

Oliver for DSX & C-Reality

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User Handbook

Issue 1



While every effort has been made to ensure that the contents of this document are accurate Cintel International equipment is under constant review to bring about improvements in design, and a unit may differ in detail from that described.

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Introduction

Introduction

Oliver is a unique device that removes or reduces, from the scanned image, the effects of dust and scratches. Oliver is fitted as standard to Cintel DSX Film Scanners and is available as an option for Cintel's range of C-Reality telecines.

Control

Although designed to be operated from a remote control desk Oliver can also be controlled from the Local Control Panel where Oliver's desk's functionality is replicated. Oliver desk controls are supported by the following manufacturers:

- Da Vinci
- Pandora.
- Tangent

Please contact manufacturers for specific details.

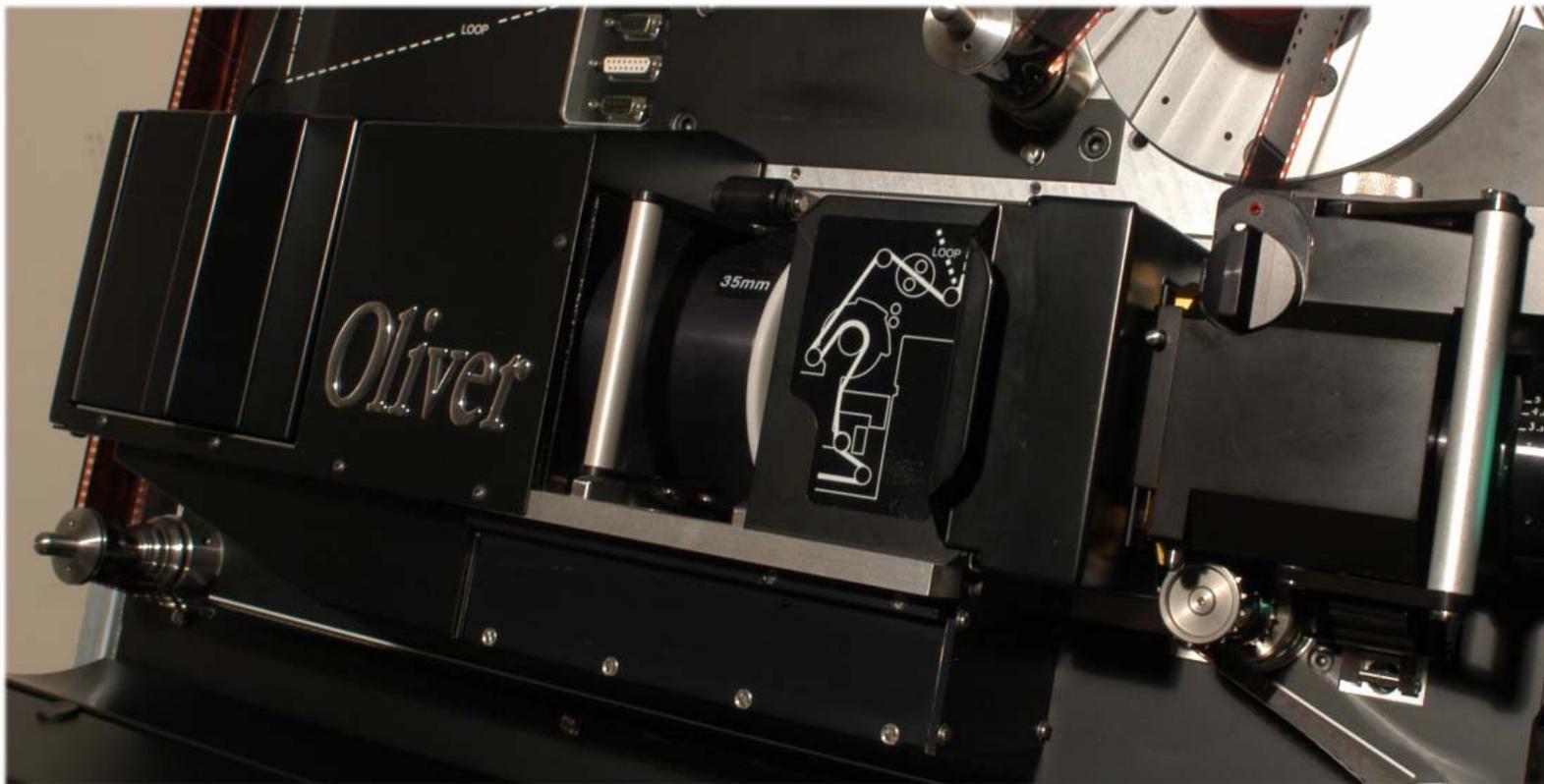


Figure 1 – Oliver on a DSX Telecine

Specification

Cintel policy is one of continuous improvement and the right is reserved to change specifications at any time without notice.

The following specification only includes differences between the general telecine specification and the specification with Oliver fitted. Therefore this specification should be read in conjunction with the telecine specification.

Gates

35/S35mm & 16/S16mm gates are designed specifically for operation with Oliver.

Gate apertures are designed to encompass maximum camera shooting apertures.

Cell Box

Interchangeable Condenser and relay lenses. Lenses for both 16mm & 35mm formats are included. For best performance both sets of lenses should be changed with a gate change.

Film Gates

All gates fitted with manual focus control, focus lock and a front operated pressure plate control.

Pick-up Device

Oliver includes its own high-resolution solid state sensor.

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Introduction

Oliver is a unique opto electro-electronic device that retrieves image information from the scratched or dirt laden area of film and re-applies the information to the scanned image. Oliver is fitted as standard to Cintel DSX Film Scanners and is available as an option for Cintel's range of C-Reality telecines.

Oliver operates at the optical front end of the scanner. Its optical properties are designed to acquire the majority of image information that has been diffracted by scratches or dust, without disturbing the main scanned image signal path. Oliver does not substitute image information from other parts of the image or from other frames, so avoiding artefacts in detailed or moving parts of the image. Similarly correction is successful even if surrounding frames have image defects in the same position. Oliver works very well in removing or reducing the visibility of scratches, small particles of dust, some larger dust particles, fingerprints and some other contaminants such as splicing tape. Oliver will not however correct for any such effects which are "printed in" e.g. can be seen on a film as a result of contamination on the previous film from which it was printed.

For lightly damaged film Oliver can often provide a perfectly satisfactory correction as a background process in the "real time" film transfer. For film with heavier damage Oliver can produce a usable image from frames that, without it, would have been beyond correction, and any remaining defects are much fewer and easier to correct in a manual restoration system.

Film grain will not generally be affected by Oliver; however in some cases where the film is not fully bleached Oliver may slightly reduce the visibility of the resultant grain, Oliver will also make a slight reduction in the visibility of film grain from black and white stock.

Oliver Detector Head

Oliver comprises a patented light gathering and detection system that includes interchangeable condenser and relay optics. Between the two optics the light gathering system transfers the diffracted retrieved image information to an additional (A)valanche (P)hoto (D)iode APD detector. (See Figure 2)

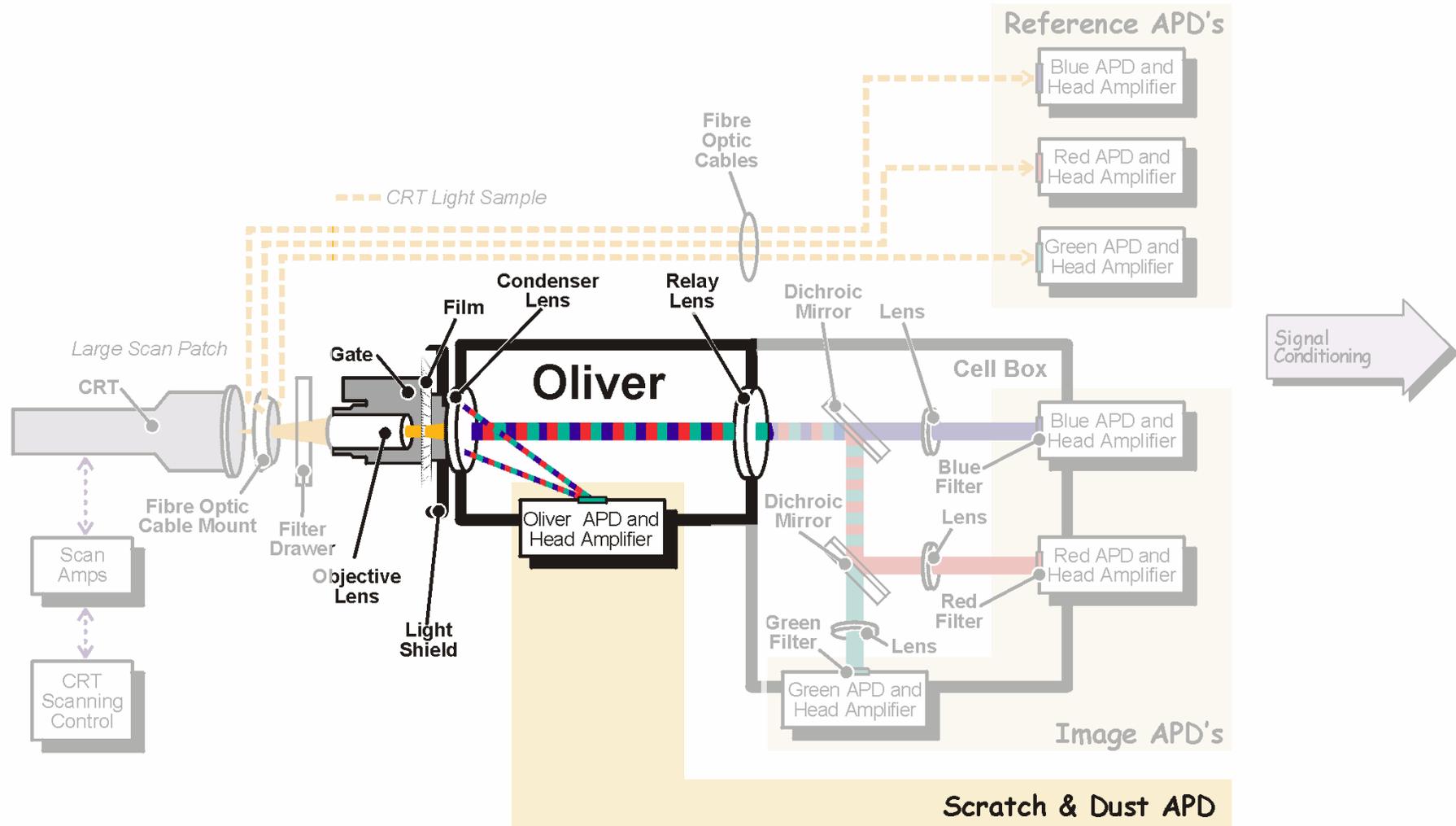


Figure 2 – Oliver Front End Block Diagram

Oliver Electronics

Light falling on the Oliver APD produces current signals that are converted into voltage signals by the head amplifier. The signal is then converted into 14-bit digital signals by A to D converters. The signal retrieved from the scratched or dusty part of the film is then added back into the main Red, Green and Blue image signal paths within the scanner. (See Figure 3)

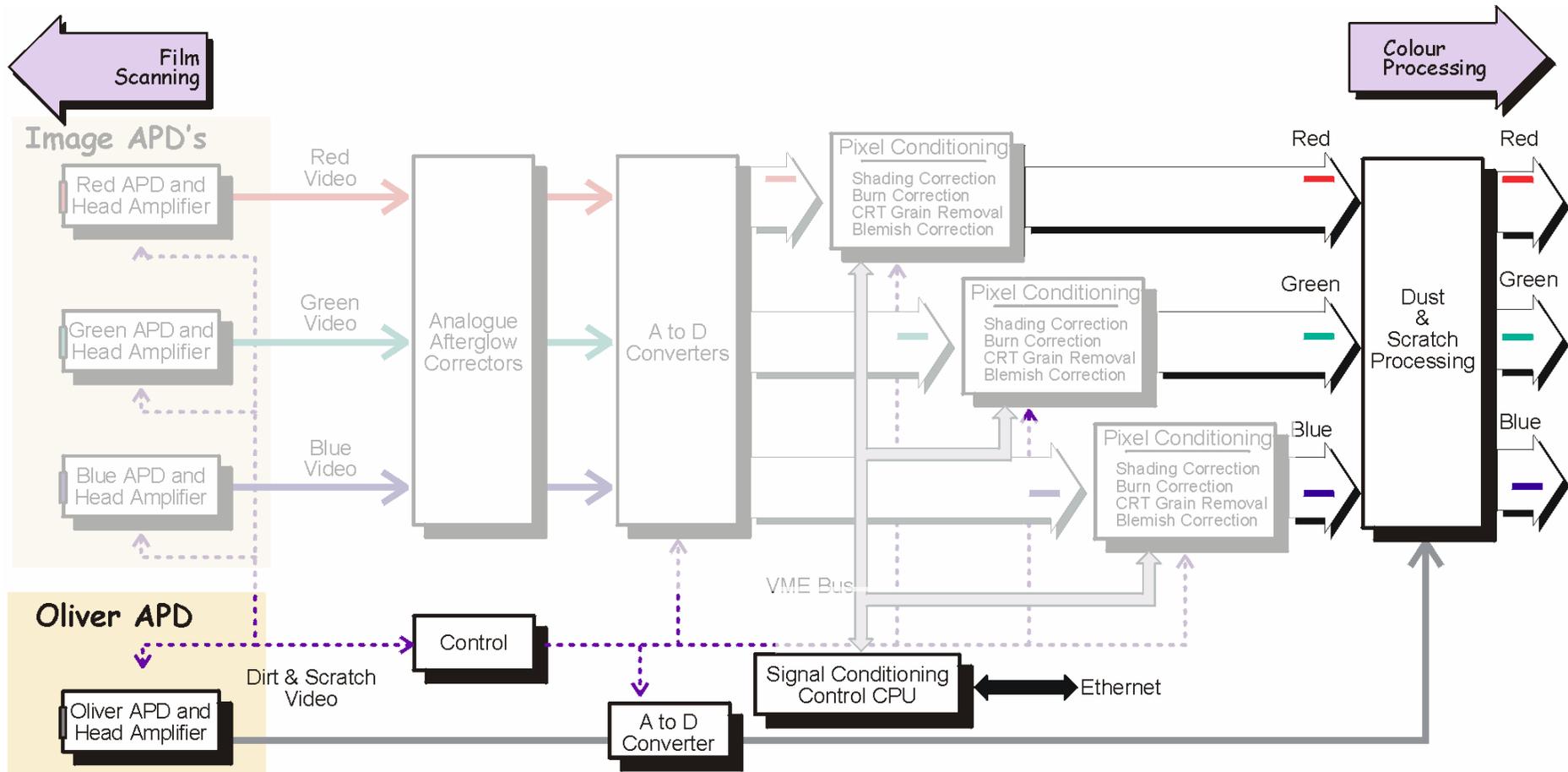


Figure 3 – Oliver Signal Path

The combined signals provide an image that is identical to the image on the original film without scratches or dust. As Oliver requires the image to be present in some form, it cannot “repair” the image if the silver or dye layers are missing. Such maybe the case with deep scratches that have removed the image layers rather than the protective surface layers. Oliver cannot recover printed in artefacts, as these have become part of the actual image.

Control

Oliver is designed to be operated remotely from a remote control desk that provides full control over all facilities. The desk, essential for full telecine operation, communicates with the telecine through an Ethernet connection. A limited amount of control is however provided at the telecine. Refer to manufacturer's literature for separate control desk operation.

Local Controls

Local controls are located on the upper right control panels on the front of the machine.

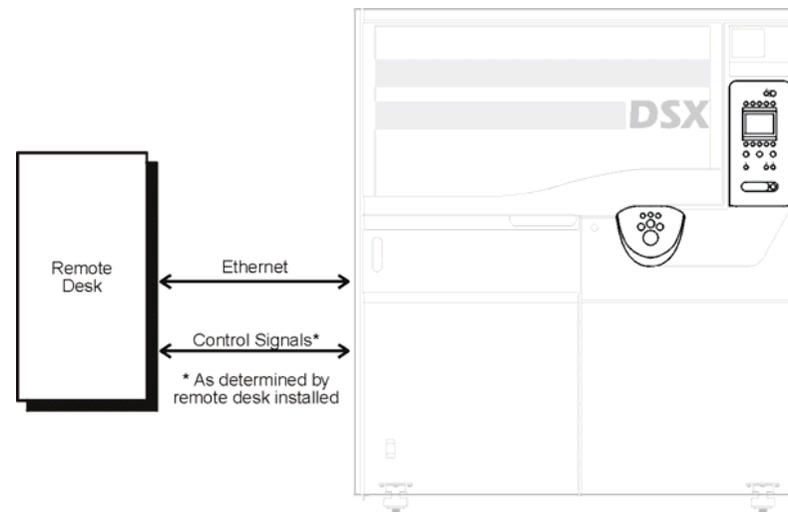


Figure 4 Control System Block Diagram

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GENERAL

Although designed to be operated from a remote control desk Oliver can also be controlled and configured from the Local Control Panel.

Lens Storage

When not in use Oliver's lenses should be left in place. Do not operate the scanner with either of Oliver's lenses removed. To do so not only degrades performance but will allow the ingress of dust into the Oliver optics.

Oliver uses a total of 4 lenses, 2 for 35mm and 2 for 16mm. At any time one set of lenses should be fitted in place.

The alternate lens set is stored at the left side of the Oliver cell box as shown in Figure 5

To access these lenses swing open the door at this location.

Take care when changing lenses they are heavy.

The Relay lens has a handle making fitment and removal easier.

Lens Care

Do not touch the glass elements or any white surfaces.

Blow dust off lens surfaces with a lens cleaning brush or wipe gently with lens cleaning tissues

If the lens surfaces become contaminated, use a suitable lens cleaner to remove the contamination.

Lens cleaning liquid can be made up as follows. 50% distilled water and 50%. Isopropynol Alcohol and add one drop of washing up liquid per litre.

On no account attempt to dismantle the lenses

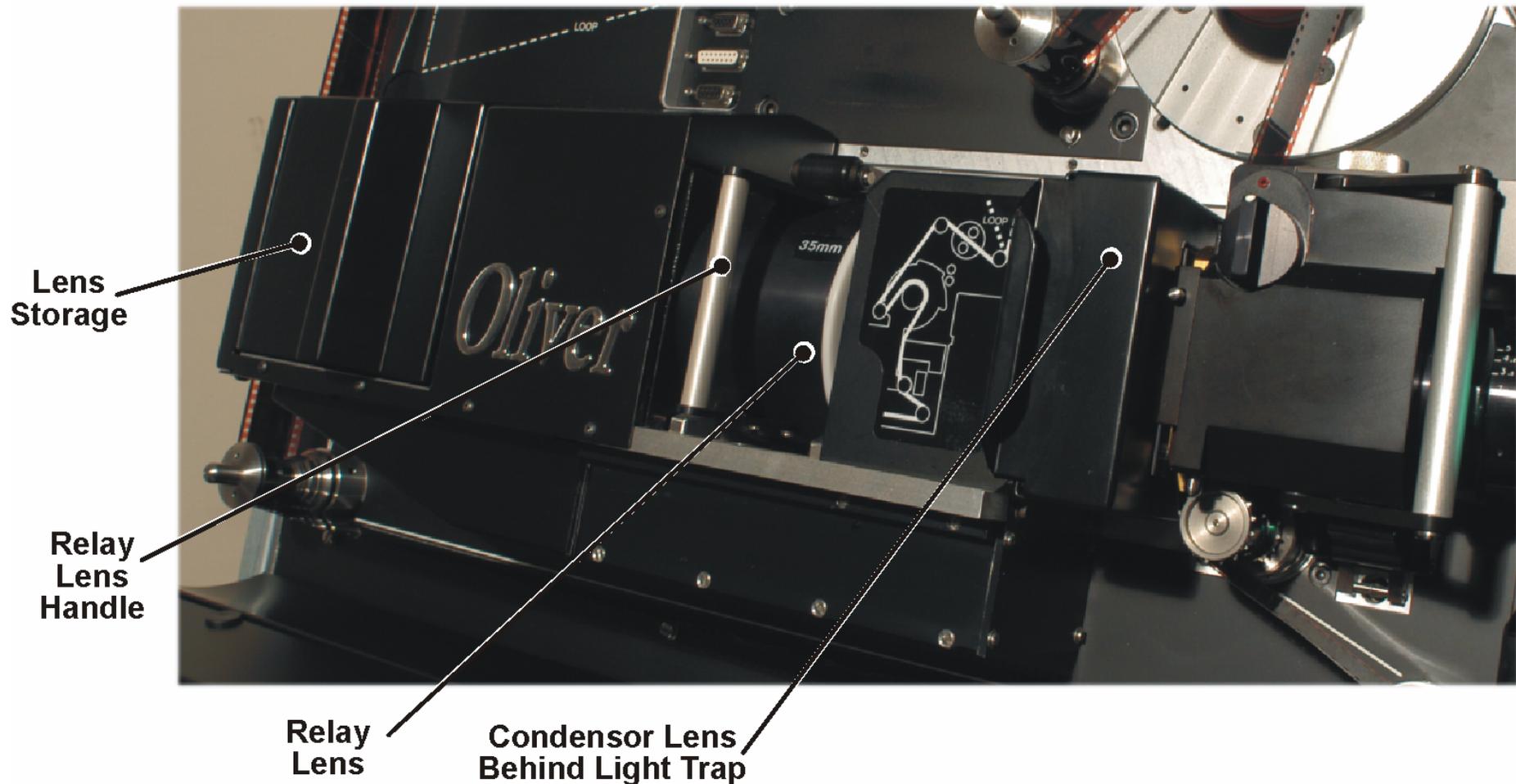


Figure 5 Location of Lenses

Oliver Relay Lens Change

Referring to Figure 5, check which gate and lenses are fitted. The lenses are marked 35mm and 16mm.

Changing the relay lens. Using the handle, pull the lens toward you. The lens is held lightly in place by a sprung roller. Only light force is needed to pull the lens free. Open the lens storage door and remove the other relay lens, replacing it with the relay lens that has just been removed from Oliver.

Place the new relay lens into Oliver, only light force is required to overcome the sprung roller pressure

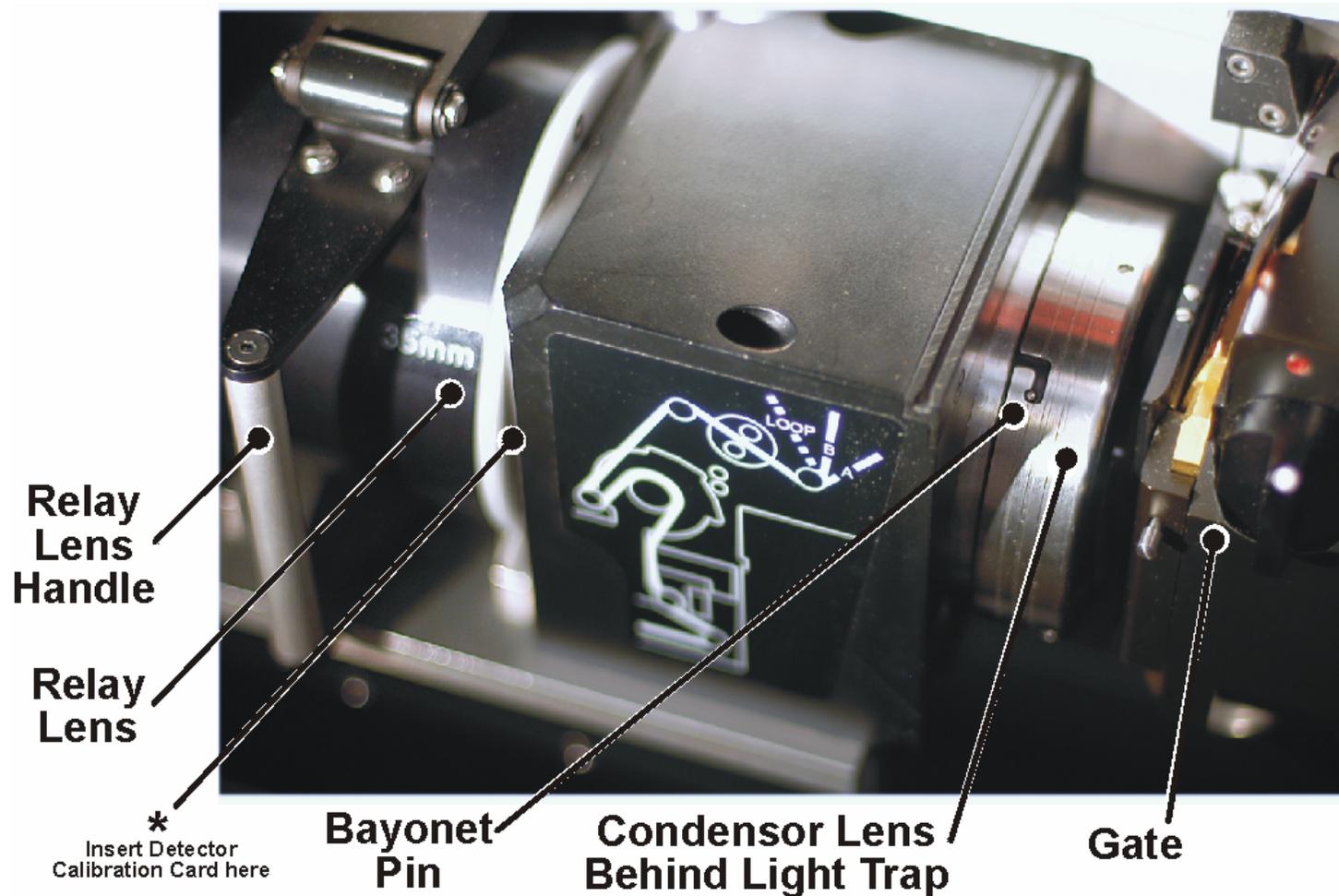


Figure 6 Oliver Condenser Lens

Oliver Condenser Lens Change

Referring to Figure 5, remove the Light trap from between the gate and Oliver. Then remove the gate.

Referring to Figure 6 note that the condenser lens is held in place by a bayonet mount. To release the lens twist it so that the bayonet pin is in line with the horizontal part of the slot. Then carefully pull the lens to the right. Note that there is another bayonet pin at the rear of the lens mount.

Open the lens storage door and remove the other condenser lens, replacing it with the condenser lens that has just been removed from Oliver.

Place the new condenser lens on Oliver by aligning the horizontal part of the lens slots with the bayonet pins. Gently push the lens to the left and when fully engaged rotate the lens such that the bayonet pin is at the end of the vertical slot as in Figure 6. Fit the new film gate and the light trap.

Once the lenses have been exchanged, normally only at the same time as a gate changes, follow the telecine operational procedure to perform an Auto Align to balance the entire optical system.

Detector Calibration

When using a new gate for the first time and at other times when the local displays prompts, Detector Calibration will be required. With Oliver it is important to note one special procedure during the calibration. At about the 50% point in the detector calibration the local panel display will prompt "Please insert calibration card". A white card with high reflectance should be placed between the Relay Lens and the Oliver main block, with the highly reflective surface facing towards the film gate, as shown at * in Figure 6. Ensure the card covers the entire Oliver block aperture. Detector calibration should then be continued. The card should be left in place until the local panel display prompts for its removal "Please remove calibration card". Detector calibration should then be completed.

Note: A detector calibration automatically includes an Auto Align, it is therefore not necessary to perform an Auto Align after a detector calibration.

Lace film according to the telecine operational procedure, close both deck plate doors.

Avoidance of external illumination

Oliver is very sensitive to stray light and it is essential to avoid any external illumination, (daylight, artificial or from monitoring equipment) from falling on the film path when DSX is in use or during detector calibration and auto align. It is generally sufficient to ensure the light shield is fitted and the lower deckplate door is closed.

Control Reference

This supplement makes reference to local controls. The function of these controls will be similar to those available from a remote desk.

Oliver Controls

There are two controls associated with Oliver:-

Amount
Wipe (Split Screen)

Amount

This control determines the amount of the "diffracted" image signal that is to be added back to the main image signal. In an ideal world this would be a fixed value. In reality the level is slightly film type dependent. Note that for the majority of each film type, negative, intermediate or print no adjustment is necessary. Therefore for most different rolls of negative no adjustment would be necessary. If a roll of intermediate or print was loaded then some adjustment may be required. Adjustment is necessary between 35mm & 16mm setups. For silver based Black & White materials adjustment will also be necessary due to the highly diffractive nature of silver based images.

Wipe

While in practice Oliver can be left running at all times without any deterioration in image quality there are reasons as to why the user may wish to split the control so as to see part of the image with and part without Oliver.

Such reasons are:-

- Client demonstration
- Confirmation that there is some damage to the material that would otherwise not be noted
- Confirmation that Oliver is in no way deteriorating the image or causing lag or smear.

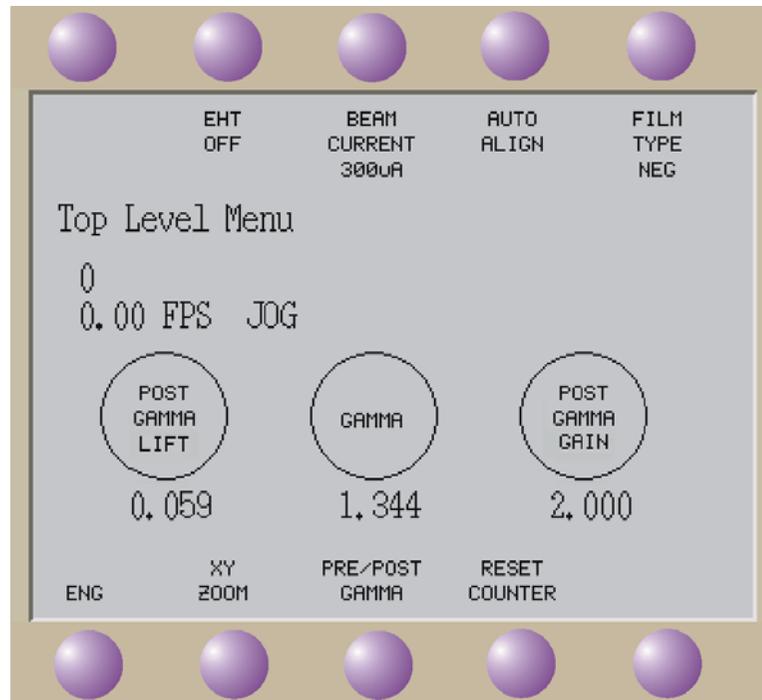
On/Off

While there is no actual On/Off switch the Off condition can be achieved either by turning "Amount " to zero, or by placing the "Wipe" fully over to the non Oliver mode.

Note that even when Oliver is switched off the correct lenses must be fitted as the optics still relay the main image to the cell box.

Control Access

Oliver can be controlled by using the menus on the upper right side control panel. For more details of these menus refer to the telecine manual. To access Oliver controls from the Top Level menu, press "ENG" then "ENG" then "MATRIX", this will place you in the Oliver control menu



Press for Eng. #1

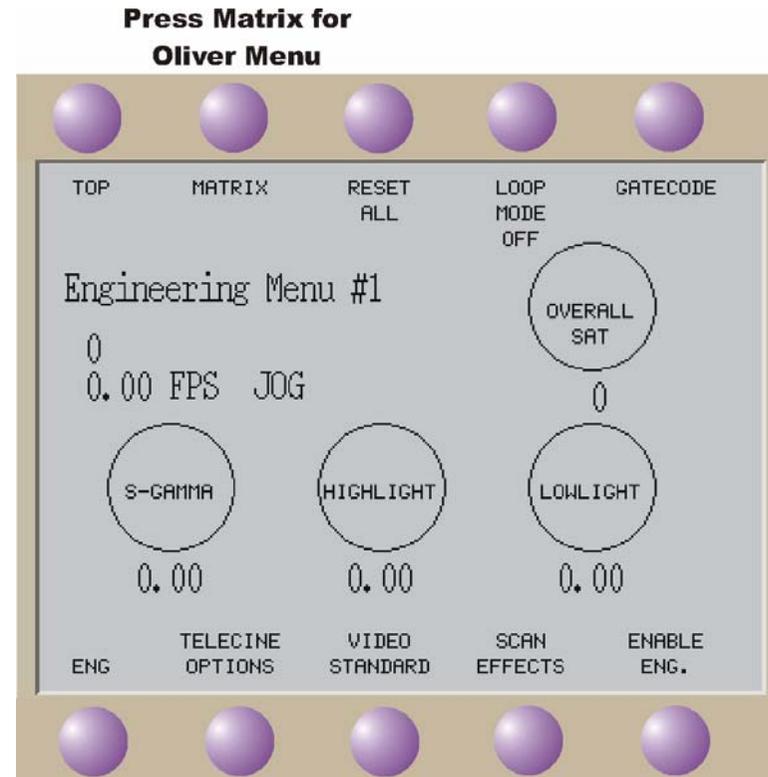


Figure 7 Menu Access

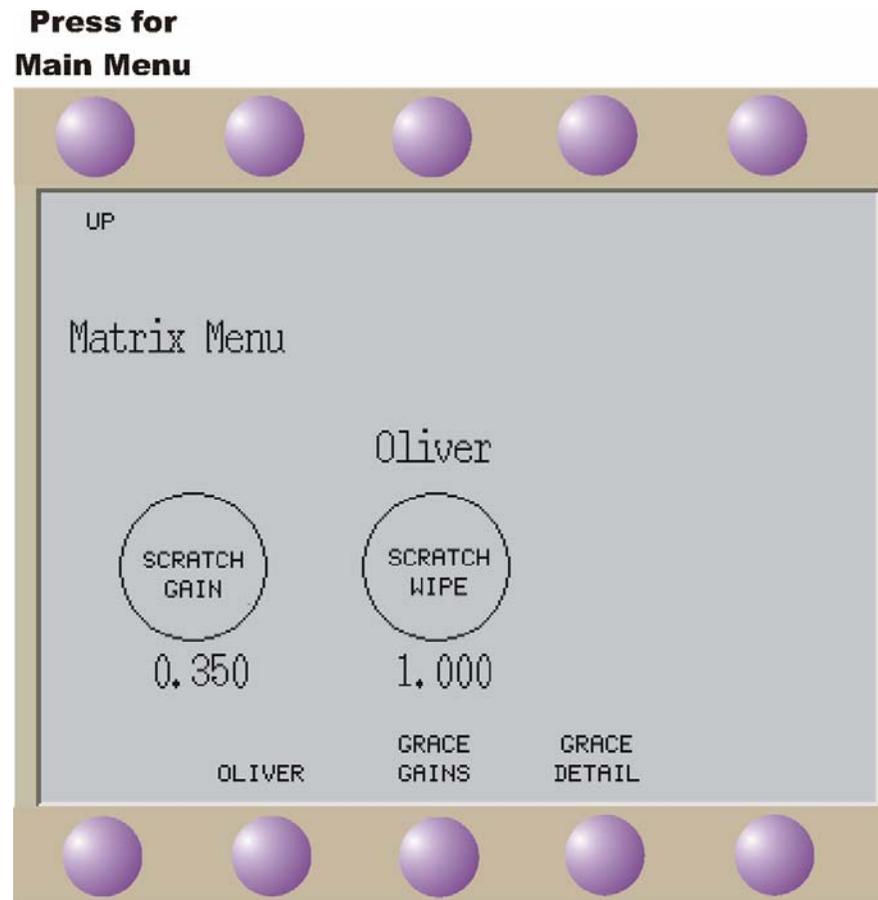


Figure 8 Oliver Menu

The two control values will be displayed as in Figure 8. Adjustment can be performed by means of the associated Digpots, refer to the telecine operational manual for more details.

Operating Procedure

Adjusting Oliver level. (Scratch Gain)

To setup Oliver it is necessary to have a film image that contains a variety of defects. If possible choose a similar film type to that being used. Find an image that contains dirt and scratches, the scratch depth must not have removed the dye layers or silver image. Oliver has been designed to operate at $f/2.5$ (fully open) for 35mm film and at $f/1.5$ for 16mm film. Working at any other aperture will give inferior results. If it is necessary to operate the 16mm gate at further reduced aperture then use $f/2.5$ and fit the 28mm inner diameter aperture-restricting white card just in front of and towards the film of the removable relay lens. (Do not fit this card for any other operating condition). For best operation if using $f/2.5$ use the same aperture and card during the 16mm detector calibrate (except for the last period where the full white card takes its place) and the auto align process. But don't forget to do a new detector calibrate and auto align when returning to the normal operating aperture.

With Oliver control set to zero balance the picture.

Now adjust the Oliver Scratch Gain control. As the gain is increased the scratches and dust marks will reduce. At some level they will disappear and beyond the level of disappearance they will reappear inverted. For example, a white negative scratch will disappear and then reappear as a black scratch. Unlike any other scratch and dust image removal system Oliver can be set to overcompensate. This make adjustment relatively easy as it is a matter of fine tuning between too little and too much compensation. The normal level for Oliver gain is about 0.35.

As the Oliver Gain is adjusted the overall image level may change, the degree of change depends on several factors. However the greatest factor is image silver content. Therefore a silver based black & white image will need to have its overall level trimmed, when Oliver has been adjusted, to remove the effects of dust and scratches. It is sometimes observed that similar but less dramatic level changes occur in some colour film materials. To date this is believed to be due to incomplete silver bleaching in such materials. If it occurs then a small overall PCC trim should return the image to normal.

In most instances Oliver will be set operational before a grade; therefore a trim will not be necessary. Bear in mind that if a silver based black & white film or colour film with incomplete silver bleach is graded with Oliver operational, then a trim will be required if for any reason it is re-transferred with Oliver turned off.

Wipe (Split Screen)

Adjusting the Split screen provides a view where different areas of the picture can be shown with and without Oliver. The split is always in the lateral plane, splitting the image between the left and right as this provides the best comparison for seeing the effect of tram line removal.