

Cooke Varotal/i FF T2.9 Full Frame Spherical Zoom Lenses



Cooke Varotal/i FF T2.9 Full Frame Spherical Zooms



Cooke is back with more zoom lenses.

Two new Cooke Varotal/i FF Full Frame zoom lenses were introduced in November 2021 and released earlier this year: 30-95 mm T2.9 and 85-215 mm T2.9. And now, the duo becomes a trio. Please welcome the Cooke Varotal/i FF 19-40 mm T2.9.

They all have:

- PL or LPL mounts.
- Aperture range: T2.9 – T22
- 114mm front diameters.
- 112mm front screw-in filter threads
- Maximum image diagonal coverage of 46.3mm Ø
- 280 degree rotation of focus scales.
- 48 degree rotation of iris scales.
- Industry standard M0.8 lens gears.
- Cooke /i Technology lens data contacts in lens mount and 4-pin connector
- Familiar Cooke barrel, gearing and style

They look like Cooke, not only the images captured, but also the familiar hardened, shiny black anodized barrel, with uniform gearing and style.

Skin tones appear smooth and cosmetically gentle. They are compact, rugged and convenient for the current crop of smaller Full Frame cameras. These latest Varotals complement Cooke S7/i T2 and Cooke S8/i T1.4 Full Frame primes.

These things seem to go in cycles. Horace W. Lee designed the legendary Cooke Speed Panchros a century ago, in 1921.

Fifty years later, in 1971, Cooke introduced the 20-100 mm T3.1 Varotal zoom, designed by Gordon H. Cook.

Primes returned in 1998 with Cooke S4.

Cooke's 16mm format CXX 15-40mm T2.0 came in 2006.

More primes followed.

And now, there are new Cooke Varotal/i FF zooms.

Then why would you want a new zoom when you have primes?

It might be a creative reason—you might want to do a gentle push in as the actor reaches a dramatic moment, as we have done, using a Preston Microforce attached to the fluid head handle.

You might want to hide a dolly move with an elegant widening of the focal length.

You may be on a screaming streaming series with forty setups a day and every quick lens change adds up to an hour, time that could be saved with zooms that make you the hero of the day.

If you hear someone on set muttering that modern zooms are not as sharp as primes, just ask them to imagine the Varotal/i FF series as Zoomable Primes.

Zoomable Primes

Lest anyone continue to harbor a misguided aversion to modern zooms as being less sharp than primes, then think of the Varotal/i FF series as Zoomable Primes.

The original Cooke Varo-Panchro 20-60 T3.1 introduced in 1981 may remind you of the new Cooke Varotal/i FF 30-90 T2.9. (Divide focal lengths by approximately 1.4 for the FF-to-S35 conversion.) The 35mm format Varo-Panchro was heralded as having the optical performance similar to a prime. And it didn't breathe. You could rack focus from a close-up low angle to the far-away crowd and the image did not shift.

The new Cooke Varotal/i FF Zooms can work as "Zoomable Primes" when you don't have time for lens changes.

And, you get the advantage of more focal lengths than ever could fit into a single lens case.

Cooke Varotal/i FF T2.9 Full Frame Spherical Zooms



left side



top



right side

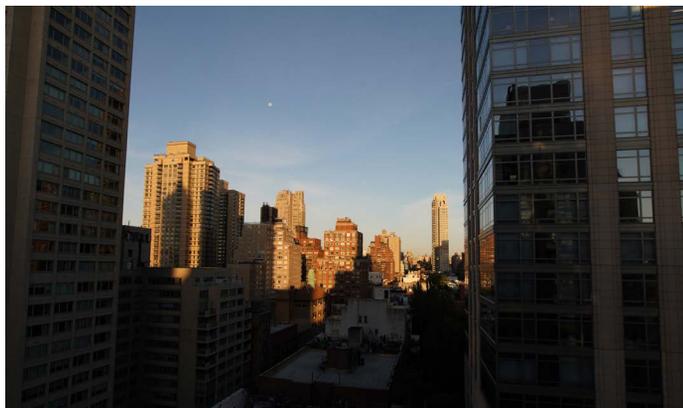
Cooke Varotal/i FF T2.9 Full Frame Spherical Zooms



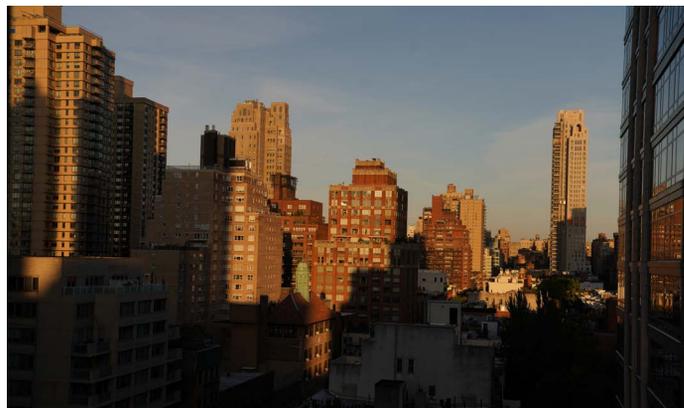
Cooke Varotal/i FF Spherical Zoom	19-40mm	30-95mm	85-215mm
T-Stop range	T2.9 - T22	T2.9 - T22	T2.9 - T22
Angular rotation of iris scale	48°	48°	48°
Min. marked object distance	0.6 m 2 ft	0.8 m 2 ft 8 in	1.5 m 5 ft
Close focus from lens front	320 mm 1 ft 1 in	500 mm 1 ft 7 in	1,000 mm 3 ft 3 in
Angular rotation to MOD endstop	280°	280°	280°
Angular rotation of zoom	103°	112°	100°
Length from front of lens to lens mount	228 mm 9 in	255 mm 10 in	255 mm 10 in
Maximum front diameter	114 mm 4.5 in	114 mm 4.5 in	114 mm 4.5 in
Total weight (with lens mount)	3.5 kg 7.7 lbs	4 kg 8.8 lbs	4 kg 8.8 lbs
Front Screw-in filter	M112.5 x 0.5	M112.5 x 0.5	M112.5 x 0.5
Maximum format coverage	46.3mm Ø (Full Frame, VV and beyond)		
Focus scales	Imperial or Metric scales marked from infinity to MOD. 19-40 focus scale 0.6m/2' to infinity 30-95 focus scale 0.8m/2'8" to infinity 85-215 focus scale 1.5m/5' to infinity		
Focus, iris, and zoom drive gear	0.8 metric module		
Iris scales	Two opposing linear T scales - whole and third stops marked		
Lens Mount	PL or LPL		



Cooke Varotal/i FF Focal Lengths: 19-40, 30-95, 80-215 mm



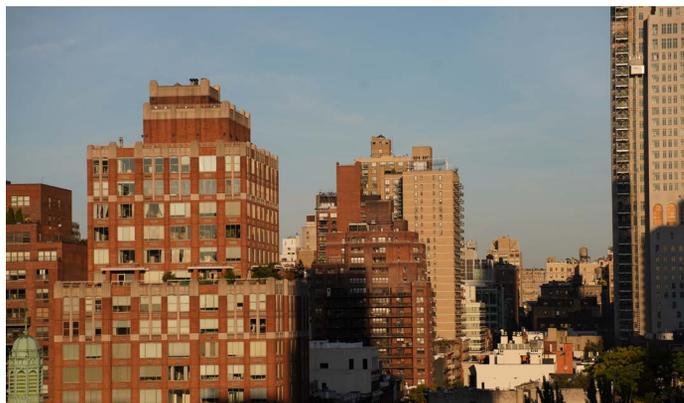
19-40 at 19mm



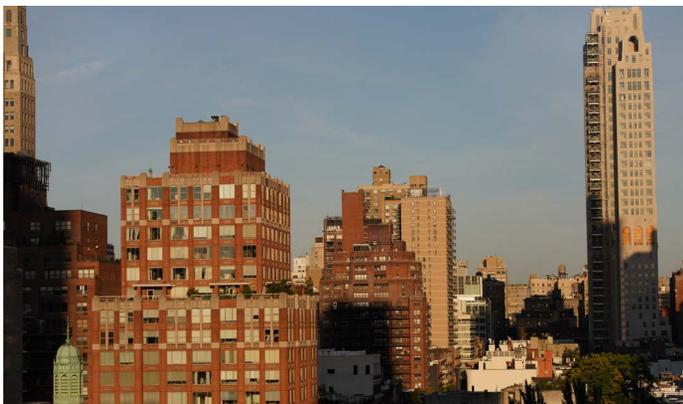
19-40 at 40mm



30-95 at 30mm



30-95 at 95mm



85-215 at 85mm



85-215 at 215mm

Cooke S8/i and Varotal/i FF Size Comparisons



We took a Look at Cooke Varotal/i FF in Industry City



Grading at FDTimes on DaVinci Resolve Studio

Cooke's Chief Marketing Officer Danny Haikin was nattering on the dog 'n bone (phone): "Under your eternal NDA, we're introducing the new Cooke 19-40 Varotal/i FF. Could you have a look?" A few days later, the lens arrived. It came, I saw, I commented. "Danny," I said. "It's vibrant. Vivacious. Images are almost three-dimensional."

Danny said, "Vivacious? That's a new one. You wouldn't let me use the word 'organic' in the FDTimes write-up of our S8/i. You insisted on 'filmic' or 'film-like.' But now, 'luscious'?"

"Well, well, well," I sputtered. "We may be running low on words, art galleries, wine tastings or food allusions to describe these vivacious, vibrant Varotal/i zooms."

Danny replied, "I like the alliterative V. But if a picture is worth more than all the V letters you can muster, how about a video with all three Varotal/i zooms. But please, no models with bad makeup. No fairy lights bokehing in the background or flash-lights flaring from the front. Something serious. Not the hilarious spoof Cine Lens Test directed by Ben Siow and Kelvin Chew. And spare us a remake of the Omar Sharif riding toward camera shot in *Lawrence of Arabia*."

Faster than you could say "The Hunting of the Snark," with apologies to Lewis Carroll:

The crew was complete, it included an AC—
A Gaffer mainly for negative fill—
An AD, brought to arrange their disputes—
And a Broker to insure their goods.

Took a Look at Cooke Varotal/i FF Zooms

FDTimes looked at Cooke Varotal/i FF Zooms on VENICE 2 at Industry City, in Brooklyn, NY. You can see the 4K video at:

youtu.be/zF-5mThr0j0
vimeo.com/766754992

Full Frame Faces

The idea was to focus on faces, since so much of what we do is all about the faces of actors and actresses and real people. These are Full Frame lenses—so that meant a Full Frame camera with the widest range of internal NDs because I love to shoot wide open. We wanted the lenses unadorned, without filters. Skin tones appeared beautifully smooth and gentle when captured on the latest 8K sensor and delivered in 4K.

We looked at 19-40, 30-95 and 85-215 Cooke Varotal/i zooms

on the latest Sony VENICE 2, recording 8.2K 17:9 DCI at 24 fps. Jon Fauer assembled the rough cut with music on DaVinci Resolve Studio. Corey Abel did the final cut on Adobe Premiere, which made the round trip back to DaVinci Resolve Studio for grading and delivery.

AbelCine Camera Technology Specialist, DIT and colorist Geoff Smith notes: "For grading, we only used native tools in the Studio version of Resolve 18.0.4 – lift, gamma, gain, offset, curves, color temperature, etc. Color management was performed 'manually' with Resolve FX Color Space Transforms applied pre- and post- the clips in a group (a 'CST sandwich'). The first CST node (in 'Group Pre-Clip') converts from Sony S-Log3/S-Gamut3.Cine to DaVinci Intermediate/DaVinci Wide Gamut and the second CST converts from DaVinci Intermediate/DaVinci Wide Gamut to RecC709 (i.e. an output transform). The idea is that one should be able to change the output target in the second CST to another OETF (e.g. ST.2084 PQ/P3-D65) and observe/trim the grade on an appropriate display (such as a BVM-X300 or BVM-HX310) without re-grading from scratch. The Color Management tab in Project Settings should be set to DaVinci YRGB (the default) rather than either DaVinci YRGB Color Managed or an ACES flavor."

The List of Thanks is Long:

AbelCine for production services, equipment and locations.

Pete Abel for his enthusiasm and generous support of this production. Pete and Rich Abel for starring roles in the film. Eric Johnston, Cooke Director of Business Development for organizing the Varotals and taking the BTS photos. Tanya Lyon, Sony Marketing Communications Manager—Cinema Division, and Paul Healy, Business Development at Sony, for diverting a VENICE 2 to our 1-day prep / 1-day shoot.

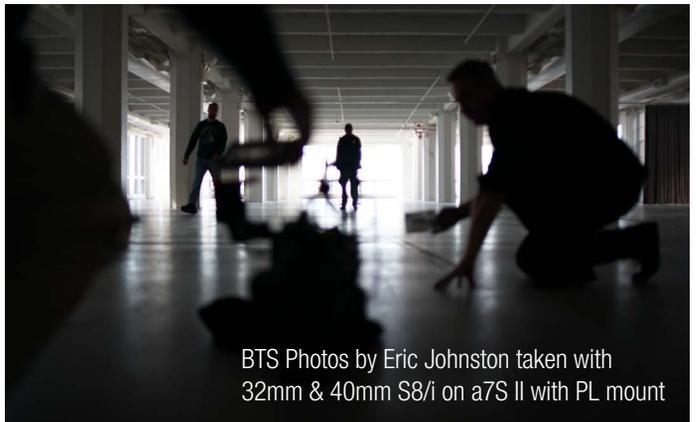
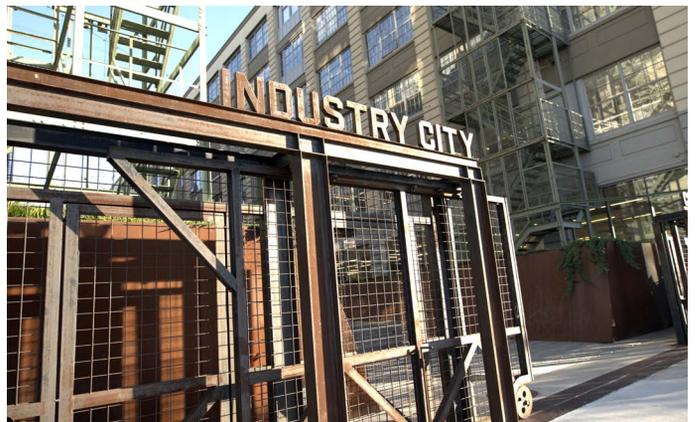
Locations were all within Industry City, a vibrant, creative community with more than 500 businesses, including media and technology companies, art studios, sports facilities, restaurants, bars, and shopping in 16 huge buildings on the Brooklyn waterfront.

AbelCine's huge windows provided beautiful available light for a large cast of AbelCine staff who patiently endured available props, butterflies on their noses, and bad jokes to make them grin. Moore Brothers Wine Company is across the street from AbelCine. The store is chilled to wine-cellar 55 degrees, so wear a jacket while you browse their vast selection of wines from small-family estates in France, Italy, Germany, Spain, Argentina, and the United States. Christophe Pourny Studio is one flight upstairs, with *Travaux En Cours* woven hats and all manner of French furnishings, home goods, soaps, chefs aprons, books and designer tote bags.

Crew:

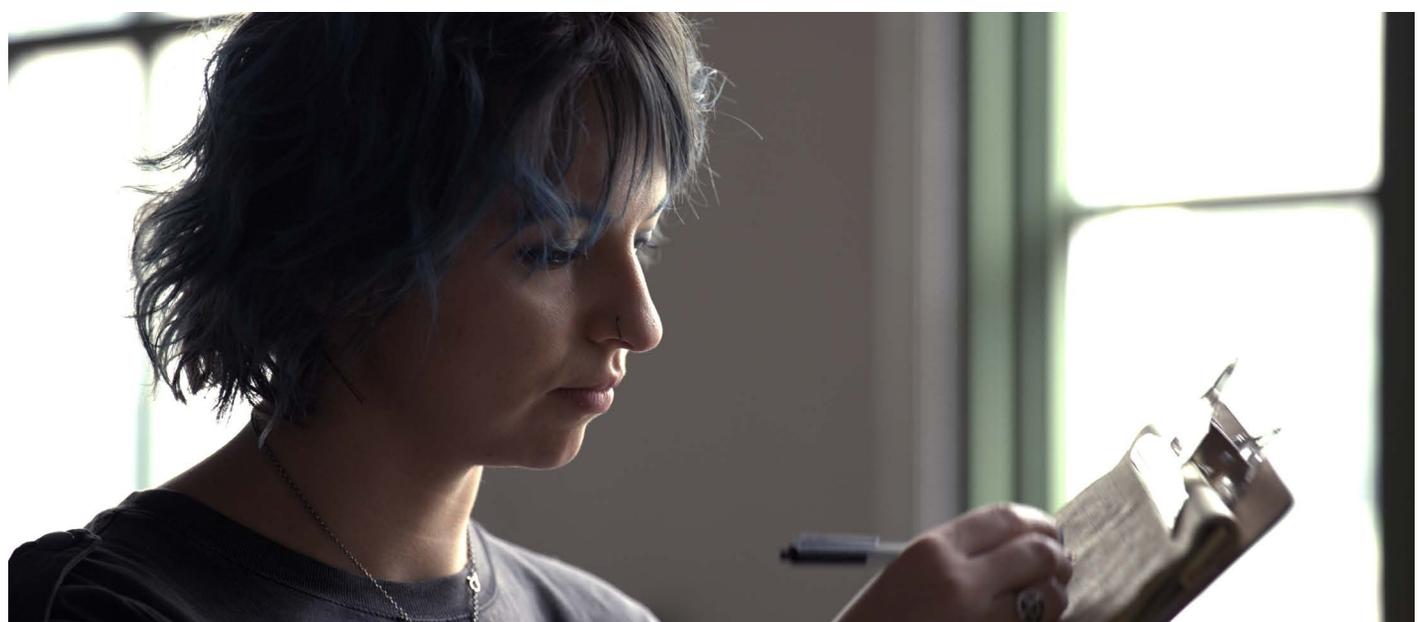
Director/Cameraman	Jon Fauer, ASC
Focus Puller/AC	Tom Kane
DIT	Geoff Smith
Tech Services Supervisor	Avery Venable-Turner
Gaffer	Ross Faccio
Production Coordinator	Nastasia Avrutin
Production Services	Megan Donnelly

BTS: Cooke Looks at Industry City



BTS Photos by Eric Johnston taken with 32mm & 40mm S8/i on a7S II with PL mount

Framegrabs: Cooke Looks at Industry City



Cooke Looks at Industry City



Cooke Looks at Industry City



Cooke Looks at Industry City



Cooke Looks at Industry City



Cooke Super35 Varotal Zoom Lens History



1932. Cooke Varo 40-120mm Variable Focal (Zoom) Lens.

Arthur Warmisham was the optical designer (British patent 398,307) of one of the first commercially manufactured variable focal (zoom) lenses for cinematography. The Cooke Varo 40-120mm cine lens for 35mm format was assembled and sold by Bell & Howell. It came equipped with a special cradle that held the Varo lens and the camera together to ensure correct alignment. Focal length was changed by rotating a crank.



Cooke Varotal 20-100 T3.1 Photo by Contrast Cine

1971. Cooke Varotal 20-100mm, f2.8 / T3.1 Zoom.

Designed by Gordon H. Cook, this was Cooke's first high-quality zoom lens for 35mm motion picture cameras. Its design remained as the concept for Cooke zooms produced through the 1990s. It had a sealed front focus unit and fixed front element that eliminated the risk of dirt and moisture being drawn into the lens, did not rotate or trombone in and out, and allowed for convenient fitting of a mattebox. It had anti-reflective wide-band Varomag high-performance coatings. This increased shadow area definition, light transmission, durability, and reduced ghosting and flares. Originally fitted with an ARRI bayonet mount, most now have a retrofit PL mount (developed by ARRI in 1982).

The Cooke Varotal is the first motion picture zoom lens not to be designed on the principle of a bicycle pump.

Cooke ad courtesy of ASC Magazine and Cooke Optics.

1975. Cooke Cine Varotal 25-250mm f2.8 / T3.1 Zoom.

Cooke's first 10:1 long range zoom lens for 35mm.

The print magazine headline by Alastair Riach, Cooke's great ad-man at the time, was, "The Cooke Varotal is the first motion picture zoom lens not to be designed on the principle of a bicycle pump."



Cooke VaroPanchro 20-60 T3.1. Photo by Cine Lens Manual.

1981. Cooke Varo-Panchro 20-60mm T3.1 Zoom.

The concept was optical performance comparable to prime lenses. This was my first Varotal on a brand-new Arriflex 35-BL3, a young Jon Fauer and a young Tom Cruise on *All the Right Moves* in 1983. Mud, rain, night exterior, and lots of low angles in the mud. Tom Stern, ASC, was the gaffer, ringing the stadium in Johnstown, PA with lots of Musco lights but we were still wide open with a wrench at T3.1. The Varo-Panchro was unique. It was the first zoom I had ever seen that didn't breathe. You could rack focus from a close-up low angle to the far-away crowd and the image did not shift. And because of all the mud and rain, changing prime lenses was not practical. Its 3x zoom range covered wide to mid-range. And so, the Varotal worked as a zoomable prime, not because we didn't want to zoom but because we didn't have time to use primes.

Cooke Super35 Varotal Zoom Lens History



1983. Cooke Cine Varotal 25-250mm T3.9 Mark II Zoom.

There were 2 versions of the Mk II 25-250: focus in front, and zoom in front with focus at the rear (early Panavision style).

1986. Cooke Wide Angle Varotal, 14-70mm T3.1 Zoom.

During the development stage in the mid-1980s, customers' input prompted the company to incorporate a curved front cover glass and a noise isolator. This lens was unique in the zoom series because it included a wide angle aspheric element.



1987. Cooke Varotal 18-100mm T3 Zoom.

Design was initiated at the beginning of 1987 and the lens was exhibited for the first time at Photokina in 1988. It included refinements prompted by extensive suggestions by cinematographers and camera operators, and became very popular.



1992. Cooke Cinetal 25-250mm T3.7 Mark III Zoom

1998 - 2021. Zoom Time Out.

Cooke stopped building 35mm cine zooms by around 1998 (with the exception of the short and fast 15-40mm T2.0 CXX S4i in 2006 and a video camera version of the 18-100).

2021. Cooke Varotal/i Full Frame 30-95 and 85-215 T2.9 Zooms.

Cooke introduced Full Frame 30-95mm T2.9 and 85-215mm T2.9 Varotal/i FF Zooms in November 2021.

2022. Cooke Varotal/i FF 30-95 T2.9 and 85-215 T2.9 Zooms.

Cooke introduces Full Frame 19-40mm T2.9 Varotal/i.

Cooke Varotal Zoom Lens	Aperture	Minimum Focus	Front Diameter	Length from image plane	Weight kg (lb)
Cooke 14-70 Varotal	T 3.1-22	2'3" (.7 m)	191 mm	16" (406 mm)	12.75 lb (5.8 kg)
Cooke 18-100 Varotal	T 3-22	2'3" (.7 m)	150 mm	14½" (370 mm)	13.5 lb (6.1 kg)
Cooke 20-60 Varopanchro	T 3.1-22	2'1" (.63 m)	116 mm	11" (280 mm)	4.8 lb (2.2 kg)
Cooke 20-100 Varotal	T 3-22	2'3" (.7 m)	144 mm	14½" (370 mm)	9 lb (4 kg)
Cooke 25-250 Mk I Cine Varotal	T4 - 22	5'6" (1.7 m)	124 mm		11.5 lb (5.2 kg)
Cooke 25-250 Mk II Cine Varotal	T 3.9-22	5'3" (1.6 m)	121 mm	13¾" (350 mm)	9.2 lb (4.2 kg)
Cooke 25-250 Mk III Cinetal	T 3.7 - 22	5'6" (1.7 m)	150 mm		10.5 lb (4.8 kg)