



Novoflex 400 is held like a rifle, with right hand on focusing trigger at rear, left hand on support and firing trigger at front.

**Practical Comments:** Lens consists of telescoping barrel, containing optics, and spring-loaded, right-handed, trigger grip which is squeezed and released to focus. At the front of the grip a conveniently located, left-hand-operated handle, with button connected to camera by cable release lets you support front of lens and fire the camera. A large ring allows you to lock focus.

The lens is held much as a rifle, and one-handed "Follow-Focus" allows rapid and convenient tracking of subject while focusing. Dual grip extensions make it particularly easy to hold and aim. Front grip can be pivoted to clear tripod head platform when needed. Grip assembly has a camera body rotating ring to permit vertical positioning. The lock ring can be loosened or tightened to adjust friction, can be set to hold focus when grip is released slightly. Focusing is quick, but at f/5.6 focusing image is only moderately bright and focusing by squeezing grip handle requires some initial practice.

Apertures are click-stop only, without preset or auto diaphragm control. However, the lens is most often used at maximum aperture (to permit the fastest shutter speed for lighting conditions). Use of latest glass permits improved performance at f/5.6 compared to older models.

Once proficiency was attained, the Novoflex proved very easy to handle and action pictures taken with it were sharp and well framed, indicating that its unique rapid focusing system is workable and worthwhile. Special adaptors are being made available to fit medium format cameras (see specifications). Accessories include drop-in filters, an equipment bag (\$75), and assorted cable releases.

**Field Test Slides:** Color transparencies were sharp over entire 35mm format, with little sign of color fringing or green haze in the shadow areas of the image. A very slight softness was found when maximum aperture exposures were compared with those taken at f/11. Overall optical per-

formance is good, aided by ability to focus rapidly when shooting moving subjects.

**Optical bench analysis** (for optical experts): A small amount of overcorrected spherical aberration at maximum aperture, gone at f/11. Slight red-green color flare was noted. Focus shift between red and green light is 0.60mm, typical for lenses of this focal length. Off axis (at 2.5°) very slight lateral color but not enough to affect image quality. A small amount of astigmatism and coma disappeared at around f/12.5. Off axis, image pattern excellent. Off axis, aberrations are small for larger angles indicating image quality remains very good for larger formats, such as 4.5x6 and 6x6cm.

#### PERFORMANCE

Our Standard	as Tested
<b>Focal length: ±5%</b> (380.0-420.0mm)	411.1mm
<b>Aperture: ±5%</b> (f/5.32-f/5.88)	f/5.80
<b>Distortion:</b> (at 400mm ±3.5%)	1.1% (pincshn)
<b>Light falloff: at f/8.0</b> (+1 stop from theoretical limit) (0-1.0) stops	0.4 stops

#### RESOLUTION

Novoflex 400mm f/5.6 at 1:50			
f/	Center (l/mm)	Corner (l/mm)	
5.6	Good	36	V. Good 28
8	V. Good	40	V. Good 32
11	Excellent	45	V. Good 36
16	Excellent	50	Excellent 40
22	Excellent	50	Excellent 45
32	V. Good	45	Excellent 40

#### CONTRAST

at 400mm/30 lines/mm			
f/	Center (%)	Corner (%)	
5.6	Medium	35	High 34
8	Medium	35	High 34
11	High	46	High 43
16	High	47	High 44
22	High	41	Medium 32
32	Medium	28	Low 26



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Island Park, NY 11558

### Fast 135mm f/2 Tele From Canon

**Specifications:** 135mm f/2 Canon FD, No. 20172 in Canon FD mount; accepts 72mm accessories; f/2-32 plus locked "A" (auto-exposure) setting; half-stop detents throughout; min foc. dist.: 4 1/2 ft. (1.3m); 6 elements, 5 groups; 3-9/16-in. long, 3-in. diam. (90.4 x 75mm); 1 lb., 7 oz. (660g) \$460.00.

**Practical comments:** Relatively large and heavy for a 135 due to its wide f/2 aperture, but balances well on medium and large size Canon SLRs; excellent shiny black finish; focuses from infinity to min. foc. dist. in smooth 260° clockwise turn of 3/4-in. wide rubberized textured focusing collar; all scales large and legible in white-on-black except green-on-black footage scale; built-in collapsible hood has black flocking on interior surface, effective in minimizing glare when shooting against the light.



Canon's fast 135mm only gets down to close 1.3 meters, and performance is superb.

**Field test slides:** Transparencies crisp and snappy with detail well rendered at all apertures and focusing distances. Corner

sharpness equalled center by f/5.6. Slight pincushion distortion noted. Flare well controlled throughout. Overall, above average performance for a high-speed tele.

**Optical bench analysis:** On axis, slight undercorrected spherical aberration and primary chromatic aberration. Diffraction limited pattern by f/8. Off axis, slight high order coma mixed with slight astigmatism; minimal lateral color.

#### PERFORMANCE

Our Standard	as Tested
<b>Focal length: ±5%</b> (128.25-141.75mm)	135.88mm
<b>Aperture: ±5%</b> (f/1.90-2.10)	f/2.06
<b>Distortion:</b> (±2.5%)	0.9% (pincshn)
<b>Light falloff: at f/5.6</b> (+1 stop from theoretical limit) (0-1.1 stops)	0.5 stops

#### RESOLUTION

CANON 135mm f/2 at 1:50			
f/	Center (l/mm)	Corner (l/mm)	
2	Excellent	50	Excellent 45
2.8	Excellent	56	Excellent 50
4	Excellent	63	Excellent 56
5.6	Excellent	63	Excellent 56
8	Excellent	70	Excellent 63
11	Excellent	70	Excellent 63
16	Excellent	63	Excellent 56
22	Excellent	56	Excellent 50
32	Excellent	50	Excellent 45

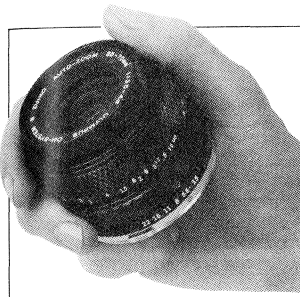
#### CONTRAST

at 135mm/30 lines/mm			
f/	Center (%)	Corner (%)	
2	High	55	High 42
2.8	High	62	High 50
4	High	63	High 53
5.6	High	67	High 55
8	High	69	High 58
11	High	60	High 49
16	High	50	High 41
22	High	47	High 39
32	High	41	High 33

**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 Editor 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 ARE MANUFACTURER'S SUGGESTED LIST PRICES. ITEMS ARE OFTEN AVAILABLE AT LOWER PRICES THROUGH DEALERS.**

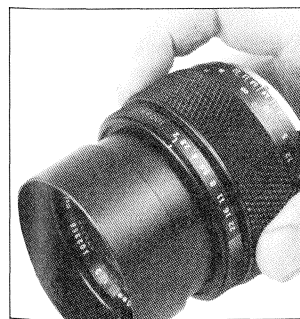
### 35-70 And 100mm From Olympus

**Specifications:** 35-70mm f/3.5-4.5 Olympus Zuiko Auto-Zoom No. 101676; in Olympus OM bayonet mount; accepts 49mm threaded accessories, f/3.5-22, full-stop detents at min. foc. dist.: 1 ft. 5 in. (.43m), 2 in. long, 2 1/2 in. diam. (52mm x 61mm), 6 5/8 oz., \$210., with case and hood.



Olympus' ultra-compact, 35-70mm focuses sharply down to 17 in.

**Specifications:** 100mm f/2 Olympus Auto-T Zuiko No. 102358; in Olympus OM bayonet mount; accepts 55mm accessories, built-in collapsible 5/8-in. lens hood, f/2-22 with full-stop detents; min. foc. dist.: 2 ft. 4 in. (.7m), 2 7/8 in. long, 2 3/4 in. diam. (72mm x 70mm), 1 lb. 5/8 oz., \$450., with case.



100mm f/2 Zuiko combines unusual sharpness with easy handling.

**Practical comments:** Both lenses share Olympus' fine satin-black finish with grippable rubber, diamond-patterned focusing collar. The fast, relatively compact, 100mm Zuiko's close-focusing ability make it a particularly convenient available-light medium-tele.

Both have highly visible scales, with metric distances and

apertures in white, footages in gold. Zoom lens focal lengths calibrated in green, white depth-of-field scale on 100mm lens. The unusually sharp, compact and light-weight twin-ring zoom will fit most ever-ready lens cases. Considering its high quality and compact dimensions, the lens is a good choice for Olympus users seeking a "normal zoom" of moderate aperture.

**Field test slides:** Transparencies taken with the 35-70mm zoom were crisp and sharp. At 50mm and 70mm corner to corner sharpness was good through all apertures. Slight amount of light falloff at 35mm, gone by f/8. Flare well-controlled throughout. Slight color-fringing in corners at 35mm, gone by f/8. Overall, above average for a zoom lens of this type.

Our slides from the fast 100mm Zuiko were unusually sharp and contrasty. Corner sharpness equalled central performance throughout. Flare was well-controlled for a lens of this speed and focal length. Again, an above-average lens for its type.

**Optical bench analysis** (for optical experts): 35-70mm Zuiko. On axis, at 35mm, slight undercorrected spherical aberration. Diffraction limited by f/8. Off-axis, slight skew-ray flare mixed with very slight astigmatism and lateral color. On axis, at 50mm, slight under-corrected spherical aberration, very slight red flare, gone by f/8. Diffraction limited by f/8. Off axis, slight skew-ray flare mixed with slight astigmatism. Some lateral color. On axis, at 70mm, slight under-corrected spherical seen, with very slight yellow flare, gone two stops down. Diffraction limited by f/11. Off axis, slight skew-ray flare mixed with very slight astigmatism, some lateral color.

100mm f/2 Zuiko, on axis, showed slight over-corrected spherical aberration, very slight axial chromatic. Diffraction limited by f/11. Off axis, slight skew-ray flare mixed with very slight astigmatism, some lateral color.

**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.**

#### PERFORMANCE

Our Standard	as Tested
<b>Focal length: ±5%</b> (33.25-36.75mm) (66.50-73.50mm)	36.45mm 67.86mm
<b>Aperture: ±5%</b> (f/3.33-3.68) at 70mm: (f/4.28-4.73)	f/3.34 f/4.69
<b>Distortion:</b> 35mm: (±2.5%) 70mm: (±2%)	0.45% (barrel) 0.95% (pincshn)

#### Light falloff: at f/5.6

+1 stop from theoretical limit
35mm: (0-1.9 stops)
70mm: (0-1.3 stops)
0.9 stops
0.7 stops

#### RESOLUTION

ZUIKO 35-70mm f/3.5-4.5 at 35mm/1:50				
f/	Center (l/mm)	Corner (l/mm)		
3.5	Excellent	56	Excellent	50
5.6	Excellent	63	Excellent	56
8	Excellent	63	Excellent	56
11	Excellent	56	Excellent	50
16	Excellent	56	Excellent	50
22	Excellent	50	Excellent	45

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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 specification, 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.

**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

Type	Minimum Resolution Standards							
	Aperture							
	Max. lines/mm	Next lines/mm	Middle lines/mm	f/11-22 lines/mm	Center	Corner	Center	Corner
<b>35mm Camera Lenses</b>								
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	25	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 1/4 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	16
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.

**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.

## MODERN TESTS

Continued from page 59

### RESOLUTION

ZUIKO 35-70mm f/3.5-4.5 at 50mm at 1:50	f/	Center (l/mm)	Corner (l/mm)		
	4	Exc	56	Exc	50
	5.6	Exc	56	Exc	50
	8	Exc	63	Exc	56
	11	Exc	63	Exc	56
	16	Exc	56	Exc	50
	22	V. Good	50	Exc	45

### CONTRAST

ZUIKO 35-70mm f/3.5-4.5 at 35mm at 30 lines/mm	f/	Center (%)	Corner (%)		
	3.5	High	45	High	35
	5.6	High	58	High	47
	8	High	65	High	56
	11	High	60	High	52
	16	High	56	High	44
	22	High	44	Medium	33

### RESOLUTION

ZUIKO 35-70mm f/3.5-4.5 at 70mm at 1:51:02	f/	Center (l/mm)	Corner (l/mm)		
	4.5	Exc	57	Exc	51
	5.6	Exc	57	Exc	51
	8	Exc	64	Exc	57
	11	Exc	64	Exc	57
	16	Exc	57	Exc	51
	22	V. Good	51	Exc	45

ZUIKO 35-70mm f/3.5-4.5 at 50mm at 30 lines/mm	f/	Center (%)	Corner (%)		
	4	High	46	High	36
	5.6	High	60	High	49
	8	High	66	High	55
	11	High	61	High	50
	16	High	57	High	45
	22	Medium	44	Medium	34

## VIDEO MOVIES

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still retain a very good image. Minolta claims a low light threshold of 7 lux, but that is being a touch too optimistic. We were able to shoot in 19 lux (under 2 ft. candles) and retain a clear image. There was some noise in the picture and a considerable loss of color saturation. At 29 lux, color was adequate and noise minimal. On the other hand, most rooms and offices are equipped with lighting that's much more generous than any of these minimums. Our office, lit by three banks of fluorescent tubes, registers at nearly 500 lux. A living room with a couple of indirect 75w tungsten lamps would provide something on the order of 50 lux.

The combination of 1/2-in. high band saticon tube and 8.5-51mm f/1.2 lens produced above average definition with stable images and acceptable color, especially when using high grade recording tape. Our Macbeth ColorChecker dis-

ZUIKO 35-70mm f/3.5-4.5 at 70mm at 30 lines/mm	f/	Center (%)	Corner (%)		
	4.5	High	47	High	37
	5.6	High	62	High	50
	8	High	67	High	57
	11	High	62	High	51
	16	High	56	High	45
	22	High	44	High	36

### PERFORMANCE

Our Standard	as Tested
Focal length: ±5% (95.00-105.00mm)	100.65mm
Aperture: ±5% (f/1.90-2.10)	f/2.05
Distortion: (±2%)	0.45% (pincshn)
Light falloff: at f/5.6 + 1 stop from theoretical limit (0-1.1 stops)	0.5 stops

### RESOLUTION

ZUIKO 100mm f/2 at 1:49	f/	Center (l/mm)	Corner (l/mm)		
	2	Exc	55	Exc	49
	2.8	Exc	62	Exc	55
	4	V. Good	62	Exc	55
	5.6	Exc	69	Exc	62
	8	Exc	69	Exc	62
	11	Exc	62	Exc	55
	16	V. Good	55	Exc	49
	22	V. Good	55	Exc	49

### CONTRAST

ZUIKO 100mm f/2 at 30 lines/mm	f/	Center (%)	Corner (%)		
	2	High	54	High	42
	2.8	High	62	High	50
	4	High	62	High	54
	5.6	High	65	High	56
	8	High	68	High	58
	11	High	60	High	49
	16	High	50	High	41
	22	High	47	High	39

played decent, if pale, greens and yellows, a red tending slightly toward orange (the norm with single tube arrangements), a good gray scale with clean whites and above average flesh tones tending toward the warmish side with proper white balancing. There was only a touch of afterimage when panning the camcorder but little blooming.

Repeated on/off shooting of short (3 to 4 sec.) takes did not induce much color shift between takes and there was no obvious glitch between shots as the tape halts, then must back up slightly for the next shot. Clean edits were the rule and overall video results were considerably above average with the Minolta Movie. List price: \$1,850.

### 1985 Index Available

MODERN's 1985 Index (and some previous years) is now available. Send a check for \$1.00 each and a stamped, self-addressed business-sized envelope to: Index Editor, Modern Photography, 825 7th Ave., N.Y., NY 10019.