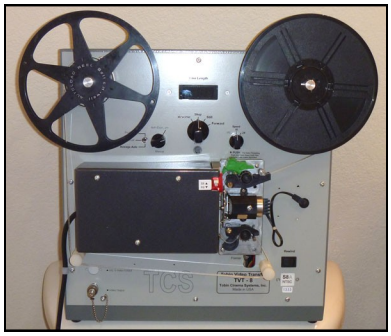
*Operating Instructions with STC-630/635 Y/C camera:*

# TVT-8A Tobin Video Transfer Regular-8 or Super-8 Telecines

## Basic Operation



Turn on the power with the switch on the right rear of the TVT.

Note: see page 6 for identification of the items on the front panel.

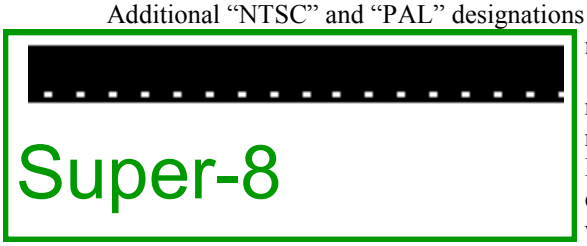
Switch the unit to “Still” or “Forward” and note that there are no hairs or lint visible in the picture on the underscanned video monitor. If there are any, switch to “Still” and press the film gate to the right and brush or blow out the hairs. Close the film gate.

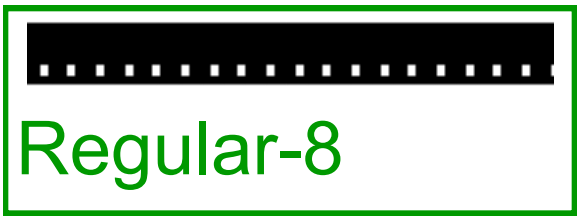
Check that the film format is correct for the model TVT-8A machine that you have:

• TVT-S8A machines are labeled “S8A” on the front badge and are set for super-8 film. Super-8 film has smaller sprocket holes and normally comes on a reel with a 1/2" (12mm) diameter center hole. Ensure that the S8-R8 switch is up in the S8 (super 8) position for correct operation.

• TVT-R8A machines are labeled “R8A” on the front badge and are set for regular-8 film. Regular-8 film has larger sprocket holes and normally comes on a reel with a 5/16" (8mm) diameter center hole. Ensure that the S8-R8 switch is down in the R8 (regular 8) position for correct operation.

Additional “NTSC” and “PAL” designations on the badge show the video standard for which the model is made. NTSC is used in the USA, PAL is used in Europe.




If the film is the wrong type, change to the other model of TVT-8A machine. However, in an emergency regular-8 film can be run through the super-8 model, in the R8 switch position, but the picture will be small and off-center. An accessory R8 reel spindle will allow a R8 reel with 5/16" (8mm) diameter center hole to be mounted. It is less acceptable to run super-8 film through the R8 model as there will be a large (33%+) loss of picture area.

**Threading:**

Place the full reel of film on the right-hand “Supply Reel” spindle, matching up the slots in the reel hub with the spokes in the reel spindle. If the reel is correctly prepared, the perforations (sprocket holes) in the film will be towards you, with the emulsion side (the side with the picture) facing to the right, while the film is hanging down from the right-hand side of the reel. There should be about 4 feet (1.25m) of leader before the first picture. If any of this is not the case, return the film reel to the preparation department for correction.

If the leading edge of the film is mangled, trim it straight across in between perforations and make little bevels on the corners with scissors, if the film preparation department hasn’t already done so. If it is bent, flatten it.

Switch to “Forward”. While constantly holding down the “Push” lever, feed the film into the upper channel. After the film emerges from the bottom channel, release the “Push” lever and lead the film until about 3 feet (1m) has emerged. (If you accidentally let go of the Push lever too soon, stop the machine and back out the film, to begin over.) (Avoid contact with the takeup reel if already fitted as it will be turning rapidly.)

Switch to “Still.” (You can carefully apply a braking force to the takeup reel to slow down its spin, without sticking your fingers in the spokes.)

Attach the film to the takeup reel, turning the reel clockwise a couple of turns, and leading it around the two round plastic guides.

Switch to “Forward” to preview the film. It should be right way up (people’s heads and the sky at the top). The frameline (the dividing line between pictures on the film) should not be visible; if it is, adjust the “Framer” lever while running, until it is not seen.

(Note on Framer: The framer lever if present is very stiff to move and you must move it very slowly up or

down or the film loops may be lost. The framer knob if present may require a couple of turns before any effect is seen, and then the change is gradual.)

Switch to “Reverse” and run until the picture is all back on the supply reel and there is about 1 foot (.3m) of leader film between the supply reel and the film gate, then switch to “Stop.” Note that in Reverse the image may have ghosting; this is normal as the shutter is correctly synchronized only in Forward and at normal speed.

Start the video recorder. Switch the TVT-8 to “Forward” and you will be recording the film on video.

The film should be inspected, repaired, cleaned and lubricated before it comes to you for transfer. In case a bad splice or multiple damaged perforations causes loss of the film loops, this will cause a chattering noise and the picture will start jumping up and down. Press the “Push” bar sharply to reset the loops. If this doesn’t work, turn to “Stop” and also stop the video recorder. Push open the sprocket pad tabs and move the film to reset the film loops to midway between the guides and the gate so they are not touching anything, both above and below the film gate. Then resume the transfer.

At the end of the film, switch to “Stop” and stop the recorder. Record the film length count for billing purposes, if your company charges by the foot or meter. Attach the end of the film straight across to the supply reel, without going through the sprockets and gate, and turn the reel a couple of turns counter-clockwise. Switch the Rewind “On” and monitor closely because the film rewinding is very fast, and when the film is fully rewound turn the Rewind switch “Off” immediately. Remove the supply reel after it stops, and you are now ready to transfer the next reel.

# Installation

Connect the TVT-8A machine to a suitable video recorder. This is often a Mini-DV (digital video) or else DVD (digital video/versatile disc) recorder, or less commonly these days a VHS (video home system) machine. There are two video outputs on the front of the machine. Both can be used at the same time if desired:

• The S-Video (“Separate”-video) Y/C output may give a cleaner video signal, as the luminance (brightness or Y) and chrominance (color or C) signals are sent through separate wires and will not interfere with each other, and thus not cause odd color artifacts to appear in the picture. This connection is with the Mini-DIN 4-pin cable emerging from the left end of the optics cover.

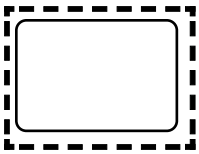
• The conventional video output is used in case the recorder lacks an S-Video input. The jack is a locking BNC connector that carries the same signal as an RCA phono “yellow jack” type, so use the BNC to RCA phono type cable or adapter to connect to consumer equipment. Use a BNC to BNC cable (not supplied) to connect to high-end equipment. Note that when this jack is not actually driving external equipment, the 75Ω terminator should be installed on it, or else the Peak Auto exposure control will malfunction.

Plug the TVT-8A into a source of 100 to 240 volts AC (alternating current) at 50 or 60 Hz (Hertz, or cycles per second.) For safety the third wire should be grounded (earthed.) Turning on the unit will cause the footage counter to light up, and for black video to be output.

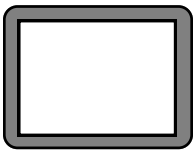
# Monitoring

A color video monitor should be used to help you best oversee the transfer operation. We recommend that the picture monitor be connected to the **output** of the recorder, so the tape or disc playback can be spot-checked for quality. We also suggest the use of an **“Underscan Monitor”** which enables the entire video signal to be seen by the operator. Such a monitor can be recognized by an Underscan-Normal switch. (In the underscan position, the active video area is bordered with black.)

This is because ordinary monitors and TV sets have varying degrees of “overscan.” The picture is larger than the picture tube, so the edges are cut off. The amount of underscan is not well standardized, may not be centered, may be out of adjustment, and may hide defects that could be seen on a different TV set. For example, the film may be out of frame so that the frameline is visible on some receivers but not others. Or, a piece of lint may be lodged on the edge of the aperture and working its way into the frame. To guarantee that the frameline or hairs will not be visible to anyone, no matter how their TV set may be adjusted, the transfer process should be watched with an underscan monitor so



Conventional TV or Monitor Cuts Off Picture



Underscanned Monitor Shows All The Video So No Surprises

the entire video signal can be seen. There can be small artifacts on the extreme edges, such as dirt specks stuck to the aperture, which will not be a problem as the customer will not see the entire video frame on his TV set.

When demonstrating the process or results to the public, the monitor should be switched back to the Normal position to prevent misunderstandings or long explanations.

If an Underscan monitor is not available, you can manage with one having Pulse Cross (Pulse Delay.) This puts the corners of the picture in the middle of the screen. It is possible to use this function to check for framing and hairs although it is less convenient.

# Other Needs

Film will be received from the public in various states of disrepair, with bad splices, winding turned over on the reel, being mounted on the wrong type reel or the wrong way out, no leaders, etc. and a facility must be provided for making the footage ready for transfer. This requires at the minimum a pair of film rewinds, with adapters for regular-8 and super-8 reels, a supply of film leader and empty reels, a film splicer, and a way of cleaning excess dirt off the film. Ideally there will be a light box for looking through the film, and a light above the editing bench to reflect light off the film.

Refer to the first section of these instructions for a description of how the film should be wound on the reel. There should be 4 feet of leader on the start for proper threading of the TVT, and enough leader on the end to thread the film cleaning device. Torn film sprocket holes and crooked splices should be removed to prevent transfer problems.

Small rolls should be spliced together for efficient transfer. A properly made cement splice, using fresh cement, is preferred. The smoothest transit of splices occurs when you have made a beveled splice using an (unfortunately discontinued) Agfa or Bolex splicer, where the total thickness at the splice is about the same as unspliced film. (Fuji Single-8 and K-Mart Focal film was on polyester base and must be tape spliced.) When making tape splices, ensure that the sprocket holes are not covered up and the tape is on straight, on both sides of the film.

We suggest using 400 foot (122 meter) reels, and cans or 7" size white 1/4" audio tape boxes. Usually if 7 small 50' rolls of regular-8 film is wound on each reel, this will enable two of the reels to fit on each 1 hour tape or disc with minimum waste and no need for time-consuming tape editing or overlaps. Mark the leader on the head (beginning) of the reel with the customer's name or job number, and the reel number, to avoid mixups. Leader with a matte finish can be written on with pencil, while shiny leader can be marked with a Sharpie or India ink. Ensure that that the cleaning step does not remove the reel identification. Storage cans should be ventilated for slight air circulation, to prevent film deterioration from "vinegar syndrome." Advise the customer to keep his film in a cool, dry, dark place to prevent fungus growth. You want the film to be in good condition so you can transfer it again when the next super generation of video equipment formats makes the present transfer obsolete. :-)

After each reel is spliced and repaired, it is rewound through the film cleaner device on to the proper reel, which restores the reel to being heads out instead of tails (foot or end) out, and sent to the transfer room. Note: When using a liquid cleaner, view the rewinding film by reflected light to make sure it is dry again before it is wound up, or else the film may dry with "shoreline" marks on it. You can wind quite fast if not using an excessive amount of solvent.

**Important note on lubrication:** Some film types are not lubricated in processing and will give an unsteady image and noisy running until lubricated. This includes the recent Ektachrome 64T and 100D films as well as some private brand films made by other manufacturers. The cleaning fluid should have a small amount of wax dissolved in it to provide lubrication for smooth transport through the TVT or through the customer's projector. A suggested amount is a lump of candle wax or beeswax the size of a pea ground up and dissolved in a pint (half litre) of solvent. Cleaning solvents that are widely used include methyl chloroform (*toxic fumes*), perchloroethylene (dry cleaning fluid) (*toxic fumes*), Freon TF (*ozone depleting*), or 99% isopropanol (isopropyl alcohol) (*flammable*). There are also commercially mixed film cleaners with lubricant. Cleaning must take place in a ventilated area.

# Running Speeds

The **TVT-8A** models feature flickerless running, at approximately18 FPS (frames per second) suitable for most amateur films. The actual speed is 19.980 FPS for USA (NTSC) video, and 16.667 FPS for the European

(PAL) video standard. An additional approximately 23-25 FPS unstabilized speed position can be used for quickly locating a place in the film, but is not suitable for transfer as it has flicker. The 9 FPS position is inactive.

# Exposure and Color Correction

The Average Auto automatic exposure correction uses Center-Weighted Averaging sensing, for good results from a variety of original moderate over- and under-exposure conditions. For very well exposed film, seldom encountered with amateur footage, you could instead use Peak Automatic. You can also use the Manual position and rotary knob to adjust the exposure level. The rotary knob is also active with automatic exposure, using non-additive mixing where whichever is higher determines the exposure, so you can lighten but not darken. Note that if you have used a very high manual setting it will take a while to regain normal automatic function.

Your TVT-8A normally comes with Push To Set white balance. To set this, remove the optics cover, run Forward or Reverse in an automatic exposure mode to ensure that the screen is bright but not overloaded, then push the button on the camera rear to set the balance. WARNING: Do not contact the high speed rotating shutter to the right of the lens or you will suffer personal injury.

If ordered with AWB (Automatic White Balance) instead, the color balance is continuously adjusted so the picture keeps a range of color averaging to grey, suitable for off-color footage. This will however give odd color effects and spoil good film. You can manually turn the AWB on and off yourself with tiny switch #4 in the second switch bank, which is under a screwed-on cover on the bottom of the camera as mounted, after removing the optics cover.

# Other Information

**Routine maintenance:**

- A spare drive belt is included, and replacements can be ordered from McMaster-Carr Supply Co. as catalog number 9396K221 which is a dash-232 red silicone belt. After long use, perhaps hundreds or thousands of hours of running, the claw pivot and cams may need greasing and high speed shafts may need oil. The pulldown claw and cams may eventually also need adjustment or replacing by a qualified technician.

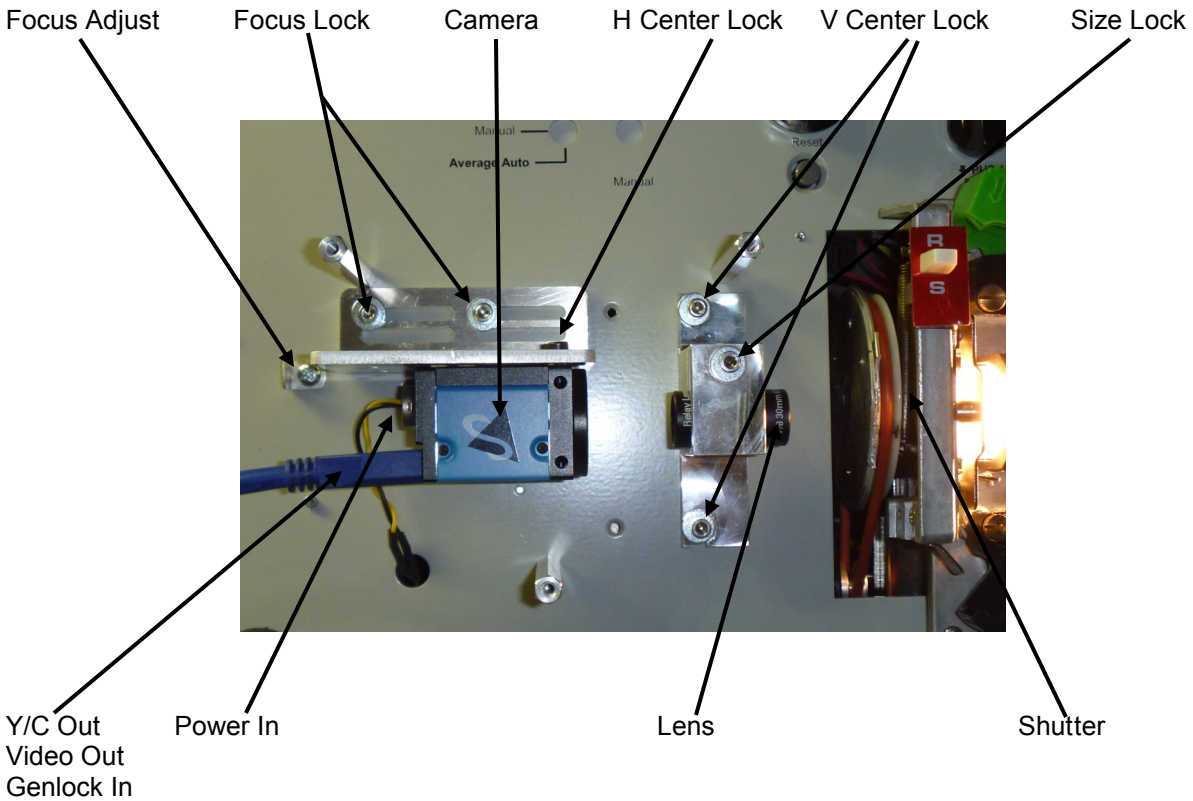
**Service adjustments:**

- After long use, the white balance of the LED light source and camera could change, which is not important if using the AWB as it should adjust itself. With the Push white balance see the instructions above.
- In case of odd symptoms, first check the output voltage of the switching power supply modules. These should be 12 and 24 volts DC, ±5%. Note that they are actually wired to supply 12 and 36 volts to the TVT circuitry. The voltage should change little no matter what settings are made to the operating controls. The power supply voltage may sag momentarily while the motors start running.
- If dust accumulates on the optics or light source, it should be removed with a clean camel's hair brush or air blower. Fingerprints must be removed immediately from the lens with lens cleaner and lens tissue, following the instructions included with them. There should be no need to dismantle the light source module.
- In case of camera replacement, the installed model is normally Sentech STC-630PWT for NTSC and STC-635PWT for PAL video. The DSP (digital signal processing) firmware is modified by TCS to defeat low-level chroma suppress, to prevent dark colors from reproducing as black. The AGC is shut off and the push white balance is enabled.

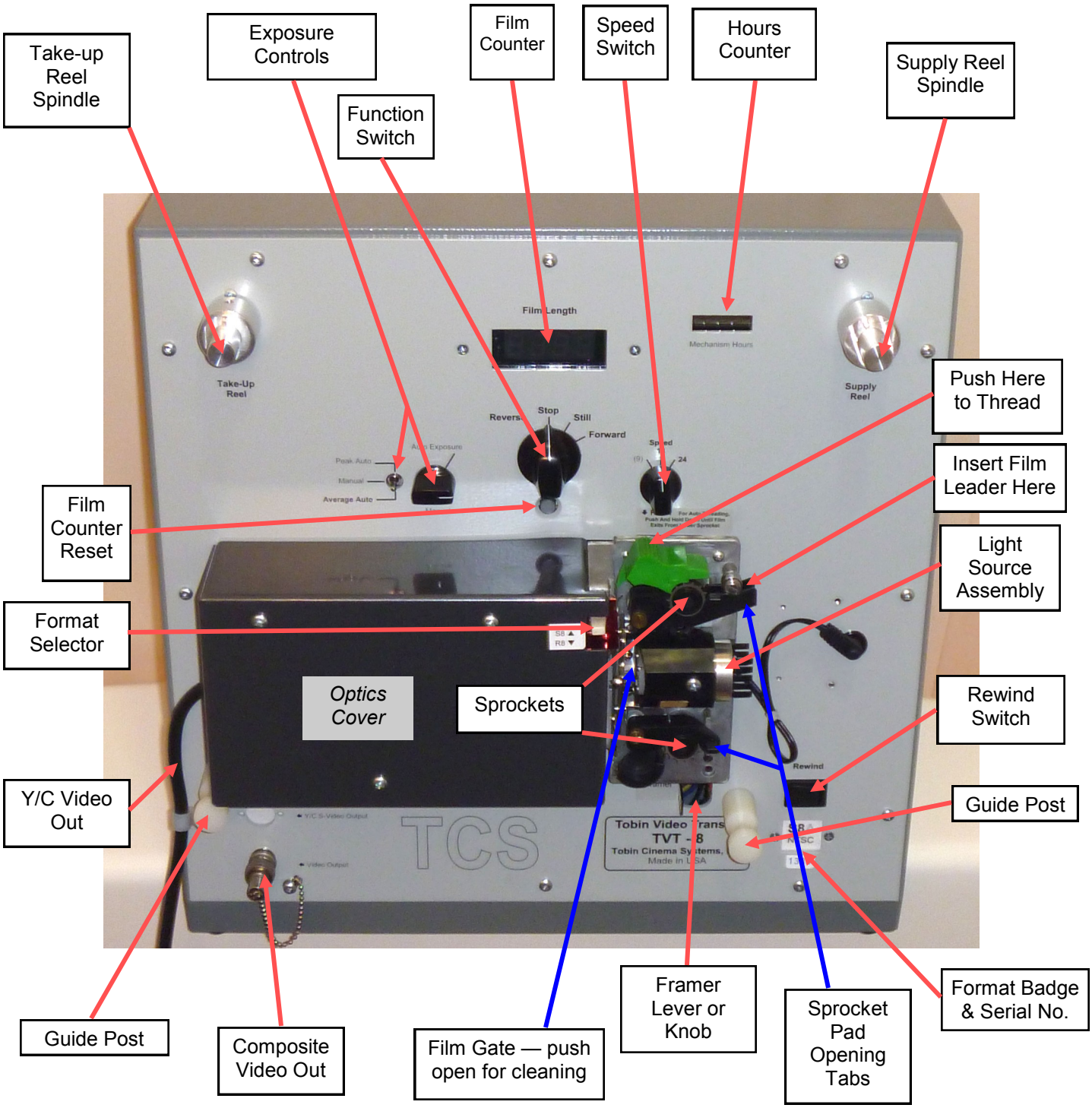
# Suggested Sources of Supplies

http://www.urbanskifilm.com

**View Inside Optics Cover**




*This is actually another model, but TVT-8A is similar.*




On rear cover (not shown): Power Inlet Jack, Power Switch

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