DObserver *RELOADED* INSTRUCTION MANUAL

POSITIONING

The D-Observer functionality and quality are factory tested.
The assembling and initialization of the equipment requires people expert in the know-how.

D-Observer is equipped with a set of wheels useful for an easy management of its positioning.
Once it is placed as desired, remember to activate its breaks to avoid undesired sliding of the equipment.

The D-Observer equipment has been engineered keeping always as primary objective the preservation of the integrity of the film but trying to offer a simple but even effective set of tools.
The standard system is compatible with all 35mm and 16mm bandwidth films and is optionally possible to get the D-Observer even compatible with smaller formats like 9,5Pathé, 8mm and Super8.
The complete system behaviour can be switched between different modalities to obey the film format and even its physical situation.

The tension applied to the film can be adjusted so to avoid any kind of undesired damage or stress to the weak supports.

Special optional gates, especially engineered for Archives curly and curved films, are available as option to give access to the contents of films otherwise unhandables.

Film and operator safety devices

The D-Observer system is equipped with special film rolls designed so to touch film only at perforation edges and are provided with tin-like ball bearings to avoid film friction stresses and damages. The standard set of rollers is adaptable for the 35mm and 16mm film motion but a special optional set is available to let use the equipment with a wider range of formats.
The film rolls are provided with special safety slides for correct film re-positioning if a loading mistake occurs.

In case of emergency or for any other reason the operator, the film and the equipment safety can be protected just breaking all tensions through the easily accessible emergency button.

Side Panel

On the D-Observer right side panel you have access to the device controls:

Left Plate winding direction, Right Plate winding direction: controls the plates way of rotation.

Main switch: main system power switch.

Light Box: equipment light box switch.

Profile selector: Using this control, you can select the desired memory bank of settings.

The equipment logic can be customised and adapted on a wide range of necessities. The standard version of the D-Observer is delivered with active profiles for handling:

Profile 0: Standard 4p 35mm film
Profile 1: Standard Super16 and 16mm film
Profile 2: 9,5mm Pathé (*on selected models*)
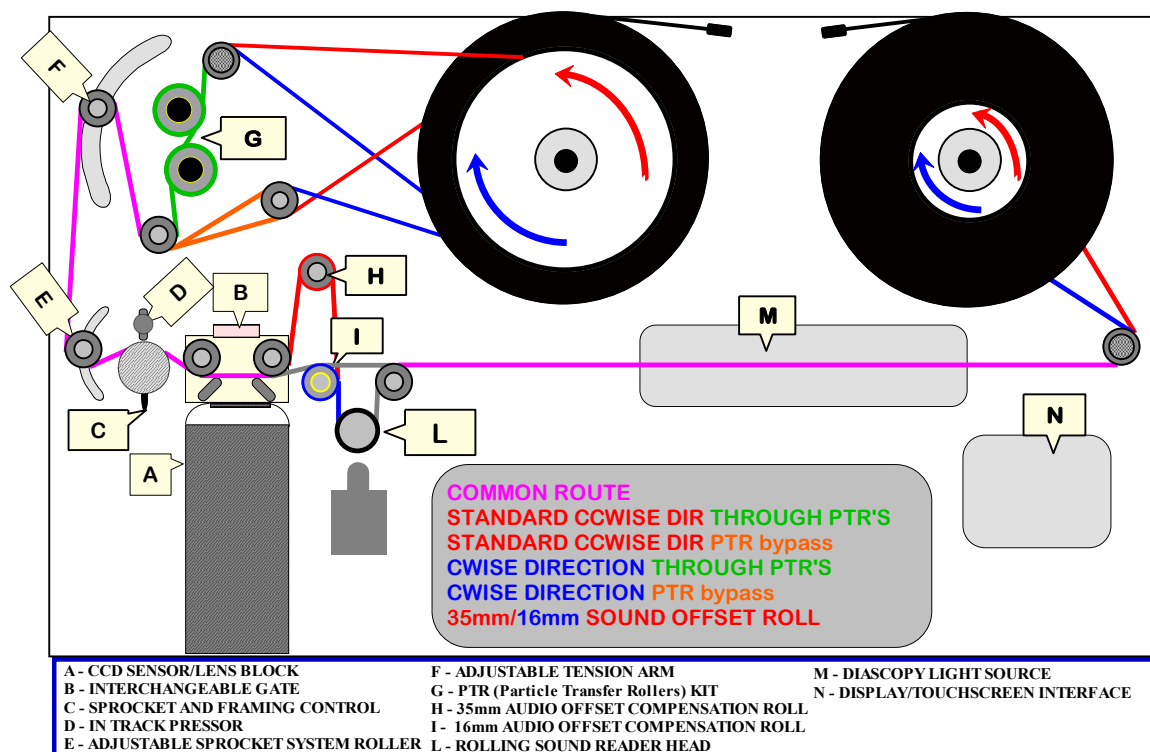Profile 3: 8mm/Super8 (*on selected models*)
Profile 4: *free*
Profile 5: *free*

NOTE: Please reset the Steadiness Controls and the Counter for every profile switch exchange.

Film loading

1. Install on both plates the reel expansion shafts aligning and inserting them into the square fitting slots.
2. Place the film take-up spool on the table right plate.
3. Place the job roll on the left plate.
4. Unroll film from left roll and load it on the right one.
5. The transport plates way of rotation can be changed by the special switches on the side control panel.
6. Hook up manually the film to the right film take-up spool.
7. Tighten the rolls on their shafts rotating them clock wise (1/4 of turn is normally enough for the standard tight/loosen routine).

COMMON ROUTE
STANDARD CCWISE DIR THROUGH PTR'S
STANDARD CCWISE DIR PTR bypass
CWISE DIRECTION THROUGH PTR'S
CWISE DIRECTION PTR bypass
35mm/16mm SOUND OFFSET ROLL

A - CCD SENSOR/LENS BLOCK
B - INTERCHANGEABLE GATE
C - SPROCKET AND FRAMING CONTROL
D - IN TRACK PRESSOR
E - ADJUSTABLE SPROCKET SYSTEM ROLLER

F - ADJUSTABLE TENSION ARM
G - PTR (Particle Transfer Rollers) KIT
H - 35mm AUDIO OFFSET COMPENSATION ROLL
I - 16mm AUDIO OFFSET COMPENSATION ROLL
L - ROLLING SOUND READER HEAD

M - DIASCOPY LIGHT SOURCE
N - DISPLAY/TOUCHSCREEN INTERFACE

Tension control

For a correct adaptation of the equipment to the fragility of the loaded film, a tension control by side is provided. A clockwise rotation of this knob will enhance the force applied on the dancing arms spring, generating a more compact final film roll; a counter clockwise rotation of the same will diminish the applied force...

On the main display, an useful reference is visualized. Displayed values are in decigrams.

Touch Screen functions - Display Indications

The system display always shows in real-time a full set of information:

- ELAPSED FILM: feet.frames elapsed length of film
- TENSION: dancing rolling arm applied tension (default scaled as decigrams).
- ELAPSED FRAMES: elapsed frames film count.
- SPEED: real-time frames per second speed monitor.
- TIME 24fps: Time Code at 24fps base reference.
- LENGTH: meters.centimetres elapsed length of film.
- TIME 25fps: Time Code at 25fps base reference.

Other functions are even accessible from it just pressing the proper menu button:

COUNTER RESET/SET FUNCTION

This function recalls the set/reset inner counter dialogue.

NOTE: the function sets also the inner picture framing index. A correct picture framing when calling the function, will also represent a correct picture playing when inspecting the film.

JUST PRESS "ENTER" TO RESET THE COUNTER
OR
INSERT THE ACTUAL FEET.FRAME REFERENCE AND PRESS "ENTER" WHEN DONE
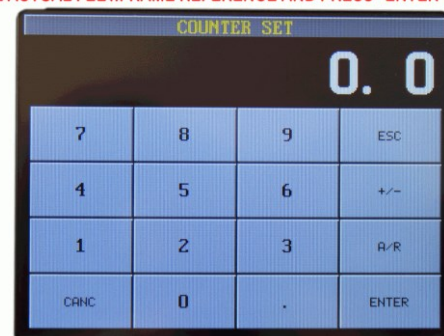
SEEKING FUNCTION

One useful function of the D-Observer equipment, is the ability to approach to any desired frame simply inserting, the right reference the from within the seeking menu.
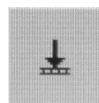
D-Observer bases its research on a frames referred syntax format; the seeking function can be used for:

- absolute values *(PRESET A): D-Observer will moves to the frames entered position.*

- relative values *(PRESET R): D-Observer will generate the target position (Preset in positive and negative) **adding** (for positive values) or **subtracting** (for negative values) to the actual counter value the inserted one.*

Notes: By pushing the ENTER key, once the goal in absolute mode *A is achieved, the system will restart to search with more precision the preset goal (considering that the machine stop precision is inversely proportional to the film running speed, the system will never stop at first exactly on the wanted frame, but*

SEEKING FUNCTION MENU
INPUT THE DESIRED VALUE USING THE KEYBOARD AND
PRESS "ENTER" TO MOVE THE FILM TO THE REQUIRED FRAME.
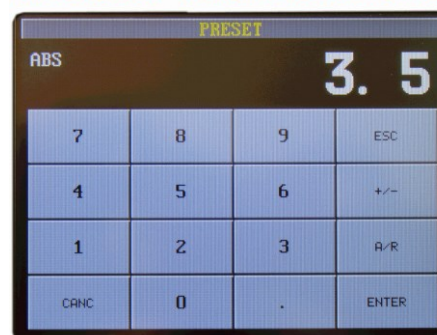
ESC : Abort and exit
+/- : Positive/Negative values
A/R: Absolute/Relative modality
CANC: Delete last entered digit
ENTER: Start seeking

will approach it with a +/-5 fr margin; an additional pushing of the ENTER (8) key is therefore necessary to remove By pushing the ENTER key, once the goal in relative value R is achieved, the system will start the search of a new goal equivalent to the algebraic addition of the current film position (Ft) and the wanted value (Preset).

Interrupting the frame research process: If at any time, a seeking function abort is required, press the button **STOP** (on touch screen).

STEADINESS COMPENSATION FUNCTION
The steadiness compensation system is based on the adoption of an user compensation table that will shift the theoretical flashing reference. Have the specific appendix as reference and explanation.
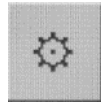
Adjust the variable sprocket control

To avoid damages on even very shrunk films, D-Observer comes equipped with a variable engaging control that allows an adaptation of the sprocket on the level of shrinkage of the film. Its logic is based on two axioms: a smaller pin positioned on a sprocket and a micro error on the axle distance (caused by film ageing). The result is that, the less pins are used for engaging the film perforations, the more the film is shrunk.
Release/Lock procedure: to release the variable sprocket control roller, just rotate counterclockwise its basement; to lock rotate the basement clockwise.

DO NOT APPLY TOO MUCH FORCE TO AVOID PROBLEMS WHEN TRYING TO RELEASE IT BACK.
Move the sliding roller upward to diminish the number of pins that are engaging the perforations for shrunk films.
Move the sliding roller downward to enhance the number of pins that are engaging the perforations for standard films.
TRICK: With the film loaded and in tension but not running, check manually if the sprocket slips (you can move slightly the sprocket with no film engage) in the perforation. If so, enhance the number of pins engaging the film moving the roller downside.

CCD Setting up

The sensor provided with the system comes equipped with a lens and a set of spacers and adapters to give the maximum possible flexibility. Assuming that the sensor has a fixed physical dimension with a fixed number of pixel over this surface, remains customisable and adjustable the area the user wants to "activate" of the sensor itself (ROI) and its relation with the film area that needs to be digitized. Adjusting, by consequence, the distance of the complete camera assembly and the distance between the focal point and the CCD surface, it is possible to adapt the scanning results to an very wide number of film standards and digitizing requirements.
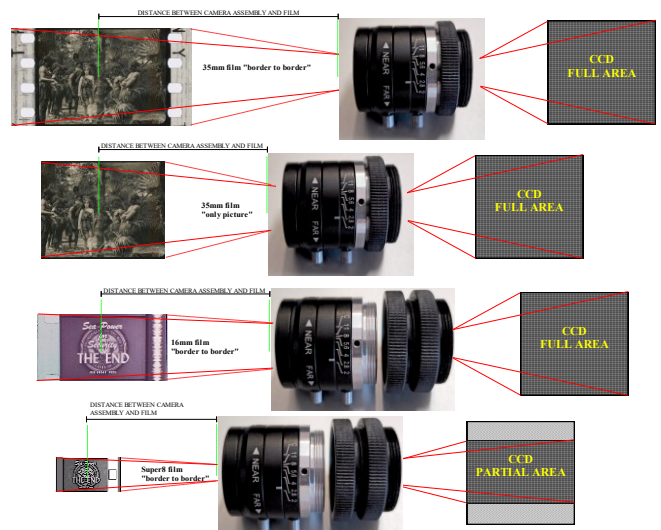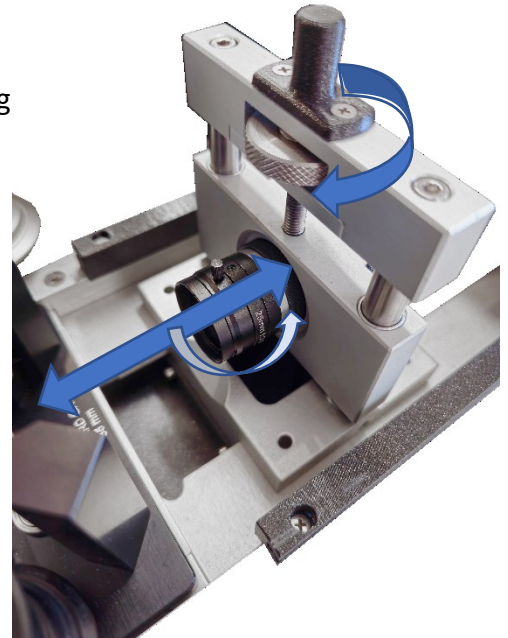
Colour camera assembly positional adjustment:

To move the camera on the horizontal axis for zooming in (cropping (enlarge the visible field):

1. Place the camera as wished pulling or pushing the Camera&Lens block.
2. Focus the image.

To move the camera on the vertical axis (Horizontal picture framing): rotate the upper knob placed on the camera assembly.

Picture framing

The film path inside the optical group passes through a sprocket wheel with a coupled encoder which, during the film transport, sends to the CPU (that controls the stroboscopic light) the running tempo of the film perforation.

To get the image framed on the display:
1. When film is loaded, manually centre the zero frame on the screen and then reset the counter (see above KEYBOARD USE); the system will keep the zero frame centring.
2. When film is running, if frame slides out, adjust the picture centring just sliding left<->right the cursor control.
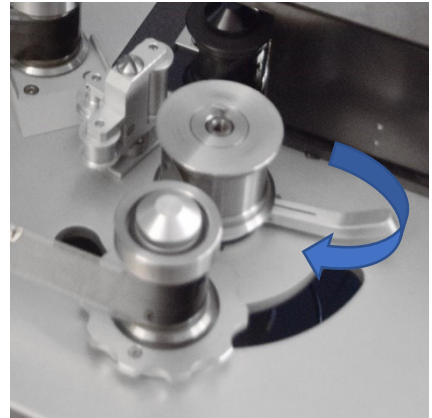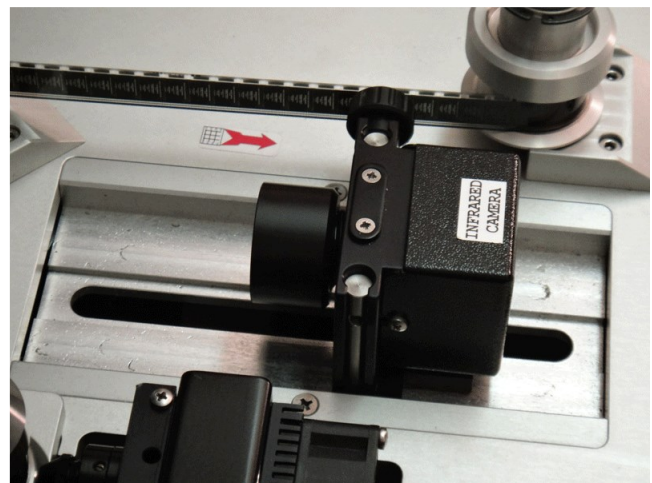
SF (IR *optional* vision) camera adjustment

To move the camera on the horizontal axis:
1. Place the camera as wished.
2. Focus the image.

To move the camera on the vertical axis:
1. Release the side lock.
2. Place the camera as wished.
3. Lock again the camera by the side lock
4. Focus the image.

Film formats switch procedure

The standard equipment is ready to be used with all 35mm formats and 16mm/Super16 films. Its adaptation and switch between the formats is a pretty simple procedure.

Installed rollers are adjustable on their width in order to swap from 35mm to 16mm films bandwidth films; an optional set of rollers is available for adapting the equipment to wider number of film formats.

The exchange procedure will require the execution of the following operations:

1. Remove all film from the table.
2. Switch off the equipment (from the side panel MAIN SWITCH) and exit from the software (just the table, computer shut down is not required).
3. Set the necessary film profile (obeying the film format and eventually its physical state).
4. Install the proper film gate.
5. Install the proper sprocket.
6. Install the proper sound reader head (ONLY for 35mm and 16mm COMOPT)
7. Switch ON back the table.
8. Align and adjust the sound reader light beam.
9. Start the software.
10. Load the film (pay a special attention to the film perforation positioning and sprocket pins matching).
11. Adjust the position of the camera according to the required area that needs to be visualised.
12. Adjust the position, focus and zoom level of the lens.

Sound Beam alignment

D-Observer/D-Archiver is equipped with an analogue track sound reader head. It is used for reading both 35mm and 16mm sound tracks. Its adaptation is possible through a complete series of possible adjustments. The calibration on the sound track can be summarised in two main steps.

1. Positioning

To perfectly match the sound track an alignment of the light beam is first required. The whole sensor head is positioned on a two axis adjustable module. The access to this movement is possible through a door placed underneath the table equipment desk. Once opened, release, adjust and then fix back the module visually matching the film sound track.
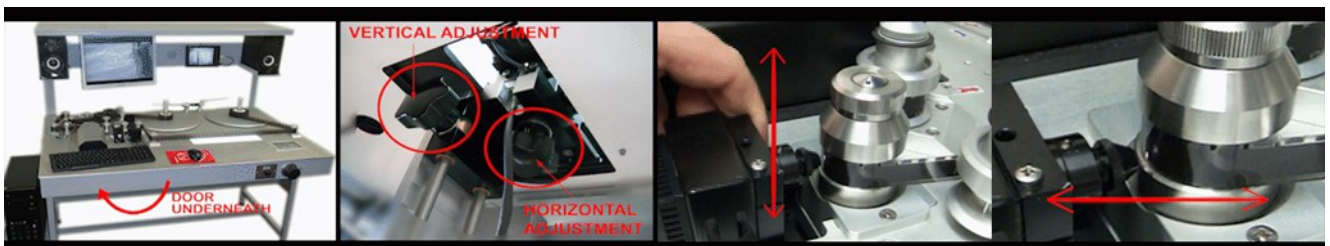
## 2. Focussing/Width adjustment

A sharp focus of the light beam is required and necessary for obtaining a good modulation effect from the sound track. This control is easily accessible from the front section of the light beam lens module itself.

An adaptation of the light beam width can be necessary for matching the variable width of the sound track. This control is accessible under the main module cover upward pullable. To change it
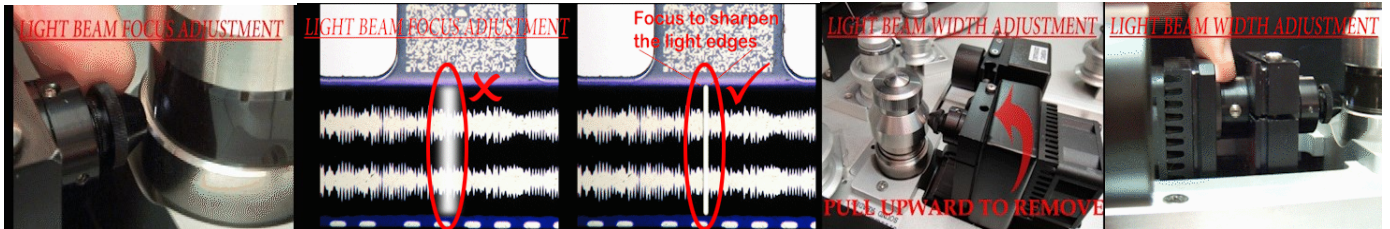
just rotate the light beam lens module appropriate control.

SOFTWARE INTERFACE
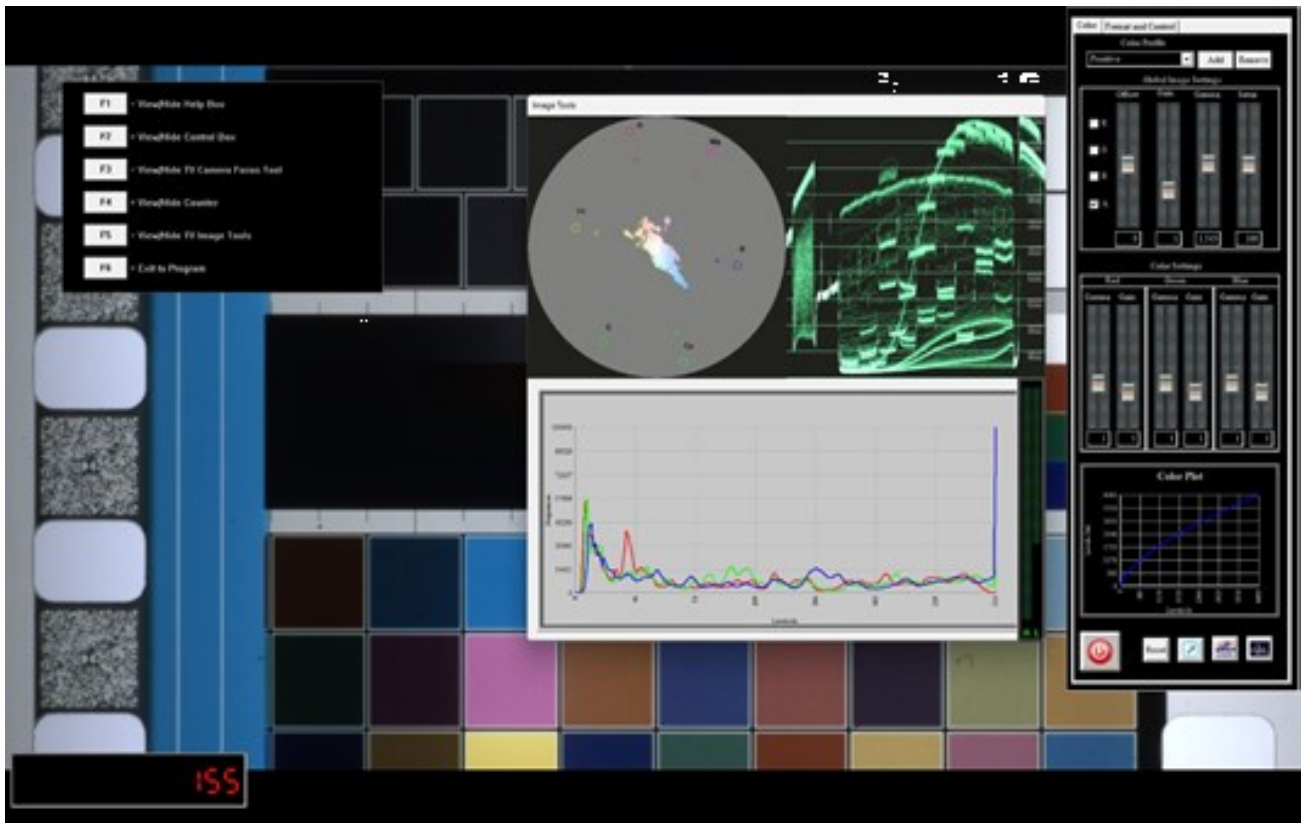
The DObserver Reloaded software is the necessary required interface between the equipment and the user that needs to inspect brand new and even very old, aged and fragile films.

The software interface is accessible just recalling the software with a double click of the left mouse button, from its icon comfortably placed into the computer desktop itself.

F1 button will recall a short reference to 'F' buttons features.

F2 button will open a floating control box containing all the colour and picture controls.

It is divided into two different menus:

COLOR menu

It give access to all picture colour controls necessary for shaping and matching the visualized colours to the originals from the film or for shaping the colour results over the operator's needing.

This section gives access to the colour profiles management:

- The scrolling list gives access to the saved profiles

- The 'Add' button will open a dialogue for attributing a name to the newly created profile. If no changes will be applied to the proposed name at the dialogue opening, the existing profile will be overwritten with the new colour settings.

- The 'Remove' button will remove the selected profile from the software database.
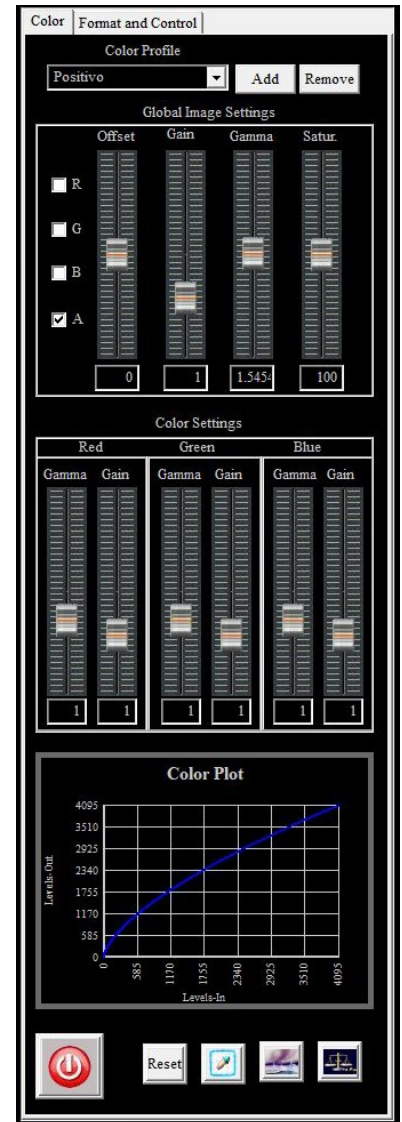

ACCESS all necessary colour controls:

- OFFSET for RGB or R/G/B

- GAIN for RGB

- GAMMA for RGB

- Saturation

- Single R/G/B GAMMA AND GAIN

Activate the POSITIVE/NEGATIVE linear colour inversion function.

RESET the actual profile to its last saved state.

FORMAT AND CONTROL menu

It gives access and control of the picture image dimensions and film format correlation.

It is possible then to:

LOAD a pre-existing profile: open the Video Format menu and select it.

ADD/CHANGE a profile saving the actual parameters: press the + button and confirm the proposed name to change permanently the actual settings OR insert/edit the name to add the actual settings into a new profile.

ERASE an existing profile just selecting it first and pressing the - button.

Insert an extended Description to integrate the given name with more information and references.

Manage the ROI area and position through the ROI Size and ROI Offset controls.
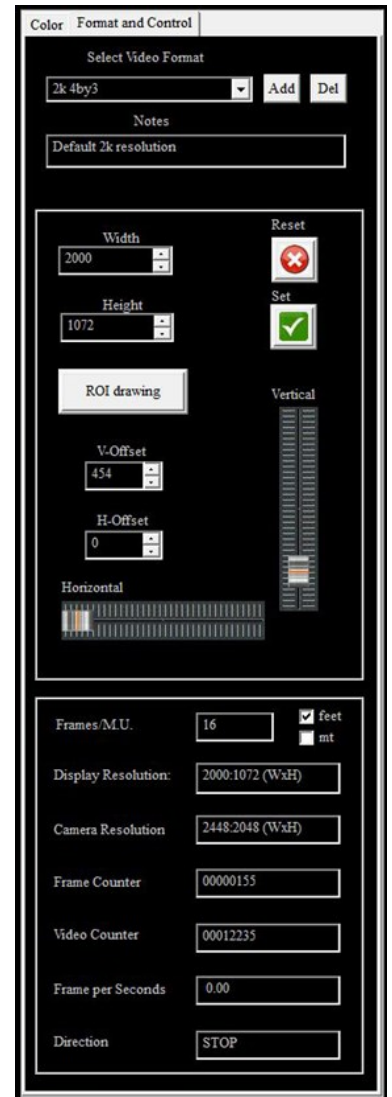
F3 button will switch camera resolution to an enhanced vision so to help in adjusting the lens focus. A floating control box containing a 'sharpness' level meter will open as well.

F4 button will switch the visibility and force an equipment sync procedure (useful when the LCD touch screen counter isn't aligned with the OSD counter) of the OSD counter.

F5 button will open the IMAGE TOOL window. A floating live analysis images flow, containing information from within a graphical video Oscilloscope, Vectorscope, Spectroscope. A audio input level will be visible as well.
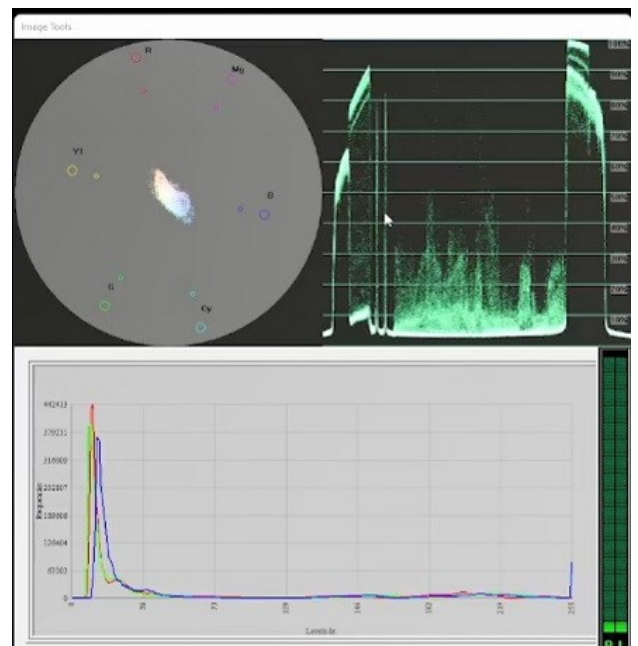
Film steadiness compensation appendix

When a film become old and damaged, it starts changing its physical state drying, shrinking, bending, etc.
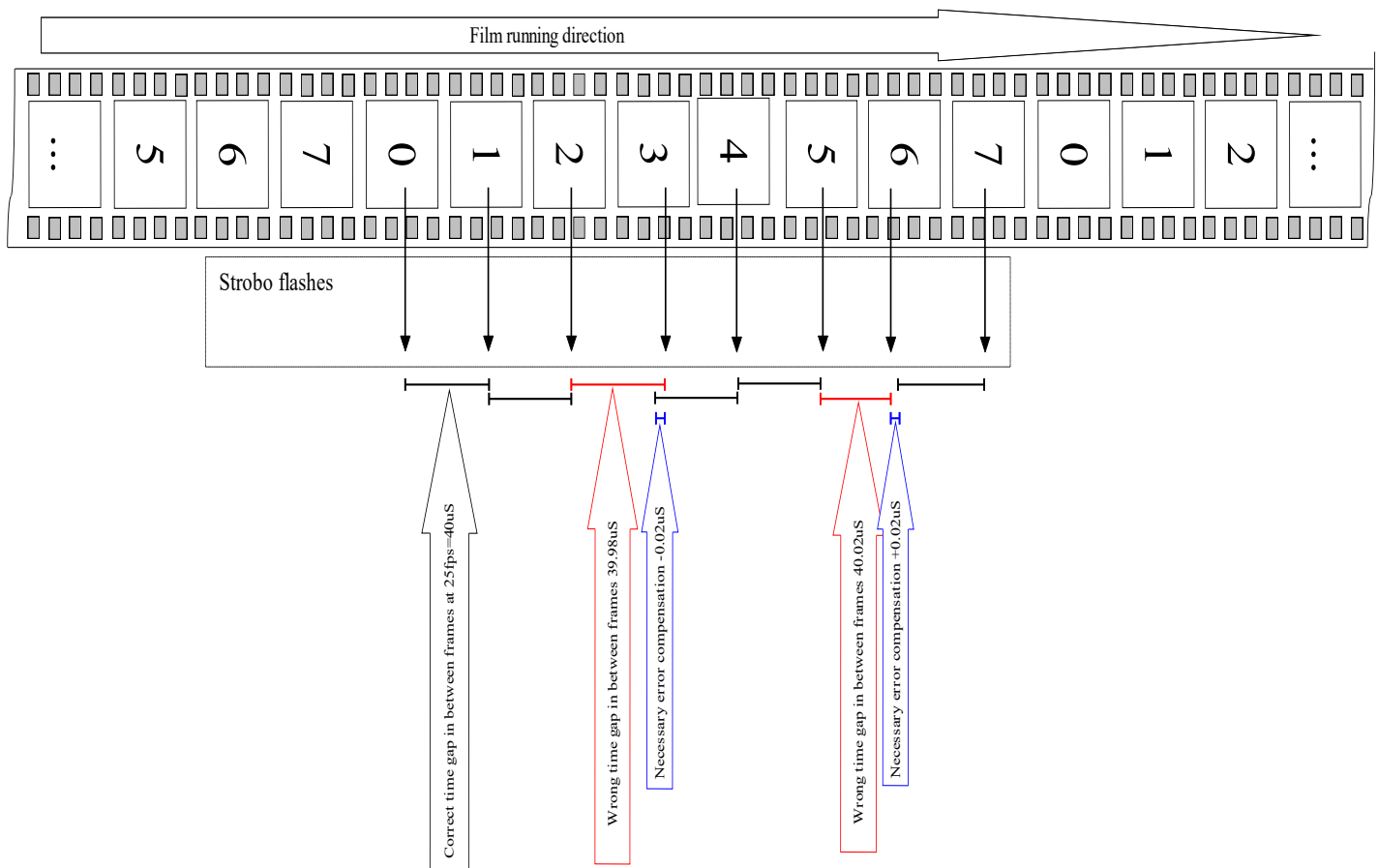
The film is running over a passive sprocket combined with an encoder that generates a sequence of 16384 pulses per round.

Every 8 frames we have a complete round.

The 35mm film has then a flash every 2048 pulses.

The images playing (or scanning) stability is strictly related to the perfect alignment in between every displayed picture and the following one.

When a uneven conditions film moves over and into the sprocket, its physical action become "unven" as well; it will not move linearly anymore over the sprocket becoming more "sinusoidal".

The steadiness compensation system is based on the adoption of an user compensation table that will shift the theoretical flashing reference (every 2048 pulses) so to obtain a positive or negative error correction.

Keeping the 0 frame as fixed reference, the user table will apply in loop the error correction chosen with the equipment interface.

To Access to the *steadiness control* menu, press button .

Once active, the control will start flashing the frame 0 (reference frame) and the frame selected in the "frame reference" area:

1. Start to run the film (it is advisable to use the *Jog Shuttle* equipment control). Keep it running during all the procedure. You can eventually stop and rewind BUT the correction is effective and can be judged only on film running FORWARD.

2. Frame, eventually, on the film perforation to have a solid reference.

3. Check if the film is now "jumping"; if so apply a point of compensation or if not, move to the next frame changing the frame reference.

4. If you've completed the check (you've checked all the 7 frames on the 35mm film sprocket), you can check the final result before applying the setting just pressing the button *CHECK.*

5. Press the button *OK* to save the newly made compensation table.

NOTES:

It is normal that the strobo lamp flashes not as often as before activating the function: it flashes only for frame 0 and for the reference frame. The setup is done only one frame at once comparing it with the reference one,

The "direction" of the correction is unknown at the beginning of the procedure. Just apply a correction in one direction (positive in example) and visually check if the "jumping" become worse or better. Starting from that initial direction, keep it until the required correction become null (0). It is normal that on a high frames sprocket (a 16mm sprocket i.e.) the defect has a complementary correction structure; the correction can assume positive values on some frames and negative values on others. This because the film can act over the round sprocket as if it were elliptical instead.

It is, unfortunately, normal that the compensation is not effective on some kind of films. The logical foundation is that a redundant error can be compensated applying always the same correction. The correction is not effective with all random defects (splices i.e.).