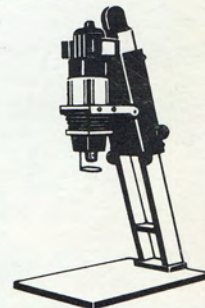
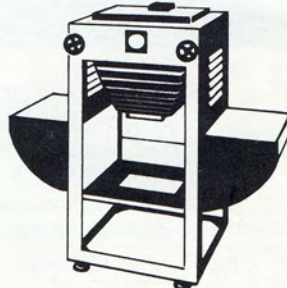
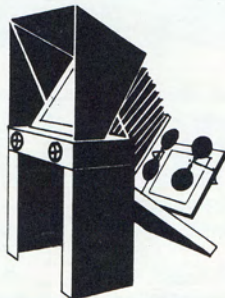
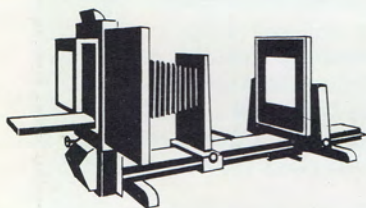


Wollensak RAPSTAR LENSES for the

GRAPHIC ARTS

- Raptar Apochromatic Process Lenses
- Prisms
- Amaton Process Lenses
- Graphic Raptar Wide Field Lenses
- Raptar Copy Lenses
- Raptar Enlarging
- Pro Raptar Enlarging
- Projection Amaton



Lenses for 4-color process work • Fine or coarse screen halftones • Critical line work • Enlarging or reducing



Revere-Wollensak Division
MINNESOTA MINING & MANUFACTURING CO.
850 HUDSON AVENUE • ROCHESTER 21, NEW YORK

COPY LENSES

RAPTAR APOCHROMATIC PROCESS LENSES

Raptar Apochromatic Process lenses are recommended for critical copy work . . . for enlarging and reducing because of their flat field, even illumination, rectilinearity, chromatic correction and over-all covering power. The exceptional chromatic qualities of Raptar Process lenses make them ideal for four-color process work. Overall sharpness with maximum resolution is main-

tained for all copy ratios. Wocoted optics reduces internal light reflection and flare, greatly increases brilliance and detail.

Supplied in barrel mounting, barrel is slotted to accept waterhouse stops. One plain waterhouse stop is supplied with each lens.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Critical Definition Plates Covered . . . 33 1/3% at f/16	Critical Definition Plates Covered . . . from 1:1 at f/16	Size Prisms	Mounting
	Inches	mm					
648	6	152	f/9	4" x 5"	6" x 8"	2	In # 3 Iris Barrel
649	8 1/4	210	f/9	5" x 7"	6 1/2" x 8 1/2"	2	In # 3 Iris Barrel
650	10 3/4	273	f/9.5	6" x 8"	10" x 12"	2	In # 3 Iris Barrel
656	13	330	f/10	7" x 9"	11" x 13"	2 1/2	In # 4 Iris Barrel
662	14	355	f/10	8 1/2" x 11"	12" x 17"	2 1/2	In # 4 Iris Barrel
677	15	380	f/10	9" x 11"	13" x 16"	2 1/2	In # 5 Iris Barrel
668	16	406	f/10	10" x 12"	14" x 17"	3	In # 5 Iris Barrel
671	19	482	f/10	11" x 14"	18" x 22"	3 1/2	In # 6 Iris Barrel
674	25	635	f/10	12" x 17"	20" x 24"	3 1/2	In # 7 Iris Barrel

Process Lenses supplied with slotted barrel and one waterhouse stop. Available in Alphax and Rapax Shutters on Special Order . . . Prices upon request.

OPTICAL DATA: Front focal length, back focal length, equivalent focal length, overall separation and separation of nodes accurately computed are furnished for each lens supplied.

PRISMS • Prisms are precision ground and polished to assure absolute flat and true surfaces maintaining the fine optical performance of the lens. Prisms are mounted

in a substantial case providing for perfect alignment. There are provisions in the prism housing to firmly place and lock the prism to the lens in any desired position.

AMATON PROCESS LENSES

This is the companion line of fine lenses which complements the superb series of Raptar Apochromatic Lenses. The f/8 Amaton Process Lenses were designed for the market where price is an important factor and extremely high chromatic correc-

tion is not necessary for the results required. These lenses are ideally suited for black and white line work . . . deliver good definition, flat field, and fine resolution.

Lenses are supplied in iris diaphragm barrel.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Coverage for Reduction		Coverage for full copy		Mounting
	Inches	mm		at f/8	at f/22	at f/8	at f/22	
685	8 1/4	210	f/8	2 1/4" x 3 1/4"	5" x 7"	4" x 5"	8" x 10"	In # 4 Iris Barrel
686	10 1/2	267	f/8	4" x 5"	8" x 10"	5" x 7"	11" x 14"	In # 4 Iris Barrel
687	15	380	f/8	5" x 7"	10" x 12"	8" x 10"	16" x 20"	In # 5 Iris Barrel

Lens coverage figures are based on coverage at f/8 for critical definition. Stopping the lens down will increase the coverage and performance up to f/22.

WOLLENSAK RAPTOR APOCHROMATIC PROCESS LENSES

ENLARGEMENT (OR REDUCTION) VALUES AT VARIOUS DIAPHRAGM SETTINGS

EFL	% Copy Size		100%			75%			50%			33⅓%	
	Aperture Ratio Nos. f Nos.	32 f 16	45 f 22	64 f 32	32 f 18	45 f 26	64 f 36	22 f 15	32 f 21	45 f 30	22 f 17	32 f 24	45 f 34
Maximum Plate Sizes Covered (in inches)													
6"	Critical Work	5¼x7	6x7	6½x8½	4½x6	5x6	5½x7	4½x5	4x5½	4x6	4x5	4x5½	4½x5¼
	Normal Work	6½x8½	7x9	7x9	5½x7	6x7½	6x7½	4x6	4½x6¼	4½x6¼	4½x5¼	4½x5¾	4½x5¾
8¼"	Critical Work	8x9	8¾x9	9x12	6½x8¼	7¼x9	7x10	5½x7	6x7	6½x8½	4½x6½	5½x6	5½x7½
	Normal Work	9x12	10½x12	10½x12	7x10	9x9½	9x9½	6½x8½	7x9	7x9	5½x7½	7x7	7x7
10¾"	Critical Work	9x12	10x12	11x14	8x10	8½x11	10x12	7x9	6½x8½	8x10	6x8	6x8	6½x8½
	Normal Work	11x14	11x14	12x17	10x12	10x12	11x14	8½x11	8½x11	10x12	8x10	8x10	8½x11
13"	Critical Work	11x13	11x13	11x17	10x12	10x12	11x14	8x10	8x10	8½x11	7x9	7x9	7x9
	Normal Work	12x18	12x18	14x17	11x14	11x14	12x17	10x12	10x12	11x14	8½x11	8½x11	10x12
14"	Critical Work	12x17	12x17	12x18	11x14	11x14	12x17	10x12	10x12	11x14	8½x11	8½x11	10x12
	Normal Work	16x20	16x20	18x22	12x18	12x18	14x17	11x14	11x14	12x17	10x12	11x14	11x14
15"	Critical Work	13x16	13x16	15x18	11x16	11x16	11x17	10x13	10x13	11x16	9x11	9x11	10x13
	Normal Work	16x20	16x20	18x22	15x18	15x18	16x20	11x16	13x16	13x16	10x13	11x15	11x16
16"	Critical Work	14x17	14x17	16x20	12x17	12x17	12x18	11x14	11x14	12x17	10x12	10x12	11x14
	Normal Work	18x22	18x23	20x24	16x20	16x20	18x22	12x18	14x17	14x17	11x14	12x17	12x18
19"	Critical Work	18x22	18x22	20x24	14x17	14x17	16x20	12x17	12x18	14x17	11x14	11x14	12x17
	Normal Work	20x24	22x28	22x28	18x23	18x23	20x24	16x20	16x20	18x22	14x17	14x17	16x20
25"	Critical Work	20x24	20x24	22x28	16x20	16x20	18x22	14x17	14x17	16x20	12x17	12x18	14x17
	Normal Work	22x28	22x28	22x28	20x24	20x24	22x28	16x20	16x20	16x20	14x17	14x17	16x20

WOLLENSAK AMATON PROCESS LENSES

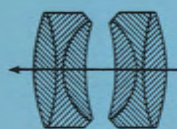
ENLARGEMENT (OR REDUCTION) VALUES AT VARIOUS DIAPHRAGM SETTINGS

EFL	% Copy Size		100%			75%			50%			33%⅓	
	Aperture Ratio Nos. f Nos.	32 f 16	45 f 22	64 f 32	32 f 18	45 f 26	64 f 36	22 f 15	32 f 21	45 f 30	22 f 17	32 f 24	45 f 34
Maximum Plate Sizes Covered (in inches)													
8¼"	Critical Work	8x9	8¾x9	9x12	6½x8¼	7¼x9	7x10	5½x7	6x7	6½x8½	4½x6½	5½x6	5½x7½
	Normal Work	9x12	10½x12	10½x12	7x10	9x9½	9x9½	6½x8½	7x9	7x9	5½x7½	7x7	7x7
10½"	Critical Work	9x12	10x12	11x14	8x10	8½x11	10x12	7x9	6½x8½	8x10	6x8	6x8	6½x8½
	Normal Work	11x14	11x14	12x17	10x12	10x12	11x14	8½x11	8½x11	10x12	8x10	8x10	8½x11
15"	Critical Work	13x16	13x16	15x18	11x16	11x16	11x17	10x13	10x13	11x16	9x11	9x11	10x13
	Normal Work	16x20	16x20	18x22	15x18	15x18	16x20	11x16	13x16	13x16	10x13	11x15	11x16



WIDE FIELD LENSES

GRAPHIC RAPTOR WIDE FIELD LENSES



Wollensak Graphic Raptor Wide Field Lenses were specifically designed to give the finest results with color or black and white in the Graphic Arts field. No other lens can surpass the qualities of these symmetrical lenses for critical definition, full covering power, uniform flat field and color correction. Actual tests with

these lenses made in a number of graphic arts plants have surpassed the most critical requirements in color, black and white line or halftone work. This series of lenses is especially designed for maximum performance at 1:1 for use in Vertical type cameras. It will produce larger size copies in shorter working distances.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Number of Elements	Coverage at 1:1	Mounting
	Inches	mm				
690	4 1/4	108	f/12.5	4	8" x 10"	In #2 Iris Barrel
691	6 1/4	159	f/12.5	4	8" x 10"	In #4 Iris Barrel
692	8 1/4	210	f/6.8	6	15" x 18"	In #4 Iris Barrel
693	10 3/4	273	f/6.8	6	18" x 22"	In #5 Iris Barrel

RAPTOR COPY LENSES



Raptor copy lenses are specifically designed for dynamic 1:1 reproduction of small size copy. They were originally designed for reproduction of moving copy using a slit aperture . . . can be used to

cover full size copy or through a slit aperture using moving copy. This series of lenses has high resolution without the sacrifice of contrast.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Coverage at 1:1		Mounting
	Inches	mm		Full Size Copy	Slit Aperture	
695	4 1/4	108	6.3	5" x 7 1/2"	9" x 1 1/2"	In #3 Barrel
696	8 1/4	210	4.5	6 1/2" x 9"	11" x 1 1/2"	In #6 Barrel



ENLARGING LENSES

RAPTOR ENLARGING LENSES

Professional photographers who want the finest in enlarging lenses select Wollensak Enlarging Raptars. These lenses produce crisp, brilliant enlargements over the entire print . . . capture all the tonal qualities and detail of the negative from corner to corner . . . were designed

specifically to make enlargements.

Enlarging Raptars are designed for working from a flat field at a short range . . . projecting from a flat surface to a flat surface. They are exceptionally well corrected and Wocoted.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Film Size	Mounting
	Inches	mm			
709	*1	25	f/4.5	18 x 24mm	In #0 Sunk Iris Barrel
710	*2	50	f/4.5	1 1/4" x 1 5/8"	In #1 Iris Barrel
711	*3	75	f/4.5	2 1/4" x 2 1/4"	In #1 Iris Barrel
712	*3 1/2	90	f/4.5	2 1/4" x 3 1/4"	In #1 Iris Barrel
713	*4	101	f/4.5	2 1/4" x 3 1/4"	In #1 Iris Barrel
714	*5	127	f/4.5	3 1/4" x 4 1/4"	In #2 Iris Barrel
715	*5 3/8	135	f/4.5	4" x 5"	In #3 Iris Barrel
716	*6 3/8	162	f/4.5	4" x 5"	In #4 Iris Barrel
717	*7 1/2	190	f/4.5	5" x 7"	In #5 Iris Barrel
718	8 1/4	210	f/4.5	5" x 8"	In #6 Iris Barrel
719	9 1/2	241	f/4.5	6 1/2" x 8 1/2"	In #6 Iris Barrel
720	11 7/8	302	f/4.5	8" x 10"	In #7 Iris Barrel

*Supplied with click stops

PRO-RAPTOR ENLARGING LENSES

- No distortion • No curvature • Higher contrast
- Extra fine resolution • Rectilinear

The Pro-Raptor series of Enlarging Lenses brings to enlarging precise projection printing unknown 'til now. Excellent for either black and white or color work. These lenses deliver unparalleled brilliance, contrast and definition with evenness of illumination and flatness of

field. A new optical formula, high index glass and new construction make this possible. Use an Enlarging Pro-Raptor lens with any reliable enlarger and you will see prints that will amaze the most critical and the most discriminating photographer.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Film Size	Mounting
	Inches	mm			
721	2	50	f/4.0	1 1/4" x 1 5/8"	In #1 Iris Barrel
722	3 1/2	90	f/4.5	2 1/4" x 3 1/4"	In #2 Iris Barrel
723	4	101	f/5.6	2 1/4" x 3 1/4"	In #3 Iris Barrel
724	5 3/8	135	f/5.6	4" x 5"	In #3 Iris Barrel
725	6 3/8	162	f/5.6	4" x 5"	In #4 Iris Barrel
726	7 1/2	190	f/5.6	5" x 7"	In #5 Iris Barrel

Supplied with click stops



PROJECTION LENSES

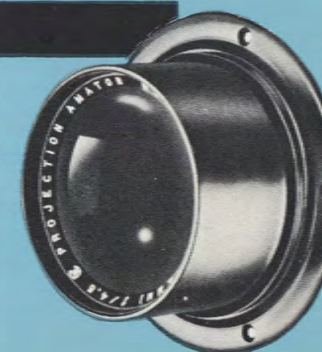
PROJECTION AMATON LENS

The 9 1/2" f/4.5 Projection Amaton Lens was specifically designed for use in opaque projectors. Used in the Graphic Art field to compose, trace, enlarge and

reduce art work. The lens has adequate speed and resolution to deliver bright sharp images.

SPECIFICATIONS

Cat. No.	Equiv. Focus		f Value	Coverage	Mounting
	Inches	mm			
735	92	241	f/4.5	6 1/2" x 8 1/2"	In Plain Barrel



WOLLENSAK RAPSTAR APOCHROMATIC PROCESS LENSES

OPERATING DISTANCES FROM LENS TO COPY BOARD FOR VARIOUS ENLARGEMENT (OR REDUCTION) VALUES

EFL (Inches)	EFL (mm)	Max. Angular Field in Degrees		Aperture for max. definition not necessarily max. covering power	Aperture Ratio No. for max. coverage not necessarily max. definition	% COPY SIZE 100%	75%	50%	33 1/3%
		Normal Work e.g. Half Tones	Critical Work e.g. Line Cuts				Object and Image Distances in Inches	Object and Image Distances in Inches	Object and Image Distances in Inches
6"	152.0	23	20	f/22	f/64	Lens to Film 12 Lens to Copy Board 12 Film to Copy Board 24	10.5 14.0 24.5	9 18 27	8 24 32
8 1/4"	209.6	23	20	f/22	f/64	Lens to Film 16.5 Lens to Copy Board 16.5 Film to Copy Board 33.0	14.4 19.25 33.65	12.4 24.75 31.15	11.0 33.0 44.0
10 3/4"	260.3	24	20	f/22	f/64	Lens to Film 21.5 Lens to Copy Board 21.5 Film to Copy Board 43.0	18.81 25.08 43.89	16.12 32.25 48.37	14.33 43.00 57.33
13"	330.2	24	20	f/22	f/64	Lens to Film 26 Lens to Copy Board 26 Film to Copy Board 52	22.75 30.30 53.05	19.5 39.0 58.5	17.3 52.0 69.3
14"	355.6	24	20	f/22	f/64	Lens to Film 28 Lens to Copy Board 28 Film to Copy Board 56	24 1/2 32 2/3 57 1/6	21 42 63	18 2/3 56 74 2/3
15"	381.0	24	20	f/22	f/64	Lens to Film 30 Lens to Copy Board 30 Film to Copy Board 60	26.25 35.00 61.25	22.50 45.00 67.50	20 60 80
16"	406.4	24	20	f/22	f/64	Lens to Film 32 Lens to Copy Board 32 Film to Copy Board 64	28 37 1/3 65 1/3	24 48 72	21 1/3 64 85 1/3
19"	482.6	24	20	f/22	f/64	Lens to Film 38 Lens to Copy Board 38 Film to Copy Board 76	33 1/4 44 1/3 77 7/12	28 1/2 57 85 1/2	25 1/3 76 101 1/3
25"	635.0	20	17	f/22	f/64	Lens to Film 50 Lens to Copy Board 50 Film to Copy Board 100	43 3/4 58 1/3 102 1/12	37 1/2 75 112 1/2	33 1/3 100 133 1/3

WOLLENSAK AMATON PROCESS LENSES

OPERATING DISTANCES FROM LENS TO COPY BOARD FOR VARIOUS ENLARGEMENT (OR REDUCTION) VALUES

EFL (Inches)	EFL (mm)	Max. Angular Field in Degrees		Aperture for max. definition not necessarily max. covering power	Aperture Ratio No. for max. coverage not necessarily max. definition	% COPY SIZE 100%	75%	50%	33 1/3%
		Normal Work e.g. Half Tones	Critical Work e.g. Line Cuts				Object and Image Distances in Inches	Object and Image Distances in Inches	Object and Image Distances in Inches
8 1/4"	209.6	23	20	f/22	f/64	Lens to Film 16.5 Lens to Copy Board 16.5 Film to Copy Board 33.0	14.4 19.25 33.65	12.4 24.75 37.15	11.0 33.0 44.0
10 1/2"	266.7	24	20	f/22	f/64	Lens to Film 21 Lens to Copy Board 21 Film to Copy Board 42	18.37 24.50 42.87	15.75 31.50 47.25	14.0 42.0 56.0
15"	381.0	24	20	f/22	f/64	Lens to Film 30 Lens to Copy Board 30 Film to Copy Board 60	26.25 35.00 61.25	22.50 45.00 67.50	20 60 80



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