



# ML2000 Series

LABORATORY MICROSCOPES

*BRIGHTFIELD  
PHASE CONTRAST  
DARKFIELD*



ML2000



ML2100

### FEATURES OF ML2000 SERIES

#### ① VIEWING HEADS

Available with standard binocular heads or trinocular heads:

Binocular head: Inclined at 30°, rotatable through 360°.

Dual graduated diopter eyetubes with interpupillary adjustments of 52mm to 72mm.

Trinocular head: Inclined at 30°, rotatable through 360°.

A sliding beam splitter directs 100% of the light to the eyepieces or 80% to the camera and 20% to the eyepieces.

#### ② EYEPIECES

Paired DIN KHW10X with 20mm field of view, 22mm eye relief.

#### ③ OBJECTIVE CHANGER

Smooth operating, revolving quadruple ball bearing nosepiece.

#### ④ OBJECTIVES

Five types of objectives are available:

S. Flat Achromats, SM Semi Planachromats, Planachromats, DIN Achromats Phase and BF Semi Plan Phase.

#### ⑤ STAGES

Two types of stages are available: The attached stage is a 120mm x 140mm rectangular mechanical stage with movements of 75mm (X) and 40mm (Y) and is graduated with vernier readings to 0.1mm, equipped with low-positioned drop-down coaxial controls.

The flat-top stage is a 171mm x 140mm rectangular stage with movements of 80mm (X) and 52mm (Y) and is drop-down coaxial controls and a detachable specimen guide.

#### ⑥ CONDENSER

An Achromatic, N.A. 1.25 substage condenser with iris diaphragm and filter tray is offered as standard equipment.

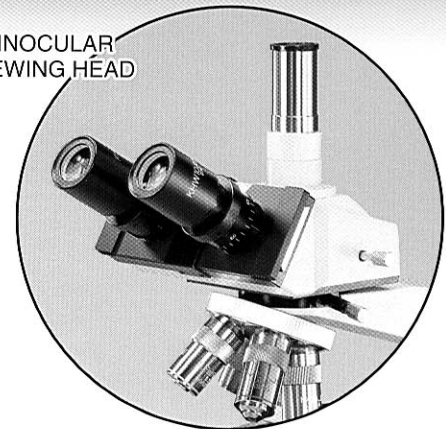
#### ⑦ ILLUMINATOR

A built-in Koehler illuminator with field iris covers all aperture and field filling requirements from 4X to 100X objectives. A 6V 30W halogen lamp with a variable intensity controls is provided as standard equipment.

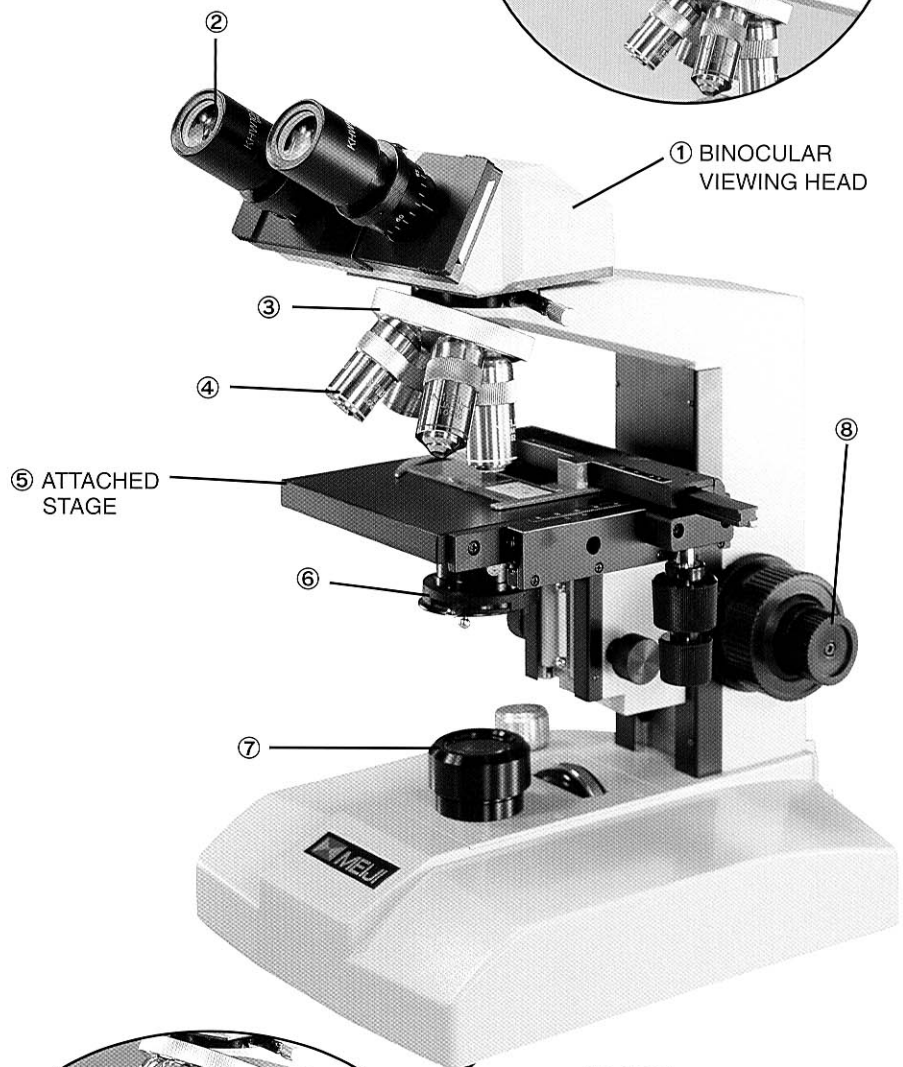
#### ⑧ FOCUSING MOVEMENT

Coaxial coarse and fine focusing controls with graduation reading 2 microns per division. Incorporates tension adjustment and safety Auto-focus stop unit.

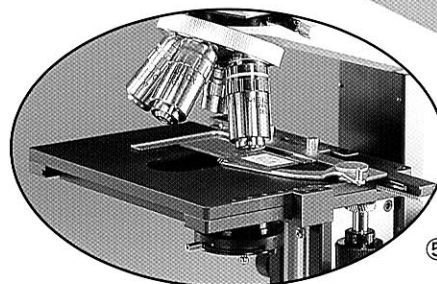
① TRINOCULAR VIEWING HEAD



① BINOCULAR VIEWING HEAD



ML2000



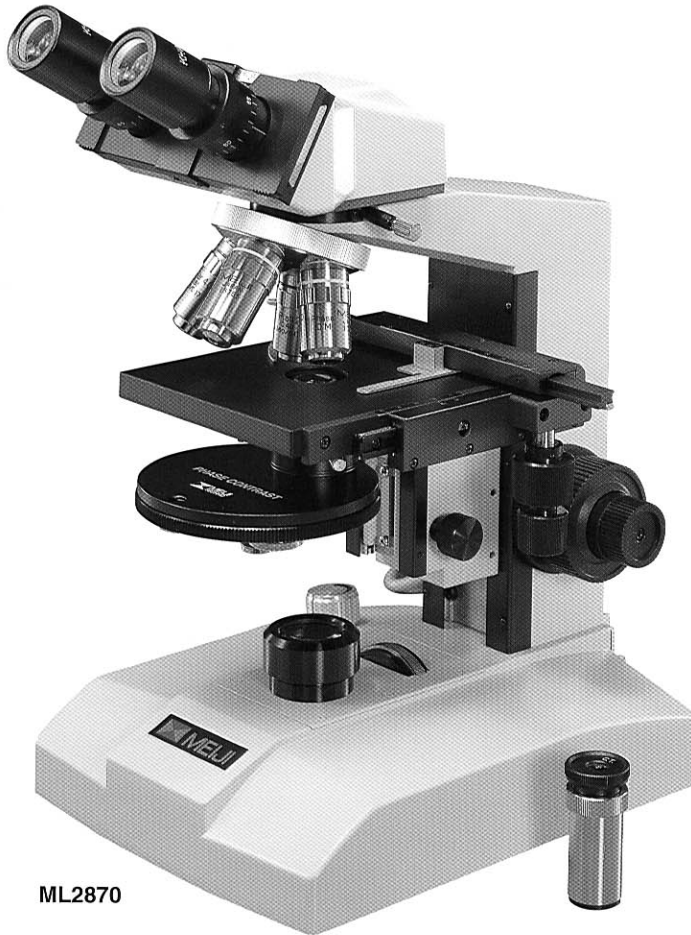
⑤ FLAT-TOP STAGE

#### SIZE AND WEIGHT

Binocular Models: 195mm(W) × 255mm(D) × 395mm(H), Net weight: 6.4Kg

Trinocular Models: 195mm(W) × 255mm(D) × 440mm(H), Net weight: 6.5Kg

# PHASE CONTRAST MICROSCOPES



ML2870



ML2970

## ORDERING INFORMATION FOR ML2000 SERIES

MODEL	BODY	EYEPIECES (DIN)	OBJECTIVES (DIN)	MECHANICAL STAGE	CONDENSER	ILLUMINATOR
ML2000	Binocular	KHW10X, 20mm f.o.v.	S.Flat 4X, 10X, S40X, S100X oil	Attached (right hand control)	Achromatic N.A. 1.25 with Blue filter	Koehler 6V 30W Halogen
ML2100	Trinocular					
ML2200	Binocular		SM Semi Plan 4X, 10X, S40X, S100X oil	Flat-top, 80mm x 52mm movement (right hand control)		
ML2300	Trinocular					
ML2400	Binocular					
ML2500	Trinocular		Planachromat 4X, 10X, S40X, S100X oil	Attached (right hand control)		
ML2600	Binocular					
ML2700	Trinocular	with centering telescope	Achromat Phase 10X, S20X, S40X, S100X oil	Zernike type Phase condenser N.A.1.25 with green filter		
ML2855	Binocular					
ML2955	Trinocular		BF Semi Plan Phase 10X, S20X, S40X, S100X oil	Zernike type Phase condenser N.A.1.25 with green interference filter		
ML2870	Binocular					
ML2970	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 ML2000 series microscope with left hand control mechanical stage (For instance: Model ML2200L).

## PHASE CONTRAST SET, PH-A comprising:

- MA715** Zernike type N.A. 1.25 Phase condenser in turret mount, individual centerable phase annuli for 10X, 20X, 40X and 100X with brightfield position with iris and filter tray for 29.8mm diameter filter
  - MA695** BF Semi Planachromat Phase objective 10X, N.A. 0.25
  - MA697** BF Semi Planachromat Phase objectives 20X, N.A. 0.40
  - MA698** BF Semi Planachromat Phase objectives 40X, N.A. 0.65
  - MA699** BF Semi Planachromat Phase objectives 100X, N.A. 1.25 oil
  - MA458** Centering telescope to check phase annulus
  - MA759** Green interference filter, 29.8mm diameter.
- The unit is equipped in Models: ML2870 and ML2970.



PH-A

## PHASE CONTRAST SET, PH-B comprising:

- MA715** Zernike type N.A. 1.25 Phase condenser in turret mount, individual centerable phase annuli for 10X, 20X, 40X and 100X with brightfield position with iris and filter tray for 29.8mm diameter filter
  - MA448** DIN Achromat Phase objective 10X, N.A. 0.25
  - MA449** DIN Achromat Phase objectives S20X, N.A. 0.40
  - MA450** DIN Achromat Phase objectives S40X, N.A. 0.65
  - MA451** DIN Achromat Phase objectives S100X, N.A. 1.25 oil
  - MA458** Centering telescope to check phase annulus
  - MA290/05** Green clear filter, 29.8mm diameter.
- The unit is equipped in Models: ML2855 and ML2955.



PH-B

## PHASE AND DARKFIELD SET, PD-A comprising:

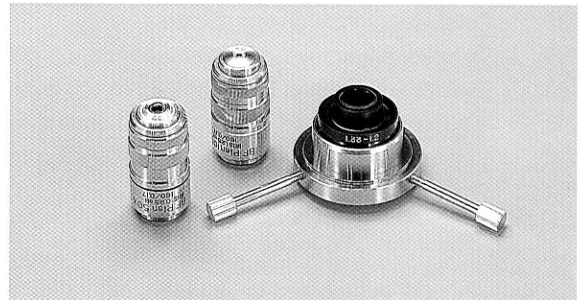
- MA716** Zernike type N.A. 1.25 Phase condenser in turret mount, individual centerable phase annuli for 10X, 20X and 40X, darkfield stop for 40X and iris and filter tray for 29.8mm diameter filter
- MA448** DIN Achromat Phase objective 10X, N.A. 0.25
- MA449** DIN Achromat Phase objectives S20X, N.A. 0.40
- MA450** DIN Achromat Phase objectives S40X, N.A. 0.65
- MA458** Centering telescope to check phase annulus
- MA290/05** Green clear filter, 29.8mm diameter



PD-A

## ACCESSORIES FOR HIGH POWER DARKFIELD MICROSCOPY

- MA274** Darkfield condenser, Cardiod type, for high power use (N.A. 1.25) in a centering mount (to be used with 100X objective with iris only).
- MA811** BF Semi planachromat S50X, N.A. 0.95 oil, with iris diaphragm
- MA813** BF Semi planachromat S100X, N.A. 1.25 oil, with iris diaphragm
- MA430** S. Plan objectives S100X oil, with iris diaphragm



Darkfield condenser and objectives with iris diaphragm

## COMPONENTS AND ACCESSORIES

### VIEWING HEADS (without eyepieces)

- MA403** Inclined Monocular head
- MA602** Inclined Binocular head
- MA603** Inclined Trinocular head

### EYEPIECES

- MA406** DIN HWF10X, Field No.18, Eye Relief 24mm (ea)
- MA407** DIN KHW10X, Field No.20, Eye Relief 22mm (ea)
- MA408** DIN HWF15X, Field No.12.2, Eye Relief 15mm (ea)
- MA409** DIN HWF20X, Field No.9, Eye Relief 9mm (ea)

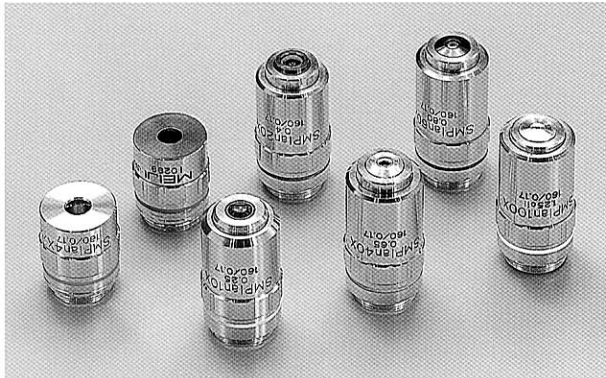
### COMPONENTS AND ACCESSORIES

#### ACHROMAT OBJECTIVES

- MA482** S.Flat achromat 4X, N.A. 0.10, W.D.20.0mm
- MA483** S.Flat achromat 10X, N.A. 0.25, W.D.6.6mm
- MA484** S.Flat achromat S20X, N.A. 0.40, W.D.3.1mm
- MA485** S.Flat achromat S40X, N.A. 0.65, W.D.0.4mm
- MA486** S.Flat achromat S60X, N.A. 0.85, W.D.0.2mm
- MA487** S.Flat achromat S100X, N.A. 1.25, W.D.0.13mm

#### SM SEMI PLANACHROMAT OBJEITIVES

- MA611** SM Semi Plan 4X, N.A. 0.10, W.D.19.83mm
- MA612** SM Semi Plan 5X, N.A. 0.10, W.D.19.83mm
- MA613** SM Semi Plan 10X, N.A. 0.25, W.D.6.23mm
- MA614** SM Semi Plan S20X, N.A. 0.40, W.D.3.13mm
- MA615** SM Semi Plan S40X, N.A. 0.65, W.D.0.43mm
- MA616** SM Semi Plan S60X, N.A. 0.85, W.D.0.23mm
- MA617** SM Semi Plan S100X, N.A. 1.25., oil, W.D.0.12mm



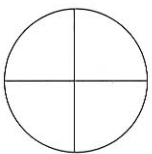
SM SEMI PLAN OBJECTIVES

#### FILTERS

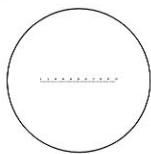
- MA196** ND2 Neutral density filter, 29.8mm diameter
- MA197** ND8 Neutral density filter, 29.8mm diameter
- MA289/05** Blue clear filter, 29.8mm diameter
- MA290/05** Green clear filter, 29.8mm diameter
- MA759** Green interference filter, 29.8mm diameter
- MA291** Polarizing filter, 29.8mm diameter

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

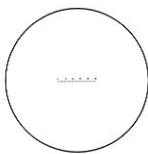
- MA284** Cross-line reticule, 21mm diameter
- MA255** Eyepiece micrometer, 10mm divided into 100 units, 21mm diameter
- MA256** Eyepiece micrometer 5mm divided into 100 units, 21mm diameter
- MA283/05** 10mm square divided into 100 parts, 1.0mm square, 21mm diameter
- MA540** Cross-line with 0.1mm graduations,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



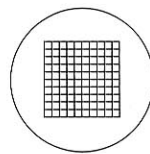
**MA284**  
Cross-line



**MA255**  
10mm in 100 parts



**MA256**  
5mm in 100 parts



**MA283/05**  
10mm square in  
100 square

#### BF SEMI PLANACHROMAT OBJEITIVES

- MA690** BF Semi Plan 4X, N.A. 0.10, W.D.19.83mm
- MA691** BF Semi Plan 10X, N.A. 0.25, W.D.6.23mm
- MA692** BF Semi Plan S20X, N.A. 0.40, W.D.3.1mm
- MA693** BF Semi Plan S40X, N.A. 0.65, W.D.0.43mm
- MA694** BF Semi Plan S50X, oil, N.A. 0.95, W.D.0.25mm
- MA696** BF Semi Plan S100X, N.A. 1.25., oil, W.D.0.15mm
- MA811** BF Semi Plan S50X, N.A. 0.95, oil, with iris, W.D.0.24mm
- MA813** BF Semi Plan S100X, N.A. 1.25., oil, with iris, W.D.0.15mm



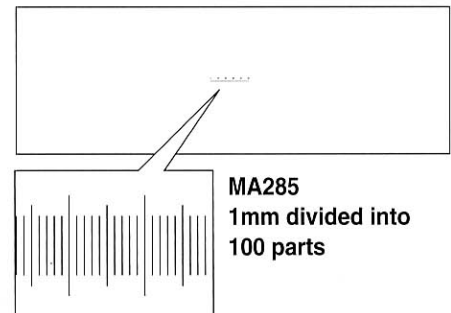
BF SEMI PLAN OBJECTIVES

#### MISCELLANEOUS COMPONENTS

- MA326** Spare bulb 6V 30W halogen
- MA327** Fuse 3A
- MA609/05** Wooden carrying case
- MA608** Polarizer set (Polarizer to fit filter tray/analyser to fit viewing head)
- MA700** Immersion oil
- MA701** Dust cover

#### STAGE MICROMETERS

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

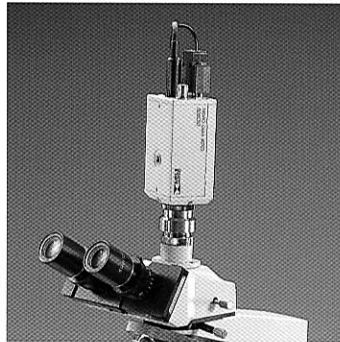


**MA285**  
1mm divided into  
100 parts

### ACCESSORIES

#### VIDEO EQUIPMENT

- CK3100N** CCD Color TV camera. 1/3"CCD, 450 lines of resolution, NTSC system with DC12V adapter
- CK3100P** CCD Color TV camera. 1/3"CCD, 450 lines of resolution, PAL system with DC12V adapter
- CK3900N** CCD Color TV camera. 1/2"CCD, 450 lines of resolution, NTSC system with DC12V adapter
- CK3900P** CCD Color TV camera. 1/2"CCD, 450 lines of resolution, PAL system with DC12V adapter



#### VIDEO "C" MOUNTS

- MA151/10** "C"mount adapter (Replaces existing phototube)
- MA151/35/04** "C"mount adapter with 0.45X lens (Slips over top of existing phototube)
- MA151/35/15** "C"mount adapter with 1.0X lens (Slips over top of existing phototube)
- MA151/35/20** "C"mount adapter with 0.7X lens (Slips over top of existing phototube)
- MA151/35/25** "C"mount adapter with 2.5X lens (Slips over top of existing phototube)

#### DIGITAL CAMERA ADAPTERS

- MA151/30/50** Digital Camera adapter for use with Nikon Coolpix950, 990, 995 and 4500 digital cameras. (Slips over top of existing phototube)
- MA151/30/60** Digital Camera adapter for use with Olympus Camedia C-3040 ZOOM, C-4040 ZOOM and C-3100 ZOOM. (Slips over top of existing phototube)
- MA151/30/70** Digital Camera adapter for use with Nikon Coolpix5000 (Slips over top of Existing phototube)
- MA151/30/80** Digital Camera adapter for use with Fuji Finepix S602 4900Z. 6900Z (Slips over top of Existing phototube)

### 35mm SLR CAMERA PHOTOMICROGRAPHY

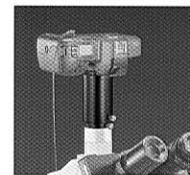
The following accessories are required for 35mm SLR camera photomicrography

#### 1. Camera Attachment

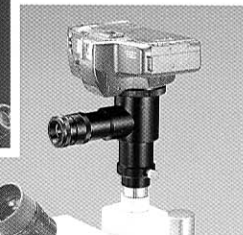
- MA150/50** Camera attachment to fit to photo tube of trinocular models
- MA150/60** Camera attachment as above, but with eyepiece finder

#### 2. 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 reticle mount)



MA150/50



MA150/60

#### 3. 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

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