Nikon

ECLIPSE TE2000

CFI60

Bringing inverted micr

Nikon has re-invented the function and re-defined the performance of research inverted microscopy with the introduction of the new TE2000, a microscope ahead of its time. Compatible for all advanced live cell applications, this advanced inverted research station was conceived to provide the highest level of optical imaging for today's competitive research scenes.

It is an inverted microscope to take full advantage of the infinity optical path, which allows multiple optical equipment to be used separately or simultaneously, and adds the ability to provide multiple input sources as well as output functions.

The TE2000 is available in three models, all featuring an exclusive multi-port design. Coupled with an extendible main body structure, all models can be flexibly configured to meet all present and future progressively advanced and diversified applications.

TE2000-S

TE2000-U

oscopy to new heights

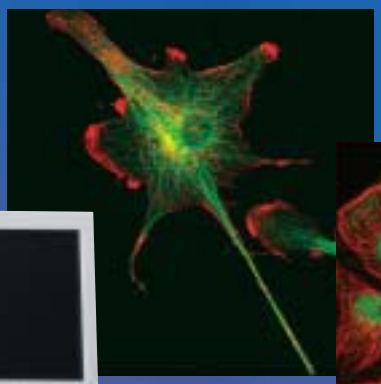
- Multi-port design.
- Super-nanoprecision Z-axis control (TE2000-E model).
- Retrofitable motorized options.
- Extendible configuration permits the addition of an optional light source and other attachments within the infinity path.
- Noise Terminator mechanism that actively blocks stray light.
- Designed and constructed so that ambient temperature fluctuations do not affect the microscope's precision.
- High resistance to vibrations.
- User-friendly ergonomic design.
- Exclusive Nikon CFI60 optical system.

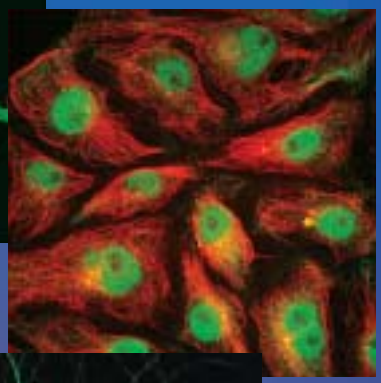
To meet research needs of all kinds, the TE2000 is available in three configurations. The TE2000-E model incorporates a high precision motorized-focus and vibration-free optical path changeover mechanism that facilitates image capture in 3D. The TE2000-U model is a universal model that comes standard with four output ports. And the TE2000-S model is a basic model that can be dedicated to specific tasks.

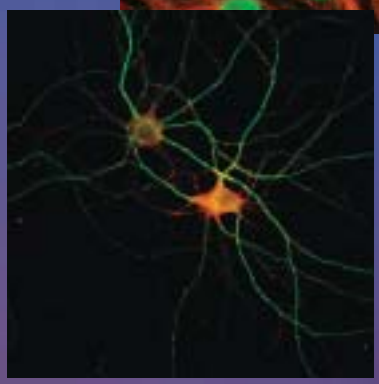
TE2000-E

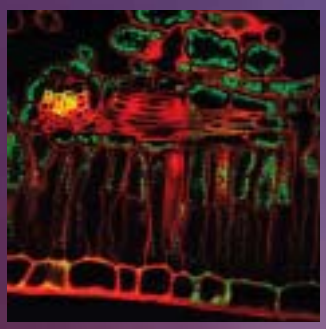
Support tools for today and tomorro

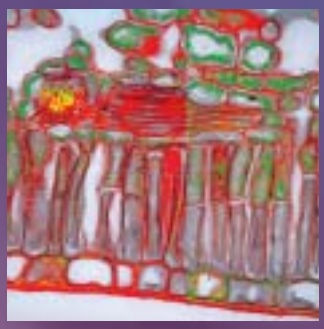
Imaging research techniques are undergoing sophistication and diversification leading to experimentation that was not previously possible.
The TE2000 is configurable to let the investigator optimize and quantitate at the highest levels of today's research techniques.





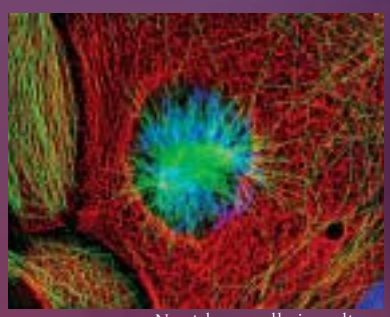






Confocal applications

With the TE2000-E, the motorized focus is precisely controlled by high-precision Z-axis readout, making it possible to capture images in 3D with high resolution. When the microscope is configured with Nikon's C1 confocal system, it is possible to perform basic microscopy operations, e.g. switching the objectives, from the GUI on the C1 system. Changeover from confocal observation to epi-fluorescence or the reverse can be carried out with a mouse click. Thanks to the TE2000's "stratum structure" and multi-port design, a confocal system can be mounted simultaneously with another attachment such as a digital camera.



Neut lung cells in culture

Fluorescent time-lapse recording

TE2000 design is rigid and highly resistant to thermally induced deformations, providing stability and accuracy for imaging even during long-term time-lapse recordings. This new design is ideal for gene detection, (M-FISH) dynamic time-lapse cellular events, FRET studies and other advanced fluorescence applications.

w's advanced research techniques

TIRF (Total Internal Reflection Fluorescence)

The benefit of TIRF microscopy to provide extremely high S/N images of low intensity fluorescing molecules is greatly enhanced by Nikon's exclusive stray-light "Noise Terminator" mechanism which thoroughly eliminates the possibility of incident stray light. The TE2000's extendible "stratum structure" enables simultaneous mounting of both TIRF and epi-fluorescence illumination systems and easy switching between the two.

Image under TIRF observation

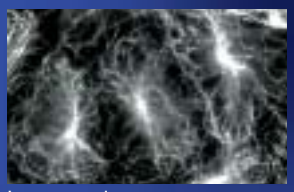
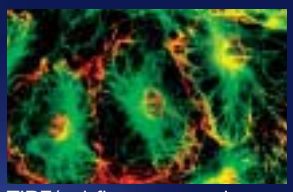


Image under epi-fluorescence observation



TIRF/epi-fluorescence image overlay (pseudo-color)

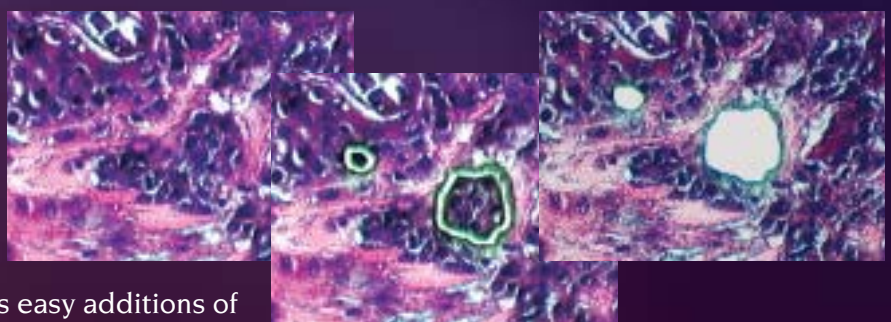
Configured with epi-fluorescence attachment

IVF (In Vitro Fertilization)

An optional motorized nosepiece can be retrofitted onto all models of the TE2000, providing smooth switching of objectives when the magnification needs to be changed. Also the E and U models come standard with a magnification changer available to all light ports, providing 1.5X magnification.

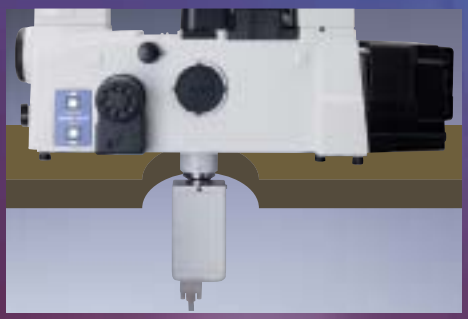
Laser micro-dissection and other laser applications

The TE2000 adopts an optical system that delivers a wide wavelength range, high transmission ratio for applications that use lasers, while its extendible "stratum structure" configuration permits easy additions of laser light sources without modifying the microscope.



New age flexibility provides high performan

All three models of the TE2000 feature a multi-port design and extendible configuration to enable optical input/output of light and images from a wide variety of illumination and detector equipment for microscopy using advanced techniques.



The TE2000-E model comes with a bottom port. High-quality primary images from the objective can be directly formed on the CCD surface without reflections.

Multi-port design

The E model has five ports, the U model four ports, both including a right-side port, whereas the S type has two ports as standard. Depending on the research techniques you are using, you can easily integrate various pieces of imaging equipment–CCTV cameras, high-sensitivity detectors, digital still cameras and SLRs–in your desired combination and placement. In addition, the imaging ports have the following features

- Because the distance between the image plane of the right and left ports and the microscope body has been extended an additional 37mm as compared with previous models, it is possible to insert filters and other accessories.
- The optical path changing prism can be optionally changed to one with a different light distribution ratio,* allowing 100% of the light to be allocated to each imaging port.

*For specific ratios, see the spec. section on page 19.

- The type of camera mount on the front port (E and U models) can also be selected from C, F or standard SLR-film mount choices.

Distance of the image plane has been extended 37mm compared with previous Nikon models.

Front port adapters: from left, C-mount, F-mount, SLR-mount

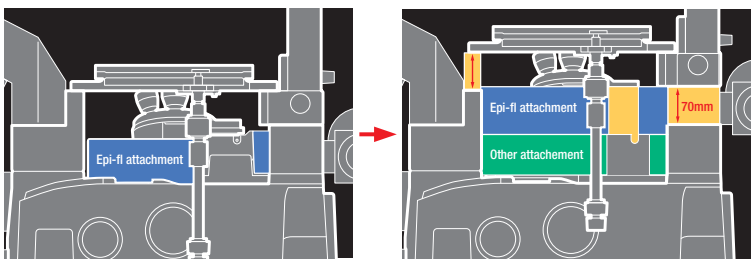
ce

Optional stage risers create space for other attachments.

Extendible optical configuration

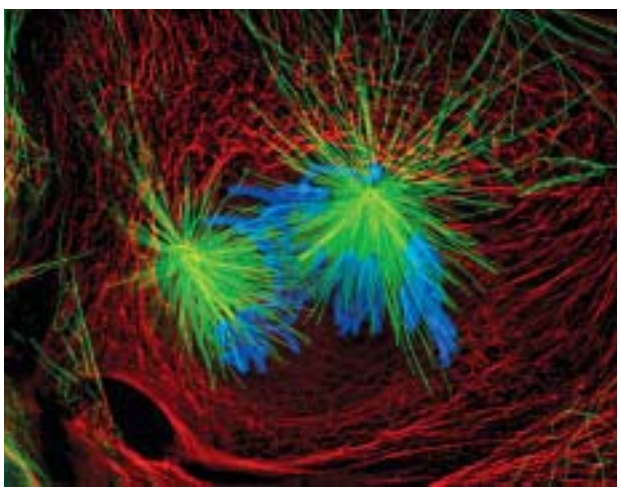
Taking advantage of infinity optics, the TE2000's extendible design allows the distance between the objective and tube lenses to be extended up to 80mm (max.). A first for inverted microscopes, this feature enables the researcher to add optional attachments without modifying the microscope. For example, by using optional stage risers* you can add a laser light source that is required for laser micro-dissection, FRAP, ablation, laser traps or Confocal imaging, without affecting the performance or stability for standard epi-fluorescence or DIC techniques. In addition, accessories for TIRF illumination or FRET detection or non-descanned detectors can be utilized in the extended optical configuration. A separate Piezo Microscope Objective NanoPositioner PZT is available to provide high-resolution deconvolution and 3D imaging, with Confocal or standard epi-fluorescence attachments.

*Use of stage risers can increase the distance an additional 57mm.



Standard position

Stage risers



Neut lung cells in culture

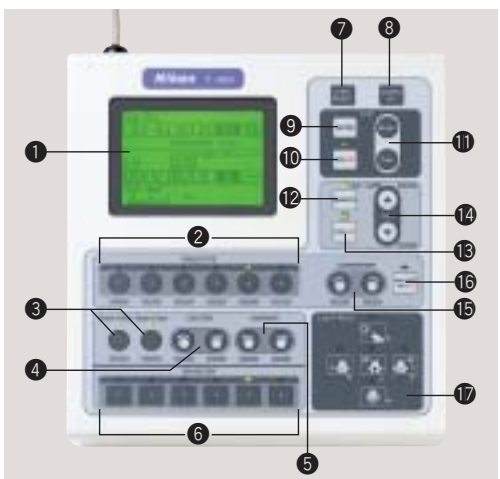
Intelligent control

Motorized options can be retrofitted to all TE2000 series models and freely controlled by the operator according to the selected research method. In particular, the TE2000-E model comes standard with ultra-precision motorized focus and light-port changeover, making it ideal for image capture in 3D.

Communication hub controller

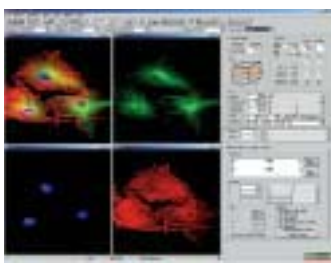
Motorized-control adaptability

All TE2000 models are designed to accept retrofitable motorized options in major sections of the microscope, which allows the researcher to not only choose the desired combinations via the dedicated communications hub controller to suit the required research method, but also control the microscope from external PCs. Sections to which motorized options can be retrofitted are: nosepiece (6-place DIC type), system condenser, epi-fluorescence filter cube switching, epi-fluorescence shutter, DIC analyzer, excitation filter wheel, and barrier filter wheel.



Control Pad

1. LCD Display
2. Objectives Changeover
3. Shutter Open/Close
4. Excitation Filter Changeover
5. Barrier Filter Changeover
6. Fluorescence Filter Block Changeover
7. Z-axis Reset
8. External signal output
9. LCD Operation Mode Changeover
10. LCD Backlight On/Off
11. LCD Brightness Control
12. Diascopic Lamp Control by Remote Pad
13. Diascopic Lamp On/Off
14. Diascopic Lamp Brightness Control
15. Condenser Cassette Changeover
16. Analyzer In/Out
17. Light Path Changing Prism Changeover



When the TE2000 is used in conjunction with the C1 confocal microscope system, the researcher can control the shutter, objective changeover, focus, and other operations through the C1's control software, while synchronizing these operations with the C1.

High-precision motorized focus

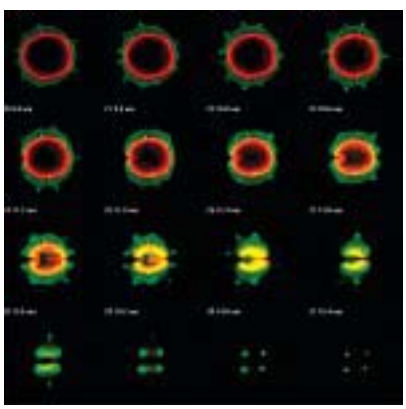
The model TE2000-E features a motorized focus that is precisely controlled by high-precision Z-axis readout. This feature is perfect for research that requires comprehensive 3D information about the specimen.

Greater Z-axis precision (TE2000-E)

The E model provides a minimum Z-axis linear encoded readout of 0.05µm when operated from the connected PC and comes standard with motorized-focus and motorized 5-way light port changeover, making it perfect for advanced research that requires image capture in 3D including confocal microscopy and deconvolution processing. Moreover, readout precision is adjustable.

Auto Descending Nosepiece

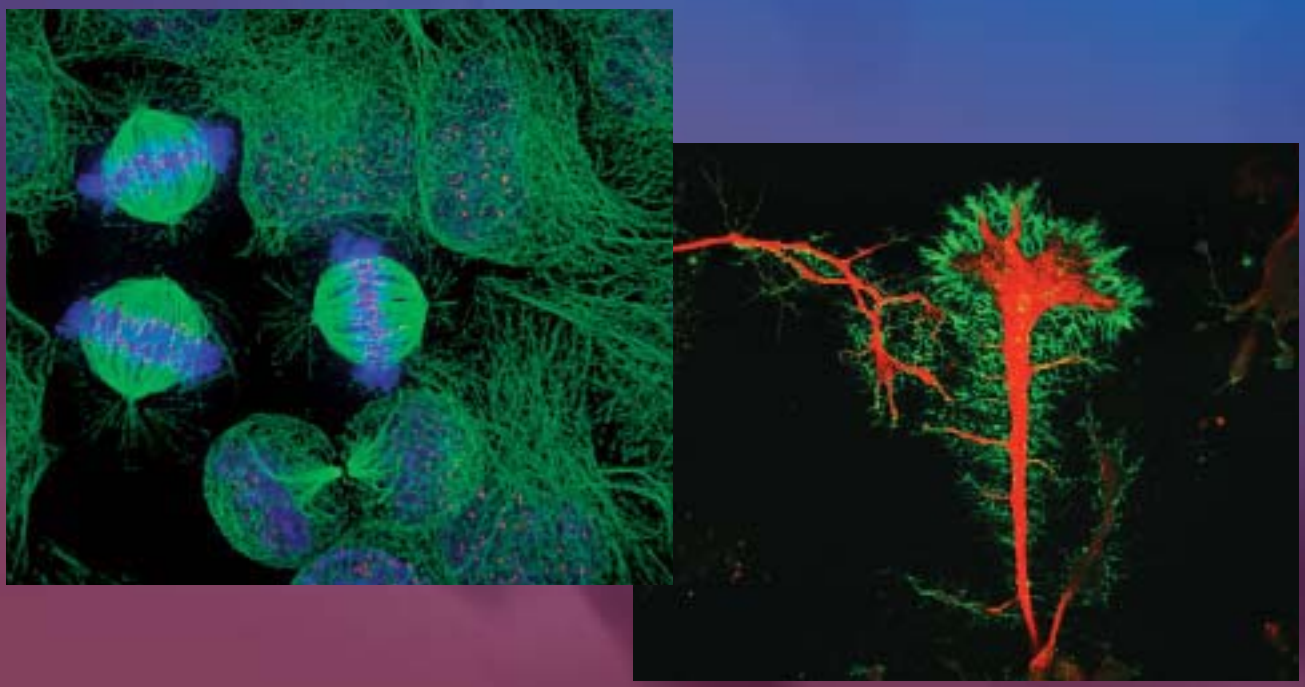
The TE2000-E is provided with a mechanism, in which, when changing the objective magnification the nosepiece automatically descends and returns to the original height after the rotation is finished. This design permits the researcher to rotate the nosepiece easily and safely to change the objective magnification.
It is particularly handy when observing the development of a live specimen being cultivated in a chamber.
The nosepiece can also be rapidly moved up and down with the touch of a button. This function works especially well when using oil immersion objectives.



TE2000-E configured with C1 confocal system

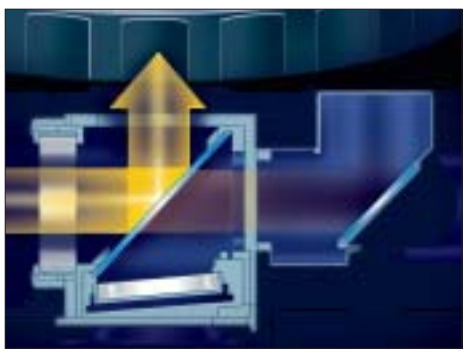
Clear, high-contrast fluorescence images

In a unique design, stray light is actively blocked to obtain high contrast and greater S/N ratio during fluorescence microscopy.



Unprecedented signal to noise ratio by eliminating stray light

Nikon has incorporated a three-step process to thoroughly eliminate the possibility of residual stray light that could occur in the microscope's fluorescence optical path, vastly improving the optical S/N. The new Noise Terminator mechanism directs deviated stray light out of the objective light collection path. This results in images of high contrast and unparalleled S/N ratio during fluorescence observation using advanced techniques such as evanescence wave microscopy (TIRF) increasing the contrast and extending the detection level limit.



Nikon's proprietary Noise Terminator mechanism

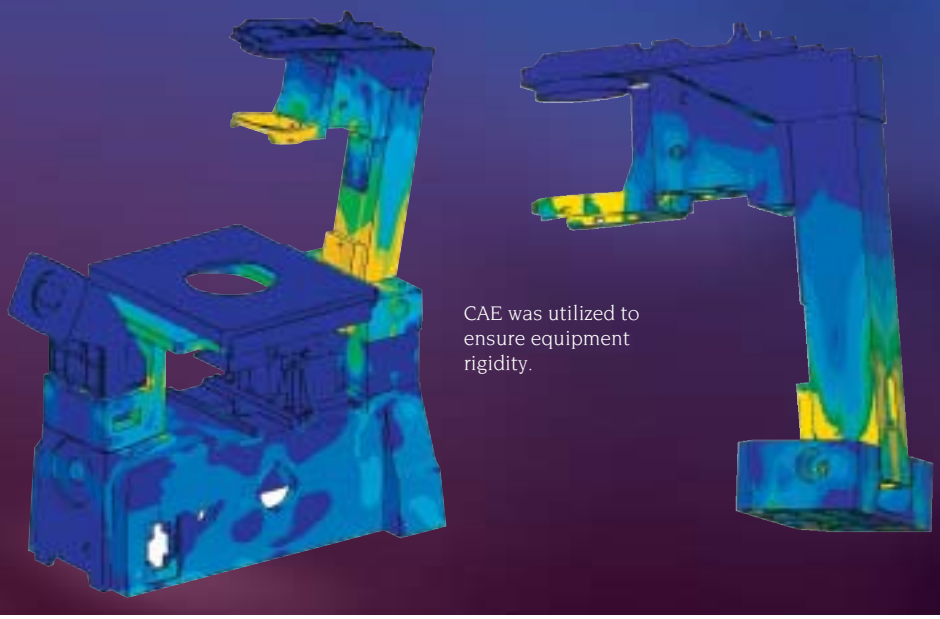
CFI60 optical system

The TE2000 adopts CFI60 infinity optics, known for crisp, clear images at any magnification, while providing higher N.A.'s and longer working distances. The 200mm tube lens is the ideal focal length allowing off-axis light rays to achieve smaller angles of incidence; especially important for reducing aberrations when phase rings, DIC prisms or dichroic mirrors are introduced into the optical path.

Innovations in design for today's research requirements

Stability for greater precision

To achieve stability that supports greater precision, Nikon implemented CAE analysis and adopted a new high-strength alloy material. The use of the M-45 alloy in the microscope base doubled the rigidity compared with previous models. The precision of the focusing movement was also improved through computer aided design simulations.



CAE was utilized to ensure equipment rigidity.

Thermal stability countermeasures

Thermal stability is as important as rigid construction. Nikon produced a main body structure in which minor ambient temperature fluctuations do not adversely affect the image to be captured. This design is particularly useful for research that extends over a long period of time such as time-lapse recording.

User-friendly ergonomic design

Nikon has instituted numerous innovations to provide operating functions in which the operator can use the microscope comfortably without strain for many hours.

Main controls are concentrated in the front, close to the operator.

- Frequently used buttons and controls are all located at the front and within easy reach. The TE2000-E comes with a compact external fine focusing unit that can be placed within easy reach anywhere on the desktop.
- The nosepiece is inclined to the left, making it easy to read the magnification and adjust the correction ring.
- The low-profile stage facilitates handling of specimens.
- The 25˚-inclination eyepiece tube minimizes fatigue during long hours of observation, while its Y-shaped design permits easy viewing of the specimen area on the stage.
- An ergonomic tilting eyepiece tube is optionally available. Furnished with a built-in Bertrand lens, the inclination angle is adjustable from 15˚ to 45˚ for viewing in a relaxed and comfortable posture.
- Optimal eyepiece height can be achieved by using optional eye-level risers. Each riser has a thickness of 25mm and up to two risers can be installed at a time. (The eye-level riser cannot be used together with a stage riser)

External fine focusing unit

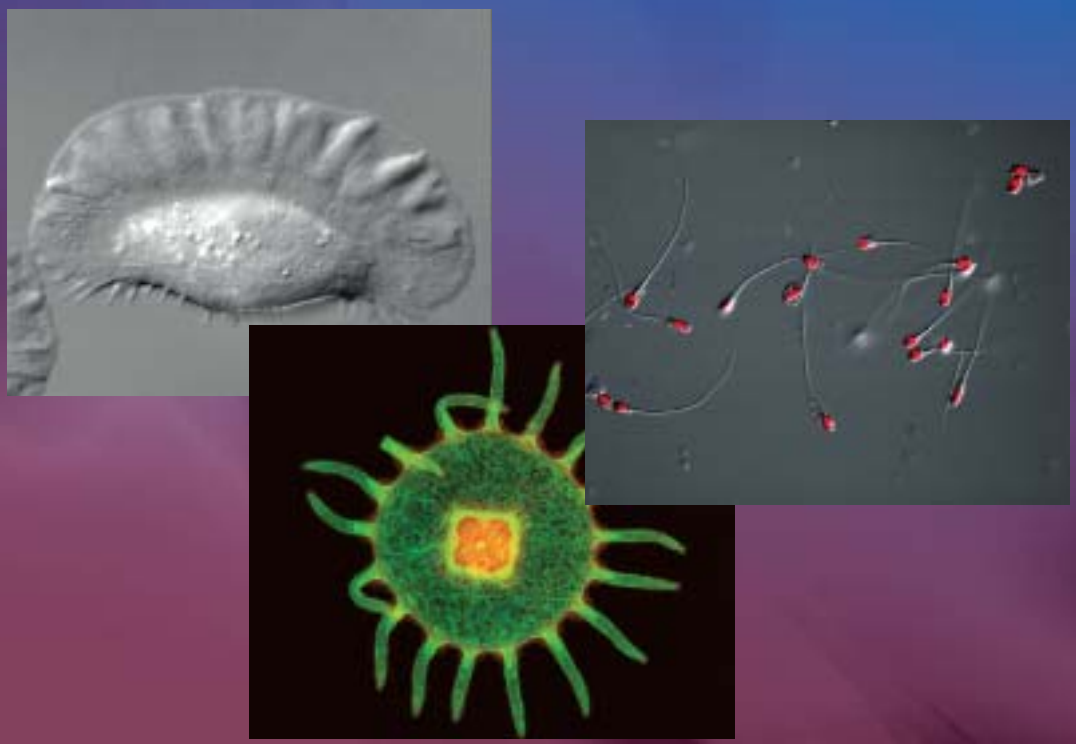
Nosepiece is inclined to the left for easy handling.

Ergonomic tube

Eye-level riser

Diversity in observation techniques

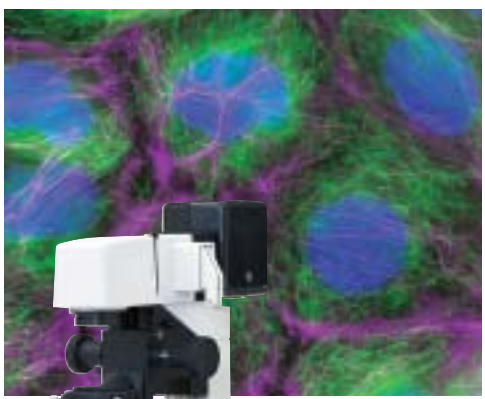
Whatever technique you use, the TE2000 delivers images of the highest quality that will make your research fruitful.



Epi-fluorescence

This technique has become indispensable for the bio-science researcher, especially in live cell microscopy involving fluorescent proteins. Nikon's exclusive Noise Terminator mechanism thoroughly eliminates the possibility of stray light to produce images of greater S/N ratio when observing weakly fluorescing specimens especially in dynamic live cell imaging experiments. The turret-type filter changer holds up to six filter cubes. Manual or motorized filter changing is provided as well as the option for an automated internal vibration-free shutter.

Remote control pad and filter turret use phosphorescent display tags to enhance visibility during operation in dark rooms.



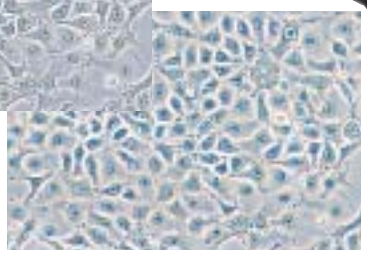
Six-filter turret

Zoom-type lamphouse adapter allows the operator to increase light intensity.

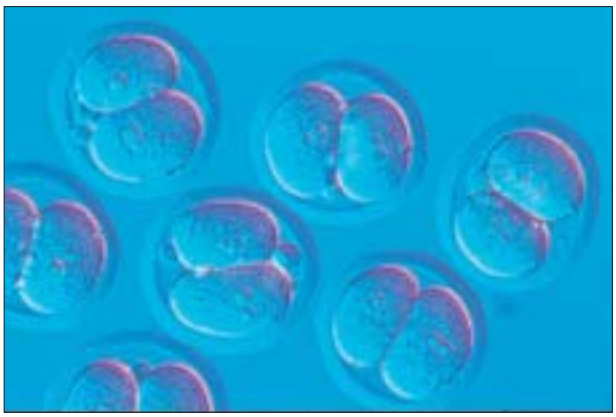
Phase contrast

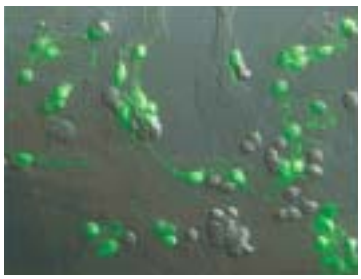
Phase contrast is the observation method most widely used for inverted microscopes. Since this method does not require staining, it is ideal for observing living cells and microorganisms. Accommodating a variety of condensers to suit the application, this method provides bright, high-contrast, high-resolution images with neutral background coloration. To improve images under this method, Nikon developed a unique series of objectives using a technique called "Apodized" Phase Contrast. These objectives minimize halos that occur in phase objects to produce images with excellent contrast and a much wider tonal range.

Viewed with the Apodized Phase Contrast method



Viewed with the conventional phase contrast method





Rat embryo in cell division (EGFP transgenic rat)

Nomarski DIC

The DIC method allows unstained living cells and microorganisms to be observed in 3D-relief-like images with overwhelming contrast and sensitivity. With the Nikon DIC system, because it adopts the Senarmont method, you can comfortably fine-tune image contrast simply by rotating the polarizer on the top of the condenser. Also, performance is optimized because the condenser DIC prism is perfectly matched to the condenser's top lens and objective side prism. Use of DIC in combination with epi-fluorescence illumination enables you to accurately locate fluorescent-tagged structures or proteins as well as visualize the cellular morphology within a specimen.

High-resolution DIC

A short shear prism is available to further improve on the resolution obtained with ordinary high-magnification prisms, allowing ultra-minute structures to be observed at full optical performance.

By combining a high-transmission polarizer and analyzer and a high-numerical aperture condenser, you can configure a microscope system optimized for high-resolution video-enhanced contrast DIC imaging. High N.A. DIC condensers are available in dry, water, oil immersion types.

HMC® (Hoffman modulation contrast®)

By using Nikon's dedicated objectives and prisms, the HMC method converts phase gradients into intensity variations to create vivid, 3-dimentional-like images of living, transparent specimens, allowing observation in plastic petri dishes–something that DIC does not do well.

Note: Hoffman Modulation Contrast and HMC are registered trademarks of Modulation Optics Inc., Greenvale, NY.
Per trademark agreement, the pictured Nikon version of Hoffman Modulation Contrast products are not available for sale in the USA, Canada and Mexico.

Accessories

DXM1200F Digital Camera

The DXM1200F delivers superb high-quality images composed of up to approximately 12 million output pixels while providing sensitivity more than double that of previous models. The camera's software aids the researcher to take a large number of images with ease and retrieve them when necessary.

FX-III Series film documentation cameras

Comprised of three types, the FX-III photomicrographic system features a direct projection system with swing-out prism providing the fastest exposures and most accurate metering. The FDX-35 dark box for auto-exposure models is DX film auto film speed compatible.

U-III: Top-end auto-exposure model with 0.1% and 1% spot and 35% integrated average metering
H-III: Auto-exposure model with 1% spot and 35% average metering
P-III: Manual-exposure model

For details, refer to the FX-III Series Photomicrographic Equipment brochure.

U-III

Double lamphouse adapter

This adapter allows two different light sources to be attached to a single microscope. This eliminates the need to change the lamphouse and the troublesome centering procedures that are necessary. Switching between two lamphouses is possible even while they are turned on.

Multi-image module

Two accessories such as a video camera and a photomicrography system can be mounted simultaneously by means of this module.

All-in-One Digital Camera System "Digital Sight" DS-5M-L1

The DS-5M-L1 is a compact digital imaging system composed of a 5-megapixel digital camera, space-saving control unit, and a 6.3-inch LCD monitor. With simple mouse clicks, it achieves camera settings optimum for the observation method being used, and features versatile network capabilities.

CCTV camera systems

Delivers electronically enhanced images on the monitor, allowing specimens with low contrast and weak fluorescence light to be viewed clearly. The system is also ideal for conferencing and consulting applications. Various CCTV adapters are available.

Incubator

With an acrylic plastic enclosure providing easy access to the specimen area, this accessory utilizes warm air circulation and maintains the temperature of the interior at 37˚C. The temperature is also adjustable from room temperature to 40˚C.

Thermal plate warmer

Keeps the specimen at a set temperature. Temperature is adjustable from a room temperature to 50˚C in 0.1˚C increments.

NT-88NE Micromanipulator System

A packaged set of instrumentation required for cellular micromanipulation, the NT-88NE is ideal for IVF (in-vitro fertilization), ICSI (intracytoplasmic sperm injection), electrophysiology, or biotechnology applications.

Teaching head

This option permits simultaneous observations of the same specimen by several persons, while delivering a constant degree of brightness. Ideal for education and training.

Objective lineup

CFI60 objectives

Designed using revolutionary new standards in order to achieve longer working distance with higher numerical apertures—a 60mm parfocal distance, a 25mm thread size and a standard 22mm field of view—the CFI60 objectives are the heart of the TE2000 inverted microscope system. An extensive line of CFI objectives are already available with more unique optics under development.

CFI Plan Fluor ADL objectives

CFI Plan Apochromat 60X WI, CFI Plan Fluor 20X MI

Plan Fluor phase contrast objectives

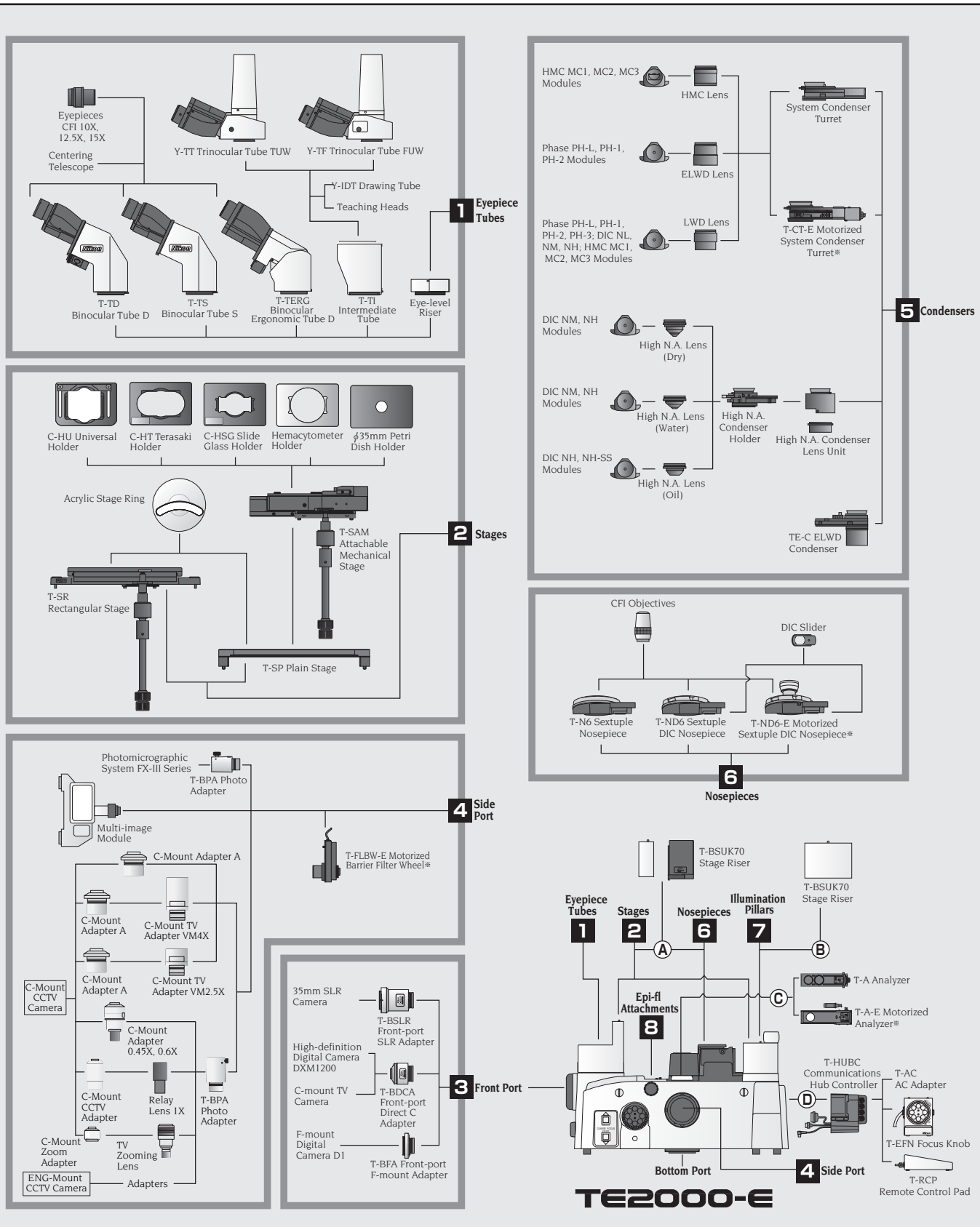
Hoffman Modulation Contrast® objectives

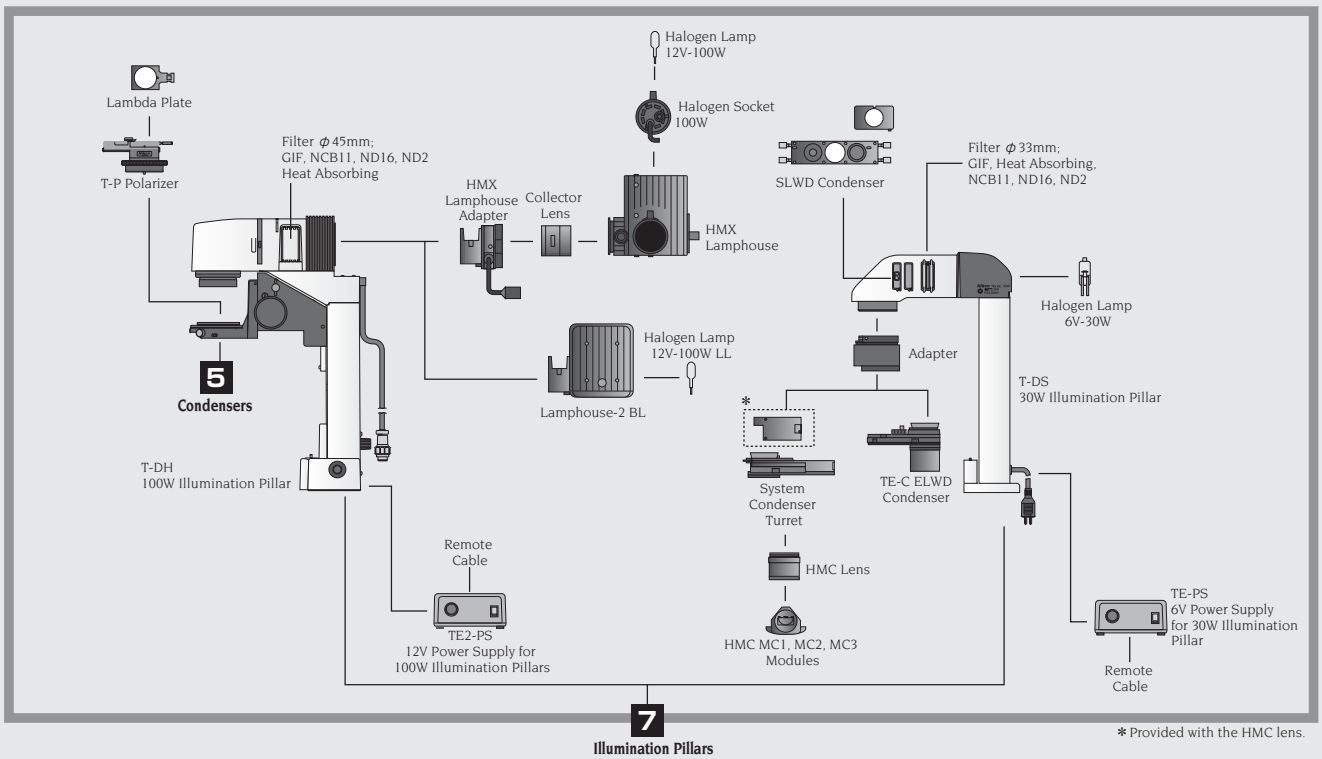
CFI S Fluor objectives

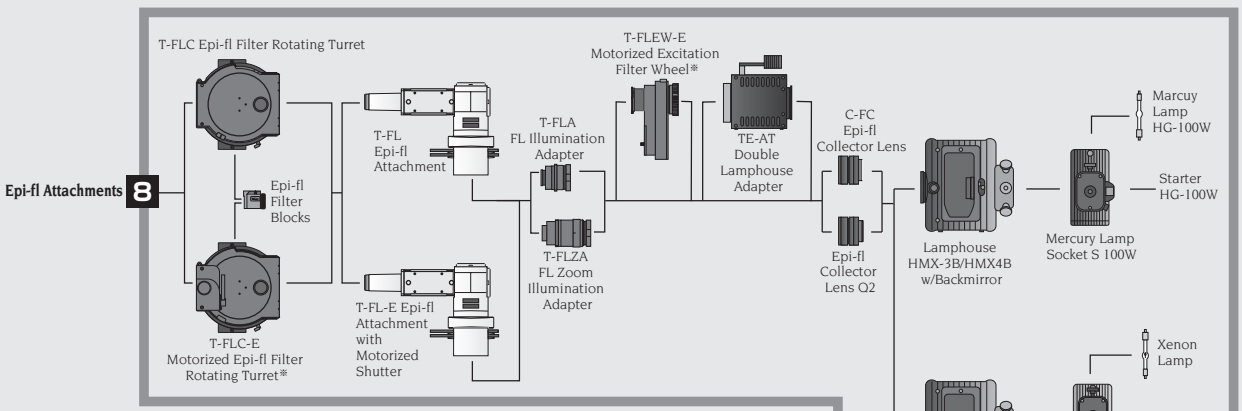
Application/type	N.A.	W.D. (mm)	Cover glass thickness (mm)	Phase contrast ring	DIC module for condensers
General-use Objectives for Phase Contrast Observations					
Achromat					
CFI Achromat DL 10X	0.25	7.0	—	Ph1	—
Achromat Long Working Distance					—
CFI Achromat LWD DL 20X F	0.4	3.9	1.2	Ph1	—
CFI Achromat LWD DL 40X C	0.55	2.7–1.7	0–2.0	Ph2	—
CFI Achromat ADL10X	0.25	6.2	1.2	Ph1	—
CFI Achromat LWD ADL20XF	0.4	3.1	1.2	Ph1	—
CFI Achromat LWD ADL40XF	0.55	2.1	1.2	Ph1	—
CFI Achromat LWD ADL40XC	0.55	2.7–1.7	0–2.0	Ph2	—
Plan Fluor					
CFI Plan Fluor DL 4X	0.13	16.4	1.2	PhL	—
CFI Plan Fluor DL 10X	0.3	15.2	1.2	Ph1	—
CFI Plan Fluor ELWD ADL 20X C	0.45	8.1–7.0	0–2.0	Ph1	NL
CFI Plan Fluor ELWD ADL 40X C	0.6	3.7–2.7	0–2.0	Ph2	NM
Plan Fluor Long Working Distance					
CFI Plan Fluor ELWD DM 20X C	0.45	8.1–7.0	0–2.0	Ph1	—
CFI Plan Fluor ELWD DM 40X C	0.6	3.7–2.7	0–2.0	Ph2	—
CFI Plan Fluor ELWD DLL 60X C	0.7	2.7–1.5	0.5–1.5	Ph2	—
Plan Fluor Oil					
CFI Plan Fluor DLL 100X oil	1.3	0.2	0.17	Ph3	NH
Plan Apochromat Oil					
CFI Plan Apochromat DM40X oil*	1.0	0.16	0.17	Ph3	—
CFI Plan Apochromat DM60X oil	1.4	0.21	0.17	Ph3	—
CFI Plan Apochromat DM100X oil	1.4	0.13	0.17	Ph3	—
High-performance Objectives for Fluorescence or DIC Observations					
Plan Fluor					
CFI Plan Fluor 4X	0.13	17.1	—		—
CFI Plan Fluor 10X	0.3	16.0	0.17		NL
CFI Plan Fluor 20X	0.5	2.1	0.17		NM
CFI Plan Fluor 40X	0.75	0.72	0.17		NM
CFI Plan Fluor 60X C	0.85	0.3	0.11–0.23		NM
S Fluor					
CFI S Fluor 4X	0.2	15.5	0.17		—
CFI S Fluor 10X	0.5	1.2	0.17		—
CFI S Fluor 20X	0.75	1.0	0.17		—
CFI S Fluor 40X C	0.9	0.3	0.11–0.23		—
Plan Fluor Long Working Distance					
CFI Plan Fluor ELWD 20X C	0.45	8.1–7.0	0–2.0		NL
CFI Plan Fluor ELWD 40X C	0.6	3.7–2.7	0–2.0		NM
CFI Plan Fluor ELWD 60X C	0.7	2.1–1.5	0.5–1.5		NM
Plan Fluor Oil					
CFI Plan Fluor 40X oil	1.3	0.2	0.17		NH
CFI Plan Fluor 100X oil	1.3	0.2	0.17		NH
CFI Plan Fluor 100X oil with iris	0.5–1.3	0.2	0.17		NH
S Fluor Oil					—
CFI S Fluor 40X oil	1.3	0.22	0.17		
CFI S Fluor 100X oil	0.5–1.3	0.2	0.17		—
Plan Apochromat Oil					
CFI Plan Apochromat 60X oil	1.4	0.21	0.17		NH, NH-SS
CFI Plan Apochromat 100X oil	1.4	0.13	0.17		NH, NH-SS
Plan Apochromat Water					
CFI Plan Apochromat 60X WI	1.2	0.22	0.15–0.18		NH
Plan Fluor Multi					
CFI Plan Fluor 20X MI	0.75	0.35 (oil)0.34 (glycerin)0.33 (water)	0.17		—
Hoffman Modulation Contrast® Objectives					
CFI HMC 10X	0.25	6.2	1.2		—
CFI HMC LWD 20X F	0.4	3.1	1.2		—
CFI HMC LWD 40X C	0.55	2.7–1.7	0–2.0		—

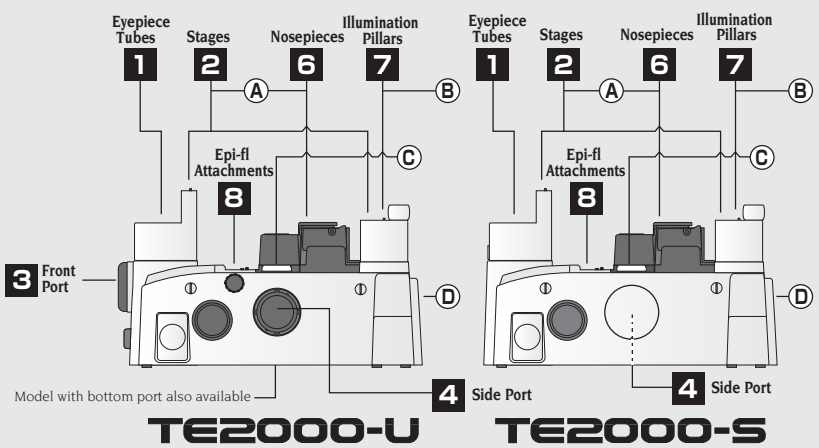
Note: "C" denotes types with correction ring,
*No objective lens slider is available with this objective.

System diagram









※Requires a communication hub controller.

Filter lineup

Epi-fluorescence filters

Nikon offers the following filter combinations to meet almost every application.

Filter Characteristics

	Filters	Wavelengths	Characteristics	Applications
U V	UV-2A	EX 330-380 DM 400 BA 420	•Standard filter block for UV	•DAPI •Hoechst 33258/33342 •AMCA •Cascade Blue® •Autofluorescence
	UV-2E/C (DAPI)	EX 340-380 DM 400 BA 435-485	•For DAPI, cutting off FITC (green) and TRITC (red) •Soft-coated type for high signal/noise •Band-Pass Barrier Filter used to cut off green and red	
	UV-1A	EX 365/10 DM 400 BA 400	•Narrow band pass – only 365nm (i line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	
	UV-2B	EX 330-380 DM 400 BA 435	•Darker background than UV-2A	
V	V-2A	EX 380-420 DM 430 BA 450	•Standard filter block for V	•Catecholamine •Serotonin •Tetracycline
B V	BV-2A	EX 400-440 DM 455 BA 470	•Standard filter block for BV	•Quinacrine •Quinacrine Mustard (QM) •Thioflavine S •Acriflavine
	BV-1A	EX 435/10 EM 455 BA 470	•Narrow band pass – only 435nm (g line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	
B	B-3A	EX 420-490 DM 505 BA 520	•Wide band passs – recommended for halogen illumination only	•FITC •Acridine Orange •Auramine O •Coriphosphine O •Bodipy® •Fluo-3 •DIO
	B-2A	EX 450-490 DM 505 BA 520	•Standard filter block for B •For FITC + Counter-stain (TRITC, PI)	
	B-2E/C (FITC)	EX 465-495 DM 505 BA 515-555	•Soft coated type for high signal/noise •For FITC (green), cutting off Rhodamine red •Band-pass Barrier Filter used to cut off red	
	B-1A	EX 470-490 DM 505 BA 520	•Narrower excitation range than B-2A •FITC+Counter-stain (TRITC, PI)	
	B-1E	EX 470-490 DM 505 BA 520-560	•For FITC (green), cutting off Rhodamine red •Band-Pass Barrier Filter used to cut off red	
G	G-2A	EX 510-560 DM 575 BA 590	•Standard filter block for G	•TRITC •Rhodamine B200 •Propidium iodide •R-Phycoerythrin •B-Phycoerythrin •Dil •Ethidium Bromide
	G-2E/C (TRITC)	EX 540/25 DM 565 BA 605/55	•For TRITC (Rhodamine) •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 643nm	
	G-1B	EX 546/10 DM 575 BA 590	•Narrow band pass – only 546nm (e line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	
	G-2B	EX 510-560 DM 575 BA 610	•610nm barrier provides darker background and deep red emission	
Y	Y-2E/C (Texas Red)	EX 540-580 DM 595 BA 600-660	•For Texas Red® •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 660nm	•Texas Red®

Multi-Band Filters

Filters	Abbreviations	Reagents
Dual	F-R	FITC Rhodamine
	F-T	FITC Texas Red
	D-F	DAPI FITC

Filters	Abbreviations	Reagents
Triple	D-F-R	DAPI FITC Rhodamine
	D-F-T	DAPI FITC Texas Red

Dedicated Filters for Epi-fluorescence Reagents

Models	Wavelengths	Features	Reagents
GFP-L	EX480/40, DM505, BA510	GFP long-pass type (red-shift mutant)	GFP
GFP-B	EX480/40, DM505, BA535/50	GFP band-pass type (red-shift mutant)	GFP

Note: Filters are consumables. For filters other than the above, please consult Nikon or its local representative.

Specifications

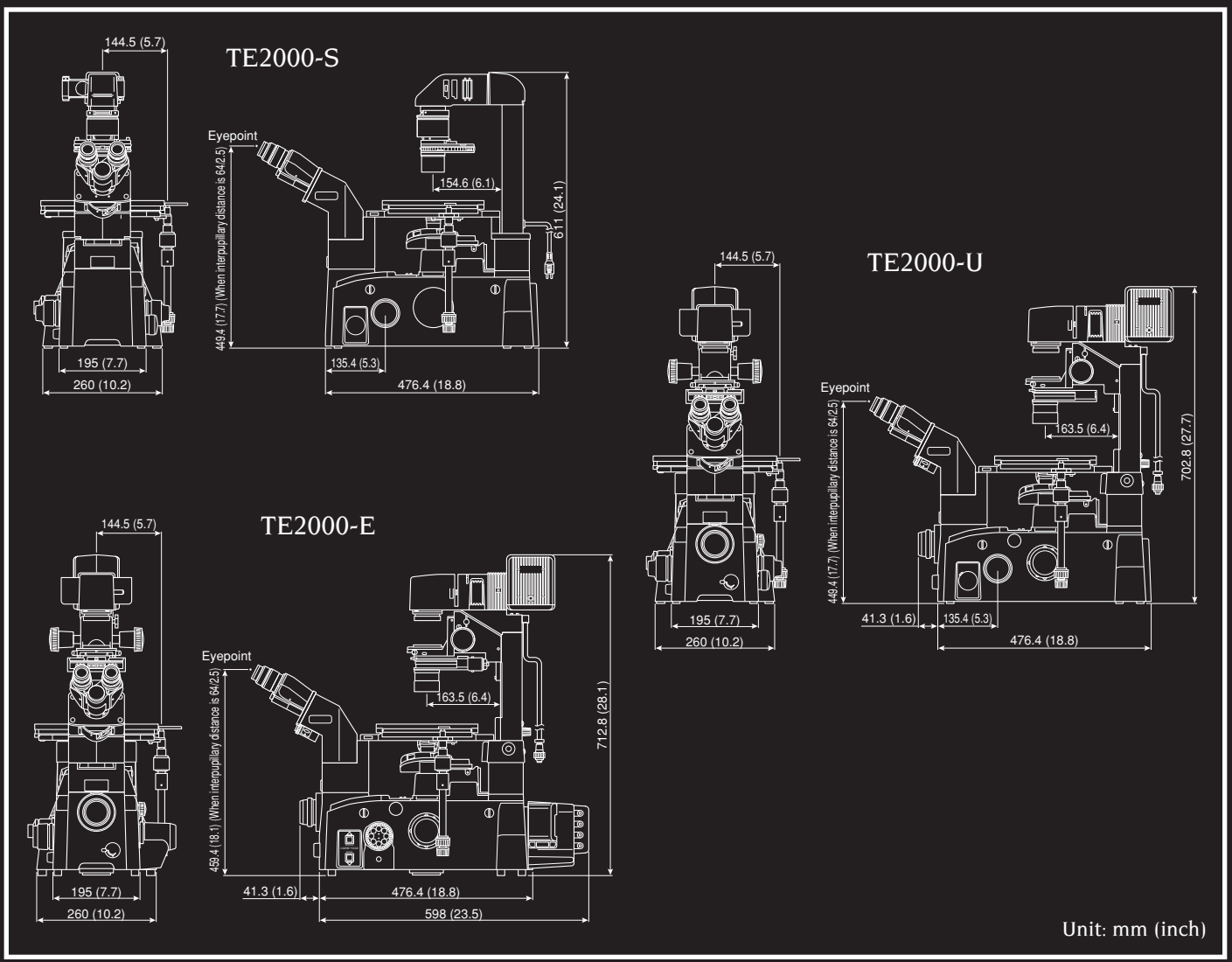
TE2000-E

TE2000-U

TE2000-S

	TE2000-E	TE2000-U	TE2000-S
Optical system	CFI60 infinity optical system, parfocal distance 60mm		
Main body material	M-45 alloy material		
Light distribution	5 positions, motorized light-distribution changer Observation 100, Left port 100, Right port 80, Front port 80, Bottom port 100 * 3 other models are available as option: 1) left 80/100 switchable instead of bottom 100 2) right 80/100 switchable instead of bottom 100 3) front 80/100 switchable instead of bottom 100	4 positions Observation 100, Left port 100, Right port 80, Front port 80 * 4 other models are available as option for 5-position light distribution: 1) with bottom port (must be added, 100% light) 2) left 80/100 switchable 3) right 80/100 switchable 4) front 80/100 switchable	2 positions Observation 100, Left port 80 * 2 other models are available as option: 1) left 100 instead of 80 2) right port (must be added) 100 instead of left 80
Focusing	Via motorized/manual nosepiece up/down movement Stroke—manual: up 7mm, down 3mm; motorized: up 6mm, down 2.5mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation (motorized) Minimum fine reading: 0.05µm by optical linear encoder External fine focusing unit	Via nosepiece up/down movement Stroke—manual: up 7mm, down 3mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation Minimum fine reading: 1µm Refocusing stopper: Adjustable coarse torque stopper	Via nosepiece up/down movement Stroke—manual: up 7mm, down 3mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation Minimum fine reading: 1µm Adjustable coarse torque stopper
Intermediate magnification	1.5X	1.5X	—
Other	Light intensity control; Light on/off switch		
Eyepiece tube	(1) T-TD Binocular Tube D (2) T-TS Binocular Tube S (3) T-TERG Binocular Ergonomic Tube D (4) T-TI Intermediate Tube for Eclipse E600/400 trinocular tubes and teaching heads		
Eyepiece lens	CFI 10X (F.O.V. 22), CFI 12.5X (F.O.V. 16), CFI 15X (F.O.V. 14.5)		
Illumination	(1) T-DH 100W Illumination Pillar (2) T-DS 30W Illumination Pillar		
Condenser	SLWD condenser for phase contrast*, ELWD condenser for phase contrast*, System condenser LWD**, ELWD** Motorized system condenser LWD**, ELWD**, Hoffman Modulation condenser® (HMC), High N.A. condensers *Only for 30W pillar **Only for 100W pillar		
Revolving nosepiece	Sextuple nosepiece, DIC sextuple nosepiece, Motorized DIC sextuple nosepiece		
Objectives	CFI60 objectives (See page 15)		
Stage	(1) T-SR Rectangular Stage—Cross travel: 70 x 50mm; Size: 300 x 276mm (2) T-SP Plain Stage—Size: 300 x 210mm; Mechanical stage mountable (3) T-SAM Attachable Mechanical Stage (must be used with T-SP Plain Stage)—Cross travel: 126 x 84mm; Specimen holders attachable		
Motorized functions	Fine focusing (minimum reading: 0.05µm) Objective anti-collision mechanism (when the nosepiece is rotated) Light distribution changer	— —	— —
	(Motorized options): DIC nosepiece, Analyzer, Epi-fl filter rotating turret, Epi-fl shutter, Excitation filer wheel, Barrier filer wheel, System condenser turret		
Epi-fluorescence attachment	Six fluorescence filter blocks in rotating turret with shutter; Noise Terminator mechanism incorporated; Aperture diaphragm centerable; Field diaphragm centerable; 33mm ND4/ND8 filters, 25mm heat absorbing filter; lamphouse adapter (Options): Zoom lamphouse adapter, Motorized epi-fl filter rotating turret, Epi-fl illumination system with motorized shutter, Motorized excitation filter wheel, Motorized barrier filter wheel		
Nomarski DIC system	Contrast control: Senarmont method (by rotating polarizer) Objective side prism: for individual objectives (installed in nosepiece) Condenser side prism: L, M, H, SS types *Nomarski DIC system can be attached only to 100W pillar.		
Optional accessories	Nikon Digital SLR D1, Digital Camera DXM1200, Digital Network Camera DN100, Photomicrographic Equipment FX-III Series, Teaching head, Drawing tube, CCTV adapters, Micromanipulators, Eye-level riser, etc.		
Weight (approx.)	Phase contrast set: 40kg; Epi-fl set: 45kg (w/100W pillar)	Phase contrast set: 36kg; Epi-fl set: 41kg (w/100W pillar)	Phase contrast set: 32kg (w/30W pillar)

Dimensional diagram



The photos of neut lung cells in culture on page 4 and 7 are courtesy of Alexey Khodjakov, PhD, Wadsworth Center, NY Dept. of Health, USA; those of the fixed 3T3 fibroblasts on page 5 are courtesy of Dr. Gregg G. Gundersen, Columbia University; those of the fixed HeLa (human) cells on page 10 are courtesy of Dr. Adrian Salic and Jennifer Waters Shuler, PhD, in the Nikon Imaging Center at Harvard Medical School, USA; and those of rat embryo in cell division (EGFP transgenic rat) on page 13 are courtesy of Masumi Hirabayashi, PhD, YS New Technology Inst. Inc., Japan.

WARNING	TO ENSURE CORRECT USAGE, READ CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.

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