



# ML5000 Series

## LABORATORY MICROSCOPES



ML5500

# ML5000 Series



## FEATURES

The high quality and dependability of the ML5000 Series with the added advantage of an ergonomic reversed quintuple nosepiece for mounting extra objectives and an optional 50W illuminator. The ML5000 series encompasses 12 standard configurations listed below.

### ① VIEWING HEADS :

Available with standard binocular heads or trinocular heads for photomicrography, 30° inclined eyetubes with adjustable diopter settings and interpupillary distance, 360° rotatable.

### ② EYEPIECES :

Paired DIN KHW10X with 20mm field of view.

### ③ OBJECTIVE CHANGER :

Smooth-operating, ball bearing mounted, ergonomic, reverse-angle, quintuple nosepiece.

### ④ OBJECTIVES :

SM Planachromats, Planachromats, or Phase Contrast.

### ⑤ STAGE :

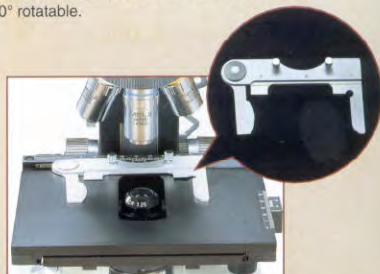
Flat-top stage: 171mm x 140mm surface with 80mm(X) by 52mm(Y) movement, graduated with vernier readings to 0.1mm, detachable specimen guide, drop-down right or left-handed controls. An attachable clinical specimen holder is available at option.

### ⑥ CONDENSERS :

Standard models have either an Achromatic NA 1.25 condenser with iris diaphragm and filter tray for brightfield work, simple NA 1.25 slider phase condenser, or an NA 1.10 Zernike phase condenser with filter tray and independently centerable annuli for phase contrast. Cardioid-type NA 1.25 darkfield condenser for high power (100X objective only) darkfield work is optional.

### ⑦ ILLUMINATOR :

Variable-intensity Koehler illumination for apertures up to 1.25. Available in 6V 30W (built-in) or 12V 50W (attached lamp house) models.



MA677R : Flat-top mechanical stage with attachable clinical specimen holder (optional)

## OBJECTIVE AND EYEPIECE SPECIFICATIONS

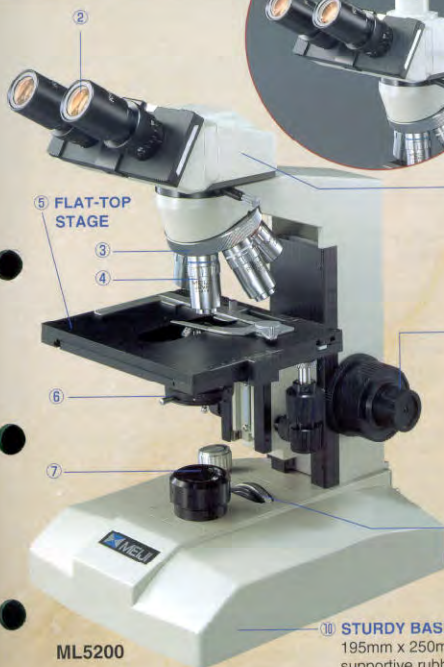
### DIN OBJECTIVES, SM PLANACHROMAT

CAT. NO.	MAG.	N.A.	FIELD mm	W.D. mm	F.L. mm
MA611	4X	0.10	5.0	20.0	30.55
MA612	5X	0.12	4.0	20.0	26.66
MA613	10X	0.25	2.0	6.4	16.10
MA614	20X	0.40	1.0	3.1	8.54
MA615	40X	0.65	0.5	0.5	4.38
MA616	60X	0.80	0.33	0.3	3.18
MA617	100X(oil)	1.25	0.2	0.12	1.91
MA618	Ph10X	0.25	2.0	6.4	16.10
MA619	Ph20X	0.40	1.0	3.1	8.54
MA620	Ph40X	0.65	0.5	0.5	4.38
MA621	Ph100X(oil)	1.25	0.2	0.13	1.91

### DIN OBJECTIVES, PLANACHROMAT

CAT. NO.	MAG.	N.A.	FIELD mm	W.D. mm	F.L. mm
MA622	4X	0.10	5.0	9.6	39.09
MA636	5X	0.10	4.0	9.6	34.13
MA623	10X	0.25	2.0	7.0	15.34
MA625	40X	0.65	0.5	0.63	4.08
MA427	50X(oil)	0.95	0.4	0.44	3.5
MA627	100X(oil)	1.25	0.2	0.13	2.58

# LABORATORY MICROSCOPES



ML5200

⑩ **STURDY BASE :**  
195mm x 250mm base with  
supportive rubber feet.

① **TRINOCULAR VIEWING HEAD :**  
Inclined at 30°, rotatable through  
360°, and featuring multi-coated  
high transmission prisms.  
A sliding beam splitter directs  
100% of the light to the eyepieces  
or 80% to the camera and 20% to  
the eyepieces.

① **BINOCULAR VIEWING HEAD :**  
Inclined at 30°, rotatable through  
360°, and featuring multi-coated  
high transmission prisms.  
Dual graduated diopter eyetubes  
with interpupillary adjustments of  
52mm to 72mm.

⑧ **FOCUSING MOVEMENT :**  
Coaxial coarse and fine focusing  
controls with graduation reading  
2 microns per division.  
Total focusing range 35mm.  
The movement runs in extra-wide  
precision ball-bearing hardened  
steel tracks. Incorporates tension  
adjustment and safety Auto-focus  
stop unit.

⑨ **FIELD IRIS CONTROL**



Lamp house assembly  
of the Models with 12V  
50W halogen illuminator

## DIN PHASE OBJECTIVES, ACHROMAT

CAT. NO.	MAG.	N.A.	FIELD mm	W.D. mm	F.L. mm
MA448	Ph10X	0.25	2.0	5.8	16.7
MA449	Ph20X	0.40	1.0	1.9	9.1
MA450	Ph40X	0.65	0.5	0.53	4.6
MA451	Ph100X(Oil)	1.25	0.2	0.14	1.8

\*Objectives 20X and over have retractable mounts.

## DIN EYEPIECES

CAT. NO.	FIELD	EYEPOINT	FOCAL LENGTH
MA406	HWF10X	18 mm	24.0mm
MA407	KHW10X	20 mm	22.0mm
MA408	HWF15X	12.2mm	15.0mm
MA409	HWF20X	9.0mm	12.0mm

## SIZE AND WEIGHT :

30W Models;

Binocular Models : 195mm(W) x 255mm(D) x 395mm(H), 6.4kg

Trinocular Models : 195mm(W) x 255mm(D) x 440mm(H), 6.5kg

50W Models;

Binocular Models : 195mm(W) x 360mm(D) x 395mm(H), 7.5kg

Trinocular Models : 195mm(W) x 360mm(D) x 440mm(H), 7.6kg

## ACCESSORIES FOR PHASE MICROSCOPY

### SLIDER TYPE PHASE MICROSCOPY

The unit comprising :

- MA663** Achromatic substage condenser 1.25 NA with phase annuli (10X, 40X, 100X) in sliding mount with iris diaphragm
- MA618** DIN Phase 10X/0.25 SM Plan objective
- MA620** DIN Phase S40X/0.65 SM Plan objective
- MA621** DIN Phase S100X/1.25 SM Plan objective, oil immersion

The unit equipped in : Models ML5800, ML5900, ML5850 and ML5950



Slider type

### ZERNIKE TYPE PHASE MICROSCOPY

The unit comprising :

- MA457** Zernike type 1.10 NA Phase condenser in turret mount, individual centerable phase annuli for 10X, 20X, 40X and 100X, with brightfield position and with iris and filter tray for 32mm diam. filter.
- MA448** DIN Phase 10X/0.25 Achromat objective
- MA449** DIN Phase S20X/0.40 Achromat objective
- MA450** DIN Phase S40X/0.65 Achromat objective
- MA451** DIN Phase S100X/1.25 Achromat objective
- MA458** Centering telescope to check phase annulus
- MA459** Green clear filter, 32mm diam.

The unit equipped in : Models ML5855 and ML5955



Zernike type



MA274 Darkfield condenser  
(used with 100X objective)

### ARKFIELD CONDENSER

- MA274** The Cardiod type darkfield condenser for high power use (NA1.25) in a centering mount (to be used with 100X objective only).

## ORDERING INFORMATION FOR ML5000 SERIES

MODEL	BODY	EYEPIECES (DIN)	OBJECTIVES (DIN)	MECHANICAL STAGE	CONDENSER	ILLUMINATOR	
ML5000	Binocular	KHW10X, 20mm f.o.v.	SM Plan 4X, 10X, S40X, S100X oil	Flat-top, 78mm x 52mm movement, with right hand control	Achromatic N.A. 1.25	Koehler 6V 30W Halogen	
ML5100	Trinocular						
ML5200	Binocular		Planachromat 4X, 10X, S40X, S100X oil			Koehler 12V 50W Halogen	
ML5300	Trinocular						
ML5400	Binocular		SM Plan 4X, SM Plan Phase 10X, S40X, S100X		Achromatic N.A. 1.25	Koehler 6V 30W Halogen	
ML5500	Trinocular						
ML5800	Binocular		with centering telescope		Achromatic Phase 10X, 20X, 40X, 100XS	Phase annulus in sliding mount	Koehler 12V 50W Halogen
ML5900	Trinocular						
ML5850	Binocular		Zernike type Phase condenser N.A. 1.10 with green filter		Koehler 6V 30W Halogen		
ML5950	Trinocular						

Supplied in styrofoam case with dust cover and instruction manual.

Left hand control mechanical stage is optional. Please indicate the letter "L" after the model number when ordering the ML5000 series microscope with left hand control mechanical stage. (For instance: Model ML5000L).

## PHOTOMICROGRAPHIC EQUIPMENT

### LARGE FORMAT PHOTOMICROGRAPHY

The following equipment is required for large format photomicrography :

- MODEL PMX100 LARGE FORMAT PHOTOMICROGRAPHIC CAMERA**  
The PMX100 accepts the various film holders for 3-1/4" x 4-1/4", 4" x 5", 6cm x 7cm, 6cm x 9cm Polaroid and Roll Films. The camera magnification is 10X. 10X Widefield Viewfinder with focusable framing reticule and shock-absorber-mounted mechanical speed shutter for 1/125 to 1 sec., B exposure settings are built in and tripod thread is provided. The PMX100 can be directly mounted to the photo tube of trinocular models. (Film holders are optional.)



PMX100 + Film Holder 405

### 35mm SLR CAMERA PHOTOMICROGRAPHY

The following accessories are required for 35mm SLR camera photomicrography :

- Camera Attachment :

**MA150/50** Camera adapter to fit to photo tube of trinocular models

**MA150/60** Camera adapter as above, but with eyepiece finder

- Photo Eyepiece :

**MA512** Photo eyepiece 2.5X (Magnifies objective power by 2.5X at the film plane)

**MA508** Photo eyepiece 5X (Magnifies objective power by 5X at the film plane)

**MA500** Photo eyepiece 3.3X (Magnifies objective power by 3.3X at the film plane, with reticule mount)

- T-2 Adapter Ring :

**T2-1** Adapter ring for CANON camera

**T2-2** Adapter ring for MINOLTA camera

**T2-3** Adapter ring for PENTAX K, RICOH-XR camera

**T2-4** Adapter ring for PENTAX S camera

**T2-5** Adapter ring for NIKON camera

**T2-6** Adapter ring for OLYMPUS camera

**T2-7** Adapter ring for CONTAX, YASHIKA camera

**T2-8** Adapter ring for KONICA camera

**T2-9** Adapter ring for CANON EOS camera

**T2-10** Adapter ring for MINOLTA Alpha, MAXIM 2000 camera



MA150/60



MA150/50

## TV EQUIPMENT

The following equipment is required for monitoring the microscope image :

- CCD TV CAMERA :

**CK3800N** CCD Color TV camera, 1/2" CCD, 450 TV lines of horizontal resolution, NTSC system, with DC adapter

**CK3800P** CCD Color TV camera, 1/2" CCD, 450 TV lines of horizontal resolution, PAL system, with DC adapter

**MK400** CCD B/W TV camera, 2/3" CCD, 420 TV lines of horizontal resolution, NTSC system only

- VIDEO MONITOR

- "C" MOUNT ADAPTER :

**MA151/10** "C" mount adapter to connect TV camera to trinocular models

**MA151/35/04** "C" mount adapter as above, but with 0.45X lens (reducing mag. of objective by 0.45X but increasing photography area by approx. 220%)

**MA151/35/20** "C" mount adapter as above, but with 0.7X lens (reducing mag. of objective by 0.7X but increasing photography area by approx. 142%)



CK3800 + MA151/10

## COMPONENTS & ACCESSORIES

### VIEWING HEADS (without eyepieces)

**MA403** Inclined Monocular head

**MA602** Inclined Binocular head

**MA603** Inclined Trinocular head

### EYEPIECES

**MA406** DIN HWF10X eyepieces, Field No.18 (ea.)

**MA407** DIN KHWF10X, Compensating eyepiece, Field No.20 (ea.)

**MA408** DIN HWF15X eyepiece, Field No.12.2 (ea.)

**MA409** DIN HWF20X eyepiece, Field No.9 (ea.)

**COMPONENTS & ACCESSORIES**
**SEMI PLANACHROMAT OBJECTIVES**

- MA611** 4X/0.10 SM Planachromat objective  
**MA612** 5X/0.12 SM Planachromat objective  
**MA613** 10X/0.25 SM Planachromat objective  
**MA614** 20X/0.40 SM Planachromat objective, spring loaded  
**MA427** 50X/0.95 S. Planachromat objective, spring loaded, oil  
**MA615** 40X/0.65 SM Planachromat objective, spring loaded  
**MA616** 60X/0.80 SM Planachromat objective, spring loaded  
**MA617** 100X/1.25 SM Planachromat objective, spring loaded, oil

**PLAN OBJECTIVES**

- MA622** 4X/0.10 Planachromat objective  
**MA636** 5X/0.10 Planachromat objective  
**MA623** 10X/0.25 Planachromat objective  
**MA625** 40X/0.65 Planachromat objective, spring loaded, oil  
**MA627** 100X/1.25 Planachromat objective, spring loaded, oil

**SLIDER TYPE PHASE OBJECTIVES AND COMPONENTS**

- MA618** Phase 10X/0.25 SM Planachromat objective  
**MA619** Phase 20X/0.40 SM Planachromat objective, spring loaded  
**MA620** Phase 40X/0.65 SM Planachromat objective, spring loaded  
**MA621** Phase 100X/1.25 SM Planachromat objective, spring loaded, oil  
**MA663** Achromatic substage condenser 1.25 NA with phase annulus in sliding mount  
**MA290/05** Green filter, clear, 29.8mm diameter

**ZERNIKE PHASE OBJECTIVES AND COMPONENTS**

- MA448** Ach. Phase 10X/0.25 objective for use with Zernike type condenser  
**MA449** Ach. Phase 20X/0.40 objective for use with Zernike type condenser  
**MA450** Ach. Phase 40X/0.65 objective for use with Zernike type condenser  
**MA451** Ach. Phase 100X/1.25 objective for use with Zernike type condenser  
**MA457** Zernike Phase condenser  
**MA458** Centering telescope  
**MA459** Green filter, clear, 32mm diameter

**DARKFIELD - OIL IMMERSION OBJECTIVE CONDENSER SYSTEM**

- MA430** DIN S. Plan 100X objective, NA 1.25 oil w/iris  
**MA274** Darkfield condenser 1.25 NA

**DARKFIELD - OIL IMMERSION OBJECTIVE/DRY CONDENSER SYSTEM**

- MA617/672** SM Plan objective 100X with funnel stop  
**MA661/674** Achromatic substage condenser 1.25 NA with darkfield stop in sliding mount with iris diaphragm

**DARKFIELD ACCESSORIES**

- MA672** Funnel stop for MA617 SM Plan objective  
**MA278/05** Darkfield filter (Central stop) for use with filter tray  
**MA664** Slider with darkfield stoppers  
**MA674** Darkfield stop to fit MA661 Achromatic NA 1.25 condenser

**CONDENSERS**

- MA457** Zernike phase condenser  
**MA661** Achromatic substage condenser 1.25 NA with iris diaphragm and 30mm filter tray

- MA663** Achromatic substage condenser 1.25 NA with Phase annulus in sliding mount with iris diaphragm  
**MA661/674** Achromatic substage condenser 1.25 NA with darkfield stop in sliding mount with iris diaphragm  
**MA274** Darkfield condenser 1.25 NA

**STAGES**

- MA596R** Flat-top mechanical stage, 78mm x 52mm movement, right hand, drop-down coaxial controls  
**MA596L** Flat-top mechanical stage, 78mm x 52mm movement, left hand, drop-down coaxial controls  
**MA677R** Flat-top mechanical stage, 78mm x 52mm movement, right hand, drop-down coaxial controls and removal-remount clinical specimen holder  
**MA677L** Flat-top mechanical stage, 78mm x 52mm movement, left hand, drop-down coaxial controls and removal-remount clinical specimen holder  
**MA676** Attachable clinical specimen holder (optional)

**FILTERS**

- MA196** ND2 Neutral density filter, 29.8mm diameter  
**MA197** ND8 Neutral density filter, 29.8mm diameter  
**MA289/05** Blue filter, clear 29.8mm diameter  
**MA290/05** Green filter, clear, 29.8mm diameter

**EYEPIECE MICROMETERS (FOR USE WITH MA407 EYEPIECE)**

- MA284** Cross-line reticle, 21mm diameter  
**MA255** Eyepiece micrometer, 10mm divided into 100 units, 21mm diameter  
**MA256** Eyepiece micrometer 5mm divided into 100 units, 21mm diameter  
**MA283/05** 10mm square divided into 100 parts, 1.0mm square, 21mm diameter  
**MA540** Cross-line with 0.1mm graduations, 21mm diameter  
**MA254/05** Walton and Beckett reticle 21mm diameter

**STAGE MICROMETERS**

- MA285** Objective micrometer, 0.01mm ruling  
**MA286** 0.04" divided into 40 units, 0.001"

**MISCELLANEOUS COMPONENTS**

- PMX100** Large format camera without film holder  
**PMX100/405** Large format camera with film holder 405  
**MA150/50** Camera adapter for 35mm SLR photomicrography for trinocular models  
**MA150/60** Camera adapter with finder eyepiece for 35mm SLR photomicrography for trinocular models  
**MA151/10** CCTV "C" mount for use with TV camera on trinocular models  
**MA326** Spare bulb 6V 30W halogen  
**MA275/05** Spare bulb 12V 50W halogen  
**MA327** Fuse 3A  
**MA609** Wooden carrying case for ML5000 series  
**MA608/05** Polarizer set for 50W models (Polarizer to fit filter tray/analyzer to fit viewing head)  
**MA608/10** Polarizer set for 30W models  
**MA700** Immersion oil  
**MA701** Dust cover (for 30W models)  
**MA702** Dust cover (for 50W models)

Agent


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