



Lens Specifications

Common to all Cooke Anamorphic/ $\frac{2}{1}$ Full Frame Plus, S7/ $\frac{2}{1}$ Full Frame Plus, Anamorphic/ $\frac{1.5}{1}$, Panchro/ $\frac{2}{1}$ Classic, ^{MINI}S4/ $\frac{2}{1}$, S4/ $\frac{1.5}{1}$ and 5/ $\frac{2}{1}$ Lenses

Optical Design The optics are designed to give maximum performance at full aperture with superior control of flare, distortion and aberration.

$\frac{2}{1}$ Technology Accessible via contacts in the lens mount that sync with /i compatible cameras. On the 5/i, S4/i, Anamorphic/i, Panchro/i Classic and S7/i lenses, there is also a cable connector near the lens mount.

Colour Balance All Cooke series of lenses are colour balanced, color-matched and compatible with each other.

The Cooke Look[®] Of course.

Index Marks Every index mark is labelled. More detailed markings allow for more detailed focus control.

Focus Scaling Large, clear numerals on both sides of the focus barrel benefit the focus puller when shooting under difficult lighting conditions.

Focus Movement Our Academy Award[®] winning cam-style focus movement, coupled with the added benefit of a large lens barrel diameter, has allowed for an increased number of focus markings, particularly at close focus. Spherical aberration has been controlled throughout the range of focal lengths to eliminate the need to compensate for changes in back focus with aperture. A four-point contact bearing provides a smooth positive backlash-free movement.

Camera Mounts Cooke Hardened PL Mount with /i Technology contact.

External Finish A scratch resistant PTFE hard anodised finish is provided on all Cooke lenses, providing a durable, hard-wearing surface to meet the most demanding environmental conditions.

Weight/Size Ratio The lenses are designed for all shooting applications, including handheld and Steadicam, providing comfortable balance ratio with the latest compact cameras.

Reliability and Service Cooke lenses are designed to meet a market requirement for fully reliable performance with a minimum of downtime.



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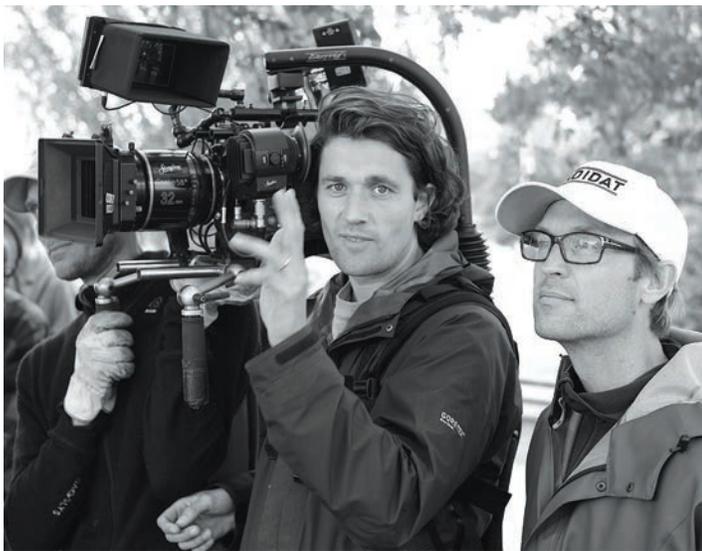
<http://www.cookeoptics.com/s/technicaldocumentation.html>

Depth of Field Tables for all current lenses and Panchro Series II and III

Several technical essays, including: "Aesthetic Role of Depth of Field in Anamorphic Cinematography" by Jon Maxwell

Cooke /i Technology protocol and manuals

Lens product brochures



Johan-Fredrik Bødtker with camera and AC Jens Patterson

“The metadata really helped me get the shots. I felt more in control and could always watch my T-stop and focus range in the viewfinder without having to stop shooting to remove my eye from the eyepiece. And, the AC doesn’t have to mumble ‘close range’ all the time because he knows I actually know the limits.”

– Johan-Fredrik Bødtker, Cinematographer, *Valkyrien*, TV Series

What is Technology?

i Technology is a metadata protocol that allows film and digital cameras to seamlessly record key lens data for every frame shot via electronics inside each *i* equipped lens: focal length, focus distance, zoom position, near and far focus, hyper focal distance, T-stop, horizontal field of view, entrance pupil position, inertial tracking and shading. The lens data and inertial data (position and orientation data) will help VFX teams to better deal with common issues like occlusions, fast camera motion (motion blur) and other challenges associated with fast-paced camera movements typical of today’s shooting style. All of this is output by *i*² enabled lenses. The *i*³ (“*i* cubed”) enabled lenses will include all that *i*² offers as well as distortion data. It will be rolled out across all Cooke spherical lens models starting mid-September 2018. Data may be selected to record in either metric or imperial units and is synced to time code within the camera.

Evolving Industry Standard

i Technology, to ensure metadata compatibility downstream from acquisition through post production giving a better looking product in a shorter amount of time. See the growing list of companies who are adopting *i* Technology within their own hardware and software products, from Aaton to Zeiss at <https://cookeoptics.com/i/itech.html>

Companies interested in becoming an *i* Technology partner by incorporating *i* protocol into their product, contact us at iTech@cookeoptics.com.

Technology by



cookeoptics.com/i/itech.html
cookeoptics.com/i/itechpartners.html

Cooke Anamorphic/ $\frac{8}{1}$ Full Frame Plus Standard & SF “Special Flair” Range of Lenses

	Units	32mm	40mm	50mm	75mm	100mm	135mm	180mm
T Stop Range		TBC	T2.3–22	T2.3–22	T2.3–22	T2.3–22	T2.3–22	T2.8–22
Angular Rotation of Iris Scale	Degrees	TBC	90	90	90	90	90	90
Minimum Marked Object Distance	mm	TBC	900	850	1000	1200	1500	2000
	inches	TBC	35	33	39	46	58	80
Close Focus from Lens Front	mm	TBC	630	600	750	925	1166	1610
	inches	TBC	25	24	30	36	46	63
Angular Rotation to MOD Endstop	Degrees	TBC	270	270	270	270	270	270
Maximum Angle of View* Horizontal/Vertical	Degrees H	TBC	86.1	74.3	49.6	37.9	28.0	20.7
	V	TBC	32.8	26.9	18.3	13.8	10.3	7.7
Length from Front of Lens to Lens Mount	mm	TBC	212	204	206	228	271	TBC
	inches	TBC	8.3	8.0	8.1	9.0	10.7	TBC
Maximum Front Diameter	mm	TBC	136	110	110	110	110	110
	inches	TBC	5.35	4.33	4.33	4.33	4.33	4.33
Total Weight	kg	TBC	4.4	4.0	3.5	3.8	5.0	TBC
	lbs	TBC	9.7	8.8	7.7	8.4	11.0	TBC

Maximum Format Covered 36mm x 24mm

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 140 teeth 0.8 metric module x 6.0mm wide x 102mm from the image plane

Iris Scales Two opposing linear T scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 82mm from the image plane



Preliminary Specifications
All specifications subject to change
* Angle of view calculations based on 36mm x 24mm format



Available in either PL or LPL mounts; please specify when ordering.

Cooke S7/i Full Frame Plus Range of Lenses

	Units	16mm	18mm	21mm	25mm	27mm	32mm	40mm	50mm	65mm	75mm	100mm	135mm	180mm
T Stop Range		T2–22												
Angular Rotation of Iris Scale	Degrees	90	90	90	90	90	90	90	90	90	90	90	90	90
Minimum Marked Object Distance	mm inches	400 16	400 16	350 14	350 14	350 14	350 14	450 18	500 20	475 19	475 19	700 30	950 39	1300 51
Close Focus from Lens Front	mm inches	151 6	158 6	109 4	109 4	109 4	109 4	209 8	259 10	234 9	234 9	459 18	709 37	1050 41
Angular Rotation to MOD Endstop	Degrees	270	270	270	270	270	270	270	270	270	270	270	270	270
Maximum Diagonal Angle of View for Super 35 Format	Degrees	85	78	70	61	58	50	41	33	27	23	17	13	9.6
Maximum Diagonal Angle of View for 24 x 36mm Format	Degrees	107	100	91	82	78	68	57	47	37	32	24	18	13.7
Length from Front of Lens to Lens Mount	mm inches	197 7.76	200 7.87	189 7.44	198 7.80									
Maximum Front Diameter	mm inches	136 5.35	110 4.33											
Total Weight	kg lbs	4.0 8.82	3.5 7.7	3.3 7.28	3.3 7.28	3.3 7.28	3.4 7.50	3.5 7.72	3.4 7.50	3.0 6.61	3.0 6.61	3.3 7.28	3.7 8.16	3.6 7.94

Maximum Format Cover 46.31mm diameter

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD.

Focus Drive Gear 140 teeth 0.8 metric module x 6.0mm wide x 103mm from image plane.

Iris Scales Two opposing linear T-scales – whole and third stops marked.

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 81mm from image plane.

Mounts Available in either PL or LPL mounts; please specify when ordering.

Compatibility Cooke S7/i Primes have a common fixed front diameter of 110mm (except for the 16mm which is 136mm), with a focus drive gear of 140T x 0.8 mod and an iris drive gear of 134T x 0.8.



Cooke Anamorphic/ $\frac{1}{1}$ Zoom Range of Lenses

Units		35–140mm 35–140mm SF	45–450mm
T Stop Range		T3.1–22	T4.5–22
Angular Rotation of Iris Scale	Degrees	90	90
Minimum Marked Object Distance	mm inches	1200 47	1830 72
Close Focus from Lens Front	mm inches	720 28	1194 47
Angular Rotation to MOD Endstop	Degrees	300	300
Maximum Angle of View* Horizontal/Vertical	Degrees H V	62.4 / 17.5 26.0 / 7.6	49.1 / 6.0 20.0 / 2.6
Length from Front of Lens to Lens Mount	mm inches	425 16.76	537 21.2
Maximum Front Diameter	mm inches	136 5.35	136 5.35
Total Weight	kg lbs	10.3 22.6	TBC TBC

Maximum Format Covered 33.54mm Diameter (New Epic S35mm format)

Focus Scales Two opposing focus scales—metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 35–140mm: 172 teeth 0.8 metric module x 6.0mm wide x 283mm from image plane.
45–450mm: 211 teeth 0.8 metric module x 6.0mm wide x 170mm dia. 420mm from the image plane.

Iris Scales Two opposing linear T scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 83mm from image plane

Zoom Drive Gear 35–140mm: 140 teeth 0.8 metric module x 6.0mm wide x 102mm from image plane.
45–450mm: 140 teeth 0.8 metric module x 6.0mm wide x 105mm from image plane.



Preliminary specifications for 45–450mm. All specifications subject to change

* Angle of view calculations based on Alexa Studio 4:3 camera

Cooke Anamorphic/i¹ & Anamorphic/i¹ SF “Special Flair” Range of Lenses

	Units	25mm	32mm	40mm	50mm	65mm MACRO	75mm	100mm	135mm	180mm	300mm
T Stop Range		T2.3–22	T2.3–22	T2.3–22	T2.3–22	T2.6–22	T2.3–22	T2.3–22	T2.3–22	T2.8–22	T3.5–22
Angular Rotation of Iris Scale	Degrees	90	90	90	90	90	90	90	90	90	90
Minimum Marked Object Distance	mm inches	840 33	840 33	840 33	840 33	450 18	1000 39	1100 44	1400 56	2000 78	3000 120
Close Focus from Lens Front	mm inches	550 22	550 22	550 22	550 22	140 5.5	800 31	900 35	1200 47	1650 64	2580 101.5
Angular Rotation to MOD Endstop	Degrees	300	300	300	300	300	300	300	300	300	300
Maximum Angle of View*	Degrees										
Horizontal	H	96.9	77.5	62.8	50.7	36.9	34.1	25.7	19.1	13.9	8.5
Vertical	V	41.0	32.6	26.3	21.2	15.6	14.2	10.7	7.9	5.7	3.5
Length from Front of Lens to Lens Mount	mm inches	203 8.0	195 7.68	195 7.68	195 7.68	258 10.10	195 7.68	195 7.68	195 7.68	296 11.65	378 14.88
Maximum Front Diameter	mm inches	136 5.35	110 4.33	110 4.33	110 4.33	136 5.35	110 4.33	110 4.33	110 4.33	110 4.33	136 5.35
Total Weight	kg lbs	4.2 9.26	3.2 7.06	3.4 7.50	3.6 7.94	5.2 11.46	3.2 7.06	3.4 7.50	4.2 9.30	5.8 12.8	9.3 20.7

Maximum Format Covered 33.54mm Diameter (New Epic S35mm format)

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 140 teeth 0.8 metric module x 6.0mm wide x 102mm from the image plane

Iris Scales Two opposing linear T scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 82mm from the image plane

Compatibility With the exception of the 25, 65 MACRO and 300mm lenses, all Cooke Anamorphic/i prime lenses have a common fixed front diameter of 110mm, with a focus drive gear of 140T x 0.8 mod and an iris drive gear of 114T x 0.8. The 25, 65 MACRO and 300mm Cooke Anamorphic/i primes have a front diameter of 136mm.



Preliminary Specifications

All specifications subject to change

* Angle of view calculations based on Alexa Studio 4:3 camera

Cooke Panchro/i[®] Classic Range of Lenses

	Units	18mm	21mm	25mm	27mm	32mm	40mm	50mm	65mm MACRO	75mm	100mm	135mm	152mm
T Stop Range		T2.2 -22	T2.4 -22	T2.2 -22	T2.6 -22	T2.8 -22	T3.0 -22						
Angular Rotation of Iris Scale	Degrees	90	90	90	90	90	90	90	90	90	90	90	90
Minimum Marked Object Distance	mm inches	200 8	200 8	200 8	200 8	325 12	450 16	550 20	325 13	800 30	950 36	850 33"	1100 43"
Close Focus from Lens Front	mm inches	111 4.6	80 3.3	106 4.2	106 4.2	181 6.3	280 11.0	380 15.0	114 4.5	593 23.3	743 29.3	657 2'1.5	903 2'10
Angular Rotation to MOD Endstop	Degrees	270	270	270	270	270	270	270	270	270	270	270	270
Max. Diagonal Angle of View for Super 35 Format	Degrees	80	75	60	60	50	41	33	27	22	16	13	11.75
Length from Front of Lens to Lens Mount	mm inches	87 3.4	92 3.6	92 3.6	92 3.6	92 3.6	118 4.6	118 4.6	197 7.7	155 6.1	155 6.1	167 6.6	167 6.6
Maximum Front Diameter	mm inches	110 4.33	110 4.33	110 4.33	110 4.33	110 4.33							
Total Weight	kg lbs	1.6 3.5	1.5 3.3	1.5 3.3	1.5 3.3	1.2 2.6	1.4 3.1	1.5 3.3	2.8 6.1	1.8 4.0	1.8 3.9	2.1 4.6	2.1 4.6

Maximum Format Covered 31.1mm diameter (Super 35mm format)

Full Frame



Focus Scales Two opposing focus scales – metric or footage. Scales marked from infinity to MOD

Focus Drive Gear 140 teeth 0.8 metric module x 6.0mm wide x 105mm from image plane

Iris Scales Two opposing linear T-scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 83mm from image plane

Internal Front Fitting Filter Internal thread for filter adapter M105 x 0.75 pitch

Compatibility All Cooke Panchro/i Classic Primes have a common fixed front diameter of 110mm, with a focus drive gear of 140T x 0.8 mod and an iris drive gear of 134T x 0.8.

	Units	18mm	21mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	135mm
T Stop Range		T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22	T2.8 -22
Angular Rotation of Iris Scale	Degrees	77	77	77	77	77	77	77	77	77	96
Minimum Marked Object Distance	mm inches	250 10	250 10	250 10	300 12	440 16	500 20	700 27	750 30	900 36	1000 39
Close Focus from Lens Front	mm inches	80 3	80 3	93 4	139 5	240 9.5	311 12	500 20	564 22	711 28	790 31
Angular Rotation to MOD Endstop	Degrees	300	300	300	300	300	300	300	300	300	300
Maximum Diagonal Angle for S35 Format	Degrees	80	73	62	50	41	34	26	22	17	14.16
Length from Front of Lens to Lens Mount	mm inches	120 4.72	110 4.33	106 4.17	110 4.33	110 4.33	137 5.39	135 5.32	137 5.39	137 5.39	157.8 6.21
Maximum Front Diameter	mm inches	110 4.33	87 3.43	87 3.43	87 3.43	87 3.43	87 3.43	87 3.43	87 3.43	87 3.43	87 3.43
Total Weight	kg lbs	1.3 2.86	1.56 3.44	1.4 3.08	1.6 3.52	1.7 3.74	1.5 3.30	1.6 3.52	1.6 3.52	1.6 3.52	1.8 3.96

Max Format Covered 33.54mm Diagonal

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 121 teeth 0.8 metric module x 5.0mm wide x 101mm from the image plane

Iris Scales Two opposing linear T scales – whole and third stops marked

Iris Drive Gear 119 teeth 0.8 metric module x 2.5mm wide x 85mm from image plane

Screw-In Filter M82 x 0.75 (25mm - 135mm)

Compatibility All Cooke miniS4/i primes, except 18mm, have a common fixed front diameter of 87mm, with a focus drive gear of 121T x 0.8 mod and an iris drive gear of 119T x 0.8.



	Units	12mm	14mm	16mm	18mm	21mm	25mm	27mm	32mm	35mm	40mm	50mm	65mm	65mmSE	75mm	100mm	135mm	150mm	180mm	300mm	
T Stop Range		T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2-22	T2.8-22
Angular Rotation of Iris Scale	degrees	96	96	96	96	96	96	96	96	95	94	93	92	92	92	91	92	92	94	78	
Minimum Marked Object Distance	mm inches	225 9	225 9	225 9	250 9	250 9	250 9	250 10	325 12	350 14	450 16	550 20	700 27	700 27	800 30	950 36	850 33	1050 42	1300 51	2100 84	
Close Focus from Lens Front	mm inches	47 2.0	46 2.0	46 2.0	60 2.5	60 2.5	60 2.5	85 3.5	119 4.9	169 6.9	207 8.4	323 13	509 20	489 19.2	573 23	707 28	564 20.7	834 32.8	1058 41.7	1846 74	
Angular Rotation to MOD Endstop	degrees	270	300	270	300	270	300	270	300	300	300	300	300	300	300	300	340	320	320	320	
Max. Diagonal Angle of View for Super 35 Format	degrees	103	94	86	80	71	62	58	50	46	41	34	26	26	22	17	13	11.5	9.5	5.7	
Length from Front of Lens to Lens Mount	mm inches	126 5.0	127 5.0	127 5.0	113 4.5	113 4.5	113 4.5	113 4.5	129 5.0	129 5.0	141 5.5	125 4.9	125 4.9	145 5.7	125 4.9	141 5.5	184 7.3	157 6.2	185 7.3	202 7.9	
Maximum Front Diameter	mm	156	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	125	136	136	
Total Weight	kg lbs	3 6.5	2.2 4.8	2.45 5.4	1.75 3.85	2.0 4.4	1.6 3.5	1.6 3.55	1.85 4.0	1.9 4.2	2.0 4.4	1.5 3.3	1.6 3.55	2.25 4.95	1.75 3.85	2.0 4.4	2.25 4.95	3.5 7.7	4.3 9.45	4.7 10.35	

Max Format Covered 30mm diameter (Super 35mm format)

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 140 teeth 0.8 metric module x 6.0mm wide x 98mm from image plane.
140 teeth 0.8 metric module x 6.0mm wide x 99mm from image plane (300mm)

Iris Scales Two opposing linear T-scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 4.0mm wide x 79.5mm from image plane

Internal Front Fitting Filter Internal thread for filter adapter M105 x 0.75 pitch (12mm and 14mm not applicable). M120 x 1.0 pitch (150mm). M131 x 1.0 pitch (180mm, 300mm)

Compatibility All Cooke S4/i Primes have a common fixed front diameter of 110mm, (except for 12mm, 150mm, 180mm, 300mm) with a focus drive gear of 140T x 0.8 mod and an iris drive gear of 134T x 0.8.



Cooke 5/i[®] Range of Lenses

	Units	18mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	135mm
T Stop Range		T1.4–22								
Angular Rotation of Iris Scale	Degrees	90	90	90	90	90	90	90	90	90
Minimum Marked Object Distance	mm inches	350 14	350 14	350 14	400 16	500 20	600 24	650 27	750 30	800 31
Close Focus from Lens Front	mm inches	127 5	121 5	121 5	171 7	271 11	370 15	421 17	520 21	531 21
Angular Rotation to MOD Endstop	Degrees	270	270	270	270	270	270	270	270	340
Maximum Diagonal Angle of View for Super 35 Format	Degrees	79.3	61.9	50.5	41.0	33.7	26.1	22.6	17.1	12.68
Length from Front of Lens to Lens Mount	mm inches	171 6.73	177 6.97	219 8.6						
Maximum Front Diameter	mm inches	110 4.33	136 5.35							
Total Weight	kg lbs	3.03 6.67	2.98 6.56	2.78 6.12	2.76 6.07	3.23 7.11	3.08 6.78	2.99 6.58	2.89 6.36	5.1 11.22

Maximum Format Cover 30mm diameter (Super 35mm Format)

Focus Scales Two opposing focus scales – metric and footage. Scales marked from infinity to MOD

Focus Drive Gear 140 teeth 0.8 metric module x 5.0mm wide x 102.5mm from the image plane
(135mm – 180 teeth 0.8 metric module x 5.0mm wide x 128mm from image plane)

Iris Scales Two opposing linear T scales – whole and third stops marked

Iris Drive Gear 134 teeth 0.8 metric module x 2.5mm wide x 82mm from image plane
(135mm – 173 teeth 0.8 metric module x 2.5mm wide x 112mm from image plane)

Focus Illumination The patented, dimmable, illuminated focus ring has two separately toggled light pipes that allow the camera operator or focus puller to read the focus scale in low lighting conditions. Illumination options are controlled on the lens or via an external controller.

Compatibility All Cooke 5/i prime lenses have a common fixed front diameter of 110mm, with a focus drive gear of 140T x 0.8 mod and an iris drive gear of 134T x 0.8. (Except the 135mm 5/i lens.)





About Cooke



Our factory in Leicester, England has generations from the same family working side by side. That experience is un-beaten anywhere. We manufacture a full range of primes and zooms to meet the evolving needs of our industry.

We know our customers, and they know us, as individuals. Our rental partners do their training next to the craftsman who built their lenses. There are no barriers.

We're intolerant when it comes to tolerances. We research continuously to drive innovation. Our lenses are dependable and practical in use on the set; our optics superb. The lenses are straightforward to maintain – which is why so many rental facilities carry our products. Our manufacturing and testers keep going until we get each lens within our very tight specification. We get it right, whatever it takes.

For over a century, cinematographers have chosen Cooke lenses for a smooth roundness and dimensionality to the picture and for the velvety skin tones that flatter. That's The Cooke Look®.



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"To Cooke Optics Limited for their continuing innovation in the design, development and manufacture of advanced camera lenses that have helped define the look of motion pictures over the last century."

*"Academy Award® of Merit
February 9, 2013"*



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