

Installing the TCS “CHT” Motor in your Arri 16-BL

1. Remove the original motor.

Unscrew the four screws attaching the motor shroud. Lift it off.

Open the film compartment. Unscrew the three screws securing the motor until they are free to move in and out. Grasp the motor and pull it straight out. Do not damage the plastic gear as it normally will be re-used.

Remove the gear by unscrewing the retaining screw in the end of the shaft. Pull the gear off. Replace the screw in the shaft. Set the old motor aside.

2. Install the new CHT motor.

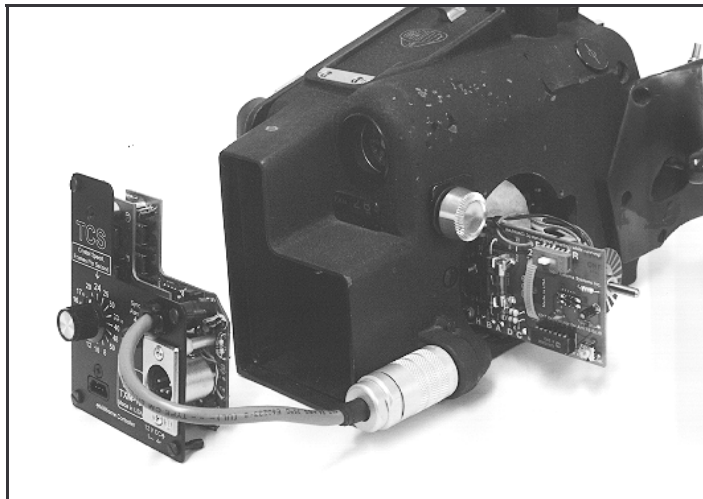
While unpacking and handling the new motor, be careful to not damage the optical encoder disc on the rear of the motor.

If you are installing a new gear set also, follow Part 3 below before installing the new motor.

Unscrew the retaining screw in the end of the shaft. Push the gear on with the gear teeth towards you. Turn and push until the slot engages with the pin in the shaft. Replace the screw in the motor shaft.

Push the motor into place with the circuit board vertical, and the connecting wires on the right, as seen from the motor side of the camera. Rotate the motor slightly back and forth while trying to engage one of the attaching screws, until the screw starts in the hole. Tighten all three screws.

Unfortunately the motor connector is no longer manufactured, so instead we have provided separate pins that are pushed into place one at a time. Each wire is color coded. Push each pin into the connector inside the body, as follows:



Red wire plugs into hole **A**.

Green wire to hole **B**.

Blue wire to hole **C**.

White wire to hole **D**.

Black wire to hole **H**.

(Other holes, E and F, are not used.)

If you lose these instructions they are repeated in abbreviated form on the circuit board.

Replace the motor shroud and re-tighten the four attaching screws.

3. If you need to replace the gear set.

NOTE: the TCS gears will **not** mesh with **any** of the original gears. If a new gear set is furnished, replace **both** the motor and camera gears. Change the small motor gear as in Part 2 above.

Remove the motor shroud and motor as in Part 2 above. Place the camera on cushions with the film compartment up. Open the film compartment. Remove the clear plastic gear cover by removing two screws.

Remove the existing camera gear assembly, by removing the center retaining screw. If the screw is very tight, and the clutch slips while holding the outer part of the gear, you may have to carefully immobilize the mechanism itself, inside the body. Set the gear assembly aside.

The new large gear is in two pieces. Place the outer portion in position with the dimpled side away from you, so the dimples engage with the four spring-loaded clutch balls in the camera.

Place the inner portion in position with the screw-recess side towards you. Engage the hole or slot with the anti-turn raised dimple or pin in the camera.

Replace the retaining screw and tighten as much as you can. If the clutch has slipped so the balls are not engaged with the dimples, immobilize the toothed part of the gear with a non-damaging rubber object and turn the screw clockwise until the balls click into place. This will prevent the clutch from slipping at an inopportune time while filming and spoiling a few frames of film.

Replace the gear cover, motor, and motor shroud.

4. Operation.

Note: the CHT motor can **only** be used with the TCS TXM-15 control or equivalent. It has **no** speeds of its own and will not operate otherwise.

The motor is used in the usual way. Only one operator control is provided on the board, the direction switch. Do not disturb the service adjustment which is for photocell sensitivity for the optical encoder disc.

The Forward-Reverse switch controls the direction of film travel. "F" to the left is Forward and "R" to the right is Reverse. Forward is used for normal filming. The switch can be changed without removing the motor shroud, by first unscrewing with your fingers the knurled plastic window on the back of the motor shroud.

WARNING! Do not change direction while the camera is running. This places a great strain on the camera as well as making a momentary electrical short circuit that could blow the fuse and cause damage to the circuit.

If the fuse opens it is replaced by another 5 Amp 32 (or more) Volt 5x20 mm fuse.

The chopper disc is normally 24 teeth and generates 60 pulses per frame with the new TCS, or the original governor or AC synchronous, 24:60 gear set; 50 pulses per frame with the normal BLE/EMP U.S. 24:50 gear set; and 48 pulses per frame with the normal European 25:50 gear set. Refer to the TXM-15 instructions for its proper internal switch settings. Incorrect internal switch settings will give incorrect running speeds.

Tobin Cinema Systems, Inc.