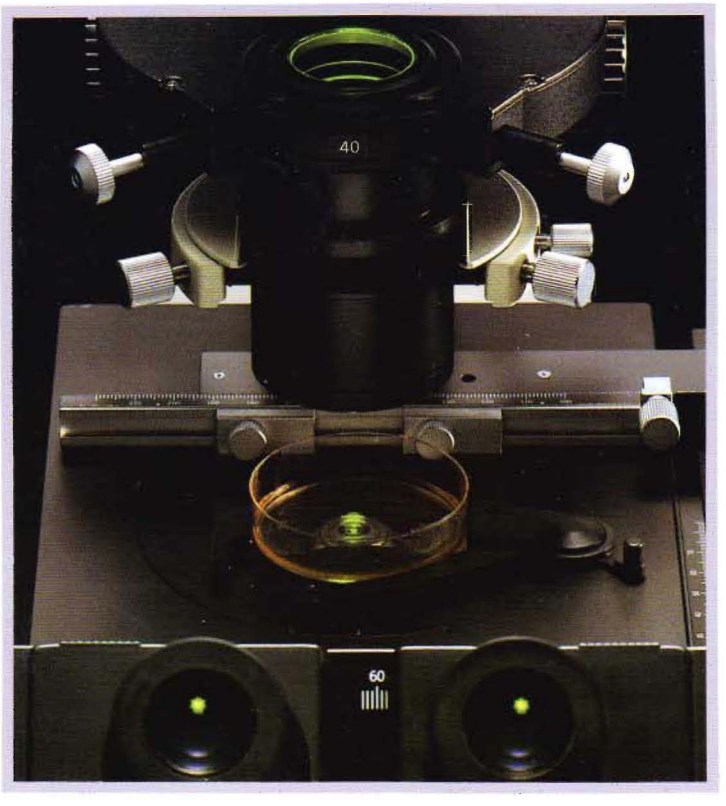
OLYMPUS®

IMT-2

Inverted Microscope

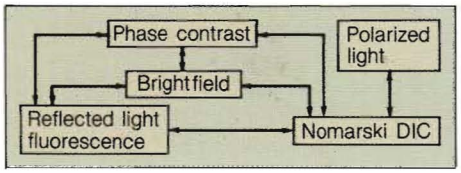


Precision, Versatility and Convenience Combine to Meet a Wide Range of Advanced Research Needs

Exceptional versatility and convenience are the hallmarks of the new Olympus IMT-2 unique design. Switchover among five different observation methods is fast and simple, and a fixed stage system, in which specimen focus is achieved by moving the objective, assures excellent stability and enhanced reliability during time-lapse photography and micro-manipulation. With such features, the IMT-2 is the ideal instrument for advanced research in the fields of biotechnology and medicine.

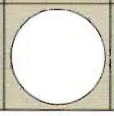
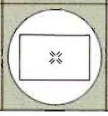
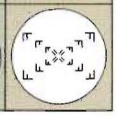
Simultaneous Mounting of Attachments Facilitates Switching Among a Variety of Observation Methods

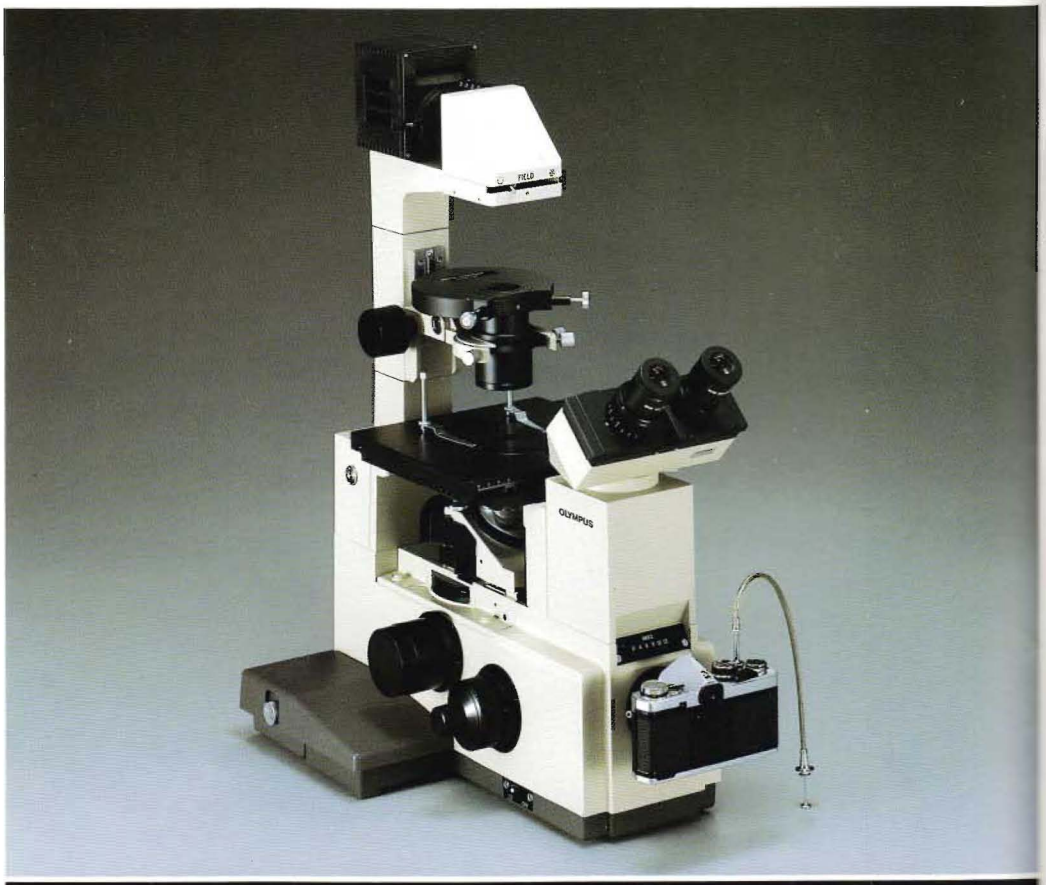
The IMT-2 allows a Nomarski differential interference contrast attachment to be mounted in conjunction with a reflected-light fluorescence attachment to enable one-touch switchover among brightfield, phase contrast, differential interference contrast, fluorescence, and simple polarized light observations. A sextuple revolving nosepiece increases the convenience and efficiency of selecting observation methods.



Interference-Free Investigation Even When Photographic Equipment Is Mounted

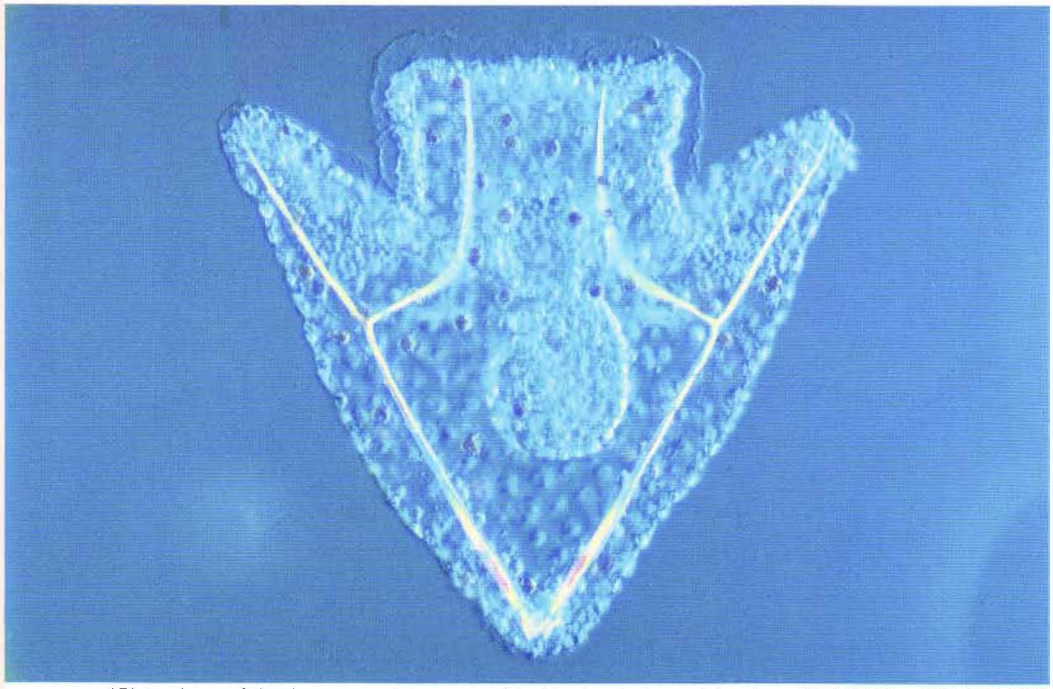
The unique multi-tube system of the IMT-2 prevents mounted photographic equipment from interfering with observation and manipulation. Photomicrographic equipment, a TV camera or a 16mm cine camera, may be attached to the side of the microscope body rather than on top of it. And when this unique multi-tube system is used with a trinocular observation tube, it allows simultaneous viewing by two observers. Moreover, an OM Series SLR camera can also be mounted independently of the multi-tube system. To provide maximum versatility, the multi-tube system features a three-step light path selector allowing the observer to direct the distribution of light to the front-mounted SLR camera, the multi-tube system or the observation tube. For added convenience, a built-in photo frame mask is automatically engaged when the light path selector is switched to its SLR camera or multi-tube setting.

Position / Optical path	BI	35	MTU
Binocular tube	100%	20%	20%
35mm SLR camera	—	80%	—
Multi-tube	—	—	80%
Frame reticle			

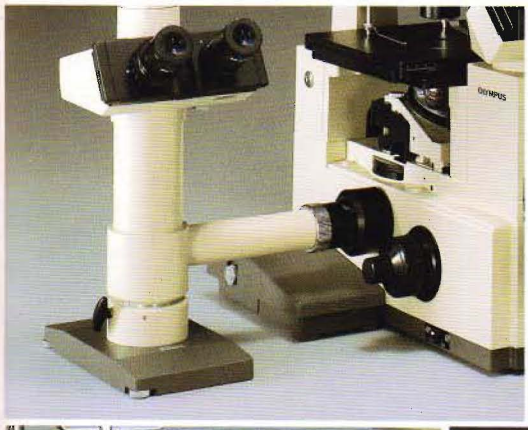


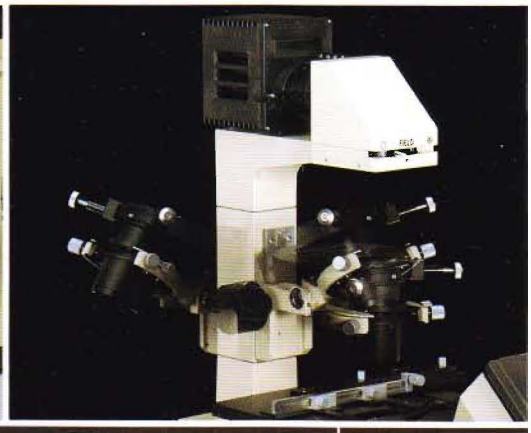
Standard Outfits

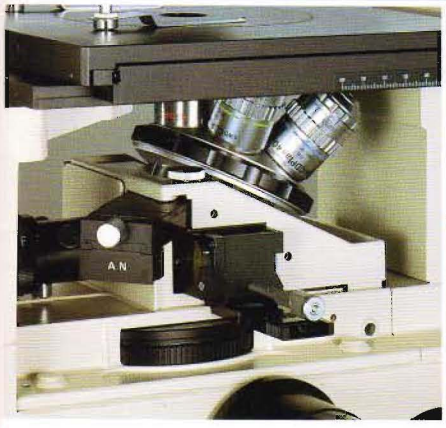
Module			IMT2 -11	IMT2 -12	IMT2 -21
Microscope stand	IMT2-F		○	○	○
Power cord	UYCP		○	○	○
Observation tube	BH2-BI45		○	○	○
Intermediate tube	IM2-ATU		○	○	○
Halogen lamp housing	IMT2-LSH		○	○	○
Halogen bulb	JC12V50WHAL 12V50W (2 pcs.)		○	○	○
Stage	IMT2-SVR	Cross movement stage with low drive control			○
	IMT2-SP-2	Square plain stage	○	○	
	CK2-SS	Stage extension plate	○	○	
	IMT2-MVR	Attachable mechanical stage	○	○	
Phase contrast condenser	IMT2-LWCD	Long working distance condenser		○	○
	IMT2-ULWCD	Ultra long working distance condenser	○	○	○
Phase contrast objective	PCSPL4XPL			○	○
	PCSPL10XPL		○	○	○
	LWDCDPL20XPL	With correction collar	○	○	○
	LWDCDPL40XPL	With correction collar		○	○
Eyepiece	WHK10X	Widefield, high eyepoint	○	○	○
	WHK10X-H	Widefield, high eyepoint, focusable	○	○	○



*Plutus larva of the Japanese winter sea urchin, Hemicentrotus pulcherrimus LWD CD Plan 20X, NFK 3.3X







Convenient Specimen Manipulation
A binocular observation tube, inclined at a 45° angle, is provided as standard equipment. Stage height is a mere 275mm above desk-top level, requiring only a slight shift of the line of vision during observation, for a view of the specimen on the stage. Moreover, since the observed image is erect and the directions of movement for the specimen and the image are the same, specimen scanning and micromanipulation can be carried out simply and smoothly.

Built-In Intermediate Magnification Equipment
The IMT-2 provides a 1X and 1.5X intermediate magnification changer for convenience in framing for photomicrography. A centering telescope (CT) is also built-in to greatly facilitate phase ring alignment.

Swing-Out Condenser
The condenser swings up and out of the way, simplifying the replacement and manipulation of specimens on the stage. The condenser may also be rotated away from the stage to accommodate extra large objects, e.g. flasks.

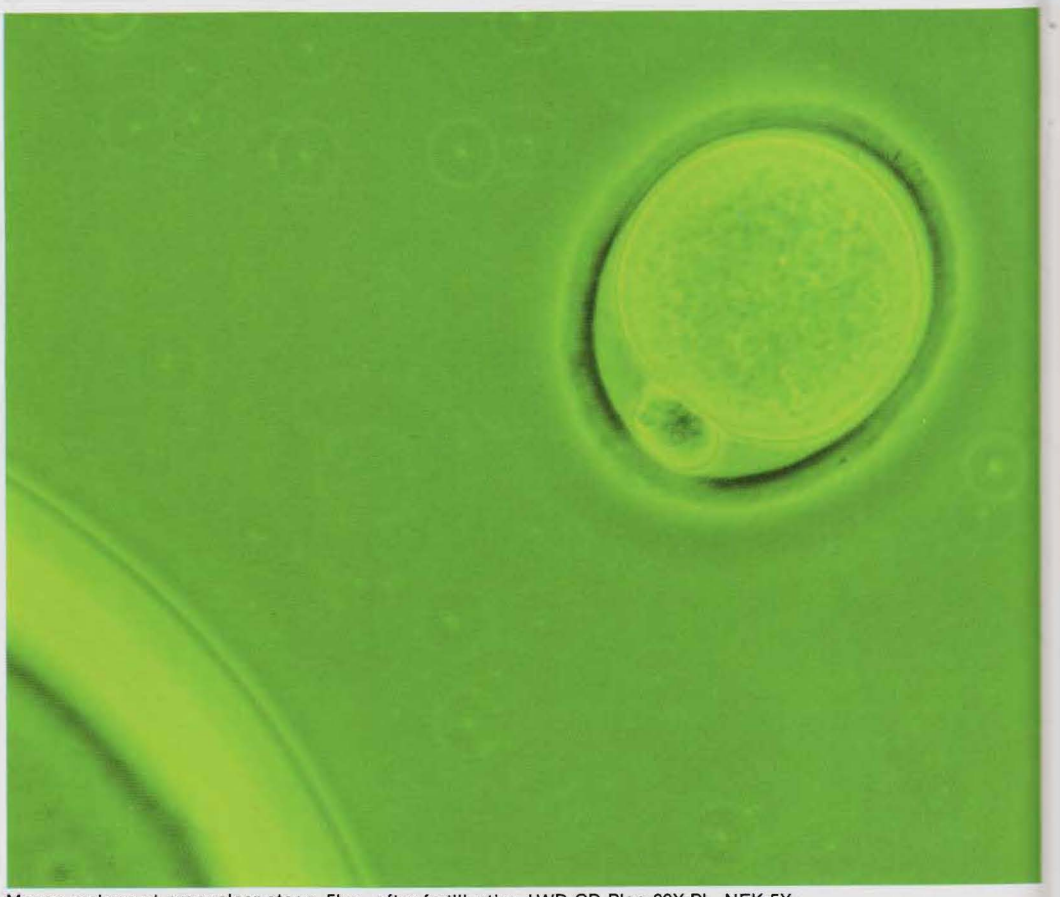
Newly-Developed Objectives
To ensure the utmost optical performance in the IMT-2, Olympus also upgraded its objectives. The result is two new series of objectives—the LWD CD Plan Series and the ULWD CD Plan Series—both designed to deliver superior resolution and flatness in inverted microscope observation, including improved observation of specimens through the thick glass of petri dishes and tissue culture flasks.

Larger, Easier-to-Use Stages
The IMT2-SVR mechanical stage consists of three horizontal sections. The excellent stability of this stage allows smooth and rapid scanning of specimens over its large 50mm × 50mm scanning area.
The plain stage for the IMT-2 is an even larger 200 × 160mm, and allows mounting the IMT2-MVR attachable mechanical stage. The IMT2-MVR is equipped with a universal specimen holder to accommodate a wide range of sizes of slide glasses, petri dishes, flasks, etc. The scanning area of this attachable mechanical stage is 110 × 72mm.

**Photograph is supplied through the courtesy of Dr. Hidemi Sato, Director, Sugashima Marine Biological Laboratory, Nagoya University.*

Phase Contrast Attachment

- The IMT-2 provides both phase contrast condensers and phase contrast objectives as standard accessories for phase contrast observation. This is an especially useful technique for the investigation of transparent specimens, such as the internal structures of unstained living cells.
- Long working distance and ultra long working distance phase contrast condensers are available for extra versatility.
- Both phase contrast condensers are equipped with ring slits for 4X, 10X, 20X and 40X phase contrast objectives. The built-in aperture diaphragm is also designed to allow brightfield observation, with an aperture diaphragm in place.

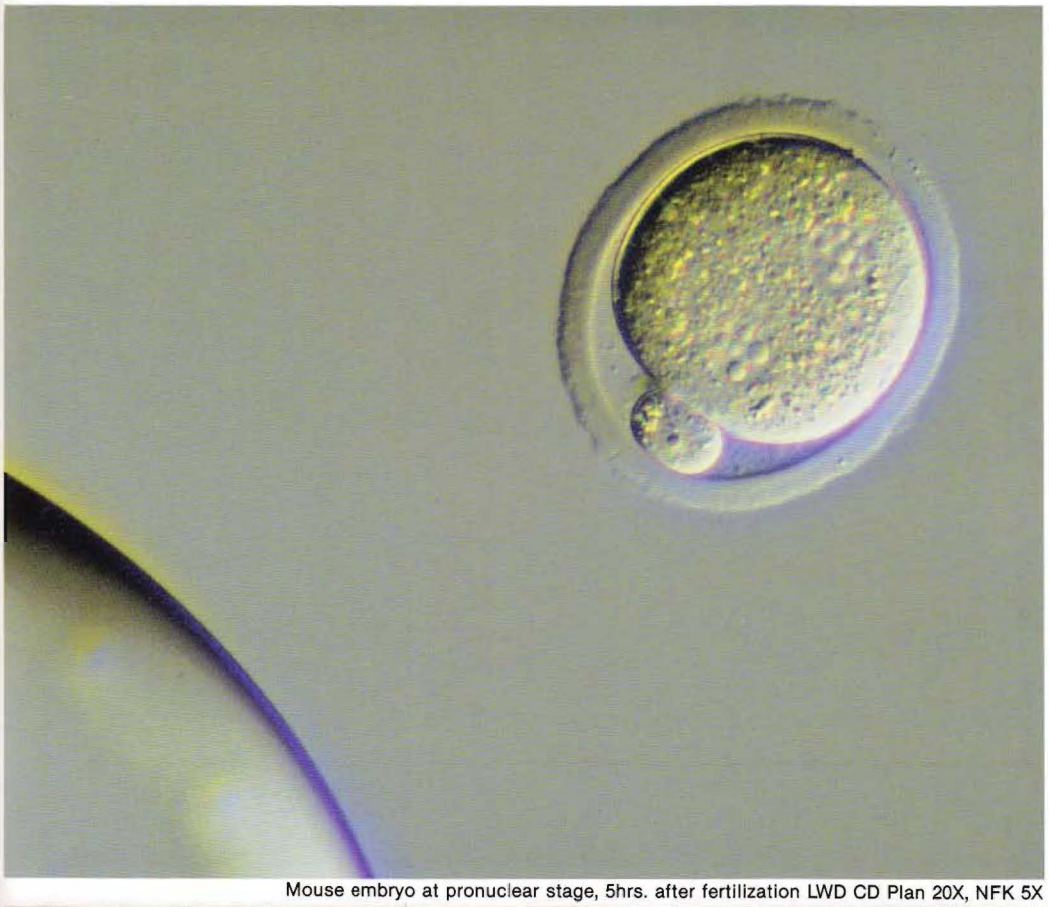


Mouse embryo at pronuclear stage, 5hrs. after fertilization LWD CD Plan 20X-PL, NFK 5X

Optical Data of Objectives and Condensers

Module		N.A.	W.D. (mm)
Objectives	PC S Plan 4X PL	0.13	15.5
	PC S Plan 10X PL	0.30	7.5
	LWD CD Plan 20X PL	0.40	3.0
	LWD CD Plan 40X PL	0.60	2.0
	ULWD CD Plan 20X PL	0.40	10.5
	ULWD CD Plan 40X PL	0.50	7.4
Condensers	LWCD	0.55	21.0
	ULWCD	0.30	55.0

Nomarski Differential Interference Contrast Attachment



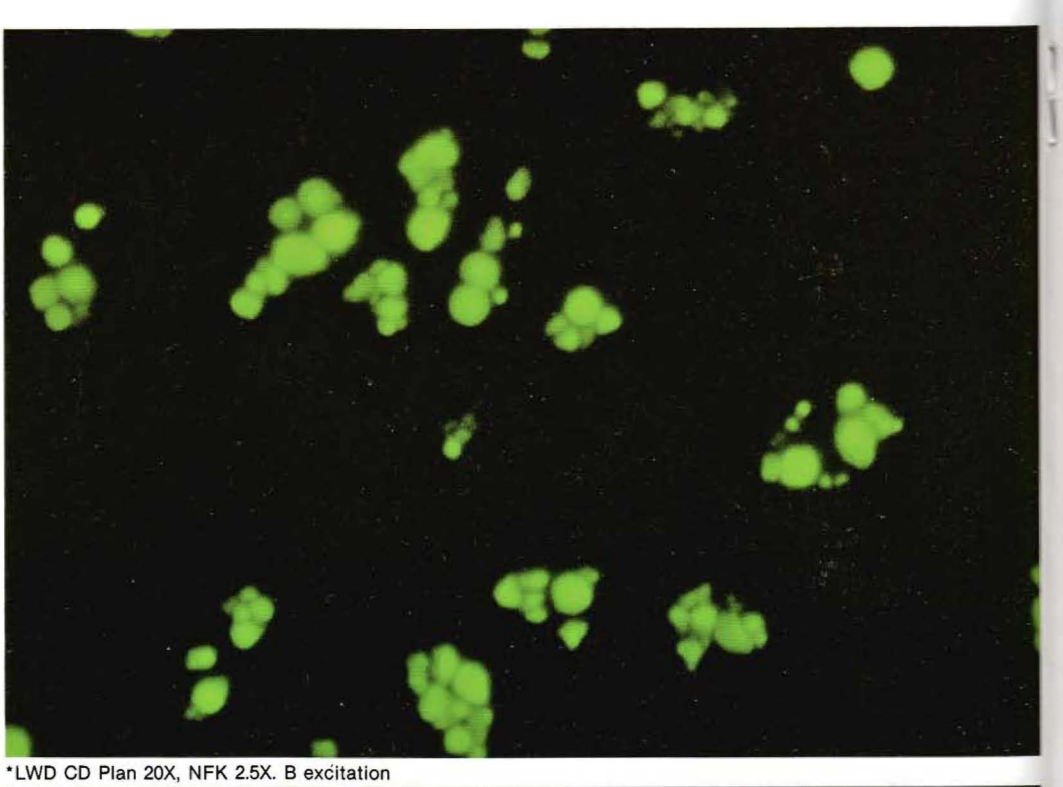
Mouse embryo at pronuclear stage, 5hrs. after fertilization LWD CD Plan 20X, NFK 5X

- For Nomarski differential interference contrast observation with the IMT-2, Olympus offers the IMT2-LWDNC Nomarski condenser and the IMT2-NA Nomarski analyzer as optional accessories. These offer excellent contrast and high detection sensitivity as they work together to produce sharply defined, relief-like images of transparent specimens.
- In addition to 10X, 20X and 40X Nomarski prisms, the multifaceted IMT2-LWDNC condenser features ring slits for 10x and 40x phase contrast objectives. Brightfield observation may also be performed with an aperture diaphragm in place.
- Three objectives are available for Nomarski Differential Interference Contrast: The S Plan 10X, the LWD CD Plan 20X and the LWD CD Plan 40X.
- The prisms of the Nomarski analyzer can also be removed from the optical path, permitting simple polarized light observation.

Module		IMT-2-NIC	
		1	3
Nomarski analyzer	IM2-NA	○	○
Nomarski condenser (N.A.0.55 W.D.21.0)	IM2-LWDNC	○	○
Objective	SPL10X, LWDCDPL20X, LWDCDPL40X	○	○
Phase contrast objective	PCSPL10XPL, LWDCDPL40XPL	○	

Reflected-Light Fluorescence Attachment

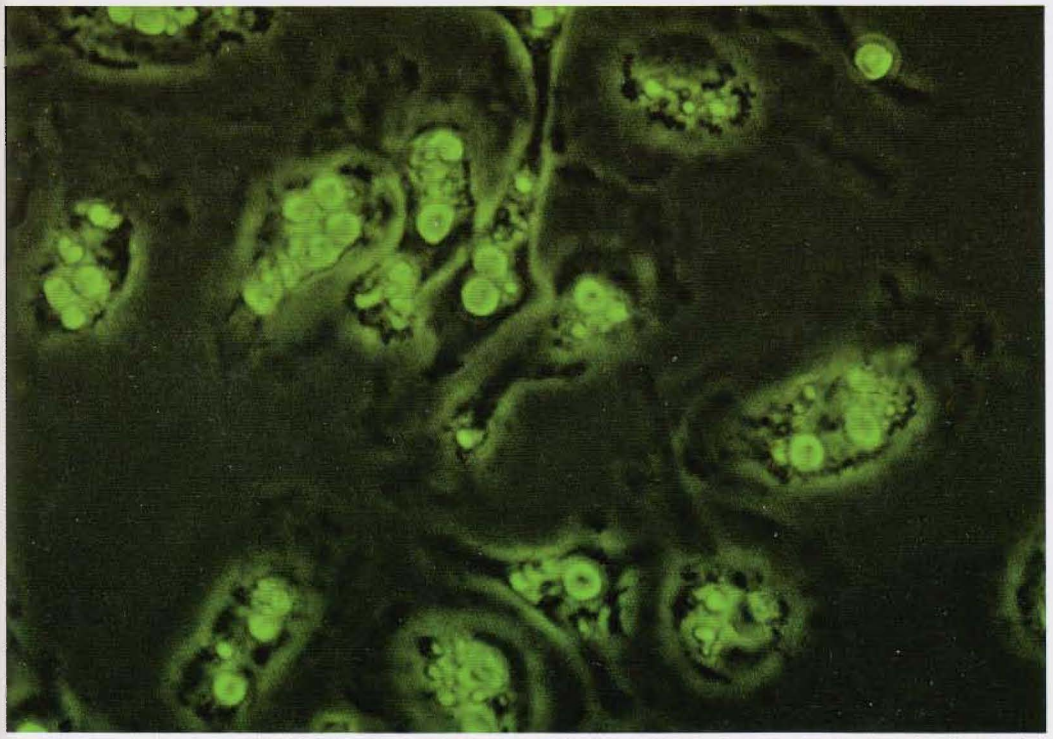
- Four types of cubic dichroic mirror units are available for U, V, B and G excitation, with each unit consisting of an exciter filter, a dichroic mirror and a barrier filter. The U-excitation units are manufactured upon request only.
- Two dichroic mirror units can be attached to the body of the IMT-2 simultaneously. Switchover between the two excitation wavelengths are achieved by a simple one-touch operation.
- Auxiliary exciter filters identical to the ones used in the AH2 series, and auxiliary barrier filters identical to the ones used in the BH2 series, can also be used with the IMT-2.
- The excitation light intensity can be adjusted to either 25% or 100% by means of a built-in ND filter.
- The fluorescence vertical illuminator incorporates a field diaphragm which eliminates stray light that can cause flares, ensuring clearer, and sharper images.
- Image contrast and the amount of excitation light may be finely adjusted by means of a built-in aperture diaphragm.



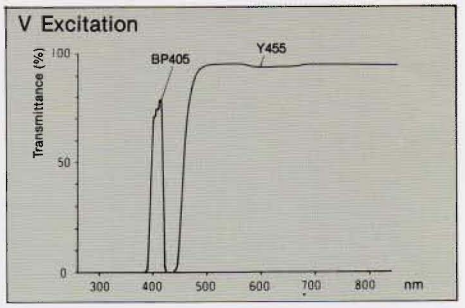
*LWD CD Plan 20X, NFK 2.5X. B excitation

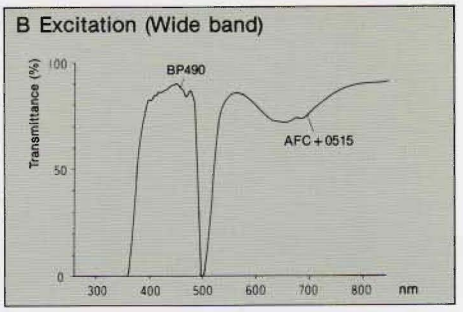
*Phagocytosis of fluorescent particles by peritoneal macrophages as revealed under a fluorescence microscope.

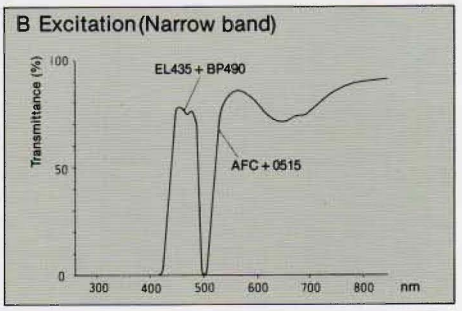
*Photographs were supplied through the courtesy of Hiroshi Maeda Ph.D., M.D., and Tatsuya Oda Ph.D., Department of Microbiology, Kumamoto University Medical School, Kumamoto, Japan.

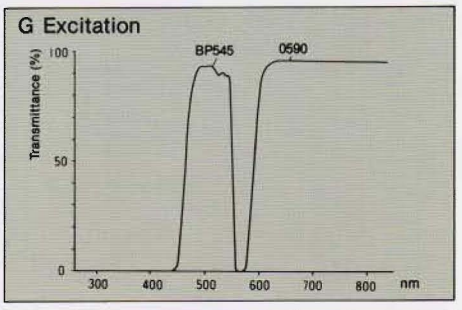


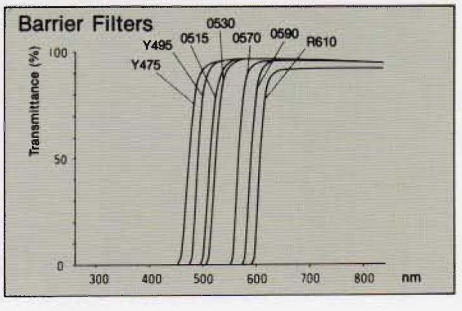
*LWD CD Plan 20X, NFK 2.5X. B excitation, with simultaneous phase contrast illumination











IMT2-RFL Standard Outfits

Module			IMT2-RFL		
			-1	-2	-3
Vertical fluorescence illuminator		IMT2-RFA	○	○	○
Fluorescence lamp housing		BH2-LSRF	○	○	
Mercury burner (2 pcs.)		HBO100W/2	○	○	
Power supply unit		BH2-RFL-T2	○	○	
Halogen lamp housing		BH2-LSRH-2			○
Halogen bulb (2 pcs.)		JC12V50WHAL			○
Transformer		TGH			○
Power cord		UYCP	○	○	○
Centering screen		BH2-SGRF	○	○	
Dichroic mirror unit	(for B excitation)	IMT2-DMB	○	○	○
	(for G excitation)	IMT2-DMG	○	○	
	(for V excitation)	IMT2-DMV	○		
Supplementary exciter filter	(for B excitation)	20EL435-W22, 20EY455-W22	○	○	○
	(for G excitation)	20EY475-W22, 20EO515-W22, 20EO530-W22	○	○	
Supplementary barrier filter	(for V excitation)	20Y-475-W, 20Y-495-W, 20O-515-W	○		
	(for B excitation)	20B-460-W, 20O-530-W, 20O-570-W, 20O-590-W	○	○	○
	(for G excitation)	20R-610-W	○	○	
Objective		SPL10X, LWDCDPL20X, LWDCDPL40X	○	○	○

Optional Accessories

Dichroic mirror unit IMT2-DMU (for U excitation)
Supplementary barrier filter 20L-435-W, 20Y-455-W (for U excitation) 20G-520-W (for B excitation)

Photo & Cinemicrographic Equipment and Other Accessories

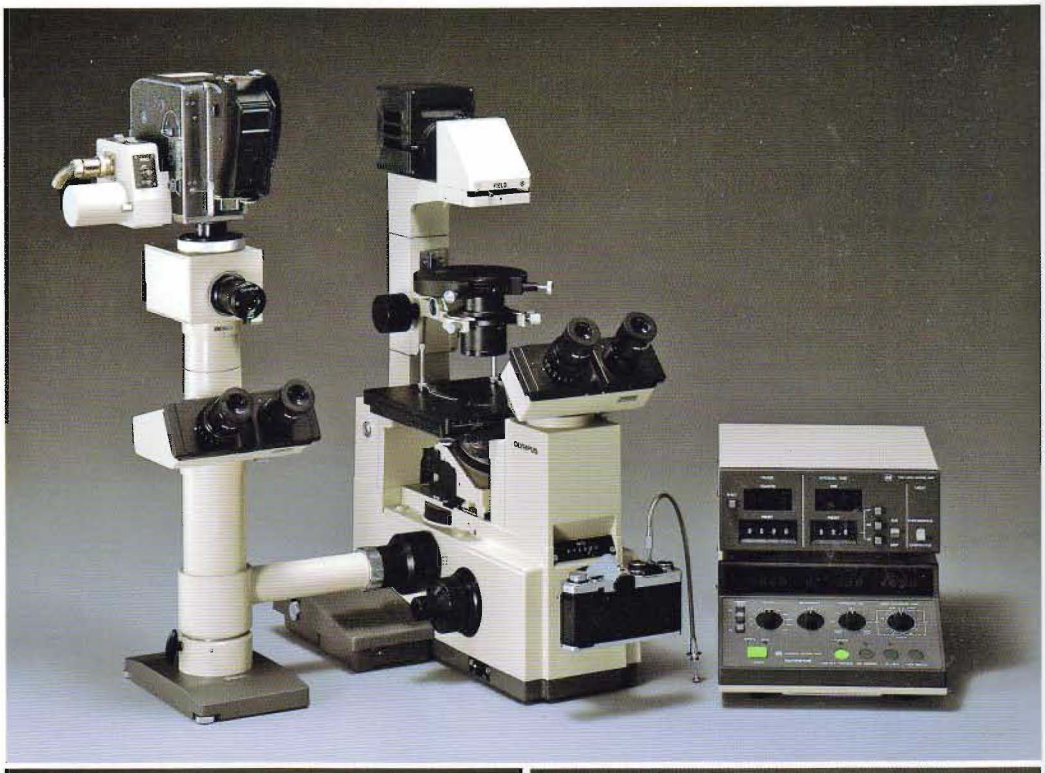
Improved Multi-Tube System
In addition to conventional photomicrographic trinocular observation tube attachment, the IMT-2 features a new multi-tube system in which all photomicrographic equipment is mounted separately on the side of the microscope body. This design effectively eliminates any interference with specimen observation and manipulation. Although the multi-tube system is usually used in conjunction with a photo-tube, it can also be used with the BH2-TR30 trinocular observation tube to allow simultaneous observation by two persons.

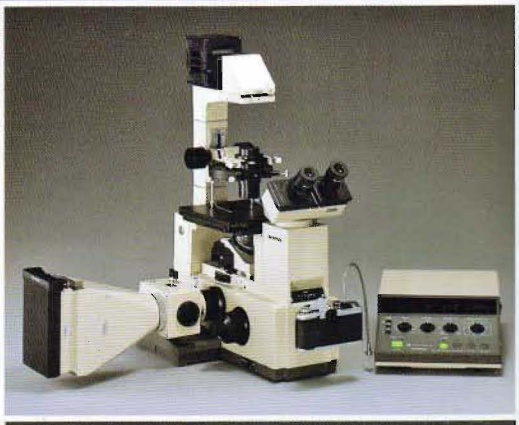
IMT2-MTU Standard Outfits

Module		IMT-2-MTU
Optical relay unit	IMT2-MTU-B	○
Photo tube	IMT2-PT	○
Photo eyepiece	NFK3.3XLD	○

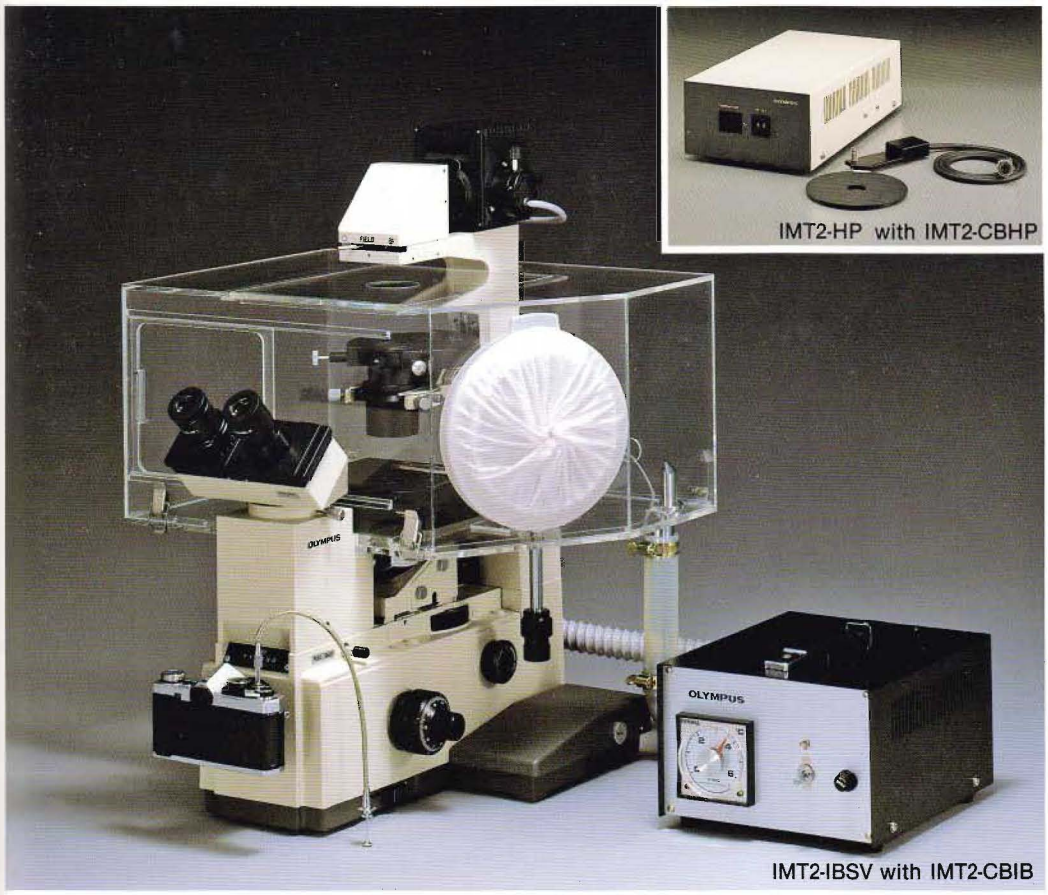
Fully Automated Photomicrographic Equipment
The IMT-2 accepts both the fully automatic Model PM-10AD and the Model PM-10ADS (with spot-metering capability) photomicrographic equipment. It also accepts large-format cameras (utilizing 4″ × 5″ sheet film or 3-1/3″ × 4-1/4″ Polaroid® film), as well as a 16mm cine camera. 35mm and cine cameras may be used in combination with the Model PM-IV time-lapse control unit for time-lapse photography.

The OM Series SLR Camera
In addition to using the IMT-2 multi-tube system, Olympus OM Series SLR camera backs can be attached directly to the front section of the microscope body. The IMT-2 light path selector can then be used to direct light towards either the front-mounted camera or a camera mounted on the multi-tube system. The built-in photo framing mask moves into place in the visual field in either of these modes. The photographic eyepiece magnification of an OM Series SLR camera is 2.5X.





® Polaroid is a trademark registered by the Polaroid Corporation, Cambridge, Mass, USA.



IMT2-IBSV with IMT2-CBIB

IMT2-HP with IMT2-CBHP

IMT2-IBSV Incubator

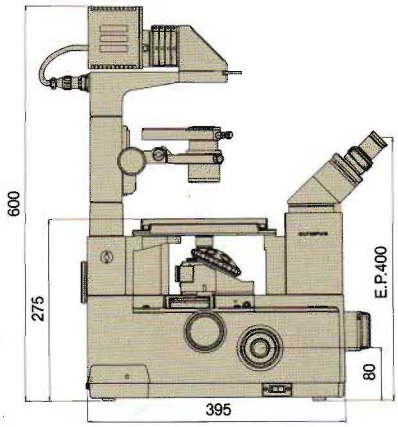
The Model IMT2-IBSV incubator works with the IMT2-CBIB air control unit or the IMT2-HP heat plate to keep cell and tissue cultures at constant temperatures. Made of transparent acryl resin and attached directly to the cross movement stage, the incubator does not interfere with objective magnification changes, with Nomarski differential interference contrast or with reflected-light fluorescence observation.

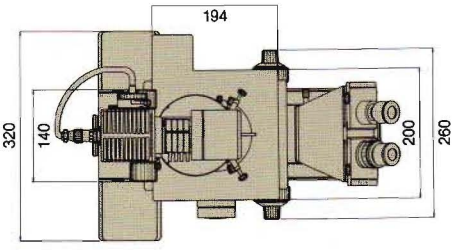
IMT2-HP Heat Plate

The IMT2-HP heat plate can be attached to the IMT-2 by replacing the stage plate of the plain or mechanical stages. And projection on above the stage is kept to a minimum, thus no working space is lost. A desirable temperature level can then be selected and maintained by directly warming the plate surface with control unit IMT2-CBHP.

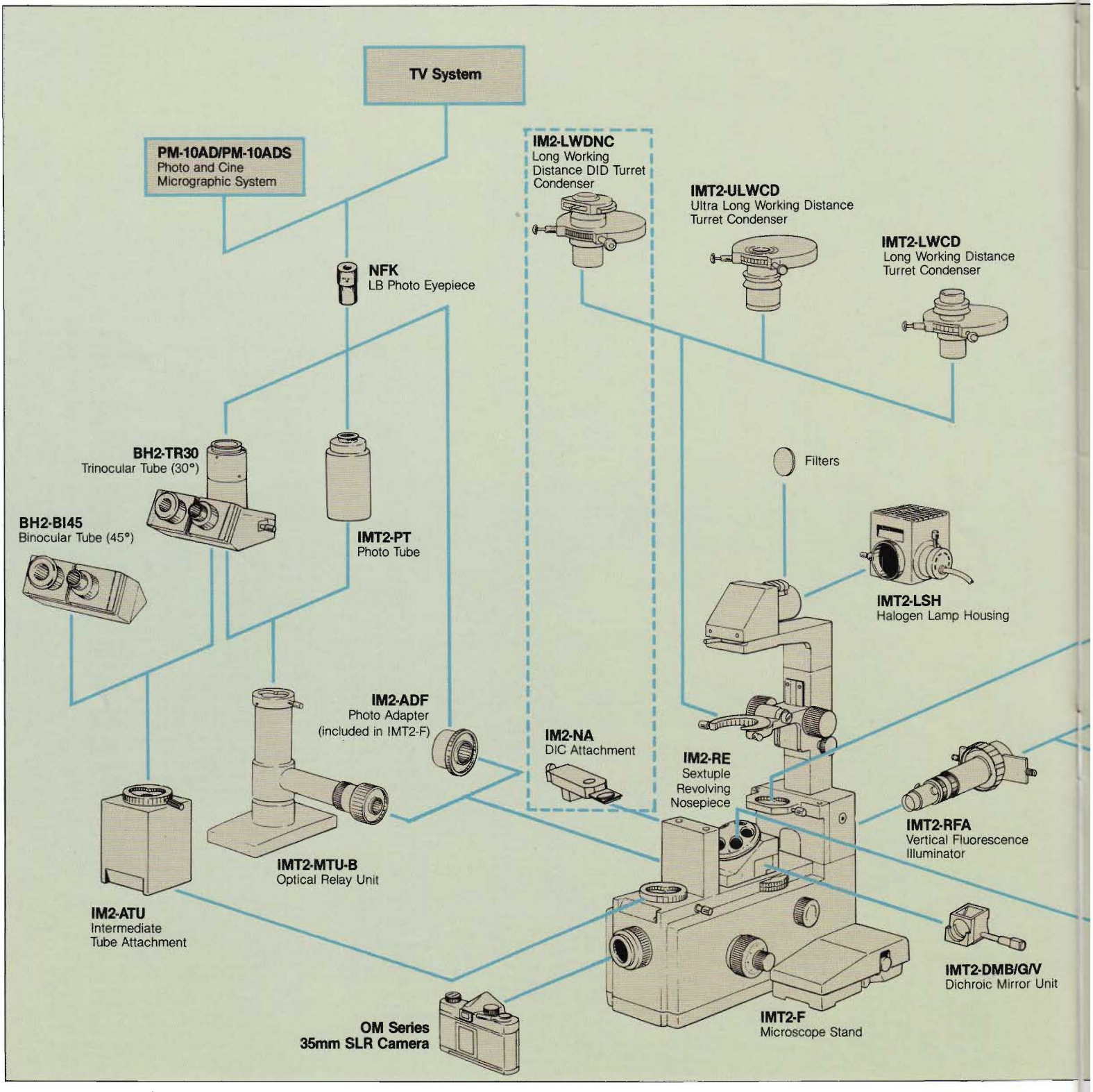
Specifications

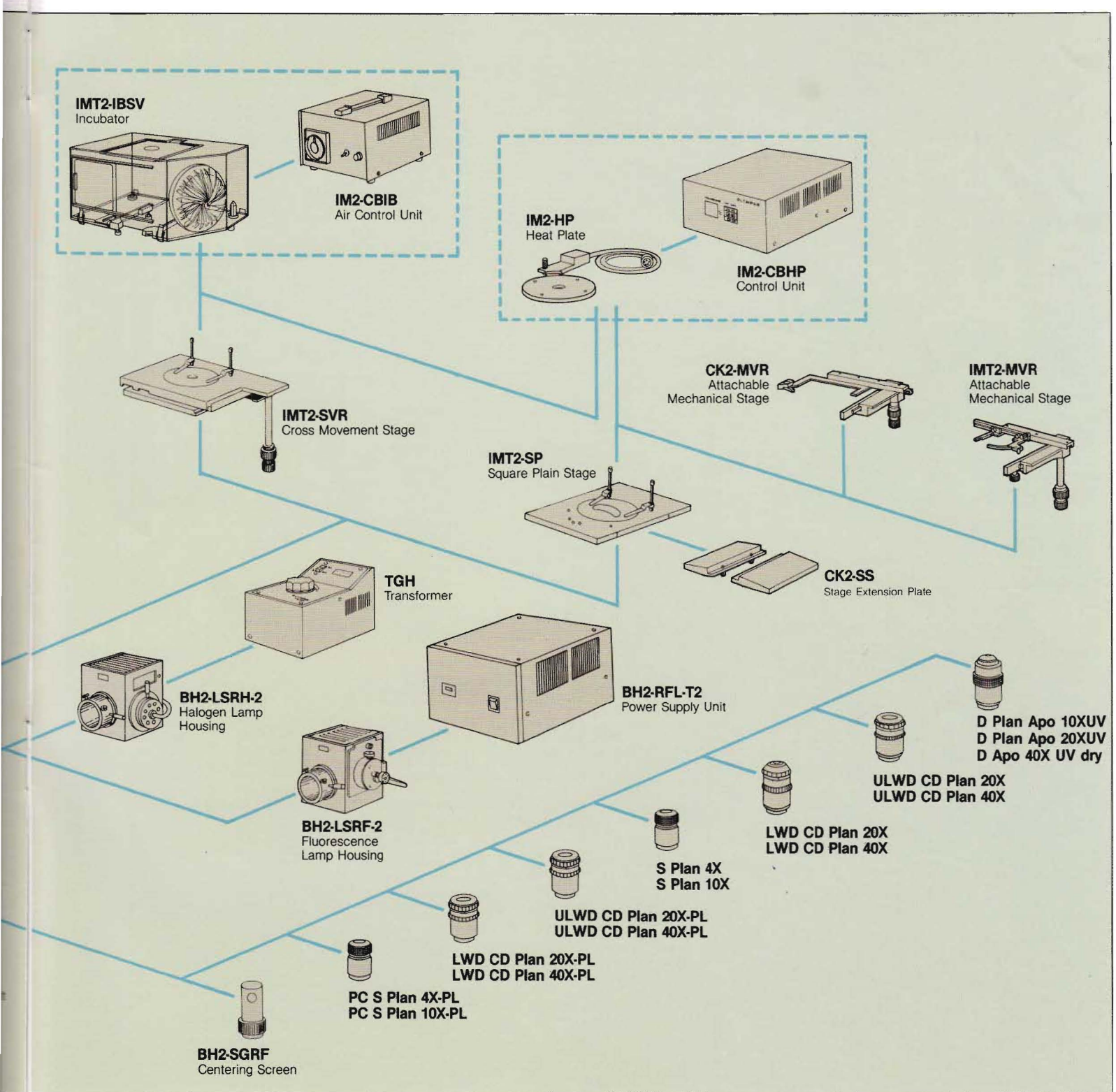
Microscope Stand	Focus adjustment by vertical movement of the nosepiece (stage remaining in a fixed position). Coaxial coarse and fine adjustment knobs, fine focusing graduated in increments of 2 microns. Built-in 1X and 1.5X magnification changer, and centering telescope. 3-step light path selector linked with photo frame reticles. Multi-tube system for photomicrographic equipment. Accepts any OM Series SLR Camera.	
Illumination System	12V50W halogen bulb. Flip-up and swing-out condenser holder. Provided with 4 swing-out filter holders.	
Observation Tube	Binocular, inclined 45°. Interpupillary distance adjustment from 53mm to 75mm. Constant tube length adjustment.	
Stage	IMT2-SVR Cross Movement Stage	200×200mm, traversing 50×50mm. Stage insert plates 110/20mmϕ and 110/50mmϕ.
	IMT2-SP Plain Stage	160×220mm, extension plates provided.
	IMT2-MVR Attachable Mechanical Stage	Traversing 110×72mm, with universal specimen holder.
Nosepiece	Sextuple, detachable	
Phase Contrast Condenser	IMT2-LWCD Long Working Distance Condenser	N.A. 0.55, W.D. 21mm.
	IMT2-ULWCD Ultra Long Working Distance Condenser	N.A. 0.30, W.D. 55mm.
Dimensions	320mm(W)×395mm(D)×600mm(H). Stage height 275mm, eyepoint 400mm.	
Weight	Approx. 20.5kg with standard equipment.	



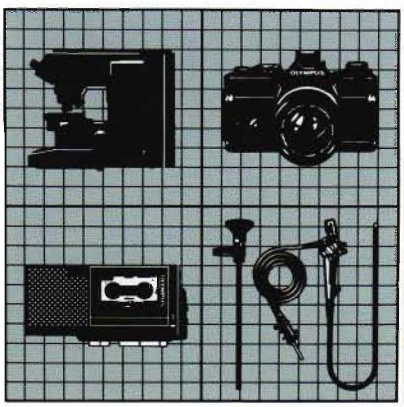


IMT-2 System Diagram




IMT2-IBSV
Incubator
IM2-CBIB
Air Control Unit
IM2-HP
Heat Plate
IM2-CBHP
Control Unit
IMT2-SVR
Cross Movement Stage
CK2-MVR
Attachable
Mechanical Stage
IMT2-MVR
Attachable
Mechanical Stage
IMT2-SP
Square Plain Stage
CK2-SS
Stage Extension Plate
TGH
Transformer
BH2-LSRH-2
Halogen Lamp
Housing
BH2-RFL-T2
Power Supply Unit
D Plan Apo 10XUV
D Plan Apo 20XUV
D Apo 40X UV dry
ULWD CD Plan 20X
ULWD CD Plan 40X
LWD CD Plan 20X
LWD CD Plan 40X
BH2-LSRF-2
Fluorescence
Lamp Housing
S Plan 4X
S Plan 10X
ULWD CD Plan 20X-PL
ULWD CD Plan 40X-PL
LWD CD Plan 20X-PL
LWD CD Plan 40X-PL
PC S Plan 4X-PL
PC S Plan 10X-PL
BH2-SGRF
Centering Screen

It takes a tremendous amount of skills to build a reputation as an innovator among industries as diverse as communications, medicine, information and science. Yet that's exactly what Olympus has accomplished since its inception in 1919. Our varied product list is filled with technological achievements and resounding successes. Not only in cameras, but also in a wide range of Microscopes. Fiberscopes. Microcassette recorders. Clinical analysis equipment. Video equipment. And more breakthroughs are on the way, particularly in the exciting new field of opto-electronics, which combines the resources of optics, electronics and precision engineering. At Olympus, we've earned our reputation with an unfailing commitment to heavy research and development. With an uncompromising dedication to quality, precision and accuracy. And with a stubborn unwillingness to follow the crowd. That's why we'll continue to lead the way with original products that surprise you, assist you, involve you, and fulfill you.



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