LINOS

Rodenstock Lenses
for Enlarging and CCD Photos and Video

High-resolution lenses optimized for enlargers and printers as well as for CCD/CMOS and video cameras

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. In both cases, only the best can be good enough.

Only a first class enlarging lens guarantees your developing success
Modern cameras, films and processing methods provide a good basis for excellent photographs. Even though photographic equipment and materials already had a very high performance standard, over the past few years it has been possible to extend this standard even further – with visible results. This very high quality level must also be maintained in the developing process.

In the transfer "chain" from the film to the paper photograph, the most important quality link is the enlarging lens. It has to transfer the information contained in the film image onto paper – ideally without any loss at all. Although the laws of physics mean that this demand can only be met approximately, it still remains our objective in the development of new lenses.

Only a lens which has been designed specifically to meet the different demands (film size, enlarging factor, etc.) and which reproduces the image with as little loss as possible can guarantee convincing results in the enlargement or duplicate or digitized file – with all the details which your high-quality taking lens has captured on the film.

A versatile range for all enlargers, film sizes and reproduction scales
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 element model for the cost-conscious and ends with sophisticated high-power, apochromatically corrected 8 element lenses.

Rodenstock has the suitable enlarging lens …

- For the ambitious beginner 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" (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.

Right from the beginning superb quality is our highest priority
The quality of an enlarging lens, normally termed its "sharpness", is expressed in its transfer performance (MTF = Modulation Transfer Function). This depends on the correction of a number of possible imaging errors such as spherical aberration, coma, astigmatism, field curvature, distortion and longitudinal and lateral chromatic aberration.

The sources of these defects can be found, for example, in the inevitable dispersion (color splitting) of the glass, asymmetry in the beam path with oblique incident light, but also in shape deviations and roughness in the lens surfaces or in errors of centring.

All imaging defects, whether physical in nature or resulting from production tolerances, are reduced to the lowest possible levels by Rodenstock at the development stage of the lens with a simulation of the imaging properties by high-performance mainframes and sophisticated computer programs. Of course, these limits are also dependent on the optical system selected: A sophisticated 7 or 8 element lens can be provided with better correction than a lens with only 3 elements.

Sophisticated production methods ensure a high quality standard
But all these efforts would be in vain if the theoretical quality achieved by the lens in the development phase were not maintained in series production. This second objective is reached with the sophisticated equipment used in the production facilities for the manufacture and assembly of the optical and mechanical components of Rodenstock

lenses. Quality assurance is more than just the final inspection of the lens, it accompanies the production of a lens from its first design draft right up to the packaging of the lens and its delivery.

The Rodenstock name guarantees lens quality which the photographer and the printer can always rely on and which allows both to expect the best possible photographic results.

Rodenstock quality for the perfect reproduction of your creative acts
Our efforts are reflected in a variety of quality features which offer practical benefits in the use of the lenses:

● All lenses are eminently suitable for photographs in black & white or color.

● The reproduction quality is even over the entire film area right up to the corners and not just in the picture center.

● The high reproduction quality is maintained without visible loss even at high magnification scale ranges.

● Good contrast even with full aperture allows problem-free focusing.

● The almost complete elimination of flare ensures high-contrast reproduction.

● The lack of vignetting at the working aperture (depending on the lens approx. 2 stops from the full aperture) guarantees a very uniform illumination distribution right up to the edges.

● Distortion is corrected so well that it is no longer visible in practice.

● The minimal focal length spread (well below 1%) means that the lenses can be used without problems in units with automatic focus or in printers.

Practical features for fast and safe operation increase productivity
Although the performance of the optics is the most important property of a lens, additional features also provide a high degree of practical use. Such features make the user's work easier, save time and money and, thanks to the increased operating safety, improve the quality of the results and increase productivity.

Rodenstock enlarging lenses are also characterised by their mechanical features which offer a number of useful properties to meet even the demands of the most discerning enlarging lab.

● 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 which can be put into operation by simply turning the setting ring to the stop after the picture has been composed and focused.

● The illuminated f-stop display shows the stop set without the room lighting having to be switched on.

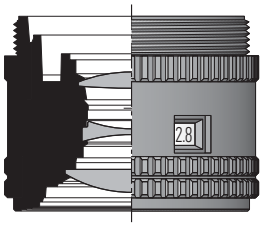
● The infinite stop setting allows exact stopping down when analysers with pre-set exposure times are used.

The prefix "Apo" stands for the best possible correction of chromatic aberration and guarantees photos without color fringes

Rogonar

Rogonar 50 mm f/2.8

Rogonar	Recomm. scale range	Max. film format
50 mm f/2.8	2× - 8×	24×36 mm



Optical design (50 mm f/2.8): 3 elements in 3 groups

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 the lens has a relatively simple optical design. But when used for a smaller scale range of about 2x to 8x 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.

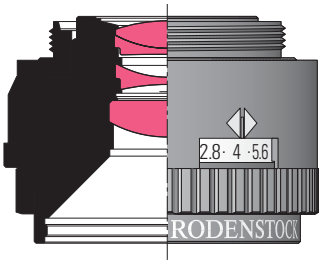
Further important technical details can be found in the table on page 11.

Rogonar: the low-priced starter for the amateur dark room

Rogonar-S

Rogonar-S 75 mm f/4.5

Rogonar-S	Recomm. scale range	Max. film format
25 mm f/4	10× - 30×	13×17 mm
35 mm f/4	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	2× - 8×	6×9 cm



Optical design (50 mm f/2.8): 4 elements in 3 groups

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 make 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.

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

Stopping down by 2 to 3 stops is recommended for optimal results.

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

❄ Discontinued model, leftover stock only!

Rogonar-S: a reasonably priced lens with remarkably good performance for standard format prints

Rodagon

Rodagon 150 mm f/5.6

Rodagon	Recomm. scale range	Max. 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	2× - 8×	10×12 inch

Optical design (50 mm f/2.8): 6 elements in 4 groups

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 focusing device Modular-Focus (see page 10).

The 6 element 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.

The Rodagon already meets the high demands of processing photography. A number of photographers use the models with shorter focal lengths in conjunction with suitable adapters together with SLR cameras for high-quality photos in extreme close-ups as they surpass most usual macro lenses with their superb definition and contrast.

All Rodagon lenses are equipped with an illuminated f-stop display, a click-stop diaphragm which can be switched to stepless control for focal lengths up to 135 mm, and all lenses are provided with a practical pre-set aperture. 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 (see table on page 11).

❄ 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

Apo-Rodagon-N

Apo-Rodagon-N 105 mm f/4

Optical design (105 mm f/4): 7 elements in 6 groups

Apo-Rodagon-N	Recomm. scale range	Max. film format
❄ 45 mm f/2.8	5× - 30×	24×36 mm
50 mm f/2.8	2× - 20×	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

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 strutures. 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 for 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.

❄ Discontinued model, leftover stock only!

Apo-Rodagon-N: the unbeatable lens for the highest demands

Rodagon-WA

Rodagon-WA 80 mm f/4

Rodagon	Recomm. scale range	Max. 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	4× - 15×	4×5 inch

Optical design (80 mm f/4): 6 elements in 4 groups

The Rodagon-WA has a shorter focal length and a larger angle of view and hence it achieves a 70 % larger projection area than conventional enlarging lenses with standard focal lengths. 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 can still be operated easily when the enlarger's head is in top position for high enlargements.

The 6 element 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 without or with less reciprocity failure for large format prints.

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.

❄ Discontinued model, leftover stock only!

Rodagon-WA: the same professional quality as the Rodagon but with a smaller projection distance

Apo-Rodagon-D

Apo-Rodagon-D 1x 75 mm f/4

Apo-Rodagon-D 1x	Recomm. scale range	Max. film format
75 mm f/4	0.8× - 1.2×	6×6 cm
Apo-Rodagon-D 2x		
75 mm f/4.5	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

Optical design (1x 75mm f/4): 6 elements in 4 groups

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 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 (see next page) – macro photography. Furthermore, as well as for photography, they can also be used as high resolving optical systems for premium scanners.

The 6 element, apochromatically corrected lenses feature high contrast and sharpness right up to the picture corners with practically no color fringes. Distortion is corrected almost to zero and cannot be seen even in critical subjects with straight-lined structures.

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.

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

Modular-Focus

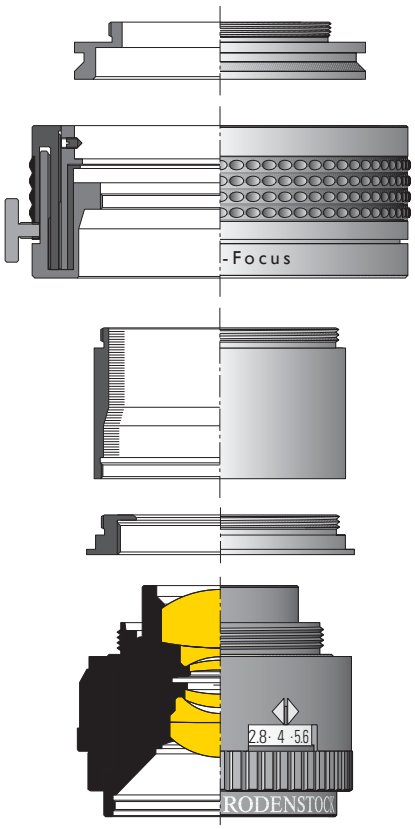
Modular-Focus with Rodagon 50 mm f/2.8

Lens adapter ▸ for lens ▾	A	B	C
Rogonar-S			
25 … 35 mm	–	–	●
50 … 105 mm	●	●	–
Rodagon			
28 mm	–	–	●
28 … 105 mm	●	●	–
135 mm	–	●	–
Apo-Rodagon-N			
45 … 105 mm	●	●	–
Rodagon-WA			
40 … 60 mm	●	●	–
80 mm	–	●	–
Apo-Rodagon-D			
1×, 2× 75 mm	–	●	–

A: M 39×1/26" special version that shuts out light from aperture display

B: M 39×1/26" standard version

C: M 32,5×0,5



Enlarging lenses have no helical focusing facility like taking lenses because focusing is performed with the bellows extension of the enlarger. 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 straight-line guide and a stroke of 25 mm to offer the high setting precision and stability to match the high image reproduction quality of our enlarging lenses. The straight-line guide guarantees that the lens does not rotate with the focusing ring of the Modular-Focus. Once the f-stop 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 conventional camera threads or bayonet mounts of 35 mm system cameras by using a T2 adapter with conventional connecting rings. For the use with system cameras with M 42 lens thread there is a M 42 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 39×1/26" and M 32,5×0,5 thread are available (see table at left). For the 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 and/or very large scales.

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

Technical data of the lenses

Lens	Max. film format	Recomm. (opt.) scale range	Smallest aperture	Pre-selection aperture	Click-stop disable	Illuminated f-stop display	Filter thread	Flange focal length [1]	Overall length	Max. diameter	Screw thread	Flange to rear edge
Rogonar												
50 mm f/2.8	24×36 mm	2-8× (4×)	16			•	–	38.0 mm	32.0 mm	42.0 mm	M 39 ×1/26"	6.5 mm
Rogonar-S												
25 mm f/4	13×17 mm	10-30× (20×)	16				M 30.5×0.5	23.0 mm	28.0 mm	40.5 mm	M 32.5×0.5 [2]	4.5 mm
35 mm f/4	18×24 mm	10-30× (20×)	16				M 30.5×0.5	34.0 mm	28.0 mm	40.5 mm	M 32.5×0.5 [2]	4.5 mm
50 mm f/2.8	24×36 mm	2-10× (4×)	16	•	•	•	M 40.5×0.5	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× (4×)	22	•	•	•	M 40.5×0.5	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× (4×)	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× (4×)	22	•	•	•	M 40.5×0.5	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× (4×)	22	•	•	•	M 40.5×0.5	95.0 mm	36.5 mm	50.0 mm	M 39 ×1/26"	5.9 mm
Rodagon												
28 mm f/4	18×24 mm	5-30× (20×)	16				M 30.5×0.5	27.7 mm	30.0 mm	40.5 mm	M 32.5×0.5 [2]	6.7 mm
28 mm f/4	18×24 mm	5-30× (20×)	16	•	•	•	M 40.5×0.5	23.0 mm	37.2 mm	50.0 mm	M 39 ×1/26"	6.5 mm
35 mm f/4	24×24 mm	5-30× (20×)	16	•	•	•	M 40.5×0.5	31.2 mm	37.2 mm	50.0 mm	M 39 ×1/26"	6.5 mm
50 mm f/2.8	24×36 mm	2-15× (10×)	16	•	•	•	M 40.5×0.5	43.5 mm	43.5 mm	50.0 mm	M 39 ×1/26"	13.0 mm
60 mm f/4	40×40 mm	2-10× (10×)	22	•	•	•	M 40.5×0.5	56.0 mm	41.8 mm	50.0 mm	M 39 ×1/26"	10.2 mm
80 mm f/4	6×7 cm	2-10× (6×)	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× (6×)	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× (6×)	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× (6×)	45			•	M 52 ×0.75	146.0 mm	49.8 mm	60.0 mm	M 50 ×0.75	20.1 mm
180 mm f/5.6	5×7 inch	2-8× (5×)	45			•	M 58 ×0.75	177.0 mm	59.8 mm	60.0 mm	M 50 ×0.75	24.6 mm
❄ 210 mm f/5.6	5×7 inch	2-8× (4×)	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× (4×)	45			•	M 77 ×0.75	230.0 mm	77.0 mm	80.0 mm	M 72 ×1	30.0 mm
❄ 300 mm f/5.6	8×10 inch	2-8× (4×)	45			•	M 86 ×1	283.0 mm	93.0 mm	90.0 mm	M 72 ×1	8.5 mm
❄ 360 mm f/6.3	10×12 inch	2-8× (2.5×)	45			•	M 95 ×1	300.0 mm	110.6 mm	100.0 mm	M 90 ×1	9.5 mm
Apo-Rodagon-N												
❄ 45 mm f/2.8	24×36 mm	2-30× (15×)	16	•	•	•	M 40.5×0.5	47.1 mm	55.3 mm	50.0 mm	M 39 ×1/26"	20.9 mm
50 mm f/2.8	24×36 mm	2-20× (10×)	16	•	•	•	M 40.5×0.5	46.0 mm	46.5 mm	50.0 mm	M 39 ×1/26"	15.7 mm
80 mm f/4	6×7 cm	2-15× (10×)	22	•	•	•	M 40.5×0.5	77.0 mm	43.0 mm	50.0 mm	M 39 ×1/26"	12.2 mm
90 mm f/4	6×7 cm	2-15× (10×)	22	•	•	•	M 40.5×0.5	93.5 mm	43.9 mm	50.0 mm	M 39 ×1/26"	13.2 mm
105 mm f/4	6×9 cm	2-15× (6×)	22	•	•	•	M 40.5×0.5	99.1 mm	54.3 mm	50.0 mm	M 39 ×1/26"	18.0 mm
Rodagon-WA												
40 mm f/4	24×36 mm	4-20× (10×)	22	•	•	•	M 40.5×0.5	36.5 mm	37.2 mm	50.0 mm	M 39 ×1/26"	6.5 mm
60 mm f/4	6×6 cm	4-15× (8×)	22	•	•	•	M 40.5×0.5	55.5 mm	41.0 mm	50.0 mm	M 39 ×1/26"	10.0 mm
80 mm f/4	6×9 cm	4-15× (8×)	22	•	•	•	M 40.5×0.5	77.0 mm	44.0 mm	50.0 mm	M 39 ×1/26"	13.0 mm
❄ 120 mm f/5.6	4×5 inch	4-15× (6×)	45			•	M 52 ×0.75	116.4 mm	59.0 mm	60.0 mm	M 50 ×0.75	26.6 mm
Apo-Rodagon-D												
75 mm f/4	6×6 cm	0.8-1.2× (1×)	22	•	•		M 40.5×0.5	136.7 mm	53.0 mm	50.0 mm	M 39 ×1/26"	18.7 mm
75 mm f/4.5	6×7 cm	1.2-2.5× (2×)	22	•	•		M 40.5×0.5	109.4 mm	43.0 mm	50.0 mm	M 39 ×1/26"	12.5 mm
120 mm f/5.6	4×5 inch	0.5-3× (2×)	32	•	•		M 40.5×0.5	172.9 mm	43.4 mm	50.0 mm	M 39 ×1/26"	12.7 mm

[1] Flange focal length at ∞, for Apo-Rodagon-D at the given optimum scale; [2] Adapter for M 39×1/26" supplied

❄ Discontinued model, leftover stock only!

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