

coma mixed with astigmatism; no lateral color.

At 210mm on axis, slight secondary chromatic aberration, gone by f/8. Diffraction limited pattern by f/11. Slight yellow flare throughout. Off axis, slight skew-ray flare mixed with astigmatism, some lateral color throughout.

**PERFORMANCE**

Our Standard	as Tested
<b>Focal Length:</b> ±5% (66.50-73.50mm)	72.90mm (199.50-220.50mm)
<b>Aperture:</b> ±5% (f/3.80-4.20)	f/4.13 (f/210mm: (f/3.80-4.20) f/4.19)
<b>Distortion:</b> 70mm: (±2%) 1.07% (barrel) 210mm: (±3.5%) 1.42% (pincshn)	
<b>Light falloff:</b> at f/5.6 +1 stop from theoretical limit 70mm: (0-1.3 stops) 0.7 stops 210mm: (0-1.0 stops) 0.8 stops	

**AN ULTRACOMPACT ULTRAWIDE OLYMPUS**

**Specifications:** 18mm f/3.5 Zuiko MC Auto-W; mount for Olympus SLRs; No. 103672; accepts 72mm filters w. access. filter holder; f/3.5 to f/16; full stop detents; min. foc. dist. 9 1/16 in. (.25mm); 1 1/8 in. long, 2 3/8 in. diam. (25x61mm); 8 1/2 oz. (247 g); \$750.00 w. case.

**Practical comments:** Olympus' widest wide angle, scaled down in size for compact SLRs. Eleven elements in 9 groups, floating element covers 100° field, focuses to 10 in. diamond textured rubber focusing ring, knurled 3/16-in. front mounted diaphragm ring. All numerals are engraved for easy legibility.

A good performer. Our only caveat would be to stress the fragility of the fish-eye-like pro-

truding front element which sticks out nearly 1/4 in. beyond the protecting metal mount rim. Invest in Olympus' Adapter Ring 49-72mm and keep it permanently mounted on the lens to protect it. If you use a 49mm filter directly, you will scratch the lens and the filter.

**Field test slides:** Our slides were sharp and crisp at all apertures, holding well into the corners. Stopping all the way down to f/16 was required before diffraction effects surfaced. Minimal linear distortion for an 18mm lens.

**Optical bench report:** (for optical experts only) On axis, we saw slight yellow flare wide-open, but performance was near diffraction limits by f/5.6. Off axis, the image was weaker, with slight lateral color and skew ray flare. Flare gone by f/8.6.

**Complex yet compact: 18mm Zuiko looks like a semi-fisheye but is virtually distortion-free.**



**RESOLUTION**

TOKINA 70-210mm f/4 at 70mm at 1: 49			
f/	Center (l/mm)	Corner (l/mm)	
4	Excellent	55	Excellent 44
5.6	Excellent	62	Excellent 44
8	Excellent	69	Excellent 49
11	Excellent	69	Excellent 55
16	Excellent	62	Excellent 49
22	V. Good	55	Excellent 49
32	Excellent	49	Excellent 44

**CONTRAST**

TOKINA 70-210mm f/4 at 135mm at 30 lines/mm			
f/	Center (%)	Corner (%)	
4	High	59	High 33
5.6	High	60	High 41
8	High	64	High 46
11	High	70	High 50
16	High	62	High 46
22	High	55	High 40
32	High	46	High 41

**RESOLUTION**

TOKINA 70-210mm f/4 at 135mm at 1: 50			
f/	Center (l/mm)	Corner (l/mm)	
4	Excellent	50	Excellent 45
5.6	Excellent	56	Excellent 45
8	Excellent	63	Excellent 50
11	Excellent	70	Excellent 50
16	Excellent	63	Excellent 50
22	V. Good	50	Excellent 45
32	V. Good	45	Excellent 40

**CONTRAST**

TOKINA 70-210mm f/4 at 210mm at 30 lines/mm			
f/	Center (%)	Corner (%)	
4	High	60	High 31
5.6	High	63	High 39
8	High	65	High 44
11	High	70	High 49
16	High	59	High 45
22	High	52	High 41
32	High	45	High 40

**RESOLUTION**

TOKINA 70-210mm f/4 at 210mm at 1: 50			
f/	Center (l/mm)	Corner (l/mm)	
4	Excellent	50	Excellent 45
5.6	Excellent	50	Excellent 45
8	Excellent	50	Excellent 45
11	Excellent	56	Excellent 45
16	Excellent	50	Excellent 45
22	Excellent	45	Excellent 40
32	Excellent	40	Excellent 35

**CONTRAST**

TOKINA 70-210mm f/4 at 70mm at 30 lines/mm			
f/	Center (%)	Corner (%)	
4	High	62	Medium 28
5.6	High	66	Medium 30
8	High	69	High 43
11	High	64	High 48
16	High	59	High 42
22	High	53	High 41
32	High	46	High 39

**RESOLUTION**

ZUIKO 18mm f/3.5 at 1:49			
f/	Center (l/mm)	Corner (l/mm)	
3.5	Excellent	55	Excellent 44
5.6	Excellent	62	Excellent 44
8	V. Good	55	Excellent 49
11	V. Good	55	Excellent 44
16	V. Good	55	Excellent 44

**CONTRAST**

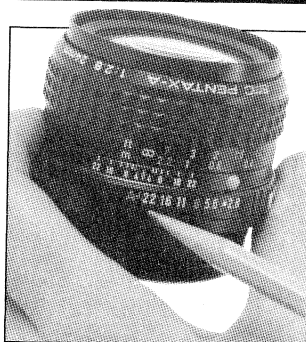
ZUIKO 18mm f/3.5 at 30 lines/mm			
f/	Center (%)	Corner (%)	
3.5	High	57	High 40
5.6	High	67	High 41
8	High	72	High 48
11	High	74	High 49
16	High	66	High 50

**PERFORMANCE**

Our Standard	as tested
<b>Focal length:</b> ±5% (17.10-18.90mm)	18.76mm
<b>Aperture:</b> ±5% (f/3.33-3.68)	f/3.51
<b>Distortion:</b> (±4%)	under 1% (pincshn)
<b>Light falloff:</b> at f/5.6 +1 stop from theoretical limit (0-4.0 stops)	3.4 stops

Would you like to test your own lens? Get MODERN'S Lens Test kit, \$12.95. Write to Lens Test Kit, MODERN PHOTOGRAPHY, 825 7th Ave., NY, NY 10019. Please allow at least 4-6 weeks for delivery.

**PENTAX 24MM FITS SUPER PROGRAM**



Turn aperture ring on 24mm A series lens to "A" for program or shutter priority automation on Super Program camera. Set aperture for use on K-mount bodies.

**Specifications:** 24mm f/2.8 Pentax-A, Pentax KA-mount bayonet; No. 5212747; accepts 52mm filters; f/2.8 to f/22 and "A", 1/2-stop detents; min. foc. dist. .79 ft. (.25m); 1 1/8-in. long, 2 3/8-in. diam. (41.5 x 63 mm); 7.2 oz. (205g); \$222.

**Practical comments:** Compact, well-balanced wide angle is about size and weight of "normal" lens; nicely finished in typical Pentax fashion; deeply knurled rubber focusing ring and 3/8-in. wide aperture ring; close focus to infinity in about 90 degrees; "A" series is designed

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**PERFORMANCE**

Our Standard	as Tested
<b>Focal length:</b> ±5% (22.80-25.20mm)	25.16mm
<b>Aperture:</b> ±5% (f/2.66-2.94)	f/2.85
<b>Distortion:</b> (±4%)	1.13%(barrel)
<b>Light falloff:</b> at f/5.6 +1 stop from theoretical limit (0-3.0 stops)	1.2 stops

**RESOLUTION**

PENTAX SMCP 24mm f/2.8 at 1: 49			
f/	Center (l/mm)	Corner (l/mm)	
2.8	V. Good	49	Excellent 44
3.5	Excellent	69	Excellent 44
5.6	Excellent	78	Excellent 44
8	Excellent	69	Excellent 49
11	Excellent	62	Excellent 49
16	V. Good	55	Excellent 44
22	Good	49	Excellent 44

**CONTRAST**

PENTAX SMCP 24mm f/2.8 at 30 lines/mm			
f/	Center (%)	Corner (%)	
2.8	High	46	High 38
3.5	High	48	High 40
5.6	High	55	High 64
8	High	65	High 62
11	High	60	High 68
16	High	61	High 66
22	High	56	High 58

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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.

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**Minimum Resolution Standards**

Type	Aperture							
	Max.		Next		Middle		f/11-22	
	lines/mm	lines/mm	lines/mm	lines/mm	lines/mm	lines/mm	lines/mm	
<b>35mm Camera Lenses</b>	Center	Corner	Center	Corner	Center	Corner	Center	Corner
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
<b>Zoom Lenses</b>								
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	23	40	25	45	28	40	28
136mm and longer	28	23	28	23	36	28	32	28
<b>2 1/4 x 2 1/4 Camera Lenses</b>								
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
<b>2 1/4 x 2 3/4 Camera Lenses</b>								
to 59.5mm	16	9	18	10	22	12	22	14
60 to 89.5mm	18	11	20	12	22	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
<b>4 x 5 Camera Lenses</b>								
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.

**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

exposure. **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.