

at 135mm/1:50

f/	Center (l/mm)	Corner (l/mm)	
5.6	Excellent	50	Excellent 45
8	Excellent	56	Excellent 50
11	Excellent	63	Excellent 56
16	Excellent	56	Excellent 50
22	Excellent	56	Excellent 50
32	Excellent	50	Excellent 45

at 300mm/1:50

f/	Center (l/mm)	Corner (l/mm)	
5.6	Excellent	45	Excellent 40
8	Excellent	50	Excellent 45
11	Excellent	56	Excellent 50
16	Excellent	50	Excellent 45
22	Excellent	50	Excellent 45
32	Excellent	45	Excellent 40

MACRO RESOLUTION  
at 300mm/1:4

f/	Center (l/mm)	Corner (l/mm)	
5.6	Good	32	V. Good 29
8	V. Good	36	V. Good 29
11	V. Good	40	Good 32
16	Good	36	Good 32
22	Good	36	Good 32
32	Good	32	Good 29

CONTRAST  
at 75mm/30 lines/mm

f/	Center (%)	Corner (%)	
5.6	Medium	38	Medium 29
8	High	52	High 41
11	High	55	High 41
16	High	53	High 42
22	High	42	High 37
32	Medium	32	Low 24

MODERN PHOTOGRAPHY'S unbiased test reports are based on actual field work and measurements carried out in our own laboratories. Only production equipment and materials similar to those available to the reader are tested. Readers are warned, however, that our tests, particularly of lenses and cameras, are often far more critical and specific than those published elsewhere and cannot therefore be compared with them. In all lens tests, unless specifically noted, some of the sharpness falloff at the edges can be traced to curvature of field, most noticeable at close focusing distances; at distant settings, this effect would be minimized. Note too that the standards for center sharpness are higher than for edge sharpness, so that no comparison should be made between center and edge ratings. **NO MODERN TEST MAY BE REPRODUCED IN WHOLE OR IN PART FOR ANY PURPOSE IN ANY FORM WITHOUT WRITTEN PERMISSION.** Should you have difficulty locating sources for any product, write to the Readers' Service Dept. of Modern Photography. **WARNING:** Since optics and precision mechanisms may vary from unit to unit, we strongly suggest that our readers carry out their own tests on equipment they buy. **PRICES GIVEN ARE MANUFACTURER'S SUGGESTED LIST PRICES AT PRESS-TIME. ITEMS ARE OFTEN AVAILABLE AT LOWER PRICES THROUGH DEALERS.**

at 135mm/30 lines/mm

f/	Center (%)	Corner (%)	
5.6	High	40	Medium 29
8	High	50	High 40
11	High	51	High 43
16	High	54	High 45
22	High	43	Medium 35
32	Medium	32	Medium 25

at 300mm/30 lines/mm

f/	Center (%)	Corner (%)	
5.6	Low	28	Medium 22
8	Medium	33	Medium 26
11	High	43	Medium 30
16	High	40	Low 28
22	Low	28	V. Low 21
32	V. Low	22	Low 19

## Fast 180mm From Olympus

**Specifications:** 180mm f/2 Olympus Zuiko Auto-T, No.101051, in Olympus bayonet mount, accepts 100mm accessories; f/2 to f/22 with full stop detents, min. foc. dist. 5 ft. 3 in. (1.6m); 6<sup>7</sup>/<sub>8</sub> in. long, 4<sup>1</sup>/<sub>2</sub> in. diam. (175 x 113mm); 4 lbs. 2<sup>7</sup>/<sub>16</sub> oz. (1885g). \$3350 with fitted alum. case, straps.

**Practical comments:** An incredibly fast telephoto designed for pros who shoot under low light. Well balanced and easy handling in spite of weight. Compact for its speed and focal length, due to internal focusing mechanism. Turning the diamond-patterned 1<sup>5</sup>/<sub>16</sub> in.-wide rubber cushioned focusing grip brings the lens to its 1.6m close focus point in an effortless 90°

Ultra-high speed Zuiko tele is ideal for low-light shooting Olympus users.



clockwise turn. Narrow 5<sup>1</sup>/<sub>16</sub> in.-wide knurled aperture ring near lens mount stops the lens down. Light tan finish (for heat reflection), apertures white on black, footage scales in red, metric in dark brown for easy reading. Collapsible rubber-rimmed 1<sup>3</sup>/<sub>8</sub> in. long locking lens shade. Rotatable, removable tripod socket/carrying handle/handgrip has three 1<sup>1</sup>/<sub>4</sub>x20 tripod sockets to facilitate balancing weight of camera plus lens and motor. Grip has lugs for heavy-duty 3<sup>4</sup>/<sub>8</sub> in. strap (included). Unfortunately, the rotating tripod socket leaves no space for a filter slot to take smaller filters so 100mm screw-in filters must be used.

**Field test slides:** Our Kodachrome slides were crisp and contrasty. Wide open, at f/2, central sharpness was surprisingly good though corners were slightly soft. By f/2.8, overall

RESOLUTION  
OLYMPUS ZUIKO 180mm f/2 at 1:49

f/	Center (l/mm)	Corner (l/mm)	
2	Excellent	55	Excellent 49
2.8	Excellent	62	Excellent 55
4	Excellent	69	Excellent 62
5.6	Excellent	69	Excellent 62
8	Excellent	69	Excellent 62
11	Excellent	62	Excellent 55
16	Excellent	62	Excellent 55
22	Excellent	55	Excellent 49

Would you like to test your own lens? Get MODERN's Lens Test Kit by sending \$13.95 plus \$2.00 for handling. Write to: Lens Test Kit, MODERN PHOTOGRAPHY, 825 Seventh Ave., N.Y., NY 10019. Please allow 4-6 weeks for delivery.

sharpness was achieved. Some color fringing was noticeable in corners; very slight fall-off in illumination was gone by f/4. Flare well controlled throughout, even at full aperture. A fine performer considering its speed and focal length. Among the sharpest 180mm teles we've seen.

PERFORMANCE

Our Standard	as Tested
Focal length: ±5% (171.00-189.00mm)	180.57mm
Aperture: ±5% (f/1.90-2.10)	f/2.01
Distortion: (±2.5%)	under 1% (pinch)
Light falloff: at f/5.6	+1 stop from theoretical limit (0-1.0 stops)
	0.2 stops

CONTRAST  
at 180mm/30 lines/mm

f/	Center (%)	Corner (%)	
2	High	51	High 40
2.8	High	58	High 43
4	High	60	High 48
5.6	High	63	High 53
8	High	67	High 55
11	High	58	High 50
16	High	50	High 41
22	High	47	High 39

## 45mm Compact Zeiss For Yashica/Contax



Tiny Tessar adds less than 1 in. to profile of Contax/Yashica SLRs, keeping them almost pocketable.

**Specifications:** 45mm f/2.8 Carl Zeiss Tessar T-star, No.6734330, in Yashica/Contax bayonet mount, accepts 49mm accessories; f/2.8 to f/22 with full stop detents, min. foc. dist. 2 ft. 1 in. (6m); 7<sup>1</sup>/<sub>8</sub> in. long, 2<sup>3</sup>/<sub>8</sub> in. diam. (22 x 60mm); 3<sup>1</sup>/<sub>16</sub> oz. (88g). \$145.

**Practical comments:** Tiny, flat normal lens for Yashica/Contax SLRs produces a slim, pocketable SLR package. Focuses to 2 feet with a 140° counter-clockwise rotation of its easily grasped, front-mounted, 1<sup>1</sup>/<sub>8</sub> in. square patterned focusing ring, f/2.8-f/22 with full stop detents. Footage scales in gold, metric distance, aperture, and depth-of-field scales legibly engraved in white. Semi-gloss black finish.

**Field test slides:** Slides showed good contrast and sharpness overall. At f/2.8 corners were slightly soft, equalled central sharpness by f/5.6. Very minimal barrel distortion noted. Flare well controlled throughout. Very slight light fall-off to f/4. An above-average performer.

PERFORMANCE

Our Standard	as Tested
Focal length: ±5% (42.75- 47.25mm)	45.75mm
Aperture: ±5% (f/2.66-2.94)	f/2.86
Distortion: (±1.5%)	0.45% (barrel)
Light falloff: at f/5.6	+1 stop from theoretical limit (0-1.6 stops)
	0.7 stops

**Optical bench analysis** (for optical experts only): On axis, slight overcorrected spherical aberration; very slight red flare, gone by f/5.6. Diffraction limited performance by f/8.

Off axis, very slight skew-ray flare mixed with slight astigmatism. Slight lateral color.

RESOLUTION  
TESSAR 45mm f/2.8 at 1:50

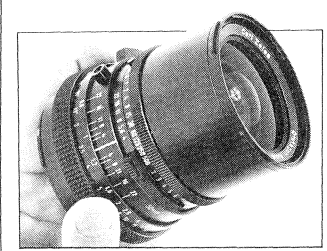
f/	Center (l/mm)	Corner (l/mm)	
2.8	Good	50	Excellent 45
4	Good	56	Excellent 50
5.6	V. Good	63	Excellent 56
8	Excellent	70	Excellent 63
11	Excellent	63	Excellent 56
16	V. Good	56	Excellent 50
22	V. Good	56	Excellent 50

CONTRAST  
at 45mm/30 lines/mm

f/	Center (%)	Corner (%)	
2.8	High	50	High 40
4	High	53	High 43
5.6	High	65	High 55
8	High	67	High 56
11	High	60	High 50
16	High	52	High 45
22	Medium	49	High 40

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## 50mm Zeiss Distagon For Hasselblad



Rubber focusing grip, depth-of-field preview and shutter-speed setting make 50mm Distagon easy to handle.

**Specifications:** 50mm f/4 Zeiss CF Distagon for Hasselblad 2<sup>1</sup>/<sub>4</sub>x2<sup>1</sup>/<sub>4</sub> in. (6x6 cm) medium format SLRs; No.6666698; accepts Hasselblad bayonet 60 filters; f/4-22, half-stop detents; Prontor CF between-lens leaf shutter, with speeds from 1/500 sec. to B. F setting locks shutter open for use with focal plane shutter of Hasselblad 2000FCs; EV scale settings from 2 to 21;

min. foc. dist. 19 in. (.48m); 3<sup>1</sup>/<sub>8</sub> in. long, 3<sup>1</sup>/<sub>4</sub> in. diam. (93 x 83mm); 1 lb., 11<sup>1</sup>/<sub>2</sub> oz. (790g). \$1590.

**Practical comments:** Relatively heavy medium format retrofocus wide angle now in a new semi-gloss black focusing mount with Prontor CF shutter, used with all new Hasselblad lenses from 38 to 250mm (with sole exception of the 40mm Distagon). Control rings are easier to set than those of previous 50mm Distagons—aperture and shutter-speed rings are uncoupled for independent adjust-

ment until you push in a spring-loaded coupling button. Preview lever can now be locked and unlocked without opening lens to maximum aperture. New textured rubber focusing grip gives added control and comfort.

**Field test slides:** Our 2<sup>1</sup>/<sub>4</sub> test slides were uniformly sharp and contrasty. Corner sharpness was a bit low, improved by f/5.6. Slight light fall-off noted when wide open, was almost gone by f/5.6. A well above average performer for a medium format retrofocus wide angle.

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The above Seal will be awarded to those still cameras and lenses, movie cameras and projectors (see Movie Section), enlargers and color analyzers that have passed MODERN TESTS and whose suppliers agree to the following:

"The equipment, like the sample tested by MODERN PHOTOGRAPHY will equal or better MODERN PHOTOGRAPHY's laboratory and field-test performance requirements or the item will be repaired or replaced until it does. Purchaser must notify warranty issuer of such failure within 45 days of receiving item from store where it was purchased. If the equipment cannot be furnished to specifications, the purchaser will receive a refund of actual purchase price provided items are returned in original condition and packing, together with the sales slip, at the expense of the purchaser. The supplier will pay postage to return merchandise to the purchaser. This warranty gives the purchaser specific legal rights and he may also have other rights that vary from state to state."

The Seal may appear on the product itself, in advertisements, in promotional materials, or on warranty cards at the discretion of the supplier. Repair, replacement or refunding will be done by the supplier and at his discretion and not by MODERN PHOTOGRAPHY Magazine. This limited warranty is in addition to whatever warranties, limited or full, that the supplier may give. Purchasers must furnish adequate proof of the equipment's disability. In terms of inaccurate exposures, shutter speeds or poor optical quality, films or slides showing proof must be furnished with proper identification of the warranty issuer—the same type of proof your repairman would like to have to check malfunctioning equipment.

MODERN will continue to test products and report on them whether or not the supplier decides to accept the Seal of Approval. The lack of a Seal in no way reflects on a product's quality. The Seal is merely an indication that the supplier has agreed to accept certain responsibilities as to minimum standards for every product sold as stated.

Minimum Resolution Standards

Type	Aperture							
	Max.		Next		Middle		f/11-22	
	lines/mm	Center	lines/mm	Center	lines/mm	Center	lines/mm	Center
35mm Camera Lenses								
Fisheye (to 16mm)	36	20	36	20	40	22	40	24
17 to 24 5mm	36	20	36	20	40	28	40	28
25 to 39 5mm	36	25	36	25	40	28	40	32
to 39 5mm/faster than f/2.1	36	22	36	22	40	27	40	28
40 to 60 5mm	40	25	40	30	45	36	45	36
40 to 60 5mm/faster than f/1.4	36	24	40	25	45	32	45	36
61 to 135mm	36	25	36	28	40	32	40	32
136 to 250 5mm	32	25	32	25	40	32	40	32
251 to 500 5mm	32	24	32	24	36	32	32	32
501mm and longer	32	24	32	24	36	32	32	28
Zoom Lenses								
to 39 5mm	32	23	32	23	36	25	36	25
40 to 60 5mm	36	25	40	28	45	36	40	32
61 to 135 5mm	36	24	40	25	45	28	40	28
136mm and longer	28	23	28	23	36	28	32	28
2 1/4 x 2 1/4 Camera Lenses								
to 74 5mm	28	14	32	18	32	18	32	22
75 to 94 5mm	28	18	32	20	36	22	32	22
95mm and longer	25	18	28	20	32	20	28	20
2 1/4 x 2 1/4 Camera Lenses								
to 59 5mm	16	9	18	10	22	12	22	14
60 to 89 5mm	18	11	20	12	24	14	25	16
90 to 119 5mm	20	12	22	14	25	16	25	18
120 to 499 5mm	18	11	20	12	22	14	25	16
500mm and longer	16	11	18	12	20	14	22	16
4 x 5 Camera Lenses								
all	28	22	28	22	34	25	34	25

## MODERN PHOTOGRAPHY Minimum test requirements for Seal of Approval

### Still camera and lens field-test standards

All features and controls must operate properly for the equivalent of 25 rolls of film, producing adequately exposed photographs of sufficient quality to meet professional standards for a camera and lens of that size and negative format when 11 x 14 in. black-and-white prints made from negatives of that camera and/or lens, or slides are projected on a 40 x 40 in. screen and are viewed at normal viewing distances.

**Shutter-speed accuracy:** ± 1/2 stop of marked speed.

**Apparent Viewing distance:** Between infinity and 20 in. **Apparent viewing distance of finder information:** within 1/2 diopter of measured viewing distance. **View Area Compared to film:** Between 90% and 100%. **Focusing Accuracy at Maximum Aperture:** Within depth of focus. **Image Magnification:** Within 0.1X of Manufacturer's specification. **Actual Picture Size:** Normal picture size ± 2.5%. **Curtain travel evenness:** ± 0.33 stop. Camera insulation from sync: More than 7 megohms. **Sync contact efficiency:** More than 60%. **Sync delay time:** X. Within full opening, M:16-20ms. **Shutter curtain bounce:** Not allowed. **Self timer delay:** 7-15 secs.

### Still camera & lens laboratory standards

(Photographic products of special benefit or interest to readers which fall below our minimums may also appear with explanation in the text.) **Resolution:** See chart. **Exposure accuracy:** ± 1 stop of proper