



# TM400 SERIES

ADVANCED EDUCATION MICROSCOPE

MONOCULAR MODELS / BINOCULAR MODELS  
Students Colleges Graduates

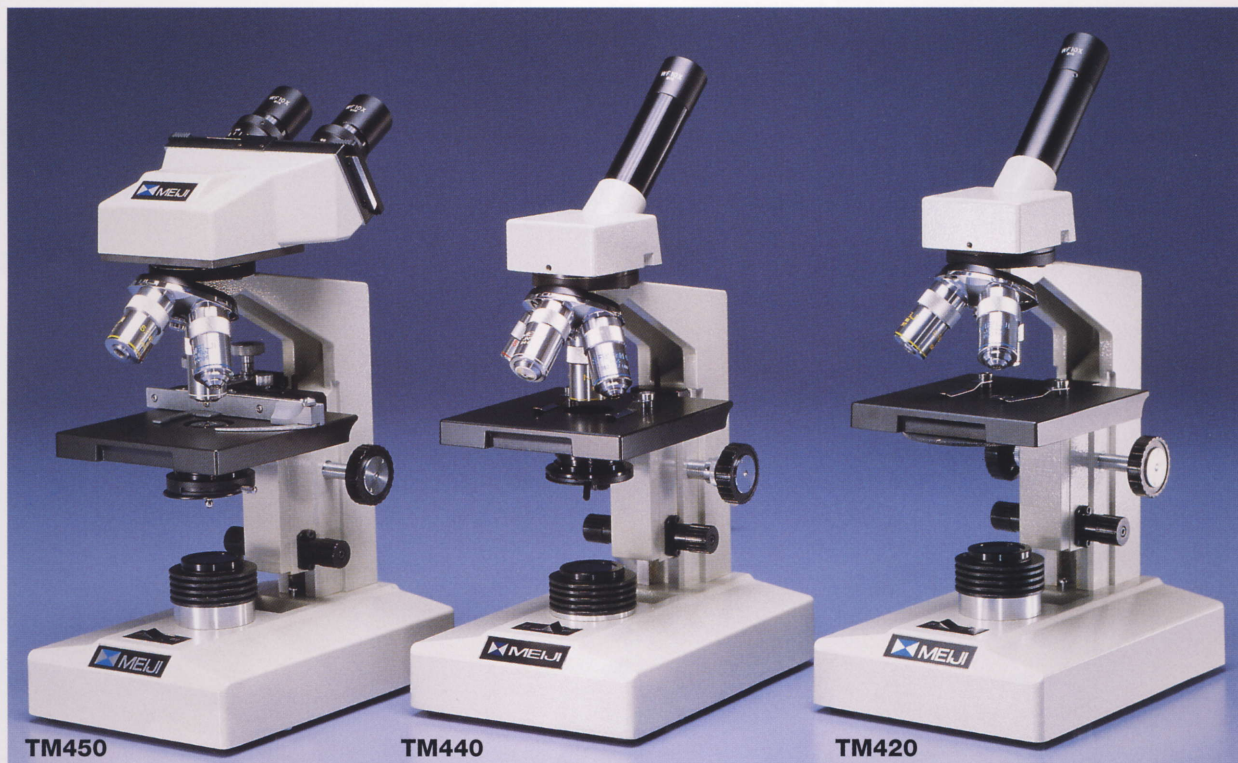




# MEIJI TM400 series Microscopes

TM420 TM440 and TM450 microscopes are modern high-performance instruments equipped with DIN standard S. Flat achromatic objectives and widefield eyepieces. They are specifically designed for student course work and undergraduate use, including monocular and binocular types with separate coarse and fine focusing movement.

TM420 Monocular student microscope is intended for ordinary middlegrade teaching requirements. TM440 Monocular and TM450 Binocular College Microscopes are suitable for higher grade applications employing 100X oil immersion objectives with a focusable NA 1.25 condenser.



Model	TM420	TM440	TM450
Viewing head	Monocular 30° inclined locked-on head, 360° rotatable		Binocular 30° inclined locked-on head, 360° rotatable twin focusing eyetubes and adjustable interpupillary separation, 52mm to 72mm
Eyepiece(s)	DIN Wide field eyepiece WF10X with built-in pointer, F.N. 18mm		Paired DIN Wide field eyepiece WF10X, one with built-in pointer, F.N. 18mm
Nosepiece	Triple revolving nosepiece	Quadruple revolving nosepiece	
Objectives	DIN S.Flat 4X/0.10 NA, 10X/0.25 NA, 40X/0.65 NA	DIN S.Flat 4X/0.10 NA, 10X/0.25 NA, 40X/0.65 NA, 100X/1.25 NA oil*	
	(Objectives 20X and over are supplied in retractable mounts to prevent slide damage.)		
Condenser	Built-in NA 0.65 with disc diaphragm	Abbe substage condenser NA 1.25 in spiral focusing mount with iris diaphragm and 30mm filter tray**	
Stage	115mm x 120mm stage with locked stage clips and drilled to accept attachable mechanical stage		115mm x 120mm stage with MA271 mechanical stage, 30mm x 70mm (X-Y) movements
Focusing	Rack and pinion coarse focusing with separate lever type fine focusing and with stopper		
Illuminator	Built-in illuminator with silvered 20W bulb		Built-in illuminator with silvered 30W bulb
Special feature	Built-in focus slip clutch to prevent rack and pinion damage and tension adjustment collar on coarse focus.		
Size & Weight	150mm(W) x 210mm(D) x 320mm(H), 3.0Kg		150mm(W) x 210mm(D) x 310mm(H), 3.5Kg
Supplied with dust cover and manual in Styrofoam case.			

\*A bottle of 15cc immersion oil is supplied for use with 100X oil immersion objectives.

\*\*A clear blue filter is supplied to fit 30mm filter tray.



**TM460 and TM490** Binocular microscopes are provided with convenient coaxial coarse and fine focusing controls for greater comfort in use. The Graduates microscopes are suitable for daily observation as well as the extended and stringent performance requirements in college. **TM470P** Monocular simple phase contrast microscope is equipped similarly to **TM420** monocular but has a special phase annulus and green filter built-into the disc diaphragm for simple phase contrast with 10X and 40X objectives. No adjustment is needed. In addition a 4X standard objective is supplied.



Model	TM460	TM490	TM470P Simple Phase
Viewing head	Binocular 30° inclined locked-on head, 360° rotatable twin focusing eyetubes and adjustable interpupillary separation, 52mm to 72mm		Microscope Monocular 30° inclined locked-on head, 360° rotatable
Eyepiece(s)	Paired DIN Wide field eyepiece WF10X, one with built-in pointer, F.N. 18mm		DIN Wide field eyepiece WF10X with built-in pointer F.N. 18mm
Nosepiece	Quadruple revolving nosepiece		Triple revolving nosepiece
Objectives	DIN S.Flat 4X/0.10 NA, 10X/0.25 NA, 40X/0.65NA, 100X/1.25 NA oil*		DIN S.Flat 4X/0.10 NA, DIN Achromat Simple phase 10X/0.25 NA, Simple phase 40X/0.65 NA
	(Objectives 20X and over are supplied in retractable mount to prevent slide damage.)		
Condenser	Abbe substage condenser NA 1.25 focusable by rack and pinion movement, with iris diaphragm and 30mm filter tray**		Built-in NA 0.65 with disc diaphragm which has a special phase annulus and green filter for simple phase contrast with 10X and 40X
Stage	115mm x 120mm stage with MA271 mechanical stage, 30mm x 70mm (X-Y) movement	115mm x 120mm stage with MA371 mechanical stage, 30mm x 70mm(X-Y) movement, with drop-down coaxial controls	115mm x 120mm stage with locked-on stage clips and drilled to accept attachable mechanical stage
Focusing	Coaxial coarse and fine focusing controls with tension control and auto focus stop		Rack and pinion coarse focusing with separate fine focus movement and with stopper
Illuminator	Built-in illuminator with silvered 30W bulb with variable brightness control		Built-in illuminator with silvered 20W bulb with brightness control
Size & Weight	150mm(W) x 210mm(D) x 320mm(H), 3.5Kg		150mm(W) x 210mm(D) x 310mm(H), 3.5Kg
Supplied with dust cover and manual in Styrofoam case.			

\*A bottle of 15cc Immersion oil is supplied for 100X oil immersion objective.

\*\*A clear blue filter is supplied to fit 30mm filter tray.



## EQUIPMENT FOR 35mm SLR CAMERA PHOTOMICROGRAPHY

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

### 1. Camera attachment

- MA150/20** Camera attachment to fit Monocular Eye Tube of TM400 series  
**MA150/50** \*Camera attachment for use with MA355 Vertical tube  
**MA150/60** \*Camera attachment with finder for use with MA355 Vertical tube  
 (\*MA355 Teaching Head is an optional item and to be fitted at the factory.)

### 2. Photo eyepiece

- MA512** Photo eyepiece 2.5X (Magnifies mag. of objective by 2.5X at the film plane)  
**MA508** Photo eyepiece 5X (Magnifies mag. of objective by 5X at the film plane)  
**MA500** Photo eyepiece 3.3X (Magnifies mag. of objective by 3.3X at the film plane and reticule mount is provided)



MA150/20 Camera attachment

### 3. T-2 Adapter ring

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| <b>T2-1</b> Adapter ring for CANON camera              | <b>T2-6</b> Adapter ring for OLYMPUS camera                    |
| <b>T2-2</b> Adapter ring for MINOLTA camera            | <b>T2-7</b> Adapter ring for CONTAX, YASHIKA camera            |
| <b>T2-3</b> Adapter ring for PENTAX K, RICOH-XR camera | <b>T2-8</b> Adapter ring for KONICA camera                     |
| <b>T2-4</b> Adapter ring for PENTAX S camera           | <b>T2-9</b> Adapter ring for CANON EOS camera                  |
| <b>T2-5</b> Adapter ring for NIKON camera              | <b>T2-10</b> Adapter ring for MINOLTA Alpha, MAXIM 2000 camera |

## TV EQUIPMENT

The following equipments are required for monitoring the microscope image;

- CK3900N, CK3900P** 1/2 CCD Color TV camera which uses "C" mount  
**CK3100N, CK3100P** 1/3 CCD Color TV camera which uses "C" mount
- Video Monitor
- MA151/10** "C" mount Adapter

- MA151/35/04** "C" mount adapter with 0.45X Lens (fit MA355 Vertical tube) [reduces mag. of objective by 0.45X but increases projecting area by approx. 220%]  
**MA151/35/15** "C" mount adapter with 1.0X Lens (fit MA355 Vertical tube)  
**MA151/35/20** "C" mount adapter with 0.7X Lens (fit MA355 Vertical tube) [reduces mag. of objective by 0.7X but increases projecting area by approx. 142%]  
**MA151/35/25** "C" mount adapter with 2.5X Lens (fit MA355 Vertical tube) [increase mag. of objective by 2.5X but reduces projecting area by approx. 40%]



MA355+MA151/35/04  
+CK3900

## DIGITAL CAMERA ADAPTERS

MICROSCOPES	DIGITAL CAMERAS			
	NIKON Coolpix 950,990,995	NIKON Coolpix 5000	Olympus Camedia C-3040 Zoom C-4040 Zoom C-3100	Fuji Finepix S602 4900Z, 6900Z
	Adapter Cat.No.	Adapter Cat.No.	Adapter Cat.No.	Adapter Cat.No.
<b>Fits a 23.2mm I.D./27.2mm O.D. Eye tube of:</b> TM420, TM440, TM480P	<b>MA151/30/51</b>	<b>MA151/30/71</b>	<b>MA151/30/61</b>	<b>MA151/30/81</b>
<b>Fits a 23.2mm I.D./25.2mm O.D. Eye tube or Photo tube of:</b> TM450, TM460, TM490 and other TM400 Series microscope with teaching head	<b>MA151/30/50</b>	<b>MA151/30/70</b>	<b>MA151/30/60</b>	<b>MA151/30/80</b>

### How to use

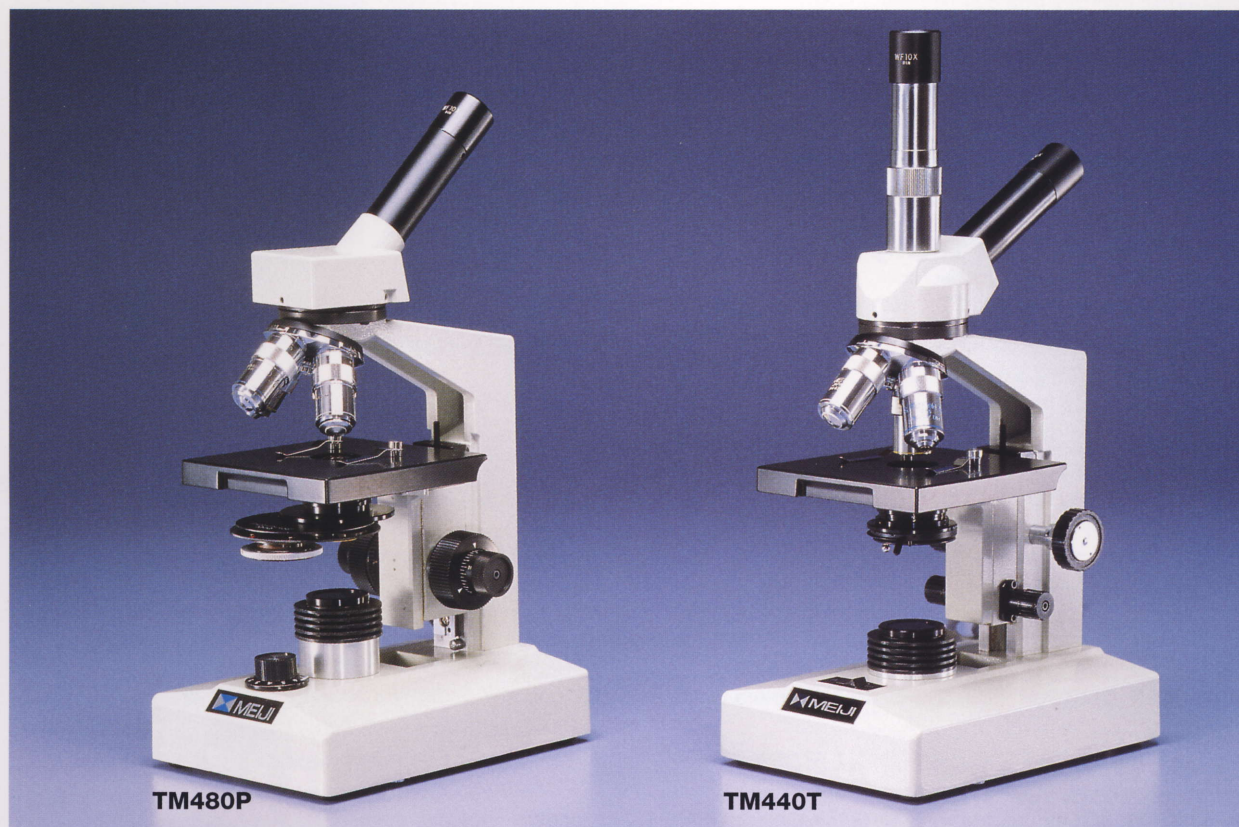
For eye tube of binocular head, insert the adapter into the eye tube until fully seated and secure the adapter with lock down screw.

For teaching head, slip the adapter over the top of the tube and secure it with locking screw.





**TM480P** Monocular Par phase contrast microscope has an NA 1.25 condenser with phase annuli for 10X, 40X and 100X phase objectives. The condenser also incorporates a dark-ground stop and position for bright-field with iris. A 4X bright-field objective is supplied as extra for bright field observation.



**TM480P**

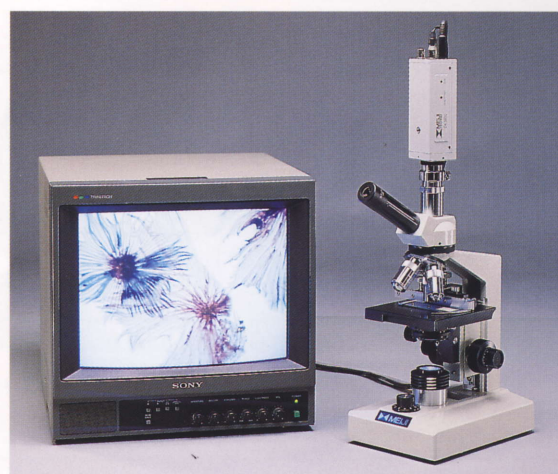
**TM440T**

**MA355 Teaching Head (Dual Viewing Head)**

The above picture shows the Model TM440T, i.e. TM440 with MA355 Dual Viewing Head in place of Monocular head.

Model	TM480P Par Phase Microscope
Viewing head	Monocular 30° inclined locked-on head, 360° rotatable
Eyeiece(s)	DIN Wide field eyepiece WF10X with built-in pointer, F.N. 18mm
Nosepiece	Quadruple revolving nosepiece
Objectives	DIN S.Flat 4X/0.10 NA, DIN Achromat Phase 10X/0.25 NA, Phase 40X/0.65 NA, Phase 100X/1.25 NA oil* (Objectives 20X and over are supplied in retractable mounts to prevent slide damage.)
Condenser	Abbe substage condenser NA 1.25 with phase annuli for 10X, 40X and 100X phase objectives. The condenser incorporates a dark-ground stop and position for bright-field with iris
Stage	115mm x 120mm stage with locked stage clips and drilled to accept attachable mechanical stage
Focusing	Coaxial coarse and fine focusing controls with tension control and auto focus stop
Illuminator	Built-in illuminator with silvered 20W bulb with brightness control
Size & Weight	150mm(W) x 210mm(D) x 320mm(H), 3.3Kg
Supplied with dust cover and manual in Styrofoam case.	

\*A bottle of 15cc immersion oil is supplied for 100X oil immersion objective.



**TM460T+MA151/10+CK3900+COLOR MONITER**

All the TM400 series models can be fitted with MA355 Dual Viewing head at factory. The vertical tube is used for connection to TV camera or Photo camera with the help of "C" mount adapter or camera attachment. The "C" mount adapter and the camera attachments are optional.



## COMPONENTS AND ACCESSORIES FOR TM400 SERIES

### MICROSCOPE EYEPIECES

MA480	DIN Wide Field Eyepiece 10X, F.N. 18mm (Standard for Binocular)
MA480P	DIN Wide Field Eyepiece 10X with pointer, F.N.18mm (Standard for Monocular, also for either tube of Binocular)
MA408	DIN Wide Field Eyepiece 15X, F.N.12.2mm, high-eyepoint
MA409	DIN Wide Field Eyepiece 20X, F.N. 9mm, high-eyepoint

### VIEWING HEADS

MA355	Teaching head (to be fitted at the factory)
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### MICROSCOPE OBJECTIVES

(DIN Achromat lenses 20X and over have retractable mounts)

MA482	S. Flat achromat 4X/0.10 NA (Standard for all models)
MA483	S. Flat achromat 10X/0.25 NA (Standard for all non-Phase models)
MA484	S. Flat achromat 20X/0.40 NA
MA485	S. Flat achromat 40X/0.65 NA (Standard for all non-Phase models)
MA487	Achromat 100X/1.25 NA oil (Standard for TM440, TM450, TM460 & TM490)
MA241/05	Phase objective 10X/0.25 NA (Standard for Models TM470P & TM480P)
MA242/05	Phase objective 40X/0.65 NA (Standard for Models TM470P & TM480P)
MA451	Phase objective 100X/1.25 NA (Standard for Model TM480P)

### MECHANICAL STAGES:

MA271	Attachable mechanical stage, graduated with scales and verniers (Standard for Model TM450 & TM460)
MA371R	Attachable mechanical stage, graduated with scales and verniers, with drop-down coaxial controls, right hand (Standard for Model TM490)
MA371L	Attachable mechanical stage, graduated with scales and verniers, with drop-down coaxial controls, left hand

### ACCESSORIES FOR MEASUREMENT:

MA279	Eyepiece Micrometer, cross-line, 19mm diameter
MA280	Eyepiece Micrometer, 10mm into 100 units, 19mm diameter
MA281	Eyepiece Micrometer, 5mm into 100 units, 19mm diameter
MA283	Eyepiece Micrometer, 10mm square into 100 parts, 1.0mm square, 19mm diameter
MA285	Stage Micrometer (for calibration), 1mm into 0.01mm units

### MISCELLANEOUS AND SPARES

MA278/05	Darkfield filter (Central stop) for use with filter tray of 30mm diameter
MA289/05	Clear Blue Filter, 29.8mm diameter
MA289	Frosted Blue Filter, 29.8mm diameter
MA134	Wooden cabinet
MA361/10	Spare bulb, 115V, 20W silvered
MA361/20	Spare bulb, 220/240V, 20W silvered
MA362/10	Spare bulb, 115V, 30W silvered
MA362/20	Spare bulb, 220/240V, 30W silvered



Agent



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