BARCO

BARCO Projection Systems

SECTION R

service sheet

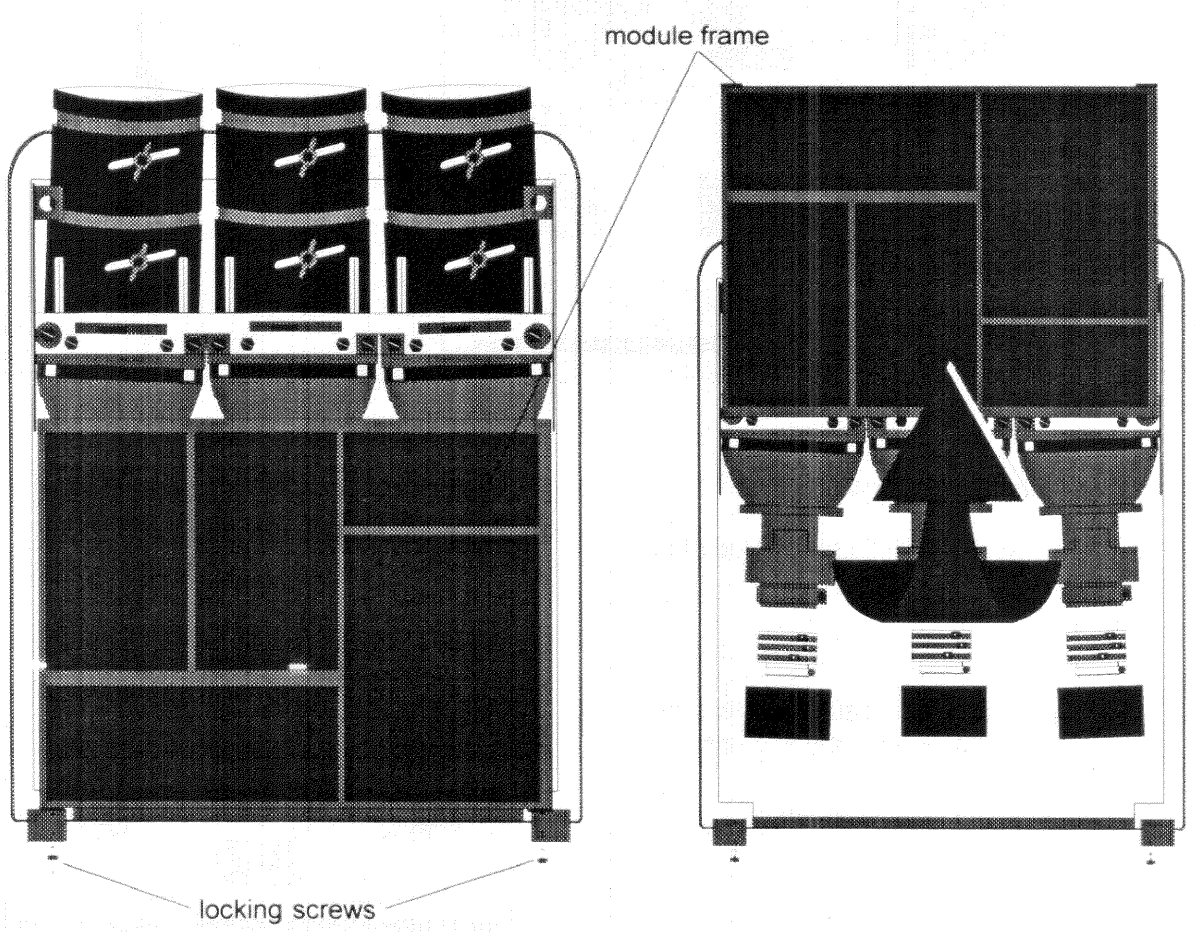
WARNING: CRT HANDLING

The picture tube encloses a high vacuum and care must be taken not to bump or to scratch the picture tube as this may cause the tube to implode resulting in personal injury and property damage. Shatterproof goggles must always be worn by individuals while handling the CRT or installing it in the projector. Do not handle the CRT by the neck.

WARNING
TURN OFF THE PROJECTOR AND UNPLUG THE POWER CORD BEFORE PROCEEDING TO THE REPLACEMENT OF A PICTURE TUBE

I. Removing and disassembling the defective picture tube.

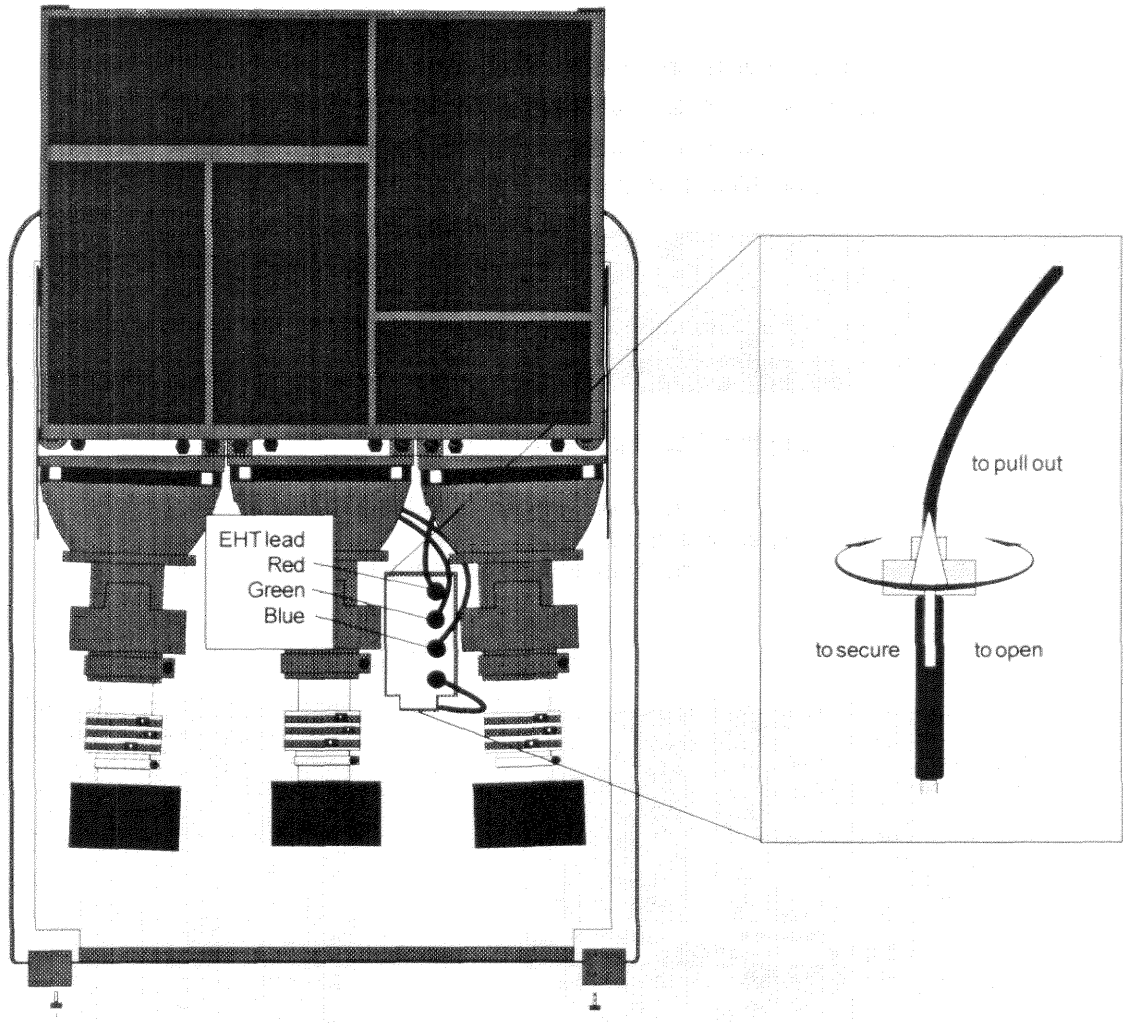
1. Remove the top cover of the projector (refer to the added installation manual)
2. Loosen the two locking screws of the module frame.
3. Open the module frame (turning it upwards towards the front of the projector).



Electrical disconnection

4. EHT lead disconnection

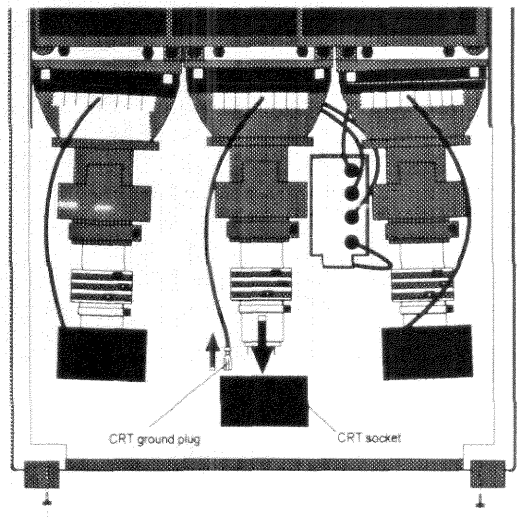
Pull out the EHT lead of the defective picture tube from the EHT splitter.



5. CRT module removal

Disconnect the CRT ground plug of the defective picture tube.

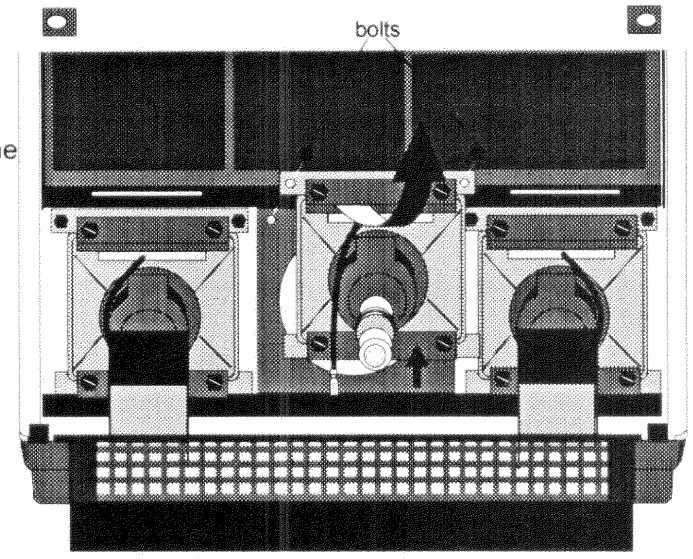
Carefully pull the module back to slide the CRT socket off of the end of the CRT.



CRT unit removal

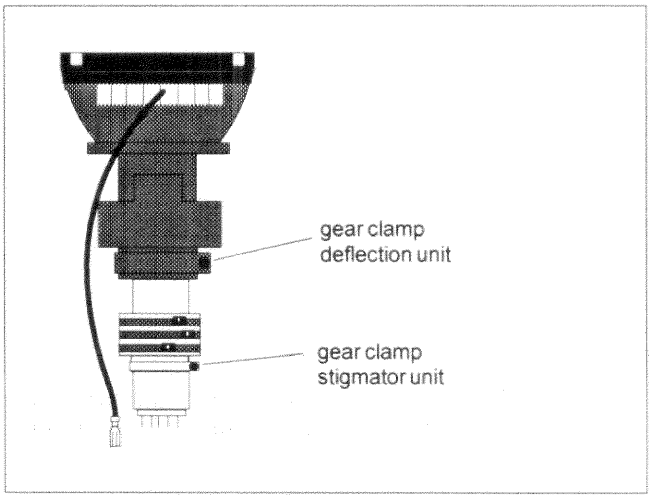
6. Remove the two bolts, holding the CRT block to the mechanical main frame.

   Pull upwards the CRT unit, lower side of the CRT unit clips in the mechanical main frame, to remove.



Removing the deflection unit and the stigmator magnets

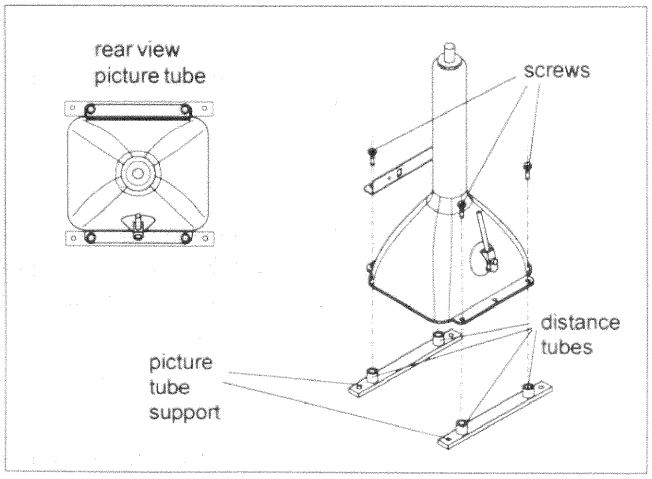
- loosen the gear clamp of the stigmator magnets unit.
- loosen the gear clamp of the deflection unit.
- Hold the CRT unit vertically and slide both units off of the end of the CRT.



Picture tube disassembly

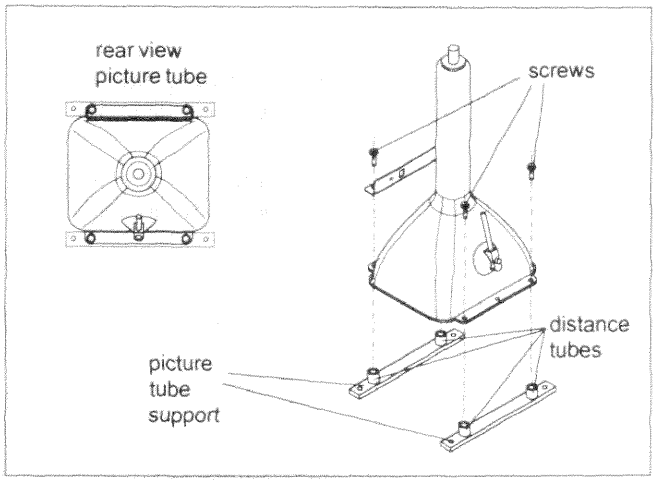
7. Removing picture tube support

   Remove the four screws, holding the picture tube supports to the CRT housing.
   Remove supports, distance tubes and CRT ground unit from defective picture tube.
   (To be remounted on the new picture tube)

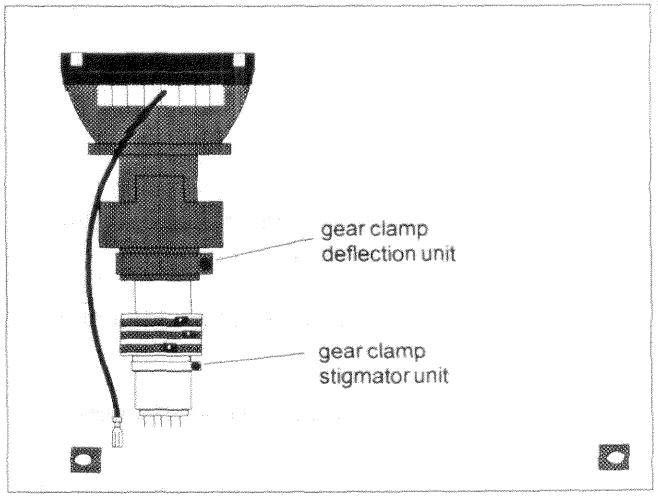


II. Placement of the new picture tube.

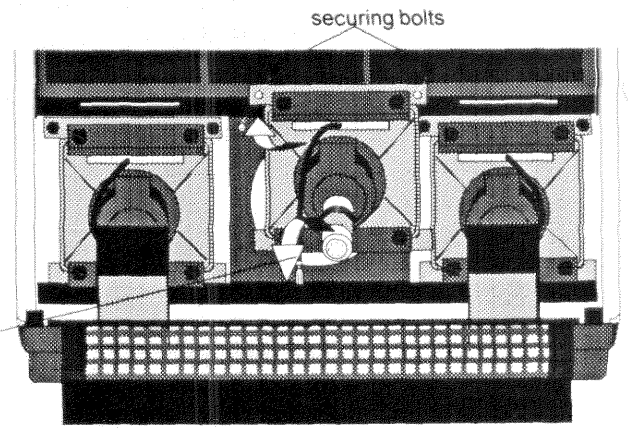
- Mount the picture tube support and the CRT ground unit on the new picture tube .



- Remount the two units, stigmator and deflection yoke, on the picture tube neck and secure the respective gear clamp.



- Place the picture tube unit on its place in the mechanical main frame and secure the position with the two bolts.



- Reinstall the electrical connections:
  - Slide the CRT Socket module on the picture tube
  - Plug in the CRT ground connector on the CRT socket
  - Plug in the EHT lead on the EHT splitter and lock the connector.

Proceed to the alignment of the picture tube.

III. Picture tube alignment

Introduction

Before starting the alignment of the new picture tube, the projector must warm up for at least 15 minutes at a medium brightness and contrast.

If a set of three tubes must be replaced, it is advisable to start with the replacement of two tubes first, the red and blue, and using the green as a reference.

Proceed then with the replacement of the green tube, using now one of the other colors tubes as a reference.

A. Replacement of a complete set of three tubes

Apply an external crosshatch pattern at 15 kHz or use the internal crosshatch.

Align the optical and electrical focus of the tube.

Rotate the deflection yoke until the horizontal lines of the crosshatch are levelled on the screen.

Tighten now carefully the screw of the gear clamp of the deflection yoke.

Center the picture on the CRT faceplate (refer to explanation 'raster centering').

Note: alignment of the stigmators will change again its position, if so, realign raster centering.

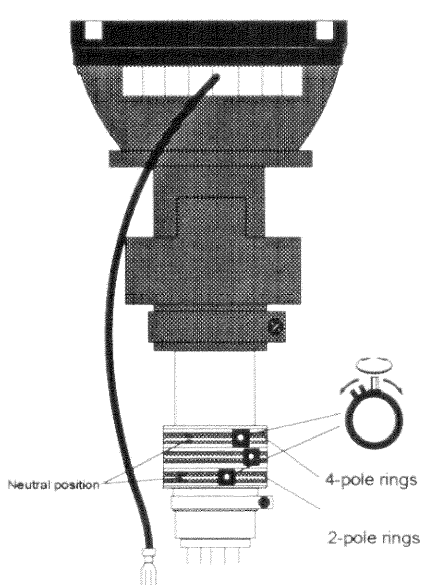
B. Replacement of one or two tubes

In such case, the remaining tube can be used as a reference for centering and positioning of the new tubes.

C. Adjustments applicable to the three tubes

Preparation

- proceed to quick optical lens focusing (refer to the installation manual of the projector).
- adjust the 2-pole and 4-pole magnetic rings on the CRT neck in their neutral position (see illustration on next page).
- select a source that will generate a field of small dots and crosshairs.



Adjustment of the stigmators (4-pole magnet ring closest to the deflection yoke)

- lower the brightness and increase the contrast.

- overdrive the midpoint focus by adjusting the lens focusing for the respective CRT.

- adjust the four pole rings until the defocused dots are circular.

- realign the electrical and optical focus.

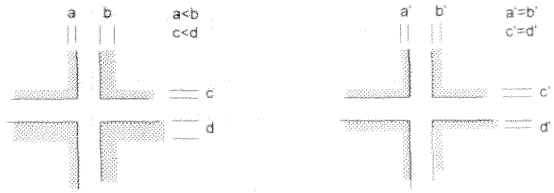
- re-position the raster as described earlier.

- due to mutual influence between the stigmators, focus and centering, it is advised to repeat above a couple of times.

Adjustment of the 2-pole magnets (the rings closest to the CRT socket)

- underdrive the electronic focus by adjusting the left arrow key of the RCU for the respective CRT.

- adjust the 2-pole magnets rings by rotating one or both up to a point where the 'shading' of both sides of the vertical and horizontal lines is equal (see figure).



- realign the electrical and optical focus.

- repeat the alignment of the stigmators if necessary, as both adjustments (stigmator and 2-pole magnets) influence each other.

Re-alignment of the image width coil(s)

- decrease the contrast and increase the brightness to reveal the background raster.

- refer to sheet 'Deflection module 76 2201' in this manual for the alignment of the image width coils.

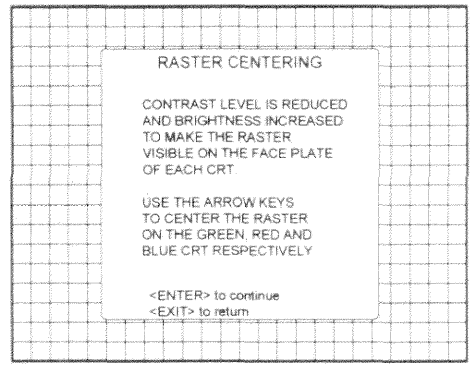
Note:

When only one tube has been replaced, you can use the image width of one of the other tubes as a reference, and obviously limit the adjustment to the core of the corresponding replaced tube.

D. Raster centering

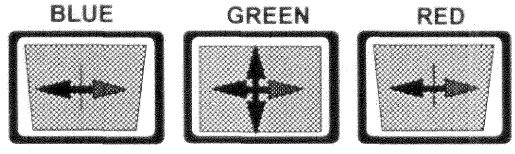
The raster must be centered on the CRT screen surface of each tube, therefore, it is necessary to look into the lenses.

Raster centering controls (refer to installation manual):



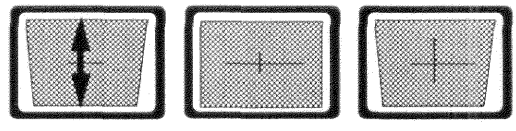
Picture movement when adjusting the arrow keys to center the **GREEN RASTER**

NOTICE: the RED and Blue raster are tracked with the GREEN raster horizontally.



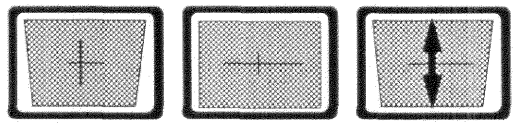
To center the **RED raster VERTICALLY,** press **"ENTER"**

Center the raster vertically, using the arrow keys of the RCU 'up' and 'down'



To center the **BLUE raster VERTICALLY,** press **"ENTER"**

Center the raster vertically, using the arrow keys of the RCU 'up' and 'down'



Additional HORIZONTAL corrections for the RED and BLUE raster after picture tube replacement only.

(Two multiturn potentiometers are provided on the module 'Focusing+Shift 76 2204')