THE BEAUTY OF 16

AN INTRODUCTION TO A FORMAT

ARRI

In recent years the tools for shooting Super 16 film have made revolutionary advances. New Super 16 cameras, lenses, film stocks, telecines, scanners and the emergence of the Digital Intermediate process have elevated the Super 16 format to unprecedented levels of image quality and production efficiency. This new Super 16 is the ideal recording medium for high definition television content, independent features, commercials and documentaries alike. It combines the advantages of film with the creative flexibility of film equipment and economic production costs.

Shooting on film has many inherent advantages, including the organic film look, its unsurpassed exposure latitude, natural color reproduction, long term archivability and the fact that film is the only globally accepted standard format.

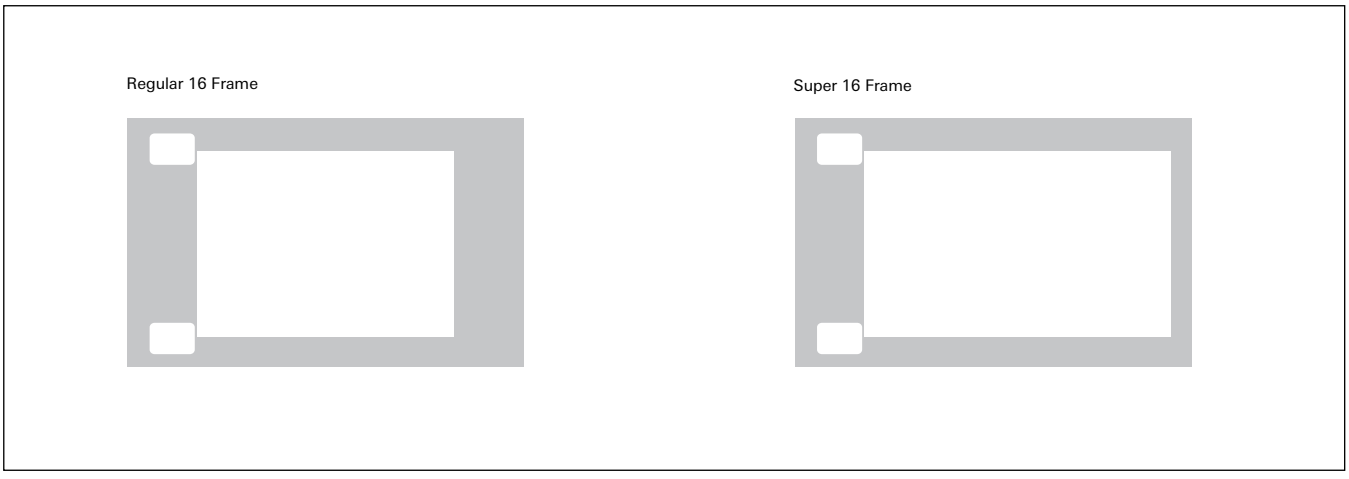
Creatively, Super 16 film equipment offers the greatest flexibility and superb image quality. Super 16 cameras are extremely portable and robust, while at the same time easy to operate. Their optical viewfinder allows by far the most comfortable, accurate and efficient way to work when capturing images. Film cameras are fast, reliable and provide a trouble-free shooting environment on the set. They are capable of variable speeds, ramping and variable shutter angles, plus they accept a vast selection of prime, zoom and specialty lenses.

REGULAR 16

In its long history, every conceivable subject or genre has been captured on 16 mm film. Developed by Kodak in 1923 as a format for hobby cinematographers, 16 mm soon dominated the market with a huge number of diverse cameras. After the Second World War, the 16 mm format became one of the most successful professional formats ever. The 16 mm cameras were the backbone of the quickly growing television industry as they became the standard tool for capturing sport, news and documentaries. The portability and reliability of 16 mm assured a steady stream of content that allowed television to ascend to its current popularity.

SUPER 16

In the early 70s, 16 mm evolved further with the introduction of Super 16, invented by Rune Ericson. By utilizing the area previously occupied by a second row of perforations on camera negative and reserved for the soundtrack on release prints, Super 16 uses the maximum image area available on 16 mm film. A Super 16 frame is 20 to 40% larger than a regular 16 mm frame depending on the aspect ratio chosen. The native aspect ratio of a Super 16 frame is 1.66:1, which is a good fit for the HDTV aspect ratio of 1.78:1 (19 x 9) or the theatrical release format of 1.85:1.



The Film Look

Almost a century of development efforts have resulted in film negatives that combine high speed with rich, natural colors and unparalleled highlight handling. The easiest way to avail oneself of this much sought after film look is simply - to shoot film.

The images created on film are defined by a three-dimensional mosaic of silver halide crystals. These crystals vary randomly in position, shape and size from frame to frame. This random arrangement closely approximates how the human eye sees continuous tones and fine detail in color hues and shades, and thus creates an organic, natural-looking image.

Unsurpassed Exposure Latitude

The wide exposure latitude of film makes working with Super 16 fast and easy. With up to 16 stops of latitude, film can capture a large contrast range and the finest details in highlights and shadows. Shooting video is an experience some have compared to shooting reversal film, where a reduced exposure latitude is critical and unforgiving. Film has enough headroom to allow the cinematographer more freedom and a faster pace on the set. The enormous amount of information captured on the film negative also provides the greatest amount of flexibility in post production.

Color Reproduction

Modern film stocks have been carefully formulated for accurate color rendition. This is especially apparent when looking at skin tones, which have a soft, gentle and natural look on film. Film also excels at color reproduction in demanding mixed lighting situations.

Long Term Archivability

Commercially, programs produced on film today will retain their value tomorrow, disregarding the constant changes in electronic video formats. Film shot today can be transferred to whatever new electronic standards will reign in years to come. Similarly, footage shot decades ago can be transferred to HD now, and look as if it was shot yesterday. Thus film is the champion when it comes to protecting your investment for the future.

A Global Standard

Anywhere in the world, a strip of 16 mm negative can be placed in a film camera's magazine and record beautiful images. The same strip of film, once developed, can be threaded in a projector or telecine anywhere in the world and reproduce those images with stunning clarity. Especially now that we are drowning in a world of competing and conflicting SD and HD video and data standards, this is a unique advantage.

High Quality, Modular Image Sensor

Super 16 film is one of the best possible sensors for converting light into picture information. It offers high image quality, is reliable and sensor upgrades are free of charge - simply load the latest film stock into the magazine.



Film exposure



Video exposure

Portability

Super 16 equipment is lighter and more compact than equipment for both the 35 format and HD. This makes it more mobile and faster to work with. A Super 16 camera fits into any location, can be mounted to almost anything and can be quickly used on the shoulder or Steadicam. Productions can shoot more pages of script per day or use the extra time for additional coverage, thus adding production value.

Reliability

Film equipment has been developed to work under the most adverse environmental conditions, and has proven its reliability on documentaries, features and commercials from the Amazon jungle to the Antarctic and from the deepest underwater shoots to outer space. It is built to the highest mechanical and optical standards by craftsmen who assemble each camera and lens individually, and the equipment must adhere to temperature specifications beyond those of professional video cameras.

Easy To Operate

Simple controls that are designed to assure safe operation and that work even in severe weather are the hallmark of film cameras. With the film look preset in the film stock chosen, all the assistant has to worry about is the frames per second rate and the shutter angle, which can easily be changed when required. That's it.



Optical Viewfinder

Operators see a full-color image in the optical viewfinder of a film camera, and are able to accurately judge focus for a first, on-set quality control. Optical viewfinders show an area larger than the image recorded on film, ensuring that microphones, light stands and other debris do not make an appearance, thus minimizing the need for re-takes and saving precious time on the set. Operators find this extra area around the image also crucial for precise composition and exacting camera movements. In addition, optical viewfinders work without power, are less fatiguing to the eye than electronic viewfinders and can be equipped with a range of accessories like medium and long eyepiece extensions, eyepiece levelers and heated eyecups.



Optical viewfinder image

Camera Creative Options

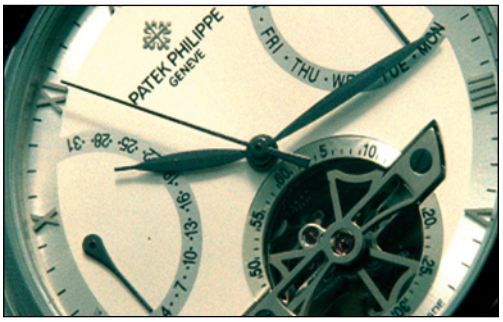
Film cameras offer plenty of creative options lacking in other formats. They can be easily run at variable speeds to create slow motion or time-lapse effects. The same technique, if applied more subtly, can stretch or compress time for a bit more kick, more pleasing, fluid motion or increased suspense in a scene. Ramps even allow a change of speed within a scene. Different shutter angles can add motion blur or a hyper-real look. All these options are built into the cameras and can be used without any extra cost in post production.

Lenses Creative Options

Modern Super 16 cameras can be equipped with lenses built for the Super 16 format, but they also accommodate the vast array of 35 format lenses. This offers unique perspectives that are not available in video formats. These lenses include the highest quality of standard prime and zoom lenses, high speed lenses, macro lenses, diopters, lightweight zooms, super long zooms, zooms with a super wide range, extreme wide angle lenses, fisheye lenses, extreme telephotos, shift & tilt lenses, tilt focus lenses, reverse perspective lenses, and numerous others including the ever popular squishy lens.



Starting wide: an establishing shot taken with a rectilinear 8 mm extreme wide angle lens.



Getting closer: a shot taken with a 16 mm camera, a high-speed 100 mm lens and a set of diopters.



Going fast: the same 8 mm lens can put the viewer right in the middle of the action.



Right up close: a macro shot taken with a 16 mm camera and a 100 mm macro lens.

Even though Super 16 is used for all kinds of projects, its most common use today is for television productions and independent features. The three most common types of productions are detailed below.

1. Shoot Super 16, Post Video, Broadcast HD
Broadcasters today are demanding content to be delivered in HD, and shooting Super 16 is the best way to create high quality HD programming.

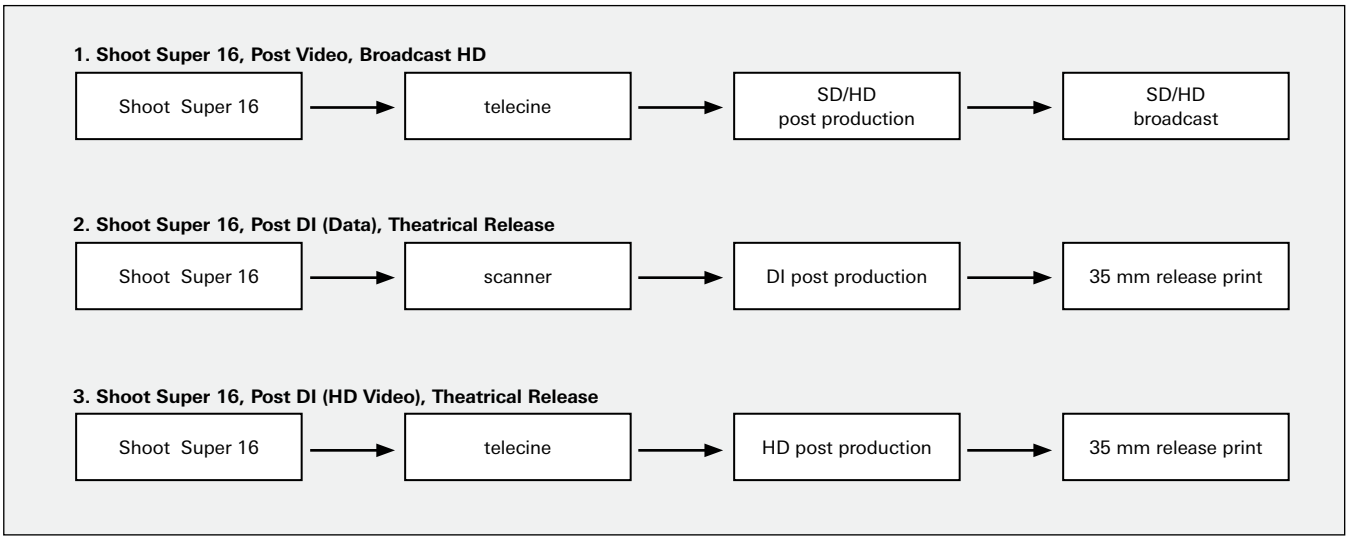
The production is shot on Super 16 film, and then transferred to standard definition (SD) or high definition (HD) video on a telecine. Modern telecines can extract most of the image information from Super 16 film, and are one reason for the continued popularity of this format. Post production commences on SD or HD equipment in the traditional fashion, as does broadcast on SD or HD. This workflow maintains all the advantages of film and the creative options of film cameras and lenses. Once the program is aired, the film-originated material can be re-transferred to any foreign or future television standard.

2. Shoot Super 16, Post DI (Data), Theatrical Release
The Achilles heel of shooting Super 16 for a theatrical release has always been the optical blow-up required to get from the Super 16 camera negative to a 35 mm release print. This optical blow-up is now being replaced by the Digital Intermediate (DI) process, which is quickly becoming a mainstream production tool.

The production is shot on Super 16 film, and then scanned on a pin-registered film scanner. Modern film scanners can record all the image information present on Super 16 film. The resulting image data is used for editing, special effects and color correction. Once in the digital realm, there is almost no limit to the image manipulations, effects or looks that can be created. The finished image data is then recorded onto 35 mm film with a modern film recorder to create 35 mm release prints. Since the DI process is completely transparent, there is no image quality loss incurred by going from a Super 16 camera negative to a 35 mm release print.

Richard Crudo, ASC, President of the American Society of Cinematographers, said in the article ***Go with the Flow*** from Film & Video Magazine: "*You're going to see a huge resurgence in 16 as DI becomes more manageable and cheaper. People are going to say, 'My God, look at the quality you can get out of this.'*"

3. Shoot Super 16, Post DI (HD Video), Theatrical Release
A hybrid option combining the other two workflows is also possible when a theatrical release is required from a Super 16 negative at rock bottom costs. The film is transferred by a telecine to HD video instead of scanned to image data. Post production is done in HD video, and the feature is output to 35 mm film on a film scanner. The result has slightly less image quality than a true data DI post production, but is substantially faster and less expensive.



This is but a small selection of some of the most successful productions captured on Super 16 film from all over the world.

USA - *Sex and the City*

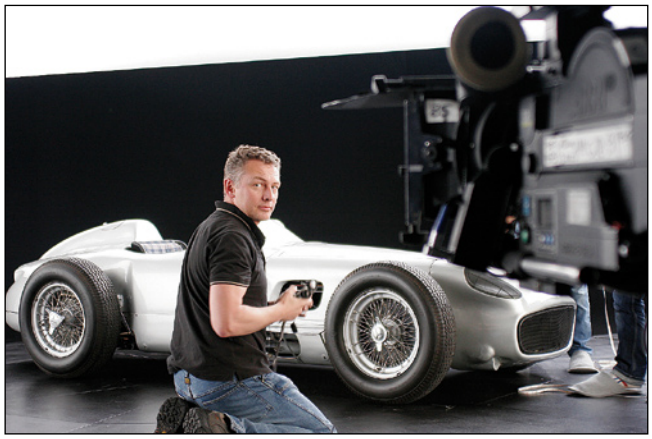


Picture by Craig Blankenhorn, Courtesy of HBO.

Initially an acclaimed hit in the United States, ***Sex and the City*** now airs internationally in over a dozen countries from Europe to Asia. The show follows four fashionable women as they navigate relationships and define what being single today means. Known for its glamorous look, ***Sex and the City*** shot Super 16, often on location to showcase New York City's street life, hip bars, restaurants and clubs.

"We liked to keep the camera moving when it was appropriate, and strived for strong compositions and beautiful lighting. Super 16 gear had advanced to the point where we had a wide array of lenses and accessories at our disposal, and the lighter weight and lower profile made for a faster pace," says Director Michael Spiller. Spiller began on the series as director of photography the first four seasons before going on to direct. *"We often were shooting in the hottest bar or restaurant and had to get in and out of there as we had two other locations that day. When you have six pages to shoot and the walls don't move, having a nice trim camera package certainly helped accomplish that. When we transferred to video, we found that the latest 16 mm high-speed stocks really held up, and we had a rich image that most people just assumed was shot on 35 mm."*

Germany - *Mercedes*



Cinematographer Thomas Stokowski measuring the light level for the Mercedes Monoposto classic car. Copyright Mercedes-Benz & Gutsy

DaimlerChrysler is currently building nine large brand centers worldwide, containing a car dealership, museums, retail stores and event spaces. DaimlerChrysler UK wanted an image film for the UK center, to be known as ***Mercedes-Benz World at Brooklands.*** They brought 27 unique classic Mercedes cars into a studio near Stuttgart in Germany, and recorded automobile history on Super 16 film.

Because of scheduling difficulties, one car had to be shot on its own up front. Even though the project was scheduled to be shot on video, cinematographer Thomas Stokowski and Director Paul O'Brien convinced DaimlerChrysler to shoot this car on Super 16. Paul O'Brien: *"**They loved the result.** Thomas used various film techniques like variable speed, speed ramps and a small shutter angle, and that, in combination with the rich film look, convinced them to shoot all cars in Super 16. The footage had a great texture and depth that you only get with film, it was beautiful and worth every cent. Plus they like the fact that they can re-purpose this footage; the negative will go into the Mercedes archive and they can transfer it to whatever video or digital imaging standard will be needed in the future. This is historical material and we are already in discussions with Mercedes on other uses for this footage."*

France - *March of The Penguins*



Cinematographer Laurent Chalet and one of his protagonists.
Picture courtesy of Laurent Chalet

March of the Penguins (La Marche de l'empereur), directed by Luc Jacquet, won Best Foreign Film at the 2006 Academy Awards. The documentary uses captivating images to trace the truly remarkable annual journey of Emperor penguins, as they travel across the unforgiving desolation of the Antarctic to their traditional breeding grounds. They traverse a region so bleak, so extreme, it supports no other wildlife at this time of year. Their loving care for their young stands in stark contrast to the foreboding cold of their environment.

March of the Penguins is one the most successful theatrical documentaries ever made. Its total gross, which stood at $77,000,000 in November of 2005, makes it the second highest earner among documentaries of all time, behind only ***Fahrenheit 9/11***. Cinematographer Laurent Chalet explains why he chose to shoot on Super 16 film: *"**First, we wanted to** shoot on film, not on any electronic medium. The film image has a special quality, it is very expressive, somehow more real. 35 mm equipment would have been too heavy - we were a two-people crew most of the time, Jerome Maison and myself, and Super 16 gave us mobility. Second, film is better in the cold. We had no problem at all with camera or film during one year of shooting in Antarctica, even at -30°C."*

UK - *The Virgin Queen*



Cinematographer David Odd, BSC, on the set of ***The Virgin Queen***.
Photograph by Nick Briggs

The Virgin Queen is a four part BBC mini-series exploring the life of Queen Elizabeth I. The show, which also aired on PBS's Masterpiece Theater in the USA. It is a riveting retelling of the reign of the most famous daughter of Henry VIII. Elizabeth is portrayed as a person torn between a real sense of duty to her nation and desire of all kinds. As she fights her advisors and Parliament for the right to rule without a man at her side, she longs for the one man she has always loved, and can never have, the married commoner Robert Dudley.

The show's cinematographer, David Odd, BSC, said: *"**We shot a lot in candlelight and by firelight to show the reality of that time. We were stretching the capabilities of everything, and I got a fantastic contrast ratio out of the 250 and 500 ASA stocks we used. For instance, I would dramatically overexpose windows, and then grade them massively down in post to bring back the definition. This could not have been done without film."*** Mr. Odd is one of the busiest cinematographers in the UK, shooting mostly Super 16. *"The way we film today is about how much you can do in a day, how much you can achieve. Some of the most successful people will tell you that the secret to achieving is to keep it simple. And Super 16 has that simplicity that is not there in HD. With Super 16, you have a lens, a camera and a roll of film. And with film you have freedom, reliability, creativity and longevity."*

Canada - *Godiva's*



Head chef Ramair (middle) serves up an illuminating meal

Godiva's is a comedic drama about a fast-paced restaurant in Yaletown, Vancouver Canada. ***Godiva's*** is a funky canteen that is home to ten exiles. It shows their high energy entanglements behind the backdrop of the high pressure, fast-paced world of the restaurant business. In their structure, depth and audacity, the stories presented in this show aim to rise above the usual television fare.

Cinematographer Bruce Worrall, CSC notes, *"To me, 16mm offers quality and flexibility and from that, the freedom to exercise one's creativity. There is the intangible quality of photography, the physical dimension and the unprecedented latitude. The exposure range offered by today's film stocks enables the 16 mm format, when handled correctly, to rival any capturing medium on the market today."*

India - *Taxi 9211*



Cinematographer Kartik Vijay checks the lighting inside a luxuriously equipped Taxi

Taxi 9211 is an independent feature film shot in Bombay on Super 16 film. It's about a day when two strangers with big egos meet and the wreckage that follows thereafter. Cinematographer Kartik Vijay feels that the huge success of this feature is based on the fact that "it combines the traditional Indian movie formula of love and relationships with a 'new age' sensibility." He also credits the actors, as well as director Milan Luthria and producer Ramesh Sipp.

"The decision to shoot Super 16 was mainly driven by budget," explains Kartik Vijay, ***"but also because I knew that*** *the shoot involved a lot of handheld work, in tight corners and inside cabs and other cars. Super 16, with its smaller cameras, spherical lenses and the new Vision2 stocks, had what I needed to give this film the look that it deserved."*

Australia - *McLeod's Daughters*

The award-winning television series ***McLeod's Daughters*** is now in its sixth season and going strong. It is the story of Claire and her sister Tess, who are reunited on the Drover's Run family farm in the Australian Outback after a long separation. After firing the male workforce, they decide to run the property themselves with the help of housekeeper Meg Fountain, her daughter Jodi, and local girl Becky. The show depicts the growing bond between the sisters, including Tess' decision to stay at Drover's permanently, as well as their relationships with the neighboring Ryan brothers and others within the district.

McLeod's Daughters is being shot on a ranch just outside of Gawler in South Australia, which acts as a wide open backlot. Cinematographer Roger Dowling, ACS notes, *"The decision to shoot on Super 16 was basically made by the producers to make it easier to obtain overseas sales as they needed the 'magic look of film over video'. 70% of the shooting for McLeod's Daughters takes place outdoors. We are shooting full episodes in 5-7 days, keeping two full crews shooting constantly. The portability of the Super 16 cameras makes it quicker and easier."*

Russia - *Stag Hunting*



Cinematographer Michael Mukasey on the set of ***Stag Hunting***

In 2005 Michael Mukasey, cinematographer and owner of the camera rental house Rentacam in Moscow, shot the popular Russian TV series ***Stag Hunting*** (Okhota na izubrya) on Super 16 for Channel 1 (ORT).

Mr. Mukasey said *"We shot Super 16 because we did not want a video/digital look. Super 16 looks like film, but is less expensive than 35 mm. Shooting Super 16 is just like shooting 35, except the equipment is smaller. Otherwise it is just the same in terms of lighting, colors, composition and DI."*

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