



This is a page of data on the lens flange distance and image coverage of various stills and movie lens systems.

It aims to provide information on the viability of adapting lenses from one system to another.

Video/Movie format-lens coverage:

[caveat: While you might suppose lenses made for a particular camera or gate/sensor size might be optimised for that system (ie so the circle of cover fits the gate, maximising the effective aperture and sharpness, and minimising light spill and lack of contrast... however it seems to be seldom the case, as lots of other factors contribute to lens design (to the point when sometimes a lens for one system is simply sold as suitable for another (eg large format lenses with M42 mounts for SLR's! and SLR lenses for half frame). Specialist lenses (most movie and specifically professional movie lenses) however do seem to adhere to good design practice, but what is optimal at any point in time has varied with film stocks and aspect ratios!]

1932: **8mm** picture area is 4.8×3.5 mm (approx 4.5×3.3 mm useable), aspect ratio close to 1.33 and image circle of $\phi 5.94$ mm.

1965: **super8** picture area is 5.79×4.01 mm, aspect ratio close to 1.44 and image circle of $\phi 7.043$ mm.

2011: **Ultra Pan8** picture area is 10.52×3.75 mm, aspect ratio 2.8 and image circle of $\phi 11.2$ mm (minimum).

1923: **standard 16mm** picture area is 10.26×7.49 mm, aspect ratio close to 1.37 and image circle of $\phi 12.7$ mm. Std 16 lens IC is typically $\phi 14$ mm+.

2005: **Ultra-16** format, picture area is 11.66×6.15 mm, with same lens centre as standard 16 (the largest 16x9 area that can be shot on a standard 16mm camera).

1971: **super16** picture area is 12.52×7.41 mm. AR=1.67 (lens is offset compared to std 16mm with respect to the neg), & IC= $\phi 14.55$ mm. The correct specs (ARRI version, machined gate) for Super 16 full aperture gate is 12.35×7.5 mm, IC= $\phi 14.45$ mm (ref. Jorge Díaz-Amador, Reduser.net). Obviously this relates to what can be seen in the viewfinder, not what is typically telecine (in order to clear the ragged gate edge, and accomodate aspect ratio). S16 lens IC are typically $\phi 16$ mm+. see note on video specs below, typically what you finally use is probably IC= $\phi 14.15$ mm (16x9).

1890/1909: **35mm movie** (or half frame) picture area is 24.89×18.67 mm, aspect ratio of 1.33.

Effectively a maximum area, IC= $\phi 31.1$ mm. (This is the standard Motion Picture Silent Format 0.723 in. $\times 0'980$).*

1932: **Academy** 35mm movie picture area is 22×16 mm, aspect ratio of 1.37 and IC of $\phi 27.2$ mm.

(Projection area was 21×15 mm). standard [Academy 35 mm film](#) size of $21.95 \text{ mm} \times 16.00 \text{ mm}$ ($0.864" \times 0.630"$)

185 from **Academy** gate is $21.95 \text{ mm} \times 11.86 \text{ mm}$ ($0.864" \times 0.467"$)

1982/4: **Super 35** camera aperture is $24.89 \text{ mm} \times 18.66 \text{ mm}$ ($0.980" \times 0.735"$)

Super 35, 16x9 aperture is $24.89 \text{ mm} \times 14\text{mm}$ ($0.980" \times 0.551"$)

Super 35, 185 aperture is $24.89 \text{ mm} \times 13.45\text{mm}$ ($0.980" \times 0.530"$)

*note, although the the standard "Motion Picture Silent Format" film size had been around since before 1900, many (particularly wide) movie lenses designed before the 1950s were effectively optimised for 3x4 and typically exhibited either more errors or vignetting in the wide screen capture from spherical lenses that became more frequent in the latter part of the century. (see notes on THC series I/II lenses).

1/3" video 3x4 active area, 4.23×3.17 mm (**IC=** $\phi 5.3$ mm) {see note 30}

1/2" video 3x4 active area, 6.35×4.75 mm (**IC=** $\phi 7.95$ mm)

Ikonoskop A-Cam dII CCD Sensor Size = 10,6mm x 6mm

Red 2/3" sensor = 10.1mm x 5.35mm

2/3" video 3x4 active area, 8.46×6.33 mm (**IC=** $\phi 10.6$ mm)

[Blackmagic Pocket Cinema Camera](#) Effective Sensor Size: 12.48mm x 7.02mm IC=ø14.32mm
Typical Film super16, 16x9 = 12.35x6.95mm, IC= ø14.17mm (less any telecine crop). S16 lens' IC are typically ø16mm (for f=40mm or less).

1" video 3x4 active area, 12.7x9.5mm (**IC=ø15.9mm**) {see note 30}

[Digital bolex](#) Kodak CCD Sensor Size = 12.85 mm x 9.64 mm

Nikon 1 Sensor Size = 13.2 x 8.8mm sensor, (2.7x crop factor) IC=ø15.865mm

[Blackmagic Cinema Camera](#) 15.81mm x 8.88mm, Active Sensor Size = 15.6 mm x 8.8 mm
IC=ø17.91mm?

Red Scarlet @ 3K: 16.65 x 9.36mm. IC=ø19.10mm

micro 4/3rds "M43" Sensor Size = 17.3 mm x 13.0 mm (21.6 mm diagonal) (2x crop factor)
IC=ø21.6mm

micro 4/3rds "M43" 16x9 Active Sensor Size = 17.3 mm x 9.73 mm (19.8 mm diagonal)
IC=ø19.8mm. (GF2 sensor: 17.3x13.0mm)

Red One Mysterium sensor (4520x2540 pixel) = 24.4mm x 13.7 mm

Red One @ 4K HD (ie 1.78:1 or 16x9 & 3840x2160 pixel) = 20.73x11.65mm

Red Epic Mysterium-X sensor (5120x2700 pixel) = 27.7mm x 14.6 mm

Red Epic @ 4K HD (ie 1.78:1 or 16x9 & 3840x2160 pixel) = 20.77x11.68mm (*this is smaller than Sony E-mount or APS-C !.*)

----- for comparision **185** from **Film Academy** gate is 21.95 mm x 11.86 mm -----

Sony E-mount, 16x9 Active Sensor Size = 23.4 x 13.6mm, IC=ø27mm (**F3L spec: 23.6x13.3mm**)

Sony E-mount, Nex, Konica-Minolta A-mount, etc, Sensor Size = 23.4 x 15.6mm, APS-C, (1.5x crop factor) IC=ø28.12mm

Canon 7D 23.4x15.6mm, APS-C. 16x9 Active Sensor Size=??

(typically APS-C film-stills cameras were 23.4x15.6mm, though this varied - see further down the list)

Arri Alexa Image Out (2880 x 1620 Pixels, 1.78:1) 23.76 x 13.37mm (0.935"x0.526") IC: 27.26 mm / 1.073"

Canon C300 24.6 x 13.8mm (equivalent to Super 35mm)

----- for comparison, **Film Super 35, 185 aperture is 24.89 mm x 13.45mm** -----

[APS-C \(stills spec\)](#), 25.1 x 16.7mm, IC=ø30.2 (ref Ken Rockwell)

Red Epic @ 5K HD... lens coverage quoted as 27.7mm (h) x 14.6mm (v), IC= ø31.4 mm

APS-H (as implemented on Canon 1dMkiv), 28 x 19mm, IC=ø33.8mm

[APS-H \(stills spec\)](#), 30.2 x 16.7mm, IC=ø34.5 (ref Ken Rockwell)

"Full Frame" digital stills (Canon 5D/5Dmk2), 36.0 x 24.0mm, IC=ø43.3mm

Crop factor figures are misleading, in that they are usually quoted in comparison to full frame stills 35mm. For a comparison with 35mm movies, divide by 1.5 (so Sony e-mount =1, "M43" =1.33 etc).

Uncompressed RAW HD Cameras:

[Ikonoskop A-Cam dII](#) CCD, (Adobe CinemaDNG), 11 stop dynamic range, IMS mount

[Digital bolex](#) 5.5 micron CCD, (CinemaDNG), C mount / PL mount

[Blackmagic Cinema Camera](#) (ProRes and DNxHD), 13 stop dynamic range, EF and ZE mount

Red Scarlet (Redcode RAW), 11+ stop dynamic range

ARRI Alexa, Super 35 CMOS (ARRIRAW), 13.5 stop dynamic range

Sony NXcams, via HDMI (but limited to 8bit).

AR = aspect ratio, the ratio of image height to width

camera IC = image circle, the diagonal corner to corner distance of a gate or sensor.

lens IC = image circle *diameter*, of a circle of good definition (ie acceptable image quality) formed by a lens. Sometimes confused with the *illumination circle* which can be significantly larger, contributing to stray light and reduced contrast, and producing blurred or dark extremities (vignetted image).. where it is 'seen' by a sensor larger than the image circle.

Lens Mounts, *in order of flange to gate/sensor distance.*

In many cases adapters exist, to fit lenses lower in this list, to lens-mounts that appear higher in the list (usually the difference in flange depth allows it). Adapters, (at least those capable of infinity focus without extra glass elements), cannot exist for lenses at the top of the list for those mounts below it - with a few exceptions, eg when the throat diameter of the mount allow the lens to sit within it.

Eg a Leica-R to EOS adapter needs to be 47mm - 44mm = 3mm thick. A c-mount to M43 however needs to be 17.525 -19.25mm (= -1.75mm!) and is only possible because the c-mount diameter can fit into the throat of the M43 flange.

Cine / stills Mount	Flange focal distance	Port Diameter	introd'd
RMS mount (<i>RMS = Royal Microscopic Screw</i>). some lenses use this as an intermediary thread (0.800"-36tpi).	n/a		
8mm, IC=ø5.94mm		0.298"	
S-mount, CCTV/webcam mount, M12x0.5mm pitch	~5mm	12mm	
Pentax Q bayonet (1/2.3 inch frame, 6.17 × 4.55 mm, 5.5x crop) IC=ø7.67mm	9.2 mm		2011
IMS. P+S TECHNIK Interchangeable Mount System {see note 24}	10~12mm		~2000
D-mount (0.625 inch wide with 32 tpi thread) S8, Industrial & CCTV cameras	12.29 mm	0.484"	1965
Camex, reflex 8mm or 9.5mm (<i>2 prong bayonet, 0.8"/~20.5mm dia</i>) note 5			~20mm
CS Mount (similar to C mount, but cheaper to mfr due to fewer glass elements used in Industrial and CCTV cameras, also known as <i>I-32 UN 2A</i>)	12.526 mm	0.492"	25.4mm
Bolex H8 RX (1" × 32tpi thread)	15.31 mm		
Nikon 1 (13.2 × 8.8mm sensor, 2.7× crop factor) IC=ø15.865mm (similar to S16)	17mm		2011
C-mount video	~17.5	0.68976" 11/16th"	
Olympus screw mount (Pen 8) 3/4" ~19mm thread			1962-66
Kiev-16C [M27×0.75 thread] typically PO-51 (20mm/f2.8) & Industar-50 (f3.5)	17.35mm		~25mm
C-mount 16mm (Beulieu, Bolex) [25.4mm /32 tpi] note	17.526 mm	0.69"	1923
Mitchell 16mm "O" Mount	17.526 mm	0.69"	
Fujifilm X mount (X pro1, X-E1, APS-C, 1.5× crop factor)	17.7mm		2012
Argus C3, 33mm thread.	17.7mm		
Canon EF-M (EOS-M, 23.4 × 15.6mm, APS-C, 1.5× crop factor)	18mm		2012
Sony E-mount (Nex etc, 23.4 × 15.6mm, APS-C, 1.5× crop factor) video IC typically = ø27mm	18mm		46.1mm 2009
Sony FZ-mount	18mm		2011
micro 4/3rds "M43" (Olympus, Panasonic GH1/2 , AG-AF101 etc.,17.3 mm × 13.0 mm , 2x crop factor). IC=ø19.3mm for 16x9	~19.25mm	38mm	2008

Kodak 16mm "B" etc, 15/16" screw		25/32"	~23.8mm	1930s
B&H 627 style threaded breech lock				
Movikon 16 (3 prong bayonet, 2 ears are 5mm wide, the other 7.2mm) {see note 43}	~20mm		30.5mm	1930s
Canon EX1/2 VL bayo (1/2" chip coverage, Canon CL) {see note 25}	20.0mm			1994
1/2" FB. JVC/Panasonic 1/2" CCD video bayonet. (3 prong bayo, looks like B4) {see note 31}	20.0mm			
Acme? (16mm) - 4 set screw mount to camera, unevenly spaced (unlike Mitchell 16/35mm mounts).. flange dia=56mm. eg Inset Baltar lens.	~26mm		38mm	1950s
Bolex (breech lock)	23.22 mm			
Samsung NX (Ext. diameter, 42mm. Frame size, 23.4x15.6mm)	25.5mm		42mm	2010
Mitchell Pro 16mm - 3 set screw mount to camera, flange dia=60.27mm	~23mm	0.9"	42.87mm	1940s
Newman Sinclair (typically 4 screws on a 26.5mm radius, to a 130x55mm plate)	22.75mm+3bf		48mm	1927-
Red One, interchangeable mount	27.3mm			
Pentax 110 auto ((bayonet) note no iris in lens, it was part of the camera) coverage: 1/2 frame	27mm			
Leica M	27.8	1.0945"	44mm	1955
Kodak "M" (2 prong breechlock, Kodak 16mm Magasine camera)	~28mm		~26mm	1940s
LSM, LTM, L39, "True Leica": Leica/Canon Schraub/Periflex/Reid screw thread rangefinders (39mm x 26tpi (.977mm))	28.8		39mm	1930
Canon J mount M39 x 1/24" screw mount. screw thread rangefinders (39 x 24tpi)	28.8		39mm	1940?
Meopta Opema . screw thread rangefinders (38mm x ?tpi)	28.8 ?			1950s
Narcissus (M24x1mm thread)	28.8			
Olympus Pen F (bayonet) coverage: 1/2 frame/S35	28.95		37.6mm	'63-72
Canon XL1, XL2 etc	29.00		~37.8mm	
Contax G1 (bayonet)	29.00			1994
Robot (bayonet or thread)	31mm			
Kiev-16U mount [M32x0.5 thread] {see note 40}	31mm			
Miranda (bayonet)	31.5			
Fairchild High Speed camera		1.298"		
Canon SD {Demi C} (~30mm screw, no iris) {see note 6}	~33mm			1965
Dixax (there are two version of this breechlock rangefinder mount)				1951-8
Finetta (either 27mm thread or 3 prong bayonet)	??		27mm	1950-7
Kodak "S" Mount (multi-start thread, often an intermediary mount for C or M mount cameras)	~34.14mm	1.344"	~24mm	1945-64
Contax RF (dual bayonet), Nikon RF {see note 28}	35-32mm		33.6mm	1932
1/2" video (breech lock), Various manuf, except Sony	35.74 mm			

(aka: general mount or 1/2" standard mount).				
Alpa bayonet	37.8	1.4882		
1/2" video (breech lock), SONY only	38 mm			
Bell and Howell: Eymo, Gun sight, GSAP etc	~38mm+20bf	1.500"		1930s
4/3rds (Olympus, Panasonic, bayonet) {see notes 26, 32}	38.67mm			2003/7
Aaton (16) " Aaton universal " 16mm (three-pronged flange)	40.00 mm		50 mm	1974
Visoflex (Leica PLOOT)				1935
Visoflex I (Leica RF)	40mm			1951
Visoflex II (Leica RF)	40mm			1960-84
Fastax (typically Wollensak lenses)	around 40mm			
Konica F (bayonet) 1960-65	40.50 mm	1.5945"		1960
Konica Autoreflex, AR (bayonet) {see note 32}	40.50 mm			1965-87
Miranda bayonet+M44x1mm thread / or M42x1 / or bayo+M46x1mm	41.50 mm			
Wall Old 35mm		1.614"		1920s
AKA, AkArette (M36 x 0.75mm screw, female thread) {see note 12}	~42mm		~29mm	1947-62
Canon FL (breech lock) {see note 27}	42.00 mm	1.6547"		1964
Canon FD (breech lock) 1971-1990{see note 27}	42.00 mm			'72-92
Canon AC (FD style autofocus for the T80 camera) has no aperture ring	42.00 mm			1985
USSR Start	42.00 mm			'58-64
Wrayflex (M41.2 x 26tpi)	42.05 mm			
Altix (breech lock, 3 prong) similar but not same as Werra {see note 13}	42.5 mm			1956-9
Bell and Howell (eg 2709)		1.6875"		1909
Wall (normal) 35mm (for Wall "New" subtract .005")		1.695"		
Mitchell NC and Standard 35mm (TTH, Baltar etc)	~ 43 mm	1.695"	46 mm	1930s-50s
PSK (Lomo) 4-pronged bayonet mount	~??			1959..
Rectaflex	43.4 mm			
Mamiya-sekor CS (bayonet)	~43.5mm			1977
Mamiya-sekor E (there is no physical coupling between iris & aperture ring, manual adapters are not possible). {see note 1}	~43.5mm			1980-4
Minolta SR / MD (bayonet)	43.5mm	1.710"		'58-01
FUJI X-fujinon (1980-85, bayonet)	43.5mm			'80-85
Petri Flex (breech lock)	43.5mm			1960s
Canon EF (bayonet) (EF stands for "Electro-Focus", designed for EOS cameras)	44.0mm		54 mm	1987
Canon EF-S (bayonet) IC for APS-H, (white square symbol next to lens mount).	44.0mm			2003

Sigma SD (AF bayonet) {see note 9}	44.0mm			
Paxette (series II cameras) (M39 (39mm x 1mm thread))	44.0mm			1951-60
Paxette (series III cameras) (bayonet) <i>iris but no aperture control ring. Iris normally closed. Camera limited lenses to f2, most were f2.8 or less.</i>	44.0mm		30mm	1958-65
Praktiflex (M40x1 thread)	44.0mm			
Sigma SA	44.0mm			1992
Kiev 10-15 (Automat, bayonet), <i>these lenses have iris but no aperture control ring</i>	~44mm			'65-83
PB, Praktica B, (Pentacon Prakticar, bayonet) {see note 8 & 3}	44.41mm			'78-02
Argus (bayonet) {see note 15}	44.45mm			
Minolta AF (bayonet) = Sony A (Alpha) mount	44.5-6 mm			1985
Contax S (M42)	~44.5 mm			
Agilux (small bayonet, Agimatic 45mm f2.8/85mm f5.5 anastigmats only)	~44.6			1956
Zeiss Werra3 (the only version with interchangeable lenses){see note 11}				1959
Rollei 35 (bayonet) Rolleiflex SL35 {see note 23}	44.6mm			
Exakta, Topcon (inc RE) (bayonet)	44.7mm			
Ikarex BM (Breech lock), Icarex BM	44.7mm			
Kodak Retina Type 025, The rear part of the lens is a permanent part of the camera body.				1957/8
Kodak Retina Reflex, Type 034, Deckel mount	44.7mm			1959
Voigtländer Bessamatic (bayonet) , similar to Deckel	44.7mm			
Kodak Retina Reflex III & IV, Type 041/051,	44.7mm			1960/7
Agfa: Agafaflex III, IV, V or Ambiflex I, II, III {see note xx} bayonet	44.7mm?			1957-58
Exaktar Real (Cosina) (3 prong bayonet)	?			
M39 style screw (39 x 1mm) <i>Russian Leica eg early FEDs</i>	45.2mm			1930
Asahiflex (bayonet)	45.46 mm			
M42, Praktica/Pentax or Universal screw mount 1947-80s (42mm dia & 1mm thread pitch) originally Contax/Zeiss.	45.46 mm		42 mm	1947
Pentax K (bayonet) eg Asahi Opt Co., SMC lenses {see note 3}	45.46 mm	1.790"		1975
Pentax KAF2-mount Frame size, 23.4×15.6mm (APSC)	45.46 mm			
Mamiya-sekor SX (M42 style, but an overhang on the aperture ring prevents connection to most adapters and cameras other than Mamiya). Aperture relay pin known to foul/jam in PK adapters.	45.46mm			
M39, Zenith 3M (M39x1 thread, see also some Enna/Corfield?)	45.46mm			1962
Contax/Yashica (bayonet)	45.5 mm	1.7913"		1975

Contax RTS	45.5 mm			
Mamiya ZE (bayonet)	45.5 mm			
Pentina (breechlock) -around 44000 cameras manufactured.	45.5 mm			1961-5
Petri (bayonet)	45.5 mm			'61-'77
Ricoh/Rikenon (breech lock)	45.5 mm			
Yashica FR, FX (bayonet)	45.5 mm			
Contarex (bayonet) <i>iris, but no aperture control on lens</i>	46.0 mm			
Olympus OM (bayonet) {see note 16, mod to Nikon or Pentax-K}	46.0 mm			'72-'2002
20th Century Fox/.125 Ring		1.820"		
Nikon F 1959-1980s (bayonet) manual iris	46.5 mm	1.831"		1959
Nikon AF (F bayonet) iris normally closed, adapters require iris adjusters	46.5 mm	1.831"		1990s
Nikon DX (F bayonet) iris normally closed, adapters require iris adjusters, $\frac{1}{2}$ frame IC.	46.5 mm			2000s
Nikon IX (F bayonet) iris normally closed, adapters require iris adjusters, these work on mirrorless cameras (or Nikon DX with small mod to rear baffle) $\frac{1}{2}$ frame IC.	46.5 mm			2000s
Leica R (bayonet)	47.0 mm			1964
20th Century Fox/.187 Ring		1.882"		
B4, typically HDTV 2/3" or $\frac{1}{2}$ " and other like digibeta {see note 30}	48.00 mm (in air)			
Contax N (bayonet)	48mm			
Eclair CA-1 (two-pronged flange) Cameflex	48.00 mm	1.8897"	46mm	1947-60s
Icarex (BM, breech lock, Voigtländer lenses) TM models were M42	48mm			'66-'71
Todd-AO 65mm FC and BFC		1.905"		c1957
Panavision 65mm (add .004" if with beamsplitter)		2.030"		
Foth Derby {see note 29}	~50mm+7bf			1930s
Panaflex16 {see note 41}				'50s-'70s
Praktina/Practina (breech lock) {see note 14}	50mm		46mm	'52-'60
Adaptall, Tamron	50.7mm			
Mitchell SSR16 (16mm, reflex)	~52mm	2.047"		1980s
Arri Bayonet Arri-B , (16/35) 1965-1980 {see note 21}	52.00mm		41.00mm	
Arri Standard , Arri-S (16/35) c. 1950s-1965 eg Arri ST to SR2 {see note 20}	52.00mm+19bf		41.00mm	1950s
Arri PL "Positive Lock" (16/35) (four-pronged flange) {see note 21a & 24 -IMS mount}	52.00mm+10bf	2.047	54.00mm	c1980
Arri PL "Positive Lock" (16mm) SR high speed models 51.97 mm	51.97 mm		54.00mm	
Krasnogorsk bayonet (K1,2,3 16mm movie camera) 4 lug, looks like PL without slot in ears, and	~52.00 mm		43mm	

polarising raised area on barrel				
Topcon Topcor UV 3 prong Breech lock. (note 4) iris, but no aperture control on lens	~54mm			1960s
Monitor HS70A	~54mm	2.131"		
Tokina, Vivitar, Soligor T4 & TX mount Breech lock (TX adapters are typically .025mm too thin, to ensure infinity focus?).	55.00 mm			
Tamron T mount unthreaded ring, held by 3 set screws {see note 2}	55.00 mm			1957
Tamron, Soligor T1 (?!?), actually just early threaded T mount M37 x 0.75 mm thread pitch (Similar to Interflex mount)	55.00 mm			1960s
Tamron T2, T400 mount similar to M42 but 0.75 mm thread pitch {see note 2}	55.00 mm			1962
Hanimex H mount (screw), {see note 10}				
Mitchell 35R mount (3 off, ¼" wide prongs, red spot) {see note 50}	~56mm	2.20"	42mm	
Konvas OCT18 (16/35) similar to the ARRI Standard mount in appearance, but larger {see note 22}	57 mm ±0.01	2.4016"? 47mm		
Kinor 16mm similar to the ARRI Standard mount in appearance, but slightly larger (43mm), and with 2 side lugs instead of indented ring. (lens mount does not rotate).	57 mm	2.4016"? 43mm		
Panavision PV (16/35) 1972-present (four-pronged bayonet, with locating pin on one flange)	57.15 mm	2.250"	49.50 mm	
ACME (model 5)		2.312"		
Mamiya 7/7II bayonet	~60mm			
Cinema Products mount (CP-16 and CP-GSMO cameras) looks similar to Aaton mount {see note 20a}	around 60mm			
ACME (model 6)		2.375"		
Askania Z (three-pronged bayonet, with locating hole on the one larger flange)	? mm			1930s
Mitchell AP65 65mm (add .015" for beamsplitter)		2.375"		
BNC (Mitchell Blimp, news camera) (four-pronged flange). On this older style the rear of the lens protrudes as a cylinder, it cannot be used with reflex cameras as it fouls the mirror.	61.468mm	2.420" {see note 51}	68.00 mm	1960s
BNCR (Mitchell reflex 35mm) rear of lens housing is cone shaped	(61.468mm)	2.420"	68.00 mm	1970s
Konvas OCT19 (16/35) similar to BNC-BNCR mount in appearance, but no reference to lens protrusion behind the mount. (Konvas-2M (1KSR-2M) Kinor-35S & 35H cameras).	61 mm ±0.01		68 mm	1970s
Mamiya 645 bayonet (medium format), Nikon F, EOS adapters common	63.3mm			
Zeiss Ikon Panflex, bayonet	64.5mm		30.85mm	1937
Pentax 645 bayonet (medium format)	70.87mm			

ARRI 65mm format Maxi-PL mount	73.5 mm			
Pentacon Six , Exacta 66, Kiev 60/Kiev Six (breech locks)	74.1 mm			
Zenit 80 (multi threaded)	74.1 mm			
Hasselblad bayonet (model 500/2000)	74.90 mm			
Korelle , Agilux, Primaflex (screw thread)	~75mm			1930s
Mitchell 70mm High Speed	~76.2mm	3.500"		
Kalarscope	78.8mm			
Panaflex 65mm		4.00"		
Kowa SeT (35mm SLR) usually a fixed lens or those with interchangeable mounts have iris but no aperture ring (it was part of the camera)	n/a			
Kowa Six/Super 66 breech lock (medium format)	79mm			
Debrie Parvo bayonet (3 prong, 87mm dia bayonet, focus in camera)	~82mm	~65mm		
Hasselblad/Kiev88 multi start thread (medium format)	82.1mm			
Zeiss Ikon Flektoskop, Flektometer	84.5mm			
Pentax 6x7 bayonet (medium format)	84.95mm			
Kilarflex	92.3mm			
Novoflex	100mm			
Bronica S2A (bayonet or 57mmx1 thread) (medium format)	101.7mm			
Rolleiflex SL66 bayonet (medium format)	102.8mm			
Mamiya RZ bayonet (medium format)	105mm			
Mamiya RB bayonet (medium format)	112mm			
Lordomat (screw on breech lock, 1953-62) note 7	35-40mm			1953
Canon EX <i>This is a two part lens, with the rear element as part of the camera {see note 33}</i>				
see also http://en.wikipedia.org/wiki/Lens_mount & http://www.markerink.org/WJM/HTML/mounts.htm				

note 1: Mamiya-sekor E lens electrical contacts were to tell the camera which lens was attached. In EF lenses this was extended to have contacts relaying focal distance. Neither have a physical connection between aperture ring and the iris which was driven by the Mamiya Z series camera.

note 2: The T-mount is the standard way to mount a camera to a microscope, sometimes with a RMS (*Royal Microscopic Screw*) adapter. It is also the standard way to mount a SLR or DSLR camera to a 1.25" telescope eyepiece.

note 3: Asahi Pentax: Pentax-M are manual lenses, PK mount. The PK-A (1983) mount has electrical contacts to a potentiometer to encode max aperture (hence the "A") of the lens to Pentax cameras. This has no bearing on the manual use of the lens on other systems. Surprisingly the PK design is actually by Topcon. It looks very similar to Praktica B (note 8) but longer flange depth, and on the lenses the gap between flange surface and bayonet prongs is greater (so the lens wobbles or is loose on a Praktica body mount).

note 4: Topcor UV lens aperture was set on the camera, a connecting leaver to the lens shuts the iris. ffd is approx 54mm to the Breechlock, though there are several concentric flanges to chose from! As far as I know no commercial adapters to modern mounts exists.

note 5: Camex, a reflex 9.5/8mm camera, lenses typically Som Bertiot 12.5mm f1.9, 20mm f1.9 {on the 9.5mm system}, 100mm f3.5 *Cinor ERCSAMs* with unique bayonet. Lens image circle too small for most adapted applications, a pity as the system had a great variable close-up tube..

note 6: [Canon SD lenses](#) for the Demi-C, (there are only two, 28mm and 50mm/f2.8) the ffd depends on where you think the flange is... there are two, the outer one, next to a single turn mounting thread, is ~39.5mm. This is not an easy lens to remount without modifying the lens, and being bit of a collectors item you wouldn't want to. There is no iris, so it's wide open all the time, but why would you want its look to be like any other lens?... The 28mm has a particularly nasty distance indicator (stick men and a mountain reminiscent of cheap point and shoots) rather than a distance scale.

The 50mm is certainly in a class of its own though nothing like the fixed Demi lenses that gave the system its good reputation... very sharp centre, but loses the plot well before the edge of even half frame. Oddly it will also cover a full frame sensor.. one wonders what the design criteria was, if not the extraordinary look of the lens (they sold you the camera with the just the 28mm... this must have looked a very cool accessory!). Actually it can be a very nice portrait lens. (Some web sites claim it is a 5 element design, this is probably incorrect).

note 7, [Lordomat](#): -Usually Enna lenses or Schacht Travenar. A 135mm f4 was seen (2012) on e-bay cut down and remounted to std arri , though obviously not a recent or particularly desirable modification. Marginally more common was an adapter to Leica.

note 8, Praktica B: Often labeled [Pentacon Practicar](#). [*This looks very similar to Pentax Bayo, see note 3*]. There was a Pentacon M42 to Praktica B adapter, it adds 1.05mm to the flange length of the lens [+/- 0.01mm measured 2009, BS]. Praktica B has 3 similar contacts (to a potentiometer in the lens) to PK-A (note 3), but they line up with the Pentax DA focus drive.. Mfrs include Sigma, rebadged Cimko and Cosina zooms, & after 1990, Samyang. Also Zeiss Jena, 28/f:2.8, 50/f:1.8 and 135/f:1.8 intended for Jenaflex camera.

note 9, Sigma SD: The electronic connections use the same protocols as Canon EOS, so possible to convert lens to camera or visa versa, by changing the mount, yet keep electrical functionality.

note 10, Hanimex H screw mount: Similar, but slightly larger than Tamron T2 mount, Five H mount/adapters were made – for M42 Pentax/Praktica screw, Nikon, Minolta (manual focus), Exakta/Exa/Topcon and Leica L39. The originals are recognisable by the adapter shell always in bright aluminium and rather coarse knurling compared to (usually black) T2 mounts.. Each mount screws onto the rear of the lens, and screws can be loosened to allow the lens to be rotated in the mount to align the distance and aperture scales at the top.

note 11: Zeiss Werra 3 lenses (50mm f2.8 Tessar, 35mm f2.8 Flectagon and Cardinar f4 100mm): Unfortunately, the aperture control ring remained on the camera, and is linked to the 6 bladed lens diaphragm via a collar and peg. This complicates making adapters for other mounts, and since the lenses have little unique merit (other than the Cardinar, which was only made for the Werra) there is little point in remounting them? Some people have had success taking the Werra mount off a camera and fitting it in a NEX extension tube. adapters, see www.rrlens.com/werra.html

note 12: AKA "Akarette", available lenses included: Schneider Kreuznach Xenagon 35/f3.5, a Xenar 45/f2.8, a Xenar 45/f3.5, Xenar 50/f3.5, a Tele-Xenar 75/f38 and an ISCO Isconar 50/f2.8. Also Westar 45/f3.5, Ysarex 50/f2.8.

note 13: usually a 50/f2.8 Zeiss Jena Tessar or 50/2.9 Meyer Trioplan. Also 35mm and 75mm. Quite a narrow throat, hence no fast lenses. adapters, see www.rrlens.com/altix.html

note 14: Adapters, see www.rrlens.com/praktina.html

note 15: [Argus](#), screw thread or C44 bayonet which had a unique focus ring on camera engaging with lens barrel to rotate helicoid.. Most lenses were Steinhill, while the standard on the Argus C-44 camera, the kitch looking [50mm f:2.8 Cintagon](#) (a tessar), made in Michigan c1956, is said to be one of the first commercial lenses wholly designed on a computer, the University of Michigan developed MIDAC. .

note 16: **Olympus OM**, despite the shorter flange distance these can be adapted to Nikon F and Pentax mount. [leitax.com](#) make a replacement bayonet (ie not an adapter), which provides a reversible mod to Nikon or Pentax. (2014, cost around £50 per lens. Pretty lenses as they are, there are probably better mod alternatives out there!).

note 20, Arri Standard: The original design calls for the lens housing to rotate in the camera mount whilst adjusting focus (exceptions note 20b). Though seemingly elegant, it is prone to wear (and all parts were usually soft aluminium). The instructions on the original camera (Arri ST) actually require the mount to be lubricated with grease, which must have messed up a lot of lens boxes at the time, let alone the lens port.

Adapters commonly exist to use Arri-S lenses on PL, M43, NEX & C-mounts. There are several types from those attached with grub screws, that do not allow rotation of the focus barrel within the adapter (so the lens group rotates to focus).. to adapters that mimic the original camera mount and hold the lens group steady while rotating the lens housing around it.

It can't be stressed enough: The cheaper grub screw attached adapters will damage the smooth rotating surface of the arri std mount.

The lens sits slightly into the PL adapter (1mm) to achieve infinity focus.

note 20a: CP made a grub screw attached adapter for CP cameras.

note 20b: for long focal lengths the focus helicod is mostly near the front of the lens and so the lens mount is "non-rotating". Similarly the Schneider Arri-S design uses a non rotating mount, though the resulting lens is lighter and seems less robust.

note 21: Adapters commonly exist to use Arri-B lenses on PL lens mounts. There are several types from those attached with grub screws, to quick release stainless steel adapters for professional use. The lens sits slightly into the adapter (1mm) to achieve infinity focus.

Historically, one-off adapters to C-mount were available (see pictures for one from the 1970s made from gash lens/camera parts and flange depth adjustable!), now common on e-bay. Arri-Bayo to Cameflex adapters were also 'common'.

note 21a: Maximum M42 lens barrel diameter that will fit in an adapter is 51mm. See: [rafcamera.com](#)

note 22 (Konvas 1M, 7M, Automat). Adapters exist to mount OCT18 lenses on OCT19 mount, despite the shorter flange length of OCT18. The rear of the OCT18 lens is sunk into the adapter, so wide barrel lenses cannot be accommodated this way. [www.gregssandbox.com/gtech/filmfacts/flange.htm](#) quotes flange depth as 2.4016" (same for Kinor 16) but this longer than 57mm!

note 23 Rollei mount. Quite a lot of effort, but possible to convert to M42 see http://www.bigeye.url.tw/big5/d_ro50_18.htm . For infinity focus the backfocus (on M42 or Nikon etc) must be longer, some lenses can achieve this by unscrewing the helicoid and reassembling in a different position (trial and error!), plus the aperture spring needs reversing. You do see the result of these DIY conversions on e-bay occasionally.

note 24. PS-technik IMS mount is physically the same as the PL mount, but with extremely short flange depth. It was intended as an intermediary mount for the mini35 depth of field adapter and there are now professional adapters to most common movie and stills mounts. It has also become a standard mount in its own right, eg for some new Zeiss lenses.

note 25. for EX1/EX2 Hi8 Video Camera: standard lens was 18-120mm f/1.4-2.1 , also wide zoom 5-15mm F/1.6-2.6, 250mm f4 mirror lens and 2x Extender, An EOS to VL Adapter was also made by Canon. The mirror lens can be modified to flange mounts out to 50mm and will just vignette at full frame, where much of the picture beyond the centre is distorted to make an interesting effects lens.

note 26. Mechanically identical to the Olympus OM mount, but with a smaller register. An OM-to-4/3 adapter is just an extension tube. Register also seen quoted as 38.58mm.

note 27. Canon service manuals of the time specify a “42.14 Dial Gauge”, to adjust the flange distance. FD: 1971-81 with separate silver breech lock, after 1981 the breech was modified and became integral to the lens body (“new FD”). Either are probably the best common SLR mounting system as there is no wear on mating surfaces. FL lenses can also be used on FD-mount.

note 28. ~35mm measured to outside of outer bayonet, the inner bayo is 3mm shorter, ~32mm; see [this page](#). Most lenses mount to inner bayonet and have no focusing helical; focus was in camera body. Lenses mounting to the outer bayonet (usually longer lenses) have focusing helicoids. Kinoptics quote the flange distance as 34.85mm, and Zeiss specified a target 35mm +0.01/-0.03.

note 29. Foth helicoid: nondestructive adapters to M43 or NEX possible, but likely to foul mirror on DSLRs. eg on a Nikon 50D the f3.5 fouls the mirror from 4ft to infinity. Flange depth varies between models +/- 2mm, probably as they were adjusted to suit individual cameras. The helicoid protrudes behind the mount by approx 7mm.

note 30. In old video cameras, the size is defined to be twice the horizontal dimension of a rectangular image with 4:3 aspect ratio so that a 1" sensor has a width of 12.7 mm, height of 9.5 mm, and diagonal length (ie image circle) of 15.9 mm.

B4 mounts, even those for 2/3rds video tubes can have quite small sensor coverage eg the Canon J15x9.5B4 KRE 9.5-143mm f1.8 will only cover micro 4/3rds from 80mm-143mm.

note 31. eg Panasonic QT1612SHGB 10-120mm f1.6. There was a C-mount to this made by Panasonic, WV-AD16A, or Century LA-12BC. Typical IC for this format zooms is around 8mm, so may just cover GH2 in ECS mode.

note 32. Konica Autoreflex, AR. These are a relatively simple mod to remount on digital 4/3rds cameras, as the bayonet flange is almost identical. 1) Remove the stop down lever. 2) Cut off or remove the protruding tab on the plastic end plate. 3) add some height to the lens mount and pad out some looseness to grip the (thinner) 4/3rds mount more effectively and obtain the correct flange depth. Most AR flanges can be rotated by 180deg, so focus marks will appear on the top of the camera/lens combination. So easy in fact, a lot of botched lenses appear on e-bay from the hammer and chisel brigade.. Fortunately with the advent of *micro* 4/3rds etc. this has become less prevalent. The only lens requiring any mod is the Hexanon 57mm f1.2 where removing the stop down leaver will improve the wide open bokeh, and make it the best FF 50ish f1.2 you can find. A secondary (AR) issue is an aperture stop down lock (originally for auto exposure settings) which is too easy to engage, though again possible with a little dismantling to disable. Most, if not all Konica Hexanons were made by Tokina, but to a better spec than 3rd party lenses and include some of the sharpest manual FF lenses ever made.

note 33. Canon EX lenses. The EX camera comprised shutter, iris and the rear lens element for a series of add on EX lenses with a 39mm thread. (50, 95 f3.5, 125mm f3.5). The add on lenses are consequently of longer focal length than marked (eg the 95mm is about 160mm) with quite a large image circle (so less than the marked f3.5) without the rear elements. The 95mm lens will focus on DSLRs with a LTM (39mm) adapter and 60mm extension tube. The results are not impressive.

note 34. C-mount lenses. C-mount lenses mount quite close to the sensor on digital cameras, some lenses have quite a depth behind the flange and this may foul on any baffle around the sensor. Eg the max length for the NEX5n is about 6mm and an unmodified Switar 25mm f1.4 for instance can't achieve infinity focus (it hits the baffle at about 20ft). Similarly for most of the Panasonic GH/GF series. Typically any C-mount lens with the rear longer than say 3 stacked new style 5p UK coins (3x1.92mm) is suspect. Usually a mm or so can be machined off without affecting the lens group.

note 40. Kiev-16U, typically: Mir-11M (2/12-with ICø12.3 mm), VEGA-7-1 (2/20 -with ICø14.07mm), Tair-41M (f2/50mm). The Tair is soft into the corners of APSC, there are better options for M43/APSC etc.

note 41. Reflex Pentacon Panaflex16 (or AK-16). Std 16mm movie camera which could be modified to S16 (schmalfilm issue 1/2009). Unique bayonet mount lenses, mainly Zeiss Jena. Pentacon VEB made an Exacta to Panaflex16 adapter and a (macro) bellows unit..

note 42. Panaflex8. Std 8mm movie camera.

note 43. Kinamo S10 or Movikon 16. Zeiss Jena Tessars & Sonnars, 15mm/20mm/f2.7, 2.5cm/f1.4, 5cm/f2.8, 7.5cm/f4, 18cm/f6.3. The lenses have a mechanical aperture relay pin to the camera which foils most attempts to build an adapter to M43 and similar flange depth digital cameras. Some lenses have an integral viewfinder dioptre. The system had a Contax RF lens to movikon adapter.

note 50.



Mitchell 35R: 3 off, $\frac{1}{4}$ " wide prongs on a 42mm barrel. Flange focal distance = 56mm measured to sl prongs. Overall clearance between lens mount and gate = 42mm. The prong next to a locking slot is n Lenses: Super Baltars and Kowa. Picture shows a Hasselblad to 35R adapter. Likely early 35R camera

note 51. BNCR mount: ref ASC Manual. Also: Mitchell BNC & BNCR mount recommended 2.4188mm Tolerance +/- 0.0001mm, Photosonics BNCR mount 2.419mm Tolerance 0.0005mm (Sammy's Hands on Manual). Note for Cinema Products with beamsplitter = 2.4235 inches.

Arri Standard
(16/35) c. 1950s

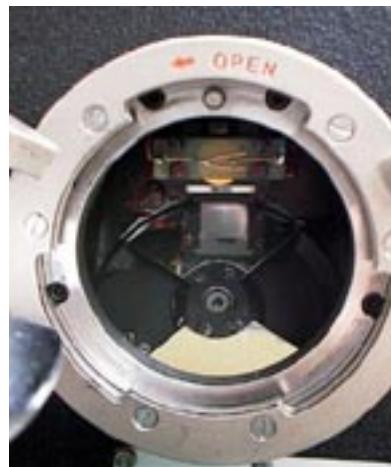


Arri Bayonet (Arri-B, 16/35) c. 1970s



Cinema
Products:

CP mount
(16mm)



camera side



Eclair / CA-1



camera side

BNCR (35)

4 ears, one
slotted. Larger
than the PL mount



Fastax
Left to right:
lens mount,
Close-up
adapter, C-
mount adapter.



Arri
PL



Sometimes
only one
(or two
adjacent)
'ears' is
slotted

OCT18 to
OCT 19
adapter

Mitchell
standard
(35mm)

four screw
holes on
flange mount.

(16mm
version is
slightly
smaller and
has only 3
holes)



Adapters



ARRI-B, bayonet to
CA-1



BNCR-PL
(BNC to PL is not
possible)





arri bayonet lenses to
Aaton mount camera

Arri Std to PL
adapter, note the
"finger" to prevent
the lens group from
rotating



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