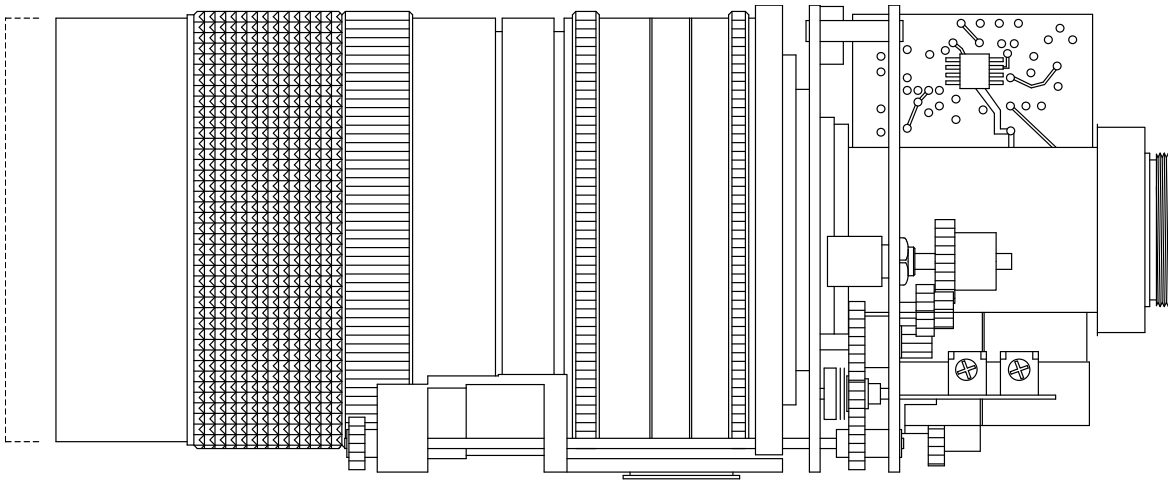


# Graflex Zoom Lenses

The *Graflex Incorporated 27X* line of continuous, refractive zoom lenses fit most any application within the military or high-end commercial markets.



The unique 27X high performance motorized zoom lenses are compact, ruggedized, lightweight and ideal for military and sophisticated commercial applications. The 27X is offered in five basic ratings; all models exceed measured telephoto resolution of 1000 TV lines.

## Features

- Tested & proven in many moderate environmental applications.
- Multi-layer, high-efficiency optical coatings for maximum transmission in the visible and near infrared spectrums.
- Motorized zoom, focus, and iris with metal drive gears
- Many optional features including auto iris board, spot filters, zoom/focus position pots, & override relay for remote selection of auto iris or manual iris, and digital control.
- Excellent boresighting throughout zoom range.
- CE tested and certified.

## Applications

- Long range surveillance
- Tracking pedestals
- Video fire control systems
- Remote piloted vehicles
- General security

*GRAFLEX Incorporated*



Always on Target

15855 Assembly Loop - Suite 100 - Jupiter, FL 33478 - USA

Telephone: (561)691-5959 Fax: (561)691-5983 E-mail: Sales@Graflex.com

# Graflex Zoom Lenses

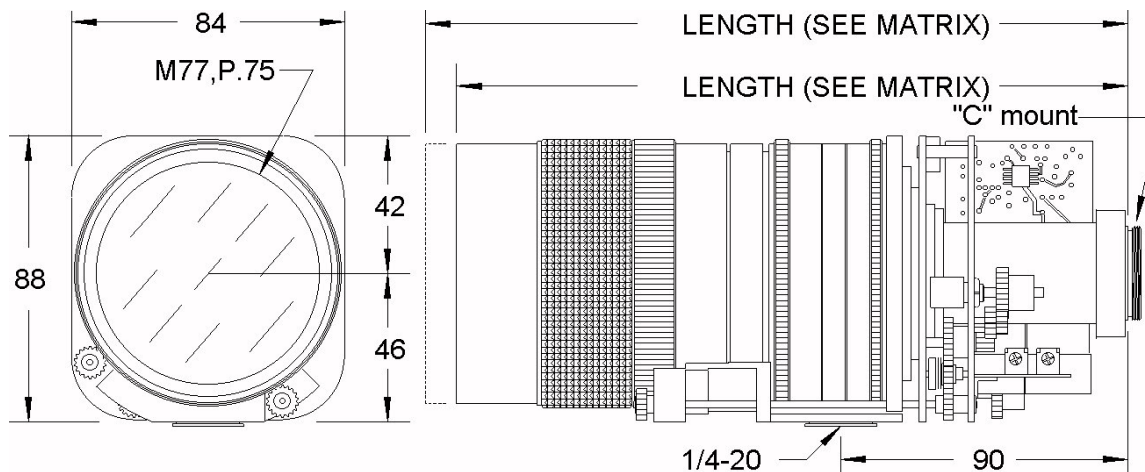
## GENERAL OPTICAL SPECIFICATIONS

Zoom Ratio	27X
Focal Length	See Resolution Chart
Free Aperture	70mm
Focus Range	1.5 Meters to Infinity
Mount	C
Flange Focus	17.5mm

## OPTICAL FEATURES

- \* Constant aperture from WA to 80% of maximum telephoto, gradual increase thereafter to 10% above specified.
- \* < .3mrad thru zoom range
- \* Excellent resolution/MTF

## MECHANICAL DRAWING



Rating	Length				Width		Height		Weight	
	Infinity		Tele							
9.5-256.0mm f3.5	208.0	8.2	216.5	8.52	88.0	3.46	90.5	3.56	1.99	4.38
14.2-385.0mm f5.2	214.6	8.5	223.1	8.78	88.0	3.46	90.5	3.56	2.03	4.47
19.0-512.0mm f7.0	219.5	8.6	228.0	8.97	88.0	3.46	90.5	3.56	2.04	4.50
28.5-770.0mm f10.5	226.1	8.9	234.6	9.23	88.0	3.46	90.5	3.56	2.08	4.59
38.0-1024.0mm f14.0	231.0	9.1	239.0	9.42	88.0	3.46	90.5	3.56	2.10	4.62

## ENVIRONMENTAL SPECIFICATIONS

Temperature Storage -35 thru +71° C\*  
 Transit -35 thru +71° C\*  
 Operation -20 thru +50° C\*  
 (\*May Require Alterations)

Vibration Contact Factory  
 Shock Contact Factory

## OTHER OPTIONS

- \* Position pots

## ELECTRICAL SPECIFICATIONS

Iris 8-16Vdc @ 30mA  
 0.4-1.0Vp-p  
 Zoom/Focus 6-12Vdc @ 60mA  
 54X Extender 6-12Vdc @ 60mA  
 AI PCB 3.0Vdc @ 21mA

# Graflex Zoom Lenses

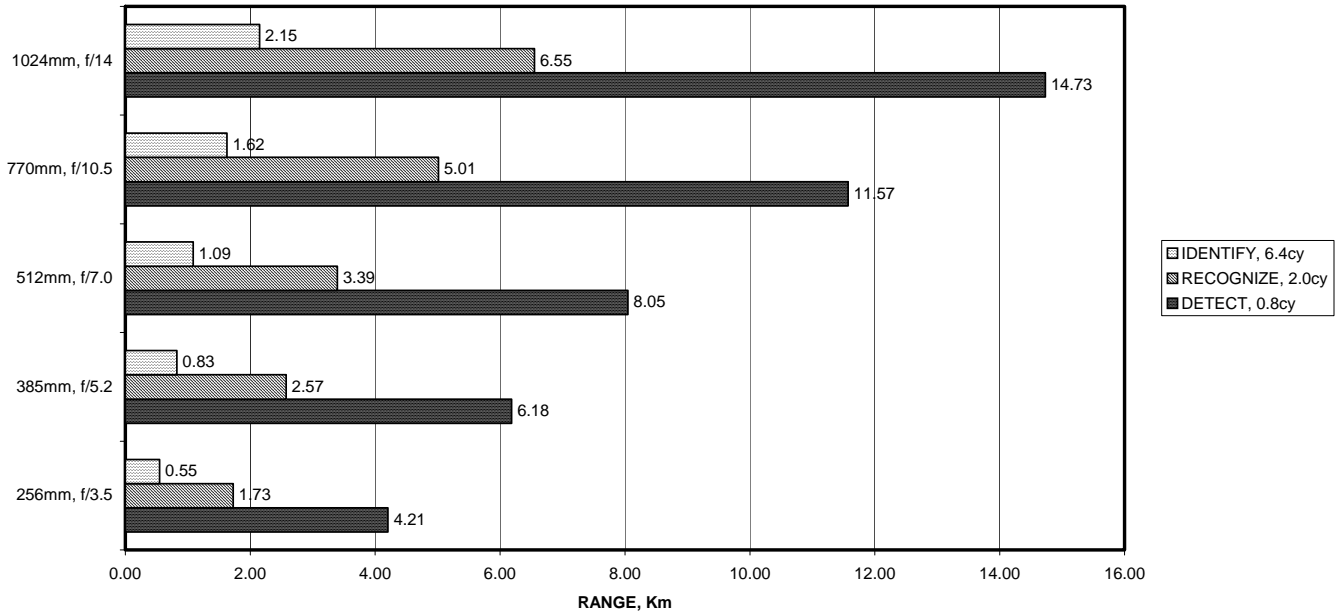
27X Optical Data & Minimum Resolution							
Mag	Rating	LP/mm		Coverage	Format	HFOV	
		WA	Tele			WA	Tele
27X	9.5-256.5mm f3.5	340	190	1/2"	1/2"	37.2	1.43
					1/3"	28.3	1.07
					2/3"	34.3	1.3
27X	14.2-385.0mm f5.2	255	142	2/3"	1/2"	25.4	0.95
					1/3"	19.1	0.7
					1"	37.2	1.4
27X	19.0-512.0mm f7.0	170	95	1"	2/3"	26	0.98
					1/2"	19.1	0.7
					1/3"	14.4	0.53
27X	28.5-770.0mm f10.5	101	60	1"	1"	25.3	0.95
					2/3"	17.5	0.65
					1/2"	12.8	0.47
27X	28.0-1024.0mm f14.0	71	50	1"	1/3"	9.6	0.35
					1"	19.1	0.71
					2/3"	13.2	0.49
					1/2"	9.6	0.35
					1/3"	7.2	0.27

**NOTE:** Recorded resolution values noted above are performed on a Gaertner Optical bench at .55 microns illumination (white light), fully open iris, viewing USAF resolution target with a microscope through an infinity collimator. TV line resolution listed above are approximations using the formula of LP/mm X 20.

GRAFLEX 27X CAMERA/LENS PERFORMANCE										
PARAMETER	27X ZOOM LENSES WITH 1/3" VIS/NIR CCD					27X ZOOM LENSES WITH 1/3" COLOR CCD				
	256mm	385mm	512mm	770mm	1024mm	256mm	385mm	512mm	770mm	1024mm
# HORIZ. PIXELS IN CCD	768	768	768	768	768	768	768	768	768	768
PIXEL SIZE (mm)	0.00635	0.00635	0.00635	0.00635	0.00635	0.00635	0.00635	0.00635	0.00635	0.00635
HORIZ. OBJ. LENS FORMAT	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
EFL (mm), AT ZOOM POSITION	256	385	512	770	1024	256	385	512	770	1024
HORIZONTAL FOV (degrees)	2.86	1.90	1.43	0.95	0.72	2.86	1.90	1.43	0.95	0.72
OBJECTIVE LENS MTF @60 Lp/mm	0.40	0.40	0.40	0.40	0.40	0.35	0.30	0.28	0.25	0.22
MAGNIFICATION (1X=39.6 Degrees)	13.83	20.79	27.65	41.58	55.29	13.83	20.79	27.65	41.58	55.29
HORIZONTAL IFOV (micro-radians)	65.4	43.5	32.7	21.8	16.4	65.4	43.5	32.7	21.8	16.4
CCD RESOLUTION, (cy/mm)	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7	78.7
SYSTEM RESOLUTION (cy/mr)	3.06	4.5976	6.1139	9.1945	12.2274	2.68	3.4482	4.2798	5.7466	6.7251
RAW RANGE DATA:										
MAN TARGET (1.15m):	RANGE IN Km					RANGE IN Km				
DETECT, Km, 0.8cy	4.40	6.61	8.79	13.22	17.58	3.85	4.96	6.15	8.26	9.67
RECOGNIZE, Km, 2.0cy	1.76	2.64	3.52	5.29	7.03	1.54	1.98	2.46	3.30	3.87
IDENTIFY, Km, 6.4cy	0.55	0.83	1.10	1.65	2.20	0.48	0.62	0.77	1.03	1.21
ADJUSTED RANGE PERFORMANCE										
DETECT, Km, 0.8cy	4.21	6.18	8.05	11.57	14.73	3.70	4.72	5.78	7.60	8.77
RECOGNIZE, Km, 2.0cy	1.73	2.57	3.39	5.01	6.55	1.51	1.94	2.40	3.20	3.72
IDENTIFY, Km, 6.4cy	0.55	0.83	1.09	1.62	2.15	0.48	0.62	0.77	1.02	1.19
RAW RANGE DATA:										
VEHICLE TARGET (2.3m):	RANGE IN Km					RANGE IN Km				
DETECT, Km, 0.8cy	8.79	13.22	17.58	26.43	35.15	7.69	9.91	12.30	16.52	19.33
RECOGNIZE, Km, 3.0cy	2.34	3.52	4.69	7.05	9.37	2.05	2.64	3.28	4.41	5.16
IDENTIFY, Km, 6.4cy	1.10	2.30	2.20	3.30	4.39	0.96	1.72	1.54	2.07	2.42
ADJUSTED RANGE PERFORMANCE										
DETECT, Km, 0.8cy	8.05	11.57	14.73	20.27	24.69	7.12	8.97	10.87	13.99	15.92
RECOGNIZE, Km, 3.0cy	2.29	3.40	4.47	6.57	8.53	2.01	2.57	3.17	4.21	4.90
IDENTIFY, Km, 6.4cy	1.09	2.25	2.15	3.20	4.20	0.96	1.69	1.51	2.02	2.36

# Graflex Zoom Lenses

**27X ZOOM CAMERA (B&W, VIS/NIR) RANGE PERFORMANCE vs. MAN TARGET**  
**27X Zoom Lens, IR Coated Lens, 1/3" B&W Visible/NIR Sensitive Camera @5 Lens Ratings**  
 Conditions: Clear, dry air, 99%/Km transmission, 20mi (33Km) visual limit, 30% Target Contrast



**27X ZOOM CAMERA (B&W, VIS/NIR) RANGE PERFORMANCE vs. VEHICLE TARGET**  
**27X Zoom, IR Coated Lens, 1/3" B&W Visible/NIR Sensitive Camera @5 Lens Ratings**  
 Conditions: Clear, dry air, 99%/Km transmission, 20mi (33Km) visual limit, 30% Target Contrast

