



BARCO Projection Systems

SECTION **Y**

service sheet

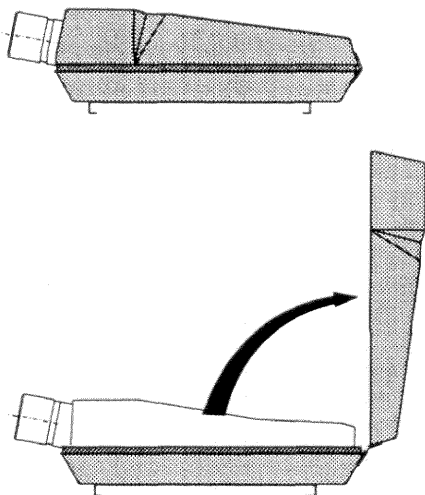
Access to modules

WARNING: MAKE SURE THAT THE PROJECTOR IS SWITCHED OFF AND THE POWER CORD IS DISCONNECTED

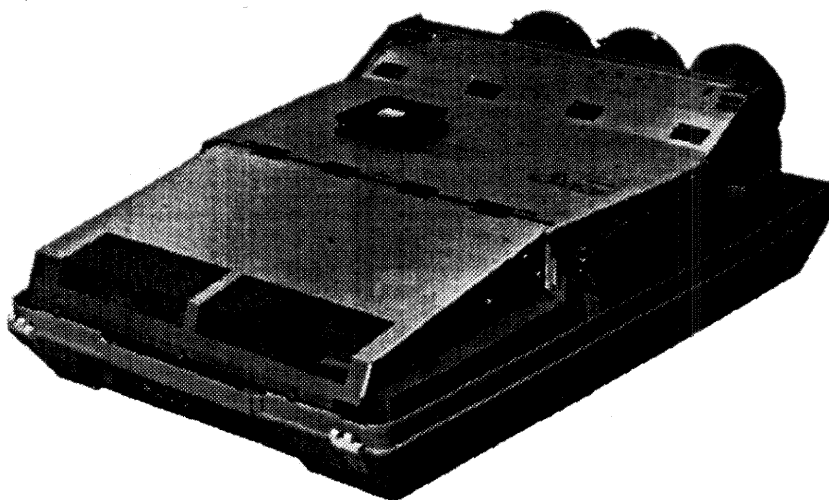
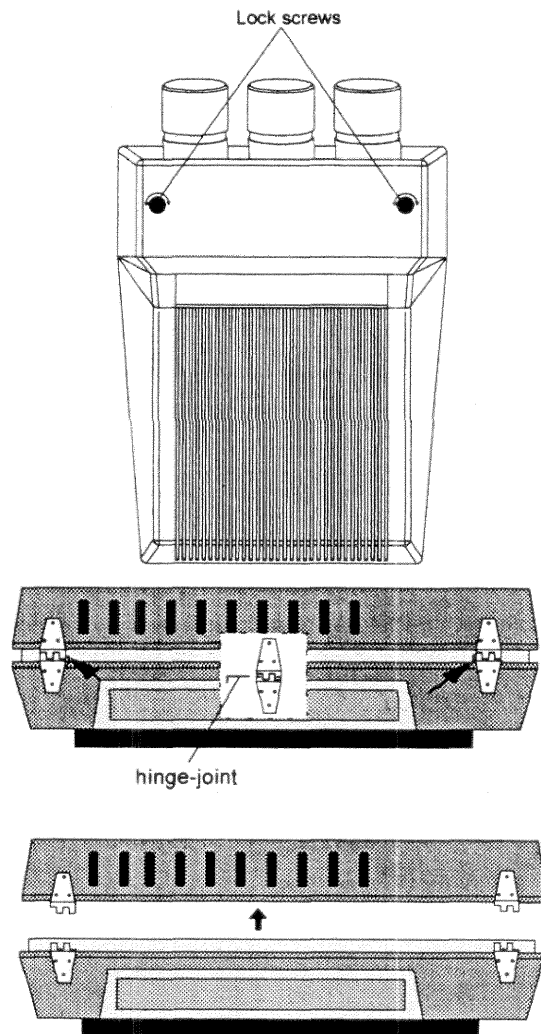
1. Remove the top cover of the projector

- Turn the cover lock screws with a screwdriver or a coin counter clockwise.
- Lift up and pivot the cover backwards.

Attention: the cover is not secured with an incorporated support. When opening, do not let it flip over, otherwise the hinges will break.

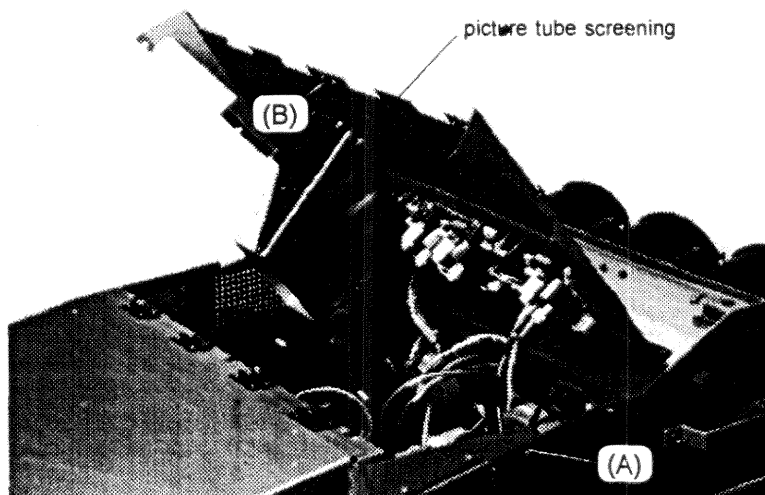


- For service purposes it will become handy to remove the top cover totally. Therefore,
- loosen the cover lock screws
 - pull out the two hinge-joints
 - left up the top cover



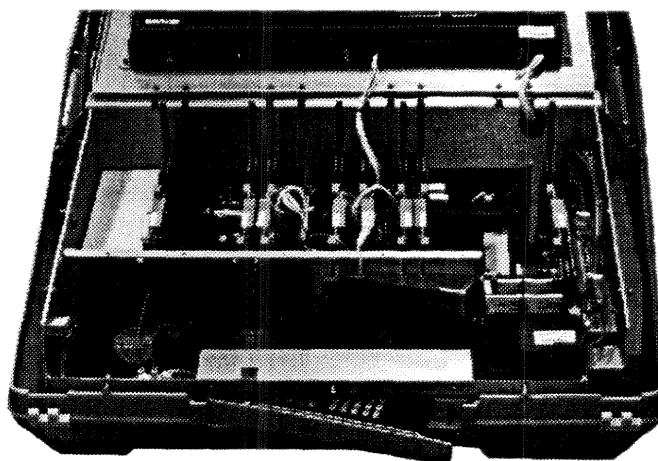
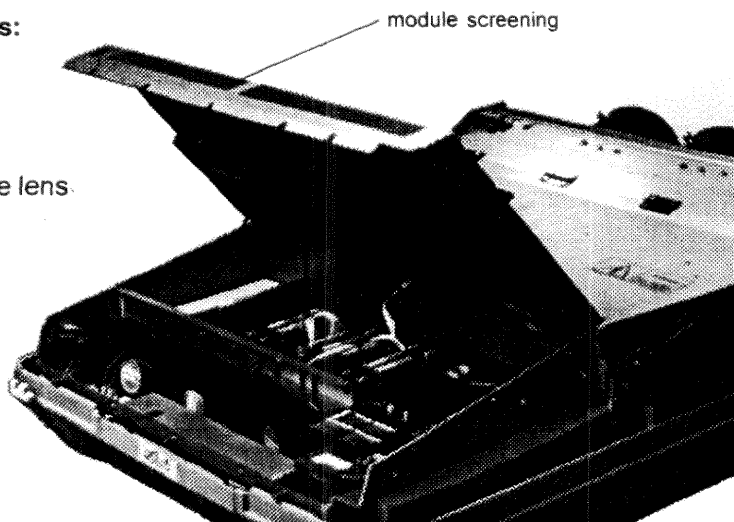
2. Access to picture tubes

- loosen the 6 screws (A) holding the picture tube screening to both sides of the main frame.
- loosen the 3 lock screws (B) with a screwdriver by turning the screws a quarter of a turn counter clockwise.
- lift up the screening and pivot it towards the lens side.



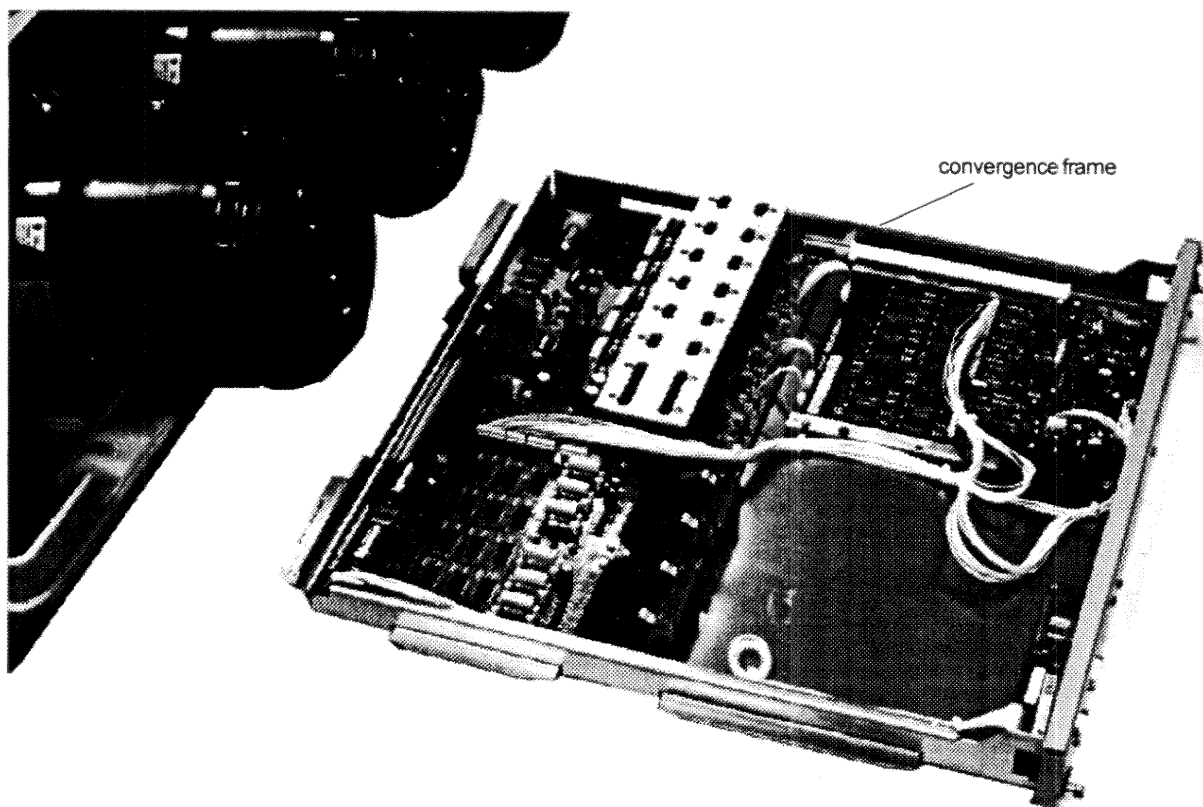
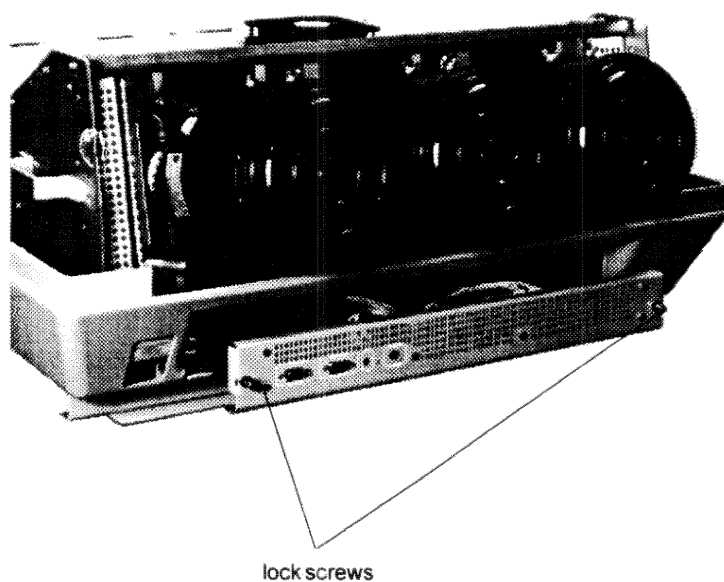
2. Access to modules, proceed as follows:

- Turn out the 9 screws holding module screening to main frame.
- Lift up screening and pivot it towards the lens side.



3. Access to Convergence modules

- loosen the two lock screws with a screw-driver by turning the screws counter clock-wise.
- Pull out the convergence frame



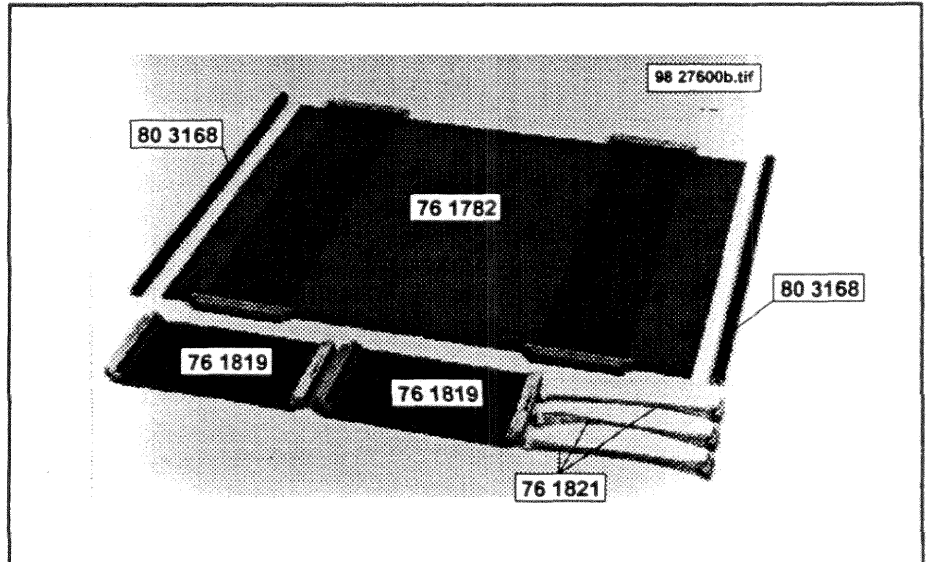
Introduction

Repairing the Barco 800 series projectors on component level is made possible by using the extension boards and the extensions cable units, delivered as **service kit**.

Contents of the kit:

Order No. kit: 98 27600

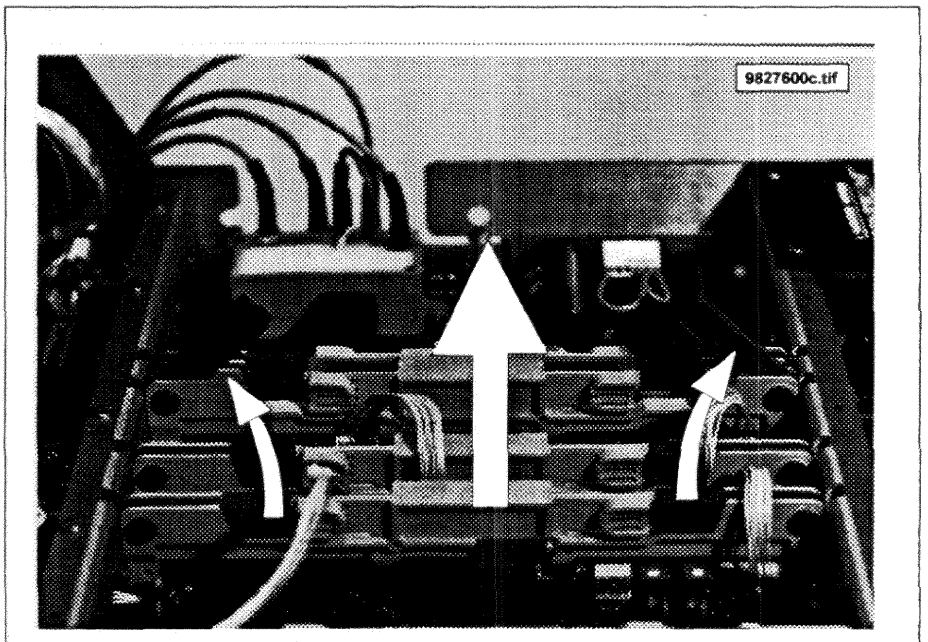
2 Extension boards for Euro cards:	Art. No. 76 1819
1 Extension board for Convergence module:	Art. No. 76 1782
2 Extensions metallic supports	Art. No. 80 3168
3 Extension cable units:	Art. No. 76 1821



Using the extension boards for Euro cards

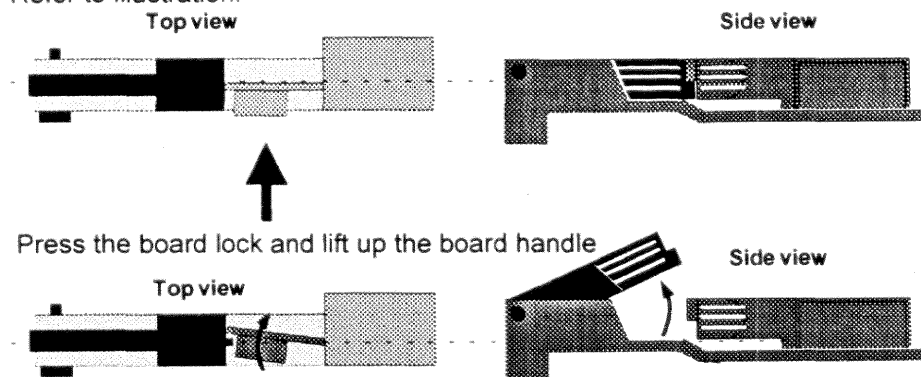
How to extract a module

Each board is locked in the main chassis on both sides.



To unlock the board, proceed as follows:

Refer to illustration:

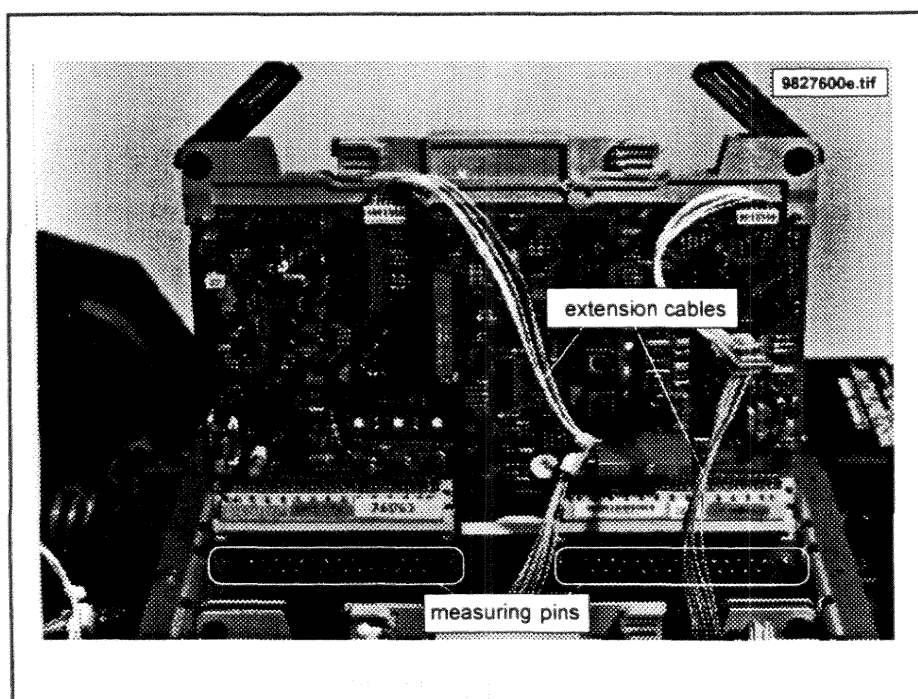


Repeat this action on both sides of the module and extract the module out of the main frame.

Example: repairing the decoder module

- Unplug the two connection cables to and from the Decoder module.
- Remove the Decoder module out of the main frame as already described.
- Plug the extension boards on the two decoder board connectors on the main frame.
- Put the Decoder module on the extensions boards.
- Re-install the cable connection by inserting the extension cables.

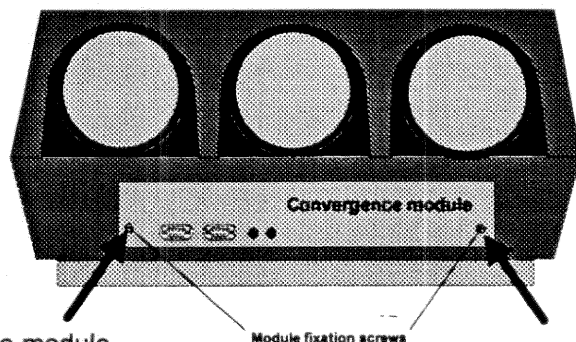
Important: the extension board for Eurocard is provided on each printed circuit foil with measuring pins.



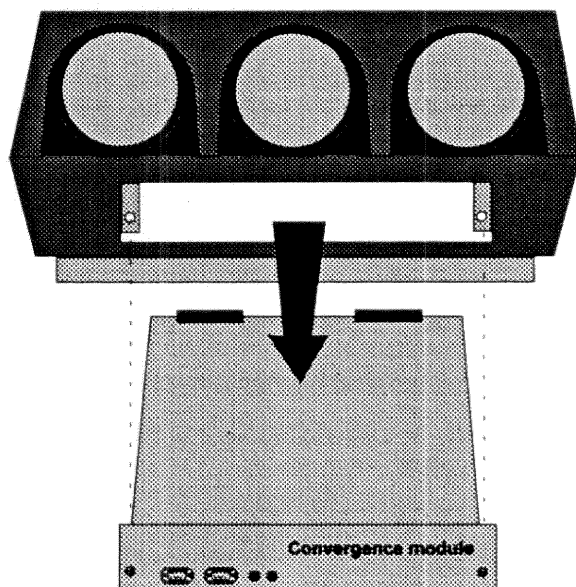
Using the extension
board for the
Convergence
module

Removing the convergence module:

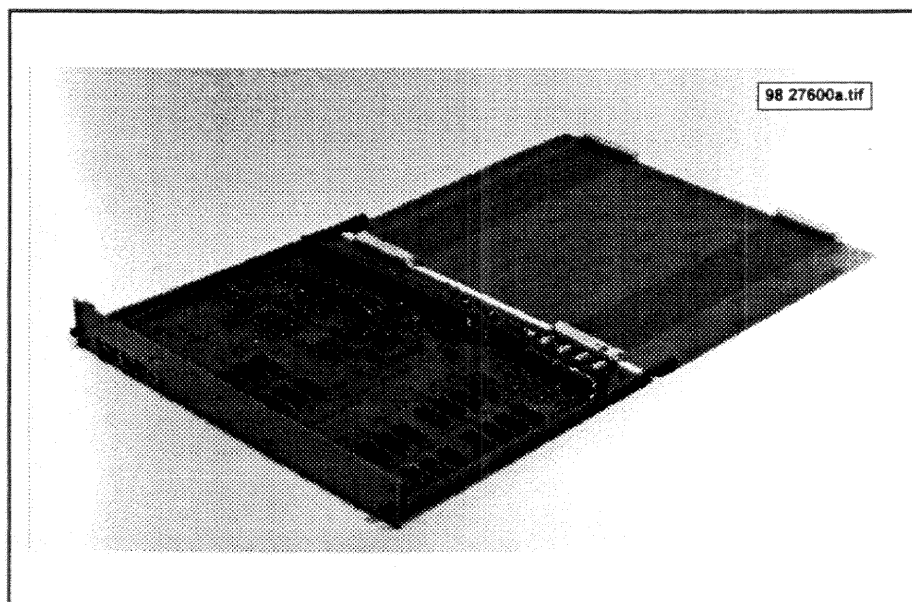
- Loosen the board fixation screws on both sides of the Convergence module.



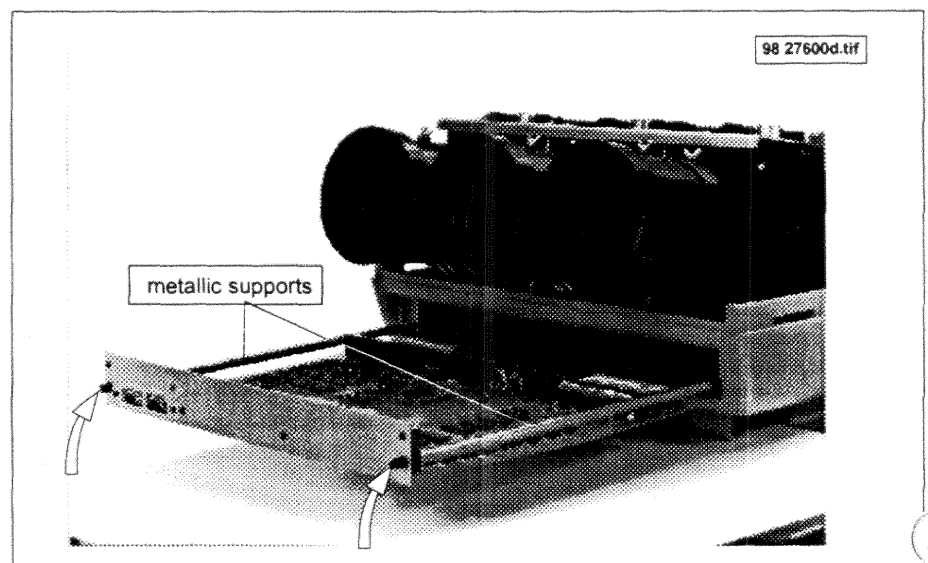
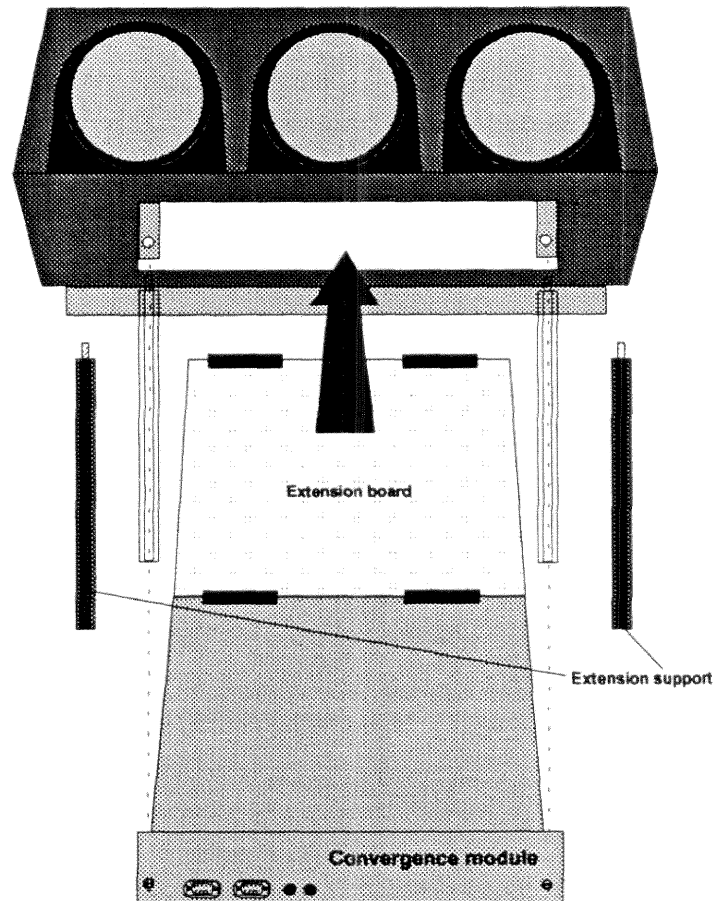
- Pull out the Convergence module.



- Put the Convergence module onto the convergence extension board.



- Screw in on both side on the main frame the metallic extension supports.
- Slide the extension board with the plugged in Convergence module into the projector.
- Secure the Convergence module onto the supports by screwing in the two remaining board screws.



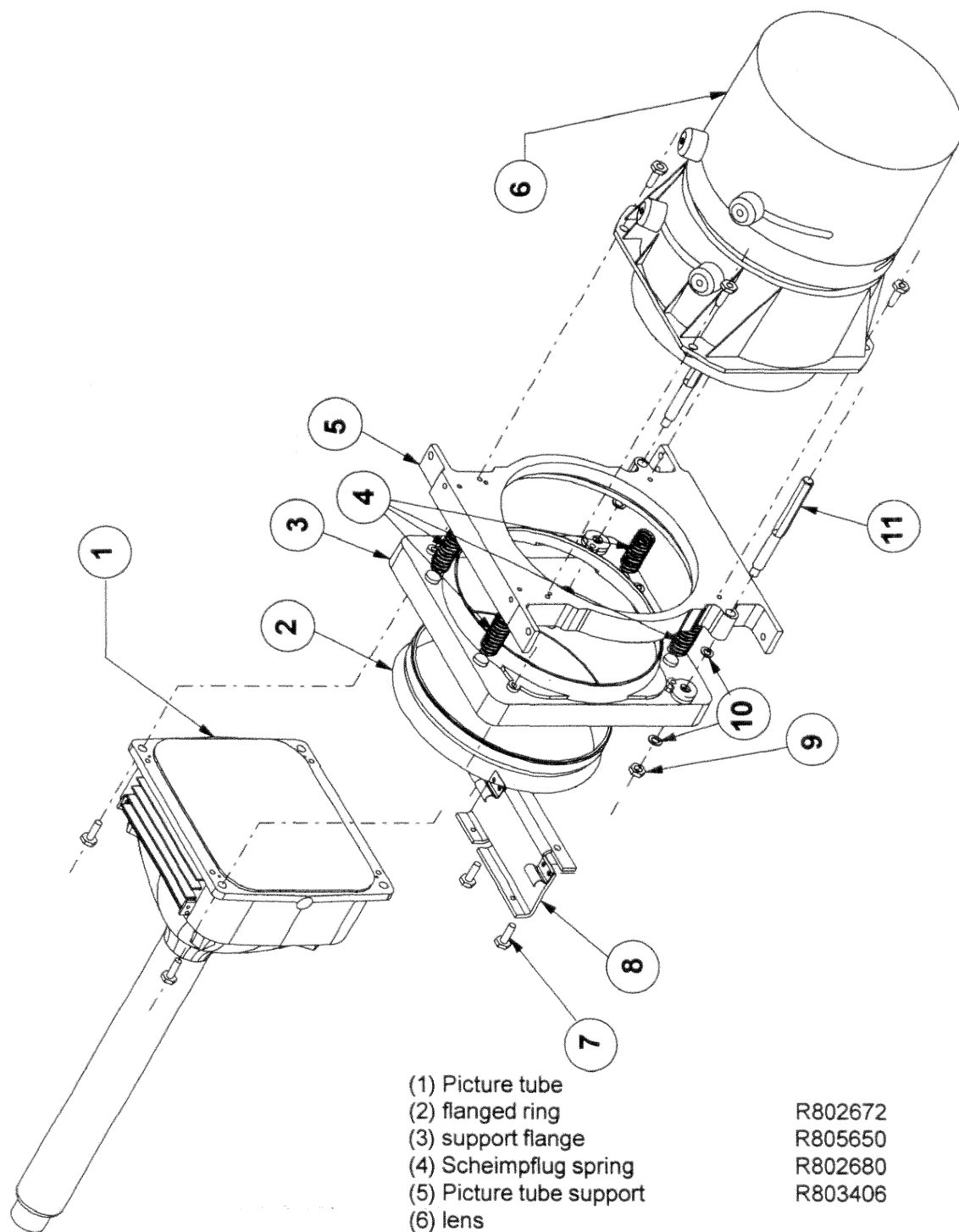
Replacement of a picture tube unit

WARNING: CRT HANDLING

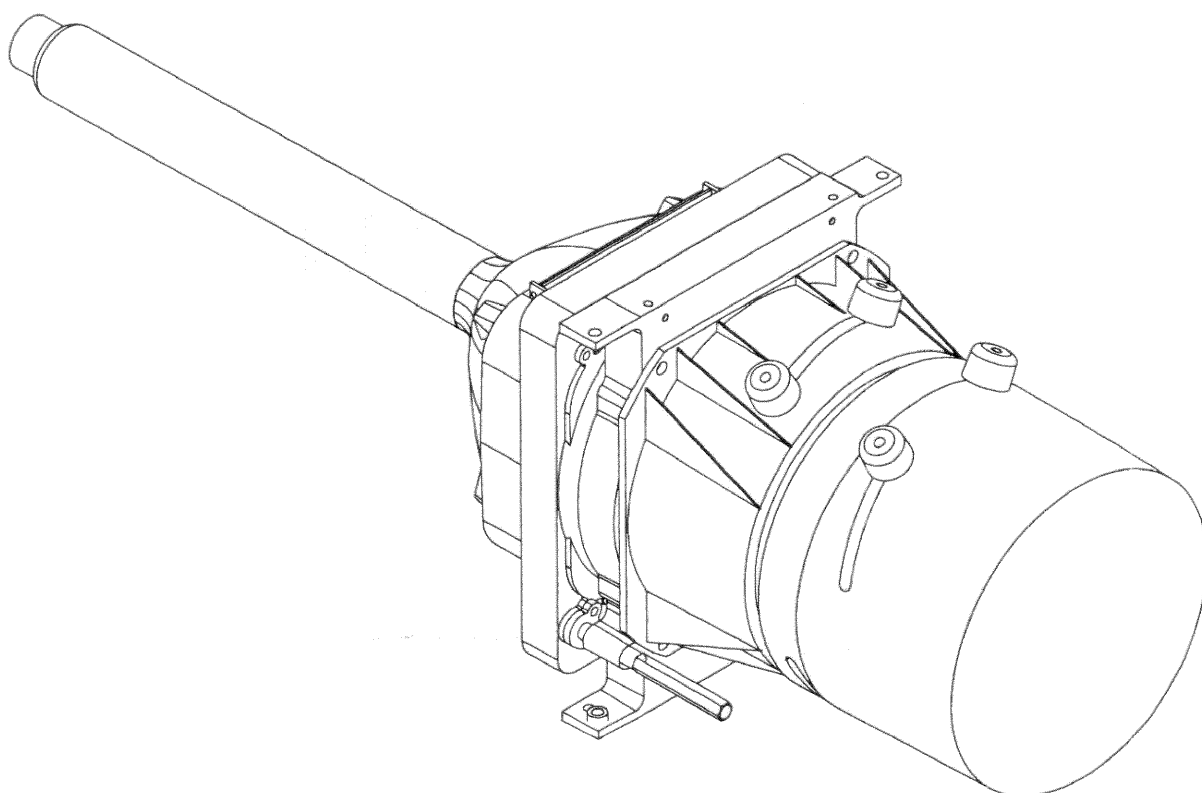
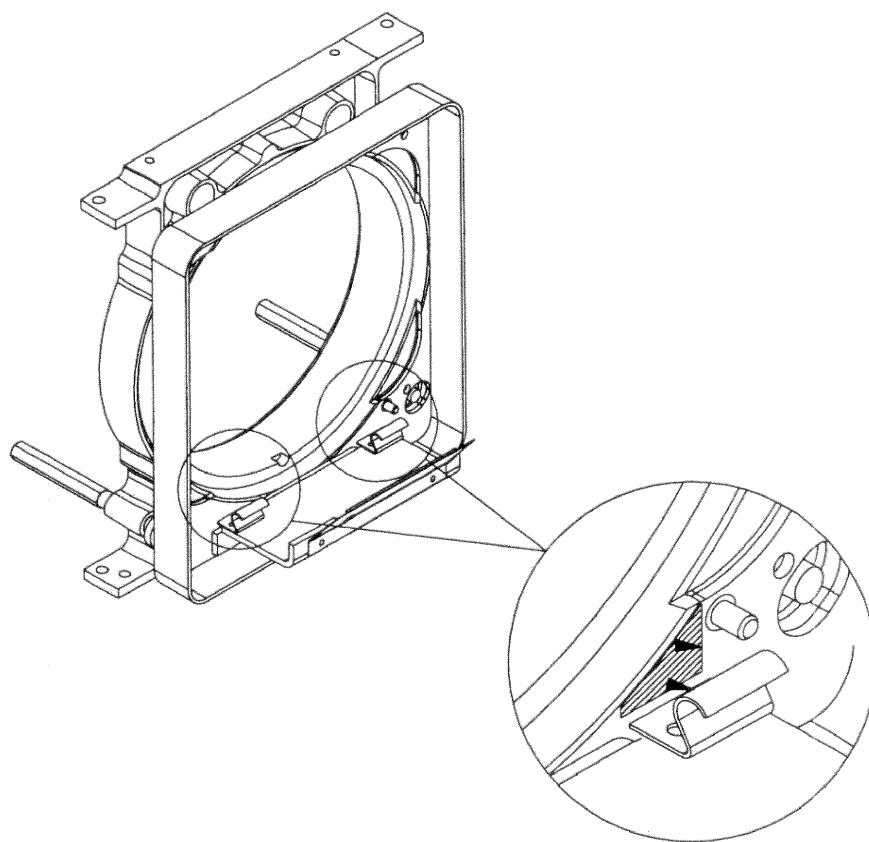
The picture tube encloses a high vacuum and care must be taken not to bump or to scratch the picture tube as this may cause the tube to implode resulting in personal injury and property damage. Shatterproof goggles must always be worn by individuals while handling the CRT or installing it in the projector.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

Removing the defective picture tube.

WARNING: MAKE SURE THAT THE PROJECTOR IS SWITCHED OFF AND THE POWER CORD IS DISCONNECTED

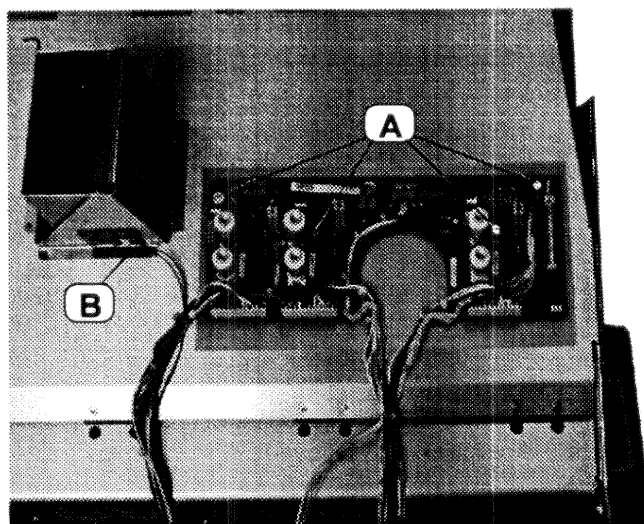


- | | |
|----------------------------------|----------|
| (1) Picture tube | |
| (2) flanged ring | R802672 |
| (3) support flange | R805650 |
| (4) Scheimpflug spring | R802680 |
| (5) Picture tube support | R803406 |
| (6) lens | |
| (7) screw DIN 933 M5X16 | R3631469 |
| (8) picture tube fixation bottom | R805823 |
| (9) nut DIN 439 M6 | R3661766 |
| (10) washer DIN 2093 125X62X0.7 | R367355 |
| (11) adjust screw Scheimpflug | R805646 |



3. Removing the Deflection Switching module:

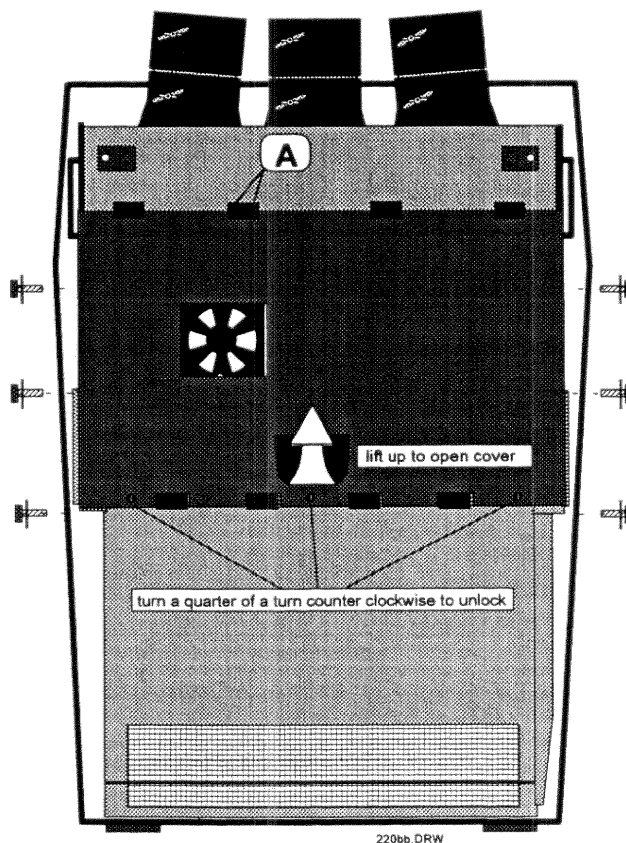
- turn out the 4 screws (A) holding the Deflection Switching module to the picture tube screening.
- disconnect Fan plug (B).



4. Removing the picture tube screening:

For easier picture tube replacement, remove the picture tube screening totally.

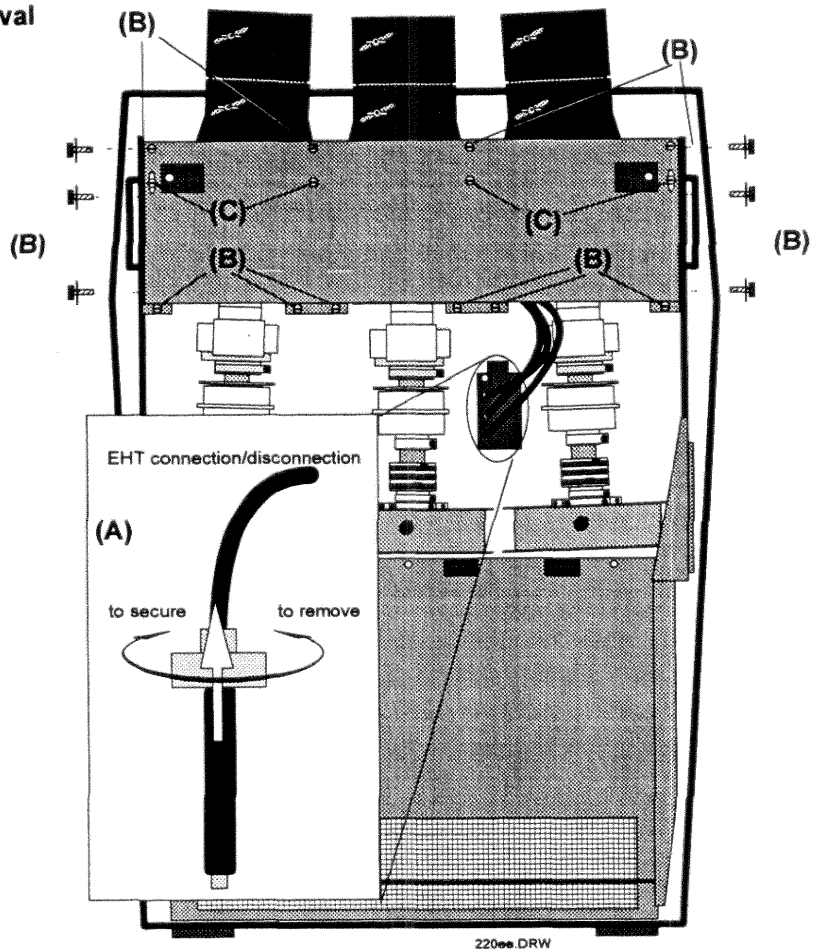
- turn out the 2 screws (A) holding the hinge to the picture tube top support.
- remove the picture tube screening.



Access to picture tube for removal

5. Picture tube cover removal

- Pull out the EHT lead (A) of the 3 picture tubes from the EHT splitter.
- Remove the 4 screws (C) securing the CRT blocks.
- Remove the 16 (B) screws holding the upper metallic cover to the main frame.
- Remove the upper metallic cover.



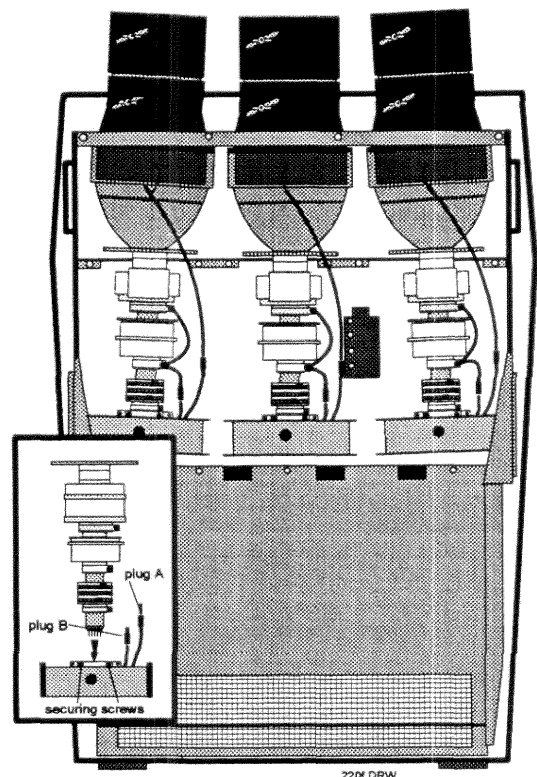
6. Output module removal

Disconnect the following plugs of the defective picture tube:

- CRT ground, plug A
- Unit ground, plug B

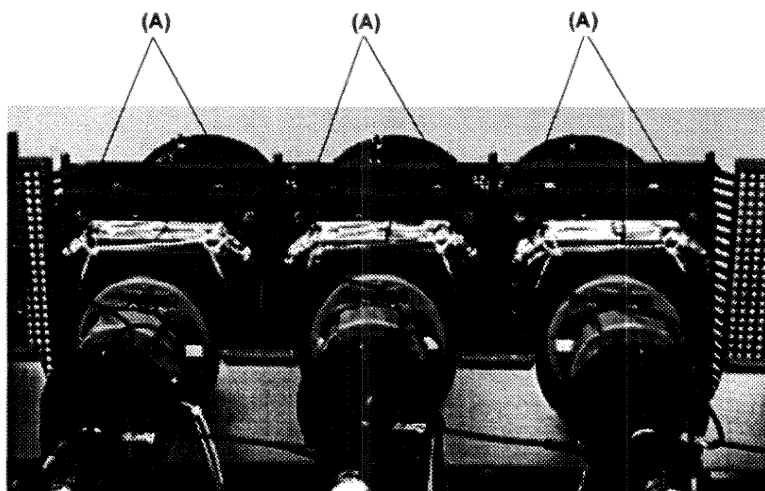
Loosen the two screws securing the output module to the picture tube neck.

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

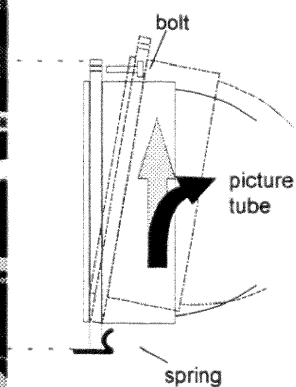
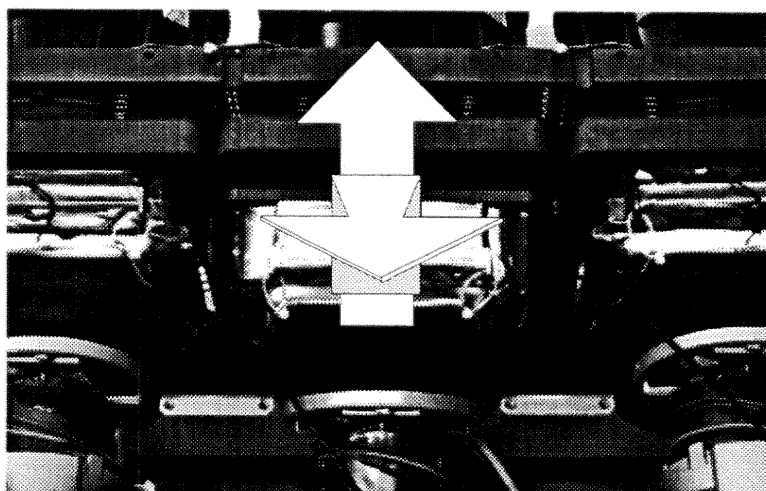


CRT unit removal

7. Remove the 2 bolts (A), holding the defective picture tube to the picture tube support.



8. Lift up the front side of the picture tube out of the provided springs, pivot the picture tube slightly downwards, and finally remove it.



II. Placement of the new picture tube (refer to illustrations in § I).

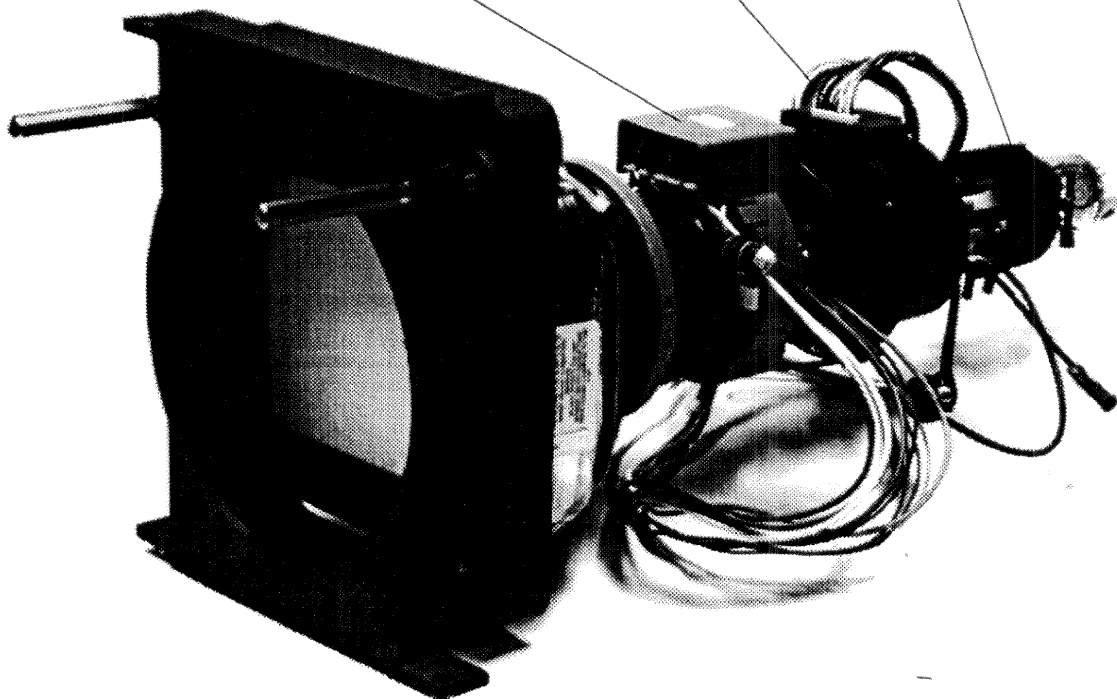
- Put the new picture tube unit on its place in the mechanical main frame and secure the position on the top with the 2 bolts.
- Re-install the metallic cover on the picture tube assembly and re-mount the deflection switching module.
- Re-install the electrical connections: - Output module
 - CRT ground, plug A
 - Unit ground, plug B
 - Deflection plug
 - Magnetic focus plug
 - EHT lead

Picture tube disassembly

9. Loosen gear clamp of the stigmator magnets unit and slide the unit off of the end of the CRT.

Loosen gear clamp of the dynamic astigmatism unit and slide the unit off of the end of the CRT.

Loosen gear clamp of the deflection unit and slide the unit off of the end of the CRT.

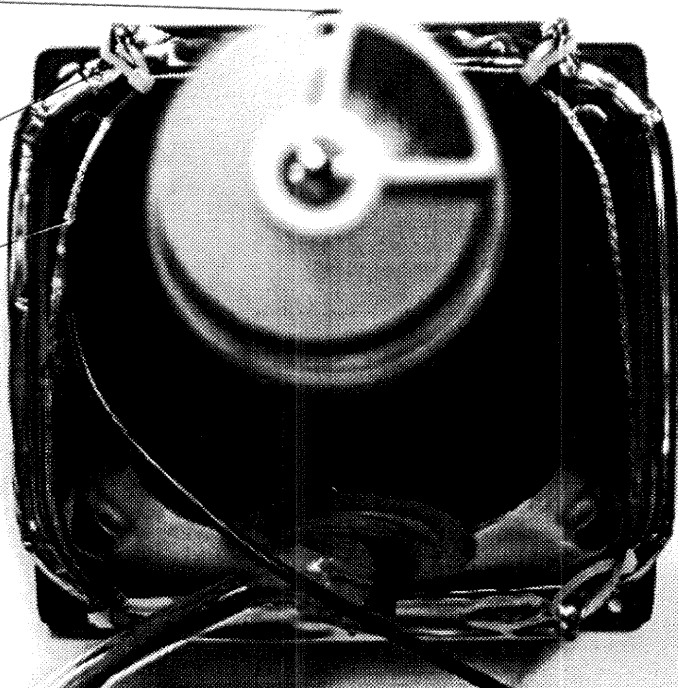


10. Removing the picture tube ground connection (to be mounted on the new tube)

Unsolder the wire, connecting the ground connection wire to CRT screening, on the CRT screening.

Cut the cable binders, holding the ground connection wire onto the picture tube.

Remove the ground connection assembly.



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 colours 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.

Centre the picture on the CRT faceplate (refer to installation manual).

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

B. Replacement of one or two tubes

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

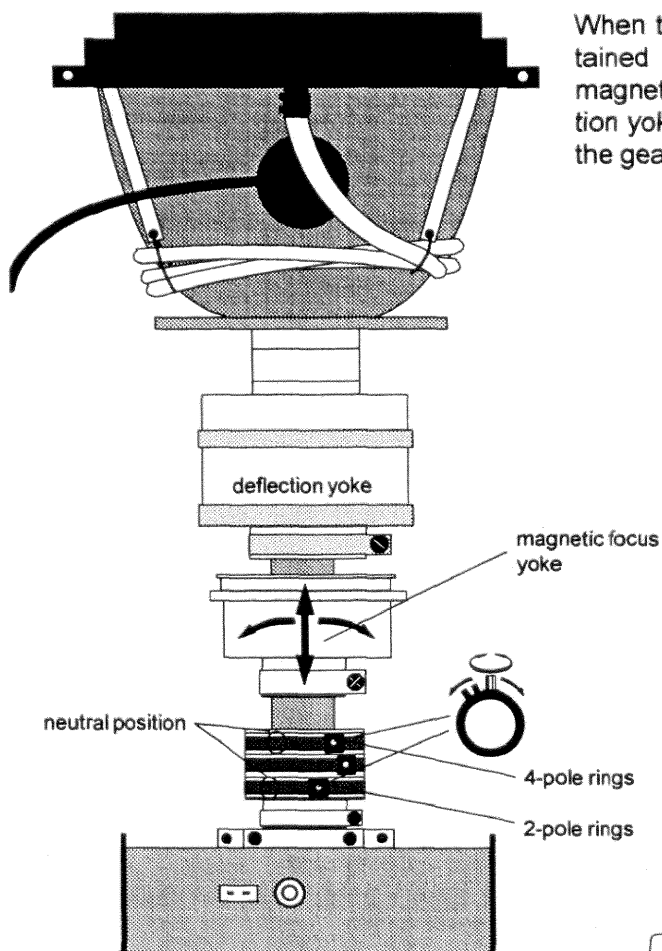
C. Adjustments applicable to the three tubes

Preparation

- proceed to quick optical lens focusing (refer to the installation manual of the projector).
- proceed to random access adjustment mode and selects 'Focusing'. Select the colour of the replaced picture tube and adjust the midpoint focus at 50 and the top/bottom/left/right at 0.
- 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.

Positioning the magnetic focus yoke

- selects in the Random access adjustment mode the 'Focusing' menu. This menu is displayed on a background useful for the required adjustments.
- slide and rotate unit on the tube neck until the same circular shape of the dots is obtained in the four corners of the projected picture.



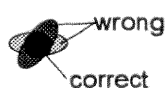
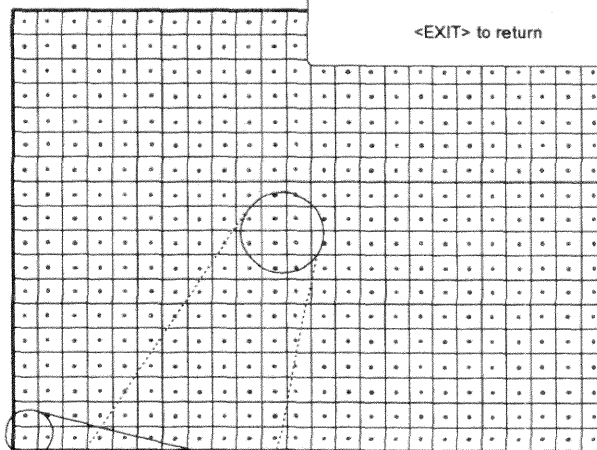
When the same circular shape is obtained in the four corners, slide the magnetic focus yoke against the deflection yoke and secure the position with the gear clamp screw.

FOCUSING

MIDPOINT RED
MIDPOINT GREEN
MIDPOINT BLUE
TOP
BOTTOM
LEFT
RIGHT

Select with ↑ or ↓
then <ENTER>

<EXIT> to return

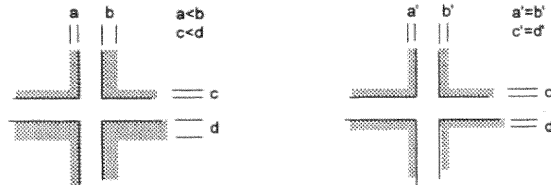


Adjustment of the stigmators (4-pole magnet ring closest to the deflection yoke)

- lower the brightness and increase the contrast.
- overdrive the midpoint focus by adjusting the right arrow key of the RCU 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 centring, 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)

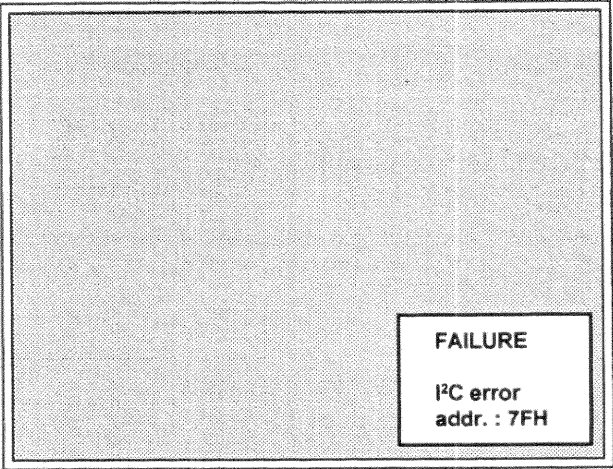
- decrease the contrast and increase the brightness to reveal the background raster.
- refer to sheet 'Deflection switching module 76 2121' in this manual for the alignment of the image width coils.

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.

I²C error is displayed on the screen together with the respective address, as illustrated on screen picture:

The table below indicates which IC corresponds to the displayed address . Replacement of the indicated IC solves the I²C error.



Convergence module (Driver) 76 2518 - Green convergence sub module 76 25128

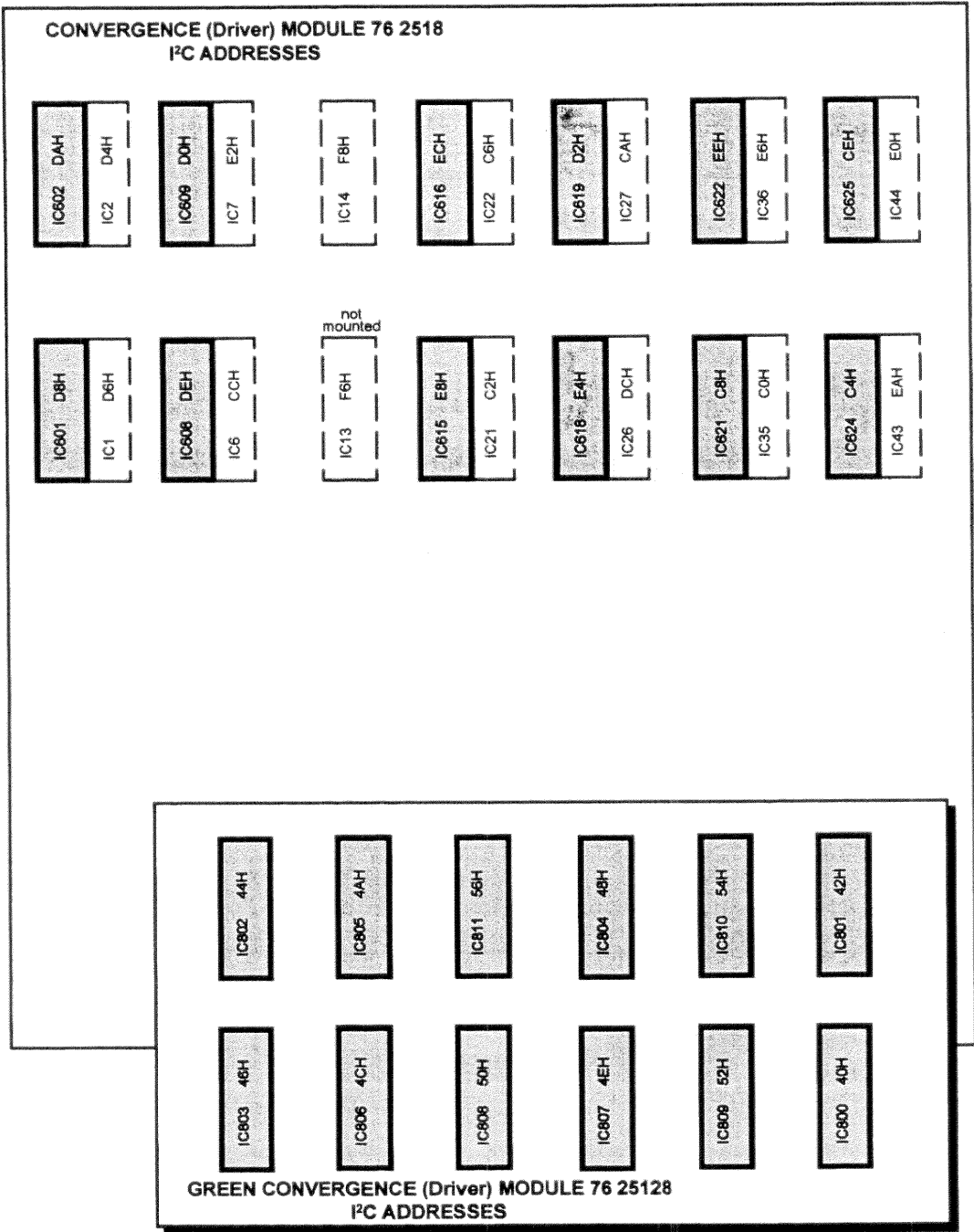
Convergence zones

1	2	3	4	5
6	7	8	9	10
11	12		13	14
15	16	17	18	19
20	21	22	23	24

HEX address	IC	CORRECTION Red/Blue vert./hor.	ZONE
C0H	IC35		1
C2H	IC21		2
C4H	IC624		3
C6H	IC22		4
C8H	IC621		5
CAH	IC27		6
CCH	IC6		7
CEH	IC625		8
D0H	IC609		9
D2H	IC619		10
D4H	IC2		11
D6H	IC1		12
D8H	IC601		13
DAH	IC602		14
DCH	IC26		15
DEH	IC608		16
E0H	IC44		17

E2H	IC7	18
E4H	IC618	19
E6H	IC36	20
E8H	IC615	21
EAH	IC43	22
ECH	IC616	23
EEH	IC622	24

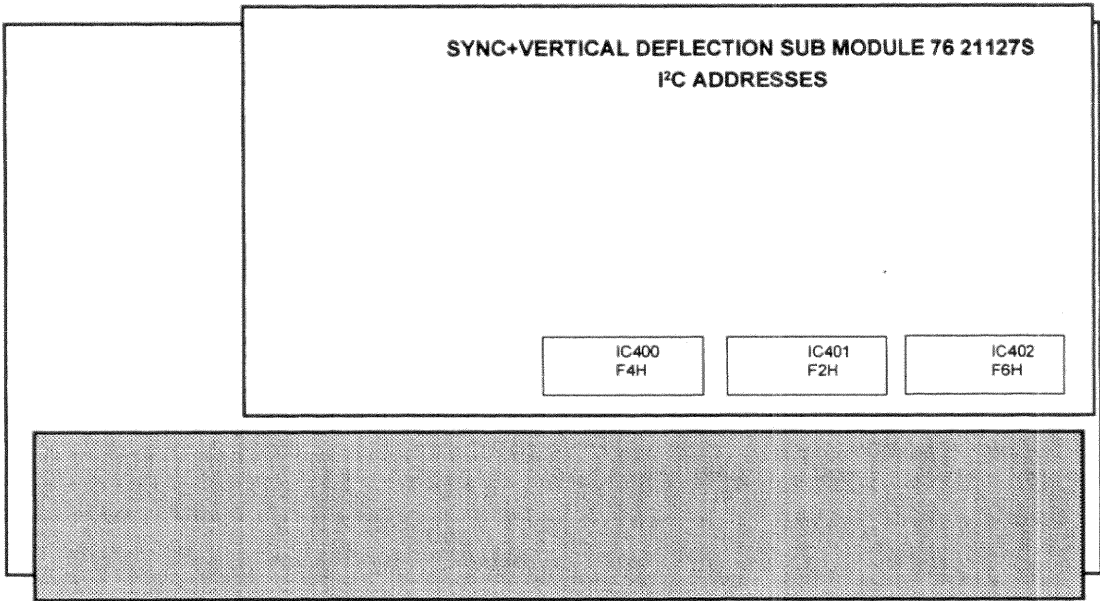
HEX address	IC	CORRECTION Green vert./hor.	ZONE
40H	IC800		22
			3
42H	IC801		8
			17
44H	IC802		13
			12
46H	IC803		14
			11
48H	IC804		6
			15
4AH	IC805		7
			16
4CH	IC806		9
			18
4EH	IC807		19
			10
50H	IC808		4
			23
52H	IC809		5
			24
54H	IC810		20
			1
56H	IC811		2
			21



HEX address	IC	CORRECTION N/S Correction	ZONE	HEX address	IC	CORRECTION N/S Correction	ZONE
F8H	IC14	top keystone bottom keystone top bow bottom bow		FAH	IC42	horizontal midline bow horizontal midline skew vertical midline bow vertical midline skew	

SYNC+VERTICAL DEFLECTION MODULE 76 21127

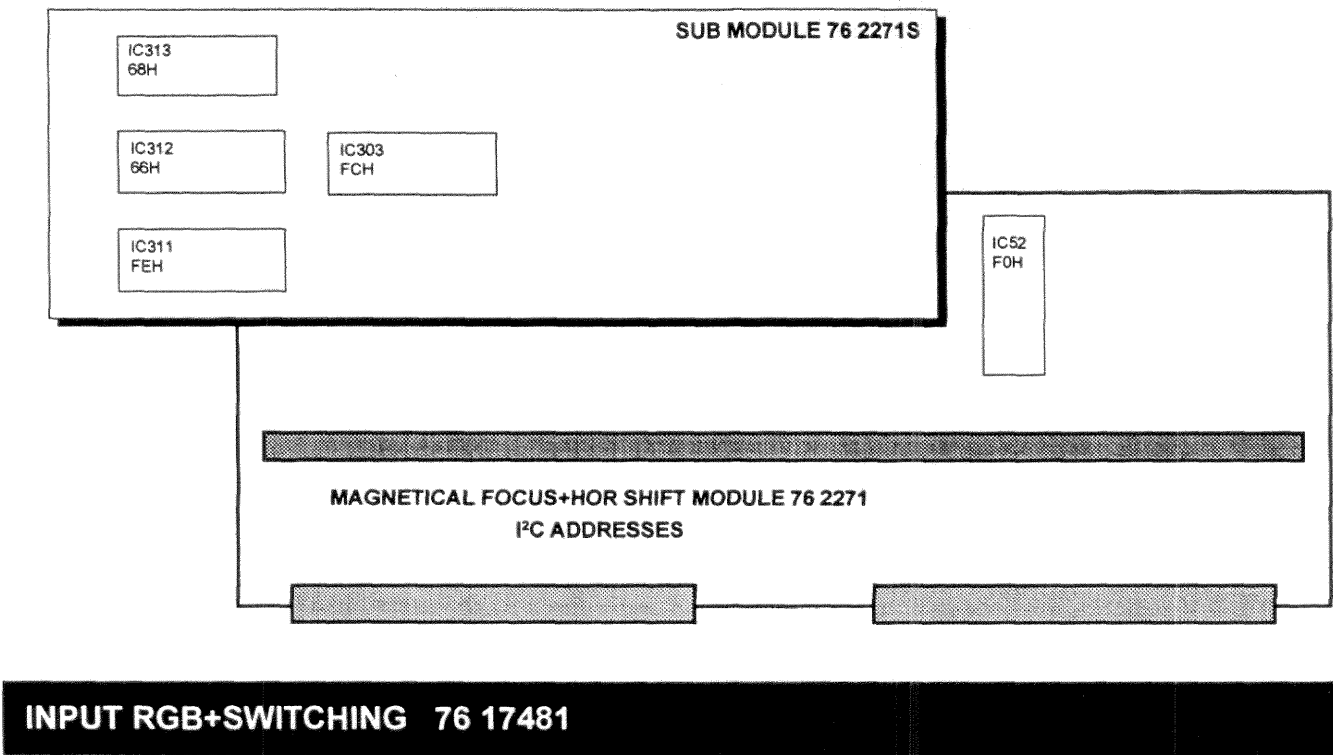
HEX address	IC	CORRECTION	HEX address	IC	CORRECTION
F2H	IC401	bottom blanking vertical shift red vertical shift green vertical shift blue	F6H	IC402	side keystone side bow left blanking right blanking
F4H	IC400	vertical amplitude vertical linearity horizontal phase top blanking			



MAGNETICAL FOCUS+HOR SHIFT 76 2271

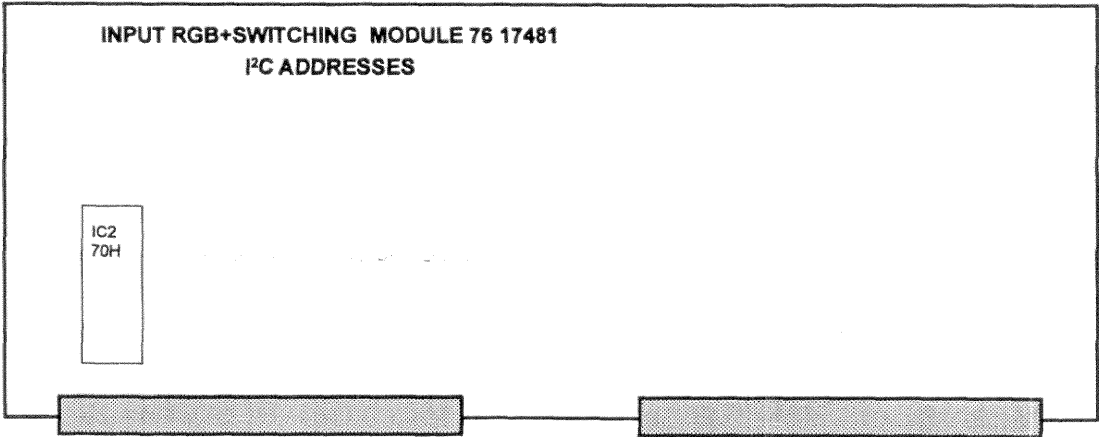
HEX address	IC	CORRECTION	HEX address	IC	CORRECTION
F0H	IC52	horizontall shift red horizontal shift green horizontal shift blue switching ldefl*	FEH	IC311	focus bottom R focus top R focus left R focus right R
FCH	IC303	focus Red center focus Green center focus Blue center H Amp (not used)	66H	IC312	focus bottom G focus top G focus left G focus right G
			68H	IC313	focus bottom B focus top B focus left B focus right B

* Vert. Deflection current switching (low/high frequency)



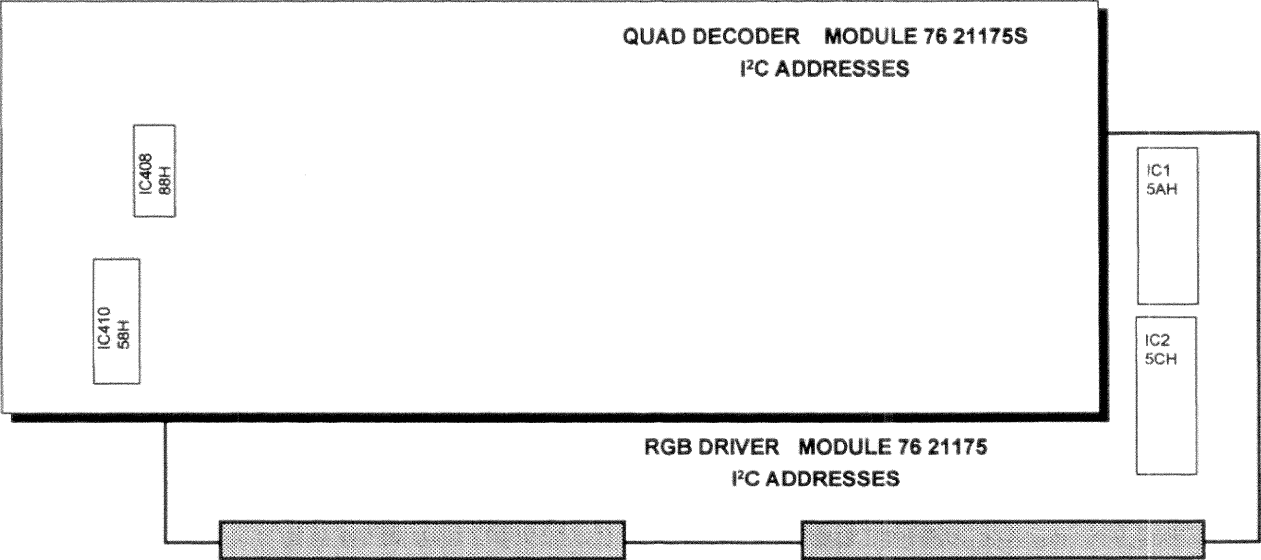
INPUT RGB+SWITCHING 76 17481

HEX address	IC	CORRECTION
70H	IC2	red on/off green on/off blue on/off sync fast/slow input video input S-video input RGB TTL input RGsB analog input RGBS analog internal pattern enhanced blue on/off



RGB DRIVER+QUAD DECODER 76 21175

HEX address	IC	CORRECTION	HEX address	IC	CORRECTION
58H	IC410	saturation R-Y saturation B-Y tint x (not used)	5CH	IC2	red gain blue gain red cut off blue cut off
5AH	IC1	contrast brightness horizontal amplitude bandwidth limiting	88H	IC408	delay line sharpness



I²C error messages in ascending order of address number

HEXaddress	IC	MODULE	HEXaddress	IC	MODULE
40H	IC800	Convergence G 76 25128	CAH	IC27	Convergence 76 2518
42H	IC801	Convergence G 76 25128	CCH	IC6	Convergence 76 2518
44H	IC802	Convergence G 76 25128	CEH	IC625	Convergence 76 2518
46H	IC803	Convergence G 76 25128	D0H	IC609	Convergence 76 2518
48H	IC804	Convergence G 76 25128	D2H	IC619	Convergence 76 2518
4AH	IC805	Convergence G 76 25128	D4H	IC2	Convergence 76 2518
4CH	IC806	Convergence G 76 25128	D6H	IC1	Convergence 76 2518
4EH	IC807	Convergence 7G 76 25128	D8H	IC601	Convergence 76 2518
			DAH	IC602	Convergence 76 2518
50H	IC808	Convergence G 76 25128	DCH	IC26	Convergence 76 2518
52H	IC809	Convergence G 76 25128	DEH	IC608	Convergence 76 2518
54H	IC810	Convergence G 76 25128			
56H	IC811	Convergence G 76 25128	E0H	IC44	Convergence 76 2518
			E2H	IC7	Convergence 76 2518
58H	IC410	Q Decoder+Gain 76 21175S	E4H	IC618	Convergence 76 2518
5AH	IC1	Q Decoder+Gain 76 21175	E6H	IC36	Convergence 76 2518
5CH	IC2	Q Decoder+Gain 76 21175	E8H	IC615	Convergence 76 2518
			EAH	IC43	Convergence 76 2518
66H	IC312	Mag. Foc+Hor Shift 76 2271	ECH	IC616	Convergence 76 2518
68H	IC313	Mag. Foc+Hor Shift 76 2271	EEH	IC622	Convergence 76 2518
88H	IC408	Q Decoder+Gain 76 21175S	F0H	IC52	Mag. Foc+Hor Shift 76 2271
70H	IC2	In RGB+Switching 76 17481	F2H	IC401	Sync+Vert defl 76 21127S
			F4H	IC400	Sync+Vert defl 76 21127S
74H	IC2	Orbiting 76 2268U	F6H	IC402	Sync+Vert defl 76 21127S
C0H	IC35	Convergence 76 2518	F8H	IC14	N-S corrections 76 2518
C2H	IC21	Convergence 76 2518	FAH	IC42	N-S corrections 76 2518
C4H	IC624	Convergence 76 2518			
C6H	IC22	Convergence 76 2518	FCH	IC303	Mag. Foc+Hor Shift 76 2271
C8H	IC621	Convergence 76 2518	FEH	IC311	Mag. Foc+Hor Shift 76 2271

Refer to preceding pages for IC location on module and fault identification.