

## Nikon Rayfact VF

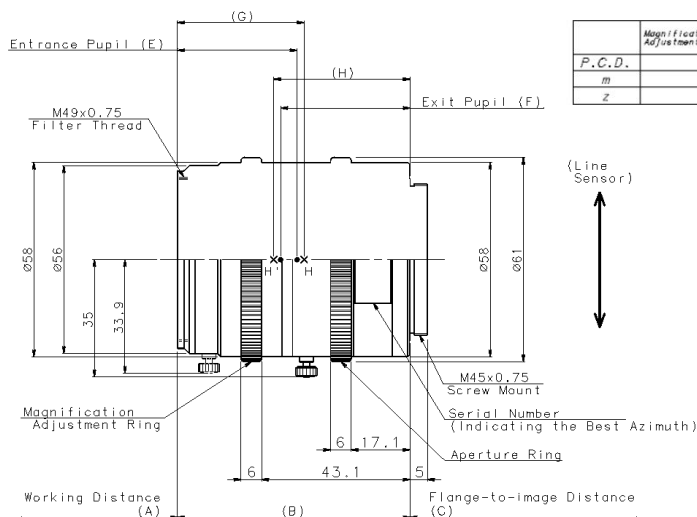
### • Features

- Variable magnification range : 0.5x - 3.0x
- Image size  $\phi$  64mm to meet large-sized high resolution line sensor cameras.
- Suitable for line sensor cameras of  $7\ \mu\text{m} \times 8\text{K}$  /  $5\ \mu\text{m} \times 12\text{K}$ .
- High performance guaranteed in all range of magnification.
- Adjustable diaphragm, Diaphragm open position at F4.
- Aperture lockable screw and floating ring lockable screw for easy use.
- Rotating mount mechanism enables you to align the lens at the best resolution direction.
- Fixed magnification model : Choice of 5 types of magnification (1.0x•1.4x•2.0x•2.5x•3.0x)
- Fixed magnification model : 3 types (Magnification at 2.0x•2.5x•3.0x) secure image size of  $\phi$  84mm.
- RoHS compliant.

### • Applications

- Image receiving process by both line and area sensor cameras.
- Printed materials inspection.
- Fine pattern inspection - e.g. PCB.
- Fine pattern inspection and detecting defects - e.g. TAB, sheets.
- FPD inspection.

# NikonRavfactVF



	Magnification Adjustment Ring	Aperture Ring
P.C.D.		ø60
m		0.5
z		120

(Line Sensor)

## Specifications

Model	L-OVM30093MN						
Magnification range	-0.5x ~ -3.0x						
Magnification scale	-0.5x	-0.7x	-1.0x	-1.4x	-2.0x	-2.5x	-3.0x
Focal length	90mm						
F Number (∞)	F4						
NA (Diaphragm open)	0.042	0.051	0.062	0.073	0.083	0.089	0.093
Reference wavelength	546.07nm(e-line)						
Wavelength range	400 ~ 700nm						
Image size	64mm φ						
Object Size	128.0mm φ	91.4mm φ	64.0mm φ	45.7mm φ	32.0mm φ	25.6mm φ	21.3mm φ
Distortion ※1	+0.18%	+0.07%	+0.00%	-0.03%	-0.04%	-0.04%	-0.04%
Relative illumination ※1	56%	67%	78%	87%	93%	94%	95%
Aperture scale	4.5.6.8 (With a diaphragm lock)						
Object-to-image distance	405.93mm	371.87mm	360.08mm	370.56mm	405.93mm	442.62mm	482.36mm
Working distance	239.66mm	187.16mm	147.74mm	121.42mm	101.67mm	92.44mm	86.29mm
Mount size	M45(P=0.75)						
Flange-to-image distance	98.77mm	117.21mm	144.84mm	181.64mm	236.77mm	282.68mm	328.57mm
Attachment size	M49(P=0.75)						
Diameter/length	58mm φ × 67.5mm ※2						
Weight	Approximately 430g						

※1 Highest image height (Y'=32mm) at F4.

	-0.5x	-0.7x	-1.0x	-1.4x	-2.0x	-2.5x	-3.0x
Entrance Pupil	d	34.32mm	34.93mm	35.69mm	36.44mm	37.12mm	37.48mm
	φ	22.8mm	22.9mm	23.0mm	23.0mm	23.1mm	23.2mm
Exit Pupil	d	39.97mm	39.34mm	38.59mm	37.83mm	37.18mm	36.82mm
	φ	23.1mm	23.0mm	23.0mm	22.8mm	22.7mm	22.7mm
Front Principal Point	35.48mm	35.57mm	35.69mm	35.80mm	35.90mm	35.96mm	36.00mm
Rear Principal Point	38.79mm	38.7mm	38.59mm	38.47mm	38.37mm	38.32mm	38.28mm
Nodal point distance	-6.77mm	-6.77mm	-6.78mm	-6.77mm	-6.77mm	-6.78mm	-6.78mm

β	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(J)
-0.5	239.66	67.5	98.77	405.93	34.32(φ 22.8)	39.97(φ 23.1)	35.48	38.79
-0.7	187.16		117.21	371.87	34.93(φ 22.9)	39.34(φ 23.0)	35.57	38.70
-1.0	147.74		144.84	360.08	35.69(φ 23.0)	38.59(φ 23.0)	35.69	38.59
-1.4	121.42		181.64	370.56	36.44(φ 23.0)	37.83(φ 22.8)	35.80	38.47
-2.0	101.66		236.77	405.93	37.12(φ 23.1)	37.18(φ 22.7)	35.90	38.37
-2.5	92.44		282.68	442.62	37.48(φ 23.2)	36.82(φ 22.7)	35.96	38.32
-3.0	86.29		328.57	482.36	37.75(φ 23.2)	35.56(φ 22.7)	36.00	38.28

\*Specifications unless any specific instructions are stated is at the standard magnification.

\*Specifications are subject to change without prior notice.

## NikonRayfactVF 1.0x



### Specifications

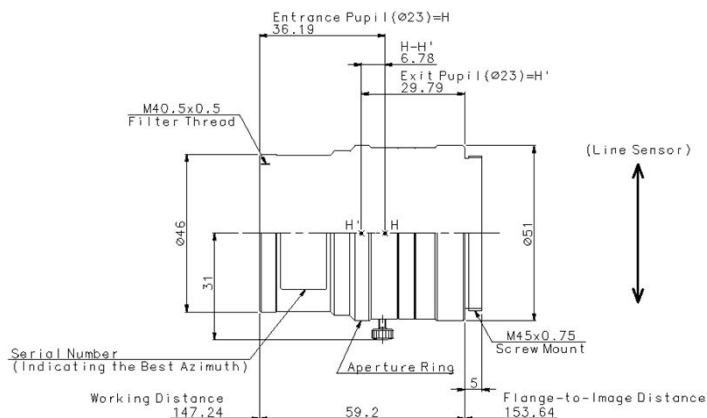
Model	L-OFM10062MN
Focal length	91.7mm
F Number ( $\infty$ )	F4
NA (Diaphragm open)	0.062
Magnification scale	-1.0x
Reference wavelength	546.07nm(e-line)
Wavelength range	400~700nm
Picture angle	19.8°
Image size	64mm $\phi$
Object Size	64mm $\phi$
Distortion	0% ※1
Relative illumination	77.9% ※1
Aperture scale	4.5,6,8 (With a click stop ※2)
Object-to-image distance	360.1mm
Working distance	147.2mm
Mount size	M45(P=0.75)
Flange-to-image distance	153.6mm
Back focus	154.9mm
Attachment size	M40.5(P=0.5)
Diameter/length	51mm $\phi$ × 59.2mm ※3
Weight	Approximately 240g

※1 Image size 64mm  $\phi$  at F4

※2 Diaphragm scale indicated with indexes.

No numeric indication. The open position index states as "O".

※3 Dimension excludes protrusion of screws or other convex part.



## NikonRayfactVF 1.4x



### Specifications

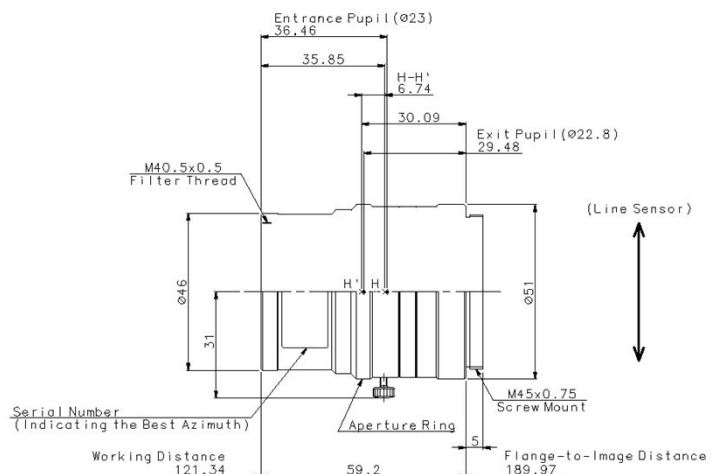
Model	L-OFM14073MN
Focal length	91.7mm
F Number ( $\infty$ )	F4
NA (Diaphragm open)	0.073
Magnification scale	-1.4x
Reference wavelength	546.07nm(e-line)
Wavelength range	400~700nm
Picture angle	16.4°
Image size	64mm $\phi$
Object Size	45.7mm $\phi$
Distortion	-0.03% ※1
Relative illumination	87.4% ※1
Aperture scale	4.5,6,8 (With a click stop ※2)
Object-to-image distance	370.5mm
Working distance	121.3mm
Mount size	M45(P=0.75)
Flange-to-image distance	190mm
Back focus	191.7mm
Attachment size	M40.5(P=0.5)
Diameter/length	51mm $\phi$ × 59.2mm ※3
Weight	Approximately 240g

※1 Image size 64mm  $\phi$  at F4

※2 Diaphragm scale indicated with indexes.

No numeric indication. The open position index states as "O".

※3 Dimension excludes protrusion of screws or other convex part.



\*Specifications unless any specific instructions are stated is at the standard magnification.

\*Specifications are subject to change without prior notice.

## NikonRayfactVF 2.0x



### Specifications

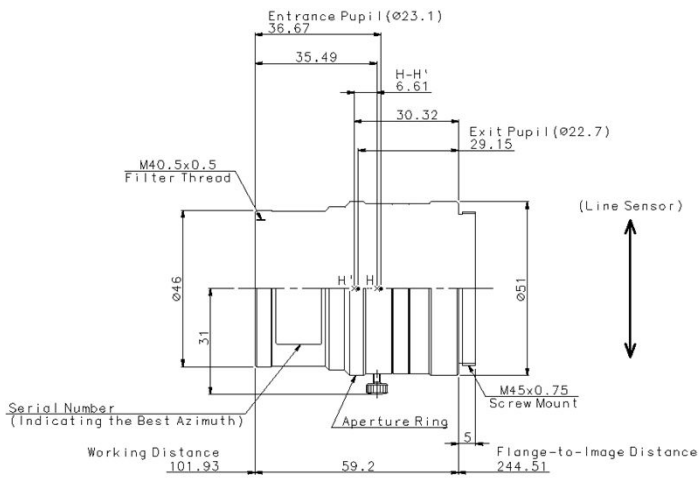
Model	L-OFM20083MN
Focal length	91.6mm
F Number ( $\infty$ )	F4
NA (Diaphragm open)	0.083
Magnification scale	-2.0x
Reference wavelength	546.07nm(e-line)
Wavelength range	400~700nm
Picture angle	17.2°
Image size	84mm $\phi$
Object Size	42.0mm $\phi$
Distortion	-0.07% ※1
Relative illumination	85.5% ※1
Aperture scale	4.5,6,8 (With a click stop ※2)
Object-to-image distance	405.6mm
Working distance	101.9mm
Mount size	M45(P=0.75)
Flange-to-image distance	244.5mm
Back focus	246.7mm
Attachment size	M40.5(P=0.5)
Diameter/length	51mm $\phi$ × 59.2mm ※3
Weight	Approximately 240g

※1 Image size 84mm  $\phi$  at F4

※2 Diaphragm scale indicated with indexes.

No numeric indication. The open position index states as "O".

※3 Dimension excludes protrusion of screws or other convex part.



## NikonRayfactVF 2.5x



### Specifications

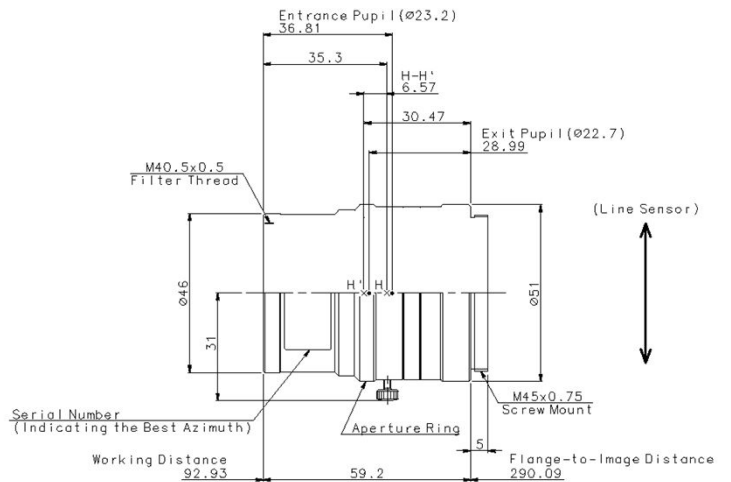
Model	L-OFM25089MN
Focal length	91.6mm
F Number ( $\infty$ )	F4
NA (Diaphragm open)	0.089
Magnification scale	-2.5x
Reference wavelength	546.07nm(e-line)
Wavelength range	400~700nm
Picture angle	14.8°
Image size	84mm $\phi$
Object Size	33.6mm $\phi$
Distortion	-0.07% ※1
Relative illumination	90.0% ※1
Aperture scale	4.5,6,8 (With a click stop ※2)
Object-to-image distance	442.2mm
Working distance	92.9mm
Mount size	M45(P=0.75)
Flange-to-image distance	290.1mm
Back focus	292.6mm
Attachment size	M40.5(P=0.5)
Diameter/length	51mm $\phi$ × 59.2mm ※3
Weight	Approximately 240g

※1 Image size 84mm  $\phi$  at F4

※2 Diaphragm scale indicated with indexes.

No numeric indication. The open position index states as "O".

※3 Dimension excludes protrusion of screws or other convex part.



•Specifications unless any specific instructions are stated is at the standard magnification.

•Specifications are subject to change without prior notice.

# NikonRayfactVF 3.0x



## Specifications

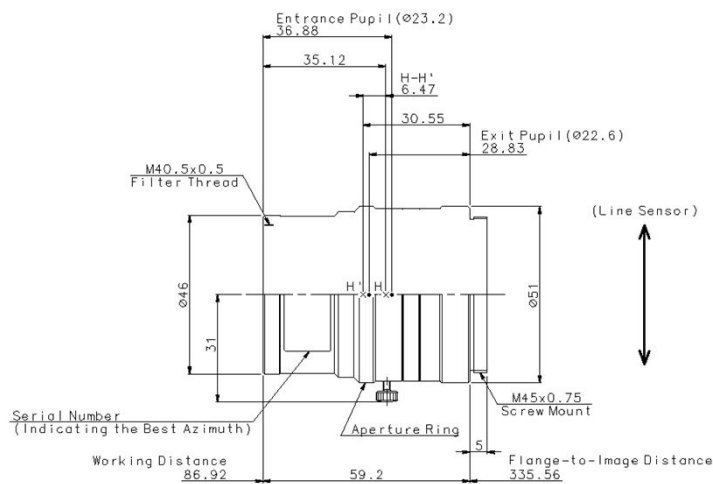
Model	L-OFM30093MN
Focal length	91.5mm
F Number ( $\infty$ )	F4
NA (Diaphragm open)	0.094
Magnification scale	-3.0x
Reference wavelength	546.07nm(e-line)
Wavelength range	400~700nm
Picture angle	13.0°
Image size	84mm $\phi$
Object Size	28.0mm $\phi$
Distortion	-0.06% ※1
Relative illumination	92.6% ※1
Aperture scale	4,5,6,8 (With a click stop ※2)
Object-to-image distance	481.7mm
Working distance	86.9mm
Mount size	M45(P=0.75)
Flange-to-image distance	335.6mm
Back focus	338.3mm
Attachment size	M40.5(P=0.5)
Diameter/length	51mm $\phi$ × 59.2mm ※3
Weight	Approximately 240g

※1 Image size 84mm  $\phi$  at F4

※2 Diaphragm scale indicated with indexes.

No numeric indication. The open position index states as "O".

※3 Dimension excludes protrusion of screws or other convex part.



\*Specifications unless any specific instructions are stated is at the standard magnification.

\*Specifications are subject to change without prior notice.

For further queries, please contact ;  
Marketing Sec. Industrial Equipment Dept.  
TOCHIGI NIKON COROPRATION  
E-mail : ktn.eigyo@nikon.com  
TEL+81-287-28-7100 FAX+81-287-28-7170