Anamorphic Now

Apocalypse Now, Blade Runner, Close Encounters of the Third Kind, Bridge on the River Kwai, Evita — if you were enthralled by the look of these classic 'Scope films, you may be considering anamorphic lenses for your next production. Angénieux, ARRI/ZEISS, Cooke, and Scorpio showed prototypes of new anamorphic lenses at NAB, some expected to be ready later this year, others next year. If you need your anamorphics right away, Hawk primes and zooms have been made by Vantage for the PL world in Weiden, Germany since 1995. Panavision has covered the PV world since the late 1960s. The pages following this article present lenses to purchase or rent. Hawks are mostly rented; a few are sold. Panavision only rents. But first a few words about anamorphic.

In December 2009, I wrote, "Pretend for a moment that you are a Studio Mogul. It's your job to predict the next big thing and plan accordingly. Unlike the local television weather forecaster, who gets it wrong most of the time, you will be summarily escorted off the lot for anything less than perfect prophecy.

"After the 3D Gold Rush of 2009, how will you lure audiences out of their HD, 3D, and soon 4K-equipped home theaters—and propel them into popcorn-popping and snack-selling multiplexes? In two words (as Sam Goldwyn might say), Anamorphic."

Twentieth Century-Fox bought the rights to the technique from Henri Jacques Chrétien in 1952 to produce *The Robe*, the first feature filmed with an anamorphic lens. It was promoted as "'the modern miracle you see without glasses," to compete with the 3D movies being made at the time—and TV. (The *Today Show* also premiered that year.) Sound familiar?

Once upon a time, films were mostly shot in a 1.33:1 ratio. This evolved over time to wider 1.66:1, 1.85:1, and eventually 2.40:1 widescreen ratios. The 2.40:1 aspect ratio means the picture is 2.40 times wider than it is high. You can use either spherical or anamorphic lenses. The ratio is the same. The process differs.

With spherical ("normal") lenses, the 2.40:1 aspect ratio "wastes" a lot of unused space on the sensor or film negative. The top and bottom of each frame is cropped, or letterboxed, out.

With anamorphic lenses, the width of the picture is squeezed (usually by a factor of 2x) to fit the sensor or aperture. This lets you use the entire image capture area, without letterboxing, and the result is a picture with more pixels, more resolution, and less noise . This was one of the original reasons why anamorphic ('Scope) was developed in the first place in the 1950s—to use more film negative area with less grain and more resolution.

Peter Märtin of Vantage Film, makers of Hawk Anamorphic lenses, explains. "Anamorphic lenses use cylindrical elements to squeeze the image in one axis only—the width, not the height. That means an anamorphic lens has different focal lengths: the horizontal part of the image is the wider focal length and the vertical is the longer focal length. Also, the lens has two nodal points. (The nodal point is where all light beams converge when going through the lens.) One nodal point is for the horizontal part of the light rays, and the other one is for the vertical. Essentially, the lens records the image in a sort of three-dimensional way.

"It's similar to looking at a landscape with one eye closed. If you hold up your hand and move it closer to you, your hand will covering more of the background. Move side to side, and you reveal different perspectives behind your hand. You get information about the three-dimensionality of the room. Anamorphic lenses do something similar: providing the two dimensional sensor a part of the three-dimensional information. It's almost 3-D, perhaps 2.5D."

There's something inexplicably appealing about anamorphic lenses, and it's not inextricably tied to blue line streaks or oval bokehs.

Peter continues, "The anamorphic look is very elegant. The lens is not a neutral, technical, observer. Instead, it is subjective. It changes the scene slightly, adding out of focus areas, providing depth to a sequence. It's very appealing for faces, good for beauty. It gives actors a beautifully cosmetic, elegant, interesting, different look. With a long spherical lens, the face might look flattened, which is not always flattering. The anamorphic lens gives you depth and is pleasing. A lot of cinematographers are using anamorphic lenses mainly because they look so beautiful for faces."

A good way to select the appropriate anamorphic lens for a specific scene is to think in terms of the vertical focal length. Use the same numbers as you would for spherical. A 100 mm anamorphic lens gives you the same headroom as a 100 mm spherical lens. Of course, the 100 mm anamorphic will be twice as wide as the spherical 100 mm — equivalent to a 50 mm spherical in its horizontal field of view.

If you were thinking in terms of a 100 mm spherical lens and wanted the same horizontal field of view in anamorphic, you'd choose a 200 mm anamorphic lens. Of course, the vertical axis would be "tighter" because the vertical angle of the anamorphic is the same as the spherical.

The out of focus look of a 100 mm anamorphic lens is different from the spherical 100 mm. You get less depth of field. An actor would appear more separated from the background. Anamorphic lenses whose cylinders are in front will provide oval shaped bokehs. The out-of-focus hot spots in the background will be egg shaped. The more out of focus they are, the more squeezed they will appear to be. Rear anamorphics don't have oval bokehs, and the rear anamorphoser results in a stop of light loss. Some of the new anamorphic lenses on the next pages are hybrids, with cylinders spread among several elements throughout the lens.

Anamorphic Math

The lines were long at NAB to get on waiting-lists for new anamorphics. The buzz, tweets, likes and posts pointed to a frenzied revolution, or perhaps democratizing evolution, of the format.

But there's really only one camera right now that can take advantage of the 2x squeeze anamorphic format with a 4:3 sensor. The ARRI Alexa. This is great for ARRI. But shouldn't all cameras have 4:3 sensors? The math that made Panavision, Technovision, JDC, and others famous, that film camera and optical companies knew for 60 years, somehow has been forgotten by many in the last 5 years of digital camera design.

Here are diagrams and numbers explaining how the anamorphic 2.39:1 format benefits from a larger sensor area than spherical 2.39:1, and why 4:3 sensors are better than 16:9 for anamorphic.

Figure 1 shows an image area of 234 sq mm² for Super 35 spherical widescreen 2.39:1. This format fits on both 4:3 and 16:9 sensors. The top and bottom are "thrown away"—letterboxed.

Figure 2 shows an image area of 376 mm² for anamorphic 2.39:1 format on a 4:3 sensor. Much bigger.

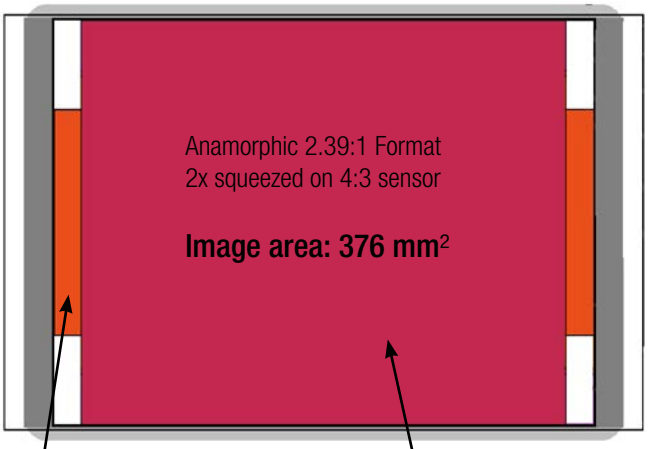
Figure 3 shows how 16:9 sensor cameras crop the image by a factor of 1.8x and have much less resolution than 4:3 sensors shooting anamorphic 2x squeeze format. We've discussed 1.3x anamorphic on 16:9 sensors in many previous editions of FDTimes. However the prevalence of 2x anamorphic lenses available today, and in the works this year, far outnumber the current inventory of 1.3x squeeze lenses.

4:3 Sensor with 2x squeezed image

16:9 Sensor with same lens and same 2x squeezed image: the smaller sensor size crops image by a factor of 1.8x and Linda gets a haircut

Fig 1. Spherical 2.39:1 on 4:3 Alexa Sensor

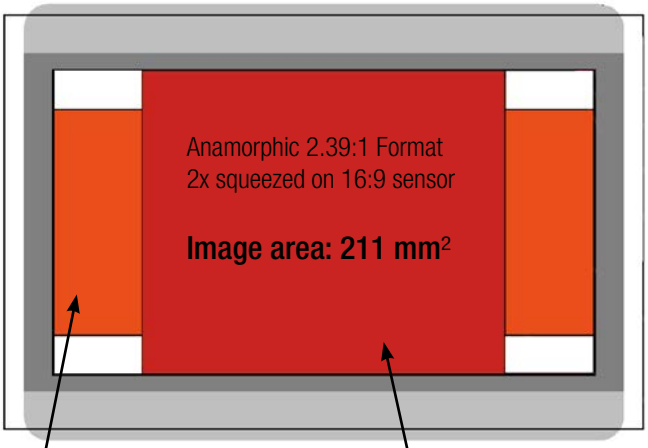
Fig 2. Anamorphic 2.39:1 on 4:3 Alexa Sensor



2.39:1 Spherical (Flat) Super35
2868 x 1200 Photosites
23.66 x 9.90 mm (Width x Height)
Ø 25.65 mm

2.39:1 Anamorphic
2x squeeze (1.195:1)
2570 x 2150 Photosites
21.20 x 17.74 mm (W x H)
Ø 27.64 mm

Fig 3. Anamorphic 2.39:1 on 16:9 Alexa Sensor



2.39:1 Spherical (Flat) Super35
2868 x 1200 Photosites
23.66 x 9.90 mm (W x H)
Ø 25.65 mm

2.39:1 Anamorphic
2x squeeze (1.195:1)
1926 x 1612 Photosites
15.89 x 13.30 mm (W x H)
Ø 20.72 mm

Angénieux Optimo Anamorphic 56-152 mm

Angénieux Optimo Anamorphic 56-152 mm T4 2S Series Zoom

Angénieux presented the first in the 2S Series of lightweight, compact 2x anamorphic zoom lenses at NAB 2013. Two additional compact anamorphic zooms are planned. Together they will cover a range of 30 to 240 mm. Looking at the current line of lightweight Optimos (15-40 and 45-120 mm), that suggests additional 30-80 and 90-240 mm anamorphic zooms—unless there's greater demand for a studio version 48-580 or 50-500.

The first zoom (56-152) should be available early 2014. The two others are expected Q2 2014 and Q4 2014. The anamorphic cylinders are at the rear of the lens—keeping it small, light and a new design.

Horizontal focal length:	56-152 mm
Aperture:	T4
MOD:	2'1" / 0.63 m
Weight (approx):	4.8 lb / 2. 2 kg
Focus:	320˚ rotation, 50 marks, interchangeable feet or meters
Length:	210 mm / 8.3 "
Front diameter:	114 mm / 4.5"
Image coverage:	28.8 mm diagonal (18.6 x 22 mm)
Anamorphic squeeze:	2x horizontal squeeze
Format:	35mm "4 perf." scope
Mounts:	PL mount, PV mount available on request

Cooke Anamorphic Prime Lenses

The "Cooke Look" in a 2x squeeze anamorphic set, with front cylinders, oval bokehs, and /i lens metadata.

	Units	25mm	32mm	40mm	50mm	75mm	100mm	135mm
Aperture		T2.3-22	T2.3-22	T2.3-22	T2.3-22	T2.3-22	T2.3-22	T2.3-22
Iris Scale Rotation	deg	90	90	90	90	90	90	90
Min Object Distance	inches	33	33	30	33	39	44	56
	mm	838	838	762	838	991	1118	1422
Focus Scale Rotation	deg	300	300	300	300	300	300	300
Length: Fr to Mount	inches	7.68	7.68	7.68	7.68	7.68	7.68	7.68
	mm	195	195	195	195	195	195	195
Max Front Diameter	inches	4.33	4.33	4.33	4.33	4.33	4.33	4.33
	mm	110	110	110	110	110	110	110
Total Weight	kg	2.77	2.68	2.93	2.74	2.64	2.93	2.93
	lb	6.11	5.90	6.47	6.03	5.81	6.47	6.47

ARRI/ZEISS Master Anamorphic Primes

ARRI/ZEISS 2x Anamorphics in PL mounts with Lens Data System (LDS) contacts. These lenses are a completely new anamorphic optical design. Cylindrical elements seem to be combined into the construction of individual lens elements and spread throughout the lens. Bokehs are expected to be oval—they were on the prototype lenses. Image circle is 29.26 mm.

Lens Focal Length	Aperture	Close Focus	Length Mount to Front	Front Diameter	Maximum Housing Diameter	kg	lb
35 mm	T1.9-22	0.75 m / 2'6"	183 mm / 7.2"	95 mm / 3.7"	114 mm / 4.5"	2.6	5.7
40 mm	T1.9-22	0.70 m / 2'4"	183 mm / 7.2"	95 mm / 3.7"	114 mm / 4.5"	2.7	6
50 mm	T1.9-22	0.75 m / 2'6"	183 mm / 7.2"	95 mm / 3.7"	114 mm / 4.5"	2.6	5.7
60 mm	T1.9-22	0.90 m / 3'	183 mm / 7.2"	95 mm / 3.7"	114 mm / 4.5"	2.7	6
75 mm	T1.9-22	0.90 m / 3'	183 mm / 7.2"	95 mm / 3.7"	114 mm / 4.5"	2.6	5.7
100 mm	T1.9-22	0.95 m / 3'1''	210 mm / 8.3''	95 mm / 3.7"	114 mm / 4.5"	3.1	6.8
135 mm	T1.9-22	1.50 m / 5'	tbd	tbd	tbd	tbd	tbd

Scorpiolens 2x Anamorphics

Focal length	Aperture	Close focus (From image plane)	Front diameter	Length (Front to PL mount)
20mm	T2.8	0.40m 1 1/4 feet	95mm 3.7 in	190mm 7.5 in
25mm	T2	0.45m 1 1/2 feet	95mm 3.7 in	190mm 7.5 in
30mm	T2	0.45m 1 1/2 feet	95mm 3.7 in	190mm 7.5 in
35mm	T2	0.45m 1 1/2 feet	95mm 3.7 in	160mm 6.3 in
40mm	T2	0.5 m 1 3/4 feet	95mm 3.7 in	160mm 6.3 in
50mm	T2	0.55m 1 3/4 feet	95mm 3.7 in	160mm 6.3 in
60mm	T2	0.65m 2 1/4 feet	95mm 3.7 in	160mm 6.3 in
75mm	T2	0.75m 2 1/2 feet	95mm 3.7 in	160mm 6.3 in
100mm	T2	1.0 m 3 1/4 feet	95mm 3.7 in	160mm 6.3 in
135 mm	T2.8	1.3 m 4 1/4 feet	95mm 3.7 in	160mm 6.3 in
150 mm	T2.8	1.5 m 5 feet	95mm 3.7 in	190mm 7.5 in
200mm	T2.8	1.8 m 6 feet	95mm 3.7 in	190mm 7.5 in
250mm	T2.8	2.0m 6 1/2 feet	95mm 3.7 in	220mm 8.7 in
300mm	T2.8	2.5m 8 1/4 feet	95mm 3.7 in	220mm 8.7 in

- Small size and weight
- Almost no distortion or breathing
- 31.14 mm image circle
- Feet and meter scales can be changed
- Internal focus
- PL mount
- Telecentric design
- Multi-aspheric design

Hawk V-Plus Anamorphics

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min. Filter
V-Plus 35	35 mm	T2.2-16	0.75	2'6"	5.3	11.7	156 mm	187 mm	6.6x6.6"
V-Plus 40	40 mm	T2.2-16	0.75	2'6"	5.5	12.1	156 mm	202 mm	6.6x6.6"
V-Plus 50	50 mm	T2.2-16	0.6	2'	3.7	8.1	125 mm	202 mm	6.6x6.6"
V-Plus 65	65 mm	T3-22	0.35	1'2"	4.3	9.5	125 mm	252 mm	40.5 mm (rear)
V-Plus 75	75 mm	T2.2-16	0.6	2'	4.3	9.5	125 mm	238 mm	6.6x6.6"
V-Plus 85	85 mm	T2.2-16	0.6	2'	4.4	9.7	125 mm	250 mm	6.6x6.6"
V-Plus 100	100 mm	T2.2-16	1	3'3"	5.6	12.3	125 mm	325 mm	6.6x6.6"
V-Plus 120	120 mm	T3.5-32	0.42	1'5"	5.6	12.3	125 mm	333 mm	40.5 mm (rear)
V-Plus 135	135 mm	T3-22	1	3'3"	5.4	11.9	125 mm	325 mm	6.6x6.6"
V-Plus 150	150 mm	T3-22	1	3'3"	5.3	11.7	125 mm	323 mm	6.6x6.6"

Introduced in 2006, the Hawk V-Plus were successors to the V-Series. Telecentric design. Parallax-free focus scales. Easy to change focus scale from feet to meters. Closer focusing than V-Lites.

Hawk V-Plus Front Anamorphic Zooms

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min. Filter
V-Plus 45-90	45-90 mm	T2.8-16	0.75	2'6"	5.3	11.7	125 mm	280 mm	6.6x6.6"
V-Plus 80-180	80-180 mm	T2.8-16	1	3'3"	6.6	14.5	125 mm	430 mm	6.6x6.6"

Hawk V-Lite Anamorphics

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min. Filter
V-Lite 28	28 mm	T2.2-16	0.8	2'7"	2.1	4.6	120 mm	137 mm	4x5.65"
V-Lite 35	35 mm	T2.2-16	1	3'3"	2.9	6.4	120 mm	170 mm	4x5.65"
V-Lite 45	45 mm	T2.2-16	1	3'3"	1.9	4.2	104 mm	154 mm	4x5.65"
V-Lite 55	55 mm	T2.2-16	1	3'3"	2	4.4	104 mm	156 mm	4x5.65"
V-Lite 65	65 mm	T2.2-16	1	3'3"	2	4.4	104 mm	160 mm	4x5.65"
V-Lite 80	80 mm	T2.2-16	1	3'3"	2.3	5	104 mm	185 mm	4x5.65"
V-Lite 110	110 mm	T3-16	1	3'3"	2.6	5.7	104 mm	200 mm	4x5.65"
V-Lite 140	140 mm	T3.5-22	1	3'3"	2.7	5.9	104 mm	220 mm	4x5.65"

Lighter, smaller and more recent than the V-Plus series, increased definition and contrast. Telecentric design. Parallax-free focus scale.

Hawk V-Lite Vintage '74 Anamorphics

Hawk V-Lite Vintage Anamorphic Primes have the same specifications as regular V-Lites, but feature an added 1970s look: 1970s coatings and enhanced flares, lower contrast, increased color aberrations and vintage flaws. Built with contemporary mechanical parts. These are thoroughly modern lenses with the classic look of anamorphic films from the 1970s. Recognizable by their distinctive white barrels.

Hawk C-Series Anamorphics

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min Filter
C 40	40 mm	T2.2-16	1	3'6"	2.2	4.8	110 mm	143 mm	4x5.65"
C 50	50 mm	T2.2-16	1	3'6"	2.1	4.6	110mm	161 mm	4x5.65"
C 60	60mm	T2.2-16	1	3'6"	2.1	4.6	110mm	180 mm	4x5.65"
C 75	75 mm	T2.2-16	1	3'6"	2.4	5.2	110 mm	188 mm	4x5.65"
C 100	100 mm	T3-22	1	3'6"	2.7	5.9	110 mm	218mm	4x5.65"

Hawk's original Anamorphic Series, introduced in the mid 1990s. Smaller and more compact than the V-Series. Useful for Steadicam and handheld. Used on *Star Wars Phantom Menace - Episode 1.* (Filming began in 1997.)

Hawk C-Series Anamorphic Zoom

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min Filter
C 55-165	55-165 mm	T4-22 1		3'6"	2.2	4.8	110mm	192 mm	4x5.65"

Hawk V-Series Anamorphics

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min Filter
V 25	25mm	T2.2-16	1	3'6"	2.8	6.2	142 mm	135 mm	6.6x6.6"
V 30	30mm	T2.2-16	0.8	2'8"	5.2	11.5	156 mm	188 mm	6.6x6.6"
V 35	35mm	T2.2-16	0.75	2'6"	5.6	12.3	156 mm	187 mm	6.6x6.6"
V 40	40mm	T2.2-16	0.75	2'6"	6.2	13.6	156 mm	202 mm	6.6x6.6"
V 50	50mm	T2.2-16	0.6	2'	3.7	8.1	125 mm	202 mm	6.6x6.6"
V 60	60mm	T2.2-16	0.6	2'	4	8.8	125 mm	213 mm	6.6x6.6"
V 75	75mm	T2.2-16	0.6	2'	4.6	10.1	125 mm	238 mm	6.6x6.6"
V 100	100mm	T2.2-16	1	3'6"	6.6	14.5	125 mm	325 mm	6.6x6.6"
V 135	135mm	T3- 22	1	3'6"	6.3	13.8	125 mm	325 mm	6.6x6.6"
V 180	180mm	T3-22	2	6'6"	7.5	16.5	142 mm	407mm	6.6x6.6"
V 250	250mm	T3-22	2	6'6"	7.8	17.2	142 mm	461mm	6.6x6.6"
V 350	350mm	T4.2-32	2	6'6"	8.4	18.5	142 mm	486 mm	6.6x6.6"

The second Hawk Anamorphic Series, introduced in 2001. Internal and close focusing.

Hawk V-Series Anamorphic Zooms

Lens	Foc Lng	Aperture	MOD m	MOD ft	kg	lb	Front Dia	Length	Min Filter
V 46-230	46-230mm	T 4- T 32	0.4	1'6"	7.4	16.3	150mm	377mm	6.6x6.6"
V 300-900	300-900mm	T 4 - T 32	3	9'9"	15.8	34.8	156mm	672mm	48mm

Hawk Rear Anamorphics

Lens	Foc Lng	Aperture	MOD m
Angénieux Hawk Optimo 48-580	48-580	T4	1.2
Angénieux Hawk 34-204	34-204 mm	T4.2	0.75
Angénieux Hawk 50-500	50-500 mm	T5.1	1.7
Canon Hawk 600	600 mm	T4	2.8
Canon Hawk 800	800 mm	T4	3.6
Canon Hawk 1000	1000 mm	T6.3	5
Canon Hawk 1600	1600 mm	T8	14

Panavision C Series Anamorphic Primes

	C30	C35	C40	C50	C60	C75	C100	C150	C180
Focal Length	35	35	40	50	60	75	100	150	180
T-Stop	3	2.3	2.8	2.3	2.8	2.5	2.8	3.5	2.8
Close Focus (in)	48	33	30	30	42	54	54	60	84
Close Focus (cm)	121.9	83.8	76.2	76.2	106.7	137.2	137.2	152.4	213.4
Weight (lb)	4.8	5.4	3.7	5.4	4.0	3.6	4.6	6.8	8
Weight (kg)	2.2	2.4	1.7	2.4	1.8	1.6	2.1	3.1	3.6
Length (in)	5.3	6	4.6	5.8	6.13	5.6	7.8	10.1	12.4
Length (cm)	13.3	15.2	11.7	14.6	15.57	14.1	19.8	25.7	31.4
Front Diam (in)	4.5	4.375	4	4.125	3.69	3.313	3.75	3.75	3.75
Front Diam (mm)	114.3	111.1	101.6	104.8	93.7	84.1	95.3	95.3	95.3

Panavision's C series were introduced in the late 1960s. Compact and lightweight, they have a pronounced blue streak anamorphic flare. The 1960s anti-reflective coatings on these lenses are partly responsible for these streaks.

The C series lenses have what many DPs call "an organic feel." They are compact and lightweight, good for handheld and Steadicam.

Many C series lenses have been retrofitted with later generation primes and adjusted to enhance optical performance. The upgraded set matches the E series, Primo AL series, and G series lenses. There are several custom versions with enhanced flare and close focus.

Panavision E Series Anamorphic Primes

	E28	E35	E40	E50	E75	E85	E100	E135	E180
Focal Length	28	35	40	50	75	85	100	135	180
T-Stop	2.3	2	2	2	2	2	2.3	2.8	2.8
Close Focus (in)	48	42	48	48	48	60	60	45	54
Close Focus (cm)	121.9	106.7	121.9	121.9	121.9	152.4	152.4	114.3	137.2
Weight (lb)	10	8.3	7	7.6	5.3	5.5	6	7.1	8.6
Weight (kg)	4.5	3.8	3.2	3.4	2.4	2.5	2.7	3.2	3.9
Length (in)	7.1	7.4	6.8	7.31	8.1	7.5	8.4	10.6	11.4
Length (cm)	18.1	18.7	17.3	18.57	20.5	19.1	21.4	27	28.9
Front Diam (in)	6.875	5.625	4.938	4.95	4.438	4.375	4.438	4.625	4.938
Front Diam (mm)	174.6	142.9	125.4	125.8	112.7	111.1	112.7	117.5	125.4

Panavision E series Anamorphic Primes were introduced in the 1980s. They were designed with higher optical quality than their predecessors, the C series. The E series have more sophisticated anti-reflection coatings, and fewer aberrations.

The E series lenses do not produce blue streak anamorphic flares as readily as the C Series. E series lenses show little fall off at the edges of the frame and the center to edge resolution is good. They show familiar anamorphic artifacts such as disproportional vertical focus breathing, mild barrel distortion (with wide angle lenses), without an excess of flare.

The E series lenses are larger and heavier than the C or G series lenses

Panavision Primo Anamorphic Primes

	AL35	AL40	AL50	AL75	AL100
Focal Length	35	40	50	75	100
T-Stop	2	2	2	2	2
Close Focus (in)	42	42	42	54	54
Close Focus (cm)	106.7	106.7	106.7	137.2	137.2
Weight (lb)	13.6	14.6	15.3	10.4	12.1
Weight (kg)	6.2	6.6	6.9	4.7	5.5
Length (in)	11.5	11.6	13.1	9.5	10.5
Length (cm)	29.2	29.5	33.3	24.1	26.7
Front Diam (in/mm)	5.938 / 150.8	5.938 / 150.8	5.938 / 150.8	5.5 / 139.7	5.375 / 136.5

Primo Anamorphics were matched to a modified version of the E series. They have high contrast and resolution, even field illumination, and negligible ghosting and distortion. They provide the signature blue anamorphic streak without unwanted veiling glare.

The earliest set had a close focusing distance of 2'6" to 4'6".

The more recent close focusing Primo anamorphic lenses have an MOD from 2'6" to 2'9".

Primo anamorphic primes are larger and heavier than other series of Panavision anamorphic lenses.

Panavision G Series Anamorphic Primes

	G25	G30	G35	G40	G50	G60	G75	G100
Focal Length	25	30	35	40	50	60	75	100
T-Stop	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3
Close Focus (in)	30	30	36	36	36	36	36	36
Close Focus (cm)	76.2	76.2	91.4	91.4	91.4	91.4	91.4	91.4
Weight (lb)	4.6	4.6	4.4	4.2	4.4	3.9	3.8	4.5
Weight (kg)	2.1	2.1	2	1.9	2	1.8	1.7	2
Length (in)	5.4	5.4	6	5.2	6.1	6.2	6.3	7.8
Length (cm)	13.7	13.7	15.2	13.2	15.5	15.7	16	19.8
Front Diam (in)	4.94	4.94	4.44	4.44	4.44	4.44	4.44	4.44
Front Diam (mm)	125.4	125.4	112.8	112.8	112.8	112.8	112.8	112.8

The G series were introduced in 2007, with the convenience of the C series and the optical technology of the Primo AL series in mind. The G series use recent advanced anti-reflection coatings. The barrels are consistent: they all have front diameters of 125.4 or 112.8 mm, and are lightweight.

Optically, the G series lenses have high contrast, high resolution, well balanced aberration control, excellent flare control, and minimal breathing.

Performance and size make these lenses comparable to Panavision E series anamorphic primes, but in a lightweight, compact size similar to the C series.

Panavision Anamorphic Zooms

	AWZ2 (Bailey Zoom)	ATZ	ALZ11	ALZ3
Anamorphic Elements	Front	Front	Rear	Rear
Zoom Focal Lengths	40-80	70-200	48-550	270-840
T-Stop	2.8	3.5	4.5	4.5
Close Focus (in)	39	69	49	103.0
Close Focus (cm)	99.1	175.3	124.5	261.6
Weight (lb)	10.4	12.8	20	25.1
Weight (kg)	4.7	5.8	9.1	11.4
Length (in)	10.5	15.4	14.75	19.88
Length (cm)	26.7	39.1	37.46	50.5
Front Diam (in)	4.87 x 4.08	4.87 x 4.08	5.94	6.75
Front Diam (mm)			150.8	171.5

Panavision's front anamorphic zooms - AWZ2 and ATZ have high contrast and resolution, good field illumination, low veiling glare, and minimal aberrations, ghosting, distortion and breathing. Performance is comparable to E Series primes.

The AWZ2 Anamorphic wide-angle zoom was introduced in 2004. It is Panavision's first zoom lens to use anamorphic elements at the front of the lens. It is also known as the "Bailey zoom," in honor of John Bailey, ASC, who asked Panavision to develop a wide-angle front anamorphic zoom.

The ATZ Anamorphic Telephoto Zoom was introduced in 2007. It is Panavision's second zoom lens with front anamorphic elements.

The rear Anamorphic 11:1 Primo Anamorphic Zoom – ALZ11 – is a 24-275mm Primo with a high-performance rear anamorphoser, making it a 48-550 zoom.

The rear Anamorphic 3:1 Primo Anamorphic Zoom – ALZ3 – is a 135-420 mm Primo with a rear-mounted anamorphoser, making it a 270-840mm, T4.5 zoom.

Panavision High Speed and Close Focus Anamorphic Primes

	Super High Speed Anamophics						Close Focus / Macro Panatar				
	HS24	**HS35**	**HS50**	**HS55**	**HS75**	**HS100**	**AR90-SF**	**MAP55**	**MAP150**	**MAP200**	**MAP250**
Focal Length	24	35	50	55	75	100	90	55	150	200	250
T-Stop	1.6	1.4	1.1	1.4	1.8	1.8	4.3	2.5	3.2	3.2	3.2
Close Focus (in)	72	54	48	48	54	54	17	10	17	18	29
Close Focus (cm)	182.9	137.2	121.9	121.9	137.2	137.2	43.2	25.4	43.2	45.7	73.7
Weight (lb)	9.3	5.8	5.8	5.4	7.7	9.3	3	6	6.1	5.7	6
Weight (kg)	4.2	2.6	2.6	2.4	3.5	4.2	1.4	2.7	2.8	2.6	2.7
Length (in)	6.6	6.3	6.3	5.5	9.9	11.8	4.3	6.09	7.4	7.4	7.4
Length (cm)	16.8	15.9	15.9	14	25.1	29.8	10.8	15.57	18.7	18.7	18.7
Front Diam (in)	5.0x6.0	4.5	4.125	4.125	4.25	4.5	4.25	3.69	4.375	4.375	4.375
Front Diam (mm)	127x152.4	114.3	104.8	104.8	108	114.3	108	93.7	111.1	111.1	111.1

Bailey Zoom

G-Series

Panavision Telephoto Anamorphic Primes

	Telephoto Anamorphic Lenses					
	C360	**AN400**	**CN400**	**AN600**	**CN600**	**C800**
Focal Length	**350**	400	400	600	600	800
T-Stop	**4**	3.5	3	4	4.5	5.6
Close Focus (in)	**66**	108	96	156	324	180
Close Focus (cm)	**167.64**	274.32	243.84	396.24	822.96	457.2
Weight (lb)	**6.0**	6.0	6.5		15.8	
Weight (kg)	**2.7**	2.7	2.9		7.1	
Length (in)	**8.56**	8.86	8.02		13.28	
Length (cm)	**21.74**	22.5	20.36		33.73	
Front Diam (in)	**4.95**	4.98	4.83		6.89	
Front Diam (mm)	**125.8**	126.6	122.6		175	

Panavision has a large inventory of specialty anamorphic lenses: high speed, flare, portrait, macro, and telephoto lenses.

Anamorphic flare lenses do not have the coatings removed and therefore do not have reduced overall contrast or veiling glare. They are modified to produce an enhanced anamorphic cylindrical flare, also called "blue streak".

Portrait lenses come in 40 mm and 100 mm. Both are T2.8. The 40 mm has a close focusing distance of 3 feet 3 inches and the 100 mm has a close focusing distance of 4 feet. These lenses have a soft focus look around the edges of the frame, leaving the center of the frame sharp.