

# OPTICMUSIC'S **FILM & VIDEO**

P R O D U C T I O N

APRIL 1988

U.S. \$3.00 U.K. £1.75

**A COMPARISON OF  
FILM-TO-TAPE  
TRANSFER FACILITIES**

**Improving Telecine Registration**  
**Award-Winning Special**  
**Effects Director Peter Kleinow**  
**Inside Hollywood's Modern Videofilm**



# On the Road to Accurate Registration

By Ira Kalb



▲ Encore Video Industries' EPR 1630 electronic pin registration system

Oil painting technology hasn't changed much since the days of Leonardo da Vinci. Therefore, an experienced artist who paints with oils knows exactly how to translate the image in his head to the canvas. Film and video artists, however, don't have it quite so easy. Explosive changes in technology now cause uncertainty at each stage of the film and video creative process, so when it comes to determining the proper method for translating the idea to the screen, many artists are left in the dark.

This uncertainty is especially true in the area of creating multi-layer video composites. To produce such effects when the source material originates on film, registration of the negative is necessary, because for the layers to match, the frames have to match. If the layers do not line up, the composite will either not work or will appear distorted, fuzzy and/or out of focus.

Many professionals operate under the misconception that film registration is

**Because every telecine device possesses a natural weave motion, they remain the most common source of registration error.**

the sole responsibility of the post-production facility during the film-to-tape transfer process. While this is true to a certain extent, the telecine operator cannot correct for significant registration error introduced at some prior stage of production. The goal, then, is to identify the necessary steps required to ensure proper registration throughout the film-to-video chain.

Registration error can be introduced at many junctures in this chain — beginning with the error tolerances built into film stock. Since film negative is made from a pliable and somewhat elastic material whose tolerances are difficult to maintain, proper registration cannot be insured under all conditions. Temperature and humidity during production, laboratory processing and post production can all introduce significant registration error. Similarly, film handling and multiple passes through registration or telecine devices can stretch the film perf and introduce error.

For multi-layer compositing, 35mm film shot with a double pin-registered cam-



**STEADI-FILM CORPORATION IS PROUD TO BE PART OF THESE SIXTY VANGUARD FACILITIES:**

**USA**

Action Video, Broadcast Video, Complete Post, Crawford Post, Editel/LA, Editel/Chicago, Editel/NY, Grace & Wild/LA, Grace & Wild/Detroit, HBO Studios, Limelite Video, MTI (Image Mix), Magno Sound & Video, Manhattan Transfer, Northwest Teleproductions, One Pass Video, The

Post Group, Postmasters, Post Perfect, Swell Pictures, TVC Video, The Tape House, Today Video, VCA Teletronics, and Video Post & Transfer.

**INTERNATIONAL**

Bellevue Studios, Centro TV, Complete Video, Digital Video,

GLPP Video, Magnetic North, Molinare, Moving Picture Co., Omnicon, Onkio Haus, Quail de Production, Rushes, SVC, 6-2-5 Ltd., Teleroy, Television & Sonido, Vector Television, Vid-Com Ltd., Video Effects, Video Images, Video Lab, Video Tape Corp., and others...

**615-329-2073**





▲ The Steadi-Film mechanical registration system by Steadi-Film Corp.

era generally provides the most professional results, yet many film makers are learning to successfully composite 8 and 16mm stock. The single pin-registered cameras generally used for 8 and 16mm film do not provide accurate registration, however. The reason is twofold: first, the pins are all on one side of the camera; and second, they engage the film through only one sprocket hole per frame. In either case, accurate registration is compromised; therefore, 35mm film is still the first choice for feature-quality compositing.

Once the film has been shot, the real task begins, for laboratory processing can also introduce rather significant registration error. Therefore, if there is any choice, original camera negative (OCN) that has not been processed or run through any registration or telecine device should be used in favor of prints for film-to-tape transfers. But because every telecine device possesses a natural weave motion, they remain the most common source of registration error.

In recent years, Rank Cintel has added edge guides to its telecine to help alleviate the weave problem. While this modification has helped, it has not completely eliminated weaving, and so registration error still occurs. But other devices have been developed to eliminate registration error during film-to-tape transfers. These devices include Composite Image Systems' mechanical pin-registration system, Mike Waldie's Pin Up gate, the Steadi-Film system by Steadi-Film Corp. and the EPR Electronic Pin Registration system by Encore Video Industries Inc.

The latter two devices operate on Rank Cintel's flying spot-style telecine and are both commercially available. Although both systems boast a significant number of successful installations, there are important differences between them.

Introduced in 1985, the Steadi-Film system utilizes pins to actually engage film sprocket holes during transfers. Similar to double pin-registered cameras, Steadi-Film's pins hold the film in place so that it can be properly registered. The system must, however, work in conjunction with a digital disk recorder or frame-store device, such as the Abekas A62 DDR or Sony 2500 still store. Steadi-Film's operating speed varies depending on the application and recording device,

### Registration devices are imperative for ensuring proper registration during film-to-tape transfers — no matter which telecine is used.

but the system tends to average between one and two frames per second.

When asked about the Steadi-Film system, users are generally happy with its performance as a registration device. Some operators have also successfully used it as an optical printer for manipulating individual film frames. There have been complaints about the system's speed, however. Because most film transfers average 24 fps, having to slow down the process to one or two fps can drive an impatient producer or client crazy.

An additional complaint is due to positional hum, a problem inherent in the Rank which only surfaces when the film is slowed to Steadi-Film speed rates. Nev-

ertheless, most operators believe a registered transfer on the Rank is worth the wait — that's why over 55 units have been installed worldwide, with several more systems on order.

Designed to overcome the speed objections associated with mechanical registration systems such as Steadi-Film, Encore Video in Los Angeles developed a proprietary EPR device which provides real-time film registration. Interest in the device from other post-production facilities was so strong, however, Encore Video opened a subsidiary called Encore Video Industries Inc. and began to make its EPR device commercially available.

EPR operates at the Rank's real-time speed of between 16 and 30 fps, and since it has no mechanical pins to engage the film, the system does not place any additional wear on film stock. Neither does it require the use of a single-frame recording device. Also, once installed, no gate modifications are necessary, so the device can be turned on and off by pressing one or two buttons on its front panel.

EPR does require sufficient density around the perf area, however, so it can not be used with positive film — unless the perf area is flashed with sufficient density when the film is processed. While this may be a disadvantage for markets where a great deal of print film is transferred, print film often possesses significant registration error introduced during processing. EPR users transferring OCN have experienced no such problems.

It should be noted that Bosch is also working on a registration device for its FDL-60 CCD telecine. But because of the

way the CCD telecine functions, it is much more difficult — and some say impossible — to register film on this device. Of course, only time will tell, but Bosch is predicting that it will have a viable registration alternative commercially available within a year.

In conclusion, registration devices are imperative for ensuring proper registration during film-to-tape transfers — no matter which telecine is used. Remember, however, that registration at transfer time is not enough to ensure quality composites: many other factors, such as film stock, camera type, processing and number of composition layers must also be taken into consideration. ■

CONTACT: DARRELL ANDERSON  
or DON RODGERS  
(213) 559-4369  
3767 OVERLAND, SUITE 109  
CULVER CITY, CA 90034



**HOWARD A. ANDERSON CO.**

- FILM TO TAPE TRANSFER — RANK CINTEL MK III
- SONY DIGITAL RECORDING
- VIDEO DUPLICATION — ALL FORMATS