

TXM-9 Crystal Control for Arri 16-BL Universal Motor

1. Installation

NOTE: For correct running speeds, your BL must be equipped with the "24 fps" (at 3000 rpm) gear set. Otherwise when you select 24 fps crystal speed the camera will run at 25 fps and the other speeds will also be 4.1667% fast.

A. Locate the four metric screws attaching the bloop panel to the rear of the Arriflex 16-BL camera. Using a flat-blade screwdriver, unscrew them about 1/4" until they are free.

B. Grasping two screws that are diagonally opposite, pull straight out to remove the panel.

C. By hand, remove all four screws from the panel. Save the screws as they will be used to install the TXM-9. Put the bloop panel away in a safe place in the event you may someday sell the 16-BL without the crystal unit.

NOTE: The TCS TXM-9 uses static-sensitive CMOS circuitry. To prevent damage to the TXM-9 in dry weather, when your body can accumulate thousands of volts of static charge, use the procedure following:

D. Sit down at your work area. Touch a grounded object such as a metal water pipe, or the metal frame of an electrical appliance that is connected to a grounded outlet with a 3-wire cord, to drain off static.

E. Unwrap the aluminum foil from the TXM-9.

F. Manually insert the four metric screws in the TXM-9 mounting holes.

G. Connect the 9-pin Amphenol/Bendix connector by lining up the flat tang with the slot, at the same time as lining up the bayonet pins with the slots in the receptacle.

Push the plug home while rotating the outer shell clockwise until it clicks.

NOTE: for optimum performance the starting power needed by your individual motor to reach crystal speed as quickly as possible without overshoot is set by the following procedure. If you do not have access to a high resistance DC voltmeter (10-11 M Ω) or are not sure how to proceed, the factory compromise setting may be close enough. You may skip to step "J."

H. Make sure that no connections are shorted to the camera frame or other metal.

Attach the 4-pin XLR plug to the TXM-9 and connect the other end to 12 V DC.

I. Make the starting-power adjustment as follows:

a. Obtain a DVM or VTVM with a high input resistance. Set it to read DC voltage of about 1 to 3 V.

b. Start the camera running at whatever crystal speed will be used most frequently.

c. Measure the DC voltage from point "S" on the circuit board to ground. (There are eight jumper wires connecting the two circuit boards. Five of these jumpers are grouped together. Point "S" is the bottom one of the group of five.) Take note of the voltage reading.

d. Connect the DC voltmeter to the wiper of the 10k Ω trimmer (may be 20k Ω on some units) near the sync alarm LED (light emitting diode) on the board closest to the connectors, and ground. Adjust this trimmer for the same DC voltage that was noted in step "c." (The resistance value of this trimmer may be coded "103" or "203.")

e. Turn off the camera, disconnect DC power.

J. Attach the TXM-9 to the camera body with the four metric screws.

2. Operation

A. For crystal controlled filming, select the desired speed with the switch. Choices are 23.976, 24, 25, 29.97 and 30 fps (frames per second.)

B. For variable speeds, first set the crystal switch to the bottom position, with the three dots leading to the variable speed knob. The variable range can be set to any speed between 18 and 50 fps. Approximate calibrations surround the knob; read the actual speed from the camera tachometer. Note that double-system sound is not possible when using the variable range.

C. In either the crystal or variable mode, the red LED sync alarm will light if the camera is not running at the selected speed. This could result from low battery voltage, film jam, or other problem. If using a speed that is greatly different from that last used, the TXM-9 may take a few seconds to stabilize.

D. Either 24, 25 or 30 fps is normal depending on your part of the world and the technique used. For filming from most computer monitors, try around 18 and 36 fps. For undercranking use around 20 fps. For slow motion use around 50 fps. For filming from a TV monitor, use 29.97 if NTSC or 25 if PAL or SECAM.

E. If filming for NTSC video transfer, with double-system audio on digital tape or other medium that cannot be speed corrected, you probably should film at 23.976 or 29.97 fps so the rate corresponds with the actual speed of the Rank or Bosch film scanner.

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Additional Information Added 10-97

The TXM-9 was offered in other versions:

The TXM-9 was only for 24:50 USA gear sets. On special order, we also offered the **TXM-9/2550** which was for 25:50 European gears, the **TXM-9/2460** which was for 24:60 USA synchronous or governor motor gear sets but installed on the Universal motor, and the **TXM-9/F** which had a Fischer socket for external speed control, usable only with the 24:50 gear set, and most units lacked a frame pulse output.

We also made specially butchered versions to work with highly modified governor (reversing) motors with various gear ratios. Any crystal units designed to be used only with a particular serial number of motor were identified as such on the inside of the metal panel. Some, used with cameras having bad wiring, connected directly to the motor as well as through the 165 series plug. There may even have been a couple designed to be used with connectors other than the normal 165 plug, owing to the camera having been butchered by somebody unknown.

There was also an unrelated series, **TXM-9S**, which shared the circuit board but with different parts installed, mounted in a rectangular box, used with modified Arri 35mm 2A-2B-2C and 16-S and 16-M cameras. We have been unable to find any existing computer files on these.

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