# LINOS

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### Lenses for Enlarging, CCD Photos and Video

To reproduce a photograph as a picture on paper requires two optical imaging processes: One to put the image onto the film and one to enlarge the image onto the paper. The second image reproduction process is no less important for the quality of the final result than the first. When selecting your enlarging lens, you therefore need to be just as critical as when you purchase your high-quality taking lens: take only the very best.

Rodenstock offers a wide product range which provides an optimal solution for any application: The breadth of the Rodenstock enlarging lens range begins with the 3 elements model for the cost-conscious and ends with sophisticated high-power, apochromatically corrected 8 elements lenses. Rodenstock has the suitable enlarging lens ...

- For the ambitious amateur in his or her darkroom as well as for the professional in the developing lab;
- For all enlargers from amateur models, professional enlargers and printers right up to professional vertical and horizontal cameras;
- For numerous film sizes up to sheet film 8×10 in./24×30 cm and for all CCD area and line sensors;
- For all reproduction scales from 1:1 for the manufacture of duplicates up to almost infinity for biggest enlargements.

Rodenstock guarantees a lens quality which the photographer and the printer can always rely on and which allows both to expect the best possible photographic results. Furthermore, not only the optical performance but also a variety of mechanical features offer practical benefits in the use of the lenses:

- The click-stop diaphragm allows a fast and precise setting of a stop value even when the room is completely dark.
- The pre-set aperture makes it possible to set a working aperture that can be put into operation by simply turning a ring to a stop after the picture has been composed and focused.
- The illuminated f-stop display shows the f-stop set without the room lighting having to be switched on.
- The infinite stop setting allows exact stopping down when analysers with pre-set exposure times are used.

Rodenstock lenses guarantee that in the second imaging process from the negative or transparency to the print no detail will be lost that has been captured in the first imaging process by your high-quality camera lens



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Lenses for Enlarging, CCD Photos and Video

#### Rogonar

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### Rogonar

The Rogonar forms a solid base for the "first steps" in the amateur's home lab. This lens is already a standard feature of many low-price enlarging units.

With 3 single elements, it has a relatively simple optical design. But when used for a smaller scale range of about  $2 \times to 8 \times$  and at a working aperture of f/11, it still offers good results.

The large aperture for a 3 element lens ensures simple and precise focusing and provides a bright image for composition and cropping of the picture.

The Rogonar is available with the standard focal length of 50 mm for 35 mm film. It has a click-stop diaphragm and an illuminated f-number scale.



#### Data sheets

Formats, dimensions, recommended scales, features

Performance data

Rogonar	Recommended scale range	Maximum film format		
50 mm f/2.8	2x - 8x	24×36 mm		

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Rogonar			erture aperture	isable	f-stop display					Back to lense	s description
Technical data			est ape lectior	stop d	nated .						
Lens	Maximum film format	Scale range	Smalle Pre-se	Click-9	Illumir	Filter thread	Flange focal length <sup>1</sup> )	Overall length	Max. diameter	Screw thread	Flange to rear edge
50 mm f/2.8	24×36 mm	2-8×	16 -	-	•	M 30.5×0.5	38.0 mm	32.0 mm	42.0 mm	M 39× <sup>1</sup> /26"	6.5 mm

<sup>1</sup>) Flange focal length at scale  $\infty$ 

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#### Rogonar 50 mm f/2.8



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#### Long. chrom. aberration Scale 4x



All spatial frequencies [line pairs/mm] and image heights [mm] are related to the film side, all scales are related to the print side

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#### **Rogonar-S**

The universal lens Rogonar-S has a relatively simple optical design and so a very attractive price. But the very high performance capability of this lens makes it ideal for the high requirements of demanding amateurs or professional labs.

The main application area of the Rogonar-S is enlargement in the scale range required for photographs in the standard formats. In this range, the lens with 4 elements in 3 groups provides high-quality results with only low light fall-off to the picture margin. Stopping down by 2 to 3 stops is recommended for optimal contrast und sharpness up to the image corners.

The recommended scale range can also offer some interesting possibilities for cropped enlargements.

The Rogonar-S can be supplied in several models for use for all film sizes up to roll film  $6 \times 9$  cm. It is equipped with a clickstop diaphragm which can be disabled on the models from 50 mm to 105 mm focal length for stepless control which is helpful for the use of analysers or timers with pre-set exposure time mode. All models from a focal length of 50 mm on have an illuminated aperture display and a practical pre-set aperture for fast switching from fully open to the working f-stop.



#### Data sheets

- Formats, dimensions, recommended scales, features
- Performance data

Rogonar-S	Recommended scale range	Maximum film format	
25 mm f/4	10× - 30×	13×17 mm	
35 mm f/2.8	10× - 30×	18×24 mm	
50 mm f/2.8	2× - 10×	24×36 mm	
60 mm f/4.5	2× - 10×	40×40 mm	
75 mm f/4.5	2× - 10×	6×6 cm	
90 mm f/4.5	2×- 8×	6×7 cm	
105 mm f/4 5 *	2x - 8x	6×9 cm	

\* Discontinued model, leftover stock only

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Rogonar-S			erture	n aperture	tisable f-stop display					▲ Back to lens of the second seco	description
Technical data			est ap	lectio	stop o nated						
Lens	Maximum film format	Scale range	Smalle	Pre-se	Click-	Filter thread	Flange focal length <sup>1</sup> )	Overall length	Max. diameter	Screw thread	Flange to rear edge
25 mm f/4	13×17 mm	10-30×	16			M 30.5×0.5	5 23.0 mm	28.0 mm	40.5 mm	M 32.5×0.5 <sup>2</sup> )	4.5 mm
35 mm f/4	18×24 mm	10-30×	16			M 30.5×0.5	5 34.0 mm	28.0 mm	40.5 mm	M 32.5×0.5 <sup>2</sup> )	4.5 mm
50 mm f/2.8	24×36 mm	2-10×	16	•	• •	M 40.5×0.5	5 47.0 mm	37.5 mm	50.0 mm	M 39×1/26"	6.5 mm
60 mm f/4.5	40×40 mm	2-10×	22	•	• •	M 40.5×0.5	5 52.5 mm	36.5 mm	50.0 mm	M 39×1/26"	5.9 mm
75 mm f/4.5	6×6 cm	2-10×	22	•	• •	M 40.5×0.5	65.5 mm	36.5 mm	50.0 mm	M 39×1/26"	5.9 mm
90 mm f/4.5	6×7 cm	2-8×	22	•	• •	M 40.5×0.5	5 80.0 mm	36.5 mm	50.0 mm	M 39×1/26"	5.9 mm
105 mm f/4.5	6×7 cm	2-8×	22	•	• •	M 40.5×0.5	5 95.0 mm	36.5 mm	50.0 mm	M 39×1/26"	5.9 mm

 $^1)$  Flange focal length at scale  $\infty,~^2)$  Adapter for M 39  $\times ^{1/26}"$  supplied

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#### Rogonar-S 50 mm f/2.8



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#### Long. chrom. aberration Scale 10x



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#### Lenses for Enlarging, CCD Photos and Video

#### Rodagon

The lens type Rodagon, with brilliant reproduction over the whole scale range of conventional enlargers, has become the universal workhorse of both demanding amateurs and professionals in practical use. Furthermore, the models with focal lengths up to 135 mm have proven to be excellent macro lenses for SLR cameras and to be high-resolution taking lenses for CCD cameras in combination with the Rodenstock focus-ing device Modular-Focus.

The 6 elements design guarantees the resolution of the finest details while maintaining a uniformly high contrast from the picture center to the edges. As the lens is nearly independent with regard to magnification scale, top quality is ensured from mini-prints right up to high enlargements. The recommended working aperture is reached by stopping down by only 2 stops from open aperture.

All Rodagon lenses are equipped with an illuminated f-stop display, a practical pre-set aperture und a click-stop diaphragm which can be switched to stepless control for focal lengths up to 135 mm. The Rodagon 28 mm is also available in a smaller barrel with a 32.5 mm thread mount, without pre-set aperture, without illumination of the f-stop scale and with a click-stop aperture ring that cannot be disabled.



#### **Data sheets**

- Formats, dimensions, recommended scales, features
- Performance data

Rodagon	Recommended scale range	Maximum film format
28 mm f/4	5× - 30×	18×24 mm
35 mm f/4	5×-30×	24×24 mm
50 mm f/2.8	2× - 15×	24×36 mm
60 mm f/4	2× - 10×	40×40 mm
80 mm f/4	2× - 10×	6×7 cm
105 mm f/5.6	2× - 10×	6×9 cm
135 mm f/5.6	2× - 10×	4×5 inch
150 mm f/5.6	2× - 10×	4×5 inch
180 mm f/5.6	2×- 8×	5×7 inch
210 mm f/5.6 *	2×- 8×	5×7 inch
240 mm f/5.6 *	2×- 8×	8×10 inch
300 mm f/5.6 *	2×- 8×	8×10 inch
360 mm f/6 3 *	2x - 8x	$10 \times 12$ inch

\* Discontinued model, leftover stock only

Rodagon: the all-round lens for professional quality in the lab as well as for macro and CCD/CMOS shots

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Rodagon

Illuminated f-stop display Pre-selection aperture Smallest aperture Click-stop disable **Technical data** Lens Maximum Scale Filter Flange focal Overall Max. Screw Flange to film format range thread length <sup>1</sup>) length diameter thread rear edge 5-30× 28 mm f/4 18×24 mm 16 M 30.5×0.5 27.7 mm 30.0 mm 40.5 mm M 32.5×0.5<sup>2</sup>) 6.7 mm 28 mm f/4 18×24 mm 5-30× 16 M 40.5×0.5 23.0 mm 37.2 mm 50.0 mm M 39×1/26" 6.5 mm ٠ • • 35 mm f/4 24×24 mm 5-30× 16 ٠ M 40.5×0.5 31.2 mm 37.2 mm 50.0 mm M 39×1/26" 6.5 mm • • 2-15× M 39×1/26" 50 mm f/2.8 • 43.5 mm 50.0 mm 24×36 mm 16 . • M 40.5×0.5 43.5 mm 13.0 mm 60 mm f/4 2-10× 56.0 mm 41.8 mm 50.0 mm M 39×1/26" 40×40 mm 22 • M 40.5×0.5 10.2 mm • . 80 mm f/4 6×7 cm 2-10× 22 • M 40.5×0.5 74.5 mm 44.5 mm 50.0 mm M 39×1/26" 13.7 mm 105 mm f/5.6 6×9 cm 2-10× 32 M 40.5×0.5 101.5 mm 42.3 mm 50.0 mm M 39×1/26" 11.6 mm • 135 mm f/5.6 4×5 inch 2-10× 32 M 40.5×0.5 128.0 mm 45.5 mm 50.0 mm M 39×1/26" 14.5 mm 150 mm f/5.6 4×5 inch 2-10× M 52×0.75 146.0 mm 49.8 mm 60.0 mm M 50×0,75 45 20.1 mm 180 mm f/5.6 45 M 58×0.75 177.0 mm 59.8 mm 60.0 mm M 50×0.75 5×7 inch 2-8× 24.6 mm 210 mm f/5.6 5×7 inch 2-8× 45 M 67×0.75 201.0 mm 67.2 mm 70.0 mm M 58×0.75 28.1 mm 240 mm f/5.6 8×10 inch 2-8× 45 M 77×0.75 230.0 mm 77.0 mm 80.0 mm M 72×1 30.0 mm 283.0 mm M 72×1 300 mm f/5.6 8×10 inch 2-8× 45 M 86×1 93.0 mm 90.0 mm 8.5 mm M 90×1 360 mm f/6.3 300.0 mm 110.6 mm 100.0 mm 10×12 inch 2-8× M 95×1 45 9.5 mm

^) Flange focal length at scale  $\infty,~^2)$  Adapter for M 39  $\times\,^{1\!/\!26}$  " supplied

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#### Rodagon 50 mm f/2.8



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#### Long. chrom. aberration Scale 10x



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#### Lenses for Enlarging, CCD Photos and Video

#### Apo-Rodagon-N

The apochromatically corrected high-performance lenses of the Rodenstock Apo-Rodagon-N series guarantee perfect results which will satisfy even the highest demands.

The correction of these excellent lenses with up to 8 elements was taken to the absolute limits and so ensures the full elimination of irritating visible color fringes on high-contrast structures. All monochromatic imaging errors have also been greatly reduced to give this lens type its unsurpassed image reproduction performance.

The advantages are clearly visible in both color and black and white enlargements. The Apo-Rodagon-N is therefore the amateur's and professional's first choice whenever the very highest reproduction quality is required.

The optimal working aperture is reached by stopping down by only 1 to 2 stops.

For the use of these lenses as taking lenses for close up and macro photography with 35 mm SLR cameras as well as for use as high resolution taking lenses with CCD still and video cameras, the same applies as to the use of the Rodagon; however, the definition and the brilliance is still a little bit better.

All Apo-Rodagon-N models have a click-stop diaphragm and an illuminated f-stop display. They also offer a pre-set aperture and allow the click-stop to be disengaged for stepless control which is helpful for the use of analysers or timers with a pre-set exposure time mode.

Apo-Rodagon-N	Recommended scale range	Maximum film format
45 mm f/2.8 *	5×-30×	24×36 mm
50 mm f/2.8	2× - 15×	24×36 mm
80 mm f/4	2× - 15×	6×7 cm
90 mm f/4	2× - 15×	6×7 cm
105 mm f/4	2× - 15×	6×9 cm

\* Discontinued model, leftover stock only



Data sheets

- Formats, dimensions, recommended scales features
- Performance data

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Apo-Rodagon- Technical data	N		sst aperture lection aperture	stop disable	nated f-stop display					▲ Back to lens	description
Lens	Maximum film format	Scale range	Smalle Pre-se	Click-	Illumir	Filter thread	Flange focal length <sup>1</sup> )	Overall length	Max. diameter	Screw thread	Flange to rear edge
45 mm f/2.8 50 mm f/2.8 80 mm f/4 90 mm f/4 105 mm f/4	24×36 mm 24×36 mm 6×7 cm 6×7 cm 6×9 cm	2-30× 2-20× 2-15× 2-15× 2-15×	16 • 16 • 22 • 22 • 22 •	• • • •	• • • • •	M 40.5×0.5 M 40.5×0.5 M 40.5×0.5 M 40.5×0.5 M 40.5×0.5	6 47.1 mm 6 46.0 mm 6 77.0 mm 6 93.5 mm 6 99.1 mm	55.3 mm 46.5 mm 43.0 mm 43.9 mm 54.3 mm	50.0 mm 50.0 mm 50.0 mm 50.0 mm 50.0 mm	M 39×1/26" M 39×1/26" M 39×1/26" M 39×1/26" M 39×1/26"	20.9 mm 15.7 mm 12.2 mm 13.2 mm 18.0 mm

<sup>1</sup>) Flange focal length at scale  $\infty$ 

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#### Apo-Rodagon-N 50 mm f/2.8



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#### Long. chrom. aberration Scale 10x



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#### Lenses for Enlarging, CCD Photos and Video

#### **Rodagon-WA**

The Rodagon-WA has a shorter focal length and a larger angle of view and hence it achieves a 70% larger projection area than a conventional enlarging lens with standard focal length. It is therefore eminently suitable for section enlargements on units with relatively short columns. Clumsy wall or floor projections can so be avoided.

Thanks to the shorter projection distance, the negative carrier and the filter adjustment controls remain within reach of the hands and can still be operated easily when the enlarger's head is in top position for high enlargements.

The 6 elements Rodagon-WA provides the same reproduction performance as the Rodagon lens type.

The recommended working aperture is reached by stopping down by 2 stops. This guarantees shorter exposure times for higher efficiency and without or with less reciprocity failure for large format prints as well as for less loss in contrast by the influence of stray light during longer exposure times.

All Rodagon-WA models have a click-stop diaphragm and an illuminated f-stop display. The three lenses from 40 mm to 80 mm focal length have a pre-set aperture and allow the click-stop to be disabled for stepless control for the use of analysers or timers with a pre-set exposure time mode.



#### Data sheets

- Formats, dimensions, recommended scales features
- Performance data

Rodagon-WA	Recommended scale range	Maximum film format	
40 mm f/4	4× - 20×	24×36 mm	
60 mm f/4	4× - 15×	6×6 cm	
80 mm f/4	4× - 15×	6×9 cm	
120 mm f/5.6 *	4x - 15x	$4 \times 5$ inch	

\* Discontinued model, leftover stock only

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Rodagon-WA			perture ble	ypidein dui					▲ Back to lens	s description
<b>Technical data</b> Lens	Maximum film format	Scale range	Smallest aperti Pre-selection a Click-stop disa		Filter thread	Flange focal length <sup>1</sup> )	Overall length	Max. diameter	Screw thread	Flange to rear edge
40 mm f/4 60 mm f/4 80 mm f/4 120 mm f/5.6	24×36 mm 6×6 cm 6×9 cm 4×5 inch	4-20× 4-15× 4-15× 4-15×	22 • • 22 • • 22 • • 45	•	M 40.5×0.5 M 40.5×0.5 M 40.5×0.5 M 52×0.75	5 36.5 mm 5 55.5 mm 5 77.0 mm 116.4 mm	37.2 mm 41.0 mm 44.0 mm 59.0 mm	50.0 mm 50.0 mm 50.0 mm 60.0 mm	M 39× <sup>1</sup> /26" M 39× <sup>1</sup> /26" M 39× <sup>1</sup> /26" M 50×0.75	6.5 mm 10.0 mm 13.0 mm 26.6 mm

<sup>1</sup>) Flange focal length at scale  $\infty$ 

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#### Rodagon-WA 40 mm f/4



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### Long. chrom. aberration Scale 10x

Image height [mm]





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#### **Apo-Rodagon-D**

Apo-Rodagon-D lenses are designed for the highest possible imaging quality for close-ups at just those scales around 1:1 where even the best enlarging lenses for larger scales begin to show their weak spots.

Thus their typical applications are transparency duplication, the preparation of internegatives and – together with the Modular-Focus helical mount and the matching camera adapters – macro photography. Furthermore, as well as for photography, they can also be used as high resolving optical systems for premium scanners.

The 6 elements, apochromatically corrected lenses feature high contrast and sharpness right up to the picture corners with virtually no color fringes. Distortion is corrected almost to zero and cannot be seen even in critical subjects with straight-line structures parallel with the edges of the frame.

The optimum working aperture is between f/5.6 and f/8. This is worth mentioning because the effective aperture of a lens focused for a scale of about 1:1 is approximately two f-stops smaller than the nominal aperture and therefore stopping down to smaller apertures than nominal f/8 would result in visible blur because of diffraction. All three models are fitted with click-stop aperture rings which can be disabled and with pre-setting rings.



#### Data sheets

- Formats, dimensions, recommended scales features
- Performance data

Apo- Rodagon-D 1x	Recommended scale range	Maximum film format
75 mm f/4	0.8× - 1.2×	6×6 cm
Apo-Rodagon-D	2x	
75 mm f/4	1.2× - 2.5×	6×7 cm
Apo-Rodagon-D		
120 mm f/5.6	0.5× - 3×	4×5 inch

The given scale ranges refer to projection; when the lenses are used as taking lenses the respective reciprocal values apply

Apo-Rodagon-D: duplication and macro photography with practically no loss in definition and brilliance

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Apo-Rodagon-D

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Technical data			est aperture	election aperture	stop disable						
Lens	Maximum film format	Scale range	Smalle	Pre-se	Click-	Filter thread	Flange focal length <sup>1</sup> )	Overall length	Max. diameter	Screw thread	Flange to rear edge
75 mm f/4 75 mm f/4.5 120 mm f/5.6	6×6 cm 6×7 cm 4×5 inch	0.8-1.2× 1.2-2.5× 0.5-3×	22 22 32	•	• •	M 40.5×0.5 M 40.5×0.5 M 40.5×0.5	5 136.7 mm 5 109.4 mm 5 172.9 mm	53.0 mm 43.0 mm 43.4 mm	50.0 mm 50.0 mm 50.0 mm	M 39× <sup>1</sup> /26" M 39× <sup>1</sup> /26" M 39× <sup>1</sup> /26"	18.7 mm 12.5 mm 12.7 mm

<sup>1</sup>) Flange focal length for Apo-Rodagon-D 1× 75 mm f/4 at scale 1:1, for 2x 75 mm f/4.5 and for 120 mm f/5.6 at scale 2×

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#### Apo-Rodagon-D 75 mm f/4



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Wavelength [nm]

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Enlarging lenses do not have a helical focusing facility because focusing is performed with the enlarger's bellows extension. If an enlarging lens is used as a taking lens, it is necessary to fit a focusing device. The Modular-Focus developed for this purpose has a stroke of 25 mm and offers high setting precision and stability to match our enlarging lenses' high image quality. The straight-line guide guarantees that the lens does not rotate with the focusing ring. Once the aperture display window has been adjusted for best readability by rotating the Modular-Focus against the adapter, and once it has been subsequently fixed, then it will permanently keep its optimum position.

The Modular-Focus can be fitted to almost all 35 mm system cameras by using a T2 adapter with conventional connecting rings. For the use with cameras with M42 lens thread there is a M42 correction ring. Furthermore, the Modular-Focus can also be fitted to professional CCD and video cameras with exchangeable lenses using the optional C mount connection.

For attaching the lens, three adapters with  $M 39 \times 1/26''$  and  $M 32.5 \times 0.5$  thread are available. For lenses with illuminated f-stop display there is a special version (A) that blocks the entrance window for the light in order to avoid irritating stray light. Extension tubes with a length of 24.5 mm or 45 mm allow larger extensions for long focal lengths or very large scales.

Lens adapter ► for lens <del>▼</del>		Α	В	С	
Rogonar-S	25 35 mm 50 105 mm	- •	- •	•	A: M 39×1/26" special ver- sion that shuts out light from aperture display
Rodagon	28 mm 28 105 mm 135 mm	- • -	- • •	• - -	<b>B</b> : M 39× <sup>1</sup> / <sub>26</sub> " standard version
Apo-Rodagon-N	45 105 mm	•	٠	_	<b>C</b> : M 32×0.5
Rodagon-WA	40 60 mm 80 mm	•	•	_	
Apo-Rodagon-D	1x, 2x 75 mm	-	•	-	

Modular-Focus: Focusing device for most enlarging lenses to be used with photo, CCD and video cameras

