1				
110-504-10	0.375		Spherical	±0.00015/±0.00006

- Measuring face: Material/Carbide tip (**110-502-10**/**504-10** are alloy tool steel), Hardness/90 HRA or more (Only **110-502-10**/**504-10** are 60 HRC or more), Lapped
- Scale finishing: Satin-chrome plated

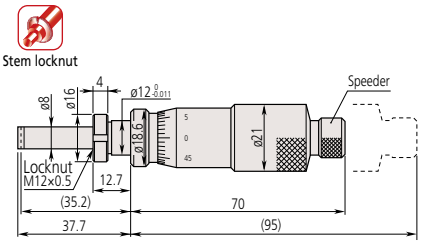
*1 Made-to-order models
*2 Wide range/narrow range

DIMENSIONS

Unit: mm

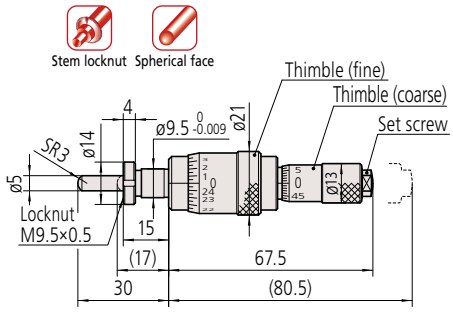
- Differential movement mechanism with double spindle.
- Non-rotating spindle.
- Fixture thickness: 9.5 mm

Equipped with vernier scale



110-101
110-102 Equipped with vernier scale

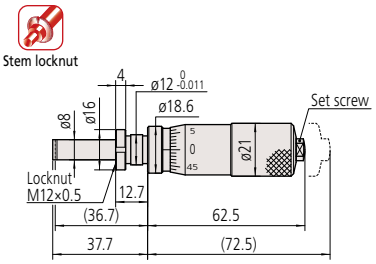
- Dual thimble
- Fixture thickness: 11.5 mm



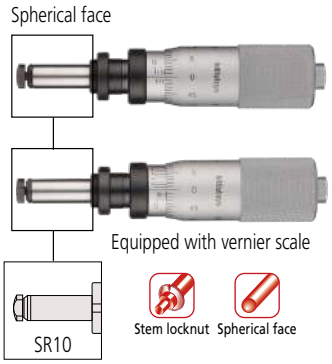
110-502-10 Mass: 95 g

- Differential movement mechanism with double spindle.
- Non-rotating spindle.
- Fixture thickness: 9.5 mm

Equipped with vernier scale



110-105-10
110-106-10 Equipped with vernier scale Mass: 150 g



110-107-10
110-108-10 Equipped with vernier scale

( ): with spindle fully retracted.

Mitutoyo

Micrometer Heads
SERIES 152 — Large Thimble Type

- Large-diameter thimble for fine adjustment and positioning.

SPECIFICATIONS

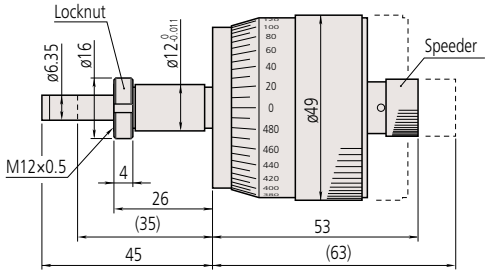
Metric

Code No.	Range (mm)	Graduation (mm)	Graduation features	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)
152-283	0 - 10	0.002	Standard	12	W/clamp nut	Flat (carbide tip)	0.5	±2
152-332	0 - 25				Plain			
152-380	0 - 50		Bidirectional					±4

- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: White anodized aluminum

DIMENSIONS

Unit: mm



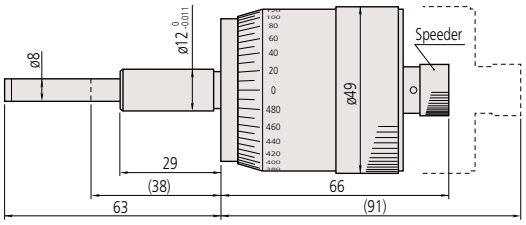
- Fixture thickness: 22.5 mm

152-283 Mass: 190 g

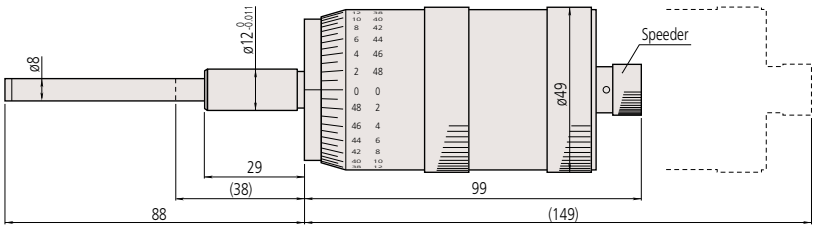
( ): with spindle fully retracted.

DIMENSIONS

Unit: mm



152-332 Mass: 310 g



152-380 Mass: 460 g

( ): with spindle fully retracted.

Micrometer Heads
SERIES 152 — XY-Stage Type

• Designed for cross-travel stage translation in the X and Y axes. Bidirectional graduation for easy reading in both directions.

SPECIFICATIONS

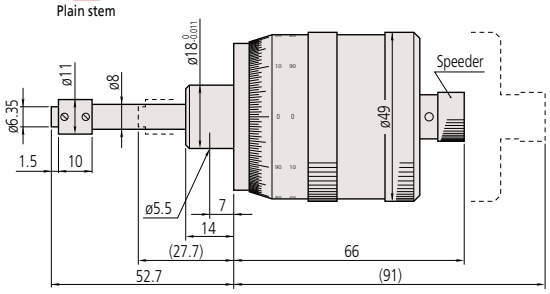
Metric

Code No.	Range (mm)	Graduation (mm)	Graduation features	Stem dia. (mm)	Stem	Spindle pitch (mm)	Maximum permissible error J_{MPE} (µm)
152-390	0 - 25	0.005	for Y axis, bidirectional	18	Plain	1	±2
152-389							

• Measuring face: Material/Carbide tip (**152-389**/**390** are alloy tool steel), Hardness/90 HRA or more (**152-389**/**390** are 60 HRC or more), Lapped
• Scale finishing: White anodized aluminum

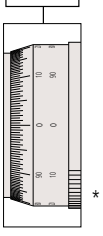
DIMENSIONS

Unit: mm



152-390 Mass: 270 g

• The thimble can be rotated to a better reading position while maintaining the spindle position.



152-389

* Other dimensions are the same as **152-390**.
( ): with spindle fully retracted.

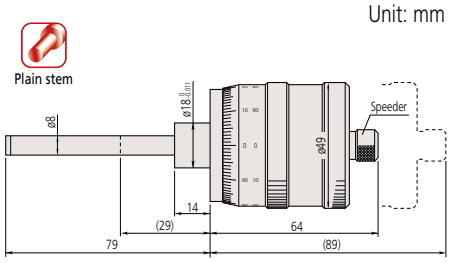
Micrometer Heads
SERIES 197 — Long Stroke Non-rotating Spindle

- Large-thimble micrometer head with non-rotating spindle. Dual-spindle mechanism for quick feeding and bidirectional graduation for easy reading.
- Floating thimble allows easy zero setting at any spindle position.

197-101

DIMENSIONS

Unit: mm



197-101 Mass: 300 g

( ): with spindle fully retracted.

SPECIFICATIONS

Metric

Code No.	Range	Graduation	Graduation features	Stem dia.	Stem	Spindle end	Spindle pitch	Maximum permissible error J_{MPE}
197-101	0 - 50 mm	0.005 mm	Bidirectional	18 mm	Plain	Flat (carbide tip)	1 mm	±5 µm

Inch

Code No.	Range	Graduation	Graduation features	Stem dia.	Stem	Spindle end	Spindle pitch	Maximum permissible error J_{MPE}
197-201	0 - 2 in	0.0002 in	Bidirectional	0.709 in	Plain	Flat (carbide tip)	0.05 in	±0.0001 in

- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: White anodized aluminum

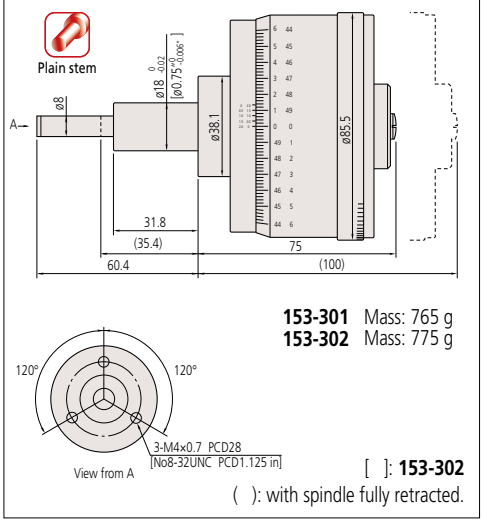
Micrometer Heads
SERIES 153 — High Accuracy and Resolution

- Fine graduation and high accuracy model, suitable for inspection equipment.
- Non-rotating spindle type.

153-301

DIMENSIONS

Unit: mm



153-301 Mass: 765 g
153-302 Mass: 775 g

[ ]: **153-302**

( ): with spindle fully retracted.

SPECIFICATIONS

Metric

Code No.	Range	Graduation	Graduation features	Stem dia.	Stem	Spindle end	Spindle pitch	Maximum permissible error J_{MPE}*
153-301	0 - 25 mm	0.0005 mm (vernier)	Bidirectional	18 mm	Plain	Flat (carbide tip)	0.5 mm	±1/±0.5 µm

Inch

Code No.	Range	Graduation	Graduation features	Stem dia.	Stem	Spindle end	Spindle pitch	Maximum permissible error J_{MPE}*
153-302	0 - 1 in	0.00001 in (vernier)	Bidirectional	0.75 in	Plain	Flat (carbide tip)	0.025 in	±0.00005 in/ ±0.00003 in

- Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
- Scale finishing: White anodized aluminum

* Wide range/narrow range

Mitutoyo

Micrometer Heads
SERIES 250 — Digit Counter Type

• Digit counter for easy reading of spindle movement.

250-301

SPECIFICATIONS

Metric

Code No.	Range (mm)	Graduation (mm)	Stem dia. (mm)	Stem	Spindle end	Spindle pitch (mm)	Graduation features	Maximum permissible error J_{MPE} (µm)
250-301	0 - 25	0.01	10	Plain	Flat (carbide tip)	0.5	—	±2

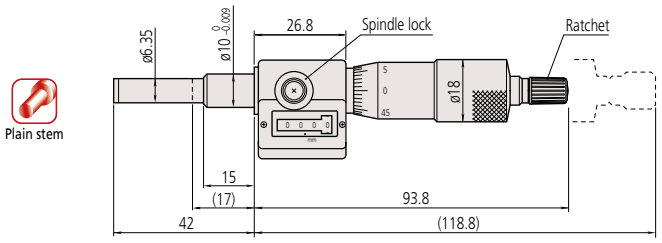
Inch

Code No.	Range (in)	Graduation (in)	Stem dia. (in)	Stem	Spindle end	Spindle pitch (in)	Graduation features	Maximum permissible error J_{MPE} (in)
250-312	0 - 1	0.0001	0.375	Plain	Flat (carbide tip)	0.025	Vernier scale	±.0001

• Measuring face: Material/Carbide tip, Hardness/90 HRA or more, Lapped
• Scale finishing: Satin-chrome plated

DIMENSIONS

Unit: mm



250-301 Mass: 165 g

( ): with spindle fully retracted.

Micro Jack
SERIES 7

• Used for accurate leveling of machines, surface plates, and other precision instruments.
• Zero-setting is possible at any position.
• Easy adjustment under heavy load.

7850

SPECIFICATIONS

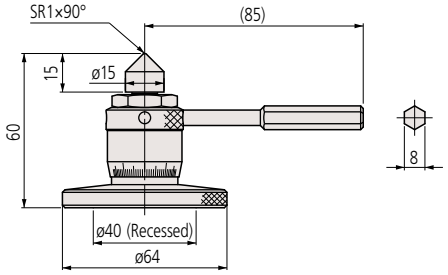
Metric

Code No.	Range (mm)	Graduation (mm)	Remarks (kg)	Handle power at the max. loading (N)
7850	60 - 75	0.01	Max. load: 400	90

• Measuring face: Material/Alloy tool steel, Hardness/60 HRC or more, Lapped
• Scale finishing: Satin-chrome plated

DIMENSIONS

Unit: mm



Measurement example

Micrometer Head Mounting Fixtures

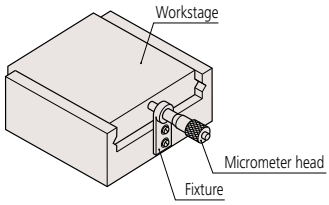
- The act of fabricating brackets to mount micrometer heads for each particular application can be laborious and costly. Mitutoyo offers various types of fixtures for micrometer heads to meet a range of applications. These fixtures are made of nickel-plated cast iron.

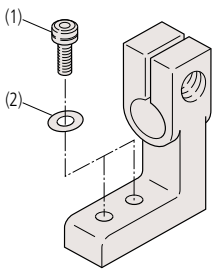
SPECIFICATIONS

Mounting hole size

Micrometer Head	Fixtures (**Code No.**)	Mounting hole size
148 Series	**303560, 303562, 303564, 303566** **303559, 303561, 303563, 303565**	ø9.5×9.5 long for plain stem or stem locknut type micrometer heads
149 Series	**303569, 303571, 303573, 303575** **303568, 303570, 303572, 303574**	ø9.5×15 long for plain stem or stem locknut type micrometer heads
150 Series	**303579, 303581, 303583, 303585** **303578, 303580, 303582, 303584**	ø10×15 long for plain stem or stem locknut type micrometer heads

Note: Supplied with a socket head screw (M3×0.5×12) for fixtures to be used with a micrometer head without stem locknut (plain stem type micrometer head).





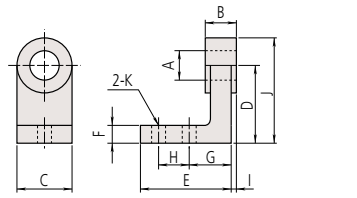
SPECIFICATIONS

Recommended socket head screws for the fixtures

Fixtures (**Code No.**)	Socket head screw (1)	Washer (2)
303559, 303560, 303561, 303562, 303563, 303564 **303565, 303566**	M3×0.5×8 M3×0.5×12	Small, Nominal dia.: 3 Small, Nominal dia.: 3
303568, 303569, 303570, 303571, 303572, 303573 **303578, 303579, 303580, 303581, 303582, 303583**	M4×0.7×10	Small, Nominal dia.: 4
303574, 303575 **303584, 303585**	M4×0.7×12	Small, Nominal dia.: 4

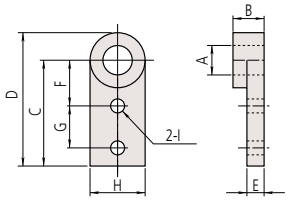
Micrometer Heads Mounting Fixtures

Fixtures for micrometer heads with stem locknut



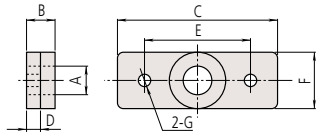
(Unit: mm)

Code No.	A	B	C	D	E	F	G	H	I	J	K
303559	ø9.5	6	15	20	24	5	11	8	0.5	27.5	ø3.4
303568		11.5	20	30	35	7	16	12	1.75	40	ø4.5
303578	ø10										



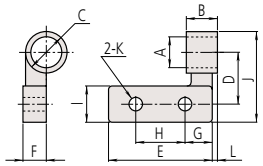
(Unit: mm)

Code No.	A	B	C	D	E	F	G	H	I
303563	ø9.5	6	30	37.5	4.5	15	10	15	ø3.4
303572		11.5	40	50	6.5	18	15	20	ø4.5
303582	ø10								



(Unit: mm)

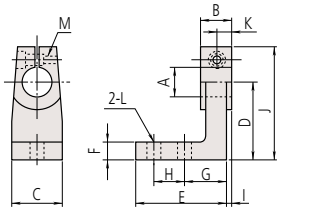
Code No.	A	B	C	D	E	F	G
303561	ø9.5	6	40	3.5	30	15	ø3.4
303570		11.5	60	5.5	40	20	ø4.5
303580	ø10						



(Unit: mm)

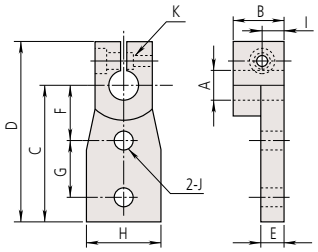
Code No.	A	B	C	D	E	F	G	H	I	J	K	L
303565	ø9.5	6	ø15	15	25	8.5	7.5	10	10	27.5	ø3.4	0.75
303574		11.5		20	40		10	20	15	35	ø4.5	1.25
303584	ø10											

Fixtures for plain stem type micrometer heads



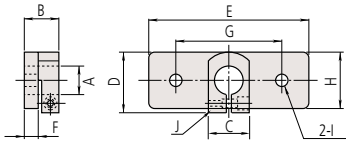
(Unit: mm)

Code No.	A	B	C	D	E	F	G	H	I	J	K	L	M
303560	ø9.5	9	15	20	23	5	11	8	1.5	3.25	4.5	ø3.4	M3x 0.5
303569		14.5	20	30	35	7	16	12	3.25	4.25	7.25	ø4.5	
303579	ø10												



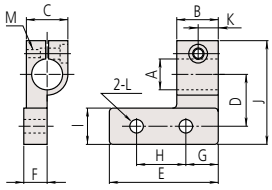
(Unit: mm)

Code No.	A	B	C	D	E	F	G	H	I	J	K
303564	ø9.5	9	30	42.5	4	15	10	15	4.5	ø3.4	M3x 0.5
303573		14.5	40	52.5	6	18	15	20	7.25	ø4.5	
303583	ø10										



(Unit: mm)

Code No.	A	B	C	D	E	F	G	H	I	J
303562	ø9.5	9	15	20	40	3	30	15	ø3.4	M3x 0.5
303571		14.5		22.5	60	5	40	20	ø4.5	
303581	ø10									



(Unit: mm)

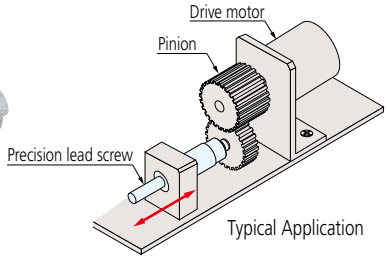
Code No.	A	B	C	D	E	F	G	H	I	J	K	L	M
303566	ø9.5	9	15	15	25	8.5	7.5	10	10	32.5	4.5	ø3.4	M3x 0.5
303575		14.5		20	40		10	20	15	40	7.25	ø4.5	
303585	ø10												

Precision Lead Screws

Main applications:
- Precision feed stages
- Fine adjustment of optical elements (mirrors, prisms)
- Fiber optic centering devices
- Various assembly and adjustment jigs

- Mitutoyo manufactures simple and economical precision lead screws for precise positioning mechanisms and fine-feed mechanisms, in addition to the conventional micrometer heads.
- Mitutoyo also manufactures lead screws with special specifications, such as 0.25 mm pitch, as well as those with the standard 0.5 mm feed pitch and with dimensions and forms that meet cusotmer's requirements.

Micrometer Head



Typical Application

SPECIFICATIONS

Code No.	Model*	Range (mm)	Feed pitch (mm)	Feed accuracy (μm)	Stem diameter (mm)	Tip diameter (mm)	Tail diameter (mm)	Screw nominal diameter	Sleeve diameter (mm)	Measuring face	Mass (g)
04AZA160	AS-6.5	0 - 6.5	0.5	±5	ø6 $^{0}_{-0.008}$	ø3.5	ø3 $^{0}_{-0.01}$	M4.5×0.5	ø7	Hardened	10
04AZA161	BS-6.5										11
04AZA162	AS-13	0 - 13		±2	ø9.5 $^{0}_{-0.009}$	ø5	ø5 $^{0}_{-0.012}$	M7.35×0.5	ø10.5		27
04AZA163	BS-13										30
04AZA164	AS-25	0 - 25			ø10 $^{0}_{-0.009}$	ø6.35	ø6 $^{0}_{-0.015}$		ø12	Carbide tip	61
04AZA165	BS-25										64

- Measuring face: Material/Alloy tool steel (**AS-25** and **BS-25** are Carbide tip), Hardness/60 HRC or more (**AS-25** and **BS-25** are 90 HRA or more), Lapped
- Durability: 100,000 operations are guaranteed (use condition: 4 kg load; 2 kg for **AS-6.5** and **BS-6.5**)

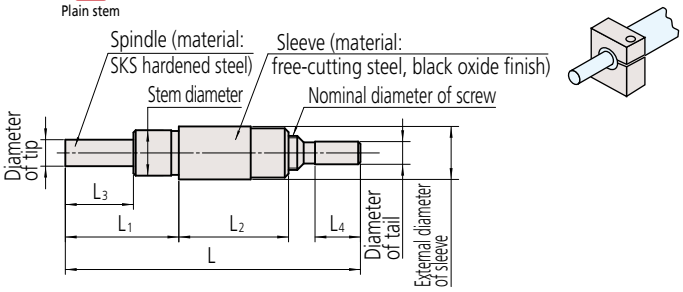
* AS type: Flat spindle tip without nut, BS type: Spherical spindle tip with nut

DIMENSIONS

Type AS: Plain Stem

Unit: mm

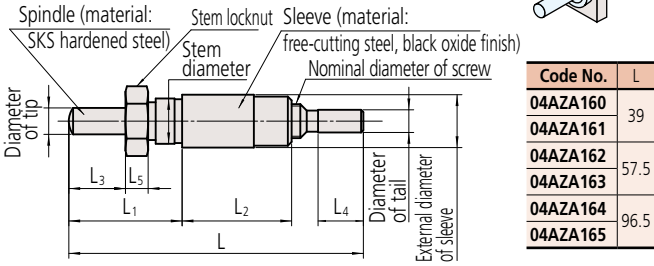
Plain stem



Type BS: Stem with Locknut

Stem locknut

Spherical face



Code No.	L	L1	L2	L3	L4	L5
04AZA160	39	15	14.5	9	6	—
04AZA161				7.5		3
04AZA162	57.5	25	21.5	15.5	8	—
04AZA163						4
04AZA164	96.5	42	39.5	27	10	—
04AZA165						4

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