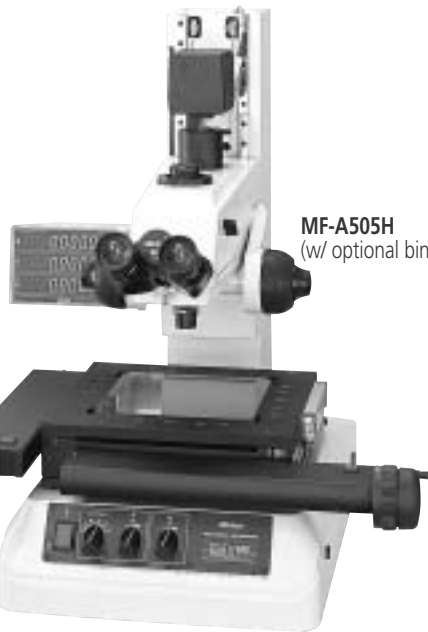


MF-A500/1000

SERIES 176 — Measuring Microscopes



MF-A505H
(w/ optional binocular tube)



MF-A1020H
(w/ optional binocular tube)



MF-A1730H
(w/ optional binocular tube)

MICROSCOPES

The MF-A/MF-UA measuring microscopes' expandability, such as when used in combination with Mitutoyo's vision unit to boost its performance or data management on a PC, promises further improved measuring efficiency.

FEATURES

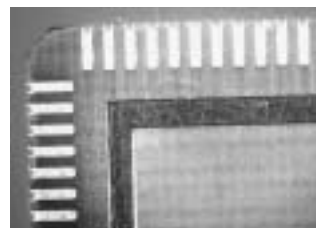
- Bright field observation, clear and flare less erect image, wide field of view.
- Long working distance objectives, up to 100x magnification (total: 2000x).
- Aperture diaphragms in the transmitted illumination and reflected illumination system as standard feature.
- The quick-release system, which is especially useful in long-stroke measurements.
- Focus and measure using the fine/coarse movement handle with the large-size grips on both sides of the column.
- Built in X- and Y-axis Zero-set switches (Z-axis has a non-built-in Zero set switch)
- Available with the Vision Unit for upgrading to a vision measuring system.

Aperture stop is equipped for the surface illumination.



Coarse and fine focusing wheels for quick operation





SPECIFICATIONS

Metric

Model No.		MF-A 505	MF-A 505H	MF-A 1010	MF-A 1010H	MF-A 1020	MF-A 1020H	MF-A 1720	MF-A 1720H	MF-A 1730	MF-A 1730H
Order No.	100V AC	176-521A	176-525A	176-522A	176-526A	176-529A	176-530A	176-523A	176-527A	176-524A	176-528A
	110V AC	176-521C	176-525C	176-522C	176-526C	176-529C	176-530C	176-523C	176-527C	176-524C	176-528C
	220V AC	176-521D	176-525D	176-522D	176-526D	176-529D	176-530D	176-523D	176-527D	176-524D	176-528D
	240V AC	176-521E	176-525E	176-522E	176-526E	176-529E	176-530E	176-523E	176-527E	176-524E	176-528E
XY range		50 x 50mm		100 x 100mm		200 x 100mm		200 x 170mm		300 x 170mm	
Digital counter		2-axis	3-axis	2-axis	3-axis	2-axis	3-axis	2-axis	3-axis	2-axis	3-axis
Resolution		0.001mm/0.0005mm/0.001mm (switchable)									
Measuring accuracy*(at 20°C)		(3+0.02L)μm L= Measuring length (mm) when not loaded									
Measuring unit		Built-in linear scales									
XY travel range		50 x 50mm		100 x 100mm		200 x 100mm		200 x 170mm		300 x 170mm	
Table top dimensions		280 x 280mm		280 x 280mm		350 x 280mm		410 x 342mm		510 x 342mm	
Effective glass size		170 x 170mm		170 x 170mm		240 x 140mm		260 x 230mm		360 x 230mm	
Swiveling		—		—		—		±5° (left)		±5° (left)	
Max. Workpiece weight		5kg		5kg		10kg		20kg		20kg	
Max. Workpiece height		150mm									
Optical tube		Choice between Monocular and Binocular tube (depression angle: 25°), Reticle projection method, with TV mount, Optical path ratio (eyepiece/CCD camera: 50/50 fixed)									
Eyepiece lens (optional)		10X (field No.: 24mm), 15X (field No.: 16), 20X (field No.: 12)									
Objective		1X, 3X*, 5X 10X, 20X, 50X, 100X *Standard accessory									
Transmitted illumination		Koehler illumination with adjustable aperture diaphragms, 12V/50W halogen lamp (non-stepped brightness adjustment)									
Reflected illumination		Telecentric illumination with adjustable aperture diaphragm, 12V/50W halogen lamp (non-stepped brightness adjustment)									
Data output		Via RS-232C interface									
Power supply		100/110/120/220/230/240V AC, 50/60Hz, 160W									
Dimensions (WxDxH)		555 x 741 x 630mm		555 x 741 x 630mm		626 x 887 x 750mm		626 x 887 x 750mm		676 x 887 x 750mm	
Mass		55kg		55kg		59kg		130kg		138kg	

Inch/Metric

Model No.		MF-A 505	MF-A 505H	MF-A 1010	MF-A 1010H	MF-A 1020	MF-A 1020H	MF-A 1720	MF-A 1720H	MF-A 1730	MF-A 1730H
Order No.	100V AC	176-531A	176-535A	176-532A	176-536A	176-539A	176-540A	176-533A	176-537A	176-534A	176-538A
	110V AC	176-531C	176-535C	176-532C	176-536C	176-539C	176-540C	176-533C	176-537C	176-534C	176-538C
	220V AC	176-531D	176-535D	176-532D	176-536D	176-539D	176-540D	176-533D	176-537D	176-534D	176-538D
	240V AC	176-531E	176-535E	176-532E	176-536E	176-539E	176-540E	176-533E	176-537E	176-534E	176-538E
XY range		2" x 2"		4" x 4"		8" x 4"		8" x 7"		12" x 7"	
Digital counter		2-axis	3-axis	2-axis	3-axis	2-axis	3-axis	2-axis	3-axis	2-axis	3-axis
Resolution		.0001"/.00005"/.00001"(switchable)									
Measuring accuracy*(at 20°C)		(3+0.02L)μm L= Measuring length (mm) when not loaded									
Measuring unit		Built-in linear scales									
XY travel range		2" x 2"		4" x 4"		8" x 4"		8" x 7"		12" x 7"	
Table top dimensions		11.02"x 11.02"		11.02"x 11.02"		13.78" x 11.02"		16.14" x 13.46"		14.17" x 9.05"	
Effective glass size		6.69" x 6.69"		6.69" x 6.69"		9.45" x 5.51"		10.23" x 9.05"		14.17" x 9.05"	
Swiveling		—		—		—		±5° (left)		±5° (left)	
Max. Workpiece weight		11 lbs.		11 lbs.		22 lbs.		44 lbs.		20kg	
Max. Workpiece height		6"									
Mass		121 lbs.		121 lbs.		129 lbs.		286 lbs.		138kg	

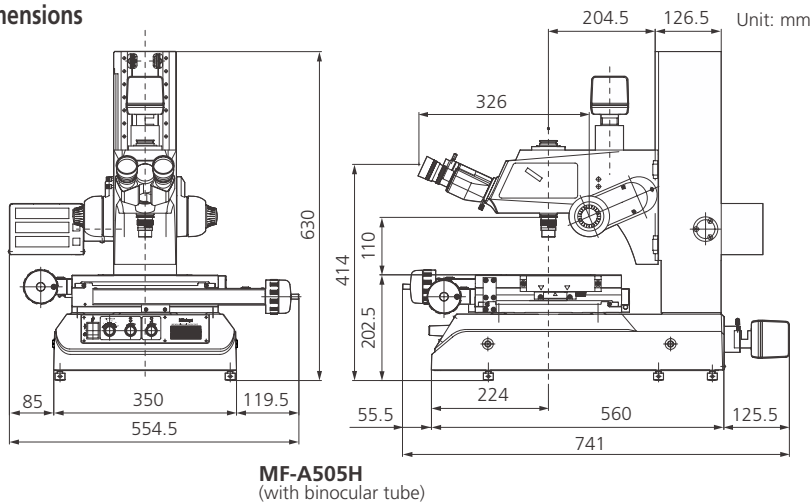
*Not included the z-axis measuring accuracy.



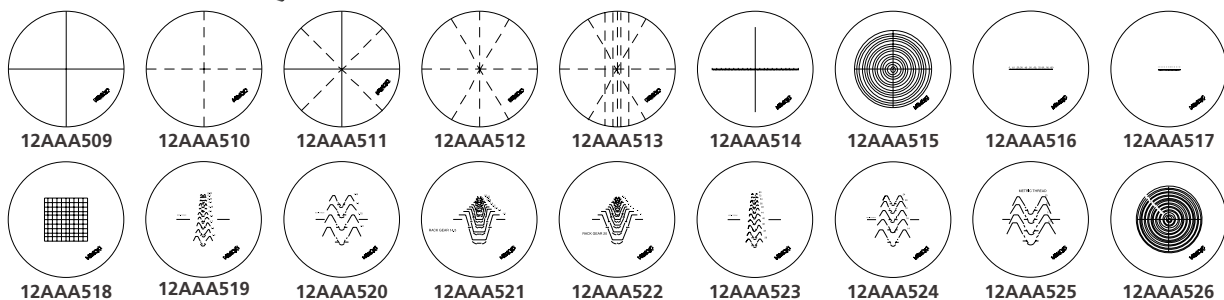
MF-A500/1000

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Dimensions



Reticle with mount



Optional Reticles†

Order No.	Templet patterns
12AAA509	Cross-hair
12AAA510	Broken cross-hair
12AAA511	Cross-hair and 45° angle
12AAA512	Broken cross-hair and 60° angle
12AAA513	Zeiss type chart
12AAA514	20mm scale (0.1mm reading)
12AAA515	Concentric circle (ø1.2-ø18mm)
12AAA516	10mm scale (0.1mm reading)
12AAA517	5mm scale (0.05mm reading)
12AAA518	10x10mm section (1mm min.)
12AAA519	Metric screw thread (P= 0.25-1.0)
12AAA520	Metric screw thread (P= 1.25-2.0)
12AAA521	Involute gear tooth (14.5°), module= 0.1-1.0
12AAA522	Involute gear tooth (20°), module= 0.1-1.0
12AAA523	Unified screw thread (80 - 28TPI)
12AAA524	Unified screw thread (24 - 14TPI)
12AAA525	Unified screw thread (13 - 10TPI)
12AAA526	Concentric circle (ø.01" - ø.2")

† Use with 3X eyepiece. Reticle mount is provided.

OPTIONAL ACCESSORIES

Order No.	Description
176-302	Monocular tube
176-303	Binocular tube
378-857	15X eyepiece set (View field diameter: 16mm)
378-858	20X eyepiece set (View field diameter: 12mm)
375-036	1X objective (W.D.: 59mm, N.A.: 0.07)
375-034	5X objective (W.D.: 59.9mm, N.A.: 0.11)
375-035	5X objective (W.D.: 59.9mm, N.A.: 0.11)
375-051	20X objective (W.D.: 20mm, N.A.: 0.42)
375-052	50X objective (W.D.: 13mm, N.A.: 0.55)
375-053	100X objective (W.D.: 6mm, N.A.: 0.7)
375-040	Digital protractor eyepiece (10X)
375-043	Protractor eyepiece (10X)
375-044	Double-image eyepiece (10X)
176-357	Templet eyepiece (10X)
176-351-5	Oblique surface illumination unit
176-367	LED ring optics illuminator (White)
176-368	LED ring optics illuminator (Green)
173-343	Twin fiber optics illuminator
176-366	Ring fiber optics illuminator
12AAB251	ND2 filter (for light source)
12AAB252	ND8 filter (for light source)
12BAA583	GIF filter (for light source)

Order No.	Description
12BAA584	LB80 filter for light source)
12AAA643	Color filter (ND2)
12AAA644	Color filter (ND8)
375-054	0.5X camera adapter (with C-mount adapter)
970441	C-mount adapter
176-107	Holder with clamp
172-378	V-block with clamp (Max. workpiece dia.: 25mm)
172-197	Swivel center support (Max. workpiece dia.: 80mm)
176-304	Stage adapter
176-305	Rotary stage with fine feed knob (small)
176-306	Rotary stage with fine feed knob (large)
176-308	Bivibration damping stand
176-309	Mounting stand
375-056	Stage micrometer
12AAA165	Lens cleaning kit
937179T	Foot switch
12AAA807	Connecting cable set for QM-Data200
(See page 378.)	Vision Unit
(See page 376.)	QM-Data200 2-D data processor
(See page 374.)	Focus pilot FP-05

SYSTEM DIAGRAM

