

OEM/Designer Handbook:

InFocus™ Video Insert Series

- **C-Mount Video Insert**

The InFocus™ C-Mount Video Insert

General Information. The InFocus Video Insert is a convenient means of adapting InFocus capability to Infinity-corrected microscopes when C-Mount Video Cameras are utilized. A full system of accessories complements the Basic Module. The InFocus Insert either fits atop most microscopes or can be used on the side ports of inverted instruments.

The InFocus Insert has virtually no measurable magnification change with focus over its entire 180° Focusing Ring rotation. The translation is therefore virtually identical to that of the regular mechanical translation.

Setup. The InFocus Insert is placed into the appropriate Socket Adapter and locked in place. (Zeiss microscopes do not require a Socket Adapter). Next, the InFocus Insert must be parfocalled so that when its two reference "arrows" are opposite each other, the focus is set for infinity. The easiest way to do this is to use the InFocus Insert with a video camera and monitor. Using a prepared microscope slide as an object, focus should be established for the 40x objective *by the regular mechanical* focus. Then, the 10x objective should be turned into position and focus should be established *by turning the InFocus Focusing Ring*. The process should be repeated at which time the parfocality will be virtually perfect. Using a piece of vinyl tape, the InFocus Focusing Ring is temporarily fixed in place. The Reference Ring can now be permanently set by loosening its three setscrews with the supplied 2-56 allen wrench and rotating it so that both "arrows" line up. Then, the three setscrews should be *gently* locked in place. The InFocus Insert is now ready for use. Turning the Focusing Ring clockwise/counterclockwise adjusts focus in the specimen or object to a different optically-sectioned level.

Ranges. When the Front Probe's Lock Ring is in the full-back position, the Insert is set for the Standard range. If thick samples or high index media are used, the Insert can be set to the "Full-Plus" position by extending the probe and counter-locking it there. If thin preparations are to be examined (those thinner than 0.17mm), the Probe is unscrewed, so that the Lock Ring can be removed. The Probe can then be screwed back without the Lock ring spacer to set the Insert for "More Minus" functioning. In any case, if moved from the Standard range position, the reference arrows should be reset (see above).

In some rare cases (high index of refraction media c.1.8 and higher), it may be desirable to go beyond the "Full-Plus" position. However, it will no longer be possible to maintain parfocality among different objectives. Note that the objective is used further away from the object, so that contact is unlikely. We recommend this position when only one objective has been selected for a specific task.

Uses. Once the InFocus Insert has been parfocalled, it can be used to sweep focus from a fixed position without any external movement of either object or objective. This means that the InFocus Insert turns any microscope so-equipped into a micromanipulator-ready instrument. In addition, contact with delicate objects (from wafers to fragile biological cells) can be avoided.

Since the first optical system of any biological microscope is the cover glass/preparation, too-thin or too-thick preparations affect the optical path (and therefore the spherical correction) of the objective. Microscopes can only be set at the factory for one optimum working distance and for only one (0.17mm) cover/preparation thickness in order to assure the best spherical aberration-free image. Consequently, InFocus may also be understood as a means to deliberately defocus the microscope to reset and counter the effects of preparation deviations. When the Focusing Ring is turned in the clockwise direction, thin preparations (or low refractive index media) tend to be spherically corrected in the (-) direction. Turning the Focusing Ring counter-clockwise focuses and also defocuses the microscope in the other (+) direction suited to preparations that are generally thick or of high refractive index. When the InFocus is used to deliberately defocus the microscope, the regular mechanical focus can then be used to re-establish the image. Since a new working distance is thereby established other than the standard factory-set 0.17mm cover/preparation thickness, InFocus actually "seeks" a new working distance that is

more in keeping with that dictated by a too-thin/too-thick preparation. Note that the InFocus is generally set more travel in the counterclockwise (+) direction because most preparations that deviate from 0.17mm cover/preparation are generally thicker than the norm.

You need not be an optical expert to use InFocus. In fact, InFocus is virtually fool-proof. Simply by turning the Focusing Ring, five positions may be set from its full-minus position 180° to its full-plus position: one image will be captured within a spherical tolerance that yields superb results. This is why InFocus is the world's first active video/photo adapter.

System Configuration and Accessories. The InFocus Insert is a complete system for video and photo imaging with your microscope. A 2x increase in magnification may be obtained by interfacing the standard C-mount and camera with a DL Tube. When exceptionally heavy cameras are used, a T-Clamp may be secured around any part that is 48mm diameter for connection to a stable support.

The InFocus Insert can be used in additional ways. Please refer to the accompanying technical drawings for further details.

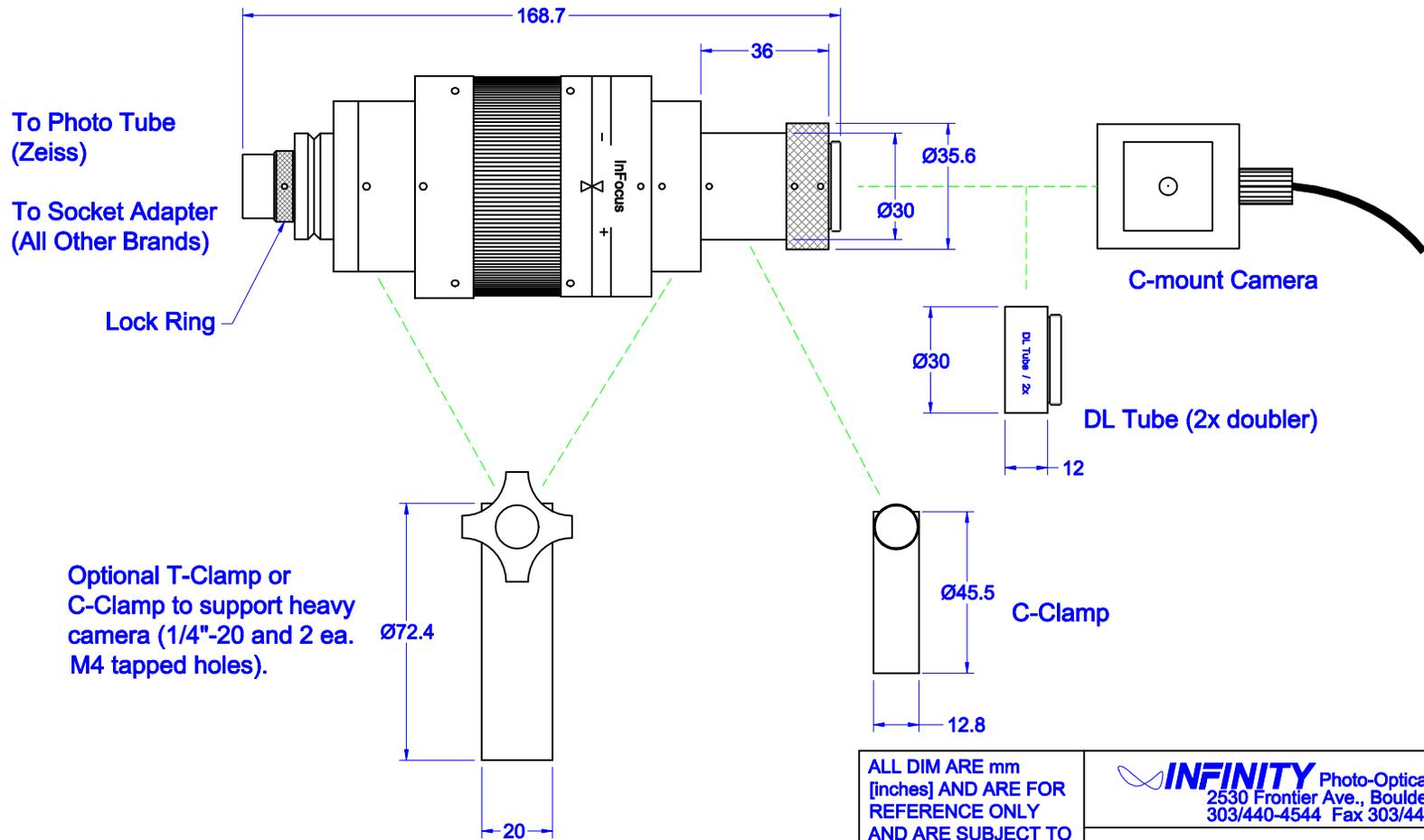
Care and Cleaning. The InFocus Insert should be treated as the fine optical instrument it is. Care should be taken to keep dust and dirt off external surfaces. If the front element should ever need to be cleaned, use lens tissue moistened by a lens cleaner. NEVER USE SOLVENTS of any kind. The InFocus Insert should NEVER be opened. If contaminants enter any inner parts, consult your dealer or INFINITY about cleaning services.

Warranty Service and Questions. Specific details of the warranty are given on the limited warranty statement. In general, all parts and labor are guaranteed for one full year. Should the InFocus Insert become damaged or need service, return it to your authorized dealer with a letter explaining the problem. If you have additional questions, please do not hesitate to contact your dealer or INFINITY PHOTO-OPTICAL COMPANY directly.

InFocus is a trademark of Infinity Photo-Optical Company.

U.S. Patents 4,998,173 and 5,452,133. Additional
U.S. and foreign patents pending and may apply

Main Module



Optional T-Clamp or C-Clamp to support heavy camera (1/4"-20 and 2 ea. M4 tapped holes).

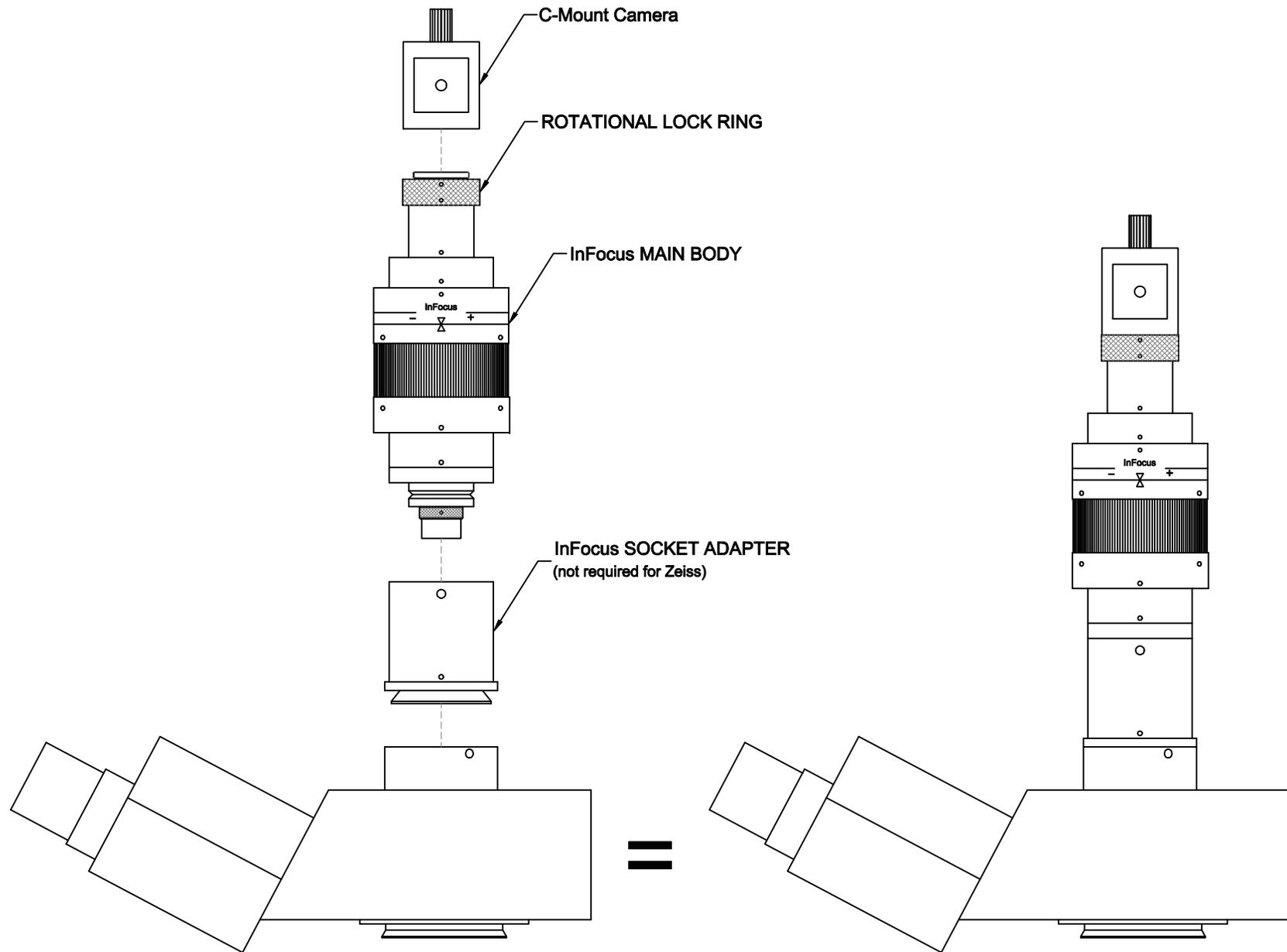
ALL DIM ARE mm [inches] AND ARE FOR REFERENCE ONLY AND ARE SUBJECT TO CHANGE.

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InFocus Insert System Layout

Date: 05/19/1998	SIZE B	FSCM NO.	DWG NO.	REV D
Modified: 06/16/00 MB	SCALE NONE	SHEET 1 OF 1		

HOW TO MOUNT THE InFocus™ INSERT ON YOUR MICROSCOPE:



INFINITY PHOTO-OPTICAL COMPANY LIMITED WARRANTY

INFINITY PHOTO-OPTICAL COMPANY hereby warrants its products to be free from defects in workmanship or materials for the warranty period set forth below. INFINITY PHOTO-OPTICAL COMPANY, at its option, shall repair or replace the defective product without cost to the purchaser, and such repair or replacement shall be the full extent of this express limited warranty. INFINITY PHOTO-OPTICAL COMPANY shall not be liable for any other damages either direct or consequential.

This warranty is made to the original purchaser, and is effective only on new equipment purchased from INFINITY PHOTO-OPTICAL COMPANY, or a dealer authorized by INFINITY PHOTO-OPTICAL COMPANY to sell the product.

This warranty is valid only when the product is returned to the authorized dealer from whom it was purchased, or returned directly to INFINITY PHOTO-OPTICAL COMPANY, freight prepaid, with proof of date of purchase.

This warranty does not extend to any defect, malfunction or failure caused by misuse, abuse or the use of the product with equipment for which it may not have been intended. Any unauthorized repair voids this warranty.

The warranty period for all products manufactured by INFINITY PHOTO-OPTICAL COMPANY is five (5) years from date of original purchase. Parts or components made or sourced from other manufacturers shall be solely covered by that manufacturer's warranty.

The warranty contained herein is the only warranty made by INFINITY PHOTO-OPTICAL COMPANY. Any implied warranty of merchantability and/or fitness for a particular purpose is expressly excluded from this warranty. INFINITY PHOTO-OPTICAL COMPANY shall not be liable for any expense, loss, incidental or consequential damages which may arise in connection with the use of this equipment. Recovery under this warranty is limited to repair or replacement of the equipment as provided above.

INFINITY PHOTO-OPTICAL COMPANY reserves the right to modify designs, equipment and accessories without notice.