Replace an M Vision or T Vision Board

Prior to commencing the removal of the defective camera assembly board you need to remove the power input to the lane control box either a VDB, or the RDB, or the 3 QT. Now you can start the removal of the defective board.

The M vision or T vision board camera assemblies all have the four sensors and camera connections installed into the main board.

1. Remove the start sensor from JP4 terminal ports 1, 2, and 3. Fig. 1
2. On the even lane side of the board remove the start sensor from JP3 terminal strip ports 1, 2, and 3 of the camera assembly board. Remove the camera connection cable from the JP3 Terminal strip ports 5, 6, 7, and 8. Fig. 1
3. Continue now to remove the two stop sensor cables and LCOM cable connection from ports 1 through 10 of the JP2 terminal connection strip. Fig. 1

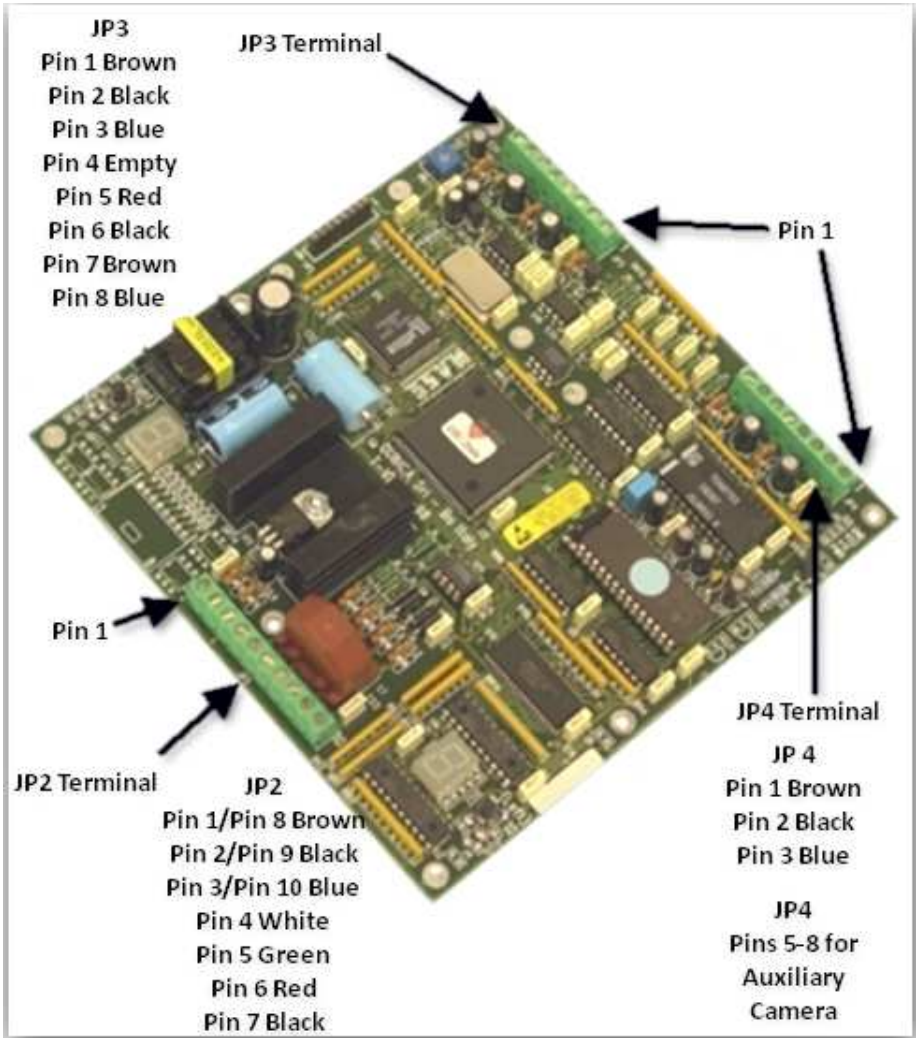

Fig. 1

4. After you have removed the cable connections from terminal strip JP2, ports one through ten, proceed to remove the Phillips head screws that hold the T vision or M vision board to the base of the camera assembly. Location and quantity of hold down screws varies with the different versions of the T vision boards that have been utilized throughout the life of the camera assembly. After all the Phillips head screws have been removed, remove the camera board from the base.
5. Pictured are different varieties of T vision boards: the T Vision 98 (Fig. 2), the T Vision/B (Fig. 3), the T Vision/4 (Fig. 4) as well as an M vision board, which is a variety of the T vision 98 board and can readily be identified by a label on an E-prom on the board (Fig. 5).

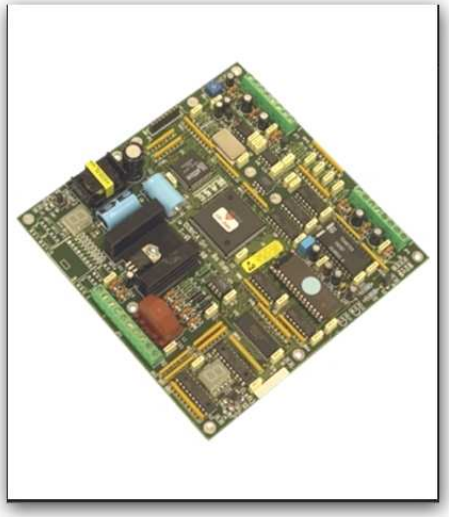

Fig. 2

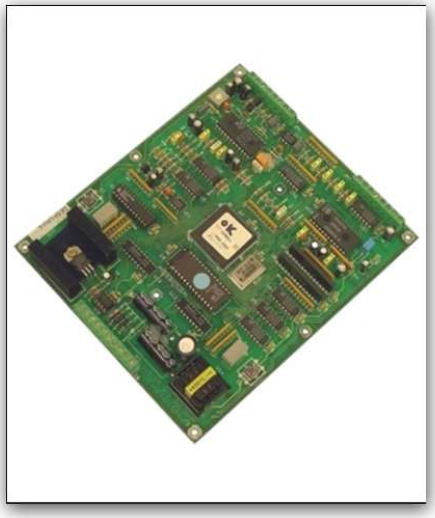

Fig. 3

Fig. 4

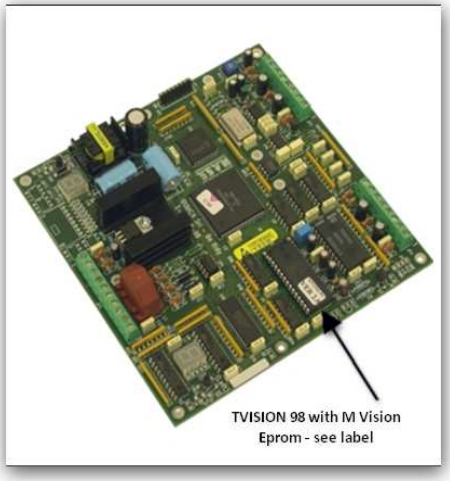

Fig. 5

Align the replacement board onto the posts of the camera base and start by hand, the Phillips head screws.

1. Tighten the hold down screws; do not over tighten the screws as this could cause damage to the board by crushing internal traces in the board.
2. Before you start inserting wires into the terminal strip ports, make sure to open the receiving ports of the terminals to properly capture each of the individual wires in the various cables being attached. When ready to attach the camera cable to the board refer to the pin-out for the camera, printed on the back of the camera body or in the above picture. Fig. 1
3. Only the original CCD camera (Fig. 6) does not have the pin out printed on the back of the camera body.

Fig. 6

4. Continue to connect the remaining sensor cables and LCOM cable into the JP2 terminal, remember sensors are Brown, Black, and Blue wires into terminal ports 1, 2, and 3 or in JP2

terminal into ports 1,2,3,8, 9, and 10. Earlier models of T vision boards use JP3 terminal for these connections.

5. Restore power to the lane control box and open the lane pair for scoring.
6. On the camera board press the button labeled DX (Fig.7); it is on the even lane side adjacent to the LED. Observe the displayed numerical value on the LED (Fig. 8). Ideal value is between 4 and 7, if necessary adjust value by opening or closing the aperture of the camera lens.

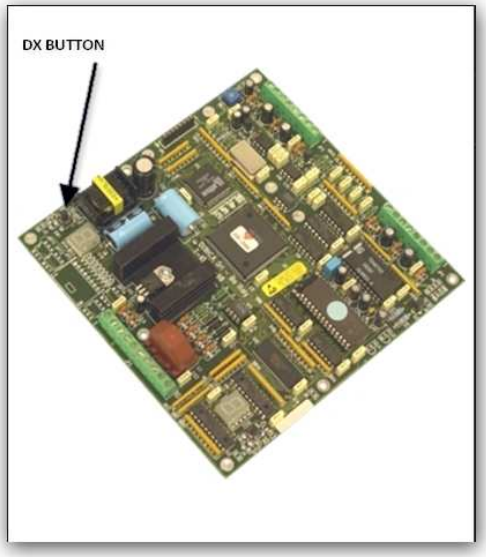

Fig. 7

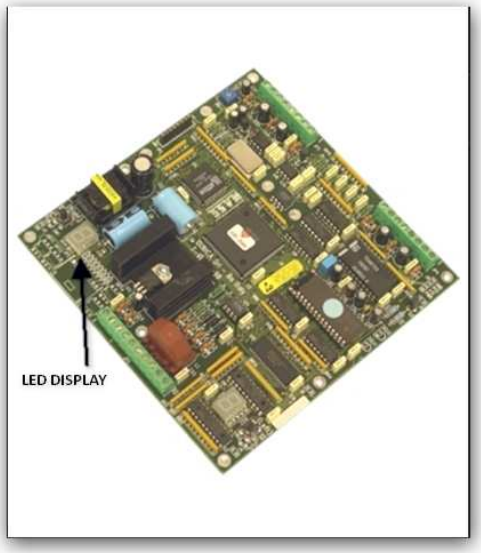

Fig. 8

7. Allow a short period of time between adjustments to allow the board to obtain the new value and display the new value on the LED. When the desired value is obtained, lock down the camera aperture to prevent unwanted movement of the lens dial by either use of the thumb screws, if available, or the use of electrical tape or hot glue.

When satisfied proceed to the Front Desk computer.

1. Sign in to Conqueror program with sufficient privileges to perform setup functions. Fig. 9

Fig. 9

2. At the Front Desk computer in Conqueror navigate SET UP – TECHNICAL SETUP – PINSETTER AND CAMERA. Fig. 10

Fig. 10

3. Select one of the lanes in the pair where the camera board was replaced and select the OK button at the bottom right. Fig. 11

Fig. 11

4. Select the tab labeled Camera parameters. Fig. 12

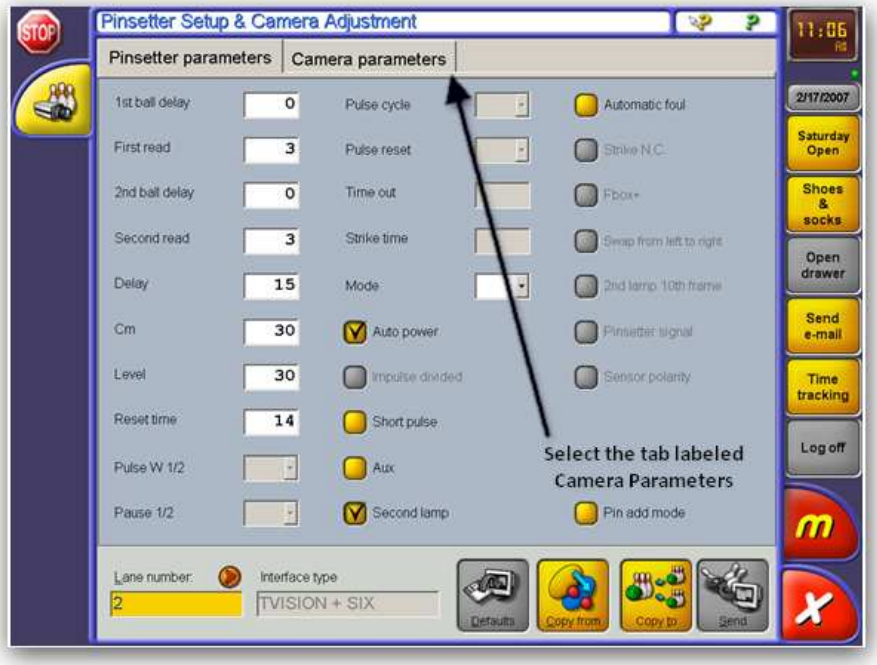

Fig. 12

5. In the page that opened select the button labeled IMAGE. The front desk is now requesting and receiving the image from the camera of that lane pair. This may take a few moments to complete. Fig. 13

Fig. 13

6. Observe the position of the reference dots in the upper portion of each of the pins in the image. If the dots are all centered in the upper portion of the pins – the head section, then no other step is necessary. Fig. 14

Fig. 14

7. If the Pins are not in their correct position select the button labeled AUTO in the lower left hand side of the page to move the dots into their correct position. Fig 15
8. After the dots have moved to their correct position apply the SEND button to send the information to the lane control box. Fig. 15
9. If the Auto button is grayed out check the aim of the camera to ensure the picture of both lanes is center on the page. Fig. 15

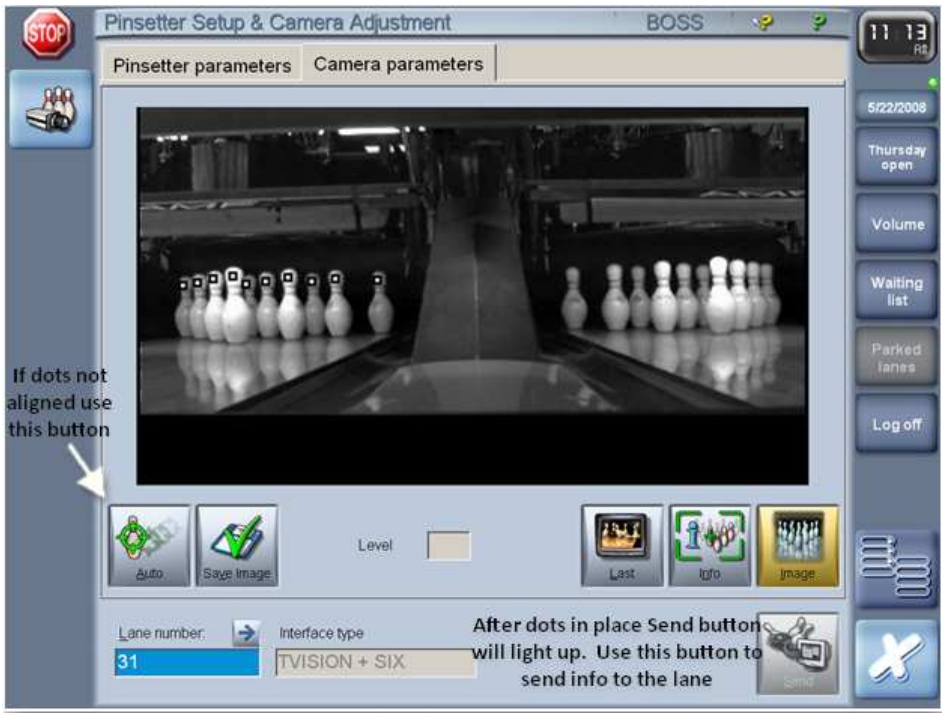

Fig. 15

10. After completing the first lane of the lane pair repeat the procedure for the other lane of the lane pair by first selecting the arrow above the lane number box, then selecting the other lane of the pair in the window that opens. Fig. 16 and 17

Fig. 16

11. Select okay to return to the camera parameters page. Fig. 17

Fig. 17

12. Select the button labeled image. When the image loads select the AUTO button, if the dots need to be adjusted, followed by the SEND button after the dots have been adjusted into their correct position. Fig. 13 and 15

Throw a few frames to test the lane for correctness of score and proper pinsetter operation. If no issues occur you are finished with replacing the T vision or M Vision assembly board.