

The long working distance objective lens infinity correction function and par focal length 95mm can be used for a laser system and coaxial observation. The objective will allow user to focus a visible laser or microscopic observation of objects from a distance.

- Chromatic aberration is corrected in the visible range (400 – 700nm).
- PAL/PAL-L has a long working distance and a corrected field curvature. Its natural observation image is obtained to the periphery of the visual field.



### Guide

- ▶ Available fixed objective lens holder (LHO-26).  
 ▶ [WEB Reference](#) [Catalog Code](#) W4024
- ▶ When the objective lens is fixed to a 2 axis holder, please consult our Sales Division.
- ▶ For laser processing, we offer a dichoric block (DIMC) and for laser unit with coaxial illumination and observation (OUCI-2).  
 ▶ [WEB Reference](#) [Catalog Code](#) W2041

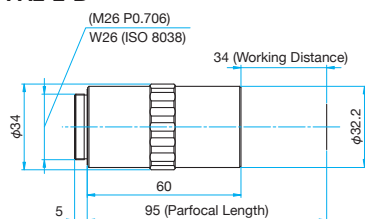
### Attention

- ▶ When an objective lens is used in laser processing, use the diameter of the incident beam to extend to a size of half the pupil diameter ( $1/e^2$ ). A small light spot cannot be achieved when the incident beam is too narrow. Please note if there is a laser energy density increase, there will be a high possibility of damage to the objective lens.
- ▶ The surface of an objective lens can be contaminated by debris during processing. To avoid this, please have sufficient working distance (WD) and insert a thin protective glass on the objective.
- ▶ Magnification is the value when using the imaging lens  $f=200\text{mm}$ . When used in a microscope lens barrel from other manufacturers there may be different magnifications. The actual magnification should be calculated from the ratio of the focal length of the objective lens and the focal length of the imaging lens to verify the focal length of the imaging lens barrel to be used.

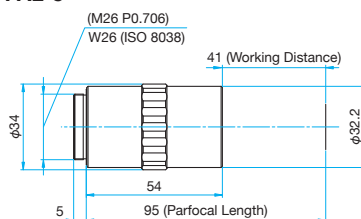
### Outline Drawing

(in mm)

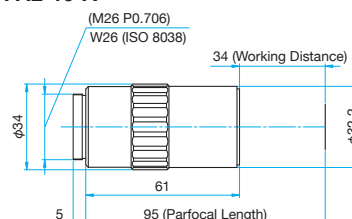
#### PAL-2-B



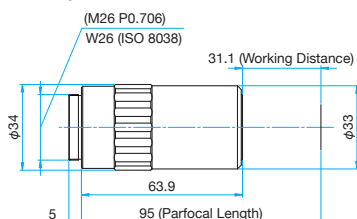
#### PAL-5



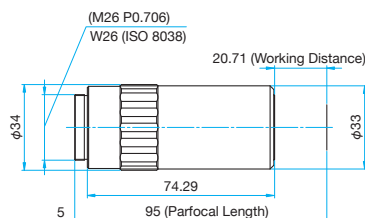
#### PAL-10-A



#### PAL-20-L-A

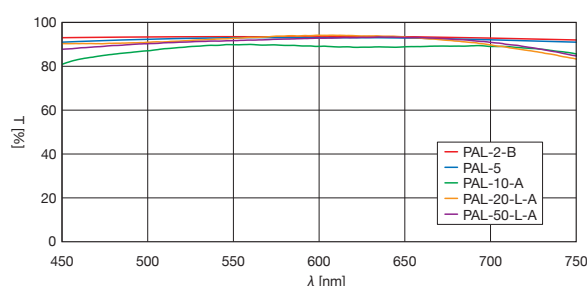


#### PAL-50-L-A



### Typical Transmittance Data

T: Transmission



### Specifications

Part Number	Item name	Magnification	Focal length f [mm]	Numerical aperture NA	Working distance WD [mm]	Resolution ( $\lambda=550\text{nm}$ ) [ $\mu\text{m}$ ]	Focal depth ( $\lambda=550\text{nm}$ ) [ $\mu\text{m}$ ]	Real field of view (Eyepiece $\phi 24\text{mm}$ ) [mm]	Real field of view (Imaging device 1/2-inch) [mm]	Weight [kg]
PAL-2-B	MPlanApo 2x	2x	100	0.055	34.0	5	91	$\phi 2.4 \times 3.2$	2.4 × 3.2	0.25
PAL-5	MPlanApo 5x	5x	40	0.14	41.0	2	14	$\phi 4.8$	$0.96 \times 1.28$	0.24
PAL-10-A	MPlanApo 10x	10x	20	0.3	34.0	0.92	3.1	$\phi 2.4$	$0.48 \times 0.64$	0.24
PAL-20-L-A	MPlanApo SL20x	20x	10	0.3	31.1	0.92	3.1	$\phi 1.2$	$0.24 \times 0.32$	0.28
PAL-50-L-A	MPlanApo SL50x	50x	4	0.42	20.7	0.65	1.6	$\phi 0.48$	$0.10 \times 0.13$	0.31