

Tobin Video Transfer Dual Format (Dual-8) True Speed Sprocketless Telecine

Cautionary Notes:

1. The three motors are electronically switched and circuit failure could cause them to run prematurely. If working near potentially moving parts, first turn off the power with the rear switch.
2. The light emitter should not be looked at directly as it is very bright. On True Speed models it pulsates, and a flashing light is known to trigger an epileptic fit in susceptible persons.



Basic Operation

See Page 7 for identification of parts. Turn on the power with the switch on the right rear of the TVT.

Switch the unit to “Still” and note that there are no hairs or lint visible in the picture on the underscanned video monitor. If there are any, swing open the film gate and brush or blow out the hairs. Switch back to “Stop” and close the film gate.

Check that the film format is correct for the present TVT-D8 machine setup:

- Your TVT-D8 is set for Super-8 film when the Claw lever is in the Super-8 S8 (upper) position and the 1/2" (12.7mm) supply reel spindle or adapter is installed.
- Your TVT-D8 is set for Regular 8mm film when the Claw lever is in the Regular-8 R8 (lower) position and the 5/16" (8mm) supply reel spindle is installed.



The film will not advance through the gate if the Claw setting is wrong. If the setup is wrong, change to the other TVT-D8 setup as explained below. There are optical and claw adjustments needed, see pages 3 and 4.

“NTSC” and “PAL” designations on the TVT badge in the lower right of the front panel show the video standard for which the model is made. NTSC is used in North America including the USA, PAL is used in Europe.

The TVT has easy automatic threading. This sprocketless design prevents the film damage that could otherwise occur if a bad splice sticks in the film gate and film sprockets continue to drag the film through. Threading is done as follows.

1. Place the full film reel on the Supply (right-hand) reel spindle. Ensure that the film leader has a gentle natural curl from being wound on the reel, and is cut straight across, in between perforations, with a very slight bevel on the unperforated edge. The film’s perforations should be towards you, with the end hanging on the right.
2. Start the TVT running forward.
3. Move the Film Threading Lever ① fully downwards in the large arc shown, and feed the beginning of the film leader between the two metal guide rollers ② until the rubber feed roller pulls film from the supply reel. (See Figure A at right.)
4. Allow about six inches (15 cm) of the film leader to enter the TVT, or until you hear the clicking of the pulldown claw engaging the film. This should

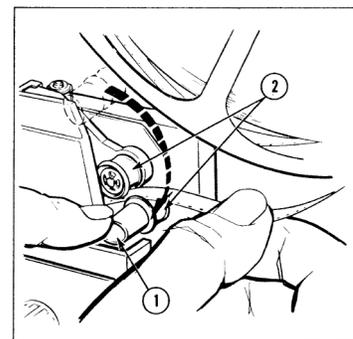


Figure A. Autoload Threading

- take about two seconds.
5. Then release the Film Threading Lever gently to its original position. The film will now naturally pass by the left side of the attached roller, to give additional vibration-absorbing action. NOTE: Failure to release the Lever as soon as the clicking is heard may cause a film jam.
 6. When the film leader emerges from the lower sprung film guide, lead it around the two guide rollers towards the Take-up (left-hand) spindle. Let the leader extend about a foot (30 cm) past the Take-up reel spindle.
 7. Stop the TVT. When the Take-up spindle stops turning, mount the take-up reel on it. Attach the leader to the hub of the take-up reel, and turn the reel clockwise a couple of turns.

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** knob until it is not seen. The film need not be running to make the adjustment, but ensure the film is in its rest position and not in the middle of a pulldown cycle. Note: The original Framing knob is no longer active for Framing owing to optical and mechanical changes. If it is set wrong however you will get a dark shadow at the top or bottom of the frame. Turning this knob a little will remove it.

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.” Push the “Reset” button to zero the footage counter. Start the video recorder. Switch the TVT to “Forward” and you will be recording the film on video.

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 rollers and gate, and turn the reel a couple of turns counter-clockwise. Switch the Rewind “On” and when the film is fully rewound turn the Rewind switch “Off” immediately. Do not stick your finger into the reel spokes or grab the edge of a plastic reel while it is spinning, as this may cause injury. Remove the supply reel after it stops, and you are now ready to transfer the next reel.

Speed Selection

In all cases the transfer speeds are crystal controlled and will give flickerless results, with no speed tweaking by the operator.

True Speed Running

The running speeds are the exactly correct 18 and 24 FPS (frames per second) that are standard for home movies. 18 FPS is used for most amateur film. 24 FPS has been used by folks with professional aspirations. If screen action looks slow at 18, switch to 24. Conversely, if you have the “Keystone Kops” effect at 24, switch to 18. An additional 9 FPS speed is provided for locating a particular spot in the film, but it has “travel ghost” and is not suitable for recording. The normal speeds are only synchronized when running Forward, so you will see travel ghost when running in Reverse.

Note that with some control panel versions, the switch position might actually be marked either .5x Normal and 1.5x, or else .5x Normal and Pro, however the speeds will actually be 9, 18 and 24 FPS.

Exposure Control

The left-hand switch selects either Peak Sensing Automatic, Averaging Automatic, or fully Manual. If the film cameraman was very careful with his exposure, the **Peak** Sensing will retain the mood of the film. However, if the film is poorly exposed and very dark and has bright elements such as the sun or a movie light showing, the Peak method will respond mostly to the bright areas and cause the rest of the picture to reproduce too dark. For run of the mill amateur footage, the **Averaging** exposure will be the best compromise and is **recommended** instead. You can also select fully **Manual** brightness setting with the variable knob, and this is suggested for unusually composed footage such as fireworks against a black sky. In all modes, the exposure is controlled by varying the brightness of the light emitter.

Note that the Automatic functions can generally react faster than you can yourself. Note also that the Manual brightness knob is still active in either of the Automatic modes, setting a minimum brightness floor, so the automatic functions will not over-react to flashbulbs going off and the like. This is known as “non-additive mixing” where the brighter setting of the two (either manual or automatic) overrides the other. If you are in an Auto mode with the manual knob turned up higher than the Auto would call for, and you rapidly turn down the

knob, it will take a while for the exposure to re-stabilize back up to the Auto level.

Color Control

The white balance can be controlled with a tiny switch on the back of the camera module. With the switch number 1 turned off, this enables continuous automatic white balance. With this switch turned on, this selects our factory-adjusted neutral white setting (with no color present in the video from a colorless film highlight.) Automatic is recommended for amateur footage that was shot with the wrong filter (white balance) setting, or where the film has faded or was improperly processed. Meticulously exposed film with high quality processing and proper storage can instead benefit from the preset white setting.

Film Format Changeover *See Page 8 for illustration*

1. Claw Change: First, swing the film gate open to avoid stressing the Claw while shifting it. Move the Claw lever all the way up to S8 to center it for super-8 film. Move the claw lever all the way down to R8 to center it for regular-8 film.

Note: the following step uses the 1/16" Allen hex key only if exchanging the reel spindle.

2. Reel Spindle Change: To exchange the supply reel spindle, loosen the setscrew a few turns, slide off the old reel spindle, slide on the new one, and tighten the setscrew. S8 film uses the 1/2" (12.7mm) spindle and R8 film reels have the 5/16" (8mm) size hole. (The "wrong" spindle can be installed to suit film that is wound on the wrong type non-standard reel.) Be sure that the reel spindle does go on so far that it rubs on the TVT panel, or this can cause excessive drag and poor film feeding, or jamming. The **Reel Spindle Adapter** instead slips on and off without tools. Some spindles may require a .050" Allen key instead, which will be furnished if needed.

3. Counter Change: Remove the 3 screws and the Optics Cover. Flip the toggle switch to S8 for counting super-8 film length (72 frames per foot.) Flip the toggle switch to R8 for counting regular-8 film length (80 frames per foot.)

Note: the following steps use the 7/64" Allen hex driver.

4. Magnification Change:

For Current 30mm Focal Length 15mm (19/32") Diameter Lens: Loosen the Lens Lock Screw and follow the steps below without touching the glass elements. The lens is symmetrical so it does not need to be reversed when changing formats.

Adjust so the left end of the lens is sticking out 7/32" (5.5mm) to the left of the mount, for super-8.

Adjust so the left end is 1/16" (1.5mm) past the left side of the mount, for regular-8.

Tighten the Lens Lock Screw. Make it tight but do not over-tighten as this could damage the lens.

The magnification may need to be changed to accommodate variations in film camera aperture size, film shrinkage and the like. (Moving the lens to the right will further magnify the film (zoom in); moving it left will reduce the size (zoom out).)

Note: the following steps use the 7/64" hex wrench, supplied. Previous models may instead need a 1/4" wrench for the centering change (procure locally.)

5. Centering Change: Thread the new film, running to a few feet past the end of the head leader but not near a splice. Pick a spot with lots of fine detail or that is grainy, for easier focusing (below). Turn the Manual Advance knob so the film advances once and then is stationary. Loosen the two Centering Lock Screws on the camera module by 1/8 of a turn, and slide the camera module in or out on the elongated holes to center the image. (Do not disturb the 4 small screws that mount the camera module to the black metal plate. The camera is static sensitive so it is best to not touch it.) Tighten the Centering Lock Screws.

6. Framing Adjustment: Adjust the Framer with the knob as usual.

Note: the following step also uses the Focus Jig accessory.

7. Focus Adjustment. Remove the two lower screws that hold the panel's left edge in place. Install the focus jig plate with the counterbored holes towards you. Re-install and tighten the two screws. Slide the focus adjust screw through from the left and screw it in to the left side of the camera mount. NOTE: Do not short out or physically

damage the tiny components on the exposed camera circuit board. Some of the parts are about the size of a grain of sand. The camera is static sensitive so it is best to not touch it.

Loosen the two Focus Lock screws about 1/8 of a turn. While pushing in on the end of the focus adjust screw, turn the thumbnut Focus Adjust for optimum picture sharpness. Tighten the two Focus Lock screws while still pushing on the end of the focus adjust screw. Watch the picture while tightening to ensure the focus does not shift from optimum.

Check and re-adjust if necessary the Magnification, Centering and Framing settings as changing the focus may have altered them slightly.

When done, remove the focus jig, and replace the optics cover and the 5 screws. Be careful to not pinch the Emitter wires between the optics cover and the mounting standoffs. Note that the Panel is attached to the case with sheet metal (coarse pitch) screws while the Optics Cover is attached with machine (fine pitch) screws.

Installation

Connect the TVT 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 one or two video output jacks on the front of the machine. Both can be used at the same time if desired:

- The preferred S-Video (“Separate”-video) Y/C output may give a somewhat 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. This connection is with the Mini-DIN 4-pin cable.

- The conventional video output is a professional BNC type, so use the BNC cable to connect to commercial video equipment. Use the BNC to RCA phono type cable or adapter, to connect to the Yellow input jack on consumer equipment.

Plug the TVT into a source of 120 volts AC (alternating current) for NTSC video models. Plug the TVT into a source of 240 volts AC (alternating current) for PAL video models. For safety the third wire should be grounded (earthed.) Turning on the unit will cause the footage counter to light up, and for video to be output. Do not plug 120 volt units into 240 volts or this can cause supply reel motor overheating and risk of fire in Reverse and Rewind modes. 240 volt units will not give satisfactory reel torque in Reverse and Rewind when powered by 120 volts.

Monitoring

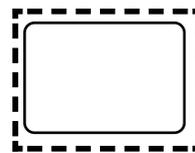
A color video monitor should be used to help you best oversee the transfer operation. We recommend that the picture monitor be connected to the output of the recorder, so the tape or disc playback can be spot-checked for quality. We also suggest the use of an “Underscan Monitor” which enables the entire 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 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 gate hairs although it is less convenient.

Some consumer flat-panel TV sets are now being made with Native Mode (Toshiba’s name for it) or



Conventional TV
or Monitor Cuts
Off Picture



Underscanned
Monitor Shows
All The Video So
No Surprises

equivalent, and show the entire video signal without overscanning and losing part of the picture. These can be used in place of an Underscan monitor.

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, or 8 small 50' rolls of super-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 (start) 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 winds up, or else the film may dry with "shoreline" marks on it. You can wind quite fast if not using an excessive amount of fluid.

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 current Ektachrome 64T and 100D film 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.

Other Information

The TVT True Speed has a "Mechanism Hours" timer to measure how long the main drive motor and the mechanism have been running. This only advances in the Forward and Reverse modes. The count is remembered without need for batteries when the unit is turned off. A time interval for servicing has not yet been established.

Routine service:

- After long use, the Claw Pivot and cams may need greasing or maintenance. Instructions for this are posted in the Instruction Manual section of the website, or will be furnished on request.

Service adjustments:

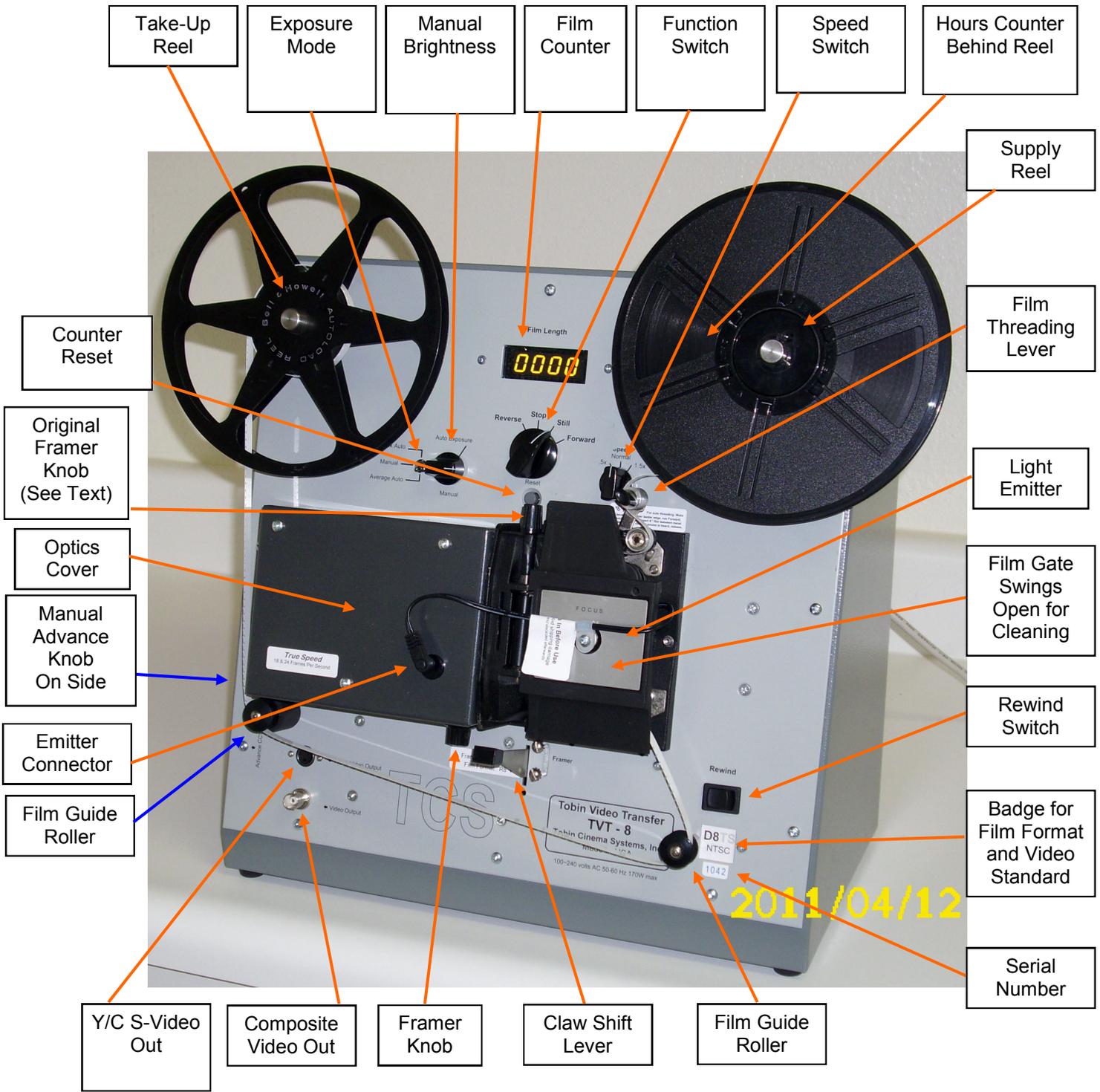
- After long use, the white balance of the LED and camera module could change, which is not important if using the AWB (automatic white balance). To reset the white balance when the AWB is turned off, turn to “Still” without film and observe the output signal with an oscilloscope or waveform monitor. Adjust the R and B (red and blue) pots in the Y/C camera module, for minimum chroma carrier, preferably from the S-video “C” output. Be very careful with the tiny pots as they are easily damaged or torn loose from the circuit board.
- In case of replacing the timing belt, it will be necessary to reset the Shutter Phase in order to not have blurring or travel ghost. Shutter phase is selected with the jumpers on the circuit board.
- In case of odd symptoms, first check the output voltage of the switching power supply modules. These should be 12 and 24 volts DC, $\pm 5\%$. The voltage should change little no matter what settings are made to the operating controls. The 24 volt supply may sag momentarily while the drive motor starts 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.

Suggested Sources of Supplies

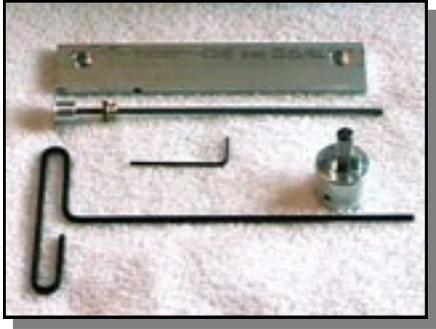
<http://www.urbanskifilm.com>

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<http://www.urbanskifilm.com>



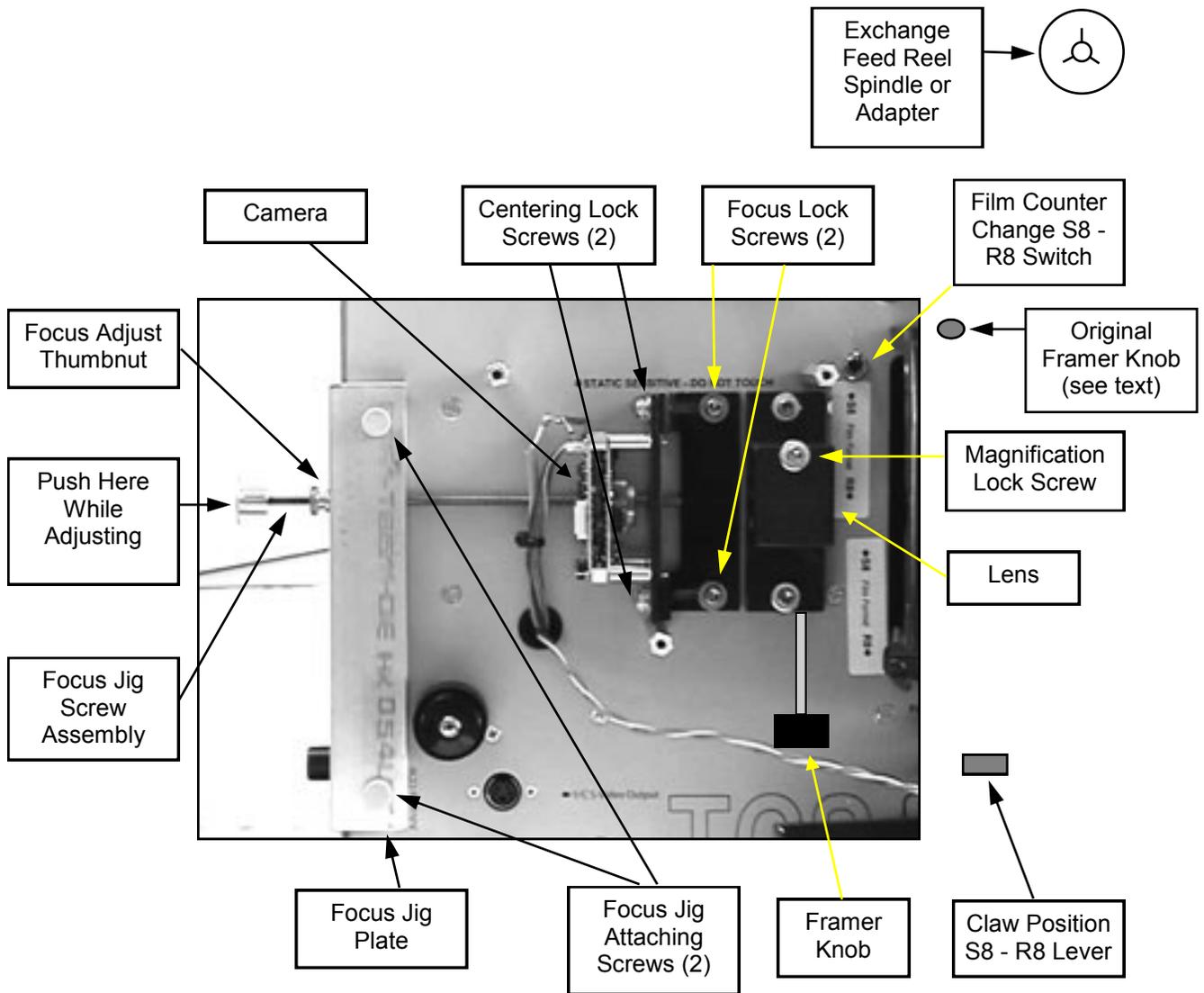
On rear: Power inlet connector, power switch, line voltage rating sticker.



TVT-D8 Parts Kit:

- Focus Jig Plate
- Focus Adjust Screw assembly
- 1/16" Hex Key*
- Alternate Reel Spindle*
- 7/64" Hex Key

*Omitted in case of reel spindle adapter.
Not included: 1/4" Wrench



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