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**From the Archives**



In bright sunlight, any ISO 100 film will be fast enough for most action shooting. The airshow performer was recorded on Agfachrome RSX 100 Professional slide film. *Photo by Mike Stensvold*



Ektachrome E200 at ISO 200 was fast enough to freeze this motorcyclist in mid-motion. This shot was made with a 90mm lens on a rangefinder 35mm camera. *Photo by Mike Stensvold*



At our sister publication Dirt Rider Magazine, some veteran action shooters use slow Fujichrome Velvia with great success. One secret: fast lenses. *Photo by Karel Kramer*

**Film and Digital**

Note that this head doesn't say "Film vs. Digital." You can do both concurrently. Many photographers today have "gone digital" while continuing to shoot film. That way, they get to use the cameras they already have and are familiar with (and, generally, cameras that have more and easier-to-use "serious" features and better performance than equivalent-cost digital cameras), they get to use the films with which they have long experience, they get slides or negatives as excellent originals, and they get all the benefits of the computer. How?

By scanning their slides and negatives. There are a variety of high-resolution film scanners on the market that let you turn your slides and negatives into 2700- to 4000-dpi digital scans that can be used like any digital images. Except they're of even higher resolution than any "affordable" digital camera currently makes. A 4000-dpi scan of a 35mm slide or negative results in an image measuring 3762x5646 pixels, or 21.2 megapixels. The newest pro digital SLRs introduced at the recent Photokina have just over half that resolution—and cost a bunch more than what a 4000-dpi scanner costs.

And today's films are designed with scanning in mind—the new ones all scan very well. The film scanners don't do a terrific job with older black-and-white films like Tri-X, but they do a great job with color-negative films, color-slide films, and chromogenic black-and-white films (see the "Chromogenic B&W Films" sidebar).

**Push- and Pull-Processing**

Sometimes, the film you have isn't fast enough to let you shoot in the existing conditions (i.e., it doesn't permit using the right shutter speed and aperture combination to get the picture you

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Digital Camera HQ: See [prices and reviews of digital cameras.](#)





Ektachrome E100VS pushed to EI 200 is our standard "bird" film, allowing us to get sharp in-flight shots with a hand-held 400mm f/5.6 lens. (And it really enhanced the early-morning light!) *Photo by Mike Stensvold*



Fujichrome Provia 400's speed is sufficient to freeze a hummingbird in mid-flap (the exposure was 1/6400 at f/4 with a 300mm lens). Provia 400 has always been on the cutting edge; the current version, Provia 400F, is truly amazing. *Photo by Mike Stensvold*



Kodak Professional Portra 800 was designed for ambient-light portraits, but it works well for fast action, too. *Photo by Jack and Sue Drafa*

want). In such a situation, you can push the film speed: Set your meter's ISO index to a higher speed that permits you to use the desired shutter-speed/f-stop combination.

Of course, you can't just set the meter index to any number, expose the film accordingly, and expect to get good images. When you expose the film at a speed other than its ISO rating, you must compensate when processing the film. When you rate film at a figure higher than its ISO speed, you are underexposing it. If you develop it normally, your photos will be too dark, lacking shadow detail and having weak, gray highlights. By increasing the development time (or using a "speed-increasing" developer), you can partially compensate for the underexposure, and get better results. This procedure of underexposing and overdeveloping film is known as push-processing. It allows you to do some amazing things, but bear in mind that it always results in decreased shadow detail and sharpness, and increased graininess and contrast.

The opposite procedure—pull-processing—consists of intentionally overexposing the film to assure good detail in the dark areas of the scene, then reducing development (or using a special "extended-range" developer) to keep the highlights from becoming too dense on the negative to print with detail (or to burn out on a slide). Pull-processing is a good technique for night photography and daylit interiors with bright windows, to hold detail throughout the high-contrast scene.

Color-slide films generally can be push-processed a stop with good results, and two stops with OK results. With color-negative films, a one-stop push is generally about it without adverse effects on image quality. And a one-stop pull is about the limit for good results with color films. Black-and-white films can be pushed and pulled further. (We've pushed black-and-white Kodak T-Max P3200 to EI 50,000 for simulated surveillance photography, and got identifiable images of our "suspects.")

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